CONTRACT DOCUMENTS

AND

TECHNICAL SPECIFICATIONS

FOR

BURMASTER TRANSFER FACILITY

DEPARTMENT OF PUBLIC WORKS CITY OF GRETNA, LOUISIANA

February 26, 2025

BURK-KLEINPETER, INC. 2400 VETERAN'S BLVD. SUITE 310, KENNER, LA. 70062

Set No.____



BURMASTER TRANSFER FACILITY

FOR THE CITY OF GRETNA, LOUISIANA

TABLE OF CONTENTS

BIDDING REQUIREMENTS

Invitatio Instruct Louisia Bid Bor Affidavi Attesta Equal C Certific Bidder'	on to Bid tions to Bidders na Uniform Public Work Bid Form nd t tion Affidavit Opportunity Clause ation of Non-segregated Facilities s Representation	I-1 thru I-2 B-1 thru B-8 LUPWBF-1 thru LUPWBF-4 BB-1 thru BB-2 AF-1 AA-1 thru AA-2 EO-1 NF-1 BR-1
CONTRACT F	FORMS	
Agreen Payme	nent nt and Performance Bond	A-1 thru A-5 PB-1 thru PB-2
CONDITIONS	OF CONTRACT	
00700	Standard General Conditions of the Construction Contract	00700-0 thru 00700-41
00810	Supplementary Conditions to the Standard General Conditions of the Construction Contract	00810-1 thru 00810-16
TECHNICAL	SPECIFICATIONS	
DIVISI	ON 01	
01A 01B 01C 01SP 01010 01025 01400 01530 01540 01555	Project Requirements Submittals Mobilization Special Provisions Project Description and Scope of Work Measurement and Payment Quality Control Barriers and Enclosures Security Traffic Control and Coordination	1A-1 thru 1A-24 1B-1 thru 1B-6 1C-1 thru 1C-2 1SP-1 thru 1SP-12 01010-1 thru 01010-6 01025-1 thru 01025-6 01400-1 thru 01400-6 01530-1 thru 01530-2 01540-1 thru 01555-6

01560 Temporary Controls TS-01 Clearing and Grubbing TS-02 Removal of Structures and Obstructions TS-03 Excavation and Embankment TS-04 Asphalt Concrete Mixtures TS-05 Asphalt Concrete Pavement Patching TS-06 Portland Cement Concrete Pavement TS-07 Storm Drains TS-08 Catch Basins TS-09 Fences TS-10 Concrete Walks and Drives TS-10 Concrete Walks and Drives TS-11 Curbs TS-12 Plastic Pavement Markings TS-13 Hydro-Seeding TS-16 Structural Metals TS-17 Steel Sheet Piling	$\begin{array}{l} 01560-1 \ thru \ 01560-4 \\ TS01 - 1 \ thru \ TS01 - 2 \\ TS02 - 1 \ thru \ TS02 - 2 \\ TS03 - 1 \ thru \ TS03 - 9 \\ TS04 - 1 \ thru \ TS04 - 26 \\ TS05 - 1 \ thru \ TS05 - 3 \\ TS06 - 1 \ thru \ TS05 - 3 \\ TS07 - 1 \ thru \ TS06 - 1 \\ TS07 - 1 \ thru \ TS07 - 9 \\ TS08 - 1 \ thru \ TS07 - 9 \\ TS08 - 1 \ thru \ TS09 - 4 \\ TS10 - 1 \ thru \ TS10 - 2 \\ TS11 - 1 \ thru \ TS11 - 2 \\ TS12 - 1 \ thru \ TS12 - 7 \\ TS13 - 1 \ thru \ TS13 - 2 \\ TS16 - 1 \ thru \ TS17 - 7 \\ \end{array}$
DIVISION 05	
055000 Metal Fabrications	055000-1 thru 055000-9
DIVISION 07	
079200 Joint Sealants	079200-1 thru 079200-8
DIVISION 09	
099113 Exterior Painting	099113-1 thru 099113-5
DIVISION 13	
133419 Metal Building Systems	133419-1 thru 133419-2
DIVISION 16	
 16010 Basic Electrical Requirements 16051 Basic Electrical Related Work 16110 Raceways and Boxes for Electrical Systems 16120 Low Voltage Electrical Power Conductors And Cables 16142 Electrical Connections for Equipment 16170 Circuit Disconnects 16190 Hangers and Supports for Electrical Systems 16195 Basic Electrical Requirements 16200 Sleeves and Sleeve Seals for Electrical Raceways and Cabling 16452 Grounding 	16010-1 thru 16010-10 16051-1 thru 16051-4 16110-1 thru 16110-8 16120-1 thru 16120-5 16142-1 thru 16142-3 16170-1 thru 16170-2 16190-1 thru 16190-6 16195-1 thru 16195-8 16200-1 thru 16200-5 16452-1 thru 16452-5
16470 Panelboards	16470-1 thru 16470-4

	16472 16510	16472-1 thru 1 16510-1 thru 16	4720-3 6510-4	
S-001 \	WATE	R DISTRIBUTION SYSTEM		
:	S-001	Water Distribution System	S-001 thru S-0	17
	<u>NDIX</u>		PA	GE NUMBER
Append	dix A:	Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standa	rd Notes	1 - 23
Append	dix B:	Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General S	tandard Notes	1 - 21
Append	dix C:	Jefferson Parish Department of Engineering Water Distribution System General Standard No	otes	1 - 43
Appen	dix D:	Division II Technical Specifications, Section S-0 Water Distribution System	01	1 - 17

INVITATION TO BID

BURMASTER TRANSFER FACILITY FOR THE DEPARTMENT OF PUBLIC WORKS CITY OF GRETNA, LOUISIANA

Sealed Bids will be received by the City of Gretna in the Mayor's Office, Gretna City Hall, Second Street and Huey P. Long Avenue, Gretna, Louisiana 70053 or electronically through the website www.publicpurchase.com on March 27, 2025; until 9:45 a.m. local time for:

BURMASTER TRANSFER FACILITY

At 10:00 a.m. local time on the same day, in the Council Chamber, Gretna City Hall, Gretna, Louisiana, all Bids that have been duly received will be officially opened and read aloud.

Without limiting the scope of work described herein, the proposed bid provides for installation of concrete paving, asphalt paving, sheet pile driving, water infrastructure, electrical and lighting infrastructure, and all other incidental work thereto.

All Bids must be in accordance with the Contract Documents on file at the office of BURK-KLEINPETER, INC., Consulting Engineers, 2400 Veteran's Blvd., Suite 310 Kenner, Louisiana 70062.

Copies of the Bidding Documents and Contract Documents, consisting of drawings and specifications for use in preparing bids may be secured from the office of BURK-KLEINPETER, INC., Consulting Engineers, 2400 Veteran's Blvd., Suite 310 Kenner, Louisiana 70062; (504) 483-6271 by licensed contractors upon payment of \$50.00 per set or through the website <u>www.publicpurchase.com</u>. Deposit on the first set of documents furnished bona fide prime bidders will be fully refunded upon return of the documents in good condition no later than ten calendar days after receipt of bids. On other sets of documents furnished to prime bidders, the deposit less \$25.00 will be refunded upon return of the documents in good condition no later than ten calendar days after receipt of bids. Good condition is defined as free of all pencils, pens and other marks. All sets furnished to subcontractors and suppliers are non-refundable. Partial sets will not be issued. Request for mailing Contract Documents will be handled by Federal Express only, provided the addressee supplies his courier's account number and "street" address.

Each Bidder must obtain a contractor's license from the State of Louisiana prior to submitting his bid.

The work for this project is classified as Category IV, Municipal and Public Works Construction. **ONLY** Contractors with these classifications may submit bids for this project. Bids received by Contractors without this classification will not be opened.

Bids will be received on a unit price basis as described in the Contract Documents.

All work is to commence immediately after the Date of Contract. Completion of the work is required within 120 calendar days. All time limits commencing upon the date of issuance by of the Owner's "Notice to Proceed."

Bid security in the amount of 5 percent (5%) of the total Bid must accompany each Bid.

The successful Bidder will be required to furnish a Performance and Payment Bond guaranteeing faithful performance and the payment of all bills and obligations arising from the performance of the contract.

Sureties will be required to meet qualifications set forth in the Contract Documents.

Bidders are required to attend a <u>mandatory pre-bid conference Wednesday, March 19,2025 at 10:00 a.m.</u> to discuss the project. The meeting will take place at the Gretna City Hall Council Chambers; 740 2nd Street, Gretna, La. 70053. Prebid conference details are also set forth in the Bidding Documents.

No Bid may be withdrawn within a period of 45 days after the date fixed for opening Bids.

The City of Gretna reserves the right to reject all Bids, and to reject nonconforming, nonresponsive, or conditional Bids.

<u>/S/ BELINDA C. CONSTANT</u> MAYOR CITY OF GRETNA STATE OF LOUISIANA

Publish: February 26; March 5; and March 12, 2025.

INSTRUCTIONS TO BIDDERS - LIST OF SUBJECTS

- B-1. CROSS REFERENCE TO PRIMARY STATEMENTS
- B-2. QUALIFICATIONS OF BIDDERS
- B-3. LOUISIANA LICENSE REQUIREMENTS
- B-4. FAMILIARIZATION WITH THE WORK
- B-4.01. Site Conditions
- B-4.02. Pre-Bid Conference
- B-5. INTERPRETATIONS
- B-6. TAXES AND PERMITS
- B-7. BID SECURITY
- B-8. RETURN OF BID SECURITY
- B-9. CONTRACT TIME
- B-10. SUBCONTRACTORS AND SUPPLIERS
- B-10.01. Subcontractor Qualification
- B-10.02. Suppliers
- B-11. BIDS
- B-11.01. Bid Form
- B-11.02. Bid Pricing
- B-11.03. Not Used
- B-11.04. Submission of Bids
- B-11.05. Modification and Withdrawal of Bids
- B-11.06. Bids to Remain Open
- B-12. AWARD OF CONTRACT
- B-13. EXECUTION OF AGREEMENT
- B-14. COPIES OF CONTRACT DOCUMENTS
- B-15. LOCAL MATERIALS AND FIRMS
- B-16. 20. NOT USED
- B-21. PERFORMANCE AND PAYMENT BOND QUALIFICATIONS
- B-22. BIDDER'S CHECKLIST

INSTRUCTIONS TO BIDDERS

B-1. <u>CROSS REFERENCE TO PRIMARY STATEMENTS</u>. Definitions, requirements, and limitations affecting the bidding are contained in the various Contract Documents, and are not necessarily repeated in these instructions. The following is a partial list of applicable provisions and their locations:

Availability of Land	General Conditions and Division 1
Bonds and Insurance	General and Supplemental Conditions
Definitions	General and Supplemental Conditions
Detailed Description of the Work	Division 1
Liquidated Damages	Agreement and Special Provisions
Laws and Regulations	General and Supplemental Conditions
Retainage	Agreement and Special Provisions
Subsurface Investigations	General and Supplemental Conditions

B-2. <u>QUALIFICATIONS OF BIDDERS</u>. Bidders may be required to submit evidence that they have a practical knowledge of the particular Work bid upon, and that they have the financial resources to complete the proposed Work.

In determining the Bidder's qualifications, the following factors will be considered: Work previously completed by the Bidder and whether the Bidder (a) maintains a permanent place of business, (b) has adequate plant and equipment to do the Work properly and expeditiously, (c) has the financial resources to meet all obligations incident to the Work, and (d) has appropriate technical experience. In accordance with Louisiana Public Contract Law (38:2281), preference will be given to bidders domiciled in Louisiana.

Each Bidder may be required to show that he has handled former work so that no just claims are pending against such work. No Bid will be accepted from a Bidder who is engaged on any work which would impair his ability to perform or finance this Work.

B-3. <u>LOUISIANA LICENSE REQUIREMENTS</u>. Only Bids of Contractors licensed under LSA R.S. - 37:2150 et seq., will be considered. Licensing is supervised by the Louisiana Licensing Board for Contractors, State Capitol Building, Baton Rouge, Louisiana. Contractors desiring to bid shall submit with their Bids evidence that they hold a valid license in the proper classification. This work is classified as Municipal and Public Works construction. **ONLY** Contractors with these classifications may submit bids for this project. Bids received by Contractors without this classification will not be opened.

B-4. <u>FAMILIARIZATION WITH THE WORK</u>. Before submitting his Bid, each prospective Bidder shall familiarize himself with the Work, the site where the Work is to be performed, local labor conditions and all laws, regulations and other factors affecting performance of the Work. He shall carefully correlate his observations with requirements of the Contract Documents and otherwise satisfy himself of the expense and difficulties attending performance of the Work. The submission of a Bid will constitute a representation of compliance by the Bidder. There will be no subsequent financial adjustment for lack of such familiarization.

B-4.01. <u>Site Conditions</u>. Each Bidder shall visit the site of the Work and completely inform himself relative to construction hazards and procedure, the availability of lands, the character and quantity of surface and subsurface materials, and utilities to be encountered, the arrangement and condition of existing structures and facilities, the character of construction equipment and facilities needed for performance of the Work, and facilities for transportation, handling, and storage of materials and equipment. All such factors shall be properly investigated and considered in the preparation of the Bid.

B-4.02. <u>Mandatory Prebid Conference</u>. A mandatory prebid conference will be held at Gretna City Hall, 2nd Street and Huey P. Long Avenue, Gretna, Louisiana, on March 19, 2025, at 10:00 A.M. Representatives of BURK-KLEINPETER, INC., will be present to discuss the Project and answer questions. Bidders, subcontractors, and suppliers are encouraged to attend and participate in the conference. Contractors and subcontractors shall be responsible for all matters discussed at the mandatory pre-bid conference as well as decisions made at that time.

B-5. <u>INTERPRETATIONS</u>. All questions about the meaning or intent of the Contract Documents shall be submitted to the Engineer in writing. Replies will be issued by Addenda, mailed or delivered to all parties recorded by the Engineer as having received the bidding documents. Addenda will be issued at least 72 hours (excluding weekends and holidays) prior to the time stated for opening bids. Questions received less than fifteen calendar days prior to the date for opening Bids will not be answered. Only answers furnished by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

B-6. <u>TAXES AND PERMITS</u>. Attention is directed to the requirements of the General and Supplementary Conditions regarding payment of taxes and obtaining permits. All taxes that are lawfully assessed against Owner or Contractor in connection with the Work shall be paid by the Contractor. The bid prices shall include all such taxes and the costs of all required permits.

B-7. <u>BID SECURITY</u>. The amount of bid security is stated in the Invitation to Bid. The required security must be in the form of a certified or bank cashier's check or a bid bond. The bid bond must be executed by a surety meeting the requirements set forth in General Conditions.

The bid security shall be made payable without condition to the Department of Public Works, City of Gretna, hereinafter referred to as Owner. The bid security may be retained by and shall be forfeited to the Owner as liquidated damages if the Bid is accepted and a contract based thereon is awarded and the Bidder shall fail to enter into a contract in the form prescribed, with legally responsible sureties, within ten days after contract has been delivered to the Bidder by the Owner.

B-8. <u>RETURN OF BID SECURITY</u>. The bid security of the successful Bidder will be retained until he has executed the Agreement and furnished the required Contract Security, whereupon checks furnished as bid security will be returned; if he fails to execute and deliver the Agreement and furnish the required Contract Security within twelve days after the Contract has been delivered to the Bidder by the Owner, Owner may annul the Notice of Award and the bid security of that Bidder will be forfeited. The bid security of any Bidder whom Owner believes to have a reasonable

chance of receiving the award may be retained by Owner until the seventh day after the executed Agreement is delivered by Owner to Contractor and the required Contract Security is furnished but not to exceed 45 days. Checks furnished as bid security by other Bidders will be returned within seven days of the Bid opening.

B-9. <u>CONTRACT TIME</u>. The Contract Time is an essential part of the contract and it will be necessary for each Bidder to satisfy Owner of his ability to complete the Work within the time set forth in the Bid Form. Provisions for delays, liquidated damages, and extensions of time are set forth in the General and Supplementary Conditions.

B-10. <u>SUBCONTRACTORS AND SUPPLIERS</u>. Within seven days after Bids are opened, the apparent low Bidder, and any other Bidder so requested, shall submit a list of all Subcontractors he expects to use in the Work.

B-10.01. <u>Subcontractor Qualification</u>. Particular consideration will be given to the qualifications of each Subcontractor proposed to perform more than ten per cent (10%) of the Work. An experience statement with pertinent information as to similar projects and other evidence of qualification shall be furnished for each named Subcontractor, as requested by the Owner. If Owner or Engineer after due investigation has reasonable objection to any proposed Subcontractor, he may before giving the Notice of Award request the apparent low Bidder to submit an acceptable substitute without an increase in his Bid. If the apparent low Bidder declines to make any such substitution, Notice of Award shall not be given to such bidder, but in declining to make substitution he will not thereby sacrifice his bid security. Any Subcontractor so listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to the Owner and Engineer.

Contractor shall not be required to employ any subcontractor against whom he has reasonable objection.

The use of subcontractors listed by the Bidder and accepted by the Owner prior to the Notice of Award will be required in the performance of the Work.

B-10.02. <u>Suppliers</u>. The list of subcontractors shall also include the suppliers and manufacturers of principal items of materials and equipment the Bidder expects to use in the Work.

B-11. <u>BIDS</u>.

B-11.01. <u>Bid Form</u>. Bound sets of Contract Documents are for the Bidder's information only and should not be used when submitting bids. The Bidder shall use the Proposal Form issued by Addendum for the submission of bids. All papers bound with or attached to the Proposal Form are a necessary part thereof and must not be detached. Necessary copies of this form will be furnished for bidding. Proposal Forms must be made out in ink or typed. Illegibility or ambiguity therein may constitute justification for rejection of the bid.

Bids by Corporations must be executed in the corporate name by the signature of the president or vice-president (or other corporate officer accompanied by evidence of

authority to sign) and the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The state of incorporation shall be shown below the corporate name. Bids by partnerships must be executed in the partnership name and signed by a partner; title and the official address of the partnership must be shown below the signature. Bids by joint ventures shall be signed by each participant in the joint venture or by an authorized agent of each participant.

The names of all persons signing must also be legibly printed below the signature. A Bid by a person who affixes to his signature the word "president", "secretary", "agent", or other designation without disclosing his principal may be held to be the Bid of the individual signing. When requested by Owner, evidence of the authority of the person signing shall be furnished.

All blank spaces in the Bid Form shall be filled. A bid price shall be indicated for all unit price items and the total Bid. The total Bid will be determined as the sum of the products of the estimated quantities of each item and the unit price bid.

The bid shall contain an acknowledgment of receipt of all Addenda, the numbers and dates of which shall be filled in on the Bid Form.

No alterations in Bids, or in the printed forms therefore, by erasures, interpolations, or otherwise will be acceptable unless each such alteration is signed or initialed by the Bidder; if initialed, Owner may require the Bidder to identify any alteration so initialed.

B-11.02. <u>Bid Pricing</u>. The Bid shall be based on the Work as indicated on the drawings and as specified. The Bidder shall complete the schedule of unit prices included in the Bid Form.

The total Bid price quoted for the Work shall be stated in figures and in words. The price quoted in the Bid Form shall include all costs necessary for the complete performance of the work in full conformity with the conditions of the Contract Documents, and shall include all applicable Federal, State, County or Parish, Municipal or other taxes.

The final Contract Price will be subject to adjustment according to final measured, used, or delivered quantities, and the unit prices in the Bid will apply to such final quantities.

B-11.03. NOT USED

B-11.04. <u>Submission of Bids</u>. Each Bid and accompanying documents shall be enclosed in duplicate in a sealed opaque envelope or wrapping, addressed to: Gretna City Hall, Mayor's Office, 2nd Street and Huey P. Long Avenue, Gretna, Louisiana 70054 and identified on the outside with the Bidder's name; return address; the words "Burmaster Transfer Facility" or submitted electronically through the website www.publicpurchase.com.

If the bid is in the amount of \$50,000 or more, the state license number of the bidder, unless otherwise accepted by law. (Amended by Resolution No. 47418) If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof.

Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Invitation to Bid, or the modified time and date indicated by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened.

Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

Oral, telephone, or faxed Bids are invalid and will not receive consideration.

No Bidder may submit more than one Bid. Multiple Bids under different names will not be accepted from one firm or association.

B-11.05. <u>Modification and Withdrawal of Bids</u>. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

B-11.06. <u>Bids to Remain Open</u>. All Bids shall remain open for 45 days after the day of the Bid opening. Owner shall release bids and return bid securities as specified in this section under "Return of Bid Security".

B-12. <u>AWARD OF CONTRACT</u>. Owner shall award a contract to the Bidder who, in Owner's judgment, is the lowest responsive, responsible Bidder. Owner reserves the right to reject any or all Bids, to waive informalities, and to reject nonconforming, nonresponsive, or conditional Bids.

In evaluating Bids, Owner shall consider the qualifications of the Bidders, and whether or not the Bids comply with the prescribed requirements. Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material), and may reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

If the contract is awarded, Owner shall give the apparent successful Bidder a Notice of Award within 90 days after the date of the Bid opening.

B-13. <u>EXECUTION OF THE AGREEMENT</u>. Engineer will furnish to Contractor six copies of the Agreement and other Contract Documents bound therewith. Within 12 days, Contractor shall execute the Agreement; insert executed copies of the required bonds and power of attorney and submit all copies to the Owner. The date of contract on the Agreement and Bond forms shall be left blank for filling in by Owner. The certification date on the power of attorney also shall be left blank for filling in by Owner.

Owner will execute all copies, insert the date of contract on the Agreement, Bonds, and power of attorney, and return all copies to Engineer for review and distribution. Distribution of signed copies shall be two copies each to Owner and Contractor, and one copy each to Surety and Engineer.

Owner will file one complete copy of the executed Contract Documents with the Recorder of Mortgages in Jefferson Parish and will bill Contractor.

B-14. <u>COPIES OF CONTRACT DOCUMENTS</u>. Copies of the Bidding Documents and Contract Documents, consisting of drawings and specifications for use in preparing Bids may be secured from the office of BURK-KLEINPETER, INC., 2400 Veteran's Blvd, Suite 310 Kenner, LA 70063, (504) 483-6271 by licensed contractors upon payment of \$50.00 per set. Deposit on the first set of documents furnished bona fide prime bidders will be fully refunded upon return of the documents in good condition no later than ten calendar days after receipt of bids. On other sets of documents furnished to prime bidders, the deposit less \$25.00 will be refunded upon return of the documents in good condition no later than ten calendar days after receipt of bids. Good condition is defined as free of all pencil, pen and other marks. All sets furnished to subcontractors and suppliers are non-refundable. Partial sets will not be issued.

The Contractor to whom a contract is awarded will be furnished 6 copies of the specifications and the drawings, together with all Addenda thereto.

B-15. <u>LOCAL MATERIALS AND FIRMS</u>. By statutory authority, preference is hereby given to materials, supplies, and provisions produced, manufactured, or grown in Louisiana, quality being equal to articles offered by competitors outside of the State (LSA R.S. - 38:2251), and preference is hereby given to firms doing business in the State of Louisiana (LSA R.S. - 38:2253)

B-16. through B-20. NOT USED

B-21. <u>PERFORMANCE AND PAYMENT BOND QUALIFICATIONS</u>. All performance and payment bonds for contracts with the City of Gretna are to be provided by a company or companies with at least an "A" or better financial rating according to the latest A.M. Best Company rating.

B-22. <u>BIDDER'S CHECKLIST</u>. Bidders shall refer to the Bidder's Check List to ensure all required documents and instructions are followed prior to submitting the Bid. Failure to submit required documents may render a bid informal. (See page B-8).

BIDDER'S CHECK LIST

Check off each box as you complete the instructions.

- Bid Surety equal to 5% of total bid in the form of a certified check, cashiers check, or bid bond. Bid Bond must have attached appropriate and satisfactory power of attorney and certificate as to corporate principal. (Res. No. 10677, Section I-1-A and LRS 38:2214) (Pages BB-1 through BB-3).
- Proper attestations affidavit attached to bid, signed and notarized. (Page AA-1 and AA-2).
- Proper affidavit attached to bid, signed and notarized. (Page AF-1).
- _____ Satisfactory evidence of the authority of the person signing on behalf of the individual, firm, partnership, or corporation must be attached. In the case of a corporation, said authority must be in the form of a Corporate Resolution.
- _____ If bid is \$50,000.00 or more, your Louisiana State Contractor's license number must be affixed to the outside of your bid envelope and to the bid form. (Res. No. 10677 as amended by Res. No. 13385 Sec. I-1-A.)
- Your bid package must be submitted with original typed or in ink and receipt of all Addenda acknowledged. (Pages BF-1 through BF-5).
- Bid documents shall be enclosed in a sealed opaque envelope or wrapping properly addressed and identified on the outside with Bidder's name, return address, Louisiana State License Number, Title of Project and Proposal Number or submitted electronically through the website www.publicpurchase.com.
- _____ Check terms, delivery, and/or starting and completion times.
- Certification of Equal Opportunity and Non-Segregated Facilities signed and attached to bid. (Pages EO-1 and NF-1). The documents should be submitted within <u>10</u> days after bid deadline.
- _____ Bid forms signed and state license number shown.

BURK-KLEINPETER, INC.

Engineers-Architects-Planners-Environmental Scientists 2400 Veteran's Blvd, Suite 310-Kenner, LA 70062 - (504) 483-6271

SELLING OF PLANS AND SPECIFICATION

JOB NAME Burmaster Transfer Facility

JOB NUMBER 9344-8660

CLIENT: City of Gretna, Amie Hebert

CONTACT PERSON:

Engineer David Boyd, PE

Architect: N/A

DATES OF ADVERTISEMENTS: 2/26/25, 3/5/25 & 3/12/25

PRE-BID DATE: 3/19/25 MANDATORY

PRE-BID TIME: 10:00 AM

PRE-BID LOCATION: Gretna City Hall Conference Room

BID DATE: 3/27/25

BID TIME: Bids due 9:45 AM, Bid opening 10:00 AM

BID LOCATION: Gretna City Hall Council Room

DESCRIPTION

OF

WORK:

Installation of concrete paving, asphalt paving, sheet pile driving, water infrastructure, electrical and lighting infrastructure, and all other incidental work thereto.

COST OF PLANS AND SPECIFICATIONS: \$50.00

ENGINEERS ESTIMATE: \$N/A

**** PLEASE INFORM DAVID BOYD 504-483-6271 WHEN ADDENDUM COMES OUT.

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: City of Gretna 2nd St. and Huey P. Long Avenue Gretna, LA 70053 (Owner to provide name and address of owner) BID FOR: Burmaster Transfer Facility

(Owner to provide name of project and other identifying information)

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: <u>Burk Kleinpeter Inc.</u>, and dated: <u>February 2025</u>.

(Owner to provide name of entity preparing bidding documents.)

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA:** (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) ______.

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" * but not alternates) the sum of:

Dollars	(\$))
	\ +	/	

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

	Dollars (\$)
Alternate No. 2 (Owner to provide description of alternate and s	tate whether add or deduct) for the lump sum of:	
	Dollars (\$)
Alternate No. 3 (Owner to provide description of alternate and st	ate whether add or deduct) for the lump sum of:	
	Dollars (\$)
NAME OF BIDDER:ADDRESS OF BIDDER:		
LOUISIANA CONTRACTOR'S LICENSE NUMBER: NAME OF AUTHORIZED SIGNATORY OF BIDDER:		
TITLE OF AUTHORIZED SIGNATORY OF BIDDER:		
SIGNATURE OF AUTHORIZED SIGNATORY OF BID	DER **:	

DATE: _____

* The <u>Unit Price Form</u> shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.
** If someone other than a corporate officer signs for the Bidder/Contractor, a copy of a corporate resolution or other signature authorization shall be required for submission of bid. Failure to include a copy of the appropriate signature authorization, if required, may result in the rejection of the bid unless bidder has complied with La. R.S. 38:2212(B)5.

BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LA RS 38:2218. A is attached to and made a part of this bid.

LOUISIANA UNIFORM PUBLIC WORK BID FORM **UNIT PRICE FORM**

TO:

City of Gretna 2nd St. and Huey P. Long Avenue

Gretna, LA 70053 (Owner to provide name and address of owner) (Owner to provide name of project and other identifying information)

BID FOR: Burmaster Transfer Facility

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	⊠ Base Bid or □	Alt.# MOBILIZATIO	ON AND DEMOBILIZATION	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
727-01	1	LUMP SUM		
DESCRIPTION				
DESCRIPTION:	⊠ Base Bid or ∟	Alt.# CLEARING A	ND GRUBBING	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
201-01-00100	1	LUMP SUM		
DESCRIPTION:	🗵 Base Bid or 🕻	Alt.# REMOVAL O	F PAVEMENT STRUCTURE	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
202-02-03030	2262.1	SQUARE YARD		
DECONDUCION				
DESCRIPTION:	IXI Base Bid or	Alt.#_REMOVAL OF C	UNCRETE WALKS AND DRIVES	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
202-02-06100	106	SQUARE YARDS		
DESCRIPTION:	🛛 Base Bid or 🗆	Alt.# REMOVAL OF	FENCE	
REE NO	OUANTITY:	LINIT OF MEASURE:	LINIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
202 02 42000	1144	UNIT OF MERSORE.	ONTITICE	ONTETRICE EXTENSION (Quantity times one trace)
202-02-12000	1144	LINEAR FOOT		
DESCRIPTION:	🗵 Base Bid or 🕻	Alt.# NON -PLASTI	C EMBANKMENT(SAND)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
203-04-00200	12,160	CUBIC YARD		

DESCRIPTION:	⊠ Base Bid or □ Alt.#EXCAVATION AND EMBANKMENT_				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
203-05-00100	1	LUMP SUM			

DESCRIPTION:	⊠ Base Bid or □ Alt.# ASPHALT CONCRETE				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
502-01-00100	280	TON			

DESCRIPTION:	⊠ Base Bid or □ Alt.# PAVEMENT PATCHING				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
510-04-00100	4	TONS			

DESCRIPTION:	🗵 Base Bid or 🕻	Alt.#PORTLAND C	EMENT CONCRETE PAVEMENT (9" THICK)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
601-01-00300	5,224	SQUARE YARD		

DESCRIPTION:	⊠ Base Bid or □ Alt.# STORMDRAIN PIPE ARCH (15" EQUIV. RCPA)				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
701-04-01000	380	LINEAR FOOT			

DESCRIPTION:	🗵 Base Bid or 🕻	Alt.# STORMDRAI	N PIPE ARCH (18" EQUIV. RCPA)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
701-04-01020	176	LINEAR FOOT		

DESCRIPTION:	⊠ Base Bid or □ Alt.#_CATCH BASINS (CB-01)				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
702-03-00100	7	EACH			

DESCRIPTION:	⊠ Base Bid or □ Alt.# CHAIN LINK FENCE (6-FOOT HEIGHT)				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
705-06-00300	980	LINEAR FOOT			

DESCRIPTION:	⊠ Base Bid or □ Alt.# CONCRETE WALK (5" THICK)				
REF. NO.	QUANTITY:	NTITY: UNIT OF MEASURE: UNIT PRICE UNIT PRICE EXTENSION (Quantity times			
706-01-00200	14.8	SQUARE YARD			

Wording for "DESCRIPTION" is to be provided by the Owner. All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner

DESCRIPTION:	🗵 Base Bid or	Alt.# CONCRETE	WALK (6" THICK)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
706-02-00200	229.0	SQUARE YARD		

DESCRIPTION:	⊠ Base Bid or □ Alt.# CONCRETE CURB					
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)		
707-01-00100	261	LINEAR FOOT				

DESCRIPTION:	☑ Base Bid or □ Alt.# PLASTIC PAVEMENT LEGEND & SYMBOLS (ARROW -STRAIGHT)				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
732-04-01020	11	EACH			

DESCRIPTION:	⊠ Base Bid or □ Alt.# HYDRO-SEEDING					
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)		
739-01-00100	0.14	ACRES				

DESCRIPTION:	⊠ Base Bid or □ Alt.# STRUCTURAL METALWORK				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
807-04-00100	27,806	POUNDS			

DESCRIPTION:	⊠ Base Bid or □ Alt.# ELECTRICAL WORK					
REF. NO.	QUANTITY:	UNIT OF MEASURE: UNIT PRICE UNIT PRICE EXTENSION (Quantity times Unit Price)				
TS-1	1	LUMP SUM				

DESCRIPTION:	⊠ Base Bid or □ Alt.# GUARD SHACK				
REF. NO.	QUANTITY:	UNIT OF MEASURE: UNIT PRICE UNIT PRICE EXTENSION (Quantity times Unit Price)			
TS-2	1	LUMP SUM			

DESCRIPTION:	⊠ Base Bid or □ Alt.# STEEL SHEETPILE					
REF. NO.	QUANTITY:	VTITY: UNIT OF MEASURE: UNIT PRICE UNIT PRICE UNIT PRICE EXTENSION (Quantity times Unit Price)				
TS-3	8008	SQUARE FOOT				

Wording for "DESCRIPTION" is to be provided by Owner. All quantities are estimates. The contractor will be paid upon actual quantities as verified by the Owner.

DESCRIPTION:	⊠ Base Bid or □ Alt.#SINGLE GATES FOR CHAIN LINK FENCE							
REF. NO.	QUANTITY:	UNIT OF MEASURE:	JNIT OF MEASURE: UNIT PRICE UNIT PRICE EXTENSION (Quantity times Uni					
TS-4	2	EACH						

DESCRIPTION:	⊠ Base Bid or □ Alt.#BOLLARDS						
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)			
TS-5	12	EACH					
DESCRIPTION:	Base Bid or Alt.#OIL_RECEIVING BUILDING						
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)			
TS-6	1	LUMP SUM					

Wording for "DESCRIPTION" is to be provided by Owner. All quantities are estimates. The contractor will be paid upon actual quantities as verified by the Owner.

BID BOND FOR FACILITY PLANNING AND CONTROL PROJECTS

Date:

KNOW ALL MEN BY THESE PRESENTS:

That	_of,
as Principal, and	, as Surety,
are held and firmly bound unto the State of Louisiana,	Division of Administration, Office of Facility
Planning and Control (Obligee), in the full and just sur	n of five (5%) percent of the total amount of this
proposal, including all alternates, lawful money of the	United States, for payment of which sum, well and
truly be made, we bind ourselves, our heirs, executors,	administrators, successors and assigns, jointly and
severally firmly by these presents.	

Surety represents that it is listed on the current U. S. Department of the Treasury Financial Management Service list of approved bonding companies as approved for an amount equal to or greater that the amount for which it obligates itself in this instrument or that it is a Louisiana domiciled insurance company with at least an A - rating in the latest printing of the A. M. Best's Key Rating Guide. If surety qualifies by virtue of its Best's listing, the Bond amount may not exceed ten percent of policyholders' surplus as shown in the latest A. M. Best's Key Rating Guide.

Surety further represents that it is licensed to do business in the State of Louisiana and that this Bond is signed by surety's agent or attorney-in-fact. This Bid Bond is accompanied by appropriate power of attorney.

THE CONDITION OF THIS OBLIGATION IS SUCH that, whereas said Principal is herewith submitting its proposal to the Obligee on a Contract for:

NOW, THEREFORE, if the said Contract be awarded to the Principal and the Principal shall, within such time as may be specified, enter into the Contract in writing and give a good and sufficient bond to secure the performance of the terms and conditions of the Contract with surety acceptable to the Obligee, then this obligation shall be void; otherwise this obligation shall become due and payable.

PRINCIPAL (BIDDER)

SURETY

 BY: AGENT OR ATTORNEY-IN-FACT(SEAL)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I,,	certify that I	am	the .
,	Secretary	of	the
Corporation names as Principal in the within bond; that			
V	who signed	the s	said
bond on behalf of the Principal was then			
of said Corporation; that I know his signature, and his signature the	ereto is genu	ine;	and
that said bond was duly signed, sealed, and attested to for ar	nd in behalf	of	said
corporation by authority of this governing body.			

(Corporate Seal)

(Title)

* Power-of-Attorney for person signing for the surety company must be attached to bond.

AFFIDAVIT

STATE OF LOUISIANA CITY OF GRETNA

BEFORE ME, the undersigned authority, personally came and appeared who after being by me duly sworn, deposed and said that he is the fully authorized______ of ______ (hereinafter referred to as bidder) the party who submitted a bid for______

which bid was received by the City of Gretna on ______and said affiant further said:

(1) That bidder employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the bidder whose services in connection with the construction of the public building or project or in securing the public contract were in the regular course of their duties for bidder; and

(2) That no part of the contract price received by bidder was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the bidder whose services in connection with the construction of the public building or project were in the regular course of their duties for bidder.

(3) Said bid is genuine and the bidder has not colluded, conspired or agreed directly or indirectly with any other bidder to offer a sham or collusive bid.

(4) Said bidder has not in any manner directly or indirectly agreed with any other person to fix the bid price of affiant or any other bidder, or to fix any overhead profit or cost element of said bid price, or that of any other bidder, or to induce any other person to refrain from bidding.

(5) Said bid is not intended to secure an unfair advantage of benefit from the Parish of Jefferson or in favor of any person interested in the proposed contract.

(6) All statements contained in said bid are true and correct.

(7) Neither affiant nor any member of his company has divulged information regarding said bid or any data relative thereto to any other person, firm or corporation.

Signed:

SWORN TO AND S	UBSCRIBED
BEFORE ME THIS	
DAY OF	, 20

Title

NOTARY PUBLIC

(NOT REQUIRED TO BE SUBMITTED WITH BID) SUBMIT BY THE LOW BIDDER WITHIN 10 DAYS AFTER BID OPENING

ATTESTATIONS AFFIDAVIT

NAME OF PROJECT

Before me, the undersigned notary public, duly commissioned and qualitied in and for the parish and state aforesaid, personally came and appeared Affiant, who after being duly sworn, attested as follows:

LA R.S. 38:2227 PAST CRIMINAL CONVICTIONS OF BIDDERS

- A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:
 - (a) Public bribery (R.S. 14:118)
 (b) Corrupt influencing (R.S. 14:120)
 (c) Extortion (R.S. 14:66)
 (d) Money laundering (R.S. 14:230)
- B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:
 - (a) Theft (R.S. 14:67)
 - (b) Identity Theft (R.S. 14:67.16)
 - (c) Theft of a business record (R.S.14:67.20)
 - (d) False accounting (R.S. 14:70)
 - (e) Issuing worthless checks (R.S. 14:71)

- (f) Bank fraud (R.S. 14:71.1)
- (g) Forgery (R.S. 14:72)
- (h) Contractors; misapplication of payments (R.S. 14:202)
- (i) Malfeasance in office (R.S. 14:134)

LA R.S. 38:2212.10 VERIFICATION OF EMPLOYEES

- A. Appearer is registered and participates in a status verification system to verify that all employees in the state of Louisiana are legal citizens of the United States or are legal aliens.
- B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.
- C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

(NOT REQUIRED TO BE SUBMITTED WITH BID) SUBMIT BY THE LOW BIDDER WITHIN 10 DAYS AFTER BID OPENING

LA R.S. 23:1726(B) CERTIFICATION REGARDING UNPAID WORKERS COMPENSATION INSURANCE

- A. R.S. 23:1726 prohibits any entity against whom an assessment under Part X of Chapter 11 of Title 23 of the Louisiana Revised Statutes of 1950 (Alternative Collection Procedures & Assessments) is in effect, and whose right to appeal that assessment is exhausted, from submitting a bid or proposal for or obtaining any contract pursuant to Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950 and Chapters 16 and 17 of Title 39 of the Louisiana Revised Statutes of 1950.
- B. By signing this bid /proposal, Affiant certifies that no such assessment is in effect against the bidding/proposing entity.

NAME OF BIDDER	NAME OF AUTHORIZED SIGNATORY OF BIDDER
DATE	TITLE OF AUTHORIZED SIGNATORY OF BIDDER
	SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER
WITNESSES:	
Sworn to and subscribed before	me this day of, 201,

Notary Public

PROSPECTIVE PRIME SUPPLIER'S (BIDDER) STATEMENT ABOUT EQUAL OPPORTUNITY CLAUSE

- () I have participated in previous contract(s) or subcontract(s) subject to the equal opportunity clause under Executive Orders 11246 and 11375 or preceding Executive Orders 10925 and 11114. I have filed all reports due under the requirements contained in 40 CRF, Part C, 8.11.
- () I have not participated in previous contract(s) subject to the equal opportunity clause under Executive Orders 111246 and 11375 or preceding Executive Order 10925 and 11114.

I will obtain a similar statement from any proposed subcontractor(s), when appropriate.

(Signature and Title of Prospective Prime of Subcontractor's Representative)

(Printed or typed Name and Title of Prospective Prime or Subcontractor's Representative)

(Name and address of Prospective Prime or Subcontractor)

CERTIFICATION OF NONSEGREGATED FACILITIES

The Bidder certified that he does not maintain nor provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location under his control, where segregated facilities are maintained. The bidder certified further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The bidder agrees that a breach of this certification would be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The bidder agrees that (except where he has obtained identical certification from proposed subcontractors) prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date _____, 20___

Name of Bidder

Official Address (Including Zip Code):

BY:_____

BIDDER'S REPRESENTATION

By the act of submitting a bid for the proposed contract, the Bidder represents that:

- 1. The Bidder and all subcontractors the Bidder intends to use have carefully and thoroughly reviewed the drawings, specifications and other construction contract documents and have found them free from ambiguities and sufficient for the purpose intended; further that,
- 2. The Bidder and all workmen, employees and subcontractors the Bidder intends to use are skilled and experienced in the type of construction represented by the construction contract documents bid upon; further that,
- 3. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors have relied upon any verbal representations, allegedly authorized or unauthorized from the Owner, or the Owner's employees or agents including architects, engineers or consultants, in assembling the bid figure; and further that,
- 4. The bid figure is based solely upon the bid documents and the construction contract documents and properly issued written addenda and not upon any other written representation.

Contractor's Name

By (Signature)

Typed or Clearly Printed Name and Title

Date

END OF SECTION

<u>AGREEMENT</u>

THIS AGREEMENT, made on the _____ day of __, 20__, by and between, The City of Gretna, Louisiana, referred to in these Contract Documents as "Owner" acting through its Mayor and his authorized agents, and _____ is referred to in these Contract Documents as "Contractor":

WITNESSETH:

<u>THAT WHEREAS</u>: in accordance with law, Owner has caused Contract Documents to be prepared and an Invitation to Bid to be published, for and in connection with BURMASTER TRANSFER FACILITY. Without limiting the scope of work described herein, the proposed bid provides for installation of concrete paving, asphalt paving, sheet pile driving, water infrastructure, electrical and lighting infrastructure, and all other incidental work thereto.

<u>WHEREAS</u>, Contractor, in response to the Invitation to Bid, has submitted to Owner, in the manner and at the time specified, a sealed Bid in accordance with Instructions to Bidders; and

<u>WHEREAS</u>, Owner, in the manner prescribed by law, has publicly opened, examined, and canvassed the Bids submitted, and has determined Contractor to be the lowest and best Bidder for the Work and duly awarded to Contractor a contract therefor, for the sum or sums named in Contractor's Bid.

<u>NOW, THEREFORE</u>, in consideration of the compensation to be paid to Contractor and of the mutual agreements herein contained, the parties to these presents have agreed and hereby agree, Owner for itself and its successors, and Contractor for itself, himself, or themselves, and its, his, or their successors and assigns, and its, his, or their executors and administrators, as follows:

<u>ARTICLE I</u>. All notices, letters, and other communication directed to Owner shall be delivered or addressed and mailed, postage prepaid to:

Director of Public Utilities 100 5th Street Gretna, Louisiana 70053

The business address of Contractor given in the Bid Form and Contractor's office in the vicinity of the Work are both hereby designated as the places to which all notices, letters, and other communication to Contractor will be mailed or delivered.

All duties and responsibilities assigned to Engineer in the Contract Documents, with the corresponding rights and authority, will be assumed by <u>BURK-KLEINPETER, INC.</u> and their authorized agents.

Owner or Contractor may change its address at any time by written notification to Engineer and the other party.

<u>ARTICLE II</u>. The Contractor shall perform all Work, including the assumption of all obligations, duties and responsibilities necessary to the successful completion of the contract and the furnishing of all materials and equipment required to be incorporated in and form a permanent part of the Work; tools, equipment, supplies, transportation, facilities, labor, superintendence and services required to perform the Work; and Bonds, insurance and submittals, all as indicated or specified in the Contract Documents to be performed or furnished by Contractor for the Work included in and covered by Owner's official award of this contract to Contractor, such award being based on the acceptance by Owner of Contractor's Bid, as follows:

Without limiting the scope of work described herein, the proposed bid provides for installation of concrete paving, asphalt paving, sheet pile driving, water infrastructure, electrical and lighting infrastructure, and all other incidental work thereto.

<u>ARTICLE III</u>. That Owner shall pay to Contractor for performance of the Work embraced in this contract, and Contractor shall accept as full compensation therefor, the sum (subjected to the adjustment as provided in the Contract Documents for all Work covered by and included in the contract award and designated in the foregoing Article I; payment thereof to be made in current funds in the manner provided in the Contract Documents.

<u>ARTICLE IV</u>. That Contractor shall complete all Work for the Bid within 120 (one hundred twenty) calendar days after the commencement of Contract Time (as defined in General Conditions).

<u>ARTICLE V</u>. Time is an essential condition of the contract. Should Contractor fail to perform the Work within the Contract Time stipulated herein, Contractor shall pay to Owner, as liquidated damages and not as a penalty, \$500 per day of default unless the Contract Time is extended by Owner.

The expiration of the Contract Time shall ipso facto constitute a putting in default where Contractor has failed to perform the Work, and Owner need not formally place the Contractor in default. Contractor hereby waives any and all notices of default.

<u>ARTICLE VI</u>. Pursuant to LSA R.S. - 38:2248 (Public Contract Law), Owner shall retain (five/ten) percent of each progress payment until payment is due under the terms and conditions governing substantial completion or final payment.

<u>ARTICLE VII</u>. That the Contract Documents which comprise the contract between Owner and Contractor, attached hereto and made a part hereof, consist of the documents listed in Table of Contents, and the documents identified below.

Addenda numbers:

Information submitted by Contractor with the Bid: <u>Bid Form, Signature of Bidder,</u> <u>Affidavit, Bidders Representation, Equal Opportunity Clause, Certification of Non-</u> <u>segregated Facilities, Bid Bond, Certificate as to Corporate Principal, Power of Attorney</u>

Information submitted by Contractor prior to the time Owner issues Notice of Award: Payment and Performance Bond, Certificate of Insurance

Notice of Award.

Notice to Proceed.

Any Modifications (as defined in General Conditions) duly delivered after execution of this Agreement.

The Contract Drawings consists of <mark>7 (seven) sheets</mark>. In addition, each sheet bears the following general title:

BURMASTER TRANSFER FACILITY 9344-8660 – 2/2025

<u>ARTICLE VIII</u>. In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

- 1. Contractor has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and federal, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.
- 2. Contractor has studied carefully all latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which were relied upon by Engineer in the preparation of the Drawings and Specifications and which have been identified in the Supplementary Conditions.

- 3. Contractor has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in paragraph 2 as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required by Contractor for such purposes.
- 4. Contractor has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.
- 5. Contractor has given Engineer written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Contractor.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

	(Contractor)	
Ву	Title Date	_ (SEAL &) (ATTEST)
	(Joint Venturer)	
	CITY OF GRETNA	
	(Owner)	
Ву	Belinda C. Constant Mayor - City of Gretna	_ (SEAL &) (ATTEST)
	Approved As to Form	

Attorney for Owner

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that we, _____

		of					<u>,</u> her	reinafter r	eferred
to as "Cont	ractor", a	corp	oration organized u	nder	r the I	laws	of the State c	of	
and			<u>,</u> as	"Sur	ety",	a co	prporation orga	anized un	der the
laws of the	State of		and au	thor	ized t	to tra	ansact busines	ss in the S	State of
Louisiana,	are held	and	firmly bound unto	the	City	of C	Gretna, Louisi	ana, her	einafter
referred	to	as	"Owner",	in		the	penal	sum	of
								(dollars
(\$		<u>)</u> , foi	the payment of wh	hich s	sum,	well	and truly to be	e made, v	we bind

(\$______), for the payment of which sum, well and truly to be made, we bind ourselves and our heirs, executors, administrator, successors, and assigns, jointly and severally, by these presents:

WHEREAS, on the _____day of _____, 20___, the Contractor entered into a written contract with the Owner for furnishing materials, supplies, and equipment not furnished by the Owner, construction tools, equipment, and plant, and the performance of all necessary labor, for and in connection with the construction of certain improvements described in the attached contract documents; and

WHEREAS, it was a condition of the contract award by the Owner that these presents be executed by the Contractor and Surety;

NOW, THEREFORE, if the Contractor shall, in all particulars, well, duly, and faithfully observe, perform, and abide by each and every covenant, condition, and part of the said contract, and the conditions, specifications, drawings, and other contract documents thereto attached or, by reference, made a part thereof, according to the true intent and meaning in each case, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED FURTHER, that if the Contractor shall fail to pay all just claims and demands by, or in behalf of, any employee or other person, or any firm, association, or corporation, for labor performed or materials, supplies, or equipment furnished, used, or consumed by the Contractor or his subcontractors in the performance of the work, then the Surety will pay the full value of all such claims or demands in any total amount not exceeding the amount of this obligation, together with interest as provided by law.

THE UNDERSIGNED SURETY, for value received, hereby agrees that no extension of time, change in, addition to, or other modification of the terms of the contract or work to be performed thereunder, or of the specifications or other contract document, shall in any way affect its obligation on this bond, and the Surety does hereby waive notice of any such extension of time, change, addition, or modification.

IN TESTIMONY WHEREOF, the Contractor has hereunto set his hand and the Surety has caused these presents to be executed in its name and its corporate seal to be affixed by its attorney-in-fact at

	on this the day
of 20	·
ATTEST	
Witness of Principal	(SEAL) CONTRACTOR
	By:
	By:
	Address
ATTEST	
Witness as to Surety	SURETY COMPANY
	By:(SEAL)
	Attorney-in-Fact
	Title:
	Address

(Accompany this bond with attorney-in-fact's authority from) (the Surety Company certified to include the date of the bond)

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By





PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE a practice division of the NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN COUNCIL OF ENGINEERING COMPANIES

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by



The Associated General Contractors of America



and Sustaining the Built Environment

Construction Specifications Institute Edited And Adopted For Use By Burk-Kleinpeter, Inc. February 2003

Copyright ©2002

National Society of Professional Engineers 1420 King Street, Alexandria, VA 22314

American Council of Engineering Companies 1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers 1801 Alexander Bell Drive, Reston, VA 20191-4400

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).
TABLE OF CONTENTS

|--|

1.01 Defined Terms 6 1.02 Terminology 8 ARTICLE 2 - PRELINNARY MATTERS 9 2.01 Delivery of Bonds and Evidence of Insurance 9 2.02 Copies of Documents 9 2.03 Commencement of Contract Times: Notice to Proceed 9 2.04 Statring the Work 9 2.05 Before Starting Construction 9 2.06 Preconstruction Conference 9 2.07 Initial Acceptance of Schedules 9 2.08 Preconstruction Conference 9 2.09 Initial Acceptance of Schedules 9 3.01 Intent 10 3.02 Reporting and Kaplementing Contract Documents 10 3.03 Reporting and Kaplementing Contract Documents 11 3.04 Amending and Supplementing Contract Documents 11 3.05 Resise of Documents 11 3.06 Fleetronic Data 11 4.01 Availability of LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONNETAL CONDITIONS; RLIFTRENCE POINTS 11 4.03	ARTICLE	1 - DEFINITIONS AND TERMINOLOGY	6
1.02 Terminology 8 ARTICLE 2 - PRELIMINARY MATTERS 9 2.01 Delivery of Bonds and Evidence of Insurance 9 2.02 Copies of Documents 9 2.03 Commencement of Contract Times: Notice to Proceed 9 2.04 Starting the Work 9 2.05 Refore Starting Construction 9 2.06 Preconstruction Conference 9 2.07 Initial Acceptance of Schedules 9 ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE 10 3.01 Intent 10 3.02 Reference Standards 10 3.03 Reporting and Reporting Contract Documents 11 3.04 Amending and Supplementing Contract Documents 11 3.05 Reause of Documents 11 3.06 Electronic Data 11 3.07 Reporting and Respiced Conditions 12 4.01 Availability of Lands 11 4.02 Subsurface on Physical Conditions 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 <t< td=""><td>1.01</td><td>Defined Terms</td><td>6</td></t<>	1.01	Defined Terms	6
ARTICLE 2 - PRELIMINARY MATTERS 9 2.01 Delivery of Boals and Evidence of Insurance 9 2.02 Copies of Documents 9 2.03 Commencement of Contruct Times; Notice to Proceed 9 2.04 Starting the Work Construction 9 2.05 Before Starting Construction 9 2.06 Preconstruction Conference 9 2.01 Initial Acceptance of Schedules 9 2.01 Initial Acceptance of Schedules 9 2.01 Initial Acceptance of Schedules 9 3.01 Intent 10 3.02 Reference Standards 10 3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 4.01 Availability of LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS 11 4.02 Subsurgace and Physical Conditions 12 4.03 Differing Subsurgace or Physical Conditions 12 </td <td>1.02</td> <td>Terminology</td> <td>8</td>	1.02	Terminology	8
2.01 Delivery of Bonds and Evidence of Insurance 9 2.02 Commencement of Contract Times; Notice to Proceed 9 2.03 Commencement of Contract Times; Notice to Proceed 9 2.04 Starting the Work. 9 2.05 Before Starting Construction 9 2.06 Preconstruction Conference 9 2.07 Initial Acceptance of Schedules 9 2.08 Reference Standards 10 3.01 Intent. 10 3.02 Reference Standards 10 3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Reieronic Data 11 Antic LE 4 - AVAIL ABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 Availability of Lands 11 4.01 4.01 Availability of Lands 12 4.03 Differing Subsurgace or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13	ARTICLE	2 - PRELIMINARY MATTERS	9
202 Copies of Documents 9 203 Commencement of Contract Times; Notice to Proceed 9 204 Starting the Work 9 205 Before Starting Construction 9 206 Preconstruction Conference 9 207 Initial Acceptance of Schedules 9 208 Preconstruction Conference 9 209 Initial Acceptance of Schedules 9 201 Initial Acceptance of Schedules 9 202 Reporting and Resolving Discrepancies 10 301 Intent 10 302 Reference Standards 10 303 Reporting and Resolving Discrepancies 10 304 Amending and Supplementing Contract Documents 11 305 Reuse of Documents 11 306 Fleetoronic Data 11 401 Availability of LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS 11 403 Differing Subsurgace or Physical Conditions 12 404 Underground Facilities 13 405	2.01	Delivery of Bonds and Evidence of Insurance	9
2.03 Commencement of Contract Times; Notice to Proceed 9 2.04 Starting the Work 9 2.05 Before Starting Construction 9 2.06 Preconstruction Conference 9 2.07 Initial Acceptance of Schedules 9 2.08 ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE 10 3.01 Intent. 10 3.02 Reference Standards 10 3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 4.01 Availability of LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 4.01 Availability of Lands. 12 4.02 Suburface and Physical Conditions. 12 4.03 Differing Subsurface or Physical Conditions. 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.04 Underground Facilities 13 4.05 Reference Pointance 13<	2.02	Copies of Documents	9
2.04 Starting the Work 9 2.05 Before Starting Construction 9 2.06 Preconstruction Conference 9 2.07 Initial Acceptance of Schedules 9 2.01 Initial Acceptance of Schedules 9 3.01 Intent 10 3.01 Intent 10 3.02 Reference Standards 10 3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 4.01 Availability of LaNDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS 11 4.01 Availability of Lands 12 4.03 Differing Subsurface on Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Haardous Environmental Condition at Site 13 ANTICLE 5 - BONDS AND INSURANCE 15 15 5.01 Certificates of In	2.03	Commencement of Contract Times; Notice to Proceed	9
205 <i>Before Starting Construction</i> 9 206 <i>Preconstruction Conference</i> 9 207 Initial Acceptance of Schedules 9 ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE 10 301 Intent 10 302 <i>Reference Standards</i> 10 303 <i>Reporting and Resolving Discrepancies</i> 10 304 <i>Amending and Supplementing Contract Documents</i> 11 305 <i>Reuse of Documents</i> 11 306 <i>Electronic Data</i> 11 ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 Availability of Lands 11 11 401 Availability of Lands 12 402 Subsurface or Physical Conditions 12 404 Underground Facilities 13 405 <i>Reference Points</i> 13 406 Ilazardous Environmental Condition at Site 13 406 Ilazardous Environmental Condition at Site 13 501 <i>Certificates of Insurance</i> 15 502 Licensed Sureties and Insurarce: 15	2.04	Starting the Work	9
2.06 Preconstruction Conference	2.05	Before Starting Construction	9
2.07 Initial Acceptance of Schedules 9 ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE 10 3.01 Intent 10 3.02 Reference Standards 10 3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 ARTICLE 4 - AVALLABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 HANDENTAL CONDITIONS; REFERENCE POINTS 11 4.01 Availability of Lands 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 ARTICLE 5 - BONDS AND INSURANCE 14 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Surviews and Insurance 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 16	2.06	Preconstruction Conference	9
ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE 10 3.01 Intent 10 3.02 Reference Standards 10 3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 4.01 Availability of Lands 11 4.02 Subsurface and Physical Conditions 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Haeronial Condition at Site 13 4.07 Haeronian Environmental Condition at Site 13 4.06 Haeronian Environmental Condition at Site 14 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Surface on Insurance 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance	2.07	Initial Acceptance of Schedules	9
3.01 Intent	ARTICLE	3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE	10
3.02 Reference Standards 10 3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 3.07 Amending and Supplementing Contract Documents 11 ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 ANTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 4.01 Availability of Lands 11 4.02 Subsurface and Physical Conditions 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Inzardous Environmental Condition at Site 13 ARTICLE 5 - BONDS AND INSURANCE 14 5.01 5.02 Licensed Survironmental Conduiton at Site 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 15 5.05 Owner's Liability Insurance 16	3.01	Intent	10
3.03 Reporting and Resolving Discrepancies 10 3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 4.01 Availability of Lands 11 4.01 Availability of Lands 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 4.06 Hazardous Environmental Condition at Site 13 4.06 Hazardous Environmental Condition at Site 14 5.01 Performance, Payment, and Other Bonds. 15 5.02 Licensed Sureties and Insurance 15 5.04 Contractor's Liability Insurance 16 5.05 Owner's Liability Insurance 16 5.06 Property Insurance. 16 5.07 Waver of Rights. 17 5.08 Receptane of Bonds and I	3.02	Reference Standards	10
3.04 Amending and Supplementing Contract Documents 11 3.05 Reuse of Documents 11 3.06 Electronic Data 11 ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 ENVIRONMENTAL CONDITIONS; REFERENCE POINTS 11 4.01 Availability of Lands 11 4.02 Subsurface and Physical Conditions 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 4.07 Performance, Payment, and Other Bonds 15 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Sureties and Insurance 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 15 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Receipt and Applicatino of Insurance Proceeds <td>3.03</td> <td>Reporting and Resolving Discrepancies</td> <td>10</td>	3.03	Reporting and Resolving Discrepancies	10
3.05 Reuse of Documents 11 3.06 Electronic Data 11 3.07 Reiner of Landon Conditions 11 ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 4.01 Availability of Lands 11 4.01 Availability of Lands 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 4.06 Hazardous Environmental Condition at Site 14 5.01 Deriformace, Payment, and Other Bonds 15 5.02 Licensed Sureties and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 16 5.05 Owner 's Liability Insurance 16 5.06 Property Insurance 18 6.01 Surgervise of Bonds and Insurance; Option to Replace 18 6.01 Supervision and Superintendence 18 6.01 Supervision and Superintendenc	3.04	Amending and Supplementing Contract Documents	11
3.06 Electronic Data 11 ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS 11 4.01 Availability of Lands 11 4.01 Availability of Lands 11 4.01 Availability of Lands 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 ANTICLE 5 - BONDS AND INSURANCE 14 14 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Survies and Insurance 15 5.03 Certificates of Insurance 16 5.04 Convers't Liability Insurance 16 5.05 Onder of Rights 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceptance of Bonds and Insurance; Option to Replace 18 6.01 Superintendence 18 6.01 Superintendence 18 6.02 Labor; Working Hours 19	3.05	Reuse of Documents	11
ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS 11 4.01 Availability of Lands. 11 4.02 Subsurface and Physical Conditions 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 4.06 Hazardous Environmental Condition at Site 14 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Survities and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 16 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Owner's Liability Insurance 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceeptance of Bonds and Insurance; Option to Replace 18 6.01 Supervision and Superintendence 18 6.01 <td< td=""><td>3.06</td><td>Electronic Data</td><td>11</td></td<>	3.06	Electronic Data	11
ENVIRONMENTAL CONDITIONS; REFERENCE POINTS. 11 4.01 Availability of Lands. 11 4.01 Availability of Lands. 12 4.03 Differing Subsurface or Physical Conditions. 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities. 13 4.05 Reference Points. 13 4.06 Hasardous Environmental Condition at Site 13 4.07 Performance. 14 5.01 Cerustricates of Insurance. 15 5.02 Licensed Sureties and Insurers 15 5.04 Contractor's Liability Insurance 16 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Acceipt and Application of Insurance Proceeds 17 5.09 Acceipt and Application of Insurance Procee	ARTICLE	4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS	
4.01 Availability of Lands	ENVIRON	MENTAL CONDITIONS; REFERENCE POINTS	11
4.02 Subsurface and Physical Conditions 12 4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 ARTICLE 5 - BONDS AND INSURANCE 14 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Sureties and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 16 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceptance of Bonds and Insurance; Option to Replace 18 5.10 Partial Utilization, Acknowledgment of Property Insurer 18 6.01 Supervision and Superintendence 18 6.02 Labor; Working Hours 18 6.03 Services, Materials, and Equipment 18 6.04 Progress Schedule </td <td>4.01</td> <td>Availability of Lands</td> <td>11</td>	4.01	Availability of Lands	11
4.03 Differing Subsurface or Physical Conditions 12 4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 ARTICLE 5 - BONDS AND INSURANCE 14 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Sureties and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 16 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceptance of Bonds and Insurance; Option to Replace 18 5.10 Partial Utilization, Acknowledgment of Property Insurer 18 6.01 Supervision and Superintendence 18 6.02 Labor; Working Hours 18 6.03 Services, Materials, and Equipment 18 6.04 Progress Schedule 19 6.05 Substitutes and "Or-Equals"	4.02	Subsurface and Physical Conditions	12
4.04 Underground Facilities 13 4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 ARTICLE 5 - BONDS AND INSURANCE 14 5.01 Performance, Payment, and Other Bonds 15 5.02 Licensed Sureties and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 16 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceptance of Bonds and Insurance; Option to Replace 18 5.10 Partial Utilization, Acknowledgment of Property Insurer 18 6.01 Supervision and Superintendence 18 6.02 Labor, Working Hours 18 6.03 Services, Materials, and Equipment 18 6.04 Progress Schedule 19 6.05 Substitutes and "Or-Equals" 19 6.06 Concerening Subcontractors, Suppliers, and Others <td>4.03</td> <td>Differing Subsurface or Physical Conditions</td> <td>12</td>	4.03	Differing Subsurface or Physical Conditions	12
4.05 Reference Points 13 4.06 Hazardous Environmental Condition at Site 13 ARTICLE 5 - BONDS AND INSURANCE 14 5.01 Performance, Payment, and Other Bonds. 15 5.02 Licensed Sureties and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 15 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceptance of Bonds and Insurance; Option to Replace 18 5.10 Partial Utilization, Acknowledgment of Property Insurer 18 6.01 Supervision and Superintendence 18 6.02 Labor; Working Hours 18 6.03 Services, Materials, and Equipment 18 6.04 Progress Schedule 19 6.05 Substitutes and "Or-Equals" 20 6.07 Patent Fees and Royalties 21 6.08 Permits 20 <tr< td=""><td>4.04</td><td>Underground Facilities</td><td>13</td></tr<>	4.04	Underground Facilities	13
4.06 Hazardous Environmental Condition at Site 13 ARTICLE 5 - BONDS AND INSURANCE 14 5.01 Performance, Payment, and Other Bonds. 15 5.02 Licensed Sureties and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 15 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceptance of Bonds and Insurance; Option to Replace 18 5.10 Partial Utilization, Acknowledgment of Property Insurer 18 6.01 Supervision and Superintendence 18 6.02 Labor; Working Hours 18 6.03 Services, Materials, and Equipment 18 6.04 Progress Schedule. 19 6.05 Substitutes and 'Or-Equals'' 19 6.06 Concerning Subcontractors, Suppliers, and Others 20 6.07 Patent Fees and Royalties 21 6.08 Permits	4.05	Reference Points	13
ARTICLE 5 - BONDS AND INSURANCE 14 5.01 Performance, Payment, and Other Bonds. 15 5.02 Licensed Sureties and Insurers 15 5.03 Certificates of Insurance 15 5.04 Contractor's Liability Insurance 15 5.05 Owner's Liability Insurance 16 5.06 Property Insurance 16 5.07 Waiver of Rights 17 5.08 Receipt and Application of Insurance Proceeds 17 5.09 Acceptance of Bonds and Insurance; Option to Replace 18 5.10 Partial Utilization, Acknowledgment of Property Insurer 18 6.01 Supervision and Superintendence 18 6.01 Supervision and Superintendence 18 6.02 Labor; Working Hours 18 6.03 Services, Materials, and Equipment 19 6.04 Progress Schedule 19 6.05 Substitutes and "Or-Equals" 20 6.07 Patent Fees and Royalties 21 6.08 Permits 21 6.09 Laws and Regulations 21	4.06	Hazardous Environmental Condition at Site	13
5.01 Performance, Payment, and Other Bonds	ARTICLE	5 - BONDS AND INSURANCE	14
5.02Licensed Sureties and Insurers155.03Certificates of Insurance155.04Contractor's Liability Insurance155.05Owner's Liability Insurance165.06Property Insurance165.07Waiver of Rights175.08Receipt and Application of Insurance Proceeds175.09Acceptance of Bonds and Insurance; Option to Replace185.10Partial Utilization, Acknowledgment of Property Insurer186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	5.01	Performance, Payment, and Other Bonds	15
5.03Certificates of Insurance155.04Contractor's Liability Insurance155.05Owner's Liability Insurance165.06Property Insurance165.07Waiver of Rights.175.08Receipt and Application of Insurance Proceeds175.09Acceptance of Bonds and Insurance; Option to Replace185.10Partial Utilization, Acknowledgment of Property Insurer186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule.196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others.206.07Patert Fees and Royalties216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety Representative236.15Hazard Communication Programs23	5.02	Licensed Sureties and Insurers	15
5.04Contractor's Liability Insurance155.05Owner's Liability Insurance165.06Property Insurance165.07Waiver of Rights175.08Receipt and Application of Insurance Proceeds175.09Acceptance of Bonds and Insurance; Option to Replace185.10Partial Utilization, Acknowledgment of Property Insurer186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety Representative236.15Hazard Communication Programs23	5.03	Certificates of Insurance	15
5.05Owner's Liability Insurance165.06Property Insurance165.07Waiver of Rights.175.08Receipt and Application of Insurance Proceeds175.09Acceptance of Bonds and Insurance; Option to Replace185.10Partial Utilization, Acknowledgment of Property Insurer18ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	5.04	Contractor's Liability Insurance	15
5.06Property Insurance165.07Waiver of Rights	5.05	Owner's Liability Insurance	16
5.07Waiver of Rights	5.06	Property Insurance	16
5.08Receipt and Application of Insurance Proceeds175.09Acceptance of Bonds and Insurance; Option to Replace185.10Partial Utilization, Acknowledgment of Property Insurer18ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	5.07	Waiver of Rights	17
5.09Acceptance of Bonds and Insurance; Option to Replace185.10Partial Utilization, Acknowledgment of Property Insurer18ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	5.08	Receipt and Application of Insurance Proceeds	17
5.10Partial Utilization, Acknowledgment of Property Insurer18ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	5.09	Acceptance of Bonds and Insurance; Option to Replace	18
ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES186.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	5.10	Partial Utilization, Acknowledgment of Property Insurer	18
6.01Supervision and Superintendence186.02Labor; Working Hours186.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	ARTICLE	6 - CONTRACTOR'S RESPONSIBILITIES	18
6.02Labor; Working Hours	6.01	Supervision and Superintendence	18
6.03Services, Materials, and Equipment186.04Progress Schedule196.05Substitutes and "Or-Equals"196.06Concerning Subcontractors, Suppliers, and Others206.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.02	Labor; Working Hours	18
6.04Progress Schedule	6.03	Services, Materials, and Equipment	18
6.05Substitutes and "Or-Equals"	6.04	Progress Schedule	19
6.06Concerning Subcontractors, Suppliers, and Others.206.07Patent Fees and Royalties.216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.05	Substitutes and "Or-Equals"	19
6.07Patent Fees and Royalties216.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.06	Concerning Subcontractors, Suppliers, and Others	20
6.08Permits216.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.07	Patent Fees and Royalties	21
6.09Laws and Regulations216.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.08	Permits	21
6.10Taxes226.11Use of Site and Other Areas226.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.09	Laws and Regulations	21
6.11Use of Site and Other Areas.226.12Record Documents.226.13Safety and Protection.226.14Safety Representative	6.10	Taxes	22
6.12Record Documents226.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.11	Use of Site and Other Areas	22
6.13Safety and Protection226.14Safety Representative236.15Hazard Communication Programs23	6.12	Record Documents	22
6.14Safety Representative236.15Hazard Communication Programs23	6.13	Safety and Protection	22
6.15 <i>Hazard Communication Programs</i>	6.14	Safety Representative	23
	6.15	Hazard Communication Programs	23

6.16	Emergencies	23
6.17	Shop Drawings and Samples	23
6.18	Continuing the Work	24
6.19	Contractor's General Warranty and Guarantee	24
6.20	Indemnification	25
6.21	Delegation of Professional Design Services	25
ARTICLE '	7 - OTHER WORK AT THE SITE	26
7.01	Related Work at Site	25
7.02	Coordination	26
7.03	Legal Relationships	
ARTICLE		
8.01	Communications to Contractor	
8.02	Replacement of Engineer	26
8.03	Furnish Data	26
8.04	Pav When Due	26
8.05	I and s and Fasements: Reports and Tests	20
8.05	Insurance	27
8.00	Themas Ordans	27
8.07	Lugnosticus Tests and Approvals	27
8.08	Inspections, Tests, and Approvais	27
8.09	Limitations on Owner's Responsibilities	27
8.10	Unalsciosea Hazaraous Environmental Condition	27
8.11	Evidence of Financial Arrangements	27
ARTICLE	9 - ENGINEER'S STATUS DURING CONSTRUCTION	27
9.01	Owner's Representative	27
9.02	Visits to Site	27
9.03	Project Representative	27
9.04	Authorized Variations in Work	28
9.05	Rejecting Defective Work	28
9.06	Shop Drawings, Change Orders and Payments	28
9.07	Determinations for Unit Price Work	28
9.08	Decisions on Requirements of Contract Documents and Acceptability of Work	28
9.09	Limitations on Engineer's Authority and Responsibilities	28
ARTICLE	10 - CHANGES IN THE WORK; CLAIMS	29
10.01	Authorized Changes in the Work	29
10.02	Unauthorized Changes in the Work	29
10.03	Execution of Change Orders	29
10.04	Notification to Surety	29
10.05	Claims	29
ARTICLE	11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK	30
11.01	Cost of the Work	30
11.02	Allowances	.31
11.03	Unit Price Work	32
ARTICLE	12 - CHANGE OF CONTRACT PRICE: CHANGE OF CONTRACT TIMES	32
12.01	Change of Contract Price	32
12.01	Change of Contract Times	33
12.02	Delaws	33
ADTICLE	D = D = M + M + M + M + M + M + M + M + M + M	
13 01	Notice of Defects	
12.01	Access to Work	
13.02	Access 10 WOrk	
13.03	Tests and Inspections	
13.04	Oncovering work	
13.05	Owner May Stop the Work	
13.06	Correction or Removal of Dejective Work	
13.07	Correction Period	35
13.08	Acceptance of Defective Work	35
13.09	Owner May Correct Defective Work	35
ARTICLE	14 - PAYMENTS TO CONTRACTOR AND COMPLETION	36
14.01	Schedule of Values	36
14.02	Progress Payments	36
14.03	Contractor's Warranty of Title	37
14.04	Substantial Completion	38

14.05	Partial Utilization	38
14.06	Final Inspection	38
14.07	Final Payment	38
14.08	Final Completion Delayed	39
14.09	Waiver of Claims	39
ARTICLE	15 - SUSPENSION OF WORK AND TERMINATION	40
15.01	Owner May Suspend Work	40
15.02	Owner May Terminate for Cause	40
15.03	Owner May Terminate For Convenience	40
15.04	Contractor May Stop Work or Terminate	41
ARTICLE	16 - DISPUTE RESOLUTION	41
16.01	Methods and Procedures	41
ARTICLE	17 - MISCELLANEOUS	41
17.01	Giving Notice	41
17.02	Computation of Times	41
17.03	Cumulative Remedies	41
17.04	Survival of Obligations	42
17.05	Controlling Law.	42
17.06	Headings	42
	5	

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

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

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid--*The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents--*The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements--*The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements. 9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. Contract Documents-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings--*That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement-*-The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

* See SC-1.01 of Supplemental Conditions

19. *Engineer*--The individual or entity named as such in the Agreement.

20. Field Order -- A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. General Requirements--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. Hazardous Environmental Condition--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. Hazardous Waste--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. Laws and Regulations; Laws or Regulations--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. Liens--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. Milestone--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. Notice of Award--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. Notice to Proceed--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. Owner--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. PCBs--Polychlorinated biphenyls.

31. Petroleum--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

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

33. Project--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. Project Manual--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. Radioactive Material--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. Related Entity -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. Resident Project Representative -- The authorized representative of Engineer who may be assigned to the Site or any part thereof.

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

39. Schedule of Submittals--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

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

41. Shop Drawings--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

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

43. Specifications--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

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

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

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

49. Underground Facilities--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

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

52. Work Change Directive--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the "reasonable," "suitable," adjectives "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

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

a. does not conform to the Contract Documents, or

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

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

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

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

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

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

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

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed *

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

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

2.04 Starting the Work **

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

2.05 Before Starting Construction ***

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

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

2. a preliminary Schedule of Submittals; and

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

2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided

- * See SC-2.03 of Supplemental Conditions
- ** See SC-2.04 of Supplemental Conditions
- *** See SC-2.05B of Supplemental Conditions

below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

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

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

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

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

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

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

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

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

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. Contractor's Review of Contract Documents Before Starting Work: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. Contractor's Review of Contract Documents During Performance of Work: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and: a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

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

3.04 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

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

3.06 Electronic Data

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

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

C. Contractor shall provide for all additional lands and access thereto that may be required for

temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

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

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

**B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

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

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

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

4.03 Differing Subsurface or Physical Conditions

A. Notice: If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

- 1. is of such a nature as to require a change in the Contract Documents; or
- See SC-4.02A of Supplemental Conditions ** See SC-4.02B of Supplemental Conditions

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

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

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. Engineer's Review: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

> a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

> b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

> a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract: or

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

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

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

Underground Facilities 4.04

*A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

> a. reviewing and checking all such information and data.

> b. locating all Underground Facilities shown or indicated in the Contract Documents.

> c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

> d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall,

* See SC-4.04.A of Supplemental Conditions

promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

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

4.06 Hazardous Environmental Condition at Site

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not

Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

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

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

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

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05. F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers. directors, partners, employees, agents. consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, employees, agents, partners, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

5.01 *Performance, Payment, and Other Bonds*

*A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

**B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional

*	See SC-5.01.A of Supplemental Conditions
**	See SC-5.01.B of Supplemental Conditions

insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

***A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

****B. The policies of insurance required by this Paragraph 5.04 shall:

*** See SC-5.04.A of Supplemental Conditions **** See SC-5.04.B of Supplemental Conditions

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers. partners, directors, employees, agents. consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claimsmade basis, remain in effect for at least two years after final payment.

> a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 Property Insurance

*A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief. earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

**B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and

- * See SC-5.06.A of Supplemental Conditions
- ** See SC-5.06.B of Supplemental Conditions

Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

*D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

**E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 Waiver of Rights

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and

* See SC-5.06.D of Supplemental Conditions ** See SC-5.06.E of Supplemental Conditions damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, consultants partners. employees, agents, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order .

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

6.02 Labor; Working Hours

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

*B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 Services, Materials, and Equipment

**A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer,

- See SC-6.02.B of Supplemental Conditions
- ** See SC-6.03.A of Supplemental Conditions

Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

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

6.04 Progress Schedule

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

*1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 Substitutes and "Or-Equals"

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. "Or-Equal" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if: a. in the exercise of reasonable judgment Engineer determines that:

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

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

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

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

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

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

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

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

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

* See SC-6.04.A.1 of Supplemental Conditions

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified , and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or

equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

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

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

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

6.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued . No acceptance by Owner of any such Subcontractor, Supplier, or other individual or

entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

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

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

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

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an approagreement between Contractor priate and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer,, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property

insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

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

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations. B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 Taxes

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

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

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

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

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

6.12 *Record Documents*

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

6.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

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

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

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities

not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 Shop Drawings and Samples

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:* Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

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

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog

numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

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

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

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

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation

from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

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

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

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

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

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

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

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of: 1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 Delegation of Professional Design Services

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

If professional design services B. or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

7.01 Related Work at Site

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

*A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions: 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

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

7.03 Legal Relationships

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 Replacement of Engineer

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 Furnish Data

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

8.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

* See SC-7.02.A of Supplemental Conditions

^{**} See SC-7.02.B of Supplemental Conditions

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 Change Orders

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 Inspections, Tests, and Approvals

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 Limitations on Owner's Responsibilities

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

8.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 Evidence of Financial Arrangements

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the

* See SC-9.03 of Supplemental Conditions

responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 Authorized Variations in Work

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment , a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 Shop Drawings, Change Orders and Payments

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or

otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 Requirements Contract Decisions on of Documents and Acceptability of Work

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the auestion

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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

sible for Contractor's failure to perform the Work in accordance with the Contract Documents.

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

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 Unauthorized Changes in the Work

A.Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 Execution of Change Orders

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering: 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

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

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

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

10.05 Claims

A. Engineer's Decision Required: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. Notice: Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied

by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

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

Payments made by Contractor 3. to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

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

5. Supplemental costs including the following:

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

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value,

of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

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

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

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

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

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

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

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of

partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

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

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

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

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

B. Cash Allowances

1. Contractor agrees that:

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

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

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

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

11.03 Unit Price Work

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

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

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

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

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

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

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

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times , or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the

* See SC-12.03.F and SC-12.03.G of Supplemental Conditions

Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

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

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be

uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of

or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay 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) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (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 or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments

*1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

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

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

B. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

* See SC-14.02.A.1 of Supplemental Conditions

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed

inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

> a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

> b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

*C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

* See SC-14.02.C Supplemental Conditions

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is

substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 Partial Utilization

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

*A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in

* See SC-14.07.A of Supplemental Conditions

accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may
make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 Final Completion Delayed**

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

* See SC-14.07.C of Supplemental Conditions ** See SC-14.08 of Supplemental Conditions ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of

*C. Payment Becomes Due

EJCDC C-700 Standard General Conditions of the Construction Contract. Copyright © 2002 National Society of Professional Engineers for EJCDC. All rights reserved. 00700 - 38 not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 **Owner May Terminate for Cause**

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall

pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C. Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

Owner May Terminate For Convenience 15.03

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work:

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. 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. reasonable expenses directly attributable to termination.

B. 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.

EJCDC C-700 Standard General Conditions of the Construction Contract. Copyright © 2002 National Society of Professional Engineers for EJCDC. All rights reserved. 00700 - 39

15.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 Methods and Procedures

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Times 17.02

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Docu-

EJCDC C-700 Standard General Conditions of the Construction Contract. Copyright © 2002 National Society of Professional Engineers for EJCDC. All rights reserved. 00700 - 40

ments, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

* See SC-17.07 of Supplemental Conditions.

SECTION 00810 SUPPLEMENTARY CONDITIONS

SUPPLEMENTARY CONDITIONS TO THE STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT (C-700, 2002 EDITION)

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (C-700, 2002 Edition) and other provisions of the Contract Documents as indicated herein. All provisions which are not so amended or supplemented remain in full force and effect. Revision Date: February 2003.

00810-1

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (C-700, 2002 Edition, as edited for use by Burk-Kleinpeter, Inc. [February 2003]) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

<u>SC-1.01</u>

The items used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract (C-700, 2002 Edition, as edited for use by Burk-Kleinpeter, Inc. [February 2003]) have the meanings assigned to them in the General Conditions.

Add the following definitions:

"Easement/Servitude - The burden placed on property due to specified rights to its use. The terms may be used interchangeably."

"Record Drawing - The engineering plans, amended for the changes incorporated during construction."

"Special Provision - The part of the Contract Documents which emphasizes, specifies or advises the CONTRACTOR of special items or circumstances particular to the project or amends or supplements General Conditions and Supplementary Conditions."

SC-2.03.

Refer to paragraph GC 2.03. The seventh line of this paragraph is amended to read as follows:

".....later than the one hundred-twentieth (120th) day after day of Bid opening......"

and so amended paragraph 2.03. remains in effect.

<u>SC-2.04.</u>

Amend the first sentence of paragraph 2.04. of General Conditions to read as follows:

"CONTRACTOR shall start to perform the Work within ten (10) calendar days of the date when...."

and so amended paragraph 2.04. remains in effect.

<u>SC-2.05.B</u>

Add the following paragraph SC-2.05.B at the end of this Section.

"2.05.B. *Evidence of Insurance:* All liability, property and other insurance specified in Contract Documents shall be purchased and maintained by CONTRACTOR as set forth in Article 5 (unless otherwise specified in the Special Provisions). CONTRACTOR shall deliver the required insurance certificates for the project to the ENGINEER within seven (7) calendar days of the execution of the Agreement. Failure to comply with this requirement will delay issuance of the Notice to Proceed."

SC-4.02.A.

Amend the first line of paragraph 4.02.A. of General Conditions to read as follows:

"The Special Provisions identify:"

and so amended paragraph 4.02.A. remains in effect.

SC-4.02.B.

Amend the fifth line of paragraph 4.02.B. of General Conditions to read as follows:

"Such "technical data" is identified in the Special Provisions."

and so amended paragraph 4.02.B. remains in effect.

SC-4.04.A.

Amend the last sentence of paragraph 4.04.A. of General Conditions to read as follows:

"Unless it is otherwise expressly provided in the Special Provisions:"

and so amended paragraph 4.04.A. remains in effect.

SC-5.01.A.

The first sentence of paragraph 5.01.A. of General Conditions shall be amended to read as follows:

"CONTRACTOR shall purchase and maintain performance......"

Also, the sixth line of paragraph 5.01.A. of General Conditions shall be amended to read as follows:

"one year after the date of Official OWNER acceptance, except"

and so amended paragraph 5.01.A. remains in effect.

<u>SC-5.01.B.</u>

The first sentence of paragraph 5.01.B. of the General Conditions shall be amended to read as follows:

"All Bonds shall be in the forms prescribed by Law or Regulations or by the Contract Documents and shall be executed by such sureties as (i) are licensed to conduct business in the state where the Project is located, (ii) are approved by the Louisiana State Insurance Commissioners and (iii) sureties shall have at least an "A" or better financial rating and a Class 8 or better General Policy holder rating according to the latest A.M. Best Company ratings."

and so amended paragraph 5.01.B. remains in effect.

SC-5.04.A.

The insurance requirements in Article 5.04.A. of General Conditions are hereby modified. All liability and property insurance shall be purchased and maintained by CONTRACTOR as set forth herein.

Satisfactory certificates of insurance shall be filed with OWNER/ ENGINEER prior to starting any construction work on this contract. Applicable provisions of General Conditions 5.04.A. shall govern the purchase of all insurance coverage.

"5.04.A.1 & 5.04.A.2. Workmen's Compensation and Employer's Liability: This insurance shall protect CONTRACTOR against all claims under applicable state workmen's compensation laws. CONTRACTOR shall also be protected against claims for injury, disease, or death of employees, which, for any reason, may not fall within the provisions of a workmen's compensation law. This policy shall include an "all states" endorsement.

The liability limits shall be not less than:

Workmen's compensation Statutory

Employer's liability \$100,000 each occurrence

5.04.A.3. through 5.04.A.5. Comprehensive General Liability: This insurance shall be written in comprehensive form and shall protect CONTRACTOR against all claims arising from injuries to persons other than his employees or damage to property of OWNER or others arising out of any act or omission of CONTRACTOR or his agents, employees, or Subcontractors. The policy shall also include protection against claims

insured by usual personal injury liability coverage, a "protective liability" endorsement to insure the contractual liability assumed by CONTRACTOR under the indemnification provisions in General Conditions, and "Completed Operations and Products Liability" coverage (to remain in force during the correction period). To the extent that CONTRACTOR's work, or work under his direction, may require blasting, explosive conditions, or underground operations, the comprehensive general liability coverage shall contain no exclusion relative to blasting, explosion, collapse of buildings, or damage to underground property.

Combined single limits of \$500,000.00 each occurrence and \$1,000,000 aggregate for Bodily Injury and Property Damage.

5.04.A.6. Comprehensive Automobile Liability: This insurance shall be written in comprehensive form and shall protect CONTRACTOR against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles licensed for highway use, whether they are owned, non-owned, or hired.

The liability limits shall be not less than: Combined single limit of \$500,000.00 each occurrence and \$500,000 aggregate for Bodily Injury and Property Damage.

5.04.A.7. Umbrella Liability Policy: This insurance shall protect CONTRACTOR against all claims in excess of the limits provided under the workmen's compensation and employer's liability, comprehensive automobile liability, and general liability policies. The liability limits of the umbrella liability policy shall not be less than \$5,000,000."

and so amended paragraph 5.04.A. remains in effect.

<u>SC-5.04.B.</u>

The contractual liability required by paragraph 5.04.B.2.of General Conditions shall provide coverage for not less than the following amounts:

"5.04.B.2.1.	Bodily Injury:\$500,000 \$1,000,000	each occurrence aggregate
5.04.B.2.2.	Property Damage\$250,000 \$500,000	each occurrence aggregate"

Amend the first line of the paragraph following paragraph 5.04.B.6.of General Conditions to read as follows:

"Remain in effect until Official OWNER acceptance and at all times thereafter..."

Amend the third and fourth lines of the paragraph 5.04.B.7. of General Conditions to read as follows:

"...remain in effect for at least two years after Official OWNER acceptance..."

and so amended Article 5.04.B. of General Conditions remains in effect.

SC-5.06.A.

