RON DESANTIS
GOVERNOR

Florida Department of Transportation
605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT
SECRETARY

January 11, 2021

ADDENDUM NO. 3

To: ALL DESIGN BUILD FIRMS

FINANCIAL ITEM NUMBER: 407918-5-52-01 & 407918-5-56-02
CONTRACT NUMBER: E3T77
DESCRIPTION: Design Build for new SR 8 (I-10) Interchange West of Crestview in Okaloosa County

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PROPOSALS TO BE RECEIVED: June 3, 2021

This is your authorization to make the following changes to the Request for Proposal package you now have for the subject project:

Attached for your use is a redline revision to the RFP document previously distributed. The following is a summary of the revisions:

Cover
- **Document denoted as Addendum 3**

Attachments
- **Replacing Structures Foundation Design Build specification with new revised version**

Reference Documents
- **Added Preliminary Lighting Design Analysis Report to the list. Information was provided previously with original Reference Documents**
- **Added Pond permitting memo to clarify conceptual pond design and initial permitting**

Section I. Introduction, Description of Work
- **Revised lighting requirements**
- **Clarified conceptual pond design and initial permitting**

Section II. Schedule of Events
- **Changed Page Turn meeting date due to schedule conflict**

Section V. Project Requirements and Provisions for Work, Subsection I. Submittals, Subsection 2. Phase Submittals
- **Added new item for submittal**

Section VI. Design and Construction Criteria, Subsection F. Roadway Design, Subsection 3. Drainage Analysis
- **Clarified conceptual pond design**

Section VI. Design and Construction Criteria, Subsection Q. Lighting Plans
- **Modified lighting requirements for the project**

<u>Section VI. Design and Construction Criteria,</u> Subsection R. Signalization and Intelligent Transportation System Plans, Subsection 2. Design and Engineering Services

- **Added new report to be submitted in electrical systems sections**
- **Modified testing of fiber optic backbone paragraph**

<u>Section VIII. Bid Proposal Requirements,</u> Subsection A. Bid Price Proposal

- **Removed specific due date and reference Schedule of Events for hard copy submittal of bid documents**

Please use this information when preparing your proposal.

All PROPOSAL HOLDERS please acknowledge receipt of the addendum on the Design Build Proposal of form (form no. 375-020-12), in the space provided.

Sincerely,

Ranae Dodson

Digitally signed by: Ranae Dodson
DN: CN = Ranae Dodson email = ranae.dodson@dot.state.fl.us C = US O = FDOT OU = Procurement
Date: 2021.01.11 13:06:31 -06'00'

Ranae Dodson
Procurement Manager

cc: Kerrie Harrell, Alaina Webb, File

Please sign below to acknowledge receipt of Addendum No. 3.

Acknowledged by:_____

Florida Department of Transportation
District 3

DESIGN-BUILD
FINAL
REQUEST FOR PROPOSAL
for
New SR 8 (I-10) Interchange West of Crestview
Okaloosa County

Financial Projects Number(s): 407918-5-52-01 & 407918-5-56-02
Federal Aid Project Number(s): D320-013-B
Contract Number: E3T77

Addendum No. 1 – 11/20/20
Addendum No. 2 – 12/07/20
Addendum No. 3 – 01/11/20

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ATTACHMENTS

The Attachments listed below are hereby incorporated into and made a part of this Request for Proposal (RFP) as though fully set forth herein.

Project Advertisement - revised

Division I Design-Build Specifications

Award and Execution of Contract – Public Records (SP0030900D3-720)
Legal Requirements and Responsibility to the Public – laws to be observed – compliance with Federal Endangered Species Act and other wildlife regulations (Bear) (SP0070104-1)
Legal Requirements and Responsibility to the Public – laws to be observed – compliance with Federal Endangered Species Act and other wildlife regulations (Eagle) (SP0070104-2)
Legal Requirements and Responsibility to the Public – laws to be observed – compliance with Federal Endangered Species Act and other wildlife regulations (Gopher Tortoises) (SP0070104-3)
Legal Requirements and Responsibility to the Public – laws to be observed – compliance with Federal Endangered Species Act and other wildlife regulations (Indigo Snake) (SP0070104-7)
Legal Requirements and Responsibilities to the Public – E-Verify (SP0072900)
Legal Requirements and Responsibilities to the Public – Scrutinized Companies (SP0073000)
Legal Requirements and Responsibility to the Public-Title VI Assurance (SP0073100)
Partnering (SP0080306)
Damage Recovery (SP0081200)

Divisions II and III Special Provisions identified by the Department to be used on the Project:

Mobilization (SP1010000DB)
Contractor Quality Control General Requirements (SP1050813DB)
Structures Foundations (SP4550000DB) – REVISED

Value Added Developmental Specifications

Value Added Bridge Component (DEV475)

FHWA 1273

Workforce and Bituminous Material Document

Permits – *not available at this time*

407918-5 I-10 at Antioch Design Typical Section Package

407918-5 Pavement Design

Right of Way Commitments and Final Judgements

ITS Facility Management Implementation Guidelines and Minimum Requirements

PD&E Study Documents

407918-5 Antioch Road Noise Study Report

SR 8 (I-10) Re-evaluation

City of Crestview Utility Work by Highway Contractor Agreement

City of Crestview Utility Specifications

CS14 - Addition Water Main Spec
CS14 – Water Main Specs (93)

CS15 – Sewer Specs (91)

Bid Price Proposal Forms:

1. Design Build Proposal Of Proposer (No. 375-020-12)
2. Design Build Bid Blank (No. 375-020-17)
3. Design Build Bid or Proposal Bond (No. 375-020-34)
4. Vendor Certification Regarding Scrutinized Companies Lists (No. 375-030-60)
5. Design Build Bid Proposal (No. 700-010-65)

Other Contract Forms:

1. Design Build Contract Bond (No. 375-020-14)
2. Contract Affidavit (No. 375-020-30)
3. Design Build Contract (No. 375-020-13)

REFERENCE DOCUMENTS

The following documents are being provided with this RFP. Except as specifically set forth in the body of this RFP, these documents are being provided for reference and general information only. They are not being incorporated into and are not being made part of the RFP, the contract documents or any other document that is connected or related to this Project except as otherwise specifically stated herein. No information contained in these documents shall be construed as a representation of any field condition or any statement of facts upon which the Design-Build Firm can rely upon in performance of this contract. All information contained in these reference documents must be verified by a proper factual investigation. The bidder agrees that by accepting copies of the documents, any and all claims for damages, time or any other impacts based on the documents are expressly waived.

I-10 As-Built Plans State Job No. 57002-3403

407918-5 Concept Plans (including cadd files)
- 407918-5 Roadway Plans
- 407918-5 Signing & Marking Plans
- 407918-5 Signalization Plans
- 407918-5 ITS Plans
- 40791855201 zip file (CAD Drawings)

Bridge Development Report

Drainage Report

Pond Siting Report

Geotechnical Data
- 407918-5 Geotech Pond Report - I-10 at Antioch Rd
- 407918-5 Phase II Geotech Roadway and Embankments Report - I-10 at Antioch Rd

Preliminary Utility Assessment Lighting Design Analysis Report

Straight Line Diagrams

Right of Way Maps

Preliminary ICE evaluations

Wildlife Fence Plans and CAD Files

Okaloosa County PJ Adams Reconstruction Plans

Okaloosa County Arena Road Plans
Okaloosa County Phase V Bypass Roadway Plans-(Arena Road)
Okaloosa County Phase V Bypass Signing and Pavement Marking Plans-(Arena Road)
Preliminary Lighting Design Analysis Report (LDAR)
Pond permitting memo – December 2020

I. Introduction.

The Florida Department of Transportation (Department) has issued this Request for Proposal (RFP) to solicit competitive bids and proposals from Proposers for the design and construction of a new SR 8 (1-10) Interchange west of Crestview in Okaloosa County.

Description of Work

The proposed interchange is located along SR 8 (I-10) near Antioch Road/PJ Adams Parkway; that will be located approximately 2.6 miles west of SR 85 and 1,400 feet east of the existing CR 4 (Antioch Road) bridge over SR 8 (I-10). The interchange project is a critical part of a series of projects that will develop the Crestview Bypass that will ultimately connect US 90 to SR 85. US 90 to SR 85 (north of Crestview) via PJ Adams Parkway reconstruction and extension. The southern limits of the proposed Bypass includes the widening PJ Adams Parkway (currently under construction) and this interchange project. The northern limits are currently under design and will be under construction, if not completed, prior to this project. The overall project length of the interchange is approximately 1.42 miles.

The improvements include a new four lane corridor (approximately 2,000 LF) as an extension of PJ Adams Parkway, that will become part of the planned Crestview Bypass. The project begins where the alignment of the planned PJ Adams Parkway Extension deviates from the existing CR 4 (Antioch Road) approximately 100 feet east of the existing PJ Adams Parkway and CR 4 (Antioch Road) intersection and continues to travel west then curves to the north and travels over SR 8 (I-10). The interchange and new bridge are configured as a tight urban diamond interchange to minimize right-of-way needs, potential relocations, and wetland impacts. As the new alignment of PJ Adams Parkway (Crestview Bypass) crosses over SR 8 (I-10) and comes back down to grade, the alignment continues to travel north, approximately 1,900 feet, to connect with the planned PJ Adams Parkway Extension (as approved in 2009 during the PJ Adams Parkway Extension PD&E study, FPID 421988-1).

The existing SR 8 (I-10) has four 12-foot wide travel lanes with 12-foot shoulders (10-foot paved) with a design speed of 70 mph. The existing travel lanes and paved shoulders shall be milled and resurfaced between Sta. 650+00 and Sta 695+00 westbound and Sta 657+00 to Sta. 702+00 eastbound. The Design-Build Firm shall verify if the existing pavement cross slopes meet current design criteria. Areas not meeting current criteria shall be corrected by the Design-Build Firm. The outside shoulders will be reconstructed to accommodate the proposed ramp geometry, drainage improvements, and pavement structure. Any edge drains impacted shall also be reconstructed. This interchange improvement shall be compatible with the future six-laning of SR 8 (I-10) per FPID 441038-4-52-01 where new lanes will be added on the inside.

Proposed Ramp A is the eastbound off-ramp to PJ Adams Parkway. A 15-foot wide single lane ramp taper type exit shall be provided with a design speed of 50 mph. The horizontal geometry in the conceptual plans provides a 530-foot deacceleration length (70 mph to 40 mph) prior to the initial curve. At a minimum, this deceleration length shall be provided in the final design. The ramp shall widen and provide 12-foot wide double left turn lanes and a 12-foot single right turn lane at the proposed signal. The inside paved shoulder varies from 6 to 8 feet with a concrete barrier attached to a MSE wall system. The outside shoulder begins with 4-foot paved shoulder with shoulder gutter and then transitions to a 10-foot paved shoulder with a concrete barrier/noise wall attached to a MSE wall system.

Proposed Ramp B is the westbound off-ramp to PJ Adams Parkway. A 15-foot wide single lane ramp taper type exit shall be provided with a design speed of 50 mph. The horizontal geometry in the conceptual plans provides a 530-foot deacceleration length (70 mph to 40 mph) prior to the initial curve. At a minimum, this deceleration length shall be provided in the final design. The ramp shall widen to provide 12-foot wide double left turn lanes and a 12-foot wide single right turn lane at the proposed signal. The inside paved

shoulder varies from 6 to 8 feet with a concrete barrier attached to a MSE wall system. The outside shoulder begins with 4-foot paved shoulder with shoulder gutter/guardrail and then transitions to a 6 to 10-foot paved shoulder with a concrete barrier wall attached to a MSE wall system.

Proposed Ramp C is the eastbound on-ramp to SR 8 (I-10). Provide a dual lane ramp transitioning to a single lane parallel type entrance ramp with a design speed of 50 mph. Minimum single ramp width is 15 feet and 2 lane ramp shall be 24 feet. The horizontal geometry in the conceptual plans provide 1044-foot acceleration length (50 mph to 70 mph) prior to merging onto SR 8 (I-10). At a minimum, this acceleration length shall be provided in the final design. The inside paved shoulder varies from 6 to 8 feet with a concrete barrier attached to a MSE wall system. The outside shoulder begins with 10-foot paved shoulder with a concrete barrier wall attached to a MSE wall system, then transitions to a 10-foot paved shoulder with guardrail and finally to a 12-shoulder (10-foot paved).

Proposed Ramp D is the westbound on-ramp to SR 8 (I-10). Provide a dual lane ramp transitioning to a single lane parallel type entrance with a design speed of 50 mph. Minimum single ramp width is 15 feet and 2 lane ramp shall be 24 feet. The horizontal geometry in the conceptual plans provide 580-foot acceleration length (50 mph to 70 mph) prior to merging onto SR 8 (I-10). At a minimum, this acceleration length shall be provided in the final design. The inside paved shoulder varies from 6 to 8 feet with a concrete barrier attached to a MSE wall system. The outside shoulder begins with 10-foot paved shoulder with a concrete barrier wall attached to a MSE wall system, then transitions to a 8-foot paved shoulder with shoulder gutter/guardrail, then transitions to a 4-foot paved shoulder with shoulder gutter, then to a 6-foot paved shoulder with guardrail and finally to a 12-shoulder (10-foot paved).

The proposed PJ Adams Parkway from Crab Apple Avenue to signalized intersection with Antioch Road is an urban arterial with a design speed of 40 mph. The design shall include four 11-foot travel lanes (two each way) with 22 to 29-foot wide raised median with Type E curb and gutter, 7-foot buffered bike lanes with Type F curb and gutter, and 6-foot sidewalks. This segment is to provide the following:

- Full median opening at Crab Apple Avenue with a westbound offset left turn lane.
- Restrictive median opening at first intersection with Antioch Road. No turn lanes.
- Full median opening at Lillian Way with eastbound and westbound offset left turn lanes.
- Signalized full median opening with the second intersection with Antioch Road with northbound double left turns.

The proposed PJ Adams Parkway from signalized intersection with Antioch Road to approximately 900 feet north of SR 8 (I-10) is an urban arterial with a design speed of 45 mph. The design shall include four 11-foot travel lanes (two each direction) with 22 to 50-foot wide raised median with Type E curb and gutter, 7-foot buffered bike lanes with Type F curb and gutter, and 6-foot sidewalks. This segment also includes a bridge that will have four 11-foot travel lanes (two each direction), two 11-foot left turn lanes (one each direction), two 11-foot striped gore (one each direction) and a 6-foot median with a 4-foot traffic separator. The concept bridge also includes 4-foot buffered bike lanes, 18-inch (16-inch) gutter pan buffer and 6-foot raised sidewalks with vertical-shape traffic railing. This segment is to provide the following:

- Southbound right turn lane with 7-foot keyhole at the signalized intersection with Antioch Road.
- Northbound left turn lane for SR 8 (I-10) westbound Ramp D.
- Northbound right turn lane with 7-foot keyhole for the SR 8 (I-10) eastbound Ramp C.
- Southbound left turn lane for SR 8 (I-10) eastbound Ramp C.
- Southbound right turn lane with 7-foot keyhole for the SR 8 (I-10) westbound Ramp D.
- Signalized intersections with the SR 8 (I-10) ramps.
- Approximately 236 linear feet (left) of concrete barrier/noise wall attached to a MSE wall system south of the bridge.
- Approximately 1133 linear feet (left and right) of concrete barrier wall attached to a MSE wall

system north of the bridge.

The proposed PJ Adams Parkway from approximately 900 feet north of SR 8 (I-10) to Arena Road (to be constructed by others) is a suburban arterial with a design speed of 45 mph. The design shall include four 11-foot travel lanes (two each way) with 22-foot wide raised median with Type E curb and gutter, 10-foot shoulders (7-foot paved), open drainage ditches with 6-foot sidewalks. This segment is to provide the following:

- Northbound left turn lane connecting to Arena Road.
- Convert the open median opening at Arena Road to a signalized one.

A new roundabout shall be designed and constructed for the connection for CR 4 (Antioch Road) (North), Whitehurst Lane, and Garrett Pit Road with the new PJ Adams Parkway Extension alignment. The proposed roundabout approximately 660 feet west of PJ Adams Parkway is single lane roundabout with two lanes for the northbound Antioch Road traffic movement. The roundabout shall be designed for a design speed 25 mph with a landscaped center. The geometrics shall be designed in accordance with the FDM Section 213 and NCHRP Report 672 shall be utilized as a guide during the design. The Design-Build team shall work with the local government regarding landscape planting material for the area around and inside of the roundabout. The roundabout shall not be opened for service until vertical obstructions are included in the center of the circle. The concept incorporates following characteristics and the final design shall provide these minimum criteria:

- 210-foot Inscribed Diameter.
- Left of Center Approach.
- Entry Width (total) – 18 feet for one lane and 36 feet for two lanes.
- Circulatory Width (total) – 18 feet for one lane and 36 feet for two lanes.
- Entry Radii – 100 feet for one lane and 125 feet for two lanes.
- Exit Radii – 300 feet for Antioch Road and 100 feet for Addison Place, Whitehurst Lane and Garrett Pit Road.
- 18-foot Wide Truck Apron.
- WB-62FL Design Vehicle.
- Sidewalks/pedestrian accommodation.

The proposed Antioch Road from PJ Adams Parkway to the roundabout is an urban arterial with a design speed of 30 mph. The design shall include two 12-foot westbound travel lanes and one 12-foot lane eastbound lane with 22-foot wide raised median with Type E curb and gutter, 5-foot bike lanes with Type F curb and gutter, and 6 to 8-foot sidewalks. This segment is to provide the following:

- Eastbound lane widens to provide 11-foot double left turn lanes and a 11-foot single right turn lane at the signalized intersection with PJ Adams Parkway.

The proposed Antioch Road from the roundabout to south of existing Antioch Road bridge width will utilize design speeds 30 to 45 mph. The roadway transitions from urban to a rural arterial matching existing conditions. The urban concept will have two 12-foot northbound travel lanes and one 12-foot lane southbound lane with Type F curb and gutter, and 8-foot sidewalks. With the rural concept, the two 12-foot northbound travel lanes with 8-foot paved shoulders with shoulder gutter/guardrail transitions down to one matching existing conditions. The southbound lane remains 12 feet with 8-foot paved shoulders with shoulder gutter/guardrail. This segment is to provide the following:

- Widen Antioch Road to introduce a splitter island at the roundabout.

The required pavement design for the project is included as an Attachment to this RFP. . The minimum pavement design requirements for each design applies to the entire width of the lane/area. For cross slope correction, maximum and minimum milling depths are as follows:

I-10 Maximum Milling Depth: 3.0”
I-10 Minimum Milling Depth: 1.0”

All longitudinal joints, including base and pavement widening joints, shall be within 1 foot of the lane edge.

All roadway areas, not including I-10, shall be full depth reconstruction except for minimal milling/resurfacing at the beginning/ending limits of construction to provide proper tie-in to existing facilities.

The following requirements shall be implemented regarding side streets within the project:

Crab Apple Avenue is a side street entrance to the Rolling Ridge subdivision. The design needs to include all necessary work to tie-in the side street within the existing right-of-way while maintaining access to the neighborhood.

Antioch Road is a two-lane rural local side street. The design needs to include all necessary work to tie-in the side street within the existing right-of-way while maintaining access to local traffic.

Lilian Way is a side street entrance to Taylor Farms subdivision. The roadway needs to be extended and realigned to tie-in to PJ Adams Parkway similar to the concept plans. Lilian Way will include two 12-foot lanes, Type F curb and gutter, and a closed drainage system. Access to the neighborhood shall be maintained at all times.

Addison Place is a side street entrance to Addison Place Apartments. The roadway needs to be extended, reconstructed, and realigned to be one of the legs of the roundabout similar to the concept plans. Addison Place will include two lanes of variable width, Type F curb and gutter, and a closed drainage system. The design will also need to accommodate the dumpster services as well. Access to the apartments shall be maintained at all times.

Garrett Pit Road is a two-lane rural local side street. The roadway needs to be extended, reconstructed, and realigned to be one of the legs of the roundabout similar to the concept plans. Garrett Pit Road will include two 11-foot lanes, Type F curb and gutter, and a closed drainage system. The design will also need to accommodate maintenance access to Pond 2 as well. Access for local traffic shall be maintained at all times.

Whitehurst Lane is a two-lane rural local side street that services Antioch Elementary School and Antioch Estates subdivision. The roadway needs to be reconstructed and realigned to be one of the legs of the roundabout similar to the concept plans. Whitehurst Lane will include two 11-foot lanes, Type F curb and gutter, a closed drainage system and 6-foot sidewalk on the left side. Access for local traffic shall be maintained.

Offset left turn lanes shall be constructed at the following locations:

- Eastbound P.J. Adams Parkway at Crab Apple Lane
- Westbound P.J Adams Parkway west of Antioch Road (U-turn)
- Eastbound P.J Adams Parkway at Lillian Way extension
- Westbound P.J. Adams Parkway at Whitehurst Lane
- Westbound P.J. Adams Parkway at I-10 westbound on-ramp
- Eastbound P.J. Adams Parkway at I-10 eastbound on-ramp

- Westbound P.J. Adams Parkway at Arena Road
- Eastbound Antioch Road at P.J. Adams Parkway

Right turn lanes shall be constructed at the following locations:

- Eastbound Antioch Road at P.J. Adams Parkway
- Eastbound P.J. Adams Parkway at Antioch Road
- Westbound P.J. Adams Parkway at I-10 eastbound on-ramp
- Eastbound P.J. Adams Parkway at I-10 westbound on-ramp

Turn lanes shall be design in accordance with current design criteria for design speed and queue length.

The Design-Build Firm will develop a drainage system to convey, treat and attenuate runoff from the project. The stormwater management system shall meet the requirements set forth by the NWFWMD and FDOT for water quantity (attenuation) and water quality. The existing 8 ft wide by 5 ft wide Box Culvert Cross drain, EX-CD-2, under I-10 will remain, and the existing 8 ft wide by 5 ft high Box Culvert Cross Drain, EX-CD-1 under Southwestern Crestview Bypass (EX CD-1) will need to be extended to accommodate the widening. There are two proposed cross drains under PJ Adams Parkway: CD-4 and CD-5. Both are proposed 10 ft wide by 4 ft high concrete box culverts. The culverts will be designed in accordance with the requirements of this RFP.

The Design-Build Firm shall construct D3 standard wildlife fencing along the newly acquired Limited Access Right-of-Way per Standard Plans Indexes 550-001 and 550-004. The Right-of-Way Maps for the project is included as a Reference Document in this RFP. The Design-Build Firm will need to verify right-of-way location before construction.

The Design-Build Firm shall design, furnish, install and test, traffic signals that shall include mast arm signals, full pedestrian features with countdown pedestrian signals meeting ADA standards, vehicular detection (loop), LED internally illuminated overhead street name signs (servicing all applicable directions), uninterrupted power supply devices (UPS), and emergency preemption devices. The following intersections will be signalized:

- PJ Adams Parkway / Antioch Road
- PJ Adams Parkway / Ramps A & C
- PJ Adams Parkway / Ramps D & B
- PJ Adams Parkway / Arena Road

The Design-Build Firm is required to complete ICE evaluations for the new roundabout location and all new traffic signal locations if the previously approved ICE evaluation is no longer valid based on the Design-Build Firm's design.

~~**High mast lighting is required for the footprint of the interchange (ramps and SR 8 (I-10) mainline). Conventional lighting is required for PJ Adams Parkway. Underdeck lighting is required for the existing Antioch Bridge and the new bridge over SR 8 (I-10).**~~

LED high-mast lighting is required for the footprint of the interchange (ramps and SR 8 (I-10) mainline). Underdeck LED lighting is required for the existing Antioch Bridge and the new bridge over SR 8 (I-10). Complete conventional LED lighting design is required for PJ Adams Parkway from PJ Adams Parkway and Antioch Road intersection to the end of the Department right of way north of SR 8 (I-10) ramp intersection (Ramps D & B) (including but not limited to PJ Adams Parkway and Antioch Road intersection, south of SR 8 (I-10) ramp intersection (Ramps A & C) until the PJ Adams Parkway and Antioch Road intersection, SR 8 (I-10) ramp intersections (Ramps A &

C and Ramps D & B), between two (2) SR 8 (I-10) ramp intersections (Ramps A & C and Ramps D & B), and north of SR 8 (I-10) ramp intersection (Ramps D & B) until the end of the Department right of way). Complete conventional LED lighting design and lighting analysis is required for Antioch Road from the roundabout (including the roundabout) to Antioch Road and PJ Adams intersection. Use LED lighting only for lighting design and construction. See the Lighting Plans section of this RFP for more detailed requirements.

Overhead cantilever signing is required for the 1 Mile, ½ Mile and at the exit gore illuminating each direction of SR 8 (I-10) approaching the interchange with PJ Adams Parkway.

Pier protection is required for the existing Antioch Bridge in accordance with the FDOT Standard Plans Index 521-002.

The existing Freeway Management System (FMS) ITS fiber backbone will require replacement with new ITS fiber backbone and the ITS infrastructure shall be upgraded in the project corridor. The Design-Build Firm shall design, furnish, install a new FMS ITS fiber conduit duct bank.

The Design-Build Firm shall provide a fully functional drainage system to accommodate the requirements of this project. This includes, but is not limited to, replacement of existing structures and any other drainage improvements necessary to complete this project. No existing drainage shall be utilized in the new drainage design. ~~**Three new stormwater ponds will be designed and constructed to accommodate the new roadway infrastructure stormwater.**~~ **The conceptual design included five (5) ponds associated with the proposed roadway improvements. Three ponds are anticipated to be constructed/modified by the Design-Build Firm and two ponds are anticipated to be designed, permitted, and constructed by others. See Section VI. F.3 Drainage Analysis for further information on the ponds.** ~~**The Design-Build Firm will be responsible for obtaining all permits.**~~ **The Department has begun permitting the three (3) ponds to be constructed by the Design-Build Firm, but the Design-Build Firm will ultimately be responsible for completing the permitting process since the Department does not anticipate obtaining permits prior to the letting of this Design-Build contract. If the Design-Build Firm's pond design deviates or includes any necessary modifications the permit application, the Design-Build Firm is responsible for submitting revised permit applications.** The Design-Build Firm shall not include littoral zones and plantings in stormwater pond designs.

Sound Barrier wall construction is a requirement of this contract as per the final Noise Study Report Addendum. The Design-Build Firm will be required to install noise walls along the north and south sides of SR 8 (I-10) between the existing Antioch Road bridge and the new PJ Adams overpass and along the west side of the new PJ Adams Blvd between SR 8 and the new Antioch Road intersection. The locations, station limits and height requirements are provided below:

Barrier Location	Limits Start/Stop		Barrier Height (ft)	Barrier Length (ft)
I-10 Eastbound Off-Ramp	1001+50 Rt	1009+60 Rt	22	810
I-10 Eastbound Off-Ramp*	1009+20 Rt	1012+05 Rt	8	332**
PJ Adams Blvd	129+50 Lt	133+25 Lt	22	375
PJ Adams Blvd*	132+85 Lt	135+20 Lt	8	235
I-10 Westbound On-Ramp	4008+90 Lt	4018+90 Lt	22	1,000

*Concrete Barrier/Noise Wall – Standard Plans 521-510
**Include radius of return

The offset of the sound wall from the roadway may vary but should be as close to the right-of-way as

feasible. Variations in required wall offsets are allowed with Department approval. The Design-Build Firm shall offset the wall as close to the location shown in the Final Noise Study Report to avoid reanalysis of the sound wall's effectiveness.

The Design-Build Firm will prepare the Final Noise Study Report if their design deviates from the Department's latest Noise Study Report in terms of wall elevation, wall offset from travel lane, roadway profile and noise wall effectiveness. The Department will review and must provide approval of the Design-Build Firm's Final Noise Study Report before the wall can be installed. The Design-Build Firm shall ensure their design provides equal to or better noise wall effectiveness than the Department's latest Noise Study Report. The Design-Build Firm will be required to adjust the wall height and/or offset if necessary, until noise wall effectiveness is achieved. The Department will be responsible for any public involvement required for the noise wall. The Design-Build Firm shall provide all graphics, renderings, and project information as required by the Department to facilitate the public involvement process.

All driveways and side roads shall remain open at all times.

A Structure Number Request Form will be required at the 90% submittal for the new bridge, mast arms, sign structures, or any other specific structure identified by District 3 Bridge Maintenance.

The conceptual plans are being provided for information only. An extensive amount of coordination with Okaloosa County has occurred regarding the proposed interchange, roundabout and traffic signals. The Design-Build Firm is required to provide a fully functional design that complies with this RFP and meets the intent of project.

Adjacent Project Coordination - This project should be coordinated with any and all adjacent County, State or private projects, including the following known project(s):

- FPID 445815-1-52-01 – FDOT Project – Resurfacing of SR 8 (I-10) From West of Yellow River to East of Shoal River. This project is scheduled for design and construction in FDOT Fiscal Year 2021 and 2023 respectively.
- Okaloosa County - Southwest Crestview Bypass (Phase V) – Arena Road to US 90. This project is currently being advertised for construction. Anticipated construction is Fall 2020.
- Okaloosa County -PJ Adams Parkway Multi-laning (Phase IV) – SR 85N to Wild Horse Drive. This project is currently under construction.

It is the intent to always preserve existing vegetation including trees and palms that do not conflict with proposed improvements. Tree and palm protection shall comply with FDOT Standard Plans for Road and Bridge Construction (Standard Plans), Index 110-100. Within the Project limits and within the Project Right of Way, it will be the responsibility of the Design-Build Firm to identify and remove all Category 1 invasive exotics as defined by the Florida Exotic Pest Plant Council (www.fleppc.org) and as identified in the Landscape Opportunity Plan.

The Design-Build Firm shall replace in-kind any ditch pavement disturbed or damaged during construction.

The Design-Build Firm shall design the drainage system so that is will not adversely impact any proposed retaining walls.

The intent of this Project is to replace, repair or rehabilitate all deficiencies noted in the RFP within the Project limits such that maintenance work required upon Final Acceptance is limited to routine work.

It is the Department's intent to promote the use of innovative design concepts, components, details, and construction techniques for bridge structures as discussed in Part 1, Chapter 121 of the FDOT Design Manual (FDM). The Design-Build Firm may submit a Technical Proposal that includes innovative concepts if they are discussed with the Department and approved in accordance with Part 1, Chapter 121 of the FDM using the Alternative Technical Concept (ATC) process.

Along with all engineering services needed to satisfy the requirements of this project, the Design-Build Firm shall include a Landscape Architect duly authorized to practice Landscape Architecture in the State of Florida consistent with State Statute 481 part II. The Design-Build Firm's Landscape Architect (DBLA) shall review and identify future unencumbered landscape areas for this Project. This Project shall reserve landscape opportunities and implement the FDOT Highway Beautification Policy. Landscape construction will be performed by others and not included with this Project. Areas shall be identified in the Design-Build Firm's Proposal Plans as "future landscape areas to be constructed by others". Coordination will be required by the Design-Build Firm and the District Landscape Architect. Coordination between Design-Build Firm's Landscape Architect, the District Landscape Architect and Engineer will be required during the Design-Build plans development process to ensure landscape opportunities are accommodated within the project limits. The DBLA shall be included in the project kick-off meeting and subsequent progress meetings.

The anticipated right-of-way clear date for this project is April 18, 2022. **This right-of-way clear date has been utilized to determine the contract duration for this project. The Design-Build Firm shall utilize this date in determining their project schedule that will be submitted in accordance with the Design-Build Division I Specifications.**
A Notice to Proceed for construction will be issued once all right-of-way is clear, design plans and specifications are ready to be released for construction, NEPA for construction is clear, all permits are obtained, and utilities are certified. The Department will be responsible for right-of-way and NEPA clearances and the Design-Build Firm will be responsible for plans, specifications, permits, and utility certification. Design can commence immediately upon the Department's issuance of the initial Notice to Proceed for the contract. The Design-Build Firm will be allowed to request to be released for construction to clear and grub in advance of the official Notice to Proceed for construction. These clearing and grubbing activities should be in upland areas that do not require a permit for clearing activities or a permit must be approved if clearing and grubbing in wetlands is pursued. The Design-Build Firm shall provide sufficient advance notification to allow the Department sufficient time to obtain NEPA clearance, as necessary. The Design-Build Firm will also be allowed to request to be released for construction for various components of construction (i.e. utility relocations, pond excavations, specific lengths of roadway construction, etc.) to help expedite their schedule. This may include issuing an early NTP and then releasing certain plan components for construction. The Department will ONLY consider this request if appropriate permits have been obtained and the Department has cleared these activities based on right-of-way and NEPA constraints.

No work may be performed outside of the Department's existing right-of-way until the planned right-of-way acquisitions are complete (and then only within the existing right-of-way).

The Department's Right-of-Way Office will acquire the necessary property right-of-way for the project either by negotiated settlement or by the exercise of eminent domain (condemnation). The right-of-way requirements for the contract are based on the maps as developed from the requirements of the conceptual plans included in this RFP.

The right-of-way maps for the project are included as a Reference Document in this RFP. These

Right-of-way maps are for informational purposes only. Minor modifications to these right-of-way maps may occur as the project progresses. The Design-Build Firm's verification with the public records is advised to confirm the accuracy of the maps.

Construction activities cannot occur on acquired property until it has been certified as "clear" by the Department's Right-of-Way Office and the Notice to Proceed for construction has been issued.

During the right-of-way acquisition process there are often instances where design commitments are made based on agreements with owners during settlement negotiations or as part of final negotiated settlements. Such agreements are required to enable successful negotiations with property owners. Oftentimes these agreements are of benefit to both the property owner and the Department. These agreements include, but are not limited to modifications of profile grade, driveway connections, culverts, ditch profiles, median openings, etc. The design commitments previously made in settlement must be incorporated in the design and construction of the project. It is the desire of the Department for the design and construction of the project to not only function as a safe and efficient roadway, but for it to also consider the desires and needs of adjoining property owners. Right-of-way Commitments and Judgements for these specific items are included as attachments to this RFP. Any Right-of-Way Commitments made by the Department and subsequently issued to the awarded Design-Build Firm after contract execution shall be incorporated into the plans and design documents for the project and be constructed as part of the project. The Department will negotiate with the Design-Build Firm on an appropriate supplemental agreement for the required work or in the Department's discretion pay for such work pursuant to Subarticle 4-3.2, Division I, Design-Build Specifications for this contract.

As the negotiation phase of any right-of-way parcel acquisition comes to a close there will likely be a need for one or more parcels that have not been acquired by negotiation to be condemned. Any such condemnation action will be initiated by the Department and will immediately require assistance and possible court testimony from the Engineer of Record for the Design-Build Firm regarding both public purpose and the reasonable necessity of specific parcels for the project. The Design-Build Firm will be required to provide any and all documentation immediately as may be requested by the Department to aid in the Right-of-Way acquisition process. The Design-Build Firm's Engineer of Record is required to be available as needed by the Department to assist in the Right-of-Way acquisition process. If the Design-Build Firm's Engineer of Record is required to act as an expert witness (i.e. for deposition or court testimony) the Department will enter into a separate contract with the Design-Build Firm's Engineer of Record for this effort.

After right-of-way acquisitions are complete, the Department will have its demolition contractor (under a separate contract) remove any buildings, septic tanks, lift stations and wells during its clearing activities. The Design-Build Firm will be responsible for any remaining clearing and grubbing including, but not limited to existing fencing, trees, concrete removal, etc.

All design and construction activities for the project will be required to remain within the existing right-of-way. These right-of-way maps are the controlling document in reference to right-of-way line location. The conceptual plans may or may not accurately depict the right-of-way being acquired by the Department.

During the right-of-way acquisition negotiation process, the Department may obtain rights-of-entry or easements from property owners and document this specific access right in the Right-of-Way Commitments. For this reason, the Right-of-Way Commitments that include property access rights shall overrule the Right-of-Way Maps and the conceptual plans.

It is the Department's intent that all Project construction activities be conducted within the existing Right of Way. The Design-Build Firm may submit a Technical Proposal that requires the acquisition of additional Right of Way if the subject acquisition was approved during the ATC process. Any Technical Proposal that requires the acquisition of additional Right of Way will not extend the contract duration as set forth in the Request for Proposal under any circumstances. The Department will have sole authority to determine whether the acquisition of additional Right of Way on the Project is in the Department's best interest, and the Department reserves the right to reject the acquisition of additional Right of Way.

If a Design-Build Firm intends to submit a Technical Proposal that requires the acquisition of additional Right of Way, the Design-Build Firm shall discuss such a proposal with the Department as part of the ATC process. If a Design-Build Firm submits a Technical Proposal that requires the acquisition of additional Right of Way and the Design-Build Firm fails to obtain Department approval as part of the ATC process, then the Department will not consider such aspects of the Proposal during the Evaluation process. If the Design-Build Firm's Technical Proposal requires additional Right of Way approved by the ATC process, the additional Right of Way will be required to be directly acquired by the Department. The Design-Build Firm shall submit, along with the Technical Proposal, Right of Way maps and legal descriptions including area in square feet of any proposed additional Right of Way parcels in the Technical Proposal. The additional Right of Way will be acquired by the Department in accordance with all applicable state and federal laws, specifically including but not limited to the Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Programs (42 USC Chapter 61) and its implementing regulations. This includes completing a State Environmental Impact Report (SEIR) or National Environmental Policy Act (NEPA) evaluation as appropriate. All costs concerning the acquisition of additional Right of Way will be borne solely by the Design-Build Firm. These costs include, but are not limited to consultant acquisition, appraisal services, court fees, attorney and any expert fees, property cost, etc. The Department will have sole discretion with respect to the entire acquisition process of the additional Right of Way.

If the Design-Build Firm's Technical Proposal requires additional Right of Way, the acquisition of any such Right of Way shall be at no cost to the Department, and all costs associated with securing and making ready for use such Right of Way for the Project shall be borne solely by the Design-Build Firm as a part of the Design-Build Firm's Lump Sum Price Bid. The Department will not advance any funds for any such Right of Way acquisition and the Design-Build Firm shall bear all risk of delays in the acquisition of the additional property, regardless of cause or source. No additional contract time will be granted.

The Design Build Firm shall provide to the Department an estimate of the purchase price of the land from the property owner and any conditions related to the purchase. The Department will provide to the successful Design-Build Firm an estimate of all costs related to the acquisition and use of the additional Right-of-Way for the project. At the time the Design-Build Firm returns the executed contract to the Department, the Design-Build Firm will provide the Department funds equal to the amount of the Department's estimate along with a Letter of Credit approved by the Department in an amount equal to 100% of the Department's estimate. If additional funds beyond the Department's estimate are anticipated, the Design-Build Firm shall be solely responsible for all such costs and provide the same to the Department upon ten (10) days written notice from the Department. The Letter of Credit is for the purpose of securing the obligations of the Design-Build Firm with respect to the acquisition and use of additional Right-of-Way. The Letter of Credit will be released upon the Department's determination that all costs related to the acquisition of and making ready for use of the additional Right-of-Way have been satisfied. Any remaining funds provided will be returned to the Design-Build Firm.

Any additional Right of Way must be acquired prior to the commencement of any construction on or

affecting the subject property. The Design-Build Firm waives any and all rights or claims for information, compensation, or reimbursement of expenses with respect to the Design-Build Firm's payment to the Department for costs associated with the acquisition of the additional Right of Way. The additional Right-of-Way cannot be used for any construction activity or other purpose until the Department has issued an applicable parcel clear letter or a Right of Way Certification for Construction.

If the Department's attempt to acquire the additional Right of Way is unsuccessful, then the Design-Build Firm shall provide a design of the Project within existing Right of Way and be required to complete the Project solely for the Lump Sum Price Bid, with no further monetary or time adjustments arising therefrom. Under no circumstances will the Department be liable for any increase in either time or money impacts the Design-Build Firm suffers due to the Design-Build Firm's proposed acquisition of additional Right of Way, whether or not the acquisition is successful.

All time granted during the design phase and before commencement of field construction work of controlling items of work shall be non-compensable.

Utilities

The Design-Build Firm will be responsible for providing utility adjustment plans and coordinating utility relocations. The Design-Build Firm shall be responsible for determining, through the use of non-destructive means, both the horizontal and vertical location of all existing utilities above and below ground within the project limits, and for coordinating with the Utility owner(s) for any necessary relocation and/or adjustment of their utilities through the development of a comprehensive utility work schedule. Existing utility location information is provided in the RFP – Reference Documents for information purposes only.

Along with coordinating utility relocations for the project, the Design-Build Firm is required to perform the utility relocation work for the City of Crestview. The work effort for these anticipated relocations is described below:

1.) The City of Crestview

The Design-Build Firm shall be required to design, construct, and prepare as-built plans for the City of Crestview water and sewer adjustment/relocation work as approved by the City of Crestview and the Department. The Design-Build Firm will be responsible for acquiring all permits required for the utility work**, with the exception of the FDOT Utility permit in which the utility owner shall obtain**. All water and sewer design, construction, tie-ins to existing water and sewer system, service connections and resolution of conflicts with existing water and sewer systems shall be in accordance with the current City of Crestview standards**, 2017 Utility Accommodation Manual** and shall be scheduled with and coordinated through the City of Crestview. The Design-Build Firm shall copy the Department on all correspondence with the City of Crestview related to schedule and coordination efforts.

Design of Utility Work

a. The Design-Build Firm shall prepare the final engineering design, plans, technical special provisions, permit applications (including, but not limited to, FDEP and the FDOT) for the utility work for the City of Crestview water and sewer in accordance with the City of Crestview's standards. In the event of a conflict between the City of Crestview requirements and any FDOT governing Regulations, the Department shall determine which provisions apply based on the intent and purpose of the Utility Work.
b. The Plans Package shall be in the same format as the Department's contract documents for the Project and shall be suitable for reproduction.

c. Unless otherwise specifically directed in writing, the Plans Package shall include any and all activities and work effort required to perform the utility work, including, but not limited to, all clearing and grubbing, permitting, survey, subsurface engineering (as required), utility coordination (telephone, fiber, cable, electrical, gas, etc.) and shall include a traffic control plan.
d. Construction costs for mobilization, clearing and grubbing and maintenance of traffic for this utility work are to be included in the main project and not in the utility relocations cost.
e. The Plans Package shall be prepared in compliance with the FDOT Utility Accommodation Manual and the FDOT Design Manual, and the Department's contract documents for the Project. If the FDOT Design Manual conflicts with the FDOT Utility Accommodation Manual, the Utility Accommodation Manual shall apply where such conflicts exist.
f. The Design-Build Firm shall prepare the Utility Work's technical special provisions, which are a part of the Plans Package, in accordance with the Department's guidelines on preparation of technical special provisions and shall not duplicate or change the general contracting provisions of the FDOT Standard Specifications for Road and Bridge Construction and any Supplemental Specifications for the Project.
g. The Design-Build Firm shall provide a copy of the proposed Plans Package to the Department and the City of Crestview for review at the following stages: 90% and 100% plans.
~~h. The Design-Build Firm shall at all times be and remain solely responsible for proper preparation of the Plans Package and for verifying all information necessary to properly prepare the Plans Package, including survey information as to the location (both vertical and horizontal) of the Utility.~~
i. The utility work will include all utility facilities of the City of Crestview which are located within the limits of the Project.
~~j. The Design-Build Firm shall fully cooperate and coordinate the utility work with all other right of way users in the preparation of the Plans Package.~~
k. Upon completion of the utility work, the facilities shall be deemed to be located on the Department's right-of-way under and pursuant to the Utility Permit to be issued by the Department. The Design-Build Firm shall facilitate and comply with all permit conditions, and provide all disinfection, pressure testing, laboratory tests, permit certifications, record drawings, etc. to obtain regulatory approval and clearance to place the utilities in service.
l. The Design-Build Firm is responsible for handling and removing any residual content in utility lines when making new connections for relocated segments.

Performance of Utility Work

~~a. The Department shall perform all engineering, inspection, and monitoring of the Utility Work to insure it is properly performed in accordance with the Plans Package. The City of Crestview shall have representation on site periodically for consultation as necessary.~~
b. Testing, monitoring and reporting shall be performed by the Design-Build Firm in accordance with standard industry practices for water and wastewater and in accordance with the City of Crestview's standards.
c. The Design-Build Firm shall coordinate with the City of Crestview during construction and schedule any necessary temporary utility interruptions, in advance with the City.
d. All out of service City of Crestview mains, services, and appurtenances that are in conflict with the Design-Build Firm's Project design shall be removed and cost of removal be covered under FPID 407918-5-56-02 (Water & Sewer).

Should out of service facilities not require removal, then Design-Build Firm shall cap them or grout fill and place them out of service in accordance with County Specifications with costs being covered under FPID 407918-5-56-02 (Water & Sewer).

~~**The Design-Build Firm shall minimize and, to the greatest extent possible, avoid impacts to existing landscaping or future landscaping opportunities associated with utility relocations.**~~

The Design-Build Firm shall comply with the Utility Work by Highway Contractor Agreement that the Department executed with the City of Crestview (see RFP Attachments).

Advance utility coordination information is provided in RFP – Reference Documents for information only

During the Design-Build procurement process for this contract, the Design-Build Firm shall NOT coordinate directly with the City of Crestview due to their work being a requirement of this RFP. All questions related to their utility work requirements will be required to go through the FDOT Bid Question website.

A. Design-Build Responsibility

The Design-Build Firm shall be responsible for survey, geotechnical investigation, design, preparation of all documentation related to the acquisition of all permits not acquired by the Department, preparation of any and all information required to modify permits acquired by the Department if necessary, maintenance of traffic, demolition, and construction on or before the Project completion date indicated in the Proposal. The Design-Build Firm shall coordinate all utility relocations.

The Design-Build Firm shall be responsible for compliance with Design and Construction Criteria (Section VI) which sets forth requirements regarding survey, design, construction, and maintenance of traffic during construction, requirements relative to Project management, scheduling, and coordination with other agencies and entities such as state and local government, utilities and the public.

The Design-Build Firm shall be responsible for reviewing the approved Environmental Document of the PD&E Study and any subsequent environmental document reevaluations.

The Design-Build Firm is responsible for coordinating with the District Environmental Management Office (DEMO) on any engineering information related to Environmental Reevaluations. The Design-Build Firm will not be compensated for any additional costs or time associated with Reevaluation(s) resulting from proposed design changes.

The Design-Build Firm may propose changes which differ from the approved Interchange Access Request (if applicable) and/or the Project Development & Environment (PD&E) Study. Proposed changes must be coordinated through the Department. If changes are proposed to the configuration, the Design-Build Firm shall be responsible for preparing the necessary documentation required for the Department to analyze and satisfy requirements to obtain approval of the Department, and if applicable, the Office of Environmental Management (OEM) for the NEPA document, or FHWA for the Interchange Access Request document. The Design-Build Firm shall provide the required documentation for review and processing. Approved revisions to the configuration may also be required to be included in the Reevaluation of the NEPA document or SEIR Reevaluations, per the Environmental Services/Permits/Mitigation Section of this RFP. The Design-Build Firm will not be compensated for any additional costs or time resulting from proposed changes.

The Design-Build Firm shall examine the Contract Documents and the site of the proposed work carefully before submitting a Proposal for the work contemplated and shall investigate the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished and as to the requirements of all Contract Documents. Written notification of differing site conditions discovered during the

design or construction phase of the Project will be given to the Department's Project Manager.

The Design-Build Firm shall examine boring data, where available, and make their own interpretation of the subsoil investigations and other preliminary data, and shall base their bid on their own opinion of the conditions likely to be encountered. The submission of a proposal is prima facia evidence that the Design-Build Firm has made an examination as described in this provision.

The Design-Build Firm shall demonstrate good Project management practices while working on this Project. These include communication with the Department and others as necessary, management of time and resources, and documentation.

The Design-Build Firm will provide litter removal and mowing within the project limits in accordance with Specification Section 107 with a 30 **day** mowing frequency and a 30 **day** litter removal.

B. Department Responsibility

The Department will provide contract administration, management services, construction engineering inspection services, environmental oversight, and quality acceptance reviews of all work associated with the development and preparation of the contract plans, permits, and construction of the improvements. The Department will provide Project specific information and/or functions as outlined in this document.

In accordance with 23 CFR 636.109 of the FHWA, in a Federal Aid project, the Department shall have oversight, review, and approval authority of the permitting process.

The Department will determine the environmental impacts and coordinate with the appropriate agencies during the preparation of NEPA or SEIR Reevaluations. For federal projects, NEPA Reevaluations will be processed by the Department's EMO Office for approval by OEM pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016 and executed by the FHWA and the Department.

II. Schedule of Events.

Below is the current schedule of the events that will take place in the procurement process. The Department reserves the right to make changes or alterations to the schedule as the Department determines is in the best interests of the public. Proposers will be notified sufficiently in advance of any changes or alterations in the schedule. Unless otherwise notified in writing by the Department, the dates indicated below for submission of items or for other actions on the part of a Proposer shall constitute absolute deadlines for those activities and failure to fully comply by the time stated shall cause a Proposer to be disqualified.

