

Specifications and Contract Documents

Hangar Development Marksville Municipal Airport

FAA AIP No. 3-22-0031-024-2025

Avoyelles Parish Airport Authority

Prepared By:



DIGITAL ENGINEERING & IMAGING, INC.

April, 2026



CONTRACT DOCUMENTS AND SPECIFICATIONS
TABLE OF CONTENTS

BIDDING REQUIREMENTS AND CONTRACTING REQUIREMENTS

00030	Advertisement for Bids
00100	Information for Bidders
00300	Louisiana Public Works Bid Form
00410	Bid Bond
00420	Corporate Resolution
00425	Disadvantaged Business Enterprise Contract Provisions
00426	Required Federal Certifications <i>(Submitted by <u>Low</u> Bidder within 10 Days of Bid Opening)</i> <ul style="list-style-type: none">- Certification of Offerer/Bidder Regarding Tax Delinquency and Felony Conviction- Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion- Certificate of Buy American Compliance for Total Facility- Certificate of Buy American Compliance for Manufactured Products
00430	Attestations <i>(Submitted by <u>Low</u> Bidder within 10 Days of Bid Opening)</i> (LA. R.S. 38:2227 Past Criminal Convictions of Bidders) (LA. R.S. 38:2212.10 Verification of Employees) (LA. R.S. 23:1725(B) Certification Regarding Unpaid Workers Compensation Insurance
00440	Contractor Affidavit (R.S. 38:2224) <i>(Submitted by <u>Low</u> Bidder within 10 Days of Bid Opening)</i>
00490	Notice of Award / Acceptance of Notice
00500	Agreement
00550	Notice to Proceed
00610	Payment Bond
00620	Performance Bond
00700	Federal Contract Provisions
00710	Federal Wage Decisions
00800	General Provisions <ul style="list-style-type: none">10 Definition of Terms20 Proposal Requirements and Conditions30 Award and Execution of Contract40 Scope of Work50 Control of Work60 Control of Materials70 Legal Regulations and Responsibility to Public80 Execution and Progress90 Measurement and Payment
00900	Special Provisions
00910	Construction Safety and Phasing Plan

CONTRACT DOCUMENTS AND SPECIFICATIONS
TABLE OF CONTENTS

DIVISION 2 – SITE CONSTRUCTION

02510 Water, Piping, Materials and Structures

DIVISION 3 – CONCRETE

03200 Concrete Reinforcement*
03300 Cast-In-Place Concrete*

DIVISION 8 – DOORS & WINDOWS

08111 Standard Steel Doors and Frames
08700 Finish Hardware

DIVISION 9 – FINISHES

09260 Gypsum Board Systems
09860 Thin-Film Antimicrobial Resinous Epoxy Floor Coating

DIVISION 13 – SPECIAL CONSTRUCTION

13500 Pre-Engineered Steel Hangar Specifications

DIVISION 15 – MECHANICAL

15400 Plumbing – General Provisions
15410 Plumbing – Piping Systems

DIVISION 16 – ELECTRICAL

16000 Electrical (See Plan Sheets E0.0 and E5.0)

TECHNICAL SPECIFICATIONS

S-1001 Construction Access Road

CONTRACT DOCUMENTS AND SPECIFICATIONS
TABLE OF CONTENTS

SUPPLEMENTAL TECHNICAL SPECIFICATIONS – FAA STANDARD SPECIFICATIONS

C-105	Mobilization
P-151	Clearing and Grubbing
P-152	Excavation, Subgrade, and Embankment
T-901	Seeding

TECHNICAL SPECIFICATIONS – LADOTD STANDARD SPECIFICATIONS

Section 302	Class II Base Course
Section 402	Traffic Maintenance Surfacing
Section 601	Portland Cement Concrete Pavement
Section 701	Culverts and Storm Drains
Section 706	Concrete Walks, Drives, and Incidental Paving
Section 726	Bedding Material
Section 901	Portland Cement Concrete
Section 1001	Portland Cement and Cementitious Materials
Section 1003	Aggregates
Section 1005	Joint Materials for Pavements and Structures
Section 1006	Thermoplastic Pipe
Section 1007	Metal Pipe
Section 1009	Reinforcing Steel, Strand, and Wire Rope
Section 1011	Concrete Curing Materials, Admixtures, and Special Finishes
Section 1017	Epoxy Resin Systems
Section 1018	Miscellaneous Materials
Section 1019	Geotextile Fabric and Geocomposite Systems

BIDDING REQUIREMENTS AND CONTRACTING REQUIREMENTS

ADVERTISEMENT FOR BIDS

Avoyelles Parish Airport Authority (herein referred to as the "Owner") hereby solicits sealed bids for Marksville Municipal Airport – Hangar Development project described as follows:

STATEMENT OF WORK:

Erection of a pre-engineered metal hangar with a single panel hydraulic hangar door on a concrete slab foundation. Hangar to include connections to existing water and sewer on the Airport property, as well as electrical wiring for the lighting, hydraulic power lift hangar door, and outlets. Also included is a concrete apron in front of the new hangar. Fill, grading, and seeding will be required on shoulders of the new pavements.

Sealed Bids shall be addressed to the Avoyelles Parish Airport Authority, and delivered to 312 N. Main Street, Courthouse Bldg., Marksville, LA 71351 not later than 2:00p.m., on June 4, 2026. Any bid received after the specified time and date will not be considered.

The sealed bids will be publicly opened and read aloud at 2:00 p.m. on June 4, 2026 at the Avoyelles Parish Police Jury Office located at 312 N. Main Street, Courthouse Bldg., Marksville, LA 71351.

A Non-Mandatory / PRE-BID CONFERENCE WILL BE HELD:

TIME & DATE: 10:00 a.m. on May 21, 2026

LOCATION: Marksville Municipal Airport
307 Runway Road
Mansura, LA 71350

Attendance at the Pre-Bid Conference is not mandatory in order to bid on the project; however, bidders are encouraged to attend. It is the responsibility of all potential bidders to visit the job site to assess the location and conditions prior to bidding.

The Instructions to Bidders, Bid Form, Contract, Plans, Specifications, and Forms of Bid Bond, Performance Bond and Payment Bond, and other bidding documents may be examined at the office of the Engineer for the contract; Digital Engineering & Imaging, Inc. located at 527 W. Esplanade Ave, Kenner, LA 70065; (504-468-6129). Copies shall be obtained at the Engineer's office upon payment of a deposit of \$120.00. This deposit will be refunded upon request in accordance with R.S. 38:2212. Electronic (pdf) versions of the plans and specs can be requested from the Engineer by emailing gbabin@deii.net.

Contractors submitting bids shall be licensed under LA R.S. 37:2150-2164, Building Construction. The bidder shall show his license number on the bid and on the sealed envelope submitting the bid.

The signature on the bid must be that of an authorized representative of the corporation, partnership or other legal entity, as defined by Louisiana Public Bid Law Revised Statute 38:2212.A.(1)(c) which dictates parties authorized to submit bids for public contracts. All required Certificates of Liability Insurance shall list the "Owner" as "additionally insured".

The Owner reserves the right to reject any and all bids for just cause; such actions will be in accordance with Title 38 of the Louisiana Revised Statutes. In accordance with R.S. 38:2212 (A)(1)(b), the provisions and requirements stated in the Bidding Documents shall not be waived by any entity.

In accordance with R.S. 38:2212 (A)(1)(b), the provisions and requirements stated in the Bidding

Documents shall not be waived by any entity.

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the Avoyelles Parish Airport Authority to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

The proposed contract is subject to the Buy American provision under 49 USC § 50101.

The successful bidder will be required to submit Certifications regarding Foreign Trade Restrictions under 49 CFR part 30, Government Wide Debarment and Suspension as per 2 CFR part 180 and Non-segregated Facilities as per 41 CFR § 60-1.8.

Attention to Bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the Davis Bacon Act Requirements.

All applicable Federal, State, Local laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout.

Notice is hereby given that the project is funded through Federal and State Grants which funds will not be available at the time of bidding. The Owner may reject all bids and cancel this solicitation should adequate funding not be secured within 30 days after bid opening. The time limits stipulated in LA. R.S. 38:2215(D) do not apply based upon the statutory exception that "the contract is to be financed in whole or in part by federal or other funds which will not be readily available at the time bids are opened."

Each Bidder must deposit with his/her bid, security in the amount of at least five percent (5%) of the total bid price, provided on the specified form and subject to the conditions provided in the Information for Bidders. Sureties used for obtaining bonds must appear as acceptable on the U. S. Department of Treasury Circular 570.

OWNER
Avoyelles Parish Airport Authority

BY: Rene' Borrel, P.E., Chairman

PUBLICATION/DATES:

Friday May 8, 2026

Friday May 15, 2026

Friday May 22, 2026

SECTION 00100 BIDDING INSTRUCTIONS

1. *RECEIPT AND OPENING OF BIDS:*

BIDS will be received by the Avoyelles Parish Airport Authority (hereinafter called the "OWNER"), at 312 N. Main Street, Courthouse Bldg, Marksville, LA 71351 until 2:00 p.m. (local time) on June 4, 2026 and then at said office publicly opened and read aloud. Each BID must be submitted in a sealed envelope, addressed to Avoyelles Parish Airport Authority at 312 N. Main Street, Courthouse Bldg, Marksville, LA 71351.

The OWNER reserves the right to waive any informalities except for those provisions and requirements of LA R.S. 38:2212, those stated in the advertisement for bids, and those required on the bid form. Owner reserves the right to reject any and/or all bids for just cause as permitted by public bid laws.

Any BID may be withdrawn prior to the above scheduled time for the BID OPENING or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within 45 days after the actual date of the opening thereof. Should there be reasons why the CONTRACT cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

2. *PRE-BID MEETING:*

A non-mandatory pre-bid conference is scheduled for 10:00 a.m. CST on May 21, 2026 at the Marksville Municipal Airport, 307 Runway Road, Mansura, LA 71350.

3. *PREPARATION OF BID:*

Each sealed envelope containing a BID must be plainly marked on the outside as BID:
Marksville Municipal Airport
Hangar Development
Louisiana Contractors License No. _____

If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at: 312 N. Main Street, Courthouse Bldg, Marksville, LA 71351 and marked "BID ENCLOSED."."

4. *METHOD OF BIDDING:*

The OWNER invites the following BIDS:
Base Bid – Hangar Development
Additive Alternate #1 – Construction Access Road
Additive Alternate #2 – Concrete Floor Sealing and Coating

The BIDDER must complete all parts of Section 00300, BID FORM.

A conditional or qualified BID will not be accepted.

5. *QUALIFICATIONS OF BIDDERS:*

The OWNER may make such investigations as deemed necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this

purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the AGREEMENT and to complete the WORK contemplated therein.

6. BID SUBMISSION REQUIREMENTS:

6.1 At the time of the Bid Opening, Bids shall include documents required under La. R.S. 38:2212 B. Any Bidder may, but is not required to include within its bid packet any other document that the bidder wants to include.

The signature on the bid must be that of an authorized representative of the corporation, partnership or other legal entity, as defined by Louisiana Public Bid Law Revised Statute 38:2212.A.(1)(c) which dictates parties authorized to submit bids for public contracts.

6.2 Required Certifications, Attestations, Etc.(Not required to be included in Bid Packet)

6.2.1 In accordance with La. R.S. 38:2227 and La. R.S. 38:2212.10, the apparent low bidder on this project must submit the completed Attestation Clause (Past Criminal Convictions of Bidders and Verification of Employees) form found within this bid package. The Attestation Clause form shall be submitted to the ENGINEER within 10 days after the opening of bids to Digital Engineering, 527 W. Esplanade Ave., Kenner, LA 70065

6.2.2 In addition to Part 6.2.1, before award of the contract to the lowest successful Bidder, Bidder shall furnish to the ENGINEER the following additional documents within 10 days after the opening of bids:

- A. Non-Collusion Affidavit – Contractor (R.S. 38:2224).
- B. Certification of Non-Segregated Facilities
- C. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- D. Lobbying and Influencing Federal Employees
- E. Certification Regarding Foreign Trade Restrictions
- F. Certificate of Buy American Compliance for Manufactured Products
- G. All applicable insurance documents.

7. BID SECURITY:

Each BID must be accompanied by a BID BOND payable to the OWNER for five percent (5%) of the total amount of the BID. As soon as the BID PRICES have been compared, the OWNER will return the BONDS of all except the three (3) lowest responsible BIDDERS. When the AGREEMENT is executed, the BONDS of the two remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the PAYMENT BOND and PERFORMANCE BOND have been executed and approved, after which it will be returned. A certified check may be used in lieu of a BID BOND.

8. TIME OF COMPLETION AND LIQUIDATED DAMAGES:

BIDDER shall agree to commence WORK on or before a date to be specified in the written NOTICE TO PROCEED of the OWNER and to fully complete the PROJECT within the 120 calendar days thereafter. BIDDER shall agree to pay as liquidated damages the sum specified in Section 00500, AGREEMENT, for each consecutive calendar day thereafter as hereinafter provided in the GENERAL CONDITIONS.

9. CONDITIONS OF WORK:

Each bidder must inform him/herself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all materials and labor necessary to carry out the provisions of his/her contract. Insofar as possible the contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

Inspection trips for prospective BIDDERS are to be arranged through the office of the Engineer.

The Engineer is Digital Engineering & Imaging, Inc. The ENGINEER's address is 527 W. Esplanade Ave., Kenner, LA 70065.

10. PROJECT REQUIREMENTS:

The party to whom the CONTRACT is awarded shall execute and deliver to the ENGINEER the AGREEMENT and the PERFORMANCE BOND and PAYMENT BOND within fourteen (14) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The successful BIDDER shall furnish a certified copy of the minutes of the corporation or other certification from its business entity which is acceptable to the Owner, which authorized the party executing the BID and CONTRACT to sign on behalf of the CONTRACTOR.

Failure to comply with this provision shall be sufficient grounds for OWNER to put BIDDER in default, in which case the BID BOND accompanying the BID shall be enforced by the OWNER.

After the funds necessary to pay for the Work have been secured, and after the OWNER is in receipt of acceptable PERFORMANCE BOND, PAYMENT BOND and AGREEMENT signed by the party to whom the AGREEMENT was awarded, the OWNER intends to sign the AGREEMENT and return to such party an executed duplicate of the AGREEMENT.

The NOTICE TO PROCEED may be issued within fourteen (14) calendar days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR.

The low BIDDER shall supply the names and addresses of all SUPPLIERS and SUBCONTRACTORS when required to do so by the OWNER.

11. ADDENDA AND INTERPRETATION:

No interpretation of the PLANS, SPECIFICATIONS, or any of the BIDDING DOCUMENTS will be made to any BIDDER orally. Reliance upon any oral instruction, direction or interpretation is not reasonable and shall have absolutely no effect.

Every request for such interpretations shall be in writing and emailed to the Project Manager (mflynn@deii.net) or addressed to Digital Engineering & Imaging, Inc. 527 W. Esplanade Ave., Kenner, LA 70065 and to be given consideration must be received at least five (5) days prior to the date fixed for the BID OPENING. Any and all such interpretations and any supplemental instructions will be given in the form of written ADDDENDA to the SPECIFICATIONS which, if issued, shall be sent by certified mail with return receipt requested and will also be sent either by fax transmission, email, or other electronic means or hand delivered to all prospective BIDDERS (at the addresses furnished for such purposes), not later than three (3) days prior to the date fixed for the BID OPENING. Failure of any BIDDER to receive any such ADDENDUM or interpretation shall not relieve such BIDDER from any obligation under his/her BID as submitted. All ADDENDA so issued shall become part of the CONTRACT DOCUMENTS.

12. SECURITY FOR FAITHFUL PERFORMANCE:

A PERFORMANCE BOND and a PAYMENT BOND, each in the amount of one hundred percent (100%) of the CONTRACT PRICE, with a commercial SURETY approved by the OWNER, will be required for the faithful performance of the CONTRACT. Only those surety companies currently on the U.S. Department of Treasury Financial Management Services list of approved bonding companies will be accepted. The agent selling the BOND must be currently licensed to do business in Louisiana. This will be verified by the OWNER.

13. POWER OF ATTORNEY:

Attorneys-in-fact who sign BID BONDS or PAYMENT BONDS and PERFORMANCE BONDS must file with each BOND a certified and effective-dated copy of their POWER OF ATTORNEY.

14. NOTICE OF SPECIAL CONDITIONS:

Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

- a) Section 00426 Federal Contract Certifications
- b) Section 00700 Federal Contract Provisions
- c) Section 00710 Federal Wage Decisions
- d) Section 00800 Special Provisions
- e) Section 00800 Insurance Requirements (Found in General Provisions)
- f) Section 00910 Construction Safety Plan

15. LAWS AND REGULATIONS:

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the CONTRACT throughout, and they will be deemed to be included in the CONTRACT the same as though herein written out in full.

16. METHOD OF AWARD – LOWEST QUALIFIED BIDDER:

If at the time this CONTRACT is to be awarded, the lowest BASE BID submitted by a responsive BIDDER does not exceed the amount of funds then estimated by the OWNER as available to finance the CONTRACT, the CONTRACT will be awarded on the BASE BID only. If such BID exceeds such amount, the OWNER may reject all BIDS or may award the CONTRACT on the BASE BID combined with such alternates as listed in the BID FORM, as produces a net amount which is within the estimated available funds. OR This project contains no Alternate Bids.

Whether or not specifically stated, any award made shall be understood as being contingent upon the receipt of the funds needed to construct the project. There shall be no binding agreement until the OWNER signs the CONTRACT. Bidders acknowledge that a suspensive condition shall exist until the funds necessary to actually construct the project have in fact been obtained by the OWNER.

17. OBLIGATION OF BIDDER:

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

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

SECTION 00300
LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: Avoyelles Parish Airport Authority
312 N. Main Street, Courthouse Bldg
Marksville, LA 71351

(Owner to provide name and address of owner)

BID FOR: Marksville Municipal Airport
Hangar Development

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

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: Digital Engineering & Imaging, Inc. and dated: April 2026
(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.

Additive Alternate No. 1 Construction Access Road - Includes all unit prices designated Alternate #1 for the lump sum of:

_____ Dollars (\$ _____)

Additive Alternate No. 2 Concrete Floor Sealing and Coating – Includes all unit prices designated for Alternate #2 for the lump sum of:

_____ Dollars (\$ _____)

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

Not Applicable _____ 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.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Avoyelles Parish Airport
Authority
312 N. Main Street
Marksville, LA 71351

(Owner to provide name and address of owner)

BID FOR: Marksville Municipal Airport
Hangar Development

(Owner to provide name of project and other identifying)

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:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Mobilization			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
C-105	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Clearing and Grubbing			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
P-151	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Unclassified Excavation			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
P-152-4.1	120	Cubic Yard		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Embankment in Place			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
P-152-4.2	45	Cubic Yard		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Seeding			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
T-901-5.1	1	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Class II Base Course (8" Thick) (Crushed Stone or Recycled Portland Cement Concrete)			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
302-02-08070	187	Square Yard		

Wording for "DESCRIPTION" is to be provided by the Owner.

All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Avoyelles Parish Airport
Authority
312 N. Main Street
Marksville, LA 71351

BID FOR: Marksville Municipal Airport
Hangar Development

(Owner to provide name and address of owner)

(Owner to provide name of project and other identifying)

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:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Portland Cement Concrete Paving (6" Thick)			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
601-01-00100	181	Square Yard		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Incidental Concrete Paving (4" Thick)			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
706-03-00100	23	Square Yard		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __ Construction of a Pre-engineered 60 x 65 Box Hangar Building (3,900 SF) with Single Panel Hydraulic Door on Concrete Foundation, Installation of Electrical, Mechanical, Water and Sewer for the Hangar, a Finished Restroom, Grading and All Incidental Work			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
S-1000	1	Lump Sum		

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input checked="" type="checkbox"/> Alt.# <u>1</u> Construction Access Road			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
S-1001	1	Lump Sum		

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input checked="" type="checkbox"/> Alt.# <u>2</u> Concrete Floor Sealing and Coating			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>
S-1002	1	Lump Sum		

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# __			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION <i>(Quantity times Unit Price)</i>

Wording for "DESCRIPTION" is to be provided by the Owner.

All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner

**SECTION 00410
BID BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,
as PRINCIPAL, and _____ as SURETY, are hereby held and firmly bound
unto Avoyelles Parish Airport Authority as OWNER in the penal sum of _____
_____ for the payment of which, well and truly to be made, we hereby jointly and severally bind
ourselves, successors and assigns. Signed, this _____ day of _____, 20_____.

The condition of the above obligation is such that whereas the PRINCIPAL has submitted to Avoyelles Parish
Airport Authority a certain BID, attached hereto and hereby made a part hereof to enter into a CONTRACT
in writing, for Marksville Municipal Airport – Hangar Development _____.

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the PRINCIPAL shall execute and deliver a CONTRACT in
the FORM OF CONTRACT attachment hereto properly completed in accordance with said
BID and shall furnish a BOND for faithful performance of said CONTRACT, and for the
payment of all persons performing labor and furnishing materials in connection therewith,
and shall in all other respects perform the AGREEMENT created by the acceptance of said
BID.

Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly
understood and agreed that the liability of the SURETY for any and all claims hereunder shall, in no event,
exceed the penal amount of this obligation as herein stated.

The SURETY, for value received, hereby stipulates and agrees that the obligations of said SURETY and its
BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may
accept such BID; and said SURETY does hereby waive notice of any such extension.

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

Principal

Witness

By: _____

Surety

Witness

By: _____

IMPORTANT - SURETY companies executing BONDS must appear on the U.S. Treasury Department's most
current list (Circular 570 as amended) and be authorized to transact business in the state where the project is
located.

**SECTION 00420
CORPORATE RESOLUTION**

Excerpt from minutes of meeting of the board of directors of _____
_____, incorporated.

At the meeting of directors of _____,
Incorporated, duly noticed and held on _____, 202____,
A quorum being there present, on motion duly made and seconded. It was:

Resolved that _____, be and is hereby
appointed, constituted and designated as agent and attorney-in-fact of the corporation
with full power and authority to act on behalf of this corporation in all negotiations,
bidding, concerns and transactions with Avoyelles Parish Airport Authority, the
governing authority of the
Marksville Municipal Airport or any of its agencies, departments, employees or agents,
including but not limited to the execution of all bids, papers, documents, affidavits,
bonds, sureties, contracts and acts and to receive and receipt therefore all purchase
orders and notices issued pursuant to the provisions of any such bid or contract, this
corporation hereby ratifying, approving, confirming and accepting each and every such
act performed by said agent and attorney-in-fact.

I HEREBY CERTIFY THE FOREGOING TO BE A TRUE
AND CORRECT COPY OF AN EXCERPT OF THE
MINUTES OF THE ABOVE DATED MEETING OF THE
BOARD OF DIRECTORS OF SAID CORPORATION, AND
THE SAME HAS NOT BEEN REVOKED OR RESCINDED.

SECRETARY-TREASURER

DATE

SECTION 00425

DISADVANTAGED BUSINESS ENTERPRISE CONTRACT PROVISIONS

1. DISADVANTAGED BUSINESS ENTERPRISE CONTRACT PROVISIONS (49 CFR PART 26):

PART A

Policy. It is the policy of the Department of Transportation (DOT) that disadvantaged business enterprises as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds under this agreement. Consequently, the DBE requirements of 49 CFR Part 26 apply to this agreement.

DBE Obligation. The contractor agrees to ensure that disadvantaged business enterprises as defined in 49 CFR Part 26 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds provided under this agreement. In this regard all contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that disadvantaged business enterprises have the maximum opportunity to compete for and perform contracts. Contractors shall not discriminate on the basis of race, color, national origin or sex in the award and performance of DOT—assisted contracts.

SECTION 00426

FEDERAL REQUIRED CERTIFICATIONS

(Apparent Low Bidder Must Provide the following Certifications within 10 Business Days)

- A. Certification of Offerer /Bidder Regarding Tax Delinquency and Felony Conviction
- B. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- C. Certification of Compliance with FAA Buy American Preference

CERTIFICATION OF OFFERER/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTION

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

- 1) The applicant represents that it is () is not () a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The applicant represents that it is () is not () is not a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION,
INELIGIBILITY AND VOLUNTARY EXCLUSION
(2 CFR PART 180, Subpart C)**

CERTIFICATE REGARDING DEBARMENT AND SUSPENSION (BIDDER OR OFFEROR)

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that at the time the bidder or offeror submits its proposal that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a “covered transaction”, must verify each lower tier participant of a “covered transaction” under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>.
2. Collecting a certification statement similar to the Certification of Offerer /Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

Signature of Contractor

Title

Certification of Compliance with FAA Buy American Preference – Equipment / Building Projects

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement ~~with their proposal~~. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101, and other Made in America Laws, U.S. statutes, guidance, and FAA policies by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter “X”.

- Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:
- a) Only installing steel and manufactured products produced in the United States;
 - b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
 - c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
 - d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- a) To provide to the Airport Sponsor or FAA evidence that documents the source and origin of the steel and manufactured product.
 - b) To faithfully comply with providing U.S. domestic product.
 - c) To furnish U.S. domestic product for any waiver request that the FAA rejects.
 - d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:
- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
 - b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
 - c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.

- d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of the item components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “item”. The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all product components and subcomponents that are not comprised of 100 percent U.S. domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108 (products of unknown origin must be considered as non-domestic products in their entirety).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “item” component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials, would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bidders and/or offerors;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date

Signature

Company Name

Title

(SUBMIT BY LOW BIDDER WITHIN 10 DAYS AFTER BID OPENING)

**SECTION 00430
ATTESTATIONS**

Marksville Municipal Airport Hangar Development
Name of Project

STATE OF _____
PARISH OF _____

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

A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

- | | |
|---------------------------------------|-----------------------------------|
| (a) Public bribery (R.S. 14:118) | (c) Extortion (R.S. 14:66) |
| (b) Corrupt influencing (R.S. 14:120) | (d) Money laundering (R.S. 14:23) |

B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:

- | | |
|--|--|
| (a) Theft (R.S. 14:67) | (f) Bank fraud (R.S. 14:71.1) |
| (b) Identity Theft (R.S. 14:67.16) | (g) Forgery (R.S. 14:72) |
| (c) Theft of a business record
(R.S.14:67.20) | (h) Contractors; misapplication of
payments (R.S. 14:202) |
| (d) False accounting (R.S. 14:70) | (i) Malfeasance in office (R.S. 14:134) |
| (e) Issuing worthless checks
(R.S. 14:71) | |

LA. R.S. 38:2212.10 VERIFICATION OF EMPLOYEES

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

(SUBMIT BY LOW BIDDER WITHIN 10 DAYS AFTER BID OPENING)

Marksville Municipal Airport Hangar Development
Name of Project

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

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

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

SIGNATURE OF AUTHORIZED
SIGNATORY OF BIDDER

**SECTION 00440
CONTRACTOR AFFIDAVIT (R.S. 38:2224)**

STATE OF LOUISIANA

PARISH OF _____

BE IT KNOWN, that on this _ day of _____, _____, before me the undersigned Notary Public, duly commissioned and qualified, within and for the Parish of _____, State of Louisiana, personally came and appeared _____, as the duly authorized agent of _____, who after being by me first duly sworn, did depose and say:

That _____ has/have been selected as Contractor for the Avoyelles Parish Airport Authority for the Marksville Municipal Airport Hangar Development and that affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly to secure the public contract under which he received payment, other than persons regularly employed by the 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 or their duties for affiant; and

That no part of the contract price received by affiant 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, alternation or demolition of the public building or project were in the regular course of their duties for affiant.

APPEARER FURTHER DECLARES, that they will, in all respects, comply with the public contract laws of the State of Louisiana, including Title 38 of the Louisiana Statutes, and particularly Section 2224, as amended, of such Title 38 of the Louisiana Revised Statutes.

WITNESSES:

BY: _____

Sworn to and subscribed before me this _____ day of _____, 20_____.

Notary Public

**SECTION 00490
NOTICE OF AWARD**

TO: _____

PROJECT Description: Marksville Municipal Airport Hangar Development. The OWNER has considered the BID submitted by you for the above described WORK in response to its ADVERTISEMENT FOR BIDS dated May 8, 2026, and INSTRUCTIONS TO BIDDERS.

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

Please note the following from the Bidding Instructions:

The party to whom the CONTRACT is awarded shall execute and to deliver to the ENGINEER the AGREEMENT and the PERFORMANCE BOND and PAYMENT BOND within fourteen (14) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The successful BIDDER shall furnish a certified copy of the minutes of the corporation or other certification from its business entity which is acceptable to the Owner, which authorized the party executing the BID and CONTRACT to sign on behalf of the CONTRACTOR.

Failure to comply with this provision shall be sufficient grounds for OWNER to put BIDDER in default, in which case the BID BOND accompanying the BID shall be enforced by the OWNER.

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

Dated this _____ day of _____.

Avoyelles Parish Airport Authority
OWNER

By _____
Rene' Borrel

TITLE Chairman

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by
_____this _____ day of _____, 20_____.

BY _____

TITLE _____

**SECTION 00500
AGREEMENT**

THIS AGREEMENT, made this _____ day of _____, _____, by and between

Avoyelles Parish Airport Authority

hereinafter called "OWNER" and _____
_doing business as a _____ hereinafter called "CONTRACTOR".

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

1. The CONTRACTOR will commence and complete the Hangar Development
2. The CONTRACTOR will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the PROJECT described herein.
3. The CONTRACTOR will commence the WORK required by the CONTRACT DOCUMENTS within fourteen (14) calendar days after the date of the NOTICE TO PROCEED and will complete the same within One Hundred Twenty (120) calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS. Liquidated damages in the amount of \$ 750 per day will be assessed for each Calendar day this PROJECT is not completed beyond the completion date.
4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of \$ _____.

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

- 00030 Advertisement for Bids
- 00100 Information for Bidders
- 00300 Louisiana Public Works Bid Form
- 00410 Bid Bond
- 00420 Corporate Resolution
- 00425 Disadvantaged Business Enterprise Contract Provisions
- 00426 Required Federal Certifications
- 00430 Attestations
- 00440 Contractor Affidavit
- 00490 Notice of Award / Acceptance of Notice
- 00500 Agreement
- 00550 Notice to Proceed / Acceptance of Notice
- 00610 Payment Bond
- 00620 Performance Bond
- 00700 Federal Contract Provisions
- 00710 Federal Wage Decisions
- 00800 General Provisions
- 00900 Special Provisions
- 00910 Construction Safety & Phasing Plan

GENERAL CONSTRUCTION ITEMS

TECHNICAL SPECIFICATIONS

DRAWINGS prepared by Digital Engineering & Imaging, Inc. numbered G1 through E5.0, dated March 2026.

SPECIFICATIONS prepared or issued by Digital Engineering & Imaging, Inc. dated April 2026.

ADDENDA:

No.	<u>N/A</u>	dated	<u>N/A</u>	20	<u> </u>
	<u>N/A</u>		<u>N/A</u>	20	<u> </u>
	<u>N/A</u>		<u>N/A</u>	20	<u> </u>
	<u>N/A</u>		<u>N/A</u>	20	<u> </u>

6. The OWNER will pay to the CONTRACTOR, in the amount and at such times as set forth in the GENERAL CONDITIONS, such amounts as required by the CONTRACT DOCUMENTS.

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

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized officials, this AGREEMENT in three (3) copies each of which shall be deemed an original on the date first above written.

(SEAL)

OWNER:

ATTEST:

Avoyelles Parish Airport Authority

BY _____
(Please Type)

BY _____

TITLE _____

NAME Rene' Borrel, P.E., Chairman
(Please Type)

(SEAL)

CONTRACTOR:

ATTEST:

BY _____
(Please Type)

BY _____

TITLE _____

NAME _____
(Please Type)

ADDRESS _____

SECTION 00550
NOTICE TO PROCEED

TO: _____ Date: _____

Project: Marksville Municipal Airport
Hangar Development

You are hereby notified to commence WORK in accordance with the Agreement dated _____, on or before _____, and you are to complete the WORK within One Hundred Twenty (120) consecutive calendar days thereafter. The date of completion of all WORK is therefore _____.

Avoyelles Parish Airport Authority
OWNER

By: _____
Rene' Borrel, P.E., Chairman

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____, this the _____, 20_____.

By _____

Title _____

Employer Identification
Number _____

**SECTION 00610
PAYMENT BOND**

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____
(Corporation, Partnership, or Individual)

hereinafter called PRINCIPAL and _____
(Name of Surety)

(Address of Surety)

hereinafter called SURETY, are held and firmly bound unto:

Avoyelles Parish Airport Authority, 312 N. Main Street, Courthouse Bldg,
Marksville, LA 71351

hereinafter called OWNER and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the CONTRACT and to their successors and assigns in the total aggregate penal sum of _____ (\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that WHEREAS, the PRINCIPAL entered into a certain CONTRACT with the OWNER, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

_____ **Marksville Municipal Airport Hangar Development** _____

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such CONTRACT and any authorized extensions or modification thereof, including all amounts due for materials, equipment and tools, consumed or used in connection with the construction of such WORK, and for all labor cost incurred in such WORK including that by a SUBCONTRACTOR, and to any mechanic or materialman lienholder whether it acquires its lien by operation of State or Federal law; then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, that in all respects this Bond shall be a statutory bond pursuant to LSA-R.S. 38:2241.

PROVIDED, FURTHER, that the said SURETY for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the CONTRACT or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this CONTRACT or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the CONTRACT increasing the CONTRACT PRICE, so as to bind the PRINCIPAL and SURETY to the full and faithful performance of the CONTRACT as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the CONTRACT or the loan documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each of which shall be deemed an original, this being the _____ day of _____, 20_____.

ATTEST:

_____	_____
(Principal) Secretary	(Principal)
_____	By _____
_____	_____
Witness as to Principal	(Printed Name)
_____	_____
(Address)	(Address)
_____	_____
	(Surety)

ATTEST:

_____	By _____
Witness as to Surety	Attorney-in-Fact
_____	_____
(Address)	(Printed Name)
_____	_____
	(Address)

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

If CONTRACTOR is partnership, all partners should execute BOND.

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

**SECTION 00620
PERFORMANCE BOND**

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a

(Corporation, Partnership, or Individual)

hereinafter called PRINCIPAL
and

(Name of Surety)

(Address of Surety)

hereinafter called SURETY, are held and firmly bound unto:

Avoyelles Parish Airport Authority, 312 N. Main Street, Courthouse Bldg., Marksville, LA
71351

hereinafter called OWNER, in the total aggregate sum _____(\$
__) in lawful money of the United States, for the payment of which sum well and truly to be made,
we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and
severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the PRINCIPAL entered into a
certain CONTRACT with the OWNER, dated the _____ day of _____, 20__, a
copy of which is hereto attached and made a part hereof for the construction of:

Marksville Municipal Airport Hangar Development

NOW, THEREFORE, if the PRINCIPAL shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said CONTRACT during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the SURETY and during the warranty periods, express and/or implied, and if the PRINCIPAL shall satisfy all claims and demands incurred under such CONTRACT, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said SURETY, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the CONTRACT or to WORK to be performed thereunder or the SPECIFICATIONS accompanying same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the CONTRACT or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that it is expressly agreed that the BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the CONTRACT increasing the CONTRACT PRICE, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the CONTRACT as so amended. The term "Amendment", wherever used in this BOND, and whether referring to this BOND, the CONTRACT or any of the Contract Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

IN WITNESS WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this being the _____ day of _____, 20__.

ATTEST:

_____	_____
(Principal) Secretary	(Principal)
_____	By _____
_____	_____
Witness as to Principal	(Printed Name)
_____	_____
(Address)	(Address)

ATTEST:

_____	_____
Witness as to Surety	By _____
_____	Attorney-in-Fact
_____	_____
(Address)	(Printed Name)
_____	_____
	(Address)

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

If CONTRACTOR is partnership, all partners should execute BOND.

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

SECTION 00700 FEDERAL CONTRACT PROVISIONS

The work in this contract is included in Airport Improvement Program No. 3-22-0031-024-2025 which is being undertaken and accomplished by the Avoyelles Parish Airport Authority (Sponsor) in accordance with the terms and conditions of a grant agreement between the Sponsor and the United States, under the Airport and Airway Improvement Act of 1982 (P.L. 97-248) as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987 (P.L. 100-223) and Part 152 of the Federal Aviation Regulations (14 CFR Part 152), pursuant to which the United States has agreed to pay a certain percentage of the costs under those Acts. The United States is not a party to this contract and no reference in this contract to the FAA or any representative thereof, or the United States, by the contract, makes the United States a party to this contract.

A-1 ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

A-2 BREACH OF CONTRACT TERMS

Any violation or breach of terms of this contract on the part of the Contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the Contractor must correct the breach. Owner may proceed with termination of the contract if the Contractor fails to correct the breach by the deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

A-3 BUY AMERICAN PREFERENCE

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP

funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

(Bidder must complete the Certification of Compliance with FAA Buy American Preference – Equipment and Buildings found in Section 00426)

A-4 GENERAL CIVIL RIGHTS PROVISIONS

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

A-5 CIVIL RIGHTS – TITLE VI ASSURANCE

Title VI Solicitation Notice

As a condition of a grant award, the Sponsor shall demonstrate that it complies with the provisions of Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq) and implementing regulations (49 CFR part 21) including amendments thereto, the Airport and Airway Improvement Act of 1982 (49 U.S.C. § 47123), the Age Discrimination Act of 1975 (42 U.S.C. 6101 et seq.), Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 et seq.), the Americans with Disabilities Act of 1990 (42 U.S.C. § 12101, et seq.), U.S. Department of Transportation and Federal Aviation Administration (FAA) Assurances, and other relevant civil rights statutes, regulations, or authorities, including any amendments or updates thereto.

This may include, as applicable, providing a current Title VI Program Plan to the FAA for approval, in the format and according to the timeline required by the FAA, and other information about the communities that will be benefited and impacted by the project. A completed FAA Title VI Pre-Grant Award Checklist is required for every grant application, unless excused by the FAA. The Sponsor shall affirmatively ensure that when carrying out any project supported by this grant that it complies with all federal nondiscrimination and civil rights laws based on race, color, national origin, sex, creed, age, disability, genetic information, in consideration for federal financial assistance. The Department's and FAA's Office of Civil Rights may provide resources and technical assistance to recipients to ensure full and sustainable compliance with Federal civil rights requirements. Failure to comply with civil rights requirements will be considered a violation of the agreement or contract and be subject to any enforcement action as authorized by law.

Title VI Clauses for Compliance with Nondiscrimination Requirements Compliance with Nondiscrimination Requirements:

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

1. **Compliance with Regulations:** The Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in

- the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21 including amendments thereto.
3. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the contractor's obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.
 4. **Information and Reports:** The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
 5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or
 - b. Cancelling, terminating, or suspending a contract, in whole or in part.
 6. **Incorporation of Provisions:** The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);

- 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964) including amendments thereto;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq.*) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, *et seq.*) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, *et seq.*).

A-6 CLEAN AIR AND WATER POLLUTION CONTROL

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 USC § 740-7671q) and the Federal Water Pollution Control Act as amended (33 USC § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceeds \$150,000.

A-7 CONTRACT WORK HOURS AND SAFETY STANDARDS

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or

mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this clause.

4. Subcontractors.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

A-8 COPELAND "ANTI-KICKBACK" ACT

Contractor must comply with the requirements of the Copeland "Anti-Kickback" Act (18 USC 874 and 40 USC 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

A-9 DAVIS-BACON REQUIREMENTS

1. Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided* that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and

Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers, or mechanics to be employed in the classification, or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program: *Provided* that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding.

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the Contractor, Sponsor, Applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and that show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit the payrolls to the applicant, Sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at

<https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit them to the applicant, sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, Sponsor, or Owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) The payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5(a)(3)(i), and that such information is correct and complete;

(2) Each laborer and mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) Each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the sponsor, the Federal Aviation Administration, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, Sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted

to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination that provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees, and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 USC 1001.

A-10 DEBARMENT AND SUSPENSION

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

(The Bidder must complete the Debarment and Suspension Certification in Section 00426)

A-11 DISADVANTAGED BUSINESS ENTERPRISE (Also See Section 00425)

A-11.3 Prime Contracts (Contracts Covered by a DBE Program)

DISADVANTAGED BUSINESS ENTERPRISES

Contract Assurance (§ 26.13) –

The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of Department of Transportation-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Owner deems appropriate, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the Contractor from future bidding as non-responsible.

Prompt Payment (§26.29) – The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than thirty (30) days from the receipt of each payment the prime contractor receives from the **Avoyelles Parish Airport Authority**. The prime contractor agrees further to return retainage payments to each subcontractor within thirty (30) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the **Avoyelles Parish Airport Authority**. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53(f))

The prime contractor must not terminate a DBE subcontractor listed in response to Section 12.3.1 (or an approved substitute DBE firm) without prior written consent of Avoyelles Parish Airport Authority. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent Avoyelles Parish Airport Authority. Unless Avoyelles Parish Airport Authority consent is provided, the prime

contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

Avoyelles Parish Airport Authority may provide such written consent only if Avoyelles Parish Airport Authority agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to Avoyelles Parish Airport Authority its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to Avoyelles Parish Airport Authority, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise Avoyelles Parish Airport Authority and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why Avoyelles Parish Airport Authority should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), Avoyelles Parish Airport Authority may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

A-12 DISTRACTED DRIVING

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving", (10/1/2009) and DOT Order 3902.10, "Text Messaging While Driving", (12/30/2009), the Federal Aviation Administration encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$3,500 that involve driving a motor vehicle in performance of work activities associated with the project.

A-13 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

A-14 (NOT USED)

A-15 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The *Contractor* has full responsibility to monitor compliance to the referenced statute or regulation. The *Contractor* must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

A-16 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

A-17 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause

death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

A-18 PROCUREMENT OF RECOVERED MATERIALS

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- 1) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or
- 2) The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

A-19 (NOT USED)

A-20 (NOT USED)

A-21 TAX DELINQUENCY AND FELONY CONVICTION

The applicant must complete the certification statement on Tax Delinquency and Felony Convictions found in Section 00426.

A-22 TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACT)

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.
4. Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work, and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the Owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

- 1) Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
- 2) Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
- 3) Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
- 4) Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

A-23 TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

- 1) is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR);
- 2) has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the USTR; and
- 3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 USC Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- 1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR or
- 2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list or
- 3) who incorporates in the public works project any product of a foreign country on such USTR list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

A-24 VETERANS PREFERENCE

In the employment of labor (excluding executive, administrative, and supervisory positions), the Contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 USC 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

A-25 CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase,

acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

A-26 PROHIBITION OF COVERED UNMANNED AIRCRAFT SYSTEMS (UAS)

The Bidder or Offeror certifies that they are aware of and comply with relevant Federal statutes and regulations, including those from the Federal Aviation Administration (FAA), for operating unmanned aircraft systems (UAS) in accordance, and in compliance with all related requirements in the FAA Reauthorization Act of 2024 (Public Law 118-63), section 936 (49 U.S.C. § 44801 note).

Contractor warrants that all UAS operations will be conducted in full compliance with all applicable Federal Aviation Administration (FAA) regulations, including but not limited to 14 CFR Part 107, and any other applicable local, state, or Federal laws and regulations.

Sponsors and subgrant recipients cannot use AIP grant funds to enter into, extend, or renew a contract related to covered unmanned aircraft systems (UAS). This includes both procurement and operational contracts, as well as contracts with entities that operate such systems.

SECTION 00710

FEDERAL WAGE DECISIONS

"General Decision Number: LA20260025 01/02/2026

Superseded General Decision Number: LA20250025

State: Louisiana

Construction Type: Building

Counties: Avoyelles, Beauregard, Evangeline and Jefferson Davis Counties in Louisiana.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Modification Number Publication Date
 0 01/02/2026

ASBE0053-001 09/02/2024

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR.....	\$ 32.66	9.86

 ELEC0861-008 09/01/2024

	Rates	Fringes
ELECTRICIAN (Low Voltage Wiring Only).....	\$ 31.98	4.34%+13.75

 PLUM0247-005 05/01/2020

	Rates	Fringes
PLUMBER (Including HVAC Pipe Installation).....	\$ 26.50	13.39

 ROOF0317-001 12/01/2022

	Rates	Fringes
ROOFER.....	\$ 23.04	9.34

 SULA2012-010 09/22/2014

	Rates	Fringes
BRICKLAYER.....	\$ 20.00	0.00
CARPENTER, Excludes Form Work....	\$ 16.86	0.00
ELECTRICIAN, Excludes Low Voltage Wiring.....	\$ 22.54	8.39
FORM WORKER.....	\$ 14.25	0.00
LABORER: Common or General.....	\$ 12.34	0.00

OPERATOR:

Backhoe/Excavator/Trackhoe.....\$ 18.50 3.40

SHEET METAL WORKER (HVAC Duct Installation Only).....\$ 25.16 10.11

SPRINKLER FITTER (Fire Sprinklers).....\$ 27.00 6.91

TRUCK DRIVER: Dump Truck.....\$ 14.50 2.68

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the

type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey

is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

=====

END OF GENERAL DECISION

"

SECTION 00800 GENERAL PROVISIONS

SECTION 10: DEFINITION OF TERMS

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

Paragraph Number	Term	Definition
10-01	AASHTO	The American Association of State Highway and Transportation Officials.
10-02	Access Road	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	Advertisement	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	Airport	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
10-05	Airport Improvement Program (AIP)	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	Air Operations Area (AOA)	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	Apron	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	ASTM International (ASTM)	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	Award	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	Bidder	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
10-11	Building Area	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	Calendar Day	Every day shown on the calendar.
10-13	Certificate of Analysis (COA)	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	Certificate of Compliance (COC)	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	Change Order	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.

Paragraph Number	Term	Definition
10-16	Contract	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment. The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
10-17	Contract Item (Pay Item)	A specific unit of work for which a price is provided in the contract.
10-18	Contract Time	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
10-19	Contractor	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	Contractors Quality Control (QC) Facilities	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
10-21	Contractor Quality Control Program (CQCP)	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	Control Strip	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	Construction Safety and Phasing Plan (CSPP)	The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
10-24	Drainage System	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	Engineer	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	Equipment	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	Extra Work	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	FAA	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.

Paragraph Number	Term	Definition
10-29	Federal Specifications	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.
10-30	Force Account	<p>a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.</p> <p>b. Owner Force Account - Work performed for the project by the Owner's employees.</p>
10-31	Intention of Terms	<p>Whenever, in these specifications or on the plans, the words “directed,” “required,” “permitted,” “ordered,” “designated,” “prescribed,” or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words “approved,” “acceptable,” “satisfactory,” or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner.</p> <p>Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.</p>
10-32	Lighting	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	Major and Minor Contract Items	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	Materials	Any substance specified for use in the construction of the contract work.
10-35	Modification of Standards (MOS)	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	Notice to Proceed (NTP)	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
10-37	Owner	The term “Owner” shall mean the party of the first part or the contracting agency signatory to the contract. Where the term “Owner” is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is Avoyelles Parish Airport Authority .
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	Pavement Structure	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.

Paragraph Number	Term	Definition
10-40	Payment bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	Performance bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	Plans	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
10-43	Project	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	Proposal	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.
10-45	Proposal guaranty	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	Quality Assurance (QA)	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	Quality Control (QC)	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	Quality Assurance (QA) Inspector	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	Quality Assurance (QA) Laboratory	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	Resident Project Representative (RPR)	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	Runway	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	Runway Safety Area (RSA)	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	Safety Plan Compliance Document (SPCD)	Details how the Contractor will comply with the CSPP.
10-54	Specifications	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.

Paragraph Number	Term	Definition
10-55	Sponsor	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	Structures	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	Subgrade	The soil that forms the pavement foundation.
10-58	Superintendent	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
10-59	Supplemental Agreement	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	Surety	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	Taxilane	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	Taxiway	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	Taxiway/Taxilane Safety Area (TSA)	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	Work	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	Working day	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.

END OF SECTION 10

SECTION 20: PROPOSAL REQUIREMENTS AND CONDITIONS

20-01 Advertisement (Notice to Bidders).). [See Section 00030]

20-02 Qualification of bidders. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

20-03 Contents of proposal forms. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

Mobilization is limited to ten percent (10%) of the total project cost.

A prebid conference is required on this project to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements.

**A non-mandatory pre-bid conference is scheduled for May 21, 2026 at 10:00 a.m.
at the Marksville Municipal Airport – 307 Runway Road., Mansura, LA.**

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

- a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.
- c. Documented record of Contractor default under previous contracts with the Owner.
- d. Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained and is intended for the Owner's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which the bidder may make or obtain from their own examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

20-07 Preparation of proposal. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

20-08 Responsive and responsible bidder. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.

b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.

c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.

d. If the proposal contains unit prices that are obviously unbalanced.

e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 Bid guarantee. Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

20-11 Delivery of proposal. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum

before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

Each sealed envelope containing a BID must be plainly marked on the outside as BID for **Marksville Municipal Airport Hangar Development** and the envelope should bear on the outside the **BIDDER's name, address and Louisiana contractor license number** if applicable. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at: **Avoyelles Parish Airport Authority at 312 N. Main Street, Courthouse Bldg., Marksville, LA 71351.**

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms*, of this section.

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than 5 days prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

END OF SECTION 20

SECTION 30: AWARD AND EXECUTION OF CONTRACT

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within **One Hundred Twenty (120) calendar days** of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals*. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds*.

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds*, of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract*, of this section shall be

just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

SECTION 40: SCOPE OF WORK

40-01 Intent of contract. The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

40-02 Alteration of work and quantities. The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

40-03 Omitted items. The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work. When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*. If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including

power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways.

40-06 Removal of existing structures. All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,

b. Remove such material from the site, upon written approval of the RPR; or

c. Use such material for the Contractor's own temporary construction on site; or,

d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

40-08 Final cleanup. Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

SECTION 50: CONTROL OF WORK

50-01 Authority of the Resident Project Representative (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

50-02 Conformity with plans and specifications. All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

50-04 List of Special Provisions. See Section 00900

50-05 Cooperation of Contractor. The Contractor shall be supplied with five hard copies or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

50-06 Cooperation between Contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

50-07 Construction layout and stakes. The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor. Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s):

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

50-08 Authority and duties of Quality Assurance (QA) inspectors. QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

50-11 Load restrictions. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

50-12 Maintenance during construction. The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 Final acceptance. Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection. If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

50-16 Claims for adjustment and disputes. If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances. Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

50-17 Value Engineering Cost Proposal. Not used

END OF SECTION 50

SECTION 60: CONTROL OF MATERIALS

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program* and *Addendum*, that is in effect on the date of advertisement.

60-02 Samples, tests, and cited specifications. All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP).

60-03 Certification of compliance/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not. The form and distribution of certificates of compliance shall be as approved by the RPR.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed “or equal” is suitable for use in the work. The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions shall exist:

a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.

b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

60-05 Engineer/ Resident Project Representative (RPR) field office. An Engineer/RPR field office is not required.

60-06 Storage of materials. Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor’s plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner’s permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

60-07 Unacceptable materials. Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

60-08 Owner furnished materials. The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor’s handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor’s handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

SECTION 70: LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

70-01 Laws to be observed. The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 Patented devices, materials, and processes. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows:

No work on public or private utilities is anticipated on this project.

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the RPR.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 Federal Participation. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

70-06 Sanitary, health, and safety provisions. The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

70-07 Public convenience and safety. The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic*, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

70-08 Construction Safety and Phasing Plan (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on sheet(s) **G2** of the project plans and also section 00910 of these specifications.

70-09 Use of explosives. The use of explosives is not permitted on this project

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

70-11 Responsibility for damage claims. The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

70-12 Third party beneficiary clause. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

70-13 Opening sections of the work to traffic. If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance

of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

70-14 Contractor's responsibility for work. Until the RPR's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 Contractor's responsibility for utility service and facilities of others. As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents.

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's

commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the RPR.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the RPR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the RPR continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

70-15.1 FAA facilities and cable runs. Not used.

70-16 Furnishing rights-of-way. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

70-18 No waiver of legal rights. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

70-19 Environmental protection. The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

70-20 Archaeological and historical findings. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

70-21 Insurance Requirements.

Contractor shall have and maintain, until final acceptance of the Work by the Owner and Council, the minimum insurance described herein with an insurance company authorized to do business in the State of Louisiana that has an industry rating of at least A-, Class VI, according to Best's Key Rating Guide. Contractor shall deliver to Owner certificates of insurance showing such insurance is in effect prior to execution of the Contract, which certificates shall incorporate a provision that no cancellation or change in such insurance shall be effected without at least 30 days prior written notice being given to the Owner and Engineer. These requirements shall not be construed to limit any obligations of indemnity and/or defense of the Contractor or Surety, but constitutes minimum insurance requirements, which must be provided and maintained.

A. Standard Workmen's Compensation – Full statutory liability under Louisiana law with Employer's Liability Coverage.

B. Commercial General Liability coverage (ISO form CG 00 01) when the Contract amount is as follows:

1. General Aggregate:

<u>CONTRACT AMOUNT</u>	<u>MINIMUM LIMITS OF INSURANCE</u>
Less than 1,000,000	\$1,000,000
\$1,000,000 to \$5,000,000	\$2,000,000
\$5,000,000 to \$10,000,000	\$3,000,000
Greater than \$10,000,000	\$4,000,000

2. Products – Completed Operations Aggregate:

<u>CONTRACT AMOUNT</u>	<u>MINIMUM LIMITS OF INSURANCE</u>
Less than 1,000,000	\$1,000,000
\$1,000,000 to \$5,000,000	\$2,000,000
\$5,000,000 to \$10,000,000	\$3,000,000
Greater than \$10,000,000	\$4,000,000

3. Personal and Advertising Injury:

<u>CONTRACT AMOUNT</u>	<u>MINIMUM LIMITS OF INSURANCE</u>
Less than 5,000,000	\$1,000,000
Greater than \$5,000,000	\$2,000,000

4. Each Occurrence:

<u>CONTRACT AMOUNT</u>	<u>MINIMUM LIMITS OF INSURANCE</u>
Less than \$5,000,000	\$1,000,000
Greater than \$5,000,000	\$2,000,000

The above Commercial General Liability coverage shall not be narrowed endorsement without the express written agreement of the Owner.

C. Business Auto Policy – Combined single limit \$1,000,000.

D. Umbrella Liability: Lower primary limits will be accepted if Umbrella Coverage is provided with limits of at least \$1,000,000 in excess of primary coverage shown on the certificate.

E. The **Avoyelles Parish Airport Authority** be named on all liability policies described above as “additional insured” as respects liability arising out of the Project; products and completed operations of the Contractor, as well as premises owned, occupied or used by the Contractor. The additional insured coverage shall contain no special limitations on the scope of protection afforded to any additional insured. It is understood that the business auto policy under “Who is and Insured” automatically provides liability coverage in favor of the Owner. Any failure of Contractor to comply

with any reporting provision of any policy shall not affect coverage provided to an additional insured.

