CONTRACT DOCUMENTS,

TECHNICAL SPECIFICATIONS

AND

CONSTRUCTION DRAWINGS

FOR

NEW RIVER CHANNEL IMPROVEMENTS
EAD-15-004
EAST ASCENSION CONSOLIDATED GRAVITY DRAINAGE DISTRICT NO. 1
ASCENSION PARISH

PARISH PRESIDENT
Kenny Matassa

COUNCILMEMBERS
Oliver Joseph, District 1
Bill Dawson, District 2
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Aaron Lawler, District 7
Teri Casso, District 8
Todd Lambert, District 9
John Cagnolatti, District 10
Benny Johnson, District 11

5/9/2019
STATE OF LOUISIANA
DAVID ALAN MARTIN
License No. 37832
PROFESSIONAL ENGINEER
IN CIVIL ENGINEERING

May, 2019

Prepared by ***H. DAVIS COLE & ASSOCIATES, LLC (HDCA)***
For
Ascension Parish Engineering Dept
Department of Public Works East
42077 Churchpoint Road

RELEASED FOR BIDS AND CONSTRUCTION

REVISION HISTORY

Date	Description
May 9, 2019	Revised per and Re – Issued to Parish
April 26, 2019	Revised per KCSRR & Re-Issued to Parish
March 11, 2019	Initial Issue

Parish of Ascension

Ascension Parish Department of Public Works
42077 Churchpoint Rd.
Gonzales, Louisiana 70737

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Division 0 – Article 1
INVITATION

Sealed bids will be received by ***Ascension Parish Purchasing Department*, 615 East Worthey Road, Gonzales, LA 70737 (mailing address P.O. Box 2392, Gonzales, LA 70707-2392)** on **Tuesday, July 16, 2019** until **10:00 AM** and then at said office publicly opened and read aloud for construction of the project described as follows:

NEW RIVER CHANNEL IMPROVEMENTS
EAD-15-004
EAST ASCENSION CONSOLIDATED GRAVITY DRAINAGE DISTRICT NO. 1
Parish of Ascension

STATEMENT OF WORK:
TEST AMI

All Bids must be in accordance with the Contract Documents on file at the ***Ascension Parish Purchasing Department, 615 E. Worthey Road, Gonzales, Louisiana 70737***.

Copies of Specifications, Bid Documents, Contract Documents and Construction Drawings for use in preparing Bids may be obtained from ***H. Davis Cole & Associates, LLC, 1340 Poydras Street, Suite 1850, New Orleans, Louisiana 70112, 504-836-2020*** upon payment of ***Three Hundred Dollars ($300.00) (or free for electronic copy with contractor provided media)*** per set made payable to H. Davis Cole & Associates, LLC. Documents can be mailed to bidders with a provided shipping account number. No refunds will be made for returned drawings.

Where bids are to be received on forms furnished by the awarding authority, no contract documents shall be issued to anyone except a Licensed Contractor or his authorized Representatives. **In no event shall any documents for bidding be issued later than twenty-four (24) hours prior to the hour and date set for receiving bids.**

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his/her address, contractor's state license number and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the ***Ascension Parish Purchasing Department*, 615 E. Worthey Road, Gonzales, LA 70737 (P.O. Box 2392 Gonzales, LA 70707),** mailed certified mail and must be received no later than the bid opening.

Contractors desiring to bid shall submit to the Engineer, with their request for Contract Documents, contract documents deposit and evidence that they hold State License of proper classification and in full force and effect.

Bid security in the amount of five percent (5%) of the Total Bid must accompany each Bid, and shall be made payable to the Owner.

The Owner reserves the right to waive any informalities or to reject any or all bids.

No bidder may withdraw his bid within forty-five (45) days after the actual date of opening thereof.

All questions regarding this project and the bid package shall be submitted to the Purchasing Department via purchasing@apgov.us by 10:00 am on Friday, July 5, 2019. Responses will be coordinated with the Project Engineer and posted on the centralauctionhouse web site by 5:00 PM on Tuesday, July 9, 2019.

A mandatory pre-bid meeting will be held on Tuesday, July 2, 2019 at 8:00 a.m. the Ascension Parish Department of Public Works (DPW), 42077 Churchpoint Road, Gonzales, Louisiana 70737. Only those in attendance at the pre – bid meeting will be considered responsive bidders. The pre-bid meeting may include a non-mandatory visit to the project site.

In addition to paper bids, electronic bids and electronic bid bonds for the followings project will be downloaded by the Ascension Parish Purchasing Department. Electronic bids and electronic bid bonds must be submitted through www.centralauctionhouse.com prior to the electronic bidding deadline. Beginning at ***10:00 AM*** (CST) on **Tuesday, July 16, 2019** all bids will be downloaded. No bids are accepted after ***10:00 AM***

RS 38:2218. Evidence of good faith; countersigning

A. The public entity advertising for bids for work shall require the bidders to attach a certified check, cashier's check, or bid bond for not more than five percent of the contract price of work to be done, as an evidence of good faith of the bidder. The public entity advertising for bids for work may require the bidders to attach a certified check, cashier's check, or bid bond for not more than five percent of the estimated price of supplies or materials, as evidence of good faith of the bidder.

To address the above requirement for electronic bids Ascension Parish Government will allow electronic bids submitted via the parish approved on-line bid site to be submitted as follows:

A. A copy of the bid bond **must** be attached to bid document submitted electronically
B. The original bid bond document must be received in our office no later than 48 hours after bid opening date and time (***Ascension Parish Purchasing Department,***

615 E. Worthey Road, Gonzales, Louisiana 70737 (P.O. Box 2392, Gonzales, Louisiana 70707))

C. The bid-bond envelope must be clearly labeled as a "Bid Bond" with the project name, vendor's name as it appears on the bid documents and address.

All addenda, Amendments, Letters of Clarification, and Withdrawal Notices will be posted online in addition to electronic copies being distributed. Construction proposal information may be accessed via the internet at www.centralauctionhouse.com. Users must click on Login and create a New User Registration to view and download drawings. Once logged in, users must click on Ascension Parish Government to view current advertisement listings. This listing is titled "***NEW RIVER CHANNEL IMPROVEMENTS***". Registered users will have access to view Project Information, submit a question concerning the project, and view the drawings. All project specific notices are found here. It will be the responsibility of the bidder to check for updates. All submitted questions will be forwarded by email to the Project Manager and the Project Engineer for a response.

The U.S. Department of Transportation (DOT) operates a toll free "Hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should call 1-800-424-9071. All information will be treated confidentially and caller anonymity will be respected.

The Ascension Parish shall not be responsible if the bidder cannot complete and submit a bid due to failure or incomplete delivery of the files submitted via the internet.

Ascension Parish Government reserves the right to reject any and all bids for just cause.

OWNER
PARISH OF ASCENSION

BY: /s/ MR. KENNY MATASSA

TO APPEAR IN THE:

GONZALES WEEKLY CITIZEN, DONALDSONVILLE CHIEF, THE ADVOCATE

6/13/2019; 6/20/2019; 6/27/2019

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Division 0 – Article 2
INSTRUCTIONS TO BIDDERS

2.1 CROSS REFERENCE TO PRIMARY STATEMENTS. Definitions, requirements, and limitations affecting the bidding are contained in the various contract documents, and are not necessarily repeated in these instructions.

2.2 QUALIFICATION OF BIDDERS. Bidders may be required to submit evidence that they have a practical knowledge of the particular task bid upon, and that they have the financial resources to complete the proposed scope in entirety.

In determining the Bidder's qualifications, the following factors will be considered: contracts 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 task properly and expeditiously, (c) has the financial resources to meet all obligations incidental to the task, and (d) has appropriate technical experience.

Preference will be given to bidders domiciled in Louisiana as stated in Louisiana Public Contract Law (38:2281).

Each Bidder may be required to show that he has completed similar work and that there are no just claims pending against such work. No Bid will be accepted from a Bidder who is engaged on any contract which would impair his ability to perform or finance his work.

2.3 LOUISIANA LICENSE REQUIREMENTS. 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, 7434 Perkins Road, Baton Rouge, Louisiana. Contractors desiring to bid shall submit with their Bids evidence that they hold a valid license in the proper classification.

2.4 FAMILIARIZATION WITH THE WORK. Before submitting his Bid, each prospective Bidder shall familiarize himself with the scope of the task, the sites where the proposed improvements 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 financial adjustment justification for lack of such familiarization. Additionally, evidence of having the lack of familiarization could result in contract termination or substantial financial impacts to the contractor due to liquidated damages or other variables.

2.4.1 Site Conditions. Each Bidder shall visit the sites 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 procedure necessary for maintenance of uninterrupted operation of existing 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.

2.4.2 Access to the Sites. The project is to be constructed within the Parish of Ascension. Contractors and Suppliers wishing to inspect the various sites may do so at their convenience.

2.5 INTERPRETATIONS. The Drawings have been prepared by H. DAVIS COLE & ASSOCIATES, LLC (HDCA), 1340 POYDRAS STREET, SUITE 1850, NEW ORLEANS, LA 70112, (504) 836 – 2020, who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents. All questions about the meaning or intent of the Specifications and Contract Documents shall be submitted to the Engineer in writing. Replies will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the bidding documents and posted on the Central Auction House website. Addenda will be issued at least 72 hours, (3 working days, excluding weekends and holidays) prior to the time stated for opening bids. Questions received less than five (5) working 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.

2.6 TAXES AND PERMITS. Attention is directed to the requirements of the General Conditions 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 Contractor. The bid prices shall include all such taxes and the costs of all required permits.

2.7 BID SECURITY. The amount of bid security is stated in the Invitation. 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 the General Conditions and Supplementary Conditions. Bid bond must have attached appropriate and satisfactory Power of Attorney. The bond shall also be countersigned by a person who is under contract with the Surety Company or Bond Issuer as a Licensed Agent in this State and who is residing in the State. Refer to R.S. 38:2218
The bid security shall be made payable without condition to the 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 should fail to enter

into a contract in the form prescribed, with legally responsible sureties, within fifteen (15) days after such award is made by Owner.

2.8 RETURN OF BID SECURITY. The bid security of the successful Bidder will be retained until the bidder has executed the Agreement and furnished the required Contract Security, whereupon checks furnished as bid security will be returned; if the bidder fails to execute and deliver the Agreement and furnish the required Contract Security within fifteen (15) days of the Notice of Award, 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 thirty (30) days after the Bid opening. Checks furnished as bid security by other Bidders will be returned within five (5) days of the Bid opening.

2.9 CONTRACT TIME. The Contract Time is an essential part of the contract and it may 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.

The Contractor is responsible for equipment and material delivery. A time extension to the Contract duration will not be allowed for late material or equipment delivery.

2.10 SUBCONTRACTORS AND SUPPLIERS. Within three (3) days after Bids are opened, the apparent low Bidder, and any other Bidder so requested, shall submit a list of all Subcontractors and Suppliers he expects to use in the Work and to submit manufacturer's data on selected equipment, if requested by Owner.

2.10.1 Subcontractor Qualification. Particular consideration will be given to the qualifications of each Subcontractor proposed. 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 or Engineer. If Owner or Engineer, after due investigation has reasonable objection to any proposed Subcontractor, he may, before giving 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 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 Owner prior to Notice of Award will be required in the performance of the Work.

2.10.2 Suppliers. The list of Subcontractors shall also include the suppliers of the principal items of materials and equipment the Bidder expects to use in the Work unless such suppliers or manufacturers are named in the Bid.

2.10.3 Manufacturer's Data. The list of Subcontractors submitted as provided herein shall be accompanied by two prints or copies of data on equipment and materials to be furnished by each supplier or manufacturer. Data so submitted shall illustrate the physical characteristics of the equipment and materials to be furnished. Although the drawings and specifications submitted prior to the Notice of Award need not be complete, but must contain sufficient detail for Engineer to determine whether the materials and equipment will conform to the Contract Documents.

The Contract Documents will take precedence over any nonconforming data submitted.

Any Bid specifically conditioned upon furnishing equipment or materials which are not responsive to the Contract Documents will not be considered.

2.11 BIDS.

2.11.1 Bid Form. The Bid Form is bound within the Contract Documents. Bid forms must be completed in ink or typed.

Bids by corporations must be executed in the corporate name by a president or vice-president (or other corporate officer) accompanied by evidence of authority to sign. 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 liable for the Bid.

All blank spaces in the Bid Form shall be filled. Bids received without all such items completed will be considered as a nonresponsive Bid.

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

No alterations in the Bids, or in the printed forms therein, 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 clarify any alteration so initialed.

All questions regarding this project and the bid package shall be submitted to the Purchasing Department via purchasing@apgov.us by 10:00 am on Friday, July 5, 2019. Responses will be coordinated with the Engineer and posted on the centralauctionhouse web site by 5:00 PM on Tuesday, July 9, 2019.

A mandatory pre-bid meeting will be held on Tuesday, July 2, 2019 at 8:00 A.M. in the Ascension Parish Department of Public Works (DPW), 42077 Churchpoint Road, Gonzales, Louisiana 70737. Only those in attendance at the pre – bid meeting will be considered responsive bidders. The pre-bid meeting may include a non-mandatory visit to the project site.

In addition to paper bids, electronic bids and electronic bid bonds for the followings project will be downloaded by the Ascension Parish Purchasing Department. Electronic bids and electronic bid bonds must be submitted through www.centralauctionhouse.com prior to the electronic bidding deadline. Beginning at 10:00 AM CDT (CST) on Tuesday, July 16, 2019 all bids will be downloaded. No bids are accepted after 10:00 AM CDT

2.11.2 Affidavit. Bidders shall include with their Bid the attached Non-Collusion Affidavit.

2.11.3 Submission of Bids. The bid shall consist of the Bid Form and the other documents that are required to be submitted along with the Bid Form.

Each Bid and accompanying data shall be enclosed in a sealed opaque envelope or wrapping, addressed to:

Ascension Parish Purchasing Department
615 E. Worthey Road, Gonzales, Louisiana 70737 (P.O. Box 2392, Gonzales, Louisiana 70707)

and identified on the outside with the Bidder's name, Louisiana Contractor License Number and the words "***NEW RIVER CHANNEL IMPROVEMENTS, EAD-15-004"***.

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 for Bids, 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 telegraph 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.

2.11.4 Modification and Withdrawal of Bids. 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.

2.11.5 Bids to Remain Open. 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 Section 1.8 under "Return of Bid Security".

2.12 AWARD OF CONTRACT. 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 award the contract by sections, to waive informalities, and to reject nonconforming, nonresponsive, or conditional Bids.

In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices if requested in the Bid Form. 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 or equipment), and may reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

The evaluation of manufacturer's data, when required to be submitted with the Bid or submitted upon request prior to the Notice of Award, shall include the following information at a minimum for consideration:

- Full name and address of manufacturer.
- Manufacturer's engineering or technical representative contact, including telephone number and email addresses.
- Manufacturer's service facilities and availability of qualified field service personnel.
- Manufacturer's contact information for the local sales information.
- The name (model, series number, etc.) of the product(s) that are to be listed.
- Manufacturer's inventory on-hand and demand capacity.
- Manufacturer's installation requirements and procedures, related engineering specifications, training, required certifications.
- Manufacturer's operating cost, maintenance upkeep schedule, life expectancy, and any warranty or other service included for the product listed.
- Experience and performance record of the manufacturer and specific products listed.
- Manufacturer's Cut sheet(s) / engineering details of products listed.
- A cost / benefit analysis compared to similar and common product from different manufacturer.

If the contract is awarded, Owner shall give the apparent successful Bidder a Notice of Award within thirty (30) days after the date of the Bid opening.

2.13 EXECUTION OF THE AGREEMENT. The Contractor shall be furnished four (4) copies of the Agreement, including insurance certificates, and other Contract Documents bound therewith. Within fifteen (15) days of Notice of Award, Contractor shall execute the Agreement, insert executed copies of the required bonds and power of

attorney and submit all copies to 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 shall 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.

Once all contract documents have been executed, the Contractor shall be furnished one (1) set of original documents. The Owner shall have one (1) set of these documents recorded in the office of the Recorder of Mortgages in the jurisdiction where the work is to be performed.

2.14 COPIES OF CONTRACT DOCUMENTS. Copies of the drawings and specifications for use in preparing Bids may be obtained from:

H. Davis Cole & Associates, LLC (HDCA)
1340 Poydras Street, Suite 1850
New Orleans, Louisiana 70112
504-836-2020
Three Hundred Dollars ($300.00)

The Contractor to whom a contract is awarded will be furnished two (2) working copies of the specifications and the drawings, together with all Addenda thereto.

2.15 LOCAL MATERIAL AND FIRMS. 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. – 38:2252), and preference is hereby given to firms doing business in the State of Louisiana (LSA R.S. – 38:2253).

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Division 0 – Article 3

ADVERTISEMENT FOR BID
Parish of Ascension
Project name : NEW RIVER CHANNEL IMPROVEMENTS
PROJECT ID: EAD-15-004

Sealed bids are invited and will be received by Ascension Parish will be accepted by Ascension Parish Purchasing Department, until *10:00 AM* **(Central Standard Time) on Tuesday, July 16, 2019 for the** *Construction* **project entitled "***NEW RIVER CHANNEL IMPROVEMENTS***", Project Number** *EAD-15-004***.**

This project consists of channel shaping and excavation of the New River Channel, including drainage excavation, clearing and grubbing, relocation of utilities, and modifications to existing drainage structures, and other items as required by the Plans, Contract Documents, and Technical Specifications.

Any contractor wanting to bid on this project shall hold a State License in the *Municipal and Public Works AND/OR Heavy Construction* **category. Bids will be publicly opened and read aloud at this time. Any bid received after the closure time above stated will be returned unopened.**

All questions regarding this project and the bid package shall be submitted to the Purchasing Department via purchasing@apgov.us by 10:00 am on Friday, July 5, 2019. Responses will be coordinated with the Project Engineer and posted on the centralauctionhouse web site by 5:00 PM on Tuesday, July 9, 2019.

A mandatory pre-bid meeting will be held on Tuesday, July 2, 2019 at 8:00 a.m. in the Ascension Parish Department of Public Works (DPW), 42077 Churchpoint Road, Gonzales, Louisiana 70737. Only those in attendance at the pre – bid meeting will be considered responsive bidders. The pre-bid meeting may include a non-mandatory visit to the project site.

BID DEADLINE/OPENING: *Tuesday, July 16, 2019* **@***Ascension Parish Purchasing Department*
FOR *10:00 AM***(CST)**

Copies of Specifications, Bid Documents, Contract Documents and Construction Drawings for use in preparing Bids may be obtained from *H. DAVIS COLE & ASSOCIATES, LLC (HDCA)., 1340 POYDRAS STREET, SUITE 1850, NEW ORLEANS, LA 70112, 504-836-2020* **upon payment of** *Three Hundred Dollars ($300.00)* **per set made payable to H. DAVIS COLE & ASSOCIATES, LLC (HDCA). Documents can be mailed to bidders**

with a provided shipping account number. No refunds will be made for returned drawings. Bid documents may also be obtained from www.centralauctionhouse.com**.**

Bid security in the amount of five percent (5%) of the Total Bid must accompany each Bid, and shall be made payable to Ascension Parish Government. See bid documents for specific criteria.

Bid packages may be submitted in different manners. Consult the bid documents for specific deadlines for the desired submittal process before application. The following are acceptable methods:

Hand Delivered to *615 E. Worthey Road, Gonzales, Louisiana 70737*
Certified Receipt Mailed to *P.O. Box 2392, Gonzales, Louisiana 70707*
Uploaded to www.centralauctionhouse.com

Bids should be submitted in a sealed envelope and must be to the attention of the Ascension Parish Purchasing Department and clearly labeled on the outside of the envelope as "Bid Submittal", with the project name *"NEW RIVER CHANNEL IMPROVEMENTS, EAD-15-004".***and Louisiana Contractor's License Number, as well as accompany all funds and documents as spelled out on the bid documents to be deemed complete.**
All Addenda, Amendments, Letters of Clarification, and Withdrawal Notices will be posted online at www.centralauctionhouse.com.
Ascension Parish Government reserves the right to reject any and all bids for just cause.

ASCENSION PARISH GOVERNMENT
KENNY MATASSA, PARISH PRESIDENT

Please Publish: CHIEF, ***6/13, 6/20, 6/27***
ADVOCATE ***6,13, 6/20, 6/27***
WEEKLY, ***6/13, 6/20, 6/27***

DIVISION 0
Article 4

Draft Contract

**DRAFT Contract – Final contract subject to final negotiations and special conditions that may arise for this project, until such agreement approved by Parish Legal

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MASTER CONTRACT
for
PUBLIC WORKS / CONSTRUCTION

BE IT KNOWN that on this ____ day of _____, 20_____,

Ascension Parish Government (hereinafter called OWNER), by and through the Office of the Parish President (hereinafter sometimes referred to as the "Parish"), as approved by Resolution adopted by the Parish Council of Ascension on the _____ day of _____, 20___.

And

_____, _____, (hereinafter called CONTRACTOR) qualified to do and doing business in this State and Parish (hereinafter referred to as "CONTRACTOR") and authorized to enter into this contract;

do hereby enter into contract under the following terms and conditions:

NOTE: This Contract or Agreement governs the relationship and rights between the Parties. While there may be other Documents (for example, General Conditions) which might exist between the Parties, those documents **do not** control in the event or to the extent that there is any conflict or contradiction with the terms of this Agreement or Contract. In the event that there is any conflict between the terms of this Agreement/Contract and any other document between the parties, THE PARTIES AGREE THAT THIS AGREEMENT/CONTRACT SHALL CONTROL AND GOVERN.

1. SCOPE OF WORK

A. CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents in conjunction with:

Project name: "NEW RIVER CHANNEL IMPROVEMENTS, EAD-15-004".

2. ENGINEER

A. The Drawings have been prepared by ***H. Davis Cole & Associates, LLC (HDCA), 1340 Poydras Street, Suite 1850, New Orleans, LA 70112***, and prepared for ***Department of Public Works East***, who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

3. TERM OF CONTRACT

A. The Work will be substantially completed within ***365 Calendar Days*** from the date identified on the Notice to Proceed from the Engineer.

B. The Notice to Proceed shall be issued within thirty (30) days from the execution of this contract

unless the Owner or Owner's representative and the Contractor agree in writing to another specified date.

C. This Construction Contract shall terminate upon final acceptance by the engineer and all justified payments are made to contractor:

4. PROJECT SCHEDULE

A. CONTRACTOR shall submit and strictly adhere to a project construction schedule throughout the allocated contract and associated time frame. CONTRACTOR is aware that OWNER may have a representative at each site where Work is being performed and that CONTRACTOR needs to coordinate with the OWNER'S REPRESENTATIVE or PROJECT MANAGER where Work on the CONTRACT will be performed. CONTRACTOR will coordinate with the OWNER'S REPRESENTATIVE by strictly following the project construction schedule or Progress Schedule. OWNER recognizes and understands that changes in project construction schedule or Progress Schedule may become necessary during the course of the project. However, in the event of any such change, the CONTRACTOR shall notify the OWNER'S REPRESENTATIVE **in writing** of a proposed change. Said written notice shall be provided at least 12 hours prior to the revised construction activity. Said notice shall be provided by emailing notice of change to rsavoy@apgov.us and jtureau@apgov.us and other contacts including testing company that is a team member for the project.

B. Should the CONTRACTOR fail to timely notify the OWNER'S REPRESENTATIVE of such change, the OWNER'S REPRESENTATIVE will document the CONTRACTOR'S failure to notify of the change in work and SHALL assess stipulated damages as follows. For EACH failure to notify the OWNER'S REPRESENTATIVE of any change in the project construction schedule or Progress Schedule, the CONTRACTOR AGREES TO PAY **$150.00 per failure to notify the OWNER'S REPRESENTATIVE.** CONTRACTOR agrees that these stipulated damages reflect the lost time, manpower, and mileage incurred by OWNER attempting to locate the CONTRACTOR where a change in schedule occurs and the required notice was not provided. CONTRACTOR further agrees that **said amount shall be paid** by directly reducing the amount of monthly invoices/pay applications by the amount of penalties issued. The Penalty fees shall be itemized on monthly invoices.

5. LIQUIDATED DAMAGES

A. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and the OWNER will suffer financial loss if the Work is not completed within the times specified in section 2 above, plus any extensions thereof allowed in accordance with the contract conditions and approved time changes thereto. There are delays, expenses and difficulties involved in proving in a legal arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER the amount of ***$500.00*** Dollars for each day that expires after the time specified in section 2 for Substantial Completion until the Work is substantially complete.

6. CONTRACT PRICE

A. OWNER shall pay CONTRACTOR for completion of the Work completed in accordance with the Contract Documents in the amount specified therein, subject to adjustment as provided in the Contract Documents or amendments thereto. This is unit price contract based on the estimated quantities and unit cost awarded with an estimated total of **$**_____

7. PAYMENT PROCEDURES

A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

B. Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, once each month during construction. All progress payments will be on the basis of progress of the Work measured by the schedule of values established in paragraph 2.07.A of the General Conditions (and in each case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements. Payment will be made on work that has been installed, inspected, tested, verified, and done so to the satisfaction of the engineer.

C. Pursuant to LA R.S. – 38.2248 (Public Contract Law), Owner shall withhold retainage from each progress payment until payment is due under terms and conditions governing substantial completion or final payment. Retainage shall be ten percent of the amount of work completed to date if the contract amount is up to $500,000 and five percent of the work complete to date if the contract amount is over $500,000.

D. **Fuel or Asphalt/Concrete Adjustments.** There shall be NO adjustments for prices or costs of any fuel or asphalt/concrete on this project, arising out of the work on this project/contract, or arising out of this contract. Further, the CONTRACTOR hereby waives any price adjustment for fuel or asphalt/concrete or the ability or right to request any price adjustment for fuel or asphalt/concrete. Particularly, the Louisiana DOTD provisions (or any such or similar provisions by any other third party) pertaining to or related to fuel or asphalt/concrete adjustments are not part of this contract, are not incorporated by reference or otherwise in this Contract, and shall not apply in any form or fashion to the contract. Any language in this Contract which implies that the CONTRACTOR may obtain an adjustment in price for fuel or asphalt/concrete is hereby to be interpreted that CONTRACTOR shall **not** receive any such adjustment. CONTRACTOR shall not assert that any language in the CONTRACT creates any vagueness or ambiguity in the CONTRACT entitling CONTRACTOR to price adjustments for fuel or asphalt/concrete. CONTRACTOR hereby waives any right or ability to request any price adjustment for fuel or asphalt/concrete and CONTRACTOR shall **not** submit any request for any change in price for fuel or asphalt/concrete adjustments to the OWNER in any form.

E. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions and Supplementary Conditions SC-9.03(B)(13). OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER.

F. There shall be no fees charged by, nor paid to, CONTRACTOR for consultation with the Parish.

G. CONTRACTOR hereby agrees that the responsibility for payment of taxes from the funds thus received under this agreement shall be said CONTRACTOR's obligation and identified under Federal Tax Identification Number as listed in the Scope.

H. The Parish agrees to make payment to CONTRACTOR for services upon receipt and approval of each invoice. The Parish will pay CONTRACTOR the amount due and payable within thirty (30) days or unless a conflict results in a delay of payment. Upon receipt of each invoice, the Parish shall have the right and opportunity to review, confirm or otherwise determine the accuracy of each invoice and performance of service. In the event that the Parish disputes or

otherwise may question the accuracy of each invoice or quality of all work performed, the Parish may withhold payment of any invoice until a successful and satisfactory resolution can be had between the parties. Parish agrees to not unreasonably withhold payments of any invoice.

I. Other than the fee schedule herein, there will be absolutely no additional fees due CONTRACTOR to cover its overhead costs, general expenses, capital expenses, expenses for principal/branch/ field offices, employees salaries, direct and indirect costs, additional costs or profit of any nature whatsoever in excess of the previously agreed hourly rate.

8. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

A. CONTRACTOR is familiar with the nature and extent of the Contract Documents, Work site, locality and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

B. CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies, or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

C. CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.

D. 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.

9. CONTRACT DOCUMENTS

The Contract Documents which comprise of 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.

a. CONTRACTOR Bid Documents
b. Bid Bonds
c. Agreement
d. Payment Bond
e. Performance Bond
f. Notice of Award
g. Notice to Proceed
h. Technical Specifications prepared by engineer
i. Standard General Conditions
j. Drawings prepared by engineer

10. CONTRACTOR DOCUMENTS

A. The CONTRACTOR shall also furnish sufficient as-built sets of plans, specifications & contract documents.

B. All data collected by the CONTRACTOR and all documents, notes, drawings, tracings, and files shall remain the property of the Owner except as otherwise provided herein. The CONTRACTOR shall furnish to the PROJECT MANAGER originals of any project documents used in completion of the project or in any way related to this project to the Project Manager.

C. The Owner shall furnish without charge all standard plans and specifications and any other information which the Owner now has in its files which may be of use to the CONTRACTOR. CONTRACTOR has the duty to and must confirm and verify all information contained therein.

D. **Construction Documents.** The CONTRACTOR shall use the most current version of the standard forms of documents adopted and specified by the Owner in the performance of the Contract, all as of the date of the signing of this contract. Notwithstanding anything to the contrary in any other provision of this contract, none of the contract documents provided by the Owner are or will become the property of the CONTRACTOR but shall remain the property of the Owner to the extent the Owner has a property interest therein.

E. Notwithstanding any Section hereinafter, there will be retention of all related records:

(1) All records, reports, documents and other material delivered or transmitted to CONTRACTOR by Parish shall remain the property of Parish, and shall be returned by CONTRACTOR to Parish, at CONTRACTOR's expense, at termination or expiration of this contract. All records, reports, documents, exhibits or other material related to this contract and/or obtained or prepared by CONTRACTOR in connection with the performance of the services contracted for herein shall become the property of Parish, and shall be returned by CONTRACTOR to Parish, at CONTRACTOR's expense, at termination or expiration of this contract.

(2) The Parish and CONTRACTOR acknowledge and agree that the Parish has the right to review retain all records, reports, worksheets or any other material of either party related to this contract. CONTRACTOR further agrees that CONTRACTOR will furnish to the Parish copies of any and all records, reports, worksheets, bills, statements or any other material of CONTRACTOR or Parish related to this contract.

(3) CONTRACTOR shall maintain all books, documents, papers, accounting records and other evidence pertaining to costs incurred and shall make such materials available at its offices at any reasonable time for inspection and copying by the Parish.

(4) CONTRACTOR shall retain all of its records and supporting documentation applicable to this contract with the Parish for a period of five (5) years after termination of the contract in accordance with state law, except as follows:

(a) Records that are subject to Federal Funds and/or audit findings shall be retained for five (5) years after such findings have been resolved close out has been issued.

(b) All such records and supporting documentation shall be made readily available for inspection, copying or audit by representatives of the Parish. In the event the CONTRACTOR goes out of existence, it

shall turn over to the Parish all of its records relating to this contract to be retained by the Parish for the required period of time.

F. In the event there is re-use of any documents created by CONTRACTOR, CONTRACTOR invokes the privileges afforded it as per La. Revised Statute R.S. 38:2317.

G. The Parish agrees not to use CONTRACTOR's work product on any other project without the express written notice to the CONTRACTOR.

H. All of CONTRACTOR's pre-existing or proprietary computer programs, software, information, standard details or material developed by CONTRACTOR outside of this agreement shall remain the exclusive property of the CONTRACTOR.

11. NON-ASSIGNABILITY

A. CONTRACTOR shall not assign nor transfer any interest in this contract (whether by assignment or novation) without prior written consent of the Parish, provided however, that claims for money due or to become due to the CONTRACTOR from the Parish under this contract may be assigned to a bank, trust company, or other financial institution without such prior written consent. Notice of any such assignment or transfer shall be furnished promptly to the Parish.

B. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

C. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representative to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

12. BUDGET LIMITATION

A. It is the responsibility of the CONTRACTOR to advise the Parish in advance if contract funds or contract terms may be insufficient to complete contract objectives. CONTRACTOR understands and specifically warrants that it assumes the sole responsibility to advise the Parish in advance if contract funds or contract terms may be insufficient to complete contract objectives. In providing opinions of probable construction cost, the Parish understands that the CONTRACTOR has no control over costs and price of labor, equipment or materials or over the general CONTRACTOR's method of pricing, and that the opinion of probable costs provided herein are made on the basis of the CONTRACTOR's qualifications and experience.

B. The continuation of this contract is contingent upon the appropriation of funds by the Parish to fulfill the requirements of the contract. If the Parish fails to appropriate sufficient monies to provide for the continuation of this or any other related contract, or if such appropriation is reduced by the veto of Parish President by any means provided in the appropriations Ordinance to prevent the total appropriation for the year from exceeding revenues for that year, or for any other lawful purpose, and the effect of such reduction is to provide

insufficient monies for the continuation of the contract, the contract shall terminate on the date of the beginning of the first fiscal year for which funds are not appropriated.

13. INSURANCE

A. The CONTRACTOR shall secure and maintain at its expense such insurance that will protect it and the Parish from claims under the Workmen's Compensation Acts and from claims for bodily injury, death or property damage which may arise from the performance of services under this agreement. All certificates of insurance shall be furnished to the Parish and shall provide that insurance shall not be canceled without thirty (30) days prior notice of cancellation given to the Parish of Ascension, in writing, on all of the required coverage provided to Ascension Parish. Where possible, all policies and notices should name the CONTRACTOR and Parish. The Parish may examine the policies at any time.

B. All policies and certificates of insurance shall contain the following clauses:

1. The CONTRACTOR's insurers will have no right of recovery or subrogation against the Parish of Ascension, it being the intention of the parties that the insurance policy so affected shall protect both parties and be the primary coverage for any and all losses covered by the below described insurance.

2. The Parish of Ascension shall be named as additional named insured with respect to automobile and general liability.

3. The insurance companies issuing the policy or policies shall have no recourse against the Parish of Ascension for payment of any premiums or for assessments under any form of policy.

4. Any and all deductible in the described insurance policies shall be assumed by and be at the sole risk of the CONTRACTOR.

C. Prior to the execution of this agreement, the CONTRACTOR shall provide at its own expense, proof of the following insurance coverage required by the contract to the Parish of Ascension by insurance companies authorized to do business in the State of Louisiana. Insurance is to be placed with insurers with an A.M. Best rating of no less than B+.

1. Worker's compensation Insurance: As required by Louisiana State Statute exception; employer's liability shall be at least $1,000,000 per occurrence when work is to be over water and involves maritime exposures, otherwise this limit shall be no less than $500,000 per occurrence.

2. Commercial General Liability Insurance with a Combined Single Limit of at least $500,000.00 per Occurrence for bodily injury and property damage. This insurance shall include coverage for bodily injury and property damage, and indicate on the certificate of insurance the following:

a) Premises - operations;
b) Broad form contractual liability;
c) Products and completed operations;
d) Personal Injury;
e) Broad form property damage;

f) Explosion, collapse and underground coverage. Not needed for design

1. Business Automobile Liability Insurance with a Combined Single Limit of $500,000 per Occurrence for bodily injury and property damage, unless otherwise indicated. This insurance shall include for bodily injury and property damage the following coverage:

   Any automobiles;
   Owned automobiles;
   Hired automobiles;
   Non-owned automobiles;
   Uninsured motorist.

1. An umbrella policy or excess policy may be used to meet minimum requirements.

2. The CONTRACTOR shall also secure and maintain at its expense professional liability insurance in the sum of at least One Million Dollars ($1,000,000.00) per claim.

3. All policies of insurance shall meet the requirements of the Parish of Ascension prior to the commencing of any work. The Parish of Ascension has the right, but not the duty, to approve all insurance policies prior to commencing of any work. If at any time, it becomes known that any of the said policies shall be or becomes unsatisfactory to the Parish of Ascension as to form or substance; or if a company issuing any such policy shall be or become unsatisfactory to the Parish of Ascension, the CONTRACTOR shall promptly obtain a new policy, timely submit same to the Parish of Ascension for approval and submit a certificate thereof as provided above. The Parish agrees to not unreasonably withhold approval of any insurance carrier selected by CONTRACTOR. In the event that Parish cannot agree or otherwise authorize said carrier, CONTRACTOR shall have the option of selecting and submitting new insurance carrier within 30 days of said notice by the Parish. In the event that the second submission is insufficient or is not approved, then the Parish shall have the unilateral opportunity to thereafter select a responsive and responsible insurance carrier all at the cost of CONTRACTOR and thereafter deduct from CONTRACTOR's fee the cost of such insurance.

4. Upon failure of CONTRACTOR to furnish, deliver and/or maintain such insurance as above provided, this contract, at the election of the Parish of Ascension, may be forthwith declared suspended, discontinued or terminated. Failure of the CONTRACTOR to maintain insurance shall not relieve the CONTRACTOR from any liability under the contract, nor shall the insurance requirements be construed to conflict with the obligation of the CONTRACTOR concerning indemnification.

5. WAIVER: Except as otherwise provided by law, the coverage requirements of this section may be waived in whole or in part on agreements under $50,000.00, and the Parish is authorized to use its discretion in regard to insurance requirements for such contracts. Except as otherwise provided by law, the Parish President or the Parish Chief Administrative Officer is authorized to omit in whole or in part the insurance requirements of this section in connection

with such contracts.

D. CONTRACTOR shall maintain a current copy of all annual insurance policies and provide same to the Parish of Ascension on an annual basis or as may be reasonably requested.

14. OTHER TERMS AND CONDITIONS

A. **Licenses and Commissions.** The CONTRACTOR shall, at all times during the term of this contract, maintain valid Louisiana licenses and commissions as are customarily required of such a CONTRACTOR, including but not limited to those that may be required by this State and/or Parish. The CONTRACTOR agrees to renew and or keep current all licenses and commissions herein. The CONTRACTOR agrees to maintain a copy of all such licenses or commissions on file at all time and make same available for review as may be reasonably requested by the Parish of Ascension.

B. The professional and technical adequacy and accuracy of designs, drawings, specifications, documents, and other work products furnished under this agreement will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession in the Baton Rouge Metropolitan area including the parishes surrounding Ascension Parish. In the event the Parish must have work done by change order or addition resulting from an error or omission by the CONTRACTOR, CONTRACTOR shall provide, at no cost to Parish, all professional services attributable to the change order. This is in addition to Parish's right to recover from CONTRACTOR any damages for its errors and omissions.

C. The CONTRACTOR shall defend, indemnify, and hold the Parish harmless from against any and all actions, claims, demands, complaints, or lawsuits of any kind (whether in tort or in contract) for any sums of money, costs, liabilities, judgments, fines, or penalties asserted or alleged by any person, party, entity, firm or generation for any damage, injury, claim, or cause of action (of any kind) including, but not limited to, pecuniary and non-pecuniary damages/losses to person or property which are alleged to have been caused by or which were caused by or (wholly or partially), which grow out of, which arise from, or which result from any acts, errors, or omissions by CONTRACTOR, its agents, servants, or employees while engaged in connection with services required to be performed by the CONTRACTOR under this agreement. This paragraph is to be broadly interpreted to include any and all causes of action which result wholly or partially from the conduct or the CONTRACTOR.

D. This agreement shall be binding upon the successors and assigns for the parties hereto.

E. This agreement represents the entire Agreement between Parish and CONTRACTOR.

F. If there is any dispute concerning this agreement, the laws of Louisiana shall apply. The exclusive venue and jurisdiction for all lawsuits, claims, disputes, and other matters in questions between the parties to this agreement or any breach thereof shall be in the 23rd Judicial District Court for the Parish of Ascension, State of Louisiana. It is also understood and agreed that the laws and ordinances of Ascension shall apply.

G. In the event that the CONTRACTOR modifies the Parish's contract documents without the expressed prior written consent of the Parish, the CONTRACTOR shall indemnify and hold harmless the Parish from any claims, lawsuits, or damages that arise out of or

are attributable to the modification. This indemnification and hold harmless obligation shall include not only the damages suffered by the Parish but also all reasonable expenses including, but not limited to, any and all litigation or other dispute resolution costs and any and all professional fees incurred by the Parish as a result of the CONTRACTOR's deviation from the Parish's contract documents.

H. CONTRACTOR agrees to a covenant against contingent fees. CONTRACTOR warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the CONTRACTOR, to solicit or secure this Contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the CONTRACTOR, any fee, commission, percentage, brokerage fee, gifts, or any other consideration, contingent upon or resulting from the award or making of this Contract. For breach or violation of this warranty, the Parish shall have the right to annul this contract without liability.

I. This contract may be amended only by mutual written consent of the respective parties.

J. Third Party Beneficiary: it is specifically agreed by and between the parties to this contract that no person or party is intended, deemed, considered, or construed to be a third party beneficiary of this contract.

K. Neither party will be liable for failure to fulfill its obligations when due to causes beyond its reasonable control.

L. Any failure or delay by either party in exercising any right or remedy will not constitute a waiver.

M. Severability: if any provision or item in this contract is held invalid or unenforceable for any reason, then such invalidity or unenforceability shall not affect other provisions or items of this contract. In such event, the remaining portions shall be given full force and effect without the invalid provision or item, and to this end the provisions or items of this contract are hereby declared severable.

N. It is specifically understood that the terms "agreement" and "contract" may be used interchangeably. It is specifically understood that the terms "Owner", "PROJECT MANAGER" and "Parish" and "the Parish of Ascension" may be used interchangeably.

O. Conflict of Interest: it is understood and agreed between the parties hereto that CONTRACTOR is not retained exclusively by the Parish but that the Parish may retain other CONTRACTORs during the term of this Contract. In the event of reasonably known conflicts of interest or potential conflicts of interest between the Parish and other parties who have engaged CONTRACTOR, the CONTRACTOR agrees to make full disclosure of the same, and that they will take no action on behalf of any other client directly adverse to the Parish, nor will CONTRACTOR take any action on behalf of the Parish directly adverse to any other client.

P. CONTRACTOR warrants that CONTRACTOR is qualified to perform the intended purposes of this agreement. In the event that CONTRACTOR becomes not fit nor qualified for any reason whatsoever, then CONTRACTOR agrees to withdraw from work herein at no cost to the Parish. In the event that the Parish determines that CONTRACTOR is not suited for Parish purposes or otherwise fails to represent Parish policies to the satisfaction of the Parish, then CONTRACTOR agrees to withdraw from this agreement.

Q. CONTRACTOR specifically agrees and understands that CONTRACTOR shall not maintain or otherwise claim that it possesses any security interest in any aspect of the work that forms the basis of this agreement.

R. CONTRACTOR agrees to ensure that its personnel are, at all times, educated and trained, and further, that CONTRACTOR and its personnel will perform all work and services in a workmanlike and professional manner.

S. CONTRACTOR recognizes and understands that time is of the essence. CONTRACTOR agrees to perform and provide services in accordance with this agreement and all incorporated attachments.

T. CONTRACTOR shall be responsible for any and all losses and damages suffered or incurred by the Parish, including but not limited to all costs, attorney's fees, out of pocket expenses, any & all Parish employee time, and any other expenditure by the Parish to defend, remedy, repair, replace, correct, or cure any condition or liability created or arising out of the actions or omissions to act of the CONTRACTOR, it's agents, officer, servants, or employees. This includes the payment of any cost or fees of any type or kind incurred by the Parish in defending any lawsuit, complaint, claim, claim filed or arising out of the action or omission to act of the CONTRACTOR.

U. CONTRACTOR agrees that it will be responsible for all of its own actual and reasonably related expenses for its on & off-site office work. CONTRACTOR further agrees that Parish will not be responsible for or in any way liable for CONTRACTOR's payroll costs, indirect or direct expenses, overhead, or any other amounts associated with CONTRACTOR's business other than the specific fees & costs generated under the terms of this agreement.

15. TERMINATION AND SUSPENSION

A. Termination for Cause

The Parish may terminate this Contract for cause based upon the failure of the CONTRACTOR to comply with the terms and/or conditions of the Contract, provided that the Parish shall give the CONTRACTOR written notice specifying the failure. If within thirty (30) days after receipt of such notice, the CONTRACTOR shall not have corrected such failure and thereafter proceeded diligently to complete such correction, then the Parish may, at its sole and exclusive option, place the CONTRACTOR in default and this contract shall terminate on the date specified in such notice. Work to be performed during this 30-day period shall not proceed without the actual knowledge of the Parish and specifically supervised by the Parish. Any work performed by CONTRACTOR during this period without the actual knowledge of the Parish and not under the supervision of the Parish shall not be compensated nor honored; CONTRACTOR specifically waives and forfeits any and all claims to payment, compensation, quantum merit, and/or reimbursement from the Parish of any work performed during this period in violation of this paragraph. CONTRACTOR agrees and understands specifically that satisfactory performance shall be unilaterally and exclusively determined by the Parish.

B. Termination for Convenience

Notwithstanding any other section herein, the Parish may terminate this contract at any time for any reason whatsoever by giving thirty (30) days written notice to the CONTRACTOR. The CONTRACTOR shall be entitled to payment for deliverables in progress; to the extent work has been actually and satisfactorily performed.

C. Right to Cancel

(1) The continuation of this contract is contingent upon the appropriation of funds to fulfill the requirements of the contract by the Parish. If the Parish fails to appropriate sufficient monies to provide for the continuation of this or any other contract, or if such appropriation is reduced by the veto of Parish President by any means provided in the appropriations Ordinance to prevent the total appropriation for the year from exceeding revenues for that year, or for any other lawful purpose, and the effect of such reduction is to provide insufficient monies for the continuation of the contract, the contract shall terminate on the date of the beginning of the first fiscal year for which funds are not appropriated. It is understood and agreed that the paragraph below may preempt this paragraph, all at the exclusive and unilateral option of the Parish.

(2) Either party shall have the right to cancel this contract, with or without cause, by giving the other party (30) days written notice.

D. Additional Causes for Termination or suspension:

1. Either party shall have the right to cancel this contract, with or without cause, by giving the other party (30) days written notice. Parish has the right to cancel this contract upon less than thirty (30) days due to budgetary reductions and changes in funding priorities by the Parish.
2. By mutual agreement and consent of the parties hereto.
3. By the Parish as a consequence of the CONTRACTOR's failure to comply with the terms, progress or quality of work in a satisfactory manner, proper allowances being made for circumstances beyond the control of the CONTRACTOR.
4. By either party upon failure to fulfill its obligations as set forth in this contract
5. In the event of the abandonment of the project by the Parish.
6. A Stop Work Order can be immediately issued by the Parish if they deem it necessary to protect the health, safety, and welfare of the community.

E. Upon termination, the CONTRACTOR shall be paid for actual work performed prior to the notice of termination on a pro-rata share of the basic fee based on the phase or percentage of work actually completed.

F. Upon termination, the CONTRACTOR shall deliver to the Parish all original documents, notes, drawings, tracings, computer files, and files except the CONTRACTOR’s personal and administrative files.

G. Should the Parish desire to suspend the work, but not definitely terminate the contract, this may be done by thirty (30) days notice given by the Parish to that effect, and the work may be reinstated and resumed in full force & effect upon receipt from the Parish of thirty (30) days notice in writing to that effect. CONTRACTOR shall receive no additional compensation during the suspension period. The parties agree to revisit the terms of this contract during the suspension period which shall not exceed six (6) months, unless mutually agreed upon.

H. There is a right to cancel by the Parish by giving thirty (30) days notice to CONTRACTOR and paying undisputed fees due for services on that portion of the work that has been satisfactorily, timely and/or professionally completed, all in the exclusive discretion of the Parish at any time herein.

I. In the event of a default and/or breach of this agreement and this matter is forwarded to legal counsel, then the prevailing party may be entitled to collect a reasonable attorney fees and all costs associated therewith whether or not litigation is initiated. Attorney fees shall be based upon the current, reasonable prevailing rate for counsel as provided on the fee schedule of the Louisiana Attorney General or in the private sector, whichever is greater. The parties agree to be responsible for such attorney fees, together for all with legal interest from date of agreement breach, plus all costs of collection.

J. Termination or cancellation of this agreement will not affect any rights or duties arising under any term or condition herein.

K. As to the filing of bankruptcy, voluntarily or involuntarily, by CONTRACTOR, CONTRACTOR agrees that if any execution or legal process is levied upon its interest in this contract, or if any liens or privileges are filed against its interest, or if a petition in bankruptcy is filed against it, or if it is adjudicated bankrupt in involuntary proceedings, or if it should breach this contract in any material respect, the Parish shall have the right, at its unilateral option, to immediately cancel and terminate this contract. In the event that CONTRACTOR is placed in any chapter of bankruptcy, voluntarily or involuntarily, or otherwise triggers any provision of the preceding sentence herein, it is understood and agreed that all materials, goods and/or services provided shall be and remain the property of the Parish. All rights of CONTRACTOR as to goods, wares, products, services, materials and the like supplied to Parish shall be deemed forfeited.

16. AUDITORS

Notwithstanding other Sections herein, CONTRACTOR shall maintain all records for a period of three years after the date of final payment under this contract. It is hereby agreed that the Parish Department of Finance or its designated auditor shall have the sole, unilateral and exclusive option of auditing all accounts of CONTRACTOR which relate to this contract. Such audit may be commenced at any reasonable time. CONTRACTOR agrees not to delay, retard, interrupt or unduly interfere with commencement and completion of such an audit. If in the exclusive and unilateral opinion of the Parish that CONTRACTOR delays, retards, interferes with or otherwise interrupts such an audit, the Parish may seek such relief as per law. In such an event, CONTRACTOR agrees to be liable for all reasonable attorney fees, costs of auditors, court costs, and any other reasonably related expenses with such litigation.

17. DISCRIMINATION CLAUSE

CONTRACTOR agrees to comply with the Americans with Disabilities Act of 1990 and any current amendments thereto. All individuals shall have equal access to employment opportunities available to a similarly suited individual. CONTRACTOR agrees not to discriminate in its employment practices, and will render services under this contract without regard to race, color, religion, sex, national origin, veteran status, political affiliation, or disabilities. Any act of discrimination committed by CONTRACTOR, or failure to comply with these statutory obligations when applicable shall be grounds for termination of this contract. CONTRACTOR agrees to abide by the requirements of all local, state, and/or federal law, including but not limited to the following: Title VI and VII of the Civil Rights Act of 1964, as

amended by the Equal Opportunity Act of 1972, Federal Executive Order 11246, the Federal Rehabilitation Act of 1973, as amended, the Vietnam Era Veteran's Readjustment Assistance Act of 1974, Title IX of the Education Amendments of 1972, the Age Act of 1975, and the requirements of the Americans with Disabilities Act of 1990. CONTRACTOR warrants and guarantees that it is an Equal Employment Opportunity employer. In all hiring or employment made possible by or resulting from this Contract, there shall not be any discrimination against any person because of race, color, religion, sex, national origin, disability, age or veterans status; and where applicable, affirmative action will be taken to ensure that CONTRACTOR's employees are treated equally during employment without regard to their race, color, religion, sex, national origin, disability, age, political affiliation, disabilities or veteran status. This requirement shall apply to but not be limited to the following: employment upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. All solicitations or advertisements for employees shall state that all applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability, age or veteran status.

18. INDEPENDENT CONTRACTOR

A. While in the performance of services or carrying out obligations herein, the CONTRACTOR shall be acting in the capacity of an independent contractor and not as an employee of the Parish. The Parish shall not be obliged to any person, firm or corporation for any obligations of the CONTRACTOR arising from the performance of its services under this agreement. The CONTRACTOR shall not be authorized to represent the Parish with respect to services being performed, dealings with other agencies, and administration of specifically related contracts, unless done so in writing by the Parish.

B. CONTRACTOR hereby agrees to be responsible for payment of taxes from the funds thus received under this Contract. CONTRACTOR agrees to be responsible for and to pay all applicable federal income taxes, federal social security tax (or self-employment taxes in lieu thereof) and any other applicable federal or state unemployment taxes. CONTRACTOR agrees to indemnify and hold the Parish harmless for any and all federal and/or state income tax liability, including taxes, interest and penalties, resulting from the Parish's treatment of CONTRACTOR as independent contractor.

C. CONTRACTOR further agrees to reimburse Parish for any and all costs it incurs, including, but not limited to, accounting fees and legal fees, in defending itself against any such liability.

D. CONTRACTOR agrees and acknowledges that it (and its employees) is an **independent contractor** as defined in R.S. 23: 1021 (or any other provision of law) and as such nothing herein shall make CONTRACTOR an employee of the Parish nor create a partnership between CONTRACTOR and the Parish.

E. CONTRACTOR acknowledges exclusion of Workmen's Compensation Coverage. CONTRACTOR acknowledges of the exclusion of Unemployment Compensation coverage.

F. CONTRACTOR agrees to a waiver of any and all sick and annual benefits from the Parish. It is expressly agreed and understood between the parties entering into this personal service contract, that CONTRACTOR, acting as an independent agent, shall

not receive any sick and annual leave from the Parish.

19. NOTICES

All notices shall be by certified mail, return receipt requested, and sent to the following individuals at the following addresses. Changes of person and addresses are to be exchanged in a like manner:

Parish of Ascension: Office of the Parish President
P.O. Box 1659
Gonzales, LA 70707

CONTRACTOR: (insert company name)

20. AUTHORITY TO ENTER CONTRACT

The undersigned representative of CONTRACTOR warrants and personally guarantees that he/she has the requisite and necessary authority to enter and sign this contract on behalf of the corporate entity. The undersigned parties warrant and represent that they each have the respective authority and permission to enter this agreement. The Parish shall require, as an additional provision, that CONTRACTOR provide a certified copy of a corporate resolution authorizing the undersigned to enter and sign this agreement in the event that CONTRACTOR is a member of a corporation, partnership, LLC, LLP, and any other juridical entity.

This agreement is executed in two (2) originals. IN TESTIMONY WHEREOF, they have executed this agreement, the day and year first above written.

WITNESSES

_____ _____

Title: Parish President
Ascension Parish Government
Date: _____

_____

WITNESSES

_____ _____

Title: _____
Company Name
License No.
Date: _____

_____

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DIVISION 1

STANDARD CONDITIONS OF THE CONSTRUCTION CONTRACT

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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

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The Associated General Contractors of America
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Endorsed by

CSI

CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 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 Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

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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 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 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.

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.

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.

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

37. *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.

38. *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.

39. *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.

40. *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.

41. *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.

42. *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.

43. *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.

44. *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.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

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

47. *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 Subcontractor.

48. *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.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *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.

51. *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 words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated 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 adjectives "reasonable," "suitable," "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 information in the Contract Documents and with the design concept of the 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 that 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; Designation of Authorized Representatives*

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.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

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 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 reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated 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, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 discovers, or has actual knowledge of, 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 (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then 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 had actual knowledge 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, or code, or the instruction of any Supplier (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 o 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 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 its consultants, including electronic media editions; or

2. Reuse any 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 adaptation by Engineer.

B. The prohibitions 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. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by 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 60-day 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 known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the 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 officers, directors, members, partners, employees, agents, consultants, or subcontractors 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 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

2. is of such a nature as to require a change in the Contract Documents; or

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, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall 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.

4.04 *Underground Facilities*

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 provided by others; 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, 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:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the 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 officers, directors, members, partners, employees, agents, consultants, or subcontractors 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. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

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 written notice to Contractor: (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, members, 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, members, 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 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.

ARTICLE 5 – BONDS AND INSURANCE

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 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 or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

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 and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee 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.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such 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:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds

(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, directors, members, partners, 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 contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. 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);

5. 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

6. include completed operations coverage:

   a. Such insurance shall remain in effect for two years after final payment.

   b. 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, members, 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 a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, 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 that 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 loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown 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 Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, 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 a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this 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 loss payee 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 this 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 as loss payees (and the officers, directors, members, 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 insurers or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and 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 as loss payees (and the officers, directors, members, partners, employees, agents, consultants, 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, members, 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, members, 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 loss payees, 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.

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, 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; and

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

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 if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. 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 by 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,

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 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 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; and

4) 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 a Change Order in the case of a substitute and 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 so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner

for the reasonable 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 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.

All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor 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 a loss payee 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, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, 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, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, 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 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 therefore 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.

   To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, 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. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. 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. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. 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 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).

F. 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*

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 accepted 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:*

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:

a. 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;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

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

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 Drawings 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:*

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 officers, directors, members, partners, employees, agents, consultants, and subcontractors 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, members, 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 officers, directors, members, partners, employees, agents, consultants, or subcontractors 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, members, 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.

B. If professional design services 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 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.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through 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, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and 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 such work; provided, however, that Contractor may cut or alter others' 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 wrongful actions or inactions.

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

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to 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 relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with 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 with 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. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

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.

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*

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 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 *Decisions on Requirements of Contract 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 question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes 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 responsible 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.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

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 therefore 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.D.

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 the provisions of any bond require notice to be given to a surety 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), 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 Times 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 not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

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 on the Work. 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.

3. Payments made by Contractor 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, as 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, express and courier services, 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.

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*

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.

A. *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.

B. *Contingency Allowance:*

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

C. 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 to 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;

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 Paragraphs 12.01.C.2.a and 12.01.C.2.b 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;

c. 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;

d. 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

e. 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 their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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. 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 Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's 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 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, Contractor shall, if requested by Engineer, uncover such Work 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 written 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.

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.

B. 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.

C. 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.

D. 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 for 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 (7) 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 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, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and 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:

   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. 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 remedies the reasons for such action.

3. Upon a subsequent determination 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 and subject to interest as provided in the Agreement.

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.

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, ngineer concludes that the Work is not substantially complete, Engineer will, within

D. 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.

E. 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.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and 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, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D 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 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.6;

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 might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, 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.

C. *Payment Becomes Due:*

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.

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 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 repeated 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.

15.03 *Owner May Terminate For Convenience*

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.

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 the 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.

17.02 *Computation of Times*

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 Documents, 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.

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Condition s have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following in its place:

Owner shall furnish to Contractor up to 3 printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

SC-2.03 Delete Paragraph 2.03.A in its entirety and insert the following in its place:

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.

SC-4.06 Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Sites are known to Owner.

B. Not Used.

SC-5.01 Add the following language after the last sentence of paragraph 5.01 A:

“All bonds must be countersigned by a resident agent of the State in which the Project is done.”

SC-5.04 Add the following new paragraph immediately after Paragraph 5.04.B:

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

2. Workers’ Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions:

a.	State:	Statutory
b.	Applicable Federal (e.g., Longshoreman’s):	Statutory

c. Employer's Liability: Statutory

3. Contractor's General Liability under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

   a. General Aggregate $300,000

   b. Products - Completed Operations Aggregate $300,000

   c. Personal and Advertising Injury $300,000

   d. Each Occurrence (Bodily Injury and Property Damage) $100,000

   e. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages where applicable.

   f. Excess or Umbrella Liability

   General Aggregate $1,000,000
   Each Occurrence $300,000

4. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

   a. Bodily Injury:
   Each person $100,000
   Each Accident $300,000

   b. Property Damage:
   Each Accident $300,000

   Or

   c. Combined Single Limit of $500,000

5. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

   a. Bodily Injury:
   Each person $100,000
   Each Accident $300,000

b. Property Damage:
Each Accident $300,000

SC-5.06.A. Delete Paragraph 5.06.A in its entirety and insert the following in its place:

A. Contractor shall purchase and maintain property insurance upon the Work at the Sites in the amount of the full replacement cost thereof. Contractor shall be responsible for any deductible or self-insured retention. This insurance shall:

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

6. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, 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 that caused by flood), and such other perils or causes of loss as may be specifically required by these Supplementary Conditions.

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

8. 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;

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

10. include testing and startup;

11. 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 loss payee to whom a certificate of insurance has been issued; and

12. comply with the requirements of Paragraph 5.06.C of the General Conditions.

SC-5.06.B Change the first word "Owner" to "Contractor" in paragraph 5.06.B of the General Conditions. The Contractor shall be responsible for this coverage.

SC-6.06 Add a new paragraph immediately after Paragraph 6.06.G:

D. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier.

SC-9.03 Add the following new paragraphs immediately after Paragraph 9.03.A:

B. The Resident Project Representative (RPR) will be Owner's employee or 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 Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:

1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample 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 authorized representative, assist in providing information regarding the intent of the Contract Documents.

   b. Assist Engineer in serving as 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 Engineer.

5. *Shop Drawings and Samples:*

   a. Record date of receipt of Samples and approved Shop Drawings.

   b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

6. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

7. *Review of Work and Rejection of Defective Work*:

   a. Conduct onsite observations of Contractor's 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 imperil 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 Startups:*

   a. 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.

   b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

9. *Records:*

    a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

    b. Maintain records for use in preparing Project documentation.

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. 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 Hazardous Environmental Condition.

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. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.

b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the 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. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in 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 Contractor's work unless such advice or directions are specifically required by the Contract Documents.

5. Advise on, issue directions regarding, or assume control over safety practices, 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 Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

SC-11.03.D Delete Paragraph 11.03.D in its entirety and insert the following in its place:

D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. if the Bid price of a particular item of Unit Price Work amounts to 25% percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 10% percent from the estimated quantity of such item indicated in the Agreement; and

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

3. if Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

SC-12.01.C Delete the semicolon at the end of GC 12.01.C.2.c, and add the following language:

provided, however, that on any subcontracted work the total maximum fee to be paid by Owner under this subparagraph shall be no greater than 27 percent of the costs incurred by the Subcontractor who actually performs the work;

SC-Article 16 Delete Article 16 of the General Conditions in its entirety and replace with the following:

"16.01 Any and all disputes that arise out of the performance of this Contract shall be litigated in the 23rd Judicial District Court in and for the Parish of Ascension. Any reference to arbitration in any Contract Documents is hereby expressly waived and deleted."

DIVISION 3

BID FORMS

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Division 3 – Article 1
LOUISIANA UNIFORM
PUBLIC WORKS BID FORM

TO: ***Ascension Parish Government*** **BID FOR:** **NEW RIVER CHANNEL IMPROVEMENTS**
P.O. Box 2392 ***EAD-15-004***
Gonzales, Louisiana 70707

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: *H. Davis Cole & Associates, LLC (HDCA)* and dated: March, 2019 .
(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:

N/A Dollars ($ N/A)

Alternate No. 2 *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

N/A Dollars ($ N/A)

Alternate No. 3 *(Owner to provide description of alternate and state whether add or deduct))* for the lump sum of:

N/A Dollars ($ N/A)

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 BIDDER ** :_____

DATE: _____

THE FOLLOWING ITEMS ARE TO BE INCLUDED WITH THE SUBMISSION OF THIS LOUISIANA UNIFORM PUBLIC WORK BID FORM:

* The Unit Price Form 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.

** **A CORPORATE RESOLUTION OR WRITTEN EVIDENCE** of the authority of the person signing the bid for the public work as prescribed by 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.