DATE	EVENT
03/02/20	Planned Advertisement
09/21/20	Official Advertisement
10/19/20	Letters of Interest for Phase I of the procurement process due in District Office by 4:00 pm local time
11/09/20	Proposal Evaluators submit Letter of Interest Scores to Contracting Unit 12:00 pm local time
11/12/20	Contracting Unit provides Letter of Interest scores and Proposal Evaluators comments to Selection Committee
11/16/20	Public Meeting of Selection Committee to Shortlist 9:00 am local time

11/16/20	Shortlist Posting Date
11/20/20	Final RFP provided to Design-Build Firms continuing to Phase II of the procurement process
12/01/20	Mandatory Pre-Proposal meeting at 10:00 am local time will be held virtually. Virtual Meeting log in information will be provided via email to shortlisted Firms. All Utility Agency/Owners that the Department contemplates an adjustment, protection, or relocation is possible are to be invited to the Mandatory Pre-Proposal Meeting.
12/04/20	Deadline for Design-Build Firm to request participation in One-on-One Alternative Technical Concept Discussion Meeting No. 1, 4:00 pm local time
12/14/20	Deadline for Design-Build Firm to submit preliminary list of Alternative Technical Concepts prior to One-on-One Alternative Technical Concept Discussion Meeting No. 1, 4:00 pm local time
12/17/20 **& 12/18/20**	One-on-One Alternative Technical Concept Discussion Meeting No. 1. 90 Minutes will be allotted for this Meeting.
12/17/20	Deadline for Design-Build Firm to request participation in One-on-One Alternative Technical Concept Discussion Meeting No. 2, 4:00 pm local time
01/07/21	Deadline for Design-Build Firm to submit preliminary list of Alternative Technical Concepts prior to One-on-One Alternative Technical Concept Discussion Meeting No. 2, 4:00 pm local time
01/13/21 & 01/14/21	One-on-One Alternative Technical Concept Discussion Meeting No. 2. 90 Minutes will be allotted for this Meeting.
01/28/21	Deadline for submittal of Alternative Technical Concept Proposals 4:00 pm local time.
01/28/21	Final deadline for submission of requests for Design Exceptions or Design Variations. 4:00 pm local time
02/25/21	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Technical Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
03/04/21	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Technical Proposal.
03/11/21	Technical Proposals due in District Office by 2:00 pm local time
03/11/21	Deadline for Design-Build Firm to "opt out" of Technical Proposal Page Turn meeting.
03/31/21 ~~**03/23/21**~~	Technical Proposal Page Turn Meeting. Times will be assigned during the Pre-Proposal Meeting. 30 Minutes will be allotted for this Meeting.
04/12/21	Question and Answer Written Reponses. Deadline for the Department to provide a list of questions/clarifications for the Design-Build Firm to answer.
04/19/21	Deadline for submittal of Question and Answer Written Responses to the Department's questions/clarifications from the Design-Build Firm. 4:00 pm local time
04/27/21	Deadline for submittal of follow up questions to previously submitted Question and Answer Written Responses to the Department's questions/clarifications from the Design-Build

	Firm. 4:00 pm local time
05/04/21	Deadline for submittal of Question and Answer Written Responses to the Department's follow up questions. 4:00 pm local time.
05/11/21	Deadline for submittal of questions, for which a response is assured, prior to the submission of the Price Proposal. All questions shall be submitted to the Pre-Bid Q&A website.
05/18/21	Deadline for the Department to post responses to the Pre-Bid Q&A website for questions submitted by the Design-Build Firms prior to the submittal of the Price Proposal.
05/18/21	Deadline for the Design-Build Firm to submit a written statement per Section III. Threshold Requirements, F. Question and Answer Written Responses
06/03/21	Price Proposals due in District Office by 10:00 am local time.
06/03/21	Public announcing of Technical Scores and opening of Price Proposals at 10:30 am local time will be held as a Virtual Meeting. Log in information for the Virtual Meeting will be posted on the Procurement website and emailed to the Shortlisted Firms.
06/09/21	Deadline for original hard copy bid documents, including the original bid bond. Documents shall be provided no later than 4:00 pm.
06/14/21	Public Meeting Date of Selection Committee to determine intended Award
06/14/21	Final Selection Posting Date
06/18/21	Anticipated Award Date
07/12/21	Anticipated Execution Date

III. Threshold Requirements.

A. Qualifications

Proposers are required to be pre-qualified in all work types required for the Project. The technical qualification requirements of Florida Administrative Code (F.A.C.) Chapter 14-75 and all qualification requirements of F.A.C. Chapter 14-22, based on the applicable category of the Project, must be satisfied.

B. Joint Venture Firm

Two or more Firms submitting as a Joint Venture must meet the Joint Venture requirements of Section 14-22.007, F.A.C. Parties to a Joint Venture must submit a Declaration of Joint Venture and Power of Attorney Form No. 375-020-18, prior to the deadline for receipt of Letters of Interest.

If the Proposer is a Joint Venture, the individual empowered by a properly executed Declaration of Joint Venture and Power of Attorney Form shall execute the proposal. The proposal shall clearly identify who will be responsible for the engineering, quality control, and geotechnical and construction portions of the Work. The Joint Venture shall provide an Affirmative Action Plan specifically for the Joint Venture.

C. Price Proposal Guarantee

A Price Proposal guaranty in an amount of not less than five percent (5%) of the total bid amount shall accompany each Proposer's Price Proposal. The Price Proposal guaranty may, at the discretion of the Proposer, be in the form of a cashier's check, bank money order, bank draft of any national or state bank, certified check, or surety bond, payable to the Department. The surety on any bid bond shall be a company recognized to execute bid bonds for contracts of the State of Florida. The Price Proposal guaranty shall stand for the Proposer's obligation to timely and properly execute the contract and supply all other submittals due therewith. The amount of the Price Proposal guaranty shall be a liquidated sum, which shall be due in full in the event of default, regardless of the actual damages suffered. The Price Proposal guaranty of all Proposers' shall be released pursuant to 3-4 of the Division I Design-Build Specifications.

D. Pre-Proposal Meeting

Attendance at the pre-proposal meeting is mandatory. Any Short-Listed Design-Build Firm failing to attend will be deemed non-responsive and eliminated from further consideration. The purpose of this meeting is to provide a forum for the Department to discuss with all concerned parties the proposed Project, the design and construction criteria, contract procurement schedule, method of compensation, instructions for submitting proposals, Design Exceptions, Design Variations, and other relevant issues. In the event that any discussions at the pre-proposal meeting require official additions, deletions, or clarifications of the Request for Proposal, or any other document, the Department will issue a written addendum to this Request for Proposal as the Department determines is appropriate. No oral representations or discussions, which take place at the pre-proposal meeting, will be binding on the Department. FHWA will be invited on Projects of Division Interest (PoDIs), in order to discuss the Project in detail and to clarify any concerns. Proposers shall direct all questions to the Department's Question and Answer website:

https://fdotwp1.dot.state.fl.us/BidQuestionsAndAnswers/

Failure by a Proposer to attend or be represented at the pre-proposal meeting will constitute a non-responsive determination of their bid package. Bids found to be non-responsive will not be considered. All Proposers must be present and signed in prior to the start of the mandatory pre-proposal meeting. The convener of the meeting will circulate the attendee sign in sheet at the time the meeting was advertised to begin. Once all Proposers have signed, the sign in sheet will be taken and the meeting will "officially" begin. Any Proposer not signed in at the "official" start of the meeting will be considered late and will not be allowed to propose on the Project.

E. Technical Proposal Page-Turn Meeting

The Department will meet with each Proposer, formally for thirty (30) minutes, for a page-turn meeting. FHWA will be invited on Projects of Division Interest (PoDIs). The purpose of the page-turn meeting is for the Design-Build Firm to guide the Technical Review Committee through the Technical Proposal, highlighting sections within the Technical Proposal that the Design-Build Firm wishes to emphasize. The page-turn meeting will occur between the date the Technical Proposal is due and the Question and Answer Written Response occurs, per the Schedule of Events section of this RFP. The Department will terminate the page-turn meeting promptly at the end of the allotted time. The Department will record all of the page-turn meeting. All recordings will become part of the Contract Documents. The page-turn meeting will not constitute discussions or negotiations. The Design-Build Firm will not be permitted to ask questions of the Technical Review Committee during the page-turn meeting. Roll plots submitted with the Technical Proposal and an unmodified aerial or map of the project limits provided by the Design-Build Firm is acceptable for reference during the page-turn meeting. The unmodified aerial or map may not be left with the Department upon conclusion of the page turn meeting. Use of other visual aids, electronic presentations, handouts, etc., during the page turn meeting is expressly prohibited. Upon

conclusion of the thirty (30) minutes, the Technical Review Committee is allowed five (5) minutes to ask questions pertaining to information highlighted by Design-Build Firm. Participation in the page-turn meeting by the Design-Build Firm shall be limited to eight (8) representatives from the Design-Build Firm. Design-Build Firms desiring to opt out of the page-turn meeting may do so by submitting a request to the Department.

F. Question and Answer Written Responses

The Department will provide all proposed questions to each Design-Build Firm as it relates to their Technical Proposal approximately 1 (one) week before the written Q & A letter is due.

The Design-Build Firm shall submit to the Department a written letter answering the questions provided by the Department. The questions and written answers/clarifications will become part of the Contract Documents and will be considered by the Department as part of the Technical Proposal.

On or prior to the due date listed in the Schedule of Events, the Design-Build Firm shall submit to the Department a written statement as follows: "[insert name of the Design-Build Firm] confirms that, despite any provision in the Design-Build Firm's Technical Proposal or any Q&A written response letter that may be inconsistent with the other requirements of the Contract Documents, [insert name of the Design-Build Firm] intends to comply fully with the requirements otherwise provided for in the Contract Documents, except for, pursuant to Subsection 5-2 Coordination of Contract Documents of the Design-Build Division I Specifications, any [insert name of Design-Build Firm]'s statements, terms, concepts or designs that can reasonably be interpreted as offers to provide higher quality items than otherwise required by the other Contract Documents or to perform services or meet standards in addition to or better than those otherwise required which such statements, terms, concepts and designs are the obligations of [insert name of the Design-Build Firm]." In case of the failure of the Design-Build Firm to timely provide such a written statement, the Department may determine the Design-Build Firm to be deemed non-responsive.

G. Protest Rights

Any person who is adversely affected by the specifications contained in this Request for Proposal must file a notice of intent to protest in writing within seventy-two hours of the posting of this Request for Proposal. Pursuant to Sections 120.57(3) and 337.11, Florida Statutes, and Rule Chapter 28-110, F.A.C., any person adversely affected by the agency decision or intended decision shall file with the agency both a notice of protest in writing and bond within 72 hours after the posting of the notice of decision or intended decision, or posting of the solicitation with respect to a protest of the terms, conditions, and specifications contained in a solicitation and will file a formal written protest within 10 days after the filing of the notice of protest. The formal written protest shall be filed within 10 days after the date of the notice of protest if filed. The person filing the Protest must send the notice of intent and the formal written protest to:

Clerk of Agency Proceedings
Department of Transportation
605 Suwannee Street, MS 58
Tallahassee, Florida 32399-0458

Failure to file a notice of protest or formal written protest within the time prescribed in section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120 Florida Statutes.

H. Non-Responsive Proposals

Proposals found to be non-responsive shall not be considered. Proposals may be rejected if found to be in nonconformance with the requirements and instructions herein contained. A proposal may be found to be non-responsive by reasons, including, but not limited to, failure to utilize or complete prescribed forms, conditional proposals, incomplete proposals, indefinite or ambiguous proposals, failure to meet deadlines and improper and/or undated signatures.

Other conditions which may cause rejection of proposals include evidence of collusion among Proposers, obvious lack of experience or expertise to perform the required work, submission of more than one proposal for the same work from an individual, firm, joint venture, or corporation under the same or a different name (also included for Design-Build Projects are those proposals wherein the same Engineer is identified in more than one proposal), failure to perform or meet financial obligations on previous contracts, employment of unauthorized aliens in violation of Section 274A (e) of the Immigration and Nationalization Act, or in the event an individual, firm, partnership, or corporation is on the United States Department of Labor's System for Award Management (SAM) list.

The Department will not give consideration to tentative or qualified commitments in the proposals. For example, the Department will not give consideration to phrases as "we may" or "we are considering" in the evaluation process for the reason that they do not indicate a firm commitment.

Proposals will also be rejected if not delivered or received on or before the date and time specified as the due date for submission.

Any proposal submitted by a Proposer that did not sign-in at the mandatory pre-proposal meeting will be non-responsive.

I. Waiver of Irregularities

The Department may waive minor informalities or irregularities in proposals received where such is merely a matter of form and not substance, and the correction or waiver of which is not prejudicial to other Proposers. Minor irregularities are defined as those that will not have an adverse effect on the Department's interest and will not affect the price of the Proposals by giving a Proposer an advantage or benefit not enjoyed by other Proposers.

1. Any design submittals that are part of a proposal shall be deemed preliminary only.

2. Preliminary design submittals may vary from the requirements of the RFP. The Department, at their discretion, may elect to consider those variations in awarding points to the proposal rather than rejecting the entire proposal.

3. In no event will any such elections by the Department be deemed to be a waiving of the RFP requirements.

4. The Proposer who is selected for the Project will be required to fully comply with the RFP for the price bid, regardless that the proposal may have been based on a variation from the RFP.

5. Proposers shall identify separately all innovative aspects as such in the Technical Proposal. An innovative aspect does not include revisions to specifications or established Department policies. Innovation should be limited to Design-Build Firm's means and

methods, roadway alignments, approach to Project, use of new products, new uses for established products, etc.

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6. The Proposer shall obtain any necessary permits or permit modifications not already provided.

7. Those changes to the Design Concept may be considered together with innovative construction techniques, as well as other areas, as the basis for grading the Technical Proposals in the area of innovative measures.

J. Modification or Withdrawal of Technical Proposal

Proposers may modify or withdraw previously submitted Technical Proposals at any time prior to the Technical Proposal due date. Requests for modification or withdrawal of a submitted Technical Proposal shall be in writing and shall be signed in the same manner as the Technical Proposal. Upon receipt and acceptance of such a request, the entire Technical Proposal will be returned to the Proposer and not considered unless resubmitted by the due date and time. ~~**Proposers may also send a change in sealed envelope to be opened at the same time as the Technical Proposal provided the change is submitted prior to the Technical Proposal due date.**~~

K. Department's Responsibilities

This Request for Proposal does not commit the Department to make studies or designs for the preparation of any proposal, nor to procure or contract for any articles or services.

The Department does not guarantee the details pertaining to borings, as shown on any documents supplied by the Department, to be more than a general indication of the materials likely to be found adjacent to holes bored at the site of the work, approximately at the locations indicated.

L. Design-Build Contract

The Department will enter into a Lump Sum contract with the successful Design-Build Firm. In accordance with Section V, the Design-Build Firm will provide a schedule of values to the Department for their approval. The total of the Schedule of Values will be the lump sum contract amount.

The terms and conditions of this contract are fixed price and fixed time. The Design-Build Firm's submitted bid (time and cost) is to be a lump sum bid for completing the scope of work detailed in the Request for Proposal.

IV. Disadvantaged Business Enterprise (DBE) Program.

a. DBE Availability Goal Percentage:

The Department of Transportation has an overall, race-neutral DBE goal. This means that the State's goal is to spend a portion of the highway dollars with Certified DBE's as prime Design-Build Firms or as subcontractors. Race-neutral means that the Department believes that the overall goal can be achieved through the normal competitive procurement process. The Department has reviewed this Project and assigned a DBE availability goal shown in the Project Advertisement and on the bid blank/contract front page under "% DBE Availability Goal". The Department has determined that this DBE percentage can be achieved on this Project based on the number of DBE's associated with the different types of work that will

be required.

Under 49 Code of Federal Regulations Part 26, if the overall goal is not achieved, the Department may be required to return to a race-conscious program where goals are imposed on individual contracts. The Department encourages Design-Build Firms to actively pursue obtaining bids and quotes from Certified DBE's.

The Department is reporting to the Federal Highway Administration the planned commitments to use DBE's, as well as actual dollars paid to DBE's. This information is being collected through the Department's Equal Opportunity Compliance (EOC) system. Additional requirements of the Design-Build Firm may be found in Chapter 2 of the FDOT Equal Opportunity Construction Contract Compliance Manual.

b. DBE Supportive Services Providers:

The Department has contracted with a consultant, referred to as DBE Supportive Services Provider, to provide managerial and technical assistance to DBE's. This consultant is also required to work with prime Design-Build Firms, who have been awarded contracts, to assist in identifying DBE's that are available to participate on the Project. The successful Design-Build Firm should meet with the DBE Supportive Services Provider to discuss the DBE's that are available to work on this Project. The current DBE Supportive Services Provider for the State of Florida can be found in the Equal Opportunity website at: http://www.fdot.gov/equalopportunity/serviceproviders.shtm

c. Bidders Opportunity List:

The Federal DBE Program requires States to maintain a database of all Firms that are participating, or attempting to participate, on DOT-assisted contracts. The list must include all Firms that bid on prime contracts or bid or quote subcontracts on DOT-assisted Projects, including both DBEs and Non-DBEs.

A Bid Opportunity List should be submitted through the Equal Opportunity Compliance system which is available at the Equal Opportunity Office Website. This information should be entered into the Equal Opportunity Compliance System within 3 business days of submission of the bid or proposal.

V. Project Requirements and Provisions for Work.

A. Governing Regulations:

The services performed by the Design-Build Firm shall be in compliance with all applicable Manuals and Guidelines including the Department, FHWA, AASHTO, and additional requirements specified in this document. Except to the extent inconsistent with the specific provisions in this document, the current edition, including updates, of the following Manuals and Guidelines shall be used in the performance of this work. Current edition is defined as the edition in place and adopted by the Department at the date of advertisement of this contract with the exception of the Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications, Manual on Uniform Traffic Control Devices (MUTCD), and FDOT Standard Plans with applicable Interim Revisions. The Design-Build Firm shall use the edition of the Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications, FDOT Standard Plans and applicable Interim Revisions in effect at the time the bid price proposals are due in the District Office. The Design-Build Firm shall use the 2009 edition of the MUTCD (as amended in 2012). It shall be the Design-Build Firm's responsibility to acquire and utilize the necessary manuals and guidelines that apply to the work required to complete this Project. The services will include preparation of all documents necessary to complete the Project as described in Section I of this document.

1. Florida Department of Transportation Design Manual (FDM)
http://www.fdot.gov/roadway/FDM/

2. Florida Department of Transportation Specifications Package Preparation Procedure
http://www.fdot.gov/programmanagement/PackagePreparation/Handbooks/630-010-005.pdf

3. Florida Department of Transportation Standard Plans for Road and Bridge Construction
http://www.fdot.gov/design/standardplans/

4. Standard Plans Instructions (Refer to Part I, Chapter 115, FDM)
http://www.fdot.gov/roadway/FDM/

5. Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications
http://www.fdot.gov/programmanagement/default.shtm

6. Florida Department of Transportation Surveying Procedure 550-030-101
http://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/FormsAndProcedures/ViewDocument?topicNum=550-030-101

7. Florida Department of Transportation EFB User Handbook (Electronic Field Book)
http://www.fdot.gov/geospatial/doc_pubs.shtm

8. Florida Department of Transportation Drainage Manual
http://www.fdot.gov/roadway/Drainage/ManualsandHandbooks.shtm

9. Florida Department of Transportation Soils and Foundations Handbook
http://www.fdot.gov/structures/Manuals/SFH.pdf

10. Florida Department of Transportation Structures Manual
http://www.fdot.gov/structures/DocsandPubs.shtm

11. Florida Department of Transportation Computer Aided Design and Drafting (CADD) Manual
http://www.fdot.gov/cadd/downloads/publications/CADDManual/default.shtm

12. AASHTO – A Policy on Geometric Design of Highways and Streets
https://bookstore.transportation.org/collection_detail.aspx?ID=110

13. MUTCD – 2009 (as amended in 2012)
http://mutcd.fhwa.dot.gov/

14. Safe Mobility for Life Program Policy Statement
http://www.fdot.gov/traffic/TrafficServices/PDFs/000-750-001.pdf

15. Traffic Engineering and Operations Safe Mobility for Life Program
http://www.fdot.gov/traffic/TrafficServices/SafetyisGolden.shtm/

16. Florida Department of Transportation American with Disabilities Act (ADA) Compliance – Facilities Access for Persons with Disabilities Procedure 625-020-015
https://fdotwp1.dot.state.fl.us/ProceduresInformationManagementSystemInternet/?viewBy=0&procType=pr

17. Florida Department of Transportation Florida Sampling and Testing Methods
http://www.fdot.gov/materials/administration/resources/library/publications/fstm/disclai

mer.shtm

18. Florida Department of Transportation Flexible Pavement Coring and Evaluation Procedure http://www.fdot.gov/materials/administration/resources/library/publications/materialsmanual/documents/v1-section32-clean.pdf

19. Florida Department of Transportation Design Bulletins and Update Memos http://www.fdot.gov/roadway/Bulletin/Default.shtm

20. Florida Department of Transportation Utility Accommodation Manual https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/programmanagement/programmanagement/utilities/docs/uam/uam2017.pdf?sfvrsn=d97fd3dd_0

21. AASHTO LRFD Bridge Design Specifications https://bookstore.transportation.org/category_item.aspx?id=BR

22. Florida Department of Transportation Flexible Pavement Design Manual http://www.fdot.gov/roadway/PM/publicationS.shtm

23. Florida Department of Transportation Rigid Pavement Design Manual http://www.fdot.gov/roadway/PM/publicationS.shtm

24. Florida Department of Transportation Pavement Type Selection Manual http://www.fdot.gov/roadway/PM/publicationS.shtm

25. Florida Department of Transportation Right of Way Manual http://www.fdot.gov/rightofway/Documents.shtm

26. Florida Department of Transportation Traffic Engineering Manual http://www.fdot.gov/traffic/TrafficServices/Studies/TEM/tem.shtm

27. Florida Department of Transportation Intelligent Transportation System Guide Book http://www.fdot.gov/traffic/Doc_Library/Doc_Library.shtm

28. Federal Highway Administration Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications http://www.fhwa.dot.gov/engineering/geotech/pubs/reviewguide/checklist.cfm

29. AASHTO Guide for the Development of Bicycle Facilities https://bookstore.transportation.org/collection_detail.aspx?ID=116

30. Federal Highway Administration Hydraulic Engineering Circular Number 18 (HEC 18). http://www.fhwa.dot.gov/engineering/hydraulics/library_arc.cfm?pub_number=17

31. Florida Department of Transportation Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways http://www.fdot.gov/roadway/FloridaGreenbook/FGB.shtm

32. Florida Department of Transportation Project Development and Environment Manual, Parts 1 and 2 http://www.fdot.gov/environment/pubs/pdeman/pdeman1.shtm

33. Florida Department of Transportation Driveway Information Guide http://www.fdot.gov/planning/systems/programs/sm/accman/pdfs/driveway2008.pdf

34. AASHTO Highway Safety Manual http://www.highwaysafetymanual.org/

35. Florida Statutes
http://www.leg.state.fl.us/Statutes/index.cfm?Mode=View%20Statutes&Submenu=1&Tab=statutes&CFID=14677574&CFTOKEN=80981948

36. Florida Department of Transportation Equal Opportunity Construction Contract Compliance Manual
http://www.fdot.gov/equalopportunity/contractcomplianceworkbook.shtm

B. Innovative Aspects:

All innovative aspects shall be identified separately as such in the Technical Proposal.

An innovative aspect does not include revisions to specifications, standards or established Department policies. Innovation should be limited to Design-Build Firm's means and methods, roadway alignments, approach to Project, etc.

1. Alternative Technical Concept (ATC) Proposals

The Department has chosen to incorporate in the Design-Build method of project delivery the process whereby Design-Build Firms may propose innovative technical solutions for the Departments approval which meet or exceed the goals of the project. The process involves the submission of an Alternative Technical Concept (ATC) as outlined below. This process has shown to be very cost effective in providing the best-value solution which often times is a result of the collaborative approach of the contractor and their designer which is made possible with the Design Build project delivery method and the ATC process.

The ATC process allows innovation, flexibility, time and cost savings on the design and construction of Design-Build Projects while providing the best value for the public. Any deviation from the RFP that the Design-Build Firm seeks to obtain approval to utilize prior to Technical Proposal submission is, by definition, an ATC and therefore must be discussed and submitted to the Department for consideration through the ATC process. ATCs also include items defined in FDM, Part 1, Chapter 121.3.2. The proposed ATC shall provide an approach that is equal to or better than the requirements of the RFP, as determined by the Department. ATC Proposals which reduce scope, quality, performance, or reliability should not be proposed. A proposed concept does not meet the definition of an ATC if the concept is contemplated by the RFP.

The Department will keep all ATC submissions confidential prior to the Final Selection of the Proposer to the fullest extent allowed by law, with few exceptions. Although the Department will issue an addendum for all ATC Proposals contained in the list below, the Department will endeavor to maintain confidentiality of the Design-Build Firms specific ATC proposal. Prior to approving ATC's which would result in the issuance of an Addendum as a result of the item being listed below, the Design-Build Firm will be given the option to withdraw previously submitted ATC proposals. Any approved ATC Proposal related to following requirements described by this RFP shall result in the issuance of an Addendum to the RFP:

- New Design Exceptions required
- Modifications to the Pavement Types or approved Pavement Design.
- Significant changes in scope as determined by the Department.

The following requirements described by this RFP may be modified by the Design-Build Firm provided they are presented in the One-on-One ATC discussion meeting, as defined below, and submitted to the

Department for review and approval through the ATC process described herein. The Department may deem a Proposal Non-Responsive should the Design-Build Firm include but fail to present and obtain Department approval of the proposed alternates through the ATC process. Department approval of an ATC proposal that is related to the items listed below will NOT result in the issuance of an Addendum to the RFP.

- Any RFP requirement other than the items included in the previous paragraph's bulleted list

2. One-on-One ATC Proposal Discussion Meetings

One-on-One ATC discussion meetings may be held in order for the Design-Build Firm to describe proposed changes to supplied basic configurations, Project scope, design criteria, and/or construction criteria. Each Design-Build Firm with proposed changes may request a One-on-One ATC discussion meeting to describe the proposed changes. The Design-Build Firm shall provide, by the deadline shown in the Schedule of Events of this RFP, a preliminary list of ATC proposals to be reviewed and discussed during the One-on-One ATC discussion meetings. This list may not be inclusive of all ATC's to be discussed but it should be sufficiently comprehensive to allow the Department to identify appropriate personnel to participate in the One-on-One ATC discussion meetings.

The purpose of the One-on-One ATC discussion meeting is to discuss the ATC proposals, answer questions that the Department may have related to the ATC proposal, review other relevant information and when possible establish whether the proposal meets the definition of an ATC thereby requiring the submittal of a formal ATC submittal. The meeting should be between representatives of the Design-Build Firm and/or the Design-Build Engineer of Record and District/Central Office staff as needed to provide feedback on the ATC proposal. FHWA should be invited to ATC meetings for all PoDI projects. Immediately prior to the conclusion of the One-on-One ATC discussion meeting, the Department will advise the Design-Build Firm as to the following related to the ATC proposals which were discussed:

- The Proposal meets the criteria established herein as a qualifying ATC Proposal; therefore, an ATC Proposal submission IS required, or
- The Proposal does not meet the criteria established herein as a qualifying ATC proposal since the Proposal is already allowed or contemplated by the original RFP; therefore, an ATC Proposal submission is NOT required.

The Department will return all handouts back to the Design-Build Firm except one copy to remain in the secure procurement file.

3. Submittal of ATC Proposals

All ATC submittals must be in writing and may be submitted at any time following the Shortlist Posting but shall be discussed and submitted prior to the deadline shown in the Schedule of Events of this RFP.

The Department will allow the submission of draft ATCs at any time following the Shortlist Posting until the date on which the last One-on-One ATC discussion meeting is held as defined in the Schedule of Events. The submission must be clearly marked as DRAFT. The Design-Build Firm, by submitting a Draft ATC, understands that the purpose of the submission is to provide information to facilitate the discussion during ATC meetings and that the Department will discuss the concept but is not obligated to reply to the draft submission as if it were a formal ATC submittal. However, at any time prior to the formal Alternative Technical Concept Proposal submittal, the Department may provide the Design-Build Firm with a draft written response. The draft written response shall be clearly marked as DRAFT.

The intent of this draft ATC response is to provide the Design-Build Firm with possible additional feedback beyond what is provided during the one-on-one ATC meetings, with the goal of allowing for more condensed procurement schedules, as well as potentially eliminating a one-on-one ATC meeting on complex projects.

All ATC submittals are required to be on plan sheets or on roll plots no wider than 36" and shall be sequentially numbered and include the following information and discussions:

a) Description: A description and conceptual drawings of the configuration of the ATC or other appropriate descriptive information, including, if appropriate, product details and a traffic operational analysis as applicable;

b) Usage: The locations where and an explanation of how the ATC would be used on the Project;

c) Deviations: References to requirements of the RFP which are inconsistent with the proposed ATC, an explanation of the nature of the deviations from the requirements and a request for approval of such deviations along with suggested changes to the requirements of the RFP which would allow the alternative proposal;

d) Analysis: An analysis justifying use of the ATC and why the deviation, if any, from the requirements of the RFP should be allowed;

e) Impacts: A preliminary analysis of potential impacts on vehicular traffic (during construction), environmental impacts, community impacts, safety, and life-cycle Project and infrastructure costs, including impacts on the cost of repair, maintenance, and operation;

f) Risks: A description of added risks to the Department or third parties associated with implementation of the ATC;

g) Quality: A description of how the ATC is equal or better in quality and performance than the requirements of the RFP including the traffic operational analysis if requested by the Department;

h) Operations: Any changes in operation requirements associated with the ATC, including ease of operations;

i) Maintenance: Any changes in maintenance requirements associated with the ATC, including ease of maintenance;

j) Anticipated Life: Any changes in the anticipated life of the item comprising the ATC;

4. Review and Approval of ATC Submittals

After receipt of the ATC submittal, the District Design Engineer (DDE), or designee, will communicate with the appropriate staff (i.e. District Structures Design Engineer, District Construction Engineer, District Maintenance Engineer, State Structures Design Engineer, State Roadway Design Engineer, FHWA, as applicable) as necessary, and respond to the Design-Build Firm in writing within 14 calendar days of receipt of the ATC submittal as to whether the ATC is acceptable, not acceptable, or requires additional information. If the DDE, or designee, determines that more information is required for the review of an ATC, questions should be prepared by the DDE, or designee, to request and receive responses from the

Design-Build Firm. The review should be completed within 14 calendar days of the receipt of the ATC submittal. If the review will require additional time, the Design-Build Firm should be notified in advance of the 14 day deadline with an estimated timeframe for completion.

Approved Design Exceptions required as part of an approved ATC submittal will result in the issuance of an addendum to the RFP notifying all Shortlisted Design-Build Firms of the approved Design Exception(s). Such a change will be approved by FHWA, as applicable. Prior to approving ATC's which would result in the issuance of an Addendum as a result of a Design Exception, the Design-Build Firm will be given the option to withdraw previously submitted ATC Proposals.

The Department reserves the right to disclose to all Design-Build Firms, via an Addendum to the RFP, any errors of the RFP that are identified during the One-on-One ATC meetings, except to the extent that the Department determines, in its sole discretion, such disclosure would reveal confidential or proprietary information of the ATC.

Through the ATC process, the Design-Build Firm may submit, and the Department may consider, geometric modifications to the Concept Plans or other contract requirements that will provide an engineering solution that is better overall in terms of traffic flow and reduced congestion. The approval of ATCs related to improvements of traffic flow and reduced congestion is at the sole discretion of the Department. It is the Design-Build Firm's responsibility to clearly establish in the ATC process how the engineering solution provides a benefit to the Department and identify areas of conflict outlined in the RFP.

ATC's are accepted by the Department at the Department's discretion and the Department reserves the right to reject any ATC submitted. The Department reserves the right to issue an Addendum to the RFP based upon a previously denied ATC Proposal, without regard to the confidentiality of the denied ATC Proposal. All Department approvals of ATC submissions are based upon the known impacts on the Project at the time of submission. The Department reserves the right to require a modification or amendment to a previously approved ATC as a result of a contract change which is issued by an addendum subsequent to the Department's initial approval of the ATC.

5. Incorporation of Approved ATC's into the Technical Proposal

The Design-Build Firm will have the option to include any Department Approved ATC's in the Technical Proposal. The Proposal Price should reflect any incorporated ATC's. All approved ATC's that are incorporated into the Technical Proposal must be clearly identified in the Technical Proposal Plans and/or Roll Plots. The Technical Proposal shall also include a listing of the incorporated, approved ATCs.

By submitting a Proposal, the Design-Build Firm agrees, if it is not selected, to disclosure of its work product to the successful Design-Build Firm, only after receipt of the designated stipend (if applicable) or after award of the contract whichever occurs first.

C. Geotechnical Services:

1. **General Conditions**:

The Design-Build Firm shall be responsible for identifying and performing any geotechnical investigation, analysis and design of foundations, foundation construction, foundation load and integrity testing, and inspection dictated by the Project needs in accordance with Department guidelines, procedures and specifications. All geotechnical work necessary shall be performed in accordance with the Governing Regulations. The Design-Build Firm shall be solely responsible for all geotechnical aspects of the Project.

D. Department Commitments:

The Design-Build Firm will be responsible for adhering to the project commitments identified below:

1. All right-of-way commitments, agreements and stipulated final judgements provided as an Attachment to the RFP.
2. Environmental commitments detailed in the Environmental Services/Permits/Mitigation section of this RFP.

E. Environmental Permits:

The Design-Build Firm shall be responsible for obtaining all applicable permits and/or permit modifications required for this project. The Design-Build Firm shall be responsible for any necessary permit time extensions or re-permitting in order to keep the environmental permits valid throughout the construction period. The Design-Build Firm shall provide the Department with draft copies of any and all permit applications, including responses to agency Requests for Additional Information, requests to modify the permits and/or requests for permit time extensions, for review and approval by the Department prior to submittal to the agencies. The FDOT Design PM, Drainage Engineer, and Permit Coordinator should be included on all meetings and correspondence with the permit agencies.

All applicable data shall be prepared in accordance with Chapter 373 and 403, Florida Statutes, Chapters 40 and 62, F.A.C.; Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, 23 CFR 771, 23 CFR 636, and parts 114 and 115, Title 33, Code of Federal Regulations. Preparation of all documentation related to the acquisition of all applicable permits will be the responsibility of the Design-Build Firm. Preparation of complete permit packages will be the responsibility of the Design-Build Firm. The Design-Build Firm is responsible for the accuracy of all information included in permit application packages. As the permittee, the Department is responsible for reviewing, approving, and signing, the permit application package including all permit modifications, or subsequent permit applications. This applies whether the Project is federal or state funded. Once the Department has approved the permit application, the Design-Build Firm is responsible for submitting the permit application to the environmental permitting agency. A copy (electronic and hard copy) of any and all correspondence with any of the environmental permitting agencies shall be sent to the District Environmental Permits Coordinator. If any agency rejects or denies the permit application, it is the Design-Build Firm's responsibility to make whatever changes necessary to ensure the permit application is approved.

The Design-Build Firm will be required to pay all permit and public notice fees. Any fines levied by permitting agencies shall be the responsibility of the Design-Build Firm. The Design-Build Firm shall be responsible for complying with all permit conditions.

The Department is responsible for providing mitigation of all wetland impacts identified in the conceptual plans, if any exist. If any design modifications by the Design-Build Firm propose to increase the amount of wetland impacts such that mitigation or additional mitigation is required, the Design-Build Firm shall be responsible for providing the Department information on the amount and type of wetland impacts as soon as the impacts are identified (including temporary impacts and/or any anticipated impacts due to construction staging or construction methods). Prior to submitting a permit modification to a regulatory agency, the Design-Build Firm shall provide the Department a draft of all supporting information. The Department will have up to 15 calendar days (excluding weekends and Department observed holidays) to review and comment on the draft permit application package. The Design-Build Firm will address all comments by the Department and obtain Department approval, prior to submittal of the draft permit application package. The Design-Build Firm shall be solely responsible for all time and costs associated with providing the required

information to the Department, as well as the time required by the Department to perform its review of the permit application package, prior to submittal of the permit application(s) by the Design-Build Firm to the regulatory agency(ies).

Any additional mitigation required due to design modifications proposed by the Design-Build Firm shall be the responsibility of the Design-Build Firm and shall be satisfied through the purchase of mitigation bank credits. The Design-Build Firm shall purchase credits directly from a permitted mitigation bank. In the event that permitted mitigation bank credits are unavailable or insufficient to meet the project needs, the Design-Build Firm will be responsible for providing alternative mitigation consistent with the provisions of section 373.-4137, Florida Statutes, and acceptable to the permitting agency. The Design-Build Firm shall be solely responsible for all costs associated with permitting activities and shall include all necessary permitting activities in their schedule.

However, notwithstanding anything above to the contrary, upon the Design-Build Firm's preliminary request for extension of Contract Time, pursuant to 8-7.3, being made directly to the District Construction Engineer, the Department reserves unto the District Construction Engineer, in their sole and absolute discretion, according to the parameters set forth below, the authority to make a determination to grant a non-compensable time extension for any impacts beyond the reasonable control of the Design-Build Firm in securing permits. Furthermore, as to any such impact, no modification provision will be considered by the District Construction Engineer unless the Design-Build Firm clearly establishes that it has continuously from the beginning of the Project aggressively, efficiently and effectively pursued the securing of the permits including the utilization of any and all reasonably available means and methods to overcome all impacts. There shall be no right of any kind on behalf of the Design-Build Firm to challenge or otherwise seek review or appeal in any forum of any determination made by the District Construction Engineer under this provision.

F. Railroad Coordination: N/A

G. Survey:

If the Design-Build Firm chooses to utilize the existing survey, the Design-Build Firm shall be responsible for verifying the accuracy of the information being provided and for providing all other surveys necessary for the Project.

The Design-Build Firm shall perform all surveying (Terrestrial, Mobile and/or Aerial) and mapping services necessary to complete the Project. Survey services must also comply with all pertinent Florida Statutes (Chapters 177 and 472, F.S.) and applicable rules in the Florida Administrative Code (Rule Chapter 5J-17, F.A.C.). All field survey data will be furnished to the District Surveyor in a Department approved digital format, readily available for input and use in CADD Design files. All surveying and mapping work must be accomplished in accordance with the Department's Surveying and Mapping Procedure, Topic Nos. 550-030-101, and the Surveying and Mapping Handbook.

H. Verification of Existing Conditions:

The Design-Build Firm shall be responsible for verification of existing conditions, including research of all existing Department records and other information.

By execution of the contract, the Design-Build Firm specifically acknowledges and agrees that the Design-

Build Firm is contracting and being compensated for performing adequate investigations of existing site conditions sufficient to support the design developed by the Design-Build Firm and that any information is being provided merely to assist the Design-Build Firm in completing adequate site investigations. Notwithstanding any other provision in the contract documents to the contrary, no additional compensation will be paid in the event of any inaccuracies in the preliminary information.

I. Submittals:

1. Component Submittals:

The Design-Build Firm may submit components of the contract plans set instead of submitting the entire contract plan set; however, sufficient information from other components must be provided to allow for a complete review. In accordance with the FDOT Design Manual, components of the contract plans set are roadway, signing and pavement marking, signalization, ITS, lighting, landscape, architectural, structural, and toll facilities. The Department will designate in the review comments if the next submittal will be a resubmittal of the 90% phase submittal or if the plans and supporting calculations are significantly developed to proceed to the Final Submittal.

The Design-Build Firm may divide the Project into separate areas and submit components for each area; however, sufficient information on adjoining areas must be provided to allow for a complete review. Submittals for bridges are limited to foundation, substructure, and superstructure. Further dividing the foundation, substructure, or superstructure into individual elements (i.e. Pier 2, Abutment 1, Span 4, etc.) will not be accepted.

Category 1 and 2 bridge submittals shall contain the following:

- Plan sheets for the component under review developed to the specified level of detail (i.e. 90% plans, Final plans, etc.) as outlined in the FDM.
- A complete set of the most developed plan sheets for all other major elements of the bridge. These sheets shall be marked “For Information Only” on the index sheet. In no case shall a plan sheet be less than 30% complete.
- Design documentation including a complete set of calculations, geotechnical reports, pertinent correspondence, etc. in support of the 90% and final component submittals.

2. Phase Submittals:

The Design-Build Firm shall provide the documents for each phase submittal listed below to the Department’s Project Manager. The particular phase shall be clearly indicated on the documents. The Department’s Project Manager will send the documents to the appropriate office for review and comment. Once all comments requiring a response from the Design-Build Firm have been satisfactorily resolved as determined by the Department, the Department’s Project Manager will initial, date and stamp the signed and sealed plans and specifications as “Released for Construction”.

Submit for Department’s review and approval the Independent Peer Review Firm’s comments, design verifications calculations, and the EOR’s response to the Independent Peer reviewer’s comments in conjunction with the submittal of the 90% component bridge plans for Category 2 Bridge Structures. The Department will designate in the review comments if the next submittal will be a resubmittal of the 90% phase submittal or if the plans and supporting calculations are significantly developed to proceed to the Final Submittal.

One (1) month prior to the 90% submittal listed below, the Design-Build Firm will be required to prepare and submit to the Department for review phase submittal notification draft email for distribution to Local Governments to obtain comments from the respective entity. The Design-Build Firm may obtain an example of a sample distribution email from the Department's Project Manager. The Design-Build Firm will provide a list of proposed recipients, such as City and/or County Commissioners, TPO, appropriate public officials, etc., and submit this list to the District Public Information Office for review and approval prior to submitting the draft email for distribution by the Department. Along with the draft email, a PDF of the plans (without structures included) shall be provided for distribution. Exempt structural information shall NOT be distributed. A sample distribution list can be obtained from the Department's Project Manager.

The draft email distribution shall include the following information:

- FPID Number
- State Road Number and Local Road Name
- Project limits
- Type of work
- Anticipated construction start date
- Estimated duration of construction
- Department contact persons
- A fourteen (14) calendar day deadline for providing comments

Each comment or request provided by the local government or entity reviewing the submittal shall be evaluated by the Design-Build Firm and discussed with the Department's Project Manager. Responses will be prepared by the Design-Build Firm for the District Secretary (i.e. for elected officials) or District Consultant Project Management Engineer's signature. All comments or requests shall be responded to in writing within thirty (30) days of receipt of comments.

90% Phase Submittal

1 copy of 11" X 17" plans (all required components)
2 signed and sealed geotechnical reports
1 copy of Settlement and Vibration Monitoring Plan (SVMP) for Department acceptance and update throughout the construction period
1 copy of design documentation
1 copy of Technical Special Provisions, if applicable
1 copy of Landscape Opportunity Plans
1 copy of Concept of Operations (ITS)
1 copy of Maintenance of communication (MOC) plans
1 copy of Project System Engineering Management Plan (ITS)
1 copy of Requirement Traceability Verification Matrix (ITS)
1 copy existing Signalization and Intelligent Transportation System equipment report
1 copy of power design analysis report (PDAR)
1 copy of Bridge Load Rating Calculations
1 copy of Completed Bridge Load Rating Summary Detail Sheet
1 copy of Load Rating Summary Form

All of the information above shall be submitted electronically in .pdf format. All QC plans and documentation for each component submittal shall be electronic in .pdf format

The Department will designate in the review comments if the next submittal will be a

resubmittal of the 90% phase submittal or if the plans and supporting calculations are significantly developed to proceed to the Final Submittal. If the Department requires more than 2 resubmittals a submittal workshop between the Department and the Design-Build Firm must be held to resolve any outstanding issues or comments.

Final Submittal
1 set of signed and sealed 11" X 17" plans (all required documents)
1 set of signed and sealed Landscape Opportunity Plans
1 signed and sealed Construction Specifications Package
1 signed and sealed Technical Special Provision, as applicable
1 set of signed and sealed design documentation
1 copy of Settlement and Vibration Monitoring Plan (SVMP)
1 copy of Concept of Operations (ITS)
1 copy of Maintenance of communication (MOC) plans
1 copy of Project System Engineering Management Plan (ITS)
1 copy of Requirement Traceability Verification Matrix (ITS)
1 copy of power design analysis report (PDAR)
1 copy existing Signalization and Intelligent Transportation System equipment report
1 set of final documentation
1 signed and sealed Bridge Load Rating Summary Detail Sheet
1 signed and sealed Load Rating Summary Form

All of the information above shall be submitted electronically in .pdf format. All QC plans and documentation for each component submittal shall be electronic in .pdf format

The Design-Build Firm shall provide a list of all changes made to the plans or specifications that were not directly related to the 90% plans review comments. Significant changes (as determined by the Department) made as a part of the Final submittal, that were not reviewed or provided in response to the 90% submittal comments, may require an additional review phase prior to stamping the plans or specifications "Released for Construction." The Design-Build Firm shall provide a signed certification that all Electronic Review Comments (ERC) have been resolved to the Department's satisfaction as a requirement before obtaining "Released for Construction" plans.

3. Requirements to Begin Construction:

The Department's indication that the signed and sealed plans and specifications are "Released for Construction" authorizes the Design Build Firm to proceed with construction based on the contract plans and specifications. The Department's review of submittals and subsequent Release for Construction is to assure that the Design-Build Firm's EOR has approved and signed the submittal, the submittal has been independently reviewed and is in general conformance with the contract documents. The Department's review is not meant to be a complete and detailed review. No failure by the Department in discovering details in the submittal that are released for construction and subsequently found not to be in compliance with the requirements of the contract shall constitute a basis for the Design-Build Firm's entitlement to additional monetary compensation, time, or other adjustments to the contract. The Design-Build Firm shall cause the Engineer of Record to resolve the items not in compliance with the contract, errors or omissions at no additional cost to the Department and all revisions are subject to the Department's approval.

The Design-Build Firm may choose to begin construction prior to completion of the Phase Submittals and the Department stamping the plans and specifications Released for Construction except for bridge construction. To begin construction the Design-Build Firm shall submit signed and sealed plans for the

specific activity; submit a signed and sealed Construction Specifications Package; obtain regulatory permits as required for the specific activity; obtain utility agreements and permits, if applicable; and provide five (5) days notice before starting the specific activity. The plans to begin construction may be in any format including report with details, 8 1/2" X 11" sheets, or 11" X 17" sheets, and only the information needed by the Design-Build Firm to construct the specific activity needs to be shown. Beginning construction prior to the Department stamping the plans and specifications Released for Construction does not reduce or eliminate the Phase Submittal requirements.

As-Built Set:

The Design-Build Firm's Professional Engineer in responsible charge of the Project's design shall professionally endorse (sign, seal, and certify) the As-Built Plans, the special provisions and all reference and support documents. The professional endorsement shall be performed in accordance with the FDOT Design Manual.

Design-Build Firm shall complete the As-Built Plans as the Project is being constructed. All changes made subsequent to the "Released for Construction" Plans shall be signed/sealed by the EOR. The As-Built Plans shall reflect all changes initiated by the Design-Build Firm or the Department in the form of revisions. The As-Built Plans shall be submitted prior to Project completion for Department review and acceptance as a condition precedent to the Department's issuance of Final Acceptance.

The Department shall review, certify, and accept the As-Built Plans prior to issuing Final Acceptance of the project in order to complete the As-Built Plans.

The Department shall accept the As-Built Plans and related documents when in compliance with Design Build Division I Specification 7-2.3, As-Built Drawings and Certified Surveys, and the As-Built Requirements.

The Design-Build Firm shall furnish to the Department, upon Project completion, the following:

- 1 set of 11" X 17" signed and sealed As-Built plans, drawings and Certified Surveys (including Landscape Opportunity Plans)
- 1 set of 11 "X 17" copies of the signed and sealed As-Built plans, drawings and Certified Surveys
- 1 signed and sealed Bridge Load Rating Summary Form and Calculations based on as-built conditions
- 1 set of final documentation (if different from final component submittal)
- 1 set of survey information, including electronic files and field books
- CADD Files
- 1 Final Project submittal containing the information above shall be electronic in .pdf format

4. Milestones:

Component submittals, in addition to the plan submittals listed in the previous section will be required. In addition to various submittals mentioned throughout this document the following milestone submittals will be required.

- Typical Section package
- Utility Clearance Certification

- Permit applications
- Responses to Request for Additional Information from permitting agencies
- Approved permits package
- Pavement design package, if different than the minimum pavement design included as an Attachment to the RFP
- Any information necessary to complete any NEPA reevaluations

5. Railroad Submittals: N/A

J. Contract Duration:

The Department has established a **Contract Duration of ~~1134 calendar days~~ 1290 calendar days** for the subject Project.

K. Project Schedule:

The Design-Build Firm shall submit a Schedule, in accordance with Subarticle 8-3.2 (Design-Build Division I Specifications). The Design-Build Firm's Schedule shall allow for up to fifteen (15) calendar days (excluding weekends and Department observed Holidays) review time for the Department's review of all submittals.

The Department will perform the review of Foundation Construction submittals in accordance with Section 455.

No special events have been identified as described in Specification 8-6.4 for this project.

The minimum number of activities included in the Schedule shall be those listed in the Schedule of Values and those listed below:

- Anticipated Contract Execution Date
- Anticipated Notice to Proceed Date
- Design Submittals
- Shop Drawing Submittals
- Other Contractor-Initiated Submittals including RFI's, RFM's, RFC's, and NCR's
- Design Survey
- Submittal Reviews by the Department
- Design Review / Acceptance Milestones
- Materials Quality Tracking
- Geotechnical Investigation
- Start of Construction
- Clearing and Grubbing
- Construction Mobilization
- Embankment/Excavation
- Environmental Permit Acquisition
- Foundation Design
- Foundation Construction

- Substructure Design
- Substructure Construction
- Superstructure Design
- Superstructure Construction
- Walls Design
- Walls Construction
- Roadway Design
- Roadway Construction
- Signing and Pavement Marking Design
- Signing and Pavement Marking Construction
- Signalization and Intelligent Transportation System Design
- Signalization and Intelligent Transportation System Construction
- Lighting Design
- Lighting Construction
- Maintenance of Traffic Design
- Landscape Opportunity Plans
- Permit Submittals
- Maintenance of Traffic Set-Up (per duration)
- Erosion Control
- Holidays and Special Events (shown as non-work days)
- Maintenance of Communication (MOC) Plan
- Existing Signalization and Intelligent Transportation System equipment report
- Equipment Testing and Commissioning; System Testing, Standalone
- Equipment Testing and Commissioning; System Testing, Network Communication
- Equipment Testing and Commissioning; System Testing, Central Test End-User
- Equipment Submittals (Prior to Start of Construction)
- Test Plan Submittal to FDOT
- Field Device Deployment
- System Integration (District Coordination, County Coordination, Meetings, Field Work, Acceptance)
- As-Built Plan Preparation and Submittal
- RTVM Updates
- Additional Construction Milestones as determined by the Design-Build Firm
- Final Completion Date for All Work

L. Key Personnel/Staffing:

The Design-Build Firm's work shall be performed and directed by key personnel identified in the Letter of Interest and/or Technical Proposal by the Design-Build Firm. In the event a change in key personnel is requested, the Design-Build Firm shall submit the qualifications of the proposed key personnel and include the reason for the proposed change. Any changes in the indicated personnel shall be subject to review and approval by the District Construction Engineer. The Department shall have sole discretion in determining whether or not the proposed substitutions in key personnel are comparable to the key personnel identified in the Letter of Interest and/or Technical Proposal. The Design-Build Firm shall have available professional staff meeting the minimum training and experience set forth in Florida Statute Chapter 455.

M. Partner/Teaming Arrangement:

Partner/Teaming Arrangements of the Design-Build Firm (i.e., Prime Contractor or Lead Design Firm) cannot be changed after submittal of the Letter of Interest without written consent of the Department. In the event a change in the Partner/Teaming Arrangement is requested, the Design-Build Firm shall submit the reason for the proposed change. Any changes in the Partner/Teaming Arrangement shall be subject to review and approval by the Department's Chief Engineer. The Department shall have sole discretion in determining whether or not the proposed substitutions in Partner/Teaming Arrangements are comparable to the Partner/Teaming Arrangements identified in the Letter of Interest and/or Technical Proposal.