- F. Waiver of subrogation in favor of the Avoyelles Parish Airport Authority required on Worker's Compensation insurance.
- G. The certificate holder shall be listed as follows:

**Avoyelles Parish Airport Authority
312 N. Main Street
Marksville, LA 71351**

END OF SECTION 70

SECTION 80: EXECUTION AND PROGRESS

80-01 Subletting of contract. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least **Forty Percent (40%)** percent of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

The Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within **14 Calendar days of the NTP date.** The Contractor shall notify the RPR at least 24 hours in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

80-04 Limitation of operations. The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 Determination and extension of contract time. The number of calendar days shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

80-07.1 Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-workdays. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Schedule	Liquidated Damages Cost	Allowed Construction Time
Contract	\$750.00/ day	120 calendar days

The maximum construction time allowed for Schedules **120 calendar days** will be the sum of the time allowed for individual schedules but not more than **120** days. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or
- b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or
- d. Discontinues the execution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

80-10 Termination for national emergencies. The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

END OF SECTION 80

SECTION 90: MEASUREMENT AND PAYMENT

90-01 Measurement of quantities. All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement .

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	The term "ton" will mean the short ton consisting of 2,000 pounds (907 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
Asphalt Material	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton (kg) or hundredweight (kg).

Term	Description
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
Scales	<p>Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.</p> <p>Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted.</p> <p>In the event inspection reveals the scales have been “overweighing” (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%.</p> <p>In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded.</p> <p>Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.</p> <p>Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.</p> <p>All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.</p>
Rental Equipment	Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 <i>Payment for Extra Work</i> .
Pay Quantities	When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

90-02 Scope of payment. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the "basis of payment" subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

90-03 Compensation for altered quantities. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities*, will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in Section 40, paragraph 40-03, *Omitted Items*, the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

90-05 Payment for extra work. Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

Retainage shall be 5%

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are

acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.
- b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.
- e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

- a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.
- b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.
- c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.
- d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes*, or under the provisions of this paragraph, such claims will be considered by the

Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within 14 days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

90-11 Contractor Final Project Documentation. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

- a. Provide two (2) copies of all manufacturers warranties specified for materials, equipment, and installations.
- b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.
- c. Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.
- d. Complete all punch list items identified during the Final Inspection.
- e. Provide complete release of all claims for labor and material arising out of the Contract.
- f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.
- g. When applicable per state requirements, return copies of sales tax completion forms.
- h. Manufacturer's certifications for all items incorporated in the work.
- i. All required record drawings, as-built drawings or as-constructed drawings.
- j. Project Operation and Maintenance (O&M) Manual(s).
- k. Security for Construction Warranty.
- l. Equipment commissioning documentation submitted, if required.

END OF SECTION 90

SECTION 00900 SPECIAL PROVISIONS

1.01 TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall begin work on or before the date stipulated in the Notice to Proceed. Due consideration has been given to normal bad weather and delays in specifying the contract times. By entering this Contract, each respective CONTRACTOR and the OWNER both mutually agree that failure to complete the Contract within time limits constitutes due cause for liquidated damages. Furthermore, both parties to the Contract hereby agree that the amount of liquidated damages is recognized as the amount of actual damage to the OWNER and is not assessed as a penalty.

<u>Contract</u>	Consecutive Calendar Days	Liquidated Damages/ Day
Base Bid	120	\$750.00
NOTE		

- Liquidated damages may be assessed after substantial completion date if punch list items are not complete within the 30 day window provided to contractor to complete punch list items.

Reasonable anticipated days for bad weather shall not be cumulative and are as follows:

January	11 days	July	6 days
February	10 days	August	5 days
March	8 days	September	4 days
April	7 days	October	3 days
May	5 days	November	5 days
June	6 days	December	8 days

The Contractor shall ask for total adverse weather days; and shall only be allowed for the number days in excess of the days stated above. Adverse Weather shall be defined as the occurrence of one or more of the following conditions within a twenty-four (24) hour day that prevents construction activity exposed to weather conditions or access to the site:

1. Precipitation (rain, snow, or ice) in excess of one-tenth inch (0.10") liquid measure.
2. Temperatures that do not rise above or drop below that required for the day's construction activity, if such temperature requirement is specified or accepted as standard industry practice.
3. Sustained wind in excess of twenty-five (25) m.p.h.

Adverse Weather may include, if appropriate, "dry-out" or "mud" days resulting from precipitation days;

1. Only if there is a hindrance to site access or site work and Contractor has taken all reasonable accommodations to avoid such hindrance; and,
2. At a rate no greater than 1 make-up day for each day or consecutive days of precipitation that total 1.0 inch or more, liquid measure, unless specifically recommended otherwise by the Engineer.

1.02 SUBSTANTIAL COMPLETION

- The date of Substantial Completion of the Work is the date established by Project Engineer with the issuance of the Certificate of Substantial Completion.
- Substantial Completion is defined as that stage in the progress of the work whereby completion of all items may be achieved within thirty (30) Calendar Days thereafter. If the Project Engineer, based on his sole determination and reasonability believes that the Contractor cannot achieve completion of all items and acceptance within thirty (30) days, the work will not be accepted as substantially complete. This does not preclude partial Occupancy or use by Owner.
- When the Contractor considers that the Work, or designated portion whereof which is acceptable to Owner, is substantially complete, the Contractor shall notify the Project Engineer in writing at least twenty-four hours prior to the time Contractor desires an inspection and shall prepare for submission to Project Engineer a list of items to be completed or corrected. The Project Engineer shall schedule an inspection as soon as possible thereafter. 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.
- When the Project Engineer determines that the work or designated portion thereof is substantially complete, and upon establishment of a punch list and related costs, the Project Engineer shall prepare a Certificate of Substantial Completion. The Project Engineer's determination of Substantial Completion shall be final and binding. The Substantial Completion Certificate date is the date upon which contract time is stopped for thirty (30) Calendar days. If after thirty (30) Calendars days the punch list is not complete, contract time shall continue from the date previously stopped until the project is accepted complete by the Project Engineer.

1.03 LABOR

All skilled and unskilled labor, craftsmen and mechanics must be proficient in their respective trades as deemed satisfactory to the ENGINEER

1.04 INSPECTION BY GOVERNMENT AGENCIES

Representatives of Federal, state and local agencies, concerned directly or indirectly with the project, shall have access to the work wherever it is in preparation or progress, and the CONTRACTOR shall provide proper facilities for such access and inspection.

1.04 MEASUREMENT AND PAYMENT

Payment will be made only for the items of work listed in the BID FORM. The cost of all other work necessary shall be included in the items for which unit prices are established.

Partial payment, cost breakdown, estimates, etc. shall be in accordance with the General Provisions.

1.05 "OR EQUAL" CLAUSE

Where specific manufacturers' names are used to describe requirements of the Specifications, it is understood that an approved equal product will be considered.

1.06 LOCATION, PROTECTION AND REPAIR OF ANY DAMAGE TO EXISTING UTILITIES

The Contractor is advised that existing overhead and underground utilities such as (but not limited to) electrical lines and poles, telephone cables, gas lines, water lines, fiber optic cables, and sanitary sewers, may exist in the rights-of-way where the proposed improvements are to be installed, all in accordance with the provisions of R.S. 38:2223. It shall be the Contractor's responsibility to protect these existing utilities during construction of the work to be installed under this Contract and any damage to existing utilities caused by negligent acts of the Contractor shall be repaired by the Contractor at his own expense. The Contractor shall contact Louisiana One Call a minimum of 48 hours prior to beginning construction in the work area.

1.07 TOOLS, PLANT AND EQUIPMENT

If at any time before the commencement or during the progress of the work, tools, plant, or equipment appear to the ENGINEER to be insufficient, inefficient, or inappropriate to secure the quality of work required or the proper rate of progress, the ENGINEER may order the CONTRACTOR to increase their efficiency to improve their character, to augment their number, or to substitute new tools, plant, or equipment as the case may be, and the CONTRACTOR must conform to such order; but the failure of the ENGINEER to demand such increase of efficiency number, or improvement shall not relieve the CONTRACTOR of his obligation to secure the quality of work and the rate of progress necessary to complete the work within the time required by this Contract to the satisfaction of the OWNER.

1.08 PLANS

The word PLANS shall have the same meanings as the word DRAWINGS in the Specifications and Contract Documents.

1.09 WASTE MATERIALS

All waste materials from excavations or removals shall be hauled from the site and shall be disposed of by the CONTRACTOR in a manner acceptable to the ENGINEER at no cost to the OWNER unless otherwise directed by the ENGINEER and the OWNER to be turned over to the OWNER.

1.10 ADDITIONAL SPECIAL CONDITIONS

1. Failure to perform, as used herein, is defined to mean non-performance, defective performance or delay in performance as set forth in La. Civil Code art. 1994.
2. The intent of the Contract Documents is to include all items necessary for the proper

execution and completion of the Work by the Contractor however, the Contractor and Owner acknowledge that not every condition is detailed and that not every item necessary for complete construction is identified. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. In the event of a discrepancy, error or omission in the Contract Documents, the more specific and more detailed descriptive information will take precedence over the general and less detailed description. In case of doubt, Contractor shall assume that Owner intends that the more complete method, system, or process is required. Any work, labor, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce a functionally complete Project or part thereof, will be supplied by the Contractor at no additional cost, whether or not specifically stated or identified in the Contract Documents. Reference to standard specifications, manuals, or codes of any technical society, organization, or association or to the laws or regulations of any governmental authority, whether such reference is specific or by implication shall mean the latest standard specifications, manual, code or laws or regulations in effect on the date of the Contract is last signed, unless otherwise specifically stated. However, no provision of any standard specification, manual, or code shall be effective to change the duties or the responsibilities of the Owner, Contractor or ENGINEER or any of their consultants, agents or employees from those set forth in the Contract Documents.

3. In the event of any discrepancy or inconsistency among the Contract Documents, the most recent Contract Document as issued by the ENGINEER shall prevail.
4. The Owner reserves the right to require the Contractor, all subcontractors and material suppliers to provide lien releases at any time. The Owner reserves the right to withhold progress payments until such lien releases are received for all work for which prior progress payments have been made. Upon the Owner's Demand for lien releases (either verbally or written), the Contractor, all subcontractors and material or equipment suppliers shall provide such releases with every payment request until Final Acceptance of the Project.
5. Contractor hereby stipulates and agrees that nothing in any of the Contract Documents shall be interpreted to create any warranty, express or implied, by the Owner that the plans, specification or any other Contract Document is sufficient, complete, coordinated, feasible, error free or constructible. Contractor's sole and exclusive remedy for any error, omission or any deficiency in the documents produced by the ENGINEER or any design professional performing services for the ENGINEER or Owner, or any failure to perform by the ENGINEER or any such design professional, shall be only against the responsible design professional. Nothing stated herein shall be interpreted as a waiver of La. R.S. 9:2771 but rather an acknowledgment that the design professionals engaged by the Owner are independent contractors and that the Owner shall not be liable for any negligence of the ENGINEER or any other design professional in connection with the Project. Pursuant to La. R.S. 9:2771, the Contractor shall not be liable for "destruction or deterioration of or defects in any work constructed, or under construction, by him if he constructed, or is constructing, the work according to plans or specifications furnished to him which he did not make or cause to be made and if the destruction, deterioration, or defect was due to any fault or insufficiency of the plans or specifications."
6. Nether the Owner nor ENGINEER, nor any consultant engaged by them, guarantee the accuracy of any survey provided regarding features of the site including, but not limited to, the location or elevation of utilities, cables, pipes, manholes or underground pipes, or the presence or absence of easements, or topography. The Contractor shall confirm all site

information and the location of each utility, and make further investigation of all surface and subsurface conditions including any soil borings of the site of the Project and the conditions of any existing structures.

7. OWNER'S RIGHT TO CARRY OUT THE WORK

If the Owner or ENGINEER determine that there has been a failure to perform by the Contractor, or the Owner or ENGINEER have determined that the Contractor has neglected to diligently carry out the Work in accordance with the Contract Documents, and the Contractor fails to commence and continue correction of such failure to perform by the Contractor within seven (7) calendar days after receipt of written notice, the Owner may, without prejudice to any other rights or remedies which the Owner may have, stop the Contractor's Work, in whole or in part, and correct such failure to perform. In such case, the Owner may deduct from payments then, or thereafter due the Contractor, the cost of correcting such failure to perform, including but not limited to, any costs, expenses, fees and attorney's fees, as well as compensation for any additional services performed by the ENGINEER or other design professionals made necessary by such failure to perform. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor and/or its surety shall pay the difference to the Owner. The right to stop the Work shall not give rise to a duty on the part of the Owner or ENGINEER to exercise this right for the benefit of the Contractor or any other person or entity. Contractor stipulates and agrees that in the event such work stoppage arises in any manner due to the Contractor's failure to perform, Contractor shall have no claim for delay or acceleration arising from the stoppage of the Work pursuant to this subsection.

8. OWNER'S RIGHT TO AUDIT

The Contractor shall keep and maintain full and accurate Project records of as-built conditions and all costs to build including, but not limited to, all contracts, subcontracts, purchase orders, invoices, delivery tickets, test results, field changes, payroll and all documents relating to the costs incurred in connection with the Work, which records shall be open for inspection, review and audit by the Owner or its authorized representatives, at any time with reasonable notice to the Contractor during the performance of the Work and for a period five (5) years after Final Payment.

9. CONTRACTOR

- a. The Contractor shall perform the Work in strict accordance with the Contract Documents.
- b. The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by the performance or failure to perform by the ENGINEER or any of its consultants, or by tests, inspections or approvals required or performed by or on behalf of the ENGINEER or its consultants, the Owner or its consultants, or any governmental entity. Contractor stipulates and agrees that the ENGINEER and its consultants owe the Contractor no duty or obligation of any nature or kind notwithstanding and superseding any other provision elsewhere in any Contract Document or by law. Quality control (i.e. ensuring compliance with the Contract Documents) is the sole responsibility of the Contractor. Testing, observations and or inspections performed or provided by the Owner or ENGINEER are solely for information purposes for the exclusive benefit of

the Owner to determine compliance with the Contract Documents.

- c. If the Contractor performs any portion of the Work when the Contractor knows or should know that it would be contrary to applicable laws, statutes, ordinances, codes, standards referenced in the Contract Documents, rules or regulations, lawful orders of public authorities, or any of the requirements of the Contract Documents, or creates a condition that could cause personal injury or property damage, or creates a hazardous condition, and the Contractor proceeds to perform without the prior express written consent of the ENGINEER and full disclosure to the ENGINEER, the Contractor shall be solely responsible for and shall pay for any and all costs, expenses, fees, damages and attorney's fees incurred by the Owner arising from the performance of such portion of Work, including, but not limited to, all costs attributable for any corrective work.

10. REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS

- a. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the site. The Contractor is solely responsible for providing a safe place for the performance of the Work.
- b. Contractor shall comply with the provisions of the Louisiana Underground Utilities and Facilities Damage Prevention law, R.S. 40:1749.11 et al, as amended prior to any portion of the Work which may require excavation including but not limited to pile driving, digging, auguring, boring, backfilling, dredging, compressing, plowing-in, trenching, ditching, tunneling, land leveling, grading and or mechanical probing. Damage to underground utilities by Contractor shall be repaired at Contractor's expense. Such damage must be reported immediately to the ENGINEER and the Owner. The Contractor shall undertake to make such further investigations, including without limitation, all structural, surface and subsurface conditions, including soil borings and otherwise of the Project site.
- c. Because the Contract Documents are complimentary, the Contractor shall, before starting each portion of the Work, carefully study all conditions upon which any portion of the Work is to be performed in order to ensure that conditions are suitable for the performance of each portion of the Work in strict accordance with the Contract Documents. The Contractor shall, before performance of each portion of the Work, take field measurements of existing conditions related to that portion of the Work, and the Contractor shall take into account all existing conditions including, but not limited to, conditions at the site affecting the Work, including existing utilities. The Contractor shall report to the ENGINEER, prior to commencing any portion of the Work, any errors, inconsistencies or omissions discovered by or made known to the Contractor and/or any of its Subcontractors, otherwise the Contractor shall be solely liable for any costs or expenses associated with any corrective work, effort or services.

11. WARRANTY

- a. The Contractor warrants that the Work will conform to the requirements of the Contract Documents, and will be free from defects to the fullest extent and duration of the prescriptive period of time for bringing claims against a contractor

provided by law.

- b. Pursuant to La. R.S. 9:2774, the "guarantee and warranty period of all construction contracts shall commence on the date certified by the ENGINEER as the date the prime contract(s) has (have) been substantially completed in accordance with plans and specifications, or beneficially used by the owner, whichever first occurs." Thus, the commencement date for ALL warranties of every nature or kind shall be the date of Substantial Completion as certified by the ENGINEER or beneficially used by the Owner, whichever first occurs. It shall be Contractor's sole responsibility to ensure that all written warranty documents include this commencement time. Damages for the failure to provide a warranty required by the Contract Documents that fails to comply with this requirement shall include, but are not limited to, the cost of total replacement of the affected portion of the Work, plus all costs, expenses, design professional fees and attorney fees.

12. INDEMNIFICATION

Delete all conflicting provisions in the Contract Documents and replace with the following:

- i. To the fullest extent permitted by law the Contractor shall indemnify, defend and hold harmless the Owner, ENGINEER, ENGINEER's consultants, and agents and employees of any of them, from and against claims, damages, losses and expenses, including but not limited to the payment of attorneys' fees incurred by any of them, arising out of or resulting from any failure to perform by or attributable to Contractor. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist under any other provision of the Contract Documents. See § 1.26 for insurance requirements to cover the obligation to indemnify, defend, hold harmless and to provide additional insured coverage.

13. FAILURE TO PERFORM WORK

Contractor shall be liable to the Owner and pay for all costs, expenses, fees (including attorney fees) and/or damages that the Owner incurs arising from or connected with the Contractor's failure to perform the Work, or any part thereof, in accordance with Contract Documents. Contractor's failure to perform shall include, but not be limited to, the failure of its subcontractors and/or suppliers of any tier to perform. The Contractor's liability to the Owner shall include, but not be limited to (1) the increase costs of performance, including services of the ENGINEER and other consultants, resulting from the Contractor's failure to comply with the Contract Documents; (2) costs of corrective or warranty work; (3) liability to third parties; (4) re-procurement costs; (5) attorney fees and related costs, including costs incurred in enforcing Owner's rights under the Contract Documents; and (6) liquidated damages.

14. LIENS

In the event a claim is asserted or a lien is filed by anyone in relation to the Work asserting that Work, materials equipment or supplies have been furnished but not

paid for, the Owner shall have the right, but not the obligation to: (1) require the Contractor to furnish to the Owner a release of a Lien or claim recorded by the person or entity filing the claim; (2) require the Contractor to discharge the lien by positing a bond with the Clerk of Court for the parish where the lien is recorded within five (5) calendar days of notice by the Owner to the Contractor; (3) issue payment in the form of a joint check to Contractor and claimant to pay the amount claimed and/or (4) retain out of any payment due or thereafter to become due 150% of the amount of the claim/lien and to apply the same in such manner as Owner deems necessary to satisfy such claim/liens and to compensate Owner for attorneys' fees and/or administrative costs. In the event such claim/lien is not discharged, the Contractor at its sole cost and expense, including attorneys' fees, shall hold harmless, indemnify and defend the Owner from any and all claims, lawsuits, causes of actions and demands of any person or entity asserting or claiming any right as a result of any lien or claim recorded or unrecorded, against the Owner, Project, or the Owner's property. The Owner shall have the right to terminate the Contractor for cause or to bond off said lien(s), and Contractor shall be liable for and pay to Owner all costs, expenses and fees including but not limited to, bond premiums and attorneys' fees incurred as a result thereof,. Prior to the receipt of partial or Final Payment, Contractor shall provide the Owner a final release of any liens and claims of all persons furnishing labor and/or materials to the Work with satisfactory evidence that there are no other liens or claims whatsoever outstanding against the Work or Contract.

15. ENGINEER

- a. The ENGINEER shall not be considered as the Owner's agent and the Owner shall not be responsible for any reliance by the Contractor upon oral instructions given by the ENGINEER, nor shall the Owner be responsible for any acts, errors or omissions of the ENGINEER. Contractor hereby stipulates and agrees that reliance upon any appearance of authority beyond the duties, responsibilities and limitations of authority of the ENGINEER as set forth in the Contract Documents, is not reasonable. Contractor stipulates and agrees that Contractor waives any claim against the Owner based upon any acts, errors or omissions of the ENGINEER or any design professional engaged by the ENGINEER. Contractor acknowledges that its exclusive remedy for any such claim shall be against the ENGINEER or designer responsible.
- b. The Contractor stipulates and agrees that the ENGINEER's determination of the date or dates of Substantial Completion shall be final, binding, and not subject to review by any court or arbitrator absent a showing that such determination was arbitrary and capricious.
- c. The ENGINEER will interpret and decide all matters concerning performance failure to perform by either the Contractor or Owner under the Contract Documents either on written request of the Owner or the Contractor, or upon the ENGINEER's own initiative.
- d. The Contractor and Owner stipulate and agree that the ENGINEER's interpretations and decisions shall be final and not subject to review by any court or arbitrator absent a showing that such interpretation or decision was arbitrary and capricious.

- e. The Contractor and Owner stipulate and agree that the ENGINEER's interpretations and decisions shall be final and not subject to review by any court or arbitrator absent a showing that such interpretation or decision was arbitrary and capricious.
- f. The failure of the ENGINEER to identify any failure to perform by the Contractor in accordance with the Contract Documents, shall not serve as a waiver of any Owner rights nor relieve the Contractor of any responsibility to perform the Work in strict accordance with the Contract Documents, despite the ENGINEER's signature on any document including, but not limited to, Final Application or Certification for Payment, or on any recommendation of final acceptance.

16. CHANGES IN THE WORK

- a. Requests for Information (RFIs), responses to an RFI and/or ENGINEER's instructions are not recognized as a modification to the Contract Documents where such documents may be interpreted to have the effect of altering the Contract Sum or the Contract Time. Contractor stipulates and agrees that the Contract Documents may only be changed by a written document properly signed by the OWNER. Contractor stipulates that Contractor shall not rely upon nor make any claim based upon any oral communication. Contractor hereby states its solemn intent that any such asserted reliance is unresolvable.
- b. Superseding any other provision in the Contract Documents to the contrary, the Contractor acknowledges that the OWNER shall have the right to issue a written directive in the event the OWNER and Contractor fail to reach an agreement on the cost or time to perform certain work which the Contractor contends should be considered extra work. The Contractor hereby agrees and stipulates that such written directive shall not serve as a contract modification, and does not adjust the contract price, contract time, addition, deletion, or revision of work. However, the Contractor stipulates and agrees to perform any work set forth in a written directive reserving all rights to assert a claim for additional time and/or money. Payment for work performed pursuant to a written directive shall be paid as certified by the ENGINEER.

17. RECORDATION

- a. The Contractor shall not commence any portion of the Work until the Contractor has properly, and in compliance with applicable law, recorded a Notice of Contract together with any bonds required by the Contract Documents and a description of the property where the Work is to be performed, with the Recorder of Mortgages for the Parish where the Work is to be performed, and the Contractor has delivered a copy of the recorded Notice of Contract and Bond(s) to the Owner bearing the recordation stamp of the public official. The Contractor hereby stipulates and agrees that the Contractor shall be liable unto the Owner for any and all costs, expenses, fees and attorney's fees incurred by the Owner arising from the failure of the Contractor to perform this obligation.
- b. After the Contractor, ENGINEER and Owner have signed the Certificate of Substantial Completion, the Contractor shall record with the Recorder of Mortgages in the Parish where the Work is performed, the fully executed Certificate of Substantial Completion together with the final list of deficiencies or punch lists

within two (2) business days after final execution of the Certificate of Substantial Completion. The Contractor shall deliver a copy of same to the Owner and ENGINEER bearing the file stamp of the Recorder of Mortgages. The Certificate of Substantial Completion must identify the date of recordation and the recordation data where the Notice of Contract was originally recorded.

18. FINAL ACCEPTANCE

- a. Any failure of the ENGINEER to identify a deficiency in the Work or the Contractor's performance, shall not serve as a waiver of any Owner rights, nor relieve the Contractor of the responsibility to perform the Work in strict accordance with the Contract Documents, despite any inspection or actual observation of missing or defective Work and/or despite the Designer's signature on any certification or on any recommendation. Only the Owner may waive or accept missing or defective Work and any such waiver or acceptance shall be in writing signed by the Owner. Oral statements, email, text messages or conduct shall not be relied upon to affect any such waiver or acceptance.
- b. The ENGINEER will, based solely upon the ENGINEER's professional judgment, include monetary values for the estimated cost to perform each item on the list of deficiencies or punch list. The ENGINEER's monetary quantification shall be final, binding and not subject to review by a court or arbitrator absent a finding of arbitrary and capricious.

19. FINAL PAYMENT

- a. In addition to any other requirement, neither final payment nor any retained percentage shall become due until the Contractor submits to the ENGINEER a certificate issued by the Recorder of Mortgages for the parish where the Work has been performed attesting that no liens have been recorded in connection with the Work, and that a statutory period of time for filing liens has expired
- b. Acceptance of Final Payment by the Contractor, a subcontractor or material supplier shall constitute a knowing and voluntary forfeiture of any and all claims by that payee except those claims which are specifically identified in writing by that payee on the Final Application for Payment document.

20. INSURANCE AND BONDS

- a. The Contractor hereby agrees, on its behalf and on behalf of its insurance carriers, to waive any rights of Subrogation for any loss sustained arising from the Work in favor of the Owner. The Contractor agrees to carry the insurance required in the Contract Documents, which shall be written for not less than the following minimum limits or as required by law, whichever is greater. The Contractor shall require its subcontractors, agents, or anyone else for whom it is responsible to carry the same limits of insurance.
- b. **ADDITIONAL INSURED** The Owner shall be named as an "additional insured" on all of the Contractor's liability policies as respects liability arising out of the Work; products and completed operations of the Contractor. The additional insured coverage shall contain no special limitations on the scope of protection afforded to

any additional insured. It is understood that the business auto policy under "Who is an Insured" automatically provides liability coverage in favor of the Owner. Any failure of Contractor to comply with any reporting provision of any policy shall not affect coverage provided to an additional insured. The insurance to be provided by Contractor shall not include any provision, exclusion or endorsement precluding coverage for claims between insureds and/or additional insureds.

- c. R.S. 9:2780.1 Contractor hereby agrees, as a material condition of the Contract Documents, to obtain insurance to insure any and every obligation to indemnify, defend, or hold harmless and/or any obligation to name Owner and/or others as an additional insured, wherever such obligation is stated in the Contract Documents. Contractor hereby acknowledges and stipulates that the cost of all insurance required by the Contract Documents is included within the contract price to be paid by Owner to Contractor.

21. STATUTORY EMPLOYER STATUS

Pursuant to the directive of Act 315 of the 1997 Louisiana Regular Session regarding guidelines for determining statutory employer status under La R.S. 23:1061, effective June 17, 1997 and in consideration thereof:

- a. Owner and Contractor jointly agree, stipulate and recognize that Owner shall be the Statutory Employer pursuant to R.S. 23:1061 of any and all of the Contractor's employees and/or employees of any subcontractor hired or retained in any manner by Contractor while Contractor's employees and/or subcontractor's employees are performing any work and all work and/or any services under the contract between Owner and Contractor.
- b. Owner and Contractor further stipulate, agree and recognize that all work performed under the contract between Owner and Contractor shall be considered part of Owner's trade, business or occupation and shall be specifically considered an integral part of and essential to the ability of Owner to generate goods, products or services.
- c. Owner and Contractor further stipulate, agree and recognize that the services or work provided by any subcontractor hired or retained by Contractor for the performance of any work and/or services under this contract shall be contemplated by and included in this contract.

22. WRITING REQUIRED TO WAIVE RIGHTS

Contractor stipulates and agrees that actions, inactions or conduct alone, which may be deemed or interpreted as inconsistent with rights afforded the Owner, shall not be interpreted as a waiver of such rights absent an express writing signed by the Owner to that effect.

END OF SECTION

SECTION 00910
CONSTRUCTION SAFETY PHASING PLAN (CSPP)

Hangar Development
Marksville Municipal Airport

PREPARED BY: Digital Engineering & Imaging, Inc.

- 1. COORDINATION 2
- 2. PHASING..... 2
- 3. AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION 3
- 4. PROTECTION OF NAVIGATION AIDS (NAVAIDS) 4
- 5. CONTRACTOR ACCESS..... 4
- 6. WILDLIFE MANAGEMENT 6
- 7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT..... 6
- 8. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT 7
- 9. NOTIFICATION OF CONSTRUCTION ACTIVITIES..... 7
- 10. INSPECTION OF CONSTRUCTION ACTIVITIES 7
- 11. UNDERGROUND UTILITIES..... 8
- 12. PENALTIES 8
- 13. SPECIAL CONDITIONS 8
- 14. RUNWAY AND TAXIWAY VISUAL AIDS..... 8
- 15. MARKING AND SIGNS FOR ACCESS ROUTES 8
- 16. HAZARD MARKING AND LIGHTING 8
- 17. PROTECTION OF RSA/TSA, OFA, OFZ AND APPROACH/DEPARTURE SURFACES . 9
- 18. OTHER LIMITATIONS ON CONSTRUCTION..... 9

APPENDIX A – Project Layout & Safety Plan
APPENDIX B – Construction Daily Safety Inspection Checklist

1. COORDINATION

A. PROJECT CONTACTS:

- Marksville Municipal Airport
Brian St. Romain (Airport Manager).....(318)359-0812
- Digital Engineering
Gerald Babin, P.E. (Project Manager) (504) 468-6129 (225) 235-5009
- LA DOTD (Louisiana Department of Transportation & Development)
Jamie Henry (Program Manager)(225) 379-3046
- FAA (Federal Aviation Administration)
Brittan Smith (Program Manager)(817) 222-5654

B. EMERGENCY CONTACTS:

Brian St. Romain (Airport Manager)(318)359-0812

C. DESIGN SUBMITTALS:

The 100% Project Plans and Specification submittal were transmitted to the owner for review.

D. NON-MANDATORY PRE-BID MEETING:

A Non-Mandatory Pre-bid Meeting will be held at the Marksville Municipal Airport prior to bidding, which will include a site visit for all present. All parameters of the project will be discussed, including the Safety Plan.

E. PRE-CONSTRUCTION MEETING:

A Pre-construction Meeting shall be conducted prior to the initiation of any work or movement of equipment on to the project site. Attendees will include a representative for the airport, the project engineer, contractor, and the project inspector. The construction safety and phasing plan will be reviewed and discussed at such time.

F. CONSTRUCTION PROGRESS MEETING:

Construction progress meetings shall be conducted bi-weekly pending the necessity for an increased frequency of scheduling the meetings.

2. PHASING

A. OVERALL SCOPE OF WORK: This project consists of the construction of a pre-engineered metal building with a single panel hydraulic lift door on a concrete slab foundation. Also included in this project is the construction of a 25' concrete apron for the new metal building. The pre-engineered metal building will require connections to existing water, sewer, and electrical lines on the airfield property. General excavation, grading, seeding will also be included.

B. CONSTRUCTION PHASING: This project is being projected to be completed in 120 calendar days with Runway 4-22 remaining open for the duration of construction operations.

Before commencing work, the contractor shall submit to the project engineer for approval his proposed sequence of construction. Subsequent to the project engineer's approval, deviations from the approved sequence of construction shall not be made without written approval of the engineer. See proposed sequence and requirements below.

(This sequence of construction is a suggested guide for the contractor for the observance of critical work areas, operational requirements at the project site, and/or regarding safety concerns. This provides a guide for the contractors understanding of the work days that must be properly projected on the contractors work schedule. This is in no way an instruction to the contractor on the means or methods of constructing this project; however, the owner has the right to deny a proposed work schedule that does not sufficiently project a work schedule that shows how the contractor plans to meet the project completion within the contract time. The contractor shall provide a written schedule of construction to the owner for approval prior to commencing work and must be submitted to the owner/engineer prior to the pre-construction meeting.)

PHASE I Pre Construction

Contractor Submits All Material Submittals and Proposed Schedule To Engineer.
Pre-Construction Conference Conducted.
Mobilization / Notice to Proceed

PHASE II - Construction

Construct temporary construction access road
Construct pre-engineered metal building on a concrete slab foundation with sewer and electrical connections to existing airfield utilities.
Construct concrete apron for the new metal building.
Grade new pavement shoulders and the perimeter of the new hangar slab, and seed disturbed areas.
Final Inspection / Acceptance (All punch list items complete and accepted)
Barricades Removed / Airport Re-opened
45 Day Clear Lien Period Begins

STAGING AREA: The Contractor will establish the staging area north of the existing hangars adjacent to where the new hangar will be constructed.

CONSTRUCTION ACCESS: The Contractor will construct a temporary aggregate construction access road off of Taxiway A as indicated on the project plans. This access road will need to be utilized by any heavy machinery, hauling vehicles, or delivery trucks. Timber matting will need to be placed atop the first 10' of the access road off of Taxiway A to prevent FOD from getting onto the taxiway. The Contractor may use the existing aprons on the airfield as access for general purpose vehicles such as pickup trucks or personal vehicles.

3. AREAS and OPERATIONS AFFECTED BY CONSTRUCTION

- A. **AFFECTED AREAS:** No airfield pavements are expected to be closed for the duration of this project. While Taxiway A is being used by machinery or delivery vehicles, the Contractor shall have a flagger present to maintain traffic.

- B. **RUNWAY SAFETY AREAS:** Contractor shall not enter a Runway Safety Area (RSA) of any active runway without prior coordination with Airport Manager.
- C. **RUNWAY PROTECTION ZONES:** Contractor shall not place stockpiles or store materials and fuel in the runway approach protection zone (RPZ) of any active runway.

4. PROTECTION OF NAVIGATION AIDS (NAVAIDS)

- a. **EFFECTS OF CONSTRUCTION TO NAVAIDS:** No NAVAID facilities are expected to be affected for the duration of this project.

5. CONTRACTOR ACCESS

- A. **STOCKPILED MATERIALS:** Contractor is limited to placement of stockpiled materials at the locations shown within the phasing plans.
 - i. **Height Restrictions:** Stockpiles are limited to 10 feet if inside airfield perimeter fence.
 - ii. **Wildlife Attractant:** Contractor to manage stockpiles so that they do not attract wildlife (Refer to Section 6 below).
 - iii. **Foreign Object Debris (FOD):** Contractor to manage stockpiles so that they do not create FOD (Refer to Section 7 below).
 - iv. **Marking and Lighting of Stockpiles:** Contractor will not be required to mark or light material stockpiles.

- B. **VEHICLE AND PERSONNEL OPERATIONS**

- i. **Access to Airport Operations Area (AOA):** The airport operations area is defined by the perimeter fence surrounding the airfield. Access onto the AOA is through any number of gates along the fence or doors through buildings. Contractor access onto the AOA is limited to the gates shown on the project phasing sheets. No person shall enter upon the Air Operations Area (AOA), or any other restricted area except authorized personnel assigned to duty therein, personnel escorted by an appropriately badged escort.
- II. **Mechanisms To Prevent Improper Movement:** Contractor operations within the AOA are limited to the areas shown on the project phasing plans. A visual boundary will be installed by the Contractor around all work areas. Boundary will consist of low profile barricades on pavement surfaces. The project layout plan show locations of work area boundaries, which generally follow Object Free Areas of adjacent open pavement. Construction vehicles and personnel must not cross barricades.
- III. **Parking areas for personal vehicles and equipment:** Parking area for Contractor employee personal vehicles is identified as staging areas on the project layout plan. Contractor vehicles and equipment are allowed inside of the project work area within the AOA only for parking within designated locations. Equipment staging and parking areas are as shown in the project plans.
- IV. **Haul Routes:** The project layout plan depict haul routes for both overall

site access from surrounding public roadways and haul routes to the individual phased work areas through the airport perimeter fence. Contractor access and hauling operations are strictly limited to the haul routes shown. Contractor is responsible for any improvements and maintenance to haul routes as needed to efficiently perform construction activities. Following completion of construction Contractor is required to restore haul route to original condition.

- v. **Airport Rules For Ground Vehicle Operations:**
 - a) No person shall operate motorized vehicles or equipment of any kind on the airport unless in possession of valid operator's license as required by the State for the type of vehicle being operated.
 - b) No person shall operate a motor vehicle or other motorized equipment of any kind on the airport in a reckless or negligent manner or without caution or in any manner that endangers or is likely to endanger persons or property.
 - c) No person shall fail to give pedestrians and aircraft the right-of-way over vehicular traffic. All ground vehicles shall pass to the rear of taxiing aircraft.
 - d) No person operating a motor vehicle on the airport shall fail to give proper signals or fail to observe the directions of posted traffic signs or traffic lanes.
 - e) No person under the influence of alcohol or drugs shall operate a motor vehicle on the airport.
 - f) Contractor will not be allowed to operate motor vehicles outside of the designated work areas as identified by barricades. To drive from one work area to another you should, under most circumstances, leave the airfield via an authorized security gate, and then drive the airport service road to the desired work area.
 - g) The Airport shall have the authority to tow or otherwise move motor vehicles that are parked by their owners or operators on the airport in violation of the regulations of the airport, at the operator's expense and without liability for damage that may result in the course of or by reason of such moving.
 - h) All Vehicles operating on the airport must have their head / tail lights turned on during darkness and low visibility conditions.
- vi. **Contractor Vehicle Marking and Lighting:**
 - Each Contractor licensed vehicle must have a yellow/amber rotating beacon affixed to the uppermost part of the vehicle. Light must be visible from any direction, day and night, including the air. Specialized construction equipment does not require rotating beacon lights.
 - Contractor vehicle marking and lighting is the sole responsibility of the Contractor. The Airport will not provide markings or lights.

C. RADIO COMMUNICATION

This airfield is a general aviation airport that does not have a control tower.

- i. **Two-way Radios:** Contractors may utilize two way radios on the project provided that they do not interfere with existing Airport frequency
- ii. **Airfield Radio Communication:**
 - a. **Airfield Radio will not be required on a closed runway.**

D. AIRPORT SECURITY:

- i. The project plans show the entry point (Runway Road), barricades, Contractor's staging area, and work area.
- ii. No Contractor employee may tamper or interfere with, compromise, modify, attempt to circumvent, or cause a person tamper or interfere with, compromise, modify, or attempt to circumvent any security system, measure, or procedure implemented at the Airport.
- iii. Each Contractor employee must immediately notify the Airport when security-related facilities and equipment within the Contractor's area are malfunctioning or no longer adequate to perform the control function.

E. SECURITY BADGING REQUIREMENTS: No badging of construction personnel is required on this project.

6. WILDLIFE MANAGEMENT

A. TRASH: All construction personnel will dispose of all trash including food scraps in closed receptacles which will be emptied off of the Airfield.

B. STANDING WATER: Any activity taking place that creates a standing body of water must be remedied immediately.

C. WILDLIFE SIGHTINGS: Any wildlife sightings shall be reported to airport manager immediately.

7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

A. DESCRIPTION OF FOD: Foreign object debris at airports includes any object found in an inappropriate location that can damage aircraft, equipment, or airport personnel. On construction sites FOD typically is comprised of loose gravel, blowing sand, wire bristles from sweeper heads, food wrappers, material packaging. The presence of FOD on an airport's air operations area (AOA) poses a significant threat to the safety of air travel. FOD has the potential to damage aircraft during critical phases of flight, which can lead to catastrophic loss of life and airframe, and at the very least increased maintenance and operating costs. All construction personnel will secure all items that may be carried by wind onto air operations area (AOA)

B. METHODS OF FOD CONTROL

- i. **TRAINING:** Contractor shall provide training to all employees working within the AOA on effective FOD management. Training shall include description and consequences of FOD, FOD awareness, and housekeeping procedures.
- ii. **HOUSEKEEPING:** Preventing FOD from occurring is the most effective form of FOD management. Contractor must monitor construction activities and proactively develop a plan to prevent FOD from occurring. Typical FOD prevention measures include the use of covered trash containers, covered loads, zero tolerance of littering, and tying down items which may be easily wind-blown.
- iii. **PAVEMENT SWEEPS:** Prior to opening sections of pavement within a

work area to aircraft traffic, the Contractor will be required to sweep the entire pavement surface .

- iv. **FOD INSPECTIONS:** Refer to Section 10 for FOD inspection requirements.

8. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

Haz-mat procedures to be developed by the contractor prior to the issuance of the notice-to-proceed including but not limited to:

- I. **SPILL KIT:** The Contractor will have a spill kit available at all times that is capable of containing and removing leaked fluids.
- II. **SPILL PROCEDURES**
- III. **MSDS**
- IV. **FUEL STORAGE LOCATIONS**

9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

- A. **RESPONSIBLE REPRESENTATIVES:** Persons who have questions concerning policies, procedures, or requirements of the Airport Security Program, should contact Airport Staff. Persons who observe a security violation, suspicious act or any serious act that may endanger persons or property, should immediately contact Airport Staff. For this project, all communications with ATC Ground Control will be made by Airport Operations staff.
- B. **NOTAMS:** Contractor shall coordinate with Airport Operations personnel for the issuance of all NOTAMs related to the project construction. Airport Operations and FAA shall generate and issue NOTAMs based on Contractor construction schedule and facility impacts.
- C. **EMERGENCY NOTIFICATION PROCEDURES:** In the case of a life threatening situation, dial 911 and Airport Manager immediately thereafter. Airport Operations will coordinate any emergency response.
- D. **NOTIFICATION TO THE FAA:** The project 7460 "airspace analysis" has been submitted to FAA for review based upon the project design and estimated construction methods/equipment necessary for the project. If at such time the project requires a change to the data submitted to FAA, an update shall be resubmitted by the project manager/engineer.
- E. **AIRPORT USER NOTIFICATION:** The airport manager will notify tenants of construction activity by email or by posting flyers on the airfield.

10.INSPECTION OF CONSTRUCTION ACTIVITIES

- A. **FOD INSPECTIONS:** The Contractor shall keep the project site and vehicles clean, employing a "clean as you go" approach throughout the project.
- B. **AIRPORT INSPECTION:** The Airport or their representative will make periodic checks on the airport surfaces. The airport representative will attend the construction progress meetings if necessary as well as the final inspection.
- C. **PROJECT INSPECTOR:** The Project Inspector will conduct an inspection of the worksite at the end of each day using the daily inspection checklist attached in the Appendix B.
- D. **CONTRACTOR REQUIREMENTS:** The Contractor will conduct routine inspections of the worksite to ensure compliance with this plan.

11. UNDERGROUND UTILITIES

- A. This project does not cross any utility lines. All electrical power and control lines that run parallel to the runway and taxiway are airport property. No conflict with airfield electrical lines are anticipated with this project. If an unplanned task develops that the contractor is required to excavate outside of the runway pavement or excavate to a depth of three (3) feet below the pavement surface, the project engineer shall be contacted prior to provide assistance in conduit and electrical cable avoidance.
- B. The Contractor will suspend all construction activity and notify the project manager if any underground conduit/cable is observed until consulted with the project engineer.

12. PENALTIES

- A. **VEHICLE VIOLATIONS:** The Sponsor will immediately suspend all construction if any of the contractor's personnel enters any Air Operations Area without notifying and receiving permission from the Sponsor.
- B. **SECURITY VIOLATION:** The Sponsor may permanently prohibit anyone acting in violation with airport rules and regulations for entering or working on the airport.
- C. **FOD VIOLATION:** Project may be halted by the Airport, FAA, or other agencies for failure to properly manage FOD during construction activities.

13. SPECIAL CONDITIONS

- A. **AIRPORT EMERGENCIES:** Contractor shall monitor any weather conditions, aircraft emergencies, unexpected emergencies and other elements that may cause safety on the project to be jeopardized.
- B. **ON-SITE BURNING OR BLASTING:** On-site burning or blasting is prohibited.

14. RUNWAY AND TAXIWAY VISUAL AIDS

- A. **GENERAL:** No airport markings, lighting, signs, or visual NAVAIDs will be covered, removed, or disabled during construction.

15. MARKING AND SIGNS FOR ACCESS ROUTES

No signs are required for this project

16. HAZARD MARKING AND LIGHTING

Low profile barricades with flashing red lights to be used for all pavement closures.

17. PROTECTION OF RSA/TSA, OFA, OFZ AND APPROACH/DEPARTURE SURFACES

- A. Open trenches and excavations are not permitted within the RSA / TSA while the runway/ taxiway is open. All trenches and excavations must be backfilled prior to opening taxiway.

18. OTHER LIMITATIONS ON CONSTRUCTION

Contractor may not use tall equipment (cranes, concrete pumps, etc.) unless a 7460-1 determination letter is issued for such equipment.

**SECTION 02510 -
WATER PIPING, MATERIALS AND STRUCTURES**

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The work covered by this section consists of all labor, materials, equipment, and incidentals necessary to completely furnish, install, test, and clean all water piping, valves, fittings, hydrants, services and accessories indicated on the drawings and/or specified herein including all appurtenances necessary to make the water system complete and fully operational.

1.02 REFERENCED STANDARDS

- A. American Petroleum Institute (API), 5L Specification for Line Pipe.
- B. American Railroad Engineering Association Manual for Railroad Engineering.
- C. American Standards Association
1. ASA B16.1, American National Standard for Cast Iron Flanged Fittings and Flanges.
- D. American Society of Testing Materials
1. ASTM A120, Standard Specification for Black and Hot Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses.
 2. ASTM A338, Standard Specification for Malleable Iron Flanges, Pipe Fittings and Valve Parts for Railroad, Marine, and other Heavy Duty Service at Temperatures up to 650 Degrees F.
 3. ASTM B88, Standard Specification for Seamless Copper Water Tube.
 4. ASTM C127, Standard Test for Thermal Conductivity of materials by Means of the Guarded Hot Plate.
 5. ASTM D256, Standard Test for Impact Resistance of Plastics and Electrical Insulating Materials.
 6. ASTM D635, Standard Test for Flammability of Self-Supporting Plastics.
 7. ASTM D638, Standard Test for Tensile Properties of Plastic.
 8. ASTM D648, Standard Test Deflection Temperature of Plastics under Flexural Load.
 9. ASTM D696, Standard Test for Coefficient of Linear Thermal Expansion of Plastics.
 10. ASTM D746, Standard Test of Brittleness Temperature of Plastics by Means of a Cantilever Beam.
 11. ASTM D792, Standard Test for Specific Gravity and Density of Plastics by Displacement.
 12. ASTM D1238, Measuring Flow Rates of Thermoplastics by Extrusion Platometer.
 13. ASTM D1248, Standard Specification for Polyethylene Plastic Molding and Extrusion Materials.
 14. ASTM D1525, Standard Test for Vicat Softening Point of Plastics.
 15. ASTM D1693, Standard Test for Environmental Stress Cracking of Ethylene Plastic.

16. ASTM D1784, Standard Specification for Rigid Poly (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds.
17. ASTM D2240, Standard Test for Indentation Hardness of Rubber and Plastics by Means of a Durometer.
18. ASTM D2241, Standard Specification for Poly (Vinyl Chloride)(CPVC) Plastic Pipe (SDR-PR).
19. ASTM D2837, Obtaining Hydrostatic Design Basis for ThermoPlastic Pipe Materials.

E. American Water Works Association

1. AWWA C101, American National Standard for Thickness Design of Cast Iron Pipe (ASA 21.1).
2. AWWA C104, American National Standard for Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water (ASA 21.4).
3. AWWA C106, American National Standard for Gray-Iron Pipe Centrifugally Cast in Metal Molds, for Water and Other Liquids (ASA 21.6).
4. AWWA C108, American National Standard for Cast Iron Pipe Centrifugally Cast in Sand-lined Molds, for Water or Other Liquids (ASA 21.8).
5. AWWA C110, American National Standard for Gray-Iron and Ductile Iron Fittings 3" through 48", for Water and Other Liquids (ASA A21.10)
6. AWWA C111, American National Standard for Rubber Gasket Joints for Ductile Iron and Gray-Iron Pressure Pipe and Fittings (ASA A21.11).
7. AWWA C150, American National Standard for the Thickness Design of Ductile Iron Pipe (ASA A21.50).
8. AWWA C151, American National Standard for Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-lined Molds, for Water or Other Liquids (ASA A21.51).
9. AWWA C153, Short Body Full Flow Ductile Iron Fittings 3" through 24" for Water and Other Liquids (AAS A21.10).
10. AWWA C500, Standard for Gate Valves, 3" through 48" NPS, for Water and Sewage Systems.
11. AWWA C502, Standard for Dry-Barrel Fire Hydrants.
12. AWWA C504, Standard for Rubber-seated Butterfly Valves.
13. AWWA C600, American National Standard for Installation of Gray and Ductile Cast-Iron Water Mains and Appurtenances.
14. AWWA C601, Standard for Disinfecting Water Mains.
15. AWWA C700, Standard for Cold-water Meters - Displacement Type.
16. AWWA C800, Standard for Threads for Underground Service Line Fittings with Appendix on Collected Standards for Service Line Material.
17. AWWA C900, Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4" through 12", for Water.
18. AWWA C901, Standard for Polyethylene (PE) Pressure Pipe, Tubing, and Fittings, 2" through 3", for Water.

- 19. AWWA C905, Standard for Polyvinyl Chloride (PVC) Pressure Pipe 14" through 36".
- F. National Fire Protection Association
NFPA No. 194, Standard for Screw Threads and Gasket for Fire Hose Couplings.
- G. Louisiana Standard Specification for Roads and Bridges
- H. American National Standards/National Sanitation Foundation Standard for Drinking Water System Components (ANSI/NSF 61)

1.03 GENERAL

- A. Contract Drawings: The contract drawings indicate the general design, arrangement and extent of the piping system. It is desired that the indicated positions be followed as closely as possible. Do not scale drawings for roughing in measurements nor use as shop drawings. Prepare shop drawings per Paragraph 1.04, Submittals, herein. The exact location of the various items is subject to construction, and the actual materials and equipment furnished by the Contractor. The Contractor shall verify the location of all items furnished, installed, or connected to by him. Coordinate work with other specification divisions.
 - 1. Piping systems shall be located from dimensions given on drawings or all implied locations shall be determined after field measurements have been taken.
 - 2. Should interferences or discrepancies prevent the installation of any part of the work, the Engineer shall be notified and he will determine the steps necessary to complete the true development of the intent of the drawings and specifications.
- B. Materials
 - 1. General
 - a. Unless otherwise specified or shown, pipe, fittings, and general purpose valves for each piping system shall be as shown in the drawings.
 - b. If there are any conflicts in the specifications, use the stronger pipe class. Contractor shall submit calculations with shop drawings where specified.
 - c. All piping shall have a minimum cover of 30 inches unless otherwise shown on the drawings.

1.04 SUBMITTALS

- A. General: Shop drawings and product data shall be submitted in accordance with the General Requirements.
- B. Product data shall include all manufacturer's literature, catalog cuts and other descriptive literature to fully substantiate the conformance with specifications of materials and equipment submitted. Mark product-data to indicate exactly those items that are to be provided and cross out unrelated or nonapplicable items.
- C. Shop drawings shall include Contractor prepared plans, sections and details fully dimensioned showing all piping systems and appurtenances to be installed and with system designations as indicated herein. Show all equipment connection details.

1.05 JOB CONDITIONS

- A. Schedule Of Work: Arrange work to comply with schedule of construction. In scheduling, anticipate means of installing equipment through available openings in structure.

- B. Coordination Of Work: The Contractor shall coordinate all trades whose work is adjacent, in order to avoid field interference and delay in execution of the work of all trades. Furnish detailed advance information regarding all requirements related to work by others. Furnish sizes and accurate data and location of any and all foundations, pits, chases, holes through beams, floors, walls, ceilings and roof, and other special openings required for this contract work.
- C. Inserts: Prior to the execution of each step in the general construction work, determine that all chases and holes required for the specified work are properly located and sized and supervise the setting of all sleeves, inserts and other required build-in items. If this preliminary work is not properly performed and should cutting be required to install the specified work, the Contractor shall bear all expense of cutting and restoring the construction to its original condition.
- D. Cutting: The work shall be carefully laid out in advance and any cutting of construction shall be done only with the written permission of the Engineer. Cutting shall be carefully done, and any damage to the building, piping, wiring and equipment as a result of the cutting shall be repaired by persons skilled in the particular trade.

1.06 MANUFACTURER

- A. Pipe and fittings shall be manufactured by a firm regularly engaged in the successful manufacture of the type of pipe furnished. All water piping specified shall be NSF approved and all piping shall bear the NSF stamp of approval. (ANSI/NSF 61)

1.07 HANDLING OF PIPE

- A. The pipe shall not be dropped or subjected to any unnecessary jar, impact or other treatment that might damage the pipe. Any unit of pipe that in the opinion of the Engineer is damaged beyond repair by the Contractor shall be replaced by another unit. Any pipe that is damaged and repairable shall be repaired in the field, or at the direction of the Engineer shall be returned to the manufacturing plant for repair.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE FITTINGS

- A. Manufacture. Ductile Iron pipe shall be manufactured in the U.S.A. in accordance with the latest revision of ANSI/AWWA C151/A21.51. All ductile iron pipe shall be hydrostatic pressure tested at the plant of the manufacturer to 500 psi.
- B. Design. Ductile Iron Pipe shall be designed in accordance with the latest revision of ANSI/AWWA C150/A21.50. The design shall include a minimum working pressure of 150 psi plus a 150 psi surge allowance. A two to one safety factor shall be applied to the sum of the working pressure plus the surge allowance. A two to one safety factor shall also be applied to the bending stress and deflection design for a Type 3 to Type 5 laying condition with the depth of cover as required per the plans.

Unless noted otherwise on the plans, the minimum pressure classes for ductile iron pipe shall be as follows: PC 350 for 8" - 12" pipe, PC 250 for 14" - 20" pipe, PC 200 for 24" pipe and PC 150 for 30" and larger pipe.
- C. Coating and Lining. Pipe shall have a standard asphaltic coating on the exterior. Pipe shall have a cement mortar lining on the interior in accordance with the latest revision of ANSI/AWWA C104/A21.4.
- D. Joints. All in plant ductile iron piping shall be restrained joint. "Fast-Grip", "Flex-Grip", "Field Flex-Ring", "Lok-Ring" or approved equal shall be used.
- E. Ductile Iron Fittings. Ductile Iron Fittings shall conform to the latest revisions of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53. Linings and coatings for fittings shall be the same as specified for ductile iron pipe.
- F. Flanged Pipe. All above ground or exposed pipe shall be ductile iron and shall comply with ANSI/AWWA

C115/A21.15. The pipe barrel shall be made in accordance with ANSI/AWWA C151/A21.51, and shall have a thickness of no less than special thickness Class 53. All flanges shall be ductile iron and rated for a working pressure of 250 psi. Flange pipe and fittings shall be cement lined as specified above and shall be shop primed on the outside diameter with either TNEMEC 37H77 Chem Primer for an alkyd-phenolic primer or TNEMEC 140-1211 Pota-1211 Pota-Pox Plus for high solids epoxy primer.

- G. Outlets. Welded on outlets may be provided in lieu of tees and crosses. Outlets shall be fabricated from centrifugally cast ductile iron pipe, manufactured and tested in accordance with the latest revision of ANSI/AWWA C151/A21.51, using a high nickel content weld such as NI-Rod #55. Welding shall be performed in the pipe manufacturer's shop only. Outlets shall not be more than 70% of the size of the parent pipe. Minimum walls for the parent and outlet pipes shall be as published by American Ductile Iron Pipe or other approved manufacturer.