Change the first sentence of paragraph 5.06.A to read as follows:

"5.06.A. CONTRACTOR shall purchase and maintain, from effective date of agreement to official OWNER acceptance, property insurance upon the Work at the site..."

Add paragraph 5.06.A.8 of General Conditions to read as follows:

Installation Floater: This insurance shall protect CONTRACTOR, OWNER and ENGINEER from all insurable risks of physical loss or damage to materials and equipment not otherwise covered under builder's risk insurance, while in approved warehouses or approved storage areas, during installation, during testing, and after the Work is completed. It shall be of the "all-risks" type, with coverage designed for the circumstances which may occur in the particular Work included in this contract. The coverage shall be for an amount not less than the insurable value of the Work at completion, less the value of the materials and equipment insured under builder's risk insurance. The value shall include the aggregate value of the OWNER-furnished equipment and materials (if any) to be erected or installed by CONTRACTOR not otherwise insured under builder's risk insurance.

Installation floater insurance shall provide for losses to be payable to CONTRACTOR, OWNER and ENGINEER as their interest may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the CONTRACTOR, OWNER and ENGINEER.

Certificates of insurance covering installation floater insurance shall quote the insuring agreement and all exclusions as they appear in the policy; or in lieu of certificates, copies of the complete policy may be submitted."

<u>SC-5.06.B.</u>

Delete entire paragraph 5.06.B. of General Conditions.

<u>SC-5.06.D.</u>

Add the following language at the end of paragraph 5.06.D. of General Conditions:

"No property insurance required by Contract Documents shall have deductible amount in excess of \$5,000.00."

SC-5.06.E.

Delete entire paragraph 5.06.E. of General Conditions and so amended Article 5.06. of General Conditions remains in effect.

SC-6.02.B.

The following paragraph shall be added at the end of paragraph 6.02.B. of General Conditions:

"6.02.B.1. Overtime Work: No work shall be done between 6:00 P.M. and 7:00 A.M. nor on Sundays or legal holidays without permission of OWNER. However, emergency work may be done without prior permission.

Night work may be undertaken as a regular procedure with the permission of OWNER; such permission, however, may be revoked at any time by OWNER if CONTRACTOR fails to maintain adequate equipment and supervision for the proper prosecution and control of the Work at night.

The CONTRACTOR shall establish a normal work schedule which does not exceed 40 hours per week. Whenever CONTRACTOR's work requires scheduled overtime, CONTRACTOR shall reimburse OWNER for extra costs incurred at a rate of \$70.00 per hour for providing Resident Project Representative and overtime shall be scheduled only after CONTRACTOR obtains written permission from OWNER. A Change Order shall be prepared to cover OWNER's reimbursable costs."

and so amended Article 6.02.B. of General Conditions remains in effect.

SC-6.03.A.

Add the following language at the end of paragraph 6.03.A. of General Conditions:

"Except for items specifically identified as provided by OWNER, CONTRACTOR shall pay for all labor, materials and other costs incurred under this contract."

and so amended paragraph 6.03.A. remains in effect.

SC-6.04.A.1.

At the end of paragraph 6.04.A.1. of General Conditions to read as follows:

"Contractor shall submit adjustments in the progress schedule every thirty (30) days or as directed by ENGINEER to reflect the impact thereon of new developments."

and so amended paragraph 6.04.A. remains in effect.

SC-7.02.A.

The words "Supplementary Conditions" in the third line of paragraph 7.02.A. of the General Conditions shall be substituted with "Special Provisions." and so amended paragraph 7.02.A. will remain in effect.

<u>SC-7.02.B.</u>

The words "Supplementary Conditions" in the first line of paragraph 7.02.B. of the General Conditions shall be substituted with "Special Provisions." and so amended paragraph 7.02.B. will remain in effect.

<u>SC-9.03.</u>

The paragraph 9.03.of General Conditions shall be amended by adding, at the end of the paragraph, the following language:

"ENGINEER may furnish a RESIDENT PROJECT REPRESENTATIVE and assistants to aid ENGINEER in carrying out his responsibilities at the site. The duties, responsibilities and limitations of authority of the Resident Project Representative are set forth in Exhibit A attached to these Supplementary Conditions."

and so amended paragraph 9.03. will remain in effect.

SC-12.03.F and SC-12.03.G.

Add the following articles 12.03.F and 12.03.G. after paragraph 12.03.E. of General Conditions.

"12.03.F. CONTRACTOR shall accept the risk of any delays caused by the rate of progress of the Work to be performed under other Sections of this contract or other contracts. In the event CONTRACTOR is delayed in the prosecution and completion of the Work because of such conditions, CONTRACTOR shall have no claim against

OWNER for damages or contract adjustment other than an extension of Contract Time and waiving of liquidated damages during the period occasioned by the delay.

12.03.G. Time limitations required by OWNER shall be for the benefit of OWNER and CONTRACTORs under other Sections of this contract or other contracts who have entered into such contracts with OWNER in reliance on the time limitations set forth in these Contract Documents. Any claim by CONTRACTOR for damages due to delay by another contractor shall be asserted against that CONTRACTOR."

and so amended paragraph 12.03. remains in effect.

SC-14.02.A.1.

Add article 14.02.A.1.a. and 14.02.A.1.b. immediately after paragraph 14.02.A.1. of General Conditions, as follows:

"14.02.A.1.a. Schedules: Each Application for Progress Payment shall be accompanied by CONTRACTOR's updated schedule of operations, or progress report, with such shop drawing schedules, procurement schedules, value of material on hand included in application, and other data specified in Division 1 or reasonably required by ENGINEER.

14.02.A.1.b. Payment for Material on Hand:

(a) General: When approved by the ENGINEER, advance payments may be made for fabricated or manufactured materials that are to be incorporated in the project when such materials are stockpiled or stored on the project or in acceptable facilities outside the limits of the project within a 50 mile radius. These materials must meet the specifications; however, partial payment for materials on hand will not constitute acceptance. It shall be the CONTRACTOR's responsibility to protect the material from damage while in storage. Payments shall be limited to those materials described herein that are durable in nature and must represent a SIGNIFICANT portion of the project cost. Further, on lump sum contracts or lump sum bid items, payments shall be limited to those materials which are specifically identified by a separate line item on the schedule of values. Perishable articles, small warehouse items, reinforcing steel and natural materials such as aggregate, stone, expanded clay, river sand, crushed rock and recycled concrete will not be included.

Payment for materials, unless otherwise stated in the specifications, shall be the invoice price for the material. For fabricated materials purchased from commercial sources and delivered to approved storage, payment for material on hand may be the invoice price plus freight and taxes. The quantity of materials for payment will not exceed the total estimated quantity required to complete the project and the invoice values will not exceed the appropriate portion of the contract item in which such materials are to be incorporated.

The amounts advanced on stockpiles or stored materials will be recovered by the OWNER through deductions made on construction estimates and payments as the materials are incorporated in the work.

Payment for material on hand must be requested by the CONTRACTOR in writing and the following documents must be furnished before approval is recommended:

- (1) Written consent from the CONTRACTOR's surety for the OWNER to make such partial payment.
- (2) A copy of the original invoices from the supplier or manufacturer verifying the cost and quantity of material, and identifying the material by serial number or other appropriate description.
- (3) If storage is on private property, a copy of the lease or agreement granting the OWNER right of entry to the property.

Within thirty (30) days after payment by the OWNER, the CONTRACTOR shall submit a copy of certified invoice statement for each item for which payment has been made. If this certification of payment is not presented within the thirty (30) day period, the advance payment will be deducted from future progress payments.

Title and ownership of materials for which advancements have been made by the OWNER shall not vest in the OWNER until such materials are actually incorporated in the work and the work accepted by the OWNER and the making of advancements thereof by the OWNER shall not release the CONTRACTOR from the responsibility for any portion thereof.

(b) Fabricated Material: This shall be fabricated or manufactured materials that are purchased by the CONTRACTOR for the project and may include but is not limited to the following:

Structural steel, fabricated structural steel items, steel piling, mechanical equipment, electrical equipment, precast and precast-prestressed concrete items including pipe, fittings, piling, girders and bridge sections, structural timber, timber piling, metal and PVC pipe and fittings."

and so amended paragraph 14.02.A.1. remains in effect.

SC-14.02.C

The beginning of the first sentence of paragraph 14.02.C.1. of General Conditions shall read as follows:

"Thirty days after presentation"

and so paragraph 14.02.C. as amended above remains in effect.

<u>SC-14.04.C</u>

The third sentence of paragraph 14.04.C of General Conditions shall read as follows:

" There shall be attached to the certificate a tentative list of items including each item's value for labor, materials equipment, profit etc. included and attached to Certificate of Substantial Completion."

and so paragraph 14.04.C. as amended above remains in effect.

SC-14.07.A.

Add the following language after paragraph 14.07.A.3. of General Conditions:

"4. CONTRACTOR's Application for Final Payment shall also be accompanied by consent of the Surety to final payment and a clear lien and privilege certificate issued by the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish."

and so paragraph 14.07.A. as amended above remains in effect.

<u>SC-14.07.C.</u>

The first sentence of paragraph 14.07.C.1. of General Conditions shall be amended as follows:

Delete words "Thirty days" from beginning of first sentence of the paragraph 14.07.C.1. and insert "and in accordance with Louisiana State Public Contract Statute" before the words "will become due" in the fourth line of this paragraph.

and so paragraph 14.07.C. as amended above remains in effect.

<u>SC-14.08.</u>

Add the following language at the end of paragraph 14.08. of General Conditions:

"When CONTRACTOR is in default for nonperformance within the stipulated Contract Time, OWNER shall deduct the liquidated damages amount stated in the Agreement from the CONTRACTOR's payment request."

and so paragraph 14.08. as amended above remains in effect.

SC-17.07.

Add the following new paragraph at the end of paragraph 17.06. of General Conditions:

"17.07. Assignment: Neither party to this contract shall assign or sublet his interest in this contract without written consent of the other, nor shall CONTRACTOR assign

any moneys due or to become due him under this contract without previous written consent of OWNER, nor without the consent of the surety unless the Surety has waived its right to notice of assignment."

and so paragraph 17. as amended above remains in effect.

END OF SECTION

EXHIBIT A

Duties, Responsibilities and Limitations of Authority of Resident Project Representative

A. General

Resident Project Representative (RPR) is ENGINEER's agent at the site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding RPR's actions. RPR's dealings in matters pertaining to the on-site work shall in general be with ENGINEER and Contractor, keeping OWNER advised as necessary. RPR's dealings with subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with OWNER with the knowledge of and under the direction of ENGINEER.

B. Duties and Responsibilities of RPR

- 1. *Schedules:* Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by Contractor and consult with ENGINEER concerning acceptability.
- 2. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
- 3. Liaison:
 - a. Serve as ENGINEER's liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of Contract Documents.
 - b. Assist ENGINEER in serving as OWNER's liaison with Contractor when Contractor's operations affect OWNER's on-site operations.
 - c. Assist in obtaining from OWNER additional details or information, when required for proper execution of the Work.
- 4. Interpretation of Contract Documents: Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by the ENGINEER.
- 5. Shop Drawings and Samples:
 - a. Record date of receipt of Shop Drawings and Samples.
 - b. Receive Samples which are furnished at the site by Contractor, and notify ENGINEER of availability of Samples for examination.
 - c. Advise ENGINEER and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which the RPR believes that the submittal has not been approved by ENGINEER.
- 6. *Modifications*: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report with RPR's recommendations to ENGINEER. Transmit to Contractor in writing decisions as issued by ENGINEER.
- 7. Review of Work, Rejection of Defective Work:

00810-13

- a. Conduct on-site observations of the Work in progress to assist ENGINEER in determining if the Work is in general proceeding in accordance with the Contract Documents.
- b. Report to ENGINEER whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise ENGINEER of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
- 8. Inspections, Tests and System Start-ups:
 - a. Consult with ENGINEER in advance of scheduled major inspections, tests, and systems start-ups of important phases of the Work.
 - b. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate OWNER's personnel, and that Contractor maintains adequate records thereof.
 - c. Observe, record, and report to ENGINEER appropriate details relative to the test procedures and systems start-ups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to ENGINEER.
- 9. Records:
 - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and Samples, reproductions of original Contract Documents including all Change Orders, Field Orders, Work Change Directives, Addenda, additional Drawings issued subsequent to the execution of the Contract, ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing and Sample submittals received from and delivered to Contractor and other Project related documents.
 - b. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the job site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to ENGINEER.
 - c. Record names, addresses and telephone numbers of all Contractors, subcontractors and major suppliers of materials and equipment.
 - d. Maintain records for use in preparing Project documentation.
 - e. Upon completion of the Work, furnish original set of all RPR Project documentation to ENGINEER.
- 10. Reports:
 - a. Furnish to ENGINEER periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
 - b. Draft and recommend to ENGINEER proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
 - c. Furnish to ENGINEER and OWNER copies of all inspection, test, and start-up reports.

- d. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Constituent of Concern.
- 11. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to ENGINEER, noting particularly the relationship of the payment requested to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.
- 12. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to ENGINEER for review and forwarding to OWNER prior to payment for that part of the Work.
- 13. Completion:
 - a. Before ENGINEER issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
 - b. Observe whether Contractor has arranged for inspections required by Laws and Regulations, including but not limited to those to be performed by public agencies having jurisdiction over the work.
 - c. Participate in a final inspection in the company of ENGINEER, OWNER and Contractor and prepare a final list of items to be completed or corrected.
 - d. Observe whether all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance and issuance of the Notice of Acceptability of the Work.

C. Resident Project Representative shall not:

- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "orequal" items), unless authorized by ENGINEER.
- 2. Exceed limitations of ENGINEER's authority as set forth in the Agreement or the Contract Documents.
- 3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.
- 4. Advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
- 5. Advise on, issue directions regarding or assume control over safety precautions and programs in connection with the activities or operations of OWNER or Contractor.
- 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by ENGINEER.
- 7. Accept Shop Drawings or Sample submittals from anyone other than Contractor.
- 8. Authorize OWNER to occupy the Project in whole or in part.

THIS PAGE INTENTIONALLY LEFT BLANK

DIVISION 1

GENERAL REQUIREMENTS

SECTION 1A - PROJECT REQUIREMENTS

1A-1 <u>GENERAL DESCRIPTION OF</u> <u>WORK</u>. Without limiting the scope of work described herein, the proposed bid provides for THE installation of concrete paving, asphalt paving, sheet pile driving, water infrastructure, electrical and lighting infrastructure, and all other incidental work thereto.

- 1A-2 NOT USED
- 1A-3 NOT USED

1A-4 RESPONSIBILITY FOR MATERIALS AND EQUIPMENT.

- 1A-4.1 <u>Items Furnished by Contractor</u>. Contractor shall be fully responsible for all materials and equipment which he has furnished, and shall furnish necessary replacements at any time prior to expiration of the Correction Period.
- 1A-5 <u>OFF-SITE STORAGE</u>. Off-site storage arrangements for Contractor-furnished equipment shall be acceptable to Owner for all materials and equipment not incorporated into the work but included in Applications for Payment. Such off-site storage arrangements shall be presented in writing and shall afford adequate and satisfactory security and protection. Off-site storage facilities shall be accessible to the Engineer.
- 1A-6 <u>EQUIVALENT MATERIALS AND EQUIPMENT</u>. In accordance with Louisiana Public Contract Statute (LSA R.S. - 38:2295), these Contract Documents include provisions for use of equivalent materials and equipment. Requests for review of equivalency shall be submitted in accordance with the General Conditions.
 - A. Material and equipment incorporated into the Work:
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, type and quality specified or as specifically approved in writing by the Engineer.
 - 3. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

- 4. Whenever an article, device or piece of equipment specified herein (or as indicated on the Drawings) is referred to in the singular number, such reference shall apply to as many such articles as are indicated on the Drawings or required to complete the installation within the general intent of the Contract Documents.
- 5. Any items damaged in removal, storage or handling through carelessness or improper procedures shall be replaced by Contractor in kind or with new items.
- 6. Existing materials and equipment removed by Contractor shall not be reused in the Work except where so specified or indicated.
- 7. All items mentioned in these Contract Documents shall be handled in conformance with this Section, instructions in the related Sections, and manufacturer's literature.
- 8. The security of Owner furnished equipment shall become the responsibility of the Contractor upon taking delivery of the items at the office of the Owner.

MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require that installation of Work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to Engineer.
 - 1. Maintain one set of complete instructions at the job site during installation and until project completion.
- B. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
 - 2. Do not proceed with such Work without clear instructions.
- C. Perform Work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.
- 1A-7 <u>PREPARATION FOR SHIPMENT</u>. All materials shall be suitably packaged to facilitate handling and protect against damage during transit and storage. Coated surfaces shall be protected against impact, abrasion, discoloration, and

other damage. All coated surfaces which are damaged prior to acceptance of material shall be repaired to the satisfaction of Engineer. If the Engineer deems the damage to be too extensive for repair, the material will be rejected and disposed of by the Contractor at No Direct Pay.

Each item, package, or bundle of material shall be tagged or marked as identified in the delivery schedule. Complete packing lists and bills of material shall be included with each shipment. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflicts and delays with Work and conditions at the site.

Deliver products in undamaged condition, in manufacturer's original containers or packaging with identifying labels intact and legible. Labels shall indicate manufacturer and product name, description, mixing and application instructions, limitations, cautions and warnings.

- 1A-8 <u>SALVAGE OF MATERIALS AND EQUIPMENT</u>. Existing materials, unless otherwise noted on the contract drawings, removed, shall not be reused, as a part of the Work and shall become the property of the Contractor. Contractor shall dispose of material at an off-site location at no direct cost to the Owner.
- 1A-9 <u>NOT USED</u>.
- 1A-10 <u>NOT USED</u>.
- 1A-11 <u>NOTICES TO OWNERS AND AUTHORITIES</u>. Contractor shall, as provided in General Conditions, notify owners of adjacent property and utilities when prosecution of Work may affect them.

When it is necessary to temporarily deny access by owners or tenants to their property, or when any utility service connection must be interrupted, Contractor shall give notices sufficiently in advance to enable the affected persons to provide for their needs. Notices shall conform to any applicable local ordinance and, whether delivered orally or in writing, shall include appropriate information concerning the interruption and instructions on how to limit their inconvenience.

Utilities and other concerned agencies shall be contacted at least 24 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

1A-12 <u>MEASUREMENT AND PAYMENT</u>. The project shall be constructed complete as shown and indicated on the Contract Drawings and as described in the Contract Specifications. Payment shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labors, operations, and incidentals as necessary to complete the various items of work all in accordance with the requirements of the Contract Documents, including all costs of compliance with the regulations of public agencies having jurisdiction. The Contractor is hereby on notice that no separate payment will be made for any item not specifically called out, but that is required to properly complete the project.

The Total Bid Price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid. All work not specifically set forth as a pay items in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the work, and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. No compensation will be given for any quantities not used.

1A-13 <u>LINES AND GRADES</u>. All Work shall be done to the lines, grades, and elevations shown on the Contract Drawings.

Basic horizontal and vertical control points will be established or designated by Engineer. These points shall be used as datum for the Work. All additional survey, layout, and measurement Work shall be performed by Contractor as a part of the Work (No Direct Payment).

Contractor shall provide an experienced instrument man, competent assistants, and such instruments, tools, stakes, and other materials required to complete the survey, layout and measurement Work. In addition, Contractor shall furnish, without charge, competent men from his force and such tools, stakes, and other materials as Engineer may require in establishing or designating control points, in establishing construction easement boundaries, or in checking survey, layout, and measurement Work performed by Contractor.

The Contractor shall keep Engineer informed, a reasonable time in advance, of the times and places at which he wishes to do Work, so that horizontal and vertical control points may be established and any checking deemed necessary by Engineer may be done with minimum inconvenience to Engineer and minimum delay to Contractor. The Contractor shall remove and reconstruct Work which is improperly located.

1A-14 <u>EASEMENTS AND RIGHT-OF-WAY (SERVITUDE).</u> The easements and rightsof-way for the work will be provided by the Owner, Contractor shall confine his construction operations within the limits indicated on the drawings, and shall use due care in placing construction tools, equipment, excavated materials, and pipeline materials and supplies, so as to cause the least possible damage to property and interference with traffic.

All Work performed and all operations of Contractor, his employees or Subcontractors, within the limits of rights-of-way, shall be in conformity with the requirements and be under the control (through Owner) of the authority owning, or having jurisdiction over and control of, the right-of-way.

1A-15 <u>CONNECTIONS TO EXISTING FACILITIES</u>. Unless otherwise specified or indicated, Contractor shall make all necessary connections to existing facilities including structures, drain lines and utilities such as water, sewer, gas, telephone, and electricity if required. In each case, Contractor shall receive permission from Owner or the owning utility prior to undertaking connections. Contractor shall protect facilities against deleterious substances and damage.

Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock), if necessary, to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

Materials shall be cut and removed to the extent indicated on the Plans or as required to complete the Work. Materials shall be removed in a careful manner with no damage to adjacent facilities or materials. Materials which are not salvageable shall be removed from the site by Contractor.

All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to Engineer, to obtain a finished installation with the strength, appearance, and functional capacity required. If necessary, entire surfaces shall be patched and refinished.

1A-16 <u>UNFAVORABLE CONSTRUCTION CONDITIONS</u>. Contractor shall confine his operations to work which will not be affected adversely by unfavorable weather, wet ground, or other unsuitable construction conditions. No portion of the Work shall proceed under conditions which would affect adversely the quality or efficiency of the Work, unless suitable special precautions or countermeasures

are taken by Contractor. These special precautions or countermeasures must be approved by the Engineer.

1A-17 CUTTING AND PATCHING.

GENERAL

1.01 DESCRIPTION: As provided in the General Conditions and herein, Contractor shall perform all cutting and patching required for the Work, and as may be necessary in connection with uncovering Work for inspection or for the correction of defective Work. Contractor shall perform all cutting and patching required for the installation of improperly timed Work and to remove samples of installed materials for testing.

Contractor shall not undertake any cutting or demolition which may affect the structural stability of the existing facilities without Engineer's concurrence. Contractor shall provide all shoring, bracing, supports, and protective devices necessary to safeguard all Work during cutting and patching operations.

Materials shall be cut and removed to the extent indicated on the drawings or as required to complete the Work. Materials shall be removed in a careful manner with no damage to adjacent facilities or materials. Materials which are not salvageable shall be removed from the site by Contractor.

All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to Engineer, to obtain a finished installation with the strength, appearance, and functional capacity required. If necessary, entire surfaces shall be patched and refinished.

1A-18 PROTECTION OF SITE AND STORAGE.

- 1.0 <u>GENERAL.</u> The Contractor is responsible for his methods and means of construction. He shall provide all shoring, bracing, supports, and protector devices necessary to safe guard all work performed in this area.
- 1.01 RELATED REQUIREMENTS

None

1.02 DESCRIPTION. All materials shall be suitably packaged (in manufacturer's original packaging with labels and seals intact) to facilitate handling and protect against damage during storage. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of the Engineer.

Each item, package, or bundle of material shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall accompany each shipment.

2.0 PRODUCTS

Not Used

3.01 STORAGE GENERAL

- A. Store products, immediately on delivery, in accordance with manufacturer's instructions. Protect until installed.
- B. Arrange storage in a manner to provide access for maintenance of stored items and for inspection.
- C. Store and handle paints and products subject to spillage in areas where spills will not deface surfaces.
- D. Flammable or hazardous materials:
 - 1. Store minimum quantities in protected areas.
 - 2. Provide appropriate type fire extinguishers near storage areas.
 - 3. Observe manufacturer's precautions and applicable ordinances and regulations.

3.02 EXTERIOR STORAGE

- A. Provide substantial platforms, blocking, or skids, to support fabricated products above ground; slope to provide drainage. Protect products from soiling and staining.
- B. For products subject to discoloration or deterioration from exposure to the elements, cover with impervious sheet material. Provide ventilation to avoid condensation.
- C. Store loose granular materials on clean, solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.
- D. Provide surface drainage to prevent erosion, pollution by mixing and ponding of water.
- E. Prevent mixing of refuse or chemically injurious materials or liquids.
- 3.03 NOT USED

3.04 MAINTENANCE OF STORAGE

- A. Periodically inspect stored products on a scheduled basis.
- B. Verify that storage facilities comply with manufacturer's product storage requirements.
- C. Verify that manufacturer's required environmental conditions are maintained continually.
- D. Verify that surfaces of products exposed to the elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.
- 1A-19 <u>CLEANING</u>. As required by the General Conditions and as specified herein, Contractor shall keep the premises free at all times from accumulations of waste materials and rubbish. Contractor shall provide adequate trash receptacles about the site, and shall promptly empty the containers when filled.

Construction materials, such as concrete forms and scaffolding shall be neatly stacked by Contractor when not in use. Contractor shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids and cleaning solutions from surfaces to prevent marring or other damage.

Volatile wastes shall be properly stored in covered metal containers and removed daily.

Wastes shall not be buried or burned on the site or disposed of into storm drains, sanitary sewers, streams, or waterways. All wastes shall be removed from the site and disposed of in a manner complying with local ordinances and antipollution laws.

Adequate cleanup will be a condition for recommendation of progress payment applications.

1A-20 <u>APPLICABLE CODES</u>. References in the Contract Documents to local codes mean all codes enforceable in the unincorporated City of Gretna and the State of Louisiana.

Other standard codes which apply to the Work are designated in the specifications.

1A-21 REFERENCE STANDARDS AND DEFINITIONS.

1.0 <u>GENERAL</u> Reference to the standards of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code, specifications, or tentative standard adopted and published at the date of receipt of bids, unless specifically stated otherwise.

1.01 RELATED REQUIREMENTS

NONE

1.02 REFERENCE STANDARDS

A. Reference to the standards of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative standard adopted and published at the date of receipt of bids, unless specifically stated otherwise.

1.03 DEFINITIONS

- A. ADVERTISEMENT. A public announcement inviting bids for work to be performed or materials to be furnished.
- B. BASE COURSE. The layer or layers of specified material of designed thickness or a subbase or subgrade to support a surface course.
- C. BIDDER. An individual, partnership, firm, corporation, or any acceptable combination thereof, or joint venture submitting a proposal.
- D. CALENDAR DAY. Every day shown on the calendar, beginning and ending at midnight.
- E. CONTRACTING AGENCY. City, Levee Board, Parish Council or other governing authority of a Parish, State Office, Agency, Board, Commission, Public Corporation or other political subdivision of the State, in whose name the contract will be executed. The Contracting Agency is further defined in the Notice to Contractors.
- F. CONTRACT BOND. The approved form of security, executed by the Contractor and his surety or sureties, guaranteeing complete execution of the contract and all supplemental agreements pertaining thereto and payment of all legal debts pertaining to construction of the project.
- G. CONTRACT ITEM (Pay Item). A specific unit of work for which a price is provided in the contract.
- H. EQUIPMENT. All machinery and equipment, with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for proper construction and acceptable completion of the work.

- I. EXTRA WORK. An item of work not provided for in the contract as awarded but found essential by the Owner for satisfactory completion of the contract within its intended scope.
- J. HIGHWAY, STREET OR ROAD. A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way. Recommended usage in urban areas highway or street; in rural areas highway or road.
- K. INSPECTOR. The Owner's authorized representative assigned to make detailed inspections of contract performance.
- L. INVITATION FOR BIDS. The advertisement for proposals for all work or materials on which bids are required. Such advertisement will indicate location and description of the work, and time and place of opening bid proposals.
- M. LABORATORY. The Owner's testing laboratory or any other testing laboratory approved by the engineer.
- N. MATERIALS. Any substances specified for use in the construction of the project and its appurtenances.
- O. PARISH. The parish in which the specified work is to be done.
- P. PLAN CHANGE. A general term denoting changes to the contract.
- Q. PLANS. The contract drawings which show location, type, and dimensions of the prescribed work and may include layouts, profiles, cross sections and other details.
- R. PROPOSAL. The offer of a bidder, on the prescribed form, to perform the stated work and to furnish the labor and materials at the prices quoted.
- S. PROPOSAL FORM. The prescribed form on which the offer of a bidder must be submitted.
- T. PROPOSAL GUARANTY. The required security furnished with a bid proposal.
- U. RIGHT OF WAY. Land, property or interest therein, reserved for use in constructing, maintaining and protecting an improvement.
- V. SPECIAL PROVISIONS. Additions and revisions to the standard and supplemental specifications covering conditions applicable to the project.

- W. SPECIFIED. Set forth or stipulated in the plans or specifications or elsewhere in the contract documents; such as materials, equipment or methods.
- X. STATE. The State which the project is being constructed or the Governing body of this state acting through its authorized representative.
- Y. STRUCTURES. Bridges, culverts, catch basins, junction boxes, retaining walls, cribbing, manholes, endwalls, buildings, sewers, dams, floodgates, plumbing stations, docks, wharves, levees, boat ramps, pile dolphins, jetties, service pipes, underdrains, foundation drains and other features encountered in the work and not otherwise classed herein.
- Z. SUBBASE. The layer or layers of specified or selected material of designed thickness placed on a subgrade to support a base course.
- AA. SUBGRADE. The surface of a foundation layer upon which the pavement structure and shoulders are constructed.
- BB. SUBSTRUCTURE. That part of the structure below the bearings of simple and continuous spans, skewbacks or arches and tops of footings or rigid frames, including backwalls, wingwalls and wing protection railings.
- CC. SUPERINTENDENT. The Contractor's authorized representative in responsible charge of the work.
- DD. SUPERSTRUCTURE. The entire structure above the substructure.
- EE. SUPPLEMENTAL AGREEMENT. A written agreement made and entered into by and between the Contractor and the Owner covering work not otherwise provided for, revisions in or amendments to terms of the contract or conditions specifically prescribed in the specifications as requiring supplemental agreements. Such supplemental agreement becomes a part of the contract when approved and properly executed.
- FF. SURETY. The corporation, partnership or individual, other than the contractor, executing a bond furnished by the contractor.
- 1A-22 <u>ABBREVIATIONS AND SYMBOLS</u>. Abbreviations used in the Contract Documents are defined as follows:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AAN	American Association of Nurserymen

AASHTO	American Association of State Highway and
4050	Transportation Officials
ACEC	American Consulting Engineers Council
	American Concrete Institute
	American Concrete Pipe Association
AGA	American Gas Association
	Amorican Goar Manufacturors Association
	American Hardboard Association
	Asnhalt Institute
	American Institute of Architects
AISC	American Institute of Steel Construction
	American Iron and Steel Institute
	American Institute of Timber Construction
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
ΑΡΑ	American Plywood Association
	American Petroleum Institute
APWA	American Public Works Association
ARI	Air Conditioning and Refrigeration Institute
ARIB	Asphalt Roofing Industry Bureau
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air
	Conditioning Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWG	American Wire Gauge
AWI	American Woodworking Institute
AWPA	American Wood Presevers Association
AWPA	American Wood Products Association
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BIA	Brick Institute of America
BHMA	Builders Hardware Manufacturers Association
BOCA	Building Officials Council of America
CE	Corps of Engineers, U.S. Army
CISPI	Cast Iron Soil Pipe Institute
CMA	Crane Manufacturing Association
CPSC	U. S. Consumer Products Safety Commission
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
CSI	Construction Specifications Institute

DHI	Door and Hardware Institute
DOTD	Louisiana Department of Transportation and
	Development
EJCDC	Engineers Joint Contract Documents Committee
EPA	Environmental Protection Agency
Fed Spec	Federal Specifications
FDA	Food & Drug Administration
FGMA	Flat Glass Marketing Association
FM	Factory Mutual Engineering Corporation
FMA	Flat Glass Marketing Association
FS	Federal Specifications
FSS	Federal Specifications and Standards, General
	Services Administration
GA	Gypsum Association
HMI	Hoist Manufacturers Institute
IBBM	Iron Body, Bronze Mounted
ICBO	International Conference of Building Officials
IFFF	Institute Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IFI	Industrial Fasteners Institute
IPCEA	Insulated Power Cable Engineers Association
IPS	Iron Pipe Size
ISA	Instrument Society of America
LSGA	Laminators Safety Glass Association
LSSRB	Louisiana Standard Specifications for Roads and Bridges
MBMA	Metal Building Manufacturers Association
MIL	Military Specification
ML/SFA	Metal Lath/Steel Framing Association
MSS	Manufacturers Standardization Society
NAAMM	National Association of Architectural Metal
	Manufacturers
NACE	National Association of Corrosion Engineers
NBC	National Building Code
NBHA	National Builders Hardware Association
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NPA	National Particleboard Association
NPCA	National Pest Control Association
NPT	National Pipe Thread
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NSPE	National Society for Professional Engineers
NWMA	National Woodwork Manufacturers Association
NWWDA	National Wood Window and Door Association

OSHA PCA	Occupational Safety and Health Administration
PCI	Prestressed Concrete Institute
PDI	Plumbing & Drainage Institute
PFI	Pine Fabrication Institute
PPI	Plastic Pipe Institute
PS	Product Standards
RCSC	Research Council on Structural Connections
RMA	Rubber Manufacturers Association
SAE	Society of Automotive Engineers
SBCCI	Sothern Building Code Congress International
SCPRF	Structural Clay Products Research Foundation
SCS	Soil Conservation Service, U.S. Department of
	Agriculture
SDI	Steel Deck Institute
SDI	Steel Door Institute
SFPA	Southern Forest Products Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors
	National Association
SPI	Society of the Plastics Industry
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
STI	Steel Tank Institute
SWI	Sealant and Waterproofers Institute
SWI	Steel Window Institute
TCA	Tile Council of America
TPI	Truss Plate Institute
UL	Underwriters' Laboratories
US	U. S. Bureau of Standards
WPRS	Water and Power Resources Service
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

1A-23 NOT USED

1A-24 <u>PROJECT MEETING, PRECONSTRUCTION CONFERENCE AND</u> <u>PROGRESS MEETING</u>.

- 1A-25A <u>PROJECT MEETING</u>: The Owner's Representative may schedule and administer pre-bid and pre-construction meetings, periodic progress meetings, and specially called meetings throughout the progress of the work. Specially called meetings may be held at the job site during normal working hours, as necessary to expedite the progress of the job.
 - A. The Owner's Representative shall direct individuals attending the meeting to:

- 1. Prepare agenda for meetings.
- 2. Distribute written notice of each meeting.
- 3. Preside at meetings.
- 4. Record the minutes; include all significant proceedings and decisions.
- 5. Reproduce and distribute copies of minutes.
- B. Representatives of Contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.
- 1A-25B: <u>PRE-CONSTRUCTION CONFERENCE:</u> In accordance with the General Conditions, prior to the commencement of Work at the site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by:
 - 1. Contractor and his superintendent.
 - 2. Principal Subcontractors
 - 3. Representatives of principal suppliers and manufacturers as appropriate.
 - 4. Engineer and his Resident Project Representative.
 - 5. Representatives of Owner.
 - 6. Others as requested by Contractor, Owner, or Engineer.
 - A. Unless previously submitted to Engineer, Contractor shall bring to the conference a tentative schedule for each of the following:
 - 1. Schedule of Values.
 - 2. List of Subcontractors.
 - 3. List of major material suppliers
 - 4. Construction Schedule
 - 5. Procurement Schedule
 - 6. Shop Drawings and Submittal Schedule
 - 7. Excavation Plan

- 8. Progress.
- B. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:
 - 1. Contractor's tentative schedules.
 - 2. Transmittal, review, and distribution of Contractor's submittals.
 - 3. Processing applications for payment.
 - 4. Maintaining record documents.
 - 5. Critical Work sequencing.
 - 6. Field decisions and Change Orders.
 - 7. Use of premises, office and storage areas, security,housekeeping, and Owner's needs.
 - 8. Major equipment deliveries and priorities.
 - 9. Contractor's assignments for safety and first aid.
 - 10. Submitted of executed bonds and insurance certificates if not previously submitted.
- C. Engineer will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

1A-25C PROGRESS MEETINGS:

- A. Progress meetings will be scheduled by the Owner's Representative or the Engineer after consulting with the Owner and the Using Agency. These meetings shall be no more often than one per week as required by progress of the work, exclusive of any other meetings scheduled by the Owner's Representative, Owner or Using Agency.
 - 1. It shall be the responsibility of the Owner's Representative to notify the Owner, Using Agency, and the Contractor of the time, place and date of the "Progress Meeting".
- 2. It shall be the responsibility of the Contractor to notify all suppliers and subcontractors.
- B. The purpose of these regular meetings is to assess, realistically, the current status and progress of the work, to effect coordination, cooperation and assistance in every practical way and to discuss changes in scheduling, and to resolve other problems that may develop. This should maintain the progress of the project on schedule and complete the project within the contract time.
- C. These meetings will be called as required during progress of the work.
- D. Location of the meetings: The project field office or other location where directed by the Owner's Representative.
- E. Attendance:
 - 1. Owner's representative.
 - 2. Using Agency's representative.
 - 3. Engineer, his professional consultants, and his Project Representative.
 - 1. Contractor.
 - 2. Contractor's Superintendent.
 - 3. Principal Subcontractors, and all subcontractors active on the site.
 - 4. Principal Suppliers and Manufacturer's Representatives.
 - 8. Others as appropriate.
- F. Suggested Addendum:
 - 1 Review and approve minutes of previous meeting.
 - 2 Review of work progress since previous meeting.
 - 3 Note field observations, problems, or conflicts.
 - 4 Identify problems that impede Construction Schedule.
 - 5 Develop corrective measures and procedures to regain projected schedule.
 - 6 Revise Construction Schedule as required.
 - 7 Plan progress, schedule, during succeeding work period.

- 8 Coordination of schedules.
- 9 Review submittal schedules; expedite as required to maintain schedule.
- 10 Review maintenance of quality and work standards.
- 11 Review proposed changes for the effect on Construction Schedule, completion date, and coordination
- 12 Complete other current business.
- 1A-26<u>CONSTRUCTION PHOTOGRAPHS.</u> The Contractor shall be responsible for the production of construction photographs showing the regular progress of the Work.

Before commencement of the Work and continuing through the duration of the contract, the Contractor shall take not less than ten (10) exposures consisting of different subjects or angles of view for each exposure. The exposures shall be taken from various locations on the construction site for adequate documentation of the Work. The photographer shall attempt to use the same locations for four (4) exposures at each interval. The exposures shall be taken at intervals not exceeding two (2) weeks in duration. The Contractor shall take ten (10) additional exposures at the completion of the Work as directed by the Engineer. All photographs shall be furnished to the Engineer within two (2) weeks after each exposure.

All photographs shall be produced by a competent photographer, and shall be color photographs of commercial quality. All digital image files and three 4" x 6" prints of each view shall be submitted, bound in 3-ring, hard cover, loose leaf binders. Prints shall be identified with contract number, description of view and date. Prints shall be enclosed in clear plastic sheets in binders, and marked with the name and number of the contract, name of Contractor, description and location of view, and date photographed. Photographs shall be glossy printed on single weight paper and shall be taken with a 8.0 megapixel or greater digital formatted cameras. All photography shall be at the Contractor's expense. Engineer shall transmit, suitably bound, one copy of each photograph to Owner.

1A-27 <u>SITE ADMINISTRATION</u>. Contractor shall be responsible for all areas of the site used by him, and all Subcontractors in the performance of the Work. He will exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such controls as may be specifically reserved to Owner or others. Contractor

has the right to exclude from the site all persons who have no purpose related to the Work or its inspection, and may require all persons on the site (except Owner's employees) to observe the same regulations as he requires of his employees.

The Contractor shall coordinate scheduling, submittals and work of the various sections of the Specification to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.

Each Contractor and subcontractor involved shall assume all liability, financial or otherwise, in connection with his work and shall protect and save harmless the Owner from any and all damages or claims that may arise because of inconvenience, delay or loss experienced by him because of the presence and operations of any other Contractors working within the limits of this project.

The Contractor shall arrange his work and shall place and dispose of the materials being used so as not to interfere with operations of others working in the surrounding area. He shall join his work with that of others in an acceptable manner and shall perform it in proper sequence to that of the others.

The contracting agency will not be responsible for any delays or inconvenience to the Contractor in carrying on his work while any public utility companies or agencies are making necessary adjustments of their fixtures or appurtenances, nor will the contracting agency be responsible for any cost incurred by the Contractor or utility owners for making said adjustments, by delays, etc.

<u>1A-28 PROGRESS REPORTS</u>: Engineer's representative shall write progress report and furnish it to Engineer with each application for progress payment. If the Work falls behind schedule, it is Contractor's responsibility to notify Engineer's representative of that delay and the Engineer's representative shall document that delay at such intervals as Engineer may request.

Each progress report shall include sufficient narrative to describe current and anticipated delaying factors, their effect on the construction schedule, and proposed corrective actions. Any Work reported complete, but which is not readily apparent to Engineer, must be substantiated with satisfactory evidence.

Each progress report shall also include three prints of the accepted graphic schedule marked to indicate actual progress.

1A-29 PROJECT CLOSEOUT.

<u>GENERAL</u>

1.01 REQUIREMENTS INCLUDED

1.02 RELATED WORK

A. General and Supplementary Conditions of the Contract. Fiscal provisions, legal submittals and additional administrative requirements.

1.03 CLEANING

- A. Before final acceptance, the Contractor shall remove from the site and adjacent property all surplus materials, weeds, bushes, rubbish and temporary structures; shall satisfactorily restore all property which has been worn, rutted or damaged during the work; and shall leave the site in a presentable condition. Upon completion of work in connection with drainage structures, the Contractor shall remove all obstructions to the flow of water from inside all structures, channels, and culverts whether new or old. No direct payment will be made for this work.
- B. Remove all temporary labels.
- C. Clean site. Sweep paved areas.
- D. Remove all waste and surplus material from site.

1.04 SUBSTANTIAL COMPLETION

- A. When Contractor considers the Work is substantially complete, he shall submit to the Engineer (3 copies each):
 - 1. A written notice that the Work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected. The punch list will include the cost estimate for the particular items of work based on mobilization, labor, material, and equipment costs for correcting each punch list item.
- B. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.
- C. Should the Engineer determine that the Work is not substantially complete:
 - 1. Engineer will promptly notify the Contractor in writing, giving the reasons therefor.
 - 2. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer.
 - 3. Engineer will re-inspect the Work.

- D. When the Engineer finds that the Work is substantially complete, he may:
 - 1. Prepare and deliver to the Owner a notification of Substantial Completion on an appropriate form with the Contractor's list of items to be completed or corrected as verified and amended by the Engineer before final payment.
 - 2. After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when Engineer considers that the Work is substantially complete, he will countersign and deliver to the Owner and the contractor a definite notification of Substantial Completion with a revised list of items to be completed or corrected.

1.05 FINAL INSPECTION

- A. When Contractor considers the Work is complete, he shall submit written notification that (3 copies):
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Work is completed and ready for final inspection.
 - 5. All items noted from the Substantial Completion inspection have been completed or corrected.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such notification.
- C. Should Engineer consider that the Work is incomplete or defective:
 - 1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.

2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written notification to Engineer stating that the Work is complete.

- 3. Engineer will reinspect the Work.
- D. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals, including Application for Final Payment.

1.06 REINSPECTION FEES

- A. Should Engineer perform reinspection due to failure of the Work to comply with the claims of status of completion made by the Contractor:
 - 1. Owner will compensate Engineer for such additional services.
 - 2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.07 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Project Record Documents.
- B. Warranties, Guarantees and Bonds. All warranty periods shall begin on the date of Final Acceptance.
- C. Spare parts and Maintenance Materials.
- D. Reports of all required tests and demonstrations.
- E. Evidence of Payment and Release of Liens: In accordance with requirements of General and Supplementary Conditions. Additionally, there is to be a 45 day period prior to the request for the clear lien and privilege certificate

1.08 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Engineer.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Quantity reconciliations.
 - c. Deductions for liquidated damages.
 - d. Deductions for re-inspection payments.
 - e. Deductions for overtime inspection payments.
 - f. Other adjustments.
 - 3. Total Contract Sum, as adjusted.

- 4. Previous payments.
- 4. Sum remaining due.
- C. Engineer will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.
- D. The Contractor shall furnish a set of "As-Built" drawings upon completion of the work and prior to final inspection. These drawings shall be a legibly marked set of prints of the Contract Drawings, revised to show clearly all field changes. There shall be no direct payment for the keeping of as-built plans.

1.09 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General and Supplementary Conditions of the Contract.

1.10 SUPPLEMENTAL LIQUIDATED DAMAGES

After the establishment of a date of Substantial Completion, the Contractor shall have 45 days to complete any outstanding items of Work remaining to be completed or corrected as listed on a final punch list made a part of the Substantial Completion Package. If upon expiration of said 45 days the outstanding items of Work have not been completed, liquidated damages in the amount agreed to in this contract will be reinstated for every day in which the outstanding items of Work have not been completed. Furthermore, the Owner shall not release monies withheld until all outstanding items of Work have been completed.

THIS PAGE INTENTIONALLY LEFT BLANK

DIVISION 1

GENERAL REQUIREMENTS

SECTION 1B - SUBMITTALS

1B-1 <u>CONSTRUCTION SCHEDULE</u>. Before Work is started, Contractor shall submit to Engineer for review a schedule of the proposed construction operations. The construction schedule shall indicate the sequence of the Work, the time of starting and completion of each part, and the installation date for each major item of equipment, and the time for making connections to existing facilities.

Owner may require Contractor to add to his plant, equipment, or construction forces, as well as increase the working hours, if operations fall behind schedule at any time during the construction period.

1B-2 <u>PROGRESS REPORTS</u>. A progress report shall be furnished to Engineer with each application for progress payment. If the Work falls behind schedule, Contractor shall submit additional progress reports at such intervals as Engineer may request.

Each progress report shall include sufficient narrative to describe current and anticipated delaying factors, their effect on the construction schedule, and proposed corrective actions. Any Work reported complete, but which is not readily apparent to Engineer, must be substantiated with satisfactory evidence.

Each progress report shall also include three prints of the accepted graphic schedule marked to indicate actual progress.

1B-3 <u>SCHEDULE OF VALUES</u>. After review of the tentative schedule at the preconstruction conference, and before submission of the first application for payment, Contractor shall prepare and submit to Engineer a schedule of values covering each lump sum item. The schedule of values, showing the value of each kind of work, shall be acceptable to Engineer before any partial payment estimate is prepared. Such items as Bond premium, temporary construction facilities, and plant may be listed separately in the schedule of values, provided the amounts can be substantiated.

The sum of the items listed in the schedule of values shall equal the contract lump sum total Bid price. Overhead and profit shall not be listed as separate items.

An unbalanced schedule of values providing for overpayment of Contractor on items of Work which would be performed first will not be accepted. The schedule of values shall be revised and resubmitted until acceptable to Engineer.

1B-4 <u>SCHEDULE OF PAYMENTS</u>. Within 30 days after award of contract, Contractor shall furnish to Engineer a schedule of estimated monthly payments. The

schedule shall be revised and submitted each time an application for payment varies more than 10 percent from the estimated payment schedule.

1B-5 <u>SURVEY DATA</u>. All field books, notes, and other data developed by Contractor in performing surveys required as part of the Work shall be available to Engineer for examination throughout the construction period. All such data shall be submitted to Engineer with the other documentation required for final acceptance of the work.

1B-6 <u>SHOP DRAWINGS AND ENGINEERING DATA</u>. Engineering data covering all fabricated materials to be furnished under this contract shall be submitted to Engineer for review. This data shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement and operation of component materials and devices; the external connections, anchorages, and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.

All submittals, regardless of origin, shall be stamped with the approval of Contractor and identified with the name and number of this contract, Contractor's name, and references to applicable specification paragraphs and Contract Drawings. Each submittal shall indicate the intended use of the item in the work. When catalog pages are submitted, applicable items shall be clearly identified. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.

All deviations from the Contract Documents shall be identified on each submittal and shall be tabulated in Contractor's letter of transmittal. Such submittals shall, as pertinent to the deviation, indicate essential details of all changes proposed by Contractor (including modifications to other facilities that may be a result of the deviation) and all required piping and wiring diagrams.

Contractor shall accept full responsibility for the completeness of each submission, and, in the case of a resubmission, shall verify that all exceptions previously noted by Engineer have been taken into account. In the event that more than one resubmission is required because of failure of Contractor to account for exceptions previously noted, Contractor shall reimburse Owner for the charges of Engineer for review of the additional resubmissions.

Any need for more than one resubmission, or any other delay in obtaining Engineers' review of submittals, will not entitle Contractor to extension of the Contract time unless delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of Engineer to return any submittal within a reasonable amount of time after its receipt in Engineer's office.

Engineer's review of drawings and data submitted by Contractor will cover only general conformity to the drawings and specifications, external connections and dimensions which affect the layout. Engineer's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, and device or item shown. Engineer's review of submittals shall not relieve Contractor from responsibility

for errors, omissions, deviations, or responsibility for compliance with the Contract Documents.

Six copies (or one reproducible copy) of each drawing and necessary data shall be submitted to Engineer. Engineer will not accept submittals from anyone but Contractor. Submittals shall be consecutively numbered in direct sequence of submittal and without division by subcontracts or trades. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.,) to indicate the sequence of the resubmittal.

When the drawings and data are returned marked REJECTED or REVISE AND RESUBMIT, the corrections shall be made as noted thereon and as instructed by Engineer and five corrected copies (or one corrected reproducible copy) resubmitted.

When corrected copies are resubmitted, Contractor shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by Engineer on previous submissions.

When the drawings and data are returned marked REVIEWED AS NOTED or REVIEWED, no additional copies need to be furnished.

1B-7 NOT USED

1B-8 <u>LAYOUT DATA</u>. Contractor shall keep neat and legible notes of measurements and calculations made by him in connection with the layout of the Work. Copies of such data shall be furnished to the Engineer for use in checking Contractor's layout as provided under Lines and Grades (paragraph 1A-15 in the Project Requirements). All such data considered of value to Owner will be transmitted to Owner by Engineer with other records upon completion of the Work.

1B-9 <u>CONSTRUCTION PHOTOGRAPHS</u>. Contractor shall be responsible for the production of construction photographs as provided herein. Engineer will designate the subject of each photograph.

Two copies each of five different photographs of the entire site, or pertinent features thereof, shall be taken before the commencement of Work at the site and promptly submitted to Engineer. The same views shall be re-photographed upon completion of all construction activities and submitted with Contractor's application for final payment. Two copies each of five different photographic views of the Work shall be made each month throughout the progress of the Work at such times as requested by Engineer, and submitted with Contractor's application for progress payment.

All photographs shall be produced by a competent photographer, and shall be color photographs of commercial quality. All digital files and two 8 x 10 prints of each view shall be submitted. Digital files shall be identified with a description of view and date photographed. Prints shall be mounted on linen with flap for binding or enclosed in clear plastic binders, and marked with the name and number of the contract, name of Contractor, description and location of view, date and time photographed. No Direct

Payment shall be made for construction photographs and associated equipment, binding, and reproduction.

Engineer will transmit digital files and one copy of each photograph to Owner.

1B-10 <u>CUTING AND PATCHING</u>.

1.0 GENERAL

- A. The Contractor shall submit a written request to the Owner's Representative well in advance of executing any cutting or alteration which may affect:
 - 1. The work of the Owner or any separate contractor.
 - 2. The structural value or integrity of any element of the Project.
 - 3. The integrity of effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. The efficiency, operational life, maintenance or safety of operational elements.
 - 5. The visual qualities of sight-exposed elements.
- B. The request shall include:
 - 1. Identification of the Project.
 - 2. Location and description of the affected work.
 - 3. The necessity for cutting, alteration or excavation.
 - 4. The effect on the work of the Owner or any separate contractor, or on the structural or weatherproof integrity of the Project.
 - 5. Description of the proposed work:
 - a. The scope of cutting, patching, alteration, or excavation.
 - b. The trades who will execute the work.
 - c. Products proposed to be used.
 - d. The extent of refinishing to be done.
 - 6. Alternatives to cutting and patching.
 - 7. Cost proposal, when applicable.
 - 8. Written permission of any separate contractor whose work will be affected.

- 9. Date and time work will be executed.
- C. Should conditions of the work or the schedule indicate a change of products from the original installation, Contractor shall submit a request substitution.
- 2.0 PRODUCTS
- 2.01 MATERIALS
 - A. Comply with specifications and standards for each specific product involved.
- 3.0 <u>EXECUTION</u>
- 3.01 INSPECTION
 - A. The Contractor shall inspect existing conditions of the Project, including elements subject to damage or to movement during cutting and patching.
 - B. After uncovering work, the Contractor shall inspect the conditions affecting the installation of products, or performance of the work. The commencement of any cutting or patching means acceptance of existing conditions.
 - C. Report unsatisfactory or questionable conditions to the Owner's Representative in writing; do not proceed with the work until the Owner's Representative has provided further instructions.

3.02 PREPARATION

- A. The Contractor shall provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the Work.
- B. Provide devices and methods to protect other portions of the Project from damage.
- C. Provide protection from the elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.

3.03 PERFORMANCE

- A. The Contractor shall execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.
- B. Provide devices and methods to protect other portions of the Project from damage.

- C. Provide protection from the elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.
- D. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.
- E. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- F. Restore work which has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.
- G.Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- H. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish the entire unit.

END OF SECTION

DIVISION 1

GENERAL REQUIREMENTS

SECTION 1C – MOBILIZATION AND DEMOBILIZATION

1C-1 <u>DESCRIPTION OF WORK</u>. The Work shall consist of the mobilization and demobilization of the Contractor's forces and equipment necessary for performing the Work required under the Agreement.

It shall include the purchase of contract bonds, transportation of personnel, equipment, and operating supplies to the site, establishment of offices, buildings, and other necessary facilities at the site; and other Work at the site.

It shall not include mobilization for any specific item of work for which payment for mobilization is provided elsewhere in the Agreement.

This specification covers mobilization for work required by the Agreement at the time of award. If additional mobilization costs are incurred during performance of the Agreement as a result of changed or added items of work for which the Contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

1C-2 <u>METHOD OF MEASUREMENT AND PAYMENT.</u> Payment will be made monthly as the Work proceeds, after presentation of invoices by the Contractor showing his own mobilization costs and evidence of charges of suppliers, subcontractors, and others for mobilization work performed by them. If the total of such payments is less than the lump sum price for mobilization, the unpaid balance will be included in the final contract payment. Total payment will be the lump sum price for mobilization, regardless of actual cost to the Contractor.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated into the project, or the purchase costs of operating supplies.

Payment of the lump sum price for mobilization will constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to completion of the Work.

In the event this Agreement is cancelled by the Owner, the Contractor will be paid for the actual costs incurred for mobilization to the time of cancellation, which costs will not exceed the total lump sum price for the pay item "Mobilization and Demobilization".

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT	
1	Mobilization & Demobilizat	ion	Lump Sum

THIS PAGE INTENTIONALLY LEFT BLANK

DIVISION I

GENERAL REQUIREMENTS

SECTION 1SP - SPECIAL PROVISIONS

1SP-1 <u>DEFINITIONS</u>. The City of Gretna is herein called the "Owner" and Burk-Kleinpeter, Inc. is herein called the "Engineer".

1SP-2 <u>TESTING LABORATORY</u>. An independent testing laboratory shall be employed at the Owner's option and paid by the Owner for the purpose of conducting tests for concrete bents and where testing is called for in the Technical Specifications.

The selection of the testing laboratory by the Owner shall be understood as in no way relieving the Contractor of his responsibility for satisfactory performance of the work in full conformance with the requirements of the Contract. Excluding written protest by the Contractor in advance of processing or use of materials, services of the testing laboratory shall be understood as constituting full acceptance by and approval of the Contractor.

The Contractor shall cooperate with and make available to the testing laboratory such facilities and material samples as may be necessary for the performance of these services without charge.

1SP-3 <u>LABOR PREFERENCE</u>. To the extent that qualified mechanics and laborers are available, employment preference shall be given to bona-fide residents of Jefferson Parish.

1SP-4 <u>DRAINAGE</u>. Contractor shall not be allowed to impede drainage during rainstorms or when a storm is imminent.

Contractor shall also be responsible for keeping all existing drain lines from drainage systems flowing at all times.

1SP-5 <u>CHANGE ORDERS</u>. All Change Orders must be approved in writing by the Owner prior to the execution of any work on same. If at any time during the performance of this contract or for a period of twelve (12) months after final acceptance of the project, defects in construction and/or workmanship should develop, the contractor shall promptly repair and/or replace the defect even though such workmanship and/or material has already passed inspection. All such repair work is an obligation of the Contractor and the cost thereof must be included in the prices bid for the various items of work.

1SP-7 <u>TIME OF COMPLETION AND LIQUIDATED DAMAGES</u> The Contractor will be issued a "Conditional Notice To Proceed" to acquire approvals of required drawings, brochures and other submittals, and to begin purchase and assembly of materials. The

Contractor may only mobilize enough force to verify material requirements and quantities. The "Conditional Notice To Proceed" will expire 30 calendar days after the date of contract or as necessary to obtain material deliveries. The contractor shall request, in writing, an extension of the "Conditional Notice to Proceed" as may be required.

The Contractor on this project shall complete all work outlined in the total Bid within 90 (ninety) calendar days from the date of the Full Notice to Proceed issued by the Owner or the Engineer acting on behalf of the Owner.

The stated time of completion includes an assumed percentage of inclement weather days. No consideration shall be given to a request for a contract time extension due to inclement weather, except for extraordinary conditions such as hurricanes, floods, and the like.

Liquidated damages at the rate of Five Hundred Dollars (\$500.00) per day shall be assessed against the Contractor if the work is not completed within the above specified calendar days, in accordance with paragraph SC-8 of the Supplementary Conditions.

1SP-8 <u>UTILITY RELOCATION</u>. The Contractor shall notify the City of Gretna, Department of Public Works, prior to commencing any work involving removal, valvingoff, or relocation of sewer lines. The Contractor shall also notify the gas companies, the power company, Cable TV Company and the telephone company to coordinate relocation and construction operations.

1SP-9 <u>PROTECTION OF TREES, PLANTS, AND SHRUBBERY</u>. The Contractor shall be responsible for protecting all trees, plants, and ornamental shrubbery on the line of or adjacent to the proposed construction, whether these trees, plants, and shrubbery are within the servitude or not.

Contractor, after visiting the site, shall be aware of existing trees and shall not be allowed to cut or destroy any trees on private property or tree limbs overhanging project limits from private property without first obtaining written permission from the property owners. Trees within the servitude may be cut or destroyed only with the approval of the Engineer.

1SP-10 <u>PAYMENTS TO CONTRACTOR</u>. The Owner agrees to make payment to its Contractor promptly sums due under this contract and to retain only such amounts as may be justified by specific circumstances specifically provided for in the construction contract, to the following schedule:

a. Retention of up to ten (10) percent of payments for projects with contract prices of less than \$500,000.

b. Retention of five (5) percent of payments for projects with contract prices of \$500,000 or more.

Wherever an item of work to be performed under this contract is specified in any of the bid documents as being paid at an item total price, the Contractor shall be paid the entire amount that appears in his bid proposal for that item.

Wherever the estimated quantities (i.e., cubic yards of sand, shell, etc.) of materials to be furnished under this contract are shown in any of the documents, including the Proposal, they are given for use in comparing bids and are not to be construed as exact quantities. The Owner reserves the right to increase or diminish these quantities as may be necessary to complete the work contemplated by this contract. The Contractor shall be paid for the actual quantity of items or material used, and payment will be at the respective unit price bid for these items or materials.

The sum of the products of approximate quantities multiplied by the unit price bid, constitute the total base bid price or total alternate bid price which sums shall be used in comparison of bids, and the awarding of the Contract.

It shall be understood that the total base bid or alternate bid price figure, wherever specified in the bid document, may not reflect the actual amount the Contractor will receive upon completion of the work. This figure shall be adjusted in accordance with the actual quantity of unit price items used.

All payment requests or invoices must be sent first to the Engineer for review and comment on the proper forms, which are then forwarded to the appropriate department. Contractors who fail to follow this procedure will not be paid on a timely basis due to the unnecessary delays in re-routing the payment requests.

"Final payment and release of retainage will be predicated on the Contractor submitting to the City a list of outstanding insurance claims which they have incurred by the residents and homeowners along with the disposition of such claims."

1SP-11 <u>INSURANCE CERTIFICATES</u> The Contractor shall deliver the required insurance certificate for the project to the Engineer within seven (7) calendar days of the execution of the Agreement. Failure to comply with this requirement will delay issuance of the Notice to Proceed.

1SP-12 <u>SAFETY AND HEALTH REGULATIONS</u>. All work and construction practices shall conform to "Federal Register - Volume 36 - Number 105 - Part II - Department of Labor - Bureau of Standards - Safety and Health Regulations for Construction", or the latest revision thereof.

1SP-13 <u>SANITARY FACILITIES</u>. The Contractor shall furnish his own adequate temporary facilities for his personnel. It shall be his responsibility to maintain and dispose of wastes.

1SP-14 <u>VISIT TO SITE</u>. The bidder shall visit the site of the proposed work in order that he may understand the facilities, difficulties and restrictions attending the execution of the contract. He will be allowed no additional compensation for failure to be so informed.

1SP-15 <u>PROTECTION OF INSTALLED UTILITIES</u>. Contractor is responsible for any and all materials required for protecting the existing utilities, both underground and overhead within the limits of construction of this project as deemed necessary by his construction techniques

1SP-16 <u>AWARD OF CONTRACT</u>. The contract for the CITY OF GRETNA, WATERLINE REPLACEMENT AT WHITNEY AVENUE CANAL shall be awarded based on the lowest responsive and responsible bidder for the total bid price as determined by the Owner and in conformance with the Contract Specifications.

1SP-18 <u>DOCUMENTATION OF EXISTING CONDITIONS</u>. The Contractor, prior to mobilizing onto the jobsite, shall conduct a detailed survey on the jobsite, surrounding area and access routes.

This survey is intended to document existing conditions with respect to any conditions which may be noticed after construction begins. Post construction conditions shall also be compared to this data.

This documentation shall be provided by the Contractor and submitted to the Engineer as preparation to resolve any damage claims which may arise due to the construction of this project. All costs associated with this survey shall be included in other bid items.

These records shall become property of the Owner upon delivery to the Engineer or Owner's Representative.

The Owner shall have the authority to reject all or any portion of the photographic documentation not conforming to the Specifications. Those rejected portions shall be re-photographed at no additional cost to the Owner.

Photographs shall be taken of the exterior of all public and private buildings and structures along any pipeline work and immediately adjacent to any excavation or pile driving. The photos must be of sufficient extent to cover existing conditions which may be affected by the work.

The Contractor shall make every attempt to gain permission from property owners for access to private property for documenting preconstruction conditions. If a property owner refuses access after multiple attempts, the Contractor will notify the Engineer and log all contacts with the property owner. The attempts shall include a formal letter and upon refusal, a registered or certified letter to supplement the log of verbal and/or telephone contacts.

Video tapes of the access routes shall be made to show existing street and right-of-way conditions. The camera shall be mounted on a tripod or platform upon a vehicle which places the camera approximately 10' above the path being traveled upon. The travel speed of the vehicle shall be no greater than 48 feet per minute. Photographs shall be taken to supplement the video tapes to give more detailed documentation of pre-existing conditions.

A carefully prepared log shall be maintained to show the name of the individual taking the photographs, the stationing as shown on the Plans, or as directed by the Engineer, the name of the street, easement, or building being documented, the project name, and the direction of travel and viewing side.

All still photographs shall be taken on a digital camera with minimum 8 megapixel resolution.

Photographs shall be sharp clear, bright, well focused with accurate colors free from distortion or any other form of picture imperfection.

The date, time, and identification number of each photograph shall be displayed onto the digital file and print.

The Engineer and Owner shall be furnished with three (3) contact sheets containing each exposure positioned individually in plastic pages with full descriptions of each photograph (origin, location, etc.) attached to the back of the print. Digital files shall also be submitted with descriptions matching those mentioned above. The prints and shall be bound in sets in heavy duty 3 ring binders, with digital files and delivered no later than on the date of mobilization upon the size or staging areas.

No photography shall be done during periods of significant precipitation, mist or fog.

The photography shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording. Proper flash lighting shall be used inside the buildings and less lighted areas. No Direct Payment shall be made for photography, as well as associated labor, equipment, reproduction, etc. necessary to comply with the requirements above.

PROTECTION OF PROPERTY AND STRUCTURES. The Contractor 1SP-19 shall, at his own expense, sustain in their places and protect from direct or indirect injury all pipes, poles, fencing, walls, utilities, and other structures or property in the vicinity of his work whether above or below the ground. He shall at all times have a sufficient quantity of timber and planks, chains, ropes, etc., on the ground and shall use them as necessary for sheathing any excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened, or weakened. The Contractor shall assume all risks attending the presence or proximity of piles, poles, fencing, walls, buildings, and other structures and property of every kind and description in the vicinity of his work, whether above or below the surface of the ground, that are indicated on the Contract Drawings or may be discovered on the site by the use of reasonable investigation and caution; and he shall be responsible for all damage and assume all expense for direct or indirect injury caused by his work to any of them, or to any person or property by reason of injury to them. Contractor shall indemnify and hold harmless Owner and Engineer and their agents and employees from and against all claims, damages, losses and expenses including, but not limited to attorney's fees, arising out of or resulting from the performance of the Work, when such claim, damage, loss, or expense is caused by work of the Contractor, any sub-contractor, anyone

directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused by a party indemnified hereunder.

1SP-20 <u>PERFORMANCE AND PAYMENT BONDS</u>. All payment and performance bonds provided in connection with any contract let by or on behalf of the City of Gretna shall be provided by a company or companies having at least an "A" or better financial rating according to the latest A.M. Best Company ratings and shall be in an amount at least equal to the Contract Price.

1SP-21 <u>UNDERGROUND INSTALLATIONS.</u> Existing underground installations are indicated on the Contract Drawings only to the extent that such information was made available to or discovered by the Engineer in preparing the Contract Drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof is expressly disclaimed.

1SP-22 <u>INSPECTION BY PUBLIC AGENCIES.</u> Authorized representatives of the City of Gretna, Department of Public Utilities, shall have access to the Work wherever it is in preparation or progress. Contractor shall provide proper facilities for such access and inspection.

1SP-23 <u>PROJECT CLEAN-UP</u>: During construction (daily) and before final acceptance the Contractor shall be responsible for and will clean up at his own expense any streets or roadways which have debris, mud, shells, etc., as a result of construction on this project.

1SP-24 <u>INDEMNIFICATION</u>: Contractor shall defend, indemnify, and hold harmless Owner and Engineer and their agents, employees, related and companion corporations (collectively referred to as Owner and Engineer) from and against any and all claims, demands, in any way arising out of or resulting from, directly or indirectly, errors, omissions, or negligence related to the work performed by the Contractor or any of his subcontractors, suppliers or agents, including all damages, losses, expenses, attorney's fees and costs.

1SP-25 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

a. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the contract clause in the General Conditions, Paragraph 12.2. In order for the Engineer to recommend and the Owner approve a time extension under this clause, the following conditions must be satisfied.

1. The weather experienced at the project site during the contract period must be found to be unusually severe. That is, more severe than the adverse weather anticipated for the project location during any given month.

2. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) New Orleans (Audubon) Weather Station located near the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER CALENDAR DELAY WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(11)	(9)	(5)	(4)	(4)	(6)	(9)	(9)	(6)	(4)	(5)	(9)

c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Engineer/Owner will record on the daily report the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day.

The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b. above, the contract time will be modified reflecting any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Change in the Contract Time", Article 12 of the General Conditions.

1SP-26 <u>CONSTRUCTION SEQUENCE</u>. The Contractor shall be responsible for developing a construction sequence to facilitate the construction of this project. The sequence must be approved by the Engineer.

1SP-27 <u>CONSTRUCTION NOISE</u>. The Contractor shall maintain and operate equipment in such manner as to minimize noise generation to the extent practicable. All engines used on the project shall be equipped with properly functioning mufflers.

1SP-28 <u>COOPERATION BETWEEN CONTRACTORS</u>. The Contractor shall be cognizant of the fact that other utilities may be under construction at the same time that this contract is active. There shall be complete cooperation with any other contractor in the area, and any unavoidable conflicts shall be immediately brought to the Engineer's attention.

1SP-29. <u>FIELD OFFICE</u>. NOT USED.

1SP-30 <u>PROXIMITY TO POWER LINES</u>. The Contractor shall take notice of the overhead power lines along the length of the project.

It shall be the Contractor's responsibility to determine the requirements of his work in the vicinity of the power lines and his ability to work safely under these conditions. Any relocation, de-energizing, etc. must be arranged with Entergy Services, Inc. by the Contractor, and it will be his responsibility for all costs associated with same.

The Contractor shall meet all applicable OSHA regulations and National Electric Safety Code requirements during the duration of this project. No equipment is to be utilized beneath transmission lines with a height greater than 15 feet.

1SP-31 <u>GROUND FAULT PROTECTION</u>. Electrical equipment used on this contract shall be equipped with ground fault circuit interrupters in accordance with EM 385-1-1, Section 11.C.05.

1SP-32 <u>HAUL ROADS.</u> NOT USED.

1SP-33 UTILITIES AND IMPROVEMENTS.

a. All known utilities within the limits of the work, such as pipes, communication lines, power lines, etc., that would interfere with construction work shall be protected, removed, modified or relocated by the appropriate utility company at no cost to the Owner unless otherwise noted in the plans and/or specifications. The Contractor, however, shall cooperate with the authorities or company representatives and shall conduct his operations in such manner as to result in a minimum of inconveniences to the owners of said utilities. The Contractor shall notify each utility owner, (Entergy Electric, Atmos Energy, BellSouth Telecommunications, and Cox Communications) by certified mail 45 days, 15 days and by telephone 72 hours prior to the date utilities need to be moved and provide a copy of these notifications to the Engineer. The contact persons and telephone numbers that should be utilized during the construction phase are listed on the drawings.

b. <u>Notices to Owners and Authorities.</u> The Contractor shall notify owners, Entergy Electric, BellSouth Telecommunications, Atmos Energy and Cox Communications of utilities when prosecution of the work may affect them. When it is necessary to temporarily disconnect utility services, the Contractor shall give notices sufficiently in advance to enable the affected persons to provide for their needs. Notices shall conform to any applicable local ordinance and, whether delivered orally or in writing, shall include appropriate information concerning the interruptions and instructions on how to limit their inconvenience. Utilities and other concerned agencies shall be contacted at least 48 hours (excluding Saturdays, Sundays and legal holidays) prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

c. <u>Entergy Electric Transmission and Distribution Lines (Entergy)</u>. While constructing the project, the Contractor will be working near, and under the Entergy overhead power lines. The Contractor shall contact Entergy prior to start of construction to coordinate all construction work with Entergy in order to ensure safety.

1. All Entergy Electric relocation and de-energizing work along the route must be coordinated with the Contractor for the adjacent project. This is necessary to prevent any loss of power to the adjacent businesses, residences, and other electrical fed equipment. Existing Entergy Electric facilities that have not been completely located at the time of construction shall be closely coordinated between Entergy Electric and the Contractor.

2. The Contractor shall maintain a minimum distance from all power lines as required by NEC and Entergy. Contractor shall be responsible for determining the maximum height and reach attainable by any part of any piece of equipment, and after coordinating with Entergy to determine the height and location of the power line, shall determine if the required clearance will be violated. The Contractor shall not work within the required clearance of the lines unless the lines are de-energized. If the clearance will be violated, prior to beginning any operations in the area, the Contractor shall coordinate with Entergy to de-energize the line. If the line is to be de-energized but is to remain in place, rather than being removed, the Contractor shall establish a procedure with Entergy to ensure that the Contractor shall have sufficient notice to allow removal of all equipment which may violate the required clearance from the area prior to the line being re-energized. These procedures and requirements shall also apply to any buried power lines.

3. It shall be the Contractor's sole duty and responsibility to provide for the safety of his men, equipment, subcontractors and the general public during operations in the vicinity of overhead and underground power lines; and to assure that all of his operations and those of his employees and subcontractors comply with OSHA, EM 385-1-1, the National Electric Safety Code, and all applicable Parish, State and Federal codes and regulations.

1SP-34 EXISTING FACILITIES.

a. <u>Protection and Relocation of Existing Structures and Utilities</u>. The Contractor shall assume full responsibility for the protection of all structures and utilities, public or private, including poles, signs, services to building utilities, in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's negligence shall be repaired by him at his expense, prior approval from the OWNER is required.

b. The Contractor shall bear full responsibility for locating all underground structures and utilities (including existing water services, drain lines, gas lines, telephone cables, and sewers) as indicated on the plan drawings. Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.

c. <u>Care and Protection of Property</u>. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in another manner acceptable to the Engineer.

d. <u>Other Features</u>. Along the location of this work, all fences, walks, bushes, trees, shrubbery, and other physical features noted on the drawings to remain, shall be protected and restored in a thoroughly workmanlike manner.

e. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the contract, and all costs in connection therewith shall be included in the applicable contract unit and/or lump sum prices for which the work is incidental thereto.

1SP-35 <u>DAMAGED STRUCTURES AND ROADWAYS</u>. The Contractor shall at his own expense remove and replace any damaged structures and roadways caused by the negligence of his construction work as directed by the Engineer.

The Contractor shall coordinate the work with the Engineer. The existing buildings, sidewalks, curbs, fences, pavement and other structures which are located close to the project site. Damages to these structures may occur due to construction operations, construction vehicular traffic, vibrations, excavation, etc. To minimize the possibility of damages to these structures, the Contractor shall use the following procedures and or guidance:

a. <u>Monitoring Vibrations</u>. Vibrations, construction equipment and vehicular traffic may affect and damage existing structures. Vibrations shall be monitored by others and limited to 0.25 inch per second at all structures including buildings and pools. Exceeding 0.5 of an inch per second may induce structural damages. The Contractor shall be informed when the vibrations from his operations have exceeded 0.25 of an inch per second and the Contractor shall take immediate action to reduce the vibrations to the acceptable limits or terminate the operation until further notice. The Contractor shall coordinate monitoring of vibrations with the Engineer.

1SP-36 <u>SPECIAL WORK REQUIREMENTS.</u> Construction equipment exceeding 100 horsepower shall not be allowed to work in the excavation area, since the excavation may be subject to flooding with minimal warning. The work shall be performed within, or from, City property or right-of-way. The Contractor shall be responsible for the removal of all equipment in the excavated areas and cover open trenches at the end of each workday. The Contractor shall be responsible for monitoring weather conditions to ensure that no damage occurs to his equipment or materials due to flooding. Materials shall not be stockpiled within the work area in excess of the amount that can be incorporated into the project by the end of each workday. No obstructions will be allowed at any time which reduce the normal traffic flow.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01010

PROJECT DESCRIPTION AND SCOPE OF WORK

1.0 <u>GENERAL</u>

- 1.1 SUMMARY
 - A. Section Includes:
 - 1. Project Information
 - 2. Work covered by Contract Documents.
 - 3. Work under separate contracts.
 - 4. Access to site and surrounding amenities.
 - 5. Coordination with occupants.
 - 6. Work restrictions.
 - 7. Specification and drawing conventions.
 - B. Division 01 Section "Temporary Controls" for limitations and procedures governing temporary use of Owner's facilities.
- 1.2 PROJECT INFORMATION
 - A. Project Identification: BURMASTER TRANSFER FACILITY
 - 1. Project Location: Gretna, Louisiana
 - a. Project limits begin at the intersection of 4TH Street Extension and Burmaster Blvd.
 - B. Owner: City of Gretna
 - 1. Owner's Representative for Project: Amie Hebert, Project Manager, City of Gretna, 504-654-6078
 - C. Prime Consultant
 - 1. Engineer: Burk Kleinpeter, Inc.
 - a. 2400 Veteran's Blvd, Suite 310 Kenner LA 70062
 - b. Project Managers: David E. Boyd, PE
 - c. (504) 483-6271

1.3 WORK COVERED BY THE CONTRACT DOCUMENTS

A. The work of the project is defined by the Contract Documents and consists of the following:

Without limiting the scope of work described herein, access management, installation of concrete paving, asphalt paving, sheet pile driving, water infrastructure, electrical and lighting infrastructure, and all other incidental work thereto.

- B. Type of Contract
 - 1. Project will be constructed under a single prime contract.

1.4 ACCESS TO THE SITE AND SURROUNDING AMENITIES

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to work area designated on plans or by the owner.
 - 2. Driveways, Walkways and Entrances: Keep driveways parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Public access to all surrounding businesses shall be maintained throughout the contract duration.
 - 1. In the event that existing access routes to these destinations is affected or blocked at any point during the contract an alternate route shall be provided.
 - a. It is the contractor's responsibility to designate, maintain, and

ensure clear delineation of the alternate route is provided

b. All alternate routes shall comply with the US Department of Justice ADA 2010 Standards for accessible routes. Contractor to produce an access route maps, indicating ADA accessible routes.

1.5 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction. See above in paragraph 1.4.C.
 - 2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations.
- B. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
- C. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work.

Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

- 1. Engineer will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
- Before limited Owner occupancy, electrical systems shall be complete, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain electrical systems serving occupied portions of Work.

3. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.6 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing site to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Engineer, Owner and Residents-Business Owners not less than three days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Engineer and Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within buildings or within 25 feet of entrances, operable windows, or outdoor air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.8 PROPOSED ORDER OF WORK

A. Engineer will not approve or dictate the Contractor's order of work. The Contractor shall dictate their own means and methods that adhere to the entire project specifications, specifically Section 1.6 Work Restrictions.

END OF SECTION 01010

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 <u>GENERAL</u>

1.01 SUMMARY

- A. The project shall be constructed complete as shown and indicated on the Contract Drawings and as described in the Contract Specifications.
- B. Payment shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labors, operations, and incidentals as necessary to complete the various items of work all in accordance with the requirements of the Contract Documents, including all costs of compliance with the regulations of public agencies having jurisdiction. The Contractor is hereby on notice that no separate payment will be made for any item not specifically called out, but that is required to properly complete the project.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION (NOT USED)
- PART 4 MEASUREMENT AND PAYMENT
- 4.01 SCOPE
 - A. The Total Bid Price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid. All work not specifically set forth as a pay items in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

4.02 ESTIMATED QUANTITIES

A. All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the work, and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. No compensation will be given for any quantities not used.

4.03 MOBILIZATION AND DEMOBILIZATION (ITEM NO. 1)

- A. Measurement: Measurement for payment for mobilization and demobilization will be on a lump-sum basis as specified herein.
- B. Payment: Payment for mobilization and demobilization shall cover all preparatory work, insurance and bonds, movement of personnel, equipment, supplies and incidentals to the project site, the establishment of temporary offices, project signs and other construction facilities necessary for work on this project. It shall include removal of all personnel, equipment, supplies, and incidentals from the project site, removal of temporary offices and other construction facilities necessary for work on this project. It shall include removal of temporary offices and other construction facilities necessary for work on this project, all as required for the proper performance and completion of the work.

Payment will be made at the contract lump sum price, subject to the following provisions:

Partial payments for mobilization and demobilization will be made in accordance with the following schedule up to a maximum of 5 percent of the total contract amount (including this item), and payment of any remaining amount will be made upon completion of all work under the contract.

Percent of Total Contract	Allowable Percent of the			
Amount Earned	Lump Sum Price for the Item			
1 st Partial Estimate	25%			
10%	50%			
25%	75%			
50%	100%			

No price adjustments will be made for this item due to changes in the work.
4.04 CLEARING AND GRUBBING (ITEM NO. 2)

- A. Measurement: Measurement for payment for Clearing and Grubbing will be made on a lump sum basis.
- B. Payment: Payment for this item will be made at the lump-sum bid and will constitute full compensation for the clearing and Grubbing. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.05 REMOVAL OF PAVEMENT STRUCTURE (ITEM NO. 3)
 - A. Measurement: Measurement for payment for Removal of Pavement Structure will be made on a square yard basis.
 - B. Payment: Payment for this item will be made at the square yard bid and will constitute full compensation for the Removal of Pavement Structure.
 Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.06 REMOVAL OF CONCRETE WALKS AND DRIVES (ITEM NO. 4)
 - A. Measurement: Measurement for payment for Removal of Concrete Walks and Drives will be made on a square yard basis.
 - B. Payment: Payment for this item will be made at the square yard bid and will constitute full compensation for the Removal of Concrete Walks and Drives.
 Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.07 REMOVAL OF FENCE (ITEM NO. 5)
 - A. Measurement: Measurement for payment for Removal of Fence will be made on a linear foot basis.
 - B. Payment: Payment for this item will be made at the linear foot bid and will constitute full compensation for the Removal of Fence. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.

- 4.08 NON-PLASTIC EMBANKMENT (SAND) (ITEM NO. 6)
 - A. Measurement: Measurement for payment for Non-Plastic Embankment will be made on a cubic yard basis.
 - B. Payment: Payment for this item will be made at the cubic yard bid and will constitute full compensation for the Non-Plastic Embankment (Sand).
 Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.09 EXCAVATION AND EMBANKMENT (ITEM NO. 7)
 - A. Measurement: Measurement for payment for Excavation and Embankment will be made on a lump sum basis.
 - B. Payment: Payment for this item will be made at the lump sum bid and will constitute full compensation for the Excavation and Embankment. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.10 ASPHALT CONCRETE (ITEM NO. 8)
 - A. Measurement: Measurement for payment for Asphalt Concrete will be made on a tonnage basis.
 - B. Payment: Payment for this item will be made at the tonnage bid and will constitute full compensation for the Excavation and Embankment. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.11 PAVEMENT PATCHING (ITEM NO. 9)
 - A. Measurement: Measurement for payment for Pavement Patching will be made on a tonnage basis.
 - B. Payment: Payment for this item will be made at the tonnage bid and will constitute full compensation for the Pavement Patching. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.

- 4.12 PORTLAND CEMENT CONCRETE PAVEMENT (9" THICK) (ITEM NO. 10)
 - A. Measurement: Measurement for payment for Portland Cement Concrete Pavement (9" Thick) will be made on a Square Yard basis.
 - B. Payment: Payment for this item will be made at the square yard bid and will constitute full compensation for the Portland Cement Concrete Pavement (9" Thick). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.13 STORM DRAIN PIPE ARCH (15" EQUIV. RCPA) (ITEM NO. 11)
 - A. Measurement: Measurement for payment for Storm Drain Pipe Arch (15" Equiv. RCPA) will be made on a linear foot basis.
 - B. Payment: Payment for this item will be made at the linear foot bid and will constitute full compensation for the Storm Drain Pipe Arch (15" Equiv. RCPA). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.14 STORM DRAIN PIPE ARCH (18" EQUIV. RCPA) (ITEM NO. 12)
 - A. Measurement: Measurement for payment for Storm Drain Pipe Arch (18" Equiv. RCPA) will be made on a linear foot basis.
 - B. Payment: Payment for this item will be made at the linear foot bid and will constitute full compensation for the Storm Drain Pipe Arch (18" Equiv. RCPA). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.15 CATCH BASINS (CB-01) (ITEM NO. 13)
 - A. Measurement: Measurement for payment for Catch Basins (CB-01) will be made on a per each basis.
 - B. Payment: Payment for this item will be made at the per each and will constitute full compensation for the Catch Basins (CB-01). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.

4.16 CHAIN LINK FENCE (6' HIGH) (ITEM NO. 14)

- A. Measurement: Measurement for payment for Chain Link Fence (6' High) will be made on a linear foot basis.
- B. Payment: Payment for this item will be made at the linear foot and will constitute full compensation for the Chain Link Fence (6' High). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.17 CONCRETE WALK (5" THICK) (ITEM NO. 15)
 - A. Measurement: Measurement for payment for Concrete Walk (5" Thick) will be made on a square yard basis.
 - B. Payment: Payment for this item will be made at the square yard and will constitute full compensation for the Concrete Walk (5" Thick). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.18 CONCRETE WALK (6" THICK) (ITEM NO. 16)
 - A. Measurement: Measurement for payment for Concrete Walk (6" Thick) will be made on a square yard basis.
 - B. Payment: Payment for this item will be made at the square yard and will constitute full compensation for the Concrete Walk (6" Thick). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.19 CONCRETE CURB (ITEM NO. 17)
 - A. Measurement: Measurement for payment for Concrete Curb will be made on a linear foot basis.
 - B. Payment: Payment for this item will be made at the linear foot and will constitute full compensation for the Concrete Curb. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.

- 4.20 PLASTIC PAVEMENT LEGEND & SYMBOLS (ARROW STRAIGHT) (ITEM NO. 18)
 - A. Measurement: Measurement for payment for Plastic Pavement Legend & Symbols (Arrow Straight) will be made on a per each basis.
 - B. Payment: Payment for this item will be made a per each and will constitute full compensation for the Plastic Pavement Legend & Symbols (Arrow Straight). Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.21 HYDRO-SEEDING (ITEM NO. 19)
 - A. Measurement: Measurement for payment for Hydro-Seeding will be made on a per acre basis.
 - B. Payment: Payment for this item will be made at the per acre and will constitute full compensation for the Hydro-Seeding. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.22 STRUCTURAL METALWORK (ITEM NO. 20)
 - A. Measurement: Measurement for payment for Structural Metalwork will be made on a per pound basis.
 - B. Payment: Payment for this item will be made at the per pound and will constitute full compensation for the Structural Metalwork. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.23 ELECTRICAL WORK (ITEM NO. 21)
 - A. Measurement: Measurement for payment for Electrical Work will be made on a lump sum basis.
 - B. Payment: Payment for this item will be made at the lump sum and will constitute full compensation for the Electrical Work. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.

4.24 GUARD SHACK (ITEM NO. 22)

- A. Measurement: Measurement for payment for Guard Shack will be made on a lump sum basis.
- B. Payment: Payment for this item will be made at the lump sum and will constitute full compensation for the Guard Shack. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.25 STEEL SHEETPILE (ITEM NO. 23)
 - A. Measurement: Measurement for payment for Steel Sheetpile will be made on a per square foot basis.
 - B. Payment: Payment for this item will be made at the per square foot and will constitute full compensation for the Steel Sheetpile. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.26 SINGLE GATES FOR CHAIN LINK FENCE (ITEM NO. 24)
 - A. Measurement: Measurement for payment for Single Gates for Chain Link Fence will be made on a per each basis.
 - B. Payment: Payment for this item will be made at the per each and will constitute full compensation for the Single Gates for Chain Link Fence.
 Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.
- 4.27 BOLLARDS (ITEM NO. 25)
 - A. Measurement: Measurement for payment for Bollards will be made on a per each basis.
 - B. Payment: Payment for this item will be made at the per each and will constitute full compensation for the Bollards. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.

4.28 OIL ANTIFREEZE SHED (ITEM NO. 26)

- A. Measurement: Measurement for payment for Oil Antifreeze Shed will be made on a lump sum basis.
- B. Payment: Payment for this item will be made at the lump sum and will constitute full compensation for the Oil antifreeze Shed. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished.