N. Meetings and Progress Reporting:

The Design-Build Firm shall anticipate periodic meetings with Department personnel and other agencies as required for resolution of design and/or construction issues. These meetings may include:

- Department technical issue resolution
- Local government agency coordination
- Maintenance of Traffic Workshop
- Pavement Design Meeting
- Permit agency coordination
- Scoping Meetings
- System Integration Meetings
- Post Submittal Design Review Meetings

During design, the Design-Build Firm shall meet with the Department's Project Manager on a monthly basis at a minimum and provide a one month look ahead of the activities to be completed during the upcoming month.

During construction, the Design-Build Firm shall meet with the Department's Project Manager on a weekly basis and provide a one-week look ahead for activities to be performed during the coming week.

The Design-Build Firm shall meet with the Department's Project Manager at least thirty (30) calendar days before beginning system integration activities. The purpose of these meetings shall be to verify the Design-Build Firm's ITS and signalization integration plans by reviewing site survey information, proposed splicing diagrams, IP addressing schemes, troubleshooting issues, and other design issues. In addition, at these meetings the Design-Build Firm shall identify any concerns regarding the Integration and provide detailed information on how such concerns will be addressed and/or minimized.

The Design-Build Firm shall provide all documentation required to support system integration meetings, including detailed functional narrative text, system and subsystem drawings and schematics. Also included shall be the documentation to demonstrate all elements of the proposed design which includes, but is not limited to: technical, functional, and operational requirements; ITS/communications; equipment; termination/patch panels; performance criteria; and details relating to interfaces to other ITS subsystems. If, for any reason, planned network or signal operation outages are to occur, the Design-Build Firm shall submit to the Department for approval a Maintenance of Communication (MOC) Plan in advance of the planned network or signal operation outage detailing work to be performed and a strategy for minimizing the outage. The existing fiber backbone cut over shall be coordinated District Three Transportation System Management Operations (TSM&O) manager and designated representatives before beginning of roadway construction.

All action items resulting from the System Integration Meeting shall be satisfactorily addressed by the Design-Build Firm and reviewed and approved by the Department.

The Design-Build Firm shall, on a monthly basis, provide written progress reports that describe the items of concern and the work performed on each task.

O. Public Involvement:

1. General:

Public involvement is an important aspect of the Project. Public involvement includes communicating to all interested persons, groups, and government organizations information regarding the development of the Project. The Department, or its designated representative, will serve as the Public Involvement Consultant (PIC) to carry out an exhaustive Public Involvement Campaign and a marketing effort. The Design-Build Firm will assist the Department in the Public Involvement effort as described below.

The Design-Build Firm shall provide weekly advance MOT changes for roadways to the Department's CEI no later than noon each Thursday. For the upcoming week (Sunday through Saturday) which will be used to notify the public of impacts.

2. Community Awareness:

The Design-Build Firm will review and comment on a Community Awareness Program if requested by the Department.

3. Public Meetings:

The Design-Build Firm shall provide all supporting materials necessary for various public meetings, which may include:

- Kick-off or introductory meeting
- Metropolitan Planning Organization (MPO) Citizens Advisory Committee Meetings
- MPO Transportation Technical Committee Meetings
- MPO Meetings
- Public Information Meetings
- Elected and appointed officials
- Special interest groups (private groups, homeowners associations, environmental groups, minority groups and individuals)
- Open Houses
- Virtual Public Hearings

The Design-Build Firm shall include attendance at two meetings per month for the term of the contract to support the public involvement program. The Department anticipates having a minimum of one Construction Public Meeting for the Project.

For any of the above type meetings the Design-Build Firm shall provide all technical assistance, data and information, display boards, printed material, video graphics, computerized graphics, etc., and information necessary for the day-to-day exchange of information with the public, all agencies and elected officials in order to keep them informed as to the progress and impacts that the proposed Project will create. This includes workshops, information meetings, open houses, and public hearings. The Design-Build Firm shall provide display boards using aerials for the Construction Public Meeting to the same level of quality or

better than the graphics utilized for the PD&E public meeting. The Design-Build Firm shall provide information for the various public meetings at a minimum of one (1) month prior to the meeting for Department review and approval.

The Design-Build Firm shall provide a computer animated display for the public meeting that details how traffic will utilize the new interchange, roundabout and adjacent roadway tie ins.

The Design-Build Firm shall, as determined by the Department, attend the meetings with an appropriate number of personnel to assist the CEI/Department. The Design-Build Firm shall forward all requests for group meetings to the CEI/Department. The Design-Build Firm shall inform the CEI/Department of any meetings with individuals that occur without prior notice.

4. **Public Workshops, Information Meetings:**

The Design-Build Firm shall provide all the support services listed in No. 3 above.

All legal/display advertisements announcing workshops, information meetings, and public meetings will be prepared and paid for by the Department.

The Department will be responsible for the legal/display advertisements for design concept acceptance. The Department will be responsible for preparing and mailing (includes postage) for all letters announcing the associated workshops and information meetings.

5. **Public Involvement Data:**

The Design-Build Firm is responsible for the following:

- Coordinating with the Department.
- Identifying possible permit and review agencies and providing names and contact information for these agencies to the Department.
- Providing required expertise (staff members) to assist the Department on an as-needed basis.
- Preparing color graphic renderings and/or computer generated graphics to depict the proposed improvements for coordination with the Department, local governments, and other agencies.
- Providing information to the Department to keep the Department website or social media platforms up to date.

The Design-Build Firm shall provide records of all public correspondence, written or verbal, to the Department throughout the life of the Project.

The Design-Build Firm may be asked by the CEI/Department to prepare draft responses to any public inquiries as a result of the public involvement process.

P. Quality Management Plan (QMP):

1. **Design:**

The Design-Build Firm shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications, geotechnical and other services furnished by

the Design-Build Firm under this contract.

The Design-Build Firm shall provide a Design Quality Management Plan, which describes the Quality Control (QC) procedures to be utilized to verify, independently check, and review all design drawings, specifications, and other documentation prepared as a part of the contract. In addition, the QMP shall establish a Quality Assurance (QA) program to confirm that the Quality Control procedures are followed. The Design-Build Firm shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The QMP may be one utilized by the Design-Build Firm, as part of their normal operation or it may be one specifically designed for this Project. The Design-Build Firm shall submit a QMP within fifteen (15) working days following issuance of the written Notice to Proceed. A marked up set of prints from the Quality Control review will be sent in with each review submittal. The responsible Professional Engineers or Professional Surveyor that performed the Quality Control review, as well as the QA manager will sign a statement certifying that the review was conducted.

The Design-Build Firm shall, without additional compensation, correct all errors or deficiencies in the surveys, designs, drawings, specifications and/or other services.

2. **Construction:**

The Design-Build Firm shall be responsible for developing and maintaining a Construction Quality Control Plan in accordance with Section 105 of Standard Specifications which describes their Quality Control procedures to verify, check, and maintain control of key construction processes and materials.

The sampling, testing and reporting of all materials used shall be in compliance with the Sampling, Testing and Reporting Guide (STRG) provided by the Department. The Design-Build Firm will use the Department's database(s) to allow audits of materials used to assure compliance with the STRG. The Department has listed the most commonly used materials and details in the Department's database. When materials being used are not in the Department's database list, the Design-Build Firm shall use appropriate material details from the STRG to report sampling and testing. Refer to the State Materials Office website for instructions on gaining access to the Department's databases: http://www.fdot.gov/materials/quality/programs/qualitycontrol/contractor.shtm

Prepare and submit to the Engineer a Job Guide Schedule (JGS) using the Department database in accordance with Section 105 of Standard Specifications.

The Department shall maintain its rights to inspect construction activities and request any documentation from the Design-Build Firm to ensure quality products and services are being provided in accordance with the Department's Materials Acceptance Program.

Q. Liaison Office:

The Department and the Design-Build Firm will designate a Liaison Office and a Project Manager who shall be the representative of their respective organizations for the Project.

R. Engineers Field Office: N/A

S. Schedule of Values:

The Design-Build Firm is responsible for submitting estimates requesting payment. Estimates requesting payment will be based on the completion or percentage of completion of tasks as defined in the schedule

of values. Final payment will be made upon final acceptance by the Department of the Design-Build Project. Tracking DBE participation will be required under normal procedures according to the Construction Project Administration Manual. The Design-Build Firm must submit the schedule of values to the Department for approval. No estimates requesting payment shall be submitted prior to Department approval of the schedule of values.

Upon receipt of the estimate requesting payment, the Department's Project Manager will make judgment on whether or not work of sufficient quality and quantity has been accomplished by comparing the reported percent complete against actual work accomplished.

T. Computer Automation:

The Project shall be developed utilizing computer automation systems in order to facilitate the development of the contract plans. Various software and operating systems were developed to aid in assuring quality and conformance with Department policies and procedures. The Department supports MicroStation and GEOPAK as its standard graphics and roadway design platform as well as Autodesk's AutoCAD Civil 3D as an alternate platform. Seed Files, Cell Libraries, User Commands, MDL Applications and related programs developed for roadway design and drafting are in the FDOT CADD Software Suite. Furnish As-Built documents for all building related components of the Project in AutoCAD format. It is the responsibility of the Design-Build Firm to obtain and utilize current Department releases of all CADD applications.

The Design-Build Firm will be required to furnish the Project's CADD files after the plans have been Released for Construction. The Design-Build Firm's role and responsibilities are defined in the Department's CADD Manual. The Design-Build Firm will be required to submit final documents and files which shall include complete CADD design and coordinate geometry files in MicroStation and/or AutoCAD design files format.

As part of the As-Built Set deliverables, field conditions shall be incorporated into MicroStation and/or AutoCAD design files. Use the cloud revision utility as well as an "AB" revision triangle to denote field conditions on plan sheets.

U. Construction Engineering and Inspection:

The Department is responsible for providing Construction Engineering and Inspection (CEI) and Quality Assurance Engineering.

The Design-Build Firm is subject to the Department's Independent Assurance (IA) Procedures.

V. Testing:

The Department or its representative will perform verification and resolution sampling and testing activities at both on site, as well as, off site locations such as pre-stress plants, batch plants, structural steel and weld, fabrication plants, etc. in accordance with the latest Specifications.

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W. Value Added:

The Design-Build Firm may provide Value Added Project Features, in accordance with Article 5-14 of the Specifications for the following features:

- Roadway features
- Roadway drainage systems
- Retaining Walls
- Approach slabs
- Superstructure
- Substructure
- Concrete defects
- Structural steel defects
- Post-tensioning systems, if applicable
- And any other products or features the Design-Build Firm desires.

The Design-Build Firm shall develop the Value Added criteria, measurable standards, and remedial work plans in the Design-Build Firm's Technical Proposal for features proposed by the Design-Build Firm.

The Design-Build Firm shall provide at a minimum the three (3) year warranty period as defined by Article 338, Value Added Asphalt Pavement, Division II, Standard Specifications. The Design-Build Firm may provide a longer warranty period than the three (3) year minimum.

X. Adjoining Construction Projects:

The Design-Build Firm shall be responsible for coordinating all design, permitting, and construction activities with other construction Projects that are impacted by or impact this Project. This includes Projects under the jurisdiction of local governments, the Department, other regional and state agencies, or private entities.

The Design-Build Firm shall consider and include in the Construction Plans and Bid Price Proposal, any and all temporary detours or diversions required to facilitate traffic movements into and out of the project limits; notwithstanding the alignment, lane positioning and/or grade differences of traffic conditions on those adjacent projects.

Y. Issue Escalation:

In the event issues arise during prosecution of the work, the resolution of those issues will be processed as described below unless revised by a Project specific Partnering Agreement:

The escalation process begins with the Construction Project Manager. All issues are to be directed to the Construction Project Manager. If the issue cannot be resolved by the Construction Project Manager in coordination with the Resident Engineer and Design Project Manager as applicable, the Construction Project Manager shall forward the issue to the District Construction Engineer who will coordinate with the District Design Engineer, and the District Utility Administrator, as applicable. Each level shall have a maximum of five (5) calendar days (excluding weekends and Department observed holidays) to answer, resolve, or address the issue. The Design-Build Firm shall provide all supporting documentation relative to the issue being escalated. The five (5) calendar day period (excluding weekends and Department observed holidays) begins when each level in the issue escalation process has received all required supporting documentation necessary to arrive at an informed and complete decision. The five (5) calendar day period (excluding weekends and Department observed holidays) is a response time and does not infer resolution. Questions asked by the Department may be expressed verbally and followed up in writing within one (1)

calendar day (excluding weekends and Department observed holidays). Responses provided by the Design-Build Firm may be expressed verbally and followed up in writing within one (1) working day. Once a response is received from the District Construction Engineer, the Construction Project Manager will respond to the Design-Build Firm in a timely manner but not to exceed three (3) calendar days (excluding weekends and Department observed holidays).

The Design-Build Firm shall provide a similar issue escalation process for their organization with personnel of similar levels of responsibility.

Should an impasse develop, the Dispute Review Board shall assist in the resolution of disputes and claims arising out of the work on the Contract.

VI. Design and Construction Criteria.

A. General:

All design and construction work completed under the Contract shall be in accordance with the United States Standard Measures.

B. Vibration and Settlement Monitoring:

The Department has identified vibration sensitive sites along the Project corridor. The Design-Build Firm shall be responsible for the identification of and coordination with vibration sensitive sites impacted by the Work for the duration of the construction period.

The Design-Build Firm is responsible for evaluating the need for, design of, and the provision of any necessary precautionary features to protect existing structures from damage, including, at a minimum, selecting construction methods and procedures that will prevent damage. The Design-Build Firm shall submit for Department acceptance a Settlement and Vibration Monitoring Plan (SVMP) as part of the 90% plans submittal and update the SVMP throughout the Construction Period. The Design-Build Firm is responsible for establishing maximum settlement and vibration thresholds equivalent to or lower than the Department Specification requirements for all construction activities, including vibratory compaction operations and excavations.

Submittals for Settlement and Vibration Monitoring Plan (SVMP) shall include the following as a minimum:

- Identify any existing structures that will be monitored for vibrations during the construction period.
- Establish the maximum vibration levels for the existing structures shall not be exceeded.
- Identify any existing structures that will be monitored for settlement during the construction period.
- Establish the maximum settlement levels for the existing structures that must not be exceeded.
- Identify any existing structures that require pre-construction and post-construction surveys.

The Department will perform the review of Vibration and Settlement submittals in accordance with Department Specifications.

C. Geotechnical Services:

Driven Pile Foundations for Bridges and Major Structures

The Design-Build Firm shall determine whether the resistance factors used for pile design will be based on static/statnamic load testing. Prepare a Technical Special Provision (TSP) for tests other than the Modified Quick Test, such as Bidirectional (Osterberg Cell) Load Test or Statnamic Load Test. For Bidirectional Load Tests use the same loading and unloading intervals, as well as the same loading times specified for the Modified Quick Test. Comply with the instrumentation requirements of 455-2.4. Before the resistance factors for static/statnamic load testing may be used for pile foundations in any of the following areas of the Project, a minimum number of successful load tests must be performed in representative locations of that area:

- Station 673+00 to Station 674+60 Eastbound (BL of Survey), (minimum 1test)
- Station 673+00 to Station 674+60 Westbound (BL of Survey), (minimum 1test)

Limits of these areas may be modified by the Design-Build Firm if the modifications are justified by additional subsurface information and concurred with by the Department. Furthermore, resistance factors for static/statnamic load testing may only be used for production piles which have the same tip elevations in the same material as the representative static/statnamic load test pile. Deviations in tip elevations or bearing material will require additional static/statnamic testing if the static/statnamic load test resistance factors will be used.

There shall be at least one test pile in every pier/bent. Production piles for a pier/bent shall not be cast or driven until the test pile in that pier/bent has been successfully driven and has achieved the required NBR.

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions concerning the use of Driven Piling.
2. Conducting additional subsurface investigation (if believed needed).
3. Selection of pile type and size.
4. Selection of test pile lengths, locations and quantity of test piles.
5. Selection of pile testing methods.
6. Determining the frequency of such testing unless otherwise stated herein.
7. Performance of the selected test pile program, including dynamic load test personnel and equipment. The Department may observe the installation of test piles and all pile testing.
8. Preparing and submitting a Pile Installation Plan for the Department's acceptance.
9. Selection of production pile lengths.
10. Development of the driving criteria.
11. Driving piles to the required capacity and minimum penetration depth.
12. Inspecting and Recording the pile driving information.
13. Submitting Foundation Certification Packages.
14. Providing safe access, and cooperating with the Department in verification of the piles, both during construction and after submittal of the certification package.

Drilled Shaft Foundations for Bridges and Miscellaneous Structures

The Design-Build Firm shall determine whether the resistance factors used for drilled shaft design will be based on static/statnamic load testing. Prepare a Technical Special Provision (TSP) for tests other than the Modified Quick Test, such as Bidirectional (Osterberg Cell) Load Test or Statnamic Load Test. For Bidirectional Load Tests use the same loading and unloading intervals, as well as the same loading times specified for the Modified Quick Test. Comply with the instrumentation requirements of 455-2.4. Before the resistance factors for static/statnamic load testing may be used for drilled shafts in any of the following areas of the Project, a minimum number of successful load tests must be performed in representative locations of that area:

- Station 672+80to Station 674+20Eastbound (BL of Survey), (minimum 1test)
- Station 672+80 to Station 674+20 Westbound (BL of Survey), (minimum 1test)

Limits of these areas may be modified by the Design-Build Firm if the modifications are justified by additional subsurface information and concurred with by the Department. Furthermore, resistance factors for static/statnamic load testing may only be used for production piles/shafts which have the same tip elevations in the same material as the representative static/statnamic load test pile/shaft. Deviations in tip elevations or bearing material will require additional static/statnamic testing if the static/statnamic load test resistance factors will be used.

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions to determine the drilled shaft diameter and length and construction methods to be used.
2. Conducting additional subsurface investigation (if believed needed).
3. Performing the subsurface investigation and drilling pilot holes prior to establishing the drilled shaft tip elevations and socket requirements. For redundant drilled shaft bridge foundations, perform at least one test boring in accordance with the Soils and Foundations Handbook at each bent/pier.
4. Determining the locations of the load test shafts and the types of tests that will be performed.
5. Performing pilot borings for test holes (also known as test shafts or method shafts) and load test shafts and providing the results to the Department at least one (1) working day before beginning construction of these shafts.
6. Preparing and submitting a Drilled Shaft Installation Plan for the Department's acceptance.
7. Constructing the method shaft (test hole) and load test shafts successfully and conducting thermal integrity tests on these shafts.
8. Providing all personnel and equipment to perform a load test program on the load test shafts.
9. Determining the production shaft lengths.
10. Documenting and providing a report that includes all load test shaft data, analysis, and recommendations to the Department.
11. Constructing all drilled shafts to the required tip elevation and socket requirement in accordance with the specifications.
12. Inspecting and documenting the construction of all drilled shafts in accordance with the specifications.
13. Performing Cross-Hole Sonic Logging (CSL) or Thermal Integrity tests on all nonredundant drilled shafts supporting bridges. For redundant drilled shaft bridge foundations and drilled shafts for miscellaneous structures, perform CSL or Thermal Integrity testing on any shaft suspected of containing defects.

14. Repairing all detected defects and conducting post repair integrity testing using 3D tomographic imaging and gamma-gamma density logging.
15. Submitting Foundation Certification Packages in accordance with the specifications.
16. Providing safe access, and cooperating with the Department in verification of the drilled shafts, both during construction and after submittal of the certification package.

Spread Footings Foundations

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions and conducting additional subsurface investigations if needed for the design the spread footing.
2. Evaluating geotechnical conditions and designing the spread footing.
3. Constructing the spread footing to the required footing elevation, at the required soil or rock material, and at the required compaction levels, in accordance with the specifications.
4. Inspecting and documenting the spread footing construction.
5. Submitting Foundation Certification Packages in accordance with the specifications.
6. Providing safe access, and cooperating with the Department in verification of the spread footing, both during construction and after submittal of the certification package.

Auger Cast Piles for Sound Barrier Walls

The Design-Build Firm shall be responsible for the following:

1. Evaluating geotechnical conditions and conducting additional subsurface investigations, if needed.
2. Design the foundations, including diameter and lengths..
3. Constructing all auger cast piles to the required tip elevation and socket requirements, in accordance with the specifications.
4. Preparing and submitting an Auger Cast Pile Installation Plan for the Department's acceptance.
5. Inspecting and documenting the auger cast pile installation.
6. Submitting Foundation Certification Packages in accordance with the specifications.
7. Providing safe access, and cooperating with the Department in verification of the auger cast piles, both during construction and after submittal of the certification package.

Specialty Geotechnical Services Requirements

Specialty geotechnical work is any alternative geotechnical work not covered by Department Specifications and requires the development of a Technical Special Provision (TSP). Any TSP for geotechnical work shall include the following:

- Criteria of measurable parameters to be met in order to accept the specialty geotechnical work,
- A field testing and instrumentation program to verify design assumptions and performance,
- A quality control program to be performed by the Design-Build Firm that includes sampling and testing to ensure the material quality, products, and installation procedures meet , requirements,
- A verification testing program to be performed by the Geotechnical Foundation Design Engineer of Record (GFDEOR) that includes inspection, sampling, and testing to verify the material, products, and procedures meet requirements. The TSP shall include language providing separate lab samples to be used for the Department's independent verification.
- A certification process

After construction of the specialty geotechnical work, the Design-Build Firm shall submit a certification package for Department's review within 15 business days. The certification package shall include the results of all the field testing, instrumentation and lab testing performed and a signed and sealed letter by the GFDEOR certifying that the specialty geotechnical work meets the requirements. The Department may issue comments and require additional verification testing.

D. Utility Coordination:

The Design-Build Firm shall utilize a single dedicated person responsible for managing all utility coordination. This person shall be contractually referred to as the Utility Coordination Manager (UCM) and shall be identified in the Design-Build Firm's proposal. The Design-Build Firm shall notify the Department in writing of any change in the identity of the Utility Coordination Manager. The Utility Coordination Manager shall have the following knowledge, skills, and abilities:

1. A minimum of 4 years of experience performing utility coordination in accordance with Department standards, policies, and procedures.
2. Knowledge of the Department plans production process and utility coordination practices,
3. Knowledge of Department agreements, standards, policies, and procedures.
4. Ability to physically reach the project site within three (3) hours.

The Design-Build Firm's Utility Coordination Manager shall be responsible for managing all utility coordination, including, but not limited to, the following:

1. Ensuring that all utility coordination and activities are conducted in accordance with the requirements of the Contract Documents.
2. Identifying all existing utilities and coordinating any new installations.
3. Reviewing proposed utility permit application packages and recommending approval/disapproval of each permit application based on the compatibility of the permit as related to the Design-Build Firm's plans.
4. Scheduling and conducting utility meetings, preparing and distributing minutes of all utility meetings, and ensuring expedient follow-up on all unresolved issues. The utility meetings shall be monthly during the design phase, but once construction commences (any element of construction), the meetings shall be held biweekly. Meetings will be required to remain on biweekly status until all conflicts are resolved and utilities are fully relocated.
5. Distributing all plans, conflict matrices and changes to affected Utility Agency/Owners and making sure this information is properly coordinated.
6. Identifying, preparing, reviewing and facilitating any agreement required for any utility work needed through final approval and execution. The UCM shall also be responsible for monitoring and reporting the performance of all involved parties under said agreement.
7. Preparing, reviewing, approving, signing, and coordinating the implementation of and submitting to the Department for review, all Utility Agreements. Provide copies to the Department Area Utility Manager.
8. Resolving utility conflicts.

9. Obtaining and maintaining all appropriate "*Sunshine State One Call of Florida*" tickets.

10. Performing Constructability Reviews of plans prior to construction activities with regard to the installation, removal, temporary removal, de-energizing, deactivation, relocation, or adjustment of utilities.

11. Providing periodic Project updates to the Department Project Manager and District Utility Office as requested. Copy the Department Area Utility Manager on all correspondence regarding utilities.

12. Coordination with the Department on any issues that arise concerning reimbursement of utility work costs between the Department and the utility.

The following Utility Agency/Owners (UA/O's) have been identified by the Department as having facilities within the Project corridor for which the Department contemplates an adjustment, protection, or relocation is possible. Also provided below is a determination made by the Department as to the eligibility of reimbursement for each UA/O. The UA/O's will be responsible for any necessary relocations for the project except where a UA/O is specifically identified in this RFP for the Design-Build Firm to perform the design and construction of the UA/O's relocation. **The Design-Build Firm will be responsible for including in their Bid Price Proposal a bid for the City of Crestview water and sewer relocations as indicated below. The remainder of the required utility relocations will be paid via reimbursable agreements by the Department outside of the Design-Build contract.** The Design-Build Firm is responsible for all other utility coordination for the project.

Table A – Summary of Department Contemplated Adjustment, Protection, or Relocation

UA/O	Utility Relocation Type	Cost Estimate	Eligible for Reimbursement	Work to be Bid in this D/B contract
AT&T Corp. (Transmission)	No conflicts	N/A	N/A	No
AT&T Metro (Transmission)	UA/O performing utility work	$350,000	Yes	No
CenturyLink	UA/O performing utility work	$330,000	Yes	No
Crestview, City of (Water & Sewer)	**Design-Build Firm performing utility work**	**$867,150**	**Yes**	**Yes**
Cox Communications	UA/O performing utility work	$135,000	Yes	No
Gulf Power (Distribution)	UA/O performing utility work	$1,500,000	Yes	No

Okaloosa County Water & Sewer	UA/O performing utility work	$1,052,982	Yes	No
Okaloosa Gas District	UA/O performing utility work	$200,000	Yes	No
Verizon Business (MCI)	UA/O performing utility work	$110,000	Yes	No

Table B - Summary of UAO having facilities within the Proposed Project Limits

Company	Contact Person	Contact Number	Email Address
AT&T Corp. *(Transmission)*	Steve Hamer	(813) 888-8300 ext. 201	shamer@sdt-1.com
AT&T Metro *(Transmission)*	Joel McKinney	(770) 335-9816	jm2814@att.com
CenturyLink	Amber Gilson	(850) 815-3131	amber.gilson@centurylink.com
Crestview, City of (Water & Sewer)	Wayne Steele	(850) 682-6132 ext. 102	steele@cityofcrestview.org
Gulf Power Company *(Distribution)*	Chad Swails	(850) 429-2446	chad.swails@nexteraenergy.com
Okaloosa County Water & Sewer	Jon Kanak	(850) 609-5098	jkanak@myokaloosa.com
Okaloosa Gas District	Lars Sullivan	(850) 729-4870	larssullivan@okaloosagas.com
Verizon Business (MCI)	**Thom Broyles**	**Office – 850-475-7465 Cell – 850-375-1877**	**Thomas.broyles@verizon.com**
~~**Verizon Business *(MCI)***~~	~~**Chuck Brunick**~~	~~**(407) 257-6135**~~	~~**chuck.brunick@verizon.com**~~

The Design-Build Firm may request the utility to be relocated to accommodate changes from the conceptual plans; however, these relocations require the Department's approval and the Department will not pay the Utility Agency/Owner (UA/O) or the Design-Build Firm for the utility relocation work regardless of the UA/O's eligibility for reimbursement.

For a reimbursable utility relocation where the UA/O desires the work to be done by their contractor, the UA/O will perform the work in accordance with the utility work schedule and permit, and bill the Department directly.

DEVIATION FROM THE CONCEPTUAL UTILITY RELOCATION PLAN: If the Design-Build Firm chooses to deviate from the conceptual plans and the scope of the impact to a utility depicted in the Reference Document section of the RFP, and thereby causes a greater impact to a utility, the Design-Build Firm shall be solely responsible for all increased costs incurred by the utility owner associated with the increase in the scope of the impact to a utility from that depicted in the conceptual plans. The Design-Build Firm shall obtain an agreement from the utility owner being impacted which outlines the changes to the scope of the impact to a utility from that depicted in the conceptual plans. The agreement shall also address the Design-Build Firm's obligation to compensate the utility owner for the additional costs above the costs

which would have been incurred without the Design Build Firm's increase in the scope of the impact to a utility from that depicted in the conceptual plans. The Design-Build Firm shall also provide a draft utility permit application acceptable to the Department for the placement of the utility owner's facilities based on the final design. The Department shall not compensate or reimburse the Design-Build Firm for any cost created by a change in scope of the impact to a utility from that depicted in the conceptual plans, or be liable for any time delays caused by a change in scope of the impact to a utility from that depicted in the conceptual plans.

The Design-Build Firm shall forward the relocation agreements, plans, work schedules and permit application to the Department for review by the District Utility Office (DUO) and the Department's Project Manager. The DUO and Department's Project Manager will review the documents. Once reviewed, the utility permit application will be forwarded to the District Maintenance office for the permit to be signed and recorded or submitted through the One Stop Permitting (OSP) system.

E. Roadway Plans:

General:

The Design-Build Firm shall prepare the Roadway Plans Package. This work effort includes the roadway design and drainage analysis needed to prepare a complete set of Roadway Plans, Temporary Traffic Control Plans, Environmental Permits and other necessary documents.

Design Analysis:

The Design-Build Firm shall either utilize the signed and sealed Approved Typical Section Package (see Attachments) and comply with the same, or via the ATC process, develop and submit a different signed and sealed Typical Section Package for review and concurrence by the Department. The Design-Build Firm shall develop and submit a signed and sealed Pavement Design Package (if changed from the minimum pavement design in the RFP) and project design documentation for review and concurrence by the Department.

Any deviation from the Department's design criteria will require a Design Variation and any deviation from AASHTO will require a Design Exception. All such Design Variations and Design Exceptions must be approved.

These packages shall include the following:

F. Roadway Design:

See FDM Part 3; Chapter 301 for Roadway Design sheets, elements and completion level required for each submittal.

1. **Typical Section Package:**

- Transmittal letter
- Location Map
- Roadway Typical Section(s)
    1. Pavement Description (Includes milling depth)
    2. Minimum lane, shoulder, median widths
    3. Slopes requirements
    4. Barriers

5. Right-of-Way

- Data Sheet
- Design Speed

2. **Pavement Design Package:**

The recommended pavement design attached to this document is the minimum required pavement design for the contract. The pavement designs detailed in the conceptual plans may NOT be accurate and are overruled by the recommended pavement designs included in this RFP. If alternate pavement designs are proposed, the following submittal requirements should be provided to the Department for review.

- Pavement Design
  1. Minimum design period
  2. Minimum ESAL's
  3. Minimum design reliability factors
     Resilient modulus for existing and proposed widening (show assumptions)
  4. Roadbed resilient modulus
  5. Minimum structural asphalt thickness
  6. Cross slope
  7. Identify the need for modified binder
  8. Pavement coring and evaluation
  9. Identify if ARMI layer is required
  10. Minimum milling depth

Use of the Mechanistic-Empirical Pavement Design Guide (MEPDG) for pavement design shall not be allowed.

3. **Drainage Analysis:**

The Design-Build Firm shall be responsible for designing the drainage and stormwater management systems. All design work shall be in compliance with the Department's Drainage Manual; Florida Administrative Code, chapter 14-86; Federal Aid Policy Guide 23 CFR 650A; and the requirements of the regulatory agencies. This work will include the engineering analysis necessary to design any or all of the following: cross drains, French drains, underdrains, edge drains, roadway ditches, outfall ditches, storm sewers, retention/detention facilities, interchange drainage and water management, other drainage systems, temporary drainage design for all MOT phases and elements of systems as required for a complete analysis. Full coordination with all permitting agencies, the District Environmental Management Office and Drainage Design Engineer will be required from the outset. Full documentation of all meetings and decisions are to be submitted to the District Drainage Design Engineer, District Environmental Permits Coordinator and Department's Project Manager. These activities and submittals shall be coordinated through the Department's Project Manager.

The exact number of drainage basins, outfalls and water management facilities (retention/detention areas, weirs, etc.) will be the Design-Build Firm's responsibility. ~~**The Department has developed preliminary pond designs as depicted in the conceptual plans.**~~ **The Department has developed preliminary pond designs as follows and depicted in the conceptual plans:**

There are five (5) ponds associated with the proposed roadway improvements. Three (3)

ponds are anticipated to be constructed/modified by the Design-Build Firm as follows:

***Pond 1* – Construct a new pond North of I-10**

***Pond 2* - Construct a new pond at the Antioch Road/PJ Adams Parkway Intersection**

***Pond 3* - Modify the existing pond at the Taylor Farms/PJ Adams Parkway**

The remaining two ponds are anticipated to be constructed by others as follows:

***Pond 4* - An existing pond located at the Addison Place apartments is anticipated to need modification to accommodate the roadway improvements. The property owner will be responsible for designing, permitting and constructing the pond modifications. No stormwater from the roadway will be directed to this pond as this is private property pond.**

***Pond 5* – This pond is located at the intersection of PJ Adams Parkway and Old Antioch Road. This pond is being constructed by Okaloosa County as part of the PJ Adams Parkway improvements to the east.**

The Design-Build Firm shall complete the design and permitting for any required pond locations**, modify any permit that may be necessary that the Department started the permitting process on** and **ultimately obtain all permits** for the full project. The objective is to obtain approved stormwater treatment/attenuation design. The drainage design shall ensure that no adverse impacts occur to adjacent properties as a result of the design. The drainage design detailed in the conceptual plans may be modified by the Design-Build Firm as necessary for the project.

The assumed velocity method will NOT be allowed for crossdrain analysis.

Perform design and generate construction plans documenting that the permitted systems function to criteria.

The Design-Build Firm will consider optional culvert materials in accordance with the Department's Drainage Manual Criteria.

Prior to proceeding with the Drainage Design, the Design-Build Firm shall meet with the District Drainage Engineer and District Environmental Permits Coordinator. The purpose of this meeting is to provide information to the Design-Build Firm that will better coordinate the Preliminary and Final Drainage Design efforts. This meeting is Mandatory and is to occur fifteen (15) calendar days (excluding weekends and Department observed holidays) prior to any submittals containing drainage components.

The Design-Build Firm shall provide the Department's District Drainage Engineer a signed and sealed Drainage Design Report. It shall be an As-Built Plan of all drainage computations, both hydrologic and hydraulic. The engineer shall include all necessary support data.

G. Geometric Design:

The Design-Build Firm shall prepare the geometric design for the Project using the Standard Plans and criteria that are most appropriate with proper consideration given to the design traffic volumes, adjacent land use, design consistency, aesthetics, ADA requirements, and this document.

The design elements shall include, but not be limited to, the horizontal and vertical alignments, lane widths, shoulder widths, median widths, cross slopes, borders, sight distance, side slopes, front slopes and ditches. The geometric design developed by the Design-Build Firm shall be an engineering solution that is not merely an adherence to the minimum AASHTO and/or Department standards.

H. Design Documentation, Calculations, and Computations:

The Design-Build Firm shall submit to the Department design documentation, notes, calculations, and computations to document the design conclusions reached during the development of the construction plans.

The design notes and computation sheets shall be fully titled, numbered, dated, indexed, and signed by the designer and the checker. Computer output forms and other oversized sheets shall be folded to a standard size 8½" x 11". At the Project completion, a final set of design notes and computations, signed by the Design-Build Firm, shall be submitted with the As-Built Plans and tracings.

The design documentation, notes, calculations and computations shall include, but not be limited to the following data:

1. Standards Plans and criteria used for the Project
2. Geometric design calculations for roadway alignments
3. Vertical geometry calculations
4. Documentation of decisions reached resulting from meetings, telephone conversations or site visits
5. Design Standards and criteria used for the Project
6. Power service voltage drop calculations to verify proper wire size for an electricalcircuit based on voltage drop and current carrying capacity is sufficient at all proposed new equipment locations.
7. CCTV citing survey video files and pictures.

Prior to final acceptance, furnish the District with two copies of the following documentary items obtained from the manufacturer for all of the electronic equipment:

1. Operation Manual
2. Troubleshooting and Service Manual
3. Assembly and installation instructions
4. Pictorial layout of components and schematics for circuit boards
5. Parts list
6. Diagram of the field installation wiring
7. Warranty information

I. Structure Plans:

1. **Bridge Design Analysis:**

   a. The Design-Build Firm shall submit to the Department final signed and sealed design documentation prepared during the development of the plans.

   b. The Design-Build Firm shall insure that the final geotechnical recommendations and reports required for structures design are submitted with the 90% plans.

   c. The Design-Build Firm shall "Load Rate" all bridges in accordance with the Department Procedure 850-010-035 and the Structures Manual. The Bridge Load Rating Calculations, the Completed Bridge Load Rating Summary Detail Sheet, and the Load Rating Summary Form shall be

submitted to the Department for review with the 90% superstructure submittal. The final Bridge Load Rating Summary Sheet and Load Rating Summary Form shall be submitted to the Department for review with the Final superstructure submittal. A final, signed and sealed Bridge Load Rating, updated for as-built conditions, shall be submitted to the Department for each phase of the bridge construction prior to placing traffic on the completed phase of the bridge. A final, signed and sealed Bridge Load Rating, updated for the as-built conditions as part of the As-Built Plans submittal shall be submitted to the Department before any traffic is placed on the bridge. The Bridge Load Rating shall be signed and sealed by a Professional Engineer licensed in the State of Florida.

d. The Design-Build Firm shall evaluate scour on all bridges over water using the procedures described in HEC 18.

e. The Engineer of Record for bridges shall analyze the effects of the construction related loads on the permanent structure. These effects include but are not limited to: construction equipment loads, change in segment length, change in construction sequence, etc. The Engineer of Record shall review all specialty engineer submittals (camber curves, falsework systems, etc.) to ensure compliance with the contract plan requirements and intent.

2. **Criteria**

The Design-Build Firm shall incorporate the following into the design of this facility:

a. All plans and designs are to be prepared in accordance with the Governing Regulations of Section V. A.

b. Critical Temporary Retaining Walls: Whenever the construction of a component requires excavation that may endanger the public or an existing structure that is in use the Design-Build Firm must protect the existing facility and the public. If a critical temporary retaining wall is, therefore, required during the construction stage only, it may be removed and reused after completion of the work. Such systems as steel sheet pilings, soldier beams and lagging or other similar systems are commonly used. In such cases, the Design-Build Firm is responsible for designing and detailing the wall in the set of contract plans. These plans must be signed and sealed by the Structural Engineer in responsible charge of the wall design.

c. Wall height shall not exceed a maximum of 40’.

d. Pier Design: Bridge piers shall be evaluated and designed for vehicle collision, if applicable.

e. Footing Design: Pier Foundation Caps shall be placed at an elevation to allow clearance for future crash walls.

f. Structure Numbers: Identification numbers have not been obtained. Design-Build Firm shall apply for bridge, sign, mast arm and high mast lighting identification numbers as appropriate.

Sound wall surface finish requirements:

The Design-Build Firm shall seal the surfaces of the concrete noise walls using an opaque Silicone Acrylic Sealer shall include appropriate surface preparation and application of two coats of the sealer for exterior concrete surfaces. The Design-Build Firm shall develop a TSP subject to Department approval for the sealer to be utilized. The Design-Build Firm shall also provide to the Department during the design phase the specific proposed sealer product to be utilized and the plan for utilizing staff qualified for completing the sealer application. Prefinished items should not be coated. The proposed TSP shall include similar information as detailed below:

- Source Limitations
- Certificates of Compliance
- Material List
- Manufacturer's Information
- Approval of Materials
- Pollution Control Plan
- Delivery and Storage

The Design-Build Firm shall provide a written plan outlining the surface preparation and application of the sealer and include the following:

- **Examination of Surfaces.** Before starting any Work, surfaces to receive sealer finish shall be examined carefully for defects which cannot be corrected by the procedures specified below under "Surface Preparation" and which might prevent satisfactory sealing results. Should such conditions be encountered, the Engineer shall be notified immediately so that the extent of the problem and a solution can be identified. Commencing of work shall be construed as acceptance of the surfaces, and thereafter, the Contractor shall be fully responsible for satisfactory work as required herein.
- **Field Area "Sample".** Provide a full two (2) coat "sample" at the Field Sample Area using type of sealer proposed for use on this Project.

  For a noise wall structure including a minimum of one (1) post, and a minimum of one (1) full wall panel (from ground to top of structure) to represent surfaces and conditions for sealer and substrate to be sealed.

  Final approval of sealer system and color will be from Field Sample Area.
- **Protection.** Protect from surface preparation operations and contamination by sealing materials all surfaces not to be sealed. Restore surfaces which are contaminated by sealing materials to their original condition.
- **Surface Preparation.** All surfaces shall be clean, dry and free of grease, oil, paint, sealers, coatings, etc. Concrete surfaces shall be hydro-silica blasted at the direction of the Engineer as follows:
    1. Hydro-silica blasting shall be capable of pressures in excess of 2500 psi in order to effectively remove all existing applied finishes, sealers, curing compounds, and other surface residues. Dry sandblasting shall not be employed without express written approval of the Engineer.
    2. Prior to blasting, use a manufacturer recommended de-greasing agent if required, following label directions, rinse thoroughly and allow the surface to dry. If mold mildew or fungus are present, kill and remove by cleaning with a solution.
    3. If concrete surface feels like 120-grit sandpaper, the pores are open enough for the sealer to properly bond. If concrete does not have this texture, etch surface with a manufacturer recommended concrete etching solution following label instructions.

4. Prepared concrete shall have a pH between 7 and 10. If a high pH reading (11-13) is detected, neutralize the surface by acid etching the surface with a manufacturer recommended concrete etching solutions, following label instructions. If after the process the surface pH is high, then notify the Engineer before proceeding with the Work.

- **Environmental Conditions.** Do not apply sealer in foggy or rainy weather or when the temperature of the air at the surface is below 50 degrees F or over 95 degrees F, unless approved by the Engineer. Under no circumstances shall any sealer be applied when the dew point and the temperature are within three (3) degrees C of each other or otherwise when surfaces are wet or contaminated in any way.
- **Inspection.** Contractor shall arrange to have sealer manufacturer's representative inspect and approve prepared (unsealed) surface and, prior to commencement of application, each succeeding coat.
- **Cleanup.** Clean spills and spatters and tools immediately with a manufacturer recommended solvent, Xylene, or Toluene. Follow manufacturer's instructions and safety recommendations when using any solvent.

J. Specifications:

Department Specifications may not be modified or revised. Technical Special Provisions shall be written only for items not addressed by Department Specifications and shall not be used as a means of changing Department Specifications.

The Design-Build Firm shall prepare and submit a signed and sealed Construction Specifications Package for the Project, containing all applicable Division II and III Special Provisions and Supplemental Specifications from the Specifications Workbook in effect at the time the Bid Price Proposals were due in the District Office, along with any approved Developmental Specifications and Technical Special Provisions, that are not part of this RFP. Any subsequent modifications to the Construction Specifications Package shall be prepared, signed and sealed as a Supplemental Specifications Package. The Specifications Package(s) shall be prepared, signed and sealed by the Design-Build Firms Engineer of Record who has successfully completed the mandatory Specifications Package Preparations Training.

The website for completing the training is at the following URL address:

http://www2.dot.state.fl.us/programmanagement/PackagePreparation/TrainingConsultants.aspx

Specification Workbooks are posted on the Department's website at the following URL address:

https://fdotewp1.dot.state.fl.us/SpecificationsPackage/Utilities/Membership/login.aspx?ReturnUrl=%2fSpecificationsPackage%2fdefault.aspx

Upon review and approval by the Department, the Construction Specifications Package will be stamped "Released for Construction" and initialed and dated by the Department.

K. Shop Drawings:

The Design-Build Firm shall be responsible for the preparation and approval of Shop Drawings. Shop Drawings shall be in conformance with the FDM. Shop Drawing submittals must be accompanied by sufficient information for adjoining components or areas of work to allow for proper evaluation of the Shop Drawing(s) submitted for review. When required to be submitted to the Department, Shop Drawings shall

bear the stamp and signature of the Design-Build Firm's Engineer of Record (EOR), and Specialty Engineer, as appropriate. All "Approved" and "Approved as Noted" Shop Drawings submitted to the Department for review shall also include Engineer of Record QA/QC Shop Drawing check prints along with the EOR stamped set(s). The Department shall review the Shop Drawing(s) to evaluate compliance with Project requirements and provide any findings to the Design-Build Firm. The Department's procedural review of Shop Drawings is to assure that the Design-Build Firm's EOR has approved and signed the drawing, the drawing has been independently reviewed and is in general conformance with the plans. The Department's review is not meant to be a complete and detailed review. Upon review of the Shop Drawing, the Department will initial, date, and stamp the drawing "Released for Construction" or "Released for Construction as Noted".

L. Sequence of Construction:

The Design-Build Firm shall construct the work in a logical manner and with the following objectives as guides:

1. Maintain or improve, to the maximum extent possible, the quality of existing traffic operations, both in terms of flow rate and safety, throughout the duration of the Project.
2. Minimize the number of different Temporary Traffic Control Plan (TTCP) phases, i.e., number of different diversions and detours for a given traffic movement.
3. Take advantage of newly constructed portions of the permanent facility as soon as possible when it is in the best interest of traffic operations and construction activity.
4. Maintain reasonable direct access to adjacent properties at all times, with the exception in areas of limited access Right-of-Way where direct access is not permitted.
5. Coordinate with adjacent construction Projects and maintaining agencies.

M. Stormwater Pollution Prevention Plans (SWPPP):

The Design-Build Firm shall prepare a Storm Water Pollution Prevention Plan (SWPPP) as required by the National Pollution Discharge Elimination System (NPDES). The Design-Build Firm shall refer to the Department's Project Development and Environment Manual and Florida Department of Environmental Protection (FDEP) Rule 62-621.300(4)(a) for information in regard to the SWPPP. The SWPPP and the Design-Build Firm's Certification (FDEP Form 62-621.300(4)(b) **NOTICE OF INTENT (NOI) TO USE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES)** shall be submitted for Department review and approval. Department approval must be obtained prior to beginning construction activities.

N. Transportation Management Plan:

The Design-Build Firm must develop a Transportation Management Plan in accordance with the Department's FDOT Design Manual.

1. Traffic Control Restrictions:

There will be NO LANE CLOSURES on SR 8 (I-10) between the hours of 6:00 AM to 8:00 PM Monday through Thursday and from 6:00 AM Friday to 8:00 PM Sunday. No lane closure will be allowed on PJ Adams Parkway between 8:00 AM and 6:00 PM Monday through Friday All lane closures, including ramp closures, must be reported to the local emergency agencies, the media and the District Three Public Information Office. Also, the Design-Build Firm shall develop the Project to be able to provide for all lanes of traffic to be open in the event of an emergency.

No special events have been identified for this project.

O. Environmental Services/Permits/Mitigation:

The Design-Build Firm will be responsible for preparing designs and proposing construction methods that are permittable. The Design-Build Firm will be responsible for any required permit fees. All permits required for a particular construction activity will be acquired prior to commencing the particular construction activity. Delays due to incomplete or erroneous permit application packages, agency rejection, agency denials, agency processing time, or any permit violations, except as provided herein, will be the responsibility of the Design-Build Firm, and will not be considered sufficient reason for a time extension or additional compensation.

As the permittee, the Department is responsible for reviewing, approving, and signing the permit application package including all permit modifications, or subsequent permit applications.

The Department has conducted an investigation of the Project site and determined that potential gopher tortoise habitats could be impacted by the Project. All coordination by the Design-Build Firm with the Department regarding gopher tortoises will be completed through the District Environmental Management Office. The Department has determined that suitable gopher tortoise habitat exists in the project area and the Design-Build Firm shall be responsible for conducting the gopher tortoise burrow survey for the purpose of identifying potential gopher tortoise habitats that could be impacted by the Project including any areas to be used for construction staging. The habitat will be systematically surveyed according to the current Gopher Tortoise Permitting guidelines published by the Florida Fish and Wildlife Conservation Commission (FWC). The Department must verify the completeness and accuracy of the assessment prior to commencement of any permitting or construction activities. Any areas where the Design-Build Firm proposes to protect burrows to remain on-site with "exclusionary fencing" shall be reviewed and approved by the Department. The Design-Build Firm shall submit an "exclusionary fencing" plan for review prior to any "exclusionary fencing" installation. If there are unavoidable impacts to gopher tortoise burrows, the Design-Build Firm shall be responsible for preparing required documentation for the Department to obtain a FWC permit for the relocation of gopher tortoises and commensals from burrows which cannot be avoided. Preparation of complete permit packages will be the responsibility of the Design-Build Firm. As the "permittee", the Department is responsible for reviewing and approving the permit application package including all permit modifications, or subsequent permit applications. This applies whether the project is Federal or state funded. Once the Department has approved the permit application, the Design-Build Firm is responsible for submitting the permit application to FWC. A copy of the permit and any subsequent reports to FWC must be provided to the District Environmental Management Office. If FWC rejects or denies the permit application, it is the Design-Build Firm's responsibility to make whatever changes necessary to ensure the permit application is approved. Once the permit is obtained, the Design-Build Firm shall notify the Department at least one week prior to the relocation of gopher tortoises. If gopher tortoise relocations are phased throughout the construction, the Design-Build Firm shall notify the Department at least one week prior to each relocation phase. The Department will provide oversight of the relocations and ensure permit compliance. The Design-Build Firm shall be responsible for any necessary permit extensions or re-permitting in order to keep the relocation permit valid throughout the construction period. The Design-Build Firm shall provide the Department with draft copies of requests to modify the permits and/or requests for permit extensions, for review and approval by the Department prior to submittal to the Agencies. The Design-Build Firm shall provide the appropriate reports as required by the permit conditions, including closing out the permit. The Design-Build Firm shall note that permits for gopher tortoise relocation for areas outside of the Department owned Right of Way (i.e. utility easements; license agreements) cannot be obtained with the Department as the "permittee", per FWC requirements. Should permits in areas outside of the Right of Way be required, the Department will still perform the oversight of

the process as described above. The Design-Build Firm will be required to pay all permit fees including any and all fees associated with the relocation of gopher tortoises. Any fines levied by permitting agencies shall be the responsibility of the Design-Build Firm.

The following Project specific Environmental Commitments have been identified as specific requirements for this project:

1. **Gopher Tortoise** – the gopher tortoise requirements previously listed above shall apply for this contract.
2. **Bald Eagle** - The FDOT will re-survey for bald eagle nests within one (1) year of construction. If a nest is found within 660 feet of the project, the FDOT Environmental Office will coordinate with USFWS regarding additional avoidance measures and possible additional commitments.
3. **Florida Black Bear** - Due to the presence of Black Bears in the area, the construction contractor will be required to have bear-proof garbage containers on site or be required to remove garbage and food debris from the project daily.
4. **Eastern Indigo Snake** - The Design-Build Firm shall implement the Standard Protection Measures for the Eastern Indigo Snake during construction.
5. **Noise Abatement** - The FDOT is committed to the construction of feasible and reasonable noise abatement measures at the noise-impacted locations as identified in the 2020 Final Noise Study Report Addendum. Noise walls shall be installed in accordance with the requirements of this RFP and the 2020 Noise Study Report Addendum.

