September 3, 2026

EXHIBIT A

SCOPE OF SERVICES FOR

FINANCIAL PROJECT ID: 411433-7-32-01

DISTRICTWIDE DRAINAGE DESIGN & PLANS REVIEW CONSULTANT

DISTRICT SIX

MIAMI-DADE COUNTY & MONROE COUNTY

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SCOPE OF SERVICES FOR CONSULTING ENGINEERING SERVICES
DISTRICTWIDE DRAINAGE DESIGN AND PLANS REVIEW CONSULTANT

This Exhibit forms an integral part of the agreement between the State of Florida Department of Transportation (hereinafter referred to as the DEPARTMENT) and _____ (hereinafter referred to as the CONSULTANT) relative to the transportation facility described as follows:

Financial Project ID: 41143323202
Work Program Item No.: N/A
Federal Aid Project No.: N/A
County Section No.: N/A
Description: Districtwide Drainage Design and Plans Review Consultant
Bridge No.: N/A

1.0 PURPOSE

The purpose of this Exhibit is to describe the scope of work and the responsibilities of the CONSULTANT and the DEPARTMENT in connection with the review of construction plans, drainage support, and design and preparation of a complete set of construction contract plans and special provisions, if necessary, for:

Roadway drainage improvements to the DEPARTMENT'S transportation facility based on emergency drainage requests, push button projects with drainage involvement and revisions to plans or drainage support to internal design offices.

The general objective is for the CONSULTANT to prepare a set of plans to be used by the contractor to build the project, and by the DEPARTMENT to ensure the project is built and designed as to specifications. Elements of work shall include roadways, culvert structures, pollution control structures, intersections, geotechnical activities, surveys, drainage, signing and pavement markings, signalization, lighting, utility relocation, landscaping and irrigation, maintenance of traffic, cost estimates, environmental permits, quantity computation books, and all necessary incidental items for a complete project.

The Scope of Services establishes which items of work described in the FDM (FDOT Design Manual) and other pertinent manuals to accomplish the work are specifically included in this contract, and also which of the items of work will be the responsibility of the CONSULTANT or the DEPARTMENT.

All plans and design documents are to be prepared with Standard English values in accordance with all applicable DEPARTMENT manuals and guidelines.

The CONSULTANT shall be aware that as a project is developed, certain modifications and/or improvements to the original recommendation may be required. The CONSULTANT is to incorporate these refinements into the design and will consider this

effort to be an anticipated and integral part of the work. This will not be a basis for any supplemental fee request(s).

The CONSULTANT 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 CONSULTANT shall set up and maintain throughout the design of the project a contract file in accordance with DEPARTMENT procedures. It shall be the CONSULTANT's responsibility to utilize the very best engineering judgment, practices, and principles possible during the prosecution of the work commissioned under this contract.

The DEPARTMENT will provide contract administration, management services, and technical reviews of all work associated with the development and preparation of the contract plans. The DEPARTMENT will provide job-specific information and/or functions as outlined in this contract.

The DEPARTMENT may utilize the services of an engineer to work in the DEPARTMENT'S office as requested by the Florida Department of Transportation Project Manager.

All construction plans and design documents are to be prepared with Standard English values in accordance with all applicable DEPARTMENT standard manuals and guidelines applicable to this contract.

The CONSULTANT shall be aware that as a project is developed, certain modifications and/or improvements to the original recommendation may be required. The CONSULTANT is to incorporate these refinements into the design and will consider this effort to be an anticipated and integral part of the work. This will not be a basis for any supplemental fee request(s).

The CONSULTANT 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 CONSULTANT shall set up and maintain through the design of the project a contract file in accordance with DEPARTMENT procedures. It shall be the CONSULTANT'S responsibility to utilize the very best engineering judgment, practices, and principles possible during the prosecution of the work commissioned under this contract.

The DEPARTMENT will provide contract administration, management services, and technical reviews of all work associated with the development and preparation of the contract plan. The DEPARTMENT will provide job-specific information and/or functions as outlined in this contract.

2 PROJECT DESCRIPTION

The CONSULTANT shall investigate the status of the projects and become familiar with

concepts and commitments (typical sections, alignments, etc.) developed from prior studies. If a Preliminary Engineering Report is available from a prior or current Project Development and Environmental (PD&E) study, the CONSULTANT shall use the approved concepts as a basis for the design unless otherwise directed by the DEPARTMENT.

The District-Wide Drainage Design and Plans Review Consultant involve projects within the Miami-Dade County in the majority and some minor involvement in the Keys including Monroe County.

The CONSULTANT shall incorporate the following into the design of this facility:

2.1 Roadway (Activities 3.0, 4.0, and 5.0)

(Unless not included in the Task Work Order)

Public Involvement: Participate in public meetings, or workshops, if requested by the FDOT Project Manager.

Joint Project Agreements: Typically not required for push-button projects, but input may be required as a request of the FDOT Project Manager.

Plan Type: Describe type of roadway plans, i.e., plan/profile, plan only, letter plans, or as directed. (Follow the FDM – FDOT Design Manual).

Existing Typical Section: A minimum of one Typical Section shall be prepared for the roadway facility, i.e., mainline: four-lane divided urban curb and gutter, 4-foot bike lanes, 5-foot sidewalk, 3-foot utility strip both directions; four-lane divided rural with 5-foot paved shoulders, no sidewalks each direction. For new Typical Sections usually this activity is done by the Department.

Pavement Design: Done by the Department

Access Management Classification: N/A

Major Intersections/Interchanges: This item will vary per task work order.

Level of TCP Plans: This item will vary per task work order.

Temporary Signals: Generally as needed per task work order.

Temporary Lighting: Generally as needed per task work order.

Temporary Drainage: Per task work order assignment.

Limits: SR _____ from _____ to _____.

Variations/Exceptions: If applicable, generally not needed.

Back of Sidewalk Profiles: Generally not required, but as per task work order assignment.

2.2 Drainage (Activity 6.0)

Expected systems may include, i.e., conveyance drainage system, open and close ditches and swales (designed for dry or wet conditions), ponds (designed for dry or wet conditions), Exfiltration systems as French drain systems (designed as self-contained or with overflow discharges), storm water injection wells (gravity or pressurized), flood plain involvement, etc.

Number of pond sites to be studied per basin. Per task work order request.

Number of cross drains per task work order requests.

Number of bridge culverts per task work order requests.

2.3 Utilities (Activity 7.0)

This work is done by the DEPARTMENT, but requires coordination by the CONSULTANT.