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01400 QUALITY CONTROL

1.0 <u>GENERAL</u>

- 1.01 QUALITY CONTROL, GENERAL
- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship on this project.
- B. Perform work only by persons qualified by equivalent applicable union standards to produce workmanship of the specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- D. Comply with manufacturer's instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, notify and request clarification from Engineer before proceeding.
- 1.02 SITE INVESTIGATION AND CONTROL
- A. The Contractor shall verify all dimensions in the field and shall check field conditions continuously during construction. The Contractor shall be solely responsible for any inaccuracies built into the Work due to his failure to comply with this requirement.
- B. The Contractor shall inspect related, adjacent, and appurtenant Work and shall report in writing to the Engineer any conditions that will prevent proper completion of the Work. Failure to report any such conditions shall constitute acceptance of all site conditions, and any required removal, repair or replacement caused by unsuitable conditions shall be performed by the Contractor at their sole cost and expense.
- 1.03 INSPECTION OF THE WORK
 - A. The Work shall be conducted under the general observation of the Engineer and shall be subject to inspection by representatives of the Engineer acting on behalf of the Owner to insure strict compliance with the requirements of the Contract Documents. Such inspection may include mill, plant, shop or field inspection, as required. The Engineer

shall be permitted access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.

- B. The presence of the Engineer or any inspector(s), however, shall not relieve the Contractor of the responsibility for the proper execution of the work in accordance with all requirements of the Contract Documents. Compliance is a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Engineer or any inspector(s).
- C. All materials and articles furnished by the Contractor shall be subject to rigid inspection, and no materials or articles shall be used in the Work until they have been inspected and accepted by the Owner or his representative. No Work shall be backfilled, buried, cast in concrete, hidden or otherwise covered until it has been inspected. Any Work so covered in the absence of inspector shall be subject to uncovering. Where uninspected work cannot be uncovered, such as in concrete cast over reinforcing steel, all such Work shall be subject to demolition, removal and reconstruction under proper inspection, and no additional payment will be allowed therefor.
- 1.04 TIME OF INSPECTIONS AND TESTS
- A. Samples and test specimens required under these Specifications shall be furnished and prepared for testing in ample time for the completion of the necessary tests, analyses and reporting of results before said articles or materials are to be used. The Contractor shall furnish and prepare all required test specimens at its own expense. Except as otherwise provided in the Contract Documents, performance of the required tests will be by the Owner, and all costs thereof will be borne by the Owner at no extra cost to the Contractor; except, that the costs of any tests which show unsatisfactory results shall be borne by the Contractor.
- B. Whenever the Contractor is ready to backfill, bury, cast in concrete, hide or otherwise cover any Work under the Contract, the Engineer shall be notified not less than 24 hours in advance to request inspection before beginning any such Work of covering. Failure of the Contractor to notify the Engineer at least 24 hours in advance of any such inspections shall be reasonable cause for the Engineer to order a sufficient delay in the Contractor's schedule to allow time for such inspections and any remedial or corrective Work required, and all costs of such delays, including its effect upon other portions of the Work, shall be borne by the Contractor. Payment for items that are built,

uninspected, or unverified may be delayed by the Engineer until satisfactory evidence of compliance is attained.

1.05 SAMPLING AND TESTING

- A. When not otherwise specified, all sampling and testing shall be in accordance with methods prescribed in the current standards of the ASTM or related standard entity, as applicable to the class and nature of the article or materials considered; however, the Owner reserves the right to use any generally-accepted system of inspection which, in the opinion of the Engineer, will insure the Owner that the quality of the workmanship is in full accordance with the Contract Documents.
- B. Any waiver of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver of any technical or qualitative requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the Engineer shall reserve the right to make independent investigations and tests as specified in the following paragraph and, upon failure of any portion of the Work to meet any of the quantitative requirements of the Contract Documents, shall be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such Work.
- D. In addition to any other inspection or quality assurance provisions that may be specified, the Engineer shall have the right to independently select, test and analyze, at the expense of the Owner, additional test specimens of any or all of the materials to be used. Results of such tests and analyses shall be considered along with the tests and analyses made by the Contractor to determine compliance with the applicable specifications for materials so tested or analyzed; provided that wherever any portion of the Work is discovered, as a result of such independent inspection and investigation, and all costs of removal, correction and reconstruction, or repair of any such Work shall be borne by the Contractor.

1.06 RIGHT OF REJECTION

- A. The Engineer, acting for the Owner, shall have the right, at all times and places, to reject any articles or materials to be furnished herein which, in any respect, fail to meet the requirements of the Contract Documents, regardless of whether the defects in such articles or materials are detected at the point of manufacture or after completion of the Work at the site. If the Engineer or inspector, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to the Contract Documents, such material, no matter in what stage or condition of manufacture, delivery or erection, may be rejected by the Engineer or the Owner.
- B. The Contractor shall promptly remove rejected articles or material from the site of the Work after notification of rejection.
- C. All costs of removal and replacement of rejected articles or materials from the site of the Work after notification of rejection shall be borne by the Contractor.
- 1.07 TESTING LABORATORY SERVICES
 - A. The Owner will select and pay for the services of an independent testing laboratory to perform specified testing quality control and services.

1. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.

- 2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.
- B. Related Requirements
 - 1. Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities as mentioned in the Conditions of the Contract.

2. Certification of Products indicated in respective Specification Sections.

- C. Testing laboratory inspecting, sampling, and testing is required for, but not limited to:
 - 1. Soils Compaction and Control.
 - 2. Cast-in-Place Concrete.

- D. Qualification of Laboratory
 - 1. Meet "Recommended Requirements of Independent Laboratory Qualification," latest edition, published by American Council of Independent Laboratories.
 - 2. Meet basic requirements of ASTM E 329, "Standard Recommended Practice for inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as Used in Construction".
 - 3. Authorized to operate in the State in which the Project is located.
- E. Laboratory Duties
 - 1. Cooperate with Engineer and Contractor; provide qualified personnel after due notice.
 - 2. Perform specified inspections, sampling and testing and reporting of results of materials and methods of construction:
 - a. Comply with specified standards.
 - b. Ascertain compliance of materials with requirements of Contract Documents.
 - c. Tests and inspections shall be conducted in accordance with specified requirements and if not specified, in accordance with applicable standards of American Society of Testing and Materials and other recognized authorities as applicable.
 - 3. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products.
 - 4. Promptly submit written reports of each test and inspection; at least one copy each to Engineer, Owner, and Contractor.
 - 5. Perform any additional tests as required by the Engineer or Owner.
- F. Limitations of Authority of Testing Laboratory.
 - 1. Laboratory is not authorized to:
 - a. Release, revoke, alter or enlarge any requirements of Contract Documents.
 - b. Approve or accept any portion of the Work.
 - c. Perform any duties of the Contractor.
- G. Contractor's Responsibilities

- 1. Cooperate with laboratory personnel, provide access to Work and to Manufacturer's operations.
- 2. Provide to the laboratory and to the Engineer the preliminary design mix proposed to be used for concrete and other materials and mixes which require control by the testing laboratory.
- 3. Furnish copies of Products test reports as requested.
- 4. Furnish incidental labor and facilities:
 - a. To provide access to Work to be tested.

b. To obtain and handle samples at the Project Site or at the source of the product to be tested.

- c. To facilitate inspections and tests.
- d. For protection, storage and curing of test samples.
- 5. Costs of tests, samples and specified material, where the substitution is requested by the Contractor and the tests are necessary in the opinion of the Engineer to establish equality qualified with specified items, shall be borne by the Contractor.
- 6. Notify laboratory and Owner's Representative sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
- 7. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required:
 - a. For the Contractor's convenience.
 - b. When initial tests indicate Work does not comply with Contract Documents.
 - c. When required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- 2.0 <u>PRODUCTS</u>

NOT USED

3.0 <u>EXECUTION</u>

NOT USED

SECTION 01530 BARRIERS AND ENCLOSURES

1.0 <u>GENERAL</u>

1.01 RELATED WORK

- A. Furnish, install and maintain suitable barriers as required to maintain security to prevent public entry and to protect the Work and existing facilities from construction operations. Remove the barriers when no longer needed, or at completion of Work.
- 1.02 REQUIREMENTS OF REGULATORY AGENCIES
- A. Comply with federal, state and local codes and regulations.
- 1.03 BARRICADES AND LIGHTS
 - A. All streets, roads, driveways and other thoroughfares which are closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs. Barricades shall be located at the nearest intersection on each side of the blocked section.
 - B. All open trenches and other excavations shall have suitable barricades, signs and lights to provide adequate protection to the public. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights.
 - C. All barricades and obstructions shall be illuminated with warning lights from sunset to sunrise. Material storage and conduct of the Work on or alongside streets and driveways shall cause the minimum obstruction and inconvenience to the traveling public as possible.
 - D. All barricades, lights and other protective devices shall be installed and maintained in conformity with the "Louisiana Manual on Uniform Traffic Control Devices", 1978 and latest revision.
- 1.04 FENCES
 - A. All existing fences affected by the Work shall be maintained by Contractor until completion of the Work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the owner of the fence, and the period the fence may be left relocated and dismantled has been

agreed upon. Where fences must be maintained across the construction easement, adequate gates shall be installed. Gates shall be kept closed and locked at all times when not in use. Fences or gates which have been disturbed or which have been opened must be closed when directed by the Owner or Engineer within 12 hours of any such direction. If the Contractor fails to comply with any of this type of direction the Owner shall retain the right to remedy any fence removal with other forces and deduct monies spent from monies due the Contractor.

- B. Upon completion of the Work, Contractor shall restore all fences to their original or to a better condition and to their original location as needed.
- 2.0 PRODUCTS
- 2.01 GENERAL
- A. Materials may be new or used suitable for the intended purpose, but must not violate requirements of applicable codes and standards.
- 3.0 EXECUTION

Not Used

SECTION 01540 SECURITY

1.0 <u>GENERAL</u>

1.01 RELATED WORK

None

- 1.02 PROTECTION OF WORK
 - A. Contractor shall be responsible for protection of the site, and all work, materials, equipment and existing facilities thereon, against theft, vandals, and other unauthorized persons.
 - B. No claim shall be made against Owner by reason of any act of an employee or trespasser, and Contractor shall make good all damage to Owner's property resulting from his failure to provide security measures as specified.
 - C. Security measures shall be at least equal to those usually provided to protect the existing facilities during normal operation, but shall also include such additional security fencing, barricades, lighting, watchman services and other measures as required to protect the site.
 - D. Maintain security of the limited access areas as required by the Owner.
 - E. The work shall be under the charge and care of the Contractor until final acceptance. The Contractor shall take precautions against damages to the work by action of the elements or from other cause, and shall satisfactorily repair any damaged work at his expense. In case of suspension of work, the Contractor shall be responsible for all materials and shall properly store them if necessary, and shall erect temporary structures where necessary.

1.03 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

A. Contractor shall protect, shore, brace, support and maintain all above ground and underground pipes, conduits, drains and infrastructure items uncovered or otherwise affected by his construction operations. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences and other surface structures affected by construction operations, together with all sod and shrubs in yards and parkings, shall be restored to their original conditions, whether within or outside the easement.

- B. All replacements shall be made with new materials. No trees shall be removed outside of the permanent easement, except where authorized by Engineer. Whenever practicable, Contractor shall tunnel beneath trees in yards and parking areas when on or near the line of trench. Hand excavation shall be employed as necessary to prevent injury to trees. Trees standing shall be adequately protected against damage by construction operations.
- C. Contractor shall be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges and any other public or private property, regardless of location or character, which may be caused by transporting equipment, materials or men to or from the Work or any part of site thereof, whether by him or his Subcontractors. Contractor shall make satisfactory and acceptable arrangements with the owner of, or the agency or authority having jurisdiction over, the damaged property concerning its repair or replacement or payment of costs incurred in connection with the damage.
- C. All fire hydrants, water control valves, and other facilities of public use shall be kept free from obstruction and available for use at all times. Fire hydrants to be removed and relocated shall be done as quickly as possible.
- 2.0 <u>PRODUCTS</u>

Not Used

- 3.0 <u>EXECUTION</u>
- 3.01 PERFORMANCE OF SECURITY MEASURES
 - A. If the Contractor fails to comply with the provisions of this section, the Engineer will immediately notify the Contractor, in writing, of such noncompliance. If the Contractor fails to remedy unsatisfactory maintenance within 48 hours after receipt of such notices, the Engineer may immediately proceed to maintain the project, and the cost of this maintenance will be deducted from payments for the work.
 - B. If the unsatisfactory maintenance results in a condition that is hazardous to life, health or property, the Engineer will immediately effect necessary repairs and deduct the cost of such repairs from payments for the work.

INDEX

SECTION 01555 - TRAFFIC CONTROL AND COORDINATION

PART	1 GENERAL	3
1.1	SCOPE	3
1.2	REFERENCES	3
1.3	MEASUREMENT AND PAYMENT	3
1.4	SUBMITTALS	3
PART	2 PRODUCTS	3
2.1	SIGNS AND BARRICADES	3
PART	3 EXECUTION	4
3.1	TRAFFIC CONTROL DEVICE PLAN	4
3.2	TRAFFIC CONTROL	5
3.3	PUBLIC CONVENIENCE AND SAFETY	5
3.4	BARRICADES, DANGER, WARNING, AND DETOUR SIGNS	5
3.5	EMERGENCY CONTRACTOR DESIGNATION	6
3.6	CONSULTATIONS	6

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01555 - TRAFFIC CONTROL AND COORDINATION

PART 1 GENERAL

1.1 SCOPE

The work provided for in this section consists of providing and maintaining traffic control, coordination, maintenance and the preparation of a traffic control and truck haul route device plan as specified herein.

1.2 REFERENCES

The current issues of the publications listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

Manual on Uniform Traffic Control Device (MUTCD) (latest edition)

Louisiana Standard Specifications for Roadway and Bridges (2016 edition and amendment thereto)

1.3 MEASUREMENT AND PAYMENT

No measurement will be made for the preparation of a traffic control device plan, nor the maintenance, control and coordination of traffic routing as specified herein. Payment will be made at the lump sum contract price for "Traffic Control and Coordination". Price and payment shall constitute full compensation for providing all plant, labor, materials and equipment to complete the work as specified herein and as shown on the drawings.

Note: One lane of traffic in both directions of Huey P. Long Ave. shall be maintained as open at all times during construction.

1.4 SUBMITTALS

The Contractor shall prepare and submit the original and six (6) copies of the Traffic Control Device Plan as specified herein.

PART 2 PRODUCTS

2.1 SIGNS AND BARRICADES

In accordance with Section 713 of the <u>Louisiana Standard Specifications for Roads</u> and <u>Bridges (LSSRB)</u>, 2016 Edition, the Contractor shall provide all necessary signs, barricades, temporary pavement markings, in accordance with the Louisiana Manual on Uniform Traffic Control Devices, Construction Section as well as all signs, barricades, blinking lights or other necessary traffic control devices required by the Parish of Jefferson or other governing specifications.

PART 3 EXECUTION

3.1 TRAFFIC CONTROL DEVICE PLAN

a. The Contractor shall develop and implement a site specific traffic control device plan (TCDP) and truck haul route plan, which shall provide for the safe and expeditious movement of traffic through construction zones. A construction zone is defined as the immediate area of actual construction, which interferes with the driving or walking public. The TCDP shall comply with the requirements set forth in the <u>Manual on Uniform Traffic Control Devices</u>, as revised, and with the general requirements stipulated below.

b. The TCDP for the site shall address the conditions for providing traffic flow within the zone during the influence of construction. The TCDP shall be schematically drawn on sheet(s) large enough to show adequate details and be easily readable and reproducible. If larger than eleven inches by seventeen inches (11" x 17"), the sheet(s) shall be submitted with a reproducible transparency so that the Engineer and the City of Gretna can produce additional copies as needed.

c. The TCDP shall be designed and stamped by a Professional Engineer registered in the State of Louisiana. The qualifications of the Engineer shall be submitted for review and approval of the Engineer, and where applicable Louisiana Department of Transportation and Development, Traffic Operations. Engineers for this project will be qualified by education and experience in Categories 1 and 2 as noted below. All categories require a minimum of four (4) years experience and education.

d. <u>Category 1 - Traffic Control through Construction Zones</u>. Urban experience in MUTCD applications, plan preparations, studies in volume, speed, and pedestrians, and tort liability.

e. <u>Category 2 - Permanent Sign / Marking</u>. Urban experience in MUTCD applications, studies in volume, speed, pedestrians, and accident analysis.

f. The Contractor shall submit an original and six (6) copies of the TCDP to the Engineer prior to any anticipated traffic control work for the review and approval. Adequate time (a minimum of 15 calendar days exclusive of mailing time) shall be allowed for review and approval. Such approval is required prior to start of any work, which might affect the traffic pattern in the area.

3.2 TRAFFIC CONTROL

a. The necessary precautions shall include, but not be limited to, such items as proper construction warning signs, signals, lighting devices, battery operated flashers, markings, barricades, channelization, and hand signaling devices (flagging operations). The Contractor shall be responsible for the installation and maintenance of all devices and requirements for the duration of the construction period.

b. All work shall be performed in accordance with the <u>Louisiana Standard</u> <u>Specifications for Roads and Bridges (LSSRB)</u>, 2016 edition, except as noted. Traffic control devices shall be in accordance with the MUTCD.

c. The Contractor shall consult with the Engineer and the City of Gretna Department of Public Works immediately on any vehicular or pedestrian safety or efficiency problem incurred as a result of construction of the project. If warranted, the Contractor's Traffic Engineer shall make adjustments to the TCDP and the Contractor shall immediately implement the revised TCDP.

d. The Contractor shall monitor traffic control devices on a daily basis and shall make appropriate changes to correspond to conditions.

e. The qualified Traffic Engineer shall be provided by the Contractor to inspect the job site at the beginning of the project, after significant changes, and at 30day intervals. A written report submitted to the Engineer verifying compliance with the plan and adequacy of traffic control devices and operating conditions will be required for each inspection. All deficiencies noted by the report shall be immediately corrected by the Contractor.

3.3 PUBLIC CONVENIENCE AND SAFETY

a. <u>Road Closure</u>. No road shall be closed by the Contractor to the public except by written permission of the Engineer, and except while so closed, the Contractor shall maintain traffic over, through, or around the work included in his Contract, with the maximum practical convenience, for the full twenty-four hours of each day of the Contract, whether or not work has ceased temporarily. The Contractor shall notify the Engineer at the earliest possible date after the Contract has been executed, and in any case before the starting of any construction that might in any way inconvenience or endanger traffic, so that the necessary arrangements may be determined.

b. <u>Fire Protection</u>. Fire hydrants shall be accessible at all times to the Fire Department. No material or other obstructions shall be placed closer to a fire hydrant than permitted by ordinances, rules, or regulations or within fifteen (15) feet of a fire hydrant, in the absence of such ordinances, rules, or regulations.

3.4 BARRICADES, DANGER, WARNING, AND DETOUR SIGNS

a. <u>General</u>. The Contractor shall, at his own expense, provide, erect, paint, and maintain all construction barricades. The Contractor shall provide suitable and sufficient lights, torches, reflectors, or other danger signals and signs, provide a sufficient number of watchmen and flagmen, and take all necessary precautions for the protection of the work and safety of the public. The Contractor shall replace any permanent street signs or markers, which have to be moved to facilitate his construction with temporary signs as necessary.

b. <u>Warning Signs, Painting, Illumination</u>. The Contractor shall erect warning signs beyond the limits of the project, sufficiently in advance of any place on the project where operations interfere with the use of the road by traffic, including all intermediate points where the new work crosses or coincides with the existing road. Barricades shall be kept well painted and suitable warning signs shall be placed thereon. All barricades and obstructions shall be illuminated at night and all lights or devices for this purpose shall be kept burning from sunset to sunrise.

3.5 EMERGENCY CONTRACTOR DESIGNATION

The Contractor shall designate a person(s) who can be contacted and shall be available on a seven-day week, 24-hour basis through the entire period that the contract is in force. Name(s) and telephone number(s) of the individual(s) designated shall be furnished to the Engineer prior to starting work. The person contacted shall be able to respond to emergencies occurring along the length of the project during normal after work and holiday hours.

3.6 CONSULTATIONS

The Contractor shall consult with the Engineer and the City of Gretna Department of Public Works immediately on any vehicular or pedestrian safety or efficiency problems incurred as a result of construction of the project.

SECTION 01560 TEMPORARY CONTROLS

- 1.0 <u>GENERAL</u>
- 1.01 RELATED WORK

None

- 1.02 DUST CONTROL
 - A. Contractor shall take reasonable measures to prevent or minimize unnecessary air-borne dust. Earth surfaces subject to dusting shall be kept moist with water or by application of a chemical dust suppressant. Dusty materials in piles or in transit shall be covered to prevent blowing.
 - B. Buildings or operating facilities which may be affected adversely by dust shall be adequately protected from dust.
- 1.03 EROSION CONTROL
 - A. Contractor shall prevent erosion of soil on the site and adjacent property resulting from his construction activities. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation or other operations that will disturb the natural protection.
- B. Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation preserved to the greatest extent practicable to minimize amount of bare soil exposed at one time. Temporary storage and construction buildings shall be located, and construction traffic routed, to minimize erosion. Temporary fast growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.
- 1.04 NOISE CONTROL
 - A. Contractor shall take reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the Work.

- B. During construction activities on or adjacent to occupied buildings, and when appropriate, Contractor shall erect screens or barriers effective in reducing noise in the building; and shall conduct his operations to avoid unnecessary noise which might interfere with the activities of building occupants.
- 1.05 POLLUTION CONTROL
 - A. Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities. No sanitary wastes will be permitted to enter any drain of watercourse other than sanitary sewers.
 - B. No sediment, debris or other substance will be permitted to enter sanitary sewers and reasonable measures will be taken to prevent such materials from entering any drain or watercourse.
- 1.06 SURFACE WATER CONTROL
 - A. The facilities to be constructed are located in an area that may be subject to heavy rainfall and flooding. During the construction period, Contractor shall provide temporary protection as necessary to prevent flood damage to new and existing facilities and shall be responsible for any damage that may result from flooding. Additionally the Contractor shall provide adequate flow area to the existing stations as to not impede its pumping capacity.
 - B. Contractor shall provide for the drainage of storm-water and such water as may be applied or discharged on the site in performance of the Work. Drainage facilities (and pumping operations as necessary) shall be adequate to prevent damage to the Work, the site and adjacent property. Drains shall not be blocked by any of the Contractor's activities as flooding may be caused by any impedance to existing storm water flow.
 - C. Existing drainage channels and conduits shall be cleaned, enlarged or supplemented as necessary to carry all increased runoff attributable to Contractor's operations. Dikes shall be constructed as necessary to divert increased runoff from entering adjacent property (except in natural channels), to protect Owner's facilities and the Work, and to direct water to drainage channels or conduits. Ponding shall be provided as necessary to prevent downstream flooding. The Contractor must obtain permission from the Owner before beginning any of the above mentioned work.

1.07 DEBRIS CONTROL

- A. Remove debris, empty crates, waste, etc. from building and site at the end of each day's work and leave grounds clean and orderly. Keep driveways, entrances and walks clean and clear at all times.
- 2.0 PRODUCTS

Not Used

3.0 <u>EXECUTION</u>

Not Used

THIS PAGE INTENTIONALLY LEFT BLANK

TECHNICAL SPECIFICATIONS

SECTION 01

CLEARING AND GRUBBING

1.1 **DESCRIPTION:**

Clear, grub, and remove vegetation and debris within the limits of the right-of-way and easement areas, except such items that are designated to remain or to be removed under other pay items.

Cut trees, logs, brush, stumps and debris; excavate and remove stumps, roots, submerged logs, snags, and other vegetative or objectionable material; dispose removed material in accordance with 202.02; and clean the area.

Quality assurance requirements shall be as specified in the latest edition of the Department's publication titled *Application of Quality Assurance Specifications for Embankment and Base Course*.

Erosion control shall be in accordance with Section 204.

1.2 <u>MATERIALS:</u>

Vacant

1.3 <u>GENERAL CONSTRUCTION REQUIREMENTS:</u>

Preserve the items to remain as designated by the engineer. Do not store equipment, materials, and supplies in proximity of items designated to remain. Remove trees without damaging items marked to remain. Repair damage to bark, trunks, limbs, or roots of vegetation marked to remain using horticultural and tree surgery practices published by the American Association of Nurserymen (AAN) under the supervision of a licensed landscape arborist at no cost to the department. Do not fell trees outside of the right-of-way. Damage outside the right-of-way caused by the contractor's operations shall be the contractor's responsibility.

1.4 <u>CLEARING AND GRUBBING:</u>

Clear and grub to the limits of the right-of-way, or to the construction limits, whichever is greater, unless otherwise designated on the plans. When fencing or utility relocation is required, an area 10 foot wide, adjacent to and inside the right-of-way line, shall be cleared and grubbed. Mow when required by the engineer. Some loose limbs and roots approximately 2 inch x 2 foot and smaller may be allowed to remain; however, excessive amounts will not be allowed.

Explosives, when used, shall be in accordance with 107.11.

Fill stump holes and other holes left from clearing and grubbing by blading the area and

backfilling with existing materials or soil complying with 203.06.1 and compact to a condition similar to surrounding soils.

Submit a plan for burning operations to the engineer for review and comment. Burning of materials shall not jeopardize anything designated to remain on the right-of-way, the surrounding forest cover, or other adjacent property. Burn in accordance with all laws and ordinances, including, but not limited to, the current regulations of the Louisiana Department of Environmental Quality and 107.13 and 107.14.

Remove materials and debris which cannot be burned and materials which are not burned from the right-of-way and dispose of in accordance with 202.02.

Merchantable timber in the area to be cleared, not removed from the right- of-way prior to the beginning date stipulated in the Notice to Proceed, becomes the property of the contractor.

Remove low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain as directed. Trim branches of trees extending over the roadbed to a height of 20 foot above the pavement in accordance with accepted horticultural and tree surgery practices published by AAN.

1.5 <u>MEASUREMENT:</u>

No measurement of area will be made for payment.

1.6 <u>PAYMENT:</u>

When a pay item is included in the contract, payment for clearing and grubbing will be made at the contract lump sum price. Partial payment will be limited to 10 percent of the original total contract amount until the contractor has earned 40 percent of the original total contract amount. When clearing and grubbing consists of more than 50 percent of the contract amount, payment will be made for the work completed.

Payment will be made under:

Item No.	Pay Item	Pay Unit
201-01-00100	Clearing and Grubbing	Lump Sum

TECHNICAL SPECIFICATIONS

SECTION 02

REMOVAL OF STRUCTURES AND OBSTRUCTIONS

1.1 <u>DESCRIPTION:</u>

This work consists of the removal of structures, facilities, or obstructions from the project right-of-way as necessary and proper for construction unless specified otherwise.

All work shall be performed in accordance with the provisions of Section 202 of the Louisiana Standard Specifications for Roads and Bridges, 2016 Edition (Purple Book), and latest revisions, except as otherwise noted in these specifications.

1.2 <u>REQUIREMENTS:</u>

The removal of a structure from the limits of construction is the razing, demolishing and disposal of the structure after salvageable parts, components and materials, designated on the plans, have been recovered by the contractor. The contractor is responsible for delivering salvageable items to a location designated on the plans.

For the purposes of this section, structures may include concrete walks, concrete drives, stumps, concrete roadway pavement with integral concrete curb, asphalt pavement, landscaping, drainage pipes, drainage structures, water service connections, sewer service connections, abandoned pipelines, and other similar facilities or obstructions located within the limits of required trenches or not designated or permitted to remain within the limits of construction. This work also includes backfilling of trenches, holes, voids, or pits resulting from removal of item specified herein with granular material. If structures or obstructions are encountered which differ materially from those ordinarily encountered, the provisions of subsection 105.18 of the Purple Book shall apply.

Clean removal of existing concrete or asphalt pavement at property line will be accomplished by full depth saw cut at No Direct Payment.

1.3 MEASUREMENT AND PAYMENT:

Measurement for the removal of pavement structure shall be by the square yard and shall include full depth saw cut at boundaries to provide a clean joint.

Measurement for the removal of concrete walks and drives shall be by the square yard and shall include full depth saw cut along property line.

Measurement for the removal of fence shall be by the linear foot.

Payment for removal of pavement structure and associated full depth saw cut shall be made at the contract unit price per square yard, which price and payment shall be full compensation for furnishing all plant, labor, material, equipment, and all other incidentals as specified herein and as shown on the drawings.

Payment for removal of concrete walks and drives and associated full depth saw cut shall be made at the contract unit price per square yard, which price and payment shall be full compensation for furnishing all

plant, labor, material, equipment, and all other incidentals as specified herein and as shown on the drawings.

Payment for removal of fence shall be made at the contract unit price per linear foot, which price and payment shall be full compensation for furnishing all plant, labor, material, equipment, and all other incidentals as specified herein and as shown on the drawings.

Payment shall be made under:

<u>Item No.</u>	Pay Item	Pay Unit
202-02-02030	Removal of Pavement Structure	Square Yard
202-02-06100	Removal of Concrete Walks and Drives	Square Yard
202-02-12000	Removal of Fence	Linear Foot

TECHNICAL SPECIFICATIONS

SECTION 03

EXCAVCATION AND EMBANKMENT

1.1 <u>DESCRIPTION:</u>

This work consists of excavation, disposal, placement, and compaction of materials for which provisions have not been made under other sections of these specifications. This work shall include excavation and embankment construction for roadways and other structures, excavation for ditches and channels, and other grading operations necessary for the work in accordance with these specifications and in conformity with the lines, grades, thicknesses, and typical sections shown on the plans or established. When specified, supply, install, and monitor settlement plates. When contaminated soils or underground tanks are encountered, handling shall be in accordance with Section 202. Disposal of material shall be in accordance with 202.02.

The plans may include data regarding the boring and classification of existing materials. The Department does not guarantee that individual samples are representative of the entire project, and bidders are required to study, make interpretations and additional investigations, as necessary, at no direct pay. The bidder shall determine the suitability of the on-site soils to meet specifications of Section 203.

The contractor shall comply with 107.09 for work in, over or adjacent to navigable waters and wetlands, and shall comply with 107.27 when cultural artifacts, historical sites, or archaeological sites are encountered.

Quality assurance requirements shall be as specified in the latest edition of the Department's publication titled *Application of Quality Assurance Specifications for Embankment and Base Course*.

Excavated material may be used in accordance with 203.06. Temporary erosion control shall be in accordance with Section 204.

1.2 <u>GENERAL EXCAVATION:</u>

General excavation consists of the excavation of materials, as required by the plans, except drainage excavation and structural excavation. General excavation also includes unsuitable material in accordance with 203.04.

1.3 <u>UNSUITABLE MATERIAL:</u>

Unsuitable materials are soils containing significant amounts of debris or organic matter including stumps, roots, logs, and humus, or other materials which will decay or produce subsidence, including highly saturated soils, which the engineer determines are not satisfactory for use in the embankment or other construction purposes. Remove unsuitable materials and dispose of as general excavation. Remove unsuitable materials determined to be environmentally sensitive and dispose of in accordance with 202.05.

1.4 <u>SOIL USAGE:</u>

The laboratory will test and classify soil in accordance with DOTD TR 423 from samples taken in the original location or from designated stockpiles. Soil shall be classified and approved prior to its being placed in embankments or other final positions on the project. Blending in the pit by approved methods to adjust percent silt or sand will be permitted. Do not blend soils that do not meet Liquid Limit or PI requirements in order to modify the Liquid Limit or PI. Soils may be treated with lime to reduce PI in accordance with 203.06.5.

Soil properties will be determined by the test methods shown in Table 203-1, "Soil Properties."

Property	Test Method
Plasticity Index (PI)	DOTD TR 428
Liquid Limit (LL)	DOTD TR 428
% Organic	DOTD TR 413
% Silt	DOTD TR 407
pH	DOTD TR 430

Table 203-1 Soil Properties

1.4.1 <u>Usable Soils:</u>

Usable soils shall have a maximum PI of 25 and a maximum organic content of 5 percent. Soils with a silt content of 50 percent or greater and also a PI of 10 or less will not be allowed.

1.4.2 <u>Nonplastic Embankment:</u>

Nonplastic embankment shall be as specified in 203.09.

1.5 <u>GENERAL REQUIREMENTS:</u>

1.5.1 <u>General:</u>

Excavation and embankment work consists of constructing roadway embankments, including preparation of surfaces on which they are to be placed; constructing drainage excavation; constructing backslopes; constructing dikes, when required; placing and compacting approved material in areas where unusable material has been undercut and removed; placing and compacting embankment material in holes, pits, and other depressions.

Do not place or spread embankment materials on portland cement concrete or asphalt concrete pavements. Do not damage pavement surfaces, edges and joints during embankment operations.

1.5.2 <u>Surface Layer Preparation:</u>

Complete all necessary clearing and grubbing in an area, prior to beginning excavation,

grading, or embankment operations in that area. Prior to any embankment operations in an area, cut ditches as required to facilitate drainage in that area unless otherwise noted on the plans.

When preparing surface layers on which the embankment or base is to be placed, attempt all normal earthwork construction methods before undercutting or modifying the soil with additives. Such construction methods may include, but are not limited to, the following and will be at no direct pay:

- 1. Draining and drying of the surface until the material is within the limits of optimum moisture before compaction is attempted.
- 2. Using lighter weight construction equipment for manipulating, disking, drying, and compacting the material.
- 3. Placing successive loads of approved material in a uniformly distributed layer of a thickness necessary to support equipment while placing subsequent layers.
- 4. Rerouting heavy construction equipment around the area until the embankment can support the equipment without damage to foundation soils. Remove unstable materials by undercutting, unless otherwise directed, and backfill to required section with usable soils as directed.

When undercutting is required, conduct the operations in such manner that the engineer can make necessary measurements before backfill is placed. When a new roadway is to be constructed on an existing roadbed, remove existing surface courses. When the surface of the existing roadbed is within 2 foot of finished sub-grade, scarify the existing roadbed full width to a depth of not less than 9 inches and re-compact to at least 95.0 percent of maximum dry density.

1.5.3 Excavation:

Excavated material shall become the property of the contractor. Soils from excavation areas may be used in embankments or other finished sections when approved. Dispose of surplus or unusable excavated material in accordance with 202.02 or as provided in this subsection.

When obliteration of old roadways is required, include grading operations necessary to satisfactorily incorporate the old roadway into the new roadway and surroundings to the satisfaction of the engineer and to allow drainage.

1.5.4 <u>Embankment:</u>

Embankment material shall be in accordance with 203.06. Place in uniform layers not exceeding 12 inches of un-compacted thickness. Place each layer for the full width of embankment, blend as necessary to obtain a uniform material, bring to a uniform moisture content, and compact to a minimum of 95.0 percent of maximum dry density before the next layer is placed. Determine maximum dry density in accordance with DOTD TR 415 or TR 418 and percent in-place density in accordance with DOTD TR 401. The density of the embankment shall be such that the density of the type of base course being constructed shall be met. The moisture content at the time of compaction, tested in accordance with DOTD TR 403, shall be within a range of ± 2.0 percent of optimum moisture established in accordance with DOTD TR 415 or TR 418. If not, reprocess and re-compact the lifts until these requirements

are met.

Topsoil shall be placed and compacted in accordance with 715.03.

Ensure that final embankment slope lines are uniform in appearance. Measure as necessary to assure that the elevations at the top, bottom, and intermediate breaks in the slope are such that minimum acceptable slopes are achieved. Visually inspect the slopes and ensure the slopes are straight without valleys or humps. If an apparent discrepancy is discovered upon visual inspection, take measurements a minimum of every 10 feet measured along the slope between theoretical break points in the embankment. Allowable tolerances for slope grade will not be less than by 0.03 foot/foot nor greater than 0.15 foot/foot. The slopes shall be reworked until these criteria are met. The top of embankment shall not vary from the established grade by more than ± 0.1 foot.

Conduct operations to prevent lamination between lifts. Correct all laminations between lifts prior to placing additional lifts. Assure that surfaces of excavated areas and embankments are smooth and uniform. Do not disturb material outside the construction limits.

When excavation and embankment construction results in surface soils having a PI less than 10, or pH less than 5.5 or greater than 8.5, place a plastic soil blanket complying with 203.10.

The contractor shall be responsible for the stability of embankments until final acceptance. Construction activities which may lead to subsequent embankment damage, will not be permitted.

When embankments are constructed on a surface sloping more than 6:1 from the horizontal, cut the slope of the ground on which the embankment is to be placed into steps, as directed, before fill is placed.

When an embankment is to be constructed to a height of less than 5 feet, remove heavy sod and objectionable vegetation from the area on which the embankment is to be placed. Scarify the area to a depth of approximately 9 inches. Re-compact this area to at least 95.0 percent of maximum dry density in accordance with DOTD TR 415 or TR 418 and percent in-place density in accordance with DOTD TR 401. When height of fill is 5 feet or more, removal of sod will not be required, but disk the area on which embankment is to be placed to the satisfaction of the engineer and re- compact before construction of embankment.

When embankment material is to be deposited only on one side of abutments, wing walls, piers, or culvert head walls, do not compact the area immediately adjacent to the structure to the extent that it will cause excessive pressure against the structure. When the embankment is to be deposited on both sides of a concrete wall or similar structure, conduct operations so that the embankment is always at approximately the same elevation on both sides of the structure. Backfill structures in accordance with Section 802.

When embankments are constructed in lakes, streams, swamps, or other unstable areas and unstable material cannot be removed or the area drained, the requirement for placing material in layers as outlined above may be waived. When this requirement is waived, place the
embankment by end dump or other approved methods to an elevation where normal construction methods can begin. Construct embankments placed above this elevation in layers as specified above. When a wave of unsuitable material is forced up in front of the end dumping operation, it shall become the property of the contractor and be removed as necessary. In addition, do not allow this material to be trapped and incorporated in the embankment except as part of plastic soil for slopes.

1.6 <u>NONPLASTIC EMBANKMENT:</u>

1.6.1 <u>Materials:</u>

Non-plastic embankment material shall comply with 1003.09 or the following, unless otherwise specified on the plans.

1.6.2 <u>General Requirements:</u>

Do not entrap unsuitable material defined in 203.04 in the embankment. Remove any such material at no direct pay.

Leave surcharge materials on the embankment for at least the specified number of days after approval of the increment. Damage to embankment increments due to the contractor's operations shall be satisfactorily repaired by the contractor at no direct pay. Remove excess surcharge materials after the surcharge period. Verification cross-sections of the final embankment will be taken after removal of the surcharge. Material required due to additional subsidence after crosssections are taken will be paid under the appropriate item.

After all embankment increments have been surcharged, satisfactorily dispose of excess surcharge material in accordance with 202.02 at no direct pay.

Except for stone embankments, furnish and place a plastic soil blanket complying with 203.10.

1.6.3 <u>Nonplastic Embankment Construction:</u>

Construct nonplastic embankments by mechanical methods.

Unless otherwise shown on the plans, place material in lifts not exceeding 15 inches of uncompacted thickness after establishing a working table as directed. Compact each lift and test in accordance with 203.07.

1.7 <u>GEOTEXTILE FABRICS</u>

1.7.1 <u>General:</u>

Furnish and place geotextile fabric in accordance with these specifications and in conformance with the details shown on the plans.

1.7.2 <u>Materials:</u>

The geotextile fabric shall comply with Section 1019.

1.7.3 <u>Construction Requirements:</u>

Keep rolls of geotextile fabric covered and protected from ultraviolet degradation at all times until use. Cover geotextile fabric that has been installed with embankment material within seven calendar days. When ultraviolet damage occurs, remove and replace the geotextile fabric. Place the geotextile fabric at the locations shown on the plans or as directed. Overlap or sew adjacent rolls of geotextile fabric. When rolls are overlapped, overlap a minimum of 18 inches or as specified in the plans, including the ends of the rolls. Place the top layer of the geotextile fabric parallel with adjacent rolls and in the direction of embankment placement. When rolls are sewn, join adjacent rolls by sewing with polyester or kevlar thread. When field sewing, employ the J-seam or "Butterfly" seam with the two pieces of geotextile fabric mated together, turned inwards so as to sew through four layers of fabric. Sew with two rows of Type 401, two-thread chain stitch. Factory seams other than specified shall be submitted to the Materials and Testing Section for approval. Where the ground is covered with water or soil is saturated, sewing of the geotextile fabric will be required.

Place the geotextile fabric as smooth as possible with no wrinkles or folds, except in curved road sections. For curved road sections, fold the geotextile fabric to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Fill and compact ruts that occur during construction prior to placement of geotextile fabric.

Remove damaged geotextile fabric and replace with new geotextile fabric or cover with a second layer of geotextile fabric extending 2 feet in each direction from the damaged area.

1.8 QUALITY CONTROL:

Locate, select, and place material conforming to specification requirements. Control processes, including performing tests and making adjustments as necessary, to result in a uniform quality product meeting all the requirements of the plans and specifications. Perform tests for in-place moisture content in accordance with DOTD TR 403, at a frequency that will ensure that the material is within the tolerances of optimum moisture. Perform tests for in-place density in accordance with DOTD TR 401 at a frequency that will ensure that the compactive effort is producing a uniform product that conforms to specification requirements. Control placement and finishing to ensure conformance with the lines, grades, thickness, and typical cross-sections shown on the plans or established.

Sections will be inspected prior to acceptance testing. Correct obviously deficient areas prior to acceptance testing.

1.9 <u>ACCEPTANCE</u>

The Department will perform inspection, sampling, and testing for acceptance. Correct any area that is deficient whether identified by inspection or testing.

The embankment (with surcharge, if required) will be approved in increments of 1000 feet,

except terminal increments which may be less than 1000 feet.

Maximum density for earthwork will be determined in accordance with DOTD TR 415 or DOTD TR 418; in-place density will be determined in accordance with DOTD TR 401.

1.10 MEASUREMENT:

1.10.1 <u>General:</u>

Unless otherwise specified, borrow material in accordance with 203.05, topsoil, and plastic soil for slopes in accordance with 203.06.6 will be considered incidental to the embankment and will not be measured separately, but will be measured as embankment. Removal and stockpiling of existing topsoil will be measured by the in-situ square yard.

Measurement of undercut will be from subgrade or original ground, whichever is lower.

No measurement will be made for excavation for culverts or culvert headwalls.

When the grade line of a pipe or box culvert is raised or lowered more than 2 feet from the grade line shown on the plans or is relocated to a site requiring an equivalent change in excavation, payment will be increased or decreased accordingly at the rate of three times the contract unit price for General Excavation (or Embankment if General Excavation is not a contract pay item). The volume to be used in the increase or decrease will be a rectangular solid the length of the pipe or box culvert, the outside width of the pipe or box culvert plus 3 feet, and the average change in invert elevation minus 2 feet.

1.10.2 <u>General Excavation, Embankment and Nonplastic Embankment:</u>

The measurement of quantities will be computed by the average end area method and will be that area bound by (1) the original ground line established by location (plan) cross-sections or new original cross-sections obtained by the contractor, and (2) the final theoretical pay line as shown on the plans, or established by the engineer, adjusted for field changes. New original cross-sections will be taken after clearing, and prior to grubbing.

The final theoretical pay line shall be derived from the profile grade, typical section and ditch grades shown in the plans, along with approved plan changes and other field changes made by the engineer. No increase in quantities will be authorized for overbuilding unless directed by the engineer.

Pay lines for surcharged embankments will be the theoretical surcharge lines shown on the plans. No measurement will be made for removing and disposing of excess surcharge materials

When payment is made for embankment in its final position, no additional quantity will be measured due to settlement, compaction, erosion or other cause.

Excavation and embankment for crossovers, turnouts, driveway approaches or other minor installations will not be included in the measurement.

A depth and width tolerance of ± 1.5 feet will be allowed for excavation of unsuitable material. Overdepth and overwidth will be waived at no direct pay; however, no measurement for payment will be made for additional embankment material required to backfill areas beyond theoretical unsuitable material lines.

Measurement will be made by one or more of the following methods:

1.10.2.1 <u>Plan Quantity:</u>

The quantities of excavation and embankment will be those shown in the plans, provided the project is constructed essentially to the theoretical pay line.

When the plans have been revised or when disagreement exists between the contractor and the engineer as to the accuracy of the plan quantities for the entire project, or any substantial portion thereof, either party may require that quantities be revised. The party requesting the revision will be responsible for isolating and detailing the error in an easily understood format which may include cross-sections, sketches, and computations. The revision will be verified and agreed to by the other party. Quantity revisions will not be considered without advanced notice to both parties and unless the original cross-sections have been taken.

No payment will be made to the contractor to re-compute new plan quantities.

1.10.2.2 Field Cross-Sections:

When payment lines are not shown on the plans and cannot be established, in lieu of final theoretical pay lines, field cross-sections will be used to determine pay quantities for excavation and embankment.

After clearing operations, the contractor shall take original cross-sections for the entire length of the project. Take all original cross-sections in the presence of the Department. Take cross-sections at sufficient intervals to accurately determine earthwork quantities, not to exceed 100 linear feet. Take the cross-sections in accordance with DOTD procedures, and furnish results to the Department immediately in a format satisfactory to the engineer. The Department reserves the right to take additional cross-sections as needed to verify the contractor's cross-sections. In the event the cross- sections do not verify, the contractor shall investigate and reconcile any differences.

The original cross-sections will be used to determine the accuracy of the location crosssections by using random sections not farther apart than 1000 linear feet and centerline elevations at intervals of 100 linear feet. The location cross-sections will be considered to be usable if the average of the differentials does not exceed ± 0.3 foot. For significant portions of the project with obvious errors between location and original cross-sections, the contractor's original field cross-sections will be used, and will not be part of the verification process. In all cases where location sections are unavailable, new originals are to be taken and used.

1.10.3 Excavation and Embankment:

1.10.3.1 Lump Sum Measurement:

When excavation and embankment is to be measured by the lump sum, this item includes performing the excavation, embankment, and grading work necessary for construction of the project. It is the contractor's responsibility to determine the correct quantities of earthwork required to complete this item. No adjustment in contract price will be made.

1.10.4 <u>Geotextile Fabric:</u>

Geotextile fabric will be measured by the square yard of covered area in place.

1.11 <u>PAYMENT:</u>

Payment for the accepted quantities will be made at the contract unit prices, which includes furnishing the equipment, labor and materials necessary to complete the items.

Payment for roadway obliteration will be made under appropriate roadway removal and excavation items. Removal of existing asphalt pavement asphalt will be paid for under Section 202. Blading and shaping to drain will be considered incidental and will not be measured for pay. Excavation, other than blading and shaping, generally over 1 foot in depth over a substantial area, will be paid as general excavation for the full depth of cut.

Payment for undercut will be as general excavation, and payment for required backfill will be made as embankment.

Plastic soil blanket and topsoil will be included in the pay volume for the embankment. Payment for the removal and stockpiling of existing topsoil will be by the in-situ square yard.

No direct payment will be made for Geotextile Fabric.

Payment will be made under:

Item No.	Pay Item	Pay Unit	
203-04-00200	Nonplastic Embankment	Cubic Yard	
203-05-00100	Excavation and Embankment	Lump Sum	
203-08-	Geotextile Fabric	Square Yard	

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 04

ASPHALT CONCRETE MIXTURES

1.1 DESCRIPTION.

1.1.1 General:

Furnish and construct asphalt concrete mixtures in accordance with Table 502-6 and in conformance with the lines, grades, thicknesses, and typical sections in the plans.

Comply with Section 503, Equipment and Processes and the Application of Quality Assurance Specifications for Asphalt Concrete Mixtures (QA Manual).

Use a DOTD certified laboratory accredited by AMRL, CMEC, or other accreditation agency approved by DOTD.

1.1.2 Lift Description and Mixture Types:

The wearing course is defined as the final lift placed. The binder course is defined as the lift placed prior to the final lift as defined in the plans.

When a Section 501 thin lift mix is used in conjunction with construction of 502 mixtures, it is a finish course.

Mainline mixtures include wearing, binder and base courses for travel lane, ramps greater than 300 feet, interstate acceleration/deceleration lanes, turn lanes, and the two center lanes for airports.

Minor mixes include mixture used for bike paths, crossovers, curbs, detour roads, driveways, guardrail widening, islands, joint repair, leveling, medians, parking lots, shoulders, turnouts, ramps less than or equal to 300 feet, patching, widening, miscellaneous handwork, and any other mixture that is not mainline.

1.2 <u>MATERIALS:</u>

Comply with applicable Part X subsections listed herein. Sample in accordance with the Materials Sampling Manual and ensure testing in accordance with the procedures listed in Part X and Table 502-1. Keep accurate records, including proof of deliveries of all materials used in asphalt concrete mixtures. Furnish copies of these records to the engineer upon request.

Aggregates	1003.01 & 1003.06
Anti-Strip Additives	1002.02
Asphalt	1002
Crumb Rubber	1002.02.2.
Hydrated Lime	1018.02
Mineral Fiber	1002.02.5
Mineral Filler	1003.06.6
Mix Release Agent	1018.10
Reclaimed Asphalt Pavement (RAP)	1003.01 & 1003.06.5
Warm Mix Additives	1002.02.4

Table 502-1Test Procedures for Asphalt Concrete

Description	Test Method
Specific Gravity and Density of Compressed Asphalt	DOTD TR 304
Mixtures	
Theoretical Maximum Specific Gravity, G _{mm}	DOTD TR 327
Asphalt Cement Content, Pb	DOTD TR 323
Mechanical Analysis of Extracted Aggregate	DOTD TR 309
Moisture Content of Loose HMA	DOTD TR 319
Degree of Particle Coating (plant requirement)	DOTD TR 328
Bulk Specific Gravity and Absorption	AASHTO T 84, T
	85
Coarse Aggregate Angularity, % Crushed	DOTD TR 306
(Double Faced)	
Fine Aggregate Angularity	DOTD TR 121
Flat and Elongated Particles	ASTM D 4791
Sand Equivalent	DOTD TR 120
Mixture Conditioning (Aging) of HMA Mixtures	AASHTO R 30
Superpave Volumetric Mix Design	AASHTO M 323
Preparing Gyratory Samples	AASHTO T 312
Asphalt Cement Draindown	ASTM D 6390
Longitudinal Profile Using Automated Profilers	DOTD TR 644
Thickness and Width of Base and Subbase	DOTD TR 602
Loaded Wheel Tester (LWT)	AASHTO T 324
Semicircular Bend Test (SCB)	TR 330

1.2.1 Asphalt Cement:

Comply with Table 502-2.

If the asphalt cement does not comply with the requirements of Section 1002, cease mix production until proper asphalt material is supplied.

Table 502-2 **Asphalt Cement Usage**

Location	Mix Leve 1	Asphalt Grade Required	Substitutions Allowed		
			Lower	Grade ¹	Higher Grade
Mainline Wearing & Binder ^{2,3}	1	PG 70-22m	PG 6 (Binde with traff volume < 3500	7-22 er only) ic) ADT	PG 82-22rm, and PG 76- 22m
Mainlin e Wearin g & Binder 2,3,4	2 and SMA	PG 76-22m	PG 70-22m with Hydrated Lime	PG 70-22m (Binde r Only)	PG 82-22rm
Base	1	PG 67-22	PG 58	8-285	PG 82-22rm, PG 76-22m, PG 70-22m
Minor Mixes including Leveling ^{2,3}	AL L	PG 67-22			PG 82-22rm, PG 76-22m, PG 70-22m

Lower grade substitutions are only allowed if LWT rut depths < 6mm for the design level. For single lift overlay match grade of overlay. Semicircular bend test (SCB), minimum, Jc=0.5 KJ/m2 required for all substitutions. Semicircular bend test (SCB), minimum, Jc=0.6 KJ/m2 required for all substitutions. When 21-30% RAP is used, PG 58-28 is required. 1.

2. 3.

4.

5.

1.2.2 Additives:

1.2.2.1 Anti-Strip (AS):

Add anti-strip additive at the minimum rate of 0.6 percent by weight of asphalt cement and thoroughly mix in-line with the virgin asphalt cement at the plant. Increase the anti-strip additive or change to different additive as needed to meet Loaded Wheel Test, LWT, requirements. Discontinue production until satisfactory adjustments are made when the amount of anti-strip additive is not in accordance with the approved JMF.

1.2.2.2 <u>Hydrated Lime:</u>

When used, specify rate of hydrated lime additive on the Job Mix Formula. Add hydrated lime additive at a minimum of 1.5 percent and thoroughly mix with aggregates in conformance with 503.05.5 as required to meet LWT requirements.

1.2.2.3 <u>Waste Tire Rubber Additive:</u>

When used, crumb rubber may be pre-blended or, with approval by the Materials Laboratory, may be blended at the plant. The maximum rubber replacement is 10 percent by weight of asphalt.

When blending crumb rubber at the contractor's plant, add crumbrubber to a PG 67-22 material on the Approved Materials List. Add 30 mesh (or finer) crumb rubber as required to meet grade PG 82-22rm. Comply with 1002.02.2

1.2.2.4 Latex Additive:

When added at the contractor's plant, blend a minimum of 1.0 percent residual latex by weight of asphalt cement to a PG 67-22 material on the Approved Material List, and in accordance with Section 503. Meet PG 70-22m requirement using pre-qualified asphalt material and latex.

1.2.2.5 <u>Warm Mix Asphalt Additives:</u>

When used, add only approved warm mix chemical additives. Foaming is allowed.

1.2.3 Aggregates:

Use aggregates from approved sources. Blend aggregates to meet Sections 502 and 1003.

1.2.3.1 Friction Ratings:

Friction ratings for aggregates are determined in accordance with 1003.01.2.4. Table 502-3 describes the friction ratings and corresponding usage allowed for the current average daily traffic (ADT) shown on the plans. Friction rating requirements apply to the mainline wearing course only, unless a finish course is applied. If a finish course is applied, then the friction rating requirements do not apply to wearing course.

All binder and base mixes and minor mixes do not have aggregate friction rating requirements.

Table 502-3Aggregate Friction Rating

Friction Rating	Allowable Usage
Ι	All mixtures
II	All mixtures
III	All mixtures, except mainline wearing courses with plan Average Daily Traffic (ADT) greater than 7000 ¹
IV	All mixtures, except mainline wearing courses ²

When plan current average daily traffic (ADT) is greater than 7000, blending of Friction Rating III aggregates and Friction Rating I and/or II aggregates will be allowed for travel lane wearing courses at the following percentages. At least 30 percent by weight (mass) of the total aggregates shall have a Friction Rating of I, or at least 50 percent by weight (mass) of the total aggregate shall have a Friction Rating of II. The frictional aggregates used to obtain the required percentages shall not have more than 10 percent passing the No. 8 (2.36 mm) sieve.

When the average daily traffic (ADT) is less than 2500, blending of Friction Rating IV aggregates with Friction Rating I and/or II aggregates will be allowed for travel lane wearing courses at the following percentages. At least 50 percent by weight (mass) of the total aggregate in the mixture shall have a Friction Rating of I or II. The frictional aggregates used to obtain the required percentages shall not have more than 10 percent passing the No. 8 (2.36 mm) sieve.

1.2.3.2 <u>Reclaimed Asphalt Pavement (RAP):</u>

Keep reclaimed asphalt pavement separate from other materials at the plant in such a manner that will allow for Department inspection and acceptance. Keep stockpiles uniform and free of soil, debris, foreign matter and other contaminants. Allowable RAP percentages are defined in Table 502-6. Screen or crush RAP to pass a maximum of 2 inch sieve prior to use. Additional RAP is allowed in all mixes except for Airports and SMA when RAP stockpile is pre-screened on a 1 inch scalping screen.

1.2.3.3 <u>Mineral Filler:</u>

When used, comply with the requirements of 1003.06.6.

1.2.3.4 <u>Natural Sand:</u>

When used, meet the requirements of Table 502-6 and 1003.06.3.

1.2.3.5 <u>Fibers:</u>

When required to prevent draindown, use cellulose or mineral fiber, meeting the requirements of 1002.02.5 When used, add fibers at a rate sufficient to prevent draindown.

1.3 DESIGN OF ASPHALT MIXTURES AND JOB MIX FORMULA (JMF) APPROVAL:

Design all asphalt mixtures for optimum asphalt content in compliance with the mix design in accordance with AASHTO M323, AASHTO M325 for SMA, and the requirements of Table 502-6 and Table 1003-14.

At minimum, all design submittals must include the recommended materials proportions, extracted gradation, recommended mix and compaction temperatures, and supporting design data. Submit the recommended JMF electronically through Site Manager Materials (SMM) or other data system as designated by the Department for District Laboratory Engineer acceptance with all supporting design data. No mixture shall be produced until the proposed JMF has been accepted.

Indicate the optimum mixing and compaction temperatures as suggested by the asphalt binder supplier on the JMF. Mix temperatures are recommended by the asphalt supplier as determined by rotational viscosity or other means. Warm Mix Asphalt technology may be used to reduce this temperature and must be noted on the JMF. Warm mix asphalt may be substituted with a minimum production temperature of 275°F.

Once a plant is producing an acceptable JMF, keep JMF production within the specified tolerances. Changes will be reviewed and accepted by the District Laboratory Engineer as necessary.

The engineer may require a new mix design when roadway acceptance requirements are not being met or plant quality data indicates non- compliance.

1.3.1 <u>Mixtures Design Substitutions:</u>

Use only Warm Mix Asphalt (WMA) additives that are listed on the Approved Material List. The 3/4-inch Nominal Maximum Size (NMS) wearing course may be substituted for binder course but not substituted for base course. The 1-inch NMS binder course may be substituted for base course.

The 1/2-inch NMS wearing course may be substituted for incidental paving, Level A. Shoulders may be any mixture type shown in Table 502-4 regardless of design level except that shoulder wearing must be a 1/2-inch or 3/4-inch NMS mixture.

Apply all specification requirements for the substituted mixture with the following exceptions: When wearing course is substituted for binder course, Table 502-3 does not apply. When wearing or binder are substituted for binder or base, the allowable RAP percentage shall meet the intended use specified in Table 502-6.

When a 501 finish course and a 502 wearing course are required on a project, allowable RAP percentage for wearing may meet binder course requirement.

1.4 JOB MIX FORMULA VALIDATION AND APPROVAL:

The Department and contractor will jointly test plant mix to validate each JMF for mainline mixture and accept each JMF whenever a plant begins initial operations for the Department in a specific plant location, or whenever a plant experiences a change in materials or change in source of materials, or when there are significant changes in equipment, such as the introduction of a new crusher, drum mixer, burner, foaming device, etc. Evaluate each JMF at least once every two years. Meet LWT requirements and all applicable requirements of Table 502-6.

For Minor Mixes, validation is not required for mixture designs, but the mixture must meet specification requirements. In order to validate minor mixes, the plant G_{mm} must be determined. The average of the first five (5) plant G_{mm} s will become the new JMF target. For all mixes, validation is not required when the asphalt grade has changed or asphalt source has changed, but must meet LWT requirements and all applicable requirements of Table 502-6.

1.4.1 <u>Validation Plant Lot:</u>

The validation plant lot ("VP-lot"), is a maximum of 2000 tons of plant produced mix. Divide into 5 equal parts for validation sampling and testing.

1.4.2 <u>Validation:</u>

Report the mean, standard deviation, Quality Index and percent within limits (PWL) of the test results in accordance with the QA manual. The JMF is considered conditionally validated if the following parameters are 71 percent within limits of the JMF and meet the specifications.

- 1. Theoretical Maximum Specific Gravity (G_{mm}),
- 2. Percent G_{mm} at N_{initial,}
- 3. Percent passing the No. 8 and No. 200 sieves,
- 4. Percent Air Voids at N_{design}, and
- 5. VFA.

The average of all other validation tests shall meet the specifications limits in Table 502-6. The production can continue during conditional validation. The JMF is considered validated with passing LWT results. If the LWT fails twice, cease production and re-design. Upon validation of the JMF, the average of the validated results will become the JMF targets.

1.4.3 <u>Payment for Plant Validation:</u>

Payment will be in accordance with 502.15.

The validation mixture is not paid separately, but is considered part of the roadway lot.

1.5 <u>QUALITY CONTROL AND PLANT ACCEPTANCE:</u>

All quality control information, plant records, etc. will be considered part of the Department's acceptance decision. Exercise quality control over all materials and their assembly, design, processing, production, hauling, laydown and associated equipment to ensure compliance with Table 502-4 and all other specifications herein. At the end of each production day, notify the District Lab Engineer (DLE) and the DOTD Asphalt District Inspector (ADI) of the next scheduled mix production run and placement.

For plant quality control, a plant lot, or "P-Lot' is defined as 1000 tons of continuously produced mixture from one JMF. Obtain a sample of plant mixture and test the mixture once every 1000 tons using a random sampling approach. Minimum quality control testing for each P-Lot is as follows:

Loose Mix

- 1. Theoretical Maximum Specific Gravity, G_{mm}
- 2. % Asphalt Cement Content
- 3. Gradation
- 4. % Crushed
- 5. Temperature, and
- 6. % Moisture content

Compacted Specimen, N_{design}

- 1. % Gmm at Ninitial
- 2. % Air Voids, V
- 3. % VMA
- 4. % VFA, and
- 5. % Gmm at Nmax (1 per 5 P-Lots)

Age all loose mix tested for G_{mm} or volumetrics for one hour in accordance with AASHTO R30 prior to testing. Age warm mix for two hours.

Determine the rolling five test results average and standard deviation for aggregate gradation, asphalt content, air voids, and G_{mm} . Take corrective action or cease production when the latest rolling five test results show:

- 1. Air voids or G_{mm} fall below 71 PWL (based on the lastest rolling five test results); or
- 2. Average VFA is outside of specification limits; or
- 3. Gradation for the No. 8 and No. 200 sieve is outside of specification limits; or
- 4. Asphalt content is $\pm 0.2\%$ the JMF target.

Enter all plant quality control data into the Department's approved data management system. The full range of gradation mix tolerances will be allowed even if they fall outside the control points. The District Laboratory Engineer may require re-validation of the mix when the average of the Quality Control data indicates non-compliance with the specified limits or tolerances.

Measure the moisture content of the cold feed aggregates daily in accordance with DOTD TR 403. The moisture content of the final mixture, measured daily, shall not exceed 0.3 percent by weight (mass) when tested in accordance with DOTD TR 319.

1.6 <u>PLANT INSPECTION AND AUDITS:</u>

All Department inspection procedures, including sampling and testing, and the contractor's quality control data form the basis for acceptance of the asphalt. The Department's Certified Asphalt Plant Inspector will randomly visit and inspect asphalt plants, sample and test material, and review documentation to ensure conformance to specification requirements. In particular, the inspector will take a minimum of the following samples which may be tested for verification:

Loose Mix

- 1. Theoretical Maximum Specific Gravity, Gmm,
- 2. % Asphalt Cement Content,
- 3. Gradation, and
- 4. % Crushed

Compacted Specimen, N_{design} (Using contractor's equipment)

- 1. % Gmm at Ninitial,
- 2. % Air Voids, Va,
- 3. % VMA, and
- 4. % VFA.

Compacted Specimen, $7.0 \pm 0.5\%$ AV (Using contractor's equipment) 1. Loaded Wheel Testing (LWT) as needed.

The inspector will review contractor data and documentation. The inspector will check the plant equipment, lab equipment and plant operations. The inspector will sample asphalt cement working tank and or transport during random plant visits and will obtain random asphalt cement transport samples as requested by the Materials Lab.

Lack of conformance after 5 P-lots to specification requirements may result in increased sampling, reduced pay, removal and replacement of the asphalt mixture, decertification of the technician, and/or decertification of the plant. Correct deficiencies or cease operations.

1.7 <u>ROADWAY OPERATIONS:</u>

1.7.1 <u>Weather Limitations:</u>

Apply asphalt concrete mixtures on a dry surface when the ambient temperature is above 50°F for wearing courses and 40°F for base and binder courses. Material in transit, or a maximum of 100 tons in a surge bin or silo used as a surge bin, at the time plant operation is discontinued may be placed. All mixture placed is expected to perform satisfactorily and meet specification requirements. Inclement weather will be sufficient reason to terminate or not begin production.

When base course mixtures are placed in plan thicknesses of 2 3/4 inches or greater, disregard temperature limitations provided all other specification requirements are met. When a wearing course is substituted for a binder course mixture, apply the temperature limitation for binder course.

1.7.2 <u>Surface Preparation:</u>

Maintain the surface being covered. Acceptance is required for each surface prior to placement of subsequent surface.

Roadway slope shall be established at the base course level unless otherwise authorized by the engineer. The absolute minimum lift thickness placed shall be 1/4 inch greater than the nominal maximum aggregate size as shown on Table 502-6. Failure to meet minimum thickness is subject to removal.

1.7.2.1 <u>Cleaning:</u>

Sweep the surface to be covered clean of dust, dirt, caked clay, caked material, vegetation, and loose material by revolving brooms or other mechanical sweepers supplemented with hand equipment as directed. Remove excess joint filler from the surface by an approved method when mixtures are to be placed on portland cement concrete pavement or previously overlaid portland cement concrete. Remove any existing raised pavement markers prior to asphalt concrete overlay operations. Payment for removal of pavement markings will be in accordance with the applicable item.

Wash the surface with water in addition to brooming when brooming alone does not adequately clean the surface.

When tack coat is exposed to traffic for more than one (1) calendar day, becomes contaminated, or degrades due to inclement weather, reapply the tack coat at the initial recommended rate at no direct pay.

1.7.2.2 <u>Applying Tack Coat:</u>

1.7.2.2.1 Existing Pavement Surfaces:

Before constructing each course, apply an approved asphalt tack coat in accordance with Section 504. Protect the tack coat and spot patch as required.

1.7.2.2.2 <u>Raw Aggregate Base Course and Raw Embankment Surfaces:</u>

Apply an approved asphalt prime coat to unprimed surfaces, or protect in-place prime coat and spot apply prime coat as required, in accordance with Section 505.

1.7.2.2.3 <u>Cement and Lime Stabilized or Treated Embankment and Base</u> <u>Course Surfaces:</u>

Apply an approved asphalt curing membrane when none is in place, or protect the in-place curing membrane and spot apply, as required, with asphalt material in accordance with Section 506.

1.7.2.2.4 Other Surfaces:

Cover contact surfaces of curbs, gutters, manholes, edges of longitudinal and transverse joints, and other structures with a uniform coating of an approved asphalt tack coat complying with Section 504 before placing asphalt mixtures.

1.7.3 Joint Construction:

1.7.3.1 Longitudinal Joints:

When constructing longitudinal joints, set the screed to allow approximately 2 inches onto the adjacent pass. Use approved 10-foot static straight edge to maintain no greater than 1/8-inch deviation in grade. Make necessary correction in joint before continuing operations. Offset longitudinal joints in one layer over those in the layer below by a minimum of 3 inches; however, keep the top layer joint 6 inches to 9 inches from the centerline of two lane highways. Offset 6 inches to 9 inches from lane lines when the roadway is more than two lanes. Construct the narrow strip first.

1.7.3.2 <u>Transverse Joints:</u>

Construct transverse joints by milling or hand forming paper butt joints. Use an approved 10foot static straightedge to identify the location to be cut back to maintain no greater than a 1/8inch deviation in grade. Lightly tack the cut face of the previously placed mat before fresh material is placed. Rest the screed on shims that are approximately 25 percent of lift thickness placed on the compacted mat. Provide an adequate crew to form transverse joints. Additionally, meet the transverse joint surface tolerance requirements of Table 502-5. Make necessary corrections to the joint before continuing placement operations.

Offset transverse joints in succeeding lifts by at least 3 feet.

1.8 HAULING, PAVING AND FINISHING:

Transport mixtures from the plant and deliver to the paver at a temperature no cooler than 25°F below the lower limit of the approved job mix formula, maintaining a temperature of the WMA mix not cooler than 245°F going through the paver. Send no loads so late in the day that completion of spreading and compaction of the mixture cannot be completed during daylight, unless artificial lighting has been approved and is on site.

Load haul trucks to minimize segregation.

Place each course of asphalt mixture in accordance with the specified lift thickness shown in Table 502-6.

With the engineer's approval, motor patrols may be used to level isolated depressions in the initial layer, provided this construction does not result in unsatisfactory subsequent lifts.

1.8.1 <u>Coordination of Production:</u>

Coordinate and manage plant production, transportation of mix and placement operations to achieve a high quality pavement. Provide sufficient hauling vehicles to ensure continuous plant and roadway operations. The engineer will order a halt to operations when sufficient hauling vehicles are not available.

On final wearing course construction under traffic with pavement layers of 2 inches compacted thickness or less, the contractor will be permitted to pave one travel lane for a full day and the adjacent travel lane the next work day. When the adjacent travel lane is not paved the next work day and the longitudinal joint is exposed to traffic for more than 3 calendar days, and it has been determined that the roadway edge is not true to line and grade as previously constructed, cut back the entire length of exposed longitudinal joint to lift thickness to a vertical edge and heavily tack unless a notch wedge device is used. When pavement layers are greater than 2 inches compacted thickness, place approximately 1/2 of each day's production in one lane and the remainder in the adjacent lane unless an approved notched wedge device is used.

Protect pavement from traffic until it has sufficiently hardened to the extent the surface is not damaged.

1.8.2 Paving Operations:

When placing the final two lifts of asphalt concrete on the roadway travel lanes, use a material transfer vehicle (MTV) as described in 503.14. During continuous paving, maintain temperature of the mixture constant. At no time shall there be more than 50°F difference in temperature as measured in 300 linear feet of paving or 25°F across the full paved width. All mixtures shall flow through the paver hopper. Lift into the hopper any mixture dropped in front of the paver or reject such material and cast it aside. Deliver material to the paver at a uniform rate and in an amount within the capacity of paving and compacting equipment. Adjust the paver speed and number of trucks to maintain one truck waiting in addition to the one at the paver in order to maintain continuous paving operations. Maintain a uniform height of material in front of the screed.

Keep the paver steady and in constant alignment during mix transfer. Maintain a level of mix higher than the paver hopper feed slats at all times. Use pavers and operators capable of placing mixtures to required line, grade and surface tolerance without resorting to hand finishing.

Construct longitudinal joints and edges along established lines. Utilize some form of longitudinal control for the paver to follow, preferably a string line. Position and operate the paver to closely follow the established line. Correct irregularities in alignment by trimming or filling directly behind the paver. Check the texture for uniformity after each load of material has been placed. Check the adjustment of screed, feed screws, hopper feed, etc., frequently and adjust as required to assure uniform spreading of the mix to proper line and grade and adequate compaction. When segregation of materials or other deficiencies occur, suspend paving operations until the cause is determined and corrected.

Correct surface irregularities directly behind the paver. Hand placement will be allowed in accordance with 502.08.3 for surface repair, taking care never to cast material over the fresh surface.

Discontinue paving operations when any screed control device malfunctions during binder or wearing course placement operations. When malfunctions occur, limit material through the paver to that which is in transit. Assume responsibility of meeting all specifications and yield requirements, and bear the cost of any overrun during malfunctions. Do not resume paving operations until the malfunction is fixed.

When paving operations are interrupted, remove and replace at no direct pay, mixture that has cooled below the point that it cannot be finished, or compacted to meet specifications. When additional mix is required to increase superelevation in curves, the use of automatic slope control is optional. However, ensure slope by measuring with a slope board. Allow the engineer use of the slope board upon request.

Use the traveling reference plane method of construction for airport runways unless designated otherwise on the plans. Unless the erected string line is required or directed, use the 27-foot (minimum) traveling reference plane method of construction for roadway travel lanes. The requirements of 502.08.2.1, 502.08.2.2, and 502.08.2.3 shall apply for mechanical pavers.

1.8.2.1 <u>Traveling Reference Plane:</u>

Obtain approval of the traveling reference plane method before use. After the initial paving strip of each lift is finished and compacted, place adjacent paving strips to the grade of the initial paving strip using the traveling reference plane or shoe device to control grade and a slope control device to control cross slope.

On multilane pavements, the initial paving strip and the sequence of lane construction will be subject to approval.

When both outside edges of the paving strip being placed are flush with previously placed material, do not use the slope control device. A grade sensor is required for each side of the paver.

In superelevated curves, the cross slope shall be changed from that specified for tangents to that specified for superelevation in gradual increments while the paver is in motion so a smooth transition in grade is obtained. This change in cross slope shall be accomplished within the transition distance specified.

This is the minimum acceptable method and the contractor must meet or exceed current surface tolerance specifications.

1.8.2.2 <u>Erected Stringline:</u>

Use the erected stringline method in isolated areas as directed by the engineer. This method may be used on the first lift of asphalt when the underlying new or reconstructed bases do not have grade control requirements. Equip pavers for roadway travel lanes with automatic screed and slope control devices when used with an erected stringline.

An erected stringline shall consist of a piano wire or approved equal stretched between stakes set at no greater than 25-foot intervals. Tension the stringline between supports so that there is less than 1/8 inch variance between supports when the sensor is in place. If required, place the initial paving strip of the first lift constructed using an erected stringline referenced to established grade. When permitted, mixtures required to level isolated depressions may be placed without automatic screed control. Subsequent lifts may be constructed by use of the traveling reference plane, provided surface and grade tolerances are met on the previous lift.

Only one grade sensor and the slope control device are necessary for roadways with a normal crown on tangent alignment. Superelevated curves will require the use of two grade sensors and two erected stringlines to obtain proper grade and slope; however, when the automatic screed control device is equipped with a dial or other device which can be conveniently used to change the cross slope in small increments, superelevated curves may be constructed using this device and one erected stringline.

After the initial paving strip of the first lift is finished and compacted, lay adjacent paving strips using an approved traveling reference plane.

1.8.2.3 <u>Without Automatic Screed Control:</u>

When permitted, pavers without automatic screed control may be used for pavement patching, pavement widening, paved drives and turnouts.

1.8.3 <u>Hand Placement:</u>

When the use of mechanical finishing equipment is not practical, the mix may be placed and finished by hand to the satisfaction of the engineer. During paving operations, material shall be thoroughly loosened and uniformly distributed. Material that has formed into lumps and does not break down readily will be rejected. Check the surface before rolling and correct irregularities.

1.9 <u>ROLLING AND COMPACTION:</u>

1.9.1 General:

After placement, uniformly compact mixture by rolling while still hot, to a density that complies with Table 502-5. If continuous roller operation is discontinued, move rollers to cooler areas of the mat where they will not leave surface indentations. The use of steel wheel rollers in the vibratory mode, which result in excessive crushing of aggregate, will not be permitted.

Utilize experienced operators when rolling the mixture using consistent rolling sequences and uniform methods to achieve specified density and smoothness. Uniformly overlap preceding passes of individual roller passes to ensure complete coverage of the paving area. Do not tear or crack the mat by varying the roller speed, amplitude, vibration frequency or other roller operation. Operate non-vibrating steel wheel rollers with drive wheels toward the paver. Correct any operation causing displacement, tearing or cracking of the mat.

Prohibit use of equipment, which leaves tracks or indented areas that cannot be corrected in normal operations or fails to produce a satisfactory surface. Stop use of equipment resulting in accumulation of material and subsequent shedding of accumulated material into the mixture or onto the mat.

Keep rollers of steel wheel rollers properly moistened without excess water to prevent adhesion of mixture to rollers.

Maintain adequate heat for pneumatic tire rollers to prevent mix from adhering to tires. Operate the pneumatic tire roller at a contact pressure which will result in a uniform, tightly knit surface. Keep the pneumatic tire roller approximately 6 inches from unsupported edges of the paving strip; however, when an adjacent paving strip is down, overlap the adjacent paving strip approximately 6 inches.

Vibratory rollers may be used provided they do not impair the stability of the pavement structure or underlying layers. Vibratory rollers shall not be used on the first lift of asphalt concrete placed over the asphalt treated drainage blanket. When mix is placed on newly constructed cement or lime stabilized or treated layers, do not use vibratory rollers until base is approved by the engineer and not for at least 5 days after such stabilization or treatment.

It is the responsibility of the contractor to determine the number, size, and type of rollers to sufficiently compact the mixture to the specified density and surface smoothness. Ensure that the rolling equipment is capable of maintaining the pace of the paver and conforms to 503.16. The surface of mixtures after compaction shall be smooth and true to cross slope and grade within the tolerances specified. Remove mixtures that become loose, broken, contaminated or otherwise defective and replace with fresh hot mixture compacted to conform to the surrounding mixture.

Excessive rippling of the mat surface will not be accepted. Ripples are small bumps in the pavement surface which usually appear in groups in a frequent and regular manner. No more than 12 ripples or peaks will be allowed in any 100-foot section. Rippling indicates a problem with the paving operation or mix that requires immediate corrective action by the contractor; otherwise cease operations. Correct unacceptable areas at no direct pay.

After rolling, ensure that newly finished pavements have a uniform, tightly knit surface free of cracks, tears, roller marks or other deficiencies. Correct deficiencies at no direct pay and adjust operations to correct the problem. This may require the contractor to adjust the mix or furnish additional or different equipment.

1.9.2 <u>Hand Compaction:</u>

Along forms, curbs, headers, walls and at other places inaccessible to rollers, compact the mixture uniformly to the satisfaction of the engineer with approved hand tampers or mechanical tampers, conforming to 503.17.

1.10 <u>ROADWAY LOT SIZES:</u>

A roadway lot is determined as mix placed consecutively on the project from a specific JMF.

1.10.1 Mainline Mix Lot Sizes:

The mainline sublot size is 7500 linear lane feet; the mainline lot is five sublots or 37,500 linear lane feet. Any project with less than 37,500 linear lane feet for any mix type is also defined as a lot. The final mainline lot size may be extended one sublot with the approval of the engineer.

1.10.2 <u>Minor Mix:</u>

Minor mix lots will be defined as 1000 tons delivered to the project by mix type. The following types should be kept in separate lots.

1.10.2.2 <u>Minor Lots with Density Requirement:</u>

Minor mix lots with density requirements are 1000 tons. These include bike paths, crossovers, detour roads, parking lots, patching, widening, uniform leveling thicker than 1.5 inches, tapers, and shoulders paved independently which are less than 8 feet wide.

1.10.2.3 <u>Minor Lots without Density Requirement:</u>

Minor mix lots such as curbs, driveways, guardrail widening, islands, joint repair, spot leveling, medians, turnouts and ≤ 4 feet shoulder paved with the mainline do not have density requirements. Make compaction effort to the satisfaction of the engineer. Lots are 1000 tons.

For projects, or separate locations within a project, requiring less than 250 tons, the JMF, materials, and plant and paving operations shall be satisfactory to the engineer. Sampling and testing requirements may be modified by the engineer and the payment adjustment for deviations waived.

1.11 <u>ROADWAY ACCEPTANCE:</u>

Acceptance testing for pavement density and dimensional tolerances will be conducted on that portion of the lot placed on each contract. Acceptance testing for surface tolerance will be conducted upon completion of mainline paving.

Do not place asphalt concrete mixture exhibiting deficiencies such as segregation, contamination, lumps, non-uniform coating, excessive temperature variations, or other deficiencies apparent on visual inspection.

Correct and/or replace at no direct pay any asphalt concrete mix exhibiting deficiencies, such as segregation, contamination, alignment deviations, variations in surface texture and appearance or other deficiencies, apparent on visual inspection. Poor construction practices such as handwork, improper truck exchanges, improper joint construction, or other deficiencies, apparent on visual inspection, will be corrected at no direct pay.

1.11.1 <u>Density:</u>

Obtain pavement samples from each sublot within 24 hours after placement. When this falls on a day the contractor is not working, sampling will be done within 3 calendar days. Sample at locations determined by the PE using random number tables shown in DOTD S605.

When the sampling location determined by random sampling falls within areas that are to be replaced or within 18 inches of the unsupported pavement edge, another random sampling location will be used.

Take cores, approximately 6 inches in diameter, with an approved core drill. Furnish samples cut from the completed work. Replace removed pavement with hot or cold mixture and refinished during the work day coring is performed at no additional pay. Sample in the presence of the engineer's representative. Do not use cores less than 1 3/8 inches thick for payment determination. For transport by parties other than DOTD representatives, ensure that the cores are individually wrapped, sealed, signed, and dated by the DOTD inspector or representative using an approved method. Any evidence of tampering with the core will result in the cores being rejected and additional pavement samples being required.

The engineer or his representative will transport cores in approved transport containers. When allowed, the contractor or third party will transport in an approved, locked transport container.

Divide the 7500-linear-lane-foot sublot into three segments of 2500 linear feet each. Obtain one acceptance core from each segment for a total of three cores. Take a verification core randomly from the 7500-linear-foot sublot. Take a resolution core randomly from the 7500-linear-foot sublot. There are five 7500-foot sublots for each 37,500 linear foot lot. For each lot, there are a total of 15 acceptance cores, 5 verification cores and 5 resolution cores.

For project lots between 2500 and 5000 linear feet, take two acceptance cores per sublot. Projects having less than 2500 linear feet will require 3 cores. Sampling for projects with less than 250 tons may be modified by the Project Engineer.

1.11.1.1 <u>Testing of Roadway Cores (Method 1):</u>

The District Laboratory will calculate the density of each acceptance roadway core using the G_{mb} of the core and the representative maximum specific gravity, G_{mm} , in accordance with 502.05.

The density requirement for each lot is s h o w n in Table 502-5. Cores will be retained for a period of 10 days after density is reported.

1.11.1.2 <u>Testing of Roadway Cores (Method 2) Contractor's Testing of Roadway</u> <u>Cores in Acceptance Decision:</u>

With proven plant production consistency, and when recommended by the District Laboratory Engineer and approved by the Materials Engineer, contractor may request to be allowed to sample and test roadway cores for acceptance at no cost to the Department in lieu of District Laboratory acceptance testing. Density calculations for each acceptance roadway and verification core will utilize the G_{mb} of the core and the representative maximum specific gravity, G_{mm} as determined in accordance with 502.05. Refer to 502.11.1 for core responsibility. The District Laboratory roadway lot verification will be based on a means comparison between the District Laboratory verification average and the contractor acceptance average for each lot. If the means comparison produces a difference, use the resolution cores for pay determination. The Department will send the resolution cores to a certified Independent Assurance (IA) laboratory to determine pay in accordance with 502.11.1.5.

For Method 2:

The plant production consistency will be determined as follows: The Department will continuously monitor plant data and roadway data by JMF, by plant, by contractor. Plant data will be monitored in accordance with 502.06. Roadway data will be monitored using statistical methods comparing means and variances (F and t) tests. Continued use of Method 2 is allowed unless the plant or roadway data fail to verify with data set of a minimum of 45 contractor acceptance tests and 15 DOTD verification tests results, and it is determined by the DLE and Independent Assurance team that the contractor's production data meets requirements.

If the F and t test fail an investigation shall be conducted by the IA team. If the contractor data after F and t analysis is performed and is found to be error, DOTD acceptance testing of roadway cores will resume and independent accredited laboratory could be required for plant testing at no cost to the Department until such time as the problem is identified and resolved.

1.11.1.3 <u>"Minor with Density" Requirements:</u>

For Method 1:

When density is specified in Table 502-5, the roadway inspector will identify core locations to be cut by the contractor. The District Laboratory will test three cores for density every 1000 tons per mix type placed per roadway sampling procedure mentioned above and pay in accordance with Table 502-7. The District Laboratory will calculate the density of each roadway core using the G_{mb} of the core and the representative maximum specific gravity, G_{mm} , in accordance with 502.05. For Method 2: The contractor will perform acceptance test per above method. Table 502-7 is used to compute pay.

1.11.1.4 <u>Minor Mix without Density:</u>

This minor mix shall have a neat, uniform appearance and be compacted by methods to the satisfaction of the engineer. Collect one loose mix specimen, from roadway, per project, for G_{mm} verification.

1.11.1.5 <u>Verification:</u>

One core will be selected every 7500 linear lane feet and will be evaluated by either Method 1 or Method 2 in accordance with 502.11.1.1.

1.11.1.6 <u>Resolution:</u>

One core from each 7500 linear lane feet of placed mix will be chosen at random and will be double sealed, signed by both contractor and Department's certified inspectors in accordance with the Quality Assurance Manual as required or for documentation. The resolution core will be tested at a certified IA laboratory as described in the QA manual.

1.12 <u>SURFACE TOLERANCE EQUIPMENT, QUALITY CONTROL,</u> <u>ACCEPTANCE, MEASUREMENT AND PAYMENT ADJUSTMENT.</u>

Measure the top two lifts of the mainline travel lanes with an approved inertial profiler. Maintain record of intermediate measures of smoothness quality as described herein. Final acceptance will be based on the last measurement taken on the final wearing course of the travel lanes. Measurement of the center two lanes will be required for airports.

Constantly monitor equipment, materials, and processes to ensure that surface tolerance requirements are met.

1.12.1 Equipment:

For longitudinal surface tolerance quality control testing and acceptance testing on mainline wearing and binder courses, furnish and use a DOTD certified inertial profiler. Certified profilers will have a DOTD decal indicating the date of certification and profiler system parameter settings. Measure longitudinal surface profile in inches per mile in accordance with DOTD TR 644 and report as the International Roughness Index (IRI).

Verify the profiler system parameter settings before each run. Demonstrate the daily set up procedure and pre-operation tests in accordance with the manufacturer's procedures and DOTD TR 644. Ensure that a copy of the manufacturer's setup, pre-operation, and general operating procedures for measuring surface tolerance are available at all times during measurement.

For transverse quality control testing and for longitudinal quality control testing for wearing course on bike paths, detour roads, parking lots, and shoulders; furnish and use an approved 10-foot metal static straight-edge and electronic or static level.

Profiler system parameter settings shall be verified before and during each run by the DOTD inspector. For transverse, cross slope and grade testing, furnish a 10-foot metal static straightedge and electronic or static level for Department use.

1.12.2 Longitudinal Smoothness Quality Control:

Within 7 calendar days of placement, for mainline wearing and binder courses, run the certified profiler. View the raw data with ProVAL to determine IRI and to view Profilograph Simulation for each wheelpath. Make corrections to operation and/or mixture to ensure that the overall ride and individual bump requirements are met. Correct all individual bumps which are more than 1/4 inch as identified on Profilograph Simulation or when tested with a 10-foot metal static straightedge. Ensure that the following quality requirements are met:

- 1. Produce IRI which meets the requirements for 100 percent pay in accordance with Table 502-8. Continued surface tolerance penalties are not allowed.
- 2. Correct all individual bumps which are more than 1/4 inch when tested with a 10-foot metal static straightedge. Utilize the Profilograph Simulation on ProVAL to help identify these bumps.
- 3. Correct ripples to the satisfaction of the engineer. Report Profilograph Simulation for areas with 12 or more small, regular bumps in a 100-foot section or for any areas in question.

Minor mixes shall comply with Table 502-5. For minor mixes, use the 10-foot metal static straightedge to check for conformance to specifications.

1.12.3 <u>Transverse Smoothness, Cross Slope, and Grade:</u>

The Department will test the surface of the binder and wearing courses at selected locations for conformance to the surface tolerance requirements of this subsection and Table 502-5. Make corrections as directed in accordance with 502.12.4.

1.12.3.1 <u>Transverse Smoothness:</u>

Areas with surface deviations in excess of specification limits shall be isolated and corrected in accordance with 502.12.4. Control the transverse surface finish.