P. Signing and Pavement Marking Plans:

The Design-Build Firm shall prepare signing and pavement marking plans in accordance with Department criteria. Final pavement markings shall be thermoplastic.

A Conceptual Signing Plan has been provided by the Department identifying sign locations and messages within the Project limits. No structural analysis was performed for the Conceptual Signing Plan.

The Design-Build Firm shall be responsible for the design of all new or retrofit sign supports (post, overhead span, overhead cantilever, bridge mount and any applicable foundations). The Design-Build Firm shall show all details (anchor bolt size, bolt circle, bolt length, etc.) as well as all design assumptions (wind loads, support reactions, etc.) used in the analysis.

All existing signs shall be removed and new signs designed and installed within the project limits.

It shall be the Design-Build Firm's responsibility to field inventory and show all existing signs within the Project limits and address all signage within the Project limits.

Q. Lighting Plans:

~~**The Design-Build Firm shall provide a Light Emitting Diode (LED) lighting design and a lighting analysis and prepare lighting plans in accordance with Department criteria. The Design-Build Firm shall be responsible for the design, furnish/install and testing of all lighting for the roadway, including roadway bridges, within the limits of construction. The Design-Build Firm shall design, furnish, install and test LED high-mast lighting for SR 8 (I-10), the I-10 interchange, I-10 ramps to PJ Adams Parkway and conventional LED lighting along PJ Adams Parkway and Antioch Road within the limits of the project. The Design-Build Firm shall design, furnish, install and test LED underdeck lighting for the new bridge over SR 8 (I-10) and the existing Antioch Road bridge as per standards**~~

~~to illuminate the I-10 roadway. All the lighting elements provided shall meet or exceed the requirements of all current codes and all applicable standards and criteria. At minimum, the Design-Build Firm shall provide 11 high-mast poles with minimum four luminaires per pole with more than 74,375 lumens per fixture and a minimum of 120' mounting height for I-10, and I-10 interchange, I-10 ramps to PJ Adams Parkway. At minimum, the Design-Build Firm shall provide 12 underdeck LED luminaires with more than 9,275 Lumens on the piers at each bridge over I-10. Provide a separate load center(s) for the I-10 high mast lighting system and a separate load center(s) for underdeck LED lighting. Provide a separate load center(s) for each maintaining agency for the conventional lighting system on PJ Adams Parkway and Antioch Road.~~

The Design-Build Firm shall provide a Light-Emitting Diode (LED) lighting design and lighting analysis and prepare lighting plans in accordance with Department criteria. The Design-Build Firm shall be responsible for the design, furnish, install and testing of all LED high-mast lighting for the roadway, including roadway bridges, within the limits of construction on the SR 8 (I-10) mainline, SR 8 (I-10) ramps to PJ Adams Parkway. The Design-Build Firm shall design, furnish, install and test LED underdeck lighting for the new bridge over SR 8 (I-10) and the existing Antioch Road bridge to illuminate the I-10 roadway. The Design-Build Firm shall coordinate with Gulf Power Company and provide the Department approved conventional LED lighting design and lighting analysis and prepare lighting plans in accordance with Department criteria for PJ Adams Parkway from PJ Adams Parkway and Antioch Road intersection to the end of the Department right of way north of SR 8 (I-10) ramp intersection (Ramps D & B) (including but not limited to PJ Adams Parkway and Antioch Road intersection, south of SR 8 (I-10) ramp intersection (Ramps A & C) until the PJ Adams Parkway and Antioch Road intersection, SR 8 (I-10) ramp intersections (Ramps A & C and Ramps D & B), between two (2) SR 8 (I-10) ramp intersections (Ramps A & C and Ramps D & B), and north of SR 8 (I-10) ramp intersection (Ramps D & B) until the end of the Department right of way)) and lighting design shall use Gulf Power utility poles to mount LED lighting. The Design-Build Firm shall develop and submit lighting design plans and lighting analysis report of the lighting project limit for Antioch Road from the roundabout (including the roundabout) to Antioch Road and PJ Adams intersection and lighting design shall use Gulf Power utility poles to mount LED lighting. The Design-Build Firm shall submit the lighting design to the Gulf Power Company for review and approval along with 90% phase submittal and Final submittal. The Design-Build Firm shall coordinate and facilitate Gulf Power Company to install and test the conventional LED lighting along Antioch Road and PJ Adams Parkway during and along with other construction activities of the project. The Design-Build Firm shall provide Maintenance of Traffic (MOT) for the Gulf Power Company to install and test the conventional LED lighting along Antioch Road and PJ Adams Parkway. All the lighting elements provided shall meet or exceed the requirements of all current codes and all applicable standards and criteria. At minimum, the Design-Build Firm shall provide 11 high-mast poles with minimum four luminaires per pole with more than 74,375 lumens per fixture and a minimum of 120' mounting height for I-10, and I-10 interchange, I-10 ramps to PJ Adams Parkway. At minimum, the Design-Build Firm shall provide 12 underdeck LED luminaires with more than 9,275 Lumens on the piers at each bridge over I-10. At minimum, design lighting to provide a separate load center(s) and power meter for each maintaining agency. At minimum, provide a separate load center(s) and power meter for: a) the I-10 high mast lighting system, b) for the underdeck LED lighting, and design for separate load center(s) and power meter for a) for the conventional LED lighting system on Antioch Road, b) for the conventional LED lighting system on PJ Adams Parkway south of Ramps (A & C) to Antioch Road intersection, c) for the conventional LED lighting system on PJ Adams Parkway north of Ramps (B & D) until end of the Department right of way, and d) for the conventional LED lighting on PJ Adams Parkway between Ramps (A & C) and Ramps (B & D) including the intersections.

The Design-Build Firm shall coordinate with the Department's Area Utility Manager and the project area power provider (Gulf Power) in order to maximize the use of the UAO's poles and service. The Design-Build Firm shall design the lighting and utilize the UAO (Gulf Power) for required Gulf Power lighting installations for the project. For new LED lighting installations to be performed by the Gulf Power use Gulf Power utility poles. The Gulf Power lighting installations will be compensated directly to Gulf Power by the Department through a separate agreement. The Design-Build Firm shall assist and facilitate coordination between Gulf Power and the Department for a separate agreement and compensation plan of lighting furnish and installation activities from Gulf Power. The Design-Build Firm shall coordinate with the Department in design and construction to insure all the project Department agreements are executed in time and not to cause any adverse effect on timely project delivery.

In the bid of the RFP, the Design-Build Firm shall include the design, furnish, install, and test cost of all lighting NOT being installed on Gulf Power poles and the cost of design of all lighting required as per this RFP.

The Design-Build Firm shall develop and submit a lighting design analysis report (LDAR) of entire lighting project limit to the Department for review and approval. **The Design-Build Firm shall develop and submit a lighting design analysis report (LDAR) of the lighting project limit of Antioch Road and PJ Adams Parkway to the Gulf Power Company for review and approval.** The LDAR shall be based on FDOT guidelines and current lighting design criteria listed in the FDM. The LDAR shall include typical sections photometric calculations to establish the proper spacing and show compliance of the Veiling Ratio criteria as established in the FDM. Each lighting calculation zone shall be properly identified with the area that it covers. With the results of the typical sections photometric calculations, prepare point to point photometric calculations modeling the actual roadway layout, including all the lighting poles required to meet the lighting criteria established in the FDM for the entire corridor. The LDAR shall be submitted under a separate cover and approved **by the Department** prior to the 90% submittal. **The LDAR shall be submitted under a separate cover and approved by the Gulf Power Company prior to the 90% submittal.** After approval of the preliminary report, the Design-Build Firm shall submit a revised report including a detailed lighting design analysis for each submittal.

A preliminary LDAR has been provided by the Department as a Reference Document identifying preliminary lighting locations within the Project limits. No electrical analysis was performed for the preliminary LDAR. The report does not cover entire lighting project limits.

All lighting within the project limits shall be LED lighting. New light poles, luminaire arms, and luminaires shall be provided for all new and reconstruction areas for this Project. After permanent lighting is installed, active, and operational, all permanent lighting shall be consistent and lighting levels shall be maintained at all times during construction.

The Design-Build Firm shall develop and submit for approval from the Department and lighting maintaining agency, a Load Center/Circuit/Pole Number identification plan that is compatible with the existing lighting systems maintenance identification scheme.

Where existing roadway lighting circuit sources (services, load centers, etc.) are being removed, the Design-Build Firm shall either:

1. Provide a new load center per current codes and all applicable standards and criteria.
2. Identify an existing load center capable of feeding the existing and proposed lighting while meeting all current codes and all applicable standards and criteria.

All modified load centers shall comply with all applicable criteria and shall be in like new condition.

Existing light poles, luminaire arms, luminaires, and load centers identified for removal shall be coordinated with the Department and the Maintaining Agency as to whether these features or part of these features will become the property of Design-Build Firm or salvaged, transported, and delivered to the Maintaining Agency for future use. The Design-Build Firm shall coordinate with each and all maintaining agencies in the project limit.

The Design-Build Firm shall perform detailed field reviews. Review and document all lighting (poles/luminaires, sign luminaires, etc.), circuiting, load centers, service points, utility transformers, etc., within the limits of lighting construction. This review includes, **but is not limited to**: conductors, conduit, grounding, enclosures, voltages, mounting heights, pullboxes, etc. This review also includes circuits outside the limits of lighting construction that originate **and ~~or~~** touch this Project's scope of work.

All deficiencies within the limits of lighting construction shall be identified and corrected. Any deficiencies outside the limits of lighting construction shall be brought to the attention of the Department.

After the field reviews are completed, a list of all damaged and/or non-functioning equipment shall be documented and forwarded to the Department prior to the start of construction. All damaged and/or non-functioning equipment within the limits of lighting construction are required to be replaced or repaired to meet all applicable criteria and shall be in like-new condition. At the end of construction and prior to acceptance by the Department, all roadway lighting elements and fixtures that were modified during construction outside of the project limits shall be functioning as intended.

Where new electrical services are required, the Design-Build Firm shall coordinate the final locations of distribution transformer and service poles to minimize service and branch circuit conductors and conduit lengths. Preliminary electrical service locations shall be coordinated with and provided by Gulf Power. Each service point shall be separately metered. Separate power service meter(s) to be provided for lighting infrastructure.

The Design-Build Firm shall comply with the requirements of each jurisdictional authority within the Project limits. Compliance with the jurisdictional authority includes but is not limited to: field reviews, technical meetings, special deliverable, etc. It is the Design-build Firm's responsibility to verify and comply with all jurisdictional authority's requirements.

All lighting fixtures shall include "bird spikes" or "bird deterrent devices" to avoid birds landing on the fixtures and therefore extend the useful life of the housing. The Design-Build Firm is required to provide a consistent lighting mounting height on Department poles throughout the Project limits.

The Design-Build Firm is responsible for submitting Roadway Lighting Design Documentation with each lighting plans submittal under a separate cover and not part of the roadway documentation. At a minimum, the design documentation shall include:

- Phase submittal checklist
- Structural calculations for special conventional pole concrete foundations
- Letter to the power company stating the total electrical load, and requesting service and the available fault current of transformers
- Power company confirmation letter on the requested services
- Voltage drop calculations

- Load analysis calculations
- Coordination emails, letters, and/or telephone conversation records with the Department, Cities, Counties, Power Companies, and their maintenance department.

The Design-Build Firm shall perform electrical analysis to determine the wire sizes and ensure each proposed circuit meets the required voltage drop per FDM and meeting or exceeding all current codes and all applicable standards and criteria. Submit voltage drop calculations showing the equation(s) used along with the number of luminaires per circuit, the length of each segment in the circuit, the conductor size, the conductor ohm resistance values, and the source of these values. The voltage drop incurred on each service feeder from the service source (transformer) to the load center and the voltage drop of each circuit from the load center to farthest load (luminaire) shall be calculated. The maximum allowable voltage drop as per all current codes and all applicable standards and criteria calculated from the service source (transformer) to the farthest luminaire on each circuit. All work necessary to calculate the voltage drop values for each circuit should be presented in such a manner that it can be duplicated by the Department. Along with the voltage drop calculations, submit load analysis calculations for each branch circuit breaker and main breaker.

The existing lighting system and subsystems shall be shown in the plans along with the required construction scope (e.g. poles to be removed, load centers to be removed or re-worked, conductors to be removed, etc.).

The Design-Build Firm will be responsible for the development of the proposed lighting system via a LDAR, maintenance, and transition of existing lighting within the project limits.

The Design-Build Firm must use conductors that are resistant to any form of corrosion suitable for direct burial, and spliced with submersible rated splice kits. All conductors must be placed inside conduits. Perform insulation-test resistance on each conductor with respect to ground and adjacent phase conductors. Applied potential shall be 1000 volts dc for 600V rated cable. Minimum test duration shall be 1 minute. Insulation resistance values should not be less than 100 mega ohms. Replace all cables with insulation where resistance values are less than 100 mega ohms, with no additional costs to the Department. Test that all splices waterproof and inspect for physical damage.

The Design-Build Firm shall analyze the impact to surrounding environment and impacts to residential areas and shall show that the lighting design includes measures to minimize those adverse impacts. The lighting system shall have proper shielding to prevent lighting spillage into adjacent residences.

R. Signalization and Intelligent Transportation System Plans:

1. General

The Design-Build Firm shall prepare Signalization and Intelligent Transportation Plans in accordance with Department criteria.

The Design-Build Firm shall prepare design plans and provide necessary documentation for the procurement and installation of the Signalization and Intelligent Transportation System devices as well as overall system construction and integration.

Signalization plans shall be separate from the ITS plans. Signals shall be installed at the two ramp terminal intersections, the new Arena Road/Antioch Road intersection, and the new P.J. Adams Boulevard/Antioch

Road intersection. A Conceptual Signalization Plan has been provided as a Reference Document in this RFP identifying signal locations within the Project limits. No structural analysis was performed for the Conceptual Signalization Plans.

The ITS construction plan sheets shall be in accordance with Department requirements and include, but not be limited to:

- Project Layout / Overview sheets outlying the locations of field elements
- Detail sheets on:
  - DMS Structure, DMS attachment, DMS display/layout
  - CCTV structure, CCTV attachment, CCTV operation/layout
  - MVDS structure, MDVS attachment, MDVS operation/layout
  - Fiber optic cables, conduit, pull boxes splice vault, and splice enclosure
  - Bluetooth structure, Bluetooth attachment, Bluetooth operation/layout
  - Managed Field Ethernet Switches (MFES)
  - Grounding and Grounding Array details
  - Surge Protection
  - Lightning protection, air terminals and dissipation
  - Directional Bore Details
  - System Overview Sheets of District and fiber Ring
  - Commercial electric power service
  - Connection to existing ITS electrical services
  - Overall Power Service Distribution diagram
  - Wiring and connection details
  - Power, conduit, pull box, and cable installation
  - Communication Hub and Field Cabinets
  - System-level block diagrams
  - Device-level block diagrams
  - Device and facility access plans for all stage of construction and as-built condition
  - Field hub/router cabinet configuration details
  - Fiber optic splicing diagrams
  - System configuration/Wiring diagram/Equipment Interface for field equipment at individual locations and communications hubs.
  - Maintenance of Communications (MOC) Plan

Anticipated DMS features and details:

DMS Feature	Approximate Location	Direction	Notes
Full Color Walk In DMS	MM 52.6	EB	Cantilever Structure
Full Color Walk In DMS	MM 54.8	WB	Cantilever Structure

The Design-Build Firm is responsible for ensuring project compliance with the Regional ITS Architecture and Rule 940 as applicable. This includes, but is not limited to, the development of a concept of operations, the development or update of a system engineering master plan (SEMP), and requirement traceability verification (RTVM) as well as coordination of document review. **FDOT system engineering documents can be found at the following link: https://www.fdot.gov/traffic/its/projects-deploy/semp.shtm.**

The Design-Build Firm shall detail existing Signalization and Intelligent Transportation System equipment and report which devices will be removed, replaced, recovered, or impacted by project work.

2. Design and Engineering Services:

The Design-Build Firm shall be responsible for all Signalization and ITS design and engineering services relating to the Project. All signalization and ITS system components shall be new unless otherwise identified for relocation. No mounting, installing or integrating of ITS, traffic and signalization components to existing or new light poles, lighting structures, sign structures, etc. shall be permitted. Do not mix ITS, signalization and lighting infrastructure.

The design of the new system shall integrate with the existing devices**, systems, software and services**. The design shall include the necessary infrastructure and components to ensure proper connection of the new ITS components. This shall include but not be limited to all proposed ITS components of this project as well as existing subsystems that remain or are re-deployed as the final project.

At a minimum, the signal work in this project consists of the following major components:

- The Design-Build Firm shall design, furnish, install, integrate and test, traffic signals at the following intersections:
  - PJ Adams Parkway / Antioch Road (To be owned by County)
  - PJ Adams Parkway / Ramps A & C (To be maintained by FDOT)
  - PJ Adams Parkway / Ramps D & B (To be maintained by FDOT)
  - PJ Adams Parkway / Arena Road (To be owned by County)
- The Design-Build Firm shall prepare Signalization Plans in accordance with all applicable standards and Department criteria. In addition, the Design-Build Firm shall incorporate all aspects of the District 3 Signalization General Notes that can be obtained from the District Design Office.
- The Design-Build Firm is required to provide all data collection and analysis for the signalized intersection designs and any specific maintenance of traffic needs.
- The design shall be submitted to the Department for review early in the signalization design process, as the Department design review may affect eventual mast arm placement and structural design.
- The design will provide for signalized pedestrian crossings at all signalized intersections.
- The permanent traffic signals shall be oriented horizontally and supported by mast arms with underground electrical power service. The mast arm layout design shall provide for far-side signal head indications (as opposed to near-side indications) and may dictate installation of refuge islands in which to install mast arms to meet stop bar-to-signal head spacing criteria. Mast arm length shall be sufficient to provide for protected-only signal heads in the future if protected-permissive operation is deployed initially as part of the permanent design. Each protected only signal heads will have an additional flashing yellow arrow signal head. Overhead street name signs shall be provided for all approaches.
- Temporary signal(s) shall be designed, installed and maintained at the Design-Build Firm's discretion and as directed by the Department anytime during the course of the project.
- Detection at existing, temporary, or new signals shall be established and maintained by the Design-Build Firm throughout the duration of the project with no lapse in operation of the detection greater than 48-hours. Temporary detection shall be accomplished by use of video, microwave, or conventional loops at the Design-Build Firm's discretion.

- Timing and phasing plans shall be developed and maintained by the Design-Build Firm for maintenance of traffic throughout the duration of the project in consideration of prevailing traffic conditions. It is anticipated that multiple timing plans will need to operate on a time-of-day basis to accommodate differing traffic conditions during AM peak, PM peak, off-peak, night-time, and weekend periods. In addition to interim timing plans developed and maintained during the construction operation, the Design-Build Firm shall establish a permanent set of timing plans, time-of-day settings, and day-of-week settings that are to remain in the traffic signal equipment at the conclusion of the construction project. The permanent timings discussed above are to be summarized and documented in a signed and sealed report to the department for review and approval.

- The Design-Build Firm shall replace existing traffic controller cabinet assemblies with new traffic controllers and cabinet assembly compatible with Okaloosa County computerized traffic system. The proposed traffic controller cabinet assembly shall be approved by maintaining agency. Provide fiber optic drops to each proposed at the new signal cabinets, each fiber optic drop cable shall be at minimum 48 count SMFOC. The traffic signal fiber optic drop cable shall connect with144 count SMFOC ITS backbone fiber on I-10.

- All traffic signal controllers provided shall be new at each intersection with connected vehicle (CV) compatible controllers. The traffic control cabinet associated peripheral equipment, and electrical power service assembly shall be strategically located in a protected area not vulnerable to damage by vehicular impact. The traffic signal controller cabinet shall be of sufficient size to afford 30% usable free space when populated with all required equipment. The traffic signal installation shall be equipped with an Uninterruptible Power Supply (UPS) capable of providing at minimum 2-Hours of normal stop-and-go operation. Grounding **and testing** of the new controller shall be included with the installation of every cabinet.

- The Design-Build Firm shall design, furnish, install and integrate ethernet repeaters and Power over Ethernet (PoE) injectors as recommended by the camera **and/or any device** manufacturer when the distance, including cable slack, between the camera **(any device)** and the equipment panel is more than 100 meters (approximately 320 feet). The ethernet repeaters and the PoE injectors shall be outdoor rated and rugged for field installation. The ethernet repeaters shall be installed within a cable manufacturer approved NEMA 6P/IP 67 rated equivalent enclosure. The location of the enclosure shall be determined and shown during the all phases of design plans.

- Video cameras - The Design-Build Firm shall upgrade the existing detection at the signalized intersection to video detection. The Design-Build Firm shall design, furnish, install, integrate and test a new video detection system for all project signalized intersections. At minimum each traffic signal intersection shall have one (1) fish-eye traffic detection camera. Each fish-eye traffic detection camera shall be mounted at a height as per camera manufacturer mounting height recommendation. Each fish-eye camera shall provide accurate traffic detection at each detection zone for safe and effective traffic signal operation. The video detection system shall provide and activate vehicle detection for all the approaches, all lanes and all the turn lanes at the intersections. The video detection cameras shall be mounted on the mast arm structure with camera manufacturer and Department approved mounting attachments.

- In addition, the Design-Build Firm shall design, furnish, install, integrate and test inductive loops with loop amplifier modules on approaches where video detection is unable to detect vehicles due to occlusion. The Design-Build Firm shall ensure that all approaches, all the lanes and all the turn lanes have full vehicle detection coverage using both video detection cameras and loop detectors. Inductive system loops shall be terminated on the cabinet loop panel. Placement of the loops shall not conflict with driveways or side streets. Loops shall be saw cut to the edge of pavement to a loop window, run through 2” conduit to a pull box adjacent to the loops and thru

new 2" conduit to the controller. All wiring, programming, transfer of controller timings and operations shall be the responsibility of the Design-Build Firm.

- The Design-Build Firm shall submit a vehicle detection coverage plan for all locations and seek approval from the Department and maintaining agency. Based on the vehicle detection coverage plan, the Department may require the Design-Build Firm to install additional video detection cameras and loop detectors as needed to obtain the necessary coverage for each detection zone. The Design-Build Firm shall provide the required vehicle detection coverage as per the Department requirement.
- The Design-Build Firm shall design, furnish, install**, ~~and~~** integrate**, and test** all communications and power cabling for the video detection system **and each device**. The Design-Build Firm shall allow sufficient slack for cables as per cable manufacturer requirements and all current codes and all applicable standards and criteria.
- Permanent video detection design shall provide for advance vehicular detection on the main street through movements upstream of the stop bar of at least 330' and shall provide presence detection zones of at least 50' at all other stop bar locations.
- The Design-Build Firm shall establish the power service addresses and the necessary commercial electrical power service. Once power service has been established by the Design-Build Firm, the Department or its designee will inspect the power service for compliance with Department, NFPA, and NEC standards, and all Contract Documents. Power distribution for each traffic signal cabinet and ITS device shall include coordination and applicable fees by Utility Companies until Final Acceptance. New power service and panels shall have a minimum of 1 spare breaker slot for future use. No ITS device shall have voltage drop greater than 4% with a worst case assumption of 9 amp load at the furthest point of each link documented in the required power load calculations. All electrical distribution to ITS devices shall be underground and shall not mix power for separate/different ITS devices. Aluminum wound electrical products shall not be installed or used, all wiring shall be new and free of damage. Separate power service meter(s) shall be provided for the traffic signal infrastructure.
- Overhead street name signs – The Design-Build Firm shall design, furnish, install and test Signal Mounted Overhead Illuminated Street Name Signs at minimum for each leg of the intersection.
- Mast Arms – The Design-Build Firm shall design, furnish and install all mast arm assemblies, mast arm mounting assemblies and pedestrian poles or pedestals. The Design-Build Firm shall design, furnish and install mast arm signal structures including but not limited to arms, upright, arm/upright connection(s), baseplate, cover plates, caps, clamps, blank sign panel, luminaire bracket, anchor bolts, foundation, and any other details necessary for fabrication and construction and shall provide all labor, equipment, miscellaneous materials and hardware necessary for a complete and acceptable installation. The design shall be based on Department Cantilever Signal Structure Standards using standard Department plan sheets. Calculations for the structure shall be performed using the Department approved software.
- The Design-Build Firm shall design, furnish, install, integrate and test an intelligent emergency vehicle pre-emption system at each newly signalized intersection. The emergency vehicle pre-emption system to be activated when either the Chipley RTMC or an Okaloosa County first responder vehicle(s) equipped with emergency vehicle pre-emption system activates the system. The Design-Build Firm shall provide all necessary system integration with the Chipley RTMC facility and shall verify compliance through performance measures and tests developed by the Design-Build Firm and approved by the Department. When the emergency vehicle pre-emption system is activated, the pre-emption system shall provide automated traffic signal timing adjustments to the traffic signal intersection for enhancing the traffic flow along the first

responder vehicle approach intersection leg of the intersection. The signal pre-emption system shall allow first responder vehicles to disrupt a normal signal cycle in order to proceed through the intersection more quickly and under safer conditions. The pre-emption systems shall extend the green on a first responder vehicle's approach and shall replace the phases and timing for the whole cycle. The traffic signal pre-emption device must be able to request priority early enough for first responder vehicle(s) traverse the intersection without stopping at higher than post speed limit, regardless of obstacles that can interfere with communications. The pre-emption system shall provide adequate signal range and reliability for first responder vehicle(s) travelling higher than posted speed limit can activate the pre-emption system. The Design-Build Firm shall coordinate implementation integration activities with the Department and maintaining agency and compatibility of equipment and technology, as well as operational policies. The Design-Build Firm shall provide all power and communication equipment/infrastructure necessary to connect emergency vehicle pre-emption system equipment to the Chipley RTMC.

- The Design-Build Firm shall submit to the Department and maintaining agency list of existing signalization system components, equipment and material to be removed. Existing signalization system components, equipment and material shall not be removed without the advanced approval from the Department and maintaining agency. All existing signal equipment and mast arm structures (without the foundations) removed from the Project in working condition shall be the delivered to the Department or the maintaining agency. Care shall be taken in the removal and disassembly of all parts to avoid damage. The Design-Build Firm shall conduct a field walk through with the Department and maintaining agency Signal Technician to determine the field conditions of the equipment and mast arms and to identify the items to be returned to the Department and maintaining agency. Once the equipment and mast arm list ~~is~~ **are** approved by the Department and maintaining agency, the Design-Build Firm shall return the removed equipment and mast arms in an operable and undamaged condition to the Owner identified facility within 50 miles of the Project limits. Any removed devices to be delivered to the Department shall be verified, inventoried and delivered to the Department with a transmittal letter. The transmittal letter shall be signed by a minimum of two Department representatives. The Design-Build Firm shall take ownership of remainder of unclaimed signal elements. The existing mast arms and any existing signalization equipment shall NOT be utilized for the new signalized intersections.
- Vehicular traffic and pedestrian signal assembly – The Design-Build Firm shall design, furnish, install and test, the traffic signal and pedestrian signal and all components necessary to make a complete unit, including mounting assemblies, backplates, visors, LED modules, labor, and materials necessary for a complete and acceptable installation.

The Design-Build Firm shall design and implement the Project to keep the Department's standard Traffic Signal Maintenance and Compensation Agreement in good standing.

At a minimum, the ITS work in this project consists of the following major components:

- Replacement of any ITS System components that are impacted by the Design-Build Firm's scope of work as approved by the Department. All equipment shall be new unless otherwise specified.
- ITS Cabinet Installation – All new ITS cabinets shall be mounted at a maximum of 72" from top of the cabinet to technician pad. All ITS cabinets shall have a technician pad. Each cabinet shall be provided for safe and efficient maintenance access. Provide safe and efficient accessibility to each device cabinet and device for built condition and for construction duration. Submit device and cabinet accessibility plan for approval of the Department. This cabinet shall meet the technical requirements of FDOT. Separate breakers shall be installed for the new equipment and

not piggybacked off the existing ITS system power configuration. Breakers, grounding and other electrical connections shall comply with all applicable standards including the latest National Electric Code (NEC) at the time of bid proposal. A concrete technician or service pad shall be provided, and spare conduit installed as required **for all cabinets**. The technician or service pad shall extend at least 30" from each cabinet door and from each side of the cabinet to provide adequate space for maintenance technician to stand and perform maintenance activity safely. Existing ITS device cabinets shall be furnished with concrete service pad. Two (2) cabinets placed side by side shall be separated at minimum by 6 feet. **If a cabinet relocation is needed to protect from construction activities, then relocate the cabinet with Department approved cabinet relocation MOC plan.**

- ~~**The Design-Build Firm shall install an**~~ Uninterruptible Power Supply (UPS) – **The Design-Build Firm shall install an UPS and Power Distribution Unit (PDU)** at each ITS device cabinet and traffic signal cabinet as required in the RFP document. At minimum, each UPS shall be sized according to the maximum expected load for each cabinet plus 50 additional watts. The service outlets shall not be connected to the UPS. The UPS shall provide commercial power pass through during all failures of UPS. The Design-Build Firm shall ensure that the UPS is generator compatible to ensure clean, uninterrupted power to protected equipment when generator power is used. The UPS shall be environmentally rated for the environment that the UPS is installed in. The recharging of all the UPS batteries which may be drained shall be included within the power design calculations. The Design-Build Firm shall supply a Simple Network Management Protocol (SNMP) network management interface to determine the operational status of the UPS, the internal UPS temperature, the external temperature as recorded by a remote sensor mounted elsewhere in the cabinet, the state of the cabinet door switch(es) (open or closed), and surge protection device (SPD) failures (open or closed SPD alarm contacts). All UPS shall be designed and integrated to email events over the ITS and traffic engineering ethernet network, such as: power loss, battery levels, and alarms. Any software required to monitor the UPSs shall be furnished, configured, and integrated into the RTMC monitoring computer and any applicable Traffic Signal Operation Control (TSOC) monitoring system. During construction duration protect the cabinets in the project. ~~**If a cabinet relocation is needed to protect from construction activities then relocate the cabinet with department approved cabinet relocation MOC plan.**~~

- Conduit and Pull Boxes –Use cap and seal and abandon existing conduit in place. Any existing copper cable inside the conduit shall not be removed without the advanced approval from the Department. Any removed copper cable shall be inventoried and delivered to the Department with a transmittal letter. The transmittal letter shall be signed by a minimum of two stakeholders. All new underground and directional bored communications conduit shall be HDPE SDR 11 rated or thicker and smooth wall interior. A spare conduit shall be provided for each newly installed conduit. There shall be a separate spare conduit each for communication and power. Open trench and bored communication conduit consist of a 4" gray outer duct, one 1 ¼" white innerduct, one 1 ¼" orange innerduct, and one 1" gray innerduct. Install locate wire inside the outer duct, but outside the innerducts. Open trench and bored power conduit consist of two 2-inch gray conduit. Every drop or laterals, new conduit runs shall have two 2-inch conduit runs. All conduits shall have "jet-line" or equal pull string installed in each spare conduit run for future use. Electrical pull boxes shall not be spaced further than 500 feet apart in any power run. All pull boxes shall be a minimum Tier 15 and rated at 20K or more test static load. A splice vault shall be provided at each signalized intersection along the corridor. Provide safe and efficient accessibility to each facility for built condition and for construction duration. Submit facility accessibility plan for approval of the Department. Use of existing conduit is allowed for fiber connection to west side of the project splice vault at mile marker 50.9 and east side of the project

splice vault at mile marker 56.3. The Design-Build Firm shall verify the condition of the existing conduit and rectify deficiencies in any existing conduit before use. The Design-Build Firm shall gather approval from the FDOT district three TSM&O manager before using an existing conduit on this project. At minimum, provide a splice vault at the beginning and end of the project limit and at the roadway interchange. For the entire project limit provide bored conduit for SMFOC back bone along the right of way and place the SMFOC back bone conduit at least 3 feet inside the right of way. The Design-Build Firm shall propose the backbone conduit location to have none to minimum impact from proposed construction activities. Provide drop conduits to each proposed devices and provide drop conduits to each existing device being operational during construction.

- DMS – Includes sign support structures, mounting brackets, catwalk, and 3 line walk in full color, 96x416 full matrix DMS. Each DMS shall have its own splice vault for connection to the fiber trunk line.

- Existing Dynamic Message Sign (DMS) – During construction phase of the project perform complete integration **and testing** of existing DMS in the project corridor to accommodate roadway widening activities. The Design-Build Firm shall verify current working condition of the DMS and submit the report to the Department for verification. Any equipment, device(s), cabinet(s), ~~**ADMS**~~ **DMS** and structure(s) damaged during integration process shall be replaced in kind with new materials. Integrate DMS sign communication with proposed fiber optic communication system **and with the version of SunGuide software in use at Chipley RTMC at the time of DMS operational test**. Extreme care shall be taken not to damage DMS equipment, device, cabinet and structure during integration process. Protect all DMS device, cabinets, equipment and items from theft and vandalism until project completion. DMS signs shall be operational for the project duration. Any operation downtime of the DMS operation shall be approved in writing from the RTMC Manager in Chipley, FL.

- CCTV – Proposed cameras must demonstrate 100% visual coverage of the project corridor. In addition, the existing and proposed DMSs shall be verified with the proposed cameras. CCTV Cameras: shall be 1080p High Definition (HD), embedded encoder, H.264 stream, Pan, Tilt and Zoom (PTZ) IP-enabled. Provide 100% camera coverage areas using the SunGuide software at Chipley RTMC. Submit the camera siting survey of each proposed camera to the Department or its designated representative for approval. CCTV siting shall include local agency coordination to verify current and proposed landscaping, land development, lighting and signalization plans do not impact CCTV view, maintenance and operation. The Department approval of the CCTV siting survey does not exempt the Design-Build Firm from meeting the RFP requirements. The CCTV shall be mounted at a minimum height of forty (40) feet above the adjacent roadway surface. Each CCTV camera shall have a lowering device **and the lowering device cable shall be installed inside the CCTV prestressed concrete pole.** Provide 100% visual coverage of the entire project corridor from one end of the right of way to another for the complete construction duration of the project.

- CCTV Prestressed Concrete Pole – Provide concrete spun poles, camera lowering device, mountings, and concrete pad. All prestressed concrete poles shall be backfilled with FDOT approved Class I nonstructural concrete. The distance between a device cable weather head and the device shall not be more than four (4) feet. No steel CCTV poles are allowed on the project.

- MVDS - Includes concrete poles and mountings to detect all travel lanes and auxiliary lanes along the project corridor. MVDS devices shall be located at the exit ramps from SR 8 (I-10) and shall provide detection of all mainline lanes, entrance and exit ramps within the project limits.

- Removal of any ITS System components that are impacted by the Design-Build Firm's scope of

work as approved by the Department.

- Single Mode Fiber Optic Cable (SMFOC) – All new 144 count SMFOC backbone fiber shall be installed and tested on entire project corridor. Use 48 count SMFOC drop cable to connect each signalized intersection cabinet and use 24 count SMFOC drop cable to connect each ITS device cabinet on entire project corridor. Test all fiber strands before installation and after delivery to the project site or yard or staging area and submit the test results for the Department to review. The SMFOC backbone fiber shall be efficiently designed to have minimum splices to SMFOC backbone fiber and each lateral fiber drop cable shall have at least four (4) live fiber strands. The Design-Build firm shall replace existing 144 count SMFOC truck line with new 144 count SMFOC truck line. On the west side the SMFOC cut over shall occur at splice vault at mile marker 50.9 and on the east end SMFOC cut over shall occur at splice vault at mile marker 56.3. The maximum time allowed for SMFOC cut over and connection shall be less than 4 hours. New splice canister shall be used for cut over and connection operation. The fibers shall be spliced color to color at each SMFOC cut over and connection site.
- Bluetooth – Co-locate Bluetooth with other ITS device location. Bluetooth device shall detect traffic on entire project corridor.
- Grounding, Surge Suppression, Lightning Protection – Protection shall be provided for all ITS **and traffic** field elements and ITS **and traffic** Field Cabinets. A surge suppression shall be provided on both sides of each circuit.
- ITS Communication – The Design-Build Firm shall design, furnish, install, integrate and test a new ITS Field Cabinets with power supply, Managed Field Ethernet Switch (MFES), and communication cable connection to the 144-count single mode fiber optic cable.
- Connection to Existing Electrical Systems: The Design-Build Firm shall perform power calculations and install connections to existing electrical services, to the extent possible. When connecting to existing electrical systems, the Design-Build Firm shall verify that the additional equipment will not overload the existing circuits. If the additional load required by this project overloads the existing circuit, the Design-Build Firm shall modify the power distribution as necessary. The Design-Build Firm shall submit the load calculation for Department approval before finalizing the power design. The new circuit shall utilize an existing spare branch circuit breaker. If no spare breaker is available, then a new branch circuit breaker shall be provided **by the Design-Build Firm**. At a minimum, all affected ITS field cabinets shall be calculated for 125% over peak electrical draw. Mixing of ITS power circuit to lighting/signal circuits is not allowed. **The Design-Build Firm shall submit a power design analysis report (PDAR) to the Department for review and approval.**
- New Electrical System – Where new electrical service points are required, the Design-Build Firm shall coordinate final locations of the distribution transformer and service pole to minimize the service and branch circuit lengths. The Design-Build Firm shall provide a new load center per current codes and all applicable criteria. The Design-Build Firm shall verify and comply with the requirements of each jurisdictional authority within the Project limits. Compliance with the jurisdictional authority includes, but is not limited to: field reviews, technical meetings, special deliverable, etc. Separate power service meter(s) shall be provided for the ITS infrastructure. **The Design-Build Firm shall submit a power design analysis report (PDAR) to the Department for review and approval.**
- Removal of any ITS System components – Existing ITS System components shall not be removed without the advanced approval from the Department/maintaining agency. Any removed devices shall be verified, inventoried and delivered to the Department with a transmittal letter. The transmittal letter shall be signed by a minimum of two stakeholders. Removal of the existing

lateral drops from the backbone to the existing ITS facilities that will or may be removed as part of this project. The lateral drops disconnected from the backbone shall be re-spliced "in-kind" to match respective fiber strand(s) and buffer tube(s) as approved by the Department. The existing lateral drop conduit(s), pull boxes and splice boxes shall be removed as described in Section C - Utility Coordination of this RFP.

- Installation or modification of electrical service panels, transformers and disconnect switches to provide electrical service to the ITS devices within the project limits. All electrical work will comply with the latest NEC standards and requirements at the time of bid proposal.

- Testing of fiber optic backbone and lateral drops furnished and installed or modified by the Design-Build Firm. **The Design-Build Firm shall perform bi-directional power meter light source test and submit all test results. Submit the results of each Optical Time Domain Reflectometer (OTDR) testing to the Department in .pdf format and OTDR file format along with software to read and review OTDR files. Submit the results of the OTDR traces for each fiber with a loss table showing details for each splice and/or termination tested to in Microsoft Excel format to the Department for review and approval.** If a backbone fiber is modified, bi-directional testing shall occur to/from the nearest fiber hub shelter/cabinet, or current splice point upstream and downstream from the point of modification **before and after modification.** Modification includes, but is not limited to, fiber splices, terminations, or relocations. Bi-directional testing of fiber optic backbone and active lateral drops furnished and installed or modified by the Design-Build Firm. The Design-Build Firm to perform bi-directional test dark lateral drops furnished and installed or modified by the Design-Build Firm.

- New fiber optic cable shall not be run in any conduit with energized (low or high voltage) conductors. New fiber optic cable shall be installed in its own pull box and its pull box shall only be shared with other di-electric fiber optic cables. Only di-electric, loose tube, non-gel single mode fiber optic cable shall be used to interface with the system fiber optic patch panels.

- Locate wire or tone wire shall not be placed in a conduit with communications or power but shall be furnished and installed inside the outer duct and shall be placed outside of any inner ducts. At all lateral or drop cable conduit locations, the locate wire shall be furnished and installed as per FDOT design standards conduit installation details.

- ITS System Access – Any project(s) for construction and/or maintenance requiring access to the existing ITS system including, but not limited to, fiber optic cable (handholes and pull boxes); ITS equipment control cabinet(s); ITS power facilities; ITS specific equipment (CCTV, MVDS, etc.); and/or the RTMC and TSOC will require a submitted and approved access schedule. ~~**This document**~~ **The Design-Build Firm shall develop and submit the document to the Department for review and approval. The Design-Build Firm shall coordinate with District Three Traffic Operation's ITS Program Manager and D3 ITS Maintenance Contractor, for any preventative maintenance schedule and potential repairs. This document** will identify access necessities, schedule expectation(s), specific ITS facilities to be accessed, and an action plan for potential failure. ITS system access plan shall not include crossing a fence and/or going through water body. This document will be submitted thru District Three Traffic Operation's ITS Program Manager for approval within 60 days of project construction start or 90 days prior to system access for long duration project(s).

- Gathering all new infrastructure information by GPS (sub-foot accuracy) and providing the information necessary for populating the **Intelligent Transportation System Facilities Management (ITSFM)** ~~**ITSFM**~~ GIS informational map. The Design-Build Firm shall be responsible for providing the information necessary to populate all new and existing equipment.

- Testing of the Intelligent Transportation System.

Each ITS device location shall be designed with a local hub cabinet which includes at a minimum a 336 cabinet, layer 2 switch, required media converters, **grounding**/surge suppression devices, a UPS system and a 15 Amp auxiliary maintenance outlet. The voltage drop analysis shall use a maintenance load of 10A applied to the last cabinet on each branch circuit and consider the UPS to be set at a max recharge rate. The maximum allowable voltage drop along any circuit shall be 5% from point of electrical service to the last Local Hub on that circuit. The maximum allowable electrical service to be utilized shall be a 480V for electrical distribution design.

The Design-Build Firm shall prepare a Maintenance of Communications (MOC) plan depicting the methods in which the existing ITS devices and communications system will be maintained in full operation during construction while meeting the required accuracy requirements in the specifications. The MOC plan shall include replacing existing 144 count SMFOC truck line with new 144 count SMFOC truck line. On the west side the cut over shall occur at splice vault at mile marker 50.9 and on the east end cut over shall occur at splice vault at mile marker 56.3. The maximum time allowed for SMFOC cut over and connection shall be less than 4 hours. A Maintenance of Communication Plan (MOC) shall be presented in writing to the Department **for review and approval** fourteen (14) days prior to any planned network outages and construction activities. Down time is permitted for network splicing or maintenance as approved by the Department. Part of the MOC plan will include a CEI present to witness the procedure and document start time and end time of any network outage. The MOC shall include repair procedures in the event the existing ITS network or power service is damaged.

Coordinate with the Design-Build Firm to avoid conflicts with landscape plans within the Department Right-of-Way. While procedures are being revised to facilitate this increased collaboration and cooperation, the Design-Build Firm is required to ensure that the design and construction of each ITS project and each landscape project is entirely coordinated with existing and proposed ITS facilities and landscapes. Both programs have been determined to be important components of the state transportation system.

3. Construction and Integration Services:

The Design-Build Firm shall be responsible for all Signalization and ITS construction and integration services as described in this RFP as a part of the Project.

4. Testing and Acceptance:

All equipment furnished by the Design-Build Firm shall be subject to monitoring and testing to determine conformance with all applicable requirements. The Design-Build Firm is responsible for the coordination and performance of material inspection and testing, field acceptance tests, and system acceptance tests. The times and dates of tests must be accepted in writing by the CEI. The Design-Build Firm shall conduct all tests in the presence of the CEI or designated representative.

Final acceptance of the project as determined by the Department will be made after satisfactory completion of the following:

- **Pre-Installation test**, Stand-alone, ~~**subsystem**~~ and ~~**system**~~ **Subsystem** tests
- 30-Day ~~**Burn-In**~~ Operational **(burn-in) system acceptance test period** ~~**Test Period**~~ of ITS and traffic signal devices
- Department approval of all test reports and results
- Approval of all delivered project submittals, including documentation final field inspection

- All the communication network documents
- Assignment of all warranties to the Department and delivery of warranty documentation
- Approval and delivery of all documentation required under this contract including as-built documentation.
- Demonstration that the system is stable and any failures are within predicted mean time between failures and no intermittent operational conditions.
- All spares parts ordered by the Department under this contract that have not been installed shall be turned over to the Department's representative.
- All testing to be completed after construction is complete. No access to system during burn-in test is allowed.

Upon completion of successful final acceptance testing, document the acceptance date and project identification information and provide two (2) copies to the Department. Final ITS and traffic acceptance notification shall be provided in writing from the Department.

The Design-Build Firm shall ensure the device and device components are in proper working condition before testing can begin. During testing, Design-Build Firm shall provide all necessary qualified personnel to conduct the test.

The Design-Build Firm shall meet the following requirements:

- Develop and submit a test plan for this Project, a corresponding testing schedule, and an updated RTVM to the Department for review and approval at least 60 calendar days in advance of the Design-Build Firm's scheduled testing dates.
- If the Department rejects or requests modifications to the test plan, the Design-Build Firm shall update and resubmit a revised test plan and RTVM to the Department for review and approval.
- The Design-Build Firm shall allow 21 calendar days for the Department's review and approval of the revised test plan and RTVM.
- No testing will commence until the Department has reviewed and approved the test plan.
- Request in writing to the Department for approval to start each testing activity a minimum of 15 calendar days prior to the requested start date. The Department reserves the right to reschedule the start date if needed. The start date for each testing activity cannot be prior to the successful completion of all previous testing activities unless otherwise approved by the Department.
- Provide test plans that are based on the following items:
    - The PSEMP template
    - The updated RTVM
    - A step-by-step outline of the test procedures and sequence to be followed demonstrating compliance with the Project ITS requirements
    - A test set-up/configuration diagram showing what is being tested
    - A description of expected operation, output, and test results (pass/fail criteria)
    - An estimate of the test duration and proposed testing schedule
    - A data form to be used to record all data and quantitative results obtained during the tests
    - A description of any special equipment, setup, test software, manpower, and/or conditions required for each respective test
    - The number of test cases must reflect the complexity of each ITS device or subsystem and the content of test cases must cover all functionalities and requirements
- All provided test plans shall have the signed approval of the EOR.
- Conduct the following tests on all ITS devices and subsystems:

  - Pre-Installation Tests
  - Installed Site Test \ Stand Alone Tests (SAT's)
  - Fiber Optic Cable End-to-End Tests
  - Subsystem Tests
  - 30-Day Operational System Acceptance Test (OSAT)
  - ITS Close-Out and Final ITS Acceptance
- Provide maintenance of traffic (MOT) **and MOC** during all testing activities as required.
- Provide and maintain all test equipment and software, made ready for use by the Design-Build Firm and/or the Department.
- Provide up-to-date calibration certification with dates and test parameters for all test equipment utilized in accordance with the manufacturer's recommended procedures.
- Conduct all tests in the presence of the Department, unless otherwise approved in writing by the Department. The Department reserves the right to waive the right to witness certain tests. Neither witnessing of the tests by the Department, nor the waiving of the right to do so shall relieve the Design-Build Firm of the responsibility to comply with the ITS Project requirements.
- Document and submit all test results to the Department 15 calendar days after the completion of the tests for review and approval by the Department. Test results must include documentation of:
  - Test results with pass/fail criteria and test objectives
  - Cross reference to what ITS Project requirement(s) were tested using the RTVM
  - Date of test
  - Start/end times of test
  - Location of test
  - Names and signatures of testers and witnesses of the test
  - Sketch of test location and set-up
  - Conditions during the test (i.e., weather conditions, etc.)
  - Any and all field notes provided by the tester
  - Any discrepancies found during testing
  - Equipment serial numbers
  - Equipment IP addresses (if applicable)
  - Equipment MAC addresses (if applicable)

Replace, repair, and retest all ITS devices that failed testing at no additional cost to the Department. Time extensions for replacement, repair, and retesting, even if the manufacturer and other cause beyond the Design-Build Firm's control caused the failure, will not be granted.

Pre-Installation Tests:
The Design-Build Firm shall meet the following requirements:

- Document and submit the factory and reel fiber testing results for all fiber strands to the Department for review and approval 21 calendar days prior to any fiber installation.
- Inspect all ITS devices and materials delivered to the designated Design-Build Firm's Project field site for any damage as a result of shipping.
- Provide written documentation stating that all ITS devices and materials showed no signs of damage or compromise as a result of shipping. The Department reserves the right to inspect ITS devices and materials.

Stand Alone Test (SAT):

The Design-Build Firm shall meet the following SAT requirements:

- Field inspect and verify the following items:
  - All ITS devices and equipment, once installed at each field site, are undamaged and correctly installed, with correct cabling and wiring terminations, port settings, cable interconnections, good workmanship.
  - All ITS devices are functional, operational and can be controlled locally prior to connecting to the communication network.
  - All local ITS cabinet components and subsystems, including Ethernet switches, power supply voltages and outputs, are fully functional and operational.
  - All ITS devices are properly connected to their power source, and the lightning protection system which includes air terminal, down conductors, surge protection devices and grounding array has been installed.
  - Site grounding meets and/or exceeds the FDOT Standard Specifications and is compliant with this RFP.
- Replace any ITS device with the same make and model that fails its SAT more than twice. The entire SAT must be repeated for the replaced or repaired ITS device until proven successful.
- Perform SAT on every ITS **and traffic signal** device, including **CCTVs,** DMS, MVDS and components, ITS cabinets, Device servers, layer 2 Managed Field Ethernet Switches (MFES's), all fiber optic cables including splices, patch cords, connectors, **traffic signal controllers, video detection system, video cameras, vehicular traffic and pedestrian signal assembly, intelligent emergency vehicle pre-emption system** and power distribution units.
- Document and submit all test results to the Department 15 calendar days after the completion of the tests for review and approval by the Department. Test results must include documentation of any discrepancies found during testing, successful test completion dates, and equipment serial numbers.