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LOUISIANA UNIFORM PUBLIC WORKS BID FORM
UNIT PRICE FORM

TO: ***Ascension Parish Government***
P.O. Box 2392
Gonzales, Louisiana 70707

BID FOR: **NEW RIVER CHANNEL IMPROVEMENTS**
EAD-15-004

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.# MOBILIZATION			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
1	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# TEMPORARY ENVIRONMENTAL CONTROLS			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
2	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# TEMPORARY TRAFFIC CONTROL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
3	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# CONSTRUCTION LAYOUT			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
4	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# SITE PREPARATION			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
5	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# REMOVAL OF STRUCTURES AND OBSTRUCTIONS			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
6	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# DRAINAGE EXCAVATION			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
7	80,000	CUBIC YARD		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# EMBANKMENT			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
8	20,000	CUBIC YARD		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# ARBORIST SERVICES			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
9	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# TREE TRIMMING			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
10	1	LUMP SUM		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# 15" PLASTIC PIPE STORM DRAIN, OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
11	360	LINEAR FOOT		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# 18" PLASTIC PIPE STORM DRAIN, OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
12	240	LINEAR FOOT		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# 24" PLASTIC PIPE STORM DRAIN, OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
13	260	LINEAR FOOT		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# 36" PLASTIC PIPE, STORM DRAIN, OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
14	20	LINEAR FOOT		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# 48" PLASTIC PIPE STORM DRAIN, OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
15	40	LINEAR FOOT		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# 48" REINFORCED CONCRETE PIPE STORM DRAIN, OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
16	40	LINEAR FOOT		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# MODIFIED CB-01 DRAINAGE STRUCTURE			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
17	25	EACH		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# MODIFIED CB-02 DRAINAGE STRUCTURE			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
18	4	EACH		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# BEDDING MATERIAL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
19	200	CUBIC YARD		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# OUTFALL PROTECTION, 30 LB RIP – RAP			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
20	900	SQUARE YARD		

DESCRIPTION:	✠ Base Bid or ❑ Alt.# RIP-RAP (30 LB), BRIDGES			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
21	4200	SQUARE YARD		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# RIP-RAP (10 LB) (RAILROAD BRIDGE)			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
22	350	SQUARE YARD		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# GEOTEXTILE FABRIC			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
23	5800	SQUARE YARD		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# TYPE 3 OBJECT MARKERS AND POSTS			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
24	58	EACJ		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# NO PARKING SIGNS AND POSTS			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
25	2	EACJ		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# MOBILIZATION COST FOR STEEL SHEET PILE DRIVING			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
26	1	LUMP SUM		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# STEEL SHEET PILE WALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
27	9000	SQUARE FOOT		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# INITIAL INSTALLATION AND FINAL REMOVAL OF TEMPORARY DAMS			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
28	1	LUMP SUM		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# TEMPORARY DEWATERING DAM REMOVAL AND REPLACEMENT			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
29	1	EACH		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# FURNISH AND INSTALL 18” FLAP GATE FOR DRAIN PIPE OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
30	2	EACH		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# FURNISH AND INSTALL 24” FLAP GATE FOR DRAIN PIPE OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
31	1	EACH		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# REMOVE AND RE-INSTALL 48” FLAP GATE FOR DRAIN PIPE OUTFALL			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
32	2	EACH		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# AGGREGATE SURFACE COURSE			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
33	50	CUBIC YARD		

DESCRIPTION:	☒ Base Bid or ❑ Alt.# HYDRO-SEEDING			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
34	1	LUMP SUM		

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BIDDER INFORMATION FORM

If BIDDER is:

An Individual

By: _____ (SEAL)
(Signature Individual)
Name (typed or printed): _____

Doing business as: _____

Business Address: _____

_____

Phone No.: _____ Fax No.: _____

A Partnership

Partnership Name: _____ (SEAL)

By:_____
(Signature of General Partner)
Name (typed or printed): _____ _____

Business Address: _____

_____

Phone No.: _____ Fax No.: _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

By:_____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Business Address: _____

_____

Phone No.: _____ Fax No.: _____
** (A Corporate Resolution Must Be Attached)

If BIDDER is:

A Limited Liability Company

Company Name: _____(SEAL)

By:_____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Business Address: _____

_____

Phone No.: _____ Fax No.: _____

A Joint Venture

Joint Venture Name: _____(SEAL)

By: _____
(Signature of Joint Venture Partner)

Name (typed or printed): _____

Address: _____

_____

Phone No.: _____ Fax No.: _____

Joint Venture Name: _____(SEAL)

By: _____
(Signature of Joint Venture Partner)

Name (typed or printed): _____

Address: _____

_____

Phone No.: _____ Fax No.: _____

Address, Phone Number, and Fax Number for receipt of official communications:

_____

_____

(Each joint venture partner must sign. The manner of signing for each individual, partnership, and corporatin that is a party to the joint venture should be in the manner indicated above.
If BIDDER is:

A Limited Liability Company

Company Name: _____(SEAL)

By:_____
(Signature - attach evidence of authority to sign)

Name (typed or printed): _____

Business Address: _____

_____

Phone No.: _____ Fax No.: _____

A Joint Venture

Joint Venture Name: _____(SEAL)

By: _____
(Signature of Joint Venture Partner)

Name (typed or printed): _____

Address: _____

_____

Phone No.: _____ Fax No.: _____

Joint Venture Name: _____(SEAL)

By: _____
(Signature of Joint Venture Partner)

Name (typed or printed): _____

Address: _____

_____

Phone No.: _____ Fax No.: _____

Address, Phone Number, and Fax Number for receipt of official communications:

_____

_____

(Each joint venture partner must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.

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BID BOND FORM

Date: _____

KNOW ALL MEN BY THESE PRESENTS:

That_____ of _____, as Principal, and _____, as Surety, are held and firmly bound unto the _____ (Obligee), in the full and just sum of five (5%) percent of the total amount of this bid, 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. Bests 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:_____ BY:_____

AUTHORIZED OFFICER-OWNER-PARTNER AGENT OR ATTORNEY-IN-FACT

(SEAL)

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BIDDER'S NON-COLLUSION AFFIDAVIT
(FURNISH WITH BID PACKAGE)

STATE OF LOUISIANA

PARISH OF _____

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

_____(Herein after referred to as "BIDDER") the party

who submitted a bid for

_____

_____ which bid was received by ASCENSION PARISH, LOUISIANA on

_____ and said affiant further said:

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

(3) Said bidder 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, of 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 Ascension Parish, Louisiana or in favor of any persons interested in the proposed contract.

(6) All statement 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 person, firm, or corporation.

By:_____
(Signature)

_____
(Type or Print Name)

_____
(Type or Print Title)

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____DAY OF _____, 20_____.

_____
Notary Public

RESOLUTION AUTHORIZING SUBMISSION OF BID, SIGNATURE OF BID AND SIGNATURE OF CONTRACT

BE IT RESOLVED by the Board of Directors of _____, a Corporation organized and existing under the laws of the State of _____, and domiciled in the City of _____; that _____ President of the Corporation and/or _____ of the Corporation, be, and are hereby authorized and empowered to submit bids and to execute any and all contracts of whatever kind on behalf of the Corporation and to do all things necessary in the premises.

CERTIFICATE

I, _____, Secretary of _____ do hereby certify that the foregoing resolution is a true and exact copy unanimously adopted by the Board of Directors of said corporation at a meeting thereof legally held on the _____ day of _____ 20_____; that said resolution is duly entered into the records of said corporation; that it has not been rescinded or modified; and that it is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand and the seal of said corporation this _____ day of _____, 20_____.

_____
(Secretary)

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PERFORMANCE BOND

_____ as Principal, and

_____

a surety company or companies authorized to do business in Louisiana, as Surety, are bound, in solido, unto

_____ and unto all subcontractors, workmen, and furnishers of materials and equipment, jointly in the sum of _____

Dollars($_____).

Payable in lawful money of the United States, and to this bond do obligate their heirs, successors and assigns. In the case of co-sureties, co-sureties assume an obligation in the sum of

_____

_____Dollars($_____).

For_____and

_____

_____Dollars($_____).

The consideration for this bond is such, that if the Principal shall perform this contract, made and entered into on the _____ day of _____, 20_____, To construct the project entitled:

NEW RIVER CHANNEL IMPROVEMENTS:, ***EAD-15-004*** consisting of municipal wastewater infrastructure construction according to the stipulations in said contract attached hereto and made a part hereof, at the time and in the manner and form specified; perform all labor and work; and shall furnish all materials as specified in said contract, and the drawings and specifications thereto attached and made a part thereof; this obligation shall be void; otherwise to remain in effect.

It is agreed by the parties that this bond is given in accordance with Louisiana Revised Statutes of 1950, Title 38, Chapter 10.

In faith whereof, we have subscribed this obligation at _____, Louisiana.

Witness our hands and seals, this _____ day of _____, 20_____.
Witnesses

_____

_____
Principal

_____

By_____

_____
Typed or Printed Name

_____

_____
First Surety

_____ By_____(Seal)
Attorney-in-Fact

_____
Typed or Printed Name

_____

_____
Second Surety

_____

By_____(Seal)
Attorney-in-Fact

_____
Typed or Printed Name

I certify that I am as of the date of this bond a licensed Resident Agent of Louisiana in good standing with the Louisiana Insurance Commission and authorized to countersign this bond on behalf of the Surety of Sureties.

First Surety	Second Surety
By_____	By_____
_____	_____
Typed or Printed Name	Typed or Printed Name
_____	_____
Typed or Printed Name	Typed or Printed Name
_____	_____
Address	Address

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PAYMENT BOND FORM

_____

as Principal, and _____

a surety company or companies authorized to do business in Louisiana, as Surety, are bound, in solido, unto

_____ and unto all subcontractors, workmen, and furnishers of materials and equipment, jointly in the sum of

_____

_____Dollars($_____).

Payable in lawful money of the United States, and to this bond do obligate their heirs, successors and assigns. In the case of co-sureties, co-sureties assume an obligation in the sum of

_____

_____Dollars($_____).

For_____and

_____

_____Dollars($_____).

The consideration for this bond is such, that if the Principal shall perform this contract, made and entered into on the _____ day of _____, 20_____, To construct the project entitled:

NEW RIVER CHANNEL IMPROVEMENTS:, ***EAD-15-004***, consisting of municipal street and lighting construction according to the stipulations in said contract attached hereto and made a part hereof, pay all sums due on materials and supplies used and

wages earned by workmen employed on the work; this obligation shall be void; otherwise to remain in effect.

It is agreed by the parties that this bond is given in accordance with Louisiana Revised Statutes of 1950, Title 38, Chapter 10.

Witness our hands and seals, this _____ day of _____, 20_____.

Witnesses

_____ _____

Principal

_____

By_____

_____
Typed or Printed Name

First Surety

_____ By_____(Seal)
Attorney-in-Fact

_____
Typed or Printed Name

Second Surety

_____ By_____(Seal)
Attorney-in-Fact

_____
Typed or Printed Name

I certify that I am as of the date of this bond a licensed Resident Agent of Louisiana in good standing with the Louisiana Insurance Commission and authorized to countersign this bond on behalf of the Surety of Sureties.

First Surety	Second Surety
By_____	By_____
_____	_____
Typed or Printed Name	Typed or Printed Name
_____	_____
Typed or Printed Name	Typed or Printed Name
_____	_____
Address	Address

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HOLD HARMLESS AGREEMENT

OWNER: **PARISH OF ASCENSION**
P.O. BOX 1659
GONZALES, LOUISIANA 70707-1659

ENGINEER: ***H. Davis Cole & Associates, LLC (HDCA)***
1340 Poydras Street, Suite 1850
New Orleans, LA. 70112

The Contractor shall indemnify and hold harmless the Owner and the Engineers and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense: (a) 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: and (b) is caused in whole or in part by any negligent act or omission of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not is caused in part by a party indemnified hereunder.

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

The obligations of the Contractor under this Agreement shall not extend to the liability of the Engineers, their agents or employees arising out of. (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications: or (2) the giving of or the failure to give directions or instructions by the Engineers, their agents or employees provided such giving or failure to give its primary cause of the injury or damage.

CONTRACTOR: _____

By: _____

WITNESSES:

_____

_____

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DIVISION 4

CONTRACT FORMS

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NOTICE OF AWARD

Date of Award: _____

TO: _____

ADDRESS: _____
_____

PROJECT: _____

Owner's Contract No.: _____ Engineer's Project No.: 2017-14

Contract For: ***NEW RIVER CHANNEL IMPROVEMENTS***
ASCENSION PARISH
PROJECT # ***EAD-15-004***

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a Contract for:
NEW RIVER CHANNEL IMPROVEMENTS: ASCENSION PARISH

The Contract Price of your Contract is: _____

_____

_____

4 Copies of each of the proposed Contracts accompany this Notice of Award.
3 Sets of the complete Contract Documents, including Drawings, will be delivered separate
During the Pre-Construction Conference or otherwise made available to you immediately.

You must comply with the following conditions precedent within fifteen (15) days of the date of this Notice of Award, this is by:_____

1. You must deliver to the Owner four (4) fully executed counterparts of the proposed Contract, including the Agreement. Each copy of the Contract must bear your signature on all signatory lines within the Agreement

2. You must deliver with the executed Agreement, the Contract Security (Bonds) as specified in the Instructions to Bidders (Section 1.8) and General Conditions (Section 5.01).

NOTICE OF AWARD (Continued)

3. You must deliver with the executed Agreement, Certificate of Insurance including certificates verifying additional insurers as required in General Conditions (Section 5.03)

Failure to comply with these conditions within the time specified will entitle the Owner to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten (10) days after you comply with the above conditions, the Owner will return to you one (1) fully signed counterpart of the Agreement with the Contract Documents attached.

PARISH OF ASCENSION_____
(Owner)

By: _____
(Authorized Signature)

_____
(Title)

ACCEPTANCE OF AWARD

_____
(Contractor)

By: _____
(Authorized Signature)

_____
(Title)

_____
(Date)

NOTICE TO PROCEED

TO: _____

ADDRESS: _____

_____

PROJECT: _____

Owner's Contract No.: _____ Engineer's Project No.: 2017-14

Contract For: ***NEW RIVER CHANNEL IMPROVEMENTS***
ASCENSION PARISH
PROJECT # EAD-15-004

You are notified that the Contract Times under the above Contract will commence to run on _____. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 3 of the Agreement, the dates of Substantial Completion and completion and readiness for Final Payment are:
_____ and _____

Before you may start any Work at the site, Article 2.01 of the General Conditions provides that you and the Owner must each deliver to the other (with copies to the Engineer) and other identified additional insurers) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents. Also, before you may start any Work at the site you must notify Owner/Engineer of Start Date.

PARISH OF ASCENSION
(Owner)

By: _____
(Authorized Signature)

_____
(Title)

ACKNOWLEDGED:

_____
(Contractor)

By: _____
(Authorized Signature)

_____
(Title)

_____
(Date)

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APPLICATION FOR PAYMENT

NO. _____
TO Ascension Parish Government_____
Contract For: ***NEW RIVER CHANNEL IMPROVEMENTS***
Owner's Contract No.: _____ Engineer's Project No.: ***2017-14***
For Work accomplished through the date of: _____

ITEM	CONTRACTORS Schedule of Values			Work Completed	
	Unit Price	Quantity	Amount	Quantity	Amount
Total (Original Contract)			$		$

Accompanying Documents
_____
_____
_____
_____

Gross Amount Due: $_____
Less (%) Retainage: $_____
Amount Due to Date: $_____
Less Previous Payments: $_____
Amount Due this Application:$_____

CONTRACTOR's Certification:

The undersigned CONTRACTOR certifies that: (1) all previous progress payments received from OWNER on account of Work done under the Contract referred to above have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with Work covered by prior Applications for Payment numbered _____ through _____ inclusive; (2) title to all Work materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all liens, claims, security interest and encumbrances (except such as are covered by Bond acceptable to OWNER indemnifying OWNER against any such lien, claim, security interest or encumbrance); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective as that term is defined in the Contract Documents.

Dated: _____ _____
CONTRACTOR

By: _____
Authorized Signature

Payment of the above AMOUNT DUE THIS APPLICATION is recommended.

Dated: _____ _____
ENGINEER

By: _____
Authorized Signature

NO._____

WORK CHANGE DIRECTIVE

PROJECT: NEW RIVER CHANNEL IMPROVEMENTS

DATE OF ISSUANCE:_____ EFFECTIVE DATE: _____

OWNER: PARISH OF ASCENSION_____ OWNER'S CONTRACT NO.: __EAD-15-004_

ENGINEER: ***H. Davis Cole & Associates, LLC*** ENGINEER'S PROJECT NO.: ***2017-14***

CONTRACTOR: _____

You are directed to make the following changes in the Contract Documents:

Description:

Purpose of Work Change Directive:

Attachments (List documents supporting changes):

If a claim is made that the above change(s) have affected the Contract Price or Contract Times, any claim for a change order based thereon will involve one or more of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:
_____Unit Prices
_____Lump Sum
_____Other: _____

Estimated increase (decrease) in Contract Price:
_____$_____-____

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Method of determining change in Contract Times
_____Contractor's Records
_____Engineer's Records
_____Other: _____

Estimated increase (decrease) in Contract Times:
Substantial Completion: _____Days
Ready for Final Payment: _____Days
If the change involves an increase, the estimated are not to be exceeded without further authorization.

RECOMMENDED: By: _____ Date: _____
Engineer (Authorized Signature)

APPROVED: By: _____ Date: _____
Owner (Authorized Signature)

ACCEPTED: By: _____ Date: _____
Contractor (Authorized Signature)

EJCDC No. 1910-E-F (1990 Edition)
Prepared by the Engineers Joint Contract Documents Committee and Endorsed by
The Associated General Contractors of America

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CHANGE ORDER

CHANGE ORDER NO. _____

OWNER Ascension Parish Government_____ DATE _____

NAME OF PROJECT: ***NEW RIVER CHANNEL IMPROVEMENTS***
PROJECT NUMBER: ***EAD-15-004***
ENGINEER: ***H. Davis Cole & Associates, LLC***

CONTRACTOR: _____ CONTRACT DATE _____

It is hereby mutually agreed that when this change order has been signed by the contracting parties, the following described changes in the work required by the Contract shall be executed by the Contractor without changing the terms of the Contract except as herein stipulated and agreed.

SCOPE OF CHANGES:

JUSTIFICATION FOR CHANGES:

CONTRACTOR'S PROPOSAL FOR THE ABOVE DESCRIBED CHANGES
I/We hereby agree to the modification of the Contract as described above and agree to furnish all materials, equipment and labor necessary to perform all work in connection therewith in accordance with the requirements for similar work in the existing Contract except as otherwise stipulated herein, for the following consideration.

CONTRACT Amount –Add to –or- Deduct from- the Contract amount the sum of $_____
Time for Completion –Add to –or- Deduct from- the Contract Time: _____ Days.
The New Date for Completion is _____

CONTRACTOR:_____

SIGNATURE: _____ DATE _____

RECOMMENDED BY: Chief Engineer, Ascension Parish Engineering Department

BY: _____ DATE _____

CHANGE ORDER (Continued)

APPROVED BY:

PUBLIC WORKS BY: _____ DATE _____

PARISH PRESIDENT BY: _____ DATE _____

STATEMENT OF CONTRACT AMOUNT

ORIGINAL CONTRACT AMOUNT:	$_____
Previous Additions	$_____
Previous Deductions	$_____
Net Amount Prior to this Change	$_____
Amount of This Change ___Add ___Deduct...	$_____
CONTRACT AMOUNT TO DATE…….....	$_____

CERTIFICATE OF

SUBSTANTIAL COMPLETION

Project: ***NEW RIVER CHANNEL IMPROVEMENTS***

Owner: Ascension Parish Government	Owner's Contract No.: EAD-15-004
Contract:	Engineer's Project No ***2017-14***

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐All Work under the Contract Documents: ☐The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐Amended Responsibilities ☐Not Amended

Owner's Amended Responsibilities:

CERTIFICATE OF

SUBSTANTIAL COMPLETION (Continued)

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer	Date
Accepted by Contractor	Date
Accepted by Owner	Date

DIVISION 5

TECHINCAL SPECIFICATIONS

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PART 1 -- SPECIAL PROVISIONS

SP1. THE REQUIREMENT

A. The WORK to be performed under this Contract shall consist of furnishing plant, tools, equipment, materials, supplies, and manufactured articles, and furnishing all labor, transportation, and services, including fuel, power, water, and essential communications, and performing all work or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The WORK shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete and proper construction of the WORK in good faith shall be provided by the CONTRACTOR as though originally so indicated, at no increase in cost to the OWNER.

SP2. WORK COVERED BY CONTRACT DOCUMENTS

A. The WORK of this Contract generally comprises the construction of channel improvements within the existing New River Canal, including clearing and grubbing channel shaping, excavation and disposal, fill, installation of erosion protection, extension of drainage pipes, relocation of gas and potable water facilities, and other items as indicated in the Contract Documents.

B. The Work of the contract is located at: the New River Canal, generally located in Gonzales, Louisiana from the confluence of the New River and Smith Bayou to the existing weir downstream of US Highway 61.

C. Major Items of the WORK include, but are not limited to the following:

1. Channel shaping

2. Disposal of spoil material

3. Installation of Rip Rap and other erosion protection

4. Repair and/or extension of existing drain pipes

SP3. CONTRACT METHOD

A. The WORK hereunder will be constructed under a single unit price contract. Payments will be based upon items identified in Section 01025 – Measurement and Payment.

SP4. EXPLANATION OF ALTERNATES

A. No bid alternates will be considered.

SP5. WORK BY OTHERS

A. Where 2 or more contracts are being performed at one time on the same Site or adjacent land in such manner that work under one contract may interfere with work under another, the OWNER will determine the sequence and order of the Work in either or both contracts. When the Site of one contract is the necessary or convenient means

of access for performance of work under another, the OWNER may grant privilege of access or other reasonable privilege to the CONTRACTOR so desiring, to the extent, amount, and in manner and at time that the OWNER may determine. No OWNER determination of method or time or sequence or order of the work or access privilege shall be the basis for a claim for delay or damage except under provisions of the General Conditions for temporary suspensions of the work. The CONTRACTOR shall conduct its operations so as to cause a minimum of interference with the work of such other contractors, and shall cooperate fully with such contractors to allow continued safe access to their respective portions of the Site, as required to perform work under their respective contracts.

SP6. INTERFERENCE WITH WORK ON UTILITIES

A. The CONTRACTOR shall cooperate fully with all utility forces of the OWNER or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the WORK, and shall schedule the WORK so as to minimize interference with said relocation, altering, or other rearranging of facilities.

SP7. WORK SEQUENCE

A. The CONTRACTOR’s attention is directed to the fact that the WORK is being performed in an active drainage canal, and as such, no interruption in the flow of stormwater into and out of the river can be accommodated during severe rainfall events.

SP8. CONTRACTOR USE OF THE SITE

A. The CONTRACTOR's use of the Site shall be limited to its construction operations, including on-Site storage of materials, on-Site fabrication facilities, and field offices.

SP9. WORKING HOURS

A. The CONTRACTOR’s working hours shall be limited to ordinary working hours of 7:30 AM to 5:30 PM, Monday through Friday. The CONTRACTOR may work outside of normal hours with the permission of the OWNER and ENGINEER. Such requests shall be tendered to the ENGINEER a minimum of 48 hours prior to the proposed work outside of normal working hours.

B. Night WORK will generally not be allowed.

C. The CONTRACTOR is alerted to the Construction and Schedule Constraints specified within these Special Provisions.

SP10. OWNER’S USE OF THE SITE

A. The OWNER may utilize all or part of the existing facilities during the entire period of construction for the conduct of the OWNER's normal operations. The CONTRACTOR shall cooperate and coordinate with the OWNER and ENGINEER to facilitate the OWNER's operations and to minimize interference with the CONTRACTOR's operations at the same time. In any event, the OWNER shall be allowed access to the Site during

SP11. BAR CHART CONSTRUCTION SCHEDULE

A. CONTRACTOR shall schedule the WORK in accordance with the Contract Documents.

B. Where submittals are indicated, submit the number and type of copies as established at the pre-construction conference.

C. The CONTRACTOR is alerted to the Construction and Schedule Constraints specified within these Special Provisions.

D. The CONTRACTOR shall submit 2 schedule documents at the Preconstruction Conference that shall serve as the CONTRACTOR's Plan of Operation for the initial 60 Day period of the Contract Times and shall identify the manner in which the CONTRACTOR intends to complete WORK within the Contract Time. The CONTRACTOR shall submit a 60 Day Plan of Operation Bar Chart Schedule and a Project Overview Bar Chart Schedule for WORK as indicated below.

1. 60 Day Bar Chart Plan of Operation Schedule: The bar chart shall show the CONTRACTOR's early activities (mobilization, permits, submittals necessary for early material and equipment procurement, submittals necessary for long lead equipment procurement, scheduling submittals, initial site work, and other submittals) required in the first 60 Days).

2. Project Overview Bar Chart Schedule: The Bar Chart shall indicate the major components of the WORK and the sequence relations between the major components and subdivisions of major components. The bar chart schedule shall indicate the relationships and time frames in which the various components of the WORK will be made substantially complete and placed into service in order to meet the Contract Times. Sufficient detail shall be included for the identification of subdivisions of major components according to such activities as mobilization, site dewatering, excavation, demolition, yard piping installation, placement of structural backfill, final site grading, and other important WORK for each major item within the overall project scope. Planned durations and start dates shall be indicated for each work item subdivision.

E. The ENGINEER and the CONTRACTOR shall meet to review and discuss the 60 Day Plan of Operations and Project Overview Schedules at the Pre – Construction Conference. The ENGINEER's review and comment on the schedules will be limited to conformance to the Contract Documents. The CONTRACTOR shall make corrections to the schedules necessary to comply with requirements and shall adjust the schedules to incorporate any missing information requested by the ENGINEER.

F. Upon approval of a change order or upon receipt of authorization to proceed with additional WORK, the change shall be depicted in the next submittal of the Project Overview Bar Chart Schedule.

G. The CONTRACTOR shall furnish monthly Project Overview Bar Chart Schedules and written narrative reports in the form indicated below. This information, along with Construction Photographs as required by the Special Provisions, shall accompany the CONTRACTOR’s Progress Payment Requests.

H. The Project Overview Bar Chart Schedule shall be a summary of the current construction schedule for major project components (original and as updated and adjusted throughout the entire construction period). The major project components shall be represented as time bars which shall be subdivided into various types of WORK including dewatering, excavation, demolition, yard piping, placement of structural backfill, and final site grading.

I. Each major component and subdivision shall be plotted accurately on a time scale consistent with the early start and finish activity information contained in the latest update of the schedule. In addition, a percent completion shall be listed for each major component and subdivision. The CONTRACTOR shall amend the Project Overview Bar Chart Schedule as necessary to include any additional detail required by the ENGINEER. The CONTRACTOR shall include any additional information requested by the ENGINEER at any time during construction.

J. The CONTRACTOR shall prepare monthly written narrative reports of the status of the project for submission to the ENGINEER with the CONTRACTOR's [[monthly]] Progress Payment Request. Status reports shall include:

1. The status of major project components (percent complete and amount of time ahead or behind schedule) and an explanation of how the project will be brought back on schedule if delays have occurred.

2. The progress made on critical activities indicated on the construction schedule.

3. Explanations for any lack of WORK on critical activities planned to be performed during the last month.

4. Explanations for any schedule changes, including changes to the logic or to activity durations.

5. A list of the critical activities scheduled for the next 2 months.

6. The status of major material and equipment procurements.

7. The value of materials and equipment properly stored at the Site but not yet incorporated into the WORK.

8. Any delays encountered during the reporting period.

9. An assessment of inclement weather delays and impacts to the progress of the WORK.

10. The CONTRACTOR may include any other information pertinent to the status of the project.

11. The CONTRACTOR shall include additional status information requested by the ENGINEER.

K. The construction schedule shall include lost days on the construction schedule due to inclement weather. Inclement weather delays shall be determined in accordance with the Contract Documents.

SP12. CONSTRUCTION AND SCHEDULE CONSTRAINTS

A. The WORK shall be scheduled, sequenced, and performed in a manner which minimizes disruption to the operation and maintenance of existing facilities.

B. The CONTRACTOR shall incorporate the construction and schedule constraints of this Section in preparing the construction schedules required under Special Provisions.

C. It is the CONTRACTOR'S responsibility to coordinate and plan the construction activities to integrate each schedule constraint into performance of the overall work.

D. The listing of schedule constraints below does not mean that all constraints or special conditions have been identified. The list does not substitute for the CONTRACTOR's coordination and planning for completion of the WORK within the Contract Times.

E. The constraints herein do not relieve the CONTRACTOR of his responsibilities to notify the OWNER and ENGINEER of proposed work outside of normal working hours.

F. The following constraints affect the construction schedule.

1. The CONTRACTOR shall maintain at least one lane of all roads adjacent to New River open at all times. Lane closures may be permitted at the discretion of the OWNER. For any state highway, the CONTRACTOR shall be required to coordinate closures with the Louisiana Department of Transportation and Development (LDOTD).

2. New River Street from Burnside Avenue to Airline Highway shall be off limits to construction vehicles and equipment from 6:30 AM to 8:00 AM and 2:30 PM to 3:30PM on any day in which St. Theresa School is in session.

SP13. PROTECTION OF EXISTING FACILITIES

A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than prior to such damage or temporary relocation, all in accordance with the Contract Documents.

B. The CONTRACTOR shall not do any WORK that would affect any oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line; any fence; or any other structure, nor shall the CONTRACTOR enter upon the rights-of-way involved until notified that the OWNER has secured authority therefor from the proper party.

C. After authority has been obtained, the CONTRACTOR shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support, or otherwise protect such pipeline, transmission line, ditch, fence, or structure, or replace the same.

D. The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced. Survey markers or points disturbed by the CONTRACTOR shall be accurately restored after street or roadway resurfacing has been completed.

E. All paved areas including asphaltic concrete berms cut or damaged during construction shall be replaced with similar materials of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. The pavement restoration requirement to match existing sections shall apply to all components of existing sections, including sub-base, base, and pavement. Temporary and permanent pavement shall conform to the requirements of the affected pavement

owner. Pavements which are subject to partial removal shall be neatly saw cut in straight lines.

F. Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

G. In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

H. **Restoration of Sidewalks or Private Driveways:** Wherever sidewalks or private roads have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions. If no such period of time is so fixed, the CONTRACTOR shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

I. The CONTRACTOR shall protect underground Utilities and other improvements which may be impaired during construction operations, regardless of whether or not the Utilities are indicated on the Drawings. The CONTRACTOR shall take all possible precautions for the protection of unforeseen Utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.

J. Except where the Drawings indicate Utilities have been field located during design or certain Utility locations shall be exposed as part of the WORK, the CONTRACTOR shall be responsible for exploratory excavations as it deems necessary to determine the exact locations and depths of Utilities which may interfere with its work. All such exploratory excavations shall be performed as soon as practicable after Notice to Proceed and, in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR's progress. When such exploratory excavations show the Utility location as shown on the Drawings to be in error, the CONTRACTOR shall so notify the ENGINEER.

K. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the Utility.

L. **Utilities to be Moved:** In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the CONTRACTOR, be notified by the OWNER to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the ENGINEER a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.

M. **Utilities to be Removed:** Where the proper completion of the WORK requires the temporary or permanent removal and/or relocation of an existing Utility or other improvement which is indicated, the CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such Utility or improvement in a manner satisfactory to the ENGINEER and the owner of the facility. In all cases of such

temporary removal or relocation, restoration to the former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the Utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.

N. **OWNER's Right of Access:** The right is reserved to the OWNER and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the WORK of this Contract.

O. **Underground Utilities Indicated:** Existing Utility lines that are indicated or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all Utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the CONTRACTOR, unless otherwise repaired by the owner of the damaged Utility. If the owner of the damaged facility performs its own repairs, the CONTRACTOR shall reimburse said owner for the costs of repair.

P. **Underground Utilities Not Indicated:** In the event that the CONTRACTOR damages existing Utility lines that are not indicated or the locations of which are not made known to the CONTRACTOR prior to excavation, a verbal report of such damage shall be made immediately to the ENGINEER and a written report thereof shall be made promptly thereafter. The ENGINEER will immediately notify the owner of the damaged Utility. If the ENGINEER is not immediately available, the CONTRACTOR shall notify the Utility owner of the damage. If directed by the ENGINEER, repairs shall be made by the CONTRACTOR under the provisions for changes and extra work as specified in the General Conditions.

Q. Costs of locating and repairing damage not due to failure of the CONTRACTOR to exercise reasonable care, and removing or relocating such Utility facilities not indicated in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the WORK which was interrupted or idled by removal or relocation of such Utility facilities, and which was necessarily idled during such work will be paid for as extra work in accordance with the General Conditions.

R. **Approval of Repairs:** All repairs to a damaged Utility or improvement are subject to inspection and approval by an authorized representative of the Utility or improvement owner before being concealed by backfill or other work.

S. **Maintaining in Service:** Unless indicated otherwise, oil and gasoline pipelines, power, and telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the WORK shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the ENGINEER are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The CONTRACTOR shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

T. Lawn or landscaped areas damaged during construction shall be repaired to match the pre-construction condition to the satisfaction of the land owner and the OWNER.

U. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way, the CONTRACTOR shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than 3 days nor more than 7 days prior to excavation so that a representative of said owners or agencies can be present during such work if they so desire.

SP14. ROADWAY CLOSURE REQUESTS

A. Modifications to existing facilities, the construction of new facilities, and the connection of new to existing facilities may require the temporary closure of existing roadways and driveways. In such cases, the CONTRACTOR shall coordinate the WORK with the ENGINEER as described below. The CONTRACTOR shall submit a detailed closure request and time schedule for all construction activities which will make it necessary to completely or partially close a roadway, driveway, or walkway to the public.

B. The closure request shall be submitted to the ENGINEER a minimum of two (2) weeks in advance of the time that such closure is required. The closure plan shall be coordinated with the construction schedule and shall meet the restrictions and conditions of these Special Provisions. The closure request shall describe the CONTRACTOR's temporary traffic control plan, the length of time to complete the operation, and the manpower, plant, and equipment to ensure that WORK requiring the closure is completed within the scheduled time for the closure. All costs for preparing and implementing the closure plan shall be the responsibility of the CONTRACTOR as part of the WORK.

C. The CONTRACTOR shall not enact a roadway, driveway, or sidewalk closure until written approval has been granted by the ENGINEER in each case. Should the CONTRACTOR enact a closure without approval of the ENGINEER, the ENGINEER will direct the CONTRACTOR to take whatever measures are necessary to re – open the affected roadway, driveway, or sidewalk closure at the CONTRACTOR's expense. Should the CONTRACTOR refuse, the OWNER may take required measures and such costs will be withheld from future progress payments to the CONTRACTOR.

D. The ENGINEER will coordinate the CONTRACTOR's planned closure with the OWNER's personnel. The ENGINEER shall have the authority to modify any proposed closure plans should the closure unnecessarily adversely impact the public.

E. The ENGINEER shall be notified in writing at least one week in advance of the required closure if the schedule for performing the work has changed or if revisions to the closure plan are required. The CONTRACTOR shall provide written confirmation of the closure date and time 2 working days prior to the actual closure.

SP15. PERMITS

A. The CONTRACTOR shall abide by the conditions of all permits and shall obtain proof of satisfaction of conditions from issuers of permits prior to acceptance of the WORK by the OWNER.

B. Conditions affecting the CONTRACTOR are found in the following permits. Copies will be provided to the CONTRACTOR upon request.

1. **Louisiana Department of Transportation and Development (LDOTD):** The OWNER has obtained clearance from LDOTD for the WORK. In order for the final

permit to be issued, the CONTRACTOR shall submit to the ENGINEER and OWNER a copy of an excavation plan for excavation within the vicinity of the US 61 bridge. The permit will be finalized and issued upon acceptance of the excavation plan by LDOTD. The CONTRACTOR shall abide by the conditions of the permit.

2. **United States Army Corps of Engineers/Louisiana Department of Environmental Quality:** The OWNER has obtained Section 404/10 permits from LDEQ and USACE. The CONTRACTOR shall abide by the conditions of this permit.

3. **Kansas City Southern Railroad (KCSRR):** The CONTRACTOR shall obtain, and pay all costs associated therewith, the right – of – entry agreement from the Kansas City Southern Railroad prior to any WORK within the railroad right – of – way.

   The CONTRACTOR shall give in writing via email the ENGINEER and the Railroad a minimum of 30 days notice prior to entry into the right of way. Contact personnel for this notification shall include the following:

   Mr. Sri Honnur, P.E.
   Track and Bridge Construction Director
   Kansas City Southern Railroad
   427 West 12th Street
   Kansas City, MO 64105
   shonnur@kcsouthern.com

   Ms. Denise Case
   Transaction Manager
   Jones Lang Lasalle (JLL)
   Rail Practice group
   4200 Buckingham, Suite 110
   Fort Worth, Texas 76155
   Denise.case@am.jll.com

   The CONTRACTOR shall provide (and shall require any contractors or subcontractors employed by it in the performance of the work to provide) in addition to any other form of insurance or bond required by statute, insurance of the kinds and amounts detailed below. The CONTRACTOR shall show the Kansas City Kansas City Southern Railway Company and its Affiliates, 427 W. 12th St., Kansas City, MO 64105-1403 as a Certificate Holder for the following:

   Comprehensive General Liability and Contractual Liability Insurance: The CONTRACTOR shall purchase and maintain Comprehensive General Liability and Contractual Liability Insurance in the amounts of $2,000,000 per occurrence and an aggregate of $4,000,000 minimum limits.

   Automotive Liability Insurance: The CONTRACTOR shall purchase and maintain Automotive Liability Insurance in the amount of $1,000,000 combined single limit.

   Workers Compensation Insurance: The CONTRACTOR shall purchase and maintain Worker's Compensation Insurance in the amounts not less than statutory worker's compensation coverage for all covered employees who are on KCSRR property.

   All policies shall be endorsed to give 30 days written notice of intent to cancel or material alter to KCSRR and its affiliates.

Commercial general liability shall name KCSRR and its affiliates as additional insured.

All policies shall contain a waiver of subrogation in favor of KCSRR and its affiliates.

All policies shall be will be primary to any insurance or self-insurance KCSRR and its Affiliates may maintain for acts or omissions of CONTRACTOR or anyone for whom CONTRACTOR is responsible.

The CONTRACTOR shall show the Kansas City Southern Railway Company and its Affiliates, 427 W. 12th St., Kansas City, MO 64105-1403 as an Insured for the following:

Railroad Protective Liability Insurance: The CONTRACTOR shall purchase and maintain Railroad Protective Liability Insurance (RPLI) naming KCSRR and its Affiliates as insured with $2,000,000 per occurrence and $6,000,000 aggregate. Bidders may visit www.123ocp.com to obtain RPLI.

The CONTRACTOR shall employ and pay all costs associated with a railroad flagman prior to entering the railroad property or right of way. The railroad flagman shall be present at any time the CONTRACTOR enters the railroad property or right – of – way, which shall be taken as a 50 feet on either side of the centerline of the track. The CONTRACTOR shall employ one of the following companies for railroad flagmen:

Railpros Field Services

Contact: David Allen, 601-502-6485; david.allen@railpros.com OR Jamie Ferguson, 903-556-5433; jamie.ferguson@railpros.com

Bottom Line On – Track Safety Services

Contact: Casey Turner, 903-767-7630; bottomline076@aol.com OR Jeff Yarbrough, 972-824-3348; jeff.yarbrough@alliedtrack.com.

The CONTRACTOR shall employ and pay all costs associated with a railroad inspector while excavation is occurring in the railroad property or right of way. The railroad inspector shall be present any time excavation is occurring within 50 feet on either side of the centerline of the track. The CONTRACTOR shall employ the following entity for railroad inspection.

Bartlett & West
1200 SW Executive Drive
Topeka KS, 66615
(785) 272-2252

The CONTRACTOR shall inform the ENGINEER and KCSRR of the company employed prior to entry into the right – of – way.

The CONTRACTOR shall submit an excavation plan as detailed in Special Provision 21 – Excavation in the Vicnity of Bridges prior to entry into railroad property or right – of – way.

4. **City of Gonzales:** The OWNER has obtained clearance from the City of Gonzales for the WORK. In order for the final permit to be issued, the CONTRACTOR shall submit to the ENGINEER and OWNER a copy of an excavation plan for excavation within the vicinity of the US 61 bridge. The permit will be finalized and issued upon acceptance of the excavation plan by LDOTD. The CONTRACTOR shall abide by the conditions of the permit.

5. **Stormwater Permit:** The CONTRACTOR shall obtain and pay for any stormwater permits required by State and Federal Agencies.

SP16. CONSTRUCTION NOISE

A. 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.

SP17. SITE CONDITIONS SURVEYS

A. The CONTRACTOR shall conduct thorough pre-construction and post-construction Site conditions surveys of the entire Project. Site conditions surveys shall consist of photographs and videotape recordings.

B. Video surveys, photographs, and other data of the preconstruction conditions shall be submitted to the ENGINEER for record purposes prior to, but not more than three weeks before, commencement of any construction activities.

C. A complete set of all photographs and survey data of the post-construction conditions shall be completed and submitted prior to final inspection by the OWNER and ENGINEER. Photographs shall be in digital format.

D. CONTRACTOR, as a minimum, shall document pre- and post-construction conditions by preparing videotape surveys of the following:

1. Roadways used to access the Site or haul materials and equipment to the Site.

2. Work areas, including actual work sites, materials processing and stockpiling areas, access corridors, disposal areas, and staging areas.

3. Any work completed by other CONTRACTORs at the Site that will be connected to or otherwise affected by the WORK.

4. Driveways, sidewalks, and buildings which might be affected by the WORK.

E. Supplement videotape surveys with photographs as required to thoroughly document the original condition and location of existing features and facilities.

F. Videotape records shall be in DVD format.

SP18. APPLICATIONS FOR PAYMENT

A. Applications for Payment shall contain both an application and continuation pages, along with all substantiating documentation detailed herein or as deemed necessary by the ENGINEER. The application and continuation sheets shall be typed in the format specified herein and created on 8-1/2” x 11” paper.

B. The CONTRACTOR shall submit Applications for Payment typed on American Institute of Architects (AIA) Form G-702. Continuation sheets shall be submitted on American Institute of Architects (AIA) Form G-703.

C. The CONTRACTOR shall populate the application form (AIA G-702) in accordance with the form instructions and as prescribed below:

    1) Include required information, including Change Orders executed prior to the date of the application;

    2) Include summary of dollar amounts to agree with totals depicted within continuation sheets;

    3) Execute certification by a Corporate Principal.

    4) The signed application form shall be notarized by a Notary Public Registered in the State of Louisiana.

D. The CONTRACTOR shall submit Applications for Payment typed on American Institute of Architects (AIA) Form G-702. Continuation sheets shall be submitted on American Institute of Architects (AIA) Form G-703.

E. The CONTRACTOR shall populate the application form (AIA G-702) in accordance with the form instructions and as prescribed below:

    1) If the project is to be conducted under a Lump Sum Contract, include list of all scheduled items of the WORK per the Schedule of Values with each as a single line item. Include list of all payment items included in Section 01025 – Measurement and Payment with each as a single line item.

    2) Fill in dollar amount in each column for each line item on the continuation page.

    3) List each Change Order executed prior to date of submission at the end of the continuation pages.

    4) Submit copies of paid invoices for stored materials, along with photos of stored materials in the amount and quality deemed acceptable by the ENGINEER.

F. The CONTRACTOR shall submit applications for Payment to the ENGINEER at the times stipulated in the General Conditions.

G. Prior to submittal of the completed Application for Payment, the CONTRACTOR shall submit to the ENGINEER an electronic copy of a “draft” Application for Payment, including all substantiating documentation for review. The draft application shall be created in Adobe Acrobat Portable Document Format (.PDF). The CONTRACTOR shall

undertake all revisions as required by the ENGINEER prior to submitting the completed application for payment.

H. When the ENGINEER finds the application for payment correct, he will instruct the CONTRACTOR to submit the completed application for approval and transmittal to the OWNER. The CONTRACTOR shall submit the number of applications for payment as determined at the pre – construction conference.

I. The ENGINEER will not collate or assemble Applications for Payment. Assembly of the Application for Payment shall be the sole responsibility of the CONTRACTOR.

J. The CONTRACTOR shall submit construction progress photographs documenting progress of the WORK with applications for payment.

K. The CONTRACTOR shall submit construction progress narratives documenting the progress of the WORK with applications for payment.

SP19. CHANGE ORDER PROCEDURES

A. The CONTRACTOR shall implement and abide by the procedures for Change Orders as specified herein and the General Conditions.

B. The CONTRACTOR shall:

1) Provide full written data as required or requested for the evaluation of changes by the OWNER and ENGINEER;

2) Maintain detailed records of work done on a time – and – material or force account basis;

3) Provide full documentation to the ENGINEER upon request.

C. The CONTRACTOR shall designate in writing the member of the CONTRACTOR's organization who is authorized to accept changes in the WORK and who is responsible of informing others in the CONTRACTOR's employ of the authorization for changes in the WORK.

D. The OWNER will designate in writing the person who is authorized to execute change orders.

E. The OWNER or ENGINEER may initiate changes to the WORK by submitting a Proposal Request to the CONTRACTOR. Such a request is to be for information only and shall not be construed as an authorization to execute the WORK. This request will include, but not necessarily be limited to, the following items:

1) Detailed description of the proposed change, products, and location of the proposed change to the WORK;

2) Supplementary or revised drawings and/or specifications;

3) Projected time for making the change, and a specific statement as to whether or not overtime work is or is not authorized;

4) A specific period of time for which the requested price is to remain valid.

F. The CONTRACTOR may initiate a request for changes to the WORK by submitting a written notice to the ENGINEER containing at a minimum the following items:

1) A description of the proposed changes;

2) Statement of the reason for making the changes

3) Statement of the effect on the Contract Price and Contract Time;

4) Statement of the effect on the work of separate CONTRACTORs;

5) Documentation supporting any change in the Contract Sum or Contract Time, as appropriate.

G. The CONTRACTOR shall support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow ENGINEER to evaluate the quotation.

H. On request of the ENGINEER or OWNER, the CONTRACTOR shall provide additional data to support time and cost computations, such as the following:

1) Labor Required;

2) Equipment Required;

3) Products required (recommended source of purchase and unit cost, quantities required);

4) Taxes, insurance, and bonds;

5) Credit for WORK deleted from the Contract;

6) Overhead and Profit;

7) Justification for any changes in the Contract Time.

I. The CONTRACTOR shall support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information, such as the following:

1) Name of the OWNER’s authorized agent who ordered the work, and date of the order;

2) Dates and time work was performed, and by whom;

3) Time record, summary of hours worked, and hourly rates paid;

4) Receipts and invoices for equipment used listing dates and times of use;

5) Receipts and invoices for products used, including quantities;

6) Receipts and invoices for subcontracts.

J. The ENGINEER will prepare each Change Order.

K. The form for Change Orders shall be the OWNER's standard form, which will be provided to the CONTRACTOR. A copy of the OWNER's standard form is included within this specification for the CONTRACTOR's information.

L. The Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

M. The Change Order will provide an accounting of adjustment in the Contract Sum and Contract Times.

N. The content of Lump Sum/Fixed Price Change Orders will be based on, either:

1) ENGINEER's Proposal Request and CONTRACTOR's responsive proposal as mutually agreed upon between OWNER and CONTRACTOR;

2) CONTRACTOR's Proposal for change to the WORK, as recommended by the ENGINEER.

O. OWNER and ENGINEER will sign and date the Change Order as authorization for the CONTRACTOR to proceed with the changes.

P. CONTRACTOR may sign and date the Change Order to indicate agreement with the terms therein.

Q. The content of Unit Price Change Orders will be based on, either:

1) ENGINEER'S definition of scope of the required Changes in the WORK;

2) CONTRACTOR's proposal for a Changes in the WORK, as recommended by the ENGINEER;

3) Survey of completed work.

R. The amounts of the unit prices shall be either:

1) Those stated in the Agreement;

2) Those mutually agreed upon between OWNER and CONTRACTOR.

S. When quantities of the items affected by the Change Order can be determined prior to the start of the work, the following procedure shall be employed:

1) OWNER and ENGINEER will sign and date the Change Order as authorization for the CONTRACTOR to proceed with the changes;

2) CONTRACTOR may signe and date the Change Order to indicate agreement with the terms therein.

T. When quantities of the items affected by the Change Order cannot be determined prior to the start of the work, the following procedure shall be employed:

1) The ENGINEER or OWNER will issue a construction change authorization directing CONTRACTOR to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.

2) At the completion of the change, the ENGINEER will determine the cost of such work based upon the unit prices and quantities of work performed. The CONTRACTOR shall submit documentation sufficient in the opinion of the ENGINEER to establish the change in Contract Sum and Contract Time.

3) The ENGINEER will sign and date the Change Order to establish the change in Contract Sum and Contract Time.

4) OWNER and CONTRACTOR will sign and date the Change Order to indicate their agreement with the terms included therein.

U. The CONTRACTOR shall periodically revise Schedule of Values and application for payment forms to record each change as a separate item of WORK, and to reflect the adjusted Contract Price.

V. The CONTRACTOR shall periodically revise the Construction Schedule to reflect Change Orders as specified herein.

W. Upon completion of WORK under a Change Order, the CONTRACTOR shall enter pertinent changes into the Record Documents.

SP20. CONSTRUCTION PROGRESS PHOTOGRAPHS

A. The CONTRACTOR shall furnish construction progress photographs showing the progress of the WORK. A competent photographer shall take photos via digital format of a resolution sufficient for documentation of the work and acceptable to the ENGINEER. CONTRACTOR shall provide a log with the date of photographing, the project title, short description of what is in the photograph, and the direction the camera is facing.

B. Starting when the WORK begins and for as long as the WORK is in progress, not less than twelve (12) photographs at intervals no longer than two (2) weeks apart, consisting of different angles or views at different locations of progress on the site. Digital photographs shall be furnished to the ENGINEER within one (1) week. Digital photographs shall become property of the OWNER upon submittal by the CONTRACTOR.

C. CONTRACTOR shall submit construction progress photographs with applications for payment.

D. Upon completion of the WORK but before final payment, an additional twenty (20) photographs shall be made of the WORK as directed by the ENGINEER. For the purposes of documenting the completed work, digital photographs and logs shall be delivered to the ENGINEER for transmittal to the OWNER.

SP21. EXCAVATION IN THE VICINITY OF BRIDGES

A. All excavation in the vicinity of bridges must be done from equipment staged from outside the footprint of the bridge. No equipment will be allowed under bridges for excavation.

B. The CONTRACTOR must submit a plan/method of excavation that must be preapproved by all bridge owners no later than 30 days prior to WORK being performed. Contacts for bridge owners are contained within the drawings. Contact information for the KCSRR is also included in SP. 15.

C. CONTRACTOR must not disturb soil within a minimum of 18 inches surrounding the bridge foundation.

SP22. PRESERVATION OF PUBLIC AND PRIVATE PROPERTY

A. The CONTRACTOR shall be responsible for preservation of public and private property and shall protect from disturbance and damage all land monuments, property line markers or horizontal and vertical control monuments such as those established by the United States Coast and Geodetic Survey, National Geodetic Survey, Louisiana Geodetic Survey, Louisiana DOTD, Corps of Engineers, or United States Geological Survey. Before removing and/or resetting any survey monuments, the CONTRACTOR shall give sufficient written advance notice to the ENGINEER with a copy to the Department's Location and Survey Section for coordination with the appropriate agency. The CONTRACTOR shall not disturb or move any such monument without written approval. The CONTRACTOR shall give immediate written notice to the ENGINEER, with a copy to the Department's Location and Survey Section, of damage to survey monuments. The ENGINEER will designate the location and manner in which monuments are to be reset in accordance with current Department procedures. The CONTRACTOR shall be responsible for damage to property during the WORK due to any negligent act, omission or misconduct in executing the WORK, or due to defective WORK or materials. This responsibility will not end until final acceptance. When damage is done to public or private property by the CONTRACTOR due to any negligent act, omission or misconduct in execution of the WORK, or in consequence of nonexecution thereof by the CONTRACTOR, such property shall be restored at the CONTRACTOR's expense, to a condition similar or equal to that existing before such damage was done, by repairing, rebuilding or otherwise acceptably restoring as directed, or making good such damage in an acceptable manner.

SP23. TEMPORARY DAMS AND BYPASSING

A. The CONTRACTOR may construct temporary dams to permit dewatering of the WORK area. The CONTRACTOR will be permitted to construct a maximum of two (2) temporary dams for construction in the canal. Dams shall be constructed using material that will rapidly erode in the event that the dams are overtopped. The CONTRACTOR will be required to remove the temporary dams and reinstall temporary dams as needed during the course of the project.

B. The CONTRACTOR shall be responsible for the design, installation, and maintenance of a system to bypass dry weather flows around the dewatered area.

C. The CONTRACTOR shall submit the location, elevation, and cross section of any dam he proposes to install, along with the dry – weather flow bypass system which he proposes to employ prior to beginning the WORK.

D. Upon orders at any time from the OWNER or ENGINEER, the temporary dams must be removed within one (1) hour of the time of verbal or written notification in order to permit storm water to pass through the construction site. The CONTRACTOR will also be responsible for keeping all existing drainage lines flowing at all times. Prior to initial dam installation, the CONTRACTOR shall file with the ENGINEER and OWNER, the names,

telephone numbers and email addresses of personnel who are available on a twenty-four hour "on-call" basis for removing these dams and any other impediment to drainage within the construction area. In the event that a dam is overtopped, the CONTRACTOR will be required to remove the remaining portions of the temporary dam(s) which are impeding the canal flow. Replacement of the temporary dams shall not be attempted until the flow in the canal has decreased to a rate which can be handled by the Contractor's by-pass pumping system (or other drainage facilities) and the National Weather Service forecast does not include a major rain event in Ascension Parish.

E. Temporary dams constructed of wood, concrete, or steel sheeting will not be allowed. Only earthen (sand) dams will be allowed. All temporary dams shall be constructed such that overtopping will result in rapid failure. Temporary dams constructed of any non-eroding material will not be allowed.

F. The CONTRACTOR shall employ the established by-pass pumping system for dry weather by-pass in order to avoid overtopping the temporary dams during minor rain events. If the CONTRACTOR does not properly provide and maintain a by-pass pumping system and the dam is overtopped, the CONTRACTOR shall be solely responsible for all clean up of damaged work and reestablishment of temporary dams. If the COTRACTOR's by-pass pumping system is in operation and properly functioning and the temporary dams are overtopped, or if the OWNER directs the CONTRACTOR to remove the dams, the CONTRACTOR will be eligible for payment under the provisions of the appropriate items.

G. Whenever the temporary dams are in place in the canal, the CONTRACTOR shall, at all times (on a 24 hour per day basis), maintain equipment on site and on-call personnel adequate for removal of the temporary dams within one (1) hour of notification.

H. If at any time during the rainfall (or prior to an eminent heavy rain/flood event), the OWNER decides that the dams must be removed, the CONTRACTOR shall immediately begin removing the dams in their entirety. All dams shall be completely removed within one (1) hour of the time the removal order is given. Once all dams have been removed, the CONTRACTOR shall contact the ENGINEER and the OWNER to confirm that the dams have been completely removed and that water flow in the canal has been reestablished.

SP24. ARBORIST SERVICES AND REQUIREMENTS FOR WORK WITHIN THE VICINITY OF SIGNIFICANT TREES

A. The CONTRACTOR shall retain and pay for the services of a licensed arborist registered by and in good standing with the Louisiana Horticulture Commission. The licensed arborist shall be responsible for the following items:

1. Directing the limits and depths of drainage excavation and embankment in the vicinity of significant trees within the project area;

2. Directing the limits of tree protection for significant trees;

3. Directing and performing tree trimming of all trees within the project area, whether indicated on the plans or required for equipment access;

B. For the purposes of this Special Provision, a significant tree is defined as any magnolia, oak, cypress, or sycamore tree within the project area.

C. The CONTRACTOR may trim trees within the channel area for access of equipment, however, such trimming shall be performed by the licensed arborist and shall be limited to the extents as directed by the licensed arborist.

D. The limits of tree protection shall be as directed by the licensed arborist, but shall conform to the construction requirements indicated in the plans.

E. The limits of drainage excavation and embankment as determined by the licensed arborist shall take precedence over plan limits of drainage excavation and embankment. No adjustment in unit prices for excavation or embankment will be made due to changes in those quantities due to limitations imposed by the licensed arborist.

F. The CONTRACTOR shall submit the name and licensure information of the licensed arborist prior to beginning the WORK.

SP25. EQUIPMENT ON PUBLIC ROADS

A. The CONTRACTOR shall design and implement measures to minimize the damage to Parish streets as a result of the construction. In all cases, the CONTRACTOR shall protect all existing traffic markings, reflectors, and signage from damage.

B. All metal - tracked equipment shall be operated on matted surfaces only. Under no circumstances shall any metal – tracked equipment be operated in direct contact with pavement on Parish streets. The design of mats shall be sufficient to reduce the effective live load of the equipment such that ground contact loading or pressures are equal to or less than HS 20-44 live loading as defined by AASHTO.

C. All rubber tire equipment shall result in no greater than an HS 20-44 live loading on Parish streets. Should equipment which produces greater than a resultant HL – 93 live loading on Parish streets be employed by the CONTRACTOR in the prosecution of the WORK, matting shall be provided such that contact loading or pressures are equal to or less than HS 20-44 live loading as defined by AASHTO.

D. Prior to the beginning of the WORK, the CONTRACTOR shall submit a complete roster of all equipment to be utilized, complete with operating weights, proposed measures for matting and surface protection, and calculations signed and sealed by a Professional Engineer registered in the State of Louisiana which substantiate compliance with the requirements contained within this special provision.

E. Live Loads for Construction Equipment on State Highways shall be in compliance with State Law and requirements of the Louisiana Department of Transportation and Development (LDOTD).

SP26. EQUIPMENT ON PRIVATE ROADS

A. Under no circumstances shall any construction equipment, vehicles, or materials be permitted on privately owned roads or privately - owned bridges.

SP27. RETURN OF SPOIL TO OWNER

A. The CONTRACTOR shall return up to 2,000 cubic yards of spoil material to the OWNER as directed. This spoil shall be delivered and placed in a stockpile as directed by the OWNER at a point on the east bank of Ascension Parish to be determined during construction. The CONTRACTOR shall dispose of the remainder of the spoil that is not

used in the channel for embankment, or delivered to the OWNER, in accordance with local, state, and federal laws and regulations.

SP28. STEEL SHEET PILES

A. Where directed by the ENGINEER and OWNER, the CONTRACTOR shall mobilize and drive sheet piles for shoring of the canal bank. This shall be considered as an as – needed item, and payment for these items will be made only if such WORK is directed by the OWNER and ENGINEER. No payment will be made for the omission of this item from the WORK.

B. Vibration monitoring for steel sheet piles will be paid as extra work under the provisions for extra work under the General Provisions.

- END OF SECTION –

PART 1 -- GENERAL

1.1 ABBREVIATIONS OF INSTITUTIONS

A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of the Specifications, the following acronyms or abbreviations which may appear shall have the meanings indicated herein.

B. Abbreviations:

AA	Aluminum Association
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ABMA	American Bearing Manufacturer's Association – ABMA
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
AF&PA	American Forest and Paper Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AHAM	Association of Home Appliance Manufacturers
AI	The Asphalt Institute
AIA	American Institute of Architects
AIHA	American Industrial Hygiene Association
AIIM	Association for Information and Image Management
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association International, Inc
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	Air-Conditioning and Refrigeration Institute
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASQ	American Society for Quality
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWCI	American Wire Cloth Institute
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute

AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturer's Association
CABO	Council of American Building Officials
CDA	Copper Development Association
CEMA	Conveyors Equipment Manufacturer's Association
CGA	Compressed Gas Association
CLFMI	Chain Link Fence Manufacturer's Institute
CMAA	A division/section of the Material Handling Industry of America
CRSI	Concrete Reinforcing Steel Institute
DCDMA	Diamond Core Drilling Manufacturer's Association
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EASA	Electrical Apparatus Service Association
EI	Energy Institute
EIA	Electronic Industries Alliance
EPA	Environmental Protection Agency
ETL	Electrical Test Laboratories
FCC	Federal Communications Commission
FCI	Fluid Controls Institute
FEMA	Federal Emergency Management Association
FHWA	Federal Highway Administration
FM	Factory Mutual System
FPL	Forest Products Laboratory
HI	Hydronics Institute, Hydraulic Institute
HSWA	Federal Hazardous and Solid Waste Amendments
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IBC	International Building Code
ICC	International Code Council
ICEA	Insulated Cable Engineers Association
ICCEC	Electrical Code
ICC-ES	International Code Council Evaluation Service
IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
IFC	International Fire Code
IFGC	International Fuel Gas Code
IMC	International Mechanical Code
IME	Institute of Makers of Explosives
IPC	International Plumbing Code, Association Connecting Electronic Industries
IRC	International Residential Code
ISA	Instrument Society of America
ISDI	Insulated Steel Door Institute
ISEA	Industrial Safety Equipment Association
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
ITU-T	Telecommunications Standardization Sector of the International Telecommunications Union
LDOTD	Louisiana Department of Transportation and Development
LPI	Lightning Protection Institute

LRQA	Lloyd’s Register Quality Assurance
MBMA	Metal Building Manufacturer's Association
MIL	Military Standards (DoD)
MPTA	Mechanical Power Transmission Association
MSS	Manufacturers Standardization Society
NAAMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers
DASMA	Door and Access Systems Manufacturers Association International
NAPF	National Association of Pipe Fabricators
NBBPVI	National Board of Boiler and Pressure Vessel Inspectors
NCCLS	National Committee for Clinical Laboratory Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association or National Fluid Power Association
NISO	National Information Standards Organization
NIST	National Institute of Standards and Technology
NLGI	National Lubricating Grease Institute
NRCA	National Roofing CONTRACTORs Association
NSF	National Sanitation Foundation
NWWDA	National Wood Window and Door Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PPI	Plastic Pipe Institute
RCRA	Resource Conservation and Recovery Act
RMA	Rubber Manufacturers Association
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SDI	Steel Door Institute, Steel Deck Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning CONTRACTORs National Association
SPFA	Steel Plate Fabricator’s Association
SPIB	Southern Pine Inspection Bureau
SSPC	Society for Protective Coating
SSPWC	Standard Specifications for Public Works Construction
STLE	Society of Tribologists and Lubricating Engineers
TAPPI	Technical Association of the Worldwide Pulp, Paper, and Converting Industry
TFI	The Fertilizer Institute
TIA	Telecommunications Industries Association
TPI	Truss Plate Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau
WDMA	National Window and Door Manufacturers Association
WEF	Water Environment Federation
WI	Woodwork Institute
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

1.2 REFERENCE STANDARDS

A. **Titles of Sections and Paragraphs:** Titles and subtitles accompanying specification sections and paragraphs are for convenience and reference only, and do not form a part of the Specifications.

B. **Applicable Publications:** Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Contract is advertised for bids shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth in the Specifications or shown on the Drawings will be waived because of any provision of, or omission from, said standards or requirements.

