

**THE CITY OF ALEXANDER CITY, ALABAMA
SPECIFICATIONS - CONTRACTUAL DOCUMENTS
TRUSSELL ROAD GRAVITY SEWER REPLACEMENT
BID #24-16**



**PREPARED BY
MUNICIPAL CONSULTANTS, INC.
200 CENTURY PARK SOUTH, SUITE 212
BIRMINGHAM, ALABAMA**

MAY 2024

**THE CITY OF ALEXANDER CITY, ALABAMA
SPECIFICATIONS - CONTRACTUAL DOCUMENTS
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TABLE OF CONTENTS

GENERAL

Advertisement for Bids..... i

BID DOCUMENTS

General Information for Bidders BD-1
Bid Bond BD-4
Insurance Requirements Certification BD-6
List of Subcontractors BD-7
Basis of Payment BD-8
Bid Proposal and Items of Work BD-11
Alabama Immigration Law Compliance BD-15
E-Verify Documentation and State Contractor’s License BD-16

CONTRACT DOCUMENTS

Notice of Award..... CD-1
Notice to Proceed CD-2
Performance Bond CD-3
Payment Bond CD-5
Certificate of Insurance CD-7
Contract Agreement CD-8

SPECIAL PROVISIONS

Starting and Completion Time and Liquidated Damages SP-1
Standard of Quality for Base Bid SP-3
Basis of Award SP-4
Source of Funding SP-5
Application for Tax Certificate SP-6
Insurance Requirements..... SP-7
 Additional Insured (CG 20 10 11 85) SP-8
 Additional Insured (CG 20 10 10 01) SP-9
 Additional Insured (CG 20 37 10 01) SP-10
 Additional Insured (CG 24 04 10 93) SP-11
 Waiver of Transfer of Rights of Recovery against Other to Us (CG 24 04 10 93) SP-12

SPECIAL PROVISIONS (Continued)

Owner Approved Material Suppliers and Equipment Manufacturers SP-13
Consent of Surety, Release of Liens, and Payment of Debts and Claims SP-14
Contractor’s Affidavit, Release of Liens, and Payment of Debts and Claims (Form) SP-15
Consent of Surety to Final Payment (Form)..... SP-16

GENERAL SPECIFICATIONS

Definition of Terms..... G-1
Proposal Requirements and Conditions G-4
Award and Execution of Contract..... G-8
Scope of Work..... G-10
Control of Work..... G-12
Control of Materials G-26
Legal Relations and Responsibilities to Public G-28
Prosecution and Progress G-40
Project Completion G-49
Warranty and Guarantees G-52

STANDARD SPECIFICATIONS

Concrete S-1
Sitework, Excavation, and Earthwork..... S-13
Pipe Materials S-25
Gravity Sewer Installation S-37
Ductile Iron Sewer Pipe Interior Coating S-45
Pavement, Gravel, and Concrete Surfaces..... S-48
Grassing S-52

GENERAL

ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of **Trussell Road Gravity Sewer Replacement Bid #24-16** will be received by The City of Alexander City, Alabama (Owner) at the Public Works Conference Room, 281 James D. Nabors Drive, Alexander City, Alabama 35010 until **2:00 PM**, the prevailing time, on **June 3, 2024**, or by mailing to 281 James D. Nabors Drive, Alexander City, Alabama 35010 at which time and place they will be publicly opened and read. The **BID NUMBER, BID TITLE, and BID OPENING DATE** must be clearly labeled. The bid is comprised of the following principal items and approximate quantities:

2,300± L.F. 10” Gravity Sewer

1 Sewer Line Creek Crossing

Miscellaneous Appurtenances and Work

Plans and Specifications may be inspected at the Alexander City Water Services Department and Municipal Consultants, Inc. in Birmingham, Alabama and they may be obtained from the office of Municipal Consultants, Inc., 200 Century Park South, Suite 212, Birmingham, Alabama 35226, upon payment of **\$75.00**. Cost of plans and specifications are non-refundable. Plans and specifications may also be downloaded from the City of Alexander City at [www.alexandercityal.gov/rfps].

All Bidders must be responsible, meeting the criteria and requirements set forth in the specification documents. Prequalification of Bidders is not required.

This project is considered a “Public Works” project and is governed by competitive bid laws as contained in Title 39 of the Alabama Code. Bidders, subcontractors, suppliers, and Bond Agents should be familiar with this code. This project is also governed by CDBG requirements.

The Owner reserves the right to reject any or all proposals and to waive technicalities. No Bidder may withdraw his bid within sixty days from the date set for receiving of the same. There will not be a Pre-Bid Conference for this Project.

This project is governed by the applicable bid laws and practices of the State of Alabama.

MUNICIPAL CONSULTANTS, INC.
Consulting Engineers
200 Century Park South
Suite 212
Birmingham, AL 35226

By: Curtis “Woody” Baird
Title: Mayor

BID DOCUMENTS

GENERAL INFORMATION FOR BIDDERS

BIDS will be received by the City of Alexander City, Alabama (herein called the "OWNER"), at the Public Works Conference Room, 281 James D. Nabors Drive, Alexander City, Alabama 35010 until **2:00 PM**, the prevailing time, on **June 3, 2024**, and then at said office publicly opened and read aloud.

Each BID must be submitted in a sealed envelope, addressed to the City of Alexander City, Alabama at 281 James D. Nabors Drive, Alexander City, Alabama 35010. Each sealed envelope containing a BID must be plainly marked on the outside as BID for **Trussell Road Gravity Sewer Replacement Bid #24-16** and the envelope should bear on the outside the name of the BIDDER, his address, his license number if applicable and the name of the Project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at 281 James D. Nabors Drive, Alexander City, Alabama 35010.

All BIDS must be made on the required BID form with the entire bound documents intact. All blank spaces for BID prices must be filled in, in ink, or typewritten, and the BID form must be fully completed and executed when submitted. Only one copy of the BID form is required. A copy of the BIDDER'S State Contractor's License for the state in which the work will be performed must be attached to the BID DOCUMENTS.

The OWNER may waive any informalities or minor defects or reject any or all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within 60 days after the actual date of the opening thereof or after the Notice of Award is transmitted to the BIDDER, provided the Award is made within the 60 days herein described. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID Schedule by examination of the site and a review of the Drawings and Specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve him from fulfilling any of the conditions of the Contract.

Each BID must be accompanied by a BID BOND payable to the OWNER in the amount described in the General Specifications. As soon as the BID prices have been compared, the OWNER will return the BONDS of all except the three lowest responsible BIDDERS. When the Agreement is executed, the BONDS of the two remaining unsuccessful BIDDERS will be

returned. The BID BOND of the successful BIDDER will be retained until the payment BOND and performance BOND have been executed and approved, after which it will be returned. A cashier's check may be used in lieu of a BID BOND as described in the General Specifications.

A performance BOND and a payment BOND, each in the amount of 100 percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the Contract and as provided in the General Specifications.

Attorneys-in-fact who sign BID BONDS or payment BONDS and performance BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

The party to whom the Contract is awarded will be required to execute the Agreement and obtain the performance BOND and payment BOND within fifteen (15) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary Agreement and BOND forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may at his option consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER within fifteen (15) days of receipt of acceptable performance BOND, payment BOND and Agreement signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by WRITTEN NOTICE withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued within a reasonable time frame of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within a reasonable time frame or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

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 any 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 obligations of the Agreement and to complete the WORK contemplated therein.

A conditional or qualified BID will not be accepted. The OWNER reserves the right to reject any BID that is submitted by a BIDDER that is determined by the OWNER to not be a responsible BIDDER or whose BID proposal is not responsive. In determining whether a BIDDER or BID is responsible and/or responsive, the OWNER reserves the right to also request and consider the following factors in Section III.2 of the General Specifications and/or the Special Provisions (if applicable).

Award will be made in concurrence with the Special Provisions "Award of Contract", the General Specifications, and any Supplemental General Conditions.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the Contract throughout.

Each BIDDER is responsible for thoroughly inspecting the site and for reading and

being thoroughly familiar with all the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way whatsoever relieve any BIDDER from any obligation in respect to his BID.

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 these Specifications if included herein.

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when requested to do so by the OWNER in addition to those required in the Bid Documents. Either the act of not providing the names required with the submittal of the Bid Documents or the act of not providing such additional names that may be requested after Bids are received, will be grounds for the OWNER to disqualify the BIDDER for not being responsive.

This project is considered a "Public Works" project and is governed by competitive bid laws as contained in Title 39 (1997) of the Alabama Code. Bidders, subcontractors, suppliers, and Bond Agents should be familiar with this code.

A Pre-Bid conference for prospective BIDDERS will not be held. It shall be the responsibility of the bidders to have a thorough understanding of the plans, specifications, and other contract documents and to include all costs in their bids for fully complying with all requirements.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____
_____ as Principal, and _____ as
Surety, are hereby held and firmly bound unto The City of Alexander City, Alabama as
OWNER in the penal sum of _____ for the
payment of which, well and truly to be made, we hereby jointly and severally bind ourselves,
successors and assigns. Signed, this ____ day of _____, 20____. The Condition of
the above obligation is such that whereas the Principal has submitted to the Owner a certain
BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the_
Trussell Road Gravity Sewer Replacement Bid #24-16.

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void. Otherwise, the same shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the amount that is allowed by Alabama Code, Title 39 (1997) for Public Works projects.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety

and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (L.S.)

Surety

By: _____

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.

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INSURANCE REQUIREMENTS CERTIFICATION

The Contractor selected for the Project will be required to provide insurance in full accordance with all the requirements of the Specifications. See the sections pertaining to insurance in the Special Provisions and in the General Specifications. Bidders shall ensure that if awarded the Project, the insurance provided will be in full accordance with all these requirements. This includes the exact endorsements and coverages as listed. No exceptions will be allowed.

The Bidder hereby certifies that he has provided all insurance requirements to his insurance provider for their careful review and pricing, and has verified that if his bid is accepted, all the insurance required by the Specifications, including the exact endorsements and coverages, will be provided. The Contractor also certifies that if the Contractor's current insurance provider will not provide the insurance required by the Specifications, then the Bidder has located another insurance provider for the Project that will issue insurance for the Project in full accordance with all requirements of the Specifications.

Finally, the Contractor certifies that he has included all costs necessary in his Bid to provide all insurance in full accordance with all the Specifications.

Contractor _____

By _____

Date _____

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LIST OF SUBCONTRACTORS

Contractors submitting a proposal are required to list in the spaces provided the name of each of the subcontractors they will use if awarded the Contract. No substitutions will be allowed without approval of the Owner. The Bidder shall list the names of major subcontractors. If all the information is not provided with the bid, this will be grounds for the Owner to disqualify the Bidder for not being responsive.

ITEM OF WORK

SUBCONTRACTOR NAMES

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Note: If the Contractor will not use a subcontractor for an Item of Work, he shall write "None" in the blank for the Subcontractor for that Item of Work.

If the Bidder does not write in the name of a Subcontractor, he shall submit with his bid detailed evidence satisfactory to the Engineer that he has sufficient personnel experienced in that trade on his full time staff to perform that item of work on this project. Failure to submit such satisfactory evidence with the Bid, or the submission of inaccurate, misleading, or incorrect information, will be grounds for the Owner to disqualify the Bidder for not being responsive.

The Bidder certifies that if his bid is accepted, the above subcontracting firms or businesses will be awarded subcontracts for the above portions of the work.

Contractor _____

By _____

Date _____

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BASIS OF PAYMENT

BASE BID

For unit price items, the quantities shown in the “Items of Work” reflect estimates. The actual quantities will be adjusted during construction to reflect the conditions encountered, or other changes, or Owner preferences. Inasmuch as the actual quantities may vary considerably from the quantities listed in the schedule or shown on the drawings, the bidders shall insert prices that represent his actual costs. The Contractor shall not be paid an amount higher than he bids.

The cost of all work required for the project shall be included in the “Items of Work” listed for the project.

The Contract Unit or Lump Sum Bid Amounts shall be payment in full for furnishing all resources (materials, labor, equipment, etc.) necessary to install and complete each portion of the project in complete accordance with the requirements of the Plans and Specification-Contractual Documents. The Contract Bid Amounts shall include the cost of completing all work described under each bid item description and all necessary incidental work not included or listed as a separate bid item. Incidental work may include, but not be limited to, all necessary excavation (earth or rock), backfilling (earth or stone), demolition, sheeting, shoring, piling, bracing, bypass pumping, dewatering, well pointing, clearing, grubbing, erosion control, locating all utilities and existing piping, repairing or replacing damaged facilities, restoration, grassing, disposal of excess materials, traffic/pedestrian control in accordance with the regulations of all authorities or agencies having jurisdiction over the work areas, permit compliance, and all other miscellaneous tasks necessary to fully complete the projects, etc. The quantities actually required may be significantly more or less than the quantities shown. **The Contractor will be paid for only the quantities actually and properly installed, and approved for payment. The Contractor shall be paid only the price he bids for each item regardless of the conditions encountered, the quantity actually required, or the unit price.**

ITEMS 1 THROUGH 3, ITEMS B1-1 THROUGH B1-3, AND ITEMS B2-1 THROUGH B2-3 - DUCTILE IRON, PROTECTO 401 LINED, CLASS 350 SEWER LINES, VARIOUS CUTS AND LOCATIONS

The Contract Unit Prices Bid per linear foot shall be payment in full to furnish and install Ductile Iron P401 Lined Class 350 pipe for all sewers to the alignment and grades shown in the Plans. Measurements for depth of cut shall be from the pipe invert elevation to existing grade. If additional lines or deviations from the alignments and grades shown in the Plans are required by the Engineer in the field, these same unit prices shall apply. The Contract Unit Prices Bid shall include, but not be limited to: excavation, rock excavation, dewatering, sheeting and bracing, bedding materials; providing materials and grading to

maintain minimum cover; connections to existing sewer lines; connections to existing manholes; demolition of existing lines, manholes or structures for construction of new lines; temporary connections or manholes; all bypass pumping; temporary or permanent connections to proposed sewers; temporary or permanent plugs for lines; protection and/or replacement of all existing utilities, structures, etc.; setting of alignment and grade stakes; clay ditch checks; disposal of excess materials, clearing and grubbing of all trees, compacted backfill per project specification and detail in trench (including full stone backfill in areas shown on drawings), concrete caps as shown over sewer, grassing and clean-up, repairing damaged property, testing, and all incidental materials necessary and required to complete the work. The Contractor's personnel shall be present whenever trenches and/or excavations are open.

ITEMS 4, B1-4 AND B2-4 – 48” DIAMETER PRECAST MANHOLES AT VARIOUS CUTS, EXTRA

The Contract Unit Price Bid per vertical foot shall be payment in full for the furnishing of all labor, materials, and equipment including watertight rings and covers, as required by the Plans and Specifications to install a 48” diameter precast concrete manhole at the locations designated by the Engineer and/or Plans. These items shall include all incidentals associated with this work including but not limited to: earth and rock excavation, backfilling and compaction as indicated on the Plans, backfilling with special subgrade material where rock or unstable subgrade material is encountered and removed, the setting of alignment and grade stakes, dewatering, sheeting and bracing, bypass pumping of raw sewage where required, testing, and all other accessories and all incidentals necessary and required to complete the work to the satisfaction of the Owner and Engineer. This item is extra and shall only be utilized where the Owner determines an existing manhole cannot be utilized. There shall be no payment under this item for replacing manholes damaged by the Contractor.

ITEM 5 - SEWER LINE CREEK CROSSING

The Contract Lump Sum Price Bid shall be payment in full for the furnishing of all labor, materials and equipment, to install restrained joint ductile iron pipe within the limits of the crossing as indicated on the Plans, and all incidentals necessary and required to complete the Creek Crossing. It shall include, but not be limited to: all aspects covered under the Basis of Payment for ductile iron sewer lines; restrained joint ductile iron pipe; rock and earth excavation; steel casing pipe, spacers, and end seals; replacing unsuitable material(s) as required; erosion control during construction; clearing and disposal of debris; water management during work; and restoration of the creek bed and banks to their original shape following construction. Class II Rip-Rap, geotextile fabric, and crushed stone shall be included in this item.

ITEM 6 - RIP RAP, EXTRA

The Contract Unit Price per ton in place shall be payment in full for furnishing of all labor, machinery, equipment, materials, and all incidentals necessary and required to complete the installation of Class 2 rip-rap as directed by the Engineer during construction. This item does not include rip-rap shown or inferred from the drawings or included as part of the

contractor's BMP installation and maintenance, the cost of which shall be included in other items. Rip-rap placement paid under this item shall include only extra rip-rap placed during construction at the direction of the Engineer. This shall include but not be limited to supplying and placing the rip-rap and all necessary excavation. Tonnage shall be measured from certified invoices from the material supplier.

ITEM 7 - MOBILIZATION

The Contract Lump Sum Price shall be the cost allowed by the Owner for mobilization of Contractor's and Subcontractor's forces. The cost includes portions or all the Contractor's cost for bonds, insurance, set up of Contractor's and Subcontractor's forces and all field offices, acceptance by Engineer and Owner of schedule of payment values submitted by the Contractor, and all equipment and personnel movement. The price established by the Owner is an allowance for the Contractor and will be partially paid upon completion of initial mobilization. Only one mobilization charge is allowed regardless of how the Contractor manages the work and number of mobilization occurrences by the Contractor and Subcontractors. Any additional cost above the price established for mobilization shall be accounted for in other Bid Items.

ITEM 8 - START-UP, TESTING, CLEAN-UP AND USE OF IMPROVEMENTS

The Contract Lump Sum Price shall be paid for furnishing the Owner an operable and completed project which has successfully passed all tests and been approved by all authorities for use by the Owner as intended and is put into service. The price in this item represents an allowance that is established by the Owner and used by all Contractors bidding the project. The amount of money written in this item will be paid the Contractor when the entire project is approved for service, including connections, by the Engineer and all authorities and all clean-up and project components are completed since all the project's components are an integral part of the entire project needed by the Owner. Partial payment will not be allowed on this item.

BID

Proposal of _____ (hereinafter called "BIDDER"),
organized and existing under the laws of the State of _____ doing
business as _____.*

To the City of Alexander City, Alabama (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of Trussell Road Gravity Sewer Replacement Bid #24-16 in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, at the prices stated below, and in accordance with the "Basis of Payment" herein.

By submission of this 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 arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

No BIDDER may withdraw a BID within 60 days after the actual date of the opening thereof or after the Notice of Award is transmitted to the BIDDER, provided the Award is made within the 60 days herein described. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

Upon receipt of written notice of the acceptance of this bid, BIDDER will execute the formal contract attached within fifteen (15) days and deliver a Surety Bond or Bonds as required by the General Conditions. The bid security attached is to become the property of the OWNER in the event the contract and bond are not executed within the time set forth, as liquidated damages for the delay and additional expenses to the OWNER caused there.

BIDDER hereby agrees to commence WORK under this Contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within the calendar days as specified in Section 1 of the Special Provisions. Bidder further agrees to pay as liquidated damages, the sum as specified in Section 1 of the Special Provisions for each consecutive calendar day thereafter.

* Insert "a corporation", "a partnership", or "an individual" as applicable.

BIDDER acknowledges receipt of the following ADDENDUM:

BIDDER agrees to perform all the work described in the Contract Documents for the following unit prices or lump sum:

Note: The Owner is tax exempt from the payment of Sales and Use taxes. Bids shall not include Sales and Use taxes.

ITEMS OF WORK
BID SCHEDULE

BASE BID

ITEM	QUANT	UNIT	DESCRIPTION	UNIT PRICE	TOTAL
1	345	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 0'-6' Cut	\$ _____	\$ _____
2	841	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 6'-8' Cut	\$ _____	\$ _____
3	53	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 8'-10' Cut	\$ _____	\$ _____
4	40	Vertical Foot	48" Diameter Precast Manholes at Various Cuts, Extra	\$ _____	\$ _____
5	1	Lump Sum	Sewer Line Creek Crossing	\$ _____	\$ _____
6	50	Ton	Rip Rap, Extra	\$ _____	\$ _____
7	1	Lump Sum	Mobilization	\$ 5,000.00	\$ 5,000.00
8	1	Lump Sum	Start-up, Testing, Clean-up, and Use of Improvements	\$ 5,000.00	\$ 5,000.00

TOTAL OF BASE BID \$ _____

ALTERNATE B1 ADDER TO BASE BID

ITEM	QUANT	UNIT	DESCRIPTION	UNIT PRICE	TOTAL
B1-1	179	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 0'-6' Cut	\$ _____	\$ _____
B1-2	215	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 6'-8' Cut	\$ _____	\$ _____
B1-3	74	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 8'-10' Cut	\$ _____	\$ _____
B1-4	10	Vertical Foot	48" Diameter Precast Manholes at Various Cuts, Extra	\$ _____	\$ _____

ALTERNATE B2 ADDER TO BASE BID

ITEM	QUANT	UNIT	DESCRIPTION	UNIT PRICE	TOTAL
B2-1	124	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 0'-6' Cut	\$ _____	\$ _____
B2-2	365	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 6'-8' Cut	\$ _____	\$ _____
B2-3	61	Linear Foot	10" D.I. Sewer Line, Class 350 P401 Lined, 8'-10' Cut	\$ _____	\$ _____
B2-4	20	Vertical Foot	48" Diameter Precast Manholes at Various Cuts, Extra	\$ _____	\$ _____

ACCOUNTING OF SALES AND USE TAX SAVINGS

Pursuant to Alabama Law, (Alabama Act 2018-234), BIDDER accounts for the Sales and Use Tax savings which are NOT included in the Items of Work - Bid Schedule as follows:

Bidder shall write in the estimated Sales and Use Tax savings which are NOT included in:

1. BASE BID: \$ _____

Failure to provide an accounting of Sales and Use Tax savings in the blank(s) above shall be grounds for the Owner to render the bid non-responsive. Other than determining responsiveness, the estimated Sales and Use Tax savings shall not affect the bid pricing nor be considered in the determination of the lowest responsible and responsive bidder. Accordingly, the Contractor will not be paid for the Sales and Use Tax savings written in the blank(s) above. Bidder shall reference the Special Provisions for "Application for Tax Certificate of Exemption".

MATERIAL DELIVERY LEAD TIMES (SEE SPECIAL PROVISIONS)

Indicate the specific number of calendar days required to deliver each specified material order to the jobsite, after each order is submitted by the Contractor (lead time).

Ductile Iron Pipe _____ calendar days

Ductile Iron Fittings _____ calendar days

Respectfully submitted:

Signature

Address

Print Name and Title

Alabama License Number

Date

(SEAL - if BID is by a Corporation)

Attest _____

ALABAMA IMMIGRATION LAW COMPLIANCE

State of _____

County of _____

FORM FOR SECTIONS 9 (a) and (b) BEASON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT; CODE OF ALABAMA, SECTIONS 31-13-9 (a) and (b)

AFFIDAVIT FOR BUSINESS ENTITY/EMPLOYER /CONTRACTOR

(To be completed as a condition for the award of any contract, grant, or incentive by the State of Alabama, any political subdivision thereof, or any state-funded entity to a business entity)

Before me, a notary public, personally appeared _____ (print name) who, being duly sworn, says as follows:

As a condition for the award of any contract, grant, or incentive by the State of Alabama, any political subdivision thereof, or any state-funded entity to a business entity or employer that employs one or more employees, I hereby attest that in my capacity as _____ (state position) for _____ (state business entity/employer/contractor name) that said business entity/employer/contractor shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien.

I further attest that said business entity/employer/contractor is enrolled in the E-Verify program. (ATTACH DOCUMENTATION ESTABLISHING THAT BUSINESS ENTITY/EMPLOYER/CONTRACTOR IS ENROLLED IN THE E-VERIFY PROGRAM) and will utilize the E-Verify program to verify the employment status of employees and potential employers according to Federal Rules and Regulations.

I further attest that all sub-contractors in my employment shall not knowingly employ, have for employment, or continue to employ an unauthorized alien; and are duly enrolled in the E-Verify program and upon request can produce the appropriate forms verifying such action.

Signature of Affiant

Sworn to and subscribed before me this ____ day of _____, 2____.

I certify that the affiant is known (or made known) to me to be the identical party he or she claims to be.

Signature and Seal of Notary Public

**E-VERIFY DOCUMENTATION
AND
STATE CONTRACTORS LICENSE

TO BE INSERTED HERE**

CONTRACT
DOCUMENTS

NOTICE OF AWARD

To: _____

PROJECT Description: Trussell Road Gravity Sewer Replacement Bid #24-16

The OWNER has considered the BID submitted by you on (Bid Date) for the above described WORK in response to its Advertisement for Bids and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$ _____.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND and certificates of insurance within fifteen (15) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within fifteen (15) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

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

Dated this _____ day of _____, 20_____.

The City of Alexander City, Alabama

By _____

Name Curtis "Woody" Baird

Title Mayor

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

By _____

this the _____ day of _____, 20_____.

By _____

Title _____

_____ **Bond Number**

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto _____

The City of Alexander City, Alabama

(Name of Owner)

P.O. Box 552, Alexander City, Alabama 35011

(Address of Owner)

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 _____, 20_____, a copy of which is hereto attached and made a part hereof for the construction of:

Trussell Road Gravity Sewer Replacement Bid #24-16

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 all 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 agrees that no change, extension of time, alteration or addition to the terms of the Contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the 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 be unsatisfied.

IN WITNESS, WHEREOF, this instrument is executed in _____ counterparts, each one
(Number)

of which shall be deemed an original, this the _____ day of _____, 20_____

ATTEST:

(Principal)

(Principal) Secretary By _____ (s)

(SEAL)

(Witness as to Principal) _____
(Address)

(Address) _____

Surety

ATTEST:

(Surety) Secretary

(SEAL)

Witness as to Surety By _____
Attorney in Fact

(Address) _____
(Address)

NOTE: Date of BOND must not be prior to date of Contract.
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.

Bond Number

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal, and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto _____

The City of Alexander City, Alabama

(Name of Owner)

P.O. Box 552, Alexander City, Alabama 35011

(Address of Owner)

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 _____, 20_____, a copy of which is hereto attached and made a part hereof for the construction of:

Trussell Road Gravity Sewer Replacement Bid #24-16

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 all 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 agrees that no change, extension of time, alteration or addition to the terms of the Contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the 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 be unsatisfied.

IN WITNESS, WHEREOF, this instrument is executed in _____ counterparts, each one
(Number)
of which shall be deemed an original, this the _____ day of _____, 20_____.

ATTEST: _____
(Principal)

(Principal) Secretary By _____ (s)

(SEAL)

(Witness as to Principal) _____
(Address)

(Address) _____

Surety

ATTEST: _____
(Surety) Secretary
(SEAL)

Witness as to Surety By _____
(Address) _____

(Address) _____
(Address)

NOTE: Date of BOND must not be prior to date of Contract.
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.

**CERTIFICATE OF INSURANCE
AND
INSURANCE ENDORSEMENTS**

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 20____ by and between _____ **The City of Alexander City, Alabama** _____, hereinafter called "OWNER" and _____ doing business as a "Corporation", "Partnership", "an Individual", or Limited Liability Company (LLC) 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 _____
Trussell Road Gravity Sewer Replacement Bid #24-16

2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within ten (10) calendar days after the date of the NOTICE TO PROCEED and will complete the same within _____ calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS. The Contractor further agrees to pay, as liquidated damages, the sum of \$_____ for each consecutive calendar day thereafter as hereinafter provided in the GENERAL CONDITIONS and SPECIAL PROVISIONS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of \$ _____ or as shown in the BID schedule.

5. The term "CONTRACT DOCUMENTS" means and includes the following:

- (A) Advertisement for Bids
- (B) Information for Bidders
- (C) Bid
- (D) Bid Bond
- (E) Agreement
- (F) General Specifications
- (G) Supplemental General and Special Provisions
- (H) Payment Bond
- (I) Performance Bond
- (J) Notice of Award
- (K) Notice to Proceed
- (L) Change Order
- (M) DRAWINGS prepared or issued by Municipal Consultants, Inc. _____
numbered _____ through _____, and dated _____, 20____.
- (N) SPECIFICATIONS prepared or issued by Municipal Consultants, Inc.
dated _____, 20____.
- (O) ADDENDA:
No. _____, dated _____, 20____
No. _____, dated _____, 20____
No. _____, dated _____, 20____
No. _____, dated _____, 20____

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.

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

8. The Contractor enters into this Contract with the Owner as an independent contractor and, as such, agrees that neither the Owner nor its officers, agents, employees, engineers or inspectors shall be responsible for the acts or omissions of the Contractor, or any subcontractor, or any of the Contractor's or subcontractor's agents or employees, or any other persons performing any of the work pursuant to this Contract. The Contractor shall be solely responsible for controlling construction manner, means and techniques consistent with the Contract Documents, Plans and Specifications.

9. This Agreement, together with all documents which constitute the "Contract Documents" constitute the entire agreement of the parties, as a complete and final integration thereof with respect to its subject matter. All understandings and agreements heretofore had between and among the parties are merged into this Agreement, which alone fully and completely expresses their understandings. No representation, warranty, or covenant made by any party which is not contained in this Agreement or expressly referred to herein has been relied on by any party in entering into this Agreement.

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

OWNER:

The City of Alexander City, Alabama

By _____

Name Curtis "Woody" Baird

Title Mayor

(SEAL)

ATTEST:

Name _____

Title _____

CONTRACTOR:

By _____

Name _____

Address _____

(SEAL)

ATTEST:

Name _____

Title _____

SPECIAL PROVISIONS

**SPECIAL PROVISIONS
FOR
STARTING AND COMPLETION TIME
AND LIQUIDATING DAMAGES**

SECTION I

1.0 STARTING AND COMPLETION TIME

Work specified under this contract shall begin on the date specified in the Notice to Proceed. The completion of work shall be counted from the specified start date in the Notice to Proceed and will be as follows:

Line A = 90 calendar days

Line B1 = 30 calendar days

Line B2 = 30 calendar days

Requests for extension of time will be submitted to the Engineer along with the Contractor's periodic estimate. The Engineer shall ascertain the facts and the extent of the delay and shall recommend to the Owner whether it should extend the time for completing the Project. The Contractor shall provide all documentation requested by the Engineer. Extensions of time, if any, will be made by the Owner only if in accordance with the Contract Documents.

For change orders requesting extensions of time due to rain, wind, flood or other natural phenomenon, the Contractor's written request must be accompanied, at the Owner's request, by a detailed report of weather at this site for the last ten (10) years with averages showing means and statistical deviations from mean averages to support request for extension. No extension shall be made for delays due to rain, wind, flood or other natural phenomenon of normal intensity for the locality.

In the event any material changes, alterations, or additions are made as herein specified, which in the opinion of the Engineer will require additional time for execution of any work under the contract, then in that case, the time of the completion of the Project may be extended through change order. No extensions of time shall be given for any minor changes, alterations or additions. The Contractor shall not be entitled to any reparation or compensation on account of such additional time or extensions of time.

2.0 LIQUIDATING DAMAGE CHARGE

Beginning with the first periodic estimate after the contract completion date, liquidating damage charges may be assessed by the Owner against the Contractor for each calendar day past the contract completion date, plus approved time extensions. The liquidating damage charges shall be deducted from the Contractor's periodic payment by the Owner. The Contractor shall be notified of the liquidating damage charge and shall have ten (10) days in which to file an appeal of the charges with the Owner. The Owner shall review the appeal and render a decision of approval or disapproval. The liquidated damages shall be as follows

beginning from the stated or extended date of completion and continuing for so long as the Project remains incomplete.

\$ 500 per calendar day

Should the Owner not deduct liquidated damages when it is first entitled to, this shall in no way limit the Owner's right to deduct or claim the entire liquidated damages at whatsoever time the Owner may desire. It is understood and agreed that the above deduction is not a penalty, but money due to reimburse the Owner for inconvenience and damage to the general public, due to the delay in the completion of the Project and is reasonable. The collection of liquidated damages by the Owner shall not constitute an election or waiver by the Owner of recovery of additional delay or non-delay related damages from the Contractor, and the Owner expressly reserves the right to recover actual damages for other harms resulting from delay. The provisions of the liquidated damage clause shall apply and continue to apply even if the Contractor terminates or abandons the Project prior to the scheduled completion dates.

The amounts of such liquidated damages and actual damages incurred by reason of failure to complete the work stipulated in the Contract are hereby agreed upon as reasonable estimates of the costs which may be accrued by the Owner. It is expressly understood and agreed that these amounts are not to be considered in the nature of penalties, but as damages which have accrued against the Contractor. The Owner shall have the right to deduct such damages from any amount due, or that may become due the Contractor, or the amount of such damages shall be due and collectible from the Contractor or Surety.

**SPECIAL PROVISIONS
FOR
STANDARD OF QUALITY
FOR BASE BID**

SECTION II

1.0 MANUFACTURED ARTICLES

Where certain items are called for or described, it is to establish a "standard" of quality. The Contractor's Proposal shall be based on furnishing the items as called for or described.

2.0 SUBSTITUTE EQUIPMENT/MATERIALS

Contractors may submit for approval of substitute equipment/material. Such items shall be written in on the "List of Material Suppliers and Equipment Manufacturers". The Contractor shall state the reduction in cost, if any, between the substitute and the equipment in the base bid. No extra will be paid the Contractor for any changes required to adapt the substitute equipment or material and the Contractor shall pay the Owner for any necessary redesign and/or construction drawings. All redesign and drawing will be prepared by the Engineer. Substantial evidence of the equal or superior quality shall be submitted with the bid. The Contractor shall also promptly furnish after bid opening such additional information as may be requested by the Engineer such as lists of installations of the same equipment of similar size and complexity (including contact persons and phone numbers), testing and performance data (including both independent laboratory certification and full scale) to clearly indicate full compliance with all specifications. The determination whether or not the substitute equals the "standard" shall be made by the Engineers and Owner. The Owner may determine any substitute equipment or material as not desired to suit his best interest.

**SPECIAL PROVISIONS
FOR
BASIS OF AWARD**

SECTION III

1.0 REDUCTION OF QUANTITIES

The award will be made to the lowest Bidder for the total bid of all sections as determined in Section 2.0 below. In the event the low bid, taking into consideration the alternate items, is more than the funds allocated for the construction of the Project, the Owner reserves the right, and the Bidder submitting the bid acknowledges and accepts this right, to reduce quantities at the unit price bid, to bring the project within the funds allocated. In the event a reduction in quantities is made, the time allowed for completion of the work may be reduced proportionately by the Owner.

2.0 DETERMINATION OF LOW BIDDER

The contract will be awarded to the lowest responsible and responsive Bidder, unless the Owner determines that all the bids are unreasonable or that it is not in the best interest of the Owner to accept any of the bids. The lowest responsible and responsive bid is defined as the total bid of all items on the base bid utilizing the base equipment and materials listed. If more than one equipment or materials supplier is listed in the base equipment/material list, the contractor shall indicate which equipment or material brand he is basing his proposal on.

If Alternate bid items are bid, the Owner shall decide after the Bid Opening what portion of the total project can be completed with the funds available. If no Alternate bids are requested, the Total base Bid will be used to determine the Low Bid. However, if any alternate bid items are to be constructed as determined by the Owner, these Alternate Bid Unit Prices will be added and/or deducted to the Total Base Bid to determine the lowest responsible and responsive Bidder.

3.0 CONSIDERATION OF MATERIAL LEAD TIMES

Where indicated in the Bid Documents, the Contractor shall provide the specific number of calendar days required to deliver each specified material order to the jobsite, after each order is submitted (lead time). Time is of the essence, and the Owner may consider the lead times provided by each bidder in determining the award of the project. Material lead times may be utilized to award the project to another bidder, other than the lowest bidder(s), if it is determined to be in the best interest of the Owner.

**SPECIAL PROVISIONS
FOR
SOURCE OF FUNDING**

SECTION IV

The Owner has funding secured for the anticipated cost of this Project as noted below. Note that more than one funding source may be utilized at the Owner's discretion. The Award of the Project is at the sole discretion of the Owner.

Project Funding Source:

- Cash reserves on hand
- Bond Proceeds on hand
- Bond Proceeds from a Bond Issue to be completed after Bids are opened
- Grant or Award
- Direct Reimbursement from a State, Federal or Local Government Agency
- Other source which will not become available until after the execution of the Contract

Payment to Contractors shall be in accordance with the Contract Documents and the Code of Alabama 39-2-12

**SPECIAL PROVISIONS
FOR
APPLICATION FOR TAX CERTIFICATE OF EXEMPTION**

SECTION V

Under Alabama law (Alabama Act 2018-234), the Owner is tax exempt from the payment of all State, County, and Municipal Sales and Use Taxes for *purchases that qualify for an exemption* pursuant to Alabama Department of Revenue (ADOR) Rule No. 810-6-3-.77. Bidders shall not include Sales and Use Taxes in their bid for *purchases that qualify for exemption* under ADOR rules. However, Bidders shall account for the Sales and Use Tax savings (i.e., the Sales and Use Taxes not included in the Contractor's bid) in the designated section of the bid form (included in the Bid Documents) in accordance with Alabama law. All Bidders shall reference Alabama Act 2018-234 and the ADOR - Sales and Use Tax Rules (specifically Rule No. 810-6-3-.77) prior to bidding. Bidders shall include all Sales and Use Taxes for purchases of non-exempt materials and items, etc., as well as all other applicable taxes. It shall be the responsibility solely of the Bidder to determine which purchases for this project are exempt from Sales and Use Tax and which purchases are not exempt.