Utilities request is anticipated on each project. Underground utilities require locations and verifications for horizontal and vertical elevations request.

2.4 Environmental Permits (Activity 8.0)

Expected permits may require coordination with USCG, USCOE, SFWMD, FDEP, Miami-Dade (DERM), or any other agency involved.

The DEPARTMENT will direct use of mitigation site or Florida Statutes. N.P.D.E.S. activities, including reports, GIS data base information, and some drainage retrofits, if necessary.

2.5 Structural Drainage Involvement

Walls: lengths of temporary and/or permanent retaining walls with drainage involvement as per task work order.

Miscellaneous Drainage Structures may require: New or extended bridge culverts, special drainage structures, pump stations housing or underground storage structure, pollution control structures with different chambers and devices, etc.

2.6 Signing and Pavement Markings (Activity 19.0 & 20.0)

Per task work order assignment.

2.7 Signals (Activity 21.0 & 22.0)

Intersections: N/A.

Traffic Data Collection: N/A.

Traffic Studies: N/A.

Count Stations: N/A.

2.8 Lighting (Activity 23.0 & 24.0)

Only on pump station designs for stormwater per task work order assignments.

2.9 Landscape Architecture (Activity 25.0 & 26.0)

Done by the DEPARTMENT, but some type of coordination required per task work order. But CONSULTANT must have a landscaping architecture on board as part of this contract in case is needed.

Planting Plans: Not needed on this District-wide Contract, but CONSULTANT must have available designer for this task.

Project length and location (name of street and limits, median, roadside), landscape intensity (rural, suburban, urban) and landscape type (buffer, xeric, gateway, native, restoration, mitigation, tree relocation, streetscape, etc.).

Irrigation Plans: Not needed on this District-Wide Contract, but CONSULTANT must capabilities to have an engineer on board to do this type of work.

Hardscape Plans: N/A on District-Wide Contract.

2.10 Survey (Activity 27.0)

Design Survey: This activity is generally done by the DEPARTMENT. CONSULTANT should have on board a SUB-CONSULTANT to be used if task work order assignment is required.

Subsurface Utility: Done by the DEPARTMENT. CONSULTANT must provide locations and description of possible utility encroachments.

Right of Way Survey: Done by the DEPARMENT. CONSULTANT must provide input or feedback on locations and description.

2.11 Photogrammetry (Activity 28.0)

Done by the DEPARTMENT.

2.12 Mapping (Activity 29.0)

Control Survey Map: Done by the DEPARTMENT. Right-of-

Way Map: Done by the DEPARTMENT. Maintenance Map:

Done by the DEPARMENT.

Miscellaneous Items: CONSULTANT must provide field survey if task work order requires it and the DEPARTMENT does not provide field survey.

2.13 Geotechnical (Activity 30.0)

Done by the DEPARTMENT, unless requested by the Project Manager.

Provide boring locations and unique lab tests, i.e., roadway, structures, ponds, lighting, near slab covered trenches, near Exfiltration trenches as French drains, retaining walls with drainage etc.

2.14 Architecture

Only on pump station design for the housing and structure involvement of stormwater collector systems above/or underground and electrical control housing for sluice gates.

2.15 Joint Project Agreements

Done by the DEPARTMENT.

If requested, the CONSULTANT may provide input and feedback to the Department.

2.16 Specifications Package

The CONSULTANT shall prepare, sign and seal the project specifications package as required.

2.17 Project Schedule

Within ten (10) days after the Notice-To-Proceed or each task work order assignment, and prior to the CONSULTANT beginning work, the CONSULTANT shall provide a detailed project activity/event schedule for DEPARTMENT and CONSULTANT activities required to meet the current DEPARTMENT Production Date. ***The production date will vary per task work order assigned or for projects assigned under work program.*** The schedule shall be accompanied by an anticipated payout and fiscal progress curve.

The schedule shall indicate all required submittals.

For purposes of scheduling, the CONSULTANT shall allow for the following DEPARTMENT work activity and submittal review times, when applicable:

Work Activity/Submittal Review (to be determined by DEPARTMENT)	**Time (weeks)** (to be determined by DEPARTMENT)
Roadway Plans Review	6
Structures Plans Review	6
Bridge Hydraulics Report Review	4
Drainage Design Report Review (French drains, stormwater wells, swales (dry or wet)	4
Pond Siting Report	4
Environmental Permitting Packages Review Including N.P.D.E.S. work if required	4
Landscape Development Plan	6

Periodically, throughout the life of the project, the schedule and curves shall be reviewed and, with the approval of the DEPARTMENT, adjusted as necessary to incorporate changes in the work concept and progress to date.

The approved schedule and schedule status report, along with progress and payout curves or spreadsheets format, shall be submitted with the monthly progress report.

The schedule shall be submitted in a system-compatible format (spreadsheet).

2.18 Submittals

The CONSULTANT shall furnish plans and documents as required by the DEPARTMENT to adequately control, coordinate, and approve the plans. The CONSULTANT shall distribute phase submittals as directed by the DEPARTMENT.

The CONSULTANT shall provide copies of the required plans and documents as listed below. These are the anticipated printing requirements for the project. This tabulation will be used for estimating purposes. The Project Manager will determine the specific number of copies required prior to each submittal.

Plans Distribution Chart
(District to input number of copies required for each phase submittal and footnotes, if desired.)

	Phase			
Department	**I**	**II**	**III**	**IV**
Access Management				
Preliminary Estimates (TRNS*PORT)				
Design Services				
Drainage				

Environmental Management
Environmental Permits
    N.P.D.E.S. permit packages
Traffic Operations
    Traffic Signals (N/A)
    Signing and Marking
Geotechnical
Structures
Construction
Maintenance
Utilities (3 sets for DEPARTMENT and 2 sets for each Utility Company or as requested)
    District Land Surveyor
    District Modal Development Manager
    District Design Engineer
    District Right-of-Way Manager
    District Project Management Engineer
    District Drainage Engineer
    District Value Engineer
    District Utility Administrator
Applicable City and/or County Engineering Dept
Mass Transit Dept

Engineering Documents
(Documents and number of copies to be determined by DEPARTMENT preference.)

Document	No. of Copies Required
Roadway Design	
Typical Section Package	1
Pavement Type Selection Report	1
Pavement Design Report	1
Design Documentation	1
Computation Book	3
CES Input	3
Technical Special Provisions	3
Access Management Reports	3

Engineering Documents
(Documents and number of copies to be determined by DEPARTMENT preference.)