Subsystem Tests:

The Design-Build **Firm** shall meet the following Subsystem Tests requirements:

- Perform subsystem tests to demonstrate that each subsystem meets the relevant sections of FDOT Standard Specifications and this RFP. No partial subsystem testing will be permitted.
- Begin subsystem tests only when the Design-Build Firm has satisfied the Department requirements that all Stand Alone tests along with all fiber optic facilities have been successfully completed and approved by the Department and that all work on the subsystem to be tested has been completed.
- Provide qualified personnel to support the diagnosis and repair of system equipment during the subsystem tests as required.
- Perform subsystem tests for the following subsystems:
  - ITS Communications subsystem
  - DMS subsystem
  - MVDS subsystem
  - **CCTV subsystem**
  - ITS Power distribution subsystem
- Perform subsystem tests consisting of two parts as follows:
  - Part 1 subsystem testing must include the following:
    - Verify network communications by 'pinging' each network device to verify connectivity.
    - Verify Layer 2 communications between ITS cabinet MFESs and the ITS equipment shelter distribution switches. All communications testing must be coordinated with the Department. If a problem is discovered

outside the Project limits, the Design-Build Firm will be required to identify the problem and coordinate with the Department in order for the Department to make the necessary repairs. A minimum of 45 calendar days must be included in the project schedule to allow the Department time to repair any potential problems along this path.
- Verify that individual ITS devices are operational and fully functional as a single subsystem using the software.
- Provide all the temporary central equipment, including the workstations or laptop computers, necessary for **all** the ~~**Part 1**~~ testing of the individual subsystems.
- Submit Part 1 subsystem test results with a comparison with the RTVM for review and approval by the Department prior to integration with SunGuide® software.

- Part 2 subsystem testing must include the following:
  - Demonstrate full control and functionality as specified herein of all ITS devices associated with the subsystem from the RTMC utilizing SunGuide® software.
  - Demonstrate that the functionalities of the local/remote trouble shooting/diagnostics perform as specified in the specific subsystem functional requirements.
  - Submit Part 2 subsystem test results for review and approval by the Department.
- Demonstrate the following subsystem central control and its functions include:
  - Verify full integration of all other ITS devices installed on this Project into District Three SunGuide® software, including the verification of all control and monitoring capabilities with the District Three SunGuide® software and configuration parameters.
  - Verify remote monitoring and control of all field devices, including network switches, UPS, and power distribution units.

Correct any problem in the event a subsystem fails and is rejected by the Department. The Design-Build Firm shall repeat the subsystem tests within seven calendar days after receiving direction from the Department that a retest can be conducted.

Operational System Acceptance Test (OSAT):

Prior to beginning OSAT, the Design-Build Firm shall submit the completed ITSFM data entry sheets to the Department. The Design-Build Firm shall meet the following OSAT requirements:

- Start OSAT testing once all subsystems tests have been completed and approved by the Department and all SunGuide® software integration work has been completed.
- Conduct the OSAT covering all subsystems, integrated together and fully operable as a single system with District Three SunGuide® software from the Chipley RTMC, for a period of 30 consecutive calendar days without failure of any ITS device or subsystem.
- The Design-Build Firm will not be allowed access to the system once testing has commenced.
- Perform OSAT to demonstrate that all subsystems operate together and meet the relevant sections of FDOT Standard Specifications and this RFP.
- Shutdown the OSAT in the event that an ITS device or subsystem failure is identified by

the Department and/or the Design-Build Firm. The Design-Build Firm will not be allowed access to the system once testing has commenced without OSAT shutdown. In the event of an OSAT suspension or shut down by the Department, provide qualified personnel to support the diagnosis and repair of system equipment during the OSAT as required.

- Diagnose and correct all deficiencies causing the OSAT shutdown. After the deficiency or deficiencies causing the OSAT shutdown have been corrected, the Design-Build Firm shall re- perform all applicable tests as directed by the Department.
- Restart tests at day zero for a new 30 consecutive calendar day test period as directed and approved by the Department, unless corrections are made within the maximum allowable outage times requirements for each **~~ITS system~~ ITS Device and ITS subsystem** set by the Department project manager **and District Three Traffic Operation's ITS Program Manager** at the beginning of the OSAT test. If the maximum allowable outage times have been met, then the OSAT shutdown will be reclassified as an OSAT suspension and the test will recommence at the point it was stopped upon approval by the Department.
- Provide the following when the total number of OSAT shutdowns equals three for the same subsystem and/or ITS device:
    - Remove and replace the subsystem or ITS device with a new and unused unit as per the requirements of this RFP.
    - Perform again all applicable tests, **as stated in the RFP and** as deemed necessary by the Department.
    - Upon written approval from the Departments representative, restart the OSAT for a new 30 consecutive calendar day period.
- Repeat the OSAT as necessary to satisfy the Project requirements.
- Supply all test equipment, software, and software documentation required for diagnosing malfunctions of ITS device and software/firmware. Submit a description of all test equipment and software to be utilized within 21 calendar days prior to the start of the OSAT for review and approval by the Department.
- Submit diagnostic reports to demonstrate that errors were detected and corrected.
- Maintain a daily log for all operations after the start of the OSAT.
- Report in an OSAT daily log all activities associated with OSAT.
- Submit to the Department the required documentation to verify that all subsystems and ITS devices have been successfully integrated and configured.
- Perform tests with the District Three RTMC personnel managing, monitoring, and controlling the ITS devices in real-time to assure conformance to the Project requirements and the FDOT Standard Specifications.

5. Existing Conditions

This section is intended to provide a general overview of the existing conditions of the Department's ITS System and its components such as the fiber optic network (FON) communications infrastructure within the project limits. Refer to the concept plan for existing ITS equipment locations. In addition, the Design-Build Firm shall refer to the ITS As-Built Plans provided with this RFP as Reference Documents for additional information and shall be responsible for field verifying all existing site conditions within the project limits.

The ITS components shall be defined as follows:

- Closed Circuit Television (CCTV) Camera System: The CCTV Camera System consists of pan-tilt-zoom (PTZ) cameras along the corridor that are typically spaced at one (1) mile intervals.

The CCTV cameras are used by Department staff for incident management and traffic monitoring. The cameras are integrated and communicate with Local Hubs along the corridor via the single mode FOC communications backbone installed along the corridor.

- Dynamic Message Sign System (DMS). The DMS **system** consists of ~~**both**~~ mainline ~~**and arterial**~~ dynamic message signs (~~**A**~~DMS) and provide roadway information and travel times. The mainline DMS are located at select locations along the corridor. ~~**The ADMS are located on each approach of select major arterials throughout the roadway system.**~~ The mainline DMS are connected and communicate via the single mode FOC communications backbone installed along the corridor. ~~**The ADMS communicate with wireless radios to a hub site connected to the single mode FOC communications backbone installed along the corridor.**~~
- Vehicle Detection Systems (VDS): The VDS consists of non-intrusive, microwave technology sensors used to collect vehicle volume, speed and occupancy data from mainline travel lanes. The detectors are installed on stand-alone concrete poles and/or attached to other ITS device structures in a side-fired configuration to detect data on a lane by lane basis. The VDS is used for incident detection by Department staff and communicate with the single mode FOC communications backbone installed along the corridor.
- Fiber Optic Network (FON): The FON infrastructure provides communications for ITS components. The FON is composed of the FOC communications backbone, lateral connections and communications equipment including but not limited to field and HUB Ethernet switches, port servers, **media converters, device servers,** routers, fiber patch panels **and all auxiliary equipment** installed at the various ITS device(s) serving as a local HUB.
- For clarification purposes, any reference in this RFP to the mainline fiber optic backbone that is installed along the corridor shall be defined as the "backbone". The fiber optic cable between the backbone and ITS components shall be defined as the "ITS lateral".
- The FOC communications backbone consists of a single mode fiber optic cable and two (2), 1.25-inch HDPE conduit, locate tone wire, warning tape, fiber route markers, pull boxes, and splice boxes. One of the two (2), 1.25-inch HDPE conduits are spare conduits. The backbone provides access points for the various ITS components along the corridor for network connectivity as previously described.
- The majority of ITS components are connected to the backbone through a lateral twelve (12) count single mode fiber optic cable inside two (2), 1.25-inch HDPE conduits of which one is a spare.
- The Departments Communications Network includes but is not limited to the fiber optic drops from the backbone to each ITS device location.
- **The Department existing electrical systems connects commercial power systems to each ITS device. The existing electrical system has several power drop locations with commercial power meters. Each ITS device has surge suppression equipment, cables, transformers, disconnect brackets, and all auxiliary equipment for a complete power systems.**

S. Landscape Opportunity Plans:

It is the intent of this work item to preserve the opportunity to provide for significant landscape planting areas within the Project limits that meet the intent of FDOT Highway Beautification Policy. The landscape opportunity design shall adhere to the FDOT Highway Beautification Policy with the intent of creating a unified landscape theme for the project.

The Design-Build Firm shall provide the necessary site inventory and site analysis and shall prepare a "Landscape Opportunity Plan" (Opportunity Plan) as part of the roadway plan set. The Landscape Opportunity Plan shall consider the Design-Build Firm's proposed roadway improvements, utilities, setbacks and clear zone dimensions, ITS, Signalization, Lighting, community commitments and other Project needs in identifying future landscape planting areas. Landscape opportunity areas should be preserved in accordance with the Departments "Bold" initiative.

The Opportunity Plans shall include the following:

1. Proposed improvements and existing elements to remain as associated with the Project.
2. Vegetation disposition depicting existing plant material to be removed, relocated or to remain.
3. Wetland jurisdictional lines.
4. Proposed drainage retention areas and easements.
5. Proposed utilities and existing utilities to remain.
6. Graphically depicted on-site and off-site desired or objectionable views.
7. Locations of landscape opportunity planting areas in a bubble format which identifies various vegetation groupings in a hatched or colorized manner. Examples are: "trees/palms/shrubs", "shrubs only", "buffer plantings", etc.
8. Provided and labeled applicable clear zone, horizontal clearance, setback dimensions on the plans and in chart form which reflect AASHTO, FDOT and Department guidelines for landscape installation and maintenance operations, including those that have been coordinated with other disciplines
9. Identified outdoor advertising locations, owners and contacts and shown 1000 ft. view zone.
10. Indicated potential area(s) for wildflower plantings.
11. Identify existing and proposed ITS infrastructure.
12. Identify proposed signalization elements.
13. Identify roadway and pedestrian lighting locations.

The Opportunity Plan shall match the scale and format used for the proposed roadway sheets. Should this format not convey design intent that is clearly legible, an alternate format may be considered.

Landscape construction documents and landscape installation are not included in this contract and shall be provided by others.

Disciplines that will have greatest impact to preserving landscape opportunities include environmental, drainage, utilities, signing, lighting and ITS. The DBLA shall identify potential conflicts relating to preserving opportunity landscape areas and provide suggested resolutions to preserve them. If conflicts cannot be resolved by the Design-Build Firm and the DBLA, they shall be discussed with the Department's Project Manager and District Landscape Architect for coordination and resolution.

The DBLA shall research and confirm any legally permitted outdoor advertising billboard (ODA) within 1,000-feet of the Project limits. The ODA sign(s) and 1,000-feet maximum vegetation protection zone limit shall be indicated on the plans. The Design-Build Firm's Landscape Architect shall provide a copy of all correspondence and attachments to the Department's District Landscape Architect.

The DBLA shall conduct a visual survey of existing vegetation within and adjacent to the Right of Way of the project. General locations of existing vegetation that will remain after roadway and associated

improvements are completed shall be shown with notations of general plant species in each location on the Opportunity Plan. The DBLA shall identify proposed buffer areas as needed.

The DBLA shall meet with the District Landscape Architect prior to the beginning of work for the purposes of coordination and to discuss adherence to the Highway Beautification Policy. No proposed planting areas indicated on the Opportunity Plan can occur in: federal and/or state jurisdictional wetlands or other surface waters; within open water bodies; in the bottom of stormwater management facilities; or use obligate wetlands or facultative wetland species within 25 feet of the seasonal high water of wetlands or other surface waters. Limited plantings may occur on the slopes and bottom of stormwater management facilities once coordinated with the DEMO Office, District Drainage Engineer and the District Landscape Architect. Trees may not be planted within 5 feet of storm sewer pipes and utilities.

VII. Technical Proposal Requirements:

A. General:

Each Design-Build Firm being considered for this Project is required to submit a Technical Proposal. The proposal shall include sufficient information to enable the Department to evaluate the capability of the Design-Build Firm to provide the desired services. The data shall be significant to the Project and shall be innovative, when appropriate, and practical.

B. Submittal Requirements:

The Technical Proposal shall include the information, paper size and page limitation requirements as listed herein.

The written Technical Proposal must also be submitted electronically in PDF format including bookmarks for each section. Bookmarks which provide links to content within the Technical Proposal are allowed. Bookmarks which provide links to information not included within the content of the Technical Proposal shall NOT be utilized. No macros will be allowed. Minimum font size of ten (10) shall be used. Times New Roman shall be the required font type.

Only upon request by the Department, provide calculations, studies and/or research to support features identified in the Technical Proposal. This only applies during the Technical Proposal Evaluation phase.

Submit the Technical Proposal electronically in PDF format to: d3.designbuild@dot.state.fl.us

The minimum information to be included:

Section 1: Project Approach

- Paper size: 8½" x 11". The maximum number of pages shall be ten (10), single-sided, typed pages including text, graphics, tables, charts, and photographs. Double-sided 8½" x 11" sheets will be counted as 2 pages. 11”x17” sheets are prohibited in this section.
- Describe how the proposed design solutions and construction means and methods meet the project needs described in this RFP. Provide sufficient information to convey a thorough knowledge and understanding of the project and to provide confidence the design and construction can be completed as proposed.

- Provide the term, measurable standards, and remedial work plan for any proposed Value Added features that are not Value Added features included in this RFP, or for extending the Value Added period of a feature that is included in this RFP. Describe any material requirements that are exceeded.
- Provide a Written Schedule Narrative that describes the Design and Construction phases and illustrates how each phase will be scheduled to meet the Project needs required of this RFP. Bar or Gantt charts are prohibited.
- Provide a summary of your proposed Transportation Management Plan concept. Include your operational approach to opening the new interchange to traffic on the first day.
- Describe your public awareness ideas for the proposed roundabout and new interchange.
- Provide utility coordinator information (if not previously provided in your Letter of Interest).
- All approved ATCs the Design-Build Firm intends to utilize for the project shall be detailed in proposal plans as appropriate.
- Detail how accommodations will be made for the future 6-laning of SR 8 (I-10)
- Discuss drainage plan, construction phasing and ensuring offsite discharge does not affect downstream properties.
- Discuss design and construction considerations for the roundabout.

Section 2: Plans

- Plan and Profile views of the proposed improvements shall be submitted in roll-plot format. The maximum width of the roll-plots shall be 36". The maximum length of the roll-plot shall be 6'. No more than 6 roll plots will be allowed. Inclusion of additional information on the roll-plot, other than depictions of the Plan and Profile views, is allowed provided it clarifies the plan and profile views. However, the Department may determine that such additional information is excessive and may require the Design-Build Firm to revise and resubmit the roll-plots. If this occurs, the Design-Build Firm will have 2 business days to revise and resubmit the roll-plots upon notification by the Department. All other information not included on the roll plots, such as typical sections, special emphasis details, structure plans, etc., shall be provided on 11"x17" sheets. No more than 250 single sided plan sheets shall be submitted.
- Provide Landscape Opportunity Plan sheets that depict preserved planting locations for a Bold Landscape design for the entire project limits. The Landscape Plan shall show all preserved planting areas to be used for future Bold Landscaping designs. Paper size shall be 11"x17".
- Right of Way Maps and Legal Descriptions (including area in square feet) of any proposed additional Right of Way parcels if applicable and approved through the ATC process.
- Provide Technical Proposal Plans in accordance with the requirements of the FDOT Design Manual, except as modified herein.
- The Plans shall complement the Project Approach.
- Provide anticipated bridge, retaining wall and sound wall profile views.
- Provide anticipated stormwater treatment locations and size.

C. Evaluation Criteria:

The Department shall evaluate the written Technical Proposal by each Design-Build Firm. The Design-Build Firm shall not discuss or reveal elements of the price proposal in the written proposals. A technical score for each Design-Build Firm will be based on the following criteria:

Item	Value
1. Design	32
2. Construction	32
3. Innovation	10
4. Value Added	6
Maximum Score	**80**

The following is a description of each of the above referenced items:

1. Design (32 points)

The Design-Build Firm is to address the quality and suitability of the following elements in the Technical Proposal:

- Structures design
- Roadway design / and safety
- Drainage design
- Environmental Design
- ITS, lighting and Traffic design
- Design coordination plan minimizing design changes
- Geotechnical investigation plan
- Geotechnical load test program
- Minimizing impacts through design to:
  - Environment
  - Public
  - Adjacent Properties
  - Structures
- Temporary Traffic Control Plan
- Incident Management Plan
- Aesthetics
- Utility Coordination and Design
- Minimization of utility impacts
- Design considerations which improve recycling and reuse opportunities

The Design-Build Firm is to address the following in the Technical Proposal: aesthetics features of the design including but not limited to the following: considerations in the geometry, suitability and consistency of structure type, structure finishes, shapes, proportions and form throughout the limits of the project.

Architectural treatments such as tiles, colors, emblems, etc. will not be considered as primary aesthetic treatments.

The Design-Build Firm is to address the following in the Technical Proposal: design and utility coordination efforts that minimize the potential for adverse impacts and project delays due to utility involvement.

The Design-Build Firm is to address the following in the Technical Proposal: development of design approaches which minimize periodic and routine maintenance. The following elements should be considered: access to provide adequate inspections and maintenance, access to structure's lighting system, and impacts to long term maintenance costs.

2. **Construction (32 points)**

The Design-Build Firm is to address the quality and suitability of the following elements in the Technical Proposal:

- Safety
- Structures construction
- Roadway construction
- Drainage construction
- Construction coordination plan minimizing construction changes
- Minimizing impacts through construction to:
    - Environment
    - Public
    - Adjacent Properties
    - Structures
- Implementation of the Environmental design and Erosion/Sediment Control Plan
- Implementation of the Maintenance of Traffic Plan
- Implementation of the Incident Management Plan
- Utility Coordination and Construction

The Design-Build Firm is to address the following in the Technical Proposal: developing and deploying construction techniques that enhance project durability, reduce long term and routine maintenance, and those techniques which enhance public and worker safety. This shall include, but not be limited to, minimization of lane and driveway closures, lane widths, visual obstructions, construction sequencing, and drastic reductions in speed limits.

The Design-Build Firm is to address the following in the Technical Proposal: insuring all environmental commitments are honored.

The Design-Build Firm is to address the following in the Technical Proposal: construction and utility coordination efforts that minimize the potential for adverse impacts and project delays due to utility conflicts.

3. **Innovation (10 points)**

The Design-Build Firm is to address introducing and implementing innovative design approaches and construction techniques which address the following elements in the Technical Proposal:

- Minimize or eliminate Utility relocations
- Construction time savings techniques
- Enhance Design and Construction aspects related to future expansion of the transportation facility
- Minimize traffic disruption

4. **Value Added (6 points)**

The Design-Build is to address the following Value Added features in the Technical Proposal:

- Broadening the extent of the Value Added features of this RFP while maintaining existing threshold requirements
- Exceeding minimum material requirements to enhance durability of project components
- Providing additional Value Added project features proposed by the Design-Build Firm

The following Value Added features have been identified by the Department as being applicable to this project. The Design-Build Firm may propose to broaden the extent of these Value Added features.

Value Added Feature	Minimum Value Added Period
Value Added Asphalt	3 years
Value Added Bridge Components	5 years

D. Final Selection Formula:

The Department shall publicly open the sealed bid proposals and calculate an adjusted score using the following formula:

$$\frac{BPP}{TS} = \text{Adjusted Score}$$

BPP = Bid Price Proposal

TS = Technical Score (Combined Scores from LOI and Technical Proposal)

The Design-Build Firm selected will be the Design-Build Firm whose adjusted score is lowest.

The Department reserves the right to consider any proposal as non-responsive if any part of the Technical Proposal does not meet established codes and criteria.

E. Final Selection Process:

After the sealed bids are received, the Department will have a public meeting for the announcement of the Technical Scores and opening of sealed Bid Price Proposals. The Department will document the preliminary results of the meeting. At this meeting, the Department will announce the score for each member of the Technical Review Committee, by category, for each Proposer and each Proposer's Technical Score. Following announcement of the Technical Scores, the sealed Bid Price Proposals will be opened and the

adjusted scores calculated. The Department will document the preliminary bid results as presented in the meeting. The Selection Committee should meet a minimum of two (2) calendar days (excluding weekends and Department observed holidays) after the public opening of the Technical Scores and Bid Price Proposals. The Department's Selection Committee will review the evaluation of the Technical Review Committee and the Bid Price Proposal of each Proposer as to the apparent lowest adjusted score and make a final determination of the lowest adjusted score. The Selection Committee has the right to correct any errors in the evaluation and selection process that may have been made. The Department is not obligated to award the contract and the Selection Committee may decide to reject all proposals. If the Selection Committee decides not to reject all proposals, the contract will be awarded to the Proposer determined by the Selection Committee to have the lowest adjusted score.

F. Stipend Awards:

The Department has elected to pay a stipend to all non-selected Short-Listed Design-Build Firms to offset some of the costs of preparing the Proposals. The non-selected Short-Listed Design-Build Firms meeting the stipend eligibility requirements of the Project Advertisement and complying with the requirements contained in this section will ultimately be compensated. The stipend will only be payable under the terms and conditions of the Design-Build Stipend Agreement and Project Advertisement, copies of which are included with this Request for Proposal. This Request for Proposal does not commit the Department or any other public agency to pay any costs incurred by an individual firm, partnership, or corporation in the submission of Proposals except as set forth in the Design-Build Stipend Agreement. The amount of the stipend will be **$223,237** per non-selected Short-Listed Design-Build Firm that meets the stipend eligibility requirements contained in the Project Advertisement. The stipend is not intended to compensate any non-selected Short-Listed Design-Build Firm for the total cost of preparing the Technical and Price Proposals. The Department reserves the right, upon payment of stipend, to use any of the concepts or ideas within the Technical Proposals, as the Department deems appropriate.

In order for a Short-Listed Design-Build Firm to remain eligible for a stipend, the Short-Listed Design-Build Firm must fully execute the stipend agreement within one (1) week after the Short-List protest period for the Design-Build Stipend Agreement, Form No. 700-011-14. The Short-Listed Design-Build Firm shall reproduce the necessary copies. Terms of said agreement are non-negotiable. A fully executed copy of the Design-Build Stipend Agreement will be returned to the Short-Listed Design-Build Firm.

A non-selected Short-Listed Design-Build Firm eligible for stipend compensation must submit an invoice for a lump sum payment of services after the selection/award process is complete. The invoice should include a statement similar to the following: "All work necessary to prepare Technical Proposal and Price Proposals in response to the Department's RFP for the subject Project".

VIII. Bid Proposal Requirements.

A. Bid Price Proposal:

Bid Price Proposals shall be submitted on the Bid Blank form attached hereto and shall include one lump sum price for the Project within which the Proposer will complete the Project. The lump sum price shall include all costs for all design, geotechnical surveys, architectural services, engineering services, Design-Build Firms quality plan, construction of the Project, and all other work necessary to fully and timely complete that portion of the Project in accordance with the Contract Documents, as well as all job site and home office overhead, and profit, it being understood that payment of that amount for that portion of the Project will be full, complete, and final compensation for the work required to complete that portion of the Project.

Due to FDOT office closures, the Design-Build Firm shall submit the Bid Price Proposal electronically via email to D3.designbuild@dot.state.fl.us. Original hard copy bid documents, including the original bid bond shall be due to the D3 Procurement Office no later than **deadline shown in the Schedule of Events**. ~~**4:00pm on Wednesday, April 22, 2020**~~. One (1) hard copy of the Bid Price Proposal shall be mailed to the address below:

Ranae Dodson
FDOT D3 Procurement Manager
1074 Highway 90
Chipley, FL 32428

**PLEASE NOTE COURIERS WILL NOT GUARANTEE OVERNIGHT DELIVER TO THE FDOT OFFICE. DESIGN-BUILD FIRMS WILL NOT BE ABLE TO HAND DELIVER THE BID DUE TO STATE OFFICE CLOSURES CURRENTLY IN EFFECT.

The package shall indicate clearly that it is the Bid Price Proposal and shall identify clearly the Proposer's name, contract number, project number, and Project description. The Bid Price Proposal shall be secured and unopened until the date specified for opening of Bid Price Proposals.

Forms to be included with the Price Proposal:

- Design Build Bid Blank Form
- Design Build Bid Proposal Form
- Design Build Proposal Of (Proposer) Form
- Design Build Bid or Proposal Bond
- Vendor Certification Regarding Scrutinized Companies List

STRUCTURES FOUNDATIONS (DESIGN BUILD).
(REV 8-20-20)

SECTION 455 is deleted and the following substituted:

SECTION 455
STRUCTURES FOUNDATIONS

Index

A. General ..... 455-1 through 455-2
B. Piling ..... 455-3 through 455-12
C. Drilled Shafts ..... 455-13 through 455-24
D. Spread Footings ..... 455-25 through 455-37
E. Structures (Other Than Bridge) Foundations-
Auger Cast Piles ..... 455-38 through 455-50

A. GENERAL

455-1 General Requirement.

The Contractor may examine available soil samples and/or rock cores obtained during the preliminary soil boring operations at the appropriate District Materials Office or designated storage location.

455-1.1 Monitor Existing Structures: Monitor existing structures in accordance with Section 108.

455-1.2 Excavation: Complete all excavation of the foundations prior to installing piles or shafts unless otherwise authorized by the Engineer. After completing pile/shaft installation, remove all loose and displaced materials from around the piles/shafts, leaving a clean, solid surface. Compact the soil surface on which concrete is to be placed or which will support the forming system for the concrete to support the load of the plastic concrete without settling or causing the concrete to crack, or as shown in the Contract Documents.

455-1.2.1 Abutment (End Bent) Fill: Place and compact the fill before installing end-bent piling/shafts, except when driving specified test piling in end bents or when the Plans show uncased piles through proprietary retaining wall fills.

When installing piles/shafts or casing prior to placing fill, take necessary precautions to prevent displacement of piles/shafts during placing and compacting fill materials within 15 feet of the piles/shafts or casing. Reference and check the position of the piles/shafts or casing at three approximately equal intervals during construction of the embankment.

Place embankment material in 6 inch compacted lifts in the 15 foot area around the piles/shafts or casing. Compact embankment material within the 15 foot area adjacent to the piles/shafts or casing to the required density with compaction equipment weighing less than 1,000 pounds. When installing piles/shafts prior to the completion of the surrounding fills, do not cap them until placing the fills as near to final grade as possible, leaving only the necessary working room for construction of the caps.

When shown in the Plans, provide permanent casings installed prior to placement of the fill, for all drilled shafts through mechanically stabilized fills (for example, behind proprietary retaining walls) for shafts installed after fill placement. Install temporary casings through the completed conventional fill when permanent casings are not required.

Provide permanent casings, if required, before the fill is placed extending a sufficient distance into the existing ground to provide stability to the casings during construction of the abutment fill.

455-1.3 Cofferdams: Construct cofferdams as detailed in the Plans. When cofferdams are not detailed in the Plans, employ a qualified Specialty Engineer to design cofferdams, and to sign and seal the plans and specification requirements. Send the designs to the Engineer for his records before beginning construction.

Provide a qualified diver and a safety diver to inspect the conditions of the foundation enclosure or cofferdam when the Contract Documents require a seal for construction. Equip these divers with suitable voice communications, and have them inspect the foundation enclosure and cofferdam periphery including each sheeting indentation and around each piling or drilled shaft to ensure that no layers of mud or other undesirable materials were left above the bottom of seal elevation during the excavation process. Also have the divers check to make sure the surfaces of the piles or drilled shafts are sufficiently clean to allow bond of the concrete down to the minimum bottom of seal elevation. Ensure that there are no mounds of stone, shell, or unapproved backfill material left after placement and grading. Ensure that the seal is placed as specified and evaluate the adequacy of the foundation soils or rock. Correct any deficiencies found by the divers. Upon completion of inspection by the divers, the Department may also elect to inspect the work before authorizing the Contractor to proceed with subsequent construction operations. Submit a written report by the divers to the Engineer indicating the results of their underwater inspection before requesting authorization to place the seal concrete.

455-1.4 Vibrations on Freshly Placed Concrete (Drilled Shafts and Piers): Ensure that freshly placed concrete is not subjected to peak particle velocities greater than 1.5 inches per second from vibration sources located within 30 feet (from the nearest outside edge of freshly placed concrete to the vibration source) until that concrete has attained its final set as defined by ASTM C403 except as required to remove temporary casings before the drilled shaft elapsed time has expired.

455-2 Static Compression Load Tests.

455-2.1 General: Employ a professional testing laboratory, or Specialty Engineer with prior load test experience on at least three projects, to conduct the load test in compliance with these Specifications, to record all data, and to submit signed and sealed reports of the test results to the Engineer.

Perform the load test by applying a load up to the load required in the Contract Documents or to the failure load, whichever occurs first.

Do not apply test loads to piles sooner than 48 hours (or the time interval shown in the Plans) after driving of the test pile or reaction piles, whichever occurs last.

Do not begin static load testing of drilled shafts until the concrete has attained a compressive strength of 3,400 psi. The Contractor may use high early strength concrete to obtain this strength at an earlier time to prevent testing delays.

Provide all equipment, materials, labor, and personnel required to conduct the load tests, including determination of anchor reaction member depths. In this case, provide a loading apparatus designed to accommodate the maximum load plus an adequate safety factor.

While performing the load test, provide safety equipment, and employ safety procedures consistent with the latest approved practices for this work. Include with these safety procedures, adequate support for the load test plates and jack to prevent them from falling in the event of a release of load due to hydraulic failure, test pile/shaft failure, or any other cause.

455-2.2 Loading Apparatus: Provide an apparatus for applying the vertical loads as described in one of the following:

1. As shown and described in the Contract Documents.

2. As supplied by the Contractor, one of the following devices designed to accommodate a load at least 20% higher than the test load shown in the Plans or described herein for test loads:

a. Load Applied by Hydraulic Jack Acting Against Weighted Box or Platform: Construct a test box or test platform, resting on a suitable support, over the pile, and load it with material with a total weight greater than the anticipated maximum test load. Locate supports for the weighted box or platform at least 6 feet or three pile/shaft diameters, whichever is greater, measured from the edge of the pile or shaft to the edge of the supports. Insert a hydraulic jack with pressure gauge between the test pile or shaft and the underside of the reaction beam, and apply the load to the pile or shaft by operating the jack between the reaction beam and the top of the pile or shaft.

b. Load Applied to the Test Pile or Shaft by Hydraulic Jack Acting Against Anchored Reaction Member: Construct reaction member anchorages in accordance with article 6.3 of ASTM D1143. Attach a girder(s) of sufficient strength to act as a reaction beam to the upper ends of the anchor piles or shafts. Insert a hydraulic jack with pressure gauges between the head of the test pile/shaft and the underside of the reaction beam, and apply the test load to the pile/shaft by operating the jack between the reaction beam and the pile/shaft head.

If using drilled shafts with bells as reaction member anchorages, locate the top of the bell of any reaction shaft anchorage at least three shaft diameters below the bottom of the test shaft.

c. Combination Devices: The Contractor may use a combination of devices (a) and (b), as described above, to apply the test load to the pile or shaft.

d. Other systems proposed by the Contractor and accepted by the Engineer: When necessary, provide horizontal supports for loading the pile/shaft, and space them so that the ratio of the unsupported length to the minimum radius of gyration of the pile does not exceed 120 for steel piles, and the unsupported length to the least cross-section dimension does not exceed 20 for concrete piles or drilled shafts. Ensure that horizontal supports provide full support without restraining the vertical movement of the pile/shaft in any way.

When required by the Contract Documents, apply a horizontal load to the pile/shaft either separately or in conjunction with the vertical load. Apply the load to the test pile/shaft by hydraulic jacks, jacking against Contractor provided reaction devices. After receiving the Engineer's acceptance of the proposed method of load application, apply the horizontal load in increments, and relieve it in decrements as required by the Contract Documents.

455-2.2.1 Modified Quick Test:

1. Loading Procedure: Apply vertical loads concentric with the longitudinal axis of the tested pile/shaft to accurately determine and control the load acting on the pile/shaft at any time. Place the load on the pile/shaft continuously, in increments equal to approximately 5% of the maximum test load specified until approaching the failure load, as indicated by the measuring

apparatus and/or instruments. Then, apply increments of approximately 2.5% until the pile/shaft "plunges" or attains the limiting load. The Specialty Engineer may elect to stop the loading increments when the pile/shaft has met the failure criteria or when a settlement equal to 10% of the pile/shaft width or diameter is reached. Apply each load increment immediately after taking and verifying the complete set of readings from all gauges and instruments. Apply each increment of load within the minimum length of time practical, and immediately take the readings. Complete the addition of a load increment and the completion of the readings within 5 to 15 minutes. Hold the maximum applied load for one hour.

Remove the load in decrements of about 10% of the maximum test load. Remove each decrement of load within the minimum length of time practical, and immediately take the readings. Complete the removal of a load decrement and the taking of the readings within 5 to 15 minutes. The Engineer may also require up to two reloading cycles with five loading increments and three unloading decrements. Record the final recovery of the pile/shaft until movement is essentially complete for a period of one hour after the last unload interval.

2. Failure Criteria and Nominal Resistance: Use the criteria described herein to establish the failure load. The failure load is defined as the load that causes a pile/shaft top deflection equal to the calculated elastic compression plus 0.15 inches plus 1/120 of the pile/shaft minimum width or the diameter in inches for piles/shafts 24 inches or less in width, and equal to the calculated elastic compression plus 1/30 of the pile/shaft minimum width or diameter for piles/shafts greater than 24 inches in width. Consider the nominal resistance of any pile/shaft so tested as either the maximum applied load or the failure load, whichever is smaller.

455-2.3 Measuring Apparatus: Provide an apparatus for measuring movement of the test piles/shafts that consists of all of the following devices:

1. Wire Line and Scale: Stretch a wire between two secure supports located at a distance at least:

a. 10 feet from the center of the test pile but not less than 3.5 times the pile diameter or width.

b. 12 feet from the centerline of the shaft to be tested but not less than three shaft diameters.

Locate the wire supports as far as practical from reaction beam anchorages. At over-water test sites, the Contractor may attach the wire line to the sides of the service platform. Mount the wire with a pulley on one support and a weight at the end of the wire to provide constant tension on the wire. Ensure that the wire passes across the face of a scale mounted on a mirror attached to the test pile/shaft so that readings can be made directly from the scale. Use the scale readings as a check on an average of the dial readings. When measuring both horizontal and vertical movement, mount separate wires to indicate each movement, horizontal or vertical. Measure horizontal movements from two reference wires set normal to each other in a horizontal.

2. Wooden Reference Beams and Dial Gauges: Attach wooden reference beams as detailed in the Plans and accepted by the Engineer to independent supports. For piles, install the independent supports at the greater of 3.5 times the pile diameter or width or 10 feet from the centerline of the test pile. For drilled shafts, install independent supports at the greater of three shaft diameters or 12 feet from the centerline of the shaft to be tested. Locate the reference beam supports as far as practical from reaction beam anchorages. For over-water test sites, the Contractor may attach the reference beams between two diagonal platform supports. Attach dial gauges, with their stems resting either on the top of the pile/shaft or on lugs or similar reference

points on the pile/shaft, to the fixed beams to record the movement of the pile/shaft head. Ensure that the area on the pile/shaft or lug on which the stem bears is a smooth surface which will not cause irregularities in the dial readings.

Provide a minimum of four dial gauges, each with 0.001 inch divisions and with 2 inch minimum travel, placed at 90 degree intervals for measuring vertical or horizontal movement.

3. Survey Level: As a check on the dial gauges, determine the elevation of a point near the top of the test pile/shaft (on plan datum) by survey level at each load and unload interval during the load test. Unless accepted otherwise by the Engineer, level survey precision is 0.001 foot. Alternately, the surveyor may read an engineer's 50 scale attached near the pile/shaft head. Determine the first elevation before applying the first load increment; make intermediate readings immediately before a load increment or an unload decrement, and after the final unload decrement that completely removes the load. Make a final reading at the time of the last recovery reading.

For over-water test sites, when shown in the Plans or directed by the Engineer, the Contractor shall, drive an H pile through a 36 inch casing to provide a stable support for the level and to protect it against wave action interfering with level measurements. Provide a suitable movable jig for the surveyor to stand. Use a jig that has a minimum of three legs, has a work platform providing at least 4 feet width of work area around the casing, and is accepted by the Engineer before use. The described work platform may be supported by the protective casing when accepted by the Engineer.

455-2.4 Load Test Instrumentation:

1. General: The intent of the load test instrumentation is to measure the test load on top of the pile/shaft and its distribution between side friction and end bearing to provide evaluation of the preliminary design calculations and settlement estimates and to provide information for final pile/shaft length design. Ensure that the instrumentation is as described in the Contract Documents.

Supply 110 V, 60 Hz, 30 A of AC electric power in accordance with the National Electric Code (NEC) to each test pile/shaft site during the installation of the instrumentation, during the load testing, and during any instrumented set-checks/redrives.

Place all of the internal instrumentation on the rebar cage before installation in the test shaft. Construct the rebar cage at least two days before it is required for construction of the test shaft. Successfully demonstrate the lifting and handling procedures before installing the instrumentation. Place the instrumented rebar cage in one segment without causing damage to the instrumentation.

2. Hydraulic Jack and Load Cell: Provide hydraulic jack(s) of adequate size to deliver the required test load to the pile/shaft unless shown otherwise in the Plans. Before load testing begins, submit a certificate from a reputable testing laboratory showing a calibration of gauge readings for all stages of jack loading and unloading for jacks provided. Ensure that the jack has been calibrated within the preceding six months. Ensure that the accuracy of the gauge is within 5% of the true load.

Provide an adequate load cell accepted by the Engineer that has been calibrated within the preceding six months. Provide an approved electrical readout device for the load cell. Submit a certificate from an independent laboratory showing a calibration of readings for all stages of loading and unloading for load cells furnished by the Contractor and obtain the

approval of the Engineer before beginning load testing. Ensure that the accuracy of the load cell is within 1% of the true load.

3. Telltales: When shown in the Contract Documents, install telltales that consist of an unstressed steel rod, greased for reducing friction and corrosion, with appropriate clearance inside a constant-diameter pipe that rests on a flat plate attached to the end of the pipe at the point of interest shown in the Plans. Construct telltales in accordance with the Contract Documents. Install dial gauges reading to 0.001 inch with 1 inch minimum travel as directed by the Specialty Engineer to measure the movement of the telltale with respect to the top of the pile/shaft.

4. Embedded Strain Gauges: Install strain gauges in the test shaft to measure the distribution of the load. Ensure that the type, number, and location of the strain gauges are as shown in the Plans or as directed by the Geotechnical Foundation Design Engineer of Record (GFDEOR). Use strain gauges that are waterproof and have suitable shielded cable that is unspliced within the shaft. In drilled shafts provide sufficient instrumentation to determine side friction components in segments no longer than 5 feet and the end bearing component.

5. Caliper: Provide a caliper tool or system to measure accurately and continuously the shape of test shafts prior to placing concrete.

455-2.5 Support Facilities: Furnish adequate facilities for making load and settlement readings 24 hours per day. Provide such facilities for the instrumented area, and include lighting and shelter from rain, wind, and direct sunlight.

455-2.6 Load Test Personnel Furnished by the Contractor: Provide a certified welder, together with necessary cutting and welding equipment, to assist with the load test setup and to make any necessary adjustments during the load test. Provide personnel to operate the jack, generators, and lighting equipment, and also provide one person with transportation to assist as required during load test setup and conducting of the load tests. Provide qualified personnel, to read the dial gauges, take level measurements, and conduct the load test under the direct supervision of the Specialty Engineer.

455-2.7 Cooperation by the Contractor: Cooperate with the Department, and ensure that the Department has access to all facilities necessary for observation of the conduct and the results of the test.

455-2.8 Required Reports: Submit a static load test report signed and sealed by the Specialty Engineer to the Engineer for review and acceptance, at least three working days, excluding weekends and Department observed holidays, prior to beginning production pile/shaft construction. Include in the report of the load test the following information:

1. A tabulation of the time of, and the amount of, the load and settlement readings, and the load and recovery readings taken during the loading and unloading of the pile/shaft.

2. A graphic representation of the test results, during loading and unloading of pile/shaft top movement as measured by the average of the dial gauge readings, from wireline readings and from level readings.

3. A graphic representation of the test results, when using telltales, showing pile/shaft compression and pile/shaft tip movement.

4. The estimated failure and safe loads according to the criteria described herein.

5. The derived side friction component for each pile/shaft segment, and end bearing component. Include all pertinent test data, analysis and charts used to determine these values.

6. Remarks concerning any unusual occurrences during the loading of the pile/shaft.

7. The names of those making the required observations of the results of the load test, the weather conditions prevailing during the load test, and the effect of weather conditions on the load test.

8. All supporting data including jack and load cell calibrations and certificates and other equipment requiring calibration.

9. All data taken during the load test together with instrument calibration certifications. In addition, submit a report showing an analysis of the results of axial load and lateral load tests in which soil resistance along and against the pile/shaft is reported as a function of deflection.

10. For drilled shafts, include all cross-hole sonic logging results, gamma-gamma density logging results, the results of other integrity tests, caliper measurements data and the pilot holes reports of core borings. Attach this report to the final authorized tip elevations letter in accordance with 455-15.6.

11. For piles, include pile driving records, and dynamic testing data and analysis.

12. Submit a signed & sealed letter to the Department confirming the design assumptions were verified by the load tests before proceeding with production foundation construction.

455-2.9 Disposition of Loading Material: Remove all equipment and materials, which remains the Contractor's property, from the site. Clean up and restore the site to the satisfaction of the Engineer.

455-2.10 Disposition of Tested Piles/Shafts: After completing testing, cut off the tested piles/shafts, which are not to be incorporated into the final structure, and any reaction piles/shafts at an elevation 24 inches below the finished ground surface. Take ownership of the cut-offs and provide areas for their disposal.

B. PILING

455-3 General.

Furnish and install concrete, steel, or wood piling including driving, jetting, preformed pile holes, cutting off, splicing, dynamic load testing, and static load testing of piling. Prior to driving, clearly mark the piles to facilitate inspection. Provide individual straight-line marks at 1-ft intervals numbered at least every 5 ft. Use markers or lumber crayons or paint marks that can be easily observed by the inspector. Ensure marks are spaced uniformly and perpendicular to the face of the pile. Face pile so that the pile markings are easily visible to the pile inspector. Provide inch marks as needed when set checks or practical refusal checks are required.

In the event a pile is broken or otherwise damaged by the Contractor to the extent that the damage is irreparable, in the opinion of the Engineer, the Contractor shall extract and replace the pile at no additional expense to the Department. In the event that a pile is mislocated by the Contractor, the Contractor shall extract and replace the pile, at no expense to the Department, except when a design change proposed by the Contractor is approved by the Department as provided in 455-5.16.5.

455-4 Classification.

The Department classifies piling as follows:

1. Treated timber piling.
2. Prestressed concrete piling.
3. Steel piling.
4. Test piling.
5. Sheet piling.
    a. Concrete sheet piling.
    b. Steel sheet piling.
6. Polymeric Piles (see Section 471 for requirements).

455-5 General Construction Requirements.

455-5.1 Predrilling of Pile Holes: Predrilled pile holes are either starter holes to the depth described in this Subarticle or holes drilled through embankment/fill material down to the natural ground surface at no additional cost to the Department. When using low displacement steel piling such as structural shapes, drive them through the compacted fill without the necessity of drilling holes through the fill except when the requirements for predrilling are shown in the Plans. When using concrete or other high displacement piles, drill pile holes through fill, new or existing, to at least the elevation of the natural ground surface. Use the range of drill diameters listed below for square concrete piles.

12 inch square piles	15 to 17 inches
14 inch square piles	18 to 20 inches
18 inch square piles	22 to 26 inches
20 inch square piles	24 to 29 inches
24 inch square piles	30 to 34 inches
30 inch square piles	36 to 43 inches

For other pile sizes, use the diameter of the drills shown in the Plans or accepted by the Engineer. Accurately drill the pile holes with the hole centered over the Plan location of the piling. Maintain the location and vertical alignment within the tolerances allowed for the piling.

For predrilled holes required through rock or other hard (i.e. debris, obstructions, etc.) materials that may damage the pile during installation, predrill hole diameters approximately 2 inches larger than the largest dimension across the pile cross-section. Fill the annular space around the piles as described in 455-5.10.1 with clean A-3 sand or sand meeting the requirements of 902-3.3.

In the setting of permanent and test piling, the Contractor may initially predrill holes to a depth up to 10 feet or 20% of the pile length whichever is greater, unless otherwise shown in the plans. When installing piles in compacted fill, predrill the holes to the elevation of the natural ground surface. With prior written authorization from the Engineer, the Contractor may predrill holes to greater depths to minimize the effects of vibrations on existing structures adjacent to the work or for other reasons the Contractor proposes.

455-5.2 Underwater Driving: Underwater driving is defined as any driving through water which is above the pile head at the time of driving.

When conducting underwater driving, provide a diver equipped with voice communications to aid in placing the hammer back on the pile for required cushion changes or

for subsequent redriving, to attach or recover instrumentation, to inspect the condition of the pile, or for other assistance as required.

Select one of the following methods for underwater driving:

1. Accomplish underwater driving using conventional driving equipment and piling longer than authorized so that the piling will extend above the water surface during final driving. When choosing this option, furnish a pile hammer that satisfies the requirements of this Section for use with the longer pile.

2. Accomplish underwater driving using an underwater hammer that meets the requirements of this Section and is accepted by the Engineer. When choosing this option, provide at least one pile longer than authorized at each pile group, extending above the water surface at final driving. At each group location, drive the longer pile first. Evaluate the adequacy of the underwater driving system. Use the pile tip elevation of the longer pile to evaluate the acceptability of the piles driven with the underwater hammer.

3. Accomplish underwater driving using conventional driving equipment with a suitable pile follower. When choosing this option, provide at least one pile longer than required at each pile group, extending above the water surface at final driving. At each group location, drive the full length pile first without using the follower. Perform a dynamic load test on the first pile driven with the follower in each group. Use the pile tip elevation of the longer pile to evaluate the acceptability of the piles driven with the follower.

Prior to use, submit details of the follower to the Engineer along with the information required in 455-10. Include the weight, cross-section details, stiffness, type of materials, and dimensions of the follower.

455-5.3 Pile Hammers: All equipment is subject to satisfactory field performance during and without dynamic testing. Use a variable energy hammer to drive concrete piles. Hammers will be rated based on the theoretical energy of the ram at impact. Supply driving equipment which provides the required resistance at a blow count ranging from 3 blows per inch (36 blows per foot) to 10 blows per inch (120 blows per foot) at the end of initial drive. When the stroke height or bounce chamber pressure readings do not adequately determine the energy of the hammer, provide and maintain a device to measure the velocity of the ram at impact. Determine the actual hammer energy in the field so that it is consistent with the hammer energy used for each bearing capacity determination. When requested, submit to the Engineer all technical specifications and operating instructions related to hammer equipment.

455-5.3.1 Air/steam: Variable energy air/steam hammers shall be capable of providing at least two ram stroke lengths. The short ram stroke length shall be approximately half of the full stroke for hammers with strokes up to 4 feet and no more than 2 feet for hammers with maximum strokes lengths over 4 feet. Operate and maintain air/steam hammers within the manufacturer’s specified ranges. Use a plant and equipment for steam and air hammers with sufficient capacity to maintain, under working conditions, the hammer, volume and pressure specified by the manufacturer. Equip the plant and equipment with accurate pressure gauges which are easily accessible. Drive piles with air/steam hammers operating within 10% of the manufacturer’s rated speed in blows per minute. Provide and maintain in working order for the Engineer’s use an approved device to automatically determine and display the blows per minute of the hammer.

455-5.3.2 Diesel: Variable energy diesel hammers shall have at least three fuel settings that will produce reduced strokes. Operate and maintain diesel hammers within the manufacturer’s specified ranges. Determine the rated energy of diesel hammers using measured

ram stroke length multiplied by the weight of the ram for open end hammers and by methods recommended by the manufacturer for closed end hammers.

Provide and maintain in working order an approved device to automatically determine and display ram stroke for open-end diesel hammers.

Equip closed-end (double acting) diesel hammers with a bounce chamber pressure gauge, in good working order, mounted near ground level so it can be easily read. Also, submit to the Engineer a chart, calibrated to actual hammer performance within 30 days prior to initial use, equating bounce chamber pressure to either equivalent energy or stroke for the closed-end diesel hammer to be used.

455-5.3.3 Hydraulic: Variable energy hydraulic hammers shall have at least three hydraulic control settings that provide for predictable energy or equivalent ram stroke. The shortest stroke shall be a maximum of 2 feet for the driving of concrete piles. The remaining strokes shall include full stroke and approximately halfway between minimum and maximum stroke.

Supply hammer instrumentation with electronic read out, and control unit that allows the inspector and Engineer to monitor, and the operator to read and adjust the hammer energy or equivalent ram stroke. When pressure measuring equipment is required to determine hammer energy, calibrate the pressure measuring equipment before use.

455-5.3.4 Vibratory: Vibratory hammers of sufficient capacity (force and amplitude) may be used to drive steel sheet piles and, with acceptance of the Engineer, to drive steel bearing piles a sufficient distance to get the impact hammer on the pile (to stick the pile). The Geotechnical Foundation Design Engineer of Record will determine the allowable depth of driving using the vibratory hammer based on site conditions. However, in all cases, use a power impact hammer for the last 15 feet or more of the final driving of steel bearing piles for bearing determinations after all piles in the bent/pier have been driven with a vibratory hammer. Do not use vibratory hammers to install concrete piles, or to install support or reaction piles for a load test.

455-5.4 Cushions and Pile Helmet:

455-5.4.1 Capblock: Provide a capblock (also called the hammer cushion) as recommended by the hammer manufacturer. Use commercially manufactured capblocks constructed of durable manmade materials with uniform known properties. Do not use wood chips, wood blocks, rope, or other material which permit excessive loss of hammer energy. Do not use capblocks constructed of asbestos materials. Obtain the Engineer’s acceptance for all proposed capblock materials and proposed thickness for use. Maintain capblocks in good condition, and replace them when charred, melted, or otherwise significantly deteriorated. Inspect the capblock before driving begins and weekly or at appropriate intervals based on field trial. Replace or repair any capblock which loses more than 25% of its original thickness, in accordance with the manufacturer’s instructions, before permitting further driving.

455-5.4.2 Pile Cushion: Provide a pile cushion that is adequate to protect the pile from being overstressed in compression and tension during driving. Use a pile cushion sized so that it will fully fill the lateral dimensions of the pile helmet minus one inch but does not cover any void or hole extending through the top of the pile. Determine the thickness based upon the hammer-pile-soil system. For driving concrete piles, use a pile cushion made from pine plywood or oak lumber. Do not use materials previously soaked, saturated or treated with oil. Maintain pile cushions in good condition and replace them when charred, splintered, excessively compressed, or otherwise deteriorated to the point it will not protect the pile against

overstressing in tension or compression. Protect cushions from the weather, and keep them dry. Do not soak the cushions in any liquid. Provide a new cushion for each pile unless approved otherwise by the Engineer after satisfactory field trial during dynamic testing.