2.02 POLYVINYL CHLORIDE (PVC) PIPING

All PVC piping shall meet the requirements and conform to one of the paragraphs as designated on the Drawings.

- A. AWWA C900, Plastic pipe designated as C900 shall be made of rigid polyvinyl chloride (PVC) compounds conforming to ASTM D1784 for Type 1, Grade 1 (PVC 1120). The pipe shall be standard sizes 4" through 12" in pressure class 100, 150 and 200 conforming with the outside diameter (OD) of cast-iron (CI) and with the wall thickness of dimension ratio DR series 25, 18 and 14 as indicated on the Drawings. Standard laying lengths shall be twenty feet (20').
- B. AWWA C905, plastic pipe designated as C905 shall be made of rigid polyvinyl chloride (PVC) compounds conforming to ASTM D1784 for Type 1, Grade 1 (PVC 1120). The pipe shall be the standard sizes 14" through 36" conforming with the outside diameter (OD) for cast iron (CI) and with the wall thickness of dimension ration DR series 25 and 18 as indicated in the Plans. Standard laying lengths shall be twenty feet (20') laying length. Sizes and pressures are as follows:

<u>Size</u>	<u>DR</u>	<u>Pressure</u>	<u>DR</u>	<u>Pressure</u>
14	25	165	18	237
16	25	165	18	237
18	25	165	18	237
20	25	165	NA	---
24	25	165	NA	---
30	25	165	NA	---
36	25	165	NA	---

- C. SDR 21 and 26. Plastic pipe designated as SDR 21 or 26 shall be made of rigid polyvinyl chloride (PVC) compounds conforming to ASTM D1784 for Type 1, Grade 1 (PVC 1120). The pipe shall be standard sizes 4" through 12" in pressure classes 160 (SDR-26) and 200 (SDR-21) and conform to ASTM D 2241. The standard length shall be twenty feet (20') or forty feet (40').
- D. Polyvinylchloride (PVC) material for pipe, fittings, and couplings shall conform to ASTM D1784, Type 1, Grade 1, with 2,000 psi design stress. Pipe shall be Schedule 40 or 80 and shall be in accordance with ASTM D1785. Thickness schedule shall be as specified on pipe specifications sheets. PVC fittings shall be socket type conforming to ASTM D2466/2467. Solvent cement shall comply with ASTM D2564.

- E. Joints:

Joints shall be rubber ring and made to manufacturer's specifications. Rubber rings shall be securely locked into the bell.

- F. Fittings:

Fittings shall be the same type and grade, pressure rating and manufacturer of the pipe, and conform to the pipe

specifications AWWA 900 or AWWA 905; or shall be ductile iron as specified herein under ductile iron pipe, except that fittings shall have all connections of standard AWWA dimensions or dimensions as required or with adapters of the proper class for the size of plastic pipe laid. Fittings 3" and smaller shall be PVC equal. Fittings 4" through 36" shall be ductile iron meeting C-153 specifications of AWWA. Where new water main is being cut into existing water main, only ductile iron fittings, all sizes, will be accepted.

G. Manufacturer's Representative:

The pipe manufacturer must furnish a trained representative for not less than one (1) eight (8) hour day on the job site to instruct and supervise the contractor in the proper method for installation of pipe and pipe fittings.

2.03 HIGH DENSITY POLYETHYLENE PRESSURE PIPE

- A. High density polyethylene pipe shall be made from polyethylene resin compound that meet the requirements for Type III, Category 5, Class C, Grade P34 as defined in ASTM D1248.
- B. The pipe produced from this resin shall have a classification of 345434C in accordance with ASTM D 3350 and shall have a Plastic Pipe Institute (PPI) rating of PE 3408.
- C. The material shall be of virgin quality and contain a minimum of 2% well dispersed carbon black. The workmanship shall be of the highest level compatible with current commercial practice. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification and from the same raw material supplier. The polyethylene pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. It shall be uniform in color, opacity, density and other physical properties.
- D. The pipe shall have a manufacturer's recommended hydrostatic design stress rating of 800 psi based on a material with a 1,600 psi design basis determined in accordance with ASTM D2837. The pipe shall conform to the dimensions, wall thickness, testing, marking and all other provisions of ASTM F 714 for the dimension ratios as shown on the drawings or on the bid form.
- E. Pipe shall be marked at 5-foot intervals with a coded number which identifies the manufacturer, SDR, size, PPI rating, manufacturing standard reference and production code form which date and place of manufacture can be determined.
- F. Flange adaptors shall be manufactured by the same manufacturer as the pipe using the same resin as the pipe. Each flange adaptor shall be furnished with a ductile iron convoluted backup ring drilled to match a standard ANSI bolt pattern for welded steel pipe.
- G. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. It shall be uniform in color, opacity, density and other physical properties.
- H. Butt fusion of the pipe and fittings shall be performed by the thermal butt fusion system. Polyethylene pipe lengths, fittings and flange adaptor connections to be fused shall be of the same type, grade and class of polyethylene compound and supplied by the same raw material supplier.

2.04 STEEL PIPE AND FITTINGS

- A. Steel pipe shall meet the requirements of ASTM A 53 Grade B and shall be standard weight. Steel pipe specified to meet the requirements of AWWA C200 shall be designed to the maximum internal pressure given in the specifications.
- B. The minimum wall thickness for steel pipe 4 inches and up to and including 36 inches shall be 1/4 inch.
- C. Exposed pipe shall have grooved or shoulder type joints complying with AWWA C606 unless flanged ends or plain ends for flexible couplings are shown on the drawings are required. Flanged ends shall conform to AWWA C207 Class B with rubber gaskets.

Pipe used with groove and couplings shall be not less than standard weight and at least as thick as the minimum recommended by the coupling manufacturer or shall be provided with double fillet or butt welded collared ends to meet requirements. Laying length shall be as specified by the Contractor. Bends, fittings, and special fittings for pipe 14 inches and larger shall meet the requirements of AWWA C 208 and the same stress and load conditions required for pipe meeting the requirements of AWWA C 200 specified above. The Contractor shall determine and provide reinforcements or additional shell thickness as required to keep the combined stresses within the specified maximum.

- D. Coatings for steel pipe and fittings shall be hot applied coal tar enamel with kraft paper wrap in accordance with AWWA C203, or coal tar epoxy per AWWA C210 or fusion epoxy coating per AWWA C213. Other steel pipe and fittings shall be factory cleaned and primed and field painted.
 - 1. Lining for steel pipe and fittings shall be cement mortar lining per AWWA C205.
 - 2. All field repair work shall conform to one of the following as applicable. Welding per AWWA C206, cement mortar lining per AWWA C602, and cold applied coal tar coating per AWWA C209.
- E. The manufacturer shall provide an affidavit of compliance as described in AWWA C200. Shop hydrostatic tests of steel pipe and fittings, as specified in AWWA C200, are required.

2.05 GALVANIZED PIPE

- A. Pipe:

Galvanized steel pipe shall conform to A.S.T.M. A120, standard weight (unless designated otherwise), with hot-dip galvanizing.
- B. Joints:

Joints shall be threaded or screwed and shall utilize iron pipe threads. Only joint compounds that are suitable and AWWA approved for use in potable water systems shall be used.

2.06 CASING PIPE

- A. Pipe:

Casing pipe shall be steel having a minimum yield strength of 35,000 psi, conforming to A.P.I. Specification 5L. Casings shall have the following minimum wall thicknesses:

<u>Size (Non. Diam., In.)</u>	<u>Thickness (Inches)</u>
Under 12" I.D.	0.250
14 and 16 O.D.	0.281
18 O.D.	0.313
20 O.D.	0.344
24 O.D.	0.375
26 O.D.	0.438
28 and 30 O.D.	0.469
32 O.D.	0.500
34 and 36 O.D.	0.532
38, 40 and 42 O.D.	0.563

Both the interior and exterior of the pipe shall have a bituminous coating.

- B. Joints:

Joints shall be butt welded. Coatings shall be continuous at the joints.

C. Carrier Runners:

The carrier pipe shall be supported by utilizing three way to concentric casing cradle as manufactured by T. D. Williamson, Inc., Pipeline Seal and Insulator Company, APS Casing Spacers or equal.

D. Casing Seal:

Casing seals, which seals the annulus between the casing and carrier pipe, shall be made of cement grout or bituminous material.

2.07 RESTRAINED JOINT PVC PRESSURE PIPE

- A. Restrained Joint PVC Pressure Pipe shall be used for all trenchless installations and shall be AWWA C900 DR 18 where the restraint mechanism is lodged in the bell. Pipe shall be Diamond Lok-21 restrained joint C900 with Bulldog restraint system and rieber gasket per ASTM F477 to seal the integral bell socket to the spigot of the next joint (conforming to the requirements of ASTM D3139) or approved equal.
- B. Each piece of pipe shall be factory hydrostatically proof tested to two times its pressure rating. Pipe shall be flattened tested per ASTM D2412, as well as be periodically tested in accordance with ASTM D2152. Pipe dimensions shall be checked in compliance with ASTM D2122.
- C. Joints must meet the requirements of ASTM D3139.

2.08 PLASTIC SERVICE PIPE

A. Polyethylene Pipe:

Polyethylene service pipe shall conform to AWWA Standard C901 and be approved by the National Sanitation Foundation. The pipe shall have a standard dimension ration (SDR) of 9, and pipe shall conform to PE 3306, Type III, Grade 3, Class C.

B. Service Pipe Connections:

Only compression type couplings with inserts or flared couplings will be acceptable. Hot flared or hose connections are not permitted. The pipe must be continuous from water main to meter.

2.09 MECHANICAL COUPLINGS

- A. Flexible Couplings: Flexible (sleeve) couplings shall be of the full sleeve type, split sleeve type, or flanged adaptor type, as shown on the Drawings, specified herein, or as otherwise permitted by the Engineer. The coupling shall provide the requisite pipe flexibility without jeopardizing pipe joint integrity due to hydraulic thrust, and shall have the same pressure-rating as the pipe. Couplings shall have all metal bearing surfaces and shall be provided with galvanized steel bolts and nuts. Flexible couplings shall be restrained unless the Engineer has given his approval to omit this feature for specific cases.
1. Full Sleeve Type Couplings shall be properly gasketed and shall be of a diameter to fit the pipe. Each coupling shall consist of a steel middle ring, 2 steel followers, 2 gaskets and the necessary steel bolts and nuts to compress the gaskets. The couplings shall be Dresser Style 38, Smith-Blair Type 411, or equal. Couplings to be installed underground shall have a hot-dipped galvanized sleeve with corrosion resistant bolts conforming to AWWA C-111 (type 316 stainless steel).
 2. Split Sleeve Type Couplings shall consist of one gasket, 2 housing clamps, and 2 bolts and nuts to obtain the flexibility for connecting the piping. Steel shoulders shall be provided and welded to the pipe ends to accommodate the couplings. The couplings shall be Kuhns, Ductile Iron Pipe Lock Coupling; M.B. Skinner Seal; or equal.

3. Flexible Flanged Coupling Adaptors shall be of the sleeve type, consisting of steel middle ring, steel followers, gaskets, and steel bolts and nuts to compress the gaskets. The couplings shall contain anchor studs of strength adequate to hold the pipe together under a pull equal to the longitudinal strength of the pipe at a tensile stress of 20,000 psi, and shall be Smith-Blair No. 913, Dresser Style 128, or equal. Couplings to be installed underground shall have a hot-dipped galvanized steel with corrosion resistant bolts conforming to AWWA C-111 (type 316 stainless steel).

2.10 GATE VALVES (2-IN AND LARGER)

A. General Requirements:

1. Unless otherwise specified below, these requirements shall apply to all gate valves.
2. Gate valves shall meet the requirements of AWWA C500 and AWWA C509 as applicable to the type of valve specified.
3. Buried and submerged valves shall be furnished with mechanical joints and stainless steel hardware; non-rising stem design.
4. Exposed valves shall be furnished with Class 125 flanged ends; provided valves with outside screw and yoke.
5. All metal valves shall be manufactured of ASTM A126 Cast Iron, Class B, with bronze mounting design.
6. Rising stem valves shall be sealed with adjustable and replaceable packing; valve design must permit packing replacement under operation system pressures with only moderate leakage.
7. Non-rising stem valves shall use a double O-ring stem seal, except that packing shall be used where geared operators are required.
8. Except as otherwise specified, valves shall be rated for the following working water pressures:

<u>Valve Size</u>	<u>Pressure (psig)</u>
2-in to 12-in	200
14-in to 20-in	150
24-in and greater	50

9. Valve bodies shall be hydrostatically tested to at least twice the rated working water pressure. In addition, valves shall be seat-tested, bi-directional at the rated working pressure, with seat leakage not to exceed one fluid ounce per inch of valve diameter per hour. Provide certificates of testing.
10. Flanged valves to have face-to-face dimensions per ANSI B16.1 and flanges per ANAI B16.10.
11. Exposed valves 16-in and larger to have valve by-pass.
12. Bonnet and packing gland bolts shall be zinc or cadmium electroplated steel; packing gland bolts shall have nuts.
13. Exposed valves 16-in and greater indicated for horizontal stem installation shall be furnished with rollers, tracks and scrapers and enclosed bevel gear grease case.
14. Provide geared operator and chain wheel, chain and chain guides for valves with handwheel centerline more than 5-ft above operating level.
15. Valves shall be marked per AWWA Standards, including name of manufacturer, valve size and working pressure and year of manufacture.

16. Unless otherwise indicated, valves 12-in and smaller shall be capable of installation in the vertical or horizontal position, sealing in both directions at the rated pressure.
 17. Valve operation shall be counterclockwise for potable water. Provide permanent label showing "OPEN" and arrows.
 18. Metal-seated valves shall be coated internally and externally with an asphaltic varnish, per AWWA C500. Resilient seated valves shall be coated, interior and exterior, with fusion bonded epoxy per AWWA C550.
- B. Valve Applications:
1. Valves for Potable Water Service.
 - a. Double disc or resilient seated design manufactured by American-Darling Valve; Kennedy Valve; M&H Valve Company, Mueller or equal.
- C. Valve Requirements:
1. Double Disc.
 - a. Conform to AWWA C500.
 - b. Wedging surfaces shall be bronze, monel or stainless steel.
 2. Resilient Seated.
 - a. Conform to AWWA C509. Also UF and FM approved.
 - b. Internal and external epoxy coating of valve body, including bonnet, per AWWA C550.
 - c. Gate shall be encapsulated with synthetic rubber. It shall be bonded and vulcanized in accordance with ASTM B429, Method B.
 - d. No recesses in valve body.
- D. Buried Valves:
1. Conform to the requirements above, except restrained mechanical joint bell ends per AWWA C111. Exposed valve hardware (nuts, bolts, washers, etc.) including bonnet, bonnet cover, stuffing box, gear adaptor and joints shall be Type 304 stainless steel.
 2. Non-rising stem design, double O-ring seals for non-g geared valves and shall incorporate packing for geared valves.

2.11 CHECK VALVES

- A. Check valves for metallic lines of 2-in to 20-in diameter shall be swing type and shall meet the requirements of AWWA C508. The valves shall be iron body, bronze mounted, single disc, 150 psi working water pressure, nonshock and hydrostatically tested at 300 psi.
1. When there is no flow through the line, the disc shall hang lightly against its seat in practically a vertical position. When open, the disc shall swing clear of the waterway.
 2. Check valves shall have bronze seat and body rings, extended bronze hinge pins and bronze nuts on the bolts of bolted covers.
 3. Valves shall be so constructed that disc and body seat may easily be removed and replaced without

removing the valve from the line. Valves shall be fitted with an extended hinge arm with outside lever and weight. The position of the weight shall be adjustable. Various weights shall be provided and installation approved by the Engineer. Lever shall be installed to the horizontal in the closed position, for both horizontal and vertical pipeline installations.

4. Air Cushion type check valves shall be provided for all check valves 10 inches and larger and shall be Golden Anderson Figure 250-D, or equal.
 5. Check valves shall be by American-Darling; APCO; M&H; Golden Anderson; McWayne or equal.
- B. Check valves 2-in and smaller for installation in copper and steel pipes shall be bronze, swing type, 125 lb with solder or screwed ends.
- C. Check valves for PVC or CPVC pipe shall be of the ball check valve type, and of same material as the pipe, with solder or screwed ends. Valve bodies shall be union type. Valves shall be as manufactured by Plastic Piping Systems Inc., or Equal.
- D. Wafer style check valves shall be of the dual disc type with bodies constructed of cast iron, ASTM A126, Class B. Disc shall be fabricated of ductile iron, ASTM A536 and shall be electroless nickel plated. Body seat material shall be Buna-N. Spring material shall be Type 316 stainless steel. The ends shall be plain. The valve shall be of APCO; Val-Matic; GA; Keystone or equal.

2.12 PRESSURE REGULATING VALVES

- A. Pressure regulating valves shall be factory tested. Outlet pressure shall be easily field adjustable over the pressure ranges and meet the criteria noted on the Drawing.
- B. Pressure regulating valves shall have flanged connections, or shall have unions mounted in the pipe on each side of the valve.
- C. Strainers for installation upstream of pressure regulating valves are specified elsewhere. The pressure regulating valve manufacturer shall specify the screen mesh or size or perforations that are required to protect the regulating valve. The supplier shall furnish both valve and strainer.
- D. Pressure Regulating Valves - 3-in and larger.
1. Valves 3-in and larger and for pressure regulating shall be flanged with globe body, full bronze mounted, external pilot operated, diaphragm type single seat with seat base equal to size of valve and shall be equal to the Figure 4500D Pressure Reducing Valve as manufactured by GA Industries, Inc; Clayton Model 90 by Cla-Val Company, Bailey, similar models by Ross; OCV; Watts/Muesco or equal.
 2. The valve shall be packed with leather material acceptable to the Engineer to ensure tight closure and prevent metal to metal friction and sticking. The valve shall be furnished with indicator rod, to show position of opening of the piston, and pet cocks for attachment to valve body for receiving gauges for testing purposes.
 3. The pilot valve, controlling operation of the main valve, shall be easily accessible and so arranged to allow for its removal from the main valve, while the valve is under pressure. The pilot valve shall be easily adjustable without removal of the springs, weights or use of special tools. The control piping on the valves shall have strainers to prevent plugging of control mechanisms.
 4. The design shall be such that repairs and dismantling internally of main valve may be made without its removal from the line.
 5. The unit shall be flanged. The valve body shall be constructed of cast iron.
 6. The valve shall maintain pre-adjusted downstream pressure for varying rates of flow through the positioning of the piston by the pilot without causing: water hammer or waste of water and without

cavitation.

2.13 AIR RELEASE VALVES

- A. Air release valves shall be installed to release any small accumulations of air which may collect while pipe is in operation and under pressure.
- B. The small orifice assembly air release valve shall release air accumulations from the pipe while under positive pressure. When the valve body fills with air, the float ball shall fall to open the small orifice and exhaust the air to atmosphere. When air has been exhausted, the float ball shall be buoyed up and tightly close the small orifice.
- C. The small orifice assembly shall be furnished with cast iron body and cover (ASTM A126-B). The float ball shall be constructed of stainless steel and attached to a stainless steel lever mechanism. A resilient, Buna-N seat shall be attached to the lever mechanism for drop-tight closure.

2.14 BUTTERFLY VALVES

- A. Butterfly valves for above ground service, where required on the Plans, shall be Allis-Chambers, Henry Pratt, B.I.F. Industries, Darling, or approved equal.
- B. Valves shall be rubber seated and have rated working pressures of 150 psi. Valves shall be flangeless or shall employ narrow face to face dimensions for A.S.A. B16.1 flanges (Class 125). Packing shall preferably be rubber "O" rings and shall be replaceable without disassembling the valve stem and discs. Operators shall be of the manual sidewinder type, with indicator, unless designated otherwise on the Plans.
- C. Rubber seated butterfly valves shall equal or exceed the requirements of the latest revision of A.W.W.A. Standard C504, Class 125-16, -and the requirements specified above shall govern.

2.15 VALVE BOXES

- A. Valve boxes shall be provided for all below ground valves. Valve boxes in non-traffic areas shall be of the two-piece sliding or threaded type, equal to Mueller H-10364. For traffic areas, boxes shall be of the three-piece sliding type with the appropriate base, equal to Mueller H-10380.

2.16 FIRE HYDRANTS

- A. Fire Hydrants:

Fire hydrants shall be cast iron bodies, full bronze mounted, suitable for a working pressure of one hundred fifty pounds (150#) per square inch, and shall meet all requirements of the latest AWWA Standard C-502. Hydrants shall be Mueller improved, M&H, Darling, or approved equal. Hydrants shall have double "O-Rings" seals and dry bonnets. Each hydrant shall be given a 300 psi hydrostatic test in the shop.

Hose Nozzles	2-2 ½"	2-2 ½"
Pump Nozzle	None	1-4 ½"
Main Lead Diameter	6"	6"
Min Opening Diameter	4 ½"	5 ¼"
Min. Barrel Diameter	6 ½"	7 ¼"

Nozzles shall be bronze.

Unless noted otherwise on the Plans and specified in the special conditions, nozzle thread and operating nuts shall be as follows: Threads for nozzle connections shall conform to NFPA No. 194, and shall be opened by turning in a counter clockwise direction. The operating nut at the top of the hydrant and cap nuts shall be one and one-half inch pentagon nut (measured point to flat) and shall open counter-clockwise. The Contractor shall verify all pertinent hydrant features and dimensions with both the Engineer and the Owner adapt to the Owner's standards shall be made at no additional cost to the Owner.

The hydrant main valve shall be of the compression type closing with pressure. The valve shall be faced with heavy impregnated water-proof balata, or other approved material. Hydrants shall have a safety "Breakable" section located above the ground line. The minimum distance from the ground line to the top of the hydrant lead (cover) and from ground line to bottom of hydrant lead (bury) shall be thirty inch (30") cover. After installation, exposed surfaces of hydrants shall be painted with one (1) finish coat of red enamel (Alkyd paint), unless otherwise directed by the Engineer. The Contractor shall provide the Owner with two (2) cartons of collision breakage repair parts for the hydrants.

Fire hydrants shall be AWWA C503 with a 6-inch inlet and threaded for two (2) 2-1/2" inch outlets (National Standard Hose Threads).

B. Wrenches and Keys for Hydrants:

The Owner shall be furnished one (1) key wrench for each ten (10) hydrants, or a minimum of one (1) for ten (10) or less hydrants.

C. Manufacturer:

Provide hydrants by Mueller, Centurion, M&H, Darling or equal.

2.17 PRESSURE GAUGES

Pressure gauges, where called for on the Plans or specified elsewhere, shall be bronze bourdon tube; movements mounted on socket independent of case; steel, aluminum alloy or phenol cased; long life plastic face; heavy glass or unbreakable plastic face; accuracy 1/2"; 1/4" N.P.T. connection. Gauges shall be equal to Hellicoid as manufactured by American Chain and Cable Co., Bridgeport, Conn., or Ashcroft as manufactured by Manning, Maxwell, and Moore, Stratford, Conn., a division of Dresser Industries.

Gauges for clear water service shall be compound 4-1/2" dials with a range of 0 to twice the anticipated operating pressure, reading in psig and feet of water.

All gauges shall employ valves or gauge cocks to facilitate cleaning and changing.

2.18 NEW SERVICE ASSEMBLY WITH METER SETTING

New water service assemblies with meter setting where called for on the Plans or in the Proposal, shall each include a plastic meter box with cast iron reading lid, service tap clamps or fittings, curb stop, corporation stop, and the required connectors and service pipe. All equipment shall be bronze. Water meters shall be furnished by the Contractor, except in the case where it is designated on the Plans or in the Special Conditions that meters will be purchased by the Owner, and furnished to the Contractor, in which case the Contractor will set the meters. These items, in place and accepted, shall together form a pay item for service assemblies of the various sizes. All connectors shall comply with A.W.W.A. Standard C800.

A. Service Assembly and Corresponding Service Pipe Size:

<u>SERVICE ASSEMBLY</u>	<u>SERVICE PIPE SIZE</u>
5/8" x 3/4" small res. & comm. (up to 2 baths)	3/4"
5/8" x 3/4" large res. & comm. (more than 2 baths)	1"
3/4" or 2-5/8" x 3/4"	1 1/2"
1" or 2-3/4"	1 1/2"
1 1/4" or 2-3/4"	2"
1 1/2" or 2-1"	2 1/2"
2"	3"
3"	4"

B. Water Meters:

Water meters shall be cold water rotating disc type with hermetically sealed and magnetically driven registers as manufactured by Sensus Technology, Precision or an approved equal. Meters shall be first line quality of the manufacturer. The latest specifications of the A.W.W.A. Standard C700 shall be complied with, except in cases of conflict with these Specifications.

1. Main Cases:

The main case shall be high grade waterworks bronze with hinged single lid cover and raised characters cast on them to indicate the direction of number stamped on the lid. The working pressure shall be 150 psi. Standard, Southern or non-frost proof bottoms shall be furnished unless noted otherwise on the Plans or in the Special Conditions. Non-ferrous strainers shall be provided which fit tightly against the main case. Meters 1 1/2" and larger shall be flanged.

2. Measuring Chamber:

The measuring chamber shall be of 85-5-5-5 bronze alloy composition and stainless steel or monel trimmed. The moving unit shall be of hard rubber rotating disc type. The disc shall be preferably the three-piece and the chamber shall be the two-piece type employing a thrust roller and insert.

3. Register:

The register shall be straight reading simultaneously and cumulative in gallons. The unit shall be completely encased, hermetically sealed, and driven by permanent magnets. There shall be a test index circle which shall be divided into one hundred (100) equal parts and red test hand.

C. Corporation stops shall be of bronze or brass and shall be designed and manufactured in accordance with AWWA C800, except as modified herein.

Corporation stops shall have Mueller inlet threads except that corporation stops for use with service clamps shall have IPS threads. Where corporation stops are used with plastic pipe, a brass companion flange shall be provided on the outlet of each corporation stop.

D. Curb stops shall be similar to corporation stops as manufactured by Crane; Ford; McDonald or equal.

E. All service taps shall be threaded couplings or strap clamps for A.W.W.A threads. Thread couplings for galvanized pipe shall not be permitted.

Maximum Size Threaded Coupling Permitted in Ductile Iron Pipe

<u>Pipe Size</u>	<u>Tap Size</u>	<u>Pipe Size</u>	<u>Tap Size</u>
2"	1/2"	8"	1 1/4"
3"	1/2"	10"	1 1/2"
4"	3/4"	12"	2"
6"	1"		

Where it is necessary to provide a service larger than the allowable ductile tap size, multiple taps shall be employed by staggering the taps around the pipe and spacing the taps at least twelve (12) inches apart and twelve (12) inches from the end of the pipe length, or service clamps shall be used.

Service strap clamps shall be galvanized malleable or ductile iron or bronze with rubber gasket. Clamps shall be Smith-Blair, Mueller, Dresser, Nappco or approved equal.

Maximum Size Service Clamp Permitted

Pipe Size (Inches)	Ductile Iron Size	Plastic and Galvanized Size
2	1"	3/4"
2 1/2	1 1/4"	1"
3	1 1/2"	1 1/2"
4	2"	1 1/2"
6	2"	1 1/2"
8	3"	1 1/2"
10	3"	1 1/2"
12	4"	1 1/2"

2.19 THRUST BLOCKS AND ANCHORS

- A. For all water lines, at 1/8 bends or greater, and at tees, caps, plugs, and other fittings, concrete thrust blocks or anchor rods shall be provided by the Contractor to firmly secure these fittings. Anchor blocks and straps shall be used under valves and hydrants and plastic pipe in accordance with the manufacturer's standards or recommendation. Thrust blocks shall be of such size and dimensions as detailed on the plans. Concrete for thrust blocks shall be not leaner than one (1) cement to two and one-half (2 1/2) sand to five (5) aggregate, and having a compressive strength of not less than 2,000 psi at 28 days. Otherwise, concrete shall be in strict conformance with the applicable section on concrete in these Specifications. Restrainer devices such as Uni-Flange or an approved equal shall be acceptable.
- B. Restrained Joints:
1. Restrained joints may be considered by the Engineer in lieu of thrust blocks if they meet the requirements of the section. Restrained joints shall be constructed using pipe and fittings with restrained "Lock-type" joints. The joints shall be capable of holding against withdrawal and no axial movement for line pressures 50 percent above the normal working pressure but not less than 100 psi. The pipe and fittings shall be as shown for restrained push-on joints or restrained mechanical joints in the Handbook of Cast Iron Pipe, 4th Edition, except that mechanical joint ductile iron pipe retainer glands will not be permitted.
 2. Restrained pipe joints that achieve restraint by incorporating cut out sections in the wall of the pipe shall have a minimum wall thickness at the point of cut out that corresponds with the minimum specified wall thickness for the rest of the pipe.
 3. The minimum number of restrained joints required for resisting forces at fittings and changes in direction of pipe shall be determined from the length of restrained pipe on each side of fittings and changes in direction necessary to develop adequate resisting friction with the soil. The formula and parameters given below shall be used to determine the minimum requirements:

$$L = \frac{1.5PA(1 - \cos X)}{fw}$$

Where

L = length of pipe on each side of fitting or change in direction
P = 50 percent above the normal working pressure
A = cross-sectional area in square inches based on outside diameter (O.D.) of pipe
X = angle of bend or change in direction in degrees
f = coefficient of friction = 0.4 (maximum)
w = earth + pipe + water in pipe

earth = (density of soil*) (depth of cover in feet) (O.D. in feet) (2)

* maximum 120 lbs/ft above maximum water table elevation

and 60 lbs/ft below maximum water table elevation

4. Bolts and nuts for restrained joints shall be corten, low alloy, high strength steel.
5. Restrained joints shall be "TR-Flex" as manufactured by the U.S. Pipe and Foundry Company, "Super-Lock" as manufactured by the Clow Corporation, or equal.

PART 3 - EXECUTION

3.01 LAYING WATER PIPE

A. General:

Grading, excavation, and earthwork required in laying water pipe shall conform to Supplemental Technical Specification P-152 of these Specifications. Installation of water pipe shall be in conformance with provisions of A.W.W.A. Standard C605, Installation of PVC pressure pipe for water mains, except in cases of conflict with these Specifications, in which case these Specifications will govern.

Water mains shall be laid at least 6 feet, measured from outside edge to outside edge, from any existing or proposed sewer gravity main, force main, sewer manhole and sewer wet well. Water mains crossing sewer gravity mains, force mains, sewer manholes and sewer wet wells shall be laid to provide a minimum vertical distance of 18" between the outside edge of the water main and the outside edge of the sewer main.

When work is suspended either for the night or for any other reason, open ends of the pipe shall be securely capped or plugged to prevent the entrance of mud, water, animals, or any obstruction.

Dead ends of pipe and unused branches of crosses, tees, valves, etc., shall be closed with a plug suitable to the type of pipe used.

Proper and suitable tools and appliances for the safe and convenient handling and laying of pipe shall be used, and care shall be taken to prevent damage to pipe coating. If required by the size pipe being used, mechanical pullers (or spreaders) shall be used in conformance with the pipe manufacturer's instructions.

While pipe laying is in progress, the trench shall be kept free of water.

While suspended in the sling and before lowering in the trench, the pipe shall be swabbed clean and inspected for defects and tapped with a light hammer to detect cracks. Defective, damaged, or unsound pipe shall not be used.

B. Excavation and Bedding:

The width of the trench at the top of the pipe for water pipe installation shall not exceed the external diameter of the barrel of the pipe plus nine inches (9") on each side.

Trenches for water lines shall be of a depth to provide a thirty inch (30") minimum cover over the top of the pipe.

Where sanitary sewer, storm sewer, or other subsurface utilities are encountered in trenching for water lines, it will be permitted to lay pipe above the obstruction if a minimum cover of twenty-four inches (24") can be obtained while providing a cushion between the bottom of the pipe and the top of the obstruction of at least six inches (18") in thickness. Otherwise, the obstruction will have to be by-passed or tunneled under. Approval must be sought by the Department of Health in these situations.

Mechanical excavation shall be stopped so that the pipe may be laid on a firm, undisturbed, continuous native earth bed. Prior to laying the pipe, the trench shall be manually excavated so that it is flat, true to grade, and provides continuous contact with the pipe barrel. Bell holes shall be spaced as required providing two inches (2") minimum between earth and the pipe coupling.

If over digging occurs, the trench bottom must be brought back to grade with compacted select material, and the cost borne by the Contractor.

Where the bottom of the trench is rock, water bearing soil, or unstable material, the Resident Project Representative may direct that the pipe be bedded in granular material, a concrete cradle, or granular material on timber runners, and paid for as separate items. The pipe shall be bedded as provided above, but in no case shall the bedding provide less than eighteen inch (18") cushion below and at the sides of any part of the pipe.

Granular material, where required, shall be sand, crushed stone, or gravel, and shall not exceed 3/4 inch maximum size.

Concrete for pipe foundations, where required, shall be proportioned a required hereinbefore for thrust blocking concrete. Other excavation and trenching requirements as specified hereinbefore (Section 2) shall be complied with.

C. Backfilling:

The initial backfill under the pipe haunches, around the pipe, and over the top of the pipe shall be manually placed in layers, each layer being thoroughly hand tamped. The thickness of each layer, prior to compaction, shall be six inches (6"). Special laying instructions of any pipe manufacturer shall be rigidly followed.

Where the Contractor uses a trenching machine for the excavation, the initial backfill shall be brought to not less than one foot (1') above the top of the pipe, as hereinafter specified. Should the Contractor elect to use a backhoe, dragline clam - shell bucket or equipment other than a trenching machine, then the initial backfill shall be brought to not less than two feet (2') above the top of the pipe.

Other backfill requirements as specified hereinbefore in Section 2 of the Specifications shall be complied with.

3.02 PLACING VALVES AND FITTINGS

A. Valves and fittings shall be placed in the location indicated on the Plans and as directed by the ENGINEER.

All underground valves shall be set vertically. Boxes shall be set with covers flush with the surface.

Before being placed in the trenches, all valves, meters, fittings, etc., shall be carefully examined to see that they are in good working order and are clean.

3.03 JACKING AND BORING PIPE

A. General:

Where pipe is to be laid beneath railroads, Federal Highways, State Highways, and concrete pavement, jacking and boring is required. The Contractor will not be permitted to open cut.

The requirements of the approving agency, such as railroad or State Highway Department, shall govern over these Specifications and Plans.

Sub-surface operations resulting in damage to the tracks or pavement, shall be the responsibility of the Contractor and shall be repaired at no cost to the OWNER.

B. Jacking and Boring Casing Pipe:

Installing of steel casing pipe shall conform to the A.R.E.A. Manual for Railway Engineering and Louisiana Standard Specifications for Roads and Bridges, Sections 7 and 8, latest edition.

Where the ends of pipe used as casing for other pipe are below ground, the ends shall be sealed.

The barrel of the carrier pipe shall be supported within the casing. Supports or carrier runners shall be spaced as recommended by the manufacturer, or as directed by the ENGINEER.

3.04 INSTALLING FIRE HYDRANTS

- A. Each hydrant and flush hydrant shall be placed vertically on a concrete base, and shall be secured against dislocation as shown on the Plans. Unless otherwise directed by the ENGINEER, hydrants shall be placed as shown on the Plans and as follows:
- B. Flush hydrants shall be located at high or low points and at the ends of lines in the approximate locations shown on the Plans. Fire hydrants placed behind curbs shall be set so that no portion of the hydrant or nozzle caps shall be less than six (6) nor more than twelve (12) inches from the vertical face of the curb. Hydrants shall not be placed within twenty (20) feet of the intersection of curb lines at street corners.
- C. Vertical off-sets or hydrant extensions shall be used as required in the hydrant lead so that the bury line of the hydrant will be flush with the natural ground and the specified cover will be maintained on the main and the hydrant lead.
- D. Hydrants shall be secured in place by hydrant valve anchoring tee with hydrant anchoring connection pieces, concrete thrust blocks, or socket clamps and tie rods. Tie rods shall extend from hydrant to tee fitting in main. Clamps shall be of either wrought iron or steel, and not less than two (2) inches wide and three-eighth (3/8) inches thick. Bolts used shall be not less than three-quarter (3/4) inches in diameter. Material shall be wrought iron steel. Wrought iron and steel shall be protected against corrosion by painting with tar, asphaltic, or other suitable and approved material.

3.05 CONNECTING EXISTING PIPE LINES TO NEW WATER MAINS

- A. On 3" and smaller water mains these connections shall be made each with the required number and size of corporation cocks, goosenecks, and branch connection. Valves and cast iron fittings and pipe shall be paid for separately and in addition to this item. On 4" and larger water mains, tapping valves and tees will be required. These shall be a separate pay item.

3.06 TESTING WATER PIPING

- A. No pressure tests shall be made until all concrete thrust blocks are at least forty-eight (48) hours old.
- B. Installed pipe shall be pressure and hydrostatically tested in accordance with the latest appropriate AWWA standards.

3.07 STERILIZATION

- A. Following the pressure and leakage tests, all lines shall be disinfected in accordance with LAC Title 51, Public Health Sanitary Code, Part XII, Water Supplies as follows:

Pumps, pipes, wells, tanks and other parts of new systems shall be thoroughly disinfected by the use of chlorine or chlorine compounds before being placed in use. The rate of application of chlorine shall be in such proportion to the rate of water entering the pipe or other appurtenances that the chlorine dose applied to the water shall be at least 50 mg/l. Chlorinated water shall be retained long enough to destroy non-spore-forming bacteria. The period shall be at least three hours and preferably longer, as may be directed. After the chlorine treated water has been retained for the required time, the chlorine residual at pipe extremities and at other representative points shall be at least 5 mg/l. If the residual is less than 5 mg/l, the disinfection procedure shall be repeated until a 5 mg/l residual is obtained, as required above.

- B. All new potable water lines, including pipe, valves, etc. shall be sterilized prior to being placed in use with a solution or an approved disinfectant containing no less than fifty (50) parts per million of available chlorine.

Products used must be in conformance to NSF 60.

- C. For this work, the Contractor shall furnish suitable plugs or caps for the pipe, injection pumps, pipe connections, flush points and other equipment together with all labor required.
- D. While the disinfectant is being applied to any section of the system, the water shall be allowed to escape at all extremities of this section until an orthotolidin test shows a deep orange color. The disinfectant shall be allowed to remain in the pipe for twenty-four (24) hours, after which the lines shall be thoroughly flushed by flush valves and/or fire hydrants. Each section of the system shall be sterilized and re-sterilized until bacteriological approval has been obtained from the appropriate health agency.

3.08 INTERRUPTION OF WATER SERVICE

- A. The attention of the Contractor is directed to the fact that some of the alterations in the water system may require cutting into existing water mains.
- B. Valving of new water lines shall be as shown on the Plans. Testing and sterilizing of the new lines shall be done by utilizing existing and new valves and temporarily plugging the line if necessary. Where no existing services occur on a short length of existing line, the Resident Project Representative may direct that this existing line be tested and sterilized in conjunction with the new line, at no additional cost to the Owner.
- C. Water service can be interrupted under the following conditions and subject to all other provisions herein contained:
 - 1. Where interruption of service will be along a main serving not more than fifty (50) customers, who will be affected by said interruption, and where the duration of said interruption is to be four (4) hours or less, interruption will be permitted, provided Contractor has notified both the Resident Project Representative and the Owner at least seventy-two (72) hours in advance of the contemplated interruption of service.
 - 2. Where interruption of service shall affect more than fifty (50) customers, or shall affect the main business district, or shall be of greater duration than four (4) hours, or a combination of the above conditions, interruption of service will be permitted only after both the Resident Project Representative and the Owner have received a seventy-two hours notice and have approved such cases. Owner reserves the right to require the Contractor to perform such work between the hours of 11:30 p.m. and 6:00 a.m. Any overtime pay required to be disbursed by the Contractor shall be included in his bid for the items of work involved.

The contract documents provide payment for ductile iron fittings and tapping valves and tees used to tie into existing lines on a pound and per each ton basis and provide payment for the additional work and extra cost of cutting into the existing lines. This additional work and cost shall be paid for separately, and shall be included in the prices bid for the items applicable.

3.09 TRACERS FOR NON-METALLIC PIPE

- A. A plastic bonded 10 gauge copper wire and a metallic tape strip (2" width) shall be laid one foot (1') above the top of the pipe. The wire shall be continuous along the entire length of the pipe and grounded to gate valves, fire hydrants, flush valves, and water meters.

3.10 HIGH DENSITY POLYETHYLENE (HDPE) PIPE INSTALLATION

- A. Polyethylene pipe shall be joined by the method of thermal butt-fusion as outlined in ASTM D 2657 "Heat Joining Polyolefin Pipe and Fittings." All butt-fusion joining of pipe and fittings shall be performed in accordance with proven procedures and techniques recommended by manufacturer. Thermal butt-fusion of the pipe shall be performed by an experienced technician, certified in the jointing of high-density polyethylene pipe in accordance with Title 49 CFR 192.285. Written certification of the individual welders as per Attachments found at the end of this section shall be submitted to the Engineer prior to the performance of any welding.

- B. A minimum of two test joints shall be fused and cut from each pipe size and each SDR prior to beginning joining the pipe system. The test joints shall be visually examined in accordance with Title 49 CFT 192.285. The Engineer reserves the right to request that no more than 10 additional samples be cut from the pipe during the jointing process at no additional cost to the Owner, to document the integrity of the fusion process.
- C. All finished butt-fusion welds shall be ground out to the inside of joined pipe sections such that the maximum finished bead protrudes no more than 1/8-inch from the inside of the pipe wall at any given point.
- D. Where shown on the plans, the HDPE pipe shall be adapted to fittings and valves by means of an assembly consisting of polyethylene stub-ed, butt-fused to the pipe, a back-up flange of ductile iron, made to Class 140, ANSI B16.5 dimensional standard with exceptions, bolts of compatible material and a viton gasket to fill the joints. Bolts shall be drawn up evenly and in line.

3.11 STEEL PIPE FABRICATION AND INSTALLATION

- A. The fabrication of the steel manifolds and piping shall be in accordance with these specifications and drawings and with the requirements of AWWA Standard C200.
 - 1. The outside surface of the steel manifold and piping sections, larger than 24 inches and joined by sleeve-type couplings shall be sufficiently free from indentations, projections, or roll marks for distance of 8 inches from the end of the steel manifold and piping sections to make a tight joint with the rubber-gasket type of coupling. The maximum permissible outside diameter shall permit passing a ring gage having 3/32-inch larger than the steel manifold and piping section for the same 8-inch length. The outside diameter shall not be more than 1/32-inch smaller than the nominal outside diameter for a distance of 8 inches from the end.
 - 2. Longitudinal joints shall be staggered. Longitudinal, girth, and spiral joints shall not intersect at outlet connections. All longitudinal, girth, and spiral joints shall be butt welded. All butt welds shall have complete penetration. Manual welding will be permitted for all welded joints. The ends of pipe sections shall lie in a plane normal to the longitudinal axis of the section within a maximum deviation of 1/16-inch on either side of the plane. The radial offset of plate edges at the weld for pipe with wall thickness less than or equal to 0.500-inch shall not exceed 1/16-inch. For pie with wall thickness greater than 0.500-inch the radial offset shall not exceed 0.125t or 1/8-inch whichever is less. Care shall be exercised in matching the edge and ends of the adjoining plates and courses to ensure that the inner surfaces of the plates to be joined by welding are in continuity within a maximum allowable offset at any point of 1/16-inch. Flange faces shall be sufficient true to provide a watertight joint.
 - 3. Concave orientation of the flange face is not permissible. The flange thickness after machining shall not be reduced below the minimum thickness required in the appropriate flange specification.
 - 4. All joins of flange supports and pipe support shall be continuously welded so that no cracks will be left that could not be completely painted.
- B. Except as shown on the drawings all field joints for the 36-inch steel outlet piping shall be double-welded butt joints with complete penetration. Welding shall conform to AWWA Standard C206 except that testing of the field welds is not required.
- C. The Contractor shall furnish and install supports and bracing to hold the steel surface water connection piping in place and prevent distortion during erection, hydrostatic testing and backfilling.

3.12 CLEANUP AND REPAIR

- A. General: The Contractor shall maintain his operations in a neat and orderly manner causing as little inconvenience as possible. Within 10 working days from the time a trench is opened all roadside ditches, culverts, etc, shall be repaired and surfaces thoroughly cleaned. All excess excavation shall be removed from the trench side and disposed of at the Contractor expense. The work area shall be then thoroughly cleaned.

- B. Clean-up and repair shall conform to the applicable requirements of Section 02315, Excavation, Backfilling and Compacting.

3.13 ACCEPTANCE

- A. Final acceptance of the project will not be made until the CONTRACTOR has completed the total project and all tests, restoration, and clean-up have been performed to the satisfaction of the ENGINEER.

END OF SECTION

THIS PAGE IS INTENTIONALLY LEFT BLANK.

**SECTION 08111 –
STANDARD STEEL DOORS AND FRAMES**

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Non-rated rolled steel doors and frames.

1.02 RELATED WORK

- A. Section 08700 – Hardware

1.03 REFERENCES

- A. ANSI/SDI-100 Standard Steel Doors and Frames.
- B. ANSI/SDI-105 – Recommended Erection Instructions for Steel Frames.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of ANSI/SDI-100.

1.05 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01340.
- B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
- C. Indicate door elevations, internal reinforcement, closure method and cut outs for glazing.
- D. Submit manufacturer's installation instructions under provisions of Section 01340.

1.06 DELIVERY, STORAGE AND PROTECTION

- A. Protect doors and frames with resilient packaging.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. A.J. Manufacturing
- B. Amweld Building Products
- C. Republic Builders Products
- D. Steelcraft Manufacturing Co.

2.02 DOORS AND FRAMES

- A. Exterior Doors: ANSI/SDI-100 Grade III, Model 3, 18 gage.
- B. Interior Doors: ANSI/SDI-100 Grade 1, Model 3, 20 gage.
- C. Exterior Frames: 16 gage thick material, 5 ¾ depth.

D. Interior Frames: 18 gage thick material, 5 ¾ depth.

2.03 DOOR CORE

A. Core: Polyurethane.

2.04 ACCESSORIES

A. Rubber Silencers Resilient rubber.

B. Glazing Stops: Rolled steel channel shape, mitered corners; prepared for countersink style tamperproof screws.

2.05 PROTECTIVE COATINGS

A. Primer: Zinc chromate type.

2.06 FABRICATION

A. Fabricate frames as welded unit type.

B. Mullions for Double Doors: Fixed type.

C. Fabricate frames and doors with hardware reinforcement plates welded in place.

D. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.

E. Prepare frame for silencers. Provide three single rubber silencers for single doors and mullions of double doors on strike side, and two single silencers on frame head at double doors without mullions.

F. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.

2.07 FINISH

A. Interior Units: 0.60 oz/sq ft galvanized.

B. Exterior Units: 0.60 oz/sq ft galvanized.

C. Primer: Air dried.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install frames in accordance with ANSI/SDI-105.

B. Coordinate with wall construction for anchor placement.

C. Coordinate installation of glass and glazing.

D. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.02 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

- A. Adjust hardware for smooth and balanced door movement.

3.04 SCHEDULE: Refer to Drawings.

END OF SECTION

SECTION 08700 – FINISH HARDWARE

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01340 – Submittal and Shop Drawings.
- B. Section 08111 – Standard Steel Doors.

1.02 WORK INCLUDED

- A. Furnish all finishing hardware as specified or as obviously required to complete the project. Items not specifically mentioned but necessary to complete the work shall be furnished, matching in quality and finish the items specified or described. Should an opening be omitted this supplier shall provide finish hardware equal to that specified for similar or adjacent openings and as approved by the Engineer for function and quality. No extras will be allowed for omitted but required items. Clarify all questions with the Engineer in accordance with the requirements of the Instructions to Bidders.

1.03 APPROVED MANUFACTURERS

- A. Hager
- B. Mckinney
- C. Yale
- D. Sargent
- E. Schlage

1.04 QUALITY ASSURANCE

- A. Hardware shall be furnished by those having experience in the Builders Hardware field, competent to correctly interpret the plans, specifications, and must furnish an appropriate Technician regularly employed by them to immediately service the job as required. This Technician shall operate out of a stocking builder's hardware warehouse located within 100 miles of the job site in order to insure immediate servicing of the project. In addition, this supplier shall immediately service the job upon the call of the General Contractor and/or Engineer.
- B. Upon completion of the job and prior to the final construction inspection, hardware supplier shall lubricate and adjust all hardware according to the manufacturer's recommendation.
- C. These service requirements shall be demanded and strictly enforced.

1.05 SCHEDULE AND SAMPLES

- A. Submit to the Engineer, before placing order for hardware, five (5) copies of hardware schedule for his review and approval. Submit brochures and cuts with Schedule when requested.
 - 1. Set-up schedule using Engineer's "mark" numbering system shown on Door Schedule and Floor Plans. Also, designate the official Using Agency room numbers on the Bid Documents. Give room or area designations occurring on both sides of door. List swing.
 - 2. Describe item of hardware with manufacturer's name, model number and finish.
 - 3. The finish hardware schedule shall contain keying information for each lock or cylinder listed under all headings. A separate keying schedule is not acceptable.
 - 4. Coordinate Hardware Schedule with schedules submitted by Hollow Metal Manufacturer.

5. Advise the Engineer of lead time, should any items be in “custom” or “special order” category.
 6. After approval, provide Engineer with sufficient corrected record copies of Schedule, including enough copies for Engineer to transmit two (copies) to the Using Agency.
- B. Submit samples if requested by Engineer. Approved samples may be used in the work.

1.06 KEY TAGS

- A. General Contractor shall tag keys as follows:
1. Attach one (1) key by means of a strong cord or wire to a metal rimmed fiber tag. Place this key with the lockset.
 2. Attach all duplicate copies of this key to another tag. Place these duplicate keys to tagged in a sealed box to be turned over separately to the Using Agency. See below also, Key Handling.
 3. Each tag shall be marked with the hardware heading number, the Engineer’s door mark number, Using Agency, room number, location and key change number.

1.07 KEYING

- A. Specific keying will be outlined in a keying session to be attended by the Engineer, Contractor and Hardware Supplier, using a Using Agency representative.
- B. Furnish cylinders that are keyed differently, keyed alike, master-keyed of grand-master-keyed, as directed by the Engineer and as required to suit Using Agency’s keying system. No cross keying is to be used.
- C. Furnish two (2) keys with each cylinder.
- E. Keying must be accomplished with key changes no closer than .010 inch steps, no pins or discs shorter than .040 inches and no cuts deeper than necessary to leave at least .187 inches of key blade.

1.08 KEY BOWS

- A. All key bows furnished shall contain the manufacturer’s name and key change number only.

1.09 TEMPLATE HARDWARE

- A. All items of hardware to be fastened to metal or to pre-finished or pre-machined doors and/or frames shall be furnished to template. Templates and approved hardware schedules shall be furnished to the respective door and frame supplier by the hardware supplier through the General Contractor. The supplier for the hardware shall include in his submitted hardware schedules pages entitled “Template Information” which shall include a listing of all templates necessary for hollow metal preparation. This page shall include hardware item, manufacturer’s name and stock of catalog number, gauge of metal in the case of butt hinges, and manufacturer’s template or drawing number. In the event hardware preparation is necessary for aluminum doors or window walls, plastic clad doors, or pre-machined doors, separate hardware template pages are to be supplied for each of these other fabricators and shall contain generally the information listed above as might be pertinent to the cut-out work required for each respective fabricator.

1.10 HARDWARE LOCATION DIMENSION

- A. See Door and Hardware Institute recommendations. These dimensions are only a general guide in the absence of other specifications. They would be unsuitable for certain types of buildings. Some dimensions are determined by door manufacturers whose templates should be consulted.

1.11 STORAGE

- A. Contractor shall provide at the jobsite a safe, and dry place for the storage of all finish hardware. Storage facilities for hardware shall be kept locked.

PART 2 - PRODUCTS

2.01 FINISHES

- A. Butts for hollow metal doors shall be US 26D
- B. Closers shall be painted finish (US 26D)
- C. Thresholds shall be aluminum.
- D. Locksets and items not mentioned shall be US 26D.

2.02 LOCKSETS AND LATCHSETS

- A. Locks shall be reversible in the field and have two-piece pivoted anti-friction type latch bolts with a minimum throw of 5/8" except when 3/4" throw is specified
- B. Where deadbolts are required, they shall have a minimum throw of 3/4". Effective throw of auxillary dead-locking latch shall be at least 7/16". (Maximum clearance between door and frame that lock will deadlock against.)
- C. Lock shall have balanced hub construction and where key operated, provide minimum of 6 pin tumbler brass cylinder.
- D. Furnish wrought boxes and strikes with curved lip.
- E. Locksets and cylinders shall be of same manufacture.
- F. Knobs shall be of the screwless shank type. Grub or set screw attachment of the knob to the spindle is not acceptable.

2.03 CYLINDERS

- A. Cylinder Bodies: The manufacturer shall stamp the back of the cylinder bodies with the individual key change number.
- B. Cylinder Cams: To be standard type; clover leaf or other types not acceptable.

2.04 BUTT HINGES

- A. All exterior doors swinging out shall have "N.R.P." hinges with set screw in barrel. All equipment room doors shall have "N.R.P." hinges.
- B. Provide one (1) pair of butts for all doors up to 5' high; all doors over 5' high and up to 7' high to have one and one-half (1 ½) pairs of butts; all doors over 7' high and all dutch doors to have two (2) pairs of butts.
- C. Butts for doors up to 36" wide shall have a pin height of 4 ½"; doors over 36" wide and up to 40" wide shall have a pin height of 5". All doors over 40" wide shall have butts with pin height 6". The width of the butts shall be determined by the trim conditions affecting the throw.

	<u>Type</u>		<u>Weight</u>	<u>Where Specified</u>
McKinney	Stanley	Hager		
T4B3386	FBB 199	BB1199	HVY	a. Exterior Door with door closers.
T4B3786	FBB 168	BB1168	HVY	a. All interior doors over 3/0 wide specified to have door closers.

2.05 DOOR CLOSERS – SURFACE TYPE

- A. Door closers shall be the full rack and pinion type, with two-speed closing control with two separate key type regulating valves. All closers shall have separate adjustable back checks. All closers to have adjustable spring to increase spring power 50 % plus reversible foot to boost latching power.
- B. All door closers shall be the product of one manufacturer throughout, for both interior and exterior doors, unless specified otherwise.
- C. Closer shall be the contemporary flat rectangular type with narrow projection.
- D. Closers shall be supplied in sizes recommended by the manufacturer to properly control the doors.
- E. Thru bolts and grommet nuts shall be provided for attachment of all closers. Parallel arm closers are not acceptable.
- F. All label doors shall be equipped with door closers.
- G. All label doors shall be provided with adaptor plates for outswinging exterior doors or where it is necessary to mount closer on opposite to swing side of door. Extra length arm and shoes to be furnished for reveals deeper than 4-13/16" for top-jamb-mounted closers.
- H. All closer bodies shall be high strength cast iron.