Document	No. of Copies Required
Lane Closure Analysis Worksheets, if necessary	3
3R Reports, if necessary	2
Drainage	
Phase 60% (Package Submitted For Environmental Permits by Agencies Involved) which includes: Drainage Design Documentation Report (ICPR design analysis with input/output information) And Construction Plans and 1 CD of the Drainage Report and the ICPR input/output Data.	6
Phase 90% Drainage Design Documentation Report (ICPR design analysis with input/output information) and Construction Plan	6
Phase 100% Drainage Design Documentation Report And Construction Plans ICPR Input/Output Data for Drainage Analysis (1-CD of the FINAL Drainage Report and 1-CD of the ICPR input/output Data using Microsoft WORD and PDF format)	6
Bridge/Structural	
Bridge Hydraulics Report	4
Environmental Items	
Environmental Resource Permit Application Package	2
Mitigation Plan	2
Jurisdictional Determination Report	2

Engineering Documents
(Documents and number of copies to be determined by DEPARTMENT preference.)

Document	No. of Copies Required
Coast Guard Navigation Permit Application Package (if applicable)	2
National Pollutant Discharge Elimination System (NPDES) Permit Application Package	5
Any other NPDES related deliverables (Hard Copies & CD)	3
Any other NPDES electronic deliverables (CD)	1
Design/Right-of-Way Surveys	
Map and Plat Copies	2
Certified Right-of-Way Control Survey Drawings	2
Aerial Photograph Original Negatives	1
Rectified Aerial Raster Image (HMR Format)	1
24"x36" Aerial Mylars (R/W Format)	1
Geotechnical	
Roadway Report – Preliminary	2
Roadway Report – Final	2
Structures Report - Phase I	2
Structures Report - Phase II	2
Structures Report – BDR	2
Final Electronic Submittals	
Project CD(s)/DVD(s)	1
Plans and Specifications CD(s)/DVD(s)	1
Other	
Critical Path Method (CPM) Schedule, if part of the Task Work Order	1

2.19 Provisions for Work

All maps, plans and designs are to be prepared with English values in accordance with all applicable current DEPARTMENT manuals, memorandums, guidelines and other documents listed below:.

General

- Florida Statutes
- Florida Administrative Codes
- Florida Department of Transportation Project Development and Environmental Manual
- Florida Department of Transportation FDM
- Florida Department of Transportation Standard Specifications for Road and Bridge Construction
- Florida Department of Transportation Handbook for Preparation of Specifications Package
- Florida Department of Transportation Design Standards for Design, Construction, Maintenance, and Utility Operations on the State Highway System
- Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways
- Bicycle Facilities Planning and Design Manual, Rev. Ed. 1982
- CADD Production Criteria Handbook
- CADD Manual
- Florida's Level of Service Standards and Guidelines Manual for Planning
- Equivalent Single Axle Load Guidelines
- Design Traffic Procedure
- K-Factor Estimation Process
- Project Traffic Forecasting Guidelines
- Florida Department of Transportation Basis of Estimates Manual
- Quality Assurance Guidelines
- Safety Standards
- Rule 61G17-6, F.A.C., Minimum Technical Standards for Professional Surveyors and Mappers
- Department of Environmental Protection Rules Governing Mean High Water and Jurisdictional Line Surveys
- Any special instructions from the DEPARTMENT
- Utility Accommodations Guidelines
- Policy for Geometric Design of Highways and Streets
- Florida Department of Transportation Materials Manual
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- 40 CFR, Part 61, Subpart M - National Emission Standard for Hazardous Air Pollutants (NESHAP), Environmental Protection Agency (EPA)
- 40 CFR, Part 763, Subpart E – Asbestos-Containing Materials in Schools, EPA
- 40 CFR, Part 763, Subpart G – Asbestos Worker Protection, EPA
- 29 CFR, Part 1910.1101 – Asbestos Standard for Industry, U.S. Occupational Safety and Health Administration (OSHA)

- 29 CFR, Part 1926, 1101 – Asbestos Standard for Construction, OSHA
- Ch. 62257, F.A.C. – Asbestos Program, Florida Department of Environmental Protection (DEP)
- Ch. 469, F.S. – Asbestos Abatement, Florida Department of Business and Professional Regulation (DBPR)
- Model Guide Specifications – Asbestos Abatement and Management in Buildings, National Institute for Building Sciences (NIBS)

Permits
- Chapter 373, F.S.
- Bridge Permit Application Guide, COMDT PUB P16591.3B
- Building Permit

Drainage
- Minimum drainage design criteria based on 10 years on any number of lanes roadways.
- Drainage Manual
- Drainage Handbooks
- Storm Drain
- Optional Pipe Materials
- Stormwater Management Facility
- Cross Drain
- Erosion and Sediment Control
- Hydrology
- Temporary Drainage Handbook
- Drainage Design Guide
- District 6 hydrologic and hydraulic analysis guidelines including (ICPR Technical Design Guide, Exfiltration Trench Reference Manual, and ICPR Application Manual)
- District 6 drainage design technical memorandum dated May 8, 2002 in reference to the District Six Storm Water Management and Runoff Design Criteria

  Any latest applicable environmental permitting requirements by regulatory permitting agencies

Survey
- Location Survey Manual
- Highway Field Survey Specifications
- Automated Survey Data Gathering
- Outline Specifications for Aerial Surveys and Photogrammetry for Transportation Projects
- Standards for Consultant-Submitted G.P.S. Static Control Projects
- EFB User Guide
- Chapter 472, F.S.
- Chapter 177, F.S.
- FDEP Bureau of Surveying and Mapping

Traffic Operation Manuals

- American Disabilities Act
- AASHTO - Guide for Development of Bicycle Facilities
- Federal Highway Administration Standard Highway Signs Manual
- Florida Department of Transportation Traffic Engineering Manual
- Florida Department of Transportation Manual on Uniform Traffic Studies (MUTS)
- National Electrical Code
- National Electric Safety Code
- Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD)
- Minimum Specifications for Traffic Control Signal Devices
- Florida Department of Transportation - Florida Roundabout Guide
- FHWA - Roundabouts: An Informational Guide
- Florida Department of Transportation Median Handbook
- AASHTO - An Information Guide for Highway Lighting

Mapping

- Right-of-Way Mapping
- Florida Department of Transportation Right-of-Way Handbook
- Florida Department of Transportation Right-of-Way Manual