1.12.3.2 <u>Cross Slope:</u>

When the plans require the section to be constructed to a specified cross slope, take measurements at selected locations using a stringline, a slope board, an electronic or static level mounted on a 10-foot metal static straightedge, or other comparable device. Control the cross slope for each lane to comply with the tolerances shown in Table 502-5. Make corrections in accordance with 502.12.4.

1.12.3.3 Grade:

When the plans require the pavement to be constructed to a specified profile grade, test for conformance at selected locations, using a stringline or other comparable device. Control grade variations so that the tolerances shown in Table 502-5 are not exceeded. Grade tolerances shall apply to only one longitudinal line, such as the centerline or outside edge of pavement. Make corrections in accordance with 502.12.4.

1.12.4 Correction of Deficient Areas:

Correct areas as required in 502.12.2 and those not meeting Table 502-5, and Table 502-8. Correct wearing and binder courses by grinding. In lieu of grinding, the Project Engineer may penalize the contractor \$800 per area of small individual bumps, and/or per "Ripple" as defined in 502.12.2.

1.12.4.1 <u>Deficiencies in Mainline Wearing Course:</u>

Correct deficiencies in the final wearing course by removing and replacing mixture, or by diamond grinding or other approved device across the lane and applying a light tack coat, or by furnishing and placing a supplemental layer of wearing course mixture at least 1 1/2 inches compacted thickness for the full width of the roadway meeting specification requirements at no direct pay. If the supplemental layer does not meet specification requirements to the satisfaction of the engineer, remove and replace or correct it by other methods approved by the engineer.

For areas that will not be improved by grinding such as minor dips, extreme vertical curves, areas with < 1/4 inch bump as measured with a 10 feet metal static straight edge, the engineer may waive the requirement to grind.

1.12.4.2 Deficiencies in Mainline Binder Courses:

Correct deficiencies in binder course: longitudinal, transverse, cross slope, and grade to meet specification requirements at no direct pay. Make corrections before subsequent courses are constructed.

1.12.4.3 Deficiencies in Minor Mixes:

Correct deficiencies in minor mixes by diamond grinding or approved method at the project engineer's direction.

1.12.5 Surface Tolerance Acceptance:

Measure the top two lifts of the mainline travel lanes with an approved inertial profiler. Final acceptance will be based on the last measurement taken on the final wearing course of the travel lanes. Measurement of the center two lanes will be required for airports.

1.12.5.1 Longitudinal Surface Tolerance Acceptance:

Measure surface tolerance at the completion of the project and after all corrections have been made or at an approved portion of the project in accordance with 502.12.2. Measure the mainline wearing course continuously from start to finish in the direction of travel. The measurement shall be performed by the contractor in the presence of a Department representative. The measurement may also be made by the Materials and Testing Section, or by a private company approved by the Department. Report one IRI measurement in inches per mile for the entire project. A stand- alone pay adjustment factor will be determined in accordance with 502.15.

Place a start and stop mark at the beginning and end of each travel lane so that measurements can be rerun by the Department if needed. Interim measurements of a portion may be allowed, with approval of the engineer, as follows:

- 1. For partial acceptance in accordance with 105.17.1.
- 2. Due to phasing or sequence of construction, this measurement may result in 100 percent pay or less. However, payment exceeding 100 percent for this section of roadway will only be allowed if the smoothness re- measured at the completion of the project meets the requirements of Table 502-8.
- 3. For an unavoidable lengthy delay, apply the same payment criteria as No. 2 above.

The mainline longitudinal surface tolerance IRI specification requirements are shown in Table 502-8. Perform profiler testing and submit data to the engineer before starting paving operations. To ensure that the contractor has corrected deficiencies, the Department will spot check for 1/4 inch bumps in accordance with 502.12.2. Although grinding may bewaived by the engineer, the measured roughness will still contribute to the total IRI for the project.

A DOTD inspector will be present for the final test run and will immediately receive a copy of the raw data, the ".erd file" and any files with information about the project, the operator, the equipment, the settings, daily pre-operation results, and a copy of the IRI results via USB flash drive provided by the contractor. In addition to the data transferred by USB storage device, provide to the engineer a paper copy of the IRI report. Acceptance for the project will be in accordance with Tables 502-8, based on the data. The Department may elect to perform and utilize independent ride quality test results for acceptance at any time.

1.12.5.2 Exclusions:

The final IRI measurement shall be taken in entirety, without exclusions. The Department will then review the profile report obtained for each lane of the mainline wearing course. In special cases or extenuating circumstances, the engineer may isolate or exclude sections of the profile. These include the following:

- 1. Bridge ends, and sections that are within 150 feet of bridge ends.
- 2. Outside wheelpath of curb and gutter sections that require adjustment in order to maintain adequate drainage.
- 3. Manholes, catch basins, valve and junction boxes.
- 4. Street intersections or rail road crossings of a different grade.
- 5. Structures located in the roadway which cause abrupt deviations in the profile.
- 6. Transitions to and from ramps and turn lanes and sections within 200ft of the limits of the project if the limits begin or end at an intersection.
- 7. Sections where the project engineer determines that attaining smoothness is beyond the contractor's reasonable control.

Exclusions will not be used to simply isolate sections of road that are in poor condition when the project is let. The roughness in excluded areas will not be included in the total IRI used for payment purposes, but shall meet the requirements of 502.12.2. The quantity of asphalt represented by the length excluded will not receive a pay adjustment for surface tolerance.

1.12.6 <u>Surface Tolerance Measurement:</u>

Measure and report the average IRI of each wheel path of each mainline lane in inches per mile and reach mainline lane prorated for the entire project.

The theoretical quantity is computed by using the total length of lanes, the plan thickness, and the plan width, excluding shoulders and minor mixes. Adjust the tons as necessary affected represented for each mainline travel lane.

1.12.7 <u>Payment Adjustment for Surface Tolerance:</u>

Apply a percent payment adjustment for the quantity of tons represented in each land of the mainline wearing course. This pay adjustment is in addition to pay adjustments for density as described in 502.15.2. For mainline wearing course, a separate pay adjustment for surface tolerance measured on the mainline wearing course based on Table 502-8 shall apply. Apply the adjustment to the theoretical lane quantity and contract unit price.

1.13 DIMENSIONAL REQUIREMENTS:

Ensure that mixtures conform to the following dimensional requirements only. No other acceptance tests will be required for these mixtures. Over-thickness and over-width will be accepted at no direct pay.

1.13.1 <u>Thickness:</u>

For mixture specified for payment on cubic yard or square yard basis, thickness of mixtures will be determined by the Department in accordance with DOTD TR 602. Under-thickness shall not exceed 1/4 inch.

Correct area under-thickness in excess of 1/4 inch to plan thickness atno direct pay. Furnishing and placing additional mixture in accordance with 502.12.4.1. Correct excesses of 1/2 inch for category D, Table 502-8. When grade adjustments do not permit placing additional mixture, remove the deficient under-thickness area and replace at no additional pay.

For mixtures specified for payment on a per ton basis, thickness of mixtures will be determined by the plans, Table 502-6, and that agreed to with the Project Engineer. Under thickness shall not exceed 1/2 inch. Removal and replacement of deficient under-thickness area(s) or other approved remediation agreed to by the Project Engineer will be at no direct pay.

1.13.2 <u>Width:</u>

The width of completed courses will be determined in accordance with DOTD TR 602. Correct under-widths by furnishing and placing additional mixture to a minimum width of 1 foot and plan thickness at no direct pay.

1.14 <u>MEASUREMENT:</u>

Measure asphalt concrete by the ton of 2,000 pounds from printed weights as provided in Section 503. Provide stamped printer tickets with each truckload of material delivered denoting JMF number and plant tonnage. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphalt concrete shown on the plans are based on 110 lb/sq yd/inch thickness. The measured quantity of asphalt mixtures will be multiplied by the following adjustment factors to obtain the pay quantity.

Theoretical Maximum Specific	<u>Adjustment</u>
Gravity, (G _{mm}) (DOTD TR 327)	Factor
2.340 - 2.360	1.02
2.361 - 2.399	1.01
2.400 - 2.540	1.00
2.541 - 2.570	0.99
2.571 - 2.590	0.98

The adjustment factor for mixtures with theoretical maximum specific gravities less than 2.340 or more than 2.590 will be determined by the following formulas:

Theoretical maximum specific gravity less than 2.340:

$$F \square \frac{2.400}{S}$$

Theoretical maximum specific gravity more than 2.590:

where,

F = quantity adjustment factor

S = theoretical maximum specific gravity of mixture from approved job mix formula

1.14.1 <u>Volume or Area Measurement:</u>

The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the engineer makes changes to adjust the field conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

1.15 <u>PAYMENT:</u>

1.15.1 <u>Payment General:</u>

Payment for all mixes will be at the contract unit price of asphalt mixture accepted on the roadway. Payment for asphalt concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures. When the mix does not meet requirements, payment adjustments shall be assessed. Production of mix that is not eligible for 100 percent payment will not be allowed on a continuous basis. When test results demonstrate that payment adjustments are necessary, satisfactory mixture and compaction adjustments shall be made, or production shall be discontinued. All calculations for percent payment adjustments will be rounded to the nearest one (1) percent. Payment for removal of pavement markings will be in accordance with the applicable item. Payment adjustments will be determined in accordance with 502.14 and the QA Manual.

1.15.2 <u>Mainline Mixtures:</u>

For all mainline mixtures, adjustments in contract unit price for roadway density as required by Table 502-5 and will be based on PWL using Tables 502-9 and 502-10 for all acceptance cores in the lot. This payment adjustment will be applied to the theoretical mainline lane quantity and contract unit price.

In addition, for mainline wearing course, a separate pay adjustment for surface tolerance based on Table 502-8 shall apply for all travel lanes based on the theoretical mainline lane quantity and contract unit price.

The theoretical quantity is computed by using the plan width, the plan thickness, and the total length of travel lanes, without exclusion areas.

1.15.3 <u>Minor Mixtures:</u>

1.15.3.1 <u>Minor Shoulder Lots, > 4 Feet Wide:</u>

Adjustments in contract price for shoulder density will be based on the average density for all cores in the lot and Table 502-5.

1.15.3.2 <u>Minor Lots with Density:</u>

Adjustments in contract price will be based on the core density for each lot in accordance with Table 502-7.

1.15.4 <u>Payment for Tack:</u>

Tack coat as required in 502.07.2.2 "Applying Tack Coat" will be considered incidental to the 502 item. If the engineer adjusts the application rate of tack coat from that specified by the contract document, payment for the asphalt mixture will be increased or decreased based on the difference in the applied quantity of asphalt emulsion shown on paid invoices (total of charges). The contractor shall provide copies of paid invoices for this determination. Apply 95 percent payment to the 502 item when the tack coat rates do not meet the application rate as allow by the engineer.

1.15.5 <u>Payment Adjustment for Asphalt Cement:</u>

A minimum payment adjustments of 10 percent of the 502 item will apply to mixtures that do not meet specification but are within one grade of the specification. Asphalt that exceeds one lower grade difference in specification will be subject to 50 percent payment reduction or removal at the discretion of the Chief Engineer.

1.15.6 Payment Adjustment for Surface Tolerance:

Payment adjustment will be in accordance with 502.12.7

Apply a percent payment adjustment for quantity of tons represented in each lane of the mainline wearing course. This pay adjustment is in addition to the pay adjustments for density as described in 502.15.2. For mainline wearing course, a separate pay adjustment for surface tolerance measured on the mainline wearing course based on Table 502-8 shall apply. Apply the adjustment to the theoretical lane quantity and contract unit price.

1.15.7 <u>Payment for Erected Stringline:</u>

When the use of an erected stringline is not specified, but directed by the engineer, an additional payment of \$3500 per contract plus \$0.25 per linear foot will be made for mixtures placed by the erected stringline method. When the use of an erected stringline is specified, no additional payment will be made.

Payment will be made under:

Item No. 502-01-00100

Pay Item Asphalt Concrete Pay Unit Ton

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 05

ASPHALT CONCRETE PAVEMENT PATCHING

1.1 DESCRIPTION:

Use asphalt concrete to patch, widen and repair joints of existing concrete pavements, asphalt concrete pavements, and composite pavements in accordance with these specifications and in conformity with the lines, grades and typical sections shown on the plans or as directed.

1.2 <u>MATERIALS:</u>

Use any type of asphalt concrete mixture for patching and widening listed in Section 502, other than 1/2 inch nominal maximum size mixtures. For joint repair, use Incidental Paving Asphalt Concrete (Level A) complying with Section 502. Use asphalt tack coat complying with Section 504.

1.3 <u>EQUIPMENT:</u>

Furnish equipment that meets the specification requirements in Section 503 for the types of material used.

1.4 <u>GENERAL CONSTRUCTION REQUIREMENTS:</u>

Remove existing surfacing and base materials by sawcutting and perform all required excavation for patching and widening. Sawcuts shall be for the full depth of the pavement along the perimeter of the pavement to be removed as marked by the engineer. Sawcuts shall be made with a diamond bladed concrete concrete saw for the full depth of patch if patching is performed on the final riding surface. Patching performed on underlying surface can be full depth sawed with a rock saw or milled out with a roto-mill or stabilizer, unless otherwise specified in plans. When through traffic is maintained, place the pavement widening material, or fill and compact open areas or trenches at the end of each day's operations. Under-thickness in excess of 1/2 inch will be corrected at no direct pay.

Excavate and dispose of the excess material beyond the right-of-way in accordance with Section 202 at no direct pay. Uniformly compact the subgrade.

For joint repair, clean contact surfaces of existing pavement and apply a thin, uniform layer of approved asphalt tack coat prior to placing asphalt mixture in the joint.

Patch and widen with asphalt concrete conforming to Section 502 except that priming of the subgrade will not be required. Clean contact surfaces of pavement and apply a uniform layer of approved asphalt tack coat before placement of asphalt concrete. Do not overlay patches for a minimum of 5 calendar days. Spread, finish, and compact the asphalt concrete leaving the surface smooth and slightly above the edge of existing pavement. To provide lateral support, the contractor may construct temporary berms of excavated material against the outside edge of widening strips prior to rolling. If outside edges of widening strips are not edged up by the end of the work day,

place super cones or drums on a maximum of 100-feet centers at no direct pay.

1.5 <u>MEASUREMENT:</u>

1.5.1 <u>Patching:</u>

The Department will measure patching of pavement by the square yard or ton of existing pavement designated to be removed and replaced. Saw-cutting, removal of existing surfacing, base course, required excavation, and application of tack coat will not be measured for payment.

1.6 <u>PAYMENT:</u>

1.6.1 <u>Patching:</u>

Payment for pavement patching will be made at the contract unit prices per square yard or ton, subject to the following provisions:

Payment adjustments for deficiencies in asphalt concrete and asphalt materials will be applied at 1/2 the contract unit price for pavement patching. Asphalt concrete will be subject to the payment adjustment provisions of Section 502, Table 502-7 with 4-inch cores allowed.

When the engineer orders additional thickness of patching in excess of plan thickness, payment for the additional thickness will be made as follows. When patching is on a square yard basis, the value per inch thickness will be calculated by dividing the contract unit price per square yard by the plan thickness. Thickness of patches will be measured from the surface that exists at the time of patching. Payment for the additional thickness will be made at 50 percent of the value per inch thus determined.

When the engineer approves of an under-thickness of patching less than plan thickness, a deduction in payment will be made. The value per inch will be calculated by dividing the contract unit price per square yard by the plan thickness. This deduction per inch of under-thickness will be made at 50 percent of the value per inch.

When payment for patching is made per ton, no adjustment in unit price will be made for additional thickness or under-thickness. Any patching that develops or is required between the time of initial patching operations and the placement of the first lift of asphalt concrete will be paid for at the contract unit price. Any patching required due to base failure after placement of the first lift of asphalt concrete will be paid for at twice the contract unit price. Payment will be made under:

Item No.	Pay Item	Pay Unit
510-04-00100	Pavement Patching	Ton

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 06

PORTLAND CEMENT CONCRETE PAVEMENT

1.1 <u>DESCRIPTION:</u>

This work consists of constructing Portland cement concrete pavement for roadway, on a prepared base course in accordance with these specifications and in conformity with the lines, grades, thicknesses and typical cross sections shown on these plans or established by the Engineer. Work shall be performed in accordance with the provisions of Section 601 of the Louisiana Standard Specifications for Roads and Bridges, 2016 Edition (Purple Book), and latest revisions, or as amended herein.

1.2 <u>MATERIAL:</u>

Materials shall be in accordance with the requirements of Section 601 and Section 901 of the Purple Book. Concrete shall be high early strength, attaining 4,000 PSI compressive strength in three days. Use polyurethane polymer joint sealers. The joint sealers shall be in accordance with section 1005.02 of the Purple Book.

A minimum of four (4) cylinders shall be taken for each day's pour. One (1) cylinder shall be broken at one (1) day, one (1) at three (3) days and two (2) at twenty-eight (28) days.

1.3 <u>SUBMITTALS:</u>

The following items shall be submitted to the Engineer for approval prior to construction:

- a) Concrete Mix Design
- b) Technical data on joint material

1.4 MEASUREMENT AND PAYMENT:

Measurement for Portland Cement Concrete Pavement (9" Thick) shall be by the square yard.

Payment for the Portland cement concrete pavement (9" Thick) including dowel bars, joint material, form work, etc. shall be made at the contract unit price bid per square yard, which price and payment shall be full compensation for furnishing all plant, labor, material, equipment and all other incidentals as specified herein and as shown on the drawings.

Payment shall be made under:

<u>Item No.</u>	Pay Item	Pay Unit
601-01-00300	Portland Cement Concrete Pavement (9" Thick)	Square Yard

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 07

STORM DRAINS

1.1 **DESCRIPTION:**

Furnish, install, and clean pipe, pipe arch, storm drains, and sewers, also referred to as culverts or conduits, in accordance with these specifications and in conformity with the lines and grades shown on the plans or as established by the engineer.

1.2 <u>MATERIALS:</u>

Materials shall comply with the following sections and subsections:

Usable Soil	203.06.1
Selected Soil	701.08.1
Plastic Soil Blanket	203.10
Flowable Fill	710
Portland Cement Concrete	901
Stone	1003.03.1
Recycled Portland Cement Concrete	1003.03.2
Granular Material	1003.09
Reinforced Concrete Pipe Arch	1016.03

1.2.1 Storm Drain Pipe or Storm Drain Pipe Arch:

When an item for Storm Drain Pipe or Storm Drain Pipe Arch is included in the contract, furnish thermoplastic pipe, reinforced concrete pipe or reinforced concrete pipe arch allowed by Sections 1006 or 1016, respectively, unless otherwise specified.

- 1.2.2 <u>Material Type Abbreviations:</u>
 - 1.2.2.1 <u>Reinforced Concrete Pipe:</u>

RCP	Reinforced Concrete Pipe
RCPA	Reinforced Concrete Pipe Arch

1.2.3 Quality Assurance for Pipe:

Manufacturing plants will be periodically inspected for compliance with specified manufacturing methods, and material samples will be randomly obtained for laboratory testing for verification of manufacturing lots. Materials approved at the manufacturing plant will be subject to visual acceptance inspections at the jobsite or point of delivery.
1.3 <u>EXCAVATION:</u>

For all trench excavation, ensure that the sides of the trench are stable, as evidenced by the sides of the trench being able to maintain a vertical cut face. Consider the sides unstable if fissures develop in the face of or adjacent to the open excavation; if the edge of the excavation subsides; if material ravels, spalls, or slumps from the face of the excavation; or if the bottom of the excavation bulges or heaves. In all cases of apparent distress, or when the trench excavation exceeds 5 feet in depth, sloping, benching, and shoring will be required in accordance with the OSHA trench safety standards, 29 CFR § 1926 (P). Consider these and any more stringent trench safety standards as minimum contract requirements.

Submission of bid and subsequent award of contract will serve as certification that all trench excavation in excess of 5 feet will be in compliance LA R.S. 48:251.1.

Consider all available geotechnical information when designing the trench excavation safety system, including groundwater. Evaluate trench stability due to the effects of surcharge loads from adjacent structures, stored materials and equipment, or traffic. Ensure that excavated material is placed a sufficient distance back from the trench edge to preclude material from falling back into the trench, otherwise provide an adequate retention system.

Ensure that the bottom width of a pipe trench provides at least 18 inches of clearance on each side of the pipe. In accordance with 202.02, satisfactorily dispose of surplus excavated material that does not conform to the requirements of 203.06.1. Control rainfall runoff or excess moisture by proper selection of backfill materials, dewatering sumps, wells, well points, or other approved procedures during excavation, bedding installation, over- excavated trench backfilling, pipe placement, and pipe backfill.

1.3.1 Over-Excavation:

When encountering unsuitable soils as defined in 203.04, or a stable, non-yielding foundation cannot be obtained at either the established pipe grade or at the grade established for placement of the bedding, remove unstable or unsuitable soils below this grade and replace with granular material complying with 1003.09, bedding materials complying with 1003.10, or Type A backfill complying with 701.08.1. Place all granular backfill materials below the established pipe or bedding grade in lifts less than 8 inches thick. Compact sufficiently with a dynamic mechanical hand compaction device over the surface of each lift to form a stable, non-yielding foundation at the surface of the established bedding or pipe grade.

When encountering rock, remove the rock below grade and replace it with granular material, bedding materials, or Type A backfill. Provide a compacted earth cushion thickness under the pipe of at least 1/2 inch per foot of fill height over the top of the pipe with a minimum thickness of 8 inches. Place all granular backfill materials below the established pipe or bedding grade in lifts less than 8 inches thick. Sufficiently compact with a dynamic mechanical hand operated compaction device over the surface of each lift form a stable, non-yielding foundation at the surface of the established bedding or pipe grade.

Materials used to backfill in an over-excavated portion of a trench do not require encasement in a geotextile fabric.

1.4 FORMING PIPE BED:

When specifying bedding material, construct in accordance with Section 726. Materials allowed for bedding shall comply with 1003.10 or may be type a backfill materials. When specifying bedding materials, perform additional excavation below established pipe grade and place the bedding material in lifts less than 8 inches thick. Lightly compact with a dynamic hand compaction device over the surface of each lift.

When the bottom of the pipe is not laid in a trench but constructed above natural soils, construct a uniform bed as specified for the bottom of a trench. In lieu of removing and replacing unstable soil with granular material, bedding material, or Type A backfill material, a cabled articulated concrete block mattress meeting the requirements of Section 712 may be used with a 6-inch layer of bedding material between the pipe and the mattress installed in accordance with Section 726. Excavate the trench to a depth 6 inches plus the thickness of the mattress below the grade line of the pipe. Join adjacent mattress segments together to form a continuous supporting foundation beneath the pipe to the satisfaction of the engineer.

1.5 <u>LAYING PIPE:</u>

Begin laying pipe at the downstream end of the line. Ensure that the pipe is in contact with the foundation throughout its length. Place bell or grooved ends of pipe and outside circumferential laps of riveted metal pipe facing upstream. Place riveted seam metal pipe with longitudinal laps at sides. Pipes in each continuous line shall have the same wall thickness. Handle metal pipes provided with lifting lugs only by these lugs.

After laying pipe and before placing backfill, the engineer will inspect the pipe for alignment, grade, integrity of joints, and coating damage.

1.6 JOINING PIPE:

- 1.6.1 Joint Usage:
 - 1.6.1.1 <u>Type 1 (T1) Joints:</u>

Use Type 1 joints for side drains under driveways and similar installations.

1.6.1.2 <u>Type 2 (T2) Joints:</u>

Use Type 2 joints for crossdrains under roadways, including turnouts.

1.6.1.3 <u>Type 3 (T3) Joints:</u>

Use Type 3 joints for storm drain systems, flumes, and siphons.

1.6.2 <u>Concrete Pipe:</u>

Concrete pipe may be either bell andspigot or tongue and groove. Join pipe sections so that ends are fully entered, and inner surfaces are flush and even.

Use an approved mechanical pipe puller for joining pipes over 36 inches in diameter. For pipe 36 inches or less in diameter, use any approved method for joining pipe that does not damage the pipe.

Joints shall comply with 1016.01.1 and 1018.03. Seal with gasket material installed in accordance with the manufacturer's recommendations.

1.6.3 <u>Connections:</u>

Use approved connections when joining new pipes to existing pipes. When using concrete collars to extend the ends of existing pipes that have been damaged or to join different types or sizes of pipes, construct the concrete collars in accordance with plan details, the applicable requirements of Section 901, and as directed.

1.6.4 <u>Geotextile Fabric Wrapped Pipe Joints:</u>

For concrete, metal, and plastic pipes, use Types 2 and 3 joints wrapped with geotextile fabric for a minimum of 12 inches on each side of the joint for pipe 36 inches or less in diameter and a minimum of 18 inches on each side of the joint for pipe greater than 36 inches in diameter. Wrap the ends of the fabric around the circumference of the pipe and overlap at least 10 inches. Secure the edges and ends of fabric for the entire circumference of the pipe.

1.7 <u>RELAYING PIPE:</u>

If specified or directed, remove existing pipes and relay suitable sections as specified for new pipes.

1.8 <u>BACKFILLING:</u>

1.8.1 <u>General:</u>

Prior to backfilling, remove pipes found to be damaged or out of alignment or grade; reinstall or replace.

Type A backfill material shall be stone, recycled portland cement concrete, flowable fill, or RAP.

Type B backfill materials are select soils. Select soils are natural soils with a maximum PI of 20, a maximum liquid limit of 35, and a maximum organic content of 5 percent. Soils with a silt content of 50 percent or greater and also a PI of 10 or less will not be allowed. Where Type B backfill materials are called for, Type A backfill materials may be substituted.

When using corrugated metal pipe, the backfill material shall be tested and shall have a resistivity greater than 1500 ohm-cm and a pH greater than 5 when tested in accordance with DOTD TR 429 and DOTD TR 430 respectively.

When using Type A backfill material, place geotextile fabric to surround this backfill in accordance with 726.03 between the aggregate backfill material and all other natural or placed soils in the trench or embankment. Take care to prevent damage to geotextile fabric during placement of backfill material. For concrete pipe, enclose not only the initial backfill with the

fabric, but wrap the fabric over the top of the pipe with at least 12 inches of overlap.

When using a trench box or trench sheeting in unstable soils and/or for worker safety, and when moved during backfilling operations, immediately fill and provide additional compaction of the disturbed zone of backfill to the satisfaction of the engineer.

Initial backfill is a structural backfill encasing the pipe from the bottom of the pipe to the spring line for concrete pipe and to a point one foot above the top of the pipe for both metal and plastic pipe. Final backfill is not a structural backfill. Final backfill extends from the top of the initial backfill to the top of the natural ground or subgrade in cut areas or to the top of existing ground in fill areas. Consider and treat any fill required above the final backfill as embankment.

1.8.2 Backfill Applications:

For projects using the A+B+C bidding method where considering rigid and flexible pavement alternates, use the backfill application in 701.08.2.2 for either rigid or flexible pavements.

1.8.2.1 <u>Pipe Under Concrete Pavements:</u>

Type B backfill may be used as initial and final backfill for all pipes, culverts, or drains under portland cement concrete pavements. Place and compact as specified in 701.08.4.

1.8.2.2 Other Drains Under Flexible Pavements:

All reaches of all culverts, pipes, or drains under flexible pavements that do not cross the centerlines of new or existing roadways, and exclusive of those portions of the pipe which are totally under shoulders, shall receive an initial and final backfill of Type B material. Place and compact as specified in 701.08.4. Where the subgrade is above existing ground, use embankment material as specified for the remainder of the project from the top of the final backfill to the top of the established embankment grade.

1.8.2.3 Other Areas:

All culverts, pipes, or drains in unpaved areas or paved areas that serve as driveways or shoulders shall receive an initial and final backfill of Type B material. Place and compact as specified in 701.08.4.

1.8.2.4 <u>Pipes Subject to Construction Traffic:</u>

Construct the embankment or pipe backfill to a minimum height of 24 inches over the pipe before allowing heavy construction equipment to cross the installation. Where practical, do not construct installations with less than 24 inches of cover over the top of the pipe until after completing the heavy hauling over the pipe location. After completion of hauling operations, remove excess cover material. Remove and reinstall or replace, pipe damaged by hauling and backfilling operations at no direct pay.

1.8.3 <u>Placement and Compaction - Type A Backfill:</u>

For all pipes, culverts, and conduits under paved and unpaved areas, where using Type A

backfill material, thoroughly hand compact the Type A backfill under the pipe haunches and then dynamically compact in layers not exceeding 8 inches compacted thickness. Initially compact under the haunches of the pipe by hand tamping or other acceptable means, until reaching a level in which the dynamic tamping can commence. Compact each lift by applying at least eight passes of a hand operated, dynamic mechanical compaction device over the surface of each lift. With approval of the engineer, layer thickness may be increased to 12 inches with verification of satisfactory installation and performance. If using flowable fill, furnish, place, and consolidate in accordance with Section 710. Control placement operations during initial backfill operations without damage to protective coatings on metal pipes. Repair damaged coatings at no additional pay.

1.8.4 <u>Placement and Compaction - Type B Backfill:</u>

For all pipes, culverts, and conduits where Type B backfill is allowed, place the Type B material in layers not exceeding 8 inches compacted thickness. Compact with suitable mechanical equipment. With approval of the engineer, layer thickness may be increased to 12 inches with verification of satisfactory installation and performance.

1.8.5 <u>Placement and Compaction- Trenchless or Partial Trench Condition:</u>

All pipes, culverts, drains, and conduits placed with any portion of the pipe above existing ground shall comply with 701.08.1, 701.08.2, 701.08.3; 701.08.4 shall be for the portion of the pipe within a trench and the portion of the pipe not constructed in a trench. The initial and final backfill of that portion of pipe above existing ground and not within a trench shall be constructed to such a width that the requirements for placement, compaction, and density are met.

1.8.6 Density Requirements:

The in-place density of Type A backfill materials and bedding materials will not be measured or calculated. Place Type A backfill, exclusive of RAP and flowable fill, at or near optimum moisture content in accordance with DOTD TR 415 or 418. Place and compact RAP materials in a slightly moist condition.

Determine the maximum dry density of initial or final Type B backfill under all paved areas which are to be under traffic in accordance with DOTD TR 415 or TR 418. Determine in-place density in accordance with DOTD TR 401. Place initial and final Type B backfill under all paved areas under traffic, at or near optimum moisture content in accordance with DOTD TR 415 or TR 418. Compact each layer by approved methods prior to the placement of a subsequent layer. The engineer will approve the compaction method upon validation that such method, including moisture control, will achieve at least 95 percent of maximum dry density in accordance with DOTD TR 401. Density testing on subsequent backfill layers may be waived by the engineer if installation has been in accordance with approved compaction methods and performance has been continuously satisfactory. Place initial and final backfill in unpaved or paved areas, such as shoulders or driveways, evenly and compact along the length of the culvert, pipe, or drain from the top of the initial backfill to the top of the subgrade. Compact layered backfill to at least the density of the adjoining existing soils or the compaction required of the laterally adjoining layers of soil immediately outside the trench for embankment elevations. Place and compact initial and final backfill at or near optimum moisture content in accordance with DOTD TR 415 or TR 418.

1.9 <u>INSPECTION OF PIPES:</u>

After completion of embankment and prior to roadway surfacing, the engineer shall inspect pipes for proper alignment and integrity of joints. Correct any misaligned pipe or defective joints at no direct pay.

1.10 CLEANING PIPES:

1.10.1 <u>Contractor Installed Pipes:</u>

Prior to final acceptance, clean pipes of all debris and soil to the invert of the pipe at no direct pay.

Dispose of removed soil, debris, and other materials in accordance with 202.02 or as otherwise approved in writing.

1.11 STUBBING AND PLUGGING PIPES:

Construct pipe plugs with Class R concrete complying with Section 901. Thickness of plug and method of construction shall be as directed.

When stubbing new pipes are to be stubbed into new or existing pipes or other structures, make the connection with approved mortar complying with 1001.03.

1.12 <u>MEASUREMENT:</u>

- 1. The length of new and re-laid pipe will be measured in linear feet along the pipe from end to end unless stated otherwise.
- 2. Pipe tees, elbows, and other fittings will be measured per each fitting. The length of pipe in such fittings will be included in the pay length measurement of pipes of which they form a part.
- 3. Excavation required for pipe installation will not be measured for payment, except as otherwise specified in 203.14 and 701.12.10.
- 4. Furnishing and placing backfill material below existing ground level for pipes will not be measured for payment. Backfill material needed to complete backfill above natural ground and around pipes that extend above natural ground will be measured for payment under applicable earthwork items. When specifying flowable fill, measure for payment in accordance with Section 710.
- 5. Plugging and stubbing of pipes will not be measured for payment.
- 6. Cleaning existing pipes will be measured by the length of pipe cleaned and accepted.
- 7. Concrete collars will be measured per each.
- 8. Dewatering of excavated areas will not be measured for payment.
- 9. Special shoring and bracing (depth > 5 feet), needed in addition to OSHA requirements for trench safety, will be measured by the square foot of wall area.
- 10. Trench excavation safety protection (depth > 5 feet) will be measured by the length of trench having a depth > 5 feet below natural ground.

1.13 <u>PAYMENT:</u>

Payment for concrete and metal pipe will be made at the contract unit price per linear foot of the types and sizes specified, which includes all labor, materials, equipment, tools, and incidentals necessary to complete the work.

When plastic pipe is shown on the plans or elected to be used by the contractor, payment will be made at the contract unit price per linear foot of the types and sizes specified in accordance with the payment schedule of Table 701-1.

Table 701-1

Payment Schedule for Plastic Pipe

Percent Payment	Stage of Completeness	
75	After placement and backfill has	
,5	been completed	
	After the pipe has met vertical deflection	
25	requirements in accordance with 701.09.1	

Payment for fabricating pipe tees, elbows, and other fittings will be made at the contract unit price per each fitting.

When unstable conditions are encountered, the additional excavation will not be measured for payment; however, the additional materials furnished and placed for the pipe foundation will be measured and paid for as follows:

1. <u>Granular Materials</u>:

Payment will be made under the embankment item. The net section volume of the materials will be multiplied by 3 to determine the pay volume. When the contract does not include a pay item for embankment, payment will be made in accordance with 104.02.

2. <u>Bedding Material</u>:

Measurement and payment will be made in accordance with Section 726. When the contract does not include a pay item for bedding material, payment will be made in accordance with 104.02.

3. <u>Trench Excavation Safety Protection</u>:

When excavation depths exceed 5 feet from natural ground, safety precautions for excavations in compliance with OSHA are required and will be paid per linear foot of trench. When the contract does not include a pay item for trench excavation safety protection, payment will be made in accordance with 104.02.

Payment for cleaning existing pipes will be made at the contract unit price per cleaned linear foot.

Payment for concrete collars will be made at the contract unit price per each.

Payment for special shoring and bracing will be made at the contract unit price per square foot of wall area.

Payment will be made under:

Item No.	Pay Item	Pay Unit
701-04-01000	Storm Drain Pipe Arch (15" Equiv. RCPA)	Linear Foot
701-04-01020	Storm Drain Pipe Arch (18" Equiv. RCPA)	Linear Foot

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08

CATCH BASINS

1.1 **DESCRIPTION**:

Construct, install, and adjust manholes, junction boxes, catch basins, culvert end treatments, and safety ends in accordance with these specifications and in conformity with lines and grades shown on the plans or established.

1.2 <u>MATERIALS:</u>

Materials shall comply with the following sections and subsections:

Cast-in-Place Concrete (Class M)	901
Portland Cement	1001.01
Mortar Sand	1003.08.1
Sewer Brick	1018.12.1
Asphaltic Varnish	1008.03
Reinforcing Steel	1009.01
Precast Reinforced Concrete Drainage Units	1016
Frames, Grates, and Covers for Manholes,	
Catch Basins, and Junction Boxes	1013.05, 1013.06
Geotextile Fabric	1019

The contractor may furnish structures of either cast-in-place concrete or precast concrete units.

Use mortar complying with 1001.03. Use mortar within 30 minutes after mixing or as recommended by the manufacturer.

1.3 **QUALITY ASSURANCE:**

Manufacturing plants will be inspected periodically for compliance with specified manufacturing methods. Material samples will be randomly obtained for laboratory testing for verification of manufacturing lots.

Materials will be subject to inspection at any time during the work.

1.4 <u>CONSTRUCTION REQUIREMENTS:</u>

Construct all cast-in- place structures in dry or dewatered areas, unless otherwise directed. Provide dewatering, shoring and bracing needed to comply with OSHA requirements at no cost to the Department. Remove logs, stumps, and other undesirable material.

1.4.1 <u>Manholes, Junction Boxes, and Catch Basins:</u>

Concrete construction shall conform to Section 805. Joints shall be full mortar joints no more than 1/2 inch wide. When specified, plaster outside faces of structures with 1/2 inch thick cement-sand mortar. Cure exposed surfaces of concrete and masonry in accordance with 805.10 for at least 48 hours.

Cast precast concrete units with the specified number and size of pipe openings required for the drainage system; however, if additional pipe is required during construction for which no openings have been supplied, make such openings, provided any damaged units are replaced or satisfactorily repaired. Set precast units to established grade within $\pm 1/2$ inch. Seal joints for sectional precast units with flexible plastic gasket material complying with 1016.01.1 and install to form a watertight seal. Wrap the joints of precast units with geotextile fabric a minimum of 18 inches on each side of the joint. Lap the ends of the fabric at least 10 inches. Secure the edges and ends of the cloth.

Set metal frames in a full mortar bed. Conduit sections shall be flush on the inside of structure wall and project outside sufficiently for proper connection with the next conduit section. Fit masonry neatly and tightly around conduit.

When grade adjustments of existing structures are specified, remove the frames, covers, and gratings and reconstruct the walls as required. Cleanthe frames and reset at required elevation. Thoroughly clean metal parts and place in good repair. In lieu of resetting structures, structures may be adjusted by means of approved metal adjustment rings.

Clean new structures of silt, debris or other foreign matter. Coat non- galvanized metal parts of new or adjusted structures with asphaltic varnish meeting the requirements of 1008.03 or jet black metal work paint satisfactory to the engineer.

Backfill the structure in accordance with 701.08.

Dispose of excavated material not satisfactory for backfill and surplus material in accordance with 202.02.

1.4.2 Frames, Grates, and Covers for Manholes, Catch Basins, and Junction Boxes:

Metal units shall comply with the following requirements:

- 1. Gray and ductile iron castings shall comply with 1013.06.1.
- 2. Steel castings shall comply with 1013.05.
- 3. Structural steel shall comply with 1013.01 and rivet steel shall comply with 1013.02.
- 4. Galvanizing shall comply with ASTM A123.

1.5 <u>MEASUREMENT:</u>

Measure new and adjusted junction boxes, manholes, catch basins, culvert end treatments, and safety ends per each. Excavation and backfill required for installation of these units will not be measured for payment. Dewatering, shoring and bracing needed to meet OSHA requirements are considered incidental to the work will not be measured for payment.

1.6 <u>PAYMENT:</u>

Payment for new and adjusted junction boxes, manholes, catch basins, culvert end treatments and safety ends will be made at the contract unit price per each which will include all materials, tools, equipment, labor and incidentals necessary to complete the work.

The concrete in cast-in-place manholes, junction boxes, catch basins, and culvert end treatments and safety ends will be identified by lots and will be subject to pay adjustments in accordance with Table 901-5 and Note 1 therein. Acceptance for each precast concrete manhole, junction box, and catch basin lot will be in accordance with the requirements of StandardPlan PC-01. Size, sampling, and testing of each concrete lot shall be in accordance with the Materials Sampling Manual.

Payment will be made under:

Item No.	Pay Item	Pay Unit
702-03-00100	Catch Basins (CB-01)	Each

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 09

FENCES

1.1 **DESCRIPTION:**

Construct fences and gates in accordance with these specifications and in conformity with lines and grades shown on the plans or established by the engineer.

1.2 <u>MATERIALS:</u>

Materials shall comply with the following section and subsections:

Portland Cement Concrete (Class R)	901
Barbed Wire	1010.01
Woven Wire	1010.02
Posts and Braces for Field and Line Type Fence	1010.03
Staples and Nails	1010.04
Metal Fasteners for Steel Posts	1010.05
Gates for Field and Line Type Fence	1010.06
Chain Link Fence, Gates and Appurtenances	1010.07
Timber Preservatives	1014.03
Ground Rod Assemblies	1010.08

Use the same type chain link fencing throughout the project. Use the same type, shape, and treatment of posts throughout a section of fence.

1.3 <u>GENERAL CONSTRUCTION REQUIREMENTS:</u>

Conform to Section 201 when clearing and grubbing for fence installation.

Confine operations to the area adjacent to right-of-way lines and within the right-of-way.

Where breaks in a run of fencing are required, and at intersections with existing fences, make appropriate adjustment in post spacing for the type closure indicated.

Place wood posts with small end up. When posts, braces, or anchors are to be embedded in concrete, install temporary braces as required to hold posts in proper position until concrete has set sufficiently to hold posts. Do not install fencing material on posts or place strain on bracing set in concrete for 72 hours after concrete has been placed. Set tops of posts to required grade and alignment. Cutting of wood post tops will be allowed only when approved. Treat cut ends with 2 applications of the same type preservative used for post treatment. Stretch wire taut. Install ground rods along each segment of new or rebuilt fence, regardless of type fence post used, at maximum 500-foot intervals. Ensure that ground rods and connections conform to plan details.

1.4 <u>REBUILT FENCE:</u>

When specified, take down, move back, and rebuild existing fence. Rebuild fence in the same manner as specified for new fence. Rebuilt ornamental fence, picket fence, or other special type fence shall be equal in all respects to existing fence.

1.5 <u>GATES:</u>

Gates of a design different from that shown on the plans may be furnished with prior approval. Gates shall be of rigid construction, and after erection, gates shall not show sag or warp.

1.6 <u>CHAIN LINK FENCE AND GATES:</u>

1.6.1 <u>Concrete Post Anchorage:</u>

Anchor posts in Class R concrete footings. Portable mixing of concrete in accordance with 901.10.6 will be permitted for small quantities of concrete.

Extend tops of footings slightly above ground and steel trowel to a smooth finish sloped to drain away from posts. Center posts, braces, and other units in footings.

Perform concrete operations in accordance with Section 901. Consolidate concrete by tamping or vibrating. Satisfactorily dispose of excess excavation from footings.

1.6.2 Fence Erection:

Place pull posts no more than 200 feet apart in straight runs and at each vertical angle greater than 20 degrees. Place corner posts at each horizontal angle greater than 20 degrees. Provide corner and pull posts with a horizontal brace and tie rod on each side of posts. Connect the horizontal brace and tie rod to adjacent line posts.

Before placing fabric, permanently position posts, firmly setanchorages, and satisfactorily secure top rail or tension wires to posts. Secure ends of fabric by stretcher bars threaded through loops of fabric and secure to posts by clamps with bolts and nuts.

Place fabric by securing one end and applying sufficient tension to remove all slack before making attachments elsewhere. Assure that degree of tensioning is commensurate with air temperatures at time of installation to prevent undue sagging or tensioning of fabric due to changing temperatures. Fasten fabric to line posts at approximately equal spaces and to top rail (or top tension wire) and bottom tension wire with tie wires or bands as specified.

1.6.3 <u>Gate Erection:</u>

Gate installation shall include gate frames, stretcher bars, filler fabric, latches, stops, locking device, padlocks, hinges, gate posts with braces, tie rods, turnbuckles, caps, and other fittings as specified or required for complete installation.

Clamps for attaching hardware shall be tightened. Bottom of gates shall clear the ground at least 3 inches at all points in its swing. Grade the area if necessary to meet this requirement. Provide stops with latches or other approved means for holding the gate open and place to prevent damage to gate or fence by over-swing. Unless otherwise directed, provide stops at the centerline of fence to arrest the swing of a closed gate.

1.6.4 <u>Repair of Protective Coatings:</u>

After completion of the fence and gate installation, satisfactorily repair all damaged protective coatings in accordance with 811.08.

1.7 <u>MEASUREMENT:</u>

1.7.1 <u>New Fence and Gates:</u>

The new fence will be measured by the linear foot between outside of end posts for each continuous run of fence, exclusive of gates. Gates for new fences will be measured per each for single swinging gates and per double gate for double swinging gates.

1.7.2 <u>Rebuilt Fence:</u>

Rebuilt fences will be measured by the linear foot between outside of end posts for each continuous run of fences, including gates.

1.7.3 Intersecting Fences:

Sections of new fences required for connections of existing intersecting fences to new or rebuilt fences will be included in the measurement of the new or rebuilt fences.

1.7.4 Ground Rod:

Ground rod placement will not be measured for payment.

1.8 <u>PAYMENT:</u>

Payment for fences and gates will be made at the contract unit prices, which will include all labor, materials, tools, equipment, and incidentals, including hardware necessary to complete the work. Payment adjustments for Portland cement concrete in accordance with Section 901 will not apply.

Payment will be made under:

Item No.	Pay Item	Pay Unit
705-07-00100	Single Gates for Chain Link Fence	Each
705-06-00300	Chain Link Fence (6 -Foot Height)	Linear Foot

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 10

CONCRETE WALKS AND DRIVES

1.1 <u>DESCRIPTION:</u>

This work consists of furnishing all plant, equipment, labor and materials required for the construction of concrete walks and drives in accordance with the lines and grades shown in the plans or established in the field by the Engineer. All work shall be performed in accordance with the provisions of Section 706 of the Louisiana Standard of the Specifications for Roads and Bridges, 2016 Edition (Purple Book), and latest revisions, except as otherwise noted in these specifications.

1.2 <u>MATERIALS:</u>

Concrete for drives shall be high early strength and attain 4,000 PSI compressive strength in three days. Use polyurethane polymer joint sealers. The joint sealers shall be in accordance with section 1005.02 of the Purple Book.

Concrete for walks and shall be 3,000 psi minimum strength at twenty-eight (28) days, Class M. Joint filler shall be 3/4" redwood.

1.3 <u>CURB RAMPS</u>

Curb ramps shall be constructed with a detectable warning as per the latest ADAAG requirements. Detectable warnings shall consist of truncated domes with a nominal diameter of 0.9 inch (23mm), a nominal height of 0.2 inch (5mm) and a nominal center-to-center spacing of 2.35 inch (60mm) and shall contrast visually with adjoining surfaces.

The material used to provide contrast shall be an integral part of the walking surface.

Detectable warnings on curb ramps shall be created either by the installation of masonry unity pavers or tiles having dimensions and a configuration of the truncated dome as detailed on the construction plans. Stamping the newly placed concrete surface of the ramp with the truncated dome pattern before curing will not be allowed.

Detectable warnings shall cover a 2 foot depth and full width of the main surface of the ramp. Any ramp having flared sides <u>will not</u> be required to have these detectable warnings on the flares.

The limits of the main surface of the ramp on which the detectable warnings are placed shall have a reddish color similar to that of "Terra Cotta" tile. The color must be chosen by the Contractor and approved by Jefferson Parish Department of Engineering before installation.

1.4 MEASUREMENT AND PAYMENT:

Measurement for concrete walk, concrete drive, and curb ramps shall be made by the square yard.

Payment for concrete walk (5" thick), concrete drive (6" thick), and curb ramps will be made at the contract unit price per square yard, which price and payment shall be full compensation for furnishing all

plant, labor, material, equipment and all other incidentals as specified herein and as shown on the drawings.

Payment shall be made under:

Item No.	Pay Item	<u>Pay Unit</u>
706-01-00200	Concrete Walk (5" Thick)	Square Yard
706-02-00200	Concrete Drive (6" Thick)	Square Yard

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 11

CURBS

11.1 DESCRIPTION

This section consists of furnishing and constructing concrete curbs and concrete curb and gutter in conformity with lines, grades, dimensions and typical sections shown on the plans or established in the field by the Engineer. Integral concrete curb shall be placed as per the project plans and shall be replaced to match existing dimensions along driveways and parking areas which are designated to be removed and replaced. Curb transitions will be five (5) feet long.

All roadway curb work shall be performed in accordance with the provisions of Section 707 of the Louisiana Standard of the Specifications for Roads and Bridges, 2016 Edition (Purple Book), and latest revisions, except as otherwise noted in these specifications.

11.2 <u>MATERIALS</u>

Materials for roadway curb shall be in accordance with the requirements of Section 601 and Section 901 of the Purple Book. Concrete shall be high early strength, attaining 4,000 PSI compressive strength in three days. Use polyurethane polymer joint sealers. The joint sealers shall be in accordance with section 1005.02 of the Purple Book.

11.3 <u>SUBMITTALS</u>

The Contractor shall submit the concrete mix design to the Engineer to ensure compliance with these specifications.

11.4 MEASUREMENT AND PAYMENT

Measurement for concrete curb shall be by the linear foot. No additional payment will be made for transitions at turnouts, handicap ramps, driveways, etc., but the length of the transition shall be included for payment under the curb item.

Payment for concrete curb, including dowels and joint material, shall be made at the contract unit price bid per linear foot, which price and payment shall be full compensation for furnishing all plant, labor, material, equipment, and all other incidentals as specified herein and as shown on the drawings.

Payment shall be made under:

Item No.

Pay Item

707-01-00100

Concrete Curb

Pay Unit

Linear Foot

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 12

PLASTIC PAVEMENT MARKINGS

1.1 **DESCRIPTION:**

Furnish and place reflective pavement markings of hot applied thermoplastic or preformed (cold or hot applied) plastic at the locations shown on the plans. Plastic pavement markings include stripes, gore markings, lines, legends, and symbols.

1.2 MATERIALS:

1.2.1 Thermoplastic Markings and Glass Beads:

Thermoplastic marking material shall be a plastic compound reflectorized by internal and external application of glass beads. Comply with 1015.10 and 1015.13. Width, thickness, and color of markings shall be as specified. Black thermoplastic pavement markings shall require skid-resistant filler in lieu of glass beads.

1.2.2 <u>Preformed Plastic Marking Tape:</u>

Comply with 1015.11.

1.2.3 Surface Primer:

Provide a single component surface primer or two component primer sealer for the appropriate application in accordance with 732.03.5. The primer shall form a continuous film that dries rapidly and adheres to the pavement. The primer material shall not discolor or cause any noticeable change in the appearance of the pavement outside of the finished pavement marking. Apply primer in accordance with the manufacturer's recommendation. Do not allow traffic over primed areas before applying thermoplastic.

1.2.4 Glass Beads:

Glass beads for standard (flat) thermoplastic markings shall be in accordance with 1015.13.

1.3 <u>CONSTRUCTION REQUIREMENTS:</u>

1.3.1 Equipment for Standard (Flat) Thermoplastic Marking Material:

Finished markings shall be continuous and uniform in shape, with clear and sharp dimensions. Applicators shall be capable of producing various widths of traffic markings. Applicators shall produce sharply defined lines and provide means for cleanly cutting off stripe ends and applying broken lines. For new 90 mil application, equipment shall consist of an extrusion die or a ribbon gun that simultaneously deposits and shapes lines at a thickness of 90 mils or greater on the pavement surface.

When restriping 90 mils thickness onto existing thermoplastic markings, only a ribbon gun shall be used.

For 40 mils, only a spray application will be allowed.

1.3.2 <u>Weather Limitations:</u>

Do not apply markings within 12 hours after rain, if moisture is present, or when the surface temperature or ambient temperature is below 50°F.

1.3.3 <u>Cleaning of Surfaces:</u>

Clean surfaces, including ramps and gore areas, on which markings are to be applied of materials that may reduce adhesion of the thermoplastic marking materials to the pavement. Clean by blast cleaning or other approved methods, which do not damage the surface. Blast cleaning equipment must have positive cutoff controls. Keep surfaces clean and dry until placement of markings.

1.3.4 <u>Removal of Existing Markings:</u>

1.3.4.1 <u>40 Mil Thickness:</u>

Remove existing thermoplastic markings that are flaking or peeling prior to placement of thermoplastic. Remove flaking or peeling material by mechanical sweeper or wire brushto the satisfaction of the engineer prior to thermoplastic application. After markings are removed, properly dispose of striping debris and residue.

1.3.4.2 <u>90 Mil Thickness:</u>

Before placement of 90 mil or greater thermoplastic on portland cement concrete, remove existing thermoplastic markings regardless of condition. Apply a two part sealer before placement of any temporary paint or permanent thermoplastic. Asphalt sections do not require removal of thermoplastic unless otherwise noted on the plans. After markings are removed, properly dispose of striping debris and residue.

1.3.4.3 Intersection Markings, Legends and Symbols:

Remove existing markings from the pavement surface. Apply 125 mils of new thermoplastic markings.

1.3.4.4 <u>Preformed Plastic Markings (Tape):</u>

Remove existing markings to the pavement surface before applying the preformed plastic markings (tape).

Remove markings by methods that will not damage the pavement or bridge deck. After removing the markings, pick up and dispose of the debris and residue within 24 hours. Removal shall be to such extent that 75 percent of the pavement surface or bridge deck under the markings is exposed. At the end of each day's operations, the engineer may direct that temporary pavement markings complying with Section 713 be used in areas where existing markings have been removed and new markings not placed.

Satisfactorily remove temporary pavement markings prior to resuming thermoplastic marking operations.

Remove all markings made in error or not conforming to the traffic operation in use to the satisfaction of the engineer. Do not obliterate markings by painting with asphalt binder or other material.

1.3.5 Application of Surface Primer:

When applying 90 mil thermoplastic, use a two component primer sealer prior to placement of thermoplastic materials on portland cement concrete surfaces and oxidized asphalt unless otherwise directed by the engineer.

When applying 40 mil thermoplastic, use a single component surface primer on portland cement concrete surfaces unless otherwise directed by the engineer.

When applying preformed thermoplastic, use primer as recommended by the manufacturer. Do not allow traffic over primed areas before applying thermoplastic.

1.3.6 Application of Markings:

Install material in specified widths from 4 inches to 24 inches. Finished lines shall have well defined edges and be free of waviness. Measurements will be taken as an average through any 36-inch section of line. Offset longitudinal lines approximately 2 inches from longitudinal joints. A tolerance of + 1/2 inch and -1/8 inch from the specified width will be allowed, provided the variation is gradual. Lines should be squared off at each end without excessive mist or drip. Transverse variations from the control device up to 1 inch will be allowed provided the variation does not increase or decrease at the rate of more than 1/2 inch in 25 feet. Remove lines not meeting these tolerances and replace at no cost to the Department.

1.3.6.1 <u>Thermoplastic Markings:</u>

For extruded or ribbon gun applied markings, the thickness of material, not including drop-on beads, shall not be less than 90 mils for lane lines, edge lines, black contrast, gore markings, and no less than 125 mils for crosswalks, stop lines, words, and symbol markings.

For spray applications the thickness of material, not including drop-on beads, shall not be less

than 40 mils.

Apply glass beads to the molten surface of completed stripes by either a single drop or a double drop application depending on the thickness of the thermoplastic striping. Glass beads shall be uniformly distributed to ensure that the full width of the line is visible at night. For a 40 mil single drop application, the contractor has discretion on which beads to use in order to meet the retro reflectivity requirements. For the first drop of a 90 mil double drop application, use Type 4 beads at a minimum rate of 211 pounds per mile, based on a 4-inch solid line. The type of bead for the second drop is at the contractor's discretion; however, a smaller bead is typical. Black thermoplastic pavement markings require skid-resistant filler in lieu of glass beads.

1.3.6.2 <u>Preformed Plastic Markings:</u>

Apply preformed plastic markings in accordance with the manufacturer's recommendation.

1.3.7 Field Testing of Roadway Markings:

The contractor and the Department will field test the pavement markings in accordance with 1015.10, 1015.11, and Table 732-1. Failure to meet these requirements will require the contractor to replace the portion of the material shown to be out of specification as directed by the engineer.

Take initial readings within 30 days of application. Initial readings taken after 30 days must meet the same requirements as initial readings. Any late readings submitted after the 30 days will be considered initial readings. Take the initial retro reflectivity readings with a DOTD inspector present. Upon completion of testing, the DOTD inspector will immediately take

possession of a copy of the retro reflectivity readings in either a hard copy $(8^{1}/_{2} \text{ inches x } 11 \text{ inches})$ or electronic format on a USB drive, as noted below. Additionally, provide documentation to the Department that the instrument has been calibrated in accordance with the manufacturer's requirements, including the required annual factory calibration.

The Department reserves the right to inspect the striping and take additional readings six months to one year after the date of installation for the one year warranty.

For each material type, take a different set of readings in accordance with Table 732-1. Provide the data to the Department electronically in Microsoft Excel® (xls) format downloaded from the reflectometer data. Each spreadsheet shall have a header that states all of the following:

- 1. Project number;
- 2. Date material installed;
- 3. Type of material installed;
- 4. Interstate: Specify the route and direction and show the beginning mile-point to ending mile-point, of material installed; and,
- 5. State Route: Specify the route and direction. Also specify X number mile from intersection to X number mile from intersection, of material installed. (*Ex.* Route US 61 South; 0.10 Mile South of Old Hammond Highway to 0.2 Mile South of I-12).

The format for the excel spreadsheet shall be (description, date, and reading). In the description cell, the format shall be Route (*i.e.*, LA, US, or I), Direction (*i.e.*, N, S, E, or W), Mile Point, and Color (W or Y).

Examples: LA 115; W; 23; Y I-10; S; 4; W

The project engineer will input data into the striping input form.

Length of Roadway (Segment)	Minimum Required Readings	
Less than 1 mi	10 evenly spaced readings per line ^{a, c}	
1 mi to	10 evenly spaced readings per line for	
6 mi	each 1-mi segment ^{a, c}	
Greater than	5 evenly spaced readings per line	
6 mi	for each 1-mi segment b, c	
Stop Bars, Cross Walks,	Visual	
Chevrons, Hash Marks, and	nighttime inspection	
Legends and Symbols only		
8-inch Lines	5 readings	
(Parallel to Roadway)	per line ^{b, c,}	
	d	
^a Report average of 10 readings per line	segment.	
^b Report average of 5 readings per line segment.		
^c Additional readings shall be taken if a defect is noticed by the engineer.		
^a Only initial readings are required.		

Table 732-1Field Testing of Plastic Pavement Markings

General Notes:

- 1. Take readings on each line and color separately except as indicated below.
- 2. Adjacent lines applied at the same time are considered one line. Alternate readings between each line.
- 3. Take readings on dry, clean roadways.
- 4. Collect data in the direction lines were applied except for yellow centerlines on two lane roadways. For yellow centerlines on two lane roadways, collect data against the direction lines were applied.
- 5. On broken lines (skip striping), no more than two readings shall be taken per stripe, with readings 20 inches from ends of marking. This does not apply if using a vehicle mounted mobile unit.
- 6. Acceptance will be based on the average of each set of readings for each line segment.
- 7. Failure of the average reading for any segment to meet the specified minimum values will require replacement, corrective action or be subject to payment adjustments

specified in Table 732-2.

- 8. Limits of replacement will be determined by the engineer.
- 9. Aggregate Surface Course projects will not be tested for retroreflectivity, but will be visually inspected at night for acceptance by the engineer.
- 10. No reflectance readings are required for black, red, or blue thermoplastic pavement markings.
- 11. Glass beads shall be uniformly distributed to ensure that the full width of the line is visible at night.

1.3.8 Guarantee:

All work performed in accordance with this section shall be guaranteed in accordance with 104.05.

1.4 <u>MEASUREMENT:</u>

1.4.1 <u>Plastic Pavement Striping:</u>

Plastic striping will be measured by the linear foot or mile, as specified. When not including a bid item for wider markings, the Department will measure the quantity by converting the actual length and width of lines installed to an equivalent length of the normal width line on that section of roadway.

1.4.1.1 Linear Foot:

Measurement will be made by the linear foot of striping, exclusive of gaps.

1.4.1.2 <u>Mile:</u>

Measurement will be made by the mile of single stripe. No deduction will be made for standard broken-line gaps; however, deductions will be made for the length of other gaps or omitted sections.

1.4.2 <u>Plastic Pavement Legends and Symbols:</u>

Plastic legends and symbols will be measured per each legend or symbol. Each symbol includes all letters, lines, bars, or markings necessary to convey the message at each location.

1.4.3 <u>Removal of Existing Markings:</u>

For two-lane highways, markings will be measured by the linear mile of full roadway width including shoulders. For multilane highways and ramps, the markings will be measured by the linear mile of the full roadway width including shoulders for each direction of travel. Removal of pavement markings will include removal of lane lines, edge lines, gore markings, legends, symbols, raised pavement markers, and disposal of debris.

1.5 <u>PAYMENT:</u>

Payment for the completed and accepted quantities of plastic pavement markings and removal of existing markings will be made at the contract unit prices, which include all labor, materials, equipment, and incidentals necessary to complete the work.

Table 732-2

Contract Unit Price ¹ , , %	White (mcd\lux\sq m)		Yellow (mcd\lux\sq m)	
	40 mil	90 mil	40 mil	90 mil
100	250	375	175	250
90	230	360	165	230
80	220	340	155	220
50	200	325	150	200
Restripe	<200	<325	<150	<200

Thermoplastic Payment Adjustment for Minimum Initial Retro reflectivity

The payment requirements are based on the project total average of all test segments (on a route) for initial reading for white and yellow separately in accordance with Table 732-1. Payment adjustments will be based on each identifiable route within the contract.

Payment will be made under:

Pay Item	Pay Unit
Plastic Pavement Striping	
(inch Width)	Linear Foot
Plastic Pavement Striping (Solid Line)	
(inch Width)	Linear Mile
Plastic Pavement Striping (Broken Line)	
(inch Width)	Linear Mile
Plastic Pavement Legends and Symbols	
(Type)	Each
Removal of Existing Markings	Linear Mile
	Pay Item Plastic Pavement Striping (inch Width) Plastic Pavement Striping (Solid Line) (inch Width) Plastic Pavement Striping (Broken Line) (inch Width) Plastic Pavement Legends and Symbols (Type) Removal of Existing Markings

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 13

HYDRO - SEEDING

1.1 <u>DESCRIPTION:</u>

Prepare seed beds and sow grass seed utilizing hydro-seeding equipment and methods in order to establish a turf grass cover to areas designated on the plans or as directed.

1.2 <u>BED PREPARATION:</u>

Prepare seed beds in accordance with 717.04.

1.3 <u>HYDRO-SEEDING GENERAL:</u>

Hydro-seeding consists of mixing and applying seed, commercial fertilizer, lime, polyacrylamide tackifier, and mycorrhizal inoculum with paper or wood fiber and water. Uniformly spread seed and commercial fertilizer over the area at the rates specified in Table 717-1 and Table 718-1. Mix and apply paper or wood fiber with the seed in accordance with the manufacturer's recommendations and as approved by the engineer. Fertilizer and lime may be included in the seeding slurry for application during hydro-seeding operations. All of these materials may be included in a single manufacturer's hydro-seeding system. Use Approved Materials List systems.

Determine the application rate for pellet-inoculated seed by using the seed mass exclusive of inoculant materials.

Mix the materials with water according to the manufacturer's specifications. Mix the materials in a tank with a built-in continuous agitation system with sufficient operating capacity to produce a homogeneous mixture, and with a discharge system that will apply the mixture at a continuous and uniform rate. Provide a tank with a minimum capacity of 962 gallons. The engineer may authorize use of equipment of smaller capacity if it is demonstrated that the equipment is capable of performing all operations satisfactorily.

A dispersing agent may be added to the mixture provided evidence is furnished showing that the additive will not affect germination. Do not use any material considered detrimental, as determined by the engineer.

Do not apply any mixture containing polyacrylamide tackifier during rainy weather, or when soil temperatures are below 41°F, or if the wind speed is above 20 miles per hour. Do not permit pedestrian traffic or equipment to enter areas where hydro-seeding has been applied.

Prior to planting, the engineer will contact the Department's Roadside Development Coordinator to select the varieties of seed to be used.

1.4 <u>MEASUREMENT:</u>

Quantities for hydro-seeding will be measured by the acre.

1.5 <u>PAYMENT:</u>

Payment for hydro-seeding will be made at the contract unit price per acre and shall include the seed, mulch, tackifier, lime, fertilizer, water and bed preparation as a system and all labor and equipment necessary to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
739-01-00100	Hydro-Seeding	Acre

END OF SECTION

SECTION 055000

METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Steel framing and supports for overhead doors.
- 2. Steel framing and supports for mechanical and electrical equipment.
- 3. Steel framing and supports for applications where framing and supports are not specified in other Sections, including trash enclosure gate frames.
- 4. Steel shapes for supporting elevator door sills.
- 5. Miscellaneous steel trim including steel angle corner guards, steel edgings and decorative steel plate.
- 6. Bollards.
- 7. Shelf angles.
- 8. Metal ladders.
- 9. Metal downspout boots.
- 10. Abrasive metal nosings.
- B. Products furnished, but not installed, under this Section include the following:
 - 1. Loose steel lintels.
 - 2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
 - 3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.
- C. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
 - 2. Section 042100 "Masonry Veneer" for installing loose lintels, anchor bolts, and other items built into unit masonry.
 - 3. Section 051200 "Structural Steel Framing."

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
 - 1. Steel framing and supports for overhead doors.
 - 2. Steel framing and supports for mechanical and electrical equipment.
 - 3. Steel framing and supports for applications where framing and supports are not specified in other Sections, including trash enclosure gate frames.
 - 4. Miscellaneous steel trim including steel angle corner guards, steel edgings, steel pipe for fences and loading-dock edge angles.
 - 5. Shelf angles.
 - 6. Metal ladders.
 - 7. Metal downspout boots.
 - 8. Loose steel lintels.

1.5 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- 1.6 QUALITY ASSURANCE
 - A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design ladders.

B. Structural Performance of Aluminum Ladders: Ladders shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- D. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.
- E. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
- F. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.
- G. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.
- H. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.
- I. Aluminum Castings: ASTM B26/B26M, Alloy 443.0-F.

2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- B. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts.

2.4 MISCELLANEOUS MATERIALS

- A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Galvanize miscellaneous framing and supports where exposed to weather.
- D. Prime miscellaneous framing and supports.

2.7 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
 - 1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
- C. Galvanize miscellaneous steel trim exposed to weather.

2.8 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
- B. Galvanize and prime plates.

2.9 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.
- C. Galvanize loose steel lintels located in exterior walls.

2.10 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.11 METAL BOLLARDS

A. Fabricate metal bollards from galvanized Schedule 40 steel pipe 1/4-inchwall-thickness rectangular steel tubing.

2.12 SHELF ANGLES

- A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch bolts, spaced not more than 6 inches from ends and 24 inches o.c., unless otherwise indicated.
 - 1. Provide mitered and welded units at corners.
 - 2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inches larger than expansion or control joint.
- B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.
- C. Galvanize shelf angles located in exterior walls.
- D. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-inplace concrete.

2.13 METAL LADDERS

- A. General:
 - 1. Comply with ANSI A14.3.
 - 2. Basis-of-Design: Subject to compliance with requirements, provide Cotterman; Series F or comparable.
 - 3. Color: Gray.

2.14 METAL DOWNSPOUT BOOTS

- A. Provide downspout boots made from cast iron in heights indicated with inlets of size and shape to suit downspouts. Provide units with flanges and holes for countersunk anchor bolts.
 1. Outlet: Vertical, to discharge into pipe.
- B. Prime cast-iron downspout boots with zinc-rich primer.

2.15 ABRASIVE METAL NOSINGS

- A. Extruded Units: Cast iron, with an integral-abrasive, as-cast finish consisting of aluminum oxide, silicon carbide, or a combination of both. Fabricate units in lengths necessary to accurately fit openings or conditions.
 - 1. Provide ribbed units, with abrasive filler strips projecting 1/16 inch above aluminum extrusion.
 - 2. Nosings:
 - a. Square-back units, 3 inches wide, for casting into concrete steps.

- B. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.
- C. Drill for mechanical anchors and countersink. Locate holes not more than 4 inches from ends and not more than 12 inches o.c., evenly spaced between ends, unless otherwise indicated. Provide closer spacing if recommended by manufacturer.
- D. Apply clear lacquer to concealed surfaces of extruded units.
- 2.16 FINISHES, GENERAL
 - A. Finish metal fabrications after assembly.
 - B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.17 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
 - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.
- C. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
- D. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
 - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Other Items: SSPC-SP 3, "Power Tool Cleaning."
- E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.

Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Anchor supports for overhead doors securely to, and rigidly brace from, building structure.

3.3 INSTALLING METAL BOLLARDS

- A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.
- B. Anchor bollards in place with concrete footings. Center and align bollards in holes as indicated. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
- C. Fill bollards solidly with concrete, mounding top surface to shed water.

3.4 INSTALLATION OF NOSINGS, TREADS, AND THRESHOLDS

- A. Center nosings on tread widths unless otherwise indicated.
- B. For nosings embedded in concrete steps or curbs, align nosings flush with riser faces and level with tread surfaces.
- C. Seal thresholds exposed to exterior with elastomeric sealant complying with Section 079200 "Joint Sealants" to provide a watertight installation.
3.5 REPAIRS

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099000 "Painting and Coating."
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 055000

SECTION 079200

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Silicone joint sealants.
- 2. Urethane joint sealants.
- 3. Mildew-resistant joint sealants.
- 4. Butyl joint sealants.
- 5. Latex joint sealants.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

- D. Field-Adhesion-Test Reports: For each sealant application tested.
- E. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
 - 2. Conduct field tests for each kind of sealant and joint substrate.
 - 3. Notify Architect seven days in advance of dates and times when test joints will be erected.
 - 4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
 - 6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.8 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by jointsealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 - 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 - 2. Disintegration of joint substrates from causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

- 2.1 JOINT SEALANTS, GENERAL
 - A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- 2.2 SILICONE JOINT SEALANTS
 - A. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. Pecora Corporation; Pecora 864NST.
 - b. The Dow Chemical Company; Dow Corning® 795 Silicone Building Sealant.
 - c. Tremco Incorporated; Spectrem 2.
 - B. Silicone, Nonstaining, S, NS, 100/50, T, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Uses T and NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. The Dow Chemical Company; Dow Corning® 790 Silicone Building Sealant.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Corporation; MasterSeal CR 195 (Pre-2014: Sonolastic Ultra).
 - b. Pecora Corporation; Dynatrol I-XL.
 - c. Tremco Incorporated; Dymonic.

2.4 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. Pecora Corporation; Pecora 860.
 - b. The Dow Chemical Company; DOW CORNING® 786 SILICONE SEALANT -.
 - c. Tremco Incorporated; Tremsil 200.

2.5 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. Pecora Corporation; BC-158.
 - b. Tremco Incorporated; Tremco Butyl Sealant.

2.6 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. Pecora Corporation; AC-20.
 - b. Tremco Incorporated; Tremflex 834.

2.7 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 - 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
 - b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
 - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 3. Inspect tested joints and report on the following:

- a. Whether sealants filled joint cavities and are free of voids.
- b. Whether sealant dimensions and configurations comply with specified requirements.
- c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
- 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
- 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces<JS-1>
 - 1. Joint Locations:
 - a. Joints in dimension stone cladding.
 - b. Joints between different materials listed above.
 - c. Perimeter joints between materials listed above and frames of doors windows and louvers.
 - d. Control and expansion joints in ceilings and other overhead surfaces.
 - e. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces <JS-2>.

- 1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Tile control and expansion joints.
 - c. Other joints as indicated on Drawings.
- 2. Joint Sealant: Urethane, S, NS, 25, NT.
- 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement <JS-3>.
 - 1. Joint Locations:
 - a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.
 - c. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Acrylic latex.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces <JS-4>.
 - 1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- E. Joint-Sealant Application: Concealed mastics <JS-5>.
 - 1. Joint Locations:
 - a. Aluminum thresholds.
 - b. Sill plates.
 - c. Metal flashing seams.
 - d. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Butyl-rubber based.

END OF SECTION 079200

SECTION 099113

EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following exterior substrates:
 - 1. Galvanized metal.
- B. Related Requirements:
 - 1. Section 099123 "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Label each Sample for location and application area.
- C. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.5 QUALITY ASSURANCE

- A. MPI Standards: Comply with MPI standards indicated and provide elastomeric coatings listed in the "MPI Approved Products List."
 - 1. Preparation and Workmanship: Comply with requirements in the "MPI Architectural Painting Specification Manual" for products and coating systems indicated.
- B. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

- 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. Include multiple color samples for each type of surface for final color selection.
 - b. Other Items: Architect will designate items or areas required.
- 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
- 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following unless otherwise noted:
 - 1. Benjamin Moore & Co.
 - 2. PPG Architectural.
 - 3. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. Colors: Match Architect's samples.

2.3 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 - 2. Testing agency will perform tests for compliance with product requirements.
 - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Paint entire exposed surface of wood window frames and sashes.
 - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

- A. Galvanized Substrates including, but not limited to steel lintels and hollow metal doors and frames.
 - 1. Alkyd System:
 - a. Prime Coat: Primer, as recommended by manufacturer of topcoat.
 - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
 - c. Topcoat: Alkyd, exterior, quick dry semi-gloss (Gloss Level 5) MPI #81.
- B. Galvanized Substrates including, but not limited to steel bollards and downspout boots.
 - 1. Pigmented Polyurethane over Self-Priming Epoxy System:
 - a. Prime Coat: Epoxy, high build, self-priming, MPI #120.
 - b. Intermediate Coat: Polyurethane, two component, pigmented, matching topcoat.
 - c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

END OF SECTION 099113

TECHNICAL SPECIFICATIONS

SECTION 133419

METAL BUILDING SYSTEMS (GUARD SHED & OIL RECEIVING BUILDING)

1.1 **DESCRIPTION:**

Purchase and Installation of a metal guard shed and metal oil receiving building.

1.2 <u>MATERIALS:</u>

Per Manufacturer's Requirements

1.3 <u>GENERAL CONSTRUCTION REQUIREMENTS:</u>

Guard Shed: Morgan Building & Spa Manufacturing Corporation Model # 08086GTJHUSD Serial # H205148 or Equal. Bidder's are encouraged to visit the Marrero Drop Off Site 6440 Lapalco Blvd. Marrero, La. 70072 or the Metairie Drop Off Site 400 David Drive Metairie, La. 70003.



<u>Oil Receiving Building</u>: Rigid Global Buildings and reference the Marrero Drop Off Site 6440 Lapalco Blvd. Marrero, La. 70072 or the Metairie Drop Off Site 400 David Drive Metairie, La. 70003. Both buildings are the same approximately 18'x 22'. Building must meet current International Building Code 2021. Building manufacturer designated design. Manufacturer required to provide anchor bolt reactions at foundation for confirmation by City of Gretna structural. Other building manufacturers must meet this same designated design criteria. Bidder's are encouraged to visit the Marrero Drop Off Site 6440 Lapalco Blvd. Marrero, La. 70072 or the Metairie Drop Off Site 400 David Drive Metairie, La. 70003.



1.5 <u>MEASUREMENT:</u>

Measurement: Measurement for payment for Guard Shack & Oil Receiving Building will be made on a per each basis.

1.6 <u>PAYMENT:</u>

Payment: Payment for these items will be made at the per each and will constitute full compensation for the Guard Shack & Oil Receiving Building. Payment will be made at 100% of the bid amount on the estimate after this work is accomplished. Payment will be made under:

Item No.	Pay Item
TS-2	Guard Shed
TS-6	Oil Receiving Building

Pay Unit Each Each

END OF SECTION

SECTION 16010

BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. This section is an extension of the General Conditions and certain items of a common or administrative nature that pertain to all electrical work.
- B. The work of this section consists of furnishing materials, equipment, constant competent supervision, special tools, test equipment, technicians, and labor necessary for installation of a complete working electrical system as indicated herein and on the Drawings.
- C. The work shall include but not necessarily be limited to the following:
 - 1. Electrical Panel
 - 2. Temporary power provided by contractor to critical loads for the duration of the power outage.
 - 3. Lighting fixture and installation.
 - 4. Power distribution feeders and branch circuits.
 - 5. Raceways and fittings.
 - 6. Grounding.

1.02 QUALITY ASSURANCE

- A. The electrical installation shall conform to the requirements of the 2014 edition of the National Electrical Code (NEC). Notify Engineer of conflicts before performance.
- B. Electrical material shall be built and tested in accordance with the applicable standards of the National Electrical Manufacturers' Association (NEMA), the American National Standards Institute (ANSI) the American Society for Testing and Materials (ASTM), and the Institute of Electrical and Electronic Engineers (IEEE)
- C. Electrical materials shall be new and unused and shall be listed and labeled for the service intended by Underwriters' Laboratories, Inc., where such labeling service is available.
- D. Applicable sections of the following codes and standards shall also be followed:
 - 1. NFPA National Fire Protection Association including NFPA-101, Life Safety Code.

- 2. OSHA Code of Federal Regulations (for construction practices).
- 3. International Building Code (latest edition) as adopted by the State of Louisiana..
- 4. Applicable state and local codes/ordinances.
- 5. CBM Certified Ballast Manufacturer
- 6. IPCEA Insulated Power Cable Engineers' Association
- 7. FM Factory Mutual
- 8. ETL Electrical Testing Laboratories
- 9. IES Illuminating Engineering Society
- 10. NECA National Electrical Contractors Association
- E. Include all items of labor and materials required to comply with the above referenced codes and standards. Where quantities, sizes, or other requirements indicated on Drawings or herein specified are in excess of the requirements of the standards and codes, the Specifications or Drawings shall govern.
- 1.03 REGULATORY REQUIREMENTS
- A. Permits: Obtain and pay for all necessary permits, inspections, connection charges, fees, insurance, bond, licenses, and comply with all governing laws, ordinances, rules and regulations including those of the National Fire Protection Association and all municipal, state or other authority having jurisdiction over the work.
- B. Certificates of Inspection: Upon completion and before the date of substantial completion of each designated Phase, furnish a certificate of inspection issued by the proper authorities to the effect that the installation is in full conformity with all local and state requirements.
- 1.04 COORDINATION
 - A. Lay out the work and be responsible for its correctness. Take such measurements as may be necessary to assure approved fitting and proper installation of work, and all other work depending thereon.
 - B. Arrange work in a neat, well organized manner with exposed conduit and similar services running parallel with primary lines of the building construction, high as possible with a minimum of 8'-0" overhead clearance or as directed by the Engineer.
 - C. Perform all work in the best and most substantial manner by workmen skilled in the work to be done. Provide adequate supervision at all times.

- D. Cooperate with other contractors to avoid complications between the installation of the various items of equipment. Advise other trades of openings required in their work for the subsequent move-in of large units of electrical equipment.
- E. Locate operating and control equipment properly to provide easy access and arrange entire electrical work with adequate access for operation and maintenance.
- F. Where the method of installation is not certain, ask for details. Lack of details, not requested, will not be an excuse for improper installation, and any such work must be corrected at the contractor's expense.
- G. Coordination Drawings: For locations where several elements of electrical or combined mechanical and electrical work must be sequenced and positioned with precision in order to fit into the available space, prepare coordination drawings showing the actual physical dimensions (at accurate scale, minimum 1/4") required for the installation. <u>Prepare and submit coordination drawings prior to purchase-fabrication-installation of any of the elements involved in the coordination.</u>
- H. All Bidders shall be responsible to ensure that equipment selected, panelboards, etc., fit in spaces selected, along with NEC compliance. If standard equipment does not fit, Contractor shall be required to utilize custom equipment as required.

1.05 DRAWINGS AND SPECIFICATIONS

- A. Contract Documents (Drawings and Specifications) are intended to convey the scope of work and indicate general arrangements of equipment, fixtures and piping, and approximate sizes and locations of equipment and outlets. Follow these documents in laying out the work, check all Drawings to become familiar with all conditions affecting the work, and verify spaces in which the work will be installed.
- B. The contract documents are diagrammatic in showing certain but not all, physical relationships which must be established within the electrical work. Its interface with other work is the exclusive responsibility of the Contractor. The Drawings show approximate locations only of selected feeders, branch circuits, etc., except where specific routing or dimensions are indicated. The Engineer reserves the right to make reasonable changes in locations indicated before roughing-in without additional cost to the Owner.
- C. Because of the small scale of the Drawings, it is not possible to indicate all of the offsets, fittings, and accessories required. Contractor shall investigate the structural and finish conditions affecting electrical work and shall arrange such work accordingly, furnishing fittings, bends, junction boxes, pull boxes, access panels, and accessories required to meet such conditions.
- D. These Specifications, together with the accompanying Drawings, contemplate apparatus fully erected, and in satisfactory operating condition with the Contractor furnishing and installing everything that may be necessary to complete the job.
- 1.06 SUBMITTALS

- A. Refer to Section 01340 for Submittal Requirements. The following paragraphs are an extension of Section 01340.
- B. Review of shop drawings shall in no way modify the contract or relieve the Contractor from compliance with the contract.
- C. Names of manufacturers or catalog numbers are listed in the Specification in order to establish a standard for the type, general design and quality of the product required. Where "or equal" is indicated, other products similar in design and of equal quality and complying with the Drawings and Specifications will be considered for acceptance. See Section 01340 Product Requirements.
- D. Any item not specified herein, but submitted as a substitute for the specified item, shall be submitted in accordance with Section 01340 Product Requirements and accompanied by manufacturer's documentation stating/illustrating the following applicable information in addition to the specific information requested in other sections:
 - 1. Dimensions/weight.
 - 2. Electrical ratings-voltage, amperage, short circuit capability, etc.
 - 3. Construction gauge of steel/aluminum, paint finish / application method, color, NEMA type, etc.
 - 4. Warranty.
 - 5. Local manufacturer's representative or nearest stocking distributor.
 - 6. Length of time the product has been available to the public.
 - 7. Any deviations.
- E. Shop Drawings:
 - 1. Listed below are shop drawings required for transmittal. Refer to Phasing Plan for scheduling of submittal. No time delays will be allowed for failure to be so informed.
 - a. Panelboards
 - b. Disconnect Switches
 - c. Raceways, Fitting, Including Expansion Fittings
 - d. Connectors
 - e. Circuit Breakers
 - f. Conductors
 - g. Conduit Layout Drawings w/ Dimensions
 - h. Lighting Fixtures
 - 2. Further descriptions or information required with shop drawings shall be included with the description of materials specified herein as follows:

- a. Grounding Products: Materials and ground conductor sizes.
- b. Housekeeping Pads: Include location and dimensions of housekeeping pads, including blockouts and anchor bolts.
- c. In preparing shop drawings, establish lines and levels for the work specified and check the drawings to avoid interference with structural features, and the work of other trades. Immediately call to the attention of the Engineer in writing any interferences for clarification.
- 3. Corrections or comments made on shop Drawings during the review do not relieve the Contractor from compliance with requirements of the contract documents. Shop Drawings will be checked for general conformance with the design concept of the project and general compliance with information given in the contract documents. Review of the shop Drawings shall not relieve the Contractor from responsibility for confirming and correlating all quantities and dimensions, coordinating work with that of all other trades, and performing work in a safe and satisfactory manner. Review of shop Drawings shall not permit any deviation from Drawings and Specifications. Shop Drawings must be accompanied by signed statement from contractor, stating that he has reviewed the submittal and checked it for compliance.
- 4. Contractor shall provide products as specified if submittals for review of materials are not received within thirty (30) days after award of the Contract.
- 1.07 PROTECTION OF APPARATUS
- A. At all times the Contractor shall take precautions necessary to protect his apparatus from damage. Failure on the part of the Contractor to comply with the above to the Engineer's satisfaction shall be sufficient cause for the rejection of the particular piece of apparatus in question.
- 1.08 PROJECT/SITE CONDITIONS
 - A. Visit the site before bidding to become familiar with conditions under which the work will be performed.
 - B. No additional compensation will be allowed for failure to be so informed.
- 1.09 CUTTING AND PATCHING
 - A. Do all cutting, fitting, and all other work that may be required to make the several parts come together and fit. Cutting for equipment entry shall be under other Divisions. Do not endanger any work by cutting, digging, or otherwise, and do not cut or alter the work of any other items of work, except with the consent of the Engineer. Cutting shall be done under the supervision of the Project Superintendent. Patching, including patching of bonded roofing, shall be performed under General Conditions.
 - B. Provide, properly located and sized, all required chases, shafts, openings, furred spaces, etc., required for the work or to conceal any of the work, in any part of the structure.

C. It is the responsibility of this Specification to coordinate with other responsible Specifications for required cutting and patching.

1.10 INSERTS AND THIMBLES

- A. Set in place as form work progresses, all necessary inserts and thimbles as may be required. Cutting of beams or of concrete floors or walls will not be permitted.
- B. All thimbles set in concrete shall be of standard pipe, plain ends, and shall be of proper size to allow for freedom around piping passing through thimble.
- C. Thimbles set in the walls, partitions or in chases where structural requirements will allow, shall be of rigid galvanized steel conduit.
- D. Inserts shall be nailed to form work and shall be of size to allow for installation of hangers for the particular pipe served.

1.11 RECORD DRAWINGS

- A. Prepare Record Drawings in accordance with the requirements in Division 1.
- B. In addition to the requirements specified in Division 1, indicate the following installed conditions:
 - 1. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 - 2. Approved substitutions, Contract Modifications, and actual equipment and materials installed.
 - 3. Contract Modification, actual equipment and materials installed.
 - 4. Complete As-Built Drawings of Division 16 work shown and not shown on the contract drawings in the new and existing facilities.

C. Equipment Manuals:

- Before the date of substantial completion, Contractor shall furnish to the Engineer three (3) bound sets of descriptive, dimensional and parts data on all major items of electrical equipment and material including those items listed above under "Shop Drawings:".
- 2. Each set of this literature shall be bound in a permanent type hard cover ring binder and shall be suitably indexed.
- 3. This submittal shall be accompanied by final Electrical Inspection Certificate from the authority having jurisdiction.

1.12 WARRANTY/GUARANTEE

16010-6

- A. Except where longer periods of warranty are specified, guarantee all labor and materials for a period of twelve (12) months from the date of substantial completion of the particular phase of the work. Repair all defective materials and work; replace with new materials and/or equipment, any material and/or equipment failing to give satisfactory service.
- B. During the period of guarantee, promptly correct any defects in equipment, materials or workmanship without cost to the Owner.
- C. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Any deficiencies in equipment specified shall be promptly corrected.
- D. Contractor's warranty shall include an inspection of the system one (1) week before the end of the one (1) year warranty period. Replace or repair any items found to be defective at this time.
- 1.13 TESTS AND BALANCING
 - A. At such times as the Engineer / Owner directs, conduct operating tests to demonstrate that the electrical systems are installed and will operate properly and in accordance with the requirements of this Specification. Tests shall be performed in the presence of the Owner's representative. Furnish instruments and personnel required for such tests.
 - B. Perform tests to show Engineer / Owner that the power and lighting loads are equally divided among phases of feeders serving each piece of equipment and each panelboard, and record the results of such tests and turn over to the Engineer.
 - C. Any work and materials tested and found varying from the requirements of the Drawings and Specifications shall be replaced without additional cost to the Owner.
 - D. This section does not relieve the Contractor from testing equipment installed under this Division but not listed in this section. Contractor is required to test all equipment, feeders, etc., installed under this Division.