Following execution of the Contract and in accordance with ADOR Rule No. 810-6-3-.77, the Contractor and any Sub-Contractors shall submit an Application for Sales and Use Tax Certificate of Exemption (ADOR Form ST: EXC-01) to the ADOR that is specifically for this tax-exempt project. The Contractor and any Sub-Contractors shall comply with all requirements of the ADOR and shall obtain the Certificates of Exemption (ADOR Form STC-1) prior to ordering any materials for the project that qualify for exemption of Sales and Use Taxes. The Owner will make available any information that is requested by the Contractor and is required by the ADOR for the Contractor and any Sub-Contractors to obtain their Certificates of Exemption. In accordance with ADOR Rule No. 810-6-3-.77, the Owner will also fulfill its obligation to submit its Application for Sales and Use Tax Certificate of Exemption specifically for this tax-exempt project.

**SPECIAL PROVISIONS
FOR
INSURANCE REQUIREMENTS**

SECTION VI

1. All bidders shall have their insurance provider thoroughly review all insurance requirements prior to Bid opening to ensure the Contractor includes sufficient monies to meet all insurance requirements. This review by the insurance provider shall be detailed and complete. The review shall determine pricing and availability of all specific insurance requirements including specific endorsements. This review shall determine all additional and special insurance that the Contractor must acquire to be in full and complete compliance with all insurance requirements. Prior to bidding, all bidders shall furnish to their insurance providers complete copies of all insurance requirements contained in the General Specifications Section of this Contract, all insurance requirements in other sections of the documents (including but not limited to the Special Provisions), and those required by permits, etc.
2. As soon as indication is given that the low bidder will apparently be awarded the contract, the Contractor shall have his insurance provider begin making whatever arrangements may be necessary to allow all required insurance, including all specific requirements (e.g., specific endorsements, etc.) for this particular project, to be promptly obtained so as not to delay execution of the contract.
3. Per the General Specifications, the Contractor will be required to provide copies of the Contractor's automatic policy endorsements or original policy endorsements acceptable to the Owner. Each endorsement shall indicate the policy number and be complete in full accordance with the General Specifications and to the satisfaction of the Owner and Engineer. The policy endorsements shall be filed with the Owner prior to the Owner's execution of the Contract. Automatic and/or original policy endorsements for additional insureds and waivers of subrogation for ALL policies shall be as broad as (i.e., similarly worded to) the following General Liability endorsements:
 - a. Endorsements for the Additional Insured - ISO's CG 20 10 11/85 or the combination of CG 20 10 10/01 and CG 20 37 10/01
 - b. Endorsements for Waivers of Subrogation - ISO's CG 24 04 10 93 or CG 24 04 05 09.

Samples of acceptable ISO forms are provided on the following pages. Although these sample endorsements are for General Liability, ALL endorsements for ALL policies shall be similarly worded and acceptable to the Owner.

4. Per the General Specifications, "All Risk" Insurance (including flood insurance) shall be provided, if applicable. "All-Risk" Insurance shall be provided for all plants, pumping stations, buildings, tanks, structures, and equipment, etc. "All Risk" Insurance shall be provided as applicable for other portions of the project.
5. If project includes SRF Funding, Flood Insurance shall meet all SRF requirements.

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – (FORM B)**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART.

SCHEDULE

Name of Person or Organization:

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

WHO IS AN INSURED (Section II) is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" for that insured by or for you.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – SCHEDULED PERSON OR
ORGANIZATION**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

<p>Name of Person or Organization:</p>

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

- A. **Section II – Who Is An Insured** is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of your ongoing operations performed for that insured.
- B. With respect to the insurance afforded to these additional insureds, the following exclusion is added:

2. Exclusions

This insurance does not apply to "bodily injury" or "property damage" occurring after:

- (1) All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the site of the covered operations has been completed; or
- (2) That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 20 37 10 01

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – COMPLETED OPERATIONS**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization:
Location And Description of Completed Operations:
Additional Premium:

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" at the location designated and described in the schedule of this endorsement performed for that insured and included in the "products-completed operations hazard".

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 24 04 10 93

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization:

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

The TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US Condition (Section **IV** – COMMERCIAL GENERAL LIABILITY CONDITIONS) is amended by the addition of the following:

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 24 04 05 09

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions**:

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.

**SPECIAL PROVISIONS
FOR
OWNER APPROVED MATERIAL SUPPLIERS
AND EQUIPMENT MANUFACTURERS**

SECTION VII

The below Material or Equipment Manufacturer's listed are allowed choices the Contractor may use for the specific material/equipment listed. The Contractor may only use one supplier/manufacturer of each item below. When the Contractor supplies the Engineer a submittal for an item, the supplier/manufacturer for the item will be established. Note that not all items are listed on this page but only select items. Some items require identifying suppliers/manufacturers in the Bid Documents, some items are identified by standards of quality in the Specifications and/or Drawings, and some items are specifically listed in the Specification and/or Drawings. The Contractor shall review all documents thoroughly with his vendors before preparing his bid and when submitting on any items.

<i>ITEM - MATERIAL OR EQUIPMENT</i>	<i>NAME OF SUPPLIER OR MANUFACTURER</i>
Ductile Iron Pipe	U.S. Pipe, American, McWane
Restrained Joint	Flex Ring or TR Flex
Fire Hydrants	M&H, Mueller, U.S. Pipe, American
Brass	Ford

**SPECIAL PROVISIONS
FOR
CONSENT OF SURETY
RELEASE OF LIENS
PAYMENT OF DEBTS AND CLAIMS**

SECTION VIII

When the Owner and the Engineer have completed a review of the Work and of the request for final payment and accepted all work, final payment of the amount determined to be due under the Contract will be made to the Contractor, provided that all provisions of the Contract have been met, including all aspects of Section IX.3 FINAL PAYMENT contained in the General Specifications. In particular, the Contractor shall provide:

- Certified evidence that all payrolls, all amounts due for labor and materials, and all other indebtedness connected with the work have been fully paid and satisfied, and that there are no outstanding claims or demands against the Contractor in any manner connected with the work.
- A release of all claims and claims of lien against the Owner and its agents and Engineer from the Contractor and all major subcontractors (the Owner may waive the requirement for subcontractor releases) arising under and by virtue of the Contract, on form provided by the Owner, duly executed by the Contractor and with the consent of the Surety. The Contractor may specifically exclude claims of the Contractor from the operation of the release if specifically excluded there from in stated amounts and the reason therefore. The Contractor may with the consent of the Owner representative, if any subcontractor refuses to furnish such a release, furnish a bond with surety satisfactory to the Owner representative to indemnify against such claims.

Forms are provided on the following pages.

**CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS AND PAYMENT OF DEBTS
AND CLAIMS**

PROJECT:

(project name)

CONTRACT DATE:

TO OWNER:

(name and address of Owner)

STATE OF:

COUNTY OF:

I CERTIFY to the best of my knowledge and belief that all work has been performed and materials supplied in strict accordance with the terms and conditions of the corresponding contract documents between the _____, hereinafter called the OWNER, and, _____, hereinafter called the CONTRACTOR, for the above referenced project.

I further certify and declare that all bills for materials, supplies, utilities and for all other things furnished or caused to be furnished by the CONTRACTOR and used in the execution of the contract are fully paid and that there are no unpaid obligations, liens, claims, security interests, encumbrances, liabilities and/or demands of agencies, subcontractors, materialmen, mechanics, laborers or any others resulting from or arising out of any work done, caused to be done or ordered to be done by the CONTRACTOR under the contract, except as listed below.

I further certify and declare that, except as listed below, the CONTRACTOR (including but not limited to the Contractor, Subcontractors, all suppliers of material and equipment, and all performers of work, labor, or services) releases and forever discharges as well as indemnifies and holds harmless the OWNER and ENGINEER (Municipal Consultants, Inc.) from any and all obligations, liens, claims, security interests, encumbrances and/or liabilities arising by virtue of the contract and authorized changes between the contracting parties, and any and all claims and demands of every kind and character whatsoever against the OWNER and ENGINEER (Municipal Consultants, Inc.), arising out of or in any way relating to the contract and authorized changes.

EXCEPTIONS:

CONTRACTOR:

(name and address of Contractor)

BY: _____

(signature of authorized representative)

(printed name and title)

Subscribed and sworn to before me on this _____ day of _____, 20____.

Notary Public

My commission expires: _____

CONSENT OF SURETY TO FINAL PAYMENT

PROJECT:

(project name)

CONTRACT DATE:

TO OWNER:

(name and address of Owner)

In accordance with the provisions of the Contract between the OWNER and the CONTRACTOR as indicated above, the

(name and address of Surety Company)

, SURETY COMPANY,

on bond of

(name and address of Contractor)

, CONTRACTOR,

hereby approves of the final payment to the CONTRACTOR, and agrees that the final payment to the CONTRACTOR shall not relieve the SURETY COMPANY of any of its obligations to

(name and address of Owner)

, OWNER,

IN WITNESS WHEREOF, the SURETY COMPANY has hereunto set its hand on this _____ day of _____, 20__.

Surety Company

Signature of authorized representative

Printed name and title

GENERAL
SPECIFICATIONS

GENERAL SPECIFICATIONS

SECTION I DEFINITION OF TERMS

In these Specifications, or in any Documents or Instruments in construction operations where these Specifications govern, the following terms, or pronouns in place of them, shall be interpreted as follows:

I.1 ADDENDA

Written or graphic instruments, issued prior to the execution of the agreement which modify or interpret the Contract, Plans, and Specifications by additions, deletions clarifications, or corrections.

I.2 A.S.T.M.

The American Society for Testing Materials.

I.3 BIDDER

A person, firm or corporation submitting a written Proposal in answer to an advertisement or request for Bids for the construction of the improvement.

I.4 CHANGE ORDER

A written instrument prepared by the Engineer and signed by the Owner, Contractor and Engineer stating their agreement upon a change in the Work, the amount of the adjustment in the Contract Sum, if any, and the extent of the adjustment in the Contract Time, if any.

I.5 CONTRACT

The written Agreement between the Owner and the Contractor, covering the performance of the work and the furnishing of the labor, equipment and materials. The Contract shall include, but shall not be limited to, the "Notice to Contractors," "Proposal," "Plans," "General Specifications," "Standard Specifications," "Supplemental Specifications," "Special Provisions," "Contract Agreement," and "Contract Bonds," together with all the Agreements and "Change Orders" that are required to complete the work in accordance with the Plans and the Contract.

I.6 CONTRACT BID PRICE

The total of the products of the estimated quantities of the items of the work listed in the Proposal and the unit prices bid.

I.7 CONTRACT BONDS

The approved indemnity bonds furnished by the Contractor and his Surety to guarantee completion of the Contract.

I.8 CONTRACT COMPLETION TIME

The period in calendar days from the time specified for the commencement of work to the time specified for its total completion.

I.9 CONTRACTOR

The individual, firm or corporation, the Party of the Second part to the Contract, who has entered into a Contract awarded him by the Owner, acting directly or through his agents or employees.

I.10 ENGINEER

The Engineer employed by the Owner, or his representative.

I.11 EQUIPMENT

Machinery, tools, and supplies for the construction of the work.

I.12 EXTRA WORK

Work authorized in writing by Change Order and performed by the Contractor, for which there is no basis of payment in the Contract Documents and Plans.

I.13 EXTRA WORK ORDERS

Written orders by Change Order to the Contractor authorizing work or furnishing of materials for EXTRA WORK, as defined in these Specifications.

I.14 INSPECTOR

A person employed by the Owner or Engineer to make inspection of materials and work.

I.15 ITEM

A specified class of work for which bid prices are in the Bid Documents.

I.16 MATERIAL

Any substance to be used in connection with the improvements.

I.17 NOTICE TO PROCEED (WORK ORDER)

Written notice from the Owner to the Contractor allowing work to start.

I.18 OWNER

The Party of the First Part to the Contract.

I.19 PLANS

All approved drawings which are on file at the office of the Owner or Engineer, or their reproductions showing the details of the work covered by the Contract.

I.20 PROPOSAL

The formal signed Bid Form with prices provided by the Bidder.

I.21 PROPOSAL FORM

All prepared forms on which Bids are submitted in the Bid Documents and all items in the Specification - Contractual Documents.

I.22 PROPOSAL GUARANTY

The Bid Bond or cashier's check to be furnished by the Bidder as a guarantee that he will enter into a Contract for the work as bid.

I.23 RESPONSIBLE BIDDER

Responsible Bidder shall mean a Bidder who, among other qualities determined necessary for performance, is competent, experienced, and financially able to perform the Contract.

I.24 RESPONSIVE BIDDER

Responsive Bidder shall mean a Bidder who submits a bid that complies with the terms and conditions of the invitation for bids, including plans, drawings, specifications and other provisions of the Contract Documents.

I.25 RETAINAGE

Retainage shall mean that money which has been held or retained by the awarding authority from Contractor's pay requests conditioned upon final completion and acceptance of all work in connection with the Project. Payment of retainage to the Contractor may be reduced by other contract considerations.

I.26 RIGHT-OF-WAY

The area acquired for use in constructing, operation and maintaining the work.

I.27 SPECIAL PROVISION

Clauses or memoranda, applying to the Contract of which these Specifications are a part, and/or amending these Specifications.

I.28 SPECIFICATIONS

The requirements, including Supplemental and Special Provisions applying to the Contract, establishing the type and kind of materials, applicable standards of quality and care, and equipment to be furnished and incorporated in the work.

I.29 STREET

Any or all portions of any dedicated street, avenue, alley, road, or other public highway.

I.30 SUBCONTRACTOR

Any individual, firm or corporation undertaking work under the Contract with an Agreement between himself and the Contractor, and approved by the Surety with the Owner reserving the right to disapprove the subcontractor. The Contractor shall be fully responsible for all his subcontractors including but not limited to safety.

I.31 SUPERINTENDENT

The representative of the Contractor who is present at the work at all times and authorized to interact with the Engineer and who is capable of efficiently superintending the work. The superintendent shall act as a manager which excludes him from operating equipment or performing any construction labor.

I.32 SUPPLEMENTAL AGREEMENT

A Written Agreement between the Contractor and the Owner with the consent of the Surety, modifying the original Contract.

I.33 SUPPLEMENTAL SPECIFICATIONS

Specifications supplemental to or superseding specified portions of the Specifications.

I.34 SURETY

The corporate body, licensed under the laws of the state in which the work is to be performed and bound with the Contractor for the performance of the Contract and payment of all claims recoverable under the Contract Bonds.

I.35 WORK

All performance required of the Contractor under the terms of the Contract to complete and provide the Owner the final project as described in the plans and contract.

**SECTION II
PROPOSAL REQUIREMENTS AND CONDITIONS**

II.1 QUALIFIED BIDDERS

Proposal Forms will be considered only from Contractors licensed under the laws of the state in which the work is to be done. A copy of the Contractor's license in the state work is to be performed must be attached to the bid. Only Contractors having met all qualification requirements as set forth in these Specifications shall be considered qualified. If the Owner requires prequalification of bidders, the bidder must successfully complete the Owner's requirements in the time frame required in the prequalification solicitation and these Specifications.

II.2 PROPOSAL FORM

The Engineer will furnish Bidders a Proposal Form showing the items of the work and/or materials to be furnished, the amount of the Proposal Guaranty, and the date, time

and place of the opening of proposals and the time in which the work must be completed. The Proposal Form will contain all papers bound with or attached to the Specification-Contractual Documents and addenda and are part of the Contract and/or Proposal and must not be detached or altered.

II.3 INTERPRETATION OF ESTIMATES

The estimates of work listed in the Proposal Form (including Basis of Payment and Items of Work) are to be considered only approximate quantities of items and are to be used as a basis for comparing bids. The Owner does not by any means guarantee that the approximate quantities given will hold in the construction of the work. Final installed quantities may vary significantly from the estimates shown.

Final Payment will be made for actual quantities of the work performed as approved by the Engineer, at the contract prices bid. Should the quantities of the pay items be more or less than the quantities estimated, the contract unit prices bid in the Proposal will prevail.

II.4 EXAMINATION OF PLANS, SPECIFICATIONS AND SITE OF WORK

Bidders are required to thoroughly examine the site of the proposed work, the Proposal Form, Plans, Specifications and the Contract. The submission of the Proposal shall be evidence that the Bidder has made such thorough examination and that the Contractor's bid includes all necessary components to provide the Owner with a fully functional facility that is complete in all respects. No compensation will be allowed for losses caused by failure to comply with this requirement.

II.5 PREPARATION OF PROPOSAL

Bidder's Proposal must be submitted on the Forms furnished him by the Engineer. The Bidder must specify in ink; in figures; if a space is provided, in words; a unit price; and a total price for each of the separate items. In case of error or discrepancy the sum obtained by adding all of the products of the unit prices and the estimated quantities shall prevail, and this shall be the Contract Bid Price. The prices in words will govern if a space is provided in the Bid Form. If a space for words is not provided on the Bid Form, the written unit price in figures will prevail for each work item. The total of that Bid Item that is accepted is the product of the Bidder's written unit price and the estimated quantity of that Bid Item.

The Proposal shall be signed by the Bidder. Name and address must be shown; if a firm or partnership, the name and address of each member of the firm, or partnership must be shown; if a corporation, the president, vice-president or secretary shall sign and affix the corporate seal. If the person signing the Proposal is an agent, the agent must attach written authorization from the corporation. The Proposal must show the name of the corporation, the state under which the corporation is chartered and the name, title and address of the officer executing the proposal.

Proposal Forms shall be enclosed in an envelope, sealed and addressed to the Owner with the Bidder's name and address inscribed on the outside and a warning not to be opened until the bid date. Proposals may be submitted to the Owner in person, by mail, or by agent, at any time prior to the day and time set for the opening of bids. Proposals will be

opened at the designated office at the time set forth in "Advertisement for Bids." Only bids submitted by Contractors licensed by the state laws in which the work is to be done will be considered. Proposals shall be submitted in the specification and contractual documents form in the proper order. No Proposal will be received after the time specified in the "Advertisement for Bids". A Bidder may withdraw, personally or by telegraphic or written request, any time prior to the closing time for receipt of bids. No Bidder may withdraw for a minimum period of sixty (60) days after the date set for the opening, but the period may be modified in the Bid Documents.

If any person submitting a bid is in doubt as to the meaning of any part of the Plans, Specifications, or other Contract Documents, he may submit to the Engineer a written request for an interpretation. Any interpretation of the Documents will be made only by an addendum and a copy of such addendum will be mailed or delivered to each person receiving a set of Documents. The Owner or Engineer will not be responsible for other explanations or interpretations.

Prior to bid opening, the Owner will make available to prospective Bidders, upon request, any information that it may have as to subsurface conditions and surface topography at the work site. Investigations conducted by the Owner or its Engineers of subsurface conditions were made for the purpose of study and design, and neither the Owner nor the Engineer assumes any responsibility whatever in respect to the sufficiency or accuracy of borings, or of the logs of test borings, or of other investigations that have been made, or of the interpretations made thereof, and there is no warranty or guarantee, either expressed or implied, that the conditions indicated by such investigations are representative of those existing throughout such area, or any part thereof, or that unforeseen developments may not occur.

Logs of test borings, geotechnical reports, or topographic maps showing a record of the data obtained by the investigations of surface and subsurface conditions shall not be considered a part of the Contract Documents, and are available only for the convenience of the Bidders. Such logs and reports represent only the opinion of the Geotechnical Engineer as to the character of the materials encountered by him in his investigations of the test borings.

Information derived from inspection of logs of test borings, or pits, geotechnical reports, topographic maps, or from Drawings showing location of utilities and structures will not in any way relieve the Contractor from any risk, or prevent him from properly examining the site and making such additional investigations as he may elect, or from properly fulfilling all the terms of the Contract Documents.

The Owner and Engineer shall not be responsible for any interpretations or conclusions drawn from any subsurface exploration reports or borings. Each Bidder is to base his bid upon his determination of the subsurface conditions and of the types and quantities or material to be encountered or needed. Additional tests or other exploratory operations may be made at no cost to the Owner.

II.6 IRREGULAR PROPOSALS

Proposals may be rejected as being non responsive if they contain omissions or uncompleted forms, alterations of form, additions, conditional bids, improper alternate bids, incomplete bids, erasures, or irregularities. Combination bids submitted as specified will not be classed as irregular. Proposals in which the unit or lump sum prices bid are obviously

unbalanced may be rejected. Bidders shall supply the names and addresses of major material suppliers and subcontractors as requested in the bid proposal and if not provided will be grounds for the Owner to disqualify the Bidder for not being responsive.

II.7 PROPOSAL GUARANTY

No Proposal will be considered unless accompanied by a cashier's check drawn on a bank in the Owner's state or Bid Bond from a company duly authorized and qualified to make bond in the Owner's state. The bond amount should be five percent (5%) of the Contract Bid but in no case more than \$10,000.

II.8 OPENING OF PROPOSALS

Proposals will be opened and read publicly at the time and place indicated in the "Advertisement for Bids." Bidders or their authorized agents are invited to be present.

II.9 DISQUALIFICATION OF BIDDERS

A Bidder using the same or different names for submitting more than one Proposal will be disqualified. A Bidder may submit a Proposal as a Subcontractor to other principals and not be disqualified provided he does not withdraw his bid after bid opening.

If there is a reason for believing that collusion exists among the Bidders, any or all Proposals may be rejected. Those participating in collusion may be barred from submitting bids on the same or other work with the Owner.

The Owner can disqualify and/or reject bids where the Bidder does not comply with the requirements of the Contract Documents. The Owner reserves the right to reject any bid that is submitted by a Bidder that is determined by the Owner to not be a responsible Bidder or whose bid proposal is not responsive. In determining whether a Bidder or bid is responsible, the Owner reserves the right to also request and consider the factors in Section III.2 of the General Specifications.

II.10 COMPLIANCE WITH LAWS AND ORDINANCES

Each Bidder shall inform himself of, and the Bidder awarded a contract shall comply with, federal, state, and local laws, statutes, and ordinances relative to the execution of the work. This requirement includes, but is not limited to, applicable regulations concerning minimum wage rates, the use of domestic products, U.S. steel and resident labor, non-discrimination in the employment of labor, protection of public and employee safety and health, environmental protection, the protection of natural resources, fire protection, burning and non-burning requirements, permits, fees and similar subjects. The attention of all Bidders is called to the fact that the work will be subject to compliance with all applicable building and technical codes and will be subject, in addition to all other inspections, to inspection by a representative of the City's and/or County's building inspection department which has jurisdiction over the project, if any. If the project is a Public Works projects as defined by Alabama Code, Title 39 (1997), the bidders will be governed by the above Code. No adjustments or compensation will be allowed for losses caused by failure to comply with such requirements.

II.11 GENERAL CONTRACTOR'S PERMITS OR LICENSES

The attention of all Bidders is called to the provisions of the State law governing general contractors as set forth in ALA.CODE §34-8-1 et seq. (1975), particularly in regard to the need for and evidence of a State general contractor's license. The provisions of said state are adopted herein by reference and form a part of the Contract with the selected Bidder should this project be awarded.

Bidders will be governed by said statutes insofar as they are applicable. To summarize the above quoted statutes, ALA.CODE §34-8-1, et seq. (1975) provides that no one is entitled to bid and no contract may be awarded to anyone who does not possess a valid general contractor's permit or license, including specialty classifications for the work, as provided by the foregoing sections of the State Code, and rules and regulations promulgated pursuant thereto and that said bid may not be considered without evidence being produced that he is so qualified. Trade contractors must be duly licensed in accordance with applicable law. The Owner may not enter into a contract with a nonresident corporation that is not qualified under the State law to do business in Alabama.

SECTION III AWARD AND EXECUTION OF CONTRACT

III.1 CONSIDERATION OF PROPOSALS

After the Proposals are opened, read and checked, the results will be made public. Until the final award of the Contract, the Owner reserves the right to reject any and all Proposals, and to waive technical errors. A Proposal will not be considered unless signed by the Bidder or his authorized agent and accompanied by cashier's check drawn on a state bank in the Owner's state or Bid Bond.

III.2 AWARD OF CONTRACT

The successful Bidder will be notified by "Notice of Award" mailed to the address shown on his Proposal.

In order to be considered for the award, the Bidder shall present to the Owner, when requested, satisfactory evidence that:

- (a) He has the necessary capital and financial resources to undertake and complete the project.
- (b) He has equipment, in good working order, adequate for performance of work within the time specified.
- (c) He has within his organization, at the time, the construction management and supervisory personnel available for assignment to the project.
- (d) The construction management and supervisory personnel are skilled and experienced in the particular type of work to be undertaken on the project. The bidder's attention is called to "V.2 CONTRACTOR".
- (e) He has performed and completed similar work of similar magnitude in a satisfactory manner.
- (f) There are no outstanding claims with the Owner on previous projects.

(g) He has complied with all qualification requirements set forth in these Specifications.

The Owner reserves the right to reject any proposal 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 obligations of the Contract and complete the work contemplated therein.

The Contractor shall use the personnel he submits as evidence of qualification throughout the construction of the project.

III.3 CANCELLATION OF AWARD

The Owner reserves the right to cancel the award of the Contract before its execution by either the Contractor or Owner without any liability against the Owner or the Engineer.

III.4 REQUIREMENTS OF CONTRACT BONDS

In order to insure the performance of the Contract and indemnify and save harmless the Owner and the Engineer from all damages, the Bidder, to whom the Contract is awarded, shall within fifteen (15) days from the award furnish the Owner, Surety Bonds equal to one hundred (100%) per cent of the total contract amount for Performance of Work and Payment of Labor and Materials.

Bonds shall be made on approved Bond Form, furnished by a Surety company authorized to do business in the state. The Bonds shall be countersigned by an authorized agent who is a resident of the state. The Bond shall have attached power of attorney of the signing official. Bonds shall be valid for twelve (12) months from date of final acceptance of the work.

III.5 EXECUTION OF CONTRACT BY CONTRACTOR

The Contract shall be signed by the Bidder receiving the award and returned to the Owner with Contract Bonds within fifteen (15) days of Notice of Award.

III.6 APPROVAL OF CONTRACT AND EXECUTION BY OWNER

The Owner shall approve and execute the Contract within fifteen (15) days after it has been completed in its entirety with all requirements properly met and its presentation to the Owner unless the Contractor agrees in writing to a longer period. No contract is binding upon the Owner until it has been executed by the Owner. The date of the execution of the Contract shall be when signed by the Owner. The "Notice to Proceed" may be held by the Owner for a reasonable time to remedy details of the project.

III.7 FAILURE TO EXECUTE CONTRACT

Should the successful Bidder or Bidders to whom a Contract is awarded fail to execute a Contract(s) and furnish acceptable Contract securities and evidence of insurance, as required, within fifteen (15) days after the prescribed forms have been presented to him/her, the Owner shall retain the proposal guaranty, or recover from the principal or the sureties, if the guaranty is a bid bond, the difference between the amount of the Contract as awarded, and

the amount of the proposal of the new lowest Bidder. If no other bids are received, the full amount of the proposal guaranty shall be so retained and recovered as liquidated damages for such default. Any sum so retained or recovered shall be the property of the Owner. In the event of the death of the lowest Bidder (if an individual) between the opening of the bids and ten (10) days following award of the Contract the Owner shall return the Proposal Guaranty to the estate of the Bidder.

III.8 WAIVER OF TRIAL BY JURY

The parties to the Contract desire to avoid the additional time and expense related to a jury trial of any disputes arising hereunder. Therefore, it is mutually agreed by and between the parties hereto, and for their successors and assigns, that they shall and hereby waive trial by jury of any claim, counterclaim, or third-party claim, etc., including any and all claims of injury or damages, etc., brought by either party against the other arising out of or in any way connected with the Contract and the relationship which arises here from. The parties acknowledge and agree that this waiver is knowingly, freely and voluntarily given, is desired by both parties, and is in the best interest of both parties. Further, the parties mutually agree that all such proceedings or related proceedings shall be filed in and conducted in a court located in the county of the Owner's central office location.

SECTION IV SCOPE OF WORK

IV.1 INTENT OF PLANS AND SPECIFICATIONS

The Plans, Specifications, Bidder's Documents, Contract Documents, Bidder requirements, and all other agreements are interrelated and their intent is to prescribe a complete improvement. The Contractor shall perform all items of work in the Proposal Forms, Plans, and reduced work or extra work as ordered. The Contractor shall furnish, unless provided otherwise, all material, machinery, equipment, supplies, transportation and labor for the completion of the project. The Contractor shall, for the price bid, perform all work shown on the Plans, required by the Specifications, or as reasonably inferred, requested, or as required for a complete and workable project. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. Not all details are shown, particularly for architectural, equipment, and building details. Where details are not shown, the Contractor shall submit proposed details to Engineer for review, and shall perform the work in accordance with details accepted by the Engineer.

IV.2 ALTERATION OF PLANS AND CHARACTER OF WORK

The Engineer may without notice to the Surety and without change in the unit bid prices, make alterations in the Plans or the work and its quantities to complete the proposed

construction. Alterations shall not be considered as a waiver of any of the conditions of the Contract or Bonds.

IV.3 CHANGE ORDERS

The Engineer may order additional or reduced levels of work or materials. If not listed as a pay item or if not included in the Contract Unit Prices, it will be Extra Work, modified work, or deductive work and the total Contract Price unchanged, increased, or decreased. The Engineer will ask the Contractor for a proposed cost to complete the Work. If the Owner approves the proposed cost, it shall become a part of the Contract. If the Owner considers the price excessive on extra work, the Owner may have the Contractor perform the work on force account. The Contractor shall not, except in an emergency, perform work that he may deem "extra work" without first giving prior written notice to the Engineer. In all circumstances, the Contractor shall take appropriate measures to mitigate extra cost and time. Whenever changes are made, whether they eliminate or deduct work or create extra work or when differing conditions are encountered, credits or payments for a Change Order will be made by use of any one of the following methods:

- (1) Unit prices or combinations of unit prices which formed the basis of the original Contract.
- (2) A lump sum mutually accepted based upon the Contractor's estimate which is properly itemized and supported by sufficient substantiating data to permit evaluation by the Engineer and Owner.
- (3) Actual cost of performing the work (estimated cost for reduced work) plus fifteen (15%) percent of actual cost to cover supervision, overhead, bond, profit, and all other costs. The Contractor shall submit to the Owner itemized cost sheets showing actual cost of performance of the work. Actual costs are defined as Required Labor Costs, Labor Insurance, Workmen's Benefits, and Social Security; Cost of Required Materials; and actual Rental Costs of Required Construction Equipment. When the work is performed under this method, the Contractor shall take appropriate measures to mitigate the costs and time incurred.

The Contractor shall promptly price and provide all other information to the Engineer to allow prompt evaluation and processing of change orders. The Contractor shall devote sufficient attention to change orders and provide adequate resources to start and complete change order work in an expeditious manner. The Contractor shall not be entitled to any reparation or compensation on account of such additional time or extension of time. The Contractor shall not be entitled to extra time or extra compensation associated with his failure to always act in a timely manner.

For unit price items, the quantities shown in the "Items of Work" reflect estimates. The actual quantities will be adjusted during construction to reflect the conditions encountered, or other changes or Owner preferences. Inasmuch as the actual quantities may vary considerably from the quantities listed in the schedule or shown on the drawings, the bidders shall insert prices that represent his actual cost. The Contractor will be paid for only

the quantities actually installed and approved for payment. Modification to quantities with contractually established unit prices does not constitute extra work.

IV.4 CLEANUP

During construction, the Contractor shall continuously keep all dirt, mud, and dust, etc., cleaned from all roads, streets, highways and parking lots, etc. that may be affected by his work. The Contractor shall take whatever measures are necessary to maintain such roads, streets, and highways in a clean and safe condition at all times.

The Contractor shall clear and remove debris from the project sites as a result of construction. He shall maintain and restore in an acceptable manner all property, both public and private, and leave the Right-of-Way, adjacent property, and sites of the improvements in a neat condition.

He shall thoroughly clean all discoloration, mud, dirt, rust, paint, markings, concrete splatter, ink or other lettering, and stains of any nature, etc. from all structures and surfaces, etc.

The Contractor shall take appropriate measures during and throughout construction to prevent discoloration and staining, etc., of all surfaces during construction. He shall provide cleaning of all mud, concrete splatter, oil, and stain-producing materials, etc. during construction as required to facilitate final cleaning. Regardless, all discoloration and staining, etc., shall be totally removed at the completion of construction. The Contractor shall use pressure washing, steam cleaning, chemical cleaning, and whatever additional measures may be necessary to totally remove all traces of all discoloration and all stains of all types, etc. The cleaning shall be conducted in a manner that the final surface appearance is uniform and attractive.

When facilities are cleaned prior to the completion of all work, and then startup, operation, or other activities by the Owner or Contractor result in the need for additional cleaning, such cleaning shall be performed by the Contractor.

These cleaning requirements apply to the entire project including but not limited to all, floors, walls, ceilings, structures, buildings, roofs, windows, enclosures, equipment, walks, sidewalks, steps, stairs, metal surfaces, fiberglass surfaces, plastic surfaces, masonry, paving, concrete, asphalt, and all other surfaces, etc.

These cleaning requirements also apply to all electrical facilities, including but not limited to, inside and outside of electrical panels, conduits, pull boxes, and lights, etc. Protect electrical facilities from concrete splatter when concrete is being placed. Clean all dust and debris, etc. from the inside of all electrical and control panels, etc.

SECTION V CONTROL OF WORK

V.1 ENGINEER

Project communication is generally through the Engineer and the work shall be accomplished under the inspection of the Engineer. The Engineer shall decide questions which arise concerning materials furnished, and work performed. The Engineer shall interpret the Plans and Specifications during the fulfillment of the Contract. The Engineer shall have

authority to decide disputes and mutual right between Contractors. The Engineer is not authorized to increase the obligation of the Owner to the Contractor, except in accordance with the terms of the Contract.

The Engineer may inspect the Work at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the Engineer will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. On the basis of on-site observations as an engineer, the Engineer will keep the Owner informed of progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

The Engineer will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Engineer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Engineer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work. The Engineer has no authority to supervise or control the Contractor (or subcontractors) or any of their personnel.

The Engineer shall have no obligation or duty to prepare a list of incomplete work until the Contractor has complied with all the requirements of Project Completion. However, should the Engineer produce any preliminary list of incomplete work and provide it to the Contractor, the Engineer is in no way responsible for listing all incomplete or unacceptable items. Such a list may require more time and personnel than the Engineer could devote and may be totally impractical if significant work remains. Whether or not any preliminary list of work is prepared by the Engineer, the Contractor shall not be entitled to any claim whatsoever in regard to such a list. If such a list is given to the Contractor, it shall be solely for the convenience of the Contractor and shall not in any way be considered to be a complete or semi-complete list of incomplete work. The Contractor shall not in any way assume that the list is in any way representative of all the work remaining or is even representative of the importance or magnitude of the remaining work. It is the responsibility of the Contractor to prepare his own listing of incomplete work.

The Engineer will have authority to reject Work which does not conform to the Contract Documents. However, neither this authority of the Engineer nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Engineer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

The Engineer shall review and approve or take other appropriate action on the Contractor submittals, such as shop drawings, product data, samples and other data, which the Contractor is required to submit, but only for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods,

coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor. The Engineer's review shall be conducted in a reasonable time period while allowing sufficient time in the Engineer's judgment to permit adequate review. Review of a specific item shall not indicate that the Engineer has reviewed the entire assembly of which the item is a component. The Engineer shall not be responsible for any deviations from the Construction Documents and in all cases the Contractor shall remain responsible for the deviations. The Engineer shall not be required to review partial submissions, submittals containing significant inaccuracies, submittals not properly and thoroughly coordinated by the Contractor, or those for which submissions of correlated items have not been received.

V.2 CONTRACTOR

The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Engineer at once.

The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

The Contractor shall be fully responsible to the Owner for all acts and all omissions of the Contractor's employees, Subcontractors and their agents and employees, and all other persons performing portions of the Work for the Contractor. The Contractor shall be solely and fully responsible for all safety associated with all work by his personnel, subcontractors, suppliers, agents, and employees, etc. The Contractor shall be fully responsible for the quality of work of and for supervising all work by his subcontractors, suppliers, agents, and employees, etc. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Engineer in the Engineer's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor. The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to received subsequent Work. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

The Contractor's superintendent, project manager, assistant project manager, and other key project personnel shall be thoroughly knowledgeable regarding all the types of work required to safely and fully complete the entire project in full accordance with all the Plans and Specifications. They shall have a complete understanding of all the potential dangers that may be encountered in the work required by this project. They shall implement and enforce proper safety procedures throughout the entire duration of the construction. They shall

also be very well-experienced in their position in performing similar projects (including water and wastewater projects where the project involves water or wastewater) with the same or greater complexity. All Contractor personnel shall be well-experienced at all tasks they are performing. The full-time project manager shall have acceptable experience being the full-time project manager on at least three prior similar projects of similar type and complexity. For projects where a pump station is to be constructed or modified, the minimum required experience shall be similar pump stations or treatment plants on projects of similar or greater complexity and size. For projects where a treatment plant is to be constructed or modified, the minimum experience shall be treatment plant experience on projects of similar or greater complexity and size.

