

# BID DOCUMENTS PROJECT MANUAL

for

## FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median

at



**NORTHWEST FLORIDA**  
BEACHES INTERNATIONAL AIRPORT

### NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT (ECP)

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**December 2023**  
**ECP Task Order No. 69**

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**APPENDIX**

- A. Section 01322 – Web-Based Project Information Management
- B. Geotechnical Engineering Report dated October 7, 2021

**Reference FAA Advisory Circulars**

The following FAA Advisory Circulars are not included in the Project Manual but form a part of the executed contract by reference. FAA ACs may be downloaded from [www.faa.gov](http://www.faa.gov).

- AC 150/5210-5D “Painting, Marking, and Lighting of Vehicles Used on an Airport”
- AC 150/5200-18C “Airport Safety Self-Inspection”
- AC 150/5370-2G “Operational Safety on Airports During Construction”

# FRONT END DOCUMENTS

## NOTICE AND INSTRUCTIONS TO BIDDERS

### FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median

at the

Northwest Florida Beaches International Airport  
6300 West Bay Parkway  
Panama City, Florida 32409  
Phone: 850-763-6751

December 27, 2023

The Panama City Bay County Airport and Industrial District dba Northwest Florida Beaches International Airport is seeking sealed bids from qualified firms for all work and materials necessary to complete the FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median project detailed in the Bid Package and Project Manual (Contract Documents) dated December 27, 2023. Interested Bidders may obtain the Contract Documents from DemandStar via the link on the Business Opportunities section of the Airport's website at [www.iflybeaches.com](http://www.iflybeaches.com).

The work consists of two taxilane connectors, vehicular roadway median improvements, and a vehicular parking lot. The taxilane connectors will include airfield pavement, pavement markings, and taxiway edge light fixtures. The roadway median improvements consist of adding a left turn from slip road onto West Bay Parkway (Southbound). The vehicular parking lot consists of installing an asphalt parking lot, F-Curb, sidewalk, and lighting and access control. The base bid will be the taxilane connectors, with the median improvements and parking lot being separate bid alternates.

The contract time for substantial completion of the work included shall be 180 calendar days from the date of the "Notice to Proceed (NTP)." The final project completion shall be 210 calendar days from the date of the "Notice to Proceed (NTP)."

The contract time for substantial completion of the **Base Bid** shall be 30 calendar days after the date when the Contract Time commences to run, which shall commence no later than the *one hundred twentieth (120<sup>th</sup>)* day after the day of Bid opening or the *ninetieth (90<sup>th</sup>)* day after the Effective Date of the Agreement, whichever date is earlier. Substantial completion is defined as the entire base bid is complete and accepted, except for permanent pavement markings.

If Bid Alternates are awarded, the following contract time(s) will be added to the contract:

- (a) Bid Alternate 1 – 75 calendar days
- (b) Bid Alternate 2 – 90 calendar days

Neither the Owner nor its Representative shall assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid and Project Documents.

#### Proposed Schedule

|                   |   |
|-------------------|---|
| December 27, 2023 | Release of Invitation To Bid.                             |
| January 2, 2024   | Pre-Bid Meeting at 2:00 pm.                               |
| January 9, 2024   | Deadline to submit questions up to 5:00 pm.               |
| January 12, 2024  | Final Addendum issued.                                    |
| January 17, 2024  | Bids due before 2:00 pm. Opening will occur at 2:05 pm. * |

\*Denotes a public meeting. All meetings will be held at Airport Board Room, Panama City, Florida. All times denote Local Time.

### **Pre-Bid**

A non-mandatory Pre-bid meeting will be held on **Tuesday, January 2, 2024, at 2:00 pm Local Time** in the North conference room, 1<sup>st</sup> floor of the Airport Terminal Building.

### **Questions**

Questions must be submitted no later than **5:00 pm Local Time on January 9, 2024**, via e-mail to FBOconnectors.ECP@zhaintl.com.

#### **OWNER'S REP CONTACT:**

Rick Mellin  
President  
**ZHA Incorporated**  
2290 Lucien Way, Suite 300  
Maitland, FL 32751

#### **ENGINEER'S CONTACT:**

Calvin Palmer, P.E.  
Project Engineer  
**AVCON, INC.**  
320 Bayshore Drive, Suite "A"  
Niceville, Florida 32578

Responses to those questions considered material to the solicitation shall be distributed via formal addendum and posted to the Airport's vendor bid portal on DemandStar and accessible via the link on the Business Opportunities section of the Airport's website at [www.iflybeaches.com](http://www.iflybeaches.com).

### **Addendum**

Should revisions to the bidding and project documents become necessary, addenda information will be posted to DemandStar. The last date for issuance of a final addendum will occur on or before January 12, 2024.

### **Bid Submittal**

Bidders are required to submit two (2) copies—one (1) original written submittal with manual signatures and one (1) digital PDF copy of the complete submittal on a USB flash drive. ***Sealed bids***, subject to the conditions herein, will be ***received until 2:00 pm, Local Time, on January 17, 2024***, at the North Conference Room of the Northwest Florida Beaches International Airport, 6300 West Bay Parkway, 1<sup>st</sup> Floor, Airport Terminal, Panama City, Florida 32409, at which time bids will be publicly opened and read, for furnishing all labor and materials, and performing all work connected with the project.

All bids should be addressed as follows:

**BID ENCLOSED: FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median**  
Northwest Florida Beaches International Airport  
North Conference Room, 1<sup>st</sup> Floor Airport Terminal  
6300 West Bay Parkway  
Panama City, Florida 32409

The Panama City Bay County Airport and Industrial District dba Northwest Florida Beaches International Airport (Airport) reserves the right, in its sole and absolute discretion, to reject, cancel, or withdraw this bid at any time and waive any irregularities in the bid process. The Airport reserves the right to award any contract to the respondent that it deems to offer the best overall service; therefore, the Airport is not bound to award any contract based on the lowest quoted price. The Airport, in its sole and absolute discretion, also reserves the right to waive any minor defects in the process and to accept the bid deemed to be in the Airport's best interest. No faxed Proposals will be accepted.

### **Bid Proposal Documents**

The bid proposal must be made on the forms provided with the contract documents and submitted in the number of copies indicated above. All blank spaces shall be filled in and no interlineations, alterations, or erasures of the text shall be made. Bidders must supply all required information prior to the time of bid openings.

Partial or incomplete bid proposals will not be considered. Each bid proposal shall show the full legal name and business address of the Bidder, including its street address if it differs from its mailing address, and shall be signed with the usual signature of the person or persons authorized to bind the Bidder and shall be dated.

The preparation of a bid proposal shall be by and at the expense of the Bidder.

Bid proposals shall be publicly opened and read. If a Bidder's proposal contains a discrepancy between bid prices written in words and bid prices written in numbers, the price written in words shall govern.

### **Bid Security & Bond Requirements**

Bid security in the amount of at least five percent (5%) of the total quote must be submitted with the quote. The quote security may be either a certified check or a proposal guaranty bond executed by a surety company authorized to do business in the State of Florida. Quote security shall be made payable to Panama City Bay County Airport and Industrial District. The successful contractor must be able to furnish proof of required insurance, a 100% Performance Bond, and a 100% Labor and Materials Payment Bond, and shall begin execution of this contract within five (5) calendar days following the date of the Notice to Proceed.

### **Funding Requirements**

If applicable, funding for this project may be provided by the Florida Department of Transportation and/or the Federal Aviation Administration and may be subject to all applicable requirements of the affiliated funding agency.

The Northwest Florida Beaches International Airport has a Disadvantaged Business Enterprise (DBE) Program for Airport Improvement Program projects which the successful contract must comply with. The DBE participation goal for this project is 8.86% and compliance requirements are listed in the project documents.

### **Performance and Payment Securities**

The successful Bidder shall deliver to the Owner or the Owner's Authorized Representative no later than ten (10) calendar days after contract award and prior to commencing the Work or entering the Project Site, a Performance and Payment Bond in the form supplied in the bid and project documents and executed, as surety, by a corporation acceptable to the Owner and authorized to issue such bonds in the jurisdiction of Bay County, Florida. Such Performance Bond and Payment Bond shall each be for one hundred percent (100%) of the total as set forth in Bidder's proposal. The cost of such Performance Bond and Payment Bond shall be included in the Guaranteed Maximum Price submitted in the Bidder's Proposal.

### **Insurance Certificates**

The successful Bidder shall deliver to the Owner or the Owner's Authorized Representative no later than ten (10) calendar days after contract award and prior to commencing the Work or entering the Project Site, certificates of insurance, in the form supplied in the bid and project documents and executed, attesting to the fact that the policies of insurance required by the Bid and Project Documents have been obtained.

### **Sales and Use Taxes**

Work under this contract is subject to the provisions of Chapter 212, Florida Statutes, Tax on State, Use and Other Transactions. Other state, local, or federal taxes may be applicable. The Bidder is responsible for remitting all applicable taxes to the appropriate governmental entity. Any applicable tax shall be included in the total bid price.

by Bidder. Owner is a public body and eligible for certain sales tax exemptions and intends to implement a Sales Tax Savings Program and the successful Bidder shall be obligated to comply with such a program.

The successful Bidder shall coordinate with the Owner relative to the direct purchase of major material items by the Owner when applicable.

#### **Award of Contract**

After consideration of price and other factors, the contract will be awarded to the Bidder whose bid proposal is determined to be the best responsive and responsible Bidder as determined by the Owner.

Owner reserves the right, as the interest of the Owner may require, to reject any or all bid proposals and to waive any informality in Bid Proposals received.

If the Owner intends to accept the successful Bidder's Proposal and enter into the Contract with them, Bidder acknowledges and agrees that unless and until the Owner executes the contract and returns the executed copy to the Bidder, no contract or agreement between the Owner and the Bidder shall exist. If the Owner fails to execute the contract within thirty (30) calendar days of the bid opening, the contract will be deemed withdrawn and Bidder shall be released from its Bid Proposal. The Owner shall issue a Notice to Proceed (NTP), in accordance with Florida law, within thirty (30) calendar days of receipt of bids.

#### **ATTACHMENTS**

##### **Attachment 1: Bid Document Forms**

1. Bid Proposal
2. Bid Bond Form
3. Public Entity Crimes Statement
4. DBE Program
5. Davis-Bacon Certification
6. Drug Free Workplace Certification
7. Non-Segregated Facilities Certification
8. Buy American Clause
9. Trench Safety Act Certification
10. Form of Non-Collusion Affidavit
11. E-Verify Compliance Certification
12. Construction Contract
13. Payment & Performance Bond Forms
14. Certification of Attorney
15. Release of Liens
16. Advertisement of Completion

##### **Attachment 2: Insurance Certificate**

#### **PROJECT DOCUMENTS**

NWFBIA General Conditions

NWFBIA Special Conditions

Project Specifications

Contract Drawings



# BID DOCUMENTS

**NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT  
PANAMA CITY–BAY COUNTY AIRPORT AND INDUSTRIAL DISTRICT**

**FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median**

In response to the Bid and Project Documents dated **27 day of December 2023**, and in accordance with the “Notice and Instructions to Bidders”, the undersigned hereby proposes to furnish all plant, labor, technical and professional services, supervision, materials and equipment, and to perform all operations necessary and required to construct the **FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median** at Northwest Florida Beaches International Airport located in Bay County, Florida, in accordance with provisions of the Request for Bid and Project Documents and any addenda thereto, and at the prices stated opposite the respective items set forth in the Schedule of Prices attached hereto.

The undersigned agrees that this Bid Proposal constitutes a firm offer to Owner which cannot be withdrawn for **120** calendar days from and after the due date or until a contract for the Work is executed by the undersigned and Owner, whichever is earlier. The undersigned’s execution of the Bid Affidavit (copy attached), the Non-Collusion Affidavit (copy attached), the Sworn Statement under Section 287.133 (3)(A), Florida Statutes, ON Public Entity Crimes (copy attached), must be witnessed and notarized by a Notary and returned with this Bid Proposal in order that the Bid Proposal be considered. Further, the Drug Free Workplace Certification (copy attached), Certification of Non-Segregated Facilities (copy attached), and Buy America Certification (copy attached) must also be completed and returned as part of the Bid Proposal.

The undersigned certifies that it has examined and is fully familiar with all of the provisions of the Bid and Project Documents and any addenda thereto; that it has carefully checked all the words and figures shown in its Schedule of Prices, if any required; that it has carefully reviewed the accuracy of all statements in this Bid Proposal and attachments hereto; and that it has by careful examination of the Bid and Project Documents and any addenda thereto and by examination of the actual site conditions, satisfied itself as to the nature and location of all work, the general and local conditions to be encountered in the performance of any work, the requirements of the Contract and all other matters which can in any way affect the Work or the cost thereof. The undersigned hereby agrees Owner shall not be responsible for any errors or omissions on the part of the undersigned in preparing this Bid Proposal.

If awarded a Contract, the undersigned agrees to execute the Contract and deliver it to Owner within ten (10) calendar days after contract award with the Certificates of Insurance and Payment Securities as required.

The undersigned hereby acknowledges that any contract resulting from this Bid Proposal will represent the entire agreement and that any exceptions taken in this Bid Proposal, may be a basis for Owner rejecting such Bid Proposal.

The undersigned also acknowledges receipt, understanding, and full consideration of the following addenda to the Bid and Project Documents. (Contractor shall enter Addenda number and initial next to addenda received.)

Addendum No. \_\_\_\_\_ Signature \_\_\_\_\_

Addendum No. \_\_\_\_\_ Signature \_\_\_\_\_

Addendum No. \_\_\_\_\_ Signature \_\_\_\_\_

Addendum No. \_\_\_\_\_ Signature \_\_\_\_\_

Bidder: \_\_\_\_\_

Signed by: \_\_\_\_\_

Typed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Bidder's Address: \_\_\_\_\_

State/Country of Incorporation (if applicable): \_\_\_\_\_

Bidder's Contractor License No. \_\_\_\_\_

License Expiration Date: \_\_\_\_\_

Bid Proposal Date: \_\_\_\_\_

If Bidder is a corporation, enter State/Country of Incorporation in addition to Business Address. Evidence of the authority of the person signing on behalf of the bidding entity shall be attached to the Bid Proposal. If a joint venture, consortia, or partnership, attach evidence of the signatory's authority signed by and listing the full names of all partners or joint venture(s) that shall be jointly and severally liable.

### BID AFFIDAVIT

The following affidavit must be executed in order that your Bid Proposal may be considered.

State of \_\_\_\_\_, County of \_\_\_\_\_  
of lawful age, being first duly sworn, upon his oath deposes and says: That he executed the accompanying Bid Proposal on behalf of the Contractor therein named, and that he had lawful authority so to do, and said Contractor has not directly or indirectly, entered into any agreement, expressed or implied, with any Contractor or Contractors, having to its object the controlling of the price or amount of such quotation or any quotations, the limiting of the Bid Proposal or Contractors, the parceling or farming out to any Contractor or Contractors, to other persons of any part of the contract or any of the subject matter or the Bid Proposals, or of the profits thereof, and that he has not and will not divulge the sealed Bid Proposal to any person whomsoever, except those having a partnership or other financial interest with him in said Bid Proposal or Proposals, until after the sealed Bid Proposal or Proposals are opened.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

State of \_\_\_\_\_ County of \_\_\_\_\_

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

\_\_\_\_\_ (name of individual signing)

Who, after first being sworn by me, affixed his/her signature in the space provided above on this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My Commission Expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Public

Unit Prices, if any:

Unit prices for changes shall be full and complete compensation for the work or changes to the work. Prices will be inclusive of all costs including, but not limited to, labor, materials, services, overhead, and profit.

Unit Pricing (written pricing for areas noted per unit) Adjustments:

All prices are fixed for the duration of the Contract and are not subject to escalation for any cause. Payment of the Total Contract Price shall constitute full payment for performance of the Work and covers all costs of whatever nature incurred by Contractor in accomplishing the Work in accordance with the provisions of the Contract.

Contractor shall maintain all work in progress until it is accepted. Contractor shall repair, rework, or replace as necessary any work damaged or lost due to normal wear and tear, anticipated events, or conditions within its control. No separate payment shall be made for such maintenance costs which are deemed included in the original contract price. Any failure to maintain the Work shall be considered a defect in accordance with the General Conditions.

If provided with a Notice of Intent to Award the Contract by the Owner, the Bidder shall execute and deliver to the Owner all of the documents required by the Contract Documents, including but not limited to, the Addendum to the Agreement and the Performance and Payment Bonds in the form contained in the Contract Documents, furnish the required evidence of the specified insurance coverages, furnish all necessary permits, license, materials, equipment, machinery, maintenance, tools, apparatus, means of transportation and labor necessary to complete the Work.

Required Submittals: The following submittals are a prerequisite to the initial payment:

1. Contract Schedule,
2. Payment Securities,
3. Insurance Certificates,
4. Schedule of Values,
5. Maintenance Plan.

ATTACH BID SCHEDULE FORMS

**BID SCHEDULE - UNIT PRICES**  
(This is a Unit Price Contract)

**BIDDER:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**AIRPORT NAME:** Northwest Florida Beaches International Airport  
**PROJECT DESCRIPTION:** FBO Connectors, Administration Parking Lot and Slip Road  
Left Turn Median

**BID SCHEDULE**

**Base Bid Schedule – FBO Connectors**

| Bid Item No. | Item No. | Item Description & Unit Price<br>Bid In Words  | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------|--|------|--------------------|------------|-----------------------|
| BASE BID     |          |  |      |                    |            |                       |
| 1            | C-102-1  | TEMPORARY AIR AND WATER<br>POLLUTION, SOIL EROSION, AND<br>SILTATION CONTROL<br><br>_____ dollars and<br>_____ cents | LS   | 1                  |            |                       |
| 2            | C-105-1  | MOBILIZATION<br><br>_____ dollars and<br>_____ cents   | LS   | 1                  |            |                       |
| 3            | C-106-1  | SAFETY, SECURITY, AND<br>MAINTENANCE OF TRAFFIC<br><br>_____ dollars and<br>_____ cents                              | LS   | 1                  |            |                       |
| 4            | P-151-1  | STRIPPING AND STOCKPILING<br><br>_____ dollars and<br>_____ cents  | AC   | 0.5                |            |                       |

| Bid Item No. | Item No.             | Item Description & Unit Price<br>Bid In Words   | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------------------|---|------|--------------------|------------|-----------------------|
| 5            | 151-2                | MISCELLANEOUS DEMOLITION -<br>ACCESS ROAD AND FILLETS<br>_____ dollars and<br>_____ cents | LS   | 1                  |            |                       |
| 6            | 152-1                | UNCLASSIFIED EXCAVATION AND<br>EMBANKMENT -CUT/FILL<br>_____ dollars and<br>_____ cents   | LS   | 1                  |            |                       |
| 7            | 154-1                | 12" STABILIZED SUBBASE<br>_____ dollars and<br>_____ cents                                | SY   | 510                |            |                       |
| 8            | P-209-1 /<br>P-211-1 | 8" LIMEROCK BASE COURSE<br>_____ dollars and<br>_____ cents                               | SY   | 6,010              |            |                       |
| 9            | P-401-1              | 4" ASPHALT MIX PAVEMENT<br>_____ dollars and<br>_____ cents                               | TON  | 105                |            |                       |
| 10           | T-904-1              | SODDING<br>_____ dollars and<br>_____ cents   | SY   | 260                |            |                       |
| 11           | P-620-1              | PAVEMENT MARKINGS<br>_____ dollars and<br>_____ cents                                     | LS   | 1                  |            |                       |
| 12           | L-110-1              | 6" CONCRETE DUCT BANK<br>_____ dollars and<br>_____ cents                                 | LF   | 155                |            |                       |

| Bid Item No. | Item No. | Item Description & Unit Price<br>Bid In Words  | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------|--|------|--------------------|------------|-----------------------|
| 13           | L-125-1  | L-861T OMNIDIRECTIONAL, BLUE, LED, TAXIWAY EDGE LIGHT - FIXTURE ONLY<br><br>_____ dollars and<br><br>_____ cents | EA   | 4                  |            |                       |

For all work required to perform the work in accordance with the construction drawings, specifications, and other contract documents, including all costs related to the work, and any required permits, taxes, bonds and insurance, the undersigned submits a Total Base Bid Amount of:

TOTAL BASE BID AMOUNT (in words):

\_\_\_\_\_ Dollars and \_\_\_\_\_ cents  
( \$ \_\_\_\_\_ )  
(amount in numbers)

Note: Total Base Bid Amount shall equal the total amount for Bid Items No. 1 through 13.



**Bid Alt 1 Schedule – Administration Parking Lot**

| Bid Item No. | Item No. | Item Description & Unit Price<br>Bid In Words   | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------|---|------|--------------------|------------|-----------------------|
| 14           | 101-1    | MOBILIZATION - BID ALT 1<br><br>_____dollars and<br><br>_____cents  | LS   | 1                  |            |                       |
| 15           | 102-1    | MAINTENANCE OF TRAFFIC - BID ALT 1<br><br>_____dollars and<br><br>_____cents  | LS   | 1                  |            |                       |
| 16           | 104-1    | PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION - BID ALT 1<br><br>_____dollars and<br><br>_____cents | LS   | 1                  |            |                       |
| 17           | 110-1    | STRIPPING AND STOCKPILING – BID ALT 1<br><br>_____dollars and<br><br>_____cents   | AC   | 0.25               |            |                       |
| 18           | 110-2    | ADMIN LOT DEMO<br><br>_____dollars and<br><br>_____cents  | LS   | 1                  |            |                       |
| 19           | 120-1    | ADMIN LOT CUT (INCLUDES 12" OF OVEREXCAVATION)<br><br>_____dollars and<br><br>_____cents                                | CY   | 513                |            |                       |
| 20           | 120-2    | ADMIN LOT FILL (INCLUDES 12" OF OVEREXCAVATION)<br><br>_____dollars and<br><br>_____cents                               | CY   | 338                |            |                       |

| Bid Item No. | Item No. | Item Description & Unit Price<br>Bid In Words                              | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------|--|------|--------------------|------------|-----------------------|
| 21           | 160-1    | 12" STABILIZED SUBBASE<br><br>_____ dollars and<br>_____ cents             | SY   | 810                |            |                       |
| 22           | 285-1    | 8" LIMEROCK BASE COURSE<br><br>_____ dollars and<br>_____ cents            | SY   | 790                |            |                       |
| 23           | 334-2    | 2.5" SUPERPAVE ASPHALT<br>CONCRETE<br><br>_____ dollars and<br>_____ cents | TON  | 110                |            |                       |
| 24           | 425-1    | FDOT TYPE 'C' DBI<br><br>_____ dollars and<br>_____ cents                  | EA   | 1                  |            |                       |
| 25           | 425-2    | FDOT TYPE 'F' DBI<br><br>_____ dollars and<br>_____ cents                  | EA   | 1                  |            |                       |
| 26           | 425-3    | 18" MES<br><br>_____ dollars and<br>_____ cents                            | EA   | 1                  |            |                       |
| 27           | 430-1    | 18" RCP<br><br>_____ dollars and<br>_____ cents                            | LF   | 125                |            |                       |

| Bid Item No. | Item No. | Item Description & Unit Price<br>Bid In Words  | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------|--|------|--------------------|------------|-----------------------|
| 28           | 520-1    | F-CURB<br><br>_____ dollars and<br>_____ cents   | LF   | 500                |            |                       |
| 29           | 522-1    | CONCRETE SIDEWALK (6")<br><br>_____ dollars and<br>_____ cents                               | SY   | 120                |            |                       |
| 30           | 570-1    | SODDING<br><br>_____ dollars and<br>_____ cents  | SY   | 640                |            |                       |
| 31           | 710-1    | PAVEMENT MARKINGS – BID ALT 1<br><br>_____ dollars and<br>_____ cents                        | LS   | 1                  |            |                       |
| 32           | WH-1     | WHEEL STOPS<br><br>_____ dollars and<br>_____ cents  | EA   | 7                  |            |                       |
| 33           | ADMIN-1  | RELOCATE LIGHT POLE AND<br>ACCESS CONTROL - COMPLETE<br><br>_____ dollars and<br>_____ cents | LS   | 1                  |            |                       |

**For all work required to perform the work in accordance with the construction drawings, specifications, and other contract documents, including all costs related to the work, and any required permits, taxes, bonds and insurance, the undersigned submits a Total Bid Alt 1 Amount of:**

**TOTAL BID ALT 1 AMOUNT (in words):** \_\_\_\_\_

\_\_\_\_\_ Dollars and \_\_\_\_\_ cents  
( \$ \_\_\_\_\_ )  
**(Amount in numbers)**

Note: Total Bid Alt 1 Amount shall equal the total amount for Bid Items No. 14 through 33.

**Bid Alt 2 Schedule**

| Bid Item No. | Item No. | Item Description & Unit Price<br>Bid In Words  | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------|--|------|--------------------|------------|-----------------------|
| 34           | 101-2    | MOBILIZATION - BID ALT 2<br><br>_____dollars and<br><br>_____cents   | LS   | 1                  |            |                       |
| 35           | 102-2    | MAINTENANCE OF TRAFFIC - BID ALT 2<br><br>_____dollars and<br><br>_____cents   | LS   | 1                  |            |                       |
| 36           | 104-2    | PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION - BID ALT 2<br><br>_____dollars<br>and<br>_____cents | LS   | 1                  |            |                       |
| 37           | 110-3    | STRIPPING AND STOCKPILING - BID ALT 2<br><br>_____dollars and<br><br>_____cents  | LS   | 1                  |            |                       |
| 38           | 110-4    | MISCELLANEOUS DEMOLITION - BID ALT 2<br><br>_____dollars and<br><br>_____cents   | LS   | 1                  |            |                       |
| 39           | 120-3    | UNCLASSIFIED EXCAVATION AND EMBANKMENT - CUT/FILL<br><br>_____dollars and<br><br>_____cents                            | LS   | 1                  |            |                       |
| 40           | 160-1    | 12" STABILIZED SUBBASE<br><br>_____dollars and<br><br>_____cents   | SY   | 530                |            |                       |

| Bid Item No. | Item No. | Item Description & Unit Price<br>Bid In Words                                | Unit | Estimated Quantity | Unit Price | Total Amount/<br>Item |
|--------------|----------|--|------|--------------------|------------|-----------------------|
| 41           | 285-1    | 8" LIMEROCK BASE COURSE<br><br>_____dollars and<br><br>_____cents            | SY   | 500                |            |                       |
| 42           | 334      | 2.5" SUPERPAVE ASPHALT<br>CONCRETE<br><br>_____dollars and<br><br>_____cents | TON  | 65                 |            |                       |
| 43           | 570-1    | SODDING<br><br>_____dollars and<br><br>_____cents                            | SY   | 390                |            |                       |
| 44           | 710-2    | PAVEMENT MARKINGS - BID ALT<br>2<br><br>_____dollars and<br><br>_____cents   | LS   | 1                  |            |                       |

For all work required to perform the work in accordance with the construction drawings, specifications, and other contract documents, including all costs related to the work, and any required permits, taxes, bonds and insurance, the undersigned submits a Total Bid Alt 2 Amount of:

TOTAL BID ALT 2 SCHEDULE AMOUNT (in words): \_\_\_\_\_

\_\_\_\_\_ Dollars and \_\_\_\_\_cents  
( \$ \_\_\_\_\_ )  
(Amount in numbers)

Note: Total Bid Alt 2 Schedule Amount shall equal the total amount for Bid Items No. 34 through 44.

BID SUMMARY (amount in numbers)

(A) TOTAL BASE BID: \$ \_\_\_\_\_

(B) TOTAL BID ALT. 1 BID: \$ \_\_\_\_\_

(C) TOTAL BID ALT 2 BID: \$ \_\_\_\_\_

(D) TOTAL BID AMOUNT\*: \$ \_\_\_\_\_

*\* The Total Bid Amount (D) shall equal the sum of (A) through (C). The Basis of Award shall be based on the lowest total of either the Base Bid or combination of the total of the Base Bid and any or all of the Bid Alts, as finally determined by the owner and the funding agencies based on the availability of funding.*

The Bidder represents that it has examined the site of the Work and informed itself fully in regard to all conditions pertaining to the place where the work is to be done; that it has examined the plans and specifications for the work and other Contract Documents relative thereto and has read all of the Addenda furnished prior to the opening of the Bids, as acknowledged below; and that it has otherwise fully informed itself regarding the nature, extent, scope and details of the Work to be performed.

If provided with a Notice of Intent to Award the Contract by the Owner, the Bidder shall execute and deliver to the Owner all of the documents required by the Contract Documents, including but not limited to, the Addendum to the Agreement and the Performance and Payment Bonds in the form contained in the Contract Documents, furnish the required evidence of the specified insurance coverages, furnish all necessary permits, license, materials, equipment, machinery, maintenance, tools, apparatus, means of transportation and labor necessary to complete the Work.

Dated and signed at \_\_\_\_\_, \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Mailing Address

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
(Federal ID No. or SS No.)

## BID BOND

**CONTRACTOR** (Name and Address):

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**SURETY** (Name and Address of Principal Place of Business):

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**OWNER** (Name and Address):

Owner: Panama City – Bay County Airport and Industrial District  
Address: 6300 West Bay Parkway  
Panama City Beach, FL 32409

**BID:**

BID DUE DATE: January 17, 2024, at 2:00 pm  
PROJECT (Brief Description Including Location): The Work to be performed by Contractor comprises the furnishing of all professional and technical services, labor, equipment, materials, and all other functions and operations including, but not limited to, temporary construction facilities, equipment, safety, materials and supplies and related services, and surveying as necessary and required to accomplish the **FBO Connectors, Administration Parking Lot, and Slip Road Left Turn Median** project strictly in accordance with all requirements of the Bid Package and Contract Documents. Northwest Florida Beaches International Airport, Panama City, Florida

**BOND:**

BOND NUMBER: \_\_\_\_\_  
DATE: (Not later than Bid Due Date): \_\_\_\_\_  
PENAL SUM: \_\_\_\_\_

IN WITNESS WHEREOF, Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR

\_\_\_\_\_(Seal)  
Contractor's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title

Attest: \_\_\_\_\_  
Signature and Title

SURETY

\_\_\_\_\_(Seal)  
Surety's Name and Corporate Seal

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title



- Note:
- (1) Above addresses are to be used for giving required notice.
  - (2) Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

EJCDC NO. 1910-28-C (1990 Edition)

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to OWNER upon default of Contractor the penal sum set forth on the face of this Bond.
2. Default of Contractor shall occur upon the failure of Contractor to deliver within the time required by the Project Documents the executed Agreement required by the Project Documents and any performance and payment bonds required by the Project Documents and Contract Documents.
3. This obligation shall be null and void if:
  - 3.1. OWNER accepts Contractor's Bid and Contractor delivers within the time required by the Project Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Project Documents and any performance and payment bonds required by the Project Documents and Contract Documents, or
  - 3.2. All Bids are rejected by OWNER, or
  - 3.3. OWNER fails to issue a notice of award to Contractor within the time specified in the Project Documents (or any extension thereof agreed to in writing by Contractor and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Contractor and within 30 calendar days after receipt by Contractor and Surety of written notice of default from OWNER, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by OWNER and Contractor, provided that the time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.
6. No suit or action shall commence under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Contractor and Surety, and in no case later than one year after Bid Due Date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notice required hereunder shall be in writing and sent to Contractor and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal deliver, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of any Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

**SWORN STATEMENT UNDER SECTION 287.133 (3)(a)  
FLORIDA STATUTES, PUBLIC ENTITY CRIMES**

**THIS FORM MUST BE SIGNED AND SWORN IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATH.**

1. This sworn statement is submitted to Panama City – Bay County Airport and Industrial

District by \_\_\_\_\_ (print individuals name and title)

for \_\_\_\_\_ (print name

of entity submitting sworn statement) whose business address is \_\_\_\_\_

\_\_\_\_\_ and (if applicable) its Federal Employer Identification No. (FEIN) is \_\_\_\_\_ (if entity has no FEIN, include the Social Security No. of the individual signing this sworn statement).

2. I understand that a “public entity crime” as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that “convicted” or “conviction” as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an “affiliate” as defined in Paragraph 287.133(1)(a), Florida Statutes, means:

- a. A predecessor or successor of a person convicted of a public entity crime; or
- b. An entity under the control of any natural person, who is active in the management of the entity and who has been convicted of a public entity crime. The “affiliate” includes those officers, directors, executives, partners, shareholders, employees, members and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm’s length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133 (1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, and employees, members, and agents who are active in management or an entity.

6. Based on information and belief, the statement which I have marked below is true and in relation to the entity submitting this sworn statement. **(Indicate which statement applies.)**

\_\_\_\_ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members or agents who are active in the management of the entity, or any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members or agents who are active in the management of the entity, or any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the submitting this sworn statement on the convicted vendor list. **(Attach a copy of the final order).**

**I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT HIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.107, FLORIDA STATUTES FOR CATEGORY TWO ON ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.**

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

STATE OF \_\_\_\_\_ COUNTY OF \_\_\_\_\_

**PERSONALLY APPEARED BEFORE ME**, the undersigned authority,

\_\_\_\_\_  
(Name of individual signing)

Who, after first being sworn by me, affixed his/her signature in the space provided above on this  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My Commission Expires:

\_\_\_\_\_  
Notary Public

## DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

The following bid condition applies to this U.S. Department of Transportation (DOT) assisted contract. Submission of a bid/proposal by a prospective contractor shall constitute full acceptance of these bid conditions.

1. **DEFINITION** - Disadvantaged Business Enterprise (DBE) as used in this contract shall have the same meaning as defined in 49 CFR Part 26.
2. **POLICY** - It is the policy of DOT that DBE's as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds. Consequently, the DBE requirements of 49 CFR Part 26 apply to this contract.
3. **OBLIGATION** - The contractor agrees to ensure that DBE's 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. In this regard, all contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that DBE's 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.
4. **COMPLIANCE** - All bidders, potential contractors, or subcontractors for this DOT assisted contract are hereby notified that failure to carry out the DOT policy and the DBE obligation, as set forth above, shall constitute a breach of contract which may result in termination of the contract or such other remedy as deemed appropriate by the owner.
5. **CONTRACT CLAUSE** - All bidders and potential contractors hereby assure that they will include the above clauses in all subcontracts, which offer further subcontracting opportunities.
6. **CONTRACT AWARD** - Bidders are hereby advised that meeting the DBE subcontract goal or making an acceptable good faith effort to meet said goal are conditions of being awarded this DOT assigned contract.  
  
The owner proposes to award the contract to the lowest responsive and responsible bidder submitting a reasonable bid provided he has met the goal for DBE participation or, if failing to meet the goal, he has made an acceptable good faith effort to meet the established goal for DBE participation. Bidder is advised that the owner reserves the right to reject any or all bids submitted.
7. **DBE PARTICIPATION GOAL** - The attainment of the goal established for this contract is to be measured as a percentage of the total dollar value of the contract. The DBE goal established for this contract is **8.86%**.
8. **AVAILABLE DBE'S** - The owner has on file a DBE program pending approved by the Federal Aviation Administration. This program contains a listing of DBE's (certified and uncertified). Bidders are encouraged to inspect this list to assist in locating DBE's for the work. Other DBE's may be added to the list in accordance with the owner's approved DBE program. Credit toward the DBE goal will not be counted unless the DBE to be used can be certified by the owner.
9. **CONTRACTOR'S REQUIRED SUBMISSION** - The owner requires the submission of the following information with the bid:

**DISADVANTAGED BUSINESS ENTERPRISE PROGRAM**

**MBEs**

| MBE Subcontractors<br><u>Names/Addresses/ Identity</u> | <u>Subcontract Work Item</u> | Dollar Value of<br><u>Subcontract Work</u> |
|--|------------------------------|--|
| _____  | _____                        | _____                                      |
| _____  | _____                        | _____                                      |
| _____  | _____                        | _____                                      |

**WBEs**

| Women Subcontractors<br><u>Names/Addresses/ Identity</u> | <u>Subcontract Work Item</u> | Dollar Value of<br><u>Subcontract Work</u> |
|--|------------------------------|--|
| _____  | _____                        | _____                                      |
| _____  | _____                        | _____                                      |
| _____  | _____                        | _____                                      |

**OSEs**

| Other Socially and<br>Economically Disadvantaged<br>Subcontractors within the<br>DBE Group<br><u>Names/Addresses/ Identity</u> | <u>Subcontract Work Item</u> | Dollar Value of<br><u>Subcontract Work</u> |
|--|------------------------------|--|
| _____  | _____                        | _____                                      |
| _____  | _____                        | _____                                      |
| _____  | _____                        | _____                                      |

**Total Dollar Value of Subcontract Work**

**Total Dollar Value of Basic Bid**

**Total DBE Percent**

\_\_\_\_\_  
%

\*(Black, Hispanic, Asian American, American Indian, and other economically disadvantaged.)

If the Contractor fails to meet the contract goal established in Section 7 above, the following information must be submitted prior to contract award to assist the owner in determining whether or not the contractor made acceptable good faith efforts to meet the contract goal. This information (when applicable), as well as the DBE information, should be submitted as specified in Section 9 above.

Suggested guidance for use in determining if good faith efforts were made by a contractor are included in 49 CFR Part 26.

A list of the efforts that a contractor may make, and the owner may use, in making a determination as to the acceptability of a contractor's efforts to meet the goal as included in 49 CFR Part 26 are as follows:

- a. Whether the contractor attended any pre-solicitation or pre-bid meetings that were scheduled by the recipient to inform DBE's of contracting and subcontracting opportunities;
- b. Whether the contractor advertised in general circulation, trade association, and minority-focus media concerning the subcontracting opportunities;
- c. Whether the contractor provided written notice to a reasonable number of specific DBE's that their interest in the contract was being solicited in sufficient time to allow the DBE's to participate effectively;
- d. Whether the contractor followed up initial solicitations of interest by contacting DBE's to determine with certainty whether the DBE's were interested;
- e. Whether the contractor selected portions of work to be performed by DBE's in order to increase the likelihood of meeting the DBE goal (including, where appropriate, breaking down contracts into economically feasible units to facilitate DBE participation);
- f. Whether the contractor provided interested DBE's with adequate information about the plans, specifications, and requirements of the contract;
- g. Whether the contractor negotiated in good faith with interested DBE's, not rejecting DBE's as unqualified without sound reasons based on a thorough investigation of their capabilities.
- h. Whether the contractor made efforts to assist interested DBE's in obtaining bonding, lines of credit, or insurance required by the recipient or contractor;  
and
- i. Whether the contractor effectively used the services of available minority community organizations; minority contractors' groups; local and state Federal Minority Business Assistance Offices; and other organizations that provide assistance in the recruitment and placement of DBE's.

**NOTE:** The nine items set forth above are merely suggested criteria and the owner may specify that you submit information on certain other actions a contractor took to secure DBE participation in an effort to meet the goals. A contractor may also submit to the owner other information on efforts to meet the goals.

**10. CONTRACTOR ASSURANCE** - The bidder hereby assures that he will meet one of the following as appropriate:

- a. The DBE participation goal as established in the General Conditions.

- b. The DBE participation percentage as shown in Section 9, which was submitted as a condition of contract award.

Agreements between bidder/proposer and a DBE in which the DBE promises not to provide subcontracting quotations to other bidders/proposers are prohibited. The bidder shall make a good faith effort to replace a DBE subcontract that is unable to perform successfully with another DBE subcontractor. Substitution must be coordinated and approved by the owner.

The bidder shall establish and maintain records and submit regular reports, as required, which will identify and assess progress in achieving DBE subcontract goals and other DBE affirmative action efforts.

- 11. **PROMPT PAYMENT** - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than **10** days from the receipt of each payment the prime contractor receives from the owner. The prime contractor agrees further to return retainage payments to each subcontractor within **10** 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 owner. This clause applies to both DBE and non-DBE subcontractors.





## PANAMA CITY-BAY COUNTY AIRPORT & INDUSTRIAL DISTRICT MONTHLY REPORT OF SUBCONTRACTOR PARTICIPATION

Name of Prime Contractor \_\_\_\_\_ Contract Name/Number/Description \_\_\_\_\_  
 Original Contract Amount \_\_\_\_\_ Payments Received \_\_\_\_\_  
 Current Contract Amount \_\_\_\_\_ Retainage Withheld \_\_\_\_\_  
 Original Contract DBE Participation \_\_\_\_\_ Invoice Period From: \_\_\_\_\_ To: \_\_\_\_\_  
 Actual DBE Participation to Date \_\_\_\_\_ Percentage Original Contracted DBE \_\_\_\_\_  
 Current Scheduled DBE Participation \_\_\_\_\_ Participation Date Report Submitted \_\_\_\_\_

PLEASE COMPLETE INFORMATION BELOW. ATTACH ADDITIONAL SHEETS IF NECESSARY.

| #                               | SUBCONTRACTOR NAME & ADDRESS | BRIEF DESCRIPTION OF WORK | NAICS CODE | D<br>B<br>E<br>* | M<br>B<br>E | S<br>B<br>E | W<br>B<br>E | O<br>T<br>H<br>E<br>R | ORIGINAL<br>SUBCONTRACT<br>AMOUNT | CURRENT<br>SUBCONTRACT<br>AMOUNT | TOTAL<br>PAYMENTS TO<br>DATE | AMOUNT<br>INVOICES THIS<br>MONTH | TOTAL<br>INVOICED TO<br>DATE THIS<br>PROJECT | PERCENT<br>COMPLETE | PERCENT<br>OF<br>PAYMENTS<br>TO DBE |
|---------------------------------|------------------------------|---------------------------|------------|------------------|-------------|-------------|-------------|-----------------------|-----------------------------------|----------------------------------|------------------------------|----------------------------------|--|---------------------|-------------------------------------|
| <b>DBEs SUBCONTRACTORS ONLY</b> |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 1                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 2                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 3                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 4                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 5                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| SUBTOTAL - DBEs                 |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| <b>NON-DBE SUBCONTRACTORS</b>   |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 1                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 2                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 3                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 4                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| 5                               |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
|                                 |                              |                           |            | Comments:        |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| SUBTOTAL - NON-DBEs             |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |
| ALL SUBCONTRACTOR TOTALS        |                              |                           |            |                  |             |             |             |                       |                                   |                                  |                              |                                  |  |                     |                                     |

\* CHECK THIS COLUMN ONLY IF SUBCONTRACTOR IS A CERTIFIED DBE UNDER FEDERAL REGULATIONS, 49 CFR PART 26.

I certify that the information furnished above is correct to the best of my knowledge and represents the current status of the firm's (Prime Contractor) subcontract(s) with the listed firms (Subcontracts) for the designated period covered by this report.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

**PANAMA CITY-BAY COUNTY AIRPORT & INDUSTRIAL DISTRICT  
INSTRUCTIONS AND FORM FOR COMPLETING THE  
MONTHLY REPORT OF SUBCONTRACTOR PARTICIPATION**

**I. USE AUTHORIZED FORMS**

These instructions and the approved form "Monthly Report of Subcontractor Participation" are to be used to file monthly reports of subcontractor participation. Do not change or amend the instructions or form in any manner. These documents are available in hard copy or electronically from the Commission's DBELO, Darlene Gordon.

**II. TOP PORTION OF FORM**

**Original Contract Amount.** Enter the original amount of the Prime's Contract.

**Current Contract Amount.** Enter the current amount of the Prime's Contract. If this amount is the same as the entry in "Original Contract Amount", enter it. If this amount is different than the amount entered in "Original Contract Amount", enter the new contract amount.

**Invoice Period.** Enter the monthly period being reported (e.g., January 1, 20xx to January 31, 20xx). Each report must cover a full month.

**Actual DBE Participation to Date.** Enter the sum of "Total Payments to Date" made to DBEs as of the date of the report.

**Current Scheduled DBE Participation.** Enter the sum of "Current Subcontract Amounts" reported for **DBEs only**, i.e, do NOT include current subcontract amounts for non-DBEs even though they appear in the ledger portion of the report.

**Total Original Contracted DBE Participation.** Enter the original dollar amount of DBE participation. This must be the same dollar amount submitted on the Original Letter of Intent and approved by the District, and that is reported in the ledger portion of the report under "Original Subcontract Amount".

**Payments Received.** Enter the sum of total of payments received by the Prime Contractor as of the date of the report.

**Retainage Withheld.** Enter the amount of retainage withheld as of the date of the report. If none, enter 0.

**Date Submitted.** Enter the date the report is submitted to the District.

**Percentage Original Contracted Participation.** Enter the original percentage of DBE participation for this contract. This must be the same percentage committed to in the Prime Contractor's proposal and approved by the District.

**IMPORTANT NOTE:** The Monthly Report of Subcontractor Participation must be attached to each invoice submitted by the Prime Contractor. If an invoice is not being submitted in a particular month, the Monthly Report of Subcontractor Participation must still be submitted each month. The due date of the monthly report is the 15<sup>th</sup> day of the following month.

**III. LEDGER PORTION**

**Report all subcontractors every month and complete all required information.** Please note that some entries

apply only to the sum of DBE contracts. To facilitate accuracy in reporting, the DBE subcontractors section is listed first along with a subtotal and the Non-DBE contracts appear in the second section of the report. If there is no invoice activity for a DBE in any given month, enter "0" in the column, "Amount This Invoice". All other information must be entered, and must be current and correct.

**Subcontractor Name and Address.** For all subcontractors, enter the subcontractor's name and business address (street address, city, state and zip code). For DBEs, these entries must be the same as comparable information appearing on the original Letter of Intent and the Contract Participation Form/DBE Program Form submitted with the prime contractor's proposal.

**Description of Work and NAICS Code.** Enter a brief description (e.g., painting, electrical, survey, etc.) of the work each subcontractor is performing and the associated NAICS Code for that work. For DBEs, these entries must be the same as comparable information appearing on the Letter of Intent and the Contract Participation Form/DBE Program Form submitted with the prime contractor's proposal.

**Classification of Subcontractor(s).** Assign classifications as follows:

**DBE**-Place an "X" in this column only if the subcontractor has been DBE certified by the Florida Department of Transportation ("FDOT"). Only those subcontractors who have meet the DBE eligibility requirements of 49 CFR Part 26 may be classified as DBEs.

**MBE**-Place an "X" in this column if the subcontractor is also an FDOT certified minority-owned company. This classification should also be used for subcontractors who have submitted a DBE certification application but have not yet been certified as a DBE. Once DBE certification has been achieved, such firms should be classified as both MBE and DBE.

**SBE**-Place an "X" in this column if the subcontractor is an FDOT certified small business that has 250 or fewer employees and meets the definition of the Small Business Administration regulations (13 CFR Part 121). This classification should also be used for subcontractors who have submitted a SBE certification application but have not yet been SBE certified. Once certification has been achieved, such firms should be classified only as SBE.

**WBE**-Place an "X" in this column if the subcontractor is an FDOT certified woman-owned company. This classification should also be used for subcontractors who have submitted a DBE certification application but have not yet been certified as a DBE. Once DBE certification has been achieved, such firms should be classified as both WBE and DBE.

**OTHER**-Place an "X" in this column for all subcontractors who cannot be classified as either DBE, MBE, WBE or SBE.

**Original Subcontract Amount.** Enter the original subcontract amount for each subcontractor. For DBEs, this must be the **amount listed on the Original Letter of Intent or the Contract Participation Form/DBE Program Form** submitted for DBEs with the prime contractor's proposal, or the amount listed on the proposal in the Disadvantaged Business Enterprise Program, and approved by the District.

**Current Subcontract Amount.** Enter the current subcontract amount. If this amount is the same as the entry in "Original Subcontract Amount", enter it. For DBEs, **if this amount is different** than the amount entered in "Original Subcontract Amount", a **Revised Letter of Intent must be on file with and approved by the District.** It is recommended that Revised Letters of Intent be submitted with the Monthly Report of Subcontractor Participation that initially reports the new contract amount.

**Total Payments to Date.** Enter the sum of payments that have been made to each subcontractor as of the date of the report. This column should not contain diminishing amounts, i.e., a succeeding month's entry lower than the preceding month's entry. If this occurs, the District may request an examination of additional records to verify the correct amount.

**Amount of This Invoice.** Enter the amount of the subcontractor's invoice being submitted with this report.

**Total Invoiced to Date.** Enter the total amount invoiced as of the date of the report. This column should not contain diminishing amounts, i.e., a succeeding month's entry lower than the preceding month's entry. If this occurs, the District may request an examination of additional records to verify the correct amount.

**Percentage Complete.** Enter the percentage that equals the progress of that subcontractor's work.

**Percent DBE.** This entry depends upon the type of contract and terms stated in the solicitation. The **percentage for non-DBEs is always "0"**. Thus, if the subcontractor does not meet the requirements stated above to be classified as a DBE, the percentage entered in this column **must be "0"**.

### DAVIS-BACON CERTIFICATION

This is to certify that I have reviewed the minimum rate wages contained in Special Provision No. 9, which were predetermined for this project by the Secretary of Labor, and I have used these rates in the preparation of this proposal. Furthermore, I agree to abide by these wages and all other provisions of the Davis-Bacon Act as it associates to this project.

\_\_\_\_\_  
Bidder's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

\_\_\_\_\_  
Notary Public

## DRUG-FREE WORKPLACE CERTIFICATION

**THE BELOW SIGNED BIDDER CERTIFIES** that it has implemented a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distributing, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection 1.
4. In the statement specified in subsection 1, notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, to any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on or require the satisfactory participation in drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign this statement, I certify that this firm complies fully with the above requirements.

DATE: \_\_\_\_\_

COMPANY: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

NAME: \_\_\_\_\_  
(Typed or Printed)

\_\_\_\_\_

\_\_\_\_\_ TITLE: \_\_\_\_\_

PHONE #: \_\_\_\_\_

## CERTIFICATION OF NON-SEGREGATED FACILITIES

(Must be completed and submitted with the Bid)

The Bidder certifies that it does not maintain or provide for its employee any segregated facilities at any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Bidder certifies further that it will not maintain or provide for its employees segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting room, work areas, restrooms and washrooms, restaurants and other eating areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated basis of race, color, religion, or national origin, because of habit, local customs, or any other reason. The Bidder agrees that (except where it has obtained identical certification from proposed subcontractors for the specific time period) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the equal opportunity clause, and that it will retain such certification in its files.

---

(Name of Bidder)

---

(Signature)

---

(Title)

---

(Dated)

## BUY AMERICAN CERTIFICATION

Except for those items listed by the Bidder below or on a separate and clearly identified attachment to this Bid, the Bidder hereby certifies that steel and each manufactured product, is produced in the United States (as defined in the Special Provisions under this section entitled Buy American-Steel and Manufactured Products) and that components of unknown origin are considered to have been produced or manufactured outside the United States.

PRODUCT

COUNTY OF ORIGIN

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |

\_\_\_\_\_  
(Name of Bidder)

By: \_\_\_\_\_

Title: \_\_\_\_\_

Dated: \_\_\_\_\_



**TRENCH SAFETY ACT CERTIFICATION**  
**(Under Chapter 553, Florida Statutes)**

Bidder recognizes that this Contract includes work for trench excavation in excess of five feet deep. Bidder acknowledges the requirement set forth in Section 553.63 of the Florida Statutes titled Trench Safety Act. Bidder certifies that the required trench safety standards will be in effect during the period of construction of the Project and Bidder agrees to comply with all such required trench safety standards.

The amount of \_\_\_\_\_ dollars (\$) has been separately identified for the cost of compliance with the required trench safety standards; said amount is included within the Contract Price.

**FORM OF NON-COLLUSION AFFIDAVIT**

State of \_\_\_\_\_

County of \_\_\_\_\_

\_\_\_\_\_ being first duly

sworn, deposes and says that he/she is \_\_\_\_\_

(Sole owner, a partner, president, secretary, etc.) of \_\_\_\_\_, the party making the foregoing Bid, that such Bid is genuine and not collusive or shame; that said Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any Bidder or person, to put in a sham Bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communications or conference, with any person, to fix the Bid Price, or of that of any other Bidder, or to secure any advantage against Owner any person interested in the proposed Contract; and that all statements in said Bid Proposal or Bid are true; and further, that such Bidder has not, directly or indirectly submitted this Bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof.

\_\_\_\_\_(Bidder)

Sworn to and subscribed before me this [\_\_\_\_] day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public – State of \_\_\_\_\_

(NOTARY SEAL)

\_\_\_\_\_  
(Name typed, printed or stamped)

My Commission Expires: \_\_\_\_\_

### E-VERIFY COMPLIANCE CERTIFICATION

In accordance with Executive Order Number 11-116 from the office of the Governor of the State of Florida, Bidder hereby certifies that the U.S. Department of Homeland Security's E-Verify system will be used to verify the employment eligibility of all new employees hired by the contractor during the contract term, and shall expressly require any subcontractors performing work or providing services pursuant to the contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term; and shall provide documentation of such verification to the OWNER upon request.

---

As the person authorized to sign this statement, I certify that this company complies/will comply fully with the above requirements.

DATE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

COMPANY: \_\_\_\_\_

NAME: \_\_\_\_\_  
(Typed or Printed)

ADDRESS: \_\_\_\_\_

TITLE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

E-MAIL: \_\_\_\_\_

PHONE NO.: \_\_\_\_\_

**NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT  
PANAMA CITY – BAY COUNTY AIRPORT AND INDUSTRIAL DISTRICT  
CONSTRUCTION CONTRACT**

**Contractor:** (TBD)  
**Address:** (TBD)  
**Contact:** (TBD)  
**Telephone:** (TBD)  
**Facsimile:** (TBD)

**Contact Title:** FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median  
**Work Location:** Northwest Florida Beaches International Airport  
**Owner:** Panama City – Bay County Airport and Industrial District  
**Address:** 6300 West Bay Parkway  
Panama City Beach, FL 32409  
**Telephone:** (850) 763-6751

This construction contract (hereinafter the “Contract”) is effective as of the [ ] day of [ ], 20[ ] between Owner and the above named Contractor who hereby agree that all Work specified below shall be performed by the Contractor in accordance with all provisions of this Contract, consisting of the following Project Documents:

1. Contract Form of Agreement, along with all addenda issued prior to execution of this Contract and modifications issued after execution of this Contract, including but not limited to duly issued Change Notices/Orders (as such term is defined in the General Conditions) and Amendments.
2. Exhibit “A” – Bid Proposal dated \_\_\_\_\_, General Conditions, Special Conditions
3. Exhibit “B” – Scope of Work
4. Exhibit “C” – Drawings and Technical Specifications

Contractor shall commence the Work within ten (10) calendar days after the Notice to Proceed is issued by the Owner, which shall be issued within one hundred twenty (120) calendar days (or such longer period of time the Owner and Contractor may mutually agree to in writing) of the execution of this Contract, Owner shall issue a Notice to Proceed to Contractor.

The Owner’s issuance of the Notice to Proceed is expressly conditioned upon the satisfaction of the following condition precedents:

1. The Performance Bond has been delivered and is acceptable to the Owner,
2. The Payment Bond has been delivered and is acceptable to the Owner,
3. The Insurance Certificate has been delivered and is acceptable to the Owner,
4. A Project Schedule for the Work has been delivered and is acceptable to the Owner, and
5. A Schedule of Values for the Work has been delivered and is acceptable to the Owner.

Owner shall determine, in its sole discretion, whether these condition precedents have been satisfied, shall be final and binding on the Contractor. Should Owner determine that all such condition precedents have not been satisfied (or otherwise waived in writing by Owner, in its sole discretion), then Owner may send Contractor written notice that Owner has elected to terminate this Contract, in which event this Contract shall automatically be terminated and neither party shall have any further liability or obligation hereunder whatsoever to the other party. In the event of any such termination prior to issuance of the Notice to Proceed, Contractor acknowledges and agrees that it shall not be entitled to and Owner shall not be liable for any payments to Contractor arising out of or relating to this Contract.

**Work to Be Performed:** Except as specified elsewhere in the contract, Contractor shall furnish all plant; labor; materials; tools; supplies; equipment; transportation; supervision; safety; technical; professional; and other services; and shall perform all operations necessary and required to satisfactorily accomplish the Work all strictly in accordance with all requirements of the Bid and Project Documents.

**Security:** If awarded a Contract, undersigned may be required to obtain security clearance and SIDA badges for all workers on site.

**Schedule:** The Work shall be completed in accordance with the construction duration identified in the Notice to Proceed.

**Compensation:** As full consideration for the satisfactory performance by Contractor of this Contract, Owner shall pay to Contractor compensation in accordance with the prices set forth in the “Bid Proposal” included in Exhibit ‘A’ and the payment provisions of the Project Documents.

**Payment Procedures**

The successful Bidder shall be required as a pre-requisite of the Notice to Proceed to provide the Owner a “Schedule of Values”, a statement allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing “Contractor’s Application for Payment”. Only a Contractor’s Application for Payment that corresponds directly with the “Schedule of Values” approved by the Owner or its representative will be acceptable for payment consideration.

The Contractor shall submit three (3) signed and notarized original copies of each Application of Payment (AIA Document G702 and G703) on a monthly basis for Work completed and/or stored to date along with waivers of lien, schedule updates, and other pertinent information. The Owner’s Representative will review the Application for Payment, evaluate the status of the Work, and recommend the amount to be authorized for payment less 5% retained by the Owner until the project is complete.

The amount authorized for payment will be made to the Contractor by the Owner in accordance with Florida Statutes §218.735. Retained amounts shall be released to the Contractor in accordance with Florida Statutes §218.735 following final acceptance of the Work by the Owner or its representative.

**Insurance:** The Contactor shall procure and maintain the following described insurance, except for coverage(s) specifically waived by Owner, on policies and with insurers acceptable to Owner. These insurance requirements shall not limit the liability of Contractor.

The insurance coverage(s) and limits required of Contractor under this Contract are designed to meet the minimum requirements of Owner and the Owner does not represent these types or amounts of insurance to be sufficient or adequate to protect the Contractor's interests or liabilities. Contractor alone shall be responsible to the sufficiency of its own insurance program.

The Contractor and the Contractor's subcontractors and sub-subcontractors shall be solely responsible for all of their property, including but not limited to any materials, temporary facilities, equipment and vehicles, and for obtaining adequate and appropriate insurance covering any damage or loss to such property. The Contractor and the Contractor's subcontractors and sub-subcontractors shall expressly waive any claim against the Owner arising out of or relating to any damage or loss of such property, even if such damage or loss is due to the fault or neglect of the Owner or anyone for whom the Owner is responsible. The Contractor is obligated to include, or cause to be included, provisions similar to this paragraph in all of the Contractor's subcontracts and its subcontractor's contracts with their sub-subcontractors.

The Contractor's deductibles/self insurance retention's must be disclosed to Owner and are subject to Owner's approval. The Contractor is responsible of the amount of any deductible or self-insured retention. Any deductible or retention applicable to any claim or loss shall be the responsibility of Contractor and shall not be greater than \$25,000, unless otherwise agreed to, in writing, by Owner.

Insurance required of the Contractor or any other insurance of the Contractor shall be considered primary, and insurance of Owner shall be considered excess, as may be applicable to claims or losses which arise out of or relate to the Work or this Project.

- A. Workers' Compensation and Employers' Liability Insurance Coverage: The Contractor shall purchase and maintain workers' compensation and employers' liability insurance for all employees engaged in the Work, in accordance with the laws of the State of Florida. Limits of coverage shall not be less than:

|           |                             |
|-----------|-----------------------------|
| \$500,000 | Limit Each Accident         |
| \$500,000 | Limit Disease Aggregate     |
| \$250,000 | Limit Disease Each Employee |

- B. Commercial General Liability Coverage: Contractor shall purchase and maintain commercial general liability insurance on a full occurrence form. Coverage shall include, but not be limited to, Premises and Operations, Personal Injury, Contractual for this Contract, Independent Contractors, Broad Form Property Damage, Products and Completed Operation Liability Coverage(s) and shall not exclude coverage for the "X" (Explosion), "C" (Collapse) and "U" (Underground) Property Damage Liability exposures. Limits of coverage shall not be less than:

|             |                                       |
|-------------|---------------------------------------|
| \$1,000,000 | Combined Single Limit Each Occurrence |
| \$2,000,000 | Aggregate Limit                       |

Contractor shall add Owner as an additional insured through the use of Insurance Service Office Endorsements No. CG 20.20.22.85 wording or equivalent, or broader, an executed copy of which shall be attached to or incorporated by reference on the Certificate of Insurance to be provided by Contractor pursuant to the requirements of the Project Documents.

- C. Business Automobile Liability Coverage: The Contractor shall purchase and maintain Business Automobile Liability Insurance as to ownership, maintenance, use, loading and unloading of all of Contractor's owned, non-owned, leased, rented or hired vehicles with limits not less than:

\$1,000,000 Combined Single Limit Each Accident

- D. Excess or Umbrella Liability Coverage: Contractor shall purchase and maintain Excess Umbrella Liability Insurance or Excess Liability Insurance on a full occurrence form providing the same continuous coverage(s) as required for the underlying Commercial General, Business Automobile and Employers' Liability Coverage(s) with no gaps in continuity of coverage(s) or limits with Owner added by endorsement to the policy as an additional insured in the same manner as is required under the primary policies, and shall not be less than:

\$4,000,000 Each Occurrence/Accident

This Contract embodies the entire agreement between Owner and Contractor and supersedes all other writings. The parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding not set forth herein.

**OWNER**  
**Panama City – Bay County Airport**  
**and Industrial District**

**CONTRACTOR**  
**(TBD)**

**By:**

**By:**

**Authorized**  
**Signature:** \_\_\_\_\_

**Authorized**  
**Signature:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**ATTACHMENT 1**

**BOND NO.** \_\_\_\_\_

**PUBLIC PAYMENT BOND**

**KNOW ALL MEN BY THESE PRESENTS:** That \_\_\_\_\_ as Principal, and \_\_\_\_\_, as Surety, located at \_\_\_\_\_ (Business Address) are held and firmly bound to \_\_\_\_\_, as Obligee in the sum of (\$\_\_\_\_\_) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

**WHEREAS**, Principal has entered into a contract dated as of the \_\_\_\_ day of \_\_\_\_\_, 20\_\_, with Obligee for \_\_\_\_\_, which contract is incorporated by reference and made a part hereof, and is referred to herein as the Contract.

**THE CONDITION OF THIS BOND** is that if Principal:

1. Promptly makes payment to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, services, materials or supplies, used directly or indirectly by Principal in the prosecution of the Work provided for in the Contract, then this bond is void; otherwise it remains in full force; and

2. Any changes in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond. The Surety and the Principal further agree that any modifications, additions or alterations which may be made in the terms of the Contract or in the work to be done thereunder, or any extensions of the Contract, or other forbearance on the part of either Obligee or the Principal to the other, shall not in any way release the Principal and the Surety or either of them, their heirs, assigns, executors, administrators and successors, from their liability hereunder, notice to Surety of any such modifications, additions, extensions or forbearance being hereby expressly waived; and

3. Any action instituted by a claimant under this Payment Bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes; and

4. The penal sum of this Payment Bond is in addition to the penal sum of the Performance Bond being executed concurrently herewith.

**IN WITNESS WHEREOF**, the above parties have executed this instrument this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.



Signed, sealed and delivered

**PRINCIPAL:**

\_\_\_\_\_

\_\_\_\_\_

Witnessed as to Principal

By: \_\_\_\_\_

Name: \_\_\_\_\_

Its: \_\_\_\_\_

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

This foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_,  
20\_\_, by \_\_\_\_\_, as \_\_\_\_\_ of  
\_\_\_\_\_, a \_\_\_\_\_ corporation, on behalf  
of the corporation. He/she is personally known to me OR has produced  
\_\_\_\_\_ as identification.

My Commission Expires:

\_\_\_\_\_  
Notary Public (Signature)

(AFFIX NOTARY SEAL)

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Title or Rank)

\_\_\_\_\_  
(Serial Number, if any)

**ATTEST:**

\_\_\_\_\_  
\_\_\_\_\_  
(Witnessed as to Surety)

\_\_\_\_\_  
\_\_\_\_\_  
Witnesses

**SURETY:**

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
(Authorized Signature)

\_\_\_\_\_  
(Printed Name)

**OR**

\_\_\_\_\_  
As Attorney in Fact  
(Attach Power of Attorney)

\_\_\_\_\_  
As Attorney in Fact  
(Attach Power of Attorney)

\_\_\_\_\_  
\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Telephone Number)

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

This foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_,  
20\_\_, by \_\_\_\_\_, as \_\_\_\_\_ of  
\_\_\_\_\_, a \_\_\_\_\_ corporation, on behalf  
of the corporation. He/she is personally known to me OR has produced  
\_\_\_\_\_ as identification.

My Commission Expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Public (Signature)

(AFFIX NOTARY SEAL)

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Title or Rank)

\_\_\_\_\_  
(Serial Number, if any)

## ATTACHMENT 2

BOND NO. \_\_\_\_\_

### PERFORMANCE BOND

**KNOW ALL MEN BY THESE PRESENTS:** That \_\_\_\_\_ as Principal, and \_\_\_\_\_, as Surety, located at \_\_\_\_\_ (Business Address) are held and firmly bound to \_\_\_\_\_, as Obligee in the sum of (\$\_\_\_\_\_) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

**WHEREAS,** Principal has entered into a contract dated as of the \_\_\_\_ day of \_\_\_\_\_, 20\_\_, with Obligee for \_\_\_\_\_, which contract is incorporated by reference and made a part hereof, and is referred to herein as the Contract.

**THE CONDITION OF THIS BOND** is that if Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and
2. Pays Obligee any and all losses, damages, expenses, costs and attorneys' fees, including appellate proceedings, that Obligee sustains because of any default by Principal under the Contract, including, but not limited to, all delay damages, whether liquidated or actual, incurred by Obligee; and
3. Performs the guarantee of all work and materials furnished under this Contract for the time specified in the Contract, then this bond is void; otherwise it remains in full force.

Any changes in or under the Contract and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect Surety's obligation under this Bond.

The Surety further agrees that whenever the Principal shall be, and is declared by Obligee to be, in default under the Contract and said default shall be construed to be any breach of any of the provisions of the Contract on the part of the Principal, as directed by Obligee, the Surety shall promptly remedy the default and will complete the Contract in accordance with its terms and conditions and shall fully indemnify and hold harmless Obligee from all costs, damages, and expenses which may arise thereafter (including reasonable attorneys' fees) and which the Obligee may suffer by reason of Surety's failure to so do.

The Surety and the Principal further agree that any modifications, additions, or alternations which may be made in the terms of the Contract or in the work to be performed thereunder, or any extensions of the Contract, or other forbearance on the part of either Obligee or the Principal to the other, shall not in any way release the Principal and the Surety, or either of them, their heirs, assigns, executors, administrators and successors, from their liability hereunder, notice to the Surety of any such modifications, additions, extensions or forbearance being hereby expressly waived.

The penal sum of this Performance Bond is in addition to the penal sum of the Payment Bond being executed concurrently herewith.

This instrument shall be construed in all respects as a common law bond. It is expressly understood that the time provisions and statute of limitations under Section 255.05, Florida Statutes, shall not apply to this bond.

**IN WITNESS WHEREOF**, the above parties have executed this instrument this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, the name of each party being affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered

**PRINCIPAL:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witnessed as to Principal

By: \_\_\_\_\_

Name: \_\_\_\_\_

Its: \_\_\_\_\_

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

This foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by \_\_\_\_\_, as \_\_\_\_\_ of \_\_\_\_\_, a \_\_\_\_\_ corporation, on behalf of the corporation. He/she is personally known to me OR has produced \_\_\_\_\_ as identification.

My Commission Expires:

\_\_\_\_\_  
Notary Public (Signature)

(AFFIX NOTARY SEAL)

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Title or Rank)

**ATTEST:**

\_\_\_\_\_  
\_\_\_\_\_  
(Witnessed as to Surety)

\_\_\_\_\_  
\_\_\_\_\_  
Witnesses

\_\_\_\_\_  
(Serial Number, if any)

**SURETY:**

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
(Authorized Signature)

\_\_\_\_\_  
(Printed Name)

**OR**

\_\_\_\_\_  
As Attorney in Fact  
(Attach Power of Attorney)

\_\_\_\_\_  
As Attorney in Fact  
(Attach Power of Attorney)

\_\_\_\_\_  
\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Telephone Number)

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

This foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_,  
20\_\_, by \_\_\_\_\_, as \_\_\_\_\_ of  
\_\_\_\_\_, a \_\_\_\_\_ corporation, on behalf  
of the corporation. He/she is personally known to me OR has produced  
\_\_\_\_\_ as identification.

My Commission Expires:

\_\_\_\_\_  
Notary Public (Signature)

(AFFIX NOTARY SEAL)

\_\_\_\_\_  
(Printed Name)

\_\_\_\_\_  
(Title or Rank)

\_\_\_\_\_  
(Serial Number, if any)

**CERTIFICATE OF ATTORNEY – OWNER**

I, the undersigned,

\_\_\_\_\_

the duly authorized and acting legal representative of

PANAMA CITY-BAY COUNTY AIRPORT AND INDUSTRIAL DISTRICT

do hereby certify that I have examined the foregoing contract and the Surety Bond attached thereto and the manner of execution thereof, and that I am of the opinion that each of the aforesaid agreements has been executed by the proper representatives, and that said representatives have respectively the full power and authority to execute said agreements on behalf of the respective parties named therein, and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions and provisions thereof.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**RELEASE OF LIENS**

STATE OF: \_\_\_\_\_

COUNTY OF: \_\_\_\_\_

Before me, the undersigned Notary Public in and for the said County and State personally appeared \_\_\_\_\_, representing the Contractor \_\_\_\_\_, who being duly sworn according to law deposes and says that all labor, materials, and outstanding claims and indebtedness of whatever nature arising out of the performance of the Contract with \_\_\_\_\_ (Owner) for \_\_\_\_\_ (Contract No.) have been paid in full and that for the final payment in the amount of \$ \_\_\_\_\_, the Contractor releases and discharges the Owner and his authorized representatives from any liens or claims or any nature because of or arising from this Contract and/or its performance, which it has had, has or may have in the future.

By: \_\_\_\_\_

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

\_\_\_\_\_  
Notary Public – State of \_\_\_\_\_

(NOTARY SEAL)

\_\_\_\_\_  
(Name typed, printed or stamped)

My Commission Expires: \_\_\_\_\_

### ADVERTISEMENT OF COMPLETION

\_\_\_\_\_ (Contractor)  
\_\_\_\_\_ (Address)  
gives notice of completion of \_\_\_\_\_ (Project)  
and sets \_\_\_\_\_ as the date of final settlement.

All persons and firms should file all claims for payment to the below address prior to the settlement date:

**Northwest Florida Beaches International Airport  
Panama City – Bay County Airport and Industrial District (Owner)  
6300 West Bay Parkway  
Panama City Beach, FL 32409**

By: \_\_\_\_\_ (Name)  
\_\_\_\_\_ (Title)  
Leg: \_\_\_\_\_ (Publication Dates)



# NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT

## NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT

### GENERAL CONDITIONS

#### **GC-1 Independent Contractor**

Contractor represents that it is fully experienced, properly qualified, registered, licensed, equipped, organized, and financed to perform the Work under this contract. Contractor shall act as an independent contractor and is not an agent of the Owner in performing this contract, maintaining complete control over its employees and all its suppliers and subcontractors of any tier. Nothing contained in this contract or any lower-tier purchase orders or subcontracts awarded by the Contractor shall create any contractual relationship with the Owner and/or its representative. Contractor shall perform the Work hereunder in accordance with its own methods subject to compliance with the Contract.

#### **GC-2 Authorized Representatives**

Before starting the Work, Contractor shall designate in writing an authorized representative acceptable to the Owner or its representative to represent and act for Contractor and shall specify any and all limitations of such representative's authority.

#### **GC-3 Notices**

Any notices required hereunder shall be in writing and may be served either personally on the authorized representative of the receiving party at the Jobsite, by facsimile, by courier or express delivery, or by certified mail to the facsimile number or address of that party, or at such facsimile number or address as may have been directed by written notice.

#### **GC-4 Contract Interpretations**

All questions concerning interpretation or clarification of this Contract or applicable standards and codes, including the discovery of conflicts, discrepancies, errors or omissions, or the acceptable performance thereof by contractor, shall be immediately submitted in writing to the Owner or its representative for resolution. At all times Contractor shall proceed with the Work in accordance with the determinations, instructions, and clarifications of the Owner or its representative. Contractor shall be solely responsible for requesting instructions, interpretations or clarifications and shall be solely liable for any costs and expense arising from its failure to do so.

#### **GC-5 Order of Precedence**

All Project Documents and subsequently issued Change Orders and Amendments are essential parts of this Contract and a requirement occurring in one is binding as though occurring in all. In resolving conflicts, discrepancies, errors or omissions the following order of precedence shall be used

1. Instructions to Bidders
2. Special Conditions
3. General Conditions
4. Scope of Work
5. Specifications

#### **GC-6 Standards and Codes**

Wherever references are made in this contract to standards or codes in accordance with which the Work under this Contract is to be performed, the edition or revision of the standards or codes current on the effective date of this contract shall apply unless otherwise expressly stated. In case of conflict between any referenced standards and codes and any Project Documents, the Project Documents shall govern.

#### **GC-7 Laws and Regulations**

All applicable laws, ordinances, statutes, rules, regulations, orders or decrees, including Owner's Airport Security Program and other formally adopted rules and regulations, in effect at the time the Work under this Contract is performed shall apply to Contractor and its employees, representative, its subcontractors, sub-subcontractors, material suppliers and others under Contractor's Contract for the Work.

#### **GC-8 Permits**

Except as otherwise specified, Contractor shall procure and pay for all permits, licenses, certifications and other applicable governing authority requirements and inspections, other than inspection performed by the Owner or its representative and shall furnish any documentation, bonds, security, or deposits required to permit performance of the Work. Owner shall submit drawings and specifications to Bay County Builder Services on January 5, 2015 to initiate review and expedite review process. Contractor, upon award, shall immediately follow up, submit, secure, procure and pay for required permits with agencies.

#### **GC-9 Taxes**

Contractor shall pay all taxes, levies, duties and assessments of every nature due in connection with the Work under this Contract and shall make any and all payroll deductions and withholdings required by law, and hereby indemnifies and holds harmless the Owner and its representative from any liability on account of any and all such taxes, levies, duties, assessments, and deductions.

#### **GC-10 Labor, Personnel and Work Rules**

Contractor shall employ only competent and skilled personnel to perform the Work and shall remove from the Jobsite any Contractor personnel determined to be unfit or to be acting in violation of any provision of this Contract. Contractor is responsible for maintaining labor relations in such manner that there is harmony among workers and shall comply with and enforce Project and Jobsite procedures, regulations, work rules, and work hours established by the Owner or its representative.

The Owner may, at its sole discretion, directly or through its representative deny access to the Jobsite to any individual by written notice to Contractor and Contractor shall promptly replace such individual with another who is fully competent and skilled to perform the Work.

Contractor shall, to the extent permissible under applicable law, comply with the provisions of all labor agreement(s) which apply to the Work performed under this Contract. Unless other methods are established by Owner, the rules, regulations, and procedures of the Plan for Settlement of Jurisdictional Disputes in the Construction Industry, or any successor agreement thereto, shall be used to determine work assignments and to resolve jurisdictional disputes on work covered by this Contract.

#### **GC-11 Commercial Activities**

Neither Contractor nor its employees shall establish any commercial activity or issue concessions or permits of any kind to third parties for establishing commercial activities on the Jobsite or any other lands owned or controlled by Owner.

#### **GC-12 Publicity and Advertising**

Contractor shall not make any announcement, take any photographs, or release any information concerning this Contract, or Project, or any part thereof to any member of the public, press, business entity, or any official body unless prior written consent is obtained from the Owner.

### **GC-13 Safety and Health**

Contractor shall be solely responsible for conducting operations under this Contract to avoid risk of harm to the health and safety of persons and property and for inspecting and monitoring all its equipment, materials and work practices to ensure compliance with its obligations under this contract. Contractor shall assume all responsibility and liability with respect to all matters regarding safety and health of its employees and the employees of Contractor's suppliers and subcontractors of any tier, with respect to the risks under this Contract.

### **GC-14 Environmental Requirements**

Throughout performance of the Work, Contractor shall conduct all operations in such a way as to minimize impact upon the natural environment and prevent any spread or release of contaminated or hazardous substances and comply with all applicable laws, regulations, ordinances, statutes, rules, and codes governing environmental requirements and conduct the Work based on the requirements of this Contract including compliance with permit requirements and Project plans and approvals. Contractor shall indemnify Owner for any penalties, fines, and costs incurred, including costs for environmental studies and remediation, that arise due to Contractor's improper performance of the Work or Contractor's negligence.

### **GC-15 Site Conditions and Natural Resources**

Contractor shall have the sole responsibility for satisfying itself concerning the nature and location of the Work and the general and local conditions, including but not limited to, transportation, access, disposal, handling/storage materials, labor availability, water, electrical power, road conditions, climatic conditions, soil conditions, seasons, hydrology, physical site condition, project area, topography, ground surface conditions, equipment and facilities needed preliminary to and during the performance of the Work. The failure of Contractor to acquaint itself with any applicable conditions will not relieve Contractor of the responsibility for properly estimating the difficulties, time or cost of successfully performing Contractor's obligations under this Contract.

### **GC-16 Differing Site Conditions**

Where the Owner or its representative has made investigations of subsurface, surface and soil conditions in areas where work is to be performed under this Contract, such investigations are made by Owner or its representative for the purpose of study and design. If such records of such investigations are included in the Project Documents, the interpretation of such records shall be the sole responsibility of Contractor and the Owner or its representative assumes any responsibility whatsoever in respect to the sufficiency or accuracy of such investigations, the records thereof, or the interpretations set forth and there is no warranty or guarantee, either express or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unforeseen developments may not occur, or that materials other than or in proportions different from those indicated may not be encountered.

### **GC-17 Contractor's Work Area**

Contractor shall confine its operations to the areas designated in the plans as the areas of Work or access to the Work or areas designated for storage. Contractor shall coordinate with Owner any planned disruption of operations at, or adjacent to, Worksite. Contractor shall, at all times, keep its work areas in neat, clean and safe conditions. Upon completion of any portion of the Work, Contractor shall promptly remove from the work area all its equipment, storage, temporary structures, surplus materials not to be used at or near the same location during later stages of the Work. Upon completion of the Work and prior to final payment, Contractor shall at its expense satisfactorily dispose of all rubbish, remove all plant, equipment, and materials and leave the premises in a neat, clean and safe condition. If Contractor fails to comply with these foregoing requirements, Owner may accomplish same at Contractor's expense.

### **GC-18 Cooperation with Others**

The Owner may have its employees, representatives, other contractors and other subcontractors working at the Jobsite during the performance of this Contract and Contractor's work or use of certain facilities may be interfered with as a result of such concurrent activities. Owner reserves the right to require Contractor to schedule the order of performance of the Work in such a manner as will minimize the interference with work of any of the parties involved.

**GC-19 Responsibility for Work, Security and Property**

Contractor shall be responsible for and shall bear any and all risk of loss or damage to work in progress and, pursuant to the Special Condition titled "Title and Risk of Loss," to equipment and materials. Contractor shall be responsible for all receiving and unloading of materials for the Work, storing of materials and equipment subject to degradation by the elements and secure same from other damage or loss. Contractor shall at all times conduct all operations under this Contract in a manner to avoid the risk of loss, theft, or damage by vandalism, sabotage or any other means to any equipment, materials, work or other property at the Jobsite. Contractor shall plan and conduct its operations so as not to enter into lands in their natural state unless pre-authorized by the Owner, damage, close, obstruct or otherwise interfere with any utility installation, ditch, highway, road, structure or other property, and if necessary to do so, receive the Owner's pre-permission prior to such obstruction or interference.

**GC-20 Cleaning Up**

Contractor shall, at all times, keep its work areas in a neat, clean and safe condition. Upon completion of any portion of the Work, Contractor shall promptly remove from the work area all its equipment, construction plant, temporary structures and surplus materials not to be used at or near the same location during later stages of the Work.

Upon completion of the Work and prior to final payment, Contractor shall at its expense satisfactorily dispose of all rubbish, remove all plant, buildings, equipment and materials belonging to Contractor and return to Owner's warehouse or Jobsite storage area all salvageable Owner supplied materials. Contractor shall leave the premises in a neat, clean and safe condition.

In event of Contractor's failure to comply with the foregoing requirements, Owner may accomplish same at Contractor's expense.

**GC-21 Contractor's Plant, Equipment and Facilities**

Contractor shall provide and use for the Work only such construction plant and equipment as are capable of producing the quality and quantity of work and materials required by this contract and within the time or times specified in the Contract Documents.