During dynamic load tests, replace the pile cushion when any of the pile stress measurements exceed the maximum allowed pile stress determined by 455-5.12.2. When driving a pile without dynamic testing, replace the pile cushion when the cushion is either compressed more than one-half the original thickness, begins to burn, or as directed by the Engineer after field performance.

Reuse pile cushions in good condition to perform all set-checks and redrives. Use the same cushion to perform the set-check or redrive as was used during the initial driving, unless this cushion is unacceptable due to deterioration, in which case use a similar cushion.

455-5.4.3 Pile Helmet: Provide a pile helmet suitable for the type and size of piling being driven. Use a pile helmet deep enough to adequately contain the required thickness of pile cushion and to assist in maintaining pile-hammer alignment. Use a pile helmet that fits loosely over the pile head and is at least 1 inch larger than the pile dimensions. Use a pile helmet designed so that it will not restrain the pile from rotating.

455-5.5 Leads: Provide pile leads constructed in a manner which offers freedom of movement to the hammer and that have the strength and rigidity to hold the hammer and pile in the correct position and alignment during driving. When using followers, use leads that are long enough and suitable to maintain position and alignment of the hammer, follower, and pile throughout driving.

455-5.6 Followers: When driving using followers, perform dynamic load testing as per 455-5.14. Obtain the Engineer's acceptance for the type of follower, when used, and the method of connection to the leads and pile. Use followers constructed of steel with an adequate cross-section to withstand driving stresses. When driving concrete piles, ensure that the cross-sectional area of the follower is at least 18% of the cross-sectional area of the pile. When driving steel piles, ensure that the cross-sectional area of the follower is greater than or equal to the cross-sectional area of the pile. Provide a pile helmet at the lower end of the follower sized according to the requirements of 455-5.4.3. Use followers constructed that maintain the alignment of the pile, follower, and hammer and still allow the pile to be driven within the allowable tolerances. Use followers designed with guides adapted to the leads that maintain the hammer, follower, and the piles in alignment.

Use information from dynamic load tests described in 455-5.14 to evaluate the adequacy of the follower and to determine pile capacity.

455-5.7 Templates and Ground Elevations: Provide a fixed template, adequate to maintain the pile in proper position and alignment during driving with swinging leads or with semi-fixed leads. The Engineer may allow the use of templates attached to a barge if the Contractor demonstrates satisfactorily that the pile alignment, and the elevation and horizontal position of the template can be maintained during all pile driving operations. Where practical, place the template so that the pile can be driven to cut-off elevation before removing the template. Ensure that templates do not restrict the vertical movement of the pile.

Supply a stable reference close to the pile, which is satisfactory in the opinion of the Engineer, for determination of the pile penetration. At the time of driving piles, obtain and record elevations of the original ground and template at each pile or pile group location. Note the highest and lowest elevation at each required location and the ground elevation at all piles.

455-5.8 Water Jets: Use jet pumps, supply lines, and jet pipes that provide adequate pressure and volume of water to freely erode the soil. Do not perform jetting without prior approval by the Engineer.

Do not perform jetting in the embankment or for end bents. Where conditions warrant, with approval by the GFDEOR, perform jetting on the holes first, place the pile therein, then drive the pile to secure the last few feet of penetration. Only use one jet for prejetting or jetting through piles constructed with a center jet-hole. Use two jets when using external jets. When jetting and driving, position the jets slightly behind the advancing pile tip (approximately 3 feet or as approved by the GFDEOR. When using water jets in the driving, determine the pile bearing only from the results of driving after withdrawing the jets, except where using jets to continuously eliminate soil resistance through the scour zone, ensure that they remain in place as directed by the GFDEOR and operating during pile bearing determination. Where practical, perform jetting on all piles in a pile group before driving begins. When large pile groups or pile spacing and batter make this impractical, or when the Plans specify a jet-drive sequence, set check a sufficient number of previously driven piles in a pile group to confirm their capacity after completing all jetting.

455-5.9 Penetration Requirements: Measure the penetration of piles from the elevation of natural ground, the deepest scour elevation shown in the Pile Data Table, or the bottom of excavation, whichever is lower. When the Contract Documents show a minimum pile tip elevation, drive the tip of the pile to this minimum elevation. The Engineer will accept the bearing of a pile only if the Contractor achieves the required bearing when the tip of the pile is at or below the specified minimum tip elevation and below the bottom of the preformed or predrilled pile hole.

When the Plans do not show a minimum tip elevation, ensure that the penetration is at least 10 feet into firm bearing material or at least 20 feet into soft material unless otherwise permitted by the Engineer. The Engineer may accept a penetration between 15 feet and 20 feet when there is an accumulation of five consecutive feet or more of firm bearing material. Firm bearing material is any material offering a driving resistance greater than or equal to 30 tons per square foot of gross pile area as determined by the Dynamic Load Testing (455-5.12.4). Soft material is any material offering less than these resistances. The gross pile area is the actual pile tip cross-sectional area for solid concrete piles, the product of the width and depth for H piles, and the area within the outside perimeter for pipe piles and voided concrete piles.

Do not drive piles beyond practical refusal. To meet the requirements in this Subarticle, provide penetration aids, such as jetting or preformed pile holes, when piles cannot be driven to the required penetration without reaching practical refusal.

455-5.10 Preformed Pile Holes:

455-5.10.1 Description: Preformed pile holes serve as a penetration aid when all other pile installation methods fail to produce the desired penetration and when authorized by the GFDEOR to minimize the effects of vibrations on adjacent structures. Preformed pile holes are necessary when the presence of rock or strong strata of soils will not permit the installation of piles to the desired penetration by driving or a combination of jetting and driving, when determined necessary, and authorized by the GFDEOR to minimize the effects of vibrations on adjacent existing structures. Drive all piles installed in preformed pile holes to determine that the bearing requirements have been met.

For preformed holes which are required through material that caves during driving to the extent that the preformed hole does not serve its intended purpose, case the hole

from the surface through caving material. After installing the pile to the bottom of the casing, remove the casings unless shown otherwise in the Plans. Determine bearing of the pile after removing the casing unless shown otherwise in the Plans. Fill all voids between the pile and soil remaining after driving through preformed holes with clean A-3 sand or sand meeting the requirements of 902-3.3, after the pile has achieved the required minimum tip elevation, unless grouting of preformed pile holes is shown in the Plans. If pile driving is interrupted during sand placement, drive the pile at least 20 additional blows after filling all of the voids between the pile and soil with sand at no additional cost to the Department.

455-5.10.2 Provisions for Use of Preformed Pile Holes: Preformed pile holes may be used when the Contractor establishes that the required results cannot be obtained when driving the load bearing piles with specified driving equipment, or if jetting is allowed, while jetting the piles and then driving or while jetting the piles during driving.

455-5.10.3 Reasons for Preformed Pile Holes: The Department considers, but does not limit to, the following conditions as reasons for preformed pile holes:

1. Inability to drive piles to the required penetration with driving and jetting equipment.
2. To penetrate a hard layer or layers of rock or strong stratum that the Engineer considers not sufficiently thick to support the structure.
3. To obtain greater penetration into dense (strong) material and into dense material containing holes, cavities or unstable soft layers.
4. To obtain penetration into a stratum in which it is desired to found the structure.
5. To minimize the effects of vibrations or heave on adjacent existing structures.
6. To minimize the effects of ground heave on adjacent piles.

455-5.10.4 Construction Methods: Construct preformed pile holes by drilling, or driving and withdrawing a suitable punch or chisel at the locations of the piles. Construct a hole that is equal to or slightly greater than the largest pile dimension for the entire length of the hole and of sufficient depth to obtain the required penetration. Carefully form the preformed hole by using a drill or punch guided by a template or other suitable device, and do not exceed the minimum dimensions necessary to achieve the required penetration of the pile. When the Plans call for grouting the preformed pile holes, provide a minimum pile hole dimension that is 2 inches larger than the largest pile dimension. Construct the holes at the Plan position of the pile and the tolerances in location, and ensure the hole is straight and that the batter is the same as specified for the pile. Loose material may remain in the preformed pile hole if the conditions in 455-5.10.1 are satisfied.

455-5.10.5 Grouting of Pile Holes: Clean and grout preformed pile holes for bearing piles, when the Plans require grouting after driving. Use grout that meets the requirements of 455-40 and 455-42 and has a minimum compressive strength of 3,000 psi at 28 days or as specified in the Plans. Prepare cylinders and perform QC testing in accordance with 455-43. LOT size and verification will be in accordance with 455-43. Pump the grout through three or more grout pipes initially placed at the bottom of the preformed hole. The Contractor may raise the grout pipes when necessary to prevent clogging and to complete the grouting operations. Maintain the grout pipes below the surface of the previously placed grout. Continue grouting until the grout reaches the ground surface all around the pile. Provide divers to

monitor grouting operations when the water depth is such that it is impractical to monitor from the ground surface.

455-5.11 Bearing Requirements:

455-5.11.1 General: Drive piles to provide the bearing required for carrying the loads shown in the Plans. For all types of bearing piles, consider the driving resistance as determined by the methods described herein sufficient for carrying the specified loads as the minimum bearing which is accepted for any type of piles. Determine pile bearing using the method described herein or as shown in the Plans.

For foundations requiring 100% dynamic testing of production piles, ensure each pile has achieved minimum penetration and the minimum required bearing for 6 inches of consecutive driving, or the minimum penetration is achieved, driving has reached practical refusal in firm material and the bearing capacity obtained in all the refusal blows.

For foundations not requiring 100% dynamic testing of production piles, ensure each pile has achieved minimum penetration, the blow count is generally the same or increasing and the minimum required bearing capacity obtained for 24 inches of consecutive driving with less than 1/4 inches rebound per blow, or the minimum penetration is achieved and driving has reached practical refusal in firm material.

455-5.11.2 Bearing Criteria: For foundations requiring 100% dynamic testing, determine the bearing of all piles using the data received from dynamic load testing equipment utilizing internally or externally mounted sensors according to the methods described in 455-5.12.1.

For foundations not requiring 100% dynamic testing, drive all piles to the blow count criteria established by the GFDEOR and the Dynamic Testing Engineer (DTE) using the methods described herein and presented in the production pile length and driving criteria letter (see 455-5.15.2).

455-5.11.3 Practical Refusal: Practical refusal is defined as 20 blows per inch or less than one inch penetration, with the hammer operating at the highest setting or setting determined by the DTE for driving piles without damage and less than 1/4 inches rebound per blow. Stop driving as soon as the pile has reached practical refusal.

455-5.11.4 Set-checks and Pile Redrive:

1. Set-checks: Set-checks consist of redriving the pile after certain period of time, typically up to 24 hours. Perform set-checks as required and at the waiting periods shown in the Contract Documents. Provide an engineer's level or other suitable equipment for elevation determinations to determine accurate pile penetration during the set-checks. A pile may be accepted when a set-check shows that it has achieved the minimum required pile bearing and has met all other requirements of this Section.

2. Pile Redrive: Pile redrive consists of redriving the pile after the following working day from initial driving to determine time effects, to reestablish pile capacity due to pile heave, or for other reasons.

3. Uninstrumented Set-Checks and Uninstrumented Pile Redrive: Piles may be accepted based on uninstrumented set-checks or uninstrumented pile redrives only when the piles are redriven for at least 24 inches. In these cases, the piles may be considered to have sufficient bearing resistance when the specified blow count criteria is achieved in accordance with 455-5.11.1 and 455-5.11.2. Unless practical refusal is obtained as defined in 455-5.11.3, set-checks or redrives for piles redriven less than 24 inches must be instrumented for pile acceptance.

4. Instrumented Set-Checks and Instrumented Pile Redrive: Use dynamic load tests using at least 6 hammer blows to determine whether the pile bearing is sufficient. The pile may be considered to have sufficient bearing resistance when dynamic measurements demonstrate the static pile resistance exceeds the required pile resistance for at least one hammer blow and the average static pile resistance during the next five hammer blows exceeds 95% of the required pile resistance. If the pile is advanced farther, the static pile resistance during all subsequent blows must exceed 90% of the required pile resistance.

455-5.11.5 Pile Heave: Pile heave is the upward movement of a pile from its originally driven elevation. Drive the piles in an appropriate sequence to minimize the effects of heave and lateral displacement of the ground. Monitor piles previously driven in a pile group for possible heave during the driving of the remaining piles. Take elevation measurements to determine the magnitude of the movement of piles and the ground surface resulting from the driving process. Redrive all piles that have heaved 1/4 inches or more.

455-5.11.6 Piles with Insufficient Bearing: When the bearing capacity of any pile is less than the required bearing capacity, the Contractor may splice the pile and continue driving or may extract the pile and drive a pile of greater length, or drive additional piles.

455-5.11.7 Optional Soil Set-up approach: If the Contractor so desires, it may consider soil set-up. Production piles that are driven to less than the Nominal Bearing Resistance (NBR) may be accepted based on the anticipated soil setup without set checks on all piles, only if the following criteria are met:

(a) Pile tip penetration satisfies the minimum penetration requirement following 455-5.9.

(b) End of Initial Drive (EOID) resistance exceeds 1.10 times the Factored Design Load for the pile bent/pier, as determined by the dynamic testing or blow count criteria.

(c) The Resistance Factor for computing NBR is taken from the following table:

Resistance Factors for Pile Installation Using Soil Setup (all structures)				
Loading	Design Method	Construction QC Method	Resistance Factor, φ	
			Blow Count Criteria[4]	100% Dynamic Testing[5]
Compression	Davisson Capacity	EDC[1], or PDA and CAPWAP[2]	0.55	0.60
		Static Load Testing[3]	0.65	0.70
		Statnamic Load Testing[3]	0.60	0.65
Uplift	Skin Friction	EDC[1], or PDA and CAPWAP[2]	0.45	0.50
		Static Load Testing[3]	0.55	0.55

1 Using the analysis methods published by Tran et al (2012)
2. Dynamic Load Testing and Signal Matching Analysis
3 Used to confirm the results of Dynamic Load Testing and Signal Matching Analysis
4 Initial drive of production piles using Blow Count Criteria
5 Initial drive of all piles accepted by results of Dynamic Testing of all blows.

(d) At least one test pile is driven at each bent/pier with a successful set check at the anticipated production pile tip elevations and one of the following sets of dynamic load testing conditions are met at each bent/pier.

1. The bearing of at least 10% of piles in the bent/pier (round up to the next whole number) is confirmed by instrumented set-check, and all test piles and instrumented set-checks demonstrate the pile resistance exceeds the NBR within seven days after EOID

2. The bearing of at least 20% of piles in the bent/pier (round up to the next whole number) is confirmed by instrumented set-check, and all test piles and instrumented set-checks demonstrate the pile resistance exceeds the NBR within 21 days after EOID.

(e) All uninstrumented piles are driven deeper and to a greater EOID resistance than the EOID resistance of all instrumented production piles in the same bent/pier.

455-5.12 Methods to Determine Pile Capacity:

455-5.12.1 General: Dynamic load tests using an externally mounted instrument system and signal matching analyses or embedded gauges will determine pile capacity for all structures or projects unless otherwise shown on the Plans. Notify the Engineer two working days prior to placement of piles within the template and at least one working day prior to driving piles.

455-5.12.2 Wave Equation:

1. General: Use Wave Equation Analysis for Piles (WEAP) programs to evaluate the suitability of the proposed driving system (including the hammer, follower, capblock and pile cushions) as well as to estimate the driving resistance, in blows per 12 inches or blows per inch, to achieve the pile bearing requirements and to evaluate pile driving stresses.

Use Wave Equation Analyses to show the hammer meets the requirements described in 455-5.3.

2. Required Equipment For Driving: Hammer acceptance is solely based on satisfactory field trial including dynamic load test results and Wave Equation Analysis. Supply a hammer system that meets the requirements described in the specifications based on satisfactory field performance.

In the event piles require different hammer sizes, the Contractor may elect to drive with more than one size hammer or with a variable energy hammer, provided the hammer is properly sized and cushioned, will not damage the pile, and will develop the required resistance.

3. Maximum Allowed Pile Stresses:

a. General: The maximum allowed driving stresses for concrete, steel, and timber piles are given below. In the event dynamic load tests show that the hammer will overstress the pile, modify the driving system or method of operation as required to prevent overstressing the pile. In such cases provide additional cushioning, reduce the stroke, or make other appropriate agreed upon changes.

b. Prestressed Concrete Piles: Use the following equations to determine the maximum allowed pile stresses:

$$s_{apc} = 0.7\ f'_c - 0.75\ f_{cpe} \qquad (1)$$

$s_{apt} = 6.5 (f'_c)^{0.5} + 1.05\ f_{cpe}$ (2a) for piles less than 50 feet long

$s_{apt} = 3.25 (f'_c)^{0.5} + 1.05\ f_{cpe}$ (2b) for piles 50 feet long and greater

$s_{apt} = 500$ (2c) within 20 feet of a mechanical splice

where:

s_{apc}= maximum allowed pile compressive stress, psi
s_{apt}= maximum allowed pile tensile stress, psi
f'_c= specified minimum compressive strength of concrete, psi
f_{cpe}= effective prestress (after all losses) at the time of driving, psi, taken as 0.8 times the initial prestress force divided by the minimum net concrete cross sectional area of the pile (f_{cpe}= 0 for dowel spliced piles).

c. Steel Piles: Ensure the maximum pile compression and tensile stresses measured during driving are no greater than 0.9 times the yield strength (0.9 f_y) of the steel.

d. Timber Piles: Ensure the maximum pile compression and tensile stresses measured during driving are no greater than 3.6 ksi for Southern Pine and Pacific Coast Douglas Fir and 0.9 of the ultimate parallel to the grain strength for piles of other wood.

455-5.12.3 Temporary Piles: Submit for the Engineers review, an analysis signed and sealed by the GFDEOR which establishes the pile lengths for temporary piles. Submit for the Engineer's acceptance, a Wave Equation analysis signed and sealed by the GFDEOR which establishes the driving criteria for temporary piles at least five working days prior to driving temporary production piles. The required driving resistance is equal to the sum of the factored design load plus the scour and down drag resistances shown in the Plans, divided by the appropriate resistance factor or the nominal bearing resistance shown in the Plans, whichever is higher:

The maximum resistance factor is 0.45 when only wave equation analysis is performed. However, a larger resistance factor may be applicable when additional testing is provided by the GFDEOR in accordance with Section 3.5.6 of Volume 1 of the FDOT Structures Manual.

455-5.12.4 Dynamic Load Tests: Dynamic load testing consists of estimating pile capacity by the analysis of electronic data collected from blows of the hammer during driving of an instrumented pile in accordance with 455-5.14.

455-5.12.5 Static Load Tests: Static load testing consists of applying a static load to the pile to determine its capacity. Use the Modified Quick Test Procedure in accordance with 455-2.2.1.

455-5.12.6 Fender Pile Installation: For piles used in fender systems, regardless of type or size of pile, either drive them full length or jet the piles to within 2 feet of cutoff and drive to cutoff elevation to seat the pile. The Engineer will not require a specific driving resistance unless noted in the Plans. Use methods and equipment for installation that do not damage the piles. If the method or equipment used causes damage to the pile, modify the methods or equipment.

455-5.12.7 Structures Without Test Piles: For structures without 100% dynamic testing or test piles, dynamically test the first pile(s) in each bent or pier at locations shown in the

Plans to determine the blow count criteria for the remaining piles. Dynamically test at least 5% of the piles at each bent or pier (rounded up to the next whole number).

455-5.13 Test Piles:

455-5.13.1 General: All test piles will have dynamic load tests. Drive piles of the same cross-section and type as the permanent piles shown in the Plans, in order to determine any or all of the following:

1. installation criteria for the piles.
2. nature of the soil.
3. lengths of permanent piles required for the work.
4. driving resistance characteristics of the various soil strata.
5. amount of work necessary to obtain minimum required pile penetration.
6. the ability of the driving system to do the work.
7. the need for point protection.
8. Verify the bearing stratum is of sufficient thickness to prevent punching shear failure.

Because test piles are exploratory in nature, drive them harder (within the limits of practical refusal), deeper, and to a greater bearing resistance than required for the permanent piling. Except for test piles which are to be statically or Statnamically load tested, drive test piles their full length or to practical refusal. Splice test piles which have been driven their full length and have developed only minimal required bearing, and proceed with further driving.

As a minimum, unless otherwise accepted by the Engineer, do not cease driving of test piles until obtaining the required bearing capacity continuously, where the blow count is increasing, for 10 feet unless reaching practical refusal first. For test piles which are to be statically or Statnamically load tested, ignore this minimum and drive these piles as anticipated for the production piles.

When test piles attain practical refusal prior to attaining minimum penetration, perform all work necessary to attain minimum penetration and the required bearing. Where practical, use water jets to break the pile loose for further driving. Where jetting is impractical, extract the pile and install a preformed pile hole through which driving will continue. Install instruments on all test piles.

455-5.13.2 Location of Test Piles: Drive all test piles in the position of permanent piles at the designated locations. Ensure that all test piles designated to be statically load tested are plumb. In the event that all the piles are battered at a static load test site, an out-of-position location for driving a plumb pile for the static load test may be selected.

455-5.13.3 Equipment for Driving: Use the same hammer and equipment for driving test piles as for driving the permanent piles. Also use the same equipment to redrive piles.

455-5.14 Dynamic Load Tests: Take dynamic measurements during the driving of piles designated in the Plans. Provide all personnel, materials and equipment for dynamic testing. For concrete piles, install instruments prior to driving and monitor all blows delivered to the pile. For steel production piles, the Engineer may accept instrumented set checks or redrives. Perform dynamic load tests to evaluate the following:

1. Suitability of the driving equipment, including hammer, capblock, pile cushion, and any proposed follower.
2. Pile capacity.

3. Pile stresses.
4. Energy transfer to pile.
5. Distribution of soil resistance.
6. Soil variables including quake and damping.
7. Hammer-pile-soil system for Wave Equation analyses.
8. Pile installation problems.

Either install embedded gauges in the piles in accordance with Standard Plans, Index 455-003, or attach instruments (strain transducers to measure force and accelerometers to measure acceleration) with bolts to the pile for dynamic testing.

Monitor the stresses in the piles with the dynamic test equipment during driving to ensure the maximum allowed stresses are not exceeded. If necessary, add additional cushioning, replace the cushions, or reduce the hammer stroke to maintain stresses below the maximum allowable. If dynamic test equipment measurements indicate non-axial driving, immediately realign the driving system. If the cushion is compressed to the point that a change in alignment of the hammer will not correct the problem, add cushioning or change the cushion.

Drive the pile to the required penetration and resistance.

Do not use a cold diesel hammer for a set-check. Generally, warm up the hammer by driving another pile or applying at least 20 blows to a previously driven pile or to timber mats placed on the ground.

455-5.15 Pile Lengths:

455-5.15.1 Test Pile Length: Provide the length of test piles shown in the Plans or as directed by the GFDEOR.

455-5.15.2 Production Pile Length

The production pile lengths shall be the lengths determined by the DTE and the GFDEOR based on all information available before the driving of the permanent piles, including, but not limited to, information gained from the driving of test piles, dynamic load testing, static load testing, supplemental soil testing, etc. When authorized by the Department, soil freeze information obtained during set checks and pile redrives may be used to determine authorized pile lengths for sites with extreme soil conditions.

After completion of the test pile program, production pile lengths and driving criteria shall be established in a letter signed and sealed jointly by the DTE and the GFDEOR. The letter will contain an itemized list of authorized pile lengths as well as the blow count criteria for acceptance of the pile, minimum penetrations, maximum strokes, criteria to replace cushions and any other conditions and limitations deemed appropriate for the safe installation of the piles. Use these lengths for furnishing the permanent piling for the structure. At least two working days, excluding weekends and Department observed holidays, prior to beginning of production pile driving, submit the letter and load test reports to the Engineer including the following electronic files (Windows compatible): dynamic testing date data, signal matching data and results, and Wave Equation data and results.

If there are no test piles, provide the Production Pile Order Lengths in the Pile Data Table on the Structure Plans.

455-5.16 Allowable Driving Tolerances:

455-5.16.1 General: Meet the tolerances described in this Subarticle for the piles that are free standing without lateral restraint (after the template is removed). After the piles are driven, do not move the piles laterally to force them to be within the specified tolerances, except to move battered piles laterally to overcome the dead load deflections caused by the pile's

weight. When this is necessary, submit calculations signed and sealed by a Specialty Engineer to the Engineer that verify the amount of dead load deflection prior to moving any piles.

455-5.16.2 Position: Ensure that the final position of the pile head at cut-off elevation is no more than 3 inches, or 1/6 of the diameter of the pile, whichever is less, laterally in the X or Y coordinate from the Plan position indicated in the Plans.

455-5.16.3 Axial Alignment: Ensure that the axial alignment of the driven piles does not deviate by more than 1/4 inches per foot from the vertical or batter line indicated in the Plans.

455-5.16.4 Elevation: Ensure that the final elevation of the pile head is no more than 1-1/2 inches above, or more than 4 inches below, the elevation shown in the Plans, however in no case shall the pile be embedded less than 8 inches into the cap or footing.

For fender piles, cut off piles at the elevation shown in the Plans to a tolerance of plus 0.0 inches to minus 2.0 inches using sawing or other means as accepted by the Engineer to provide a smooth level cut.

455-5.16.5 Deviation from Above Tolerances: Have the Contractor's Engineer of Record perform an evaluation of the as built foundation to determine whether a foundation redesign or an increase in the loading requirements of the piles is needed. Include the signed and sealed evaluation as part of the certification package submitted in accordance with 455-5.19. If the evaluation indicates the foundation or the pile load requirements must be modified, propose a redesign to incorporate out of tolerance piles into pile caps or footings, at no expense to the Department. Submit signed and sealed redesign drawings and computations to the Engineer for review and acceptance. Do not begin any proposed construction until the redesign has been reviewed and accepted by the Engineer, excepted as noted in 455-5.20.

455-5.17 Disposition of Pile Cut-offs, Test Piles, and Load Test Materials:

455-5.17.1 Pile Cut-offs:

Take ownership of any unused cut-off lengths remaining, and remove them from the right-of-way. Provide areas for their disposal.

455-5.17.2 Test Piles: Cut off, or build-up as necessary, test piles, and leave them in place as permanent piles. Extract and replace test piles driven in permanent position and found not suitable for use. Pull, or cut off at an elevation 2 feet below the ground surface or bottom of proposed excavation, test piles driven out of permanent position, and dispose of the removed portion of the test pile.

When test piles are required to be driven in permanent pile positions, the Contractor may elect to drive the test pile out of position provided that a replacement pile is furnished and driven in the position that was to be occupied by the test pile. Unless otherwise directed in the Plans or by the Engineer, retain ownership of test piles that are pulled or cut off and provide areas for their disposal.

455-5.18 Recording: Inspect and record all the pile installation activities, including but not limited to handling, jetting, predrilling, preforming and driving on the Department's Pile Driving Record form. Steel piles and dynamically tested concrete piles in accordance with 455-5.14 will not require inspection during handling. Keep a pile driving log for each pile installed whether it is, or is not, instrumented. Within one working day after completing the installation of a pile, submit the Pile Driving Record to the Engineer.

455-5.19 Foundation Certification Packages: Submit certification packages of pile foundations to the Engineer prior to Pile Verification Testing. A separate Foundation Certification Package must be submitted for each foundation unit. A foundation unit is defined as

all the piles within one bent or pier for a specific bridge for each phase of construction. Each Foundation Certification Package shall contain an original certification letter signed and sealed by the GFDEOR certifying the piles have the required axial capacity including compression and uplift, lateral stability, pile integrity, settlements will not affect the functionality of the structure, and that the inspection of the pile installation was performed under the supervision of the GFDEOR. The package shall also include all pile driving logs, EDC records, all supplemental dynamic testing raw data and analyses for the foundation unit, and the signed and sealed evaluation performed to address out of tolerance piles in accordance with 455-5.16.5. The certification shall not be contingent on any future testing or approval by Engineer.

For foundation units where all piles are dynamically load tested by the same DTE, the foundation certification package may be prepared by the DTE, and the DTE may sign and seal the foundation layout and pile data table to reflect as-built conditions if the DTE is prequalified under the appropriate category in Florida Administrative Code (F.A.C.) 14-75.

455-5.20 Verification: One working day, excluding weekends and Department observed holidays, after receipt of the Foundation Certification Package, the Engineer will determine whether a pile in that foundation unit will be selected for verification testing. Based on its review of the certification package, the Engineer may or may not choose a pile for verification testing in any or all foundation units. For the pile selected by the Engineer for verification testing, the Engineer will provide the dynamic load test equipment and personnel for the Pile Verification Testing. Provide the driving equipment and pile driving crew for the Pile Verification Testing and provide support as needed to prepare the piles for testing. The Engineer will provide the results of the verification testing and identify additional needs for verification testing within one working day of testing.

If the capacity or integrity of any pile is found to be deficient, the Engineer will reject the entire certification package for the foundation unit, and the Contractor shall:

1. Correct the deficiency;
2. Correct the process that led to the deficiency;
3. Demonstrate to the Engineer that the remainder of the piles in the foundation unit are acceptable, including additional dynamic load tests to verify pile capacity and integrity, and;
4. Recertify the foundation unit.

One working day, excluding weekends and Department observed holidays, after receipt of the recertification, the Engineer shall then determine whether additional verification testing is required in that foundation unit. If the capacity or integrity of a verification pile is found to be deficient, additional cycles of deficiency correction and verification testing shall be completed until no more pile capacity or integrity deficiencies are detected or the design is modified accordingly. Piles shall not be cut-off nor bent/pier caps placed prior to successful completion of the Pile Verification Testing Program for that foundation unit. In case of disagreement of dynamic testing results, the Engineer’s results will be final and will be used for acceptance.

On land foundation units or water foundation units when the pile cutoff is at least six feet above mean high water, the Contractor may cut-off piles prior to a complete submittal of the Certification Package or to a successful completion of the Pile Verification Testing Program at its own risk. If any piles in a foundation unit are cut-off prior to the submittal of a certification package or completion of the Pile Verification Testing Program and the Engineer determines that verification testing is required, the Contractor shall perform, at no expense to the Department,

any work and labor required to expose any pile selected for verification to allow the installation of the instruments in dry conditions and to provide references and access to the Engineer for such testing. Piles experiencing damage during the verification testing or requiring build-up after the verification shall be repaired by the Contractor at no expense to the Department. No pile bent/cap shall be poured prior to successful completion of the Pile Verification Testing Program for that foundation unit or notification by the Engineer that no verification will be required.

455-6 Timber Piling.

455-6.1 Description: Drive timber piles of the kind and dimensions specified in the Plans at the locations and to the elevations shown in the Plans.

455-6.2 Materials: Meet the timber piling requirements of Section 953. Treat the piles according to the applicable provisions of Section 955. Treat all cuts and drilled holes in accordance with 470-3.

455-6.3 Preparation for Driving:

455-6.3.1 Caps: Protect the heads of timber piles during driving, using a cap of approved type, that will distribute the hammer blow over the entire cross-section of the pile. When necessary, cut the head of the pile square before beginning pile driving.

455-6.3.2 Collars: Provide collars or bands to protect piles against splitting and brooming at no expense to the Department.

455-6.3.3 Shoes: Provide piles shod with metal shoes, of a design satisfactory to the Engineer, at no expense to the Department. Shape pile tips to receive the shoe and install according to the manufacturer's directions.

455-6.4 Storage and Handling: Store and handle piles in the manner necessary to avoid damage to the piling. Take special care to avoid breaking the surface of treated piles. Do not use cant dogs, hooks, or pike poles when handling and storing the piling.

455-6.5 Cutting Off: Saw off the tops of all timber piles at the elevation indicated in the Plans. Saw off piles which support timber caps to the exact plane of the superimposed structure so that they exactly fit. Withdraw and replace broken, split, or misplaced piles.

455-6.6 Build-ups: The Engineer will not permit splices or build-ups for timber piles. Extract piles driven below Plan elevation and drive a longer pile.

455-6.7 Pile Heads:

455-6.7.1 Piles with Timber Caps: On piles wider than the timber caps, dress off the part of the pile head projecting beyond the sides of the cap to a slope of 45 degrees. Coat the cut surface with the required preservative and then place a sheet of copper, with a weight of 10 ounces per square foot or greater, meeting the requirements of ASTM B370. Provide a cover measuring at least 4 inches more in each dimension greater than the diameter of the pile. Bend the cover down over the pile and fasten the edges with large head copper nails or three wraps of No. 12 copper wire.

455-6.7.2 Fender and Bulkhead Piles: Paint the heads of fender piles and of bulkhead piles with preservative and then cover with copper as provided above for piles supporting timber caps.

455-7 Prestressed Concrete Piling.

455-7.1 Description: Provide prestressed concrete piles that are manufactured, cured, and driven in accordance with the Contract Documents. Provide piles full length without splices when transported by barge or the pile length is less than or equal to 120 feet. When piles are transported by truck and the pile length exceeds 120 feet or the maximum length for a 3-point

pick-up according to Standard Plans, Index 455-001, and splicing is desired, provide minimal splices. Include the cost of the splices in the cost of the pile.

455-7.2 Manufacture: Fabricate piles in accordance with Section 450. When embedded gauges will be used for dynamic load testing, supply and install in square prestressed concrete piles in accordance with Standard Plans Index 455-003. Ensure the embedded gauges are installed by personnel approved by the manufacturer.

455-7.3 Storage and Handling:

455-7.3.1 Time of Driving Piles: Drive prestressed concrete piles at any time after the concrete has been cured in accordance with Section 450, and the concrete compressive strength is equal to or greater than the specified 28 day compressive strength.

455-7.3.2 Storage: Support piles on adequate dunnage both in the prestress yard and at the job site in accordance with the locations shown in the Standard Plans to minimize undue bending stresses or creating a sweep or camber in the pile.

455-7.3.3 Handling: Handle and store piles in the manner necessary to eliminate the danger of fracture by impact or of undue bending stresses in handling or transporting the piles from the forms and into the leads. In general, lift concrete piles by means of a suitable bridge or slings attached to the pile at the locations shown in the Standard Plans. Construct slings used to handle piles of a fabric material or braided wire rope constructed of six or more wire ropes which will not mar the corners or the surface finish of the piles. Do not use chains to handle piles. During transport, support concrete piles at the lifting locations shown in the Standard Plans or fully support them throughout 80% or more of their length. In handling piles for use in salty or brackish water, exercise special care to avoid damaging the surface and corners of the pile. If an alternate transportation support arrangement is desired, submit calculations, signed and sealed by the Specialty Engineer, for acceptance by the Engineer prior to transporting the pile. Calculations must show that the pile can be transported without exceeding the bending moments calculated using the support locations shown in the Plans.

455-7.4 Cracked Piles: The Engineer will reject any pile that becomes cracked in handling to the point that a transverse or longitudinal crack extends through the pile, shows failure of the concrete as indicated by spalling of concrete on the main body of the pile adjacent to the crack, which in the opinion of the Engineer will not withstand driving stresses, or becomes damaged during installation. The Engineer will not reject any pile for the occasional minor surface hairline cracking caused by shrinkage.

Do not drive piling with irreparable damage, which is defined as any cracks that extend through the pile cross-sectional area that are, or will be, below ground or water level at the end of driving. Remove and replace broken piles or piles cracked to the extent described above at no expense to the Department. The Engineer will accept cracks less than 0.005 inches which do not extend through the pile. Using approved methods, cut off and splice or build-up to cut-off elevation piles with cracks greater than 0.005 inches at the pile head or above ground or water level, and piles with cracks above ground or water level which extend through the cross-sectional area of the pile. The Engineer, at his discretion, may require correction of pile damage or pile cracks by cutting down the concrete to the plane of sound concrete below the crack and rebuilding it to cut-off elevation, or the Engineer may reject the pile. Extract and replace rejected piles that cannot be repaired, at no expense to the Department.

Take appropriate steps to prevent the occurrence of cracking, whether due to handling, transporting or driving.

455-7.5 Preparation for Transportation: Cut strands flush with the surface of the concrete using an abrasive cutting blade before transporting the piles from the casting yard.

Cut and patch the metal lifting devices in accordance with 450-9.2.1.

455-7.6 Method of Driving: Unless otherwise directed, drive piles by a hammer or by means of a combination of water jets and hammer when jetting is allowed. When using jets in combination with a hammer, withdraw the jets and drive the pile by the hammer alone to secure final penetration and to rigidly fix the tip end of the pile. Keep jets in place if they are being used to continuously eliminate the soil resistance in the scour zone.

455-7.7 Extensions and Build-ups Used to Increase Production Lengths:

455-7.7.1 General: Where splices, extensions and build-ups for concrete piles are necessary, construct them in accordance with Standard Plans, Index 455-002.

These requirements are not applicable to specially designed piling. Make splices for special pile designs as shown in the Plans.

455-7.7.2 Extensions to be Driven or Those 21 feet or Longer: Construct extensions to be driven or extensions 21 feet or longer in length in accordance with the details shown in the Plans and in a manner including the requirements, sequences, and procedures outlined below:

1. Cast a splice section in accordance with Section 450 with the dowel steel in the correct position and alignment.

2. Drill dowel holes using an approved steel template that will position and align the drill bit during drilling. Drill holes a minimum of 2 inches deeper than the length of the dowel to be inserted.

3. Clean the drilled dowel holes by inserting a high pressure air hose to the bottom of the hole and blowing the hole clean from the bottom upward. Eliminate any oil, dust, water, and other deleterious materials from the holes and the concrete surfaces to be joined.

4. Place forms around joints between the pile sections.

5. Mix the adhesive components in accordance with the manufacturer's directions. Do not mix sand or any other filler material with the epoxy components unless it is prepackaged by the manufacturer for this specific purpose. Use adhesives meeting the requirements of Section 926 for Type B Epoxy Compounds.

6. After ensuring that all concrete surfaces are dry, fill the dowel holes with the adhesive material.

7. Insert the dowels of the spliced section into the adhesive filled holes of the bottom section and position the spliced section so that the axes of the two sections are in concentric alignment and the ends of the abutting sections are spaced 1/2 inches apart. The Contractor may use small steel spacers of the required thickness provided they have 3 inches or more of cover after completing the splice. Fill the space between the abutting sections completely with the adhesive.

8. Secure the spliced sections in alignment until the adhesive is cured in accordance with the manufacturer's directions for the time appropriate with the prevailing ambient temperatures. Do not utilize the crane to secure the pile extension during the adhesive cure time. Utilize alignment braces to maintain the proper pile alignment during the epoxy cure time.

9. After curing is completed, remove alignment braces and forms and clean and dress the spliced area to match the pile dimensions.

When dowel splices need to be driven, perform dynamic instrumentation during the driving of each dowel spliced pile to monitor and control the stresses and to verify the splicing integrity. Replace any damaged pile splices in accordance with 455-3. Provide the Engineer 48 hours advance notification prior to driving spliced piles.

455-7.7.3 Precast Reinforced Non-Drivable Build-ups less than 21 feet: Construct precast reinforced non-drivable build-ups less than 21 feet in accordance with the requirements of this Subarticle, Section 346, and Section 400. Provide the same material for the form surfaces for precast build-ups as was used to form the prestressed piles. Use concrete of the same mix as used in the prestressed pile and dimension the cross-section the same as piling being built up. Install build-ups as specified in 455-7.7.2(2) through 455-7.7.2(9). Apply to the build-ups the same surface treatment or sealant applied to the prestressed piles.

455-7.8 Pre-Planned Splices: Construct splices in accordance with the dowel splice method contained in the Standard Plan Indexes or using proprietary splices which are listed on the Department's Approved Product List (APL). Splice test piles in the same manner as the production piles. Include in the pile installation plan, the chosen method of splicing and the approximate locations of the splice. Generally, place the splice at approximately the midpoint between the estimated pile tip and the ground surface, considering scour if applicable. Stagger the splice location between adjacent piles by a minimum of 10 feet. Obtain the Engineer's approval prior to constructing any pile sections. Construct piles which are to be spliced using the dowel splice with preformed dowel holes in the bottom section and embedded dowels in the upper section.

When dowel splices need to be driven, perform dynamic instrumentation during the driving of each dowel spliced pile to monitor and control the stresses and verify the splicing integrity. Replace any damaged pile splices in accordance with 455-3. Provide the Engineer 48 hours advance notification prior to driving spliced piles.

. Mechanical pile splices must be capable of developing the following capacities in the pile section unless shown otherwise in the Plans and capable of being installed without damage to the pile or splice:

1. Compressive strength = (Pile Cross sectional area) x (28 day concrete strength)

2. Tensile Strength = (Pile Cross sectional area) x 900 psi

Pile Size (inches)	Bending Strength (kip-feet)
18	245
20	325
24	600
30	950

455-7.9 Pile Cut-offs: After the completion of driving, cut piles off which extend above the cut-off elevation with an abrasive saw. Make the cut the depth necessary to cleanly cut through the prestressed strands. Take ownership and dispose of cut-off sections not used elsewhere as allowed by this Section.

455-8 Steel Piling.

455-8.1 Description: Furnish, splice, drive, and cut off structural steel shapes to form bearing piles. Include in this work the preparation of a smooth and square pile top meeting the

requirements of ASTM A252 or API 5L prior to driving, installation of structural steel bracing by bolting or welding, construction of splices and the filling of pipe piles with the materials specified in 455-8.9.

455-8.2 Material: For the material in steel piles, pile bracing, scabs, wedges, and splices, meet the requirements of Section 962.

455-8.3 Pile Splices: Order and use the full authorized pile length where practicable. Do not splice to obtain authorized lengths less than 40 feet except when shown in the Plans. Locate all splices in the authorized pile length in portions of the pile expected to be at least 15 feet below the final ground surface after driving. When it is not practicable to provide authorized pile lengths longer than 40 feet in a single length, use no more than one field splice per additional 40 feet of authorized pile length. Shop splices may be used to join single lengths of pile which are at least 20 feet in length. One shorter segment of pile may be used to achieve the authorized pile length when needed.

Where the pile length authorized is not sufficient to obtain the required bearing value or penetration, order an additional length of pile and splice it to the original length.

Make all splices in accordance with details shown in the Plans and in compliance with the general requirements of AWS D1.1 or American Petroleum Institute Specification 5L (API 5L).

455-8.4 Welding: Make all welded connections to steel piles by electric arc welding, in accordance with details shown in the Plans and in compliance with the general requirements of AWS D1.5. Electroslag welding is not permitted. Welds will be inspected by visual methods.

455-8.5 Pile Heads and Tips: Cut off all piles at the elevation shown in the Plans. If using a cutting torch, make the surface as smooth as practical.

Where foundation material is so dense that the Contractor cannot drive the pile to the required penetration and firmly seat it without danger of crumpling the tip, reinforce the tips with cast steel point protectors. Construct point protectors in one piece of cast steel meeting the requirements of ASTM A27, Grade 65-35 heat treated to provide full bearing for the piles. Attach points by welding according to the recommendations of the manufacturer.

455-8.6 Pile Bent Bracing Members: Place structural steel sway and cross bracing, and all other steel tie bracing, on steel pile bents and bolt or weld in place as indicated in the Plans. Where piles are not driven into position in exact alignment as shown in the Plans, furnish and place fills and shims as required to square and line up faces of flanges for cross bracing.

455-8.7 Coating: Coat exposed parts of steel piling, wedging, bracing, and splices in accordance with the provisions for coating structural steel as specified in Section 560.

455-8.8 Storage and Handling: While handling or transporting the piles from the point of origin and into the leads, store and handle in the manner necessary to avoid damage due to bending stresses. In general, lift steel piles by means of a suitable bridge or a sling attached to the pile at appropriate points to prevent damage. Lift the pile from the horizontal position in a manner that will prevent damage due to bending of the flanges and/or web.

455-8.9 Filling Pipe Piles: Ensure closed-end pipe piles are watertight. When required by the Plans, fill pipe piles with the specified materials. Use clean concrete sands and concrete meeting the requirements of Section 346. Place concrete in open ended pipes containing water using methods in accordance with 455-15.9 with modified tremie and pump line sizes. Concrete may be placed directly into pipes which are dry. Construct and place reinforcement cages in accordance with 455-16, except the minimum number of spacers per level is three.

Reinforcement cages may be installed before concrete placement or after concrete placement is completed if proper alignment and position is obtainable.

455-9 Sheet Piling.

455-9.1 Description: Leave permanent piling in place as part of the finished work and remove temporary piling after each construction phase unless otherwise authorized by the Engineer.

455-9.2 Materials: Meet the following requirements:

Concrete .....Section 346
Bar Reinforcement .....Section 931
Prestressing Reinforcement.....Section 933
Steel Sheet Piles* .....Section 962
*For temporary steel sheet piles meet the requirements specified in the Plans.

455-9.3 Steel Sheet Piling: Drive steel sheet piling and cut off true to line and grade. Install steel sheet piling with a suitable hammer. Remove and replace any section damaged during handling and installation at no additional expense to the Department.

455-9.3.1 Method of Installation: Where rock or strong material is encountered such that the sheet piles cannot be set to grade by driving, remove the strong material by other acceptable means, such as excavation and backfilling, drilling or by punching.

455-9.4 Concrete Sheet Piling:

455-9.4.1 Description: Ensure that concrete sheet piling is of prestressed concrete construction and manufactured, cured, and installed in accordance with the requirements of the Contract Documents

455-9.4.2 Manufacture of Piles: Ensure that the piles are fabricated in accordance with Section 450.

455-9.4.3 Method of Installation: Jet concrete sheet piling to grade where practical. Use a minimum of two jets. Provide water at the nozzles of sufficient volume and pressure to freely erode material adjacent to the piles. Where encountering rock or strong material, such that the sheet piles cannot be set to grade by jetting, remove the strong materials by other acceptable means, such as excavation and backfilling, drilling or by punching with a suitable punch.

455-9.4.4 Grouting and Caulking: Concrete sheet piles are generally detailed to have tongues and grooves on their lower ends, and double grooves on their upper ends. Where so detailed, after installation, clean the grooves of all sand, mud, or debris, and fully grout the grooves. Use approved plastic bags (sheaths) which will meet the shape and length of the groove to be grouted to contain the plastic grout within the double grooves. Provide grout composed of one part cement and two parts sand. Use clean A-3 sand or sand meeting the requirements of Section 902 in this grout. In lieu of sand-cement grout, the Contractor may use concrete meeting the requirements of Section 347, using small gravel or crushed stone coarse aggregate. Deposit the grout through a grout pipe placed within a watertight plastic sheath (bag) extending the full depth of the double grooves and which, when filled, completely fills the slot formed by the double grooves.

455-9.5 Storage and Handling: Handle and store all sheet piles in a manner to prevent damage. Handle long sheet piles with fabric slings or braided wire rope constructed of six or more wire ropes placed at appropriate lift points to prevent damage due to excessive bending.

455-10 Pile Installation Plan (PIP).

455-10.1 General: At the preconstruction conference or at least 15 days prior to driving the first pile, submit a Pile Installation Plan for review by the Engineer. The PIP shall be used to govern all pile installation activities. In the event that deviations from the PIP are observed, the Engineer may perform Independent Verification Testing/Review of the Contractor's equipment, procedures, personnel and PIP at any time during production pile driving. If, as determined by the Engineer, pile driving equipment, procedures and/or personnel for the PIP is deemed inadequate to consistently provide undamaged driven piling meeting the contract requirements, the Contractor's PIP acceptance may be withdrawn pending corrective actions. Production driving shall then cease and not restart until corrective actions have been taken and the PIP re-accepted.

Ensure the Pile Driving Installation Plan information includes the following:

1. List and size of proposed equipment including cranes, barges, driving equipment, jetting equipment, compressors, and preformed pile hole equipment on the Department's Pile Driving Installation Plan Form (Form No. 700-020-01). Include manufacturer's data sheets on hammers.
2. Methods to determine hammer energy in the field for determination of pile capacity. Include in the submittal necessary charts and recent calibrations for any pressure measuring equipment.
3. Detailed drawings of any proposed followers.
4. Detailed drawings of templates.
5. Details of proposed load test equipment and procedures, including recent calibrations of jacks and required load cells.
6. Sequence of driving of piles for each different configuration of pile layout.
7. Details of proposed features and procedures for protection of existing structures.
8. Required shop drawings for piles, cofferdams, etc.
9. Methods and equipment proposed to prevent displacement of piles during placement and compaction of fill within 15 feet of the piles.
10. Methods to prevent deflection of battered piles due to their own weight and to maintain their as-driven position until casting of the pile cap is complete.
11. Proposed pile splice locations and details of any proprietary splices anticipated to be used.
12. Methods and equipment proposed to prevent damage to voided or cylinder piles due to interior water pressure.
13. Name and experience record of pile driving superintendent or foreman in responsible charge of pile driving operations. Ensure the pile driving superintendent or foreman in responsible charge of the pile driving operations has the experience requirements of 105-8.13 installing driven piles of the size and depth shown in the Plans.
14. The names of the CTQP qualified inspectors assigned to inspect the pile installation. If the Dynamic Testing Engineer is also a CTQP qualified pile driving inspector and is able to perform both operations, then an additional pile driving inspector is not required when driving piles using embedded sensors.
15. The quality control processes to ensure the required capacity is achieved in all piles. Include in the PIP the steps and analyses that would be performed when

driving conditions change (such as unanticipated tip elevations, hammer modifications, presence of temporary piles and structures, preforming, changes, etc.).

16. The name and contact information for the single representative of the Contractor, independent of field operations personnel, to resolve to the Engineer's satisfaction conflicts in the driving procedures or interpretations of the driving criteria. This person shall be available within two hours notice, and shall have the authority to refer issues to higher levels (corporate, if needed).

17. A letter from the GFDEOR certifying concurrence with the PIP.

Notify the Engineer of any test pile driving and production pile driving at least 1 week prior to beginning the installation operations of any pile.

455-10.2 Acceptance of the Pile Installation Plan: The Engineer will evaluate the PIP for conformance with the Contract Documents. Within five working days, excluding weekends and Department observed holidays, after receipt of the plan, the Engineer will notify the Contractor of any comments and additional information required and/or changes that may be necessary to satisfy the Contract Documents. Submit changes and respond to the Engineer's comments and allow at least two working days, excluding weekends and Department observed holidays, for the Engineer to review the revised PIP.