The Contractor shall utilize office and field personnel who have a full understanding of all the risks and potential dangers that may be associated with all the different types of work involved in the project.

The Contractor shall be solely responsible for insuring that he is in full compliance with all Contract requirements, all requirements in the specifications, and all requirements in the drawings.

V.3 DRAWINGS

The Plans accompanying these Specifications form a part of the Contract and include the drawings showing the location and details of the work insofar as practicable. No change or alteration shall be made in the plans without the written permission of the Engineer. The figure dimensions on the Plans are assumed to be correct, but the Contractor is warned to check carefully all dimensions before proceeding with the construction. Should any errors be discovered, the Engineer's attention shall be immediately directed to same, and his decision in the matter shall be final.

V.4 COORDINATION OF PLANS AND SPECIFICATIONS

These Specifications, the Supplemental Specifications, the Plans, Special Provisions and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and provide for a complete work. All details and requirements related to items of work or equipment, etc., are not shown in one location in the plans or in one specification. The Contractor shall use the complete set of plans and specifications in its entirety to determine and comply with all project requirements. In case of discrepancy, figured dimensions, unless obviously incorrect, shall govern over scaled dimensions. Supplemental Specifications shall govern over the General Specifications. Plans shall govern over Specifications. Special Provisions shall govern over Specifications, Supplemental Specifications and Plans. The latest revision or its replacement of a professional association's specification or regulatory requirement shall govern.

It is the intent of the Drawings and Specifications that the Contractor shall furnish all labor, tools, materials, equipment, transportation and services necessary for the proper execution of the work so shown and/or described, unless specifically noted otherwise. The Contractor shall execute all work so described in full conformance with the Plans, Specifications and all Contract Documents; shall perform all incidental work necessary to

complete the project in an acceptable manner; and shall fully and satisfactorily complete all work, facilities, and improvements, ready for use, occupancy and operation by the Owner in a timely manner. To avoid delaying the schedule, the Contractor shall always spot check by exposing, measuring, etc. the existing facilities early in the project to coordinate the changes as shown or implied by the Contract Documents to existing facilities i.e., piping, equipment, etc.

The Contractor shall not take advantage of errors or omissions in the Plans or discrepancies between the Plans and Specifications. It shall be his responsibility to notify the Engineer of any errors or discrepancies found and ask for a clarification. The Engineer will make the corrections or clarifications. After discovery of such inconsistencies or ambiguities by the Contractor, any work done by the Contractor on any part of the project affected by such inconsistencies or ambiguities before receipt of written corrections from the Engineer shall be at the Contractor's risk.

V.5 SHOP DRAWINGS, SUBMITTALS, AND O & M MANUALS

The Contractor shall provide all shop drawings, setting layouts and schedules, pipe layout and installation schedules, piping installation details, and such other drawings as may be necessary for the proper and satisfactory prosecution of the work in accordance with the intent of the Drawings and Specifications and to secure a complete and operable project capable of satisfactory performance of the service intended. Upon the request of the Contractor, the Engineer may waive this requirement in the case of standard manufactured items named in the Specifications. The drawings shall be submitted in accordance with an orderly schedule based upon time required for fabrication or manufacture, delivery, and installation of items presented in shop drawings which is coordinated with the Contractor's construction schedule and allows the Engineer reasonable time to review submittals including re-submittals. The Engineer's review time will be longer for submittals for complex equipment and for submittals where the Contractor has not completely complied with all submittal requirements.

Shop drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Engineer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

The actions required to be taken by the Contractor during the submittal process shall include, but shall not be limited to the following:

(a) The Contractor must thoroughly review and coordinate all submittal data before forwarding such material to the Engineer for his review, shall indicate on the submittal material that he has made such a review, and shall verify such indication or statement by his signature or initials on the Contractor's stamp. The Contractor shall clearly mark all corrections, etc., on the submittals, shop drawings, and O&M Manuals prior to furnishing to the Engineer. If the corrections and markup, etc., are significant, the Contractor shall have the manufacturer or fabricator, etc., prepare a new corrected submittal or shop drawing or O&M Manual prior to furnishing to the Engineer. The new submittal shall also be reviewed

by the Contractor in full accordance with the requirements herein prior to furnishing to the Engineer. Further, all electrical and control submittals shall be thoroughly reviewed and coordinated by the Electrical Subcontractor who shall also stamp and sign or initial those submittals. The requirement for review and coordination by the Electrical Subcontractor of electrical and controls also applies to equipment not being provided by the Electrical Subcontractor. All electrical and control submittals (regardless of the manufacturer or supplier) shall also be thoroughly coordinated by SCADA or instrumentation supplier/manufacturer/system integrator prior to making the first submittal. Any submittals apparently not having been thoroughly reviewed or fully coordinated by the Contractor, and Electrical Subcontractor and system integrator as appropriate, may be returned to him (without review, or with partial review, by the Engineer) for re-submittal. Any comments, questions, corrections, or modifications to the submittal as a result of the review by the Contractor, Electrical Subcontractor and system integrator shall be made to the submittal (by the original producer of the submittal unless approved otherwise by the Engineer) prior to the first submittal to the Engineer. All parties required to review or coordinate the submittals shall utilize personnel who are qualified and experienced at reviewing such submittals.

Each submittal shall be numbered consecutively in order of submission to the Engineer. Resubmittals shall be designated with the original submittal number and the suffixes A, B, C, etc., as required, to indicate consecutive resubmissions.

(b) Submittal items shall be referenced to the applicable Division, Section and page numbers of the Specifications.

(c) Submittal items shall be referenced to sheets (by number) of the Contract Drawings on which such items appear, when applicable.

(d) Any and all particular features of the items submitted that may deviate from those specified and/or shown in the Contract Specifications or Drawings shall be clearly indicated by notations on the submittals and on a separate "Exceptions" sheet submitted by the Contractor.

(e) Submittals shall be legible and should be original information. Copies of facsimiles will not be accepted. The "Exceptions" sheet shall be completed by the Contractor and included with all his submittals. The "Exceptions" sheet shall state "None" if there are no exceptions and shall be included with the submittal. The "Exceptions" sheet must be executed (signed and dated) by the Contractor. The Contractor shall include in the list of exceptions all discrepancies in the submittal. (For example if an item is shown to have one coating in one part of the submittal but a different coating in another part of the submittal, the Contractor shall list such discrepancies as exceptions.) The Engineer shall not be required to find all discrepancies or exceptions as that is the responsibility solely of the Contractor to list all exceptions and discrepancies. The Engineer shall not be required to evaluate any request for an exception unless it is clearly listed on the "Exceptions" sheet included with the submittal.

(f) Submittals for equipment, materials, etc. from different specification divisions shall not be made under a single letter of transmittal.

(g) Submittals shall be stamped "Submittals" on exterior of their envelope or package.

(h) The submittals shall contain all information required for the Engineer to determine, if he desires, if the item being proposed fully and completely complies with all

requirements of the Specifications. Where all such information is not submitted, this shall represent the Contractor's certification that such items are in full compliance with all requirements of the plans and specifications.

(i) The Contractor shall cross out all non-applicable information, models, and options, etc. such that all information remaining pertains specifically to the items being furnished.

(j) The submittal shall show all required information relating to coordination with or connection to other equipment. Properly coordinate the location and orientation of all equipment. Insure equipment does not conflict with other requirements or structures, etc. All control panels and all wiring, including interface with other signals, alarms, or equipment, shall be clearly shown. Clearly show all field wiring and all connections to other equipment including the terminal numbers in other equipment. The Contractor shall fully coordinate all equipment and connections provided for work as shown in the submittal with Electrical, Control, and Panel Suppliers and/or Subcontractors. All electrical and control functions shall be clearly labeled. Provide supplementary notes and descriptions if needed to avoid any confusion.

(k) Equipment shop drawing submittals shall contain the manufacturer's handling and storage requirements, including all maintenance required during storage, type of storage (indoor, outdoor, etc.), heat source, or storage temperature requirements, short term or long term requirements, and all other pertinent storage and maintenance requirements for type of job, location, and exposures. This storage information shall be clearly written, easy-to-understand, detailed, and complete. If preprinted storage instructions are provided, cross out all non-applicable information. Storage instructions shall separately state instructions for short-term storage, long-term storage, and storage after equipment is installed but before placed into fulltime operation. Where motors are part of the submitted equipment, provide the same type of storage information specific to the motors that are provided. Unless clearly stated otherwise by the manufacturer's storage information, storage in utility trailers, or portable storage units (Conex, etc.) shall not be considered indoor or inside storage. Where the required storage requirements are not clear to the Engineer, the equipment shall be stored indoors and inside a permanent structure with conditioned temperature for cooling by air conditioning and heating.

(l) Show anchor bolts and installation requirements. Specifically list all spare parts that will be provided. Specifically list all installation, startup, and training services that will be provided.

(m) Provide all other information requested by Engineer to assist him in understanding the items being provided, the operation of the equipment and controls, the submittals, and the coordination with other equipment.

(n) Provide manufacturer's certification and Contractor's certification that all submittal requirements are fully complied with except as specifically noted. These certifications shall be on a form prepared by and furnished by the Engineer.

(o) Where product samples are submitted for review, the Contractor shall submit a minimum of three samples (i.e. in triplicate) which will be retained by the Engineer/Owner. The samples shall be clearly labeled by permanent labeling to identify the item, date, submittal number, model and/or color, etc., as applicable. All colors to utilized on the project shall be submitted at one time to coordinate and facilitate color selection by the

Owner. Where required, color charts or samples shall be included in the color submittal for the following items as a minimum: paints, thorocoat, sealants, caulk, brick, mortar, block, fans, louvers, doors, and windows, and other similar items, etc. Provide color samples for other items as applicable or as required.

(p) All equipment manufacturers shall include in their submittal a Submittal Certification Form prepared by the Engineer and executed by the manufacturer's engineer in responsible charge stating that (1) they have responsible control over the submittal, (2) they have thoroughly reviewed and understand the project requirements and the submittal requirements, (3) the submittal is in full accordance with submittal requirements contained in the General Specifications except as the manufacture itemizes below, and (4) an acknowledgement that the submittal will not be reviewed by the Engineer if it is not in full accordance with all submittal requirements.

(q) The equipment manufacturer's Submittal Certification Form prepared by the Engineer shall include a space which shall be executed by the Contractor stating that (1) he has carefully reviewed the submittal, (2) it has been reviewed and coordinated by Electrical Subcontractor and SCADA/system integrator, (3) it has been thoroughly coordinated as required, (4) the paint system proposed in the submittal meets all the project painting specifications including but not limited to preparation, coating system, number of coats, thickness, color, (5) the submittal contains long term and short term storage instructions specific for the project including but not limited to whether or not equipment must be stored in conditioned space, heated space, or only out of the weather, etc. (In the absence of clearly written instructions to the contrary, equipment shall be stored in heated and air conditioned space.), (6) the submittal contains listing of all spare parts and these are in conformance with the specifications, (7) the submittal states the manufacturer's field services being provided, (8) the submittal states that all exceptions are listed on an attached sheet, and (9) an acknowledgement that the submittal will not be reviewed by the Engineer if it is not in full accordance with all submittal requirements.

(r) The equipment manufacturer's Submittal Certification Form prepared by the Engineer shall include a space which shall be executed by the Electrical Subcontractor stating that (1) he has carefully reviewed the submittal, (2) it has been reviewed and coordinated by Electrical Subcontractor and SCADA/system integrator, (3) it has been thoroughly coordinated as required, (4) the submittal clearly shows all connecting wiring (including power, control, instrumentation, and SCADA) including but not limited to voltages, power sources, and (where applicable) signal types. This Electrical Subcontractor certification is not required on items that have no electrical or wiring components.

The Engineer shall not be required to review submittals that are not in full compliance with all the submittal requirements. However, should the Engineer elect to review such submittals, the review time will be longer.

The Engineer does not necessarily review all details of all submittals. For some submittals, the Engineer's review may be very limited. Regardless of the Engineer's review or limited or partial review, the Contractor remains fully responsible for full compliance with all requirements of the plans and specifications.

Unless a greater number is called for in various portions of these Specifications the minimum number of copies of submittal data shall be six (6).

Deviations from the Drawings and Specifications shall be called to the attention of the Engineer by the Contractor at the time when such shop drawings or other drawings are first submitted to the Engineer for his consideration. The Engineer's review of any data shall not release the Contractor from responsibility for such deviations, or any subsequent deviations not noted by the Contractor or the Engineer. Any disclaimers or similar statements in the submittals shall not relieve the Contractor, Subcontractor, manufacturer, or equipment supplier of their responsibility.

The Contractor shall coordinate and verify dimensions, arrangements, configurations, and orientation, etc., to insure that all items fit properly in the space available and are accessible for maintenance and replacement, etc.

Shop drawings and other drawings submitted for review by the Engineer shall bear the Contractor's certification. The certification shall represent that he has reviewed, checked, and approved such drawings; that they are in harmony with the requirements of the project and with the provisions of the Contract Documents; that he has verified all field measurements, construction criteria, materials, catalog numbers, and similar data; and that the work represented by the shop drawings is recommended by the Contractor and that the Contractor's Guaranty will fully apply. The Contractor shall insure that all markups in the submittal and all comments returned with the submittal are properly incorporated in all products delivered to the project. Regardless of the Contractor's procedures and by virtue of the Contractor submitting the data to the Engineer, he thereby certifies the above and that he has coordinated the submittal with his work. If the Engineer marks up the shop drawing or submittal, the Contractor shall carefully review, check, and coordinate the Engineer's comments prior to releasing the shop drawings and shall promptly notify the Engineer if he disagrees or doesn't understand the markings. Regardless, the Contractor remains fully and solely responsible for compliance with the plans and specifications.

The finished assemblies represented by the shop drawings and other such drawings are required to be in conformance with the standards of the Occupational Safety and Health Administration, wherever applicable. Manufacturer or contractor shall prepare detailed installation drawings for each assembly.

The Contractor shall submit Operation and Maintenance (O&M) manuals for all equipment of all types provided for the project. This also includes but is not limited to all electrical equipment, monitoring equipment, instrumentation, and controls, etc. O&M Manuals shall be handled the same as other submittals, and shall be accompanied by the same Submittal Certification Form executed by the Manufacturer and the General Contractor. The manual shall contain sufficient drawings, with all equipment components clearly labeled and identified, such that maintenance personnel can promptly determine each and every individual component requiring maintenance and its location as discussed in the manual. The drawings shall be detailed and easy to understand. The manual shall address all recommended maintenance as well as all safety precautions and procedures. The manuals shall fully describe all the features of all equipment. The controls and panels, including but not limited to all alarms, lights, and switches, etc., shall be clearly explained. The O&M manuals shall have a table of contents and be tabbed, bound, and arranged as necessary for easy reference and use. The Contractor shall review the O&M manuals to insure compliance with all submittal requirements prior to submitting them to the Engineer. The manuals shall be revised as

necessary prior to making submittal to the Engineer. Two initial manuals shall be submitted a minimum of 90 days prior to equipment startup for Engineer review. The manuals shall be customized specifically to this project and specific for the equipment actually provided. If the O&M manual contains references to equipment components or parts or material different from that actually furnished, the Contractor shall cross out the inapplicable references or sections. The manual shall not include references to “optional” features or components, etc., without clearly and specifically clarifying whether such an option was actually provided. If an optional feature is provided, delete references to “optional”. If an optional feature is not provided, cross out references to the feature. The submitted manual will not be considered acceptable if it contains inapplicable references that are not marked out. Any O&M manuals apparently not having been thoroughly reviewed or fully coordinated by the Contractor, may be returned to him (without review, or with partial review, by the Engineer) for re-submittal. The Contractor shall submit originals or very high quality copies.

The O&M manual for a piece of equipment shall contain an Equipment Maintenance Summary Form that summarizes all routine maintenance requirements of the equipment provided in a concise, easy to follow format. The form shall also clearly indicate maintenance frequency, required lubricants, and lubricant quantity. The form shall also clearly show any required initial oil changes due to the use of different lubricants for storage or due to short change intervals at startup. The form shall be located in its own tabbed division and the tab shall be clearly labeled “Maintenance Summary.”

The exact location of every lubrication point or adjustment point, etc., shall be clearly shown and labeled in high quality drawings or photographs. The drawings or photographs shall be such that maintenance personnel can quickly discern the exact location of all items requiring attention. Provide multiple drawings (both overall system and detailed) or photographs where helpful for immediate understanding.

All O&M manuals shall be organized, arranged, and tabbed to allow operators and maintenance personnel to easily and promptly find all needed information. Provide whatever features, figures, and drawings, etc., may be desirable for a very user-friendly manual. Where the manual pertains to multiple models of non-identical equipment, each separate model shall be in its own tabbed division of the manual and the division shall be clearly labeled and contain all the information, drawings, and maintenance summary for that specific model.

After the O&M manual is accepted by the Engineer, the Contractor shall submit six (6) copies of the final O&M Manual.

V.6 DATA FOR SHOP DRAWINGS

The Contractor shall submit, for review by the Engineer, complete catalog data for materials and every manufactured item of equipment and all components to be used in the work, including: specific performance data, material description, rating, capacity, working pressure, material gauge or thickness, brand name, catalog number, general type, and other pertinent data. Where equipment or material is of a minor nature, the Contractor shall furnish the Engineer a complete list, giving names of manufacturers, catalog numbers, and other applicable data. Submittals shall be compiled by the Contractor and reviewed by the Contractor and Engineer before equipment is ordered. Where details of items of equipment

are affected by details of items of other equipment, submittals for such associated items of equipment shall be compiled by the Contractor and reviewed by the Contractor and Engineer before any such associated items of equipment are ordered.

Catalog data for equipment and materials submitted by the Contractor shall not supersede the Contract Documents. The Contractor shall check the equipment, materials, and work described by the catalog data against the requirements set forth in the Contract Documents in order to determine the existence of any errors or deviations. The review by the Engineer shall not relieve the Contractor of the responsibility for correcting and/or remedying such deviations from the Drawings and/or Specifications, either by redesign or by submitting equipment or materials fully meeting the requirements of the Contract Documents. The Contractor shall, in writing, call the attention of the Engineer to equipment and materials deviations at the time of the submittal. If the equipment or material should be accepted, the Contractor will ensure the proper fit of the equipment in the work and guarantee that the equipment or material is suitable for the service intended and that the performance of the equipment or material, with respect to life and efficiency, will equal or exceed that of the equipment or material specified. The form, extent and specifics of the Contractor's Guaranty shall be subject to the decision of the Engineer. Review by the Engineer of the Contractor's submittals of catalog data shall not relieve the Contractor of responsibility for errors in the submittals.

Engineering concurrence of all data described above is a prerequisite to the ordering of the equipment or materials by the Contractor, and, in the case where shop drawings may be required, the acceptability of the shop drawings is also a prerequisite to the manufacture of the item.

V.7 COOPERATION WITH UTILITIES

The Owners or Operators of Private or Public utilities shall have access to the work for the installation or repair. When taking any utilities out of service for construction purposes, the Contractor shall attain the permission and coordinate and comply with whatever requirements the utility Owner may have to minimize the time the utility must be removed from service. This may include such requirements as performing the work at night, weekends, or early morning hours (midnight and later) as may be designated by the utility Owner. The number of shutdowns shall be minimized. This may require two or more separate, independent crews both working simultaneously. All shutdowns shall be carefully planned by the Contractor to insure minimal disruption with a written plan submitted by the Contractor. Backup equipment and materials shall be provided by the Contractor as appropriate or required. No compensation shall be allowed because of the delay or interference caused by such work.

V.8 COOPERATION OF THE CONTRACTOR

The Contractor will be supplied with three copies of the Plans and Specifications. The Contractor shall have on the Work, at all times, one copy of the Plans and Specifications. The Contractor will cooperate with the Engineer, Owner and other Contractors.

The Contractor shall have a competent Superintendent with authority to direct the work as required by the Engineer. The Superintendent shall be furnished irrespective of the amount of work sublet and shall have authority over all subcontract work.

It may be necessary that certain items of work be completed, fully tested and placed in service before other facilities can be constructed. This often applies when the project involves work associated with existing treatment plants, pump stations, or lift stations, etc. The plans and specifications may not call out any or all of the work elements where such sequencing is necessary. It is the Contractor's duty to identify any such or similar sequencing and implement such sequencing at no additional cost or time to the Owner. The structures and facilities that the Contractor shall have completed and ready for operation in order to fulfill the above requirement shall be scheduled with the Engineer. After all testing and equipment adjustment has been performed to the satisfaction of the Engineer, the facilities shall be placed in operation with the assistance of the Contractor. The personnel of the Owner shall then perform all operating functions in accordance with instructions previously received from equipment manufacturers. The Contractor shall be required to keep the existing facilities and place new units in operation in a manner to best keep the existing facilities operating. All start-up shall be scheduled with the Engineer.

V.9 SITE ENGINEERING

The Plans show the lines and grades for the prosecution of the work. The Contractor shall be fully responsible for construction to the alignment, elevations and dimensions and shall provide the stake-out of the project off of existing bench marks and stations. The Contractor shall be held responsible for the preservation of all stakes and bench marks. If, in the opinion of the Engineer, any of the construction stakes or bench marks have been carelessly or willfully destroyed or disturbed by the Contractor, the cost to the Owner of replacing them shall be charged against the Contractor.

The Contractor shall set the elevation of all structures, tanks, pipes, and gates, etc. The Contractor shall be solely responsible for verifying all such elevations prior to pouring concrete, etc. The Contractor shall be solely responsible for the satisfactory removal and replacement of any structure, tank, pipe, or gate, etc. that is later determined not to be in full compliance with contract requirements.

The Contractor shall furnish all materials for marking and maintaining points and lines and shall furnish such labor as may be required. When required by the Contract Documents, the Contractor shall provide independent and adequate building facilities to perform field laboratory and/or office for inspection. The Plans and Standard Specifications will indicate the requirements for any required facilities.

V.10 INSPECTORS, ASSISTANTS, AND REPRESENTATIVES

Inspectors, assistants or representatives shall not be authorized to alter the Plans and Specifications; nor shall they act as foreman for the Contractor, or interfere with the management of the work. Any advice which they may give the Contractor shall not be construed as binding the Engineer or the Owner in any way, nor releasing the Contractor from fulfilling all of the terms of the Contracts. Inspectors, assistants, and representatives are not authorized to supervise or control the Contractor or subcontractor personnel or their work.

V.11 INSPECTION OF THE WORK

The Contractor shall furnish the Engineer with facility for ascertaining whether or not the work performed and materials used are in accordance with the requirements and intent of the Contract. At any time before final acceptance of the work, the Contractor shall, if the Engineer requests, remove or uncover such portions of the finished work as the Engineer may direct. After the examination, the Contractor shall restore the work to the standard required by Specifications. If the work is acceptable and if the Engineer had been given ample opportunity to inspect the work prior to its being covered, the uncovering or removing shall be paid for as Extra allowed the Contractor. No work shall be done nor materials used without providing the Engineer the opportunity to inspect. Failure to reject any defective work or material shall not prevent later rejection whether or not such Work is fabricated, installed, or completed. Failure to detect or reject defective work shall not relieve the Contractor of his responsibilities nor impose any liability on the Engineer. Inspection is not acceptance and shall not constitute acceptance by the Owner. The Contractor is solely responsible for performing all the work in full accordance with all the requirements of the Contract.

V.12 DEFECTIVE WORK

Defective work shall be removed and replaced without extra compensation. Should the Contractor fail to remove defective work when so ordered by the Engineer, the Engineer may withhold payment. Any work not in full compliance with the requirements of the plans and specifications shall be considered defective work.

In any case, the amount previously paid to the Contractor for defective work may be reduced at any time the Owner determines it is in his best interest. The Owner may also, at any time, deduct amounts and require the Contractor to reimburse amounts and withhold further payment for all costs associated with the complete correction of the defective work to the full satisfaction of the Owner. These deductions or reimbursements shall include, but not be limited to, the full cost of satisfactorily removing all work not in full compliance with all Contract requirements, as well as any other work that must be removed or modified in order to correct or replace the work in non-compliance.

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

V.13 UNAUTHORIZED WORK

Work done in excess of that provided by the lines and grades shown on the Plans or as given by the Engineer, or any extra work done without the written authority of the Engineer, will be considered as unauthorized, and will not be paid for. If Unauthorized Work is directed to be removed it shall be handled as provided by Article V.12.

V.14 MAINTENANCE OF THE WORK

The Contractor will be required to continuously maintain the work under the Contract from the date of Notice to Proceed until the work is completed and accepted. The

work shall be maintained in a manner which maximizes the safety and convenience of all persons in the vicinity of the work. Maintenance work, until finally accepted, shall be included in the Contract Prices. The Contractor shall restore without compensation, all damages to the Work before its acceptance. During suspension of Work, the Contractor shall be responsible for all materials and construction.

The failure of the Contractor to comply with maintenance of the Work may result in notification by the Engineer to the Contractor's superintendent or his employee in charge to comply with the required maintenance. If the Contractor fails to remedy unsatisfactory maintenance within three (3) days after the date of issuance of this notice, the Owner may proceed to maintain the work. However, regardless of whether or not the Contractor is notified of his failure to maintain the work, and regardless of whether or not the Owner maintains the work, it shall remain the responsibility, solely, of the Contractor to maintain the work. The entire cost of this maintenance will be deducted from monies due the Contractor.

This requirement applies to all aspects of the work. This includes but is not limited to such items as site, materials, equipment, supplies, cleaning, and electrical components and work, etc.

V.15 RECORD DOCUMENTS

Engineer shall provide to the Contractor, one complete set of Contract Documents to be used by the Contractor for the purpose of documenting as constructed information for all elements of Work. These as constructed documents generated by the Contractor may then be used by the Engineer in preparing Record Drawings for the Project.

The Contractor shall make legible and accurate notations to the drawings to indicate changes. All changes shall be recorded as construction progresses and within 24 hours of a change being made. Work shall not be covered, concealed, or otherwise made inaccessible until all information has been recorded by the Contractor. Record Documents shall be maintained in a clean, dry, legible, and orderly fashion and shall not be used for construction purposes. Record Documents shall be clearly labeled: "Record Documents, Not for Construction".

Changes shall be recorded in erasable colored pencil. Alternate colors may be used to emphasize different types of changes. Changes shall be "clouded" to draw attention to effected area(s). Changes shall be legibly marked and shall include descriptions when necessary. Changes shall be dated and initialed by the Contractor.

Record Documents shall be made available to the Engineer or the Owner at all times. The Engineer may review and approve, on a monthly basis, the Record Documents. Portions of the Record Documents determined to be incomplete or incorrect by the Engineer, shall be corrected by the Contractor before monthly Pay Requests are approved. Before requesting final payment, Contractor shall provide Engineer with a completed set of clean, fully legible Record Documents. Record Documents may be reviewed by Engineer for clarity and completeness; however, the Contractor has sole responsibility for the correctness, and accuracy of the Record Documents. The Owner may withhold final payment until the Record Documents are complete, accurate, and have met all other requirements specified herein.

Record Documents required by this Section shall be in addition to any other Record/As Built requirements contained elsewhere in the Plans and/or Specifications.

SECTION VI CONTROL OF MATERIALS

VI.1 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

All materials or equipment used on the Work shall meet the requirements of the Specifications. The source of supply of the materials or equipment shall be approved by the Engineer before delivery is started. If it is found that products from a source are unacceptable, the Contractor shall furnish materials from other sources.

The Contractor shall warrant to the Owner and the Engineer that, unless otherwise specified, all materials and equipment furnished under this Contract shall be new, and both workmanship and materials shall be of good quality, free of faults and defects, and in conformance with the Contract Documents. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials. In selecting and/or approving equipment for installation in the Project, neither the Owner nor Engineer assume responsibility for injury or claims resulting from failure of the equipment to comply with applicable federal, state, and local safety codes or requirements, or the safety requirements of a recognized agency, or failure due to faulty design concepts, or defective workmanship and materials. Material and/or equipment damaged by any cause during the construction period shall be subject to rejection by the Engineer; reconditioning and/or repairing material and/or equipment is not acceptable.

VI.2 SAMPLES, TESTS FOR SPECIFICATION COMPLIANCE

All materials shall be approved by the Engineer. Materials used without prior approval shall be considered unauthorized and will not be paid for. Tests for suspected faulty materials, work, or tests not mentioned in this Section shall be conducted by an independent testing laboratory approved by the Engineer. Such tests shall be paid for by the Contractor. Certified copies in duplicate of each test shall promptly be furnished the Engineer. Laboratory testing common to the project shall be paid by the Owner at a laboratory of his choice, unless specified otherwise. These tests include concrete breaks, inspection, soil tests, and liner tests as defined in these Specifications.

The Contractor shall cooperate, coordinate, and assist the Engineer with all testing the Owner deems appropriate for the project. Make appropriate arrangements with the Engineer and provide safe access, etc., so that all such testing can be preformed. There shall be no extra time or payment associated with this work. If retesting is necessary due to not passing on the first test, all costs associated with retesting shall be the responsibility of the Contractor.

Acceptance of materials by the Engineer shall not relieve the Vendor, or the Contractor from repairing or replacing defective materials. Any materials rejected at the site of the work shall be removed from the premises by the Contractor in accordance with Articles V.12 and V.13.

VI.3 SALVAGE MATERIALS AND UNUSED EQUIPMENT AND MATERIALS

All existing materials and/or equipment removed and not required to be reused or relocated remains the property of the Owner. These materials and equipment will be stored orderly at the job site in accordance with the Owner's instructions. All unusable items as determined by the Owner will be disposed by the Contractor as excess materials.

All unused construction materials or equipment remaining at completion of the project will remain the property of the Contractor unless the Owner has purchased unused property through the Contract and has rightful ownership or agrees to purchase or accept ownership of materials or equipment. Making payment of stored materials throughout the job does not constitute the Owner's willingness to purchase unused materials or equipment at the end of the Work.

VI.4 STORAGE OF MATERIALS AND/OR EQUIPMENT

Materials and/or equipment to be incorporated in the work shall be properly housed or otherwise protected from corrosion and damage so as to ensure the preservation of their finish, quality, and fitness for the work. Where considered necessary to secure proper protection, the materials shall be placed on racks, platforms, or hard clean surfaces not subject to surface drainage. Factory finished items shall be stored above ground, covered, individually sealed, or housed indoors as required. Equipment shall as a minimum be stored and maintained in accordance with the manufacturer's recommendations, or in accordance with the Plans and Specifications if those storage requirements are more stringent. Equipment that has been installed but not being operated by the Owner shall be stored and protected by the Contractor in accordance with the recommendations of the manufacturer and plans and specifications. The Contractor shall be aware of the potential difficulties involved in the storage of equipment fitted with bearings which may suffer damage from a long period of idleness, and shall take such precautionary measures as may be required to preserve the life expectancy of the bearings. Materials not properly stored, housed and maintained in condition for service as intended will be deducted from the stored materials and will not be incorporated in the work. Full instructions on storage should be provided with the shop drawings (See Sections V.5 and V.6). The Contractor shall be solely responsible for equipment that is damaged due to flooding or improper storage.

No equipment (including but not limited to process equipment, electrical equipment, HVAC equipment, or mechanical equipment, etc.) shall be stored in a location where it may be flooded or otherwise unintentionally submerged, etc.

Stored materials and equipment shall be located and arranged so as to facilitate observation. When the Contractor desires to accept delivery of material or equipment which cannot be accommodated or housed on the site of the work he may, but only with the permission of the Owner, store such material and/or equipment in an insured and bonded warehouse within a 60 mile radius of the project site. Any agreement for rental of such storage space by the Contractor shall contain a provision that the material and/or equipment thus stored shall not be subject to a lien for payment of storage. A certificate of insurance shall be furnished. The storage facility shall be climate-controlled, if appropriate. The Owner

shall be protected against loss of or damage to such stored equipment by the terms and endorsements of the Contractor's insurance policies.

The Contractor shall develop an inventory of stored equipment showing the maintenance required during storage and containing a place for the Contractor to sign off when the maintenance is performed. The maintenance provided shall be stated, dated, and signed by the person performing the work. The Contractor shall notify the Engineer's representative sufficiently prior to performing the work to allow the representative to accompany the Contractor during the maintenance. The Stored Equipment Maintenance Inventory shall be submitted to the Engineer with each monthly pay request. If there is no pay request during a month, the Contractor shall submit the updated inventory monthly until project acceptable.

VI.5 U.S. PRODUCTS PREFERENCE

The successful Bidder (Contractor) shall comply with ALA. CODE §39-3-1 (1975), shall agree to utilize in the execution of the Project, materials, supplies and products manufactured, mined, processed or otherwise produced in the United States or its territories, if the same are available at reasonable and competitive prices and not contrary to any sole source specifications. It is further stipulated that a breach of the foregoing provision of this agreement by the Contractor in failing to utilize domestic products shall result in a downward adjustment in the Contract price equal to any realized savings or benefit to the Contractor.

VI.6 USE OF DOMESTIC STEEL

The attention of all Bidders and that of the successful Bidder (Contractor) is drawn to ALA.CODE §39-3-4 (1975), requiring the use of steel produced within the United States for municipal construction projects when specifications in the construction contract require the use of steel and do not limit its supply to a sole source. This provision is subject to waiver if the procurement of domestic steel products becomes impractical as a result of national emergency, national strike or other causes. Violations of the use of domestic steel requirements shall result in a downward adjustment in the Contact price to equal any savings or benefit to the Contractor.

SECTION VII LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

VII.1 LAWS TO BE OBSERVED

The Contractor shall comply with all laws, regulations, and permits. The Contractor and his Surety shall indemnify and save harmless the Owner and the Engineer and all of their representatives or agents against any claim or liability arising from or based on the violation of any law, regulation, or permit requirement, whether by himself, his employees, or his subcontractors. The Contractor agrees to indemnify and/or reimburse the Owner for any fines, violations, charges, suits, or sums of money imposed by the Alabama Department of Environmental Management (ADEM), Environmental Protection Agency (EPA), or any agency overseeing and/or issuing regulation, law or permit for any violation arising out of the work by the Contractor pursuant to this agreement. The Contractor agrees to reimburse the

Owner for all costs the Owner incurs due to the Contractor's non-compliance or alleged non-compliance with laws, regulations, and permits.

VII.2 PERMITS AND LICENSES

The Owner will procure general permits such as those required by highway departments or other utilities to allow the proposed facilities to be installed on public rights of way or privately owned rights of way; however, the Contractor shall procure all other required permits and licenses, pay all royalties and fees, and give all notices necessary. Special or supplemental permits for the Contractor's means and methods of construction such as blasting permits shall be the full responsibility of the Contractor. An exception for blasting permits is discussed in Section VII.13.

Requirements from permits acquired by the Owner for construction will be strictly adhered to by the Contractor with all stipulations within the Contractor's control being fulfilled. The Contractor shall be solely responsible for satisfying all requirements and costs of all permits and licenses acquired by the Owner regardless of whether such requirements are imposed on the Owner or are imposed directly on the Contractor. This includes, but is not limited to, any permit issued by utilities, railroad, streets or highways, governmental agencies, or regulatory agencies, etc. This shall include, but by no means be limited to, such requirements as bonds, insurance, indemnification, flagmen, and traffic control, etc. The Contractor shall obtain special or supplemental permits required by agencies to complete the work in accordance with Section VII.13. The Contractor shall indemnify the Owner and Engineer in accordance with Section VII.1.

VII.3 PATENTED DEVICES, MATERIALS AND PROCESSES

If the Contractor uses any design, device, material, or process covered by letters, patent or copyright, the Contractor and the Surety shall indemnify and save harmless the Owner and the Engineer and all their authorized representatives from any suits, or claims for infringement.

VII.4 PUBLIC CONVENIENCE AND SAFETY

The Contractor is required to conduct his work as to ensure the least possible obstruction to traffic, to ensure the least possible inconvenience to the general public, businesses, and the residents in the vicinity of the work, and to ensure the protection of persons and property. Maintain continuous access to businesses (during and near to hours of operation) and hospitals, etc. No disturbing noise will be allowed particularly in residential areas between the hours of 9:00 p.m. until 7:30 a.m. unless an emergency occurs. Permission of the proper authority is required before any road or street is closed to the public. The maintenance of continuous accessibility of fire-fighting equipment to fire hydrants and to such areas as are necessary for the provision of fire protection is a requirement of the Fire Department or the authority having jurisdiction. The provision of temporary measures as required to ensure the safe use of sidewalks and streets by the public is the responsibility of the Contractor. The proper functioning of all gutters, sewer inlets, drainage ditches and irrigation ditches is to be ensured by constant clean-up along with the work and by provision of temporary facilities where required for the maintenance of natural surface drainage. The

implementation of all such maintenance measures and safety precautions is the responsibility of the Contractor. Respond promptly and appropriately to all complaints. Coordinate and cooperate with affected property Owners and keep them advised of work schedules and activities.