Before proceeding with the Work, Contractor shall furnish Owner's Representative and Owner with information and drawings relative to such equipment, plant and facilities as Owner's Representative or Owner may request. Upon written order of Owner or Owner's Representative, Contractor shall discontinue operation of unsatisfactory plant, equipment or facilities and shall either modify the unsatisfactory items or remove such items from the Jobsite.

**GC-22 Use of Completed Portions of Work**

Whenever, as determined by Owner, any portion of the Work performed by Contractor is suitable for use, Owner may, upon written notice, occupy and use such portion. Use shall not constitute acceptance, relieve Contractor of its responsibilities, or act as a waiver by Owner of any terms of this contract.

Contractor shall not be liable for normal wear and tear or for repair of damage caused by any misuse during such occupancy or use by Owner. If such use increases the cost or time of performance of remaining portions of the Work, Contractor shall, pursuant to the General Condition titled "Changes," be entitled to an equitable adjustment in its compensation or schedule under this contract.

If, as a result of Contractor's failure to comply with the provisions of this contract, such use proves to be unsatisfactory to Owner, Owner shall have the right to continue such use until such portion of the Work can, without injury to Owner, be taken out of service for correction of defects, errors, omissions or replacement of unsatisfactory materials or equipment as necessary for such portion of the Work to comply with the contract; provided that the period of such operation or use pending completion of appropriate remedial action shall not exceed twelve (12) months unless otherwise mutually agreed in writing between the parties.

Contractor shall not use any permanently installed equipment until such use is approved in writing by Owner. When such use is approved, Contractor shall, at Contractor's expense properly use and maintain and, upon completion of such use, recondition such equipment as required to meet specifications.

If Owner's Representative or Owner furnishes an operator for such permanently installed equipment, all services performed shall be under the complete direction and control of Contractor, and such operator shall be considered Contractor's employee for all purposes other than payment of such operator's wages, Worker's Compensation Insurance or other benefits.

#### **GC-23 Inspection, Quality Surveillance, Rejection of Materials and Workmanship**

All material and equipment furnished and work performed shall be properly inspected by Contractor at its expense, and shall at all times be subject to quality surveillance and quality audit by Owner's Representative, Owner or their authorized representatives who, upon reasonable notice, shall be afforded full and free access to the shops, factories or other places of business of Contractor and its suppliers and subcontractors of any tier for such quality surveillance or audit. Contractor shall provide safe and adequate facilities, drawings, documents and samples as requested, and shall provide assistance and cooperation including stoppage of work to perform such examination as may be necessary to determine compliance with the requirements of this contract. Any work covered prior to any quality surveillance or test by Owner's Representative or Owner shall be uncovered and replaced at the expense of contractor if such covering interferes with or obstructs such inspection or test. Failure of Owner's Representative or Owner to make such quality surveillance or to discover defective design, equipment, materials or workmanship shall not relieve Contractor of its obligations under this contract nor prejudice the rights of Owner thereafter to reject or require the correction of defective work in accordance with the provisions of this contract.

If any work is determined by Owner's Representative or Owner to be defective or not in conformance with this contract the provisions of the General Condition titled "Warranty" shall apply.

#### **GC-24 Testing**

Unless otherwise provided in the Contract, testing of soils, equipment, materials or work shall be performed by Contractor at its expense and in accordance with the Project Documents. Should tests in addition to those required by this Contract be desired by the Owner or its representative, Contractor will be given reasonable notice by the Owner or its representative for such testing and at the Owner's expense.

#### **GC-25 Expediting**

The equipment and materials furnished and work performed under this contract shall be subject to expediting by Owner's Representative and/or Owner or their representative who shall be afforded full and free access to the shops, factories, and other places of business of Contractor and its suppliers and subcontractors of any tier for expediting purposes. As required by Owner's Representative or Owner, Contractor shall provide detailed schedules and progress reports for use in expediting and shall cooperate with Owner's Representative and/or Owner in expediting activities.

#### **GC-26 Excusable Delays**

If Contractor's performance of this Contract is prevented or delayed by any unforeseeable cause, existing or future, which is beyond the reasonable control of the parties and without the fault or negligence of Contractor, Contractor shall, within twenty-four (24) hours of the commencement of any such delay, give the Owner or its representative written notice thereof and within seven (7) calendar days of commencement of the delay, a written description of the anticipated impact of the delay on performance of the Work. Delays attributable to within the control of Contractor's suppliers or subcontractors of any tier shall be deemed delays within the control of Contractor. Contractor expressly acknowledges and agrees that it shall receive no damages for delay and Contractor's sole remedy, if any, against Owner will be the right to seek an extension of time.

#### **GC-27 Changes**

Owner may at any time, without notice to the sureties if any, by written Change Order unilaterally make any change in the Work within the general scope of this Contract, including but not limited to changes in the method, manner

and sequence of Contractor work, in Owner furnished facilities, equipment, materials services or site(s) and directing acceleration or deceleration in performance of the Work and modifying the Contract Schedule or the Contract Milestones.

If the Owner and Contractor are unable to agree on a Change Order for the requested change, Contractor shall, nevertheless, promptly perform the change as directed by the Owner in a written Construction Change Directive. In that event, the Contract Price and Contract Time shall be adjusted in the Construction Change Directive as determined by the Owner. If Contractor disagrees with the Owner's adjustment determination, Contractor must make a claim strictly in accordance with the terms of this General Condition or else be deemed to have waived any claim it might otherwise have had on that matter.

In addition, in the event of an emergency which Owner determines endangers life or property, Owner may use oral orders to Contractor for any work required by reason of such emergency. Contractor shall commence and complete such emergency work as directed by the Owner or its representative and such orders will be confirmed by written Change Order.

If at any time Contractor believes that acts or omissions of Owner or its representative constitute a change to the Work not covered by a Change Order or requirements of the Project Documents, Contractor shall within seven (7) calendar days of discovery of such act or omission submit a written Change Order Request explaining in detail the basis for the request. The Owner will either issue a Change Order or deny the request in writing.

If Contractor intends to assert a claim for an equitable adjustment under this clause it must, within ten (10) calendar days after receipt of a Change Order or denial of same provide written notification of such intent and within a further twenty (20) calendar days, submit to Owner or its representative a written proposal setting forth the nature, schedule, impact and monetary extent of such claim in sufficient detail to permit thorough analysis and negotiations.

Change Order Requests from the Contractor shall be presented to the Owner in sufficient detail to allow for evaluation. Minimum information shall include Contractor, Sub-contractor and Sub-sub-contractor itemization of Labor, Materials and Equipment costs included in the Change Order. Labor shall include labor-hours and hourly rates. Hourly rates will be the direct hourly rate of the personnel performing the work plus an allowable labor burden. The labor burden shall either be an audited labor burden or 0.5, if an audited rate is not available. Material and Equipment shall be included at their direct costs, which shall be supported by itemized invoices for billing. If equipment is rented through a related company, the rental rate shall be no greater than the average rental rate for similar equipment in Bay County. Related company shall mean a company owned or controlled by any owner or officer of the Contractor and Subcontractor.

Subcontractor's and Sub-sub-contractor's allowable mark-up for overhead and profit on Labor, Material and Equipment in the Change Order shall be individually no greater than 10% and in aggregate no greater than 15%.

Contractor's allowable mark-up for overhead and profit on Labor, Material and Equipment in the Change Order shall be 10%.

Additional General Conditions shall not be included in a Change Order unless the Change Order changes effects the critical path and changes the Time of Completion. Any change order request affecting the critical path shall include a detailed schedule show the change effect on the critical path.

Any delay by Contractor in giving notice or presenting a proposal for adjustment under this clause shall be grounds for rejection and waiver of the claim and in no case shall a claim by Contractor be considered if asserted after final payment under this Contract.

Contractor shall proceed diligently with performance of the Work, pending final resolution of any request for relief, dispute, claim, appeal, or action arising under the Contract, and comply with any direction from the Owner or its representative.



### **GC-28 Disputes**

Contractor shall not be entitled to claim and neither Owner nor its representative shall be liable to Contractor or its suppliers or subcontractors of any tier in tort (including negligence), or contract except as specifically provided in this Contract. Any claim arising out of or attributable to the interpretation or performance of this Contract which cannot be resolved by negotiation shall be considered a dispute within the meaning of this clause. If for any reason Owner and Contractor are unable to resolve a claim for an adjustment, Contractor shall notify Owner or its representative in writing that a dispute exists and request a final determination by Owner. Owner shall, within thirty (30) calendar days of its receipt of any written request by Contractor, provide a written final determination setting for the contractual basis for its decision and defining what contract adjustments it considers equitable. Upon Contractor's written acceptance of Owner's determination the Contract will be modified and the determination implemented accordingly or, failing agreement, the dispute resolution procedures as set forth in the Special Conditions titled "Dispute Resolution" shall be complied with.

### **GC-29 Records and Audit**

The Contractor shall maintain an acceptable cost accounting system. The Contractor agrees to provide the Sponsor, 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.

Contractor shall maintain records and accounts in connection with the performance of this Contract which will accurately document incurred costs, both direct and indirect, of whatever nature for a period of three (3) years from the Final Acceptance of the Work unless a longer period of time is otherwise specified by applicable law. Owner or its representative shall have the right to examine and copy, at all reasonable times and with advance notification, such records and accounts for the purpose of verifying payments or requests for payment when costs are the basis of such payment and to evaluate the reasonableness of proposed contract price adjustments and claims.

### **GC-30 Warranty**

Contractor warrants to Owner that materials furnished under this contract shall be of clear title and of the most suitable grade of their respective kinds for their intended uses, unless otherwise specified and shall also conform to the requirements of this Contract. All workmanship shall be first class and performed in accordance with sound construction practices acceptable to Owner or its representative.

If at any time prior to Final Acceptance or after Final Acceptance in cases of latent defects, fraud or such gross mistakes as amount to fraud, Owner, Owner's Representative, or Contractor discover any defect in the equipment, materials, workmanship, or Contractor-provided design, immediate written notice shall be given to the other parties. Contractor shall within a reasonable time propose corrective actions to cure such defects.

Owner may at its sole discretion, or through Owner's Representative, direct Contractor in writing and Contractor agrees to:

1. Rework, repair, or remove and replace defective equipment and materials or re-perform defective workmanship to acceptable quality at a time and in a manner acceptable to Owner;
2. Cooperate with others assigned by Owner to correct such defects and pay to Owner all actual costs reasonably incurred by Owner in performing or in having performed corrective actions; or
3. Propose and negotiate in good faith an equitable reduction in the Contract price in lieu of corrective action.

The warranty described by this General Condition is in addition to any more specific warranty required by the Invitation to Bid, the Scope of Work, the Specifications, or provided by the Contractor as part of its bid or as a separate document.

### **GC-31 Backcharges**

Owner may, in addition to any other amounts to be retained as defined in the Contract, retain from any sums otherwise owing to Contractor amounts sufficient to cover the full costs of any Contractor failure to comply with provisions of this Contract or Contractor acts or omissions in the performance of any part of this Contract, including but not limited to, violation of any applicable law, order, rule, or regulation, including those regarding safety, hazardous materials or environmental requirements; correction of defective or nonconforming work by repair, rework, replacement or other appropriate means when Contractor states, or by its actions indicates, that it is unable or unwilling to proceed with corrective action in a reasonable time; and/or the Owner is required to take action or perform work for Contractor, such as cleanup, off-loading or completion of incomplete work.

Owner may also backcharge against Contractor for work done or cost incurred to remedy these or any other Contractor defaults, errors, omissions or failures to perform or observe any part of this Contract. Owner may, but shall not be required to, give Contractor written notice before performing such actions or work or incurring such cost. Cost of backcharge work shall include labor costs including payroll additives, incurred net delivered material costs, incurred lower-tier supplier and subcontractor costs directly related to performing the corrective action, equipment and tool rentals at prevailing rates in the Jobsite area and a factor, determined by the Owner, but not greater than sixty percent (60%), shall be applied to the total of these items for Owner's overhead, supervision, administrative and other related costs.

Owner shall separately invoice or deduct and retain from payments otherwise due to Contractor the cost as provided herein. Owner's right to backcharge is in addition to any and all other rights and remedies provided in this Contract or by law. The performance of backcharge work by Owner shall not relieve Contractor of any of its responsibilities under this Contract including but not limited to express or implied warranties, specified standards for quality, contractual liabilities and indemnifications, and meeting the milestones of the Special Condition titled "Commencement, Progress and Completion of the Work."

### **GC-32 Indemnity**

To the maximum extent permitted by Florida law, Contractor shall indemnify and hold harmless Owner and its officers and employees and its representatives from any and all liabilities, claims, damages, penalties, demands, judgments, actions, proceedings, losses or costs, including, but not limited to, reasonable attorneys' fees and paralegals' fees, whether resulting from (1) any claimed breach of this Contract by Contractor or (2) from personal injury, property damage, direct or consequential damages, or economic loss, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of Contractor or anyone employed or utilized by the Contractor in the performance of this Contract.

### **GC-33 Consequential Damages**

Except as expressly provided below in the second paragraph of this Section GC-33, Contractor and Owner shall waive all claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes damages incurred by Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with the requirements herein.

Notwithstanding anything in this Section GC-33 or any other term of the Project Documents to the contrary, it is acknowledged and agreed by Contractor that expressly excluded from the above referenced waiver of consequential damages provisions are any consequential damages arising out of or relating to this Contract suffered by Owner for which Contractor otherwise would be liable as provided in the following three (3) sentences. Consequential damages are not waived by Owner to the extent such consequential damages would be covered and paid for by any applicable insurance. Further, with respect to such consequential damages incurred by Owner that are not paid by any applicable insurance, Owner does not waive and Contractor shall be liable to Owner for such consequential damages up to the total cumulative amount of those reasonable amounts expected by Contractor as

profit. Further still, with respect to any consequential damages incurred by Owner that are due to the gross negligence or intentional wrongful acts or omissions of Contractor or anyone for whom Contractor is responsible, Owner does not waive and Contractor shall be liable to Owner for all such consequential damages. Nothing herein shall be construed as a cap or limitation on any liquidated damages Contractor may owe Owner pursuant to the terms of the Project Documents.

#### **GC-34 Assignments and Subcontracts**

Any assignment of this Contract or rights hereunder, in whole or part, without the prior written consent of Owner shall be void, except that upon ten (10) calendar days written notice to Owner or its representative, Contractor may assign monies due or to become due under this Contract, provided that any assignment of monies shall be subject to proper set-offs in favor of Owner and any deductions provided for in this Contract. Purchase orders and subcontracts of any tier must include provisions to secure all rights and remedies of Owner provided under this Contract, and must impose upon the lower-tier supplier and subcontractor all of the duties and obligations required to fulfill this Contract. No assignment or subcontract shall relieve Contractor or its sureties of the responsibilities under this Contract.

#### **GC-35 Suspension**

Owner or its representative may by written notice to Contractor suspend at any time the performance of all or any portion of the Work to be performed under the Contract. After receipt of such notice, Contractor shall immediately discontinue work on the date and to the extent specified in the notice, place no further orders or subcontracts for material, services, or facilities with respect to the suspended work other than to the extent required in the notice, continue to protect and maintain the Work including those portions on which work has been suspended, and take any other reasonable steps to minimize cost associated with such suspension.

Upon receipt of notice to resume suspended work, Contractor shall immediately resume performance under this Contract to the extent required in the notice.

#### **GC-36 Termination for Default**

Notwithstanding any other provisions of this contract, Contractor shall be considered in default of its contractual obligations under this Contract if it performs work which fails to conform to the requirements of this Contract; fails to make progress so as to endanger performance of this contract within the required time periods; abandons or refuses to proceed with any of the Work, including modifications or changes directed pursuant to the General Conditions titled "Changes;" fails to fulfill or comply with any of the terms of this Contract; engages in behavior that is dishonest, fraudulent or constitutes a conflict of interest with Contractor's obligations under this Contract; or Contractor becomes insolvent or makes a general assignment for the benefit of creditors or reasonable grounds for insecurity arise with respect to Contractor's performance.

Upon the occurrence of any of the foregoing, Owner shall notify Contractor in writing of the nature of the failure and of Owner's intention to terminate the Contract for default. If Contractor does not cure such failure within seven (7) calendar days from receipt of notification, or sooner if safety is involved, or fails to provide satisfactory evidence that such default will be corrected within a reasonable time, Owner may, by written notice to Contractor, and without notice to Contractor's sureties, if any, terminate in whole or in part Contractor's right to proceed with the Work and Owner may prosecute the Work to completion by contract or by any other method deemed expedient. Owner may take possession of and utilize any data, designs, licenses, equipment, materials, plant, tools, and property to any kind furnished by Contractor and necessary to complete the Work.

Contractor and its sureties, if any, shall be liable for all costs in excess of the Contract price for such terminated work incurred by Owner in the completion of the Work, including cost of administration of any purchase order or subcontract awarded to others for completion.

Upon termination for default, Contractor shall immediately discontinue work on the date and to the extent specified in the notice and place no further purchase orders or subcontracts to the extent that they relate to the performance of the terminated work; inventory, maintain and turn over to Owner all data, designs, licenses, equipment, materials, plant, tools, and property furnished by Contractor or provided by Owner for performance of the terminated work;

promptly obtain cancellation upon terms satisfactory to Owner of all purchase orders, subcontracts, rentals, or any other agreements existing for performance of the terminated work or assign those agreements as directed by Owner or its representative; cooperate with Owner or its representative in the transfer of data, designs, licenses, and information and disposition of work in progress so as to mitigate damages; comply with other reasonable requests from Owner or its representative regarding the terminated work; and continue to perform in accordance with all of the terms and conditions of this Contract such portion of the Work that is not terminated.

If, after termination pursuant to this clause, it is determined for any reason that Contractor was not in default, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to the General Condition entitled Optional Termination.

### **GC-37 Optional Termination**

Owner may, at its option, terminate for convenience any of the Work under this Contract in whole or, from time to time, in part, at any time by written notice to Contractor. Such notice shall specify the extent to which the performance of the Work is terminated and the effective date of such termination.

Upon receipt of such notice Contractor shall immediately discontinue the Work on the date and to the extent specified in the notice and place no further purchase orders or subcontracts for materials, services, or facilities, other than as may be required for completion of such portion of the Work that is not terminated; promptly obtain assignment or cancellation upon terms satisfactory to Owner of all purchase orders, subcontracts, rentals, or any other agreements existing for the performance of the terminated work or assign those agreements as directed by Owner or its representative; assist Owner or its representative in the maintenance, protection and disposition of work in progress, plant, tools, equipment, property and materials acquired by Contractor or furnished by Owner or its representative under this Contract; and complete performance of such portion of the Work which is not terminated.

Upon any such termination, Contractor shall waive any claims for damages including loss of anticipated profits; on account thereof, but as the sole right and remedy of Contractor, Owner shall pay in accordance with (1) the Contract price corresponding to the work performed in accordance with this Contract prior to such notice of termination; (2) all reasonable costs for work thereafter performed as specified in such notice; (3) reasonable administrative costs of settling and paying claims arising out of the termination of work under purchase orders or subcontracts; (4) reasonable increased costs incurred in demobilization and the disposition of residual material, plant, and equipment; and (5) reasonable overhead and profit on items 2 through 4.

Contractor shall submit with thirty (30) calendar days after receipt of notice of termination, a written statement setting forth its proposal for an adjustment to the Contract price to include only the incurred costs described in this clause. Owner and its representative shall review, analyze, and verify such proposal, and negotiate an equitable adjustment, and the Contract shall be modified accordingly.

### **GC-38 Final Inspection and Acceptance**

When Contractor considers the Work, or any Owner identified independent portion of the Work under this Contract to be complete and ready for acceptance, Contractor shall notify Owner or its representative in writing. Owner and its representative, with Contractor's cooperation, will conduct such reviews, inspections and tests as may be reasonably required to satisfy the Owner and its representative that the Work, or identified portion of the Work, conforms to all requirements of the Contract. If all or any part of the Work covered by Contractor's notice does not conform to contract requirements, Owner or its representative shall notify Contractor of such nonconformance and Contractor shall take corrective action and then have the nonconforming work re-inspected until all contract requirements are satisfied.

Owner's written Certification of Final Acceptance of the Work under this Contract shall be final and conclusive except with regard to latent defects, fraud or such gross mistake as amount to fraud, or with regard to Owner's rights under the General Conditions titled "Warranty".

### **GC-39 Non-Waiver**

Failure by Owner to insist upon strict performance of any terms or conditions of this contract, or failure or delay to exercise any rights or remedies herein or by law, or failure to properly notify Contractor in the event of breach, or the acceptance of or payment for any goods or services, hereunder, or the review or failure to review designs shall not release Contractor from any of the warranties or obligations of this Contract and shall not be deemed a waiver of any right of Owner to insist upon strict performance hereof or any of its rights or remedies as to any prior or subsequent default hereunder nor shall any termination of work under this contract by Owner operate as a waiver of any of the terms hereof.

### **GC-40 Government Restricted Parties and Commodities**

Contractor acknowledges that all applicable export rules and regulations of the origin countries shall apply to the exports of commodities, software and technology (technical data and assistance) under this contract. Contractor also acknowledges that other rules and regulations may restrict the use of certain parties under this contract. Such rules and regulations are generally described below.

#### **1. Restricted Parties Lists**

Country governments and international organizations such as the United Nations and European Union publish Restricted Parties List (“Lists”) that identify parties (such as known or suspected terrorists, money launderers and drug traffickers) restricted from certain or all types of transactions. Contractor shall review all applicable Lists prior to initiating transactions with any third party for the performance of all or any portion of the Work to ensure such third party is not identified on any applicable Lists. Contractor shall not enter into any transactions with any third party identified on any applicable Lists.

#### **2. Licensing Requirements**

(a) **General:** Each country has export regulations that control commodities, software and technology for various reasons, such as national security, foreign policy, anti-terrorism, and to avoid the proliferation of weapons and potential weapons, e.g. certain nuclear, chemical or biological agents. Numerous countries have export regulations that specifically address dual-use items, meaning commercial items with the potential to be applied to military and/or weapon proliferation uses. Contractor shall ensure that all necessary export licenses are obtained, or license exceptions confirmed, prior to the export of any commodity, software, or technology.

(b) **United States of America (USA) Export Licensing Requirements:** Contractor is solely responsible for obtaining any required USA export licenses for all commodities, software, and technology being supplied in the performance of the Work, except for any commodity, software or technology supplied by Owner. A copy of the export license, or rationale as to why a license is not required, shall be provided to Owner’s Representative or Owner upon request.

Contractor shall be responsible for any delay resulting from Contractor’s failure to comply fully and timely with any such rule or regulation described above.

Contractor hereby agrees to indemnify, defend and hold Owner’s Representative, Owner, each of their respective affiliates and the respective directors, officers, employees and representatives of each harmless from and against any and all claims, legal or regulatory actions, final judgments, reasonable attorneys’ fees, civil fines and any other losses which any of them may incur as a result of Contractor’s failure to comply with its obligations under this clause.

### **GC-41 Equal Employment Opportunity**

Contractor is aware of and is fully informed of Contractor’s obligation under Executive Order 11246 and, where applicable, shall comply with the requirements of such Order and all orders, rules, and regulations promulgated thereunder unless exempted therefrom.

Without limitation of the foregoing, Contractor's attention is directed to 41 Code of Federal Regulations (CFR), Section 60-1.4, and the clause titled "Equal Opportunity Clause" which, by this reference, is incorporated herein.

Contractor is aware of and is fully informed of Contractor's responsibilities under Executive Order No. 11701 "List of Job Openings for Veterans" and, where applicable, shall comply with the requirements of such Order and all orders, rules and regulations promulgated thereunder unless exempted therefrom.

Without limitation of the foregoing, Contractor's attention is directed to 41 CFR section 60-250 et seq. and the clause therein titled "Affirmative Action Obligations of Contractors and Subcontractors for Disabled Veterans and Veterans of the Vietnam Era," which by this reference, is incorporated herein.

Contractor certifies that segregated facilities, including but not limited to washrooms, work areas and locker rooms, are not and will not be maintained or provided for Contractor's employees. Where applicable, Contractor shall obtain a similar certification from any of its subcontractors, vendors, or suppliers performing the Work under this contract.

Contractor is aware of and is fully informed of Contractor's responsibilities under the Rehabilitation Act of 1973 and the Americans with Disabilities Act and, where applicable, shall comply with the provisions of each Act and the regulations promulgated thereunder unless exempted therefrom.

Without limitation of the foregoing, Contractor's attention is directed to 41 CFR Section 60-741 and the clause therein titled "Affirmative Action Obligations of Contractors and Subcontractors for Handicapped Workers," which by this reference, is incorporated herein.

#### **GC-42 Disadvantaged Business Enterprises Program**

Contractor shall support Owner's policy and commitment to maximizing, where practical, business opportunities for Disadvantaged Business Enterprises (as identified in the Special Conditions) by actively identifying, encouraging, and assisting in their participation and otherwise making a good-faith effort to achieve the DBA goals established for this project.

#### **GC-43 Authority of Owner's Representative**

The Owner's Representative shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the Work. The Owner's Representative also shall decide all questions that may arise as to the interpretation of the specifications or plans relating to the Work. The Owner's Representative shall determine the amount and quality of the several kinds of Work performed and materials furnished which are to be paid for under the contract.

#### **GC-44 Conformity with Plans and Specifications**

All Work and all materials furnished shall be in conformity with the dimensions, quality, quantity, material, and testing requirements that are specified (including specified tolerances) in the Contract Documents.

If the Owner's Representative finds the materials furnished, Work performed, match or the finished product not within conformity with the Contract Documents but that the portion of the Work affected will, in its opinion, result in a finished project having a level of safety, economy, durability, and workmanship acceptable to the Owner, it will advise the Owner of its recommendation that the affected Work be accepted and remain in place. In this event, the Owner's Representative will document its 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. The Owner's Representative determination and recommended contract price adjustments will be based on the Owner's Representative's reasonable judgment and such test or retests of the affected Work as are, in its opinion, needed. Owner may accept or reject the Owner's Representative's recommendation (including any price adjustment recommendation) in its sole discretion. Changes in the contract price shall be covered by Change Order or supplemental agreement, as applicable.

If the Owner's Representative finds the materials furnished, Work performed, or the finished product are not in conformity with the Contract Documents and which Owner has not decided to accept with a price adjustment as provided above, the affected Work or materials shall be removed and replaced or otherwise corrected by and at the expense of Contractor in accordance with the Owner's Representative's written orders.

For the purpose of this subsection, nothing herein shall be construed as waiving Contractor's responsibility to complete the Work in accordance with the Invitation to Bid or Bid Specifications.

Neither Owner's Representative nor Owner will be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

#### **GC-45 Authority and Duties of Inspectors**

Inspectors employed by the Owner or Owner's Representative shall be authorized to inspect all Work done and all materials furnished. Such inspection may extend to all or any part of the Work and to the preparation, fabrication, or manufacture of the materials used. Inspectors are not authorized to revoke, alter, or waive any provision of the contract. Inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

Inspectors employed by the Owner or Owner's Representative are authorized to notify the Contractor or its 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 Owner's Representative for its initial decision.

#### **GC-46 Source of Supply and Quality Requirements**

The materials used in the Work shall conform to the requirements of the Contract Documents. 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, Contractor shall furnish complete statements to the Owner's Representative as to the origin, composition, and manufacture of all materials to be used in the Work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the Owner's Representative's option, materials may be approved at the source of supply before delivery is stated. 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.

#### **GC-47 Samples, Tests, and Cited Specifications**

Except for those tests to be performed by Contractor pursuant to the Contract Documents, all materials used in the Work may be inspected, tested, and approved or denied by the Owner's Representative at any time before incorporation in the Work, its decision. Any Work in which untested materials are used at the Contractor's risk. Any untested materials used in the Work and are found to not comply with requirements of the Contract Documents, such materials shall be removed and replaced with materials tested and approved by the Owner's Representative at the Contractor's expense. Materials found to be unacceptable will not be paid for.

Unless otherwise designated in the Contract Documents, tests in accordance with the cited standard methods of ASTM, AASHTO, Federal Specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement of the bids, will be made by the Owner's Representative or Owner at the Owner's expense. The testing organizations performing on site field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel including the Contractor's representative at its request. Unless otherwise designated, samples will be taken by a qualified representative of the Owner's Representative. All materials being used are subject to inspection, test, or rejection at any time prior to or after incorporation into the Work. Copies of all tests will be furnished to the Contractor's representative at its request.

The Contractor shall employ a testing organization to perform all Contractor required tests. The Contractor shall submit to the Owner's Representative resumes on all testing organizations and individual persons who will be performing the tests. The Owner's Representative shall have the right, following review of such credentials, to reject any organization or individual persons performing the tests at its decision and require the Contractor to find alternative organizations or individuals acceptable to the Owner's Representative. All the test data shall be reported to the Owner's Representative after the results are known. Legible, printed reports of all test data shall be given to the Owner's Representative within five (5) business days of such tests. After completion of the Work, and prior to final payment, Contractor shall submit a final report to the Owner's Representative showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

#### **GC-48 Certification of Compliance**

The Owner's Representative may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance 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.

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 Owner's Representative.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "brand name," 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 certificates 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 Work.

Should the Contractor propose to furnish an "or equal" material or assembly, it shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand name material or assembly prior to and be approved by the Owner's Representative prior to its order and delivery to the Work. Any material or assembly furnished "or equal" not prior approved shall be removed from the Work at the Contractor's cost and shall not be paid for.

#### **GC-49 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 Documents 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 Owner's Representative or Owner at or on an Owner approved site,
- b. The Contractor has furnished the Owner's Representative with acceptable evidence of the quantity and quality of such stored or stockpiled materials,
- c. The Contractor has furnished the Owner's Representative 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 so stored or stockpiled,
- e. The Contractor has furnished the Owner evidence that the material so 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 its responsibility for furnishing and placing such materials in accordance with the requirements of the Contract Documents.

In no case will the amount of partial payments for materials on hand exceed the allocated portion of the contract price for such materials or the contract price for the contract item in which the material is intended to be used, less any applicable retained portions. The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

**GC-50 Bid Security**

Guarantee will be required with each bid as a certified check on a solvent bank or a bid bond in the amount of five (5) percent of the total amount of the bid, made payable to the Panama City–Bay County Airport and Industrial District.

**GC-51 Bonding Requirements**

The successful bidder will be required to furnish separate performance and payment bonds each in an amount equal to 100% of the contract price.

**GC-52 Performance and Payment Securities**

The successful Bidder shall deliver to the Owner or the Owner's Authorized Representative no later than ten (10) calendar days after contract award and prior to commencing the Work or entering the Project Site, a Performance and Payment Bond in the form supplied in the bid and project documents and executed, as surety, by a corporation acceptable to the Owner and authorized to issue such bonds in the jurisdiction of Bay County, Florida. Such Performance Bond and Payment Bond shall each be for one hundred percent (100%) of the total as set forth in Bidder's proposal. The cost of such Performance Bond and Payment Bond shall be included in the Guaranteed Maximum Price submitted in the Bidder's Proposal

**END OF GENERAL CONDITION**



# NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT

## NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT

### SPECIAL CONDITIONS

#### **SC-1 Definitions**

Whenever the following terms are used, the intent and meaning shall be interpreted as follows:

**AIR OPERATIONS AREA (AOA)** means any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft including paved and unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways and/or aprons.

**AIRPORT TICKET OFFICE (ATO)** means any area of the airport terminal used or intended to be used for the ticketing and baggage check for passengers. This area includes staff work and break areas.

**CALENDAR DAY** means every day shown on the calendar.

**CHANGE ORDER** means a written order to the Contactor signed by Owner and its representative covering changes in the plans, specifications, or proposed quantities and establishing a basis of payment and contract time adjustment, if any, for the work affected by such changes.

**CONTRACT DOCUMENTS** mean all the written and drawn documents comprising the Contract for the Project.

**CONTACT SCHEDULE** means the Work execution schedule developed by Contactor and approved by Owner for implementation of the Work.

**CONTRACTOR** means the individual, partnership, Limited Liability Company or corporation, its authorized representatives, successors, and permitted assigns as identified in the Contract.

**FAA** means the Federal Aviation Administration of the U.S. Dept. of Transportation.

**INSPECTOR** means authorized representative of Owner assigned to make all necessary inspections and/or tests of the work performed or being performed, or the materials furnished or being furnished by Contractor.

**JOBSITE** means the designated site for the Project where the Work will be performed by the Contractor.

**NOTICE TO PROCEED (NTP)** means a written notice to Contractor to begin the actual work for the designated portion thereof by a specified date and date on which the Contract begins.

**OWNER** means Panama City–Bay County Airport and Industrial District dba Northwest Florida Beaches International Airport.

**OWNER’S REPRESENTATIVE** means the designated agent of the Owner to administer this Contract for the Owner, which shall be the Owner, unless a change is provided by written notice from Owner to Contractor.

PROJECT means the scope of work (Work) under this **FBO Connectors, Administration Parking Lot and Slip Road Left Turn Median** at Northwest Florida Beaches International Airport (ECP), Panama City, Florida.

SPECIFICATIONS mean a part of the Invitation to Bid containing the written directions and requirements for completing the Contract Work.

WORK means all the stated or implied activities to be performed by Contractor as required by the Project Documents.

### **SC-2 Insurance**

The Contractor shall procure and maintain the following described insurance, except for coverage(s) specifically waived by Owner, on policies and with insurers acceptable to Owner. These insurance requirements shall not limit the liability of Contractor.

The insurance coverage(s) and limits required of Contractor under this Invitation to Bid are designed to meet the minimum requirements of Owner and the Owner does not represent these types or amounts of insurance to be sufficient or adequate to protect the Contractor's interests or liabilities. Contractor alone shall be responsible to the sufficiency of its own insurance program.

The Contractor and the Contractor's subcontractors and sub-subcontractors shall be solely responsible for all of their property, including but not limited to any materials, temporary facilities, equipment and vehicles, and for obtaining adequate and appropriate insurance covering any damage or loss to such property. The Contractor and the Contractor's subcontractors and sub-subcontractors shall expressly waive any claim against the Owner arising out of or relating to any damage or loss of such property, even if such damage or loss is due to the fault or neglect of the Owner or anyone for whom the Owner is responsible. The Contractor is obligated to include, or cause to be included, provisions similar to this paragraph in all of the Contractor's subcontracts and its subcontractor's contracts with their sub-subcontractors.

The Contractor's deductibles/self-insurance retention's must be disclosed to Owner and are subject to Owner's approval. The Contractor is responsible of the amount of any deductible or self-insured retention. Any deductible or retention applicable to any claim or loss shall be the responsibility of Contractor and shall not be greater than \$25,000, unless otherwise agreed to, in writing, by Owner.

Insurance required of the Contractor or any other insurance of the Contractor shall be considered primary, and insurance of Owner shall be considered excess, as may be applicable to claims or losses which arise out of or relate to the Work or this Project.

A. Workers' Compensation and Employers' Liability Insurance Coverage: The Contractor shall purchase and maintain workers' compensation and employers' liability insurance for all employees engaged in the Work, in accordance with the laws of the State of Florida. Limits of coverage shall not be less than:

\$500,000 Limit Each Accident  
\$500,000 Limit Disease Aggregate  
\$250,000 Limit Disease Each Employee

B. Commercial General Liability Coverage: Contractor shall purchase and maintain commercial general liability insurance on a full occurrence form. Coverage shall include, but not be limited to, Premises and Operations, Personal Injury, Contractual for this Contract, Independent Contractors, Broad Form Property Damage, Products and Completed Operation Liability Coverage(s) and shall not exclude coverage for the "X" (Explosion), "C" (Collapse) and "U" (Underground) Property Damage Liability exposures. Limits of coverage shall not be less than:

\$1,000,000 Combined Single Limit Each Occurrence  
\$2,000,000 Aggregate Limit

Contractor shall add Owner as an additional insured through the use of Insurance Service Office Endorsements No. CG 20.20.22.85 wording or equivalent, or broader, an executed copy of which shall be attached to or incorporated by reference on the Certificate of Insurance to be provided by Contractor pursuant to the requirements of the Project Documents.

C. Business Automobile Liability Coverage: The Contractor shall purchase and maintain Business Automobile Liability Insurance as to ownership, maintenance, use, loading and unloading of all of Contractor's owned, non-owned, leased, rented or hired vehicles with limits not less than:

\$1,000,000 Combined Single Limit Each Accident

D. Excess or Umbrella Liability Coverage: Contractor shall purchase and maintain Excess Umbrella Liability Insurance or Excess Liability Insurance on a full occurrence form providing the same continuous coverage(s) as required for the underlying Commercial General, Business Automobile and Employers' Liability Coverage(s) with no gaps in continuity of coverage(s) or limits with Owner added by endorsement to the policy as an additional insured in the same manner as is required under the primary policies, and shall not be less than:

\$4,000,000 Each Occurrence/Accident

### **SC-3 Owner Furnished Drawings and Specifications**

Owner's Representative will furnish specifications and/or design drawings of the Project for each part of the Work under this contract. Such drawings and specifications will give the information required for the preparation of shop detail drawings by Contractor.

Contractor shall, upon receipt thereof, check promptly all specifications and/or drawings furnished and shall notify Owner's Representative and Owner of any omissions or discrepancies in such specifications or drawings found.

All specifications and/or drawings for the Work are identified as the Passenger Boarding Bridges (PBB). Should any addenda be issued or other modifications to the specifications and/or drawings occur prior to NTP of the contract, Owner's Representative will prepare a consolidated and conformed set of specifications and/or drawings marked "Issued for Bid" and issued by Owner's Representative. Contractor shall perform the Work in accordance with the "Issued for Bid" specifications and/or drawings. Contractor shall immediately review the "Issued for Construction" specifications and/or drawings and promptly notify the Owner's Representative and Owner in writing if Contractor believes anything in the "Issued for Bid" specifications and/or drawings represents a material change from what was reflected in the bid documents, addenda, and changes/modifications thereafter accepted by the Contractor with the Contract and prior to the NTP and identify any effects on cost and schedule.

### **SC-4 Owner Furnished Utilities, Facilities, Materials and Equipment**

Owner will not furnish to Contractor any utilities, facilities, materials and/or equipment. Owner shall designate in the Project Documents or in written form to Contractor's request for such designation the location where Contractor facilities for storage may be temporarily placed.

### **SC-5 Permits**

Any required permits shall be provided by Contractor. Except as otherwise specified, Contractor shall procure and pay for all permits, licenses, certifications and other applicable governing authority requirements and inspections, other than inspection performed by the Owner or its representative and shall furnish any documentation, bonds, security, or deposits required to permit performance of the Work. Owner shall submit drawings and specifications to Bay County Builder Services to initiate review and expedite review process. Contractor, upon award, shall immediately follow up, submit, secure, procure and pay for required permits.

### **SC-6 Contractor Furnished Drawings, Data and Samples**

Owner's Representative and Owner's permission to proceed with the Work does not constitute acceptance or approval of submittals including, but not limited to, design details, calculations, analyses, test methods, construction methods, certificates or materials developed or selected by Contractor and does not relieve Contractor from full compliance with the Contract Documents. Drawings required of the Contractor if not specifically identified in the specifications shall include drawings for fabrication of Contractor furnished equipment or materials, installation of Contractor furnished equipment or materials, planning and performance of the Work under this contract, material samples, material certificates and other appropriate data.

**DRAWINGS:** All drawings required to be submitted by Contractor shall be certified by Contractor to be correct, shall show the contract number and shall be furnished in accordance with the contract drawings and data requirements and forms. The Owner's Representative or its representative shall review Contractor's drawings and a reproducible drawing marked with one of the following codes will be returned to Contractor:

- a. Reviewed, No Comments,
- b. Reviewed, Comments as Noted (Work May Proceed),
- c. Rejected, Revise and Resubmit,
- d. No Review Required.

All drawings submitted by Contractor shall be submitted to the Owner's Representative for review at least thirty (30) calendar days before fabrication, installation, or performance is commenced and at Contractor's expense.

**SAMPLES:** All samples required to be submitted by Contractor shall be certified by Contractor to be representative of materials to be incorporated in the Work, shall show the contract number and shall be furnished in accordance with the contract drawings and data requirements and forms. All samples submitted by Contractor shall be submitted to the Owner's Representative for review at least fifteen (15) calendar days before materials are incorporated into the Work and at Contractor's expense. The Owner's Representative or its representative shall review the sample and return the Contractor's submittal form marked as noted for drawings.

**CERTIFICATES AND DATA:** Where certificates are required, one (1) copy of each certificate and one (1) computer file of same shall be submitted by and at the expense of Contractor. Such submittal shall be made not less than thirty (30) calendar days prior to the time that the materials represented by such certificates are needed for incorporation into the Work. Certificates shall be subject to review and material represented by such certificates shall not be fabricated, delivered to the Jobsite or incorporated into the Work without such review.

Certificates shall clearly identify the material being certified and shall include, but not be limited to, providing the following information: Contractor's name, project name, contract number, name of item, manufacturer's name, and reference to the appropriate drawing, technical specification section and paragraph number, all as applicable.

**AS-BUILT DRAWINGS AND SPECIFICATIONS:** During construction, Contractor shall keep a current marked-up controlled set of as-built drawings on the Jobsite as an accurate record of all deviations between work as shown on the drawings and work as installed. These drawings shall be available to the Owner's Representative, Owner or their representatives for inspection at any time during regular business hours. Contractor shall at its expense and no later than thirty (30) calendar days after final acceptance and before final payment furnish to the Owner's Representative a complete set of signed marked-up as-built reproducible (bond paper) drawings with "As-Built" clearly printed on each sheet and a PDF electronic copy of same. Contractor will keep a current marked-up controlled set of as-built specifications on the Jobsite annotated to clearly indicate all substitutions that are incorporated into the Work. Where the selection of more than one product is specified, annotation shall show which product was installed.

### **SC-7 Commencement, Progress, Completion of the Work and Project Schedule**

Contractor shall complete the Work under this Invitation to Bid within 210 days of Notice to Proceed unless otherwise negotiated, and approved, by the Owner.

Contractor will provide, in a form acceptable to Owner and/or its representative, a project schedule in sufficient detail to clearly outline the Work to be performed under this Contract and milestone dates for major work events such as the start and completion of major components of the Project, as one of the prerequisites to issuance of the Notice to Proceed after the execution of the Contract. The Owner's Representative shall review the Project Schedule and shall accept, accept with comment, or reject with comment. Contractor shall revise the schedule as required by the Owner's Representative and resubmit until accepted.

Contractor shall periodically update the Project Schedule as required and no less than weekly to support the pay-application to promptly reflect the progress of the Work. Should any of the work not be performed as indicated and be later than originally planned to perform, a recovery plan shall be presented to the Owner or its representative for approval.

### **SC-8 Temporary Access and Haul Roads**

Access to Secured Areas will be granted in accordance with the Owner's TSA-approved Airport Security Program. Haul roads and routes will be identified during a scheduled pre-construction meeting with the Contractor.

### **SC-9 Safety, Health and Security Requirements**

Contractor will comply with all applicable federal, state and local laws, ordinances, statutes, rules, regulations, orders or decrees, including the Airport Safety Program and other rules and regulations adopted by Owner, in effect at the time the Work under this Contract is performed shall apply to Contractor and its employees, representative, its subcontractors, sub-subcontractors, material suppliers and others under Contractor's Contract for the Work.

### **SC-10 Applicable Law**

This contract shall be governed by and construed in accordance with the laws of State of Florida excluding its conflict of law rules which may apply the laws of any other jurisdiction, and each party hereto agrees not to assert as a defense in any proceeding that it is not subject to the laws of State of Florida.

### **SC-11 Invoicing and Payment**

Contractor shall prepare and submit invoices monthly or at some other pre-approved interval with estimates submitted for review by Owner and its representative at least ten (10) calendar days prior to formal submittal period for review and field inspection to verify estimated payment amounts requested. Following review and Owner's and its representative's approvals, Contractor will submit invoice (form as specified in the Project Documents) for payment. Owner pays Contractor undisputed amounts submitted and approved, in accordance with the terms of the Project Documents, within forty-five (45) days of the date of submission of the submitted invoice.

Contractor shall certify in each invoice that no known outstanding mechanic's or material-men liens and all due and payable bills have been paid or are included in the application for payment.

Each invoice shall be accompanied by a submission of information regarding Disadvantaged Business Enterprise (DBE) goals and accomplishments during the period covered by the payment application in a format acceptable to OWNER. CONTRACTOR'S payment application shall include the amounts authorized for payment to each DBE firm and its certification number. Failure to submit DBE-related information with the request for payment will result in the payment application being returned to the CONTRACTOR for correction.

Owner shall retain ten percent (10%) of that portion of the gross amount of each payment request submitted to Owner for payment, until fifty percent (50%) completion of the Work. Owner reserves the right, at its sole discretion, to further release any portion of such retainage prior to final payment and prior to such release, require

Contractor to submit for itself, its subcontractors of all tiers, and all material suppliers, vendors, laborers and other parties acting through or under it, complete waivers and releases of all claims against Owner or its representative arising under or by virtue of this Contract to the extent of payments made and Contractor, upon request by Owner or its representative, shall in addition furnish acceptable evidence that all such claims have been satisfied.

Any amounts otherwise payable under this Contract may be withheld, in whole or in part, to the extent reasonably necessary to protect Owner's interest, if any claims are filed against Owner for which Contractor is or may become liable, Contractor is in material default of any Contract condition including, but not limited to, the schedule, quality assurance and health and safety requirements, Contractor has not submitted a Project Schedule or required updates or proper insurance certificates and continuous coverage(s) as required by the Project Documents and proof thereof of any required Performance and Payment Bonds, any adjustments that are due from previous overpayment or audit results, or offsets in favor of Owner in other transactions are asserted. Owner will pay such withheld payments if Contractor pays, satisfies, or discharges any claim of Owner against Contractor under or by virtue of this Contract or cures all defaults in the performance of this Contract.

Contractor agrees to pay each of its subcontractors under this contract for satisfactory performance of its subcontract in accordance with section 218.70, Florida Statutes, Florida's Prompt Payment Act.

Owner shall make final payment to Contractor in accordance with section 218.735, Florida Statutes, following Final Acceptance of the Work and after submittal of such final invoice, provided that Contractor shall have furnished Owner or its representative for itself, its subcontractors of all tiers, and all material suppliers, vendors, laborers and other parties acting through or under it, waivers and releases of all claims against Owner arising under or by virtue of this Contract, except such claims, if any, as may with the consent of Owner be specifically excepted by Contractor from the operation of the release in stated amounts to be set forth therein.

#### **SC-12 Owner's Representative**

Owner has designated a Representative to act for and on behalf of Owner for carrying out certain contract activities as expressly designated herein and may, by contract change order, modify its representative authority, replace the representative or dispense with the representative's services without relieving Contractor of any of its obligations under this Contract. Contractor acknowledges and agrees that the Owner's Representative has no authority to authorize or approve changes to the Contract.

Owner, after consultation with the Owner's Representative, shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the matter of performance and rate of progress of the Work. Owner, after consultation with the Owner's Representative shall decide all questions which may arise as to the interpretation of the specifications and drawings relating to the Work, the fulfillment of the contract on the part of Contractor, and the rights of different contractors on the Project. Owner, after consultation with the Owner's Representative shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for under this contract.

#### **SC-13 Nondisclosure**

Contractor agrees not to divulge to third parties, without the written consent of Owner, any information obtained from or through Owner or its representative in connection with the performance of this Contract unless the information is (1) known to Contractor prior to obtaining the same from Owner or its representative, (2) disclosed to Contractor in the public domain, or (3) obtained by Contractor from a third party who did not receive same, directly or indirectly from Owner or its representative and who has no obligation of secrecy with respect thereto.

#### **SC-14 Dispute Resolution**

In the event of a dispute between the parties arising out of or relating to their responsibilities under this Contract, the party claiming the dispute shall provide the other party promptly written notice of such dispute, as required by the terms of the Contract. The parties hereby agree that they shall first negotiate dispute to resolve the dispute in good faith in an attempt to prevent the need for mediation or litigation. Accordingly, within seven (7) calendar days of receipt of the initial written dispute notice, the parties shall commence discussions between the on-site

project managers. In the event the parties are unable to reach a resolution of the dispute within seven (7) calendar days after such commencement of the discussions between the on-site managers, the parties shall commence discussions between Contractor's President and the Owner's Executive Director. In the event that such parties are unable to reach a resolution of the dispute within fourteen (14) calendar days after such commencement of the discussions between the President and Executive Director, the parties shall submit the dispute to non-binding mediation before a mutually agreed mediator who shall conduct such mediation proceedings. All costs of mediation shall be shared equally by the parties, except that each party shall be responsible for its own attorney's fees.

If the parties are unable to resolve the dispute through mediation and litigation proves necessary, either party may initiate such litigation. In the event of any such litigation, the prevailing party shall be entitled to recover its reasonable attorneys' fees and costs through all trial and appellate levels of such litigation. Any litigation between Owner and Contractor (which term for the purposes of this subparagraph shall include Contractor's surety), whether arising out of any claim or arising out of the Contract or any breach thereof, shall be brought, maintained and pursued only in the appropriate State of Florida Courts for Bay County, Florida, and Owner and Contractor each hereby waive and renounce any and all rights and options which they, or either of them, have or might have to bring or maintain any such litigation or action in the Federal Court system of the United States or in any United States Federal District Court. Owner and Contractor expressly waive all rights to trial by jury regarding any such litigation.

In the event of a dispute between the parties arising out of or relating to their responsibilities under this Contract, the party claiming the dispute shall provide the other party promptly written notice of such dispute, as required by the terms of the Contract. The parties hereby agree that they shall first negotiate dispute to resolve the dispute in good faith in an attempt to prevent the need for mediation or litigation. Accordingly, within seven (7) calendar days of receipt of the initial written dispute notice, the parties shall commence discussions between the on-site project managers. In the event the parties are unable to reach a resolution of the dispute within seven (7) calendar days after such commencement of the discussions between the on-site managers, the parties shall commence discussions between Contractor's President and the Owner's Executive Director. In the event that such parties are unable to reach a resolution of the dispute within fourteen (14) calendar days after such commencement of the discussions between the President and Executive Director, either party may initiate such litigation. In the event of any such litigation, the prevailing party shall be entitled to recover its reasonable attorneys' fees and costs through all trial and appellate levels of such litigation, including the fees and costs incurred to litigate the amount of attorney's fees and costs due under said action. Any litigation between Owner and Contractor (which term for the purposes of this subparagraph shall include Contractor's surety), whether arising out of any claim or arising out of the Contract or any breach thereof, shall be brought, maintained and pursued only in the appropriate State of Florida Courts for Bay County, Florida, and Owner and Contractor each hereby waive and renounce any and all rights and options which they, or either of them, have or might have to bring or maintain any such litigation or action in the Federal Court system of the United States or in any United States Federal District Court. Owner and Contractor expressly waive all rights to trial by jury regarding any such litigation.

A company that, at the time of bidding or submitting a proposal for a new contract or renewal of an existing contract, is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to s. 215.473, or is engaged in business operations in Cuba or Syria, is ineligible for, and may not bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of \$1 million or more.

#### **SC-15 Liquidated Damages**

In the event of Contractor's failure to meet the Project Schedule, the Contractor shall pay liquidated damages to the Owner in the amount of \$215.00 per day. The parties agree to this arrangement due to the impracticability and difficulty in ascertaining the true value of the damages the Airport will incur as a result of such delay and said sum per day is agreed to be a reasonable estimate of the amount of such damages which the Airport will sustain. The parties further agree that such liquidated damages shall be deducted from any amounts owing to Contractor, and if such amounts owing are insufficient, the Contractor shall pay to Airport the amount of the difference.



### **SC-16 Drugs, Alcohol and Weapons**

Contractor's personnel, subcontractor's personnel at any tier, material supplier's personnel or any other's personnel at any time shall not bring onto the Jobsite, or any other location where the provisions of this Contract apply any firearm of whatsoever nature or any other object which in the judgment of the Owner or its representative is determined to be a potential weapon, or alcoholic beverages of any nature, illegal or Owner prohibited non-prescription drugs of any nature without exception.

### **SC-17 Owner Directed Purchase (ODP)**

Contractor agrees that Owner at its sole election **may** have Contractor assign some or all of its purchase orders and subcontracts directly to Owner in accordance with the provisions set forth herein.

Material suppliers shall be selected by Contractor using competitive bidding/proposals. Supply contracts shall be awarded by Contractor to the supplier whose bid/proposal is most advantageous to Owner, price and other factors considered. Contractor shall include the price of all materials in his bid and shall include all Florida State sales and other taxes normally applicable to such material and equipment. Owner may consider purchasing any item but does not expect to issue purchase orders to less than five thousand dollars (\$5,000.00). Owner purchase of selected materials and equipment will be administered on a deductive Change Order basis.

Contractor shall provide Owner a list of all intended suppliers, vendors and material men for consideration as ODP. Contractor shall submit price quotes from the vendors, as well as a description of the materials to be supplied, estimated quantities and prices.

Upon request from Owner, and in a timely manner, Contractor shall prepare Purchasing Requisition Request Form which shall, in form and detail acceptable to Owner, specifically identify the materials which Owner may, in its discretion, elect to purchase directly. The Purchasing Requisition Request Form shall include:

- a. the name, address, telephone number and contact person for the material supplier,
- b. manufacturer or brand, model, or specification number of the item,
- c. quantity needed as estimated by Contractor,
- d. the price quoted by the supplier for the materials identified therein,
- e. any sales tax associated with such quote,
- f. delivery dates as established by Contractor,
- g. any reduction in Contractor's cost for both the Payment Bond and Performance Bond,
- h. shipping, handling and insurance costs,
- i. detail concerning bonds or letters of credit provided by the supplier if included in his/her proposal,
- j. special terms and conditions which have been negotiated with the supplier relative to payment terms, discounts, rebates, warranty, credits or other terms and conditions which revert to Owner.

Contractor shall include copies of vendors' quotations and specifically reference any terms and conditions, which have been negotiated with the vendors concerning letters of credit, terms, discounts, or special payments.

After receipt of the Purchasing Requisition Request Form, Owner shall prepare a Purchase Order for all items of material, which Owner chooses to purchase directly. The purchase order shall be sent to the vendor with a copy sent to Contractor. Pursuant to the Purchase Order, the vendor will provide the required quantities of material at the price established in the vendor's quote to Contractor, excluding any sales tax associated with such price. The Purchase Order shall also require the delivery of the ODP on the delivery dates provided by Contractor in the Purchasing Requisition Request Form.

In conjunction with the execution of the Purchase orders by the suppliers, Contractor shall execute and deliver to Owner one or more deductive Change Orders, referencing the full value of all ODP to be provided by each supplier from whom Owner elected to purchase material directly, plus all sales taxes associated with such materials in Contractor's bid to Owner, plus any savings to Contractor in the cost of Payment and Performance Bonds associated

with such ODP. To compensate Contractor for the warranty enforcement obligation Contractor's overhead and profit associated with ODP shall not be deducted from the Contract.

Contractor shall be fully responsible for all matters relating to the procurement of materials furnished by and incorporated into the Project in accordance with these Supplementary Conditions including, but not limited to, assuring the correct quantities, placing the order in a timely manner, and assuring coordination of purchases, providing and obtaining all warranties and guarantees required by the Project Documents, inspection and acceptance of the goods at the time of delivery. Contractor shall coordinate delivery schedules, sequence of delivery, loading orientation, and other arrangements normally required by Contractor for the particular materials furnished. Contractor shall provide all services required for the unloading, handling and storage of materials through installation.

Owner assumes the risk of loss of materials through their incorporation into the installation.

As ODP are delivered to the Jobsite, Contractor shall visually inspect all shipments from the suppliers, and sign off on the receiving reports for material delivered. Contractor shall assure that each delivery of ODP is accompanied by documentation adequate to identify the Purchase Order against which the purchase is made. This documentation may consist of a delivery ticket and an invoice from the supplier conforming to the Purchase Order together with such additional information as Owner may require. Contractor will then forward the receiving report to Owner to match up with invoice for payment.

Contractor shall insure that ODP conform to the Specifications and determine prior to incorporation into the Work if such materials are patently defective, and whether such materials are identical to the materials ordered and match the description on the bill of lading. If Contractor discovers defective or non-conformities in ODP upon such visual inspection, Contractor shall not utilize such nonconforming or defective materials in the Work and instead shall promptly notify Owner of the defective or nonconforming condition so that repair or replacement of those materials can occur without any undue delay or interruption to the Project. If Contractor fails to perform such inspection and otherwise incorporates into the work such defective or nonconforming ODP, the condition of which it either knew or should have known by performance of an inspection, Contractor shall be responsible for all damages to Owner resulting from Contractor's incorporation of such materials into the Project including liquidated or delay damages.

Contractor shall maintain records of all ODP it incorporates into the Work from the stock of ODP in its possession. Contractor shall account monthly to Owner for any ODP delivered into Contractor's possession, indicating portions of all such materials which have been incorporated into the Work.

Contractor shall be responsible for obtaining and managing all warranties and guarantees for all materials and products as required by the Project Documents. All repair, maintenance or damage-repair calls shall be forwarded to Contractor for resolution with the appropriate supplier, vendor, or subcontractor. Additionally, ODP items shall be warranted by Contractor as part of Contractor's warranty. Contractor agrees and understands that it shall undertake all warranty enforcement and other related duties of Owner for its ODP equipment and materials. To that end, Contractor expressly agrees it shall make no distinction in discharging such warranty duties between ODP equipment and materials and equipment and materials otherwise supplied by Contractor.

Notwithstanding the transfer of ODP by Owner to Contractor's possession, Owner shall retain legal and equitable title to any and all ODP.

The transfer of possession of ODP from Owner to Contractor shall constitute a bailment for the mutual benefit of Owner and Contractor. Owner shall be considered the bailor and Contractor the bailee of the ODP. ODP shall be considered returned to Owner for purposes of their bailment at such time as they are incorporated into the Project.

Owner shall purchase and maintain builder's risk insurance sufficient to protect against any loss of or damage to ODP. Such insurance shall cover the full value of any ODP not yet incorporated into the Project during the

period between the time the Owner first takes title to any of such ODP and the time when the last of such is incorporated into the Project. Contractor shall purchase and maintain builder's risk, all risk, insurance based on the completed value of Project, less the Owner's ODP values. Contractor must name Owner as additional insured on its policy.

Owner shall in no way be liable for any interruption or delay in the Project, for any defects or other problems with the Project, or for any extra costs resulting from any delay in the delivery of, or defects in, ODP. Contractor's sole or exclusive remedy shall be an extension of the Contract Time for such reasonable time as determined by Owner or its representative.

Contractor shall be required to review invoices submitted by all suppliers of ODP delivered to the project site and either concur or object to Owner's issuance of payment to the suppliers, based upon Contractor's records of materials delivered to the site and any defects detected in such materials.

In order to arrange for the prompt payment to the supplier, prompt submittal of a copy of the applicable Purchase Order as receiving report, invoices, delivery tickets, written acceptance of the delivered items, and such other documentation as may be reasonably required by Owner. Upon receipt of the appropriate documentation, Owner shall prepare a check drawn to the supplier based upon the data provided. This check will be released and remitted directly to the supplier. Contractor agrees to assist Owner to immediately obtain partial or final release of waivers as appropriate.

At the end of the Project, Contractor will be provided with a deductive Change Order for the costs incurred by Owner to provide all ODP, not covered by previous change orders. Salvage materials shall be stored or removed from the site at Owner or its representative's direction, or may be turned over to Contractor by Owner for salvage or disposal at Owner's option.

#### **SC-18 Risk of Loss**

Contractor shall be responsible for risk of loss or damage in progress and all goods furnished until Final Acceptance, including any losses resulting from inclement weather or erosion.

#### **SC-19 Component Warranties**

In addition to the General Condition title "WARRANTY," Contractor shall obtain and provide, for the benefit of owner and its successors in interest, warranties or guarantees for the equipment, materials, and work furnished by suppliers and subcontractors of any tier for the period customarily provided by the supplier. Contractor shall use its best efforts to enforce such lower-tier warranties or guarantees on its own behalf or, if requested by Owner or Owner's Representative, on behalf of Owner. Contractor shall provide warranty documentation by Final Acceptance or as otherwise required by this contract.

#### **SC-20 Procedures to Minimize Risk to Stormwater System and Environment**

Contractor acknowledges GC-14 Environmental Requirements and will have no significant impact on the stormwater system or environment while completing the Work.

#### **SC-21 Miscellaneous Federal Provisions**

The work performed under this Contract shall be governed by the following Federal provisions, statutes, and regulations:

Disadvantaged Business Enterprise – 49 CFR Part 26: Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. In accordance with 49 CFR Part 26.45, the sponsor shall establish a contract goal of participation for small business concerns owned and controlled by certified socially and economically disadvantaged enterprise (DBE). Contractor shall make and document good faith efforts, as defined in Appendix A of 19 CFR Part 26, to meet his established goal.

Davis-Bacon Act, as amended – 29 CFR Part 5: Contractor is required to comply with wage and labor provisions and to pay minimum wages in accordance with the current schedule of wage rates established by the United States Department of Labor.

Debarment, Suspension, Ineligibility and Voluntary Exclusion – 49 CFR Part 29: Contractor certifies, by submission of a proposal or acceptance of a contract, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. Individuals or companies listed in the General Services Administration’s “Excluded Parties Listing System” will not be considered for award of contract.

Certification Regarding Debarment and Suspension (Non-Procurement) – Title 2 CFR Part 180 & Title 2 CFR Part 1200: This Agreement is a “covered transaction” as defined by Title 2 CFR Part 180. Contractor has agreed that at the time it submitted its proposal and throughout the duration of this Agreement that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction. Contractor further agrees to comply with Title 2 CFR Part 1200 and Title 2 CFR Part 180, Subpart C by administering each lower tier subcontract that exceeds \$25,000 as a “covered transaction”.

Certification Regarding Debarment and Suspension (Non-Procurement) – Title 2 CFR Part 1200 and Title 2 CFR Part 180, Subpart C: Contractor 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. Contractor shall accomplish this by:

- i. Checking the System for Award Management at website: <http://www.sam.gov>
- ii. Collecting a certification statement similar to paragraph a.
- iii. Inserting a clause or condition in the covered transaction with the lower tier contract

If the FAA later determines that an individual failed to tell a higher tier that they were excluded or disqualified at the time they entered the covered transaction with that person, the FAA may pursue any available remedy, including suspension and debarment

Foreign Trade Restrictions – 49 CFR Part 30: Contractor and its subcontractors shall not be owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Representative (USTR)’ shall not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list; and shall not procure any product nor subcontract for the supply of any product for use on the project that is produced in a foreign country on said list.

Buy American Certificate – Aviation Safety and Capacity Act of 1990: This contract is subject to the “Buy American Preferences” of the Aviation Safety and Capacity Act of 1990.

### **SC-22 Certifications**

Contractor shall execute, in the presence of a Notary Public (where required), and return the certifications noted below:

1. Bid Affidavit
2. Non-Collusion Affidavit
3. Sworn Statement under Section 287.133(3)(A), Florida Statutes, On Public Entity Crimes
4. DBE Certificate of Compliance Affidavit
5. Davis Bacon Certification
6. Drug Free Workplace Certification
7. Certification of Non-Segregated Facilities

8. Buy American Certification
9. Trench Safety Act Certification under Chapter 553, Florida Statutes

### **SC-23 Clean Air and Water Pollution Control**

Contractors and subcontractors agree:

- a. That any facility to be used in the performance of the contract or subcontract or to benefit from the contract is not listed on the Environmental Protection Agency (EPA) List of Violating Facilities;
- b. To comply with all the requirements of Section 114 of the Clean Air Act, as amended, 42 U.S.C. 1857 et seq. and Section 308 of the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 and Section 308 of the Acts, respectively, and all other regulations and guidelines issued thereunder;
- c. That, as a condition for the award of this contract, the contractor or subcontractor will notify the awarding official of the receipt of any communication from the EPA indicating that a facility to be used for the performance of or benefit from the contract is under consideration to be listed on the EPA List of Violating Facilities;
- d. To include or cause to be included in any construction contract or subcontract which exceeds \$ 100,000 the aforementioned criteria and requirements.

### **SC-24 Airport and Airway Improvement Act of 1982, Section 520 - General Civil Rights Provisions**

The contractor assures that it will comply with pertinent statutes, Executive orders, and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision obligates the tenant/concessionaire/lessee or its transferee for the period during which Federal assistance is extended to the airport a program, except where Federal assistance is to provide, or is in the form of personal property or real property or interest therein or structures or improvements thereon. In these cases, the provision obligates the party or any transferee for the longer of the following periods:

- (a) The period during which the property is used by the airport sponsor or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits or
- (b) The period during which the airport sponsor or any transferee retains ownership or possession of the property. In the case of contractors, this provision binds the contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

### **SC-25 Lobbying and Influencing Federal Employees**

- (1) No Federal appropriated funds shall be paid, by or on behalf of the contractor, 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 the making of any Federal grant and the amendment or modification of any Federal grant.
- (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 any Federal grant, the contractor shall complete and submit Standard Form-LLL, "Disclosure of Lobby Activities," in accordance with its instructions.

### **SC-26 Energy Conservation Requirements**

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Public Law 94-163).

### **SC-27 Rights to Inventions**

All rights to inventions and materials generated under this contract are subject to regulations issued by the FAA and the Sponsor of the Federal grant under which this contract is executed.

### **SC-28 Trade Restriction Clause**

The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

- a. 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 published by the Office of the United States Trade Representative (USTR);
- b. 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 on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list;
- c. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

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 a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use on the project, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract at no cost to the Government.

Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide written notice to the contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

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

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.

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, United States Code, Section 1001.

### **SC-29 Web-Based Project Information Management**

The Contractor shall work with the Owner's web-based project information management system as directed. The project documentation requirements are described in Appendix A – Section 01322, Web-Based Project Information Management.

## **END OF SPECIAL CONDITIONS**

# TECHNICAL SPECIFICATIONS



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SECTION C-102 TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL

## PART 1 - DESCRIPTION

1.1. This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

## PART 2 - MATERIALS

2.1 GRASS. Grass that will not compete with the grasses sown later for permanent cover per Item T-901 shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

2.2 MULCHES. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

2.3 FERTILIZER. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

2.4 SLOPE DRAINS. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

2.5 SILT FENCE. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

2.6 OTHER. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project.

### PART 3 - CONSTRUCTION REQUIREMENTS

3.1 GENERAL. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

3.2 SCHEDULE. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

3.3 CONSTRUCTION DETAILS. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

3.4 INSTALLATION, MAINTENANCE AND REMOVAL OF SILT FENCE. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

#### PART 4 - METHOD OF MEASUREMENT

4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the RPR. Completed and accepted work will be measured as follows:

- a. Temporary seeding and mulching will be measured by the square yard (square meter).
- b. Temporary slope drains will be measured by the linear foot (meter).
- c. Temporary benches, dikes, dams, and sediment basins will be measured by the cubic yard (cubic meter) of excavation performed, including necessary cleaning of sediment basins, and the cubic yard (cubic meter) of embankment placed as directed by the RPR.
- d. All fertilizing will be measured by the ton (kg).
- e. Installation and removal of silt fence will be measured by the Lump sum.

4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

#### PART 5 - BASIS OF PAYMENT

5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the RPR and measured as provided in paragraph 102-4.1 will be paid for under:

Item C-102-5.1a ——— Temporary seeding and mulching ——— per square yard (square meter)

|                            |   |   |
|----------------------------|---|---|
| <del>Item C-102-5.1b</del> | <del>Temporary slope drains</del>                             | <del>per linear foot (meter)</del>      |
| <del>Item C-102-5.1c</del> | <del>Temporary benches, dikes, dams and sediment basins</del> | <del>per cubic yard (cubic meter)</del> |
| <del>Item C-102-5.1d</del> | <del>Fertilizing</del>  | <del>per ton (kg)</del>                 |
| <del>Item C-102-5.1e</del> | <del>Installation and removal of silt fence</del>             | <del>[ per linear feet (meter) ]</del>  |
|                            |   | <del>[ lump sum ]</del>                 |

***Item C-102-1*** ***TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL***  
***-per Lump Sum (LS)***

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.

Temporary control features not covered by contract items that are ordered by the RPR will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work*.

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.

Advisory Circulars (AC)

AC 150/5200-33 *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2 *Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

**END OF ITEM C-102**

## **SECTION C-105 MOBILIZATION**

**105-1.1 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.

**105-1.2 MOBILIZATION LIMIT.** Mobilization shall be limited to 10 percent of the total project **Base Bid** cost.

**105-1.3 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.

**105-1.4 ENGINEER/RPR FIELD OFFICE.** [ The Contractor shall provide dedicated space for the use of the field RPR and inspectors, as a field office for the duration of the project. This space shall be located conveniently near the construction and shall be separate from any space used by the Contractor. An Engineer/RPR field office is not required.

## **METHOD OF MEASUREMENT**

**105-2.1 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, 50%.
- b. With second pay request, 50%.

## **BASIS OF PAYMENT**

**105-3.1 PAYMENT WILL BE MADE UNDER:**

***Item No. C-105-1 Mobilization***

***- per Lump Sum (LS)***

## **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 SECTION C-105**

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## 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. [ Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway. ]

**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.

**END OF SECTION 40**

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## **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: **N/A. Contact Airport Operations or Engineer of Record if any questions.**

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) **C-7** of the project plans.

**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.

**The Base Bid shall be substantially complete in 30 calendar days from the Notice to Proceed being executed.**

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.

**70-16 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*.

**END OF SECTION 70**

## ITEM P-101 PREPARATION/REMOVAL OF EXISTING PAVEMENTS

### DESCRIPTION

**101-1** This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

### EQUIPMENT AND MATERIALS

**101-2** All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

### CONSTRUCTION

#### 101-3.1 REMOVAL OF EXISTING PAVEMENT.

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

**a. Concrete pavement removal.** Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. If the material is to be wasted on the airport site, it shall be reduced to a maximum size of [\_\_\_]. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the RPR.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlaying material that is to remain in place, shall be recompacted and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense.

**b. Asphalt pavement removal.** Asphalt pavement to be removed shall be cut to the full depth of the asphalt pavement around the perimeter of the area to be removed. If the material is to be wasted on the airport site, it shall be broken to a maximum size of 6 inches.

**c. Repair or removal of Base, Subbase, and/or Subgrade.** All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense.

**101-3.2 PREPARATION OF JOINTS AND CRACKS PRIOR TO OVERLAY/SURFACE TREATMENT.** Remove all vegetation and debris from cracks to a minimum depth of 1 inch (25 mm). If extensive vegetation exists, treat the specific area with a concentrated solution of a water-based herbicide approved by the RPR. Fill all cracks greater than 1/4 inch (6 mm) wide with a crack sealant per ASTM D6690. The crack sealant, preparation, and application shall be compatible with the surface treatment/overlay to be used. To minimize contamination of the asphalt with the crack sealant, underfill the crack sealant a minimum of 1/8 inch (3 mm), not to exceed 1/4 inch (6 mm). Any excess joint or crack sealer shall be removed from the pavement surface.

Wider cracks (over 1-1/2 inch wide (38 mm)), along with soft or sunken spots, indicate that the pavement or the pavement base should be repaired or replaced as stated below.

Cracks and joints may be filled with a mixture of emulsified asphalt and aggregate. The aggregate shall consist of limestone, volcanic ash, sand, or other material that will cure to form a hard substance. The combined gradation shall be as shown in the following table.

**Gradation**

| Sieve Size       | Percent Passing |
|------------------|-----------------|
| No. 4 (4.75 mm)  | 100             |
| No. 8 (2.36 mm)  | 90-100          |
| No. 16 (1.18 mm) | 65-90           |
| No. 30 (600 µm)  | 40-60           |
| No. 50 (300 µm)  | 25-42           |
| No. 100 (150 µm) | 15-30           |
| No. 200 (75 µm)  | 10-20           |

Up to 3% cement can be added to accelerate the set time. The mixture shall not contain more than 20% natural sand without approval in writing from the RPR.

The proportions of asphalt emulsion and aggregate shall be determined in the field and may be varied to facilitate construction requirements. Normally, these proportions will be approximately one part asphalt emulsion to five parts aggregate by volume. The material shall be poured or placed into the joints or cracks and compacted to form a voidless mass. The joint or crack shall be filled to within +0 to -1/8 inches (+0 to -3 mm) of the surface. Any material spilled outside the width of the joint shall be removed from the pavement surface prior to constructing the overlay. Where concrete overlays are to be constructed, only the excess joint material on the pavement surface and vegetation in the joints need to be removed.

**101-3.3 REMOVAL OF FOREIGN SUBSTANCES/CONTAMINATES PRIOR TO OVERLAY.** Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction.

High-pressure water, heater scarifier (asphaltic concrete only), cold milling, rotary grinding, or sandblasting may be used. If chemicals are used, they shall comply with the state's environmental

protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR.

Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All wastes shall be disposed of in areas indicated in this specification or shown on the plans.

#### **101-3.4 CONCRETE SPALL OR FAILED ASPHALTIC CONCRETE PAVEMENT REPAIR.**

**a. Repair of concrete spalls in areas to be overlaid with asphalt.** The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The perimeter of the repair shall be saw cut a minimum of 2 inches (50 mm) outside the affected area and 2 inches (50 mm) deep. The deteriorated material shall be removed to a depth where the existing material is firm or cannot be easily removed with a geologist pick. The removed area shall be filled with asphalt mixture with aggregate sized appropriately for the depth of the patch. The material shall be compacted with equipment approved by the RPR until the material is dense and no movement or marks are visible. The material shall not be placed in lifts over 4 inches (100 mm) in depth. This method of repair applies only to pavement to be overlaid.

**b. Asphalt pavement repair.** The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The failed areas shall be removed as specified in paragraph 101-3.1b. All failed material including surface, base course, subbase course, and subgrade shall be removed. Materials and methods of construction shall comply with the applicable sections of these specifications.

**101-3.5 COLD MILLING.** Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. All millings shall be removed and disposed [ off Airport property ] [ in areas designated on the plans ]. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.

**a. Patching.** The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The RPR shall layout the area to be milled with a straightedge in increments of 1-foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.

**b. Profiling, grade correction, or surface correction.** The milling machine shall have a minimum width of 7 feet and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The

machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of off the airport.

**c. Clean-up.** The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed off Airport property.

**101-3.6. PREPARATION OF ASPHALT PAVEMENT SURFACES PRIOR TO SURFACE TREATMENT.** Existing asphalt pavements to be treated with a surface treatment shall be prepared as follows:

**a.** Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt pavement similar to that of the existing pavement in accordance with paragraph 101-3.4b.

**b.** Repair joints and cracks in accordance with paragraph 101-3.2.

**c.** Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent and washing thoroughly with clean water. After cleaning, treat these areas with an oil spot primer.

**d.** Clean pavement surface immediately prior to placing the surface treatment so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.

**101-3.7 MAINTENANCE.** The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the RPR. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

**101-3.8 PREPARATION OF JOINTS IN RIGID PAVEMENT PRIOR TO RESEALING.** Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the joint and does not damage the joint.

**101-3.8.1 Removal of Existing Joint Sealant.** All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch (2 mm) from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry.

**101-3.8.2 Cleaning prior to sealing.** Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Allow sufficient time to dry out joints prior to sealing. Joint surfaces will be surface-dry prior to installation of sealant.

**101-3.8.3 Joint sealant.** Joint material and installation will be in accordance with Item P-605.

**101-3.9 PREPARATION OF CRACKS IN FLEXIBLE PAVEMENT PRIOR TO SEALING.** Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture

and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the cracks and does not damage the pavement.

**101-3.9.1 Preparation of Crack.** Widen crack with router by removing a minimum of 1/16 inch (2 mm) from each side of crack. Immediately before sealing, cracks will be blown out with a hot air lance combined with oil and water-free compressed air.

**101-3.9.2 Removal of Existing Crack Sealant.** Existing sealants will be removed by routing. Following routing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

**101-3.9.3 Crack Sealant.** Crack sealant material and installation will be in accordance with Item P-605.

**101-3.9.4 Removal of Pipe and other Buried Structures.**

- a. **Removal of Existing Pipe Material.** Not used.
- b. **Removal of Inlets/Manholes.** Not used.
- c. Removal of [\_\_\_].

#### METHOD OF MEASUREMENT

**101-4.1 LUMP SUM.** No separate measurement for payment will be made. The work covered by this section shall be considered as a subsidiary obligation of the Contractor and covered under the other contract items.

**101-4.7 REMOVAL OF PIPE AND OTHER BURIED STRUCTURES.** Not required.

#### BASIS OF PAYMENT

**101-5.1 PAYMENT.** No separate payment shall be made for this item. The work covered by this section shall be considered as a subsidiary obligation of the Contractor and covered under the other contract items.

#### 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.

Advisory Circulars (AC)

AC 150/5380-6

Guidelines and Procedures for Maintenance of Airport Pavements.

ASTM International (ASTM)

ASTM D6690

Standard Specification for Joint and Crack Sealants, Hot Applied, for  
Concrete and Asphalt Pavements

**END OF ITEM P-101**



## 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 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.

**151-2.1.2 Blasting.** Blasting shall not be allowed.

**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 (stripping and stockpiling) as shown by the limits on the plans shall be the number of acres, or fractions thereof, of land specifically cleared.

**151-3.2** The quantities of miscellaneous demolition as shown by the limits on the plans shall be per lump sum.

#### **BASIS OF PAYMENT**

**151-4.1** Payment shall be made at the contract unit price per acre, or fractions thereof, for clearing (stripping and stockpiling). 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 No. P-151-2    Miscellaneous Demolition – Access Road and Fillets    - per Lump Sum (LS)**

**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.

**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.

**a. Blasting.** Blasting shall not be allowed.

**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. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

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. Undercutting.** Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed off the airport. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard (per cubic meter) for **this item**. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.

**c. 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."

**d. Removal of utilities.** The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated 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.**

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 7 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 CUT AREAS OR AREAS WHERE EXISTING PAVEMENT HAS BEEN REMOVED.** In those areas on which a subbase or base course is to be placed, the top 12 inches of subgrade shall be compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM **D1557**. 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.

**152-2.6 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 152-2.10.

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.

**152-2.7 CONTROL STRIP.** The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

**152-2.8 FORMATION OF EMBANKMENTS.** The material shall be constructed in lifts as established in the control strip, but 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 Contractor will take samples of excavated materials which will be used in embankment for testing and develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with D 1557. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the Contractor 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 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM **D1557**. Under all areas to be paved, the embankments shall be compacted to a depth of **12"** and to a density of not less than **100%** percent of the maximum density as determined by ASTM **D1557**. 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 **sod** in accordance with **Item T-904**.

The in-place field density shall be determined in accordance with ASTM D1556. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

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.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

**152-2.9 PROOF ROLLING.** The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment, **and** after compaction is completed, the subgrade area shall be proof rolled with a 20 ton (18.1 metric ton) Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 100 psi in the presence of the RPR. Apply a minimum of **250 SY** coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction



requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

**152-2.10 COMPACTION REQUIREMENTS.** The subgrade under areas to be paved shall be compacted to a depth of 12 inches and to a density of not less than **100** percent of the maximum dry density as determined by ASTM D1557. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

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). When the material has greater than 30 percent retained on the  $\frac{3}{4}$  inch (19.0 mm) sieve, follow the methods in ASTM D1557. Tests for moisture content and compaction will be taken at a minimum of **500** S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D1556.

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.

**152-2.11 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.

**152-2.12 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.

**152-2.13 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  $\pm \frac{1}{2}$  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  $\pm 0.05$  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.

**152-2.14 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** No separate measurement shall be made for Unclassified Excavation and Embankment. This item shall be paid for by the unit price per Lump Sum in the contract documents.

**152-3.1** No separate measurement shall be made for Unclassified Excavation and Embankment. This item shall be paid for by the unit price per Lump Sum in the contract documents.

## BASIS OF PAYMENT

**152-4.1** Unclassified excavation **and embankment** payment shall be made at the contract unit price per Lump Sum. 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 No. P-152-1    Unclassified Excavation and Embankment – Cut/fill    - per Lump Sum (LS)**

## 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/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> )) |
|-----------|--|

|            |   |
|------------|---|
| 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/ft <sup>3</sup> (2700 kN-m/m <sup>3</sup> )) |
|------------|---|

|            |  |
|------------|--|
| 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 P-154 SUBBASE COURSE

### DESCRIPTION

**154-1.1** This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course in accordance with these specifications, and in conformity with the dimensions and typical cross-section shown on the plans.