PART 2 PRODUCTS

- 2.01 GENERAL
 - A. Refer to DIVISION 1 sections for general requirements on products, materials and equipment. The provisions outlined below expand or modify the requirements as applicable to electrical work. Refer to other DIVISION 16 sections for additional requirements.
 - B. Materials and equipment shall conform in all respects to the requirements set forth in these Specifications and the accompanying Drawings.
 - C. Provide products which are compatible with other products of the electrical work, and with other work requiring interface with the electrical work, including electrical connections and control devices. For exposed electrical work, coordinate colors and finishes with the Engineer and as referenced elsewhere in the documents. Determine in

advance of purchase that equipment and materials proposed for installation will fit into the confines indicated, leaving adequate clearance as required by applicable codes, and for adjustment, repair, or replacement.

2.02 MANUFACTURERS' NAMEPLATES

Each major component of the equipment shall have the manufacturer's name, address, model number, and rating on a plate securely affixed in a conspicuous place. The nameplate of a distributing agent will not be acceptable. NEMA Code ratings, or other data which are die-stamped into the surface of the equipment shall be stamped in an easily visible location.

PART 3 EXECUTION

- 3.01 GENERAL
 - A. Visit the building / project site before bidding to determine existing conditions and assume all responsibility and bear all expenses in allowing for these conditions in the bid.
 - B. Obtain all necessary permits, pay all legal fees and charges, pay all utility charges, and comply with all state and local building codes and safety laws, ordinances and regulations relating to the building and public health and safety. Refer to Division 1 for utility construction demolition, installation, and service connection charge allowances.
 - C. No work shall be concealed until approved by the local inspector and all local regulations are adhered to.
 - D. Upon completion, a certificate of approval from the appropriate regulatory agency shall be furnished to the Engineer.
 - E. Cooperate with other trades in installing work in order that there will be no conflict of space required by conduit, piping, ducts, outlets, etc. If an interference develops, it shall be referred to the Engineer for a decision as to which equipment, piping, conduit, etc, is to be relocated. Such relocations shall be made without additional cost to the Owner.
 - F. Study all sections of the Specifications and Drawings. Notify Engineer of conflict between Drawings and Specifications before bidding. The Engineer's decision will govern.
 - G. Electrical Drawings are diagrammatic except where dimensioned. Do not scale. Follow manufacturer's certified shop drawings for accuracy. Consult Engineer in cases of doubt or conflict. Unless noted as fixed, dimensions are based on the product of one (1) manufacturer. Verify dimensions with certified shop Drawings of the materials actually approved and purchased.
- 3.02 TEMPORARY WIRING, LIGHTING AND POWER AT THE SITE
 - A. Furnish and install provisions for temporary electrical service and construction light and power during the construction period conforming to the contract documents, all local code

and State labor law requirements. Temporary light and power provisions to be included shall be as hereinafter specified and as required in Section 01510 - Temporary Utilities.

- A. Arrange for temporary service with the Utility Company.
- B. Furnish, install, and maintain all temporary service equipment as required until permanent service is installed switch-over of temporary systems on the permanent service when latter is ready for same.
- C. Furnish, install, maintain, and switch on and off on all regular work days a complete temporary light system, for the building while under construction.
- D. Provide any and/or all relocations of temporary electric facilities as necessary to clear the permanent installations of all trades.
- 3.03 WIRING FOR EQUIPMENT BY OTHERS
 - A. Electrical service for all equipment furnished under this Specification and/or indicated on the Drawings shall be roughed-in and connected under this Section. It is the responsibility of the Contractor to obtain correct roughing-in dimensions and requirements for this equipment.
 - B. Raceways, outlets, backboards, cabinets, grounding connections, handholes, underground distribution system, and other roughing-in indicated shall be provided as work of this division for telephone system, lightning protection system.
- 3.04 MECHANICAL EQUIPMENT
 - A. All power wiring associated with Division 15, Mechanical shall be done as work of Division 16, Electrical. All power disconnect switches and single speed manual starting switches shall be furnished and installed under Division 16. Multi-speed manual starters, magnetic starters shall be furnished and installed under Division 16.
 - B. All power wiring conduits shall be furnished and installed under Division 16. All control wiring and conduits associated with the lighting controls to be provided and installed by Division 16.

3.05 WORKMANSHIP

- A. Install all materials and electrical components of the work in accordance with instructions of manufacturer following the best modern construction practices and conforming with the Contract Documents. Workmanship shall be first class, in both function and appearance, whether finally concealed or exposed and shall be performed by experienced workmen skilled in the type of work. As practicable, the lines of all components of the system shall be perpendicular or parallel. In general, workmanship shall conform to guidelines set forth in N.E.C.A. manuals.
- 3.06 CLEANING UP

- A. Remove once per week and at the completion of the work all empty cartons, scrap wire, raceways, rubbish, etc., accumulated on the project as a result of work performed.
- B. Remove all marks, stains, fingerprints, bugs, dust and other foreign material from all electrical components. Refinish damaged surfaces and restore original finish to the satisfaction of the Engineer.
- 3.07 SAFETY
- A. It shall be the Contractor's responsibility to do all things necessary in the pursuit of the installation or testing to provide safe conditions in which to work.

3.08 MOUNTING HEIGHTS

A. Unless otherwise noted on the Drawings or required by the Engineer, the following mounting heights shall apply:

Panelboards

B. Upon approval of the Engineer mounting heights may be adjusted, Except where mounting heights are indicated by code.

6'-6" to top

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Basic Electrical Requirements shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.PAY ITEMPAY UNIT16000Electrical Power Supply, Gear & LightingLump Sum

END OF SECTION

BASIC ELECTRICAL REQUIREMENTS

16010-10

SECTION 16051

ELECTRICAL RELATED WORK

PART 1 GENERAL

1.01 SUMMARY

- A. Extent of electrical related work required by this section is indicated on Drawings and/or specified in other Division 16 sections.
- B. Types of electrical related work specified in this section include the following:
 - 1. Access to Electrical Work:
 - 2. Excavating, Trenching and Backfill for Electrical Work.
 - 3. Foundations and Supports.
 - 4. Cutting and patching.
 - 5. Concrete for Electrical Work:
 - a. Electrical equipment foundations and mounting pads.
 - b. Rough grouting in and around electrical work.
 - c. Patching concrete which has been cut to accommodate electrical work.

1.02 PROJECT/SITE CONDITIONS

- A. Protect property from damages which might result from excavating and backfilling.
- B. Protect persons from injury at excavations by barricades, warnings and illumination.
- C. Coordinate excavations with weather conditions, to minimize possibility of washouts, settlements and other damages and hazards.

PART 2 PRODUCTS

2.01 ACCESS TO ELECTRICAL WORK

A. Where switches, control devices, pull boxes and similar elements of electrical work are located within or behind wall, ceiling or floor construction of finishes, or below grade, provide removable access doors of types and sizes needed for access requirements.

16051-1

2.02 EXCAVATING FOR ELECTRICAL WORK

- A. Backfill Materials: Refer to Division 2 Section, Earthwork.
- B. MATERIALS OF CONCRETE WORK: Refer to Division 3 Section, Concrete.

PART 3 EXECUTION

3.01 EXCAVATION, TRENCHING AND BACKFILLING

- A. Perform all excavation of every description and of whatever substances encountered to the depths indicated on the Drawings or as otherwise specified. During excavation, material suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or not suitable for backfill shall be removed and wasted or removed from jobsite as indicated on the Drawings or as directed by Engineer at no additional cost to Owner.
- B. Sheeting and shoring shall be done as necessary for the protection of the work and for the safety of personnel. Provide necessary pumping and/or well pointing at all times to maintain a dry working condition in all trenches. Unless otherwise indicated, excavations shall be by open cut except that short sections of a trench may be tunneled if, in the opinion of the Engineer the conduit can be safely and properly installed and backfill can be properly tamped in such tunneled sections.
- C. No excavation or trenches shall be cut near or under footings without first consulting Engineer.
- D. Bottom of trench shall be shaped to give substantially uniform circumferential support to lower third of each pipe. Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with adjoining pipe and to prevent sudden offset to flow line. As work progresses, interior of pipe shall be cleared of dirt and superfluous materials of every description.
- E. Wherever wet or otherwise unstable soil that is incapable of properly supporting the pipe, as determined by the Engineer is encountered in the bottom of the trench, such soil shall be removed to the depth required and the trench backfilled to the proper grade with coarse sand, fine gravel, or other suitable material, and approved by the Engineer.
- F. Trenches for utilities shall be of a depth that will provide the following minimum depth of cover from existing grade or from indicated finish grade, whichever is lower, unless otherwise specifically shown:
 - 1. 30-Inch Minimum Cover Electrical Conduits/Cables over 600 volts

- 2. 24-Inch Maximum (See NEC 300-5) Electrical Cables/Conduits Under 600 volts.
- 3. 36-Inch Minimum for Utility Service Cables/Conduits.
- G. Backfill shall be installed in layers 6" deep, adequately wetted and tamped using materials as noted above. The surface shall be graded to a reasonable uniformity and the mounding over trenches left in a uniform and neat condition as approved by the Engineer. Refer to Division 2 for compaction densities.
- H. Service lateral that are not encased in concrete and that are buried 18 in. or more below grade shall have their location identified by a warning ribbon that is placed in the trench at least 12 in. above the underground installation.
- I. Restore all hard finished surfaces such as roadways, sidewalks, grass, shrubbery, etc., removed for installation of utilities (and not shown on Drawings or specified to be reworked under other sections of the work) to their original condition using the same type as original materials. Patching concrete roadways shall require dowelling to tie-in matching reinforcement rods or highway mesh to existing roadway. Dowelling shall occur every 18 inches on both sides of the trench. Restore to near original condition acceptable to Engineer.
- J. Carefully plan all work to avoid existing utilities and other interferences. The Drawings do not indicate all existing underground utilities. Existing utility lines to be retained that are shown on the Drawings or the locations of which are made known to the Contractor prior to excavation, as well as all utility lines uncovered during excavation operations, shall be protected from damage during excavation and backfilling and, if damaged, shall be repaired by Contractor at his expense. Prior to doing any excavation with power tools, carefully investigate and locate any exiting conduit, pipes, and other lines.
- 3.02 FOUNDATIONS AND SUPPORTS
 - A. Provide concrete pedestals, bases, pads, curbs, anchor blocks, anchor bolts, slab inserts, hangers channels, cradles, saddles, etc. for installation of floor mounted equipment such as apparatus shown on the Drawings and specified in the various sections of Specification Division 16.
 - B. Concrete pads for floor mounted electrical equipment shall be 4 inches high, unless otherwise indicated, poured integral with the floor slab wherever practical. Wherever integral slab poured pads are not practicable, construct 4 inch high housekeeping pads, reinforced with No. 3 steel wire mesh 6 X 6 inches, fastened to structural slabs with 1/2 inch diameter bolts embedded in structural slabs with expansion bolts at all corners (inset 3 inches) and no further apart than 18 inches. Score structural slab thoroughly to assure concrete bonding between structural slab and housekeeping pad. Construct in full accordance with "concrete" specifications for 2500 psi minimum compressive strength.

Finish tops of housekeeping pads smooth and level within 1 percent of span. Pads shall be extended at least 4" (10 cm) beyond the equipment outline on all four sides.

3.03 **CUTTING AND PATCHING**

Comply with the requirements of DIVISION 1 for cutting and patching of other A. work to accommodate the installation of electrical work. Except as individually authorized by the Engineer, cutting and patching of electrical work to accommodate the installation of other work is not permitted. Coordinate all cutting and patching of walls and ceiling with Division 1, to install and conceal new raceway in existing finished areas.

3.04 PAINTING

A. Factory painted equipment shall have finish restored to Manufacturer's finish if scratched or damaged before acceptance or use by Owner.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- The contract price per lump sum for Electrical Related Work shall include furnishing all A. labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

PAYMENT 4.02

- Payment shall be paid based on percent of work completed/installed according to the A. schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

END OF SECTION

ELECTRICAL RELATED WORK

SECTION 16110

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Metal conduits and fittings.
 - 2. Nonmetal conduits and fittings.
 - 3. Boxes, enclosures, and cabinets.

1.02 ACTION SUBMITTALS

- A. Product Data: For surface raceways, fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.03 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
 - 1. Structural members in paths of conduit groups with common supports.
 - 2. Existing U/G utilities.
- B. Seismic Qualification Certificates: For enclosures, cabinets, and their mounting provisions, including those for internal components, from manufacturer.

PART 2 PRODUCTS

2.01 METAL CONDUITS, AND FITTINGS

- A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. GRC: Comply with ANSI C80.1 and UL 6.
- C. ARC: Comply with ANSI C80.5 and UL 6A.

- D. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- E. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
 - 2. Expansion Fittings (8" travel): PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
 - 3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.
 - 4. Form 5 malleable iron or mark 9 aluminum.
- F. Joint Compound for GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.02 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

- A. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. RNC: Type EPC-40-PVC or schedule 80 as indicated, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
- C. Fittings for and RNC: Comply with NEMA TC 3; match to conduit type and material.
- D. Solvent cements and adhesive primers shall have a VOC content of 510 and 550 g/L or less, respectively, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Solvent cements and adhesive primers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.03 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 4X (316 stainless), and sized according to NFPA 70.
 - 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.04 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations. All enclosures shall be castmetal or have welded seams. All NEMA 4X enclosures shall have hinged covers with standing drip edges as part of the enclosure. All gaskets shall be continuous and poured in place. Foam type adhesive backed gaskets are not acceptable.
- B. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, galvanized ferrous alloy, Type FD, with gasketed cover.
- C. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast steel with neoprene gasketed cover and stainless steel screws.
- D. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 4X (316 stainless) with continuous-hinge cover with flush latch unless otherwise indicated.
 - 1. Metal Enclosures: 316 Stainless Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- E. Cabinets:
 - 1. NEMA 250, Type 4X (316 stainless) steel (unless otherwise noted) box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 - 2. Hinged door in front cover with flush latch and concealed hinge.
 - 3. Metal barriers to separate wiring of different systems and voltage.
 - 4. Accessory feet where required for freestanding equipment.

2.05 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. General Requirements for Handholes and Boxes:
 - 1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.
 - 2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.
 - 1. Standard: Comply with SCTE 77.
 - 2. Configuration: Designed for flush burial with open bottom unless otherwise indicated.
 - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and handhole location.
 - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - 5. Cover Legend: Molded lettering, "ELECTRIC.".

6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.

PART 3 EXECUTION

3.01 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed Conduit (above finished floor): ARC.
 - 2. Concealed Conduit, Aboveground: ARC.
 - 3. Underground Conduit: RNC, Type EPC-40-PVC, Type EPC-80-PVC, direct buried or concrete encased as indicated.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 5. Boxes and Enclosures, Aboveground: NEMA 250, type 4X (316 stainless).
- B. Indoors: Apply raceway products as specified below unless otherwise indicated.
 - 1. Exposed, Not Subject to Physical Damage: ARC or GRC.
 - 2. Exposed, Not Subject to Severe Physical Damage: ARC or GRC.
 - 3. Exposed and Subject to Severe Physical Damage: ARC or GRC.
 - 4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
- C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 - 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
 - 3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- E. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- F. Install surface raceways only where indicated on Drawings.
- G. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C).

3.02 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits.

Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

- B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hotwater pipes. Install horizontal raceway runs above water and steam piping.
- C. Comply with requirements in Division 16 Section "Hangers and Supports for Electrical Systems" for hangers and supports.
- D. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- E. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.
- F. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- G. Support conduit within 12 inches (300 mm) of enclosures to which attached.
- H. Raceways Embedded in Slabs:
 - 1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot (3-m) intervals.
 - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 - 3. Arrange raceways to keep a minimum of 2 inches (50 mm) of concrete cover in all directions.
 - 4. Do not embed threadless fittings in concrete unless specifically approved by Engineer for each specific location.
 - 5. Change from RNC to GRC before rising above floor.
- I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- J. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
- K. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- L. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35-mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- M. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end

of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

- N. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.
- O. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where an underground service raceway enters a building or structure.
 - 3. Where otherwise required by NFPA 70.
- P. Expansion-Joint Fittings:
 - 1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F (17 deg C) and that has straight-run length that exceeds 25 feet (7.6 m).
 - 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C temperature change.
 - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
 - d. Attics: 135 deg F (75 deg C) temperature change.
 - 3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per degree F (0.06 mm per meter of length of straight run per degree C) of temperature change for PVC conduits.
 - 4. Install expansion fittings at all locations where conduits cross building or structure expansion joints. Install expansion fittings in vertical portion of conduits where they emerge from the ground at the building.
 - 5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- Q. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 18 inches (460 mm) of flexible conduit for equipment subject to vibration, noise transmission, or movement.
 - 1. Use LFMC in damp or wet locations subject to severe physical damage.
 - 2. Use LFMC in damp or wet locations not subject to severe physical damage.
- R. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
S. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.03 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
 - 1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 2 Section "Earthwork" for pipe less than 6 inches (150 mm) in nominal diameter.
 - 2. Install backfill as specified in Division 2 Section "Earthwork"
 - 3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 2 Section "Earthwork."
 - 4. Install manufactured duct elbows for stub-up at equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
 - 5. Install manufactured rigid steel conduit elbows for stub-ups and equipment and at building entrances through floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose and encase coupling with 3 inches (75 mm) of concrete for a minimum of 12 inches (300 mm) on each side of the coupling.
 - 6. Underground Warning Tape: Comply with requirements in Division 16 Section "Identification for Electrical Systems."

3.04 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.5-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch (25 mm) above finished grade.
- D. Install handholes with bottom below frost line.
- E. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.05 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Division 16 Section "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.06 **PROTECTION**

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Raceways and Boxes for Electrical Systems shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- 1.03 INFORMATIONAL SUBMITTALS
 - A. Field quality-control test reports.
- 1.04 QUALITY ASSURANCE
 - A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 CONDUCTORS AND CABLES

- A. Copper Conductors: Comply with NEMA WC 70.
- B. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN, XHHW.
- C. Multiconductor Cable: Comply with NEMA WC 70 for Type SO with ground wire.

2.02 CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Hubbell Power Systems, Inc.
 - 3. O-Z/Gedney; EGS Electrical Group LLC.
 - 4. 3M; Electrical Products Division.
 - 5. Tyco Electronics Corp.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- 3.02 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS
 - A. Service Entrance: Type THHN-THWN, XHHW, single conductors in raceway.
 - B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
 - C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway.
 - D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THWN, single conductors in raceway.
 - E. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-THWN, single conductors in raceway.
 - F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
 - G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THWN, single conductors in raceway.
 - H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainlesssteel, wire-mesh, strain relief device at terminations to suit application.

- I. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- J. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.03 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 16 Sections "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 16 Section "Identification for Electrical Systems."
- G. Tighten electrical connectors and terminals according to manufacturer's published torquetightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

3.04 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Division 16 Section "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.05 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test conductors for compliance with requirements.

- 2. All conductors shall pass a continuity and megger insulation test. Use conductor manufacturer recommended voltages for testing each appropriate insulation rating.
- 3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- 4. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.
 - a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
 - b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- C. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
 - 4. All test reports shall be submitted to the Engineer for review and be included in final close out documentation.
- D. Remove and replace malfunctioning units and retest as specified above.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Low-voltage Electrical Power Conductors and Cables shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.

PAY ITEM

PAY UNIT

16000

Electrical Power Supply, Gear & Lighting

Lump Sum

ELECTRICAL CONNECTIONS FOR EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

- A. The work of this section consists of providing labor, materials, tools, appliances and miscellaneous accessories associated with the electrical connections for equipment indicated by drawings and schedules.
- B. Electrical connections are hereby defined to include, but not necessarily be limited to, connections for providing electrical power to equipment, splices, and taps.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide products of one of the following (for each type of product):
 - 1. AMP Products Corp.
 - 2. Arrow-Hart Div, Crouse-Hinds Co.
 - 3. Burndy Corp.
 - 4. Ideal Industries, Inc.
 - 5. Penn Union
 - 6. Scotch 3M Division
 - 7. T and B / Thomas and Betts Corp.

B. Materials and Components:

- 1. General: For each electrical connection indicated, provide complete assembly of materials, including but not necessarily limited to, pressure connectors, terminals (lugs) electrical insulating tape, electrical solder, electrical soldering flux, heat-shrinkable insulating tubing, cable ties, solderless wire nuts, and other items and accessories as needed to complete splices and termination of types indicated.
- 2. Wire, Cable and Connectors:
 - a. Wire: Unless otherwise indicated, provide wires/conductors for electrical connections which match wires/conductors of wiring supplying power.
 - b. Connectors and Terminals: Provide electrical connectors and terminals as recommended by connector and terminal manufacturer for intended applications.
- 3. Electrical Connection Accessories: Provide electrical insulating tape, heat-shrinkable insulating tubing and boots, solder, electrical soldering flux, wire nuts and cable ties

16142 - 1

as recommended for use by accessories manufacturers for type services indicated.

- 4. Taps, Splices & Terminations: All secondary feeder taps shall be made of cast copper, 2-bolt type connector, with insulating covers. Terminals connections shall be made with 2-bolt, clamp type lugs, as manufactured by:
 - a. O.Z. Gedney
 - b. Penn Union Corp.
 - c. Thomas & Betts.
- 5. Taps and splices for branch circuit wiring #14 to #6 shall be made with approved solderless pressure spring connectors with insulating covers as manufactured by:
 - a. Minnesota Mining & Manufacturing Company
 - b. Ideal Industries, Inc.
 - c. NEER/OZ Gedney
 - d. Buchanan Electrical Products Corporation
- 6. Tape shall be Scotch #33 and shall be applied so that the insulation is not less than that of the wire.
- 7. Cable supports shall consist of composition cable clamps as manufactured by:
 - a. O.Z. Gedney
 - b. Burndy Corporation

PART 3 EXECUTION

3.01 INSTALLATION OF ELECTRICAL CONNECTIONS

- A. Install electrical connections as indicated, in accordance with connector manufacturer's written instructions and with recognized industry practices, and complying with requirements of NEC and NECA's "Standard of Installation" to ensure that products fulfill requirements.
- B. Connect electrical power supply conductors to equipment conductors in accordance with equipment manufacturer's written instructions and wiring diagrams. Wherever possible, mate and match conductors of electrical connections for proper interface between electrical power supplies and installed equipment.
- C. Coordinate installation of electrical connections for equipment with equipment installation work.
- D. Cover splices with electrical insulation equivalent to, or of higher rating, than insulation on conductors being spliced.
- E. Prepare cables and wires, by cutting and stripping, covering armor, jacket, and insulation properly to ensure uniform and neat appearance where cables and wires are terminated.

- F. Trim cables and wires as short as practicable and arrange routing to facilitate inspection, testing and maintenance.
- G. Tighten wire-binding connector screws firmly.
- H. Refer to "Electrical Identification" Section 16195 for identification of electrical power supply conductor terminations with markers approved as to types, colors, letter and marker sizes, by Architect/Engineer.

Affix markers at each point of termination, as close as possible to each point of connection.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Electrical Connections for Equipment shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

CIRCUIT DISCONNECTS

PART 1 GENERAL

1.01 SUMMARY

- A. The work of this section consists of providing labor, materials, tools, appliances and miscellaneous accessories associated with the circuit and motor disconnect switch work indicated herein and on Drawings and schedules.
- B. Types of circuit and motor disconnect switches in this section include the following:
 - 1. Equipment disconnects.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements.

2.02 FABRICATED SWITCHES

- A. Heavy-Duty Safety Switches: Provide surface-mounted, heavy duty type, sheet-steel enclosed safety switches, of types, sizes and electrical characteristics indicated, horsepower rated for above 240 volts or 240 volts and 200 amperes or larger, 60 hertz, 3-blades, 4-poles, solid neutral, incorporating quick-make, quick-break type switches; so construct that switch blades are visible in OFF position with door open. Equip with operating handle which is integral part of enclosure base and whose position is easily recognizable and is padlockable in OFF position; construct current carrying parts of high-conductivity copper, with silver-tungsten type switch contacts, and positive pressure type reinforced fuse clips. Fused switches shall include the following:
 - 1. All fusible switches shall accept Class R fuses and have provision for field installation of U.L. listed rejection feature.
 - 2. The U.L. listed short circuit rating shall be 100,000 symmetrical amperes when Class R fuses and fuse kits are installed.
- C. Type of Enclosure for the Different Locations:
 - 1. NEMA Type 4X: Outdoor use, for protection against windblown dust and rain, splashing water, and hose-directed water.
- E. All switches shall be U.L. listed for use with copper or aluminum wires (60 or 75 C.).
- F. All switches shall be listed per U.L. Standard 98; comply with Federal Specifications W-

S-865; comply with NEMA KS-1.

PART 3 - EXECUTION

3.01 INSTALLATION OF CIRCUIT DISCONNECT SWITCHES

- A. Install disconnect switches where indicated, complying with manufacturer's written instructions, applicable requirements of NEC, NEMA, and NECA's "Standard of Installation", and in accordance with recognized industry practices to ensure that products fulfill requirements.
- B. Coordinate circuit disconnect switch installation work with electrical raceway and cable work, as necessary for proper interface.
- C. Install disconnect switches used with motor-driven appliances, and motors and controllers within sight of controller position unless otherwise indicated.
- D. Provide and install fuses where applicable and/or shown on the Drawings.
- E. Install label nameplate as required.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Circuit Disconnects shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO. PAY ITEM PAY UNIT

16000	Flectrical Power Supply Gear & Lighting	Lump Sum
10000	Electrical I ower Supply, Sear & Eighting	Eurip Sum

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.

1.02 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.03 ACTION SUBMITTALS

- A. Product Data: For steel slotted support systems.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.
 - 3. Equipment supports.

1.04 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.05 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
- B. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - 2. Furnish and install 316 grade stainless steel supports, strut, all-thread rods, hangers, anchors, attachment components, hardware, etc. for exterior installations.
 - 3. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: 316 stainless steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported. Insulate stainless steel hardware from arc with mastic wrap or two layer of scotch 33 tape.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

- 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
- 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Hilti Inc.
 - 3) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 4) MKT Fastening, LLC.
- 3. Concrete Inserts: Steel or malleable-iron, hot dipped galvanized slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
- 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
- 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
- 6. Toggle Bolts: All-steel springhead type.
- 7. Hanger Rods: Threaded 316 stainless steel.

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates. All fabrications shall be hot dipped galvanized after fabrication.

PART 3 EXECUTION

3.01 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for ARC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.02 SUPPORT INSTALLATION

- A. Comply with NFPA 70 (NEC), NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 - 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts or Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for sitefabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.04 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base.
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.05 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Hangers and Supports for Electrical Systems shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Identification for raceways.
 - 2. Identification of power and control cables.
 - 3. Identification for conductors.
 - 4. Underground-line warning tape.
 - 5. Warning labels and signs.
 - 6. Instruction signs.
 - 7. Equipment identification labels.
 - 8. Miscellaneous identification products.

1.02 ACTION SUBMITTALS

A. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 PRODUCTS

2.01 POWER RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:

- 1. Black letters on an orange field
- 2. Legend: Indicate voltageand system or service type.
- C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- D. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- F. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.02 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Write-On Tags: Polyester tag, 0.010 inch (0.25 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
- D. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- E. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.03 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.

- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- D. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.04 UNDERGROUND-LINE WARNING TAPE

- A. Tape:
 - 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - 2. Printing on tape shall be permanent and shall not be damaged by burial operations.
 - 3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.
- B. Color and Printing:
 - 1. Comply with ANSI Z535.1 through ANSI Z535.5.
 - 2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
 - 3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.
- C. Tag: Type I:
 - 1. Pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
 - 2. Thickness: 4 mils (0.1 mm).
 - 3. Weight: 18.5 lb/1000 sq. ft. (9.0 kg/100 sq. m).
 - 4. 3-Inch (75-mm) Tensile According to ASTM D 882: 30 lbf (133.4 N), and 2500 psi (17.2 MPa).

2.05 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
- C. Baked-Enamel Warning Signs:

- 1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
- 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
- 3. Nominal size, 7 by 10 inches (180 by 250 mm).
- D. Metal-Backed, Butyrate Warning Signs:
 - 1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application.
 - 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
 - 3. Nominal size, 10 by 14 inches (250 by 360 mm).
- E. Warning label and sign shall include, but are not limited to, the following legends:
 - 1. Multiple Power Source Warning: "DANGER ELECTRICAL SHOCK HAZARD EQUIPMENT HAS MULTIPLE POWER SOURCES."
 - 2. Workspace Clearance Warning: "WARNING OSHA REGULATION AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 42 INCHES (915 MM)."
 - 3. ARC Flash: Label to identify potential electric arc flash hazards in compliance with the requirements of 2018 NFPA 70E and ANSI Z535.4.

2.06 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. inches (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.
 - 1. Engraved legend with [black letters on white face].
 - 2. Punched or drilled for mechanical fasteners.
 - 3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.
- B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm).
- C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.

2.07 EQUIPMENT IDENTIFICATION LABELS

- A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.
- B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

C. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch (25 mm).

2.08 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Apply identification devices to surfaces that require finish after completing finish work.
- C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.
- F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.
- G. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.02 IDENTIFICATION SCHEDULE

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30A, and 120V to ground: Install labels at 10-foot (3-m) maximum intervals.

- B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
 - 1. Emergency Power.
 - 2. Power.
- C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
 - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. Colors for 208/120-V Circuits:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - c. Colors for control circuits
 - 1) General purpose a-c control: Pink
 - 2) General purpose d-c control: Light Blue
 - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- E. Conductors to Be Extended in the Future: Attach write-on tags or marker tape to conductors and list source.
- F. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
 - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
 - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- G. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
 - 1. Limit use of underground-line warning tape to direct-buried cables.

- 2. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- H. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Selfadhesive warning labels, Baked-enamel warning signs, Metal-backed, butyrate warning signs.
 - 1. Comply with 29 CFR 1910.145.
 - 2. Identify system voltage with black letters on an orange background.
 - 3. Apply to exterior of door, cover, or other access.
 - 4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
 - a. Power transfer switches.
 - b. Controls with external control power connections.
- J. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- K. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 - 1. Labeling Instructions:
 - a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
 - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
 - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
 - d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The contract price per lump sum for Identification for Electrical Systems shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.

B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
 - 2. Sleeve-seal systems.
 - 3. Sleeve-seal fittings.
 - 4. Grout.
 - 5. Silicone sealants.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 PRODUCTS

2.01 SLEEVES

- A. Wall Sleeves:
 - 1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
 - 2. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.
- B. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies: Galvanized-steel sheet; 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.
- C. Sleeves for Rectangular Openings:
 - 1. Material: Galvanized sheet steel.
 - 2. Minimum Metal Thickness:
 - a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and with no side larger than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).

b. For sleeve cross-section rectangle perimeter 50 inches (1270 mm) or more and one or more sides larger than 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.02 SLEEVE-SEAL SYSTEMS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Advance Products & Systems, Inc.
 - b. CALPICO, Inc.
 - c. Metraflex Company (The).
 - d. Pipeline Seal and Insulator, Inc.
 - e. Proco Products, Inc.
 - 2. Sealing Elements: Nitrile (Buna N) rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 3. Pressure Plates: Stainless steel.
 - 4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.03 SLEEVE-SEAL FITTINGS

- A. Description: Manufactured plastic, sleeve-type, waterstop assembly made for embedding in concrete slab or wall. Unit shall have plastic or rubber waterstop collar with center opening to match piping OD.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Presealed Systems.

2.04 GROUT

- A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-firerated walls or floors.
- B. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

16200-2

D. Packaging: Premixed and factory packaged.

2.05 SILICONE SEALANTS

- A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.
 - 2. Sealant shall have VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 EXECUTION

3.01 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

- A. Comply with NECA 1.
- B. Comply with NEMA VE 2 for cable tray and cable penetrations.
- C. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:
 - 1. Interior Penetrations of Non-Fire-Rated Walls and Floors:
 - a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants."
 - b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect material while curing.
 - 2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 3. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
 - 4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
 - 5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level. Install sleeves during erection of floors.

- D. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- E. Underground, Exterior-Wall and Floor Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing sleeve-seal system.

3.02 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at raceway entries into building.
- B. Install type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.03 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings in new walls and slabs as they are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Sleeves and Sleeve Seals for Electrical Raceway and Cabling shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.

PAY ITEM

PAY UNIT

16000

Electrical Power Supply, Gear & Lighting

Lump Sum

END OF SECTION

SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

GROUNDING

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section consists of providing labor, materials, tools, appliances and miscellaneous accessories associated with grounding of the electrical system as required by and as is indicated herein and/or on the Drawings.
- B. Main electric service equipment, raceways, motors, panelboards and other electrical equipment shall be effectively and permanently grounded to a grounding electrode. This electrode shall be the nearest available effectively grounded structural metal member of the structure or the nearest available effectively grounded metal water pipe and also a driven rod. Grounding connections and conductor sizes shall be in accordance with requirements of the National Electrical Code, Article 250, and local ordinances, and as described herein.
- C. A separate grounding conductor, sized in accordance with NEC Table 250-122 shall be provided in the conduit with the circuit conductors for all feeder and branch circuits. The grounding conductor may be bare or insulated copper; however, if this conductor is insulated, the insulating covering shall be a green color. Conduit runs shall be increased in size where necessary to accommodate the grounding conductor in addition to circuit conductors. The electrical continuity of all conduit runs shall be verified and corrected where necessary.
- D. Isolated Ground Connectors shall be insulated. Additional grounding conductors and conduit shall be provided as specified herein or shown on the drawings. All conduit for grounding system conductors, not run in conduit with circuit conductors, shall be rigid steel conduit.
- E. All electrical equipment enclosures and conductor enclosures shall be grounded. This includes but is not limited to metal raceways, outlet boxes, cabinets, switch boxes, motor frames, transformer cases and metallic enclosure for all electrical equipment.
- F. Under no circumstances shall neutral conductors again be grounded after they have been grounded once at the transformer secondary.
- G. Panelboards shall be equipped with a neutral bar which is insulated from the enclosure, and a grounding bar which is bonded to the enclosure. The grounding bar shall provide for terminating the green equipment grounding conductors in the panelboard or motor control center cabinets. The grounding bar shall be bonded to the cabinet. Neutral busses shall be isolated from ground except at the transformer ground connection.
- H. Types of grounding in this section includes the following:

- 1. Enclosures.
- 2. Systems.
- 3. Equipment.
- I. Requirements of this section apply to electrical grounding work specified elsewhere in these specifications.
- J. Provide Bonding Jumper across water meter.

1.02 RELATED DOCUMENTS

- A. Drawings
- B. General provisions of Contract, including General and Supplementary Conditions.
- C. Division 01 Specification Section.
- D. Section 16010 Basic Electrical Requirements.

PART 2 - PRODUCTS

2.01 GROUNDING

- A. Materials and Components:
 - 1. General: Except as otherwise indicated, provide electrical grounding and bonding systems indicated, with assembly of materials including, but not necessarily limited to, cables/wires, connectors, terminals (solderless lugs), grounding rods/electrodes, bonding jumper braid, surge arrestors and other items and accessories needed for complete installation. Where more than one type meets indicated requirements, selection is Installer's option.

Where materials or components are not otherwise indicated, comply with NEC, UL and IEEE requirements and with established industry standards for applications indicated.

- 2. Bonding Jumper Braid: Copper braided tape, constructed of 30-gage bare copper wires and properly sized for indicated applications.
- 3. Flexible Jumper Strap: Flexible flat conductor, 480 strands of 30-gage bare copper wire, 3/4" wide, 9-1/2" long, 48, 250 CM. Protect braid with copper bolt hole ends with holes sized for 3/8" dia. bolts.
- 4. Grounding Conductors: Unless otherwise indicated, provide electrical grounding conductors for grounding connections matching power supply wiring materials and sized according to NEC.
- 5. Connectors, Terminals and Clamps: Provide electrical bonding plates,

connectors terminals and clamps as recommended by bonding plate, connector, terminal and clamp manufacturers for indicated applications.

- 6. Ground Electrodes: Ground Rods: Stainless Steel, 3/4" dia. X 10'.
- 7. Electrical Grounding Connection Accessories: Provide electrical insulating tape, heat-shrinkable insulating tubing, solder, soldering flux, bonding straps, as recommended by accessories manufacturers for type services indicated.
- 8. Field Welding: Comply with AWS code for procedures, appearance, and quality of welds and methods used in connecting welding work. Provide welded connections where grounding conductors connect to underground grounding rods/electrodes.

PART 3 – EXECUTION

3.01 INSTALLATION OF GROUNDING SYSTEMS

- A. Install electrical grounding and bonding systems as indicated, in accordance with manufacturer's written instructions and with recognized industry practices to ensure grounding and ground-fault protection devices comply with requirements. Comply with requirements of NEC, and NECA's "standard of Installation".
- B. Coordinate with other electrical work as necessary to interface installation of grounding system and ground fault protection devices with other work.
- C. Weld grounding conductors to underground grounding electrodes. The building equipment grounding system shall consist of the ground wire, and electrically continuous metallic conduit system. Every item of equipment served by the electrical system shall be bonded to the building equipment ground. Portions of metallic piping and duct systems which are electrically isolated shall be bonded to the equipment grounding system with a flexible bonding jumper.
- D. The neutral shall be grounded to the grounding electrode system at the service entrance only, and shall be kept isolated from the building grounding system throughout the building. The neutral of separately derived systems shall be grounded at one point as specified herein below.
- E. Provide bonding and grounding wires run in conduit and sized per the NEC in accordance with the local electrical inspection department and the NEC. Metallic piping and duct systems which enter the building shall be grounded at the point of entry to the building, in accordance with the NEC.
- F. Continuity of the building equipment grounding system shall be maintained throughout the project. Grounding jumpers shall be installed across conduit expansion fittings, all liquid-tight flexible metal and flexible metal conduit, light fixture pigtails in excess of 6', and all other nonelectrically continuous raceway fittings.

- G. All main grounding conductors shall be stranded copper conductors, sized as shown and/or required, and run in a suitable raceway. All main grounding conductors shall be continuous without joints or splices over their entire length.
- H. Bond the case and neutral of each transformer directly to the nearest available effectively grounded structural metal member of the structure, the nearest available effectively grounded metal water pipe, or in accordance with the local electrical inspection department. Flexible conduit shall not be used as a ground path to a transformer.
- I. Carefully and securely ground all fluorescent fixture bodies to the conduit grounding system. Flexible conduit longer than 6' shall not be considered a ground path.
- J. Ground all grounding-type receptacles with a separate ground wire.
- K. Grounding of all motors or equipment connected to terminal box with flexible conduit shall be made with separate grounding conductor between motor frame or equipment cabinet and rigid conduit system. Grounding conductor shall be sized in accordance with table 250-122 of the NEC.
- L. All grounding conductors shall be amply protected from mechanical injury and shall be supported in an approved manner. Where conductors are located in concrete, they shall be installed in conduit. Where ground conductors enter or emerge from slabs bearing directly on fill or soil, the voids between the conductor and surrounding conduit shall be filled with compound to provide an effective water seal.
- M. Grounding conductors shall be not smaller than #12 AWG. Conductors shall be high conductivity copper, and sizes larger than #10 shall be stranded.
- N. Insulated grounding bushings shall be installed on all raceways at transformers, switchboards, motor-control centers, dry-type transformers, as well as switches used as service equipment.
- O. Install braided type bonding jumpers with clamps on water meter piping to electrically bypass water meter.
- P. Install clamp-on connectors only on thoroughly cleaned metal contact surfaces, to ensure electrical conductivity and circuit integrity.
- Q. For all motor circuit and all circuits serving multi-outlet assemblies provide a separate grounding conductor in addition to any conduit ground. Conduit runs shall be increased in size where necessary to accommodate the grounding conductor in addition to circuit conductors.

3.02 FIELD QUALITY CONTROL

A. Upon completion of installation of electrical grounding system, test ground resistance

with ground resistance tester. Where tests show resistance-to-ground is over 3 ohms, take appropriate action to reduce resistance to 3 ohms or less by driving additional ground rods and/or by chemically treating soil encircling ground rods with sodium chloride, calcium chloride, copper sulphate, or magnesium. Then retest to demonstrate compliance.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Grounding shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum
SECTION 16470

PANELBOARDS

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section consists of providing labor, materials, tools, appliances and miscellaneous accessories associated with panelboard work indicated herein and on the Drawings and schedules.
- B. Types of panelboards and enclosures required for this project include the following:
 - 1. Lighting and appliance panelboards.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide products of one of the following: (for each type of panelboard and enclosure)
 - 1. General Electric Company.
 - 2. ITE.
 - 3. Square D Company.

2.02 PANELBOARDS

A. General: Except as otherwise indicated, provide panelboards, enclosures and ancillary components, of types, sizes, and ratings indicated, which comply with manufacturer's standard materials, design and construction in accordance with published product information; equip with number of unit panelboard devices as required for complete installation.

Where types, sizes, or ratings are not indicated, comply with NEC, UL and established industry standards for applications indicated.

- B. Lighting and appliance panelboards shall be dead front safety-type equipped with molded case circuit breakers as shown and scheduled.
- C. Main lugs or main overcurrent units shall be furnished for panelboards as indicated on the Drawings.
- D. Panelboards shall be mounted in code gauge galvanized sheet steel cabinets with corners lapped and riveted or fastened by other approved methods. Cabinets shall be of such size as to allow a wiring gutter space of at least 6" all around for power panels, and 4" all around for

lighting panels. Extra large gutter spaces shall be provided if specifically called for.

- E. Panelboards shall be surface mounted as indicated on the Drawings. Trim for each panel shall be suitable for the type of mounting. Each trim shall be complete with suitable hinged door having chrome plated flush type combination lock and catch, except that for doors over 48" in height a chrome plated vault handle and 3 point catch shall be provided with built-in lock arranged to fasten door at top, bottom and center. Two keys shall be provided for each lock and each key shall open all panelboards furnished. All trims shall be of a type that is self-supporting on the box after the trim holding screws have been removed. All free-standing cabinets shall be secured to floors, walls, and columns with approved angle iron or unistrut framework. Framework shall be painted as cabinets.
- F. Each panelboard shall be complete with main copper bus run up the center and neutral bars where required and all proper sequence phase connections. Polarized panelboards will not be accepted. Capacities of copper busses and connections shall be based on a maximum density of 1000 amps. per sq. in. Spacing of busses shall not be less than code requirements. Busses shall be arranged for single or 3-phase, 3- or 4-wire supply as indicated on the Drawings. Busses shall be provided with suitable phase identification.
- G. Directory holder with metal frame shall be furnished and installed upon of door of each cabinet, with complete typewritten circuit schedule inserted.
- H. The inside and outside of panelboard boxes, doors and trims shall be furnished with at least two coats of manufacturer's standard finish paint over a baked-on prime cost.
- I. Provide ground bus. Provide additional isolated ground bus where specified.
- J. Lighting and Appliance Panels: Panels shall be for use on 240/120 volt, single phase, 3 wire, 60 cycle, solid neutral service, with number and size of bolt-on type circuit breaker branches as shown on the Drawings. Circuit breaker's interrupting capacity shall be 22,000 RMS symmetrical amperes unless otherwise noted. NEMA 3R enclosure.
- M. Series rated circuit breaker panels shall not be accepted.
- N. Exterior panelboards enclosures shall have a drip edge. Door in door front covers are not acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION OF PANELBOARDS

- A. General: Install panelboards and enclosures where indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.
- B. Coordinate installation of panelboards and enclosures with cable and raceway installation work.

- C. Anchor panelboard assemblies firmly to walls and structural surfaces, ensuring that they are permanently and mechanically secure.
- D. Provide properly wired electrical connections for panelboards within enclosures.
- E. Fill out (typewritten) panelboard's circuit directory card upon completion of installation work.
- F. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Stds 486A and B.

3.02 GROUNDING

A. Provide equipment grounding connections for panelboard enclosures as indicated. Tighten connections to comply with UL tightening torques to assure permanent and effective grounds.

3.03 FIELD QUALITY CONTROL

- A. Prior to energization of panelboards, check with ground resistance tester phase-to-phase and phase-to-ground insulation resistance levels to ensure requirements are fulfilled.
- B. Prior to energization, check panelboards for electrical continuity of circuits, and for shortcircuits.

3.04 ADJUSTING AND CLEANING

- A. Adjust operating mechanisms for free mechanical movement.
- B. Touch-up scratched or marred surfaces to match original finishes.

3.05 DEMONSTRATION

- A. Subsequent to wire and cable hook-ups, energize panelboards and demonstrate functioning in accordance with requirements. Where necessary, correct malfunctioning units, and then retest to demonstrate compliance.
- B. Label panelboards in accordance with SECTION 16195.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Panelboards shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

END OF SECTION

SECTION 16472

OVERCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section consists of providing labor, materials, tools, appliances and miscellaneous accessories associated with overcurrent protective device work indicated herein and on the Drawings.
- B. Types of overcurrent protective devices in this section include the following:
 - 1. Circuit breakers (600 volts and below).
 - 2. Fuses (600 volts and below).

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide products of one of the following (for each type and rating of overcurrent protective device):
 - 1. Circuit Breakers:
 - a. Square D Co.
 - b. Eaton Cutler Hammer
 - c. ABB
 - 2. Fuses:
 - a. Bussmann Mfg Co.
 - b. Little Fuse.

2.02 CIRCUIT BREAKERS

- A. General: Except as otherwise indicated, provide circuit breakers and ancillary components, of types, sizes, ratings and electrical characteristics indicated, which comply with manufacturer's standard design, materials, components, and construction in accordance with published product information, and as required for a complete installation.
- B. Molded-Case Circuit Breakers:
 - 1. Provide bolt-on factory-assembled, molded-case circuit breakers of frame size, trip and interrupting rating as shown on the Panel Schedule and Drawings.
 - 2. Provide thermal and instantaneous magnetic trips in each pole. Construct with over

center, trip-free, toggle type operating mechanisms with quick-make, quick-break action and positive handle indication. Construct breakers for mounting and operating, within specified ratings, in any physical position and in an ambient temperature of 40 deg. C. Provide with mechanical screw type removable connector lugs, AL/CU rated, for full frame amperes.

- 3. All molded case circuit breakers shall be listed per U.L. 489 to continuously carry 80% of its nameplate rating and shall meet the requirements of NEMA AB1 and the NEC-NFPA 70-84.
- 4. Accessories for molded case breakers shall include (when indicated on drawings and schedules) auxiliary switch, shunt trip, undervoltage release, bell alarm, motor operator, and mechanical interlocks.

C. FUSES:

- 1. General: Except as otherwise indicated, provide fuses of types, sizes and ratings and electrical characteristics indicated, which comply with manufacturer's standard design, materials, and construction in accordance with published product information, and with industry standards and configurations.
- 2. Class L Time-Delay Fuses: Provide UL Class L time-delay fuses, 600 V, 60 Hz., with ampere rating as shown on drawings, with 200,000 RMS symmetrical interrupting current rating for protecting transformers, motors, and circuit breakers, service entrance and main feeder circuit breakers.
- 3. Class L Fast-Acting Fuses: Provide UL Class fast-acting fuses, 600 V, 60 Hz., with ampere rating as shown on drawings, with 200,000 RMS symmetrical interrupting current rating for protecting service entrances and main feeder circuit breakers.
- 4. Class RK1 Time-Delay Fuses: Provide UL Class RK1 time-delay current limiting fuses rated as shown on drawings, 60 Hz., with 200,000 RMS symmetrical interrupting current rating for protecting motors and circuit breakers.
- 5. Class RK1 Fast-Acting Fuses: Provide UL Class fast-acting current limiting fuses, 600 V, 60 Hz., with ampere rating as shown on drawings, with 200,000 RMS symmetrical interrupting current rating for protecting panelboards, motor control centers, etc.

PART 3 - EXECUTION

3.01 INSTALLATION OF OVERCURRENT PROTECTIVE DEVICES

A. Install overcurrent protective devices as indicated, in accordance with the manufacturer's

16472 - 2

written instructions and with recognized industry practices to ensure that protective devices comply with requirements. Comply with NEC and NEMA standards for installation of overcurrent protective devices.

- B. Coordinate with other work, including electrical wiring work, as necessary to interface installation of overcurrent protective devices with other work.
- C. Fasten circuit breakers without mechanical stresses, twisting or misalignment being exerted by clamps, supports, or cables.
- D. Install fuses, if any, in fused circuit breakers.
- E. Provide spare fuses (3 of each ampere rating used).

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Low-voltage Electrical Power Conductors and Cables shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

END OF SECTION

SECTION 16510

EXTERIOR LIGHTING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. Section Includes: The work of this section consists of providing labor, materials, tools, appliances and miscellaneous accessories associated with lighting luminaire work as indicated herein and on the Drawings and schedules.
- B. Type: The types of lighting luminaires required for the project include the following:
 - 1. Light Emitting Diode (LED).
- C. Applications of lighting luminaires required for project include the following:
 - 1. Exterior lighting.
- 1.02 RELATED DOCUMENTS
 - A. Drawings.
 - B. General provisions of Contract, including General and Supplementary Conditions.
 - C. Division 01 Specification Sections.
 - D. Section 16010 Basic Electrical Requirements.

1.03 LUMINAIRES

A. Furnish, assemble, install, and wire up complete, all exterior lighting luminaires. Luminaires shall be complete with lamps, lamp holders, and all necessary accessories. Luminaires shall bear the Underwriters' Laboratories, Inc. label of approval and be purchased, wired, and installed in accordance with applicable codes.

PART 2 PRODUCTS

- 2.01 LUMINAIRES
 - A. General: All luminaires shall be as indicated and scheduled on the Drawings. The omission of a type or quantity in the luminaires schedule shown on the Drawings will not relieve the Contractor of the responsibility for furnishing all luminaires indicated on the Drawings.
 - B. Provide lighting luminaires, of the size, type, and rating indicated, complete with, but not necessarily limited to, lamps, lamp holders, reflectors, ballasts, starters, and wiring.

- C. Luminaire Types:
 - 1. LED light Luminaires:
 - a. Luminaires shall be designed for 120-208 volts AC.
 - b. The LED driver shall be UL listed and suitable for WET location as shown on the drawings. Lamp, driver, and luminaire as a unit shall be suitable for operation from -30C to 55C or greater.
 - c. All LED luminaire housings shall have aluminum heat sinks.
 - d. The luminaire shall meet LM-79, LM-80 tests and reports as performed in accordance to IESNA standards and shall meet UL 8750 LED equipment in Lighting Products standard.
 - e. LED Lamps: Projected lifetime must be reported as per IES-TM-21 calculations and based on IES-LM-80-08 measurements with Lumen maintenance of >85 %. Lamp lifetime should be 50,000 hours at minimum. Total luminous flux (lumens) must be measured as per IES-79-08. Lamps with screw-in or plug-in bases are not acceptable. Minimum initial efficacy of >105 lumens per watt. The lamps shall have a Rated Color Rendering Index (CRI) of 70 and a color temperature of at least 3000K and no greater than 5000K. All lamps shall have the same color temperature.
 - f. Power Quality: Power Quality shall be maximum total harmonic distortion (THD) of 20% and meet EMI: title 47 CFR 15 class A.
 - g. Minimum Power factor shall be 90%.
 - h. Power Regulation: Lamp wattage regulation must not exceed \pm 10 per cent when operated at voltage variation from 108V/120V to 125V/120V at 60 Hz with ambient temperature of 25°C \pm 2°C (77°F \pm 3.6°F). 2.3.6.2 Surge Arrester
 - i. Each luminaire shall be protected with a surge arrester rated 3kV at 3kA per ANSI C62.41-1991.

2.02 LED drivers

A. LED drivers for use on 120-208 volt systems shall be suitable and guaranteed for a voltage range of 110 to 250 volts.

PART 3 EXECUTION

3.01 INSTALLATION OF LIGHTING LUMINAIRES

- A. General: Install lighting luminaires of the types indicated, where shown, and at the indicated heights in accordance with the luminaire manufacturer's written instructions and recognized industry practices to ensure that the luminaires comply with the requirements and serve the intended purposes.
- B. Provide adequate and safe protection for luminaires and at completion of the work they shall be made clean and free of all foreign material, dust, etc.
- C. Furnish and set all inserts, anchors, and hangers for the support of lighting luminaires and respective equipment, and make all necessary adjustments required therein.

- D. Verify location and spacing of luminaires before installation. Coordinate space conditions; including overhead clearances, and interferences with openings, beams and piping, prior to installation.
- E. Standards: Comply with NEMA standards, applicable requirements of the NEC pertaining to installation of interior lighting luminaires, and with applicable portions of the NECA's "Standard of Installation.
- F. Attachment: Fasten luminaires securely to the indicated structural support members.

3.02 SHIPPING REQUIREMENTS

- A. It shall be the Contractor's responsibility to coordinate and evaluate the shipping schedule for luminaires as required by the progress of the job.
- B. The Owner will not accept payment responsibility for luminaires scheduled, and delivered out of construction sequence at an earlier or later time than reasonably required by job progress.
- C. Luminaires shall be in first class condition after installation. The lens surface shall be clean, if required. Luminaires with rust or damaged lenses shall be replaced at no cost to the Owner.

3.03 ADJUST AND CLEAN

- A. Clean interior lighting luminaires of dirt and debris upon completion of installation.
- B. Protect installed luminaires from damage during remainder of construction period.

3.04 FIELD QUALITY CONTROL

- A. Upon completion of installation of lighting luminaires, and after building circuitry has been energized, apply electrical energy to demonstrate capability and compliance with requirements. Where possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units, and proceed with retesting.
- B. Replace defective and burned out luminaires for period of 6 months following the date of Substantial Completion of that phase.
- C. At the date of Substantial Completion, replace lighting luminaires which are observed to be noticeable dimmed after Contractor's use and testing, as judged by Engineer.

3.05 GROUNDING

A. Provide tight equipment grounding connections for each exterior lighting luminaire installation where indicated.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. The contract price per lump sum for Exterior Lighting shall include furnishing all labor, materials, tools, equipment, and any incidental items required to complete the work required by the plans and as specified.
- B. Measurement shall be based on actual quantity of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.

4.02 PAYMENT

- A. Payment shall be paid based on percent of work completed/installed according to the schedule of values to be submitted by contractor with each pay application.
- B. Payment for the items shall include all materials, equipment, labor, and incidentals necessary to complete the work as shown on the drawings, and shall be paid under:

ITEM NO.	PAY ITEM	PAY UNIT
16000	Electrical Power Supply, Gear & Lighting	Lump Sum

END OF SECTION

DIVISION II

TECHNICAL SPECIFICATIONS

SECTION S-001

WATER DISTRIBUTION SYSTEM

TABLE OF CONTENTS:

I.	DE	SCRIPTION:	2
II.	(COORDINATION:	3
III.	(CONSTRUCTION LAYOUT:	3
IV.	l	MATERIALS:	3
V.	I	EXECUTION:	3
Α	. (GENERAL	3
В	. 1	WATER VALVES AND HYDRANTS "OPERATING" REGULATIONS	4
С	. [FRENCHING	5
D	. I	BACKFILL	5
E.	. (CONNECTION TO EXISTING PIPING	6
F.	ŀ	HANDLING, REMOVAL AND DISPOSAL OF "AC" WATERLINES	7
G	. /	ABANDONMENT OF EXISTING WATERLINES	7
Η	. I	PIPELINE TESTING AND STERILIZATION	7
VI.	Ι	DEVIATION FROM JEFFERSON PARISH STANDARDS	7
VII.	(CONSTRUCTION DELAY CLAIMS:	7
VIII	. 1	MEASUREMENT AND PAYMENT:	8
	1.	Payment	.8
	2.	Water Lines and/or Water Mains	8
	3.	Existing AC waterlines	.8
	4.	Existing Waterlines	9
	6.	Fire Hydrants	9
	7.	Fire Hydrant Assemblies	.9
	8.	Water Meters and Meter Boxes	.9
	9.	Water Meter/Meter-Box adjustment	9
	10.	Gate and Butterfly Valves and Valve Boxes	.9
	11.	Ductile Iron Fittings (Fittings),	.9

S-001 - Page 1 of 17

12.	Pipe restraints	9
13.	Transitional Couplings1	0
15.	Price Brothers Adapters1	0
16.	Price Brothers Pipe Joint Field Welding1	0
17.	Tie-ins,1	0
18.	Water Service Connections	0
19.	Fire Service Connections1	0
20.	Check Valves1	1
21.	Double check valve assemblies1	.1
TA a) b) c) d) e) f) g) h) i)	BULATED GENERAL JEFFERSON PARISH PAY ITEMS1100 SERIES, PVC PIPES1200 SERIES, DUCTILE IRON PIPES1300 SERIES, HDPE PIPES1400 SERIES, GATE VALVES1500 SERIES, BUTTERFLY VALVES1600 SERIES, TAPPING & VALVE ASSEMBLY1700 SERIES, PIPE RESTRAINTS1800 SERIES, TRANSITIONAL COUPLINGS1900 SERIES, MISCELLANEOUS1	1 1 2 3 3 3 4 5 5
	12. 13. 15. 16. 17. 18. 19. 20. 21. TA a) b) c) d) e) f) g) h) i)	12. Pipe restraints 13. Transitional Couplings 14. Price Brothers Adapters 15. Price Brothers Adapters 16. Price Brothers Pipe Joint Field Welding 17. Tie-ins, 18. Water Service Connections 19. Fire Service Connections 120. Check Valves 121. Double check valve assemblies 122. Check Valves assemblies 13. TABULATED GENERAL JEFFERSON PARISH PAY ITEMS 14. 100 SERIES, PVC PIPES 15. 100 SERIES, DUCTILE IRON PIPES 16. 100 SERIES, BUTTERFLY VALVES 17. 100 SERIES, BUTTERFLY VALVES 18. 11 19. 11 10. 11 11. 11 11. 11 11. 11 12. 11 13. 11 14. 11 15. 11 16. 11 17. 11 18. 11 19. 11

I. <u>DESCRIPTION:</u>

All "water distribution system" work shall be performed in total conformance with Jefferson Parish standards, requirements, [<u>http://www.jeffparish.net/index.aspx?page=261</u>, <u>http://www.jeffparish.net/index.aspx?page=297</u>] and as per materials manufacturer's requirements and recommendations.

All work associated with the water distribution system shall be performed under this section (S-001) and to the lines and grades shown on plans.

This work will include furnishing and constructing the water lines and appurtenances as indicated on the drawings and in accordance with the provisions of the Jefferson Parish Department of Engineering and the Specifications herein. Where the word "pipe" and/or "water line" are used it shall refer to pipe, fittings, or appurtenances unless otherwise noted.

The Contractor shall furnish all labor, equipment and materials required to perform all work required for removal of existing water lines and for installation of new waterlines. Removal and

S-001 - Page 2 of 17

installation, replacement or relocation shall be as indicated on the drawings and specified herein. Damage to any waterlines by the Contractor, subcontractors, material and equipment suppliers or other persons, shall be repaired by the Contractor to the satisfaction of the Engineer and Owner at the expense of the Contractor, prior to acceptance.

The drawings attempt to indicate the alignment of all known waterlines within the limits of the work. However, the Contractor shall be responsible to inspect the entire project to verify all existing waterlines and to determine the existence of any additional conflicts with his work. The location of proposed water lines may be field adjusted, with prior approval from the Jefferson Parish Department of Engineering, to avoid conflicts with other utilities.

II. <u>COORDINATION:</u>

Removal and replacement or relocation of waterlines shall be done in close coordination with the Owner. Removal and replacement or relocation work shall be planned in advance so that inconvenience to the Owner and utility users caused by the disruption of service is minimized. The contractor shall be responsible for immediately notifying the Owner and Engineer of existing conditions that differ from that shown on the plans.

III. CONSTRUCTION LAYOUT:

The Contractor will be responsible for establishing all lines and grades and staking out all "Water Distribution System" work on this project from controls provided in the construction documents. There shall be no separate payment for construction layout related to the "Water Distribution System".

IV. <u>MATERIALS:</u>

All materials shall be as specified in Jefferson Parish Standard Notes and Drawings and as specified herein.

V. EXECUTION:

A. <u>GENERAL</u>

1. Pipe, fittings, and accessories shall be handled in a manner that will insure installation in sound, undamaged condition. Equipment, tools, and methods used in handling and

S-001 - Page 3 of 17

installing pipe and fittings shall not damage the pipe and fittings. Hooks inserted in ends of pipe shall have broad, well-padded contact surfaces.

- 2. All pipe coatings which have been damaged shall be repaired by the Contractor before installing the pipe. Any such repairs shall be done in total conformance with the manufacturer's requirements and recommendations and shall require prior approval from the Jefferson Parish Department of Engineering.
- 3. Water distribution system installation shall be done with pipe sections and fittings such that pipe cutting is not required. Should pipe cutting be required, cutting shall be done in a neat manner, without damage to the pipe or to the lining. Cuts shall be smooth, straight, and at right angles to the pipe axis. After cutting, the end of the pipe shall be dressed with a file to remove all roughness and sharp corners.
- 4. All cutting of ductile iron pipe shall be done with mechanical pipe cutters except where the use of mechanical cutters would be difficult or impracticable. Ends of ductile iron pipe shall be cut with a saw, abrasive wheel, or oxyacetylene torch. Field cut holes for saddles shall be cut with mechanical cutters; oxyacetylene cutting will not be permitted.
- 5. The interior of all pipe and fittings shall be thoroughly cleaned of foreign matter and must be swabbed with chlorine prior to installation and shall be kept clean until the work has been accepted. Before jointing, all joint contact surfaces shall be wire brushed if necessary, wiped clean, and kept clean until jointing is completed.
- 6. Precautions shall be taken to prevent foreign material from entering the pipe during installation. Debris, tools, clothing, or other materials shall not be placed in or allowed to enter the pipe.
- 7. A representative of the Jefferson Parish Engineering Department shall be present or be given the chance to inspect all water distribution items, installed, prior to backfill.

B. WATER VALVES AND HYDRANTS "OPERATING" REGULATIONS

- 1. Generally all water system valves and hydrants shall be operated by the Jefferson Parish Water or Engineering Departments.
- 2. The Contractor shall not operate water system valves or hydrants without written permission from the Jefferson Parish Water or Engineering Departments.
- 3. The contractor may operate water system valves or hydrants without written permission only when representatives from Jefferson Parish Water or Engineering Departments are present.

S-001 - Page 4 of 17

4. The contractor shall obtain, maintain, and annotate the Jefferson Parish Department of Water Form No. W-101, "Valve Operation Log" throughout the project.

C. <u>TRENCHING</u>

- 1. Excavation work shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards. As always, Trench Safety shall remain the contractor's responsibility at all times.
- 2. Excavate and maintain trenches to the indicated or required depth and width. Provide minimum of 12" clearance on both sides of pipe or conduit.
- 3. Protect excavations, if necessary, by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.
- 4. Notify the Engineer and the Jefferson Parish Department of Engineering of any undesirable, unexpected subsurface conditions and discontinue work in affected area until notification to resume work.
- 5. Grade excavation top perimeter to prevent surface water run-off into excavation.
- 6. Hand trim excavation and leave free of loose matter.
- 7. Correct unauthorized excavation at no cost to Owner.

D. <u>BACKFILL</u>

- 1. Backfill material shall be Mississippi River "pumped sand", AASHTO A-4 or better having a maximum liquid limit of 25 and a maximum plasticity index of 6. All sands shall be free of trash, weeds, lumps, humus, pieces of wood or any other deleterious material. Backfill material shall have a group index number not to exceed 6.
- 2. Support pipe and conduit during placement and compaction of pipe backfill.
- 3. Document and photograph every fitting, restraint devise, valves, hydrant, etc. prior to backfill.
- 4. A representative of the Jefferson Parish Engineering Department shall inspect all installed water distribution items prior to backfill.

S-001 - Page 5 of 17

E. <u>CONNECTION TO EXISTING PIPING</u>

- 1. A representative from the Jefferson Parish Engineering Department must be present during all work being done at the tie-in points.
- 2. All tie-ins to the existing water lines shall be done by the Contractor.
- 3. All tie-in locations shall be excavated and existing piping shall be investigated (material type, size, outside diameter, condition, photograph, etc.) prior to ordering material and equipment, and especially prior to the cutting of the existing pipe.
- 4. Connections between new work and existing piping shall be made using fittings suitable for the conditions encountered and as indicated on the drawings.
- 5. Each connection to an existing pipe shall be made at a time and under conditions which will least interfere with service to customers, and as authorized by the Owner.
- 6. Water line tie-ins shall not be permitted on Fridays or any days preceding a legal holiday, unless otherwise approved by the Jefferson Parish Engineering Department in writing.
- 7. Facilities shall be provided for proper dewatering and for disposal of all water removed from the dewatered lines and excavations without damage to adjacent properties.
- 8. Water system "<u>test closures</u>", which are typically done by the Jefferson Parish Water Department must be witnessed and documented by the Resident Inspector (RI) and the contractor. Documentation may simply be done by signing or initialing a marked up copy of the Jefferson Parish Water Unit Sheets indicating which valves were closed and which hydrants were flowed. A successful "test closure" is one of the key elements necessary, prior to scheduling a tie-in.
 - a. Test Closures are typically done by the Jefferson Parish Water Department Forces, but they may be done by the contractor under direct supervision of the Jefferson Parish Engineering Department Inspectors.
 - b. Since the contractor will be responsible for the outcome of the tie-ins, it will be to his advantage to witness and fully understand a "successful test closure".
- 9. Prior to scheduling a tie-in, the contractor must make certain {and convey this information to the Jefferson Parish Engineering Inspection Department through the Resident Inspector (RI)} that he would have a clear path to the tie-in point (no surprised conflicts). Since the RI is the only fulltime parish representative on the site, he can verify the contractor's readiness for the tie-in, on behalf of the parish.

S-001 - Page 6 of 17

F. <u>HANDLING, REMOVAL AND DISPOSAL OF "AC" WATERLINES</u>

Cutting, Tapping, Tying-in to, Removal, handling, and disposal of Existing "AC" waterlines shall be in accordance with all applicable local, state, and federal regulations and requirements. This section's compliancy requirements shall also include any applicable regulatory provisions of AWWA's and OSHA's standards and guidelines.

G. <u>ABANDONMENT OF EXISTING WATERLINES</u>

All abandoned pipes shall be filled with Flowable Fill. Flowable fill shall be per DOTD Standard Specifications for Roads and Bridges section 710.

H. <u>PIPELINE TESTING AND STERILIZATION</u>

The pressure and leakage testing of all waterlines shall conform to the requirements of Jefferson Parish and AWWA C600.

VI. DEVIATION FROM JEFFERSON PARISH STANDARDS

None

VII. CONSTRUCTION DELAY CLAIMS:

- 1. Utility related Construction Delay Claims must be avoided at all costs. The contractor shall have the burden to prove that the actions or inactions of the owner or owner's representatives affected his activities. Burden of proof may include "Established Schedules" depicting Critical Path and Non-Critical Path Items, documentations of required notices to the owner or owner's representatives, documentations of minutes of meetings, etc.
- 2. In the preconstruction meeting (or shortly after) the contractor shall be provided with a list of contacts. The contractor is advised to understand the function of each contact person and the expected nature of his relationship and his responsibilities towards each contact. This list typically will include a parish utility inspector, a utility inspector supervisor, staff engineer, and utility chief engineer. The instant that the contractor feels that he may be delayed due to: differing site conditions; changes in requirements or design; weather; unavailability of material or equipment; errors in plans and specifications; and interference by the owner, he must, promptly (proactively /

S-001 - Page 7 of 17

aggressively), bring the situation to the attention of his contact points, in order to resolve the utility situation.

- 3. Typically, per contracts' special provisions, parish utility personnel do not have <u>direct</u> <u>authority</u> over the contractor; however, as owners, they have <u>total</u> <u>authority</u> to funnel, through the Parish Designated Construction Project Managers, any concerns that they may have to the contractor.
- 4. <u>Bottom line</u>; Considering the facts that typically, Jefferson Parish provides a multi-level contact points' list, a fulltime (A/E) inspector, two assigned project construction managers (Parish and the A/E), pre-bid and pre-construction meetings, etc., <u>if a contractor is delayed, most likely, it is his fault</u>.

VIII. MEASUREMENT AND PAYMENT:

1. **Payment** for this work will be made after receipt of approval from the Jefferson Parish Department of Engineering.

The price and payment shall constitute full compensation for furnishing all labor, materials, and equipment to construct the water line including trenching, bedding, pipe laying, backfill, tie-ins to existing water lines, pressure testing mains and all incidental work necessary for a complete and functional water distribution system.

- 2. <u>Water Lines and/or Water Mains</u> (terms "water lines" or "water mains" shall mean water pipe in general, including mains, hydrant leads, fire service pipes, etc.) shall be measured along the centerline of pipeline in place, through fittings and valves, and shall be paid for per linear feet. This method of Measurement and Payment shall apply to all water lines <u>despite</u> of the <u>material type</u>; PVC, Ductile Iron, HDPE, etc. <u>and/or installation method</u>; Open Trench, Jack and Bore (J&B), Directional Drill (DD), etc. An alternative for measurement and payment for Directional Drill would be to be measured horizontally. This alternative method of measurement, if considered, shall be stated as a "Deviation from Jefferson Parish Standards". *{[Non Open Trench Item Numbers shall be accompanied with an extension to identify the method of installation (e.g. the item number for an 8" HDPE pipe being installed by Directional Drilling shall be: "W-308-DD")], [Thickness <u>class 52</u> Ductile Iron pipe items shall be accompanied with extension "C52"]}.*
- 3. **Existing AC waterlines** which shall be removed and disposed of shall be measured horizontally through fittings and valves along the centerline of pipeline and shall be paid for per linear feet of pipe, for specific size, removed and disposed. In case the contractor encounters AC pipes larger than the size that is in his contract, he shall be compensated 10%, per size, in addition to his bid price for smaller size pipe.

S-001 - Page 8 of 17

- 4. <u>Existing Waterlines</u> which shall be abandoned shall be measured horizontally through fittings and valves along the centerline of pipeline and shall be paid for per linear feet of pipe abandoned, regardless of size. There shall be no additional compensation or credit for different <u>size</u> water lines than shown on plans under this item unless otherwise specified.
- 5. There shall be no direct payment for non-AC pipe removal and disposal unless otherwise specified.
- 6. <u>Fire Hydrants</u> shall be measured and paid for per each hydrant installation complete in place. This item shall only include the hydrant. Fittings, hydrant valve, hydrant tee, valve box, pipes, etc. related to installation of a Fire Hydrant shall be paid separately and shall not be included in this item.
- 7. <u>Fire Hydrant Assemblies</u> shall be measured and paid for per each installation complete in place including <u>hydrant</u>, <u>hydrant tee</u>, <u>all fittings</u>, <u>hydrant valve</u>, <u>valve box</u>, <u>pipes</u>, etc. related to installation of a Fire Hydrant Assembly as per Jefferson Parish requirements.
- 8. <u>Water Meters and Meter Boxes</u> shall be measured and paid for per each, for specific size, installed, complete in place including meter, meter box, fittings, and other necessary accessories related to installation of a meter and a meter box as per Jefferson Parish and manufacturer's requirements.
- 9. Water Meter/Meter-Box adjustment shall be measured and paid for per each, for specific size, this item shall be full compensation for any necessary adjustments (Horizontal, Vertical, etc.), complete in place as per plans instructions or as directed by the Jefferson Parish Engineering Department.
- 10. <u>Gate and Butterfly Valves and Valve Boxes</u> where shown or required in accordance with Jefferson Parish Standards, shall be measured and paid for per each for specific size.
- 11. **Ductile Iron Fittings (Fittings)**, to include bends, crosses, tees (except the hydrant tee included in the "Fire Hydrant Assembly" item which includes the tee), reducers and any other required part to make sound and functional connections shall be measured and paid for per pound.
- 12. <u>Pipe restraints</u> shall be measured and paid for per each joint restrained for specific size. Pipe restraints shall mean any external device or devices that are used to restrain a joint by locking the joint into place so the joint cannot open, move, or turn. A flanged joint shall be considered a restrained joint and shall be measured and paid for as one.

S-001 - Page 9 of 17

- 13. <u>**Transitional Couplings**</u> shall be measured and paid for per each for a specific size in place. Measurement and Payment for Transitional Couplings shall be made at the
- 14. Contract unit price per each and shall include full compensation for providing all labor, materials, equipment, excavation, bedding and backfill, board foundation, etc. and Connection (Tie-in) to Existing Water Line per all applicable Jefferson Parish and Manufacture's Standards.
- 15. **Price Brothers Adapters** shall be measured and paid for per each for a specific size in place. Measurement and Payment for Price Brothers Adapters shall be made at the Contract unit price per each and shall include full compensation for providing all labor, materials, equipment, excavation, bedding and backfill, board foundation, etc. and Connection (Tie-in) to Existing Water Line per all applicable Jefferson Parish and Manufacture's Standards.
- 16. **Price Brothers Pipe Joint Field Welding** shall be measured and paid for per each, for a specific size of water main, in place. Measurement and Payment for Price Brothers Pipe Joint Field Welding shall be made at the Contract unit price per each and shall include full compensation for providing all labor, materials, equipment, excavation, bedding and backfill, board foundation, etc. All pipe joints shall receive a full, 360 degrees circumferential weld in accordance with the latest applicable Jefferson Parish, AWWA (AWWA c206, etc.) and Manufacture's Standards, Recommendations, and Requirements.
- 17. <u>Tie-ins</u>, There shall be no direct payment for tie-ins, unless otherwise specified.
- 18. <u>Water Service Connections</u> shall include all necessary work to install (or remove and replace) a service connection in accordance with the Jefferson Parish standards from the main to the meter, complete and in place, including tie-ins to the main and the meter. Water Service connections {"Direct-Buried" (DB) or "Directionally Drilled" (DD)} shall be measured and paid for per each for specific size. In case the contractor encounters water service connections larger than the size that is in his contract, he shall be compensated 10%, per size, in addition to his bid price for smaller size pipe.
- 19. <u>Fire Service Connections</u> shall be measured and paid for based on individual components involved (I.e. Pipes, fittings, couplings, check valves, gate valves, and double check valve assemblies). There shall be no "per each" pay item for fire service connections unless it is covered under "Deviation from Jefferson Parish Standard" section. There shall be no direct payment for removal and disposal of an existing fire service connection unless otherwise specified. Unless otherwise specified or directed by the owner, fire service connections shall be installed/replaced, as a minimum, from the main to the property line.

S-001 - Page 10 of 17

- **20.** <u>Check Valves</u> {"Resilient Seated" (RS) or "Metal Seated" (MS)} shall be per Jefferson Parish Standards and Requirements and shall be measured and paid for per each for specific size.
- 21. <u>Double check valve assemblies</u> where shown or required in accordance with Jefferson Parish Standards, shall be measured and paid for per each for specific size.

IX. TABULATED GENERAL JEFFERSON PARISH PAY ITEMS

Item No. Item Description (Pay Item)

Unit of Measure (Pay Unit)

a) 100 SERIES, PVC PIPES

W-104	Water Main (4") (PVC/C-900 Pine)	Linear Foot
W 101	$\frac{1}{1000} = \frac{1}{1000} = 1$	
W-106	Water Main (6") (PVC/C-900 Pipe)	Linear Foot
W-108	Water Main (8") (PVC/C-900 Pipe)	Linear Foot
W-110	Water Main (10") (PVC/C-900 Pipe)	Linear Foot
W-112	Water Main (12") (PVC/C-900 Pipe)	Linear Foot
W-114	Water Main (14") (PVC/C-905 Pipe)	Linear Foot
W-116	Water Main (16") (PVC/C-905 Pipe)	Linear Foot
W-118	Water Main (18") (PVC/C-905 Pipe)	Linear Foot
W-120	Water Main (20") (PVC/C-905 Pipe)	Linear Foot
W-124	Water Main (24") (PVC/C-905 Pipe)	Linear Foot
W-130	Water Main (30") (PVC/C-905 Pipe)	Linear Foot

b) 200 SERIES, DUCTILE IRON PIPES

W-204	Water Main (4") (Ductile Iron Pipe)	Linear Foot
W-206	Water Main (6") (Ductile Iron Pipe)	Linear Foot
W-208	Water Main (8") (Ductile Iron Pipe)	Linear Foot
W-210	Water Main (10") (Ductile Iron Pipe)	Linear Foot
W-212	Water Main (12") (Ductile Iron Pipe)	Linear Foot
	S-001 - Page 11 of 17	

Revised (12/16/2019)

W-214	Water Main (14") (Ductile Iron Pipe)	Linear Foot
W-216	Water Main (16") (Ductile Iron Pipe)	Linear Foot
W-218	Water Main (18") (Ductile Iron Pipe)	Linear Foot
W-220	Water Main (20") (Ductile Iron Pipe)	Linear Foot
W-224	Water Main (24") (Ductile Iron Pipe)	Linear Foot
W-230	Water Main (30") (Ductile Iron Pipe)	Linear Foot
W-236	Water Main (36") (Ductile Iron Pipe)	Linear Foot
W-242	Water Main (42") (Ductile Iron Pipe)	Linear Foot
W-248	Water Main (48") (Ductile Iron Pipe)	Linear Foot
W-254	Water Main (54") (Ductile Iron Pipe)	Linear Foot
W-260	Water Main (60") (Ductile Iron Pipe)	Linear Foot
W-264	Water Main (64") (Ductile Iron Pipe)	Linear Foot

300 SERIES, HDPE PIPES c)

W-302	Water Main (2") (HDPE Pipe) [DR]	Linear Foot
W-304	Water Main (4") (HDPE Pipe) [DR]	Linear Foot
W-306	Water Main (6") (HDPE Pipe) [DR]	Linear Foot
W-308	Water Main (8") (HDPE Pipe) [DR]	Linear Foot
W-310	Water Main (10") (HDPE Pipe) [DR]	Linear Foot
W-312	Water Main (12") (HDPE Pipe) [DR]	Linear Foot
W-314	Water Main (14") (HDPE Pipe) [DR]	Linear Foot
W-316	Water Main (16") (HDPE Pipe) [DR]	Linear Foot
W-318	Water Main (18") (HDPE Pipe) [DR]	Linear Foot
W-320	Water Main (20") (HDPE Pipe) [DR]	Linear Foot
W-324	Water Main (24") (HDPE Pipe) [DR]	Linear Foot
W-330	Water Main (30") (HDPE Pipe) [DR]	Linear Foot
W-336	Water Main (36") (HDPE Pipe) [DR]	Linear Foot
W-302-DD	Water Main (2") (HDPE Pipe) [DR]	Linear
W-304-DD	Water Main (4") (HDPE Pipe) [DR]	Linear
W-306-DD	Water Main (6") (HDPE Pipe) [DR]	Linear
W-308-DD	Water Main (8") (HDPE Pipe) [DR]	Linear
W-310-DD	Water Main (10") (HDPE Pipe) [DR]	Linear
W-312-DD	Water Main (12") (HDPE Pipe) [DR]	Linear
W-314-DD	Water Main (14") (HDPE Pipe) [DR]	Linear
W-316-DD	Water Main (16") (HDPE Pipe) [DR]	Linear
W-318-DD	Water Main (18") (HDPE Pipe) [DR]	Linear
W-320-DD	Water Main (20") (HDPE Pipe) [DR]	Linear
W-324-DD	Water Main (24") (HDPE Pipe) [DR]	Linear
W-330-DD	Water Main (30") (HDPE Pipe) [DR]	Linear
W-336-DD	Water Main (36") (HDPE Pipe) [DR]	Linear

Foot Foot

S-001 - Page 12 of 17

Revised (12/16/2019)

d) 400 SERIES, GATE VALVES

W-404	Gate Valve and Valve Box (4")	Each
W-406	Gate Valve and Valve Box (6")	Each
W-408	Gate Valve and Valve Box (8")	Each
W-410	Gate Valve and Valve Box (10")	Each
W-412	Gate Valve and Valve Box (12")	Each

e) 500 SERIES, BUTTERFLY VALVES

W-514	Butterfly Valve and Valve Box (14")	Each
W-516	Butterfly Valve and Valve Box (16")	Each
W-518	Butterfly Valve and Valve Box (18")	Each
W-520	Butterfly Valve and Valve Box (20")	Each
W-524	Butterfly Valve and Valve Box (24")	Each
W-530	Butterfly Valve and Valve Box (30")	Each
W-536	Butterfly Valve and Valve Box (36")	Each
W-542	Butterfly Valve and Valve Box (42")	Each
W-548	Butterfly Valve and Valve Box (48")	Each

f) 600 SERIES, TAPPING & VALVE ASSEMBLY

W-604X4	Tapping Sleeve & Valve Assembly (4"X4")	Each
W-606X4	Tapping Sleeve & Valve Assembly (6"X4")	Each
W-606X6	Tapping Sleeve & Valve Assembly (6"X6")	Each
W-608X4	Tapping Sleeve & Valve Assembly (8"X4")	Each
W-608X6	Tapping Sleeve & Valve Assembly (8"X6")	Each
W-608X8	Tapping Sleeve & Valve Assembly (8"X8")	Each
W-610X4	Tapping Sleeve & Valve Assembly (10"X4")	Each
W-610X6	Tapping Sleeve & Valve Assembly (10"X6")	Each
W-610X8	Tapping Sleeve & Valve Assembly (10"X8")	Each
W-610X10	Tapping Sleeve & Valve Assembly (10"X10")	Each
W-612X4	Tapping Sleeve & Valve Assembly (12"X4")	Each
W-612X6	Tapping Sleeve & Valve Assembly (12"X6")	Each
W-612X8	Tapping Sleeve & Valve Assembly (12"X8")	Each
W-612X10	Tapping Sleeve & Valve Assembly (12"X10")	Each
W-612X12	Tapping Sleeve & Valve Assembly (12"X12")	Each
W-614X4	Tapping Sleeve & Valve Assembly (14"X4")	Each
W-614X6	Tapping Sleeve & Valve Assembly (14"X6")	Each
	S-001 - Page 13 of 17	

Revised (12/16/2019)

W-614X8	Tapping Sleeve & Valve Assembly (14"X8")	Each
W-614X10	Tapping Sleeve & Valve Assembly (14"X10")	Each
W-614X12	Tapping Sleeve & Valve Assembly (14"X12")	Each
W-616X4	Tapping Sleeve & Valve Assembly (16"X4")	Each
W-616X6	Tapping Sleeve & Valve Assembly (16"X6")	Each
W-616X8	Tapping Sleeve & Valve Assembly (16"X8")	Each
W-616X10	Tapping Sleeve & Valve Assembly (16"X10")	Each
W-616X12	Tapping Sleeve & Valve Assembly (16"X12")	Each
W-616X16	Tapping Sleeve & Valve Assembly (16"X16")	Each
W-618X4	Tapping Sleeve & Valve Assembly (18"X4")	Each
W-618X6	Tapping Sleeve & Valve Assembly (18"X6")	Each
W-618X8	Tapping Sleeve & Valve Assembly (18"X8")	Each
W-618X10	Tapping Sleeve & Valve Assembly (18"X10")	Each
W-618X12	Tapping Sleeve & Valve Assembly (18"X12")	Each
W-618X16	Tapping Sleeve & Valve Assembly (18"X16")	Each
W-620X4	Tapping Sleeve & Valve Assembly (20"X4")	Each
W-620X6	Tapping Sleeve & Valve Assembly (20"X6")	Each
W-620X8	Tapping Sleeve & Valve Assembly (20"X8")	Each
W-620X10	Tapping Sleeve & Valve Assembly (20"X10")	Each
W-620X12	Tapping Sleeve & Valve Assembly (20"X12")	Each
W-620X16	Tapping Sleeve & Valve Assembly (20"X16")	Each
W-624X4	Tapping Sleeve & Valve Assembly (24"X4")	Each
W-624X6	Tapping Sleeve & Valve Assembly (24"X6")	Each
W-624X8	Tapping Sleeve & Valve Assembly (24"X8")	Each
W-624X10	Tapping Sleeve & Valve Assembly (24"X10")	Each
W-624X12	Tapping Sleeve & Valve Assembly (24"X12")	Each
W-624X16	Tapping Sleeve & Valve Assembly (24"X16")	Each
W-630X4	Tapping Sleeve & Valve Assembly (30"X4")	Each
W-630X6	Tapping Sleeve & Valve Assembly (30"X6")	Each
W-630X8	Tapping Sleeve & Valve Assembly (30"X8")	Each
W-630X10	Tapping Sleeve & Valve Assembly (30"X10")	Each
W-630X12	Tapping Sleeve & Valve Assembly (30"X12")	Each
W-630X16	Tapping Sleeve & Valve Assembly (30"X16")	Each

g) 700 SERIES, PIPE RESTRAINTS

W-704	Pipe Restraints (4")	Each
W-706	Pipe Restraints (6")	Each
W-708	Pipe Restraints (8")	Each
W-710	Pipe Restraints (10")	Each
W-712	Pipe Restraints (12")	Each

S-001 - Page 14 of 17

Revised (12/16/2019) Jefferson Parish General Standard Water Distribution System Technical Specifications

W-714	Pipe Restraints (14")	Each
W-716	Pipe Restraints (16")	Each
W-718	Pipe Restraints (18")	Each
W-720	Pipe Restraints (20")	Each
W-724	Pipe Restraints (24")	Each
W-730	Pipe Restraints (30")	Each
W-736	Pipe Restraints (36")	Each
W-742	Pipe Restraints (42")	Each
vv-/+2	Tipe Resulting (42)	Lacii

h) 800 SERIES, TRANSITIONAL COUPLINGS

W-804	Transitional Couplings (4")	Each
W-806	Transitional Couplings (6")	Each
W-808	Transitional Couplings (8")	Each
W-810	Transitional Couplings (10")	Each
W-812	Transitional Couplings (12")	Each
W-814	Transitional Couplings (14")	Each
W-816	Transitional Couplings (16")	Each
W-818	Transitional Couplings (18")	Each

i) 900 SERIES, MISCELLANEOUS

W-901	Ductile Iron Fittings	Pounds
W-902	Fire Hydrant	Each
W-902-A	Fire Hydrant Assembly	Each
W-903-0-DB	Water Service Connection (< 1")	Each
W-903-1-DB	Water Service Connection (1")	Each
W-903-2-DB	Water Service Connection (2")	Each
W-903-3-DB	Water Service Connection (3") [†]	Each
W-903-4-DB	Water Service Connection (4")	Each
W-903-6-DB	Water Service Connection (6")	Each
W-903-8-DB	Water Service Connection (8")	Each
W-903-0-DD	Water Service Connection (< 1")	Each
W-903-1-DD	Water Service Connection (1")	Each
W-903-2-DD	Water Service Connection (2")	Each
W-903-3-DD	Water Service Connection (3") [†]	Each
W-903-4-DD	Water Service Connection (4")	Each
W-903-6-DD	Water Service Connection (6")	Each

S-001 - Page 15 of 17

Revised (12/16/2019) Jefferson Parish General Standard Water Distribution System Technical Specifications

W-904-4-RS	Check Valve (4")	Each
W-904-6-RS	Check Valve (6")	Each
W-904-8-RS	Check Valve (8")	Each
W-904-10-RS	Check Valve (10")	Each
W-904-12-RS	Check Valve (12")	Each
W-904-4-MS	Check Valve (4")	Each
W-904-6-MS	Check Valve (6")	Each
W-904-8-MS	Check Valve (8")	Each
W-904-10-MS	SCheck Valve (10")	Each
W-904-12-MS	SCheck Valve (12")	Each
W-905-2	"Double Check Valve Assembly" (2")	Each
W-905-4	"Double Check Valve Assembly" (4")	Each
W-905-6	"Double Check Valve Assembly" (6")	Each
W-905-8	"Double Check Valve Assembly" (8")	Each
W-906-0	Water Meter & Meter Box (< 1")	Each
W-906-1	Water Meter & Meter Box (1")	Each
W-906-2	Water Meter & Meter Box (2")	Each
W-906-3	Water Meter & Meter Box (3") [†]	Each
W-906-4	Water Meter & Meter Box (4")	Each
W-906-6	Water Meter & Meter Box (6")	Each
W-906-8	Water Meter & Meter Box (8")	Each
W-906-0-A	Water Meter/Meter-Box Adjustment (< 1")	Each
W-906-1-A	Water Meter/Meter-Box Adjustment (1")	Each
W-906-2-A	Water Meter/Meter-Box Adjustment (2")	Each
W-906-3-A	Water Meter/Meter-Box Adjustment (3") [†]	Each
W-906-4-A	Water Meter/Meter-Box Adjustment (4")	Each
W-906-6-A	Water Meter/Meter-Box Adjustment (6")	Each
W-906-8-A	Water Meter/Meter-Box Adjustment (8")	Each
W-907-4	Removal & Disposal of existing AC Waterline (4")	Linear Foot
W-907-6	Removal & Disposal of existing AC Waterline (6")	Linear Foot
W-907-8	Removal & Disposal of existing AC Waterline (8")	Linear Foot
W-907-10	Removal & Disposal of existing AC Waterline (10")	Linear Foot
W-907-12	Removal & Disposal of existing AC Waterline (12")	Linear Foot
W-907-14	Removal & Disposal of existing AC Waterline (14")	Linear Foot
W-907-16	Removal & Disposal of existing AC Waterline (16")	Linear Foot
W-907-18	Removal & Disposal of existing AC Waterline (18")	Linear Foot
	S-001 - Page 16 of 17	

Revised (12/16/2019)

W-907-20	Removal & Disposal of existing AC Waterline (20")	Linear Foot
W-908	Abandonment of existing Waterline	Linear Foot
W-909-16	Price Brothers Adapter (16")	Each
W-909-18	Price Brothers Adapter (18")	Each
W-909-20	Price Brothers Adapter (20")	Each
W-909-24	Price Brothers Adapter (24")	Each
W-909-30	Price Brothers Adapter (30")	Each
W-909-36	Price Brothers Adapter (36")	Each
W-909-42	Price Brothers Adapter (42")	Each
W-909-48	Price Brothers Adapter (48")	Each
W-909-54	Price Brothers Adapter (54")	Each
W-909-60	Price Brothers Adapter (60")	Each
W-909-66	Price Brothers Adapter (66")	Each
W-909-72	Price Brothers Adapter (72")	Each
W-910-16	Price Brothers Pipe Joint Field Welding (16")	Each
W-910-18	Price Brothers Pipe Joint Field Welding (18")	Each
W-910-20	Price Brothers Pipe Joint Field Welding (20")	Each
W-910-24	Price Brothers Pipe Joint Field Welding (24")	Each
W-910-30	Price Brothers Pipe Joint Field Welding (30")	Each
W-910-36	Price Brothers Pipe Joint Field Welding (36")	Each
W-910-42	Price Brothers Pipe Joint Field Welding (42")	Each
W-910-48	Price Brothers Pipe Joint Field Welding (48")	Each
W-910-54	Price Brothers Pipe Joint Field Welding (54")	Each
W-910-60	Price Brothers Pipe Joint Field Welding (60")	Each
W-910-66	Price Brothers Pipe Joint Field Welding (66")	Each
W-910-72	Price Brothers Pipe Joint Field Welding (72")	Each

[†] Typically Jefferson Parish does not approve installation of any 3" Meter

S-001 - Page 17 of 17

Revised (12/16/2019) Jefferson Parish General Standard Water Distribution System Technical Specifications

<u>Appendix "A"</u> <u>Jefferson Parish</u> <u>Department of Engineering</u> <u>Gravity Sanitary Sewer System General Standard Notes*1</u>

* These notes shall be referenced and shall be included, in their entirety, unedited and unabridged, in all Jefferson Parish Projects as follows:

- <u>New subdivisions</u> attach these notes to plans as Appendix "A".
- <u>All other projects</u> include these notes in Specification Booklets, which include any work related to the Parish Gravity Sanitary Sewer System. Insert a copy of these notes, on green paper, at the end of the "Gravity Sanitary Sewer System Technical Specification" Section of the Specification Booklet. Any Deviations and / or Variations from these General Standard Notes shall be tabulated under the heading of "Deviations From Jefferson Parish Gravity Sanitary Sewer System General Standard Notes" and shall be included in the "Sanitary Sewer System Technical Specification Specification Section of the Specification of the Specification of the Specification Section of the Specification Booklet.