Structures

- AASHTO Standard Specifications for Highway Bridges and Interims (for curved steel bridges and pedestrian bridges only)
- AASHTO LRFD Bridge Specifications and Interims
- AASHTO LRFD Movable Highway Bridge Design Specifications and Interims
- AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, dated 1994
- AASHTO LRFD Guide Specifications for Steel Curved Girder Bridges
- AASHTO Guide Specifications for Horizontally Curved Highway Bridges
- AASHTO/-AWS-D1. 5M/D1.5: An American National Standard Bridge Welding Code
- AASHTO Guide Specifications for Design of Pedestrian Bridges
- AASHTO Guide Specifications for Structural Design of Sound Barriers
- Florida Department of Transportation Structures Design Guidelines
- Florida Department of Transportation Structures Detailing Manual
- Florida Department of Transportation Structures Standard and Semi-Standard Drawings
- Florida Department of Transportation Structures Design Office Temporary Design Bulletins (available on Florida Department of Transportation Structures web site only)
- Florida Department of Transportation Preferred Details (available on Florida Department of Transportation Structures web site only)
- Florida Department of Transportation - New Directions For Florida Post-Tensioned Bridges Volumes 1-5

- Florida Department of Transportation Bridge Load Rating Permitting And Posting Manual

Geotechnical
- Soils and Foundation Handbook
- Manual of Florida Sampling and Testing Methods

Landscape Architecture
- Florida Highway Landscape Guide

Architectural
- Building Codes
  - Florida Building Code (includes the engineering design criteria contained in Section 1606; and excludes Chapter 11, Accessibility for People with Physical Disabilities and Appendix E, Energy Conservation)
- Accessibility for Persons with Disabilities
  - Florida Accessibility Code for Building Construction
  - Chapter 13D-1, FAC
  - Section 255.21 and Chapter 553, Part V, F.S.
  - ANSI A117.1 - 1986
  - Titles II and III, Americans With Disabilities Act (ADA), Public Law 101-336; and the ADA Accessibility Guidelines (ADAAG)
- Fire Codes and Rules
  - FPA 70-1990 National Electrical Code
  - NFPA 101-1997 Life Safety Code
  - NFPA 10-1998 Standard for Portable Fire Extinguishers
  - NFPA 11-1999 Standard for Low-Expansion Foam Systems
  - NFPA 11A-1998 Standard for High- and Medium-Expansion Foam Systems
  - NFPA 12-1998 Standard for Carbon Dioxide Extinguishing Systems
  - NFPA 13-1996 Installation of Sprinkler Systems
  - NFPA 30-1996 Flammable and Combustible Liquids Code
  - NFPA 54-1996 National Gas Fuel Code
  - NFPA 58-1998 LP-Gas Code
  - Florida Fire Prevention Code as adopted by the State Fire Marshal
  - Consult with the Florida State Fire Marshal's office for other frequently used codes.
- Energy Conservation
  - Rule 13D-10, FAC, Rules for Construction and Leases of State-Owned Buildings to Ensure Energy Conservation
  - Section 255.251, F.S., Florida Energy Conservation Act of 1974
  - Section 255.255, F.S., Life-Cycle Costs
- Glass
  - Chapter 553, F.S., Part III, Glass

- Elevators
  - Chapter 7C-5, Florida Elevator Code
  - Chapter 399, F.S., Elevators
- Flood Plain Management Criteria
  - Section 255.25, F.S., Approval Required Prior to Construction or Lease of Buildings
  - Rules of the Federal Emergency Management Agency (FEMA)
- Extinguishing Systems
  - NFPA 10 Fire Extinguishers
  - NFPA 13 Sprinkler
  - NFPA 14 Standpipe and Hose System
  - NFPA 17 Dry Chemical
  - NFPA 20 Centrifugal Fire Pump
  - NFPA 24 Private Fire Service Mains
  - NFPA 200 Standard on Clean Agent Fire Extinguishing Systems
- Detection and Fire Alarm Systems
  - NFPA 70 Electrical Code
  - NFPA 72 Standard for the Installation, Maintenance and Use of Local Protective Signaling Systems
  - NFPA 72EAutomatic Fire Detectors
  - NFPA 72H Testing Procedures for Remote Station and Proprietary Systems
  - NFPA 72G Installation, Maintenance, and Use of Notification Appliances
  - NFPA 74 Household Fire Warning Equipment
  - NFPA 75 Protection of Electronic Computer Equipment
- Mechanical Systems
  - NFPA 90A Air Conditioning and Ventilating Systems
  - NFPA 92A Smoke Control Systems
  - NFPA 96 Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment
  - NFPA 204M Smoke and Heating Venting
- Miscellaneous Systems
  - NFPA 45 Laboratories Using Chemicals
  - NFPA 80 Fire Doors and Windows
  - NFPA 88A Parking Structures
  - NFPA 105 Smoke and Draft-Control Door Assemblies
  - NFPA 110 Emergency and Standby Power Systems
  - NFPA 220 Types of Building Construction
  - NFPA 241 Safeguard Construction, Alteration, and Operations
  - SFM F.A.C.4A-47 Elevators
  - SFM 4A-51 Boilers
- Other
  - Chapter 10D-6 FAC On Site Sewage Disposal Systems (Septic Tanks)
  - Chapter 17-6.070 FAC Wastewater Facilities (Treatment Plants)

- Chapter 17-761 FAC Underground Storage Tank Rules
- Rule 62-624.200(2), Florida Administrative Code.
- Guidelines For Issuing a General Use Permit To Allow Dewatering Discharges Into Department Of Transportation Drainage Systems

These documents are revised periodically by the responsible agencies and adopted by authorities having jurisdiction on building projects. The design consultant and the project manager are advised to obtain applicable versions of these documents from the responsible agency prior to use.

- American Concrete Institute
- American Institute of Architects - Architect's Handbook of Professional Practice
- American Society for Testing and Materials - ASTM Standards
- Southern Building Code Congress International - Standard Building Codes
- Brick Institute of America
- DMS - Standards for Design of State Facilities
- Florida Concrete Products Association
- Florida Department of Transportation - Standard Specifications for Road and Bridge Construction
- Florida Department of Transportation - FDM
- Florida Department of Transportation - Roadway and Traffic Design Standards
- Florida Department of Transportation - Structures Design Guidelines
- Florida Department of Transportation - Structures Detailing Manual
- Florida Department of Transportation - Structures Standard Drawings
- Florida Department of Transportation - ADA/Accessibility Procedure
- Florida Department of Transportation - Fixed Capital Outlay Program
- Florida Department of Transportation - Building Code Compliance Procedure
- Florida Department of Transportation - Asbestos Management Program Procedure
- Florida Department of Transportation – Design Build Procurement and Administration
- National Concrete Masonry Association
- National Electrical Code (current edition)
- National Fire Protection Association - Life Safety Code (current edition)
- Portland Cement Association - Concrete Masonry Handbook
- South Florida Building Code

2.20 Services to be performed by the DEPARTMENT

When appropriate the DEPARTMENT will provide those services and materials as set forth below:

- Provide pre-numbered survey books in which to record field data.
- Furnish standard DEPARTMENT monuments for the bench line.
- Regarding Environmental Permitting Services:

- Approve all contacts with environmental agencies.
- Provide general philosophies and guidelines of the DEPARTMENT to be used in the fulfillment of this contract. Objectives, constraints, budgetary limitations, and time constraints will be completely defined by the Project Manager.
- Provide the appropriate signatures on application forms.