2.06 EXIT DEVICES: (N/A - No Touch Bars Required this project)

- ~~A. Device to be operated by touch bar – Bellcrank mechanism. A slight pressure at any point on the touch bar should provide a smooth operation of retracting the latch.~~
- ~~B. Touch bar, horizontal housing and trim base are to be extruded aluminum. The lock stile chassis, back plate and end caps are to be forged aluminum. The latch bolt to be forged bronze.~~
- ~~C. These devices to be non handed, have one point positive dogging (cylinder dogging optional). 3/4" throw latchbolt to deadlock for added security. Device to be thru bolted to trim.~~
- ~~D. Devices to be used on aluminum doors to have narrow stile cases and may not require deadlocking latch bolt.~~

2.07 KICK PLATES AND ARMOR PLATES

- A. Not required at metal door and doors with laminated plastic face veneers.

2.08 DOOR SILENCERS

- A. Furnish three (3) door silencers per single door and four (4) door silencers per pairs of doors on all hollow metal frames.
- B. For openings with flush transom panels, furnish four (4) silencers for each transom panel.
- C. Omit silencers at doors with sound/light seals. Omit silencers at doors with aluminum frames that are provided with gaskets. Omit silencers at outswinging exterior door.

2.09 DOOR STOPS AND/OR HOLDERS

- A. Floor stops shall be furnished wherever an open door, or any item of hardware thereon, strikes a wall, column, or other part of the building structure. Where the floor type of stop cannot be effectively used, a wall type stop or overhead type holder shall be used.
 - 1. Provide floor stops with extended bases or risers to suit floor finish and/or door undercuts as required for the particular openings involved.
 - 2. Use toggle bolt installation at stud partitions with plaster, gypsum-board and thin-set ceramic tile finish.
 - 3. Use expansion shield installation at masonry walls and partitions, and at stud partitions with conventional ceramic tile finish.

2.10 MISCELLANEOUS ITEMS

- A. Surface Bolts: Provide two surface bolts for inactive leaf of pairs of doors with locks. Surface bolts shall be bronze, or brass base metal, US 26D (finish) made to ANSI standards with rods of proper lengths for various heights of doors.
- B. Thresholds: Provide for all exterior doors except aluminum doors which are furnished with thresholds by aluminum door supplier.
- C. Key Control Cabinets and Systems: Provide Lund Equipment Company or P. O. Moore key cabinets with sufficient capacity to accommodate needs of this project and allow 10% expansion.

2.11 HARDWARE SETS

- A. See attachment to this section.

2.12 LABELED DOORS

- A. All hardware furnished in connection with doors bearing Underwriters' Labels or where necessary to meet special requirements, will be strictly in accordance with the requirements established by the regulatory Authority and subject to the approval of that Authority.

2.13 SCREWS AND FASTENINGS

- A. Hardware for hollow metal doors, hollow metal frames, or items to be attached to masonry or tile floors or walls shall be supplied with the most effective fastening devices to insure the best possible means of attachment.

2.14 MANUFACTURERS

- A. Approved manufacturers for each component of door hardware are listed below. All others require pre-bid approval. Manufacturers' serial numbers specified under hardware schedule correspond to the manufacturer listed in Column I.

	<u>Column I</u>	<u>Column II</u>
Butts	Specified in Paragraph 2.04 above	
Locklets/Latchsets	Specified in Paragraph 2.02 above	
Closers	LCN 4020 series	Sargent 250 (top jamb)
Exit Devices	Von Duprin	Sargent

Bumpers	H. B. Ives	Quality
Floor	436	FB18
Wall	407/408	W307-S/W307-TB
Miscellaneous:		
Thresholds	National Guard	Reese

PART 3 - EXECUTION

3.01 DELIVERY AND STORAGE

- A. Deliver hardware items to site in manufacturer's original, unopened, labeled packages.
- B. Store in original packages until hardware is ready to be installed.

3.02 INSTALLATION

- A. Install hardware to meet hardware manufacturer's recommendations and the requirements of each individual installation as specified in related sections.
- B. Mount hardware at heights recommended in "Recommended locations for Builders' Hardware" by NBHA; except as may be otherwise directed by Engineer.
- C. Set items level, plumb and true to line and location. Adjust and reinforce substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with manufacturer's recommendations.
- E. Cut and fit threshold and floor covers to profile of door frames, with mitered corners and hairline joints. Cut smooth openings for spindles, bolts and similar items, if any.
- F. At exterior doors, and elsewhere as indicated, set thresholds in sealant to exclude moisture. Do not plug drainage holes or block weeps. Remove excess sealant.
- G. Adjust and check each item of hardware and each door, to ensure proper operation and function of every unit. Lubricate moving parts with type lubrication recommended by manufacturer (graphite-type if no other recommended). Replace units which cannot be adjusted and lubricated to operate freely and smoothly as intended for application made.

3.03 CLEAN-UP

- A. Remove soil, stain and extraneous materials, caused by hardware installation, from adjacent surfaces.
- B. Remove and replace all screws with burred heads and all hardware which does not function properly or is damaged to a point of being unsightly.

END OF SECTION

**SECTION 09260 –
GYPSUM BOARD SYSTEMS**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Metal stud wall framing.
- B. Metal channel ceiling framing.
- C. Gypsum board.
- D. Taped and sanded joint treatment.

1.02 REFERENCES

- A. ANSI/ASTM C36 – Gypsum Wallboard.
- B. ANSI/ASTM C475 – Joint Treatment Materials for Gypsum Wallboard Construction.
- C. ANSI/ASTM C645 – Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
- D. ANSI/ASTM C646 – Steel Drill Screws for the Application of Gypsum Sheet Material to Light Gage Steel Studs.
- E. ANI/ASTM C754 – Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Baking Board, or Water Resistant Backing Board.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 01340.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS – GYPSUM BOARD SYSTEM

- A. United States Gypsum Company, “Sheetrock – Firecode C”
- B. Other acceptable manufacturers offering equivalent products:
 - 1. Gold Bond Building Products, “Fireshield”
 - 2. Georgia Pacific “Firestop”
- C. Substitutions: Under provisions of Section 01600.

2.02 FRAMING MATERIALS

- A. Studs and Tracks: ANSI/ASTM C645; galvanized sheet steel, 20 gage, “C” shape.
- B. Furring, Framing and Accessories: ANSI/ASTM C36; fire resistive type, UL rated; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.
- C. Fasteners: ANSI/ASTM C646.

2.03 GYPSUM BOARD MATERIALS

09260-1

- A. Fire Rated Gypsum Board: ANSI/ASTM C36; fire resistive type, UL rated; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

2.04 ACCESSORIES

- A. Joint Materials: ANSI/ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that site conditions are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

3.02 METAL STUD AND FURRING INSTALLATION

- A. Install studding and furring in accordance with manufacturer's instructions.
- B. Metal Stud and Furring Spacing: 16 inches on center.
- C. Coordinate installation of anchors, blocking, and electrical and mechanical work placed in or behind ceiling framing.

3.03 FURRING AND FIRE RATINGS

- A. Install studs and furring as required for fire resistance ratings of one (1) hour for ceiling and two (2) hours for boiler room walls.

3.04 CEILING FRAMING INSTALLATION

- A. Install in accordance with ANSI/ASTM C754.
- B. Coordinate location of hangers with other work.
- C. Install ceiling framing independent of walls, columns, and above-ceiling work.

3.05 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with manufacturer's instructions.
- B. Erect single layer fire-rated gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Use screws when fastening gypsum board to metal furring or framing.
- D. Erect fire-rated gypsum ceiling board perpendicular to supports, with staggered end joints over supports.

3.06 JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces.

END OF SECTION

09260-2

SECTION 09860 -
THIN-FILM ANTIMICROBIAL RESINOUS EPOXY FLOOR COATING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specifications sections apply to work specified in this section.

1.02 SCOPE OF WORK

- A. Furnish all necessary materials, labor, and equipment for the complete installation of a Thin Film Antimicrobial Resinous Epoxy Floor Coating and other materials and accessories, as shown on the drawings and specified herein. Provide all necessary supplementary items for a complete installation intended by documents.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications
 - 1. Obtain primary Epoxy Coating System materials including primer, resins and hardening agents from a single manufacturer providing materials of the type specified in this section. Provide unblended aggregates, solvents and other secondary materials from a source recommended by the manufacturer of primary materials.
 - 2. The Epoxy Coating System manufacturer shall instruct the applicator's crew on the proper techniques of mixing and applying the Epoxy Coating System.
 - 3. Installer to verify locations of all joints requiring a soft sealant and/or epoxy joint material. Follow recommendations of material manufacture for treatment of all joints, expansion joints, and cracks.
 - 4. Mock-Up: Prior to starting application of floor coating, provide full-scale mock-up to establish acceptable quality, appearance and texture. Mock-up area must not be less than 50 square feet.
 - a. Acceptable mock-up to be standard of quality for remaining work.
 - b. Accepted work may remain in place. Unacceptable work to be removed and replaced until acceptable.
 - 5. Installer must be acceptable to A/E, manufacturer, and owner.
- B. Applicator Qualifications: Installation shall be performed by an applicator with not less than three years of satisfactory experience in the application of the type of system as specified in this section, and shall be approved by the manufacturer of the Epoxy Coating System.

1.04 WARRANTY

- A. Contractor to guarantee work under this Section to be free from defects of material and installation for the duration of the warranty period. Defects occurring during warranty period shall be repaired, in a manner satisfactory to the Owner and the A/E, at no additional cost to the Owner.
 - 1. Warranty Period: Five (5) Years.
- B. In case of a warranty claim, the owner will notify the contractor in writing within 30 days of the first appearance of any problems which are covered under this warranty and will provide free access to

the area during normal working hours.

1.05 SUBMITTALS

- A. Product Data – Submit manufacturer's specifications on specific products of the Epoxy Coating System, including physical properties and performance properties including required tests, and an overall system description, with installation instructions. Manufacturer's full range color charts shall also be submitted.
- B. The applicator shall submit a 6" X 6" system sample for verification purposes, finish, texture approval and color.

1.06 MATERIAL DELIVERY, HANDLING, AND STORAGE

- A. Primary system materials shall be delivered in the manufacturer's undamaged, unopened containers. Each container shall be clearly marked with the following:
 - 1. Product Name.
 - 2. Manufacturer's name.
 - 3. Component designation (A or B, etc.)
 - 4. Mixing ratio of component mixture.
- B. Provide equipment and personnel to handle the materials by methods which prevent damage.
- C. The applicator shall promptly inspect all direct job site deliveries to assure that quantities are correct and that materials comply with requirements and are not damaged.
- D. The applicator shall be responsible for all materials furnished by him, and he shall replace, at his own expense, all such material that is found to be defective in manufacture or that has become damaged in transit, handling or storage.
- E. Store materials in accordance with manufacturer's instructions, with seals and labels intact and legible. Maintain temperatures within the required range. Do not use materials that have been stored for a longer period of time than the manufacturer's maximum recommended shelf life.

1.07 JOB CONDITIONS

- A. The applicator's representative shall visit the job site prior to beginning the application of the Epoxy Coating System to evaluate the extent of repairs required. Testing should also be done to verify that the moisture content of the slab does not exceed that as recommended by the manufacturer.
- B. The applicator should exercise care during surface preparation and system application to protect surrounding substrates and surfaces, as well as in place equipment. The applicator shall use his discretion as to the physical means and methods used for preparation and protection. Preparation shall be as per coating manufacturers recommendations. Prepared surfaces shall be clean, sound, and have a uniform feel of medium grit sandpaper.
- C. Concrete: The General Contractor shall be responsible for hiring an independent testing service to test for moisture content and moisture vapor emission rate; install no flooring over concrete until the concrete has been cured and is sufficiently dry to achieve acceptable bond with flooring as determined by material manufacturer's recommended bond and moisture tests.
- D. Moisture vapor emission and moisture content testing must conform with the requirements of ASTM F-1869-98 (Calcium Chloride Test) and ASTM F-2170-02 (Relative Humidity Probe Test). If test results show excessive levels of moisture content or vapor emission rate, installation shall not proceed

until source of excessive moisture is identified and removed or corrected. If excessive moisture cannot be removed or prevented, apply manufacturer's recommended moisture vapor emission control material.

- E. During material application, care should be exercised to comply with the temperature and humidity limitations of the materials used as defined by the manufacturer. Maintain the ambient room and floor temperatures at a minimum of 55° Fahrenheit or above before, during and after floor installation. Concrete to be cured for at least 28 days and shall have been free of water for at least 7 days.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. For the purpose of designating type and quality the following product information is based on products manufactured by The Key Resin Company, or prior approved equal.

2.02 MATERIALS

- A. System Overview

1. The coating system shall be Key Thin-Film Coating System using Key #625-MVT Plus+ epoxy primer and Key #625 Chemical Resistant Bisphenal-F Epoxy Coating containing Key BioClean Anti-Microbial additive throughout. The system shall be applied over a clean, properly prepared substrate.
2. Prior to system application, all joints and cracks are to be treated with semi-flexible epoxy and crack filler respectively as described in the execution section.
3. The finished floor system shall be a minimum 15-20 mils in thickness, dense and nonpourous.
4. The system shall have the following properties:

Property	Test Method	Requirement
Fungus and Bacteria Resistance	MIL-F-52505	Will not support growth of §4.4.2.11 fungus or bacteria when subjected to mildew and bacterium tests
Resistance to Elevated Temperature	MIL-D-3234F	No slip or flow at required §4.7.5 temperature of 158° F.
Tabor Abrasion Resistance	CS-17 Wheel	40 mg lost per 1,000 cycles, max 2,000 gm load
Water Absorption	ASTM-D-470	.10% Max (24 hours immersion)
Bond Strength to Concrete	ACI Comm. #430, Bulletin 59-43	300 psi, concrete failure
Flammability	ASTM-D-635-63	Self-extinguishing by this test
Hardness	Shore D	70-80

- B. The rigid epoxy to be used for crack treatment shall be Key #715 Crack Filler or other epoxy approved by Manufacturer. The semi-flexible epoxy to be used for control joint filler shall be Key #780 Joint Filler, or equal.
- C. Slip resistance floor shall be polypropylene beads. Course shall be selected by A/E from either course, medium or fine during the submittal process. Submit samples for A/E review.

PART 3: EXECUTION

3.01 SURFACE PREPARATION

- A. Prepare concrete by means of vacuum shot blasting or grinding. Remove all contaminating or bond breaking substances including but not limited to dust, laitance, curing compounds, coatings, sealers,

oil and grease. Any oil or grease not removed by vacuum blasting must be chemically removed. Steel substrates shall be cleaned of any oil or grease and prepared by rough grinding to remove any rust or scale.

- B. Cracks and non-expansion joints shall be routed and filled with Crack Filler and Epoxy Joint Filler respectively.

3.02 APPLICATION

- A. General – Apply each component of the Epoxy Coating System in compliance with manufacturer's installation instructions including mixing and application methods, recoat windows, cure times and environmental restrictions. The system is to be applied directly over all non-expansion joints and cracks that have been treated as previously described. Material applied over expansion or control joint material is subject to cracking due to movement in the joint.
- B. Cracks and Non-Expansion Joints
 - 1. Those less than 1/16" wide after surface preparation shall be filled with neat, epoxy, mixed and applied as recommended by the manufacturer's printed instructions. All treated cracks are to be sanded prior to applying primer. Non-Expansion Joints shall be routed and filled with semi-flexible epoxy.
 - 2. Those cracks larger than 1/16" wide shall be routed and filled with crack filler epoxy mixed and applied as recommended by the manufacturer.
- C. Epoxy Primer – Apply epoxy primer by squeegee and back roll or brush at the rate of 250 square feet per gallon to thoroughly wet surface, but taking care not to "pond" the material.
- D. Coating Application
 - 1. Apply 2 coats of epoxy coating at a minimum of 6-10 mils per coat. 160 square feet per gallon is required coverage for 100% solids epoxy coating to achieve 10 mils thickness.
 - 2. Follow manufacturer's instructions for mixing and application techniques.
 - 3. For floor: Add or broadcast non-skid grit or aluminum oxide to epoxy coating application to provide required textured finish as directed by A/E.
- E. Obtain engineer's approval of the system just after completion of the final coat, prior to completion of curing.

3.03 CURING, CLEANING AND PROTECTION

- A. Cure epoxy coating system materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of the application and prior to completion of the curing process.
- B. Protect the epoxy coating system from damage and wear during other phases of the construction operation, using temporary covering as recommended by the manufacturer, if required. Remove temporary covering just prior to final inspection.
- C. Clean the epoxy coating system just prior to final inspection, using materials and procedures suitable to the system manufacturer.

END OF SECTION

SECTION 13500 -
PRE-ENGINEERED STEEL HANGAR SPECIFICATIONS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Contractor to furnish all labor, materials, equipment and incidentals required to install a single Hangar Unit. The Hangar Unit shall be a complete, pre-engineered metal building system (PEMB) and an integrated hydraulic door as designed, manufactured, and delivered by “ProAm Hangar Systems” of Slocumb Alabama, or an approved equal. The PEMB shall be fully coordinated to ensure compatibility between the structural frame, secondary members, and hydraulic door assembly. All components shall function as a unified, integrated system. In the event the contract is based on an alternate building manufacturer, it is the Contractor's responsibility to see that the alternate manufacturer provides a system that meets the complete detailed functions specified herein.
- B. Contractor to provide the Owner with construction drawings of the pre-engineered steel building stamped by a registered Professional Engineer in the State of Louisiana prior to construction.
- C. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specifications sections apply to work specified in this section.

1.02 RELATED WORK

- A. Concrete floor, foundations, and installation of anchor bolts are specified in Division-3.

1.03 DESCRIPTION OF SYSTEMS

- A. The extent of the PEMB is shown on the project plans. The Hangar shall be 65’ wide by 60’ deep based on the out-to-out of the steel exterior walls. Eave height shall be as measured from the top of the eave purlin or door truss to the bottom of the column base plate.
- B. Hangar shall include a single-panel hydraulic door fully integrated into the PEMB system and supplied by “PowerLift Doors” of Brookings South Dakota, or an approved equal. Hydraulic Lift Door shall have a clear opening 18’ tall by 60’ wide. System shall include doorframe, hydraulic cylinders, power unit, hoses, and control panel. Doorframe to be designed as part of the PEMB primary structure to ensure proper load transfer and deflection limits. All hardware shall be industrial-grade, with safety check valves, reinforced pivot connections, and weather seals.
- C. Tolerances shall comply with MBMA’s “Metal Building Systems Manual” for fabrication tolerances unless more stringent tolerances are noted herein.

1.04 DESIGN CRITERIA

- A. Design primary and secondary structural members, in addition to coverings, for applicable loads and combination loads in accordance with the MBMA “Recommended Design Practices Manual”.
- B. For structural steel members, comply with AISC “Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings.
- C. For light gage steel members, comply with AISI “Specification for the Design of Cold-Formed Steel Structural Members”.
- D. For welded connections, comply with AWS “Structural Welding Code”.

- E. Design loads shall be stated herein and as clearly set forth in the order document and shall be in accordance to the 2021 IBC Building Code standard design practices ASCE 7-10.

Ground Snow Load	<u>N/A</u>
Live Load	<u>150 psf</u>
Ultimate Wind Speed	<u>111 mph</u>
Exposure	<u>C</u>
Seismic Zone	<u>B</u>
Construction Type	<u>II B</u>
Occupancy/Risk Category	<u>S-1 / II</u>
Hangar Group	<u>III</u>
NFPA Construction Type	<u>II(000)</u>
Importance Factors	<u>1.0</u>

- F. Design calculations, drawings and documents shall contain information requested for permits and approval and sufficient information for building erection and shall be as applied to ProAm Hangar Systems or approved equal product furnished. Drawings shall be sealed by a Professional Engineer registered in the State of Louisiana. Four sets of required plans shall be furnished with original Professional Engineers seal together with an electronic version of the sealed drawings in .pdf format.
- G. Building Reactions shall be furnished by the building supplier. Design of floors and foundation shall be the responsibility of the foundation designer, not the building designer.
- H. Primary structural framing shall be main load carrying structural members. They shall include door trusses, rafters, interior columns, and exterior columns. The minimum design deflection shall be L/240.

1.05 QUALIFICATIONS

- A. Manufacturer regularly and presently manufactures pre-engineered metal buildings as specified as one of its principle products.
- B. Manufacturer's product submitted has been in satisfactory and efficient operation on three installations similar and equivalent to this project for three years. Submit list of installations.

1.06 SUBMITTALS

- A. Product Data: Submit manufacturer's product information, full range of available standard colors and finishes, specifications, and installation instructions for building components and accessories.
- B. Shop Drawings: Submit complete erection drawings showing anchor bolts, settings, sidewall, endwall, and roof framing, transverse cross sections, covering and trim details, and accessory installation details to clearly indicate proper assembly of building components.
- C. Structural Design Analysis: Furnish complete structural design analysis for all structural components of the prefabricated metal building.
- D. Operation and Maintenance Data: Complete operating and maintenance instructions shall be furnished by the manufacturer. The instructions shall include troubleshooting directions and preventative maintenance schedules for the hangar door, as well as spare parts lists with ordering information.
1. A schedule of the date of shop testing and delivery of the equipment to the job site will be provided to the Owner by the selected pump manufacturer.
 2. Copies of all inspection reports, as specified in Part 3 of this Section.

E. Operation and Maintenance Data

Complete operating and maintenance instructions shall be furnished by the Owner selected pump manufacturer, and the Contractor can obtain these documents upon request. The maintenance instructions shall include troubleshooting data and full preventative maintenance schedules, and complete spare parts lists with ordering information. The maintenance instructions shall also include directions on how to properly maintain all equipment delivered and stored at the project site prior to installation, in the event that the equipment is required to be stored for a prolonged period of time. This would include full inspection and maintenance instructions and schedules for the Owner to complete during the storage time between delivery and installation.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. The Manufacturer shall deliver all primary and secondary steel components, roof and wall panels, and hangar door assemblies to the project site with adequate protection so they will not be damaged or deformed during delivery. Materials stored on site before erection shall be stacked on platforms or pallets and covered with suitable weather tight ventilated covering. Store metal sheets or panels so that water accumulations will drain freely. Panels shall not be stored in contact with materials that will cause staining. Materials having defects or damages that affect appearance, serviceability, or use will be rejected. Contractor shall coordinate unloading, staging, and erection sequencing.

1.08 WARRANTY

- A. The prefabricated metal building and the integral hangar door shall be warrantied against defects in materials and workmanship for one year after the completion of the erection of the structure. After erection the completed work shall also be weather tight for the duration of the warranty.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Hot-Rolled Structural Shapes: ASTM A36 or ASTM A992 as applicable for structural columns, rafters, and door columns.
- B. Purlins, girts, wind bracing, and miscellaneous structural members: ASTM A572
- C. Tubing or pipe: ASTM A500 minimum
- D. Roof and wall panels: ASTM A792
- E. Structural Field Connections: ASTM A325

2.02 STRUCTURAL FRAMING COMPONENTS

- A. All framing shall be factory-fabricated, welded, and painted in accordance with AISC and AWS standards. Furnish complete with all attachment plates, bearing plates, and splice members. Factory drilled for bolted field assembly.
- B. Wind Bracing: Adjustable, threaded steel rods, ½” diameter minimum, ASTM A35 or A572, Grade D.
- C. Secondary Framing: Purlins, eave struts, end wall beams, flange and sag bracing; minimum 16 ga. rolled formed sections. Shop painted or galvanized.
- D. Structural field connections shall be bolted (unless otherwise noted). All primary bolted connections, as shown on the manufacturer’s drawings, shall be furnished with high strength bolts conforming to

ASTM A325. All bolts shall be zinc-aluminum coated with neoprene washers for weather seal.

- E. Shop Priming: All structural members shall be shop primed red oxide.
- F. All sheet metal for roof, wall, and hangar door panels shall be no less than 26 ga., Galvalume coating conforming to ASTM A792. Panels shall be furnished full length from building eave to ridge purlin. A preformed ridge cap shall be provided. Exterior wall panels and trim color/colors to be determined by owner.

2.03 MISCELLANEOUS MATERIALS

- A. Building trim shall include eave trim, gable trim, corner trim, service door trim, and hangar door trim. All trim shall be 26 ga. Minimum and manufactured of flat stock material equal in quality to the wall sheets and color as selected by the owner.
- B. Roof caulking shall be at all roof sheet side laps and at pre-formed ridge caps. Roof caulk shall be a tape sealant type and shall be pre-formed and supplied by the manufacturer.
- C. Flexible Closure Strips: Closed cell, expanded cellular rubber, self-extinguishing, cut or pre-molded to match corrugation configuration of roofing and siding sheets. Provide where necessary to ensure weather-tight construction and to provide a bird-proof building.
- D. Sheet panel fasteners shall be the manufacturer's standard system of self-tapping screws, bolts and nuts, self-locking rivets, self-locking bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Fasteners on weather side of panels shall be provided with metal-backed neoprene washers under the heads of the fasteners. Fasteners shall be zinc plated for exterior application.
- E. Gutters and downspouts: Furnish gutters and downspouts designed and sized in accordance with SMACNA "Architectural Sheet Metal Manual" 7th Edition, for the rainfall intensity inches/hour of a five minute duration for storms which should be exceeded only once in 10 years for the area where the building is erected. Gutters shall be formed in sections not less than 8ft. in length, complete with end pieces, outlet tubes, and any special pieces required. Furnish gutter supports spaced at 36" O.C., constructed of same metal as gutters. Slope gutters to drain, and paint to match roof fascia. Downspouts shall be formed in sections approximately 10ft. long, complete with elbows and offsets. Join sections with minimum 1-1/2" telescoping joints. Provide fasteners for top, bottom, and 5' O.C. intermediately between, designed to securely hold downspouts not less than 1" away from walls. Paint to match trim.
- F. Insulation: Insulation shall be blanket-type, 4" Vinyl Reinforced Insulation (R-13) (WMP-VR-R-PLUS) fiberglass with vapor barrier facing, suitable for application to walls and roof of metal buildings. System R values under ASTM C1136. Vapor barrier facing shall be vinyl reinforced polyester (VRP) film (3 mil approximate thickness) and shall have an Underwriters Laboratories flame spread rate of 25 or less* and a smoke developed rating of 50 or less. Water vapor transmission value is 1.00 perms for vinyl film facing and .02 pers for VRP Facing. Color of facing material shall be white.
- G. Exterior doors: 3'-0" x 7'-0" white steel flush entry door, 1-3/4" 24 ga. polyurethane foam core thermal broke leaf with R-12 insulation value, 16 ga. white thermal broke frame, dual seal bulb weather-stripping, ADA compliant low profile sill and ANSU A156.2 Series 4000, Grade 2 lever lockset keyed and master keyed. Door leaf has blocking for future door closer. Doors to be ADA compliant.
- H. Manufacturer to include at least two louvres in the rear wall of the hanger to reduce the vacuum effect caused by the hangar door opening. Manufacturer shall size the louvers to provide adequate air flow during door operation. Manufacturer shall also include a third louver of the same size on one of the sides of the hangar as indicated on the plans.

2.04 SINGLE PANEL HYDRAULIC DOOR

- A. Hydraulic Door must be designed to withstand all design loads stated in Section 1.04. Door is to have a final clear opening of 60 ft wide by 18 ft tall. Door manufacturer to provide specific door reaction design parameters including all anticipated cladding and insulation upon award of contract.
- B. Construction of Panel and Frame Sections:
 - 1. Framing
 - a. Structural Steel Tubing: ASTM A500 Minimum
 - b. Structural Steel Flats, Bars, and Angles: ASTM A36
 - c. Hinge Pins: ASTM 1144 Stress Proof or AISI 4140 Heat Treated
 - 2. Frames: Structural steel tubing and other structural steel shapes.
 - a. Design to same loading requirements for live, dead and wind loads as the surrounding construction.
 - b. Maximum Spacing:
 - i. Between Vertical Members: 96 inches
 - ii. Between Horizontal Members: 48 inches
 - 3. Panel Frame: Factory-welded at all joints and connections, with smooth welds minimum ¼ inch thick.
 - 4. Frame and Panel System: Swinging door leaf panel mounted to manufactured door frame.
 - a. Door Leaf Panel: Not to be mounted directly to building header.
 - 5. Cane Bolts: On larger width doors, cane bolts may be added to inside of bottom door truss near door center adding strength at the door truss location.
 - a. If Severe or Abnormal Weather is Anticipated: Cane bolts are to engage by lowering bolt into a hole in the floor slab. This will aid in preventing building or door damage.
 - b. Normal Weather Conditions: Cane bolt may be left in the raised disengaged position.
 - c. Never operate door when cane bolts are in the lower engaged position.
- C. Hinges: Silent, greaseless, efficient, with zero maintenance.
 - 1. Permanent Bronze Bushings: Teflon impregnated providing a greaseless solution to hinge lubrication.
 - 2. Hinge Pin: Yield Strength: 100,000 psi (689,475.7 kPa).
- D. Factory Supplied Upper Weather Stripping: Shipped with frame and door panel for field-install.
- E. Factory Supplied Lower Weather Stripping: Installed on door panel before installation.
- F. Hydraulic Doors: Operated by hydraulic cylinders mechanically fastened to swinging door leaf and manufacturer's door frame.
- G. Two Hydraulic Cylinders: open and close hydraulic door. Designed to carry required loads during operation, open position, and closed position.
 - 1. Internal Stops: Installed to prevent over-extension of cylinders, restricting system from opening or closing beyond its limits.
 - 2. Equipped with resistors to control oil flow on the down cycle.
- H. System to Lock Closed: Hydraulic cylinders to provide a minimum of 1,000 lbf (4.45 kN) of total closing force.
- I. Electric over hydraulic locks on cylinder ports:
 - 1. Standard for all SuperMax doors; optional for all other sizes.

2. Normally closed hydraulic valve opens when power unit momentary switch is pressed, closes when momentary switch is released.
- J. Hydraulic Power Unit:
1. Power: 10HP
 - a. 230 VAC Single-Phase: Requires 70 Amp breaker.
 - b. Double Push Button Controls:
 - i. Push button for desired direction according to labels; raise or lower.
 - ii. Buttons requires constant pressure to operate.
 - iii. When pressure on button is released, pump operation stops causing door to stop and stay at door's present position.
 2. Electric motor and pump are combined into one self-contained unit located adjacent to the door, fastened to the framing by four ¼ inch lags.
 3. The Contractor is responsible for electrical power connections for the pump unit. Electrical power installation is to meet federal, state, and local codes.
 4. Hydraulic power unit to be pre-wired and factory tested, with the final hook-up by the Contractor.
 5. Controls: wired for constant-hold operation to raise or lower the door.
- K. An alternative hydraulic system shall be included that will allow for door operation when the electrical pump has lost power.
- L. Sensors shall be included that stop the door from continuing in the direction of a detected obstruction, but allows door travel in the reverse direction of the obstruction. Sensors interrupt current to the solenoid coils that shift the hydraulic directional control valve to raise or lower the door in order to stop the door. They do not stop the motor on the power unit, they stop oil flow to the cylinders in the direction of travel of the obstruction.

PART 3: EXECUTION

3.01 ERECTION

- A. Contractor shall coordinate unloading, staging, and erection sequencing with the Manufacturer. Contractor to install the complete building system including the integrated hangar door as per the manufacturer's recommendations.

END OF SECTION

**SECTION 15400 –
PLUMBING- GENERAL PROVISIONS**

PART 1- GENERAL

1.01 SCOPE OF WORK

- A. Furnish labor, materials, equipment, services, and incidentals required to install and test a complete plumbing system as shown on the Drawings. More specifically the work shall include, but shall not be limited to the following:
 - 1. Installation of sanitary drain system and cleanouts.
 - 2. Installation of potable cold water systems.
 - 3. Plumbing fixtures, wash hose stations.
 - 4. All parts necessary to make a complete Plumbing System ready for continuous operation.

1.02 SUBMITTAL

- A. Furnish to the Engineer shop drawings and technical literature covering details of plumbing-piping systems being furnished under this Section prior to fabrication, assembly or shipment.
- B. Operation and Maintenance Data
 - 1. Operating and maintenance manuals shall be furnished to the Engineer. The manuals shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with such equipment.

1.03 REFERENCE STANDARDS

- A. American Society For Testing and Materials (ASTM)
- B. American National Standards Institute (ANSI)
- C. American Water Works Association (AWWA)
- D. Southern Building Code Congress International, Inc. (SBCCI)
- E. National Fire Protection Association (NFPA)
- F. National Electrical Manufacturers Association (NEMA)
- G. Plumbing and Drainage Institute Standards (PDI)
- H. Cast Iron Soil Pipe Institute (CISPI)
- I. Underwriters Laboratory (UL)
- J. Factory Manual (FM)
- K. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 QUALITY ASSURANCE

- A. The Contractor for this Section shall be fully responsible for the proper execution and performance of the work described herein. It shall be their responsibility to inspect all installation conditions and bring to the attention of the Engineer any conditions which may affect their work adversely. They shall report to the Engineer, prior to commencing any portion of this work, any conditions unsuitable for the installation of their portion of the work.
- B. Mention herein or indication on the Drawings of equipment, materials, operation or methods shall require that each item mentioned or indicated be provided to make a complete system of plumbing ready for continuous operation.
- C. The location of all equipment, fixtures and piping shall be considered as approximate only and the right is reserved by the Engineer to change at any time, before the work is installed, the position of such equipment and piping to meet structural conditions and to provide proper headroom clearance or for other sufficient causes and such changes shall be made without additional expense to the Owner.
- D. Attention is called to the necessity for elimination of transmission of vibration from mechanical equipment to building structures. All equipment, therefore, shall be carefully selected and installed to meet this condition and isolators and water hammer arresters shall be provided where required.
- E. Instruct such persons as designated by the Owner in the care and use of all plumbing equipment and piping systems installed.
- F. Comply with all the laws, ordinances, codes, rules and regulations of the local, State or other authorized having jurisdiction over any of the work specified herein.
- G. Obtain all required permits, pay all legal fees for the same and in general take complete charge and responsibility for all legal requirements pertaining to this Section of the work.
- H. Requirements set forth in this Section and indicated on the Drawings shall be followed when in excess of the required or minimum regulations.
- I. If any work is performed and subsequent changes are necessary to conform to the regulations, such change shall be made as part of this work at no additional cost to the Owner.
- J. All work shown on the Drawings is intended to be approximately correct to scale, but figured dimensions and detailed Drawings shall be followed in every case. The Drawings shall be taken in a sense as diagrammatic. Size of pipes and general method of running them are shown, but it is not intended to show every offset and fitting nor every structural difficulty that may be encountered. To carry out the true intent and purpose of the Drawings all necessary parts to make complete working systems ready for use shall be furnished without extra charge.
- K. Refer to the Structural Drawings which indicate the type of construction in which the work shall be installed. Locations shown on the Plumbing Drawings shall be checked against the general and detailed drawings of the construction proper. All measurements must be taken at the building.

1.05 MAINTENANCE

- A. Materials, fixtures and equipment shall be properly protected at all times and all pipe openings shall be temporarily closed so as to prevent obstruction and damage. Items damaged during construction shall be replaced at no additional cost to the Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All the items shall be installed according to the applicable manufacturer's recommendations, the details shown on the Drawings and as specified herein.
- B. All work shall be installed in accordance with the manufacturer's printed instructions and shall be rigid, plumb and true to line, with all parts in perfect working order. Maintain protective covers on all units until final cleanup time and at that time remove covers and clean and polish all surfaces.

3.02 TESTING

- A. The various piping systems shall be subject to water, smoke, or air tests as noted and shall hold tight at pressures stated without extra pumping or water addition for the time intervals stated.
- B. All additional tests, methods or materials as may be required by the local ordinances and not specifically mentioned herein, shall be made as directed by the Engineer or the local Inspection Authority.
- C. Provide all apparatus and all other supplies or materials which may be necessary for testing the systems and operating the apparatus during the period while tests of any kind are being made, or for carrying out the work of the Contract.

3.03 CLEANING

- A. At the completion of the work, all fixtures, equipment, apparatus and exposed trim for same included in this Section shall be clean and, where required, polished ready for use.
- B. Protect this work during construction and all finished work damaged during construction shall be replaced.

3.04 PROTECTION

- A. Materials, fixtures and equipment shall be properly protected at all times and all pipe openings shall be temporarily closed so as to prevent obstruction and damage.

3.05 COORDINATION SKETCHES

- A. It shall be the responsibility of the Subcontractor to have in his employ a competent coordinator of mechanical systems and as such to provide all coordination of drawings or sketches as may be required or deemed necessary by the Engineer to obtain the required ceiling heights and eliminate conflicts with all piping, ducts and electrical installation.

END OF SECTION

**SECTION 15410 -
PLUMBING- PIPING SYSTEMS**

PART 1- GENERAL

1.01 SCOPE OF WORK

- A. Refer to Section 15400 for general provisions and additional information applicable to this Section.
- B. This Section specifies the basic Plumbing Systems of Piping and the materials of each System. Specific uses and applications are specified in other Sections of this Specification.
- C. Furnish all labor, materials, equipment, services and incidentals required and install complete interior Plumbing Piping Systems as shown on the Drawings and as Specified in Section 15400.
- D. The Contractor shall comply with all applicable Federal, State and Local Laws, codes, permits, roles, regulations and ordinances on the purchase, construction and implementation of the system and components described in these specifications and associated Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Steel Pipe and Fittings (Galvanized)
 - 1. Furnish and install standard weight, schedule 40, galvanized, pipe and fittings where galvanized steel pipe is required.
 - 2. Use the pipe for sleeves as specified elsewhere in this Section.
- B. Steel Pipe and Fittings (Black)
 - 1. Furnish and install steel pipe and fittings, black steel, standard weight, Schedule 40.
 - 2. Shall be used for all natural gas piping systems.
 - 3. Fittings for natural gas shall be black gas pattern malleable iron threaded and shall conform to ANSI 816.3 standard weight and ANSI 816.19 extra heavy weight.
- C. Copper Supply and Service Pipe and Fittings (Water)
 - 1. Water supply and service pipe shall be Type "L" hard tubing with cast or wrought brass fittings.
 - 2. Where below slab, piping shall be copper tubing ASTM B88 Type "L" soft drawn.
- D. Copper Drainage Pipe and Fittings
 - 1. Copper drainage pipe and fittings shall be Type "L" heavy and hard copper tubing with cast brass recessed drainage pattern sweat fittings and shall be used for pressure wastes, and equipment drip piping to and over adjacent floor drains. This piping may be used for waste and vent piping serving plumbing fixtures and equipment 2-in. in size and smaller.
- E. Plastic Pipe and Fittings
 - 1. Plastic pipe shall be rigid unplasticized, polyvinyl chloride (PVC) pipe as manufactured by Eslon Thermoplastics or equal unless noted otherwise in these specifications. Pipe shall be

Schedule 80 and of required sizes. All fittings shall be Schedule 80 for threaded joints.

F. Insulating Fittings

1. Provide on all connections between dissimilar metal water service lines.
2. Fittings shall be of type to provide control of electrolysis.

2.02 VALVES

A. General

1. It is the intention of these Specifications to require control valves at the bottom of all potable and protected hot and cold water service risers.
2. Install drawoff valves on the house side of main control valves, at the bottom of all risers, at all low points. Drawoffs shall consist of a gate valve fitted with hexagon hose end nipples.
3. Group and locate control valves in all locations so they may be easily operated, through access panels, doors, or adjacent to equipment.
4. Valves, in general, shall be of the same manufacturer throughout unless noted otherwise. All valves, except as noted otherwise, shall be made for 125 pound steam working pressure and shall have round iron wheel handles.

B. Services and Systems

1. In general, valves will be required for the following services and systems:
 - a. Water (Potable and Plant)

2.03 CLEANOUTS

- A. Exterior Cleanouts- Exterior cleanouts shown as FCO shall consist of cast iron floor cleanout with serrated cutoff sections and brass screwed raised head plug, Zurn Z- 1449, with heavy cast iron access box and gasketed cover, Zurn Z-1474, or equal. Set flush with concrete slab.
- B. Cleanout Ferrule- Horizontal, above grade sanitary sewer and rain water leaders requiring cleanouts at the end of, or at the change of direction, shall use a cleanout ferrule with brass plug. Zurn Z-1440-BP or equal.

2.04 SLEEVES AND CASTINGS

A. Sleeves

1. Sleeve all piping through walls, beams and partitions. All sleeves shall finish flush with the finish line.
2. Sleeve all piping passing through floor slabs. All sleeves shall extend 2-inch above the finish floor slab.
3. All sleeves shall be one-piece galvanized Schedule 40 steel pipe as specified above and shall be set before slabs are poured and piping installed.
4. Refer to "Typical Detail Sheets" for additional information.

- B. Castings- Provide waterproof castings on each plumbing pipe entering or leaving building through foundation walls. Seal space between each pipe and its waterproof casting. Each pipe shall be concentric with sleeve. Castings shall be of size and length to suit pipe and wall thickness.

2.06 INSULATION

- A. All water piping of every description specified shall be completely insulated with 1” snap-on, glass fiber pipe insulation in one piece molded sections with integral vapor barrier jacket.
- B. All fittings shall be covered with permanently non-combustible, one-piece, factory premolded, insulated fittings covers.

2.07 PIPE MARKING AND COLOR CODING

- A. Pipe marking shall be part of the work of this Section to assist as required by the Engineer to identify the pipe contents, direction of flow and all pertinent data required for proper marking of pipe.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Furnish a competent coordinator of all mechanical systems to provide coordination of drawings or sketches as may be required or deemed necessary by the Engineer to obtain the required ceiling heights and eliminate conflicts with piping, ducts and electrical installations.

3.02 INSTALLATION

- A. Install items as specified and in accordance with manufacturer's instructions and approved shop drawings.
- B. Install sanitary system complete to various points of termination.
- C. Water Systems
 - 1. Install all water system complete throughout the building.
 - 2. Refer to Part 1 which describes the locations and installation of all Potable Water, Protected Water.
 - 3. Expansion of the hot water piping shall be provided by anchoring the end of long runs and installing at least six screw elbows or approved type mechanical expansion joints.
- D. Valves
 - 1. Install control valves to all locations grouped and located to be easily operated, through access panels, doors, or adjacent to equipment.
 - 2. Install final Protected Water connections to equipment. Each connection shall be preceded by a ball valve directly adjacent to the unit.
 - 3. Install valves in a horizontal to upright position. Valves shall not be installed in down position from the horizontal.
- E. Insulation
 - 1. Do not apply insulation until pipes have been tested and accepted by all parties making inspection. Insulated covering shall be guaranteed for a period of one year.

- a. Insulate hot and cold water runouts to fixtures in partitioned pipe spaces.
 - b. Short exposed supply pipe at or immediately near regular plumbing fixtures shall not be covered but shall be finished as trim for regular plumbing fixtures specified in Part 2 of this Section.
- 2. Insulation shall be continuous through sleeves.
- H. Install cleanouts as directed by applicable code, at end of each branch soil, waste and rainwater line where rainwater, waste and soil lines change direction, at the bottom of every riser either as a cleanout tee above floor or end cleanout in the horizontal below the floor.

3.03 FIELD TESTING

- A. Provide steam, air and water necessary for testing the piping systems as specified under this Section of the work. Provide all connections for testing under this Section. Remove all debris resulting from testing. Use the water in an efficient and economical manner.
- B. Provide apparatus and another supplies or materials which may be necessary for testing the systems and operating the apparatus during the period while tests of any kind are being made, or for carrying out the work of the Contract.
- C. The various piping systems shall be subjected to water, smoke, or air tests as noted and shall hold tight at pressures stated without extra pumping or water addition for the time intervals stated.
- D. Additional tests, methods or materials that may be required by the local ordinances and not specifically specified herein, shall be made as directed by the Engineer or the local Inspection Authority.
- E. Provide for all repeated tests as necessary to make systems tight as required.
- F. Test soil, waste, drain, vent and rainwater piping as follows:
 - 1. Test rough drainage of soil, waste, drain, vent and rainwater leader by plugging piping when it terminates in the building or where it leaves the building by filling each system completely with water to the outlets on the roof after all outlets in section have been plugged or capped, for at least one hour duration.
 - 2. If it becomes necessary during the construction of the building to test a part of a section for any reason or to cover permanently any pipe before piping above the part or section has been completed, apply a water test to such part to section of the piping by maintaining a ten foot head of water on the highest section of the piping and the test shall hold tight for one hour.
- G. Test water piping to a water pressure of 150 psi to the lowest level and maintain this pressure without additional pumping for two hours.

3.04 CLEANING

- A. At the completion of the work, clean all piping, fixtures, equipment, apparatus and exposed trim for same included in the Section and, where required, polish ready for use.
- B. Thoroughly disinfect the entire potable water distribution systems with a solution of not less than 50 parts per million of available chlorine. Allow the disinfecting solution to remain in the system for a period of 3 hours after which time, open all valves and faucets and flush the system with clean water until the residual chlorine content is not greater than 0.2 parts per million, unless otherwise directed.

**SECTION 16000 -
ELECTRICAL SPECIFICATIONS**

SEE PLAN SHEET E0.0 FOR ELECTRICAL NOTES AND PLAN SHEET E5.0 FOR ELECTRICAL SPECIFICATIONS

END OF SECTION

**ITEM S-1001 -
CONSTRUCTION HAUL ROAD**

DESCRIPTION

1001-1.1 This work consists of furnishing, constructing and maintaining a construction access road (wood matting adjacent to existing pavement) and installation of culverts in accordance with these specifications and in conformance with the details shown on the plans.

MATERIALS

1001-2.1 Fill Material

Fill Material shall be sand or material as specified in Section 402 of Louisiana Standard Specifications for Roads and Bridges 2016 Edition. Geotextile fabric shall conform to requirements for Class C or D fabric in Section 1019 of Louisiana Standard Specifications for Roads and Bridges 2016 Edition.

1001-2.2 Wood Matting

Wood matting shall be constructed of Oak or other hardwood timber placed edge to edge across beams. Matting materials shall be able to withstand the dead loads produced from typical heavy construction equipment used in road construction.

At any time should the ENGINEER deem the wood matting material to be structural unsound to support the loads of said equipment the CONTRACTOR shall replace the matting used.

1001-2.3 Cross Drain Pipe

Cross drain pipe for the construction haul road shall be 24" equivalent corrugated metal pipe arch (CMPA) as specified in Section 701 of the Louisiana Standard Specifications for Roads and Bridges 2016 Edition. Cross drain shall be able to withstand the dead loads produced from typical heavy construction equipment used in road construction. Bedding material for pipe shall conform to the requirements for Stone or Recycle Portland Cement Concrete in Section 1003 of the Louisiana Standard Specifications for Roads and Bridges 2016 Edition.

EQUIPMENT

1001-3.1 Equipment, necessary to produce a finished product meeting specification requirements shall be furnished by the contractor.

CONSTRUCTION METHODS

1001-4.1 If required, fill material shall be spread and compacted to 95% of standard proctor. Contractor shall maintain construction access road in a satisfactory condition.

The contractor shall place the wood matting as established by the Engineer prior to any heavy construction activity. The matting shall be sufficient in width to provide a minimum of two (2) feet outside the wheel path of construction vehicles. It is intended for this matting to provide a method of dispersing the dead loads produced by heavy construction equipment.

METHOD OF MEASUREMENT

1001-5.1 Measurement shall be made per item complete which shall cover all work necessary to provide a construction access road, including culvert installation, fill material and wood matting in accordance with the specifications, complete, and accepted by the Engineer.

BASIS OF PAYMENT

1001-6.1 For Construction Access Road, payment shall be made at the contract lump sum price for this item. This contract price shall be full compensation for furnishing all material, labor, equipment, tools and incidentals necessary to complete the item.

Payment will be made under:

Item S-1001 Construction Access Road – lump sum

END OF ITEM S-1001

ITEM C-105 MOBILIZATION

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to 10 percent of the total project cost.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster “Equal Employment Opportunity is the Law” in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL “Notice to All Employees” Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office An Engineer/RPR field office is not required.

METHOD OF MEASUREMENT

105-5 Basis of measurement and payment. Based upon the contract lump sum price for “Mobilization” partial payments will be allowed as follows:

- a. With first pay request, 25%.
- b. When 25% or more of the original contract is earned, an additional 25%.
- c. When 50% or more of the original contract is earned, an additional 40%.
- d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, Contractor Final Project Documentation, the final 10%.

BASIS OF PAYMENT

105-6 Payment will be made under:

Item C-105 Mobilization – per lump sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

INTENTIONALLY LEFT BLANK

ITEM P-151 CLEARING AND GRUBBING

DESCRIPTION

151-1.1 This item shall consist of clearing or clearing and grubbing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the Resident Project Representative (RPR).

a. Clearing shall consist of the cutting and removal of all trees, stumps, brush, logs, hedges, the removal of fences and other loose or projecting material from the designated areas. The grubbing of stumps and roots will not be required.

b. Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or weeds, fences, structures, debris, and rubbish of any nature, natural obstructions or such material which in the opinion of the RPR is unsuitable for the foundation of strips, pavements, or other required structures, including the grubbing of stumps, roots, matted roots, foundations, and the disposal from the project of all spoil materials resulting from clearing and grubbing.

c. Tree Removal. Tree Removal shall consist of the cutting and removal of isolated single trees or isolated groups of trees, and the grubbing of stumps and roots. The removal of all the trees of this classification shall be in accordance with the requirements for the particular area being cleared.

CONSTRUCTION METHODS

151-2.1 General. The areas denoted on the plans to be cleared and grubbed shall be staked on the ground by the Contractor as indicated on the plans.

The removal of existing structures and utilities required to permit orderly progress of work shall be accomplished by local agencies, unless otherwise shown on the plans. Whenever a telephone pole, pipeline, conduit, sewer, roadway, or other utility is encountered and must be removed or relocated, the Contractor shall advise the RPR who will notify the proper local authority or owner to secure prompt action.

151-2.1.1 Disposal. All materials removed by clearing or by clearing and grubbing shall be disposed of outside the Airport's limits at the Contractor's responsibility, except when otherwise directed by the RPR. As far as practicable, waste concrete and masonry shall be placed on slopes of embankments or channels. When embankments are constructed of such material, this material shall be placed in accordance with requirements for formation of embankments. Any broken concrete or masonry that cannot be used in construction and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case, shall any discarded materials be left in windrows or piles adjacent to or within the airport limits. The manner and location of disposal of materials shall be subject to the approval of the RPR and shall not create an unsightly or objectionable view. When the Contractor is required to locate a disposal area outside the airport property limits, the Contractor shall obtain and file with the RPR permission in writing from the property owner for the use of private property for this purpose.

151-2.2 Clearing. The Contractor shall clear the staked or indicated area of all materials as indicated on the plans. Trees unavoidably falling outside the specified clearing limits must be cut up, removed, and disposed of in a satisfactory manner. To minimize damage to trees that are to be left standing, trees shall be felled toward the center of the area being cleared. The Contractor shall preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut flush with the original ground surface. The grubbing of stumps and roots will not be required.

Fences shall be removed and disposed of as directed by the RPR. Fence wire shall be neatly rolled and the wire and posts stored on the airport if they are to be used again, or stored at a location designated by the RPR if the fence is to remain the property of a local owner or authority.

151-2.3 Clearing and grubbing. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass, and other unsatisfactory materials as indicated on the plans, shall be removed, except where embankments exceeding 3-1/2 feet (105 cm) in depth will be constructed outside of paved areas. For embankments constructed outside of paved areas, all unsatisfactory materials shall be removed, but sound trees, stumps, and brush can be cut off flush with the original ground and allowed to remain. Tap roots and other projections over 1-1/2 inches (38 mm) in diameter shall be grubbed out to a depth of at least 18 inches (0.5 m) below the finished subgrade or slope elevation.

Any buildings and miscellaneous structures that are shown on the plans to be removed shall be demolished or removed, and all materials shall be disposed of by removal from the site. The cost of removal is incidental to this item. The remaining or existing foundations, wells, cesspools, and like structures shall be destroyed by breaking down the materials of which the foundations, wells, cesspools, etc., are built to a depth at least 2 feet (60 cm) below the existing surrounding ground. Any broken concrete, blocks, or other objectionable material that cannot be used in backfill shall be removed and disposed of at the Contractor's expense. The holes or openings shall be backfilled with acceptable material and properly compacted.

All holes in embankment areas remaining after the grubbing operation shall have the sides of the holes flattened to facilitate filling with acceptable material and compacting as required in Item P-152. The same procedure shall be applied to all holes remaining after grubbing in areas where the depth of holes exceeds the depth of the proposed excavation.

METHOD OF MEASUREMENT

151-3.1 The quantities of clearing and grubbing as shown by the limits on the plans shall be per lump sum of land specifically cleared and grubbed.

BASIS OF PAYMENT

151-4.1 Payment shall be made at the contract unit price per lump sum for clearing and grubbing. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-151-4.1 Clearing and Grubbing – per lump sum

END OF ITEM P-151

ITEM P-152 EXCAVATION, SUBGRADE, AND EMBANKMENT

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature.

b. Borrow excavation. Borrow excavation shall consist of approved material required for the construction of embankments or for other portions of the work in excess of the quantity of usable material available from required excavations. Borrow material shall be obtained from areas designated by the Resident Project Representative (RPR) within the limits of the airport property but outside the normal limits of necessary grading, or from areas outside the airport boundaries.

152-1.3 Unsuitable excavation. Unsuitable material shall be disposed in designated waste areas as shown on the plans. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

c. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by someone other than the Contractor; for example, the utility unless otherwise shown on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow excavation. Borrow areas are not required.

There are no borrow sources within the boundaries of the airport property. The Contractor shall locate and obtain borrow sources, subject to the approval of the RPR. The Contractor shall notify the RPR at least 15 days prior to beginning the excavation so necessary measurements and tests can be made by the RPR. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.7.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.6 Formation of embankments. The material shall be constructed in lifts not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within $\pm 2\%$ of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The RPR will take samples of excavated materials which will be used in embankment for testing to obtain a Moisture-Density Relations of Soils Report (Proctor) in accordance with D 1557. A new Proctor shall be obtained for each soil type based on visual classification.

Density tests will be taken by the RPR for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 95% of maximum density for non-cohesive soils, and 90% of maximum density for cohesive soils as determined by ASTM 1557. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be

leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

Payment for compacted embankment will be made under embankment in-place and no payment will be made for excavation, borrow, or other items.

152-2.7 Compaction requirements. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 9 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D1557. The material to be compacted shall be within $\pm 2\%$ of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils).

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Density tests will be taken by the RPR for every 3000 square yards of completed subgrade.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

152-2.8 Finishing and protection of subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.9 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.10 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

- a. **Smoothness.** The finished surface shall not vary more than $\pm 1/2$ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be

moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

- b. Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/-0.05 feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to be placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.10 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

METHOD OF MEASUREMENT

152-3.1 The quantity of unclassified excavation to be paid for shall be the number of cubic yards measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

152-3.2 The quantity of embankment in place shall be the number of cubic yards measured in its final position.

BASIS OF PAYMENT

152-4.1 For unclassified excavation, payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 For embankment in place, payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152-4.1	Unclassified Excavation – per cubic yard
Item P-152-4.2	Embankment in Place - per cubic yard

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180 Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))

ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2700 kN-m/m³))

ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2 Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66 Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

ITEM T-901 SEEDING

DESCRIPTION

901-1.1 This item shall consist of soil preparation, seeding and fertilizing the areas shown on the plans or as directed by the RPR in accordance with these specifications.