1. NOTIFICATION:

CONTRACTORS SHALL NOTIFY THE DEPARTMENT OF SEWERAGE AT 736-6661 AND THE DEPARTMENT OF ENGINEERING, INSPECTION DIVISION AT 736-6793, 48 HOURS PRIOR TO ANY FIELD WORK RELATING TO JEFFERSON PARISH SANITARY SEWER SYSTEM. IN ADDITION TO THIS <u>GENERAL</u> NOTIFICATION REQUIREMENT, THE CONTRACTOR IS RESPONSIBLE TO NOTIFY INDIVIDUALS AND OFFICES AS REQUIRED BY DIFFERENT SECTIONS OF THESE STANDARD NOTES.

2. MINIMUM MAIN SIZE

THE MINIMUM ACCEPTABLE SIZE FOR NEW GRAVITY SEWER LINES IS 8 INCHES IN DIAMETER.

3. MATERIAL

POLYVINYL CHLORIDE (PVC) GRAVITY PIPE 4 INCHES THROUGH 15 INCHES IN DIAMETER (MAINS AND LATERAL SERVICE CONNECTIONS) SHALL MEET ASTM SPECIFICATION D-3034 (LATEST REVISION), DR26 WITH MINIMUM PIPE STIFFNESS OF 115 PSI. PVC PIPE LARGER THAN 15 INCHES IN DIAMETER SHALL MEET ASTM SPECIFICATION F-679 WITH MINIMUM PIPE STIFFNESS OF 115 PSI. FITTINGS SHALL MEET ASTM

¹ Jefferson Parish Department of Engineering "Gravity Sanitary Sewer System General Standard Notes", Originated - December 2002.

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

SPECIFICATION D-3034 (LATEST REVISION), DR35. PIPE SECTIONS AND FITTINGS SHALL BE INTEGRAL CAST BELL AND ELASTOMERIC GASKET AS RECOMMENDED BY THE MANUFACTURER AND ASTM SPECIFICATION D-3212. INSTALLATION OF THE SEWER GRAVITY LINES SHALL CONFORM TO ASTM SPECIFICATIONS D-2321.

4. <u>DESIGN VELOCITIES & DESIGN SLOPES</u>

SEWER MAINS SHALL BE DESIGNED AND CONSTRUCTED TO PROVIDE MEAN VELOCITIES, WHEN FLOWING FULL, OF NOT LESS THAN 2.0 FEET PER SECOND, BASED ON MANNING'S FORMULA USING AN "N" VALUE OF 0.011. MINIMUM DESIRED SLOPE FOR AN 8 INCH MAIN IS 0.40%. SLOPES SLIGHTLY LESS THAN THE DESIRED SLOPE OF 0.40% (0.40% TO 0.30%) WILL BE PERMITTED TO AVOID EXCEEDING MAXIMUM DEPTH REQUIREMENT FOR SEWER GRAVITY LINES OF 15 FEET, TO ENABLE TYING TO AN EXISTING GRAVITY SYSTEM, AND MINIMIZING THE NUMBER OF LIFT STATIONS.

5. JACKED AND/OR BORED CASINGS

PIPES INSTALLED IN JACKED AND/OR BORED CASINGS SHALL HAVE A MINIMUM TARGET SLOPE OF 0.50%. PIPES INSTALLED IN CASINGS SHALL BE "RESTRAINED PVC C-900" AND ADEQUATELY BRACED WITH APPROVED CASING SPACERS TO CONTROL THE SLOPE, PREVENT PIPE FLOTATION AND PIPE DEFLECTION WITHIN THE CASING.

6. DIRECTIONAL DRILLING OF HDPE PIPE

DIRECTIONAL DRILLING OF HDPE GRAVITY MAINS AND/OR SERVICE CONNECTIONS WILL NOT BE PERMITTED.

7. <u>NEW SERVICE CONNECTIONS</u>

SERVICE CONNECTIONS SHALL BE 6-INCH IN DIAMETER AND SHALL BE INSTALLED IN ACCORDANCE WITH JEFFERSON PARISH SEWER STANDARD DETAILS. SERVICE CONNECTIONS SHALL EXTEND FROM MAIN TO PROPERTY LINE.

8. TRENCH CONSTRUCTION

TRENCH CONSTRUCTION FOR THE GRAVITY SANITARY SEWER LINES SHALL BE DETERMINED BY THE EXISTING SOIL TYPE AND THE DEPTH OF

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

INSTALLATION. REFER TO JEFFERSON PARISH SEWER STANDARD DETAIL SHEET (LATEST REVISION, 05-30-00). USE SOIL TYPE []. ONLY HARDWOOD SUCH AS OAK SHALL BE ALLOWED FOR SHEETING, BRACING, AND FOUNDATION LUMBER.

TIMBER SHEETING AND BRACING SHOWN (JEFFERSON PARISH SEWER STANDARD DETAIL SHEET, LATEST REVISION) FOR SANITARY SEWER TRENCHES ARE THE MINIMUM REQUIRED TO CONTROL THE WIDTH OF THE EXCAVATED TRENCH AND TO SAFEGUARD THE INTEGRITY OF THE SANITARY SEWER FOUNDATION, BEDDING AND BACKFILL. IN ADDITION TO THESE MINIMUM REQUIREMENTS, THE CONTRACTOR MUST PROVIDE SUFFICIENT AMOUNT OF SHEETING AND BRACING TO INSURE SAFE WORKING CONDITIONS FOR HIS WORKMEN.

BACKFILL ALL TRENCHES WITHIN STREET RIGHT-OF-WAY WITH PUMPED RIVER SAND.

9. INFILTRATION

NO INFILTRATION IS ALLOWED WITHIN THE GRAVITY SANITARY SEWER SYSTEM (MANHOLES, MAINS & SERVICE CONNECTIONS).

10. <u>CLEARANCE</u>

GRAVITY SEWER MAINS SHALL BE INSTALLED FOUR (4) FEET FROM PROPERTY LINES (CENTERLINE OF MAIN TO PROPERTY LINE = 4 FEET). A SIX (6) FOOT MINIMUM HORIZONTAL SPACING (EDGE TO EDGE) SHALL BE MAINTAINED BETWEEN GRAVITY SEWER LINES (MAINS & SERVICE CONNECTIONS) AND WATER MAINS.

SEWER LINES SHALL NOT BE INSTALLED CLOSER THAN 10 FEET (MEASURED HORIZONTALLY) FROM ANY BUILDING FOUNDATION, WALL OR BUILDING OVERHANG. THIS 10 FOOT CLEARANCE MAY BE REDUCED TO 6 FEET IN AREAS HAVING COMMERCIAL ZONING WITH LIMITED RIGHT-OF-WAY AND WITH APPROVAL OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT.

GRAVITY SEWER MAINS CROSSING WATER MAINS MUST BE INSTALLED BELOW WATER MAINS WITH A MINIMUM VERTICAL CLEARANCE OF EIGHTEEN (18) INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND OUTSIDE OF THE SEWER MAIN. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER MAIN JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

SEWER SERVICE CONNECTIONS MAY CROSS OVER WATER MAINS WITH A MINIMUM VERTICAL CLEARANCE OF EIGHTEEN (18) INCHES. ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER SERVICE CONNECTION TO MAINTAIN LINE AND GRADE. ONLY TYPE III, IV & V SEWER STANDARD TRENCH (SEE JEFFERSON PARISH SEWER STANDARD DETAILS) SHALL BE PERMITTED. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER MAIN JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

WHEN SANITARY SEWER LINES ARE PARALLEL TO WATER LINES, THE CLEARANCE SHALL BE A MINIMUM OF 6 FEET (MEASURED HORIZONTALLY).

IF ANY OF THE ABOVE CONDITIONS CANNOT BE MET, DUE TO FIELD CONDITIONS, THE <u>"10 STATE STANDARDS" ((PHONE (518) 439-7286, WEB SITE: WWW.HES.ORG))</u> GUIDELINES CAN BE FOLLOWED, WITH APPROVAL OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT.

MINIMUM CLEARANCE BETWEEN A SEWER LINE AND ANY PRIVATE UTILITY LINE SHALL BE 6 FEET (MEASURED HORIZONTALLY). PRIVATE UTILITIES SHALL BE INSTALLED IN PRIVATE SERVITUDES.

11. <u>MANHOLES</u>

MANHOLES' MANUFACTURING, CONSTRUCTION, AND INSTALLATION SHALL BE PER "LATEST REVISIONS OF ALL APPLICABLE ASTM SPECIFICATIONS" AND "MANUFACTURER'S SPECIFICATIONS AND REQUIREMENTS". FIBERGLASS MANHOLES AS WELL AS BRICK, CAST-IN-PLACE AND PRECAST CONCRETE MANHOLES MAY BE SPECIFIED. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, FOR MANHOLES, TO THE PARISH'S CONSULTANT ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

ALL CONCRETE USED IN CONSTRUCTION OF <u>CAST-IN-PLACE</u> AND <u>PRECAST CONCRETE</u> MANHOLES, INCLUDING THE TOP SLAB, SHALL INCLUDE AN **APPROVED CRYSTALLINE ADMIX** (AS LISTED BELOW) IN THE MIX REGARDLESS OF ANY SPECIAL COATING THAT MAY HAVE BEEN SPECIFIED FOR CERTAIN MANHOLES AND/OR WET WELLS.

AN **APPROVED CRYSTALLINE WATERPROOFING MORTAR ADMIX** (AS LISTED BELOW) SHALL BE INCORPORATED INTO ALL MORTAR MIXES USED IN SANITARY SEWER MANHOLES (BRICK, CAST-IN-PLACE, AND PRECAST CONCRETE). THE DOSAGE, MIXING, AND APPLICATION OF THE

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

CRYSTALLINE WATERPROOFING MORTAR ADMIX SHALL BE AS PER MANUFACTURER'S SPECIFICATIONS AND REQUIREMENTS.

AN ALTERNATE TO THE ABOVE (WITH JEFFERSON PARISH ENGINEERING DEPARTMENT'S APPROVAL) WOULD BE TO APPLY TWO COATS OF AN **APPROVED CRYSTALLINE COATING** (AS LISTED BELOW) TO THE INTERIOR MORTAR SURFACE OF THE BRICK MANHOLE AS PER MANUFACTURER'S SPECIFICATIONS.

ALL CRYSTALLINE PRODUCTS SHALL INCLUDE A DYE SO IT CAN BE DISTINGUISHED FROM CONCRETE WITHOUT CRYSTALLINE PRODUCTS EXCEPT TOP SLAB OF LIFT STATION WET WELLS AND VALVE PITS WHICH SHOULD NOT HAVE ANY DYE.

APPROVED CRYSTALLINE ADMIXES:

- XYPEX CHEMICAL CORPORATION; XYPEX C-1000R
- PENETRON USA; PENETRON ADMIX RP

APPROVED CRYSTALLINE WATERPROOFING MORTAR ADMIXES:

- XYPEX CHEMICAL CORPORATION; XYPEX C-1000R
- PENETRON USA; PENETRON ADMIX RP

APPROVED CRYSTALLINE COATINGS:

- XYPEX CHEMICAL CORPORATION, TWO COAT SYSTEM:
 ONE COAT OF XYPEX CONCENTRATE FOLLOWED BY ONE COAT OF XYPEX MODIFIED.
- PENETRON USA; PENETRON
 O TWO COATS OF PENETRON

MANHOLE STEPS SHALL NOT BE INSTALLED IN SANITARY SEWER MANHOLES.

FIBERGLASS, POLYMER CONCRETE; BY "U.S. COMPOSITE PIPE, INC." OR APPROVED EQUAL, OR CONCRETE "FORTIFIED WITH CONSHIELD" (IN ADDITION TO XYPEX), IS REQUIRED FOR LIFT STATION WET WELLS, MANHOLES WITHIN CLOSE PROXIMITY (100 FEET) OF LIFT STATIONS, DEEP (8 FEET AND ABOVE) MANHOLES AND ANY MANHOLE WHICH IS OR WILL BE RECEIVING A FORCE MAIN.

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

FIBERGLASS AND PRECAST MANHOLES ARE THE CHOICES FOR SHALLOWER MANHOLES.

BRICK AND CAST-IN-PLACE MANHOLES MAY BE SPECIFIED ONLY WHEN FIELD CONDITIONS AND OR CONFLICTS WILL REQUIRE FLEXIBILITY IN DESIGN AND CONSTRUCTION OF THE MANHOLES.

INTERVALS BETWEEN SANITARY SEWER MANHOLES SHALL BE MAXIMUM OF 350 FEET.

MINIMUM DEPTH FOR SEWER MANHOLES AND MAINS SHALL BE 3.5 FEET. DROP SEWER MANHOLES SHALL BE INSTALLED WHEN THE VERTICAL DISTANCE FROM THE MANHOLE INVERT TO THE SEWER MAIN INVERT EXCEEDS THREE (3) FEET.

12. <u>LIFESAVER STAINLESS STEEL STOPPERS</u>

CONTRACTOR SHALL INSTALL "LIFESAVER STAINLESS STEEL STOPPERS" INSERTS IN SANITARY SEWER MANHOLES IN ACCORDANCE WITH JEFFERSON PARISH STANDARDS.

13. <u>SERVICE CONNECTIONS AND CLEANOUTS</u>

SERVICE CONNECTIONS SHALL BE MINIMUM 6-INCH IN DIAMETER AND SHALL BE INSTALLED IN ACCORDANCE WITH JEFFERSON PARISH SEWER STANDARD DETAILS. SERVICE CONNECTIONS SHALL EXTEND FROM MAIN TO PROPERTY LINE.

SEWER SERVICE/HOUSE CONNECTIONS CONNECTED TO A TERMINAL MANHOLE SHALL BE CONNECTED AT THE INVERT OF THE TERMINAL MANHOLE.

ALL LOTS MUST ULTIMATELY HAVE A FUNCTIONING "JEFFERSON PARISH MAINTAINED CLEANOUT". IF A LOT DOES NOT HAVE SUCH A CLEANOUT, ONE MUST BE PROVIDED UNDER THIS CONTRACT.

ALL VACANT LOTS MUST BE PROVIDED WITH A SEWER SERVICE / HOUSE CONNECTION (HC) AND A CLEANOUT. SEWER HC, WHERE PRACTICAL, SHALL BE INSTALLED PERPENDICULAR TO THE SEWER MAIN. ALL SEWER HC INSTALLED BY THE CONTRACTOR SHALL BE PROPERLY PLUGGED. LOCATION OF ALL HC SHALL BE MARKED BY IMPRESSING LETTERS HC IN THE FACE OF STREET CURB IN ACCORDANCE WITH THE REQUIREMENTS OF JEFFERSON PARISH STANDARDS (SEE SEWER STANDARD DETAILS). END OF HC SHALL BE MARKED BY INSTALLING A Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017 2" X 12"- OAK BOARD (MINIMUM THREE FEET (3') OF EXPOSED HEIGHT) VERTICALLY AT THE END OF HC.

14. <u>EXISTING SANITARY SEWER SERVICE</u> <u>CONNECTIONS</u>

EXISTING SANITARY SEWER SERVICE CONNECTIONS, IF DISTURBED OR WHICH WILL BE LOCATED UNDER A PROPOSED NEW ROADWAY PAVEMENT SHALL BE REPAIRED, ADJUSTED OR REPLACED AS FOLLOWS:

- If the existing sanitary sewer house connection is made of PVC material, any repairs or adjustments shall be allowed only by removal and replacement of sections of the house connection in kind. Use of rubber couplings such as fernco couplings will not be permissible under roadways. Only SDR-35 Repair Couplings will be allowed for repair of the existing PVC sanitary sewer house connections under roadways.
- If the existing sanitary sewer house connection is made of any material other than PVC material (*Clay, Concrete, and <u>Armco Truss, etc.</u>*), repairs or adjustments shall not be allowed. These connections shall be replaced with PVC pipe and fittings from the main to the property line or to the Jefferson Parish maintenance cleanout, whichever is practical.
- Bedding and backfill of the sanitary sewer house connections must be as indicated on Jefferson Parish Sewer Standard Detail Sheet (latest revision).
- No siphons will be allowed.
- When sewer house connections are being connected to existing lined mains or newly lined mains, "LMT wyes or tees" (or approved equal) shall be used to connect the house connection to the main. *The following sample specifications* {Downloaded from LMK Technologies' site (<u>http://www.performanceliner.com/vacatee/mainline_tap/installation_specs/</u>)} shall be followed for this product:

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

Installation Specifications for Mainline Liner Connection Lined Main TapTM (LMTTM)

1. INTENT

It is the intent of this specification to provide a cost effective installation of a sewer lateral tap to a rehabilitated mainline pipe providing a $VNLC^{TM}$ (verifiable non-leaking connection).

2. GENERAL

The LINE MAIN TAPTM (LMTTM) product and process consists of locating the service connection within the mainline pipe by the most effective means available to the installer. The most common method utilized and associated with the LMTTM process consists of inserting a video camera with an internal sonde either through the lateral service and pushing the camera to the mainline pipe or from main pipe to the service location. Locating the service location is achieved with a receiving unit and marked on the surface. Once the service connection has been located an access pit is made by conventional excavation exposing the main pipe at the lateral connection. Then, a 2-foot section of the original host pipe is broken away, exposing the new stand-alone mainline liner. (Pipe within a pipe, CIPP/Folded Pipe) Prepare the surface of the mainline liner by removing any excess resin or debris to provide a smooth clean surface. Grinding may be necessary. The opening in the mainline liner may be circular or elliptical to accommodate a WYE or TEE shaped LMT[™] saddle. The LMT[™] is connected to a new section of PVC pipe (4" or 6" SDR 26 or SDR 35) utilizing a solvent weld or a push gasket joint. An adhesive/sealant is applied to the underside of the LMTTM saddle. The LMTTM/PVC pipe assembly is snapped onto the exterior of the mainline liner. The LMTTM saddle is attached to the mainline liner encompassing more than fifty percent (50%) of the mainline liner diameter. The LMT[™] saddle is a selfsupporting component, which allows the resin to cure without affecting the integrity of the seal to the mainline liner. Then the section of new PVC pipe is connected to the existing lateral pipe using a non-shear leak-free coupling. The excavated access pit is back filled and the site is restored according to the engineer's specifications. The process shall be LMTTM (LINED MAIN TAPTM) by LMK® Technologies or equal.

3. MATERIAL

The material shall be a molded PVC saddle sized to encompass more than 50% of the mainline liner. The saddle boss shall be either solvent welded or a push-gasket bell. The adhesive/sealant shall be designed for structurally adhering to CIPP, PVC, Modified PVC or PE pipe.

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017
4. FINAL ACCEPTANCE

Upon completion, the installer will deliver an internal CCTV video of the main/lateral connection to the owner. The owners will review the documentation and the site to determine that the scope of work is complete and the work is satisfactory.

Copyright 2009 LMK Technologies

15. <u>SHIELDED REPAIR COUPLINGS</u>

SHIELDED REPAIR COUPLINGS (<u>4" THROUGH 15"</u>) SHALL BE DESIGNED FOR MAKING SEWER CONNECTIONS, REPAIRS AND FITTINGS INSERTIONS. THESE COUPLINGS SHALL BE SUITABLE FOR CONNECTING PLAIN END OF ANY MATERIAL COMBINATIONS OF CLAY, CONCRETE, CAST IRON, PLASTIC, ETC. SHIELDED REPAIR COUPLINGS SHALL HAVE STAINLESS STEEL SHEAR RINGS AND STAINLESS STEEL HARDWARE ("NUT AND BOLT CLAMP DESIGN" ONLY). SHIELDED REPAIR COUPLINGS SHALL BE "**FERNCO'S 5000 SERIES STRONG BACK RC COUPLINGS**" OR "**MISSION RUBBERS' ARC**". ASTM C1173-08.

16. <u>CONFLICT MANHOLES</u>

SEWER GRAVITY MAINS INSTALLED WITHIN CONFLICT MANHOLES SHALL BE DUCTILE IRON PIPE AND HAVE NO JOINTS. DUCTILE IRON PIPES, UP TO 12" IN DIAMETER, ARE AVAILABLE IN 18' AND 20' LAYING LENGTHS (LARGER DIAMETER PIPES ARE LIMITED TO 18' LAYING LENGTH). FLANGED DUCTILE IRON PIPE MAY BE USED FOR SPANS LONGER THAN 20'.

PVC DR 25, C-900 AND PVC SDR26 PIPE MAY BE ALLOWED IN SMALL CONFLICT MANHOLES (MAXIMUM SPAN OF 5 FEET). THIS HAS TO BE SPECIFIED IN PLANS AND OR SPECS.

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

17. <u>DUCTILE IRON PIPE</u>

ALL DUCTILE IRON PIPE USED FOR SANITARY SEWER APPLICATIONS SHALL HAVE A FACTORY APPLIED INTERIOR COATING/LINING OF "PROTECTO 401" CERAMIC EPOXY LINING AS PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR SANITARY SEWER APPLICATIONS AND FACTORY ASPHALTIC EXTERIOR COATING.

POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) SHALL BE REQUIRED FOR ALL DUCTILE IRON PIPES AND FITTINGS.

18. <u>GREEN PVC C-900 AND C-905 (DR 18) PIPE</u>

POLYVINYL CHLORIDE PVC C-900 AND C-905 PIPE 4 INCHES THROUGH 36 INCHES IN DIAMETER USED FOR SEWER GRAVITY PIPE SHALL BE DR-18 AND SHALL BE GREEN COLOR.

19. <u>MANHOLE CONNECTIONS</u>

MANHOLE CONNECTIONS (CONNECTION OF SEWER PIPES TO MANHOLES) SHALL BE WATERTIGHT. CONNECTION OF PVC SEWER PIPE TO MANHOLES WITH CONCRETE GROUT, WITHOUT SOME FORM OF APPROVED MANHOLE CONNECTOR OR WATER STOP, SHALL NOT BE PERMITTED. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR MANHOLE CONNECTIONS TO THE PARISH ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

20. <u>SEWER PIPE ABANDONMENT</u>

ALL ABANDONED SEWER LINES (MAINS OR SERVICE CONNECTIONS) UNDER ROADWAYS SHALL BE FILLED WITH FLOWABLE FILL.

21. <u>PRE-CONSTRUCTION AND POST-</u> <u>CONSTRUCTION VIDEO INSPECTIONS (EXISTING</u> <u>SYSTEM ONLY)</u>

THE CONTRACTOR SHALL PERFORM A <u>PRE-CONSTRUCTION AND POST-CONSTRUCTION</u> VIDEO INSPECTIONS OF ANY <u>EXISTING</u> GRAVITY SANITARY SEWER PIPE (MAINS OR SERVICE CONNECTIONS), WHICH MAY BE AFFECTED (TO BE DECIDED BY THE JEFFERSON PARISH ENGINEERING Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017 DEPARTMENT) BY THE PROJECT, WITHIN THE PROJECT LIMITS AS PER JEFFERSON PARISH DEPARTMENT OF SEWERAGE LATEST "SEWER LINE CLEANING AND VIDEO INSPECTION" SPECIFICATIONS (SEE INSET "A").

SINCE THE CLEANING OF ANY SEGMENT OF SEWER LINES, BY NATURE OF THIS TASK, WILL REQUIRE CLEANING OF THE ENTIRE SEWER LINE FROM ONE MANHOLE TO THE NEXT, THE CLEANING AND VIDEO INSPECTIONS OF SEWER LINES MOST LIKELY WILL EXTEND BEYOND THE PROJECT LIMITS AT INTERSECTING STREETS, AND WILL AFFECT THE PAY ITEM QUANTITIES FOR THIS TASK.

A VERY IMPORTANT, AND OFTEN MISSED, REQUIREMENT INCLUDED IN INSET "A" IS THE UPSTREAM AND DOWNSTREAM MANHOLE NUMBERS AND LIFT STATION AREA CODES. IF THIS INFORMATION IS NOT PROVIDED IN THE PLANS AND OR SPECIFICATIONS, THE CONTRACTOR IS RESPONSIBLE FOR ACCRUING THIS INFORMATION PRIOR TO THE VIDEO INSPECTION. (CONTACT MR. CHANEN JOSEPH OF THE ENGINEERING DEPARTMENT, 504-736-6824).

- THE CONTRACTOR MUST CONTACT THE FOLLOWING INDIVIDUALS 48 HOURS PRIOR TO CLEANING AND VIDEOING ANY SEWER SYSTEM:
 - JEFFERSON PARISH ENGINEERING DEPARTMENT UTILITY INSPECTION SUPERVISOR, MR. PETER BLAHA (504-736-6791) OR MR. MICHAEL CALECAS (504-736-6509)
 - O THE DESIGNATED JEFFERSON PARISH ENGINEERING DEPARTMENT UTILITY INSPECTOR (NAME AND CONTACT INFORMATION WILL BE PROVIDED AT THE PRE-CONSTRUCTION MEETING).
- IN ADDITION TO THE ABOVE, THE FOLLOWING INDIVIDUALS MUST BE CONTACTED (ONLY FOR THE REASONS STATED BELOW) AS WELL:
 - JEFFERSON PARISH SEWERAGE DEPARTMENT (<u>LIFT STATIONS</u> <u>& SFM SHUTDOWNS</u>)
 - WESTBANK:
 MR. MORRIS SAPIA
 (504-437-4817)

 EASTBANK:
 MR. TOMMY HOYT
 (504-736-6678)
 - O JEFFERSON PARISH SEWERAGE DEPARTMENT (<u>GRAVITY</u> <u>LINES AND MANHOLES RELATED EMERGENCIES</u>)
 - WESTBANK: MR. DONALD JACKSON (504-437-4816)

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

• EASTBANK: MR. CRAIG BRADLEY (504-736-6685)

THE PURPOSE OF PRE-CONSTRUCTION VIDEO INSPECTION WOULD BE TO PROVIDE ADDITIONAL INFORMATION ABOUT THE CONDITION OF THESE LINES BEFORE THE CONSTRUCTION IN ORDER FOR THE PARISH TO DETERMINE AND IMPLEMENT APPLICABLE COST EFFECTIVE REHABILITATION AND REPAIR PROGRAMS PRIOR TO CONSTRUCTION. THE PURPOSE OF THE POST-CONSTRUCTION VIDEO INSPECTION WOULD BE TO REFLECT ANY DAMAGE CAUSED BY THE CONSTRUCTION. A COPY OF THESE VIDEOS SHALL BE SENT TO THE JEFFERSON PARISH DEPARTMENTS OF ENGINEERING, IMMEDIATELY, AS THEY BECOME AVAILABLE.

UNLESS OTHERWISE AGREED UPON, BETWEEN THE JEFFERSON PARISH ENGINEERING DEPARTMENT, UTILITY SECTION, AND THE CONTRACTOR, THE PRE-CONSTRUCTION VIDEO INSPECTION MUST BE DONE IMMEDIATELY AFTER THE NOTICE TO PROCEED IS ISSUED. THIS WILL ALLOW AMPLE TIME TO ADDRESS ALL NECESSARY ISSUES RELATING TO THE EXISTING SEWER GRAVITY SYSTEM.

UNLESS OTHERWISE SPECIFIED {SEE NOTE TO THE ENGINEER / DESIGNER, BELOW}, THERE SHALL BE NO DIRECT PAYMENT FOR <u>PRE-CONSTRUCTION AND POST-CONSTRUCTION</u> SEWER LINE CLEANING AND VIDEO INSPECTION.

NOTE TO ENGINEER / DESIGNER

IF APPLICABLE, PLEASE PROVIDE PAY ITEMS FOR <u>"SEWER LINE CLEANING AND VIDEO INSPECTION"</u> FOR MAINS OR SERVICE CONNECTIONS". THE QUANTITY FOR THESE ITEMS SHALL BE EQUAL TO THE LINEAR FOOTAGE OF THE SEWER GRAVITY PIPE (SPECIFY SIZE) BEING INSPECTED MULTIPLY BY TWO. FOR EXAMPLE, IF THE CONTRACTOR PERFORMS 1400 FEET OF PRE-CONSTRUCTION VIDEO AND ONLY 1250 POST CONSTRUCTION VIDEO, HE WOULD BE COMPENSATED FOR 2650 FEET UNDER THIS ITEM.

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

22. <u>DEFLECTION, LAMP TESTING AND VIDEO</u> <u>INSPECTION (NEW SYSTEM ONLY):</u>

- A 5% DEFLECTION MANDREL SHALL BE USED TO PERFORM THE DEFLECTION TESTING FOR ALL NEW SEWER GRAVITY LINES.
- DEFLECTION TESTING SHALL BE PERFORMED NO SOONER THAN 31 DAYS AFTER THE PIPE HAS BEEN INSTALLED AND ALL BACKFILL OPERATIONS COMPLETED.
- DEFLECTION TESTING SHALL BE PERFORMED AFTER ALL INFRASTRUCTURES, INCLUDING THE COMPACTED ROADWAY FOUNDATION, HAVE BEEN INSTALLED.
- DEFLECTION TESTING OF ALL GRAVITY LINES AND SUBMITTAL OF A DEFLECTION TESTING REPORT BY AN APPROVED TESTING LAB IS REQUIRED PRIOR TO FINAL INSPECTION.
- THE OWNER, HIS AGENT OR THE CONTRACTOR SHALL CONTACT THE DEPARTMENT OF ENGINEERING 48 HOURS IN ADVANCE FOR THE INSPECTION OF THE DEFLECTION MANDREL TEST.
- THE MANDREL SHALL BE PULLED THROUGH THE PIPE BY HAND TO ENSURE THAT MAXIMUM ALLOWABLE DEFLECTIONS HAVE NOT BEEN EXCEEDED.
- LAMP TEST OF ALL SEWER GRAVITY LINES SHALL BE PERFORMED BY THE JEFFERSON PARISH ENGINEERING DEPARTMENT DURING FINAL INSPECTION.
- THE CONTRACTOR SHALL PERFORM CLEANING AND VIDEO INSPECTIONS OF ALL NEW SEWER GRAVITY LINES (MAINS AND SERVICE CONNECTIONS) INSTALLED BY HIM AS PART OF FINAL INSPECTION (THERE WILL BE NO DIRECT PAYMENT FOR THIS ITEM). SEWER LINE CLEANING AND VIDEO INSPECTION SHALL BE PERFORMED AFTER ALL INFRASTRUCTURES, INCLUDING THE COMPACTED ROADWAY FOUNDATION, HAVE BEEN INSTALLED. SEWER LINE CLEANING AND VIDEO INSPECTION SHALL BE DONE AS PER JEFFERSON PARISH DEPARTMENT OF SEWERAGE LATEST "VIDEO INSPECTION" SPECIFICATIONS (SEE INSET "A"). COPIES OF THESE VIDEO INSPECTIONS SHALL BE SENT TO THE JEFFERSON DEPARTMENT, IMMEDIATELY PARISH ENGINEERING {THE URGENCY LAYS WITH THE FACT THAT THE CONTRACTOR NEEDS PARISH'S PARTIAL ACCEPTANCE OF THE SEWER GRAVITY SYSTEM PRIOR TO INSTALLATION OF THE PAVEMENT }. FINAL ACCEPTANCE OF THE SEWER SYSTEM WILL BE HAPPEN WHEN THE PROJECT OFFICIALLY IS ACCEPTED.
- THE CONTRACTOR MUST CONTACT THE FOLLOWING INDIVIDUALS 48 HOURS PRIOR TO CLEANING AND VIDEOING ANY SEWER SYSTEM:

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

- JEFFERSON PARISH ENGINEERING DEPARTMENT UTILITY INSPECTION SUPERVISOR, MR. PETER BLAHA (504-736-6791)
 OR MR. MICHAEL CALECAS (504-736-6509).
- O THE DESIGNATED JEFFERSON PARISH ENGINEERING DEPARTMENT UTILITY INSPECTOR (NAME AND CONTACT INFORMATION WILL BE PROVIDED AT THE PRE-CONSTRUCTION MEETING).
- IN ADDITION TO THE ABOVE, IF THE NEW SEWER SYSTEM IS CONNECTED TO THE EXISTING SEWER SYSTEM, THE FOLLOWING INDIVIDUALS MUST BE CONTACTED (ONLY FOR THE REASONS STATED BELOW) AS WELL:
 - JEFFERSON PARISH SEWERAGE DEPARTMENT (<u>LIFT STATIONS</u> <u>& SFM SHUTDOWNS</u>)
 - <u>WESTBANK</u>: MR. MORRIS SAPIA (504-437-4817)
 EASTBANK: MR. TOMMY HOYT (504-736-6678)
 - JEFFERSON PARISH SEWERAGE DEPARTMENT (<u>GRAVITY</u> <u>LINES AND MANHOLES RELATED EMERGENCIES</u>)
 - <u>WESTBANK</u>: MR. DONALD JACKSON (504-437-4816)
 EASTBANK: MR. CRAIG BRADLEY (504-736-6685)
- THE CONTRACTOR IS ADVISED TO PERFORM PERIODIC DEFLECTION AND LAMP TESTING, AND VIDEO INSPECTION TO ENSURE QUALITY OF HIS WORK.
- THE DEPARTMENT OF ENGINEERING HAS THE RIGHT TO REJECT ANY AND ALL EQUIPMENT, OR WORK, WHICH DOES NOT CONFORM TO SPECIFICATIONS. ANY WORK SO REJECTED SHALL BE REDONE BY THE CONTRACTOR AT HIS OWN EXPENSE.

<u>INSET "A"</u> <u>JEFFERSON PARISH DEPARTMENT OF SEWERAGE "SEWER LINE</u> <u>CLEANING" AND "VIDEO INSPECTION" SPECIFICATIONS</u>

PART 1: GENERAL

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

GUIDELINES AND REQUIREMENTS INCLUDE IN THIS SECTION SHALL BE FOLLOWED AND ADHERE TO FOR BOTH "PRE-CONSTRUCTION AND POST-CONSTRUCTION VIDEO INSPECTIONS OF ANY EXISTING SEWER GRAVITY PIPES". SECTION 3.02.12, BELOW, WILL PROVIDE ADDITIONAL GUIDELINES AND REQUIREMENTS APPLICABLE TO NEWLY INSTALLED PIPES.

SEWER LINE CLEANING: THE INTENT OF SEWER LINE CLEANING IS TO REMOVE FOREIGN MATERIALS FROM THE LINES AND RESTORE THE SEWER TO A MINIMUM OF 95% OF THE ORIGINAL CARRYING CAPACITY FOR PROPER VIDEO INSPECTION. A DAILY LOG SHALL BE MAINTAINED TO RECORD THE LOCATION OF THE STRUCTURES AND LINEAR FOOTAGE OF PIPE CLEANED, METHOD OF CLEANING, LINE SIZES, AND VOLUME AND TYPE OF DEBRIS REMOVED.

<u>VIDEO INSPECTION:</u> WHEN CLEANING IS COMPLETED, THE CONTRACTOR SHALL PROCEED WITH THE VIDEO INSPECTION.

PART 2: EQUIPMENTS

THE EQUIPMENT USED FOR THE CLEANING WORK ON THIS PROJECT SHALL BE A HIGH VELOCITY COMBINATION SEWER CLEANER AND VACUUM TRUCK SUPPLYING WATER AT A MINIMUM OF 80 GPM, AND A MINIMUM OF 2000 PSI.

THE VIDEO INSPECTION SHALL BE DONE BY USE OF A COLOR "CLOSED CIRCUIT TELEVISION" INSPECTION SYSTEM. PRIOR TO VIDEO INSPECTION, THE CAMERA INSPECTION SYSTEM MUST BE APPROVED BY THE PARISH OF JEFFERSON. EQUIPMENT QUESTIONS SHALL BE DIRECTED TO:

MR. PABLO SAN MARTIN JEFFERSON PARISH DEPT. OF PUBLIC WORKS INVESTIGATION- REHAB SECTION 4901 JEFFERSON HWY, SUITE B SUITE 107 JEFFERSON, LA 70121 <u>PSANMARTIN@JEFFPARISH.NET</u> 504-736-6686 504-736.6695

PART 3: EXECUTION

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

3.01 GENERAL

IF THE CLEANING OF AN ENTIRE SECTION CANNOT BE SUCCESSFULLY PERFORMED FROM ONE MANHOLE, THE EOUIPMENT SHALL BE RE-SETUP TO THE NEXT MANHOLE IN CLEANING SUCCESSION AND ATTEMPTED AGAIN. IF SUCCESSFUL CLEANING CANNOT BE PERFORMED. IT SHALL BE ASSUMED THAT A MAJOR BLOCKAGE EXISTS AND THE CLEANING EFFORTS SHALL BE ABANDONED UNTIL AN EXCAVATION AND "POINT REPAIR" CAN BE MADE BY THE PARISH OF JEFFERSON SUPPLIED FORCES AND THE CLEANING OPERATION MAY BE RESUMED. AFTER REMOVAL OF THE BLOCKAGE THE CONTRACTOR SHALL AGAIN CLEAN THE LINE SECTION, AT NO ADDITIONAL COMPENSATION. ALL SLUDGE, DIRT, SAND, GREASE, ROCKS, AND OTHER SOLID OR SEMI-SOLID MATERIALS RESULTING FROM THE CLEANING OPERATION SHALL BE REMOVED FROM THE DOWNSTREAM MANHOLE OF THE SECTION BEING CLEANED. MATERIALS PASSING FROM A MANHOLE SECTION, WHICH COULD CAUSE LINE STOPPAGES, ACCUMULATIONS OF SAND IN WET WELLS OR DAMAGE PUMPING EQUIPMENT, SHALL NOT BE PERMITTED. THE CONTRACTOR SHALL NOT BE RESPONSIBLE FOR REMOVING MORTAR OR OTHER MATERIAL, WHICH IS SECURELY ATTACHED TO THE PIPE WALLS OR JOINTS.

CLEANING SHALL BE DETERMINED TO BE COMPLETED WHEN VIDEO INSPECTION OF THE PIPE INDICATES THAT ALL LOOSE DEBRIS HAS BEEN REMOVED SO THAT THE ENTIRE PIPE WALL IS VISIBLE.

3.02 PIPE INSPECTION

PIPE INSPECTION SHALL BE ACCOMPLISHED BY THE FOLLOWING METHODS:

- 1. VIDEO 6" SANITARY OR STORM SEWER SERVICE LATERALS:
 - A. THE CONTRACTOR SHALL PROVIDE A COLOR CLOSED CIRCUIT TELEVISION INSPECTION SYSTEM. THIS SYSTEM SHALL BE USED TO REMOTELY INSPECT SERVICE LATERALS FROM EITHER THE CLEAN OUT OR THE SERVICES LINE/MAINLINE CONNECTION. PICTURE QUALITY SHOULD BE A

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

DEGREE OF QUALITY TO ALLOW A THOROUGH EVALUATION OF SERVICE LATERAL CONDITION.

B. REPORTS SHALL BE PROVIDED BOTH WRITTEN AND ELECTRONICALLY TO JEFFERSON PARISH PER PARISH STANDARD REQUIREMENTS.

2. TELEVISION INSPECTION OF 6" THRU 60" MAINLINE PIPE:

THE CONTRACTOR SHALL USE A PAN AND TILT A. ARTICULATING LENS CLOSED CIRCUIT COLOR VIDEO SYSTEM TO REMOTELY INSPECT THE PIPE. THE TELEVISION CAMERA USED FOR THE INSPECTION SHALL BE ONE SPECIFICALLY CONSTRUCTED FOR DESIGNED AND SUCH INSPECTION. LIGHTING FOR THE CAMERA SHALL BE SUITABLE TO ALLOW A CLEAR PICTURE OF THE ENTIRE PERIPHERY OF THE PIPE. THE CAMERA SHALL BE **OPERATIVE** IN 100% HUMIDITY CONDITIONS. THE CAMERA, TELEVISION MONITOR, THE VIDEO RECORDER, AND OTHER COMPONENTS OF THE VIDEO SYSTEM SHALL BE CAPABLE OF PRODUCING THE PICTURE QUALITY REQUIRED TO PROPERLY EVALUATE THE CONDITION OF THE PIPE **BEING INSPECTED.**

> B. DEPTH OF FLOW SHALL NOT EXCEED THAT SHOWN BELOW FOR THE RESPECTIVE PIPE SIZES AS MEASURED IN THE MANHOLE.

> MAXIMUM DEPTH OF FLOW FOR TELEVISION INSPECTION

6" – 10" PIPE......20% OF PIPE DIAMETER 12" – 24" PIPE.....25% OF PIPE DIAMETER GREATER THAN 24" PIPE...30% OF PIPE DIAMETER

THE CONTRACTOR SHALL BE REQUIRED TO DEWATER PIPE DIPS AS NECESSARY TO ALLOW THE REQUIRED VISIBILITY. THIS DEWATERING SHALL BE CONSIDERED INCIDENTAL TO THE VIDEO INSPECTION. PICTURE QUALITY AND DEFINITION

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

SHALL BE TO THE SATISFACTION OF THE PROJECT MANAGER.

3. PLUGGING: A SEWER LINE PLUG SHALL BE INSTALLED UPSTREAM OF THE SECTION BEING INSPECTED. AFTER THE WORK HAS BEEN COMPLETED, SEWAGE FLOW SHALL BE RESTORED TO NORMAL.

SEWER PLUGS SHALL BE INSTALLED IN THE INFLUENT PIPE OF A MANHOLE. THE PLUG SHALL BE EQUIPPED WITH AN AIR HOSE TO PERMIT DEFLATION FROM ABOVE GROUND. A STRONG ROPE SHOULD BE ATTACHED TO ENABLE THE PLUG TO BE QUICKLY REMOVED FROM THE MANHOLE. CONTRACTOR SHALL BE RESPONSIBLE TO PREVENT A PLUG FROM BEING PUSHED INTO THE OUTGOING PIPE WHEN STORED SEWAGE IS RELEASED.

THE CAMERA SHALL BE MOVED THROUGH THE LINE IN 4. EITHER DIRECTION AT A MODERATE RATE, STOPPING WHEN NECESSARY TO PERMIT PROPER DOCUMENTATION OF THE PIPE'S CONDITION. IN NO CASE SHALL THE TELEVISION CAMERA BE MOVED AT A SPEED GREATER THAN 30 FEET PER MINUTE. MANUAL WINCHES, POWER WINCHES, TV CABLE, AND POWERED REWINDS OR OTHER DEVICES THAT DO NOT OBSTRUCT THE CAMERA VIEW OR INTERFERE WITH PROPER DOCUMENTATION OF THE PIPE CONDITIONS SHALL BE USED TO MOVE THE CAMERA THROUGH THE LINE. IF DURING THE INSPECTION OPERATION THE TELEVISION CAMERA WILL NOT PASS THROUGH THE ENTIRE SECTION DUE TO AN OBSTRUCTION SUCH AS A DROPPED JOINT, CRUSHED PIPE ETC., THE CONTRACTOR SHALL SET UP HIS EQUIPMENT SO THE INSPECTION CAN BE PERFORMED FROM THE OPPOSITE END. IF, AGAIN, THE CAMERA FAILS TO PASS THROUGH THE ENTIRE SECTION BECAUSE OF AN OBSTRUCTION, THE CONTRACTOR SHALL CONTACT THE PARISH OF JEFFERSON OR THE ENGINEER. WHEN MANUALLY OPERATED WINCHES ARE USED TO PULL THE TELEVISION CAMERA THROUGH THE LINE, RADIOS OR OTHER SUITABLE MEANS OF COMMUNICATION SHALL BE SET UP BETWEEN THE TWO ENDS OF THE SECTION BEING INSPECTED TO INSURE GOOD COMMUNICATIONS BETWEEN MEMBERS OF THE CREW.

- 5. THE IMPORTANCE OF ACCURATE DISTANCE MEASUREMENTS IS EMPHASIZED. MEASUREMENT FOR LOCATION OF DEFECTS AND SERVICE CONNECTIONS SHALL BE DONE WITH A METERING DEVICE LOCATED IN THE VIDEO INSPECTION VAN. THE FOOTAGE READING OF THE COUNTER MUST BE DISPLAYED AT ALL TIMES ON THE MONITOR AND ON VIDEOTAPE. MARKING ON THE CABLE WHICH WOULD REQUIRE INTERPOLATION FOR MANHOLE DEPTH, SHALL NOT BE ALLOWED. ACCURACY OF THE DISTANCE METER SHALL BE CHECKED BY USE OF A TAPE. THE ACCURACY SHALL BE WITHIN 1%.
- 6. THE LOCATION OF ALL SIGNIFICANT PIPE DEFECTS SHALL BE RECORDED ON THE INSPECTION LOG INCLUDING, BUT NOT LIMITED TO, CRACKED AND MISSING PIPE, DEGREE OF PIPE DETERIORATION, OPEN OR SHIFTED JOINTS, LEAKING JOINTS, LEAK ESTIMATES, CRUSHED PIPE AND OBSTRUCTION. THE LOG SHALL ALSO SHOW PIPE TYPE, SIZE, DEPTH, MANHOLE LOCATIONS, AND LOCATION OF ALL SERVICE CONNECTIONS. IN ADDITION, AS PART OF THE MAINLINE VIDEO INSPECTION, THE CONTRACTOR SHALL DETERMINE AND RECORD THE STREET NUMBER ADDRESSES OF ALL OBSERVATIONS.
- 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF ADDRESSES AND ASSESSED POINT REPAIR FOOTAGES PROVIDED UNDER THIS CONTRACT.
- 8. AFTER ISSUANCE OF A VIDEO INSPECTION WORK ORDER, BUT PRIOR TO INITIATION OF FIELD INSPECTION WORK, THE CONTRACTOR SHALL FIELD VERIFY THE SURVEY AND MANHOLE LOCATIONS. UPON COMPLETION OF THE MANHOLE SURVEY, THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER FOR APPROVAL A COMPLETE MAINLINE INVENTORY OF ALL MANHOLES IN THE WORK ORDER SCOPE. THE CONTRACTOR MUST USE THE PARISH ADDRESSING STANDARD FOR THIS INVENTORY,
- 9. A DIGITAL MPEG RECORDING, USING PENINSULAR TECHNOLOGY'S SOFTWARE (SEE NOTE 14), SHALL BE MADE, BY THE CONTRACTOR, OF ALL PIPE SECTIONS VIDEO INSPECTED. THE RECORDING SHALL INCLUDE A COMPLETE "COLOR" VIDEO OF THE ENTIRE INSPECTION. THE VIDEO INSPECTION SHALL HAVE THE CAPABILITY OF

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

PERMANENTLY DISPLAYING, ON COMPACT DISCS, INFORMATION CONCERNING THE PIPE INSPECTED, INCLUDING PROJECT NUMBER, DATA, STREET NAME, MANHOLE DESIGNATIONS, SIZE OF PIPE AND THE FOOTAGE COUNTER. THE FOLLOWING FIELDS MUST BE SHOWN THROUGHOUT THE ENTIRE VIDEO:

A) DATE.

B) UPSTREAM MANHOLE #, INCLUDING LIFT STATION AREA CODE.

C) DOWNSTREAM MANHOLE #, INCLUDING LIFT STATION AREA CODE.

D) FOOTAGE.

E) DIRECTION OF VIDEO [WITH FLOW OR AGAINST FLOW].

THE CONTRACTOR SHALL DELIVER, TO THE PARISH, COMPUTER MEDIA CONTAINING ALL FIELD INVESTIGATION DATA COLLECTED AFTER COMPLETION OF THE INSPECTION. IF INSPECTION IS NOT COMPLETED WITHIN ONE WEEK, THEN THE CONTRACTOR SHALL PROVIDE WEEKLY REPORTS TO THE OWNER. FOR THE DURATION OF THE CONTRACT, THE CONTRACTOR SHALL MAINTAIN A LOCAL LIBRARY CONTAINING A COPY OF ALL VIDEO RECORDING GENERATED ON THIS CONTRACT. ALL CODES SHALL FOLLOW STANDARD JEFFERSON PARISH REQUIREMENTS.

- 10. VIDEO INSPECTION ACTIVITIES MAY BE COORDINATED WITH DYE FLOODING WHEN DIRECTED BY THE ENGINEER OR PARISH'S PROJECT MANAGER.
- 11. THE CONTRACTOR SHALL BE PAID FOR THE ACTUAL LINEAR FEET OF PIPE INSPECTED AT THE UNIT BID PRICES FOR THE VARIOUS SIZES OF SEWER PIPES.

12. **<u>NEWLY INSTALLED PIPES:</u>**

- A) ALL PIPES MUST BE CLEANED AS OUTLINED HEREIN.
- B) THE OPERATOR SHOULD PLUG OFF ANY ADDITIONAL INCOMING MAINLINES AT THE DOWNSTREAM MANHOLE THAT ARE NOT BEING TELEVISED AT THAT TIME. SET UP THE T.V. TRUCK AT THE UPSTREAM

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

MANHOLE, AND PLUG OFF ANY INCOMING MAINLINES AT THAT MANHOLE.

- C) ROLL OUT FIRE HOSES TO THE NEAREST FIRE HYDRANT, AND AFTER CLEANING OF THE MAINLINE HAS BEEN COMPLETED (WITHOUT THE RODDER HOSE OR NOZZLE IN THE MAINLINE), BEGIN INDUCING WATER AT THE UPSTREAM MANHOLE USING THE FIRE HOSES FOR APPROXIMATELY 15 MINUTES.
- D) DISCONTINUE THE INDUCTION OF WATER INTO THE MAINLINE AND WAIT APPROXIMATELY 15 MINUTES SO THAT THE WATER CAN LEVEL OFF. T.V. INSPECTION SHOULD BEGIN ONLY AFTER ALLOWING WATER TO LEVEL OFF.
- E) THE LINE SHOULD BE VIDEOED WITHOUT THE RODDER HOSE OR NOZZLE DEWATERING THE MAINLINE.
- F) PIPE TECH SCAN MUST BE USED TO RECORD THE VIDEO INSPECTION. VIDEOS MUST BE SUBMITTED IN ORIGINAL PIPE TECH FORMAT (PVT FILE). <u>VIDEOS IN</u> <u>DVD FORMAT WILL NOT BE ACCEPTED!</u>
- 13. IN ADDITION TO DIGITAL MPEG VIDEO RECORDINGS, THE CONTRACTOR SHALL PROVIDE AN ANALOG VHS VIDEOTAPE OR COMPACT DISC OF PIPE INSPECTIONS AT THE REQUEST OF THE OWNER.
- 14. ALL THE DATA GATHERED IN THE FIELD INVESTIGATION SHALL BE INPUT INTO THE GBA MASTER SERIES SEWER SYSTEM MANAGEMENT PROGRAM BY THE CONTRACTOR TO GENERATE REPORTS DETAILING ALL LEAKS IDENTIFIED AND ANY FURTHER EVALUATION OR REPAIR WORK TO BE DONE.
- 15. ALL DIGITAL VIDEOS GATHERED IN THE TELEVISION INSPECTION SHALL BE DIGITIZED USING PENINSULAR TECHNOLOGY SOFTWARE ONLY. NO OTHER SOFTWARE SHALL BE ACCEPTED.

3.03 DISPOSAL OF MATERIALS FROM CLEANING

1. GENERAL

MATERIALS SHALL BE DISPOSED OF FROM THE WORK SITE NOT LESS OFTEN THAN ONCE AT THE END OF EACH

Jefferson Parish Department of Engineering Gravity Sanitary Sewer System General Standard Notes, Green Sheets, Appendix "A", Revised: 11/22/2017

WORK-DAY. THE CONTRACTOR SHALL PROVIDE SATISFACTORY EVIDENCE DAILY TO THE PARISH OF THE AMOUNT OF MATERIAL REMOVED FROM THE PIPES. THESE QUANTITIES SHALL BE SUBJECTED TO CERTIFICATION, AS DEEMED NECESSARY BY THE PROJECT ENGINEER OR OWNER.

ALL MATERIALS REMOVED DURING THE CLEANING SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT NO COST TO THE OWNER. THE DISPOSAL SITE SHALL BE APPROPRIATE FOR THE TYPE OF MATERIAL BEING DISPOSED OF. THE CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE AND FEDERAL GUIDELINES IN DISPOSAL OF THIS MATERIAL.

23. <u>AS-BUILT PLANS</u>

THE CONTRACTOR SHALL FURNISH TO THE JEFFERSON PARISH DEPARTMENT OF ENGINEERING "AS-BUILT" PLANS (ONE DIGITAL CD, IN ACAD 2004 AND PDF FORMATS, ONE MYLAR & THREE BLUE-LINE SETS). AS-BUILT PLANS SHALL INCLUDE, AS A MINIMUM, THE FOLLOWING:

- DISTANCE OF SEWER HOUSE CONNECTIONS (HC) FROM DOWNSTREAM MANHOLES. THIS DISTANCE SHALL BE MEASURED ALONG THE CENTERLINE OF THE MAIN AND SHALL BE EQUAL TO THE DISTANCE FROM THE CENTER OF THE DOWNSTREAM MANHOLE TO THE PROJECTION POINT OF EACH HC (HC AT PROPERTY LINE) ONTO THE MAIN.
- ELEVATION OF SERVICE HOUSE CONNECTIONS AT THE PROPERTY LINE.
- THE INVERT AND TOP OF CASTING ELEVATIONS AND DEPTH OF EACH MANHOLE.
- PIPE INVERTS AT MANHOLES.
- THE CENTER TO CENTER DISTANCES OF CONSECUTIVE MANHOLES.

TABLE OF CONTENTS

1.	NOTIFICATION:	1
2.	MINIMUM MAIN SIZE	1
3.	MATERIAL	1
4.	DESIGN VELOCITIES & DESIGN SLOPES	2
5.	JACKED AND/OR BORED CASINGS	2
6.	DIRECTIONAL DRILLING OF HDPE PIPE	2
7.	NEW SERVICE CONNECTIONS	2
8.	TRENCH CONSTRUCTION	2
9.	INFILTRATION	3
10.	CLEARANCE	3
11.	MANHOLES	4
12.	LIFESAVER STAINLESS STEEL STOPPERS	6
13.	SERVICE CONNECTIONS AND CLEANOUTS	6
14.	EXISTING SANITARY SEWER SERVICE CONNECTIONS	7
1.	INTENT	8
2.	GENERAL	8
3.	MATERIAL	8
4.	FINAL ACCEPTANCE	9
15.	SHIELDED REPAIR COUPLINGS	9
16.	CONFLICT MANHOLES	9
17.	DUCTILE IRON PIPE 1	.0
18.	GREEN PVC C-900 AND C-905 (DR 18) PIPE 1	.0
19.	MANHOLE CONNECTIONS 1	.0
20.	SEWER PIPE ABANDONMENT 1	.0
21.	PRE-CONSTRUCTION AND POST-CONSTRUCTION VIDEO INSPECTIONS	
(EX	ISTING SYSTEM ONLY)1	.0
22.	DEFLECTION, LAMP TESTING AND VIDEO INSPECTION (NEW SYSTEM	
ONI	LY): 1	.3
INS	ET "A" 1	.4
JEF	FERSON PARISH DEPARTMENT OF SEWERAGE "SEWER LINE	
CLI	EANING" AND "VIDEO INSPECTION" SPECIFICATIONS 1	.4
	PART 1: GENERAL	.4
	PART 2: EQUIPMENTS	.5
	PART 3: EXECUTION	.5
	3.01 GENERAL	.6
•	3.02 PIPE INSPECTION	.6
23.	AS-BUILT PLANS	.2

<u>Appendix "B"</u> <u>Jefferson Parish</u> <u>Department of Engineering</u> Sanitary Sewer "Force Main System" General Standard Notes*1

* These notes shall be referenced and shall be included, in their entirety, unedited and unabridged, in all Jefferson Parish Projects as follows:

- <u>New subdivisions</u> attach these notes to plans as Appendix "B".
- <u>All other projects</u> include these notes in Specification Booklets, which include any work related to the Parish Sanitary Sewer Force Main System. Insert a copy of these notes, on green paper, at the end of the "Sanitary Sewer Force Main System Technical Specification" Section of the Specification Booklet. Any Deviations and / or Variations from these General Standard Notes shall be tabulated under the heading of "Deviations from Jefferson Parish Sanitary Sewer Force main System General Standard Notes" and shall be included in the "Sanitary Sewer System Technical Specification of the Specification Booklet.

1. <u>NOTIFICATION</u>

CONTRACTORS SHALL NOTIFY THE DEPARTMENT OF SEWERAGE AT 736-6661 AND THE DEPARTMENT OF ENGINEERING, INSPECTION DIVISION AT 736-6793, 48 HOURS PRIOR TO ANY FIELD WORK RELATING TO SANITARY SEWER FORCE MAINS, SANITARY SEWER VALVES, ETC. ALL SANITARY SEWER VALVES SHALL BE OPERATED BY PARISH PERSONNEL.

WHERE A TIE-IN TO A SEWER FORCE MAIN IS TO BE MADE BY A CONTRACTOR, THE DEPARTMENT OF ENGINEERING SHALL BE NOTIFIED 24 HOURS IN ADVANCE FOR THE INSPECTION OF THE TIE-IN. THE INSTALLATION AND THE TIE-IN OF ALL SEWER FORCE MAINS SHALL BE INSPECTED AND APPROVED BY THE DEPARTMENT OF ENGINEERING PRIOR TO BACKFILLING.

2. <u>MATERIAL</u>

ALL MATERIALS USED IN JEFFERSON PARISH'S SEWER FORCE MAIN SYSTEM SHALL BE IN TOTAL CONFORMANCE WITH THESE STANDARD NOTES, OTHER CURRENT JEFFERSON PARISH STANDARDS AND MATERIAL SPECIFICATIONS INCLUDING "<u>THE DEPARTMENT OF SEWERAGE</u> <u>ANNUAL MATERIAL SUPPLY</u> <u>CONTRACT SPECIFICATIONS</u>". IN ORDER TO SIMPLIFY "MATERIAL RELATED ISSUES" FOR THE ENGINEERS, CONSULTANTS, CONTRACTORS, SUPPLIERS, AND PARISH INSPECTORS EFFORTS HAVE BEEN MADE THROUGHOUT THESE STANDARDS TO MINIMIZE DISCREPANCIES BETWEEN THESE STANDARD NOTES

¹ Jefferson Parish Department of Engineering Sanitary Sewer Force Main System General Standard Notes, Originated - January 2002.

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015

AND THE "DEPARTMENT OF SEWERAGE ANNUAL MATERIAL SUPPLY CONTRACT SPECIFICATIONS". IN CASE OF ANY DISCREPANCIES, "THE DEPARTMENT OF SEWERAGE ANNUAL MATERIAL SUPPLY CONTRACT SPECIFICATIONS" WILL GOVERN.

QUALIFIED MANUFACTURERS AND/OR PRODUCTS FOR MOST ITEMS (THE DEPARTMENT OF SEWERAGE ANNUAL MATERIAL SUPPLY CONTRACT SPECIFICATIONS SHALL BE REFERENCED FOR ITEMS NOT INCLUDED IN THESE NOTES) HAVE BEEN PROVIDED THROUGHOUT THESE NOTES. THESE QUALIFIED MANUFACTURERS AND/OR PRODUCT INFORMATION MAY BE MODIFIED SEMIANNUALLY MAINLY BASED ON REVISIONS TO "THE DEPARTMENT OF SEWERAGE ANNUAL MATERIAL SUPPLY CONTRACT SPECIFICATIONS". THESE MODIFICATIONS MAY OCCUR ONCE A YEAR OR ONCE EVERY TWO YEARS DEPENDING UPON EACH SPECIFIC CONTRACT PERIOD. NEW PRODUCTS MAY BE PRESENTED TO THE JEFFERSON PARISH ENGINEERING AND SEWERAGE DEPARTMENTS SIMULTANEOUSLY FOR EVALUATION. ANY PRODUCT FOUND TO MEET JEFFERSON PARISH STANDARDS WILL BE INCLUDED IN THESE STANDARDS WHEN SEMIANNUAL REVISIONS ARE MADE. FINAL DECISION FOR ACCEPTANCE OF ALL MATERIALS WILL BE MADE BY THE JEFFERSON PARISH DEPARTMENT OF SEWERAGE.

3. <u>NON CONFORMANCE</u>

THE DEPARTMENT OF ENGINEERING HAS THE RIGHT TO REJECT ANY AND ALL EQUIPMENT, OR WORK, WHICH DOES NOT CONFORM TO JEFFERSON PARISH STANDARDS AND SPECIFICATIONS. ANY WORK SO REJECTED SHALL BE REDONE BY THE CONTRACTOR AT HIS OWN EXPENSE.

4. <u>VERIFICATION OF EXISTING UTILITIES PRIOR TO ORDERING</u> <u>MATERIALS</u>

THE CONTRACTOR SHALL VERIFY THE SIZE AND MATERIAL OF ALL EXISTING UTILITIES BEFORE ORDERING MATERIALS. FOR EXAMPLE VARIATIONS IN OUTSIDE DIAMETER OF ASBESTOS CEMENT (AC) PIPE CAN CAUSE LEAKAGE IF A CORRECT COUPLING IS NOT USED. JEFFERSON PARISH WILL NOT REIMBURSE THE CONTRACTOR FOR ANY MATERIAL RE-STOCKING FEES.

5. <u>DOMESTICITY</u>

A. **PURPOSE OF THIS SECTION**

THIS SECTION INCLUDES INFORMATION AND PROVIDES ANSWERS TO SOME FREQUENTLY ASKED QUESTIONS REGARDING JEFFERSON PARISH DOMESTICITY POLICY.

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015

B. CLARIFICATION OF TERMS

TERMS SUCH AS "DOMESTIC UNITED STATES OF AMERICA MANUFACTURE" AND/OR "MADE IN UNITED STATES" SHALL MEAN THAT EVERY COMPONENTS OF THESE PRODUCTS OR ITEMS ARE 100% MADE, MANUFACTURED, CAST, ASSEMBLED, ETC. IN THE UNITED STATES OF AMERICA.

C. VALVES

ALL DUCTILE IRON/CAST IRON VALVES SHALL BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE. NO DUCTILE IRON/CAST IRON VALVES MANUFACTURED OUTSIDE OF THE UNITED STATES OF AMERICA WILL BE ALLOWED.

D. **APPURTENANCES**

BY POLICY, DOMESTIC AS WELL AS GLOBALLY SOURCED (FOREIGN) APPURTENANCES {PIPE RESTRAINERS (MECHANICAL JOINT, PIPE TO PIPE, FLANGE ADAPTERS, BELL HARNESSES, ETC.), COUPLINGS, TAPPING AND REPAIR CLAMPS AND SLEEVES, SADDLES, ETC.} MAY BE PRESENTED TO THE JEFFERSON PARISH ENGINEERING AND SEWERAGE DEPARTMENTS SIMULTANEOUSLY FOR EVALUATION AS MENTIONED IN SECTION 3, ABOVE. ALL APPURTENANCES SHALL BE MANUFACTURED IN STRICT ACCORDANCE WITH THE LATEST APPLICABLE ANSI/AWWA AND ASTM STANDARDS FOR SANITARY SEWER FORCE MAINS. IN ADDITION TO THESE REQUIREMENTS, ALL GLOBALLY SOURCED APPURTENANCES SHALL BE MANUFACTURED AT AN <u>SIX SIGMA</u> OR <u>ISO</u> (INTERNATIONAL ORGANIZATION FOR STANDARDS) REGISTERED MANUFACTURER WITH THE LATEST CERTIFICATIONS FROM THESE ORGANIZATIONS.

E. **FITTINGS**

DOMESTIC AS WELL AS GLOBALLY SOURCED (FOREIGN) DUCTILE IRON FITTINGS SHALL BE ALLOWED. ALL FITTINGS SHALL BE IN STRICT ACCORDANCE WITH THE LATEST APPLICABLE ANSI (ANSI/AWWA C153/A21.53, ANSI/AWWA C110/A21.10, ANSI/AWWA C111/A21.11, ANSI/AWWA C104/A21.4, ETC.) AND ASTM STANDARDS FOR SANITARY SEWER FORCE MAINS. IN ADDITION TO THESE REQUIREMENTS, THE GLOBALLY SOURCED FITTINGS SHALL ALSO BE MANUFACTURED BY AN ISO (INTERNATIONAL ORGANIZATION FOR STANDARDIZATION) REGISTERED MANUFACTURER, WHICH MANUFACTURER SHALL HAVE CURRENT ISO 9001 CERTIFICATION FOR STANDARDIZATION FOR FITTING PRODUCTS.

F. ISO REGISTERED MANUFACTURER

THESE MANUFACTURING FACILITIES MUST BE COVERED UNDER PERIODIC AUDITS BY THIRD PARTY ACCREDITATION BODIES FOR EVALUATIONS. THESE EVALUATIONS SHALL INCLUDE MANUFACTURING PROCESSES. OUALITY CONTROL. CORRECTIVE AND PREVENTIVE ACTIONS, AND DOCUMENT CONTROL. IN ADDITION, DISTRIBUTION CENTERS MUST BE AUDITED BY THIRD PARTY APPROVAL AGENCIES FOR PERIODIC CONFIRMATION TESTS AND SURVEILLANCE AUDITS. THESE PERIODIC CONFIRMATION TESTS AND SURVEILLANCE AUDITS SHALL DOCUMENT CONTINUATION OF PRODUCT APPROVALS OF EVERY SPECIFIC MANUFACTURING FACILITY BY AUDITING THE ENTIRE QUALITY SYSTEMS INCLUDING DESIGN, INFRASTRUCTURE, SYSTEM IMPLEMENTATION, DISTRIBUTION, TRAINING, QUALITY CONTROL AND ASSURANCE, AND DOCUMENT CONTROL. ALL FITTINGS AND APPURTENANCES MUST BE MANUFACTURED IN ACCORDANCE WITH NSF61.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND FURNISHING JEFFERSON PARISH WITH WRITTEN PROOF THAT ALL GLOBALLY SOURCED (FOREIGN) FITTINGS AND APPURTENANCES MEET THE AFOREMENTIONED ANSI/AWWA, AND ASTM STANDARDS. THE CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING THAT THESE FITTINGS AND APPURTENANCES ARE MANUFACTURED AT AN ISO **REGISTERED MANUFACTURER WITH CURRENT 9001 CERTIFICATION FOR** FITTINGS AND APPURTENANCE PRODUCTS AND SHALL FURNISH JEFFERSON PARISH WITH WRITTEN PROOF OF THIS REGISTRATION AND CERTIFICATION. ALL WRITTEN PROOF SHALL BE FURNISHED IMMEDIATELY AFTER EXECUTION OF THE CONTRACT DOCUMENTS AND PRIOR TO ORDERING FITTINGS AND ANY APPURTENANCE PRODUCTS.

6. <u>SANITARY SEWER FORCE MAINS</u>

- 6.1 <u>BADEPTH OF COVER</u> BACKFILL ALL TRENCHES WITHIN STREET RIGHT-OF-WAYS WITH RIVER SAND. APPROVED SELECT MATERIAL MAY BE USED FOR BACKFILL OF TRENCHES OUTSIDE STREET RIGHT-OF-WAYS.
- 6.2 <u>BACKFILL</u> BACKFILL ALL TRENCHES WITHIN STREET RIGHT-OF-WAYS WITH RIVER SAND. APPROVED SELECT MATERIAL MAY BE USED FOR BACKFILL OF TRENCHES OUTSIDE STREET RIGHT-OF-WAYS.

- **6.3 <u>PVC PIPE**</u> POLYVINYL CHLORIDE (PVC) PRESSURE PIPE 4 INCHES THROUGH 12 INCHES IN DIAMETER SHALL MEET AWWA SPECIFICATION C-900, DR18. PVC PIPE 14 INCHES AND LARGER IN DIAMETER SHALL MEET AWWA SPECIFICATION C-905, DR25. PVC SEWER FORCE MAINS SHALL BE GREEN.
- 6.4 **<u>DUCTILE IRON PIPE</u>** ALL DUCTILE IRON PIPE SHALL CONFORM TO ANSI/AWWA A21.51/C151, ANSI/AWWA A21.50/C150 AND SHALL THICKNESS CLASS 50 FOR ALL PIPES OR PRESSURE CLASS 350 FOR SIZES 3" - 18", PRESSURE CLASS 250 FOR SIZES 20" - 36" AND PRESSURE CLASS 200 FOR SIZES 42" - 54". ALL DUCTILE IRON PIPES THAT WILL HAVE LESS THAN 24" OF COVER SHALL BE MINIMUM THICKNESS CLASS 52 RESTRAINED JOINT PIPE. DUCTILE IRON PIPE SHALL HAVE A FACTORY APPLIED INTERIOR COATING/LINING OF "PROTECTO 401" CERAMIC EPOXY LINING AS PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR SANITARY SEWER APPLICATIONS AND FACTORY **ASPHALTIC** EXTERIOR COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 SHALL BE REQUIRED FOR ALL DUCTILE IRON PIPES.
- 6.5 <u>STEEL CASINGS</u> JEFFERSON PARISH DEPARTMENT OF ENGINEERING MAY REQUIRE SANITARY SEWER FORCE MAINS TO BE INSTALLED IN STEEL CASINGS WHEN CROSSING MAJOR (*TO BE DEFINED BY THE DEPARTMENT OF ENGINEERING*) STREETS.
- 6.6 <u>CASING SPACERS</u> WHEN PIPE IS INSTALLED IN CASINGS, COMMERCIALLY FABRICATED CASING SPACERS MUST BE USED TO PREVENT DAMAGE TO PIPE AND BELL JOINTS DURING INSTALLATION AND TO PROVIDE PROPER LONG-TERM LINE SUPPORT. USE OF WOODEN SKIDS WILL NOT BE PERMITTED. PIPES IN CASINGS SHALL BE RESTRAINED AND SHALL NOT REST ON BELLS. CASING SPACERS MUST PROVIDE SUFFICIENT HEIGHT TO PERMIT CLEARANCE BETWEEN BELL JOINTS AND CASING WALLS (ALL CASING PIPE SHALL HAVE AN INSIDE CLEAR DIMENSION AT LEAST 2" GREATER THAN THE MAXIMUM OUTSIDE DIMENSION OF THE CARRIER PIPE BELL OR MECHANICAL JOINT RESTRAINTS). SPACE BETWEEN THE CASING AND THE CARRIER PIPE SHOULD NOT BE BACKFILLED. JEFFERSON PARISH APPROVED END CASING SEAL WITH STAINLESS STEEL BANDS SHOULD BE USED TO SEAL THE ENDS OF THE CASINGS.
- 6.7 <u>CANAL CROSSINGS</u> LONG-SPAN DUCTILE IRON PIPE SHALL BE USED AS PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR ALL CANAL CROSSINGS.

ALL EXPOSED FITTINGS AND JOINTS SHALL BE FLANGED WITH **TORUSEAL** "OR APPROVED EQUAL" GASKETS. UNDERGROUND FITTINGS AND JOINTS SHALL HAVE RESTRAINED MECHANICAL JOINTS. ALTERNATIVE DESIGNS MAY BE CONSIDERED IF JUSTIFIED BY SPECIAL FIELD CONDITIONS.

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015 CANAL CROSSINGS SHALL BE SUPPORTED BY CONCRETE PILES UNLESS OTHERWISE PERMITTED BY THE JEFFERSON PARISH DEPARTMENT OF ENGINEERING.

6.8 CONFLICT BOXES

PVC OR DUCTILE IRON SEWER FORCE MAINS INSTALLED WITHIN CONFLICT MANHOLES SHALL HAVE NO JOINTS. DUCTILE IRON PIPES, UP TO 12" IN DIAMETER, ARE AVAILABLE IN 18' AND 20' LAYING LENGTHS (LARGER DIAMETER PIPES ARE LIMITED TO 18' LAYING LENGTH). FLANGED DUCTILE IRON PIPE MAY BE USED FOR SPANS LONGER THAN 20'.

6.9 HDPE PIPE (AND FITTINGS)

HIGH DENSITY POLYETHYLENE (PE) PIPE (AND FITTINGS) SHALL CONFORM TO CURRENT REQUIREMENTS OF ASTM D3350 AND ASTM D2337 AND ALL PERTINENT ASTM AND ANSI SPECIFICATIONS FOR SPECIFYING, INSTALLATION AND ACCEPTANCE (PRESSURE TESTING) OF SANITARY SEWER FORCE MAINS.

- **6.9.1 MATERIALS** MATERIALS USED FOR THE MANUFACTURE OF POLYETHYLENE PIPE AND FITTINGS SHALL BE PE 3408 (OR THE NEW DESIGNATION, PE3608/PE4710) HIGH DENSITY POLYETHYLENE MEETING CELL CLASSIFICATION 345464C FOR BLACK OR 345464E FOR STRIPES PER ASTM D 3350; AND SHALL BE LISTED IN THE NAME OF THE PIPE AND FITTING MANUFACTURER IN PLASTICS PIPE INSTITUTE (PPI) TR-4, *RECOMMENDED HYDROSTATIC STRENGTHS AND DESIGN STRESSES FOR THERMOPLASTIC PIPE AND FITTINGS COMPOUNDS*, WITH A STANDARD GRADE HDB RATING OF 1600 PSI AT 73°F. THE MANUFACTURER SHALL CERTIFY THAT THE MATERIALS USED TO MANUFACTURE PIPE AND FITTINGS MEET THESE REQUIREMENTS.
- **6.9.2 COMPATIBILITY OF PIPE AND FITTINGS** THE PIPE AND FITTINGS SHALL BE TOTALLY COMPATIBLE AND MEET THE PIPE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
- **6.9.3 POLYETHYLENE PIPE** POLYETHYLENE PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C901 FOR SIZES 1-1/4" THRU 3" IPS DIAMETERS AND TO THE REQUIREMENTS OF ASTM D3035. PIPE 4" AND ABOVE SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F714 AND AWWA C906. POLYETHYLENE (PE) PIPE SHALL BE DUCTILE IRON PIPE SIZE (DIPS) DRISCOPLEX 4300" AS MANUFACTURED BY PERFORMANCE PIPE OR APPROVED EQUAL.

POLYETHYLENE (PE) PIPE SHALL BE SPECIFIED BY NOMINAL DUCTILE IRON PIPE SIZE AND SHALL MEET THE REQUIREMENTS OF STANDARD DIMENSION RATIO (SDR) SDR-17 FOR DIRECT BURIAL. PIPES USED FOR DIRECTIONAL BORES, STANDARD JACKING AND BORING, HIGHWAY AND RAILWAY CROSSINGS SHALL BE SDR-11 OR GREATER STRENGTH IF REQUIRED BY SPECIAL DESIGN.

- **6.9.4 SERVICE IDENTIFICATION STRIPES** PERMANENT IDENTIFICATION OF THE PIPING SERVICE SHALL BE PROVIDED BY CO-EXTRUDING COLOR STRIPES INTO THE PIPE OUTSIDE SURFACE. THE STRIPING MATERIAL SHALL BE THE SAME MATERIAL AS THE PIPE MATERIAL EXCEPT FOR COLOR. STRIPES PRINTED ON THE PIPE OUTSIDE SURFACE SHALL NOT BE ACCEPTABLE. IPS SIZED PIPES SHALL HAVE FOUR EQUALLY SPACED, LONGITUDINAL COLOR STRIPES. DIPS SIZED PIPES SHALL HAVE THREE EQUALLY SPACED PAIRS OF LONGITUDINAL COLOR STRIPES. THE STRIPE COLOR SHALL BE GREEN.
- 6.9.5 **POLYETHYLENE FITTINGS & CUSTOM FABRICATIONS** POLYETHYLENE FITTINGS AND CUSTOM FABRICATIONS SHALL BE MOLDED OR FABRICATED BY THE APPROVED PIPE MANUFACTURER. ALL FITTINGS AND CUSTOM FABRICATIONS SHALL BE PRESSURE RATED FOR THE SAME INTERNAL PRESSURE RATING AS THE MATING PIPE. REDUCED PRESSURE-RATED (DE-RATED) FABRICATED FITTINGS ARE PROHIBITED.
- **6.9.6** <u>MOLDED FITTINGS</u> MOLDED FITTINGS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM D 3261AND SHALL BE SO MARKED.
- **6.9.7** <u>X-RAY INSPECTION</u> THE MANUFACTURER SHALL SUBMIT SAMPLES FROM EACH MOLDED FITTINGS PRODUCTION LOT TO X-RAY INSPECTION.
- **6.9.8 FABRICATED FITTINGS** FABRICATED FITTINGS SHALL BE MADE BY HEAT FUSION JOINING SPECIALLY MACHINED SHAPES CUT FROM PIPE, POLYETHYLENE SHEET STOCK, OR MOLDED FITTINGS. FABRICATED FITTINGS SHALL BE RATED FOR INTERNAL PRESSURE SERVICE AT LEAST EQUAL TO THE FULL SERVICE PRESSURE RATING OF THE MATING PIPE.
- **6.9.9 POLYETHYLENE FLANGE ADAPTERS** FLANGE ADAPTERS SHALL BE MADE WITH SUFFICIENT THROUGH-BORE LENGTH TO BE CLAMPED IN A BUTT FUSION-JOINING MACHINE WITHOUT THE USE OF A STUB-END HOLDER. THE SEALING SURFACE OF THE FLANGE ADAPTER SHALL BE MACHINED WITH A SERIES OF SMALL V-SHAPED GROOVES (SERRATIONS) TO PROMOTE GASKETLESS SEALING, OR RESTRAIN THE GASKET AGAINST BLOWOUT.

6.9.10 BACK-UP RINGS & FLANGE BOLTS - FLANGE ADAPTERS SHALL BE FITTED WITH BACK-UP RINGS PRESSURE RATED EQUAL TO OR GREATER son Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B". THAN THE MATING PIPE. THE BACK-UP RING BORE SHALL BE CHAMFERED OR RADIUSED TO PROVIDE CLEARANCE TO THE FLANGE ADAPTER RADIUS. FLANGE BOLTS AND NUTS SHALL BE GRADE 2 OR HIGHER.

6.9.11 <u>MJ ADAPTERS</u> - MJ ADAPTERS 4" AND ABOVE SHALL BE PROVIDED WITH HEAVY DUTY BACK-UP RING KITS AND STAINLESS STEEL STIFFENERS.

6.9.12 <u>JOINING</u>

6.9.12.1 HEAT FUSION JOINING.

JOINTS BETWEEN PLAIN END PIPES AND FITTINGS SHALL BE MADE BY BUTT FUSION. JOINTS BETWEEN THE MAIN AND SADDLE BRANCH FITTINGS SHALL BE MADE USING SADDLE FUSION. THE BUTT FUSION AND SADDLE FUSION PROCEDURES USED SHALL BE PROCEDURES THAT ARE RECOMMENDED BY THE PIPE AND FITTING MANUFACTURER. THE CONTRACTOR SHALL ENSURE THAT PERSONS MAKING HEAT FUSION JOINTS HAVE RECEIVED TRAINING IN THE MANUFACTURER'S RECOMMENDED PROCEDURE. THE CONTRACTOR SHALL MAINTAIN RECORDS OF TRAINED PERSONNEL, AND SHALL CERTIFY THAT TRAINING WAS RECEIVED NOT MORE THAN 12 MONTHS BEFORE COMMENCING CONSTRUCTION. EXTERNAL AND INTERNAL BEADS SHALL NOT BE REMOVED.

6.9.12.2 BUTT FUSION OF UNLIKE WALL THICKNESS.

BUTT FUSION SHALL BE PERFORMED BETWEEN PIPE ENDS, OR PIPE ENDS AND FITTING OUTLETS THAT HAVE THE SAME OUTSIDE DIAMETER AND ARE NOT DIFFERENT IN WALL THICKNESS BY MORE THAN ONE STANDARD DR, FOR EXAMPLE, SDR 13.5 TO SDR 17, OR SDR 11 TO SDR 13.5. TRANSITIONS BETWEEN UNLIKE WALL THICKNESS GREATER THAN ONE SDR SHALL BE MADE WITH A TRANSITION NIPPLE (A SHORT LENGTH OF THE HEAVIER WALL PIPE WITH ONE END MACHINED TO THE LIGHTER WALL) OR BY MECHANICAL MEANS OR ELECTROFUSION. SDR'S FOR POLYETHYLENE PIPE ARE 7.3, 9, 11, 13.5, 17, 21, 26, 32.5 AND 41.

6.9.12.3 JOINING BY OTHER MEANS.

POLYETHYLENE PIPE AND FITTINGS MAY BE JOINED TOGETHER OR TO OTHER MATERIALS BY MEANS OF (A) FLANGED CONNECTIONS (FLANGE ADAPTERS AND BACK-UP RINGS), (B) MECHANICAL COUPLINGS DESIGNED FOR JOINING POLYETHYLENE PIPE OR FOR JOINING POLYETHYLENE PIPE TO ANOTHER MATERIAL, (C) MJ ADAPTERS OR (D) ELECTROFUSION. WHEN JOINING BY OTHER MEANS, THE INSTALLATION INSTRUCTIONS OF THE JOINING DEVICE MANUFACTURER SHALL BE OBSERVED.

6.9.12.4 ID STIFFENER AND RESTRAINT.

A STIFFENER SHALL BE INSTALLED IN THE BORE OF THE POLYETHYLENE PIPE WHEN AN OD COMPRESSION MECHANICAL COUPLING IS USED AND WHEN CONNECTING PLAIN END PE PIPE TO A MECHANICAL JOINT PIPE, FITTING OR APPURTENANCE. EXTERNAL CLAMP AND TIE ROD RESTRAINT SHALL BE INSTALLED WHERE PE PIPE IS CONNECTED TO THE SOCKET OF A MECHANICAL JOINT PIPE, FITTING OR APPURTENANCE EXCEPT WHERE AN MJ ADAPTER IS USED.

6.9.12.5 BRANCH CONNECTIONS.

BRANCH CONNECTIONS TO THE MAIN SHALL BE MADE WITH SADDLE FITTINGS OR TEES. POLYETHYLENE SADDLE FITTINGS SHALL BE SADDLE FUSED TO THE MAIN PIPE PER SECTION **4.8.12.1** ABOVE.

6.9.13 **INSTALLATION:**

6.9.13.1 <u>GENERAL</u>.