### MATERIALS

**154-2.1 MATERIALS.** The subbase material shall consist of hard durable particles or fragments of granular aggregates. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The material shall be free from vegetative matter, excessive amounts of clay, and other objectionable substances; uniformly blended; and be capable of being compacted into a dense, stable subbase.

The subbase material shall exhibit a California Bearing Ratio (CBR) value of at least 20 when tested in accordance with ASTM D1883. The subbase material shall meet the gradation specified in the table below.

**Subbase Gradation Requirements**

| Sieve designation    | Percentage by weight passing sieves |                                | Contractor's Final Gradation | Job Control Grading Band Tolerances <sup>1</sup> (Percent) |
|----------------------|-------------------------------------|--------------------------------|------------------------------|--|
|                      | Subbase Aggregate                   | Recycled pavement (RAP or RCO) |                              |  |
| 3 inch (75 mm)       | 100                                 |                                |                              | 0  |
| 1 1/2 inch (37.5 mm) |                                     | 100                            |                              | 0  |
| 3/4 inch (19.0 mm)   | 70-100                              | 70-100                         |                              | ±10  |
| No. 10 (2.00 mm)     | 20-100                              | 20-100                         |                              | ±10  |
| No. 40 (425 µm)      | 5-60                                | 5-60                           |                              | ±5   |
| No. 200 (75 µm)      | [ 0-15 ]                            | [ 0-15 ]                       |                              | ±5   |

<sup>1</sup>The "Job Control Grading Band Tolerances" shall be applied to "Contractor's Final Gradation" to establish the job control grading band.

The portion of the material passing the No. 40 (425 µm) sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than six (6) when tested in accordance with ASTM D4318.

#### **154-2.2 SAMPLING AND TESTING.**

**a. Aggregate base materials.** Samples shall be taken by the Contractor per ASTM D75 for initial aggregate subbase requirements and gradation. Material shall meet the requirements in paragraphs 154-2.1. The Contractor shall submit to the Resident Project Representative (RPR) certified test results showing that the aggregate meets the Material requirements of this section. Tests shall be representative of the material to be used for the project.

**b. Gradation requirements.** The Contractor shall take at least one aggregate subbase sample per day in the presence of the RPR to check the final gradation. Samples shall be taken from the in-place, un-compacted material at sampling locations determined by the RPR on a random basis per ASTM D3665. Sampling shall be per ASTM D75 and tested per ASTM C136 and ASTM C117. Results shall be furnished to the RPR by the Contractor each day during construction. Material shall meet the requirements in paragraph 154-2.1.

**154-2.3 SEPARATION GEOTEXTILE.** Not used.

**154-2.4 GEOGRID.** Not used.

#### **CONSTRUCTION METHODS**

**154-3.1 GENERAL.** The subbase course shall be placed where designated on the plans or as directed by the RPR. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the construction equipment without movement, shall be mechanically modified to the depth necessary to provide stability as directed by the RPR. The mechanical modification shall include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so the course will not deform under construction equipment traffic.

**154-3.2 PREPARING UNDERLYING COURSE.** Prior to constructing the subbase course, clean the underlying course or subgrade of all foreign substances. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances in accordance with Item P-152. Correct ruts, soft yielding spots in the underlying courses, and subgrade areas having inadequate compaction and/or deviations of the surface from the specified requirements, by loosening and removing soft or unsatisfactory material, adding approved material, reshaping to line and grade, and recompact to specified density requirements. For cohesionless underlying courses or subgrades containing sands or gravels, as defined in ASTM D2487, the surface shall be stabilized prior to placement of the overlying course by mixing the overlying course material into the underlying course, and compacting by approved methods. [ The stabilized material shall be considered as part of the underlying course and shall meet all requirements for the underlying course. ] The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the overlying course is placed. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

**154-3.3 CONTROL STRIP.** The first half-day of subbase construction shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

**154-3.4 PLACEMENT.** The material shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted. The material shall not be placed when the underlying course is soft or yielding.

The material shall meet gradation and moisture requirements prior to compaction. Material may be free-draining and the minimum moisture content shall be established for placement and compaction of the material.

The material shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 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.

**154-3.5 COMPACTION.** The subbase material shall be compacted, adjusting moisture as necessary, to be within  $\pm 2\%$  of optimum moisture. The field density of the compacted material shall be at least 100% of the maximum density as specified in paragraph 154-3.9a. If the specified density is not attained, the area of the lift represented by the test shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**154-3.6 WEATHER LIMITATION.** Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on subbase course shall not be conducted when the subgrade is wet or frozen or the subbase material contains frozen material.

**154-3.7 MAINTENANCE.** No base or surface course shall be placed on the subbase until the subbase has been accepted by the RPR. The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, the Contractor shall verify that materials still meet all specification requirements before placement of additional material. Equipment may be routed over completed sections of subbase course, provided the equipment does not damage the subbase course and the equipment is routed over the full width of the completed subbase course. Any damage to the subbase course from routing equipment over the subbase course shall be repaired by the Contractor at their expense.

**154-3.8 SURFACE TOLERANCE.** 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  $\pm \frac{1}{2}$  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  $\pm 0.05$  feet (15 mm) of the specified grade.

**154-3.9 ACCEPTANCE SAMPLING AND TESTING.** The aggregate base course shall be accepted for density and thickness on an area basis. Two test shall be made for density and thickness for each 300 square yards. Sampling locations will be determined on a random basis per ASTM D3665.

**a. Density.** The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D1557. The in-place field density shall be determined per ASTM D1556. If the specified density is not attained, the area represented by the failed test shall be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

When the material has greater than 30 percent retained on the  $\frac{3}{4}$  inch (19.0 mm) sieve, use methods in ASTM D1557 and the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles.

**b. Thickness.** The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material

of proper gradation, and the material shall be blended and recompact to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

## METHOD OF MEASUREMENT

**154-4.1** Subbase course shall be measured by the number of square yards of subbase course material placed and compacted to specified density and plan thickness requirements in the completed course. The quantity of subbase course material shall be measured in final position based upon depth tests or cores taken as directed by the RPR, at the rate of two test per each 300 square yards of subbase course. On individual depth measurements, thicknesses more than 1/2 inch (12 mm) in excess of that shown on the plans shall be considered as the specified thickness plus 1/2 inch (12 mm) in computing the yardage for payment. Subbase materials shall not be included in any other excavation quantities.

## BASIS OF PAYMENT

**154-5.1** Payment shall be made at the contract unit price per square yard for subbase course. This price shall be full compensation for furnishing all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

|                         |                                      |                               |
|-------------------------|--------------------------------------|-------------------------------|
| <b>Item No. P-154-1</b> | <b>12" Stabilized Subbase Course</b> | <b>- per Square Yard (SY)</b> |
|-------------------------|--------------------------------------|-------------------------------|

## 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 C117  | Standard Test Method for Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing   |
| ASTM C136  | Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates  |
| ASTM D75   | Standard Practice for Sampling Aggregates  |
| ASTM D698  | Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> ))   |
| 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/ft <sup>3</sup> (2,700 kN-m/m <sup>3</sup> )) |



|            |   |
|------------|---|
| ASTM D2487 | Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)               |
| ASTM D4253 | Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table                          |
| ASTM D4759 | Practice for Determining the Specification Conformance of Geosynthetics   |
| ASTM D4318 | Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils                                      |
| ASTM D6938 | Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) |

American Association of State Highway and Transportation Officials (AASHTO)

|       |   |
|-------|---|
| M 288 | Geotextile Specification for Highway Applications |
|-------|---|

**END OF ITEM P-154**

## Item P-209 Crushed Aggregate Base Course

### DESCRIPTION

**209-1.1** This item consists of a base course composed of crushed aggregate base constructed on a prepared course in accordance with these specifications and in conformity to the dimensions and typical cross-sections shown on the plans.

### MATERIALS

**209-2.1 Crushed aggregate base.** Crushed aggregate shall consist of clean, sound, durable particles of crushed stone, crushed gravel, and shall be free from coatings of clay, silt, organic material, clay lumps or balls or other deleterious materials or coatings. The method used to produce the crushed gravel shall result in the fractured particles in the finished product as consistent and uniform as practicable. Fine aggregate portion, defined as the portion passing the No. 4 (4.75 mm) sieve shall consist of fines from the coarse aggregate crushing operation. The fine aggregate shall be produced by crushing stone, gravel, that meet the coarse aggregate requirements for wear and soundness. Aggregate base material requirements are listed in the following table.

**Crushed Aggregate Base Material Requirements**

| Material Test   | Requirement  | Standard   |
|---|--|------------|
| <b>Coarse Aggregate</b>   |  |            |
| Resistance to Degradation   | Loss: 45% maximum  | ASTM C131  |
| Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate | Loss after 5 cycles:<br>12% maximum using Sodium sulfate - or -<br>18% maximum using magnesium sulfate                     | ASTM C88   |
| Percentage of Fractured Particles                                     | Minimum 90% by weight of particles with at least two fractured faces and 98% with at least one fractured face <sup>1</sup> | ASTM D5821 |
| Flat Particles, Elongated Particles, or Flat and Elongated Particles  | 10% maximum, by weight, of flat, elongated, or flat and elongated particles <sup>2</sup>                                   | ASTM D4791 |
| <b>Fine Aggregate</b>   |  |            |
| Liquid limit  | Less than or equal to 25   | ASTM D4318 |
| Plasticity Index  | Not more than five (5)   | ASTM D4318 |

<sup>1</sup> The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

<sup>2</sup> A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

**209-2.2 Gradation requirements.** The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa.

**Gradation of Aggregate Base**

| Sieve Size                      | Design Range<br>Percentage by Weight<br>passing | Contractor's Final<br>Gradation | Job Control Grading Band<br>Tolerances <sup>1</sup><br>(Percent) |
|---------------------------------|---|---------------------------------|--|
| 2 inch<br>(50 mm)               | 100   |                                 | 0  |
| 1-1/2 inch<br>(37.5 mm)         | 95-100  |                                 | ±5   |
| 1 inch<br>(25.0 mm)             | 70-95   |                                 | ±8   |
| 3/4 inch<br>(19.0 mm)           | 55-85   |                                 | ±8   |
| No. 4<br>(4.75 mm)              | 30-60   |                                 | ±8   |
| No. 40 <sup>2</sup><br>(425 µm) | 10-30   |                                 | ±5   |
| No. 200 <sup>2</sup><br>(75 µm) | 0-10  |                                 | ±3   |

<sup>1</sup> The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

<sup>2</sup> The fraction of material passing the No 200 (75 µm) sieve shall not exceed two-thirds the fraction passing the No 40 (425 µm) sieve.

**209-2.3 Sampling and Testing.**

**a. Aggregate base materials.** The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraph 209-2.1. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

**b. Gradation requirements.** The Contractor shall take at least two aggregate base samples per day in the presence of the Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 209-2.2. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

**209-2.4 Separation Geotextile.** Not used.

## CONSTRUCTION METHODS

**209-3.1 Control strip.** The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted or removed and replaced at the Contractor's expense. Full operations shall not continue until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved by the RPR.

**209-3.2 Preparing underlying subgrade and/or subbase.** The underlying subgrade and/or subbase shall be checked and accepted by the RPR before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with Item P-152, at the Contractor's expense, may be required by the RPR if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

**209-3.3 Production.** The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 209-3.5, the approved material may be transported directly to the placement.

**209-3.4 Placement.** The aggregate shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

The aggregate shall meet gradation and moisture requirements prior to compaction. The base course shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 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 at the Contractor's expense.

**209-3.5 Compaction.** Immediately after completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade.

The field density of each compacted lift of material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the base material delivered to the jobsite. The laboratory specimens shall be compacted and tested in accordance with ASTM D1557. The moisture

content of the material during placing operations shall be within  $\pm 2$  percentage points of the optimum moisture content as determined by ASTM **D1557**. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**209-3.6 Weather limitations.** Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

**209-3.7 Maintenance.** The base course shall be maintained in a condition that will meet all specification requirements. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the Contractor shall verify that materials still meet all specification requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at the Contractor's expense.

**209-3.8 Surface tolerances.** After the course has been compacted, 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 recompact to grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

**a. Smoothness.** The finished surface shall not vary more than 3/8-inch (9 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 and -1/2 inch (12 mm) of the specified grade.

**209-3.9 Acceptance sampling and testing.** Crushed aggregate base course shall be accepted for density and thickness on an area basis. Two tests shall be made for density and thickness for each 300 square yds. Sampling locations will be determined on a random basis per ASTM D3665

**a. Density.** The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM 1557. The in-place field density shall be determined per ASTM D1556. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompact and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**b. Thickness.** Depth tests shall be made by test holes at least 3 inches (75 mm) in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new

material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

## METHOD OF MEASUREMENT

**209-4.1** The quantity of crushed aggregate base course will be determined by measurement of the number of square yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

## BASIS OF PAYMENT

**209-5.1** Payment shall be made at the contract unit price per square yard for crushed aggregate base course. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

Payment will be made under:

**Item No. P-209-1 8" Crushed Aggregate Base Course - per Square Yard (SY)**

## 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 C29   | Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate   |
| ASTM C88   | Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate   |
| ASTM C117  | Standard Test Method for Materials Finer than 75- $\mu\text{m}$ (No. 200) Sieve in Mineral Aggregates by Washing   |
| ASTM C131  | Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine                      |
| ASTM C136  | Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates  |
| ASTM C142  | Standard Test Method for Clay Lumps and Friable Particles in Aggregates  |
| ASTM D75   | Standard Practice for Sampling Aggregates  |
| ASTM D698  | Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> )) |
| ASTM D1556 | Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method  |

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|   |   |
|---|---|
| ASTM D1557  | Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft <sup>3</sup> (2700 kN-m/m <sup>3</sup> )) |
| ASTM D2167  | Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method  |
| ASTM D2419  | Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate  |
| ASTM D3665  | Standard Practice for Random Sampling of Construction Materials   |
| ASTM D4318  | Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils  |
| ASTM D4491  | Standard Test Methods for Water Permeability of Geotextiles by Permittivity   |
| ASTM D4643  | Standard Test Method for Determination of Water Content of Soil and Rock by Microwave Oven Heating  |
| ASTM D4751  | Standard Test Methods for Determining Apparent Opening Size of a Geotextile   |
| ASTM D4791  | Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate   |
| ASTM D5821  | Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate  |
| ASTM D6938  | Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)                                 |
| ASTM D7928  | Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis                       |
| American Association of State Highway and Transportation Officials (AASHTO) |   |
| M288  | Standard Specification for Geosynthetic Specification for Highway Applications  |

**END OF ITEM P-209**

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## Item P-211 Lime Rock Base Course

### DESCRIPTION

**211-1.1** This item shall consist of a base course composed of lime rock constructed on the prepared underlying course per these specifications and shall conform to the dimensions and typical cross-section shown on the plans.

### MATERIALS

**211-2.1 Materials.** The lime rock base course material shall consist of fossiliferous limestone of uniform quality. The material shall not contain hard or flinty pieces that will cause a rough surface containing pits and pockets. The rock shall show no tendency to “air slake” or undergo chemical change when exposed to the weather. The material when watered and rolled shall be capable of compacting to a dense and well-bonded base.

### Lime Rock Base Course Material Properties<sup>2</sup>

|   | Oolitic                  | Non-Oolitic              |
|---|--------------------------|--------------------------|
| Carbonates of calcium and magnesium <sup>1</sup>            | 70% minimum              | 75% minimum              |
| Oxides of iron and aluminum <sup>1</sup>                    | Less than or equal to 2% | Less than or equal to 2% |
| Liquid limit  | NA                       | Not greater than 35      |
| Plasticity Index  | NA                       | Not greater than 6       |
| Organic or foreign matter                                   | Not more than 0.5%       | Not more than 0.5%       |
| Lime Bearing Ratio (LBR) <sup>3</sup> at 0 to +1.5% optimum | 125                      | 125                      |

<sup>1</sup> The combined amount of carbonates, oxides, and silica shall be at least 97%. The material shall be non-plastic.

<sup>2</sup> The chemical analysis of lime rock shall consist of determining the insoluble silica, iron oxide, and alumina by solution of the sample in hydrochloric (HCl) acid, evaporating, dehydrating, re-dissolving the residue, and neutralizing with ammonium hydroxide, filtering, washing, and igniting the residue lime rock. The difference between the percentage of insoluble matter and 100% is reported as carbonates of calcium and magnesium.

<sup>3</sup> FM 5-515, Florida Method of Test for Lime Rock Bearing Ratio

### Lime Rock Base Course Gradation

| Sieve Designation<br>(square openings) | Percentage by Weight<br>Passing Sieves |
|--|--|
| 3-1/2 inch (87.5 mm)                   | 100                                    |
| 3/4 inch (19.0 mm)                     | 50-100                                 |

All fine material shall consist entirely of dust of fracture (fine portion passing the No. 10 (2.00 mm) sieve).

### **211-2.2 Sampling and Testing.**

**a. Aggregate base materials.** The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraph 211-2.1. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

**b. Gradation requirements.** The Contractor shall take at least two aggregate base samples per day in the presence of the Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 209-2.1. The lot will be consistent with the lot size used for density. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

**211-2.3 Separation Geotextile.** Not used.

## **CONSTRUCTION METHODS**

**211-3.1 Control strip.** The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. Control strips that do not meet specification requirements shall be removed and replaced at the Contractor's expense. Full operations shall not continue until the control strip has been accepted by the RPR. Upon acceptance of the control strip by the RPR, the Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

**211-3.2 Preparing underlying course.** The RPR shall check and accept the underlying course before placing and spreading operations are started. Any ruts or soft yielding places caused by improper drainage conditions, hauling, or any other cause shall be corrected at the Contractor's expense before the base course is placed. Material shall not be placed on frozen subgrade.

**211-3.3 Placement.** The material shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

The material shall meet gradation and moisture requirements prior to compaction. The layer shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 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.

**211-3.4 Compaction.** Immediately upon completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade. The field density of each compacted lift of material shall be at least [ 100% ] of the maximum density of laboratory specimens prepared from samples of the subbase

material delivered to the jobsite. The moisture content of the material during placing operations shall be within  $\pm 2$  percentage points of the optimum moisture content as determined by ASTM D1557. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

**211-3.5 Finishing.** After the watering and rolling of the base course, the entire surface shall be scarified to a depth of at least 3 inches (75 mm) and shaped to the exact crown and cross-section with a blade grader. The scarified material shall be rewetted and thoroughly rolled. Rolling shall continue until the base is bonded and compacted to a dense, unyielding mass, true to grade and cross-section. Scarifying and rolling of the surface of the base shall follow the initial rolling of the lime rock by not more than four (4) days. When the lime rock base is constructed in two layers, the scarifying of the surface shall be to a depth of 2 inches (50 mm).

If cracks or checks appear in the base before the surface course is laid, the Contractor shall rescarifying, reshaping, watering, add lime rock where necessary, and recompact. If the underlying material becomes mixed with the base course material, the Contractor shall, without additional compensation, remove, reshape, and recompact the mixture.

**211-3.6 Weather limitations.** Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

**211-3.7 Maintenance.** The base course shall be maintained in a condition that will meet all specification requirements until the work is accepted by the RPR. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the Contractor shall verify that materials still meet all specification requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at the Contractor's expense.

**211-3.8 Surface tolerance.** After the course has been compacted, 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 recompact to grade. until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

**a. Smoothness.** The finished surface shall not vary more than 3/8-inch (9 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 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 and -1/2 inch (12 mm) of the specified grade.

**211-3.9 Acceptance sampling and testing.** Lime rock base course shall be accepted for density on an area basis. Two tests shall be made for density and thickness for each 300 square yds. Sampling locations will be determined on a random basis per ASTM D3665.

**a. Density.** The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

**b. Thickness.** Depth tests shall be made by test holes or cores at least 3 inches (75 mm) in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompact to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

**211-4.1** The quantity of lime rock base course shall be the number of square yards of base material placed, bonded, and accepted in the completed base course. The quantity of base course material shall be measured in final position based upon depth tests taken as directed by the RPR. On individual depth measurements, thicknesses more than 1/2 inch (12 mm) in excess of that shown on the plans shall be considered as the specified thickness plus 1/2 inch (12 mm) in computing the yardage for payment.

Payment will be made under:

**Item No. P-211-1    8" Limerock Base Course                                  - per Square Yard (SY)**

## ASTM International (ASTM)

|           |  |
|-----------|--|
| ASTM C136 | Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates  |
| ASTM D75  | Standard Practice for Sampling Aggregates  |
| ASTM D698 | Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> )) |

|            |   |
|------------|---|
| 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/ft <sup>3</sup> (2700 kN-m/m <sup>3</sup> )) |
| ASTM D3665 | Standard Practice for Random Sampling of Construction Materials   |
| ASTM D4318 | Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils  |
| ASTM D4491 | Standard Test Methods for Water Permeability of Geotextiles by Permittivity   |
| ASTM D4751 | Standard Test Methods for Determining Apparent Opening Size of a Geotextile   |

American Association of State Highway and Transportation Officials (AASHTO)

|      |  |
|------|--|
| M288 | Standard Specification for Geosynthetic Specification for Highway Applications |
|------|--|

**END OF ITEM P-211**

## **Item P-401 Asphalt Mix Pavement**

### **DESCRIPTION**

**401-1.1** This item shall consist of pavement courses composed of mineral aggregate and asphalt binder mixed in a central mixing plant and placed on a prepared base or stabilized course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross-sections shown on the plans. Each course shall be constructed to the depth, typical section, and elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

### **MATERIALS**

**401-2.1 Aggregate.** Aggregates shall consist of crushed stone, crushed gravel, crushed slag, screenings, natural sand, and mineral filler, as required. The aggregates should have no known history of detrimental pavement staining due to ferrous sulfides, such as pyrite. Coarse aggregate is the material retained on the No. 4 (4.75 mm) sieve. Fine aggregate is the material passing the No. 4 (4.75 mm) sieve.

**a. Coarse aggregate.** Coarse aggregate shall consist of sound, tough, durable particles, free from films of matter that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. Coarse aggregate material requirements are given in the table below.

**Coarse Aggregate Material Requirements**

| <b>Material Test</b>  | <b>Requirement</b>   | <b>Standard</b> |
|---|--|-----------------|
| Resistance to Degradation   | Loss: 40% maximum  | ASTM C131       |
| Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate | Loss after 5 cycles:<br>12% maximum using Sodium sulfate - or -<br>18% maximum using magnesium sulfate   | ASTM C88        |
| Clay lumps and friable particles                                      | 1.0 % maximum  | ASTM C142       |
| Percentage of Fractured Particles                                     | For pavements designed for aircraft gross weights of 60,000 pounds (27200 kg) or more:<br>Minimum 75% by weight of particles with at least two fractured faces and 85% with at least one fractured face <sup>1</sup> | ASTM D5821      |
|   | For pavements designed for aircraft gross weights less than 60,000 pounds (27200 kg):<br>Minimum 50% by weight of particles with at least two fractured faces and 65% with at least one fractured face <sup>1</sup>  |                 |
| Flat, Elongated, or Flat and Elongated Particles                      | 8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 <sup>2</sup>   | ASTM D4791      |
| Bulk density of slag <sup>3</sup>                                     | Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)   | ASTM C29.       |

<sup>1</sup> The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

<sup>2</sup> A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

<sup>3</sup> Only required if slag is specified.

**b. Fine aggregate.** Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel and shall be free from coatings of clay, silt, or other objectionable matter. Natural (non-manufactured) sand may be used to obtain the gradation of the fine aggregate blend or to improve the workability of the mix. Fine aggregate material requirements are listed in the table below.

#### Fine Aggregate Material Requirements

| Material Test   | Requirement  | Standard   |
|---|--|------------|
| Liquid limit  | 25 maximum   | ASTM D4318 |
| Plasticity Index  | 4 maximum  | ASTM D4318 |
| Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate | Loss after 5 cycles:<br>10% maximum using Sodium sulfate - or -<br>15% maximum using magnesium sulfate | ASTM C88   |
| Clay lumps and friable particles                                      | 1.0% maximum   | ASTM C142  |
| Sand equivalent   | 45 minimum   | ASTM D2419 |

c. **Sampling.** ASTM D75 shall be used in sampling coarse and fine aggregate.

**401-2.2 Mineral filler.** Mineral filler (baghouse fines) may be added in addition to material naturally present in the aggregate. Mineral filler shall meet the requirements of ASTM D242.

#### Mineral Filler Requirements

| Material Test    | Requirement | Standard   |
|------------------|-------------|------------|
| Plasticity Index | 4 maximum   | ASTM D4318 |

**401-2.3 Asphalt binder.** Asphalt binder shall conform to ASTM D6373 Performance Grade (PG) **76-22**.

**401-2.4 Anti-stripping agent.** Any anti-stripping agent or additive (anti-strip) shall be heat stable and shall not change the asphalt binder grade beyond specifications. Anti-strip shall be an approved material of the Department of Transportation of the State in which the project is located.

#### COMPOSITION

**401-3.1 Composition of mixture(s).** The asphalt mix shall be composed of a mixture of aggregates, filler and anti-strip agent if required, and asphalt binder. The aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

**401-3.2 Job mix formula (JMF) laboratory.** The laboratory used to develop the JMF shall possess a current certificate of accreditation, listing D3666 from a national accrediting authority and all test methods required for developing the JMF; and be listed on the accrediting authority's website. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Resident Project Representative (RPR) prior to start of construction.

**401-3.3 Job mix formula (JMF).** No asphalt mixture shall be placed until an acceptable mix design has been submitted to the RPR for review and accepted in writing. The RPR's review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

When the project requires asphalt mixtures of differing aggregate gradations and/or binders, a separate JMF shall be submitted for each mix. Add anti-stripping agent to meet tensile strength requirements.



The JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 401-3.2. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition. Samples shall be prepared and compacted using the gyratory compactor in accordance with ASTM D6925.

Should a change in sources of materials be made, a new JMF must be submitted to the RPR for review and accepted in writing before the new material is used. After the initial production JMF has been approved by the RPR and a new or modified JMF is required for whatever reason, the subsequent cost of the new or modified JMF, including a new control strip when required by the RPR, will be borne by the Contractor.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

The JMF shall be submitted in writing by the Contractor at least 14 days prior to the start of paving operations. The JMF shall be developed within the same construction season using aggregates proposed for project use.

The JMF shall be dated, and stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

- Manufacturer's Certificate of Analysis (COA) for the asphalt binder used in the JMF in accordance with paragraph 401-2.3. Certificate of asphalt performance grade is with modifier already added, if used and must indicate compliance with ASTM D6373. For plant modified asphalt binder, certified test report indicating grade certification of modified asphalt binder.
- Manufacturer's Certificate of Analysis (COA) for the anti-stripping agent if used in the JMF in accordance with paragraph 401-2.4.
- Certified material test reports for the course and fine aggregate and mineral filler in accordance with paragraphs 401-2.1.
- Percent passing each sieve size for individual gradation of each aggregate cold feed and/or hot bin; percent by weight of each cold feed and/or hot bin used; and the total combined gradation in the JMF.
- Specific Gravity and absorption of each coarse and fine aggregate.
- Percent natural sand.
- Percent fractured faces.
- Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).
- Percent of asphalt.
- Number of blows or gyrations
- Laboratory mixing and compaction temperatures.
- Supplier-recommended field mixing and compaction temperatures.
- Plot of the combined gradation on a 0.45 power gradation curve.

- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.
- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.
- Asphalt Pavement Analyzer (APA) results.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.
- Percentage and properties (asphalt content, asphalt binder properties, and aggregate properties) of reclaimed asphalt mix pavement (RAP) in accordance with paragraph 401-3.4.
- Table 1. Asphalt Design Criteria

| Test Property                                     | Value                                      | Test Method |
|---|--|-------------|
| Number of blows or gyrations                      | 75   |             |
| Air voids (%)                                     | 3.5  | ASTM D3203  |
| Percent voids in mineral aggregate (VMA), minimum | See Table 2                                | ASTM D6995  |
| Tensile Strength Ratio (TSR) <sup>1</sup>         | not less than 80 at a saturation of 70-80% | ASTM D4867  |

<sup>1</sup> Test specimens for TSR shall be compacted at  $7 \pm 1.0$  % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867.

<sup>2</sup> AASHTO T340 at 100 psi hose pressure at 64°C test temperature may be used in the interim. If this method is used the required Value shall be less than 5 mm @ 8000 passes

<sup>3</sup> Where APA not available , use Hamburg Wheel test (AASHTO T-324) 10mm @ 20,000 passes at 50°C.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply; be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa.

**Table 2. Aggregate - Asphalt Pavements**

| Sieve Size  | Percentage by Weight Passing Sieve |
|---|------------------------------------|
| 1 inch (25.0 mm)  | --                                 |
| 3/4 inch (19.0 mm)  | 100                                |
| 1/2 inch (12.5 mm)  | 90-100                             |
| 3/8 inch (9.5 mm)   | 72-88                              |
| No. 4 (4.75 mm)   | 53-73                              |
| No. 8 (2.36 mm)   | 38-60                              |
| No. 16 (1.18 mm)  | 26-48                              |
| No. 30 (600 µm)   | 18-38                              |
| No. 50 (300 µm)   | 11-27                              |
| No. 100 (150 µm)  | 6-18                               |
| No. 200 (75 µm)   | 3-6                                |
| <b>Minimum Voids in Mineral Aggregate (VMA)<sup>1</sup></b> | 15.0                               |
| <b>Asphalt Percent:</b>                                     |                                    |
| Stone or gravel   | 5.0-7.5                            |
| Slag  | 6.5-9.5                            |
| <b>Recommended Minimum Construction Lift Thickness</b>      | 2                                  |

<sup>1</sup>To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition.

**401-3.4 Reclaimed asphalt pavement (RAP).** RAP shall not be used.

**401-3.5 Control Strip.** A control strip is not required.

## CONSTRUCTION METHODS

**401-4.1 Weather limitations.** The asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 4. The temperature requirements may be waived by the RPR, if requested; however, all other requirements including compaction shall be met.

**Table 4. Surface Temperature Limitations of Underlying Course**

| Mat Thickness  | Base Temperature (Minimum) |    |
|--|----------------------------|----|
|  | °F                         | °C |
| 3 inches (7.5 cm) or greater                                     | 40 <sup>1</sup>            | 4  |
| Greater than 2 inches (50 mm)<br>but less than 3 inches (7.5 cm) | 45                         | 7  |

**401-4.2 Asphalt plant.** Plants used for the preparation of asphalt shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 including the following items.

**a. Inspection of plant.** The RPR, or RPR's authorized representative, shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the mixtures.

**b. Storage bins and surge bins.** The asphalt mixture stored in storage and/or surge bins shall meet the same requirements as asphalt mixture loaded directly into trucks. Asphalt mixture shall not be stored in storage and/or surge bins for a period greater than twelve (12) hours. If the RPR determines there is an excessive heat loss, segregation, or oxidation of the asphalt mixture due to temporary storage, temporary storage shall not be allowed.

**401-4.3 Aggregate stockpile management.** Aggregate stockpiles shall be constructed in a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the asphalt batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used.

A continuous supply of materials shall be provided to the work to ensure continuous placement.

**401-4.4 Hauling equipment.** Trucks used for hauling asphalt shall have tight, clean, and smooth metal beds. To prevent the asphalt from sticking to the truck beds, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other material approved by the RPR. Petroleum products shall not be used for coating truck beds. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

**401-4.4.1 Material transfer vehicle (MTV).** Material transfer vehicles are not required.

**401-4.5 Asphalt pavers.** Asphalt pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of asphalt that will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface. The asphalt paver shall be equipped with a control system capable of automatically maintaining the specified screed grade and elevation.

If the spreading and finishing equipment in use leaves tracks or indented areas, or produces other blemishes in the pavement that are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued.

The paver shall be capable of paving to a minimum width specified in paragraph 401-4.12.

**401-4.6 Rollers.** The number, type, and weight of rollers shall be sufficient to compact the asphalt to the required density while it is still in a workable condition without crushing of the aggregate, depressions or other damage to the pavement surface. Rollers shall be in good condition, clean, and capable of operating at slow speeds to avoid displacement of the asphalt. All rollers shall be specifically designed and suitable for compacting asphalt concrete and shall be properly used. Rollers that impair the stability of any layer of a pavement structure or underlying soils shall not be used.

**401-4.7 Density device.** The Contractor shall have on site a density gauge during all paving operations in order to assist in the determination of the optimum rolling pattern, type of roller and frequencies, as well as to monitor the effect of the rolling operations during production paving. The Contractor shall supply a qualified technician during all paving operations to calibrate the gauge and obtain accurate density readings for all new asphalt. These densities shall be supplied to the RPR upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

**401-4.8 Preparation of asphalt binder.** The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt binder to the mixer at a uniform temperature. The temperature of unmodified asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed 325°F (160°C) when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F (175°C) when added to the aggregate.

**401-4.9 Preparation of mineral aggregate.** The aggregate for the asphalt shall be heated and dried. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350°F (175°C) when the asphalt binder is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

**401-4.10 Preparation of Asphalt mixture.** The aggregates and the asphalt binder shall be weighed or metered and mixed in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95% of coated particles. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer. The moisture content of all asphalt upon discharge shall not exceed 0.5%.

**401-4.11 Application of Prime and Tack Coat.** Immediately before placing the asphalt mixture, the underlying course shall be cleaned of all dust and debris.

A prime coat in accordance with Item P-602 shall be applied to aggregate base prior to placing the asphalt mixture.

A tack coat shall be applied in accordance with Item P-603 to all vertical and horizontal asphalt and concrete surfaces prior to placement of the first and each subsequent lift of asphalt mixture.

**401-4.12 Laydown plan, transporting, placing, and finishing.** Prior to the placement of the asphalt, the Contractor shall prepare a laydown plan with the sequence of paving lanes and width to minimize the number of cold joints; the location of any temporary ramps; laydown temperature; and estimated time of completion for each portion of the work (milling, paving, rolling, cooling, etc.). The laydown plan and any modifications shall be approved by the RPR.

Deliveries shall be scheduled so that placing and compacting of asphalt is uniform with minimum stopping and starting of the paver. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to approximately ambient temperature. The Contractor, at their expense, shall be responsible for repair of any damage to the pavement caused by hauling operations.

Contractor shall survey each lift of asphalt surface course and certify to RPR that every lot of each lift meets the grade tolerances of paragraph 401-6.2d before the next lift can be placed.

Edges of existing asphalt pavement abutting the new work shall be saw cut and the cut off material and laitance removed. Apply a tack coat in accordance with P-603 before new asphalt material is placed against it.

The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Placement of the asphalt mix shall begin along the centerline of a crowned section or on the high side of areas with a one way slope unless shown otherwise on the laydown plan as accepted by the RPR. The asphalt mix shall be placed in consecutive adjacent lanes having a minimum width of **10 feet (m)** except where edge lanes require less width to complete the area. Additional screed sections attached to widen the paver to meet the minimum lane width requirements must include additional auger sections to move the asphalt mixture uniformly along the screed extension.

The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least one foot (30 cm); however, the joint in the surface top course shall be at the centerline of crowned pavements. Transverse joints in one course shall be offset by at least 10 feet (3 m) from transverse joints in the previous course. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet (3 m). On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the asphalt may be spread and luted by hand tools.

The RPR may at any time, reject any batch of asphalt, on the truck or placed in the mat, which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or overheated asphalt mixture. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

Areas of segregation in the surface course, as determined by the RPR, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of the construction lift thickness as specified in paragraph 401-3.3, Table 2 for the approved mix design. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet (3 m) long.

**401-4.13 Compaction of asphalt mixture.** After placing, the asphalt mixture shall be thoroughly and uniformly compacted by self-propelled rollers. The surface shall be compacted as soon as possible when the asphalt has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the

discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any surface defects and/or displacement occurring as a result of the roller, or from any other cause, shall be corrected at the Contractor's expense.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross-section, and the required field density is obtained. To prevent adhesion of the asphalt to the roller, the wheels shall be equipped with a scraper and kept moistened with water as necessary.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power tampers.

Any asphalt that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

**401-4.14 Joints.** The formation of all joints shall be made to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid asphalt except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be coated with an asphalt tack coat before placing any fresh asphalt against the joint.

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F (80°C); or are irregular, damaged, uncompacted or otherwise defective shall be cut back with a cutting wheel or pavement saw a maximum of 3 inches (75 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material and any laitance produced from cutting joints shall be removed from the project. Asphalt tack coat in accordance with P-603 shall be applied to the clean, dry joint prior to placing any additional fresh asphalt against the joint. The cost of this work shall be considered incidental to the cost of the asphalt.

**401-4.15 Saw-cut grooving.** Saw-cut grooving is not required.

**401-4.16 Diamond grinding.** Diamond grinding shall be completed prior to pavement grooving. Diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive.

Diamond grinding shall be performed with a machine designed specifically for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with a sufficient number of blades to create grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Equipment or grinding procedures that cause ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted. Contractor shall demonstrate to the RPR that the grinding equipment will produce satisfactory results prior to making corrections to surfaces. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the

grinding operation shall be continuously removed and the pavement left in a clean condition. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

**401-4.17 Nighttime paving requirements.** The Contractor shall provide adequate lighting during any nighttime construction. A lighting plan shall be submitted by the Contractor and approved by the RPR prior to the start of any nighttime work. All work shall be in accordance with the approved CSPP and lighting plan.

### **CONTRACTOR QUALITY CONTROL (CQC)**

**401-5.1 General.** A formal Contractor Quality Control Program (CQCP) is not required; however, testing shall be completed in accordance with the sections below.

**401-5.2 Contractor quality control (QC) facilities.** Not required.

**401-5.3 Contractor QC testing.** The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to these specifications. The testing program shall include, but not necessarily be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, field compaction, and surface smoothness.

**a. Asphalt content.** A minimum of two tests shall be performed per day in accordance with ASTM D6307 or ASTM D2172 for determination of asphalt content. When using ASTM D6307, the correction factor shall be determined as part of the first test performed at the beginning of plant production; and as part of every tenth test performed thereafter. The asphalt content for the day will be determined by averaging the test results.

**b. Gradation.** Aggregate gradations shall be determined a minimum of twice per day from mechanical analysis of extracted aggregate in accordance with ASTM D5444, ASTM C136, and ASTM C117.

**c. Moisture content of aggregate.** The moisture content of aggregate used for production shall be determined a minimum of once per day in accordance with ASTM C566.

**d. Moisture content of asphalt.** The moisture content shall be determined once per day in accordance with AASHTO T329 or ASTM D1461.

**e. Temperatures.** Temperatures shall be checked, at least four times per day, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the asphalt at the plant, and the asphalt at the job site.

**f. In-place density monitoring.** The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the pavement density in accordance with ASTM D2950.

#### **g. Smoothness for Contractor Quality Control.**

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¼ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria is not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues

The Contractor may use a 12-foot (3.7 m) "straightedge, a rolling inclinometer meeting the requirements of ASTM E2133 or rolling external reference device that can simulate a 12-foot (3.7m)



straightedge approved by the RPR. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer or external reference device is used, the data may be evaluated using either the FAA profile program, ProFAA, or FHWA ProVal, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

**(1) Transverse measurements.** Transverse measurements shall be taken for each day's production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

**(2) Longitudinal measurements.** Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater. When placement abuts previously placed material the first measurement shall start with one half the length of the straight edge on the previously placed material.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 401-4.16 or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 401-6.1d(3). Areas that have been ground shall be sealed with a surface treatment in accordance with Item P-608. To avoid the surface treatment creating any conflict with runway or taxiway markings, it may be necessary to seal a larger area.

Control charts shall be kept to show area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

**h. Grade.** Grade shall be evaluated daily to allow adjustments to paving operations when grade measurements do not meet specifications. As a minimum, grade shall be evaluated prior to and after the placement of the first lift and after placement of the surface lift.

Measurements will be taken at appropriate gradelines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the RPR within 24 hours.

Areas with humps or depressions that exceed grade or smoothness criteria and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch

(12 mm) less than the thickness specified on the plans. Grinding shall be in accordance with paragraph 401-4.16.

The Contractor shall repair low areas or areas that cannot be corrected by grinding by removal of deficient areas to the depth of the final course plus ½ inch and replacing with new material. Skin patching is not allowed.

**401-5.4 Sampling.** When directed by the RPR, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

**401-5.5 Control charts.** The Contractor shall maintain linear control charts for both individual measurements and range (i.e. difference between highest and lowest measurements) for aggregate gradation, asphalt content, and VMA. The VMA for each day will be calculated and monitored by the QC laboratory.

Control charts shall be posted in a location satisfactory to the RPR and kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the RPR may suspend production or acceptance of the material.

**a. Individual measurements.** Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation, asphalt content, and VMA. The control charts shall use the job mix formula target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

**Control Chart Limits for Individual Measurements**

| Sieve                  | Action Limit | Suspension Limit |
|------------------------|--------------|------------------|
| 3/4 inch (19.0 mm)     | ±6%          | ±9%              |
| 1/2 inch (12.5 mm)     | ±6%          | ±9%              |
| 3/8 inch (9.5 mm)      | ±6%          | ±9%              |
| No. 4 (4.75 mm)        | ±6%          | ±9%              |
| No. 16 (1.18 mm)       | ±5%          | ±7.5%            |
| No. 50 (300 µm)        | ±3%          | ±4.5%            |
| No. 200 (75 µm)        | ±2%          | ±3%              |
| <b>Asphalt Content</b> | ±0.45%       | ±0.70%           |
| <b>Minimum VMA</b>     | -0.5%        | -1.0%            |

**b. Range.** Control charts shall be established to control gradation process variability. The range shall be plotted as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of n = 2. Should the Contractor elect to perform more

than two tests per lot, the Suspension Limits shall be adjusted by multiplying the Suspension Limit by 1.18 for  $n = 3$  and by 1.27 for  $n = 4$ .

**Control Chart Limits Based on Range**

| Sieve                  | Suspension Limit |
|------------------------|------------------|
| 1/2 inch (12.5 mm)     | 11%              |
| 3/8 inch (9.5 mm)      | 11%              |
| No. 4 (4.75 mm)        | 11%              |
| No. 16 (1.18 mm)       | 9%               |
| No. 50 (300 $\mu$ m)   | 6%               |
| No. 200 (75 $\mu$ m)   | 3.5%             |
| <b>Asphalt Content</b> | <b>0.8%</b>      |

**c. Corrective Action.** [ The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain rules to gauge when a process is out of control and detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

- (1) One point falls outside the Suspension Limit line for individual measurements or range; or
- (2) Two points in a row fall outside the Action Limit line for individual measurements. ]

**401-5.6 QC reports.** The Contractor shall maintain records and shall submit reports of QC activities daily [ , in accordance with Item C-100 ].

**MATERIAL ACCEPTANCE**

**401-6.1 Acceptance sampling and testing.** Unless otherwise specified, all acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the RPR at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor.

**a. Quality assurance (QA) testing laboratory.** The QA testing laboratory performing these acceptance tests will be accredited in accordance with ASTM D3666. The QA laboratory accreditation will be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing will be listed on the lab accreditation.

**b. Lot size.** A standard lot will be equal to one day's production divided into approximately equal sublots of between 400 to 600 tons. When only one or two sublots are produced in a day's production, the sublots will be combined with the production lot from the previous or next day.

Where more than one plant is simultaneously producing asphalt for the job, the lot sizes will apply separately for each plant.

**c. Asphalt air voids.** Plant-produced asphalt will be tested for air voids on a subplot basis.

**(1) Sampling.** Material from each subplot shall be sampled in accordance with ASTM D3665. Samples shall be taken from material deposited into trucks at the plant or at the job site in accordance with ASTM D979. The sample of asphalt may be put in a covered metal tin and placed in an oven for not

less than 30 minutes nor more than 60 minutes to maintain the material at or above the compaction temperature as specified in the JMF.

**(2) Testing.** Air voids will be determined for each subplot in accordance with ASTM D3203 for a set of three compacted specimens prepared in accordance with ASTM D6925.

**d. In-place asphalt mat and joint density.** Each subplot will be tested for in-place mat and joint density as a percentage of the theoretical maximum density (TMD).

**(1) Sampling.** The Contractor will cut minimum 5 inch (125 mm) diameter samples in accordance with ASTM D5361. The Contractor shall furnish all tools, labor, and materials for cleaning, and filling the cored pavement. Laitance produced by the coring operation shall be removed immediately after coring, and core holes shall be filled within one day after sampling in a manner acceptable to the RPR.

**(2) Bond.** Each lift of asphalt shall be bonded to the underlying layer. If cores reveal that the surface is not bonded, additional cores shall be taken as directed by the RPR to determine the extent of unbonded areas. Unbonded areas shall be removed by milling and replaced at no additional cost as directed by the RPR.

**(3) Thickness.** Thickness of each lift of surface course will be evaluated by the RPR for compliance to the requirements shown on the plans after any necessary corrections for grade. Measurements of thickness will be made using the cores extracted for each subplot for density measurement. The maximum allowable deficiency at any point will not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, will not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or subplot shall be corrected by the Contractor at his expense by removing the deficient area and replacing with new pavement. The Contractor, at his expense, may take additional cores as approved by the RPR to circumscribe the deficient area.

**(4) Mat density.** One core shall be taken from each subplot. Core locations will be determined by the RPR in accordance with ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint. The bulk specific gravity of each cored sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each subplot sample by the TMD for that subplot.

**(5) Joint density.** One core centered over the longitudinal joint shall be taken for each subplot that has a longitudinal joint. Core locations will be determined by the RPR in accordance with ASTM D3665. The bulk specific gravity of each core sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each joint density sample by the average TMD for the lot. The TMD used to determine the joint density at joints formed between lots will be the lower of the average TMD values from the adjacent lots.

#### **401-6.2 Acceptance criteria.**

**a. General.** Acceptance will be based on the implementation of the Contractor Quality Control Program (CQCP) and the following characteristics of the asphalt and completed pavements: air voids, mat density, joint density, grade.

**b. Air Voids and Mat density.** Acceptance of each lot of plant produced material for mat density and air voids will be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment will be determined in accordance with paragraph 401-8.1.

**c. Joint density.** Acceptance of each lot of plant produced asphalt for joint density will be based on the PWL. If the PWL of the lot is equal to or exceeds 90%, the lot will be considered acceptable. If the PWL is less than 90%, the Contractor shall evaluate the reason and act accordingly. If the PWL is less than 80%, the Contractor shall cease operations and until the reason for poor compaction has been determined. If the PWL is less than 71%, the pay factor for the lot used to complete the joint will be reduced by five (5) percentage points. This lot pay factor reduction will be incorporated and evaluated in accordance with paragraph 401-8.1.

**d. Grade.** The final finished surface of the pavement shall be surveyed to verify that the grade elevations and cross-sections shown on the plans do not deviate more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally.

Cross-sections of the pavement shall be taken at a minimum 50-foot (15-m) longitudinal spacing, at all longitudinal grade breaks, and at start and end of each lane placed. Minimum cross-section grade points shall include grade at centerline,  $\pm 10$  feet of centerline, and edge of taxiway pavement.

The survey and documentation shall be stamped and signed by a licensed surveyor. Payment for sublots that do not meet grade for over 25% of the subplot shall not be more than 95%.

**e. Profilograph roughness for QA Acceptance. Not Used.**

**401-6.3 Percentage of material within specification limits (PWL).** The PWL will be determined in accordance with procedures specified in Item C-110. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 5.

**Table 5. Acceptance Limits for Air Voids and Density**

| Test Property                  | Pavements Specification Tolerance Limits |     |
|--------------------------------|--|-----|
|                                | L  | U   |
| Air Voids Total Mix (%)        | 2.0                                      | 5.0 |
| Surface Course Mat Density (%) | 92.8                                     | -   |
| Base Course Mat Density (%)    | 92.0                                     | -   |
| Joint density (%)              | 90.5                                     | --  |

**a. Outliers.** All individual tests for mat density and air voids will be checked for outliers (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded, and the PWL will be determined using the remaining test values. The criteria in Table 5 is based on production processes which have a variability with the following standard deviations: Surface Course Mat Density (%), 1.30; Base Course Mat Density (%), 1.55; Joint Density (%), 1.55.

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 94.5% with 1.30% or less variability, (2) 90 PWL is achieved when consistently producing a base course with an average mat density of at least 94.0% with 1.55% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 92.5% with 1.55% or less variability.

#### **401-6.4 Resampling pavement for mat density.**

**a. General.** Resampling of a lot of pavement will only be allowed for mat density, and then, only if the Contractor requests same, in writing, within 48 hours after receiving the written test results from the RPR. A retest will consist of all the sampling and testing procedures contained in paragraphs 401-6.1d and 401-6.2b. Only one resampling per lot will be permitted.

**(1)** A redefined PWL will be calculated for the resampled lot. The number of tests used to calculate the redefined PWL will include the initial tests made for that lot plus the retests.

**(2)** The cost for resampling and retesting shall be borne by the Contractor.

**b. Payment for resampled lots.** The redefined PWL for a resampled lot will be used to calculate the payment for that lot in accordance with Table 6.

**c. Outliers.** Check for outliers in accordance with ASTM E178, at a significance level of 5%.

### **METHOD OF MEASUREMENT**

**401-7.1 Measurement.** Asphalt shall be measured by the number of tons of asphalt used in the accepted work. Batch weights or truck scale weights will be used to determine the basis for the tonnage.

### **BASIS OF PAYMENT**

**401-8.1 Payment.** Payment for a lot of asphalt meeting all acceptance criteria as specified in paragraph 401-6.2 shall be made based on results of tests for mat density and air voids. Payment for acceptable lots shall be adjusted according to paragraph 401-8.1c for mat density and air voids; and paragraph 401-6.2c for joint density, subject to the limitation that:

**a.** The total project payment for plant mix asphalt pavement shall not exceed **100** percent of the product of the contract unit price and the total number of tons (kg) of asphalt used in the accepted work.

**b.** The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

**c. Basis of adjusted payment.** The pay factor for each individual lot shall be calculated in accordance with Table 6. A pay factor shall be calculated for both mat density and air voids. The lot pay factor shall be the higher of the two values when calculations for both mat density and air voids are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either mat density or air voids is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both mat density and air voids are less than 100%. If PWL for joint density is less than 71% then the lot pay factor shall be reduced by 5% but be no higher than 95%.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 401-8.1a. Payment in excess of 100% for accepted lots of asphalt shall be used to offset payment for accepted lots of asphalt pavement that achieve a lot pay factor less than 100%.

Payment for sublots which do not meet grade in accordance with paragraph 401-6.2d after correction for over 25% of the subplot shall be reduced by 5%.

**Table 6. Price adjustment schedule<sup>1</sup>**

| <b>Percentage of material within specification limits (PWL)</b> | <b>Lot pay factor (percent of contract unit price)</b> |
|---|--|
| 96 – 100  | 106  |
| 90 – 95   | PWL + 10   |
| 75 – 89   | 0.5 PWL + 55   |
| 55 – 74   | 1.4 PWL – 12   |
| Below 55  | Reject <sup>2</sup>                                    |

<sup>1</sup> Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment above 100% shall be subject to the total project payment limitation specified in paragraph 401-8.1a.

<sup>2</sup> The lot shall be removed and replaced. However, the RPR may decide to allow the rejected lot to remain. In that case, if the RPR and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50% of the contract unit price and the total project payment shall be reduced by the amount withheld for the rejected lot.

**d. Profilograph Roughness.** Not used.

#### **401-8.1 Payment.**

Payment will be made under:

**Item No. P-401-1 4" Asphalt Mix Pavement**

**- per Ton (TON)**

#### **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 C29  | Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate  |
| ASTM C88  | Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate                                      |
| ASTM C117 | Standard Test Method for Materials Finer than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing                                |
| ASTM C127 | Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate                            |
| ASTM C131 | Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine |
| ASTM C136 | Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates   |

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|            |   |
|------------|---|
| ASTM C142  | Standard Test Method for Clay Lumps and Friable Particles in Aggregates   |
| ASTM C566  | Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying                                 |
| ASTM D75   | Standard Practice for Sampling Aggregates   |
| ASTM D242  | Standard Specification for Mineral Filler for Bituminous Paving Mixtures  |
| ASTM D946  | Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction                     |
| ASTM D979  | Standard Practice for Sampling Asphalt Paving Mixtures  |
| ASTM D1073 | Standard Specification for Fine Aggregate for Asphalt Paving Mixtures   |
| ASTM D1188 | Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples  |
| ASTM D2172 | Standard Test Method for Quantitative Extraction of Bitumen from Asphalt Paving Mixtures                          |
| ASTM D1461 | Standard Test Method for Moisture or Volatile Distillates in Asphalt Paving Mixtures                              |
| ASTM D2041 | Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures           |
| ASTM D2419 | Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate  |
| ASTM D2489 | Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures                      |
| ASTM D2726 | Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures        |
| ASTM D2950 | Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods                               |
| ASTM D3203 | Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures                 |
| ASTM D3381 | Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction                       |
| ASTM D3665 | Standard Practice for Random Sampling of Construction Materials   |
| ASTM D3666 | Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials     |
| ASTM D4318 | Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils                              |
| ASTM D4552 | Standard Practice for Classifying Hot-Mix Recycling Agents  |
| ASTM D4791 | Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate |

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|   |   |
|---|---|
| ASTM D4867  | Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures   |
| ASTM D5361  | Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing  |
| ASTM D5444  | Standard Test Method for Mechanical Size Analysis of Extracted Aggregate  |
| ASTM D5821  | Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate  |
| ASTM D6084  | Standard Test Method for Elastic Recovery of Bituminous Materials by Ductilometer   |
| ASTM D6307  | Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method  |
| ASTM D6373  | Standard Specification for Performance Graded Asphalt Binder  |
| ASTM D6752  | Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method                               |
| ASTM D6925  | Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the SuperPave Gyrotory Compactor. |
| ASTM D6926  | Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus  |
| ASTM D6927  | Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures   |
| ASTM D6995  | Standard Test Method for Determining Field VMA based on the Maximum Specific Gravity of the Mix (Gmm)   |
| ASTM E11  | Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves  |
| ASTM E178   | Standard Practice for Dealing with Outlying Observations  |
| ASTM E1274  | Standard Test Method for Measuring Pavement Roughness Using a Profilograph  |
| ASTM E950   | Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference                 |
| ASTM E2133  | Standard Test Method for Using a Rolling Inclinator to Measure Longitudinal and Transverse Profiles of a Traveled Surface                                       |
| American Association of State Highway and Transportation Officials (AASHTO) |   |
| AASHTO M156   | Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.   |
| AASHTO T329   | Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method  |

|              |   |
|--------------|---|
| AASHTO T324  | Standard Method of Test for Hamburg Wheel-Track Testing of Compacted Asphalt Mixtures   |
| AASHTO T 340 | Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA) |

Asphalt Institute (AI)

Asphalt Institute Handbook MS-26, Asphalt Binder  
Asphalt Institute MS-2 Mix Design Manual, 7th Edition  
AI State Binder Specification Database

Federal Highway Administration (FHWA)

Long Term Pavement Performance Binder Program

Advisory Circulars (AC)

AC 150/5320-6 Airport Pavement Design and Evaluation

FAA Orders

5300.1 Modifications to Agency Airport Design, Construction, and Equipment Standards

Software

FAARFIELD

**END OF ITEM P-401**

## ITEM P-605 JOINT SEALANTS FOR PAVEMENTS

### DESCRIPTION

**605-1.1** This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints in pavement; joints between different types of pavements; and cracks in existing pavement.

### MATERIALS

**605-2.1 JOINT SEALANTS.** Joint sealant materials shall meet the requirements of **D5893**.

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

**605-2.2 BACKER ROD.** The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant in accordance with ASTM D5249. The backer-rod material shall be  $25\% \pm 5\%$  larger in diameter than the nominal width of the joint.

**605-2.3 BOND BREAKING TAPES.** Provide a bond breaking tape or separating material that is a flexible, non-shrinkable, non-absorbing, non-staining, and non-reacting adhesive-backed tape. The material shall have a melting point at least 5°F (3°C) greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately 1/8 inch (3 mm) wider than the nominal width of the joint and shall not bond to the joint sealant.

### CONSTRUCTION METHODS

**605-3.1 TIME OF APPLICATION.** Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F (10°C) and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

**605-3.2 EQUIPMENT.** Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, **14** days prior to use on the project.

**a. Tractor-mounted routing tool.** Provide a routing tool, used for removing old sealant from the joints, of such shape and dimensions and so mounted on the tractor that it will not damage the sides of the joints. The tool shall be designed so that it can be adjusted to remove the old material to varying depths as required. The use of V-shaped tools or rotary impact routing devices will not be permitted. Hand-operated spindle routing devices may be used to clean and enlarge random cracks.

**b. Concrete saw.** Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified.

**c. Sandblasting equipment.** Not used.

**d. Waterblasting equipment.** Not used.

**e. Hand tools.** Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

**f. Hot-poured sealing equipment.** The unit applicators used for heating and installing ASTM D6690 joint sealant materials shall be mobile and shall be equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording type thermometer for indicating the temperature of the sealant. The applicator unit shall be designed so that the sealant will circulate through the delivery hose and return to the inner kettle when not in use.

**g. Cold-applied, single-component sealing equipment.** The equipment for installing ASTM D5893 single component joint sealants shall consist of an extrusion pump, air compressor, following plate, hoses, and nozzle for transferring the sealant from the storage container into the joint opening. The dimension of the nozzle shall be such that the tip of the nozzle will extend into the joint to allow sealing from the bottom of the joint to the top. Maintain the initially approved equipment in good working condition, serviced in accordance with the supplier's instructions, and unaltered in any way without obtaining prior approval. Small hand-held air-powered equipment (i.e., caulking guns) may be used for small applications. ]

**605-3.3 PREPARATION OF JOINTS.** Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

**a. Sawing.** All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

**b. Sealing.** Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by tractor-mounted routing equipment or concrete saw as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch (12 mm) from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches (75 mm) from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

**c. Backer Rod.** When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod is placed at the specified depth and is not stretched or twisted during installation.

**d. Bond-breaking tape.** Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-separating tape breaker in accordance with paragraph 605-2.3 to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

**605-3.4 INSTALLATION OF SEALANTS.** Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the RPR before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet (15 m) ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/4 inch  $\pm$  1/16 inch below the top of pavement surface; or bottom of groove for grooved pavement. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the RPR. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

**605-3.5 INSPECTION.** The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

**605-3.6 CLEAN-UP.** Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

## METHOD OF MEASUREMENT

**605-4.1** No separate measurement shall be made for Joint Sealants. This item shall be considered incidental to item P-401.

## BASIS OF PAYMENT

**605-5.1** No separate payment shall be made for Joint Sealants. This item shall be considered incidental to and paid for under item P-401.

Payment will be made under:

Item P-605-5.1 ——— Joint Sealing Filler, [ ~~per gallon (liter)~~ ][ ~~per pound (kg)~~ ][ ~~per linear foot (meter)~~ ]

## 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 D789    | Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)   |
| ASTM D5249   | Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints  |
| [ ASTM D5893 | Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements ] |
| [ ASTM D6690 | Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt]  |
| [ ASTM D7116 | Standard Specification for Joint Sealants, Hot Applied, Jet Fuel Resistant Types for Portland Cement Concrete Pavements]                     |

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**The Engineer shall specify one or more of the ASTMs above to agree with sealant type selected in paragraph 605-2.1.**

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### Advisory Circulars (AC)

|                |   |
|----------------|---|
| AC 150/5340-30 | Design and Installation Details for Airport Visual Aids |
|----------------|---|

**END OF ITEM P-605**

## ITEM P-610 CONCRETE FOR MISCELLANEOUS STRUCTURES

### DESCRIPTION

**610-1.1** This item shall consist of concrete and reinforcement, as shown on the plans, prepared and constructed in accordance with these specifications. This specification shall be used for all concrete other than airfield pavement which are cast-in-place.

### MATERIALS

**610-2.1 GENERAL.** Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Resident Project Representative (RPR) before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

**a. Reactivity.** Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within six months of the project in accordance with ASTM C1260. Test results shall be submitted to the RPR. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.08% at 14 days (16 days from casting). If the expansion either or both test specimen is greater than 0.08% at 14 days, but less than 0.20%, a minimum of 25% of Type F fly ash, or between 40% and 55% of slag cement shall be used in the concrete mix.

If the expansion is greater than 0.20% the aggregates shall not be used, and test results for other aggregates must be submitted for evaluation; or aggregates that meet P-501 reactivity test requirements may be utilized.

**610-2.2 COARSE AGGREGATE.** The coarse aggregate for concrete shall meet the requirements of ASTM C33 and the requirements of Table 4, Class Designation 5S; and the grading requirements shown below, as required for the project.

**Coarse Aggregate Grading Requirements**

| <b>Maximum Aggregate Size</b> | <b>ASTM C33, Table 3 Grading Requirements (Size No.)</b> |
|-------------------------------|--|
| 1 1/2 inch (37.5 mm)          | 467 or<br>4 and 67                                       |
| 1 inch (25 mm)                | 57   |
| 3/4 inch (19 mm)              | 67   |
| 1/2 inch (12.5 mm)            | 7  |

**610-2.2.1 Coarse Aggregate susceptibility to durability (D) cracking.** Not used.

**610-2.3 FINE AGGREGATE.** The fine aggregate for concrete shall meet all fine aggregate requirements of ASTM C33.

**610-2.4 CEMENT.** Cement shall conform to the requirements of **ASTM C150 Type II**.

**610-2.5 CEMENTITIOUS MATERIALS.**

**a. Fly ash.** Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total available alkali content less than 3% per ASTM C311. Fly ash produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the RPR.

**b. Slag cement (ground granulated blast furnace (GGBF)).** Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

**610-2.6 WATER.** Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

**610-2.7 ADMIXTURES.** The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the RPR may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the RPR from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

**a. Air-entraining admixtures.** Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.



**b. Water-reducing admixtures.** Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

**c. Other chemical admixtures.** The use of set retarding, and set-accelerating admixtures shall be approved by the RPR. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

**610-2.8 PREMOLDED JOINT MATERIAL.** Premolded joint material for expansion joints shall meet the requirements of ASTM **D1751**.

**610-2.9 JOINT FILLER.** The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

**610-2.10 STEEL REINFORCEMENT.** Not used.

**610-2.11 MATERIALS FOR CURING CONCRETE.** Curing materials shall conform to **ASTM C171 or C309**.

## **CONSTRUCTION METHODS**

**610-3.1 GENERAL.** The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the RPR.

**610-3.2 CONCRETE MIXTURE.** The concrete shall develop a compressive strength of 4000 psi in 28 days as determined by test cylinders made in accordance with ASTM C31 and tested in accordance with ASTM C39. The concrete shall contain not less than 470 pounds of cementitious material per cubic yard (280 kg per cubic meter). The water cementitious ratio shall not exceed 0.45 by weight. The air content of the concrete shall be 5% +/- 1.2% as determined by ASTM C231 and shall have a slump of not more than 4 inches (100 mm) as determined by ASTM C143.

**610-3.3 MIXING.** Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94 or ASTM C685.

The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40°F (4°C) without the RPRs approval. If approval is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F (10°C) nor more than 100°F (38°C). The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his expense.

Retempering of concrete by adding water or any other material is not permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

**610-3.4 FORMS.** Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the RPR. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface.

**610-3.5 PLACING REINFORCEMENT.** All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

**610-3.6 EMBEDDED ITEMS.** Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

**610-3.7 CONCRETE CONSISTENCY.** The Contractor shall monitor the consistency of the concrete delivered to the project site; collect each batch ticket; check temperature; and perform slump tests on each truck at the project site in accordance with ASTM C143.

**610-3.8 PLACING CONCRETE.** All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the RPR. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet (1.5 m). Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

**610-3.9 VIBRATION.** Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309R, Guide for Consolidation of Concrete.

**610-3.10 JOINTS.** Joints shall be constructed as indicated on the plans.

**610-3.11 FINISHING.** All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated.

**610-3.12 CURING AND PROTECTION.** All concrete shall be properly cured in accordance with the recommendations in American Concrete Institute (ACI) 308R, Guide to External Curing of Concrete. The concrete shall be protected from damage until project acceptance.

**610-3.13 COLD WEATHER PLACING.** When concrete is placed at temperatures below 40°F (4°C), follow the cold weather concreting recommendations found in ACI 306R, Cold Weather Concreting.

**610-3.14 HOT WEATHER PLACING.** When concrete is placed in hot weather greater than 85°F (30 °C), follow the hot weather concreting recommendations found in ACI 305R, Hot Weather Concreting.

#### QUALITY ASSURANCE (QA)

**610-4.1 QUALITY ASSURANCE SAMPLING AND TESTING.** Concrete for each day's placement will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The RPR will sample the concrete in accordance with ASTM C172; test the slump in accordance with ASTM C143; [ test air content in accordance with ASTM C231; ] make and cure compressive strength specimens in accordance with ASTM C31; and test in accordance with ASTM C39. The QA testing agency will meet the requirements of ASTM C1077.

The Contractor shall provide adequate facilities for the initial curing of cylinders.

**610-4.2 DEFECTIVE WORK.** Any defective work that cannot be satisfactorily repaired as determined by the RPR, shall be removed and replaced at the Contractor's expense. Defective work includes, but is not limited to, uneven dimensions, honeycombing and other voids on the surface or edges of the concrete.

#### METHOD OF MEASUREMENT

**610-5.1** No separate measurement shall be made for Concrete for Miscellaneous Structures. This item shall be considered incidental to the item of which it is apart.

#### BASIS OF PAYMENT

**610-6.1** No separate payment shall be made for Concrete for Miscellaneous Structures. This item shall be considered incidental to the item of which it is apart.

Payment will be made under:

|                |          |                                      |
|----------------|----------|--------------------------------------|
| Item P-610-6.1 | Concrete | [ per cubic yards (cubic meters) ]   |
|                |          | [ per square yards (square meters) ] |
|                |          | [ lump sum ]                         |
|                |          | [ incidental to other work items ]   |

## 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 A184  | Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement                         |
| ASTM A615  | Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement                   |
| ASTM A704  | Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement                     |
| ASTM A706  | Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement                |
| ASTM A775  | Standard Specification for Epoxy-Coated Steel Reinforcing Bars   |
| ASTM A884  | Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement                             |
| ASTM A934  | Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars                                 |
| ASTM A1064 | Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete |
| ASTM C31   | Standard Practice for Making and Curing Concrete Test Specimens in the Field                                 |
| ASTM C33   | Standard Specification for Concrete Aggregates   |
| ASTM C39   | Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens                              |
| ASTM C94   | Standard Specification for Ready-Mixed Concrete  |
| ASTM C136  | Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates                              |
| ASTM C114  | Standard Test Methods for Chemical Analysis of Hydraulic Cement  |
| ASTM C136  | Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates  |
| ASTM C143  | Standard Test Method for Slump of Hydraulic-Cement Concrete  |

|            |   |
|------------|---|
| ASTM C150  | Standard Specification for Portland Cement  |
| ASTM C171  | Standard Specification for Sheet Materials for Curing Concrete  |
| ASTM C172  | Standard Practice for Sampling Freshly Mixed Concrete   |
| ASTM C231  | Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method   |
| ASTM C260  | Standard Specification for Air-Entraining Admixtures for Concrete   |
| ASTM C309  | Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete  |
| ASTM C311  | Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete   |
| ASTM C494  | Standard Specification for Chemical Admixtures for Concrete   |
| ASTM C618  | Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete  |
| ASTM C666  | Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing   |
| ASTM C685  | Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing   |
| ASTM C989  | Standard Specification for Slag Cement for Use in Concrete and Mortars  |
| ASTM C1017 | Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete  |
| ASTM C1077 | Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation                |
| ASTM C1157 | Standard Performance Specification for Hydraulic Cement   |
| ASTM C1260 | Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)  |
| ASTM C1365 | Standard Test Method for Determination of the Proportion of Phases in Portland Cement and Portland-Cement Clinker Using X-Ray Powder Diffraction Analysis |
| ASTM C1602 | Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete   |

|            |  |
|------------|--|
| ASTM D1751 | Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types) |
| ASTM D1752 | Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction       |

## American Concrete Institute (ACI)

|          |                                      |
|----------|--------------------------------------|
| ACI 305R | Hot Weather Concreting               |
| ACI 306R | Cold Weather Concreting              |
| ACI 308R | Guide to External Curing of Concrete |
| ACI 309R | Guide for Consolidation of Concrete  |

**END OF ITEM P-610**

## ITEM P-620 RUNWAY AND TAXIWAY MARKING

### DESCRIPTION

**620-1.1** This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer. The terms “paint” and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification.

### MATERIALS

**620-2.1 Materials Acceptance.** The Contractor shall furnish manufacturer’s certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer’s surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the Resident Project Representative (RPR) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the RPR.

### 620-2.2 Marking Materials.

**Table 1. Marking Materials**

| Paint <sup>1</sup>  |        |                     |  | Glass Beads <sup>2</sup> |                          |
|---------------------|--------|---------------------|--|--------------------------|--------------------------|
| Type                | Color  | Fed Std. 595 Number | Application Rate Maximum                           | Type                     | Application Rate Minimum |
| Waterborne Type III | White  | 37925               | 90 ft <sup>2</sup> /gal<br>(2.2 m <sup>2</sup> /l) | III                      | 8 lb/gal<br>(1.0 kg/l)   |
| Waterborne Type III | Yellow | 33538               | 90 ft <sup>2</sup> /gal<br>(2.2 m <sup>2</sup> /l) | III                      | 8 lb/gal<br>(1.0 kg/l)   |
| Waterborne Type III | Red    | 31136               | 55 ft <sup>2</sup> /gal<br>(1.4 m <sup>2</sup> /l) | IV                       | 3 lb/gal<br>(0.36 kg/l)  |
| Waterborne Type III | Black  | 37038               | 90 ft <sup>2</sup> /gal<br>(2.2 m <sup>2</sup> /l) | No beads                 | No beads                 |

|                              |        |       |   |          |          |
|------------------------------|--------|-------|---|----------|----------|
| Temporary Waterborne Type II | White  | 37925 | 230 ft <sup>2</sup> /gal<br>(5.6 m <sup>2</sup> /l) | No beads | No beads |
| Temporary Waterborne Type II | Yellow | 33538 | 230 ft <sup>2</sup> /gal<br>(5.6 m <sup>2</sup> /l) | No beads | No beads |
| Temporary Waterborne Type II | Black  | 37038 | 230 ft <sup>2</sup> /gal<br>(5.6 m <sup>2</sup> /l) | No beads | No beads |

<sup>1</sup> See Paragraph 620-2.2a

<sup>2</sup> See Paragraph 620-2.2b

- a. **Paint.** Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595.

1. **Waterborne.** Paint shall meet the requirements of Federal Specification TT-P-1952F, Type III. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis. The acrylic resin used for Type III shall be 100% cross-linking acrylic as evidenced by infrared peaks at wavelengths 1568, 1624, and 1672 cm<sup>-1</sup> with intensities equal to those produced by an acrylic resin known to be 100% cross-linking.

- b. **Reflective Media.** Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type III.

Glass beads for red and pink paint shall meet the requirements for Type IV, Gradation A.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

## CONSTRUCTION METHODS

**620-3.1 Weather Limitations.** Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in



accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures does not meet the manufacturer's recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

**620-3.2 Equipment.** Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily.

**620-3.3 Preparation of Surfaces.** Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminants that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the RPR. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

- a. **Preparation of New Pavement Surfaces.** The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the RPR to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.
- b. **Preparation of Pavement to Remove Existing Markings.** Existing pavement markings shall be removed by rotary grinding, water blasting, or by other methods approved by the RPR minimizing damage to the pavement surface. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.
- c. **Preparation of Pavement Markings Prior to Remarking.** Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the RPR. After removal, the surface shall be cleaned of all residue or debris.

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint

manufactures application and surface preparation requirements must be submitted to the RPR prior to the initial application of markings.

**620-3.4 Layout of Markings.** The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans.

**620-3.5 Application.** A period of 30 days shall elapse between placement of surface course or seal coat and application of the permanent paint markings. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the RPR.

The edges of the markings shall not vary from a straight line more than 1/2 inch (12 mm) in 50 feet (15 m), and marking dimensions and spacing shall be within the following tolerances:

**Marking Dimensions and Spacing Tolerance**

| Dimension and Spacing                            | Tolerance        |
|--|------------------|
| 36 inch (910 mm) or less                         | ±1/2 inch (12mm) |
| greater than 36 inch to 6 feet (910 mm to 1.85m) | ±1 inch (25mm)   |
| Greater than 6 feet to 60 feet (1.85m to 18.3m)  | ±2 inch (50mm)   |
| Greater than 60 feet (18.3m)                     | ±3 inch (76 mm)  |

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment and distribution should be performed.

**620-3.6 Application--Preformed Thermoplastic Airport Pavement Markings.** Preformed thermoplastic pavement markings not used.

**620-3.7 Control Strip.** Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the RPR. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the prescribed application rate of paint and population of glass beads (per Table 1) that are properly embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

**620-3.8 Retro-Reflectance.** Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 readings shall be taken over a 6 square foot area with 3 readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other.

**Minimum Retro-Reflectance Values**

| Material  | Retro-reflectance mcd/m <sup>2</sup> /lux |        |     |
|---|---|--------|-----|
|   | White                                     | Yellow | Red |
| Initial Type I                                    | 300                                       | 175    | 35  |
| Initial Type III                                  | 600                                       | 300    | 35  |
| Initial Thermoplastic                             | 225                                       | 100    | 35  |
| All materials, remark when less than <sup>1</sup> | 100                                       | 75     | 10  |

<sup>1</sup>. Prior to remarking determine if removal of contaminants on markings will restore retro-reflectance

**620-3.9 Protection and Cleanup.** After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the RPR. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

#### **METHOD OF MEASUREMENT**

**620-4.1a** The quantity of surface preparation shall be measured by lump sum.

**620-4.1b** The quantity of markings shall be paid for shall be measured by lump sum.

**620-4.1c** The quantity of reflective media shall be paid for by lump sum.

**620-4.1d** The quantity of temporary markings to be paid for shall be lump sum.

#### **BASIS OF PAYMENT**

**620-5.1** This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item complete in place and accepted by the RPR in accordance with these specifications.

**620-5.1a** Payment for surface preparation shall be made at the contract price for lump sum.

**620-5.2b** Payment for markings shall be made at the contract price for lump sum.

**620-5.3c** Payment for reflective media shall be made at the contract unit price for lump sum.

**620-5.4d** Payment for temporary markings shall be made at the contract price for lump sum.

Payment will be made under:

|                            |   |  |
|----------------------------|---|--|
| <del>Item P-620-5.1a</del> | <del>Surface Preparation</del>                  | <del>-per square foot (square meter)</del> |
| <del>Item P-620-5.2b</del> | <del>Marking</del>                              | <del>-per square foot (square meter)</del> |
| <del>Item P-620-5.3c</del> | <del>Reflective Media</del>                     | <del>-per pound (km)</del>                 |
| <del>Item P-620-5.4d</del> | <del>Temporary runway and taxiway marking</del> | <del>-per square foot (square meter)</del> |
| <b>Item P-620-1</b>        | <b>Pavement Markings</b>                        | <b>-per Lump Sum (LS)</b>                  |

#### **REFERENCES**

**620-6.1** 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 D476      Standard Classification for Dry Pigmentary Titanium Dioxide Products

ASTM D968      Standard Test Methods for Abrasion Resistance of Organic Coatings by  
Falling Abrasive

ASTM D1652      Standard Test Method for Epoxy Content of Epoxy Resins

|   |   |
|---|---|
| ASTM D2074                              | Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method                             |
| ASTM D2240                              | Standard Test Method for Rubber Property - Durometer Hardness   |
| ASTM D7585                              | Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments   |
| ASTM E303                               | Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester  |
| ASTM E1710                              | Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer       |
| ASTM E2302                              | Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer |
| ASTM G154                               | Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials   |
| Code of Federal Regulations (CFR)       |   |
| 40 CFR Part 60, Appendix A-7, Method 24 | Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings                                    |
| 29 CFR Part 1910.1200                   | Hazard Communication  |
| Federal Specifications (FED SPEC)       |   |
| FED SPEC TT-B-1325D                     | Beads (Glass Spheres) Retro-Reflective  |
| FED SPEC TT-P-1952F                     | Paint, Traffic and Airfield Marking, Waterborne   |
| FED STD 595                             | Colors used in Government Procurement   |
| Commercial Item Description             |   |
| A-A-2886B                               | Paint, Traffic, Solvent Based   |
| Advisory Circulars (AC)                 |   |
| AC 150/5340-1                           | Standards for Airport Markings  |
| AC 150/5320-12                          | Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces  |

END OF ITEM P-620

## ITEM T-904 SODDING

### DESCRIPTION

**904-1.1** This item shall consist of furnishing, hauling, and placing approved live sod on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

### MATERIALS

**904-2.1 SOD.** Sod furnished by the Contractor shall have a good cover of living or growing grass. This shall be interpreted to include grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period. All sod shall be obtained from areas where the soil is reasonably fertile and contains a high percentage of loamy topsoil. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots, or other materials that might be detrimental to the development of the sod or to future maintenance. At least 70% of the plants in the cut sod shall be composed of the species stated in the special provisions, and any vegetation more than 6 inches (150 mm) in height shall be mowed to a height of 3 inches (75 mm) or less before sod is lifted. Sod, including the soil containing the roots and the plant growth showing above, shall be cut uniformly to a thickness not less than that stated in the special provisions.

**904-2.2 LIME.** Not required.

**904-2.3 FERTILIZER.** Not required.

**904-2.4 WATER.** The water shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass.

**904-2.5 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

**904-3.1 GENERAL.** Areas to be solid, strip, or spot sodded shall be shown on the plans. Areas requiring special ground surface preparation such as tilling and those areas in a satisfactory condition that are to remain undisturbed shall also be shown on the plans.

Suitable equipment necessary for proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand, in good condition, and shall be approved by the RPR before the various operations are started. The Contractor shall demonstrate to the RPR before starting the various operations that the application of required materials will be made at the specified rates.

**904-3.2 PREPARING THE GROUND SURFACE.** After grading of areas has been completed and before applying fertilizer and limestone, areas to be sodded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris which might interfere with

sodding, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes occurs after grading of areas and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

**904-3.3 APPLYING FERTILIZER AND GROUND LIMESTONE.** Following ground surface preparation, fertilizer shall be uniformly spread at a rate which will provide not less than the minimum quantity of each fertilizer ingredient, as stated in the special provisions. If use of ground limestone is required, it shall then be spread at a rate that will provide not less than the minimum quantity stated in the special provisions. These materials shall be incorporated into the soil to a depth of not less than 2 inches (50 mm) by discing, raking, or other suitable methods. Any stones larger than 2 inches (50 mm) in any diameter, large clods, roots, and other litter brought to the surface by this operation shall be removed.

**904-3.4 OBTAINING AND DELIVERING SOD.** After inspection and approval of the source of sod by the RPR, the sod shall be cut with approved sod cutters to such a thickness that after it has been transported and placed on the prepared bed, but before it has been compacted, it shall have a uniform thickness of not less than 2 inches (50 mm). Sod sections or strips shall be cut in uniform widths, not less than 10 inches (250 mm), and in lengths of not less than 18 inches (0.5 m), but of such length as may be readily lifted without breaking, tearing, or loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside. The Contractor may be required to mow high grass before cutting sod.

The sod shall be transplanted within 24 hours from the time it is stripped, unless circumstances beyond the Contractor's control make storing necessary. In such cases, sod shall be stacked, kept moist, and protected from exposure to the air and sun and shall be kept from freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Where the soil is too dry, approval to cut sod may be granted only after it has been watered sufficiently to moisten the soil to the depth the sod is to be cut.

**904-3.5 LAYING SOD.** Sodding shall be performed only during the seasons when satisfactory results can be expected. Frozen sod shall not be used and sod shall not be placed upon frozen soil. Sod may be transplanted during periods of drought with the approval of the RPR, provided the sod bed is watered to moisten the soil to a depth of at least 4 inches (100 mm) immediately prior to laying the sod.

The sod shall be moist and shall be placed on a moist earth bed. Pitch forks shall not be used to handle sod, and dumping from vehicles shall not be permitted. The sod shall be carefully placed by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface, and ensure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod may be displaced during sodding operations, the workmen, when replacing it, shall work from ladders or treaded planks to prevent further displacement. Screened soil of good quality shall be used to fill all cracks between sods. The quantity of the fill soil shall not cause smothering of the grass. Where the grades are such that the flow of water will be from paved surfaces across sodded areas, the surface of the soil in the sod after compaction shall be set approximately one inch (25 mm) below the pavement edge. Where the flow will be over the sodded areas and onto the paved surfaces around manholes and inlets, the surface of the soil in the sod after compaction shall be placed flush with pavement edges.