C. References herein to "Building Code" shall mean The International Building Code (IBC) latest edition. Similarly, references to "Mechanical Code", “Plumbing Code" and, “Fire Code" shall mean International Mechanical Code, International Plumbing Code and International Fire Code of the International Conference of the Building Officials (ICBO). "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the WORK is advertised for bids, as adopted by the agency having jurisdiction, shall apply to the WORK herein, including all addenda, modifications, amendments, or other lawful changes thereto.

D. In case of conflict between codes, reference standards, drawings, and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the ENGINEER for clarification and directions prior to ordering or providing any materials or furnishing labor. The CONTRACTOR shall bid for the most stringent requirements.

E. References herein to "OSHA Regulations for Construction" shall mean **Title 29, Part 1926, Construction Safety and Health Regulations,** Code of Federal Regulations (OSHA), including all changes and amendments thereto.

F. References herein to "OSHA Standards" shall mean **Title 29, Part 1910, Occupational Safety and Health Standards,** Code of Federal Regulations (OSHA), including all changes and amendments thereto

G. The CONTRACTOR shall be responsible that all work included in the Contract Documents, regardless if shown or not, shall comply with all EPA, OSHA, RCRA, NFPA, and any other Federal, State, and Local Regulations governing the storage and conveyance of hazardous materials, including petroleum products. Where no specific regulations exist, chemical, hazardous, and petroleum product piping and storage in underground locations shall be installed with double containment piping and tanks, or in separate concrete trenches and vaults, or with an approved lining which cannot be penetrated by the chemicals, unless waived in writing by the OWNER.

1.3 CONTRACTOR SUBMITTALS

A. Wherever submittals are required in the Contract Documents, submit them to the ENGINEER.

B. **Shop Drawings:** Wherever called for in the Contract Documents or where required by the ENGINEER, the CONTRACTOR shall furnish to the ENGINEER for review, a number and type of each Shop Drawing submittal as established by the OWNER or ENGINEER. Shop Drawings may include detail design calculations, shop-prepared drawings, fabrication and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items. Whenever the CONTRACTOR is required to submit design calculations as part of a submittal, such calculations shall bear the signature and seal of an engineer registered in the appropriate branch and in the state wherein the project is located, unless otherwise indicated. Shop drawing submittals shall be accompanied by the CONTRACTOR's standard submittal transmittal form. Submittals shall be signed by the CONTRACTOR as an indication that they have been reviewed for completeness and organization.

1) **Organization**: A single submittal transmittal form shall be used for each technical specification section or item or class of material or equipment for which a submittal is required. A single submittal covering multiple sections will not be acceptable, unless the primary specification references other sections for components. Example: if a pump section references other sections for the motor, shop-applied protective coating, anchor bolts, local control panel, and variable frequency drive, a single submittal would be acceptable. A single submittal covering vertical turbine pumps and horizontal split case pumps would not be acceptable.

2) Unless indicated otherwise, terminology and equipment names and numbers used in submittals shall match those used in the Contract Documents.

3) Each submittal shall be assigned a unique number. Submittals shall be numbered sequentially, and the submittal numbers shall be clearly noted on the transmittal. Submittals shall be numbered in accordance with the numbers indicated in Section 01030 – Submittals, Sampling, and Testing Plan. Original submittals shall be assigned a numeric submittal number followed by a letter of the alphabet to distinguish between the original submittal and each resubmittal. For example, if submittal 09-01-A requires a resubmittal, the first resubmittal will bear the designation "09-01-B" and the second resubmittal will bear the designation "09-01-C" and so on.

4) Disorganized submittals that do not meet the requirements of the Contract Documents will be returned without review.

5) Except as may otherwise be indicated, the ENGINEER will return a copy of each submittal to the CONTRACTOR with comments noted thereon, within 30 Days following receipt by the ENGINEER. It is considered reasonable that the CONTRACTOR will make a complete and acceptable submittal to the ENGINEER by the first resubmittal on an item. The OWNER reserves the right to withhold monies due to the CONTRACTOR to cover additional costs of the ENGINEER's review beyond the first resubmittal. The ENGINEER'S maximum review period for each submittal or resubmittal will be 30 Days. Thus, for a submittal that requires 2 resubmittals before it is complete, the maximum review period could be 90 Days.

6) If a submittal is returned to the CONTRACTOR marked “REVIEWED-NO EXCEPTIONS," formal revision and resubmission will not be required. If a submittal is returned marked "REVIEWED- EXCEPTIONS NOTED," CONTRACTOR shall make the corrections on the submittal, but formal revision and resubmission will not be required. If a submittal is returned marked "REVISE AND RESUBMIT," the CONTRACTOR shall revise it and shall resubmit the required number of copies to the ENGINEER for review. Resubmittal of portions of multi-page or multi-drawing submittals will not be allowed. For example, if a Shop Drawing submittal consisting of 10 drawings contains one drawing noted as "REVISE AND RESUBMIT," the submittal as a whole is deemed "REVISE AND RESUBMT," and 10 drawings are required to be resubmitted. If a submittal is returned marked "REJECTED-RESUBMIT," it shall mean either that the proposed material or product does not satisfy the specification, the submittal is so incomplete that it cannot be reviewed, or is a substitution request not submitted in accordance with the requirements of the Contract Documents. In the first 2 cases, the CONTRACTOR shall prepare a new submittal and shall submit the required number of copies to the ENGINEER for review. In the latter case, the CONTRACTOR shall submit the substitution request according to the Contract Documents. Fabrication of an item may commence only after the ENGINEER has reviewed the pertinent submittals and returned copies to the CONTRACTOR marked either "REVIEWED-EXECPTIONS NOTED" or "REVIEWED-NO EXCEPTIONS." Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as changes to the contract requirements. Re -submittal of rejected portions of a previous submittal will not be allowed. Every change from a submittal to a resubmittal or from a resubmittal to a subsequent resubmittal shall be identified and flagged on the resubmittal.

7) Submittals shall be carefully reviewed by an authorized representative of the CONTRACTOR prior to submission to the ENGINEER. Each submittal shall be dated and signed by the CONTRACTOR as being correct and in strict conformance with the Contract Documents. In the case of Shop Drawings, each sheet shall be so dated and signed. Any deviations from the Contract Documents shall be noted on the transmittal sheet. The ENGINEER will only review submittals that have been so verified by the CONTRACTOR. Non-verified submittals will be returned to the CONTRACTOR without action taken by the ENGINEER, and any delays caused thereby shall be the total responsibility of the CONTRACTOR.

8) Corrections or or comments made on the CONTRACTOR's Shop Drawings during review do not relieve the CONTRACTOR from compliance with Contract Drawings and Specifications. Review is for conformance to the design concept and general compliance with the Contract Documents only. The CONTRACTOR is responsible for confirming and correlating quantities and dimensions, fabrication processes and techniques, coordinating WORK with the trades, and satisfactory and safe performance of the WORK.

C. **Certificates:** Where certificates are required, submit them to the ENGINEER as specified herein. For materials, regardless of an approved certificate, the ENGINEER may still test the material if in his opinion it is questionable upon delivery. The abbreviations and definitions of certificates are as follows:

1) **Certificate of Analysis**: Certificate from the manufacturer or supplier of actual test results of the material properties. (This also includes "mill test reports.") A Certificate of Analysis shall be furnished with each lot of material delivered to the work.

2) **Certificate of Compliance**: Certificate from the manufacturer or supplier stating that the material complies with the required specifications. A Certificate of Compliance shall be furnished with each lot of material delivered to the work.

D. **Technical Manuals:** The CONTRACTOR shall submit technical operation and maintenance information for each item of mechanical, electrical, and instrumentation equipment in an organized manner in the Technical Manual. It shall be written so that it can be used and understood by the OWNER's operation and maintenance staff. The Technical Manual shall be subdivided first by specification section number; second, by equipment item; and last, by "Category." The following "Categories" shall be addressed (as applicable):

1) **Equipment Summary**: A table shall indicate the equipment name, equipment number, and process area in which the equipment is installed.

2) **Operational Procedures**: Manufacturer – recommended procedures on the following shall be included: Installation, adjustment, startup, locations of controls, special tools, equipment required, or related instrumentation needed for operation, operation procedures, load changes, calibration, shutdown, troubleshooting, disassembly, reassembly, realignment, testing to determine performance efficiency, tabulation of proper settings and listing of all electrical relay settings.

3) **Preventative Maintenance Procedures**: Preventive maintenance procedures shall include manufacturer-recommended procedures to be performed on a periodic basis, both by removing and replacing the equipment or component, and by maintaining the equipment in place. Recommended frequency of preventive maintenance procedures shall be included. Lubrication schedules, including lubricant SAE grade, type, and temperature ranges, shall be covered.

4) **Parts List**: complete parts list shall be furnished, including a generic description and manufacturer's identification number for each part. Addresses and telephone numbers of the nearest supplier and parts warehouse shall be included. Cross-sectional or exploded view drawings shall accompany the parts list. Part numbers shall appear on the drawings with arrows to the corresponding part.

5) **Wiring Diagrams**: This shall include complete internal and connection wiring diagrams for electrical equipment items.

6) **Shop Drawings**: This category includes approved shop or fabrication drawings with ENGINEER comments and corrections incorporated, complete with dimensions.

7) **Safety**: This category describes the safety precautions to be taken when operating and maintaining the equipment or working near it.

8) **Documentation**: Equipment warranties, affidavits, certifications, calibrations, laboratory test results, etc. required by the Technical Specifications shall be placed in this category

E. **Record Drawings:** The CONTRACTOR shall maintain one set of Drawings at the Site for the preparation of record drawings. On these, it shall mark every project condition, location, configuration, and any other change or deviation which may differ from the Contract Drawings at the time of award, including buried or concealed construction and utility features that are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of buried utilities that differ from the locations indicated, or that were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or as CONTRACTOR is directed, to fully indicate the WORK as actually constructed. These record drawings are the CONTRACTOR's representation of as-built conditions, shall include revisions made by addenda and change orders, and shall be maintained up-to-date during the progress of the WORK. Red ink shall be used for alterations and notes. Notes shall identify relevant Change Orders by number and date. Disorganized or incomplete record drawings will not be accepted. The CONTRACTOR shall revise them and resubmit within 10 Days. Record drawings shall be accessible to the ENGINEER during the construction period. Final payment will not be acted upon until the record drawings have been completed and delivered to the ENGINEER.

1.4 SCHEDULE OF VALUES

A. The CONTRACTOR shall prepare and submit a detailed Schedule of Values to the ENGINEER prior to the CONTRACTOR’s first application for payment. Because the ultimate requirement is to develop a detailed Schedule of Values sufficient to determine appropriate progress payment amounts, sufficient detailed breakdown shall be provided to meet this requirement. The ENGINEER shall be the sole judge of acceptable numbers, details and description of values established. If, in the opinion of the ENGINEER, a greater number of Schedule of Values items than proposed by the CONTRACTOR is necessary, the CONTRACTOR shall add the additional items so identified by the ENGINEER.

1.5 SANITARY, HEALTH, AND SAFETY PROVISIONS

A. The CONTRACTOR shall not require any worker to work under conditions which are unsanitary, hazardous or dangerous to health or safety. The CONTRACTOR shall maintain the work in a sanitary, safe and nonhazardous condition.

B. The CONTRACTOR shall provide and maintain in a neat, sanitary condition, restrooms and other such accommodations for use of employees and ENGINEER or OWNER personnel. Such facilities shall comply with requirements of the State and local governments.

C. **Sanitary and Other Organic Wastes**: The CONTRACTOR shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary

facilities provided by the CONTRACTOR or organic material wastes from any other source related to the CONTRACTOR's operations shall be disposed of away from the Site in a manner satisfactory to the ENGINEER and in accordance with all laws and regulations pertaining thereto.

D. **Toilet Facilities:** Fixed or portable chemical toilets shall be provided wherever needed for the use of CONTRACTOR's employees. Toilets at construction job sites shall conform to the requirements of Subpart D, Section 1926.51 of the OSHA Standards for Construction. Provide separate field office facilities in conformance with Section 01590.

1.6 NAVIGABLE WATERS AND WETLANDS

A. All work in, over, or adjacent to navigable waters or wetlands shall be conducted in accordance with rules and regulations of the U. S. Army Corps of Engineers and U. S. Coast Guard.

B. Navigable clearances on waterways shall not be infringed upon, and existing navigable depths shall not be impaired except as allowed by permits issued by the responsible agency.

C. The CONTRACTOR shall display lights on equipment operating, berthed or moored in navigable streams, and provide temporary navigational lighting on temporary and permanent construction in the navigable limits as required by the U. S. Coast Guard.

D. Should the CONTRACTOR sink, lose or throw overboard any material, machinery or equipment which may be dangerous to navigation, it shall be immediately removed or recovered. The CONTRACTOR shall give immediate notice of such obstruction to proper authorities and, if required, shall mark or buoy such obstruction until it is removed.

E. The CONTRACTOR shall not deposit excavated material into the water-way or wetland without a permit from the appropriate agency.

F. All operations in connection with the work shall be in accordance with permits, rules and regulations of the U. S. Army Corps of Engineers and the U. S. Coast Guard. Deviations therefrom shall be only by special permission or special permit which shall be the responsibility of the CONTRACTOR. Failure of the CONTRACTOR to become familiar with the terms, conditions and provisions of the permits, rules and regulations applicable to the work shall not relieve the CONTRACTOR of responsibility under the contract.

1.7 BARRICADES AND WARNING SIGNS

A. The CONTRACTOR shall provide, erect and maintain necessary barricades, suitable lights, danger signals, signs and other traffic control devices, including flaggers, and shall take all necessary precautions for protection of the work and safety of the public. Highways closed to traffic shall be protected by effective barricades. Suitable warning signs shall be provided to direct traffic

1.8 USE OF EXPLOSIVES

A. Explosives shall not be used without written approval. When explosives are used, the CONTRACTOR shall not endanger life or property. The use of explosives shall be in compliance with all laws and ordinances. The CONTRACTOR shall be responsible for all damage resulting from the use of explosives.

B. Explosives shall be securely stored, in compliance with all laws and ordinances. Such storage places shall be clearly marked. When no local laws or ordinances apply, satisfactory storage shall be provided not closer than 1,000 feet from any road, building or place of human occupancy.

C. The CONTRACTOR shall notify, in writing, each utility company and affected property owner having facilities in proximity to the site of work of the intention to use explosives. Such notices shall be given sufficiently in advance to enable them to protect their property from damage.

1.9 ARCHEOLOGICAL AND HISTORICAL FINDINGS

A. If the CONTRACTOR encounters cultural artifacts or archaeological or historical sites, operations shall be discontinued. The engineer will contact the proper authorities in order that an appropriate assessment may be made to determine the disposition thereof and necessary actions relative to the site. When directed, the CONTRACTOR shall excavate the site to preserve the artifacts encountered. Such excavation will be paid for as extra work, including an appropriate adjustment in contract time. Borrow and muck disposal areas furnished by the CONTRACTOR will be subject to such assessment prior to use.

1.10 TEMPORARY UTILITIES

A. The CONTRACTOR shall be responsible for the provision of all temporary utilities he deems necessary for the proper execution of the WORK in the most efficient manner practical. The cost of provision of these temporary utilities shall be borne by the CONTRACTOR and shall be included in the price of the WORK.

B. tHE CONTRACTOR shall provide either new or used materials and equipment, which are in substantially undamaged condition and without significant deterioration and which are recognized in the construction industry, by compliance with appropriate standards, as being suitable for intended use in each case. Where a portion of temporary utility is provided by utility company, the CONTRACTOR shall provide the remaining portion with matching and compatible materials and equipment and shall comply with recommendations of utility company.

C. **Power:** The CONTRACTOR shall provide power required for its operations under the Contract, and shall provide and maintain all temporary power lines required to perform the WORK in a safe and satisfactory manner.

D. **Temporary Power Distribution**: The CONTRACTOR shall provide a weatherproof, grounded, temporary power distribution system sufficient for performance of entire WORK of project, including temporary electrical heating where indicated, operation of test equipment and test operation of building equipment and systems which cannot be delayed until permanent power connections are operable, temporary operation of other temporary facilities, including permanent equipment and systems which must be placed in operation prior to use of permanent power connections (pumps, HVAC equipment, elevators, and similar equipment), and power for temporary operation of existing facilities (if any) at the Site during change-over to new permanent power system. Provide circuits of adequate size and proper power characteristics for each use; run circuit wiring generally overhead, and rise vertically in locations where it will be least exposed to possible damage from construction operations and will result in minimal interference with performance of the WORK; provide rigid steel conduit or equivalent raceways for wiring which must be exposed on grade, floors, decks, or other exposures to damage or abuse.

Wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. Electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction.

E. **Construction Lighting:** WORK conducted at night or under conditions of deficient daylight shall be suitably lighted to insure proper WORK and to afford adequate facilities for inspection and safe working conditions.

F. **Temporary Lighting**: The CONTRACTOR shall provide a general, weatherproof, grounded temporary lighting system in every area of construction work, as soon as overhead floor/roof deck structure has been installed to provide sufficient illumination for safe work and traffic conditions. Run circuit wiring generally overhead, and rise vertically in locations where it will be least exposed to possible damage from construction operations on grade, floors, decks, or other areas of possible damage or abuse.

G. **Construction Water:** The CONTRACTOR shall provide an adequate supply of water of a quality suitable for all domestic and construction purposes. The CONTRACTOR shall not make connection to or draw water from any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system. For each such connection made, the CONTRACTOR shall first attach to the fire hydrant or pipeline a valve and a meter, if required by the said authority, of a size and type acceptable to said authority and agency. The CONTRACTOR shall pay all permit and water charges.

1.11 SITE ACCESS AND STORAGE

A. The CONTRACTOR shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the WORK. It shall be the CONTRACTOR's responsibility to construct and maintain any haul roads required for its construction operations.

B. Continuous, unobstructed, safe, and adequate pedestrian and vehicular access shall be provided to fire hydrants, commercial and industrial establishments, churches, schools, parking lots, service stations, motels, fire and police stations, and hospitals. Safe and adequate public transportation stops and pedestrian crossings at intervals not exceeding 300 feet shall be provided. The CONTRACTOR shall cooperate with parties involved in the delivery of mail and removal of trash and garbage so as to maintain existing schedules for such services. Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time.

C. Wherever necessary, to maintain vehicular crossings, the CONTRACTOR shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the CONTRACTOR shall secure the written consent of the responsible individuals or authorities to omit such temporary bridges or steel plates, which written consent shall be delivered to the ENGINEER prior to excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the CONTRACTOR shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required.

D. Nothing herein shall be construed to entitle the CONTRACTOR to the exclusive use of any public street, alleyway, or parking area during the performance of the WORK hereunder, and it shall conduct its operations to not interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. No street shall be closed to the public without first obtaining permission of the ENGINEER and proper governmental authority. Where excavation is being performed in primary streets or highways, one lane in each direction shall be kept open to traffic at all times unless otherwise indicated. Toe boards shall be provided to retain excavated material if required by the ENGINEER or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the WORK shall be kept accessible to fire-fighting equipment at all times. Temporary provisions shall be made by the CONTRACTOR to assure the use of sidewalks and the proper functioning of all gutters, storm drain inlets, and other drainage facilities.

E. The OWNER may designate and arrange for the CONTRACTOR's use, a portion of the property for its exclusive use during the term of the Contract as a storage and shop area for its construction operations on the WORK. At completion of WORK, the CONTRACTOR shall return this area to its original condition, including grading and landscaping.

F. The CONTRACTOR shall make its own arrangements for any necessary off-Site storage or shop areas necessary for the proper execution of the WORK.

G. The CONTRACTOR shall construct and use a separate storage area for hazardous materials used in constructing the WORK.

1.12 PROTECTION OF EXISTING UTILTIES

A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than prior to such damage or temporary relocation, all in accordance with the Contract Documents.

B. When the CONTRACTOR's work involves excavating or underground demolition activity, the CONTRACTOR is required to reach Louisiana One Call, prior to starting any work, by calling (225) 275-3700 or toll-free 1-800-272- 3020, or by fax (225) 272-1967 in order to comply with the Louisiana Underground Utilities and Facilities Damage Prevention Law.

C. The CONTRACTOR's operations adjacent to properties of railway and utility companies or adjacent to other property, damage to which might result in considerable expense, loss or inconvenience, shall not commence until after all arrangements necessary for the protection thereof have been made.

D. The CONTRACTOR shall cooperate with owners of utility lines in their removal and rearrangement, in order that these operations may progress in a reasonable manner, that duplication of rearrangement work may be minimized and that services rendered by those parties will not be unnecessarily interrupted.

E. In the event of interruption of utility services due to accidental breakage or being exposed or unsupported, the CONTRACTOR shall promptly notify the proper authority and shall cooperate with such authority in restoration of service. If utility service is interrupted, continuous cooperation will be required until service is restored. No work

shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

1.13 QUALITY CONTROL

A. The CONTRACTOR shall establish and maintain an effective quality control process. The quality control process shall consist of plans, procedures, and organization necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the contract requirements. The process shall cover construction operations both onsite and offsite, and shall be keyed to the proposed construction sequence.

1.14 PROTECTION OF THE WORK

A. The CONTRACTOR shall be responsible for the 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. The CONTRACTOR shall maintain the 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.

F. If the CONTRACTOR fails to comply with the provisions of this section, the ENGINEER will 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 provide security for the project, and the cost of this security will be deducted from payments for the work.

G. If 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.

1.15 PROJECT MEETINGS

A. **Preconstruction Conference:**

1. 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

the CONTRACTOR'S Project Manager, its superintendent, and its subcontractors as the CONTRACTOR deems appropriate. Other attendees will be:

a. ENGINEER and the Resident Project Representative.

b. Representatives of OWNER.

c. Governmental representatives as appropriate.

d. Representatives of the Louisiana Department of Transportation and Development

e. Representatives of the City of Gonzales

f. Representatives of the Kansas City Southern Railway

g. Others as requested by CONTRACTOR, OWNER, or ENGINEER.

2. 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 complete agenda will be furnished to the CONTRACTOR prior to the meeting date. However, the CONTRACTOR should be prepared to discuss all of the items listed below.

a. Status of CONTRACTOR's insurance and bonds.

b. CONTRACTOR's tentative schedules.

c. Transmittal, review, and distribution of CONTRACTOR's submittals.

d. Processing applications for payment.

e. Maintaining record documents.

f. Critical work sequencing.

g. Field decisions and Change Orders.

h. Use of Site, office and storage areas, security, housekeeping, and OWNER's needs.

i. Major equipment deliveries and priorities.

3. The ENGINEER will preside at the preconstruction conference and will arrange for keeping and distributing the minutes to all persons in attendance.

4. The CONTRACTOR and its subcontractors should plan on the conference taking no less than one half of one full working day.

B. **Progress Meetings:**

1. The ENGINEER will schedule and hold regular on-Site progress meetings as requested by CONTRACTOR or OWNER or as required by progress of the WORK. The CONTRACTOR, ENGINEER, and all subcontractors active on the Site shall

attend each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers, and other subcontractors.

2. The ENGINEER will preside at the progress meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings is to review the progress of the WORK, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop. During each meeting, the CONTRACTOR shall present any issues that may impact its progress with a view to resolve these issues expeditiously.

1.16 **PROJECT CLOSEOUT**

A. The CONTRACTOR shall promptly remove from the vicinity of the completed WORK, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the WORK by the OWNER will be withheld until the CONTRACTOR has satisfactorily performed the final cleanup of the Site.

B. The CONTRACTOR shall establish dates for equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the OWNER, the ENGINEER, and their authorized representatives sufficient time to schedule attendance at such activities.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION -

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SECTION 01025 - MEASUREMENT AND PAYMENT (REVISED 03/12/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. Payment for the various items on the Bid Form, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Schedule, and all costs therefor shall be included in the prices named in the Bid Schedule for the various appurtenant items of work.

1.2 ACCURACY

A. The ENGINEER will be the judge of the accuracy of measurements, or approximations made in lieu of accurate determinations and these decisions shall be binding upon both the CONTRACTOR and the OWNER.

B. The ENGINEER will utilize the accepted Schedule of Values for the purpose of estimating the value of WORK completed for the evaluation of requests for payment.

C. In computing volumes of excavation, the average end area method or other acceptable methods will be used.

D. When United States standard units are used, the pound or the ton will be the standard units of weight. The term "ton," in the United States standard, will mean the short ton of 2,000 pounds avoirdupois. Materials measured or proportioned by weight shall be weighed on approved scales by qualified personnel at designated locations. If material is shipped by rail, the car weight may be accepted provided the weight of material only will be paid for; however, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid by measured weight shall be weighed empty at such times as directed; and each truck shall bear a plainly legible identification mark.

E. Materials specified to be measured by volume in hauling vehicles shall be hauled in approved vehicles and will be measured therein at the point of delivery on the project. Vehicles may be of any acceptable size or type, provided the body is of such shape that the volume can be readily and accurately determined. Vehicles shall be loaded to at least a predetermined permanently fixed mark, which defines a known volume, upon arrival at the point of delivery. Vehicles will be measured in increments of 0.5 cubic yard, except that when tailgate spreader-boxes are used to place aggregate materials for asphaltic surface treatment, the volume of the spreader-ox will be added to the volume of the vehicle. When materials are measured by weight and converted to volume for payment, conversion will be made to the nearest 0.1 cubic yard

F. The terms "lump sum, each, or unit" when used as a unit of measure for payment will mean complete payment for the work described in the contract.

1.3 MOBILIZATION (Ref. No. 1)

A. **Measurement:** No measurement will be made for this item.

B. **Payment:** Payment for this item will be made at the lump sum price on the Bid Form, or in portions thereof in accordance with the following table, which price shall constitute full payment for mobilization, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Mobilization
1st Application for Payment	25
10	50
25	75
50	100

1.4 TEMPORARY ENVIRONMENTAL CONTROLS (Ref. No. 2)

A. **Measurement:** No Measurement will be made for this item.

B. **Payment:** Payment for temporary environmental controls will be made at the lump sum price named in the Bid Form, or portions thereof, in accordance with the following table, which price shall constitute full payment for temporary environmental controls, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

Percent of Total Contract Amount Earned:	Allowable Percent of Lump Sum Price for Temporary Environmental Controls:
First Estimate	40
25	60
50	80
75	95
100	100

1.5 TEMPORARY TRAFFIC CONTROL (Ref. No. 3)

A. **Measurement:** No Measurement will be made for this item.

B. **Payment:** Payment for temporary traffic control will be made at the lump sum price named in the Bid Form, or portions thereof, in accordance with the following table, which price shall constitute full payment for temporary traffic control, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Temporary Traffic Control
Initial Erection of Temporary Traffic Controls	40
25	60
50	80
75	95
100	100

1.6 CONSTRUCTION LAYOUT (Ref. No. 4)

A. **Measurement:** No Measurement will be made for this item.

B. **Payment:** Payment for this item will be made at the lump sum price named in the Bid Form, or portions thereof, in accordance with the following table, which shall constitute full payment for construction layout, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

Percent of Total Contract Amount Earned:	Allowable Percent of Lump Sum Price for Construction Layout:
First Estimate	40
25	60
50	80
75	95
100	100

1.7 **SITE PREPARATION (Ref. No. 5)**

A. **Measurement:** No Measurement will be made for this item.

B. **Payment:** Payment for this item will be made at, or in portions thereof based upon the estimated amount of the WORK completed, of the lump sum bid price named on the bid form which price shall constitute full payment for clearing and grubbing and sit preparation including removal and disposal of grubbed material, and including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.8 **REMOVAL OF STRUCTURES AND OBSTRUCTIONS (Ref. No. 6)**

A. **Measurement:** No Measurement will be made for this item.

B. **Payment:** Payment for this item will be made at, or in portions thereof based upon the estimated amount of the WORK completed, of the lump sum bid price named on the bid form which price shall constitute full payment for all required removal of structures and obstructions, inclusive of existing storm drain pipes to be removed and structures to be removed, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.9 **DRAINAGE EXCAVATION (Ref. No. 7)**

A. **Measurement:** Drainage excavation includes the excavation for drainage beyond the limits of the roadway section. Drainage excavation also includes inlet and outlet ditches to structures or roadways; changes in or deepening of channels of streams, berm ditches, ditches parallel or adjacent to the roadway beyond the limits of the roadway section; and material excavated from areas under bridges. The measurement of quantities will be computed by the average end area method and will be that area bound by the original ground line based on original cross sections obtained by the CONTRACTOR, and final field cross sections obtained by the CONTRACTOR. After clearing and grubbing operations, the CONTRACTOR will take original cross sections for the entire length of the project. All original cross sections shall be taken in the presence of the ENGINEER or his representative. Cross sections shall be taken at sufficient intervals to accurately determine earthwork quantities, not

to exceed 100 linear feet. Final cross sections will be taken after stabilization of the excavations. The cross sections shall be taken by methods acceptable to the ENGINEER, and results must be furnished to the ENGINEER in a format satisfactory to the ENGINEER. The ENGINEER 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 will investigate and reconcile any differences.

B. **Payment:** Payment for the accepted quantities will be made at the unit price named in the bid form which price shall constitute full payment for drainage excavation, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.10 **EMBANKMENT (Ref. No. 8)**

A. **Measurement:** The measurement of quantities will be computed by the average end area method and will be that area bound by the original ground line based on original cross sections obtained by the CONTRACTOR, and final field cross sections obtained by the CONTRACTOR. After clearing and grubbing operations, the contractor will take original cross sections for the entire length of the project. All original cross sections shall be taken at sufficient intervals to accurately determine earthwork quantities, not to exceed 100 linear feet. Final cross sections will be taken after stabilization of the excavations. The cross sections shall be taken by methods acceptable to the ENGINEER, and results must be furnished to the ENGINEER in a format satisfactory to the ENGINEER. The ENGINEER 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 will investigate and reconcile any differences.

B. **Payment:** Payment for this item will be made at the unit price per named in the Bid Form which price shall constitute full compensation for embankment, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.11 **ARBORIST SERVICES (Ref. No. 9)**

A. **Measurement:** No Measurement will be made for this item.

B. **Payment:** Payment for this item will be made at, or in portions thereof based upon the estimated amount of the WORK completed, of the lump sum bid price named on the bid form which price shall constitute full payment for all arborist services in accordance with the Contract Documents, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.12 **TREE TRIMMING (Ref. No. 10)**

A. **Measurement:** No Measurement will be made for this item.

B. **Payment:** Payment for this item will be made at, or in portions thereof based upon the estimated amount of the WORK completed, of the lump sum bid price named on the bid form which price shall constitute full payment for all tree trimming in accordance with the Contract Documents, including furnishing all equipment, labor and materials

necessary for the completion of this WORK in accordance with the Contract Documents.

1.13 **15" PLASTIC PIPE STORM DRAIN, OUTFALL (Ref. No. 11)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe. Excavation required for installation of pipes will not be measured for payment. Furnishing and placing backfill material 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 and payment will be made under applicable earthwork items.

B. **Payment:** Payment for this item will be made at the contract unit price per linear foot, which includes connections to existing structures, concrete, reinforcing steel, excavation, backfill, and all including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.14 **18" PLASTIC PIPE STORM DRAIN, OUTFALL (Ref. No. 12)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe. Excavation required for installation of pipes will not be measured for payment. Furnishing and placing backfill material 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 and payment will be made under applicable earthwork items.

B. **Payment:** Payment for this item will be made at the contract unit price per linear foot, which includes connections to existing structures, concrete, reinforcing steel, excavation, backfill, and all including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.15 **24" PLASTIC PIPE STORM DRAIN, OUTFALL (Ref. No. 13)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe. Excavation required for installation of pipes will not be measured for payment. Furnishing and placing backfill material 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 and payment will be made under applicable earthwork items.

B. **Payment:** Payment for this item will be made at the contract unit price per linear foot, which includes connections to existing structures, concrete, reinforcing steel, excavation, backfill, and including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.16 **36" PLASTIC PIPE STORM DRAIN, OUTFALL (Ref. No. 14)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe. Excavation required for installation of pipes will not be measured for payment. Furnishing and placing backfill material 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 and payment will be made under applicable earthwork items.

B. **Payment:** Payment for this item will be made at the contract unit price per linear foot, which includes connections to existing structures, concrete, reinforcing steel, excavation, backfill, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.17 **48" PLASTIC PIPE STORM DRAIN, OUTFALL (Ref. No. 15)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe. Excavation required for installation of pipes will not be measured for payment. Furnishing and placing backfill material 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 and payment will be made under applicable earthwork items.

B. **Payment:** Payment for this item will be made at the contract unit price per linear foot, which includes connections to existing structures, concrete, reinforcing steel, excavation, backfill, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.18 **48" REINFORCED CONCRETE PIPE STORM DRAIN, OUTFALL (Ref. No. 16)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe. Excavation required for installation of pipes will not be measured for payment. Furnishing and placing backfill material 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 and payment will be made under applicable earthwork items.

B. **Payment:** Payment for this item will be made at the contract unit price per linear foot, which includes connections to existing structures, concrete, reinforcing steel, excavation, backfill, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.19 **MODIFIED CB – 01 DRAINAGE STRUCTURE (Ref. No. 17)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of such structures completed. Excavation and backfill for installation of these structures will not be measured for payment.

B. **Payment:** Payment for this item will be made at the unit price named in the Bid Form, which price shall constitute full payment for construction of such drainage structures, including excavation, shoring, backfill, concrete, reinforcement, grates, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.20 **MODIFIED CB – 02 DRAINAGE STRUCTURE (Ref. No. 18)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of such structures completed. Excavation and backfill for installation of these structures will not be measured for payment.

B. **Payment:** Payment for this item will be made at the unit price named in the Bid Form, which price shall constitute full payment for construction of such drainage structures, including excavation, shoring, backfill, concrete, reinforcement, grates, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.21 **BEDDING MATERIAL (Ref. No. 19)**

A. **Measurement:** Bedding material, including plastic soil material, completed and accepted, will be measured by the cubic yard (net section). The length and width will be measured horizontally to the theoretical points established by the plans for bedding material. The depth will be as shown on the plans or established by the ENGINEER. Geotextile fabric will not be measured for payment. Necessary excavation and disposal of excess excavated materials will not be measured for payment.

B. **Payment:** Payment for this item will be made at the unit price named in the Bid Form which price shall constitute full compensation for placement and compaction of bedding material, including provision of material, placement, and compaction of the material, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.22 **OUTFALL PROTECTION, 30 – LB RIP RAP (Ref. No. 20)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of square yards of such rip rap actually placed. Excavation required for installation of rip rap will not be measured for payment.

B. **Payment:** Payment for this item will be made at the unit price named in the Bid Form which price shall constitute full compensation for placement and compaction of bedding material, including provision of material, placement, and compaction of the material, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.23 **RIP RAP (30 LB), BRIDGES (Ref. No. 21)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of square yards of such rip rap actually placed. Excavation required for installation of rip rap will not be measured for payment.

B. **Payment:** Payment for this item will be made at the contract unit price per square yard, which includes delivery and installation of rip rap, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.24 **RIP RAP (10 LB) (RAILROAD BRIDGE) (Ref. No. 22)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of square yards of such rip rap actually placed. Excavation required for installation of rip rap will not be measured for payment.

B. **Payment:** Payment for this item will be made at the contract unit price per square yard, which includes delivery and installation of rip rap, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.25 **GEOTEXTILE FABRIC (Ref. No. 23)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of square yards of such geotextile fabric actually placed. Excavation required for installation of geotextile fabric will not be measured for payment.

B. **Payment:** Payment for this item will be made at the contract unit price per square yard, which includes delivery and installation of geotextile fabric, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.26 **TYPE 3 OBJECT MARKERS AND POSTS (Ref. No. 24)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of such signs actually placed. Excavation required for installation of signs will not be measured for payment.

B. **Payment:** Payment for this item will be made at the contract unit price per each, which includes delivery and installation of type 3 object markers and posts, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.27 **NO PARKING SIGNS AND POSTS (Ref. No. 25)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of such signs actually placed. Excavation required for installation of signs will not be measured for payment.

B. **Payment:** Payment for this item will be made at the contract unit price per each, which includes delivery and installation of no parking signs and posts, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.28 **MOBILIZATION COST FOR STEEL SHEET PILE DRIVING (Ref. No. 26)**

A. **Measurement:** No measurement will be made for this item.

B. **Payment:** Payment for this item, if necessary and ordered by the ENGINEER, will be made at the lump sum price named in the Bid Form, which price shall constitute full payment for mobilization for sheet pile WORK, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.29 **STEEL SHEET PILE WALL (Ref. No. 27)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of square feet of such sheet pile wall actually placed. Excavation required for installation of sheet pile wall will not be measured for payment.

B. **Payment:** Payment for this item, if necessary and ordered by the ENGINEER, will be made at the contract unit price per square foot, which includes delivery and installation of sheet pile wall, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.30 **INITIAL INSTALLATION AND FINAL REMOVAL OF TEMPORARY DAMS (Ref. No. 28)**

A. **Measurement:** No measurement will be made for this item.

B. **Payment:** Payment for this item will be made at the lump sum price listed in the Bid Form, which price shall constitute full compensation for initial installation and final removal of temporary dams (inclusive of disposal) including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents. Costs associated with furnishing, installing and operating the accepted dry weather flow by-pass system shall be included in this item.

1.31 **TEMPORARY DEWATERING DAM REMOVAL AND REPLACEMENT (Ref. No. 29)**

A. **Measurement:** Measurement for this item will be made based upon the number of occurrences for dam removal and replacement as ordered by the OWNER or ENGINEER.

B. **Payment:** Payment for this item will be made at price per each listed in the Bid Form, which price shall constitute full compensation for removal, disposal of, and re – installation of temporary dams where ordered by the ENGINEER including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.32 **FURNISH AND INSTALL 18" FLAP GATE FOR DRAIN PIPE OUTFALL (Ref. No. 30)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of such flap gates actually placed.

B. **Payment:** Payment for this item will be made at the contract unit price per each, which includes delivery and installation of flap gates, and all other items of material,

labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.33 **FURNISH AND INSTALL 24" FLAP GATE FOR DRAIN PIPE OUTFALL (Ref. No. 31)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of such flap gates actually placed.

B. **Payment:** Payment for this item will be made at the contract unit price per each, which includes delivery and installation of flap gates, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.34 **REMOVE AND RE-INSTALL 48" FLAP GATE FOR DRAIN PIPE OUTFALL (Ref. No. 32)**

A. **Measurement:** Measurement for payment for this item will be based upon the number of such flap gates actually removed and reinstalled.

B. **Payment:** Payment for this item will be made at the contract unit price per each, which includes removal and reinstallation of flap gates, and all other items of material, labor, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.35 **AGGREGATE SURFACE COURSE (Ref. No. 33)**

A. **Measurement:** Measurement for this item will be made based upon the number of cubic yards of material delivered and placed as determined by adjusted vehicular measure. The CONTRACTOR, with approval of the ENGINEER and OWNER, may elect to measure material deliveries by the ton. Should the CONTRACTOR elect to measure deliveries by the ton, the CONTRACTOR shall provide certified haul tickets with weights measured by scales acceptable to the ENGINEER. Materials delivered by volume will be measured by the cubic yard in hauling vehicles and divided by the following factors to determine pay volume:

Material	Factor
Stone or Crushed Slag	1.30
Lime Treated Sand – Clay – Gravel	1.30
Recycled Portland Cement Concrete	1.30
Reclaimed Asphalt Pavement	1.50

Materials delivered by weight will be measured by the ton in hauling vehicles and divided by the following factors to determine the pay volume:

Material	Tons to Cubic Yards Factor

Limestone	1.95
Sandstone	1.82
Porous Limestone	1.76
Lime Treated Sand Clay Gravel	1.89
Recycled Portland Cement Concrete	1.82
Reclaimed Asphalt Pavement	1.80

B. **Payment:** Payment for this item will be made at price per each listed in the Bid Form, which price shall constitute full compensation for furnishing, placing, and satisfactorily compacting material for aggregate surface course, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

1.36 **HYDRO-SEEDING (Ref. No. 34)**

A. **Measurement:** No measurement will be made for this item.

B. **Payment:** Payment for this item will be made at the lump sum price named in the Bid Form which price shall constitute full payment for labor, materials, tools, and equipment required for hydro-seeding including surface preparation, fertilization, placement of seed, establishment, including furnishing all equipment, labor and materials necessary for the completion of this WORK in accordance with the Contract Documents.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION –

SECTION 01030 – SUBMITTALS AND SAMPLING PLAN (REVISED 03/12/2019)

PART 1 -- GENERAL

1.1 **THE REQUIREMENT**

A. The CONTRACTOR shall provide submittals and shall cooperate with quality control and acceptance testing in accordance with the requirements of the Contract Documents.

1.2 **SUBMITTALS LIST**

A. The list contained within Part 3 - Execution comprises the minimum submittals which shall be submitted by the CONTRACTOR to the ENGINEER in accordance with Section 01010. Additional submittals and testing may be required by the ENGINEER at his discretion. If additional submittals and samples.

B. The list contained within Part 3 – Execution does not reflect items required to be submitted with respect to bidding, or award of the contract.

PART 2 -- PRODUCTS

2.1 NOT USED

PART 3 -- EXECUTION

3.1 **REQUIRED SUBMITTALS AND SAMPLING (SPECIAL PROVISIONS)**

A. The CONTRACTOR shall provide at a minimum the following submittals and shall provide materials for the following sampling:

SPECIAL PROVISIONS				
Submittal No.	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
00-01	Special Provisions	Submittal	Bar Chart Construction Schedule – 60 Day Bar Chart Plan	Submit at Pre – Construction Conference
00- 02	Special Provisions	Submittal	Project Overview Bar Chart Schedule	Submit at Pre – Construction Conference
00 – 03	Special Provisions	Submittal	Pre – Construction Photographs	Submit prior to mobilization
00 – 04	Special Provisions	Submittal	Pre – Construction Video	Submit prior to mobilization
00 – 05	Special Provisions	Submittal	Construction Progress Photographs	Submit minimum of 12 photographs with each application for payment, unless otherwise approved by ENGINEER
00 – 06	Special Provisions	Submittal	Excavation Plan in Vicinity of Bridges	Submit plan showing equipment and methods of excavation below bridges to the ENGINEER for review by bridge owners. No excavation beneath bridges will be permitted prior to receipt of this submittal.
00 – 07	Special Provisions	Submittal	Temporary Dams – Location, elevation, and cross section of dams, along with proposed dry weather bypass system.	Include on – call personnel.
00 – 08	Special Provisions	Submittal	Arborist Qualifications – Submit name, firm, and licensure information of licensed arborist	Submit prior to mobilization

SPECIAL PROVISIONS (CONTINUED)				
Submittal No.	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
00 – 09	Special Provisions	Submittal	Roster of all equipment to be utilized, including weights, proposed measures for surface protection, and calculations sealed by Louisiana Licensed Professional Engineer	Submit prior to mobilization

3.2 **REQUIRED SUBMITTALS AND SAMPLING (DIV 1)**

A. The CONTRACTOR shall provide at a minimum the following submittals and shall provide materials for the following sampling:

SECTION 01010 – GENERAL REQUIREMENTS				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
01 – 01	01010	Submittal	Record Drawings – Maintain and submit record drawings as prescribed by Section 01010.	Submit to ENGINEER as requested and prior to final payment. Final payment will not be acted on until record drawings are received.

3.3 **REQUIRED SUBMITTALS AND SAMPLING (DIV 2)**

A. The CONTRACTOR shall provide at a minimum the following submittals and shall provide materials for the following sampling:

SECTION 02003 – AGGREGATES				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
N/A	02200	Testing	Specific sampling and testing requirements for aggregates are contained within the specific specifications sections for the type of WORK into which the aggregates are being incorporated.	

SECTION 02200 - EARTHWORK				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-01	02200	Submittal	The CONTRACTOR shall submit an excavation plan, detailing methods of bracing, sheeting, and/or shoring of all excavations.	.
02-02	02200	Submittal	The CONTRACTOR shall submit a dewatering plan, detailing methods of dewatering all excavations.	
02-03	02200	Sample	Useable Soils - Prior to the WORK, the CONTRACTOR shall submit a sample of select soil material from each source proposed to be utilized in the WORK to the ENGINEER or Testing Laboratory for source approval and classification. The sample will be tested for compliance with specification requirements. Moisture – density relationships of acceptable material will be tested and reported in accordance with DOTD TR 418.	Sample size shall be two (2) full Louisiana Department of Transportation and Development standard sample sacks, or as directed by the Testing Lab. Source approval testing shall be completed for each source of material utilized in the WORK. Useable soils may be existing spoil from the canal provided suitable testing is completed ensuring its compliance with specification requirement.

SECTION 02200 – EARTHWORK (Continued)				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-04	02200	Sample	Useable Soils - During the WORK, the CONTRACTOR shall submit one sample per 1,000 cubic yards of select soil supplied. The sample will be classified and tested for compliance with specifications. Failed tests may be deemed as cause for rejection of the WORK by the ENGINEER. For embankments or backfill, Determination of In – Place Density and Determination of In – Place Moisture Content will be determined by DOTD TR 401 and DOTD TR 403, respectively.	Frequency of In – Place Moisture Density and In – Place Density will be at the discretion of the ENGINEER.
N/A	02200	Testing	Useable Soils - The CONTRACTOR shall provide sufficient testing to ensure that specification requirements are met.	NO SUBMITTAL REQUIRED.
02-05	02200	Sample	Plastic Soil Blanket - Prior to the WORK, the CONTRACTOR shall submit a sample of plastic soil blanket material from each source proposed to be utilized in the WORK to the ENGINEER or Testing Laboratory for source approval and classification. The sample will be tested for compliance with specification requirements. Moisture – density relationships of acceptable material will be tested and reported in accordance with DOTD TR 418.	Sample size shall be two (2) full Louisiana Department of Transportation and Development standard sample sack, or as directed by the Testing Lab. Source approval testing shall be completed for each source of material utilized in the WORK.

SECTION 02200 – EARTHWORK (Continued)				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-06	02200	Sample	Plastic Soil Blanket - During the WORK, the CONTRACTOR shall submit one sample per 1,000 cubic yards of plastic soil blanket supplied. The sample will be classified and tested for compliance with specifications. Failed tests may be deemed as cause for rejection of the WORK by the ENGINEER. For embankments or backfill, Determination of In – Place Density and Determination of In – Place Moisture Content will be determined by DOTD TR 401 and DOTD TR 403, respectively.	Frequency of In – Place Moisture Density and In – Place Density will be at the discretion of the ENGINEER.
N/A	02200	Test	Plastic Soil Blanket - The CONTRACTOR shall provide sufficient testing to ensure that specification requirements are met.	NO SUBMITTAL REQUIRED.
02-07	02200	Sample	Granular Material for Structures or Backfill - Prior to the WORK, the CONTRACTOR shall submit a sample of material from each source of granular material proposed to be utilized in the WORK to the ENGINEER or Testing Laboratory for source approval and classification. The sample will be tested for compliance with specification requirements. Classification and Group Index will be determined in accordance with DOTD TR 423. Moisture – density relationships of acceptable material will be tested and reported in accordance with DOTD TR 418.	Sample size shall be two (2) full Louisiana Department of Transportation and Development standard sample sacks, or as directed by the Testing Lab. Source approval testing shall be completed for each source of material utilized in the WORK. This sample is only required if granular material is used for Type “B” Backfill.

SECTION 02200 – EARTHWORK (Continued)				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-08	02200	Sample	Granular Material for Structures or Backfill - During the WORK, the CONTRACTOR shall submit one sample per 1,000 cubic yards of select soil supplied. The sample will be classified and tested for compliance with specifications. Failed tests may be deemed as cause for rejection of the WORK by the ENGINEER. For backfill, Determination of In – Place Density and Determination of In – Place Moisture Content will be determined by DOTD TR 401 and DOTD TR 403, respectively.	Frequency of In – Place Moisture Density and In – Place Density will be at the discretion of the ENGINEER. This sample is only required if granular material is used for Type “B” Backfill.
02-09	02200	Testing	Granular Material for Structures or Backfill - The CONTRACTOR shall provide sufficient testing to ensure that specification requirements are met.	Frequency of In – Place Moisture Density and In – Place Density will be at the discretion of the ENGINEER. This testing is only required if granular material is used for Type “B” Backfill
02-10	02200	Sample	Aggregate for Type “A” Backfill - Prior to the WORK, the CONTRACTOR shall submit a sample of bedding material proposed to be utilized in the WORK to the ENGINEER or Testing Laboratory for source approval. Material will be tested for deleterious materials and gradation. Relative Density Index of acceptable material will be developed in reported in accordance with ASTM D4253 and ASTM D4254.	Sample size shall be two (2) full Louisiana Department of Transportation and Development standard sample sacks, or as directed by the Testing Lab. Source approval testing shall be completed for each source of material utilized in the WORK.

SECTION 02200 – EARTHWORK (Continued)				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-11	02200	Sample	Aggregate for Type "A" Backfill - During the WORK, the CONTRACTOR shall submit one sample per 1,000 cubic yards of select soil supplied. The sample will be tested for compliance with specifications. Failed tests may be deemed as cause for rejection of the WORK by the ENGINEER. For backfill, Determination of In – Place Density and Determination of In – Place Moisture Content will be determined by DOTD TR 401 and DOTD TR 403, respectively.	Sample size shall be two (2) full Louisiana Department of Transportation and Development standard sample sack, or as directed by the Testing Lab. Source approval testing shall be completed for each source of material utilized in the WORK.
02-12	02200	Sample	Bedding Material - Prior to the WORK, the CONTRACTOR shall submit a sample of bedding material proposed to be utilized in the WORK to the ENGINEER or Testing Laboratory for source approval. Material will be tested for deleterious materials and gradation. Relative Density Index of acceptable material will be developed in reported in accordance with ASTM D4253 and ASTM D4254.	Sample size shall be two (2) full Louisiana Department of Transportation and Development standard sample sack, or as directed by the Testing Lab. Source approval testing shall be completed for each source of material utilized in the WORK.
02-13	02200	Sample	Bedding Material - During the WORK, the CONTRACTOR shall submit one sample per 1,000 cubic yards of select soil supplied. The sample will be tested for compliance with specifications. Failed tests may be deemed as cause for rejection of the WORK by the ENGINEER. For backfill, Determination of In – Place Density and Determination of In – Place Moisture Content will be determined by DOTD TR 401 and DOTD TR 403, respectively.	Frequency of In – Place Moisture Density and In – Place Density will be at the discretion of the ENGINEER.
N/A	02200	Testing	Bedding Material - The CONTRACTOR shall provide sufficient testing to ensure that specification requirements are met.	NO SUBMITTAL REQUIRED.

SECTION 02200 – EARTHWORK (Continued)				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-14	02200	Submittal	Geotextile Fabric - Prior to the WORK, the CONTRACTOR shall submit evidence to the ENGINEER that the material is listed on the Louisiana Department of Transportation and Development Approved Materials List.	
N/A	02200	Sample	Geotextile Fabric - Unless questionable, geotextile fabric will not be sampled. If questionable, the material shall be tested for compliance with the specifications by an independent testing lab.	Costs for such testing will be made by a lab of the OWNER's choosing and at the OWNER's cost. Seams will be inspected visually by the ENGINEER. Fabric will be visually inspected for UV damage.
N/A	02200	Testing	Geotextile Fabric - The CONTRACTOR shall provide sufficient testing to ensure that specification requirements are met.	
02-15	02200	Sample	Topsoil - Prior to the WORK, the CONTRACTOR shall provide a report from an established testing laboratory for source approval.	
N/A	02200	Sample	Topsoil - Unless questionable, topsoil will not be sampled. If questionable, topsoil will be sampled and tested for compliance by the ENGINEER or Testing Laboratory.	Sample size shall be two (2) full Louisiana Department of Transportation and Development standard sample sack, or as directed by the Testing Lab.
N/A	02200	Testing	Topsoil - The CONTRACTOR shall provide sufficient testing to ensure that specification requirements are met.	

SECTION 02201 – SITE PREPARATION				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
N/A	02201	Submittal	Material used for backfill shall be sampled and tested in accordance with Section 02200 – Earthwork.	

SECTION 02202 – DEMOLITION AND REMOVAL				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-17	02202	Submittal	Demolition and reconstruction activities and procedures, including operational sequence, shall be submitted to the ENGINEER for approval. The procedures shall provide for safe conduct of the WORK, careful removal and disposition of materials and equipment, protection of existing facilities which are to remain undisturbed, coordination with existing facilities to remain in service, and timely disconnection and reconnection of utility services.	The procedures shall include a detailed description and time schedule of the methods and equipment to be used for each operation and the sequence of operation. A storage plan for salvaged items shall be included.

SECTION 02204 – TEMPORARY ENVIRONMENTAL CONTROLS				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-18	02204	Submittal	Where a stormwater pollution prevention plan is required, submit to the ENGINEER as specified herein. The CONTRACTOR shall submit all activity reports as required by permits as applicable.	
02-19	02204	Submittal	Where certificates, inspection reports, or other items are required, submit to the ENGINEER as specified herein.	

SECTION 02401 – AGGREGATE SURFACE COURSE				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-20	02401	Submittal	Aggregate Surface Course - Prior to the WORK, the CONTRACTOR shall submit a sample of bedding material proposed to be utilized in the WORK to the ENGINEER or Testing Laboratory for source approval. Material will be tested for deleterious materials and gradation.	
02-21	02401	Submittal	Aggregate Surface Course - - During the WORK, the CONTRACTOR shall submit one sample of Aggregate Surface Course. The sample will be tested for compliance with specifications.	

SECTION 02701 – CULVERT AND STORM DRAIN SYSTEMS				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-22	02701	Submittal	The CONTRACTOR shall submit product information on all pipe and catch basin products to be utilized or incorporated into the WORK. This shall include evidence of all products listing on the LDOTD AML, dimensional drawings of pipes, catch basins, and accessory products, and evidence of compliance with referenced specifications.	The submittal shall include information on compliance with applicable standards and any other information required sufficient for the ENGINEER to review the acceptability of the proposed products.

SECTION 02711 – RIP RAP				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-23	02711	Submittal/ Source Approval	The CONTRACTOR shall submit the location and name of the proposed rip – rap supplier as well as evidence of listing of the source on the LDOTD AML (formerly QPL 2).	
02-24	02711	Sampling/ Acceptance	At the option of the ENGINEER, the CONTRACTOR shall submit a sample of rip rap for gradation testing to confirm compliance with these specifications.	The ENGINEER will have the option of inspecting rip – rap at the source prior to delivery.

SECTION 02713 – TEMPORARY TRAFFIC CONTROL				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-25	02713	Submittal	The CONTRACTOR shall submit product information on all temporary traffic control devices and products to be utilized or incorporated into the WORK. The submittal for source approval shall include evidence of each product's listing on the LDOTD AML, compliance with applicable standards, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed products.	
02-26	02713	Submittal	Traffic Control Device Plan: Prior to the start of the WORK, the CONTRACTOR shall submit a traffic control device plan, which shall clearly depict the arrangement of all temporary traffic control devices for all phases or portions of the WORK. The plan shall also clearly depict all temporary traffic control device products to be utilized, along with appropriate certifications to be included therewith. The traffic control device plan shall be prepared under the supervision of a licensed professional engineer registered in the State of Louisiana and signed and sealed by such. The traffic control device plan shall include product data detailing all traffic control devices to be utilized. WORK on public roads will not be authorized by the ENGINEER until such time as this plan has been submitted and reviewed by the ENGINEER. Prior to the start of the WORK, the CONTRACTOR shall submit to the ENGINEER proof of the TCS and TCT authorizations. TCS's and TCT shall meet all requirements of the Louisiana Department of Transportation and Development's requirements for such personnel.	

SECTION 02713 – TEMPORARY TRAFFIC CONTROL (CONTINUED)				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-27	02713	Acceptance	Prior to the issuance of the first progress payment, the CONTRACTOR shall submit a signed statement certifying that all traffic control devices conform to these specifications and reference standards.	
N/A	02713	Submittal/ Sampling	At his discretion, the ENGINEER may sample materials which in his opinion may be questionable in quality or suspected of not meeting requirements specified herein.	

SECTION 02717 - SEEDING				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-28	02717	Submittal/ Source Approval	The CONTRACTOR shall submit product information on all seeding products to be utilized or incorporated into the WORK. The submittal for source approval shall include information on chemical properties, compliance with applicable standards, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed products	

SECTION 02718 - FERTILIZER				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-29	02718	Submittal	The CONTRACTOR shall submit product information on all seeding products to be utilized or incorporated into the WORK. The submittal for source approval shall include information on chemical properties, compliance with applicable standards, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed products	

SECTION 02719 – VEGETATIVE AND FIBER MULCH				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-30	02719	Submittal	The CONTRACTOR shall submit product information on all seeding products to be utilized or incorporated into the WORK. The submittal for source approval shall include information on chemical properties, compliance with applicable standards, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed products	

SECTION 02729 – PERMANENT SIGNS				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-31	02729	Submittal	The CONTRACTOR shall submit product information on all seeding products to be utilized or incorporated into the WORK. The submittal for source approval shall include evidence of listing of products on the LDOTD AML, evidence of compliance with reference specifications, and all other information necessary to ensure compliance with specifications.	

SECTION 02803 – SHEET PILES				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-32	02803	Submittal	The CONTRACTOR shall submit product data for all permanent or temporary sheeting to be utilized in the WORK.	
02-33	02803	Submittal	Sheet Pile Driving Plan - The CONTRACTOR shall submit a sheet pile driving plan indicating the equipment, means and methods to be utilized in the WORK. CONTRACTOR shall provide information including make, model and rated driving energy for the pile driving hammer it proposes to use, and details of collars, shoes, splices, cushion blocks and related items.	

SECTION 02803 – SHEET PILES (CONTINUED)				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
02-34	02803	Submittal	The CONTRACTOR shall provide written notification to the ENGINEER of its scheduled date for commencing of pile driving at the site at least one week in advance of that date.	

3.4 **REQUIRED SUBMITTALS AND SAMPLING (DIV 3)**

A. The CONTRACTOR shall provide at a minimum the following submittals and shall provide materials for the following sampling:

SECTION 03315 - GROUT				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
03-01	03315	Submittal	Grout - The CONTRACTOR shall submit Manufacturer's literature for all grouts to be utilized, including product information, instructions and recommendations on the mixing, handling, placement, curing, and appropriate uses for each type of grout used in the WORK, and location of use. The submittal shall contain a certification that grouts used on the project contain no chlorides or other chemicals that cause corrosion. A certification that non-shrink grout does not contain aluminum, zinc, or magnesium powders as a method of expansion shall be included for non – shrink grouts.	

SECTION 03805 – STRUCTURAL CONCRETE				
No	**Specification Section**	**Type (Submittal/Sample)**	**Description of Submittal or Sample**	**Remarks**
N/A	03805	Submittal	Portland Cement Concrete: Requirements for submittals, sampling, and testing of Portland cement concrete shall be as specified in Section 03901 – Portland Cement Concrete.	
N/A	03805	Submittal	Reinforcing Steel: Requirements for submittals, sampling, and testing of reinforcing steel shall be as specified in Section 03906 – Reinforcing.	
03-02	03805	Submittal	Curing Material: Burlap cloth, white polyethylene sheeting, combination burlap cloth and white polyethylene sheeting, and waterproof paper will be sampled if quality of the material is questionable in the opinion of the ENGINEER.	Liquid membrane forming compounds will be sampled for compliance if the material is questionable in the opinion of the ENGINEER. This submittal may be waived if pre – cast concrete structures are supplied.
03-03	03805	Submittal	Curing Material - The CONTRACTOR shall submit to the ENGINEER evidence of listing of the proposed product on the LDOTD AML.	This submittal may be waived if pre – cast concrete structures are supplied.
03-04	03805	Submittal	Form Release Agent - The CONTRACTOR shall submit to the ENGINEER evidence of listing of the proposed product on the LDOTD AML.	This submittal may be waived if pre – cast concrete structures are supplied.

SECTION 03805 – STRUCTURAL CONCRETE (CONTINUED)				
No	**Specification Section**	**Type (Submittal/Sample)**	**Description of Submittal or Sample**	**Remarks**
03-05	03805	Submittal	Precast Concrete - Prior to fabrication of precast concrete, the CONTRACTOR shall submit product data, shop drawings, and other information as required suitable for the ENGINEER to evaluate the suitability of the proposed product. Shop drawings for standard precast concrete units shall be shop drawings furnished by the CONTRACTOR for approval by the ENGINEER. These drawings shall show complete design, installation, and construction information in such detail as to enable the ENGINEER to determine the adequacy of the proposed units for the intended purpose. Details of steel reinforcement size and placement as well as supporting design calculations or documentation that the proposed unit meets reference standards shall be included. Drawings for custom precast concrete units shall be shop drawings furnished by the precast concrete producer for approval by the ENGINEER. These drawings shall demonstrate that the applicable industry design standards and other design standards as specified or indicated on the drawings have been met. Installation and construction information shall be included on shop drawings. Details of steel reinforcement size and placement as well as supporting design calculations shall be included for all custom precast units. The precast concrete units shall be produced in accordance with the approved drawings.	The CONTRACTOR shall supply precast concrete unit design calculations and concrete mix design proportions and appropriate mix design test data. Structural design calculations shall be signed by a licensed professional engineer. The precast concrete producer shall supply copies of material certifications and/or laboratory test reports, including mill tests and all other test data, for portland cement, blended cement, pozzolans, ground granulated blast-furnace slag, silica fume, aggregate, admixtures, and curing compound proposed. Proposed methods of repairs of precast units shall be submitted. This submittal may be waived if cast – in – place concrete is provided.
03-06	03805	Submittal	Precast Concrete - The CONTRACTOR shall supply copies of in-plant QA/QC inspection reports and test results.	This submittal may be waived if cast – in – place concrete is provided.

SECTION 03806 – REINFORCEMENT				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
03-07	03806	Submittal	Reinforcing - Prior to fabrication of reinforcing, the CONTRACTOR shall submit to the ENGINEER the name and address of each mill providing reinforcing steel. For each type of reinforcement to be used, the CONTRACTOR shall submit a statement that the material meets the requirements of this section.	The CONTRACTOR shall submit the name, address, and current status of mills listed on the LDOTD AML to provide steel for the project.
03-08	03806	Submittal	Reinforcing - For each shipment of each type of reinforcement utilized, the CONTRACTOR shall submit a certified mill report or certificate analysis signed by an authorized representative of the mill providing the material.	
N/A	03806	Sample	Reinforcing - At his discretion, the ENGINEER may sample any type of reinforcement for verification of compliance with the requirements of this section.	