No road, sidewalk or vehicle path shall be closed by the Contractor except by permission of the Engineer, and while closed the Contractor shall maintain traffic through or around the Work. The Contractor shall notify emergency agencies and the Engineer before the starting of construction of any situations that might inconvenience or endanger traffic. All right-of-ways shall be kept continuously open and maintained in passable and safe condition. The Contractor shall clean-up and place streets back in service as soon as possible. Paving shall be patched as soon as possible. Use cold-mix asphalt as temporary patch if required by plans or specifications, or if helpful in continuously maintaining public safety or convenience.

The convenience of the general public and of residents along the road or other travelways shall be provided for in a satisfactory manner. Where roads or streets are not available for use as detours, traffic shall be permitted to pass through the Work. The traveling public shall have precedence over Contractor's vehicles, and shall not be delayed for the convenience of the Contractor. The Contractor shall provide flagmen whose sole duties shall consist of controlling the movement of public traffic. No additional charges will be paid for traffic routing or control.

The Contractor shall provide and maintain temporary roads to provide access to the Work, driveways, houses or buildings affected by the work. Temporary bridges for pedestrians shall be provided over surfacing, pavement, sidewalks or muddy areas.

The provision by the Contractor of warning signs, warning lights, barricades and watchmen is subject to the requirements of "Safety and Health Regulations for Construction" of the Occupational Safety and Health Administration, U. S. Government Department of Labor; the State "Manual on Uniform Traffic Control Devices for Streets and Highways"; and other authorities having jurisdiction in the areas and traffic control. The Contractor is solely responsible for satisfying all safety and traffic control requirements of authorities concerned with or affected by this work. The Contractor shall provide, install, and continuously maintain all traffic control and other safety features, etc. as may be desirable for the protection, safety, and convenience of the public. The Contractor is solely and fully responsible for protecting the public. This responsibility applies both during working hours and non-working hours, 7 days per week, for the entire duration of the project.

VII.5 PROTECTION AND RESTORATION OF PROPERTY, STREETS AND LANDSCAPE

The Contractor shall not enter upon private property without obtaining permission from the owners and lessees. The Contractor shall be responsible for the preservation of all public and private property. The Contractor will obtain necessary information of existing utilities, and shall give notice to the owners or authorities at least forty-eight (48) hours before his operations will affect such property. The Contractor shall not interfere with the operation of utilities. The Contractor shall at his own expense, take necessary precautions to avoid interruption of service or damage.

Work under this Contract shall include the restoration of all paved areas and macadamized roadways to their original condition at his own expense. If the Contractor fails to restore disturbed areas promptly, the Owner, after giving three (3) days' written notice, may have the pavement restored and deduct cost from the payment due the Contractor. However, any such action or lack of action, by the Owner shall not relieve the Contractor of any of his obligations under this Contract, including but not limited to safety. The Contractor must conform to the prevailing State Highway Code and Railroad Company requirements at his own expense. The Contractor shall maintain roads, streets, and highways affected by his work in a safe condition at all times.

When damage or injury is done to public or private property by the Contractor, he shall repair such damage or injury so that it is equal or better condition to the property before damage.

VII.6 INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Engineer, Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including loss of use resulting there from, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, equipment or material supplier or manufacturer, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described herein.

In claims against any person or entity indemnified under this Section by an employee of the Contractor, a Subcontractor, equipment or material supplier or manufacturer, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Section shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor, Subcontractor, or equipment or material supplier or manufacturer under workmen's compensation acts, disability benefit acts or other employee benefit acts.

The obligations of the Contractor under this Section shall not extend to the liability arising out of active negligence, sole negligence, willful misconduct of, or for defects in design furnished by, the Owner and Engineer, their agents, consultants, and/or employees provided that such negligence or defect are the primary cause of the injury or damage.

The Owner may retain money due for actions or claims for injuries or damages until settled. The Owner and/or the Engineer, or their representatives shall not be liable to the Contractor for damages or delays resulting from work by third parties or by injunctions or other restraining orders obtained by third parties.

VII.7 INSURANCE

All bidders shall have their insurance provider thoroughly review all insurance requirements well prior to Bid opening to ensure the Contractor includes sufficient monies to meet all insurance requirements. This review by the insurance provider shall be detailed and complete. The review shall determine pricing and availability of all specific insurance requirements. This review shall determine all additional and special insurance that the Contractor must acquire to be in full and complete compliance with all insurance requirements. Prior to bidding, all bidders shall furnish to their insurance providers complete copies of all insurance requirements contained in the General Specifications Section of these Contract Documents, all insurance requirements in other sections of the documents (including but not limited to the Special Provisions and Supplemental General Conditions), and those required by permits, etc. See the Special Provisions for additional insurance requirements.

(a) General: The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise from the Contractor's execution of the work, whether execution be by the Contractor, any Subcontractor, any one directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The Contractor and/or any subcontractors waive subrogation as to the Owner, its officers, agents, employees, consultants, and Engineer (Municipal Consultants, Inc.). This waiver of subrogation shall apply to all policies, including but not limited to, General Liability, Automobile, All-Risk (Builder's Risk), Worker's Compensation, and Umbrella Insurance. This shall be stated as such in all policies and on all certificates. The full aggregate limits shall apply per job or contract. This shall be stated as such in all policies and on all certificates. Insurance for Contractor or any of its agents, employees or subcontractors shall cover both on-site and off-site operations under this Contract and insurance coverage shall extend to any motor vehicles or other related equipment, irrespective of whether the same is owned, non-owned or hired. Coverages shall include, but not be limited to:

- (1) Claims under worker's compensation, disability benefit and other similar employee benefit acts;
- (2) Claims for damages because of bodily injury, occupational sickness or disease, or death of employees;
- (3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than employees;
- (4) Claims for damages insured by usual personal injury liability coverage which are sustained (i) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (ii) by any other person;
- (5) Claims for damages because of injury, destruction, or loss of use of tangible property; and
- (6) Where work under this Contract includes any exposure to navigable waterways and/or adjoining water areas, the Contractor shall obtain

insurance coverage to include Federal Longshoreman's and Harborworker's Act (USL & H) and Federal Jones Act or other insurance required by other applicable law or regulation.

The Contractor's insurance shall cover both On-going Operations and Completed Operations related to the project. Coverage for On-going Operations shall be in effect from the beginning date of the Contract until final payment is made to the Contractor by the Owner. Coverage for Completed Operations shall be in effect for a minimum period of one (1) year after final payment is made to the Contractor by the Owner and/or any time the Contractor is working on the project after final payment has been made to the Contractor by the Owner. There shall be no interruption of insurance coverage during the transition from On-going Operations to Completed Operations.

Maintenance of proper insurance coverage is a material element of the Contract. Failure to maintain, renew and/or provide evidence of renewal may be treated by the Owner as a material breach of Contract. The lack of insurance does not negate the Contractor's obligations under this Contract including, but not limited to, indemnification of the Owner and Engineer from any damages resulting from the Contractor's failure to obtain, maintain or renew the minimum insurance policies and endorsements required herein.

(b) Certificate of Insurance: Original Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to the Owner's execution of the Contract. These Certificates shall contain the following:

- (1) Unconditional provision that coverage afforded under the policies will not be canceled unless at least thirty (30) days prior Written Notice has been given to the Owner and Engineer.
- (2) The Contractor's and any subcontractor's general liability, automobile liability insurance, and umbrella (and/or excess) insurance shall endorse the Owner, its officers, agents, employees, consultants and Municipal Consultants, Inc., as additional insureds for any claims arising out of work performed under this Contract. Umbrella (and/or excess) liability shall follow form to the underlying insurance. All insurance shall be primary without contribution from any insurance or deductibles available to the additional insureds.
- (3) There shall be a statement for all policies that the Contractor and any subcontractor waive subrogation as to the Owner, its officers, agents, employees, consultants and Municipal Consultants, Inc.
- (4) There shall be a statement that full aggregate limits apply per job or contract.
- (5) Confirmation of coverage of x, c, and u.

(c) Policy Endorsements: Copies of the Contractor's automatic policy endorsements or original policy endorsements acceptable to the Owner shall be filed with the Owner prior to the Owner's execution of the Contract. All policy endorsements shall endorse

the Owner, its officers, agents, employees, consultants and Municipal Consultants, Inc. and these parties/organizations shall be listed as such in the Endorsement Schedule included on the endorsements. The policy number shall be listed in all Schedules. Policy endorsements for additional insureds and waivers of subrogation shall be for both On-going and Completed Operations as defined above. Automatic and/or original endorsements for additional insureds and waivers of subrogation for ALL policies (i.e. General Liability, Automobile Liability, All Risk (Builder's risk), Umbrella Insurance, Workman's Compensation, etc.) shall be as broad as (i.e. similarly worded to) the following General Liability endorsements and be acceptable to the Owner:

- (1) Additional Insured Endorsements - ISO's CG 20 10 11/85 or the combination of CG 20 10 10/01 and CG 20 37 10/01.
- (2) Waivers of Subrogation Endorsements - ISO's CG 24 04 10 93 or CG 24 04 05 09.

(d) **Liability Insurance:** The Contractor shall procure and maintain at the Contractor's expense, during the work, liability insurance as hereinafter specified:

- (1) Contractor's General Public Liability and Property Damage Insurance including vehicle coverage issued to the Contractor and protecting the Contractor from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising in connection with any operations under the Contract Documents, whether such operations be by the Contractor or by any Subcontractor employed by the Contractor. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident, and a limit of liability of not less than \$2,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all property damage sustained by any one person in any one accident and a limit of liability of not less than \$2,000,000 aggregate for property damage sustained by two or more persons in any one accident. The insurance shall provide full coverage for x, c, and u.
- (2) The Contractor shall acquire and maintain, if applicable, Fire and Extended Coverage Insurance upon the Project to the full insurable value thereof for the benefit of the Owner, the Contractor, and Subcontractors as their interest may appear. This provision shall in no way release the Contractor or Contractor's surety from obligations under the Contract Documents to fully complete the Project.

(e) **Worker's Compensation Insurance:** The Contractor shall procure and maintain, at the Contractor's own expense, during the Contract Time, in accordance with the provisions of the laws of the state in which the Work is performed, Workman's Compensation Insurance,

including occupational disease provisions, for all of the Contractor's employees at the site of the Project and in case any Work is sublet, the Contractor shall require such Subcontractor similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this Contract at the site of the project is not protected under Workmen's Compensation statute, the Contractor shall provide, and shall cause each Subcontractor to provide, adequate and suitable Insurance for the protection of its employees not otherwise protected.

(f) "All Risk" Insurance: The Contractor shall secure, if applicable, "All Risk" type Builder's Risk Insurance for Work to be performed. Unless specifically authorized by the Owner, the amount of such insurance shall not be less than 100% of the insurable value. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, earthquake, malicious mischief, wind, collapse, riot, aircraft, water damage (other than caused by flood) and smoke during the Contract Time, and until the Work is accepted by the Owner and final payment has been made. The "All Risk" policy shall include testing and start-up and allow for utilization of the Work by the Owner. The policy shall name as additional insured the Owner, its officers, agents, employees, consultants, and Engineer (Municipal Consultants, Inc.). Flood insurance and all Additional Insured and Waiver of Subrogation Endorsements must be carried in "All Risk Policy" or by separate policy.

(g) Consistent with the requirement for all insurance coverages provided by the Contractor, the Contractor shall notify the Owner and Engineer in writing 30 days prior to the expiration of the Contractor's Builder's Risk Insurance and Flood Insurance. The Contractor shall maintain the specified Builder's Risk Insurance and Flood Insurance continuously for the duration of the project and until the Work has been accepted by the Owner. In no case, shall the Contractor anticipate acceptance by the Owner when planning for discontinuance of the required Builder's Risk Insurance or Flood Insurance.

(h) Umbrella Excess Liability Over Primary Insurance: The Contractor shall take out and maintain during the term of this Contract, and any extensions thereof, Umbrella Excess Liability Insurance. The minimum limits of coverage shall be \$5,000,000 aggregate. The coverage shall be over the required general liability insurance and automobile liability insurance as a minimum. There shall be no gaps or sublimit deductibles, etc. The Owner, its officers, agents, employees, consultants, and Engineer (Municipal Consultants, Inc.) shall be named as additional insureds in all umbrella policies.

(i) Protection of the Owner and Engineers: The Owner, its officers, agents, employees, consultants, and Engineer (Municipal Consultants, Inc.) shall be named as additional insureds in all insurance policies carried by the Contractor or that of his subcontractors for this Contract. If the Contractor or his Surety cannot name the Owner, its officers, agents, employees, consultants, and Engineer (Municipal Consultants, Inc.) as additional insureds in any policies providing the coverage above, the Contractor shall purchase and maintain Owner's Protective Liability Insurance (OCP Policy) in the amount of not less than \$5,000,000 and the named insured shall be the Owner, its officers, agents, employees, consultants, and Engineer (Municipal Consultants, Inc.) during the life of this agreement. The coverage shall remain in full effect for both On-going Operations and Completed Operations as described above in Section VII.7(a). The insurance shall protect the Owner, its officers,

agents, employees, consultants, and Engineer (Municipal Consultants, Inc.) from any claim or loss arising from any act or failure to act on the part of the Contractor or his Subcontractors. All insurance shall be primary without contribution from any insurance or deductibles available to the additional insureds and OCP policy holders.

(j) **Miscellaneous Insurance:** Provide all insurance required by railroads, other utilities, etc. Provide, on the behalf of the Owner, all such insurance required of the Owner by railroad, other utilities, etc.

(k) Neither the setting of insurance limits or requirements nor the acceptance or approval of the same by the Owner imply or represent that the limits or the insurance carrier is sufficient or that such insurance actually has been obtained, that being the responsibility of the Contractor. These insurance requirements shall be considered as a minimum. The Contractor shall consult with his insurance agent to determine whatever greater levels of insurance may be desired. The provision of insurance shall in no way limit the Contractor's responsibility under the Contract nor limit his responsibility to indemnify and hold harmless the Owner and Engineer.

(l) See the Special Provisions for additional insurance requirements.

VII.8 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES

The Contractor shall fully cooperate with private and public utilities in accordance with Section V.7. Where the Contractor's operations are adjacent to properties or utilities, work shall not be started until arrangements for their protection have been made. The Contractor shall be solely responsible to the Owners and Operators of properties or utilities for injuries or damages. If required by the Owner, he shall furnish special Protective Public Liability and Property Damage Insurance in an amount specified. The Contractor shall cooperate with the owners of utilities if any of their facilities are removed or rearranged. The Contractor shall be responsible for costs associated with this item.

In the event of interruption to utility services or potential damage to the utility caused by the Contractor, the Contractor shall promptly notify the proper authority. He shall cooperate in the restoration of service promptly. The Contractor shall be responsible for all costs associated with this item.

VII.9 PERSONAL LIABILITY

There shall be no liability upon the Owner or Engineers, or their authorized representatives, or employees, either personally or as officials of the Owner or engineering company.

VII.10 NO WAIVER OF LEGAL RIGHTS

The Owner or the Engineer shall not be precluded from showing the true and correct amount and character of the Work performed and materials furnished by the Contractor by any measurement, estimate, or certificate incorrectly made during the course of the Work. The Engineer shall have the right to reject any part of the Work or materials should it be found to be inconsistent with the Contract. The Owner shall not be precluded from recovering from the Contractor and his surety damages for the Contractor's failure to comply with the terms of

the Contract. Neither the inspection by the Owner or the Engineer or any of their officers, employees, agents, or subconsultants, nor any order by the Owner for payment of money, nor any payment for, or acceptance of, the whole or any part of the Project by the Owner or Engineer, nor any extension of time or change order, nor any possession taken by the Owner or its employees, shall operate as a waiver of any provision of this Contract, or any power herein reserved to the Owner, or any right to damages, nor shall any waiver of any breach in this Contract be held to be waiver of any other or subsequent breach. Acceptance or final payment shall not be final and conclusive with regards to rejected Work at any time before or during the warranty period; to latent defects; fraud or such gross mistakes as may amount to fraud; or as regards to the Owner's rights under any warranty.

VII.11 SAFETY AND CONSTRUCTION METHODS

The Contractor at his own expense, shall maintain project and public safety. The Contractor agrees to hold the Owner and Engineers harmless and indemnify them from all claims for damages resulting from construction of the project by the Contractor or Subcontractors, his agents or employees. The Owner and/or Engineers are not responsible for providing the Contractor a safe place to work nor for the safety of any equipment, procedure or material used on construction or incorporated into the work. The Contractor shall be solely responsible for the means and methods of construction and for safety.

The Contract or Owner may sometimes impose limitations or other requirements on the Contractor's sequence of construction. Such limitations or requirements do not constitute control of the Contractor's means or methods, nor relieve the Contractor's responsibility for safety.

When the use of explosives is necessary, the Contractor shall use care to prevent damages to life or property and shall comply with all rules and regulations of the governing authorities. Notwithstanding any other provisions contained in these Contract Documents, and notwithstanding whether any claim alleges negligence, intention or willful injury, absolute liability or any other theory of recovery, Contractor and his surety shall indemnify and hold harmless Owner, its directors, agents and employees, engineer, engineer's consultants, agents and employees, or any of them from and against all claims, damages, losses and expenses, including, but not limited to, attorney's fees, arising out of or resulting from blasting activities, the use, transportation, or storage of explosives generally or any other dangerous material or ultra-hazardous activity. If no local laws or ordinances apply, storage of explosives shall not be closer than 1,000 feet from the road, street, any building or area of public use. Fuel tanks, systems and appurtenances shall be stored and utilized in a way to comply with OSHA and regulatory agencies.

The Contractor, in the prosecution of his work under the Contract, is bound by the requirements of "Safety and Health Regulations for Construction" of the Occupational Safety and Health Administration, U. S. Government Department of Labor, and of other authorities having jurisdiction in safety matters.

Under the terms and conditions of this Contract, the Engineer shall not act as Safety Engineer or Safety Supervisor, since such responsibility remains solely with the Contractor. The Engineer shall not be responsible for establishing safety practices or for prescribing safety measures for the Contractor and his methods of construction.

The Contractor is solely and completely responsible for conditions of the job site, including safety of all persons and property affected directly or indirectly by his operations during the performance of the work; and this requirement is not limited in application to normal working hours, but applies continuously twenty-four (24) hours per day until acceptance of the work by the Owner, and thereafter shall be subject to the terms and conditions of the Guaranty.

The duty of the Engineer is to review the work in order to determine its acceptability in accordance with the Specifications and to conduct construction review of the Contractor's performance for the benefit of the Owner. This shall not be construed as a duty to review the adequacy of the Contractor's safety measures or construction methods on or near the construction site and/or to direct the actions of the Contractor's employees in the performance of the work as such duties are not included among the responsibilities of the Engineer.

VII.12 SANITARY PROVISIONS

The Contractor is responsible for the maintenance of proper sanitary conditions in the area of his work. The provision and maintenance of such sanitary accommodations as may be required for the use of his employees and of his subcontractor's employees is subject to the Rules and Regulations of the State Board of Health and to all local Codes and Ordinances.

VII.13 EXISTING CONSTRUCTION AND FACILITIES

Where construction work under this Contract is adjacent to or crosses highways, railroads, streets, roads, access facilities, or utilities under the jurisdiction of State, County, City or other public agency, public utility or private entity, the Contractor is required to furnish such bond (cash or surety as required), insurance agreement or satisfy any other permit conditions as may be required before executing such construction work. A copy of the bond or insurance agreement (when required) must be filed with the Owner before any work is done. The Contractor is responsible for his means and methods of construction to satisfy the permitting authority and to obtain the desired result as shown within the Contract Documents.

Although the Owner will procure general permits such as those required by highway departments or other utilities to allow the proposed facilities to be installed on public rights of way or privately owned rights of way, it is the responsibility of the Contractor to obtain special or supplemental permits for his means and methods of construction such as blasting permits. However, if and only if the rules and regulations of the agency having jurisdiction over the work will not allow the Contractor or his blasting subcontractor to obtain a blasting permit (but instead require the Owner to obtain the blasting permit as a formality), then the Owner will not withhold from assisting the Contractor with submitting a reasonable blasting permit application (in the Owner's name) provided that the following minimum requirements are understood/met to the full satisfaction of the Owner:

- (1) The Owner nor the Engineer in no way suggests or implies that a blasting permit can be obtained for the entire project or any part of the project in the Contractor's name or the Owner's name. The Contractor shall have reviewed the project in its entirety and satisfied himself during bid time that his proposed

means and methods (i.e. blasting) are reasonable and acceptable to the agency having jurisdiction over the work.

- (2) The Contractor shall provide written documentation from the agency having jurisdiction over the work stating that the blasting permit cannot be obtained in the Contractor's (or his subcontractor's) name, but instead must be obtained in the Owner's name as a formality.
- (3) The request for a blasting permit shall be considered reasonable to the Owner in all respects.
- (4) The Contractor, on behalf of the Owner, shall comply with and adhere to all stipulations set forth in the blasting permit agreement and any other requirements set forth by the permitting agency.
- (5) Notwithstanding any other provisions contained in these Contract Documents, and notwithstanding whether any claim alleges negligence, intention or willful injury, absolute liability or any other theory of recovery, Contractor shall indemnify and hold harmless Owner, its directors, agents and employees, engineer, engineer's consultants, agents and employees, or any of them from and against all claims, damages, losses and expenses, including, but not limited to, attorney's fees, arising out of or resulting from blasting activities, the use, transportation, or storage of explosives generally or any other dangerous material or ultra-hazardous activity.
- (6) The Contractor shall be fully responsible for preparing and providing all permit applications, all necessary documentation, maps, sketches, additional insurance, bonds, indemnifications, etc. as may be required by the permitting agency and/or Owner to obtain the blasting permit. If required by the Owner, the Contractor shall furnish special Protective Public Liability and Property Damage Insurance in an amount specified.
- (7) The Contractor shall be fully responsible for all costs resulting from special or supplemental permits for his means and methods of construction such as blasting permits.
- (8) The Contractor shall execute any supplemental agreements or amendments to the Contract Documents that may be required to fully satisfy the Owner regarding the Contractor's complete responsibility and overall liability for the blasting operations.
- (9) The Contractor shall perform pre-blast surveys, seismograph testing, and any other activity required to ensure no damage to surrounding property. When

required by the Owner, the Contractor shall submit a complete blasting plan sealed by a professional engineer in the state where the work is to be performed.

- (10) The Contractor shall only employ experienced blasting professionals to perform the pre-blast surveys, seismograph testing, blasting plans, and all other activities associated with the blasting operations. The Contractor shall provide the resumes of the companies and individuals actually performing the pre-blasting and blasting activities when requested by the Owner.
- (11) The Contractor shall be fully responsible for the replacement and/or repair of all existing construction, utilities, or facilities damaged in the execution of work under this Contract.
- (12) The Contractor shall furnish releases from all authorities affected by the work before final acceptance of the work under this Contract.
- (13) The coordination, timing, and the overall schedule of the permitting process shall be the full responsibility of the Contractor to ensure all work is completed within the allotted Contract Time set forth in the Special Provisions. Any permitting activities requiring the Owner's participation shall be coordinated well in advance by the Contractor and sufficient time shall be allotted for such activities.

SECTION VIII PROSECUTION AND PROGRESS

VIII.1 SUBLETTING OR ASSIGNING OF CONTRACT

The Contractor shall perform the Contract under his direction and responsibility. A Subcontractor shall be recognized only as an employee or agent of the Contractor and his removal may be required by the Owner.

VIII.2 PROSECUTION OF WORK

The Contractor shall begin the Work under the Contract within ten (10) calendar days after issuance of the Notice to Proceed. He shall give the Engineers notice to start work at least seventy-two (72) hours before beginning work. The Contractor shall notify the Engineers twenty-four (24) hours before he expects to undertake particular construction or testing.

Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work. The Contractor shall employ an ample force and provide adequate construction equipment to insure its completion within the Contract time. The Contractor shall properly plan, coordinate, and schedule all work to insure completion within the Contract Time.

All work shall receive the personal attention of the Contractor or of a competent superintendent who shall have authority to act for him. The Contractor shall notify the Engineers of the person authorized to act as superintendent. The Contractor shall have his superintendent on site at all times when work is being performed. The superintendent shall be a full time employee of the general contractor and not of a subcontractor. Any employee of the Contractor or Subcontractor found by the Owner to be incompetent, shall be dismissed from the work.

The Contractor shall utilize the same suppliers, equipment manufacturers, and subcontractors as he listed in the bidding documents that he submitted with his bid. The Contractor shall be fully responsible for all work and safety practices of all his subcontractors.

To coordinate work to be accomplished with affected entities, a progress meeting will be held periodically at the project site. The progress meeting will be held on Fridays and will be attended by the Engineer's inspector, Owner's representative, Contractor's superintendent, Contractor's project manager from his home office, affected subcontractor(s), and other parties who may be invited. The Owner reserves the right to establish the time of the meeting, change frequency of meetings, change meeting days, or to cancel the meeting.

Prior to starting up any equipment, the Contractor shall insure that all tanks, piping, and equipment, etc., are thoroughly cleaned of any debris or substances that may cause damage. The Contractor shall be fully responsible for all startups. He shall insure that all operations are in accordance with the manufacturer's recommendations. If certain equipment is not to be operated or is to operate only under special procedures, the Contractor shall be fully responsible for insuring that such procedures are carefully followed. The Contractor shall lock out (with his own locks) and tag out breakers, controls, equipment, valves, and gates, etc., where needed to prevent unintended operation by others. The Contractor shall clearly communicate any special operating instructions to the Owner and Engineer in writing.

Color Selection Conference: Prior to the selection by the Owner of any colors (including but not limited to colors of paint, block, brick, mortar, louvers, soffit, gutters, roofing, doors, windows, furniture, counters, cabinets, molding, lighting, and all other materials or equipment to be provided by the Contractor), the Contractor shall furnish triplicate samples of all colors to be selected. After review of the colors by the Owner and Engineer, a conference shall be held to be attended by the Contractor, Owner, and Engineer for the Owner to make his selections. One of the samples shall be retained by the Owner, one by the Engineer, and the third by the Contractor.

The Contractor shall cooperate with the Engineer and keep him informed regarding all planned short-term and long-term activities. This includes but is not limited to all startup and testing, etc., issues. The Contractor shall notify the Engineer in advance of all such activities so that the Engineer may observe these if he desires. The Contractor shall provide the Engineer with copies of all manufacturer startup and testing reports, etc.

If changes are made on the project to accommodate the Contractor's requests, the Contractor shall be solely responsible for all associated changes, including but not limited to electrical, control, instrumentation, and SCADA changes. He shall make all such changes at his own expense to maintain the same functionality, flexibility, expandability, and redundancy etc. as provided by the original design. There shall be no extra time awarded due to agreeing to the Contractor's request.

Provide copies of all manufacturer or manufacturer representative, etc. site visit reports, startup reports, test reports, and all other manufacturer or installer reports (including but not limited to troubleshooting or service reports) to the Engineer promptly after the action occurs. If problems occur after startup or during the warranty period, and a service visit or repair, etc., is needed, the Contractor shall promptly provide to both the Engineer and Owner a written report from the service provider describing the problem and the corrective actions taken.

The Contractor shall provide temporary power and temporary utilities as needed to construct the project. All power costs and utility costs, including those for testing, shall be the responsibility of the Contractor until the Owner accepts the project or, at the Owner's discretion, begins beneficial use of the project. Regardless, the Contractor shall be responsible for extra utility costs incurred by or billed to the Owner due to the Contractor's activities or non-compliance with the Contract, or late completion.

It shall be the responsibility solely of the Contractor to properly prosecute all works in a safe manner that fully and continuously protects all people at the site(s) as well as the public. Neither the Owner or the Engineer are responsible for safety. Only the Contractor has the authority to control his work and to implement safe work practices.

VIII.3 TEMPORARY SUSPENSION OF WORK

The Owner shall have the authority to suspend the Work or parts for periods due to unsuitable weather or conditions which he considers unfavorable for satisfactory prosecution of Work, or for failure of the Contractor to perform any provisions of the Contract. No additional compensation shall be paid the Contractor for suspension. Upon suspension, the Work shall be properly protected. The Contractor shall not suspend the Work without the approval of the Owner. The Engineer will be notified twenty-four (24) hours before work is to be resumed.

Should the Work be stopped by an injunction, court restraining order, process or judgment directed to either of the parties hereto, then such delay shall not be charged against the Contract time. The Owner will not be liable to the Contractor for such delay or termination of the Work. If it should become necessary to stop work, the Contractor shall properly store materials and equipment, and properly protect the Work.

VIII.4 USE OF COMPLETED PORTIONS OF THE WORK

The Owner shall have the right to take possession of and use any completed or partially completed portion of the work, notwithstanding that the time for completing the entire work or such portions of the work may not have expired; but such taking possession and use shall not be deemed to be acceptance or substantial completion of any work not completed in accordance with the Plans, Specifications, and Contract Documents.

VIII.5 SATURDAY, SUNDAY, HOLIDAY, AND NIGHT WORK

Work on Saturdays, Sundays, Holidays, or at night may be required when special connections to existing systems are to be made, when new facilities are to be placed in service, when existing facilities are to be taken out of service, when it is more advantageous to the utilities involved, or when an emergency arises in the work schedule. In such cases the

Owner must be notified prior to beginning work. The work should be scheduled well in advance and arrangements made for prosecution of the work with minimum inconvenience to the public. All work required on Saturdays, Sundays, Holidays, or at night shall be so performed without additional expense to the Owner. Maintenance work normally required for protection of persons, or for protection of the work or property, will be permitted at any time. No equipment or system where controls or any other complicated processes are involved shall be placed in service on Friday, Saturday, Sunday, observed Holidays, or any day before observed Holidays without the consent of the Owner.

VIII.6 CONSTRUCTION SCHEDULE

The Contractor is instructed to submit to the Engineer, prior to initiating the work but not later than ten (10) days after the execution of the Contract, a schedule of construction operations so planned as to ensure completion of the work within the time limit specified in the Proposal and in the Contract Agreement. The maintenance of such schedule in order to fulfill the terms of the Contract Agreement is the responsibility of the Contractor, and he may employ such reasonable and proper measures, subject to other conditions of these Documents, as he deems to be required to expedite the work and to ensure that it will be fully and satisfactorily completed within the stated time limit. The Contractor shall not be allowed additional compensation for employment of such measures.

The Contractor shall show in the schedule the proposed dates of commencement, completion, and cost (if cost was not delineated in Basis of Payment) of the various subdivisions of work comprising the project, and also shall show in the schedule the estimated amount of each monthly payment (periodic estimate) that will become due to the Contractor as he maintains the progress schedule prepared by him.

VIII.7 AVOIDANCE OF POLLUTION CONTRIBUTION DURING CONSTRUCTION OPERATIONS

The employment of all safeguards and all precautions necessary to minimize contributions of pollution to water courses during the construction operations is the responsibility of the Contractor. The proper performance of excavating and backfilling operations, the interception and diversion of surface drainage around excavated areas or areas having the soil cover disturbed, the construction of temporary terraces or dikes, and the use of silt fences or other silt retaining means will be necessary to prevent concentration of run-off over freshly excavated or backfilled areas and to minimize stream pollution resulting from soil transported in run-off from the construction site. At the conclusion of the work, and after all temporary facilities have been removed, all areas disturbed by construction operations shall be restored to as good a condition as when found, or to condition as may be specified for the particular area. The Contractor shall comply with all ADEM and EPA laws, regulations, guidelines, and permits, etc.

VIII.8 USE OF CHEMICALS

All chemicals used during construction of the project or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reagent, or of other classification, must show approval of EPA, USDA, or FDA, according to the purposes for

which the particular chemical is to be used. Application of all such chemicals and disposal of residues therefrom are dependent upon the instructions and recommendations of the manufacturer's of the respective chemicals.

VIII.9 COMPLETION DATE AND LIQUIDATED DAMAGES

The Owner will issue a Notice to Proceed to the Contractor. The Notice to Proceed will state the date upon which work shall start, and the Contractor will then be allowed the number of calendar days shown in the Special Provisions to totally complete all work. Liquidated Damages shall be as indicated in Special Provisions.

The Contractor shall proceed expeditiously with adequate forces and shall achieve final acceptance of all Work within the Contract Time. If the Contractor is unavoidably and directly delayed in progress of the Work by unpredictable circumstances created by a separate contractor employed by the Owner; by changes ordered in the Work; by unavoidable casualties; or by delay authorized by the Owner, then the Contract Time may be extended by Change Order for such reasonable time as the Owner may determine. The Contractor shall not be entitled to any reparation or compensation on account of such additional time or extension of time. Change to specific work element may only constitute an increase time for that work element and may not necessarily increase the time for the entire project. Time extension will be allowed only if the justifiable delay directly affects the Contractor's schedule for the entire project. In such case, the time extension shall be only for the direct extra time required due to the change itself. No extra time shall be allowed for the Contractor's failure to address the change and perform the extra work in the most expeditious manner possible. In all cases, the Contractor shall properly plan and fully perform his work in a manner to minimize any extra time required. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated and that weather conditions had an adverse effect on the scheduled construction. (See Special Provisions).

VIII.10 DEFAULT OF CONTRACT

If the Contractor fails to begin the Work within the time provided, or to perform the Work to insure its completion in the time allowed or performs the Work unsuitably, or neglects or refuses to remove materials or perform anew such work as shall be rejected as defective and unsuitable, or if it should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or if it should refuse or fail to make prompt payment to persons supplying labor or materials for the Project under the Contract, or persistently disregard instructions of the Engineer or Owner or fail to observe or perform any provisions of the Contract Documents, or fail or otherwise be guilty of a substantial violation of any provision of the Contract Documents, or discontinues the prosecution of the Work for any other cause whatsoever, or does not carry on the Work for any other cause whatsoever, or does not carry on the Work in an acceptable manner, or becomes insolvent or is adjudicated a bankrupt, or commits any act of bankruptcy or insolvency, or allows any final judgment to stand against him unsatisfied for a period of ten (10) days, the Owner may give notice by registered mail to the Contractor and Surety, of such default. If within ten (10) days after

notice the Contractor does not remedy or the Surety does not take over the work, the Owner shall have authority, without impairing the obligation of the Contract Bonds, to take over the completion of the Work. If the Contractor or Surety does not substantially begin Work and remedy the default after the ten (10) day period, the Owner shall not be obligated to make further payment to the Contractor, including any amounts which may be due for previously performed Work, if he was diligently pursuing the Work. The Contractor and his Surety shall be liable for all costs incurred by the Owner including but by no means limited to construction, administration, legal, and engineering, in completing the Work and all liquidated damages. In case the expense incurred by the Owner is less than the sum payable under the Contract, the Contractor or his Surety shall be entitled to receive the difference. In case the expense exceeds the sum payable under the Contract, the Contractor and his Surety shall be liable to the Owner in the amount of the excess. The surety shall assume all warranties required by the Contract Documents whether work is performed by defaulting contractor or contractors which complete the project.

VIII.11 OWNER MAY TERMINATE FOR CONVENIENCE

Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):

- 1) for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
- 2) for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
- 3) for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
- 4) for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

VIII.12 PAYMENTS ON ACCOUNT/PAYMENTS WITHHELD/RETAINAGE

Provide a complete and detailed schedule of values to the Engineer in a timely manner prior to the 1st payment request. The schedule of values shall be patterned after the bid items in the Contract but much more detailed. This schedule shall be in a format with breakdowns and amounts, etc., acceptable to the Owner. The schedule of values shall be revised until it is satisfactory to the Owner. The Owner shall not be required to make or continue payments until the Schedule of Values is acceptable to the Owner. The submittal of this schedule of values by the Contractor shall act as a certification by the Contractor that the

values reflect the total cost such that the cost associated with unperformed work items is sufficient to fully complete the work. Provide an explanation with the schedule of values explaining what work is included in each item. The schedule of values and pay request shall be revised whenever it appears that the monies remaining to be paid may not be sufficient to cover the entire cost (including overhead and profit, etc.) of the remaining work. This may result in deduction being made from items previously paid for.