On slopes steeper than one (1) vertical to 2-1/2 horizontal and in v-shaped or flat-bottom ditches or gutters, the sod shall be pegged with wooden pegs not less than 12 inches (300 mm) in length and have a cross-sectional area of not less than 3/4 sq inch (18 sq mm). The pegs shall be driven flush with the surface of the sod.

**904-3.6 WATERING.** Adequate water and watering equipment must be on hand before sodding begins, and sod shall be kept moist until it has become established and its continued growth assured. In all cases, watering shall be done in a manner that will avoid erosion from the application of excessive quantities and will avoid damage to the finished surface.

**904-3.7 ESTABLISHING TURF.** The Contractor shall provide general care for the sodded areas as soon as the sod has been laid and shall continue until final inspection and acceptance of the work. All sodded areas shall be protected against traffic or other use by warning signs or barricades approved by the RPR. The Contractor shall mow the sodded areas with approved mowing equipment, depending upon climatic and growth conditions and the needs for mowing specific areas. Weeds or other undesirable vegetation shall be mowed and the clippings raked and removed from the area.

**904-3.8 REPAIRING.** When the surface has become gullied or otherwise damaged during the period covered by this contract, the affected areas shall be repaired to re-establish the grade and the condition of the soil, as directed by the RPR, and shall then be sodded as specified in paragraph 904-3.5.

#### **METHOD OF MEASUREMENT**

**904-4.1** This item shall be measured on the basis of the area in square yards (square meters) of the surface covered with sod and accepted.

#### **BASIS OF PAYMENT**

**904-5.1** This item will be paid for on the basis of the contract unit price per square yard (square meter) for sodding, which price shall be full compensation for all labor, equipment, material, staking, and incidentals necessary to satisfactorily complete the items as specified.

Payment will be made under:

***Item No. T-904-1 Sodding***

***- per Square Yard (SY)***

#### **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



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-904**

## SECTION 101

### MOBILIZATION

#### 101-1 Description

Perform preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, and sanitary and other facilities.

Include the costs of bonds and any required insurance and any other preconstruction expense necessary for the start of the work, excluding the cost of construction materials.

#### 101-2 Basis of Payment

**101-2.1 When a Separate Item is Included in the Proposal:** When the proposal includes a separate item of payment for this work, the work and incidental costs specified as being covered under this Section will be paid for at the Contract lump sum price for the item of Mobilization.

Payment will be made under:

|                       |                                 |                            |
|-----------------------|---------------------------------|----------------------------|
| <b>Item No. 101-1</b> | <b>Mobilization – Bid Alt 1</b> | <b>- per Lump Sum (LS)</b> |
| <b>Item No. 101-2</b> | <b>Mobilization – Bid Alt 2</b> | <b>- per Lump Sum (LS)</b> |

**101-2.2 Partial Payments:** When the proposal includes a separate pay item for Mobilization and the Notice to Proceed has been issued, partial payments will be made in accordance with the following:

For contracts of 120 contract days duration or less, partial payment will be made at 50% of the bid price per month for the first two months.

For contracts in excess of 120 contract days duration, partial payment will be made at 25% of the bid price per month for the first four months. In no event shall more than 50% of the bid price be paid prior to commencing construction on the project site.

Total partial payments for Mobilization on any project, including when more than one project or job is included in the Contract, will be limited to 10% of the original Contract amount for that project. Any remaining amount will be paid upon completion of all work on the Contract.

Retainage, as specified in the Contract Documents, will be applied to all partial payments.

Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract.

**101-2.3 When No Separate Item is Included in the Proposal:** When the proposal does not include a separate item for Mobilization, all work and incidental costs specified as being covered under this Section will be included for payment under the several scheduled items of the overall Contract, and no separate payment will be made therefore.

**END OF SECTION 101**

## SECTION 102

### MAINTENANCE OF TRAFFIC

#### 102-1 Description

Maintain traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of the work. Construct and maintain detours. Provide facilities for access to residences, businesses, etc., along the project. Furnish, install and maintain traffic control and safety devices during construction. Furnish and install work zone pavement markings for maintenance of traffic (MOT) in construction areas. Provide any other special requirements for safe and expeditious movement of traffic specified in the Plans. MOT includes all facilities, devices and operations as required for safety and convenience of the public within the work zone.

Do not maintain traffic over those portions of the project where no work is to be accomplished or where construction operations will not affect existing roads. Do not obstruct or create a hazard to any traffic during the performance of the work and repair any damage to existing pavement open to traffic. Basis of Payment

#### 102-2 Materials.

Meet the following requirements:

|  |             |
|--|-------------|
| Bituminous Adhesive .....  | Section 970 |
| Temporary Raised Pavement Markers .....  | Section 990 |
| Paint .....  | Section 971 |
| Removable Tape .....   | Section 990 |
| Glass Spheres .....  | Section 971 |
| Temporary Traffic Control Device Materials .....                                       | Section 990 |
| Retroreflective and Nonreflective Sheeting for Temporary Traffic Control Devices ..... | Section 994 |

**102-2.1 Temporary Traffic Control Devices:** Use only the materials meeting the requirements of Section 990, Section 994, Standard Plans and the Manual on Uniform Traffic Control Devices (MUTCD).

**102-2.2 Detour:** Provide all materials for the construction and maintenance of all detours.

**102-2.3 Commercial Materials for Driveway Maintenance:** Provide materials of the type typically used for base, including reclaimed asphalt pavement (RAP) material, and having stability and drainage properties that will provide a firm surface under wet conditions.

#### 102-3 Specific Requirements.

**102-3.1 Beginning Date of Contractor's Responsibility:** Maintain traffic starting the day work begins on the project or on the first day Contract Time is charged, whichever is earlier.

**102-3.2 Worksite Traffic Supervisor:** Provide a Worksite Traffic Supervisor who is responsible for initiating, installing, and maintaining all temporary traffic control devices as described in this Section and the Contract Documents. Provide all equipment and materials needed to set up, take down, maintain traffic control, and handle traffic-related situations. Use approved alternate Worksite Traffic Supervisors when necessary.

The Worksite Traffic Supervisor must meet the personnel qualifications specified in Section 105. The Worksite Traffic Supervisor is to perform the following duties:

1. On site direction of all temporary traffic control on the project.
2. Is on site during all set up and take down, and performs a drive through inspection immediately after set up.
3. Is on site during all nighttime operations ensuring proper temporary traffic control.
4. Immediately corrects all safety deficiencies and corrects minor deficiencies that are not immediate safety hazards within 24 hours.
5. Is available on a 24 hour per day basis and present at the site within 45 minutes after notification of an emergency situation and is prepared to respond to maintain temporary traffic control or to provide alternate traffic arrangements.
6. Conducts daily daytime and weekly nighttime inspections of projects with predominately daytime work activities, and daily nighttime and weekly daytime inspections of projects with predominantly nighttime work activities of all traffic control devices, traffic flow, pedestrian, bicyclist, and business accommodations.

Advise the project personnel of the schedule of these inspections and give them the opportunity to join in the inspection as deemed necessary. Pedestrians are to be accommodated with a safe, accessible travel path around work sites separated from mainline traffic in compliance with the Americans with Disabilities Act (ADA) Standards for Transportation Facilities. Maintain existing or detour bicycle facilities satisfactorily throughout the project limits. Existing businesses in work areas are to be provided with adequate entrances for vehicular and pedestrian traffic during business hours.

The Owner may disqualify and remove from the project a Worksite Traffic Supervisor who fails to comply with the provisions of this Section. The Owner may temporarily suspend all activities, except traffic, erosion control and such other activities that are necessary for project maintenance and safety, for failure to comply with these provisions.

**102-3.3 Lane Closures:** Approval for all lane closures, mobile operations, and traffic pacing operations is required. Submit routine requests to the Engineer fourteen calendar days in advance of planned lane closures, mobile operations, and traffic pacing operations. For unforeseen events that require cancelling or rescheduling lane closures, mobile operations, and traffic pacing operations, revise the lane closure request as soon as possible.

#### **102-4 Alternative Traffic Control Plan.**

The Contractor may propose an alternative traffic control plan (TCP) to the plan presented in the Contract Documents. The Contractor's Engineer of Record must sign and seal the alternative plan and submit to the Engineer. Prepare the TCP in conformance with and in the form outlined in the current version of the FDOT Design Manual. Indicate in the plan a TCP for each phase of activities. Take responsibility for identifying and assessing any potential impacts to a utility that may be caused by the alternate TCP proposed by the Contractor, and notify the Owner in writing of any such potential impacts to utilities.

For projects with nighttime lane closure restrictions where paving is expected to extend into the winter months, the Contractor may propose an alternative TCP allowing for daytime lane closures for friction course paving. The alternative TCP must be a lane closure analysis based on actual traffic counts and prepared in accordance with the FDOT Design Manual.

Engineer's approval of the alternate TCP does not relieve the Contractor of sole responsibility for all utility impacts, costs, delays or damages, whether direct or indirect, resulting from Contractor initiated changes in the design or construction activities from those in the original Contract Specifications, Design Plans (including TCPs) or other Contract Documents and which effect a change in utility work different from that shown in the Utility Plans, joint project agreements or utility relocation schedules.

The Owner reserves the right to reject any alternative TCP. Obtain the Engineer's written approval before beginning work using an alternate TCP. The Engineer's written approval is required for all modifications to the TCP. The Engineer will only allow changes to the TCP in an emergency without the proper documentation.

#### **102-5 Traffic Control.**

**102-5.1 Standards:** FDOT Standard Plans are the minimum standards for the use in the development of all TCPs. The MUTCD, Part VI is the minimum national standard for traffic control for highway construction, maintenance, and utility operations. Follow the basic principles and minimum standards contained in these documents for the design, application, installation, maintenance, and removal of all traffic control devices, warning devices and barriers which are necessary to protect the public and workers from hazards within the project limits.

**102-5.2 Maintenance of Roadway Surfaces:** Maintain all lanes that are being used for the MOT, including those on detours and temporary facilities, under all weather conditions. Keep the lanes reasonably free of dust, potholes and rutting. Provide the lanes with the drainage facilities necessary to maintain a smooth riding surface under all weather conditions.

**102-5.3 Number of Traffic Lanes:** Maintain one lane of traffic in each direction. Maintain two lanes of traffic in each direction at existing four (or more) lane cross roads, where necessary to avoid undue traffic congestion. Construct each lane used for MOT at least as wide as the traffic lanes existing in the area before commencement of construction. Do not allow traffic control and warning devices to encroach on lanes used for MOT.

The Engineer may allow the Contractor to restrict traffic to one-way operation for short periods of time provided that the Contractor employs adequate means of traffic control and does not unreasonably delay traffic. When a construction activity requires restricting traffic to one-way operations, locate the flaggers within view of each other when possible. When visual contact between flaggers is not possible, equip them with 2-way radios, official, or pilot vehicles, or use traffic signals.

**102-5.4 Crossings and Intersections:** Provide and maintain adequate accommodations for intersecting and crossing traffic. Do not block or unduly restrict any median opening, road or street crossing the project unless approved by the Engineer. Before beginning any construction, submit to the Engineer the names and phone numbers of persons that can be contacted when signal operation malfunctions.

**102-5.5 Access for Residences and Businesses:** Provide continuous access to all residences and all places of business.

**102-5.6 Protection of the Work from Injury by Traffic:** Where traffic would be injurious to a base, surface course, or structure constructed as a part of the work, maintain all traffic outside the limits of such areas until the potential for injury no longer exists.

**102-5.7 Flagger:** Provide flaggers to control traffic when traffic in both directions must use a single lane and in other situations as required. All flaggers must meet the personnel qualifications specified in Section 105.

**102-5.8 Conflicting Pavement Markings:** Where the lane use or where normal vehicle or pedestrian paths are altered during construction, remove all pavement markings (paint, tape, thermoplastic, raised pavement markers, etc.) that will conflict with the adjusted vehicle or pedestrian paths. Use of paint to cover conflicting pavement markings is prohibited. Remove conflicting pavement markings using a method that will not damage the surface texture of the pavement and which will eliminate the previous marking pattern regardless of weather and light conditions.

Remove all pavement markings that will be in conflict with “next phase of operation” vehicle pedestrian paths as described above, before opening to vehicle traffic or use by pedestrians.

Cost for removing conflicting pavement markings (paint, tape, thermoplastic, raised pavement markers, etc.) to be included in Maintenance of Traffic, lump sum.

**102-5.9 Vehicle and Equipment Visibility:** Equip all pickups and automobiles used on the project with a minimum of one Class 2 warning light that meets the Society of Automotive Engineers Recommended Practice SAE J595, dated November 1, 2008, or SAE J845, dated December 1, 2007, and incorporated herein by reference. Existing lights that meet SAE J845, dated March, 1992, or SAE J1318, dated April, 1986, may be used to their end of service life. The warning lights must be a high intensity amber or white rotating, flashing, oscillating or strobe light. Lights must be unobstructed by ancillary vehicle equipment such as ladders, racks or booms and be visible 360 degrees around the vehicle. If the light is obstructed, additional lights will be required. The lights must be operating when the vehicle is in a work area where a potential hazard exists, when operating at less than the average speed for the facility while performing work activities, making frequent stops or called for in the Plans or Standard Plans.

Equip all other vehicles and equipment with a minimum of 4 square feet of retroreflective sheeting or warning lights.

**102-5.10 No Waiver of Liability:** Conduct operations in such a manner that no undue hazard results due to the requirements of this Article. The procedures and policies described herein in no way acts as a waiver of any terms of the liability of the Contractor or his surety.

## **102-6 Detours.**

**102-6.1 General:** Construct and maintain detour facilities wherever it becomes necessary to divert traffic, including pedestrians and bicyclists, from any existing facility, or wherever construction operations block the flow of traffic.

**102-6.2 Construction:** Plan, construct, and maintain detours for the safe passage of traffic in all conditions of weather. Provide the detour with all facilities necessary to meet this requirement.

Where pedestrian facilities are detoured, blocked or closed during the work, provide safe alternate accessible routes through or around the work zone meeting the requirements of the ADA Standards for Transportation Facilities. When temporary walkway surfaces and ramps are required to be constructed, ensure surfaces are stable, firm, slip resistant, and kept free of any obstructions and hazards such as holes, debris, mud, construction equipment and stored materials.

When the Plans call for the Owner to furnish detour bridge components, construct the pile bents in accordance with the Plans, unless otherwise authorized by the Engineer.

Provide two Contractor representatives, who will be directly involved in the erection of Owner-owned temporary bridging, to attend a mandatory one-day training session to be conducted at the Owner's storage facility. No bridging will be released to the Contractor prior to the completion of this training.

Submit the following: company name, phone number, office address, project contact person, names of the representatives who will attend the training described above, project number, detour bridge type, bridge length, span length, location and usage time frames, to the Engineer at least 30 calendar days before the intended pick-up date, to obtain the storage facility location and list of components for the project. Upon receipt, the Engineer will, within 10 calendar days submit an approved material list to the Contractor and the appropriate Owner storage yard.

Submit the name of the representative with authority to pick up components, to the Engineer at least 10 calendar days before the proposed pick-up date. The Owner is not obligated to load the bridge components without this notice. Take responsibility and sign for each item loaded at the time of issuance.

Provide timber dunnage, and transport the bridge components from the designated storage facility to the job site. Unload, erect, and maintain the bridge, then dismantle the bridge and load and return the components to the designated storage facility.

Notify the Engineer in writing at least 10 calendar days before returning the components. Include in this notice the name of the Contractor's representative authorized to sign for return of the bridge components. The yard supervisor is not obligated to unload the bridge components without this notice.

The Owner will provide equipment and an operator at the Owner's storage facility to assist in loading and unloading the bridge components. Furnish all other labor and equipment required for loading and unloading the components.

The Owner's representative will record all bridge components issued or returned on the Detour Bridge Issue and Credit Ticket. The tickets must be signed by a Owner and a Contractor representative, after loading or unloading each truck to document the quantity and type of bridging issued or returned.

Bind together all bridge components to be returned in accordance with the instructions given by the storage facility. The yard supervisor will repack components that are not packed in compliance with



these instructions. Upon request, written packing instructions will be made available to the Contractor, before dismantling of the bridge for return to the Owner's storage facility.

Assume responsibility for any shortage or damage to the bridge components. Monies due the Contractor will be reduced at the rate of \$35.00 per hour plus materials for repacking, repairs or replacement of bridge components.

The skid resistance of open steel grid decking on the detour bridge may decrease gradually after opening the bridge to traffic. The Owner will furnish a pneumatic floor scabber machine for roughening the roadway surface of the detour bridge decking. Provide an air compressor at the job site with 200 cubic feet per minute capacity, 90 psi air pressure for the power supply of the machine, and an operator. Transport the scabber machine to and from the Owner's structures shop. Repair any damage to the scabber machine caused by operations at no expense to the Owner. Perform scabbling when determined necessary by the Engineer. The Owner will pay for the cost of scabbling as Unforeseeable Work in accordance with 4-4.

Return the bridge components to the designated storage facility beginning no later than 10 calendar days after the date the detour bridge is no longer needed, the date the new bridge is placed in service, or the date Contract Time expires, whichever is earliest. Return the detour bridging at an average of not less than 200 feet per week. Upon failure to return the bridge components to the Owner within the time specified, compensate the Owner for the bridge components not returned at the rate of \$5.00 per 10 feet, per day, per bridge, for single lane; and \$10.00 per 10 feet, per day, per bridge, for dual lane until the bridge components are returned to the Owner.

**102-6.3 Construction Methods:** Select and use construction methods and materials that provide a stable and safe detour facility. Construct the detour facility to have sufficient durability to remain in good condition, supplemented by maintenance, for the entire period that the detour is required.

**102-6.4 Removal of Detours:** Remove detours when they are no longer needed and before the Contract is completed. Take ownership of all materials from the detour and dispose of them, except for the materials on loan from the Owner with the stipulation that they are returned.

**102-6.5 Detours Over Existing Roads and Streets:** When the Owner specifies that traffic be detoured over roads or streets outside the project area, do not maintain such roads or streets. However, maintain all signs and other devices placed for the purpose of the detour.

**102-6.6 Operation of Existing Movable Bridges:** The Owner will maintain and operate existing moveable bridges that are to be removed by the Contractor until such time as they are closed to traffic. During this period, make immediate repairs of any damage to such structures caused by use or operations related to the work at no expense to the Owner, but do not provide routine repairs or maintenance. In the event that use or operations result in damage to a bridge requiring repairs, give such repairs top priority to any equipment, material, or labor available.

**102-6.7 Special Detour:** A special detour is defined as a diversion or lane shift for vehicular traffic that requires temporary pavement.

**102-6.8 Pedestrian Special Detour:** A pedestrian special detour is defined as a temporary pedestrian way that requires temporary pavement or other stable, firm, slip-resistant surface.

### **102-7 Traffic Control Officer.**

Provide uniformed law enforcement officers, including marked law enforcement vehicles, to assist in controlling and directing traffic in the work zone when the following types of work is necessary on projects:

1. When directing traffic/overriding the signal in a signalized intersection.
2. When Standard Plans, Index 102-619 is used on freeway facilities (interstates, toll roads, and expressways) at nighttime for work within the travel lane.
3. When Standard Plans, Index 102-655 Traffic Pacing is called for in the Plans or approved by the Engineer.
4. When pulling conductor/cable above an open traffic lane on limited access facilities, when called for in the Plans or approved by the Engineer.
5. When Standard Plans, Index 102-625 Temporary Road Closure 5 Minutes or Less is used.
6. When performing lane closures during nighttime operations on roadways with posted speed limits 55 mph or greater.

At the Contractor's option, traffic control officers may be used for operations other than those listed above.

Cost for traffic control officers will be paid for as described in 102-11.2.

The Owner will not consider any claim arising from the failure of a traffic control officer to be present or available on the project. A noncompensable time extension may be granted when a state or local emergency requires all area law enforcement officers to be on-duty and not available for hire.

### **102-8 Driveway Maintenance.**

**102-8.1 General:** Ensure that each residence and business has safe, stable, and reasonable access.

**102-8.2 Construction Methods:** Place, level, manipulate, compact, and maintain the material, to the extent appropriate for the intended use. As permanent driveway construction is accomplished at a particular location, the Contractor may salvage and reuse previously placed materials that are suitable for reuse on other driveways.

### **102-9 Temporary Traffic Control Devices.**

**102-9.1 General:** Use only devices that are listed on the APL. Immediately remove or cover, using any method of covering approved by the Engineer, any existing or temporary devices that do not apply to current conditions.

The use of NCHRP Report 350 Recommended Procedures for the Safety Performance Evaluation of Highway Features devices purchased prior to January 1, 2020 is permitted on projects let prior to January 1, 2030. All devices manufactured or purchased on or after January 1, 2020 must be MASH compliant in accordance with Section 990.

The APL number is to be permanently marked on the device at a readily visible location. Sheet piling used on devices and pavement markings are exempt from this requirement.

Notify the Engineer in writing of any scheduled operation that will affect traffic patterns or safety sufficiently in advance of commencing such operation to permit review of the plan for the proposed installation of temporary traffic control devices.

Assign an employee the responsibility of maintaining the position and condition of all temporary traffic control devices throughout the duration of the Contract. Keep the Engineer advised at all times of the identification and means of contacting this employee on a 24 hour basis.

Maintain temporary traffic control devices in the correct position, properly oriented, clearly visible and clean, at all times. All applicable temporary traffic control devices must meet the classification category of Acceptable as defined in the American Traffic Safety Services Association (ATSSA) Quality Guidelines for Temporary Traffic Control Devices and Features. Temporary concrete barriers must meet the classification category of Acceptable defined in the FDOT's Temporary Concrete Barrier Evaluation Guide, which may be viewed at the following URL: [https://fdotwww.blob.core.windows.net/sitefinity/docs/defaultsource/programmanagement/implemented/urlinspecs/files/docs/default-source/contentdocs/programmanagement/implemented/urlinspecs/files/temporaryconcretebarrierguide.pdf.pdf?sfvrsn=343b4c97\\_10](https://fdotwww.blob.core.windows.net/sitefinity/docs/defaultsource/programmanagement/implemented/urlinspecs/files/docs/default-source/contentdocs/programmanagement/implemented/urlinspecs/files/temporaryconcretebarrierguide.pdf.pdf?sfvrsn=343b4c97_10). Pedestrian longitudinal channelizing devices (LCDs) must meet the classification category of Acceptable as defined in the Pedestrian LCD Evaluation Guide, which may be viewed at the following URL: [https://fdotwww.blob.core.windows.net/sitefinity/docs/defaultsource/programmanagement/implemented/urlinspecs/files/lcdevaluationguide.pdf?sfvrsn=166e0f16\\_2](https://fdotwww.blob.core.windows.net/sitefinity/docs/defaultsource/programmanagement/implemented/urlinspecs/files/lcdevaluationguide.pdf?sfvrsn=166e0f16_2). Immediately repair, replace or clean damaged, defaced or dirty devices. Traffic control devices must not be cleaned while installed/used. Use of warning lights on any temporary traffic control device is prohibited, with the exception of the trailer mounted portable regulatory signs.

Employ an approved independent Channelizing Device Supplier (CDS) to provide and maintain the condition of the following non-fixed channelizing devices: drums, cones, vertical panels, barricades, tubular markers, and longitudinal channelizing devices. Cones may be provided and maintained by the Contractor.

The CDS shall not be affiliated with the Contractor and shall be approved by the Engineer in accordance with 102-9.1.1. The CDS shall submit a monthly certification on letterhead that the channelizing devices mentioned above installed/used within the work zone meet classification category of Acceptable as defined in the Pedestrian LCD Evaluation Guide and the ATSSA Quality Guidelines for Temporary Traffic Control Devices and Features. The CDS shall submit the monthly certification on letterhead for channelizing devices installed/used within the work zone. The CDS certification shall include the following statement, "I certify that I have provided and maintained the following devices <list devices covered under the certification> in accordance with Pedestrian LCD Evaluation Guide and the ATSSA Quality Guidelines for Temporary Traffic Control Devices and Features." If the Contractor chooses to provide and maintain cones, the Contractor must submit a monthly Contractor certification on letterhead that all cones installed/used within the work zone meet acceptable standards as outlined in the ATSSA Quality Guidelines for Temporary Traffic Control Devices and Features. The Contractor certification shall include the following statement, "I certify that I have provided and maintained cones in accordance with the ATSSA Quality Guidelines for Temporary Traffic Control Devices and Features."

**102-9.1.1 Approved Independent Channelizing Device Supplier (CDS) Requirements:** Submit the following documents to the Engineer for independent CDS approval at the preconstruction

conference. A CDS may elect to provide a one-time submittal of this information to the State Construction Office for review and pre-approval. FDOT approved CDSs are listed on the State Construction Office website. Inform the Engineer at the preconstruction conference of this approval.

1. A letter on company letterhead signed and dated by the owner of the company or company officer with the following information and statements:
  - a. The company's owners, stockholders, and officers.
  - b. A statement declaring that the company will not perform as a CDS on any project where there is common ownership, directly or indirectly, between the company and the Contractor.
  - c. A statement declaring that the company will furnish and maintain the condition of all channelizing devices with the exception of cones as required in 1029.1 with its own forces.
  - d. A statement declaring at least five years of experience in providing channelizing device supplier services, with its own inventory of channelizing devices.
  - e. On a separate sheet, list a sample project history of the company's experience as a channelizing device supplier for the five years declared in item 1(d) above including the following information:
    1. Project name and number and a brief description of CDS work performed,
    2. Beginning and ending date of CDS project activities,
    3. Location of project (city, state),
    4. Monetary amount of CDS work on project,
    5. Owner of project, contact person and phone number with area code,
    6. Name of Contractor (client) that the work was performed for and phone number with area code.
2. A maintenance plan for approval by the Owner that outlines the frequency and methods for maintaining the condition of all channelizing devices, except cones owned and maintained by the Contractor, installed/used in the work zone.

**102-9.2 Work Zone Signs:** Furnish, install, maintain, remove and relocate signs in accordance with the Plans and Standard Plans, Index 102-600.

**102-9.2.1 Post Mounted Signs:** Meet the requirements of 990-8.

**102-9.2.2 Portable Signs:** Use only approved systems, which includes sign stands and attachment hardware (nuts, bolts, clamps, brackets, braces, etc.), meeting the vendor requirements specified on the APL drawings.

**102-9.2.3 Barrier Mounted Signs:** If post mounting criteria cannot be achieved in accordance with Standard Plans, Index 102-600 and a barrier or traffic railing exists, use temporary sign criteria provided in Standard Plans, Index 700-013.

**102-9.3 Business Signs:** Provide and place signs in accordance with the Plans and Standard Plans, Index 102 series. Furnish signs having retroreflective sheeting meeting the requirements of Section 990.

**102-9.4 Project Information Signs:** Provide and place signs in accordance with the Plans and Standard Plans, Index 102 series. Furnish signs having retroreflective sheeting meeting the requirements of Section 990.

**102-9.5 Channelizing Devices:** Furnish, install, maintain, remove and relocate channelizing devices in accordance with the Plans and Standard Plans.

**102-9.5.1 Retroreflective Collars for Traffic Cones:** Use collars for traffic cones listed on the APL that meet the requirements of Section 990. Use cone collars at night designed to properly fit the taper of the cone when installed. Place the upper 6 inch collar a uniform 3-1/2 inches distance from the top of the cone and the lower 4 inch collar a uniform 2 inches distance below the bottom of the upper 6 inch collar. Collars must be capable of being removed for temporary use or attached permanently to the cone in accordance with the manufacturer's recommendations. Provide a white sheeting having a smooth outer surface and that has the property of a retroreflector over its entire surface.

**102-9.5.2 Longitudinal Channelizing Devices (LCDs):** Use LCDs listed on the APL and meeting the requirements of Section 990 and the Standard Plans. LCDs must be interlocked except for the stand-alone unit placed perpendicular to a sidewalk. For LCDs requiring internal ballasting, an indicator that clearly identifies the proper ballast level will be required. For LCDs requiring external ballasting, the ballasting methods must be detailed in the APL drawings including ballasting type and minimum weight.

Ensure that joints on the pedestrian LCDs are free of sharp edges and have a maximum offset of 1/2 inch in any plane.

Use alternating orange and white solid color vehicular LCDs. Vehicular LCDs may be substituted for drums, vertical panels, or barricades.

**102-9.6 Temporary Barrier:** Furnish, install, maintain, remove and relocate temporary barrier in accordance with the Plans and Standard Plans. Obtain and use precast temporary concrete barrier from a manufacturing plant that is on the FDOT's Production Facility Listing. Temporary concrete barrier must meet the material and construction requirements of Section 521 unless noted otherwise in the Standard Plans. Proprietary temporary concrete, steel, or water filled barrier used must be listed on the APL.

The maximum allowable height increase between consecutive temporary barrier units in the direction of traffic is 1 inch.

Temporary barrier must comply with Standard Plans, Index 102-100 or 102-120. Install temporary barriers as either anchored or freestanding as shown in the Plans or the Standard Plans. An

anchored unit is defined as having at least one stake or bolt into the underlying pavement or bridge deck. All other units, including those with keeper pins, are considered freestanding.

Remove temporary asphalt pads and repair all attachment scars to permanent structures and pavements after barrier removal. Make necessary repairs due to defective material, work, or Contractor operations at no cost to the Owner. Restore barrier damaged by the traveling public within 24 hours after notification as authorized by the Engineer.

Trailer mounted barriers listed on the APL may be used at the option of the Contractor. Trailer mounted barriers listed on the APL must have an FHWA eligibility letter and be successfully crash tested in accordance with MASH TL-3 criteria. All trailer mounted barriers must be equipped with an APL listed truck mounted attenuator, an APL listed vehicle mounted arrow board and vehicle warning lights in accordance with this Section.

**102-9.6.1 Temporary Barrier Meeting the Requirements of Standard Plans, Index 102-120 and 102-110:** Ensure the marking requirements of the respective Index are met.

**102-9.6.2 Proprietary Precast Temporary Concrete Barrier Fabricated prior to 2005:** Submit a certification stating that all unmarked barrier units meet the requirements of the Specifications and the Standard Plans. Certifications will be project specific and non-transferable.

**102-9.6.3 Proprietary Precast Temporary Concrete Barrier Fabricated in 2005 or later:** Ensure each barrier unit has permanent clear markings, showing the manufacture date, serial number, manufacturer's name or symbol, and the APL number. Label the markings on a plate, plaque, or cast in the unit. Proprietary barrier fabricated prior to 2016 and marked with the "INDX 521" in lieu of the APL number will be permitted.

**102-9.6.4 Temporary Concrete Barrier Repair:** Before beginning the repair, remove all laitance, loose material, and any other deleterious matter to sound concrete or a minimum depth of one inch. Additionally, when reinforcing bars, inserts or weldments are exposed, remove the concrete to provide a minimum one inch clearance all around. Fill the repair area with an approved high performance concrete repair material in accordance with 930-5 and the manufacturer's recommendations. Restore surfaces and edges to the original dimensions and shape of the barrier.

Repairs are not allowed on barrier units that have one or more of the following deficiencies: structural cracking or cracks that exist through the entire cross-section; unit-to-unit connection assemblies or anchor slots are broken or no longer in a fixed position.

Do not paint repaired barriers.

**102-9.7 Barrier Delineators:** Install barrier delineators on top of temporary barrier and vehicular LCDs meeting the requirements of Section 705.

**102-9.8 Temporary Glare Screen:** Use temporary glare screens listed on the APL that meet the requirements of Section 990. Furnish, install, maintain, remove and relocate glare screen systems in conjunction with temporary barrier at locations identified in the Plans.

The anchorage of the glare screen to the barrier must be capable of safely resisting an equivalent tensile load of 600 pounds per foot of glare screen, with a requirement to use a minimum of three fasteners per barrier section.

When glare screen is utilized on temporary barrier, barrier delineators will not be required.

**102-9.9 Temporary Crash Cushion (Redirective or Gating):** Furnish, install, maintain and subsequently remove temporary crash cushions in accordance with the details and notes shown in the Plans, Standard Plans, and requirements of the pre-approved alternatives listed on the APL.

Temporary crash cushions can be either new or used functionally sound refurbished devices. Performance of intended function is the only condition for acceptance. All metallic components must be galvanized in accordance with Section 967.

Anchor abutting temporary barrier in accordance the Standard Plans or APL drawings, as required. Bidirectional installations must have a transition panel installed between the crash cushion and the abutting barrier. Delineate the crash cushion in accordance with Section 544. Maintain the crash cushions until their authorized removal. Do not place any materials or equipment within the length of the crash cushion.

Remove temporary asphalt or concrete pads and repair all attachment scars to permanent structures and pavements after crash cushion removal. Make necessary repairs due to defective material, work, or Contractor operations at no cost to the Owner. Restore crash cushions damaged by the traveling public within 24 hours after notification as authorized by the Engineer.

**102-9.10 Temporary Guardrail:** Furnish temporary guardrail in accordance with the Plans and Standard Plans. Meet the requirements of Section 536.

**102-9.11 Arrow Board:** Furnish arrow boards that meet the requirements of Section 990 as required by the Plans and Standard Plans to advise approaching traffic of lane closures or shoulder work. Ensure that the arrow board display panel is raised to a fully upright position and is fully visible to motorists. Type B arrow boards may be used on low to intermediate speed (0 mph to 50 mph) facilities or for maintenance or moving operations on any speed facility. Type C arrow boards must be used for all other operations on high-speed (50 mph and greater) facilities and may be substituted for Type B arrow boards on any speed facility.

**102-9.12 Portable Changeable Message Sign (PCMS):** Furnish PCMSs or truck mounted changeable message signs that meet the requirements of Section 990 as required by the Plans and Standard Plans to supplement other temporary traffic control devices used in work zones. Ensure that the PCMS display panel is raised to a fully upright position and is fully visible to motorists.

Messages must have no more than two phases. The display time for each phase must be at least two seconds but no more than three seconds. The sum of the display time must be a maximum of six seconds.

**102-9.13 Portable Regulatory Signs (PRS):** Furnish PRSs that meet the requirements of Section 990 as required by the Plans and Standard Plans. Ensure that the PRS sign panel is raised to a fully upright position and is fully visible to motorists.

Activate portable regulatory signs only during active work activities and deactivate when no work is being performed.

**102-9.14 Radar Speed Display Unit (RSDU):** Furnish RSDUs that meet the requirements of Section 990 as required by the Plans and Standard Plans to inform motorists of the posted speed and their actual speed. Ensure that the RSDU display panel is mounted in accordance with the manufacturer's recommendations.

Activate the radar speed display unit only during active work activities and deactivate when no work is being performed.

**102-9.15 Temporary Signalization and Maintenance:** Provide temporary signalization and maintenance at existing, temporary, and new intersections including but not limited to the following:

1. Installation of temporary poles and span wire assemblies as shown in the Plans,
2. Temporary portable traffic signals as shown in the Plans,
3. Adding or shifting signal heads,
4. Trouble calls,
5. Maintaining intersection and coordination timing and preemption devices. Coordination timing will require maintaining functionality of system communications.

Restore any loss of operation within 12 hours after notification. Provide alternate temporary traffic control until the signalization is restored.

Provide traffic signal equipment that meets the requirements of the Standard Plans and 603-2. The Engineer may approve used signal equipment if it is in acceptable condition. Replacement components for traffic signal cabinet assemblies will be provided by the maintaining agency. For temporary signals used for lane closure operations on two-lane, two-way roadways meet the requirements in 102-9.21.

**102-9.16 Temporary Traffic Detection and Maintenance:** Provide temporary traffic detection and maintenance at existing, temporary, and new signalized intersections. Provide temporary traffic detection equipment listed on the APL. Restore any loss of detection within 12 hours. Ensure 90% accuracy per signal phase, measured at the initial installation and after any lane shifts, by comparing sample data collected from the detection system with ground truth data collected by human observation. Collect the sample and ground truth data for a minimum of five minutes during a peak and five minutes during an off-peak period with a minimum three detections for each signal phase. Perform the test in the presence of the Engineer.

**102-9.17 Truck Mounted Attenuators and Trailer Mounted Attenuators:** Furnish, operate and maintain APL listed truck mounted and trailer mounted attenuators in accordance with the manufacturer's recommendations.



For posted speeds of 50 mph or greater, use either truck mounted attenuators or trailer mounted attenuators that meet TL-3 criteria. For posted speeds of 45 mph or less, use either truck mounted attenuators or trailer mounted attenuators that meet TL-2 or TL-3 criteria.

Attenuators will not be paid for separately. Include the cost of the truck with either a truck mounted attenuator or a trailer mounted attenuator in Maintenance of Traffic, lump sum. Payment includes all costs, including furnishing, operating maintaining and removal when no longer required, and all materials, labor, tools, equipment and incidentals required for attenuator maintenance.

**102-9.18 Temporary Raised Rumble Strip Set:** Furnish, install, maintain, remove, and reinstall temporary raised rumble strips per the manufacturer's recommendations and in accordance with Standard Plans, Index 102-603.

The temporary raised rumble strip may be either a removable polymer striping tape or a molded engineered polymer material.

**102-9.19 Automated Flagger Assistance Devices (AFAD):** Furnish, install, maintain, remove, and relocate AFADs in accordance with the Plans, Standard Plans, Index 102-603, and APL vendor drawings.

Position AFADs where they are clearly visible to oncoming traffic. AFADs may be placed on the centerline if they have been successfully crash tested in accordance with MASH TL-3 criteria. A gate arm is required in accordance with Section 990 if a single AFAD is used on the shoulder to control one direction of traffic.

The devices may be operated either by a single flagger at one end of the traffic control zone, from a central location, or by a separate flagger near each device location. Use only flaggers trained in accordance with Section 105 and in the operation of the AFAD. When in use, each AFAD must be in view of, and attended at all times by, the flagger operating the device.

Provide two flaggers on-site and use one of the following methods in the deployment of AFADs:

1. Place an AFAD at each end of the temporary traffic control zone, or
2. Place an AFAD at one end of the temporary traffic control zone and a flagger at the opposite end.

A single flagger may simultaneously operate two AFADs as described in (1) or a single AFAD as described in (2) if all of the following conditions are met:

1. The flagger has an unobstructed view of the AFAD(s),
2. The flagger has an unobstructed view of approaching traffic in both directions,
3. For two AFADs, the AFADs are less than 800 feet apart. For one AFAD, the AFAD and the flagger are less than 800 feet apart.
4. Two flaggers are available on-site to provide normal flagging operations should an AFAD malfunction.

AFADs may be either a remotely controlled Stop/Slow AFAD mounted on either a trailer or a movable cart system, or a remotely controlled Red/Yellow Lens AFAD.

Illuminate the flagging station when the AFAD is used at night. When the AFAD is not in use, remove or cover signs and move the AFAD device outside the clear zone or shield it with a barrier.

AFADs will not be paid for separately. AFADs may be used as a supplement or an alternate to flaggers in accordance with the Plans, Standard Plans, Index 102-603, and the APL vendor drawings. Include the cost for AFADs in Maintenance of Traffic, Lump Sum.

**102-9.20 Temporary Lane Separator:** Furnish, install, maintain, remove and relocate temporary lane separator in accordance with the Plans and Standard Plans, Index 102-600. Anchor the portable temporary lane separator with a removable anchor bolt. Use epoxy on bridge decks where anchoring is not allowed. Remove the epoxy from the bridge deck by hydroblasting or other method approved by the Engineer.

**102-9.21 Temporary Signals for Lane Closures on Two-Lane, Two-Way Roadways:** Furnish, install, maintain, remove, and relocate temporary signals for lane closure operations on two-lane, two-way roadways at the locations shown in the Plans. Temporary signals may be used, at the Contractor's option, as an alternate to flaggers for lane closure operations on two-lane, two-way roadways in accordance with Standard Plans, Index 102-606. Temporary signals can either be portable signals or span wire signals and must be listed on the APL.

## **102-10 Work Zone Pavement Marking.**

**102-10.1 Description:** Furnish and install work zone pavement markings for MOT in construction areas and in close conformity with the lines and details shown in the Plans and Standard Plans. Centerlines, lane lines, edge lines, stop bars, standard crosswalks, and turn arrows will be required in work zones prior to opening the road to traffic.

### **102-10.2 Painted Pavement Markings:**

**102-10.2.1 General:** Use painted pavement markings meeting the requirements of Section 710. Use standard paint unless otherwise identified in the Plans or approved by the Engineer.

### **102-10.3 Removable Tape:**

**102-10.3.1 General:** Use removable tape listed on the APL as shown in the Plans and meeting the requirements of 990-4.

**102-10.3.2 Application:** Apply removable tape with a mechanical applicator to provide pavement lines that are neat, accurate and uniform. Equip the mechanical applicator with a film cut-off device and with measuring devices that automatically and accumulatively measure the length of each line placed within an accuracy tolerance of plus or minus 2%. Ensure removable tape adheres to the road surface. Removable tape may be placed by hand on short sections, 500 feet or less, if it is done in a neat accurate manner.

**102-10.3.3 Retroreflectivity:** Apply white and yellow pavement markings that will attain an initial retroreflectivity of not less than 300 mcd/lx·m<sup>2</sup> for white and contrast markings and not less than 250 mcd/lx·m<sup>2</sup> for yellow markings. Black portions of contrast tapes and black masking tapes must be non-reflective and have a reflectance of less than 5 mcd/lx m<sup>2</sup>. At the end of the

six month service life, the retroreflectance of white and yellow removable tape shall not be less than 150 mcd/lx·m<sup>2</sup>.

**102-10.3.4 Removability:** Provide removable tape capable of being removed from bituminous concrete and portland cement concrete pavement intact or in substantially large strips, either manually or by a mechanical roll-up device, at temperatures above 40°F, without the use of heat, solvents, grinding or blasting.

**102-10.4 Temporary Raised Pavement Markers (RPMs):** Use Class B RPMs except for work that consists of ground-in rumble strips at centerline locations. For ground-in rumble strips at centerline locations, use temporary RPMs in accordance with Section 710. Provide only temporary RPMs listed on the APL. Install all markers in accordance with the manufacturer's recommendations, the Standard Plans, and Section 706. After initial installation, replace broken or missing temporary RPMs in locations where more than three consecutive temporary RPMs are broken or missing at no expense to the Owner.

**102-11 Method of Measurement.**

No separate measurement shall be made for Maintenance of Traffic. Include the cost of any work and all materials, including signage, barricades, informational signage, and any other materials necessary to meet the requirements of the Florida Department of Transportation per the contract documents for maintenance of traffic under the lump sum price for Maintenance of Traffic.

**102-12 Submittals.**

**102-12.1 Submittal Instructions:** Prepare a certification of quantities for certified MOT payment items for each project in the Contract. Submit the certification of quantities to the Engineer. The Owner will not pay for any disputed items until the Engineer approves the certification of quantities.

**102-12.2 Contractor's Certification of Quantities:** Request payment by submitting a certification of quantities no later than Twelve O'clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less an amount previously retained or withheld. The basis will include a detail breakdown provided on the certification of items of payment in accordance with 102-13. After the initial setup of the MOT items and counts, the interval for recording the counts will be made weekly on the certification sheet unless there is a change. This change will be documented on the day of occurrence. Some items may necessitate a daily interval of recording the counts.

**102-13 Basis of Payment.**

**102-13.1 Maintenance of Traffic (General Work):** When an item of work is included in the proposal, price and payment will be full compensation for all work and costs specified under this Section except as may be specifically covered for payment under other items.

**102-13.2 Traffic Control Officers:** Price and payment will be full compensation for the services of the traffic control officers.

**102-13.3 Special Detours:** Price and payment will be full compensation for providing all detour facilities shown in the Plans and all costs incurred in carrying out all requirements of this Section for general MOT within the limits of the detour, as shown in the Plans.

**102-13.4 Commercial Materials for Driveway Maintenance:** Price and payment will be full compensation for all work and materials specified for this item, including specifically all required shaping and maintaining of driveways.

**102-13.5 Work Zone Signs:** Price and payment will be full compensation for all work and materials for furnishing signs, supports and necessary hardware, installation, relocating, maintaining and removing signs.

**102-13.6 Business Signs:** Price and payment will be full compensation for all materials and labor required for furnishing, installing, relocating, maintaining, and removing the signs as well as the cost of installing any logos provided by business owners.

**102-13.7 Project Information Signs:** Price and payment will be full compensation for all materials and labor for furnishing, installing, relocating, maintaining and removing signs.

**102-13.8 Channelizing Devices:** Prices and payment will be full compensation for furnishing, installing, relocating, maintaining and removing the channelizing devices.

**102-13.9 Temporary Barrier:** Price and payment will be full compensation for furnishing, installing, maintaining, and removing the barrier and asphalt pad. When called for, temporary barrier (relocate) will be full compensation for relocating the barrier.

**102-13.10 Temporary Glare Screen:** Price and payment will be full compensation for furnishing, installing, maintaining, and removing the glare screen certified as installed/used on the project. When called for, glare screen (relocate) will be full compensation for relocating the glare screen.

**102-13.11 Temporary Crash Cushion (Redirective or Gating):** Price and payment will be full compensation for furnishing, installing, maintaining, and removing crash cushions and concrete or asphalt pads.

**102-13.12 Temporary Guardrail:** Price and payment will be full compensation for furnishing all materials required for a complete installation, including end anchorage assemblies and any end connections to other structures and for installing, maintaining and removing guardrail.

**102-13.13 Arrow Board:** Price and payment will be full compensation for furnishing, installing, operating, relocating, maintaining and removing arrow boards.

**102-13.14 Portable Changeable Message Sign:** Price and payment will be full compensation for furnishing, installing, operating, relocating, maintaining and removing portable changeable message signs.

**102-13.15 Portable Regulatory Signs:** Price and payment will be full compensation for furnishing, installing, relocating, operating, maintaining and removing a completely functioning system as described in these Specifications.

Payment will include all labor, materials, incidentals, repairs and any actions necessary to operate and maintain the unit at all times that work is being performed or traffic is being affected by construction and/or MOT operations.

**102-13.16 Radar Speed Display Unit:** Price and payment will be made only for a completely functioning system as described in these Specifications. Payment will include all labor, hardware, accessories, signs, and incidental items necessary for a complete system. Payment will include any measurements needed to ensure that the unit conforms to all Specification requirements.

Payment will include all labor, materials, incidentals, repairs and any actions necessary to operate and maintain the unit at all times that work is being performed or traffic is being affected by construction and MOT operations. Price and payment will be full compensation for furnishing, installing, operating, relocating, maintaining and removing radar speed display unit.

**102-13.17 Temporary Signalization and Maintenance:** Price and payment will constitute full compensation for furnishing, installing, operating, maintaining and removing temporary traffic control signals including all equipment and components necessary to provide an operable traffic signal. Payment will be withheld for each day at each intersection where the temporary signalization is not operational within 12 hours after notification.

**102-13.18 Temporary Traffic Detection and Maintenance:** Price and payment will constitute full compensation for furnishing, installing, operating, maintaining and removing temporary traffic detection including all equipment and components necessary to provide an acceptable signalized intersection. Take ownership of all equipment and components. Payment will be withheld for each day at each intersection where the temporary detection is not operational within 12 hours after notification.

**102-13.19 Work Zone Pavement Markings:** Price and payment will be full compensation for all work specified including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

Removable tape or durable paint may be substituted for standard paint at no additional cost to the Owner.

Payment for temporary RPMs used to supplement line markings will be paid for under temporary raised pavement markers. Install these RPMs as detailed in the Standard Plans.

**102-13.20 Temporary Raised Rumble Strips:** Price and payment will be full compensation for all work and materials described in this Section, including all cleaning and preparing of surfaces, disposal of all debris, furnishing of all materials, application, curing, removal, reinstalling and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work.

**102-13.21 Temporary Lane Separator:** Price and payment will be full compensation for all work specified in this Section.

**102-13.22 Temporary Signals for Lane Closures on Two-Lane, Two-Way Roadways:** Price and payment will be full compensation for furnishing, installing, operating, maintaining and removing temporary traffic signal including all equipment and components necessary to provide an operable portable traffic signal.

**102-13.23 Temporary Highway Lighting:** Price and payment will be full compensation for providing all temporary highway lighting shown in the Plans.

**102-13.24 Pedestrian Special Detours:** Price and payment will be full compensation for providing all pedestrian special detours shown in the Plans.

**102-13.25 Payment Items:** Payment will be made under:

|                   |   |                           |
|-------------------|---|---------------------------|
| <b>Item 102-1</b> | <b>Maintenance of Traffic – Bid Alt 1</b> | <b>-per Lump Sum (LS)</b> |
| <b>Item 102-2</b> | <b>Maintenance of Traffic – Bid Alt 2</b> | <b>-per Lump Sum (LS)</b> |

**END OF SECTION 102**

**SECTION 104****PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION****104-1 Description.**

Provide erosion control measures where work is accomplished in conjunction with the project, to prevent erosion, pollution of water, detrimental effects to public or private property adjacent to the project right-of-way and damage to work on the project.

**104-2 General.**

Coordinate the installation of temporary erosion control devices with the construction of the permanent erosion control devices to ensure economical, effective, and continuous control of erosion and water pollution throughout the life of the Contract.

**104-3 Control of Contractor's Operations Which May Result in Water Pollution.**

Prevent contaminants, pollutants or hazardous substances, as defined in Section 376.301, Florida Statutes, from migrating from the construction site or from materials and equipment into any surface waters, wetlands, groundwater or property beyond the project limits. Conduct and schedule operations to avoid and minimize pollution or siltation from the project to surface waters, wetlands, groundwater, or property beyond the project limits.

Do not drive in, operate, or place construction equipment or materials in surface waters, wetlands, groundwater, or property beyond the project limits without permitted authority for permanent or temporary impacts. Water crossings or other wetlands impacts must be authorized by permit. Obstructing or impeding the water flow or movement of the water or wildlife must be authorized by permit.

Where pumps are used to remove highly turbid waters from enclosed construction areas such as cofferdams or forms, treat the water by one or more of the following methods prior to discharge from the project: pumping into grassed swales or appropriate upland vegetated areas or constructed sediment basins, or confined by an appropriate enclosure such as turbidity barriers when other methods are not practical. Do not discharge, water that does not meet State water quality standards or does not meet the criteria specified in any applicable permit.

Remove sediment accumulated during construction from all existing or newly constructed stormwater facilities prior to final acceptance. Ensure that all stormwater conveyances and stormwater facilities meet final grade requirements at final acceptance. Remove silt or regrade as necessary to comply with the lines and grades shown in the Plans.

Do not enter onto lands or waters outside the limits of construction as staked, except as authorized by the Engineer. Do not allow water that does not meet state water quality standards or does not meet the permitted criteria to exit the project limits.

Obtain the Engineer's approval for the location and method of operation in borrow pits, material pits, and disposal areas furnished for waste material from the project (other than commercially operated sources) such that erosion during and after completion of the work will not result in detrimental siltation or water pollution.

**104-4 Materials for Temporary Erosion Control.**

The Engineer will not require testing of materials used in construction of temporary erosion control devices other than as provided for geotextile fabric in 985-3 unless such material is to be incorporated into the completed project. When no testing is required, the Engineer will base acceptance on visual inspection.

The Contractor may use new or used materials for the construction of temporary silt fence, staked turbidity barriers, and floating turbidity barrier not to be incorporated into the completed project, subject to the approval of the Engineer.

**104-5 Preconstruction Requirements.**

Prior to the Preconstruction Conference, submit an Erosion and Sediment Control Plan meeting the requirements or special conditions of all permits authorizing project construction. If no permits are required or the approved permits do not contain special conditions or specifically address erosion and water pollution, the project's Erosion and Sediment Control Plan will be governed by 7-1.1, 7-2.2, 7-8.1, 7-8.2, and Section 104.

When a DEP Generic Permit for Stormwater Discharge from Large and Small Construction Activities permit is issued, the Contractor's Erosion and Sediment Control Plan shall be prepared to accompany the Owner's Stormwater Pollution Prevention Plan. Ensure the Erosion and Sediment Control Plan includes procedures to control off-site tracking of soil by vehicles and construction equipment and a procedure for cleanup and reporting of non-storm water discharges, such as contaminated groundwater or accidental spills. Do not begin any soil disturbing activities before receiving the Engineer's written approval of the Erosion and Sediment Control Plan, including the required signed certification statements.

Failure to sign and submit any required documents or certification statements will be considered a default of the Contract. Any soil disturbing activities performed without the required signed documents or certification statements is considered a violation of the DEP Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

Prepare a site-specific Erosion and Sediment Control Plan in accordance with the planned sequence of operations and present it in a format acceptable to the Owner. The Erosion and Sediment Control Plan shall describe, but not be limited to, the following items or activities:

1. For each phase of construction operations or activities, supply the following information:
  - a. Locations of all erosion control devices
  - b. Types of all erosion control devices
  - c. Estimated time erosion control devices will be in operation
  - d. Monitoring schedules for maintenance of erosion control devices
  - e. Methods of maintaining erosion control devices
  - f. Dewatering plan
  - g. Locations of all stored fuel or other containments, pollutants or hazardous waste
  - h. Spill prevention and response measures and disposal and removal methods
  - i. Submit any changes to the Erosion and Sediment Control Plan within seven calendar days
2. The name and telephone number of the person responsible for monitoring and maintaining the erosion control devices.
3. Submit for approval the Erosion and Sediment Control Plans meeting paragraphs 3a, 3b, or 3c below:



- a. Projects permitted by the Southwest Florida Water Management District (SWFWMD), require the following:

Submit the Erosion and Sediment Control Plan to the Engineer for review and to the appropriate SWFWMD Office for review and approval. Include the SWFWMD permit number on all submitted data or correspondence.

The Contractor may schedule a meeting with the appropriate SWFWMD Office to discuss the Erosion and Sediment Control Plan in detail, to expedite the review and approval process. Advise the Engineer of the time and place of any meetings scheduled with SWFWMD.

Do not begin construction activities until the Erosion and Sediment Control Plan receives written approval from both SWFWMD and the Engineer.

- b. Projects permitted by the South Florida Water Management District or the St. Johns River Water Management District, require the following:

Obtain the Engineer's approval of the Erosion and Sediment Control Plan.

Do not begin construction activities until the Erosion and Sediment Control Plan receives written approval from the Engineer.

- c. Projects authorized by permitting agencies other than the Water Management Districts or projects for which no permits are required require the following:

The Engineer will review and approve the Contractor's Erosion and Sediment Erosion Control Plan.

Do not begin construction activities until the Erosion and Sediment Control Plan receives written approval from the Engineer.

#### **104-6 Construction Requirements.**

**104-6.1 Limitation of Exposure of Erodible Earth:** Do not allow the surface area of erodible earth that clearing and grubbing operations, excavation and filling operations, or other earth disturbing activities to exceed 750,000 square feet without specific prior written approval by the Engineer. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.

The Engineer may further limit the surface areas of unprotected erodible earth exposed by the construction operation and may direct the Contractor to provide additional erosion or pollution control measures to prevent contamination of any surface waters, wetlands, or groundwater or to prevent detrimental effects on property outside the project limits or damage to the project.

**104-6.2 Incorporation of Erosion and Sediment Control Devices:** Incorporate permanent erosion and sediment control devices into the project at the earliest practical time. Complete the installation of temporary erosion and sediment control devices prior to the commencement of any earthwork. Use temporary erosion and sediment control devices found in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual) to control erosion and sediment generated by construction operations, to correct unforeseen conditions during construction, and to control

erosion and sediment prior to the incorporation of permanent erosion and sediment control devices. An electronic version of the E&SC Manual can be found at the following URL:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/FLERosionSedimentManual.shtm>

**104-6.3 Scheduling of Successive Operations:** Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable.

Schedule and perform clearing and grubbing such that grading operations can be incorporated immediately thereafter. Schedule and perform grading operations so that permanent erosion control devices can follow immediately thereafter if conditions on the project permit.

**104-6.4 Details for Temporary Erosion and Sediment Control Devices:**

**104-6.4.1 General:** Use temporary erosion, sediment and water pollution control devices found in the E&SC Manual. These devices consist of, but are not limited to, temporary sod, rolled erosion control products, sediment containment systems, runoff control structures, sediment barriers, inlet protection systems, silt fences, turbidity barriers, and chemical treatment. For design details for some of these devices, refer to the E&SC Manual. Perform installation, inspection, maintenance, and removal of all temporary erosion and sediment control devices in accordance with applicable permits, manufacturer's directions, and the Contract Documents.

**104-6.4.2 Temporary Sod:** The Engineer may designate certain areas of sod constructed in accordance with Section 570, as a temporary erosion control device. Do not use seed as a temporary erosion control device. The Engineer may waive the turf establishment requirements of Section 570 for areas of temporary sod that will not be a part of the permanent construction.

**104-6.4.3 Runoff Control Structures:** Construct runoff control structures in accordance with the details shown in the Contract Documents.

**104-6.4.4 Sediment Containment Systems:** Construct sediment containment systems in accordance with the details shown in the Contract Documents. Clean out sediment containment systems as necessary in accordance with the Contract Documents.

**104-6.4.5 Sediment Barriers:** Provide and install sediment barriers according to details shown in the Contract Documents or, as directed by the Engineer to protect against downstream accumulation of sediment. Sediment Barriers include, but are not limited to synthetic bales, silt fence, fiber logs and geosynthetic barriers. Reusable barriers that have had sediment deposits removed may be reinstalled on the project as approved by the Engineer.

**104-6.4.6 Silt Fence:**

**104-6.4.6.1 General:** Furnish, install, maintain, and remove silt fences, in accordance with the applicable permits, the manufacturer's directions, and the Contract Documents.

**104-6.4.6.2 Materials and Installation:** Use a geotextile fabric made from woven or nonwoven fabric, meeting the physical requirements of Section 985 according to those applications for erosion control.

Choose the type and size of posts and wire mesh reinforcement (if required). Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective silt fence that controls sediment in accordance with the Contract Documents.

Erect silt fence at upland locations and at temporary locations shown in the Contract Documents or where continuous construction activities change the natural contour and drainage runoff. Do not attach silt fence to existing trees unless approved by the Engineer.

**104-6.4.6.3 Inspection and Maintenance:** Inspect all silt fences in accordance with any applicable permit. If the project does not have a permit, inspect within 24 hours after each rain event and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, repair or replace silt fences in accordance with the Contract Documents or as directed by the Engineer.

Remove sediment deposits when the deposit reaches approximately 1/2 the height of the silt fence or as directed by the Engineer. Shape any remaining sediment deposits to conform with the finished grade and prepare the area for turf in accordance with Section 570.

**104-6.4.7 Floating Turbidity Barriers and Staked Turbidity Barriers:** Furnish, install, maintain, and remove floating turbidity barriers in accordance with the applicable permits, the manufacturer's directions, and the Contract Documents. The Contractor may need to deploy turbidity barriers around isolated areas of concern (such as, seagrass beds, coral communities) both within as well as outside the project limits. The Engineer will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Ensure that the type of barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the project. The Engineer may approve alternate methods or materials.

Install and maintain turbidity barriers to avoid or minimize the degradation of the water quality of the surrounding waters and minimize damage to areas where the floating barriers are installed.

**104-6.4.8 Inlet Protection System:** Furnish and install inlet protection systems as shown in the Contract Documents.

**104-6.4.9 Rolled Erosion Control Products (RECPs):**

**104-6.4.9.1 General:** Install RECPs in locations where temporary protection from erosion is needed. Two common applications are described below.

1. Use RECPs composed of natural or synthetic fiber mats, plastic sheeting, or netting as protection against erosion, when directed by the Engineer, during temporary pauses in construction caused by inclement weather or other circumstances. Remove the material when construction resumes.
2. Use RECPs as erosion control blankets, at locations shown in the Plans, to facilitate plant growth while permanent grassing is being established. For the purpose described, use non-toxic, biodegradable, natural or synthetic woven fiber mats. Install erosion control

blankets capable of sustaining a maximum design velocity of 6.5 ft/sec as determined from tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the Owner. Submit to the Engineer, certified test reports from the manufacturer showing that the erosion control blankets meet the requirements of this Specification. Certification must be attested, by a person having legal authority to bind the manufacturing company. Also, furnish two 4 by 8 inch samples for product identification. The manufacturers test records shall be made available to the Owner upon request. Leave the material in place, as installed, to biodegrade.

**104-6.4.10 Chemical Treatment:** Provide chemical treatment in accordance with the Contract Documents. Chemical treatment may be used to clarify turbid or sediment laden water that does not meet state water quality standards or to supplement other erosion and sediment control devices to aid in their performance. The contractor must provide the required toxicity testing information in accordance with the Contract Documents to the Engineer for review and acceptance prior to using any chemical treatment on the project site.

**104-6.5 Removal of Temporary Erosion Control Devices:** In general, remove or incorporate into the soil any temporary erosion control devices upon incorporation of the permanent erosion control devices into the project. The Engineer may direct that temporary devices be left in place.

#### **104-7 Maintenance of Erosion and Sediment Control Devices.**

**104-7.1 General:** Provide routine maintenance of permanent and temporary erosion and sediment control devices, at no expense to the Owner, until the project is complete and accepted. If reconstruction or replacement of erosion and sediment control devices is necessary due to the Contractor's negligence or carelessness or, in the case of temporary erosion and sediment control devices, improper installation, lack of maintenance, excessive wear, design-life exceedance or failure by the Contractor to install permanent erosion control devices as scheduled, the Contractor shall repair or replace such erosion control devices at no expense to the Owner. If reconstruction of permanent or temporary erosion and sediment control devices is necessary due to factors beyond the control of the Contractor, the Owner will pay for replacement under the appropriate Contract pay item or items.

Inspect all erosion and sediment control devices at least once every seven calendar days and within 24 hours of the end of a storm event that is 0.50 inches or greater. Maintain all erosion and sediment control devices as required in the Stormwater Pollution Prevention Plan, the Contractor's Erosion and Sediment Control Plan, and if applicable, as specified in the State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

#### **104-8 Protection During Suspension of Contract Time.**

Initiate stabilization measures within seven calendar days upon suspension of construction activities. If it is necessary to suspend the construction operations for any appreciable length of time, shape the disturbed areas to facilitate stormwater runoff and construct earthen berms along the top edges of embankments to intercept stormwater runoff. Provide temporary slope drains in areas that are highly erodible to avoid pollution of surface waters, wetlands, groundwater, or property beyond the project limits. Locate slope drains at intervals of approximately 500 feet and stabilize by paving or covering with waterproof materials. Should such preventive measures fail, immediately take action as necessary to

effectively prevent erosion and siltation. During suspension of operations, the Engineer may direct the Contractor to perform additional erosion and sediment control work as necessary.

**104-9 Method of Measurement.**

Erosion Control shall be measured based on percent complete of the total project. Erosion control measures are required until the project area has been fully stabilized. No separate measurement for individual erosion control devices shall be provided.

Upon acceptance by the Engineer, the quantity of floating turbidity barriers, sediment barriers, staked turbidity barriers, and inlet protection devices will be paid for regardless of whether materials are new, used, or relocated from a previous installation on the project. Protection of newly constructed inlets and drainage systems is incidental to their installation. No separate payment will be made for temporary erosion control devices used to protect newly constructed drainage systems.

**104-10 Basis of Payment.**

Prices and payments will be full compensation for all work specified in this Section, including construction and routine maintenance of temporary erosion control devices.

Any additional costs resulting from compliance with the requirements of this Section, other than construction, routine maintenance, and removal of temporary erosion control devices, will be included in the Contract unit prices for the item or items to which such costs are related. Temporary sod used as a temporary erosion control device in accordance with 104-6.4.2 will be paid for under Section 570.

Separate payment will not be made for the cost of constructing temporary earth berms along the edges of the roadways to prevent erosion during grading and subsequent operations. The Contractor shall include these costs in the Contract prices for grading items.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside assistance or to use the Owner's own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions made from the monthly progress estimate.

Payment will be made under:

**Item No. 104-1    Prevention, Control, and Abatement of Erosion and Water Pollution – Bid Alt 1**  
**- per Lump Sum (LS)**

**Item No. 104-2    Prevention, Control, and Abatement of Erosion and Water Pollution – Bid Alt 2**  
**- per Lump Sum (LS)**

**END OF SECTION 104**

## SECTION 105

### CONTRACTOR QUALITY CONTROL GENERAL REQUIREMENTS

#### 105-1 General.

##### 105-1.1 Quality Control Documentation.

**105-1.1.1 Submission of Materials Certification and Reporting Test Results:** Submit certifications prior to placement of materials. Report test results at completion of the test and meet the requirements of the applicable Specifications.

**105-1.1.2 Worksheets:** Make available to the Owner, when requested, worksheets used for collecting test information. Ensure the worksheets at a minimum contain the following:

1. Project Identification Number,
2. Time and Date,
3. Laboratory Identification and Name,
4. Training Identification Numbers (TIN) and initials,
5. Record details as specified within the test method.

##### 105-1.2 Inspections to Assure Compliance with Acceptance Criteria.

**105-1.2.1 General:** The Owner is not obligated to make an inspection of materials at the source of supply, manufacture, or fabrication. Provide the Engineer with unrestricted entry at all times to such parts of the facilities that concern the manufacture, fabrication, or production of the ordered materials. Bear all costs incurred in determining whether the material meets the requirements of these Specifications.

**105-1.2.2 Quality Control (QC) Inspection:** Provide all necessary inspection to assure effective QC of the operations related to materials acceptance. This includes but is not limited to sampling and testing, production, storage, delivery, construction and placement. Ensure that the equipment used in the production and testing of the materials provides accurate and precise measurements in accordance with the applicable Specifications. Maintain a record of all inspections, including but not limited to, date of inspection, results of inspection, and any subsequent corrective actions taken. Make available to the Owner the inspection records, when requested.

**105-1.2.3 Notification of Placing Order:** Order materials sufficiently in advance of their incorporation in the work to allow time for sampling, testing and inspection. Notify the Engineer prior to placing orders for materials.

Submit to the Engineer a fabrication schedule for all items requiring commercial inspection at least 30 days before beginning fabrication. These items include steel bridge components, moveable bridge components, pedestrian bridges, castings, forgings, structures erected either partially or completely over the travelled roadway or mounted on bridges as overhead traffic signs (some of these may be further classified as cantilevered, overhead trusses, or monotubes)

or any other item identified as an item requiring commercial inspection in the Contract Documents.

#### **105-2 Additional Requirements for Lump Sum Projects.**

Prepare and submit to the Engineer a project-specific list of material items and quantities to be used on the project as a Job Guide Schedule in the same format as the current Sampling, Testing, and Reporting Guide 21 calendar days prior to commencement of construction. Submit up-to-date quantities for the items on the Job Guide Schedule to the Engineer with each monthly progress estimate. The Owner may not authorize payment of any progress estimate not accompanied by updated Job Guide Schedule quantities. Maintain the Job Guide Schedule throughout the project including the quantity placed since the previous submittal, and total to date quantity and any additional materials placed. Do not commence work activities that require testing until the Job Guide Schedule has been reviewed and accepted by the Engineer. At final acceptance, submit a final Job Guide Schedule that includes all materials used on the project in the same format as the monthly reports.

#### **105-3 Quality Control Program.**

Certain operations require personnel with specific qualifications. Certain materials require production under an approved Quality Control (QC) Plan to ensure that these materials meet the requirements of the Contract Documents. Applicable materials include hot mix asphalt, portland cement concrete (Structural), earthwork, cementitious materials, timber, steel and miscellaneous metals, galvanized metal products, prestressed and/or precast concrete products, drainage products, and fiber reinforced polymer products. For all applicable materials included in the Contract, submit a QC Plan prepared in accordance with the requirements of this Section to the Engineer. Do not incorporate any of these materials into the project prior to the Engineer's approval of the QC Plan.

Steel and Miscellaneous Metal products, including aluminum, are defined as the metal components of bridges, including pedestrian and moveable bridges, overhead and cantilevered sign supports, ladders and platforms, bearings, end wall grates, roadway gratings, drainage items, expansion joints, roadway decking, shear connectors, handrails, galvanized products, fencing, guardrail, light poles, high mast light poles, standard mast arm assemblies and Monotube assemblies, stay in-place forms, casing pipe, strain poles, fasteners, connectors and other hardware.

#### **105-4 Producer Quality Control Program.**

**105-4.1** General: When accreditation or certification is required, make supporting documents from the two previous inspections performed by the accrediting or certifying agency available to the Owner upon request.

Obtain Owner approval prior to beginning production. Meet and maintain the approved Producer Quality Control Program requirements at all times. Production of these products without the Owner's prior acceptance of the Producer Quality Control Program may result in rejection of the products. Continued approval will be subject to satisfactory results from Owner evaluations, including the Independent Assurance program. In cases of noncompliance with the accepted Producer Quality Control Program, identify all affected material and do not incorporate or supply to the Owner projects. The following conditions may result in suspension of a Producer Quality Control Program

1. Failure to timely supply information required.
2. Repeated failure of material to meet Standard Specification requirements.

3. Failure to take immediate corrective action relative to deficiencies in the performance of the Producer Quality Control Program.
4. Certifying materials that are not produced under an accepted Producer Quality Control Program for use on Owner projects.
5. Failure to correct any deficiencies related to any requirement of the Producer Quality Control Program, having received notice from the Owner, within the amount of time defined in the notice.

**105-4.2 Producer Quality Control Program Requirements:**

**105-4.2.1 Hot Mix Asphalt, Portland Cement Concrete (Structural), Earthwork, Cementitious Materials, Timber, Steel and Miscellaneous Metals, Galvanized Metal Products, Prestressed and/or Precast Concrete Products, Drainage Products, and Fiber Reinforced Polymer Products Quality Control Program:** Have an accepted Producer Quality Control Program, developed in accordance with this Section, during the production of materials to be used on Owner projects.

**105-4.2.2 Prestressed Concrete Quality Control Program:** Have a current certification from a FDOT approved precast prestressed concrete plant certification agency and a FDOT accepted Producer Quality Control Plan, meeting the requirements of this Section. The list of FDOT approved certification agencies is available on the website of the State Materials Office (SMO).

**105-4.2.3 Steel and Miscellaneous Metals Quality Control Program:** Have an accepted Producer Quality Control Plan, developed in accordance with this Section and a current American Institute for Steel Construction (AISC) certification, provided that AISC certification program is available for the category of the fabrication products.

**105-4.3 Submittal:** Depending on the type of products, producers shall submit their proposed Producer Quality Control Programs to the SMO or to the District Materials Office, as described below:

**105-4.3.1 State Materials Office (SMO):** Producers of cementitious materials, steel and miscellaneous metals, galvanized metal products, aggregates, and fiber reinforced polymer products must submit their proposed Producer Quality Control Program to the SMO for review and acceptance.

**105-4.3.2 District Materials Office:** Producers of hot mix asphalt, portland cement concrete (structural), earthwork, timber, prestressed and/or precast concrete products and drainage products must submit their proposed Producer Quality Control Program to the local District Materials Office for acceptance. Producers located outside the State must contact the SMO for address information of the District Materials Office responsible for the review of the proposed Quality Control Program.

**105-4.4 Compliance with the Materials Manual.**

Producers of Flexible Pipe shall meet the requirements of Section 6.1, Volume II of the FDOT's Materials Manual, which may be viewed at the following URL:

<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section61V2.shtm>.



Producers of Precast Concrete Pipe shall meet the requirements of Section 6.2, Volume II of the FDOT's Materials Manual, which may be viewed at the following URL:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section62V2.shtm>.

Producers of Precast Concrete Drainage Structures shall meet the requirements of Section 6.3, Volume II of the FDOT's Materials Manual, which may be viewed at the following URL:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section63V2.shtm>.

Producers of Precast/Prestressed Concrete Products shall meet the requirements of Sections 8.1 and 8.3 of the FDOT's Materials Manual, which may be viewed at the following URLs:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section81V1.shtm>.  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section83V2.shtm>.

Producers of Precast Prestressed Concrete Products using Self Consolidating Concrete shall meet the requirements of Section 8.4, Volume II of the FDOT's Materials Manual, which may be viewed at the following URL:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section84V2.shtm>.

Producers of Incidental Precast/Prestressed Concrete Products shall meet the requirements of Section 8.2, Volume II of the FDOT's Materials Manual, which may be viewed at the following URL:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section82V2.shtm>.

Producers of Portland Cement Concrete shall meet the requirements of Section 9.2, Volume II of the FDOT's Materials Manual, which may be viewed at the following URL:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section92V2.shtm>.

Producers of Structural Steel and Miscellaneous Metal Components shall meet the requirements of Sections 11.1, 11.2, 11.3, 11.4, 11.5 and 11.6 of the FDOT's Materials Manual, which may be viewed at the following URLs:

<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section111V1.shtm>.  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section112V2.shtm>.  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section113V2.shtm>.  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section114V2.shtm>.  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section115V2.shtm>.  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section116V2.shtm>.

Producers of Fiber Reinforced Polymer Composites shall meet the requirements of Section 12-1, Volume II of the FDOT's Materials Manual, which may be viewed at the following URL:  
<https://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section121V2.shtm>.

**105-4.5 Producer Quality Control (QC) Plan Review and Acceptance:** The Owner will respond to the producer within 21 calendar days of receipt of the proposed Producer Quality Control Program. The Owner may perform evaluation activities to verify compliance with submitted documents prior to acceptance.

If the Producer Quality Control Program must be revised for any reason, including non-compliance, submit the revision to the Owner. The Owner will respond to the producer within seven calendar days of receipt of the revised Producer Quality Control Program.

**105-4.6 Producer's Quality Control (QC) Plan:** Submit detailed policies, methods and procedures to ensure the specified quality of all applicable materials and related production operations. Include other items in addition to these guidelines as necessary.

**105-4.6.1 Personnel:**

**105-4.6.1.1 Qualifications:** Submit the Training Identification Numbers (TINs) or any other information which will be traceable to the certification agency's training location and dates for all technicians performing sampling, testing and inspection for both field and laboratory tests. Submit the names of the Construction Training and Qualification Program (CTQP) certifications and other pertinent certifications held and the expiration dates for each certification for each technician. Include employed and subcontracted technicians.

**105-4.6.1.2 Level of Responsibility:** Identify the primary contact for the Owner. Identify roles and responsibilities of various personnel involved in the QC process.

**105-4.6.2 Raw Materials:**

**105-4.6.2.1 Source:** Identify the sources of raw materials. Submit locations and plant or mine numbers when applicable.

**105-4.6.2.2 Certification:** Submit methods of verifying compliance of certification with the Specifications.

**105-4.6.2.3 Disposition of Failing Materials:** Describe the system for controlling non-conforming materials, including procedures for identification, isolation and disposition.

**105-4.6.3 Storage Facilities for Raw Materials:** Describe measures and methods, including bedding details, for preventing segregation, contamination and degradation. Describe methods of identifying individual materials. Where applicable, submit a site plan showing the locations of various materials.

**105-4.6.4 Production Equipment:** Describe calibration frequencies, maintenance schedule and procedures for production equipment.

**105-4.6.5 Plant Requirements:**

**105-4.6.5.1 Plant Identification:** For those facilities producing materials listed in 105-3, submit the mailing address, physical address including county and X,Y ( latitude and longitude) coordinates of the plant, telephone and fax numbers, email address, primary contact at the plant, responsible person in charge, facility number provided by the Owner, owner information including parent company, vendor number, designed production capacity, and other information as required.

**105-4.6.5.2 Process Control System:** Describe the methods and measures established to ensure Contract compliance for the produced materials that are supplemental to the QC sampling and testing program described in the Contract Documents. These methods and

measures will include, but are not limited to, inspection schedule, additional sampling and testing, maintenance schedule, etc.

**105-4.6.5.3 Loading and Shipping Control:** Describe the methods and measures for preventing segregation, contamination and degradation during loading and shipping operations. Describe the methods established for materials to be in compliance with the Specifications at the point of use.

**105-4.6.5.4 Types of Products Generated:** Describe the products the plant is approved to produce under Owner guidelines.

**105-4.7 Other Requirements:**

**105-4.7.1 Submittal of Certification:** Submit certifications issued by the plant/Contractor for the applicable products approved by the Owner.

**105-4.7.2 Statement of Compliance:** Include a statement of compliance with all quality requirements set forth by the Owner in the Contract Documents and FDOT manuals.

**105-4.7.3 Documentation Storage:** Identify location of document storage to enable Owner review. Include QC charts, qualification and accreditation records, inspection reports, and other pertinent supporting documents.

**105-4.8 Final Manufactured Product - Plant Operations:** Describe inspection schedule and methods for identifying defects and non-compliance with the Specifications. Describe corrective actions and methods to resolve them.

**105-4.8.1 Storage:** When storage of the produced materials is required and it is not defined in the Contract Documents, describe the methods and duration for storage. Include measures and methods for preventing segregation, contamination and degradation during storage.

**105-4.8.2 Disposition of Failing Materials:** When not described in the Specifications, describe the methods and measures for identifying and controlling the failing materials. Include preventive and corrective measures. Describe disposition of failing materials.

**105-4.9 Testing Laboratories:** Identify the laboratories performing testing. Ensure that the testing laboratories comply with the Laboratory Qualification Program requirements of this Section or other applicable requirements.

**105-4.10 Owner Inspection Access:** Include a statement in the Quality Control Plan allowing the Owner inspectors access to the production facility to perform the inspections of the production process and the products produced for the Owner.

**105-5 Contractor Quality Control (QC) Plan.**

**105-5.1 General:** Submit the Contractor QC Plan seven days prior to beginning work on any QC material as defined in this Section. The QC Plan may be submitted as a whole or in portions for the work related to the Contract.

Update the QC Plan at least five working days prior to the implementation of any changes.

If at any time the Work is not in compliance with the Contract Documents, the Engineer may suspend operations in accordance with 8-6.1.

**105-5.2 Personnel Qualification:** Submit the Training Identification Numbers for all technicians performing sampling, testing and inspection for field tests. Include employed and subcontracted technicians.

**105-5.3 Production Facilities:** Identify the producers of materials listed in 105-4.4 for the project. Include the FDOT's facility ID number as part of the identification. All producers must have accepted Producer's Quality Control Program and be listed on the FDOT's Production Facility Listing.

**105-5.3.1 Structural Concrete Mix Designs:** Identify the approved structural concrete mix designs for each structural concrete production facility for review and approval by the Engineer. Do not begin work on the material without the Engineer's approval. The Engineer will review and respond within five calendar days of submittal.

**105-5.4 Testing Laboratories:** Identify the laboratories performing testing. Ensure that the testing laboratories comply with the Laboratory Qualification Program requirements of this Section.

**105-6 Contractor Certification of Compliance.**

Provide the Engineer with a notarized monthly certification of compliance with the Contract Documents, to accompany each progress estimate, on a form provided by the Engineer. The Owner may not authorize payment of any progress estimate not accompanied by an executed certification document.

Final payment in accordance with 9-8 will not be made until a final notarized certification summarizing all QC exceptions has been submitted.

**105-7 Lab Qualification Program.**

Testing laboratories participating in the FDOT's Acceptance Program must have current FDOT qualification when testing materials that are used on Owner projects. In addition, they must have one of the following:

1. Current AASHTO (AAP) accreditation.
2. Inspected on a regular basis per ASTM D 3740 for earthwork, ASTM D 3666 for asphalt and ASTM C 1077 for concrete for test methods used in the Acceptance Program, with all deficiencies corrected, and under the supervision of a Specialty Engineer.
3. Current Construction Materials Engineering Council (CMEC) program accreditation or other independent inspection program accreditation acceptable to the Engineer and equivalent to (1) or (2) above.

After meeting the criteria described above, submit a Laboratory Qualification Application to the Owner. Obtain the Owner's qualification prior to beginning testing. The Owner may inspect the laboratory for compliance with the accreditation requirements prior to issuing qualification.

Meet and maintain the qualification requirements at all times. Testing without Owner's qualification may result in a rejection of the test results. Continued qualifications are subject to satisfactory results from Owner evaluations, including Independent Assurance evaluations. In case of suspension or

disqualification, prior to resumption of testing, resolve the issues to the Owner's satisfaction and obtain reinstatement of qualification. The following conditions may result in suspension of a laboratory's qualified status:

1. Failure to timely supply required information.
2. Loss of accredited status.
3. Failure to correct deficiencies in a timely manner.
4. Unsatisfactory performance.
5. Changing the laboratory's physical location without notification to the accrediting agency and the Engineer.
6. Delays in reporting the test data in the Owner's database.
7. Incomplete or inaccurate reporting.
8. Using unqualified technicians performing testing.

Should any qualified laboratory falsify records, the laboratory qualification will be subject to revocation by the Engineer. Falsification of project-related documentation will be subject to further investigation and penalty under State and Federal laws.

It is prohibited for any contract laboratory or staff to perform Contractor QC testing and any other Acceptance Program testing on the same contract.