SECTION 03901 – PORTLAND CEMENT CONCRETE				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
03-09	03901	Submittal	The CONTRACTOR shall submit a proposed concrete mix designs on a form acceptable to the ENGINEER giving the intended sources of materials and the mix design for concrete to be furnished.	No work shall be started until the Portland cement concrete mix design has been reviewed and accepted. Review and acceptance of this mix design does not release the CONTRACTOR from the responsibility of producing concrete that meets the minimum requirements of the specifications.
03-10	03901	Submittal	Portland Cement - The CONTRACTOR shall submit product information on all Portland cement products to be utilized for all Portland cement concrete mixes to be incorporated into the WORK.	This information shall evidence of the listing of the proposed product on the LDOTD AML for the type of mix or mixes to be utilized on the project. The submittal for source approval shall include information on chemical properties, compliance with AASHTO M 85, alkali content, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed product.
03-11	03901	Submittal	Aggregates for Concrete - The CONTRACTOR shall submit product information on all coarse and fine aggregates to be utilized for all mixes to be incorporated in the WORK.	This information shall evidence of the listing of the proposed aggregate products on the LDOTD AML for the type of mix or mixes to be utilized on the project. The submittal for source approval shall include information on deleterious materials, gradation, friction rating, unit weight, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed product.

SECTION 03901 – PORTLAND CEMENT CONCRETE				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
03-12	03901	Submittal	Admixtures for Concrete - The CONTRACTOR shall submit product information on all concrete admixtures to be utilized for all mixes to be incorporated in the WORK.	This information shall evidence of the listing of the proposed admixture products on the LDOTD AML for the type of mix or mixes to be utilized on the project. The submittal for source approval shall include information on chemical properties, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed product.
03-13	03901	Submittal	Water - Source of water shall be indicated in mix designs for all Portland cement concrete mixes to be incorporated into the WORK.	
03-14	03901	Submittal	Fly Ash - The CONTRACTOR shall submit product information on all fly ash products to be utilized for all Portland cement concrete mixes to be incorporated into the WORK.	This information shall evidence of the listing of the proposed products on the LDOTD AML for the type of mix or mixes to be utilized on the project. The submittal for source approval shall include information on chemical properties, compliance with AASHTO M 295, and any other information required sufficient for the ENGINEER to review the acceptability of the proposed product.

SECTION 03901 – PORTLAND CEMENT CONCRETE				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
03-15	03901	Testing	Structural Concrete (Classes AA(M), AA, A(M), A, D, F, P(X), P(M), S - The ENGINEER will conduct the following acceptance tests of a per – lot basis. Unless noted otherwise, a lot is defined as an identifiable placement of concrete not to exceed 200 cubic yards. 1. Entrained Air: Plastic concrete will be tested for air content at least once per lot or as otherwise determined by the ENGINEER. The air content will be determined in accordance with LDOTD TR 202. 2. Slump: Plastic concrete will be tested for slump at least once per lot or as otherwise determined by the ENGINEER. The slump of plastic concrete will be determined in accordance with LDOTD TR 207. 3. Compressive Strength: Compressive strength for acceptance of structural concrete will be determined by DOTD TR 226. Two (2) batches of three (3) 6 – inch by 12 – inch cylinders will be made and tested in accordance with DOTD TR 226 for each lot of structural concrete placed. 4. Batch Tickets: The CONTRACTOR shall provide batch tickets for each batch of concrete as indicated in Part 3 – Execution.	This testing shall be completed by the precast supplier with copies of all reports provided to the ENGINEER.

SECTION 03901 – PORTLAND CEMENT CONCRETE				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
03-16	03901	Testing	Minor Structural Concrete (Classes M, R, Y) - The ENGINEER will conduct the following acceptance tests of a per – lot basis. Unless noted otherwise, a lot for minor concrete shall be 50 cubic yards, regardless of day placed. 1. Entrained Air: Plastic concrete will be tested for air content at least once per lot or as otherwise determined by the ENGINEER. The air content will be determined in accordance with LDOTD TR 202. 2. Slump: Plastic concrete will be tested for slump at least once per lot or as otherwise determined by the ENGINEER. The slump of plastic concrete will be determined in accordance with LDOTD TR 207. 3. Compressive Strength: Compressive strength for acceptance of structural concrete will be determined by DOTD TR 226. One (1) batches of (3) 6 – inch by 12 – inch cylinders will be made and tested in accordance with DOTD TR 226 for each lot of structural concrete placed. 4. Batch Tickets: The CONTRACTOR shall provide batch tickets for each batch of concrete as indicated in Part 3 – Execution.	This may be waived if precast is provided.

3.5 **REQUIRED SUBMITTALS AND SAMPLING (DIV 5)**

A. The CONTRACTOR shall provide at a minimum the following submittals and shall provide materials for the following sampling:

SECTION 05500 – MISCELLANEOUS METALWORK				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
05-01	05500	Submittal	Bolts and Anchors - The CONTRACTOR shall submit product data for all bolts and anchors. Anchors shall be submitted with an ICBO report listing the ultimate load capacity in tension and shear for each size and type of concrete anchor.	CONTRACTOR shall submit manufacturer's recommended installation instructions and procedures for adhesive anchors. Upon review by ENGINEER, these instructions shall be followed specifically.
05-02	05500	Submittal	Powder Driven Pins - The CONTRACTOR shall submit product data for all powder driven pins. Powder driven pins shall be submitted with an ICBO report listing the ultimate load capacity in tension and shear for each size and type of powder driven pins.	CONTRACTOR shall submit manufacturer's recommended installation instructions and procedures for the pins. Upon review by ENGINEER, these instructions shall be followed specifically.
05-03	05500	Submittal	Impact Anchors - The CONTRACTOR shall submit product data for all impact anchors. Anchors shall be submitted with an ICBO report listing the ultimate load capacity in tension and shear for each size and type of impact anchor.	CONTRACTOR shall submit manufacturer's recommended installation instructions and procedures for the pins. Upon review by ENGINEER, these instructions shall be followed specifically.

3.6 **REQUIRED SUBMITTALS AND SAMPLING (DIV 9)**

A. The CONTRACTOR shall provide at a minimum the following submittals and shall provide materials for the following sampling:

SECTION 09800 – PROTECTIVE COATINGS				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
09-01	09800	Submittal	Coating Materials List: Submit a coating materials list showing the manufacturer and the coating number, keyed to the coating systems herein.	
09-02	09800	Submittal	Paint Manufacturer's Information: For each coating system to be used, the following data: 1. Paint manufacturer's data sheet for each product proposed, including statements on the suitability of the material for the intended use. 2. Technical and performance information that demonstrates compliance with the system performance and material requirements. 3. Paint manufacturer's instructions and recommendations on surface preparation and application. 4. Colors available for each product (where applicable). 5. Compatibility of shop and field applied coatings (where applicable). 6. Material Safety Data Sheet for each product used.	

3.7 **REQUIRED SUBMITTALS AND SAMPLING (DIV 15)**

A. The CONTRACTOR shall provide at a minimum the following submittals and shall provide materials for the following sampling:

SECTION 15250 – HYDRAULIC GATES				
No	**Specification Section**	**Type (Submittal/Sample/Test)**	**Description of Submittal or Sample**	**Remarks**
15-01	15250	Submittal	Technical Manuals: Complete technical manuals, including printed instructions for proper maintenance, lubrication, and complete parts list indicating the various parts by name, number, and exploded view where necessary. A list of recommended spare parts for the OWNER to store at the facility shall be included	
15-02	15250	Submittal	Certification: The CONTRACTOR shall obtain written certification from the designated single manufacturer, addressed to the OWNER, stating that the equipment will efficiently and thoroughly perform the required functions in accordance with these Contract Documents, and that the designated single manufacturer accepts the CONTRACTOR's assignment of responsibility for coordination of gate equipment, including operators, controls, and services required for proper installation and operation. The CONTRACTOR shall submit all such certificates to the ENGINEER.	
15-03	15250	Submittal	Field Procedures: Instructions for field procedures for installation, adjustments, inspection, and testing shall be provided prior to installation of the gates.	

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SECTION 02003 – AGGREGATES (REVISED 02/26/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide aggregates as specified herein and elsewhere required by the Contract Documents.

1.2 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T96	Standard Method of Test for Resistance to Degregation of Small Size Aggregate by Abrasion and Impact in the Los Angeles Machine
AASHTO T104	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

B. ASTM International

ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

C. Louisiana Department of Transportation and Development (DOTD)

DOTD AML	Louisiana DOTD Approved Materials List
TR 111	Abrasion of Lightweight Coarse Aggregate
TR 428	Determining the Atterberg Limits of Soils

1.4 QUALITY CONTROL

A. The CONTRACTOR shall locate, select, and place material conforming to specification requirements and requirements shown on the drawings. The CONTRACTOR shall control his processes, including performing tests and making adjustments as necessary to result in a uniform product meeting all the requirements of the drawings and specifications.

PART 2 -- PRODUCTS

2.1 GENERAL REQUIREMENTS FOR AGGREGATES

A. Aggregates shall be environmentally acceptable for the intended use and shall be from a source acceptable to the ENGINEER. For an aggregate source to be approved, each

sample shall comply with the general requirements within this subsection and requirements for specific aggregate applications contained within this section and other specifications sections.

B. **Soundness Loss:** The soundless loss of recycled Portland cement concrete and aggregates listed in the LDOTD AML (formerly QPL2) shall not exceed 15 percent when subjected to 5 cycles of the magnesium sulfate soundness test in accordance with AASHTO T 104.

C. **Abrasion Loss:** Coarse aggregate listed in the LDOTD AML (formerly QPL 2), and recycled Portland cement concrete, except for lightweight aggregate, shall show an abrasion loss of not more than 40 percent when tested in accordance with AASHTO T96. Lightweight aggregate shall be expanded clay or expanded shale and shall show an abrasion loss of not more than 40 percent when tested in accordance with DOTD TR 111.

D. **Recycled Portland Cement Concrete:** Recycled Portland cement concrete shall be approved in dedicated stockpiles and shall be free of asphaltic concrete overlay material, reinforcing steel, joint material, or other debris. After processing, recycled Portland cement concrete shall comply with the requirements specified herein. When a stockpile has been accepted, no other material shall be added without the approval of the ENGINEER.

E. **Reclaimed Asphalt Concrete Pavement:** Relcaimed asphaltic pavement shall be cold planed or crushed. Reclaimed asphalt pavement shall be approved either at the time of removal from the roadway or in stockpiles. Stockpiled material shall be uniform and reasonably free of lightweight aggregate, debris, soil, or other foreign matter.

F. **Friction Ratings:** Where specified herein or in other specifications sections, aggregates shall comply with the requirements for friction ratings as defined in the table below and as indicated on the LDOTD AML (formerly QPL 2).

Friction Rating	**Description**
I	Aggregates that have a Polish Value of greater than 37 or demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
II	Aggregates that have a Polish Value of 35 to 37 or demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
III	Aggregates that have a Polish Value of 30 to 34 or demonstrate the ability to retain acceptable friction numbers for the life of the pavement
IV	Aggregates with a Polish Value of 20 to 29.

2.2 AGGREGATES FOR PORTLAND CEMENT CONCRETE AND MORTAR

A. All aggregates for use in Portland cement concrete shall comply with the General Requirements for Aggregates detailed above and the requirements below.

B. **Fine Aggregate for Portland Cement Concrete:** Sand shall be a natural silica sand from a source listed in the LDOTD AML (formerly QPL 2). The percentages of deleterious materials shall not exceed the following values:

MAXIMUM DELETERIOUS MATERIALS – FINE AGGREGATES FOR PORTLAND CEMENT CONCRETE	
Property	**Percent, Max**
Coal and Lignite	0.25
Clay Lumps	0.05
Clay Lumps and Friable Particles	3.00

Fine aggregate for Portland cement concrete shall comply with the following gradations:

GRADATION REQUIREMENTS – FINE AGGREGATES FOR PORTLAND CEMENT CONCRETE	
Concrete Sand	
U.S. Sieve	Percent Passing
3/8 inch	100
No. 4	95-100
No. 16	45-90
No. 50	7-30
No. 100	0-7
No. 200	0-3
Mortar Sand	
U. S. Sieve	Percent Passing
No. 4	100
No. 8	95-100
No. 100	0-25
No. 200	0-10

C. **Coarse Aggregate for Portland Cement Concrete:** The maximum amounts by weight of deleterious materials for coarse aggregate shall be as follows:

MAXIMUM DELETERIOUS MATERIALS – COARSE AGGREGATE FOR PORTLAND CEMENT CONCRETE	
Property	**Percent, Max**
Clay Lumps	0.05
Total Clay Lumps and Friable Particles	3.0
Iron Ore	2.0

Glassy Particles in Slag	10.0
Flat and Elongated Particles (5:1) (ASTM D4791)	10.0
Coal and Lignite	1.0
Wood (Wet)	0.05
Total Clay Lumps and Friable Particles, Iron Ore, Coal and Lignite, Wood	5.0

When used in Portland cement concrete for bridge decks, coarse aggregates for Portland cement concrete shall have a friction rating of I, II, or III.

1. **Uncrushed Coarse Aggregate for Portland Cement Concrete:** Uncrushed coarse aggregate for Portland cement concrete shall comply with the table below:

GRADATIONS FOR PORTLAND CEMENT CONCRETE COURSE AGGREGATES					
U.S Sieve	Grade A (Size 57)	Grade B (Size 467)	Grade D (Size 357)	Grade F ---	Grade P (Size 67)
2 1/2 inch	---	---	100	---	---
2 inch	---	100	90-100	---	---
1 1/2 inch	100	85-100	---	---	---
1 inch	90-100	---	35-70	---	100
3/4 inch	---	35-70	---	100	80-100
1/2 inch	25-60	---	10-30	90-100	---
3/8 inch	---	10-30	---	---	20-55
No. 4	0-10	0-5	0-5	15-60	0-10
No. 8	0-5	---	---	0-15	0-5
No. 16	---	---	---	0-5	---
No. 200	0-1	0-1	0-1	0-1	0-1

2. Crushed coarse aggregates for Portland cement concrete shall comply with the uncrushed coarse aggregate gradations except that when the material finer than the No. 200 sieve consists of the dust fraction from crushing, essentially free from clay, this percentage shall be 0 – 2 percent. When the total material passing the No. 200 sieve from the coarse and fine aggregates does not exceed 5 percent, the percent passing the No. 200 sieve from the crushed coarse aggregate may be increased to 3 percent.

2.3 AGGREGATES FOR SURFACE COURSES

A. All aggregates for use in Portland cement concrete shall comply with the General Requirements for Aggregates detailed above and the requirements below.

B. **Stone for Surface Courses:** This material shall consist of 100 percent stone and shall comply with the gradation specified below. The fraction of stone passing the No. 40 sieve shall have a maximum liquid limit of 25 and a maximum plasticity index of 4.

GRADATION FOR STONE FOR SURFACE COURSES	
U.S. Sieve	**Percent Passing**
1 – ½ inch	100
¾ Inch	50 – 100
No. 4	35 – 65
No. 40	10 – 32
No. 200	3 – 15

C. **Sand – Clay – Gravel for Surface Courses:** This material shall be a mixture of sand, clay, and siliceous gravel, stone or recycled portland cement concrete. The mixture shall be reasonably free from foreign matter as determined by visual inspection. The mixture, prior to treatment shall comply with the gradation specified below. The fraction passing the No. 4 sieve shall have a maximum liquid limit of 40 and a plasticity index greater than 4 and less than 15. Stone and recycled Portland cement concrete in the mixture shall be in conformance with the general requirements for aggregates specified herein.

GRADATION FOR SAND – CLAY - GRAVEL FOR SURFACE COURSES	
U.S. Sieve	**Percent Passing**
1 – ½ Inch	95 - 100
No. 4	40 - 65
No. 40	---
No. 200	10 - 25

D. **Recycled Portland Cement Concrete for Surface Courses:** Recycled portland cement concrete for surface courses shall be crushed portland cement concrete and will be permitted in combination with other approved stone for surface courses. After being crushed the recycled portland cement concrete or a combination of stone and recycled portland cement concrete shall comply with the following gradation.

GRADATION FOR RECYCLED PORTLAND CEMENT CONCRETE FOR SURFACE COURSES	
U.S. Sieve	**Percent Passing**
1 – ½ inch	100
¾ Inch	50 – 100
No. 4	35 – 65
No. 40	10 – 32
No. 200	3 – 15

E. **Reclaimed Asphaltic Pavement for Surface Courses:** Reclaimed asphaltic pavement shall comply with the general requirements specified above and the gradation specified below.

GRADATION FOR RECLAIMED ASPHALTIC PAVEMENT FOR SURFACE COURSES	
U.S. Sieve	**Percent Passing**
2 – ½ Inch	100
No. 4	35 - 75

F. **Crushed Slag for Surface Courses:** Crushed slag shall be 100 percent crushed slag and shall comply with the general requirements specified above and the gradation requirements specified below. The fraction of slag passing the No. 40 sieve shall be non – plastic.

GRADATION FOR CRUSHED SLAG FOR SURFACE COURSES	
U.S. Sieve	**Percent Passing**
1 – ½ inch	100
¾ Inch	50 – 100
No. 4	35 – 65
No. 40	10 – 32
No. 200	3 – 15

2.4 AGGREGATES FOR BEDDING MATERIAL

A. All aggregates for use in bedding material shall comply with the General Requirements for Aggregates detailed above and the requirements below.

B. Bedding materials shall consist of stone, recycled portland cement concrete, or a mixture of either recycled portland cement concrete, gravel, crushed slag, or stone as specified herein.

C. **Stone for Bedding Material:** Stone for bedding material shall be 100% stone and shall comply with the general requirements specified above and the gradation requirements specified below. The fraction of stone passing the No. 4 sieve shall have a maximum liquid limit of 25 and a maximum plasticity index of 4.

GRADATION FOR STONE FOR BEDDING MATERIAL	
U.S. Sieve	**Percent Passing**
1 – ½ inch	100
¾ Inch	50 – 100
No. 4	35 – 65
No. 40	10 – 32
No. 200	3 – 15

D. **Recycled Portland Cement Concrete Pavement for Bedding Material:** Recycled portland cement concrete shall be crushed portland cement concrete and will be permitted in combination with other approved stone for surface courses. After being

crushed the recycled portland cement concrete or a combination of stone and recycled portland cement concrete shall comply with the following gradation.

GRADATION FOR RECYCLED PORTLAND CEMENT CONCRETE PAVEMENT FOR BEDDING MATERIAL	
U.S. Sieve	**Percent Passing**
1 – ½ inch	100
¾ Inch	50 – 100
No. 4	35 – 65
No. 40	10 – 32
No. 200	3 – 15

E. **Sand – Aggregate for Bedding Material:** The sand-aggregate material shall be a natural or artificial mixture of sand and gravel, crushed slag, recycled portland cement concrete, or other approved aggregate listed in this subsection. Material passing the No. 40 (425 µm) sieve shall be nonplastic. The mixture shall be free of foreign matter as determined by visual inspection and shall comply with the following gradation prior to placement.

GRADATION FOR SAND - AGGREGATE FOR BEDDING MATERIAL	
U.S. Sieve	**Percent Passing**
1 – ½ inch	95 – 100
No. 4	30 – 50
No. 10	20 – 45
No. 200	0 – 10

2.5 AGGREGATES FOR BACKFILL MATERIAL

A. **Stone (Type "A" Backfill) for Backfill Material:** This material shall consist of 100 percent stone and shall comply with the gradation specified below. To facilitate meeting these gradation requirements, a calcium carbonate additive approved by the Materials and Testing Section may be added to the stone. The additive shall be thoroughly blended with the stone by approved methods prior to placement on the project. When tested according to DOTD TR 428, the fraction passing the No. 40 (425 µm) sieve, including any additive, shall have a liquid limit no greater than 25, and a plasticity index of no greater than 4.

GRADATION FOR STONE (TYPE "A" BACKFILL) FOR BACKFILL MATERIAL	
U.S. Sieve	**Percent Passing**
1 – ½ Inch	100
1 Inch	90 – 100
¾ Inch	70 – 100
No. 4	35 - 65
No. 40	12 – 32
No. 200	5 - 12

B. **Recycled Portland Cement Concrete (Type "A" Backfill) for Backfill Material:** Recycled portland cement concrete shall be crushed portland cement concrete. After being crushed, recycled portland cement concrete may contain a minimal amount of other base course materials resulting from normal construction methods and shall conform to the gradation specified below. The fraction of recycled Portland cement concete passing the No. 40 sieve shall be non – plastic.

GRADATION FOR RECYCLED PORTLAND CEMENT CONCRETE (TYPE "A" BACKFILL) FOR BACKFILL MATERIAL	
U.S. Sieve	**Percent Passing**
1 – ½ Inch	100
1 Inch	90 – 100
¾ Inch	70 – 100
No. 4	35 – 65
No. 40	12 – 32
No. 200	0 - 8

PART 3 -- EXECUTION

3.1 GENERAL

A. Execution requirements for aggregates are contained within the specific specifications sections for the WORK into which the aggregates are being incorporated.

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SECTION 02200 - EARTHWORK (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall perform earthwork indicated and required for construction of the WORK, complete and in place, in accordance with the Contract Documents.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM)

ASTM D3787	Standard Test Method for Bursting Strength of Textiles
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permeability
ASTM D4533	Standard Test Method for Trapezoid Tearing Strength of Geotextiles
ASTM D4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D4833	Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

B. Code of Federal Regulations (CFR)

29 CFR 1926	Safety and Health Regulations for Construction

C. Louisiana Department of Transportation and Development (LDOTD)

AML	Approved Materials List (formerly QPL)
TR 401	Determination of In Place Density
TR 403	Determination of Moisture Content
TR 415	Field Moisture – Density Relationships
TR 418	Moisture Density Relationships
TR 429	Resistivity Values of Soil and Water
TR 430	Determination of pH of Water or Soil

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 QUALITY ASSURANCE

A. The CONTRACTOR shall locate, select, and place material conforming to specification requirements and requirements shown on the drawings. The CONTRACTOR shall control his processes, including performing tests and making adjustments as necessary to result in a uniform product meeting all the requirements of the drawings and specifications.

B. All sheeting, shoring, and bracing of excavations shall conform to requirements necessary to comply with local codes and authorities having jurisdiction. Impact pile driving and sheet pile installations will cause vibrations that may affect existing residences or underground utilities in the vicinity of the proposed force main. Peak particle velocities due to pile driving should be monitored at critical locations with a seismograph during the installation of test piles, job piles and sheet piles. The record of peak particle velocities will provide information in assessing the need for changes in driving operations and the types of changes best suited for the project requirements. Monitoring will be performed by an independent testing lab retained by the OWNER.

PART 2 -- PRODUCTS

2.1 SOIL USAGE

A. Soils which do not meet Liquid Limit or Plasticity Index requirements shall not be blended to reduce Liquid Limit or Plasticity Index. Soils may be treated with Lime to reduce plasticity index only with the approval of the ENGINEER.

2.2 USABLE SOILS

A. Useable 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.

2.3 SELECT SOILS

A. Selected soils are defined as natural soils with a maximum plasticity index of 20, maximum liquid limit of 35, and a maximum organic content of 5 percent. Soils with a silt content of 50 percent or greater and a PI of 10 or less will not be allowed.

2.4 PLASTIC SOIL BLANKET

A. Plastic soil blanket shall consist of soils having a minimum PI of 11, maximum PI of 35, a maximum silt content of 65 percent, and a pH not less than 5.5 or greater than 8.5, and a minimum organic content of 3 percent. The CONTRACTOR will be allowed to blend organic materials to achieve the minimum 3 percent organic content. The plastic soil blanket shall support a satisfactory stand of grass upon visual inspection. The minimum thickness of the soil blanket will be 12 inches (300 mm). Areas requiring a plastic soil

blanket shall be approved prior to placement of the plastic soil blanket. After materials are placed and spread, lumps, stones, roots and other foreign matter shall be removed from the area. Soil blanket material shall be spread and rolled in a manner that leaves a uniform surface. Any remaining ridges or grooves, including cleat tracks from the dozer, will be parallel to the roadway during the period of time between placement and seeding.

2.5 TYPE "A" BACKFILL FOR DRAINAGE AND UTILITY PIPE

A. Type "A" Backfill for drainage and/or utility pipe shall be aggregate material as specified in Section 02003 – Aggregates.

2.6 TYPE "B" BACKFILL FOR DRAINAGE AND UTILITY PIPE

A. Type "B" Backfill for drainage and or utility pipe shall be granular material as specified in Section 02003 or Select Soil as specified herein. Type "A" backfill material may be substituted for Type "B" material.

2.7 BEDDING MATERIAL

A. Bedding material shall be a aggregate material as specified in Section 02003 – Aggregates.

2.8 TOPSOIL

A. When available, topsoil shall be existing surface soil stripped and stockpiled. When additional topsoil is required beyond the available topsoil from the stripping operation, topsoil shall be delivered and amended as recommended by soil tests. Soil tests shall be provided prior to delivery of topsoil to the site. The tests shall determine the quantities and type of soil amendments required to meet local growing conditions for the seed species provided. Delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil shall be tested for particle size, pH, organic content, textural class, chemical composition and soluble salts. Topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over 1 ½ inches diameter. Topsoil shall be free from viable plants and plant parts Topsoil shall also be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth. Topsoil shall have a minimum PI of 4, a maximum PI of 12, a pH of 5.5-8.0, a minimum organic content of 2 percent, and shall be capable of supporting adequate vegetation.

B. Soil amendments to be blended with the topsoil shall be delivered to the site either in the original, unopened containers bearing the manufacturer's chemical analysis, or in bulk. A chemical analysis shall be provided for bulk deliveries.

C. Existing topsoil meeting the above requirements within construction limits may be used. If agricultural lime or organic matter is added to a soil to bring topsoil into conformance with these specifications, it shall be at the expense of the CONTRACTOR.

2.9 GEOTEXTILE FABRIC

A. Geotextile fabric shall be composed of at least 85 percent by weight (mass) of polyolefins, polyesters, or polyamides. Fabric shall be resistant to chemical attack, rot, and miler and shall have no tears or defects which adversely alter its physical properties. When required, fabric shall contain stabilizers and/or inhibitors added to the base materials to make filaments resistant to deterioration due to ultraviolet and heat exposure. Edges of geotextile shall be finished to prevent the outer yarn from pulling

away from the fabric. Fibers of other composition may be woven into the geotextile fabric for reinforcing purposes.

B. Geotextile fabric rolls shall be furnished with an opaque, waterproof wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled with the manufacturer's name, date of manufacture, lot number, and name of product.

C. All geotextile fabric shall be a product listed on the Louisiana Department of Transportation and Development Approved Materials List at the time of incorporation into the WORK.

D. Geotextile classes and materials requirements shall be as defined in the table below:

Property	**Test Method**	**Class and Requirements**						
		A	**B**	**C**	**D**	**S**	**F**	**G**
AOS, Metric Sieve, µm, Max	ASTM D4751	300	300	212	600	850	850	850
Grab Tensile, N, Min.	ASTM D4632	330	400	580	800	800	400	400
% Elongation at Failure, Min.	ASTM D4632	--	--	50	50	--	--	--
% Elongation at 200N, Max.	ASTM D4632	--	--	--	--	--	--	50
Burst Strength, N, Min	ASTM D3787	440	620	930	1290	1390	--	--
Puncture, N, Min.	ASTM D4833	110	130	180	330	330	--	--
Trapezoid Tear Strength, N, Min.	ASTM D4533	110	130	180	220	220	--	--
Permittivity, Sec $^{-1}$, Min.	ASTM D4491	1.0	1.0	1.0	1.0	0.2	0.01	0.01
Grab Tensile Strength, Retained after Weathering 150H, UVA lamps, %, Min.	ASTM D4491, ASTM G154	70	70	70	70	70	--	--
Grab Tensile Strength, Retained after Weathering 500H, UVA lamps, %, Min	ASTM D4491, ASTM G154	--	--	--	--	--	70	70

2.10 MATERIALS FOR SHEETING, SHORING, AND BRACING

A. Wood for shoring and sheeting shall be green, rough cut hardwood (i.e. oak or hickory). Planking for sheeting and foundation lumber shall have a minimum thickness of 2 inches. CONTRACTOR shall be responsible for the design and installation of all wood sheeting unless wood shoring is indicated on the plans.

B. Steel sheet piling shall be a continuous interlock design. The sheet piling must be in good condition and shall provide a tight interlocking connection, which will retard the infiltration of ground water. Cofferdams shall be provided when constructing wet wells at pump station sites. The CONTRACTOR shall be responsible for the design and installation of all cofferdams.

C. Trench boxes and shields shall be in good, sound condition and shall comply with all applicable OSHA requirements. Installation, use, and removal of trench shields or boxes shall be in accordance with the manufacturer's recommendations. CONTRACTOR shall be responsible for the design and installation of all trench boxes or shields and the use thereof shall be depicted within the CONTRACTOR's sheeting, shoring and bracing plan.

PART 3 -- EXECUTION

3.1 GENERAL

A. Except when specifically provided to the contrary, excavation shall include the removal of materials, including obstructions that would interfere with the proper execution and completion of the WORK. The removal of such materials shall conform to the lines and grades indicated or ordered. Unless otherwise indicated, the entire Site shall be stripped of vegetation and debris and shall be grubbed, and such material shall be removed from the Site prior to performing any excavation or placing any fill.

3.2 SHEETING, SHORING, AND BRACING

A. The CONTRACTOR shall furnish, place, and maintain supports and shoring that may be required for the sides of all excavations regardless of type. The CONTRACTOR shall be solely responsible for the stability and safety of all excavations, regardless of type.

B. Excavations shall be sloped or otherwise supported in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926).

C. The use of horizontal strutting below the barrel of a pipe or structure or the use of a pipe as support for trench bracing will not be permitted.

3.3 EXCLUSION OF WATER

A. The CONTRACTOR shall remove and exclude water, including storm water, groundwater, irrigation water, and wastewater, from excavations. Dewatering wells, well-points, sump pumps, or other means shall be used to remove water and continuously maintain groundwater at a level at least 2 feet below the bottom of excavations before the excavation WORK begins at each location. Water shall be removed and excluded until backfilling is complete and field soils testing has been completed.

3.4 OVER – EXCAVATION

A. **Indicated:** Where areas are indicated to be over-excavated, excavation shall be to the depth indicated, and backfill shall be installed to the grade indicated.

B. **Not Indicated:** When ordered to over-excavate areas deeper and/or wider than required by the Contract Documents, the CONTRACTOR shall over-excavate to the dimensions ordered and backfill to the indicated grade.

C. **Neither Indicated nor Ordered:** Any over-excavation carried below the grade ordered or indicated shall be backfilled and compacted to the required grade with granular material or non – plastic embankment as part of the WORK.

3.5 DISPOSAL OF EXCESS MATERIAL

A. Unless otherwise indicated, excess excavated material shall be the property of the CONTRACTOR. The CONTRACTOR shall be responsible for the removal and disposal of excess excavated material. Material shall be disposed of at an off-Site location arranged by the CONTRACTOR in accordance with laws and regulations regarding disposal of such material.

3.6 EMBANKMENT AND HEADERS

A. Where indicated on the drawings, or where directed by the ENGINEER, the CONTRACTOR shall place and compact embankment and headers as specified within this Section 02200 – EarthWORK

B. Prior to beginning excavation, grading or embankment operations in an area, all necessary clearing and grubbing in that area shall have been completed. Prior to any embankment operations in an area, all corresponding roadside ditches shall be cut to facilitate drainage in that area. Embankment materials shall not be placed or spread on portland cement concrete or asphaltic concrete pavements. Pavement surfaces, edges, and joints shall not be damaged during embankment operations.

C. Final excavation and embankment slope lines shall be uniform in appearance. Measurements shall be made as necessary to assure that the elevations at the top, bottom, and intermediate breaks in the slope are such that a minimum acceptable slope is achieved. The slopes shall be straight without valleys or humps, as determined by visual inspection.

D. Embankments shall be constructed of select soils and shall be placed in uniform layers not exceeding 12 inches of uncompacted thickness. Each layer shall be placed for the full width of embankment, blended as necessary to obtain a uniform material, brought to a uniform moisture content, and compacted by approved methods to a minimum of 95.0 percent of maximum dry density before the next layer is placed. Maximum dry density will be determined in accordance with DOTD TR 415 or TR 418 and percent in-place density in accordance with DOTD TR 401. If base course or roadway is to be constructed on the embankment, the density of the embankment shall be such that the required base course compaction can 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 or the lifts shall be reprocessed and recompacted until these requirements are met. Operations shall be conducted to prevent lamination between lifts. Laminations between lifts shall be corrected prior to placing additional lifts. Surfaces of excavated areas and

embankments shall be smooth and uniform. Material outside construction limits shall not be disturbed.

E. 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.

F. When embankments are constructed on a surface sloping more than 6:1 from the horizontal, the slope of the ground on which the embankment is to be placed shall be cut into steps, as directed, before fill is placed.

G. When an embankment is to be constructed to a height of less than 5 feet, heavy sod and objectionable vegetation shall be removed from the area on which the embankment is to be placed. The area shall be scarified to a depth of approximately 9 inches. This area shall be recompacted to at least 95.0 percent of maximum dry density. Maximum dry density will be determined 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 the area on which embankment is to be placed shall be disked to the satisfaction of the ENGINEER and recompacted before construction of embankment.

H. When embankment material is to be deposited only on one side of structures or culvert head walls, the area immediately adjacent to the structure shall not be compacted to the extent that it will cause excessive pressure against the structure. Fill adjacent to the end bent of a bridge shall not be placed higher than the top of the substructure until the superstructure is in place. When the embankment is to be deposited both sides of a concrete wall or similar structure, operations shall be conducted so that the embankment is always at approximately the same elevation on both sides of the structure. Backfilling of structures shall be as specified herein.

I. 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, the embankment shall be placed by end dump or other approved methods to an elevation where normal construction methods can begin. Embankments placed above this elevation shall be constructed 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, and will not be allowed to be trapped and be incorporated in the embankment except as part of plastic soil for slopes.

J. **Cut Area Prepration:** If base course or roadway is to be constructed on the cut area, the density of the embankment shall be such that the required base course compaction can be met. When unstable soils are encountered, the ENGINEER will determine the limits to be undercut. The CONTRACTOR shall excavate to a stable foundation or to the depth required by the ENGINEER and backfill to existing grade. When stable foundation cannot be reached, the embankment materials shall be “bridged-in” and the remaining embankment constructed to grade as specified.

K. **Plastic Soil Blanket:** The outside layer of each roadway embankment and header will consist of a plastic soil blanket as specified. Plastic soil blanket shall be placed in a timely manner to prevent erosion.

3.7 DRAINAGE AND UTILITY PIPELINE EXCAVATION

A. **General:** Unless otherwise indicated or ordered, excavation for pipelines and utilities shall be open-cut trenches with minimum widths as indicated.

B. **Trench Bottom**: Except where pipe bedding is required, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe. Excavations for pipe bells and welding shall be made as required. Where pipe bedding is required, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe bedding.

C. **Open Trench**: The maximum amount of open trench permitted in any one location shall be 500-feet or the length necessary to accommodate the amount of pipe installed in a single Day, whichever is greater. Trenches shall be fully backfilled at the end of each day or, in lieu thereof, shall be covered by heavy steel plates adequately braced and capable of supporting vehicular traffic in those locations where it is impractical to backfill at the end of each Day. These requirements for backfilling or use of steel plate will be waived in cases where the trench is located further than 100-feet from any traveled roadway or occupied structure. In such cases, however, barricades and warning lights meeting appropriate safety requirements shall be provided and maintained.

D. Where pipelines are to be installed in embankments, fills, or structure backfills, the fill shall be constructed to a level at least one-foot above the top of the pipe before the trench is excavated. Upon completion of the embankment or structural backfill, a trench conforming to the appropriate detail may be excavated and the pipe may be installed.

E. Where moveable trench shield is used during excavation operations, the trench width shall be wider than the shield so that the shield is free to be lifted and then moved horizontally without binding against the trench sidewalls and causing sloughing or caving of the trench walls. If the trench walls cave or slough, the trench shall be excavated as an open excavation with sloped sidewalls or with trench shoring.

F. If a moveable trench shield is used during excavation, pipe installation, and backfill operations, the shield shall be moved by lifting the shield free of the trench bottom or backfill and then moving the shield horizontally. The CONTRACTOR shall not drag trench shields along the trench causing damage or displacement to the trench sidewalls, the pipe, or the bedding and backfill.

3.8 DRAINAGE AND UTILITY PIPELINE BACKFILL AND COMPACTION

A. Prior to backfilling, pipes found to be damaged or out of alignment or grade shall be removed and reinstalled or replaced as directed by the ENGINEER.

B. **Paved Areas:** Cross and side drains in paved areas subject to traffic loads such as roadway travel lanes, shoulders, and turnouts shall be backfilled with Type A material. Type B backfill material shall be used in all other paved areas including driveways, detour roads and similar installations. Selected soils will not be allowed as backfill material. Placement and compaction shall be as specified below

C. **Non – Paved Areas:** Backfill material, except for plastic pipe, shall be Type B backfill material placed by approved methods and compacted to the density of surrounding soil. Plastic pipe shall be backfilled with granular material or Type A backfill Material.

D. **Placement and Compaction:**

1. When corrugated metal pipe is used, 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.

2. If the top of pipe is even with or below the top of the trench, backfill material shall be brought up evenly on both sides of pipe for its full length to an elevation of 12 inches (300 mm) above the top of pipe [or to subgrade if less than 12 inches (300 mm)] or to natural ground elevation, whichever is greater.

3. When the top of the pipe is above the top of the trench, backfill material shall be brought up evenly on both sides of pipe for its full length to 12 inches (300 mm) above the top of pipe or to subgrade if less than 12 inches (300 mm). Material in the trench and above the top of the trench for a distance on each side of the pipe equal to the horizontal outside diameter for corrugated metal or plastic pipe and 18 inches (450 mm) for concrete pipe, and to 12 inches (300 mm) above the top of pipe or to subgrade if less than 12 inches (300 mm) shall be backfill material.

4. Unless otherwise authorized by the ENGINEER where headroom is limited, embankment shall be constructed to a minimum of 24 inches (600 mm) over the pipe before heavy construction equipment is allowed to cross the installation. Where practical, installations with less than 24 inches (600 mm) of cover over the top of the pipe shall be constructed after heavy hauling is completed over the pipe location. After completion of hauling operations, the CONTRACTOR shall remove excess cover material. Pipe damaged by hauling and backfilling operations shall be removed and reinstalled, or replaced, at no additional cost to the OWNER.

E. **Backfill Methods**: Compaction of backfill for drainage pipe shall be as indicated below. Compaction by flooding will not be allowed unless authorized by the ENGINEER.

1. **Selected Soils:** Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418 in layers not exceeding 8 inches (200 mm) compacted thickness. Backfill material shall be thoroughly compacted under the haunches of the pipe. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer.

2. **Granular Material:** Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Backfill material shall be thoroughly compacted under the haunches of the pipe and then compacted in layers not exceeding 12 inches (300 mm) compacted thickness. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. Exposed slopes at the pipe ends shall be covered by at least 12 inches (300 mm) compacted thickness of plastic soil blanket.

3. **Flowable Fill:** Flowable fill shall be installed in accordance with Section 02710 – Flowable Fill.

4. **Stone or Recycled Portland Cement Concrete:** Backfill shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Backfill material shall be thoroughly compacted under the pipe haunches and then compacted in layers not exceeding 8 inches (200 mm) compacted thickness. With approval of the ENGINEER, layer thickness may be increased to 12 inches (300 mm) with verification of satisfactory installation and performance. Each layer shall be compacted by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. The CONTRACTOR shall control

placement operations so as not to damage protective coatings on metal pipes. The CONTRACTOR shall repair damaged coatings at no additional cost to the OWNER.

3.9 BEDDING MATERIAL

A. **Placement of Bedding:** Unless otherwise noted on the drawings, geotextile fabric shall be placed in accordance with plan details prior to placing bedding material. Care shall be taken to prevent damage to geotextile fabric during placement of bedding material. Materials shall be placed in lifts, shaped, and uniformly compacted to 75 percent of relative density.

B. Adjacent rolls of fabric will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of 18 inches, including the ends of the rolls. The top layer of the fabric shall be parallel with adjacent rolls and in the direction of bedding materials placement. When rolls are sewn, the CONTRACTOR shall join adjacent rolls by sewing with polyester, or Kevlar thread. Field sewing shall employ the “J” seam or “Butterfly” seam with the two pieces of geotextile fabric mated together, turned in order to sew through 4 layers of fabric and sewn with 2 rows of Type 401, two-threaded locking chain stitch. Factory seams other than specified may be submitted to the ENGINEER for approval. When the ground is covered with water or supersaturated soil, sewing of the fabric will be required.

C. Damaged fabric shall be either removed and replaced with new fabric or covered with a second layer of fabric extending 2 feet in each direction from the damaged area.

3.10 EXCAVATION AND BACKFILL FOR STRUCTURES

A. Except where otherwise indicated for a particular structure or where ordered by the ENGINEER, excavation shall be carried to an elevation 6-inches below the bottom of the footing or slab and brought back to grade with compacted materials acceptable for placement beneath structures. Where indicated or ordered, areas beneath structures shall be over-excavated. When such over-excavation is indicated, both over-excavation and subsequent backfill to the required grade shall be performed by the CONTRACTOR.

B. Excavations shall be backfilled with granular material compacted in lifts. Backfill fill material shall be placed and spread evenly in approximately horizontal layers. Each layer shall be moistened or aerated as necessary. Unless otherwise approved by the ENGINEER, no layer shall exceed 6-inches of compacted thickness. The embankment and fill shall be compacted to a minimum of 95 percent of maximum dry density.

1. Each layer backfill materials as defined herein, where the material is graded such that 10 percent or more passes a No. 4 sieve, shall be mechanically compacted to the indicated percentage of density. Equipment that is consistently capable of achieving the required degree of compaction shall be used, and each layer shall be compacted over its entire area while the material is at the required moisture content.

2. Each layer of coarse granular backfill materials with less than 10 percent passing the No. 4 sieve shall be compacted by means of at least 2 passes from a vibratory compactor that is capable of obtaining the required density in 2 passes and that is acceptable to the ENGINEER.

C. Fill on reservoir and structure roofs shall be deposited not sooner than 30 Days after the concrete roof slab has been placed. Equipment weighing more than 10,000 pounds when loaded shall not be used on a roof. A roller weighing not more than 8,000 pounds shall be used to compact fill on a roof.

D. Flooding, ponding, and jetting shall not be used for fill on roofs, backfill around structures, backfill around reservoir walls, for final backfill materials, or aggregate base materials.

E. Equipment weighing more than 10,000 pounds shall not be used closer to walls than a horizontal distance equal to the vertical depth of the fill above undisturbed soil at that time. Hand operated power compaction equipment shall be used where use of heavier equipment is impractical or restricted due to weight limitations.

3.11 GEOTEXTILE FABRIC

A. Unless noted otherwise, on the drawings or elsewhere in the Contract Documents, the geotextile fabric shall be utilized as follows:

Application		**Geotextile Class (as defined in Section 2.1)**
Drainage or Sewerage	Underdrains	A, B, C, or D
	Pipe and Precast Manhole Joints	A, B, C, or D
	Weepholes	A, B, C, or D
	Bedding Fabric	B, C, or D
	Geocomposite Drainage Systems	B, C, or D
Stabilization	Bulkheads	C or D
	Flexible Revetments	C or D
	Rip Rap	D
	Railroad Crossings	D
	Base Course	D
	Subgrade Layer	D
	Soil Stabilization	C, D, or S
Paving	Paving Fabric	B or C
Silt Fencing	Self Supported Silt Fencing	F
	Wire Supported Silt Fencing	G

B. Rolls of geotextile fabric shall be kept covered and protected from ultraviolet degradation at all times until use. Geotextile fabric that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric shall be removed and replaced. The geotextile fabric shall be placed at the

locations shown on the plans or as directed. Adjacent rolls of geotextile fabric will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of 18 inches (450 mm), or as specified in the plans, including the ends of the rolls. The top layer of the geotextile fabric shall be parallel with adjacent rolls and in the direction of embankment placement. When rolls are sewn, the CONTRACTOR shall join adjacent rolls by sewing with polyester or Kevlar thread. Field sewing shall employ the "J" seam or "Butterfly" seam with the two pieces of geotextile fabric mated together, turned in order to sew through 4 layers of fabric and sewn with 2 rows of Type 401, two-thread chain stitch. Factory seams other than specified may 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.

C. The geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except in curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

D. Damaged geotextile fabric shall be either removed and replaced with new geotextile fabric or covered with a second layer of geotextile fabric extending 2 feet (0.6 m) in each direction from the damaged area

3.12 **TOPSOIL**

Areas to receive topsoil shall be scarified as directed. Topsoil shall be uniformly spread over the areas to a depth of 6 inches and rolled to a uniform surface with a cultipacker or other suitable equipment.

- END OF SECTION –

SECTION 02201 - SITE PREPARATION (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The WORK of this Section includes measures required during the CONTRACTOR's initial move onto the Site to protect existing fences, houses and associated improvements, streets, and utilities downslope of construction areas from damage due to boulders, trees or other objects dislodged during the construction process; clearing, grubbing and stripping; and regrading of certain areas to receive embankment fill.

1.2 REFERENCE STANDARDS

A. Commercial Standards:

AAN	American Association of Nurserymen

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 QUALITY CONTROL

A. NOT USED

1.5 SITE INSPECTION

A. Prior to moving onto the Site, the CONTRACTOR shall inspect the Site conditions and review maps of the existing plant site, existing utilities, and facilities or other items delineating the OWNER's property and right-of-way lines.

PART 2 -- PRODUCTS

2.1 BACKFILL

A. Material utilized for backfill shall be in accordance with Section 02200 – Earthwork.

PART 3 -- EXECUTION

3.1 PRIMARY CONSTRUCTION SITE ACCESS

A. The CONTRACTOR shall develop any necessary access to the Site, including access barriers to prohibit entry of unauthorized persons.

B. **Utility Interference:** Where existing utilities interfere with the WORK, notify the utility owner and the ENGINEER before proceeding in accordance with the General Conditions.

3.2 CLEARING AND GRUBBING

A. The ENGINEER will designate trees, shrubs, plants and other items to remain. The CONTRACTOR shall preserve the items designated to remain. Equipment, materials and supplies shall not be stored in proximity of items designated to remain. Trees shall be removed without damaging items marked to remain. The CONTRACTOR shall, at no direct pay, use a licensed landscape arborist to 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 Nurseryman (AAN). Trees shall not be felled outside of the right-of-way. Damage outside the right-of-way caused by the CONTRACTOR's operations shall be the CONTRACTOR's responsibility.

B. Clearing and grubbing shall be done within the construction limits and to a point in fills 15 feet (4.5 m) beyond the toes of foreslopes and in cuts 15 feet beyond the tops of backslopes, when width of right of way permits, or to the limits shown on the plans; also from areas required for outfall ditches and channel changes. Trees, stumps, roots and other protruding vegetative obstruction not designated to remain shall be cleared and grubbed (including mowing when required by the ENGINEER). Some loose limbs and roots approximately 2 inches x 2 feet and smaller may be allowed to remain however excessive amounts will not be allowed.

C. Explosives shall not be used.

D. Stump holes and other holes left from clearing and grubbing shall be filled by blading the area or backfilling with existing materials or soil complying with Subsection 203.06(a) and compacted to at least the density of the surrounding soils.

E. Burning of material shall not be permitted without the approval of the OWNER and ENGINEER. If burning is allowed, of material shall be under the constant care of watchmen. Burning of materials shall not jeopardize anything designated to remain on the right-of-way, the surrounding forest cover, or other adjacent property. The CONTRACTOR shall be responsible for burning in accordance with all local, state, and federal laws and ordinances, including, but not limited to, the current regulations of the Louisiana Department of Environmental Quality (LDEQ).

F. Materials and debris which cannot be burned and materials which are not burned shall be removed from the right-of-way and disposed of in accordance with Section 02200 – Earthwork.

G. Merchantable timber in the area to be cleared, which has not been removed from the area of Construction prior to the beginning date stipulated in the Notice to Proceed, shall become the property of the CONTRACTOR.

H. Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. Branches of trees extending over the roadbed shall be trimmed to a height of 20 feet (6.0 m) above the pavement. Trimming shall be done in accordance with accepted horticultural and tree surgery practices published by AAN.

- END OF SECTION -

SECTION 02202 – DEMOLITION AND REMOVAL OF STRUCTURES AND OBSTRUCTIONS (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall demolish facilities as indicated,and shall remove and/or relocate structures and obstructions as indicated, all in accordance with the Contract Documents.

1.2 REFERENCE STANDARDS

A. Code of Federal Regulations

49 CFR, Parts 172-180 Regulations for Hazardous Materials

B. Louisiana Administrative Code (LAC)

LAC Title 33, Part V, Chapter 38, Section 3813

LAC Title 33, Part V, Chapter 38

C. Louisiana Department of Transportation and Development (LDOTD)

Water Well Rules, Regulations, and Standards, State of Louisiana

D. Louisiana Department of Environmental Quality (LDEQ)

UST Regulations Regulations for Underground Storage Tanks

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

PART 2 -- PRODUCTS - NOT USED

PART 3 -- EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall take precautions to avoid damage to adjacent facilities and to limit the WORK activities to the extent indicated. If reconstruction beyond the scope indicated is required, the CONTRACTOR shall obtain approval from the ENGINEER prior to commencing.

3.2 PROTECTION OF EXISTING FACILITIES

A. Before beginning any reconstruction, the CONTRACTOR shall carefully survey the existing facilities and examine the Specifications and Drawings to determine the extent of reconstruction and coordination with the WORK. Existing facilities not subject to

reconstruction shall be protected and maintained. Damaged existing facilities shall be repaired to the previous condition or replaced.

B. Persons shall be afforded safe passages around areas of demolition.

C. Structural elements shall not be overloaded. The CONTRACTOR shall be responsible for shoring, bracing, or adding new supports as may be required for adequate structural support as a result of WORK performed under this Section. The CONTRACTOR shall remove temporary protection when the WORK is complete or when so authorized by the ENGINEER.

D. The CONTRACTOR shall carefully consider bearing loads and capacities before placement of equipment and material on Site. In the event of any questions as to whether an area to be loaded has adequate bearing capacity, the CONTRACTOR shall consult with the ENGINEER prior to the placement of such equipment or material.

3.3 DEMOLITION AND REMOVAL OF STRUCTURES AND OBSTRUCTIONS

A. **Pipe**: Pipe to be relaid shall be removed and stored so that there will be no loss or undue damage before relaying. The CONTRACTOR shall replace sections lost from storage or unduly damaged at no direct pay. When specified, pipe not to be relaid and considered usable shall be salvaged, cleaned of soils or other materials, stored and stacked.

B. **Bridges and Drainage Structures**: Bridges, including approach slabs, and drainage structures in use by traffic shall not be removed until satisfactory arrangements have been made to accommodate traffic. Unless otherwise directed or shown on the plans, substructures shall be removed to natural stream bottom and those parts outside the stream shall be removed to 1 foot below natural ground surface. Existing structures within the limits of a new structure shall be removed as necessary to accommodate construction of the new structure. Steel or wood bridges to be salvaged shall be dismantled without unnecessary damage. Dismantling shall include stripping all hardware. Structural members shall be match-marked before dismantling. Explosives, if approved, shall be utilized in accordance with Section 01010. Blasting or other operations necessary for removal of an existing structure or obstruction, which may damage new construction, shall be completed prior to placing the new work.

3.4 REMOVING ENVIRONMENTALLY SENSITIVE MATERIALS

A. When removal or remediation of any environmentally sensitive or contaminated sites is required during construction, the CONTRACTOR's operations shall be coordinated through the appropriate agency having jurisdiction. If the CONTRACTOR fails to follow the guidelines of the agency having jurisdiction, and subsequently causes or increases harm or damage to the environment, then all resulting fines and clean-up costs shall be the responsibility of the CONTRACTOR.

B. **Non-Friable Asbestos**: When a structure contains non-friable asbestos, the CONTRACTOR shall carefully remove the asbestos without excessive breakage or crushing before removal, relocation or demolition of the structure. The non-friable asbestos material shall be disposed of at an approved industrial landfill.

C. **Friable Asbestos**: When a structure contains friable asbestos, the CONTRACTOR shall immediately notify the Department of Environmental Quality (DEQ), Air Quality Division and request that DEQ provide a confirmation letter with an Asbestos Disposal Verification Form (ADVF). The CONTRACTOR shall complete the ADVF within 90

calendar days from the date of issue. When this information is available, the Department will indicate on the plans which structures contain friable asbestos. Only entities certified by DEQ as Asbestos Abatement Entities shall remove friable asbestos from structures. The asbestos removal shall be performed before removal, relocation or demolition of the structure. Friable asbestos removal, handling and disposal shall be performed in accordance with the latest requirements for asbestos abatement of the DEQ, Air Quality Division. The CONTRACTOR shall maintain, and furnish to the ENGINEER, within 21 calendar days, Chain of Custody verification records for the friable asbestos from the work site to the disposal site. These records will become part of the permanent project records.

D. **Underground Fuel Tanks**: Before removal, underground fuel tanks shall be registered with the DEQ by the ENGINEER as abandoned underground storage tanks. The CONTRACTOR shall notify the ENGINEER in writing at least 45 calendar days prior to removal of tanks. All site activities, including the collection of closure samples and tank removal, as defined in the latest DEQ Underground Storage Tank (UST) regulations, shall be performed by a DEQ approved CONTRACTOR. Closure test results, all documentation, and all necessary forms shall be submitted by the CONTRACTOR to DEQ. The CONTRACTOR and/or the subcontractor shall note that all contact and/or coordination with the DEQ is to be the responsibility of the ENGINEER. The CONTRACTOR shall take all necessary precautions to prevent the infiltration of water into tanks and tank excavations during the work. During routine site closure, the removal, transportation and disposal of tanks, and the handling of contaminated soil and contaminated fluid shall be in accordance with all local, state, and federal laws and regulations. Limits of excavation and quantities of contaminated soil and contaminated fluid to be removed, transported and disposed shall be as specified. When underground storage tanks (UST) have been filled with concrete, sand, or other such material and are designated on the plans for removal, the CONTRACTOR or certified UST subcontractor shall remove, transport and dispose of such tanks in accordance with the recommendations of the American Petroleum Institute (API) and the requirements of the Louisiana Department of Environmental Quality (DEQ) or other regulatory agency of jurisdiction. When such UST are discovered during construction and removal is necessary to achieve soil compaction or to meet other construction requirements, the CONTRACTOR shall stop construction activity in the immediate vicinity of the UST and notify the project ENGINEER in accordance with this subsection The DOTD Materials and Testing Section will verify the closure status of such filled UST discovered during construction prior to any UST site activity by the CONTRACTOR or certified UST subcontractor. The CONTRACTOR or certified UST subcontractor shall collect and submit for laboratory analysis, a representative sample of the storage tank fill material for landfill acceptance. The results of the laboratory analysis shall be used to determine the disposition of the UST fill material. The CONTRACTOR or certified UST subcontractor shall provide a copy of all laboratory analyses to the ENGINEER for verification prior to profiling materials for landfill acceptance.

E. **Contaminated Soils:** Soil contaminated with Benzene, Toluene, Ethyl Benzene, Xylene (BTEX), Total Petroleum Hydrocarbons- Gasoline (TPH-G), Total Petroleum Hydrocarbons-Diesel (TPH- D), Total Petroleum Hydrocarbons-Oil (TPH-O), or other identified toxic materials, in areas of underground fuel tanks or other areas, at levels above the regulatory limits and is non-protective of groundwater shall be excavated by the CONTRACTOR as shown on the plans or as directed. Determination of groundwater protection shall be through the use of the Synthetic Precipitation Leachate Procedure (SPLP) or as directed. The CONTRACTOR shall remove the overburden above the contaminated soil to the dimensions shown on the plans or as directed. The CONTRACTOR shall also excavate the contaminated soil at the locations shown on the

plans or as directed. The contaminated soil shall be loaded into approved hauling vehicles by the CONTRACTOR and be disposed of in a disposal site approved by the Department of Environmental Quality. The CONTRACTOR shall furnish the ENGINEER, within 21 calendar days, Chain of Custody verification records for the contaminated soil. The Materials and Testing Section will verify that all contaminated soil has been removed. While the excavation is open, the CONTRACTOR shall construct and maintain a soil berm around the excavation to prevent surface water runoff from entering the excavation. The removed overburden may be used to construct the berm and backfill the excavation. Removal and disposal of contaminated soils will be in accordance with all local, state and federal laws and regulations.

F. **Contaminated Fluids:** Contaminated fluid in underground fuel tanks, in areas of underground fuel tanks or other areas as shown on the plans or as directed shall be removed and disposed of by the CONTRACTOR. The CONTRACTOR shall pump the contaminated fluid into approved hauling vehicles. Contaminated fluid in underground fuel tanks shall be removed before tank removal. The contaminated fluid shall be disposed of in a disposal site approved by the Department of Environmental Quality. The CONTRACTOR shall furnish the ENGINEER, within 21 calendar days, Chain of Custody verification records for the contaminated fluid. The ENGINEER will verify the removal of the contaminated fluid. The Removal and disposal of contaminated fluids will be in accordance with all local, state and federal laws and regulations.

G. **Paint Containing Lead or Other Hazardous Materials on Metal Surfaces:** Steel members of structures protected by paint containing lead or other hazardous materials as shown on the plans or as discovered in the field shall be removed and prepared for transport by methods approved by the ENGINEER. Such steel members shall be delivered to a licensed recycling center capable of processing steel members coated with paint identified by the Resource Conservation and Recovery Act (RCRA) as hazardous. Prior to removal, transport, treatment or disposal of any steel members, the CONTRACTOR shall submit the following to the ENGINEER.

1) Plan of removal of steel members.

2) Plan for transport of steel members.

3) Name and address of the licensed recycling center.

All steel members shall be transported in accordance with all federal, state and local laws. Certificates of Disposal, Chain of Custody forms, or other applicable documents shall be provided within 21 calendar days following each shipment.

H. **Treated Timber:** Creosoted and other treated timber or lumber shown on the plans or discovered in the field shall be removed and prepared for transport by methods approved by the ENGINEER. All materials that are not designated to be salvaged by the OWNER or salvaged by the CONTRACTOR are to be disposed of in an appropriate landfill. Certificates of Disposal, Chain of Custody forms, or other applicable documents shall be provided within 21 calendar days following each shipment.

I. **Universal Wastes:** Universal wastes are hazardous wastes defined in LAC Title 33, Part V, Chapter 38, Section 3813 to include batteries, pesticides, thermostats, lamps and antifreeze. Universal wastes shall be removed by the CONTRACTOR in accordance with the plans and shall be stored and prepared for transport as specified in LAC Title 33, Part V, Chapter 38 and herein. A lamp is the bulb or tube portion of an electric lighting device. Universal waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metallic halide.

Such lamps shall be removed and stored in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers shall remain closed and lack evidence of leakage, spillage or damage that could cause releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions. The containers shall be clearly labeled or marked with the words “Universal Waste – Lamps” and with the earliest date that any lamp in the container was discarded as waste. If a container develops a leak, it shall be placed into an over-pack container. The CONTRACTOR shall immediately clean up any leakage and place in a container any lamp that shows evidence of breakage, leakage, or damage. Universal waste lamps will not be allowed to accumulate for a period longer than one year from the date the lamps were discarded. The waste lamps shall be delivered to a universal waste disposal site or destination facility by a Universal Waste Transporter in accordance with the applicable U.S. Department of Transportation Regulations, 49 CFR, Parts 172-180. The CONTRACTOR shall be responsible for informing all employees who handle universal wastes of the proper handling and emergency procedures appropriate to the type of waste.

3.5 PLUGGING OR RELOCATING EXISTING WATER WELLS

A. All abandoned wells shall be plugged and sealed at the locations shown on the plans, or as directed by the ENGINEER, in accordance with the "Water Well Rules, Regulations, and Standards, State of Louisiana." Well abandonment must be accomplished by a DOTD licensed water well CONTRACTOR. Relocated wells shall conform to the Sanitary Code of the State of Louisiana as prepared and promulgated by the Louisiana State Board of Health.

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SECTION 02204 - TEMPORARY ENVIRONMENTAL CONTROLS (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall comply with federal, state, and local laws and regulations controlling pollution of the environment, including air, water, and noise. The CONTRACTOR shall take precautions to prevent pollution of waters and wetlands with fuels, oils, asphalts, chemicals, or other harmful materials.

1.2 REFERENCE STANDARDS

A. Louisiana Department of Environmental Quality (LDEQ)

LAR 100000	Master General Permit for Discharges of Storm Water from Construction Activities – Five Acres or More
LAR 200000	Storm Water General Permit for Small Construction Activities

B. Occupational Safety Hazard Administration (OSHA)

Part 1926	Safety and Health Regulations for Construction

C. United States Environmental Protection Agency (US EPA)

Storm Water Management for Construction Activities

1.3 CONTRACTOR SUBMITTALS

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 DUST ABATEMENT

A. The CONTRACTOR shall prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity of the Site. The CONTRACTOR shall be responsible for any damage resulting from dust originating from its operations. Dust abatement measures shall be continued until the CONTRACTOR is relieved of further responsibility by the ENGINEER.

B. **Storage Piles**: The CONTRACTOR shall enclose, cover, water (as needed), or apply non-toxic soil binders according to manufacturer's specifications on material piles (i.e. gravel, sand, dirt) with a silt content of 5 percent or greater.

C. **Active Areas of Site**: The CONTRACTOR shall water active construction areas and unpaved roads as needed and as directed by ENGINEER.

D. **Inactive Areas of Site**: The CONTRACTOR shall apply non-toxic soil stabilizers according to manufacturer's specifications to inactive construction areas, or water as needed to maintain adequate dust control.

E. **Vehicle Loads**: The CONTRACTOR shall cover or maintain at least 2-feet of freeboard vertical distance between the top of the load and the top of the trailer sides on trucks hauling dirt, sand, soil, or other loose materials off of the Site.

F. **Roads**: When there is visible track-out onto a paved public road, the CONTRACTOR shall install wheel washers where the vehicles exit and enter onto the paved roads and wash the undercarriage of trucks and any equipment leaving the Site on each trip. The CONTRACTOR shall sweep the paved street at the end of each shift with a water spray pick-up broom-type street sweeper as necessary or as directed.

G. **Vehicle Speeds**: If watering of unpaved roads is not sufficient to control dust. The CONTRACTOR shall reduce vehicle speeds as required for control of dust.

1.5 SEDIMENTATION ABATEMENT

A. For work disturbing one acre or less, no Storm Water Pollution Prevention Plan is required. CONTRACTOR shall be responsible for collecting, storing, hauling, and disposing of spoil, silt, and waste materials in compliance with applicable federal, state, and local rules and regulations and the Contract Documents.

B. The CONTRACTOR shall install and maintain erosion and sediment control measures, such as swales, grade stabilization structures, berms, dikes, waterways, filter fabric fences, and sediment basins.

C. The CONTRACTOR shall filter fabric barrier systems, if used, shall be installed in such a manner that surface runoff will percolate through the system in sheet flow fashion and allow sediment to be retained and accumulated.