Upon presentation of a verified application for payment, as the Work progresses, the Owner shall make partial payments (generally monthly) to the Contractor for the billable work performed less payments already made and less deductions for any incomplete, unacceptable, or defective work. The Contractor shall include neatly organized backup data and detailed calculations fully supporting all the items in his pay request. All such information shall be arranged in a manner required by the Engineer. The required format may vary as the project progresses. Also include totals and percentages for both total work performed to date and work remaining after the current pay request. On relocation projects reimbursable by the Alabama Department of Transportation, application for payment will be submitted by the Owner to the Alabama Department of Transportation. When reimbursement funds are received by the Owner from the State, payment will be made to the Contractor. In making partial payments to the Contractor, there shall be retained five (5%) percent of the estimated amount of work done and value of materials suitably stored on the site or suitably stored and insured offsite (offsite storage must be approved). Provided, however, after fifty (50%) percent of the project has been satisfactorily completed, no further retainage will be withheld. The calculation of percent completed shall be based on the value of work actually in place and agreed upon by the Engineer. The value of stored materials shall not be considered in the calculation of percent completed. Submittals must be approved and all comments addressed to the satisfaction of the Engineer before any payment is made on the items the submittal addresses.

The Contractor will be paid only for items listed in the "Items of Work". The Contractor shall include the cost of any and all work required, but not specifically listed, in the cost of the items listed. The Contractor shall include in the Contract Sum all allowances stated in the Contractor Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, or the Contractor chooses. Unless otherwise provided in the Contract Documents, allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts. The Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowances. Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order.

The Contractor's submittal of an Application for Payment (that is, a request for payment) shall be a certification by the Contractor that he is familiar with the work performed, has inspected the work performed, certifies that all work billed for on the current and previous applications has been completed in accordance with all the requirements of the Contract, and certifies that the status of completion indicated is accurate and that the amounts requested for payment are accurate. The Application for Payment shall be the Contractor's certification (1)

that all work billed for has been properly completed to the percentage or amount shown, and (2) that all work billed for complies fully with all requirements of the plans and specifications.

The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work. Such applications shall not include requests for payment of amounts the Contractor does not intend to pay or has not paid, where applicable to a Subcontractor or material supplier because of a dispute or for any other reason. When requested, the Contractor shall promptly provide the Engineer proof of payments made. The proof shall be a certified statement from the subcontractor or material supplier showing the invoice amounts and the amount actually received for the project. Retainage or other amounts to be paid later shall not be included in the amounts paid. The proof of payment shall be clearly stated and acceptable to the Engineer.

The issuance of a Certificate for Payment will constitute a representation by the Engineer to the Owner, based on the Engineer's observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Engineer's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon completion; to results of subsequent tests and inspections; to minor deviations from the Contract Documents correctable prior to completion; and to specific qualifications expressed by the Engineer. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Engineer has (1) made exhaustive or continuous inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

The Engineer may decide not to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Engineer's opinions the representations to the Owner required above cannot be made. If the Engineer is unable to certify payment in the amount of the Application, the Engineer will notify the Contractor and Owner. If the Contractor and Engineer cannot agree on a revised amount, the Engineer will issue a Certificate for Payment for the amount for which the Engineer is able to make such representations to the Owner. If the Contractor feels that he is entitled to be paid more, he shall promptly provide to the Engineer detailed and complete documentation demonstrating that he has earned the amounts he requested and that sufficient monies remain to be paid to fully complete all the requirements of the plans and specifications.

Retainage may be held by the Owner until final completion and acceptance of all work covered by the Contract Documents. No other escrow or deposit arrangements are

acceptable to the Owner. When maintenance periods are included in the Contract Documents, such period shall be considered a component part of the Contract and retainage will be held until the expiration of such periods.

Unless specified otherwise in the Basis of Payment, separate structures or buildings, public work, or other separately identifiable divisions of the Contract in regard to which a separate price has been stated in the Contract Documents or can be separately ascertained, are integral parts of the complete project, and the Owner will not release retainage or make payment in full or separate divisions even though that part of the project may be complete, accepted, and in full service until the entire project and all components thereof have been completed, tested, accepted, and are in satisfactory service.

All materials and work covered by partial payments as provided for herein shall become the sole property of the Owner; provided, however, the Contractor shall not be relieved from the sole responsibility for the care and protection of materials, equipment, and work upon which payments have been made and for the restoration of any damaged work.

When work has been determined to be unacceptable, the Owner may at any time deduct the full cost, as estimated by the Engineer, of removing the unacceptable work and replacing it with work fully meeting the requirements of the Contract. The Owner may at any time refuse to pay for any work that will be affected by the removal and replacement of unacceptable work. The Owner shall not be required to pay for, or may at any time, deduct the full cost of removal and replacement, of all affected work that is dependent on or supported by or connected to, etc., unacceptable work or work not demonstrated to be in full compliance with all Contract requirements.

When requested, the Contractor shall promptly provide full support and detailed documentation clearly showing (1) that the amounts previously paid and currently being requested are justified, and (2) that sufficient monies remain for fully completing all work items of concern. There shall be no obligation for the Engineer to approve a payment amount requested if the Contractor does not acceptably demonstrate that the item (including any associated remedial work) can be totally completed per all Contract requirements for the amount remaining. In addition to retainage, additional amounts will be withheld for start-up, testing, cleanup, grassing, price adjustments, etc., and any and all other required work until all such work is totally complete in all respects. The Contractor shall not receive full payment for a work item until it is totally complete in all respects. Payment for an item shall not preclude later withholding for that item if it is determined that the payment should not have been made or if a problem develops with the work previously paid for. In addition, the Owner may also withhold payment of the whole or any part of a verified or approved application for payment from the Contractor to such an extent as may be necessary to protect itself from loss on account of any of the following causes discovered subsequent to its verification or approvals:

- 1) Defective work.
- 2) Evidence indicating probable filing of claims by other parties against the Contractor.
- 3) Failure of the Contractor or subcontractor to promptly make payments to subcontractors or for materials, labor, food stuffs and supplies.
- 4) Damage to another contractor under separate contract with the Owner.

- 5) Assessment of liquidated damages or fines, fees, etc.
- 6) Overestimated quantities or percent completion from previous estimates.
- 7) Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum.
- 8) Reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay.
- 9) Persistent failure to carry out the Work in accordance with the Contract Documents.

When the above grounds are removed, applications for payment will then be verified and/or approved for amounts not previously verified and approved because of them.

VIII.13 NO DAMAGE FOR DELAY

If the Contractor is delayed, hindered, or impeded at any time in the progress of the Work for any reason or by any alleged act or neglect of the Owner, or the Engineer, or by an employee of any of them or by a separate vendor, manufacturer or Contractor employed by the Owner, or by changes ordered in the scope of the Work, or by other causes beyond the Contractor's control, then the Contract Time may be extended at the sole discretion of the Owner by Change Order for such reasonable time as is agreed to by the Owner. However, notwithstanding any other provisions in the Contract Documents, and whether contemplated or not, and whether or not arising by active interference; the Owner, Engineer, and their respective agents and employees shall not be liable for any damages for delay whether for direct or indirect costs, extended home office overhead, idle or inefficient labor or equipment, cost escalations, or monetary claims of any nature arising from or attributable to delay by any cause whatsoever. The Contractor's sole and exclusive right and remedy for delay by any cause whatsoever is an extension of the Contract Time but no increase in the Contract Sum.

SECTION IX PROJECT COMPLETION

IX.1 SUBSTANTIAL COMPLETION

"Substantial completion" shall be that degree of completion of the entire Project, unless otherwise provided for, as evidenced by the Engineer's written notice of substantial completion, sufficient to provide the Owner, at its discretion, the full-time use of the work or defined portion of the work for the purposes for which it was intended. "Substantial completion" of a Project shall be that degree of completion that has provided a minimum of 7 continuous days of successful, trouble-free operation of the entire project facilities in a "fully automatic" manner acceptable to the Owner and Engineer and with all redundant and alternative systems fully operational. The Contractor shall demonstrate that all features of the project function properly and reliably in the intended mode during this seven-day period in order for the project to be considered eligible for substantial completion. All alternative modes of operation and flexibility must be demonstrated during this period. All equipment contained in the Project, plus all other components required in the Plans and

Contract Documents to enable the Owner to operate the project facilities in the manner that was intended, shall be complete on the substantial completion date. The Project herein described is a complete Project in its entirety and shall include clean-up and other aesthetically pleasing requirements of the project. Completion of individual components of the Project cannot be considered for substantial completion until the sum total of these components are complete and thus, the components when operating properly will provide the Owner with a complete Project.

When the Contractor considers that the Project is substantially complete, the Contractor shall carefully review all requirements of the plans and specifications, carefully compare the work completed to the work required, and prepare and submit to the Engineer a detailed, complete list of all items to be completed or corrected and request an inspection for substantial completion. The Contractor shall not misrepresent the work as substantially complete when a limited investigation indicates that the work is not substantially complete. The failure by the Contractor to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. After inspection and/or if an operating facility, after a minimum of seven continuous days of successful, trouble-free operation has been achieved during startup, the Engineer may, at his sole discretion, issue a written notice of substantial completion for the purpose of establishing the starting date for specific equipment guarantees or warranties, and to establish the date the Owner will assume the responsibility for the cost of operating such equipment.

Said notice shall not be considered as final acceptance of any portion of the Project or relieve the Contractor from completing the remaining work, including any remaining performance or acceptance testing, within the specified time and in full compliance with the Contract Documents. Specifically, the issuance of a written notice of substantial completion shall not relieve the Contractor of his obligation to promptly remedy any omissions and latent or unnoticed defects in the Project covered by the written notice of substantial completion.

IX.2 FINAL INSPECTION

After the Contractor properly completes all work on his detailed list of items to be completed or corrected, he shall again carefully review all requirements of the plans and specifications and carefully compare the work completed to the work required by the plans and specifications. He shall complete any work not completed in accordance with the plans and specifications, as well as any other required work that may be brought to his attention by others. When all work is complete, the Contractor shall notify the Engineer and Owner that his work is complete. The Contractor shall not misrepresent the work as complete when a limited investigation indicates that the work is not complete.

Upon notice from the Contractor that its work is complete, the Engineer and/or other representatives of the Owner shall make a final inspection of the Work or Project and conduct test or tests, if applicable. The Engineer shall notify the Contractor of all apparent and/or visible instances where the Project fails to comply with the Plans and Specifications and Contract Documents, as well as any defects he may discover (punch list). The Contractor shall immediately make such alterations as are necessary to make the Project comply with the Plans and Specifications and to the satisfaction of the Engineer.

Verification, approval, inspection, final inspection, issuance of final acceptance, issuance of final certificate of payment, action or approval by the Owner upon the final certificate of payment or final acceptance shall not in any way relieve the Contractor of responsibility for faulty materials or workmanship.

IX.3 FINAL PAYMENT

When the Contractor shall have completed all of the work in accordance with the terms of the Contract Documents, he shall certify to the Owner that he has completed all of the work. The Contractor shall also prepare and submit to the Owner a Final Request for Payment in an amount which shall be the Contract Amount plus all approved additions, less all approved deductions and less previous payments made. The Contractor shall give "Notice" of the completion of the work by an advertisement in a newspaper of general circulation published within the City or County in which the work has been done, for a period of four successive weeks. A final payment shall not be made upon the Contract until the expiration of 30 days after the completion of the "Notice". Proof of publication of the "Notice" shall be made by the Contractor to the authority by whom the Contract was made by affidavit of the publisher and a printed copy of the "Notice" published. If no newspaper is published in the County in which the work is done, the "Notice" may be given by posting at the courthouse for 30 days, a proof of same shall be made by the judge of probate, sheriff, and the Contractor.

When the Owner and the Engineer have completed a review of the Work and of the request for final payment and accepted all work, final payment of the amount determined to be due under the Contract will be made to the Contractor, provided that:

(1) Any deficiencies in the Work noted during the review shall have been satisfactorily corrected.

(2) The Contractor shall have submitted certified evidence that all payrolls, all amounts due for labor and materials, and all other indebtedness connected with the work have been fully paid and satisfied, and that there are no outstanding claims or demands against the Contractor in any manner connected with the work.

(3) Proof of publication of "Notice" of completion in newspaper in manner described by law.

(4) A properly executed and duly certified voucher for payment, verified by Engineer or other representative.

(5) A release of all claims and claims of lien against the Owner and its agents and Engineer from the Contractor and all major subcontractors (the Owner may waive the requirement for subcontractor releases) arising under and by virtue of the Contract, on form provided by the Owner, duly executed by the Contractor and with the consent of the Surety. The Contractor may specifically exclude claims of the Contractor from the operation of the release if specifically excluded therefrom in stated amounts and the reason therefore. The Contractor may with the consent of the Owner representative, if any subcontractor refuses to furnish such a release, furnish a bond with surety satisfactory to the Owner representative to indemnify against such claims.

(6) In accordance with ALA.CODE §39-2-12(c), a non-resident Contractor

shall satisfy the Owner that he or she has paid all taxes due and payable to the State, the Owner and all applicable political subdivisions.

Upon Project completion and acceptance by the Owner's representatives, but not before the expiration of thirty (30) days after completion of the "Notice", the amount due the Contractor pursuant to the Contract Documents shall be paid. On relocation projects reimbursable by the Alabama Department of Transportation, application for payment may be submitted by the Owner to the Alabama Department of Transportation. When reimbursement funds are received by the Owner from the State, payment will be made to the Contractor.

IX.4 ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE

The acceptance by the Contractor of the final payment shall release the Owner, the Engineer, as representatives of the Owner, and their officers, employees, agents, and subconsultants from all claims and all liability to the Contractor for all things done or furnished in connection with the Project, and every act of the Owner and others relating to or arising out of the work. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from obligations under this Contract and the Performance Bond, Payment Bond, and other bonds, warranties and guarantees as herein provided.

SECTION X WARRANTY AND GUARANTEES

X.1 WARRANTY AND GUARANTEE

The Contractor warrants to the Owner and the Engineer that all materials, work, and equipment furnished under this Contract will be new unless otherwise specified and that all work, materials and equipment will be of good quality, free from fault and defects in conformance with the Contract Documents. All work, materials, and equipment not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The warranty shall be for one year from the date of the Final Acceptance or the date of Substantial Completion of the full Project completed in its entirety, whichever is first. If within one (1) year from the beginning date of the warranty period, any of the work, materials or equipment is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so. This warranty includes all equipment even if the specific equipment warranty from the equipment manufacturer has expired. This obligation shall survive termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

If the Project involves a roof on a building or other structure, then the Contractor shall execute and provide the Roofing Guarantee. The guarantee shall be delivered to the Owner and Engineer prior to final payment. If the Project involves termite treatment, the Contractor shall furnish to the Owner a written warranty certifying that the applied soil poisoning treatment will prevent the infestation of subterranean termites and that if subterranean termite activity is discovered during the warranty period, Contractor shall re-treat the soil and repair or replace any damage caused by termite infestation. The warranty shall be for a period of five (5) years from the date of treatment signed by Applicator and Contractor.

X.2 CORRECTION OF DEFECTIVE WORK DURING WARRANTY/ GUARANTEE PERIOD

The Contractor hereby agrees to make, at his own expense, all repairs or replacements necessitated by defects in materials or workmanship, provided under the terms of this Contract, and pay for any damage to other works resulting from such defects, which become evident within 1 year after the beginning date of the warranty period by the terms of any applicable special guarantee required by the Contract Documents unless the Owner has previously given the Contractor a written acceptance of such defects. The Contractor shall promptly correct such defects upon receipt of a written notice from the Owner to do so. This obligation shall survive the termination of the Contract.

Unremedied defects identified for correction during the warranty period described herein before, but remaining after its expiration, shall be considered as part of the obligations of the warranty. Defects in material, workmanship, or equipment which are remedied as a result of obligations of the warranty shall subject the remedied portion of the Project to an extended warranty period of 1 year after the defect has been remedied. Repetitive malfunction of equipment shall be cause for equipment replacement and an extension of the guarantee period for the equipment to a date 1 year following acceptable replacement. The Contractor further assumes responsibility for a similar guarantee for all work and materials provided by subcontractors or manufacturers of packaged equipment components.

The Contractor also agrees to hold the Owner and the Engineer and employees harmless from liability or damages, including the Engineer and attorneys' fees, and cost and expenses of litigation of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written order for same from the Owner or its agent. If the Contractor fails to make the repairs and replacements promptly, or in an emergency where delay would cause serious risk, or loss, or damage, the Owner may have the defective work corrected or the rejected work removed and replaced, and the Contractor and his Surety shall be liable for the cost thereof. The Contractor during the warranty period shall repair/replace as rapidly as possible any and all equipments, materials, etc., which are found to be defective. Should any items not be repaired/replaced within thirty (30) days from the time it is reported to the Contractor by the Owner, then the warranty period shall be extended on that item for a period equal to the time that the item has remained defective, incomplete, or inoperable as determined by the Owner. The Contractor must certify that the item has been corrected. The Owner's rights under this Article shall be in addition to, and not a limitation of, any other rights and remedies available by law.

Nothing contained in this Section shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in this Section relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

STANDARD
SPECIFICATIONS

**STANDARD SPECIFICATION
FOR
CONCRETE**

SECTION 1

1.0 DESCRIPTION

Concrete shall be comprised of cement, fine aggregates, coarse aggregate, and water, and shall be so proportioned and mixed as to produce a plastic, workable mixture. The relative stiffness of the mix may be varied within the limits hereinafter specified so as to secure the mix most suitable for the particular location and/or condition of placement. Concrete shall be Class "A" or Class "B" as defined below and required under Composition:

(a) Class "A". All reinforced concrete shall be Class "A". If the structure is to contain liquid, the concrete shall be watertight.

(b) Class "B". Concrete not requiring reinforcing. In general, the use of Class "B" concrete shall be limited to plain underground, unreinforced concrete for pipe bracing, skin coats, and concrete fill.

2.0 COMPOSITION

Concrete shall be "ready mixed" apportioned by the approved design mix. Concrete shall contain not less than 6-1/2 bags of approved cement per cubic yard. The slump shall indicate "the mix" is workable and not be less than 3-1/2 inches nor greater than 5. The Engineer may require additives to provide a workable mix. Concrete shall be inspected by a laboratory designated by the Engineer who will test the mix and make test cylinders. Method of measuring the materials shall be approved by the Engineer.

3.0 MATERIALS

(a) Cement. Cement used shall be Portland Cement of an approved brand. The cement shall meet Type II requirements. The Engineer shall designate a retarder, if required. Certificate of test showing the cement meets the Standard Specification of A.S.T.M. Designation C-150 with latest revisions will be required. In order to ensure uniformity of color and appearance, the same brand of cement shall be used in the mixes for all concrete on the project. Portland Cement shall be of color acceptable to the Engineer.

(b) Fine Aggregates. Fine aggregates used shall be clean, sharp and conform to the Standard Specification of A.S.T.M. Designation C-33. No screening or crushed slag will be permitted as substitute for sand in concrete or mortar work. Fine aggregate shall be graded to the following limits:

Passing 3/8" Sieve	100%
Passing #4	95 to 100%
Passing #6	45 to 80%
Passing #50	10 to 30%
Passing #100	2 to 10%

(c) Coarse Aggregates. Coarse aggregate shall consist of either crushed stone, or gravel, and the aggregate shall be clean, hard, durable, and free from foreign matter. The aggregate shall conform to the Standard Specification A.S.T.M. Designation C-33. Coarse aggregate shall be graded as indicated below. The design mix shall set the gradations of the coarse aggregate for the particular project. Unless stated differently, the gradation shall be 1-inch maximum except where smaller gradation may be needed, such as in beams with congested steel.

Percentages Passing Square Openings

Designated Size	2-1/2 Inch	2 Inch	1-1/2 Inch	1 Inch
2" to #4	100	95 to 100	---	35 to 70
1-1/2" to #4	---	100	95 to 100	---
1" to #4	---	---	100	90 to 100
3/4" to #4	---	---	---	100
1/2" to #4	---	---	---	---

Designated Size	3/4 Inch	1/2 Inch	3/8 Inch	#4
2" to #4	---	10 to 30	---	0 to 5
1-1/2" to #3	35 to 70	---	10 to 30	0 to 5
1" to #4	---	25 to 60	---	0 to 10
3/4" to #4	90 to 100	---	20 to 25	0 to 10
1/2" to #4	100	90 to 100	---	0 to 15

(d) Water. Water used shall be clean, potable and free from harmful amounts of acids, alkalis or organic materials. No water shall be added at the job site unless approved by the Engineer.

4.0 AIR ENTRAINED CONCRETE

Concrete used shall be air entrained. When required or directed by the Engineer, concrete shall contain an admixture for controlling the setting rate. The addition of air will be by approved admixtures or by approved Portland Cement containing admixture, conforming to A.S.T.M. C-260 or latest revision. Testing shall be in accordance with A.S.T.M. Standards.

In general, the air content shall conform to the following except when changed by the Engineer or the Testing Laboratory responsible for the design mix and plant inspection.

<u>Coarse Aggregate in Inches</u>	<u>Air Content Percent by Volume</u>
1-1/2, 2 or 2-1/2	5% +/- 1%
3/4 or 1	6% +/- 1%
3/8 or 1/2	7-1/2% +/- 1%

If the air content is not satisfactory, the Contractor may be required to remove and replace the concrete without extra compensation or the concrete may be refused to be poured. Concrete refused at the site cannot be used and must be permanently removed from the job site.

5.0 MIXING AND PLACING

Ready mixed concrete shall be in accordance with ASTM Specification C-94. Concrete will be conveyed to the place of deposit by methods which prevent the separation of materials. Concreting shall be carried on as a continuous operation until a section is completed. No dry to set joints will be allowed.

Concrete will be compacted during placing and shall be thoroughly worked around reinforcement, embedded fixtures, and into the corners of the forms. The number and types of the tools or equipment utilized in the compaction process shall be such that compaction can keep pace with the pouring and that compaction can be completed while the concrete is still fresh and plastic. Before beginning any pour, the Contractor shall have on hand and readily available at the location of the pour, spare tools and equipment, in good working condition that can be immediately utilized in case of the malfunction of any tools or equipment being used. Mechanical vibrators will be required with backup vibrators onsite.

Before placing concrete, debris, ice, frost, and water shall be removed from the reinforcement and forms. Forms shall be thoroughly wetted immediately prior to placing concrete, except when freezing. Concrete shall not be poured when the temperature is below 40°F or 45°F and falling unless measures and facilities for protection of the concrete have been provided. Such measures and facilities shall be subject to concurrence of the Engineer and may include insulation of the poured structure, protective covers, and heat source capable of maintaining temperature of the poured structure (forms and rebar) at 50°F or above. Concrete, at the time when deposited in forms or slabs when protection is required, shall not have a temperature lower than 65°F. At no time shall concrete reach a temperature lower than 50°F. The maximum temperature of concrete, at any time during its production, transportation, and placement, shall not exceed 90°F. During cold weather the finished concrete shall be protected for an adequate length of time following the pouring by maintaining the temperature at a level not lower than 50°F.

After concrete has been placed, it shall be protected against loss of moisture and against damage from succeeding construction operations. Water curing methods shall be employed for all concrete unless other methods are specified herein, shown on the drawings, or concurred with in writing by the Engineer. Water used for curing shall be potable water meeting the requirement of ASTM C 94 with no properties that would stain concrete. Concrete curing methods shall be in accordance with ACI 308. Curing shall be achieved through immersion, ponding, or continuous sprinkling through soaker hoses or lawn sprinklers as required by the type of structure. Concrete surfaces shall be kept continuously wet throughout the curing period. Alternate wetting and drying of concrete surfaces shall not be allowed. Curing shall be continuous for a minimum of 7 days.

Concrete poured in beams, columns, and walls shall be kept wet by continuously sprinkling concrete with water until forms have been removed. After forms have been removed, concrete shall be wetted continuously by one of the above methods for a minimum of 7 additional days. Additional water curing time may be required by the Engineer when environmental conditions are adverse or when daytime temperatures exceed 95°. Concrete for slabs and footings shall be kept continuously wet through sprinkling, ponding, or

immersion for a minimum of 7 days. Additional water curing time may be required by the Engineer when environmental conditions are adverse or when daytime temperatures exceed 95°.

In locations where concrete surfaces are specified to be rubbed, concrete shall be kept wet by continuous sprinkling until rubbing has been completed and then shall be covered after rubbing has been completed. Covering shall be by the application of polyethylene sheeting. In addition to walls and other surfaces to be rubbed, the above shall also apply to exposed beams and columns.

Liquid membrane-forming curing compounds may be used in some cases after completion of the above-stated periods of wet curing, if concurred with in writing by the Engineer. Curing compounds are not permitted on surfaces receiving surface treatments or coatings or on any surface in contact with potable water treatment structures. Curing compounds shall conform to the requirements of ASTM C309, Type 2. The compound should be applied at a uniform rate as specifically recommended by the manufacturer. The method of application shall be as recommended by the manufacturer. Application of the curing compound shall follow the recommendations of the manufacturer and ACI 308. The use of curing compounds, if allowed, shall not be a substitute for the wet curing described above.

Liquid "Cure and Seal" compounds shall be used on all floor slabs in operations buildings, pump rooms, chemical rooms, maintenance buildings, filter galleries (both upstairs and downstairs), electrical buildings or rooms, valve rooms, control rooms, laboratories, offices, and other buildings, except such compounds shall not be used on slabs or portions of slabs that will receive carpet, tile, or other type of surface treatment. All slabs, whether receiving the "Cure and Seal" or not, shall be water cured. Apply compounds in accordance with manufactures recommendations and ACI 308. "Cure and Seal" compounds shall be Diamond Clear VOX by Euclid Chemical Company, or equal.

When placing concrete in walls, the concrete shall be deposited in tremies or by other approved methods to prevent segregation and the accumulation of hardened concrete on the reinforcement above the level of the concrete. The lower end of the tremie or spout shall be not more than six feet above the surface of the concrete.

All concrete shall be placed in continuous horizontal layers of such depth that no dry to set (cold) joints are formed, however not more than 30 minutes shall elapse between placing of successive layers. The depth of any layer shall not exceed two feet.

The concrete mix shall be so placed (without segregation) and compacted (without excessive vibration) that there will be no water on the surface of the finished layer or on the surface of the finished pour. Should water appear on the surface of any layer the pour shall be stopped, the water shall be removed, and the pour shall not be continued until corrective measures satisfactory to the Engineer are employed.

5.1 MIXING AND PLACING – SIDEWALKS, DRIVEWAYS AND PATHWAYS

For sidewalks, driveways and other miscellaneous pathways, concrete mix design and placement will conform to ALDOT Standard Specifications 501 and 618. Drawings may contain special requirements, for reinforcements, finishes, etc.

6.0 TEST

Certification of mill test from the manufacturer of cement and steel will be

required. The Contractor shall submit a representative sample of aggregate to a laboratory approved by the Engineer for a design mix as follows:

- 100 Pounds Fine Aggregate
- 150 Pounds Course Aggregate
- 50 Pounds of Cement
- 3 Ounces of Additive

All concrete shall be designed to test a minimum of 4000 psi in 28 days, and shall break at or above 4000 psi in 28 days, but in no case will a mix of less than 6½ bags of cement be acceptable regardless of test break results. Cylinder testing as required by A.S.T.M. C-39 will be used for testing and be at the expense of the Owner. All concrete placed on the project, unless specifically otherwise noted, shall have all the cylinders represented by the pour break at a 28-day minimum strength of 4,000 psi in order for the pours to be considered acceptable. Provide higher strength concrete or grout where required by specifications or plans or by equipment manufacturers.

The specimens (cylinders) shall be carefully prepared, stored, and protected at the project site in a manner satisfactory to the Engineer until they are ready for transportation to the Testing Laboratory. The cylinders shall be stored on a level bed in a moist environment, and shall be protected against movement, surface water, ground water, rainfall, and cold weather. The furnishing of slump cones, screeds (knife edges), and containers for the specimens shall be the responsibility of the Contractor.

7.0 WATERTIGHT CONCRETE AND TESTING

Basins, tanks, or any structure built to contain liquid shall be watertight. As soon as possible, the Contractor shall fill structure with water and if leakage should develop, the contractor shall correct leakage in a manner acceptable to the Engineer. Duration of leakage test shall be not less than 72 hours with no leakage allowed for this period for approval. The tests shall be repeated until leakage has been stopped with the work not being accepted by the Engineer until it is watertight. Before testing watertight structures, the structure roof or other bracing shall first be poured and cured and all concrete must achieve its full strength. No backfill shall be added until structure has been accepted as watertight.

Minor concrete repairs for leaking walls shall be fixed by means to stop all leakage. Major concrete cracks in walls shall be repaired by flexible pressure injected sealant or material by a specialty contractor such as Barton Southern Company who has experience in such repairs. All exposed concrete shall be re-rubbed and finished such that the entire wall has a uniform pleasing appearance.

8.0 REINFORCING STEEL

Reinforcing steel used shall be Billet Steel, Grade 60. Steel shall comply with the latest revisions for the following:

<u>Type</u>	<u>ASTM Designation</u>
Billet Steel Bars	A-615, Grade 60
Welded Steel Wire Fabric	A-185, Grade 65

<u>Type</u>	<u>ASTM Designation</u>
Dowels Across Expansion Joints	A-675, Grade 80

Reinforcing shall be properly bent and free from rust, mill scale, and other foreign substance. Reinforcing bars should not be bent or straightened in a manner that will injure the materials. Bars with kinks or improper bends should not be used. Bars shall not be bent in the field except for realignment of #7 through #18 rebar up to about a 30° bend and #3 through #6 rebar up to about a 45° bend. No bars partially embedded in concrete shall be field bent. Exposed reinforcement bars for future extensions shall be protected from corrosion and concrete splatter.

Reinforcing shall be in accordance with the Plans and approved Shop Drawings. The Contractor shall furnish reinforcing bar details and marking or erection diagrams to the Engineer for review. These shall be on the same size drawings as the Engineers' Plans, and shall be clear and legible. Any splicing, other than that shown in the Plans or Shop Drawings, shall be approved by the Engineer.

When it is necessary to splice reinforcement at points other than shown on the Drawings, the character and location of the splices shall be detailed through the submittal process for review by the Engineer. In such places the bars shall be placed in contact and securely wired. Wherever possible splices in adjacent bars shall be staggered. Lengths of splices or laps shall be a minimum 30 bar diameters unless indicated otherwise in the Drawings. In no case shall length of lap be less than that required by ACI 318 or the CRSI *Manual of Standard Practice*, latest edition.

Mechanical connections should be installed in accordance with the manufacturers' recommendations. A full mechanical connection is one in which the bars are connected to develop in tension or compression at least 125 percent of the specified yield strength of the bar. For welded splice, when required, the bars shall be butted and welded to develop in tension at least 125 percent of the specified yield strength of the bar. Welding shall conform to the current edition of "Structural Welding Code - Reinforcing Steel" (ANSI/AWS D1.4).

The clear distance between parallel reinforcing bars in a layer should not be less than the nominal diameter of the bars, 1 inch or 1-1/3 times the nominal maximum size of the coarse aggregate, whichever is greatest. Where parallel reinforcement is placed in two or more layers, the bars in the upper layers should be placed directly above those in the bottom layer with the clear distance between layers not less than one inch. All reinforcements shall be protected by a thickness of concrete as follows:

- A. For concrete deposited against the ground without the use of forms, the steel shall have 3 inches cover, except a 4 inch slab shall have 2 inches of cover.
- B. For concrete exposed to the weather or to the ground or to water or to the inside of wet wells, clearwells, etc., with the use of forms, the concrete cover over the steel shall be 2 inches.
- C. For slabs and walls not exposed to the ground or to the weather or to the ground or to water or to the inside of wet wells, clearwells, etc., the steel concrete cover shall not be less than 3/4 inch for #11 bars and smaller or 1-1/2 inch for #14 and #18 bars. Underside of slabs exposed to sewer and other harsh affects shall have 1 inch of cover for 6 inch

slabs and 1-1/2 inches for 8 inch and greater slabs.

- D. For beams, girders, and columns not exposed to the ground or to the weather, the steel concrete cover shall not be less than 1-1/2 inches.

The steel supplier shall provide bent spacers of #3 bars. Provide larger bars where needed for proper support. The Contractor shall coordinate the dimension and details, etc., with the method in which the rebars will be arranged and supported to insure proper clearance. These spacers shall be used in walls and slabs to ensure that the steel from the concrete surfaces has proper clearance as outlined above. Reinforcing shall be maintained at the required clearance from the forms during the pouring and hardening of the concrete. Chairs shall be used to maintain clearance on slabs. Concrete supports poured on jobsite may be acceptable for slabs poured against ground if the proposed method of producing and utilizing the supports is acceptable to the Owner. The use of stakes, stones, or brick to support reinforcing shall not be acceptable. Except as modified herein, or in the Plans, bar supports and spacing of same shall be per recommendations set forth in the *CRSI Manual of Standard Practice*, latest edition. Steel wire bar supports in concrete areas where soffits, slabs, or ceilings are exposed to view or are painted shall be Class 1 or Class 2, Types A or B; Class 3 shall be acceptable in other areas.

Pre-tying of steel mats shall generally not be allowed. Where allowed, it shall be the responsibility solely of the contractor to coordinate all openings through the steel and all other details. Vertical and horizontal bars of pre-tied mats shall align exactly with adjoining steel and dowels, etc. If extra bars must be cut for openings through mats due to the pre-tie operation, the Contractor shall field install full length bars to replace those extra bars cut. This shall be in addition to all other bars required by other details.

9.0 FORM WORK

The Contractor shall furnish, maintain, erect, and remove all forms, molds, centers, and bulkheads, templates or profiles, and shall furnish and maintain all screeds and bonding grooves, keyway materials or other forms necessary for construction of the concrete included in this Contract. Except as hereinafter specified otherwise, forms shall be of wood or metal, and of type and condition as approved by the Engineer. Only joints indicated in the Plans or approved in the Submittals will be permitted.

The Contractor shall be responsible for the design, erection, bracing, sealing, and finishing of the form work in such a manner as to contain and support the concrete during placement. All form work is to be well built, substantially unyielding, tight, properly spaced, set true to line and elevation, properly braced, and anchored. Forms shall be held by means of wall clamp ties. Wire ties will not be permitted. No tie shall be used which are removable and leaves a hole through the concrete section, or which leaves metal within one inch of the surface of the concrete. Form ties shall be equipped with integral waterstops.

Bevel strips shall be placed at all corners of walls, at all points where angles occur in walls and at all tops (both edges) of exposed walls. All such corners, angles, or intersections exposed to view shall be chamfered.

The inside contact surfaces of forms shall be coated with non-staining mineral oil before being set in place. For potable water structures, oils shall be approved for use in potable water applications. Oil shall not be allowed to contact reinforcing steel or surfaces to which the concrete is to be bonded. Contact surfaces of forms shall have tight, flush, watertight joints, packed and taped where required so as to prevent loss of water or paste.

Bottom edges of forms shall be set true and tight against footings or other receiving concrete surfaces, and shall be sealed to prevent loss of water or paste. Forms shall be wet before pouring concrete.

Temporary openings shall be provided at the base of wall forms, beam forms, and column forms to facilitate cleaning. All forms shall be thoroughly cleaned and washed immediately before beginning a pour, and all temporary openings shall be closed. In case of wall pours starting at the base slab or other levels below ground affected by the water tables, the Contractor shall provide pump sumps and pumps to completely remove all wash down water and any water containing silt or debris.

When forms have been erected for some time prior to a pour or have been exposed to changes in weather, the Contractor shall recheck all forms immediately before the pour, and shall make any adjustments necessary to bring the contact surfaces to true horizontal, vertical, or circular lines.

The Contractor shall provide special forms where required for openings in walls and floors for the installation of pipes, gates, flanges, and similar items. Where pipes are already in place, all pipe openings shall be securely blocked or bulkheaded to prevent entrance of concrete, paste, or laitance into the pipes. Where gates, such as flat frame sluice gates or other flat frame gates are to be installed, the wall plate in the area to be occupied by the gate shall be true and even, both horizontally and vertically in order that the gate may be installed watertight and not be warped by uneven drawdown on the gate anchor bolts.

10.0 REMOVAL OF FORMS

The removal of forms shall not be started until the concrete has attained sufficient strength to withstand any live loads that may be imposed by succeeding steps in the construction process. The length of time required between placement of concrete and removal of forms may vary with weather conditions, loading conditions, and particular construction activity in the vicinity of the recently poured concrete elements. In no case, however, shall forms be removed earlier than the following unless the concurrence of the Engineer is first secured.

Beams and Elevated Slabs	14 - 21 Days
Footings and Slabs	1 - 7 Days
Columns and Walls	3 - 7 Days

11.0 FINISHING

All concrete surfaces shall be finished to the elevation shown on the Drawings. Where surfaces of concrete pours are specified and/or indicated to have final finish other than the monolithic concrete, the monolithic pour shall be terminated at such level below the final finish elevation as is correct or suitable for the particular final finish. Those surfaces over which grout is to be placed for setting or grouting-in of machinery, equipment, bed plate, foot plates, bearing plates, etc., shall be "green-cut" and cleaned prior to the placement of grout. Surfaces specified to receive special finishes shall be prepared as hereinafter specified, or required by the Plans.