MATERIALS

901-2.1 Seed. The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the RPR duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seeds shall be applied as follows:

Seed Properties and Rate of Application

Seed	Minimum Seed Purity (Percent)	Minimum Germination (Percent)	Rate of Application lb/acre (or lb/1,000 S.F.)
Hulled Bermuda	83	*	0.7 lb/1000 S.F.

Seeding shall be performed during the period between March and September inclusive, unless otherwise approved by the RPR.

901-2.2 Lime. Not required.

901-2.3 Fertilizer. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified, and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

- a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- b. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or
- c. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be **13-13-13** commercial fertilizer and shall be spread at the rate of **615 lb/ acre**

901-2.4 Soil for repairs. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the RPR before being placed.

CONSTRUCTION METHODS

901-3.1 Advance preparation and cleanup. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

When the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

901-3.2 Dry application method.

a. Liming Not required.

b. Fertilizing. Following advance preparations and cleanup fertilizer shall be uniformly spread at the rate that will provide not less than the minimum quantity stated in paragraph 901-2.3.

c. Seeding. Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing. The fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawn roller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

901-3.3 Wet application method.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

b. Spraying equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 lb / sq inches (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (16 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For ease of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. The Contractor shall identify to the RPR all sources of water at least two (2) weeks prior to use. The RPR may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the RPR following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

d. Spraying. Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (75 mm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the RPR, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

901-3.4 Maintenance of seeded areas. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the RPR. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be for all seed placed on the ground surface, completed and accepted.

BASIS OF PAYMENT

901-5.1 Payment shall be made at a lump sum, which price and payment shall be full compensation for furnishing and placing all material and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Item 901-5.1 Seeding - per lump sum

T-901-3

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C602 Standard Specification for Agricultural Liming Materials

Federal Specifications (FED SPEC)

FED SPEC JJJ-S-181, Federal Specification, Seeds, Agricultural

Advisory Circulars (AC)

AC 150/5200-33 Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-901

**LOUISIANA DEPARTMENT OF
TRANSPORTATION AND
DEVELOPMENT**

**STANDARD SPECIFICATIONS FOR
ROADS AND BRIDGES 2016**

Section 302

Class II Base Course

302.01 DESCRIPTION. Furnish and place Class II roadway and shoulder base course on a prepared surface in accordance with these specifications, in conformity with the lines, grades, thickness, and typical sections shown on the plans or established. Control the selection, placement, mixing and compaction of materials so that the completed base course is uniform and conforms to plan dimensions and other acceptance requirements.

Quality assurance requirements shall be as specified in the latest edition of the Department's publication titled *Application of Quality Assurance Specifications for Embankment and Base Course*.

When not specified, any of the following types may be used:

1. Soil Cement
2. Crushed Stone
3. Asphalt Concrete Base Course on Embankment Layer
4. Recycled Portland Cement Concrete
5. Blended Calcium Sulfate

Unless approved otherwise in writing, use the same base course material throughout the project in accordance with these specifications.

In areas that are inaccessible for mixing and compacting, in turnouts, crossovers, and in other isolated or irregular areas, portland cement concrete complying with Section 901 or asphalt concrete base course complying with Section 502 may be used in lieu of the specified Class II base course material with approval. If using asphalt or portland cement concrete, the top half of the base course thickness shall be asphalt or portland cement concrete. If used, portland cement concrete shall be a minimum thickness of 6 inches. The remaining thickness shall be the same type and construction as the top layer of embankment, treated layer, or subgrade. Do not place raw, untreated material between a treated layer and the concrete. Place, consolidate, finish, and cure concrete as directed in accordance with Section 706.

Submit a dust control plan to address weather, sight clearance, operational procedures, traffic control, and any other project specific concerns. Failure to maintain sight clearance will result in the engineer stopping contractor operations.

The Department will identify dust sensitive areas in the plans. In these specific areas, the dust control plan must also include environmental requirements. In order to meet air quality standards, the contractor may be required to use central plant mixing of cement treated mixtures in dust

sensitive areas at no direct pay. The contractor may use other types of Class II base course in dust sensitive areas at no direct pay.

302.02 MATERIALS. Materials shall comply with the following sections or subsections and requirements.

Geotextile Fabric	203.11 & 1019
Asphalt Concrete	502
Portland Cement Concrete	901
Portland Cement	1001.01
Blended Hydraulic Cement	1001.02
Asphalt Materials	1002
Stone	1003.01 & 1003.03.1
Recycled Portland Cement Concrete	1003.01 & 1003.03.2
Blended Calcium Sulfate	1003.01 & 1003.03.3
Water	1018.01

302.02.1 Soils for Soil Cement: Soils for soil cement base course shall consist of materials that will stabilize with cement in accordance with DOTD TR 432. Such materials are those soils classified as A-1-a, A-1-b, A-2-4, A-2-6, A-4, and A-6 in accordance with DOTD TR 423. Do not use soil with a Liquid Limit greater than 35, a Plasticity Index (PI) greater than 15, or an organic content greater than 2 percent.

Determine Liquid Limit and Plasticity Index in accordance with DOTD TR 428. Determine organic content in accordance with DOTD TR 413. Do not use soil with over 79 percent sand or 60 percent silt when tested in accordance with DOTD TR 407. Soils may be blended to adjust the percentages of sand or silt to meet specification requirements; however, in-place blending is not allowed. Do not blend or treat soils that do not meet Liquid Limit or PI requirements to reduce Liquid Limit or PI. Do not use topsoil. Obtain the material to be stabilized from outside right-of-way limits except as provided in 106.02.3. The engineer will take samples from the roadway or stockpile in accordance with the Material Sampling Manual. The District Laboratory Engineer will approve materials prior to blending and the final product.

Acceptance of soils with organic contents between 2 to 5 percent may be allowed based on determination of increased cement percentages in accordance with DOTD TR 432 Method B or C, whichever is applicable, using the design compressive strength criteria listed for stabilization.

Maximum cement rate allowed will be 14 percent by volume. Perform the laboratory testing specified above at no expense to the Department. The laboratory used must be approved by the Materials Engineer Administrator.

Take samples in the presence of the engineer in accordance with the Material Sampling Manual. Obtain sufficient material to provide the District laboratory with approximately 200 pounds of the base material to be treated for verification testing. The engineer will take immediate possession of the verification samples. Also provide approximately 10 pounds of the selected cementitious material to the District laboratory. Provide materials for verification testing at no cost to the Department.

Submit all design data used to determine the recommended cement rate to the District Laboratory Engineer for approval. Prior to approval of the design, the District Laboratory will perform verification testing. Verification testing by the District Laboratory will consist of molding, curing and testing a minimum of three specimens in accordance with TR 432, at the percentage of cementitious material and at the optimum moisture determined by the contractor's laboratory. The recommended cement rate will be considered verified if test results indicate that the minimum strength criteria have been met and that the optimum moisture are within 2 percent of that submitted by the contractor. Normal testing time for verification testing may require up to 21 calendar days. Do not begin construction operations until the design is approved.

302.02.2 Portland Cement: Use Type I or II portland cement. The quantity of cement used shall be supported by proof of delivery.

302.02.3 Blended Hydraulic Cement: The cement shall be Type IP. The quantity of cement used shall be supported by proof of delivery.

302.02.4 Asphalt Concrete Base Course: The material requirements for asphalt concrete base course shall be as described in Section 502. The top half of the base thickness shall be asphalt concrete and the remaining thickness shall be the same type and construction as the top layer of embankment, treated layer, or subgrade. Do not place raw, untreated material between a treated layer and the asphalt concrete.

302.02.5 Blended Calcium Sulfate: Take gradation samples in accordance with 1003.03.3 from the dedicated stockpiles at the point of material origin.

302.03 EQUIPMENT. Obtain approval of equipment prior to use. When using in-place mixing, the equipment shall conform to 303.03. When using

central mixing, the equipment shall conform to 301.03.1. Compaction equipment shall conform to 301.03.1.5.

302.04 GENERAL CONSTRUCTION REQUIREMENTS. Place base course material on a subgrade prepared in accordance with Sections 203, 304, 305, 306 as specified. Construct asphalt concrete base course in accordance with Section 502. Do not use blended calcium sulfate in areas needed to facilitate traffic control. Do not place blended calcium sulfate within 10 feet of metal drainage structures. The contractor will be allowed to substitute any untreated Class II base course material listed in 302.01.

Finished lift thickness shall be 9 inches maximum. The Department may allow single lift construction for depths exceeding 9 inches and up to 12 inches based on a rolling pattern that obtains the required density.

Use a Class D geotextile separator fabric if an aggregate base course is to be placed on untreated or lime-treated soils.

302.05 MIXING.

302.05.1 Soil Cement: Combine soil with cement and water by in-place mixing or in a central plant and shape on the subgrade. When in-place mixing is done, spread and mix the cement prior to adding any more water.

A minimum of 70 percent of the pulverized soil, as determined by DOTD TR 431, shall pass the No. 4 sieve after mixing. Determine the optimum moisture of the mixture in accordance with DOTD TR 415 or TR 418. The percentage of moisture in the mixture, by dry weight, shall not vary from the optimum moisture by more than ± 2.0 percent at the time of compaction when tested in accordance with DOTD TR 403.

302.05.1.1 In-Place Mixing: Samples to determine optimum moisture and maximum dry density will be taken by the project engineer. Determine maximum dry density in accordance with DOTD TR 415 or TR 418 and in-place density in accordance with DOTD TR 401. After placement of soil and prior to mixing with cement, shape the soil to required section and compact to at least 93.0 percent of maximum dry density at the required grade.

From materials sampled in-place on the project, the engineer will determine the percentage of cement in accordance with DOTD TR 432 prior to mixing. Depending on the type of cement and soil to be used, normal testing time to determine required cement content may require 21 calendar days. Add water as needed to bring the moisture content of the mixture within the tolerance and uniformly mix with the materials. During the

mixing process, add water only through the spray bar of the in-place mixer which is adjusted to provide uniform coverage across the completed width of the roadway for the full depth of the base. Do not allow wet streaks or spots.

The method of cement distribution shall be such that the amount of cement used can be readily determined. Determine the spread rate of cement in accordance with DOTD TR 436.

When the moisture content is not within ± 2.0 percent of optimum, discontinue operations and do not resume until the moisture content is controlled within this tolerance. Do not place and pulverize more than one transport until moisture content is within ± 2.0 percent of optimum.

302.05.1.2 Central Plant Mixing: Mixing in a central mix plant shall conform to Section 301. When using central plant mixing, a reduction of 1.0 percent in the volume of cement required will be permitted.

302.05.2 Crushed Stone and Recycled Portland Cement Concrete: Do not allow crushed stone or recycled portland cement concrete base courses to segregate during construction. Take gradation samples in accordance with 1003.03 from the dedicated stockpiles at the point of material origin.

302.05.3 Blended Calcium Sulfate: Do not use for crossovers, drives, or in areas needed to facilitate traffic control. In lieu of blended calcium sulfate, substitute any untreated Class II base course material listed in 302.01. Do not place blended calcium sulfate within 10 feet of metal drainage structures. Use approved backfill material in Section 701.

302.06 TRANSPORTING AND PLACING ON SUBGRADE. Use only transportation and spreading methods that do not damage the subgrade. Place and spread sufficient base course material to obtain required width and compacted thickness within the tolerances set forth in 302.12. Do not allow subgrade material to contaminate the base course. Any contamination will require retesting and correction of deficiencies. Do not place, spread, or mix base course material on portland cement concrete or asphalt concrete pavements. Do not allow base course construction operations to damage adjacent pavement surfaces, edges and joints. Add water or use other suitable means to prevent dust during the transporting and placing of materials.

302.07 COMPACTING AND FINISHING.

302.07.1 General: The finished base course shall have a smooth, uniform, closely knit surface, free from ridges, waves, laminations or loose material. Thoroughly roll the surface and finish to grade. The cross-slope shall not vary by more than ± 0.003 foot/foot. Density requirement shall be in accordance with 302.12. Do not damage the subgrade layer during compaction operations.

302.07.2 Soil Cement: When using central plant mixing, compact the material and finish in accordance with 301.10, except that the automatic grade machine will not be required. When using in-place mixing, compact the material and finish in accordance with 303.06.

Begin mixing operations within one hour of placement. Complete compaction and finishing operations within three hours after initial mixing of cement with base course materials. Upon expiration of the three-hour period after initial mixing, only intermediate finishing (tight blading) of the base course surface will be allowed. Dispose of excess bladed material. Do not drift bladed material along the base. Use stabilized material in the base course except for that small amount necessary for tight blading. Excessive blading, exceeding 10 percent of the base thickness, to achieve plan depth will not be allowed. Complete operations, including tight blading, within 24 hours of mixing. The finished base course shall have a smooth, uniform, closely-knit surface, free from ridges, waves, laminations, or loose materials. Do not spread cement within 2 hours of sunset, unless otherwise approved by the project engineer.

302.07.3 Crushed Stone and Recycled Portland Cement Concrete: Compact these materials using an approved sheepsfoot-type roller and finish-roll with an approved pneumatic tire roller or a smooth steel wheel roller. Keep the surface uniformly moist during compaction and final finishing.

302.07.4 Asphalt Concrete: Compact and finish asphalt concrete in accordance with Section 502. The soil layer shall be compacted and finished in accordance with the top layer of embankment or subgrade.

302.07.5 Blended Calcium Sulfate: During placement of blended calcium sulfate, the percentage of moisture in the mixture, by dry weight, shall not vary from the optimum moisture by more than ± 2.0 percent. After application of water, allow the moisture to reach equilibrium in the base before applying rolling techniques. Roll blended calcium sulfate to the edge of the embankment or subgrade. Compact each layer to at least 95 percent of maximum dry density. Determine optimum moisture and maximum

density in accordance with DOTD TR 418 Method G modified to include a maximum drying temperature of 140°F.

Proof roll by using a load of 25 tons in a 12 to 14 cubic yard tandem dump truck with ten wheels or approved loaded truck determined by the project engineer. Proof rolling shall be a minimum of 5 passes in each direction at the same locations and at a maximum vehicle speed of 3 mph.

Test all blended calcium sulfate base by proof rolling immediately prior to placement of surfacing material, including asphalt binder. Correct any irregularities or soft spots prior to placement of the surfacing material. Any rain event on the project site between the proof rolling and placement of the surfacing will require an additional proof rolling as noted above.

302.08 QUALITY CONTROL OF ROADWAY OPERATIONS.

Control the selection, placement, compaction, cement spread, mixing, moisture content, density, thickness, width, surface finish, cross-slope, and grade to produce a completed base course that is uniform and conforms to plan dimensions and other acceptance requirements as provided herein. Control operations to prevent contamination, segregation, soft spots, wet spots, laminations, and other deficiencies. Perform tests necessary to adequately control the work.

302.09 PROTECTION AND CURING.

302.09.1 Soil Cement: Upon completion of intermediate finishing, immediately protect the base course against drying by applying an asphalt curing membrane in accordance with Section 506. Place asphalt curing membrane on the same day as treatment. Maintain complete coverage of the curing membrane from the initial application until the placement of the next course. When allowing traffic, including construction equipment, on the base course, place at least the first lift of surfacing within 30 calendar days unless otherwise directed.

302.09.2 Crushed Stone, Recycled Portland Cement Concrete, Soil Layer Under Asphalt Concrete, and Blended Calcium Sulfate: Cover the base course with asphalt prime coat in accordance with Section 505 as soon as practical to avoid water infiltration due to rainfall. Maintain complete coverage of asphalt prime coat from the initial application until the placement of the next course.

302.10 MAINTENANCE OF BASE COURSE. Protect the base course from damage from public traffic or the contractor's operations and

satisfactorily maintain the base course, including the asphalt curing membrane or prime coat. Repair damaged base course at no direct pay. When requiring patching of the base course, in addition to removing damaged or unsound base course, remove a sufficient width and depth of sound base course to ensure satisfactory placement of patching material. The engineer's approval of the type of patching material will be required before use. Patching or other base course repair shall restore a uniform surface, shall conform to the requirements of the material being used, and shall be completed before paving operations begin. Patch any failures detected during paving.

Do not allow public traffic or construction traffic on the completed base course during the 72-hour curing period. If conditions permit, route both public traffic and construction traffic off the completed base course onto shoulders or other suitable areas during the 72-hour curing period. Traffic may be permitted on the base course during the curing period if conditions warrant and approved by the engineer. When permitting traffic to use the completed base course subsequent to the 72-hour curing period and prior to construction of the surface course, further protect the base by additional applications of asphalt curing membrane or prime coat in accordance with 301.12 at no direct pay.

Prior to surface course construction, correct deficiencies and weak spots, clean the base course surface, repair any damages caused by traffic, and keep the surface true to grade and cross section at no direct pay. Apply and maintain additional asphalt curing membrane or prime coat as directed at no direct pay.

When surfacing with asphalt concrete, place the first lift of surfacing within 30 calendar days.

302.11 WEATHER LIMITATIONS. Do not construct base course when the subgrade or stockpiles are frozen, when raining, when the ambient air temperature is below 35°F, in the case of cement treated bases, or the temperature forecasted by the U.S. Weather Service is to be 25°F or less within the 24-hour period following placement.

302.12 ACCEPTANCE REQUIREMENTS. Soils and aggregates will be sampled for acceptance by the Department in accordance with the Materials Sampling Manual.

For central plant mixing, determine the cement content in accordance with 301.16. For in-place mixing, determine the cement content in

accordance with 302.05. Test the moisture content of the soil cement or cement treated mixtures for conformance to optimum moisture content in accordance with DOTD TR 403.

Test the pulverization of the soil cement or cement treated mixtures in accordance with DOTD TR 431. At least 70 percent shall pass the No. 4 sieve.

Check base course, except asphalt concrete, for acceptance in increments of 1000 linear feet per roadway or 2000 linear feet per shoulder constructed separately. Asphalt concrete acceptance will be in accordance with Section 502.

302.12.1 Density Requirements: Upon completion of compaction operations, determine base course in-place density, except asphalt concrete, in accordance with DOTD TR 401. Determine density requirements for asphalt concrete base course in accordance with Section 502.

The density requirements for Class II base course materials other than asphalt concrete shall be a minimum of 95.0 percent maximum dry density in accordance with DOTD TR 418.

302.12.1.1 Soil Cement and Treated Layer Under Asphalt Concrete: When the density test value for the section falls below 95.0 percent, a payment adjustment will be applied in accordance with Table 302-1 as follows.

**Table 302-1
Density Acceptance and Payment Schedule**

Density Test Value (percent)	Percent of Contract Unit Price
95.0 & Above	100
94.0 to 94.9	90
93.0 to 93.9	75
Below 93.0	50 or Remove ¹

¹ At the option of the Chief Engineer.

302.12.1.2 Crushed Stone, Recycled Portland Cement Concrete, Blended Calcium Sulfate, and Soil Layer under Asphalt Concrete Base Course: When any test value is less than the required density, continue compaction until obtaining the specified density.

The acceptance requirements for blended calcium sulfate base course shall be the same as stone base course with the following modifications. Upon completion of compaction operations, determine the density in accordance with DOTD TR 401 except that all moisture content

determinations for density calculations shall be conducted by oven drying the material for 24 hours at 140°F. A forced draft type oven capable of maintaining the temperature shall be provided by the contractor for field moisture content determination for density control.

302.12.2 Thickness Requirements: Determine the thickness of the completed base course in accordance with DOTD TR 602.

Do not allow the completed base course to vary from plan thickness in excess of the tolerances in Table 302-2 below. Correct base course thickness deficiencies in excess of these tolerances at no direct pay.

**Table 302-2
Base Course Thickness Tolerance**

(All Bases Except Asphalt Concrete) Under-Thickness, Inches	(Stabilized & Treated Bases) Over-Thickness, Inches
$\frac{3}{4}$	$1\frac{1}{2}$

When using crushed stone base or recycled concrete base over soil cement base, the individual base layer tolerances shall be in accordance with Table 302-2, and the total base course under-thickness shall not exceed 1 inch.

Any failing area will be isolated for purposes of correction.

Determine asphalt concrete base thickness in accordance with Section 502.

When using central plant mixing, over-thickness may be waived at no direct pay.

302.12.2.1 Soil Cement, and Treated Layer Under Asphalt Concrete: When not permitting grade adjustments, correct under-thickness deficiencies in excess of tolerance by removing and replacing the full depth of base course in deficient areas with one of the following materials:

1. The same type of base course.
2. Asphalt concrete complying with Section 502.
3. Concrete complying with Section 901.

When permitting grade adjustments, correct thickness deficiencies either by furnishing and placing a supplemental layer of asphalt concrete complying with Section 502 for the full width of base course or by removing and replacing deficient base course. When approved, corrections may be

made by re-stabilizing the existing material in accordance with this section, and the cement content may be reduced from design contents with approval of the District Laboratory Engineer.

Thickness of the supplemental layer of asphalt concrete shall be in accordance with Table 302-3 as follows.

**Table 302-3
Supplemental Asphalt Concrete Layer Thickness**

Under-Thickness, Inch	In-Place Mixing Over-Thickness, Inches	Minimum Thickness of Supplemental Asphalt Concrete, Inch ¹
1 to 1 1/4	1 3/4 to 2	1 1/4
1 1/2 to 1 3/4	2 1/4 to 2 1/2	1 1/2
2 to 2 1/2	2 3/4 to 3	2
Over 2 1/2	Over 3	Remove and Replace ²

¹ May be included in the subsequent lift.

² At the option of the Department after investigation.

When using reconstruction as the method of correction, the above tolerances shall apply.

302.12.2.2 Crushed Stone, Blended Calcium Sulfate, and Recycled Portland Cement Concrete: When allowing grade adjustments, correct under-thickness in excess of 3/4 inch to plan thickness by furnishing, placing, reworking, shaping, and compacting additional base course material as required. When not allowing grade adjustments, remove the material and replace at no direct pay.

302.12.2.3 Asphalt Concrete Base Course: When not allowing grade adjustments, correct under-thickness in excess of the tolerances given in 502.12 to plan thickness by removing and replacing the full depth of base course. When allowing grade adjustments, correct under-thickness in excess of the tolerances given in 502.12 to plan thickness by placing and compacting an 1 1/4-inch thick minimum supplemental layer of asphalt concrete complying with Section 502 at no direct pay.

302.12.3 Width Requirements: Determine the width of the completed base course in accordance with DOTD TR 602. Do not allow roadway base course width to vary from plan width in excess of +6 inches. Do not allow shoulder base course width to vary from plan width in excess of +3 inches. No under-widths are allowed for shoulder or roadway bases. When the base course for both roadway and shoulders are constructed at the same time, the 6-inch tolerance will be applied. Correct base course width

deficiencies in excess of the above tolerances as follows at no expense to the Department:

302.12.3.1 Soil Cement and Asphalt Concrete Base Course:

302.12.3.1.1 Over-Width: Over-widths of asphalt concrete and treated base courses mixed in a central plant may be waived at no additional cost to the Department. When not allowing grade adjustments, remove the full depth and width of base course in areas having over-widths in excess of the foregoing tolerances and replace to the plan width with one of the following materials:

1. The same type of base course.
2. Asphalt concrete complying with Section 502.
3. Concrete complying with Section 901.

In lieu of removing and replacing the over-width areas of base course, at the Department's option, any base course less than 12 inches over-width will be allowed to remain in place at an adjusted payment of 90 percent of the contract unit price for the complete section. Remove over-width in excess of 12 inches and replace as indicated above. When approved, corrections may be made by restabilizing the existing material in accordance with this subsection, and the cement content may be reduced from design contents with approval of the District Laboratory Engineer.

When permitting grade adjustments, correct base course width deficiencies by removing and replacing as specified above, or by furnishing and placing a 1¹/₄-inch thick supplemental layer of asphalt concrete complying with Section 502 on the 1000-foot section for the full width of the base course.

302.12.3.1.2 Under-Width: Correct under-widths of base course in excess of the foregoing tolerances to plan width and thickness by furnishing and placing additional materials; however, the width of widening materials shall be not less than 12 inches. When approved, corrections may be made by restabilizing the existing material in accordance with this section, and the cement content may be reduced from design contents with approval of the District Laboratory Engineer. Materials for widening deficient base course may be asphalt concrete complying with Section 502 or concrete complying with Section 901.

302.12.3.2 Crushed Stone, Blended Calcium Sulfate, and Recycled Portland Cement Concrete: Over-widths will be waived at no additional cost to the Department. Correct under-widths in excess of the

foregoing tolerances to plan widths by furnishing, placing, reworking, shaping, and compacting additional base course material as required.

302.12.4 Grade and Cross-Slope: The finished grade shall be within $\pm 1/2$ inch of the established grade. Do not allow the cross-slope to vary by more than ± 0.003 foot/foot.

302.12.5 Correction Deficiencies: Correct deficiencies in surface finish, cross-slope, grade, contamination, segregation, soft spots, wet spots, laminations, and other deficiencies at no direct pay. Correct deficiencies by removing and replacing or as directed.

302.13 MEASUREMENT. The quantities of Class II base course for payment will be the design volumes or areas specified in the plans and adjustments thereto. Design quantities are based on the horizontal dimensions and compacted thickness of the completed base course shown on the plans. Design quantities will be adjusted if the engineer makes changes to adjust to field conditions, if plan errors are proven, or if design changes are necessary.

Geotextile fabric used beneath the base course will not be measured for payment.

302.14 PAYMENT. Payment for Class II base course will be made at the contract unit price, adjusted as specified in 302.12 and the following provisions, which includes furnishing and placing required base course materials, portland cement, blended hydraulic cement, water, asphalt curing membrane, and prime coat.

Any payment adjustment in asphalt concrete shall be in accordance with Section 502 and shall apply to the cubic yard total quantity of base course when payment is by cubic yard. For other materials, when making payment adjustments for more than one deficiency, they shall be cumulative.

Payment for geotextile fabric will be included in the contract unit price for base course.

Payment will be made under:

Item No.	Pay Item	Pay Unit
302-01	Class II Base Course	Cubic Yard
302-02	Class II Base Course _____ in Thick	Square Yard

Section 402 Traffic Maintenance Surfacing

402.01 DESCRIPTION. Furnish and construct surfacing for maintenance of traffic on driveways, pipe crossings, short-term traffic on raw embankment, slope corrections, or other disturbed roadway sections as directed and in accordance with the following requirements.

402.02 MATERIALS. Furnish any of the following types of materials complying with the following sections and subsections and in accordance with the following requirements. Other materials must be approved in advance by the engineer.

Stone	1003.01 & 1003.05.1
Recycled Portland Cement Concrete	1003.01.3.1 & 1003.05.1
Reclaimed Asphalt Pavement	1003.01.3.2 & 1003.05.3
Asphalt Concrete ¹	502
Flowable Fill ²	710

¹ All asphalt mixes in Section 502 will be allowed for surfacing materials.

² Flowable fill surface shall meet the excavatable requirements of Table 710-1.

402.03 EQUIPMENT. Furnish and maintain equipment necessary to produce a finished product meeting the requirements of these specifications. Obtain approval of equipment prior to use.

402.04 CONSTRUCTION REQUIREMENTS. Satisfactorily place, shape, compact, and maintain areas requiring traffic maintenance surfacing. When directed, reuse the aggregate material at adjacent locations when the material can be reasonably shifted by blading. When directed, material shall be loaded, hauled, and reused. Unless otherwise directed by the project engineer, remove and dispose of traffic maintenance surfacing when no longer necessary. Dispose in accordance with Section 202.

402.04.1 Mainline Surfacing: For mainline roadway, use traffic maintenance surfaces in accordance with Table 402-1 at the posted speed limit during construction. Aggregate surface is allowed only when all

aggregate table criteria are met. Hard surface is required when any hard surface table criteria is met.

Hard surface will be either asphalt concrete or excavatable flowable fill with a minimum thickness of 6 inches. Surfacing shall be uniform and smooth. Surfacing shall meet a 1/2 inch longitudinal tolerance with a 10-foot static straight edge and shall properly drain. Asphalt concrete surfaces shall have a minimum of 89 percent of maximum dry density.

Should a contractor’s operation or sequence of construction extend the time an aggregate surface remains in place under traffic beyond four weeks, hard surfacing will be at no additional pay.

Should a contractor’s operation or sequence of construction necessitate the use of aggregate in areas requiring hard surface, place the hard surface within 48 hours. Placement of aggregate surfacing in this case will be at no direct pay.

402.04.2 Non-Mainline Surfacing: Use either aggregate or hard surfacing for turnouts, drives, crossovers and other non-mainline segments of roadway. If using hard surfacing, it shall meet the requirements of 402.04.1.

**Table 402-1
Mainline Traffic Maintenance Criteria**

Surface Type	ADT	Posted Speed, mph	Time Surfacing to Remain In Place Under Traffic
Aggregate	≤5000	≤45	≤4 weeks ¹
Hard Surface	>5000	>45	>4 weeks

¹ Time may be extended with approval of the Project Engineer.

402.05 MEASUREMENT. Aggregate used for traffic maintenance surfacing will be measured at the point of delivery by the cubic yard in approved hauling vehicles in accordance with 109.01. No adjustment factor will be used.

Hard surfacing will be measured by the square yard at the roadway location.

402.06 PAYMENT. Payment for traffic maintenance surfacing, maintained and subsequently removed, when required, will be made at the contract unit prices per cubic yard or per square yard.

Aggregate materials reused by blading to adjacent locations will be at no expense to the Department. Aggregate material reloaded, hauled, and re-used will be paid at 50 percent of the contract unit price.

Payment will be made under:

Item No.	Pay Item	Pay Unit
402-01	Mainline Traffic Maintenance Surfacing (Aggregate) (Vehicular Measurement)	Cubic Yard
402-02	Mainline Traffic Maintenance Surfacing (Hard)	Square Yard
402-03	Non-Mainline Traffic Maintenance Surfacing (Aggregate) (Vehicular Measurement)	Cubic Yard

Section 601 Portland Cement Concrete Pavement

601.01 DESCRIPTION. Construct Portland Cement Concrete Pavement (PCCP) on a prepared subgrade or base course in accordance with these specifications and as shown on the plans.

Definition: Fresh concrete is being in a plastic state that has not achieved initial set.

Quality assurance requirements shall be as specified in the latest edition of the Department's publication entitled Application of Quality Assurance Specifications for Portland Cement Concrete Pavement and Structures.

601.02 MATERIALS. Provide materials as specified in the following sections and subsections.

Portland Cement Concrete	901, 1001
Aggregates	1003
Joint Materials	1005
Reinforcing Steel	1009.01
Dowel Bars	1009.03
Curing Materials	1011.01
Epoxy Resin Systems	1017
Water	1018.01
Hydrated Lime	1018.02
Non-Shrink Grout	1018.04
Geotextile Fabric	1019

Furnish either Type B or D concrete. Use the same type of concrete throughout the project, unless otherwise authorized in writing.

Account for delayed and fluctuating set times and strength gain characteristics when utilizing supplemental cementitious materials in PCCP.

601.03 CONSTRUCTION.

601.03.1 Equipment: Provide and maintain in good mechanical condition all equipment and tools for concrete batching, paving, finishing, and curing operations. Paving and miscellaneous equipment shall comply with the requirements of the appropriate subsection. Submit, at least 7 days prior to paving, a list of the proposed equipment and tools necessary for handling materials and performing the work.

Deliver all equipment to the job site at least 24 hours prior to the start of operations for examination.

601.03.1.1 Batching Plant and Equipment: See 901.09 and 901.10.

601.03.1.2 Mixers: See 901.10.

601.03.1.3 Central Plant: See 901.10.

601.03.1.4 Truck Mixers and Truck Agitators: See 901.09 and 901.10.

601.03.1.5 Non-agitator Trucks: See 901.09.

601.03.1.6 Finishing Equipment: Use slip-form paving equipment or equipment with stationary side forms to construct pavement.

601.03.1.6.1 Slip-Form Method: Place concrete with a slip-form paver that can spread, consolidate, screed, and finish the freshly placed concrete in one complete pass. Vibrators for slip form pavers shall be internal type with either immersed tube or multiple spuds and capable of consolidating the concrete for the full width and depth. Ensure that vibrators attached to the spreader or finishing machine, or mounted on a separate carriage, do not touch joints, load transfer devices, the subgrade, or side forms. Vibrate only when paver is in motion. Limit the vibration frequency from 5,000 to 8,000 vibrations per minute.

601.03.1.6.2 Stationary Side-Form Method: Use a type of screed sufficiently rigid to retain its shape to finish the surface to the specified typical section. Use wooden or metal screeds for hand finishing or mechanical twin oscillating-type roller or truss-type screeds that are at least two feet longer than the slab width. The contractor may use hand held vibrators for side form concrete placements. Maintain a minimum frequency of 4,500 vibrations per minute for the approved hand-held vibrators.

601.03.1.7 Concrete Saw: Provide saws to timely cut joints and backup saws in case of equipment failure.

601.03.1.8 Forms: Provide metal, solid, and stable forms having a depth of the specified pavement thickness with a minimum base width of 0.8 of the depth except as otherwise approved. Use flexible or curved forms for curves up to 100-foot radius. Keep forms rigid and stable during paving. Remove forms with battered top surfaces or forms that are bent or broken.

Limit the maximum variance in the top of the form to 1/8 inch in 10 feet from a true plane. Limit the maximum face variance to 3/8 inch in 10 feet. Tightly lock forms together at the ends of abutting form sections and are set securely on the grade.

601.03.1.8.1 Built-Up Forms: When approved, built-up forms may be used; however, do not exceed 2 inches of build-up. There is no limitation on the use of built-up forms or amount of build-up where the total area of pavement is less than 2,000 square yards.

601.03.1.9 Floats: Machine floats shall be composed of cutting and smoothing floats suspended from, and guided by, a rigid frame constantly in contact with side forms. Long handled floats shall have blades at least 5 feet long and 6 inches wide.

601.03.1.10 Straightedge: Use a minimum 10-foot metal static straightedge with handles approximately 3 feet longer than the paving width.

601.03.1.11 Artificial Turf Drag: The artificial turf shall be made of molded polyethylene with synthetic turf blades approximately 0.85 inch long containing approximately 7,200 individual blades per square foot. The artificial turf carpet shall be full pavement width and of sufficient size that during the finishing operation it produces 1/16 inch deep striations in the pavement surface. For pavement 16 feet or more in width, mount the artificial turf on a bridge that travels on the forms that allows control of the time and rate of texturing. If necessary, weigh the carpet to maintain intimate contact with the pavement surface.

601.03.1.12 Burlap Drag: The burlap drag shall consist of a seamless strip of damp burlap that shall produce uniform 1/16 inch deep striations in the pavement surface after dragging it longitudinally along the full width of the pavement. For pavement widths 16 feet or more, mount the drag on a bridge that travels on the forms that allows control of the time and rate of texturing.

601.03.1.13 Tine Texturing Device: The tine-texturing device shall have metal tines that produce randomly spaced grooves uniform in appearance and transverse to roadway. Tine dimensions and spacing requirements shall be in accordance with 601.03.9.8. The pavement shall have a continuously tine textured surface.

601.03.2 Mixing Limitations: Ensure adequate natural or artificial light when mixing, placing, or finishing concrete. See 105.20.

Abide by specified temperature limitations for mixing, placing, finishing, and curing. See 901.11.1 and 901.11.2.

601.03.3 Conditioning Subgrade or Base Course: Correct deficient areas in subgrade or base courses. Clean the subgrade or base course of loose material and maintain the finished subgrade in a smooth, compact, satisfactory condition. Restore disturbed areas prior to placing the pavement in accordance with 301.14. Correct all deficient areas at no direct pay.

Keep the subgrade and base course uniformly moist when placing concrete, unless specifications require a waterproof cover material.

601.03.3.1 Asphalt Concrete Base Course for PCCP: Wet the asphalt surface to minimize early-age cracking. At the time of concrete placement, ensure the surface is moist with no standing water.

Alternatively, apply a mixture to the asphalt concrete base course to prevent heat buildup in the base and bonding between the concrete pavement and base. If the

contractor elects to use a whitewash mixture, use mixtures consisting of hydrated lime and water or a wax-based white-pigmented curing compound. The whitewash mixture used and application rate shall be the responsibility of the contractor. The mixture proposed by the contractor will be subject to Department approval.

601.03.4 Preparing the Proper Grade: Trim, fill, and thoroughly compact all irregularities below the established grade with subgrade or base course material for a minimum width of 16 inches on both sides of the base of the form. Tamp or trim above-grade defects or variations to plan elevation. Maintain the finished grade in a smooth and compacted condition until placement of pavement. The Department must approve the subgrade or base course before placement of concrete.

601.03.5 Setting Forms: Ensure that the foundation under forms is firm, provides stable continuous contact, and is true to line and grade. The Project Engineer may allow shims up to 1/2 inch, not to exceed 20 percent per individual form section.

Form sections shall be tightly locked and free from movement in any direction. No settlement or springing of forms under the paving equipment is acceptable. At a minimum, place a pin at each side of every form joint. Pins shall be of sufficient length to provide adequate anchorage. Limit the maximum variance of the top form to 1/8 inch in 10 feet from a true plane. Limit the maximum face variance to 3/8 inch in 10 feet.

601.03.6 Placing and Consolidating Concrete: Deposit concrete on a surface-moist base or subgrade with a minimum of handling. Base course must be less than 120°F immediately prior to concrete placement. Place concrete continuously between transverse joints. Use appropriate tools for necessary hand spreading. Place concrete as close to joints as possible without disturbing them. Ensure workers wear footwear clean of foreign matter.

Except for concrete sawing equipment, restrict operation of mechanical equipment on the pavement until obtaining a minimum compressive strength of 3,000 psi in accordance with DOTD TR-230.

Pave adjacent lanes only after a minimum elapse of 1-day with no observable marring of the surface.

Rain protection along with hot and cold weather limitations of 901.11 shall apply.

Complete the surface finish as specified in 601.03.9.7. Texture the surface as specified in 601.03.9.8.

Cure the surface and edges as specified in 601.03.10.

601.03.6.1 Slip-Form Method: At the option of the contractor, the slip-form paving method may be used.

Place concrete with an acceptable slip-form paver designed to spread, consolidate, screed and float finish freshly placed concrete in one pass of the machine with only a minimum amount of hand finishing necessary to provide a

dense, homogeneous pavement in conformance with plans and specifications. Equip the machine with vibrators conforming to 601.03.1.6.1. Vibrate concrete for the full pavement width and depth for complete consolidation. Hold sliding forms rigidly together laterally to prevent spreading of forms.

Provide concrete of a uniform consistency exhibiting minimal bleed water and laitance. Operate the slip-form paver with as nearly a continuous uniform forward movement as possible. Coordinate mixing, delivering and placing of concrete to provide uniform progress. Concrete plants shall have sufficient mixing capacity to provide such continuous delivery of concrete to enable the paver to advance at a minimum rate of 1.5 feet per minute. If it is necessary to stop forward movement of the paver, also immediately stop the vibrator and tamping elements. If forward movement of the paver is delayed for a period, the engineer may direct fogging of fresh concrete. See 601.03.8 for construction joint requirements. Apply no outside tractive force to the machine except as controlled from the machine.

601.03.6.2 Stationary Side-Form Method: Deposit concrete as near as possible to forms and joints assemblies without disturbing the form or joint assembly.

Use vibrators to consolidate concrete against and along the faces of all forms and the length and both sides of all joint assemblies. Limit vibrator operation to 5 seconds in any one location.

601.03.7 Test Specimens: According to DOTD sampling and testing procedures, furnish concrete for casting test specimens and all required tests at no direct pay.

601.03.8 Joints, Seals, and Sealants: Saw and seal the joints according to Standard Plans CP-01.

Before preparation and sealing, verify each joint for proper width, depth, alignment.

Prior to sealing, the pavement may be opened to traffic. When poured or extruded sealants are used, allow the concrete to cure at least 7 days prior to sealing joints.

Thoroughly clean all joints immediately prior to sealing. Use sandblasting followed by an oil-free air jet to clean the faces and joint openings before sealing. Use poured or extruded sealants for sealing.

Cured sealant is required before allowing traffic on pavement. When using a poured or extruded sealant in accordance with 1005.02, close the pavement to traffic for at least one day after sealing. When elastomeric compression seals are used, allow traffic immediately following completion of sealing.

Repair any cracking, chipping, spalling, or tearing of the concrete joints at no direct pay by approved methods to the satisfaction of the engineer.

Before sealing, joints shall be free of spalls, fractures, breaks, or voids. For areas requiring minor repairs, chip back to sound concrete and repair with an approved

non-shrinking patching system in accordance with the manufacturer's recommendations, when approved by the engineer.

601.03.8.1 Poured Sealants and Preformed Joint Sealers: The following additional requirements apply to the installation of poured sealants and preformed joint sealants complying with 1005.02, 1005.03, and 1005.06.

601.03.8.2 Hot Poured Rubberized Asphalt Sealants:

601.03.8.2.1 Joint Preparation: Thoroughly clean joints by sandblasting to remove concrete curing membrane, laitance and other foreign matter from the joint. Upon completion of sandblasting, clean and dry the joint and adjacent areas of all foreign matter.

601.03.8.2.2 Application: Install poured sealants complying with 1005.02.1 in accordance with the following requirements.

Do not install the sealant until joint verification for cleanliness, dimensions, and alignment. Seal the joint without formation of entrapped air or voids. Air temperature at the time of installation shall be at least 50°F and rising.

Furnish a mobile, heated, double-walled agitator type kettle with suitable oil medium in the outer space for heat transfer capable of maintaining a sealant temperature of 380°F to 410°F. Provide easy access to kettles to facilitate cleaning. Thoroughly clean kettles of foreign substances or previously used compounds and flush daily with flushing oil. Provide this equipment with an automatic continuous temperature-recording chart for constant kettle temperature surveillance. Provide a direct connecting pressure type-extruding device with nozzles shaped for insertion into the joint. Application equipment shall recirculate sealant material in the inner kettle when not in use and shall be capable of filling the joint with sealant material free of voids or entrapped air. The applicator shall be subject to approval.

601.03.8.3 Preformed Elastomeric Compression Seals: Preformed elastomeric compression seals shall comply with 1005.03. When using a pumped adhesive-lubricant material, allow a maximum of 30 percent dilution with a material recommended by the manufacturer. Apply the adhesive lubricant just prior to installation of the seal and completely cover the seal's sidewalls.

Install seals by machine on projects requiring 3,000 feet or more of joint sealing. Do not stretch the compression seal more than 5 percent. Prior to beginning installation, cut and install, a length of seal equal to the pavement width so that stretching may be measured. Make random checks for stretching as deemed necessary by the engineer. If the adhesive lubricant has chemically set and exceeded maximum stretch limits, remove and clean the seal, re-clean the joint, and re-install the seal. There shall be no field splicing.

601.03.8.4 Silicone Sealant: The silicone sealant shall comply with 1005.02.3 or 1005.02.4. Keep the sandblasted joint faces dry and dust free prior to sealant installation. The air temperature at the time of placement shall be at least

50°F and rising. Place backer material complying with 1005.02 as shown in the plans. Prime the joint faces in accordance with the manufacturer's recommendations when a silicone sealant conforming to 1005.02.4 is used.

Force non-sag material against the joint walls by approved tooling methods that will ensure proper adhesion. No tooling is required when a self-leveling material is used.

601.03.8.5 Preformed Polyurethane Foam: Preformed polyurethane foam shall comply with 1005.06. Install preformed polyurethane foam using an approved, moisture insensitive lubricant-adhesive according to the manufacturer's instructions.

601.03.8.6 Tie Bars: For size, length, and spacing of tie bars see Standard Plans CP-01.

Place tie bars using mechanical equipment or secure them with chairs to prevent movement during concrete placement. Place tie bars perpendicular to the face of the joint, centered in the slab depth, and parallel to the finished surface. Do not place tie bars within 18 inches of contraction or expansion joints.

Do not coat tie bars with asphalt or other material or enclose in tubes or sleeves. Bend only Grade 40 tie bars at right angles against the form of the first lane constructed and straighten into final position before placement of concrete in adjacent lane. Alternatively, to bending tie bars, use approved mechanical butt splicing devices complying with 806.06.

Replace tie bars that break or show evidence of fracture upon straightening. Drill holes for tie bars approximately 1/8 inch larger than the diameter of the bar. Holes shall be clean and moisture free. Use an Approved Materials List adhesive anchor system in accordance with the manufacturer's recommendations.

601.03.8.7 Dowel Bars: Dowel bars shall have a uniformly round cross section and shall be saw-cut, smooth, and free of burrs, projections, and deformations. Dowel bars shall be plastic coated in accordance with 1009.03.

Place dowel bars in approved basket assemblies or by an approved mechanical device that is capable of accurately placing the dowels to the proper depth and alignment. Position dowel bars parallel to the pavement centerline, and parallel to the surface without any skew of individual bars.

Carefully and thoroughly consolidate the concrete around the dowel bars. When using a mechanical insertion device for placement, firmly hold dowel bars in position during the consolidation process so that the bars do not move when released in the concrete by the mechanical insertion device.

Accurately and securely, mark the transverse centerline of the in-place dowel bars prior to sawing the transverse contraction joint over the dowels.

Provide an approved expansion tube on each bar used in expansion joints. The tube shall fit the dowel bar tightly and the closed end shall be watertight. Locate dowel bar placement as shown on the plans.

With the approval of the engineer, repair all slightly damaged coatings of dowel bars by lightly oiling or greasing; otherwise replace.

601.03.8.8 Types of Joints:

601.03.8.8.1 Longitudinal Joint (Type LJ): Construct a longitudinal joint between the slabs when placing shoulder and roadway pavement slabs separately. Construct a longitudinal joint in roadway pavements placed monolithically and exceeding 15 feet in total width as shown on plans. Construct a longitudinal joint at the centerline of ramps exceeding 15 feet in width. Construct longitudinal joints with tie bars when constructing adjacent lanes separately. Ensure proper consolidation of concrete adjacent to longitudinal joints. Repair or replace any cracking, chipping, spalling, or tearing of the concrete at no direct pay by approved methods to the satisfaction of the engineer.

Form the longitudinal joint (Type LJ) in fresh concrete. Alternatively, saw hardened concrete as soon as the concrete has reached sufficient strength to support the sawing machine, and tearing and raveling of the concrete joint does not occur. Complete the sawing operation in a timely manner such that random cracking does not occur.

The joint width shall be 5/32 to 1/4 inches; joint depth shall be as specified on the plans. The joint sealant shall conform to 1005.02.1 or 1005.02.3.

Immediately prior to sealing, clean the saw cut and adjacent concrete surfaces.

Do not permit any equipment, other than the sawing machine, on the pavement during sawing operations. Provide sufficient back-up equipment at the jobsite to continue timely sawing operations in case of a breakdown.

During paving operations, clearly and accurately mark joint locations. When sawing operations are not providing proper crack control at the joint, modify sawing operations as necessary to provide proper crack control.

601.03.8.8.2 Transverse Expansion Joint (Type EJ-1 1/2 Inch): When a slip form paving method is used, construct the transverse expansion joint with a 1 1/2 inch wide sawed joint over a sleeper slab. Construct the sleeper slab from Class A1 Concrete or one of the pavement type mixes complying with Section 901. Place one layer of tarpaper equivalent to a minimum of 30 pounds per 100 square feet between the sleeper slab and the pavement. If the EJ modified joint is used, construct all the expansion joints using this method unless otherwise approved by the engineer.

601.03.8.8.3 Transverse Expansion Joint (Type EJ-4 Inch): This joint consists of a 4-inch wide joint sawed over a sleeper slab. Construct the sleeper slab from Class A1 concrete, or one of the pavement type mixes conforming to

Section 901. Place one layer of tarpaper, weighing 30 pounds per 100 square feet, between the sleeper slab and the pavement. Joint material shall comply with 1005.06.

601.03.8.8.4 Transverse Expansion Joints (Type EJ-Alternative): Replace concrete disturbed during expansion joint installation with fresh concrete and vibrate with a surface vibrator. Use a preformed elastomeric compression seal complying with 1005.03 or a silicone complying with 1005.02.

601.03.8.8.5 Wood Filler: Use wood filler conforming to 1005.01.2. Do not use a board less than six feet long. Do not use damaged wood fillers. Do not field modify wood filler.

Use dowel bars to provide adequate bracing to hold the wood filler in a vertical position. Do not permit finished joints to deviate more than 1/4 inch in horizontal alignment from a straight line. For joint fillers assembled in sections, do not allow offsets between adjacent units. Do not permit plugs of concrete within the expansion space. Seal the joint as specified.

601.03.8.8.6 Transverse Contraction Joints (Type TCJ): Transverse contraction joints shall consist of planes of weakness created in the cross section of the pavement. Install load transfer devices at these joints. Construct joints for pavement with a design speed equal to or greater than 45 mph) by sawing as specified in method 1 below. Construct by any of the following methods for joints for pavement with a design speed of less than 45 mph. For small and irregular areas, the engineer may allow methods 2 or 3.

Method 1: Construct joints by sawing after the concrete has reached sufficient strength to support sawing equipment. During paving operations, clearly and accurately mark joint locations. Saw joints to required joint width and depth in one pass. Saw to a width 5/32 to 1/4 inches and to the required joint depth. If forms prohibit sawing the transverse contraction joint for the full width of pavement, place a full-joint depth insert in the 6 inches adjacent to the forms. Conduct the sawing as soon as the concrete has hardened sufficiently to avoid tearing of the concrete and complete sawing in a timely manner to avoid random cracking.

Immediately prior to sealing joint, clean the saw cut as required.

Do not permit any equipment other than the sawing machine on the pavement during sawing operations. Provide sufficient back up equipment at the jobsite to continue timely sawing operations.

If sawing operations are not providing proper crack control, modify sawing operations, equipment, timing, and/or concrete mix as necessary to provide proper crack control.

Repair any cracking, chipping, spalling, or tearing of the concrete joints at no direct pay by approved methods to the satisfaction of the engineer.

Method 2: Install an approved removable joint former to create a joint to the required width and depth. Establish a vertical plane prior to installing the removable joint former in the fresh concrete with a T-iron. The blade of the T-iron shall have a thickness of 1/4 to 3/8 inch and a depth 1/4 inch greater than the depth of the insert. Insert the joint former in place and consolidate using a vibrating bullfloat. While concrete is workable but stiff enough to maintain joint opening, raise joint former 1/2 inch to 3/4 inch with all laitance removed alongside of insert. The joint former shall remain in place at least 12 hours. If undamaged in removal and clean of foreign material, these joint formers are reusable. Immediately prior to sealing joint, clean the joint as required.

Method 3: Install a combination joint former/sealer device as specified in 1005.04 to form a joint in fresh concrete. Establish a vertical plane prior to installing the seal insert device in the fresh concrete with a T-iron. The blade of the T-iron shall have a thickness of 1/4 to 3/8 inch and a depth 1/4 inch greater than the depth of the insert. Insert the joint former/sealer in place and consolidate using a vibrating bullfloat. The top cap of the insert shall be flush with the top surface of the pavement at the completion of all finishing operations.

601.03.8.8.7 Transverse Construction Joints (Type CJ):

Construct transverse construction joints when there is an interruption of more than 1/2 hour in concreting operations. Do not construct a transverse construction joint within 5 feet of an expansion or contraction joint. If sufficient concrete is not available at the time of interruption to form a slab at least 5 feet long, remove concrete back to the preceding working joint (which must be maintained) or 5 feet behind the working joint to establish a non-working joint. Use hand vibrators to ensure proper consolidation of concrete adjacent to transverse construction joints. Transverse construction joints shall include deformed bars conforming to the size, spacing, and dimensions of the dowel bars to form a non-working joint.

601.03.8.8.8 Longitudinal Butt Joint (Type LBJ): Construct longitudinal butt joints when adding lanes of pavement. Place deformed tie bars of the specified length, size, spacing, and material perpendicular to longitudinal butt joints. Do not coat tie bars with asphalt or other material or enclose in tubes or sleeves.

Install tie bars in clean, moisture-free holes, drilled into the existing pavement approximately 1/8 inch larger than the diameter of the tie bar. Use an Approved Materials List adhesive anchor system, or an Approved Materials List Type I, Grade C epoxy resin system.

Mix the epoxy in accordance with the manufacturer's recommendations, with no fillers or extenders added. Using a caulking gun or other approved method, inject sufficient epoxy to fill the void between the tie-bar and hole. Rotate the bar while inserting to ensure complete coverage with no voids as verified by epoxy squeezing

out when the bar is inserted. Prevent bars from being disturbed until epoxy has sufficiently cured. Place epoxy using manufacturer's temperature limitations but do not apply epoxy when ambient temperature is below 40°F.

601.03.8.8.9 Transverse Butt Joint (Type BJ): Construct transverse butt joints when extending existing pavement. Place smooth dowel bars of the specified length, size, coating, spacing, and material perpendicular to transverse butt joints.

Install dowel bars in clean, moisture-free holes, drilled into the existing pavement approximately 1/8 inch larger than the diameter of the dowel bar. Use an Approved Materials List adhesive anchor system, or an Approved Materials List Type I, Grade C epoxy resin system.

Mix the epoxy in accordance with the manufacturer's recommendations, with no fillers or extenders added. Using a caulking gun or other approved method, inject sufficient epoxy to fill the void between the dowel bar and hole. Rotate the bar while inserting to ensure complete coverage with no voids as verified by epoxy squeezing out when the bar is inserted. Prevent bars from being disturbed until epoxy has sufficiently cured. Place epoxy using manufacturer's temperature limitations but do not apply epoxy when ambient temperature is below 40°F.

Establish joint sealant reservoir in accordance with plan details (See CP-01).

601.03.9 Concrete Paving: The normal sequence for paving is strike-off, consolidation, screeding, floating (use hand floats only if necessary), remove laitance, straight edging, final surface finish, and curing. Use a mechanically powered finishing machine capable of spreading, consolidating, screeding and finishing the concrete to the required pavement elevation and cross section. Mechanical roller or truss-type screeds are allowed, if approved by the engineer, for projects with: concrete pavement lane lengths of 1,500 feet or less, continuous paving lengths less than 600 feet, pavement gaps, intersections, or when side clearance is restricted.

Use work bridges or other devices to reach the pavement surface to finish, straightedge, and make corrections.

If permitted by the engineer, apply water to the surface as a fog spray with approved equipment.

601.03.9.1 Strike-Off: Strike off to achieve the specified cross section and pavement surface elevation.

601.03.9.2 Consolidation: Consolidate concrete for full width and depth of the slab to eliminate voids without segregation. Consolidate under and around load transfer devices, and other features embedded within the pavement without causing damage or misalignment. Do not operate vibrators longer than 10 seconds in one location. Do not drag handheld vibrators through the concrete nor move the concrete using the vibrator.

601.03.9.3 Screeding: Screed the concrete to achieve the specified cross section and elevation.

601.03.9.4 Floating: Float to achieve the specified grade and provide a tight-knit textured surface using an approved machine float.

When necessary following machine floating, use long-handled floats to smooth and fill open-textured pavement areas. Hand finish with bull floats only where the surface left from the paving equipment contains voids or imperfections. In general, it is best to limit hand and mechanical finishing. Adjust the concrete mixture and/or the paving equipment if excessive floating is the only method to produce an acceptable tight-knit textured surface.