D. The CONTRACTOR shall remove and dispose of sediment deposits at the designated spoil area. If a spoil area is not indicated, dispose of sediment off-Site at a legally permitted disposal facility. Sediment to be placed at the spoil area should be spread evenly, compacted, and stabilized. Sediment shall not be allowed to flush into a stream, drainage structure, or drainage way.

E. Maintain erosion and sediment control measures until final acceptance or until directed by the ENGINEER to remove it.

1.6 STORMWATER POLLUTION PREVENTION PLAN

A. The CONTRACTOR shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), for work disturbing one acre or greater. The plan shall describe in specific details the CONTRACTOR's program to prevent contamination of the storm water collection system for this project. A suggested Template and Sample SWPPP Inspection Report, as well as other valuable information can be found at EPA's website: http://cfpub.epa.gov/npdes/stormwaterlswppp.cfm

B. The CONTRACTOR'S Storm Water Pollution Prevention Plan shall be compromised of all relevant components specified in the U.S. Environmental Protection Agency document entitled, "Storm Water Management for Construction Activities".

C. The CONTRACTOR shall implement, maintain, and inspect all erosion and sediment controls identified in the SWPPP. The program shall address both common construction activities and extraordinary events. The CONTRACTOR shall remove all temporary SCMs, such as silt fences, catch basin filters, wash areas, etc. at the end of construction.

D. The CONTRACTOR shall include Water Pollution Control Drawings (WPCD) in the SWPPP to illustrate the locations, applications, and deployment of the Storm Water Control Measures (SCMs) identified in the SWPPP. The WPCDs shall be included as an attachment to the SWPPP.

E. **Storm Water Control Measures (SCMs):** The Storm Water Control Measures (SCMs) are techniques, processes, activities, or structures used to reduce the pollutant content of a storm water or non-storm water discharge. SCMS may include simple, non-structural methods such as good housekeeping, staff training, and preventative maintenance. Additionally, SCMs may include structural modifications such as the installation of berms, canopies, or treatment control.

F. The CONTRACTOR shall comply with laws, rules, and regulations of the State of Louisiana and agencies of the United States Government prohibiting the pollution of lakes, wetlands, streams, or river waters from the dumping of contaminates, refuse, rubbish, or debris.

G. The CONTRACTOR shall submit copies of the SWPPP a minimum of 10 working days prior to beginning construction, to the ENGINEER. The CONTRACTOR shall update the SWPPP as necessary during the work to prevent contamination of the storm water collection system.

H. Before the start of work, the CONTRACTOR shall train all employees and Subcontractors on the approved SWPPP and related WPCD and provide the ENGINEER with written documentation of said training.

I. For work disturbing one acre or less, Storm Water Control Measures (SCMs) must be in place. There shall be no Notice of Intent (NOI) required. The CONTRACTOR shall complete inspection reports and submit copies to OWNER. The CONTRACTOR and the INSPECTOR shall keep a copy of the report on file.

J. For work disturbing one to five acres, Storm Water Control Measures (SCMs) must be in place. The CONTRACTOR must prepare SWPPP and post prominently on the job site. The CONTRACTOR must have the LAR 200000 General Permit posted on the job site. There shall be no Notice of Intent (NOI) required. The CONTRACTOR shall complete all required reports and submit them to OWNER.

K. For work disturbing five acres or more, Storm Water Control Measures (SCMs) must be in place. The CONTRACTOR must have Notice of Intent (NOI) completed, sent to DEQ, and posted. The CONTRACTOR must prepare a SWPPP and post prominently on the site. The CONTRACTOR shall have the LAR 100000 General Permit posted on site with DEQ permit number for specific site. The CONTRACTOR must complete a Notice of Termination (NOT) and submit it to DEQ.

1.7 RUBBISH CONTROL

A. During the progress of the WORK, the CONTRACTOR shall keep the Site and other areas for which it is responsible in a neat and clean condition and free from any accumulation of rubbish. The CONTRACTOR shall dispose of rubbish and waste materials of any nature and shall establish regular intervals of collection and disposal of such materials and waste. The CONTRACTOR shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of rubbish and surplus materials shall be off the Site in accordance with local codes and ordinances governing locations and methods of disposal and in conformance with

applicable safety laws and the particular requirements of Part 1926 of the OSHA Safety and Health Standards for Construction.

1.8 **CHEMICALS**

A. Chemicals used on the WORK or furnished for facility operation, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION -

SECTION 02401 – AGGREGATE SURFACE COURSE (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish and construct aggregate surface courses for roadways, shoulders, drives, or other facilities in accordance with these specifications, and in conformity with the lines, grades, thicknesses, and typical sections shown on the plans or already established

1.2 REFERENCE STANDARDS

A. Louisiana Department of Transportation and Development (LDOTD)

AML Approved Materials List (formerly QPL)

TR 602 Measuring Thickness and Widths of Base and Subbase Courses and Aggregate Type Surface Courses

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 DELIVERY, STORAGE, AND HANDLING:

A. The CONTRACTOR shall ensure that delivery, storage, and handling of materials shall be undertaken in such a way as to ensure compliance of the placed and compacted material with all requirements of the specifications.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Unless noted otherwise on the drawings or in the Special Provisions, aggregate surface course may be stone, sand – clay – gravel, reclaimed Portland cement concrete, or reclaimed asphalt pavement.

B. Material for aggregate surface course shall be uniformly blended aggregate surface course materials that have been sampled and accepted for use prior to placement.

C. Unless otherwise approved in writing by the ENGINEER, the same aggregate surface course material shall be used throughout the entire project.

2.2 STONE

A. Stone for aggregate surface course shall comply with the requirements of Section 02003 – Aggregates.

2.3 SAND – CLAY – GRAVEL

A. Sand – clay – gravel for aggregate surface course shall comply with the requirements of Section 02003 – Aggregates.

2.4 RECLAIMED PORTLAND CEMENT CONCRETE

A. Reclaimed Portland cement concrete for aggregate surface course shall comply with the requirements of Section 02003 – Aggregates.

2.5 RECLAIMED ASPHALT PAVEMENT

A. Reclaimed asphalt pavement for aggregate surface course shall comply with the requirements of Section 02003 – Aggregates.

2.6 WATER

A. Water for lime treatment shall be suitable for human consumption.

2.7 LIME

A. Lime shall be hydrated lime or quicklime listed on the LDOTD AML (formerly QPL 34).

PART 3 -- EXECUTION

3.1 EQUIPMENT

A. Equipment necessary to produce a finished product meeting specification requirements shall be furnished and maintained by the CONTRACTOR. Equipment will be approved prior to use.

3.2 GENERAL CONSTRUCTION REQUIREMENTS

A. Material shall be placed upon an approved subgrade. The CONTRACTOR shall obtain approval of the subgrade before placing aggregate surface course. The CONTRACTOR shall uniformly spread material removed from shoulders adjacent to the shoulder material.

B. On existing surfaces, where only placing aggregate surface course, the CONTRACTOR shall remove vegetation, shape, and satisfactorily compact the surface prior to placing aggregate surfacing. For new or reconstructed surfaces construct subgrade in accordance with Section 02200 – Earthwork and the drawings.

3.3 PLACING MATERIALS

A. The CONTRACTOR shall place material directly on the prepared and approved subgrade. Do not place surface course on damaged subgrade until repairs as directed by the ENGINEER been completed and approved.

B. The CONTRACTOR shall not place or spread aggregate surfacing materials on adjacent Portland cement concrete or asphalt concrete pavements. The CONTRACTOR shall conduct aggregate surfacing operations so that pavement surfaces, edges, and joints are not damaged. Repairs to damaged areas shall be at no additional cost to the OWNER.

3.4 MIXING

A. General: The CONTRACTOR shall add adequate moisture to all aggregate surface course materials to control compaction.

B. Sand – Clay – Gravel: The CONTRACTOR shall uniformly mix sand-clay-gravel with 6 percent lime by volume; for central mixing, the CONTRACTOR shall use 5 percent lime. The sand-clay-gravel shall be sampled and approved prior to treatment with lime

3.5 SHAPING AND COMPACTING AGGREGATE SURFACE COURSE

A. **General:** The CONTRACTOR shall place approved aggregate surface course material to required thickness, shape to the required section, and compact with an approved roller to a tight, uniform surface free from ruts and waves.

B. **Stone and Recycled Portland Cement:** After initial compaction, the CONTRACTOR shall wet the surface as required to achieve compaction satisfactory to the ENGINEER.

C. **Reclaimed Asphalt Pavement:** The CONTRACTOR shall compact with a roller acceptable ENGINEER as directed to achieve compaction satisfactory to the ENGINEER.

D. **Lime Treated Sand – Clay – Gravel:** The CONTRACTOR shall compact and finish lime treated sand-clay-gravel to the satisfaction of the ENGINEER within 72 hours after initial mixing with lime. If not compacted and finished within 72 hours, due to contractor's operations, recut lime at half the specified rate at no additional cost to the OWNER.

3.6 DIMENSIONAL TOLERANCES

A. **Net Section Measurement:** When aggregate surface course is specified in Section 01025 – Measurement and Payment to be measured for payment by net section measurement, the thickness and width of completed aggregate surface course will be checked for acceptance in accordance with DOTD TR 602. The CONTRACTOR shall correct to plan dimensions areas with deficiencies in excess of the following tolerances as required at no additional cost to the OWNER.

1. **Thickness:** Under-thickness shall not exceed 3/4 inch. Over-thickness may be waived at no additional cost to the OWNER.

2. **Width:** Under-widths shall not exceed 3 inches for shoulders or drives and 6 inches for roadways. Over-width may be waived at no additional cost to the Department

B. **Vehicular Measurement:** When aggregate surface course is specified in Section 01025 – Measurement and Payment to be measured for payment using vehicular measurement, the ENGINEER will take measurements to ensure the work's conformance to plan dimensions. The CONTRACTOR shall place material as required to comply with the plan dimensions.

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SECTION 02701 – CULVERTS AND STORM DRAIN SYSTEMS (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide and construct culverts and storm drains, drainage manholes, catch basins, and/or end treatments as specified herein.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M36	Standard Specification for Corrugated Steel Pipe
AASHTO M85	Standard Specification for Portland Cement
AASHTO M91	Standard Specification for Sewer and Manhole Brick
AASHTO M196	Standard Specification for Corrugated Aluminum Pipe
AASHTO M198	Standard Specification for Gray Iron Castings
AASHTO M218	Standard Specification for Steel Sheet, Zinc – Coated, For Corrugated Steel Pipe
AASHTO M245	Standard Specification for Corrugated Steel Pipe, Polymer Pre-coated, for Sewers and Drains
AASHTO M270	Standard Specification for Structural Steel for Bridges
AASTHO M294	Standard Specification for Corrugated Polyethylene Pipe
AASHTO M306	Standard Specification for Drainage, Sewer, and Utility Related Castings
AASHTO M315	Standard Specifications for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets

B. ASTM International (ASTM)

ASTM A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A148	Standard Specification for Steel Castings, High Strength, for Structural Purposes
ASTM A153	Standard Specification for Zinc Coating (Hot – Dip) on Iron and Steel Hardware
ASTM A536	Standard Specification for Ductile Iron Castings

ASTM A743	Standard Specification for Castings, Iron – Chromium, Iron – Chromium Nickel, Corrosion Resistant, for General Application
ASTM B633	Standard Specification for Electrodeposited Coatings of Zinc and Iron on Steel
ASTM B695	Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C139	Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
ASTM C465	Standard Specification for Processing Additions for Use in the Manufacture of Hydraulic Cements
ASTM C506	Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
ASTM C655	Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe
ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
ASTM D1640	Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings
ASTM D1784	Standard Specification for Rigid PolyVinyl Chloride (PVC) Compounds and Chlorinated PolyVinyl Chloride (CPVC) Compounds
ASTM D2369	Standard Test Method for Volatile Content of Coatings
ASTM F794	Standard Specification for PVC Profile Gravity Sewer Pipe and ` Fittings Based on Controlled Inside Diameter
ASTM F949	Standard Specification for PVC Corrugated Sewer Pipe with Smooth Interior and Fittings

C. Louisiana Department of Transportation and Development (LDOTD)

AML	Approved Materials List
LSSRB	Louisiana Standard Specifications for Roads and Bridges

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

PART 2 -- PRODUCTS

2.1 PIPE

A. Pipe shall be as specified in Section 15000 – Piping, General.

2.2 JOINT GASKET MATERIALS

A. Rubber gaskets for pipe joints shall comply with AASHTO M 315. The rubber gaskets and lubricant shall be approved products listed in the LDOTD AML (formerly QPL 4). Each rubber gasket shall be identified with a batch or lot number. Flexible plastic gaskets for pipe joints shall comply with AASHTO M 198. The hydrostatic test shall be performed using AASHTO M 315. Flexible plastic gasket material and primer shall be approved products listed in the LDOTD AML (formerly QPL 4).

2.3 SPLIT COUPLING BANDS

A. Split coupling bands shall be one piece and composed of the same material as the pipe. The bands shall be the same thickness as the base pipe. The width of the band shall be equal to one-half the diameter of the pipe but shall be a minimum of 12 inches wide. The band shall be secured to the pipe with a minimum of five stainless steel or other approved corrosion resistant circumferential bands.

2.4 PORTLAND CEMENT

A. Portland cement shall be from an approved source listed in the LDOTD AML (formerly QPL 7) and shall comply with AASHTO M 85.

B. **Chemical Requirements:** The chemical requirements shall be as specified in AASHTO M85. Alkali content calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight for all types of cement.

C. Process Additions: Process additions may be used in amounts not to exceed 3 percent by weight of portland cement clinker provided it meets the requirements for the cement portion of ASTM C 465 and the test results are submitted to the Department for review and approval.

2.5 MORTAR SAND

A. Sand shall be a natural silica sand from a source listed in the LDOTD AML (formerly QPL 2). The percentages of deleterious materials shall not exceed the following values:

Property	Percent, Max
Coal and Lignite	0.25
Clay Lumps	0.05
Clay Lumps and Friable Particles	3.00

2.6 MORTAR

A. Mortar shall consist of one part Portland cement, two parts mortar sand, and water as required for proper consistency. Mortar shall be used within thirty (30) minutes after mixing.

2.7 SEWER BRICK

A. Sewer brick shall be made from clay, shale or concrete. Brick made from clay or shale for use in junction boxes, catch basins, arches, manholes and for backings shall comply with AASHTO M 91, Manhole Brick, Grade MM. Concrete brick shall comply with ASTM C 139, except that the minimum thickness of each unit shall not be less than 3 5/8 inches.

2.8 ASPHALTIC VARNISH

A. **Material**: Asphaltic varnish shall be composed of hard native asphalts or asphaltites, run (fluxed) and blended with properly treated drying oils, and thinned with suitable solvents with the necessary amount of dryers.

B. **Appearance**: The film shall be smooth and homogeneous, when thoroughly mixed sample is poured and examined on a clean, clear, glass plate and placed in a vertical position until the excess varnish has drained off. The film will be examined by transmitted light.

C. **Color**: Color shall be jet black when examined by reflected light.

D. **Nonvolatile Matter**: Nonvolatile matter shall be not less than 40 percent by weight (mass) when tested in accordance with ASTM D 2369.

E. **Drying of Film**:

1. **Set to Touch**: Film shall set to touch in not more than 8 hours when tested in accordance with ASTM D 1640.

2. **Dry Through**: Film shall dry through in not more than 36 hours when tested in accordance with ASTM D 1640.

F. **Working Properties and Appearance of Dried Film**: Varnish shall have good brushing, flowing, covering and leveling properties. Dried film shall be jet black, smooth and free from brush marks, blisters, pinholes and other defects.

G. **Water Resistance**: Film shall show no whitening, dulling or other defects after a film is immersed in water for 18 hours and air dried for 2 hours.

2.9 REINFORCING STEEL

A. Reinforcing steel shall comply with Section 03801 – Reinforcement.

2.10 GEOTEXTILE FABRIC

A. Geotextile Fabric shall comply with Section 02200 – Earthwork

2.11 PORTLAND CEMENT CONCRETE

A. Portland Cement Concrete shall comply with Section 03901 – Portland Cement Concrete.

2.12 PRECAST CONCRETE DRAINAGE UNITS

A. Precast reinforced concrete drainage units shall be from a source listed on the LDOTD AML (formerly QPL 77) and shall comply with Section 03805 – Structural Concrete.

B. For grout connections, each opening shall be 4± 1/2 inches larger than the outside diameter of the pipe for which it is provided. Units shall be cast with the specified number and size of pipe openings to incorporate the unit into the drainage system.

C. **Marking**: The name or trademark of the manufacturer, the date of casting, the structure number of the station number as shown on the plans, and the lot number shall be indented into the concrete or painted thereon with waterproof paint on each unit on the inside and outside of the unit in such a manner as to be legible at time of delivery.

D. **Precast Reinforced Concrete Box Culverts**: Precast reinforced concrete box culverts shall be approved products listed on the LDOTD AML (formerly QPL 77). The compressive strength of box culverts shall comply with ASTM C 76. Precast reinforced concrete box culverts shall comply with ASTM C 1433 amended as follows:

1. Table 1 shall be used.

2. No modified designs will be allowed

3. Joints shall comply with the following:

    a. Joint Gasket materials shall comply with Subsection 1006.06.

    b. **Type 1 Joints (T1)**: These joints shall provide a soil tight joint.

    c. **Type 2 Joints (T2)**: These joints shall pass the 5 psi (35 kPa) hydrostatic pressure test.

    d. **Type 3 Joints (T3)**: These joints shall pass the 10 psi (70 kPa) hydrostatic pressure test.

4. Inside horizontal and vertical dimensions shall not vary by more than ± percent with a maximum of ± 1/2 inch (± 13 mm) from design dimensions.

5. Sides of each box section shall not vary from being perpendicular to the top and bottom by more than 1/2- inch (±13 mm) when measured diagonally between opposite interior corners of each end.

6. Culvert units shall be cured by one of the methods listed in ASTM C 1433. The selected method shall be approved by the Construction Section.

E. **Precast Reinforced Concrete Manholes, Catch Basins, Junction Boxes, and Safety Ends:** Precast reinforced concrete manholes, catch basins, junction boxes, and safety ends shall comply with the dimensions shown on the plans, and shall meet the following requirements:

1. **Reinforcement**: Reinforcement shall be as shown on the plans, and shall not vary more than 1/4 inch from the positions shown, except at pipe connections. At pipe connections no variance from the positions shown is allowed. Cover on reinforcement shall not be less than that shown on the plans.

2. **Workmanship**: Units shall be true to shape, and surfaces shall be smooth, dense and uniform in appearance. Units will be rejected for defeats in workmanship for any of the following:

   a. Fractures or cracks passing through the wall, except for a single end crack that does not exceed the depth of the joint.

   b. Surface defects indicating honeycombed or open texture that would adversely affect the function of the unit.

   c. Damaged or cracked ends, where such damage would prevent making a satisfactory joint.

   d. Any continuous crack having a surface width of 0.01 inch or more and extending for a length of 12 inches or more, regardless of position.

      When approved, minor surface cavities or irregularities which do not impair the service value of the unit and which can be corrected without marring its appearance shall be pointed with approved patching material listed in the LDOTD AML (formerly QPL 49) as soon as forms are removed.

2.13 STEEL CASTINGS

A. Steel castings for highway bridges shall comply with ASTM A 27, Grade 70-36.

B. High strength steel castings shall comply with ASTM A 148.

C. Chromium alloy steel castings shall comply with ASTM A 743, Grade CA-15.

2.14 IRON CASTINGS

A. Castings shall be true to pattern in form and dimensions and free from pouring faults, sponginess, cracks, blowholes and other defects in positions affecting their strength and value for the services intended. Castings shall be boldly filleted at angles, and rises shall be cleaned of scale and sanded to a smooth, clean and uniform surface.

B. Gray Iron Castings shall comply with AASHTO M 306.

C. Malleable Castings shall comply with ASTM A 47, Grade 32510. Ductile Iron Castings shall comply with ASTM A 536, Grade 60-40-18. Castings weighing more than 1,000 pounds shall be ultrasonically tested for voids. If voids are found, the casting will be rejected.

PART 3 -- EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall install products in accordance with manufacturer’s written instructions.

3.2 EXCAVATION

A. The bottom of the trench shall be excavated to a minimum width of 18 inches on each side for all pipe. Surplus material shall be satisfactorily disposed of in accordance with Section 02200 – Earthwork.

3.3 FORMING PIPE BED

A. When bedding material is specified additional excavation shall be performed below established grade and bedding material placed. When a suitable foundation cannot be obtained, unstable soil below established grade shall be removed and replaced with granular material or bedding material constructed in accordance with Section 02200 – Earthwork.

3.4 LAYING PIPE

A. Pipe laying shall begin at the downstream end of the line. The pipe shall be in contact with the foundation throughout its length. Bell or groove ends of pipe and outside circumferential lapse of riveted metal pipe shall be placed facing upstream. Riveted seam metal pipe shall be placed with longitudinal laps at sides. Pipes in each continuous line shall have the same wall thickness. Metal pipes provided with lifting lugs shall be handled only by these lugs.

B. After pipe has been laid and before backfill is placed, the ENGINEER will inspect the pipe for alignment, grade, integrity of joints, and coating damage.

3.5 JOINING PIPE

A. **Joint Usage**:

1. Type 1 (T1) joints shall be used for side drains under drives and similar installations.

2. Type 2 (T2) joints shall be used for cross drains under roadways, including turnouts.

3. Type 3 (T3) joints shall be used for closed storm drain systems, flumes and siphons.

B. **Concrete Pipe**: Concrete pipe may be either bell and spigot, or tongue and groove. The method of joining pipe sections shall be such that ends are fully entered and inner surfaces are flush and even. An approved mechanical pipe puller shall be used for joining pipes over 36 inches (900 mm) in diameter. For pipe 36 inches (900 mm) or less in diameter, any approved method for joining pipe may be used which does not damage the pipe. Joints shall be as specified herein and shall be sealed with gasket material installed in accordance with the manufacturer's recommendations. Types 2 and 3 joints shall be wrapped with geotextile fabric for a minimum of 12 inches on each side of 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. Ends of the fabric shall be lapped at least 10 inches. The edges and ends of fabric shall be suitably secured for the entire circumference of the pipe.

C. **Metal Pipe**: Metal pipe shall be firmly joined by coupling bands. Bands shall be centered over the joint. For type 1 joints, approved gasket material shall be placed in one corrugation recess on each side of the joint at the coupling band and on each band connection in such manner to prevent leakage. When Type 2 or 3 joints are specified, joining of metal pipe sections shall conform to the following provisions:

1. **General**: Band joints shall be sealed with gasket material. Gasket material shall be placed in accordance with the plan details. The joint shall be wrapped with geotextile fabric for a minimum of 12 inches (300 mm) on each side of the connecting band for pipe diameters 36 inches (900 mm) or less and a minimum of 18 inches (450 mm) on each side of the connecting band for pipe diameters greater than 36 inches (900 mm). Ends of fabric shall be lapped at least 10 inches (250 mm). The edges and ends of fabric shall be suitably secured for the entire circumference of the pipe.

2. **Circular Section**: Connecting bands shall be of an approved design and shall be installed in accordance with plan details.

3. **Arch Section**: Connecting bands shall be a minimum of 12 inches (300 mm) wide for pipe arch less than 36 inches (900 mm) round equivalent diameter, and a minimum of 21 inches (525 mm) wide for 36 inches (900 mm) round equivalent diameter pipe arch and greater. Bands shall be connected at the ends by approved angle or strap connections. Connecting bands used for 36 inches (900 mm) round equivalent diameter pipe arch and above shall be 2-piece bands.

D. Plastic Pipe: Joints for plastic pipe shall be either bell and spigot or split coupling bands. Types 2 and 3 joints shall be wrapped with geotextile fabric for a minimum of 12 inches (300 mm) on each side of the joint for pipes 36 inches (00 mm) or less in diameter and for a minimum of 18 inches (450 mm) on each side of the joint for pipes greater than 36 inches (900 mm) in diameter. The ends of the fabric shall be lapped at least 10 inches (250 mm). The edges and ends of the fabric shall be suitably secured for the entire circumference of the pipe.

    1. **Bell and Spigot Type Joint System:** The method of joining pipe sections shall be such that ends are fully entered and inner surfaces are reasonably flush and even. An approved mechanical pipe puller shall be used for joining pipes over 36 inches (900 mm) in diameter. For pipe 36 inches (900 mm) or less in diameter, any approved method for joining pipe may be used which does not damage the pipe. Joints shall be approved and shall be sealed with a gasket system utilizing gasket material complying with Subsection 1006.06(a).

    2. **Split Coupling Type Joint System:** Split coupling bands shall comply with all dimensional and material requirements of Subsection 1006.07. The bands shall be centered over the joint. The split coupling band shall be secured to the pipe with a minimum of five stainless steel or other approved corrosion resistant bands.

    3. Joints shall be approved and shall be sealed with gasket materials. Gasket material shall be placed in the first two corrugation recesses on each side of the pipe connections. Gasket material shall also be placed on each band connection to prevent leakage. When flexible plastic gasket material is used, it shall be a minimum of 1/2 inch (13 mm) in size. The bands shall be tightened to create overlap of the band and shall adequately compress the gasket material.

E. **Connections:** Approved connections shall be used when joining new pipes to existing pipes. When concrete collars are required in order to extend the ends of existing pipes that have been damaged or to join different types or sizes of pipes, the concrete collars

shall be constructed in accordance with plan details, the applicable requirements of Section 03901 – Portland Cement Concrete.

3.6 RELAYING PIPE

A. If specified or directed, existing pipes shall be removed and suitable sections re-laid as specified for new pipes.

3.7 BACKFILLING

A. Backfilling shall be per the plans and Section 02200 – Earthwork.

3.8 INSPECTION OF PIPES

A. After completion of embankment and prior to roadway surfacing, the ENGINEER shall inspect pipes for proper alignment and integrity of joints. Any misaligned pipe or defective joints shall be corrected by the CONTRACTOR at no direct pay.

B. **Plastic Pipe:** Installed plastic pipe shall be tested to ensure that vertical deflections do not exceed 5.0 percent. Maximum allowable deflections shall be governed by the mandrel requirements stated herein. Deflection tests shall be performed no sooner than 30 calendar days after installation and compaction of backfill. The pipe shall be cleaned and inspected for offsets and obstructions prior to testing. For pipe 36 inches and less in diameter, a mandrel shall be pulled through the pipe by hand to ensure that maximum allowable deflections have not been exceeded. The mandrel shall be approved or modified after approval will invalidate the test. If the mandrel fails to pass, the pipe is over-deflected. Unless otherwise permitted, over-deflected pipe shall be uncovered and, if not damaged, reinstalled. Damaged pipe shall not be installed, but shall be removed and replaced with new pipe. Any pipe subjected to any method or process other than removal, which attempts, even successfully, to reduce or cure any over-deflection, shall be removed and replaced with new pipe. For pipe larger than 36 inches (900 mm) in diameter, deflection shall be determined by a method approved by the ENGINEER. If a mandrel is selected the minimum diameter, length, and other requirements shall conform to the above requirements. Mandrel testing shall be conducted by the contractor in the presence of the ENGINEER. Mandrel testing shall be at no direct pay.

C. **Metal Pipe:** If the inside diameter of metal pipe or rise dimensions of metal pipe arch deflects more than 5.0 percent from original dimensions, they shall be removed and reinstalled, unless they do not rebound or are damaged. Pipe or pipe arch which are damaged or do not rebound shall be removed and replaced at no direct pay. Measurement of deflection will be made by the ENGINEER away from rerolled ends.

3.9 CLEANING PIPES

A. **Existing Pipes:** Pipes designated to be cleaned shall be cleaned of soil, debris, and other materials to the invert of the pipe. Designated pipes shall be cleaned by approved methods that will not damage the pipes. Any damage caused by the CONTRACTOR'S operations shall be satisfactorily repaired at no direct pay. Removed soil, debris and other materials shall be disposed of in accordance with Section 02200 – Earthwork, or as otherwise approved in writing.

B. **Contractor Installed Pipes:** Prior to final acceptance, pipes shall be cleaned of all debris and soil to the invert of the pipe at no direct pay. Removed soil, debris, and other

materials shall be disposed of in accordance with Section 02200 – Earthwork, ior as otherwise approved in writing.

3.10 STUBBING AND PLUGGING PIPES

A. When it is required that pipes be plugged, such plugs shall be constructed of Class R concrete complying with Section 03901 – Portland Cement Concrete. Thickness of plug and method of construction shall be as directed.

B. When new pipes are to be stubbed into new or existing pipes or other structures, the connection shall be made with approved mortar as specified herein.

3.11 MANHOLES, JUNCTION BOXES, AND CATCH BASINS

A. Concrete construction shall conform to Section 03805 – Structural Concrete, and the plans. Joints shall be full mortar joints not more than 1/2 inch wide. When specified, outside faces of structures shall be plastered with ½-inch thick cement-sand mortar. Exposed surfaces of concrete and masonry shall be cured in accordance with Section 03805 – Structural Concrete.

B. Precast concrete units shall be cast with 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 provided, the CONTRACTOR may make such openings provided any damaged units are replaced or satisfactorily repaired. Precast units shall be set to established grade within ± 1/2 inch. Joints for sectional precast units shall be sealed with flexible plastic gasket material installed as to form a watertight seal. The joints of precast units shall be wrapped with geotextile fabric a minimum of 18 inches on each side of the joint. Ends of the fabric shall be lapped at least 10 inches. The edges and ends of the cloth shall be suitably secured.

C. Metal frames shall be set 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. Masonry shall fit neatly and tightly around conduit.

D. When grade adjustments of existing structures are specified, frames, covers and gratings shall be removed and walls reconstructed as required. Cleaned frames shall be reset at required elevation. Metal parts shall be thoroughly cleaned and placed in good repair. In lieu of adjusting structures, the CONTRACTOR may adjust structures by means of approved metal adjustment rings.

E. New structures shall be cleaned of silt, debris or other foreign matter, and non - galvanized metal parts of new or adjusted structures shall be coated with asphaltic varnish as specified herein.

F. The structure shall be backfilled with granular material in accordance with Section 02200 – Earthwork.

G. Excavated material not satisfactory for backfill and surplus material shall be disposed of in accordance with Section 02200 – Earthwork.

- END OF SECTION –

SECTION 02710 – FLOWABLE FILL (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR furnish, place, and consolidate a controlled low strength flowable fill as indicated on the drawings and/or as directed by the ENGINEER.

B. Applications for this material include, but are not limited to general backfilling of drainage structures, entrenchments across pavements, encasements, beddings, void filling and other uses as shown on the plans or as approved by the ENGINEER.

C. Flowable fill shall be a cementitious mixture of portland cement, fly ash (depending on application and mix design), fine aggregate, water, entrained air, and appropriate admixtures for the particular application.

1.2 MODIFICATION BY SPECIAL PROVISIONS

A. The WORK of this section may be affected by requirements contained within the Special Provisions. The CONTRACTOR shall review, understand, and incorporate the requirements contained within the Special Provisions into the WORK of this Section.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M 85	Standard Specification for Portland Cement

B. ASTM International (ASTM)

ASTM C109	Standard Test Method for Compressive Strenght of Hydraulic Cement Mortars Using 2” Cube Specimens
ASTM C465	Standard Specification for Processing Additions for Use in the Manufacture of Hydraulic Cements

C. Louisiana Department of Transportation and Development (LDOTD)

AML	Approved Materials List
TR 112	Amount of Material Finer than No. 200 Sieve in Aggregate
TR 113	Sieve Analysis of Fine and Course Aggregates
TR 119	Determination of Deleterious Materials
TR 202	Air Content of Freshly Mixed Concrete
TR 226	Making, Field Curing, and Transporting Concrete Test Specimens
TR 423	Classification of Soils and Soils – Aggregate Mixtures for Highway Construction Purposes

TR 428	Determining the Atterberg Limits of Soils
TR 643	Determining Chloride Content in Admixtures for Portland Cement Concrete

1.4 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Flowable fill shall be designed and proportioned in accordance with the Flowable Fill Mix Design table contained herein. Trial batching will be required for excavatable and non-excavatable mixes to ensure appropriate job mix consistency and adherence to the Flowable Fill Mix Design Table.

Flowable Fill Mix Design Table[1]

Material	Excavatable Flowable Fill	Non – Excavatable Flowable Fill
Portland Cement	75-100 lb/cubic yard	75-150 lb/cubic yard
Fly Ash	0-150 lb/cubic yard	100-600 lb/cubic yard
Water[2]	-	-
Air[3]	10-35%	5-20%
Concrete Sand	Proportioned to Yield One Cubic Yard	Proportioned to Yield One Cubic Yard
Unit Weight[3]	90-110 lb/cubic foot	100-125 lb/cubic foot
28 – Day Compressive Strength[3]	Maximum 100 PSI	Minimum 125 PSI

1- Mix designs shall yield 1.0 cubic yard absolute volume.

2- Mix designs shall produce a consistency that will result in a flowable, self – leveling product at the time of placement.

3- The requirements for percent air, compressive strength, and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements.

2.2 PORTLAND CEMENT

A. Portland cement shall be from an approved source listed in the LDOTD AML (formerly QPL 7) and shall comply with AASHTO M 85.

B. **Chemical Requirements:** The chemical requirements shall be as specified in AASHTO M85. Alkali content calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight for all types of cement.

C. **Process Additions**: Process additions may be used in amounts not to exceed 3 percent by weight (mass) of portland cement clinker provided it meets the requirements for the cement portion of ASTM C 465 and the test results are submitted to the ENGINEER for review and approval.

2.3 AGGREGATES

A. General: Aggregates shall meet the requirements of Section 02003 – Aggregates.

2.4 ADMIXTURES

A. **Physical Requirements:** Admixtures for use in flowable fill shall be an approved product listed on the LDOTD AML (formerly QPL 58).

B. **Chemical Requirements:** Unless a chloride type admixture is specified, the contribution of chloride ion resulting from the addition of admixtures to the concrete shall not exceed 0.02 pound per cubic yard (12 g/cu m) of concrete, when tested in accordance with DOTD TR 643.

2.5 WATER

A. Water suitable for human consumption shall be used.

2.6 FLY ASH

A. Fly ash shall be from an approved source listed on the LDOTD AML (formerly QPL 50) and shall comply with AASTHTO M 295 for Class C and Class F only.

PART 3 -- EXECUTION

3.1 GENERAL

A. Before placement, temporary end dams or soil berms shall be provided as directed by the engineer to confine the flowable fill.

B. Flowable fill shall be placed to the lines and grades shown on the plans or as directed

C. Where flotation or misalignment may occur due to hydrostatic pressure, the contractor shall assure correct alignment and placement of the encased structure by using straps, soil anchors, or other approved means of restraint.

D. Flowable fill shall be protected from freezing for 36 hours after placement. Flowable fill shall be placed by chute, pumping or other methods approved by the engineer.

E. Hydrostatic pressure on adjacent structures shall be taken into account on deep fills where multiple lifts may be required.

F. While in a liquid state, flowable fill in deep excavations is in a quick condition and shall be protected until hardening occurs.

G. Flowable fill will not require field sampling or testing other than the approved trial batch mix design, unless otherwise directed by the ENGINEER.

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SECTION 02711 – RIPRAP (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish and place riprap in accordance with these specifications and in conformity to lines, grades and thickness shown on the plans or as directed.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T85 Specific Gravity and Absorption of Coarse Aggregate

B. Louisiana Department of Transportation and Development (LDOTD)

AML Approved Materials List

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

PART 2 -- PRODUCTS

2.1 MATERIALS

A. Stone riprap shall be from an approved source listed in the LDOTD AML (formerly QPL 2). Stone riprap shall not disintegrate upon exposure to the elements or be easily broken from handling, shall be reasonably free from earth and other foreign materials. When tested in accordance with AASHTO T 85, the solid weight of stone shall be at least 155 pounds per cubic foot (based on bulk specific gravity). The least dimension of any individual stone shall be 1/3 its maximum dimension. Each shipment of stone shall be reasonably well graded within specified limits.

B. Recycled concrete may be used as riprap unless otherwise indicated herein providedits solid weight is at least 155 pounds per cubic foot (based on bulk specific gravity) and it is free of protruding reinforcement.

C. Stockpiles of recycled concrete shall be source approved prior to use and kept separate from other materials. Stockpiles shall be uniform and free of soil, debris, excessive amounts of asphaltic materials, and foreign matter. Once a stockpile has been approved as an acceptable source of material, no material shall be added without prior approval.

D. Control of gradation will be by visual inspection at the source, project site or both.

E. Any difference of opinion between the ENGINEER and CONTRACTOR will be resolved by checking the gradation of two random truckloads (or equivalent size samples). Equipment, labor and sorting site shall be furnished by the CONTRACTOR at no additional cost to the OWNER.

F. **Riprap**: Riprap shall be reasonably well graded and shall comply with Table 02711-1.

G. **Geotextile Fabric:** Geotextile Fabric shall comply with Section 02200 – Earthwork.

Table 02711-1

Riprap Class [1]	Stone Size lb	Spherical Diameter, ft [2]	Percent of Store Smaller Than
2 lb (1 kg)	10 4 2 0.75	0.51 0.38 0.30 0.22	100 40-100 15-50 0-15
10 lb (5 kg)	50 20 10 5	0.88 0.65 0.51 0.41	100 50-100 15-50 0-15
30 lb (15 kg)	140 60 30 10	1.24 0.94 0.74 0.51	100 42-100 15-50 0-15
55 lb (25 kg) [3]	275 110 55 20	1.50 1.11 0.88 0.63	100 42-100 15-50 0-15
130 lb (60 kg) [3]	650 260 130 40	2.00 1.46 1.17 0.79	100 45-100 15-50 0-15
250 lb (115 kg) [3]	1250 500 250 80	2.50 1.83 1.46 1.00	100 45-100 15-50 0-15
440 lb (200 kg) [3]	2200 900 440 130	3.00 2.23 1.76 1.17	100 40-100 14-50 0-15
1000 lb (455 kg) [3]	5000 2000 1000 300	4.00 2.91 2.31 1.55	100 45-100 10-50 0-15

[1]The stone size used to define the Riprap Class is the minimum median stone size for the stone class. The minimum thickness of a riprap layer shall be no less than the spherical diameter of the maximum stone size in Riprap Class.
[2]Spherical diameters of riprap classes up to 30 lb are based on a solid weight of 140 lb/cu ft . Spherical diameters of riprap classes above 30 lb are based on a solid weight of 155 lb/cu ft.
[3]Recycled Portland cement concrete may not be used in these riprap classes.

PART 3 -- EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

A. **Riprap:** Areas on which riprap is to be placed shall be graded to the required section. Riprap shall be placed on the prepared slope or area in a manner which will produce a reasonably well-graded mass of stone with a minimum practicable percentage of voids. The entire mass of stone will be placed to be in conformance with the lines, grades, and thickness at one operation and to avoid displacing underlying material. Placing of riprap in layers, or dumping into chutes, or by similar methods likely to cause segregation, will not be permitted.

B. When placement in water currents is required, the CONTRACTOR shall make drift checks and place riprap in such manner as to compensate for drift. The CONTRACTOR shall furnish necessary facilities and personnel for checking riprap depth and distribution.

C. **Filter Stone:** When specified, filter stone shall be placed on the prepared slope or area before placement of riprap. When filter stone is placed under water, free dumping will not be permitted. Underwater placement shall be controlled by methods using bottom dump buckets or wire rope baskets lowered through the water to the point of placement. If placement in strong water currents is required, placement of riprap will follow soon after placement of filter stone. Unless shown otherwise on the plans or directed, filter stone shall be Riprap (Class 10 lb) or less.

D. **Geotextile Fabric:** When specified, geotextile fabric shall be placed on the prepared slope or area in accordance with Section 02200 - Earthwork before placement or riprap. Care shall be taken not to damage the geotextile fabric when placing riprap. Placing riprap by rolling riprap down slope, or dropping riprap from extreme heights, or by similar methods likely to damage geotextile fabric, will not be permitted. Damaged geotextile fabric shall be replaced in accordance with Section 02200 – Earthwork or as directed by the ENGINEER.

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SECTION 02713 – TEMPORARY TRAFFIC CONTROLS (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall be responsible for the design, development, and implementation of a temporary traffic control device plan for all phases and portions of the WORK. The traffic control device plan will provide for safe and expeditious movement of traffic and pedestrians through the area of construction.

B. The CONTRACTOR shall furnish, install, maintain, and remove temporary construction barricades, lights, signals, pavement markings and signs, and flaggers as indicated in his plan or as directed by the ENGINEER.

C. Appropriate signs for special conditions shall be furnished and installed as required or as directed.

D. Requirements for proper signs, barricades, barriers, channelizing devices, or other safety precautions promulgated by the CONTRACTOR's insurers will not be negated by these specifications.

E. The CONTRACTOR shall assign one or more authorized Traffic Control Supervisors (TCS) to provide traffic control management for the execution of the WORK. If more than one TCS is assigned, then the CONTRACTOR shall provide a weekly schedule identifying who will be in charge of providing traffic control management on a daily basis. If the CONTRACTOR utilizes a subcontractor to provide traffic control management, the subcontractor's TCS shall meet all requirements set forth herein.

1.2 REFERENCE STANDARDS

A. American Traffic Safety Services Association (ATSSA)

ATSSA	Quality Guidelines for Temporary Traffic Control Devices and Features

B. ASTM International (ASTM):

ASTM B209	Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate
ASTM D4956	Standard Specification for Retroreflective Sheeting for Traffic Control

C. Federal Highway Administration (FHWA):

MUTCD	Manual for Uniform Traffic Control Devices

D. Louisiana Department of Transportation and Development (LDOTD):

AML	Approved Materials List
TTC-00 (C)	Temporary Traffic Control General Notes

TTC-00 (D)	Layout for Placement of Road Work Next “XX” Miles and End Road Work Signs
TTC-01	Layout for Work Less than 15 Feet from the Traveled Way
TTC-02	Layout for Work Less than 15 Feet from the Traveled Way
TTC-03	Layout for Lane Closures on Two Lane Roads with Two Way Traffic Less Than 1600 Feet from Intersection
TTC-04	Layout for Lane Closures on Two Lane Roads with Two Way Traffic Greater Than 1600 Feet from Intersection
TTC-05	Layout for On - Site Diversion with Two Lane Traffic
TTC-06	Layout for Lane Closure on Four – Lane Undivided Highways
TTC-07	Layout for Lane Closure of Two Adjacent Lanes on Four – Lane Undivided Highways
TTC-08	Layout for Median Crossover on Divided Highways
TTC-09	Layout for One Lane Closure on Divided Highways
TTC-10	Layout for Lane and Sidewalk Closures in Urban Areas with Speed Limit Less than or Equal to 40 Miles per Hour
TTC-11	Layout for Lane Closure Using Temporary Barrier Rail on Divided Highways
TTC-12	Layout for Lane Closures Through Ramp Entrance and Exit Tapers
TTC-13	Layout for Lane Closure of Two Lanes on a Multi – Lane Highway
TTC-14	Layout for “Louisiana Left” on Interstate or Other Divided Highways
TTC-15	Layout for Short Duration Closure of Divided Highways
TTC-16	Layout for Temporary Road Closures
TTC-17	Layout for Moving Operations on Interstate or Other Multi – Lane Roadways
TTC-18	Layout for Moving Operations on Two – Way Two – Lane Roadways
TTC-19	Layout for Traffic Signal Installation and Maintenance at an Intersection

E. National Cooperative Highway Research Program (NCHRP)

NCHRP 350	Recommended Procedures for the Safety Performance Evaluation of Highway Features

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 QUALITY CONTROL

A. See Part 3 – Execution for Quality Control Requirements.

PART 2 -- PRODUCTS

2.1 GENERAL

A. All Category I, II, and III portable work zone traffic control devices shall be crashworthy as determined by evaluations through NCHRP 350 for Test Level 3.

1. **Category 1 Devices:** Category I devices are low mass, single piece traffic cones, tubular markers, single piece drums and flexible delineators and are, by definition, considered crashworthy devices meeting NCHRP 350 Criteria for Test Level III. Drum and light combinations with Type A or C warning lights and fastener hardware consisting of vandal-resistant ½ inch diameter cadmium plated steel bolts and nuts used with 1 1/2 inch diameter by ¾ cup washers are included as Category I devices. In lieu of testing for crashworthiness, acceptance of Category I devices for compliance with NCHRP 350 will be allowed based upon self – certification by the supplier. The supplier shall certify that the product is crashworthy in accordance with the evaluation criteria of NCHRP 350. Certification may be a one – page affidavit signed by the supplier, with supporting documentation kept on file to be furnished if requested.

2. **Category 2 Devices:** Category II devices include other low mass traffic control devices such as portable barricades, either with or without lights and/or signs, portable sign stands, portable vertical panel assemblies, and drums with lights not meeting the drum and light combination requirements for Category I. Individual crash testing is required for Category II devices. FHWA letters of approval shall serve as verification that these devices comply with the crash testing requirements of NCHRP Report 350, Test Level III. The CONTRACTOR shall provide to the ENGINEER a listing of all the Category II Devices to be used, including a reference to the FHWA Work Zone letter number for each device. The CONTRACTOR shall certify that each device has been crash tested and meets the NCHRP 350 requirements.

3. **Category 3 Devices:** NOT USED

2.2 BARRICADE WARNING LIGHTS

A. Type A, B, and C barricade warning lights shall be in compliance with the MUTCD and shall be an approved product listed on the Louisiana Department of Transportation and Development Approved Materials List.

2.3 DRUMS, CONES, AND TUBULAR MARKERS

A. **Drums and Super Cones:** Plastic drums shall be an approved product listed on the LDOTD AML. The design of drums and super cones shall comply with LDOTD TTC-00

(C). Reflective sheeting for drums and super cones shall be a minimum of six inches wide and shall meet the requirements of ASTM D4956, Type III, and the Supplementary Requirement S2 for reboundable sheeting as specified in ASTM D4956. Sheeting for drums shall be an approved material listed on the LDOTD AML.

B. **Traffic Cones:** The design of plastic traffic cones shall comply with LDOTD TTC-00 (C). Reflective sheeting for cone collars shall be a minimum of six inches wide and shall meet the requirements of ASTM D4956, Type IV. Sheeting for plastic traffic cones shall be an approved material listed on the LDOTD AML. All traffic cones shall be a minimum of 36 inches in height.

C. **Tubular Markers:** The design of tubular markers shall comply with LDOTD TTC-00 (C). Reflective sheeting for tubular markers shall meet the requirements of ASTM D4956, Type III. Sheeting for tubular markers shall be an approved material listed on the LDOTD AML. All tubular markers shall be a minimum of 28 inches in height.

2.4 TEMPORARY SIGNS, VERTICAL PANELS & BARRICADES

A. **General:** All signs used for temporary traffic control shall comply with the MUTCD, the LDOTD Temporary Traffic Control Standards, and the CONTRACTOR's traffic control device plan. The design of temporary barricades and vertical panels shall comply with LDOTD TTC – 00 (C). Only Type III barricades will be allowed. The design of vertical panels shall comply with LDOTD TTC – 00 (C).

B. **Substrate:** Substrate for barricade panels shall be either wood or rigid thermoplastic. Substrate for portable signs shall be aluminum, wood, or plastic. Substrate for post mounted signs shall be aluminum, wood, rigid thermoplastic, or aluminum clad low density polyethylene plastic.

1. **Aluminum:** Aluminum Substrate shall be 0.080-inch thick sheeting complying with ASTM B209, Alloy 6061-T6 or Alloy 5052-H38.

2. **Wood:** Wood substrate shall be plywood sheeting of exterior type grades High Density Overlay or Medium Density Overlay. Panels shall be a minimum of 5/8-inch thick and shall comply with the latest American Plywood Association specifications and shall be identified with the APA edge mark or back stamp to verify inspection and testing. Prior to application of the reflective sheeting, the surface shall be sanded with steel wool or fine sandpaper and wiped thoroughly clean. The surface shall be allowed to dry for eight (8) hours prior to the application of sheeting. Cut edges of plywood panels shall be sealed with aluminum pigmented polyurethane sealer.

3. **Plastic:** Plastic substrate for barricade panels and signs shall be as follows:

a. **Fiber Reinforced Vinyl (PVC):** The substrate shall have a nominal composite thickness of 0.04 inches and shall be bonded to an approved retroreflective material by the manufacturer.

b. **Rigid Thermoplastic:** Rigid thermoplastic substrate shall consist of either High Density Polyethylene (HDPE) or High Density Polycarbonate (HDPC). The rigid thermoplastic for barricade panels shall be hollow core HDPE or HDPC with a minimum thickness of 0.625-inch thick blow molded substrate. The thermoplastic for sign panels shall be either 0.4000inch thick thin wall, fluted substrate or 0.625-inch thick blow molded substrate. Substrates shall be sufficiently rigid to maintain a flat face and shall be capable of attachment to the

sign mounting in such a manner as not to crush or otherwise deform the substrate. Reflectorized sheeting applied to rigid thermoplastic shall have its manufacturer's approval for use on the substrate.

c. **Aluminum Clad Low Density Polyethylene (AL/LDPE) Plastic:** Aluminum clad low density polyethylene plastic shall be 0.080-inch thick. The substrate shall be sufficiently rigid to maintain a flat face and shall be capable of attachment to the sign mounting in such a manner as not to crush or otherwise deform the substrate. Reflectorized sheeting applied to aluminum clad low density polyethylene shall have its manufacturer's approval for use on the substrate.

C. **Reflective Sheeting:** Reflective sheeting for temporary signs and barricades shall be an approved material listed on the LDOTD AML, and shall comply with the requirements of ASTM D4956, Type III. On the main line of freeways and expressways, the initial advance warning sign shall be fabricated using sheeting complying with the requirements of ASTM D4956, Type X (Fluorescent Orange).

PART 3 -- EXECUTION

3.1 GENERAL

A. Temporary signs, barricades, and related devices shall be required when the WORK is in progress or when work is suspended. During such times that temporary signs, barricades, and related devices are not in place, appropriate existing regulatory signs shall be maintained by the CONTRACTOR. WORK shall not begin until signs, barricades, and other devices have been erected.

B. When signs to be furnished and erected by the CONTRACTOR are in place, the CONTRACTOR's Traffic Control Supervisor (TCS) shall cover any standard signs that are in conflict with the temporary signs.

C. When placing signs, the CONTRACTOR shall coordinate with the ENGINEER in covering OWNER's signs or signs owned by other entities so that all appropriate signs remain in place.

D. Signs shall remain in place and be maintained by the CONTRACTOR, supplemented by other signs as required, throughout the execution of the WORK. When previously used signs are to be utilized on the project, the ENGINEER will review and approve these signs prior to installation. The ENGINEER will require any sign with reduced reflectivity or excessive fading to be removed from the work zone. In the case of a dispute over a rejected used sign, the ENGINEER may at his discretion require measurements to be taken or review reflectivity or color data obtained by the CONTRACTOR to determine if the sign meets minimum standards for new materials. Signs that do not meet the minimum standards for new materials shall be replaced by the CONTRACTOR at his expense.

E. Signs, barricades, and related devices furnished and placed by the CONTRACTOR shall, upon removal, remain property of the CONTRACTOR.

F. When a work area has been established on one side of the roadway only, there shall be no conflicted operations or parking on the opposite shoulder within 500 feet of the work area.

G. Parking of vehicles or unattended equipment, or storage of materials within the clear zone shall not be permitted. If the clear zone is not defined on the plans, the ENGINEER will inform the CONTRACTOR of the clear zone.

H. Sight distance shall be considered when placing traffic control devices.

I. **Advanced Warning Area and Flashing Arrow Board:** When specified, advance warning arrow panels for temporary traffic control shall be provided. Panels shall be one of the specified types complying with the MUTCD. If none is specified, Type C panels shall be provided. Flashing arrow boards shall be 4 feet by 8 feet.

3.2 MINIMUM REQUIREMENTS FOR TRAFFIC CONTROL SETUP

A. General: Minimum traffic control devices shown on reference standards shall be the minimum, and it shall be the CONTRACTOR's responsibility to ensure that appropriate devices are employed and maintained during the duration of construction.

B. Minimum Traffic Control Device Layout for various construction situations shall be as indicated in the table below. These minimum requirements are the minimum required, and it shall be the CONTRACTOR's responsibility to supplement the minimum arrangements as required. The use of these minimum layouts does not relieve the CONTRACTOR from the responsibility of submitting a traffic control device plan sealed by a licensed professional engineer.

Minimum Requirement	Reference Layout
Layout for Placement of Road Work Next "XX" Miles and End Road Work Signs	LDOTD TTC – 00 (D)
Layout for Work Less than 15 Feet from the Traveled Way	LDOTD TTC – 01
Layout for Work Less than 15 Feet from the Traveled Way	LDOTD TTC – 02
Layout for Lane Closures on Two Lane Roads with Two Way Traffic Less Than 1600 Feet from Intersection	LDOTD TTC – 03
Layout for Lane Closures on Two Lane Roads with Two Way Traffic Greater Than 1600 Feet from Intersection	LDOTD TTC – 04
Layout for On - Site Diversion with Two Lane Traffic	LDOTD TTC – 05
Layout for Lane Closure on Four – Lane Undivided Highways	LDOTD TTC – 06
Layout for Lane Closure of Two Adjacent Lanes on Four – Lane Undivided Highways	LDOTD TTC – 07

Layout for Median Crossover on Divided Highways	LDOTD TTC – 08
Layout for One Lane Closure on Divided Highways	LDOTD TTC – 09
Layout for Lane and Sidewalk Closures in Urban Areas with Speed Limit Less than or Equal to 40 Miles per Hour	LDOTD TTC – 10
Layout for Lane Closure Using Temporary Barrier Rail on Divided Highways	LDOTD TTC – 11
Layout for Lane Closures Through Ramp Entrance and Exit Tapers	LDOTD TTC – 12
Layout for Lane Closure of Two Lanes on a Multi – Lane Highway	LDOTD TTC – 13
Layout for "Louisiana Left" on Interstate or Other Divided Highways	LDOTD TTC – 14
Layout for Short Duration Closure of Divided Highways	LDOTD TTC – 15
Layout for Temporary Road Closures	LDOTD TTC – 16
Layout for Moving Operations on Interstate or Other Multi – Lane Roadways	LDOTD TTC – 17
Layout for Moving Operations on Two – Way Two – Lane Roadways	LDOTD TTC – 18
Layout for Traffic Signal Installation and Maintenance at an Intersection	LDOTD TTC – 19

3.3 DROP – OFFS

A. Minimum temporary traffic control devices for Drop – offs shall be as indicated on LDOTD TTC-00 (C)

3.4 CHANNELIZING DEVICES

A. Tubular markers, drums, super cones, vertical panels, and traffic cones may be utilized as channelizing devices. During nighttime operations, 36 – inch traffic cones will not be allowed.

B. Retroreflective material pattern used on super cones shall match that used on drums.

C. **Tangent Areas:**

1. **Standard Spacing**: Standard spacing shall be as indicated on LDOTD TTC – 00 (C).

2. **Daylight Operations:** Drums and super cones shall be spaced at standard spacing. All other devices shall be spaced at ½ of standard spacing.

3. **Nighttime Operations:** Drums and super cones at standard spacing shall be the only devices allowed.

D. **Taper Areas:**

1. Standard Spacing: Standard spacing shall be as indicated on LDOTD TTC – 00 (C).

2. Daylight Operations: Drums and shall be spaced at standard spacing. All other devices shall be spaced at ½ of standard spacing.

3. Nighttime Operations: Drums at standard spacing shall be the only devices allowed.

E. Type C Steady Burn Lights shall be used on all channelizing devices in the taper and on the first two devices in the tangent at night.

F. Typical channelizing device lateral placement (do not include when it is used as a divider for opposing directions of traffic) shall be two feet off the lane line of the closed lane or two feet off the shoulder.

G. Devices may be adjusted laterally to accommodate ongoing work in the immediate vicinity but must be returned to the closed lane after to work activity has moved.

H. Channelizing devices in the tangent area shall be of the same type.

I. Channelizing devices in the taper area shall be of the same type.

3.5 TYPE III BARRICADES

A. Only Type III Barricades may be utilized.

B. When used for overnight closures, two Type B High Intensity lights shall supplement all barricades that are placed in a closed lane or that extend across a highway.

C. When signs and lights are mounted to a barricade, they must meet NCHRP Report 350 and MASH requirements.

D. A truck with a truck – mounted attenuator may be substituted for a barricade when workers are present.

E. **Barricades, at a minimum, shall be placed:**

1. At the beginning of a closed lane or shoulder and at 1,000 foot intervals where no active work is ongoing and the lane must remain closed. A minimum of two (2) barricades shall be placed if the lane or shoulder closure is less than 2,000 feet (One barricade shall be placed at the beginning of the lane closure after the buffer space and one shall be placed in the middle of the lane closure);

2. Before each or group of unfilled holes or holes filled with temporary material;

3. Before uncured concrete;

4. In the closed lane on each side of every intersection and crossover (do not block sight distance);

5. In front of piles of material (dirt, aggregate, broken concrete), culverts, and equipment which is near the work zone.

3.6 SIGNS

A. One Type B high intensity light shall be used to supplement the first sign or pair of signs that gives a warning about a lane closure during nighttime operations.

B. CONTRACTOR shall use caution not to damage existing signs which remain in place. Any such signs damaged shall be replaced at the cost of the CONTRACTOR.

C. All signs shall be covered with a strong, lightweight material when not applicable. Burlap will not be acceptable for covering signs.

D. When portable sign frames are used, they shall be moved to an area inaccessible to traffic and not visible to drives.

E. Left side mounted signs will not be required for roadways with a center left turn lane and for undivided roadways.

F. Vinyl roll up signs may be used if work zone is in place for 12 hours or less, there are no more than 2 lanes in each direction, and if signs meet all size, color, retroreflectivity, and NHCRP 230 Report or MASH requirements.

G. One foot portable sign stands may be used if work zone is in place for 12 hours or less, the pre – construction posted speed limit is less than 45 miles per hour, and there are no more than 2 lanes in each direction.

H. All signs shall be visible to the drivers. No obstructions such as on – street parkgin or other traffic control devices shall block the sign.

I. On divided highways, signs shall be placed on the right and the left.

J. **Sign Posts:**

1. Signs measuring 10 square feet or less shall be mounted on 1 rigid post.

2. Signs measuring over 10 square feet shall be mounted on two (2) rigid posts.

3. Signs measuring over 20 square feet shall be mounted on at least three (3) rigid posts.

4. Allowable lap splices for U – channel posts shall be as indicated on LDOTD TTC -00 (C).

K. Sign height and offset from roadway shall be per LDOTD TTC – 00 (C).

3.7 FLAGGING

A. All flaggers shall be qualified. The CONTRACTOR shall be responsible for training or assuring that all flaggers are qualified to perform flagging duties.

B. A qualified flagger is one that has completed courses such as those offered by ATSSA, Association of General Contractors, or other courses as approved by the LDOTD Work Zone Task Force.

C. When utilized, flaggers shall use a minimum 18-inch octagonal shape sign on minimum 6-foot stop/slow paddle and wear ANSI Class 2 Lime Green Vest during daytime operations and ANSI Class 3 Lime Green Ensemble during night operations.

D. In all flagging operations, the flagger must be visible from the flagger advance warning sign.

3.8 FLASHING ARROW BOARDS

A. Flashing arrow boards should be placed on the shoulder. When there is no shoulder or median area, the arrow board shall be placed within the closed lane behind the channelizing devices and as close to the beginning of the taper as practical.

B. Flashing arrow boards shall be delineated with retroreflective devices.

C. At no time shall the arrow board encroach upon the traveled way. When flashing arrow boards are not in use, they shall be shielded by a guard rail or barriers or removed.

D. Arrow boards shall only be used for lane reduction tapers and shall not be used for lane shifts.

3.9 DUTIES OF THE TRAFFIC CONTROL SUPERVISOR (TCS)

A. The CONTRACTOR's TCS's responsibility shall be traffic control management, and the TCS shall be available to the ENGINEER to address traffic control issues as required. The following duties shall be the primary responsibilities of the CONTRACTOR's TCS:

1. The TCS shall personally provide traffic control management and supervision services at the site of the WORK. The TCS may have other duties, but shall be readily available at all times to provide TCS duties as required. A minimum of one TCT shall be required on site during all working hours.

2. The TCS shall be responsible for observing and evaluating both the day and night time performance of all traffic control devices installed on the project, in accordance with the traffic control plan to ensure that the devices are performing effectively as planned for both safety and traffic operations. This shall be done upon the initial installation of traffic control devices and when any modifications and/or changes are made, in addition to regular inspection requirements as specified herein.

3. The TCS shall be responsible for the training of flagging personnel. This training shall ensure that all flagging is in compliance with the MUTCD, Part VI and the Louisiana Work Zone Traffic Control Details.

4. The TCS shall coordinate all traffic control operations for the duration of the contract, including those of subcontractors, utility companies, and suppliers, to ensure that all traffic control is in place and fully operational prior to the commencement of any work. The ENGINEER recognizes that the TCS does not have direct control over the traffic control operations of utility companies. The coordination required by the TCS when dealing with utility companies is specifically for the purpose of coordinating concurrent utility traffic control with any other construction traffic control to avoid conflicts.

5. The TCS shall coordinate, in writing, all project activities with the appropriate law enforcement, fire control agencies, and other appropriate public entities as determined at the pre – construction conference. The TCS shall also invite the above agencies to the pre – construction conference.

6. The TCS shall prepare and submit statements concerning road closures, delays, and other project activities to the OWNER or ENGINEER when directed by the ENGINEER.

7. The TCS shall be responsible for notifying the ENGINEER or all vehicular accidents and/or incidents related to the project traffic control. The time and date of the notification shall be documented in the traffic control diary. The TCS shall also monitor and document queues that occur.

8. The TCS assigned to the project shall attend the pre – construction conference and all project meetings.

9. The TCSA shall be responsible for the maintenance, cleanliness, and removal of traffic control plan during working and non – working hours.

B. **Traffic Control Diary:** The TCS shall maintain a project traffic control diary in a bound book. The CONTRACTOR shall obtain sufficient number of the diaries from the Louisiana Association of General Contractors (LAGC). The TCS shall keep the traffic control diary on a daily basis and shall sign each daily entry. Entries shall be made in ink, and there shall be no erasures or white – outs. Incorrect entries shall be struck out and then replaced with the correct text. Photographs and videotapes may be used to supplement written text. The diary shall be available at all times to the ENGINEER and a copy shall be submitted to the ENGINEER on a monthly basis. Failure to submit the diary will result in requests for payments being withheld until the past due copies of the diary are submitted. The traffic control diary shall become property of the ENGINEER at the completion of the WORK.

C. **Traffic Control Plan Revisions:** Where revisions are made to the traffic control plan, regardless of whether or not the changes were promulgated by the CONTRACTOR, OWNER, or ENGINEER, a revised traffic control device plan shall be submitted by the CONTRACTOR.