#### **105-8 Personnel Qualifications.**

**105-8.1 General:** Provide qualified personnel for sampling, testing and inspection of materials and construction activities. Ensure that qualifications are maintained during the course of sampling, testing and inspection.

Construction operations that require a qualified technician must not begin until the Owner verifies that the technician is on the CTQP list of qualified technicians. The CTQP lists are subject to satisfactory results from periodic Independent Assurance evaluations.

**105-8.2 Quality Control (QC) Manager:** Designate a QC Manager who has full authority to act as the Contractor's agent to institute any and all actions necessary to administer, implement, monitor, and as necessary, adjust quality control processes to ensure compliance with the Contract Documents. The QC Manager must speak and understand English. The QC Manager must be on-site at the project on a daily basis or always available upon four hours notice. Ensure that the QC Manager is qualified as such through the Construction Training and Qualification Program. The QC Manager and the Superintendent must not be the same individual.

Under the direction of the QC Manager summarize the daily QC activities including testing and material sampling. Since erasures are strictly prohibited on all reports and forms, use blue or colored ink. Do not use black ink. If manual corrections to original data are necessary, strike through, correct, and date the entry, including the initials of the person making the correction. Make copies of the completed forms available for the Owner to review daily unless otherwise required in the

Specifications. Ensure that the QC test data is entered into the Owner's database on a daily basis. Maintain all QC related reports and documentation for a period of three years from final acceptance of the project. Make copies available for review by the Owner upon request.

**105-8.3 Temporary Traffic Control (Maintenance of Traffic) Personnel:** Worksite Traffic Supervisors, flaggers, and other personnel responsible for work zone related transportation management and traffic control must obtain training and certification in accordance with the FDOT's Temporary Traffic Control (Maintenance of Traffic) Training Handbook located at the following URL address: <https://www.fdot.gov/roadway/TTC/Default.shtm>.

**105-8.4 Earthwork Quality Control (QC) Personnel:**

**105-8.4.1 Earthwork Level I:** Ensure the technician who samples soil and earthwork materials from the roadway project, takes earthwork moisture and density readings, and records those data in the Density Log Book holds a CTQP Earthwork Construction Inspection Level I qualification.

**105-8.4.2 Earthwork Level II:** Ensure the technician responsible for determining the disposition of soil and earthwork materials on the roadway, and for interpreting and meeting Contract Document requirements holds a CTQP Earthwork Construction Inspection Level II qualification.

**105-8.5 Asphalt Quality Control (QC) Personnel:**

**105-8.5.1 Plant Technicians:** For asphalt plant operations, provide a QC technician, qualified as a CTQP Asphalt Plant Level II Technician, available at the asphalt plant at all times when producing mix for the Owner. Perform all asphalt plant related testing with a CTQP Asphalt Plant Level I Technician. As an exception, measurements of temperature may be performed by someone under the supervision of a CTQP Plant Level II technician.

**105-8.5.2 Paving Technicians:** For paving operations (with the exception of miscellaneous or temporary asphalt), keep a qualified CTQP Asphalt Paving Level II Technician on the roadway at all times when placing asphalt mix for the Owner, and perform all testing with a CTQP Asphalt Paving Level I Technician. As an exception, measurements of cross-slope, temperature, and yield (spread rate) can be performed by someone under the supervision of a CTQP Paving Level II Technician at the roadway.

**105-8.5.3 Mix Designer:** Ensure all mix designs are developed by individuals who are CTQP qualified as an Asphalt Hot Mix Designer.

**105-8.5.4 Documentation:** Document all QC procedures, inspection, and all test results and make them available for review by the Engineer throughout the life of the Contract. Identify in the asphalt producer's QC Plan the QC Managers and Asphalt Plant Level II technicians responsible for the decision to resume production after a quality control failure.

**105-8.6 Concrete QC Personnel:**

**105-8.6.1 Concrete Field Technician - Level 1:** Ensure technicians performing plastic property testing on concrete for materials acceptance are qualified CTQP Concrete Field Technicians Level 1. Plastic property testing will include but not be limited to slump, temperature, air content, water-to-cementitious materials ratio calculation, and making and curing concrete cylinders. Duties will include initial sampling and testing to confirm specification compliance prior to beginning concrete placements, ensuring timely placement of initial cure and providing for the

transport of compressive strength samples to the designated laboratories. Ensure that personnel performing plastic property testing on self-consolidating concrete (SCC) possess an ACI Self-Consolidating Concrete Testing Technician Certification.

**105-8.6.2 Concrete Field Inspector - Level 2:** Ensure field inspectors responsible for the quality of concrete being placed on the following structure types are qualified CTQP Concrete Field Inspectors Level 2:

1. Moveable bridges
2. Bridges over a water opening of 1,000 feet or more
3. Bridges with a span of 190 feet or more
4. Cable supported or cable stayed bridges
5. Post-tensioned bridges
6. Steel girder or steel truss bridges
7. Multi-level roadways

With the exception of concrete traffic railing placements, a Level 2 Inspector must be present on the jobsite during all concrete placements. Prior to the placement of concrete, the inspector will inspect the element to be cast to ensure compliance with Contract Documents. A Level 2 Inspector's duties may include ensuring that concrete testing, inspection, and curing in the field are performed in accordance with the Contract Documents. The QC Inspector will inform the Verification Inspector of anticipated concrete placements and LOT sizes.

**105-8.6.3 Concrete Laboratory Technician – Level 1:** Ensure technicians testing cylinders and recording concrete strength for material acceptance are qualified CTQP Concrete Laboratory Technicians Level 1. Duties include final curing, compressive strength testing, and the recording/reporting of all test data.

**105-8.7 Structural Concrete Production Facility Quality Control (QC) Personnel:**

Ensure that each portland cement structural concrete production facility (plant), has designated personnel including plant manager of QC, concrete mix designer, concrete batch plant operator, and testing technicians to provide QC inspections and testing.

Upon Owner approval, the functions of the above positions may be performed by the same person when it can be demonstrated that the plant's operation and quality of concrete will not be detrimentally affected and personnel have the qualifications required herein.

**105-8.7.1 Plant Manager of QC:** Ensure that the plant manager of QC has at least three years of concrete related experience and the following training certifications:

1. CTQP Concrete Laboratory Technician - Level 1 certificate.
2. CTQP Concrete Field Technician - Level 1 certificate.

3. Concrete Batch Plant Operator certification in accordance with 1058.7.4.

As alternatives to these certifications, the Owner will accept, one of the following:

- a. Prestressed Concrete Institute (PCI) QC Personnel Certification Level III.
- b. Precast Concrete Pipe, Box Culverts, Drainage Structures or Incidental Precast Concrete Plants Level II QC Inspector Certifications.
- c. National Ready Mixed Concrete Association (NRMCA) Certified Concrete Technologist Level 2.

**105-8.7.2 Concrete Mix Designer:** Ensure that the concrete mix designer has the CTQP Concrete Laboratory Technician Level 2 certification. As an alternative, the Owner will accept any of the following qualifications:

1. PCI QC Personnel Level III Certification, for concrete mix designs of prestressed concrete products.
2. National Ready Mix Concrete Association (NRMCA) Certified Concrete Technologist Level 3.
3. Any of the Level II QC certifications in accordance with 105-8.9.2.2.

**105-8.7.3 Qualified Testing Technicians:** Ensure that the testing technicians have the following certifications:

1. ACI Concrete Field Testing Technician Grade I, for personnel performing concrete plastic property tests and ACI Self-Consolidating Concrete Testing Technician if testing self-consolidating concrete (SCC).
2. ACI Concrete Strength Testing Technician, for personnel performing tests on hardened properties of concrete.

**105-8.7.4 Concrete Batch Plant Operator:** Ensure that the concrete batch plant operator has a CTQP Concrete Batch Plant Operator Certification. As an alternative, the Owner will accept the following certifications:

- a. Precast Concrete Structures Association (PCSA) Batch Plant Operator,
- b. NRMCA Certified Concrete Technologist Level 3, or
- c. NRMCA Plant Manager Certification.

For dry cast concrete pipe and dry cast drainage structures, the Owner will accept American Concrete Pipe Association (ACPA) Quality School Level II Certification.

**105-8.8 Prestressed Concrete Plant Quality Control (QC) Personnel:** Obtain personnel certifications from Owner accredited training providers. The list of FDOT approved courses and their accredited providers is available on the SMO website at the following URL:



<https://www.fdot.gov/materials/administration/resources/training/structural/concreteprestressed.shtm>.

Ensure each prestressed concrete plant has an onsite production manager, an onsite plant QC manager, a plant engineer, and adequate onsite QC inspectors/technicians to provide complete QC inspections and testing.

Ensure the plant manager for QC has at least five years of related experience and the following certifications:

1. ACI Concrete Field Testing Technician Grade I certification.
2. PCI QC Personnel Certification Level III.
3. Certificate of completion of Section 450 Specification examination.

Ensure that the QC inspector/technician has the following certifications:

1. ACI Concrete Field Testing Technician Grade I certification.
2. Certificate of completion of Section 450 Specification examination.

**105-8.8.1 Additional Requirements for Quality Control (QC) Personnel of Prestressed Manufacturing Facilities:**

**105-8.8.1.1 Testing Personnel:** Ensure that testing technicians meet the requirement of 105-8.7.3.

**105-8.8.1.2 Batch Plant Operator:** Ensure that the batch plant operator meets the requirement of 105-8.7.4.

**105-8.9 Pipe and Precast Concrete Products Manufacturing Facilities Quality Control (QC) Personnel:**

**105-8.9.1 General:** Obtain personnel certifications from FDOT accredited training providers. The list of FDOT approved courses and their accredited providers is available on the SMO website at the following URL:

<https://www.fdot.gov/materials/administration/resources/training/structural/index.shtm>.

**105-8.9.2 Precast Concrete Drainage Structures, Precast Concrete Box Culvert, Precast Concrete Pipe, and Incidental Precast Concrete Manufacturing Facilities Quality Control (QC) Personnel:**

**105-8.9.2.1 Level I Quality Control Inspectors:** Ensure that the Level I Inspectors have the following certifications:

**105-8.9.2.1.1 Precast Concrete Drainage Technician Level I:** PCI Quality Control Technician Level I certification. As an alternative, a current Precast Concrete Quality Control Technician Level I certification in the respective work area will be accepted.

**105-8.9.2.1.2 Incidental Precast Concrete Technician Level I:** PCI Quality Control Technician Level I certification. As an alternative, a current Precast Concrete Quality Control Technician Level I certification in the respective work area will be accepted.

**105-8.9.2.1.3 Precast Concrete Pipe Technician Level I:** Precast Concrete Pipe Technician Level I certification.

**105-8.9.2.2 Level II Quality Control Inspectors:** Ensure that Level II Inspectors have the following certifications:

**105-8.9.2.2.1 Precast Concrete Drainage Technician Level II:**

1. Precast Concrete Drainage Technician Level I, in accordance with 105-8.9.2.1.1.
2. PCI Quality Control Technician Level II certification. As an alternative, a current Precast Concrete Quality Control Technician Level II certification in the respective work area will be accepted.
3. CTQP Concrete Field Technician Level 1, if the plant produces structural concrete in accordance with Section 346.

**105-8.9.2.2.2 Incidental Precast Concrete Technician Level II:**

1. Incidental Precast Concrete Technician Level I, in accordance with 105-8.9.2.1.2.
2. PCI Quality Control Technician Level II certification. As an alternative, a current Precast Concrete Quality Control Technician Level II in the respective work area will be accepted.
3. CTQP Concrete Field Technician Level 1.
4. Level II technicians who will perform quality control of incidental prestressed products must have a current certificate of completion of Section 450 Specification examination.

**105-8.9.2.2.3 Precast Concrete Pipe Technician Level II:**

1. Precast Concrete Pipe Technician Level I, in accordance with 105-8.9.2.1.3.
2. Precast Concrete Pipe Technician Certification Level II.

**105-8.9.2.3 Plant Quality Control Manager:** Ensure that the QC manager has a minimum of two years construction related experience in the specific work area and has the following certifications:

**105-8.9.2.3.1 Precast Concrete Drainage Facilities:** Precast Concrete Drainage Technician Level II in accordance with 105-8.9.2.2.1.

**105-8.9.2.3.2 Incidental Precast Concrete Facilities:**

1. Incidental Precast Concrete Technician Level II in accordance with 105-8.9.2.2.2.
2. Section 450 Specification Certification if the plant produces incidental prestressed products.

**105-8.9.2.3.3 Precast Concrete Pipe Facilities:** Precast Concrete Pipe Technician Level II in accordance with 105-8.9.2.2.3.

**105-8.9.2.4 Additional Requirements for Quality Control (QC) Personnel of Precast Concrete Drainage Structures and Box Culverts, Precast Concrete Pipe, and Incidental Precast Concrete Manufacturing Facilities:**

**105-8.9.2.4.1 Testing Personnel:** Ensure testing technicians meet the requirement of 105-8.7.3.

**105-8.9.2.4.2 Batch Plant Operator:** Ensure the batch plant operator meets the requirement of 105-8.7.4.

**105-8.10 Supervisory Personnel – Post-Tensioned and Movable Bridge Structures:**

**105-8.10.1 General:** Provide supervisory personnel meeting the qualification requirements only for the post-tensioned and movable bridge types detailed in this Article. Submit qualifications to the Engineer at the pre-construction conference. Do not begin construction until the qualifications of supervisory personnel have been approved by the Engineer.

**105-8.10.2 Proof of License or Certification:** Submit a copy of the Professional Engineer license current and in force issued by the state in which registration is held. The license must be for the field of engineering that the construction work involves such as Civil, Electrical or Mechanical. Under certain circumstances Florida registration may be required.

Submit a copy of the license issued by the State of Florida for tradesmen that require a license indicating that the license is in force and is current. Submit a copy of the certification issued by the International Society of Automation for each Certified Control Systems Technician.

**105-8.10.3 Experience Record:** Submit the following information for supervisory personnel to substantiate their experience record. The supervisor (project engineer, superintendent/manager or foreman) seeking approval must provide a notarized certification statement attesting to the completeness and accuracy of the information submitted. Submit the following experience information for each individual seeking approval as a supervisor:

Project owner's name and telephone number of an owner's representative, project identification number, state, city, county, highway number and feature intersected.

Detailed descriptions of each bridge construction experience and the level of supervisory authority during that experience. Report the duration in weeks, as well as begin and end dates, for each experience period.

The name, address and telephone number of an individual that can verify that the experience being reported is accurate. This individual should have been an immediate supervisor unless the supervisor cannot be contacted in which case another individual with direct knowledge of the experience is acceptable.

**105-8.10.4 Concrete Post-Tensioned Segmental Box Girder Construction:** Ensure the individuals filling the following positions meet the minimum requirements as follows:

**105-8.10.4.1 Project Engineer-New Construction:** Ensure the project engineer is a registered Professional Engineer with five years of bridge construction experience. Ensure a minimum of three years of experience is in segmental box girder construction engineering

and includes a minimum of one year in segmental casting yard operations and related surveying, one year in segment erection and related surveying, including post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project engineer in responsible charge of segmental box girder construction engineering. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

**105-8.10.4.2 Project Engineer-Repair and Rehabilitation:** Ensure the project engineer is a registered Professional Engineer with five years of bridge construction experience. Ensure a minimum of three years of experience is in segmental box girder construction engineering and includes one year of post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project engineer in responsible charge of segmental box girder rehabilitation engineering or segmental box girder new construction engineering.

**105-8.10.4.3 Project Superintendent/Manager-New Construction:** Ensure the project superintendent/manager has a minimum of ten years of bridge construction experience or is a registered Professional Engineer with five years of bridge construction experience. Ensure that a minimum of three years of experience is in segmental box girder construction operations and includes a minimum of one year in the casting yard operations and related surveying, one year in segment erection and related surveying including post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project superintendent/manager in responsible charge of segmental box girder construction operations. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

**105-8.10.4.4 Project Superintendent/Manager-Repair and Rehabilitation:** Ensure the project superintendent/manager has a minimum of five years of bridge construction experience or is a registered Professional Engineer with three years of bridge construction experience. Ensure that a minimum of two years of experience is in segmental box girder construction operations and includes a minimum of one year of experience performing post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project superintendent/manager in responsible charge of segmental box girder rehabilitation operations or segmental box girder new construction operations.

**105-8.10.4.5 Foreman-New Construction:** Ensure that the foreman has a minimum of five years of bridge construction experience with two years of experience in segmental box girder operations and a minimum of one year as the foreman in responsible charge of segmental box girder new construction operations. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

**105-8.10.4.6 Foreman-Repair and Rehabilitation:** Ensure the foreman has a minimum of five years of bridge construction experience with two years of experience in segmental box girder operations and a minimum of one year as the foreman in responsible charge of segmental box girder rehabilitation operations or segmental box girder new construction operations.

**105-8.10.4.7 Geometry Control Engineer/Manager:** Ensure that the geometry control engineer/manager for construction of cast-in-place box segments is a registered

Professional Engineer with one year of experience, a non-registered Engineer with three years of experience or a registered Professional Land Surveyor with three years of experience in geometry control for casting and erection of cast-in-place box segments. Credit for experience in cast-in-place box girder geometry control will be given for experience in precast box girder geometry control but not vice versa.

Ensure that the geometry control engineer/manager for precast box segments is a registered Professional Engineer with one year of experience or non-registered with three years of experience in casting yard geometry control of concrete box segments.

The geometry control engineer/manager must be responsible for and experienced at implementing the method for establishing and maintaining geometry control for segment casting yard operations and segment erection operations and must be experienced with the use of computer programs for monitoring and adjusting theoretical segment casting curves and geometry. This individual must be experienced at establishing procedures for assuring accurate segment form setup, post-tensioning duct and rebar alignment and effective concrete placement and curing operations as well as for verifying that casting and erection field survey data has been properly gathered and recorded. Ensure this individual is present at the site of construction, at all times while cast-in-place segmental box girder construction is in progress or until casting yard operations and segment erection is complete.

**105-8.10.4.8 Surveyor:** Ensure that the surveyor in charge of geometry control surveying for box segment casting and/or box segment erection has a minimum of one year of bridge construction surveying experience. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

**105-8.10.5 Movable Bridge Construction:** Ensure the individual filling the following positions meet the minimum requirements as follows:

**105-8.10.5.1 Electrical Journeyman:** Ensure the electrical journeyman holds, an active journeyman electrician's license and has at least five years' experience in industrial electrical work, or is a certified control systems technician. A certified control systems technician will not be permitted to perform electrical power work including, but not limited to, conduit and wire-way installation or power conductor connection. Ensure the electrical journeyman has successfully completed the installation of one similar movable bridge electrical system during the last three years.

**105-8.10.5.2 Control Systems Engineer and Mechanical Systems Engineer:** Ensure the control systems engineer and mechanical systems engineer are both registered Professional Engineers with a minimum of 10 years supervisory experience each in movable bridge construction. Ensure the engineers have working knowledge of the movable bridge leaf motion control techniques, mechanical equipment and arrangements specified for this project. Ensure that each engineer has been in responsible control of the design and implementation of at least three movable bridge electrical control and machinery systems within the past 10 years of which, at least one of the three bridges was within the last three years. Ensure that a minimum of one of the three bridge designs incorporated the same type of leaf motion control and machinery systems specified for this project.

**105-8.10.6 Concrete Post-Tensioned Other Than Segmental Box Girder Construction:** Ensure the individual filling the following positions meet the minimum requirements as follows:

**105-8.10.6.1 Project Engineer:** Ensure the project engineer is a registered Professional Engineer with five years of bridge construction experience. Ensure that a minimum of three years of experience is in concrete post-tensioned construction. Ensure that the three years of experience includes experience in girder erection, safe use of cranes, stabilization of girders; design of false work for temporary girder support, post-tensioning and grouting operations, and a minimum of one year as the project engineer in responsible charge of posttensioning related engineering responsibilities.

**105-8.10.6.2 Project Superintendent/Manager:** Ensure the project superintendent/manager has a minimum of ten years of bridge construction experience or is a registered Professional Engineer with five years of bridge construction experience and has a minimum of three years of supervisory experience in girder erection, safe use of cranes, stabilization of girders; design of falsework for temporary girder support post-tensioning, grouting operations and a minimum of one year as the project superintendent/manager in responsible charge of post-tensioning related operations.

**105-8.10.6.3 Foreman:** Ensure the foremen has a minimum of five years of bridge construction experience with two years of experience in post-tensioning related operations and a minimum of one year as the foreman in responsible charge of post-tensioning related operations.

**105-8.10.7 Post-Tensioning (PT) and Filler Injection Personnel Qualifications:** Perform all stressing and filler injection operations in the presence of the Engineer and with personnel meeting the qualifications of this article. Coordinate and schedule all PT and filler injection activities to facilitate inspection by the Engineer.

**105-8.10.7.1 Post-Tensioning:** Perform all PT field operations under the direct supervision of a Level II CTQP Qualified PT Technician who must be present at the site of the post-tensioning work during the entire duration of the operation. For the superstructures of bridges having concrete post-tensioned box or I girder construction, provide at least two CTQP Qualified PT Technicians, Level I or II, on the work crew. The supervisor of the work crew, who must be a Level II CTQP Qualified PT Technician, may also be a work crew member, in which case, the supervisor shall count as one of the two CTQP qualified work crew members. For PT operations other than the superstructures of post-tensioned box or I girder construction, perform all PT operations under the direct supervision of a Level II CTQP Qualified PT Technician who must be present at the site of the PT work during the entire duration of the operation. Work crew members are not required to be CTQP qualified.

**105-8.10.7.2 Grouting:** Perform all grouting field operations under the direct supervision of a Level II CTQP Qualified Grouting Technician who must be present at the site of the grouting work during the entire duration of the operation. For the superstructures of bridges having concrete post-tensioned box or I girder construction, provide at least two CTQP Qualified Grouting Technicians, Level I or II, on the work crew. The supervisor of the work crew, who must be a Level II CTQP Qualified Grouting Technician, may also be a work crew member, in which case, the supervisor shall count as one of two CTQP qualified work crew members. For grouting operations other than the superstructures of post-tensioned

box or I girder construction, perform all grouting operations under the direct supervision of a Level II CTQP Qualified Grouting Technician who must be present at the site of the grouting work during the entire duration of the operation. Work crew members are not required to be CTQP qualified.

Perform all vacuum grouting operations under the direct supervision of a crew foreman who has been trained and has experience in the use of vacuum grouting equipment and procedures. Submit the crew foreman's training and experience records to the Engineer for approval prior to performing any vacuum grouting operation.

**105-8.10.7.3 Flexible Filler Injection:** Perform all filler injection operations under the direct supervision of a filler injection foreman who has American Segmental Bridge Institute (ASBI) certification in the flexible filler process. Provide at least two CTQP Qualified Grouting Technicians with ASBI certification in the flexible filler process, one of whom must be a Level II CTQP Qualified Grouting Technician. Both technicians must be present at the site of the flexible filler injection work during the entire duration of the operation.

Provide a filler injection quality control (QC) inspector who has ASBI certification in the flexible filler process. The filler injection QC inspector must be present at the site of the flexible filler injection work during the entire duration of the operation.

Verifiable experience performing injection of similar flexible filler on at least two projects is acceptable in lieu of ASBI certification in the flexible filler process.

Perform all flexible filler repair operations under the direct supervision of a crew foreman who has been trained and has verifiable experience in the use of vacuum flexible filler repair equipment and procedures. Submit the crew foreman's training and experience records to the Engineer prior to performing any flexible filler operation.

**105-8.10.8 Failure to Comply with Bridge Qualification Requirements:** Make an immediate effort to reestablish compliance. If an immediate effort is not put forth as determined by the Engineer, payment for the bridge construction operations requiring supervisors to be qualified under this Specification will be withheld up to 60 days. Cease all bridge construction and related activities (casting yard, etc.) if compliance is not met within 60 days, regardless of how much effort is put forth. Resume bridge construction operations only after written approval from the Engineer stating that compliance is reestablished.

**105-8.11 Signal Installation Inspector:** Provide an inspector trained and certified by the International Municipal Signal Association (IMSA) as a traffic signal inspector to perform all signal installation inspections. Ensure all equipment, materials, and hardware is in compliance with Owner Specifications and verify that all equipment requiring certification is listed on the FDOT's Approved Product List (APL). Submit the completed signal inspection report forms, certified by the IMSA traffic signal inspector to the Engineer. The FDOT's approved inspection report forms are available at the following URL: <http://www.fdot.gov/traffic/>.

**105-8.12 Structural Steel and Miscellaneous Metals Fabrication Facility Quality Control Personnel:** Ensure each fabrication facility has an onsite production manager, an onsite facility manager for QC, a plant engineer, and onsite QC inspectors/technicians to provide complete QC inspections and testing.

Ensure that the facility manager for QC and QC inspectors/technicians meet the certification requirements set forth in the latest version of AASHTO/NSBA Steel Bridge Collaboration S 4.1, Steel Bridge Fabrication QC/QA Guide Specification, including the years of experience required in Table 105-1 below. The facility manager for QC must meet the requirements of Table 105-1 for every structural steel member type produced by a plant with QC being managed by the facility manager for QC. The facility manager for QC will report directly to the plant manager or plant engineer and must not be the plant production manager nor report to or be the subordinate of the plant production manager. QC inspectors/technicians must be the employees of, and must report directly to the facility manager for QC. Perform preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, and sanitary and other facilities.

| TABLE 105-1<br>Experience Requirements for QC Inspectors/Technicians and Facility Manager for Quality Control |                                      |                         |
|---|--------------------------------------|-------------------------|
| Structural Steel Member Type  | Minimum Years of Experience Required |                         |
|   | QC Inspector/Technician              | Facility Manager for QC |
| Rolled beam bridges   | 1 year                               | 3 years                 |
| Welded plate girders (I sections, box sections, etc.)   | 2 years                              | 4 years                 |
| Complex structures, such as trusses, arches, cable stayed bridges, and moveable bridges                       | 3 years                              | 5 years                 |
| Fracture critical (FC) members  | 3 years                              | 5 years                 |

**END OF SECTION 105**



## SECTION 110

### CLEARING AND GRUBBING

#### 110-1 Description.

Clear and grub within the areas shown in the Plans. Remove and dispose of all trees, stumps, roots and other such protruding objects, buildings, structures, appurtenances, existing flexible asphalt pavement, and other facilities necessary to prepare the area for the proposed construction. Remove and dispose of all product and debris not required to be salvaged or not required to complete the construction.

Perform miscellaneous work necessary for the complete preparation of the overall project site as specified in 110-10.

#### 110-2 Standard Clearing and Grubbing.

**110-2.1 Work Included:** Completely remove and dispose of all buildings, timber, brush, trees, stumps, roots, rubbish, debris, existing flexible pavement and base, drainage structures, culverts, and pipes. Remove all other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas.

Perform standard clearing and grubbing within the following areas:

1. All areas where excavation is to be done, including borrow pits, lateral ditches, right-of-way ditches, etc.
2. All areas where roadway embankments will be constructed.
3. All areas where structures will be constructed, including pipe culverts and other pipe lines.

**110-2.2 Depths of Removal of Roots, Stumps, and Other Debris:** In all areas where excavation is to be performed, or roadway embankments are to be constructed, remove roots and other debris to a depth of 12 inches below the ground surface. Remove roots and other debris from all excavated material to be used in the construction of roadway embankment or roadway base. Plow the surface to a depth of at least 6 inches, and remove all roots thereby exposed to a depth of at least 12 inches. Completely remove and dispose of all stumps within the roadway right-of-way.

Remove all roots, etc., protruding through or appearing on the surface of the completed excavation within the roadway area and for structures, to a depth of at least 12 inches below the finished excavation surface.

Remove or cut off all stumps, roots, etc., below the surface of the completed excavation in borrow pits, material pits, and lateral ditches.

In borrow and material pits, do not perform any clearing or grubbing within 3 feet inside the right-of-way line.

Within all other areas where standard clearing and grubbing is to be performed, remove roots and other debris projecting through or appearing on the surface of the original ground to a depth of 12 inches below the surface, but do not plow or harrow these areas.

**110-2.3 Boulders:** Remove any boulders encountered in the roadway excavation (other than as permitted under the provisions of 120-7.2) or found on the surface of the ground. When approved by the Engineer place boulders in neat piles inside the right of way. The Contractor may stockpile boulders encountered in Department-furnished borrow areas, which are not suitable for use in the embankment construction, within the borrow area.

**110-2.4 Asbestos Containing Materials (ACM) Not Identified Prior to the Work:** When encountering or exposing any condition indicating the presence of asbestos, cease operations immediately in the vicinity and notify the Engineer, in accordance with 110-6.5.

### **110-3 Selective Clearing and Grubbing.**

**110-3.1 General:** Remove and dispose of vegetation, obstructions, etc., as shown in the Plans. Provide acceptable fill material, and grade and compact holes or voids created by the removal of the stumps. Perform all selective clearing and grubbing in accordance with ANSI A300.

No staging, storing, stockpiling, parking or dumping will be allowed in selective clearing and grubbing areas. Only mechanical equipment related to selective clearing and grubbing activities will be allowed in selective clearing and grubbing areas. Protect trees to remain from trunk, branch and root damage.

**110-3.2 Trees to Remain:** Protect trees as shown in the Plans or directed by the Engineer.

At the driplines of areas designated as trees to remain, construct a tree protection barrier in accordance with Standard Plans, Index 110-100.

When pruning cuts or root pruning to existing trees is shown in the Plans, work is to be supervised on site by an International Society of Arboriculture (ISA) Certified Arborist performed in accordance with ANSI A300.

**110-3.3 Protection of Plant Preservation Areas:** Areas to remain natural may be designated in the Plans. Protect these areas with a tree protection barrier in accordance with Standard Plans, Index 110-100. No clearing and grubbing, staging, storage, stockpiling, parking or dumping is allowed in these areas. Do not bring equipment into these areas.

### **110-4 Protection of Property Remaining in Place.**

Protect property to remain in place in accordance with 7-11.

### **110-5 Removal of Buildings.**

**110-5.1 Parts to be Removed:** Completely remove all parts of the buildings, including utilities, plumbing, foundations, floors, basements, steps, connecting concrete sidewalks or other pavement, septic tanks, and any other appurtenances, by any practical manner which is not detrimental to other property and improvements.

Remove utilities to the point of connection to the utility authority's cut-in. After removing the sewer connections to the point of cut-in, construct a concrete plug at the cut-in point, as directed by the Engineer, except where the utility owners may elect to perform their own plugging. Contact the appropriate utility companies prior to removal of any part of the building to ensure disconnection of services.

Submit demolition schedule 15 working days before beginning any demolition or renovation of a building.

**110-5.2 Removal by Others:** Where buildings within the area to be cleared and grubbed are so specified to be removed by others, remove and dispose of any foundations, curtain walls, concrete floors, basements or other foundation parts which might be left in place after such removal of buildings by others.

#### **110-6 Removal of Existing Bridges.**

**110-6.1 General:** The work under this Article includes bridges, as defined in 1-3.

Remove and dispose of the materials from existing bridges. Remove

1. those bridges and approach slabs, or portions of bridges, shown in the Plans to be removed,
2. those bridges and approach slabs, or portions of bridges, found within the limits of the area to be cleared and grubbed, and directed by the Engineer to be removed,
3. those bridges and approach slabs, or portion of bridges, which are necessary to be removed in order to complete the work, and
4. other appurtenances or obstructions which may be designated in the Contract Documents to be included as an item of payment for the work under this Article.

Submit schedule information and demolition plan for approval 15 working days before beginning any demolition or renovation of any structures.

#### **110-6.2 Method of Removal:**

**110-6.2.1 General:** Remove the structures in such a way so as to leave no obstructions to any proposed new bridge or to any waterways. Pull, cut off, or break off pilings to the requirements of the permit or other Contract Documents, or if not specified, not less than 2 feet below the finish ground line. In the event that the Plans indicate channel excavation to be done by others, consider the finish ground line as the limits of such excavation. For materials which are to remain the property of the Department or are to be salvaged for use in temporary bridges, avoid damage to such materials, and entirely remove all bolts, nails, etc. from timbers to be so salvaged. Mark structural steel members for identification as directed.

**110-6.2.2 Removal of Steel Members with Hazardous Coatings:** Submit to the Engineer for approval the "Contractor's Lead in Construction Compliance Program", QP2 certification from the Society for Protective Coatings (SSPC) from the firm actually removing and disposing of these steel members before any members are disturbed.

Vacuum power tool clean any coated steel member to bare metal as defined by SSPC-SP11 a minimum of 4 inches either side of any area to be heated (e.g. torch cutting, sawing, grinding, etc.) in accordance with 29 CFR 1926.354. Abrasive blasting is prohibited.

**110-6.3 Partial Removal of Bridges:** On concrete bridges to be partially removed and widened, remove concrete by manually or mechanically operated pavement breakers, by concrete saws, by chipping hammers, or by hydro-demolition methods. Do not use explosives. Where concrete is to be removed

to neat lines, use concrete saws or hydro-demolition methods capable of providing a reasonably uniform cleavage face. If the equipment used will not provide a uniform cut without surface spalling, first score the outlines of the work with small trenches or grooves. For all demolition methods, submit for review and approval of the Engineer, a demolition plan that describes the method of removal, equipment to be used, types of rebar splices or couplers, and method of straightening or cutting rebar. In addition, for hydrodemolition, describe the method for control of water or slurry runoff and measures for safe containment of concrete fragments that are thrown out by the hydro-demolition machine.

**110-6.4 Authority of U.S. Coast Guard:** For bridges in navigable waters, when constructing the project under authority of a U.S. Coast Guard permit, the U.S. Coast Guard may inspect and approve the work to remove any existing bridges involved therein, prior to acceptance by the Department.

**110-6.5 Asbestos Containing Materials (ACM) Not Identified Prior to the Work:** When encountering or exposing any condition indicating the presence of asbestos, cease operations immediately in the vicinity and notify the Engineer.

Make every effort to minimize the disturbance of the ACM. Immediately provide provisions for the health and safety of all jobsite personnel and the public that may be exposed to any ACM. Provisions shall meet all applicable Federal, State, and Local Rules and Regulations regarding potentially hazardous conditions due to ACM.

The Engineer will notify the District Contamination Impact Coordinator (DCIC) who will engage the services of the Department's Contamination Assessment/Remediation Contractor (CAR). Provide access to the potential contamination area. Preliminary investigation by the CAR Contractor will determine the course of action necessary for site security and the steps necessary to resolve the contamination issue.

The CAR Contractor will perform an asbestos survey to delineate the asbestos areas, and identify any staging or holding areas that will be needed for assessment or abatement of the asbestos material. The CAR Contractor will maintain jurisdiction over activities within areas contaminated with ACM including staging and holding areas.

The CAR Contractor will be responsible for the health and safety of workers within these delineated areas. Provide continuous access to these areas for the CAR Contractor and representatives of regulatory or enforcement agencies having jurisdiction.

Coordinate with the CAR Contractor and Engineer to develop a work plan with projected completion dates for the final resolution of the contamination, in coordination with any regulatory agencies as appropriate. Use the work plan and schedule as a basis for planning the completion of all work efforts. The Engineer may grant Contract Time extensions according to the provisions of 8-7.3.2.

Cooperate with the CAR Contractor to expedite integration of the CAR Contractor's operations into the construction project. Adjustments to quantities or to Contract unit prices will be made according to work additions or reductions on the part of the Prime Contractor in accordance with 4-3.

The Engineer will inform the Prime Contractor when operations may resume in the affected area.

**110-7 Removal of Existing Concrete.**

Remove and dispose of existing rigid portland cement concrete pavement, sidewalk, slope pavement, ditch pavement, curb, and curb and gutter, etc., where shown in the Plans.

Remove all gravity walls, noise/sound walls, retaining walls, MSE walls, perimeter walls, and roadway concrete barriers, where shown in the Plans. All ancillary elements of these concrete features being removed including, but not limited to, leveling pads, copings, reinforcing steel or straps, footings, etc, are incidental and included in the cost of the removal.

**110-8 Ownership of Materials.**

Except as may be otherwise specified in the Contract Documents, take ownership of all buildings, structures, appurtenances, and other materials removed and dispose of them in accordance with 110-9.

**110-9 Disposal of Materials.**

**110-9.1 General:** Either stack materials designated to remain the property of the Department in neat piles within the right-of-way, load onto the Department's vehicles, or deliver to location designated in the Plans.

Dispose of timber, stumps, brush, roots, rubbish, and other material resulting from clearing and grubbing in areas and by methods meeting the applicable requirements of all Federal, State and Local Rules and Regulations. Do not block waterways by the disposal of debris.

With the approval of the Engineer, wood chips may be evenly distributed to a depth of no more than one inch in designated areas in the Department's right-of-way.

**110-9.2 Burning Debris:** Where burning of such materials is permitted, perform all such burning in accordance with the applicable Federal, State and Local rules and regulations. Perform all burning at locations where trees and shrubs adjacent to the cleared area will not be harmed.

**110-9.3 Timber and Crops:** The Contractor may sell any merchantable timber, fruit trees, and crops that are cleared under the operations of clearing and grubbing for his own benefit, subject to the provisions of 7-1.2, which may require that the timber, fruit trees, or crops be burned at or near the site of their removal, as directed by the Engineer. The Contractor is liable for any claims which may arise pursuant to the provisions of this Subarticle.

**110-9.4 Disposal of Treated Wood:** Treated wood must be handled and disposed of properly during removal. Treated wood should not be cut or otherwise mechanically altered in a manner that would generate dust or particles without proper respiratory and dermal protection. The treated wood must be disposed of in at least a lined solid waste facility or through recycling/reuse. Treated wood shall not be disposed by burning or placement in a construction and demolition (C&D) debris landfill.

**110-9.5 Hazardous Materials/Waste:** Handle, transport, and dispose of hazardous materials/waste in accordance with all Federal, State, and Local Rules and Regulations including, but not limited to, the following:

1. SSPC Guide 7
2. Federal Water Pollution Control Act, and
3. Resource Conservation and Recover Act (RCRA).

Accept responsibility for the collection, sampling, classification, packaging, labeling, accumulation time, storage, manifesting, transportation, treatment and disposal of hazardous materials/waste, both solid and liquid. Separate all solid and liquid waste and collect all liquids used at hygiene stations and handle as hazardous materials/waste. Obtain written approval from the Engineer for all hazardous materials/waste stabilization methods before implementation.

Obtain an EPA/FDEP Hazardous Waste Identification Number (EPA/FDEP ID Number) before transporting and/or disposal of any hazardous materials/waste.

List the Department as the generator for hazardous materials/waste resulting from removal or demolition of Department materials.

Submit the following for the Engineers' approval before transporting, treatment or disposal of any hazardous materials/waste:

1. Name, address and qualifications of the transporter,
2. Name, address and qualifications of the treatment facility,
3. Proposed treatment and/or disposal of all Hazardous Materials/Waste.
4. EPA/FDEP Hazardous Waste Identification Number Application Form.
5. Manifest forms.

Transport all hazardous materials/waste in accordance with applicable Federal, State, and Local Rules and Regulations including, but not limited to, the 40 CFR 263 Standards. Submit all final Hazardous Materials/Waste manifest/bills of lading and certificates of disposal to the Engineer within 21 days of each shipment.

**110-9.5.1 Steel Members with Hazardous Coating:** Dispose of steel members with hazardous coating in one of the following manners:

1. Deliver the steel members and other hazardous waste to a licensed recycling or treatment facility capable of processing steel members with hazardous coating.
2. Deliver the steel members with hazardous coating to a site designated by the Engineer for use as an offshore artificial reef. Deliver any other hazardous materials/waste to a licensed hazardous materials/waste recycling treatment facility.

Dismantle and/or cut steel members to meet the required dimensions of the recycling facility, treatment facility or offshore artificial reef agency.

All compensation for the cost of removal and disposal of hazardous materials/waste will be included in the Cost of Removal of Existing Structures.

**110-9.5.2 Certification of Compliance:** Submit certification of Compliance from the firm actually removing and disposing of the hazardous materials/waste stipulating, the hazardous materials/waste has been handled, transported and disposed of in accordance with this

Specification. The Certification of Compliance shall be attested to by a person having legal authority to bind the company.

Maintain all records required by this Specification and ensure these records are available to the Department upon request.

#### **110-10 Miscellaneous Operations.**

**110-10.1 Water Wells Required to be Plugged:** Fill or plug all water wells within the right-of-way, including areas of borrow pits and lateral ditches, that are not to remain in service, in accordance with applicable Federal, State, and Local Rules and Regulations.

Cut off the casing of cased wells at least 12 inches below the ground line or 12 inches below the elevation of the finished excavation surface, whichever is lower. Water wells, as referred to herein, are defined either as artesian or non-artesian, as follows:

1. An artesian well is an artificial hole in the ground from which water supplies may be obtained and which penetrates any water-bearing rock, the water in which is raised to the surface by natural flow or which rises to an elevation above the top of the waterbearing bed. Artesian wells are further defined to include all holes drilled as a source of water that penetrate any water-bearing beds that are a part of the artesian water system of Florida, as determined by representatives of the applicable Water Management District.
2. A non-artesian (water-table) well is a well in which the source of water is an unconfined aquifer. The water in a non-artesian well does not rise above the source bed.

**110-10.2 Leveling Terrain:** Within the areas between the limits of construction and the outer limits of clearing and grubbing, fill all holes and other depressions, and cut down all mounds and ridges. Make the area of a sufficient uniform contour so that the Department's subsequent mowing and cutting operations are not hindered by irregularity of terrain. Perform this work regardless of whether the irregularities were the result of construction operations or existed originally.

**110-10.3 Mailboxes:** When the Contract Documents require furnishing and installing mailboxes, permit each owner to remove the existing mailbox. Work with the Local Postmaster to develop a method of temporary mail service for the period between removal and installation of the new mailboxes. Install the mailboxes in accordance with the Standard Plans.

#### **110-11 Method of Measurement.**

**110-11.1 Clearing and Grubbing (Miscellaneous Demolition):** The quantity to be paid for will be the lump sum quantity.

**110-11.2 1" Asphalt Milling:** The quantity to be paid for will be the plan quantity, in square yards designated for asphalt milling.

**110-11.3 Selective Clearing and Grubbing:** The quantity to be paid will be the plan quantity area in acres designated for selective clearing and grubbing.

**110-11.4 Removal of Existing Bridges:** The quantity to be paid for will be the lump sum quantity or quantities for the specific structures, or portions of structures to be removed.

**110-11.5 Removal of Existing Concrete:** The quantity to be paid for will be the number of square yards of existing concrete elements, acceptably removed and disposed of, as specified. The quantity will be determined by actual measurement along the surface of the element before its removal. Measurements for appurtenances which have irregular surface configurations, such as curb and gutter, steps, and ditch pavement, will be the area as projected to an approximate horizontal plane. Where the removal of pavement areas is necessary only for the construction of box culverts, pipe culverts, storm sewers, inlets, manholes, etc., these areas will not be included in the measurements. Area measurements for walls will be based on exposed vertical face measurements times the horizontal length of the wall.

**110-11.6 Plugging Water Wells:** The quantity to be paid for will be the number of water wells plugged, for each type of well (artesian or non-artesian).

**110-11.7 Mailboxes:** The quantity to be paid for will be the number of mailboxes acceptably furnished and installed.

**110-11.8 Delivery of Salvageable Material to the Department** The quantity to be paid for will be the Lump Sum quantity for delivery of salvageable materials to the Department, as indicated in the Plans.

**110-11.9 General:** In each case, except as provided below, where no item of separate payment for such work is included in the proposal, all costs of such work will be included in the various scheduled items in the Contract, or under specific items as specified herein below or elsewhere in the Contract.

## **110-12 Basis of Payment.**

### **110-12.1 Clearing and Grubbing (Miscellaneous Demolition):**

**110-12.1.1 Lump Sum Payment:** Price and payment will be full compensation for all clearing and grubbing required for the roadway right-of-way and for lateral ditches, channel changes, or other outfall areas, and any other clearing and grubbing indicated, or required for the construction of the entire project, including all necessary hauling, furnishing equipment, equipment operation, furnishing any areas required for disposal of debris, leveling of terrain and the landscaping work of trimming, etc.

Where construction easements are specified in the Plans and the limits of clearing and grubbing for such easements are dependent upon the final construction requirements, no adjustment will be made in the lump sum price and payment, either over or under, for variations from the limits of the easement defined in the Plans.

**110-12.1.2 When No Direct Payment is Provided:** When no item for clearing and grubbing is included in the proposal, the Contractor shall include the cost of any work of clearing and grubbing which is necessary for the proper construction of the project in the Contract price for the structure or other item of work for which such clearing and grubbing is required. The Contractor shall include the cost of all clearing and grubbing which might be necessary in pits or areas from which base material is obtained in the Contract price for the base in which such material is used. The clearing and grubbing of areas for obtaining stabilizing materials, where required only for the purpose of obtaining materials for stabilizing, will not be paid for separately.



**110-12.2 1" Asphalt Milling:** Price and payment will be full compensation for all asphalt milling, including all necessary milling, removal, hauling, furnishing equipment, equipment operation, tools, labor, and incidentals needed to complete the work.

**110-12.3 Selective Clearing and Grubbing:** Price and payment will be full compensation for all selective clearing and grubbing, including all necessary hauling, furnishing equipment, Certified Arborist, equipment operation, furnishing any areas required for disposal of debris, leveling of terrain, root pruning and tree protection.

**110-12.4 Removal of Existing Bridges:** Price and payment will be full compensation for all work of removal and disposal of the designated bridges.

When direct payment for the removal of existing bridges is not provided in the proposal, the Contractor shall include the cost of removing all bridges in the Contract price for clearing and grubbing or, if no item of clearing and grubbing is included, in the compensation for the other items covering the new bridge being constructed.

**110-12.5 Removal of Existing Concrete:** Price and payment will be full compensation for performing and completing all the work of removal and satisfactory disposal.

When no separate item for this work is provided and no applicable item of excavation or embankment covering such work (as provided in 120-13.1) is included, the Contractor shall include the costs of this work in the Contract price for the item of clearing and grubbing or for the pipe or other structure for which the concrete removal is required.

**110-12.6 Plugging Water Wells:** Price and payment will be full compensation for each type of well acceptably plugged.

If a water well requiring plugging is encountered and the Contract contains no price for plugging wells of that specific type, the plugging of such well will be paid for as unforeseeable work.

**110-12.7 Mailboxes:** Price and payment will be full compensation for all work and materials required, including supports and numbers.

**110-12.8 Delivery of Salvageable Material to the Department:** Price and payment will be full compensation for all work required for delivery of the materials to the Department.

**110-12.9 Payment Items:** Payment will be made under:

|                       |  |                           |
|-----------------------|--|---------------------------|
| <b>Item No. 110-1</b> | <b>Stripping and Stockpiling – Bid Alt 1</b> | <b>-per Lump Sum (LS)</b> |
| <b>Item No. 110-2</b> | <b>Admin Lot Demo</b>                        | <b>-per Lump Sum (LS)</b> |
| <b>Item No. 110-3</b> | <b>Stripping and Stockpiling – Bid Alt 2</b> | <b>-per Lump Sum (LS)</b> |
| <b>Item No. 110-4</b> | <b>Miscellaneous Demolition – Bid Alt 2</b>  | <b>-per Lump Sum (LS)</b> |

**END OF SECTION 110**

## SECTION 120

### EXCAVATION AND EMBANKMENT

#### 120-1 120-1 Description.

**120-1.1 General:** Excavate and construct embankments as required for the roadway, ditches, channel changes and borrow material. Use suitable excavated material or authorized borrow to prepare subgrades and foundations. Construct embankments in accordance with Standard Plans, Index 120-001. Compact and dress excavated areas and embankments.

Meet the requirements of Section 110 for excavation of material for clearing and grubbing and Section 125 for excavation and backfilling of structures and pipe. Material displaced by the storm sewer or drainage structure system is not included in the earthwork quantities shown in the Plans.

**120-1.2 Unidentified Areas of Contamination:** When encountering or exposing any abnormal condition indicating the presence of contaminated materials, cease operations immediately in the vicinity and notify the Engineer. The presence of tanks or barrels; discolored earth, metal, wood, ground water, etc.; visible fumes; abnormal odors; excessively hot earth; smoke; or other conditions that appear abnormal may indicate the presence of contaminated materials and must be treated with extreme caution.

Make every effort to minimize the spread of contamination into uncontaminated areas. Immediately provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions. Ensure provisions adhere to all applicable laws, rules or regulations covering potentially hazardous conditions and will be in a manner commensurate with the gravity of the conditions.

The Engineer may grant the Contract Time extensions according to the provisions of 8-7.3.2.

The Engineer will direct the Prime Contractor when operations may resume in the affected area.

#### 120-2 Classifications of Excavation.

**120-2.1 General:** The Owner may classify excavation specified under this Section for payment as any of the following: regular excavation, subsoil excavation, lateral ditch excavation, and channel excavation.

If the proposal does not show subsoil excavation or lateral ditch excavation as separate items of payment, include such excavation under the item of regular excavation.

If the proposal shows lateral ditch excavation as a separate item of payment, but does not show channel excavation as a separate item of payment, include such excavation under the item of lateral ditch excavation. Otherwise, include channel excavation under the item of regular excavation.

**120-2.2 Regular Excavation:** Regular excavation includes roadway excavation and borrow excavation, as defined below for each.

**120-2.2.1 Roadway Excavation:** Roadway excavation consists of the excavation and the utilization or disposal of all materials necessary for the construction of the roadway, ditches,

channel changes, etc., except as may be specifically shown to be paid for separately and that portion of the lateral ditches within the limits of the roadway right-of-way as shown in the Plans.

**120-2.2.2 Borrow Excavation:** Borrow excavation consists of the excavation and utilization of material from authorized borrow pits, including only material that is suitable for the construction of roadway embankments or of other embankments covered by the Contract.

A Cost Savings Initiative Proposal (CSIP) submittal based on using borrow material from within the project limits will not be considered.

**120-2.3 Subsoil Excavation:** Subsoil excavation consists of the excavation and disposal of muck, clay, rock, or any other material that is unsuitable in its original position and that is excavated below the finished grading template. For stabilized bases and sand bituminous road mixes, consider the finished grading template as the top of the finished base, shoulders and slopes. For all other bases and rigid pavement, consider the finished grading template as the finished shoulder and slope lines and bottom of completed base or rigid pavement. For pond and ditches that identify the placement of a blanket material, consider the finished grading template as the bottom of the blanket material. Subsoil excavation also consists of the excavation of all suitable material within the above limits as necessary to excavate the unsuitable material. Consider the limits of subsoil excavation indicated in the Plans as being particularly variable, in accordance with the field conditions actually encountered.

The quantity of material required to replace the excavated material and to raise the elevation of the roadway to the bottom of the template will be paid for under embankment or borrow excavation (Truck Measure).

**120-2.4 Lateral Ditch Excavation:** Lateral ditch excavation consists of all excavation of inlet and outlet ditches to structures and roadway, changes in channels of streams, and ditches parallel to the roadway right-of-way. Dress lateral ditches to the grade and cross-section shown in the Plans.

**120-2.5 Channel Excavation:** Channel excavation consists of the excavation and satisfactory disposal of all materials from the limits of the channel as shown in the Plans.

### **120-3 Preliminary Soils Investigations.**

When the Plans contain the results of a soil survey, do not assume such data is a guarantee of the depth, extent, or character of material present.

### **120-4 Removal of Unsuitable Materials and Existing Roads.**

**120-4.1 Subsoil Excavation:** Where muck, rock, clay, or other material within the limits of the roadway is unsuitable in its original position, excavate such material to the cross-sections shown in the Plans or indicated by the Engineer, and backfill with suitable material. Shape backfill material to the required cross-sections. Where the removal of plastic soils below the finished earthwork grade is required, meet a construction tolerance, from the lines shown in the Plans as the removal limits, of plus or minus 0.2 feet in depth and plus or minus 6 inches (each side) in width.

**120-4.2 Construction over Existing Old Road:** Where a new roadway is to be constructed over an old one, plow or scarify the old road, and break it up full width, regardless of height of fill. If the Plans provide that paving materials may be incorporated into the fill, distribute such material in a manner so as not to create voids. Recompact the old road meeting the requirements of 120-10.2.

**120-4.3 Obliterating Old Road:** Where the Plans call for obliteration of portions of an old road outside of the proposed new roadway, obliterate such sections of the old road by grading to fill ditches and to restore approximately the original contour of the ground or a contour which produces a pleasing appearance.

**120-5 Disposal of Surplus and Unsuitable Material.**

**120-5.1 Ownership of Excavated Materials:** Dispose of surplus and excavated materials as shown in the Plans or, if the Plans do not indicate the method of disposal, take ownership of the materials and dispose of them outside the right-of-way.

**120-5.2 Disposal of Muck on Side Slopes:** As an exception to the provisions of 120-5. 1, when approved by the Engineer, in rural undeveloped areas, the Contractor may place muck (A-8 material) on the slopes, or store it alongside the roadway, provided there is a clear distance of at least 6 feet between the roadway grading limits and the muck, and the Contractor dresses the muck to present a neat appearance. In addition, the Contractor may also dispose of this material by placing it on the slopes in developed areas where, in the opinion of the Engineer, this will result in an aesthetically pleasing appearance and will have no detrimental effect on the adjacent developments. Where the Engineer permits the disposal of muck or other unsuitable material inside the right-of-way limits, do not place such material in a manner which will impede the inflow or outfall of any channel or side ditches. The Engineer will determine the limits adjacent to channels within which such materials may be disposed.

**120-5.3 Disposal of Paving Materials:** Unless otherwise noted, take ownership of paving materials, such as paving brick, asphalt block, concrete slab, sidewalk, curb and gutter, etc., excavated in the removal of existing pavements, and dispose of them outside the right-ofway. If the materials are to remain the property of the Owner, place them in neat piles as directed. Existing limerock base that is removed may be incorporated in the stabilized portion of the subgrade. If the construction sequence will allow, incorporate all existing limerock base into the project as allowed by the Contract Documents.

**120-5.4 Disposal Areas:** Where the Contract Documents require disposal of excavated materials outside the right-of-way, and the disposal area is not indicated in the Contract Documents, furnish the disposal area without additional compensation. Provide areas for disposal of removed paving materials out of sight of the project and at least 300 feet from the nearest roadway right-of-way line of any State maintained road. If the materials are buried, disregard the 300 foot limitation.

**120-6 Borrow.**

**120-6.1 Materials for Borrow:** Do not open borrow pits until the Engineer has approved their location.

Do not provide borrow materials that are polluted as defined in Chapter 376 of the Florida Statutes (oil of any kind and in any form, gasoline, pesticides, ammonia, chlorine, and derivatives thereof, excluding liquefied petroleum gas) in concentrations above any local, State, or Federal standards.

Prior to placing any borrow material that is the product of soil incineration, provide the Engineer with a copy of the Certificate of Materials Recycling and Post Burn Analysis showing that the material is below all allowable pollutant concentrations.

**120-6.2 Furnishing of Borrow Areas:** To obtain the Engineer's approval to use an offsite construction activity area that involves excavation such as a borrow pit or local aggregate pit, request in writing, a review for -cultural resources involvement. Send the request to the Division of Historical Resources (DHR), Department of State, State Historic Preservation Officer, Tallahassee, FL. As a minimum, include in the request the Project Identification Number, the County, a description of the property with Township, Range, Section, etc., the dimensions of the area to be affected, and a location map. Do not start any work at the off-site construction activity area prior to receiving clearance from the DHR that no additional research is warranted.

For certain locations, the DHR will require a Cultural Resources Assessment (CRA) Survey before approval can be granted. When this is required, secure professional archaeological services to complete an historical and archaeological survey report. Submit the report to the DHR and to the Owner. The Engineer will determine final approval or rejection of off-site construction activity areas based on input from the DHR.

Before receiving approval or before use of borrow areas, obtain written clearance from the Engineer concerning compliance with the Federal Endangered Species Act and other Wildlife Regulations as specified in 7-1.4 and Section 4(f) of the USDOT Act as specified in 71.8.

The Owner will adjust Contract Time in accordance with 8-7 for any suspension of operations required to comply with this Article. The Owner will not accept any monetary claims due to delays or loss of off-site construction activity areas.

Except where the Plans specifically call for the use of a particular borrow or dredging area, the Contractor may substitute borrow or dredging areas of his own choosing provided the Engineer determines the materials from such areas meet the Owner's standards and other requirements for stability for use in the particular sections of the work in which it is to be placed, and the Contractor absorbs any increase in hauling or other costs. Stake the corners of the proposed borrow area and provide the necessary equipment along with an operator in order for the Engineer to investigate the borrow area. The Engineer will determine test locations, collect samples, and perform tests to investigate the proposed borrow area based on soil strata and required soil properties. The Engineer will approve use of materials from the proposed area based on test results and project requirements. Final acceptance of materials will be based on Point of Use Test as described in 6-1.2.4.

Before using any borrow material from any substitute areas, obtain the Engineer's approval, in writing, for the use of the particular areas, and, where applicable, ensure that the Engineer has cross-sectioned the surface. Upon such written approval by the Engineer, consider the substitute areas as designated borrow areas.

When furnishing the dredging or borrow areas, supply the Owner with evidence that the necessary permits, rights, or waivers for the use of such areas have been secured.

Do not excavate any part of a Contractor furnished borrow area which is less than 300 feet from the right-of-way of the project or any State Road until the Engineer has approved a plan for landscaping and restoring the disturbed area. Perform this landscaping and land restoration at no expense to the Owner, prior to final acceptance of the project. Do not provide a borrow area closer than 25 feet to the right-of-way of any state road. In Owner furnished borrow pits, do not excavate material within 5 feet of adjacent property lines.

Upon completion of excavation, neatly shape, dress, grass, vegetate, landscape, and drain all exposed areas including haul roads, as necessary so as not to present an objectionable appearance.

Meet the requirements of Section 104 when furnishing borrow areas, regardless of location.

**120-6.3 Borrow Material for Shoulder Build-up:** When so indicated in the Plans, furnish borrow material with a specific minimum bearing value, for building up of existing shoulders. Blend materials as necessary to achieve this specified minimum bearing value prior to placing the materials on the shoulders. Take samples of this borrow material at the pit or blended stockpile. Include all costs of providing a material with the required bearing value in the Contract unit price for borrow material.

**120-6.4 Haul Routes for Borrow Pits:** Provide and maintain, at no expense to the Owner, all necessary roads for hauling the borrow material. Where borrow area haul roads or trails are used by others, do not cause such roads or trails to deteriorate in condition.

Arrange for the use of all non-public haul routes crossing the property of any railroad. Incur any expense for the use of such haul routes. Establish haul routes which will direct construction vehicles away from developed areas when feasible, and keep noise from hauling operations to a minimum. Advise the Engineer in writing of all proposed haul routes.

**120-6.5 Authorization for Use of Borrow:** When the item of borrow excavation is included in the Contract, use borrow only when sufficient quantities of suitable material are not available from roadway and drainage excavation, to properly construct the embankment, subgrade, and shoulders, and to complete the backfilling of structures. Do not use borrow material until so ordered by the Engineer, and then only use material from approved borrow pits.

## **120-7 Materials for Embankment.**

**120-7.1 Use of Materials Excavated from the Roadway and Appurtenances:** Assume responsibility for determining the suitability of excavated material for use on the project in accordance with the applicable Contract Documents. Consider the sequence of work and maintenance of traffic phasing in the determination of the availability of this material.

**120-7.2 General Requirements for Embankment Materials:** Construct embankments of acceptable material including reclaimed asphalt pavement (RAP), recycled concrete aggregate (RCA) and portland cement concrete rubble, but containing no muck, stumps, roots, brush, vegetable matter, rubbish, reinforcement bar or other material that does not compact into a suitable and enduring roadbed. Do not use RAP or RCA in the top 3 feet of slopes and shoulders that are to be grassed or have other type of vegetation established. Do not use RAP or RCA in stormwater management facility fill slopes.

Remove all waste material designated as undesirable. Use material in embankment construction in accordance with plan details or as the Engineer directs.

Complete the embankment using maximum particle sizes (in any dimension) as follows:

1. In top 12 inches: 3-1/2 inches (in any dimension).
2. 12 to 24 inches: 6 inches (in any dimension).

3. In the depth below 24 inches: not to exceed 12 inches (in any dimension) or the compacted thickness of the layer being placed, whichever is less.

Spread all material so that the larger particles are separated from each other to minimize voids between them during compaction. Compact around these rocks in accordance with 120-9.2.

When and where approved by the Engineer, the Contractor may place larger rocks (not to exceed 18 inches in any dimension) outside the one to two slope and at least 4 feet or more below the bottom of the base. Compact around these rocks to a firmness equal to that of the supporting soil. Construct grassed embankment areas in accordance with 120-9.2.5. Where constructing embankments adjacent to bridge end bents or abutments, do not place rock larger than 3-1/2 inches in diameter within 3 feet of the location of any end-bent piling.

**120-7.3 Materials Used at Pipes, Culverts, etc.:** Construct embankments over and around pipes, culverts, and bridge foundations with selected materials.

#### **120-8 Embankment Construction.**

**120-8.1 General:** Construct embankments in sections of not less than 300 feet in length or for the full length of the embankment. Do not construct another LOT over an untested LOT without the Engineer's approval in writing.

For construction of mainline pavement lanes, turn lanes, ramps, parking lots, concrete box culverts and retaining wall systems, a LOT is defined as a single lift of finished embankment not to exceed 500 feet.

For construction of shoulder-only areas, shared use paths, and sidewalks areas, a LOT is defined as a single lift of finished embankment not to exceed 2000 feet.

Isolated compaction operations will be considered as separate LOTs. For multiple phase construction, a LOT shall not extend beyond the limits of the phase.

#### **120-8.2 Dry Fill Method:**

**120-8.2.1 General:** Construct embankments to meet the compaction requirements in 120-9 and in accordance with the acceptance program requirements in 120-10.

As far as practicable, distribute traffic over the work during the construction of embankments so as to cover the maximum area of the surface of each layer.

Construct embankment using the dry fill method whenever normal dewatering equipment and methods can accomplish the needed dewatering.

**120-8.2.1.1 Maximum Compacted Lift Thickness Requirements:** Construct the embankment in successive layers with lifts up to a maximum listed in the table below based on the embankment material classification group.

| Group | AASHTO Soil Class                  | Maximum Lift Thickness                | Thick Lift Control Test Section Requirements |
|-------|------------------------------------|---------------------------------------|--|
| 1     | A-3                                | 12 inches                             | Not Needed                                   |
|       | A-2-4 (No. 200 Sieve $\leq$ 15%)   |                                       |  |
| 2     | A-1                                | 6 inches without Control Test Section | Maximum of 12 inches per 120-8.2.1.2         |
|       | A-2-4 (No. 200 Sieve $>$ 15%)      |                                       |  |
|       | A-2-5, A-2-6, A-2-7, A-4, A-5, A-6 |                                       |  |
|       | A-7 (Liquid Limit $<$ 50)          |                                       |  |

**120-8.2.1.2 Thick Lift Requirements:** For embankment materials classified as Group 2 in the table above, the option to perform thick lift construction in successive layers of not more than 12 inches compacted thickness may be used after meeting the following requirements:

1. Notify the Engineer and obtain approval in writing prior to beginning construction of a test section.
  - a. Demonstrate the possession and control of compacting equipment sufficient to achieve density required by 120-10.2 for the full depth of a thicker lift.
2. Construct a test section of the length of one full LOT of not less than 500 feet.
3. Perform five Quality Control (QC) tests at random locations within the test section.
  - a. All five QC tests and must meet the density required by 120-10.2.
  - b. Identify the test section with the compaction effort and soil classification.
4. Obtain Engineer's approval in writing for the compaction effort after completing a successful test section.

In case of a change in compaction effort or soil classification, failing QC test or when the QC tests cannot be verified, construct a new test section. The Contractor may elect to place material in 6 inches compacted thickness at any time. Construct all layers approximately parallel to the centerline profile of the road.

The Engineer reserves the right to terminate the Contractor's use of thick lift construction. Whenever the Engineer determines that the Contractor is not achieving satisfactory results, revert to the 6 inch compacted lifts.

**120-8.2.1.3 Equipment and Methods:** Provide normal dewatering equipment including, but not limited to, surface pumps, sump pumps and trenching/digging machinery. Provide normal dewatering methods including, but not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, sumps and siphons.

When normal dewatering does not adequately remove the water, the Engineer may require the embankment material to be placed in the water or on low swampy ground in accordance with 120-9.2.3.



**120-8.2.2 Placing in Unstable Areas:** When depositing fill material in water, or on low swampy ground that will not support the weight of hauling equipment, construct the embankment by dumping successive loads in a uniformly distributed layer of a thickness not greater than necessary to support the hauling equipment while placing subsequent layers. Once sufficient material has been placed so that the hauling equipment can be supported, construct the remaining portion of the embankment in layers in accordance with the applicable provisions of 120-9.2.2.

**120-8.2.3 Placing on Steep Slopes:** When constructing an embankment on a hillside sloping more than 20 degrees from the horizontal, before starting the fill, deeply plow or cut steps into the surface of the original ground on which the embankment is to be placed.

**120-8.2.4 Placing Outside the Standard Minimum Slope:** The standard minimum slope is defined as the plane described by a one (vertical) to two (horizontal) slope downward from the roadway shoulder point or the gutter line, in accordance with Standard Plans, Index 120-001 and 120-002. Where material that is unsuitable for normal embankment construction is to be used in the embankment outside the standard minimum slope, place such material in layers of not more than 18 inches in thickness, measured loose. The Contractor may also place material which is suitable for normal embankment, outside such standard minimum slope, in 18 inch layers. Maintain a constant thickness for suitable material placed within and outside the standard minimum slope, unless placing in a separate operation.

### **120-8.3 Hydraulic Method:**

**120-8.3.1 Method of Placing:** When the hydraulic method is used, as far as practicable, place all dredged material in its final position in the embankment by such method. Place and compact any dredged material that is reworked, or moved and placed in its final position by any other method, as specified in 120-9.2. Baffles or any other form of construction may be used if the slopes of the embankments are not steeper than indicated in the Plans. Remove all timber used for temporary bulkheads or baffles from the embankment, and fill and thoroughly compact all voids. When placing fill on submerged land, construct dikes prior to beginning of dredging, and maintain the dikes throughout the dredging operation.

**120-8.3.2 Excess Material:** Do not use any excess material placed outside the prescribed slopes or below the normal high-water table to raise the fill areas. Remove only the portion of this material required for dressing the slopes.

**120-8.3.3 Protection of Openings in Embankment:** Leave openings in the embankments at the bridge sites. Remove any material which invades these openings or existing channels without additional compensation to provide the same existing channel depth as before the construction of the embankment. Do not excavate or dredge any material within 200 feet of the toe of the proposed embankment.

### **120-8.4 Reclaimed Asphalt Pavement (RAP) Method:**

**120-8.4.1 General:** Use only RAP material stored at facilities with an approved Florida Department of Environmental Protection Stormwater permit or, transferred directly from a milling project to the Owner project. Certify the source if RAP material is from an identifiable Owner project. Do not use RAP material in the following areas: construction areas that are below the seasonal high groundwater table elevation; MSE Wall backfill; underneath MSE Walls or the top 6 inches of embankment.

Prior to placement, submit documentation to the Engineer for his approval, outlining the proposed location of the RAP material.

**120-8.4.2 Soil and RAP Mixture:** Place the RAP material at the location and spread uniformly, using approved methods to obtain a maximum layer thickness of 4 inches. Mix this 4 inches maximum layer of RAP with a loose soil layer 8 to 10 inches thick. After mixing, meet all embankment utilization requirements of Standard Plans, Index 120-001 for the location used. The total RAP and other embankment material shall not exceed 12 inches per lift after mixing and compaction if the contractor can demonstrate that the density of the mixture can be achieved. Perform mixing using rotary tillers or other equipment meeting the approval of the Engineer. The Engineer will determine the order in which to spread the two materials. Mix both materials to the full depth. Ensure that the finished layer will have the thickness and shape required by the typical section. Demonstrate the feasibility of this construction method by successfully completing a 500 foot long test section.

**120-8.4.3 Alternate Soil and RAP Layer Construction:** Construct soil in 6 to 12 inch compacted lifts and RAP in alternate layers with 6 inch maximum compacted lifts. Use soil with a minimum LBR value of 40 to prevent failure during compaction of the overlying RAP layer. Demonstrate the feasibility of this construction method by successfully completing a 500 foot long test section.

#### **120-9 Compaction Requirements.**

**120-9.1 Moisture Content:** Compact the materials at a moisture content such that the specified density can be attained. If necessary to attain the specified density, add water to the material, or lower the moisture content by manipulating the material or allowing it to dry, as is appropriate.

#### **120-9.2 Compaction of Embankments:**

**120-9.2.1 General:** Uniformly compact each layer, using equipment that will achieve the required density, and as compaction operations progress, shape and manipulate each layer as necessary to ensure uniform density throughout the embankment.

**120-9.2.2 Compaction Over Unstable Foundations:** Where the embankment material is deposited in water or on low swampy ground, and in a layer thicker than 12 inches (as provided in 120-8.2.2), compact the top 6 inches (compacted thickness) of such layer to the density as specified in 120-10.2.

**120-9.2.3 Compaction Where Plastic Material Has Been Removed:** Where unsuitable material is removed and the remaining surface is of the A-4, A-5, A-6, or A-7 Soil Groups (see AASHTO M145), as determined by the Engineer, compact the surface of the excavated area by rolling with a sheepfoot roller exerting a compression of at least 250 psi on the tamper feet, for the full width of the roadbed (subgrade and shoulders). Perform rolling before beginning any backfill, and continue until the roller feet do not penetrate the surface more than 1 inch. Do not perform such rolling where the remaining surface is below the normal water table and covered with water. Vary the procedure and equipment required for this operation at the discretion of the Engineer.

**120-9.2.4 Compaction of Grassed Shoulder Areas:** For the upper 6 inch layer of all shoulders which are to be grassed, since no specific density is required, compact only to the extent directed.

**120-9.2.5 Compaction of Grassed Embankment Areas:** Do not compact the outer layers of any embankments where plant growth will be established. Leave this layer in a loose condition to a minimum depth of 6 inches for the subsequent seeding or planting operations. Do not place RAP or RAP blended material within the top 12 inches of areas to be grassed.

**120-9.3 Compaction for Pipes, Culverts, etc.:** Compact the backfill of trenches to the densities specified for embankment or subgrade, as applicable, and in accordance with the requirements of 125-9.2.

Thoroughly compact embankments over and around pipes, culverts, and bridges in a manner which will not place undue stress on the structures, and in accordance with the requirements of 125-9.2.

**120-9.4 Compaction of Subgrade:** If the Plans do not provide for stabilizing, compact the subgrade as defined in 1-3 in both cuts and fills, to the density specified in 120-10.2. For cut areas, determine Standard Proctor Maximum Density in accordance with FM 1-T099 at a frequency of one per mile or when there is a change in soil type, whichever occurs first. For undisturbed soils, do not apply density requirements where constructing paved shoulders 5 feet or less in width.

Where trenches for widening strips are not of sufficient width to permit the use of standard compaction equipment, perform compaction using vibratory rollers, trench rollers, or other type compaction equipment approved by the Engineer.

Maintain the required density until the base or pavement is placed on the subgrade.

## **120-10 Acceptance Program.**

### **120-10.1 General Requirements:**

**120-10.1.1 Initial Equipment Comparison:** Before initial production, perform an initial nuclear moisture density gauge comparison with the Verification and Independent Assurance (IA) gauges. When comparing the computed dry density of one nuclear gauge to a second gauge, three sets of calculations must be performed (IA to QC, IA to Verification, and QC to Verification). Ensure that the difference between any two computed dry densities does not exceed 2 lb/ft<sup>3</sup> between gauges from the same manufacturer, and 3 lb/ft<sup>3</sup> between gauges from different manufacturers. Repair or replace any gauge that does not compare favorably with the IA gauge.

Perform a comparison analysis between the QC nuclear gauge and the Verification nuclear gauge any time a nuclear gauge or repaired nuclear gauge is first brought to the project. Repair and replace any QC gauge that does not compare favorably with the Verification gauge at any time during the remainder of the project. Calibrate all QC gauges annually.

**120-10.1.2 Initial Production LOT:** Before construction of any production LOT, prepare a 500 foot initial control section consisting of one full LOT. Notify the Engineer in writing at least 24 hours prior to production of the initial control section. Perform all QC tests required in 120-10.1.4. When the initial QC test results pass specifications, the Engineer will perform a Verification test to verify compliance with the specifications. Do not begin constructing another LOT until successfully completing the initial production LOT. The Engineer will notify the Contractor in writing of the initial production LOT approval within three working days after receiving the Contractor's QC data when test results meet the following conditions:

1. QC and Verification tests must meet the density requirements.
2. Difference between QC and Verification computed dry density results shall meet the requirements of 120-10.1.1.

If Verification test result fails the density requirements of 120-10.2, correct the areas of non-compliance. The QC and Verification tests will then be repeated.

**120-10.1.3 Density over 105%:** When a QC computed dry density results in a value greater than 105% of the applicable Proctor maximum dry density, the Engineer will perform an Independent Verification (IV) density test within 5 feet. If the IV density results in a value greater than 105%, the Engineer will investigate the compaction methods, examine the applicable Standard Proctor Maximum Density and material description. The Engineer may collect and test an IV Standard Proctor Maximum Density sample for acceptance in accordance with the criteria of 120-10.2.

**120-10.1.4 Quality Control (QC) Tests:**

**120-10.1.4.1 Standard Proctor Maximum Density Determination:** Determine the QC standard Proctor maximum density and optimum moisture content by sampling and testing the material in accordance with the specified test method listed in 120-10.2.

**120-10.1.4.2 Density Testing Requirements:** Ensure compliance to the requirements of 120-10.2 by Nuclear Density testing in accordance with FM 1-T238. Determine the in-place moisture content for each density test. Use FM 1-T238, FM 5-507 (Determination of Moisture Content by Means of a Calcium Carbide Gas Pressure Moisture Tester), or ASTM D4643 (Laboratory Determination of Moisture Content of Granular Soils by use of a Microwave Oven) for moisture determination.

**120-10.1.4.3 Soil Classification:** Perform soil classification tests on the sample collected in 120-10.1.4.1, in accordance with AASHTO T88, T89, T90, and FM 1-T267. Classify soils in accordance with AASHTO M145 in order to determine compliance with embankment utilization requirements as specified in Standard Plans, Index 120-001.

**120-10.1.5 Owner Verification:** The Engineer will conduct Verification tests in order to accept all materials and work associated with 120-10.1.4. The Engineer will verify the QC results if they meet the Verification Comparison Criteria, otherwise the Engineer will implement Resolution procedures.

The Engineer will select test locations, including Station, Offset, and Lift, using a random number generator, based on the LOTs under consideration. Each Verification test evaluates all work represented by the QC testing completed in those LOTs.

In addition to the Verification testing, the Engineer may perform additional Independent Verification (IV) testing. The Engineer will evaluate and act upon the IV test results in the same manner as Verification test results.

When the project requires less than four QC tests per material type, the Engineer reserves the right to accept the materials and work through visual inspection.

**120-10.1.6 Reduced Testing Frequency:** Obtain the Engineer's written approval for the option to reduce density testing frequency to one test every two LOTs if Resolution testing was not required for 12 consecutive verified LOTs, or if Resolution testing was required, but the QC test data was upheld and all substantiating tests are recorded in the Earthwork Records System (ERS).

Generate random numbers based on the two LOTs under consideration. When QC test frequency is reduced to one every two LOTs, obtain the Engineer's approval to place more than one LOT over an untested LOT. Assure similar compaction efforts for the untested LOTs. If the Verification test fails, and QC test data is not upheld by Resolution testing, the QC testing will revert to the original frequency of one QC test per LOT. Do not apply reduced testing frequency in construction of shoulder-only areas, shared use paths, sidewalks, and first and last lift.

**120-10.1.7 Payment for Resolution Tests:** If the Resolution laboratory results compare favorably with the QC results, the Owner will pay for Resolution testing. No additional compensation, either monetary or time, will be made for the impacts of any such testing.

If the Resolution laboratory results do not compare favorably with the QC results, the costs of the Resolution testing will be deducted from monthly estimates. No additional time will be granted for the impacts of any such testing.

**120-10.2 Acceptance Criteria:** Obtain a minimum QC density of 100% of the standard Proctor maximum density as determined by FM 1-T099, Method C, with the following exceptions: embankment constructed by the hydraulic method as specified in 120-8.3; material placed outside the standard minimum slope as specified in 120-8.2.4 except when a structure is supported on existing embankment; and, other areas specifically excluded herein.

**120-10.3 Additional Requirements:**

**120-10.3.1 Frequency:** Conduct QC sampling and testing at a minimum frequency listed in the table below. The Engineer will perform Verification sampling and tests at a minimum frequency listed in the table below.

| Test Name                               | Quality Control                          | Verification   | Verification of Shoulder-Only Areas, Shared Use Paths, and Sidewalks |
|---|--|--|--|
| Standard Proctor Maximum Density        | One per soil type                        | One per soil type  | One per soil type  |
| Density                                 | One per LOT                              | One per four LOTs and for wet conditions, the first lift not affected by water | One per two LOTs   |
| Soil Classification and Organic Content | One per Standard Proctor Maximum Density | One per Standard Proctor Maximum Density                                       | One per Standard Proctor Maximum Density                             |

**120-10.3.2 Test Selection and Reporting:** Determine test locations including stations and offsets, using the random number generator approved by the Engineer. Do not use notepads or worksheets to record data for later transfer to the Density Log Book. Notify the Engineer upon successful completion of QC testing on each LOT prior to placing another lift on top.

**120-10.4 Verification Comparison Criteria and Resolution Procedures:**

**120-10.4.1 Standard Proctor Maximum Density Determination:** The Engineer will verify the QC results if the results compare within 4.5 lb/ft<sup>3</sup> of the Verification test result. Otherwise, the Engineer will take one additional sample of material from the soil type in question. The State Materials Office (SMO) or an AASHTO accredited laboratory designated by the SMO will perform Resolution testing. The material will be sampled and tested in accordance with FM 1-T099, Method C.

The Engineer will compare the Resolution test results with the QC test results. If all Resolution test results are within 4.5 lb/ft<sup>3</sup> of the corresponding QC test results, the Engineer will use the QC test results for material acceptance purposes for each LOT with that soil type. If the Resolution test result is not within 4.5 lb/ft<sup>3</sup> of the Contractor's QC test, the Verification test result will be used for material acceptance purposes.

**120-10.4.2 Density Testing:** When a Verification or IV density test fails the acceptance criteria, retest the site within a 5 foot radius and the following actions will be taken:

1. If the QC retest meets the acceptance criteria and meets the 12010.1.1 criteria when compared with the Verification or IV test, the Engineer will accept those LOTs.
2. If the QC retest does not meet the acceptance criteria and compares favorably with the Verification or IV test, rework and retest the LOT. The Engineer will re-verify those LOTs.
3. If the QC retest and the Verification or IV test do not compare favorably, complete a new comparison analysis as defined in 120-10.1.1. Once acceptable comparison is achieved, retest the LOTs. The Engineer will perform new verification testing. Acceptance testing will not begin on a new LOT until the Contractor has a gauge that meets the comparison requirements.

Record QC test results in the density logbook. Submit the original, completed density logbook to the Engineer at final acceptance.

**120-10.4.3 Soil Classification:** The Engineer will verify the QC test results if the Verification and the QC test results both match the soil utilization symbol listed in Standard Plans, Index 120-001. Otherwise, the Engineer will test the sample retained for Resolution testing. The SMO or an AASHTO accredited laboratory designated by the SMO will perform the Resolution testing. The material will be sampled and tested in accordance with AASHTO T88, T89, and T90, and classified in accordance with AASHTO M145.

The Engineer will compare the Resolution test results with the QC test results. If the Resolution test matches the QC soil utilization symbol, the Engineer will use the QC soil utilization symbol for material acceptance purposes. If the Resolution test result does not match the Contractor's QC soil utilization symbol, the Verification test results will be used for material acceptance purposes.

**120-10.4.4 Organic Content:** The Engineer will verify the QC test results if the Verification test results satisfy the organic content test criteria in Standard Plans, Index 120-001. Otherwise, the Engineer will test the sample retained for Resolution testing. The SMO or an AASHTO accredited laboratory designated by the SMO will perform Resolution testing. The material will be sampled

and tested in accordance with FM 1-T267. If the Resolution test results satisfy the required criteria, material of that soil type will be verified and accepted. If the Resolution test results do not meet the required criteria, reject the material and reconstruct with acceptable material.