- Provide letters of authorization designating the CONSULTANT as an agent of the DEPARTMENT in accordance with F.S. 327.274.
- Provide phase reviews of roadway plans and all relevant reports.
- Permit the CONSULTANT to utilize the DEPARTMENT's Data Processing and Computer Services for programs requested by the CONSULTANT and approved by the DEPARTMENT.
- Furnish an approved Environmental Document when available.
- Furnish all future information that may come to the DEPARTMENT during the term of the CONSULTANT's Agreement, which in the opinion of the DEPARTMENT is necessary for the prosecution of the work.
- Furnish available traffic and planning data.
- Furnish all approved utility relocations.
- Provide project utility certification to the DEPARTMENT's Central Office.
- Provide acquisition of any necessary title searches.
- Provide project data currently on file.
- Provide engineering standards and review services.
- Provide all available information in the possession of the DEPARTMENT pertaining to utility companies whose facilities may be affected by the proposed construction.
- Provide all future information that may come to the DEPARTMENT pertaining to subdivision plans so that the CONSULTANT may take advantage of additional areas that can be utilized as part of the existing right-of-way.
- Provide systems traffic for Projected Design Year, with K, D, and T factors.
- Provide existing right-of-way maps.
- PD&E documents.
- Design Reports

3 PROJECT COMMON AND PROJECT GENERAL TASKS

Project Common Tasks

Project Common Tasks, as listed below, are work efforts that are applicable to many project activities, 4.0 Roadway Analysis through 34.0 Invoicing Limits. These tasks are to be included in the project scope in each applicable activity when the described work is to be performed by the CONSULTANT.

Cost Estimates: The CONSULTANT shall be responsible for producing a construction cost estimate and reviewing and updating the cost estimate when scope changes occur and/or at milestones of the project. Prior to 60% plans and completion of quantities, the DEPARTMENT's Long Range Estimate (L.R.E.) system will be used to produce a conceptual estimate, according to District policy. Once the quantities have been developed (beginning at 60% plans and no later than 90% plans) the CONSULTANT shall be responsible for inputting the pay items and quantities into TRNS*PORT PES (Proposal Estimating System) through the use of the DEPARTMENT's Designer Interface. A Summary of Pay Items sheet shall be prepared with all required Phase II, III, and IV Plans submittals or as per task work assignments.

Technical Special Provisions: The CONSULTANT shall provide Technical Special Provisions for all items of work not covered by the Standard Specifications for Road and Bridge Construction and the workbook of implemented modifications.

A Technical Special Provision shall not modify the first nine sections of the Standard Specifications and implemented modifications in any way. All modifications to other sections must be justified to the appropriate District Specifications Office to be included in the project's specifications package, typically as special provisions and not as Technical Special Provisions.

The Technical Special Provisions shall be technical in nature and shall provide a description of work, materials, equipment and specific requirements, method of measurement and basis of payment. Proposed Technical Special Provisions will be submitted to the District Specifications Office for initial review at the time of the Phase III plans review submission to the DEPARTMENT's Project Manager. This timing will allow for adequate processing time prior to final submittal. The Technical Special Provisions will be reviewed for suitability in accordance with the Handbook for Preparation of Specification Package. The District Specifications Office will forward the Technical Special Provisions to the District Legal Office for their review and comment. All comments will be returned to the CONSULTANT for correction and resolution. Final Technical Special Provisions shall be electronically signed and sealed in accordance with applicable Florida Statutes.

The CONSULTANT shall contact the appropriate District Specifications Office for details of the current format to be used before starting preparations of Technical Special Provisions.

Field Reviews: Includes all trips required to obtain necessary data for all elements of the project.

Technical Meetings: Includes meetings with DEPARTMENT and/or Agency staff, between disciplines, COSULTANT and SUB-CONSULTANTS, such as access management meetings, pavement design meetings, local governments, railroad companies, progress review meetings (phase review), and miscellaneous meetings.

Quality Assurance/Quality Control: It is the intention of the DEPARTMENT that design CONSULTANTS are held responsible for their work, including plans review. Detailed checking of CONSULTANT plans or assisting in designing portions of the project for the CONSULTANT is not the intent of having external design consultants. The purpose of CONSULTANT plan reviews is to ensure that CONSULTANT plans follow the plan preparation procedures outlined in the FDM, that state and federal design criteria are followed with the DEPARTMENT concept, and that the CONSULTANT submittals are complete.
The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications and other services furnished by the CONSULTANT under this contract.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review all maps, design drawings, specifications, and other documentation prepared as a part of the contract. The CONSULTANT shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The Quality Control Plan may be one utilized by the CONSULTANT as part of their normal operation or it may be one specifically designed for this project. The CONSULTANT shall submit a Quality Control Plan for approval within 20 (twenty) calendar days of the written Notice to Proceed. A marked up set of prints from a Quality Control Review indicating the reviewers for each component (structures, roadway, drainage, signals, geotechnical, signing and marking, lighting, surveys, etc.) and a written resolution of comments on a point-by-point basis will be required with each phase submittal. The responsible Professional Engineer, Landscape Architect, or Professional Surveyor that performed the Quality Control review will sign a statement certifying that the review was conducted.

The CONSULTANT shall, without additional compensation, correct all errors or deficiencies in the designs, maps, drawings, specifications and/or other services.

Independent Peer Review: When directed by the DEPARTMENT, a sub consultant shall perform Independent Peer Reviews.

Supervision: Includes all efforts required to supervise all technical design activities.

Coordination: Includes all efforts to coordinate with all disciplines of the project to produce a final set of construction documents.

Project General Tasks

Project General Tasks, described in Sections 3.1 through 3.7 below, represent work

efforts that are applicable to the project as a whole and not to any one or more specific project activity. The work described in these tasks shall be performed by the CONSULTANT when included in the project scope.