D. **Inspection of Traffic Control:** The TCS shall be responsible for the inspection of all traffic control devices every calendar day that traffic control devices are in use. This inspection may be delegated to the TCT. The “Quality Guidelines for Work Zone Traffic Control Devices” shall be used to evaluate the condition of the traffic control devices to determine if acceptable for use. The TCS shall provide for the immediate repair, cleaning, or replacement of any traffic control devices not functioning as required to ensure the safety or motorists, pedestrians, and construction personnel and/or not meeting the ATSSA standard. Inspection of traffic control devices shall be conducted by the TCS at the beginning and end of each workday, and as directed by the ENGINER during the workday. The traffic control devices shall be inspected by the ETCS or weekends, holidays, or other non – work days at least once per day. Traffic control devices shall be inspected by the TCS at least once per week during nighttime periods and the same night after any modifications or changes have been made in the traffic control devices.

E. **Traffic Control Officer:** In some cases, and with the agreement of the ENGINEER, a Traffic Control Officer (TCO) may be utilized onsite where equipment is in or near to a roadway to assist in alerting or directing traffic near the work area. If required by the

OWNER, responsibility of payment for the TCO shall be the responsibility of the OWNER. If required by the CONTRACTOR's traffic control plan, responsibility of payment for the TCO shall be the responsibility of the CONTRACTOR.

3.10 FAILURE TO COMPLY WITH TRAFFIC CONTROL PLAN

A. The ENGINEER may suspend all or part of the CONTRACTOR's operation(s) for failure to comply with the reviewed traffic control plan or for failure to correct unsafe traffic conditions within a reasonable period of time after such notification is gien to the CONTRACTOR in writing.

B. In the event that the CONTRACTOR does not take appropriate action to bring the deficient traffic control into compliance with the traffic control plan or to correct unsafe traffic conditions, the OWNER and ENGINEER may employ others to correct the unsafe traffic conditions. Such costs will be deducted from payments due the CONTRACTOR.

- END OF SECTION -

SECTION 02716 – VEGETATIVE AND FIBER MULCH (REVISED 02/26/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish and place an approved vegetative or fiber mulch with a tacking agent on seeded areas to promote seed germination and growth, while temporarily protecting the soil from erosion.

1.2 REFERENCE STANDARDS

A. Louisiana Department of Transportation & Development

AML Approved Materials List

B. Texas Transportation Institute

Field Performance Testing of Erosion Control Products

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 QUALITY ASSURANCE

A. NOT USED

1.5 DELIVERY, STORAGE, AND HANDLING:

A. Vegetative and fiber mulch shall be delivered in bales or bags of uniform size. Storage of mulching materials shall be in accordance with the supplier's recommendations. Mulch stockpiles shall be protected from the weather.

PART 2 -- PRODUCTS

2.1 GENERAL

A. The contractor shall notify the engineer at least 7 calendar days in advance of commencing operations so that the mulch can be inspected and approved prior to use.

2.2 TACKED VEGETATIVE MULCH

A. Vegetation shall consist of pine straw, stems or stalks of oats, rye, rice, or other approved straws. The contractor may also use hay obtained from various legumes and grasses such as lespedezas, clover, vetches, soybeans, Bermuda, Dallis, carpet sedge, fescue or other approved legumes or grasses of any combination thereof. Straw or hay shall be reasonably dry and free from mold, Johnson grass or other noxious weeds.

B. Vegetative mulch shall be tacked with one of the following:

1. Approved emulsified asphalt;

2. An approved tacking agent for vegetative mulch listed in the Qualified Products List (QPL 72). The minimum allowable vegetation density for source approval of tacked vegetative mulch shall be 70 percent for clay soils and 60 percent for sandy soils when evaluated in accordance with the Texas Transportation Institute (TTI) Field Performance Testing Procedure of Selected Erosion Contol Products.

2.3 FIBER MULCH PRODUCTS

A. Fiber mulch products shall be listed in the LDOTD AML (Formerly QPL 72) and consist of organic fiber mulches. The minimum allowable vegetation density for source approval of fiber mulch products shall be 70 percent for clay soils and 60 percent for sandy soils when evaluated in accordance with the TTI Field Performance Testing Procedure of Selected Erosion Control Products.

PART 3 -- EXECUTION

3.1 GENERAL

A. Mulching shall follow seeding operations within 48 hours. Mulch shall not be sprayed on structures. All stains resulting from the mulch or the tacking agent shall be removed, and the surface left in acceptable condition. During windy conditions the contractor shall make adjustments in operations to ensure uniform spreading.

B. Damage to seeded areas shall be repaired and re-seeded at no additional cost to the OWNER.

3.2 TACKED VEGETATIVE MULCH

A. Vegetative mulch shall be distributed uniformly over the seeded area by blowing it simultaneously with an approved tacking agent. Jet nozzles in the muzzle of the blower shall be spaced to provide a uniform coating of the mulch as it is blown through the nozzles. The tacked vegetative mulch shall be loose enough to allow air to circulate, but compact enough to partially shade the ground and reduce the impact of rainfall on the soil surface. Mulching shall begin at the top of the slopes and extend downward. Blower pipe extensions shall be used where slopes cannot be reached by the blower.

3.3 FIBER MULCH

A. The application equipment shall have a built in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix the fiber mulch, water and any tacking agent that is part of the fiber mulch system. The fibers shall be kept in uniform suspension throughout the mixing and distribution cycles. The slurry distribution lines shall be large enough to prevent stoppage. Hydraulic spray nozzles in the discharge line shall provide uniform distribution of the slurry.

3.4 SPREADING RATES

A. Tacked Vegetative Mulch: Vegetative mulch shall be applied at a rate of 1 1/2 to 2 tons of mulch per acre simultaneously with the tacking agent. Final application rates for the tacking agent shall be in accordance with the application rate shown in the LOTD AML (Formerly QPL 72) for the particular type of vegetative mulch being used.

B. Fiber Mulch: Fiber mulch shall be applied as a slurry at a rate of 1 to 1 1/2 tons per acre based on dry weight of the fibers. The application rate of the tacking agent, if not pre-blended with the fibers by the manufacturer, shall be in accordance with the application rate shown in the LOTD AML (Formerly QPL 72) for the particular type of fiber being used.

3.5 MANUAL SPREADING

A. In order to prevent defacing structures, mulch shall be manually spread around structures. When manual spreading is performed, mulch shall be placed in a shredded condition, after which the tacking agent shall be sprayed over the mulch at the specified rate.

- END OF SECTION –

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SECTION 02717 – SEEDING (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall prepare seed beds and furnish and show grass seed on the area shown on the plans or as directed.

B. Unless otherwise specified, seed shall be applied mechanically in a dry condition.

C. The CONTRACTOR shall obtain the services of an established soil testing entity to coordinate soil sampling, perform testing and analyses, and prepare recommendations for materials and procedures to be used during the preplanting phase of new turf establishment. When practicable, soil testing shall be performed early enough to permit agricultural lime or other additives (if required) to be applied sufficiently in advance of planting so that the soil pH adjustment will occur before planting. Samples shall be tested and analyzed to determine pH and fertility conditions. The test results and recommendations shall be used to determine the quantities of agricultural lime and fertilizer required for preplanting applications. A copy of the test report with recommendations shall be furnished to the ENGINEER. Testing will be at no direct pay. Agricultural lime recommendations shall consider probable time of application.

1.2 REFERENCE STANDARDS

A. NOT USED

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 QUALITY ASSURANCE

A. NOT USED

1.5 DELIVERY, STORAGE, AND HANDLING:

A. NOT USED

PART 2 -- PRODUCTS

2.1 TOPSOIL

A. Topsoil, if required, shall be per Section 02200.

2.2 FERTILIZER

A. Fertilizer shall be as specified in Section 02718 – Fertilizer and Agricultural Lime.

2.3 **AGRICULTURAL LIME**

A. Agricultural Lime shall be as specified in Section 02718 – Fertilizer and Agricultural Lime.

2.4 **SEED**

A. Seed shall comply with requirements of Louisiana law. minimum percentage of pure live seed and the maximum percentage of weed seed permitted shall be in accordance with the table below:

Variety	**Minimum Percent of Pure Live Seed (Purity Times Germination Including Hard Seed by Count)**	**Maximum Percent of Weed Seed by Count**
Hulled Bermuda	83	1
Pensacola Bahia	81	2
Crimson Clover	78	1
Kentucky 31 Fescue	80	1
Unhulled Bermuda	80	1
Ball Clover	80	1
Vetch	80	1
Lespedeza	80	1
Annual Rye	80	1
Browntop Mullet	80	1

B. Each variety of seed shall be furnished and delivered in separate bags or other containers. Each bag or container shall bear an analysis tag which is a minimum No. 6 standard shipping tag having all information required by the Louisiana Seed Law.

C. Seed furnished shall be the previous season's crop (the last crop year for the crop kind in question) and the date of analysis shown on each tag shall be within 5 months (excluding the month in which the test is completed) of the time of delivery to the project. Noxious weeds shall be interpreted to mean that list of weeds, except Bermuda, which has been adopted by the Louisiana Seed Commission as being noxious in Louisiana. Noxious weed seeds shall not exceed the limitations prescribed in the regulations and in no case shall they exceed 500 per pound. Analysis tags shall be removed from each bag or container only by the ENGINEER or an authorized representative.

PART 3 -- EXECUTION

3.1 SOIL AREAS AND SEED SELECTION

A. The CONTRACTOR's seed supplier shall recommend and select seed mixture on the basis of the five general areas described below and the time of planting. Seed mixtures, soil areas, and planting and establishment dates are detailed in the table below.

1) Area 1 – Alluvial Soils of Mississippi and Red River Bottoms

2) Area 2 – Mississippi Terraces and Loessial Soils

3) Area 3 – Coastal Plan Soils

4) Area 4 - Coastal Prairie Soils

5) Area 5 - Ouachita River Bottom

Type	Seed Mixture	Minimum Pounds per Acre (Respectively)	Soil Area	Planting Dates	Establishment Period
A	Hulled Bermuda	30	1,2,3,4,5	Mar – Sep	Mar – Dec
B	Hulled Bermuda, Crimson Clover	20, 25	1,2,3,5	Feb – Mar	Feb – Jun
C	Kentucky 31 Fescue, Unhulled Bermuda	25,20	1,2,3,4,5	Sep – Feb	Sep – May
D	Unhulled Bermuda, Crimson Clover	20, 40	1,2,3,4,5	Sep – Feb	Sep – May
E	Pensacola Bahia	25	1,2,3,5	Mar – Sep	Mar – Dec
F	Ball Clover, Unhulled Bermuda	25, 20	1,2,3,4,5	Feb – Mar	Feb – Jun
G	Vetch, Unhulled Bermuda	40, 20	1,2,3,4,5	Sep – Oct	Sep – Jan
H	Annual Rye	30	1,2,3,4,5	Sep - Jan	Sep – Apr

3.2 PREPARATION OF SEED BED

A. Seed beds shall be prepared by disking, harrowing or other approved methods. Soil on slopes of 3- horizontal-to-1-vertical and flatter shall be tilled to a minimum of 4 inches depth. On slopes between 3-horizontal-to-1-vertical and 1- horizontal-to-1 vertical, the soil shall be tilled to a minimum of 2 inches depth by scarifying with heavy rakes, or other methods. Rototillers may be used where soil conditions and length of slope permit. On slopes 1- horizontal-to-1-vertical and steeper, no tillage is required. Drainage patterns shall be maintained as indicated on the plans. Areas compacted by construction operations shall be completely pulverized by tillage. Soil used for repair of surface erosion or grade deficiencies shall conform to topsoil requirements. The pH adjuster, fertilizer, and soil conditioner may be applied during this procedure. The prepared surface shall be a maximum 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove debris.

B. **Lawn Area Debris:** Debris and stones over a maximum of 5/8- inch in any dimension shall be removed from surfaces designated on the plans as lawn areas or as directed by the ENGINEER.

C. **Field Area Debris:** Debris and stones over a maximum of 3-inches (75 mm) in any dimension shall be removed from the surface

D. **Protection:** Prepared surface areas shall be protected from compaction or damage by vehicular or pedestrian traffic and surface erosion.

3.3 PERMANENT SEEDING

A. Seed shall be planted within the dates specified above, unless otherwise directed or permitted by the ENGINEER.

3.4 TEMPORARY SEEDING

A. During construction, temporary seeding shall be placed as directed. Temporary seeding may be any of the types specified above. Annual rye grass shall be the only acceptable grass for winter cover.

3.5 WATERING

A. When deemed necessary due to dry conditions, seeded areas shall be periodically watered until final acceptance at no direct pay.

3.6 SEED ESTABLISHMENT PERIOD

A. Turf will be considered to be established and completed when the areas to be turfed have produced Bermuda grass stems or runners which overlap adjacent Bermuda grass growth over a minimum of 85 percent of the entire area as determined by the ENGINEER by random sampling on a square yard basis and when the areas to be turfed have no spots greater than 4 square feet that are void of Bermuda grass.

B. Acceptance of the entire turfed area will be based on the ENGINEER's visual inspection and determination of the required coverage. Acceptance will be based on coverage by Bermuda grass only. Dying or dead turf and eroded areas will not be accepted. Partial

areas will not be accepted unless determined by the ENGINEER to be in the best interest of the OWNER.

3.7 HYDROSEEDING

A. Hydro-seeding shall consist of mixing and applying seed, commercial fertilizer, lime, polyacrylamide tackifier, and mycorrhizal inoculum with paper or wood fiber and water. Seed and commercial fertilizer shall be uniformly spread over the area at the rates specified in Table 717-1 and Table 718-1. Paper or wood fiber shall be mixed and applied with the seed in accordance with the manufacturer's recommendations and as approved by the ENGINEER. The CONTRACTOR will be permitted to include fertilizer and lime in the seeding slurry for application during hydro-seeding operations.

B. The application rate for pellet-inoculated seed shall be determined using the seed mass exclusive of inoculant materials.

C. The materials and the quantities thereof to be mixed with water will be specified. The quantity of water shall be mixed as needed for application.

D. Mixing of materials for application with hydro-seeding equipment shall be performed 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. The tank shall have a minimum capacity of 962 gallons (3700 L). The ENGINEER may authorize use of equipment of smaller capacity if it is demonstrated that the equipment is capable of performing all operations satisfactorily.

E. A dispersing agent may be added to the mixture provided evidence is furnished showing that the additive will not affect germination. Any material considered detrimental, as determined by the ENGINEER, shall not be used.

F. Any mixture containing polyacrylamide tackifier during rainy weather, or when soil temperatures are below 41°F (5°C) or if the wind speed is above 20 miles per hour (32 km/h). Pedestrian traffic or equipment shall not be permitted to enter areas where hydro-seeding has been applied.

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SECTION 02720 – EROSION CONTROL SYSTEMS (REVISED 04/17/2017)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish and placing erosion control systems in accordance with plan requirements for use as soil retention blankets on slopes or as flexible channel liners in ditches.

1.2 MODIFICATION BY SPECIAL PROVISIONS

A. The WORK of this section may be affected by requirements contained within the Special Provisions. The CONTRACTOR shall review, understand, and incorporate the requirements contained within the Special Provisions into the WORK of this Section.

1.3 REFERENCE STANDARDS

A. Louisiana Department of Transportation and Development (LDOTD)

AML Approved Materials List

1.4 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall furnish submittals in accordance with Section 01010.

B. Materials proposed for and utilized in the WORK will be sampled as indicated in herein. The frequency of testing may be altered at the discretion of the ENGINEER. The CONTRACTOR shall provide all materials required for testing at no additional cost to the OWNER.

C. Submittal/Source Approval: The CONTRACTOR shall submit for approval details and material data on the proposed system including at a minimum the following:

1. Details on materials and installation requirements;

2. Evidence of listing on the LDOTD AML;

3. Any other information required by the ENGINEER to evaluate the suitability of the proposed product.

1.5 QUALITY ASSURANCE

A. NOT USED

1.6 DELIVERY, STORAGE, AND HANDLING:

A. Materials shall be packaged in such a way as to maintain the quality of the product throughout handling. Each package shall be identified with the manufacturer's name, product name, and manufacturer's lot number.

PART 2 -- PRODUCTS

2.1 **GENERAL**

A. The installation plan and hardware (staples, stakes, etc.) are considered part of the system and shall be the same as that used during the evaluation for source approval.

B. The type of erosion control system to be used shall be shown on the plans. The contractor shall have the option of substituting a higher grade system for a lower grade system within the same application (slope protection or flexible channel liners) at no additional cost to the Department.

2.2 **EROSION CONTROL MATTING AND HARDWARE**

A. Erosion control systems shall consist of approved hydraulically applied fiber mulch systems, or rolled erosion control products (mats) including hardware and installation plan.

B. Erosion control systems shall be listed in the AML (formerly QPL 72) and shall comply with the performance requirements in the table below when evaluated in accordance with the LDOTD qualification procedure for erosion control systems.

Slope Protection			
Type	Test Site Conditions for Evaluations	Maximum Sediment Loss, lb/yd	Minimum Vegetation Density, %
A	3:1 Slope	0.06	80
B	2:1 Slope	0.06	80
Flexible Channel Liners			
Type	Test Site Conditions for Evaluations	Maximum Sediment Loss, lb/yd	Minimum Vegetation Density, %
C	Shear Stress Range 0 to 2 PSF	0.45	70
D	Shear Stress Range 0 to 4 PSF	0.40	70
E	Shear Stress Range 0 to 6 PSF	0.40	70
F	Shear Stress Range 0 to 8 PSF	0.30	70

C. The manufacturer's installation plan shall include a description of all hardware and shall comply with the installation procedure used during the evaluation of source approval. A copy of the approved installation plan shall accompany each shipment.

2.3 EQUIPMENT

A. Equipment necessary to satisfactorily perform the work shall be furnished and maintained by the contractor. Equipment for hydraulically applying fiber mulch shall be equipped to eject the thoroughly wet mulch material at a uniform rate equal to the manufacturer's recommendations or as designated by the plans to provide the mulch coverage specified.

PART 3 -- EXECUTION

3.1 GENERAL

A. Erosion control systems shall be installed in accordance with the approved installation plan, no later than 48 hours after completion of seeding or sodding operations. All staples shall be installed flush to the ground and shall penetrate all layers of overlapped or adjacent rows.

3.2 SLOPE PROTECTION

A. Slopes shall be constructed to the required grade, fertilized, and seeded prior to application of erosion control systems. At the time of coverage, the area to be covered shall be free of ruts, clods, stones, roots or other foreign matter that will prevent close contact of the blanket with the soil. Rolled products or mats with netting only on one side are to be placed with the netting exposed and the fibers in contact with the soil.

3.3 FLEXIBLE CHANNEL LINERS

A. Channel shall be prepared in accordance with Paragraph 3.2. Flexible channel liners shall be placed beginning at the downstream end.

3.4 MAINTENANCE

A. The CONTRACTOR shall maintain the areas on which erosion control systems have been placed until final acceptance of the project. This shall consist of the repair of damage by erosion, wind, fire or other cause. Such areas are to be repaired to reestablish the condition that existed prior to placing the erosion control systems and may include fertilizing, seeding, mulching or sodding as required at no additional cost to OWNER.

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SECTION 02727 – MOBILIZATION (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 GENERAL

A. CONTRACTOR shall mobilize as required for the proper performance and completion of the WORK and in accordance with the Contract Documents.

B. Mobilization shall include at least the following items:

1. Moving onto the Site of CONTRACTOR's plant and equipment necessary for the first month of operations.

2. Installing temporary construction power, wiring, and lighting facilities.

3. Establishing fire protection system.

4. Developing construction water supply.

5. Providing on-Site sanitary facilities and potable water facilities.

6. Arranging for and erection of CONTRACTOR's WORK and storage yards.

7. Constructing and implementing security features and requirements as specified.

8. Obtaining required permits.

9. Having OSHA required notices and establishing safety programs.

10. Having the CONTRACTOR's superintendent at the Site full time.

11. Submitting initial submittals.

1.2 PAYMENT FOR MOBILIZATION

A. The CONTRACTOR's attention is directed to the condition that no payment for mobilization, or any part thereof, will be recommended for payment under the Contract until mobilization items listed above have been completed.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION –

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SECTION 02729- PERMANENT SIGNS (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish and install permanent traffic signs, dead end road installations, markers and delineators, with accessories, posts and overhead spans of specified materials, sizes, shapes, weights and designs.

B. In general, the work and materials shall comply with the MUTCD as modified by these specifications or as shown on the plans.

C. Signs shall be fabricated in an approved plant.

D. The term “legend” shall mean border strip, letters, numerals and symbols which convey the message on signs.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M270	Standard Specification for Structural Steel for Bridges

B. ASTM International (ASTM)

ASTM A1	Standard Specification for Carbon Steel Tee Rails
ASTM A36	Standard Specification for Carbon Structural Steel
ASTM A153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A307	Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
ASTM A325	Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A499	Standard Specification for Steel Bars and Shapes, Carbon Rolled from “T” Rails
ASTM A501	Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
ASTM A576	Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality
ASTM A653	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM A1011	Standard Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
ASTM B209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B316	Standard Standard Specification for Aluminum and Aluminum-Alloy Rivet and Cold-Heading Wire and Rods
ASTM B429	Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM B695	Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
ASTM F593	Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
ASTM F1554	Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

C. Federal Highway Administration (FHWA)

MUTCD	Manual On Uniform Traffic Control Devices

D. Louisiana Department of Transportation and Development (LDOTD)

AML	Approved Material List (formerly QPL)

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 QUALITY ASSURANCE

A. **Extended Period for Correction of Defects:** The CONTRACTOR shall provide the OWNER with a guaranty from the sheeting manufacturer stating that if the retroreflective sheeting fails to comply with the performance requirements of this subsection, the sheeting manufacturer shall take the action specified in the table below. Replacement sheeting for sign faces, material, and labor shall carry the unexpired guaranty of the sheeting for which it replaces. The sign fabricator shall be responsible for dating all signs with the month and year of fabrication at the time of sign fabrication. This date shall constitute the start of the guaranty obligation period.

Sheeting Type	CONTRACTOR shall restore the sign face in its field location to its original effectiveness at no cost to the OWNER if failure occurs during the time period as specified below		CONTRACTOR shall replace the sheeting required to restore the sign face to its original effectiveness at no cost to the OWNER if failure occurs during the time period as specified below
	Orange/Fluorescent Orange	All colors except Orange/Fluorescent Orange	All colors except Orange/Fluorescent Orange
LDOTD Type X	<3 Years	<7 Years	7-10 Years

1.5 **DELIVERY, STORAGE, AND HANDLING:**

A. Before being packed, sign shall be allowed to stand for at least 12 hours after completion of screening.

B. Signs shall be slip-sheeted and packed in such manner as to ensure their arrival at their destination in an undamaged condition.

C. Packaged signs shall not be permitted to become wet during storage or shipment

PART 2 -- PRODUCTS

2.1 **GENERAL**

A. Other than recycled aluminum blanks, materials shall be new stock conforming to the requirements included herein. Flat sign panels shall be marked on the front bottom edge with MUTCD code, initials of the manufacturer and the date. Extruded panels shall be marked on the back in accordance with the standard plans.

2.2 **SIGN AND MARKER SHEETING**

A. All reflective sheeting used for permanent signs and markers shall be super high intensity retroreflective sheeting listed as LDOTD Type X listed on the LDOTD AML.

2.3 **FERROUS METAL**

A. **Ferrous Metals:** Structural steel for posts, stringers, framing and miscellaneous steel shall comply with AASHTO M 270, Grade 36. Steel shall be galvanized in accordance with ASTM A193.

B. **Reinforcing Steel:** Steel pipe or tubing for structures shall be Schedule 40 (STD) complying with ASTM A53, Type E or Type S Grade B, or hot formed tubing complying

with ASTM A36 and ASTM A501. Steel pipe or tubing shall be galvanized in accordance with ASTM A193.

C. **Square Tubing for Signs:** Signs shall be mounted to square tubing posts. Posts shall be peroforated sign posts shall be 2 inches x 2 inches square tubing for the upright sign post and 2 1/4 inches x 2 1/4 inches x 3 feet shall be used for anchoring into soil. The square tubing shall conform to ASTM A1011, Grade 50 for hot rolled carbon steel, structural quality. The average minimum tensile strength after cold-forming is 60,000 psi. The cross section of the square tubing shall be a square tube formed and carefully rolled to size and shall be welded by high frequency resistance welding and externally scarfed to agree with corner radii and dimensional tolerances shown in the DOTD Roadside Traffic Sign Standard Details. It shall be manufactured from hot-dipped galvanized steel conforming to ASTM A653, G90, Structural Quality, Grade 50, Class 1. The weld shall be hot zinc coated after the scarfing operation. The steel shall be coated with a chromate conversion coating and a clear organic polymer topcoat. Fasteners shall be vandal resistant aluminum alloy fasteners with brasier heads complying with ASTM B316, Alloy 2024-T4.

2.4 ALUMINUM

A. Structural Members: Structural members shall be aluminum complying with ASTM B221 or ASTM B429, Alloy 6061-T6. Miscellaneous aluminum shall comply with ASTM B209, Alloy 6061-T6.

B. Sign Panels: New and recycled flat panels shall be aluminum sheets or plates complying with ASTM B209, Alloy 6061-T6 or Alloy 5052-H38. New and recycled extruded aluminum panels shall comply with ASTM B221, Alloy 6063-T6 and after fabrication, shall have a flatness equal to or less than 0.031 inch per foot of length and 0.004 inch per inch of width. The traceability paperwork shall be maintained and available from the fabricator for 7 years

2.5 FITTINGS

A. High strength bolts shall comply with ASTM A325, and other bolts shall comply with ASTM A307, Grade A or Grade B. Bolts shall have hexagonal heads and include two flat washers and one lock washer and one hexagonal-head nut. Bevel washers, where required, shall be wrought steel. Bolts, nuts and washers shall be galvanized in accordance with ASTM A153 or by an approved mechanical galvanizing process complying with ASTM B695 that provides the same coating thickness.

B. Anchor bolts shall comply with ASTM F1554. Anchor bolts shall be hot dip galvanized in accordance with ASTM A153.

C. Stainless steel bolts shall comply with ASTM F593, alloy groups 1, 2, or 3 (except alloys 303 or 303 Se), with a minimum tensile strength of 70,000 psi.

2.6 GUARD RAIL

A. Guard rail materials for dead end road installations shall comply with the requirements of Section 02704 – Guard Rail.

2.7 **TIMBER**

A. Treated timber piling for dead end installations shall comply with the requirements of Section 02804 – Driven Piles. Treated timber for barricades in dead end installations shall comply with the requirements of Section 06100 – Rough Carpentry.

2.8 **CONCRETE**

A. Concrete shall be Class M complying with the requirements of

2.9 **FLEXIBLE SIGN POSTS**

A. Flexible posts for delineators shall be listed on the LDOTD AML.

2.10 **SILK SCREEN PASTE**

A. Silk screen paste shall be as recommended by the sheeting manufacturer. Silk screen paste shall be mixed at the factory, well ground to a uniform consistency and smooth texture, and shall be free from water and other foreign matter. It shall dry within 18 hours to a film that does not run, streak, or sag. Paste which has livered, hardened, or thickened in the container, or in which pigment has settled out so that it cannot be readily broken up with a paddle to a uniform usable consistency, will be rejected. Thinner shall be used in accordance with the sheeting manufacturer's recommendations. Paste shall have proper pigmentation and consistency for use in silk screen equipment. The material shall produce the desired color and the same retroreflectivity values as required for reflective sheeting of the same type and color when applied on reflective sheeting background. Paste shall meet the quality and test requirements for appearance, coarse particles, and moisture and water resistance as specified for sign paints.

2.11 **OVERLAY FILM**

A. Transparent electronic cuttable overlay film shall produce the desired color and the same reflectivity values as required for reflective sheeting of the same type and color when applied on reflective sheeting background.

PART 3 -- EXECUTION

3.1 **GENERAL REQUIREMENTS**

A. **Sign Face Fabrication:** Signs of Types A, B, D, and E, overhead signs and sign face overlay panels shall be fabricated in accordance with the MUTCD, the “Standard Highway Signs” booklet, and the signing detail sheets of the plans. The CONTRACTOR shall furnish shop drawings of sign faces for Types D and E, overhead signs and sign overlay panels and for any non-standard sign faces of Types A and B not included in the drawings. Acceptance of shop drawings shall be obtained before sign face fabrication is begun.

B. **Sign Mountings Fabrication:** The CONTRACTOR shall furnish steel sign supports for both post mountings and overhead mountings and rigid steel posts for small signs, markers and delineators. The same signing materials shall be used throughout the project. Fabrication of sign mountings shall conform to the requirements of Section 05500 – Miscellaneous Metalwork. The CONTRACTOR shall furnish fabrication and erection drawings of all sign mountings with the exception of the installations detailed in the drawings. Fabrication and erection drawings will be reviewed only after review and

accptance of sign face shop drawings. Neither fabrication of sign mountings nor construction of sign footings will be allowed before drawings are approved and distributed.. Structure mounted delineator and milepost assemblies shall be installed in accordance with drawing details. Welding shall comply with Section 05500 – Miscellaneous Metalwork.

3.2 FABRICATION OF SIGN PANELS AND MARKERS

A. Completed signs shall have a surface free of cracks, blisters, blemishes, and wrinkles. Metal fabrication including shearing, cuttings and punching of holes shall be completed prior to surface treatment of metal and application of sheeting. Metal panels shall be cut to size and shape and shall be free of buckles, warps, dents, cockles, burrs and defects resulting from fabrication. Surface of sign panels shall be flat. Splice plates joining sign panels shall not extend behind horizontal sills. Flat aluminum panels shall be a nominal 0.080 inch thick. Extruded aluminum panels shall be 12 inches wide and have a nominal face thickness of 0.125 inches.

B. **Surface Treatment:** Surface treatment shall be in accordance with approved recommendations of the reflective sheeting manufacturer.

C. **Sheeting Application:** Reflective sheeting shall be applied in accordance with the approved written recommendations of the sheeting manufacturer. Reflective sheeting shall be applied with no horizontal splices. Reflective sheeting shall be applied directly to extruded panels with no more than two vertical splices per sign and no more than one vertical splice per individual panel. Sign faces comprised of two or more pieces of reflective sheeting shall be carefully matched for color at the time of sign fabrication to provide uniform appearance and brilliance, both day and night.

D. **Legend:** Unless otherwise noted on the drawings, or in the Special Provisions, legend shall be direct applied, screened, or overlay film as specified below.

1. **Direct Applied:** Legend shall be adhesive backed DOTD Type X sheeting as specified in this section. Legend shall be applied to provide a wrinkle-free surface.

2. **Screening**: Screened legend shall be applied to sign faces by an approved screening process in accordance with the reflective sheeting manufacturer's recommendations. The completed screened sign surface shall be uniform in color, have sharp edges, be free of bubbles, show good workmanship, and be free of blemishes, streaks, or spotted areas. Screening on sheeting may be accomplished either before or after application of sheeting to sign panels.

3. **Overlay Film:** When legend is applied by overlay film, legend shall be applied to the sign faces by an approved transparent electronic cuttable overlay film compatible with the reflective sheeting to which it is applied. Overlay film shall be applied in accordance with the recommendations of the manufacturer(s) of both the film and the reflective sheeting. Areas covered by film shall have sharp edges, be free of bubbles and blemishes, and show good workmanship.

3.3 CONSTRUCTION REQUIREMENTS

A. When removal of existing signs is required, the CONTRACTOR's sign removal operations shall be coordinated as directed with new sign construction to provide for adequate signing to be in place at all times.

B. **Sign Location:** Sign support locations will be as shown on the plans or as directed. Sign location, after initial staking by the CONTRACTOR, must be approved by the ENGINEER. Sign location which are obviously improper because of topography, existing appurtenances or other conflicting conditions will be adjusted to the closest desirable location. The CONTRACTOR shall then determine elevations for post length determinations at the established sign support location. The CONTRACTOR shall be responsible for orientation, elevation, offset and leveling of signs.

C. **Sign Postings:**

1. **Overhead Signs:** Signs shall be constructed so that the top edge of the sign face is tilted towards oncoming traffic 3 degrees (approximately 1:20) from vertical and at right angles to the road, unless otherwise directed.

2. **Road Edge Signs:** Road edge signs shall be constructed with sign faces vertical. Sign faces located less than 30 feet from the edge of travel lane shall be placed at 93 degree angle from the center of the travel lane. Sign faces located 30 feet or more from the edge of the travel lane shall be placed at an 87 degree angle from the center of the travel lane. Where the lanes divide or are on curves or grades, sign faces shall be oriented to be most effective both day and night and avoid specular reflection.

3. **Delineator, Object Marker and Milepost Assemblies:** These assemblies shall be placed at least 24 inches beyond the face of curb, or in the line of guard rail.

4. **Vertical and Horizontal Clearances:** Vertical and horizontal clearances shall be in accordance with the MUTCD and/or shall be as shown on the plans.

D. **Sign Overlay Panels:** When specified, existing signs shall be completely overlaid with new sign panels placed over the existing sign face. No partially overlaid signs shall be allowed to remain exposed overnight. Only one overlay shall be placed on a sign. When an overlay is to be placed on an existing overlaid sign, the previous overlay shall be removed prior to placement of the new overlay. Overlay panels shall conform to the requirements for permanent signs. Existing legend shall be removed from the existing sign face prior to placing the overlay panel. The size of the overlay panel shall not exceed the size of existing sign panel by more than 3 inches (on any side. Overlay panels shall be attached to the existing sign with approved rivets. Rivets shall be placed on 12-inch centers (maximum) along the perimeter of panel and at panel splices, and on 24-inch centers (maximum) both vertically and horizontally in interior portions of each panel. Rivets shall be centered horizontally on panels less than 24-inch wide. A 4 by 4-inch shim with a nominal 0.080-inch thick aluminum plate shall be placed between existing panel and overlay panel at interior rivet locations. Shims cut from salvaged sign panels may be used. The existing sign panels shall be kept reasonably flat during installation of the overlay panels. Splice arrangement for overlay panels shall conform to the requirements for traffic sign blanks.

E. **Excavation and Backfill:** The CONTRACTOR shall perform excavation for sign installation to levels and dimensions shown on the plans or as directed. Excavation and backfill shall be performed in accordance with Section 02200 – Earthwork.

F. **Footings:** Foundation piles, concrete, reinforcing steel and anchor bolt assemblies shall comply with the drawings. Posts for ground mounted delineator, object marker and milepost assemblies may be driven; no footings will be required.

G. **Bolt Tensioning:** Slip plates for breakaway sign posts shall be assembled in the shop with high strength bolts tightened at a minimum bolt tension in accordance with the recommendations of the manufacturer. After field installation, high strength bolts in the breakaway base connection shall be tightened to the specified minimum bolt tension. Bolt tensioning shall be corrected as required.

H. **Cleaning and Clearing:** Prior to erection, sign faces shall be cleaned to allow adequate visibility of the sign. Any clearing or tree trimming required to provide for full sign visibility shall be in accordance with the plans or as directed. Trimming of trees of significant local interest shall be performed by a licensed arborist.

I. **U-Channel Posts:** U-channel posts for ground mounted small signs, markers and delineators shall be driven vertically to a minimum depth of 3 feet below natural ground using a suitable protective driving cap. U-channel posts may be spliced where long lengths are required. The upper section shall overlap the lower section by at least 24 inches. The bottom edge of the upper section of the splice shall be a minimum of 24 inches above the ground. The spliced sections shall be secured with at least four 5/16 inch diameter hex head bolts spaced equally along the splice. Splicing of U-channel posts will not be allowed when break-away footings are required.

3.4 DEAD END ROAD INSTALLATIONS

A. Dead end road installations shall be of the specified type and located as shown on the plans. Timber barricade type installations shall be constructed in accordance with the plans and the following requirements. Timber piling shall be set in full depth holes and backfilled as directed or driven to required depth. Steel posts for other type installations shall be driven with a suitable protective cap. Piles and posts shall be vertical. Guard rail shall be constructed in accordance with Section 02704 – Guard Rail.

3.5 ACCEPTANCE OF SIGNS

A. After the installation of signs is complete, the ENGINEER or an authorized representative shall perform a daytime and nighttime inspection of the signs, sign faces, mounts, installations, hardware and matters relating to the requirements of this section.

B. Color match, uniformity and spacing of legend, specular glare, and sign type and design will be inspected for conformance to plans and specifications. When specular reflection is apparent on any sign, its positioning shall be adjusted by the CONTRACTOR to eliminate this condition. Signs shall be clean at the time of inspection. Reflective sheeting shall be free of cuts, scratches, breaks or other defects which might allow moisture to infiltrate and damage reflective cells. Nonstandard or otherwise unacceptable signs and traffic control devices shall be replaced or repaired as directed. The CONTRACTOR will be required to correct damage that is discovered at the time of the sign inspection. When the damage was obviously caused by vandalism, the CONTRACTOR will be paid for additional work under the provisions of the General Conditions.

C. In lieu of removing and replacing new sign faces that have been rejected, sign overlay panels complying with the requirements herein may be used to correct the deficiencies at no additional cost to the OWNER.

- END OF SECTION -

SECTION 02740 – CONSTRUCTION LAYOUT (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall establish all lines and grades, take all cross sections, and stake out the construction work in accordance with these specifications, plan details, and as directed.

B. This work also includes but is not limited to, the layout of all items of work, and providing assistance in the coordination of utility relocation activities to ensure that the placement of relocated facilities will not conflict with required construction.

1.2 REFERENCE STANDARDS

A. NOT USED

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. NOT USED

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall establish all lines and grades and stake out all work, including sufficient vertical and horizontal points for all necessary operations.

B. The project survey control and horizontal alignment are as indicated on the drawings. The construction plans depict the coordinates of sufficient survey control points to establish and re-establish horizontal control throughout the project. The CONTRACTOR shall employ such methods as approved by the ENGINEER for the location of the project and other necessary survey control points in accordance with currently acceptable surveying standards and practices. When required, the ENGINEER will also provide one bench mark on or near the project for vertical control. The CONTRACTOR shall verify the values of any intermediate bench marks shown on the plans, by checking against the bench mark established by the ENGINEER for vertical control.

C. The CONTRACTOR shall employ qualified engineering and surveying personnel experienced in layout of the type of work of this project to correctly establish and keep complete and comprehensive records of all lines and grades necessary from initial layout to final acceptance. The CONTRACTOR shall provide sufficient qualified staff, of at least one employee, on site during utility relocation periods. The CONTRACTOR shall provide any necessary survey work to ensure there are no utility conflicts with required construction. The CONTRACTOR shall provide daily documentation of utility relocation activities for incorporation into the project diaries.

D. The CONTRACTOR shall be liable for the accuracy of the initial layout and all subsequent alignment and elevations and shall, at no additional cost to OWNER, rebuild, repair or make good any portion of the work found to be incorrectly positioned either horizontally or vertically at any time before final acceptance.

E. Stationing for linear projects using an approved measuring device that is accurate to 0.1 percent. Place stakes every 100 linear feet and maintained by the CONTRACTOR throughout construction.

- END OF SECTION -

SECTION 02803 – SHEET PILES (REVISED 02/26/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide sheet piles, complete and in place, in accordance with the requirements of the Contract Documents.

B. **Permanent Sheeting:** Where required in the Contract Documents, permanent sheeting shall be of the design indicated on the drawings. Permanent sheeting shall be new and shall receive protective coatings as specified herein.

C. **Temporary Sheeting:** Where the drawings require temporary sheeting to facilitate the sequence of construction and/or maintain existing facilities in operation, the drawings will indicate the required design criteria for sheeting. The CONTRACTOR shall be responsible for the design and details of the sheeting. Temporary sheeting design and details shall be submitted to the ENGINEER. Sheeting may be new or used and will not require protective coatings. Temporary sheeting shall be removed when no longer required, however, when impractical to remove or when indicated to remain in the drawings shall remain in place.

D. **Construction Sheeting:** Where neither permanent or temporary sheeting is shown on the Drawings, but is required for the CONTRACTOR to meet its obligations for excavation safety as specified in Section 02200 – Earthwork, the CONTRACTOR shall be fully responsible for the design and details of the sheeting. Sheeting may be new or used, will not require protective coatings, and shall be removed unless otherwise approved by the ENGINEER.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM)

ASTM A572	Standard Specification for High – Strength Low – Alloy Columbium Vanadium Structural Steel
ASTM B209	Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate
ASTM B221	Standard Specification for Aluminum and Aluminum Allow Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM D4216	Standard Specification for Rigid Polyvinyl Chloride and Related PVC and Chlorinated Polyvinyl Chloride Building Products Compounds

B. American Wood Protection Association (AWPA)

AWPA C1	Preservative Treatment by Pressure Process
AWPA C3	Piles – Preservative Treatment by Pressure Process
AWPA M4	Standard for the Care of Preservative – Treated Wood Products

AWPA P1	Standard for Creosote Preservative
AWPA P2	Standard for Creosote Solutions
AWPA P3	Standard for Creosote – Petroleum Oil Solution
AWPA P5	Standard for Waterborne Preservatives
AWPA P8	Standard for Oil – Borne Preservatives
AWPA P9	Standard for Solvents and Formulations for Organic Preservative Systems

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 SUBSURFACE CONDITIONS

A. A geotechnical engineering study has been performed for the site. The soil report is available at the ENGINEER's office. The CONTRACTOR shall understand and conform to all recommendations and criteria associated with sheet piles given in this report.

B. The CONTRACTOR shall visit the site and shall satisfy itself as to all existing surface and subsurface conditions affecting its work. The information provided in the geotechnical engineering report is available to the CONTRACTOR to assist it, at its own risk, in its assessment of subsurface conditions at the site. Prior to bidding, bidding contractors may make their own subsurface investigations to satisfy themselves as to site and subsurface conditions, but such subsurface investigations shall be performed only under time schedules and arrangements approved in advance by OWNER.

PART 2 -- PRODUCTS

2.1 STEEL SHEET PILES

A. Permanent steel sheet piles shall be rolled steel sections meeting the design properties and lengths shown on the drawings. The material used in steel sheet piles shall meet the requirements of ASTM A572, Grade 60. Splices in steel sheet piles shall be made by full penetration butt weld of the entire cross section. Splices in the top 10 feet of the piles will not be permitted. All welding shall be performed by qualified welding operators.

PART 3 -- EXECUTION

3.1 DRIVING SHEET PILES

A. Sheet piles shall be driven with hammers adequate to drive the piles to required depth in satisfactory condition. To maintain satisfactory alignment, sheet piles shall be driven in increments of penetration necessary to prevent distortion, twisting out of position or pulling apart at interlocks. If a vibratory hammer is used, the CONTRACTOR will assume full responsibility for any damage to adjacent structures or for embankment settlement caused by his operation.

3.2 JETTING SHEET PILES

A. Use of jets will require written approval of the ENGINEER. When approved, jetting will be at no direct pay.

3.3 CUTOFFS

1. Tops of sheet piling shall be cut off or driven to a straight line at the elevation indicated on the plans or as directed.

2. If heads of sheet piles are appreciably distorted or otherwise damaged below cut-off level, damaged portions shall be removed and replaced at no direct pay.

3. Tops of timber sheet piles after cut-off shall be treated with creosote for field repairs as specified herein, except that galvanized metal coverings shall be bent down at least 3 inches (75 mm) on each side and nailed to the vertical surface of sheet piles with large-headed galvanized roofing nails.

4. Sheet piles damaged driving, or driven out of proper position or below cut-off elevation, shall be withdrawn and replaced with new piles at no direct pay.

3.4 PROTECTIVE COATINGS

A. Temporary and construction sheeting will not require painting unless otherwise specified. Before driving, surfaces of steel sheet piling shall be cleaned and painted from the top of the sheet pile to a point 10 feet below the ground or mud line. Protective coatings for steel sheets shall be

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SECTION 03315 – GROUT (REVISED 02/26/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide grout, complete and in place, in accordance with the Contract Documents

B. The following types of grout are specified in this Section:

1. Cement Grout
2. Non-Shrink Grout - Class I (cement based)
3. Non-Shrink Grout - Class II (cement based)

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M171	Standard Specification for Sheet Materials for Curing Concrete
AASHTO M182	Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats

B. ASTM International (ASTM)

ASTM C307	Standard Test Method for Tensile Strength of Chemical – Resistant Mortar, Grouts, and Monolithic Surfaces
ASTM C496	Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
ASTM C579	Standard Test Method for Compressive Strength of Chemical Resistant Mortars, Grouts, Monolithic Surfaces, and Polymer Concretes
ASTM C580	Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical – Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
ASTM C827	Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
ASTM C882	Standard Test Method for Bond Strength of Epoxy Resin Systems Used with Concrete by Slant Shear
ASTM C939	Standard Test Method for Flow of Grout for Pre-placed Aggregate Concrete (Flow Cone Method)
ASTM C1090	Standard Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic – Cement Grout

ASTM C1107	Standard Specification for Packaged Dry Hydraulic Cement Grout (Nonshrink)

C. International Concrete Repair Institute

	Technical Guide for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

D. Louisiana Department of Transportation and Development Testing Procedures (LDOTD)

TR 226 Specimens	Making, Field Curing, and Transporting Concrete
TR 230	Curing, Capping, and Determining the Compressive Strength of Molded Concrete Cylinders

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

PART 2 -- PRODUCTS

2.1 APPLICATION

A. Unless indicated otherwise, grouts shall be provided as listed below whether indicated on the Drawings or not.

Application	Type of Grout
Surface repairs	Cement Grout
Repair of holes and defects in concrete members which are not water bearing and not in contact with soil or other fill material	Non-Shrink - Class I
Repair of holes and defects in concrete members which are water bearing or in contact with soil or other fill materials	Non-Shrink - Class II
Any application not listed above, where grout is called for on the Drawings	Non-Shrink Class I, unless noted otherwise

2.2 CEMENT GROUT

A. Cement grout shall be composed of one part cement, 3 parts sand, and the minimum amount of water necessary to obtain the desired consistency. Where needed to match the color of adjacent concrete, white portland cement shall be blended with regular cement as needed. The minimum compressive strength at 28 Days shall be 4000 psi.

B. Cement grout materials shall be as indicated in Section 03901 – Portland Cement Concrete.

2.3 NON-SHRINK GROUTS (cement based)

A. **General:**

1. Cement-based non-shrink grout shall be a prepackaged, inorganic, fluid, non-gas-liberating, non-metallic, cement type grout requiring only the addition of water. Cement from kilns burning metal-rich hazardous waste fuel shall not be used.

2. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout indicated herein shall be that recommended by the manufacturer for the particular application.

3. Grout shall not contain chlorides or additives that may contribute to corrosion.

4. Grout shall be formulated to be used at any consistency from fluid to plastic.

5. Cement-based non-shrink grout shall have the following minimum properties when tested at a fluid consistency, at 28 Days:

   a. Minimum tensile splitting strength of 500 psi per ASTM C 496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.

   b. Minimum flexural strength of 1000 psi per ASTM C 580 - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

   c. Minimum bond strength (concrete to grout) of 1900 psi per modified ASTM C 882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.

   d. Grout to be used in a marine environment shall be certified for use in a marine environment.

   e. Grout shall be certified for use in freeze/thaw environments.

B. **Class I Non-Shrink Grout:**

1. Class I non-shrink grout shall have a minimum 28 Day compressive strength of 5000 psi when mixed at a fluid consistency.

2. Class I non-shrink grout shall meet the requirements of ASTM C 1107, Grade B or C, when mixed to fluid, flowable, and plastic consistencies.

3. Grout shall have a maximum early age height change of 4.0 percent expansion, and shall have no shrinkage (0.0 percent) in accordance with ASTM C 827 – Test Method for Early Volume Change of Cementitious Mixtures. The grout when tested shall not bleed or segregate at maximum allowed water.

4. Grout shall have no shrinkage (0.0 percent) and a maximum of 0.3 percent expansion in the hardened state when tested in accordance with ASTM C 1090 - Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic-Cement Grout.

5. Furnish certification that the non-shrink property of grout is not based on gas production or gypsum expansion.

6. Class I Non-Shrink Grout shall be **Masterflow 713 Plus** by **MBT-Chemrex; Five Star Grout** by **Five Star Products; Sikagrout 212** by **Sika Corporation; Premier** by **L&M Construction Chemicals; High-Flow Grout** by **Euclid Chemical Company; CG 200 PC** by **Hilti,** or equal.

C. **Class II Non-Shrink Grout:**

1. Class II non-shrink grout shall be a high precision, fluid, extended working time, grout. The minimum 28-Day compressive strength shall be 7500 psi, when mixed at a fluid consistency.

2. Grout shall have a maximum early age height change of 4.0 percent expansion, and shall have no shrinkage (0.0 percent) in accordance with ASTM C 827.

3. Grout shall have no shrinkage (0.0 percent) and a maximum of 0.3 percent expansion in the hardened state when tested in accordance with ASTM C 1090.

4. Class II non-shrink grout shall have an extended working time of 30 minutes minimum when mixed to a fluid consistency as defined in ASTM C 827 at temperature extremes of 45 to 90 degrees F in accordance with ASTM C 1107.

5. Class II non-shrink grout shall meet the requirements of ASTM C 1107, Grade B or C when tested using the amount of water needed to achieve fluid consistency per ASTM C 939.

6. The grout when tested shall not bleed or segregate at maximum allowed water content.

7. Provide certification that its non-shrink property is not based on gas production or gypsum expansion.

8. Class II non-shrink grout shall be **Masterflow 928** by **MBT-Chemrex; Five Star Fluid Grout 100** by **Five Star Products; Crystex** by **L&M Construction Chemicals;** or equal.

2.4 CURING MATERIALS

A. Curing materials shall be burlap cloth compying with AASHTO M182, Class 3, or combined burlap and white polyethylene sheeting shall complying with AASHTO M 171.

For prepackaged grouts, curing materials shall be as recommended by the manufacturer of prepackaged grouts.

2.5 CONSISTENCY

A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as indicated herein for the particular application.

B. The slump for topping grout and concrete/grout fill shall be adjusted to match placement and finishing conditions but shall not exceed 4-inches.

2.6 MEASUREMENT OF INGREDIENTS

A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurements shall not be allowed.

B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

PART 3 -- EXECUTION

3.1 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Grout shall be stored in accordance with manufacturer's recommendations.

3.2 GENERAL

A. Grout shall not be placed until base concrete or masonry has attained its design strength, unless authorized otherwise by the ENGINEER.

B. When cementitious grouts are used on concrete surfaces, the concrete surface shall be saturated with water for 24 hours prior to placement. Upon completion of the saturation period, excess water shall be removed with clean, oil free compressed air prior to grouting. Concrete substrate shall not be wet prior to placement of epoxy grouts.

C. Surfaces that will be in contact with grout shall be free of dirt, loose rust, oil, wax, grease, curing compounds, laitance, loose concrete, and other deleterious materials.

D. Shade the WORK from sunlight for at least 24 hours before and 48 hours after grouting.

E. Contact the grout manufacturer's representative for assistance on hot and cold weather grouting techniques and precautions if applicable.

3.3 GROUTING PROCEDURES

A. **General:** Mixing, surface preparation, handling, placing, consolidation, curing, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.

B. Structural, equipment, tank, and piping support bases shall be grouted, unless indicated otherwise.

1. The original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a minimum one-inch thickness of grout, or a thickness as indicated.

2. After the base plate has been set in position at the proper elevation by steel wedges or double nuts on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with non-shrink-type grout through a headbox of appropriate size. The mixture shall be of a fluid consistency and poured continuously into the space between the plate and the base concrete. Forms for grout shall be tight against retaining surfaces, and joints shall be sealed as recommended by the grout manufacturer to be liquid-tight. Forms shall be coated as recommended by the grout manufacturer for easy form release. Where this method of placement is not practical or where required by the ENGINEER, alternate grouting methods shall be submitted for acceptance by the ENGINEER.

C. **Topping Grout and Concrete/Grout Fill**

1. Mechanical, electrical, and finish WORK shall be completed prior to placement of topping or concrete/grout fill. To ensure bonding to the base slab, the base slab shall be given an exposed aggregate finish. Alternatively where accepted by the ENGINEER, the base slab shall be given a roughened textured surface by a close-spaced rake while the surface is green. After curing, high pressure washing shall expose the aggregates and produce not less than a 3/16-inch amplitude roughness. Jackhammers or chipping hammers shall not be used.

2. The minimum thickness of grout topping and concrete/grout fill shall be one-inch. Where the finished surface of concrete/grout fill is to form an intersecting angle of less than 45 degrees with the concrete surface it is to be placed against, a key shall be formed in the concrete surface at the intersection point. The key shall be a minimum of 3-1/2 inches wide by 1-1/2 inches deep.

3. The base slab shall be thoroughly cleaned and wetted to saturated surface dry (SSD) condition per the International Concrete Repair Institute (ICRI) -- Technical Guide for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays, prior to placing topping and fill. No topping concrete shall be placed until the slab is completely free from standing pools or ponds of water. A thin coat of neat cement grout shall be broomed into the surface of the slab just before topping or fill placement. The neat cement grout shall not be allowed to dry before topping placement. If it does dry, it must be immediately removed using wet stiff brooms and reapplied. The topping and fill shall be compacted by rolling or thorough tamping, brought to established grade, and floated. Grouted fill for tank and basin bottoms where scraping mechanisms are to be installed shall be screeded by blades attached to the revolving mechanism of the equipment in accordance with the procedures outlined by the equipment manufacturer after the grout is brought to the established grade. Coat surface with evaporation retardant as needed to prevent plastic shrinkage cracks.

4. Topping grout placed on sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement.

5. The surface shall be tested with a straight edge to detect high and low spots which shall be immediately eliminated. When the topping or fill has hardened sufficiently, it shall be steel troweled to a smooth surface free from pinholes and other imperfections. An approved type of mechanical trowel may be used as an assist in

this operation, but the last pass over the surface shall be by hand-troweling. During finishing, no water, dry cement, or mixture of dry cement and sand shall be applied to the surface.

6. As soon as topping or fill finishing is completed, coat surface with curing compound. After the topping is set and sufficiently hard in clarifiers and where required by the ENGINEER, the tank shall be filled with sufficient water to cover the entire floor for 14 days.

3.4 CONSOLIDATION

A. Grout shall be placed in such a manner, for the consistency necessary for each application, to assure that the space to be grouted is completely filled.

3.5 CURING

A. Cement based grouts shall be cured with wet burlap or combined wet burlap and white polyethylene sheeting and per the manufacturer's recommendations.

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SECTION 03805 – STRUCTURAL CONCRETE (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide Structural Concrete, complete and in place, in accordance with the contract documents.

B. Structural excavation and backfill shall conform to Section 02200 - Earthwork.

C. Unless otherwise noted, structural concrete shall be cast in place. Substitutions may be allowed if in the opinion of the ENGINEER a pre – cast structure will be equivalent in performance to cast – in – place structure. The ENGINEER will require that pre – cast substitutions be designed by the CONTRACTOR. If allowed, substitutions of precast structures for cast – in – place structures shall be at no additional cost to the OWNER.

D. Standard pre – cast structures shall include items governed by ASTM C478 or other specific design standard referenced in the drawings or specified elsewhere. Custom designed structures shall be taken to be as all other precast structures or pre – cast substitutions for cast – in – place concrete.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M148	Standard Specification for Liquid – Forming Compounds for Curing Concrete
AASHTO M153	Standard Specification for Preformed Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
AASHTO M171	Standard Specification for Sheet Materials for Curing Concrete
AASHTO M182	Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats
AASHTO M213	Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
AASHTO M315	Standard Specifications for Joints for Circular Concrete Sewer and Culvert Pipe using Rubber Gaskets

B. American Concrete Institute (ACI)

ACI 318	Building Code Requirements for Structural Concrete
ACI 350	Code Requirements for Environmental Engineering Concrete Structures
ACI 517	Required Practice for Atmospheric Pressure Steam Curing
ACI 543	Guide to Design, Manufacture, and Installation of Concrete Piles

C. ASTM International (ASTM)

ASTM A416	Standard Specification for Low – Relaxation, Seven – Wire Steel Strand for Pre-stressed Concrete
ASTM A653	Standard Specification for Steel Sheet, Zinc – Coated (Galvanized) or Zinc – Iron Alloy Coated (Galvaannealed) by the Hot – Dip Process
ASTM B370	Standard Specification for Copper Sheet and Strip for Building Construction
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
ASTM C1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1107	Standard Specification for Packaged Dry, Hydraulic Cement Grout (Non – Shrink)
ASTM D994	Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
ASTM D7174	Standard Specification for Preformed Closed – Cell Polyolefin Expansion Joint Fillers for Concrete Paving and Structural Construction

D. American Welding Society

AWS D1.1	Structural Welding Code

E. Louisiana Department of Transportation and Development (LDOTD)

AML	Approved Materials List
	Application of Quality Assurance Specifications for Portland Cement Concrete Pavement and Structures
	Application of Quality Assurance Specifications for Precast – Pre-stressed Concrete Plants
TR 201	Weight per Cubic Foot, Yield, and Air Content of Concrete

TR 202	Air Content of Freshly Mixed Concrete
TR 207	Slump of Portland Cement Concrete
TR 226	Making, Field Curing, and Transporting Concrete Test Specimens
TR 230	Curing, Capping, and Determining the Compressive Strength of Molded Concrete Cylinders

F. Pre-stressed Concrete Institute

MNL-116	Manual for Quality Control for Structural Precast Concrete Concrete Products

G. United States Army Corps of Engineers (USACE)

CRD-C-513	Corps of Engineers Specifications for Rubber Waterstop
CRD-C-572	Corps of Engineers Specification for Polyvinyl Chloride Waterstop

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 CLASSES AND USES OF CONCRETE

A. Unless noted otherwise on the drawings, classes of concrete furnished shall be as indicated in the table below:

Classes and Uses of Concrete

Concrete Class	Use
A or A(M)	Concrete exposed to sea water, and all other concrete except as listed herein.
AA or AA(M)	Cast-in-place bridge superstructure
D	Pier footings
F	Dams and flood control structures
P or P(M)	Precast Concrete
P(X)	Pre-stressed Concrete
R	Non-reinforced sections
S	Underwater sections

PART 2 -- PRODUCTS

2.1 MORTAR

A. Mortar shall consist of one part Portland cement, two parts mortar sand, and water as required for proper consistency. Mortar shall be used 30 minutes after mixing.

B. Portland cement for mortar shall conform to Section 03901 – Portland Cement Concrete.

C. Mortar sand for mortar shall conform to Section 03901 – Portland Cement Concrete.

2.2 STEEL JOINTS

A. Steel joints shall be fabricated as indicated on the drawings and per Section 05500 – Miscellaneous Metals.

2.3 PORTLAND CEMENT CONCRETE

A. Portland cement concrete shall conform to Section 03901 – Portland Cement Concrete.

2.4 JOINT FILLERS

A. Joint fillers shall be pre-formed joint fillers complying with any of the following:

1. **Preformed Resilient Bituminous Types:** Fillers shall consist of preformed strips which have been formed from cane or other suitable fibers of a cellular nature securely bound together and uniformly saturated with a suitable bituminous binder, or strips which have been formed from clean, granulated cork particles securely bound together by a suitable bituminous binder and encased between two layers of felt. The type shall be as specified and shall conform to AASHTO M 213.

2. **Wood Fillers:** Bottom boards shall be clear heart redwood. Top boards shall be any type of wood which is free from defects and meets dimensional requirements. Occasional medium surface checks will be permitted provided the board is free of defects that will impair its usefulness. The load required to compress the material in an oven-dry condition to 50 percent of its original thickness shall not exceed 1750 psi. Boards shall not vary from specified dimensions in excess of the following tolerances:

   a. Thickness: -0, +1/16 inch

   b. Depth: +/- 1/8 inch

   c. Length: +/- ¼ inch

3. **Preformed Bituminous Type:** Bituminous preformed expansion joint filler shall consist of bituminous (asphalt or tar) mastic composition, formed and encased between two layers of bituminous impregnated felt. The preformed filler shall conform to ASTM D 994.

4. **Preformed Asphalt Ribbon:** This material shall be resistant to cracking, tearing or permanent deformation under normal handling and installation procedures. It shall be sufficiently rigid to enable it to form a straight joint. This filler shall consist of preformed strips of bitumen and inert filler material conforming to the following requirements:

   a. Thickness, mm: 3-5

   b. Depth Tolerance, mm: +\- 3

   c. Weight, kg/100 sq meters, min: 245

   d. Tensile Strength, kg/100 mm width, min: 90

   e. Bitumen, % by weight:

5. **Preformed Closed Cell Polyethylene Joint Filler:** The joint filler shall comply with ASTM D 7174, Type I. This material shall be used with an adhesive-lubricant. Joint fillers and adhesive-lubricants shall be approved products listed on the LDOTD Approved Material List (formerly QPL 18).

6. **Preformed Rubber:** This filler shall consist of polyurethane bonded recycled rubber in accordance with AASHTO M 153.

2.5 JOINT SEALANTS

A. Joint sealants shall be extruded sealants complying with either of the following:

1. **Silicone Sealant (Single Component):** The silicone joint sealant shall comply with ASTM D 5893. Backer material of the appropriate size shall comply with ASTM D 5249, Type 3. The silicone sealant, backer materials and primers, if required, shall be approved products listed on the LDOTD AML (formerly QPL 42).

2. **Silicone Sealant (Two – Component Rapid Cure):** The two component silicone joint sealant shall comply with ASTM D5893 and meet the requirements for single component sealants when mixed and prepared in accordance with the manufacturer's recommendations. Backer material of the appropriate size shall conform to ASTM D5249, Type 3. The silicone sealant, backer materials and primers, if required, shall be approved products listed on the LDOTD AML (formerly QPL 42).

2.6 WATERSTOPS

A. Copper waterstops shall comply with ASTM B 370, soft temper.

B. Polyvinyl chloride (PVC) waterstops shall comply with U.S. Army Corps of Engineers CRD-C- 572.

C. Rubber waterstops shall comply with U.S. Army Corps of Engineers CRD-C- 513.

D. Details of installation and splicing, where not shown on the plans, shall be submitted to the ENGINEER for review. When PVC waterstops are used, the CONTRACTOR shall submit a certificate of compliance indicating compliance with these specifications.

2.7 REINFORCING STEEL

A. Reinforcing steel shall conform to Section 03806 – Reinforcement unless otherwise noted.

2.8 CURING MATERIAL

A. **Liquid Membrane – Forming Compounds:** Liquid membrane – forming compounds shall comply with AASHTO M 148 and shall be an approved product listed on the LDOTD AML (formerly QPL 65). The types shall be Type 2 white pigmented or Type 1-D, clear or translucent with fugitive dye.

B. **Burlap:** Burlap cloth make from Jute or Kenaf shall comply with AASHTO M 182, Class 3.

C. **Waterproof Paper:** Waterproof paper shall comply with AASHTO M 171.

D. **White Polyethylene Sheeting:** White polyethylene sheeting shall comply with AASHTO M 171.

E. **Combined Burlap and White Polyethylene Sheeting:** Combined burlap and white polyethylene sheeting shall comply with AASHTO M 171.