WHEN DELIVERED, A RECEIVING INSPECTION SHALL BE PERFORMED AND ANY SHIPPING DAMAGE SHALL BE REPORTED TO THE MANUFACTURER WITHIN 7 DAYS. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D 2774, MANUFACTURER'S RECOMMENDATIONS AND THIS SPECIFICATION. ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO ENSURE A SAFE WORKING ENVIRONMENT IN ACCORDANCE WITH ALL APPLICABLE SAFETY CODES AND STANDARDS.

6.9.13.2 <u>EXCAVATION</u>.

TRENCH EXCAVATIONS SHALL CONFORM TO THE PLANS AND DRAWINGS, AS AUTHORIZED IN WRITING BY THE PROJECT ENGINEER OR HIS APPROVED REPRESENTATIVE, AND IN ACCORDANCE WITH ALL APPLICABLE CODES. THE CONTRACTOR SHALL REMOVE EXCESS GROUNDWATER. WHERE NECESSARY, TRENCH WALLS SHALL BE SHORED OR REINFORCED, AND ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO ENSURE A SAFE WORKING ENVIRONMENT.

6.9.13.3 <u>MECHANICAL JOINT & FLANGE INSTALLATION</u>.

MECHANICAL JOINT AND FLANGE CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURE. MJ ADAPTERS AND FLANGES SHALL BE CENTERED AND ALIGNED TO THE MATING COMPONENT BEFORE ASSEMBLING AND TIGHTENING BOLTS. IN NO CASE SHALL MJ GLAND OR FLANGE BOLTS BE USED TO DRAW THE CONNECTION INTO ALIGNMENT. BOLT THREADS SHALL BE LUBRICATED, AND FLAT WASHERS SHOULD BE USED UNDER THE NUTS. BOLTS SHALL BE EVENLY TIGHTENED ACCORDING TO THE TIGHTENING PATTERN AND TORQUE STEP RECOMMENDATIONS OF THE MANUFACTURER. AT LEAST 1 HOUR AFTER INITIAL ASSEMBLY, FLANGE CONNECTIONS SHALL BE RE-TIGHTENED FOLLOWING THE TIGHTENING PATTERN AND TORQUE STEP RECOMMENDATIONS OF THE MANUFACTURER. THE FINAL TIGHTENING TORQUE SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

6.9.13.4 <u>FOUNDATION & BEDDING</u>.

PIPE SHALL BE LAID ON GRADE AND ON A STABLE FOUNDATION. UNSTABLE TRENCH BOTTOM SOILS SHALL BE REMOVED, AND A MINIMUM 6" FOUNDATION OR BEDDING OF COMPACTED GRANULAR MATERIAL SHALL BE INSTALLED TO PIPE BOTTOM GRADE. EXCESS GROUNDWATER SHALL BE REMOVED FROM THE TRENCH BEFORE LAYING THE FOUNDATION OR BEDDING FOR THE PIPE. A TRENCH CUT IN ROCK OR STONY SOIL SHALL BE EXCAVATED TO MINIMUM 6" BELOW PIPE BOTTOM GRADE, AND BROUGHT BACK TO GRADE WITH COMPACTED GRANULAR BEDDING. ALL LEDGE ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED.

6.9.13.5 <u>PIPE HANDLING</u>.

WHEN LIFTING WITH SLINGS, ONLY WIDE FABRIC CHOKER SLINGS CAPABLE OF SAFELY CARRYING THE LOAD SHALL BE USED TO LIFT, MOVE, OR LOWER PIPE AND FITTINGS. WIRE ROPE AND CHAIN ARE PROHIBITED. SLINGS SHALL BE OF SUFFICIENT CAPACITY FOR THE LOAD, AND SHALL BE INSPECTED BEFORE USE. WORN OR DAMAGED EQUIPMENT SHALL NOT BE USED.

6.9.13.6 <u>BACKFILLING</u>.

EMBEDMENT MATERIAL SOIL TYPE AND PARTICLE SIZE SHALL BE IN ACCORDANCE WITH ASTM D 2774. EMBEDMENT SHALL BE PLACED AND COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY IN 6" LIFTS TO AT LEAST 6" ABOVE THE PIPE CROWN. DURING EMBEDMENT PLACEMENT AND COMPACTION, CARE SHALL BE TAKEN TO ENSURE THAT THE HAUNCH AREAS BELOW THE PIPE SPRINGLINE ARE COMPLETELY FILLED AND FREE OF VOIDS.

6.9.13.7 **PROTECTION AGAINST SHEAR AND BENDING LOADS**.

IN ACCORDANCE WITH ASTM D 2774, CONNECTIONS SHALL BE PROTECTED WHERE AN UNDERGROUND POLYETHYLENE BRANCH OR SERVICE PIPE IS

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015

JOINED TO A BRANCH FITTING SUCH AS A SERVICE SADDLE, BRANCH SADDLE OR TAPPING TEE ON A MAIN PIPE, AND WHERE PIPES ENTER OR EXIT CASINGS OR WALLS. THE AREA SURROUNDING THE CONNECTION SHALL BE EMBEDDED IN PROPERLY PLACED, COMPACTED BACKFILL, PREFERABLY IN COMBINATION WITH A PROTECTIVE SLEEVE OR OTHER MECHANICAL STRUCTURAL SUPPORT TO PROTECT THE POLYETHYLENE PIPE AGAINST SHEAR AND BENDING LOADS.

6.9.13.8 FINAL BACKFILLING.

FINAL BACKFILL SHALL BE PLACED AND COMPACTED TO FINISHED GRADE. NATIVE SOILS MAY BE USED PROVIDED THE SOIL IS FREE OF DEBRIS, STONES, BOULDERS, CLUMPS, FROZEN CLODS OR THE LIKE LARGER THAN 8" IN THEIR LARGEST DIMENSION.

6.9.14 **TESTING**

6.9.14.1 FUSION QUALITY

THE CONTRACTOR SHALL ENSURE THE FIELD SET-UP AND OPERATION OF THE FUSION EQUIPMENT, AND THE FUSION PROCEDURE USED BY THE CONTRACTOR'S FUSION OPERATOR WHILE ON SITE. UPON REQUEST BY THE OWNER, THE CONTRACTOR SHALL VERIFY FIELD FUSION QUALITY BY MAKING AND TESTING A TRIAL FUSION. THE TRIAL FUSION SHALL BE ALLOWED TO COOL COMPLETELY; THEN TEST STRAPS SHALL BE CUT OUT AND BENT STRAP TESTED IN ACCORDANCE WITH ASTM D 2657. IF THE BENT STRAP TEST OF THE TRIAL FUSION FAILS AT THE JOINT, THE FIELD FUSIONS REPRESENTED BY THE TRIAL FUSION SHALL BE REJECTED. THE CONTRACTOR AT HIS EXPENSE SHALL MAKE ALL **NECESSARY** CORRECTIONS TO EQUIPMENT, SET-UP. OPERATION AND FUSION PROCEDURE, AND SHALL RE-MAKE THE REJECTED FUSIONS.

6.9.14.2 <u>LEAK TESTING</u>.

HYDROSTATIC LEAK TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH PERFORMANCE PIPE TECHNICAL NOTE 802 LEAK TESTING. PNEUMATIC PRESSURE TESTING IS PROHIBITED.

6.10 <u>FITTINGS</u>

FITTINGS SHALL BE DUCTILE IRON FLANGED, MECHANICAL OR BOLTLESS RESTRAINED JOINTS MEETING ANSI/AWWA C110/A21.10 AND ANSI/AWWA

C111/A21.11, CLASS 250, OR ANSI/AWWA C153/A21.53.84, CLASS 350, COMPACT STANDARD. DUCTILE IRON FITTINGS SHALL HAVE A FACTORY APPLIED INTERIOR COATING/LINING OF "**PROTECTO 401" CERAMIC EPOXY LINING** AS PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR SANITARY SEWER APPLICATIONS AND FACTORY ASPHALTIC EXTERIOR COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 SHALL BE REQUIRED FOR ALL DUCTILE IRON PIPES AND FITTINGS.

FITTINGS SHALL BE MANUFACTURED IN THE UNITES STATES OF AMERICA OR BE MANUFACTURED BY STAR PIPE PRODUCTS, SIGMA, TYLER/UNION FOUNDRY, SIP OR NACIP WITH CURRENT ISO CERTIFICATION.

6.11 <u>MINIMUM PIPE LENGTH</u>

THERE SHALL BE A MINIMUM OF 24 INCHES OF STRAIGHT PIPE BEFORE, AFTER OR IN BETWEEN VALVES, FITTINGS, ETC.

6.12 <u>PIPE AND FITTING JOINT STYLE:</u>

6.12.1 <u>DUCTILE IRON</u>

DUCTILE IRON PIPES AND FITTINGS SHALL BE FLANGED (AERIAL/BRIDGE CROSSINGS), PUSH-ON, MECHANICAL, RESTRAINED MECHANICAL OR BOLTLESS RESTRAINED JOINTS MEETING ANSI/AWWA A21.51/C151 AND ANSI/AWWA A21.50/C150.

6.12.2 <u>PVC</u>

PUSH-ON JOINTS SHALL CONSIST OF AN INTEGRAL BELL WITH A FACTORY INSTALLED "LOCKED-IN" ELASTOMERIC GASKET. THE SPIGOT END OF EACH JOINT SHALL BE FACTORY BEVELED. ELASTOMERIC GASKET SHALL MEET THE REQUIREMENTS OF ASTM "D1869" AND "F-477". RESTRAINING SHALL BE ACCOMPLISHED BY USE OF DUCTILE IRON MECHANICAL JOINTS RESTRAINER GLANDS OR BELL RESTRAINT HARNESS WITH STAINLESS STEEL HARDWARE.

6.12.3 <u>POLYETHYLENE</u>

POLYETHYLENE PIPING SHALL BE CONNECTED TO OTHER TYPE PIPES BY THERMAL BUTT-FUSION, FLANGE ASSEMBLIES OR POLYETHYLENE

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015

MECHANICAL JOINT ADAPTERS BASED UPON MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

6.13 <u>RESTRAINED JOINTS</u>

ALL VALVES, FITTINGS, PLUGS, REDUCERS, ETC., SHALL HAVE RESTRAINED JOINTS. UNLESS FIELD CONDITIONS AND / OR SPECIAL DESIGN CONDITIONS NECESSITATE, USE OF THRUST BLOCKING SHALL NOT BE PERMITTED. THRUST BLOCKS ARE PERMITTED ONLY WHEN ADEQUATE LENGTH OF PIPE CANNOT BE RESTRAINED DUE TO FIELD CONDITIONS AND/OR FOR TEMPORARY CONSTRUCTION. A MINIMUM OF 12' LONG STEEL SHEET PILE SHALL BE USED IN CONJUNCTION WITH THE JEFFERSON PARISH DETAILS (SEE JEFFERSON PARISH WATER STANDARD DRAWINGS) FOR THRUST BLOCKING. LENGTH OF RESTRAINED PIPES SHALL BE PER MANUFACTURER'S REOUIREMENTS. JEFFERSON PARISH WATER STANDARD DRAWINGS PROVIDE SOME MINIMUM LENGTHS FOR RESTRAINED PIPES IN OFFSETS. THESE MINIMUM REQUIREMENTS SHALL ONLY BE USED IF THE MANUFACTURER'S REQUIRED RESTRAINED LENGTHS, BASED ON SOIL TYPE, TRENCH TYPE. TEST PRESSURE. SAFETY FACTOR. DEPTH OF BURY. FITTING TYPE, NOMINAL SIZE, PIPE MATERIAL, ETC. ARE LESS THAN THESE MINIMUM REQUIREMENTS.

6.14 <u>PAINT</u>

EXPOSED SANITARY SEWER FORCE MAINS, SUCH AS AERIAL/BRIDGE CROSSINGS OVER DRAINAGE CANALS SHALL HAVE FACTORY APPLIED PRIMER WITH FIELD-FINISH BROWN PAINT. PRIMER AND PAINT MATERIAL SHOULD BE FULLY COMPATIBLE WITH THE EXTERNAL ENVIRONMENT AND IN FULL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR THE INTENDED PURPOSE.

6.15 <u>TAPPING SLEEVES</u>

TAPPING SLEEVES FOR PVC, AC AND DUCTILE IRON SHALL BE MANUFACTURED OF 18-8 304 STAINLESS STEEL WITH STAINLESS STEEL FLANGE. TAPPING SLEEVES FOR PRE-STRESSED CONCRETE CYLINDER PIPE SHALL BE IN ACCORDANCE WITH AWWA MANUAL M-2. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL WITH ANTI-SEIZE COMPOUND OR HEAT TREATED TEFLON COATED COR-TEN. TAPPING SLEEVES SHALL BE MANUFACTURED BY ROMAC, CASCADE OR JCM.

6.16 <u>TAPPING VALVES</u>

TAPPING VALVES SHALL BE MANUFACTURED BY MUELLER, CLOW, M&H OR KENNEDY. VALVES SHALL HAVE AN OUTLET AND CONNECTION SUITABLE FOR MAKE UP, TAPPING SLEEVE AND ADJACENT PIPE.

6.17 <u>COUPLINGS</u>

DUCTILE IRON COUPLINGS SHALL HAVE A FACTORY APPLIED INTERIOR COATING/LINING OF "PROTECTO 401" CERAMIC EPOXY LINING AS PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR SANITARY SEWER APPLICATIONS.

G. LONG BODY TRANSITIONAL COUPLING

LONG BODY TRANSITIONAL COUPLINGS IN ACCORDANCE WITH THE FOLLOWING TABLE, SHALL BE USED FOR CONNECTING PROPOSED/NEW PIPES TO EXISTING PIPES OF DIFFERENT MATERIAL, FOR EXAMPLE, <u>"PVC C-900"</u> TO <u>"AC"</u> OR <u>"CAST IRON"</u>. ONELY LONG BODY COUPLINGS SHALL BE USED TO PROVIDE RESTRAIN JOINTS. LONG BODY TRANSITIONAL COUPLINGS SHALL BE:

1. <u>ROMAC</u>

- 501 STRAIGHT, TRANSITION, LONG BARREL COUPLING
- XR501 EXTENDED RANGE COUPLING
- RC501 REDUCING COUPLING

2. <u>FORD</u>

- STYLE FC1 STRAIGHT COUPLING
- STYLE FC2A TRANSITION COUPLING
- STYLE FRC REDUCING COUPLING
- STYLE FC2W LONG SLEEVE WIDE RANGE COUPLING

3. <u>SMITH-BLAIR</u>

- SERIES 441A STRAIGHT AND TRANSITION COUPLING-STANDARD LENGTH
- SERIES 443 TRANSITION SLEEVE COUPLING IN SIZES 10"-16"
- SERIES 413 STEEL TRANSITION COUPLING IN SIZES 18"-36"

NOMINAL PIPE SIZE, INCHES.	TRANSITION COUPLING MINIMUM LENGTH, INCHES.
4, 6, 8	12
10, 12, 14, 16	18
18, 20, 24, 30, 36	24

H. SPECIAL COUPLINGS

1. HYMAX SERIES 2000

"HYMAX" SERIES 2000 TRANSITION COUPLINGS AS SUPPLIED BY TOTAL PIPING SYSTEMS SHALL BE FURNISHED WITH 2 STAINLESS STEEL NUTS AND BOLTS WITH ANTI-SEIZE COMPOUND COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

2. MACRO TWO BOLT EXTENDED RANGE COUPLING

"MACRO" TOW-BOLT EXTENDED RANGE COUPLINGS AS SUPPLIED BY ROMAC INDUSTRIES, INC. SHALL BE FURNISHED WITH 2 STAINLESS STEEL NUTS AND BOLTS WITH ANTI-SEIZE COMPOUND COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM OF 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

6.18 BOLTS AND NUTS

ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL WITH ANTI-SEIZE COMPOUND OR HEAT TREATED TEFLON COATED COR-TEN.

6.19 <u>VALVES:</u>

THE CONTRACTOR SHALL SUBMIT VALVE SHOP DRAWINGS TO THE JEFFERSON PARISH SEWERAGE AND ENGINEERING DEPARTMENTS FOR THEIR APPROVAL BEFORE ORDERING THE VALVES.

6.19.1 GATE VALVES

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015

ALL GATE SHALL HAVE CAST IRON OR DUCTILE IRON BODIES, BRONZE MOUNTED, 125 # DOUBLE BRONZE FACE DISC. VALVES SHALL CONFORM TO AWWA C500 AND HAVE A NON-RISING STEM, 2 INCH OPERATING NUT AND OPEN IN A COUNTER-CLOCKWISE DIRECTION (LEFT HAND OPENING). GATE VALVES SHALL HAVE A FACTORY APPLIED EPOXY COATING AND HAVE STAINLESS STEEL OR HEAT TREATED TEFLON COATED CORE-TEN BOLTS AND NUTS. NO CADIUM PLATED NUTS AND BOLTS ARE PERMITTED. GATE VALVES SHALL BE MANUFACTURED BY EAST JORDAN IRON WORKS, INC., MUELLER COMPANY, M & H, KENNEDY, CLOW OR DZURICH. VALVES MUST BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE.

6.19.2 CHECK VALVES

CHECK VALVES 3 INCH TO 12 INCH IN SIZE SHALL BE M&H BRAND SWING CHECK VALVES, LEVER & WEIGHT FLANGED, CAST IRON OR DUCTILE IRON BODY, BRONZE MOUNTED, 125#, SHOPCOAT FINISH, COMPLIES WITH MSS-SP-71 TYPE II AND MIL. SPEC. MIL-V-18436 GROUP B, TYPE III, TRIM 2, BOLTED CAP, STYLE # 159-02. THE VALVE SHALL BE SUITABLE FOR DIRECT BURIAL AND SHALL HAVE FLANGED OR MECHANICAL JOINT ENDS. VALVES SHALL BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE.

6.19.3 COMBINATION AIR AND VACUUM RELEASE VALVE

THE VALVE SHALL CONTROL AIR IN SEWAGE SYSTEMS TO PROVIDE MAXIMUM FLOW EFFICIENCY AND SYSTEM PROTECTION. THE DESIGN SHALL PREVENT CONTACT BETWEEN THE SEWAGE AND THE SEALING MECHANISM AND ENSURE A DRIP TIGHT SEAL. THE VALVE SHALL BE 2" MNPT AS MANUFACTURED BY A.R.I. MODEL D-025 OR PRIOR APPROVED EQUAL.

6.20 LINES CONSTRUCTED ON PRIVATE PROPERTY

ALL SANITARY SEWER FORCE MAINS INSTALLED ON PRIVATE PROPERTY SHALL BE INSTALLED IN ACCORDANCE WITH JEFFERSON PARISH STANDARDS AND SPECIFICATIONS. ALL SANITARY SEWER FORCE MAINS CONSTRUCTED ON PRIVATE PROPERTY, SHALL REMAIN PRIVATE. IN SPECIAL CIRCUMSTANCES WHEN JEFFERSON PARISH MAY HAVE TO TAKE OVER THE MAINTENANCE OF ANY SANITARY SEWER FORCE MAINS, A 20 FOOT WIDE MINIMUM SERVITUDE, CENTERED ON THE MAIN, MUST BE DEDICATED TO JEFFERSON PARISH.

6.21 <u>CLEARANCE</u>

6.21.1 BETWEEN WATER LINES AND SANITARY SEWER LINES

WHEN SANITARY SEWER LINES ARE PARALLEL TO WATER LINES, THE CLEARANCE SHALL BE A MINIMUM OF 6 FEET (MEASURED HORIZONTALLY): WHEN SEWER AND WATER LINES CROSS, VERTICAL CLEARANCE SHALL BE 18 INCHES, WITH THE WATER LINE CROSSING ON TOP. IF THESE CONDITIONS CANNOT BE MET, DUE TO FIELD CONDITIONS, THE <u>"10 STATE STANDARDS"</u> ((PHONE (518) 439-7286, WEB SITE: WWW.HES.ORG)) GUIDELINES CAN BE FOLLOWED, WITH APPROVAL OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT.

6.21.2 <u>BETWEEN SANITARY SEWER FORCE MAINS AND ANY PRIVATE</u> <u>UTILITY LINES</u>

MINIMUM CLEARANCE BETWEEN A SANITARY SEWER FORCE MAIN AND ANY PRIVATE UTILITY LINE SHALL BE 6 FEET (MEASURED HORIZONTALLY). PRIVATE UTILITIES SHALL BE INSTALLED IN PRIVATE SERVITUDES.

6.21.3 BETWEEN SANITARY SEWER FORCE MAINS AND BUILDINGS

SANITARY SEWER FORCE MAINS SHALL NOT BE INSTALLED CLOSER THAN 10 FEET (MEASURED HORIZONTALLY) FROM ANY BUILDING FOUNDATION, WALL OR BUILDING OVERHANG. THIS 10 FOOT CLEARANCE MAY BE REDUCED TO 6 FEET IN AREAS WITH COMMERCIAL ZONING WITH LIMITED RIGHT-OF-WAY AND WITH APPROVAL OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT.

6.22 <u>SEWER FORCE MAIN SYSTEM AS-BUILT PLANS/INFORMATION AND FINAL</u> <u>INSPECTION</u>

THREE DAYS PRIOR TO TESTING OF ANY SEGMENT OF THE SFM SYSTEM AND PUTTING THE SFM INTO SERVICE, SFM AS-BUILT PLANS/INFORMATION SHOULD BE COMPLETED BY THE CONTRACTOR AND THREE (3) BLUE OR BLACK LINE COPIES SHOULD BE SUBMITTED (THROUGH THE A/E) TO THE DEPARTMENT OF ENGINEERING. AS-BUILT PLANS/INFORMATION SHOULD BE COMPLETED IN SUCH A WAY THAT IDENTIFY THE TYPE AND LOCATION OF VALVES, FITTINGS AND OTHER APPURTENANCES AS WELL AS THE PIPE TYPE, SIZE, LENGTH, ETC. AS-BUILT PLANS/INFORMATION SHOULD BE USED

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015

AS A BASIS FOR THE FINAL INSPECTION AND PREPARATION OF FINAL AS-BUILT DRAWINGS.

THE REQUIREMENTS OF THIS SECTION IS SEPARATE FROM THE PARISH REQUIREMENTS FOR PROJECT AS-BUILT DRAWINGS (PLANS) WHICH INCLUDE THREE (3) BLUE OR BLACK LINE COPIES, A MYLAR SET, AND AN ELECTRONIC COPY OF THE COMPLETED AS-BUILT PLANS ON CD-ROM IN "PDF" AND "ACAD 2004" FORMAT.

THE ELECTRONIC COPY OF THE COMPLETED AS-BUILT PLANS SHALL BE A PROPERLY GEO-REFERENCED (REFERENCED TO STATE PLANE COORDINATES SYSTEM 1983, ZONE 1702, LOUISIANA SOUTH WITH X AND Y COORDINATES IN FEET) AUTO CAD DRAWING OF THE FINAL "MARK-UP" AS-BUILT WITH A LISTING OF THE X AND Y COORDINATES, FOR EACH FEATURE (VALVES, FITTINGS, REDUCERS, ETC...).

6.23 PRESSURE TESTING SANITARY SEWER FORCE MAINS

ALL NEW AND/OR MODIFIED SEGMENTS OF THE SANITARY SEWER FORCE MAIN SYSTEM SHALL BE TESTED TO A PRESSURE OF 50% ABOVE THE NORMAL OPERATING PRESSURE OR 100 P.S.I. WHICHEVER IS GRATER. THIS PRESSURE SHALL BE MAINTAINED FOR A PERIOD OF TWO (2) HOURS WITH NO DISCERNIBLE PRESSURE LOSS. LEAKS SHALL BE REPAIRED BY REMOVING AND REPLACING FAULTY SECTIONS. THE PRESSURE TEST SHALL BE PERFORMED BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT. ONLY AFTER SATISFACTORY PRESSURE TESTING IS COMPLETED CAN THE SEGMENT BE TIED INTO THE EXISTING SANITARY SEWER FORCE MAIN SYSTEM OR A MANHOLE. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED TO MAKE A TIE-IN TO THE EXISTING SEWER SYSTEM WITHOUT DIRECT SUPERVISION OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT. ALL COSTS ASSOCIATED WITH THE TESTING PROCEDURE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

6.24 <u>PIPE INSTALLATION</u>

THE INSTALLATION OF SANITARY SEWER FORCE MAINS AND OTHER RELATED APPURTENANCES SHALL BE STRICTLY IN ACCORDANCE WITH THESE JEFFERSON PARISH STANDARD NOTES, AND LATEST APPLICABLE AWWA STANDARDS SUCH AS AWWA C600 (INSTALLATION OF DUCTILE-IRON FORCE MAINS AND APPURTENANCES), AWWA C605 (UNDERGROUND INSTALLATION OF POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS FOR FORCE MAINS), ETC. AND THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015 IN ADDITION TO ANY PREVIOUSLY MENTIONED REQUIREMENTS FOR POLYETHYLENE ENCASEMENT, POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) MAY BE REQUIRED FOR ALL "DUCTILE IRON FITTINGS" AND "APPURTENANCES" REGARDLESS OF ANY SPECIFIC COATING.

6.25 PIPE BEDDING

THE OBJECTIVE OF BEDDING IS TO PROVIDE A CONTINUOUS SUPPORT FOR THE PIPE AT REQUIRED LINE AND GRADE. THE BEDDING MAY OR MAY NOT BE COMPACTED, BUT IN ANY EVENT, THE PROJECTING BELLS OF THE PIPE SHOULD BE PROPERLY RELIEVED IN THE TRENCH BOTTOM SO THAT THE ENTIRE PIPE IS EVENLY SUPPORTED BY THE BEDDING. WHERE THE TRENCH BOTTOM IS UNSTABLE (ORGANIC MATERIAL, OR "QUICK" SAND OR SIMILAR MATERIAL), THE TRENCH BOTTOM SHOULD BE OVER-EXCAVATED AND BROUGHT BACK TO GRADE UTILIZING DUNNAGE BOARDS, GEOGRID, GEOTEXTILE FABRIC OR APPROVED BEDDING MATERIAL AND/OR ANY COMBINATION OF SAME.

SANITARY SEWER FORCE MAIN TRENCH DESIGN, PIPE BEDDING, AND BACKFILL SHALL BE PER "JEFFERSON PARISH WATER STANDARD DETAILS" SHEET.

TABLE OF CONTENTS

1.	NOTIFICATION	.1
2.	MATERIAL	.1
3.	NON CONFORMANCE	.2
4.	VERIFICATION OF EXISTING UTILITIES PRIOR TO ORDERING MATERIALS	.2
5.	DOMESTICITY	.2
	A. PURPOSE OF THIS SECTION	.2
	B. CLARIFICATION OF TERMS	.3
	C. VALVES	.3
	D. APPURTENANCES	.3
	E. FITTINGS	.3
	F. ISO REGISTERED MANUFACTURER	.4
6.	SANITARY SEWER FORCE MAINS	.4
	6.1 BADEPTH OF COVER	.4
	6.2 BACKFILL	.4
	6.3 PVC PIPE	.5
	6.4 DUCTILE IRON PIPE	.5
	6.5 STEEL CASINGS	.5
	6.6 CASING SPACERS	.5
	6.7 CANAL CROSSINGS	.5
	6.8 CONFLICT BOXES	.6
	6.9 HDPE PIPE (AND FITTINGS)	.6
	6.9.1 MATERIALS	.6
	6.9.2 COMPATIBILITY OF PIPE AND FITTINGS	.6
	6.9.3 POLYETHYLENE PIPE	.6
	6.9.4 SERVICE IDENTIFICATION STRIPES	.7
	6.9.5 POLYETHYLENE FITTINGS & CUSTOM FABRICATIONS	.7
	6.9.6 MOLDED FITTINGS	.7
	6.9.7 X-RAY INSPECTION	.7
	6.9.8 FABRICATED FITTINGS	.7
	6.9.9 POLYETHYLENE FLANGE ADAPTERS	.7
	6.9.10 BACK-UP RINGS & FLANGE BOLTS	.7
	6.9.11 MJ ADAPTERS	.8
	6.9.12 JOINING	.8
	6.9.12.1 HEAT FUSION JOINING	.8
	6.9.12.2 BUTT FUSION OF UNLIKE WALL THICKNESS	.8
	6.9.12.3 JOINING BY OTHER MEANS	.8
	6.9.12.4 ID STIFFENER AND RESTRAINT	.9
	6.9.12.5 BRANCH CONNECTIONS	.9
	6.9.13 INSTALLATION	.9
	6.9.13.1 GENERAL	.9
	6.9.13.2 EXCAVATION	.9
	6.9.13.3 MECHANICAL JOINT & FLANGE INSTALLATION	.9
	6.9.13.4 FOUNDATION & BEDDING1	0

Jefferson Parish Department of Engineering Sanitary Sewer "Force Main System" General Standard Notes, Green Sheets, Appendix "B", Revised: 02/15/2015

6.9.1	3.5 PIPE HANDLING	10
6.9.1	3.6 BACKFILLING	10
6.9.1	3.7 PROTECTION AGAINST SHEAR AND BENDING LOADS	10
6.9.1	3.8 FINAL BACKFILLING	11
6.9.14	TESTING	11
6.9.14.	FUSION QUALITY	11
6.9.1	4.2 LEAK TESTING	11
6.10FIT7	'INGS	11
6.11MIN	IMUM PIPE LENGTH	12
6.12PIPE	AND FITTING JOINT STYLE:	12
6.12.1	DUCTILE IRON	12
6.12.2	PVC	12
6.12.3	POLYETHYLENE	12
6.13RES	FRAINED JOINTS	13
6.14PAI	JT	13
6.15TAP	PING SLEEVES	13
6.16TAP	PING VALVES	14
6.17COU	PLINGS	14
G. LON	G BODY TRANSITIONAL COUPLING	14
1.	ROMAC	14
2.	FORD	14
3.	SMITH-BLAIR	14
H. SPE	CIAL COUPLINGS	15
1.	HYMAX SERIES 2000	15
2.	MACRO TWO BOLT EXTENDED RANGE COUPLING	15
6 18BOI		
ONODOL	TS AND NUTS	15
6.19VAL	TS AND NUTS	15 15
6.19VAL 6.19.1	TS AND NUTS	15 15 15
6.19VAL 6.19.1 6.19.2	TS AND NUTS	15 15 15 16
6.19VAL 6.19.1 6.19.2 6.19.3	TS AND NUTS VES: GATE VALVES CHECK VALVES COMBINATION AIR AND VACUUM RELEASE VALVE	15 15 15 16
6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI	TS AND NUTS VES: GATE VALVES CHECK VALVES COMBINATION AIR AND VACUUM RELEASE VALVE S CONSTRUCTED ON PRIVATE PROPERTY	15 15 15 16 16
6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE	TS AND NUTS VES: GATE VALVES CHECK VALVES COMBINATION AIR AND VACUUM RELEASE VALVE S CONSTRUCTED ON PRIVATE PROPERTY ARANCE	15 15 16 16 16 16
6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1	TS AND NUTS VES: GATE VALVES CHECK VALVES COMBINATION AIR AND VACUUM RELEASE VALVE ES CONSTRUCTED ON PRIVATE PROPERTY ARANCE BETWEEN WATER LINES AND SANITARY SEWER LINES	15 15 16 16 16 17 17
6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1 6.21.2	TS AND NUTS VES: GATE VALVES CHECK VALVES COMBINATION AIR AND VACUUM RELEASE VALVE. S CONSTRUCTED ON PRIVATE PROPERTY ARANCE. BETWEEN WATER LINES AND SANITARY SEWER LINES BETWEEN SANITARY SEWER FORCE MAINS AND ANY PRIVATE UTILITY	15 15 16 16 16 17 17
6.19VAI 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1 6.21.2 LINES	TS AND NUTS VES:	15 15 16 16 16 16 17
6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1 6.21.2 LINES 6.21.3	TS AND NUTS VES:	15 15 16 16 16 16 17 17
6.19VAL 6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1 6.21.2 LINES 6.21.3 6.22 SEW	TS AND NUTS	15 15 16 16 16 16 17 17
6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1 6.21.2 LINES 6.21.3 6.22 SEW INSPECT	TS AND NUTS VES:	15 15 16 16 16 17 17 17
6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1 6.21.2 LINES 6.21.3 6.22 SEW INSPECT 6.23 PRE	TS AND NUTS VES: GATE VALVES CHECK VALVES COMBINATION AIR AND VACUUM RELEASE VALVE ES CONSTRUCTED ON PRIVATE PROPERTY ARANCE BETWEEN WATER LINES AND SANITARY SEWER LINES BETWEEN SANITARY SEWER FORCE MAINS AND ANY PRIVATE UTILITY 17 BETWEEN SANITARY SEWER FORCE MAINS AND BUILDINGS ER FORCE MAIN SYSTEM AS-BUILT PLANS/INFORMATION AND FINAL ION SSURE TESTING SANITARY SEWER FORCE MAINS	15 15 15 16 16 16 17 17 17 17
6.19VAL 6.19VAL 6.19.1 6.19.2 6.19.3 6.20 LINI 6.21 CLE 6.21.1 6.21.2 LINES 6.21.3 6.22 SEW INSPECT 6.23 PRE 6.24 PIPE	TS AND NUTS VES: GATE VALVES CHECK VALVES COMBINATION AIR AND VACUUM RELEASE VALVE COMBINATION AIR AND VACUUM RELEASE VALVE COMBINATION AIR AND VACUUM RELEASE VALVE SCONSTRUCTED ON PRIVATE PROPERTY ARANCE BETWEEN WATER LINES AND SANITARY SEWER LINES BETWEEN WATER LINES AND SANITARY SEWER LINES BETWEEN SANITARY SEWER FORCE MAINS AND ANY PRIVATE UTILITY 17 BETWEEN SANITARY SEWER FORCE MAINS AND BUILDINGS ER FORCE MAIN SYSTEM AS-BUILT PLANS/INFORMATION AND FINAL ION SSURE TESTING SANITARY SEWER FORCE MAINS INSTALLATION	15 15 16 16 16 17 17 17 17 18 18
<u>Appendix "C"</u> <u>Jefferson Parish</u> <u>Department of Engineering</u> <u>Water Distribution System General Standard Notes *</u>1

* These notes shall be referenced and shall be included, in their entirety, unedited and unabridged, in all Jefferson Parish Projects as follows:

- <u>New subdivisions</u> attach these notes to plans as Appendix "C".
- <u>All other projects</u> include these notes in Specification Booklets, which include any work related to the Parish Water Distribution System. Insert a copy of these notes, on green paper, at the end of the "Water Distribution System Technical Specification" Section of the Specification Booklet. Any Deviations and / or Variations from these General Standard Notes shall be tabulated under the heading of "Deviations From Jefferson Parish Water Standards Notes" and shall be included in the "Water Distribution System Technical Specification" Section of the Specification System Technical Specification" Section of the Specification System Technical Specification.

1. <u>NOTIFICATION:</u>

CONTRACTORS SHALL NOTIFY THE DEPARTMENT OF WATER AT 736-6743 AND THE DEPARTMENT OF ENGINEERING, INSPECTION DIVISION AT 736-6793, 48 HOURS PRIOR TO ANY FIELD WORK RELATING TO WATER LINES, WATER VALVES, WATER METERS, HYDRANTS, ETC. ALL WATER VALVES 16 INCH AND LARGER SHALL BE OPERATED BY PARISH PERSONNEL. SMALLER VALVES MAY BE OPERATED (OPERATED SHALL MEAN, OPENING AND CLOSING. IF A CONTRACTOR FAILS TO REOPEN A VALVE WHICH HE HAD CLOSED DURING CONSTRUCTION, HE MAY BE HELD LIABLE FOR ANY COST, SAFETY OR HEALTH RELATED ISSUES WHICH CAN BE RELATED TO HIS NEGLIGENCE OF LEAVING THE VALVE CLOSED.) BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF JEFFERSON PARISH PERSONNEL.

THE DEPARTMENT OF ENGINEERING MUST BE GIVEN A MINIMUM OF 48 HOURS NOTICE BEFORE A TAP IS TO BE MADE ON A WATER LINE (FOR METERS, FIRE SERVICES AND FIRE LINES).

WHERE A TIE-IN, FIRE SERVICE OR WATER METER INSTALLATION IS TO BE MADE BY OTHER THAN WATER DEPARTMENT PERSONNEL, THE OWNER, CONTRACTOR OR HIS AGENT SHALL CONTACT THE DEPARTMENT OF ENGINEERING 24 HOURS IN ADVANCE FOR THE INSPECTION OF THE INSTALLATION. THE INSTALLATION SHALL BE INSPECTED AND APPROVED BY THE DEPARTMENT OF ENGINEERING PRIOR TO BACKFILLING. <u>ALSO SEE</u> SECTION 26 (WATER DISTRIBUTION SYSTEM "AS-BUILT SKETCHES", "GPS COORDINATES", AND "AS-BUILT DRAWINGS")

¹ Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Originated - January 2002.

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019

2. <u>LICENSE REQUIREMENTS:</u>

PER THE REQUIREMENTS OF LSA R.S. 40:1148 ET.SEQ., A CLASS IV WATER DISTRIBUTION OPERATOR CERTIFICATE (LICENSE) SHALL BE REQUIRED TO OPERATE VALVES OR COMPLETE A TIE-IN TO ANY ACTIVE (LIVE) WATER DISTRIBUTION OR WATER SUPPLY SYSTEM IN JEFFERSON PARISH. SUCH LICENSE SHALL NOT BE REQUIRED FOR MUNICIPAL AND PUBLIC WORKS CONTRACTORS WHO ARE PROPERLY LICENSED BY THE LOUISIANA STATE LICENSING BOARD TO CONSTRUCT WATER LINES. HOWEVER, CONTRACTORS WHO OPERATE, TIE-IN, OR REPAIR ANY WATER DISTRIBUTION OR WATER SUPPLY LINE WILL BE REQUIRED TO HAVE SUCH WORK OVERSEEN BY AN INDIVIDUAL POSSESSING A CLASS IV WATER DISTRIBUTION OPERATOR CERTIFICATE (LICENSE). SUCH CERTIFICATES SHALL BE MAINTAINED ON FILE WITH THE JEFFERSON PARISH ENGINEERING DEPARTMENT, AND REFILED AT THE BEGINNING OF EACH 2 YEAR LICENSE CYCLE/PERIOD.

WHEN A CLASS IV WATER DISTRIBUTION OPERATOR CERTIFICATE (LICENSE) IS REQUIRED BY LAW, THE CONTRACTOR WILL HAVE A CHOICE TO UTILIZE HIS OWN CLASS IV OR REQUEST FOR THE PARISH TO PROVIDE ONE. DUE TO THE LIMITED NUMBER OF PARISH EMPLOYEES WITH CLASS IV LICENSE, ANY SUCH REQUEST MUST BE COORDINATED WITH THE PARISH IN ADVANCE (IF ALL POSSIBLE, IN WRITING).

3. <u>MATERIAL</u>

ALL MATERIALS USED IN JEFFERSON PARISH'S POTABLE WATER DISTRIBUTION SYSTEM SHALL BE IN TOTAL CONFORMANCE WITH THESE STANDARD NOTES, OTHER CURRENT JEFFERSON PARISH STANDARDS AND MATERIAL SPECIFICATIONS INCLUDING "THE DEPARTMENT OF WATER ANNUAL MATERIAL SUPPLY CONTRACT SPECIFICATIONS". IN ORDER TO SIMPLIFY "MATERIAL RELATED ISSUES" FOR THE ENGINEERS, CONSULTANTS, CONTRACTORS, SUPPLIERS, AND PARISH INSPECTORS EFFORTS HAVE BEEN MADE THROUGHOUT THESE STANDARDS TO MINIMIZE DISCREPANCIES BETWEEN THESE STANDARD NOTES AND THE "THE DEPARTMENT OF WATER ANNUAL MATERIAL SUPPLY CONTRACT SPECIFICATIONS".

QUALIFIED MANUFACTURERS AND/OR PRODUCTS FOR <u>MOST ITEMS</u> (THE DEPARTMENT OF WATER ANNUAL MATERIAL SUPPLY CONTRACT SPECIFICATIONS SHALL BE REFERENCED FOR ITEMS NOT INCLUDED IN THESE NOTES) HAVE BEEN PROVIDED THROUGHOUT THESE NOTES. THESE QUALIFIED MANUFACTURERS AND/OR PRODUCT INFORMATION MAY BE MODIFIED SEMIANNUALLY MAINLY. NEW PRODUCTS MAY BE PRESENTED TO THE JEFFERSON PARISH ENGINEERING AND WATER DEPARTMENTS SIMULTANEOUSLY FOR EVALUATION. ANY PRODUCT FOUND TO MEET JEFFERSON PARISH STANDARDS WILL BE INCLUDED IN THESE STANDARDS WHEN SEMIANNUAL REVISIONS ARE MADE. FINAL DECISION FOR ACCEPTANCE OF ALL MATERIALS WILL BE MADE BY THE JEFFERSON PARISH DEPARTMENT OF WATER.

4. <u>NON CONFORMANCE</u>

THE DEPARTMENT OF ENGINEERING HAS THE RIGHT TO REJECT ANY AND ALL EQUIPMENT, OR WORK, WHICH DOES NOT CONFORM TO JEFFERSON PARISH STANDARDS AND SPECIFICATIONS. ANY WORK SO REJECTED SHALL BE REDONE BY THE CONTRACTOR AT HIS OWN EXPENSE.

5. WATER VALVE BOX ADJUSTMENT

ALL WATER VALVE BOXES ENCOUNTERED WITHIN THE CONSTRUCTION SITE SHALL BE PROTECTED AND ADJUSTED TO CONFORM TO THE FINAL ADJACENT FINISHED SURFACE.

IF THE CONTRACTOR FAILS TO ADJUST ANY WATER VALVE BOXES, THE VALVE BOXES, WHEN DISCOVERED, WILL BE ADJUSTED BY JEFFERSON PARISH, AND THE CONTRACTOR WILL BE BILLED.

VERIFICATION OF EXISTING UTILITIES PRIOR TO ORDERING MATERIALS

THE CONTRACTOR SHALL VERIFY THE SIZE AND MATERIAL OF ALL EXISTING UTILITIES BEFORE ORDERING MATERIALS. JEFFERSON PARISH WILL NOT REIMBURSE THE CONTRACTOR FOR ANY MATERIAL RE-STOCKING FEES.

6. <u>DOMESTICITY</u>

A. **PURPOSE OF THIS SECTION**

THIS SECTION INCLUDES INFORMATION AND PROVIDES ANSWERS TO SOME FREQUENTLY ASKED QUESTIONS REGARDING JEFFERSON PARISH DOMESTICITY POLICY.

B. **CLARIFICATION OF TERMS**

TERMS SUCH AS "DOMESTIC UNITED STATES OF AMERICA MANUFACTURE" AND/OR "MADE IN UNITED STATES" SHALL MEAN THAT EVERY COMPONENTS

OF THESE PRODUCTS OR ITEMS ARE 100% MADE, MANUFACTURED, ASSEMBLED, ETC. IN THE UNITED STATES OF AMERICA.

C. VALVES AND HYDRANTS

ALL DUCTILE IRON/CAST IRON VALVES AND HYDRANTS SHALL BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE. NO DUCTILE IRON/CAST IRON VALVES AND HYDRANTS MANUFACTURED OUTSIDE OF THE UNITED STATES OF AMERICA WILL BE ALLOWED.

D. APPURTENANCES

BY POLICY, DOMESTIC AS WELL AS GLOBALLY SOURCED (FOREIGN) APPURTENANCES {PIPE RESTRAINERS (MECHANICAL JOINT, PIPE TO PIPE, FLANGE ADAPTERS, BELL HARNESSES, ETC.), COUPLINGS, TAPPING AND REPAIR CLAMPS AND SLEEVES, SERVICE CONNECTORS AND SADDLES, ETC.} MAY BE PRESENTED TO THE JEFFERSON PARISH ENGINEERING AND DEPARTMENTS SIMULTANEOUSLY FOR EVALUATION AS WATER MENTIONED IN SECTION 3, ABOVE. ALL APPURTENANCES SHALL BE MANUFACTURED IN STRICT ACCORDANCE WITH THE LATEST APPLICABLE AWWA, ANSI AND ASTM STANDARDS FOR POTABLE WATER. IN ADDITION TO THESE REQUIREMENTS, ALL GLOBALLY SOURCED APPURTENANCES SHALL BE MANUFACTURED AT AN SIX SIGMA OR ISO (INTERNATIONAL ORGANIZATION FOR STANDARDS) **REGISTERED MANUFACTURER WITH THE LATEST CERTIFICATIONS FROM** THESE ORGANIZATIONS.

E. **FITTINGS**

DOMESTIC AS WELL AS <u>GLOBALLY SOURCED</u> (FOREIGN) DUCTILE IRON FITTINGS SHALL BE ALLOWED. ALL FITTINGS SHALL BE IN STRICT ACCORDANCE WITH THE LATEST APPLICABLE AWWA, ANSI (ANSI/AWWA C153/A21.53, ANSI/AWWA C110/A21.10, ANSI/AWWA C111/A21.11, ANSI/AWWA C104/A21.4, ETC.) AND ASTM STANDARDS FOR POTABLE WATER. IN ADDITION TO THESE REQUIREMENTS, THE GLOBALLY SOURCED FITTINGS SHALL ALSO BE MANUFACTURED BY AN ISO (INTERNATIONAL ORGANIZATION FOR STANDARDIZATION) REGISTERED MANUFACTURER, WHICH MANUFACTURER SHALL HAVE CURRENT ISO 9001 CERTIFICATION FOR STANDARDIZATION FOR FITTING PRODUCTS.

F. ISO REGISTERED MANUFACTURER

THESE MANUFACTURING FACILITIES MUST BE COVERED UNDER PERIODIC AUDITS BY THIRD PARTY ACCREDITATION BODIES FOR EVALUATIONS. THESE EVALUATIONS SHALL INCLUDE MANUFACTURING QUALITY CONTROL, CORRECTIVE AND PREVENTIVE PROCESSES. ACTIONS, AND DOCUMENT CONTROL. IN ADDITION, DISTRIBUTION CENTERS MUST BE AUDITED BY THIRD PARTY APPROVAL AGENCIES FOR PERIODIC CONFIRMATION TESTS AND SURVEILLANCE AUDITS. THESE PERIODIC CONFIRMATION TESTS AND SURVEILLANCE AUDITS SHALL DOCUMENT CONTINUATION OF PRODUCT APPROVALS OF EVERY SPECIFIC MANUFACTURING FACILITY BY AUDITING THE ENTIRE QUALITY SYSTEMS INCLUDING DESIGN, INFRASTRUCTURE, SYSTEM IMPLEMENTATION, DISTRIBUTION, TRAINING, QUALITY CONTROL AND ASSURANCE, AND DOCUMENT CONTROL. ALL FITTINGS AND APPURTENANCES MUST BE MANUFACTURED IN ACCORDANCE WITH NSF61.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND FURNISHING JEFFERSON PARISH WITH WRITTEN PROOF THAT ALL GLOBALLY SOURCED (FOREIGN) FITTINGS AND APPURTENANCES MEET THE AFOREMENTIONED AWWA, ANSI, AND ASTM STANDARDS. THE CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING THAT THESE FITTINGS AND APPURTENANCES ARE MANUFACTURED AT AN ISO **REGISTERED MANUFACTURER WITH CURRENT 9001 CERTIFICATION FOR** FITTINGS AND APPURTENANCE PRODUCTS AND SHALL FURNISH JEFFERSON PARISH WITH WRITTEN PROOF OF THIS REGISTRATION AND WRITTEN PROOF CERTIFICATION. ALL SHALL BE FURNISHED IMMEDIATELY AFTER EXECUTION OF THE CONTRACT DOCUMENTS AND PRIOR TO ORDERING FITTINGS AND ANY APPURTENANCE PRODUCTS.

7. WATER LINES:

A. MINIMUM SIZE

THE MINIMUM ACCEPTABLE SIZE FOR NEW WATER LINES IS 8 INCHES IN DIAMETER.

B. **DEPTH OF COVER**

NEW WATER LINES 10 INCHES AND SMALLER SHALL HAVE A MINIMUM OF 3 FEET AND A MAXIMUM OF 4 FEET OF COVER. WATER LINES 12 INCHES AND LARGER SHALL HAVE A MINIMUM OF 4 FEET AND A MAXIMUM OF 5 FEET OF COVER. DEPTHS OUTSIDE THESE MINIMUMS AND MAXIMUMS WILL NOT BE ACCEPTABLE.

C. **BACKFILL**

BACKFILL ALL TRENCHES WITHIN STREET RIGHT-OF-WAY WITH RIVER SAND.

D. **PVC PIPE**

POLYVINYL CHLORIDE (PVC) PRESSURE PIPE 4 INCHES THROUGH 12 INCHES IN DIAMETER SHALL MEET AWWA SPECIFICATION C-900, MINIMUM CLASS 150, DR 18. PVC PIPE 14 INCHES THROUGH 30 INCHES IN DIAMETER SHALL MEET AWWA SPECIFICATION C-905, MINIMUM CLASS 165, DR 25. PVC PIPE WILL NOT BE USED FOR WATER LINES LARGER THAN 30 INCHES.

E. DUCTILE IRON PIPE

ALL DUCTILE IRON PIPE SHALL CONFORM TO ANSI/AWWA A21.51/C151, ANSI/AWWA A21.50/C150 AND "SHALL BE MINIMUM THICKNESS CLASS 51 OR GREATER" OR "SHALL BE MINIMUM PRESSURE CLASS 200 OR GREATER DUCTILE IRON PIPE IN ACCORDANCE WITH TABLE BELOW". ALL DUCTILE IRON PIPES THAT WILL HAVE LESS THAN 24" OF COVER SHALL BE MINIMUM THICKNESS <u>CLASS 52</u> RESTRAINED JOINT PIPE. DUCTILE IRON PIPE SHALL HAVE A FACTORY CEMENT MORTAR LINING AS PER ANSI/AWWA A21.4/C104, AND FACTORY ASPHALTIC EXTERIOR COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) SHALL BE REQUIRED FOR ALL DUCTILE IRON PIPES.

DUCTILE I RON PIPE

SIZE IN.	OUTSIDE DIAMETER IN.	PRESSURE CLASS					
		150	200	250	300	350	
		NOMINAL THICKNESS IN.					
3	3.96			-	0.25*		
4	4.80	-	-	-	-	0.25*	
6	6.90	-	-	-	-	0.25*	
8	9.05	-	-	-	_	0.25*	
10	11.10	-	-	-	-	0.26	
12	13.20	-	-	-	-	0.28	
14	15.30	-	-	0.28	0.30	0.31	
16	17.40	-	-	0.30	0.32	0.34	
18	19.50	_	-	0.31	0.34	0.36	
20	21.60	-	-	0.33	0.36	0.38	
24	25.80	-	0.33	0.37	0.40	0.43	
30	32.00	0.34	0.38	0.42	0.45	0.49	
36	38.30	0.38	0.42	0.47	0.51	0.56	
42	44.50	0.41	0.47	0.52	0.57	0.63	
48	50.80	0.46	0.52	0.58	0.64	0.70	
54	57.56	0.51	0.58	0.65	0.72	0.79	
60	61.61	0.54	0.61	0.68	0.76	0.83	
64	65.67	0.56	0.64	0.72	0.80	0.87	

NOMINAL THICKNESSES FOR STANDARD PRESSURE CLASSES OF DUCTILE I RON PIPE

*CALCULATED THICKNESSES FOR THESE SIZES AND PRESSURE RATINGS ARE LESS THAN THOSE SHOWN ABOVE. PRESENTLY THESE ARE THE LOWEST NOMINAL THICKNESSES AVAILABLE IN THESE SIZES.

PRESSURE CLASSES ARE DEFINED AS THE RATED WATER WORKING PRESSURE OF THE PIPE IN PSI. THE THICKNESSES SHOWN ABOVE ARE ADEQUATE FOR THE RATED WATER WORKING PRESSURE PLUS A SURGE ALLOWANCE OF 100 PSI. CALCULATIONS ARE BASED ON A MINIMUM YIELD STRENGTH IN TENSION OF 42,000 PSI AND 2.0 SAFETY FACTOR TIMES THE SUM OF WORKING PRESSURE AND 100 PSI SURGE ALLOWANCE.

THICKNESS CAN BE CALCULATED FOR RATED WATER WORKING PRESSURE AND SURGES OTHER THAN THE ABOVE.

DUCTILE IRON PIPE IS AVAILABLE FOR WATER WORKING PRESSURES GREATER THAN 350 PSI.

PIPE IS AVAILABLE WITH THICKNESSES GREATER THAN PRESSURE CLASS 350.

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019

F. STREET CROSSINGS

JEFFERSON PARISH DEPARTMENT OF ENGINEERING MAY REQUIRE WATER LINES TO BE INSTALLED IN STEEL CASINGS WHEN CROSSING MAJOR (*TO BE* DEFINED BY THE DEPARTMENT OF ENGINEERING) STREETS.

WHEN PIPE IS INSTALLED IN CASINGS, COMMERCIALLY FABRICATED CASING SPACERS MUST BE USED TO PREVENT DAMAGE TO PIPE AND BELL JOINTS DURING INSTALLATION AND TO PROVIDE PROPER <u>LONG-TERM</u> LINE SUPPORT. USE OF WOODEN SKIDS WILL NOT BE PERMITTED. PIPES IN CASINGS SHALL BE RESTRAINED AND SHALL NOT REST ON BELLS. CASING SPACERS MUST PROVIDE SUFFICIENT HEIGHT TO PERMIT CLEARANCE BETWEEN BELL JOINTS AND CASING WALLS (ALL CASING PIPE SHALL HAVE AN INSIDE CLEAR DIMENSION AT LEAST 2" GREATER THAN THE MAXIMUM OUTSIDE DIMENSION OF THE CARRIER PIPE BELL OR MECHANICAL JOINT RESTRAINTS). SPACE BETWEEN THE CASING AND THE CARRIER PIPE SHOULD NOT BE BACKFILLED. JEFFERSON PARISH APPROVED END CASING SEAL WITH STAINLESS STEEL BANDS SHOULD BE USED TO SEAL THE ENDS OF THE CASINGS.

END SEALS SHALL BE <u>SEAMLESS</u> <u>PULL-ON</u> <u>FULL CONICAL SHAPED</u>. <u>WRAP-AROUND</u> AND <u>ZIPPER STYLE</u> END SEALS MAY BE ALLOWED WITH JEFFERSON PARISH ENGINEERING DEPARTMENT'S APPROVAL.

END CASING SEALS SHALL BE MANUFACTURED BY "CCI PIPELINE SYSTEMS", "ADVANCED PRODUCTS & SYSTEMS, INC.", OR APPROVED EQUAL.

CASING SPACERS SHALL BE HEAVY DUTY TWO–PIECE #304 STAINLESS STEEL SPACERS.

CASING SPACERS SHALL BE MANUFACTURED BY "CCI PIPELINE SYSTEMS" (MODEL CSS), "ADVANCED PRODUCTS & SYSTEMS, INC." (MODEL SSI), OR APPROVED EQUAL.

G. CANAL CROSSINGS

LONG-SPAN DUCTILE IRON PIPE SHALL BE USED AS PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR ALL CANAL CROSSINGS.

ALL EXPOSED FITTINGS AND JOINTS SHALL BE FLANGED WITH *TORUSEAL* "OR APPROVED EQUAL" GASKETS. UNDERGROUND FITTINGS AND JOINTS SHALL

HAVE RESTRAINED MECHANICAL JOINTS. ALTERNATIVE DESIGNS MAY BE CONSIDERED IF JUSTIFIED BY SPECIAL FIELD CONDITIONS.

CANAL CROSSINGS SHALL BE SUPPORTED BY CONCRETE PILES UNLESS OTHERWISE PERMITTED BY THE JEFFERSON PARISH DEPARTMENT OF ENGINEERING.

H. CONFLICT BOXES

WATER LINES INSTALLED WITHIN CONFLICT MANHOLES SHALL HAVE NO JOINTS. DUCTILE IRON PIPES, UP TO 12" IN DIAMETER, ARE AVAILABLE IN 18' AND 20' LAYING LENGTHS (LARGER DIAMETER PIPES ARE LIMITED TO 18' LAYING LENGTH). FLANGED DUCTILE IRON PIPE MAY BE USED FOR SPANS LONGER THAN 20'.

I. HDPE PIPE (AND FITTINGS) -

HIGH DENSITY POLYETHYLENE (PE) PIPE (*AND FITTINGS*) SHALL CONFORM TO CURRENT AWWA STANDARD C906, POLYETHYLENE (PE) PRESSURE PIPE AND FITTINGS, 4 IN. THROUGH 63 IN., FOR WATER DISTRIBUTION. (PE) PIPE (*AND FITTINGS*) SHALL CONFORM TO CURRENT REQUIREMENTS OF ASTM D3350 AND ASTM D2337 AND ALL PERTINENT AWWA, ASTM AND ANSI SPECIFICATIONS FOR SPECIFYING, INSTALLATION AND ACCEPTANCE (PRESSURE TESTING AND DISINFECTING) OF WATER DISTRIBUTION SYSTEMS.

POLYETHYLENE PIPING SHALL BE CONNECTED TO OTHER TYPE PIPES BY THERMAL BUTT-FUSION, FLANGE ASSEMBLIES OR POLYETHYLENE MECHANICAL JOINT ADAPTERS BASED UPON MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

POLYETHYLENE (PE) PIPE (*AND FITTINGS*) SHALL BE INSTALLED PER THE BURIAL-DESIGN GUIDANCE OF ASTM D2321 FOR THERMOPLASTIC PIPE.

POLYETHYLENE (PE) PIPE (*AND FITTINGS*) MATERIAL SHALL MEET THE REQUIREMENTS OF TYPE "III", CLASS "C", CATEGORY "5", GRADE "P34" AS DEFINED IN ASTM D1248, WITH STANDARD GRADE RATING OF 1600 PSI AT 73 DEGREES "F" AND HAVE A PPI RECOMMENDED DESIGNATION OF "PE 3408".

POLYETHYLENE (PE) PIPE (*AND FITTINGS*) SHALL BE SPECIFIED BY NOMINAL DUCTILE IRON PIPE SIZE AND SHALL MEET THE REQUIREMENTS OF STANDARD DIMENSION RATIO (SDR) SDR-17 FOR DIRECT BURIAL. PIPES USED FOR DIRECTIONAL BORES, STANDARD JACKING AND BORING, HIGHWAY AND

RAILWAY CROSSINGS SHALL BE SDR-11 OR GREATER STRENGTH IF REQUIRED BY SPECIAL DESIGN.

HYDROSTATIC LEAK TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH PERFORMANCE PIPE TECHNICAL NOTE 802 LEAK TESTING. PNEUMATIC PRESSURE TESTING IS PROHIBITED.

(<u>HTTP://WWW.PERFORMANCEPIPE.COM/EN-US/DOCUMENTS/PP802-</u> <u>TN%20LEAK%20TEST.PDF</u>).

THE FOLLOWING TEST PRESSURES AND DURATIONS WILL BE REQUIRED AS A MINIMUM, BASED ON THE NORMAL OPERATING PRESSURE OF 60 PSI:

- INITIAL EXPANSION PHASE, PRESSURE: 130 PSI, FOR THREE (3) HOURS
- TEST PHASE, PRESSURE

- 120 PSI, FOR ONE (1) HOUR
- O IMMEDIATELY FOLLOWING THE INITIAL EXPANSION PHASE, REDUCE TEST PRESSURE BY 10 PSI, AND STOP ADDING TEST LIQUID.
- IF TEST PRESSURE REMAINS STEADY [(WITHIN 5% OF THE TARGET VALUE), (FOR EXAMPLE 6 PSI FOR THE TARGET VALUE OF 120 PSI)] FOR ONE (1) HOUR, NO LEAKAGE IS INDICATED.

J. POLYETHYLENE (PE) PLASTIC TUBING

ALL POLYETHYLENE (PE) PLASTIC TUBING, ³⁄₄ INCH THROUGH 2 INCHES SHALL BE PE 3408, DR9, CONFORMING TO ASTM D2737. THE PE MATERIAL SHALL MEET OR EXCEED THE REQUIREMENTS OF D1248 FOR TYPE III, GRADE "P34", CLASS "C" MATERIAL. ALL BRONZE/BRASS FITTINGS, CONNECTORS, CORPORATION STOPS AND ANY OTHER APPLICABLE AND APPROPRIATE APPURTENANCES USED IN CONJUNCTION WITH PE TUBING SHALL BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE, <u>SHALL BE MADE OF A LEAD FREE</u> <u>BRONZE/BRASS</u>, AND MEET ALL CRITERIA SET FORTH BY AWWA, ASTM AND ANSI FOR USE OF THESE ITEMS IN POTABLE WATER DISTRIBUTION SYSTEMS.

8. <u>FITTINGS</u>

FITTINGS SHALL BE DUCTILE IRON FLANGED, MECHANICAL OR BOLTLESS RESTRAINED JOINTS MEETING ANSI/AWWA C110/A21.10 AND ANSI/AWWA

C111/A21.11, CLASS 250, OR ANSI/AWWA C153/A21.53, CLASS 350, COMPACT STANDARD. ALL HYDRANT TEES SHALL BE SWIVEL TYPE.

DUCTILE IRON FITTINGS SHALL HAVE EITHER A FACTORY CEMENT MORTAR LINING AS PER ANSI/AWWA A21.4/C104, AND FACTORY ASPHALTIC EXTERIOR COATING, OR FACTORY APPLIED FUSION BONDED EPOXY COATING INSIDE AND OUT, IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF AWWA C-550, PROTECTIVE EPOXY COATINGS.

POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) SHALL BE REQUIRED FOR ALL DUCTILE IRON PIPES AND FITTINGS.

FITTINGS SHALL BE MANUFACTURED IN THE UNITES STATES OF AMERICA OR BE MANUFACTURED BY <u>STAR PIPE PRODUCTS</u>, <u>SIGMA</u>, <u>TYLER/UNION FOUNDRY</u>, <u>SIP</u> OR <u>NACIP</u> WITH CURRENT ISO CERTIFICATION.

9. <u>MINIMUM PIPE LENGTH</u>

THERE SHALL BE A MINIMUM OF 24 INCHES OF STRAIGHT PIPE BEFORE, AFTER OR IN BETWEEN VALVES, FITTINGS, ETC.

10. <u>PIPE AND FITTING JOINT STYLE:</u>

A. DUCTILE IRON

DUCTILE IRON PIPES AND FITTINGS SHALL BE FLANGED (AERIAL/BRIDGE CROSSINGS), PUSH-ON, MECHANICAL, RESTRAINED MECHANICAL OR BOLTLESS RESTRAINED JOINTS MEETING ANSI/AWWA A21.51/C151 AND ANSI/AWWA A21.50/C150.

В. <u>**РVС**</u>

• <u>PUSH-ON JOINTS</u> - PUSH-ON JOINTS SHALL CONSIST OF AN INTEGRAL BELL WITH A FACTORY INSTALLED "LOCKED-IN" ELASTOMERIC GASKET. THE SPIGOT END OF EACH JOINT SHALL BE FACTORY BEVELED. ELASTOMERIC GASKET SHALL MEET THE REQUIREMENTS OF ASTM "D 3139" AND "F 477". RESTRAINING SHALL BE ACCOMPLISHED BY USE OF DUCTILE IRON MECHANICAL JOINTS RESTRAINER GLANDS OR BELL RESTRAINT HARNESS, ETC. WITH STAINLESS STEEL HARDWARE.

- **INTERNALLY RESTRAINED JOINTS** THE FOLLOWING INTERNALLY RESTRAINED JOINT PIPES (NOT FOR DIRECTIONAL DRILL APPLICATIONS) WILL BE ALLOWED. DESIGN AND INSTALLATION OF THESE PIPES SHALL BE IN "TOTAL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS & REQUIREMENTS" AND ALL APPLICABLE PROVISIONS OF JEFFERSON PARISH STANDARDS:
 - $O EAGLE LOC 900^{TM} \qquad (4"-12")$
 - O DIAMOND LOK-21® (4"-12")
 - O CERTA-LOK C900/RJ (4"-8")

C. **POLYETHYLENE**

POLYETHYLENE PIPING SHALL BE JOINTED BY THERMAL BUTT-FUSION, FLANGE ASSEMBLIES OR POLYETHYLENE MECHANICAL JOINT ADAPTERS BASED UPON MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

11. <u>RESTRAINED JOINTS</u>

ALL VALVES, FITTINGS, PLUGS, REDUCERS, ETC., SHALL HAVE RESTRAINED JOINTS. HYDRANTS, HYDRANT VALVES AND HYDRANT TEES SHALL BE UNLESS FIELD CONDITIONS AND / OR SPECIAL DESIGN RESTRAINED. CONDITIONS NECESSITATE, USE OF THRUST BLOCKING SHALL NOT BE PERMITTED. THRUST BLOCKS ARE PERMITTED ONLY WHEN ADEQUATE LENGTH OF PIPE CANNOT BE RESTRAINED DUE TO FIELD CONDITIONS AND/OR FOR TEMPORARY CONSTRUCTION. LENGTH OF RESTRAINED PIPES SHALL BE PER MANUFACTURER'S REQUIREMENTS. JEFFERSON PARISH WATER STANDARD DRAWINGS PROVIDE SOME MINIMUM LENGTHS FOR RESTRAINED PIPES IN OFFSETS. THESE MINIMUM REQUIREMENTS SHALL ONLY BE USED IF THE MANUFACTURER'S REOUIRED RESTRAINED LENGTHS. BASED ON SOIL TYPE, TRENCH TYPE, TEST PRESSURE, SAFETY FACTOR, DEPTH OF BURY, FITTING TYPE, NOMINAL SIZE, PIPE MATERIAL, ETC. ARE LESS THAN THESE MINIMUM REQUIREMENTS. **IN-LINE** VALVES SHALL BE RESTRAINED ADEQUATELY TO ENSURE STABILITY OF THE SYSTEM. UNLESS FIELD CONDITIONS AND / OR SPECIAL DESIGN CONDITIONS DO NOT PERMIT. IT IS REQUIRED THAT IN-LINE VALVES BE RESTRAINED, ON EACH SIDE, A MINIMUM OF 20' FOR VALVES UP TO 8" AND 40' FOR LARGER VALVES.

12. PAINT (EXPOSED WATER LINES)

EXPOSED WATER LINES, SUCH AS AERIAL/BRIDGE CROSSINGS OVER DRAINAGE CANALS SHALL HAVE FACTORY APPLIED PRIMER WITH FIELD-FINISH SILVER

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019 ALUMINUM PAINT {ALUMINUM, QUICK DRY, 520 ENAMEL, IN GALLON CAN, BLP #520-26}. PRIMER AND PAINT MATERIAL SHOULD BE FULLY COMPATIBLE WITH THE EXTERNAL ENVIRONMENT AND IN FULL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS FOR THE INTENDED PURPOSE.

13. <u>TAPPING SLEEVES</u>

TAPPING SLEEVES FOR PVC, AC AND DUCTILE IRON SHALL BE MANUFACTURED OF 18-8 304 STAINLESS STEEL WITH STAINLESS STEEL FLANGE OR M.J. CONNECTION. TAPPING SLEEVES FOR PRE-STRESSED CONCRETE CYLINDER PIPE SHALL BE IN ACCORDANCE WITH AWWA MANUAL M-2. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL WITH ANTI-SEIZE COMPOUND OR HEAT TREATED TEFLON COATED COR-TEN. TAPPING SLEEVES SHALL BE MANUFACTURED BY ROMAC, CASCADE, POWERSEAL, SMITH-BLAIR, FORD METER BOX COMPANY, JCM, OR TOTAL PIPING SOLUTIONS (TPS).

14. <u>TAPPING VALVES</u>

VALVES USED FOR TAPPING OPERATION SHALL BE FLANGED BY MECHANICAL JOINT RESILIENT WEDGE GATE VALVES AND SHALL BE MANUFACTURED BY MUELLER, CLOW, M&H, AMERICAN FLOW CONTROL, U.S. PIPE OR KENNEDY.

15. <u>SERVICE SADDLES</u>

SERVICE SADDLES FOR USE ON SERVICE TAPS AND WATER LINE BLOW-OFF INSTALLATIONS SHALL BE "CASCADE STYLE CS12", "SMITH-BLAIR 325", "ROMAC STYLE 202BS", "TOTAL PIPING SOLUTIONS (TPS) SERIES <u>T3</u> WIDE RANGE". SADDLES WITH "U-BOLTS" SHALL NOT BE USED WITH PVC PIPE.

16. WATER SERVICE CONNECTIONS

WATER SERVICE CONNECTIONS, IF DISTURBED, SHALL BE REMOVED AND REPLACED FROM THE MAIN TO THE METER. NO SPLICING OF WATER SERVICE CONNECTIONS SHALL BE ALLOWED EVEN IF THE CONNECTIONS ARE BRAND NEW.

17. <u>PIPE RESTRAINERS (PIPE RESTRAINTS)</u>

A. APPLICABLE STANDARDS

ALL PIPE RESTRAINERS SHALL CONFORM TO THE FOLLOWING STANDARDS AND SPECIFICATIONS FOR MATERIAL, APPLICATION, COMPATIBILITY, COATING, ETC. AS APPLICABLE:

- ANSI/AWWA C110/A21.10
- ANSI/AWWA C111/A21.11
- ANSI/AWWA C153/A21.53
- AWWA C600

- ASTM A536, 65-45-12
- ASTM D2774
- ASTM E8

B. **COATING**

PIPE RESTRAINERS SHALL BE COATED BY A "FACTORY APPLIED FUSION BONDED EPOXY". BOTH "*FUSION-BOND EPOXY POWDER COATING*" AND "*ELECTROCOATING*"—IN STRICT ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS, REQUIREMENTS AND SPECIFICATIONS—SHALL BE ACCEPTABLE.

a. FUSION-BOND EPOXY POWDER COATING

- FASTENERS AND LUGS SHALL BE COATED WITH А • FLUOROPOLYMER MATRIX CONSISTING OF LUBRICATING COMPOUNDS, UV STABILIZERS AND COLORING AGENTS OR PIGMENTS APPLIED TO A SUBSTRATE PREPARED IN ACCORDANCE WITH THE MANUFACTURER'S **RECOMMENDATIONS.** THIS COATING SHALL BE LOW VOC, RESIN BONDED AND THERMALLY CURED, SINGLE FILM, DRY LUBRICANT, PRIMARILY FORMULATED FOR USE ON FASTENERS. THE COATING SHALL BE DESIGNED TO PREVENT CORROSION AND **IMPROVE** TOROUE TENSION PERFORMANCE WHEN APPLIED TO FASTENERS. THE LUBRICITY OF THE COATING SHALL BE PROVIDED BY PROPER DISPERSION OF POLYTETRAFLUOROETHYLENE (PTFE) {WELL-KNOWN BRAND NAME "TEFLON"}. TOTAL COATING THICKNESS SHALL BE 0.7 TO 1.5 MIL.
- *GLANDS* SHALL BE COATED WITH A THERMOSETTING EPOXY RESIN COATING APPLIED TO A SUBSTRATE PREPARED IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS. BEFORE APPLYING THE COATING, THE SUBSTRATE MATERIAL SHALL BE PREHEATED TO ENHANCE ATTACHMENT OF THE COATING MATERIAL. THE POWDER COATING MATERIAL SHALL BE SPRAYED OR APPLIED USING AN ELECTROSTATIC SPRAY OR FLUIDIZED BED. WHEN SPRAYING A DIFFERENTIAL VOLTAGE SHALL BE APPLIED TO THE COATING

AND PART TO PROMOTE ATTRACTION OF THE COATING PARTICULATE. AFTER COATING, THE PART SHALL BE PLACED IN AN OVEN TO FULLY BOND AND CURE THE EPOXY. ANY TOUCH POINTS OR HOLIDAYS SHALL BE PATCHED TO INSURE 100% COVERAGE. COATING THICKNESS TO BE 8 MILS TO 16 MILS.

b. <u>ELECTROCOATING</u>

• ELECTROCOATED FASTENERS, LUGS, GLANDS, ETC. SHALL BE APPLIED PER SAMPLE SPECIFICATIONS FOR ELECTROCOATING INCLUDED IN THIS SECTION.

THE PURPOSE OF PRESENTING THE FOLLOWING SAMPLE SPECIFICATIONS ON **FUSION-BONDED EPOXY POWDER COATING** AND **ELECTROCOATING** IS TO ESTABLISH CERTAIN MINIMUM STANDARDS OF QUALITY AND SUBSEQUENTLY IDENTIFYING PRODUCTS OF EQUAL QUALITY FOR "MATERIAL APPROVAL PROCESS". IF AND WHERE CERTAIN BRAND NAMES AND OR MATERIALS ARE MENTIONED, "**THE APPROVED EQUAL**" PHRASE WILL APPLY.

c. <u>FUSION-BOND EPOXY POWDER COATING SAMPLE</u> <u>SPECIFICATIONS</u>

FUSION-BONDED EPOXY POWDER COATING SHALL BE DONE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS OR APPROVED EQUAL:

<u>FUNCTIONAL CHARACTERISTICS</u> - THE COATING POWDER SHALL HAVE THE FUNCTIONAL CHARACTERISTICS LISTED IN TABLE 1 WHEN APPLIED AT 1.5 - 4.0 MILS (3.0 MILS NOMINAL).

PROPERTIES	TEST METHOD	ACCEPTABLE VALUE
FLEXIBILITY	ASTM D522	180°, 0.250" MANDREL
PENCIL HARDNESS	ASTM D3363	2H MINIMUM
DIRECT/REVERSE	ASTM D2794	≥ 160 IN. LBS.
IMPACT		
CROSSHATCH	ASTM D3359	100 % PASS 4B
ADHESION		
SALT SPRAY	ASTM B117	\geq 500 HOURS ON LESS
RESISTANCE		THAN
		1/8 INCHES UNDERCUT
		FROM
		X SCRIBE MARK
HUMIDITY	ASTM D2247	≥ 1000 HOURS, NO
RESISTANCE		BLISTERING
WEATHERABILITY	QUV-A-340	\geq 500 HOURS WITH \leq 2
		DELTA
		E (CIEL*A*B*) COLOR
		SHIFT
		OR 85-90% GLOSS
		RETENTION
SOLVENT	PCI TEST PROCEDURE	\geq 30 DOUBLE RUBS
RESISTANCE	# 8	
POWDER STORAGE	N/A	6 MOS. @ 70 ⁰ F
STABILITY		
ABRASION	ASTM D4060,	≤ 0.037 GRAMS LOSS
RESISTANCE	CS-10 WHEELS	PER 1000 CYCLES

TABLE 1 FUNCTIONAL CHARACTERISTICS

<u>APPEARANCE</u> - THE COATING POWDER USED IN THIS APPLICATION SHALL HAVE THE APPEARANCE CHARACTERISTICS LISTED IN TABLE 2.

PROPERTIES	TEST METHOD	ACCEPTABLE VALUE
SMOOTHNESS	PCI SMOOTHNESS	CLASS 5
	STANDARDS	(MEDIUM ORANGE PEEL)
GLOSS 60°	ASTM D523	$80\% \pm 5\%$
COLOR	CIELAB	TO MATCH EBAA VISUAL
		STANDARD DE < 1.0
COLOR FASTNESS	ASTM G-154	\geq 120 HOURS NO COLOR
		CHANGE
		USING XENON ARC LIGHT
		SOURCE

TABLE 2 FINISH APPEARANCE CHARACTERISTICS

THE POWDER COATING SHOULD EXHIBIT A UNIFORM APPEARANCE WITHIN THE SPECIFIED FILM THICKNESS RANGE AND BE FREE OF DIRT, PINHOLING AND OTHER SURFACE DEFECTS. FURTHER, THE POWDER COATING SHALL BE RESISTANT TO VOIDS CAUSED BY OUTGASSING INHERENT IN CAST METAL PRODUCTS.

{{THE COATING SHALL BE A FLUOROPOLYMER- METRIX CONSISTING OF LUBRICATING COMPOUNDS, UV STABILIZERS, AND COLORING AGENTS OR PIGMENTS, APPLIED TO A SUBSTRATE PREPARED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. THIS COATING IS TO BE LOW VOC, RESIN BONDED AND THERMALLY CURED, SINGLE FILM, DRY LUBRICANT, PRIMARILY FORMULATED FOR USE ON FASTENERS. THE COATING SHALL BE DESIGNED TO PREVENT CORROSION AND FACILITATE MAKE-UP TORQUE. THE LUBRICITY OF THE COATING SHALL PROVIDE A PROPER DISPERSION OF PTFE.

COATING IS TO BE APPLIED TO THE COMPONENT SUBSTRATE PREPARED IN ACCORDANCE WITH THE COATING MANUFACTURERS RECOMMENDATION, INCLUDING BUT NOT LIMITED TO, A CLEANER WASH, PHOSPHATING, RINSE, AND DRY PREPARATION. THE SPECIFIED COATING SHALL BE APPLIED AT A NOMINAL THICKNESS OF .35 MILS PER COAT, WITH A TOTAL OF 0.7 TO 1 MIL TOTAL DRY FILM THICKNESS AFTER TWO COATS ON ALL WEDGE AND WEDGE ACTUATOR COMPONENTS. NON-CRITICAL COMPONENTS SUCH AS THE TORQUE LIMITING TWIST OFF NUTS SHALL REQUIRE ONLY ONE COAT AS SPECIFIED ABOVE, AS THESE ITEMS ARE DISCARDED UPON USE.}}

d. <u>ELECTROCOATING SAMPLE SPECIFICATIONS</u>

ELECTROCOATING SHALL BE DONE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

GLANDS SHALL BE EPOXY COATED VIA THE ELECTRO-COAT (E-COAT) PROCESS. THE E-COAT PROCESS SHALL BEGIN WITH A PRE-TREATMENT SYSTEM THAT INCLUDES A CLEANING STAGE, AND A PHOSPHATE SURFACE CONDITIONING IN ADDITION TO VARIOUS RINSING STAGES. ALL PARTS SHALL THEN BE IMMERSED IN A HIGH QUALITY CATHODIC EPOXY. A DIFFERENTIAL VOLTAGE THROUGH THE PART AND THE COATING BATH SHALL BE USED TO ATTRACT THE POSITIVELY CHARGED COATING SOLIDS TO THE PRE-TREATED METAL SURFACE. THE COATED PART SHALL THEN BE CURED FOR 20 MINUTES AT 350 °F.

THE SELF-LIMITING ELECTRO-COATING PROCESS SHALL RESULT IN FILM THICKNESSES THAT VARY FROM 0.4 TO 1.5 MILS. THE RESULTING FILM PROPERTIES AND CORROSION RESISTANCE SHALL BE AS SPECIFIED IN THE TABLE BELOW:

PROPERTY	TEST METHOD	PERFORMANCE					
FILM THICKNESS	NONE	0.4-1.5 MILS					
GLOSS – 60 DEGREE	ASTM D523-89	50-80					
PENCIL HARDNESS	ASTM D3363-00	2H MINIMUM					
DIRECT IMPACT	ASTM D2794-93	100 IN-LB					
		MINIMUM					
REVERSE IMPACT	ASTM D2794-93	60 IN-LB					
		MINIMUM					
CROSS-HATCH	ASTM D3359-97	4B-5B					
ADHESION							
HUMIDITY	ASTM D1735-99	500 HR.					
		MINIMUM					
WATER IMMERSION	ASTM D870-90	250 HR.					
		MINIMUM					
GRAVELOMETER	GM 9508 P	6 MINIMUM					
RUST SPOT	GM 9632P	40 RUST SPOT					
		(AVG.)					
CORROSION RESISTANCE:							
SALT SPRAY 500	ASTM B117-97	0 MM					
HOURS							
SALT SPRAY 1000	ASTM B117-97	0-1 MM					
HOURS							
20 CYCLE SCAB	GM9511P	0-1 MM					

E-COAT FILM PROPERTIES

.

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019 THE EPOXY SHALL PROVIDE EXCELLENT EDGE COVERAGE AND SUPERIOR CORROSION RESISTANCE WITHOUT THE USE OF HEAVY METALS. THE COATING SHALL BE FREE FROM LEAD. THE VOLATILE ORGANIC COMPOUND (VOC) CONTENT SHALL BE LESS THAN 0.7 LBS/GALLON.

C. MATERIAL

MECHANICAL JOINT PIPE RESTRAINERS SHALL BE MANUFACTURED AND MADE OF GRADE 60-42-12 OF DUCTILE IRON, WHICH EXCEEDS MINIMUM REQUIREMENTS OF "ASTM A536". ALL THREADED PARTS SUCH AS BOLTS, NUTS, RODS, WEDGES, WEDGE ACTUATORS, ETC. SHALL BE HEAT TREATED TEFLON COATED COR-TEN. WEDGES AND WEDGE ACTUATORS MAY BE ELECTROCOATED.

D. MANUFACTURER

PIPE RESTRAINTS SHALL BE COATED BY A "FACTORY APPLIED FUSION BONDED EPOXY" IN ACCORDANCE WITH THESE SPECIFICATIONS AND SHALL BE ONE OF THE FOLLOWING PRODUCTS.

I. <u>DUCTILE IRON PIPE</u>

a. <u>EBAA IRON</u>

- SERIES 1100 MEGALUG MECHANICAL JOINT RESTRAINT FOR DUCTILE IRON PIPE
- SERIES 1700 MEGALUG RESTRAINT HARNESS FOR DUCTILE IRON PUSH ON PIPE JOINTS
- SERIES 1100SD MEGALUG RESTRAINT FOR EXISTING MECHANICAL JOINTS ON DUCTILE IRON PIPE
- SERIES 1100HD MEGALUG RESTRAINT HARNESS FOR EXISTING PUSH ON JOINTS DUCTILE IRON PIPE
- SERIES 1100SDB MEGALUG MID SPAN RESTRAINT FOR DUCTILE IRON PIPE

b. <u>STAR</u>

• STARGRIP SERIES 3000 MECHANICAL JOINT WEDGE ACTION RESTRAINT FOR DUCTILE IRON PIPE.

- OVERSIZED STARGRIP SERIES 3000OS MECHANICAL JOINT WEDGE ACTION RESTRAINT FOR A, B, C, & D PIT CAST PIPE
- SPLIT STARGRIP SERIES 3000S MECHANICAL JOINT WEDGE ACTION RESTRAINT FOR NEW OR EXISTING DUCTILE IRON PIPE.
- TANDEM STARGRIP SERIES 3000T FOR HIGH PRESSURE DI PIPE TO MJ FITTING APPLICATIONS
- STARGRIP SERIES 3100P WEDGE ACTION RESTRAINT FOR DUCTILE IRON PIPE BELLS – NEW INSTALLATIONS
- SPLIT STARGRIP SERIES 3100S SPLIT WEDGE ACTION RESTRAINT FOR DUCTILE IRON PIPE- NEW OR EXISTING INSTALLATION

c. <u>SIGMA</u>

- ONE-LOK SERIES SLDEH MECHANICAL JOINT RESTRAINER GLAND
- ONE-LOK SERIES D-SLDE WEDGE ACTION RESTRAINT
- ONE-LOK SERIES SSLD SPLIT GLAND MECHANICAL JOINT WEDGE ACTION RESTRAINT FOR EXISTING DUCTILE IRON PIPE
- ONE-LOK SSLDH SPLIT BELL RESTRAINT FOR EXISTING DUCTILE IRON PUSH-ON PIPE BELLS.
- ONE-LOK SERIES SLDM MODIFIED MECHANICAL JOINT WEDGE ACTION RESTRAINER GLAND FOR CLASS A, B, C AND D CAST IRON PIPES

d. <u>ROMAC</u>

- GRIP RING PIPE RESTRAINER
- ROMAGRIP FOR DUCTILE IRON PIPE DOMESTIC (3" 24") AND IMPORTED (30" 48")
- STYLE 611 FOR BELL & SPIGOT JOINTS, ROMAC COUPLINGS AND TRANSITIONS
- STYLE 612 FOR MECHANICAL JOINTS

e. <u>FORD</u>

- UNI-FLANGE SERIES 1400 WEDGE ACTION RETAINER GLAND FOR DUCTILE IRON PIPE
- UNI-FLANGE SERIES 1450 WEDGE ACTION RESTRAINER FOR PUSH-ON JOINTS OF DUCTILE IRON PIPE (NEW INSTALLATION ONLY)

f. <u>TYLER UNION</u>

- SERIES 1000 TUF GRIP WEDGE ACTION MECHANICAL JOINT RESTRAINT FOR DUCTILE IRON PIPE
- MJ FIELD LOK FOR DUCTILE IRON PIPE

g. <u>SMITH-BLAIR</u>

- CAM-LOCK 111 JOINT RESTRAINTS FOR DUCTILE IRON PIPE
- BELL-LOCK SERRATED JOINT RESTRAINTS

h. <u>SIP INDUSTRIES</u>

• EZ-GRIP WEDGE ACTION RESTRAINT GLAND FOR DUCTILE IRON PIPE

II. <u>PVC PIPE</u>

a. <u>EBAA IRON</u>

- SERIES 2000PV MEGALUG RESTRAINT FOR MECHANICAL JOINTS ON C900, C905 AND IPS OD (CLASS) PVC PIPE
- SERIES 2000SV MEGALUG RESTRAINT FOR EXISTING MECHANICAL JOINTS ON C900 AND IPS OD (CLASS) PVC PIPE
- SERIES 2200 MEGALUG RESTRAINT FOR MECHANICAL JOINTS ON C905 PVC PIPE (FOR LARGER PIPES)
- SERIES 2800 MEGALUG BELL RESTRAINT HARNESS FOR C905 PVC PIPE
- SERIES 1500 BELL RESTRAINT HARNESS FOR C900 PVC PIPE
- SERIES 15PF00 RESTRAINT FOR C900 PVC PIPE AT DUCTILE IRON FITTINGS
- SERIES 1600 BELL RESTRAINT HARNESS FOR C900 PVC PIPE
- SERIES 2500 RESTRAINT FOR C900 PVC PIPE AT PVC FITTINGS
- SERIES 1100HV RESTRAINT FOR EXISTING PUSH-ON JOINTS FOR C905 PVC

b. <u>STAR</u>

- STARGRIP SERIES 4000 MECHANICAL JOINT WEDGE ACTION RESTRAINT FOR AWWA C900/C905 AND IPS PVC PIPE
- STARGRIP SERIES 4100P WEDGE ACTION RESTRAINT FOR AWWA C900/C905 PVC PIPE BELLS NEW INSTALLATION ONLY

c. <u>SIGMA</u>

- PV-LOK SERIES PVM FOR A MECHANICAL JOINT FITTING TO A PVC PIPE
- PV-LOK SERIES PVP FOR SPIGOT PVC TO PVC PIPE BELLS
- PV-LOK SERIES PVPF FOR PVC PUSH-ON FITTINGS
- ONE-LOK SERIES D-SLC MECHANICAL JOINT WEDGE ACTION RESTRAINING GLAND FOR PVC PIPE.
- ONE-LOK SERIES SLCEH RESTRAINED JOINT HARNESS FOR NEW PVC PUSH-ON PIPE BELLS.