All equipment and procedures are subject to satisfactory field performance. Make required changes to correct unsatisfactory field performance. The Engineer will give final acceptance after the Contractor makes necessary modifications. Do not make any changes in the driving system after acceptance without a revised PIP with concurrence of the GFDEOR and acceptance by the Engineer. A hammer repaired on site or removed from the site and returned is considered to have its performance altered (efficiency increased or decreased), which is considered a change in the driving system. Perform a dynamic load test in accordance with 455-5.14 on the first pile driven with this hammer to confirm the driving criteria is still appropriate at no additional compensation.

Acceptance of the PIP by the Engineer does not relieve the Contractor of the responsibility to perform the work in accordance with the Contract Documents. The Engineer's acceptance is not a guarantee that the chosen methods and equipment are capable of obtaining the required results; this responsibility lies with the Contractor.

ARTICLE 455-11 is deleted:

455-12 Basis of Payment.

Contract Price includes all labor, equipment and materials required for furnishing, installing, and certifying completed pile foundations, in place and accepted. No separate payment will be made for any items of work associated with the construction of piling. No additional payment or adjustments will be made for set-checks, re-drives, dynamic load tests, pile instrumentations, splice installations and driving, build-ups, pile extractions, preformed holes or other associated activities.

C. DRILLED SHAFTS

455-13 Description.

Construct drilled shaft foundations consisting of reinforced concrete drilled shafts.

455-14 Materials.

455-14.1 Concrete: Use concrete meeting the requirements of Section 346, unless otherwise shown in the Plans.

455-14.2 Reinforcing Steel: Meet the reinforcing steel requirements of Section 415.

455-15 Construction Methods and Equipment.

455-15.1 General Requirements:

455-15.1.1 Templates: When drilling from a barge, provide a fixed template, adequate to maintain shaft position and alignment during all excavation and concreting operations. Do not use floating templates (attached to a barge). When the Contractor fails to properly maintain shaft position and alignment without use of a template when drilling on land, provide a fixed template, adequate to maintain shaft position and alignment during all excavation and concreting operations.

455-15.1.2 Drilled Shaft Installation Plan (DSIP): At the preconstruction conference or at least 15 days prior to constructing the first drilled shaft, submit a Drilled Shaft Installation Plan (DSIP) for review and acceptance by the Engineer. The DSIP will be used to govern all drilled shaft construction activities. In the event that deviations from the DSIP are observed, the Engineer may perform Independent Verification Testing/Review of the Contractor's equipment, procedures and personnel at any time during production drilled shaft construction. If, as determined by the Engineer, drilled shaft construction equipment, procedures or personnel is deemed inadequate to consistently provide drilled shafts meeting the contract requirements, the Contractor's DSIP may be withdrawn pending corrective actions. All drilled shaft construction activities shall then cease and not restart until corrective actions have been taken and the DSIP has been re-accepted.

Include in the DSIP the following details:

1. Name and experience record of drilled shaft superintendent or foreman in responsible charge of drilled shaft operations. Ensure the drilled shaft superintendent or foreman in responsible charge of the drilled shaft operations has the experience requirements of 105-8.13 installing drilled shafts of the size and depth shown in the Plans using the following methods:

   a. Wet Method (mineral and polymer slurry),
   b. Casings up to the length shown in the Plans,
   c. Shaft drilling operations on water under conditions as shown in the Plans.

2. List and size of proposed equipment, including, but not limited to, cranes, drills, augers, bailing buckets, final cleaning equipment, desanding equipment, slurry pumps, core sampling equipment, tremies or concrete pumps, and casings and equipment to install and remove casing.

3. Details of sequence of construction operations and sequence of shaft construction in bents or shaft groups.

4. Details of shaft excavation methods, including casing installation procedures.

5. Details of slurry, including proposed methods to mix, circulate, desand, test methods, and proposed CTQP certified technicians that will perform and document the fluid tests.

6. Details of proposed methods to clean the shaft excavation.

7. Details of shaft reinforcement, including methods to ensure centering/required cover, cage integrity during placement, placement procedures, cage support, and tie downs.

8. Details of concrete placement, including elapsed concrete placement times and proposed operational procedures for concrete tremie or pump, including initial placement, raising during placement, and overfilling of the shaft concrete. Include provisions to ensure proper final shaft cutoff elevation.

9. Details of casing removal when removal is required, including minimum concrete head in casing during removal.

10. Required submittals, including shop drawing and concrete design mixes.

11. Details of any required load tests, including equipment and procedures, and recent calibrations for any jacks or load cells.

12. Proposed Cross-Hole Sonic Logging (CSL) and Thermal Integrity Testing for Drilled (TITDS) Specialty Engineer to supervise field testing and report the test results.

13. Methods and equipment proposed to prevent displacement of casing and/or shafts during placement and compaction of fill.

14. Provide the make and model of the shaft inspection device, if applicable, and procedures for visual inspection.

15. Details of environmental control procedures used to prevent loss of slurry or concrete into waterways or other protected areas.

16. Proposed schedule for test shaft installation, load tests and production shaft installation.

17. For drilled shafts for constructed using polymer slurry, identify the polymer slurry meeting the requirements of 455-15.8.3, the pH and viscosity ranges recommended by the manufacturer for the materials to be excavated and a description of the mixing method to be used. Submit the Material Safety Data Sheets (SDS) for the product, and a current certification that the polymer slurry and components meet the requirements of 455-15.8.3. The certification shall be attested to within the past one year by a person having legal authority to bind the manufacturing company. Submit the contact information for the manufacturer’s representative available for immediate contact during shaft construction and the representative’s schedule of availability.

18. Methods to identify and remediate drilled shaft deficiencies.

19. Names of the CTQP qualified inspectors assigned to inspect the drilled shaft installation.

20. The name and contact information for the single representative of the Contractor, independent of field operations personnel, to resolve to the Engineer’s satisfaction, conflicts in the drilled shaft installation procedures. This person shall be available within two hours notice, and shall have the authority to refer issues to higher levels (corporate, if needed).

21. Procedure for grouting non-destructive testing access tubes.

22. A letter from the GFDEOR certifying concurrence with the DSIP.

455-15.1.2.1 Acceptance of the Drilled Shaft Installation Plan (DSIP).

The Engineer will evaluate the DSIP for conformance with the Contract Documents. Within

five working days, excluding weekends and Department observed holidays, after receipt of the plan, the Engineer will notify the Contractor of any comments and additional information required and/or changes that may be necessary in the opinion of the Engineer to satisfy the Contract Documents. The Engineer will reject any part of the plan that is unacceptable. Submit changes agreed upon for reevaluation. The Engineer will notify the Contractor within two working days, excluding weekends and Department observed holidays, after receipt of proposed changes of their acceptance or rejection. All equipment and procedures are subject to trial and satisfactory performance in the field.

Acceptance by the Engineer does not relieve the Contractor of the responsibility to perform the work in accordance with the Contract Documents. The Engineer's acceptance is not a guarantee that the chosen methods and equipment are capable of obtaining the required results, this responsibility lies with the Contractor.

455-15.1.3 General Methods & Equipment: Perform the excavations required for the shafts, through whatever materials encountered, to the dimensions and elevations shown in the Contract Documents, using methods and equipment suitable for the intended purpose and the materials encountered. Provide drilling tools with a diameter not smaller than one inch of the shaft diameter required in the Plans. Provide equipment capable of constructing shafts supporting bridges to a depth equal to the deepest shaft shown in the Plans plus 15 foot or plus three times the shaft diameter, whichever is greater, except when the Plans require equipment capable of constructing shafts to a deeper depth. Provide equipment capable of constructing shafts supporting sign, signal, lighting and ITS structures to a depth equal to the deepest shaft shown in the Plans plus 5 feet.

Construct drilled shafts according to the Contract Documents using generally either the dry method, wet method, casing method, or permanent casing method as necessary to produce sound, durable concrete foundation shafts free of defects. Use the permanent casing method only when required by the Plans. When the Plans describe a particular method of construction, use this method. When the Plans do not describe a particular method, propose a method on the basis of its suitability to the site conditions and submit it for acceptance by the Engineer.

Set a suitable temporary removable surface casing from at least 1 foot above the ground surface to at least 1-1/2 shaft diameters below the ground surface to prevent caving of the surface soils and to aid in maintaining shaft position and alignment. Do not use a temporary casing larger than 12 inches of the shaft diameter. Fill the oversized temporary casing with drilled shaft concrete at no additional expense to the Department. Withdraw the surface casing after concrete placement.

For drilled shafts installed to support sign, signal, lighting and ITS structures, provide temporary surface casings from at least 1 foot above the ground surface to at least 5 feet below the ground surface. For sign, signal, lighting and ITS structures foundations located within permanent sidewalks or within 5 feet of curb sections, provide temporary surface casings from no lower than the top of sidewalk to at least 5 feet below the ground surface.

For drilled shafts installed to support sign, signal, lighting and ITS structures, do not attempt to excavate the shaft using plain water or natural slurry. Do not attempt to excavate the shaft using dry construction method unless specifically indicated in the Plans or approved by the Engineer.

455-15.2 Dry Construction Method: Use the dry construction method only at sites where the ground water table and soil conditions, generally stiff to hard clays or rock above the

water table, make it feasible to construct the shaft in a relatively dry excavation and where the sides and bottom of the shaft are stable and may be visually inspected prior to placing the concrete.

In applying the dry construction method, drill the shaft excavation, remove accumulated seepage water and loose material from the excavation and place the shaft concrete in a relatively dry excavation.

Use the dry construction method only when shaft excavations, as demonstrated in a test hole, have 12 inches or less of seepage water accumulated over a four hour period, the sides and bottom remain stable without detrimental caving, sloughing, or swelling for a four hour period, and the loose material and water can be satisfactorily removed prior to inspection and prior to placing concrete. Use the wet construction method or the temporary casing construction method for shafts that do not meet the requirements for the dry construction method.

455-15.3 Wet Construction Method: Use the wet construction method at all sites where it is impractical to provide a dry excavation for placement of the shaft concrete.

The wet construction method consists of keeping the shaft excavation filled with fluid (mineral slurry, polymer slurry, natural slurry or water), desanding and cleaning the slurry and final cleaning of the excavation by means of a bailing bucket, air lift, submersible pump or other suitable devices and placing the shaft concrete (with a tremie or concrete pump extending to the shaft bottom) which displaces the water or slurry during concreting of the shaft excavation.

Where drilled shafts are located in open water areas, construct the shafts by the wet method using exterior casings extending from above the water elevation into the ground to protect the shaft concrete from water action during placement and curing of the concrete. Install the exterior casing in a manner that will produce a positive seal at the bottom of the casing so that there is no intrusion or extrusion of water or other materials into or from the shaft excavation.

455-15.4 Temporary Casing Construction Method: Use the temporary casing method at all sites where it is inappropriate to use the dry or wet construction methods without the use of temporary casings other than surface casings. In this method, the casing is advanced prior to excavation and withdrawn after concrete placement. When a formation is reached that is nearly impervious, seal in the nearly impervious formation. Proceed with drilling as with the wet method to the projected depth. Proceed with the placement of the concrete as with the dry method. In the event seepage conditions prevent use of the dry method, complete the excavation and concrete placement using wet methods.

Where drilling through materials having a tendency to cave, advance the excavation by drilling in a mineral or polymer slurry. In the event that a caving layer or layers are encountered that cannot be controlled by slurry, install temporary removable casing through such caving layer or layers. The Engineer may require overreaming to the outside diameter of the casing. Take whatever steps are required to prevent caving during shaft excavation including installation of deeper casings. If electing to remove a casing and replace it with a longer casing through caving soils, backfill the excavation. The Contractor may use soil previously excavated or soil from the site to backfill the excavation. The Contractor may use other acceptable methods which will control the size of the excavation and protect the integrity of the foundation soils to excavate through caving layers.

Before withdrawing the casing, ensure that the level of fresh concrete is at such a level that the fluid trapped behind the casing is displaced upward. As the casing is withdrawn, maintain the level of concrete within the casing so that fluid trapped behind the casing is

displaced upward out of the shaft excavation without mixing with or displacing the shaft concrete.

The Contractor may use the casing method, when accepted by the Engineer, to construct shafts through weak caving soils that do not contribute significant shaft shear resistance. In this case, place a temporary casing through the weak caving soils before beginning excavation. Conduct excavation using the dry construction method where appropriate for site conditions and the wet construction method where the dry construction method is not appropriate. Withdraw the temporary casing during the concreting operations unless the Engineer accepts otherwise.

455-15.5 Permanent Casing Construction Method: Use the permanent casing method when required by the Plans. In this method, place a casing to the prescribed depth before beginning excavation. If the Contractor cannot attain full penetration, the Contractor may excavate through the casing and advance the casing until reaching the desired penetration.

Construct the shaft in accordance with 455-15.4 except for cutting the casing off at the prescribed elevation upon reaching the proper construction sequence and leaving the remainder of the casing in place.

455-15.5.1 Temporary Extension of Permanent Casing: When the wet method does not provide enough support to excavate and clean the drilled shaft extension below the permanent casing tip elevations shown in the Plans, the permanent casing may be temporarily extended to an elevation deeper than the tip elevation at no additional expense to the Department. The rock socket length must be extended as specified in 455-15.7 and the casing raised to the original casing tip elevation shown in the Plans after the concrete placement. Include details of this procedure in the DSIP for the Engineer's review and approval.

455-15.5.2 Temporary Casing to Stabilize Excavation below Permanent Casing: To stabilize the excavation below the permanent casing tip elevation, a temporary casing inside an oversized permanent casing may be used at no additional expense to the Department. The permanent casing must have an inside diameter no more than 6 inches larger than the drilled shaft diameter specified in the Plans.

The following requirements apply:

1. Excavate and clean the materials from inside the permanent casing. Ensure all materials are removed from the inside wall of the permanent casing.
2. Install the temporary casing prior to excavating below the permanent casing tip elevation. The temporary casing must have a minimum internal diameter equal to the shaft diameter required in the Plans.
3. If the temporary casing is advanced deeper than the minimum top of rock socket elevation as shown in the Plans, or the top of rock elevation if deeper, extend the rock socket length in accordance with 455-15.7.
4. Place concrete in accordance with 455-15.9.3 through the temporary casing. Do not allow concrete to fall or overflow into the annular space between the temporary and permanent casing.
5. After placement of the concrete, remove the temporary casing in accordance with 455-15.4, 455-15.7 and 455-17. During withdrawal of the temporary casing, maintain adequate concrete head in both the temporary and permanent casings to avoid breaching, caving, or contamination of the concrete.

Include details of this procedure in the DSIP for the Engineer's review and approval.

455-15.6 Excavations: When pilot holes and/or load tests are performed, the GFDEOR shall use the pilot hole and load test results when load tests are performed to determine the production tip elevations and/or the installation criteria of the drilled shafts. Drilled shaft construction shall not begin until the proposed shaft tip elevations are accepted by the Engineer.

455-15.6.1 Pilot Hole: When pilot holes are shown in the Plans core a pilot hole, prior to shaft excavation, in accordance with ASTM D2113 Standard Practice for Rock Core Drilling and Sampling of Rock for Site Excavation and the Department's Soils & Foundations Handbook using a double or triple wall core barrel through part or all of the shaft, to a minimum depth of 3 times the diameter of the drilled shaft below the tip elevation shown in the Plans. Prior to excavating load test shafts, provide pilot holes to a minimum depth of three times the diameter of the drilled shaft below the tip elevation designed for these shafts. For test holes, provide pilot holes prior to excavation, to a minimum depth of 5 feet below the tip of the test hole.

455-15.6.2 Cores: Take cores to determine the character of the material directly below the shaft excavation when pilot borings are not performed at the shaft location. Provide equipment to retrieve the core from a depth of 5 times the diameter of the drilled shaft below the bottom of the drilled shaft excavation in accordance with ASTM D2113 Standard Practice for Rock Core Drilling and Sampling of Rock for Site Excavation. Cut the cores with an acceptable core barrel to a minimum depth of 3 times the diameter of the drilled shaft below the bottom of the drilled shaft excavation after completing the shaft excavation, as directed by the Engineer.

For cores or pilot holes, use only a double or triple wall core barrel designed:

1. to cut a core sample from 4 inches to 6 inches in diameter, at least 5 feet in length, and,
2. so that the sample of material cored can be removed from the shaft excavation and the core barrel in an undisturbed state.

When called for in the Plans and approved by the Engineer, substitute Standard Penetration Tests (SPT) using a drill rig equipped with an automatic hammer for coring.

Provide areas for the disposal of unsuitable materials and excess materials as defined in 120-5 that are removed from shaft excavations, and dispose of them in a manner meeting all environmental requirements.

Furnish the additional drilled shaft concrete over the theoretical amount required to complete filling any excavations for shafts which are larger than required by the Plans or authorized by the Engineer, at no expense to the Department.

455-15.6.3 Production Shaft Tip Elevations: After completion of load tests, pilot holes, rock cores and lab testing, the GFDEOR shall submit the required minimum rock socket lengths and shaft tip elevations to the Engineer in a signed and sealed letter for review and acceptance. This letter shall include the assumptions and geotechnical parameters used, the report of core borings of all pilot holes, rock core records, lab testing, load test reports prepared in accordance with 455-2.11, and numerical analysis and calculations. Submit this letter at least three working days, excluding weekends and Department observed holidays, prior to beginning production shaft construction. Additional data or analysis may be required by the Engineer.

Production shaft lengths may be based on the load transfer characteristics measured during the load test. End bearing characteristics may be based on load test results if the properties of the material below the tips of the production shafts meet or exceed the strength of the materials below the tip of the test shaft. If the theoretical bearing strength of the material

below the tips of the production shafts is less than the theoretical bearing strength of the materials below the tip of the test shaft, the production shafts shall be extended to meet design capacity by side shear only, unless the end bearing resistance of the weaker material is verified by additional load testing.

455-15.7 Casings: Ensure that casings are metal, of ample strength to withstand handling and driving stresses and the pressure of concrete and of the surrounding earth materials, and that they are smooth and water tight. Ensure that the inside diameter of casing is not less than the specified size of shaft except as provided below. The Department will not allow extra compensation for concrete required to fill an oversize casing or oversize excavation.

The Engineer will allow the Contractor to supply casing with an outside diameter equal to the specified shaft diameter (O.D. casing) provided additional shaft length is supplied at the shaft tip. Determine the additional length of shaft required by the following relationship:

$$Additional\ Length = \frac{(D_1 - D_2)\,L}{D_2}$$

where:

D_1= casing inside diameter specified = shaft diameter specified

D_2= casing inside diameter provided (D_2 = D_1 minus twice the wall thickness).

L= authorized shaft length below ground for temporary casing methods or below casing for permanent casing methods.

Bear all costs relating to this additional length including but not limited to the cost of extra excavation, extra concrete, and extra reinforcing steel.

Install and remove casing by rotating, exerting downward pressure, or with a vibratory hammer, unless otherwise shown in the Contract Documents. Remove all casings from shaft excavations except those used for the Permanent Casing Method. Ensure that the portion of casings installed under the Permanent Casing Method of construction below the shaft cut-off elevation remains in position as a permanent part of the drilled shaft. When casings that are to be removed become bound in the shaft excavation and cannot be practically removed, submit a proposed redesign to the Engineer for review and acceptance.

If temporary casing is advanced deeper than the minimum top of rock socket elevation shown in the Plans or actual top of rock elevation if deeper, withdraw the casing from the rock socket and overream the shaft. If the temporary casing cannot be withdrawn from the rock socket before final cleaning, extend the length of rock socket below the authorized tip elevation one-half of the distance between the minimum top of rock socket elevation or actual elevation if deeper, and the temporary casing tip elevation.

Form drilled shafts extending through a body of water with permanent casings. When the shaft extends above ground or a body of water, the Contractor may form the exposed portion with removable casing, unless otherwise specified in the Plans. Remove the portion of metal casings between an elevation 2 feet below the lowest water elevation or 2 feet below ground whichever is higher and the top of shaft elevation after the concrete is cured. Remove casings to expose the concrete as required above in a manner which will not damage the drilled shaft concrete. Dismantle removable casings in accordance with the provisions of 455-17.5.

When practical, do not start the removal until completing all concrete placement in the shaft. Extract casing at a slow, uniform rate with the pull in line with the axis of the shaft. Withdraw temporary casings while the concrete remains fluid.

When conditions warrant, the Contractor may pull the casing in partial stages. Maintain a sufficient head of concrete above the bottom of the casing to overcome the hydrostatic pressure of water outside the casing. At all times maintain the elevation of the concrete in the casing high enough to displace the drilling slurry between the outside of the casing and the edge of the hole while removing the casing.

Expandable or split casings that are removable are not permitted for use below water.

455-15.8 Slurry and Fluid in Excavation:

455-15.8.1 General: Thoroughly premix the slurry with clean fresh water prior to introduction into the shaft excavation. Introduce slurry before the excavation advances below the bottom of the casing. Ensure that the percentage of polymer or mineral admixture used to make the suspension is such as to maintain the stability of the shaft excavation. The Engineer will require adequate water or slurry tanks when necessary to perform the work in accordance with these Specifications. The Engineer will not allow excavated pits on projects requiring slurry tanks without the written permission of the Engineer. Take the steps necessary to prevent the slurry from "setting up" in the shaft, including but not limited to agitation, circulation, and adjusting the composition and properties of the slurry. Provide suitable offsite disposal areas and dispose of all waste slurry in a manner meeting all requirements pertaining to pollution.

Provide a CTQP qualified drilled shaft inspector to perform control tests using suitable apparatus on the slurry mixture to determine the slurry and fluid properties as specified in sub-articles 455-15.8.2 to 455-15.8.4.

Measure the viscosity of the freshly mixed slurry regularly as a check on the quality of the slurry being formed using an approved measuring device.

Perform tests from the fluid in the excavation to determine density, viscosity, and pH value to establish a consistent working pattern, taking into account the mixing process and blending of freshly mixed slurry and previously used slurry. Repeat tests to determine density, viscosity, and pH value at intervals not exceeding 2 hours during the first 8 hours slurry is in use and every 4 hours thereafter, including overnight, until concrete placement. Perform density, viscosity and pH tests again when the excavation reaches the midpoint.

The Department may perform comparison tests as determined necessary during the mineral and polymer slurry operations.

If, at any time in the opinion of the Engineer, the wet construction method fails to stabilize the excavation discontinue this method of construction, backfill the excavation and submit modifications in procedure or alternate means of construction for approval.

455-15.8.2 Mineral Slurry: When mineral slurry is used in an excavation, use only processed attapulgite or bentonite clays with up to 2% (by dry weight) of added polymer. Use mineral slurry having a mineral grain size such that it will remain in suspension and having sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. Use a percentage and specific gravity of the material to make the suspension sufficient to maintain the stability of the excavation and to allow proper placement of concrete. Ensure that the material used to make the slurry is not detrimental to concrete or surrounding ground strata. During construction, maintain the level of the slurry at a height sufficient to prevent caving of the hole. In the event of a sudden significant loss of slurry such that the slurry level cannot

practically be maintained by adding slurry to the hole, backfill the excavation and delay the construction of that foundation until an alternate construction procedure has been approved.

Perform the following tests on the mineral slurry supplied to and in the shaft excavation and ensure that the results are within the ranges stated in the table below:

Item to be measured	Range of Results at 68ºF	Test Method
Density	64 to 73 lb/ft^3 (in fresh water environment) 66 to 75 lb/ft^3 (in salt water environment)	Mud density balance: FM 8-RP13B-1
Viscosity	30 to 40 seconds	Marsh Cone Method: FM 8-RP13B-2
pH	8 to 11	Electric pH meter or pH indicator paper strips: FM 8-RP13B-4
Sand Content	4% or less	FM 8-RP13B-3

The Contractor may adjust the limits in the above table when field conditions warrant as successfully demonstrated in a test hole or with other methods approved by the Engineer. The Engineer must approve all changes in writing before the Contractor can continue to use them.

During construction, maintain the level of mineral slurry in the shaft excavation within the excavation and at a level not less than 4 feet above the highest expected piezometric water elevation along the depth of a shaft.

455-15.8.3 Polymer Slurry: Materials manufactured expressly for use as polymer slurry for drilled shafts that meet the requirements of this subarticle may be used as slurry for drilled shaft excavations. A representative of the manufacturer must be on-site or available for immediate contact to assist and guide the construction of the first three drilled shafts at no additional cost to the Department. This representative must also be available for on-site assistance or immediate contact if problems are encountered during the construction of the remaining drilled shafts. Use polymer slurry only if the soils below the casing are not classified as organic, and the pH of the fluid in the hole can be maintained in accordance with the manufacturer's published recommendations. Submit the SDS for the product, the manufacturer's published mixing procedures, and the manufacturer's published range of values for pH and viscosity of the mixed slurry. Submit a report in accordance with Section 2.4, Volume II of the Department's Material Manual, which may be viewed at the following URL: http://www.fdot.gov/programmanagement/Implemented/URLinSpecs/Section24V2.shtm . The report must include test results, certification and documentation that demonstrate the polymer slurry and additives meet the following requirements:

1. The polymer slurries to be used on the project and their waste products are classified as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA) Subpart C rules, Table 1 of 40 CFR 261.24 Toxicity Characteristic.

2. Pull out tests demonstrate the bond between the bar reinforcement and the concrete is not materially affected by exposure to the slurry under typical construction conditions, over the typical range of slurry viscosities to be used.

3. Load tests demonstrate the bond between the concrete and the soil is not materially affected by exposure to the polymer slurry under typical construction conditions, over the typical range of polymer slurry viscosities to be used.

4. The method of disposal meets the approval of all federal, state and local regulatory authorities.

Perform the following tests on the polymer slurry supplied to and in the shaft excavation and ensure that the results are maintained within the ranges stated in the table below:

Mixed Polymer Slurry Properties		
Item to be measured	Range of Results at 68ºF	Test Method
Density	62 to 65 lb/ft^3 (fresh water) 64 to 67 lb/ft^3 (salt water)	Mud density balance: FM 8-RP13B-1
Viscosity	50 seconds to upper limit published by the manufacturer, limited by 455-15.8.3 (2) and (3) above, for materials excavated	Marsh Cone Method: FM 8-RP13B-2
pH	Range published by the manufacturer for materials excavated	Electric pH meter or pH indicator paper strips: FM 8-RP13B-4
Sand Content	0.5% or less	FM 8-RP13B-3

Premix polymer slurry in accordance with the manufacturer's published procedures. Do not mix in the excavation as a means to prepare slurry. When approved by the GFDEOR, adjustments to slurry properties can be made in the excavation.

During construction, maintain the level of the slurry at a height sufficient to prevent caving of the hole and which should not be lower than 4 feet above the highest expected piezometric water elevation along the depth of the shaft.

455-15.8.4 Fluid In Excavation At Time Of Concrete Placement: When any fluid is present in any drilled shaft excavation, including shafts to support sign, signal, lighting and ITS structures, the applicable test methods and reporting requirements described in 455-15.8.1, 455-15.8.2 and 455-15.8.3 apply to tests of fluid in the shaft prior to placing the concrete.

Test samples of the fluid in the shaft from within 1 inch of the base of the shaft and from the middle of the shaft height for shafts up to 60 feet in depth. Test samples of the fluid in the shaft from within 1 inch of the base of the shaft and at intervals not exceeding 30 feet up the shaft for shafts deeper than 60 feet. Use a sampling tool, approved by the Engineer, designed to sample over a depth range of 12 inches or less. Take whatever action is necessary prior to placing the concrete to bring the fluid within the specification and reporting requirements, outlined in the tables in 455-15.8.2 and 455-15.8.3, except as follows:

The Engineer will not require tests for pH or viscosity, nor require the fluid to meet the minimum density specified in 455-15.8.2 and 455-15.8.3 when neither polymer nor mineral slurry has been introduced into the shaft excavation.

455-15.9 Tremies and Pumps:

455-15.9.1 General: The requirements of the applicable provisions of Section 400 will apply when using a tremie or a pump to place drilled shaft concrete.

455-15.9.2 Dry Excavations: Ensure that the tremie for depositing concrete in a dry drilled shaft excavation consists of a tube of solid construction, a tube constructed of sections which can be added and removed, or a tube of other accepted design. The Contractor may pass concrete through a hopper at the top of the tube or through side openings as the tremie is retrieved during concrete placement. Support the tremie so that the free fall of the concrete is less than 5 feet at all times. If the free falling concrete causes the shaft excavation to cave or slough, control the movement of concrete by reducing the height of free fall of the concrete and/or reducing the rate of flow of concrete into the excavation.

455-15.9.3 Wet Excavations: Construct the tremie or pump line used to deposit concrete beneath the surface of water so that it is water-tight and will readily discharge concrete. Construct the discharge end of the tremie or pump line to prevent water intrusion and permit the free flow of concrete during placement operations. Ensure that the tremie or pump line has sufficient length and weight to rest on the shaft bottom before starting concrete placement.

During placement operations, ensure that the discharge end of the tremie or pump line is within 6 inches of the bottom of the shaft excavation until at least 10 feet of concrete has been placed. Ensure the discharge end of the tremie or pump line is continuously embedded at least 10 feet into the concrete after 10 feet of concrete has been placed and until the casing is overpoured sufficiently to eliminate all contaminated concrete. Ensure that the free fall of concrete into the hopper is less than 5 feet at all times. Support the tremie so that it can be raised to increase the discharge of concrete and lowered to reduce the discharge of concrete. Do not rapidly raise or lower the tremie to increase the discharge of the concrete. Maintain a continuous flow of concrete and a positive pressure differential of the concrete in the tremie or pump line at all times to prevent water or slurry intrusion into the shaft concrete.

455-15.10 Excavation and Drilling Equipment:

455-15.10.1 General: All shaft excavation is unclassified shaft excavation. Overream the drilled shaft sidewall when necessary. These terms are defined in 455-15.10.2, 455-15.10.3, and 455-15.10.4, respectively.

Use excavation and drilling equipment having adequate capacity, including power, torque, and crowd (downthrust), and excavation and overreaming tools of adequate design, size, and strength to perform the work shown in the Plans or described herein. When the material encountered cannot be drilled using conventional earth augers and/or underreaming tools, provide special drilling equipment, including but not limited to rock augers, core barrels, rock tools, air tools, blasting materials, and other equipment as necessary to continue the shaft excavation to the size and depth required. In the event blasting is necessary, obtain all necessary permits. The Contractor is responsible for the effects of blasting on already completed work and adjacent structures. The Engineer must approve all blasting.

455-15.10.2 Unclassified Shaft Excavation: Unclassified shaft excavation is defined as all processes required to excavate a drilled shaft of the dimensions shown in the Contract Documents to the depth indicated in the Plans plus 15 feet or plus 3 shaft diameters, whichever is deeper, completed and accepted. Include in the work all shaft excavation, whether the material encountered is soil, rock, weathered rock, stone, natural or man-made obstructions, or materials of other descriptions.

455-15.10.3 Unclassified Extra Depth Excavation: Unclassified extra depth excavation is defined as all processes required to excavate a drilled shaft of plan dimensions which is deeper than the limits defined as unclassified shaft excavation.

455-15.10.4 Drilled Shaft Sidewall Overreaming: Drilled shaft sidewall overreaming is defined as the unclassified excavation required to roughen its surface or to enlarge the drilled shaft diameter due to softening of the sidewalls or to remove excessive buildup of slurry cake when slurry is used. Increase the shaft radius a minimum of 1/2 inch and a maximum of 3 inches by overreaming. The Contractor may accomplish overreaming with a grooving tool, overreaming bucket, or other suitable equipment.

Meet the limit for depth of sidewall overreaming into the shaft sidewall material and the elevation limits between which sidewall overreaming is required.

455-15.11 Inspection of Excavations:

455-15.11.1 Dimensions and Alignment: Provide equipment for checking the dimensions and alignment of each permanent shaft excavation. Determine the dimensions and alignment of the shaft excavation under the observation and direction of the Department. Generally, check the alignment and dimensions by any of the following methods as necessary:

1. Check the dimensions and alignment of dry shaft excavations using reference stakes and a plumb bob. Verify that the bottom of the hole is level.

2. Check the dimensions and alignment of casing when inserted in the excavation.

3.Use an acceptable caliper system

4. Insert any casing, rod or pipe assembly, or other device used to check dimensions and alignment into the excavation to full depth.

455-15.11.2 Depth: Generally, reference the depth of the shaft during drilling to appropriate marks on the Kelly bar or other suitable methods. Measure final shaft depths with a suitable weighted tape or other accepted methods after final cleaning.

455-15.11.3 Shaft Inspection Device (SID): Furnish all power and equipment necessary to inspect the bottom conditions of a drilled shaft excavation for bridge foundations and to measure the thickness of bottom sediment or any other debris using a SID. Provide a means to position and lower the SID into the shaft excavation to enable the bell housing to rest vertically on the bottom of the excavation. Continuously videotape the inspection of each drilled shaft excavation after final cleaning. Clearly identify in the recordings by audio or other means, the location and items being observed.

Furnish a SID meeting the following requirements:

1. A remotely operated, high resolution, color video camera sealed inside a watertight bell housing.

2. Provides a clear view of the bottom inspection on a video monitor at the surface in real time.

3. Provides a permanent record of the entire inspection with voice annotation on a quality DVD with a resolution of not less than 720 x 480.

4. Provides a minimum field of vision of 110 square inches, with at least two graduated measuring devices to record the depth of sediment on the bottom of the shaft excavation to a minimum accuracy of 1/2 inch and a length greater than 1-1/2 inches.

5. Provides sufficient lighting to illuminate the entire field of vision at the bottom of the shaft in order for the operator and inspector to clearly see the depth measurement scale on the video monitor and to produce a clear recording of the inspection.

6. Provides a regulated compressed air or gas system to precisely adjust the drilling fluid level within the bell housing, and a pressurized water system to assist in determination of bottom sedimentation depth

Obtain the Engineer's approval of the device in advance of the first inspection contingent on satisfactory field performance. Notify the Engineer for approval before a different device is used for any subsequent inspection.

455-15.11.4 Shaft Cleanliness Requirements: Adjust cleaning operations so a minimum of 50% of the bottom of each shaft will have less than 1/2 inches of sediment at the time of placement of the concrete. Ensure the maximum depth of sedimentary deposits or any other debris at any place on the bottom of the shaft excavation does not exceed 1-1/2 inches. Determine shaft cleanliness by visual inspection for dry shafts. For bridge foundations, use a shaft inspection device for wet shafts. For drilled shaft foundations for sign, signal, lighting and ITS structures the use of a weighted tape is permitted to verify level and clean hole bottom conditions at the time of concrete placement.

When using slurry, meet the requirements of 455-15.8 at the time of concrete placement.

455-15.11.4.1 Exceptions for Shafts for Sign, Signal, Lighting and ITS Structures: Ensure the depth of sedimentary deposits or other debris does not exceed 1 inch over the bottom of the shaft when installing drilled shafts to support sign, signal, lighting and ITS structures.

455-15.11.5 Time of Excavation: Overream the sidewalls of any unclassified excavation work using mineral slurry lasting more than 36 hours (measured from the beginning of excavation for all methods except the Temporary or Permanent Casing Method, which begins at the time excavation begins below the casing) before placement of the concrete. Ensure that the minimum depth of overreaming the shaft sidewall is 1/2 inches and the maximum depth is 3 inches. Provide any overreaming required at no expense to the Department when exceeding the 36 hour limit.

When using mineral slurry, adjust excavation operations so that the maximum time that slurry is in contact with the bottom 5 feet of the shaft (from time of drilling to concreting) does not exceed 12 hours. If exceeding the 12 hour time limit, overream the shaft socket or the full shaft when socket is not specified, at no additional expense to the Department prior to performing other operations in the shaft.

455-16 Reinforcing Steel Construction and Placement.

455-16.1 Cage Construction and Placement: Completely assemble and place as a unit the cage of reinforcing steel, consisting of longitudinal bars, ties, and cage stiffener bars, immediately after the Drilled Shaft Inspector inspects accepts the shaft excavation and immediately prior to placing concrete. Tie all intersections of drilled shaft reinforcing steel with cross ties or "figure 8" ties. Use double strand ties, ties with larger tie wire, U-bolts, or similar when necessary.

455-16.2 Splicing Cage: If the bottom of the constructed shaft elevation is lower than the bottom of the shaft elevation in the Plans, extend a minimum of one half of the longitudinal bars required in the upper portion of the shaft the additional length. Continue the tie bars for the extra depth, spaced on 2 foot centers, and extend the stiffener bars to the final depth. The Contractor may lap splice these bars or use unspliced bars of the proper length. Do not weld bars to the planned reinforcing steel unless shown in the Contract Documents.

For drilled shafts supporting sign, signal, lighting and ITS structures, if the shaft cleaning operations result in excavating below the required tip elevation, the reinforcing steel cage does not need to be extended. The reinforcing steel cage may be spliced to rest on the bottom of the excavation or suspended in place from the top.

455-16.3 Support, Alignment, and Tolerance: Tie and support the reinforcing steel in the shaft so that the reinforcing steel will remain within allowable tolerances as specified in 455-20 and Section 415.

Ensure concentric spacing for the entire length of the cage. As a minimum, use centering devices consisting of wheels or other approved noncorrosive spacing devices within 3 feet of the bottom, within 6 feet of the top, and intervals not exceeding 10 feet along the cage length. When a casing with an inside diameter (I.D.) larger than the required shaft diameter is used, provide, within the portion of the oversized casing, centering devices specially dimensioned to ensure the casing and the cage are concentric. Do not use block or wire type spacers. Ensure no metallic elements will be within the concrete cover space. Use a minimum of one spacer per 30 inches of circumference of cage with a minimum of four at each level. Provide spacers at the bottom of the drilled shaft reinforcing cage as required to maintain the proper position of the cage.

Check the elevation of the top of the steel cage before and after placing the concrete. If the cage is not within the specified tolerances, correct, and submit a revised DSIP to the Engineer for approval. Do not construct additional shafts until receiving approval from the Engineer.

455-16.4 Nondestructive Integrity Testing Access Tubes: Install access tubes full length in all drilled shafts from the tip of shaft to a point high enough above top of shaft to allow Thermal Integrity Testing for Drilled Shafts (TITDS) and Cross-Hole Sonic Logging (CSL) testing, but not less than 30 inches above the top of the drilled shaft, ground surface or water surface, whichever is higher. Equally space tubes around circumference of drilled shaft. Securely tie access tubes to the inside of the reinforcing cage and align tubes to be parallel to the vertical axis of the center of the cage. Access tubes from the top of the reinforcing cage to the tip of the shaft shall be NPS 1-1/2 Schedule 40 black iron or black steel (not galvanized) pipe. Access tubes above the top of the reinforcing cage may be the same black iron or black steel pipe or Schedule 40 PVC pipe. Ensure that the access tubes are free from loose rust, scale, dirt, paint, oil and other foreign material. Couple tubes as required with threaded couplers, such that inside of tube remains flush. Seal the bottom and top of the tubes with threaded caps. The tubes, joints and bottom caps shall be watertight. Seal the top of the tubes with lubricated, threaded caps sufficient to prevent the intrusion of foreign materials. Stiffen the cage sufficiently to prevent damage or misalignment of access tubes during the lifting and installation of the cage. Exercise care in removing the caps from the top of the tubes after installation so as not to apply excess torque, hammering or other stress which could break the bond between the tubes and the concrete.

Provide the following number (rounded up to the next whole number of tubes) and configuration of access tubes in each drilled shaft based on the diameter of the shaft.

Shaft Diameter	Number of Tubes Required	Configuration around the inside of Circular Reinforcing Cage
36 to 48 inches	4	90 degrees apart
Greater than 48 inches	1 tube per foot of Shaft Diameter	360 degrees divided by the Number of Tubes

Insert simulated or mock probes in each access tube prior to concreting to ensure the serviceability of the tube. Fill access tubes with clean potable water and recap prior to concreting. Repair or replace any leaking, misaligned or unserviceable tubes as in a manner acceptable to the Engineer prior to concreting.

For drilled shaft foundations requiring anchor bolts, verify access tubes will not interfere with anchor bolt installation before excavating the shaft. When access tube locations conflict with anchor bolt locations, move the access tube location plus or minus 2 inches along the inner circumference of the reinforcing cage.

For drilled shafts supporting sign, signal, lighting and ITS structures, if the shaft cleaning operations result in excavating below the required tip elevation, the access tubes do not need to be extended. If the reinforcing steel cage is suspended in place from the top rather than resting on the bottom of the excavation, clearly mark the top of shaft location on each tube.

When called for in the Contract Documents, provide embedded thermal wires and equipment to allow TITDS in accordance with ASTM D7949 Method B.

455-17 Concrete Placement.

455-17.1 General: Place concrete in accordance with the applicable portions of Sections 346 and 400, 455-15.2, 455-15.3, 455-15.4, 455-15.5, 455-15.8, 455-15.9, and the requirements herein.

Place concrete as soon as possible after completing all excavation, cleaning the shaft excavation, inspecting and finding it satisfactory, and immediately after placing reinforcing steel. Continuously place concrete in the shaft to the top of the casing. Continue placing concrete after the casing is full until good quality concrete is evident at the top of the casing. Place concrete through a tremie or concrete pump using accepted methods. After the shaft is overpoured sufficiently to eliminate all contaminated concrete, additional concrete may be added to the shaft without the use of a tremie or pump in accordance with Section 400.

If the pressure head is lost during concrete placement for any reason, perform integrity testing at no expense to the Department.

Immediately after concreting, check the water levels in the CSL access tubes and refill as necessary. If tubes become unserviceable, core new holes in the drilled shaft as directed by the Engineer.

455-17.2 Placement Time Requirements: The elapsed time for placing drilled shaft concrete includes the concrete mixing and transit time, the concrete placement time, the time required to remove any temporary casing that causes or could cause the concrete to flow into the space previously occupied by the casing, and the time to insert any required column steel, bolts, weldments, etc. The elapsed time begins at the time the first truck load placed in the shaft is batched. Maintain a minimum slump of 5 inches throughout the elapsed time. Use materials to produce and maintain the required slump through the elapsed time that meets the class of concrete specified. Provide slump loss tests that demonstrate to the Engineer that the concrete will maintain a 5 inch or greater slump for the anticipated elapsed time before beginning drilled shaft construction.

455-17.3 Forms: When the top of shaft elevation is above ground or above water, form the portion of the shaft above ground and the portion of the shaft above water with a removable form or another suitable method to the dimensions shown in the Plans

When the shaft extends above the ground through a body of water, the Contractor may form the portion through the water with removable forms except when the Permanent Casing Method is specified.

455-17.4 Riser Blocks: The Contractor may cast a riser block of equal diameter as the column and of a maximum height of 6 inches at the top of the completed shaft. When this option is chosen, extend any dowel steel above the top of shaft an additional 6 inches.

455-17.5 Curing: Cure the top surface in accordance with the applicable provisions of Section 400, and construct any construction joint area as shown in the Plans. Protect portions of drilled shafts exposed to a body of water from the action of water by leaving the forms in place for a minimum of seven days after casting the concrete. The Contractor may remove forms prior to seven days provided the concrete strength has reached 2,500 psi or greater as evidenced by cylinder breaks.

455-17.6 Non-Destructive Testing of Drilled Shaft Integrity:

455-17.6.1 Thermal Integrity Testing for Drilled Shafts (TITDS): Perform all TITDS testing in accordance with ASTM D7949. Test all drilled shafts in bridge bents or piers considered nonredundant in the Plans, using TITDS. For all other drilled shafts supporting bridges and sign, signal, lighting and ITS structures, perform TITDS on any shaft suspected of containing defects. The Engineer may select shafts for TITDS based on observations in the field or the review of the drilled shaft logs.

Engage a qualified Specialty Engineer to supervise the TITDS. The qualified TITDS Specialty Engineer must have a minimum six months experience of TITDS and have a Florida Licensed Professional Engineer and supervise the collection and interpretation of data. The individual performing the TITDS in the field must work for the Specialty Engineer firm and have a minimum of six months experience of TITDS. The Contractor shall provide all necessary access and assistance to the TITDS Specialty Engineer to satisfactorily perform the testing.

After acceptance of production shafts by the Engineer, remove all water from the access tubes or core holes and fill the tubes or core holes with a structural non-shrink grout meeting the requirements of Section 934 from the bottom via tremie tube. Place the grout utilizing enough pressure to fill the tubes or core holes completely.

If the Contractor determines at any time during the non-destructive testing and evaluation of the drilled shaft that the drilled shaft should be replaced, no further testing or evaluation of that shaft is required.

455-17.6.1.1 Equipment: Furnish TITDS test equipment in accordance with ASTM D7949 as follows:

1. Provide thermal probes with four orthogonally oriented infrared sensors able to be used in 1.5 inch I.D. pipes.
2. Provide a computer based TITDS data acquisition system for display of signals during data acquisition.
3. Provide a computer based TITDS data acquisition system for display of signals during data acquisition.
4. Provide an air compressor and power supply with sufficient pressure to air lift the water from the access tubes.

455-17.6.1.2 Procedure: Perform TITDS testing between the minimum and maximum times shown below after the batching time of the first truck load placed in the drilled shaft, unless otherwise accepted by the Engineer.

Shaft Diameter (inches)	Minimum time (hours)	Maximum time (hours)
36-48	24	54
49-60	24	72
61-72	24	72
73-84	24	90
85-120	24	108

The Contractor may propose modifications in the above table for site specific and special concrete mix conditions, as demonstrated from lab and field testing and instrumentation. The Engineer must approve all changes to the testing times prior to the Contractor using them.

Furnish information regarding the shaft, tube lengths and depths, construction dates, and other pertinent shaft installation observations and details to the Department at the time of testing. Verify access tube lengths and their condition in the presence of the Department, at the end of concrete placement. If the access tubes do not provide access over the full length of the shaft, repair the existing tube(s) or core additional hole(s), as directed by the Engineer, at no additional cost to the Department.

Just prior to inserting the thermal probe, remove water from the access tubes. Store the removed water in an insulated container for later replacement. Allow the thermal probe to acclimate in accordance with the equipment manufacturer recommendations. Continuously record temperatures at depth intervals of 3.0 inches or less from the top to the bottom of each access tube. Repeat the test at each access tube until two sets of data from the same access tube provide similar results. Return the warm water to the access tubes immediately after the testing has been completed.

Immediately report any potential defects indicated by lower temperature anomalies to the Engineer.

455-17.6.1.3 Required TITDS Reports: Submit the TITDS data and analysis to the Engineer in a signed and sealed report, together with all electronic data, within 48 hours of testing. The report shall include as minimum the following items:

1. Graphs displaying all temperature measurements and average temperature versus depth.
2. Indication of unusual temperatures, including cooler local deviations from the average at any depth from the overall average over the entire length.
3. A graph displaying the average temperature and theoretical temperature versus depth.
4. Variations in temperature between access tubes which may indicate variations in cage alignment.
5. The calculated radius of the shaft throughout the entire depth.
6. Alignment of the reinforcing cage along the shaft.
7. Calculated concrete cover throughout the entire depth.
8. Shaft Details, Probe Details, Environmental Details, Tube Run Selection and Shaft Adjustment Data that show the measurements, inputs and adjustments to the data. Screen captures of these pages from the “TIP Reporter” software will be acceptable.
9. A conclusion stating whether the tested shaft is free from integrity defects and meets the minimum concrete cover and diameter requirements by the

specifications. When anomalies are detected, include in the report a three dimensional rendering of the shape of the shaft.

455-17.6.1.4 Evaluation of TITDS Test Results: Drilled shafts not meeting the minimum cover and diameter requirements, or having integrity defects, are not acceptable without an engineering analysis.

455-17.6.1.5 Coring and/or Repair of Drilled Shafts: If a drilled shaft is unacceptable based on the TITDS tests and other testing, or problems observed during drilled shaft construction, core the shaft to allow further evaluation and repair, or replace the shaft. If coring to allow further evaluation of the shaft and repair is chosen, one or more core samples shall be taken from each unacceptable shaft for full depth of the shaft or to the depth directed by the GFDEOR. The GFDEOR shall determine, with concurrence of the Engineer, the number, location, and diameter of the cores based on the results of the TITDS. Keep an accurate log of cores. Properly mark and place the cores in a crate showing the shaft depth at each interval of core recovery. Deliver the cores to the GFDEOR and submit the coring log to the Engineer. Perform strength testing by an AASHTO certified lab on portions of the cores that exhibit questionable concrete as determined by the GFDEOR. If the TITDS and coring indicate the shaft is defective, propose remedial measures for approval by the Engineer. Such improvement may consist of, but is not limited to correcting defective portions of the shaft, providing straddle shafts to compensate for capacity loss, or providing a replacement shaft. Repair all detected defects and conduct post repair integrity testing using horizontal and offset CSL testing and 3-D tomographic imaging as described in 455-17.6.2. Engage a Specialty Engineer to perform gamma-gamma density logging calibrated to 1-1/2 inch black iron access tubes, prior to and after the repair is performed, to verify the integrity of the shaft outside the reinforcing cage in the same locations where the repair was required. When straddle shafts or replacement shafts are used to correct a deficient foundation perform TITDS in accordance with 455-17.6.1 through 455-17.6.3 to verify integrity of these shafts. Submit all results to the Engineer within five days of test completion for acceptance. Perform all work described in this sub-article at no additional cost to the Department, and with no increase in Contract Time.

455-17.6.2 Cross Sonic Logging (CSL) and Tomography: When required by the Engineer perform CSL testing in accordance with ASTM D6760. Engage a qualified Specialty Engineer to perform the CSL testing. The qualified CSL Specialty Engineer must be a Professional Engineer in the State of Florida and have a minimum six months experience of CSL testing, supervising the collection of CSL data and interpretation of CSL results. The individual performing the CLS testing in the field must work for the Specialty Engineer firm and have a minimum of six months experience of six months of CSL testing. The Contractor shall provide all necessary access and assistance to the CSL Specialty Engineer to satisfactorily perform the testing.

When a shaft contains four tubes, test every possible tube combination. For shafts with five or more tubes, test all pairs of adjacent tubes around the perimeter, and one-half of the remaining number of tube combinations, as chosen by the Engineer. Pull the probes simultaneously, starting from the bottoms of the tubes, over an electronic depth measuring device. Perform the CSL tests with the source and receiver probes in the same horizontal plane. Continuously record CSL signals at depth intervals of 2-1/2 inches or less from the bottom of the tubes to the top of each shaft. Remove all slack from the cables prior to pulling to provide accurate depth measurements in the CSL records. When the measurements indicate a 30% or

greater reduction in velocity between one or more pairs perform 3D tomography analysis as indicated below.