3.1 Public Involvement (N/A under this contract)

Per Task Work Order Assignment Only, if required.

Public involvement is an important aspect of the project development process. Public involvement includes communicating to all interested persons, groups, and government organizations information regarding the development of the project. The CONSULTANT shall continue the public involvement begun in previous studies through implementing the DEPARTMENT's Community Awareness Plan. Property owners adjacent to the project, including those not subject to right-of-way acquisition shall be informed about the project. CONSULTANT may be involved in preparing PowerPoint presentations and prepare pamphlets for workshops on specific projects.

3.2 Department Funded Agreements (Typically N/A under this contract)

Per Task Work Order Assignment Only, if required.

Most of the time these Joint Project Agreements and/or Joint Maintenance Agreements are prepared by the DEPARTMENT in conjunction with the FDOT project manager, and CONSULTANT shall provide engineering technical input based on the specific task work order used to prepare the Joint Project Agreement (JPA) and/or Joint Maintenance Agreement (JMA). The CONSULTANT services shall include all coordination, meetings, etc., required to include Joint Project Agreement (JPA) plans (prepared by others) in contract plans package including all necessary revisions/modifications to contract documents to ensure plans compatibility.

3.3 Specifications Package Preparation

The CONSULTANT shall prepare and provide a complete specifications package, including applicable Technical Special Provisions, for all items and areas of work. The DEPARTMENT will provide the necessary workbook and electronic files, in Microsoft Word 2000 format or the latest Microsoft Word format, for proper completion of the specifications package. The actual work effort will entail utilization of the supplied electronic files, including updates of new files that may be issued from time to time as mandatory specifications changes, and assembling the package in accordance with the DEPARTMENT's Specification Package Preparation Training. The DEPARTMENT may also require inclusion of special provisions necessary to convey particular DEPARTMENT needs.

The Standard Specifications, for Road and Bridge Construction and, Special Provisions or Supplemental Specifications from the applicable workbook of implemented modifications may not be modified unless absolutely necessary to control project-specific requirements. Proposed modifications to these listed

documents must be drafted in redline strikethrough format along with justification of the project specific need, and coordinated with the District Specifications Office, who will obtain District Legal input, and approval by the State Specifications Engineer, prior to inclusion in the final project specifications package.

The specifications package must be submitted for initial review to the District Specifications Office at least 30 days prior to the contract package to Tallahassee due date, or sooner if required by the District Specifications Office. This submittal does not require signing and sealing and shall be coordinated through the District's Project Manager. Submittal material shall consist of (1) the complete specifications package, (2) a copy of the marked-up workbook used to compile package, and (3) a copy of the final project plans and (4) a copy of the Contract Estimating System sheet utilized with the project.

Final submittal of the complete specifications package must occur at least 10 working days prior to the contract package to Tallahassee due date. This submittal shall be electronically signed, dated, and sealed in accordance with applicable Florida Statutes. The submittal materials shall consist of two CDs. The first CD shall contain an electronic specification project file that includes the specification package, and if applicable, all individual electronically signed and sealed Technical Special Provisions, electronically signed, sealed and secured using PEDDS. The second CD shall contain a "print file" of the specification package combining, if necessary, all Technical Special Provisions, in a consecutively numbered package secured using PEDDS.

3.4 Contract Maintenance

Contract maintenance includes project management effort for complete setup and maintenance of files, developing monthly progress reports, schedule updates, work effort to develop and execute sub consultant agreements, etc.

3.5 Value Engineering (Multi-Discipline Team) Review

N/A to this contract unless requested by the Project Manager and included as part of the Task Work Order.

The CONSULTANT shall develop the design and contract documents using sound value engineering practices to the fullest extent possible, in order to support appropriate design decisions in producing the contract plans for the most efficient and economical design.

This District-wide contract may require any of the assigned work program projects to be subjected to a Value Engineering (VE) review. The VE review will be conducted by a multi-disciplined independent team of DEPARTMENT and CONSULTANT personnel for the purpose of the improving the value of the project.

Value Engineering is an event-related activity and should occur at a time when it will provide the greatest opportunity for value improvement, as determined by the

Department Project Manager and Value Engineering Coordinator. This opportune time during the design phase of a project will generally fall between completion of Phase I design plans and completion of Phase II design plans, but may occur at any time during the development of a project.

Specific activities required by the CONSULTANT in support of the VE team are:
Provide Materials and Information: The CONSULTANT shall allow for the appropriate time, and personnel to provide the VE team with required materials and information necessary for and effective project review.

The Consultant Project Manager and other key members of the design team shall meet with the VE team to explain the development of design features and how and why they were selected. The information will be provided in the form of a personal verbal presentation and the submittal of a package containing current plans and other documentation. This presentation will take place at the location of the VE study and may be followed up with additional meetings, written communications and phone enquiries.

The plans and document packages to be provided shall include at a minimum:

- 1 copy of all environmental documents
- 1 copy of the Preliminary Engineering Report
- 1 copies of all plans
- 1 copy of the Drainage Alternatives Report
- 1 copy of Bridge Development Report
- 1 copy of other miscellaneous reports
- 1 Project Cost Estimate

The Project Cost Estimate shall assemble the construction cost of each feasible design alternative by typical section. Estimated cost should be shown by major elements of each alternative.

The CONSULTANT shall provide information in a VE matrix format the criteria and the weighted impact used by the CONSULTANT to facilitate decisions of design features. Criteria such as safety, operation, and public acceptance must be fully documented.

The reports are returned to the Project Manager after the VE review is completed. Plans are not returned.

3.6 Prime Project Manager Meetings

These meetings include Prime CONSULTANT Project Manager Staff hours for phase review, progress review, all technical meetings, and other coordination activities, including any travel time. Meetings required for each activity are included in the meetings section for that specific activity.

3.7 Other Project General Tasks

List Task Work Orders, clear and concise information of project assigned.

4 ROADWAY ANALYSIS

The CONSULTANT shall analyze and document Roadway Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

4.1 Typical Section Package

The DEPARTMENT shall provide an approved Typical Section Package prior to the Phase I plans submittal date, unless requested by Project Manager as part of the task work assignment.

4.2 Pavement Design Package

The DEPARTMENT shall provide an approved Pavement Design Package prior to the Phase II plans submittal date.