**120-10.5 Disposition of Defective Materials:** Assume responsibility for removing and replacing all defective material, as defined in Section 6.

Alternately, submit an Engineering Analysis Scope in accordance with 6-4 to determine the disposition of the material.

**120-11 Maintenance and Protection of Work.**

While construction is in progress, maintain adequate drainage for the roadbed at all times. Maintain a shoulder at least 3 feet wide adjacent to all pavement or base construction in order to provide support for the edges.

Maintain all earthwork construction throughout the life of the Contract, and take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. Repair, at no expense to the Owner except as otherwise provided herein, any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of the work. Perform maintenance and protection of earthwork construction in accordance with Section 104.

Maintain all channels excavated as a part of the Contract work against natural shoaling or other encroachments to the lines, grades, and cross-sections shown in the Plans, until final acceptance of the project.

**120-12 Construction.**

**120-12.1 Construction Tolerances:** Shape the surface of the earthwork to conform to the lines, grades, and cross-sections shown in the Plans. In final shaping of the surface of earthwork, maintain a tolerance of 0.3 foot above or below the cross-section with the following exceptions:

1. Shape the surface of shoulders to within 0.1 foot of the cross-section shown in the Plans.
2. Shape the earthwork to match adjacent pavement, curb, sidewalk, structures, etc.
3. Shape the bottom of conveyance ditches so that the ditch impounds no water.
4. When the work does not include construction of base or pavement, shape the entire roadbed (shoulder point to shoulder point) to within 0.1 foot above or below the Plan cross-section.
5. When the work includes permitted linear stormwater management facilities, shape the swales and ditch blocks to within 0.1 feet of the cross-section shown in the Plans.

Ensure that the shoulder lines do not vary horizontally more than 0.3 foot from the true lines shown in the Plans.

**120-12.2 Operations Adjacent to Pavement:** Carefully dress areas adjacent to pavement areas to avoid damage to such pavement. Complete grassing of shoulder areas prior to placing the final wearing course. Do not manipulate any embankment material on a pavement surface.

When shoulder dressing is underway adjacent to a pavement lane being used to maintain traffic, exercise extreme care to avoid interference with the safe movement of traffic.

### **120-13 Method of Measurement.**

**120-13.1 General:** When payment for excavation is on a volumetric basis, the quantity to be paid for will be the volume, in cubic yards, calculated by the method of average end areas, unless the Engineer determines that another method of calculation will provide a more accurate result. The material will be measured in its original position by field survey or by photogrammetric means as designated by the Engineer, unless otherwise specified under the provisions for individual items.

Where subsoil excavation extends outside the lines shown in the Plans or authorized by the Engineer including allowable tolerances, and the space is backfilled with material obtained in additional authorized roadway or borrow excavation, the net fill, plus shrinkage allowance, will be deducted from the quantity of roadway excavation or borrow excavation to be paid for, as applicable.

The quantity of all material washed, blown, or placed beyond the authorized roadway cross-section will be determined by the Engineer and will be deducted from the quantity of roadway excavation or borrow excavation to be paid for, as applicable.

Subsoil excavation that extends outside the lines shown in the Plans or authorized by the Engineer including allowable tolerances will be deducted from the quantity to be paid for as subsoil excavation.

**120-13.2 Roadway Excavation:** The measurement will include only the net volume of material excavated between the original ground surface and the surface of the completed earthwork, except that the measurement will also include all unavoidable slides which may occur in connection with excavation classified as roadway excavation.

The pay quantity will be the plan quantity provided that the excavation was accomplished in substantial compliance with the plan dimensions and subject to the provisions of 9-3.2 and 9-3.4. On designated 3-R Projects, regular excavation will be paid for at the Contract lump sum price provided that the excavation was accomplished in substantial compliance with the plan dimension.

**120-13.3 Borrow Excavation:** Measurement will be made on a loose volume basis, measured in trucks or other hauling equipment at the point of dumping on the road. If measurement is made in vehicles, level the material to facilitate accurate measurement.

Unsuitable material excavated from borrow pits where truck measurement is provided for and from any borrow pits furnished by the Contractor, will not be included in the quantity of excavation to be paid for.

**120-13.4 Lateral Ditch Excavation:** The measurement will include only material excavated within the lines and grades indicated in the Plans or as directed by the Engineer. The measurement will include the full station-to-station length shown in the Plans or directed by the Engineer and acceptably completed. Excavation included for payment under Section 125 will not be included in this measurement.



The pay quantity will be the plan quantity provided that the excavation was accomplished in substantial compliance with the plan dimensions and subject to the provisions of 9-3.2 and 9-3.4.

**120-13.5 Channel Excavation:** The measurement will include only material excavated within the lines and grades indicated in the Plans or in accordance with authorized Plan changes. The measurement will include the full station-to-station length shown in the Plans including any authorized changes thereto.

If shoaling occurs subsequent to excavation of a channel and the Engineer authorized the shoaled material to remain in place, the volume of any such material remaining within the limits of channel excavation shown in the Plans will be deducted from the measured quantity of channel excavation.

**120-13.6 Subsoil Excavation:** The measurement will include only material excavated within the lines and grades indicated in the Plans (including the tolerance permitted therefore) or as directed by the Engineer.

When no item for subsoil excavation is shown in the Contract but subsoil excavation is subsequently determined to be necessary, such unanticipated subsoil excavation will be paid for as provided in 4-4.

**120-13.7 Embankment:** The quantity will be at the plan quantity. Where payment for embankment is not to be included in the payment for the excavation, and is to be paid for on a cubic yard basis for the item of embankment, the plan quantities to be paid for will be calculated by the method of average end areas unless the Engineer determines that another method of calculation will provide a more accurate result. The measurement will include only material actually placed above the original ground line, within the lines and grades indicated in the Plans or directed by the Engineer. The length used in the computations will be the station-to-station length actually constructed. The original ground line used in the computations will be as determined prior to placing of embankment subject to the provisions of 9-3.2, and no allowance will be made for subsidence of material below the surface of the original ground.

If there are authorized changes in plan dimensions or if errors in plan quantities are detected, plan quantity will be adjusted as provided in 9-3.2.

Where the work includes excavation of unsuitable material below the finished grading template or original ground line, whichever is lower as defined in 120-3.3, the original ground line is defined as the surface prior to beginning excavation, except that this surface is not outside the permissible tolerance of lines and grades for subsoil excavation as indicated in the Plans or as directed by the Engineer. Any overrun or underrun of plan quantity for subsoil excavation which results in a corresponding increase or decrease in embankment will be considered as an authorized plan change for adjustment purposes as defined in 9-3.2.2.

No payment will be made for embankment material used to replace unsuitable material excavated beyond the lines and grades shown in the Plans or ordered by the Engineer.

In no case will payment be made for material allowed to run out of the embankment on a flatter slope than indicated on the cross-section. The Contractor shall make his own estimate on the volume of material actually required to obtain the pay section.

**120-14 Basis of Payment.**

**120-14.1 General:** Prices and payments for the various work items included in this Section will be full compensation for all work described herein, including excavating, dredging, hauling, placing, and compacting; dressing the surface of the earthwork; maintaining and protecting the complete earthwork; and hauling.

The Owner will not allow extra compensation for any reworking of materials. The Owner will compensate for the cost of grassing or other permanent erosion control measures directed by the Engineer as provided in the Contract for similar items of roadway work.

**120-14.2 Excavation:**

**120-14.2.1 Items of Payment:** When no classification of material is indicated in the Plans, and bids are taken only on regular excavation, the total quantity of all excavation specified under this Section will be paid for at the Contract unit price for regular excavation.

When separate classifications of excavation are shown in the proposal, the quantities of each of the various classes of materials so shown will be paid for at the Contract unit prices per cubic yard for regular excavation, lateral ditch excavation, subsoil excavation, and channel excavation, as applicable, and any of such classifications not so shown will be included under the item of regular excavation (except that if there is a classification for lateral ditch excavation shown and there is no classification for channel excavation, any channel excavation will be included under the item of lateral ditch excavation). As an exception on designated projects, regular excavation will be paid for at the Contract lump sum price.

**120-14.2.2 Basic Work Included in Payments:** Prices and payments will be full compensation for all work described under this Section, except for any excavation, or embankment which is specified to be included for payment under other items. Such prices and payments will include hauling; any reworking that may be necessary to accomplish final disposal as shown in the Plans; the dressing of shoulders, ditches and slopes; removal of trash, vegetation, etc., from the previously graded roadway where no item for clearing and grubbing is shown in the Plans; and compacting as required.

**120-14.2.3 Additional Depth of Subsoil Excavation:** Where subsoil excavation is made to a depth of 0 to 5 feet below the depth shown in the Plans, such excavation will be paid for at the unit price bid.

Where subsoil excavation is made to a depth greater than 5 feet, and up to 15 feet, deeper than the depth shown in the Plans, such excavation will be paid for at the unit price bid plus 25% of such unit price. Additional extra depth, more than 15 feet below such plan depth, will be considered as a change in the character of the work and will be paid for as unforeseeable work.

Where no subsoil excavation is shown in a particular location on the original Plans, payment for extra depth of subsoil will begin 5 feet below the lowest elevation on the grading template.

**120-14.2.4 Borrow Excavation:** When the item of borrow excavation is included in the Contract, price and payment will also include the cost of furnishing the borrow areas and any necessary clearing and grubbing thereof, the removal of unsuitable material that it is necessary to excavate in order to obtain suitable borrow material, and also the costs incurred in complying with the provisions of 120-6.3.

**120-14.2.5 Materials Excluded from Payment for the Excavation:** No payment for excavation will be made for any excavation covered for payment under the item of embankment.

No payment will be made for the excavation of any materials which is used for purposes other than those shown in the Plans or designated by the Engineer. No payment will be made for materials excavated outside the lines and grades given by the Engineer, unless specifically authorized by the Engineer. As an exception, in operations of roadway excavation, all slides and falls of insecure masses of material beyond the regular slopes that are not due to lack of precaution on the part of the Contractor, will be paid for at the Contract unit price for the material involved. The removal of slides and falls of material classified as lateral ditch excavation or as subsoil excavation will not be paid for separately, but will be included in the Contract unit price for the pay quantity of these materials, measured as provided in 120-14.

**120-14.3 Embankment:**

**120-14.3.1 General:** Price and payment will be full compensation for all work specified in this Section, including all material for constructing the embankment, all excavating, dredging, pumping, placing and compacting of material for constructing the embankment complete, dressing of the surface of the roadway, maintenance and protection of the completed earthwork, and the removal of rubbish, vegetation, etc., from the roadway where no clearing and grubbing of the area is specified in the Plans. Also, such price and payment, in each case, will specifically include all costs of any roadway, lateral ditch, or channel excavation, unless such excavation is specifically shown to be paid for separately, regardless of whether the materials are utilized in the embankment.

**120-14.3.2 Excluded Material:** No payment will be made for the removal of muck or overburden from the dredging or borrow areas. No payment will be made for embankment material used to replace muck or other unsuitable material excavated beyond the lines and grades shown in the Plans or ordered by the Engineer.

**120-14.3.3 Clearing and Grubbing:** No payment will be made for any clearing and grubbing of the borrow or dredging areas. Where no clearing and grubbing of such areas is specified in the Plans, the cost of any necessary clearing and grubbing will be included in the Contract unit or lump sum price for Embankment.

**120-14.3.4 Cost of Permits, Rights, and Waivers:** Where the Contractor provides borrow or dredging areas of his own choosing, the cost of securing the necessary permits, rights or waivers will be included in the Contract price for embankment.

**120-14.3.5 Payment Items:** Payment will be made under:

|                       |  |                             |
|-----------------------|--|-----------------------------|
| <b>Item No. 120-1</b> | <b>Admin Lot Cut (includes 12" of overexcavation)</b>    | <b>-per Cubic Yard (CY)</b> |
| <b>Item No. 120-2</b> | <b>Admin Lot Fill (includes 12" of overexcavation)</b>   | <b>-per Cubic Yard (CY)</b> |
| <b>Item No. 120-3</b> | <b>Unclassified Excavation and Embankment – cut/fill</b> | <b>-per Lump Sum (LS)</b>   |

**END OF SECTION 120**

## SECTION 160

### STABILIZING

#### 160-1 Description.

Stabilize designated portions of the roadbed to provide a firm and unyielding subgrade, having the required bearing value specified in the Plans.

#### 160-2 Materials.

**160-2.1 Commercial Material:** Meet the requirements of Section 914-2.1.

**160-2.2 Local Material:** Submit test results to the Engineer at least 14 days prior to the stabilization operation.

**160-2.2.1 Local Stabilizing Material:** Sample and test material from each source and meet the requirements of Section 914. The Engineer will verify the Quality Control (QC) test results meet the requirements of Section 914. If the QC and Verification results do not compare, the Engineer will take one additional sample of material from the source in question and the State Materials Office (SMO) or an AASHTO accredited laboratory designated by the SMO will perform Resolution testing. If the Resolution test results satisfy the required criteria, material from that source will be verified and accepted. If the Resolution test results do not meet the required criteria, reject the material.

**160-2.2.2 Reclaimed Asphalt Pavement (RAP):** Obtain the Engineer's approval in writing for the option to use 100% RAP material. Material must be milled and stockpiled without blending or contaminating with any other material.

**160-2.2.3 Reclaimed Asphalt Pavement (RAP) Blended Material:** RAP blended material is defined as material meeting the requirements of 914-1 and 914-2.2 except for the limits for organic content. If the RAP blended material meets the requirements of 914-1 and 914-2, then the blended material will be classified as local stabilizing material. Provide test results to the Engineer and obtain their approval in writing before using RAP blended material. The Engineer will verify that the QC test results meet the acceptance criteria, otherwise the Engineer will perform Resolution testing procedures specified in 160-2.2.1.

**160-2.3 Existing Base:** Obtain the Engineer's approval in writing before using existing base. When the material from an existing base is used as all, or a portion, of the stabilizing additives, no further testing is required unless directed by the Engineer.

**160-2.4 Granular Subbase:** The Engineer may allow, at no additional cost to the Owner, the substitution of 6 inches of granular subbase meeting the requirements of 290-2 and 290-3, only when 12 inches of Type B stabilization requiring a Limerock Bearing Ratio (LBR) value of 40 is specified in accordance with Standard Plans, Index 120-001.

#### 160-3 Construction Methods.

**160-3.1 General:** Prior to the beginning of stabilizing operations, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized subgrade will conform to the lines, grades, and cross-section shown in the Plans. Prior to spreading

any additive stabilizing material, bring the surface of the roadbed to a plane approximately parallel to the plane of the proposed finished surface.

Construct mainline pavement lanes, turn lanes, ramps, parking lots, concrete box culverts, retaining wall systems, shoulder-only areas, sidewalk, and shared use path areas meeting the requirements of 120-8.1, except replace "embankment" with "subgrade".

Isolated mixing operations will be considered as separate LOTs. Curb pads and shoulders compacted separately shall be considered separate LOTs. Isolated compaction operations will be considered as separate LOTs. For multiple phase construction, a LOT shall not extend beyond the limits of the phase.

**160-3.2 Application and Acceptance of Stabilizing Material:** After completing the roadbed grading operations, determine the type and quantity (if any) of stabilizing material necessary for compliance with the bearing value requirements. Before using any Fossil Fuel Combustion Products (FFCPs), submit documentation, at the preconstruction meeting or no later than 30 days prior to delivery of FFCP's to the project, signed and sealed by the Specialty Engineer that these materials meet the requirements of 403.7047 F.S. Notify the Engineer of the approximate quantity to be added before spreading. When additive stabilizing materials are required, spread the material uniformly over the area to be stabilized.

The Engineer may perform Independent Verification (IV) sampling and testing if variability in the stabilizing material is observed during inspection after spreading on the roadway. If the IV test results do not meet the requirements of Section 914, then remove and replace the failing LOTs with acceptable material. The Engineer reserves the right to reject stabilizing material that contains excessive deleterious substances.

**160-3.3 Mixing:** Perform mixing using rotary tillers, a plant or other equipment meeting the approval of the Engineer. The subgrade may be mixed in one course if the equipment and method of construction provides the uniformity, particle size limitation, compaction and other desired results of 160-4. Thoroughly mix the area to be stabilized throughout the entire depth and width of the stabilizing limits.

Perform the mixing operations, as specified, (either in place or in a plant) regardless of whether the existing soil, or any select soils placed within the limits of the stabilized sections, have the required bearing value without the addition of stabilizing materials.

**160-3.4 Mixed Material Requirements:** At the completion of the mixing, ensure the gradation of the material within the limits of the area being stabilized is such that 97% will pass a 3-1/2 inch sieve. Break down or remove from the stabilized area materials, including clay lumps or lumps made of clay-size particles (any particle size 2 microns or less), not meeting the gradation requirements. After mixing, remove any existing lumps of clay or clay-sized particles greater than one inch that do not meet the requirements of 160-3.2 or this Section from the stabilized area. The final product must meet the acceptance requirements of 160-4.

**160-3.4.1 Classification and Bearing Value:** Meet the soil utilization and bearing value requirements for the subgrade in accordance with 160-4.

**160-3.4.2 Compaction:** After completing the mixing operations and satisfying the requirements for bearing value, uniformity, and particle size, compact the materials at a moisture content permitting the specified compaction in 160-4.2.3. If the moisture content of the material is improper for attaining the specified density, either add water or allow the material to dry until reaching the proper moisture content for the specified compaction.

**160-3.4.3 Finish Grading:** Shape the completed stabilized subgrade to conform with the finished lines, grades, and cross-section indicated in the Plans. Check the subgrade using elevation stakes or other means approved by the Engineer.

**160-3.4.4 Condition of Completed Subgrade:** After completing the stabilizing and compacting operations, ensure that the subgrade is firm and substantially unyielding to the extent that it will support construction equipment and will have the bearing value required by the Plans.

Remove all soft and yielding material, and any other portions of the subgrade which will not compact readily, and replace it with suitable material so that the whole subgrade is brought to line and grade, with proper allowance for subsequent compaction.

**160-3.4.5 Maintenance of Completed Subgrade:** After completing the subgrade as specified above, maintain it free from ruts, depressions, and any damage resulting from the hauling or handling of materials, equipment, tools, etc. The Contractor is responsible for maintaining the required density until the subsequent base or pavement is in place including any repairs, replacement, etc., of curb and gutter, sidewalk, etc., which might become necessary in order to recompact the subgrade in the event of underwash or other damage occurring to the previously compacted subgrade. Perform any such recompaction at no expense to the Owner. Construct and maintain ditches and drains along the completed subgrade section.

#### **160-4 Acceptance Program for Mixed Materials.**

##### **160-4.1 General Requirements:**

**160-4.1.1 Initial Equipment Comparison:** Meet the requirements of 120-10.1.1.

**160-4.1.2 Initial Production LOT:** Meet the requirements of 120-10.1.2.

**160-4.1.3 Density over 105%:** Meet the requirements of 120-10.1.3.

##### **160-4.1.4 Quality Control Tests:**

**160-4.1.4.1 Modified Proctor Maximum Density Determination:** Collect enough material to split and create three separate samples. Determine test locations, including stations and offsets, using the Random Number generator approved by the Engineer. Retain the Verification and Resolution samples for the Owner until the Engineer accepts the LOTs represented by the samples. Determine modified Proctor maximum density and optimum moisture content by sampling and testing the material in accordance FM 1-T180.

**160-4.1.4.2 Density Testing Requirements:** Meet the requirements of 120-10.1.4.2.

**160-4.1.4.3 Bearing Value Requirements:** Test the stabilized subgrade sample collected in 160-4.1.4.1 to determine the LBR in accordance with FM 5-515. Within the entire limits of the width and depth of the areas to be stabilized, obtain the required minimum bearing value at the frequency in 160-4.4.1. For any area where the bearing value obtained is

deficient from the value indicated in the Plans, in excess of the tolerances established herein, spread and mix additional stabilizing material in accordance with 160-3.3. Perform this reprocessing for the full width of the roadway being stabilized and longitudinally for a distance of 50 feet beyond the limits of the area in which the bearing value is deficient.

Determine the quantity of additional stabilizing material to be used in reprocessing.

**160-4.1.4.3.1 Under-tolerances in Bearing Value Requirements:** The under-tolerances are allowed for the following specified Bearing Values:

| Specified Bearing Value | Under-tolerance |
|-------------------------|-----------------|
| LBR 40                  | 5.0             |
| LBR 35                  | 4.0             |
| LBR 30 (and under)      | 2.5             |

**160-4.1.4.3.2 Unsoaked LBR Requirements:** If unsoaked LBR is desired, submit request for approval to the Engineer. Upon approval by the Engineer to consider the use of unsoaked LBR, randomly sample and test from three locations in the initial LOT for both soaked and unsoaked LBR in accordance with FM 5-515. Ensure all of the tests achieves the LBR value shown in the table below. Continue testing unsoaked LBR at the frequency shown in 160-4.4.1. Discontinue unsoaked LBR testing if any unsatisfactory QC LBR test result is obtained or resolution determines an unsatisfactory LBR.

The following unsoaked bearing value requirement is based on tests performed on samples obtained after completing mixing operations:

| Specified Bearing Value | Unsoaked Bearing Value Required | Under-tolerance |
|-------------------------|---------------------------------|-----------------|
| LBR 40                  | LBR 43                          | 0.0             |

**160-4.1.4.4 Soil Classification and Organic Content Testing:** Perform soil classification tests on the sample collected in 160-4.1.4.1, in accordance with AASHTO T88, AASHTO T89, AASHTO T90, and FM 1-T267. The Engineer may waive the soil classification and organic content testing requirements for existing base or granular subbase materials. Classify soils in accordance with AASHTO M145 to determine compliance with soil utilization requirements as specified in Standard Plans, Index 120-001. If the stabilizing material used is 100% RAP or RAP blended material, then replace FM 1-T267 with FM 5-563 (excluding gradation analysis). The following testing requirements must be met.

| Test Method | Criteria                                      |
|-------------|---|
| AASHTO M145 | Soil Symbol = S                               |
| FM 1-T267   | Average of 3 Organic Content $\leq$ 2.5%      |
|             | Individual Organic Content Result $\leq$ 4.0% |
| AASHTO T89  | Liquid Limit $\leq$ 30                        |
| AASHTO T90  | Plastic Index $\leq$ 8                        |
| FM 5-563*   | Asphalt Content $\leq$ 4.0%                   |

\*Replace FM 1-T 267 with FM 5-563 (excluding gradation analysis) for 100% RAP or RAP blended material

**160-4.1.5 Owner Verification:** Meet the requirements of 120-10.1.5 except the Engineer will conduct the Verification tests in order to accept all materials and work associated with 160-4.1.4.

**160-4.1.6 Reduced Testing Frequency:** Meet the requirements of 120-10.1.6.

**160-4.1.7 Payment for Resolution Tests:** Meet the requirements of 120-10.1.7.

**160-4.2 Mixing Depth Requirements:** Report depth requirements in the Earthwork Records System (ERS) measured to the nearest 0.25 inch. The difference between the individual measured depth thickness on the roadway and the plan target thickness must not exceed 2 inches. The difference between the LOT average (average of the three individual measured depth thickness) and the plan target thickness must not exceed 1 inch. No undertolerance of mixing depth is allowed.

As an exception to the above mixing requirements, where the subgrade is of rock, the Engineer may waive the mixing operations (and the work of stabilizing), and the Owner will not pay for stabilization for such sections of the roadway.

Meet the required Plan mixing-depths by measuring from the proposed final grade line. Determine test locations, including stations and offsets, using the Random Number generator approved by the Owner. Notify the Engineer a minimum of 24 hours before checking mixing depths. Record results on Owner approved forms.

**160-4.3 Density Acceptance Criteria:**

**160-4.3.1 General:** Within the entire limits of the width and depth of the areas to be stabilized, other than as provided in 160-4.3.2, obtain a minimum density at any location of 98% of the Modified Proctor maximum density as determined by FM 1-T 180.

**160-4.3.2 Exceptions to Density Requirements:** The Contractor need not obtain the minimum density specified in 160-4.3.1 in the upper 6 inches of areas to be grassed under the same Contract. Compact these areas to a reasonably firm condition as directed by the Engineer.

**160-4.4 Additional Requirements:**

**160-4.4.1 Frequency:** Conduct QC sampling and testing at a minimum frequency listed in the table below. The Engineer will perform Verification sampling and tests at a minimum frequency listed in the table below.



| Test Name  | Quality Control              | Verification                   | Verification for Shoulder-Only, Shared Use Path and Sidewalk Construction |
|--|------------------------------|--------------------------------|---|
| Modified Proctor Maximum Density   | One per two consecutive LOTs | One per eight consecutive LOTs | One per four LOTs   |
| LBR  |                              |                                |   |
| Gradation, LL/PI, and Soil Classification  |                              |                                |   |
| Organic Content  |                              |                                |   |
| Asphalt Content*   | One per LOT                  | One per four LOTs              | One per two LOTs  |
| Density  |                              |                                |   |
| Stabilizing Mixing Depth   | Three per 500 feet           | Witness QC                     | Witness QC  |
| *Replace Organic content with asphalt content for 100% RAP or RAP blended material only. |                              |                                |   |

#### 160-4.5 Verification Comparison Criteria and Resolution Procedures:

**160-4.5.1 Bearing Value:** The Engineer will collect a sample at a location other than the location where the sample was collected in 160-4.1.4.1, and test the stabilized subgrade for determination of the LBR in accordance with FM 5-515. The Engineer will select test locations, including stations and offsets, using a Random Number generator, based on the LOTs under consideration.

**160-4.5.1.1 Unsoaked LBR:** The Engineer will sample and test the initial LOT for one soaked and one unsoaked LBR if consideration of the unsoaked LBR has been approved.

**160-4.5.1.2 Resolution Procedure:** If the Owner's Verification test meets the requirements of 160-4.1.4.3, the Engineer will accept the corresponding LOTs. Otherwise, the Engineer will collect an additional sample in the same LOT the Verification sample was obtained. SMO or an AASHTO accredited laboratory designated by SMO will perform Resolution testing on the additional sample. The material will be sampled and tested in accordance with FM 5-515.

If the resolution testing results meet the requirements of 160-4.1.4.3, then the Engineer will accept the LOTs in question. Otherwise reprocess the corresponding LOTs in accordance with 160-3 and retest in accordance with 160-4.1.4.3.

**160-4.5.2 Modified Proctor Maximum Density Determination:** Meet the requirements of 120-10.4.1 except replace FM 1-T099 with FM 1-T180.

**160-4.5.3 Density Testing:** Meet the requirement of 120-10.4.2

**160-4.5.4 Soil Classification:** Meet the requirements of 120-10.4.3 with the exception that the limits will be in accordance with 160-4.1.4.4.

**160-4.5.5 Organic Content:** Meet the requirements of 120-10.4.4 with the exception that the limits will be in accordance with 160-4.1.4.4.

**160-4.5.6 Asphalt Content:** If the material used to stabilize is 100% RAP or RAP blended material, meet the requirement of 120-10.4.4, except replace FM 1-T267 with FM 5-563 (exclude gradation analysis) and meet the limits of 160-4.1.4.4.

**160-4.5.7 Mixing Depth:** The Engineer will witness the Contractor's mixing depth checks to ensure compliance with 160-4.2. The Engineer will select test locations, including stations and offsets, using a Random Number generator. The Owner will witness the mixing depth checks.

1. If the depth checks meet the requirements of 160-4.2, the Engineer will accept that 500-foot section.
2. If the depth checks confirm shallow depth, re-mix the 500-foot section to an appropriate depth and re-measure in accordance with 160-4.2. The Engineer will repeat the witness process.
3. If the depth checks confirm extra deep mixing, conduct an additional QC density test after compaction for the bottom 12 inches of the subgrade for that 500-foot section in addition to a QC density test for the top 12 inches. The additional density test must meet the requirements of 160-4.3.

**160-4.6 Disposition of Defective Materials:** Meet the requirements of 120-10.5.

**160-5 Method of Measurement.**

The quantity to be paid for will be the plan quantity, in square yards, completed and accepted.

**160-6 Basis of Payment.**

Price and payment will constitute full compensation for all work and materials specified in this Section, including furnishing, spreading and mixing of all stabilizing material required and any reprocessing of stabilization areas necessary to attain the specified bearing value. The Owner will make full payment for any areas where the existing subgrade materials meet the design bearing value requirements without the addition of stabilizing additives, as well as areas where the Contractor may elect to place select high-bearing materials from other sources within the limits of the stabilizing.

If the item of borrow excavation is included in the Contract, any stabilizing materials obtained from designated borrow areas will be included in the pay quantity for borrow excavation.

Payment will be made under:

**Item No. 160-1      12" Stabilized Subbase**

**-per Square Yard (SY)**

**END OF SECTION 160**

## SECTION 285

### OPTIONAL BASE COURSE

#### 285-1 Description.

Construct a base course composed of one of the optional materials shown on the typical cross-sections.

#### 285-2 Materials.

Meet the material requirements as specified in the Section covering the particular type of base to be constructed.

|   |             |
|---|-------------|
| Graded Aggregate .....                    | Section 204 |
| Asphalt .....                             | Section 234 |
| Reclaimed Asphalt Pavement (RAP)* .....   | Section 283 |
| Limerock.....                             | Section 911 |
| Shell Base .....                          | Section 911 |
| Shell-Rock.....                           | Section 911 |
| Cemented Coquina .....                    | Section 911 |
| Recycled Concrete Aggregate (RCA)** ..... | Section 911 |

\* Only for use on non-limited access paved shoulders, shared use paths, or other non-traffic bearing applications.

\*\* Do not use on interstate roadways.

#### 285-3 Selection of Base Option.

The Plans will include typical cross-sections indicating the various types of base construction (material and thickness) allowable. When base options are specified in the Plans, use only those options. When base options are not specified, select one base option as allowed for each typical cross-section shown in the Plans. Only one base option is permitted for each typical cross-section. See Tables 285-1 and 285-2 for optional base materials, thickness and additional restrictions. Notify the Engineer in writing of the base option selected for each typical cross-section at least 45 calendar days prior to beginning placement of base material. Construction Requirements.

Table 285-1 (Optional Base Groups 1-15)

| Base Materials   | Base Group (Base Group Pay Item) |                   |                   |                   |            |            |            |            |            |             |             |             |                        |                    |             |
|--|----------------------------------|-------------------|-------------------|-------------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|------------------------|--------------------|-------------|
|  | 1<br>(701)                       | 2<br>(702)        | 3<br>(703)        | 4<br>(704)        | 5<br>(705) | 6<br>(706) | 7<br>(707) | 8<br>(708) | 9<br>(709) | 10<br>(710) | 11<br>(711) | 12<br>(712) | 13<br>(713)            | 14<br>(714)        | 15<br>(715) |
| Limerock, LBR 100                                      | 4"                               | 5"                | 5-1/2"            | 6"                | 7"         | 8"         | 8-1/2"     | 9-1/2"     | 10"        | 11"         | 12"         | 12-1/2"     | 13-1/2" <sup>(5)</sup> | 14" <sup>(5)</sup> | -           |
| Cemented Coquina, LBR 100                              | 4"                               | 5"                | 5-1/2"            | 6"                | 7"         | 8"         | 8-1/2"     | 9-1/2"     | 10"        | 11"         | 12"         | 12-1/2"     | 13-1/2" <sup>(5)</sup> | 14" <sup>(5)</sup> | -           |
| Shell Rock, LBR 100                                    | 4"                               | 5"                | 5-1/2"            | 6"                | 7"         | 8"         | 8-1/2"     | 9-1/2"     | 10"        | 11"         | 12"         | 12-1/2"     | 13-1/2" <sup>(5)</sup> | 14" <sup>(5)</sup> | -           |
| Bank Run Shell, LBR 100                                | 4"                               | 5"                | 5-1/2"            | 6"                | 7"         | 8"         | 8-1/2"     | 9-1/2"     | 10"        | 11"         | 12"         | 12-1/2"     | 13-1/2" <sup>(5)</sup> | 14" <sup>(5)</sup> | -           |
| Recycled Concrete Aggregate, LBR 150 <sup>(1)</sup>    | 4"                               | 5"                | 5-1/2"            | 6"                | 7"         | 8"         | 8-1/2"     | 9-1/2"     | 10"        | 11"         | 12"         | 12-1/2"     | 13-1/2" <sup>(5)</sup> | 14" <sup>(5)</sup> | -           |
| Graded Aggregate Base, LBR 100                         | 4"                               | 5"                | 6-1/2"            | 7-1/2"            | 8-1/2"     | 9"         | 10"        | 11"        | 12"        | 13"         | 14"         | -           | -                      | -                  | -           |
| Type B-12.5  | 4" <sup>(3)</sup>                | 4" <sup>(3)</sup> | 4" <sup>(3)</sup> | 4" <sup>(3)</sup> | 4-1/2"     | 5"         | 5-1/2"     | 5-1/2"     | 6"         | 6-1/2"      | 7"          | 7-1/2"      | 8"                     | 8-1/2"             | 9"          |
| B-12.5 and 4" Granular Subbase, LBR 100 <sup>(2)</sup> | -                                | -                 | -                 | -                 | -          | -          | -          | -          | 4"         | 4-1/2"      | 5"          | 5-1/2"      | 6"                     | 6-1/2"             | 7"          |
| RAP Base <sup>(4)</sup>                                | 5" <sup>(4)</sup>                | -                 | -                 | -                 | -          | -          | -          | -          | -          | -           | -           | -           | -                      | -                  | -           |

<sup>(1)</sup> Do not use on interstate roadways

<sup>(2)</sup> The construction of both the subbase and Type B-12.5 will be bid and used as Optional Base. Granular subbases include limerock, Cemented coquina, shell rock, bank run shell, recycled concrete aggregate and graded aggregate base. All subbase thicknesses are 4" minimum prior to adding the required prime coat.

<sup>(3)</sup> Based on minimum practical thickness.

<sup>(4)</sup> Only for use on non-limited access paved shoulders, shared use paths, or other non-traffic bearing applications

<sup>(5)</sup> To be used for widening, three feet or less.

| Table 285-2: Limited Use Optional Base Groups <sup>(1)</sup> |                                  |           |           |           |           |           |           |           |
|--|----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Base Materials   | Base Group (Base Group Pay Item) |           |           |           |           |           |           |           |
|  | 101 (701)                        | 102 (702) | 103 (703) | 104 (704) | 105 (705) | 106 (706) | 107 (707) | 108 (708) |
| Limerock Stabilized, LBR 70                                  | 5"                               | 6-1/2"    | 8"        | 9"        | 10"       | 11"       | 12-1/2"   | -         |
| Shell, LBR 70  | 5"                               | 6-1/2"    | 8"        | 9"        | 10"       | 11"       | 12-1/2"   | -         |
| Shell Stabilized, LBR 70                                     | 7"                               | 8-1/2"    | 9-1/2"    | 10-1/2"   | 12"       | -         | -         | -         |
| Sand-Clay, LBR 75  | 5"                               | 6-1/2"    | 8"        | 9"        | 10"       | 11"       | 12-1/2"   | -         |
| Soil Cement (300 psi) (Plant Mixed)                          | 5"                               | 5-1/2"    | 6-1/2"    | 7-1/2"    | 8-1/2"    | 9"        | 10"       | 11"       |
| Soil Cement (300 psi) (Road Mixed)                           | 5"                               | 5-1/2"    | 6-1/2"    | 7-1/2"    | 8-1/2"    | -         | -         | -         |
| Soil Cement (500 psi) (Plant Mixed)                          | 4" <sup>(2)</sup>                | 4"        | 5"        | 5-1/2"    | 6"        | 7"        | 7-1/2"    | 8-1/2"    |
| <sup>(1)</sup> Use only when specified in the Plans.         |                                  |           |           |           |           |           |           |           |
| <sup>(2)</sup> Based on minimum practical thicknesses.       |                                  |           |           |           |           |           |           |           |

#### 285-4 Construction Requirements

Construct the base in accordance with the Section covering the particular type of base to be constructed.

|   |             |
|---|-------------|
| Graded Aggregate .....                    | Section 204 |
| Asphalt .....                             | Section 234 |
| Reclaimed Asphalt Pavement (RAP)* .....   | Section 283 |
| Limerock.....                             | Section 200 |
| Shell Base .....                          | Section 200 |
| Shell Rock .....                          | Section 200 |
| Cemented Coquina .....                    | Section 200 |
| Recycled Concrete Aggregate (RCA)** ..... | Section 200 |

\* Only for use on non-limited access paved shoulders, shared use paths, or other non-traffic bearing applications.

\*\* Do not use on interstate roadways.

#### 285-5 Variation in Earthwork Quantities.

The Plans will identify the optional materials used by the Owner for determining the earthwork quantities (Roadway Excavation, Borrow Excavation, Subsoil Excavation, Subsoil Earthwork, or Embankment). The Owner will not revise the quantities, for those items having final pay based on plan quantity, to reflect any volumetric change caused by the Contractor's selection of a different optional material.

#### 285-6 Thickness Requirements.

**285-6.1 Measurements:** For non-asphalt bases, meet the requirements of 200-7.3.1.2.

For subbases, meet the thickness requirements of 290-4.

The Engineer will determine the thickness of asphalt base courses in accordance with 234-8.1.

**285-6.2 Correction of Deficient Areas:** For non-asphalt bases, correct all areas of the completed base having a deficiency in thickness in excess of 1/2 inch by scarifying and adding additional base material. As an exception, if authorized by the Engineer, such areas may be left in place without correction and with no payment.

For asphalt bases, correct all areas of deficient thickness in accordance with 234-8.

**285-7 Calculation of Average Thickness of Base.**

For bases that are not mixed in place, the Engineer will determine the average thickness from the measurements specified in 285-6.1, calculated as follows:

1. When the measured thickness is more than 1/2 inch greater than the design thickness shown on the typical cross-section in the Plans, it will be considered as the design thickness plus 1/2 inch.
2. Average thickness will be calculated per typical cross-section for the entire job as a unit.
3. Any areas of base left in place with no payment will not be included in the calculations.
4. Where it is not possible through borings to distinguish the base materials from the underlying materials, the thickness of the base used in the measurement will be the design thickness.
5. For Superpave asphalt base course, the average spread rate of each course shall be constructed in compliance with 234-8.

**285-8 Method of Measurement.**

The quantity to be paid for will be the plan quantity area in square yards, omitting any areas where under-thickness is in excess of the allowable tolerance as specified in 285-6. The pay area will be the surface area, determined as provided above, adjusted in accordance with the following formula:

$$\text{Pay Area} = \text{Surface Area} \left( \frac{\text{Calculated Average Thickness per 285 - 7}}{\text{Plan Thickness}} \right)$$

The pay area shall not exceed 105% of the surface area.

There will be no adjustment of the pay area on the basis of thickness for base courses constructed utilizing mixed-in-place operations.

For Superpave asphalt base course, the quantity to be paid for will be the plan quantity area in square yards. The pay area will be adjusted in accordance with 234-9.

**285-9 Basis of Payment.**

Price and payment will be full compensation for all work specified in this Section, including tack coat between base layers, prime coat, cover material for prime coat, bituminous material used in bituminous plant mix, and cement used in soil-cement.

For superpave asphalt base course, a pay adjustment based upon the quality of the material will be applied in accordance with 334-8.

Where the Plans include a typical cross-section which requires the construction of an asphalt base only, price adjustments for bituminous material provided for in 9-2.1.2 will apply to that typical cross-section.

For typical cross-sections which permit the use of asphalt or other materials for construction of an optional base, price adjustments for bituminous material provided for in 9-2.1.2 will not apply.

Payment will be made under:

|                       |                                |                              |
|-----------------------|--------------------------------|------------------------------|
| <b>Item No. 285-1</b> | <b>8" Limerock Base Course</b> | <b>-per Square Yard (SY)</b> |
|-----------------------|--------------------------------|------------------------------|

**END OF SECTION 285**

## SECTION 334

### SUPERPAVE ASPHALT CONCRETE

#### 334-1 Description.

**334-1.1 General:** Construct a Superpave Asphalt Concrete pavement with the type of mixture specified in the Contract Documents, or when offered as alternates, as selected. Superpave mixes are identified as Type SP-9.5, Type SP-12.5 or Type SP-19.0.

Producers must meet the requirements of Section 320 for plant and equipment and the general construction requirements of Section 330.

**334-1.2 Traffic Levels:** The requirements for Type SP Asphalt Concrete mixtures are based on the design traffic level of the project. The traffic levels for the project are as specified in the Contract Documents.

**334-1.3 Gradation Classification:** The Superpave mixes are classified as fine and are defined in 334-3.2.2.

The equivalent AASHTO nominal maximum aggregate size Superpave mixes are as follows:

|                   |         |
|-------------------|---------|
| Type SP-9.5.....  | 9.5 mm  |
| Type SP-12.5..... | 12.5 mm |
| Type SP-19.0..... | 19.0 mm |

**334-1.4 Thickness:** The total thickness of the Type SP asphalt layers will be the plan thickness as shown in the Contract Documents. Before paving, propose a thickness for each individual layer meeting the requirements of this specification, which when combined with other layers (as applicable) will equal the plan thickness. For construction purposes, the plan thickness and individual layer thickness will be converted to spread rate based on the maximum specific gravity of the asphalt mix being used, as well as the minimum density level, as shown in the following equation:

$$\text{Spread rate (lbs/yd}^2\text{)} = t \times G_{mm} \times 43.3$$

Where:  $t$  = Thickness (in.) (plan thickness or individual layer thickness)  
 $G_{mm}$  = Maximum specific gravity from the verified mix design

The weight of the mixture shall be determined as provided in 320-3.2. For target purposes only, spread rate calculations should be rounded to the nearest whole number.

Note: Plan quantities are based on a  $G_{mm}$  of 2.540, corresponding to a spread rate of 110 lbs/yd<sup>2</sup>-in. Pay quantities will be based on the actual maximum specific gravity of the mix being used.

**334-1.4.1 Layer Thicknesses:** The allowable layer thicknesses for Type SP Asphalt Concrete mixtures are as follows:

|                    |                       |
|--------------------|-----------------------|
| Type SP-9.5 .....  | 1 to 1-1/2 inches     |
| Type SP-12.5.....  | 1-1/2 to 2-1/2 inches |
| Type SP-19.0 ..... | 2 to 4 inches         |



In addition to the minimum and maximum thickness requirements, the following restrictions are placed on mixes when used as a structural course:

Type SP-9.5 - Limited to the top two structural layers, two layers maximum.

Type SP-9.5 - Do not use on Traffic Level D and E applications.

Type SP-19.0 - Do not use in the final (top) structural layer below FC-5 mixtures. Type SP-19.0 mixtures are permissible in the layer directly below FC-9.5 and FC-12.5 mixtures. Do not use in the final (top) layer of shoulders.

**334-1.4.2 Additional Requirements:** The following requirements also apply to Type SP Asphalt Concrete mixtures:

1. A minimum 1-1/2 inch initial lift is required over an Asphalt Membrane Interlayer (AMI).
2. When construction includes the paving of adjacent shoulders (less than or equal to 5 feet wide), the layer thickness for the upper pavement layer and shoulder must be the same and paved in a single pass, unless called for differently in the Contract Documents.
3. All overbuild layers must be Type SP Asphalt Concrete designed at the traffic level as stated in the Contract Documents. Use the minimum and maximum layer thicknesses as specified above unless called for differently in the Contract Documents. On variable thickness overbuild layers, the minimum and maximum allowable thicknesses will be as specified below, unless called for differently in the Contract Documents.

|                    |                   |
|--------------------|-------------------|
| Type SP-9.5 .....  | 3/8 to 2 inches   |
| Type SP-12.5 ..... | 1/2 to 3 inches   |
| Type SP-19.0.....  | 1-1/2 to 4 inches |

4. Variable thickness overbuild layers constructed using a Type SP-9.5 or SP-12.5 mixtures may be tapered to zero thickness provided the contract documents require a minimum of 1-1/2 inches of dense-graded mix placed over the variable thickness overbuild layer.

### **334-2 Materials.**

**334-2.1 General Requirements:** Meet the material requirements specified in Division III. Specific references are as follows:

|                                   |             |
|-----------------------------------|-------------|
| Superpave PG Asphalt Binder ..... | Section 916 |
| Coarse Aggregate.....             | Section 901 |
| Fine Aggregate.....               | Section 902 |

**334-2.2 Superpave Asphalt Binder:** Unless specified otherwise in the Contract Documents, use an asphalt binder grade as determined from Table 334-1.

High polymer binder mixtures may be used in lieu of mixtures with other specified binders at no additional cost to the Owner, provided they meet the traffic level and mixture type requirements of the project.

High polymer binder may be substituted in a mixture at no additional cost to the Owner when the mix design contains a maximum of 20% RAP.

**334-2.3 Reclaimed Asphalt Pavement (RAP) Material:**

**334-2.3.1 General requirements:** RAP may be used as a component of the asphalt mixture subject to the following requirements:

1. When using a PG 76-22 asphalt binder, limit the amount of RAP material used in the mix to a maximum of 20% by weight of total aggregate. As an exception, amounts greater than 20% RAP by weight of total aggregate can be used if no more than 20% by weight of the total asphalt binder comes from the RAP material. RAP is not allowed in mixtures containing High Polymer asphalt binder. High Polymer asphalt is defined in Section 916.
2. Assume full responsibility for the design, production and construction of asphalt mixes which incorporate RAP as a component material.
3. Use RAP from a Owner approved stockpile or millings from a Owner project.
4. Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.
5. Provide RAP material having a minimum average asphalt binder content of 4.0% by weight of RAP. As an exception, when using fractionated RAP, the minimum average asphalt binder content for the coarse portion of the RAP shall be 2.5% by weight of the coarse portion of the RAP. The coarse portion of the RAP shall be the portion of the RAP retained on the No. 4 sieve. The Engineer may sample the stockpiles to verify that this requirement is met.

**334-2.3.2 Material Characterization for Mix Design:** Assume responsibility for establishing the asphalt binder content, gradation, and bulk specific gravity ( $G_{sb}$ ) of the RAP material based on a representative sampling of the material by roadway cores or stockpile samples. For roadway core samples, assume responsibility for the degradation that will occur during the milling operation.

**334-2.3.3 RAP Stockpile Approval:** Prior to the incorporation of RAP into the asphalt mixture, stockpile the RAP material and obtain approval for the stockpile by one of the following methods:

1. Continuous stockpile: When RAP is obtained from one or multiple sources and is either processed, blended, or fractionated, and stockpiled in a continuous manner, assure an adequate number of test results are obtained for stockpile approval. Test the RAP material for gradation and asphalt content at a minimum frequency of one sample per 1000 tons with a minimum of six test results. Test the RAP material for  $G_{mm}$  (for  $G_{sb}$  determination) at a minimum frequency of one sample per 5000 tons with a minimum of two test results. Based on visual inspection and a review of the test data, the Engineer will determine the suitability of the stockpiled material. In addition, address the details and specifics of the processing, sampling, testing and actions to be taken in the Producer Quality Control (QC) Plan.
2. Non-continuous single stockpile: When an individual stockpile is being constructed, obtain representative samples at random locations and test the RAP material for gradation and

asphalt content at a minimum frequency of one sample per 1000 tons with a minimum of six test results. Test the RAP material for  $G_{mm}$  (for  $G_{sb}$  determination) at a minimum frequency of one sample per 5000 tons with a minimum of two test results. Based on visual inspection and a review of the test data, the Engineer will determine the suitability of the stockpiled material. Once the RAP stockpile has been approved, do not add additional material without prior approval of the Engineer.

Determine the asphalt binder content and gradation of the RAP material in accordance with FM 5-563 and FM 1-T 030, respectively. Establish the  $G_{sb}$  of the RAP material by using one of the following methods:

- a. Calculate the  $G_{sb}$  value based upon the effective specific gravity ( $G_{se}$ ) of the RAP material, determined on the basis of the asphalt binder content and maximum specific gravity ( $G_{mm}$ ) of the RAP material. The Engineer will approve the estimated asphalt binder absorption value used in the calculation.
- b. Measure the  $G_{sb}$  of the RAP aggregate, in accordance with FM 1-T 084 and FM 1-T 085. Obtain the aggregate by using a solvent extraction method.

**334-2.3.4 Pavement Coring Report:** When the Contract includes milling of the existing asphalt pavement, the Pavement Coring Report may be available on the FDOT's website.

**334-2.3.5 Asphalt Binder for Mixes with RAP:** Select the appropriate asphalt binder grade based on Table 334-1. The Engineer reserves the right to change the asphalt binder grade at design based on the characteristics of the RAP asphalt binder, and reserves the right to make changes during production.

| Table 334-1 Asphalt Binder Grade for Mixes Containing Rap |                      |
|---|----------------------|
| Percent RAP   | Asphalt Binder Grade |
| 0-15  | PG 67-22             |
| 16-30   | PG 58-22             |
| >30   | PG 53-22             |

**334-2.4 Recycled Crushed Glass:** Recycled crushed glass may be used as a component of the asphalt mixture subject to the following requirements:

1. Consider the recycled crushed glass a local material and meet all requirements specified in 902-6.
2. Limit the amount of recycled crushed glass to a maximum of 15% by weight of total aggregate.
3. Use an asphalt binder that contains an anti-stripping agent listed on the Approved Product List (APL). The anti-strip additive shall be introduced into the asphalt binder by the supplier during loading.
4. Do not use recycled crushed glass in friction course mixtures or in structural course mixtures which are to be used as the final wearing surface.

### **334-3 General Composition of Mixture.**

**334-3.1 General:** Compose the asphalt mixture using a combination of aggregate (coarse, fine or mixtures thereof), mineral filler, if required, and asphalt binder material. Size, grade and combine the aggregate fractions to meet the grading and physical properties of the mix design. Aggregates from various sources may be combined.

#### **334-3.2 Mix Design:**

**334-3.2.1 General:** Design the asphalt mixture in accordance with AASHTO R 35-12, except as noted herein. Prior to the production of any asphalt mixture, submit the proposed mix design with supporting test data indicating compliance with all mix design criteria to the Engineer. For all mix designs, include representative samples of all component materials, including asphalt binder. Allow the Director of the Office of Materials a maximum of four weeks to either conditionally verify or reject the mix as designed.

For a Traffic Level A mixture, meet the mix design criteria for a Traffic Level B mixture and for a Traffic Level D mixture meet the mix design criteria for a Traffic Level E mixture. In addition, a Type SP mix one traffic level higher than the traffic level specified in the Contract Documents may be substituted, at no cost to the Owner. Based on the previous conditions, the following substitutions are allowed:

- Traffic Level E can be substituted for Traffic Level D.
- Traffic Level D or E can be substituted for Traffic Level C.
- Traffic Level C can be substituted for Traffic Level B.
- Traffic Level B or C can be substituted for Traffic Level A.

The same traffic level and binder type that is used for the mainline traffic lanes may be placed in the shoulder at no additional cost to the Owner, even if the conditions stated above are not met for the shoulder.

Do not use more than four mix designs per nominal maximum aggregate size per traffic level per binder grade per year, where the year starts at the Notice to Proceed. Exceeding this limitation will result in a maximum Composite Pay Factor (CPF) of 1.00 as defined in 334-8.2 for all designs used beyond this limit.

Warm mix technologies (additives, foaming techniques, etc.) listed on the FDOT's website may be used in the production of the mix. The URL for obtaining this information, if available, is: <https://www.fdot.gov/materials/mac/production/warmmixasphalt/>.

When warm mix technologies are used, for mixtures containing a PG 5228, PG 58-22, or PG 67-22 binder, a mixture will be considered a warm mix asphalt design if the mixing temperature is 285°F or less. For mixtures containing a PG 76-22 or High Polymer binder, a mixture will be considered a warm mix asphalt design if the mixing temperature is 305°F or less.

The Engineer will consider any marked variations from original test data for a mix design or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of the mix design.

**334-3.2.2 Mixture Gradation Requirements:** Combine the coarse and fine aggregate in proportions that will produce an asphalt mixture meeting all of the requirements defined in this specification and conform to the gradation requirements at design as defined in AASHTO M 323-12, Table 3. Aggregates from various sources may be combined.

**334-3.2.2.1 Mixture Gradation Classification:** Plot the combined mixture gradation on an FHWA 0.45 Power Gradation Chart. Include the Control Points from AASHTO M 323-12, Table-3, as well as the Primary Control Sieve (PCS) Control Point from AASHTO M 323-12, Table 4. Fine mixes are defined as having a gradation that passes above the primary control sieve control point and above the maximum density line for all sieve sizes smaller than the primary control sieve and larger than the No. 100 sieve.

**334-3.2.3 Aggregate Consensus Properties:** For Traffic Level C through E mixtures, meet the following consensus properties at design for the aggregate blend. Aggregate consensus properties do not apply to Traffic Level A and B mixtures.

**334-3.2.3.1 Coarse Aggregate Angularity:** When tested in accordance with ASTM D 5821-01 (2006), meet the percentage of fractured faces requirements specified in AASHTO M 323-12, Table 5.

**334-3.2.3.2 Fine Aggregate Angularity:** When tested in accordance with AASHTO T 304-11, Method A, meet the uncompacted void content of fine aggregate specified in AASHTO M 323-12, Table 5.

**334-3.2.3.3 Flat and Elongated Particles:** When tested in accordance with ASTM D 4791-10, (with the exception that the material passing the 3/8 inch sieve and retained on the No. 4 sieve shall be included), meet the requirements specified in AASHTO M 323-12, Table 5. Measure the aggregate using the ratio of 5:1, comparing the length (longest dimension) to the thickness (shortest dimension) of the aggregate particles.

**334-3.2.3.4 Sand Equivalent:** When tested in accordance with AASHTO T 176-08, meet the sand equivalent requirements specified in AASHTO M 323-12, Table 5.

**334-3.2.4 Gyratory Compaction:** Compact the design mixture in accordance with AASHTO T 312-12, with the following exception: use the number of gyrations at  $N_{design}$  as defined in Table 334-2. Measure the inside diameter of gyratory molds in accordance with AASHTO T 312-12.

| Table 334-2 Gyratory Compaction Requirements |                                  |
|--|----------------------------------|
| Traffic Level                                | $N_{design}$ Number of Gyrations |
| A  | 50                               |
| B  | 65                               |
| C  | 75                               |
| D  | 100                              |
| E  | 100                              |

**334-3.2.5 Design Criteria:** Meet the requirements for nominal maximum aggregate size as defined in AASHTO M 323-12, as well as for relative density, VMA, VFA, and dust-to-binder ratio

as specified in AASHTO M 323-12, Table 6.  $N_{initial}$  and  $N_{maximum}$  requirements are not applicable.

**334-3.2.6 Moisture Susceptibility:** For all traffic levels, use a liquid anti-strip agent listed on the APL at the specified dosage rate. Hydrated lime may be used instead of the liquid anti-strip agent.

Provide a mixture having a retained tensile strength ratio of at least 0.80 and a minimum tensile strength (unconditioned) of 100 psi.

**334-3.2.7 Additional Information:** In addition to the requirements listed above, provide the following information with each proposed mix design submitted for verification:

1. The design traffic level and the design number of gyrations ( $N_{design}$ ).
2. The source and description of the materials to be used.
3. The source of the aggregate components.
4. The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use. Compensate for any change in aggregate gradation caused by handling and processing as necessary.
5. A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly material passing the No. 200 sieve) should be accounted for and identified.
6. The bulk specific gravity ( $G_{sb}$ ) value for each individual aggregate and RAP component.
7. A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%.
8. A target temperature for the mixture at the plant (mixing temperature) and a target temperature for the mixture at the roadway (compaction temperature) in accordance with 320-6.3. Do not exceed a target temperature of 340°F for High Polymer asphalt binder, 330°F for PG 76-22 asphalt binders, and 315°F for unmodified asphalt binders.
9. Provide the physical properties at the optimum asphalt content, which must conform to all specified requirements.
10. The name of the Construction Training Qualification Program (CTQP) Qualified Mix Designer.
11. The ignition oven calibration factor.
12. The warm mix technology, if used.

**334-3.3 Mix Design Revisions:** During production, the Contractor may request a target value revision to a mix design, subject to meeting the following requirements: the target change falls within the limits defined in Table 334-3, appropriate data exists demonstrating that the mix

complies with production air voids specification criteria, and the mixture gradation meets the basic gradation requirements defined in 334-3.2.2.

| Table 334-3 Limits for Potential Adjustments to Mix Design Target Values   |                                |
|--|--------------------------------|
| Characteristic   | Limit from Original Mix Design |
| No. 8 sieve and Coarser  | ±5.0%                          |
| No. 16 sieve   | ±4.0%                          |
| No. 30 sieve   | ±4.0%                          |
| No. 50 sieve   | ±3.0%                          |
| No. 100 sieve  | ±3.0%                          |
| No. 200 sieve  | ±1.0%                          |
| Asphalt Binder Content <sup>(1)</sup>  | ±0.3%                          |
| Each Component of Aggregate Blend <sup>(2)</sup>   | ±5.0%                          |
| <sup>(1)</sup> Reductions to the asphalt binder content will not be permitted if the VMA during production is lower than 1.0% below the design criteria. |                                |
| <sup>(2)</sup> Revisions to FC-5 mixtures to be determined by the Engineer   |                                |

Submit all requests for revisions to mix designs, along with supporting documentation, to the Engineer. In order to expedite the revision process, the request for revision or discussions on the possibility of a revision may be made verbally, but must be followed up by a written request. The verified mix design will remain in effect until the Engineer authorizes a change. In no case will the effective date of the revision be established earlier than the date of the first communication between the Contractor and the Engineer regarding the revision.

A new design mix will be required if aggregate sources change, or for any substitution of an aggregate product with a different aggregate code, unless approved by the Engineer.

#### **334-4 Producer Process Control (PC).**

Assume full responsibility for controlling all operations and processes such that the requirements of these Specifications are met at all times. Perform any tests necessary at the plant and roadway for process control purposes. The Engineer will not use these test results in the acceptance payment decision.

Address in the Producer QC Plan how PC failures will be handled. When a PC failure occurs, investigate, at a minimum, the production process, testing equipment and/or sampling methods to determine the cause of the failure, and make any necessary changes to assure compliance with these Specifications. Obtain a follow up sample immediately after corrective actions are taken to assess the adequacy of the corrections. In the event the follow-up PC sample also fails to meet Specification requirements, cease production of the asphalt mixture until the problem is adequately resolved to the satisfaction of the QC Manager.

#### **334-5 Acceptance of the Mixture.**

**334-5.1 General:** The mixture will be accepted at the plant with respect to gradation ( $P_{-8}$  and  $P_{-200}$ ), asphalt content ( $P_b$ ), and volumetrics (volumetrics is defined as air voids at  $N_{design}$ ). The mixture will be accepted on the roadway with respect to density of roadway cores. Acceptance will be on a LOT by LOT basis (for each mix design) based on tests of random samples obtained within each subplot taken at a frequency of one set of samples per subplot. A roadway LOT and a plant production LOT

shall be the same. Acceptance of the mixture will be based on Contractor QC test results that have been verified by the Engineer.

**334-5.1.1 Sampling and Testing Requirements:** Obtain the samples in accordance with FM 1-T 168. Obtain samples at the plant of a sufficient quantity to be split into three smaller samples; one for QC, one for Verification testing and one for Resolution testing; each sample at approximately 35 pounds. The split samples for Verification testing and Resolution testing shall be reduced in size and stored in three boxes each. The approximate size of each box must be 12 inches x 8 inches x 4 inches. Provide, label and safely store sample boxes in a manner agreed upon by the Engineer for future testing.

The asphalt content of the mixture will be determined in accordance with FM 5-563. The gradation of the recovered aggregate will be determined in accordance with FM 1-T 030. Volumetric testing will be in accordance with AASHTO T 312-12 and FM 1-T 209. Prior to testing volumetric samples, condition the test-sized sample for one hour, plus or minus five minutes, at the target roadway compaction temperature in a shallow, flat pan, such that the mixture temperature at the end of the one hour conditioning period is within plus or minus 20°F of the roadway compaction temperature. Test for roadway density in accordance with FM 1-T 166.

**334-5.1.2 Acceptance Testing Exceptions:** When the total combined quantity of hot mix asphalt for the project, as indicated in the Plans for Type B-12.5, Type SP and Type FC mixtures only, is less than 2000 tons, the Engineer will accept the mix on the basis of visual inspection. The Engineer may require the Contractor to run process control tests for informational purposes, as defined in 334-4, or may run independent verification tests to determine the acceptability of the material.

Density testing for acceptance will not be performed on widening strips or shoulders with a width of 5 feet or less, open-graded friction courses, variable thickness overbuild courses, leveling courses, any asphalt layer placed on subgrade (regardless of type), miscellaneous asphalt pavement, shared use paths, crossovers, gore areas, or any course with a specified thickness less than 1 inch or a specified spread rate that converts to less than 1 inch as described in 334-1.4. Density testing for acceptance will not be performed on asphalt courses placed on bridge decks or approach slabs; compact these courses in static mode only per the requirements of 330-7.7. In addition, density testing for acceptance will not be performed on the following areas when they are less than 500 feet (continuous) in length: turning lanes, acceleration lanes, deceleration lanes, shoulders, parallel parking lanes or ramps. Do not perform density testing for acceptance in situations where the areas requiring density testing is less than 50 tons within a sublot.

Density testing for acceptance will not be performed in intersections. The limits of the intersection will be from stop bar to stop bar for both the mainline and side streets. A random core location that occurs within the intersection shall be moved forward or backward from the intersection at the direction of the Engineer.

Where density testing for acceptance is not required, compact these courses (with the exception of open-graded friction courses) in accordance with the rolling procedure (equipment and pattern) as approved by the Engineer or with Standard Rolling Procedure as specified in 330-7.2. In the event that the rolling procedure deviates from the procedure approved by the Engineer, or the Standard Rolling Procedure, placement of the mix shall be stopped.



The density pay factor (as defined in 334-8.2) for areas not requiring density testing for acceptance will be paid at the same density pay factor as for the areas requiring density testing within the same LOT. If the entire LOT does not require density testing for acceptance, the LOT will be paid at a density pay factor of 1.00.

**334-5.2 Full LOTs:** Each LOT will be defined (as selected by the Contractor prior to the start of the LOT) as either (1) 2,000 tons, with each LOT subdivided into four equal sublots of 500 tons each, or (2) 4,000 tons, with each LOT subdivided into four equal sublots of 1,000 tons each. As an exception to this, the initial LOT of all new mix designs shall be defined as 2,000 tons, subdivided into four equal sublots of 500 tons each. Before the beginning of a LOT, the Engineer will develop a random sampling plan for each subplot and direct the Contractor on sample points, based on tonnage, for each subplot during construction.

**334-5.3 Partial LOTs:** A partial LOT is defined as a LOT size that is less than a full LOT. A partial LOT may occur due to the following:

1. The completion of a given mix type or mix design on a project.
2. Closure of the LOT due to time. LOTs will be closed 30 calendar days after the start of the LOT. Time periods other than 30 calendar days may be used if agreed to by both the Engineer and the Contractor, but under no circumstances shall the LOT be left open longer than 90 days.
3. A LOT is terminated per 334-5.4.4.

All partial LOTs will be evaluated based on the number of tests available, and will not be redefined. If a LOT is closed before the first plant random sample is obtained, then the LOT will be visually accepted by the Engineer and the LOT pay factor will be 1.00.

**334-5.4 QC Sampling and Testing:** Obtain all samples randomly as directed by the Engineer. Should the Engineer determine that the QC requirements are not being met or that unsatisfactory results are being obtained, or should any instances of falsification of test data occur, acceptance of the Producer's QC Plan will be suspended and production will be stopped.

**334-5.4.1 Lost or Missing Verification/Resolution Samples:** In the event that any of the Verification and/or Resolution asphalt mixture samples that are in the custody of the Contractor are lost, damaged, destroyed, or are otherwise unavailable for testing, the minimum possible pay factor for each quality characteristic as described in 334-8.2 will be applied to the entire LOT in question, unless called for otherwise by the Engineer. Specifically, if the LOT in question has more than two sublots, the pay factor for each quality characteristic will be 0.55. If the LOT has two or less sublots, the pay factor for each quality characteristic will be 0.80. If only the roadway cores are lost, damaged, destroyed, or are otherwise unavailable for testing, then the minimum possible pay factor for density will be applied to the entire LOT in question. In either event, the material in question will also be evaluated in accordance with 334-5.9.5.

If any of the Verification and/or Resolution samples that are in the custody of the Owner are lost, damaged, destroyed or are otherwise unavailable for testing, the corresponding QC test result will be considered verified, and payment will be based upon the Contractor's data.

**334-5.4.2 Plant Sampling and Testing Requirements:** Obtain one random sample of mix per subplot in accordance with 334-5.1.1 as directed by the Engineer. Test the QC split sample for gradation, asphalt binder content and volumetrics in accordance with 334-5.1.1. Complete all QC testing within one working day from the time the samples were obtained.

**334-5.4.3 Roadway Sampling and Testing Requirements:** Obtain five 6 inch diameter roadway cores within 24 hours of placement at random locations as directed by the Engineer within each subplot. Test these QC samples for density ( $G_{mb}$ ) in accordance with 334-5.1.1. Obtain a minimum of three cores per subplot at random locations as identified by the Engineer in situations where the subplot/LOT was closed or terminated before the random numbers were reached or where it is impractical to cut five cores per subplot. Do not obtain cores any closer than 12 inches from an unsupported edge. The Engineer may adjust randomly generated core locations for safety purposes or as the Engineer deems necessary. Do not perform density testing for acceptance in a subplot if the plant random sample for that subplot has not been obtained. Maintain traffic during the coring operation; core the roadway, patch the core holes (within three days of coring); and trim the cores to the proper thickness prior to density testing.

Density for the subplot shall be based on the average value for the cores cut from the subplot with the target density being a percentage of the maximum specific gravity ( $G_{mm}$ ) of the subplot, as defined in the Contract. Once the average density of a subplot has been determined, do not retest the samples unless approved by the Engineer. Ensure proper handling and storage of all cores until the LOT in question has been accepted.

**334-5.4.4 Individual Test Tolerances for QC Testing:** Terminate the LOT if any of the following QC failures occur:

1. An individual test result of a subplot for air voids does not meet the requirements of Table 334-4,
2. The average subplot density does not meet the requirements of Table 334-4,
3. Two consecutive test results within the same LOT for gradation or asphalt binder content do not meet the requirements of Table 334-4,

When a LOT is terminated due to a QC failure, stop production of the mixture until the problem is resolved to the satisfaction of the QC Manager and/or Asphalt Plant Level II technician responsible for the decision to resume production after a QC failure, as identified in Section 105. In the event that it can be demonstrated that the problem can immediately be or already has been resolved, it will not be necessary to stop production. When a LOT is terminated, make all necessary changes to correct the problem. Do not resume production until appropriate corrections have been made. Prior to resuming production, inform the Engineer of the problem and corrections made to correct the problem. After resuming production, sample and test the material to verify that the changes have corrected the problem. Summarize this information and provide it to the Engineer prior to the end of the work shift when production resumes.

In the event that a QC failure is not addressed as defined above, the Engineer's approval will be required prior to resuming production after any future QC failures.

Address any material represented by a failing test result, as defined above in this subarticle, in accordance with 334-5.9.5. Any LOT terminated under this subarticle will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for all quality characteristics and will include all material placed up to the point when the LOT was terminated.

In the event that a  $G_{mm}$  test result differs by more than 0.040 from the mix design  $G_{mm}$ , investigate the causes of the discrepancy and report the findings and proposed actions to the Engineer.

| Table 334-4 Master Production Range   |                          |
|---|--------------------------|
| Characteristic  | Tolerance <sup>(1)</sup> |
| Asphalt Binder Content (%)  | Target $\pm 0.55$        |
| Passing No. 200 Sieve (%)   | Target $\pm 1.50$        |
| Air Voids (%)   | 2.30-6.00                |
| Density (minimum % $G_{mm}$ ) <sup>(2)</sup>                                      | 89.50                    |
| <sup>(1)</sup> Tolerances for sample size of $n = 1$ from the verified mix design |                          |
| <sup>(2)</sup> Based on an average of 5 randomly located cores                    |                          |

**334-5.5 Verification Testing:** In order to determine the validity of the Contractor's QC test results prior to their use in the Acceptance decision, the Engineer will run verification tests.

**334-5.5.1 Plant Testing:** At the completion of each LOT, the Engineer will test a minimum of one Verification split sample randomly selected from the LOT. Results of the testing and analysis for the LOT will be made available to the Contractor within one working day from the time the LOT is completed. Verification samples shall be reheated at the target roadway compaction temperature for 1-1/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. In lieu of the 1-1/2 hours reheating procedure, the mixture may be reheated to within plus or minus 20°F of the roadway compaction temperature using a microwave oven. Stir the mixture as necessary during the reheating process to maintain temperature uniformity. Subsequently, condition and test the mixture as described in 334-5.1.1.

The Verification test results will be compared with the QC test results based on the between-laboratory precision values shown in Table 334-5.

| Table 334-5 Between-Laboratory Precision Values |                       |
|---|-----------------------|
| Property  | Maximum Difference    |
| $G_{mm}$  | 0.016                 |
| $G_{mb}$ (gyratory compacted samples)           | 0.022                 |
| $G_{mb}$ (roadway cores)                        | 0.014                 |
| $P_b$   | 0.44%                 |
| $P_{-200}$                                      | FM 1-T 030 (Figure 2) |
| $P_{-8}$  | FM 1-T 030 (Figure 2) |

If all of the specified mix characteristics compare favorably, then the LOT will be accepted, with payment based on the Contractor's QC test data for the LOT.

If any of the results do not compare favorably, then the Resolution samples from the LOT will be sent to the Resolution laboratory for testing, as described in 3345.6.

**334-5.5.2 Roadway Testing:** At the completion of each LOT, the Engineer will determine the density (Gmb) of each core (previously tested by QC) as described in 334-5.1.1 from the same subplot as the plant samples. For situations where roadway density is not required for the random subplot chosen, then another subplot shall be randomly chosen for roadway density cores only. Results of the testing and analysis for the LOT will be made available to the Contractor within one working day from the time the LOT is completed.

The individual Verification test results will be compared with individual QC test results by the Engineer based on the between-laboratory precision values given in Table 334-5.

If each of the core test results compare favorably, then the LOT will be accepted with respect to density, with payment based on the Contractor's QC test data for the LOT.

If any of the results do not compare favorably, then the core samples from the LOT will be sent to the Resolution laboratory for testing as specified in 334-5.6.

#### **334-5.6 Resolution System:**

**334-5.6.1 Plant Samples:** In the event of an unfavorable comparison between the Contractor's QC test results and the Engineer's Verification test results on any of the properties identified in Table 334-5, the Resolution laboratory will test all of the split samples from the LOT for only the property (or properties) in question. Resolution samples shall be reheated at the target roadway compaction temperature for 1-1/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. In lieu of the 11/2 hours reheating procedure, the mixture may be reheated to within plus or minus 20°F of the roadway compaction temperature using a microwave oven. Stir the mixture as necessary during the reheating process to maintain temperature uniformity. Subsequently, condition and test the mixture as described in 334-5.1.1.

**334-5.6.2 Roadway Samples:** In the event of an unfavorable comparison between the Contractor's QC test data and the Engineer's Verification test data on the density results, the Resolution laboratory will test all of the cores from the LOT. Testing will be as described in 3345.1.1.

**334-5.6.3 Resolution Determination:** The Resolution test results (for the property or properties in question) will be compared with the QC test results based on the between-laboratory precision values shown in Table 334-5.

If the Resolution test results compare favorably with all of the QC results, then acceptance and payment for the LOT will be based on the QC results, and the Owner will bear the costs associated with Resolution testing. No additional compensation, either monetary or time, will be made for the impacts of any such testing.

If the Resolution test results do not compare favorably with all of the QC results, then acceptance and payment for the LOT will be based on the Resolution test data for the LOT, and the costs of the Resolution testing will be deducted from monthly estimates. No additional time will be granted for the impacts of any such testing.

In addition, the material failure requirements of 334-5.4.4 apply to the Resolution test data. Address any material represented by the failing test results in accordance with 334-5.9.5. For this situation, the LOT will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for all quality characteristics.

In the event of an unfavorable comparison between the Resolution test results and QC test results, make the necessary adjustments to assure that future comparisons are favorable.

**334-5.7 Independent Verification (IV) Testing:**

**334-5.7.1 Plant:** The Contractor shall provide sample boxes and take samples as directed by the Engineer for IV testing. Obtain enough material for three complete sets of tests (two samples for IV testing by the Engineer and one sample for testing by the Contractor). If agreed upon by both the Engineer and the Contractor, only one sample for IV testing by the Engineer may be obtained. IV samples will be reheated at the target roadway compaction temperature for 1-1/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. The Contractor's split sample, if tested immediately after sampling, shall be reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. If the Contractor's sample is not tested immediately after sampling, then the sample shall be reheated at the target roadway compaction temperature for 11/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. For the IV and Contractor's samples, in lieu of the 1-1/2 hours reheating procedure, the mixture may be reheated to within plus or minus 20°F of the roadway compaction temperature using a microwave oven. Stir the mixture as necessary during the reheating process to maintain temperature uniformity. Subsequently, condition and test the mixture as described in 334-5.1.1. The Contractor's test results shall be provided to the Engineer within one working day from the time the sample was obtained.

If any of the IV test results do not meet the requirements of Table 334-4, then a comparison of the IV test results and the Contractor's test results, if available, will be made. If a comparison of the IV test results and the Contractor's test results meets the precision values of Table 334-5 for the material properties in question, or if the Contractor's test results are not available, then the IV test results are considered verified and the Contractor shall cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Address any material represented by the failing test results in accordance with 334-5.9.5.

If a comparison of the IV test results and the Contractor's test results does not meet the precision values of Table 334-5 for the material properties in question, then the second IV sample shall be tested by the Engineer for the material properties in question. If a comparison between the first and second IV test results does not meet the precision values of Table 334-5 for the material properties in question, then the first IV test results are considered unverified for the material properties in question and no action shall be taken.

If a comparison between the first and second IV test results meets the precision values of Table 334-5 for the material properties in question, then the first IV sample is considered verified and the Contractor shall cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction

of the Engineer that the problem can immediately be (or already has been) resolved. Address any material represented by the failing test results in accordance with 334-5.9.5.

The Engineer has the option to use the IV sample for comparison testing as specified in 334-6.

**334-5.7.2 Roadway:** Obtain five 6 inch diameter roadway cores within 24 hours of placement, as directed by the Engineer, for IV testing. In situations where it is impractical to cut five cores per subplot, obtain a minimum of three cores per subplot at random locations, as identified by the Engineer. These independent cores will be obtained from the same LOTs and sublots as the Independent Verification Plant samples, or as directed by the Engineer. The density of these cores will be obtained as described in 334-5.1.1. If the average of the results for the subplot does not meet the requirements of Table 334-4 for density, then a comparison of the IV  $G_{mm}$  test results and the Contractor's  $G_{mm}$  test results, if available, will be made in accordance with the procedure provided in 334-5.7.1. Address any material represented by the failing test results in accordance with 334-5.9.5.

**334-5.8 Surface Tolerance:** The asphalt mixture will be accepted on the roadway with respect to surface tolerance in accordance with the applicable requirements of 330-9.

**334-5.9 Minimum Acceptable Quality Levels:**

**334-5.9.1 PFs Below 0.90:** In the event that an individual pay factor for any quality characteristic of a LOT falls below 0.90, take steps to correct the situation and report the actions to the Engineer. In the event that the pay factor for the same quality characteristic for two consecutive LOTs is below 0.90, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Actions taken must be approved by the Engineer before production resumes.

**334-5.9.2 CPFs Less Than 0.90 and Greater Than or Equal to 0.80:** If the composite pay factor for the LOT is less than 0.90 and greater than or equal to 0.80, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Actions taken must be approved by the Engineer before production resumes.

**334-5.9.3 CPFs Less Than 0.80 and Greater Than or Equal to 0.75:** If the CPF for the LOT is less than 0.80 and greater than or equal to 0.75, address the defective material in accordance with 334-5.9.5.

**334-5.9.4 CPFs Less Than 0.75:** If the CPF for the LOT is less than 0.75, remove and replace the defective LOT at no cost to the Owner, or as approved by the Engineer.

**334-5.9.5 Defective Material:** Assume responsibility for removing and replacing all defective material placed on the project, at no cost to the Owner.

As an exception to the above and upon approval of the Engineer, obtain an engineering analysis in accordance with Section 6 by an independent laboratory (as approved by the Engineer) to determine the disposition of the material. The engineering analysis must be signed and sealed by a Professional Engineer licensed in the State of Florida.

The Engineer may determine that an engineering analysis is not necessary or may perform an engineering analysis to determine the disposition of the material.

Any material that remains in place will be accepted with a CPF as determined by 334-8, or as determined by the Engineer.

If the defective material is due to a gradation, asphalt binder content or density failure, upon the approval of the Engineer the Contractor may perform delineation tests on roadway cores in lieu of an engineering analysis to determine the limits of the defective material that may require removal and replacement. Prior to any delineation testing, all sampling locations shall be approved by the Engineer. All delineation sampling and testing shall be monitored and verified by the Engineer. For materials that are defective due to air voids, an engineering analysis is required.

When evaluating defective material by engineering analysis or delineation testing, at a minimum, evaluate all material located between passing QC, PC or IV test results. Exceptions to this requirement shall be approved by the Engineer.

#### **334-6 Comparison Testing.**

At the start of the project (unless waived by the Engineer) and at other times as determined necessary by the Engineer, provide split samples for comparison testing with the Engineer. The purpose of these tests is to verify that the testing equipment is functioning properly and that the testing procedures are being performed correctly. In the event that the Engineer determines that there is a problem with the Contractor's testing equipment and/or testing procedures, immediately correct the problem to the Engineer's satisfaction. In the event that the problem is not immediately corrected, cease production of the asphalt mixture until the problem is adequately resolved to the satisfaction of the Engineer.

If so agreed to by both the Contractor and the Engineer, the split sample used for comparison testing may also be used for the QC sample. The split sample used for comparison testing must also meet the requirements for IV testing described in 334-5.7.

#### **334-7 Method of Measurement.**

For the work specified under this Section (including the pertinent provisions of Sections 320 and 330), the quantity to be paid for will be the weight of the mixture, in tons. For each pay item, excluding overbuild, the pay quantity will be based on the quantity placed on the project, limited to 105% of the adjusted plan quantity for the pay item. The adjusted plan quantity will be determined by dividing the pay item's original plan quantity (including any Engineer approved quantity revisions) by the design  $G_{mm}$  stated in 334-1.4, then multiplying it by the tonnage-weighted average  $G_{mm}$  of the mixes used for the pay item.

The bid price for the asphalt mix will include the cost of the liquid asphalt and the tack coat application as directed in 300-8. There will be no separate payment or unit price adjustment for the asphalt binder material in the asphalt mix. For the calculation of unit price adjustments of bituminous material, the average asphalt content will be based on the percentage specified in 92.1.2. The weight will be determined as provided in 320-3.2 (including the provisions for the automatic recordation system).

Prepare and submit a Certification of Quantities to the Engineer in accordance with 92.1.2.

### 334-8 Basis of Payment.

**334-8.1 General:** Price and payment will be full compensation for all the work specified under this Section (including the applicable requirements of Sections 320 and 330).

For materials accepted in accordance with 334-5, based upon the quality of the material, a pay adjustment will be applied to the bid price of the material as determined on a LOT by LOT basis. The pay adjustment will be assessed by calculating a Pay Factor for the following individual quality characteristics: pavement density, air voids, asphalt binder content, and the percentage passing the No. 200 and No. 8 sieves. The pay adjustment will be computed by multiplying a Composite Pay Factor (CPF) for the LOT by the bid price per ton.

### 334-8.2 Pay Factors:

**334-8.2.1 Partial LOTs:** For Partial LOTs where no random sample is obtained due to insufficient tonnage, a CPF of 1.00 shall be applied.