To perform 3D tomography analysis conduct offset CSL measurements between the tube pair combinations in addition to the horizontal measurements. Record offset measurements with source and receiver vertically offset in the tubes. These measurements add four measurements per tube combination to the horizontal measurements described in this section. Offset measurements are described by the angle, in degrees, and direction the signal travels between the probes with respect to the horizontal plane: plus 45, plus 22.5 (source below receiver), and minus 45, minus 22.5 (source above receiver). Record offset measurements from the point where the higher probe is at least 5 feet below the velocity reduction to the point where the lower probe is at least 5 feet above the velocity reduction. When repairs are done, provide offset measurements from the point where the higher probe is at least 5 feet below the lower limit of the repaired zone to the point where the lower probe is at least 5 feet above the upper limit of the repaired zone. Perform offset measurements and provide CSL logs and 3D tomographic analysis at no additional cost to the Department.

After acceptance of production shafts by the Engineer, fill the tubes or core holes with a structural non-shrink grout in accordance with 455-17.6.1.

If the Contractor determines at any time during the non-destructive testing and evaluation of the drilled shaft that the drilled shaft should be replaced, no further testing or evaluation of that shaft is required.

455-17.6.2.1 Required CSL Reports: Present the CSL data and analysis results to the Engineer in a signed and sealed report. Include CSL logs with analyses of first pulse arrival time (FAT) versus depth and pulse energy/amplitude versus depth. Present a CSL log for each tube pair tested with any defect zones identified on the logs and discussed in the test report as appropriate. When offset measurements are required, perform 3D tomographic analysis using all offset data, and include color coded 3D tomographic images in the report.

455-17.6.2.2 Evaluation of Cross-Hole Sonic Logging Testing: Drilled shafts with velocity reduction exceeding 30% are not acceptable without an engineering analysis.

455-17.6.2.3 Coring and/or Repair of Drilled Shafts: If a drilled shaft is unacceptable based on the CSL Testing and tomographic analyses and other testing, core the shaft to allow further evaluation and repair, or replace the shaft in accordance with 455-17.6.1.5.

If repairs are performed or additional shafts installed to correct a deficient foundation, conduct integrity testing and submit the results to the Engineer in accordance with 455-17.6.1.5.

455-18 Method Shafts.

The Engineer will use the construction of method shafts (test holes) to determine if the methods and equipment used by the Contractor are sufficient to produce a shaft excavation meeting the requirements of the Contract Documents. During method shaft excavations, the Engineer will evaluate the ability to control dimensions and alignment of excavations within tolerances; to seal the casing into impervious materials; to control the size of the excavation under caving conditions by the use of slurry or by other means; to properly clean the completed shaft excavation; to construct excavations in open water areas; to determine the elevation of ground water; to place reinforcing steel and concrete meeting the requirements of these Specifications within the prescribed time frame; and to execute any other necessary construction operation. Revise the methods and equipment as necessary at any time during the construction of the method shaft when unable to satisfactorily carry out any of the necessary operations

described above or when unable to control the dimensions and alignment of the shaft excavation within tolerances.

Successfully construct method shafts out of permanent position at the location shown in the Plans. Ensure the diameter and depth of the method shafts are the same diameter and maximum depth as the production drilled shafts. When there are shafts both on land and in water, successfully construct a method shaft for each condition. When there is more than one size of drilled shaft, perform a method shaft for the largest diameter for each condition. Reinforce the method shaft unless otherwise directed in the Contract Documents. Conduct integrity tests on each shaft, using both cross-hole sonic logging and TITDS test methods. Fill the method shaft with concrete in the same manner production drilled shafts will be constructed. Backfill method shafts which are not filled with concrete with suitable soil in a manner satisfactory to the Engineer. Leave concreted method shafts in place, except remove the top of the shaft to a depth of 2 feet below the ground line. Use the same procedure for shafts constructed in water. Restore the disturbed areas at the sites of method shafts drilled out of position as nearly as practical to their original condition. When the Contractor fails to demonstrate to the Engineer the adequacy of his methods or equipment, and alterations are required, make appropriate modifications and provide additional method shafts at no expense to the Department. Make no changes in methods or equipment after initial acceptance without the consent of the Engineer.

A separate method shaft is not required for drilled shafts installed under sign, signal, lighting and ITS structures. The first production shaft will serve as a method shaft for determining acceptability of the installation method.

455-19 Test Bells.

Test bells are no longer used.

455-20 Construction Tolerances.

Meet the following construction tolerances for drilled shafts:

1. Ensure that the top of the drilled shaft is no more than 3 inches laterally in the X or Y coordinate from the position indicated in the Plans.

2. Ensure that the vertical alignment of the shaft excavation does not vary from the alignment shown in the Plans by more than 1/4 inches per foot of depth.

3. After placing all the concrete, ensure that the top of the reinforcing steel cage is no more than 6 inches above and no more than 3 inches below plan position.

4. Ensure that the reinforcing cage is concentric with the shaft within a tolerance of 1-1/2 inches. Ensure that concrete cover is a minimum of 4-1/2 inches unless shown otherwise in the Plans.

5. All casing diameters shown in the Plans refer to I.D. (inside diameter) dimensions. However, the Contractor may use casing with an outside diameter equal to the specified shaft diameter if the extra length described in 455-15.7 is provided. In this case, ensure that the I.D. of the casing is not less than the specified shaft diameter less 1 inch. The Contractor may elect to provide a casing larger in diameter than shown in the Plans to facilitate meeting this requirement. Ensure that the minimum diameter of the drilled shaft is 1 inch less than the specified shaft diameter. When conditions are such that a series of telescoping casings are used, provide the casing sized to maintain the minimum shaft diameters listed above.

6. Except when a butting or encroaching within a sidewalk, ensure that the top elevation of the drilled shaft concrete has a tolerance of plus 1 inch and minus 3 inches from the top of shaft elevation shown in the Plans.

7. When abutting or encroaching within a sidewalk, ensure that the top elevation of the drilled shaft is flush with the sidewalk surface.

8. The dimensions of casings are subject to American Petroleum Institute tolerances applicable to regular steel pipe.

9. Use excavation equipment and methods designed so that the completed shaft excavation will have a flat bottom. Ensure that the cutting edges of excavation equipment are normal to the vertical axis of the equipment within a tolerance of plus or minus 3/8 inches per foot of diameter.

455-21 Drilled Shaft Excavations Constructed out of Tolerance.

Do not construct drilled shaft excavations in such a manner that the concrete shaft cannot be completed within the required tolerances. The Contractor may make corrections to an unacceptable drilled shaft excavation by any combination of the following methods:

1. Overdrilling the shaft excavation to a larger diameter to permit accurate placement of the reinforcing steel cage with the required minimum concrete cover.

2. Increasing the number and/or size of the steel reinforcement bars.

When the tolerances are not met, the Contractor may propose a redesign to incorporate shafts installed out of tolerance into caps or footings. Incorporate shafts installed out of tolerance at no expense to the Department. Ensure the Contractor's Engineer of Record performs any redesign and signs and seals the redesign drawings and computations. Do not begin any proposed construction until the redesign has been reviewed and accepted by the Engineer.

Backfill any out of tolerance shafts in an accepted manner when necessary until the redesign is complete and accepted. Furnish additional materials and work necessary, including engineering analysis and redesign, to effect corrections of out of tolerance drilled shaft excavations at no expense to the Department.

455-22 Recording, Certification and Verification.

455-22.1 Recording: Inspect and record all the drilled shaft operations. Keep a set of drilled shaft logs for each drilled shaft including test holes, load test shafts and production shafts. Use the Department's Drilled Shaft Log forms to record the information. Submit to the Engineer drilled shaft logs and concrete logs within 24 hours of concrete placement. The documentation shall include the drilled shaft installation procedures, actual dimensions and quantities of the materials used, fluid testing results, bottom cleanliness inspection results, sequencing, as well as any problems encountered during construction and concrete placement. Allow two working days, excluding weekends and Department observed holidays, for the Department to review the data and determine whether shafts will be selected for CSL integrity testing. Perform CSL testing on any shaft selected by the Department at this stage in accordance with 455-17.

455-22.2 Foundation Certification Packages: Submit certification packages of drilled shaft foundations to the Engineer prior to Verification Testing. Each Foundation Certification Package shall include a letter signed and sealed by the GFDEOR certifying the drilled shafts have the required axial capacity, torsional capacity, uplift capacity, overturning and lateral stability, integrity deficiencies have been corrected, settlements will not affect the functionality of the structure, and that the inspection of the drilled shaft installation was performed under the supervision of the GFDEOR. Include all shaft excavation and concreting logs, videos of visual shaft bottom inspections, all CSL reports and electronic data, gamma-gamma testing reports, slurry test data, supplemental testing data, analyses for the foundation unit and the concrete strength test results of the lots sampled. The certification shall not be contingent on any future

testing or approval by the Engineer. Submit a separate Foundation Certification Package for each foundation unit. A foundation unit is defined as all the shafts within one bent or pier for a specific bridge for each phase of construction. For sign, signal, lighting and ITS structures, a foundation unit is defined as all the shafts within one intersection/interchange, for each phase of an intersection/interchange or all the shafts included in the structure.

455-22.3 Verification: The Engineer reserves the right to observe and perform verification testing on any drilled shafts during any phases of the foundation operation.

Provide safe access and cooperate with the Engineer for verification of the drilled shafts, both during construction of shafts and after submittal of the certification package. The Engineer may verify the bottom cleanliness by over the shoulder review of the Contractor's visual inspection methods and/or by independent means. The Engineer may verify properties of drilling fluid at the time of concreting.

Within one working day, excluding weekends and Department observed holidays, of receipt of the Foundation Certification Package, the Engineer will examine the Certification Package and determine whether shafts in that foundation unit will be selected for Verification Testing. The Engineer may select every shaft for Verification Testing if defects are suspected, or choose not to require verification testing on any or all foundation units. The Engineer will provide equipment and personnel as needed for Verification Testing. Methods used for Verification Testing of a completed shaft are at the discretion of the Engineer and may include coring, cross-hole sonic logging, gamma-gamma density logging, low-strain dynamic integrity testing, or other methods.

After Verification Testing for a foundation unit is performed, the Engineer will provide the results within five working days, excluding weekends and Department observed holidays. Integrity testing access tubes shall not be grouted and construction of footings, caps, columns or any superstructure elements shall not occur until the Engineer has notified the Contractor that additional Verification Testing is not required.

If any shaft is found to be deficient, correct the deficiency (i.e. repair or replace the shaft) and/or modify the design to compensate for the deficiency. After the deficiency is corrected, retest and recertify the shaft. The Engineer may then perform additional Verification Testing. In case of disagreement of test results, the Engineer's results will be final and used for determination of acceptance.

ARTICLE 455-23 is deleted:

455-24 Basis of Payment.

Contract Price includes all labor, equipment and materials required for furnishing, installing, and certifying drill shaft foundations, in place and accepted. No separate payment will be made for any items of work associated with construction of drill shaft foundations.

D. SPREAD FOOTINGS

455-25 Description.

Construct reinforced concrete spread footing foundations, including dewatering when necessary, excavating to the required limits, compacting the underlying soil as required, and constructing seals when required.

455-26 General Requirements.

Meet the following requirements for all spread footings:

1. Perform excavations, including the removal of all material, of whatever nature, necessary for the construction of spread footings. As used herein, the term “soil” shall constitute any material, whether soil, rock, or other materials.

2. Slope excavations as required, or support them with sheeting, and shore them if necessary, to provide a safe excavation that is adequate for construction purposes and that will adequately protect any existing adjacent structures.

3. Ensure that the foundation soils are firm, stable, and meet or exceed the design bearing and compressibility requirements before constructing the footings or any required seals. The Department may elect to use any type of tests to evaluate the foundation soils that is appropriate in the opinion of the Engineer. Cooperate with the Engineer in the evaluation of the foundation soils, and assist the Engineer as necessary to provide access to the site.

4. Modify the elevation of the bottom of footings or seals and the depth of over-excavation shown in the Plans as may be necessary to secure a satisfactory foundation.

5. Place all spread footing concrete in the dry.

Provide safe access and cooperate with the Engineer to perform verification of the spread footing construction.

455-26.1 Foundation Certification Packages

Submit two copies of a letter signed and sealed by the GFDEOR to the Engineer certifying each spread footing has the required axial, lateral and torsional capacity, overturning stability and integrity; and settlement will not affect the functionality of the structure. A separate Foundation Certification Package must be submitted for each foundation unit. A foundation unit is defined as a spread footing. Spread footings must be certified and the certification accepted before continuing with the construction of any structural element above the foundation unit. Correct all integrity problems and non compliance issues prior to submitting the certification packages. The certification shall not be contingent on any future testing or approval by the Engineer.

Within one working day, excluding weekends and Department observed holidays, after receipt of the Foundation Certification Package, the Engineer will examine the records and determine the acceptability of the shallow foundation.

455-27 Monitor Existing Structures.

Monitor existing structures in accordance with Section 108.

455-28 Dewatering.

The Contractor is responsible for the design, installation, and operation of an adequate dewatering system to dewater excavations for spread footings. Use a well point or well system. Submit a dewatering plan to the Engineer for his records before beginning construction.

Use well points or wells where the piezometric water level is above an elevation 3 feet below the bottom of the excavation. Maintain the water table 3 feet or more below the maximum depth of excavation. Provide continuous dewatering until completing construction of the footing and backfill the excavation at least 3 feet above the piezometric water table elevation. In the event of a dewatering failure, determine the effects of such a failure on the foundation soils, and take whatever corrective measures are required at no additional expense to the Department. When discontinuing dewatering, decrease the rate of pumping, allowing the water level to rise slowly. Use a rate, in feet per hour, that the water table is allowed to rise equal to the total number of feet the water table was lowered, divided by ten hours or a rate of 1 foot per hour, whichever is less.

Install one piezometer well approximately every 15 feet of footing perimeter. Provide a minimum of two piezometers at locations within 2 feet from the outside of the footing perimeter. Install piezometer wells to a depth at least 10 feet below the bottom of footing elevation. Measure water elevation in the piezometer wells prior to excavation and at 12-hour intervals between excavation and discontinuation of dewatering. Maintain the piezometers in working condition throughout the dewatering process, and repair or replace them when damaged at no expense to the Department.

455-29 Excavations

If the excavation must be carried deeper than shown in the Plans to obtain a satisfactory foundation, revise the Plans.

455-29.1 Dry Excavations: Dry excavations are excavations that can be completed without the need to lower the piezometric water level. Perform dry excavations when the piezometric water level at the time of construction is and, in the opinion of the Engineer, will remain at least 3 feet below the bottom of the authorized excavation or over-excavation. Demonstrate to the Engineer that a stable excavation can be made without dewatering. Make adequate provisions to divert surface runoff and to collect and remove any water entering the excavation.

Excavate to the bottom of footing, to the over-excavation limits shown in the Plans or as required for forming. Save any suitable materials for backfill. Provide areas for the disposal of all unsuitable materials, and dispose of them in a satisfactory method. Compact the foundation soils below the footing as described herein before constructing the footing.

455-29.2 Dewatered Excavations: Dewatered excavations are excavations made after first lowering the piezometric water level with wellpoints or wells. Perform dewatering as described in 455-28. Excavate in the dry after lowering of the water table.

When dewatering is required, the Contractor may excavate within 3 feet of the ground water table before dewatering begins if the dewatering system is operating and the Contractor has demonstrated that the water level has been lowered to and maintained at acceptable limits. Where large excavations require stage lowering of the water table (additional wellpoint systems installed at lower elevations), the Contractor may continue excavating as long as the water elevation is maintained at least 3 feet below the excavation.

Ensure that surface runoff is diverted from the excavation. Compact the foundation soils as shown in the Plans or as described herein before constructing the footing.

455-29.3 Wet Excavations: Wet excavations are excavations made below the existing water table without prior dewatering. When the Plans show a cofferdam and seal, perform the excavation in the wet. Maintain the water level during excavation at or above the water level outside the cofferdam.

Place the seal directly upon the foundation soils or rock when using wet excavations. Do not compact foundation soils for wet excavations. Ensure that the foundation soils or rock are disturbed as little as practical. Remove all loose or disturbed materials before placing the seal concrete.

455-30 Fill or Backfill.

In all excavations, including over-excavations below the footing, use only fill or backfill materials considered Select in accordance with Standard Plans, Index 120-001. Ensure the material is free of rubble, debris, or rocks that would prevent uniform placement and compaction. Ensure the material below the top of the footing is free of Recycled Asphalt Pavement (RAP). Perform sampling and testing in accordance with 120-10.1.4, except replace FM 1-T99 with FM 1-T180,.

455-31 Compaction and Density Requirements.

Compact the bottom of the excavation with suitable equipment. Compact the soil beneath footing excavation (whether dug to the bottom of footing or over-excavated) to a density not less than 95% of the maximum density as determined by FM 1-T180 for a minimum depth of 2 feet below the bottom of the excavation or to the depth shown in the Plans before backfilling begins. For every 500 feet of excavation or isolated compaction operation, perform two Quality Control (QC) density tests with a 12 inch depth of measurement: one QC density test with the gauge placed at an elevation of 1 foot below the bottom of the excavation and one QC density test with the gauge placed at the bottom of the excavation in accordance with FM 1-T238. Compact the backfill in footing excavations which have been over-excavated to a density not less than 95% of the maximum density as determined by FM 1-T180. Ensure that the maximum lift thickness after compaction does not exceed 6 inches. For every 500 feet of backfill or isolated compaction operation, perform at least one QC density test. The Engineer will conduct one density verification test per every four QC test with a minimum of one density test below the bottom of the excavation and one density test in the backfill. Verification comparison criteria and resolution procedures will be in accordance with 120-10.4 except replace FM 1-T99, with FM 1-T180.

For compaction, use a suitable heavy vibratory roller with a static drum weight of at least 4 tons. Compact each lift to the required density. Also, compact the final lift below the footing with a suitable sled vibratory compactor to remove any upper disturbance caused by the drum roller. When conditions require use of smaller compaction equipment, obtain the Engineer’s acceptance for the equipment, and reduce the lift thickness to achieve the required density.

Perform backfilling to the original ground surface, finished grade, or subgrade as required by the Plans in the immediate vicinity by suitable mechanical compactors weighing less than 1,000 pounds. The Contractor may compact backfill located more than 15 feet away from the exterior periphery of the footing with heavier compactors. Do not place backfill on the footing until the Engineer has given permission and until the concrete is at least seven days old.

When the plans indicate spread footing abutments on mechanically stabilized earth (MSE) walls, place and compact the backfill material underneath the footing in accordance with the requirements of 548-8.5. Meet the density requirements of 548-9.4.

455-32 Forming.

Form spread footings if it cannot be demonstrated that the natural soil or rock is strong enough to prevent caving during construction. For forms, meet the applicable requirements of 400-5. When forms are not required, meet the requirements of 400-5.4.4.

455-33 Materials.

455-33.1 Concrete: Meet the requirements of Section 346.

455-33.2 Reinforcing Steel: Meet the requirements of Section 415. For spread footing reinforcing steel, use Grade 60.

455-34 Reinforcing Steel Placement.

Place and fasten reinforcing steel for footings according to the applicable provisions of 415-5.

455-35 Concrete Placement.

455-35.1 Placement: Place all footing concrete in the dry and according to the applicable provisions of Section 400. Do not construct joints in footings.

455-35.2 Finish: After placing and consolidating the concrete, strike-off the top surface to the grades shown in the Contract Documents, leaving the surface smooth and free of undesirable cavities and other defects. Do not provide a special finish unless the footing will be visible after construction, in which case, meet the applicable provisions of Section 400.

455-35.3 Curing: Provide continuous-moisture-curing for footings. For cover materials, use clean sand, sawdust, or other materials accepted by the Engineer. Continuously wet the cover materials for a period of 72 hours.

ARTICLE 455-36 is deleted:

455-37 Basis of Payment.

Contract Price includes all labor, equipment and materials required for furnishing, installing, and certifying the completed foundations, in place and accepted. No separate payment will be made for any items of work associated with spread footing construction.

E. STRUCTURES (OTHER THAN BRIDGE) FOUNDATIONS-AUGER CAST PILES

455-38 Description.

Furnish and install auger cast piles (ACP) or augered cast-in-place (ACIP) piles used for structural support, other than bridge foundations.

ACP piles are defined as a foundation made by rotating a hollow-stem auger into the ground to the required pile depth with sufficient crowd (downward thrust) to prevent mining of the soil. A fluid cement grout is injected through the auger shaft under continuous positive pressure as the auger is being withdrawn. A reinforcing steel cage, as specified, is inserted into the column of fluid grout following the completion of grout placement.

455-39 General Requirements.

455-39.1 Contractor's Operations: Submit an Auger Cast Pile Installation Plan in accordance with 455-47. Prior to the start of production piles, demonstrate to the satisfaction of

the Engineer, the dependability of the equipment, techniques, and source of materials by construction of a demonstration pile.

Provide safe access and cooperate with the Engineer to perform verification of the auger cast pile installation.

455-39.2 Monitor Existing Structures: Monitor existing structures in accordance with Section 108.

455-40 Materials.

Meet the following material requirements:

Portland Cement and Blended Cement	Section 921
Supplementary Cementitious Materials	Section 929
Fine Aggregate (Sand)*	Section 902
Admixtures	Section 924
Water	Section 923
Fluidifier**	ASTM C 937
Reinforcing Steel	Section 415

* The Engineer will only permit Silica Sand except as provided in 902-5.2.3.
** The fluidifier shall not contain chlorides.

455-41 Grout Mix Proportions.

Use a grout mix consisting of a mixture of cementitious materials, admixtures, sand and water. Proportion and mix to produce a grout capable of maintaining the solids in suspension without appreciable bleed water which may be pumped without difficulty and fill open voids in the adjacent soils and rock. The grout mix may include a fluidifier used in accordance with the manufacturer's technical representative. Proportion these materials to produce a hardened grout of the required strength.

455-42 Mixing and Pumping Cement Grout.

Meet the following requirements:

1. Only use pumping equipment accepted by the Engineer in the preparation and handling of the grout. Before using the mixers, remove all oil or other rust inhibitors from the mixing drums, stirring mechanisms, and other portions of the equipment in contact with the grout.

2. Use a quantity of water and mixing time that will produce a homogenous grout having an efflux of not less than 21 seconds, when tested with a flow cone in accordance with ASTM D6449. Reject loads with efflux of less than 21 seconds. Notify the production facility to adjust the mix design. Calibrate the flow cone in accordance with ASTM D6449. Conduct the calibration initially before its first use and as directed by the Engineer, when there is a question of the flow cone's accuracy.

Technicians performing the efflux test must take the Auger Cast Pile course and pass the final examination to be qualified to test for any auger cast pile installations in the field. Assist the Engineer in verifying the technicians meet these requirements.

Conduct test for efflux time at the beginning of each day's grouting operation and as directed by the Engineer to ensure the Specification requirements are met.

3. Mix the grout at least one minute. If agitated continuously, the grout may be held in the mixer or agitator for a period not exceeding 2.5 hours at grout temperatures below

70ºF; two hours for temperatures from 70°F to 100ºF. Do not place grout when its temperature exceeds 100ºF. If there is a lapse in the operation of grout injection, recirculate the grout through the pump, or through the mixer drum or agitator.

4. Use mixers capable of combining components into a thoroughly mixed and uniform mass, free from balls or lumps and capable of discharging the grout with a satisfactory degree of uniformity. The Engineer's acceptance of grout mixers and all other equipment will be contingent on proper performance during construction of the demonstration pile and subsequent production work.

5. Use a screen no larger than 3/4 inch mesh between the mixer and pump to remove large particles which might clog the injection system.

6. Use a positive displacement piston type grout pump equipped with a pressure gauge, capable of developing displacing pressures at the pump not less than 350 psi. The pump must be appropriately sized to the pile diameter. Provide a grout pressure gage in clear view of the equipment operator. Provide a second pressure gauge near the drill rig where it can be observed by the Engineer.

7. Accurately monitor the volume and pressure of the grout flow. Provide a pump stroke counter in good working condition on the grout pump. Perform a calibration test of the pumping equipment, prior to construction of the demonstration piles, to determine the average volume of grout for every pump stroke, in accordance with FM 5-612. When the Contractor's installation procedure includes priming the grout pump, grouting lines or auger conduit after drilling the hole, perform a priming demonstration to determine the minimum number of pump strokes required to deliver fresh grout throughout the entire system and flow from the grout injection hole at the bottom of the auger. Perform this grout priming demonstration prior to any calibration test.

The Engineer may require additional pump calibrations and priming demonstrations when the pump is repaired, a different pump is used, when the length of the grout lines or hollow auger lengths increase from previous piles for which priming demonstrations were performed and at any time the Engineer determines the grout pump performance may have changed.

455-43 Testing Cement Grout.

Prepare three 4 inches x 8 inches cylinders for each LOT in accordance with ASTM C31, except pour grout in a single lift into cylinders molds without rodding. Plastic properties in accordance with ASTM C31 are not required. A LOT is defined as the lesser of 50 cubic yards of cement grout placed or one day of pile placement. Prepare three additional QC "hold" cylinders on the LOT selected by the Engineer for Verification. Provide curing facilities for all QC and Verification test cylinders in accordance with ASTM C31. Test the cylinders at 28 days, in accordance with ASTM C39.

When one of the three QC cylinders from a LOT is lost, missing, damaged or destroyed, determination of compressive strength will be made by averaging the remaining two cylinders. If more than one QC cylinder from a LOT is lost, missing, damaged or destroyed, core the structure at no additional expense to the Department to determine the compressive strength. Acceptance of LOT may be based on verification data at the discretion of the Engineer. Obtain the approval of the Engineer to core, and of the core location prior to coring. Repair core holes after samples are taken with a product meeting the approval of the Engineer, at no additional cost to the Department.

For each QC cylinder that is lost, missing, damaged or destroyed, payment for that LOT will be reduced by $750.00 per 1,000 psi of the specified design strength [Example: For

f'_c=5,500 psi, and the loss of two auger cast pile grout QC cylinders that have no verification data will require the element to be cored and a pay reduction will be assessed (5,500 psi / 1,000 psi) x $750 x 2 = $8,250]. This reduction will be in addition to any pay adjustment for low strength.

The Engineer will cast three verification cylinders and three "hold" cylinders from one of every four consecutive Lots, randomly selected. The Engineer will compare QC and Verification results in accordance with Section 346. If the results do not compare, the Engineer will initiate a Resolution Investigation in accordance with Section 346

Personnel making/curing grout cylinders shall be certified as ACI Concrete Field Testing Technician Grade I. Personnel performing tests on hardened properties of grout, such as strength determination of cylinders or beams, shall be certified as ACI Concrete Strength Testing Technician.

All low strength cement grout accepted by the Engineer will be subject to reduced payment as follows: $0.80 per cubic yard for each 10 psi of strength test value below the specified minimum strength. The Engineer will use the average compressive strength of the LOT tests for the computation of this pay reduction.

The Engineer will compute the volume of grout for which the reduction will be applied as 115% of the theoretical volume of the auger cast pile diameter required in the Contract Documents. Reduction in pay will be applied to the entire length of all piles containing low strength cement grout, in any quantity. The quantity of cement grout affected by the payment reduction may exceed the quantity of cement grout contained in the LOT.

When a cement grout acceptance strength test falls more than 500 psi below the specified minimum strength, perform one of the following:

1. Remove and replace the piles affected fully or partially by the low strength LOT at no additional cost to the Department, or

2. Submit a structural analysis performed by the Contractor's Engineer of Record. If the results of the analysis, approved by the Department, indicate adequate strength to serve the intended purpose with adequate durability, the concrete may remain in place.

Otherwise, abandon and install additional piles to the foundation, or remove and replace the piles affected fully or partially by the low strength LOT of grout at no additional cost to the Department. When installing additional piles to resolve the strength deficiency, submit a foundation redesign to add piles into pile caps or footings, at no expense to the Department in accordance with 455-46.

455-44 Pile Installation.

Meet the following requirements:

1. Locate the piles as shown on the drawings.

2. Should soft, compressible muck, organics, clay or other unsuitable materials (non A-1, A-3, A-2-4 or limestone materials) be encountered, remove the unsuitable material to a maximum depth of 5 feet and a radial distance around the pile centerline of two pile diameters unless otherwise indicated in the Plans. Backfill with clean granular backfill materials (A-1, A-3, A-2-4), placed and compacted in maximum 12 inch lifts to at least 95% of maximum dry density as determined by FM 1-T180. Complete this work to the Engineer's satisfaction prior to ACP construction. Should more than 5 feet depth or excessive quantities of unsuitable material be encountered, submit a revised design to the Engineer for review and acceptance prior to proceeding with pile construction.

3. Provide continuous auger flighting from the bottom of the pile to the top of ground at the time of drilling with no gaps or other breaks except for connections. Ensure the auger flights are uniform in diameter throughout its length, and of the diameter specified for the piles less a maximum of 3%. Provide augers with a distance between flights of approximately half the diameter of the auger.

4. Use augers with the grout injection hole located at the bottom of the auger tip below the cutting teeth, and with pile auger leads containing a bottom guide.

5. Construct piles of the length and diameter shown on the Plans.

6. Clearly mark the auger leads to facilitate monitoring of the incremental drilling and grout placement. Provide individual foot marks with 5 foot increments highlighted and clearly visible. Provide a clear reference mark on the moving auger assembly to facilitate accurately monitoring the vertical movement of the auger.

7. Place piles by rotating a continuous flight hollow shaft auger into the ground at a continuous rate that prevents removal of excess soil. Stop advancement after reaching the predetermined depth.

8. Should auger penetration to the required depth prove difficult due to hard materials/refusal, the pile location may be predrilled, upon concurrence by the GFDEOR and acceptance of the Engineer, through the obstruction using appropriate drilling equipment, to a diameter no larger than 1/2 the prescribed finish diameter of the ACP. Commence ACP construction immediately upon completion of predrilling to minimize ground loss and soil relaxation.

9. Plug the injection hole at the bottom of the auger prior to advancing into the ground.

10. Pump the grout with sufficient pressure as the auger is withdrawn to completely fill the auger hole, preventing hole collapse and to cause the lateral penetration of the grout into soft or porous zones of the surrounding soil or rock. Prior to commencing withdrawal of the auger, establish a head of at least 5 feet of grout by pumping a volume of grout equivalent to 5 feet of pile volume. Do not include the volume or strokes required to prime the grout pumping system in the volume required to build this initial head. Maintain this head of at least 5 feet of grout above the injection point around the perimeter of the auger to displace and remove any loose material from the hole. Maintain positive rotation of the auger at least until placement of the grout.

11. Once the grout head has been established, greatly reduce the speed of rotation of the auger and commence extraction at a rate consistent with the pump discharge. Maintain extraction at a steady rate to prevent a locked-in auger, necking of the pile, or a substantially reduced pile section. Ensure grout starts flowing out from the hole when the cutting head is at least 5 feet below the ground surface. Place a minimum volume of grout in the hole of at least 115% of the column of the auger hole from a depth of 5 feet to the tip. Place a minimum volume of grout in the hole of at least 105% of the column of the auger hole from the ground surface to a depth of 5 feet. Do not include any grout needed to create surplus grout head in the volume of grout placed into the hole. If the grout does not flow out from the hole when the cutting head is at least 5 feet below the ground surface, redrill the pile. If grouting is interrupted for any reason, reinsert the auger by drilling at least 5 feet below the tip of the auger when the interruption occurred, and then regrout.

Use this method of placement at all times. Do not depend on the stability of the hole without the earth filled auger.

12. Assume responsibility for the grout volume placed. If less than 115% of the theoretical volume of grout is placed in any 5 foot increment (100% in the top 5 foot increment), redrill 10 feet below that increment, or to the tip of the pile, whichever is less and resume pumping, followed by controlled removal and grout injection.

13. Furnish and install the reinforcing steel and anchoring bolts as shown in the Contract Documents. Use wheels or other approved noncorrosive spacing devices within 3 feet of the bottom, within 3 feet of the top, and intervals not exceeding 10 feet along the pile to ensure concentric spacing for the entire length of the cage. Do not use block or wire type spacers. Use a minimum of one spacer per 30 inches of circumference or perimeter of cage with a minimum of three at each level.

14. Use reinforcement that is without kinks or nonspecified bends, free of mud, oil or other coatings that could adversely affect the bond. Make splices in reinforcement as shown on the Contract Documents, unless otherwise accepted by the Engineer. Place the required steel reinforcement while the grout is still fluid, and immediately after finishing grouting and clearing it from any contaminating material. Install the steel cage into the grout by its own weight or manually. Do not use a mechanical equipment or tool to impact the steel cage or to force it into the grout. If the steel cage cannot be placed completely following this procedure, remove the cage, redrill and regrout the pile.

15. Leave any temporary supports of/for items placed into a grouted pile (reinforcement template, anchor bolt template, precast column supports, etc.) in place for a minimum of 12 hours after completion of the pile. Do not place wall panels or other significant loads, before the grout has set a minimum of seven days or reached the 28 day strength.

455-45 Construction Tolerances.

Locate piles as shown on the Plans. Locate pile centers to an accuracy of plus or minus 3 inches. Ensure that the top of pile elevation is within plus or minus 3 inches of the Plan elevation. Ensure the tolerances of 534-5.1 can be met.

455-46 Unacceptable Piles.

Repair or replace unacceptable piles and/or modify the design to compensate for the deficiency at no cost to the Department. Unacceptable piles are defined as piles that fail for any reason, including but not limited to the following: piles placed out of position or to improper elevation; piles with reduced cross section, contaminated grout, lack of grout consolidation (honeycombed), or deficient grout strength; and piles with reinforcement, anchor devices or other components cast or placed into the fluid grout out of position. When the Engineer determines that a pile is unacceptable, the Contractor may propose a foundation redesign to add piles to the foundation, at no expense to the Department. The Contractor’s Engineer of Record must perform any redesign, and sign and seal the redesign drawings and calculations. Do not begin any proposed construction until the redesign has been reviewed and approved by the Engineer.

455-47 Auger Cast Pile Installation Plan (ACPIP).

No later than 15 days before ACP construction begins, submit the ACPIP for acceptance by the Engineer. The ACPIP shall govern all ACP construction activities. In the event that deviations from this installation plan are observed, the Department may perform Independent Verification Testing/Review of the Contractor’s equipment, procedures, personnel and ACP construction at any time during ACP construction. If, as determined by the Department,

construction equipment, procedures and/or personnel is deemed inadequate to consistently provide auger cast piles meeting the contract requirements, the Contractor's ACPIP acceptance may be withdrawn pending corrective actions. All ACP construction activities shall then cease and not restart until corrective actions have been taken and the ACPIP has been re-accepted.

Provide the following detailed information on the ACPIP:

1. Name and experience record of ACP superintendent or foreman in responsible charge of ACP operations. Place a person in responsible charge of day to day ACP operations meeting the experience requirements of 105-8.13 constructing ACP similar to those described in the Contract Documents. The Engineer will give final acceptance subject to satisfactory performance in the field.
2. List and size of the proposed equipment, including cranes, augers, concrete pumps, mixing equipment etc.
3. Details of grout mixing procedures and proposed pump calibration procedures.
4. Details of pile installation methods.
5. Details of reinforcement placement and method of centering in pile, including details of all temporary supports for reinforcement, anchor bolts, precast columns, etc.
6. Details of how and by whom the grout volumes will be determined, monitored and documented.
7. Required submittals, including shop drawings and cement grout design mixes.
8. Equipment and procedures for visual inspection, and any methods to identify and remediate auger cast pile deficiencies.
9. Name of the inspectors assigned to monitor the installation of the auger cast piles, including evidence of the inspectors having taken and passed the CTQP computer based training course for auger cast piles.
10. Other information requested by the Engineer.
11. A letter from the GFDEOR certifying concurrence with the ACPIP.

The Engineer will evaluate the ACPIP for conformance with the Contract Documents. Within five working days after receipt of the plan, excluding weekends and Department observed holidays, the Engineer will notify the Contractor of any comments and additional information required and/or changes that may be necessary to satisfy the Contract Documents. The Engineer will reject any part of the plan that is unacceptable. Submit changes agreed upon for reevaluation. The Engineer will notify the Contractor within two working days, excluding weekends and Department observed holidays, after receipt of proposed changes of their acceptance or rejection. All equipment and procedures are subject to trial and satisfactory performance in the field. Acceptance by the Engineer does not relieve the Contractor of the responsibility to perform the work in accordance with the Contract Documents. The Engineer's acceptance is not a guarantee that the chosen methods and equipment are capable of obtaining the required results, this responsibility lies with the Contractor.

455-48 Inspection and Records.

Monitor and record pile installation utilizing the most recent version of the Department Auger Cast-In-Place Pile Installation Record form.

ARTICLE 455-49 is deleted:

455-50 Basis of Payment.

Contract Price includes cost of all labor, equipment and materials required for furnishing, installing, and certifying the completed auger cast pile foundations, in place and accepted. No separate payment will be made for any items of work associated with auger cast pile construction.

455-51 Foundation Certification Packages

Submit two copies of a letter signed and sealed by the GFDEOR to the Engineer certifying each foundation unit has the required axial capacity, lateral stability and integrity, settlements will not affect the functionality of the structure, and that the inspection of the auger cast pile installation was performed under the supervision of the GFDEOR. A separate Foundation Certification Package must be submitted for each foundation unit. The foundation unit is defined as a group of piles per wall segment or per full wall. Every ACP must be certified and the certification accepted before continuing with the construction of any structural element over the foundation unit. Each Foundation Certification Package shall include all ACP logs, the Department spreadsheet properly completed for every ACP and the grout strength test results of the lots sampled. Correct all integrity problems and noncompliance issues prior to submitting the certification packages. The certification shall not be contingent on any future testing or approval by the Engineer. Within three working days, excluding weekends and Department observed holidays, after receipt of the Foundation Certification Package, the Engineer will examine the records and determine the acceptability of the auger cast piles. The Engineer will reject any certification package that is incomplete or indicates noncompliance with the specifications without the issue being corrected to the satisfaction of the Engineer.

If any ACP is found to be deficient, correct the deficiency (i.e. repair or replace the ACP) and/or modify the design to compensate for the deficiency. In case of disagreement of test results, the Engineer’s results will be final and used for determination of acceptance.

After meeting the time requirements of 455-44(15), the Contractor may place panels prior to a complete submittal of the Certification Package at their own risk. If the Engineer determines that verification testing is needed, the Contractor will perform all work and provide all labor, at no additional cost to the Department, necessary to allow access to the piles requiring verification. Replace or redesign and reconstruct, to the satisfaction of the Engineer, any foundation found to be unacceptable after submittal of the certification packages or after verification testing, at no cost to the Department.

Memorandum

To: Dean Mitchell, P.E.

Date: December 22, 2020
Project #: 62863.03

From: Mark Bertoncini, P.E.

Re: 407918-5 I-10 Interchange West of Crestview

Based on our Teams meeting, Wednesday, December 15, 2020, regarding the permitting of the ponds for the referenced project, below is a summary of the strategy moving forward with permitting through NWFWMD.

Pond 1 – North of I-10

Pond 1 contributing area is 13.66 Ac. not including the pond. 2.62 Ac is from the county portion of PJ Adams Parkway. The remaining area is from FDOT roadways, PJ Adams Parkway, Ramps B & D, and a portion of I-10, (81% of the area).

Based on the above, Pond 1 (1.88 Ac.) will be owned and maintained by FDOT. A separate permit application will be prepared for Pond 1 with FDOT as the owner and the County as a co-applicant as they currently own the Pond 1 parcel.

Have contacted the County to verify there are no agreements in place between Okaloosa County and Taylor Farms, who donated the property. Will follow up if there are any to report

Pond 2 – Antioch Road/PJ Adams Parkway Intersection

Pond 2 contributing area is 9.16 Ac. not including the pond. Pond 2 is 2.78 Ac. 4.22 Ac is from the county portion of PJ Adams Parkway, Old Antioch Road, Whitehurst Lane and Garret Pit Road. The remaining area is from FDOT roadways, PJ Adams Parkway, Ramps A & C, and a portion of I-10, (54% of the area).

Based on the above, Pond 2 will be owned and maintained by County. A separate permit application will be prepared for Pond 2 with Okaloosa County as the permittee. This will be a joint use pond between Okaloosa County and FDOT. The MOU/MOA needs to be included with the permit application. FDOT will be the designated agent.

Pond 3 – Taylor Farms/PJ Adams Parkway

Pond 3 contributing area is 18.03 Ac not including the pond. Pond 3 (1.46 Ac.) is a proposed modified existing pond to accommodate the PJ Adams Parkway roadway improvements. None of the contributing area is from FDOT roadways. 3.46 Ac. is from PJ Adams Parkway roadway and 14.57 is from Taylor Farms.

Based on the above, Pond 3 will be owned and maintained by the County. A separate permit application will be prepared to modify the existing permit for Pond 3 with Okaloosa County as the permittee. FDOT will be the designated agent.

225 E. Robinson Street, Suite 300
Landmark Center Two
Orlando, FL 32801-4326
P 407.839.4006

Memorandum

Pond 4 – Addison Place Apartments

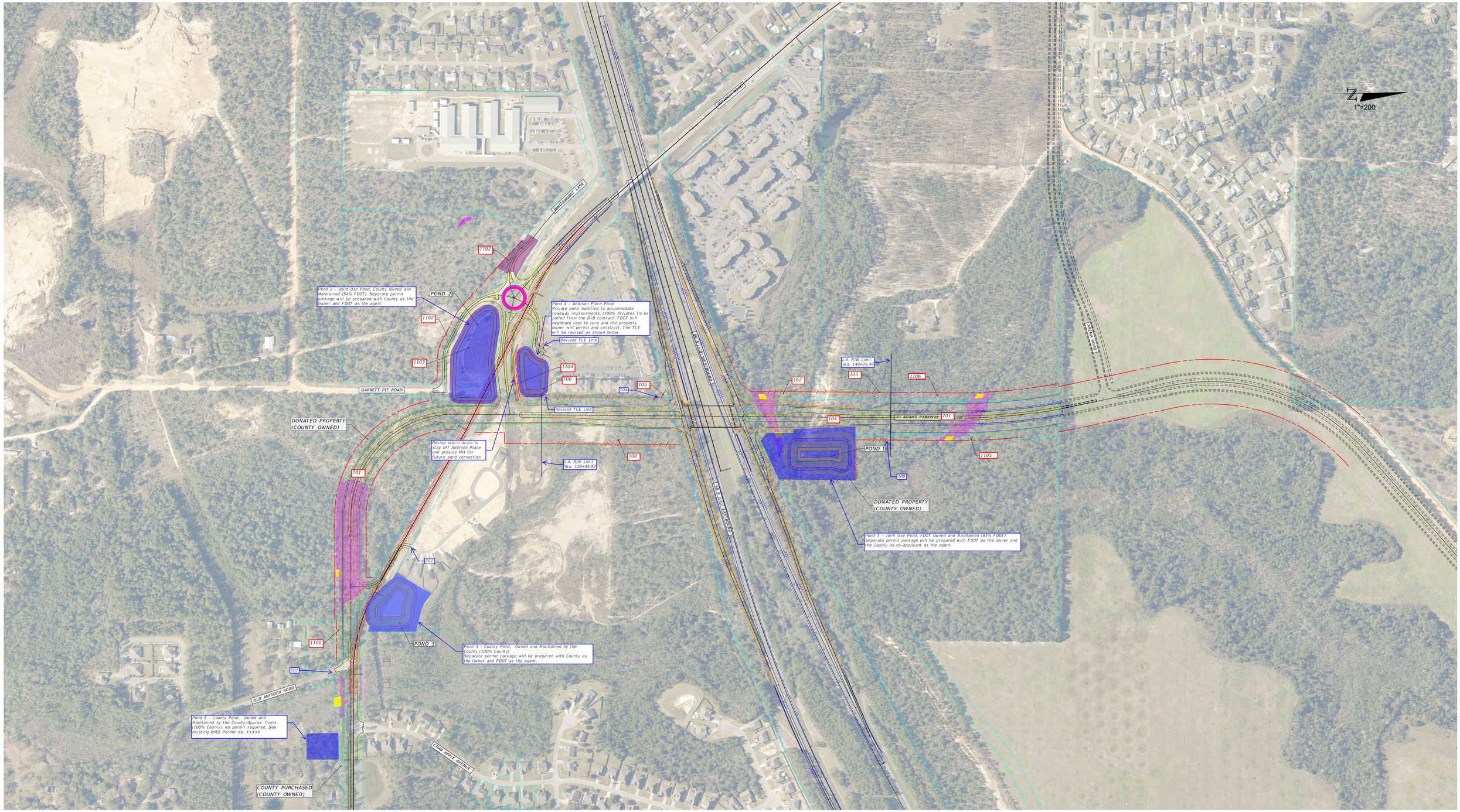
Pond 5 contributing area is 11.42 Ac not including the existing pond. The existing private pond, Pond 5 (0.87 Ac.) services the Addison Place apartment complex. The pond needs to be modified to accommodate the alignment of the roadway improvements. No runoff from the roadways will be directed to the pond. Its sole purpose is for the existing property.

There is eminent domain required on this parcel for the roadway improvements. Because this is a private pond and there are eminent domain proceedings on the property, this pond will be pulled from the project and the Department will negotiate a cost to cure with the property owner. The property owner will be responsible for permitting and modifying the pond. The TCE shown will be revised to include the work required for the driveway improvements and grading along PJ Adams Parkway south of I-10.

Pond 5 – County Pond at Old Antioch Road

Pond 5 is being constructed as part of the county's PJ Adams Parkway Phase IV improvement project. A portion of the PJ Adams roadway constructed as part of the interchange project will be directed toward Pond 4, contributing area is 3.73 Ac not including the pond. The county has accounted for this in their pond design and WMD Permit. The WMD Permit No. is 0349001-003-EM/46.

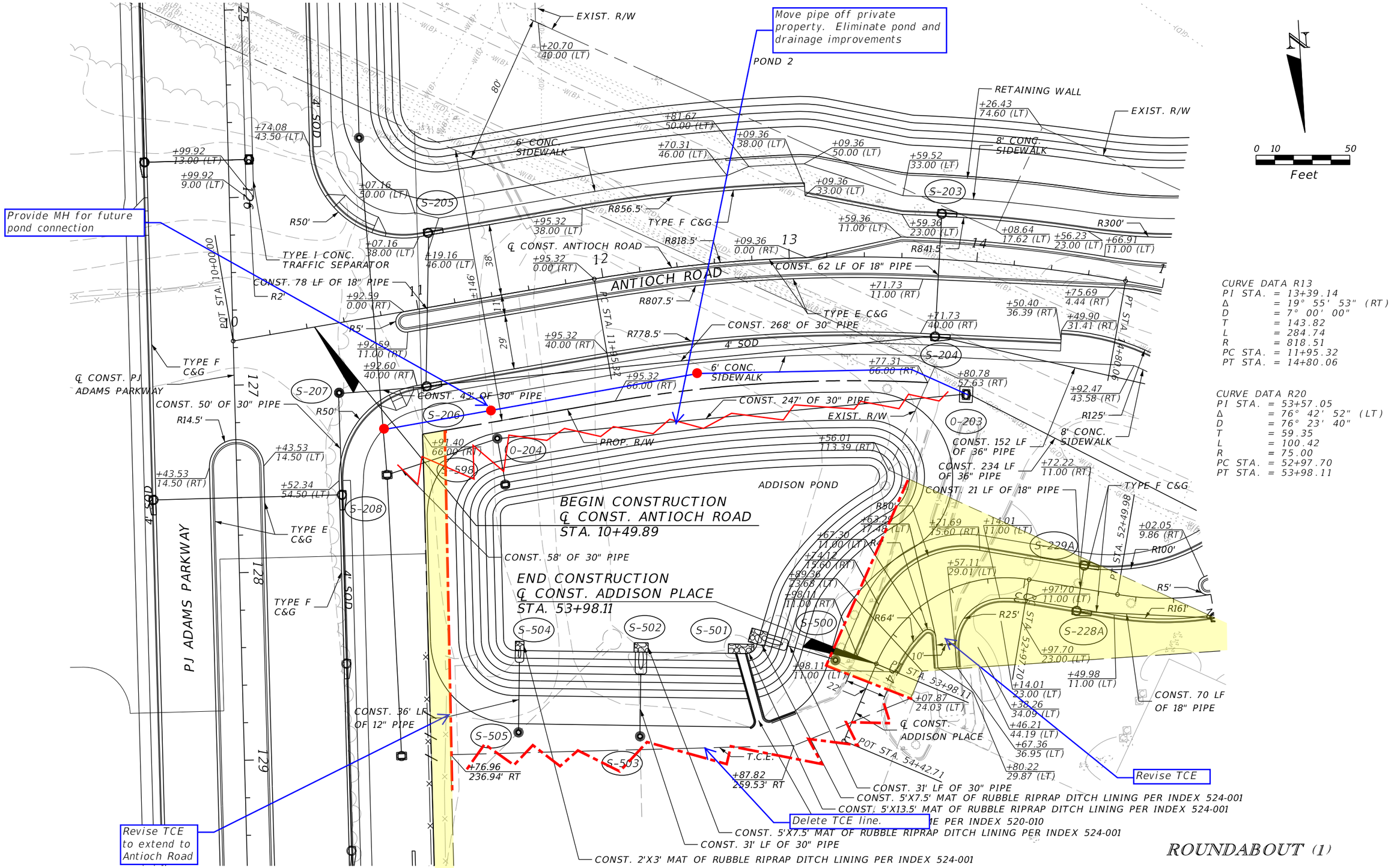
225 E. Robinson Street, Suite 300
Landmark Center Two
Orlando, FL 32801-4326
P 407.839.4006



POND PERMITTING STRATEGY MAP

PJ ADAMS PARKWAY / I-10 INTERCHANGE IN OKALOOSA COUNTY
Florida Department of Transportation - District 3
Financial Project ID 407918-5-52-01

VANASSE HANGEN BRUSTLIN, INC.
225. E. ROBINSON STREET
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 3932



ROUNDABOUT (1)

CURVE DATA R13
PI STA. = 13+39.14
Δ = 19° 55' 53" (RT)
D = 7° 00' 00"
T = 143.82
L = 284.74
R = 818.51
PC STA. = 11+95.32
PT STA. = 14+80.06

CURVE DATA R20
PI STA. = 53+57.05
Δ = 76° 42' 52" (LT)
D = 76° 23' 40"
T = 59.35
L = 100.42
R = 75.00
PC STA. = 52+97.70
PT STA. = 53+98.11

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MARK F. BERTONCINI, P.E.
P.E. LICENSE NUMBER 63437
VANASSE HANGEN BRUSTLIN, INC.
225. E. ROBINSON STREET
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 3932

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 8	OKALOOSA	407918-5-52-01

SR 8 (I-10) / PJ ADAMS PKWY INTERCHANGE

SHEET NO. 41

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