Remove excess water or laitance from the pavement surface.

601.03.9.5 Straight Edging: Test the fresh concrete surface for trueness with a straightedge to achieve surface tolerance. Immediately fill depressions with freshly mixed concrete, strike off, and refinish. Trim and refinish high areas. Ensure the surface across joints meets the requirements for smoothness. Continue straightedge testing and surface corrections until the entire surface is free from deviations and the slab conforms to required grade and cross section. Make adjustments if continuous hand corrections are required.

601.03.9.6 Edging at Forms and Joints: Before tine texturing, work the edges on each side of the pavement and each side of the transverse expansion joints, Type EJ modified joints, and longitudinal construction joints, which are not sawed. Produce a well-defined, continuous radius and obtain a smooth, dense mortar finish with an approved tool. Round to the radius specified (1/4 inch approximate). Use a work bridge to work the joints. Do not disturb the pavement surface by tilting the tool during use.

Eliminate tool marks on the slab adjacent to joints without disturbing the rounding of the slab. Remove concrete on top of joint filler.

601.03.9.7 Final Surface Finish: Perform surface finishing with an artificial turf or burlap drag such that the resultant pavement surface is uniform in appearance and reasonably free from grooves over 1/16 inch deep. Provide an adjacent concrete shoulder with the same finish as the pavement. Keep the drag material free of hardened concrete. Replace drag materials that are dirty, exhibit wear, or produce unsatisfactory results.

601.03.9.8 Transverse Tine Texturing: Operate the metal tine-texturing device by approved mechanical means when texturing roadway travel lanes. If approved, the contractor may use manual methods for tine texturing of ramps, crossovers, turnouts, split slab construction or other pavement sections. Tine texturing will not be required on parking areas, drives, or other areas as designated by the engineer. Rake tines shall be steel flat wire approximately 0.025 inches thick by 0.126 inches wide by 4 to 5 inches in length, randomly spaced, at a maximum

spacing of 1 1/2 inch and a minimum spacing of 3/8 inch with no more than 50 percent of the spaces exceeding 1 inch . The width of tines shall be 1/8 ± 1/64 inch. The depth of groove produced in the concrete shall be 3/16 inch maximum and 1/16 inch minimum, measured in accordance with DOTD TR 229.

Provide the same finish on the adjacent concrete shoulders as the travel lane. Visually inspect the tine texture on the shoulders.

Correct all pavements not meeting the above requirements by retining if concrete is still fresh or by mechanical grooving if the concrete has set. Restore the texture to specified depth, width, and spacing.

601.03.10 Curing: Immediately after completing the surface finishing, uniformly spray all exposed pavement surfaces with white pigmented curing compound as soon as surface bleed water evaporates, or within one-half hour if evaporation occurs quickly. Apply curing compound to exposed edges without spraying any exposed tie bars. Do not apply curing compound during rainfall or to surfaces with standing water. Maintain curing continuously for 72 hours.

Apply curing compound under pressure by mechanical sprayers at the rate recommended by the manufacturer, but in no case less than 1 gallon per 100 square feet of surface area. Use the fully atomizing type of spraying equipment with a tank agitator. Immediately prior to and during application thoroughly mix the compound, stirring continuously by mechanical methods.

Hand spraying is allowed on small irregular widths or shapes and on surfaces exposed by form removal. Thoroughly agitate the curing compound prior to placing in the sprayer.

After application of curing compound, resulting pavement surfaces shall have a uniform appearance of a “blank white sheet of paper.” Immediately reapply additional compound to all deficient areas during the curing period.

601.03.11 Surface Tolerance (IRI):

601.03.11.1 General: This subsection outlines the measurement of surface roughness, quality control requirements, corrective actions, and acceptance criteria for PCCP. Use the International Roughness Index (IRI) to determine the amount of roughness in a measured longitudinal profile. In the direction of travel, measure the longitudinal surface profile in inches per mile and report as the IRI; all in accordance with DOTD TR 644.

601.03.11.2 Equipment: In accordance with TR 644, furnish a DOTD certified inertial profiler for quality control and acceptance testing. The inertial profiler shall measure both wheel paths simultaneously with laser height sensing equipment at a constant speed within the certified range. Due to the surface texture of PCCP, lasers with a footprint greater than a single point are recommended for accurate readings. Profilers require a current DOTD decal indicating the date of certification and the profiler’s system parameter settings.

Furnish a 10-foot metal static straightedge for quality control and acceptance testing for transverse cross slope, grade, and individual longitudinal bumps in excess of 1/4 inch in 10 feet. Additionally, bumps are not to exceed 1/4 inch in 10 feet for non-IRI pavements including but not limited to bike paths, detour roads, parking areas, sidewalks, turning lanes, turn outs, and shoulders.

601.03.11.3 Quality Control;

601.03.11.3.1 Longitudinal Smoothness: Run the certified profiler and evaluate the raw IRI data using the ProVAL “25-foot sliding baseline” to identify areas of localized roughness as defined by Table 601-2 for each wheelpath. Correct deficiencies in accordance with Table 601-2 and modify construction operations to mitigate deficiencies.

Any individual bump, which is more than 1/4 inch when tested with a 10-foot metal static straightedge, is a deficiency, which requires correction.

Have quality control IRI results available for assessment by the engineer as requested.

601.03.11.3.2 Correction of Deficient Areas: Correct areas to meet the requirements of Table 601-2 and the 1/4 inch in 10 feet straight edge bump requirement. Correct transverse, cross slope, or grade deficiencies to meet specifications. Make corrections by removing and replacing the PCCP full depth, or by diamond grinding and reestablishing surface texture and depth. Make corrections at no direct pay.

In cases involving minor dips and extreme vertical curves where grinding will not improve the surface profile, provide the engineer a justification plus a ProVAL screen shot for the area showing the 25-foot sliding baseline and corresponding 25-foot profilograph along with a request to accept as constructed.

Although omitted from corrective action, these areas still contribute to the overall IRI results.

601.03.11.4 Acceptance:

601.03.11.4.1 Longitudinal Surface Tolerance Acceptance: Measure the mainline continuously from start to finish in the direction of travel for each lane for the project’s entire length. Perform the measurement under the observation and in the presence of the certified DOTD inspector. For projects that qualify for 102 percent pay, in accordance with Table 601-1 and allowable grinding in accordance with Table 601-2, the Materials and Testing Section will verify the testing results. Measure the surface tolerance for acceptance at the completion of the project after all corrective actions.

Profiler system parameter settings shall be verified before and during each run by the DOTD inspector. The inspector will witness and document the daily setup procedure and pre-operation tests performed by the contractor in accordance with the manufacturer’s procedures and DOTD TR 644. A copy of the manufacturer’s

setup, pre-operation, and general operating procedures for measuring surface tolerance, along with a copy of DOTD TR 644, shall be available at all times during measurement. Place a start and stop mark at the beginning and end of each travel lane so that the Department can rerun measurements.

The mainline longitudinal surface tolerance IRI specification requirements are in Table 601-1.

The Department will view the mainline PCCP's IRI raw data with the ProVAL 25-foot sliding base line to identify areas of localized roughness as defined by Table 601-2 for deficiencies. Submit to the engineer for approval the locations and screen shots for any allowed uncorrected deficiencies in accordance with 601.03.11.3.2. Although grinding for some areas may be deemed unnecessary by the engineer the measured roughness for such areas will still contribute to the total IRI for the project. In addition, the Department will check for 1/4 inch bumps at locations determined by the engineer. Correct deficiencies in accordance with 601.03.11.3.2.

A DOTD inspector will be present for the acceptance testing and will immediately receive a copy of the raw data, the "*.erd" file and any files with information about the project, the operator, the equipment, the settings, daily pre-operation results, and a copy of the IRI results via USB flash drive. In addition to the data transferred by USB storage device, provide the engineer a paper copy of the IRI report. Acceptance for the project will be in accordance with Tables 601-1 and 601-2. The Department may elect to perform and utilize independent ride quality test results for acceptance at any time.

601.03.11.4.2 Exclusions: Take the IRI acceptance measurement in its entirety, without exclusions. The Department will then review the profile report obtained for each lane. In special cases or extenuating circumstances, the engineer may isolate or exclude sections of the profile. These include the following:

- Bridges, including the approach slabs
- Curb and gutter sections, just the affected wheel path, and adjacent areas
- Manholes, catch basins, valve and junction boxes
- Intersections of a different grade
- Structures located in the roadway which cause abrupt deviations in the profile
- Ramps less than 1500 feet
- Sections where the project engineer determines that attaining smoothness is beyond the contractor's reasonable control.

The roughness in excluded areas will not be included in the total IRI used for payment purposes, but shall meet the requirements of 601.03.11.3.2 and Table 601-

2. The quantity represented by the roadway length excluded will not receive any bonus pay adjustment for surface tolerance.

601.03.12 Removing Forms: Keep the forms in place for at least 12 hours and until concrete has set sufficiently to avoid damage or prior to opening to traffic as allowed by 601.03.13. Remove forms carefully to avoid damage to pavement. Repair all superficial damage with mortar composed of one part cement and two parts fine aggregates. After removal of forms, immediately cure sides of the slab in accordance with 601.03.10.

601.03.13 Opening to Traffic: Allow traffic on the pavement after 14 days or when test specimens, complying with 601.03.7, attain a compressive strength of 3,000 psi when tested in accordance with DOTD TR 230 or a flexural strength of 550 psi when tested in accordance with AASHTO T-97. Saw initial stress relief joints and clean the pavement prior to opening to traffic. If full width joints are cut, seal before opening to traffic.

601.03.14 Acceptance Requirements:

601.03.14.1 General: Conduct sampling for DOTD testing on each pavement lot for thickness, concrete strength, and surface tolerance. Sample in accordance with the DOTD Sampling Manual. Correct all pavement that is obviously defective, or remove and replace to full depth, to the satisfaction of the engineer. Times and locations will be established by the engineer.

A pavement lot is an identifiable area of approximately 4,000 square yards paid under the same item. The final area of pavement placed is a lot if it is at least 2,000 square yards; otherwise, it will be included in the previous lot. The engineer may redefine the lot limits when sequences of construction prevent timely sampling and testing.

Consider intersections, entrances, crossovers, ramps, and any other identifiable placement as separate lots.

601.03.14.2 Concrete Strength and Thickness:

601.03.14.2.1 Compressive Strength: Determine the 28-day compressive strength and thickness of pavements from hardened cores. The Department, in accordance with DOTD TR 225, will identify random concrete core locations and determine the diameter, thickness, and strength. Cut the cores in the presence of a DOTD representative. The DOTD representative will take immediate possession of the cores for thickness and strength determinations. Notify the District Laboratory Engineer at least five days prior to the start of coring operations.

The engineer will divide each pavement lot into five equal sections. Obtain one core from each section after meeting surface tolerances. Provide additional cores required by the Department to isolate thickness, strength or other pavement deficiencies, or for recutting of deficient cores at no direct pay. Patch all core holes using an approved pavement or structural concrete mixture meeting the requirements

of Section 901. Patch the core holes immediately after coring operations. Finish the surface of the patch to match the surrounding pavement. Include the cost of patching the core holes in the bid price of the concrete coring.

When the average strength for the lot is less than 4,000 psi, the contract unit price will be adjusted in accordance with Table 601-3. When an individual core indicates compressive strength less than 3,000 psi, remove, and replace the entire deficient section with concrete of the specified quality. If the Chief Engineer determines that the concrete may be left in place, payment for the quantity of concrete represented by the deficient core will be made at 50 percent of the contract unit price. Payment for the remainder of the lot will be made in accordance with Table 601-3 based on the average compressive strength of the remaining sections.

601.03.14.2.2 Flexural Strength: The 28-day flexural strength (modulus of rupture) will only be required when specified in the contract documents. Submit a contractor-controlled curing and delivery plan to the engineer for approval.

Determine flexural strength of pavements from 6-inch by 6-inch by 20 inch cast beams. Cast and cure the beams in accordance with TR-226. The Department will randomly determine sample frequency and location for casting beams. Cast and mark the beams for identification in the presence of a DOTD representative. The Department will perform acceptance testing.

601.03.14.2.3 Thickness: Construct pavement to plan thickness. Under thickness will be subject to the payment adjustments shown in Table 601-3.

For PCCP requiring compressive strength acceptance, determine thickness from the cores.

For PCCP requiring flexural strength acceptance, use a 2-inch core to determine thickness. An alternate method may be submitted to the Department for approval.

The engineer, in calculating average pavement thickness, will consider individual measurements in excess of specified thickness by more than 0.25 inch as specified thickness plus 0.25 inch.

Replace with concrete of specified thickness areas deficient in thickness by more than 1 inch. If the Chief Engineer determines the deficient area may remain in place, payment for the quantity of concrete represented by the deficiency will be made at 50 percent of the contract unit price. Payment for the remainder of the lot will be in accordance with Table 601-3 based on the average thickness of the remaining lot segments.

601.03.14.2.4 Projects with Less Than 2,000 Square Yards of Pavement: Cored as required in 601.03.14.2.1 and 601.03.14.2.2 above, or may be accepted based on compressive strength cylinders and thickness measurements taken by the engineer.

601.03.14.3 Surface Tolerance: Test in accordance with 601.03.11.

601.03.14.4 Tolerances along Longitudinal Edges: Check the

pavement edge with a minimum 5-foot straight edge while the concrete is still in a fresh state. Do not allow the surface within a 6-inch width to vary more than 1/4 inch. This tolerance applies to those locations where subsequent paving (additional lanes, shoulders, turnouts, ramps, widening, curb and gutters, etc.) is to be constructed adjacent to the placed pavement. Correct any edge slump settlement before the concrete has hardened. Place fixed side forms at the slab edges when correcting deficiencies. If continuously unable to meet tolerance, cease paving operations and take corrective action.

For edges where there will be no adjacent pavement, the tolerance is 1/2 inch in 6 inches.

If unable to correct edge slump deficiencies before the concrete has hardened, correct as follows.

601.03.14.5 Edges at Longitudinal Joints: Correct by full depth removal and replacement of the pavement edge with tied concrete. Remove the pavement by full depth sawing for a width necessary to bring the pavement within the required tolerance. The maximum allowable width for removal and replacement with adjacent concrete work is 12 inches.

If the pavement surface corrections require removing more than 12 inches of the pavement edge, remove the pavement full depth for one-half of the lane width. Replace in accordance with the Department's full depth concrete pavement patching details prior to placing the adjacent pavement.

Begin and end all removals at a transverse joint.

601.03.14.6 Edges not along Longitudinal Joints: Correct by full depth removal and replacement of the pavement edge with tied concrete for a minimum width of 12 inches and to the original width at proper grade. Begin and end all removals at a transverse joint.

601.03.15 Quality Control: The contractor is responsible for all operations including but not limited to the production, transporting, placement, joint construction, surface finishing, maintenance, and curing of all concrete pavement and shoulders constructed in accordance with these specifications. Control the work to produce concrete pavement and shoulders that are uniform and conform to the plan dimensions and test requirements. Perform whatever tests are necessary to ensure the concrete pavement and shoulders comply with these specifications. Use construction methods that prevent cracking.

601.04 MEASUREMENT. The quantities for payment will be the design quantities specified in the plans and adjustments thereto. There will be no adjustments in plan quantities unless the engineer makes changes to adjust to field conditions, plan errors, or if design changes are necessary.

601.05 PAYMENT. Payment will be on a lot basis at the contract unit price per square yard, which includes furnishing and placing all materials including tie bars, dowel bars, and joint material. Payment for concrete cores taken for thickness and strength acceptance is at the contract unit price per each as described in 601.03.14.2. There will be no adjustment in the unit price for coring when there are different pavement-thicknesses specified. If the pavement does not comply with acceptance requirements, adjust unit price payments in accordance with Table 601-3. If there are payment adjustments for more than one deficiency, they are cumulative. Payment for surface tolerance (IRI) will be in accordance with 601.03.11. Grinding is not allowed to achieve incentive payment beyond meeting Table 601-2 requirements. Progressive partial payments for PCCP are at 100 percent with all IRI bonus and penalty assessments at final acceptance.

Payment will be made under:

Item No.	Pay Item	Pay Unit
601-01	Portland Cement Concrete Pavement ____ in. Thick	Square Yard
601-02	Portland Cement Concrete Pavement (Crossovers and Turnouts)	Square Yard
601-03	Portland Cement Concrete Shoulder ____ in. Thick	Square Yard
601-04	Portland Cement Concrete Coring	Each

Table 601-1¹
Pavement Adjustment Schedule for Mainline Longitudinal Surface Tolerance, Maximum International Roughness Index, inches per mile

Percent of Contract Unit Price		102% ²	100%	98%	50% or Remove and Replace ³
Category I: Design Speed ≥60 mph	IRI in/mi	≤65	≤75	76-84	≥85
Category II: Design Speed ≥45 mph and <60 mph	IRI in/mi	≤75	≤85	86-94	≥95
Category III: Design Speed <45 mph	IRI in/mi	N/A	≤115	116-129	≥130

¹Applies to each travel lane for the entire project's length.

²Incentive Pay Requirements:

Must equal or be less than the average IRI indicated for bonus payment.

Grinding is not allowed to achieve incentive payment but requirements for 601.03.11.3.2 must be met.

³At the option of the Chief Engineer.

Table 601-2¹
Individual Wheel Path
Deficient Area Boundaries Requiring Corrective Action
Maximum International Roughness Index,
inches per mile
as measured to nearest whole number

Any 25-foot Sliding Baseline		PCCP: Longitudinal Direction
Category I	IRI in/mi	≤170
Category II	IRI in/mi	≤190
Category III	IRI in/mi	≤210

¹The contractor shall use a continuous 25-foot sliding base selected in the ProVal software to analyze and determine must grind areas of localized roughness as specified by this table. The limits for localized roughness, unless greater than that shown in the table above, must be identified and corrected, or accepted by the Project Engineer.

Table 601-3
Payment Adjustment Schedule

	Payment (Percent of Contract Unit Price/Lot) ¹			
	100	95	80	50 or Remove and Replace ²
Deficiency in Average Thickness of 5 cores/lot, inches	0 to 0.13	0.14 to 0.25	0.26 to 0.5	Over 0.50
Average Compressive Strength, psi	≥4000	3500 to 3999	3000 to 3499	Below 3000

¹Payment adjustment shall be cumulative.

²At the option of the Chief Engineer.

Section 701 Culverts and Storm Drains

701.01 DESCRIPTION. Furnish, install, and clean pipe, pipe arch, storm drains, and sewers, also referred to as culverts or conduits, in accordance with these specifications and in conformity with the lines and grades shown on the plans or as established by the engineer.

701.02 MATERIALS. Materials shall comply with the following sections and subsections:

Usable Soil	203.06.1
Selected Soil	701.08.1
Plastic Soil Blanket	203.10
Flowable Fill	710
Portland Cement Concrete	901
Mortar	1001.03
Reclaimed Asphalt Pavement (RAP)	1003.01.3.2, 1003.06.5
Stone	1003.03.1
Recycled Portland Cement Concrete	1003.03.2
Granular Material	1003.09
Bedding Material	1003.10
Thermoplastic Pipe	1006
Split Plastic Coupling Bands	1006.06
Plastic Yard Drain Pipe	1006
Gasket Material	1016.01.1
Reinforced Concrete Pipe	1016.02
Reinforced Concrete Pipe Arch	1016.03
Bituminous Coated Corrugated Steel Pipe and Pipe Arch	1007.02
Structural Plate for Pipe, Pipe Arch and Arch	1007.04
Corrugated Aluminum Pipe and Pipe Arch	1007.05
Coupling Bands	1007.09, 1007.08.1
Reinforcing Steel	1009
Geotextile Fabric	1019

701.02.1 Side Drain Pipe or Side Drain Pipe Arch: When an item for Side Drain Pipe or Side Drain Pipe Arch is included in the contract, furnish thermoplastic pipe, corrugated metal pipe or corrugated metal pipe

arch, or reinforced concrete pipe or reinforced concrete pipe arch as allowed by Sections 1006, 1007, or 1016, respectively, unless otherwise specified.

701.02.2 Cross Drain Pipe or Cross Drain Pipe Arch: When an item for Cross Drain Pipe or Cross Drain Pipe Arch is included in the contract, furnish thermoplastic pipe, corrugated metal pipe or corrugated metal pipe arch, or reinforced concrete pipe or reinforced concrete pipe arch as allowed by Sections 1006, 1007, or 1016, respectively, unless otherwise specified.

701.02.3 Storm Drain Pipe or Storm Drain Pipe Arch: When an item for Storm Drain Pipe or Storm Drain Pipe Arch is included in the contract, furnish thermoplastic pipe, reinforced concrete pipe or reinforced concrete pipe arch allowed by Sections 1006 or 1016, respectively, unless otherwise specified.

701.02.4 Yard Drain Pipe: When an item for Yard Drain Pipe is included in the contract, furnish thermoplastic pipe in accordance with Section 1006 unless otherwise specified.

701.02.5 Material Type Abbreviations:

701.02.5.1 Reinforced Concrete Pipe:

RCP	Reinforced Concrete Pipe
RCPA	Reinforced Concrete Pipe Arch

701.02.5.2 Corrugated Metal Pipe:

CAP	Corrugated Aluminum Pipe
CAPA	Corrugated Aluminum Pipe Arch
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CSP	Corrugated Steel Pipe
CSPA	Corrugated Steel Pipe Arch
BCCSP	Bituminous Coated Corrugated Steel Pipe
BCCSPA	Bituminous Coated Corrugated Steel Pipe Arch

701.02.5.3 Thermoplastic Pipe:

TPP	Thermoplastic Pipe
PVCP	Polyvinyl Chloride Pipe
RPVCP	Ribbed Polyvinyl Chloride Pipe
CPEPSW	Corrugated Polyethylene Pipe Single Wall
CPEPDW	Corrugated Polyethylene Pipe Double Wall

701.02.6 Joint Type Abbreviations:

T1	Type 1 Joint
T2	Type 2 Joint
T3	Type 3 Joint

701.02.7 Quality Assurance for Pipe: Manufacturing plants will be periodically inspected for compliance with specified manufacturing methods, and material samples will be randomly obtained for laboratory testing for verification of manufacturing lots. Materials approved at the manufacturing plant will be subject to visual acceptance inspections at the jobsite or point of delivery.

701.03 EXCAVATION. For all trench excavation, ensure that the sides of the trench are stable, as evidenced by the sides of the trench being able to maintain a vertical cut face. Consider the sides unstable if fissures develop in the face of or adjacent to the open excavation; if the edge of the excavation subsides; if material ravel, spalls, or slumps from the face of the excavation; or if the bottom of the excavation bulges or heaves. In all cases of apparent distress, or when the trench excavation exceeds 5 feet in depth, sloping, benching, and shoring will be required in accordance with the OSHA trench safety standards, 29 CFR § 1926 (P). Consider these and any more stringent trench safety standards as minimum contract requirements.

Submission of bid and subsequent award of contract will serve as certification that all trench excavation in excess of 5 feet will be in compliance LA R.S. 48:251.1.

Consider all available geotechnical information when designing the trench excavation safety system, including groundwater. Evaluate trench stability due to the effects of surcharge loads from adjacent structures, stored materials and equipment, or traffic. Ensure that excavated material is placed a sufficient distance back from the trench edge to preclude material from falling back into the trench, otherwise provide an adequate retention system.

Ensure that the bottom width of a pipe trench provides at least 18 inches of clearance on each side of the pipe. In accordance with 202.02, satisfactorily dispose of surplus excavated material that does not conform to the requirements of 203.06.1. Control rainfall runoff or excess moisture by proper selection of backfill materials, dewatering sumps, wells, well points, or other approved procedures during excavation, bedding installation, over-excavated trench backfilling, pipe placement, and pipe backfill.

701.03.1 Over-Excavation: When encountering unsuitable soils as defined in 203.04, or a stable, non-yielding foundation cannot be obtained at either the established pipe grade or at the grade established for placement of the bedding, remove unstable or unsuitable soils below this grade and replace with granular material complying with 1003.09, bedding materials complying with 1003.10, or Type A backfill complying with 701.08.1. Place all granular backfill materials below the established pipe or bedding grade in

lifts less than 8 inches thick. Compact sufficiently with a dynamic mechanical hand compaction device over the surface of each lift to form a stable, non-yielding foundation at the surface of the established bedding or pipe grade.

When encountering rock, remove the rock below grade and replace it with granular material, bedding materials, or Type A backfill. Provide a compacted earth cushion thickness under the pipe of at least 1/2 inch per foot of fill height over the top of the pipe with a minimum thickness of 8 inches. Place all granular backfill materials below the established pipe or bedding grade in lifts less than 8 inches thick. Sufficiently compact with a dynamic mechanical hand operated compaction device over the surface of each lift to form a stable, non-yielding foundation at the surface of the established bedding or pipe grade.

Materials used to backfill in an over-excavated portion of a trench do not require encasement in a geotextile fabric.

701.04 FORMING PIPE BED. When specifying bedding material, construct in accordance with Section 726. Materials allowed for bedding shall comply with 1003.10 or may be type a backfill materials. When specifying bedding materials, perform additional excavation below established pipe grade and place the bedding material in lifts less than 8 inches thick. Lightly compact with a dynamic hand compaction device over the surface of each lift.

When the bottom of the pipe is not laid in a trench but constructed above natural soils, construct a uniform bed as specified for the bottom of a trench.

In lieu of removing and replacing unstable soil with granular material, bedding material, or Type A backfill material, a cabled articulated concrete block mattress meeting the requirements of Section 712 may be used with a 6-inch layer of bedding material between the pipe and the mattress installed in accordance with Section 726. Excavate the trench to a depth 6 inches plus the thickness of the mattress below the grade line of the pipe. Join adjacent mattress segments together to form a continuous supporting foundation beneath the pipe to the satisfaction of the engineer.

701.05 LAYING PIPE. Begin laying pipe at the downstream end of the line. Ensure that the pipe is in contact with the foundation throughout its length. Place bell or grooved ends of pipe and outside circumferential laps of riveted metal pipe facing upstream. Place riveted seam metal pipe with longitudinal laps at sides. Pipes in each continuous line shall have the same

wall thickness. Handle metal pipes provided with lifting lugs only by these lugs.

After laying pipe and before placing backfill, the engineer will inspect the pipe for alignment, grade, integrity of joints, and coating damage.

701.06 JOINING PIPE.

701.06.1 Joint Usage:

701.06.1.1 Type 1 (T1) Joints: Use Type 1 joints for side drains under driveways and similar installations.

701.06.1.2 Type 2 (T2) Joints: Use Type 2 joints for cross drains under roadways, including turnouts.

701.06.1.3 Type 3 (T3) Joints: Use Type 3 joints for storm drain systems, flumes, and siphons.

701.06.2 Concrete Pipe: Concrete pipe may be either bell and spigot or tongue and groove. Join pipe sections so that ends are fully entered and inner surfaces are flush and even.

Use an approved mechanical pipe puller for joining pipes over 36 inches in diameter. For pipe 36 inches or less in diameter, use any approved method for joining pipe that does not damage the pipe.

Joints shall comply with 1016.01.1 and 1018.03. Seal with gasket material installed in accordance with the manufacturer's recommendations.

701.06.3 Metal Pipe: Firmly join metal pipe by coupling bands. Center bands over the joint.

For Type 1 joints, place approved gasket material 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, join metal pipe sections as follows:

701.06.3.1 General: Seal band joints with gasket material. Place gasket material in accordance with the plan details.

701.06.3.2 Circular Section: Connecting bands shall be of an approved design. Install in accordance with plan details.

701.06.3.3 Arch Section: Connecting bands shall be a minimum of 12 inches wide for a pipe arch less than 36 inches round equivalent diameter, and a minimum of 21 inches wide for pipe arch 36 inches round equivalent diameter and greater. Connect bands at the ends by approved angle or strap connections. Use two-piece connecting bands for a pipe arch 36 inches round equivalent diameter and greater.

701.06.4 Plastic Pipe: Joints for plastic pipe shall be bell and spigot or split coupling bands.

701.06.4.1 Bell and Spigot Type Joint System: Join pipe sections so that ends are fully entered and inner surfaces are flush and even.

Use any approved method for joining pipe that does not damage the pipe.

After joints approval, seal with a rubber gasket material complying with 1007.08.4.1.

701.06.4.2 Split Coupling Type Joint System: Split coupling bands shall comply with all dimensional and material requirements of 1006.06. Center the bands over the joint. Secure the split coupling band to the pipe with a minimum of five stainless steel or other approved corrosion resistant bands.

After joints approval, seal with gasket material. Place gasket material in the first two corrugation recesses on each side of the pipe connection. Also place gasket material on each band connection to prevent leakage. When using flexible plastic gasket material, it shall be a minimum of 1/2 inch in size. Tighten the bands to create overlap of the band and adequately compress the gasket material.

701.06.5 Connections: Use approved connections when joining new pipes to existing pipes. When using concrete collars to extend the ends of existing pipes that have been damaged or to join different types or sizes of pipes, construct the concrete collars in accordance with plan details, the applicable requirements of Section 901, and as directed.

701.06.6 Geotextile Fabric Wrapped Pipe Joints: For concrete, metal, and plastic pipes, use Types 2 and 3 joints wrapped with geotextile fabric for a minimum of 12 inches on each side of the joint for pipe 36 inches or less in diameter and a minimum of 18 inches on each side of the joint for pipe greater than 36 inches in diameter. Wrap the ends of the fabric around the circumference of the pipe and overlap at least 10 inches. Secure the edges and ends of fabric for the entire circumference of the pipe.

701.07 RELAYING PIPE. If specified or directed, remove existing pipes and relay suitable sections as specified for new pipes.

701.08 BACKFILLING.

701.08.1 General: Prior to backfilling, remove pipes found to be damaged or out of alignment or grade; reinstall or replace.

Type A backfill material shall be stone, recycled portland cement concrete, flowable fill, or RAP.

Type B backfill materials are select soils. Select soils are natural soils with a maximum PI of 20, a maximum liquid limit of 35, and a maximum

organic content of 5 percent. Soils with a silt content of 50 percent or greater and also a PI of 10 or less will not be allowed. Where Type B backfill materials are called for, Type A backfill materials may be substituted.

When using corrugated metal pipe, the backfill material shall be tested and shall have a resistivity greater than 1500 ohm-cm and a pH greater than 5 when tested in accordance with DOTD TR 429 and DOTD TR 430 respectively.

When using Type A backfill material, place geotextile fabric to surround this backfill in accordance with 726.03 between the aggregate backfill material and all other natural or placed soils in the trench or embankment. Take care to prevent damage to geotextile fabric during placement of backfill material. For concrete pipe, enclose not only the initial backfill with the fabric, but wrap the fabric over the top of the pipe with at least 12 inches of overlap.

When using a trench box or trench sheeting in unstable soils and/or for worker safety, and when moved during backfilling operations, immediately fill and provide additional compaction of the disturbed zone of backfill to the satisfaction of the engineer.

Initial backfill is a structural backfill encasing the pipe from the bottom of the pipe to the springline for concrete pipe and to a point one foot above the top of the pipe for both metal and plastic pipe. Final backfill is not a structural backfill. Final backfill extends from the top of the initial backfill to the top of the natural ground or subgrade in cut areas or to the top of existing ground in fill areas. Consider and treat any fill required above the final backfill as embankment.

701.08.2 Backfill Applications: For projects using the A+B+C bidding method where considering rigid and flexible pavement alternates, use the backfill application in 701.08.2.2 for either rigid or flexible pavements.

701.08.2.1 Pipe Under Concrete Pavements: Type B backfill may be used as initial and final backfill for all pipes, culverts, or drains under portland cement concrete pavements. Place and compact as specified in 701.08.4.

701.08.2.2 Cross Drains Under Flexible Pavements: All reaches of cross drains, exclusive of those portions of the pipe which are under shoulders, and all other culverts, pipes, or drains that cross the centerlines of new or existing flexible pavement roadways, including intersections that are under flexible pavements, shall receive an initial backfill of Type A material. Type B backfill materials may be used as final backfill for all pipes. Place and compact as specified in 701.08.3 and

701.08.4. Where the subgrade is above existing ground, use embankment material as specified for the remainder of the project from the top of the final backfill to the top of the established embankment grade.

701.08.2.3 Other Drains Under Flexible Pavements: All reaches of all culverts, pipes, or drains under flexible pavements that do not cross the centerlines of new or existing roadways, and exclusive of those portions of the pipe which are totally under shoulders, shall receive an initial and final backfill of Type B material. Place and compact as specified in 701.08.4. Where the subgrade is above existing ground, use embankment material as specified for the remainder of the project from the top of the final backfill to the top of the established embankment grade.

701.08.2.4 Other Areas: All culverts, pipes, or drains in unpaved areas or paved areas that serve as driveways or shoulders shall receive an initial and final backfill of Type B material. Place and compact as specified in 701.08.4.

701.08.2.5 Pipes Subject to Construction Traffic: Construct the embankment or pipe backfill to a minimum height of 24 inches over the pipe before allowing heavy construction equipment to cross the installation. Where practical, do not construct installations with less than 24 inches of cover over the top of the pipe until after completing the heavy hauling over the pipe location. After completion of hauling operations, remove excess cover material. Remove and reinstall or replace, pipe damaged by hauling and backfilling operations at no direct pay.

701.08.3 Placement and Compaction - Type A Backfill: For all pipes, culverts, and conduits under paved and unpaved areas, where using Type A backfill material, thoroughly hand compact the Type A backfill under the pipe haunches and then dynamically compact in layers not exceeding 8 inches compacted thickness. Initially compact under the haunches of the pipe by hand tamping or other acceptable means, until reaching a level in which the dynamic tamping can commence. Compact each lift by applying at least eight passes of a hand operated, dynamic mechanical compaction device over the surface of each lift. With approval of the engineer, layer thickness may be increased to 12 inches with verification of satisfactory installation and performance. If using flowable fill, furnish, place, and consolidate in accordance with Section 710. Control placement operations during initial backfill operations without damage to protective coatings on metal pipes. Repair damaged coatings at no additional pay.

701.08.4 Placement and Compaction - Type B Backfill: For all pipes, culverts, and conduits where Type B backfill is allowed, place the

Type B material in layers not exceeding 8 inches compacted thickness. Compact with suitable mechanical equipment. With approval of the engineer, layer thickness may be increased to 12 inches with verification of satisfactory installation and performance.

701.08.5 Placement and Compaction- Trenchless or Partial Trench Condition: All pipes, culverts, drains, and conduits placed with any portion of the pipe above existing ground shall comply with 701.08.1, 701.08.2, 701.08.3; 701.08.4 shall be for the portion of the pipe within a trench and the portion of the pipe not constructed in a trench. The initial and final backfill of that portion of pipe above existing ground and not within a trench shall be constructed to such a width that the requirements for placement, compaction, and density are met.

701.08.6 Density Requirements: The in-place density of Type A backfill materials and bedding materials will not be measured or calculated. Place Type A backfill, exclusive of RAP and flowable fill, at or near optimum moisture content in accordance with DOTD TR 415 or 418. Place and compact RAP materials in a slightly moist condition.

Determine the maximum dry density of initial or final Type B backfill under all paved areas which are to be under traffic in accordance with DOTD TR 415 or TR 418. Determine in-place density in accordance with DOTD TR 401. Place initial and final Type B backfill under all paved areas under traffic, at or near optimum moisture content in accordance with DOTD TR 415 or TR 418. Compact each layer by approved methods prior to the placement of a subsequent layer. The engineer will approve the compaction method upon validation that such method, including moisture control, will achieve at least 95 percent of maximum dry density in accordance with DOTD TR 401. Density testing on subsequent backfill layers may be waived by the engineer if installation has been in accordance with approved compaction methods and performance has been continuously satisfactory. Place initial and final backfill in unpaved or paved areas, such as shoulders or driveways, evenly and compact along the length of the culvert, pipe, or drain from the top of the initial backfill to the top of the subgrade. Compact layered backfill to at least the density of the adjoining existing soils or the compaction required of the laterally adjoining layers of soil immediately outside the trench for embankment elevations. Place and compact initial and final backfill at or near optimum moisture content in accordance with DOTD TR 415 or TR 418.

701.09 INSPECTION OF PIPES. After completion of embankment and prior to roadway surfacing, the engineer shall inspect pipes for proper

alignment and integrity of joints. Correct any misaligned pipe or defective joints at no direct pay.

701.09.1 Plastic Pipe: Test installed plastic pipe to ensure that vertical deflections do not exceed 5.0 percent. Maximum allowable deflections shall be governed by the mandrel requirements stated herein.

Perform deflection tests no sooner than 30 calendar days after installation and compaction of backfill. Clean the pipe and inspect for offsets and obstructions prior to testing.

For pipe 36 inches and less in diameter, pull a mandrel through the pipe by hand to ensure that maximum allowable deflections have not been exceeded. The mandrel must be approved by the engineer prior to use. Use of an unapproved, mandrel or a mandrel altered or modified after approval mandrel will invalidate the test. If the mandrel fails to pass through the pipe, the pipe is over-deflected.

Unless otherwise permitted, uncover over-deflected pipe and, if not damaged, reinstall. Do not reinstall damaged pipe. Remove and replace 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.

Use a rigid, nonadjustable, odd-numbered leg (minimum 9 legs) mandrel having a length not less than its nominal diameter or 24 inches, whichever is less. The minimum diameter at any point shall be 5.0 percent less than the base inside diameter of the pipe being tested. The mandrel shall be fabricated of steel, aluminum, or other approved material fitted with pulling rings at each end. The nominal pipe size and outside diameter of the mandrel shall be stamped or engraved on some segment other than a runner. Furnish a suitable carrying case.

For pipe larger than 36 inches in diameter, determine deflection 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.

Conduct mandrel testing in the presence of the engineer. Mandrel testing shall be at no direct pay.

701.09.2 Metal Pipe: If the inside diameter of metal pipe or rise dimension of metal pipe arch deflects more than 5.0 percent from original dimensions, remove and reinstall the metal pipes or pipe arches, unless they do not rebound or are damaged. Remove pipes or pipe arches which are damaged or do not rebound; and replace at no direct pay. Measurement of deflection will be made by the engineer away from rerolled ends.

701.10 CLEANING PIPES.

701.10.1 Existing Pipes: Clean designated pipes of soil, debris, and other materials to the invert of the pipe by approved methods that will not damage the pipes. Satisfactorily repair all damage caused by the contractor's operations at no direct pay.

Dispose of removed soil, debris, and other materials in accordance with 202.02 or as otherwise approved in writing.

701.10.2 Contractor Installed Pipes: Prior to final acceptance, clean pipes of all debris and soil to the invert of the pipe at no direct pay.

Dispose of removed soil, debris, and other materials in accordance with 202.02 or as otherwise approved in writing.

701.11 STUBBING AND PLUGGING PIPES. Construct pipe plugs with Class R concrete complying with Section 901. Thickness of plug and method of construction shall be as directed.

When stubbing new pipes are to be stubbed into new or existing pipes or other structures, make the connection with approved mortar complying with 1001.03.

701.12 MEASUREMENT.

1. The length of new and re-laid pipe will be measured in linear feet along the pipe from end to end unless stated otherwise.
2. Pipe tees, elbows, and other fittings will be measured per each fitting. The length of pipe in such fittings will be included in the pay length measurement of pipes of which they form a part.
3. Excavation required for pipe installation will not be measured for payment, except as otherwise specified in 203.14 and 701.12.10.
4. Furnishing and placing backfill material below existing ground level for pipes will not be measured for payment. Backfill material needed to complete backfill above natural ground and around pipes that extend above natural ground will be measured for payment under applicable earthwork items. When specifying flowable fill, measure for payment in accordance with Section 710.
5. Plugging and stubbing of pipes will not be measured for payment.
6. Cleaning existing pipes will be measured by the length of pipe cleaned and accepted.
7. Concrete collars will be measured per each.
8. Dewatering of excavated areas will not be measured for payment.

9. Special shoring and bracing (depth > 5 feet), needed in addition to OSHA requirements for trench safety, will be measured by the square foot of wall area.

10. Trench excavation safety protection (depth > 5 feet) will be measured by the length of trench having a depth > 5 feet below natural ground.

701.13 PAYMENT. Payment for concrete and metal pipe will be made at the contract unit price per linear foot of the types and sizes specified, which includes all labor, materials, equipment, tools, and incidentals necessary to complete the work.

When plastic pipe is shown on the plans or elected to be used by the contractor, payment will be made at the contract unit price per linear foot of the types and sizes specified in accordance with the payment schedule of Table 701-1.

**Table 701-1
Payment Schedule for Plastic Pipe**

Percent Payment	Stage of Completeness
75	After placement and backfill has been completed
25	After the pipe has met vertical deflection requirements in accordance with 701.09.1

Payment for fabricating pipe tees, elbows, and other fittings will be made at the contract unit price per each fitting.

When unstable conditions are encountered, the additional excavation will not be measured for payment; however, the additional materials furnished and placed for the pipe foundation will be measured and paid for as follows:

1. Granular Materials: Payment will be made under the embankment item. The net section volume of the materials will be multiplied by 3 to determine the pay volume. When the contract does not include a pay item for embankment, payment will be made in accordance with 104.02.

2. Bedding Material: Measurement and payment will be made in accordance with Section 726. When the contract does not include a pay item for bedding material, payment will be made in accordance with 104.02.

3. Trench Excavation Safety Protection: When excavation depths exceed 5 feet from natural ground, safety precautions for excavations in compliance with OSHA are required and will be paid per linear foot of trench. When the

contract does not include a pay item for trench excavation safety protection, payment will be made in accordance with 104.02.

Payment for cleaning existing pipes will be made at the contract unit price per cleaned linear foot.

Payment for concrete collars will be made at the contract unit price per each.

Payment for special shoring and bracing will be made at the contract unit price per square foot of wall area.

Payment will be made under:

Item No.	Pay Item	Pay Unit
701-01	Cross Drain Pipe	Linear Foot
701-02	Cross Drain Pipe Arch	Linear Foot
701-03	Storm Drain Pipe	Linear Foot
701-04	Storm Drain Pipe Arch	Linear Foot
701-05	Side Drain Pipe	Linear Foot
701-06	Side Drain Pipe Arch	Linear Foot
701-07	Yard Drain Pipe	Linear Foot
701-08	Relaying Pipe	Linear Foot
701-09	Pipe Fittings	Each
701-10	Reinforced Concrete Pipe (Extension)	Linear Foot
701-11	Reinforced Concrete Pipe Arch (Extension)	Linear Foot
701-12	Corrugated Metal Pipe (Extension)	Linear Foot
701-13	Corrugated Metal Pipe Arch (Extension)	Linear Foot
701-14	Cleaning Existing Pipes	Linear Foot
701-15	Concrete Collar	Each
701-16	Plastic Pipe (Extension)	Linear Foot
701-17	Trench Excavation Safety Protection (Depth >5 feet)	Linear Foot
701-18	Special Shoring and Bracing (Depth >5 feet)	Square Foot

Section 706

Concrete Walks, Drives, and Incidental Paving

706.01 DESCRIPTION. Furnish and construct portland cement concrete walks, handicapped curb ramps, drives and incidental paving slabs in accordance with these specifications and in conformity with lines, grades, and dimensions shown on the plans or established.

706.02 MATERIALS. Materials shall comply with the following sections or subsections:

Portland Cement Concrete (Class M)	901
Joint Filler	1005.01.3
Reinforcing Steel	1009.01
Curing Materials	1011.01

706.03 CONSTRUCTION REQUIREMENTS.

706.03.1 Excavation: Excavate to required depth and width. Shape the top of the subgrade and compact to a firm, even surface conforming to the section shown on the plans. Remove unsuitable material and dispose of in accordance with 202.02 and replace with approved material at no direct pay.

706.03.2 Forms: Forms shall be of wood or metal and shall extend the full depth of concrete. Forms shall be straight, clean, and of sufficient strength to resist the pressure of concrete. Brace forms to ensure that forms remain in horizontal and vertical alignment until their removal.

Concrete may be placed by slip-form methods. Place slip-formed concrete with an approved machine designed to spread, vibrate, consolidate, and finish concrete in one pass of the machine with a minimum of hand finishing. Rigidly hold sliding forms together to prevent spreading of forms. After the passing of the side forms, there shall be no noticeable slumping of concrete.

706.03.3 Subgrade: Thoroughly moisten the subgrade immediately prior to placing concrete.

706.03.4 Placing and Finishing: Place the concrete on the subgrade, strike-off to required thickness, and tamp sufficiently to bring the mortar to the surface. Finish the surface with a wood float or steel trowel

followed by brushing to a slightly rough finish. Round joints and edges with an edging tool having a 1/4 inch radius.

706.03.5 Joints:

706.03.5.1 Expansion Joints: Fill expansion joints with 1/2 inch thick preformed expansion joint filler. Install expansion joints at maximum 100-foot intervals, and between intersecting paving and any fixed structure, such as a building, bridge, or curbing, and between intersecting paving and the handicapped curb ramps. Extend expansion joint material for the full width and depth of paving.

706.03.5.2 Weakened Plane: Form weakened planes by a jointing tool or other acceptable means. Extend weakened planes into concrete for at least one-quarter of the depth. Weakened planes shall be approximately 1/8 inch wide.

706.03.5.2.1 Walks: Space weakened planes for walks equal to the width of the walk.

706.03.5.2.2 Drives: Form a longitudinal weakened plane along the centerline of drives more than 16 feet wide. Form transverse weakened planes at not more than 16-foot intervals.

706.03.5.2.3 Incidental Paving: Form weakened planes for incidental paving at intervals not exceeding 30 times the thickness of the concrete in length or width. Construct joints in incidental paving placed adjacent to jointed concrete to match existing joints, with intermediate joints formed as necessary not to exceed the maximum joint spacing.

706.03.5.3 Construction Joints: Form construction joints around manholes, utility poles, etc., extending into paving. Install 1/4 inch thick preformed expansion joint filler into these joints.

706.03.5.4 Tie-ins: Make tie-ins of existing concrete by full depth sawing at no direct pay.

706.03.6 Curing: Cure concrete in accordance with 601.03.10.

706.03.7 Detectable Warning Surface for Handicap Ramps and At-Grade Sidewalk Intersections: When sidewalks intersect with roadways, equip the sidewalk with a detectable warning system consisting of raised truncated domes as a transition between the sidewalk and the street as required by the Americans With Disabilities Act, 28 CFR § Part 36, ADA Standards for Accessible Design. Install detectable warnings (truncated domes) on the ramp surface over the full width of the ramp throat for a distance of 24 inches in the direction of travel from the back of the curb. Also install detectable warnings (truncated domes) on at-grade sidewalks intersecting with roadways for a distance of 36 inches in the direction of

travel from the end of the sidewalk. Detectable warning surfaces may be added to at-grade sidewalks intersecting with driveways at the discretion of the design section or Project Engineer. Lay out truncated domes on a square grid in order to allow enough space for wheelchairs to roll between the domes.

Light reflectance of the truncated domes and the underlying surface shall meet the 70 percent contrast requirement of ADAAG.

706.04 MEASUREMENT. Quantities of concrete walks, drives, and incidental paving slabs for payment will be the design quantities as specified on the plans and adjustments thereto. Design quantities will be adjusted if the engineer makes changes to adjust to field conditions, if design errors are proven or if design changes are made. Design areas are based on the horizontal dimensions shown on the plans. Excavation, backfill, reinforcing steel, and joint materials will not be measured for payment.

Handicapped curb ramps, including the detectable surface warning system, will be measured per each.

Detectable surface warning systems for at-grade sidewalk intersection will not be measured for payment.

706.05 PAYMENT. Payment for concrete walks, drives, and incidental paving will be made on a lot basis at the contract unit price per square yard, adjusted in accordance with the following provisions. Payment for each lot will be made in accordance with table 901-5. Size, sampling, and testing of each concrete lot shall be in accordance with the materials sampling manual.

Payment for handicapped curb ramps, including the detectable surface warning system, will be made at the contract unit price per each and shall include, but not be limited to, curb transitions, detectable warning system, gutter, landing, and base.

Payment will be made under:

Item No.	Pay Item	Pay Unit
706-01	Concrete Walk	Square Yard
706-02	Concrete Drive	Square Yard
706-03	Incidental Concrete Paving	Square Yard
706-04	Handicapped Curb Ramps	Each

Section 726 Bedding Material

726.01 DESCRIPTION. Furnish and place aggregate bedding material on geotextile fabric for drainage structures.

726.02 MATERIALS. Materials shall comply with the following subsections:

Plastic Soil Blanket	203.10
Bedding Material	1003.10
Geotextile Fabric	1019.01

726.03 PLACEMENT OF BEDDING. Place geotextile fabric in accordance with plan details prior to placing bedding material. Properly proportion and mix bedding materials prior to placement in the foundation. Take care to prevent damage to geotextile fabric during placement of bedding material. Place, shape, and uniformly compact bedding material to the satisfaction of the engineer.

Overlap or sew adjacent rolls of geotextile fabric. When rolls are overlapped, overlap a minimum of 18 inches, including the ends of the rolls. Assure that the top layer of the fabric is parallel with adjacent rolls and in the direction of bedding materials placement. When rolls are sewn, join adjacent rolls by sewing with thread made of polyester or a material with equivalent strength and durability. When field sewing, employ the J-seam or “Butterfly” seam with the two pieces of geotextile fabric mated together and turned in order to sew through four layers of fabric. Sew with 2 rows of Type 401, two-threaded locking chain stitch. Submit factory seams other than specified to the Materials and Testing Section for approval. When the ground is covered with water or supersaturated soil, sew the fabric.

Remove damaged fabric and replace with new fabric or cover with a second layer of fabric extending two feet in each direction from the damaged area.

Use material excavated below the established grade of the structure or dispose of it in accordance with Section 203.

Place a plastic soil blanket in accordance with 203.10 at structure ends when bedding material is exposed.

726.04 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.

726.05 PAYMENT. Payment for bedding material will be made at the contract unit price per cubic yard, which includes all labor, materials, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
726-01	Bedding Material	Cubic Yard

Section 901

Portland Cement Concrete

901.01 GENERAL. This section specifies requirements for portland cement (PC) concrete, including methods and equipment for handling and storing materials, mixing, transporting, and placing concrete.

Fresh concrete is being in a plastic state that has not achieved initial set.

Structural concrete is designated by “Class” and pavement concrete by “Type.”

Portland cement concrete shall conform to the requirements of Table 901-3, “Master Proportion Table for Portland Cement Concrete.” Fly ash or ground granulated blast-furnace slag (GGBFS) is permitted as a partial replacement for PC in accordance with 901.08.2. All structural class concrete, except minor structure class concrete, requires permeability testing by surface resistivity in accordance with DOTD TR 233.

Provide portland cement concrete from a Department approved mix design, produced from a Department certified plant, and transported in Department certified trucks.

Provide sufficient plant capacity and transporting equipment to ensure delivery at required rates.

Methods of delivery and handling concrete shall facilitate placing with minimum rehandling.

Provide adequately equipped facilities or means for all quality control testing.

Quality assurance requirements shall be as specified in the latest edition of the Department's publications entitled Application of Quality Assurance Specifications for Portland Cement Concrete Pavement and Structures or Application of Quality Assurance Specifications for Precast-Prestressed Concrete Plants.

901.02 MATERIALS. Provide materials conforming to the following subsections:

Portland Cement	1001.01
Blended Hydraulic Cement	1001.02
Masonry Cement and Mortar Cement	1001.03
Portland Blast-Furnace Slag Cement	1001.02
Aggregates	1003.01 & 1003.08
Admixtures	1011.02

Water	1018.01
Fly Ash	1001.04
Ground Granulated Blast-Furnace Slag	1001.05
Microsilica (Silica Fume)	1001.06

Use cement, fly ash, ground granulated blast-furnace slag, and microsilica (silica fume) certified by the manufacturer in accordance with current Department procedures.

Maintain accurate records of cement, fly ash, ground granulated blast-furnace slag, and silica fume deliveries and their use. Furnish copies of these records to the engineer in such form as required.

901.03 TRANSPORTATION AND STORAGE OF CEMENTITIOUS MATERIALS. Transport cementitious materials in watertight conveyances and store in separate dry facilities. Reject material that is contaminated, partially set, or contains lumps of caked material.

Do not mix brands, mills, types, grades, or classes unless authorized by the DOTD Materials Engineer Administrator. The engineer may waive this requirement in case of plant breakdown during production to allow concrete, conforming to the requirements of this Section 901, furnished from another plant to finish a placement in progress.

901.04 HANDLING AND STORAGE OF AGGREGATES. Stockpile aggregates so that no detrimental degradation, contamination or segregation of aggregates results. Do not incorporate any foreign material into the aggregates. Provide a positive separation between natural ground and stockpile. Do not intermingle individual stockpiled materials. Do not add material to working faces of the stockpiles during continuous operations. Maintain drainage of stockpiles to control moisture content. Control aggregates to maintain the required gradation. Do not use aggregates that have become segregated or contaminated.

901.05 SAMPLING AND TESTING. Perform sampling and testing in accordance with the Department's "Materials Sampling Manual and Testing Procedures Manual". Furnish necessary materials for testing at no direct pay.

For pumped concrete, sample at the discharge end of pump.

901.06 QUALITY CONTROL OF CONCRETE. The contractor is responsible for quality control of materials during handling, proportioning, mixing, and placing operations, which includes the following:

1. Initial determination and necessary subsequent adjustments in proportioning of materials used to produce the specified concrete;
2. Providing suitable equipment for determination of aggregate gradation, moisture, air content, slump, unit weight, and temperature;
3. Trial mixes as necessary;
4. Testing and analysis of the mix for quality control purposes;
5. The setting of dials, gauges, scales or meters, adjusting batch weights; and accurate batching.

Furnish a Certified Concrete Technician at the plant or job site to make adjustments in batch weights for moisture content, to perform necessary adjustments in proportioning materials, and to perform tests necessary for control of the concrete mix within specification requirements. Do not begin daily plant operations until the Certified Concrete Technician has determined that gradations and batch weight adjustments are within specification limits. The Certified Concrete Technician or the Authorized Concrete Field Tester shall perform the job-site control tests for slump, air content, mix temperature, and then report the documented results to the contractor. The use of an Authorized Concrete Field Tester will not relieve the Certified Concrete Technician from performing the remaining duties as outlined in these specifications.

The contractor's Certified Concrete Technician and Authorized Concrete Field Tester shall be certified or authorized upon satisfactory completion of the Department's requirements. Personnel with a current ACI Concrete Field Testing Technician Grade I certification qualify as an Authorized Concrete Field Tester.

901.06.1 Mix Design: The Certified Concrete Technician shall submit a proposed concrete mix design on the form provided by the Department showing details for concrete to be furnished. Do not start work until the concrete mix design has been accepted and signed by the District Laboratory Engineer. 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.

Proportion the volume of coarse aggregates in concrete mixes in accordance with Table 901-1 below. This does not apply to mixes for concrete pipe, Types B and D pavement, and minor structure class concrete. Fine aggregate must have fineness Moduli (FM) between 2.20 and 3.00. For an example of proportioning of coarse aggregate, see the Department's publication entitled Application of Quality Assurance Specifications for Portland Cement Concrete Pavement and Structures.