2.9 SPECIAL SURFACE FINISH FOR CONCRETE

A. Special surface finish for concrete shall be an approved product listed on the LDOTD AML (formerly QPL 14) and shall comply with established tolerances. The material shall provide a uniform, fine-textured finish complying with these specifications. Method and rate of application shall be as recommended by the manufacturer, except that application rate shall not exceed 60 square feet per mixed gallon. The e material shall consist of a water-based one-component coating system containing pigments, texturizers, resins and water, and shall be supplied in containers not smaller than 5 gallons . The coating shall contain fungicides to adequately prevent the growth of mildew, mold, etc. No field additions to the coating will be permitted.

B. When tested in accordance with DOTD TR 620, the material shall comply with the following requirements:

1) The average number of cycles to failure shall be not less than 50 cycles when tested in accordance with ASTM C 666. Test specimens shall show no flaking, cracking, spalling or loss of bond.

2) The material shall be unaffected except for slight chalking or discoloration when exposed to 1000 hours of accelerated weathering using UV-B lamps in accordance with ASTM G 154.

3) Color and texture of the material when applied to the test panel shall closely match that of the standard "Louisiana Gray" color chip on file at the Materials and Testing Section of the Louisiana Department of Transportation and Development.

2.10 FORM MATERIALS

A. Forms shall be of wood, metal or other approved material, built mortar-tight and of sufficient rigidity to prevent distortion due to pressure of concrete and other loads incident to construction operations.

B. Forms shall be constructed and maintained to prevent warping and opening of joints due to shrinkage of lumber. Forms shall be substantial and unyielding and so designed that finished concrete will conform to proper dimensions and contours. Design of forms shall take into account the effect of vibration of concrete as it is placed.

C. **Re-Used Forms**: Shape, strength, rigidity, mortar-tightness and surface smoothness of re-used forms shall be maintained. Warped or bulged lumber shall be resized before being reused. Unsatisfactory forms shall not be re-used.

D. **Steel Stay-in-Place Forms**: Steel stay-in-place forms can only be used when approved by the ENGINEER. Steel stay-in-place forms shall be zinc – coated steel sheets complying with ASTM A 653 with a minimum of G 165 coating. The dead load deflection of steel stay-in-place forms shall not exceed L/240 or 3/8 inch. Concrete admixtures or set accelerators containing chlorides will not be allowed in the concrete when placed

against steel stay-in-place forms. When allowed, the use of steel stay-in-place forms will require:

1) Reinforcing chairs made for use with stay-in-place forms that will span the corrugations and properly support the reinforcing steel.

2) Metal chairs in contact with the metal forms shall be hot-dipped galvanized, electroplated with zinc (GS Grade), epoxy coated, or made of stainless steel.

3) Repair of any damage to galvanized surfaces on the metal pans or the visually exposed surfaces of the support angles with a cold galvanizing compound from the LDOTD AML (formerly QPL 23).

4) Removal of any portion of the support angle leg that sticks up into the bottom of the deck by more than ½ inch.

5) Steel girders and stringers to be shielded to prevent weld splatter or arc strikes on them during the installation of the support angles.

6) CONTRACTOR responsible for any additional temporary bracing requirement to prevent rotation of exterior girders.

2.11 FORM RELEASE AGENTS

A. Form release agents for concrete shall be an approved product listed on the LDOTD AML (formerly QPL 29).

2.12 EPOXY RESIN SYSTEMS

A. Epoxy resin systems for applications as specified herein shall be approved products listed on the LDOTD AML (formerly QPL 32). Types and grades shall be as specified herein. Epoxy resin systems shall consist of two components which, when combined in accordance with the manufacturer's recommendations, shall comply with the requirements specified herein.

B. Packaging and Marking: Both components shall be supplied in separate containers that are nonreactive with the contents. The containers shall be identified as Component A for the epoxy resin and Component B for the curing agent and shall show the product name, formulator, lot or batch number, date of packaging, shelf-life, and recommended mixing ratio either by weight or volume unless specified.

2.13 GEOTEXTILE FABRIC

A. Geotextile fabric shall comply with Section 02200 – Earthwork.

2.14 PRECAST CONCRETE

A. **General:** The manufacturer of precast concrete structures shall conform to the NCPA Quality Control Manual for Precast Concrete Plants, unless noted otherwise.

B. **Design:** The design of precast concrete units to withstand indicated design load conditions in accordance with applicable industry design standards ACI 318, ACI 350, ASTM, ACPA Design Manual, PCI MNL-120, and AASHTO, and/or as indicated on the drawings. Design must also consider stresses induced during handling, shipping and

installation in order to avoid product cracking or other handling damage. Design loads for precast concrete units shall be indicated on the shop drawings. Design calculations and drawings of non-standard precast units shall be prepared and signed by a licensed professional engineer, and submitted for ENGINEER approval prior to fabrication. Calculations shall include the analysis of units for lifting stresses and the sizing of lifting devices.

C. **Forms:** Forms for manufacturing precast concrete units shall be of the type and design consistent with industry standards and practices. Forms shall be capable of producing uniform products and dimensions and shall comply with the requirements specified herein. Form release agent shall be applied and utilized according to the manufacturer's recommendations and shall not be allowed to build up on the form casting surfaces.

D. **Reinforcement:** Reinforcement shall be per Section 03806 – Reinforcement.

E. **Embedded Items:** Where required by the Contract Documents or otherwise required by design for custom or standard pre-cast concrete structures, embedded items shall be placed. Welding, where required, shall be performed in accordance with AWS D1.1. All items embedded in precast concrete shall be of the type required for the intended us.

F. **Concrete:** Portland Cement Concrete shall be per Section 03901 – Portland Cement Concrete.

G. **Grout:** Grout used for precast structures shall meet the following requirements:

1) Non – shrink grout shall meet the requirements of ASTM C1107.

2) Cementitious Grout: Cementitious grout shall be of suitable mix design for the intended use, consisting of Portland cement, sand, and water.

PART 3 -- EXECUTION

3.1 HANDLING AND PLACING CONCRETE

A. General: In preparation for placing concrete, all sawdust, chips and other debris shall be removed from the interior of forms. Struts, stays and braces serving to hold forms in correct shape and alignment shall be removed from the forms when concrete placing has reached an elevation rendering their use unnecessary.

B. Concrete shall be placed to avoid segregation of materials and displacement of reinforcement. The use of long troughs, chutes and pipes for conveying concrete from mixer to forms will be permitted only with written authorization. If these devices cause segregation, impede workability, or produce detrimental effects, their use shall be discontinued.

C. Open troughs and chutes shall be metal or metal-lined. Where steep slopes are required, chutes shall be equipped with baffles or be in short lengths that reverse the direction of movement of concrete. Chutes, troughs and pipes shall be kept free from coatings of hardened concrete by thoroughly flushing with water after each pour. Water for flushing shall not be discharged within the structure.

D. When placing operations involve dropping concrete more than 5 feet, it shall be deposited through a sheet metal or other approved tremie. After initial set of the concrete, forms and any reinforcing bar projection shall not be disturbed.

E. Concrete, during and immediately after depositing, shall be thoroughly consolidated. Consolidation shall be done by mechanical vibration subject to the following provisions.

1) Vibration shall be internal unless authorization for other methods is obtained or as provided herein.

2) Vibrators shall be of an approved type and design, capable for transmitting vibration to concrete at frequencies of at least 4,500 impulses per minute.

3) Intensity of vibration shall be such as to visibly affect concrete over a radius of at least 18 inches.

4) The CONTRACTOR shall provide a sufficient number of vibrators to properly consolidate each concrete batch immediately after it is placed.

5) Vibrators shall be manipulated so as to thoroughly WORK concrete around reinforcement and imbedded fixtures and into corners and angles of forms.

6) Vibration shall be applied at the point of deposit and in the area of freshly deposited concrete. Vibrators shall be inserted and slowly withdrawn vertically from the concrete. Vibration shall be of sufficient duration and intensity to thoroughly compact concrete, but shall not cause segregation. Vibration shall not be continued at any one point to the extent that localized areas of grout are formed.

7) Application of vibrators shall be at points uniformly spaced and not farther apart than twice the radius over which vibration is visibly effective.

8) Vibration shall not be applied directly to or through reinforcement to sections or layers of concrete which have hardened to the degree that concrete ceases to be plastic under vibration. It shall not be used to make concrete flow over distances so great as to cause segregation. Vibrators shall not be used to drag concrete in forms.

9) Vibration shall be supplemented by such spading as necessary to ensure smooth surfaces and dense concrete along form surfaces and in corners and locations inaccessible to vibrators.

10) These provisions for vibration shall apply to filler concrete for steel grid floor except that the vibrator shall be applied to the steel.

11) These provisions for vibration shall also apply to precast concrete except that, if approved, the manufacturer’s methods of vibration may be used.

F. Concrete shall be placed in horizontal layers not more than 15 inches thick unless otherwise permitted. When less than a complete layer is placed in one operation, it shall be terminated at a vertical bulkhead. Each layer shall be placed and consolidated before the preceding batch has taken initial set to prevent damage to green concrete and avoid surfaces of separation between batches. The top surface of concrete adjacent to forms shall be finished to a suitable grade strip.

G. When concrete placement is temporarily discontinued, the concrete, shall be cleaned of laitance and other objectionable material to a sufficient depth to expose sound concrete after becoming firm enough to retain its form.

H. Where a featheredge might be produced at a construction joint, as in the sloped top surface of a wingwall, an inset form shall be used to produce a blocked out portion in the preceding layer which shall produce an edge thickness of not less than 6 inches in the succeeding layer. Placement of concrete shall not be discontinued within 18 inches of the top of any face, unless provision has been made for a coping less than 18 inches thick, in which case, the construction joint may be made at the underside of the coping.

I. Following concrete placement, accumulations of mortar splashed on reinforcement steel and forms shall be removed. Dried mortar chips and dust shall not be mixed in fresh concrete.

3.2 GIRDERS, SLABS, WALLS AND COLUMNS

A. Concrete in girders shall be deposited uniformly for the full length of girder and brought up evenly in horizontal layers.

B. Concrete in slabs and slab spans shall be placed in one continuous operation for each slab and/or slab span.

C. Concrete columns and walls shall be placed in a continuous operation. Concrete shall be allowed to set at least 24 hours before caps are placed. When friction collars are used to support cap forms, concrete columns shall have been poured at least 7 days or shall have at least 3,000 psi compressive strength before caps are placed. Compressive strength cylinder shall be made in accordance with DOTD TR 226 and tested in accordance with DOTD TR 230.

D. No concrete shall be placed in the superstructure until column forms have been stripped sufficiently to determine the quality of concrete in the columns. The superstructure loads shall not be allowed on the bents until the concrete has attained at least 3,000 psi compressive strength but not less than 7 curing days. Compressive strength cylinders shall be made in accordance with DOTD TR 226 and tested in accordance with DOTD TR 230.

3.3 PUMPING

A. Pumping equipment shall be so arranged that no vibrations result which might damage freshly placed concrete. Pipes carrying concrete to placing area shall be laid out with a minimum of bends and no unauthorized change in size. Where concrete is conveyed and placed by mechanically applied pressure, suitable equipment of adequate capacity shall be used.

B. A grout mortar, or concrete without coarse aggregate, shall be pumped through the equipment ahead of the regular concrete to provide lubrication to start pumping operations. This material shall not be used in placement. The lubrication process need not be repeated as long as pumping operations are continuous.

C. Operation of the pump shall be such as to provide a continuous stream of concrete without air pockets. When pumping is completed, concrete remaining in the pipes, if it is to be used, shall be ejected in such manner that there will be no contamination of concrete or separation of ingredients.

3.4 DEPOSITING CONCRETE UNDERWATER

A. Concrete shall not be deposited in water except on approval. The method of placing shall be approved by the ENGINEER and conform to the following:

B. To prevent segregation, concrete shall be placed in its final position by means of a tremie and shall not be disturbed after being deposited. Concrete shall be placed in caissons, cofferdams or watertight forms.

C. For underwater parts of structures, concrete seals shall be placed in one continuous operation. The surface of the concrete shall be kept as nearly horizontal as possible; still water shall be maintained at the point of deposit.

D. A tremie shall consist of a tube at least 10 inches (250 mm) in diameter; if constructed in sections, the couplings shall be watertight. Tremies shall be supported so as to permit positioning anywhere over the top surface of the WORK and for rapid lowering when necessary to retard or stop the flow of concrete.

E. When concrete is dumped into the hopper, flow may have to be induced by slightly raising the discharge end of the tremie, but always keeping it in deposited concrete. Flow shall be continual until the WORK is completed. Aluminum tremies will not be permitted.

F. Dewatering may proceed when the concrete is sufficiently hard, but not for at least 72 hours after concrete placement is completed. Prior to constructing succeeding portions of the structure, laitance or other unsatisfactory material shall be removed from the surface by scraping, chipping or other means which will not damage the concrete.

3.5 CONSTRUCTION JOINTS

A. **General:** Construction joints shall be made only where located on the plans or shown on the pouring schedule, unless otherwise approved. When not detailed on the plans, construction joints shall be placed as directed. Raised shear keys or reinforcing steel shall be used where necessary to transmit shear or bond sections together.

B. **Bonding:** Forms shall be retightened before placing new concrete on or against hardened concrete.

1) **Neat Cement Slurry Joints**: The surface of hardened concrete shall be roughened as required in a manner that will not leave loosened particles of aggregate or damaged concrete at the surface. It shall then be thoroughly cleaned of foreign matter and laitance, and saturated with water. All surfaces shall be thoroughly coated with a neat slurry to ensure that adequate mortar is placed at the juncture of the hardened and newly deposited concrete. New concrete shall be placed before the grout has attained its initial set. Placing of concrete shall be carried continuously from joint to joint. Edges of joints which are exposed to view shall be finished true to line and elevation.

2) **Epoxy Resin Joints**: Vertical surfaces of bridge deck construction joints and other construction joints shall be coated prior to each succeeding pour with an approved Type II, Grade B or Grade C epoxy resin applied according to the manufacturer's recommendations. Surfaces of hardened concrete to which new concrete is to be bonded shall be cleaned of foreign material, loose or unsound concrete by sandblasting, hammers or

wire brushes. Grease or oil shall be removed with a detergent wash such as trisodium phosphate, and the entire area washed with fresh water and brushed with a stiff brush. If a detergent is not required, dust and small particles not removed by other cleaning methods shall be removed by washing.

3) Unless a joint type (1) or (2) above is specified in the plans or specifications, the surface of the hardened concrete shall be thoroughly cleaned of foreign matter and laitance, and saturated with water prior to pouring fresh concrete.

3.6 CONCETE EXPOSED TO SALT WATER

A. Concrete shall be thoroughly consolidated and stone pockets shall be avoided. No construction joints shall be formed between levels of extreme low water and extreme high water. Salt water shall not come in contact with concrete for at least 30 calendar days.

3.7 FORM EXECUTION

A. **Form Surface**: Forms for exposed surfaces shall not adhere to nor discolor concrete. Forms shall be made of either metal or dressed lumber of uniform thickness with or without approved form liner and shall be mortar-tight. Forms for reentrant angles shall be chamfered and forms shall be filleted at sharp corners. Forms for projections, such as girders or copings, shall be given a bevel or draft to ensure easy removal.

B. When possible, forms shall be day-lighted at intervals not greater than 10 feet vertically, the openings being sufficient to permit free access for inspecting, working and spading the concrete.

C. **Form ties:** Metal ties or anchorages within forms shall be constructed to permit their removal to a depth of at least 1/2 inch from the face without damage to concrete. If wire ties are permitted, upon removal of the forms, wire shall be cut back at least 1/4 inch inside from the face of the concrete with chisels or nippers. Fittings for metal ties shall be of such design that, upon their removal, cavities left will be of the smallest possible size. Cavities shall be filled with cement mortar and the surface left sound, smooth, even and uniform in color.

D. Fiberglass ties may be used and shall be ground flush with the concrete surface.

E. **Setting and Maintaining:** Forms shall be set and maintained reasonably true to required line and grade until concrete is sufficiently hardened. When forms are deemed to be unsatisfactory, either before or during placing of concrete, the WORK shall be stopped until defects have been corrected. Forms shall be so designed that portions where finishing is required may be removed without disturbing portions of forms to be removed later and, as far as practical, so that form marks will conform to general lines of the structure. For narrow walls and columns, where the bottom of the form is inaccessible, lower form boards shall be left loose so that they may be removed for cleaning out immediately before placing concrete.

3.8 CURING

A. Concrete for structures (except for minor structures) shall be cured with wet burlap or combined wet burlap and white polyethylene sheeting, except where provided for herein.

B. A Type 1-D curing compound may be used for curing concrete when surfaces do not require a Class 2A finish. When membrane curing is used, exposed reinforcing steel and construction joint surfaces shall be covered or shielded to prevent coating with curing compound. Construction joint surfaces shall be wet cured by approved methods as soon as possible after concrete placement. Concrete surfaces in contact with forms shall be sealed immediately after completion of form removal and surface finishing. Membrane curing shall be applied as soon as surface moisture has evaporated. Method and application rate of curing compound shall be in accordance with the manufacturer's recommendations, but in no case shall the application rate be less than one gallon per 100 square feet surface area. The compound shall be applied in one or two applications. If the compound is applied in two increments, the second application shall follow the first application within 30 minutes. Satisfactory equipment shall be provided, with means to properly control and direct application of curing compound on concrete surfaces to result in uniform coverage.

C. If rain falls on newly coated concrete before the film has dried sufficiently to resist damage, or if the film is damaged, a new coat of compound shall be applied to affected portions.

D. When curing with burlap, the exposed concrete immediately after finishing shall be covered with two thicknesses of wet burlap. Burlap shall be fixed so that it is in contact with the concrete at all times and shall be kept continuously wet for at least 5 curing days after concrete is placed, with curing days as defined as specified herein.

3.9 REMOVAL OF FALSEWORK AND FORMS

A. Except as otherwise specified herein, face form for barrier curbs or rails and side forms for caps requiring a Class 2A finish shall be removed not less than 1/2 nor more than 2 curing days after concrete is placed to permit finishing.

B. Forms for surfaces not requiring a Class 2A finish, and supporting forms and falsework for structure members such as bent caps, beams and slabs, shall be removed in accordance with one of the following methods. For concrete containing fly ash or ground granulated blast-furnace slag, only Method 1 shall be used.

1) **Method 1**: Forms and falsework may be removed as soon as concrete has attained a compressive strength, as determined by cylinder tests, indicated in the table below. Test specimens will be made in accordance with DOTD TR 226 from the same concrete and cured under the same conditions as the portion of the structure involved. Specimens will be tested in accordance with DOTD TR 230.

Removal of Forms and Falsework

Concrete Class	Compressive Strength, Psi (MPa)
A	3,000 (20.7)
A (M)	4,000 (27.6)
AA	3,500 (24.1)
AA (M)	4,000 (24.1)
D	2,500 (17.2)
F	3,200 (22.1)
P (nonpre-stressed)	3,000 (20.7)
P(M) (nonpresetressed)	3,600 (24.9)
R	1,600 (11.0)

2) **Method 2**: Forms and falsework may be removed when concrete has aged for the minimum number of curing days in the table below:

Forms and Falsework Removal Schedule

Forms	Curing Days
Under slabs, beams or pile caps with span lengths less than 10 feet (3.0 mm)	7 days
Under slabs, beams or pile caps with span lengths of 10 to 17 feet (3.0 to 5.0 m)	7 days plus 1 day for each foot (300 mm) of span over 10 feet (3 m)
Under slabs, beams or pile caps with span lengths over 17 feet (5.0 m)	7 days plus 1 day for each foot (300 mm) of span over 10 feet (3 m)
Under portion of slabs that cantilever more than 1 foot (300 mm)	7 days
Walls, columns, side forms for beams, pile caps and slabs that cantilever less than 1 foot (300 mm)	1 day
Caissons	1 day

3) The term "curing day" will be interpreted as a calendar day on which the temperature is above 50°F (10°C) or 55°F (13°C) if ground granulated blast furnace slag is used in concrete for at least 19 hours. Colder days may be counted if approved methods are used to maintain air temperature adjacent to concrete above 50°F (10°C) throughout the day.

4) During continued cold weather, when artificial heat is not provided, the ENGINEER may permit removal of forms and falsework at the end of a period of calendar days equal to two times the number of curing days stated above.

5) The foregoing provisions for form and falsework removal shall apply only to forms or parts of forms so constructed as to permit removal without disturbing forms or falsework which are required to be left in place for a longer period on other portions of the structure.

6) Methods of form removal likely to cause overstressing of concrete shall not be used. Forms and their supports shall not be removed without approval. Supports shall be removed in such manner as to permit concrete to uniformly and gradually take stresses due to its own weight.

3.10 CONCRETE SURFACE FINISHES

A. Surface finishes shall be classified in accordance with the table below.

Concrete Surface Finishes

Class 1	Ordinary Surface Finish
Class 2A	Special Surface Finish
Class 4	Sandblast Finish

Class 6	Bridge Deck Finish
Class 7	Sidewalk Finish
Class 8	Precast Pre-stressed Concrete Finish

B. All concrete shall be given Class 1, Ordinary Surface Finish, in addition to any other type of finish specified.

C. **Class 1, Ordinary Surface Finish:** Immediately following the removal of forms, fins and irregular projections shall be removed from all surfaces except from those which will not be exposed to view after construction or are not to be waterproofed. Cavities produced by form ties and other holes, honeycombed spots, broken corners or edges and other defects shall be cleaned and, after having been kept saturated with water, shall be pointed and trued with a mortar of cement and fine aggregate mixed in the proportions used in the concrete being finished.

1) Mortar used in pointing shall be not more than 1 hour old. Water shall be added to a workable consistency. Concrete shall then be cured as specified under Subsection 805.10. Construction and expansion joints shall be free of mortar and concrete. Joint filler shall be left exposed for its full length with clean and true edges.

2) Surfaces shall be true and uniform. Surfaces which cannot be satisfactorily repaired shall be coated as specified for Class 2A, Special Surface Finish

3) Exposed surfaces not protected by forms shall be struck off with a straightedge and finished with a wood float to a true, even surface. Use of additional mortar to provide a grout finish will not be permitted.

D. **Class 2, Special Surface Finish**: The Class 2A Special Surface Finish will be used as required by the plans and additionally as follows: visually exposed faces of wingwalls, retaining walls, railings and parapets; outside faces of girders, slabs, brackets, curbs, headwalls, parapets, and vertical faces of caps and columns. Wingwalls shall be finished from the top to 1 foot (300 mm) below finish slope line on the exposed face and shall be finished on top for a depth of 1 foot (300 mm) below the top on backfill sides. When the Special Surface Finish is used, it shall be used throughout the structure.

1) Application of the Special Surface Finish shall not be started until other WORK which might mar the surface finish is complete and finishing operations can be carried out continuously on a structure.

2) The same materials and methods shall be used for all surfaces on the project given this Special Surface Finish.

E. **Class 4, Sandblasted Finish**: After 28 curing days, the concrete surface shall be sandblasted with hard, sharp sand to produce an even fine grained surface in which mortar has been cut away, leaving aggregate exposed.

F. **Class 7, Sidewalk Finish:** After concrete has been placed, it shall be consolidated and the surface struck off by means of a strike board and floated with a wooden or cork float. An edging tool shall be used on edges and at expansion joints. The surface shall not vary more than 1/8 inch (3 mm) under a 10-foot (3.0 m) metal static straightedge. The surface shall have a granular or matte texture.

3.11 PRECAST CONCRETE

A. **Quality Control:** The precast concrete producer shall show that the following quality control tests are performed as required and in accordance with the ASTM International standards indicated.

1) **Slump:** A slump test shall be performed for each 150 cubic yards of concrete produced per mix design, or once a day, whichever comes first. Slump tests shall be performed in accordance with LDOTD TR 207.

2) **Temperature**: The temperature of fresh concrete shall be measured when slump or air content tests are made and when compressive test specimens are made in accordance with ASTM C 1064.

3) **Compressive Strength**: At least four compressive strength specimens shall be made for each 150 cubic yards of concrete of each mix design in accordance with LDOTD TR 226 and LDOTD TR 227.

4) **Air Content:** Tests for air content shall be made on air-entrained, wet-cast concrete for each 150 cu yd of concrete, per mix design, but not less often than once each day when air-entrained concrete is used. The air content shall be determined in accordance with LDOTD TR 202.

5) **Density (Unit Weight):** Tests for density shall be performed a minimum of once per week to verify the yield of batch mixes. Density tests shall be performed for each 100 cu yd of lightweight concrete in accordance with LDOTD TR 201. Density tests shall be performed for each 100 cubic yards of concrete per mix design, but not less often than once per day when volumetric batch equipment is used.

B. **Concrete Mixing:** Concrete mixing shall comply with Section 03901 – Portland Cement Concrete.

C. **Concrete Placement:** Concrete placement shall comply with Section 03901 – Portland Cement Concrete and the requirements specified herein.

D. **Curing of Precast Units:** Precast concrete units shall be cured immediately following the initial set of the concrete and completion of surface finishing. Precast units may be cured by moisture retention (burlap) or by heat and moisture.

1) Concrete cured by moisture retention shall be cured with wet burlap or combined wet burlap and white polyethylene sheeting and shall adhere to the requirements specified within this section.

2) Concrete cured by heat and steam shall not be subjected to steam or hot air until after the concrete has attained its initial set. Steam, if used, shall be applied within a suitable enclosure, which permits free circulation of the steam in accordance with ACI 517.2R. If hot air is used for curing, precautions shall be taken to prevent moisture loss from the concrete. The temperature of the concrete shall not be permitted to exceed 150° F. These requirements do not apply to products cured with steam under pressure in an autoclave.

E. **Surface Finish**: Unless noted otherwise, precast concrete structures shall be given Class 1, Ordinary Surface Finish, in addition to any other type of finish specified.

F. **Stripping Precast Units from Forms:** Precast concrete units shall not be removed from the forms until the concrete reaches the compressive strength for stripping required by the design. If no such requirement exists, products may be removed from the forms after the final set of concrete provided that stripping damage is minimal. Stripping strengths shall be routinely measured to ensure product has attained sufficient strength for safe handling.

G. **Patching and Repair:** No repair is required to formed surfaces that are relatively free of air voids and honeycombed areas, unless the surfaces are required by the design to be finished.

1) **Repairing Honeycombed Areas:** When honeycombed areas are to be repaired, all loose material shall be removed and the areas cut back into essentially horizontal or vertical planes to a depth at which coarse aggregate particles break under chipping rather than being dislodged. Proprietary repair materials shall be used in accordance with the manufacturer's instructions. If a proprietary repair material is not used, the area shall be saturated with water. Immediately prior to repair, the area should be damp, but free of excess water. A cement-sand grout or an approved bonding agent shall be applied to the chipped surfaces, followed immediately by consolidating an appropriate repair material into the cavity.

2) **Repairing Major Defects:** Defects in precast concrete products which impair the functional use or the expected life of products shall be evaluated by qualified personnel to determine if repairs are feasible and, if so, to establish the repair procedure.

H. **Shipping Precast Units:** Precast concrete units shall not be shipped until the concrete strength has reached at least 75% of the specified 28-day strength, or that damage will not result, impairing the performance of the product.

I. **Installation:** Precast concrete units shall be installed to the lines and grades shown in the contract documents or otherwise specified. Precast concrete units shall be lifted by suitable lifting devices at points provided by the precast concrete producer. Precast concrete units shall be installed in accordance with applicable industry standards. Upon request, the precast concrete producer shall provide installation instructions. Field modifications to the product shall relieve the precast producer of liability regardless if such modifications result in the failure of the precast concrete unit. Where water-tightness is a necessary performance characteristic of the precast concrete unit's end use, watertight joints, pipe-entry connectors and inserts should be used to ensure the integrity of the entire system

- END OF SECTION –

SECTION 03806 – REINFORCEMENT (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide reinforcing steel for Portland cement concrete, complete and in place, in accordance with the contract documents.

1.2 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M 284	Standard Specification for Epoxy Coated Reinforcing Bars

B. American Welding Society (AWS)

AWS D1.4	Structural Welding Code – Reinforcing Steel

C. ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon – Steel Bars for Concrete Reinforcement
ASTM A996	Standard Specification for Rail – Steel and Axle – Steel Deformed Bars for Concrete Reinforcement
ASTM A1064	Standard Specification for Carbon – Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

D. Concrete Reinforcement Steel Institute

Manual of Standard Practice

E. Louisiana Department of Transportation and Development (LDOTD)

AML	Approved Materials List

PART 2 -- PRODUCTS

2.1 REINFORCING STEEL

A. Reinforcing steel for concrete shall comply with the following unless otherwise specified. Reinforcing steel used in structures shall be Grade 60. Grade 40 steel may be used in Portland cement concrete pavement. Bars smaller than No. 3 need not be deformed. All

deformed bars shall comply with items 1, 2, or 3 below. Size W 5 wire complying with item 4 below may be used in lieu of bars smaller than No. 3.

1) Billet-Steel Deformed and Plain Bars shall comply with ASTM 615 and shall be produced at a mill listed on the LDOTD AML (formerly QPL 71).

2) Rail-Steel and Axle-Steel Deformed and Plain Bars shall comply with ASTM A 996.

3) Cold-drawn Steel Wire shall comply with ASTM A 1064 with the following amendment: For material testing over 110,000 psi tensile strength in high strength applications such as spirals and ties, the 25 percent minimum reduction in area shall be reduced 5 percent for each 10,000 psi increment of tensile strength exceeding 110,000 psi.

4) Welded Steel Wire Fabric shall conform to ASTM A 1064.

5) Epoxy Coated Reinforcing Steel and patching materials shall comply with AASHTO M 284 and shall be listed on the LDOTD AML (formerly QPL 51).

2.2 SPIRAL REINFORCING

A. Spiral reinforcing shall comply with any of the following:

1) Billet-Steel Deformed and Plain Bars shall comply with ASTM 615 and shall be produced at a mill listed on the LDOTD AML (formerly QPL 71).

2) Rail-Steel and Axle-Steel Deformed and Plain Bars shall comply with ASTM A 996.

3) Cold-drawn Steel Wire shall comply with ASTM A 1064 with the following amendment: For material testing over 110,000 psi tensile strength in high strength applications such as spirals and ties, the 25 percent minimum reduction in area shall be reduced 5 percent for each 10,000 psi increment of tensile strength exceeding 110,000 psi.

4) Welded Steel Wire Fabric shall conform to ASTM A 1064.

2.3 TIE BARS

A. Grade 40 steel may be used in Portland cement concrete pavement. Tie bars shall comply with any of the following:

1) Billet-Steel Deformed and Plain Bars shall comply with ASTM 615 and shall be produced at a mill listed on the LDOTD AML (formerly QPL 71).

2) Rail-Steel and Axle-Steel Deformed and Plain Bars shall comply with ASTM A 996.

3) Cold-drawn Steel Wire shall comply with ASTM A 1064 with the following amendment: For material testing over 110,000 psi tensile strength in high strength applications such as spirals and ties, the 25 percent minimum

reduction in area shall be reduced 5 percent for each 10,000 psi increment of tensile strength exceeding 110,000 psi.

PART 3 -- EXECUTION

3.1 FABRICATION

A. **Fabrication:** Unless otherwise authorized, bent bar reinforcement shall be cold bent to the shapes shown on the plans in accordance with the following requirements:

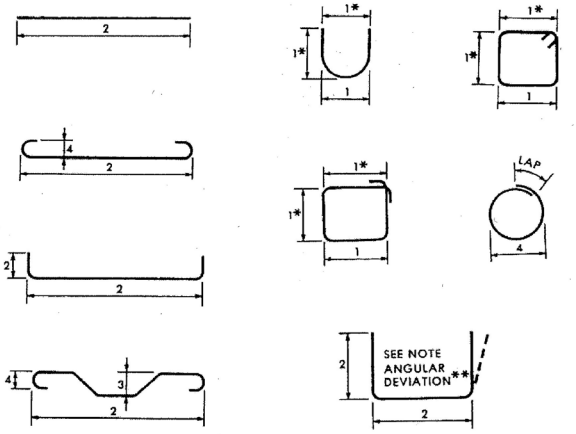
1) **Bending:** Stirrups and ties shall be bent around a pin having a diameter of at least four bar diameters for No. 5 or smaller bars, and at least five bar diameters for larger bars. All other bars, except as otherwise specified herein, shall be bent around a pin having a diameter as specified in the table below:

Pins for Bar Bends

Bar Size	Minimum Pin Diameter
Nos. 3 through 8 (Nos. 10 M through 25 M)	6 bar diameters
Nos. 9, 10 and 11 (Nos. 29, 32 and 36 M)	8 bar diameters
Nos. 14 and 18 (Nos. 43 M and 57 M)	10 bar diameters

No rebending of bars will be allowed. Special fabrication will be required for bending Nos. 14 and 18 bars more than 90 degrees.

2) **Tolerances:** Bars shall be fabricated in accordance with the tolerances specified in the figure below. All dimensions given in the figure below are out-to-out of bars.



Symbol	Tolerance, Inches (mm)
1	±1/2 (± 13)
2	± 1 (± 25)
3	+0, -1/2 (+0, -13)
4	± 1/2 (±13)

*Not to differ for opposite parallel dimension by more than 1/2 inch (13 mm).
**Angular Deviation-Maximum ± 2 1/2° or ± 1/2 inch/ft. (40 mm/m), but not less than 1/2 inch (13 mm).

3) **Shipping:** Bar reinforcement shall be shipped in standard bundles, tagged and marked in accordance with the Manual of Standard Practice

of the Concrete Reinforcement Steel Institute (CRSI). The tags shall be made of durable material and marked in a legible manner with waterproof markings. There shall be at least one tag per bundle attached by wire. The tags shall show size of reinforcing, number of pieces, and mark or length of bars.

4) **Handling and Coating Repairs:** Epoxy coated reinforcing steel shall be handled in a manner to avoid damage to the coating. Bundling bands shall be padded. Bundles shall be lifted with multiple supports or strongbacks to prevent abrasion to the coating due to sag. Patching material used by the applicator and the CONTRACTOR shall be the same as the prequalified patching material. Repairs shall be made in accordance with the patching material manufacturer's recommendations. Repairs to the coating will be required on all damaged areas larger than 1/4 inch square. The total bar surface area covered by patching material shall not exceed 2 percent. Ends of coated bars cut during field fabrication shall also be coated with the patching material before rusting appears; however, the coated ends are not to be included in the 2 percent maximum coverage of patching material. Hairline cracks without bond loss or other minor damage on fabrication bends need not be repaired.

3.2 PROTECTION OF MATERIAL

A. Reinforcing steel shall be stored above ground on platforms, skids or other supports and shall be protected from damage.

B. The various sizes, grades and lengths shall be plainly marked and tagged to facilitate inspection.

C. Epoxy coated steel bars shall be unloaded and stored on the project site in a manner to avoid damage or contamination. Bars shall be stored off the ground and covered such that formation of condensation and exposure to ultraviolet light is avoided.

3.3 PLACING AND FASTENING

A. Steel reinforcement shall be placed in the position shown on the plans and firmly held during placing and setting of concrete. When placed in the work, it shall be free from dirt, loose rust, loose scale, paint, oil, grease, form release agent, or other foreign material. Thin powdery rust and light rust need not be removed. Bars shall be tied with No.14 or 16 gage wire at all intersections, except where spacing is less than 1 foot in each direction, alternate intersections shall be tied.

B. Distance of reinforcement from forms shall be maintained by metal chairs, ties, hangers or other approved supports. Precast mortar or concrete blocks may be used when approved by the ENGINEER in applications where concrete is to be cast against soil. Metal chairs in contact with exterior surfaces of concrete shall be hot-dipped galvanized, electroplated with zinc (GS Grade), plastic-coated or stainless steel. Layers of bars shall be separated by approved devices. The use of pebbles, pieces of broken stone or brick, metal pipe and wooden blocks will not be permitted. Vertical stirrups shall pass around main tension members and shall be securely attached thereto. The minimum covering, measured from the surface of concrete to face of reinforcing bars, shall not be less than 2 inches except as follows: bottom of slab, 1 inch; stirrups and ties in T-Beams, 1 1/2 inches. Additional coverage as shown on the plans shall be provided for reinforcement in bottom of footings or where marine environments, corrosive, abrasive or other severe

exposure conditions exist. Reinforcement shall be inspected and will be subject to approval before placing concrete.

C. During and after installation of epoxy coated bars, the CONTRACTOR shall repair all significant cuts, nicks and abraded places in the coating on the bars with the epoxy repair material supplied by the epoxy resin manufacturer. Any damaged metallic accessories shall also be repaired with a suitable material. No more than 0.25 percent of the bar surface area may be left bare.

D. Damaged areas of the reinforcing steel and accessories shall be repaired before rusting occurs. Coated bars when incorporated into the work shall be free from dirt, paint, oil, grease, form release agent, or other foreign substances. Placing of concrete shall be performed in a timely manner with methods and equipment which will not damage the coated materials.

E. Since the epoxy coating is flammable, the coated bars shall not be exposed to fire or flame. Cutting coated bars by burning will not be permitted. Reinforcing steel to be partially embedded in concrete shall not be field bent unless specified on the plans or permitted by the ENGINEER.

3.4 SPLICING

A. Reinforcement shall be furnished in the full lengths indicated on the plans. Splicing of bars, except where shown on the plans, will not be permitted without written approval. Splices shall be staggered as far as possible. Unless otherwise specified, bars shall be lapped in accordance with the requirements of the table below. Construction joints shall not be made within the limits of lapped bars. In lapped splices, bars shall be placed in contact and wired together in such manner as to maintain the minimum clear distance to other bars and to the surface of concrete. Welding of reinforcement steel shall be done only if detailed on the plans or if authorized in writing. Welding shall comply with the latest edition of AWS D1.4.

Lap Splice Length for Grade 60 Steel

Bar No.	Lap Splice Length, Inches
No. 3	18
No. 4	24
No. 5	30
No. 6	39
No. 7	53
No. 8	69
No. 9	88
No. 10	111
No. 11	137

B. When permitted in the plans or specifications, reinforcing steel splices may be made by an approved mechanical butt splicing device listed on the LDOTD AML (formerly QPL 44) and used in accordance with the manufacturer's recommendations. The splice shall develop at least 125 percent of the specified yield strength of the reinforcing steel bars in tension.

3.5 SUBSTITUTIONS

A. Substitutions of different size bars will be permitted with authorization of the ENGINEER. Substituted steel shall have cross-sectional and surface areas equivalent to the design areas or larger. Allowed substitutions will be made at no additional pay.

- END OF SECTION –

SECTION 03901 – PORTLAND CEMENT CONCRETE (REVISED 02/26/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide Portland Cement Concrete, complete and in place, in accordance with the contract documents.

B. Structural Concrete is designated by class and pavement concrete is designated by type.

C. Portland cement concrete shall require an approved mix design and shall be produced by a Louisiana Department of Transportation and Development certified plant and shall be transported by Louisiana Department of Transportation and Development certified trucks.

D. The design, control, and transportation of concrete mixtures in accordance with these specifications shall be the responsibility of the CONTRACTOR.

1.2 MODIFICATION BY SPECIAL PROVISIONS

A. The WORK of this section may be affected by requirements contained within the Special Provisions. The CONTRACTOR shall review, understand, and incorporate the requirements contained within the Special Provisions into the WORK of this Section.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M 85	Standard Specification for Portland Cement
AASHTO M240	Standard Specification for Portland – Limestone Cement
AASHTO M 295	Standard Specification for Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use in Concrete
AASHTO M 302	Standard Specification for Slag Cement for Use in Concrete and Mortars
AASHTO M 307	Stabdard Specification for Silica Fume Used in Cementitious Mixtures
AASHTO T 19	Standard Method of Test for Bulk Density (Unit Weight) and Voids in Aggregate
AASHTO T 84	Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate
AASHTO T 85	Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate
AASHTO T 278	Standard Method of Test for Frictional Properties Using the British Pendelum Tester

AASHTO T 279	Standard Method of Test for Accelerated Polishing of Aggregates Using the British Wheel

B. ASTM International (ASTM)

ASTM C91	Standard Specification for Masonry Cement
ASTM C465	Standard Specification for Processing Additions for Use in the Manufacture of Hydraulic Cements

C. Louisiana Department of Transportation and Development (LDOTD)

	Application of Quality Assurance Specifications for Portland Cement Concrete Pavement and Structures
	Application of Quality Assurance Specifications for Precast – Prestressed Concrete Plants
AML	Approved Materials List
TR 106	Determining Total Moisture and Free Moisture in Aggregate
TR 109	Determining the Amount of Foreign Material in Clam Shell, Reef Shell, and Mixtures of Clam and Reef Shell
TR 112	Amount of Material Finer than No. 200 Sieve in Aggregate
TR 113	Sieve Analysis of Fine and Course Aggregates
TR 119	Determination of Deleterious Materials
TR 202	Air Content of Freshly Mixed Concrete
TR 207	Slump of Portland Cement Concrete
TR 226	Making, Field Curing, and Transporting Concrete Test Specimens
TR 230	Curing, Capping, and Determining the Compressive Strength of Molded Concrete Cylinders
TR 643	Determining Chloride Content in Admixtures for Portland Cement Concrete

1.4 QUALITY ASSURANCE

A. The CONTRACTOR’s obligations for quality assurance and design procedures shall be equivalent to the obligations of the CONTRACTOR that are specified in the latest edition of the LDOTD's publication entitled "Application of Quality Assurance Specifications for Portland Cement Concrete Pavement and Structures" and "Application of Quality Assurance Specifications for Precast-Prestressed Concrete Plants"

1.5 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.6 MASTER PROPORTION TABLE FOR PORTLAND CEMENT CONCRETE

A. Portland cement concrete shall conform to the requirements of the table below. It shall be a mixture of portland cement, portland – pozzolan cement, or portland blast – furnace slag cement, fine aggregate, coarse aggregate, water, and when specified or allowed, approved admixtures. Fly ash or ground granulated blast furnace slag will be permitted as a partial replacement for portland cement in accordance with this specification.

Master Proportion Table for Portland Cement Concrete

	Average Compressive Strength, psi at 28 days	Grade of Coarse Aggregate	Min. Cement lb/yd^3 of Concrete [9,14]	Maximum Water /Cement ratio, lb/lb[1,9]	Total Air Content (Percent by Volume) [4]	Slump Range[10], inches: Non-Vibrated	Slump Range[10], inches: Vibrated	Slump Range[10], inches: Slip Form Paving[2]
Structural Class [11]								
AA(M)	4400	A, P	560	0.44	5±1	2-5	2-4	N.A.
AA	4200	A, P	560	0.44	5±1	2-5	2-4	N.A.
A(M)	4400	A, P	510	0.53	5±2	2-5	2-4	N.A.
A	3800	A, F[8], P	510	0.53	5±2	2-5	2-4	1-2.5
D	3300	A, B, D, P	420	0.58	5±2	2-5	1-3	N.A.
F	3400[5]	A, P	460	0.44	5±1	2-5	2-4	N.A.
P(X)	7500[5]	A, F[8], P	700	0.40	5±2	N.A.	2-10	N.A.
P(M)	6000[5]	A, F[8], P	600	0.44	5±2	N.A.	2-6[7]	N.A.
P	5000[5]	A, F[8], P	560	0.44	5±2	N.A.	2-6[7]	N.A.
S	3800	A, P	650	0.53	5±2	6-8	N.A.	N.A.
Minor Structure Class [11]								
M	3000	A, B, P	470	0.56	5±2	2-5	2-4	1-2.5
R	1800	A, B, D, P	370	0.70	5±2	2-5	2-4	N.A.
Y	3000	Y	560	_[3]	6-9	N.A.	1-3	N.A.

N.A. – Not Applicable

[1] Except for Class AA, AA (M), or F concrete, the maximum volume of water; gal. shall be reduced 5 percent when a water-reducing admixture is used, and 10 percent when an air-entraining admixture, or air-entraining and water-reducing admixtures, is used. When the coarse aggregate portion of the mix is 100 percent crushed aggregate, the water may be increased by 5 percent provided the maximum water listed in the Master Proportion Table for Portland Cement Concrete is not exceeded.

[2] Also slump range for other concrete placed by extrusion methods.

[3] Because of the absorptive nature of lightweight aggregate and the inability to obtain a true saturated surface dry condition for determining free moisture, a maximum amount of water cannot be specified for Class Y concrete. The slump requirement of the Master Mixture Proportion Table for Portland Cement Concrete or as specified will be the governing factor in determining maximum allowable water.

[4] Total air content ranges when air-entrainment is allowed or specified. Air content shall be designed at midrange.

[5] Values shown represent the minimum compressive strengths allowed.

[6] Average compressive strengths for Pavement Type concrete shall be 3600 psi when air-entrainment is used.

[7] No more than a 2 inch slump differential for any design pour.

[8] Grade F coarse aggregate shall be used only when specified or permitted. The minimum cement content shall be increased when this aggregate is used.

9 For mixes including partial replacement of cement with fly ash or ground granulated blast furnace slag, the minimum cement and maximum water contents shown apply to the total cement and fly ash or ground granulated blast furnace slag content of the mix. Additional cement may be required to achieve minimum compressive strength.

[10] When a slump range is specified in other sections, that range shall govern.

[11] Allowable Cement Types shall be as specified herein.

[12] For use in partial depth patching.

[13] Aggregate grading shall comply with the requirements specified herein.

[14] The minimum cement factors may be waived in writing by the Engineer

1.7 **COMPOSITION OF CONCRETE**

A. Allowable types of cement are as follows:

Use	Allowable Cement Types
General Construction (Structural Class Concrete and Minor Structure Class Concrete	Type I/II portland cement;
Prestressed or Precast Concrete	Type I/II or Type III Portland Cement

B. For concrete placements having a least dimension of 48 inches or greater or if designated on the plans or the project specifications as being mass concrete, the allowable cement type shall by Type II Portland cement, Type IP Portland-pozzolan cement, or Type IS Portland blast-furnace slag cement. The cement, or combination of cement and fly ash or ground granulated blast furnace slag, shall be certified to generate a heat of hydration of not more than 70 calories/gram at 7 days.

C. Due to the gradation of aggregate or other conditions, additional cement may be required to achieve minimum compressive strength.

D. When using only Types I or II Portland cement in concrete mixes, fly ash conforming or ground granulated blast-furnace slag as specified herein may be partially substituted for Portland cement on a pound for pound basis. The CONTRACTOR may use up to 20 percent fly ash by weight of cement for other minor structures and concrete pavement and up to 15 percent fly ash by weight of cement for structural concrete. In lieu of fly ash, the CONTRACTOR may use grade 100 or grade 120 ground granulated blast-furnace slag up to 50 percent by weight of cement. The combination of slag and fly ash will not be allowed as a partial substitution for cement.

E. **Chemical Admixtures**: An air-entraining admixture will be required in paving concrete when placed by slip-form methods or when a central mixing plant or non-agitating haul trucks are used. Air -entraining and water-reducing admixtures will be required in Class AA, F, AA(M) concrete. When an air-entraining admixture is used, the total air content of the concrete mix shall be tested in accordance with DOTD TR 202, and shall be as specified in the Master Proportion Table for Portland Cement Concrete. A water – reducing admixture is required for mass concrete. When the ambient air temperature is 70° F or below, the water-reducing admixture shall be the normal-set type. When the ambient air temperature is above 70°F and below 85°F, the water-reducing admixture may be either the normal-set type or the set-retarding type, except for concrete containing fly ash or ground granulated blast furnace slag where this choice is optional. Set-retarding admixtures shall be used in an amount sufficient to produce the necessary retardation. The CONTRACTOR shall consider the influence of different materials and job conditions, including local weather on setting characteristics. With approval of the mix design, the CONTRACTOR may use approved admixtures other than as stated above in order to control setting characteristics. Water contents for super-plasticized concrete mixes shall not be reduced to levels that will restrict cement hydration. The amount of water in the superplasticizer shall be included as a part of required mixing water. The dosage of superplasticizer may be adjusted depending on the consistency of the mix. Final slump of

super-plasticized concrete shall be appropriate for its application. It shall not exhibit excessive bleeding or segregation of aggregates as determined by the ENGINEER. The method of adding and mixing the superplasticizer to the mix shall be as recommended by the manufacturer. The use of admixtures in other classes or types of concrete will be optional with the CONTRACTOR with written approval.

F. **Water:** The total amount of water in the mixture, including admixtures and free water, shall not exceed the maximum water-cement ratio specified in the Master Proportion Table for Portland Cement Concrete. Free water shall include all water entering the mix with the aggregates, except water absorbed by the aggregate. Because of the absorptive nature of lightweight aggregate and the inability to obtain a true saturated surface dry condition for determining free moisture, a maximum amount of water cannot be specified for Class Y concrete. The slump requirement of the Master Proportion Table for Portland Cement Concrete or as specified will be the governing factor in determining maximum allowable water.

G. **Aggregates:** All aggregates for use in Portland cement concrete shall meet the requirements below and as specified herein:

1. **Coarse Aggregate:** Coarse aggregate, except for gradations for Types B and D pavements, shall be the grade specified in the Master Proportion Table for Portland Cement Concrete and shall comply with the requirements specified herein in Part 2.

2. **Fine Aggregate:** Fine aggregate, except for gradations for Types B and D pavements shall meet the requirements specified herein in Part 2.

3. **Aggregates For Types B And D Pavements:** Aggregates shall comply with the requirements specified herein in Part 2.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Cement, fly ash, ground granulated blast furnace slag and microsilica shall be certified by the supplier in accordance with current procedures of the Louisiana Department of Transportation and Development.

2.2 PORTLAND CEMENT

A. Portland cement shall be from an approved source listed in the LDOTD AML (formerly QPL 7) and shall comply with AASHTO M 85.

B. **Chemical Requirements:** The chemical requirements shall be as specified in AASHTO M85. Alkali content calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight for all types of cement.

C. **Process Additions**: Process additions may be used in amounts not to exceed 3 percent by weight of portland cement clinker provided it meets the requirements for the cement portion of ASTM C 465 and the test results are submitted to the ENGINEER for review and approval.

2.3 PORTLAND – POZZOLAN CEMENT

A. Portland-pozzolan cement shall be from an approved source listed in the LDOTD AML (formerly QPL 7), shall comply with AASHTO M 240, Type IP and shall contain 20±5 percent by weight fly ash (or bottom ash provided it is interground with the cement clinker).

B. The alkali content of portland-pozzolan cement calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight. Fly ash or bottom ash shall comply with AASHTO M 295, Class C or F.

2.4 MASONRY CEMENT

A. Masonry cement shall comply with ASTM C 91.

2.5 AGGREGATES

A. Aggregates shall comply with the requirements of Section 02003 – Aggregates.

2.6 ADMIXTURES

A. **Physical Requirements:** Concrete admixtures shall be an approved product listed on the LDOTD AML (formerly QPL 58).

B. **Chemical Requirements:** Unless a chloride type admixture is specified, the contribution of chloride ion resulting from the addition of admixtures to the concrete shall not exceed 0.02 pound per cubic yard of concrete, when tested in accordance with DOTD TR 643.

2.7 WATER

A. Water suitable for human consumption shall be used.

2.8 FLY ASH

A. Fly Ash shall be from an approved source listed on the LDOTD AML (formerly QPL 50) and shall comply with AASHTO M 295 for Class C and Class F only.

PART 3 -- EXECUTION

3.1 GENERAL

A. No concrete shall be mixed, placed, or finished when natural light is insufficient, unless an approved artificial lighting system is provided. No concrete shall be placed on a frozen subgrade nor shall frozen aggregates be used in concrete.

3.2 EQUIPMENT

A. **General**: Sufficient plant capacity and transporting equipment to ensure delivery at the required rate shall be provided. Rate of concrete delivery during concreting operations shall provide for proper handling, placing and finishing of concrete and maintain a workable surface. Methods of delivering and handling concrete shall facilitate placing with a minimum of re-handling and without damage to the structure or concrete.

B. **Plant Equipment**: Batch plants shall include approved storage, weigh hoppers, and measuring devices. Equipment shall be properly sealed and vented to minimize dusting and loss of material.

1. Materials shall be incorporated into the mix by methods that will ensure uniform distribution. The amount of each material used in the mix shall be recorded and certified by the contractor's authorized representative.

2. The plant shall be equipped with adequate water storage and a device for automatically controlling the amount of water used in each batch.

3. For plants using direct-fill elevating weigh hoppers, computer controlled indicator lights may be used as an indication of aggregate weights but shall not be the sole means of control for aggregate proportioning. Means of control shall be provided so that, as the quantity desired in the weigh hopper is approached, material may be added slowly and shut off with precision. Weight hoppers shall be constructed as to eliminate accumulation of materials and to discharge completely. Suitable provisions shall be made for removal of overload from the hopper by the operator. The plant shall demonstrate satisfactory performance by producing consistent concrete with adequate compressive strengths.

4. **Storage Bins and Silos:** For plants with overhead storage bins, which feed directly into the weight hopper, or storage bins with belt feed to the weight hopper, the bins shall have adequate separate compartments for fine aggregate and each size of coarse aggregate. Each compartment shall be designed to discharge efficiently and freely into the weigh hopper. Means of control shall be provided so that, as the quantity desired in the weigh hopper is approached, material shall be added slowly and shut off with precision.

5. Silos shall be weatherproof, sealed, free of holes, and shall prevent contamination. Silos shall be designed to freely discharge and shall be equipped with vibrators to maintain flow of material and prevent accumulation. Silos shall be designed with sufficient capacity for the operation. Silos shall be provided with a positive means of shut off without leaking into the weigh hopper. A separate silo shall be used for each dry bulk material, added to the mix. If a silo is divided into compartments for cement, fly ash, ground granulated blast furnace slag and microsilica, a positive means of separation shall be provided.

6. **Measuring Devices:** Materials shall be measured by weighing except where other methods are authorized.

7. Batch plants may be equipped to proportion materials by approved automatic weighing devices. Moisture probes can be used to determine the moisture content of aggregates for batch adjustment provided the accuracy is confirmed by the ENGINEER to be within 0.5 percent of the results obtained by the Certified Concrete Technician in accordance with DOTD TR 106.

8. Fine aggregates and each size of coarse aggregate from separate bins shall be weighed either separately or cumulatively on scales in the weigh hopper. The allowable quantities of bulk fly ash, bulk ground granulated

blast furnace slag, or bulk microsilica may be weighed cumulatively in the same hopper with the cement, provided the cement is weighed first and the scale system is separate from that used for the aggregates.

9. Weight hoppers shall be constructed to eliminate accumulation of materials and to discharge completely. Suitable provisions shall be made for removal of an overload from the hopper by the operator.

10. Scales shall be accurate to 0.5 percent throughout the range of use. Maximum graduation on scales shall be 0.1 percent of the rated scale capacity. When bean type scales are used poises shall be designed to be locked in any position to prevent accidental change of position, and the weigh beam and a telltale device shall be in view of the operator. Plant and laboratory measuring devices shall be subject to approval and shall be tested, inspected, and certified by a qualified independent scale service or the Weights and Measures Division of the Louisiana Department of Agriculture and Forestry at no cost to the OWNER every 90 calendar days, and more often when the ENGINEER deems it necessary to assure their accuracy.

11. Individual aggregates shall be batched within 2 percent, and the total weight of aggregate shall be within 1 percent of the required weight.

12. Cement, fly ash, ground granulated blast furnace slag, and microsilica shall be within 1 percent of the required weight (mass). Cement in standard bags need not be weighted; however, when used, they shall be used in full bag increments and the quantities of other materials shall be adjusted accordingly. Bagged fly ash and bagged ground granulated blast furnace slag will not be allowed.

13. Mixing water shall be measured by volume or weight. Water measuring devices shall be accurate to 1 percent at ½ the maximum allowable water per batch and the maximum graduation shall be gallon.

14. **Ticket Printer System**: Certified concrete plants may be equipped with an approved automatic ticket printer system for recording required batching information. When an automatic ticket printer system is not used, quantities and batching information shall be determined by visual observation, recorded, and certified correct by the CONTRACTOR's authorized representative. The approved ticket printer system shall be tamper-proof and shall print time of batching, amount of water, batch weights, moisture content of aggregates, and quantities of admixtures. The Certified Concrete Technician may add moisture content of aggregates or quantities of admixtures to the printed ticket when the automatic system does not have these capabilities. During a breakdown, quantities shall be determined by visual observation and certified as stated above. All records of batches shall show batch number, day, month, year, and time of day to the nearest minute for each batch. The maximum quantity of water that can be added at the jobsite shall be shown on the batch ticket. The ENGINEER shall be provided with a legible copy of all batch records identified with lot number and mix design number

C. **Hauling Equipment**: Hauling equipment shall be watertight and shall be capable of discharging concrete at a satisfactorily controlled rate without segregation.

1. **Truck Mixer**: Truck mixers shall be the revolving drum type, equipped with pressurized, calibrated tanks for carrying a portion of the mixing water. Only the prescribed and verifiable amount of water is permitted in the tank unless the tank is equipped with a device by which the quantity of water added can be readily verified. Truck mixers shall be equipped with electrically or mechanically actuated revolution counters, which display the number of revolutions. Counters shall be located to provide safe and convenient inspection. Each truck mixer shall have attached thereto in a prominent place a metal plate on which is plainly marked the uses for which the equipment is designed, the maximum rated capacity of the drum in terms of concrete volume and rotation speed for both agitation and mixing speeds. Truck mixers shall be equipped with means for accurately measuring the amount of water used in each batch.

2. **Agitator Hauling Equipment:** Agitators shall be supplied with adequate mixing blades or paddles to agitate the mix and prevent segregation. Covers shall be provided when directed. Each agitator shall have attached thereto in a prominent place a metal plate on which is plainly marked the uses for which the equipment is designed, the maximum rated capacity in terms of concrete volume, and agitation speed

3. **Non-Agitator Hauling Equipment**: The bodies of non-agitating hauling equipment shall be smooth, metal, and mortar tight containers. Covers shall be provided when directed.

4. **Portable Mixers:** Portable mixers shall have a minimum capacity of one cubic yard (cu m) and shall be capable of uniformly mixing and discharging concrete without segregation.

3.3 TRANSPORTATION AND STORAGE OF CEMENTITIOUS MATERIALS

A. Cement, fly ash, ground granulated blast furnace slag, and microsilica shall be transported in watertight conveyances and stored in separate approved facilities so that cement, fly ash, ground granulated blast furnace slag, and microsilica will be protected from dampness or water intrusion. Material that is contaminated, is partially set, or contains lumps of caked material will be rejected. When the use of bagged cement, fly ash, ground granulated blast furnace slag or microsilica is permitted, the handling and storage will be as directed.

B. Different brands or types or the same brand or type from different mills, shall not be mixed or used alternately unless authorized by the ENGINEER. This requirement may be waived in case of plant breakdown during production to allow concrete conforming to the requirements of this section to be furnished from another plant to finish the placement in progress.

3.4 HANDLING AND STORAGE OF AGGREGATES

A. Equipment and methods for stockpiling aggregates shall be such that no detrimental degradation or segregation of aggregate will result; no appreciable amount of foreign material will be incorporated into aggregate; and there will be no intermingling of stockpiled materials. Stockpiles of aggregates shall be well drained and shall have

uniform moisture content. Material shall not be added to working faces of the stockpiles during continuous operations.

B. When specified, coarse aggregate shall be separated into two or more sizes to ensure greater uniformity of the concrete mixture. Different grades and types of aggregates shall be stored in separate stockpiles separated by bulkheads or sufficiently separated from each other to prevent material of edges of piles from intermingling. When segregation occurs in the processing and handling of Grade D coarse aggregate, the aggregate shall be separated at the 1-inch sieve into two stockpiles. The stockpiled material shall be reproportioned to meet the gradation requirements of Grade D. Activity that results in contamination or intermingling of aggregates, including overhead handling for the loading of bins or building of stockpiles, will not be permitted.

C. Aggregates shall be handled from stockpiles or other sources to the batch plant so as to secure uniform grading of material. Aggregates that have become segregated or contaminated shall not be used. Aggregates processed or handled by hydraulic methods, and washed aggregates, shall be stockpiled or placed in bins for adequate drainage. Transport containers will be accepted as an adequate bin when adequate drainage is provided. Drainage of aggregates shall meet the approval of the ENGINEER prior to batching. The ENGINEER may require water sprinkling of coarse aggregates in stockpiles that have dried to the extent that the aggregates absorb mixing water. Such sprinkling shall continue until aggregates are saturated.

3.5 QUALITY CONTROL OF CONCRETE

A. The CONTRACTOR shall be responsible for quality control of materials during handling, proportioning, mixing, and placement operations; for initial determination and necessary subsequent adjustments in proportioning of materials used to produce the specified concrete; and for providing suitable equipment for determination of aggregate gradation, moisture, air content, slump, unit weight, temperature, and trial mixes as necessary. Testing and analysis of the mix for quality control purposes, the setting of dials, gages, scales or meters, adjusting batch weights, and accurate batching shall be the responsibility of the CONTRACTOR.

B. The CONTRACTOR shall have a Certified Concrete Technician present at the plant or job site to make adjustments in batch weights for moisture content, perform necessary adjustments in proportioning materials to produce the specified concrete, and perform tests necessary for control of the concrete mix within specifications requirements. Daily plant operations shall not begin unless the Certified Concrete Technician is at the plant to determine that gradations, moisture contents, and adjusted batch weights are within specifications limits. If a Certified Concrete Technician is not available at the job site, an Authorized Concrete Technician is not available at the job site, an Authorized Concrete Field Tester is allowed to perform the job site control tests for slump, air content, and mix temperature and report the results to the Certified Concrete Technician. The use of an Authorized Concrete Field Tester at the job site will not relieve the Certified Concrete Technician from performing the remaining duties as outlined in these specifications.

C. The CONTRACTOR’S Certified Concrete Technician and Authorized Concrete Field Tester shall be certified or authorized upon satisfactory completion of the Louisiana Department and Transportation and Development requirements for such personnel.

D. Mixtures shall produce concrete of suitable workability. Slumps shall be within the ranges show in the Master Proportion Table for Portland Cement Concrete or as specified when tested in accordance with DOTD TR 207. The ENGINEER may authorize an increase in

maximum slump, by use of water reducers, for concrete used in the construction of walls and diaphragms less than 8 inches thick, and where the ENGINEER considers necessary provided the water-cement ratio is not exceeded and conventional forms are used.

1. Concrete mixes shall be formulated to produce concrete which, when molded and cured in accordance with DOTD TR 226 and tested in accordance with DOTD TR 230, shall show an average compressive strength not less than as shown in the Master Proportion Table for Portland Cement Concrete. Class P, Class P (M) and Class P (X) concrete cylinders for compressive strength tests shall be cured by the same methods used in curing the members they represent.