4.3 Access Management

N/A to this contract

The CONSULTANT shall incorporate access management standards for each project in coordination with DEPARTMENT staff. The CONSULTANT shall review adopted access management standards and the existing access conditions (interchange spacing, signalized intersection spacing, median opening spacing, and connection spacing). Median openings that will be closed, relocated, or substantially altered shall be shown on plan sheets and submitted with supporting documentation for review with the Phase I plans submittal.

The DEPARTMENT shall provide access management classification information and information derived from PD&E studies and public hearings to be used by the CONSULTANT.

4.4 Horizontal/Vertical Master Design Files

The CONSULTANT shall design the geometrics using the design standards that are most appropriate with proper consideration given to the design traffic volumes, design speed, capacity and levels of service, functional classification, adjacent land use, design consistency and driver expectancy, aesthetics, pedestrian and bicycle concerns, ADA requirements, elder road user policy, access management, PD&E documents and scope of work.

4.5 Cross Section Design Files

This work is not N/A on this contract; unless project assignment requires it to be done as part of this task work order.

The CONSULTANT shall establish and develop cross section design files in accordance with the CADD manual.

4.6 Traffic Control Analysis

The CONSULTANT shall design a safe and effective Traffic Control Plan to move vehicular and pedestrian traffic during all phases of construction. The design shall include construction phasing of roadways ingress and egress to existing property owners and businesses, routing, signing and pavement markings, and detour quantity tabulations. Special consideration shall be given to the construction of the drainage system when developing the construction phases. Positive drainage must be maintained at all times. The design shall include construction phasing of roadways to accommodate the construction of utilities when the contract includes Joint Project Agreements (JPAs).

The CONSULTANT shall investigate the need for temporary traffic signals, temporary lighting, alternate detour roads, and the use of materials such as sheet piling in the analysis. The Traffic Control Plan shall be prepared by a certified designer who has completed training as required by the DEPARTMENT. Prior to proceeding with the Traffic Control Plan, the CONSULTANT shall meet with the appropriate DEPARTMENT personnel. The purpose of this meeting is to provide information to the CONSULTANT that will better coordinate the Preliminary and Final Traffic Control Plan efforts.

4.7 Master TCP Design Files

The CONSULTANT shall develop master Traffic Control Plan (TCP) files (for Level II and Level III only) showing each phase of the Traffic Control Plan if project assignment merits to follow this mandated requirement. Typically regular push-button drainage projects may not require that much detail.

4.8 Design Variations and Exceptions

If available, the DEPARTMENT shall furnish the Variation/Exception Report. The CONSULTANT shall prepare the documentation necessary to gain DEPARTMENT approval of all appropriate Design Variations and/or Design Exceptions.

4.9 Design Report

The CONSULTANT shall prepare all applicable report(s) as listed in the Project Description section of this scope.

The CONSULTANT shall submit to the DEPARTMENT design notes, data, and calculations to document the design conclusions reached during the development of the contract plans.

The design notes, data, and computations shall be recorded on size 8½"x11"

sheets, fully titled, numbered, dated, indexed and signed by the designer and the checker. Computer output forms and other oversized sheets shall be folded to 8½"x11" size. The data shall be in a hardback folder for submittal to the DEPARTMENT.

4.10 Computation Book and Quantities

The CONSULTANT shall prepare the Computation Book and various summaries of quantities sheets. This includes all efforts required to develop the Computation Book and the supporting documentation, including construction days when required.

4.11 Cost Estimate

4.12 Technical Special Provisions

4.13 Field Reviews

4.14 Technical Meetings

4.15 Quality Assurance/Quality Control

4.16 Independent Peer Review

4.17 Supervision

4.18 Coordination

5 ROADWAY PLANS

The CONSULTANT shall prepare Roadway, Drainage, Traffic Control, Utility Adjustment Sheets, plan sheets, notes, and details. The plans shall include the following sheets necessary to convey the intent and scope of the project for the purposes of construction. (Per Task Work Order Agreement)

5.1 Key Sheet

5.2 Summary of Pay Items Including Quantity Input

5.3 Drainage Map

5.4 Interchange Drainage Map

5.5 Typical Section Sheets

5.6 General Notes/Pay Item Notes

5.7 Summary of Quantities

5.8 Box Culvert Data Sheet

5.9 Bridge Hydraulics Recommendation Sheets

5.10 Summary of Drainage Structures

5.11 Optional Pipe/Culvert Material

5.12 Project Layout

5.13 Plan/Profile Sheet

5.14 Profile Sheet

5.15 Plan Sheet

5.16 Special Profile

5.17 Back of Sidewalk Profile Sheet

5.18 Interchange Layout Sheet

5.19 Ramp Terminal Details (Plan View)

5.20 Intersection Layout Details

5.21 Miscellaneous Detail Sheets

5.22 Drainage Structure Sheet

5.23 Miscellaneous Drainage Detail Sheets

5.24 Lateral Ditch Plan/Profile

5.25 Lateral Ditch Cross Sections

5.26 Retention/Detention Ponds Detail Sheet

5.27 Retention Pond Cross Sections

5.28 Cross-Section Pattern Sheet

5.29 Roadway Soil Survey Sheet

5.30 Cross Sections

5.31 Traffic Control Plan Sheets

5.32 Traffic Control Cross Section Sheets

5.33 Traffic Control Detail Sheets

5.34 Utility Adjustment Sheets

5.35 Selective Clearing and Grubbing

5.36 Erosion Control Plan

5.37 SWPPP

5.38 Project Control Network Sheet

5.39 Interim Standards

5.40 Utility Verification Sheet (SUE Data)

5.41 Quality Assurance/Quality Control

5.42 Supervision

6 DRAINAGE ANALYSIS

The CONSULTANT shall analyze and document Drainage Tasks in accordance with all applicable manuals, including all drainage guidelines prepared by District Six Drainage Office, guideline in general,, standards, handbooks, procedures, and current design memorandums.

The CONSULTANT shall be responsible for designing a drainage and stormwater management system. All design work shall comply with the requirements of the appropriate regulatory agencies, the DEPARTMENT's Drainage Manual, and all guidelines and publications prepared by the District Six Drainage Office.

The CONSULTANT shall coordinate fully with the appropriate permitting agencies and the DEPARTMENT's staff. All activities and submittals should be coordinated through the DEPARTMENT's Project Manager. The work will include the engineering design and analyses for any or all of the following:

6.1 Determine Base Clearance Water Elevation

Analyze, determine, and document high water elevations which will be used to set minimum roadway profile grade to provide required roadway base clearance protection. Determine surface water elevations at cross drains, floodplains, outfalls and adjacent stormwater ponds. Determine groundwater elevations at intervals between the above-mentioned surface waters.