**Table 901-1
Volume of Coarse Aggregate per Unit of Volume of Concrete**

Nominal Maximum Size of Aggregate, Inches	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	0.52	0.50	0.48	0.46	0.44
1/2	0.61	0.59	0.57	0.55	0.53
3/4	0.68	0.66	0.64	0.62	0.60
1	0.73	0.71	0.69	0.67	0.65
1 1/2	0.77	0.75	0.73	0.71	0.69
2	0.80	0.78	0.76	0.74	0.72
3	0.84	0.82	0.80	0.78	0.76

¹Volumes 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, these volumes may be increased up to 10 percent. For more workable concrete, as may be required for pumping, these volumes may be reduced up to 10 percent.

Proportion aggregates for pavement Types B and D mixes in accordance with 1003.08.3.

Perform trial mixes to demonstrate the mix's performance and the compatibility of components.

Submit test results for slump, unit weight, air content, set times, and surface resistivity (i.e., permeability) when required. Develop a curve for compressive strength (flexural strength for pavements if required) at 3, 7, 14, and 28 days. All trial mixes, especially those incorporating ASTM C494 Type S admixtures, shall demonstrate their intended specific use and compliance with this section to the District Lab Engineer. Submit these findings to the DOTD Fabrication Engineer for all precast and prestress elements.

Furnish materials to the Department for verification of trial mixes as requested.

The District Laboratory Engineer may waive trial mixes, in writing, for previously accepted mix designs. Waiver of trial mixes does not release the contractor from the responsibility of producing concrete that meets the minimum requirements of the specifications.

Ensure that slumps are within the ranges shown in Table 901-3 when tested in accordance with DOTD TR 207. The Chief Construction Engineer may authorize an increase in maximum slump, without mix segregation, by use of water reducing admixtures. Formulate mixes to produce concrete that,

when molded and cured in accordance with DOTD TR 226 and tested in accordance with DOTD TR 230, show an average compressive strength not less than shown in Table 901-3.

901.06.2 Quality Control Tests: Conduct tests to confirm the mix complies with the accepted mix design. Determine gradation and moisture content of aggregates used in the concrete mixture. Test the mixture at the job site for slump, unit weight, temperature, and air content. Keep mix variations within specified control limits for individual samples. Plot test results for gradation, slump, unit weight, and air content on control charts for individual samples. Submit these control charts to the engineer.

Monitor the mix components (cementitious materials, chemical admixtures, chemical additives, and aggregates) for variations. As cementitious materials and chemical admixture shipments arrive, verify slump, air content, and initial set time by testing at ambient temperatures. Adjust the mix design to rectify any changes, which would adversely affect constructability, concrete placement, or compliance with the specifications. Document the testing to validate component consistency on the control charts. Note conformance or variation in mix parameters (workability, set times, air content, etc.) on the control charts. Provide a copy of the proposed testing plan to the engineer for record. Acceptance of the plan does not relieve the contractor of the responsibility for satisfying specifications.

Select times to obtain control test samples using random number tables in accordance with DOTD S 605 or by random selection. Conform to gradation control limits of aggregates as shown in 1003.08.

Use the Materials Sampling Manual to determine the minimum number of quality control tests for structural and pavement concrete. Take additional test samples as directed for slump, concrete temperature, and air content.

For minor structure concrete only, a Certified Concrete Technician or Authorized Concrete Field Tester will not be required, but implement a quality control testing program to ensure that the concrete meets the requirements of these specifications.

When producing concrete for Types B and D pavements, determine gradations daily on each stockpile of aggregates. Base all gradation calculations on percent of dry weight. Upon determination of the gradation of each stockpile, mathematically determine the percent of the total aggregates retained based on the proportions of the combined aggregate blend, and check for conformance with Table 1003-19.

For additional QC requirements for Mass Concrete, see 901.12.

901.06.3 Mix Adjustments: It is permissible to adjust the ratio of fine to coarse aggregates of the approved mix design by no more than 5 percent.

Never adjust to materially affect the volume of concrete. For mixtures incorporating the Type B or D gradation, if the proportions of the aggregate sizes used do not satisfy the gradation requirements of 1003.08.3 due to changes in the gradation, adjust the proportions to bring the combined aggregates back within specification limits. These minor adjustments for gradation will not require a new mix design. Ensure that the mix produced is uniform, workable and within the specification limits of Table 901-3. When plant operations do not produce a uniform and workable mix, cease plant operations and take corrective action prior to restart.

When slump, air content, concrete temperature, or gradation measurements, as plotted on control charts, indicate that the mix is not uniform and may fall outside tolerance limits, immediately make adjustments to keep the mix within specified limits. Failure to make proper adjustments or the mix deviates from specification requirements, or the mix is obviously defective, the Department will reject the mix.

Do not change sources of any materials or percentages of cementitious materials, until a new Mix Design form showing the new material or adjusted proportions has been accepted.

901.06.4 Acceptance and Verification for PCCP Types B and D Concrete: Use the Materials Sampling Manual to determine sampling and testing requirements for acceptance and verification for concrete for Types B and D pavements, except as follows:

1. Gradation testing of individual stockpiles for acceptance will not be required.

2. Verification tests, performed by the District Laboratory to assure conformance to the combined aggregate gradation shown in Table 1003-19, are at the frequency of one sample every five days of production.

3. Upon determination of the gradation of each aggregate size sampled, mathematically determine the percent retained based on the dry weight of the total combined aggregates based on the proportions of the combined aggregate blend, and check for conformance with Table 1003-19.

4. If the results of the verification sample indicate that, the combination of aggregates does not meet the requirements of 1003.08.3, re-sample the aggregates, and test again. If the results of the second verification sample indicate that the combination of aggregates does not meet the requirements of 1003.08.3, adjust operations to produce a mix meeting these specifications. The Department will investigate and compare verification results to quality control results, for the same period, to determine appropriate action.

901.07 SUBSTITUTIONS. In accordance with Table 901-2, these are the allowable mixture substitutions.

**Table 901-2
Portland Cement Concrete Mixture Substitutions**

Structural Class ¹	Substitute
A1	No Substitutions
A2	No Substitutions
A3	No Substitutions
P1	P2, P3
P2	P3,
P3	No Substitutions
S	No Substitutions
MASS(A1)	No Substitutions
MASS(A2)	No Substitutions
MASS(A3)	No Substitutions
Minor Structure Class ¹	
M	A1, B, D
R	A1, B, D
Pavement Type ^{1,2}	
B	D
D	B
E	No Substitutions

¹The substituting mixture shall meet the requirements of Table 901-3 for its class or type. The substituting mix shall meet the strength requirements of the original mix. .

²If approved by the engineer, small irregular areas of paving projects using Types B or D concrete may be substituted with Class A1 concrete.

901.08 COMPOSITION OF CONCRETE. Type of cement and composition of concrete shall be in accordance with the requirements of this Section 901 and Table 901-3. For mix designs not conforming to Section 901 or Table 901-3, the approval of the Chief Construction Engineer is required.

901.08.1 Cement: Allowable types of cement are as follows:

<u>Use</u>	<u>Allowable Cement Types</u>
General Construction (Structural Class Concrete and Minor Structure Class Concrete)	Type I and/or II portland cement; Blended Hydraulic Cement Type IL portland lime cement
Concrete Pavement	Type I and/or II portland cement; Blended Hydraulic Cement Type IL portland lime cement Type III portland cement for high early strength (HES) applications only
Prestressed Concrete or Precast Concrete	Type I and/or II, or III portland cement; Blended Hydraulic Cement Type IL portland lime cement

901.08.2 Cementitious Material Substitution: For structural classes of concrete, fly ash conforming to 1001.04 and GGBFS conforming to 1001.05 may be partially substituted for portland cement on a pound for pound basis. For purposes of cement material substitution with fly ash and slag, do not treat Type IL cement as blended.

A binary concrete mix is one that combines portland cement and one additional cementitious replacement, e.g., GGBFS or fly ash (class C or F).

A ternary concrete mix is one that combines portland cement with two additional cementitious replacements, e.g., GGBFS and fly ash (class C or F) or fly ash (both class C and F).

The maximum substitution rate for binary mixtures is 30 percent fly ash or 50 percent GGBFS.

The maximum substitution rate for ternary mixtures containing Type I, II, III, or 1L portland cement is 70 percent of cement. When using Type IP or IS portland cement, the maximum substitution rate for ternary mixtures is 40 percent. Ternary combinations using both class C and F fly ash are allowable. When using fly ash ternary mixtures, replace portland cement with class C and class F fly ash in equal amounts. When using combinations of GGBFS and fly ash, the amount of GGBFS must be equal to or greater than the amount of fly ash.

For pavement types of concrete (Types B and D), the maximum substitution rate for ternary mixtures is limited to 50 percent of cement and for binary mixtures is 30 percent fly ash or 50 percent GGBFS.

The use of Type III portland cement outside of the specified allowances for precast, prestress, and specified HES pavements requires the approval of the Chief Construction Engineer.

901.08.3 Chemical Admixtures: Only use admixtures complying with 1011.02, or listed on the Approved Materials List.

Use an air-entraining admixture in all concrete. Test the total air content of the concrete in accordance with DOTD TR 202, and meet the requirements specified in Table 901-3.

Use set-retarding admixtures in an amount sufficient to produce the necessary retardation. Consider the influence of different materials and job conditions, including local weather on setting characteristics.

Include the amount of water incorporated in admixtures as a part of required mixing water.

Follow manufacturer's recommendations for adding and mixing high range water reducers (HRWR, superplasticizer) to the mix.

When using multiple admixtures, ensure the same company manufactures all the admixtures, and they are all compatible.

901.08.4 Water: Ensure that the total amount of water in the mixture, including admixtures and free water, does not exceed the maximum water- cementitious ratio specified in Table 901-3. Free water includes all water entering the mix with the aggregates, except water absorbed by the aggregate.

901.08.5 Aggregates: Ensure that all aggregates for use in portland cement concrete meet the requirements of 1003.01.

901.08.5.1 Fine Aggregates: Ensure that fine aggregates, except for combined gradations for Types B and D, comply with the requirements of 1003.08.1.

901.08.5.2 Coarse Aggregates: Ensure that coarse aggregates, except for combined gradations for Types B and D, are the grade specified in Table 901-3 and comply with the requirements of 1003.08.2. In concrete for bridge decks, use coarse aggregates with a friction rating of I, II, or III in accordance with 1003.01.2.4.

901.08.5.3 Aggregates for Types B and D Gradations: Ensure that combined aggregate gradations comply with the requirements of 1003.08.3.

901.09 EQUIPMENT. Provide sufficient plant capacity and transporting equipment to ensure delivery at the required rate. Ensure that the rate of delivery provides for proper handling, placing and finishing of concrete and maintains a workable surface. Ensure that methods of delivering and

handling concrete facilitate placing with a minimum of rehandling and without damage to the structure or concrete.

901.09.1 Plant Equipment: Ensure that batch plants include approved storage, weigh hoppers, and measuring devices. Properly seal and vent equipment to minimize contamination, dusting and loss of material. Ensure uniform distribution of the incorporated materials.

Provide adequate water supply and a device for automatically controlling the amount of water used in each batch.

Provide communication between the concrete batcher and loader operator.

901.09.1.1 Direct-Fill Elevating Weigh Hoppers: For plants using direct-fill elevating weigh hoppers, use computer controlled lights as an indicator of aggregate weights, but not as the sole means of control for aggregate proportioning. Provide means of control so that, as approaching the quantity desired in the weigh hopper, material may be added slowly and shut off with precision. Ensure that weigh hoppers eliminate accumulation of materials and discharges completely. Make provisions for removal of overloads.

901.09.1.2 Storage Bins and Silos: For plants with storage bins, ensure that the bins have adequate separate compartments for each size of aggregate. Design each compartment to discharge efficiently and freely. Provide a means of control so that, as approaching the quantity desired in the weigh hopper, material may be added slowly and shut off with precision.

Ensure that silos are weatherproof, sealed, free of holes, and prevent contamination. Ensure complete separation for each cementitious material. Design silos to freely discharge and equip with vibrators and/or aerators to maintain flow of material and prevent accumulation. Provide silos with a positive means of shut off without leaking into the weigh hopper.

901.09.1.3 Measuring Devices: Equip batch plants to proportion materials by approved weighing/metering devices. Moisture probes are allowed to determine the moisture content of aggregates for batch adjustment, provided the accuracy is within 0.5 percent of the results obtained by the Certified Concrete Technician in accordance with DOTD TR 106 and confirmed by the engineer.

Use separate scale systems: one for aggregates, and another for cementitious materials. Weigh each size of aggregate from separate bins either individually or cumulatively. Weighing each cementitious material cumulatively in the same hopper is allowable but measure the weight of the cement first before other cementitious materials.

Ensure that weigh hoppers eliminate accumulation of materials and discharge completely. Make provisions for removal of overloads.

Ensure that scales are 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 beam type scales are used, ensure that poises are lockable into any position to prevent accidental change of position, and the weigh beam and a telltale device is in view of the operator. Plant measuring devices shall be subject to approval by the Department. They shall be tested, inspected, and certified every 90-calendar days by a qualified independent scale service or the Weights and Measures Division of the Louisiana Department of Agriculture and Forestry at no direct cost to the Department and more frequently when the engineer deems it necessary to assure their accuracy. A qualified independent scale service or the Weights and Measures Division of the Louisiana Department of Agriculture and Forestry shall certify the plant's laboratory-measuring devices annually at no direct cost to the Department.

Batch individual aggregates within 2 percent, and the cumulative total weight of aggregates within 1 percent of the required weight.

Ensure that cementitious materials are within 1 percent of the required weight. For smaller batches of 1 to 3 cubic yards, the quantity of cement and cumulative quantity of cementitious materials shall be neither less than the required amount nor more than 4 percent in excess. Cement in standard bags need not be weighed; however, furnish in full bag increments and adjust the quantities of other materials accordingly. Do not use bagged fly ash or GGBFS.

Measure the mixing water by volume or weight. Ensure that water measuring devices are accurate to 1 percent at 1/2 the maximum allowable water per batch and the maximum graduation is 1 gallon.

Use approved methods and equipment for adding admixtures into the batch. Measure the quantity of admixtures with an accuracy of 3 percent. Provide a separate dispensing device for each admixture.

901.09.1.4 Batch Tickets: Certified concrete plants may be equipped with an approved automatic ticket printer system for recording required batching information. Enter actual weights of material batched each time on the Batch Certification Report or an approved electronic document. When an automatic ticket printer system is not used, determine quantities and batching information by visual observation. The contractor's authorized representative shall record these quantities on the Batch Certification Report.

Ensure that the approved ticket printer system is tamper-proof and prints 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 printer breakdown, determine quantities by visual observation and certify as stated above.

Ensure that all records of batches show batch number, day, month, year, and time of day to the nearest minute for each batch. Record any added water on the Batch Certification Report Provide to the engineer, a legible copy of all batch records identified with lot number and mix design number.

901.09.2 Hauling Equipment: Ensure that hauling equipment is watertight and capable of discharging concrete at a controlled rate without segregation.

901.09.2.1 Truck Mixer: Provide revolving-drum truck mixers, equipped with tanks for carrying any additional portion of the mixing water and capable of dispensing to the nearest gallon. Replace pick-up and throw-over blades in the mixing drum when worn beyond the limit recommended by the manufacturer. Have available a copy of the manufacturer's design, showing dimensions and arrangements of blades in reference to original height and depth.

Equip truck mixers with electrically or mechanically actuated revolution counters. Locate counters to provide safe and convenient inspection.

In a prominent place, attach to each truck mixer a metal plate on which is plainly marked the maximum rated capacity of the drum in terms of concrete volume and rotation speed for both agitating and mixing speeds.

901.09.2.2 Agitator Hauling Equipment: Furnish agitators with blades or paddles to effectively agitate the mix and prevent segregation. Provide covers when directed.

Attach to each agitator in a prominent place, a metal plate on which is plainly marked the designed uses for the equipment, the maximum rated capacity in terms of concrete volume, and agitation speed.

901.09.2.3 Non-Agitator Hauling Equipment: Ensure that the bodies of non-agitating hauling equipment are clean, smooth, metal, and mortar-tight containers. Provide covers when directed.

901.09.3 Portable (Volumetric) Mixers: Provide portable mixers with a minimum capacity of one cubic yard and capable of accurately and uniformly mixing and discharging concrete without segregation.

901.10 BATCHING AND MIXING. Thoroughly mix concrete in a mixer of an approved size and type, which will ensure uniform distribution of materials throughout the mix.

Do not use mixers with worn blades or excessive build-up. Replace pick-up and throw-over blades or mixing paddles in the mixing drum or mixing unit when worn beyond the limit recommended by the manufacturer. Have available a copy of the manufacturer's design, showing dimensions and arrangements of blades in reference to original height and depth.

Begin mixing operations within 15 minutes after addition of cement to the aggregates. When there is an interruption to the mixing operations, thoroughly clean the mixer. Remove the entire contents of the mixer from the drum before placing materials for a succeeding batch. Add a portion of mixing water in advance of cement and aggregates. Do not use a mixer having a rated capacity of less than one cubic yard or charge a mixer in excess of its rated capacity. The minimum size batch shall be one cubic yard.

901.10.1 Central Plant and Site Mixing: Mix concrete until uniformity is achieved but not less than 60 seconds. Mixing time begins after all materials are in the mixer. Mixing time ends when the discharge chute opens. Ensure that the mixer is equipped with an approved timing device, which automatically locks the discharge lever when charging the drum and releases it at the end of the mixing period. During mixing, operate the mixer at its designed drum speed as shown on the manufacturer's nameplate on the mixer.

901.10.2 Truck Mixing: In accordance with 901.09, measure aggregates and cementitious materials for concrete and charge into the drum at the proportioning plant.

Ensure that the size of the batch does not exceed the maximum rated mixing capacity as stated by the manufacturer and stamped on a metal plate on the mixer. When using a truck mixer for complete mixing, mix each batch at designated mixing speed until uniformity is achieved, but not less than 70 revolutions. Ensure that all materials, including mixing water, are in the mixer drum before actuating the revolution counter or taking an initial reading. Ensure that any additional revolutions during transit are at the designated agitating speed.

Add a minimum of 75 percent of the prescribed amount of batch water at the plant. If the slump is low at the jobsite, add up to the "maximum water that can be added at jobsite" as indicated on the Batch Certification form. Ensure that water added at the jobsite does not exceed the maximum allowable water-cementitious material ratio or exceed the maximum allowable slump by more than 1/4 inch. Reject the load if these criteria are exceeded. Add water and/or admixtures at the job site in one or two increments with additional mixing within the range of 20 to 30 revolutions at designated mixer speed for each increment.

When adding to a partial load, add only a proportional amount of water or admixtures. Follow the manufacturer's recommendations when adding and mixing admixtures to the mix.

Perform slump, air, temperature, and unit weight tests, and mold cylinders after the addition of all components into the mix.

901.10.3 Partial Mixing at Central Plant (Shrink Mixing): When partially mixing at a central plant, reduce the mixing time to a minimum of 30 seconds. Complete required mixing in a truck mixer at mixing speed until uniformity is achieved but not less than 10 revolutions.

901.10.4 Time Limitations: Ensure that the maximum time from the addition of cement to the mix to final placement of the concrete is 90 minutes or a maximum of 300 revolutions, whichever occurs first. When transport is by non-agitator truck, ensure that the maximum time from the addition of cement to the mix to final placement of the concrete is 45 minutes. The engineer may reduce the maximum allowable time for any observed conditions contributing to rapid loss of plasticity or uniformity of the concrete.

For special applications, the stated time limitations may be modified based on trial batch results.

901.10.5 Hauling Equipment: Transport fresh concrete in a truck mixer, agitator, or other certified equipment. Non-agitator trucks are only allowed for pavement concrete. Ensure that the volume of mixed concrete transported in an agitator truck at agitation speed is in accordance with the manufacturer's specified rating.

901.10.6 Portable Mixing: Obtain written approval from the Chief Construction Engineer to use portable or volumetric mixers for PCCP patching and minor structure concrete.

901.10.7 Delivery: Provide sufficient plant capacity and transporting equipment to ensure delivery at the required rate. Ensure that methods and rate of delivery and handling of concrete facilitate placement, without damage to the structure or fresh concrete.

901.11 WEATHER AND TEMPERATURE LIMITATIONS. Concrete used in precast/prestress structural elements may be exempt from the following temperature limitations at the determination of the Construction Fabrication Engineer.

Prepare for rain and hot or cold weather concrete placement well in advance of these events.

The contractor is responsible for proper mixing, placing, and curing of all concrete. At no cost to the Department, remove and replace any unacceptable concrete as determined by the Department.

901.11.1 Cold Weather Limitations: Do not place concrete when the internal temperature of the concrete is below 45°F nor on frozen subgrade or into forms that are below 32°F.

901.11.1.1 PC Mixes: Discontinue concreting operations when a descending air temperature at the jobsite, in the shade, and away from artificial heat, reaches 35°F or NOAA forecasts the temperature to be less than 32°F within the 24-hour period following placement. Do not resume PC concreting operations until an ascending air temperature at the jobsite, in the shade, and away from artificial heat, reaches 32°F; provided the high temperature forecasted by NOAA is above 35°F and remains above 32°F for a minimum of 24 hours.

901.11.1.2 Binary Mixes: Discontinue concreting operations when a descending air temperature at the jobsite, in the shade, and away from artificial heat, reaches 40°F or NOAA forecasts the temperature to be less than 35°F within the 36-hour period following placement. Do not resume concreting operations until an ascending air temperature at the jobsite, in the shade, and away from artificial heat, reaches 40°F; provided the high temperature forecasted by NOAA is above 45°F and remains above 40°F for a minimum of 36 hours.

901.11.1.3 Ternary Mixes: Discontinue concreting operations when a descending air temperature at the jobsite, in the shade, and away from artificial heat, reaches 45°F or NOAA forecasts the temperature to be less than 40°F within the 48-hour period following placement. Do not resume concreting operations until an ascending air temperature at the jobsite, in the shade, and away from artificial heat, reaches 45°F; provided the high temperature forecasted by NOAA is above 50°F and remains above 45°F for a minimum of 48 hours.

Written authorization from the Chief Construction Engineer is required for all concrete operations outside these cold weather limitations.

901.11.2 Hot Weather Limitations: During hot weather concreting, it is critical to reduce the evaporation rate from concrete to minimize plastic shrinkage cracking by having an appropriate concrete mix design, placement methods, and curing operations. Furthermore, additional moisture loss precautions may be essential when other environmental conditions (i.e. relative humidity, air temperature, and wind velocity) accelerate water evaporation from the concrete.

Hot weather limitations commence when the internal temperature of the concrete during placement, exceeds 85°F. If these conditions exist, maintain an internal concrete placement temperature less than 90°F or submit concrete trial-batch test results for the concrete mix designs conforming to the requirements for production during hot weather conditions.

The hot weather trial-batch acceptance criteria shall meet the following requirements:

1. Maintain a minimum internal concrete temperature of 94°F throughout the trial-batching process.

2. After initial mixing, hold the trial batch in the mixer for 90 minutes. During this period, turn the drum intermittently for 30 seconds every five minutes. In between the intermittent turning of the drum, cover the drum opening with an impermeable cover to prevent moisture loss and to maintain heat. At the end of the 90-minute period, remix the trial batch a minimum of one minute and then test for slump and air content.

3. After completion of a 90-minute mixing period, ensure that the trial-batch has the desired workability, with slump and air content within the specified range as shown in Table 901-3. Allow the addition of water if the slump is below the target range but do not exceed the maximum water-to-cementitious material ratio. Remix a minimum of two minutes after addition of second water. Furthermore, ensure that concrete temperature is not less than 94°F at any time during the trial batch testing.

Concrete placed at a temperature exceeding 90°F that fails to meet the hot weather trial-batch acceptance criteria shall be removed and replaced at no cost to the Department.

The contractor is responsible for proper mixing, placing, and curing of concrete as determined by the Department.

Regardless of any hot weather precaution taken, reject all concrete attaining an internal temperature in excess of 99°F during placement.

901.11.3 Rain Protection: Prior to any concreting operations, have available at the jobsite sufficient plastic sheeting material to prevent rainwater from marring or leaving indentations in any fresh concrete.

Lap sections of plastic sheeting a minimum of 18 inches and extend coverage beyond edges so that edges are not marred by falling rainwater. Secure plastic sheeting so that it will remain in place to protect the surface. As soon as conditions permit, reapply all curing compound washed away by the rain. Repair all areas of tining or surface finishing marred by rain or plastic sheeting coverage. Repair all rain-damaged areas at no cost to the Department.

901.12 MASS CONCRETE.

901.12.1 Description: Mass concrete is defined as a structural concrete placement having a least dimension of 48 inches or greater, or if designated on the plans or in the project specifications as being mass concrete. Structural Class S concrete is exempt from mass concrete requirements.

901.12.2 General: Submit proposals for the mass concrete mix design, analysis, temperature monitoring, and control, including insulation and methods, to the Department for review and acceptance a minimum of 30 days prior to the placement of any mass concrete.

901.12.3 Materials: The structural class designation for mass concrete is Class MASS (A1, A2, or A3) as shown in Table 901-3.

901.12.3.1 Cement/Cementitious Combination: Use Type II portland cement. Replace portland cement with fly ash at 20 percent to 50 percent by weight or replace with slag cement at 50 percent to 70 percent by weight or a ternary mix meeting specification requirements. Certify that the cementitious combination generates a heat of hydration of not more than 70 calories/gram at 7 days as determined by ASTM C186 or ASTM C1702.

901.12.3.2 Aggregates: Use Type B or D aggregate gradation for mass concrete. See 1003.08.3.

901.12.3.3 Admixtures: Do not use accelerating admixtures in mass concrete.

901.12.4 Construction: Produce a structure free from thermal cracks. Place mass concrete continuously to eliminate cold joints.

Control differential temperatures by appropriate use of insulated forms, curing blankets, or other acceptable methods.

If during the first 48 hours after placement, the temperature differential nears 35°F, take corrective measures immediately to remain within the limits. Furthermore, revise the plan to maintain the limits on differential temperature on any remaining placements of mass concrete. Obtain the engineer's acceptance of the revised plan prior to implementation.

Strength gain and cooling of the mass concrete placements can take a long time. Take all such time and strength considerations into account when planning construction activities.

901.12.4.1 Analysis and Monitoring: Submit an analysis to the engineer of the projected thermal developments within the mass concrete elements for the anticipated concrete and ambient temperatures, along with the proposed mix design and construction methods. Include a copy of model results, with site and element specific data, and any electronic files. Describe the measures and procedures intended to maintain, monitor, and control the

temperature differential between the interior and exterior of the mass concrete elements. A maximum temperature during curing of 160°F and a maximum differential temperature of 35°F is allowed. An abbreviated submittal may be allowed for previously approved mass concrete mix designs.

901.12.4.2 Monitoring Devices: Provide temperature-monitoring devices to record temperature development between the interior and the exterior of the element at points acceptable to the engineer. Monitor a minimum of two independent sets of interior and exterior points for each element to provide redundancy. Locate the monitoring points at the geometric center of the element for the interior point and two inches from the surface along the shortest line from the geometric center to the nearest surface of the element for the exterior point.

Monitoring devices shall be automatic sensing and recording instruments that record information at a maximum interval of one hour. Calibrate monitoring devices to the manufacture's recommendations. These devices shall operate within the temperature range of 0 to 180°F with an accuracy of $\pm 2^\circ\text{F}$. Take readings and record the temperature data at intervals no greater than 6 hours to ensure that the automatic devices are working properly and that the temperatures are within allowable limits. The intervals of one and six hours shall begin immediately after casting is complete and shall continue until the maximum temperature differential is reached and begins to drop. Transmit these readings to the engineer daily.

Prior to the placement of mass concrete, perform a test of the automatic and manual thermal sensing and recording equipment to ensure they are operational.

901.12.5 Payment for Mass Concrete: Materials, labor, equipment, and incidental items associated with mass concrete and controlling the heat of hydration are paid for under Section 805.

901.13 ACCEPTANCE AND PAYMENT SCHEDULES. Acceptance and payment schedules in Table 901-4 and Table 901-6 apply to all cast-in-place structural portland cement concrete. Table 901-6 applies to Classes P1, P2, and P3; whereas, Table 901-4 does not apply. Acceptance and payment schedules in Table 901-5 apply to all minor structure portland cement concrete. Acceptance and payment schedules for portland cement concrete pavement are shown in Table 601-1 of Section 601.

Table 901-3¹²
Master Proportion Table for Portland Cement Concrete

	Average Compressive Strength, psi at 28 days	Grade of Coarse Aggregate ¹	Surface Resistivity ² (k Ω -cm)	Maximum Water/Cementitious Ratio, lb/lb	Air Content (Percent by volume) ³	Slump Range ⁵ , inches		
						Non-Vibrated ⁴	Vibrated	Slip Form Paving ⁶
Structural Class ⁷								
A1	4,500	57M, 67, 89M ⁹ , B,D	22	0.45	2 - 7	2-5	2-4 ⁴	N/A
A2	6,500 ¹¹	57M, 67, 89M ⁹ , B,D	22 ¹¹	0.45	2 - 7	2-5	2-4 ⁴	N/A
A3	9,000 ¹¹	57M, 67, 89M ⁹ , B,D	22 ¹¹	0.36	2 - 7	2-5	2-4 ⁴	N/A
P1	6,000 ⁸	57M, 67, 89M ⁹ , B,D	22	0.44	2 - 7	N/A	2-6 ¹⁰	N/A
P2	8,500 ⁸	57M, 67, 89M ⁹ , B,D	22	0.40	2 - 7	N/A	2-6 ¹⁰	N/A
P3	10,000 ⁸	57M, 67, 89M ⁹ , B,D	22	0.40	2 - 7	N/A	2-6 ¹⁰	N/A
S	4,500	B, D	22	0.53	2 - 7	6-8	N/A	N/A
MASS(A1)	4,500	B, D	22	0.53	2 - 7	N/A	2-4 ⁴	N/A
MASS(A2)	6,500 ¹¹	B, D	22 ¹¹	0.46	2 - 7	N/A	2-4 ⁴	N/A
MASS(A3)	9,000 ¹¹	B, D	22 ¹¹	0.36	2 - 7	N/A	2-4 ⁴	N/A
Minor Structure Class ⁷								
M	3,000	57M, 67, 89M ⁹ , B,D	N/A	0.56	2 - 7	2-5	2-4 ⁴	1-2.5
R	1,800	57M, 67, B, D	N/A	0.70	2 - 7	2-5	2-4 ⁴	N/A
Pavement Type ⁷								
B	4,000	B, D	N/A	0.53	2 - 7	N/A	2-4	1-2.5
D	4,000	B, D	N/A	0.53	2 - 7	N/A	2-4	1-2.5
E	4,000	57M, 67, 89M ⁹ , B,D	N/A	0.40	2 - 7	N/A	2-4	1-2.5

N/A – Not Applicable

¹ Combined aggregate gradation shall comply with the requirements of 1003.08.2.

² Value based on a 4-inch X 8-inch cylinder tested at 28 days of age.

³ See 901.08.3.

⁴ Allow an 8-inch maximum slump if water reducers are used.

⁵ Additional allowance in slump range to be approved by the Chief Construction Engineer.

⁶ Also slump range for other concrete placed by extrusion methods.

⁷ See 901.08.1 for allowable types of cement.

⁸ Values shown represent the minimum compressive strengths allowed for all test cylinders.

⁹ Grade 89M coarse aggregate shall be used only when specified or permitted.

¹⁰ No more than 2-inch slump differential for any design placement. Allow 8-inch maximum slump if water reducers are used.

¹¹ Average Compressive Strength, psi and Resistivity (k Ω -cm) at 56 days.

¹² Dry-cast concrete for concrete pipe is exempt from Table 901-3. See Section 1016 specifications.

**Table 901-4
Acceptance and Payment Schedules
Cast-In-Place Structural Concrete**

Average Compressive Strength per Lot, psi (28 to 31 days: A1 Mixes) (56 to 59 days: A2 & A3 Mixes)	
Class A1, S & MASS (A1)	Percent of Contract Unit Price¹
4500 & above	100
4301 - 4499	98
4000 - 4300	90
below 4000	50 or remove and replace ²
Class A2 & MASS (A2)	
6500 & above	100
6301 - 6499	98
6000 - 6300	90
Below 6000	50 or remove and replace ²
Class A3 & MASS (A3)	
9000 & above	100
8801 - 8999	98
8500 - 8800	90
Below 8500	50 or remove and replace ²

¹When 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 805.11. The value for each cubic yard 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.

Acceptance and payment schedules shall apply to the contract item itself for cast-in-place piling.

²When the average compressive strength of **any batch in a lot** is less than the specified strength a prompt investigation will be made. If concrete is allowed to remain in place by the Chief Engineer, payment will be based on 50 percent of the contract price unless associated cylinders were improperly molded or tested and investigative core strength results are above design strength (f'c). If concrete is not allowed to remain in place, the identifiable deficient areas shall be removed and replaced at no direct pay.

**Table 901-5
Acceptance and Payment Schedules
Cast-In-Place Minor Structure Concrete**

Average Compressive Strength, psi (28 to 31 days)		
Class M	Class R	Percent of Contract Price ¹
3000 & Above Below 3000	1800 & Above Below 1800	100 50 or remove and replace ²

¹When 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.

²When the average compressive strength is less than 3,000 psi for Class M, and 1,800 psi for Class R, an investigation will be made. If concrete is allowed to remain in place by the Chief Engineer, payment will be based on 50 percent of the contract price.

Any cores obtained in these investigations are for evaluation purposes only. Payment is based on original acceptance samples.

**Table 901-6
Acceptance and Payment Schedules
Structural Concrete**

Surface Resistivity per Lot, kΩ-cm (28 to 31 days: A1 Mixes) (56 to 59 days: A2 & A3 Mixes)	
Class A1, A2, A3, S, P1, P2, P3, S & MASS(A1,A2,A3)	Percent of Contract Price
22.0 & above	100
20.0 - 21.9	98
18.0 - 19.9	90
below 18.0	50 or remove and replace ¹

¹When the average surface resistivity is less than 18.0 kΩ - cm, an investigation will be made. If concrete is allowed to remain in place by the Chief Engineer, payment will be based on 50 percent of the contract price. Any cores obtained in these investigations are for evaluation purposes only. Payment will be based on original acceptance samples.

Section 1001

Portland Cement and Cementitious Materials

1001.01 PORTLAND CEMENT. Use portland cement from the Approved Materials List and comply with AASHTO M 85. Alkali content calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight.

1001.02 BLENDED HYDRAULIC CEMENT. Use blended hydraulic cement Type IP, Type IS, or Type IL from the Approved Materials List and comply with AASHTO M 240. The alkali content of blended hydraulic cement calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight.

Type IP may contain up to 30 percent by weight of fly ash or up to 30 percent by weight of bottom ash, provided that the bottom ash is interground with the cement clinker. Fly ash and bottom ash shall comply with AASHTO M 295, Class C or F.

Type IS cement may contain up to 50 percent by weight of ground granulated blast-furnace slag. Grade 100 and Grade 120 ground granulated blast-furnace slag (slag cement) shall comply with AASHTO M 302.

Type IL portland limestone cement shall not be treated as blended cement for purposes of cement material substitution with fly ash and slag.

1001.03 MASONRY CEMENT AND MORTAR CEMENT. Comply with ASTM C91 for masonry cement. Comply with ASTM C1329 for mortar cement. Mix mortar cement in accordance with ASTM C270 or use pre-blended dry mortar cement complying with ASTM C1714 and mix according to the manufacturers recommendations.

1001.04 FLY ASH AND NATURAL POZZOLANS. Use fly ash from the Approved Materials List. Comply with AASHTO M 295 for Class C and Class F. Comply with ASTM C618 for Class N. Alkali content calculated in accordance with DOTD TR 531 shall not exceed 2.5 percent by weight. Fly ash and natural pozzolans with alkali contents greater than 1.5 percent may only be used with innocuous (non-reactive) aggregates.

1001.05 GROUND GRANULATED BLAST-FURNACE SLAG (SLAG CEMENT). Use Grade 100 or Grade 120 ground granulated blast-furnace slag from the Approved Materials List and comply with AASHTO M 302.

1001.06 MICROSILICA (SILICA FUME). Use microsilica (silica fume) from the Approved Materials List and comply with AASHTO M 307.

Section 1003 Aggregates

1003.01 GENERAL. All aggregates shall be environmentally acceptable for the intended use and shall be from an approved SiteManager® Producer/Supplier. Additionally stone, gravel, slag, lightweight aggregates, and coarse and manufactured sand sources shall be from the Approved Materials List. Recycled portland cement concrete (RPCC), reclaimed asphalt pavement (RAP), blended calcium sulfate (BCS), and fine natural sand are required to be from an approved Producer/Supplier. For source approval, comply with the requirements in this subsection and any other appropriate section. Provide global positioning coordinates (GPS) for the aggregate source site location.

Unless otherwise defined, coarse aggregates have material predominately retained on the No. 4 (4.75 mm) sieve; fine aggregates have material predominately passing the No. 4 (4.75 mm) sieve.

An aggregate material stockpile is either a dedicated stockpile or a working (non-dedicated) stockpile. A dedicated stockpile is a stockpile, which has been sampled and tested by the Department representative. Once approved, it shall not be altered unless the additional material has been sampled, tested, and approved. For non-dedicated or working stockpiles, the contractor may add or remove material as needed, provided the quality and gradation is maintained.

1003.01.1 Test Methods: The following test methods apply:

**Table 1003-1
Aggregate Test Procedures**

Property	Test Procedure
Deleterious Materials	DOTD TR 119
Flat and Elongated Particles	ASTM D4791
Magnesium Sulfate Soundness	AASHTO T 104
Los Angeles Abrasion	AASHTO T 96
Alkali-Silica Reactivity (Chemical Method)	ASTM C289
Alkali Reactivity (Mortar-Bar Method)	ASTM C1260
Reactivity of Concrete Aggregates	AASHTO PP65-11
Alkali Reactivity of Carbonate Rocks (Rock-Cylinder Method)	ASTM C586
Organic Impurities	AASHTO T 21
Unit Weight	AASHTO T 19
Specific Gravity & Absorption of Fine Aggregate	AASHTO T 84
Specific Gravity & Absorption of Coarse Aggregate	AASHTO T 85
Polish Value	AASHTO T 278 and T 279
Amount of Material Finer than the No 200 (75 µm) Sieve	DOTD TR 112
Sieve Analysis (Gradation)	DOTD TR 113
pH of Soil and Water	DOTD TR 430
pH of Aggregates	DOTD TR 122
Atterberg Limits (LL, PL, & PI)	DOTD TR 428
Organic Content	DOTD TR 413
Percent Crushed	DOTD TR 306
Mechanical Analysis of Extracted Aggregate	DOTD TR 309
Sand Equivalent	DOTD TR 120
Fine Aggregate Angularity	DOTD TR 121
Micro-Deval	AASHTO T 327
Moisture Sensitivity (TSR)	DOTD TR 322
Mortar Strength	AASHTO T 71
Methylene Blue	AASHTO TP 57-99

1003.01.2 General Material Properties: All aggregates shall comply with these material properties.

1003.01.2.1 Deleterious Materials: Conform to the following deleterious materials table for source approval and/or project acceptance:

**Table 1003-2
Deleterious Materials in Aggregates**

Property	Percent, Max
Wood	0.05
Clay Lumps	0.5
Clay Lumps and Friable Particles	3.0
Coal and Lignite	1.0 ¹
Flat and Elongated Particles (5:1)	15.0 ²
Flat and Elongated Particles (3:1)	25.0 ³
Glassy Particles	10.0
Iron Ore	2.0 ¹
Total: Wood, Clay Lumps, Friable Particles, Iron Ore, Lignite and Other Foreign Matter	5.0

¹For bridge railing aggregate, maximum is 0.00.

²For source approval, maximum is 15.0. For Superpave asphalt aggregates and asphalt surface treatment, maximum is 10.0. For stone matrix asphalt (SMA) aggregates, maximum is 5.0.

³Applies only to thin lift asphalt coarse mix, thin lift asphalt Open Graded Friction Course (OGFC) and SMA.

1003.01.2.2. Magnesium Sulfate Soundness: For source approval coarse natural aggregates and recycled portland cement concrete (RPCC), the maximum soundness loss is 15 percent when subjected to 5 cycles of the magnesium sulfate soundness test.

1003.01.2.3. Los Angeles Abrasion: For coarse natural aggregates and RPCC source approval, maximum Los Angeles abrasion loss is 40.0 percent.

1003.01.2.4. Friction Rating: A friction rating is assigned for coarse aggregate (stone and lightweight aggregate) during source approval in accordance with Table 1003-3. The assigned friction rating is available from the Materials and Testing Section. Coarse gravel will only be evaluated for friction rating if the percent double face crushed is at least 75 percent; otherwise, it is assigned a rating of III.

**Table 1003-3
Aggregate Friction Rating**

Friction Rating ¹	Polish Value
I	> 37
II	35 to 37
III	30 to 34
IV	< 30

¹The Materials Engineer Administrator may adjust friction rating based upon pavement friction test results.

1003.01.3 Recycled, Reclaimed and Synthetic Aggregates:

1003.01.3.1 Recycled Portland Cement Concrete, (RPCC):

RPCC shall be from an approved source listed in the SiteManager[®] Producer/Supplier List. RPCC shall be crushed portland cement concrete screened and/or graded to meet the requirements of the specification for the intended use. For source approval, the raw material feedstock, the crushing operation, the quality control program, and the stockpiles will be inspected and approved by the District Laboratory Engineer. Quality must be maintained in order to retain source approval status. RPCC used for Interstate projects shall be stored in dedicated stockpiles used solely for one specific project. The RPCC for non-Interstate projects shall be stored in working stockpiles that are separate, identifiable, and have a minimum quantity of 5000 cubic yards. Stockpiles shall be reasonably free of asphalt concrete overlay material, reinforcing steel, joint material, base course material and other debris. If the Project Engineer certifies that the stockpile contains RPCC exclusively from DOTD pavements or structures, the Magnesium Sulfate soundness testing may be waived by the Materials Engineer Administrator.

1003.01.3.2 Reclaimed Asphalt Pavement, (RAP): RAP shall be from an approved source listed in the SiteManager[®] Producer/Supplier List. Mill or crush RAP in accordance with Section 509 and store in working stockpiles. Stockpiled materials shall be uniform and reasonably free of lightweight aggregate, debris, soil, and other foreign matter.

1003.01.3.3 Blended Calcium Sulfate, (BCS): BCS, a synthetic aggregate, shall be from an approved source listed in the SiteManager[®] Producer/Supplier List. The quality control program shall be approved by the Materials and Testing Section. The source shall provide documentation as evidence that the Department of Environmental Quality has given environmental clearance specifically for the intended use. Material pH shall

be a minimum of 5.0 when tested in accordance with DOTD TR 122. BCS may be blended at the source with an approved limestone or lime to meet pH requirements. The blended material shall be non-plastic and reasonably free from organic and foreign matter. Samples shall be taken from a dedicated stockpile at the point of origin and tested for gradation in accordance with DOTD TR 113.

1003.01.4 Properties for Portland Cement Concrete

Aggregates: For source approval, aggregates will be evaluated for both alkali silica and alkali carbonate reactivity.

1003.01.4.1 Alkali Silica Reactivity (ASR) of Sands and Gravels in Portland Cement Concrete: For source approval, aggregates for use in portland cement concrete are tested for alkali silica reactivity properties in accordance with ASTM C289. Aggregates categorized as “innocuous” (non-reactive) are allowed without restriction. Aggregates categorized as “potentially deleterious” or “deleterious” by ASTM C289 may be further appraised by ASTM C1260 testing, modified to use a minimum 0.53 water cement ratio and a portland cement from the Department’s Approved Materials List. If ASTM C1260 then designates aggregates as “potentially deleterious,” (less than 0.2 percent expansion) then use the maximum cementitious material substitutions as allowed in Section 901 for mixes incorporating these “potentially deleterious” aggregates. If a fly ash binary mix is selected, the fly ash must be class F. Alternatively, AASHTO PP65-11 may be applied to define ASR potential for gravel and sand for concrete mixtures. Concrete mixtures shall refrain from incorporating aggregates designated as “ASR deleterious.”

1003.01.4.2 Alkali Carbonate Reactivity (ACR) and Alkali Silica Reactivity (ASR) of Limestone in Portland Cement Concrete: For source approval, limestone aggregates for use in portland cement concrete will be evaluated for alkali carbonate reactivity (ACR) and alkali silica reactivity (ASR) utilizing AASHTO PP65-11. Aggregates determined to be innocuous (non-reactive) are allowed without restriction. For those aggregates determined to be potentially “ASR reactive,” use the maximum cementitious material substitutions as allowed in Section 901 for mixes incorporating these ASR reactive aggregates. If a fly ash binary mix is selected, the fly ash must be class F. Concrete mixtures shall refrain from incorporating limestone aggregates designated as “ASR deleterious.” Concrete mixtures shall not incorporate aggregates designated as “ACR reactive.”

1003.01.4.3 Organic Impurities in Fine Aggregate for Portland Cement Concrete: For source approval, fine aggregate for portland cement concrete is tested for organic impurities in accordance with AASHTO T 21. If the color is darker than the Organic Color No. 3 when tested, the fine aggregate is then tested in accordance with AASHTO T 71 for mortar strength. The measured compressive mortar strength shall be at least 95 percent of the referenced compressive mortar strength.

1003.02 NONPLASTIC EMBANKMENT. The maximum organic content is 4.0 percent when tested in accordance with DOTD TR 413.

1003.02.1 Sand: Sand embankment shall be nonplastic material with at least 75 percent passing the No. 4 (4.75 mm) sieve and not more than 15 percent passing the No. 200 (75 µm) sieve when tested in accordance with DOTD TR 112 and DOTD TR 113.

1003.02.2 Stone: Stone shall be a coarse stone from the Approved Materials List. Comply with the following gradation:

**Table 1003-4
Gradation for Nonplastic Embankment, Stone**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
2 inches (50 mm)	100
1 inch (25.0 mm)	55 - 100
3/4 inch (19.0 mm)	35 - 88
No. 4 (4.75 mm)	0 - 10

The maximum dry-rodded unit weight (mass) is 95 pounds per cubic foot (1520 kg/cu m) when tested in accordance with AASHTO T 19.

1003.02.3 Blended Calcium Sulfate, (BCS): Comply with the following gradation:

**Table 1003-5
Gradation for Nonplastic Embankment, BCS**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 1/2 inches (50 mm)	60 - 100
1 inch (25.0 mm)	40 - 80
3/4 inch (19.0 mm)	30 - 70
No. 4 (4.75 mm)	20 - 65
No. 200 (75 µm)	0 - 25

1003.03 BASE COURSE AGGREGATES.

1003.03.1 Stone: Use stone from the Approved Materials List, and comply with the following gradation:

**Table 1003-6
Gradation for Base Course Aggregates, Stone**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 ½ inches (37.5 mm)	100
1 inch (25 mm)	90 - 100
¾ inch (19.0 mm)	70 - 100
No. 4 (4.75 mm)	35 - 65
No. 40 (425 µm)	12 - 32
No. 200 (75 µm)	5 - 12

For material passing the No. 40 (425 µm) sieve, comply with the following requirements:

Liquid Limit (Max.)	25
Plasticity Index (Max.)	5

1003.03.2 Recycled Portland Cement Concrete: Comply with the following gradation:

**Table 1003-7
Gradation for Base Course Aggregates, RPCC**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 ½ inches (37.5 mm)	100
1 inch (25.0 mm)	90 - 100
¾ inch (19.0 mm)	70 - 100
No. 4 (4.75 mm)	35 - 65
No. 40 (425 µm)	12 - 32
No. 200 (75 µm)	0 - 8

Material passing the No. 40 (425 µm) sieve shall be non-plastic.

1003.03.3 Blended Calcium Sulfate, BCS: Comply with the following gradation:

**Table 1003-8
Gradation for Base Course Aggregates, BCS**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
2 inches (50 mm)	100
1 ½ inches (37.5 mm)	85 - 100
1 inch (25.0 mm)	80 - 100
¾ inch (19.0 mm)	60 - 100
No. 4 (4.75 mm)	10 - 40
No. 40 (425 µm)	0 - 20
No. 200 (75 µm)	0 - 15

1003.03.4 Permeable Base: For permeable asphalt base and permeable concrete base, use 100 percent crushed stone from the Approved Materials List, and comply with the following:

**Table 1003-9
Gradation for Permeable Base Aggregates (Stone)**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 inch (25 mm)	100
¾ inch (19.0 mm)	90 - 100
⅜ inch (9.5 mm)	20 - 55
No. 4 (4.75)	0 - 10
No. 8 (2.36)	0 - 5

1003.04 AGGREGATE FOR SUBGRADE LAYER.

1003.04.1 Stone or Recycled Portland Cement Concrete: For stone or recycled portland cement concrete comply with 1003.03.

1003.04.2 Blended Calcium Sulfate: Comply with the following gradation:

**Table 1003-10
Gradation for Subgrade Layer, BCS**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 inch (25.0 mm)	90 - 100
3/4 inch (19.0 mm)	70 - 100
No. 4 (4.75 mm)	25 - 75
No. 200 (75 μm)	0 - 25

1003.05 AGGREGATES FOR SURFACE COURSE.

1003.05.1 Stone, Recycled Portland Cement Concrete: For stone and/or recycled portland cement concrete, comply with the following:

**Table 1003-11
Gradation for Surface Course Aggregates, Stone/RPCC**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 ½ inches (37.5 mm)	100
3/4 inch (19.0 mm)	50 - 100
No. 4 (4.75 mm)	35 - 65
No. 40 (425 μm)	10 - 32
No. 200 (75 μm)	3 - 15

For material passing the No. 40 (425 μm) sieve, comply with the following requirements:

Liquid Limit (Max.)	25
Plasticity Index (Max.)	5

1003.05.2 Sand-Clay-Gravel: This material shall be a mixture of sand, clay, and either 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 following:

**Table 1003-12
Gradation for Surface Course Aggregates, Sand-Clay-Gravel**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 ½ inches (37.5 mm)	95 - 100
No. 4 (4.75 mm)	40 - 65
No. 200 (75 µm)	10 - 25

For material passing the No. 40 (425 µm) sieve, comply with the following after lime treatment:

Liquid Limit (Max.)	40
Plasticity Index	4-15

1003.05.3 Reclaimed Asphalt Pavement (RAP): Comply with the following:

**Table 1003-13
Gradation for Surface Course Aggregates, RAP**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
2 inches (50 mm)	100
No. 4 (4.75)	35 - 75

1003.06 AGGREGATES FOR ASPHALT MIXTURES.

Use only stone, gravel, slag, lightweight aggregates, and coarse and manufactured sand sources from the Approved Materials List. RAP and fine natural sand are required to be from an approved Producer/Supplier. All coarse aggregates for Stone Matrix Asphalt (SMA) shall be clean and durable crushed stone. Fine aggregate for SMA shall be 100 percent crushed stone manufactured sand.

Coarse aggregate is all material retained on or above the No. 4 (4.75 mm) sieve. Fine aggregate is all material passing the No. 4 (4.75 mm) sieve.

Comply with 1003.01.

1003.06.1 Coarse: For coarse aggregate stockpiles, determine Coarse Aggregate Angularity in accordance with DOTD TR 306 (Double Face), and determine Flat and Elongated in accordance with ASTM D4791.

1003.06.2 Fine: For fine aggregate stockpiles, determine Fine Aggregate Angularity in accordance with DOTD TR 121, and Sand Equivalent (SE) in accordance with DOTD TR 120. SE is not required for

manufactured sands (screenings), nor for fine aggregate stockpiles having 25 percent or more passing the No. 200 (75 µm) sieve.

1003.06.3 Natural Sand: Natural sand is non-plastic material consisting of clean, hard, durable, siliceous grains graded from coarse to fine and reasonably free from vegetative matter, clay balls, clay lumps, or other deleterious materials. Comply with Tables 1003-1 and 1003-2. The gradation shall have a maximum of 25 percent passing the No. 200 (75 µm) sieve. Clay lumps shall not exceed 0.5 percent by weight (mass) when sampled from the stockpile and tested in accordance with DOTD TR 119.

1003.06.4 Manufactured Sand: Manufactured sand (screenings) is the fine aggregate material generated during the crushing and processing of coarse aggregates. Sand Equivalent testing is not required; fine aggregate angularity testing is required.

1003.06.5 RAP: RAP shall be approved either at the time of removal from the roadway or in stockpiles. Make all stockpile quality control records available at the Project Engineer’s request. The records shall include RAP quantities and delivery date, quantities delivered to projects, daily moisture contents, weekly asphalt cement content, and weekly RAP G_{se} . Before feeding RAP into the plant, crush or screen all pieces that are larger than 2 inches (50 mm).

1003.06.6 Mineral Filler: Mineral filler shall be from the Approved Materials List, and shall consist of limestone dust, pulverized hydrated lime, portland cement, cement stack dust, or lime kiln dust. Mineral dust collected in bag houses or by other dust collectors at asphalt concrete plants is not classified as mineral filler. Cement stack dust shall consist of material collected from waste rotary kiln gases discharged through a collector of a cement plant. Comply with the following:

**Table 1003-14
Gradation for Asphalt Aggregates, Mineral Filler**

U. S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
No. 30 (600 mm)	100
No. 80 (180 mm)	95 - 100
No. 200 (75 µm)	70 - 100
No. 270 (53 µm)	60 - 100

1003.06.7 Lightweight Aggregate: Lightweight aggregate shall consist of cubical fragments which are of uniform density and are free from an excess of foreign matter.

1003.07 AGGREGATES FOR ASPHALT SURFACE TREATMENT. Use crushed gravel, crushed stone, or lightweight aggregate from the Approved Materials List and comply with 1003.01.

Crushed gravel Size 1 and Size 2 shall have 60 percent minimum crushed retained on the No. 4 (4.75 mm) sieve. Crushed gravel Size 3 shall have 75 percent crushed retained on the No. 4 (4.75 mm) sieve. Determine the percent crushed in accordance with DOTD TR 306.

Comply with the following gradation:

**Table 1003-15
Gradation for Asphalt Surface Treatment**

U. S. Sieve	Metric Sieve	Size 1		Size 1A	Size 2	Size 3
		Slag or Stone Aggregate (Size No. 5)	Crushed Gravel ¹ or Lightweight Aggregate	Slag or Stone Aggregate	All Aggregate	All Aggregate
1 1/2 inch	37.5 mm	100	100	100	—	—
1 inch	25.0 mm	90-100	95-100	100	—	—
3/4 inch	19.0 mm	20-55	60-90	85-100	100	—
1/2 inch	12.5 mm	0-10	—	25-40	95-100	100
3/8 inch	9.5 mm	0-5	0-15	5-15	60- 80	95-100
No. 4	4.75 mm	—	0-5	—	0-5	20-50
No. 8	2.36 mm	—	—	—	0-2	0-2
No. 200 ²	75 µm ²	0-1	0-1	0-1	—	—

¹ Uncrushed gravel may be used for Size 1 aggregate if more than one application of Asphalt Surface Treatment is required.