2. Proportioning for volume of coarse aggregates in concrete mixes, excluding concrete pipe, Types B and D pavement, and minor structure concrete shall be in accordance with the table below. An example of proportioning of coarse aggregate is shown in the LDOTD publication entitled “Application of Quality Assurance Specifications for Portland Cement Concrete Pavement and Structures”.

Volume of Coarse Aggregate Per Unit of Volume of Concrete

Maximum Size of Aggregate, Inches (mm)	Volume of Dry-Rodded Coarse Aggregate Per Unit Volume of Concrete for Different Fineness Moduli of Fine Aggregate[1]				
	2.20	2.40	2.60	2.80	3.00
3/8 (9.50)	0.52	0.50	0.48	0.46	0.44
1/2 (12.5)	0.61	0.59	0.57	0.55	0.53
3/4 (19.0)	0.68	0.66	0.64	0.62	0.60
1 (25.0)	0.73	0.71	0.69	0.67	0.65
1 1/2 (37.5)	0.77	0.75	0.73	0.71	0.69
2 (50.0)	0.80	0.78	0.76	0.74	0.72
3 (75.0)	0.84	0.82	0.80	0.78	0.76

[1] Volumes are based on aggregates in dry-rodded condition as described in AASHTO T19, Unit Weight of Aggregate. These volumes are selected from empirical relationships to produce concrete with a degree of workability suitable for usual reinforced concrete construction. For less workable concrete such as required for concrete pavement construction, they may be increased up to 10%. For more workable concrete, as may be required for pumping, they may be reduced up to 10%.

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4. Where indicated, trial mixes will be required to demonstrate the mix performance and the compatibility of mix components for the following:

    (1) Fly Ash

    (2) Ground Granulated Blast Furnace Slug

    (3) Microsilica

    (4) Heavyweight Concrete

    (5) Flexural Strength (when required)

    (6) Unusual Materials and Applications

5. For the above trial mixes, the CONTRACTOR shall submit test results for slump, unit weight, air content, set times, and compressive strength (flexural strength for pavements) at 3, 7, and 28 days. The CONTRACTOR shall furnish materials to the ENGINEER for verification of trial mixes.

6. CONTRACTOR shall be responsible for determination of gradation, unit weight, specific gravity and absorption factor of the aggregates.

7. Trial mixes may be waived in writing by the ENGINEER at his discretion.

D. **Quality Control Tests:** The CONTRACTOR shall be responsible for determining gradation and moisture content of fine and coarse aggregates used in the concrete mixture and for testing the mixture at the job site for slump, unit weight, temperature, and air content (when used). The CONTRACTOR shall conduct operations to produce a mix complying with the reviewed and accepted mix design, except that variations will be permitted within specified control limits for individual samples.

E. **Mix Adjustments:** With prior notification given to the ENGINEER, the CONTRACTOR may adjust the ratio of fine to coarse aggregate as reviewed and accepted, by no more than 5 percent. In no case shall it be adjusted so as to materially affect the volume of concrete. If the proportions of the aggregate sizes used do not satisfy the gradation requirements specified herein due to changes in the gradation of one or more stockpiles, the proportions shall be adjusted to bring the combined aggregates back within specification limits. These minor adjustments for gradation will not require a new mix design. The mix produced shall be uniform, workable and within the specification limits of the Master Proportion Table for Portland Cement Concrete. When plant operations do not produce a uniform and workable mix, plant operations shall cease and corrective action shall be taken prior to restart.

1) When individual slump, air content, concrete temperature, or gradation measurements indicate that the mix is not uniform and may fall outside tolerance limits, the CONTRACTOR shall immediately make adjustments to keep the mix within specified limits. If the CONTRACTOR fails to make proper adjustments and the mix deviates from specification requirements of if the mix is obviously defective, the mix will be rejected.

2) For workability properties only, changes in mix proportions will be permitted provided the water-cement ratio is not exceeded, minimum cement factor is maintained, proper batch adjustments are made, and prior notification is given to the ENGINEER.

3) No changes in source of materials or percentages of cement, fly ash, ground granulated blast furnace slag, or microsilica shall be made until a new Mix Design form showing the new material or adjusted proportions has been submitted by the CONTRACTOR and approved.

3.6 SUBSTITUTIONS

A. Mixtures may be substituted with approval in accordance with the table below:

Portland Cement Concrete Mixture Substitutions

Structural Class [1]	Substitute
AA (m)	No Substitutions
AA	AA(M)
A	AA(M), AA
D	AA(M), AA, A(M)
F	No Substitutions
P(X)	No Substitutions
P(M)	No Substitutions
P	P(M)
S	No Substitutions
Minor Structure Class [1]	
M	AA(M), AA, A(M), A, B
R	AA(M), AA, A(M), A, B, M
Y	No Substitutions

[1] The mixture being substituted shall meet the requirements of the Master Proportion Table for Portland Cement Concrete and the mix design for its class or type. The compressive strength of the substituted mix shall meet the strength requirements of the original mixture specified.
[2] When justified in writing and approved by the ENGINEER, small irregular areas of paving projects using Types B or D concrete may be substituted with Class A concrete.

3.7 BATCHING AND MIXING

A. **General**: Concrete shall be thoroughly mixed in a mixer of an approved size and type, which will ensure uniform distribution of materials through the mass.

B. Pick-up and throw-over blades or mixing paddles in the mixing drum or mixing unit shall be replaced when worn beyond the limit recommended by the manufacturer. The contractor shall have available a copy of the manufacturer's design, showing dimensions and arrangements of blades in reference to original height and depth.

C. Mixing operations shall begin within 30 minutes after addition of cement to the aggregates. When cement is charged into a mixer drum containing surface-wet aggregate and the ambient temperature is above 90°F, or when high early strength cement is used, this limit shall be reduced to 15 minutes. When there is an interruption to the mixing operations, the mixer shall be thoroughly cleaned. The entire contents of the mixer shall be removed from the drum before materials for a succeeding batch are placed therein. Materials composing a batch shall be deposited simultaneously in an

operating mixer. A portion of mixing water shall entire in advance of cement and aggregates. No mixer having a rated capacity of less than one cubic yard shall be used nor shall a mixer be charged in excess of its rated capacity. The minimum size batch shall be one cubic yard. Mixers with worn blades or excessive build-up will be rejected. Concrete exposed to salt water or a corrosive environment shall be mixed for 2 minutes and the water content of the m mixture shall be carefully controlled.

D. **Central Plant And Site Mixing:** Concrete shall be mixed for at least 50 seconds. Mixing time shall begin after all materials, including water, are in the mixer. Mixing time ends when the discharge chute opens. The mixer shall be equipped with an approved timing device, which will automatically lock the discharge lever when the drum has been charged and release it at the end of the mixing period. During mixing, the mixer shall be operated at a drum speed for which it has been designed as shown on the manufacturer's name plate on the mixer.

E. **Truck Mixing**: Aggregates, cement, fly ash, ground granulated blast furnace slag and microsilica for concrete shall be measured as specified herein and charged into the drum at the proportioning plant.

1. Size of batch in truck mixers shall not exceed the maximum rated mixing capacity of the mixer as stated by the manufacturer and stamped on a metal plate on the mixer. When a truck mixer is used for complete mixing, each batch shall be mixed for not less than 70 nor more than 130 revolutions of the mixer drum at the rate of rotation designated as the mixing speed by the equipment manufacturer on the metal plate on the mixer. Any additional mixing shall be at the speed designated by the equipment manufacturer as the agitating speed. All materials, including mixing water, shall be in the mixer drum before actuating the revolution counter or taking an initial reading.

2. When the prescribed amount of water is added at the beach plant and slump is on the low side at the jobsite it will be permissible to add a minimum of 75 percent of the mixing water at the time cement and aggregates are added at the batch plant and the remaining mixing water at the job site prior to discharging concrete into forms. Water added at the job site may be added in 1 or 2 increments with additional mixing within the range of 20 to 30 revolutions at designated mixer speed for each increment; however, the total of 130 revolutions shall not be exceeded. Water added at the jobsite shall not cause the maximum allowable water-cement ratio or slump of the batch to be exceeded.

3. If water or superplasticizer is allowed to be added to a partial load, only a proportional amount will be added. The method of adding and mixing superplasticizer to the mix shall be in accordance with the manufacturer's recommendation. When the slump is more than the maximum specification limit, the batch will be rejected; additional mixing or agitation to reduce the slump will not be allowed even though the maximum time limit or number of revolutions have not been exceeded.

4. Slump tests, unit weight, acceptance cylinders, and temperature measurements will not be made until all mixing water has been added to the batch.

F. **Partial Mixing at Central Plant**: When partial mixing is allowed at a central plant, the mixing time at the central plant may be reduced to 30 seconds. Additional required mixing shall be completed in a truck mixer at mixing speed. Mixing time in the truck mixer shall be a minimum of 10 and a maximum of 70 revolutions.

3.8 TEMPERATURE LIMITATIONS

A. **General:** Air temperature and mix temperature shall be determined at the point of placement in the shade away from artificial heat.

B. **Hot Weather Limitations:** Hot weather limitations shall apply to concrete for:

1. Bridge Decks, Approach Slabs, And Mass Concrete: Hot weather concreting practices will be required when the job site temperature in the shade and away from artificial heat is 80°F and rising. When internal temperature of plastic concrete reaches 85°F, the contractor shall prevent the temperature of succeeding batches from going beyond 90°F by approved methods. If necessary, forms shall be precooled by approved methods immediately prior to concrete placement

2. Pavement Concrete: Internal temperature of the plastic concrete shall not exceed 95°F at the time of placement.

C. **Cold Weather Limitations:** Mixing and concreting operations for concrete mixes not containing ground granulated blast-furnace slag or Type IS cement shall be discontinued when a descending air temperature in the shade and away from artificial heat reaches 40°F, and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35°F provided the high temperature forecasted by the U.S. Weather Service is above 40°F. For concrete mixes, containing ground granulated blast-furnace slag or Type IS cement, operations shall be discontinued at a descending air temperature in the shade and away from artificial heat of 55°F. Production shall not begin until the temperature at the point of placement is within the above limitations. Concrete shall not be placed if the U.S Weather Service forecasts the temperature to be less than 35°F within the 24-hour period following placement unless authorized in writing.

1. When concrete placement at lower air temperatures is authorized in writing, aggregates may be heated by either steam or dry heat prior to being placed in the mixer. The apparatus used shall heat the mass uniformly and shall be arranged to prevent occurrence of overheated areas. If the air temperature is less than 35°F at the time of placing concrete, the ENGINEER may require water or aggregates to be heated to not less than 70° nor more than 150°F. After placement, the concrete shall be protected by additional covering, insulating materials, or other methods approved by the ENGINEER.

3.9 TIME LIMITATIONS

A. The maximum allowable time from the addition of cement to the mix to complete discharge of the concrete shall be 90 minutes or a maximum of 300 revolutions, whichever may occur first. When transport is by non-agitator truck, the maximum allowable time from the addition of cement to the mix to complete discharge of the concrete shall be 45 minutes. In hot weather or any other conditions contributing to rapid loss of plasticity or uniformity of concrete, maximum allowable time may be reduced by the ENGINEER.

3.10 HAULING EQUIPMENT

A. Wet batches of concrete may be transported in a truck mixer, agitator or other approved equipment. Non-agitator trucks will not be allowed for structural concrete, but will be permitted for pavement concrete when air-entrainment admixture is used. Maximum volume of mixed concrete transported in an agitator truck at agitation speed shall be in accordance with the manufacturer's specified rating.

3.11 PORTABLE MIXERS

A. Portable mixers shall be approved in writing for mixing one cubic yard of concrete or less per day for minor structure concrete

3.12 DELIVERY

A. Sufficient plant capacity and transporting equipment to ensure delivery at the required rate shall be provided. Rate of concrete delivery during concreting operations shall provide for proper handling, placing and finishing of concrete and maintain a workable surface. Methods of delivering and handling concrete shall facilitate placing with a minimum of re-handling and without damage to the structure or concrete.

3.13 ACCEPTANCE AND PAYMENT SCHEDULE

A. Acceptance and payment schedules in the tables below will apply to all cast-in-place structural Portland cement concrete. Acceptance and payment schedules for portland cement concrete pavement are shown in Section 02601 – Portland Cement Concrete Pavement. These schedules do not apply to precast concrete.

Acceptance and Payment Schedule
Cast-In-Place Structural Concrete

Average Compressive Strength per Lot, PSI (28 to 31 days)					
Class A or S	Class AA	Class A(M) or AA(M)	Class D	Class F	Percent of Contract Price
3800 & Above	4200 & Above	4400 & above	3300 & above	3400 & above	100
3400 – 3799	3800-4199	4200-4199	3000-3299	---	98
3000 – 3399	3500-3799	4000-4199	2500-2999	---	90
Below 3000	Below 3500	Below 4000	Below 2500	Below 3400	50 or remove and replace[2]

[1]When concrete is part of an item or not a direct pay item, lot sizes, sampling and acceptance testing for the required quantities will be in accordance with Subsection 805.18. The value for each cubic yard required will be assessed at $350 ($460) for the purpose of applying payment adjustment percentages. The amount of payment adjustment for the quantity of concrete involved will be deducted from payment.

Acceptance and payment schedules shall apply to the contract item itself for cast-in-place piling.

[2]When the average compressive strength of **any batch in a lot** is less than 4000 psi for Class A(M) or AA(M), less than 3500 psi for Class AA, less than 3000 psi for Class A or S, less than 2500 psi for Class D, or less than 3400 psi for Class F, an investigation will be made. If concrete is allowed to remain in place, payment will be based on the average compressive strength for the lot. If concrete is not allowed to remain in place, the identifiable deficient areas shall be removed and replaced at no direct pay.

When the average compressive strength for a **lot** is less than 4000 psi for Class A(M) or AA(M), less than 3500 psi for Class AA, less than 3000 psi for Class A or S, less than 2500 psi for Class D, or less than 3400 psi for Class F, an investigation will be made. If concrete is allowed to remain in place, payment for the lot will be based on 50 percent of the contract price.

Any cores obtained in these investigations will be used for evaluation purposes only and payment will be based on original acceptance samples.

Acceptance and Payment Schedule
Minor Structural Concrete

Average Compressive Strength, psi (28 to 31 days)		
Class M or Y	Class R	Percent of Contract Price [1]
3000 & Above Below 3000	1800 & Above Below 1800	100 50 or Remove [2]

[1]When concrete is part of an item or not a direct pay item, sampling and acceptance testing for the required quantities shall be in accordance with this section. The value for each cubic yard of concrete required will be assessed at $350 for the purpose of applying payment adjustment percentages. The amount of payment adjustment for the quantity of concrete involved will be deducted from payment.

[2]When the average compressive strength is less than 3,000 psi for Class M or Y, and 1,800 psi for Class R, an investigation will be made. If concrete is allowed to remain in place, payment will be based on 50 percent of the contract price.

Any cores obtained in these investigations will be used for evaluation purposes only. Payment will be based on original acceptance samples.

- END OF SECTION -

SECTION 05500 - MISCELLANEOUS METALWORK (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide miscellaneous metalwork and appurtenances, complete and in place, in accordance with the Contract Documents.

1.2 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.3 REFERENCE STANDARDS

A. Aluminum Association

AA	Aluminum Association Designation System for Anodized Aluminum Finishes

B. American Association of State Highway and Transportation Officials

AASHTO HS-20	Standard Live Loads for Bridges

C. American Institute for Steel Construction

AISC LRFD	Standard Specification for Structural Steel Buildings
AISC CSP	Code of Standard Practice

D. American Welding Society (AWS)

AWS D1.1	Structural Welding Code
AWS WH	Welding Handbook

E. ASTM International (ASTM)

ASTM A36	Standard Specification for Carbon Structural Steel
ASTM A48	Standard Specification for Gray Iron Castings
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot – Dipped, Zinc Coated, Welded and Seamless
ASTM A193	Standard Specification for Alloy-Steel and Stainless Steel Bolting for High – Temperature or High Pressure Service and Other Special Purpose Applications
ASTM A194	Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

ASTM A307	Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod
ASTM A325	Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Streated, 120 KSI
ASTM A500	Standard Specification for Cold – Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A992	Standard Specification for Structural Steel Shapes

F. Code of Federal Regulations

29CFR1910	General Occupational Industry Health and Safety Standards

G. International Organization for Standardization

ISO 898	Mechanical and Physical Properties for Fasteners

PART 2 -- PRODUCTS

2.1 GENERAL REQUIREMENTS

A. **Corrosion Protection:** Unless otherwise indicated, fabricated steel metalwork which will be used in a corrosive environment and/or will be submerged in water/wastewater shall be coated in accordance with Section 09800 - Protective Coating and shall not be galvanized prior to coating. Other miscellaneous steel metalwork shall be hot-dip galvanized after fabrication.

B. **Stainless Steel:** Unless otherwise indicated, stainless steel metalwork and bolts shall be of Type 316 stainless steel. Where anaerobic conditions are noted, Type 304 stainless steel shall be used.

C. **Aluminum:** Unless otherwise indicated, aluminum metalwork shall be of Alloy 6061-T6. Aluminum in contact with concrete, masonry, wood, porous materials, or dissimilar metals shall have contact surfaces coated in accordance with Section 09800.

D. **Cast Iron:** Unless otherwise indicated, iron castings shall conform to the requirements of ASTM A 48, Class 50B or better.

2.2 BOLTS AND ANCHORS

A. **Standard Service (Non-Corrosive Application):** Unless otherwise indicated, bolts, anchor bolts, washers, and nuts shall be steel as indicated. Threads on galvanized bolts and nuts shall be formed with suitable taps and dies such that they retain their normal clearance after hot-dip galvanizing. Except as otherwise indicated, steel for bolt material, anchor bolts, and cap screws shall be in accordance with the following:

1. Structural connections: ASTM A 307, Grade A or B, hot-dip galvanized.

2. Anchor Bolts: ASTM A 307, Grade A or B, or ASTM A 36, hot-dip galvanized.

3. High strength bolts where indicated: ASTM A 325.

4. Pipe and equipment flange bolts: ASTM A 193, Grade B-7.

B. **Corrosive Service:** Bolts, nuts, and washers in the locations listed below shall be stainless steel as indicated.

1. Buried locations.

2. Submerged locations.

3. Locations subject to seasonal or occasional flooding.

4. Inside hydraulic structures below the top of the structure.

5. Inside buried vaults, manholes, and structures that do not drain through a gravity sewer or to a sump with a pump.

6. Chemical handling areas.

7. Inside trenches, containment walls, and curbed areas.

8. Locations indicated by the Contract Documents or designated by the ENGINEER to be provided with stainless steel bolts.

C. Unless otherwise indicated, stainless steel bolts, anchor bolts, nuts, and washers shall be Type 316 stainless steel, Class 2, conforming to ASTM A 193 for bolts and to ASTM A 194 for nuts. Threads on stainless steel bolts shall be protected with an antiseize lubricant suitable for submerged stainless steel bolts, to meet government specification MIL-A-907E. Buried bolts in poorly drained soil shall be coated the same as the buried pipe.

1. Antiseize lubricant shall be classified as acceptable for potable water use by the NSF.

2. Antiseize lubricant shall be "PURE WHITE" by **Anti-Seize Technology,** Franklin Park, IL, 60131, AS-470 by **Dixon Ticonderoga Company,** Lakehurst, NJ, 08733, or equal.

D. **Bolt Requirements**

1. The bolt and nut material shall be free-cutting steel.

2. The nuts shall be capable of developing the full strength of the bolts. Threads shall be Coarse Thread Series conforming to the requirements of the American Standard for Screw Threads. Bolts and cap screws shall have hexagon heads and nuts shall be Heavy Hexagon Series.

3. Bolts and nuts shall be installed with washers fabricated of material matching the base material of bolts, except that hardened washers for high strength bolts shall conform to the requirements of the AISC Specification. Lock washers fabricated of material matching the bolts shall be installed where indicated.

4. The length of each bolt shall be such that the bolt extends at least 1/8-inch beyond the outside face of the nut before tightening, except for anchor bolts, which shall be flush with the face of the nut before tightening.

E. **Adhesive Anchors and Rods:** Unless otherwise indicated, drilled concrete or masonry anchors shall be adhesive anchor and rod systems as specified below.

1. Adhesive anchors and rods shall employ an injectable adhesive. Adhesive shall be furnished in side-by-side refill packets that keep components separate prior to installation. Side – by – side refill packets shall accept static mixing nozzles which thoroughly combines components and allows injection directly into drilled hole. Only injection tools and static mixing nozzles as recommended by manufacturer shall be used. Manufacturer's recommended instructions shall be followed. Injection adhesive shall be **HILTI – HY 500 MAX – SD** or equal.

2. Anchor rods shall be furnished with chamfered ends so that either end will accept a nut and washer. Alternatively, anchor rods shall be furnished with at 45 degree chisel end on one end to allow for easy insertion into an adhesive – filled hole. Anchor rods shall be manufactured to meet ISO 898 Class 5.8, ASTM A193 Grade B7 (high strength carbon steel anchor). Anchor rods shall be **HILTI HAS Rods** or equal.

F. **Expanding-Type Anchors:** Expanding-type anchors if indicated or permitted, shall be galvanized steel expansion type **ITW Ramset/Redhead "Trubolt" anchors; McCullock Industries "Kwick-Bolt;"** or equal. Lead caulking anchors will not be permitted. Size shall be as indicated. Embedment depth shall be as the manufacturer recommends for the load to be supported. Expansion type anchors that are to be embedded in grout may be steel. Non-embedded buried or submerged anchors shall be stainless steel.

G. **Non-Shrink Grouted Anchors**: Anchors, if indicated or permitted, shall be grouted with a non-shrink cementitious grout in accordance with the manufacturer's recommendation. Embedment depth shall be as the manufacturer recommends for the load to be supported. Non-shrink grout material shall be Class B or C in accordance with Section 03315 - Grout.

2.3 POWDER-DRIVEN PINS

A. **Materials:** Powder-driven pins for installation in concrete or steel shall be heat-treated steel alloy. If the pins are not inherently sufficiently corrosion-resistant for the conditions to which they will be exposed, they shall be protected in an acceptable manner. Pins shall have capped or threaded heads capable of transmitting the loads the shanks are required to support. Pins that are connected to steel shall have longitudinal serrations around the circumference of the shank.

2.4 IMPACT ANCHOR

A. Impact anchors shall be an expansion type anchor in which a nail type pin is driven to produce the expansive force. The pin shall have a zinc sleeve with a mushroom style head and stainless steel nail pin. Anchors shall be **Metal Hit Anchors,** manufactured by **Hilti, Inc., Rawl Zamac Nailin,** manufactured by **the Rawlplug Company;** or equal.

PART 3 -- EXECUTION

3.1 GENERAL

A. **Measurements:** The CONTRACTOR shall verify all dimensions and shall make any field measurements necessary and shall be fully responsible for accuracy and layout of work. The CONTRACTOR shall review the Drawings, and any discrepancies shall be reported to the ENGINEER for clarification prior to starting fabrication.

3.2 POWDER DRIVEN PINS

A. **Powder-Driven Pins:** Powder-driven pins shall be installed by a craftsperson certified by the manufacturer as being qualified to install the manufacturer's pins. Pins shall be driven in one initial movement by an instantaneous force that has been carefully selected to attain the required penetration. Driven pins shall conform to the following requirements where "D" = pin's shank diameter:

Material Penetrated by Pin	Material Minimum Thickness	Pin Shank Penetration in Supporting Material	Minimum Space From Pin's CL to Edge of Penetrated Material	Minimum Pin Spacing
Concrete	16D	6D minimum	14D	20D
Steel	1/4-inch	Steel thickness	4D	7D

3.3 WELDING

A. **Method:** Welding shall be by the metal-arc method or gas-shielded arc method as described in the American Welding Society's "Welding Handbook" as supplemented by other pertinent standards of the AWS. Qualification of welders shall be in accordance with the AWS Standards governing same.

B. **Quality:** In assembly and during welding, the component parts shall be adequately clamped, supported, and restrained to minimize distortion and for control of dimensions. Weld reinforcement shall be as indicated by the AWS Code. Upon completion of welding, weld splatter, flux, slag, and burrs left by attachments shall be removed. Welds shall be repaired to produce a workmanlike appearance, with uniform weld contours and dimensions. Sharp corners of material that is to be painted or coated shall be ground to a minimum of 1/32-inch on the flat.

3.4 GALVANIZING

A. Structural steel plates shapes, bars, and fabricated assemblies required to be galvanized shall, after the steel has been thoroughly cleaned of rust and scale, be galvanized in accordance with the requirements of ASTM A 123. Any galvanized part that becomes warped during the galvanizing operation shall be straightened. Bolts, anchor bolts, nuts, and similar threaded fasteners, after being properly cleaned, shall be galvanized in accordance with the requirements of ASTM A 153.

B. Field repairs to damaged galvanizing shall be made by preparing the surface and applying a coating.

1. Surface preparation shall consist of removing oil, grease, soil, and soluble material by cleaning with water and detergent (SSPC SP1) followed by brush off blast cleaning (SSPC SP7), over an area extending at least 4-inches into the undamaged area.

2. Coating shall be applied to at least 3-mils dry film thickness. Use **Zinc-Clad XI** by **Sherwin-Williams**, **Galvax** by **Alvin Products**, or **Galvite** by **ZRC Worldwide**.

3.5 DRILLED ANCHORS

A. Drilled anchors and reinforcing bars shall be installed in strict accordance with the manufacturer's instructions. Holes shall be roughened with a brush on a power drill, cleaned and dry. Drilled anchors shall not be installed until the concrete has reached the required 28-day compressive strength. Adhesive anchors shall not be loaded until the adhesive has reached its indicated strength in accordance with the manufacturer's instructions.

- END OF SECTION -

SECTION 09800 - PROTECTIVE COATINGS (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide protective coatings, complete and in place, in accordance with the Contract Documents.

B. Definitions

1. The term "paint," "coatings," or "finishes" as used herein, shall include surface treatments, emulsions, enamels, paints, epoxy resins, and all other protective coatings, excepting galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.

2. The term "DFT" means minimum dry film thickness, without any negative tolerance.

C. The following surfaces shall not be protective coated:

1. Concrete, unless required by items on the concrete coating schedule below or the Drawings.

2. Stainless steel

3. Machined surfaces

4. Grease fittings

5. Glass

6. Equipment nameplates

7. Platform gratings, stair treads, door thresholds, and other walk surfaces, unless specifically indicated to be coated.

D. The coating system schedules included herein and/or on the drawings summarize the surfaces to be coated, the required surface preparation, and the coating systems to be applied. Coating notes on the Drawings are used to show or extend the limits of coating schedules, to show exceptions to the schedules, or to clarify or show details for application of the coating systems.

1.2 REFERENCE STANDARDS

A. American Water Works Association (AWWA)

AWWA/ANSI C213 Fusion Bonded Epoxy Coating

B. ASTM International (ASTM)

ASTM C309 Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete

ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
ASTM D624	Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

C. Code of Federal Regulations

29CFR1910.1200	Occupational Safety and Health Standards

D. United States Environmental Protection Agency (US EPA)

Method 524.1	Measurement of Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography/Mass Spectrometry
Method 524.2	Measurement of Purgeable Organic Copmounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry

E. Federal Specifications

TT-P-28	Paint, Aluminum, Heat Resisting

F. National Association of Corrosion Engineers (NACE)

TM-01-70	Standard Test Method – Visual Standard for Surfaces of New Steel Air – Blast Cleaned with Sand Abrasive
TM-01-75	Visual Standard for Surfaces of New Steel Centrifugally Blast Cleaned with Steel Grit and Shot

G. National Sanitation Foundation (NSF)

NSF 61	Drinking Water System Components – Health Effects

H. Society for Protective Coatings (SSPC)

SSPC SP1	Surface Preparation – Solvent Cleaning
SSPC SP2	Surface Preparation – Hand Tool Cleaning
SSPC SP3	Surface Preparation – Power Tool Cleaning
SSPC SP5	Surface Preparation – White Metal Blasting
SSPC SP6	Surface Preparation – Commercial Blasting
SSPC SP7	Surface Preparation – Brush Off Blasting
SSPC SP10	Surface Preparation – Near White Blasting

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

PART 2 -- PRODUCTS

2.1 GENERAL

A. **Suitability:** The CONTRACTOR shall use suitable coating materials as recommended by the manufacturer. Materials shall comply with Volatile Organic Compound (VOC) limits applicable at the Site.

B. **Material Sources:** Where manufacturers and product numbers are listed, it is to show the type and quality of coatings that are required. If a named product does not comply with VOC limits in effect at the time of bid opening, that product will not be accepted, and the CONTRACTOR shall propose a substitution product of equal quality that does comply. Unless indicated otherwise, proposed substitute materials will be considered as indicated above. Coating materials shall be materials that have a record of satisfactory performance in industrial plants, manufacturing facilities, and water and wastewater treatment plants.

C. **Compatibility:** In any coating system only compatible materials from a single manufacturer shall be used in the work. Particular attention shall be directed to compatibility of primers and finish coats. If necessary, a barrier coat shall be applied between existing prime coat and subsequent field coats to ensure compatibility.

D. **Containers:** Coating materials shall be sealed in containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, and name of manufacturer, all of which shall be plainly legible at the time of use.

E. **Colors:** All colors and shades of colors of all coats of paint shall be as indicated or selected by the ENGINEER. Each coat shall be of a slightly different shade, to facilitate inspection of surface coverage of each coat. Finish colors shall be as selected from the manufacturer's standard color samples by the ENGINEER.

F. Substitute or "Or-Equal" Products

1. To establish equality of products in accordance with the Contract Documents, the CONTRACTOR shall furnish satisfactory documentation from the manufacturer of the proposed substitute or "or-equal" product that the material meets the indicated requirements and is equivalent or better in the following properties:

    1. Quality

    2. Durability

    3. Resistance to abrasion and physical damage

    4. Life expectancy

    5. Ability to recoat in future

6. Solids content by volume

7. Dry film thickness per coat

8. Compatibility with other coatings

9. Suitability for the intended service

10. Resistance to chemical attack

11. Temperature limitations in service and during application

12. Type and quality of recommended undercoats and topcoats

13. Ease of application

14. Ease of repairing damaged areas

15. Stability of colors

2. Protective coating materials shall be standard products produced by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions. Where requested, the CONTRACTOR shall provide the ENGINEER with the names of not less than 10 successful applications of the proposed manufacturer's products that comply with these requirements.

3. If a proposed substitution requires changes in the WORK, the CONTRACTOR shall bear all such costs involved as part of the WORK.

2.2 INDUSTRIAL COATING SYSTEMS

A. **System 4 - Aliphatic Polyurethane:** Two component aliphatic acrylic polyurethane coating material shall provide superior color and gloss retention, resistance to splash from acid and alkaline chemicals, resistance to chemical fumes and severe weathering and with a minimum solids content of 58 percent by volume. Primer shall be a rust inhibitive two component epoxy coating with a minimum solids content of 68 percent by volume.

1. Prime coat DFT = 4 mils, **Ameron 385, Carboline 890, Tnemec 69**, **Sherwin – Williams Macropoxy 646 FC Epoxy B58-600 Series**, or equal.

2. Finish coat (one or more, DFT = 3 mils), **Ameron Amershield, Carbothane 134 HG, Tnemec 1074U, Sherwin – Williams Acroline 218 HS Polyurethane B65-600 Series,** or equal.

3. Total system DFT = 7 mils.

4. More than one finish coat shall be applied as necessary to produce a finish with uniform color and texture.

B. **System 5 - Inorganic Zinc/Polyurethane:** The inorganic zinc primer shall be a water or solvent based, self-curing, zinc silicate two-component inorganic coating which contains at least 85 percent of metallic zinc by weight in the dried film, and is recommended by the coating manufacturer as a primer for this system. The

intermediate coat shall be a high-build two component epoxy with a solids content of at least 69 percent by volume. Finish coats shall be a 2-component aliphatic acrylic or polyester polyurethane coating material that provides superior color and gloss retention, resistance to chemical fumes and severe weathering, and a minimum solids content of 58 percent by volume.

1. Prime coat DFT = 3 mils, **Tnemec 90-98, Carboline Carbozinc 11, Sherwin Williams Zinc Clad II ES,** or equal.

2. Intermediate coat DFT = 4 mils, **Tnemec N69, Carboline Carboguard 890, Sherwin Williams Macropoxy 646 FC,** or equal.

3. Finish coats (one or more, DFT = 3 mils), **Tnemec 1074U, Carboline Carbothane 134HG, Sherwin Williams Acrolon 218 HS** or equal.

4. Total system DFT = 10 mils.

5. Intermediate coat shall be applied in excess of 4 mils DFT or in more than one coat as necessary to completely cover the inorganic zinc primer and prevent application bubbling of the polyurethane finish coat.

6. More than one finish coat shall be applied as necessary to produce a finish with uniform color and texture. If the inorganic zinc primer is used as a pre-construction or shop applied primer, all damaged and uncoated areas shall be spot abrasive blasted and coated after construction using the indicated material.

2.3 SUBMERGED AND SEVERE SERVICE COATING SYSTEMS

A. **Material Sources:** The manufacturers' products listed in this paragraph are materials which satisfy the material descriptions of this paragraph and have a documented successful record for long term submerged or severe service conditions. Proposed substitute products will be considered as indicated above.

B. **System 100 - Amine Cured Epoxy:** High build, amine cured, epoxy resin shall have a solids content of at least 80 percent by volume, and shall be suitable for long-term immersion service in potable water and municipal wastewater. For potable water service, the coating material shall be listed by the NSF International as in compliance with NSF Standard 61 - Drinking Water System Components - Health Effects.

1. Prime coat and finish coats (3 or more, DFT = 16 mils), **Ameron 395, Tnemec 104 for Water or Tnemec N140 for all other, Carboline Carboguard 891 HS, Sherwin – Williams Macropoxy 5500,** or equal.

2.4 SPECIAL COATING SYSTEMS

A. **System 207 – Coal Tar Epoxy**: Two coat coal tar epoxy with minimum solids content of 72% by volume. Total DFT = 16.0 mils. **Carboline Bitumastic 300, Tnemec Series 46H-413, Sherwin Williams HiMil Sher Tar,** or equal.

B. **System 208 - Aluminum Metal Isolation:** Two coats of a high build polyamide epoxy paint such as **Tnemec 66, PPG Amercoat 385, Carboguard 890, Sherwin Williams Macropoxy 646 FC**, or equal (8 mils). Total thickness of system DFT = 8.0 mils.

PART 3 -- EXECUTION

3.1 MANUFACTURER'S SERVICES

A. The CONTRACTOR shall require the protective coating manufacturer to furnish a qualified technical representative to visit the Site for technical support as may be necessary to resolve field problems attributable or associated with the manufacturer's products.

3.2 WORKMANSHIP

A. Skilled craftsmen and experienced supervision shall be used on all WORK.

B. Coating shall be done in a workmanlike manner so as to produce an even film of uniform thickness. Edges, corners, crevices, and joints shall receive special attention to insure thorough cleaning and an adequate thickness of coating material. The finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. The hiding shall be so complete that the addition of another coat would not increase the hiding. Special attention shall be given to insure that edges, corners, crevices, welds, and similar areas receive a film thickness equivalent to adjacent areas, and installations shall be protected by the use of drop cloths or other precautionary measures.

C. All damage to surfaces resulting from the WORK shall be cleaned, repaired, and refinished to original condition.

3.3 STORAGE, MIXING, AND THINNING OF MATERIALS

A. **Manufacturer's Recommendations:** Unless otherwise indicated, the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, and protecting its coating materials, for preparation of surfaces for coating, and for all other procedures relative to coating shall be strictly observed.

B. All protective coating materials shall be used within the manufacturer's recommended shelf life.

C. **Storage and Mixing:** Coating materials shall be stored under the conditions recommended by the Material Safety Data Sheets, and shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Coatings of different manufacturers shall not be mixed together.

3.4 PREPARATION FOR COATING

A. **General:** All surfaces to receive protective coatings shall be cleaned as indicated prior to application of coatings. The CONTRACTOR shall examine all surfaces to be coated, and shall correct all surface defects before application of any coating material. All marred or abraded spots on shop-primed and on factory-finished surfaces shall receive touch-up restoration prior to any coating application. Surfaces to be coated shall be dry and free of visible dust.

B. **Protection of Surfaces Not to be Coated:** Surfaces that are not to receive protective coatings shall be protected during surface preparation, cleaning, and coating operations.

C. All hardware, lighting fixtures, switchplates, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not to be painted shall be removed, masked or otherwise protected. Drop cloths shall be provided to prevent coating materials from falling on or marring adjacent surfaces. The working parts of all mechanical and electrical equipment shall be protected from damage during surface preparation and coating operations. Openings in motors shall be masked to prevent entry of coating or other materials.

D. Care shall be exercised not to damage adjacent work during blast cleaning operations. Spray painting shall be conducted under carefully controlled conditions. The CONTRACTOR shall be fully responsible for and shall promptly repair any and all damage to adjacent work or adjoining property occurring from blast cleaning or coating operations.

E. **Protection of Painted Surfaces:** Cleaning and coating shall be coordinated so that dust and other contaminants from the cleaning process will not fall on wet, newly coated surfaces.

3.5 SURFACE PREPARATION STANDARDS

A. The following referenced surface preparation specifications of the Steel Structures Painting Council shall form a part of this specification:

1. Solvent Cleaning (SSPC SP1): Removal of oil, grease, soil, salts, and other soluble contaminants by cleaning with solvent, vapor, alkali, emulsion, or steam.

2. Hand Tool Cleaning (SSPC SP2): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by hand chipping, scraping, sanding, and wire brushing.

3. Power Tool Cleaning (SSPC SP3): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by power tool chipping, descaling, sanding, wire brushing, and grinding.

4. White Metal Blast Cleaning (SSPC SP5): Removal of all visible rust, oil, grease, soil, dust, mill scale, paint, oxides, corrosion products and foreign matter by blast cleaning.

5. Commercial Blast Cleaning (SSPC SP6): Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining shall be limited to no more than 33 percent of each square inch of surface area.

6. Brush-Off Blast Cleaning (SSPC SP7): Removal of all visible oil, grease, soil, dust, loose mill scale, loose rust, and loose paint.

7. Near-White Blast Cleaning (SSPC SP10): Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining shall be limited to no more than 5 percent of each square inch of surface area.

3.6 METAL SURFACE PREPARATION (UNGALVANIZED)

A. The minimum abrasive blasting surface preparation shall be as indicated in the coating system schedules included at the end of this Section. Where there is a conflict between these specifications and the coating manufacturer's printed recommendations for the intended service, the higher degree of cleaning shall apply.

B. Workmanship for metal surface preparation shall be in conformance with the current SSPC Standards and this Section. Blast cleaned surfaces shall match the standard samples available from the National Association of Corrosion Engineers, NACE Standard TM-01-70 - Visual Standard for Surfaces of New Steel Airblast Cleaned with Sand Abrasive and TM-01-75 - Visual Standard for Surfaces of New Steel Centrifugally Blast Cleaned with Steel Grit.

C. All oil, grease, welding fluxes, and other surface contaminants shall be removed by solvent cleaning per SSPC SP1 - Solvent Cleaning prior to blast cleaning.

D. All sharp edges shall be rounded or chamfered and all burrs, and surface defects and weld splatter shall be ground smooth prior to blast cleaning.

E. The type and size of abrasive shall be selected to produce a surface profile that meets the coating manufacturer's recommendation for the particular coating and service conditions. Abrasives for submerged and severe service coating systems shall be clean, hard, sharp cutting crushed slag. Automated blasting systems shall not be used for surfaces that will be in submerged service. Metal shot or grit shall not be used for surfaces that will be in submerged service, even if subsequent abrasive blasting is planned to be one with hard, sharp cutting crushed slag.

F. The abrasive shall not be reused unless an automated blasting system is used for surfaces that will be in non-submerged service. For automated blasting systems, clean oil-free abrasives shall be maintained. The abrasive mix shall include at least 50 percent grit.

G. The CONTRACTOR shall comply with the applicable federal, state, and local air pollution control regulations for blast cleaning.

H. Compressed air for air blast cleaning shall be supplied at adequate pressure from well maintained compressors equipped with oil and moisture separators that remove at least 95 percent of the contaminants.

I. Surfaces shall be cleaned of all dust and residual particles of the cleaning operation by dry air blast cleaning, vacuuming, or another approved method prior to painting.

J. Enclosed areas and other areas where dust settling is a problem shall be vacuum cleaned and wiped with a tack cloth.

K. Damaged or defective coating shall be removed by the blast cleaning to meet the clean surface requirements before recoating.

L. If the required abrasive blast cleaning will damage adjacent work, the area to be cleaned is less than 100 square feet, and the coated surface will not be submerged in service, then SSPC SP2 or SSPC SP3 be used.

M. Shop applied coatings of unknown composition shall be completely removed before the indicated coatings are applied. Valves, castings, ductile or cast iron pipe, and fabricated pipe or equipment shall be examined for the presence of shop-applied temporary coatings. Temporary coatings shall be completely removed by solvent cleaning per SSPC SP1 before the abrasive blast cleaning work has been started.

N. Shop primed equipment shall be solvent cleaned in the field before finish coats are applied.

3.7 SURFACE PREPARATION FOR GALVANIZED FERROUS METAL

A. Galvanized ferrous metal shall be alkaline cleaned per SSPC SP1 to remove oil, grease, and other contaminants detrimental to adhesion of the protective coating system to be used, followed by brush off blast cleaning per SSPC SP7.

B. Pretreatment coatings of surfaces shall be in accordance with the printed recommendations of the coating manufacturer.

3.8 SURFACE PREPARATION OF FERROUS SURFACES WITH EXISTING COATINGS, EXCLUDING STEEL RESERVOIR INTERIORS

A. **General:** All grease, oil, heavy chalk, dirt, or other contaminants shall be removed by solvent or detergent cleaning prior to abrasive blast cleaning. The generic type of the existing coatings shall be determined by laboratory testing.

B. **Abrasive Blast Cleaning:** The CONTRACTOR shall provide the degree of cleaning indicated in the coating system schedule for the entire surface to be coated. If the degree of cleaning is not indicated in the schedule, deteriorated coatings shall be removed by abrasive blast cleaning to SSPC SP6. Areas of tightly adhering coatings shall be cleaned to SSPC SP7, with the remaining thickness of existing coating not to exceed 3 mils.

C. **Incompatible Coatings:** If coatings to be applied are not compatible with existing coatings the CONTRACTOR shall apply intermediate coatings per the paint manufacturer's recommendation for the indicated coating system or shall completely remove the existing coating prior to abrasive blast cleaning. A small trial application shall be conducted for compatibility prior to painting large areas.

D. **Unknown Coatings:** Coatings of unknown composition shall be completely removed prior to application of new coatings.

E. **Water Abrasive or Wet Abrasive Blast Cleaning:** Where indicated or where Site conditions do not permit dry abrasive blasting for industrial coating systems due to dust or air pollution considerations, water abrasive blasting or wet abrasive blasting may be used. In both methods, paint-compatible corrosion inhibitors shall be used, and coating application shall begin as soon as the surfaces are dry. Water abrasive blasting shall be done using high pressure water with sand injection. In both methods, the equipment used shall be commercially produced equipment with a successful service record. Wet blasting methods shall not be used for submerged and severe service coating systems unless indicated.

3.9 SHOP COATING REQUIREMENTS

A. Unless otherwise indicated, all items of equipment, or parts of equipment which are not submerged in service, shall be shop primed and then finish coated in the field after installation with the indicated or selected color. The methods, materials, application equipment and all other details of shop painting shall comply with this section. If the shop primer requires topcoating within a specified period of time, the equipment shall be finish coated in the shop and then touch-up painted after installation.

B. All items of equipment, or parts and surfaces of equipment which are submerged or inside an enclosed hydraulic structure when in service, with the exception of pumps and valves, shall have all surface preparation and coating work performed in the field.

C. The interior surfaces of steel water reservoirs, except for Part A surfaces, shall have all surface preparation and coating work performed in the field.

D. For certain pieces of equipment it may be undesirable or impractical to apply finish coatings in the field. Such equipment may include engine generator sets, equipment such as electrical control panels, switchgear or main control boards, submerged parts of pumps, ferrous metal passages in valves, or other items where it is not possible to obtain the indicated quality in the field. Such equipment shall be primed and finish coated in the shop and touched up in the field with the identical material after installation. The CONTRACTOR shall require the manufacturer of each such piece of equipment to certify as part of its Shop Drawings that the surface preparation is in accordance with these specifications. The coating material data sheet shall be submitted with the Shop Drawings for the equipment.

E. For certain small pieces of equipment the manufacturer may have a standard coating system that is suitable for the intended service conditions. In such cases, the final determination of suitability will be made during review of the Shop Drawing submittals. Equipment of this type generally includes only indoor equipment such as instruments, small compressors, and chemical metering pumps.

F. Shop painted surfaces shall be protected during shipment and handling by suitable provisions including padding, blocking, and the use of canvas or nylon slings. Primed surfaces shall not be exposed to the weather for more than 2 months before being topcoated, or less time if recommended by the coating manufacturer.

G. Damage to shop-applied coatings shall be repaired in accordance with this Section and the coating manufacturer's printed instructions.

H. The CONTRACTOR shall make certain that the shop primers and field topcoats are compatible and meet the requirements of this Section. Copies of applicable coating manufacturer's data sheets shall be submitted with equipment Shop Drawings.

3.10 APPLICATION OF COATINGS

A. The application of protective coatings to steel substrates shall be in accordance with SSPC PA1 - Paint Application Specification No. 1.

B. Cleaned surfaces and all coats shall be inspected prior to each succeeding coat. The CONTRACTOR shall schedule such inspection with the ENGINEER in advance.

C. Blast cleaned ferrous metal surfaces shall be painted before any rusting or other deterioration of the surface occurs. Blast cleaning shall be limited to only those surfaces that can be coated in the same working day.

D. Coatings shall be applied in accordance with the manufacturer's instructions and recommendations, and this Section, whichever has the most stringent requirements.

E. Special attention shall be given to edges, angles, weld seams, flanges, nuts and bolts, and other places where insufficient film thicknesses are likely to be present. Use stripe painting for these areas.

F. Special attention shall be given to materials that will be joined so closely that proper surface preparation and application are not possible. Such contact surfaces shall be coated prior to assembly or installation.

G. Finish coats, including touch-up and damage repair coats shall be applied in a manner that will present a uniform texture and color matched appearance.

H. Coatings shall not be applied under the following conditions:

1. Temperature exceeding the manufacturer's recommended maximum and minimum allowable.

2. Dust or smoke laden atmosphere.

3. Damp or humid weather.

4. When the substrate or air temperature is less than 5 degrees F above dewpoint.

5. When air temperature is expected to drop below 40 degrees F or less than 5 degrees F above the dewpoint within 8 hours after application of coating.

6. When wind conditions are not calm.

I. Dewpoint shall be determined by use of a sling psychrometer in conjunction with U.S. Dept. of Commerce, Weather Bureau psychometric tables.

J. Unburied steel piping shall be abrasive blast cleaned and primed before installation.

K. The finish coat on all work shall be applied after all concrete, masonry, and equipment installation is complete and the work areas are clean and dust free.

3.11 CURING OF COATINGS

A. The CONTRACTOR shall maintain curing conditions in accordance with the conditions recommended by the coating material manufacturer or by this Section, whichever is the most stringent, prior to placing the completed coating system into service.

B. In the case of enclosed areas, forced air ventilation, using heated air if necessary, may be required until the coatings have fully cured.

C. **Forced Air Ventilation of Steel Reservoirs and Enclosed Hydraulic Structures:** Forced air ventilation is required for the application and curing of coatings on the interior

surfaces of steel reservoirs and enclosed hydraulic structures. During application and curing periods, continuously exhaust air from a manhole in the lowest shell ring, or in the case of an enclosed hydraulic structure, from the lowest level of the structure using portable ducting. After all interior coating operations have been completed, provide a final curing period for a minimum of 10 days, during which the forced ventilation system shall operate continuously. For additional requirements, refer to the specific coating system requirements in Part 2 above.

3.12 SHOP AND FIELD INSPECTION AND TESTING

A. General: The CONTRACTOR shall give the ENGINEER a minimum of 3 days advance notice of the start of any field surface preparation work or coating application work, and a minimum of 7 days advance notice of the start of any shop surface preparation work.

B. All such work shall be performed only in the presence of the ENGINEER, unless the ENGINEER has granted prior approval to perform such work in its absence.

C. Inspection by the ENGINEER, or the waiver of inspection of any particular portion of the WORK, shall not relieve the CONTRACTOR of its responsibility to perform the work in accordance with these Specifications.

D. Scaffolding shall be erected and moved to locations where requested by the ENGINEER to facilitate inspection. Additional illumination shall be furnished to cover all areas to be inspected.

E. **Inspection Devices:** The CONTRACTOR shall furnish, until final acceptance of such coatings, inspection devices in good working condition for the detection of holidays and measurement of dry-film thicknesses of protective coatings. Dry-film thickness gauges shall be made available for the ENGINEER'S use at all times while coating is being done, until final acceptance of such coatings. The CONTRACTOR shall furnish the services of a trained operator of the holiday detection devices until the final acceptance of such coatings. Holiday detection devices shall be operated only in the presence of the ENGINEER.

F. **Holiday Testing:** The CONTRACTOR shall holiday test all coated ferrous surfaces inside a steel reservoir, other surfaces which will be submerged in water or other liquids, or surfaces which are enclosed in a vapor space in such structures and surfaces coated with any of the submerged and severe service coating systems. Areas that contain holidays shall be marked and repaired or recoated in accordance with the coating manufacturer's printed instructions and then retested.

1. Coatings With Thickness Exceeding 20 Mils: For surfaces having a total dry film coating thickness exceeding 20 mils: pulse-type holiday detector such as **Tinker & Rasor Model AP-W, D.E. Stearns Co. Model 14/20,** or equal shall be used. The unit shall be adjusted to operate at the voltage required to cause a spark jump across an air gap equal to twice the required coating thickness.

2. Coatings With Thickness of 20 Mils or Less: For surfaces having a total dry film coating thickness of 20 mils or less: **Tinker & Rasor Model M1 non-destructive type holiday detector, K-D Bird Dog,** or equal shall be used. The unit shall operate at less than 75-volts. For thicknesses between 10 and 20 mils, a non-sudsing type wetting agent, such as **Kodak Photo-Flo,** or equal, shall be added to the water prior to wetting the detector sponge.

G. **Film Thickness Testing:** On ferrous metals, the dry film coating thickness shall be measured in accordance with the SSPC "Paint Application Specification No. 2" using a magnetic-type dry film thickness gauge such as **Mikrotest model FM, Elcometer model 111/1EZ,** or equal. Each coat shall be tested for the correct thickness. No measurements shall be made until at least 8 hours after application of the coating. On non-ferrous metals and other substrates, the coating thicknesses shall be measured at the time of application using a wet film gauge.

H. **Surface Preparation:** Evaluation of blast cleaned surface preparation work will be based upon comparison of the blasted surfaces with the standard samples available from the NACE, using NACE standards TM-01-70 and TM-01-75.

3.13 COATING SYSTEM SCHEDULES - FERROUS METALS

A. Coating System Schedule, Ferrous Metal - Not Galvanized:

	Item	**Surface Prep.**	**System No.**
FM-1	All surfaces indoors and outdoors, exposed or covered, except those included below.	Near white metal blast cleaning SSPC SP10	(5) inorganic zinc/polyurethane
FM-11	Buried surfaces that are not indicated to be coated elsewhere.	Near white metal blast cleaning SSPC SP10	(100) amine-cured epoxy
FM-12	Steel sheet piles	As recommended by coatings supplier	(207) Coal Tar Epoxy

3.14 COATING SYSTEM SCHEDULE, NON-FERROUS METAL, PLASTIC, FIBER GLASS

A. Where isolated non-ferrous parts are associated with equipment or piping, the CONTRACTOR shall use the coating system for the adjacent connected surfaces. Do not coat handrails, gratings, frames or hatches. Only primers recommended by the coating manufacturer shall be used.

	Item	**Surface Prep.**	**System No.**
NFM-1	All exposed surfaces, indoors and outdoors, except those included below.	Solvent cleaned SSPC SP1	(4) aliphatic polyurethane
NFM-3	Aluminum surfaces in contact with concrete, or with any other metal except galvanized ferrous metal.	Solvent cleaned SSPC SP1	(208) aluminum metal isolation

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SECTION 15000 - PIPING, GENERAL (REVISED 03/11/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide the piping systems indicated, complete and operable, in accordance with the Contract Documents.

B. The provisions of this Section shall apply to piping sections in Divisions 2 and 15.

C. The drawings define the general layout, configuration, routing, method of support, pipe size, and pipe type. The drawings are **not pipe** fabrication drawings. The CONTRACTOR shall provide adapters, and connectors for a complete and functional system.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M198	Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
AASTHO M315	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets

B. ASTM International (ASTM)

ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C655	Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe
ASTM D1784	Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
ASTM F949	Standard Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings

C. Louisiana Department of Transportation and Development (LDOTD)

AML	Approved Material List (formerly QPL)

1.3 CONTRACTOR SUBMITTALS

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition and stored off the ground for protection against oxidation caused by sunlight.

PART 2 -- PRODUCTS

2.1 REINFORCED CONCRETE PIPE (RCP) (Pipe Schedule Group 22)

A. **Pipe:** Reinforced concrete pipe shall be from an approved product source listed in the LDOTD AML (formerly QPL 77), and shall comply with ASTM C 76. Unless otherwise specified, Class III, Wall A, B or C pipe shall be furnished. When extra strength pipe is required, either Class IV or Class V pipe shall be furnished as specified. Either Wall A, B or C may be furnished. For pipe sizes not included in ASTM C 76, the area of reinforcement shall be approved in accordance with ASTM C 655. The producer shall provide fabrication drawings and design calculations reflecting compliance with these specifications prior to pipe fabrication. No modified designs will be allowed.

B. **Joints:** Joints for concrete pipe shall comply with AASHTO M 198 with the following modifications. Type 1 pipe joints shall be soil tight, and shall use approved rubber or flexible plastic gaskets. Type 2 pipe joints shall use approved rubber or flexible plastic gaskets and shall pass the 5 psi hydrostatic pressure test. Pipe for Type 3 joints shall have a maximum taper of 12 degrees and a maximum differential between the joint taper of the bell and spigot (tongue and groove) of 2 degrees provided that it passes the 10 psi hydrostatic pressure test. Joints for use with flexible plastic gaskets will be permitted provided the joint will pass the 10 psi hydrostatic pressure test. Gasket material shall be as specified herein.

2.2 PLASTIC PIPE FOR DRAINAGE (Pipe Schedule Group No. 37)

A. **Pipe**: Plastic pipe and joint systems shall be approved products listed in the LDOTD AML (formerly QPL 66). Plastic pipe for storm drains shall be Ribbed Polyvinyl Chloride Pipe (RPVCP). Ribbed Polyvinyl Chloride Pipe shall comply with ASTM F 949, Series 46 with UV inhibitors. The resin shall have a minimum cell classification of 12454-C in accordance with ASTM D 1784.

B. **Joints**: Joints shall be listed on the LDOTD AML (formerly QPL). Joint gasket materials shall be as specified herein. Joint requirements are as follows: Type 1 Joints (T1): these joints shall provide a soil tight joint; Type 2 Joints (T2): these joints shall pass a 5 psi hydrostatic pressure test; or Type 3 Joints (T3): these joints shall pass a 10 psi hydrostatic pressure test.

C. **Gaskets**: Rubber gaskets for pipe joints shall comply with AASHTO M 315. The rubber gaskets and lubricant shall be approved products listed in the LDOTD AML (formerly QPL 4). Each rubber gasket shall be identified with a batch or lot number. Flexible plastic gaskets for pipe joints shall comply with AASHTO M 198. The hydrostatic test shall be performed using AASHTO M 315. Flexible plastic gasket material and primer shall be approved products listed in the LDOTD AML (formerly QPL 4).

PART 3 -- EXECUTION

3.1 GENERAL

A. Piping, fittings, and appurtenances shall be installed in accordance with the requirements of applicable Sections of Division 2 and Division 15. Proprietary manufactured couplings shall be installed in accordance with the coupling manufacturer's recommendation.

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SECTION 15250 - HYDRAULIC GATES (REVISED 02/26/2019)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide hydraulic gates with appurtenances, complete and operable, in accordance with the Contract Documents.

B. The provisions of this Section shall apply to all flap gates, slide gates, stop gates, sluice gates, and shear gates, except where otherwise indicated in the Contract Documents.

C. The CONTRACTOR shall assign to a single manufacturer responsibility for furnishing and functional operation of the hydraulic gates including operators and accessories. The designated single manufacturer, however, need not manufacture more than one part of the units but shall coordinate the design, assembly, testing, and installation of the units.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. American Welding Society (AWS)

AWS D1.6	Structural Welding Code, Stainless Steel

B. ASTM International (ASTM)

ASTM A240	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
ASTM A276	Standard Specification for Stainless Steel Bars and Shapes
ASTM D2000	Standard Classification System for Rubber Products in Automotive Applications

1.3 CONTRACTOR SUBMITTALS

A. The CONTRACTOR shall provide submittals, samples for testing, and testing of materials in accordance with Section 01010 – General Requirements and Section 01030 – Submittals, Sampling and Testing Plan.

1.4 QUALITY ASSURANCE

A. **Equipment Field Testing:** The CONTRACTOR shall be responsible for the coordination of the tests of each hydraulic gate in the presence of the manufacturer's factory service representative. Excessive leaks shall be corrected and the equipment retested until found satisfactory.

1.5 SPECIAL WARRANTY REQUIREMENT

A. The CONTRACTOR shall furnish the manufacturer's written guarantee that the hydraulic gates comply with these specifications. The CONTRACTOR shall also furnish the manufacturer's warranties as published in its literature.

PART 2 -- PRODUCTS

2.1 GENERAL

A. All equipment provided under this Section shall be new, of current manufacture, and shall be the products of reputable manufacturers specializing in the manufacture of such products and which have had previous experience in such manufacture. The CONTRACTOR shall, upon request, furnish the names of not less than 5 successful installations of the manufacturer's equipment of comparable nature to that offered under this contract.

B. All combinations of manufactured equipment which are provided under these Specifications shall be entirely compatible, and the CONTRACTOR and the manufacturer shall be responsible for the compatible and successful operation of the various components of the units. All necessary mountings and appurtenances shall be included.

C. Gates shall be new and of current manufacture, adequately braced to prevent warpage and bending under the intended use.

2.2 HARDWARE

A. Bolts and nuts shall comply with Section 05500 - Miscellaneous Metalwork.

2.3 PROTECTIVE COATING

A. Coat ferrous metal in accordance with Section 09800 - Protective Coating

2.4 TOOLS AND SPARE PARTS

A. **Tools:** Furnish special tools necessary for maintenance and repair of the gates. Such tools shall be suitably stored in metal tool boxes and identified with the equipment number by means of stainless steel or solid plastic name tags attached to the box.

2.5 FLAP GATES

A. **General:** Gates shall be as specified herein and have the characteristics and dimensions shown on the Contract Drawings. Gates shall be designed for installation on plastic drainage pipe as specified in Section 15000 – Piping, General. Leakage shall not exceed 0.1 gpm/ft of wetted seal perimeter in seating head condition. The flap gate shall utilize a resilient seal around the perimeter of the opening. All structural components of the frame and flap shall be fabricated of stainless steel having a minimum thickness of 1/4-inch and shall have adequate strength to prevent distortion during normal handling, during installation and while in service. All welds shall be performed by welders with AWS D1.6 certification. Finish shall be Mill finish on stainless steel. Welds shall be sandblasted to remove weld burn and scale. Materials shall be as follows:

Components	**Materials**
Frame	Stainless Steel, Type 304L per ASTM A240
Flap, Stiffeners, and Hinge Arm	Stainless Steel, Type 304L per ASTM A240

Hinge Pins	Stainless Steel, Type 304 per ASTM A240
Seals	Neoprene or EPDM, ASTM D2000
Anchor Studs, Fasteners, and Nuts	Stainless Steel, ASTM A276

B. **Frame:** The frame shall be constructed of formed stainless steel plate with a minimum thickness of 1/4-inch. Frame design shall be of the flanged back type suitable for mounting directly to a wall with stainless steel anchor bolts and grout or mounting to a pipe flange with stainless steel mounting studs and a mastic gasket material. Frame shall be suitable for mounting on plastic drainage pipe as specified in Section 15000 – Piping, General. The angle of the flap when seated against the frame shall be between 3 degrees and 7 degrees from the vertical. Lifting lugs shall be provided on the top of the frame to facilitate installation.

C. **Hinge Arms:** Hinge arms shall be constructed of formed stainless steel plate with a minimum thickness of 3/4-inch and shall connect the frame to the flap. Dual hinge arms shall be provided on all flap gates in excess of 18 inches wide. Flap gates in excess of 18 inches wide shall have two pivot joints per arm. An adjustable lower pivot with limited rotation and a fixed upper hinge lug arrangement. The hinge pins shall have a minimum diameter of 1-inch and shall be constructed of solid stainless steel rod.

D. **Flap:** The flap and reinforcing stiffeners shall be constructed of stainless steel plate with a minimum thickness of 1/4-inch. The flap shall not deflect more than 1/360 of the span under the maximum design head. Reinforcing stiffeners shall be welded to the flap. A lifting lug shall be provided on the bottom of the flap. The manufacturer's name, opening size and maximum head rating shall be etched or cut from a stainless steel plate and welded on the flap.

E. **Seals:** All flap gates shall be provided with a seal system to restrict leakage. A continuous resilient seal shall be mounted to the seating surface of the frame to restrict leakage. The seals shall be held in place by a stainless steel retainer and stainless steel attachment bolts. The attachment bolts shall have a minimum diameter of 5/16-inch. The seal system shall be durable and shall be designed to accommodate frequent operation without loosening or suffering damage. All seals must be bolted or otherwise mechanically fastened to the frame. Arrangement with seals that are force fit and/or held in place with adhesives are unacceptable. The seals shall be mounted so as not to obstruct the water way opening.

F. Hardware: Anchor bolts or other suitable fastening hardware shall be provided by the flap gate manufacturer for mounting the gates to drainage pipe. Anchor bolts shall be designed by the manufacturer and shall be suitable for the type of pipe which the gate is to be fastened to.

G. **Manufacturers, or Equal:**

1. Whipps, Series 452

PART 3 -- EXECUTION

3.1 INSTALLATION

A. Installation of the gates and appurtenances shall be done in a workmanlike manner. It shall be the responsibility of the CONTRACTOR to handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's recommendations. The CONTRACTOR shall review the installation drawings and installation instruction prior to installing the gates. All gate assemblies shall be installed in a true vertical plane, square and plumb.

3.2 FIELD TESTING

A. After installation, all gates shall be field tested in the presence of the ENGINEER and OWNER to ensure that all items of equipment are in full compliance with this Section. Each gate shall be visually inspected to confirm that the flap seats against the frame properly.

- END OF SECTION -