Where surfaces to be finished are covered by forms, the forms shall be removed as soon as possible (following specified minimums) to permit finishing work. Immediately following removal of forms all imperfections in the surfaces of the concrete (such as form marks, projections, fins, rough areas, honeycombed areas, pits, mismatched joint marks, tie

holes, etc.) shall be corrected by use of cutting tools, grinding tools, patching, plugging, and rubbing. Plastering shall not be permitted. Form tie holes and form bolt holes shall be immediately plugged. Where form ties or form bolts are left in the concrete, such accessories shall be equipped with integral waterstops, and the ends of such accessories shall not be closer than one inch to the surface of the concrete. The holes left in each face shall then be primed with a tack coat of grout mixed with an approved accelerator, a stiff mix of mortar with an approved accelerator tamped in the holes, and the surfaces finished flush with the concrete surfaces.

All interior and exterior concrete surfaces of walls, columns, beams, ceilings, etc., permanently exposed to view above ground, in galleries, rooms, tanks, basins, etc. (from 1'-0" below grade or the low water line upward), structures covered with grating shall have the walls rubbed to 1' below the minimum water level, and the ceiling of structures where the walls require rubbing, shall be rubbed while "green" with a carborundum stone to a smooth, consistent, and uniform even surface showing no marks, joints, pits, pockets, or form grain. All imperfections shall be corrected immediately after removal of forms. Rubbing of surfaces shall begin after imperfections have been corrected and shall be completed within five days after the removal of forms from such surfaces. All rubbing will leave concrete uniform, consistent, and pleasing appearance. If concrete is stained, etc., from subsequent operations such as repair or leaks, the entire area will be rerubbed to accomplish satisfactory results.

All interior floors shall be given a "steel trowel", monolithic cement top finish unless otherwise shown in the Plans or specified. Enough cement finishers shall be employed to complete the finishing work before the cement has taken its initial set. Where such floors are shown to be equipped with floor drains, the surfaces of the floors shall slope evenly to the floor drains. No water shall stand on the finished floors. Floors finished before completion of the work shall be protected from damage by boards, sisal kraft building paper, or other adequate means.

Floors of basins, except those where final grout finish is specified to be swept in by the operating mechanism, shall be screeded to a reasonably smooth and uniform finish with even slopes as indicated on the Drawings. The screeding work shall continue until sufficient paste is brought up to secure a uniform cement/sand (grout) appearance, free from any exposed aggregate. Grout shall be added if necessary to secure the desired appearance. Where floors of basins are indicated to be sloped to floor drains, no standing water shall remain. Floors shall be uniformly sloped as indicated on the Drawings.

Surface of exterior concrete walkways, suspended slabs, and other exterior concrete surfaces subject to foot-traffic, shall be wood float finished and then lightly crossed-broomed. Where these surfaces are indicated to be sloped for drainage, no standing water shall remain.

The Contractor shall construct all curbs, bases, and foundations required for setting equipment called for in these Specifications or shown on the Drawings. Curbs, bases, and foundation pads shown on the Drawings are for equipment of a particular manufacturer. Should equipment of other manufacturers be furnished, the Contractor shall prepare drawings showing details of curbs, bases, and foundation pads to receive the equipment furnished. These drawings shall be submitted to the Engineer for review. No extra compensation will be allowed by reason of such changes in design of such concrete items.

The treads of all concrete steps and stairs shall be finished by trowel with 3/4 inch thickness, non-slip concrete, applied as dry as practicable at the time that steps are poured, and as an integral part of same. The aggregate for this concrete finish shall contain 33-1/3 percent abrasive aggregate (3/32 inch maximum size) manufactured by the compression

and vibration process and 66-2/3 percent crushed stone (3/8 inch maximum size). This top finish shall cover the entire tread back of the non-skid nosing elsewhere specified, and shall be troweled to a smooth, even, level surface. Proportions: 2 cement, 1 sand, 3 aggregate by volume.

12.0 CONSTRUCTION JOINTS, EXPANSION JOINTS, AND WATERSTOPS

Construction joints, expansion joints, waterstops, and joint seals shall be provided at locations indicated or approved in advance by the Engineer. Changes shall be subject to the Engineer's approval. Before concrete is placed against previously poured concrete, the contact surfaces shall be cleaned until completely free of laitance, dirt, and debris. Contact surfaces shall be kept continuously moist between successive pours of concrete and shall be thoroughly wetted immediately before placement of fresh concrete.

Waterstops shall be placed at concrete joints in all structures built to contain water. Waterstops shall be PVC material, dumbbell configuration, 9 inches wide and not less than 3/8-inch thick, ribbed pattern unless shown otherwise in the drawings. Splices of waterstops will be by vulcanizing. All watertight joints, whether waterstop is required or not, will be sealed on the inside face by approved sealants similar and equal to these products: Duoflex by the Sika Corporation or SynthacalkGC2+by Pecora Corporation or equal. The joint shall be prepared (e.g., chamfered, grooved, primed, etc.) in accordance with the sealant manufacturer's recommendations. No nail or wires holes or any type of penetration will be allowed in waterstops.

All expansion joints shall be sealed with backer-rod, primer, and polyurethane sealant. In the case of slabs on grade, the complete sealing process shall be applied only to top surface of joint; in the case of vertical walls the complete sealing process shall apply to joints on both faces of the wall and joints over tops of walls; and in the case of elevated slabs and beams, the complete sealing process shall apply to joints on top surfaces, on edges, and on all exposed undersides. Backer-rod shall be of premium grade polyethylene foam or Rescor type filler material, unless specifically shown otherwise in the drawings. Primer shall be an underwater type primer suitable for the surface conditions to which the joint will be subjected. Primer will be allowed to dry thoroughly if required by the manufacturer's instructions prior to application of sealants.

All PVC waterstop shipped to the project shall be new and shall not have had a shelf-life (storage after date of manufacture) of greater than eight months. All PVC waterstop received on the job shall be used (closed in concrete on both sides of a joint) within eight months after date of manufacture. The waterstop shall be stored at the job site in an indoor location and shall be protected against direct sunlight. After the waterstop is set in a concrete pour the exposed half of the waterstop shall be protected against damage resulting from the construction operations and against sunlight. The Contractor shall so schedule his pours that the joint material (waterstop) will be completely enclosed in concrete within eight months after date of manufacture.

Expansion joints for sidewalk or paving slabs abutting structures, for floor slabs meeting columns where columns pass through floor and for concrete aprons meeting ground floor slabs shall, unless indicated otherwise in the Plans, be filled with material meeting the requirements of ASTM Specification D 1751-73 and shall consist of preformed strips of cellular fibers saturated with asphalt.

13.0 GROUT AND CONCRETE ANCHORS

Grout to be swept in as topping for floors of structures equipped with collecting equipment shall be a cement/sand mix in proportion 1:3 and having slump not exceeding 6 inches. Slump may vary according to practice of the representative of the particular equipment manufacturer. Construction grout used for closing in box-outs, filling holes in concrete, patching walls and similar applications shall be non-shrink, expanding type, and shall have a compressive strength of not less than 4500 psi. Machinery grout shall be used for setting all plates, pumps, compressors, engines, generators, and other machinery and equipment. It shall be non-shrink type, and shall have high flow at low water content, high density, and compressive strength not less than 7500 psi. All concrete anchors shall be stainless steel.

All anchors not placed in concrete before a pour will be chemically anchored or mechanically anchored in cured concrete and withstand 15,000-pound pull. The chemical adhesive anchors shall be C6+ By ITW/Red Head or equal. Mechanical anchors shall be Ramset or equal. Chemical anchors must be utilized when the anchored equipment is subject to vibration or if the anchor is subject to moisture.

14.0 FLOTATION

The Contractor shall prevent the flotation of concrete structures during construction.

15.0 FERRULES, OPENINGS, AND RECESSES IN CONCRETE

Suitable alloy-steel sleeves or wall pipe assemblies shall be set in concrete for all small piping of every kind where such piping passes through concrete walls or floors. Such sleeves or ferrules shall be set with reference to their position in the final finish. Where it is found impossible to exactly locate the position of small pipes, openings of sufficient size shall be left in the concrete to allow the necessary latitude for later locating the sleeves and pipes, and after insertion of sleeves and pipes, the holes shall be properly filled with concrete. Annular spaces between sleeves and piping in exterior walls shall be caulked with Link-Seal (or equal) assemblies.

16.0 SETTING FITTINGS, FLANGES, ANCHOR BOLTS, EQUIPMENT ETC.

Where necessary to set flanges for gates or valves, pipes, manhole frames or castings, sleeves, pipe hanger rod inserts, frames, etc., in concrete walls, floors or slabs, particular care shall be taken by the Contractor to insure that all these fittings etc. are properly set in forms, level, plumb, lined up, and properly oriented, etc., the Contractor shall use submittals and other Contractors' or special drawings. The Contractor shall set all anchors, bolts, or other steel work in the concrete forms for motors, or other machinery or equipment in accordance with installation drawings by the supplier of the equipment, or as indicated by the Engineer. Paint all aluminum such as gates, handrails, conduit where placed against concrete or dissimilar metals with approved coating for intended service to protect from corrosion.

A watertight installation shall be secured where piping passes through tank or basin walls. Wall sleeves, wall pieces, and pipe to be placed in concrete walls shall first have tar coating on outside of the pipe or fitting burned off before the pipe is grouted or monolithically cast in place. Such pipe pieces may be furnished with outside "bare".

17.0 SETTING ELECTRIC CONDUIT AND DEVICE BODIES

Electrical conduit shall be installed in the concrete work as indicated, and provision shall be made for their protection during the pouring of the concrete. Outlet boxes shall be located with reference to the final floor, wall, or ceiling finish. Device bodies shall be so secured to the forms before the concrete is poured. Any galvanized conduit in potentially wet areas require Roboy PVC coating. Aluminum conduit entering concrete shall receive a bitumastic coating.

Prior to placing conduit, the Contractor shall use approved manufacturer shop drawings to accurately determine the correct locations and dimension for all conduit stubups, electrical gear, control panels, and all other facilities requiring power, etc.

**STANDARD SPECIFICATION
FOR
SITWORK, EXCAVATION, AND EARTHWORK**

SECTION 2

1.0 PREPARATION OF SITE

Preparation of the site shall consist of the relocating, maintaining and/or removal of all fences, railings, poles, pipelines, culverts, structures, walkways, etc., located within the areas to be graded or to be occupied by new structures, pipelines, or other components of the project. Such relocations, maintenance, and/or removal may be required when the permanent use of such facilities will be required during construction or after construction, or when the temporary use of such facilities will be required. Site preparation work shall also include the provision of such drainage ditches, banks, travelways, etc., as may be required for proper prosecution and protection of the work.

Topsoil shall be stripped to a depth of not less than 12 inches from areas to be affected by the work, excavated or filled, and stockpiled for final distribution. If stored onsite for reuse, topsoil shall be placed on the site at locations acceptable to the Owner and Engineer. The Contractor shall consult with the Engineer regarding use of the site for fill areas, material storage areas, and spoil areas. The Contractor shall conserve the maximum amount of topsoil for use in final grading; avoid rendering any part of the work site unfit for future use; and maintain maximum access to the construction work, existing facilities, or new facilities. Soils testing and compaction testing shall be paid for by the Owner.

2.0 CLEARING AND GRUBBING

Clearing and grubbing shall consist of cutting, removing, burning and disposal of all trees, brush, stumps, grass, woods, roots, etc., within areas indicated to be graded, cut, filled, or occupied by structures, pipelines, or other facilities. All roots projecting from walls of excavation shall be either cut or removed so that minimum clearances of three feet from outside line of all structures, pipelines, etc., will be secured. No vegetation or other perishable material shall be left within areas of fill.

It shall be the responsibility of the Contractor to dispose of all debris resulting from clearing and grubbing operations. No materials resulting from the clearing and grubbing operations shall be left on the site unless required otherwise. Materials temporarily used to form silt barriers for erosion control shall be removed from the site after permanent erosion prevention cover is established by the Contractor.

All holes and/or depressions caused by the removal of stumps, roots, snags, etc., shall be backfilled, finish graded, and grassed. Disposal of debris shall be accomplished in such a manner as to fully comply with all applicable laws, codes, ordinances, etc.

All burning of material on the work site, when permitted, shall be performed in accordance with the "Air Pollution Control Rules and Regulations" of the Alabama Department of Environmental Management (ADEM) and with the air pollution control rules and regulations of the local authority or County Department of Health having jurisdiction over the construction site.

The burning of stumps, timber, logs, trimmings, brush, or other combustible materials where allowed shall be accomplished in such a manner that there will be no smoke or

flyash nuisance. Burning shall not be initiated when atmospheric conditions are such as would cause a static cover in the area. Burning shall be strictly controlled. Quantities of materials being burned shall be limited so as to prevent damage to trees and/or growth adjacent to the cleared area, or to facilities or structures located in the surrounding area.

Trees, undergrowth, and ground cover outside of the construction areas or limits shall not be damaged or disturbed. Any tree scarred by equipment shall be immediately repaired and painted with approved asphaltic coating material. All damaged limbs shall be pruned by a clean cut and cut shall be painted with approved asphaltic coating material. Damaged undergrowth shall be pruned and treated. All areas disturbed or damaged by the Contractor's operations shall be restored to their original condition or as a minimum as specified.

3.0 SITE GRADING

All excess material or material which is unacceptable for use as fill or backfill shall be removed from the site and disposed of at the Contractor's expense. Final grading on the site, except over areas to be occupied by structures, walks, roadways, paved areas, etc., shall be of such material as will support vegetation. The entire area disturbed by the construction operations shall be finish graded, restored, and grassed. All fill material, not specified to be crushed stone, placed in areas to be occupied by roadways, walks, embankments, dikes, or other earth structures shall be compacted to 98 percent of maximum density unless otherwise indicated on the Drawings.

4.0 EROSION AND SILTING

The Contractor shall plan his site work and construction operations in such a manner as to effectively control soil erosion and runoff. The Contractor shall prevent pollution of streams and/or storm drains as would result from silt or soil runoff, or as would result from any material used in the construction operations such as oil, grease, paints, chemicals, fuels, solvents, or any construction debris. The Contractor shall obtain and comply with any permits and regulations required by ADEM or other agencies.

The Contractor shall intercept and block drainage from the construction site by means of silt fences, silt barriers, and sedimentation pools as required. Silt fences, wherever used on the site, shall consist of hay bales securely fastened in place or of suitable permeable barrier fabric designed to filter water and retain silt. Fabric shall be securely set in the ground and firmly held in place.

The Contractor shall be responsible for obtaining necessary NPDES Permits for stormwater discharge from the construction site(s) for all work described in these Specifications and shown on the Drawings. It shall be the Contractor's responsibility to meet all requirements and obligations of the Permit. All costs associated with making the application for the permit and for meeting the requirements of the Permit shall be borne by the Contractor.

5.0 CLEANING UP AND RESTORATION OF SURFACE FOR GRASSING

The Contractor shall maintain the construction and disturbed areas. All disturbed areas shall be restored to their original condition. Traveled areas shall be maintained in a passable condition by crushed stone or temporary paving as required at the Contractor's

expense. All construction work shall be performed within reasonable limits around the areas of the work. All ground surface areas within the project construction limits shall be finished graded and grassed. All cut banks, slopes, or other areas outside of the construction limit that have been disturbed by the Contractor's construction operations shall also be graded and grassed.

The Contractor shall dispose of excess material as specified herein, and shall remove all rubbish, trash, and surplus construction materials from the site. Areas, sections, or portions of the work site within which construction work has been completed prior to beginning of final grading and grassing, shall be protected from erosion by employment of temporary control measures such as seeding and mulching or seeding and netting. All temporary erosion control and pollution control features installed by the Contractor shall be maintained by the Contractor prior to and following final grading and grassing.

Where trenches are excavated across raw land, undeveloped areas, pastureland, grassed areas, etc., the material placed in the top foot of backfill for such trenches shall be selected so as to be suitable for support of vegetation as found or as hereinafter specified. Where trenches are cut through finished lawns of bermuda, zoysia, centipede, or other types of lawn grasses, the top soil shall be dressed and fertilized, and the top of the trench adequately prepared for placement of sod matching the type grass removed.

Before placement of topsoil, the subsoil shall be loosened to a depth of not less than four inches but not greater than eight inches, the surfaces shall be cleared of all rock one inch or larger in size, all construction debris, or other objectionable material. The topsoil, previously removed and stored, shall then be placed over the prepared subsoil. The depth of the topsoil shall be sufficient to allow for natural settlement, so that after such settlement has taken place the surface of the topsoil layer will conform to the finished elevations and contours shown on the Drawings.

Should the stockpile of topsoil accumulated from the trenching operations not be adequate for supplying the quantities of topsoil required for preparation of the areas described hereinabove, the Contractor shall furnish, at his expense, topsoil from other sources to meet any deficiencies. Topsoil preparation shall consist of loosening the soil by discing, harrowing, or other approved methods. On areas having a slope of 3:1 or flatter, the soil shall be loosened to a depth of approximately three inches; and on slopes steeper than 3:1, the soil shall be merely roughened to a depth of approximately one inch. All clods, loose stones, and other foreign materials which are larger than one inch in any dimensions shall be removed. All gullies and washes that develop in the loosened soil prior to seeding shall be repaired. Seeding shall immediately follow soil preparation so as to avoid both compaction and/or wash by heavy rainfall and crust formation by sunbaking. Seeding will not be permitted on hard or crusted soil surfaces.

After preparation of topsoil, the Contractor shall immediately proceed with the grassing work. All materials used shall conform to the requirements in these Specifications under "Grassing".

If the construction work in any areas or portions of the work site should have been completed prior to completion of other construction work on the site, and the surface of the ground over and around such completed construction work will not be disturbed by the continued prosecution of other construction work within the project site, the Contractor may elect to perform the finish grading, ground preparation, and permanent grassing over such areas. The Contractor shall understand, however, that all permanent grassing work done prior to the undertaking of the final grading, ground preparation, and permanent grassing of the project site after all construction work has been completed shall be at this own risk. The

Contractor shall be responsible for maintenance of temporary grassing or any permanent grassing installed prior to the undertaking of final grading and permanent grassing.

6.0 RIP RAP

Rip rap shall be placed in the locations shown on the Drawings. The areas, widths, and lengths shown for rip rap coverage are the minimums required. Field conditions or changes in field conditions may dictate that the coverage at a particular location be decreased or increased.

Rip rap shall be stone conforming to the requirements of AHD Specifications Section 814.01, Class 2 rip rap. Rip rap material shall consist of reasonably well-graded stones ranging in weight from approximately 10 pounds to approximately 200 pounds, with not over 10 percent weighing over 200 pounds, at least 50 percent over 80 pounds, and not more than 10 percent weighing less than 10 pounds. Rip rap bedding, where shown to be required, shall consist of gravel or crushed stone AHD Size #467. Thickness of bedding shall be as shown on the Drawings.

Rip rap shall be placed in accordance with AHD Specifications Section 610 for placement of Class 2 rip rap. Rip rap shall be placed in such a manner as to produce a reasonably well-graded mass of rock having the minimum practical percentage of voids. Rip rap shall be placed to its full course thickness in one operation in a manner that avoids displacement of the bedding material. The finished rip rap shall be free from objectionable pockets of small stones and clusters of large stones. Dumping of rip rap will be allowed provided mechanical equipment is used to dress the stones to a reasonably uniform slope.

No extra payment for rip rap deposited contrary to the locations shown on the Drawings will be made unless requested in writing by the Owner and/or Engineer. The Contractor shall maintain the rip rap protection until the project is accepted and any material displaced by any cause prior to acceptance of the project shall be replaced at the Contractor's expense.

If shown on the drawings, the Contractor shall furnish and install a geotextile fabric in the locations shown on the Drawings prior to the placement of the rip rap. The geotextile shall be of nonwoven construction. The fabric shall be mildew, insect, and rodent resistant and shall be inert to chemicals commonly found in soil. The geotextile shall be furnished in a protective wrapping which shall protect the fabric from ultraviolet radiation and from abrasion due to shipping and handling. The fabric shall be ultraviolet stabilized.

The embankment stabilization fabric shall be placed in the manner described and in accordance with the manufacturer's recommendations. The surface to receive the geotextile shall be prepared to a smooth condition free of obstructions, depressions, and debris. The fabric shall be placed loosely, not in a stretched condition. The rip rap shall be placed so that the geotextile is not punctured. The rip rap shall completely cover the fabric.

The fabric shall be placed on the slopes so as to provide a minimum overlap of 18 inches. The geotextile shall be placed either parallel or vertical to the direction of the flow. If placed parallel, the upstream or higher panel shall overlap the downstream or lower panel. At the top of the embankment the fabric shall be keyed into the ground a minimum of 18 inches. If a cushion layer is placed, the bottom toe shall be finished by lapping the fabric back onto the cushion layer and securing with rip rap. The cost of furnishing and installing the geotextile fabric in accordance with the Plans and Specifications shall be included with the rip rap.

7.0 EXCAVATION - GENERAL

Excavated materials which are suitable for incorporation in the embankment and berms or other fills or ditches shall be placed directly therein, or stockpiled and subsequently used in the embankment, or other fills. The Contractor shall conduct grading operations in such a manner as to allow ample quantities of "Selected Soils" to be held in reserve or stockpiled, as necessary, to provide the required materials for backfilling or filling where allowed. No direct payment will be made for such necessary manipulation as doubled handling or hauling. Excess or unsuitable material which is not needed or inadequate for construction shall be disposed of as approved by the Engineer. All costs associated with the removal and disposal of materials and all costs associated with the restoration of surfaces of disposal areas shall be included in the unit prices and/or lump sum prices bid for the work under the Contract. There shall be no extra cost to the Owner for such removal, disposal and surface restoration work. There is no pay item for backfill and the Contractor shall include the cost of backfill in the cost of the structure.

All excavated materials shall be stored in a manner that will not cause damage to adjacent properties or environment nor obstruct access to any new or existing facilities. Drainage lines shall not be obstructed nor shall natural drainage of the surrounding ground be altered or obstructed.

8.0 EARTH EXCAVATION - DEFINITION AND GENERAL REQUIREMENTS

"Earth Excavation" shall include the removal, reuse and/or disposal of all materials, excluding those specified under "Clearing and Grubbing" and "Rock Excavation - Definition and General Requirements." Rocks and boulders one cubic yard or less in volume shall be classified as earth. Excavated materials which are suitable for incorporation in fills, embankments, backfills, berms, etc., shall be placed directly therein, or stockpiled and subsequently used. Excess or unsuitable materials shall be disposed of by the Contractor.

Earth excavation for structures shall be completed such that all footings, foundations, floor slabs, etc., bear on firm undisturbed soil, rock, or engineered/compacted fill. If, at the elevations shown on the Drawings, soil over the area to be occupied by a structure is found to be unsuitable for supporting the design load, the Contractor shall remove such soil and replace it with material placed and compacted in accordance with the Plans and these Specifications.

Earth excavation in trenches for pipe shall be open cut, unless otherwise shown in the Plans. Trenches shall be excavated to the depths shown in the Plans or as required to secure the specified minimum cover over the pipe. Boulders, large stones, rock or shale meeting the definition of "Earth," shall be removed from around all pipe to provide bedding, backfill, and compaction clearances indicated in the Plans and these Specifications.

9.0 ROCK EXCAVATION - DEFINITION AND GENERAL REQUIREMENTS

Rock excavation shall consist of the loosening, removing, and disposing of all rock, solid limestone or sandstone in original bed, in well-defined ledges, or in boulder form. It shall include all solid rock which cannot be removed until loosened by blasting or use of a track excavator mounted ram hoe. Boulders having a volume of more than one cubic yard shall be classified as rock. Material that can be loosened, separated, or ripped by means of heavy duty power tools or excavating equipment shall not be classified as rock. Unless

identified in the Plans for use in the work or disposal on the site, all excavated rock shall be disposed of by the Contractor.

Where rock is the supporting material for structures, the Contractor shall expose and clean all foundation areas as required for inspection and evaluation of bearing conditions. All rock seams, voids, or fissures in the exposed areas shall be filled with crushed stone of suitable gradation.

Rock excavations in trenches for pipe shall be open cut unless otherwise shown in the Plans. Trenches shall be excavated to the depths shown in the Plans or as required to secure the specified minimum cover over the pipe. Rock shall be removed from around all pipe to provide bedding and compaction clearances indicated in the Plans and these Specifications.

10.0 BACKFILL FOR STRUCTURES

Lumber, rubbish, debris, braces, etc., shall be removed from all excavations prior to backfilling. Suitable backfill shall be free of topsoil and organics, reasonably dry (within limits necessary for compaction), and free of large stones or rocks. Backfilling shall not begin without prior approval of the Engineer. Backfill containing rock larger than three inches in any dimension shall not be used within three feet of structures. Backfill containing rock too large to be placed in eight inch lifts, shall not be used for backfill or embankments except upon approval of the Engineer. If materials excavated onsite are unsuitable at the time they are required for backfilling, or the quantity of material is insufficient, the Contractor shall provide suitable backfill materials.

Contractor shall, when necessary, provide adjustments to the natural moisture of soils before compacting. In general, backfill soils should be aerated or moisture conditioned to maintain the moisture content within two percent of the optimum moisture content. Backfill shall be placed in thin loose lifts and mechanically compacted to prevent settlement to a minimum of 95% standard proctor (ASTM D-698, latest revision) 100% compaction shall be required under structures or when shown on Drawings. For compacted material that does not pass required testing, the Contractor shall remove the fill or backfill to the last layer which passed compaction test.

The need for aeration and drying of some of the soils may be required before they can be placed and satisfactorily compacted. The Contractor will be required to have adequate equipment to manipulate and aerate soils with excessive moisture so that placement and compaction can be expedited. No direct or separate payment will be allowed for special handling of these soils.

The Contractor shall be responsible for maintenance of backfill. The Contractor shall promptly refill areas where settlement of backfill has occurred. Backfill shall be placed with the approval of the Engineer and only after all adjacent structures have gained sufficient strength to support the backfill loads.

11.0 BACKFILL FOR TRENCHES

Backfill for pipe trenches shall be as described in the Gravity Sewer Installation specification, Installation of Pressure Pipe specification, details in the Plans and as generally specified herein. Backfilling shall not begin without prior approval of the Engineer. Lumber, rubbish, debris, braces, etc. shall be removed from all trenches prior to backfilling. Suitable backfill shall be free of topsoil and organics, reasonably dry (within limits necessary for

compaction), and free of large stones or rock. Backfill containing rock larger than one cubic foot shall not be used for backfill except upon approval of the Engineer. If materials excavated onsite are unsuitable at the time they are required for backfilling, or the quantity of suitable materials is insufficient, the Contractor shall provide backfill materials. Backfill shall be placed in thin loose lifts and mechanically compacted to prevent settlement to a minimum of 95 percent standard proctor (ASTM D-698, latest revision). Provide greater compaction where required elsewhere or called for by the Drawings.

The Contractor shall be responsible for maintenance of backfill. The Contractor shall promptly refill and restore areas where settlement of backfill has occurred. Backfill shall be placed with the approval of the Engineer and only after all adjacent structures have gained sufficient strength to support the backfill loads.

12.0 EMBANKMENT AND FILL WORK

Embankments and fills shall not be started without the concurrence of the Engineer. The material used in embankments and fills shall be free from frost, stumps, trees, roots, sod, muck, or debris of any kind. Only materials as specified herein shall be used. Fill and embankment material shall not be placed on frozen ground. Wet ground to be covered by fill shall be drained. If embankment or fill is to be placed on a surface which slopes more than 4:1, the surface shall be scarified and compacted to bond with the new material.

Compacted fills shall be constructed by depositing fill materials in successive, uniform layers of not more than eight inches in depth, loose measurement. Lifts shall be placed over the entire fill area keeping the surface of each layer parallel to the elevation of finished grade by use of blade graders. In close proximity to existing structures, leveling shall be accomplished by use of small spreaders, bulldozers, or hand methods. Each layer shall be rolled and compacted by tamping, rolling, or other suitable equipment depending upon character of material to the specified density before the succeeding layer is placed. The final layer shall be brought to elevation of finished compacted fill before topsoil is placed to conform to finished contours, cross sections or details shown on the Drawings.

Contractor shall, when necessary, provide adjustments to the natural moisture of soils before compacting. In general, backfill soils should be aerated or moisture conditioned to maintain the moisture content within two percent of the optimum moisture content. Backfill shall be placed in thin loose lifts and mechanically compacted to prevent settlement as follows: (1) areas beneath future slabs, sidewalks, structures, roads, pipelines, embankments etc. - minimum of 98% standard proctor (ASTM D-698, latest revision) (2) all areas denoted as "Spoil Areas" shall be compacted to 85% Standard Proctor Density minimum unless called to be higher elsewhere. Compacted material that does not pass required testing, the Contractor shall remove the fill or backfill to the last layer which passed compaction tests.

The need for aeration and drying of some of the soils may be required before they can be placed and satisfactorily compacted. The Contractor will be required to have adequate equipment to manipulate and aerate soils with excessive moisture so that placement and compaction can be expedited. No direct or separate payment will be allowed for special handling of these soils.

Rock large enough to prevent fill work from proceeding in eight inch lifts shall not be placed in compacted fills in areas to be occupied by structures, bearing slabs, footings, roadways, walks, etc. Rock of permissible size deposited in such fills shall be dispersed and well separated in all directions by acceptable fill material.

All sampling and testing work shall be performed by an independent testing laboratory selected by the Owner. The cost of initial sampling and testing shall be borne by the Owner. Subsequent re-testing of any samples or locations failing the initial test shall be performed at the expense of the Contractor.

13.0 UNAUTHORIZED EXCAVATION AND BACKFILLING

Whenever unauthorized excavation is beyond the lines and grades established, the Contractor shall, at his own expense, refill with suitable material, tamped and settled, to ensure the stability of the structure. The area of overexcavation shall be replaced at the Contractor's expense with select material as described in the Undercut and Foundation Construction subsection. Unauthorized excavation beneath structures shall be refilled with concrete at the Contractor's expense, if this is necessary in the opinion of the Engineer to protect the structure.

14.0 SHORING

The Contractor shall provide all necessary sheeting, shoring and bracing when soil conditions, rock conditions, or the Plans require them. Damage to existing and/or proposed structures, pipelines, utilities, etc., due to water, earth pressures, or other causes shall be repaired or replaced promptly by the Contractor at his own expense.

The Contractor is reminded that all excavation for structures, trench excavation, rock excavation and sheeting, and shoring shall be prosecuted in accordance with the protective guidelines and requirements of OSHA "Safety and Health Regulations for Construction," as set forth in the Federal Register, latest revision, and that the employment of all protective measures is at the Contractor's expense. Sheeting, shoring, bracing and sloping are methods of accomplishing the work, and such methods may vary according to the Contractor's methods of dewatering, excavating, and installing the work. All such methods of accomplishing the work are the sole responsibility of the Contractor, in accordance with the OSHA guidelines.

Should the plans or specifications require the Contractor to submit a shoring plan or equivalent, it will not be reviewed by the Engineer. Submittal of such documents is solely for record purposes that the plan was prepared by others. The Contractor is solely responsible for the safety of all shoring and excavation.

15.0 UNDERCUT AND FOUNDATION CONSTRUCTION (SELECT MATERIAL)

Where the Engineer required the earth to be undercut to a depth below the bottom of the crushed stone cushion immediately beneath structures, the undercut material shall be replaced by a foundation constructed from select material. This material will consist of (1) previously excavated earth that was selected by the Engineer and stored separately by the Contractor until used for foundation construction, and/or (2) select materials imported from off site. The Engineer shall select which of these materials will be utilized. The select material shall be adjusted, if necessary, by the Contractor to achieve a moisture content within -2 to -3 percentage points of the optimum moisture content determined from compaction tests. The foundation material shall be placed in six inch or less lifts which each lift compacted to a minimum of 100 percent or as shown on Drawings of its maximum dry density as determined by ASTM D698 (Standard Proctor). The foundation will be constructed up to the elevation of the crushed stone cushion beneath the structure.

16.0 REMOVAL OF WATER

The Contractor shall, at all times during construction, provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering the excavation or other parts of the work. The Contractor shall keep excavations and work dry until the structures or facilities to be constructed are completed and the Engineers are in agreement with the Contractor to discontinue dewatering operations. No claims for an amount of money in excess of the bid prices for the work will be entertained or allowed on account of the character of the ground in which the trench or other excavations are made, dewatering requirements or water management.

The Contractor shall complete all dewatering operations and dispose of the water from the work in a manner that will not cause damage to adjacent properties or environment, nor restrict access to any new or existing facilities. No water shall be drained into work under construction.

17.0 DISPOSAL OF EXCESS MATERIALS

The Contractor shall, unless required otherwise by the Plans, Specifications, and/or the Engineer, remove from the construction site all materials and debris resulting from the construction operations, and all material unsuitable for use as backfill or for use in restoration of the surface of the construction.

The Contractor shall make all necessary arrangements for disposal of the materials and debris described hereinabove. It shall be the Contractor's responsibility to fully satisfy the requirements of the landowners whose property he has used as disposal sites for materials and debris removed from the project site. Should such properties or disposal locations be adjacent to the project site and not of remote location, the surfaces of such adjacent lands shall be restored in accordance with the provisions of these Specifications as well as in accordance with requirements of the owner of such adjacent lands.

The provisions of these Specifications may be waived in the event that the Contractor should elect to dispose of materials and debris removed from the project site at a landfill meeting the requirements of the Alabama Department of Environmental Management and/or the local Authority having jurisdiction. In such case, it shall be the responsibility of the Contractor to dispose of the materials at the landfill in accordance with the Rules and Regulations established by the Authorities and/or Agencies mentioned hereinabove for operation of the landfill.

18.0 EXPLOSIVES

It shall be the sole responsibility of the Contractor to observe all laws, regulations, ordinances, etc., relating to explosives, including but not limited to all Federal, OSHA, State, and Local. The Contractor's attention is further directed to the General Specifications sections relating to safety, explosives, and the Contractor's responsibilities. Heavy blasting in rock which is to form a foundation shall not be permitted.

The Contractor shall ensure all persons supervising, participating, observing, or near the area of blasting operations are informed of proper procedures and properly trained. Contractor's responsible personnel shall be present and supervise all blast design, loading, and shot firing. The Contractor shall be solely responsible for following all laws, regulations, local ordinances, etc., pertaining to blasting. If more stringent than specified, these

requirements shall become the minimum standards. The Contractor shall be solely responsible for all damages to properties or persons resulting from his blasting operations.

The Contractor shall be solely responsible for all safety associated with blasting. This responsibility of the Contractor shall also include but not be limited to, all work by subcontractors, suppliers, agents, and employees, etc.

19.0 PAYMENT

The costs of all necessary, Sitework, Excavation, and Earthwork shall be included in the appropriate lump sum and/or unit prices set forth in the Items of Work - Bid Schedule.

When any individual tasks of Sitework, Earth Excavation, and/or Earthwork are listed separately in the Items of Work - Bid Schedule, they shall be bid, defined and paid as outlined below and/or described in the Basis of Payment. The Basis of Payment and plans will prevail over any discrepancies herein. All other required Sitework, Excavation, and Earthwork not listed as separate bid items shall be included in the remaining lump sum and/or unit prices set forth in the Items of Work - Bid Schedule. No payments for double hauling or handling will be made.

Unless rock excavation is clearly and specifically listed as a separate pay item in the Items of Work - Bid Schedule, it shall be considered as unclassified excavation and included in the cost of other work items. No additional payment shall be made.

Earth Excavation

When earth excavation is to be paid for on the basis of unit price bid, the limits of pay excavation shall be as follows:

- Structures - Established by unit price (per cubic yard) measured having vertical sides extending one foot beyond the outside of the structure's footings with depths measured from the surface of natural grade following clearing and grubbing to the grade lines as established by elevations shown on the Drawings for underside of structures, stone cushions, foundations, footings, bearing slabs, etc. No payments will be made for earth excavations beyond these limits unless authorized by the Engineer.
- Trenches - Earth excavation in trenches shall be included in the price bid on pipe, manholes, inlets or headwalls, etc. or included in other prices if the "Bid Schedule - Items of Work" form does not contain specific unit prices for the same.
- Others - Established by unit price (per cubic yard) measured by survey cross-section methods (following clearing and grubbing if necessary). All measurements for payment of excavation will be based on the said cross-sections or original grades regardless of any subsequent changes occurring during the work.

These same limits shall apply for estimating all earth excavation quantities whether included in the original Contract Documents or negotiated as additional work. They

shall also apply for estimating quantities for Undercut and Foundation Construction when it appears as a separate bid item(s) in the Items of Work - Bid Schedule.

Rock Excavation

When rock excavations are to be paid for on the basis of unit price bid, actual rock measurements shall be made and the limits of pay excavation shall be as follows:

- Structures - Established by unit price (per cubic yard) measured having vertical sides extending one foot beyond the outside of the structure's footings with depths measured from the top surfaces of the uncovered rock to the bottom of the rock or grade lines as established by elevations shown on the Drawings for underside of structures, stone cushions, foundations, footings, bearing slabs, etc., as applicable. No payments will be made for rock excavations beyond these limits.