² If the material passing the No. 200 (75 µm) sieve consists of only dust from crushing and handling, and is essentially free of clay, then the percentage passing the No. 200 (75 µm) sieve shall be 0 - 2 percent.

1003.08 AGGREGATES FOR PORTLAND CEMENT CONCRETE AND MORTAR. Use aggregates from the Approved Materials List in portland cement concrete and mortar.

1003.08.1 Fine Aggregate: Sand shall be natural silica sand.

For fine aggregate used in all portland cement concrete except Types B and D gradations, conform to the following gradation:

**Table 1003-16
Gradation for Portland Cement Concrete Sand**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
3/8 inch (9.5 mm)	100
No. 4 (4.75 mm)	95 - 100
No. 16 (1.18 mm)	45 - 90
No. 50 (300 μm)	7 - 30
No. 100 (150 μm)	0 - 7
No. 200 (75 μm)	0 - 3

**Table 1003-17
Gradation for Mortar Sand**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
No. 4 (4.75 mm)	100
No. 8 (2.36 mm)	95 - 100
No. 100 (150 μm)	0 - 25
No. 200 (75 μm)	0 - 10

1003.08.2 Coarse Aggregate:

For bridge decks, use coarse aggregates with a Friction Rating of I, II, or III as defined in 1003.01.2.4.

1003.08.2.1 Uncrushed Coarse Aggregate:

For uncrushed coarse aggregate used in all portland cement concrete except Types B and D gradations, comply with Table 1003- 18.

**Table 1003-18
Gradation for Portland Cement Concrete, Uncrushed
Aggregates**

Percent Passing				
US Sieve	Metric Sieve	Size 57M	Size 89M	Size 67
2 1/2 inch	63 mm	—	—	—
2 inch	50 mm	—	—	—
1 1/2 inch	37.5 mm	100	—	—
1 inch	25.0 mm	90-100 ¹	—	100
3/4 inch	19.0 mm	—	100	90-100
1/2 inch	12.5 mm	25-60	90-100	—
3/8 inch	9.5 mm	—	—	20-55
No.4	4.75 mm	0-10	15-60	0-10
No.8	2.36 mm	0-5	0-30 ²	0-5
No. 16	1.18 mm	—	0-5	—
No. 200	75 µm	0-1	0-1	0-1

¹ ASTM C33 No. 57 designation requires 95 – 100.

² ASTM C33 No. 89 designation requires 0 – 15.

1003.08.2.2 Crushed Coarse Aggregate: For crushed coarse aggregate used in all portland cement concrete, except Types B and D gradations, comply with the uncrushed coarse aggregate gradation of 1003.08.2.1, except that when the material finer than the No. 200 (75 µm) sieve consists of the dust fraction from crushing, essentially free of clay, this percentage shall be 0-2 percent. When the total material passing the No. 200 (75 µm) sieve from the coarse and fine aggregates does not exceed 5 percent, the percent passing the No. 200 (75 µm) sieve from the crushed coarse aggregate may be increased to 3 percent.

1003.08.3 Portland Cement Concrete Aggregates - Combined Gradations: For the combined aggregates for the proposed portland cement concrete combined gradation mix, the percent retained based on the dry weight (mass) of the total aggregates shall meet the requirements of Table 1003-19 for the type of concrete specified in Table 901-3.

**Table 1003-19
Combined Gradations for Portland Cement Concrete
Aggregates**

U.S. Sieve	Metric Sieve	Percent Retained of Total Combined Aggregates	
		Gradation Type	
		Type B	Type D
2 1/2 inch	63 mm	0	0
2 inch	50 mm	0	0-20
1 1/2 inch	37.5 mm	0-20	0-20
1 inch	25.0 mm	0-20	5-20
3/4 inch	19.0 mm	5-20	5-20
1/2 inch	12.5 mm	5-20	5-20
3/8 inch	9.5 mm	5-20	5-20
No. 4	4.75 mm	5-20	5-20
No. 8	2.36 mm	5-20	5-20
No. 16	1.18 mm	5-20	5-20
No. 30	600 µm	5-20	5-20
No. 50	300 µm	0-20	0-20
No. 100	150 µm	0-20	0-20
No. 200	75 µm	0-5	0-5

Note: For the sieves in the shaded areas, the sum of any two adjacent sieves shall be a minimum of 12 percent of the total combined aggregates.

Sample and test each type of aggregate stockpile to be used in the proposed mixture individually. Mathematically determine the percent of total combined aggregates retained using the proportions of the combined aggregate blend. Base all gradation calculations on percent of dry weight (mass).

1003.09 GRANULAR MATERIAL. Granular material shall be non-plastic siliceous material complying with 1003.01 and the following gradation:

**Table 1003-20
Gradation for Granular Material**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1/2 inch (12.5 mm)	100
No. 10 (2.00 mm)	75 - 100
No. 200 (75 µm)	0 - 10

1003.10 BEDDING MATERIAL. Bedding materials shall consist of stone, recycled portland cement concrete, or a mixture of either recycled portland cement concrete, gravel, crushed slag, or stone combined with granular material. Stone shall be from the Approved Materials List.

1003.10.1 Stone or Recycled Portland Cement Concrete:

Comply with 1003.03.

1003.10.2 Sand-Aggregate:

The sand-aggregate material shall be a natural or artificial mixture of sand and gravel, recycled portland cement concrete, or other approved aggregate listed in this subsection. Material passing the No. 40 (425 µm) sieve shall be non-plastic. The mixture shall be free of foreign matter as determined by visual inspection. Comply with the following gradation prior to placement.

**Table 1003-21
Gradation for Bedding, Sand-Aggregate**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 ½ inches (37.5 mm)	90 - 100
¾ inch (19.0 mm)	70 - 85
⅜ inch (9.5 mm)	40 - 60
No. 4 (4.75 mm)	15 - 40
No. 16 (1.19 mm)	3 - 15
No. 200 (75 µm)	0 - 5

1003.10.3 Mixtures: Mix recycled portland cement concrete, gravel, or stone with 35±5 percent granular material by volume. Verify the mixture quantities by proof of material deliveries.

1003.10.3.1 Gravel: Comply with the following gradation.

**Table 1003-22
Gradation for Bedding, Gravel**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 ½ inches (37.5 mm)	95 - 100
No. 4 (4.75 mm)	0 - 15
No. 200 (75 µm)	0 - 2

1003.10.3.2 Recycled Portland Cement Concrete or Stone:
Comply with the following gradation:

**Table 1003-23
Gradation for Bedding, (RPCC or Stone)**

U.S. (Metric) Sieve Size	Percent Passing By Weight (Mass)
1 ½ inches (37.5 mm)	95 - 100
¾ inch (19.0 mm)	40 - 85
No. 4 (4.75 mm)	0 - 15

1003.10.3.3 Granular Material: Comply with 1003.09.

1003.11 BACKFILL. Stone shall comply with 1003.03.1. Recycled portland cement concrete, RPCC, shall comply with 1003.03.2. Reclaimed asphalt pavement, RAP, shall comply with 1003.05.3. For source approval, comply with 1003.01.

Section 1005

Joint Materials for Pavements and Structures

1005.01 PREFORMED JOINT FILLERS.

1005.01.1 Resilient Bituminous Types: Comply with AASHTO M 213.

1005.01.2 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.

Boards shall not vary from specified dimensions in excess of the following tolerances:

	<u>Tolerance, inches</u>	<u>Tolerance, mm</u>
Thickness	-0, +1/16	-0, +2
Depth	±1/8	±3
Length	±1/4	±6

The load required to compress the material in an oven-dry condition to 50 percent of its original thickness shall not exceed 1750 psi (12 MPa).

1005.01.3 Bituminous Type: Comply with ASTM D994.

1005.01.4 Asphalt Ribbon: Filler shall consist of preformed strips of bitumen and inert filler material conforming to the following requirements:

Thickness, mm	3-5
Depth tolerance, mm	±3
Weight, kg/100 sq m, Min.	245
Tensile Strength, kg/100 mm width, Min.	90
Bitumen, % by wt (ASTM D545), Min.	60

The tensile strength is determined by pulling a 25-by-150-mm sample at a 500-mm/min separation rate.

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.

Backer material of the appropriate size shall comply with ASTM D5249, Type 3.

1005.01.5 Closed Cell Polyethylene Joint Filler: Comply with ASTM D7174, Type I. This material shall be used with an adhesive-lubricant. Joint fillers and adhesive-lubricants shall be from the Approved Materials List.

1005.01.6 Rubber: Comply with AASHTO M 153, Type IV.

1005.02 POURED AND EXTRUDED JOINT SEALANT. Provide all materials in containers labeled with the name and address of the manufacturer, the trade name of the sealant, classification of the sealant (i.e., non-sag or self-leveling), batch number, manufacture date, and expiration date.

1005.02.1 Hot Poured Rubberized Asphalt Type: Comply with ASTM D6690, Type II. The sealant shall be from the Approved Materials List. Backer materials of the appropriate size shall comply with ASTM D5249, Type I.

1005.02.2 Polyurethane Sealants: The system shall be either a 1- or 2-component, pourable or extrudable sealant, with required primers and backer material. It shall cure to a solid rubber-like material able to withstand both tension and compression. Sealant shall comply with the requirements of Table 1005-1.

The system shall be from the Approved Materials List. A backer material of the appropriate size shall comply with ASTM D5249, Type 2 without the heat resistant requirement or Type 3.

**Table 1005-1
Polyurethane Sealants**

Property	Test Method	Requirement
Flow @ 60°C, 5 hr., mm, Max	ASTM D5329	3.0
Tack-Free Time, h, Max	ASTM C679	72
Bond, Defects, mm, Max	ASTM D5893	6.0
Resilience, %, Min.	ASTM D5329	75
Ball Penetration	ASTM D5329	5 – 20
Resilience (after heat aging @ 70 +/- 1°C for 24 +/- 2h), %, Min.	ASTM D5329	75
Artificial Weathering	ASTM D5893	Pass
Ozone Resistance (Exposure to 100 pphm ozone for 100 h @ 40°C, sample under 20% strain or bent loop)	ASTM D1149	No Cracks
Weight (mass) Loss, %, Max.	ASTM C792	10
Infrared Charts	DOTD TR610	
Activator		Pass
Base		Pass
¹ All specimens shall be cured at standard laboratory conditions for a minimum of 72 hours prior to beginning any test.		

1005.02.3 Silicone Sealant (Single Component): Comply with ASTM D5893. The system shall be from the Approved Materials List.

1005.02.4 Silicone Sealant (Two Component - Rapid Cure): Comply with ASTM D5893 and meet the requirements for single component sealants when mixed and prepared in accordance with the manufacturer's recommendations. The system shall be from the Approved Materials List.

A backer material of the appropriate size shall conform to ASTM D5249, Type 3.

1005.03 PREFORMED ELASTOMERIC COMPRESSION JOINT SEALS.

1005.03.1 Seals: The system shall be from the Approved Materials List. The uncompressed depth of the seal shall be equal to or greater than the uncompressed width of the seal. The actual width of the seal shall not be less than the nominal width of the seal.

The system shall comply with ASTM D2628, except that the ozone resistance may be determined by the bent loop test method.

1005.03.2 Adhesive-Lubricant: The adhesive-lubricant shall comply with ASTM D4070 and shall be from the Approved Materials List.

1005.04 COMBINATION JOINT FORMER/SEALER.

1005.04.1 Description: This joint former/sealer is intended for use in simultaneously forming and sealing a weakened plane in portland cement concrete pavements.

The material shall consist of an elastomeric strip permanently bonded either mechanically or chemically at the top of each of two rigid plastic side frames or mechanically bonded at the top of the two rigid plastic side frames and covered with a removable plastic top cap. The side frames shall be of such configuration that when the sealer is inserted into fresh concrete and vibrated, a permanent bond forms between side frames and concrete.

1005.04.2 Material Requirements:

1005.04.2.1 Elastomer: The elastomer strip portion of the material shall be manufactured from vulcanized elastomeric compound using polymerized chloroprene as the base polymer, and shall comply with the requirements of Table 1005-2.

**Table 1005-2
Elastomer for Combination Joint Former / Sealer**

Property	ASTM Test Method	Requirements	
		Polymerized Chloroprene	Thermoplastic Vulcanizate
Tensile Strength, kPa, Min.	D 412	12,400	7,400
Elongation at Break, % Min.	D 412	200	400
Hardness, Shore A	D 2240	65 ± 10	65 ± 10
Properties after Aging, 70 h @ 100°C	D 573		
Tensile Strength, % Loss, Max.		20	20
Elongation, % loss, Max.		25	25
Hardness, pts. increase, Max.		10	10
Ozone Resistance, 20% strain or bent loop, 300 pphm in air, 70 h @ 40°C	D 1149	no cracks	no cracks
Oil Swell, IRM 903, 70 h @ 100°C, wt change, % Max.	D 471	45	75

1005.04.2.2 Bond of Elastomer to Plastic: The force required to shear the elastomer from the plastic shall be a minimum of 5.0 pounds per linear inch of sealer when tested in accordance with DOTD TR 636.

1005.04.2.3 Bond of Plastic to Cement Mortar: The force required to separate the cement mortar from the plastic shall be a minimum of 5.0 pounds per linear inch of sealer when tested in accordance with DOTD TR 636.

1005.05 FABRICATED SEALS AND TROUGHS.

1005.05.1 Preformed Neoprene Joint Seal: Provide an extruded neoprene material conforming to ASTM D2628 with the following exceptions:

1. Ozone resistance may be determined by the bent loop method.
2. Omit the recovery and the compression-deflection tests.

1005.05.2 Preformed Silicone Joint Seal: Comply with Tables 1005-3 and 1005-4.

**Table 1005-3
Preformed Silicone Joint Seal Properties**

Preformed Silicone Seal Property	ASTM Test Method	Value
Durometer (Shore A)	D2240	55 +/- 5
Tensile Strength	D412	1000 psi. minimum
Elongation	D412	400% minimum
Tear Strength (Die B)	D624	100 ppi. minimum
Compression set at 212°F, 70 hrs.	D395	30% maximum
Heat Aged at 212°F, 70 hrs.		
Durometer (Shore A)	D573	5 max. points loss
Tensile Strength	D573	10 max. % loss
Elongation	D573	10 max. % loss
U.V. Radiation Resistance	C793	No cracking, ozone chalking or degradation

The locking adhesive shall be non-sag, high modulus silicone adhesive conforming to the following specifications:

**Table 1005-4
Adhesive Properties**

Adhesive Property	ASTM Test Method	Value
Durometer (Shore A)	C661	25 +/- 5
Peel Adhesion to Substrates after 7 days water immersion	C794	13 pli.
Tensile Strength	D412	200 psi. minimum
Elongation	D412	450% minimum
Tack Free Time	C679	30 minutes maximum
Cure Time 1/4" Bead (through 1/4" thickness) at 75°F, 50% R.H.	C679	16 hours maximum
U.V. Radiation Resistance	C793	No cracking, ozone chalking or degradation

1005.05.3 Fabricated Troughs and Membranes: Provide troughs and membranes consisting of reinforced elastomeric virgin polychloroprene (neoprene) with excellent environmental resistance to weather, salts, chlorides, oxygen, ozone, ultraviolet radiation, water, and common roadway substances such as gasoline and products of combustion.

Provide troughs and membranes having 1/4 inch minimum thickness. Elastomeric sheets shall be internally reinforced with synthetic or natural fabric. Fabric shall consist of either a single layer of 14.6 ounce woven nylon

fabric, or the equivalent in multiple layers of woven nylon fabric, laminated between two or more layers of neoprene.

Conform to the following:

**Table 1005-5
Elastomeric Sheet Properties**

Elastomeric Sheet Property	ASTM Test Method	Value
Durometer (Shore A)	D2240	60 +/- 5
Tensile Strength	D412	2000 psi. minimum
Elongation at Break	D412	250% minimum
Heat Aged at 212°F, 70 hrs.		
Durometer (Shore A)	D573	+10, -0 point change
Tensile Strength	D573	20 max. % loss
Elongation at Break	D573	20 max. % loss
Tear Strength (Die C)	D624	120 ppi. minimum
Oil Swell at 212°F, 70 hrs. using ASTM Oil No. 3		
Change in Weight	D471	45 maximum % gain
Change in Volume	D471	120 maximum % gain
Change in Tensile Strength	D471	70 maximum % loss
Change in Elongation at Break	D471	55 maximum % loss
Ozone Resistance at 100°F, 100 hrs., 100 PPHM Ozone, under 20% strain	D1149	No cracks when tested with Method "B"
Breaking Strength of Finished Fabric: Take sample transverse to trough centerline, or random sample from curtain.	D5034	700 ppi. minimum

1005.06 JOINT MATERIALS FOR TRANSVERSE EXPANSION JOINT (TYPE EJ-1 1/2 Inches).

1005.06.1 Type EJ-1 1/2 Inches: System shall be an approved product listed on the Approved Materials List and comply with ASTM D7174, Type I.

1005.06.2 Type EJ-4 Inches: System shall comply with ASTM D7174, Type I, with the following exceptions. The material shall be a preformed polyurethane (or other approved equal) foam, and the preformed cross section shall be semi-open cell, homogenous without laminations. The load required to compress test specimens by 25 percent (to 75 percent of original thickness) shall not be less than 3 psi (21 kPa).

Dimensional tolerances shall be:

	<u>Tolerance, inches (mm)</u>	
Thickness:	+/- 5%	(+/- 5%)
Depth:	+/- 0.4	(+/- 10)
Length:	+3.0, -0	(+80, -0)

The cross section shape shall allow easy installation in the pavement joint with parallel sides and shall be sufficiently self-locking to prevent the material from floating out of the joint. The molded polyurethane foam shall be free of defects and internal voids greater than 1/2 inch (13 mm). When the joint filler is used to form the joint, the self-locking feature will not be required and the joint filler will extend full depth.

Use lubricant-adhesive recommended by the joint filler manufacturer and apply according to the manufacturer's directions.

1005.07 WATERSTOPS.

1005.07.1 Copper Waterstops: Comply with ASTM B370, soft temper.

1005.07.2 Polyvinyl Chloride (PVC) Waterstops: Comply with U. S. Army Corps of Engineers' Specification CRD-C 572.

1005.07.3 Rubber Waterstops: Comply with U. S. Army Corps of Engineers' Specification CRD-C 513.

Section 1007 Metal Pipe

1007.01 CORRUGATED STEEL PIPE AND PIPE ARCH. Metal pipe shall be qualified products as determined by the Construction Fabrication Unit. Comply with the requirements of Type I (culvert pipes, circular section) and Type II (culvert pipes, other than circular section) of AASHTO M 36 amended as follows:

1. Pipe and pipe arch shall be galvanized in accordance with AASHTO M 218.

2. Elbows, tees, and other in-line fittings shall be fabricated from sheets of the same thickness and coating material as the pipe or pipe arch to which they are joined. Flared end sections shall be as specified.

3. Shop-formed elliptical pipe and shop-strutted pipe shall be furnished when specified.

4. For helical pipe, no coil splices at pipe manufacturing plants will be allowed for pipe 30 inches in diameter or less.

5. Helical pipe shall have annular ends and shall have the ends of seams welded a minimum of 2 inches. Helical pipe ends shall be rerolled a minimum of two full standard corrugations to the same corrugation depth as the pipe when used with the appropriate jointing system.

6. Pipe arch dimensions shall comply with AASHTO M 245 and Table 1007-1 of this section.

7. A minimum of two approved lifting lugs shall be provided on pipe larger than 30 inches in diameter, pipe arch larger than 30 inches in equivalent diameter, and any diameter of pipe or pipe arch longer than 30 feet.

8. Damaged metallic coating shall either be recoated or shall be repaired with a cold galvanizing repair compound from the Approved Materials List.

1007.02 BITUMINOUS COATED CORRUGATED STEEL PIPE AND PIPE ARCH. These conduits shall be coated in accordance with AASHTO M 190 amended as follows:

1. AASHTO M 36 is amended in accordance with 1007.01
2. Coating shall be Type A, fully bituminous coated.

1007.03 BITUMINOUS COATED CORRUGATED STEEL UNDERDRAIN PIPE. Pipe and coupling bands shall comply with the requirements of Type III (underdrain pipes) of AASHTO M 36. The pipe shall be coated with a bituminous material in accordance with AASHTO M 190, Type A coating, except the minimum coating thickness shall be 0.03 inch. The specified minimum diameter of perforations shall apply after coating. Minimum sheet thickness shall be 0.064 inch (16 gage).

1007.04 STRUCTURAL PLATE FOR PIPE, PIPE ARCH AND ARCH. Comply with AASHTO M 167 for steel, and AASHTO M 219 for aluminum.

1007.05 CORRUGATED ALUMINUM PIPE AND PIPE ARCH. Comply with AASHTO M 196 with the following exceptions:

1. Helical pipe shall have annular ends and shall have the ends of seams welded a minimum of 2 inches. Helical pipe ends shall be rerolled a minimum of two full standard corrugations to the same corrugation depth as the pipe when used with the appropriate jointing system.

2. Pipe arch dimensions shall comply with Table 1007-1.

3. A minimum of two approved lifting lugs shall be provided on pipe larger than 30 inches diameter, pipe arch larger than 30 inches equivalent diameter, and any diameter of pipe or pipe arch longer than 30 feet.

4. Aluminum alloy sheet used in fabricating pipe shall conform to the applicable requirements of AASHTO M 197 for Alclad Alloy 3004-H34 for annular pipe, and Alclad Alloy 3004-H32 for helical pipe.

1007.06 CORRUGATED ALUMINUM UNDERDRAIN PIPE. Pipe and coupling bands shall comply with the requirements of Type III (underdrain pipes) of AASHTO M 196. Minimum sheet thickness shall be 0.060 inch (16 gage).

1007.07 PIPE ARCH DIMENSIONS. Pipe arch dimensions shall comply with Table 1007-1. Pipe arch tolerances shall comply with the plans.

**Table 1007-1
Metal Pipe Arch Dimensions (Inches)**

	Steel & Aluminum	Steel
Round Equivalent (Inches)	2 2/3 in. by 1/2 in. Corrugation	3 in. by 1 in. or 5 in. by 1 in. Corrugation
15	17 x 13	—
18	21 x 15	—
21	24 x 18	—
24	28 x 20	—
30	35 x 24	—
36	42 x 29	40 x 31
42	49 x 33	46 x 36
48	57 x 38	53 x 41
54	64 x 43	60 x 46
60	71 x 47	66 x 51
66	77 x 52	73 x 55
72	83 x 57	81 x 59
78	—	87 x 63
84	—	95 x 67
90	—	103 x 71
96	—	112 x 75
102	—	117 x 79
108	—	128 x 83
114	—	137 x 87
120	—	142 x 91

1007.08 PIPE JOINT SYSTEMS. Metal pipe joint systems shall comply with 1018.03 and shall be as shown on the plans. A Type 2 or 3 joint system may be substituted for a Type 1 joint system; a Type 3 joint system may be substituted for a Type 2 joint system. For Type 1 joints, provide at least one line of approved gasket material under the band on each pipe end.

1007.08.1 Coupling Bands: Coupling bands for joining metal conduit shall be approved by the DOTD Materials Engineer Administrator and shall comply with AASHTO M 36 for steel conduit and AASHTO M 196 for aluminum conduit with the following modifications:

Bands shall be of an approved design and shall be fabricated from metal sheets of the same material as the conduit. The band thickness shall be the same as the conduit thickness with a maximum of 12 gage. Coating shall be the same as used on the conduit. Minimum band width shall be 12 inches.

1007.08.2 Steel Banding Rods: Comply with AASHTO M 270, Grade 36 (M 270M, Grade 250). Welding of rods will not be permitted. No more than two splices will be allowed.

1007.08.3 Hardware: Hardware shall be galvanized in accordance with ASTM A153 or B633, Class Fe/Zn 25 or an approved mechanical galvanizing process complying with ASTM B695 that provides the same coating thickness.

1007.08.4 Gaskets: Gaskets for pipe joint systems shall be from the Approved Materials List.

1007.08.4.1 Rubber Gaskets: Comply with ASTM C443. Each rubber gasket shall be identified with a batch or lot number. Gasket cross section shall be the following:

For pipe 36 inches in diameter or less, gasket cross section shall be 13/16-inch.

For pipe greater than 36 inches in diameter, with 1/2-inch deep corrugations, gasket cross section shall be 7/8-inch.

For pipe greater than 36 inches in diameter with 1-inch deep corrugations, gasket cross section shall be 1 3/8-inches.

1007.08.4.2 Preformed Flexible Gaskets: Comply with ASTM C990. Gasket material shall be a minimum of 1 inch for 1/2-inch corrugation depth, and a minimum of 1 1/2 inches for 1-inch corrugation depth.

1007.09 CAST IRON SOIL PIPE AND FITTINGS. Comply with ASTM A74. Joints shall be made with rubber gaskets complying with ASTM C564.

1007.10 DUCTILE IRON PIPE. Comply with ANSI A 21.51.

1007.11 BLACK AND GALVANIZED WELDED AND SEAMLESS STEEL PIPE. Steel pipe for ordinary uses shall comply with ASTM A53.

Section 1009

Reinforcing Steel, Strand, and Wire Rope

1009.01 REINFORCING STEEL. Comply with the “Buy America Provisions” in 106.04.

Use reinforcing steel for concrete complying with the following unless otherwise specified. Use Grade 60 reinforcing steel in bridge structures and other structures. Grade 40 may be used in portland cement concrete pavement (PCCP) structures. Comply with specifications below, as applicable.

Use rebar chairs, ties, and miscellaneous accessories compatible with the reinforcement.

1009.01.1 Billet-Steel: Deformed and plain bars shall comply with ASTM A615 and shall be from the Approved Materials List.

1009.01.2 Rail-Steel and Axle-Steel: Deformed and plain bars shall comply with ASTM A996.

1009.01.3 Cold-Drawn Steel Wire: Plain wire shall comply with ASTM A1064 with the following amendment: For material testing over 110,000 psi tensile strength in high strength applications such as spirals and ties, reduce the 25 percent minimum reduction in area by 5 percent for each 10,000 psi increment of tensile strength exceeding 110,000 psi.

Deformed wire shall comply with ASTM A1064.

1009.01.4 Steel Welded Wire Reinforcement: Comply with ASTM A1064. Use deformed reinforcement for bridge structures.

1009.01.5 Stainless Deformed Reinforcing Steel: Conform to ASTM A955, Type 316LN UNS Designation S31653, UNS Designation S31803, or UNS Designation S32304.

1009.01.6 Galvanized Deformed Reinforcing Steel: Comply with ASTM A767.

1009.01.7 Epoxy Coated Reinforcing Steel and Patching Materials: Use products from the Approved Materials List and comply with ASTM A775.

1009.02 BAR SUPPORTS AND TIE WIRES. Bar supports (chairs) shall be metal wire. The bottom of bar supports shall be coated with an acceptable epoxy or plastic material for a minimum distance of 2 inches from the point of contact with the forms. Metal chairs in contact with the metal forms shall be hot-dipped galvanized, electroplated with zinc (GS Grade), epoxy coated, or stainless steel.

Metal tie wires and bar supports shall be coated fully with an acceptable epoxy, plastic or nylon material if using epoxy coated steel.

1009.03 DOWEL BARS.

1009.03.1 PAVEMENT DOWEL BARS: Steel dowel bars shall comply with 1009.01.1, 1009.01.2, or 1009.01.3. Dowels shall have a uniformly round cross section and shall be saw cut, smooth and free of burrs, projections and deformations.

Coated dowel bars shall be undercoated with an adhesive and given an outer coat of polypropylene or polyethylene. Coated dowel bars shall comply with AASHTO M 254. For PCCP, place coated dowel bars in approved dowel bar assemblies in accordance with the plans.

1009.04 STEEL STRAND FOR PRE-STRESSING AND POST-TENSIONING. Strand shall comply with ASTM A416. The strand manufacturer shall submit to the Construction Section three copies of Certificates of Analysis of all test results as stipulated in ASTM A416, and as part of this certificate, shall provide the modulus of elasticity of that particular mill heat of strand. The Department reserves the right to conduct inspections at the site of manufacture and to have all tests witnessed by its inspector. The data from the manufacturer's typical curve shall be used when computing the required elongation for each strand.

1009.05 ANCHORAGES AND HARDWARE FOR PRESTRESSING. Anchorages, including hold down and miscellaneous hardware, shall be sampled in accordance with the Materials Sampling Manual and submitted to the Construction Fabrication Engineer for acceptance after evaluation or testing.

1009.06 WIRE ROPE. Wire rope shall comply with Federal Specifications RR-W-410G or the latest federal specifications and the following:

Comply with Table 1009-1 when selecting the type and classification of wire rope.

When wire joints are necessary, they shall be electrically butt-welded; and in the stranding operation, no two joints in any strand shall be closer than 25 feet, except for filler wires.

**Table 1009-1
General Wire Rope Classification and Usage**

Type	Classification	Usage
I	1. (6x7)	Haulage rope, for use where strength and durability are desirable, but not much bending is required. May be used as single line for pulling load, but not suitable for sheave work.
	2. (6x19)	Most widely used for cranes, derricks, dredges, draglines and scrapers. This classification is very rugged, withstands abrasion well and is generally suited for all-around use.
	3. (6x37)	For hoisting rope where maximum flexibility is required; for instance, hoisting rope that runs over small sheave on draglines.
II	1. (8x19)	High speed elevator rope.
III (Marine)	1. (6x6)	Deck lashing ropes.
	2. (6x12)	Running ropes.
	3. (6x24)	Mooring lines.
	4. (6x3x7)	Spring lay.
	5. (6x3x19)	Spring lay.
	6. (6x42)	Tiller or hand control rope.
IV (Special)	1. (18x7)	Nonrotating (for drill rigs)

1009.07 WIRE ROPES FOR MOVABLE BRIDGES. See Sections 821.07.31, 821.07.32, and 821.07.33.

Section 1011

Concrete Curing Materials, Admixtures, and Special Finishes

1011.01 CURING MATERIALS.

1011.01.1. Liquid Membrane-Forming Compounds: This material shall comply with ASTM C309 and shall be from the Approved Materials List. Allowable types are Type 2 white-pigmented or Type 1-D, clear or translucent with a fugitive dye, as specified.

1011.01.2 Moist Cure Materials:

1011.01.2.1 Sheet Material: Use sheet materials for curing concrete meeting the physical and performance requirements of ASTM C171.

1011.01.2.2 Burlap Cloth: Use burlap cloth made from Jute or Kenaf complying with AASHTO M 182, Class 3.

1011.02 ADMIXTURES.

1011.02.1 Physical Requirements: Use concrete admixtures from the Approved Materials List, which comply with Table 1011-2 when tested in accordance with DOTD TR 224.

1011.02.2 Chemical Requirements: 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.

1011.02.3 Acceptance Testing: The admixture shall be tested by analytical infrared (IR) spectroscopy in accordance with DOTD TR 610. The IR spectrum shall compare favorably to the standard IR spectrum of the original material tested and on file at the Materials and Testing Section. The percent solids by weight, determined in accordance with DOTD TR 524, shall not deviate more than ± 10 percent from that of the original approved material and shall not exceed the manufacturer's stated limits. Tests to determine rate of hardening, compressive strength or other properties may be made at any time during the work to ensure continued compliance with these specifications.

1011.03 SPECIAL FINISH FOR CONCRETE. Use material from the Approved Materials List. The material shall provide a uniform-textured finish complying with these specifications. Follow the manufacturer's recommendation for method of mixing, method of application, and rate of

application, except that the rate shall not exceed 60 square feet per mixed gallon. Modifications to the manufacturer's recommendations will not be permitted.

Use a one-component coating system containing pigments, sand and resins. The coating shall contain fungicides to prevent the growth of mildew, mold, etc. 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 (similar to federal color # 36440 from Federal Standard 595C) at the Materials and Testing Section.

For project samples, comply with Table 1011-1.

**Table 1011-1
Special Finish Sample Acceptance**

PROPERTY	TEST METHOD	SPECIFICATIONS ACCEPTANCE¹
Density	ASTM D1475	Target Value ± 0.25 lbs/gal
Viscosity	ASTM D562	Target Value ± 5 KU
Dry to Touch	ASTM D1640	Target Value $\pm 10\%$
Dry Through	ASTM D1640	Target Value $\pm 10\%$
Solids percent	ASTM D2369	Target Value $\pm 2\%$
Volatile percent	ASTM D2369	Target Value $\pm 2\%$
Infrared Spectrum	DOTD TR 610	²

¹Target Values shall be established by the Materials Section upon qualification of the paint system.

²Standards for infrared spectrum shall be kept on file and compared to project samples for acceptance purposes.

For source approval, comply with the following:

1. The average number of cycles to failure shall be not less than 50 cycles when tested in accordance with ASTM C666, Method A. 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 G154.

**Table 1011-2
Physical Requirements for Admixtures**

Property	Test Method	Water-Reducing			High Range Water Reducing		Set Accelerating	Specific Performance
		Air Entraining	Normal Set	Set Retarding	Normal Set	Set Retarding		
Unit Water Content, Max. % of Control Min. % of Control Air Content, %, Total	DOTD TR 202	90 — 5 ± 1	95 89 0 to 3	95 89 0 to 3	88 — 0 to 3	88 — 0 to 3	— — 0 to 3	— — —
Time of Setting, allowable deviation from control, hr:min.	AASHTO T 197							
Initial: at least		—	—	1:30 later	—	1:30 later	1:00 earlier	1:00 earlier
not more than		—	1:00 earlier nor 1:30 later	3:30 later	1:00 earlier nor 1:30 later	3:30 later	3:30 earlier	1:30 later
Final: at least		—	—	—	—	—	1:00 earlier	1:00 earlier
not more than		—	1:00 earlier or 1:30 later	3:30 later	1:00 earlier or 1:30 later	3:30 later	—	1:30 later
Compressive Strength, Min. % of Control	DOTD TR 230							
1 Day		—	—	—	140	125	125	—
3 Days		—	—	—	125	125	100	90
7 Days		85	105	105	115	115	100	90
28 Days		85	105	105	110	110	100	90
6 Months		—	—	—	100	100	—	90
1 year		—	—	—	100	100	—	90
Flexural Strength, Min. % of Control	AASHTO T 97							
3 Days		—	—	—	110	110	—	90
7 Days		—	—	—	100	100	100	90
28 Days		—	—	—	100	100	100	90
Relative Durability Factor, Min. % of Control	AASHTO T 161	—	—	—	100	100	100	80

Section 1017

Epoxy Resin Systems

1017.01 GENERAL. This section covers the material requirements for Epoxy Resin Adhesives (General Use) and Epoxy Resin Adhesives (Traffic Markers).

For anchoring application, the epoxy resin systems shall comply with ASTM C881 (with the exception of the gel time requirement) and ICC-ES AC 308. For crack injection, the minimum gel time shall be 15 minutes.

1017.02 EPOXY RESIN ADHESIVES (GENERAL USE).

1017.02.1 General: Epoxy Resin Adhesives shall comply with AASHTO M 235 (ASTM C881) and the additional requirements of Table 1017-1. Use two component systems in accordance with the manufacturer's recommendations. Epoxy resin adhesives shall be from the Approved Materials List.

1017.02.2 Classifications: Epoxy Resin Adhesives shall be classified by Type, Grade and Class.

1017.02.2.1 Types:

1. *Type I-* Use in non-load-bearing application for bonding hardened concrete to hardened concrete and other materials, and as a binder in epoxy mortars or epoxy concretes.

2. *Type II-* Use in non-load-bearing applications for bonding freshly mixed concrete to hardened concrete.

3. *Type III-* Use in bonding skid-resistant materials to hardened concrete, and as a binder in epoxy mortars or epoxy concretes used on traffic-bearing surfaces (or surfaces subject to thermal or mechanical movements).

4. *Type IV-* Use in load-bearing applications for bonding hardened concrete to hardened concrete and other materials and as a binder for epoxy mortars and concretes.

5. *Type V-* Use in load-bearing applications for bonding freshly mixed concrete to hardened concrete.

6. *Type VI-* Use for bonding and sealing segmental precast elements, as in segment-by-segment erection and for span-by-span erection when temporary post tensioning is applied.

7. *Type VII-* Use as a non-stress-carrying sealer for segmental precast elements when temporary post tensioning is not applied, as in span-by-span erection.

Note 1—Epoxy resin systems will adhere to a wide variety of materials, including wood, metals, masonry, and most plastics. Polyethylene, TFE-fluorocarbon, cellophane, and greased or waxed surfaces are among the few materials to which these systems will not adhere.

1017.02.2.2 Grades: Three grades of systems are defined according to their flow characteristics and are distinguished by the viscosity and consistency requirements of AASHTO M 235, Table 1.

Grade 1 - Low viscosity.

Grade 2 - Medium viscosity.

Grade 3 - Non-sagging consistency.

1017.02.2.3 Classes: Classes A, B, and C are defined for Types I through V, and Classes D, E, and F are defined for Types VI and VII, in accordance with the range of temperatures for which they are suitable.

Class A - Use below 40°F (4°C), with the lowest allowable temperature to be defined by the manufacturer of the product.

Class B - Use between 40 and 60°F (4 and 15°C).

Class C - Use above 60°F (15°C), with the highest allowable temperature to be defined by the manufacturer of the product.

Class D - Use between 40 and 65°F (4 and 18°C) for Type VI and VII applications.

Class E - Use between 60 and 80°F (15 and 30°C) for Type VI and VII applications.

Class F - Use above 75°F (25°C) for Type VI and VII applications, with the highest allowable temperature to be defined by the manufacturer of the product.

**Table 1017-1
Epoxy Resin Adhesives**

Property	Test Method	Type I		Type II		Type III		Type IV		Type V		Type VI & Type VII	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Compressive Strength, 24 hr, psi (MPa)	DOTD TR 705	5000 (34)	—	—	—	3000 (20)	—	5000 (34)	—	—	—	—	—
Tensile Bond Strength, psi (MPa)	DOTD TR 706												
24 hours (dry cure)		350 (2.4)	—	—	—	250 (1.7)	—	350 (2.4)	—	—	—	—	—
72 hours (moist cure)		—	—	150 (1.0)	—	—	—	—	—	150 (1.0)	—	—	—

1017.03 EPOXY RESIN ADHESIVES (TRAFFIC MARKERS).

1017.03.1 General: Epoxy Resin Adhesives for bonding traffic markers shall comply with AASHTO M 237, Type I and Type II, and the requirements of Table 1017-2. Use two component systems in accordance with the manufacturer's recommendations. Use epoxy resin adhesives from the Approved Materials List.

1017.03.2 Classifications: Epoxy Resin Adhesives shall be classified by Types.

1017.03.2.1 Types:

Type I- Rapid Setting, High Viscosity, Epoxy Adhesive. This type of adhesive provides rapid adherence of traffic markers to the surface of the pavement.

Type II- Standard Setting, High Viscosity, Epoxy Adhesive. This type of adhesive is recommended for adherence of traffic markers to pavement surfaces when rapid set is not required.

**Table 1017-2
Epoxy Resin Adhesives for Bonding Traffic Markers**

Property	Test Method	Type I Rapid		Type II Standard	
		Min.	Max.	Min.	Max.
Consistency: Component A (Resin) TD Spindle at 5 RPM, poises (Pa·s)	AASHTO T 237	1000 (100)	3500 (350)	1000 (100)	3500 (350)
		1000 (100)	3500 (350)	1000 (100)	3500 (350)
		2.0	—	2.0	—
Component B (Hardener) TD Spindle at 5 RPM, poises (Pa·s)					
Shear Ratio (each component)					
Gel Time, Minutes ¹	AASHTO T 237	6	10	6	10
Tensile Bond Strength to reach 170 psi (1.17 kPa), minutes	AASHTO T 237	—	40	—	210
Diagonal Shear Bond Strength 24 hour, psi (MPa)	AASHTO T 237	1000 (7.0)	—	2000 (14.0)	—
		800 (5.5)	—	1500 (10.0)	—
24 hour, plus 7 day water soak, psi (MPa)					

¹The gel time for mixtures that are mixed and dispensed by hand shall be a minimum of 7 minutes to a maximum of 13 minutes.

Section 1018 Miscellaneous Materials

1018.01 WATER. Water shall be suitable for human consumption or shall comply with the following when tested in accordance with AASHTO T 26:

	<u>Percent by Weight (Max.)</u>
Alkali	0.1
Solids (Organic)	0.1
Solids (Inorganic)	0.4
Salt (NaCl)	0.5
Sugar, Oil, or Acid	0.0

1018.02 LIME. For hydrated lime and quicklime, use products from the Approved Materials List. Comply with AASHTO M 216 with the following exceptions:

1. Maximum free moisture shall be 1.50 percent for hydrated lime.
2. Quicklime shall contain no more than 8 percent MgO by weight of total material. The quicklime shall be protected from contact with moisture prior to testing, and shall be free flowing and graded so that 100 percent will pass a 3/8 inch sieve. When the quicklime is to be used in slurry, a minimum of 95 percent shall pass the 3/4 inch sieve.

1018.03 JOINT SYSTEMS FOR PIPE AND PRECAST CONCRETE DRAINAGE UNITS.

1018.03.1 General: All pipe joint systems and materials shall be approved by the Materials Engineer Administrator. For source approval on all pipes exceeding 12 inches in diameter and for all concrete drainage units, joint types are determined by hydrostatic joint testing in accordance with Table 1018-1, with the modifications of 1018.03.2

**Table 1018-1
Joint Type Determination**

Type of Pipe	Test Method
Concrete Pipe and Drainage Units	ASTM C443
Metal Pipe	AASHTO M 36
Plastic Pipe - CPEPDW	AASHTO M 294
Plastic Pipe - PVC	AASHTO M 278 or ASTM D3034
Plastic Pipe - RPVC	ASTM F794 or ASTM F949

1018.03.2 Testing: Using water as the pressure medium and starting with a straight pipe joint alignment, pipe is tested in horizontal alignment, and manholes in vertical alignment. The evaluation may be performed as a continuous test rather than considering each level individually.

1018.03.2.1 Type 1 Joints (T1): Type 1 pipe joints shall be soil tight and shall not leak when the pipe joint assembly is filled with water.

1018.03.2.2 Type 2 Joints (T2): Type 2 pipe joints shall not leak when subjected to 5 psi hydrostatic pressure for 10 minutes.

1018.03.2.3 Type 3 Joints (T3): Type 3 pipe joints shall not leak when subjected to 10 psi hydrostatic pressure for 10 minutes. Also, concrete pipe shall not leak when then deflected to create a position 1/2 inch wider than the assembled position on one side and subjected to hydrostatic pressure for an additional 10 minutes. Flexible pipe shall not leak when then deflected by 5 percent of the original diameter and subjected to 10 psi hydrostatic pressure for an additional 10 minutes.

1018.04 NON-SHRINK GROUT. Non-shrink grout shall comply with ASTM C1107 and shall be from the Approved Materials List.

1018.05 HARDWARE CLOTH. Hardware cloth shall comply with the requirements of ASTM A740, shall have a minimum wire diameter of 0.041 inch, and shall be constructed of 1/2 inch x 1/2 inch mesh galvanized in accordance with ASTM A153.

1018.06 FORM RELEASE AGENT. Form release agent for concrete shall be from the Approved Materials List.

1018.07 SACKS FOR SACKED CONCRETE REVETMENT. Sacks for sacked concrete revetment shall be suitable new burlap bags. Burlap shall comply with AASHTO M 182.

1018.08 CONCRETE ANCHOR SYSTEMS. Concrete anchor systems shall consist of mechanical anchor devices, epoxy systems or other approved methods for anchoring fasteners to hardened concrete. Use systems from the Approved Materials List.

1018.09 ROOFING PITCH. Comply with ASTM D4586.

1018.10 MIX RELEASE AGENT FOR ASPHALT CONCRETE. Mix release agent for asphalt concrete shall be from the Approved Materials List. Do not use diesel as a mix release agent.

1018.11 ELECTRICAL CONDUIT AND CONDUCTORS. Rigid metal electrical conduit shall comply with ANSI C 80.1 or ANSI C 80.5.

Electrical conductors shall comply with IPCEA Publication No. S-19-81, IPCEA Publication S-66-524, and IPCEA Publication S-61-402.

1018.12 MASONRY UNITS.

1018.12.1 Sewer Brick: 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 C139, except that the minimum thickness of each unit shall not be less than 3 5/8 inches.

1018.12.2 Building Brick:

1. Building brick made from clay or shale for use in brick masonry shall comply with ASTM C62, Grade SW.

2. Concrete building brick for use in masonry buildings shall comply with ASTM C55.

1018.12.3 Concrete Building Block: Concrete hollow load-bearing building block shall comply with ASTM C90.

1018.12.4 Cellular Concrete Blocks: Cellular concrete blocks shall be manufactured by machines employing high vibratory compaction. The blocks shall comply with ASTM C90, except the oven-dry weight of concrete shall be at least 130 pounds per cubic foot based on bulk specific gravity. Permissible block dimension variations will be as directed.

1018.13 BARRICADE WARNING LIGHTS.

1018.13.1 General: Unless otherwise designated in the plans, barricade warning lights shall be Type A/C (switchable combination low-intensity flashing and steady burn), Type B (high-intensity flashing), or Type D (360-degree steady burn), and all bulbs shall be LED-type. Barricade warning lights shall be from the Approved Materials List, and comply with the MUTCD.

These lights are not for warning gates or barriers for moveable bridges.

1018.13.2 Markings: Each light submitted for approval and each light placed on a project shall have a permanently attached identification plate or other permanent markings with the following information:

1. Manufacturer's name
2. Model number
3. Type
4. Lens manufacturer and identification number
5. Circuit manufacturer and identification number
6. Bulb number
7. Minimum operating voltage required to conform to minimum intensity requirements
8. Year of manufacture

1018.13.3 Certification: Prior to installation, furnish the engineer with the following information:

1. Material certification (Certificate of Compliance)
2. Proposed number of warning lights to be used
3. Type
4. Trade name
5. Manufacturer's name and model number

The certification shall also state that each light assembly has been tested, is functioning properly and will be maintained in satisfactory working order.

1018.14 ELASTOMERIC BRIDGE BEARING PADS.

1018.14.1 General: Elastomeric bridge bearing pads shall be either plain, consisting of elastomer only, or laminated, consisting of layers of elastomer separated by non-elastic laminates. The elastomer portion of the compound used for bearings shall be 100 percent virgin chloroprene stock. Natural rubber, vulcanized rubber (natural or synthetic) or other synthetic rubber-like materials will not be acceptable.

Non-elastic laminates shall be a nominal 1/16 inch thickness rolled steel sheets with a minimum yield strength of 33,000 psi.

Elastomeric bridge bearing pads shall be from the Approved Materials List.

1018.14.2 Physical Properties of Elastomer: The elastomer compound for plain and laminated bearings shall be a virgin, low temperature Grade 2, polychloroprene complying with AASHTO M 251. In addition, the pad shall comply with acceptance criteria of AASHTO M251, except that the sample quantity shall be one per lot, and the lot size shall be no more than 100 pads. All tests shall be made on the finished product. Special molded or prepared specimens, where required, shall comply with the specimen preparation requirements of the test involved.

For laminated bearings, each bearing shall be subjected to an average compression test loading of 1,500 psi by the manufacturer. The performance of each bearing will be considered satisfactory if there is no visible evidence of bond failure or other damage to the bearing because of this loading. The Department may verify that pads meet this requirement by means of random testing.

1018.14.3 Manufacturing Requirements: Components of laminated bearing pads shall be molded into an integral unit. Edges of the nonelastic laminations shall be covered by a minimum of 1/8 inch of elastomer. The laminates shall be parallel with the bottom surface of the bearing, subject to the tolerances that follow.

The preparation of elastomer compound prior to placement in the mold shall be such as to result in a homogeneous, finished bearing pad free of voids, blisters, cracks, folds, cuts, non-fills and any appearance of layers or ply separation on the surface or within the pad. Plain bearing pads may be molded individually or cut to length from previously molded strips or slabs. No pads shall be formed from the lamination of previously cured sheets or slabs. Finish of cut surfaces shall be at least as smooth as ANSI No. 250 finish.

Each bearing pad shall be marked with the manufacturer's identification number in such manner as to remain legible until the bearing pad is placed in the structure. This number shall identify the batch from which it was produced. A batch is defined as the quantity of compound produced from each separate mixture of ingredients.

1018.14.4 Appearance and Dimensions: The flash tolerance and appearance shall comply with Drawing RMA F3-T.063 of the RMA Rubber Products Handbook as published by the Rubber Manufacturers Association, Inc.

For both plain and laminated bearings, the permissible variations from specified dimensions and configuration shall be in accordance with AASHTO M 251.

**Tolerance
Inches**

Variation from Plane Parallel to Theoretical Surface	
Individual Nonelastic Laminates (determined by measurements at edges of bearing)	±1/8
Thickness of Nonelastic Laminates	-0, +1/16

1018.14.5 Certification: Prior to installation, furnish the Materials Engineer Administrator with a notarized material Certificate of Analysis and a list showing:

1. Proposed number of laminated bearing pads to be used itemized by type and size.
2. Manufacturer's name and identification number.
3. State project number.

The certification shall also state that each bearing pad shipped has been load tested and found to comply with these requirements. It shall also state that the steel laminates in each laminated pad are aligned as required in 1018.14.4.

1018.15 SILT FENCING, EROSION CONTROL MATTING, AND HARDWARE.

1018.15.1 Silt Fencing: Silt fencing shall be either wire-supported or self-supported.

1018.15.1.1 Wire-Supported Silt Fencing: Wire-supported silt fencing shall consist of standard woven livestock wire, and minimum of 14-gage wire, a minimum of 36 inches in height with a maximum wire spacing of 6 inches. Posts shall be either wood or steel installed a minimum of 2 feet in the ground. Filter material shall be burlap weighing approximately 7 1/2 ounces per square yard, approved jute fabric or approved geotextile fabric. Geotextile fabric shall comply with Section 1019, Class F.

1018.15.1.2 Self-Supported Silt Fencing: Self-supported silt fencing shall consist of an approved geotextile fabric suitably attached to posts of either wood or steel installed in accordance with plan details. Geotextile fabric shall comply with Section 1019, Class G.

1018.15.2 Erosion Control Matting, and Hardware: Erosion control systems shall consist of approved hydraulically applied fiber mulch

systems, or rolled erosion control products (mats) including hardware and installation plan.

Use erosion control systems from the Approved Materials List. Comply with the performance requirements in Table 1018-2 when evaluated in accordance with the Department's Qualification Procedure for erosion control systems.

**Table 1018-2
Erosion Control Systems**

Slope Protection			
Type ¹	Test Site Conditions for Evaluations	Maximum Sediment Loss, lb/100 ft ²	Minimum Vegetation Density, %
A	3:1 Slope	7.89	80
B	2:1 Slope	7.89	80
Flexible Channel Liners			
Type ¹	Test Site Conditions for Evaluation	Maximum Average Sediment Loss, lb/100 ft ²	Minimum Vegetation Density, %
C	Shear Stress Range 0 to 2 psf	350	70
D	Shear Stress Range 0 to 4 psf	500	70
E	Shear Stress Range 0 to 6 psf	620	70
F	Shear Stress Range 0 to 8 psf	800	70

¹Types are listed in increased order of protection within each category.

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. Furnish a copy of the approved installation plan with each shipment.

Section 1019

Geotextile Fabric and Geocomposite Systems

1019.01 GEOTEXTILE FABRIC.

1019.01.1 General Requirements: The geotextile fabric shall be composed of at least 85 percent by weight of polyolefins, polyesters, or polyamides. The geotextile fabric shall be resistant to chemical attack, rot and mildew and shall have no tears or defects which adversely alter its physical properties. When required, the geotextile fabric shall contain stabilizers and/or inhibitors added to the base material to make filaments resistant to deterioration due to ultraviolet and heat exposure. Edges of geotextile fabric 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. Durability of these fibers shall be equivalent to that of the geotextile fabric.

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 or tagged with the manufacturer's name, date of manufacture, batch number, and name of product.

Unless otherwise specified on the plans or in the project specifications, the geotextile fabric shall be from the Approved Materials List.

1019.01.2 Detailed Requirements: The geotextile fabric shall comply with the requirements in Table 1019-1 and utilized as follows unless otherwise specified:

<u>Use</u>	<u>Classes</u>
1. Drainage:	
Underdrains	A, B, C or D
Pipe and Precast Manhole Joints	A, B, C or D
Weep Holes	A, B, C or D
Bedding Fabric	B, C, or D
Approach Slabs	B, C, or D
Fabric for Geocomposite Drainage Systems ¹	B, C, or D
2. 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
3. Paving Fabric ² :	B or C (modified)
4. Silt Fencing:	
Wire Supported	F
Self-Supported	G

¹Refer to 1019.02 for additional requirements.

²Refer to 1019.03 for additional requirements.

**Table 1019-1
Geotextile Fabrics**

Property	Test Method	Requirements Classes						
		A	B	C	D	S	F	G
AOS, Metric Sieve, μm , Max.	ASTM D4751	300	300	300	212	600	850	850
Grab Tensile, N, Min.	ASTM D4632	330	400	580	800	800	400	400
% Elongation @ Failure, Min.	ASTM D4632	—	—	50	50	—	—	—
% Elongation @ 200 N, 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 150 h, UVA lamps, %, Min	ASTM D4632 ASTM G154	70	70	70	70	70	—	—
Grab Tensile Strength Retained after weathering 500 h, UVA lamps, %, Min	ASTM D4632 ASTM G154	—	—	—	—	—	70	70

1019.02 GEOCOMPOSITE DRAINAGE SYSTEMS. The geocomposite fabric drain shall consist of a nonwoven geotextile fabric and a core as specified below with the geotextile completely enveloping the core. Fittings shall be as recommended by the manufacturer. The geotextile fabric shall be sufficiently secured to the core to prevent separation of the geotextile fabric and intrusion of the backfill material during installation. The geocomposite drainage system shall be from the Approved Materials List.

1019.02.1 Geotextile Fabric: The fabric shall meet the requirements for Class B, C, or D geotextile fabric of 1019.01 with the following modifications:

<u>Property</u>	<u>Test Method</u>	<u>Requirements</u>
Elongation, %, Min.	ASTM D4632	20
Sewn Seam Strength (Fabric to Fabric), kN/m width, Min.	ASTM D4437	2600

1019.02.2 Cores for Wall Drains (Single Sided): The core shall be a flexible, solid-backed, rectangular design made of a polyolefin material not sensitive to moisture. The geocomposite design shall allow drainage of water from one side only. The core shall consist of supports having a minimum height of 5/16 inch upon which the fabric shall be securely fastened. The cross section open area of the core which will allow the passage of water shall be a minimum of 40 percent.

The core shall meet the following requirements:

<u>Property</u>	<u>Test Method</u>	<u>Requirements</u>
Compressive Strength, kPa @ 20% Max. Deflection, Min.	ASTM D1621	380

1019.03 PAVING FABRIC. In addition to the specifications for Class B or C geotextile fabric of 1019.01, the paving fabric shall also comply with the following requirements:

<u>Property</u>	<u>Test Method</u>	<u>Requirements</u>
Asphalt Retention, L/sq m	AASHTO M 288	0.9
Change in Area at 135°C, %, Max.	AASHTO M 288	15.0