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019

- MODEL PWH RESTRAINED JOINT HARNESS ASSEMBLY FOR NEW OR EXISTING PVC PUSH- BELLS.
- d. <u>ROMAC</u>
 - GRIP RING PIPE RESTRAINER FOR C-900 AND IPS SIZE PVC
 - ROMAGRIP FOR PVC PIPE DOMESTIC (3" 24")
 - STYLE 470MJ FOR MECHANICAL JOINTS (C905 ONLY)
 - STYLE 470SJ FOR BELL JOINTS & COUPLINGS
- e. <u>FORD</u>
 - UNI-FLANGE BLOCK BUSTER SERIES 1300 RESTRAINT DEVICE FOR PVC PIPE USED WITH MECHANICAL JOINT/PUSH-ON FITTINGS (4"-16" "C" STYLE CAN BE USED ON DUCTILE IRON PIPE)
 - UNI-FLANGE BLOCK BUSTER SERIES 1350 RESTRAINT DEVICE FOR PVC PIPE BELL JOINTS
 - UNI-FLANGE BLOCK BUSTER SERIES 1360 RESTRAINT DEVICE FOR PVC PRESSURE FITTINGS
 - UNI-FLANGE BLOCK BUSTER SERIES 1390 RESTRAINT DEVICE FOR PVC PIPE BELL JOINTS
- f. <u>TYLER UNION</u>
 - SERIES 2000 TUF GRIP WEDGE ACTION MECHANICAL JOINT RESTRAINT FOR PVC PIPE
 - MJ FIELD LOK FOR PVC PIPE
 - SERIES 3000 BELL JOINT RESTRAINT FOR C900 OR IPS PVC PIPE TO PIPE
 - SERIES 3000 PVC C900/905 PIPE TO PUSH-ON FITTINGS
 - SERIES 3000 MJ PVC C900/905 PIPE TO MJ FITTINGS

g. <u>SMITH-BLAIR</u>

- CAM-LOCK 120 JOINT RESTRAINTS FOR PVC PIPE
- BELL-LOCK SERRATED JOINT RESTRAINTS

h. <u>SIP INDUSTRIES</u>

• EZ-GRIP WEDGE ACTION RESTRAINT GLAND FOR PVC PIPE

18. <u>COUPLINGS</u>

A. LONG BODY TRANSITIONAL, DUCTILE IRON, COUPLINGS

LONG BODY TRANSITIONAL COUPLINGS IN ACCORDANCE WITH THE FOLLOWING TABLE, SHALL BE USED FOR CONNECTING PROPOSED/NEW PIPES TO EXISTING PIPES OF DIFFERENT MATERIAL, FOR EXAMPLE, <u>"PVC C-900"</u> TO <u>"AC"</u> OR <u>"CAST IRON"</u>. EXTENDED-RANGE OR WIDE-RANGE COUPLINGS SHALL BE MINIMUM 12" LONG. STANDARD COUPLINGS' SLEEVE OR BARREL LENGTH SHALL BE PER TABLE PROVIDED BELOW. LONG BODY TRANSITIONAL COUPLINGS SHALL BE:

a. <u>ROMAC</u>

- 501 STRAIGHT, TRANSITION, LONG BARREL COUPLING
- XR501 EXTENDED-RANGE COUPLING
- RC501 REDUCING COUPLING

b. <u>FORD</u>

- STYLE FC1 STRAIGHT COUPLING
- STYLE FC2A TRANSITION COUPLING
- STYLE FRC REDUCING COUPLING
- STYLE FC2W LONG SLEEVE WIDE-RANGE COUPLING

c. <u>SMITH-BLAIR</u>

- SERIES 441 STRAIGHT AND TRANSITION COUPLING-STANDARD LENGTH
- SERIES 442 LONG SLEEVE TRANSITION COUPLING-IN SIZES 10"-16"
- QUANTUM, 462, WIDE-RANGE COUPLING

NOMINAL PIPE SIZE,	TRANSITION COUPLING
INCHES.	MINIMUM LENGTH, INCHES.
4, 6, 8	12
10, 12, 14, 16	18
18, 20, 24, 30, 36	24

B. SPECIAL COUPLINGS

a. <u>HYMAX SERIES 2000</u>

"HYMAX" SERIES 2000 TRANSITION COUPLINGS AS SUPPLIED BY TOTAL PIPING SYSTEMS OR KRAUSZ SHALL BE FURNISHED WITH 2 STAINLESS STEEL NUTS AND BOLTS WITH ANTI-SEIZE COMPOUND COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

b. TX3 EXTENDED RANGE TRANSITION COUPLING

"TX3" EXTENDED RANGE TRANSITION COUPLINGS AS SUPPLIED BY TOTAL PIPING SOLUTIONS (TPS), INC. SHALL BE FURNISHED WITH 2 STAINLESS STEEL NUTS AND BOLTS WITH ANTI-SEIZE COMPOUND COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM OF 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

c. VERSA-MAX SERIES 3100

"VERSA-MAX" SERIES 3100 REPAIR COUPLING AS SUPPLIED BY TOTAL PIPING SYSTEMS OR KRAUSZ. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

d. MACRO TWO-BOLT EXTENDED RANGE COUPLING

"MACRO" TOW-BOLT EXTENDED RANGE COUPLINGS AS SUPPLIED BY ROMAC INDUSTRIES, INC. SHALL BE FURNISHED WITH 2 STAINLESS STEEL NUTS AND BOLTS WITH ANTI-SEIZE COMPOUND COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM OF 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

e. TOP BOLT, 421, WIDE RANGE COUPLING

"TOP BOLT" 2-BOLT WIDE RANGE COUPLING SYSTEM AS SUPPLIED BY SMITH-BLAIR, INC. SHALL BE FURNISHED WITH 2 STAINLESS STEEL NUTS AND BOLTS WITH ANTI-SEIZE COMPOUND COATING. POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM OF 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

f. <u>SMITH-BLAIR, SERIES 413 STEEL TRANSITION COUPLING</u>

SERIES 413 STEEL TRANSITION COUPLING AS FABRICATED AND SUPPLIED BY SMITH-BLAIR, INC. SHALL BE FURNISHED WITH STAINLESS STEEL NUTS AND BOLTS WITH ANTI-SEIZE COMPOUND COATING.

SLEEVE SHALL BE PER ASTM A-53, ASTM A512 OR CARBON STEEL HAVING A MINIMUM YIELD OF 30,000 PSI. WITH FUSION BONDED EPOXY. FUSION BONDED EPOXY SHALL BE AVERAGE 12 MIL PROTECTIVE COATING AND SHALL BE FDA APPROVED FOR POTABLE WATER SYSTEMS. FOLLOWERS (FLANGES) SHALL BE DUCTILE IRON ASTM A-536 OR STEEL AISI C1020, DESIGNED FOR HIGH STRENGTH/WEIGHT RATIO.

POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM OF 8 MIL THICK) SHALL BE REQUIRED FOR ALL COUPLINGS.

19. BOLTS AND NUTS

ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL WITH ANTI-SEIZE COMPOUND OR HEAT TREATED TEFLON COATED COR-TEN.

20. FIRE HYDRANTS:

A. EASTBANK FIRE HYDRANTS

EASTBANK FIRE HYDRANTS SHALL BE THREE WAY COMPRESSION TYPE (OPENING AGAINST PRESSURE) CONFORMING TO AWWA C-502. HYDRANTS

SHALL HAVE A 5 ¼ INCH INLET CONNECTION WITH TWO 2 ½ INCH NOZZLES AND ONE 4 ¼ INCH PUMPER NOZZLE. ALL NOZZLES SHALL HAVE <u>THE NEW</u> <u>ORLEANS SEWERAGE AND WATER BOARD THREAD STANDARDS.</u> HYDRANTS SHALL HAVE A 1 1/8 INCH OPERATING NUT. <u>RIGHT HAND OPENING</u> (<u>CLOCKWISE</u>). ALL HYDRANTS FOR THE EAST JEFFERSON WATER DISTRICT SHALL BE MUELLER (NO. A423), KENNEDY GUARDIAN (MODEL K81D) OR AMERICAN DARLING (MODEL B-84-B-5). COLOR OF HYDRANT SHALL BE SILVER ALUMINUM, TO MEET OR EXCEED ANSI/AWWA STANDARD C502. EXISTING FIRE HYDRANTS AFFECTED BY THE PROJECT SHALL BE REMOVED AND REPLACED AND NOT BE REUSED/RELOCATED.

B. WESTBANK FIRE HYDRANTS

WESTBANK FIRE HYDRANTS SHALL BE THREE WAY, COMPRESSION TYPE (OPENING AGAINST PRESSURE) CONFORMING TO AWWA C-502. HYDRANTS SHALL HAVE A 5 ¼ INCH INLET CONNECTION WITH TWO 2 ½ INCH HOSE NOZZLES AND ONE 4 ¼ INCH PUMPER NOZZLE. ALL NOZZLES SHALL HAVE <u>NATIONAL STANDARD THREADS.</u> HYDRANTS SHALL HAVE A 1 ¼ INCH OPERATING NUT. <u>LEFT HAND OPENING (COUNTER-CLOCKWISE).</u> ALL HYDRANTS FOR THE WEST JEFFERSON WATER DISTRICT SHALL BE MUELLER SUPER CENTURION 250 (MUELLER NO. A423), KENNEDY GUARDIAN (MODEL K81D) OR AMERICAN DARLING (MODEL B-84-B-5). COLOR OF HYDRANT SHALL BE SILVER ALUMINUM, TO MEET OR EXCEED ANSI/AWWA STANDARD C502. EXISTING FIRE HYDRANTS AFFECTED BY THE PROJECT SHALL BE REMOVED AND REPLACED AND NOT BE REUSED/RELOCATED.

C. **PRIVATE FIRE HYDRANTS**

FIRE HYDRANTS PLACED ON A PRIVATE FIRE LINE MUST MEET THE REQUIREMENTS OF JEFFERSON PARISH REGARDING MANUFACTURE, DIRECTION OF OPENING, HOSE CONNECTION SIZE, ETC. PRIVATE HYDRANTS SHALL BE PAINTED RED AND SHALL HAVE BURIED CHECK VALVES (SIMILAR TO FIRE SERVICE CONNECTIONS) AT EACH CONNECTION TO THE PARISH WATER SYSTEM.

D. MINIMUM REQUIRED FIRE FLOW FOR PROPOSED SUBDIVISIONS

MINIMUM REQUIRED FIRE FLOW FOR RESIDENTIAL SUBDIVISION FIRE HYDRANTS SHALL BE "1000 GPM†" @ "20 PSI" RESIDUAL PRESSURE. MINIMUM REQUIRED FIRE FLOW FOR COMMERCIAL AND INDUSTRIAL SITES SHALL BE DESIGNED PER JEFFERSON PARISH FIRE DEPARTMENT'S LATEST REQUIREMENTS. **†** THE 1000 GPM REQUIREMENT HAS BEEN ADOPTED FROM NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). THE FOLLOWING IS LANGUAGE FROM "NFPA" CONCERNING FIRE FLOWS IN ONE AND TWO FAMILY DWELLINGS UP TO 3600 SQUARE FEET ALONG WITH A COPY OF THE TABLE FOR THOSE ABOVE 3600 SQUARE FEET AND OTHER STRUCTURES.

H.5 FIRE FLOW REQUIREMENTS FOR BUILDINGS:

H.5.1 ONE- AND TWO-FAMILY DWELLINGS. THE MINIMUM FIRE FLOW AND FLOW DURATION REQUIREMENTS FOR ONE- AND TWO-FAMILY DWELLINGS HAVING A FIRE AREA THAT DOES NOT EXCEED 3600 FT2 (334.5 M2) SHALL BE 1000 GPM (3785 L/MIN) FOR 1 HOUR. FIRE FLOW AND FLOW DURATION FOR DWELLINGS HAVING A FIRE AREA IN EXCESS OF 3600 FT2 (334.5 M2) SHALL NOT BE LESS THAN THAT SPECIFIED IN TABLE H.5.1. NFPA 1 FIRE PREVENTION CODE.

H.5.2 BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS. THE MINIMUM FIRE FLOW AND FLOW DURATION FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS SHALL BE AS SPECIFIED IN TABLE H.5.1. (THE ATTACHED TABLE SCREEN SHOT)

H.5.2.1 A REDUCTION IN REQUIRED FIRE FLOW OF UP TO 75 PERCENT, AS APPROVED, SHALL BE PERMITTED WHEN THE BUILDING IS PROTECTED THROUGHOUT BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM. THE RESULTING FIRE FLOW SHALL NOT BE LESS THAN 1000 GPM (3785 L/MIN.).

H.5.2.2 A REDUCTION IN REQUIRED FIRE FLOW OF UP TO 75 PERCENT, AS APPROVED, SHALL BE PERMITTED WHEN THE BUILDING IS PROTECTED THROUGHOUT BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM, WHICH UTILIZES QUICK RESPONSE SPRINKLERS THROUGHOUT. THE RESULTING FIRE FLOW SHALL NOT BE LESS THAN 600 GPM (2270 L/MIN).

Folio Views - [National Fire Codes 2006 Annual Revision Cycle Edition (Shadow)]						- FI	
I File Edit Search Advanced Tools Help						- 8	
Home Search: Go Next Hit Previous Hit Hit List							
Quick Tips C All (Codes 💿 Current Code	Advanced Searc	h Link Back I	NFC Index			
	Table H.5.1	l Minimum Require	d Fire Flow and Flow	Duration for Buildi	ngs		
	Fi		m ²)				
			ц(000),Щ(200),		Fire Flow gpm ² (× 3.785 for	Flow Duration	
<u>I(443),I(332), II(222)</u> ¹	Щ(111), Щ(211)4	IV(2HH), V(111) ¹	Щ(000)1	V(000)1	L/min)	(hours)	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250		
48,301-39,000	24,201-33,200	17,401-21,300	12,001-10,400	7,701-9,400	2,000		
70.001 92.700	33,201-39,700	21,301-20,000	19,401-18,400	9,401-11,300	2,750		
/0,901-83,700	39,701-47,100	20,001-30,100	18,401-21,800	11,301-13,400	3,000		
83,701-97,700	47,101-54,900	30,101-33,200	21,801-25,900	13,401-15,600	3,200	3	
97,701-112,700	54,901-63,400	35,201-40,600	20,901-29,300	15,601-18,000	3,000		
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750		
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000		
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250		
164,201–183,400	92,401-103,100	39,101-66,000	42,701-47,700	26,301-29,300	4,500		
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750		
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000		
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250		
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500		
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750		
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	4	
295,901-Greater	166,501-Greater	115,801-125,500	83,701-90,600	51,501-55,700	6,250		
295,901-Greater	166,501-Greater	125,501-135,500	90,601-97,900	55,701-60,200	6,500		
295,901–Greater	166,501-Greater	135,501-145,800	97,901-106,800	60,201-64,800	6,750		
295,901-Greater	166,501-Greater	145,801-156,700	106,801-113,200	64,801-69,600	7,000		
295,901–Greater	166,501-Greater	156,701-167,900	113,201-121,300	69,601-74,600	7,250		
295,901–Greater	166,501-Greater	167,901-179,400	121,301-129,600	74,601–79,800	7,500		
295,901-Greater	166,501-Greater	179,401-191,400	129,601-138,300	79,801-85,100	7,750		
295,901-Greater	166,501-Greater	191,401-Greater	128,301-Greater	85,101-Greater	8,000		
1 Types of construction are based on NFPA 220.							
start	Microsoft Out 🛛 🖂 Fi	re Flows - Message	🚺 Folio Views - [Nationa	Document1 - Micro	sof 🎤 👳 👔	2 🖞 🔿 🖸 🗸 🦉	0 🕥 10:33

E. LOOPED LINES

FIRE HYDRANTS SHALL BE SUPPLIED BY NOT LESS THAN AN 8 INCH DIAMETER LINE IN LOOPED SYSTEMS.

F. DEAD-END LINES

DEAD-END LINES, WHICH SUPPLY FIRE HYDRANTS, SHALL NOT EXCEED 600 FEET IN LENGTH FOR LINE SIZES LESS THAN 10 INCH IN DIAMETER. EXCEPTION TO THIS REQUIREMENT, WITH JEFFERSON PARISH FIRE DEPARTMENT'S APPROVAL, IS WHEN DESIGN CALCULATIONS WOULD DEMONSTRATE AVAILABILITY OF MINIMUM REQUIRED FIRE FLOW OF "1000 GPM" @ "20 PSI" RESIDUAL PRESSURE FOR THE DEAD-END FIRE HYDRANT.

ANY FACILITY THAT REQUIRES FIRE PROTECTION SHALL NOT BE FARTHER THAN 200 FEET FROM A FIRE HYDRANT. THIS REQUIREMENT MAY BE WAIVED (MODIFIED) BY THE JEFFERSON PARISH FIRE DEPARTMENT.

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019

G. HYDRANT VALVES

A 6 INCH RESILIENT SEAT GATE VALVE (NRS) SHALL BE INSTALLED ON ALL NEW HYDRANT LEADS REGARDLESS OF WATER LINE SIZE.

H. HYDRANT TEES

ALL HYDRANT TEES SHALL BE SWIVEL TYPE.

I. HYDRANT SPACING

FIRE HYDRANT SPACING SHALL NOT BE GREATER THAN 400 FEET IN RESIDENTIAL AREAS, OR 350 FEET IN COMMERCIAL AREAS. ANY FACILITY THAT REQUIRES FIRE PROTECTION SHALL NOT BE FARTHER THAN 200 FEET FROM A FIRE HYDRANT.

21. <u>VALVES:</u>

A. GATE VALVES

ALL GATE VALVES, 4 INCH – 12 INCH, SHALL HAVE DUCTILE IRON BODIES, BRONZE STEM RESILIENT SEAT TYPE WITH A MINIMUM 200 P.S.I. WORKING PRESSURE. GATE VALVES SHALL CONFORM TO AWWA C509 OR C515 AND HAVE A NON-RISING STEM, 2 INCH OPERATING NUT AND OPEN IN A COUNTER-CLOCKWISE DIRECTION (LEFT HAND OPENING). GATE VALVES SHALL HAVE A FACTORY APPLIED EPOXY COATING AND HAVE STAINLESS STEEL OR HEAT TREATED TEFLON COATED COR-TEN BOLTS AND NUTS. NO CADIUM PLATED NUTS AND BOLTS ARE PERMITTED. GATE VALVES SHALL BE MANUFACTURED BY MUELLER, AMERICAN FLOW CONTROL, M & H, CLOW, OR U.S. PIPE. VALVES MUST BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE.

B. BUTTERFLY VALVES

ALL VALVES 14 INCHES AND LARGER SHALL BE BUTTERFLY VALVES CONFORMING TO AWWA C504, CLASS 150B. VALVES SHALL BE SHORT BODY DESIGN WITH MECHANICAL OR FLANGED ENDS AND OPERATE BY TURNING A TWO (2) INCH OPERATING NUT IN A COUNTER-CLOCKWISE DIRECTION (LEFT HAND OPENING). BUTTERFLY VALVES SHALL HAVE A FACTORY APPLIED EPOXY COATING AND HAVE STAINLESS STEEL OR HEAT TREATED TEFLON COATED COR-TEN BOLTS AND NUTS. NO CADIUM PLATED NUTS AND BOLTS ARE PERMITTED. BUTTERFLY VALVES SHALL BE MANUFACTURED BY HENRY PRATT COMPANY, MUELLER COMPANY, M & H, CLOW OR DZURICH. VALVES MUST BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE.

C. CHECK VALVES (AWWA C-508)

a. <u>METAL SEATED SWING CHECK VALVES</u>

CHECK VALVES SHALL BE PLAIN TYPE WITH BRONZE MOUNTING SUITABLE FOR DIRECT BURIAL, AND BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE.

CHECK VALVES 3 INCH TO 12 INCH IN SIZE SHALL BE A PLAIN SWING CHECK TYPE WITH A CAST IRON OR DUCTILE IRON BODY, STAINLESS STEEL HINGE PIN, BRONZE DISC AND SEAT RING. THE VALVE SHALL BE SUITABLE FOR DIRECT BURIAL AND SHALL HAVE FLANGED OR MECHANICAL JOINT ENDS. VALVES SHALL BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE.

REFER TO THE "VALVE COMPARISON CHART" (SECTION 21.F) FOR VALVE MANUFACTURERS AND MODELS.

b. <u>RESILIENT SEATED SWING CHECK VALVES</u>

RESILIENT SEATED CHECK VALVES SHALL BE MANUFACTURED FROM DUCTILE IRON MEETING OR EXCEEDING ASTM A536. VALVES SHALL BE RATED FOR 250 PSIG COLD WATER WORKING PRESSURE. VALVES SHALL HAVE A METAL DISC FULLY ENCAPSULATED WITH EPDM RUBBER. DISC TRAVEL TO CLOSURE SHALL NOT BE MORE THAN 35 DEGREES AND SHALL SEAL WITH NO LEAKAGE AT PRESSURES ABOVE 5 PSIG. VALVES TO BE COATED WITH FUSION-BONDED EPOXY ON ALL INTERNAL AND EXTERNAL FERROUS SURFACES. BODY TO BONNET FASTENERS TO BE TYPE 304 STEEL. EXPOSED STAINLESS METALLIC RINGS ARE NOT ALLOWED. DISC SHALL BE THE ONLY ALLOWABLE MOVING PART. NO O-RINGS, PIVOT PINS OR OTHER BEARINGS ARE ALLOWED.

VALVES SHALL BE SUITABLE FOR DIRECT BURIAL, AND BE OF DOMESTIC UNITED STATES OF AMERICA MANUFACTURE.

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019 REFER TO THE "VALVE COMPARISON CHART" (SECTION 21.F) FOR VALVE MANUFACTURERS AND MODELS.

D. VALVE LOCATION AND SPACING

VALVES SHALL BE INSTALLED AS PER PROJECT / SUBDIVISION PLANS AND SHALL MEET THE FOLLOWING MINIMUM JEFFERSON PARISH VALVE REQUIREMENTS: 1) VALVES SHALL BE INSTALLED AT EACH INTERSECTION, IN ACCORDANCE WITH JEFFERSON PARISH STANDARD DRAWINGS. 2) VALVES SHALL BE PLACED SO THAT NO SINGLE CASE OF PIPE BREAKAGE SHALL REQUIRE SHUTTING OFF FROM SERVICE AN ARTERY, OR MORE THAN 500 FEET OF PIPE IN HIGH VOLUME DISTRICTS (RESIDENTIAL OR COMMERCIAL), OR MORE THAN 800 FEET OF PIPE IN ANY AREA (TRANSMISSION LINES). ANY DISCREPANCIES BETWEEN THESE PLANS AND JEFFERSON PARISH MINIMUM REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION.

E. **LOCATION IDENTIFICATION**

THE SYMBOL " ^ " (LETTER "V", UPSIDE DOWN) SHALL BE PLACED IN THE FACE OF THE CURB POINTING TO ALL WATER VALVES (EXCLUDING FIRE HYDRANT VALVES).

F. VALVE COMPARISON CHART

THE FOLLOWING, <u>DRAFT</u>, "VALVE COMPARISON CHART" HAS BEEN INCLUDED IN THESE "GENERAL STANDARD NOTES". THIS CHART INCLUDES ADDITIONAL INFORMATION, AND ALSO IS MEANT TO BE USED AS A QUICK REFERENCE. <u>ALL</u> <u>OTHER REFERENCES TO VALVES INCLUDED IN THESE "GENERAL STANDARD</u> <u>NOTES" SHALL REMAIN VALID:</u>

VALVE COMPARISON CHART

	DIRECT B	URIAL			TAPPING VALVE
MANUFACTURER	METAL SEATED SWING CHECK VALVES	RESILIENT SEATED CHECK VALVES	GATE VALVES	BUTTERFLY VALVES	
MUELLER	A2602-6	A2600-6	A-2360	LINESEAL III, LINESEAL XPII, LINESEAL XP	T-2360-19
CLOW	F-5380	1106	2639	4500 & 1450	2639
AMERICAN FLOW CONTROL	52-SC	SERIES 2100	SERIES 2500		SERIES 2500
M&H	59-02	506	SERIES 4000 & 7000	450&1450	
ARD	1106	506	2640	450 & 1450	
KENNEDY	1106	506	8571	450&1450	
CRISPIN		RF SERIES		500 &47	
U.S. PIPE					
APCO/DEZURIK	CVS-6000	CRF		BAW	
HENRY PRATT	8001, 9001, 8501	8001, 9001, 8501, RD SERIES (FLEX CHECK)		GROUNDHOG, TRITON XR- 70, 2FII, 2MII, MKII, HP 250II, HP250	

{THE TERM "<u>DRAFT"</u> IS USED TO INDICATE THAT THIS "VALVE COMPARISON CHART" MAY NOT BE COMPREHENSIVE AND PART NUMBERS MAY NOT BE UP TO DATE!}

22. <u>METERS:</u>

A. **RESIDENTIAL METERS**

RESIDENTIAL METERS (2" OR SMALLER) SHALL BE PROVIDED BY AND INSTALLED BY THE JEFFERSON PARISH DEPARTMENT OF WATER. APPLICANTS SHALL CONTACT THE JEFFERSON PARISH DEPARTMENT OF WATER, EASTBANK (736-6072/73) OR WESTBANK (349-5075), OFFICES TO REQUEST FOR RESIDENTIAL METERS. ALL APPLICABLE FEES ARE PAYABLE TO THE DEPARTMENT OF WATER.

B. IRRIGATION/GARDEN METERS

IRRIGATION/GARDEN WATER METERS (2" OR SMALLER) SHALL BE PROVIDED BY AND INSTALLED BY THE JEFFERSON PARISH DEPARTMENT OF WATER. APPLICANTS SHALL CONTACT THE JEFFERSON PARISH DEPARTMENT OF WATER, EASTBANK (736-6072/73) OR WESTBANK (349-5075), OFFICES TO REQUEST FOR IRRIGATION/GARDEN WATER METERS. ALL APPLICABLE FEES ARE PAYABLE TO THE DEPARTMENT OF WATER.

C. COMMERCIAL METERS 2 INCH OR SMALLER

ALL WATER METERS 2 INCH OR SMALLER SHALL BE PROVIDED BY AND INSTALLED BY THE JEFFERSON PARISH DEPARTMENT OF WATER. APPLICATIONS FOR ALL COMMERCIAL WATER METERS SHALL BE MADE TO THE DEPARTMENT OF ENGINEERING (504) 736-6814 PRIOR TO SCHEDULING ANY CONSTRUCTION. THE APPLICANT SHALL COMPLETE A WATER METER VERIFICATION FORM AS REQUIRED BY THE DEPARTMENT OF ENGINEERING.

D. COMMERCIAL WATER METERS 3 INCH AND LARGER

ALL WATER METERS 3 INCH AND LARGER, SHALL BE FURNISHED AND INSTALLED BY THE APPLICANT. METERS 3 INCH AND LARGER SHALL BE OF THE TYPE AND MANUFACTURER SPECIFIED BY THE DEPARTMENT OF ENGINEERING (SEE APPENDIX C-1, COMMERCIAL WATER METERS 3 INCH AND LARGER). CONTACT THE DEPARTMENT OF ENGINEERING FOR REQUIRED METER SPECIFICATIONS PRIOR TO ORDERING ANY METER EQUIPMENT OR MATERIALS. ALL METERS 3 INCH AND LARGER SHALL BE FURNISHED WITH A STRAINER. BY-PASS METERS, IF REQUESTED BY THE OWNER AND/OR IF DEEMED NECESSARY BY THE JEFFERSON PARISH DEPARTMENT OF WATER, SHALL BE 2 INCH MINIMUM. THE APPLICANT MUST PRESENT A RECEIPT FOR ALL REQUIRED FEES AND DEPOSITS (CONSUMER RECEIPT) ON THE INSTALLATION TO THE DEPARTMENT OF ENGINEERING, INSPECTION DIVISION, (736-6793) PRIOR TO ANY CONSTRUCTION.

E. METER ELEVATION

THE CONTRACTOR SHALL EXPOSE THE LINE TO DETERMINE DEPTH OF THE METER BOX. METER ELEVATION IS TO BE DETERMINED BY THE DEPARTMENT OF ENGINEERING. THE MAXIMUM DISTANCE BETWEEN GROUND SURFACE AND THE CENTERLINE OF THE WATER METER SHALL BE 24 INCHES UNLESS OTHERWISE AUTHORIZED BY THE DEPARTMENT OF ENGINEERING.

F. METER VAULTS INSTALLATION

MATERIALS TO BE USED IN CONSTRUCTION OF METER VAULTS INSTALLED IN TRAFFIC AREAS MAY BE COMMON BRICK, CONCRETE BLOCK, POURED IN PLACE REINFORCED CONCRETE OR A PRECAST CONCRETE BOX AS MANUFACTURED BY BROOKS PRODUCTS.

G. METER VAULTS ACCESS HATCH AND VALVE COVERS

METER VAULT ACCESS HATCH SHALL BE A HEAVY DUTY CAST IRON MANHOLE RING AND COVER WITH MACHINED RING SEATS. THE WORD "WATER" SHALL BE EMBOSSED ON THE COVER. THE MANHOLE RING AND COVER SHALL BE CENTERED OVER THE METER AND SHALL BE A VULCAN V-1406 W/COVER. WATER VALVE COVERS FOR THE METER VAULT SHALL BE HEAVY DUTY CAST IRON VULCAN V-8460. THE VALVE COVERS SHALL BE CENTERED OVER THE VALVES AND THE WORD "WATER" SHALL BE EMBOSSED ON THE COVER.

H. MAINTENANCE RESPONSIBILITY

JEFFERSON PARISH WILL ASSUME MAINTENANCE RESPONSIBILITY FOR LARGE WATER METERS (3 INCHES AND ABOVE) 365 CALENDAR DAYS FROM THE DATE THE OWNER ACCEPTS THE PROJECT, OR ALL WATER FACILITY WORK IS COMPLETED IN ACCORDANCE WITH JEFFERSON PARISH STANDARD SPECIFICATIONS, WHICHEVER OCCURS LAST. UNTIL JEFFERSON PARISH ISSUES A "LETTER OF WATER FACILITY ACCEPTANCE", THE OWNER IS RESPONSIBLE FOR ALL REPAIR AND REPLACEMENT COSTS FOR WATER FACILITIES.

23. <u>FIRE SERVICE:</u>

A. FIRE SERVICES 2 INCH OR SMALLER

ALL FIRE SERVICES 2 INCH OR SMALLER SHALL BE PROVIDED BY AND INSTALLED BY THE JEFFERSON PARISH DEPARTMENT OF WATER. APPLICATIONS FOR ALL FIRE SERVICE INSTALLATIONS SHALL BE MADE TO THE DEPARTMENT OF ENGINEERING (504) 736-6814 PRIOR TO SCHEDULING ANY CONSTRUCTION. THE APPLICANT SHALL COMPLETE A FIRE SERVICE WATER VERIFICATION FORM AS REQUIRED BY THE DEPARTMENT OF ENGINEERING. ALL APPLICABLE FEES ARE PAYABLE TO THE DEPARTMENT OF WATER.

B. FIRE SERVICES "3" INCH AND LARGER

ALL FIRE SERVICE TAPS, 3 INCH AND LARGER, SHALL BE FURNISHED AND INSTALLED BY THE APPLICANT. THE APPLICANT MUST PRESENT A RECEIPT FOR ALL REQUIRED FEES AND DEPOSITS (CONSUMER RECEIPT) ON THE INSTALLATION TO THE DEPARTMENT OF ENGINEERING INSPECTION DIVISION (736-6793) PRIOR TO ANY CONSTRUCTION.

C. FIRE SERVICE LINES FOR BUILDING SPRINKLER SYSTEMS

FIRE SERVICE LINES FOR BUILDING SPRINKLER SYSTEMS SHALL HAVE CHECK VALVES ADJACENT TO AND DOWNSTREAM OF THE TAPPING VALVE.

D. MAINTENANCE RESPONSIBILITY

JEFFERSON PARISH MAINTENANCE RESPONSIBILITY FOR FIRE SERVICE LINES WILL NOT INCLUDE ANY SEGMENT OF THESE LINES ON THE PRIVATE PROPERTY SIDE OF THE REQUIRED CHECK VALVE, INCLUDING THE CHECK VALVE. FIRE SERVICE LINE CHECK VALVES WILL BE PRIVATELY OWNED AND MAINTAINED.

E. INSPECTION BY JEFFERSON PARISH ENGINEERING DEPARTMENT

ALL FIRE LINES SHALL BE INSPECTED BY THE JEFFERSON PARISH ENGINEERING DEPARTMENT. INSPECTION SHALL INCLUDE THE ENTIRE FIRE SERVICE LINES (INCLUDING THE CHECK VALVE AND THE FIRE LINE INSIDE PRIVATE PROPERTY, ALL THE WAY TO THE BUILDING). THE JEFFERSON PARISH DEPARTMENT OF "INSPECTION & CODE ENFORCEMENT" SHALL BE RESPONSIBLE FOR INSPECTION OF THE FIRE PROTECTION SYSTEM INSIDE BUILDINGS.

24. <u>LINES CONSTRUCTED ON PRIVATE PROPERTY</u>

ALL WATER LINES (INCLUDING "LOOPED" WATER LINES), FIRE LINES (FIRE SERVICE LINES), FIRE HYDRANTS, INSTALLED ON PRIVATE PROPERTY SHALL BE INSTALLED IN ACCORDANCE WITH JEFFERSON PARISH STANDARDS AND SPECIFICATIONS. ALL WATER LINES, AND/OR FIRE SERVICE LINES CONSTRUCTED ON PRIVATE PROPERTY, SHALL REMAIN PRIVATE. IN SPECIAL CIRCUMSTANCES WHEN JEFFERSON PARISH MAY HAVE TO TAKE OVER THE MAINTENANCE OF ANY FIRE SERVICE LINE, A 20 FOOT WIDE MINIMUM SERVITUDE, CENTERED ON THE LINE, MUST BE DEDICATED TO JEFFERSON PARISH.

25. <u>CLEARANCE:</u>

A. BETWEEN WATER LINES AND SANITARY SEWER LINES

WHEN SANITARY SEWER LINES ARE PARALLEL TO WATER LINES, THE CLEARANCE SHALL BE A MINIMUM OF 6 FEET (MEASURED HORIZONTALLY): WHEN SEWER AND WATER LINES CROSS, VERTICAL CLEARANCE SHALL BE 18 INCHES, WITH THE WATER LINE CROSSING ON TOP. IF THESE CONDITIONS CANNOT BE MET, DUE TO FIELD CONDITIONS, THE <u>"10 STATE STANDARDS"</u> ((PHONE (518) 439-7286, WEB SITE: WWW.HES.ORG)) GUIDELINES CAN BE FOLLOWED, WITH APPROVAL OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT.

B. BETWEEN WATER LINES AND ANY PRIVATE UTILITY LINES

MINIMUM CLEARANCE BETWEEN A WATER LINE AND ANY PRIVATE UTILITY LINE SHALL BE 6 FEET (MEASURED HORIZONTALLY). PRIVATE UTILITIES SHALL BE INSTALLED IN PRIVATE SERVITUDES.

C. BETWEEN WATER LINES AND BUILDINGS

WATER LINES SHALL NOT BE INSTALLED CLOSER THAN 10 FEET (MEASURED HORIZONTALLY) FROM ANY BUILDING FOUNDATION, WALL OR BUILDING OVERHANG. THIS 10 FOOT CLEARANCE MAY BE REDUCED TO 6 FEET IN AREAS WITH COMMERCIAL ZONING WITH LIMITED RIGHT-OF-WAY AND WITH APPROVAL OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT.

26. <u>WATER DISTRIBUTION SYSTEM "AS-BUILT SKETCHES", "GPS</u> <u>COORDINATES", AND "AS-BUILT DRAWINGS"</u>

- 1. Prior to installation of any water distribution items, the contractor must provide an acceptable, ongoing procedure and documentation methodology that would fully satisfy the requirements of this section (As-Built). Any such procedures and documentation methodologies must be discussed in an official meeting to include; the contractor, A/E's construction manager and resident inspector, and Parish representatives from the Engineering Department. The minutes of this meeting must be prepared by the AE and must be distributed to all the attendees.
- 2. Three days prior to pressure testing and chlorination of any segment of the water distribution system, as a minimum, the following items should be submitted (three hard copies and PDF) to the Engineering Department [(the hard copies must be delivered to Mr. Peter Blaha, Joseph S. Yenni Building, 1221 Elmwood Park Blvd. Suite 702, Jefferson, La 70123) and (the PDF

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019
copies must be emailed to: the A/E's construction manager and resident inspector and the following Parish personnel; Peter Blaha, Michael Calecas, Chanen Joseph, Ray Mowla, and Jefferson Parish <u>Construction Project Engineer</u>).

- An As-Built sketch of the installed water distribution system. This sketch shall:
 - Be Prepared by the contractor,
 - Be Reviewed by the resident inspector,
 - Be Reviewed by the A/E construction manager, and forward to Jefferson Parish <u>Construction Project Engineer</u>, recommending acceptance or rejection.
 - o Include:
 - Type, size, and location of valves,
 - Location of Hydrants,
 - Type, size, and location of fittings, couplings, and any other appurtenances,
 - Type, size, and length of pipes,
 - Restrained pipe location and measurements,
- GPS coordinates in a format of a "shape file" (preferred) or a table,
 - GPS coordinates shall be referenced to "State Plane Coordinates System 1983, zone 1702, Louisiana South with X and Y coordinates in feet",
 - GPS coordinates shall be provided for each of the following water distribution features:
 - Hydrants,
 - Valves,
 - Fittings,
 - Couplings,
 - Reducers,
 - Etc.
- Valve Operating Logs (Department of Water form "W-101")
- <u>Note</u>, GPS coordinates of all fittings or couplings which are used for connecting (tie-in locations) the new water lines to the existing system, must be provided to the parish, as soon as possible, as it is described above.
- 3. The requirements of the above sections (As-Built sketch and GPS coordinates) is separate from the parish requirements for the final project As-Built drawings (plans) which will be submitted to the Jefferson Parish <u>Construction Project Engineer</u>, by the A/E, prior to the acceptance of the project as a whole, which would include the acceptance of the water distribution system. The following signed and sealed copies are required:
- One hard copy,
- PDF (CD-ROM),
- ACAD 2012 (CD-ROM),

- The ACAD electronic copy of the completed as-built plans shall be a properly georeferenced (Referenced to State Plane Coordinates System 1983, zone 1702, Louisiana South with X and Y coordinates in feet),
- The geo-referenced final ACAD As-Built drawing must include X and Y coordinates, for all Water Distribution Features (Hydrants, Valves, Couplings, Fittings, Reducers, etc.)
- 4. Contact information for current Jefferson Parish Personnel who have parts and responsibility for As-Built Drawings:
 - o Peter Blaha, Engineering Department Utility Inspection Supervisor
 - Peter Blaha <u>PBlaha@jeffparish.net</u>
 - Michael Calecas, Engineering Department Utility Inspection Coordinator
 - Michael Calecas <u>MCalecas@jeffparish.net</u>
 - o Chanen Joseph, Professional Civil Engineer II, Engineering Department, Utilities
 - Chanen Joseph <u>CPJoseph@jeffparish.net</u>
 - Ray Mowla, Chief Engineer, Engineering Department, Utilities
 - Ray Mowla <u>RMowla@jeffparish.net</u>
 - Matthew Zeringue, Professional Civil Engineer I, Engineering Department, Roads and Bridges (<u>Construction Project Engineer</u>)
 - Matthew Zeringue <u>MZeringue@jeffparish.net</u>

27. <u>PRESSURE TESTING AND DISINFECTION OF WATER LINES</u>

ALL NEW AND/OR MODIFIED SEGMENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE TESTED TO A PRESSURE OF 50% ABOVE THE NORMAL OPERATING PRESSURE OR 100 P.S.I. WHICHEVER IS GREATER. THIS PRESSURE SHALL BE MAINTAINED FOR A PERIOD OF TWO (2) HOURS WITH NO DISCERNIBLE PRESSURE LOSS. LEAKS SHALL BE REPAIRED BY REMOVING AND REPLACING FAULTY SECTIONS. THE PRESSURE TEST SHALL BE PERFORMED BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT. BEFORE BEING PLACED IN SERVICE, ALL NEW, MODIFIED AND/OR CONTAMINATED SEGMENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE FLUSHED AND DISINFECTED (CHLORINATED) BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT. **FLUSHING** SHOULD BE DONE AT FLOW RATES SUFFICIENT TO PROVIDE A VELOCITY IN THE LINES OF AT LEAST 2.5 FEET PER SECOND. DISINFECTION SHOULD COMPLY WITH AWWA STANDARD C651, "DISINFECTING WATER MAINS".

IN ORDER TO MINIMIZE BACKFLOW (BACK SIPHON, BACK PRESSURE) OR UNDESIRED REVERSAL OF THE FLOW OF UNCLEAN LIQUIDS INTO THE DRINKING WATER DISTRIBUTION SYSTEM, AS A MINIMUM, THE USE OF A SINGLE CHECK VALVE IS REQUIRED DURING FLUSHING. WHEN PRACTICAL (MAINS UP TO 12" IN DIAMETER) A FLOATER METER MUST BE USED FOR FLUSHING. UTILIZING A FLOATER METER WILL PROVIDE THE NECESSARY BACKFLOW PREVENTION AND ALSO WILL HELP THE PARISH TO ACCOUNT FOR THE WATER USE. AS ALWAYS, THE CONTRACTOR WILL NOT BE CHARGED FOR USING ANY REASONABLE AMOUNT OF WATER FOR FLUSHING.

ONLY AFTER SATISFACTORY PRESSURE TESTING AND DISINFECTION (CHLORINATION), AND SUCCESSFUL BACTERIOLOGICAL ANALYSIS FROM THE JEFFERSON PARISH WATER QUALITY MICROBIOLOGY LAB IS COMPLETED CAN THE SEGMENT BE TIED INTO THE EXISTING WATER DISTRIBUTION SYSTEM. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED TO MAKE A TIE-IN TO THE EXISTING WATER DISTRIBUTION SYSTEM WITHOUT DIRECT SUPERVISION OF THE JEFFERSON PARISH ENGINEERING DEPARTMENT. ALL COSTS ASSOCIATED WITH THE TESTING AND CHLORINATION PROCEDURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

TYPICALLY THE CONTRACTOR WILL NOT BE CHARGED FOR THE WATER USED TO FLUSH, PRESSURE TEST AND CHLORINATE THE SYSTEM. THE CONTRACTOR WILL BE CHARGED FOR THE EXCESS WATER WHEN THE WATER DISTRIBUTION SYSTEM WILL REQUIRE AN EXCESS AMOUNT OF WATER TO BE PROPERLY FLUSHED, PRESSURE TESTED AND CHLORINATED, DUE TO NEGLIGENCE OF THE CONTRACTOR.

28. <u>PIPE INSTALLATION</u>

THE INSTALLATION OF WATER MAINS AND OTHER RELATED APPURTENANCES SHALL BE STRICTLY IN ACCORDANCE WITH THESE JEFFERSON PARISH STANDARD NOTES, AND LATEST APPLICABLE AWWA STANDARDS SUCH AS AWWA C600 (INSTALLATION OF DUCTILE-IRON WATER MAINS AND APPURTENANCES), AWWA C605 (UNDERGROUND INSTALLATION OF POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS FOR WATER), ETC. AND THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS. IN ADDITION TO ANY PREVIOUSLY MENTIONED REQUIREMENTS FOR POLYETHYLENE ENCASEMENT, POLYETHYLENE ENCASEMENT IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 (MINIMUM 8 MIL THICK) SHALL BE REQUIRED FOR ALL "DUCTILE IRON PIPES, FITTINGS" AND "APPURTENANCES" REGARDLESS OF ANY SPECIFIC COATING.

29. WATERLINE ABANDONMENT, REMOVAL AND DISPOSAL

UNLESS OTHERWISE SPECIFIED, THERE SHALL BE NO DIRECT PAYMENT FOR WATERLINES (<u>WATERLINES</u> HEREIN SHALL MEAN PIPES, FITTINGS, VALVES, APPURTENANCES, ETC.) ABANDONMENT, REMOVAL OR DISPOSAL.

UNLESS OTHERWISE SPECIFIED, WHEN PAY ITEMS HAVE BEEN ESTABLISHED FOR ABANDONMENT, REMOVAL OR DISPOSAL OF WATERLINES, THESE PAY ITEMS SHALL BE FULL COMPENSATION FOR THE ABANDONMENT, REMOVAL OR DISPOSAL OF WATERLINES REGARDLESS OF THE SIZE AND/OR MATERIAL OF THE WATERLINES BEING ABANDONED, REMOVED OR DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES.

30. <u>PIPE BEDDING</u>

THE OBJECTIVE OF BEDDING IS TO PROVIDE A CONTINUOUS SUPPORT FOR THE PIPE AT REQUIRED LINE AND GRADE. THE BEDDING MAY OR MAY NOT BE COMPACTED, BUT IN ANY EVENT, THE PROJECTING BELLS OF THE PIPE SHOULD BE PROPERLY RELIEVED IN THE TRENCH BOTTOM SO THAT THE ENTIRE PIPE IS EVENLY SUPPORTED BY THE BEDDING. WHERE THE TRENCH BOTTOM IS UNSTABLE (ORGANIC MATERIAL, OR "QUICK" SAND OR SIMILAR MATERIAL), THE TRENCH BOTTOM SHOULD BE OVER-EXCAVATED AND BROUGHT BACK TO GRADE UTILIZING DUNNAGE BOARDS, GEOGRID, GEOTEXTILE FABRIC OR APPROVED BEDDING MATERIAL AND/OR ANY COMBINATION OF SAME.

TABLE OF CONTENTS

1.	NOTIFICATION:	1
2.	LICENSE REQUIREMENTS:	2
3.	MATERIAL	2
4.	NON CONFORMANCE	3
5.	WATER VALVE BOX ADJUSTMENT	3
VER	RIFICATION OF EXISTING UTILITIES PRIOR TO ORDERING MATERIALS	3
6.	DOMESTICITY	3
A	. PURPOSE OF THIS SECTION	3
Β.	. CLARIFICATION OF TERMS	3
C.	. VALVES AND HYDRANTS	4
D	. APPURTENANCES	4
E.	FITTINGS	4
F.	ISO REGISTERED MANUFACTURER	5
7.	WATER LINES:	5
A	. MINIMUM SIZE	5
В.	DEPTH OF COVER	5
C.	. BACKFILL	6
D	. PVC PIPE	6
E.	DUCTILE IRON PIPE	6
F.	STREET CROSSINGS	8
G	. CANAL CROSSINGS	8
Н	. CONFLICT BOXES	9
I.	HDPE PIPE ($AND FITTINGS$) –	9
J.	POLYETHYLENE (PE) PLASTIC TUBING	10
8.	FITTINGS	10
9.	MINIMUM PIPE LENGTH	11
10.	PIPE AND FITTING JOINT STYLE:	11
A	. DUCTILE IRON	11
В.	. PVC	11
	• push-on JOINTS	11
	internally restrained joints	12
C.	POLYETHYLENE	12
11.	RESTRAINED JOINTS	12
12.	PAINT (EXPOSED WATER LINES)	12
13.	TAPPING SLEEVES	13
14.	TAPPING VALVES	13
15.	SERVICE SADDLES	13
16.	WATER SERVICE CONNECTIONS	13
17.	PIPE RESTRAINERS (PIPE RESTRAINTS)	13
A	. APPLICABLE STANDARDS	13
В.	. COATING	14
	a. Fusion-bond epoxy powder coating	14

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019

	b. Electrocoating	15
	c. Fusion-bond epoxy powder coating sample specifications	15
	d. Electrocoating sample specifications	18
C.	MATERIAL	.19
D.	MANUFACTURER	.19
I.	DUCTILE IRON PIPE	.19
	a. Ebaa iron	.19
	b. Star	.19
	c. Sigma	20
	d. Romac	20
	e. Ford	20
	f. Tyler Union	20
	g. smith-Blair	.21
	h. SIP INDUSTRIES	.21
II	. PVC PIPE	.21
	a. Ebaa iron	.21
	b. Star	.21
	c. Sigma	.21
	d. Romac	.22
	e. Ford	.22
	f. Tyler union	.22
	g. smith-blair	.22
	h. SIP INDUSTRIES	.22
18.	COUPLINGS	.22
А.	LONG BODY TRANSITIONAL, DUCTILE IRON, COUPLINGS	.23
	a. ROMAC	.23
	b. FORD	.23
	c. smith-blair	.23
В.	SPECIAL COUPLINGS	.24
	a. Hymax Series 2000	.24
	b. TX3 EXTENDED RANGE TRANSITION COUPLING	.24
	c. VERSA-max Series 3100	.24
	d. Macro Two-Bolt Extended Range Coupling	.24
	e. Top bolt, 421, wide Range Coupling	.25
	f. Smith-blair, series 413 steel transition coupling	.25
19.	BOLTS AND NUTS	.25
20.	FIRE HYDRANTS:	.25
A.	EASTBANK FIRE HYDRANTS	.25
В.	WESTBANK FIRE HYDRANTS	.26
C.	PRIVATE FIRE HYDRANTS	.26
D.	MINIMUM REQUIRED FIRE FLOW FOR PROPOSED SUBDIVISIONS	.26
E.	LOOPED LINES	.28
F.	DEAD-END LINES	.28
G.	HYDRANT VALVES	.29
H.	HYDRANT TEES	.29
I.	HYDRANT SPACING	.29

Jefferson Parish Department of Engineering Water Distribution System General Standard Notes, Green Sheets, Appendix "C" Revised: 05-28-2019

21.	VALVES:	29
А.	GATE VALVES	29
В.	BUTTERFLY VALVES	29
C.	CHECK VALVES (AWWA C-508)	30
	a. METAL SEATED SWING CHECK VALVES	30
	b. RESILIENT SEATED SWING CHECK VALVES	30
D.	VALVE LOCATION AND SPACING	31
E.	LOCATION IDENTIFICATION	31
F.	VALVE COMPARISON CHART	31
22.	METERS:	32
A.	RESIDENTIAL METERS	32
В.	IRRIGATION/GARDEN METERS	33
C.	COMMERCIAL METERS 2 INCH OR SMALLER	33
D.	COMMERCIAL WATER METERS 3 INCH AND LARGER	33
E.	METER ELEVATION	33
F.	METER VAULTS INSTALLATION	34
G.	METER VAULTS ACCESS HATCH AND VALVE COVERS	34
Н.	MAINTENANCE RESPONSIBILITY	34
23.	FIRE SERVICE:	34
A.	FIRE SERVICES 2 INCH OR SMALLER	34
В.	FIRE SERVICES "3" INCH AND LARGER	34
C.	FIRE SERVICE LINES FOR BUILDING SPRINKLER SYSTEMS	35
D.	MAINTENANCE RESPONSIBILITY	35
E.	INSPECTION BY JEFFERSON PARISH ENGINEERING DEPARTMENT	35
24.	LINES CONSTRUCTED ON PRIVATE PROPERTY	35
25.	CLEARANCE:	36
A.	BETWEEN WATER LINES AND SANITARY SEWER LINES	36
В.	BETWEEN WATER LINES AND ANY PRIVATE UTILITY LINES	36
C.	BETWEEN WATER LINES AND BUILDINGS	36
26.	WATER DISTRIBUTION SYSTEM "AS-BUILT SKETCHES", "GPS COORDINATES	",
AND '	"AS-BUILT DRAWINGS"	36
27.	PRESSURE TESTING AND DISINFECTION OF WATER LINES	38
28.	PIPE INSTALLATION	39
29.	WATERLINE ABANDONMENT, REMOVAL AND DISPOSAL	40
30.	PIPE BEDDING	40

DIVISION II

TECHNICAL SPECIFICATIONS

SECTION S-001

WATER DISTRIBUTION SYSTEM

TABLE OF CONTENTS:

I.	DE	SCRIPTION:	2
II.	(COORDINATION:	3
III.	(CONSTRUCTION LAYOUT:	3
IV.	ľ	MATERIALS:	3
V.	I	EXECUTION:	3
Α	. (GENERAL	3
В	. 1	WATER VALVES AND HYDRANTS "OPERATING" REGULATIONS	4
С	.]	FRENCHING	5
D	. I	BACKFILL	5
E.	. (CONNECTION TO EXISTING PIPING	6
F.	I	REMOVAL AND DISPOSAL OF EXISTING "AC" WATERLINES	7
G	. <i>I</i>	ABANDONMENT OF EXISTING WATERLINES	7
Η	. I	PIPELINE TESTING AND STERILIZATION	7
VI.	Ι	DEVIATION FROM JEFFERSON PARISH STANDARDS	7
VII.	(CONSTRUCTION DELAY CLAIMS:	7
VIII	. I	MEASUREMENT AND PAYMENT:	8
	1.	Payment	.8
	2.	Water Lines and/or Water Mains	. 8
	3.	Existing AC waterlines	. 8
	4.	Existing Waterlines	.8
	6.	Fire Hydrants	.9
	7.	Fire Hydrant Assemblies	.9
	8.	Water Meters and Meter Boxes	.9
	9.	Water Meter/Meter-Box adjustment	.9
	10.	Gate and Butterfly Valves and Valve Boxes	.9
	11.	Ductile Iron Fittings (Fittings),	.9

S-001 - Page 1 of 17

	12.	Pipe restraints	.9
	13.	Transitional Couplings	.9
	14.	Price Brothers Adapters	10
	15.	Price Brothers Pipe Joint Field Welding	10
	16.	Tie-ins,1	10
	17.	Water Service Connections	10
	18.	Fire Service Connections	10
	19.	Check Valves	10
	20.	Double check valve assemblies	11
IX.	TA a) b) c) d) e) f) g) h)	BULATED GENERAL JEFFERSON PARISH PAY ITEMS 1 100 SERIES, PVC PIPES 1 200 SERIES, DUCTILE IRON PIPES 1 300 SERIES, HDPE PIPES 1 400 SERIES, GATE VALVES 1 500 SERIES, BUTTERFLY VALVES 1 600 SERIES, TAPPING & VALVE ASSEMBLY 1 700 SERIES, PIPE RESTRAINTS 1 800 SERIES, TRANSITIONAL COUPLINGS 1	11 11 12 12 13 13 14 15
	i)	900 SERIES, MISCELLANEOUS 1	15

I. <u>DESCRIPTION:</u>

All "water distribution system" work shall be performed in total conformance with Jefferson Parish standards, requirements, [http://www.jeffparish.net/index.aspx?page=261, http://www.jeffparish.net/index.aspx?page=297] and as per materials manufacturer's requirements and recommendations.

All work associated with the water distribution system shall be performed under this section (S-001) and to the lines and grades shown on plans.

This work will include furnishing and constructing the water lines and appurtenances as indicated on the drawings and in accordance with the provisions of the Jefferson Parish Department of Engineering and the Specifications herein. Where the word "pipe" and/or "water line" are used it shall refer to pipe, fittings, or appurtenances unless otherwise noted.

The Contractor shall furnish all labor, equipment and materials required to perform all work required for removal of existing water lines and for installation of new waterlines. Removal and

S-001 - Page 2 of 17

installation, replacement or relocation shall be as indicated on the drawings and specified herein. Damage to any waterlines by the Contractor, subcontractors, material and equipment suppliers or other persons, shall be repaired by the Contractor to the satisfaction of the Engineer and Owner at the expense of the Contractor, prior to acceptance.

The drawings attempt to indicate the alignment of all known waterlines within the limits of the work. However, the Contractor shall be responsible to inspect the entire project to verify all existing waterlines and to determine the existence of any additional conflicts with his work. The location of proposed water lines may be field adjusted, with prior approval from the Jefferson Parish Department of Engineering, to avoid conflicts with other utilities.

II. <u>COORDINATION:</u>

Removal and replacement or relocation of waterlines shall be done in close coordination with the Owner. Removal and replacement or relocation work shall be planned in advance so that inconvenience to the Owner and utility users caused by the disruption of service is minimized. The contractor shall be responsible for immediately notifying the Owner and Engineer of existing conditions that differ from that shown on the plans.

III. CONSTRUCTION LAYOUT:

The Contractor will be responsible for establishing all lines and grades and staking out all "Water Distribution System" work on this project from controls provided in the construction documents. There shall be no separate payment for construction layout related to the "Water Distribution System".

IV. <u>MATERIALS:</u>

All materials shall be as specified in Jefferson Parish Standard Notes and Drawings and as specified herein.

V. EXECUTION:

A. <u>GENERAL</u>

1. Pipe, fittings, and accessories shall be handled in a manner that will insure installation in sound, undamaged condition. Equipment, tools, and methods used in handling and

S-001 - Page 3 of 17

installing pipe and fittings shall not damage the pipe and fittings. Hooks inserted in ends of pipe shall have broad, well-padded contact surfaces.

- 2. All pipe coatings which have been damaged shall be repaired by the Contractor before installing the pipe. Any such repairs shall be done in total conformance with the manufacturer's requirements and recommendations and shall require prior approval from the Jefferson Parish Department of Engineering.
- 3. Water distribution system installation shall be done with pipe sections and fittings such that pipe cutting is not required. Should pipe cutting be required, cutting shall be done in a neat manner, without damage to the pipe or to the lining. Cuts shall be smooth, straight, and at right angles to the pipe axis. After cutting, the end of the pipe shall be dressed with a file to remove all roughness and sharp corners.
- 4. All cutting of ductile iron pipe shall be done with mechanical pipe cutters except where the use of mechanical cutters would be difficult or impracticable. Ends of ductile iron pipe shall be cut with a saw, abrasive wheel, or oxyacetylene torch. Field cut holes for saddles shall be cut with mechanical cutters; oxyacetylene cutting will not be permitted.
- 5. The interior of all pipe and fittings shall be thoroughly cleaned of foreign matter and must be swabbed with chlorine prior to installation and shall be kept clean until the work has been accepted. Before jointing, all joint contact surfaces shall be wire brushed if necessary, wiped clean, and kept clean until jointing is completed.
- 6. Precautions shall be taken to prevent foreign material from entering the pipe during installation. Debris, tools, clothing, or other materials shall not be placed in or allowed to enter the pipe.
- 7. A representative of the Jefferson Parish Engineering Department shall be present or be given the chance to inspect all water distribution items, installed, prior to backfill.

B. WATER VALVES AND HYDRANTS "OPERATING" REGULATIONS

- 1. Generally all water system valves and hydrants shall be operated by the Jefferson Parish Water or Engineering Departments.
- 2. The Contractor shall not operate water system valves or hydrants without written permission from the Jefferson Parish Water or Engineering Departments.
- 3. The contractor may operate water system valves or hydrants without written permission only when representatives from Jefferson Parish Water or Engineering Departments are present.

S-001 - Page 4 of 17

4. The contractor shall obtain, maintain, and annotate the Jefferson Parish Department of Water Form No. W-101, "Valve Operation Log" throughout the project.

C. <u>TRENCHING</u>

- 1. Excavation work shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards. As always, Trench Safety shall remain the contractor's responsibility at all times.
- 2. Excavate and maintain trenches to the indicated or required depth and width. Provide minimum of 12" clearance on both sides of pipe or conduit.
- 3. Protect excavations, if necessary, by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.
- 4. Notify the Engineer and the Jefferson Parish Department of Engineering of any undesirable, unexpected subsurface conditions and discontinue work in affected area until notification to resume work.
- 5. Grade excavation top perimeter to prevent surface water run-off into excavation.
- 6. Hand trim excavation and leave free of loose matter.
- 7. Correct unauthorized excavation at no cost to Owner.

D. <u>BACKFILL</u>

- 1. Backfill material shall be Mississippi River "pumped sand", AASHTO A-4 or better having a maximum liquid limit of 25 and a maximum plasticity index of 6. All sands shall be free of trash, weeds, lumps, humus, pieces of wood or any other deleterious material. Backfill material shall have a group index number not to exceed 6.
- 2. Support pipe and conduit during placement and compaction of pipe backfill.
- 3. Document and photograph every fitting, restraint devise, valves, hydrant, etc. prior to backfill.
- 4. A representative of the Jefferson Parish Engineering Department shall inspect all installed water distribution items prior to backfill.

S-001 - Page 5 of 17

E. <u>CONNECTION TO EXISTING PIPING</u>

- 1. A representative from the Jefferson Parish Engineering Department must be present during all work being done at the tie-in points.
- 2. All tie-ins to the existing water lines shall be done by the Contractor.
- 3. All tie-in locations shall be excavated and existing piping shall be investigated (material type, size, outside diameter, condition, photograph, etc.) prior to ordering material and equipment, and especially prior to the cutting of the existing pipe.
- 4. Connections between new work and existing piping shall be made using fittings suitable for the conditions encountered and as indicated on the drawings.
- 5. Each connection to an existing pipe shall be made at a time and under conditions which will least interfere with service to customers, and as authorized by the Owner.
- 6. Water line tie-ins shall not be permitted on Fridays or any days preceding a legal holiday, unless otherwise approved by the Jefferson Parish Engineering Department in writing.
- 7. Facilities shall be provided for proper dewatering and for disposal of all water removed from the dewatered lines and excavations without damage to adjacent properties.
- 8. Water system "<u>test closures</u>", which are typically done by the Jefferson Parish Water Department must be witnessed and documented by the Resident Inspector (RI) and the contractor. Documentation may simply be done by signing or initialing a marked up copy of the Jefferson Parish Water Unit Sheets indicating which valves were closed and which hydrants were flowed. A successful "test closure" is one of the key elements necessary, prior to scheduling a tie-in.
 - a. Test Closures are typically done by the Jefferson Parish Water Department Forces, but they may be done by the contractor under direct supervision of the Jefferson Parish Engineering Department Inspectors.
 - b. Since the contractor will be responsible for the outcome of the tie-ins, it will be to his advantage to witness and fully understand a "successful test closure".
- 9. Prior to scheduling a tie-in, the contractor must make certain {and convey this information to the Jefferson Parish Engineering Inspection Department through the Resident Inspector (RI)} that he would have a clear path to the tie-in point (no surprised conflicts). Since the RI is the only fulltime parish representative on the site, he can verify the contractor's readiness for the tie-in, on behalf of the parish.

S-001 - Page 6 of 17

F. <u>REMOVAL AND DISPOSAL OF EXISTING "AC" WATERLINES</u>

Removal and disposal of Existing "AC" waterlines shall be in accordance with all applicable local and federal regulations and requirements.

G. <u>ABANDONMENT OF EXISTING WATERLINES</u>

All abandoned pipes shall be filled with Flowable Fill. Flowable fill shall be per DOTD Standard Specifications for Roads and Bridges section 710.

H. <u>PIPELINE TESTING AND STERILIZATION</u>

The pressure and leakage testing of all waterlines shall conform to the requirements of Jefferson Parish and AWWA C600.

VI. DEVIATION FROM JEFFERSON PARISH STANDARDS

None

VII. CONSTRUCTION DELAY CLAIMS:

- 1. Utility related Construction Delay Claims must be avoided at all costs. The contractor shall have the burden to prove that the actions or inactions of the owner or owner's representatives affected his activities. Burden of proof may include "Established Schedules" depicting Critical Path and Non-Critical Path Items, documentations of required notices to the owner or owner's representatives, documentations of minutes of meetings, etc.
- 2. In the preconstruction meeting (or shortly after) the contractor shall be provided with a list of contacts. The contractor is advised to understand the function of each contact person and the expected nature of his relationship and his responsibilities towards each contact. This list typically will include a parish utility inspector, a utility inspector supervisor, staff engineer, and utility chief engineer. The instant that the contractor feels that he may be delayed due to: differing site conditions; changes in requirements or design; weather; unavailability of material or equipment; errors in plans and specifications; and interference by the owner, he must, promptly (proactively / aggressively), bring the situation to the attention of his contact points, in order to resolve the utility situation.

S-001 - Page 7 of 17

- 3. Typically, per contracts' special provisions, parish utility personnel do not have <u>direct</u> <u>authority</u> over the contractor; however, as owners, they have <u>total</u> <u>authority</u> to funnel, through the Parish Designated Construction Project Managers, any concerns that they may have to the contractor.
- 4. <u>Bottom line</u>; Considering the facts that typically, Jefferson Parish provides a multi-level contact points' list, a fulltime (A/E) inspector, two assigned project construction managers (Parish and the A/E), pre-bid and pre-construction meetings, etc., <u>if a contractor is delayed, most likely, it is his fault</u>.

VIII. MEASUREMENT AND PAYMENT:

1. **Payment** for this work will be made after receipt of approval from the Jefferson Parish Department of Engineering.

The price and payment shall constitute full compensation for furnishing all labor, materials, and equipment to construct the water line including trenching, bedding, pipe laying, backfill, tie-ins to existing water lines, pressure testing mains and all incidental work necessary for a complete and functional water distribution system.

- 2. <u>Water Lines and/or Water Mains</u> (terms "water lines" or "water mains" shall mean water pipe in general, including mains, hydrant leads, fire service pipes, etc.) shall be measured along the centerline of pipeline in place, through fittings and valves, and shall be paid for per linear feet. This method of Measurement and Payment shall apply to all water lines <u>despite</u> of the <u>material type</u>; PVC, Ductile Iron, HDPE, etc. <u>and/or installation method</u>; Open Trench, Jack and Bore (J&B), Directional Drill (DD), etc. An alternative for measurement and payment for Directional Drill would be to be measured horizontally. This alternative method of measurement, if considered, shall be stated as a "Deviation from Jefferson Parish Standards". *{[Non Open Trench Item Numbers shall be accompanied with an extension to identify the method of installation (e.g. the item number for an 8" HDPE pipe being installed by Directional Drilling shall be: "W-308-DD")], [Thickness <u>class 52</u> Ductile Iron pipe items shall be accompanied with extension "C52"]}.*
- 3. **Existing AC waterlines** which shall be removed and disposed of shall be measured horizontally through fittings and valves along the centerline of pipeline and shall be paid for per linear feet of pipe, for specific size, removed and disposed. In case the contractor encounters AC pipes larger than the size that is in his contract, he shall be compensated 10%, per size, in addition to his bid price for smaller size pipe.
- 4. <u>Existing Waterlines</u> which shall be abandoned shall be measured horizontally through fittings and valves along the centerline of pipeline and shall be paid for per linear feet of pipe abandoned, regardless of size. There shall be no additional compensation or

S-001 - Page 8 of 17

credit for different <u>size</u> water lines than shown on plans under this item unless otherwise specified.

- 5. There shall be no direct payment for non-AC pipe removal and disposal unless otherwise specified.
- 6. <u>Fire Hydrants</u> shall be measured and paid for per each hydrant installation complete in place. This item shall only include the hydrant. Fittings, hydrant valve, hydrant tee, valve box, pipes, etc. related to installation of a Fire Hydrant shall be paid separately and shall not be included in this item.
- 7. **Fire Hydrant Assemblies** shall be measured and paid for per each installation complete in place including <u>hydrant</u>, <u>hydrant tee</u>, <u>all fittings</u>, <u>hydrant valve</u>, <u>valve box</u>, <u>pipes</u>, etc. related to installation of a Fire Hydrant Assembly as per Jefferson Parish requirements.
- 8. <u>Water Meters and Meter Boxes</u> shall be measured and paid for per each, for specific size, installed, complete in place including meter, meter box, fittings, and other necessary accessories related to installation of a meter and a meter box as per Jefferson Parish and manufacturer's requirements.
- 9. <u>Water Meter/Meter-Box adjustment</u> shall be measured and paid for per each, for specific size, this item shall be full compensation for any necessary adjustments (Horizontal, Vertical, etc.), complete in place as per plans instructions or as directed by the Jefferson Parish Engineering Department.
- 10. <u>Gate and Butterfly Valves and Valve Boxes</u> where shown or required in accordance with Jefferson Parish Standards, shall be measured and paid for per each for specific size.
- 11. **Ductile Iron Fittings (Fittings)**, to include bends, crosses, tees (except the hydrant tee included in the "Fire Hydrant Assembly" item which includes the tee), reducers and any other required part to make sound and functional connections shall be measured and paid for per pound.
- 12. <u>Pipe restraints</u> shall be measured and paid for per each joint restrained for specific size. Pipe restraints shall mean any external device or devices that are used to restrain a joint by locking the joint into place so the joint cannot open, move, or turn. A flanged joint shall be considered a restrained joint and shall be measured and paid for as one.
- 13. <u>**Transitional Couplings</u>** shall be measured and paid for per each for a specific size in place. Measurement and Payment for Transitional Couplings shall be made at the Contract unit price per each and shall include full compensation for providing all labor,</u>

S-001 - Page 9 of 17

materials, equipment, excavation, bedding and backfill, board foundation, etc. and Connection (Tie-in) to Existing Water Line per all applicable Jefferson Parish and Manufacture's Standards.

- 14. <u>Price Brothers Adapters</u> shall be measured and paid for per each for a specific size in place. Measurement and Payment for Price Brothers Adapters shall be made at the Contract unit price per each and shall include full compensation for providing all labor, materials, equipment, excavation, bedding and backfill, board foundation, etc. and Connection (Tie-in) to Existing Water Line per all applicable Jefferson Parish and Manufacture's Standards.
- 15. **Price Brothers Pipe Joint Field Welding** shall be measured and paid for per each, for a specific size of water main, in place. Measurement and Payment for Price Brothers Pipe Joint Field Welding shall be made at the Contract unit price per each and shall include full compensation for providing all labor, materials, equipment, excavation, bedding and backfill, board foundation, etc. All pipe joints shall receive a full, 360 degrees circumferential weld in accordance with the latest applicable Jefferson Parish, AWWA (AWWA c206, etc.) and Manufacture's Standards, Recommendations, and Requirements.
- 16. **<u>Tie-ins</u>**, There shall be no direct payment for tie-ins, unless otherwise specified.
- 17. Water Service Connections shall include all necessary work to install (or remove and replace) a service connection in accordance with the Jefferson Parish standards from the main to the meter, complete and in place, including tie-ins to the main and the meter. Water Service connections shall be measured and paid for per each for specific size. In case the contractor encounters water service connections larger than the size that is in his contract, he shall be compensated 10%, per size, in addition to his bid price for smaller size pipe.
- 18. Fire Service Connections shall be measured and paid for based on individual components involved (I.e. Pipes, fittings, couplings, check valves, gate valves, and double check valve assemblies). There shall be no "per each" pay item for fire service connections unless it is covered under "Deviation from Jefferson Parish Standard" section. There shall be no direct payment for removal and disposal of an existing fire service connection unless otherwise specified. Unless otherwise specified or directed by the owner, fire service connections shall be installed/replaced, as a minimum, from the main to the property line.
- **19.** <u>Check Valves</u> {"Resilient Seated" (RS) or "Metal Seated" (MS)} shall be per Jefferson Parish Standards and Requirements and shall be measured and paid for per each for specific size.

S-001 - Page 10 of 17

20. <u>Double check valve assemblies</u> where shown or required in accordance with Jefferson Parish Standards, shall be measured and paid for per each for specific size.

IX. TABULATED GENERAL JEFFERSON PARISH PAY ITEMS

Item No. Item Description (Pay Item)

Unit of Measure (Pay Unit)

a) 100 SERIES, PVC PIPES

W-104	Water Main (4") (PVC/C-900 Pipe)	Linear Foot
W-106	Water Main (6") (PVC/C-900 Pipe)	Linear Foot
W-108	Water Main (8") (PVC/C-900 Pipe)	Linear Foot
W-110	Water Main (10") (PVC/C-900 Pipe)	Linear Foot
W-112	Water Main (12") (PVC/C-900 Pipe)	Linear Foot
W-114	Water Main (14") (PVC/C-905 Pipe)	Linear Foot
W-116	Water Main (16") (PVC/C-905 Pipe)	Linear Foot
W-118	Water Main (18") (PVC/C-905 Pipe)	Linear Foot
W-120	Water Main (20") (PVC/C-905 Pipe)	Linear Foot
W-124	Water Main (24") (PVC/C-905 Pipe)	Linear Foot
W-130	Water Main (30") (PVC/C-905 Pipe)	Linear Foot

b) 200 SERIES, DUCTILE IRON PIPES

W-204	Water Main (4") (Ductile Iron Pipe)	Linear Foot
W-206	Water Main (6") (Ductile Iron Pipe)	Linear Foot
W-208	Water Main (8") (Ductile Iron Pipe)	Linear Foot
W-210	Water Main (10") (Ductile Iron Pipe)	Linear Foot
W-212	Water Main (12") (Ductile Iron Pipe)	Linear Foot
W-214	Water Main (14") (Ductile Iron Pipe)	Linear Foot
W-216	Water Main (16") (Ductile Iron Pipe)	Linear Foot
W-218	Water Main (18") (Ductile Iron Pipe)	Linear Foot
W-220	Water Main (20") (Ductile Iron Pipe)	Linear Foot
	S-001 - Page 11 of 17	

Revised (08/04/2016)

W-224	Water Main (24") (Ductile Iron Pipe)	Linear Foot
W-230	Water Main (30") (Ductile Iron Pipe)	Linear Foot
W-236	Water Main (36") (Ductile Iron Pipe)	Linear Foot
W-242	Water Main (42") (Ductile Iron Pipe)	Linear Foot
W-248	Water Main (48") (Ductile Iron Pipe)	Linear Foot
W-254	Water Main (54") (Ductile Iron Pipe)	Linear Foot
W-260	Water Main (60") (Ductile Iron Pipe)	Linear Foot
W-264	Water Main (64") (Ductile Iron Pipe)	Linear Foot

c) 300 SERIES, HDPE PIPES

W-302	Water Main (2") (HDPE Pipe) [DR]	Linear Foot
W-304	Water Main (4") (HDPE Pipe) [DR]	Linear Foot
W-306	Water Main (6") (HDPE Pipe) [DR]	Linear Foot
W-308	Water Main (8") (HDPE Pipe) [DR]	Linear Foot
W-310	Water Main (10") (HDPE Pipe) [DR]	Linear Foot
W-312	Water Main (12") (HDPE Pipe) [DR]	Linear Foot
W-314	Water Main (14") (HDPE Pipe) [DR]	Linear Foot
W-316	Water Main (16") (HDPE Pipe) [DR]	Linear Foot
W-318	Water Main (18") (HDPE Pipe) [DR]	Linear Foot
W-320	Water Main (20") (HDPE Pipe) [DR]	Linear Foot
W-324	Water Main (24") (HDPE Pipe) [DR]	Linear Foot
W-330	Water Main (30") (HDPE Pipe) [DR]	Linear Foot
W-336	Water Main (36") (HDPE Pipe) [DR]	Linear Foot

W-302-DD	Water Main (2") (HDPE Pipe) [DR]
W-304-DD	Water Main (4") (HDPE Pipe) [DR]
W-306-DD	Water Main (6") (HDPE Pipe) [DR]
W-308-DD	Water Main (8") (HDPE Pipe) [DR]
W-310-DD	Water Main (10") (HDPE Pipe) [DR]
W-312-DD	Water Main (12") (HDPE Pipe) [DR]
W-314-DD	Water Main (14") (HDPE Pipe) [DR]
W-316-DD	Water Main (16") (HDPE Pipe) [DR]
W-318-DD	Water Main (18") (HDPE Pipe) [DR]
W-320-DD	Water Main (20") (HDPE Pipe) [DR]
W-324-DD	Water Main (24") (HDPE Pipe) [DR]
W-330-DD	Water Main (30") (HDPE Pipe) [DR]
W-336-DD	Water Main (36") (HDPE Pipe) [DR]

Linear Foot Linear Foot

d) 400 SERIES, GATE VALVES

S-001 - Page 12 of 17

Revised (08/04/2016)

W-404	Gate Valve and Valve Box (4")	Each
W-406	Gate Valve and Valve Box (6")	Each
W-408	Gate Valve and Valve Box (8")	Each
W-410	Gate Valve and Valve Box (10")	Each
W-412	Gate Valve and Valve Box (12")	Each

e) 500 SERIES, BUTTERFLY VALVES

W-514	Butterfly Valve and Valve Box (14")	Each
W-516	Butterfly Valve and Valve Box (16")	Each
W-518	Butterfly Valve and Valve Box (18")	Each
W-520	Butterfly Valve and Valve Box (20")	Each
W-524	Butterfly Valve and Valve Box (24")	Each
W-530	Butterfly Valve and Valve Box (30")	Each
W-536	Butterfly Valve and Valve Box (36")	Each
W-542	Butterfly Valve and Valve Box (42")	Each
W-548	Butterfly Valve and Valve Box (48")	Each

f) 600 SERIES, TAPPING & VALVE ASSEMBLY

W-604X4	Tapping Sleeve & Valve Assembly (4"X4")	Each
W-606X4	Tapping Sleeve & Valve Assembly (6"X4")	Each
W-606X6	Tapping Sleeve & Valve Assembly (6"X6")	Each
W-608X4	Tapping Sleeve & Valve Assembly (8"X4")	Each
W-608X6	Tapping Sleeve & Valve Assembly (8"X6")	Each
W-608X8	Tapping Sleeve & Valve Assembly (8"X8")	Each
W-610X4	Tapping Sleeve & Valve Assembly (10"X4")	Each
W-610X6	Tapping Sleeve & Valve Assembly (10"X6")	Each
W-610X8	Tapping Sleeve & Valve Assembly (10"X8")	Each
W-610X10	Tapping Sleeve & Valve Assembly (10"X10")	Each
W-612X4	Tapping Sleeve & Valve Assembly (12"X4")	Each
W-612X6	Tapping Sleeve & Valve Assembly (12"X6")	Each
W-612X8	Tapping Sleeve & Valve Assembly (12"X8")	Each
W-612X10	Tapping Sleeve & Valve Assembly (12"X10")	Each
W-612X12	Tapping Sleeve & Valve Assembly (12"X12")	Each
W-614X4	Tapping Sleeve & Valve Assembly (14"X4")	Each
W-614X6	Tapping Sleeve & Valve Assembly (14"X6")	Each
W-614X8	Tapping Sleeve & Valve Assembly (14"X8")	Each
W-614X10	Tapping Sleeve & Valve Assembly (14"X10")	Each
W-614X12	Tapping Sleeve & Valve Assembly (14"X12")	Each
W-616X4	Tapping Sleeve & Valve Assembly (16"X4")	Each

S-001 - Page 13 of 17

Revised (08/04/2016)

W-616X6	Tapping Sleeve & Valve Assembly (16"X6")	Each
W-616X8	Tapping Sleeve & Valve Assembly (16"X8")	Each
W-616X10	Tapping Sleeve & Valve Assembly (16"X10")	Each
W-616X12	Tapping Sleeve & Valve Assembly (16"X12")	Each
W-616X16	Tapping Sleeve & Valve Assembly (16"X16")	Each
W-618X4	Tapping Sleeve & Valve Assembly (18"X4")	Each
W-618X6	Tapping Sleeve & Valve Assembly (18"X6")	Each
W-618X8	Tapping Sleeve & Valve Assembly (18"X8")	Each
W-618X10	Tapping Sleeve & Valve Assembly (18"X10")	Each
W-618X12	Tapping Sleeve & Valve Assembly (18"X12")	Each
W-618X16	Tapping Sleeve & Valve Assembly (18"X16")	Each
W-620X4	Tapping Sleeve & Valve Assembly (20"X4")	Each
W-620X6	Tapping Sleeve & Valve Assembly (20"X6")	Each
W-620X8	Tapping Sleeve & Valve Assembly (20"X8")	Each
W-620X10	Tapping Sleeve & Valve Assembly (20"X10")	Each
W-620X12	Tapping Sleeve & Valve Assembly (20"X12")	Each
W-620X16	Tapping Sleeve & Valve Assembly (20"X16")	Each
W-624X4	Tapping Sleeve & Valve Assembly (24"X4")	Each
W-624X6	Tapping Sleeve & Valve Assembly (24"X6")	Each
W-624X8	Tapping Sleeve & Valve Assembly (24"X8")	Each
W-624X10	Tapping Sleeve & Valve Assembly (24"X10")	Each
W-624X12	Tapping Sleeve & Valve Assembly (24"X12")	Each
W-624X16	Tapping Sleeve & Valve Assembly (24"X16")	Each
W-630X4	Tapping Sleeve & Valve Assembly (30"X4")	Each
W-630X6	Tapping Sleeve & Valve Assembly (30"X6")	Each
W-630X8	Tapping Sleeve & Valve Assembly (30"X8")	Each
W-630X10	Tapping Sleeve & Valve Assembly (30"X10")	Each
W-630X12	Tapping Sleeve & Valve Assembly (30"X12")	Each
W-630X16	Tapping Sleeve & Valve Assembly (30"X16")	Each

g) 700 SERIES, PIPE RESTRAINTS

W-704	Pipe Restraints (4")	Each
W-706	Pipe Restraints (6")	Each
W-708	Pipe Restraints (8")	Each
W-710	Pipe Restraints (10")	Each
W-712	Pipe Restraints (12")	Each
W-714	Pipe Restraints (14")	Each
W-716	Pipe Restraints (16")	Each
W-718	Pipe Restraints (18")	Each
W-720	Pipe Restraints (20")	Each

S-001 - Page 14 of 17

Revised (08/04/2016) Jefferson Parish General Standard Water Distribution System Technical Specifications

W-724	Pipe Restraints (24")	Each
W-730	Pipe Restraints (30")	Each
W-736	Pipe Restraints (36")	Each
W-742	Pipe Restraints (42")	Each

h) 800 SERIES, TRANSITIONAL COUPLINGS

W-804	Transitional Couplings (4")	Each
W-806	Transitional Couplings (6")	Each
W-808	Transitional Couplings (8")	Each
W-810	Transitional Couplings (10")	Each
W-812	Transitional Couplings (12")	Each
W-814	Transitional Couplings (14")	Each
W-816	Transitional Couplings (16")	Each
W-818	Transitional Couplings (18")	Each

i) 900 SERIES, MISCELLANEOUS

Ductile Iron Fittings	Pounds
Fire Hydrant Fire Hydrant Assembly	Each Each
Water Service Connection (< 1")	Each
Water Service Connection (1")	Each
Water Service Connection (2")	Each
Water Service Connection (3") [†]	Each
Water Service Connection (4")	Each
Water Service Connection (6")	Each
Water Service Connection (8")	Each
Check Valve (4")	Each
Check Valve (6")	Each
Check Valve (8")	Each
Check Valve (10")	Each
Check Valve (12")	Each
	- 1
Check Valve (4")	Each
Check Valve (6")	Each
Check Valve (8")	Each
Check Valve (10")	Each
	Ductile Iron Fittings Fire Hydrant Fire Hydrant Assembly Water Service Connection (< 1") Water Service Connection (1") Water Service Connection (2") Water Service Connection (3")† Water Service Connection (4") Water Service Connection (6") Water Service Connection (6") Check Valve (4") Check Valve (6") Check Valve (8") Check Valve (10") Check Valve (4") Check Valve (4") Check Valve (4") Check Valve (4") Check Valve (2") Check Valve (4") Check Valve (4") Check Valve (8") Check Valve (8") Check Valve (8") Check Valve (8") Check Valve (8") Check Valve (10")

S-001 - Page 15 of 17

Revised (08/04/2016) Jefferson Parish General Standard Water Distribution System Technical Specifications

W-905-2	"Double Check Valve Assembly" (2")	Each
W-905-4	"Double Check Valve Assembly" (4")	Each
W-905-6	"Double Check Valve Assembly" (6")	Each
W-905-8	"Double Check Valve Assembly" (8")	Each
	• 、 /	
W-906-0	Water Meter & Meter Box (< 1")	Each
W-906-1	Water Meter & Meter Box (1")	Each
W-906-2	Water Meter & Meter Box (2")	Each
W-906-3	Water Meter & Meter Box (3") [†]	Each
W-906-4	Water Meter & Meter Box (4")	Each
W-906-6	Water Meter & Meter Box (6")	Each
W-906-8	Water Meter & Meter Box (8")	Each
W-906-0-A	Water Meter/Meter-Box Adjustment (< 1 ")	Each
W-906-1-A	Water Meter/Meter-Box Adjustment (1")	Each
W-906-2-A	Water Meter/Meter-Box Adjustment (2")	Each
W-906-3-A	Water Meter/Meter-Box Adjustment (3") [†]	Each
W-906-4-A	Water Meter/Meter-Box Adjustment (4")	Each
W-906-6-A	Water Meter/Meter-Box Adjustment (6")	Each
W-906-8-A	Water Meter/Meter-Box Adjustment (8")	Each
W-907-4	Removal & Disposal of existing AC Waterline (4")	Linear Foot
W-907-6	Removal & Disposal of existing AC Waterline (6")	Linear Foot
W-907-8	Removal & Disposal of existing AC Waterline (8")	Linear Foot
W-907-10	Removal & Disposal of existing AC Waterline (10")	Linear Foot
W-907-12	Removal & Disposal of existing AC Waterline (12")	Linear Foot
W-907-14	Removal & Disposal of existing AC Waterline (14")	Linear Foot
W-907-16	Removal & Disposal of existing AC Waterline (16")	Linear Foot
W-907-18	Removal & Disposal of existing AC Waterline (18")	Linear Foot
W-907-20	Removal & Disposal of existing AC Waterline (20")	Linear Foot
W-908	Abandonment of existing Waterline	Linear Foot
W-909-16	Price Brothers Adapter (16")	Each
W-909-18	Price Brothers Adapter (18")	Each
W-909-20	Price Brothers Adapter (20")	Each
W-909-24	Price Brothers Adapter (24")	Each
W-909-30	Price Brothers Adapter (30")	Each
W-909-36	Price Brothers Adapter (36")	Each
W-909-42	Drian Drothang Adaptor (12")	Fach
	Frice Diomers Adapter (42)	Laci
W-909-48	Price Brothers Adapter (42")	Each
W-909-48 W-909-54	Price Brothers Adapter (42") Price Brothers Adapter (54")	Each Each

S-001 - Page 16 of 17

Revised (08/04/2016)

W-909-60	Price Brothers Adapter (60")	Each
W-909-66	Price Brothers Adapter (66")	Each
W-909-72	Price Brothers Adapter (72")	Each
W-910-16	Price Brothers Pipe Joint Field Welding (16")	Each
W-910-18	Price Brothers Pipe Joint Field Welding (18")	Each
W-910-20	Price Brothers Pipe Joint Field Welding (20")	Each
W-910-24	Price Brothers Pipe Joint Field Welding (24")	Each
W-910-30	Price Brothers Pipe Joint Field Welding (30")	Each
W-910-36	Price Brothers Pipe Joint Field Welding (36")	Each
W-910-42	Price Brothers Pipe Joint Field Welding (42")	Each
W-910-48	Price Brothers Pipe Joint Field Welding (48")	Each
W-910-54	Price Brothers Pipe Joint Field Welding (54")	Each
W-910-60	Price Brothers Pipe Joint Field Welding (60")	Each
W-910-66	Price Brothers Pipe Joint Field Welding (66")	Each
W-910-72	Price Brothers Pipe Joint Field Welding (72")	Each

[†] Typically Jefferson Parish does not approve installation of any 3" Meter

S-001 - Page 17 of 17

Revised (08/04/2016) Jefferson Parish General Standard Water Distribution System Technical Specifications