- Trenches - Established by unit price (per cubic yard) calculated as follows; per linear foot of pipe installed, measured with a width of the pipe outside diameter plus 12 inches each side of pipe (i.e. pipe outside diameter plus 24 inches), and depths measured from the top of the uncovered rock to the bottom of the rock if above pipe or minimum required bedding depth of 6 inches or as required by the engineer or drawings as applicable. No payments will be made for rock excavations beyond these limits. Trench section not less than 50 feet shall be stripped for measurement.

- Others - Established by unit price (per cubic yard) measured by survey cross-section methods. Contractor shall be responsible for uncovering areas of rock for survey. All measurements for payment of excavation will be based on the said cross-sections regardless of any subsequent changes occurring during the work.

Unit prices bid shall include, but not limited to, drilling, blasting, removal and disposal. There shall be no extra payments for removal of rock with no overburden or "high rock". These same limits shall apply for estimating all rock excavation quantities whether included in the original Contract Documents or negotiated as additional work. When unusual conditions are discovered during excavation, typically indicated by the presence of seams, fissures or voids, additional excavations will be required in order that proper inspection of the foundation conditions may be made.

Undercut and Foundation Construction

Foundation Construction will be measured from the final surface required by the Engineer up to the crushed stone cushion below the footing of the structure. The measurement will extend to 1.0 foot outside the footing. Where a "Foundation Construction from Select Material" bid item is included in the Bid Schedule - Items of Work, the Contractor shall include all cost of the work described in this section in that item. Where no separate bid item is included, the cost of this work shall be included elsewhere in this bid.

20.0 GENERAL

The Contractor shall be solely and fully responsible for safety associated with blasting, excavation, and all other aspects of the construction. This responsibility of the Contractor shall also include but not be limited to, all work by Contractor, subcontractors, suppliers, agents, and employees, etc.

**STANDARD SPECIFICATION
FOR
PIPE MATERIALS**

SECTION 3

1.0 GENERAL

All fittings required for horizontal and vertical bends and deflections are not necessarily shown or called out on the drawings. Plan and coordinate pipe installation such that all required fittings and appurtenances will be available when required. When working around existing utilities, or facilities, etc. carefully spot dig for potential conflicts in a timely manner to allow adjustments to be planned and to avoid delay.

2.0 DUCTILE IRON PIPE AND FITTINGS

Ductile iron pipe shall meet AWWA and ANSI Specifications C-150, C-151 and A 21.50, A 21.51 respectively. Pressure class of ductile iron pipe shall be as indicated on Drawings.

In general, ductile iron pipe shall be furnished with push-on (i.e. boltless) joints for buried applications. The principal standard covering push-on joints shall be AWWA C111/ANSI 21.11. Restrained push-on joint pipe shall be per the specification for Restrained Joint Ductile Iron Pipe and Fittings and shall generally be required in critical buried applications such as highway crossings, creek crossings, railroad crossings, and in other locations as identified on the Drawings. The pipe joint shall be rated/certified to meet or exceed the pressure rating of the pipe itself or a higher pressure rating as indicated on the Drawings. In no case, shall the pipe joint be rated for less than 250 psi.

In general, ductile iron pipe shall be furnished with flanged joints for exposed, above-grade applications, unless shown otherwise on the Drawings. The principal standard covering ductile iron flanged pipe shall be AWWA C115/ANSI 21.15 and AWWA C110/ANSI A21.10. All pipe flanges shall meet or exceed ductile iron Class 150 or Class 300 per ASME/ANSI B16.42 or cast iron Class 250 per ASME/ANSI B16.1 as indicated on the Drawings or as required for connections to equipment, valves, fittings, etc. The flanged pipe joint shall be rated/certified to meet the pressure rating of the connecting pipe or a higher pressure rating as indicated on the Drawings. In no case, shall the flanged pipe joint be rated for less than 250 psi.

All buried ductile iron pipe shall, unless indicated otherwise, be tar coated outside. Pipe and fittings to be installed in buildings, galleries, basins, other locations where such pipe and fittings will be permanently "exposed" shall have an exterior coat of rust inhibitive primer per the Standard Specification for Painting. Wall pipes, sleeves, fittings, etc., to be installed through concrete walls shall be furnished bare or the exterior coatings removed before installing. All ductile iron pipe and fittings shall be furnished with interior cement lining in accordance with ANSI A21.4/AWWA C104, latest revision, standard thickness, with an asphaltic seal coat unless indicated otherwise in the Drawings or these Specifications.

All ductile iron fittings shall have a body and joint rated/certified to meet or exceed the pressure rating of the connecting pipe or a higher pressure rating as indicated on the Drawings. In no case, shall the fitting body and joint be rated for less than 250 psi. Unless

indicated in the Plans to be push-on joint, buried fittings shall be mechanical joint or restrained joint. Full body mechanical joint fittings shall meet or exceed AWWA C110/ANSI 21.10. Compact mechanical joint fittings and push-on joint fittings shall meet or exceed AWWA C153/ANSI A21.53. The principal standard covering mechanical and push-on joints shall be AWWA C111/ANSI 21.11. Restrained push-on joint fittings when required by the Drawings shall be per the specification for Restrained Joint Ductile Iron Pipe and Fittings.

For exposed, above grade applications, ductile iron fittings shall be furnished with flanged joints unless indicated otherwise on the Drawings. The principal standards covering ductile iron flanged fittings shall be AWWA C110/ANSI 21.10 and ASME/ANSI B16.42. Large fitting sizes including 54", 60" and 64" shall be covered by ASME/ANSI B16.42 and either AWWA C110/ANSI 21.10 or AWWA C153/ANSI A21.53. All fitting flanges shall meet or exceed ductile iron Class 150 or Class 300 per ASME/ANSI B16.42 or cast iron Class 250 per ASME/ANSI B16.1 as indicated on the Drawings or as required for connections to equipment, valves, fittings, etc. Flanged fitting joints shall be rated/certified to meet or exceed the pressure rating of the connecting pipe or a higher pressure as indicated on the Drawings. In no case, shall the flanged fitting joint be rated for less than 250 psi.

Bolting shall conform to Table 10.14 of ANSI A21.10/AWWA C110 or ANSI A21.15/AWWA C115 as applicable unless required otherwise by pressure rating requirements. Bolts for use with flat ring type gaskets between cast iron flanges shall conform to the requirements of ASTM A307-84, Grade B, hex head; and nuts shall be hex type of same grade and finish as the bolts. Bolts for use with full face type gaskets between cast iron flanges or ductile iron flanges shall conform to the requirements of ASTM A449-84a, Type 1 hex head; and nuts shall be hex type of same grade and finish as the bolts. Bolts shall also conform to the requirements of ANSI B18.2.1, and nuts shall conform to the requirements of ANSI B18.2.2. High strength bolting and nuts when required due to the pressure rating required by the Drawings or any combination of pressure rating, flange material, and/or gasket material required shall meet the requirements of ASTM A 193 Grade B7 and ASTM A 194 Grade 2H respectively.

The bolting requirements stated above shall apply except when specifically indicated otherwise and except in highly corrosive environments such as inside sewer lift stations, submerged applications, sewage valve pits, sewage/sludge tanks, or any other highly corrosive applications. For these highly corrosive applications, all bolting and nuts shall be 316 stainless steel. The bolts shall be UNC rolled thread, stainless steel per ASTM A 193, Grade B&M, (type 316). The nuts shall be heavy hex, stainless steel per ASTM A 194, Grade 8M, type 316, coated to prevent galling.

Couplings for use with grooved end joints, where specifically called for in the Plans, shall be ductile iron in accordance with ASTM 536, Grade 65-45-12. Gaskets shall be the center leg design manufactured of a nitrile compound. Bolts shall be track head design and manufactured in accordance with ASTM A-183, minimum tensile 110,000 psi. Couplings shall be Vitaulic or equivalent.

Gaskets for flanged joints, mechanical joints, and push-on joints shall meet the requirements of ANSI A21.11/AWWA C111, latest revision as a minimum. Special gaskets required to achieve high certified pressure ratings per the Drawings shall be per the recommendations of the ductile iron pipe and fitting manufacturer and shall comply with ASME/ANSI Specifications. The gasket materials shall provide the required pressure rating and withstand the expected bolt load without injurious crushing and be suitable for the service conditions. Unless indicated otherwise or required due to pressure rating, gasket materials for various service conditions shall be as follows:

- A. Water Service (up to 120° F) - SBR (Synthetic Rubber)
- B. Water Service (above 120° F) - Neoprene
- C. Wastewater Service - SBR (Synthetic Rubber)
- D. Air Piping For Blowers - EPDM

3.0 RESTRAINED JOINT DUCTILE IRON PIPE AND FITTINGS

Where required by the Plans, restrained joint pipe and fittings shall meet Specifications in the Ductile Iron Pipe and Fittings sections and shall be a boltless restrained connection to protect against separation due to thrust. Restrained joint pipe shall be flexible restrained push-on type, unless otherwise indicated. Joints shall incorporate ductile iron locking segments, inserted through slots in the bell face, providing a positive axial lock between the bell interior surface and a retainer weldment on the spigot end of the pipe. Restrained push-on joint to be equal to American "Flex-Ring" or U.S. Pipe "TR Flex".

Restraining or "Gripper" gaskets to be used to restrain slip joint pipe shall only be allowed when specifically called for in the Plans. Restraining gaskets shall contain stainless steel locking segments vulcanized into the gasket which shall in all other respects meet the requirements of standard push-on gaskets in ANSI/AWWA C111/A21.11. Restraining gaskets shall be UL listed for a minimum working pressure of 250 psi or the pressure rating of the pipe, whichever is greater. Gaskets shall be equal to American Fast-Grip or U.S. Pipe Field Lok Gasket.

4.0 RESTRAINT FOR MECHANICAL JOINT VALVES AND FITTINGS

Where required by the Plans, mechanical joint restraint shall be provided for valves and fittings. 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 A536-80. 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 ANSI/AWWA A21.11 and ANSI/AWWA C153/A21.53, latest revision. Twist-off nuts shall be used to ensure 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, Ford Meter Box Company, Uni-Flange, or equal.

5.0 BOSSES ON DUCTILE IRON PIPE

Bosses shall be ductile iron and welded to the pipe by the pipe company in the foundry. For pipe sizes 6" through 12" in diameter, a minimum of Class 52 pipe shall be used unless the pipe manufacturer recommends a higher class pipe. For pipe sizes 14" through 54" in diameter, Class 51 pipe shall be used unless a higher class pipe is recommended by the pipe manufacturer. Bosses shall be drilled and tapped for proper connection in accordance with the Standard Specifications.

6.0 POLYETHYLENE ENCASEMENT

Polyethylene wrap in tube or sheet form for piping encasement shall be manufactured of virgin polyethylene material conforming to the requirements of ANSI/ASTM Standard Specification D1248. The material requirement, if not shown on the Plans, shall be either 8 mil, low density polyethylene or 4 mil, high density, cross laminated polyethylene. Material and installation methods shall be in accordance with the requirements of AWWA C105 and the pipe manufacturer.

7.0 COPPER PIPE

Copper pipe shall be seamless copper water tube meeting the requirements of AWWA Specification 7S-CR for Type K copper water tube, Type K, hard drawn, or of ASTM Specification Designation B88-61 for seamless copper water tube, Type K hard drawn.

Class O tube may be used underground in sizes through 1-1/4". Class O tube is suitable for use with flared or compression fittings, and with solder-type fittings, provided that rounding, sizing, and preparation of tube ends is performed with the proper tools. Fittings for copper water tube, Class O, installed underground, shall be similar and equal to Mueller, Hays, Ford Meter Box Company or Swagelok (up through 1" size).

Copper water tube installed underground in sizes 1-1/2" and larger shall be Class H, furnished in straight lengths. Fittings shall be solder-type as manufactured by Mueller, Hays, or Crane. All branches from underground tube (1-1/2" and larger) shall be made by use of brass unions and copper to L.P.S. adapters. All valves installed at tees and/or crosses in piping runs shall be similarly equipped.

Copper water tube installed in buildings, vaults, galleries, etc. shall be Class H, furnished in straight lengths, and shall be installed in straight runs. An exception to the specification relative to installation of copper water tube in straight runs may be made when short lengths (not greater than 4') of tubing requiring bends and/or offsets are necessary for connection of items of equipment to water supply lines. This exception would apply only to tubing sizes 3/8" and smaller.

Fittings for tube of sizes 1-1/4" and larger shall be solder-joint type as manufactured by Mueller, Hays or Crane, except that all branches from the main run (whether from tees or crosses) shall be equipped with brass unions and copper to I.P.S. adapters. Valves are required on all branches and all valves are required to be equipped with brass unions and copper to I.P.S. adapters. Fittings for tube size 1" and smaller shall be manufactured by Swagelok or Imperial.

8.0 STAINLESS STEEL PIPE

Stainless steel tubing shall meet the requirements of ASTM Specifications Designation A269 for seamless stainless steel tubing, Type 316. All fittings for use with stainless steel tubing shall be Swagelok or equal.

Two inch and smaller stainless steel pipe shall meet ASTM A312, TP316L, schedule 40S, seamless. Stainless steel pipe 2-1/2" or larger shall be pickled and passivated by full immersion meeting ASTM A778, TP316L, as welded grade. Fittings 2" and smaller shall be screwed, stainless steel to ASTM A182, type 316 or barstock to ASTM A276, type 316. Fittings 2-1/2" or larger shall meet ASTM A774 type 316L, butt welded type, stainless steel, schedule to match the pipe, as welded grade. All ells shall be long radius unless specifically

indicated otherwise. Flanged pipe ends shall be made up of type 316L stainless steel continuously welded slip-on type rolled angle face rings. Flanges and all flange components shall be stainless steel. Flanges shall be drilled to ANSI 16.1 Class 125 standard. Piping sections shall be shop welded to the maximum extent possible for shipping and handling, field connections in addition to those indicated on the Drawings shall be flanged as described above. Bolting shall be stainless steel type 316. Gaskets shall be EPDM. Welding shall be performed using welders and procedures qualified in accordance with ASME Section IX. On exposed pipe clean all markings, stains, paint, concrete, dirt, etc. from pipe.

9.0 PVC PIPE - SMALL DIAMETER

PVC pipe and fittings for small diameter service pipe shall be rigid, polyvinyl chloride pipe and fittings meeting the requirements of ASTM Specification Designation D-1785, Type I, Schedule 80, and Commercial Standard Specification CS 207-60, Type I, Schedule 80. Pipe shall be furnished with threaded joints or glue joints for connection to fittings, companion flanges and flanged valves. Glue on glued piping and fittings (including on spare lines) shall be fully compatible with and recommended for the chemical being conveyed. Glue for chemical lines shall be weld on 724 or equal.

10.0 POLYVINYL CHLORIDE SEWER PIPE

All pipe and fittings 15" and less shall be slip joint and made from polyvinyl chloride (PVC) components as described in ASTM D-1784. The sewer pipe and fittings shall meet or exceed the requirements of ASTM D-3034 (SDR 26), Type PSM Polyvinyl Chloride Sewer Pipe and Fittings. Laying lengths shall be 13 feet minimum. All pipe 18" and larger shall meet ASTM 679 and be PS115.

The bell shall consist of an integral wall section with joints conforming to ASTM D-3212. Gaskets shall be vulcanized and comply with ASTM F-477 for Elastomeric Seals for Joining Plastic Pipe.

Each Pipe shall be marked as prescribed by ASTM Standard D-3034 of F-679 as follows: Pipe size, manufacturer's name and code, cell classification, standard dimension ratio (SDR), use (sewer pipe) and ASTM standard.

Representative samples, as directed by the Engineer, will be tested with acetone in accordance with ASTM 2152.

11.0 POLYVINYL CHLORIDE PIPE (PRESSURE CLASS)

The pipe shall be made from Polyvinyl Chloride plastic (PVC) as defined in ASTM Specification D-1784. The pipe shall conform to ASTM Specification Bell conforming to ASTM D-3139 and be approved by the National Sanitation Foundation. The pipe shall have water working pressure rating of 200 psi (SDR21) or 250 psi (SDR17) at 23 degrees C. or greater if shown on the plans. Pipe used for sanitary sewer force mains shall be green in color. Fittings shall be ductile iron and mechanical joint. The pipe will be stored away from direct sunlight.

The joints shall be "push-on" or "twin gasketed coupling", meeting ASTM Standards D-3139. Thickened bell pipe shall be provided meeting Section 6.2 of ASTM D-3139. Pipe lengths shall not exceed 20 feet. Lubricant shall be nontoxic and have no effects on the gasket or pipe material. Gaskets shall meet ASTM F477 requirements. The gasket

manufacturer's mark and year of manufacture shall be molded in the rubber. Gaskets shall be vulcanized natural or synthetic rubber. No reclaimed rubber shall be used. The Owner shall be supplied a certified copy of the manufacturer's quality control report.

As a minimum, the pipe shall have the following data applied to each piece every two feet:

1. Nominal Size
2. Type of Material
3. ASTM Standards
4. Manufacturer
5. National Sanitation Foundation Seal of Approval
6. Quality Control Code
7. Working Pressure Rating

All spigot ends shall be marked to indicate the distance the spigot end should be extended into the bell.

12.0 POLYVINYL CHLORIDE PIPE (AWWA C900 OR C905)

PVC water pipe shall be extruded from clean, virgin PVC resin compound in accordance with ASTM D1784, Class 12454-A or 12454-B. PVC pipe shall meet the requirements of AWWA C900 and C905, Class 200 (SDR 14, minimum) unless indicated a higher Class in the drawings, with the same outside diameters for corresponding nominal sizes of ductile iron pipe meeting the requirements of AWWA C151. PVC pipe shall be capable of making connection with cast iron fittings meeting the requirements of AWWA C111 without the use of adaptors. Pipe shall be fabricated in nominal 20 foot length. Fittings shall be ductile iron, mechanical joint. Marking requirements of every joint include:

- A. Nominal size and outside diameter dimension base (C.I.)
- B. PVC
- C. Dimension ratio
- D. AWWA pressure class
- E. AWWA (900) designation number
- F. Manufacturer's name and production code indicating date of manufacturer and production shift time
- G. Type of service

PVC pipe shall be equipped with bell and spigot joints. Bell shall consist of integral wall section with pipe. Bell section shall have same hydrostatic strength as pipe wall and meet the requirements of AWWA C900. Joints shall have elastomeric gaskets manufactured in conformance with ASTM F477. Gaskets shall be formulated for water service and be supplied separately from the pipe bell and lubricate recommended by the pipe manufacturer.

13.0 TRANSITION COUPLING

Transition coupling for sewer service lines shall be flexible, made of elastomeric plastic, resistant to chemicals and sewer gases and leakproof. Clamps, hardware, and

appurtenances shall be stainless steel. Coupling shall be Fernco or equal. Main line coupling, 8" or larger, will be ductile iron or stainless steel sleeves.

14.0 PIPE NIPPLES

All pipe nipples 3" and less with screwed connections shall be Schedule 40 brass or stainless steel. No galvanized material will be allowed for screwed joints.

15.0 VALVES - GENERAL

Valves shall close clockwise with 3 turns per inch. Unless indicated otherwise, valves shall have mechanical joint or flange ends. Sewer valve operating nuts shall be of a different size and/or shape of water valve nuts as approved by the owners. All valves operators will be extended as required for safe, convenient and easy access for operation.

All valves, operators, floorstands, brackets, and appurtenances, etc., that require painting shall be prepared and painted in accordance with the Painting Specifications for this project. Primer, intermediate coat, and top coat shall be the coating system required by the Painting Specifications and manufactured by the same paint manufacturer as submitted to the Engineer and accepted for the remainder of the project. Color shall be as selected by the Owner. Refer to the Painting Specifications for the project.

All exterior materials shall be suitable for underground service. Exterior bolting shall be 304 stainless steel. Valve assemblies installed in typical underground applications shall be rated for underground service and be designed for satisfactory operation under an external hydrostatic head of 10 psi. Valve assemblies installed in submerged applications (e.g., wetwells, basins, wetlands, ponds, lagoons, etc.) shall be rated for continuous submerged services under 25' (min.) of water submergence or as required by the application shown in the Contract Drawings.

16.0 BUTTERFLY VALVES

The butterfly valves shall be of rubber seated tight closing type and shall meet AWWA Standards C504 and be Class 150B unless indicated on the Plans to be Class 250. Where shown or called out for such application, valves shall be suitable for submerged and underground service and/or air service. Valves on blower discharge piping shall be suitable for hot air. The valve operator shall be suitable for underground service with permanent lubrication. The operator shall close clockwise. All valves shall have an epoxy coating in accordance with AWWA C550 on the inside of the body. Valve bearings shall be sleeve type that are corrosion resistant and self-lubricating. Bearing load shall not exceed 1/5 of the compressive strength of the material. Valve actuators shall be fully grease packed and have stops in the open/close position. The actuator shall have a mechanical stop which will withstand an input torque of 450 ft. lbs. against the stop. The traveling nut shall engage alignment grooves in the housing. The actuator shall be a slotted lever type for 4" to 12" valves and a link and lever type for 14" through 48". A means of adjusting the stem and shaft to attain zero leakage on closure of valve vane shall be provided without taking the valve out of service.

Class 150B butterfly valves shall comply with the following details. Valve discs shall be made from cast iron ASTM A-126 Class B for 3" through 20" sizes or ASTM A-48 Class 40 for 24" size. Sizes 30" and larger shall be ductile iron ASTM A-536 Grade 65-45-

12. Disc shall be furnished with 316 stainless steel seating edge to mate with the rubber seat on the body. Ductile iron of adequate strength may be substituted for cast iron. Valve shafts shall be stainless steel conforming to ASTM A-276 Type 304. Shaft seals shall be standard self-adjusting chevron "V" type packing. Shaft seals shall be of a design allowing replacement without removing the valve shaft. All valves shall be hydrostatic and leak tested. The leak test shall be performed at a differential pressure of 150 psig with the disc in a closed position. In a slightly open position, internal hydrostatic pressure equal to 300 psig shall be applied to the inside of the valve body for five minutes. Certified test results shall be made available to the Engineer.

Valves rated for 250 psig service shall comply with the following details. Valves discs shall be constructed of cast iron ASTM A-40 Class 40 for 10" through 20" sizes or ductile iron ASTM A-536 Grade 65-14-12 for 6", 8", 24" through 48" sizes. Disc shall be furnished with 316 stainless steel seating edge to mate with the rubber seat. Ductile iron of adequate strength may be substituted for cast iron. Valve shafts shall be stainless steel ASTM A-564 Type 630 Condition H-1150. Stub shafts or through shafts are acceptable. Shaft seals shall be standard self-adjusting chevron "V" type packing. Shaft seals shall be of a design allowing replacement without removing the valve shaft. All valves shall be hydrostatic and leak tested. The leak test shall be performed at a differential pressure of 250 psig with the disc in a closed position. In a slightly open position, internal hydrostatic pressure equal to 500 psig shall be applied to the inside of the valve body for five minutes. Certified test results shall be made available to the Engineer.

Where used in water plant or filter applications, valve supplier shall provide valves with actuators as shown on the drawings and/or as required by the filter manufacturer. Supplier/manufacturer shall review application and provide valves and actuators specifically suited for the application (pulsing, throttling, etc.) The actuator shall comply with all filter manufacturer recommendations including but not limited to operating frequency and duration and control logic, etc. Completely coordinate valves and actuators with filter manufacturer prior to making the first submittal. Provide written concurrence with the valves and actuators from the water plant/filter manufacturer and filter control panel manufacturer with the first submittal.

All valves shall be assembled, machined, and tested domestically at the manufacturer's facility. All valves shall be equal to Mueller, DeZurick, Val-Matic or approved equal.

See painting requirements under "Valves - General" and in the "Painting Specifications".

17.0 RESILIENT SEATED GATE VALVE

Valves shall be resilient seated wedge type manufactured to meet the requirements of AWWA C515 with ductile iron bodies. Valves shall have a clear, unobstructed water way when fully opened and shall be at least as large as the pipe inside diameter for which it is intended. All internal surfaces shall be coated with epoxy to a minimum thickness of 8 mils. Said coating shall be non-toxic, impart no taste to water and shall conform to AWWA C550. Gate valves 12" and smaller shall be rated for 250 psi cold water working pressure and shall be tested to 500 psi. Valves 14"-24" shall be rated for 200 psi cold water working pressure and shall be tested to 400 psi. Gates valves 18" through 24" shall have gearing. Gate valves in horizontal position shall have bevel gearing and valves in vertical position shall have spur gearing. Allen screws or metric bolting shall not be allowed.

Stem shall be sealed by three O-rings. The top two O-rings shall be replaceable with valve fully opened and while subject to fully rated working pressure. O-rings set in cartridge shall **not** be allowed. Valve shall have two thrust washers with one located above and one below the thrust collar to assure trouble-free operation of valve. The area between the O-rings shall be filled with lubricant to provide lubrication to the thrust collar bearing surfaces each time the valve is operated. The sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction, and shall consist of a cast or ductile iron gate with a resilient seat bonded or mechanically attached. Further, it shall be designed such that no sliding of rubber on the seating surfaces is required to compress the rubber. It shall also be designed such that compression-set of the rubber shall not affect the ability of the valve to seal when pressure is applied to either side of the gate. The gate shall be provided with a drain in the bottom to flush the internal cavity of foreign material each time the valve is opened. The valve shall be American Flow-Control, Mueller or approved equal.

See painting requirements under "Valves - General" and in the "Painting Specifications".

18.0 TAPPING SLEEVES AND VALVES

Tapping sleeves shall be bolted split type of ductile iron construction meeting ASTM A 536 Grade 65-45-12. Side flange seals shall be of the O-ring type of either round, oval, or rectangular cross-sectional shape to form a watertight joint when bolted in place. Tapping sleeves shall conform to the respective chemical and physical properties specified for ductile iron fittings in ANSI A21.10/AWWA C110. Walls of sleeves shall be extra heavy and the sleeves shall accommodate gray iron pipe, ductile iron pipe of the various standard thickness classes and C-900 type PVC pipe. Tapping sleeve and valves shall be manufactured by Dresser, Mueller, American, or equal.

Sleeves for use with ductile iron, cast iron, and C-900 PVC shall be equipped with mechanical joint ends. The Contractor shall determine the type sleeve required for accommodating the pipe and pipe outside diameter before ordering the sleeve. All sleeves are to include the end joint accessories and split glands necessary to assemble sleeve to pipe. No special tools shall be required other than a standard socket wrench. Sleeve shall be coated with asphaltic varnish in compliance with NSF-61.

Tapping sleeves for pressure class PVC lines shall be of heavy welded stainless steel per ASTM A240, type 304 and type 304L. Gasket shall be virgin SBR per ASTM D2000 MAA 610, compounded for water and sewer service with broad cross-section to resist rolling and provide dependable seal. Bolts shall be 5/8 inch UNC rolled thread trackhead, stainless steel per ASTM A193, type 304. Nuts shall be heavy hex, stainless steel per ASTM A194, type 304, coated to prevent galling. Flange shall be ductile iron per ASTM 536, Grade 65-45-12 or stainless steel per ASTM A240, type 304 to accommodate tapping valve flanges. Tapping sleeves for pressure class PVC shall be Romac Industries, Inc., style "SST III", Mueller "H-304", or equivalent.

Branch outlets of sleeves shall be equipped with flanges made with female faces to accommodate raised male faces of tapping valves.

Tapping valves shall meet or exceed the requirements of these Specifications for AWWA resilient seat gate valves with bodies and bonnets made of ductile iron for 250 psi working pressure. The tapping side of the valve shall be equipped with flange having raised male face to ensure proper alignment with the sleeve and shall be equipped with a flange having slotted bolt holes for attachment of tapping machine. The outlet end of the valve shall

have the desired joint connection for the intended pipe. All interior and exterior ferrous surfaces shall be protected against corrosion by fusion bonded epoxy coating. Valves shall meet requirements of AWWA C509. Coating shall be applied prior to assembly to assure coverage of all exposed areas including bolt holes. Seat rings shall be oversized so as to permit the use of cutters of the full nominal size of the tapping valves.

19.0 VALVE BOXES

The Contractor shall furnish and install valve boxes for all buried valves. Valve boxes shall be cast iron, screw type, with extension pieces as required to make up the length of box required from surface of ground to top of the valve body. Valve box lids shall be marked as to service. Valve boxes shall be equal to Dresser.

See painting requirements under "Valves - General" and in the "Painting Specifications".

20.0 CHECK VALVES

Check valves shall have ductile iron or cast steel bodies, and shall be plug type, with disc mounted on guided stem. Plug, seat, stem, and guide bushing shall be bronze meeting requirements of AWWA C508. Valves shall be gravity swing type, equipped with lever and weights with stainless steel hinge pins. Valves shall be equal to Mueller, Dresser, American.

21.0 FIRE HYDRANTS

Fire hydrants shall conform to the specifications of the American Water Works Association, C502 with a pressure rating sufficient to match test pressure of the line. They shall be compression type traffic model with 5-1/4" valve opening. Hydrants shall have one 4-1/2" or 5" and two 2-1/2" steamer nozzles with sizes to match the local fire department. Larger nozzle shall be fitted with integral Storz connection when shown on drawings. Threads shall match fire department equipment. Hydrants shall have a bury of 3-1/2 feet unless noted otherwise in plans. The fire hydrants shall be installed as shown on the Plans. Fire hydrants shall be M & H, American, Mueller, or equal, and/or as called for in the plans or specifications or required by Owner for matching their standard. All fire hydrants shall be connected to the main with a 6" valve and rodded throughout.

22.0 STORM DRAINAGE PIPE

Reinforced concrete drainage pipe for storm water shall conform to ASTM C-76, or A.A.S.H.O. M41. Pipe shall be fitted with tongue-and-groove type joints with rubber gaskets unless otherwise indicated. Corrugated metal pipe and arches shall conform to the requirements of the A.A.S.H.O. Designation M-36. All pipe arches shall be bituminous coated in accordance with the requirements of A.S.H.D. Specification 525 and/or 526.

23.0 PRECAST CONCRETE MANHOLES

The pre-cast reinforced concrete manholes shall be constructed in accordance with ASTM C-478. Manholes shall consist of circular pre-cast concrete sections not less than

4'-0" in diameter or as shown on the Drawings. The top section shall be suitable for mounting cast iron manhole frames and covers. Risers shall be furnished in suitable increments to an elevation not more than 12" below the base of the cast iron frame and cover. Maximum elevation of riser shall permit setting top of manhole frame at the finished grade shown on the Drawings. The bottom riser of the manhole shall be provided with openings to accommodate the sewers entering and leaving the manhole. The arrangement of the openings shall permit the construction of sewers in accordance with the alignment, elevations, and grades shown on the Drawings. All pre-cast concrete manholes shall be set on a foundation bed of compacted crushed stone, 8" minimum thickness, and covering the bottom of the excavation.

Steps, frames, and covers shall conform to the requirements of Gray Iron Casting, ASTM A48-60T, Class 20. The manhole cover shall be the solid indented type with bearing surface machined to provide solid bearing and prevent rocking. Vented manholes are not allowed unless specifically called for in the plans. When required, waterproof manhole frames and covers shall have bolted on lid with rubber or neoprene gasket for watertight sealing. Stainless steel anchor bolts will be used. Frames shall be firmly anchored to top section of manhole. Weight of frames and covers shall be 308 pounds or heavier.

Joints between the manhole sections will be made with offset joints with rubber gaskets or preformed butyl sealants. Rubber gaskets shall meet the requirements of ASTM C 443, latest revision. Sealants shall meet federal specifications SS-S-00210 (210-A) and AASHTO M-198B.

Manholes of precast concrete construction shall have flexible openings to accept sewers entering and exiting the manhole. The openings shall comprise a complete joint with insert piece precast in wall of manhole and comprised of cast iron insert ring tapped to receive draw bolts, cast iron compression flange, and rubber O-ring gasket, or a complete joint with seal assembly inserted in a hole cored in the manhole wall and comprised of a rubber or neoprene boot, stainless steel seal band, stainless steel pipe clamp.

4' diameter manholes shall have a minimum base thickness of 6" unless a greater thickness is called for elsewhere. 6' diameter manholes shall have a minimum base thickness of 8" unless a greater thickness is called for elsewhere.

Flexible connectors shall be provided as follows:

A. Pipes Less than 18 Inches Diameter

Flexible manhole connectors for lines 18 inches in diameter or less shall be Kor-N-Seal, as manufactured by NPC, Inc. Milford, New Hampshire, or equal. Connectors shall conform to the latest revisions of ASTM C923 and ASTM A167. Boots shall be of chemical resistant, resilient EPDM rubber. Assemblies with toggle or wedge-type expanders shall be fabricated of 304 Series non-magnetic stainless steel. Wedge assemblies shall be from reinforced nylon. External take-up clamps shall be Series 304 non-magnetic stainless steel. Bolt assemblies shall be of Series 305 non-magnetic stainless steel. Flexible connectors shall be stored and installed in strict accordance with the manufacturer's recommendations. Pipes shall be centered in the connector opening and supported during installation such that the pipe does not rest on the connector core band.

Pipes Larger than 18 Inches Diameter

For pipes larger than 18 inches diameter, flex connectors shall be the A-Lok Connector, as manufactured by A-Lok Products, Inc. Tullytown, Pennsylvania, or approved equal. Seal shall provide a flexible, positive watertight connection between pipe and manholes. The seal between the connector and the manhole wall shall be made by casting the connector integrally with the manhole wall during the manufacturing process in such a manner that it will not pull out during coupling.

The seal between connector and pipe will be made by pure compression of the resilient material against the outside diameter of the pipe. The connector shall be capable of being cast into a round structure in a curve and remain centrally located in the manhole wall so that there is no loss of compression or deflection in larger pipe due to curvature of the manhole wall. The connector shall be the only component to affect the seal between the pipe and structure. The connector shall be molded or extruded and vulcanized from materials whose physical/chemical properties meet or exceed the physical/chemical resistant properties outlined in ASTM C923. The connector shall meet or exceed the performance requirements prescribed in ASTM C923. The connector shall be of size specifically designed for the pipe material being used and shall be installed in accordance with the recommendations of the manufacturer.

24.0 PRECAST CONCRETE WETWELLS

When allowed in the Plans to be substituted for precast manholes, precast wetwell sections shall conform to the minimum requirements of ASTM C789. Concrete box sections shall be provided for depth of bury load conditions indicated on the Plans. Unless indicated otherwise, all pipe penetrations or connections shall be made with flexible type connectors. Joints shall be watertight subject to both an infiltration and exfiltration test prior to and following backfilling.

When wetwells are used for manholes, precast flat tops may be provided to transition to a standard four foot diameter manhole if shown to be acceptable in the plans. Manhole steps shall extend continuous through four foot manhole risers and precast wetwell to the ground invert.

**STANDARD SPECIFICATION
FOR
GRAVITY SEWER INSTALLATION**

SECTION 4

1.0 PIPE LAYING

All fittings required for horizontal and vertical bends and deflections are not necessarily shown or called out on the drawings. Plan and coordinate pipe installation such that all required fittings and appurtenances will be available when required. When working around existing utilities, or facilities, etc. carefully spot dig for potential conflicts in a timely manner to allow adjustments to be planned and to avoid delay.

The excavation, preparation, and backfilling of the trench shall be in accordance with the General Specifications and those Specifications covering excavation and sitework. The Contractor shall utilize the MUTCD to determine the minimum type of traffic control devices to be used on, and along all streets, including but not limited to City streets, County Roads, and State or Federal Highways. All sewers are to follow accurately the grade, alignment, type, size and location shown on the Plans unless otherwise approved by the Engineer. All pipe shall be inspected after unloading from the carrier. Rejected pipe shall be marked with paint and removed from the job site. The Contractor shall be responsible for locating and marking with guard stakes all underground obstructions. Where these obstructions could interfere with the sewer locations, the contractor shall notify the Engineer and the obstruction will be exposed to determine elevations and alignment of sewer in relation to the obstruction. All damages to obstructions will be repaired at the Contractor's expense.

The trench shall not be excavated any wider than necessary for safety and pipe installation. Mechanical excavation of trenches shall be stopped above the final invert grade elevation so that the pipe may be laid on a firm, undisturbed, native earth bed. The bottom of the trench shall be uniform so as to provide a firm and even bearing for the pipe. If the trench is over excavated, the disturbed material shall be replaced with compacted #57 crushed stone bedding or concrete installed at the Contractor's expense and as chosen by the Engineer. Pipe shall not be laid on rock but shall have a six inch cushion of compacted and approved bedding material, or shall be laid on concrete pads, as required. Each piece of pipe or fitting shall be cleaned and carefully examined for defects, and no defective pipe or fitting shall be laid in the trench. No blocking up with wood, rock, or other materials will be permitted. No load from adjacent spigot shall be transmitted to the bell with only the barrel of the pipe receiving bearing pressure from the trench bottom.

Spigots or hubs shall not be cut or chipped and shall be clean and dry. Whenever pipe is cut, it shall leave a smooth end at right angles to the axis. The laying of pipe in finished trenches shall be commenced at the lowest point, with the hub ends upgrade. Pipe shall be carefully centered and anchored before backfill to prevent movement. Preparatory to making pipe joints, all surfaces of the joints shall be clean and dry. Lubricants shall be used as recommended by the pipe or joint manufacturers.