**334-8.2.2 Two or Less Sublot Test Results:** In the event that two or less sublot test results are available for a LOT, Pay Factors will be determined based on Table 334-6, using the average of the accumulated deviations from the target value. (Except for density, deviations are absolute values with no plus or minus signs.) Use the 1-Test column when there is only one sublot test result and use the 2-Tests column when there are two sublots.

| Table 334-6 Small Quantity Pay Table |                         |                                 |
|--------------------------------------|-------------------------|---------------------------------|
| Pay Factor                           | 1 Sublot Test Deviation | 2 Sublot Test Average Deviation |
| Asphalt Binder Content               |                         |                                 |
| 1.05                                 | 0.00-0.23               | 0.00-0.16                       |
| 1.00                                 | 0.24-0.45               | 0.17-0.32                       |
| 0.90                                 | 0.46-0.55               | 0.33-0.39                       |
| 0.80                                 | >0.55                   | >0.39                           |
| No. 8 Sieve                          |                         |                                 |
| 1.05                                 | 0.00-2.25               | 0.00-1.59                       |
| 1.00                                 | 2.25-4.50               | 1.60-3.18                       |
| 0.90                                 | 4.51-5.50               | 3.19-3.89                       |
| 0.80                                 | >5.50                   | >3.89                           |
| No. 200 Sieve                        |                         |                                 |
| 1.05                                 | 0.00-0.55               | 0.00-0.39                       |
| 1.00                                 | 0.56-1.10               | 0.40-0.78                       |
| 0.90                                 | 1.11-1.50               | 0.79-1.06                       |
| 0.80                                 | >1.50                   | >1.06                           |
| Air Voids                            |                         |                                 |
| 1.05                                 | 0.00-0.50               | 0.00-0.35                       |
| 1.00                                 | 0.51-1.00               | 0.36-0.71                       |
| 0.90                                 | 1.01-1.70               | 0.72-1.20                       |
| 0.80                                 | 1.71-2.00               | 1.21-1.41                       |
| 0.70                                 | 2.01-2.50               | 1.42-1.77                       |
| 0.55                                 | >2.50                   | >1.77                           |



| Table 334-6 Small Quantity Pay Table  |                            |                                 |
|---|----------------------------|---------------------------------|
| Pay Factor  | 1 Sublot Test Deviation    | 2 Sublot Test Average Deviation |
| Density <sup>(1)</sup>  |                            |                                 |
| 1.05  | +(0.00-2.00), -(0.00-0.50) | +(0.00-1.40), -(0.00-0.35)      |
| 1.00  | +(2.01-3.00), -(0.51-1.00) | +(1.41-2.10), -(0.36-0.71)      |
| 0.95  | +(3.01-3.50), -(1.01-2.00) | +(2.11-2.80), -(0.72-1.41)      |
| 0.90  | +(3.51-4.00), -(2.01-3.00) | +(2.81-3.50), -(1.42-2.12)      |
| 0.80  | +(>4.00), -(>3.00)         | +(>3.50), -(2.12)               |
| <sup>(1)</sup> Each density test result is the average of five cores. The target density is 93.00 percent of G <sub>mm</sub> (92.00 percent when compaction is limited to the static mode or for layers specified to be one inch thick). When compaction is limited to the static mode, no vibratory mode in the vertical direction will be allowed. Other vibratory modes will be allowed, if approved by the Engineer. In this case, the target density is 92.00 percent of G <sub>mm</sub> . |                            |                                 |

**334-8.2.3 Three or More Sublot Test Results:** When three or more sublot test results are available for a LOT, the variability-unknown, standard deviation method will be used to determine the estimated percentage of the LOT that is within the specification limits. The number of significant figures used in the calculations will be in accordance with requirements of AASHTO R11-06, Absolute Method.

**334-8.2.3.1 Percent Within Limits:** The percent within limits (PWL) and Pay Factors for the LOT will be calculated as described below. Variables used in the calculations are as follows:

- x = individual test value (sublot)
- n = number of tests (sublots)
- s = sample standard deviation
- $\sum x^2$  = summation of squares of individual test values
- $(\sum x)^2$  = summation of individual test values squared
- Q<sub>U</sub> = upper quality index
- USL = upper specification limit (target value plus upper specification limit from Table 334-7)
- Q<sub>L</sub> = lower quality index
- LSL = lower specification limit (target value minus lower specification limit from Table 334-7)
- P<sub>U</sub> = estimated percentage below the USL
- P<sub>L</sub> = estimated percentage above the LSL

1. Calculate the arithmetic mean ( $\bar{X}$ ) of the test values:

$$\bar{X} = \frac{\sum x}{n}$$

2. Calculate the sample standard deviation (s):

$$s = \sqrt{\frac{n\sum(x^2) - (\sum x)^2}{n(n-1)}}$$

3. Calculate the upper quality index (QU):

$$Q_U = \frac{USL - \bar{X}}{s}$$

4. Calculate the lower quality index (QL):

$$Q_L = \frac{\bar{X} - LSL}{s}$$

5. From Table 334-8, determine the percentage of work below the USL ( $P_U$ ).
6. From Table 334-8, determine percentage of work above the LSL ( $P_L$ ) Note: If USL or LSL is not specified; percentages within (USL or LSL) will be 100.
7. If  $Q_U$  or  $Q_L$  is a negative number, then calculate the percent within limits for  $Q_U$  or  $Q_L$  as follows: enter Table 334-8 with the positive value of  $Q_U$  or  $Q_L$  and obtain the corresponding percent within limits for the proper sample size. Subtract this number from 100.00. The resulting number is the value to be used in the next step (Step 8) for the calculation of quality level.
8. Calculate the percent within limits (PWL) =  $(P_U + P_L) - 100$
9. Calculate the Pay Factor (PF) for each quality characteristic using the equation given in 334-8.2.3.2.

| Table 334-7 Specification Limits  |                                   |
|---|-----------------------------------|
| Quality Characteristic  | Specification Limits              |
| Passing No. 8 sieve (percent)   | Target $\pm 3.1$                  |
| Passing No. 200 sieve (percent)   | Target $\pm 1.0$                  |
| Asphalt Content (percent)   | Target $\pm 0.40$                 |
| Air Voids (percent)   | 4.00 $\pm$ 1.20                   |
| Density, vibratory mode (percent of $G_{mm}$ )  | 93.00 +3.00, -1.20                |
| Density, static mode (percent of $G_{mm}$ )   | 32.00 +4.00, -1.50 <sup>(1)</sup> |
| <sup>(1)</sup> No vibratory mode in the vertical direction will be allowed. Other vibratory modes will be allowed, if approved by the Engineer. |                                   |

| Table 334-8 Percent Within Limits |  |       |       |       |
|-----------------------------------|--|-------|-------|-------|
| Quality Index                     | Percent within Limits for Selected Sample Size |       |       |       |
|                                   | n=3  | n=4   | n=5   | n=6   |
| 0.00                              | 50.00  | 50.00 | 50.00 | 50.00 |
| 0.05                              | 51.38  | 51.67 | 51.78 | 51.84 |
| 0.10                              | 52.76  | 53.33 | 53.56 | 53.67 |
| 0.15                              | 54.15  | 55.00 | 55.33 | 55.50 |
| 0.20                              | 55.54  | 56.67 | 57.10 | 57.32 |

| Table 334-8 Percent Within Limits |  |        |        |       |
|-----------------------------------|--|--------|--------|-------|
| Quality Index                     | Percent within Limits for Selected Sample Size |        |        |       |
|                                   | n=3  | n=4    | n=5    | n=6   |
| 0.25                              | 56.95  | 58.33  | 58.87  | 59.14 |
| 0.30                              | 58.37  | 60.00  | 60.63  | 60.94 |
| 0.35                              | 59.80  | 61.67  | 62.38  | 62.73 |
| 0.40                              | 61.26  | 63.33  | 64.12  | 64.51 |
| 0.45                              | 62.74  | 65.00  | 65.84  | 66.27 |
| 0.50                              | 64.25  | 66.67  | 67.56  | 68.00 |
| 0.55                              | 65.80  | 68.33  | 69.26  | 69.72 |
| 0.60                              | 67.39  | 70.00  | 70.95  | 71.41 |
| 0.65                              | 69.03  | 71.67  | 72.61  | 73.08 |
| 0.70                              | 70.73  | 73.33  | 74.26  | 74.71 |
| 0.75                              | 72.50  | 75.00  | 75.89  | 76.32 |
| 0.80                              | 74.36  | 76.67  | 77.49  | 77.89 |
| 0.85                              | 76.33  | 78.33  | 79.07  | 79.43 |
| 0.90                              | 78.45  | 80.00  | 80.62  | 80.93 |
| 0.95                              | 80.75  | 81.67  | 82.14  | 82.39 |
| 1.00                              | 83.33  | 83.33  | 83.64  | 83.80 |
| 1.05                              | 86.34  | 85.00  | 85.09  | 85.18 |
| 1.10                              | 90.16  | 86.67  | 86.52  | 86.50 |
| 1.15                              | 97.13  | 88.33  | 87.90  | 87.78 |
| 1.20                              | 100.00   | 90.00  | 89.24  | 89.01 |
| 1.25                              | 100.00   | 91.67  | 90.54  | 90.19 |
| 1.30                              | 100.00   | 93.33  | 91.79  | 91.31 |
| 1.35                              | 100.00   | 95.00  | 92.98  | 92.37 |
| 1.40                              | 100.00   | 96.67  | 94.12  | 93.37 |
| 1.45                              | 100.00   | 98.33  | 95.19  | 94.32 |
| 1.50                              | 100.00   | 100.00 | 96.20  | 95.19 |
| 1.55                              | 100.00   | 100.00 | 97.13  | 96.00 |
| 1.60                              | 100.00   | 100.00 | 97.97  | 96.75 |
| 1.65                              | 100.00   | 100.00 | 98.72  | 97.42 |
| 1.70                              | 100.00   | 100.00 | 99.34  | 98.02 |
| 1.75                              | 100.00   | 100.00 | 99.81  | 98.55 |
| 1.80                              | 100.00   | 100.00 | 100.00 | 98.99 |
| 1.85                              | 100.00   | 100.00 | 100.00 | 99.36 |
| 1.90                              | 100.00   | 100.00 | 100.00 | 99.65 |
| 1.95                              | 100.00   | 100.00 | 100.00 | 99.85 |

| Table 334-8 Percent Within Limits |  |        |        |        |
|-----------------------------------|--|--------|--------|--------|
| Quality Index                     | Percent within Limits for Selected Sample Size |        |        |        |
|                                   | n=3  | n=4    | n=5    | n=6    |
| 2.00                              | 100.00   | 100.00 | 100.00 | 99.97  |
| 2.05                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.10                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.15                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.20                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.25                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.30                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.35                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.40                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.45                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.50                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.55                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.60                              | 100.00   | 100.00 | 100.00 | 100.00 |
| 2.65                              | 100.00   | 100.00 | 100.00 | 100.00 |

**334-8.2.3.2 Pay Factors (PF):** Pay Factors will be calculated by using the following equation:

$$\text{Pay Factor} = \frac{55 + 0.5 \times \text{PWL}}{100}$$

The PWL is determined from Step (8) of 334-8.2.3.1.

**334-8.3 Composite Pay Factor (CPF):** A CPF for the LOT will be calculated based on the individual PFs with the following weighting applied: 40% Density (D), 25% Air Voids ( $V_a$ ), 20% asphalt binder content ( $P_b$ ), 10% Passing No. 200 ( $P_{-200}$ ) and 5% Passing No. 8 ( $P_{-8}$ ). Calculate the CPF by using the following formula:

$$CPF = (0.40 \times PF D) + (0.25 \times PF V_a) + (0.20 \times PF P_b) + (0.10 \times PF P_{-200}) + (0.05 \times PF P_{-8})$$

Where the PF for each quality characteristic is determined in either 334-8.2.2 or 334-8.2.3, depending on the number of subplot tests. Note that the number after each multiplication will be rounded to the nearest 0.01.

The pay adjustment shall be computed by multiplying the CPF for the LOT by the bid price per ton.

**334-8.4 Payment:** Payment will be made under:

**Item No. 334-1      2.5" Superpave Asphaltic Concrete      -per Ton (TON)**

**END OF SECTION 334**

## SECTION 425

### INLETS, MANHOLES, AND JUNCTION BOXES

#### 425-1 Description.

Construct inlets, manholes, and junction boxes from reinforced concrete as shown in the Standard Plans and the Plans. Furnish and install the necessary metal frames and gratings. Construct yard drains from concrete meeting the requirements of Section 347. Adjust structures shown in the Plans to be adjusted or requiring adjustment for the satisfactory completion of the work.

For precast structures, meet the requirements in 449-1.

#### 425-2 Composition and Proportioning.

**425-2.1 Concrete:** For inlets, manholes, and junction boxes, use Class II or IV concrete, as designated in the Plans and Standard Plans and as specified in Section 346. For yard drains use concrete as specified in Section 347.

**425-2.2 Mortar:** For brick masonry, make the mortar by mixing one part cement to three parts sand. Miami Oolitic rock screenings may be substituted for the sand, provided the screenings meet the requirements of 902 except for gradation requirements. Use materials passing the No. 8 sieve that are well graded from coarse to fine. Submit documentation, from a FDOT approved mine or a FDOT approved concrete plant, confirming the sand or sand substitute meets the requirements of 902-3.2.

Preblended masonry cement mortar may be used in lieu of the above-specified mortar. Deliver the product in original and unopened packages properly identified by brand name of manufacturer, net weight of package, and type. Store the material in full compliance with the manufacturer's recommendations. Material must be used within manufacturer's recommended shelf life.

#### 425-3 Materials.

**425-3.1 General:** Meet the following requirements:

|   |                      |
|---|----------------------|
| Sand (for mortar).....                                  | Section 902          |
| Portland Cement .....                                   | Section 921          |
| Water.....  | Section 923          |
| Reinforcing Steel .....                                 | Sections 931 and 415 |
| Liner Repair Systems .....                              | Section 948          |
| Brick and Concrete Masonry Units .....                  | Section 949          |
| Castings for Frames and Gratings.....                   | Section 962          |
| Masonry Cement, Type M or S.....                        | ASTM C91             |
| Preblended Dry Masonry Cement Mortar, Type M or S ..... | ASTM C1714           |

**425-3.2 Gratings, Covers, and Frames:** Use gratings and frames fabricated from structural steel or cast iron as designated in the appropriate Standard Plans Index. When "Alt. G" grates are specified in the Plans, provide structural steel grates that are galvanized in accordance with the requirements of ASTM A123.

Use rigid frames and covers either 24 inches or 36 inches or optional three-piece adjustable frames and covers as indicated in Standard Plans, Index 425-001.

For three-piece adjustable frames, the inner frame may include replaceable resilient seats to support the cover. In addition, the inner frame shall indicate it is adjustable, by clearly having the word "adjustable" imprinted into the exposed portion of the inner frame so "adjustable" is visible from the roadway after installation.

#### **425-4 Forms.**

Design and construct wood or metal forms so that they may be removed without damaging the concrete. Build forms true to line and grade and brace them in a substantial and unyielding manner. Obtain the Engineer's approval before filling them with concrete.

#### **425-5 Precast Inlets, Manholes, and Junction Boxes.**

Precast inlets, manholes, and junction boxes, designed and fabricated in accordance with the Plans, the Standard Plans and Section 449 may be substituted for cast-in-place units.

#### **425-6 Construction Methods.**

**425-6.1 Excavation:** Excavate as specified in Section 125.

Where unsuitable material for foundations is encountered, excavate the unsuitable material and backfill with suitable material prior to constructing or setting inlets, manholes and junction boxes.

As an option to the above and with the Engineer's approval, the Contractor may carry the walls down to a depth required for a satisfactory foundation, backfill to 8 inches below the flowline with clean sand and cast a non-reinforced 8 inch floor.

**425-6.2 Placing and Curing Concrete:** Place the concrete in the forms, to the depth shown in the Plans, and thoroughly vibrate it. After the concrete has hardened sufficiently, cover it with suitable material and keep it moist for a period of three days. Finish the traffic surface in accordance with 522-7.2, or with a simulated broom finish approved by the Engineer.

**425-6.3 Setting Manhole Castings:** After curing the concrete as specified above, set the frame of the casting in a full mortar bed composed of one part portland cement to two parts of fine aggregate.

**425-6.3.1 Standard Castings:** Set manhole frames in a mortar bed and adjust to grade using brick or concrete grade rings, with a maximum 12 inch adjustment.

**425-6.3.2 Optional Adjustable Castings:** When using a three-piece adjustable frame and cover, install the frame and cover with brick or concrete grade rings to the base course height. Make adjustments using the inner frame in accordance with the manufacturer's installation recommendations so the inner frame and cover meet the grade and slope of the pavement surface opened to traffic.

**425-6.4 Reinforcing Steel:** Follow the construction methods for the steel reinforcement as specified in Section 415.

**425-6.5 Laying Brick:** Brick masonry may be used if the structure is circular and constructed in place, or for adjustments of rectangular risers up to a maximum 12 inches in height. Saturate all brick with water before laying. Bond the brick thoroughly into the mortar using the shove-joint method to lay the brick. Arrange headers and stretchers so as to bond the mass thoroughly. Finish the joints properly as the work progresses and ensure that they are not less than 1/4 inch or more than 3/4

inch in thickness. Do not use spalls or bats except for shaping around irregular openings or when unavoidable at corners.

**425-6.6 Backfilling:** Backfill as specified in Section 125, meeting the specific requirements for backfilling and compaction around inlets, manholes, and junction boxes detailed in 125-8.1 and 125-8.2. However; for outfall lines beyond the sidewalk or future sidewalk area, where no vehicular traffic will pass over the pipe, inlets, manholes, and junction boxes, compact backfill as required in 125-9.2.2.

**425-6.7 Adjusting Structures:** Adjust existing manholes, catch basins, inlets, valve boxes, etc., within the limits of the proposed work, to meet the finished grade of the proposed pavement, or if outside of the proposed pavement area, to the finished grade designated in the Plans for such structures. Adjust structures prior to placement of final asphalt pavement surface layer. Adjust structures to match final pavement surface cross-slope. Use materials and construction methods which meet the requirements specified above to adjust the existing structures.

The Contractor may extend manholes needing to be raised using adjustable extension rings of the type which do not require the removal of the existing manhole frame. Use an extension device that provides positive locking action and permits adjustment in height as well as diameter and meets the approval of the Engineer. When adjusting structures in flexible pavement, restore final road surface in accordance with Standard Plans, Index 125-001.

#### **425-7 Method of Measurement.**

The quantities to be paid for will be the number of inlets, manholes, junction boxes, and yard drains, completed and accepted; and the number of structures of these types (including also valve boxes) satisfactorily adjusted.

#### **425-8 Basis of Payment.**

**425-8.1 New Structures:** Price and payment will be full compensation for furnishing all materials and completing all work described herein or shown in the Plans, including all clearing and grubbing outside the limits of clearing and grubbing as shown in the Plans, all excavation except the volume included in the measurement designated to be paid for under the items for the grading work on the project, all backfilling around the structures, the disposal of surplus material, and the furnishing and placing of all gratings, frames, covers, and any other necessary fittings.

**425-8.2 Adjusted Structures:** When an item of payment for adjusting manholes, valve boxes, or inlets is provided in the proposal, price and payment will be full compensation for the number of such structures designated to be paid for under such separate items, and which are satisfactorily adjusted, at the Contract unit prices each for adjusting inlets, adjusting manholes, and adjusting valve boxes.

For any of such types of these structures required to be adjusted but for which no separate item of payment is shown in the proposal for the specific type, payment will be made under the item of adjusting miscellaneous structures.

**425-8.3 Payment Items:** Payment will be made under:

|                   |                          |                       |
|-------------------|--------------------------|-----------------------|
| <b>Item 425-1</b> | <b>FDOT Type 'C' DBI</b> | <b>-per Each (EA)</b> |
| <b>Item 425-2</b> | <b>FDOT Type 'D' DBI</b> | <b>-per Each (EA)</b> |
| <b>Item 425-3</b> | <b>18" MES</b>           | <b>-per Each (EA)</b> |

**END OF SECTION 425**



## SECTION 430

### PIPE CULVERTS

#### 430-1 Description.

Furnish and install drainage pipe and end sections at the locations called for in the Plans. Furnish and construct joints and connections to existing pipes, catch basins, inlets, manholes, walls, etc., as may be required to complete the work.

At the beginning of each project, submit a notarized certification statement to the Engineer in accordance with Section 6. The Quality Control Manager's stamp or label on each product indicates certification that the product was fabricated in conformance with the Producer QC Plan, the Contract, and this Section. Ensure that each shipment of drainage products to the project site is accompanied with a QC signed or stamped delivery ticket providing the description and the list of the products.

When the Producer Quality Control Program is suspended by the Owner, accept responsibility of either obtaining products from a plant with an approved Quality Control Program, or await re-approval of the plant. The Engineer will not allow changes in Contract Time or completion dates as a result of the plant's loss of qualification. Accept responsibility for all delay costs or other costs associated with the loss of the plant's qualification.

Construct structural plate pipe culverts or underdrains in accordance with Sections 435 and 440.

For pipe culverts installed by jack & bore, install in accordance with Section 556.

#### 430-2 Materials.

**430-2.1 Pipe:** Meet the following requirements:

|   |             |
|---|-------------|
| Concrete Pipe .....                             | Section 449 |
| Steel Pipe .....                                | 556-2.1     |
| Round Rubber Gaskets .....                      | Section 942 |
| Resilient Connectors* .....                     | Section 942 |
| Corrugated Steel Pipe and Pipe Arch.....        | Section 943 |
| Corrugated Aluminum Pipe and Pipe Arch .....    | Section 945 |
| Corrugated Polyethylene Pipe .....              | Section 948 |
| Steel Reinforced Polyethylene Ribbed Pipe ..... | Section 948 |
| Corrugated Polypropylene Pipe.....              | Section 948 |
| Corrugated Polyvinyl Chloride (PVC) Pipe .....  | Section 948 |
| Fiberglass Reinforced Polymer Pipe .....        | Section 948 |
| Liner Repair Systems .....                      | Section 948 |

\*Use resilient connector products listed on the FDOT's Approved Product List (APL).

**430-2.2 Joint Materials:** Use joint materials specified in 430-7 through 430-9 according to type of pipe and conditions of usage.

**430-2.3 Mortar:** Use mortar composed of one part Portland cement and two parts of clean, sharp sand, to which mixture the Contractor may add hydrated lime in an amount not to exceed 15% of the cement content. Use mortar within 30 minutes after its preparation.

#### **430-3 Type of Pipe to Be Used.**

**430-3.1 General:** Prior to the preconstruction conference, submit to the Engineer which optional pipe material from the optional materials tabulation sheet will be used. Once a pipe material is selected, do not change pipe materials without approval of the Engineer.

When the Plans designate a type (or types) of pipe, use only the type (or choose from the types) designated. As an exception, when the Plans designate reinforced concrete pipe as Class S, Class I, Class II, Class III and Class IV, the Contractor may use non-reinforced concrete pipe up to and including 36 inch in diameter.

**430-3.2 Side Drain:** If the Plans do not designate a type (or types) of pipe, the Contractor may use either a minimum Class I concrete pipe, corrugated steel pipe, corrugated aluminum pipe, corrugated high-density polyethylene pipe, steel reinforced polyethylene ribbed pipe, polypropylene pipe, or PVC pipe. If one of the metal types is chosen, use the minimum gage specified in Section 943 for steel pipe or Section 945 for aluminum pipe. Alternatively, when metal pipe is allowed and no future maintenance concerns exist, the Contractor may propose the pipe gage based on the FDOT's Drainage Manual and Culvert Service Life Estimator for approval by the Engineer. When extending existing pipes, construct the pipe extensions of the same size and kind as the existing pipe. Extensions of existing pipes, whose materials are no longer produced, shall be extended with the most similar pipe material available.

Non-reinforced concrete pipe may also be substituted for concrete pipe in side drains, subject to the provisions of 430-3.1.

#### **430-4 Laying Pipe.**

**430-4.1 General:** Lay all pipe, true to the lines and grades given, with hubs up and tongue end fully entered into the hub. When pipe with quadrant reinforcement or circular pipe with elliptical reinforcement is used, install the pipe in a position such that the manufacturer's marks designating "top" and "bottom" of the pipe are not more than five degrees from the vertical plane through the longitudinal axis of the pipe. Do not allow departure from and return to plan alignment and grade to exceed 1/16 inch per foot of nominal pipe length, with a total of not more than 1 inch departure from theoretical line and grade. Take up and relay any pipe that is not in true alignment or which shows any settlement after laying at no additional expense to the Owner.

Do not use concrete pipe with lift holes except round pipe which has an inside diameter in excess of 54 inches or any elliptical pipe.

Repair lift holes, if present, with hand-placed, stiff, non-shrink, 1-to-1 mortar of cement and fine sand, after first washing out the hole with water. Completely fill the void created by the lift hole with mortar. Cover the repaired area with a 24 inch by 24 inch piece of filter fabric secured to the pipe. Use a Type D-3 filter fabric meeting the requirements specified in Section 985.

Secure the filter fabric to the pipe using a method that holds the fabric in place until the backfill is placed and compacted. Use grout mixtures, mastics, or strapping devices to secure the fabric to the pipe.

Do not cut or drill into or through the corrugations or ribs of plastic pipe except when necessary to meet the dimensional requirements shown in the Plans.

When installing pipes in structures, construct inlet and outlet pipes of the same size and kind as the connecting pipe shown in the Plans. Use the same pipe material within each continuous run of pipe. Extend the pipes through the walls for a distance beyond the outside surface sufficient for the intended connections, and construct the concrete around them neatly to prevent leakage along their outer surface as shown on Standard Plans, Index 425-001. Keep the inlet and outlet pipes flush with the inside of the wall. Resilient connectors as specified in 942-3 may be used in lieu of a masonry seal.

Furnish and install a filter fabric jacket around all pipe joints and the joint between the pipe and the structure in accordance with Standard Plans, Indexes 425-001 and 430001. Use fabric meeting the physical requirements of Type D-3 specified in Section 985. Extend the fabric a minimum of 12 inches beyond each side of the joint or both edges of the coupling band, if a coupling band is used. The fabric must have a minimum width of 24 inches, and a length sufficient to provide a minimum overlap of 24 inches. Secure the filter fabric jacket against the outside of the pipe by metal or plastic strapping or by other methods approved by the Engineer.

Meet the following minimum joint standards:

| Pipe Application       | Minimum Standard |
|------------------------|------------------|
| Storm and Cross Drains | Water-tight      |
| Gutter Drain           | Water-tight      |
| Side Drains            | Soil-tight       |

When rubber gaskets are to be installed in the pipe joint, the gasket must be the sole element relied on to maintain a tight joint. Soil tight joints must be watertight to 2 psi. Water-tight joints must be water-tight to 5 psi unless a higher pressure rating is required in the Plans.

When laying pipes that pass through mechanically stabilized earth (MSE) reinforced fill, connect the portion of the pipe within the wall to the external portion of the pipe run only after the full height of the wall supported embankment is in place.

When Wall Zone Pipes are shown in the Plans, meet the following requirements:

1. Use resilient connectors on pipes entering and leaving drainage structures.
2. Provide a 2 to 4 inch pipe overhang beyond the drainage structure internal walls.
3. For pipes without welded joints, meet the following additional requirements:
  - a. Pipe joints must be watertight to 10.8 psi when pulled out 2 inches from the fully home joint alignment.
  - b. Do not allow the gap between sections of pipe to exceed 5/8 inch for all pipe diameters.

**430-4.2 Trench Excavation:** Excavate the trench for storm and cross drains, and side drains as specified in Section 125.

**430-4.3 Foundation:** Provide a suitable foundation, where the foundation material is of inadequate supporting value, as determined by the Engineer. Remove the unsuitable material and replace it

with suitable material, as specified in 125-8. Where in the Engineer's opinion, the removal and replacement of unsuitable material is not practicable, he may direct alternates in the design of the pipe line, as required to provide adequate support. Minor changes in the grade or alignment will not be considered as an adequate basis for extra compensation.

Do not lay pipe on blocks or timbers, or on other unyielding material, except where the use of such devices is called for in the Plans.

**430-4.4 Backfilling:** Backfill around the pipe as specified in 125-8 unless specific backfilling procedures are described in the Contract Documents.

**430-4.5 Plugging Pipe:** When existing pipe culverts are to be permanently placed out of service, fill them with flowable fill that is non-excavatable, contains a minimum 350 pounds per cubic yard of cementitious material and meets the requirements of Section 121 and/or plug them with masonry plugs as shown in the Plans. Install masonry plugs that are a minimum of 8 inches in thickness, in accordance with Standard Plans, Index 430-001.

When proposed or existing pipe culverts are to be temporarily placed out of service, plug them with prefabricated plugs as shown in the Plans. Install prefabricated plugs in accordance with the manufacturer's recommendations. Do not fill or construct masonry plugs in any pipe culvert intended for current or future service.

**430-4.6 End Treatment:** Place an end treatment at each storm and cross drain, and side drain as shown in the Plans. Refer to the Standard Plans for types of end treatment details. As an exception to the above, when concrete mitered end sections are permitted, the Contractor may use reinforced concrete U-endwalls, if shop drawings are submitted to the Engineer for approval prior to use.

Provide end treatments for corrugated polyethylene pipe, polypropylene pipe, and PVC pipe as specified in Section 948, or as detailed in the Plans.

**430-4.7 Metal Pipe Protection:** Apply a bituminous coating to the surface area of the pipe within and 12 inches beyond the concrete or mortar seal prior to sealing, to protect corrugated steel or aluminum pipe embedded in a concrete structure, such as an inlet, manhole, junction box, endwall, or concrete jacket.

Ensure that the surface preparation, application methods (dry film thickness and conditions during application), and equipment used are in accordance with the coating manufacturers' published specifications.

Obtain the Engineer's approval of the coating products used.

**430-4.8 Pipe Inspection:** For pipes installed under the roadway, inspection is to be conducted when backfill reaches 3 feet above the pipe crown or upon completion of placement of the stabilized subgrade. For pipe installed within fills, including embankments confined by walls, inspection is to be conducted when compacted embankment reaches 3 feet above the pipe crown or the finished earthwork grade as specified in the Plans. Prior to conducting the inspection, submit to the Engineer a video recording schedule for videoing, dewater installed pipe, and remove all silt, debris and obstructions. Submit pipe videoing and reports to the Owner for review prior to the continuation of paving.

For pipe 48 inches or less in diameter, submit to the Engineer the video files and reports using low barrel distortion video equipment with laser profile technology, non-contact video micrometer and associated software. For all pipe types, provide a Pipe Observation Summary Report for each pipe run that includes:

1. Actual recorded length and width measurements of all cracks within the pipe.
2. Actual recorded separation measurement of all rigid pipe joints.
3. Detailed written observations of leaks, debris, or other damage or defects.

For flexible pipe types, submit a Pipe Ovality Report for each pipe run that includes:

1. Representative diameter of the pipe.
2. Pipe deformation/deflections measurements with the 5% deflection limit clearly delineated.

Laser profiling and measurement technology must be certified by the company performing the work to be in compliance with the calibration criteria posted at: <https://www.fdot.gov/construction/Engineers/Environment/Laser.shtm>. Reports submitted in electronic media are preferred.

The Engineer may waive this requirement for side drains and cross drains which are short enough to inspect from each end of the pipe.

**430-4.8.1 Video Report:** Provide video files via digital media (DVD, flash drive, or other) or by online digital distribution with a minimum standard resolution of 720 x 480. Use a camera with lighting suitable to allow a clear picture of the entire periphery of the pipe. Center the camera in the pipe both vertically and horizontally and be able to pan and tilt to a 90 degree angle with the axis of the pipe and rotating 360 degrees. Use equipment to move the camera through the pipe that will not obstruct the camera's view or interfere with proper documentation of the pipe's condition.

The video image shall be clear, focused, and relatively free from roll, static, or other image distortion qualities that would prevent the reviewer from evaluating the condition of the pipe. The video will include identification before each section of pipe filmed. The identification will include the project number, the structure number corresponding to the structure number in the Plans for the project, size of pipe, the date and time, and indicate which pipe is being filmed if multiple pipes are connected to the structure. Notes should be taken during the video recording process. Submit these notes along with the video.

Move the camera through the pipe at a speed not greater than 30 feet per minute. Mark the video with the distance down the pipe. The distance shall have an accuracy of one foot per 100 feet. Film the entire circumference at each joint. Stop the camera and pan when necessary to document and measure defects. Position the camera head perpendicular to all defects requiring measurement by the video micrometer.

**430-4.8.2 Reinspection:** At any time after reviewing the submitted pipe inspection reports, the Engineer may direct additional inspections. If no defects are observed during the reinspection,

the Owner will pay for the cost of the reinspections in accordance with 4-3. If defects are observed, the reinspection and all work performed to correct the defects will be done at no cost to the Owner. Acceptance of all replacements or repairs will be based on video documentation of the completed work prior to Final Acceptance.

#### **430-5 Removing Existing Pipe.**

If the Plans indicate that existing pipe is to remain the property of the Owner, collect and stack along the right-of-way all existing pipe or pipe arch so indicated in the Plans to be removed, or that does not conform to the lines and grades of the proposed work and that is not to be re-laid, as directed by the Engineer. Take care to prevent damage to salvageable pipe during removal and stacking operations.

#### **430-6 Placing Pipe Under Railroad.**

**430-6.1 General:** Construct pipe culverts under railroad tracks in accordance with the requirements of the railroad company.

Perform all the shoring under the tracks, and sheeting and bracing of the trench, required by the railroad company or deemed necessary by the Engineer in order to ensure safe and uninterrupted movement of the railroad equipment, at no expense to the Owner.

**430-6.2 Requirements of the Railroad Company:** Install pipe using methods required by the railroad company and shown in the Contract Documents.

When the general method of installation required by the railroad company is indicated in the Plans, do not alter such method, or any other specific details of the installation which might be indicated in the Plans, without receiving approval or direction from the railroad, followed by written approval from the Engineer.

**430-6.3 Notification to Railroad Company:** Notify the railroad company and the Engineer at least ten days prior to the date on which pipe is to be placed under the railroad tracks.

**430-6.4 Placing Pipe by Jacking:** Obtain the Engineer's and the railroad company's approval of the details of the jacking method to be used, when placing pipe through the railroad embankment, before the work is started.

**430-6.5 Use of Tunnel Liner:** When the railroad company requires that a tunnel liner be used for placing the pipe in lieu of the jacking method, the Owner will pay for the tunnel liner material separately in cases where the Contract Documents do not require the use of a tunnel liner. For these cases the Owner will reimburse the Contractor for the actual cost of the liner, delivered at the site. The Owner will base such cost on a liner having the minimum gage acceptable to the railroad.

#### **430-7 Specific Requirements for Concrete Pipe.**

**430-7.1 Sealing Joints:** Seal the pipe joints with round rubber or profile gaskets meeting the requirements of Section 449. Ensure that the gasket and the surface of the pipe joint, including the gasket recess, are clean and free from grit, dirt and other foreign matter, at the time the joints are made. In order to facilitate closure of the joint, application of a vegetable soap lubricant immediately before closing of the joint will be permitted. Prelubricated gaskets may be used in lieu of a vegetable soap lubricant when the lubricating material is certified to be inert with respect to the rubber material.

**430-7.2 Laying Requirements for Concrete Pipe with Rubber Gasket Joints:** Do not allow the gap between sections of pipe to exceed 5/8 inch for pipe diameters of 12 inches through 18 inches, 7/8 inch for pipe diameters of 24 through 66 inches, and 1 inch for pipe diameters 72 inches and larger. Where minor imperfections in the manufacture of the pipe create an apparent gap in excess of the tabulated gap, the Engineer will accept the joint provided that the imperfection does not exceed 1/3 the circumference of the pipe, and the rubber gasket is 1/4 inch or more past the pipe joint entrance taper. Where concrete pipes are outside of these tolerances, replace them at no expense to the Owner. Do not apply mortar, joint compound, or other filler to the gap which would restrict the flexibility of the joint.

**430-7.3 Field Joints for Elliptical Concrete Pipe:** Use either a preformed plastic gasket material or an approved rubber gasket to make a field joint.

**430-7.3.1 Plastic Gasket:** Meet the following requirements when field joints are made from preformed plastic gasket material:

**430-7.3.1.1 General:** Install field joints in accordance with the manufacturer's instructions and the following:

**430-7.3.1.2 Material:** Meet the requirements of 942-2.

**430-7.3.1.3 Joint Design:** Ensure that the pipe manufacturer submits details to the Engineer regarding configuration of the joint and the amount of gasket material required to affect a satisfactory seal. Do not brush or wipe joint surfaces which are to be in contact with the gasket material with a cement slurry. Fill minor voids with cement slurry.

**430-7.3.1.4 Primer:** Apply a primer of the type recommended by the manufacturer of the gasket material to all joint surfaces which are to be in contact with the gasket material, prior to application of the gasket material. Thoroughly clean and dry the surface to be primed.

**430-7.3.1.5 Application of Gasket:** Apply gasket material to form a continuous gasket around the entire circumference of the leading edge of the tongue and the groove joint, in accordance with the detail shown on Standard Plans, Index 430-001. Do not remove the paper wrapper on the exterior surface of the gasket material until immediately prior to joining of sections. Apply plastic gasket material only to surfaces which are dry. When the atmospheric temperature is below 60°F, either store plastic joint seal gaskets in an area above 70°F, or artificially warm the gaskets to 70°F in a manner satisfactory to the Engineer.

**430-7.3.1.6 Installation of Pipe:** Remove and reposition or replace any displaced or contaminated gasket as directed by the Engineer. Install the pipe in a dry trench. Carefully shape the bottom of the trench to minimize the need for realignment of sections of pipe after they are placed in the trench. Hold to a minimum any realignment of a joint after the gaskets come into contact. Prior to joining the pipes, fill the entire joint with gasket material and ensure that when the pipes are joined there is evidence of squeeze-out of gasket material for the entire internal and external circumference of the joint. Trim excess material on the interior of the pipe to provide a smooth interior surface. If a joint is defective, remove the leading section of pipe and reseal the joint.

**430-7.3.2 Rubber Gasket:** Meet the following requirements when field joints are made with profile rubber gaskets:

**430-7.3.2.1 General:** Install field joints in accordance with the manufacturer's instructions and the following:

**430-7.3.2.2 Material:** Meet the requirements of 942-4.

**430-7.3.2.3 Joint Design:** Ensure that the pipe manufacturer submits details to the Engineer regarding configuration of the joint and gasket required to effect a satisfactory seal. Do not apply mortar, joint compound, or other filler which would restrict the flexibility of the gasket joint.

**430-7.4 Requirements for Concrete Radius Pipe:**

**430-7.4.1 Design:** Construct concrete radius pipe in segments not longer than 4 feet (along the pipe centerline), except where another length is called for in the Contract Documents. Join each segment using round rubber gaskets. Ensure that the pipe manufacturer submits details of the proposed joint, segment length and shape for approval by the Engineer, prior to manufacture.

**430-7.4.2 Pre-Assembly:** Ensure that the manufacturer pre-assembles the entire radius section in his yard, in the presence of the Engineer, to ensure a proper fit for all parts. At the option of the manufacturer, the Contractor may assemble the pipe without gaskets. Consecutively number the joints on both the interior and exterior surfaces of each joint, and make match marks showing proper position of joints. Install the pipe at the project site in the same order as pre-assembly.

**430-8 Specific Requirements for Corrugated Metal Pipe.**

**430-8.1 Field Joints:**

**430-8.1.1 General:** Make a field joint with locking bands, as specified in Article 9 of AASHTO M36 and AASHTO M196M for aluminum pipe. For aluminum pipe, fabricate bands from the same alloy as the culvert sheeting.

When existing pipe to be extended is helically fabricated, make a field joint between the existing pipe and the new pipe using one of the following methods:

1. Cut the new pipe to remove one of the re-rolled annular end sections required in Sections 943 or 945, or fabricate the pipe so that the re-rolled annular section is fabricated only on one end. Use either a spiral (helical) band with a gasket or a flat band with gaskets as required by 430-8.1.2 (2) to join the pipe sections.
2. The Contractor may construct a concrete jacket as shown on Standard Plans, Index 430-001.

**430-8.1.2 Side Drain, Storm and Cross Drain, and Gutter Drains:** Where corrugated metal pipe is used as side drain, storm and cross drain, or gutter drain, use a rubber or neoprene gasket of a design shown to provide a joint as specified in 430-4.

Use a gasket of one of the following dimensions:



1. For annular joints with 1/2 inch depth corrugation: either a single gasket a minimum of 7 inches by 3/8 inch or two gaskets a minimum of 3-1/2 inches by 3/8 inch; and for annular joints with 1 inch depth corrugations: either a single gasket a minimum of 7 inches by 7/8 inch or two gaskets a minimum of 3-1/2 inches by 7/8 inch.
2. For helical joints with 1/2 inch depth corrugation: either a single gasket a minimum of 5 inches by 1 inch or two gaskets a minimum of 3-1/2 inches by 1 inch; and for helical joints with 1 inch depth corrugations: either a single gasket a minimum of 5 inches by 1-1/2 inches or two gaskets a minimum of 3-1/2 inches by 1-1/2 inches.
3. Such other gasket designs as may be approved by the Engineer.

If, in lieu of a single gasket spanning the joint, two gaskets are used, place these individual gaskets approximately 2 inches from each pipe end at the joint. When two gaskets are used, seal the overlapping area on the coupling band between the gaskets consistent with the joint performance specified. The Contractor may tuck a strip of preformed gasket material over the bottom lip of the band for this purpose. Use coupling bands that provide a minimum circumferential overlap of 3 inches. As the end connections on the coupling band are tightened, ensure that there is no local bending of the band or the connection. Use precurved coupling bands on pipe diameters of 24 inches or less.

Use flat gaskets meeting the requirements of ASTM D1056, designation 2C2 or 2B3. In placing flat gaskets on pipe prior to placing the coupling band, do not stretch the gasket more than 15% of its original circumference. Use circular gaskets meeting the requirements of ASTM C361. Do not stretch the circular gasket more than 20% of its original circumference in placing the gasket on pipe. Use preformed plastic gasket material meeting the composition requirements of 942-2.2.

Apply an approved vegetable soap lubricant, as specified for concrete pipe in 430-7.1.1.

**430-8.1.3 Alternate Joint:** In lieu of the above-specified combination of locking bands and flat gaskets, the Contractor may make field joints for these pipe installations by the following combinations:

1. Use the metal bands as specified in Article 9 of AASHTO M36M that are at least 10-1/2 inches wide and consist of a flat central section with a corrugated section near each end, designed to match the annular corrugation in the pipe with which they are to be used. Connect the bands in a manner approved by the Engineer, with a suitable fastening device such as the use of two galvanized 1/2 inch diameter bolts through a galvanized bar and galvanized strap, suitably welded to the band. Use a strap that is the same gage as the band.

Where helically corrugated pipe is to be jointed by this alternate combination, ensure that at least the last two corrugations of each pipe section are annular, and designed such that the band will engage each pipe end with the next-to-outside annular corrugation.

2. For these bands, use a rubber gasket with a circular cross-section of the "O-ring" type conforming to ASTM C361. Use gaskets having the following cross-sectional diameter for the given size of pipe:

| Non-SI Units  |                 |
|---|-----------------|
| Pipe Size   | Gasket Diameter |
| 12 inches through 36 inches (with ½ inch depth corrugations)  | 13/16 inch      |
| 42 inches through 96 inches (with ½ inch depth corrugations)  | 7/8 inch        |
| 36 inches through 120 inches (with 1 inch depth corrugations) | 1-3/8 inches    |

Use preformed gasket material to seal the overlapping area on the coupling band between gaskets.

- Use channel band couplers in helical pipe with ends which have been reformed and flanged specifically to receive these bands. Use channel band couplers that are of a two piece design, are fabricated from galvanized steel stock conforming to AASHTO M36, have 2 inch by 2 inch by 3/16 inch angles fastened to the band ends to allow for proper tightening, and meet the following:

| Non-SI Units   |                       |
|----------------|-----------------------|
| Band Thickness | Pipe Wall Thickness   |
| 0.079 inch     | 0.109 inch or lighter |
| 0.109 inch     | 0.138 inch or heavier |
| ¾ inch wide    | 0.109 inch or lighter |
| 1 inch wide    | 0.138 inch or heavier |

Furnish two 1/2 inch diameter connection bolts with each band, that conform to ASTM A307, Grade A and are electroplated in accordance with ASTM B633.

Use a gasket with the joint that is a hydrocarbon blend of butyl rubber meeting the chemical composition and physical properties of 942-2.2. Use a 3/8 by 3/4 inch gasket for pipe fabricated from 0.109 inch or lighter material and a 3/8 by 1 inch gasket for pipe fabricated from 0.138 inch and heavier material.

The Contractor may use a flange band coupler without the gasket for all applications other than side drain, storm and cross drain, and gutter drain.

Do not use the flange band coupler to join dissimilar types of pipe.

The Contractor may join reformed flanged helical pipe to existing annular or reformed pipe having annular ends. On non-gasketed installations, use either an annular band or an alternate joint described in 430-8.1.3. On gasketed installations, use an annular band, minimum of five corrugations in width, in conjunction with two O-ring gaskets as specified in 430-8.1.3. Use mastic material to seal the area of band overlap.

The minimum joint performance standards specified in 430-4.1 apply.

**430-8.2 Laying and Shape Requirements for Corrugated Metal Pipe:** Install pipe using either a trench or open ditch procedure.

Check pipe shape regularly during backfilling to verify acceptability of the construction method used. Pipe deflected 5% or more of the certified actual mean diameter of the pipe at final inspection shall

be replaced at no cost to the Owner. Deflection measurements are taken at the point of smallest diameter on the corrugations.

**430-9 Specific Requirements for Steel Reinforced Polyethylene Ribbed Pipe, Corrugated High-Density Polyethylene Pipe, Polypropylene Pipe, and Polyvinyl Chloride (PVC) Pipe.**

**430-9.1 Sampling Requirements:** Submit a sample of each pipe material and diameter used on each project to the Engineer a minimum of two weeks prior to the installation, provided that the pipe meets all of the following:

1. Pipe material is PVC, HDPE, steel reinforced polyethylene, or polypropylene
2. Pipe is corrugated or ribbed
3. Pipe diameter is 12" or larger
4. Project quantity for a pipe diameter is more than 100 linear feet, unless intended for use as cross drain
5. Pipe is not perforated, unless the material is PVC or polypropylene
6. Pipe is intended for applications requiring 100 year design service life as defined in the Florida Department of Transportation Drainage Manual.

The length of each sample pipe section must comprise at least seven regular corrugations (not including the first three corrugations of the pipe on the bell or spigot ends).

**430-9.2 Field Joints:** Use gasketed joints to seal side drain, and storm and cross drain. Use gaskets meeting the requirements of Section 449. Ensure that the pipe manufacturer provides a joint design approved by the Engineer before use.

**430-9.3 Installation Requirements Including Trenching, Foundation and Backfilling Operations:** Check structure shape regularly during backfilling to verify acceptability of the construction method used.

Replace pipe deflected 5% or more of the certified actual mean diameter of the pipe at final inspection at no cost to the Owner.

**430-10 Desilting Pipe or Concrete Box Culvert.**

Desilt pipe culvert and concrete box culvert as designated in the Plans.

**430-11 Method of Measurement.**

**430-11.1 New Pipe Installed by Excavation or Trenching:** The quantity of storm and cross drain pipe, storm drain trench, side drain and gutter drain pipe, installed by pipe culvert optional material - excavation or trenching, to be paid for will be plan quantity, in place and accepted. The plan quantity will be determined from the inside wall of the structure as shown in the Plans, along the centerline of the pipe.

Adjustment to bid quantities, prices and payment will not be allowed for increases, decreases or changes in material or installation requirements due to the use of any optional pipe materials.

If adjustments are required due to Plan errors or omissions or authorized field changes, the plotted material and not the material elected would be used to establish new pay quantities.

Pipe sizes other than round (elliptical/arch) are summarized and paid for using equivalent round pipe diameter.

**430-11.2 New Pipe Installed by Jack & Bore:** The quantity of storm and cross drain pipe, storm drain trench, side drain and gutter drain pipe, installed by pipe culvert optional material - jack & bore, to be paid for will be the plan quantity, in place and accepted. The measurement and payment will be the plan quantity length of the casing or carrier pipe installed by jack & bore.

Carrier pipe installed through/inside the casing is paid for as pipe culvert optional material – excavation or trenching.

**430-11.3 Mitered End Section:** The quantity of mitered end sections to be paid for will be the number completed and accepted.

#### **430-12 Basis of Payment.**

**430-12.1 General:** Prices and payments will be full compensation for all work specified in this Section, including all excavation except the volume included in the items for the grading work on the project, and except for other items specified for separate payment in Section 125; all backfilling material and compaction; disposal of surplus material; and all clearing and grubbing outside of the required limits of clearing and grubbing as shown in the Plans.

No payment will be made for failed bore paths, injection of excavatable flowable fill, products taken out of service, or incomplete installations. Payment will include all work and materials necessary for jack & bore, including boring, backfilling, flowable fill, and restoration materials necessary for a complete and accepted installation.

No payment will be made for jack & bore until a Bore Path Report has been submitted to the Engineer.

**430-12.2 Removing Existing Pipe:** When existing pipe is removed and replaced with new pipe approximately at the same location, the cost of excavating and removing the old pipe and of its disposal will be included in the Contract unit price for clearing and grubbing.

**430-12.3 Site Restoration:** The cost of restoring the site, as specified in 125-11, that is disturbed, solely for the purpose of constructing pipe culvert, will be included in the Contract unit price for the pipe culvert, unless designated specifically to be paid for under other items.

**430-12.4 Plugging Pipes:** The cost of temporarily plugging a pipe culvert, either proposed or existing, will be incidental to the contract unit price for new pipe culvert.

The cost of filling and/or plugging an existing pipe culvert that is to be permanently placed out of service will be paid for at the contract unit price for filling and plugging pipe, per cubic yard. Price and payment will be full compensation for flowable fill, masonry, concrete, mortar, and all labor and materials necessary to complete the work.

When the project includes no quantities for new pipe culverts, and temporary plugs are required for existing pipe culverts, the cost will be considered as extra work, in accordance with 4-3.5.

**430-12.5 Desilting Pipe:** Desilting pipe will be paid for at the contract unit price per foot for each pipe desilted. Price and payment will be full compensation for furnishing all equipment, tools and labor, disposal of silt and debris, and all incidentals necessary for satisfactorily performing the work.

**430-12.6 Desilting Concrete Box Culverts:** Price and payment will be full compensation for all work required.

**430-12.7 Flared End Sections:** Price and payment will be full compensation for all work and materials required.

**430-12.8 Mitered End Sections:** Price and payment will be full compensation for all pipe, grates when required, fasteners, reinforcing, connectors, anchors, concrete, sealants, jackets and coupling bands, and all work required.

**430-12.9 Railroad Requirements:** Where pipe culvert is constructed under railroad tracks, the Contract unit price for the pipe culvert will include the costs of any jacking operations and the operation of placing the pipe by use of a tunnel liner, (except as specified for unanticipated tunnel liner, in 430-6.5, where reimbursement is to be made for such unanticipated liner), and all other work necessary to meet the requirements of the railroad company, excluding the costs of watchman or flagman services provided by the railroad company, except as provided below.

The Owner will reimburse the Contractor for the actual costs of any trestle bridge work which is performed by the railroad's forces, as billed to him by the railroad, less the value of any salvage materials derived there from, whether such salvage materials are retained by the railroad company or by the Contractor. When the work of shoring and bracing is to be performed by the railroad, such fact will be stipulated in the Contract Documents and the Contractor will be required to pay to the railroad the amount of such costs, which amount will be reimbursed to him by the Owner. The Contract unit price for the pipe culvert shall include the costs of all other work of shoring and bracing. 430-12.10 Payment Items: Payment will be made under:

**Item No. 430-1      18" RCP**

**-per Linear Foot (LF)**

**END OF SECTION 430**

## SECTION 520

### CONCRETE GUTTER, CURB ELEMENTS, AND TRAFFIC SEPARATOR

#### 520-1 Description.

Construct portland cement concrete curb. Curb will include concrete curb and gutter, concrete traffic separator, valley gutter, special concrete gutter, curb for sidewalk curb ramps and driveways, and any other types of concrete curb not specified in other Sections.

#### 520-2 Materials.

**520-2.1 Concrete:** Use concrete meeting the requirements of Section 347.

**520-2.2 Reinforcement:** For all steel reinforcement required by the Plans, meet the requirements of Section 415.

**520-2.3 Joint Materials:** Meet the requirements of Section 932.

#### 520-3 Forms.

**520-3.1 Form Materials:** Construct forms for this work of either wood or metal. Provide forms that are straight, free from warp or bends, and of sufficient strength, when staked, to resist the pressure of the concrete without deviation from line and grade. For all items constructed on a radius, use flexible forms.

**520-3.2 Depth of Forms:** Ensure that forms have a depth equal to the plan dimensions for the depth of concrete being deposited against them.

**520-3.3 Machine Placement:** The Contractor may place these items by machine methods with the approval of the Engineer provided that the Contractor consistently produces an acceptable finished product, true to line, grade, and cross section.

#### 520-4 Excavation.

Excavate to the required depth, and compact the foundation material upon which these items are to be placed as specified in 120-9.

#### 520-5 Placing Concrete.

Place the concrete in the forms, and tamp and spade it to prevent honeycombing, and until the top of the structure can be floated smooth and the edges rounded to the radius shown in the Plans.

#### 520-6 Joints.

**520-6.1 Contraction Joints:** Except for machine placed items, the Contractor may form joints by using dummy joints (either formed or sawed) or by using sheet metal templates. If using sheet metal templates, ensure that they are of the dimensions, and are set to the lines, shown in the Plans. Hold templates firmly while placing the concrete. Leave templates in place until the concrete has set sufficiently to hold its shape, but remove them while the forms are still in place.

Saw contraction joints, for machine placed items, unless the Engineer approves an alternate method. Saw the joints as soon as the concrete has hardened to the degree that excessive raveling will not occur and before uncontrolled shrinkage cracking begins.

Space contraction joints at intervals of 10 feet except where closure requires a lesser interval, but do not allow any section to be less than 4 feet in length.

**520-6.2 Expansion Joints:** Construct expansion joints at all inlets, at all radius points, and at other locations indicated in the Plans. Locate them at intervals of 500 feet between other expansion joints or ends of a run. Ensure that the joint is 1/2 inch in width.

#### **520-7 Finishing.**

**520-7.1 Repair of Minor Defects:** Remove the forms within 24 hours after placing the concrete, and then fill minor defects with mortar composed of one part portland cement and two parts fine aggregate. The Engineer will not allow plastering on the face of the curb. Remove and replace any rejected curb, curb and gutter, or valley gutter without additional compensation.

**520-7.2 Final Finish:** Finish all exposed surfaces while the concrete is still green. In general, the Engineer will only require a brush finish. For any surface areas, however, which are too rough or where other surface defects make additional finishing necessary, the Engineer may require the Contractor to rub the curb to a smooth surface with a soft brick or wood block, using water liberally. Also, if necessary to provide a suitable surface, the Engineer may require the Contractor to rub further, using thin grout or mortar.

**520-7.3 Imprinted Concrete:** Install imprinted concrete as shown in the Plans.

#### **520-8 Curing.**

**520-8.1 General:** Continuously cure the concrete for a period of at least 72 hours. Commence curing after completely finishing and as soon as the concrete has hardened sufficiently to permit application of the curing material without marring the surface. Immediately replace any curing material removed or damaged during the 72 hour period.

After removing the forms, cure the surfaces exposed by placing a berm of moist earth against them or by any of the methods described below, for the remainder of the 72 hour curing period.

**520-8.2 Wet Burlap Method:** Place burlap, as specified in 925-1, over the entire exposed surface of the concrete, with sufficient extension beyond each side to ensure complete coverage. Overlap adjacent strips a minimum of 6 inches. Hold the burlap securely in place such that it will be in continuous contact with the concrete at all times, and do not allow any earth between the burlap surfaces at laps or between the burlap and the concrete. Saturate the burlap with water before placing it, and keep it thoroughly wet throughout the curing period.

**520-8.3 Membrane Curing Compound Method:** Apply clear membrane curing compound or white pigmented curing compound, as specified in 925-2, by a hand sprayer meeting the requirements of 350-3.10, in a single coat continuous film at a uniform coverage of at least one gallon per 200 square feet. Immediately recoat any cracks, checks, or other defects appearing in the coating. Thoroughly agitate the curing compound in the drum prior to application, and during application as necessary to prevent settlement of the pigment.

**520-8.4 Polyethylene Sheeting Method:** Place polyethylene sheeting, as specified in 925-3, over the entire exposed surface of the concrete, with sufficient extension beyond each side to ensure complete coverage. Overlap adjacent strips a minimum of 6 inches. Hold the sheeting securely in place and in continuous contact with the concrete at all times.

**520-9 Backfilling and Compaction.**

After the concrete has set sufficiently, but not later than three days after pouring, refill the spaces in front and back of the curb to the required elevation with suitable material. Place and thoroughly compact the material in layers not thicker than 6 inches.

**520-10 Surface Requirements.**

Test the gutter section of curb and gutter with a 10 foot straightedge laid parallel to the centerline of the roadway and while the concrete is still plastic. Perform straightedging along the edge of the gutter adjacent to the pavement or along other lines on the gutter cross-section, as directed by the Engineer. Immediately correct irregularities in excess of 1/4 inch.

**520-11 Method of Measurement.**

For curb or curb and gutter, the quantity to be paid will be the plan quantity, in feet, measured along the face of the completed and accepted curb or curb and gutter. Curb for sidewalk curb ramps or driveways will be paid at the Contract unit price for the adjacent curb type.

For valley gutter or shoulder gutter, the quantity to be paid will be the plan quantity, in feet, measured along the gutter line of the completed and accepted valley gutter or shoulder gutter.

For concrete traffic separator of constant width, meeting the requirements of Standard Plans, Index 520-020, the quantity to be paid will be the plan quantity, in feet, measured along the center of its width, completed and accepted, including the length of the nose.

For concrete traffic separator of nonstandard or varying width, the quantity to be paid will be the plan quantity, in square yards, completed and accepted.

**520-12 Basis of Payment.**

**520-12.1 Concrete Gutter, Curb Elements, and Traffic Separator:** Price and payment will be full compensation for all work specified in this Section, including reinforcement steel, dowels, asphalt pavement and base under traffic separator, joint materials and asphalt curb pad.

**520-12.2 Excavation:** Excavation for new installations will be paid for as roadway excavation in accordance with 120-13.2.

**520-12.3 Payment Items:** Payment will be made under:

**Item No. 520-1      F-Curb**

**-per Linear Foot (LF)**

**END OF SECTION 520**



## SECTION 522

### CONCRETE SIDEWALK AND DRIVEWAYS

#### **522-1 Description.**

Construct concrete sidewalks and driveways in accordance with the Plans and the Standard Plans. Sidewalk will include curb ramps, landings, transition slopes, sidewalk curb, and edge beams.

#### **522-2 Materials.**

Meet the requirements specified in 520-2.

#### **522-3 Forms.**

Provide forms as specified in 520-3.

#### **522-4 Foundation.**

Shape and compact the foundation materials to a firm, even surface, true to grade and cross-slope. Compact areas that have been excavated more than 6 inches below the bottom of the concrete, to a minimum of 95% of AASHTO T99 density. The area to be compacted includes the area directly under and 1 foot beyond each side of the sidewalk or driveway, when right-of-way allows.

#### **522-5 Joints.**

Install expansion and contraction joints in accordance with the Plans and the Standard Plans.

#### **522-6 Placing Concrete.**

Place the concrete as specified in 520-5.

#### **522-7 Finishing.**

**522-7.1 Screeding:** Strike-off the concrete by means of a wood or metal screed, used perpendicular to the forms, to obtain the required grade and remove surplus water and laitance.

**522-7.2 Surface Requirements:** Imprint concrete as detailed in the Plans, otherwise provide a broom finish. Ensure that the surface variations are not more than 1/4 inch under a 10-foot straightedge or more than 1/8 inch on a 5-foot transverse section. Finish the outer edges of the concrete with an edging tool having a radius of 1/2 inch.

#### **522-8 Curing.**

Cure the concrete as specified in 520-8.

#### **522-9 Opening Sidewalk to Pedestrian Traffic.**

Install detectable warnings, when shown in the Plans, in accordance with Section 527 on completed sections of sidewalk before opening to pedestrian traffic.

#### **522-10 Method of Measurement.**

The quantity to be paid will be plan quantity, in square yards, completed and accepted.

#### **522-11 Basis of Payment.**

Price and payment will be full compensation for all work specified in this Section. Excavation for new installations will be paid for under the items for the grading work on the project.

Payment will be made under:

***Item No. 522-1***      ***Concrete Sidewalk (6")***      ***-per Square Yard (SY)***

**END OF SECTION 522**

## SECTION 570

### PERFORMANCE TURF

#### 570-1 Description.

Establish a growing, healthy turf over all areas designated in the Plans. Use sod in areas designated in the Plans to be sodded. Use seed, hydroseed, bonded fiber matrix, or sod in all other areas. Maintain performance turf areas until final acceptance of all Contract work in accordance with Section 5-11 and the establishment requirements of 570-4 have been met.

#### 570-2 Materials.

Meet the following requirements:

Turf Materials.....Section 981

Fertilizer .....Section 982

Water .....Section 983

#### 570-3 Construction Methods.

**570-3.1 General:** Remove all construction debris in performance turf areas. Install performance turf at the earliest practical time for erosion control and establishment.

Shape the areas to be planted to the plan typical sections and lines and grade shown in the Plans.

Except in areas where the Contract Documents requires specific types of turf to match adjoining private property, any species of turf designated in Section 981 may be used. All of the permanent performance turf material shall be in place prior to final acceptance.

The Owner will only pay for replanting as necessary due to factors determined by the Engineer to be beyond control of the Contractor.

Install all performance turf on shoulder areas prior to the placement of the friction course on adjacent pavement.

**570-3.2 Seeding:** At the Contractor's option, wildflower seed may be included in the performance turf seeding operation or performed separately from the performance turf seeding. Seed must produce visible seedlings within 45 days of planting.

Use of compost meeting the requirements of Section 987 as mulch is acceptable unless otherwise specified.

**570-3.3 Sod:** Place the sod on the prepared surface, with edges in close contact. Do not use sod which has been cut for more than 48 hours.

Place the sod to the edge of all landscape areas as shown in the Plans and the Standard Plans.

Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge.

Monitor placed sod for growth of exotic or invasive pest plants and noxious weeds. If exotic or invasive pest plants and/or noxious weeds manifest themselves within 30 days of placement of the sod during the months April through October, within 60 days of placement of the sod during the months of November through March treat affected areas by means acceptable to the Owner at no expense to the Owner. If pest plants and/or noxious weeds manifest themselves after the time frames described above from date of placement of sod, the Engineer, at his sole option, will determine if treatment is required and whether or not the Contractor will be compensated for such treatment. If compensation is provided, payment will be made as Unforeseeable Work as described in 4-4.

Remove and replace any sod as directed by the Engineer.

**570-3.4 Hydroseeding:** Use equipment specifically designed for mixing the mulch, seed, fertilizer, tackifier and dye, and applying the slurry uniformly over the areas to be hydroseeded.

Use mulch that does not contain reprocessed wood or paper fibers. Ensure that 50% of the fibers will be retained on a twenty-five mesh screen.

Mix fertilizer as required into the hydroseeding slurry.

Ensure that the dye does not contain growth or germination inhibiting chemicals.

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moistureholding compounds.

**570-3.5 Bonded Fiber Matrix (BFM):** Meet the minimum physical and performance criteria of this Specification for use of BFM in hydroseeding operations or temporary nonvegetative erosion and sediment control methods.

Provide evidence of product performance testing, manufacturer's certification of training and material samples to the Engineer at least 7 calendar days prior to installation.

Provide documentation to the Engineer of manufacturer's testing at an independent laboratory, demonstrating superior performance of BFM as measured by reduced water runoff, reduced soil loss and faster seed germination in comparison to erosion control blankets.

Use only BFMs that contain all components pre-packaged by the manufacturer to assure material performance. Deliver materials in UV and weather resistant factory labeled packaging. Store and handle products in strict compliance with the manufacturer's directions.

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moistureholding compounds.

Meet the following requirements after application of the formed matrix:

Ensure that the tackifier does not dissolve or disperse upon re-wetting.

Ensure that the matrix has no gaps between the product and the soil and that it provides 100% coverage of all disturbed soil areas after application.

Ensure that the matrix has no germination or growth inhibiting properties and does not form a water-repelling crust.

Ensure that the matrix is comprised of materials which are 100% biodegradable and 100% beneficial to plant growth.

Mix and apply the BFM in strict compliance with the manufacturer's recommendations.

Apply the BFM to geotechnically stable slopes at the manufacturer's recommended rates.

Degradation of BFM will occur naturally as a result of chemical and biological hydrolysis, UV exposure and temperature fluctuations. Re-application, as determined by the Engineer, will be required if BFM-treated soils are disturbed or water quality or turbidity tests show the need for an additional application.

**570-3.6 Watering:** Water all performance turf areas as necessary to produce a healthy and vigorous stand of turf. Ensure that the water used for turf irrigation meets the requirements of Section 983.

**570-3.7 Fertilizing:** Fertilize as necessary to promote turf growth and establishment based on soil testing. Refer to Section 982 for fertilizer rates.

For bid purposes, base estimated quantities on an initial application of 265 lbs/acre and one subsequent application of 135 lbs/acre of 16-0-8.

**570-3.8 Shoulder Treatment:** Provide soil for shoulder treatment in accordance with Standard Plans, Index 570-010. Soil needed for these purposes will be included in the corresponding Pay Item.

#### **570-4 Turf Establishment.**

Perform all work necessary, including watering and fertilizing, to sustain an established turf, free of noxious weeds, at no additional expense to the Owner. Provide the filling, leveling, and repairing of any washed or eroded areas, as necessary.

Established turf is defined as follows:

1. An established root system (leaf blades break before seedlings or sod can be pulled from the soil by hand).
2. No bare spots larger than one square foot.
3. No continuous sod seams running perpendicular to the face of the slope.
4. No bare areas comprising more than 1% of any given 1,000 square foot area.
5. No deformation of the performance turf areas caused by mowing or other Contractor equipment.

6. No exposed sod netting.
7. No competing vegetation, exotic or invasive pest plants or noxious weeds.

Monitor turf areas and remove all competing vegetation, exotic or invasive pest plants, and noxious weeds (as listed by the Florida Exotic Pest Plant Council, Category I "List of Invasive Species", Current Edition, <https://www.fleppc.org>). Remove such vegetation regularly by manual, mechanical, or chemical control means, as necessary. When selecting herbicides, pay particular attention to ensure use of chemicals that will not harm desired turf or wildflower species. Use herbicides in accordance with 7-1.7.

If at the time that all other work on the project is completed, but all turf areas have not met the requirements for established turf set forth in 570-4, continuously maintain all turf areas until the requirements for established turf set forth in 570-4 have been met.

During establishment and until the performance turf is established in accordance with this Section, continue the inspection, maintenance, and documentation of erosion and sedimentation control items in accordance with Section 104. Remove and dispose of all erosion and sedimentation control items after the performance turf has been established.

Notify the Engineer, with a minimum of seven calendar days advance notice, to conduct inspections of the performance turf at approximate 90-day intervals during the establishment period to determine establishment. Results of such inspections will be made available to the Contractor within seven calendar days of the date of inspection. Determination of an established turf will be based on the entire project and not in sections.

Upon the determination by the Engineer that the requirements of 570-4 have been met and an established turf has been achieved and all erosion and sedimentation control items have been removed, the Engineer will release the Contractor from any further responsibility provided for in this Specification.

The Contractor's establishment obligations of this specification will not apply to deficiencies due to the following factors, if found by the Engineer to be beyond the control of the Contractor, his subcontractors, vendors or suppliers:

1. Determination that the deficiency was due to the failure of other features of the Contract.
2. Determination that the deficiency was the responsibility of a third party performing work not included in the Contract or its actions.

The Owner will only pay for replanting as necessary due to factors determined by the Owner to be beyond the control of the Contractor.

#### **570-5 Responsible Party.**

For the purposes of this Specification, the Contractor shall be the responsible party throughout construction and establishment periods.

Upon final acceptance of the Contract in accordance with 5-11, the Contractor's responsibility for maintenance of all the work or facilities within the project limits of the Contract will terminate in accordance with 5-11; with the sole exception that the facilities damaged due to lack of established turf

and the obligations set forth in this Specification for performance turf shall continue thereafter to be responsibility of the Contractor as otherwise provided in this Section.

**570-6 Disputes Resolution.**

The Contractor and the Owner acknowledge that use of the Statewide Disputes Review Board is required and the determinations of the Statewide Disputes Review Board for disputes arising out of the performance turf specification will be binding on both the Contractor and the Owner, with no right of appeal by either party, for the purposes of this Specification.

Any and all Statewide Disputes Review Board meetings after final acceptance of the Contract in accordance with 5-11 shall be requested and paid for by the Contractor. The Owner will reimburse the Contractor for all fees associated with meetings.

**570-7 Failure to Perform.**

Should the Contractor fail to timely submit any dispute to the Statewide Disputes Review Board, refuse to submit any dispute to the Statewide Disputes Review Board, fail to provide an established turf in accordance with 570-4 within six months of final acceptance of the Contract in accordance with 5-11, or fail to compensate the Owner for any remedial work performed by the Owner in establishing a turf and other remedial work associated with lack of an established turf, including but not limited to, repair of shoulder or other areas due to erosion and removal of sediments deposited in roadside ditches and streams, as determined by the Statewide Disputes Review Board to be the Contractor's responsibility, the Owner shall suspend, revoke or deny the Contractor's certificate of qualification under the terms of Section 337.16(d)(2), Florida Statutes, until the Contractor provides an established turf or makes full and complete payment for the remedial work performed by the Owner. In no case shall the period of suspension, revocation, or denial of the Contractor's certificate of qualification be less than six months. Should the Contractor choose to challenge the Owner's notification of intent for suspension, revocation or denial of qualification and the Owner's action is upheld, the Contractor shall have its qualification suspended for a minimum of six months or until the remedial action is satisfactorily performed, whichever is longer.

**570-8 Method of Measurement.**

The quantities to be paid for will be plan quantity in square yards based on the area shown in the Plans, completed and accepted.

**570-9 Basis of Payment.**

Prices and payments will be full compensation for all work and materials specified in this Section.

Payment will be made under:

**Item No. 570-1 Sodding**

**-per Square Yard (SY)**

**END OF SECTION 570**

## SECTION 710

### PAINTED PAVEMENT MARKINGS

#### 710-1 Description.

Apply painted pavement markings, in accordance with the Contract Documents.

#### 710-2 Materials.

Use only materials listed meeting the following requirements:

|  |                 |
|--|-----------------|
| Materials for Raised Pavement Markers (RPMs) and Bituminous Adhesive ..... | Section 970     |
| Standard Paint .....   | 971-1 and 971-3 |
| Durable Paint .....  | 971-1 and 971-4 |
| Glass Spheres.....   | 971-1 and 971-2 |

The Engineer will take random samples of all material in accordance with the FDOT's Sampling, Testing and Reporting Guide schedule.

#### 710-3 Equipment.

Use equipment that will produce continuous uniform dimensions of pavement markings of varying widths and meet the following requirements:

1. Capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, in order to produce a uniform application of paint and capable of following straight lines and making normal curves in a true arc.
2. Capable of applying glass spheres to the surface of the completed line by an automatic sphere dispenser attached to the pavement marking machine such that the glass spheres are dispensed closely behind the installed line. Use a glass spheres dispenser equipped with an automatic cut-off control that is synchronized with the cut-off of the paint and applies the glass spheres in a manner such that the spheres appear uniform on the entire pavement markings surface.
3. Capable of spraying the paint to the required thickness and width without thinning of the paint. Equip the paint tank with nozzles equipped with cut-off valves, which will apply broken or skip lines automatically.

#### 710-4 Application.

**710-4.1 General:** Remove existing pavement markings, such that scars or traces of removed markings will not conflict with new pavement markings, by a method approved by the Engineer.

Before applying pavement markings, remove any material that would adversely affect the bond of the pavement markings by a method approved by the Engineer.

Apply standard paint to dry surfaces only, and when the ambient air and surface temperature is at least 40°F and rising.

Apply durable paint to dry surfaces only. Do not apply durable paint when the ambient air and surface temperature is below 50°F, relative humidity is above 80% or when the dew point is within 5°F of the ambient air temperature.



Do not apply painted pavement markings when winds are sufficient to cause spray dust.

Apply painted pavement markings, having well defined edges, over existing pavement markings such that not more than 2 inches on either end and not more than 1 inch on either side is visible. When stencils are used to apply symbols and messages, the areas covered by the stencil reinforcing will not be required to be painted.

Mix the paint thoroughly prior to pouring into the painting machine. Apply paint to the pavement by spray or other means approved by the Engineer.

Conduct field testing in accordance with FM 5-541. Remove and replace painted pavement markings not meeting the requirements of this Section at no additional cost to the Owner.

Apply all pavement markings prior to opening the road to traffic.

**710-4.1.1 Painted Pavement Markings (Final Surface):** On concrete surfaces or newly constructed asphalt, the painted pavement markings (final surface) will include one application of standard paint and one application of Class B RPMs applied to the final surface.

For center line and edge line rumble strip installations where the pavement marking is placed within the grinding, apply a second application of standard paint within 24 hours of each day's grinding operation.

For center line rumble strip installations where RPMs are in conflict with the grinding, install Class D RPMs with the first application of standard paint. Remove Class D RPMs prior to grinding, then install Class B RPMs in an unground area after grinding.

Do not apply final surface paint for bicycle arrows or bicycle messages, 24 inch longitudinal bars in special emphasis crosswalks, or route shields where preformed thermoplastic will be applied.

Install all RPMs in accordance with Standard Plans, Indexes 706-001 and 711-003, prior to opening the road to traffic.

Temporary RPMs must meet the requirements of Section 102.

Permanent RPMs must meet the requirements of Section 706.

**710-4.2 Thickness:** Apply standard paint to attain a minimum wet film thickness in accordance with the manufacturer's recommendations. Apply durable paint to attain a minimum wet film thickness of 0.025 inches or 25 mils. Measure, record, certify and submit to the Engineer, the thickness of white and yellow durable paint pavement markings in accordance with FM 5-541.

**710-4.3 Retroreflectivity:** Apply white and yellow standard paint that will attain an initial retroreflectance of not less than 300 mcd/lx·m<sup>2</sup> and not less than 250 mcd/lx·m<sup>2</sup>, respectively. Apply white and yellow durable paint that will attain an initial retroreflectance of not less than 450 mcd/lx·m<sup>2</sup> and not less than 300 mcd/lx·m<sup>2</sup>, respectively.

Measure, record, certify and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5541.

The Owner reserves the right to test the markings within three days of receipt of the Contractor's certification. Failure to afford the Owner opportunity to test the markings will result in non-payment. The test readings should be representative of the Contractor's pavement marking performance. If the retroreflectivity values measure below values shown above, reapply the pavement marking at no additional cost to the Owner.

For standard paint, ensure that the minimum retroreflectance of white and yellow pavement markings are not less than 150 mcd/lx m<sup>2</sup>. If the retroreflectivity values for standard paint fall below the 150 mcd/lx m<sup>2</sup> value within 180 days of initial application, the pavement marking will be reapplied at the Contractor's expense. If the retroreflectivity values for durable paint fall below the initial values of 450 mcd/lx m<sup>2</sup> value for white and 300 mcd/lx m<sup>2</sup> for yellow within 180 days of initial application, the pavement marking will be reapplied at the Contractor's expense.

**710-4.4 Color:** Use paint material that meets the requirements of 971-1.

**710-4.5 Glass Spheres:** Apply glass spheres on all pavement markings immediately and uniformly following the paint application. The rate of application shall be based on the manufacturer's recommendation.

For longitudinal durable paint markings, apply a double drop of Type 1 and Type 3 glass spheres. For transverse durable paint markings, apply a single drop of Type 3 glass spheres.

The rate of application shall be based on the manufacturer's recommendation.

## **710-5 Tolerances in Dimensions and in Alignment.**

Establish tack points at appropriate intervals for use in aligning pavement markings, and set a stringline from such points to achieve accuracy.

### **710-5.1 Dimensions:**

**710-5.1.1 Longitudinal Lines:** Apply painted skip line segments with no more than plus or minus 12 inches variance, so that over-tolerance and under-tolerance lengths between skip line and the gap will approximately balance. Apply longitudinal lines at least 2 inches from construction joints of portland cement concrete pavement.

**710-5.1.2 Transverse Markings, Gore Markings, Arrows, and Messages:** Apply paint in multiple passes when the marking cannot be completed in one pass, with an overall line width allowable tolerance of plus or minus 1 inch.

**710-5.1.3 Contrast Lines:** Use black paint to provide contrast on concrete or light asphalt pavement, when specified by the Engineer. Apply black paint in 10 foot segments following each longitudinal skip line.

**710-5.2 Alignment:** Apply painted pavement markings that will not deviate more than 1 inch from the stringline on tangents and curves one degree or less. Apply painted pavement markings that will not deviate more than 2 inches from the stringline on curves greater than one degree. Apply painted edge markings uniformly, not less than 2 inches or more than 4 inches from the edge of pavement, without noticeable breaks or deviations in alignment or width.

Remove and replace at no additional cost to the Owner, pavement markings that deviate more than the above stated requirements.

**710-5.3 Correction Rates:** Make corrections of variations in width at a maximum rate of 10 feet for each 0.5 inch of correction. Make corrections of variations in alignment at a maximum rate of 25 feet for each 1 inch of correction, to return to the stringline.

**710-6 Contractor's Responsibility for Notification.**

Notify the Engineer prior to the placement of the materials. At the time of notification, submit a certification to the Engineer with the APL number and the batch or Lot numbers of the paint and glass spheres to be used.

**710-7 Protection of Newly Applied Pavement Markings.**

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Owner.

**710-8 Corrections for Deficiencies to Applied Painted Pavement Markings.**

Reapply a 1.0 mile section, centered around any deficiency, at no additional cost to the Owner.

**710-9 Submittals.**

**710-9.1 Submittal Instructions:** Prepare a certification of quantities. Submit the certification of quantities and daily worksheets to the Engineer. For Lump Sum pay item 710-1, document the quantity as an estimated percentage (in decimal form) of the total lump sum amount on the daily worksheet. The Owner will not pay for any disputed items until the Engineer approves the certification of quantities.

**710-9.2 Contractor's Certification of Quantities:** Request payment by submitting a certification of quantities no later than Twelve O'clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.

**710-10 Method of Measurement.**

No separate measurement shall be made for Pavement Markings. Include the cost of any work and all materials, including paint, equipment, labor, and any other materials necessary to meet the requirements of the Florida Department of Transportation per the contract documents for maintenance of traffic under the lump sum price for Pavement Markings.

**710-11 Basis of Payment.**

**710-11.1 General:** Price and payment will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

**710-11.2 Painted Pavement Markings (Final Surface):** Price and payment for painted pavement markings (final surface) will be full compensation for all applications of painted pavement markings, and all applications and removal of RPMs in accordance with 710-4.1.1 and 710-9.1.

**710-11.3 Payment Items:** Payment will be made under:

|                       |                                      |                           |
|-----------------------|--------------------------------------|---------------------------|
| <i>Item No. 710-1</i> | <i>Pavement Markings – Bid Alt 1</i> | <i>-per Lump Sum (LS)</i> |
| <i>Item No. 710-2</i> | <i>Pavement Markings – Bid Alt 2</i> | <i>-per Lump Sum (LS)</i> |

**END OF SECTION 710**

# Appendix A

# Appendix B

# Appendix C

## SECTION 01322

### WEB-BASED PROJECT INFORMATION MANAGEMENT

#### GENERAL

#### SUMMARY

The section includes Requirements for web-based project information management.

- a. The system shall be provided by the Owner and accessible to all team members including but not limited to the owner, user, agents, designer, builder, subcontractors, and their suppliers.
- b. The information shall be managed by a designated Owner project information manager responsible for collecting, organizing, conducting QA and posting all project documentation for team use,
- c. The information managed is sourced from all aspects of the project including programming documents, design, BIM models, data, schedules, BIM tools, equipment lists, program files, invoices, changes, ASIs, financials, warranty, commissioning, close-out, as-builts, COBIE data, training videos, progress photos, time-stamped evidence, QA documentation, etc.
- d. Each Consultant, Designer, and Contractor in direct contract with the Owner or the Owner's Representative will designate an individual responsible for providing or uploading information into the system.

Related sections:

- a. The Contract Documents (design, specs, BIM) are complementary; what is called for by one is as binding as if called for by all.
- b. It is the Contractor's responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of Contractor's Work.
- c. The following Sections are related to the Work described in this Section. This list of Related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the Contractor to see that the completed Work complies accurately with the Contract Documents.
- d. Section 01330 - Submittal Procedures.

#### REQUIREMENTS

The Project Team shall utilize MySmartPlans (MSP) (MySmartPlans is a registered trademark of Marathon Digital Services (MDS)). for submission of all data and documents (unless specified otherwise in this Section) throughout the duration of the project.