Pipe shall be kept clean during construction with all excess debris being removed from sewers and appurtenances as work progresses. Sewers will be protected from debris entering lines after cleaning. A final cleaning will be made at time of acceptance if necessary. The ends of pipe shall be plugged when the work is left temporarily. When work

resumes, the plug shall not be removed until the trench has been dewatered and all debris cleared away to prevent entry.

The length of the sewer trench to be opened or the area of the surface to be disturbed at any one time may be limited by the Engineer with regard both to expeditious construction and to the convenience of the public. The pipe laying shall be kept a safe distance from the excavation. The opening of new trenches will not be permitted when earlier trenches need backfilling or labor is needed to restore previous work. All blasting operations are to be conducted with due regard for the safety of persons, property, and utility and in strict compliance with ordinances and regulations governing blasting and the use and storage of explosives. Payment for the removal of rock shall be included in the Unit Price Bid for sewers and appurtenances unless otherwise specified. Trenches shall not be left open at night, weekends, holidays, or other periods when the work is unattended.

2.0 BACKFILLING

All trenches and excavations shall be backfilled immediately after pipe is laid, unless otherwise directed by the Engineer. Under no circumstances, shall water be permitted to rise in unbackfilled trenches after the pipe has been placed. Approved backfilling material shall be backfilled in layers of 8 inches maximum thickness, distributed evenly on both sides of the pipe, and shall be compacted to one foot above the top of the pipe and the remainder of the trench backfill being compacted and kept free from large rock and debris. All compaction shall be to 95% standard proctor density. PVC pipe shall be wrapped in #57 crushed stone to 12" above pipe. Use sand in lieu of crushed stone where indicated on drawings.

3.0 FITTINGS

Wye branches and other fittings shall be placed in the sewer lines as the work progresses or as directed by the Engineer. Wye branch openings shall be sealed with a vitrified clay cover which shall be secured in place before it is lowered into the trench. Wye branches shall not be backfilled until they have been located and recorded for future use. Sewer wyes, riser pipe and house service pipe shall be as shown. House service crossing state, federal or county highways shall be 4 inch ductile iron pipe.

4.0 ALIGNMENT AND ELEVATION CONTROLS

Control points and bench marks will be furnished to the Contractor for control of the work. The Contractor shall clear all right-of-ways or property prior to staking for sewers. It will be the Contractor's responsibility to maintain all bench marks and control points during clearing or construction. The contractor shall be responsible for checking all bench marks and control points prior to construction. The Engineer will provide alignment stakes and elevation or grade stakes at each manhole. The Contractor shall prepare cut sheets and will submit them in duplicate to the Engineer for his approval prior to construction. No sewers will be installed or paid for without approval of cut sheets by the Engineer. Beginning points for construction will be designated by the Engineer.

5.0 MANHOLES

Unless specifically indicated in the Plans to be grouted, all manholes of precast concrete construction shall have flexible openings/connections to accept sewers entering and exiting the manhole. The Contractor shall be responsible for checking the sizes and orientations of manhole pipe openings before they are delivered to and unloaded at the job site. The Contractor shall be fully and solely responsible for all delays and/or damages resulting from his acceptance of incorrectly cast manhole sections. If the Contractor requests payment for stored material that include precast openings and/or flexible connections manhole sections, his request must be accompanied with a copy of the manhole section submittal indicating his field verified opening dimensions/orientation/elevations. These verifications shall take place before the manhole sections are unloaded on the job site. The openings shall comprise a complete joint with insert piece precast in wall of manhole and comprised of cast iron insert ring tapped to receive draw bolts, cast iron compression flange, and rubber O-ring gasket, or a complete joint with seal assembly inserted in a hole cored in the manhole wall and comprised of a rubber or neoprene boot, stainless steel seal band, stainless steel pipe clamp. Any repairs and plug holes in manholes will be sealed with nonshrink grout and made waterproof. Speedcrete will only be used to slow moving water, but final patch will be as described above. All repairs will be made on exterior of manhole.

6.0 ACCEPTANCE AND AIR TESTING OF LINES

All sewer construction shall be bedded and backfilled to prevent settlement in ditches and having tight joints with gaskets fully compressed. Sewers shall be watertight within the allowable limits, and shall have no visible leaks. Pipe shall be laid so when sighting from manhole to manhole in any section, the whole diameter of the pipe shall be visible throughout the section. Any visible leaks in any section of the sewer or appurtenances shall be repaired. The sewer shall be blocked off in sections totaling approximately 1,000 feet determined by the manhole spacing and tested for infiltration. No infiltration in excess of 200 gallons per mile per inch of pipe diameter per 24 hours will be permitted. Any section of sewer in which the infiltration is greater than that specified above shall be either repaired or replaced until it does meet the requirements specified.

Only lines tested after backfilling to final grade will be considered for acceptability. However, this test may also be used by the installer as a presumptive test to determine the condition of the line prior to backfilling. The Contractor shall furnish all the necessary equipment and be responsible for conducting all low-pressure air tests. In addition, the Contractor is responsible for any necessary repair work on sections that do not pass the test. No sealant shall be used in any newly installed sewer without the prior approval of the Engineer. Using sealant in a sewer is not the equivalent of a sound sewer pipe. Proper structural repair work is much preferred and may be required by the Engineer or the Owner. The Engineer and/or a qualified inspector shall witness all low-pressure air tests and verify the accuracy and acceptability of the equipment utilized.

The infiltration quantities specified are those permissible when wet weather conditions prevail and the pipe is subject to a high water table. Further, the Contractor shall employ the low-pressure air testing procedure in order to determine the probable acceptability of the sewers when operating under wet weather conditions. The "low-pressure air test" shall generally conform to the procedure that is recommended for testing sanitary sewers and is as follows:

1. The section of pipe to be tested is cleaned and plugged at each end. The end of all branches, laterals and wyes are plugged. Either mechanical or pneumatic plugs (manufactured for the intended use of air testing) may be used. All plugs are to be braced to prevent blow-out. To facilitate test verification by the inspecting Engineer, all air used shall pass through a single, above ground control panel. The above ground air control equipment shall include a shut-off valve, pressure regulating valve, pressure relief valve, input pressure gauge, and a continuous monitoring pressure gauge having a pressure range from 0 to 10 psi. The continuous monitoring gauge shall be no less than 4 inches in diameter with minimum divisions of 0.10 psi and an accuracy of ± 0.04 psi. Two separate hoses shall be used to: (1) connect the control panel to the sealed line for introducing low-pressure air, and (2) a separate hose connection for constant monitoring of air pressure build-up in the line. If pneumatic plugs are utilized, a separate hose shall also be required to inflate the pneumatic plugs from the above ground control panel. Plug the upstream end of the line first to prevent any upstream water from collecting in the test line. This is particularly important in high groundwater situations. When plugs are being placed, the pipe adjacent to the manhole shall be visually inspected to detect any evidence of shear in the pipe due to differential settlement between the pipe and the manhole. A probable point of leakage is at the junction of the manhole and the pipe, and this fault may be covered by the pipe plug.

2. Add air slowly to the plugged section of the sewer under test until the internal air pressure has been raised to 4.0 psig greater than the average backpressure of any groundwater. After the pre-set pressure has been obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain the pre-set pressure, then close air supply valve.

3. When the pressure decreases to a gauge reading equal to 3.5 psig, start stopwatch. Determine time in seconds marking drop of 1.0 psig of internal air pressure.

4. Refer to the appropriate table below to determine minimum permissible pressure holding time in seconds for particular section of sewer being tested if it contains one pipe size. If the time shown in Table I or Table II for the designated pipe size and length elapses before the air pressure drops 1.0 psig, the section undergoing test shall have passed and shall be presumed to be free of defects. The test may be discontinued once the prescribed time has elapsed even though the 1.0 psig drop has not occurred. If the pressure drops 1.0 psig before the appropriate time shown in Table I or Table II has elapsed, the air loss rate shall be considered excessive and the section of pipe has failed the test.

**TABLE I
MINIMUM TEST TIME FOR PVC OR D.I. PIPE**

1 Pipe Diameter (in.)	2 Minimum Time (min: sec)	3 Length for Minimum Time (ft)	4 Time for Longer Length (sec/ft)	Specification Time for Length (L) Shown (min:sec)						
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07

TABLE II

**MINIMUM TEST TIME FOR
VITRIFIED CLAY PIPE AND CONCRETE**

Nominal Pipe Size, Inc.	T (time) Min/100 ft.
3	0.2
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8

If the section of line to be tested includes more than one pipe size, calculate the test for each size and add the test times to arrive at the total test time for the section. The Contractor will furnish all facilities and personnel for conducting the test in the presence of the Engineer. The acceptance air test shall be made only after backfilling has been completed and compacted. If any section of sewer tested should fail to meet the test requirements set forth hereinabove, the contractor shall determine the source or sources of leakage, repair or replace all defective materials, and correct all defective workmanship. Low-pressure air tests shall be repeated until the specified requirements have been met. Air testing of completed sections of sewers shall closely follow installation of the sewers in order that surface restoration work might be undertaken.

7.0 ACCEPTANCE AND DEFLECTION TESTING OF LINES

All installed PVC and Polyethylene gravity sewer shall be tested for deflection by the Contractor. The Contractor shall furnish all equipment, labor, and materials for making the test. Tests shall be made from manhole to manhole and performed in the presence of the Engineer. Deflection shall be tested by a "go", "no-go" mandrel or template which is sized to such dimensions that it will not "go" when encountering a deflection greater than permissible. This type of mandrel must be of such design as to minimize the possibility of its being hung up in the pipe by silt or other residues. A mandrel shall be sized to permit up to 5% deflection in pipe having typical maximum dimensional tolerances.

In order to use the mandrel, the line shall be completely flushed, making sure the pipe is clean of any mud or debris that would hinder the passage of the mandrel. A pull and retrieval rope is required on the mandrel with a marker attached on the rope at the end of the pipe where the mandrel will exit to determine the location of the mandrel in the line. If the mandrel fails to pass through the line, it shall be assumed that the deflection exceeds 5% and the section or sections of pipe shall be corrected to the satisfaction of the Engineer.

If a section with excessive deflection is located, the Contractor shall uncover and inspect the pipe and replace any damaged pipe. If pipe is not damaged, replace and thoroughly tamp the haunching and initial backfill and replace remainder of backfill. If the section still fails to pass the deflection test, it shall be replaced with pipe which will pass the test. The cost of repair or replacement as well as acceptance retesting shall be borne by the Contractor.

8.0 ACCEPTANCE AND VACUUM TESTING OF MANHOLES

Only manholes tested after backfilling to final grade will be considered for acceptability. However, this test may also be used by the installer as a presumptive test to determine the condition of the manhole prior to backfilling. All main and service line connections which the manhole accommodates shall be 100% completed prior to testing of the manhole. Regardless of vacuum test results, no visible leaks will be allowed in a manhole.

1. Plug all manhole entrances and exits other than the manhole top access using suitably sized pneumatic or mechanical pipeline plugs. Plugs should be inserted a minimum of 12" beyond manhole wall. Make sure such plugs are properly rated for the pressures required for the test. The standard test of 10" Hg. (mercury) is equivalent to approximately 5 PSIG (.3 bar) backpressure. Unless such plugs are mechanically restrained, it is recommended that the plugs are used with a minimum two times (2x) safety factor or a minimum of 10 PSIG (0.7 bar) backpressure usage rating. All plugs are to be braced to prevent blow-out.

2. Install the vacuum tester head assembly at the top access of manhole. Adjust the cross brace to insure that the inflatable sealing element inflates and seals against the straight top section of the manhole or the ring assembly, if possible. (If using a "plate" style manhole tester, position the plate on the manhole ring assembly.)

3. Attach the vacuum pump assembly to the proper connection on the test head assembly. Make sure the vacuum inlet/outlet valve is in the closed position. Inflate sealing element to the recommended maximum inflation pressure. **DO NOT OVER INFLATE!**

4. Start the vacuum pump and allow pre-set RPM to stabilize. Open the inlet/outlet ball valve and evacuate the manhole to 10" Hg. (approximately negative 5 PSIG, 0.3 bar). **DO NOT PRESSURIZE MANHOLE! THIS MAY RESULT IN MANHOLE DAMAGE AND/OR RESULT IN MANHOLE TEST HEAD DISLODGING FROM MANHOLE INLET!**

5. Close vacuum inlet/outlet ball valve and monitor vacuum for specified test period (see Table). If vacuum does not drop in excess of 1" Hg., manhole is considered acceptable and the manhole passes the test. If manhole fails the test, complete necessary repairs and repeat test procedures until satisfactory results are obtained.

**VACUUM TEST TIMETABLE
(24' MAXIMUM DEPTH)**

<i>DIAMETER (INCHES)</i>	<i>ELAPSED TIME</i>	<i>ADDITIONAL TIME PER 2' OVER 24' DEEP</i>
48"	60 seconds	5.0 seconds
60"	78 seconds	6.5 seconds

**VACUUM TEST TIMETABLE
(24' MAXIMUM DEPTH)**

DIAMETER (INCHES)	ELAPSED TIME	ADDITIONAL TIME PER 2' OVER 24' DEEP
72"	96 seconds	8.0 seconds

6. Repeat the above test procedure after backfilling manhole for final acceptance test.

Though the above is a general explanation of testing procedures, the Contractor is responsible for all testing procedures utilized. Testing procedures shall be modified as needed by the Contractor to insure a safe working environment.

**STANDARD SPECIFICATION
FOR
DUCTILE IRON SEWER PIPE
INTERIOR COATING**

SECTION 5

1.0 GENERAL

All ductile iron pipe and fittings supplied for gravity sewer shall have a high build protective lining on the interior and a bituminous coating on the exterior except for 6 inches back from the spigot end. The bituminous coating shall not be applied to the first 6 inches of the exterior of the spigot ends. All ductile pipe and fittings shall be delivered to the application facility without asphalt, cement lining, or any other lining on the interior surface. Because removal of old linings may not be possible, the intent of this specification is that the entire interior of the ductile iron pipe and fittings shall not have been lined with any substance prior to the application of the specified lining.

2.0 LINING MATERIAL

The material used for lining the pipe and fittings must have a successful history of protecting pipe lines in sewer service. The material must be a high build multi-component Amine cured Novalac Epoxy lining. The standard of quality is Protecto 401 Ceramic Epoxy. Any request for substitution must be approved by the engineer, meet the following criteria and be accompanied by the following data.

1. The permeability rating when tested according to Method A of ASTM E-96-66, Procedure A with a test duration of 42 days as reported by an independent laboratory.
2. A statement from the manufacturer of the submitted material attesting to the fact that at least 20% of the volume of the lining contains ceramic quartz pigment.
3. A laboratory report containing test data for Immersion in Acids, Bases, and Deionized Water at elevated temperatures using ASTM-D 714-56 (1974) for the rating method. The report should also contain data on ASTM D-2794 Direct Impact and ASTM-G 53-77 Moisture and Ultraviolet Light Exposure.
4. A statement concerning recoatability and repair to the lining.

3.0 APPLICATION

The lining shall be applied by a competent firm with a successful history of applying linings to the interior of ductile iron pipe and fittings. Prior to abrasive blasting, the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Any areas with oil, grease, or any substance which can be removed by solvent shall be solvent cleaned using the guidelines outlined in SSPC-1 Solvent Cleaning. After the surface has been cleared of grease, oil or other substances, all areas to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering annealing oxide may be left on the surface. Any area where rust reappears before coating must be reblasted to remove all

rust.

After the surface preparation and within 8 hours of surface preparation, the interior pipe shall receive 40 mils dry film thickness of the protective lining. No lining shall take place when the substrate of ambient temperature is below 40 degrees Fahrenheit. The surface also must be dry and dust free. If flange fittings of pipe are included in the project, the linings must not be used on the face of the flange with full face gaskets being used to protect the ends of the pipe. All fittings shall be lined with 40 mils of the protective lining. The 40 mils system shall not be applied in the gasket grooves.

Due to the tolerances involved, the gasket area and spigot end up to 6 inches back from the end of the spigot end must be coated with 6 mils nominal, 10 mils maximum Protecto Joint Compound. This coating shall be applied by brush to ensure coverage. Care should be taken that the coating is smooth without excess buildup in the gasket groove or on the spigot end. All materials for the gasket groove and spigot end shall be applied after the application of the lining.

The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The time between coats shall never be less than the time recommended by the lining material manufacturer. No material shall be used for lining which is not indefinitely recoatable with itself without roughening of the surface.

Protecto Joint Compound shall be used for touch-up or repair. Procedures shall be in accordance with manufacturer's recommendations.

4.0 INSPECTION AND CERTIFICATION

All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PA-2 Film Thickness Rating. The interior lining of all pipe and fittings shall be tested for pinholes with a nondestructive 2,500 volt test. Each pipe joint and fitting shall be marked with the data of application of the lining system and with its numerical sequence of application on that date.

The pipe or fitting manufacturer must supply a certificate attesting to the fact that the applicator met the requirements of this specification, and that the material used was as specified, and that the material was applied as required by the specification.

5.0 PROCEDURE FOR FIELD REPAIR OF COATING

All coatings damaged in field whether from cutting edges or from handling shall be repaired as follows:

1. Remove burrs caused by field cutting of ends or handling damage and smooth out the edge of the lining if rough.
2. Remove all traces of oil, grease, asphalt, dust, dirt, etc.
3. Remove any damaged lining caused by field cutting operations or handling and clean any exposed metal by sanding or scraping. Sandblasting or power tool cleaning roughening is also acceptable. It is recommended that any loose lining be removed by chiseling, cutting, or scraping into well adhered lined area before patching. Be sure to overlap at least 1" of lining in the area to be repaired.

4. With the area to be sealed or repaired absolutely clean and suitably roughened, apply a coat of Protecto Joint Compound using the following procedure:

Mixing Procedure - Protecto Joint Compound is a seven-to-one (7:1) mix ratio. When mixed, it should contain 7 parts of the black activator and one part of the translucent blending resin. After blending resin is added to the activator, the mixture should be thoroughly agitated. All activated material must be used within 45 minutes of mixing.

Application of Material - After the material has been thoroughly mixed in a seven-to-one (7:1) ratio, it can be applied to the prepared surface by brush. Brushing is usually best, due to the fact that the areas are usually small. Practices conducive to a good coating are contained in the technical data sheet for Protecto Joint Compound.

It is important to coat the entire freshly cut exposed metal surface of the cut pipe end. To ensure proper sealing, overlap at least one inch of the lining with this repair material.

**STANDARD SPECIFICATION
FOR
PAVEMENT, GRAVEL, AND CONCRETE SURFACES**

SECTION 6

1.0 REMOVING AND REPLACING EXISTING PAVEMENT AND CONCRETE

No hard surface (pavement, concrete, etc.) shall be cut unless authorized. These surfaces shall be cut to a neat continuous line and replaced with same type material and thickness. Base course to be of same type material removed. Removal and replacing surfaced areas shall meet the requirements of the governing body. Should requirements not be in effect, the Contractor will replace these areas as indicated on the Plans or as required by the Engineer or the Owner. These surfaces shall not be replaced until authorized. All damaged hard surfaces shall be restored to its original condition and shall be replaced as soon as possible. If any inconvenience or potential inconvenience to the public is noted, the hard surfaces will be replaced immediately. Any repair after completion of the project or settlement under the replaced sections of hard surfaces will be at the expense of the Contractor. Unless otherwise noted, pavement replaced shall be included in the Unit Price Bid of Items except for repairs.

2.0 PAVEMENT

Construction and types of finished paving for roads, parking areas, and service areas shall be as shown on the Drawings or as specified below. All subgrade and base courses shall be in accordance with AHD Specification Section 301. The subgrade shall be prepared using materials in place. All depressions shall be filled with approved material compacted to same density as the remainder of the subgrade. Soft places in the subgrade shall be excavated and refilled with approved material or crushed stone so as to achieve the density specified for compacted fill. The base shall have a compacted thickness of base course under pavement of not less than 6 inches, and materials for base course shall be in accordance with AHD Specifications Sections, 823.02(d) and 826.02(d), or compacted pug mix. Subgrade and base shall be compacted to a minimum of 98% SPD. Surface of crushed stone finish shall be 2" of No. 4 gradation, compacted. Asphalt paving shall be pre-mixed bituminous pavement meeting the requirements of AHD Specifications Section 411. Base course shall be primed and pavement constructed in accordance with the provisions of AHD Specifications Section 410 except asphalt will be compacted. The pavement shall consist of binder course and wearing course. Binder course shall be Mix B (AHD Section 411.02) placed at the rate of 150 pounds per square yard, and wearing course shall be Mix A (AHD Section 411.02) placed at the rate of 110 pounds per square yard. Apply binder and wearing course at higher rates if called out on Plans. Pavement shall be installed smooth and level. Sufficient time shall lapse before the wearing course is installed on the binder course. The wearing course will be the last work on the job after all "punch" list items are completed. All dirt, mud, and other undesirable material shall be completely cleaned from the binder prior to placing the wearing course. Unless specifically requested by the Owner, the wearing course shall not be installed until after all site work is complete and after all activities that potentially damaged the asphalt are complete.

When asphaltting in cold, an ADOT Certified Testing Lab will be made available

by the Owner to measure surface temperature on which asphalt is to be placed as well as air and asphalt temperatures. As a minimum, air temperature shall be 40E and rising as well as the surface the asphalt is to be placed. The contractor will bear the cost of the laboratory testing for this situation.

If any settlement occurs under roadway, the entire roadway shall be resurfaced for at least 50 feet on both sides (100 feet total) of the settled trench. Where resurfaced segments approach within 50 feet of each other, the segment between resurfaced segments shall also be resurfaced, even though outside the 50 feet segment.

Prior to placing curb, gutter, concrete, or asphalt, etc., use survey equipment to check that all paving will properly drain to prevent puddle formation. Coordinate with Engineer and adjust grades as required to prevent ponding during rain or washdown.

3.0 CONCRETE WALKS AND OTHER SURFACES

All concrete walks shall be constructed on firm compacted subgrade or a crushed stone base of compacted thickness not less than 4 inches. The subgrade shall be damp when concrete is placed. Expansion joints shall be located where the walk changes direction, abuts a structure, top and bottom of steps, and not farther apart than 30 feet on a straight run. The expansion joint and filler shall be 3/8 inch thick asphaltic fiberboard with edges of the concrete rounded. Contraction joints 1 inch deep shall be cut across the walk not farther than 6 feet apart. Final finish will be lightly cross broomed.

Concrete parking areas and drives will be finished as described above with #5 rebar @ 10" o.c., e.w. added for reinforcing or as shown on the plans.

4.0 CURB, GUTTER, AND COMBINATION CURB AND GUTTER

This Sub-section shall cover the work of constructing Portland cement concrete gutter, curb, or combination curb and gutter, constructed with or without metal reinforcement. Curb and gutter shall be constructed in accordance with the plan details and these specifications at the locations shown on the plans or established in conformity with the lines, grades, dimensions, and cross sections shown on the plans or designated.

All materials shall conform to the requirements of Concrete Standard Specifications herein. The foundation shall be constructed or excavated to the required depth below the finished surface in accordance with the cross section shown on the plans or as designated. All soft or other unsuitable material shall be removed and replaced with suitable material, in layers not to exceed 4 inches compacted. The foundation shall be compacted as provided for the applicable types of material involved.

The Contractor shall use standard type metal forms or wood forms or if requested in writing and approved by the Engineer, an approved automatic extrusion type curb and/or gutter machine. These forms shall be straight except for radial sections, and free from warps and of sufficient strength, when staked, to hold the concrete true to line and grade without distortion. They shall provide the approved typical section and depth of the section shown on the plans. Radial or curved forms may be of flexible metal or a wood form of approved design. Bent or damaged forms shall not be used. All forms shall be securely staked, braced, and held together to the exact lines and grades established and shall be kept sufficiently tight to prevent leakage of mortar. All forms shall be cleaned and oiled with a suitable form oil immediately before concrete is placed against them.

Any automatic extrusion type curb and/or gutter machine considered for approval must be demonstrated to produce a section conforming to the dimensions, cross-section, lines, and grades shown on the plans. Failure to consistently produce an acceptable product shall be cause to withdraw approval of the machine and order the use of standard forms. All types of curbs, gutter, and combinations shall be placed in one operation, to the depth of cross section specified on the plans. The use of a two stage operation will not be permitted.

Gutter, curb, and combination curb and gutter shall be constructed in sections of the lengths shown on the plans. The length of section may be reduced where necessary to form closure. The handling, storage, proportioning, and mixing of concrete shall conform to the Concrete Standard Specification herein.

All expansion, contraction, and construction joints shall be constructed as shown on the plans. If not shown on the plans, joints shall be placed as follows:

1. Expansion joints shall be placed in curb and/or gutter to match those in concrete pavement where the two are adjacent.

2. Expansion joints shall be 3/4 of an inch wide. They shall be placed where curb, gutter or combined curb and gutter terminate against concrete driveways and other concrete structures except inlets. The joints shall be placed at least 20 feet from the location of the termination of the curb, gutter or combined curb and gutter at inlets.

3. Expansion joint filler and sealer shall be one of the materials provided by AASHTO M 153 or AASHTO M 213 with the latter being modified to allow a maximum of 25% water absorption. Expansion joint filler shall extend from the bottom of the curb and/or gutter to within 1 inch of the top; the sealer shall be 3/4 of an inch thick and shall be recessed 1/4 of an inch from the top. Hot Applied Joint and Crack Sealant shall meet the requirements of AASHTO M 324 (ASTM D 6690) for Type I Sealant or Type II Sealant. Cold Applied Joint and Crack Sealant shall be a resilient adhesive compound capable of effectively sealing joints from infiltration of incompressible materials and water throughout repeated contraction and expansion cycles. The sealant shall be a homogeneous blend of materials, which may or may not require a primer. The sealant shall meet the requirements given in ASTM D 5893.

4. Contraction joints shall be placed in curb and/or gutter to match those in concrete pavement where the two are adjacent, but in no instance more than 20 feet between joints. The contraction joints shall be sawed or otherwise cut 2 inches deep by 1/8 of an inch wide and shall extend 2 inches below the pavement surface.

The subgrade and forms shall be checked and approved just prior to placing concrete against them. All debris or other foreign material shall have been removed from the space to be occupied by the concrete. The subgrade shall be moist but not wet or muddy. After mixing, the concrete shall be placed in the forms and shall be tamped, spaded, or vibrated sufficiently to produce a dense homogeneous mass and to bring the mortar to the surface. Particular attention shall be given to spading the concrete along and against the surface of the forms to prevent honeycombing and secure a smooth, uniform surface.

When the forms are filled, the concrete shall be struck off with a template, cut to the curb edge design. The exposed concrete surface shall then be finished smooth with a wooden float in a manner that will compact the mass and produce a true, even top surface. Plastering with mortar to build up or finish will not be permitted. The surface of the gutter and the face and top of the curb shall be checked with a 10 foot straightedge and any irregularities more than 1/4 of an inch in 10 feet corrected. The alignment and grade shall not

at any point vary more than 1/2 of an inch from that established by the elevation control stakes. Excessive troweling with a steel trowel will not be permitted. A textured finish shall be provided on the exposed surface just before the concrete becomes nonplastic by the use of a burlap or cotton fabric drag, brush, or broom which will produce a uniform gritty texture along the length of the curb, gutter, or combination curb and gutter. The upper edges of curb and gutter shall be rounded with an approved edging tool to the radius shown on the plans. The joint templates shall be set during the placing of the concrete and allowed to remain in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place.

The forms shall be left in place until the concrete has set sufficiently so that they can be removed without damage to the work, but, unless otherwise directed, they shall be removed within 24 hours after the concrete has been placed. Immediately after the removal of the forms, the repair of any minor defective areas shall be accomplished.

Immediately after the finishing operation is completed, the concrete shall be cured. If mats are used, they shall be kept continuously moist for a period of at least 72 hours. During this period, and until completion and acceptance of the work, it shall be protected from damage by the elements or other cause. After the concrete has set sufficiently, spaces along the front and back sides of the gutter, curb, or combination curb and gutter, shall be backfilled to the required elevation with suitable material which shall be compacted.

**STANDARD SPECIFICATION
FOR
GRASSING**

SECTION 7

1.0 GENERAL

This work shall consist of furnishing, planting and establishing an acceptable stand of grass or other vegetative cover for use and protection of the project. Work includes, but is not limited to temporary seeding as required, furnishing and placement of fertilizers and soil treatments, furnishing, inoculation, and planting of seeds, and the covering, compaction and maintenance of seeded areas. On all work on and adjacent to private property, the Contractor shall replace the disturbed materials with materials identical to those on the site. Sod shall be provided and installed wherever needed to match existing grass. In sensitive areas and when required by Owner during construction, grass and landscaping will be replaced immediately after primary construction (i.e. pipeline installation, etc.) is complete with Contractor accepting the risk of further disturbance due to testing, other clean-up, etc.

2.0 MATERIALS

Sodding and Seeding. The sod shall be native to the area with well matted roots. Sod containing weeds, other grasses, or fire ants shall not be accepted. The seed mixture, fertilizer, lime and rates of application of all these items shall be as specified herein as a minimum and as required to achieve full coverage. Topsoil shall be placed over the area to be seeded or sodded to a depth of 4 inches. Topsoil will be obtained from the original excavation stockpile. If sufficient topsoil is unavailable, the Contractor will obtain and deliver topsoil from another site at his expense. Topsoil shall be free from all rock or gravel.

2.1 SEED MIXTURES

Seeds and seed mixtures shall conform to the Alabama Department of Transportation Standard Specifications for Highway Construction, Section 860.01, latest edition. Permanent seed mixtures in areas subject to frequent mowing for planting zones 1 and 2 shall be 1A or 2A with mix adjusted as required for the season. All areas at treatment plants, pump stations, wells, and tanks, as well as all areas inside fencing, shall be considered frequently mowed areas. Seasonal temporary mixes shall be as specified for their respective permanent mix. Temporary grassing may be modified by the contractor as required for erosion control or to comply with his BMP plan. In areas not subject to frequent mowing, mix shall be 1E or 2E depending on the planting zone. Seed mixtures shall be modified when required to match adjacent grassing. No bahiagrass shall be seeded.

3.0 PROCURING AND HANDLING SOD

Sod shall be kept moist and planted within three (3) days. Sod will not be allowed to dry out or freeze. Sod shall be machine-stripped at a uniform soil thickness with a minimum of two (2) inches of soil adhering to the roots when placed. Sod shall be live, fresh,

uninjured, and growing grass at the time of planting. Sod shall be handled in a manner that will prevent tearing, breaking, drying, or other damage. Sod shall be healthy when placed.

4.0 GROUND PREPARATION

The ground shall be plowed to a depth of not less than four (4) inches but not greater than eight (8) inches. The ground shall be cleared of all rock 3/4 inch (.75") or larger in size of any dimension, all construction debris, or other objectionable material by hand raking. After plowing and clearing, the ground shall be pulverized. Then, rock and debris-free topsoil shall be placed over the prepared area to a depth of four (4) inches, and mixed with the fertilizer and lime. After placement of topsoil, the ground shall be cleared of clods, all stones, rocks brush, roots, construction debris, or other objectionable material. In areas subject to frequent mowing, the ground shall be fine raked and hand picked to remove all gravel and rocks. Remove all other objects that may cause damage to mower blades. The Contractor shall supply water, and additional fertilizer if needed, for planting and growth without additional expense to the Owner.

5.0 PLANTING

Sod shall be placed on level, prepared soil at any time when ground is not wet or frozen. Sod shall be placed by butting edges of sod block and with alternating joints. Sod shall be used to fill in all voids after the sod has been laid. Roll sodded areas with hand-held roller to bond sod to soil and to smooth out rough spots. Completed sod shall be smooth, and free from irregularities. The Contractor shall maintain the planting until the final approval of the project which includes watering when necessary. Water shall be applied by the use of hose sprinklers, soaker hose, water truck with irrigation attachments or other watering equipment that will apply water in such as fashion as to avoid damaging areas. Seeded areas will have mulch applied at approximately two tons per acre to lessen the impact of erosion. All gullies and washes created shall be repaired and reseeded.

6.0 FERTILIZER AND SEED

When area is to be seeded, apply fertilizer in accordance with manufacturer's instructions at 500 lbs. per acre of 8-8-8 fertilizer or 300 lbs per acre of 13-13-13 fertilizer. Apply fertilizer after smooth raking of topsoil and prior to roller compaction. Do not apply fertilizer at same time or with same machine as will be used to apply seed. Mix thoroughly into upper 2 inches of topsoil. When growth has emerged and is growing normally, a second application of an approved nitrogen fertilizer shall be applied. Fertilizer shall be applied uniformly at a rate of 67 pounds of nitrogen per acre unless a higher rate is desired to enhance growth.

Apply seed at rates specified evenly into intersecting directions and rake in lightly. Exercise care in covering to preserve the grade so that areas adjacent to pavement are not left higher than paved surface. After sowing, seed bed shall be compacted immediately with a cultipacker, roller or approved drag. Compacting of seeding is not required when seed has been applied hydraulically or mulched.

Do not seed areas in excess of that which can be mulched on same day. Mulching material shall be oat or wheat straw, free from weeds, foreign matter detrimental to plant life. It shall be spread over all seeded areas at a minimum rate of approximately 2 tons

per acre, and shall be applied to a uniform depth in such a manner that not more than 10 percent of the soil surface is exposed. The use of wet hay or straw will not be permitted. Bailing twin shall be removed from mulch prior to placement.

Where temporary grass has been planted, the contractor shall establish the permanent grassing specified when weather and soil conditions are within the agronomic practice limits for the intended permanent species. Existing temporary vegetation shall be mowed to a height of approximately 3 inches or sprayed with an approved herbicide to retard future growth. The area shall be lightly scarified to prepare a suitable seed bed for permanent vegetation. Fertilize and permanent species shall be applied in the manner specified. Seed shall be covered by a second scarification followed by rolling. Scarification and rolling may be omitted when seed is spread by hydraulic equipment provided existing growth is 3 inches to 6 inches in height.

Erosion fabric shall be used when shown on the drawings, on all slopes greater than 3:1 and/or when the terrain requires use of erosion fabric. Fabric shall be woven jute fabric, open mesh construction smolder-resistant treated fabric shall be used and equal to Belton Anti-Wash/Geojute. Install fabric according to manufacturer's instruction.

Hydroseeding, when indicated in the plans to be provided, shall be accomplished with approved equipment, and all mixtures shall be constantly agitated from the time that they are mixed until they are finally applied to the seed bed. All such mixtures shall be used within eight hours from time of mixing. Nozzles or sprays shall not be directed toward the ground in such a manner as to cause erosion or runoff.

7.0 ACCEPTANCE

Acceptance of the planting shall be the satisfactory placement and growing of the material as determined by the Engineer. As a minimum, satisfactory stand for seeded grass must be a growing complete cover of grass, uniform in height, color, and density, in which gaps do not exceed the following:

1. Bare areas shall be scattered and not comprise more than 1/100 of any given area.
2. For frequently mowed areas, bare spots shall not exceed 4 square inches.
3. For infrequently mowed areas, bare spots shall not exceed 6 square inches.

Provide, at no additional cost to the Owner, watering, additional seed, additional fertilizer, and/or lime, etc., as required to achieve acceptance. It shall be the responsibility of the Contractor to secure a stand of grass such as will minimize loss of soil by erosion; to maintain all seeded areas until final acceptance of the work; and to restore or replace any portion of the grassing work that is found to be defective, or which results in an unsatisfactory stand of grass, or which becomes damaged prior to acceptance of the work. However, all grassing and coverage (whether seeded or sodded) through developed areas or in easements must match that existing prior to construction. Sod shall be level, well knitted and growing, covering the entire designated area.

If a satisfactory stand of grass or sod is not established then the area shall be re-seeded or re-sodded without any additional cost to the Owner. The responsibility of the Contractor shall continue to the following extent; should all other work at the site have been completed and accepted and should the Contractor have removed all forces and equipment from the plant site, he shall nevertheless, in the event of failure or partial failure of the grassing

work, be obliged under the terms of the Bond given to the Owner to return such forces and equipment to the plant site as are necessary to ensure the satisfactory completion of this portion of work under the Contract.

The Contractor shall mow all sites a minimum of two (2) times, a minimum of two weeks apart after the permanent species has been established, with a finish type mower to demonstrate that the site can be readily maintained by the Owner without difficulty and without damaging equipment. Repeat the mowings a minimum of two additional times if portions of the site are disturbed, regraded, or any work is performed or equipment moved off the site, or any other activity is performed that may affect the acceptance of the grassing. The mowings shall be at a close setting (i.e., low grass height) that will reveal any deficiencies from these Specifications and any debris or potentially damaging items.

The Owner shall not obligated to make any payment for grassing until an acceptable stand of grass meeting all the requirements of these specifications is achieved.