- a. MSP is a web-based electronic media site hosted by MDS.
- b. MSP will be made available to all project team personnel, subcontractor personnel, suppliers, consultants, and their team members.
- c. MSP shall be the primary means of project information gathering, organization, storage, availability, sustainment, display, and recording.
- d. A designated Project Information Manager (PIM) is required to help "library" and QC, QA, and QI documents from all external systems and available to the MSP dashboard.



## SPECIAL CONDITIONS — APPENDIX A

### User access limitations:

The Designated owner's representative will control the access to MSP by allowing access and assigning user profiles to accepted personnel. User profiles will define levels of access into the system; determine assigned function-based authorizations and user privileges. Subcontractors and suppliers will be given access to MSP by and through the Prime Contractor. Entry of information exchanged and transferred between the Contractor and its subcontractors and suppliers on MSP shall be designated by the Contractor.

### Ownership and Stewardship of data:

Data entered in a collaborative mode (entered with the intent to share as determined by permissions and workflows within the MSP system) by the Owner, Engineer, and the Contractor will be jointly owned. The owner's designated agent will be responsible for stewardship of the information no matter where the information comes from or is changed as the project proceeds.

### Automated system notification and audit log tracks:

Review comments made (or lack thereof) by the Owner on Contractor submitted documentation shall not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. Owner's acceptance via automated system notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the Contractor's submitted information.

### Computer Requirements:

The Contractor shall use computer hardware and software that meets the requirements of the MSP system as recommended by MDS to access and utilize MSP. As recommendations are modified by MSP, the Contractor will upgrade their system(s) to meet or exceed the recommendations. Upgrading of the Contractor's computer systems will not be justification for a cost or time modification to the Contract.

The Contractor shall ensure that connectivity to the MSP system is accomplished through cable or wireless communications systems. The minimum bandwidth requirements for using the system is 128kb/s. It is recommended a faster connection be used when uploading pictures and files into the system.

MSP supports the current and prior two major versions of Chrome, Mozilla Firefox, Microsoft Internet Explorer, and Apple Safari on a rolling basis.

Each time a new version of one of these browsers is released, MSP will begin supporting the update and stop supporting the fourth-oldest version.

### Contractor (includes designer) responsibility:

The Contractor shall be responsible for the validity of their information placed in MSP and for the abilities of their personnel.

Accepted users shall be knowledgeable in the use of computers, including Internet Browsers, email programs, cad drawing applications, and Adobe Portable Document Format (PDF) document distribution program.

The Contractor shall utilize the existing forms in MSP to the maximum extent possible. If a form does not exist in MSP the Contractor must include a form of their own or provide by the Engineer as an attachment to a submittal.

## SPECIAL CONDITIONS — APPENDIX A

Adobe PDF documents will be created through electronic conversion rather than optically scanned whenever possible. The Contractor is responsible for the training of their personnel in the use of MSP (outside what is provided by the Owner) and the other programs indicated above as needed.

### Connectivity problems:

Provide a list of Contractor's key MSP personnel for the Owner's representative acceptance. Owner's rep is responsible for adding and removing users from the system. The Owner's rep reserves the right to perform a security check on all potential users. The Owner's rep may allow other personnel and subcontractors to be added to MSP.

## SUBMITTALS

Preconstruction Submittals List of Contractor's key MSP personnel. Include descriptions of key personnel's roles and responsibilities for this project. The contractor should also identify their organization's administrator on the list.

## PRODUCTS

### DESCRIPTION

MSP project management application (no equal) Provided by MDS.

## EXECUTION

### MSP UTILIZATION

MSP shall be utilized in connection with all document and information management required by these Contract Documents.

## SUBMITTALS

Shop drawings:

- a. Shop drawing and design data documents shall be submitted as PDF attachments to the MSP submittal workflow process and form. Examples of shop drawings include, but are not limited to:
  - (1) Standard manufacturer installation drawings.
  - (2) Drawings prepared to illustrate portions of the work designed or developed by the Contractor.
  - (3) Steel fabrication, piece, and erection drawings.
- b. Hard copy submittals may be allowed if approved by the Engineer on a case-by-case basis.
  - (1) Hard copy submittals shall be handled following procedures for Samples defined below.

## PRODUCT DATA

Product catalog data and manufacturer's instructions shall be submitted as PDF attachments to the MSP submittal workflow process and form. Examples of product data include, but are not limited to:

- a. Manufacturer's printed literature.

## SPECIAL CONDITIONS — APPENDIX A

- b. Preprinted product specification data and installation instructions.

### **SAMPLES**

Sample submittals shall be physically submitted as specified in Section 01330. Contractor shall enter submittal data information into MSP with a copy of the submittal form(s) attached to the sample. Examples of samples include, but are not limited to:

- a. Product finishes and color selection samples.
- b. Product finishes and color verification samples.
- c. Finish/color boards.
- d. Physical samples of materials.

### **ADMINISTRATIVE SUBMITTALS**

All correspondence and pre-construction submittals shall be submitted using MSP. Examples of administrative submittals include, but are not limited to:

- a. Permits.
- b. Requests for substitutions (RFS).
- c. List of contact personnel.
- d. Requests for Information (RFI).

Network Analysis Schedules and associated reports and updates. Each schedule submittal specified in these Contract Documents shall be submitted as a native backed-up file (.PRX or .STX) of the scheduling program being used. The schedule shall also be posted as a PDF file in the format specified in these Contract Documents.

Plans for safety, demolition, environmental protection, and similar activities.

Quality Control Plan(s), Testing Plan and Log, Quality Control Reports, Production Reports, Quality Control Specialist Reports, Preparatory Phase Checklist, Initial Phase Checklist, Field Test reports, Summary reports, Rework Items List, etc.

Meeting minutes for quality control meetings, progress meetings, pre-installation meetings, etc.

Any general correspondence submitted.

### **COMPLIANCE SUBMITTALS**

Test reports, certificates, and manufacture field report submittals shall be submitted on MSP as PDF attachments. Examples of compliance submittals include, but are not limited to:

- a. Inspection requests:
  - (1) When a portion of Work is ready for inspection and prior to covering up the Work (for example, a concrete pour that has water stop, rebar and embeds placed prior to pouring the concrete), inspection requests shall be submitted via MSP and approved via MSP.
  - (2) Reports associated with this element of the Work will be submitted via MSP and associated with the inspection request.
- b. Field test reports.
- c. Quality Control certifications.
- d. Manufacturers' documentation and certifications for the quality of products and materials provided.

## SPECIAL CONDITIONS — APPENDIX A

### **RECORD AND CLOSEOUT SUBMITTALS**

Operation and maintenance data and closeout submittals shall be submitted on MSP as PDF documents during the approval and review stage as specified, with an actual set of documents submitted for final. Examples of record submittals include, but are not limited to:

- a. Operation and Maintenance Manuals: final documents shall be submitted as specified.
- b. Extra materials, spare stock, etc.: submittal forms shall indicate when actual materials are submitted.

### **FINANCIAL SUBMITTALS**

Schedule of Value, Pay Requests, and Change Request Proposals shall be submitted on MSP. Supporting material for Pay Requests and Change Requests shall be submitted on MSP as PDF attachments. Examples of compliance submittals include, but are not limited to:

- a. Contractor's Schedule of Values.
- b. Contractor's Monthly Progress Payment Requests.
- c. Contract Change proposals requested by the Owner.

END OF SECTION

# GEOTECHNICAL ENGINEERING REPORT



## **ECP North Terminal Expansion**

Panama City, Bay County, Florida

PREPARED FOR:

**ZHA, Inc.**

6300 West Bay Parkway, Suite 5052

Panama City, Florida 32409

NOVA Project Number: 10111 – 2021211

October 7, 2021



October 7, 2021

**ZHA, Inc.**  
6300 West Bay Parkway, Suite 5052  
Panama City, Florida 32409

**Attention:** Mr. David Scruggs, RLA

**Subject:** Geotechnical Engineering Report  
**ECP North Terminal Expansion**  
Panama City, Bay County, Florida  
NOVA Project Number 10111 – 2021211

Dear Mr. Scruggs,

**NOVA Engineering and Environmental LLC (NOVA)** has completed the authorized subsurface exploration and geotechnical engineering evaluation for the proposed expansion to the Northwest Florida Beaches International Airport facility in Panama City, Bay County, Florida. The work was performed in general accordance with NOVA Proposal Number 011-20215212, dated August 16, 2021. This report briefly discusses our understanding of the project at the time of the subsurface exploration, describes the geotechnical consulting services provided by NOVA, and presents our findings, conclusions, and recommendations.

We appreciate your selection of NOVA and the opportunity to be of service on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,

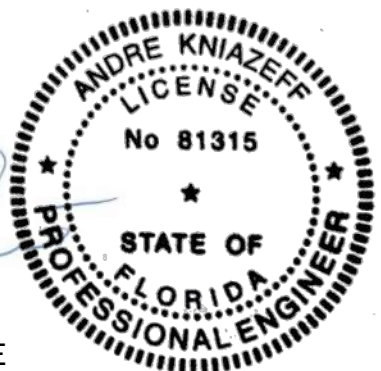
**NOVA ENGINEERING AND ENVIRONMENTAL LLC**

A blue ink signature of Kyle Selle, written in a cursive style.

Kyle Selle, E.I.  
Staff Engineer  
Florida Registration No. 1100023685

A blue ink signature of Andre Kniazeff, written in a cursive style.

Andre Kniazeff, P.E.  
Senior Geotechnical Engineer  
Florida Registration No. 81315



*Copies Submitted: Addressee (electronic)*

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## APPENDIX

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## 1.0 SUMMARY

A brief summary of pertinent findings, conclusions and recommendations is presented below. This information should not be utilized in design or construction without reading all of the recommendations presented in the text and Appendix of this report.

### 1.1 GENERAL

Our field exploration at the subject site included performing four (4) Standard Penetration Test (SPT) borings along the proposed boarding bridge structure alignment and six (6) SPT borings with two pavement cores within the proposed pavement areas. Additionally, three (3) bulk samples of the subgrade soil strata present 2 to 3 feet below the topsoil within the proposed pavement areas were collected for Limerock Bearing Ratio (LBR) testing. Drilling, testing, and sampling operations were performed in general accordance with ASTM designations and other industry standards.

The subsurface soils encountered in the SPT borings generally consisted of mixed strata of loose to very dense fine-grained sands to clayey fine-grained sands (USCS classifications of SP, SP-SM, SM, SP-SC, and SC) with trace to few organics from the existing ground surface elevation to the maximum depth explored of about 25 feet Below Existing Grade (BEG). Subsurface conditions are described in greater detail on the attached Test Boring Records.

### 1.2 SITE PREPARATION

We recommend removing all existing pavement sections, topsoil, surficial vegetation, associated root systems, and any other deleterious non-soil materials that are found to be present from within the proposed construction limits. Existing subsurface utilities that are found to be present within the footprint of the planned construction should be relocated or abandoned as appropriate. Exposed subgrade soils at the undercut elevations, as well as subsequent lifts of fill soils, should be compacted to a minimum soil density of at least 95 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557). The top 12 inches of pavement subgrades and top 12 inches of all footing excavations should be compacted to at least 98 percent. We note that vibratory compaction operations should not be performed within a clear distance of 50 feet from any adjacent structures.

A geotechnical engineer should carefully evaluate all subgrades prior to foundation and pavement section construction to confirm compliance with this report; evaluate geotechnical sections of the plans and specifications for the overall project; and provide additional recommendations that may be required.



### 1.3 GROUNDWATER CONTROL

Groundwater was encountered in the SPT borings at depths ranging from approximately 4 feet to 6½ feet BEG at the time of our subsurface exploration, which occurred during a period of relatively normal seasonal rainfall and shortly following the passing of several significant rain events. Depending on fill heights, groundwater may impact the planned near surface construction, most notably during subsurface utility installation activities. Contractors should be prepared to utilize a dewatering system during construction to maintain separation between the groundwater levels and the desired working platforms for below-grade work.

### 1.4 FOUNDATION RECOMMENDATIONS

After the recommended site/subgrade preparation and fill placement, we recommend that the proposed boarding bridge structure be supported on a conventional shallow foundation system bearing upon compacted native soils and/or compacted structural fill. The building foundation may be designed utilizing a maximum soil bearing pressure of 2,000 pounds per square foot (psf).

### 1.5 PAVEMENT SUBGRADE

To estimate the design California Bearing Ratio (CBR) for the subgrade soils, three (3) subgrade soil stratum present 2 to 3 feet below the topsoil within the proposed pavement areas, and Limerock Bearing Ratio (LBR) tests were performed. To estimate the CBR of the soils, a conversion factor of 0.8 was applied to the LBR results in accordance with U.S. Department of Transportation Federal Aviation Administration Advisory Circular 150/5320-6F Section 2.5.6. Results of the laboratory LBR testing, estimated CBR and subgrade modulus (k) values are presented in **Section 6.6** of this report.

## 2.0 INTRODUCTION

### 2.1 PROJECT INFORMATION

Our understanding of the proposed development is based on recent conversations and email exchanges with the Client, review of aerial photographs of the site via internet-based GIS software; our site reconnaissance activities; and our experience with similar geotechnical conditions in the near vicinity to this project site.

#### 2.1.1 SITE PLANS AND DOCUMENTS

We were furnished with the following documents:

- Document: Boring Location Plan  
Provided by: ZHA, Inc.  
Dated: Not Dated

#### 2.1.2 PROPOSED CONSTRUCTION

NOVA understands that the project will consist of the construction of a new passenger boarding bridge structure, along with the expansion of the existing apron along the north terminal within the Northwest Florida Beaches International Airport in Panama City, Bay County, Florida.

Structural loadings were not available from the design team at the time of the issuance of this report; we have therefore assumed that maximum loadings for the proposed structure will not exceed 25 kips per column.

#### 2.1.3 SITE GRADING

Site grading details were also not available from the design team at the time of the issuance of this report; we have therefore assumed that finished grade elevations within the proposed structure and pavement areas will not change greater than +/- 3 feet from existing grades.

### 2.2 SCOPE OF WORK

ZHA, Inc., engaged NOVA to provide geotechnical engineering consulting services for the proposed **ECP North Terminal Expansion** project. This report briefly discusses our understanding of the project, describes our exploratory procedures, and presents our findings, conclusions, and recommendations.

The primary objective of this study was to perform a geotechnical exploration within the proposed structure footprints and pavement areas and to assess these findings as they relate to geotechnical aspects of the planned site development. The authorized geotechnical engineering services included a soil test boring and sampling program, laboratory testing, engineering evaluation of the field and laboratory data, and the preparation of this report.

The services were performed substantially as outlined in our proposal number 011-20215212, dated August 16, 2021, and in general accordance with industry standards. As authorized per the above referenced proposal, this completed geotechnical report includes:

- A description of the site, fieldwork, laboratory testing, and general soil conditions encountered, together with a Boring Location Plan and individual Test Boring Records.
- Site preparation considerations that include geotechnical discussions regarding site stripping and subgrade preparation and engineered fill/backfill placement.
- Recommendations for controlling groundwater and/ or run-off during construction and, the need for permanent dewatering systems based on the anticipated post construction groundwater levels.
- Foundation system recommendations for the proposed structure, as deemed necessary based on the boring results.
- Summary of laboratory test data performed on selected soil samples.
- Suitability of on-site soils for re-use as structural fill and backfill. Additionally, the criteria for suitable fill materials will be provided.

The assessment of site environmental conditions, including the presence of wetlands or detection of pollutants in the soil, rock or groundwater, laboratory testing of samples, or a site-specific seismic study was beyond the scope of this geotechnical study. If requested, NOVA can provide these services. Additionally, this exploration only focused on the near surface soil conditions and was not intended to include the evaluation of deeper soils or rock strata where the possibility for solution cavities may exist. This report does not address the potential for sinkhole occurrence at this site.

## **3.0 SITE DESCRIPTION**

### **3.1 LOCATION AND LEGAL DESCRIPTION**

The study area is located within the Northwest Florida Beaches International Airport in Panama City, Bay County, Florida.

## 4.0 FIELD AND LABORATORY PROCEDURES

### 4.1 FIELD EXPLORATION

The boring locations were established in the field by NOVA personnel via a handheld GPS unit. Consequently, the referenced boring locations shown in Appendix B should be considered approximate. If the Client desires increased accuracy, NOVA recommends that the boring locations and elevations be surveyed.

Our field exploration at the subject site included performing:

- Four (4) SPT borings (designated B-1 through B-4), each to a depth of about 25 feet BEG, along the proposed structure alignment.
- Two (2) pavement cores and two (2) SPT borings (designated C-1 and C-2), each to a depth of about 10 feet below the existing asphalt section, within the proposed apron expansion area.
- Four (4) SPT borings (designated P-1 through P-4), each to a depth of about 10 feet BEG within the proposed apron expansion area.
- Collection of three (3) bulk samples of the subgrade soil stratum present 2 to 3 feet below the topsoil within the proposed pavement areas for LBR testing.

**SPT Borings:** The Standard Penetration Test borings were performed using the guidelines of ASTM Designation D-1586, "Penetration Test and Split-Barrel Sampling of Soils". A mud rotary drilling process was used to advance the borings. At regular intervals, soil samples were obtained with a standard 1.4-inch I.D., 2.0-inch O.D., split-tube sampler. The sampler was first seated six inches and then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot is designated the "Penetration Resistance". The penetration resistance, when properly interpreted, is an index to the soil strength and density. Representative portions of the soil samples, obtained from the sampler, were placed in sealed containers and transported to our laboratory for further evaluation and laboratory testing.

The Test Boring Records provided in Appendix B present the soil conditions encountered in the borings. These records represent our interpretation of the subsurface conditions based on the field exploration data, visual examination of the recovered samples, laboratory test data, and generally accepted geotechnical engineering practices. The stratification lines and depth designations represent approximate boundaries between various subsurface strata. Actual transitions between materials may be gradual.

**Groundwater Levels:** The groundwater levels reported on the Test Boring Records represent measurements made at the completion of each soil test boring. The soil test borings were subsequently backfilled with the soil cuttings from the drilling process for

safety concerns.

## 4.2 LABORATORY TESTING

A laboratory testing program was conducted to characterize materials existing at the site using split spoon and bulk/grab soil samples recovered from the borings. Collected samples were returned to our testing laboratory, where they were classified using visual/manual methods in accordance with the Unified Soil Classification System (USCS) soil classification system. The laboratory test data is presented in the Appendix. Selected test data are presented on the Test Boring Records attached in the Appendix.

All laboratory testing was performed in general accordance with current ASTM and Florida Methods (FM) standards and included:

- Five (5) Natural Moisture Content Determination Tests (ASTM D-2216)
- Eight (8) Fines Content Determination Tests (ASTM D-6913)
- Two (2) Organic Content Tests (ASTM D-2974)
- Three (3) Limerock Bearing Ratio (LBR) Tests (FM 5-515)

It should be noted that all soil samples will be properly disposed of 30 days following the submittal of this NOVA subsurface exploration report unless you request otherwise.

## 5.0 SUBSURFACE CONDITIONS

### 5.1 GEOLOGY

According to the United States Geological Survey (USGS), the subject site is located in Bay County within the Gulf Coastal Plain, separated from the Florida Platform by geologic structures known as the Gulf Trough and Apalachicola Embayment. These structures formed a bathymetric and environmental barrier from the earliest Eocene or earliest Oligocene periods into the Miocene.

According to the “Text to Accompany the Geologic Map of Florida” by Scott, 2001, the site is generally underlain by undifferentiated sediments deposited during the Quaternary period. These sediments typically consist of siliciclastics (sand), organics and freshwater carbonates. These soils are highly permeable and form the Sand and Gravel Aquifer of the surficial aquifer system.

Surficial soils in the region are primarily siliciclastic sediments deposited in response to the renewed uplift and erosion in the Appalachian highlands to the north and sea-level fluctuations. The extent and type of deposit is influenced by numerous factors, including mineral composition of the parent rock and meteorological events.

### 5.2 SOIL CONDITIONS

The following paragraph provides a generalized description of the subsurface profile and soil conditions encountered by the borings. The Test Boring Records provided in the Appendix should be reviewed to provide more detailed descriptions of the subsurface conditions encountered at the boring locations. Conditions may vary at other locations and times.

The subsurface soils encountered in the SPT borings generally consisted of mixed strata of loose to very dense fine-grained sands to clayey fine-grained sands (USCS classifications of SP, SP-SM, SM, SP-SC, and SC) with trace to few organics from the existing ground surface elevation to the maximum depth explored of about 25 feet BEG. Subsurface conditions are described in greater detail on the attached Test Boring Records.

### 5.3 GROUNDWATER CONDITIONS

#### 5.3.1 GENERAL

Groundwater in the Gulf Coastal Plain typically occurs as an unconfined aquifer condition. Recharge is provided by the infiltration of rainfall and surface water through the soil overburden. More permeable zones in the soil matrix can affect

groundwater conditions. The groundwater table is expected to be a subdued replica of the original surface topography.

### **5.3.2 SOIL TEST BORING GROUNDWATER CONDITIONS**

Groundwater was encountered in the SPT borings at depths ranging from approximately 4 feet to 6½ feet BEG at the time of our subsurface exploration, which occurred during a period of relatively normal seasonal rainfall and shortly following the passing of several significant rain events.

Based on our review of the subsurface conditions encountered in the test borings, we estimate that the normal permanent seasonal high groundwater (SHGW) will occur approximately at the groundwater levels measured at each boring location during our field exploration.

Groundwater levels vary with changes in season and rainfall, construction activity, surface water runoff and other site-specific factors. Groundwater levels in the Bay County area are typically lowest in the late spring and the late fall and highest in the summer with annual groundwater fluctuations by seasonal rainfall; consequently, the water table may vary at times.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on our understanding of the proposed construction, our site observations, our evaluation and interpretation of the field and laboratory data obtained during this exploration, our experience with similar subsurface conditions, and generally accepted geotechnical engineering principles and practices.

Subsurface conditions in unexplored locations or at other times may vary from those encountered at specific boring locations. If such variations are noted during construction, or if project development plans are changed, we request the opportunity to review the changes and amend our recommendations, if necessary.

As previously noted, boring locations were established in the field utilizing a handheld GPS unit. If increased accuracy is desired by the client, we recommend that the boring locations and elevations be surveyed.

### 6.1 SITE PREPARATION

We recommend removing all existing pavement sections, topsoil, surficial vegetation, associated root systems, and any other deleterious non-soil materials that are found to be present from within the proposed construction limits. Existing subsurface utilities that are found to be present within the footprint of the planned construction should be relocated or abandoned as appropriate. Exposed subgrade soils at the undercut elevations, as well as subsequent lifts of fill soils, should be compacted to a minimum soil density of at least 95 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557). We note that vibratory compaction operations should not be performed within a clear distance of 50 feet from any adjacent structures.

A geotechnical engineer should carefully evaluate all subgrades prior to foundation and pavement section construction to confirm compliance with this report; evaluate geotechnical sections of the plans and specifications for the overall project; and provide additional recommendations that may be required.

### 6.2 FILL PLACEMENT

#### 6.2.1 FILL SUITABILITY

Fill materials should be relatively clean sands with less than 12 percent fines (material passing the No. 200 sieve), and free of non-soil materials and rock fragments larger than 3 inches in diameter. On-site near surface soils that are categorized as fine-grained sands and slightly silty as fine-grained sands (SP, SP-SM) based on the Unified Soil Classification System (USCS) are considered suitable for re-use as structural fill in building and pavement areas, provided that



the materials are free of rubble, clay, rock, roots, and organics. Soils with fines contents between 13 and 25 percent (SM) may also be used as fill soils for this project, but we note that strict moisture control would be required at the time of placement for these moisture-sensitive soils. All materials to be used for backfill or compacted fill construction should be evaluated and, if necessary, tested by NOVA prior to placement to determine if they are suitable for their intended use. Any off-site materials used as fill should be approved by NOVA prior to acquisition. Organic and/or debris-laden material is not suitable for re-use as structural fill.

### **6.2.2 SOIL COMPACTION**

Fill should be placed in thin, horizontal loose lifts (maximum 12-inch depth) and compacted to a minimum soil density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D-1557). The upper 12 inches of soil beneath pavement areas and the upper 12 inches of soil beneath the bottoms of all shallow foundation footings should be compacted to at least 98 percent.

In confined areas, such as utility trenches, portable compaction equipment and thinner fill lifts (3 to 4 inches) may be necessary. Fill materials used in structural areas should have a target maximum dry density of at least 100 pounds per cubic foot (pcf). If lighter weight fill materials are used, the NOVA geotechnical engineer should be consulted to assess the impact on design recommendations.

Soil moisture content should be maintained within 3 percent of the optimum moisture content. We recommend that the grading contractor have equipment on site during earthwork for both drying and wetting fill soils. Moisture control may be difficult during rainy weather.

Filling operations should be observed by a NOVA soils technician, who can confirm suitability of material used and uniformity and appropriateness of compaction efforts. He/she can also document compliance with the specifications by performing field density tests using thin-walled tube, nuclear, or sand cone testing methods (ASTM D-2937, D-6938, or D-1556, respectively). One test per 2,000 square feet in structure and pavement areas should be performed in each lift of fill, with test locations well distributed throughout the fill mass. When filling in small areas, at least one test per day per area should be performed. One (1) test at conventional spread foundations, one (1) test per lift at each planned column footing area, and one (1) test per 75 linear feet at continuous strip foundations are also recommended.

## 6.3 GROUNDWATER CONTROL

### 6.3.1 GENERAL

Groundwater encountered in the SPT borings at depths ranging from approximately 4 feet to 6½ feet BEG at the time of our subsurface exploration, which occurred during a period of relatively normal seasonal rainfall and shortly following the passing of several significant rain events. Depending on fill heights, groundwater may impact the planned near surface construction, most notably during subsurface utility installation activities. Contractors should be prepared to utilize a dewatering system during construction to maintain separation between the groundwater levels and the desired working platforms for below-grade work.

### 6.3.2 TEMPORARY DEWATERING

As previously noted, groundwater levels are subject to seasonal, climatic, and other variations and may be different at other times and locations. The extent and nature of any dewatering required during construction will be dependent on the actual groundwater conditions prevalent at the time of construction and the effectiveness of construction drainage to prevent run-off into open excavations. If required, the dewatering system should be capable of lowering the groundwater elevations to a minimum of 2 feet below the working platform. A local contractor familiar with similar site conditions common to the Bay County area should be able to determine an adequate dewatering method for the subject property. Common local dewatering methods include dewatering by the use of temporary well points and trench drain systems.

## 6.4 FOUNDATION RECOMMENDATIONS

### 6.4.1 GENERAL

NOVA understands that the project will consist of the construction of a new passenger boarding bridge structure, which we anticipate will consist of reinforced concrete/precast concrete construction. Structural loadings were not available from the design team at the time of the issuance of this report; we have therefore assumed that maximum loadings for the proposed structure will not exceed 25 kips per column.

### 6.4.2 SHALLOW FOUNDATION SYSTEMS

**Design:** After the recommended site/subgrade preparation and fill placement, we recommend that the proposed convenience store structure be supported on a conventional shallow foundation system bearing upon compacted structural fill. The structure foundation may be designed for a maximum soil bearing pressure of **2,000 pounds per square foot (psf)**.

We recommend minimum footing widths of 24 inches for ease of construction and to reduce the possibility of localized shear failures. Exterior and interior footing bottoms should be established at least 20 inches below finished surrounding exterior grades.

**Settlement:** Settlements for spread foundations bearing on compacted native or approved fill materials were assessed using SPT values to estimate elastic modulus, based on published correlations and previous NOVA experience. We note that the settlements presented are based on the SPT boring results. Conditions may be better or worse in other areas, however, we believe the estimated settlements are reasonably conservative.

Based on the soil bearing capacity provided above, and the presumed foundation elevations as discussed above, we expect primary total settlement beneath individual foundations to be on the order of 1 inch or less. The amount of differential settlement is difficult to predict because the subsurface and foundation loading conditions can vary considerably across the site. However, we anticipate differential settlement between adjacent foundations will be on the order of  $\frac{1}{2}$  inch or less. The final deflected shape of the structure will be dependent on actual foundation locations and loading.

Foundation support conditions are highly erratic and may vary dramatically in short horizontal distances. It is anticipated that the geotechnical engineer may recommend a different bearing capacity upon examination of the actual foundation subgrade at numerous locations. To reduce the differential settlement if lower consistency materials are encountered, a lower bearing capacity should be used, or the foundations should be extended to more competent materials.

We anticipate that timely communication between the geotechnical engineer and the structural engineer, as well as other design and construction team members, will be required.

**Construction:** Foundation excavations should be evaluated by the NOVA geotechnical engineer prior to reinforcing steel placement to observe foundation subgrade preparation and confirm bearing pressure capacity. Foundation excavations should be level and free of debris, ponded water, mud, and loose, frozen, or water-softened soils. Concrete should be placed as soon as is practical after the foundation is excavated and the subgrade evaluated. Foundation concrete should not be placed on frozen or saturated soil. If a foundation excavation remains open overnight, or if rain or snow is imminent, a 3 to 4-inch thick "mud mat" of lean concrete should be placed in the bottom of the excavation to protect the bearing soils until reinforcing steel and concrete can be placed.

## 6.5 PAVEMENT SUBGRADE

To estimate the design California Bearing Ratio (CBR), three (3) bulk samples of the predominant surficial soils were obtained from within the proposed runway extension alignment and cut areas of the site, and Limerock Bearing Ratio (LBR) tests were then performed. To estimate the CBR value of the obtained soil samples, a conversion factor of 0.8 was applied to the LBR results in accordance with the US Department of Transportation Federal Aviation Administration (FAA) Advisory Circular 150/5320-6G, Section 2.3.9.11.4

We recommend that a minimum compaction requirement of 98 percent of the maximum dry density be specified for the Stabilized Subgrade Course as determined by the Modified Proctor test (ASTM D-1557). All pavement material and paving operations should meet applicable specifications of the American Concrete Institute and Federal Aviation Administration requirements. A NOVA technician should observe placement and perform density testing of the stabilized subgrade, base course material and concrete. Results of the laboratory LBR testing, as well as estimated CBR and subgrade modulus (k) values (based on FAA Advisory Circular 150/5320-6G, Section 3.16.4.1), are presented below in Table 1.

| Table 1 – Results of CBR Testing and Subgrade Modulus Values |       |       |       |
|--|-------|-------|-------|
| Corresponding Sampling and Boring Locations                  | LBR-1 | LBR-2 | LBR-3 |
| LBR Value (at 0.1-inch penetration)                          | 30    | 11    | 30    |
| Estimated CBR Value  | 24    | 9     | 24    |
| Fines Content (minus the #200 sieve, %)                      | 9.3   | 3.3   | 9.3   |
| Estimated Subgrade Modulus, <i>k</i> (psi/in)                | 341   | 159   | 341   |

## **7.0 CONSTRUCTION OBSERVATIONS**

### **7.1 SHALLOW FOUNDATIONS**

Foundation excavations should be level and free of debris, ponded water, mud, and loose, frozen, or water-softened soils. All foundation excavations should be evaluated by a NOVA geotechnical engineer prior to reinforcing steel placement to observe foundation subgrade preparation and assess bearing pressure capacity. Due to variable site subsurface and construction conditions, some adjustments in isolated foundation bearing pressures, depth of foundations or undercutting and replacement with controlled structural fill may be necessary.

### **7.2 PAVEMENT SECTION**

The pavement section should utilize materials and be constructed in accordance with applicable Federal Aviation Administration (FAA) specifications. Also, NOVA should be retained during construction to confirm subgrade conditions are as anticipated and that the construction process is as required by the contract documents.

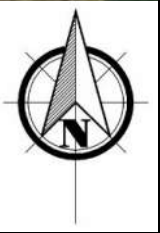
### **7.3 SUBGRADE**

Once site grading is completed, the subgrade may be exposed to adverse construction activities and weather conditions. The subgrade should be well-drained to prevent the accumulation of water. If the exposed subgrade becomes saturated or frozen, the NOVA geotechnical engineer should be consulted.

# **APPENDIX A**

## **Figures and Maps**





Base map provided by *Google Earth*

**Scale:** Not To Scale  
**Date Drawn:** August 30, 2021  
**Drawn By:** D. Ritzel  
**Checked By:** A. Kniazeff

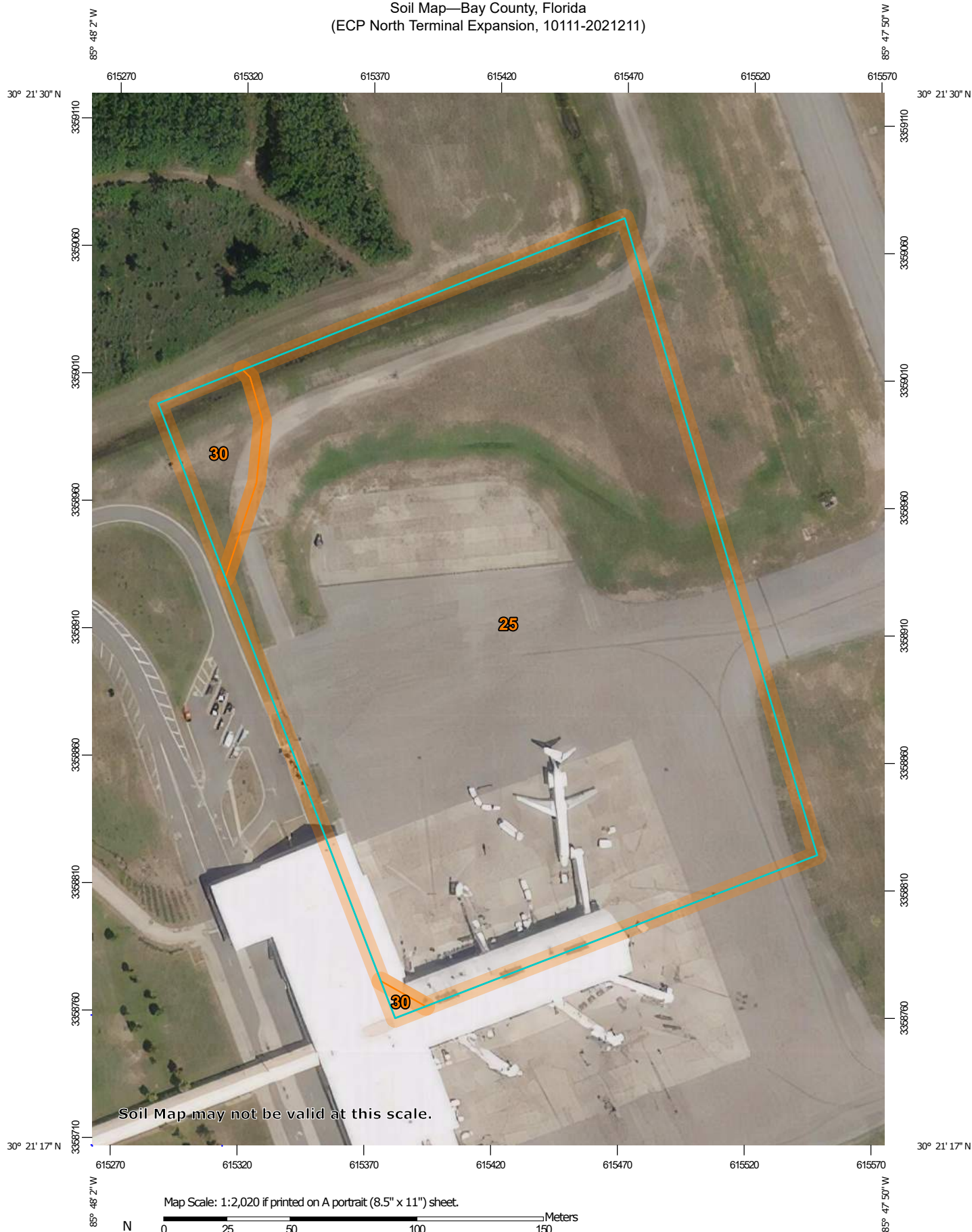


17612 Ashley Drive  
Panama City Beach, Florida 32413  
850.249.6682 ♦ 850.249.6683

**PROJECT LOCATION MAP**  
**ECP North Terminal Expansion**  
Panama City, Bay County, Florida  
*NOVA Project Number 10111-2021211*



Soil Map—Bay County, Florida  
(ECP North Terminal Expansion, 10111-2021211)








## MAP LEGEND




















### Area of Interest (AOI)






Area of Interest (AOI)

### Soils


-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points

### Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

### Water Features

-  Streams and Canals

### Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

### Background

-  Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bay County, Florida  
Survey Area Data: Version 20, Jun 10, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Dec 10, 2017

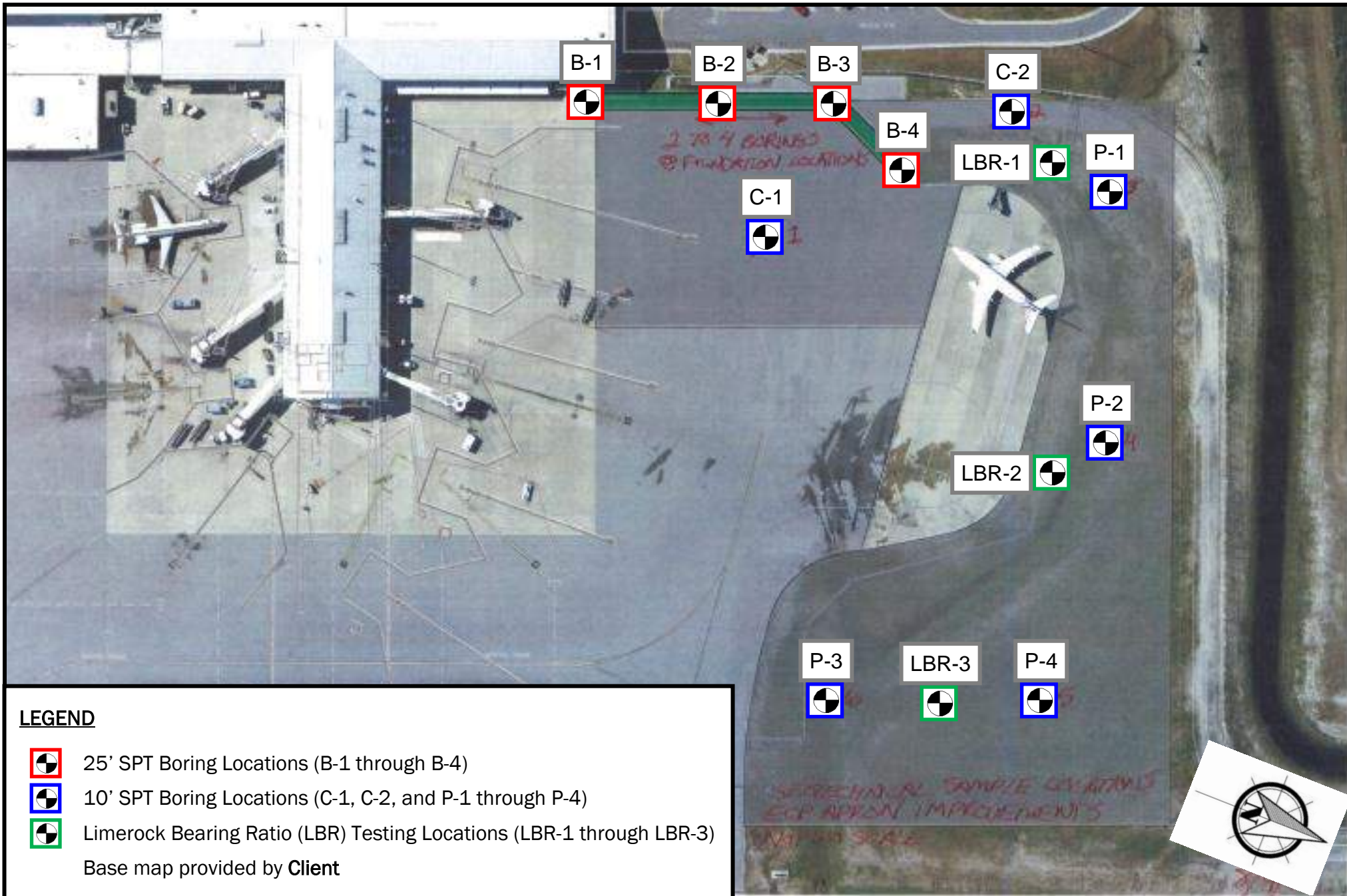
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

| Map Unit Symbol                    | Map Unit Name   | Acres in AOI | Percent of AOI |
|------------------------------------|---|--------------|----------------|
| 25                                 | Hurricane sand, 0 to 2 percent slopes                 | 11.6         | 96.1%          |
| 30                                 | Pottsburg-Pottsburg, wet, sand, 0 to 2 percent slopes | 0.5          | 3.9%           |
| <b>Totals for Area of Interest</b> |   | <b>12.1</b>  | <b>100.0%</b>  |

# **APPENDIX B**

## **Subsurface Data**



#### LEGEND



25' SPT Boring Locations (B-1 through B-4)



10' SPT Boring Locations (C-1, C-2, and P-1 through P-4)



Limerock Bearing Ratio (LBR) Testing Locations (LBR-1 through LBR-3)

Base map provided by **Client**

Scale: Not To Scale

Date Drawn: October 4, 2021

Drawn By: D. Ritzel

Checked By: A. Kniazeff



17612 Ashley Drive  
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#### BORING LOCATION PLAN






ECP North Terminal Expansion

Panama City, Bay County, Florida

NOVA Project Number 10111-2021211



## SYMBOLS AND ABBREVIATIONS

| SYMBOL   | DESCRIPTION  |
|--|--|
| N-Value  | No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot |
| WOR  | Weight of Drill Rods   |
| WOH  | Weight of Drill Rods and Hammer  |
|  | Sample from Auger Cuttings   |
|  | Standard Penetration Test Sample   |
|  | Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)                                      |
| % REC  | Percent Core Recovery from Rock Core Drilling  |
| RQD  | Rock Quality Designation   |
|  | Stabilized Groundwater Level   |
|  | Seasonal High Groundwater Level (also referred to as the W.S.W.T.)                           |
| NE   | Not Encountered  |
| GNE  | Groundwater Not Encountered  |
| BT   | Boring Terminated  |
| -200 (%)   | Fines Content or % Passing No. 200 Sieve   |
| MC (%)   | Moisture Content   |
| LL   | Liquid Limit (Atterberg Limits Test)   |
| PI   | Plasticity Index (Atterberg Limits Test)   |
| K  | Coefficient of Permeability  |
| Org. Cont.   | Organic Content  |
| G.S. Elevation   | Ground Surface Elevation   |

## UNIFIED SOIL CLASSIFICATION SYSTEM

| MAJOR DIVISIONS  |   |   | GROUP SYMBOLS  | TYPICAL NAMES  |
|--|---|---|--|--|
| COARSE-GRAINED SOILS<br>More than 50% retained on the No. 200 sieve* | GRAVELS<br>50% or more of coarse fraction retained on No. 4 sieve | CLEAN GRAVELS                                   | GW   | Well-graded gravels and gravel-sand mixtures, little or no fines   |
|  |   |   | GP   | Poorly graded gravels and gravel-sand mixtures, little or no fines |
|  |   | GRAVELS WITH FINES                              | GM   | Silty gravels and gravel-sand-silt mixtures                        |
|  |   |   | GC   | Clayey gravels and gravel-sand-clay mixtures                       |
|  | SANDS<br>More than 50% of coarse fraction passes No. 4 sieve      | CLEAN SANDS<br>5% or less passing No. 200 sieve | SW**   | Well-graded sands and gravelly sands, little or no fines           |
|  |   |   | SP**   | Poorly graded sands and gravelly sands, little or no fines         |
|  |   | SANDS with 12% or more passing No. 200 sieve    | SM**   | Silty sands, sand-silt mixtures                                    |
|  |   |   | SC**   | Clayey sands, sand-clay mixtures                                   |
| FINE-GRAINED SOILS<br>50% or more passes the No. 200 sieve*          | SILTS AND CLAYS<br>Liquid limit 50% or less                       | ML  | Inorganic silts, very fine sands, rock flour, silty or clayey fine sands             |  |
|  |   | CL  | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays |  |
|  |   | OL  | Organic silts and organic silty clays of low plasticity                              |  |
|  | SILTS AND CLAYS<br>Liquid limit greater than 50%                  | MH  | Inorganic silts, micaceous or diamiceous fine sands or silts, elastic silts          |  |
|  |   | CH  | Inorganic clays or clays of high plasticity, fat clays                               |  |
|  |   | OH  | Organic clays of medium to high plasticity   |  |
|  |   | PT  | Peat, muck and other highly organic soils  |  |

\*Based on the material passing the 3-inch (75 mm) sieve

\*\* Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

### RELATIVE DENSITY

(Sands and Gravels)

Very loose – Less than 4 Blows/Foot  
Loose – 4 to 10 Blows/Foot  
Medium Dense – 11 to 30 Blows/Foot  
Dense – 31 to 50 Blows/Foot  
Very Dense – More than 50 Blows/Foot

### CONSISTENCY

(Silts and Clays)

Very Soft – Less than 2 Blows/Foot  
Soft – 2 to 4 Blows/Foot  
Medium Stiff – 5 to 8 Blows/Foot  
Stiff – 9 to 15 Blows/Foot  
Very Stiff – 16 to 30 Blows/Foot  
Hard – More than 30 Blows/Foot

### RELATIVE HARDNESS

(Limestone)

Soft – 100 Blows for more than 2 Inches  
Hard – 100 Blows for less than 2 Inches

### MODIFIERS

**These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample**

Trace – 5% or less  
With Silt or With Clay – 6% to 11%  
Silty or Clayey – 12% to 30%  
Very Silty or Very Clayey – 31% to 50%

**These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample**

Trace – Less than 3%  
Few – 3% to 4%  
Some – 5% to 8%  
Many – Greater than 8%

**These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample**

Trace – 5% or less  
Few – 6% to 12%  
Some – 13% to 30%  
Many – 31% to 50%



# TEST BORING RECORD B-1

PROJECT NAME: ECP North Terminal Expansion DATE: 10/1/2021  
 PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
 PROJECT LOCATION: Panama City, Bay County, Florida  
 LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
 DRILLED BY: L. Griffin LOGGED BY: D. Ritzel  
 DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
 APPARENT GW DEPTH: 6.5 feet ESHGW DEPTH: ▽

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description  | Graphic | Groundwater | Sample<br>Type | N-value | ● N-Value (Blows per Foot)<br>▲ Moisture Content (%)<br>◇ Organic Content (%)<br>■ Fines Content (%)<br>PL<br>LL |
|-----------------|-----------|---|---------|-------------|----------------|---------|--|
| 0               |           |   |         |             |                |         | 10 20 30 40 50 60 70 80 90   |
|                 |           | Loose light brown silty fine-grained SAND with gravel (SM)            |         |             |                | 5       |  |
|                 |           | Loose brown to light brown slightly silty fine-grained SAND (SP-SM)   |         |             |                | 8       |  |
| 5               |           |   |         |             |                | 12      |  |
|                 |           | Medium dense grey clayey fine-grained SAND (SC)                       |         | ▽           |                | 13      |  |
|                 |           | Loose to dense grey to brown slightly silty fine-grained SAND (SP-SM) |         |             |                | 13      |  |
| 10              |           |   |         |             |                |         |  |
|                 |           |   |         |             |                |         |  |
|                 |           |   |         |             |                | 42      |  |
| 15              |           |   |         |             |                |         |  |
|                 |           |   |         |             |                |         |  |
|                 |           |   |         |             |                | 22      |  |
| 20              |           |   |         |             |                |         |  |
|                 |           |   |         |             |                |         |  |
|                 |           |   |         |             |                | 9       |  |
| 25              |           |   |         |             |                |         |  |
|                 |           | Boring Terminated at 25 feet  |         |             |                |         |  |

Note:



# TEST BORING RECORD B-2

PROJECT NAME: ECP North Terminal Expansion DATE: 10/1/2021  
 PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
 PROJECT LOCATION: Panama City, Bay County, Florida  
 LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
 DRILLED BY: L. Griffin LOGGED BY: D. Ritzel  
 DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
 INITIAL GW DEPTH: ▼ 6.0 feet ESHGW DEPTH: ▼ \_\_\_\_\_

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description  | Graphic | Groundwater | Sample<br>Type | N-value | ● N-Value (Blows per Foot)<br>▲ Moisture Content (%)<br>◇ Organic Content (%)<br>■ Fines Content (%)<br>PL<br>LL |
|-----------------|-----------|---|---------|-------------|----------------|---------|--|
| 0               |           |   |         |             |                |         | 10 20 30 40 50 60 70 80 90   |
|                 |           | Medium dense light brown silty fine-grained SAND with gravel (SM)                                   |         |             |                | 17      | ●  |
|                 |           | Medium dense light brown to grey slightly silty fine-grained SAND (SP-SM)                           |         |             |                | 23      | ●  |
| 5               |           |   |         |             |                | 21      | ●  |
|                 |           | Medium dense dark brown slightly silty fine-grained SAND with trace organics - organic silt (SP-SM) |         | ▼           |                | 12      | ●  |
|                 |           | Medium dense to dense dark brown to brown slightly silty fine-grained SAND (SP-SM)                  |         |             |                | 15      | ●  |
| 10              |           |   |         |             |                |         |  |
|                 |           |   |         |             |                | 36      | ●  |
| 15              |           |   |         |             |                |         |  |
|                 |           | Medium dense brown silty fine-grained SAND (SM)   |         |             |                | 15      | ●  |
| 20              |           |   |         |             |                |         |  |
|                 |           | Medium dense brown slightly clayey fine-grained SAND (SP-SC)  |         |             |                | 18      | ●  |
| 25              |           | Boring Terminated at 25 feet  |         |             |                |         |  |

Note:



# TEST BORING RECORD B-3

PROJECT NAME: ECP North Terminal Expansion DATE: 10/1/2021  
PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
PROJECT LOCATION: Panama City, Bay County, Florida  
LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
DRILLED BY: L. Griffin LOGGED BY: D. Ritzel  
DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
INITIAL GW DEPTH: ▼ 6.0 feet ESHGW DEPTH: ▼ \_\_\_\_\_

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description   | Graphic | Groundwater | Sample<br>Type | N-value | ● N-Value (Blows per Foot)<br>▲ Moisture Content (%)<br>◇ Organic Content (%)<br>■ Fines Content (%)<br>PL<br>LL |
|-----------------|-----------|--|---------|-------------|----------------|---------|--|
| 0               |           |  |         |             |                |         | 10 20 30 40 50 60 70 80 90   |
|                 |           | Medium dense light brown silty fine-grained SAND<br>with gravel (SM)                                   |         |             |                | 18      | ●  |
|                 |           | Medium dense grey/brown to dark brown slightly<br>silty fine-grained SAND (SP-SM)                      |         |             |                | 19      | ●  |
| 5               |           |  |         |             |                | 11      | ●  |
|                 |           | Medium dense dark brown slightly silty fine-grained<br>SAND with trace organics - organic silt (SP-SM) |         | ▼           |                | 16      | ◇ ● ▲  |
|                 |           | Medium dense brown to grey slightly silty<br>fine-grained SAND (SP-SM)                                 |         |             |                | 19      | ●  |
| 10              |           |  |         |             |                |         |  |
|                 |           |  |         |             |                | 21      | ●  |
| 15              |           |  |         |             |                |         |  |
|                 |           |  |         |             |                | 18      | ●  |
| 20              |           |  |         |             |                |         |  |
|                 |           |  |         |             |                | 22      | ●  |
| 25              |           | Boring Terminated at 25 feet   |         |             |                |         |  |

Note:





# TEST BORING RECORD B-4

PROJECT NAME: ECP North Terminal Expansion DATE: 10/1/2021  
PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
PROJECT LOCATION: Panama City, Bay County, Florida  
LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
DRILLED BY: L. Griffin LOGGED BY: D. Ritzel  
DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
INITIAL GW DEPTH: ▼ 6.5 feet ESHGW DEPTH: ▼ \_\_\_\_\_

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description   | Graphic | Groundwater | Sample<br>Type | N-Value | <div>● N-Value (Blows per Foot)<br/>▲ Moisture Content (%)<br/>◇ Organic Content (%)<br/>■ Fines Content (%)</div> <div>PL LL<br/>10 20 30 40 50 60 70 80 90</div> |  |  |  |  |  |  |  |  |  |
|-----------------|-----------|--|---------|-------------|----------------|---------|--|--|--|--|--|--|--|--|--|--|
| 0               |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           | Medium dense light brown silty fine-grained SAND<br>with gravel (SM)                                   |         |             |                | 17      | ●  |  |  |  |  |  |  |  |  |  |
|                 |           | Medium dense dark brown slightly silty fine-grained<br>SAND with trace organics - organic silt (SP-SM) |         |             |                | 20      | ●  |  |  |  |  |  |  |  |  |  |
| 5               |           |  |         |             |                | 18      | ●  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         | ▼           |                | 15      | ●  |  |  |  |  |  |  |  |  |  |
| 10              |           |  |         |             |                | 13      | ●  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
| 15              |           | Loose to medium dense grey/brown slightly silty<br>fine-grained SAND (SP-SM)                           |         |             |                | 22      | ●  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
| 20              |           |  |         |             |                | 9       | ●  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
| 25              |           |  |         |             |                | 14      | ●  |  |  |  |  |  |  |  |  |  |
|                 |           | Boring Terminated at 25 feet   |         |             |                |         |  |  |  |  |  |  |  |  |  |  |

Note:



# TEST BORING RECORD C-1

PROJECT NAME: ECP North Terminal Expansion DATE: 10/1/2021  
PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
PROJECT LOCATION: Panama City, Bay County, Florida  
LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
DRILLED BY: L. Griffin LOGGED BY: D. Ritzel  
DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
INITIAL GW DEPTH: ▼ 6.0 feet ESHGW DEPTH: ▼ 5.5 feet

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description  | Graphic | Groundwater | Sample<br>Type | N-Value | ● N-Value (Blows per Foot)<br>▲ Moisture Content (%)<br>◇ Organic Content (%)<br>■ Fines Content (%)<br>PL<br>LL |
|-----------------|-----------|---|---------|-------------|----------------|---------|--|
| 0               |           | Approximately 6 inches of asphaltic concrete                                      |         |             |                |         |  |
|                 |           | Medium dense brown/light brown silty fine-grained SAND with gravel (SM)           |         |             |                | 18      |  |
|                 |           | Medium dense brown to dark brown slightly silty fine-grained SAND (SP-SM)         |         |             |                | 26      |  |
| 5               |           |   |         |             |                | 16      |  |
|                 |           | Loose dark brown fine-grained SAND (SP)   |         | ▼           |                | 10      |  |
|                 |           | Medium dense dark brown fine-grained SAND with trace organics - organic silt (SP) |         |             |                | 11      |  |
| 10              |           | Boring Terminated at 10 feet  |         |             |                |         |  |

Note:



# TEST BORING RECORD C-2

PROJECT NAME: ECP North Terminal Expansion DATE: 10/1/2021  
PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
PROJECT LOCATION: Panama City, Bay County, Florida  
LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
DRILLED BY: L. Griffin LOGGED BY: D. Ritzel  
DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
INITIAL GW DEPTH: ▼ 6.0 feet ESHGW DEPTH: ▽ 5.5 feet

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description  | Graphic | Groundwater | Sample<br>Type | N-value | ● N-Value (Blows per Foot)<br>▲ Moisture Content (%)<br>◇ Organic Content (%)<br>■ Fines Content (%)<br>PL<br>LL |
|-----------------|-----------|---|---------|-------------|----------------|---------|--|
| 0               |           | Approximately 6 inches of asphaltic concrete  |         |             |                |         |  |
|                 |           | Medium dense grey silty fine-grained SAND (SM)  |         |             |                | 17      |  |
|                 |           | Medium dense to very dense dark brown slightly silty fine-grained SAND with trace organics - organic silt (SP-SM) |         |             |                | 24      |  |
| 5               |           |   |         |             |                | 26      |  |
|                 |           |   |         | ▽<br>▼      |                | 71      |  |
|                 |           | Very dense dark brown slightly silty fine-grained SAND with few organics - organic silt (SP-SM)                   |         |             |                | 102     | >>●  |
| 10              |           | Boring Terminated at 10 feet  |         |             |                |         |  |

Note:



PROJECT NAME: ECP North Terminal Expansion DATE: 9/16/2021  
 PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
 PROJECT LOCATION: Panama City, Bay County, Florida  
 LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
 DRILLED BY: J. Governale LOGGED BY: D. Ritzel  
 DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
 APPARENT GW DEPTH: 4.5 feet ESHGW DEPTH: ▽ 4.5 feet

| This information pertains only to this boring and should not be interpreted as being indicative of the site. |           |  |         |             |                |         |  |  |  |
|--|-----------|--|---------|-------------|----------------|---------|--|--|--|
| Depth<br>(feet)  | Elevation | Material Description   | Graphic | Groundwater | Sample<br>Type | N-Value | <ul style="list-style-type: none"> <li>● N-Value (Blows per Foot)</li> <li>▲ Moisture Content (%)</li> <li>◇ Organic Content (%)</li> <li>■ Fines Content (%)</li> </ul> |  |  |
| 0  |           |  |         |             |                |         | PL _____ LL _____<br>10 20 30 40 50 60 70 80 90  |  |  |
|  |           | Grey to brown slightly silty fine-grained SAND (SP-SM)                                       |         |             |                |         |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           | Loose dark brown slightly silty fine-grained SAND (SP-SM)                                    |         |             |                |         |  |  |  |
| 5  |           |  |         |             |                | 7       |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           | Loose dark brown slightly silty fine-grained SAND with trace organics - organic silt (SP-SM) |         |             |                |         |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           | Medium dense dark brown slightly silty fine-grained SAND (SP-SM)                             |         |             |                | 11      |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           |  |         |             |                |         |  |  |  |
|  |           |  |         |             |                | 20      |  |  |  |
| 10   |           |  |         |             |                |         |  |  |  |
|  |           | Boring Terminated at 10 feet   |         |             |                |         |  |  |  |

Note: Initial 4' hand augered due to presence of nearby subsurface utilities.



# TEST BORING RECORD P-2

PROJECT NAME: ECP North Terminal Expansion DATE: 9/16/2021  
PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
PROJECT LOCATION: Panama City, Bay County, Florida  
LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
DRILLED BY: J. Governale LOGGED BY: D. Ritzel  
DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
APPARENT GW DEPTH: 5.0 feet ESHGW DEPTH: 5.0 feet

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description   | Graphic | Groundwater | Sample<br>Type | N-value | <div>● N-Value (Blows per Foot)<br/>▲ Moisture Content (%)<br/>◇ Organic Content (%)<br/>■ Fines Content (%)</div> <div>PL LL<br/>10 20 30 40 50 60 70 80 90</div> |  |  |  |  |  |  |  |  |  |
|-----------------|-----------|--|---------|-------------|----------------|---------|--|--|--|--|--|--|--|--|--|--|
| 0               |           | Medium dense light grey fine-grained SAND (SP)   |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 18      |  |  |  |  |  |  |  |  |  |  |
|                 |           | Loose grey to dark brown slightly silty fine-grained SAND (SP-SM)                          |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 9       |  |  |  |  |  |  |  |  |  |  |
| 5               |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           | Loose to medium dense dark brown fine-grained SAND with trace organics - organic silt (SP) |         |             |                | 9       |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 9       |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 18      |  |  |  |  |  |  |  |  |  |  |
| 10              |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           | Boring Terminated at 10 feet   |         |             |                |         |  |  |  |  |  |  |  |  |  |  |

Note:



# TEST BORING RECORD P-3

PROJECT NAME: ECP North Terminal Expansion DATE: 9/16/2021  
PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
PROJECT LOCATION: Panama City, Bay County, Florida  
LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
DRILLED BY: J. Governale LOGGED BY: D. Ritzel  
DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
INITIAL GW DEPTH: ▼ 4.0 feet ESHGW DEPTH: ▼ 4.0 feet

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description  | Graphic | Groundwater | Sample<br>Type | N-value | <div>● N-Value (Blows per Foot)<br/>▲ Moisture Content (%)<br/>◇ Organic Content (%)<br/>■ Fines Content (%)<br/>PL LL<br/>10 20 30 40 50 60 70 80 90</div> |  |  |  |  |  |  |  |  |  |
|-----------------|-----------|---|---------|-------------|----------------|---------|---|--|--|--|--|--|--|--|--|--|
| 0               |           | Medium dense grey slightly silty fine-grained SAND (SP-SM)  |         |             |                | 17      | ●   |  |  |  |  |  |  |  |  |  |
|                 |           | Medium dense dark brown slightly silty fine-grained SAND with trace organics - organic silt (SP-SM) |         |             |                | 14      | ◇ ■ ▲   |  |  |  |  |  |  |  |  |  |
| 5               |           |   |         |             |                | 17      | ●   |  |  |  |  |  |  |  |  |  |
|                 |           |   |         |             |                | 14      | ●   |  |  |  |  |  |  |  |  |  |
|                 |           |   |         |             |                | 17      | ●   |  |  |  |  |  |  |  |  |  |
| 10              |           | Boring Terminated at 10 feet  |         |             |                |         |   |  |  |  |  |  |  |  |  |  |

Note:



# TEST BORING RECORD P-4

PROJECT NAME: ECP North Terminal Expansion DATE: 9/16/2021  
PROJECT NO.: 2021211 CLIENT: ZHA, Inc.  
PROJECT LOCATION: Panama City, Bay County, Florida  
LOCATION: See Boring Location Plan ELEVATION: Existing Grade  
DRILLED BY: J. Governale LOGGED BY: D. Ritzel  
DRILLING METHOD: Mud Rotary HAMMER: \_\_\_\_\_  
APPARENT GW DEPTH: 5.0 feet ESHGW DEPTH: 5.0 feet

This information pertains only to this boring and should not be interpreted as being indicative of the site.

| Depth<br>(feet) | Elevation | Material Description   | Graphic | Groundwater | Sample<br>Type | N-value | <div>● N-Value (Blows per Foot)<br/>▲ Moisture Content (%)<br/>◇ Organic Content (%)<br/>■ Fines Content (%)</div> <div>PL LL<br/>10 20 30 40 50 60 70 80 90</div> |  |  |  |  |  |  |  |  |  |
|-----------------|-----------|--|---------|-------------|----------------|---------|--|--|--|--|--|--|--|--|--|--|
| 0               |           | Medium dense grey/brown slightly silty fine-grained SAND (SP-SM)   |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 18      |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 12      |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 9       |  |  |  |  |  |  |  |  |  |  |
| 5               |           | Loose to medium dense dark brown slightly silty fine-grained SAND with trace organics - organic silt (SP-SM) |         |             |                | 14      |  |  |  |  |  |  |  |  |  |  |
|                 |           |  |         |             |                | 26      |  |  |  |  |  |  |  |  |  |  |
| 10              |           |  |         |             |                |         |  |  |  |  |  |  |  |  |  |  |
|                 |           | Boring Terminated at 10 feet   |         |             |                |         |  |  |  |  |  |  |  |  |  |  |

Note:

# APPENDIX C

## Laboratory Data



## SUMMARY OF CLASSIFICATION & INDEX TESTING

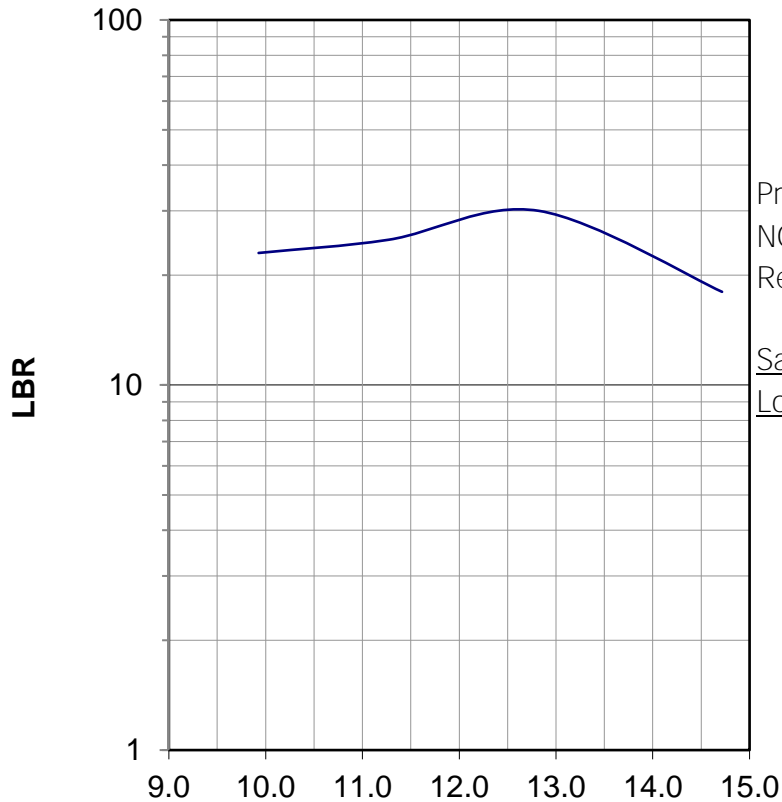
ECP North Terminal Expansion  
Panama City, Bay County, Florida  
NOVA Project Number 10111-2021211

| Boring Number | Sample Depth (ft) | Natural Moisture (%) | Percent (%) Passing Sieve #200 | Organic Content (%) | USCS Soil Classification |
|---------------|-------------------|----------------------|--------------------------------|---------------------|--------------------------|
| B-1           | 6.0 - 8.0         | 22                   | 13.5                           | —                   | SC                       |
| B-3           | 6.0 - 8.0         | 23                   | 6.0                            | 2.7                 | SP-SM                    |
| C-1           | 2.0 - 4.0         | 10                   | 9.3                            | —                   | SP-SM                    |
| P-2           | 2.0 - 4.0         | 13                   | 9.8                            | —                   | SP-SM                    |
| P-3           | 2.0 - 4.0         | 19                   | 6.4                            | 2.2                 | SP-SM                    |

## LBR @ 0.1" Penetration



17612 Ashley Drive  
Panama City Beach, FL 32413  
(850) 249-NOVA(6682)  
Fax: (850) 249-6683



Report of Limerock Bearing Ratio (FM 5-515)  
and Modified Proctor ASTM D-1557, and  
AASHTO T-180

Project Name: ECP North Terminal Expansion

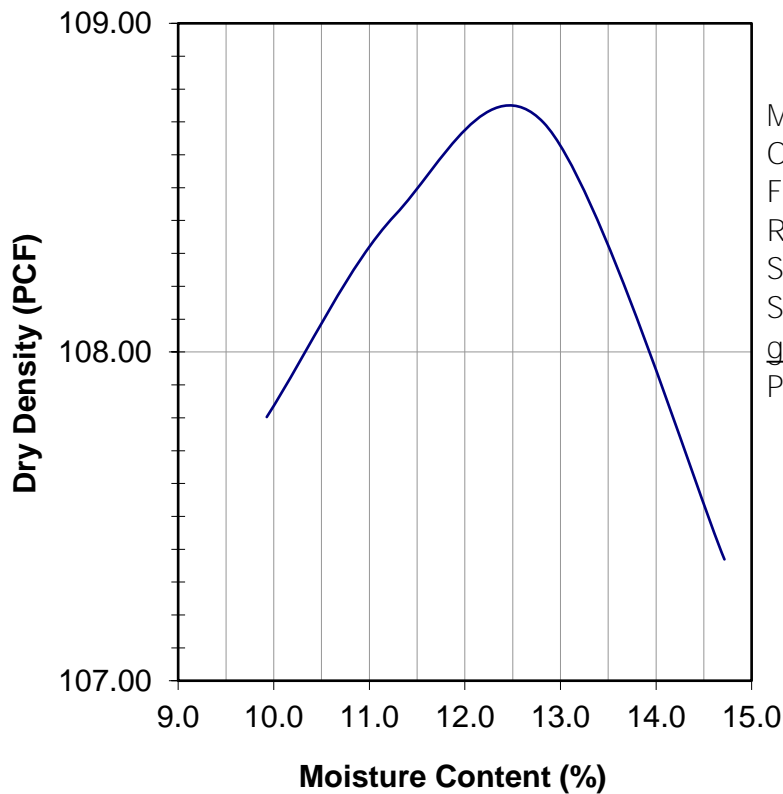
NOVA Project Number: 10111-2021211

Report Date: October 6, 2021

Sample ID: LBR-1

Location: LBR-1 (2.0' - 3.0' BEG)

LBR RESULTS  
(FM 5-515)  
Maximum LBR Value: 30



## PROCTOR DATA (FM 5-515)

Maximum Dry Density: 108.7 pcf

Optimum Moisture Content: 12.5 %

Fines Content: 9.3 %

Rammer: Mechanical

Specific Gravity (graphically): N/A

Sample Description: Grey slightly silty fine-grained SAND

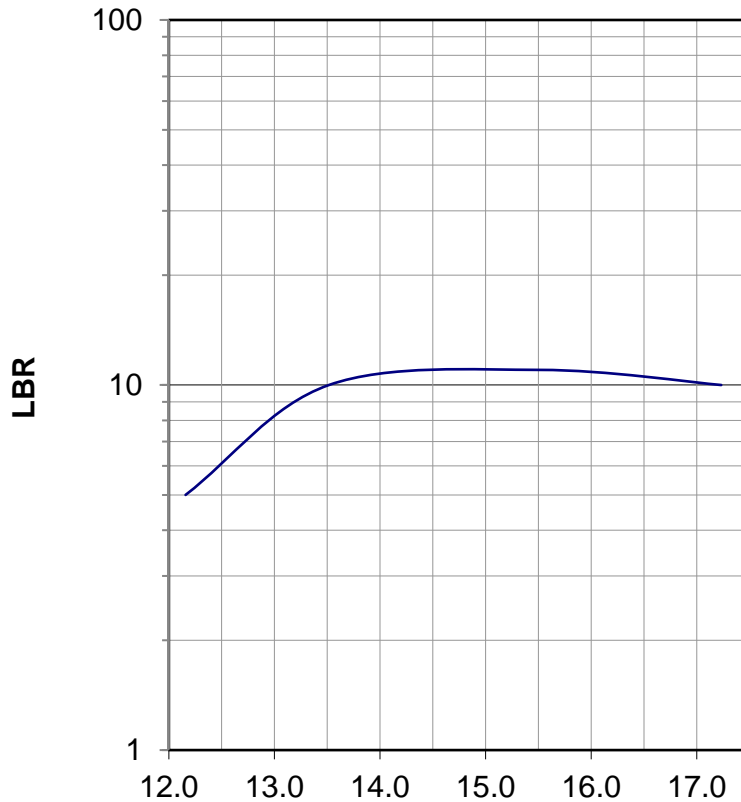
Proposed Use: Subgrade/Embankment Utilization

Kyle Ferachi  
Certified FDOT LBR Technician

## LBR @ 0.1" Penetration



17612 Ashley Drive  
Panama City Beach, FL 32413  
(850) 249-NOVA(6682)  
Fax: (850) 249-6683



Report of Limerock Bearing Ratio (FM 5-515)  
and Modified Proctor ASTM D-1557, and  
AASHTO T-180

Project Name: ECP North Terminal Expansion

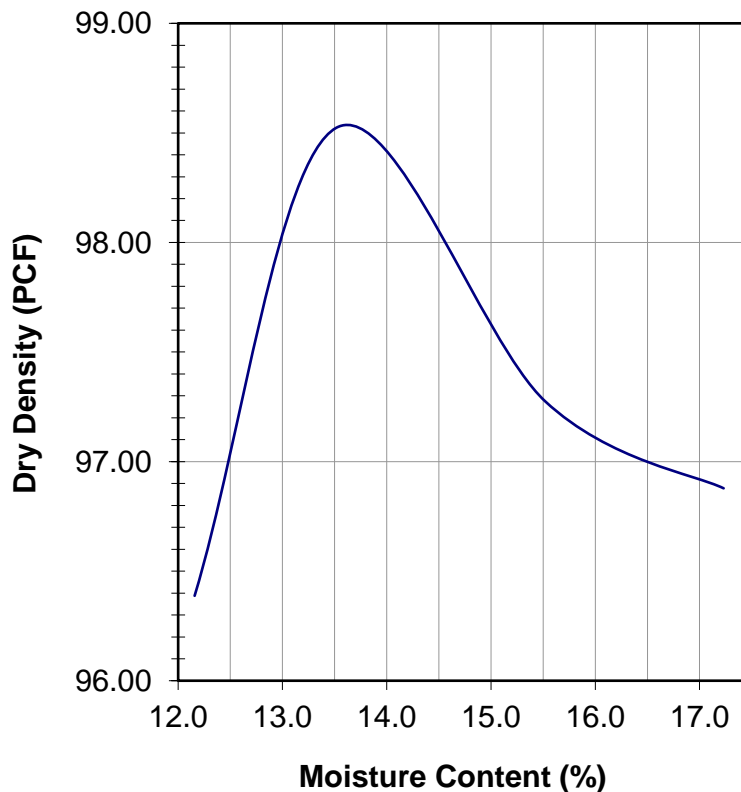
NOVA Project Number: 10111-2021211

Report Date: October 6, 2021

Sample ID: LBR-2

Location: LBR-2 (2.0' - 3.0' BEG)

LBR RESULTS  
(FM 5-515)  
Maximum LBR Value: 11



## PROCTOR DATA (FM 5-515)

Maximum Dry Density: 98.5 pcf

Optimum Moisture Content: 13.6 %

Fines Content: 3.3 %

Rammer: Mechanical

Specific Gravity (graphically): N/A

Sample Description: Dark grey fine-grained  
SAND

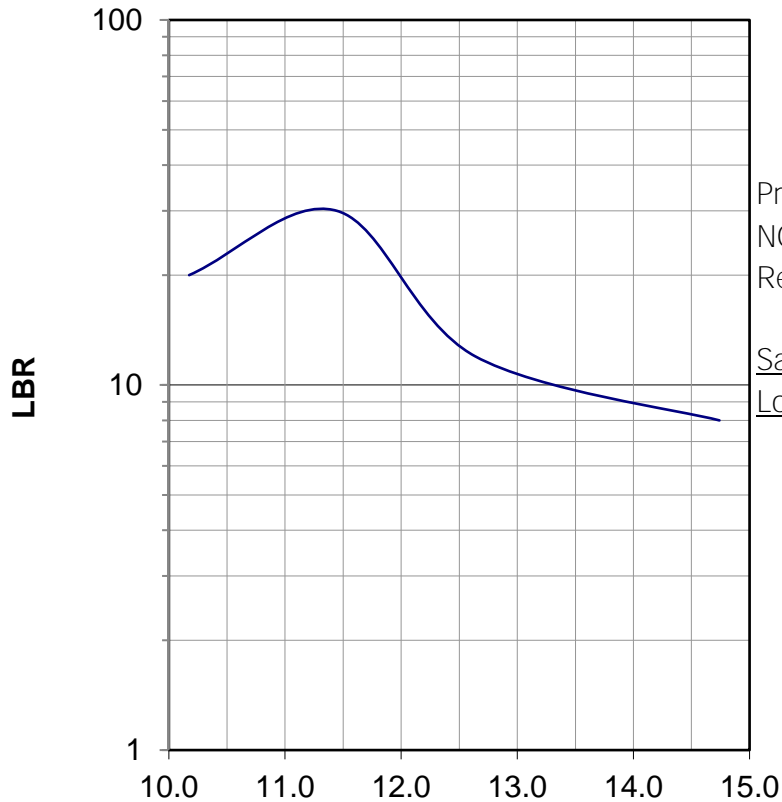
Proposed Use: Subgrade/Embankment Utilization

Kyle Ferachi  
Certified FDOT LBR Technician

## LBR @ 0.1" Penetration



17612 Ashley Drive  
Panama City Beach, FL 32413  
(850) 249-NOVA(6682)  
Fax: (850) 249-6683



Report of Limerock Bearing Ratio (FM 5-515)  
and Modified Proctor ASTM D-1557, and  
AASHTO T-180

Project Name: ECP North Terminal Expansion

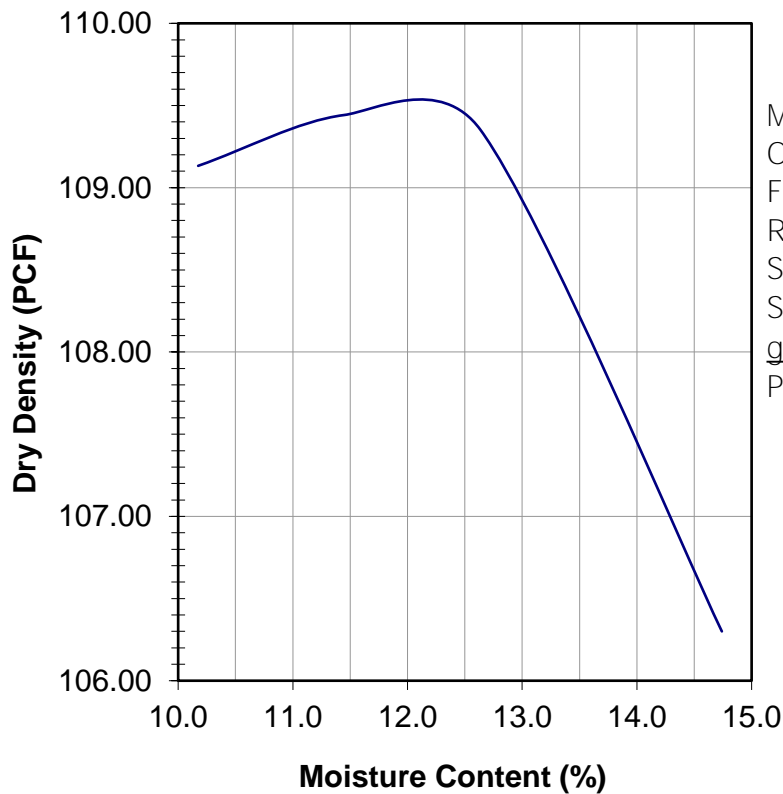
NOVA Project Number: 10111-2021211

Report Date: October 6, 2021

Sample ID: LBR-3

Location: LBR-3 (2.0' - 3.0' BEG)

LBR RESULTS  
(FM 5-515)  
Maximum LBR Value: 30



## PROCTOR DATA (FM 5-515)

Maximum Dry Density: 109.6 pcf

Optimum Moisture Content: 12.1 %

Fines Content: 9.3 %

Rammer: Mechanical

Specific Gravity (graphically): N/A

Sample Description: Grey slightly silty fine-grained SAND with trace aggregate

Proposed Use: Subgrade/Embankment Utilization

Kyle Ferachi  
Certified FDOT LBR Technician

# **APPENDIX D**

## **Support Documents**

## QUALIFICATIONS OF RECOMMENDATIONS

The findings, conclusions and recommendations presented in this report represent our professional opinions concerning subsurface conditions at the site. The opinions presented are relative to the dates of our site work and should not be relied on to represent conditions at later dates or at locations not explored. The opinions included herein are based on information provided to us, the data obtained at specific locations during the study, and our previous experience. If additional information becomes available which might impact our geotechnical opinions, it will be necessary for NOVA to review the information, re-assess the potential concerns, and re-evaluate our conclusions and recommendations.

Regardless of the thoroughness of a geotechnical exploration, there is the possibility that conditions between borings may differ from those encountered at specific boring locations, that conditions are not as anticipated by the designers and/or the contractors, or that either natural events or the construction process has altered the subsurface conditions. These variations are an inherent risk associated with subsurface conditions in this region and the approximate methods used to obtain the data. These variations may not be apparent until construction.

The professional opinions presented in this report are not final. Field observations and foundation installation monitoring by the geotechnical engineer, as well as soil density testing and other quality assurance functions associated with site earthwork and foundation construction, are an extension of this report. Therefore, NOVA should be retained by the owner to observe all earthwork and foundation construction to confirm that the conditions anticipated in this study actually exist, and to finalize or amend our conclusions and recommendations. NOVA is not responsible or liable for the conclusions and recommendations presented in this report if NOVA does not perform these observation and testing services.

This report is intended for the sole use of **ZHA, Inc.**, only. The scope of work performed during this study was developed for purposes specifically intended by **ZHA, Inc.**, only, and may not satisfy other users' requirements. Use of this report or the findings, conclusions or recommendations by others will be at the sole risk of the user. NOVA is not responsible or liable for the interpretation by others of the data in this report, nor their conclusions, recommendations, or opinions.

Our professional services have been performed, our findings obtained, our conclusions derived, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices in the State of Florida. This warranty is in lieu of all other statements or warranties, either expressed or implied.

# Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

## Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

## A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

### Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

### Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

### Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



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