6.2 Pond Siting Analysis and Report

Evaluate pond sites using a preliminary hydrologic/hydraulic analysis. Determine stormwater treatment and attenuation volume. Locate and evaluate suitable land areas for pond. Include feasibility and cost analysis for alternative stormwater management systems such as French drains and/or drainage deep wells. Coordinate with District Right of Way and Environmental Sections to assess right of way costs, wetlands presence, contamination and archeological factors. Coordinate with all pertinent regulatory agencies and local government regarding local regulations and other possible restrictions. Document the results and coordination for all of the project's pond site analyses. The Drainage Manual provides specific documentation requirements.

6.3 Design of Cross Drains

Analyze the hydraulic design of cross drains. Check existing cross drains to determine if they are structurally sound and can be extended. Document the design as required. Determine and provide flood data as required.

6.4 Design of Roadway Ditches

Design roadway conveyance ditches. This includes determining ditch cross sections, grades, selecting suitable channel lining, designing the side drain pipes,

and documentation.

6.5 Design of Outfalls

Analyze and document the design of ditch or piped outfalls. (Pond outlet structure included in task 6.6)

6.6 Design of Stormwater Management Facility (Offsite Pond)

Design stormwater management facilities to meet requirements for stormwater quality treatment and attenuation. Design of offsite pond shall meet both, FDOT regulatory agencies and local government requirements. Develop proposed pond layout (shape, contours, slopes, etc.), perform routing calculations, and design the outlet control structure.

6.7 Design of Stormwater Management Facility (Roadside Ditch as Linear Pond)

Design stormwater management facilities to meet requirements for stormwater quality treatment and attenuation. Develop proposed pond layout (shape, contours, slopes, etc.), perform routing calculations, and design the outlet control structure.

6.8 Design of Flood Plain Compensation Area

There is no regulated floodway within Miami Dade and Monroe Counties. Therefore, floodplain compensation is typically not required. However, if project is located within DERM special drainage basins design shall meet DERM cut and fill criteria. Document the design following the requirements of the regulatory agency.

6.9 Design of Storm Drains

Develop a “working drainage map”, determine runoff, inlet locations, and spread. Calculate hydraulic losses (friction, utility conflict and, if necessary, minor losses). Determine Design Tailwater and, if necessary, outlets scour protection. Tailwater conditions shall be established based on the latest available data. Tailwater data sources shall include information coming from Miami-Dade County DERM, SFWMD and USGS. Minimum pipes sizes of 18” in diameter are used on this contract, unless specific and unique locations requires to reduce the pipe diameter to 15” in diameter as per District Drainage Engineer approval.

6.10 Optional Culvert Material

Determine acceptable options for pipe materials based on the type of roadway facility, soil corrosiveness conditions, pipe application, pipe strength requirements (minimum cover) and pipe hydraulic conveyance requirements (Manning’s-n).

6.11 French Drain Design

Design French Drain Systems to provide stormwater treatment, attenuation, flood protection and conveyance as required. Identify location for percolation tests and review these, determine the size and length of French Drains, design the control structure/weir, and model the system of inlets, conveyances, French Drains, and other outfalls using interconnected pond routing program such as ICPR. Maximum French drain exfiltration rate to use in design is to be determined as per FDOT District 6 Drainage Section Technical Memorandum (typically maximum allowable exfiltration rate per lineal feet is *0.1 cfs/foot of head*). Groundwater boundary conditions to be established based on the latest available data. Sources of groundwater data include SFWMD and USGS.

6.12 Drainage Wells

Design the discharge into deep wells to comply with environmental regulatory agency requirements. Identify the location of the well, well operating type (gravity or pressurized), design the control structure/weir, and model the deep well system using the interconnected pond routing program (ICPR).

6.13 Drainage Design Documentation Report

Compile drainage design documentation into report format using 8 ½" x11" size papers for documentation and 11"x 17" for exhibits. Include documentation for all the drainage design tasks, associated meetings and decisions, except the Pond Sitting Analysis Report and Bridge Hydraulics Report which are done independently. Proposed storm drainage systems shall be designed based on the most restrictive of the FDOT 10-year, 1-hour, 8-hour and 24-hour storm events. Proposed storm drainage systems shall also be checked for performance for the 100-year 1-hour, 8-hour and 24-hour storm events. Finally, proposed drainage systems shall be also in compliance with the drainage connection permit of Chapter 14-86, Florida Administrative Code for the FDOT 10-year, 1-hour, 8- hour, 24-hour and 100-year, 1-hour, 8-hour and 24-hour storm events utilizing the ICPR program. If an Environmental Resources Permit (ERP) is required from South Florida Water Management District (SFWMD), then the stormwater event for 25-year 72-hours must be modeled based on the SFWMD rainfall distribution.

6.14 Bridge Hydraulic Report

Includes hydrology, hydraulics, scour analysis, determine scour countermeasures, and deck drainage evaluation and design analysis. For flood controlled canals the hydrology and hydraulics shall be coordinated with the canal operating agency. For riverine waters environments hydrology, hydraulics and scour analysis shall be consistent with FHWA HEC-18, HEC-20 and Hydraulic Design Series (HDS) 5. For tidal waters environment hydrology, hydraulics and scour analysis shall follow recommendations included under the latest FDOT Drainage Manual. Flood controlled and riverine hydraulic analysis is conducted using the latest version of WSPRO or HEC-RAS software. For tidal hydraulics two-dimensional hydraulic software such as RMA-2 or FWSWMS may be required unless the use of other software is approved by the District Drainage Engineer. Prepare report

using 8 ½" x 11" and 11" x 17" sizes for exhibits. Fill the required information for the Bridge Hydraulics Recommendation Sheet(s).

6.15 Pump Station Report

All piping layout by Mechanical Engineer inside the pump housing.

6.16 Temporary Drainage Analysis (Per Task Work Order assignments)

Evaluate and address drainage to adequately drain the road and maintain existing offsite drainage during all construction phases based on an intensity rain of 4 in/hour and provide documentation.

6.17 Cost Estimate

6.18 Technical Special Provisions

6.19 Other Drainage Analysis

6.20 Field Reviews

6.21 Technical Meetings

6.22 Quality Assurance/Quality Control

6.23 Independent Peer Review

6.24 Supervision

6.25 Coordination

7 UTILITIES

(Done by the DEPARTMENT)

Per task work order the CONSULTANT shall identify utility facilities and secure agreements, utility work schedules, and plans from the Utility Agency Owners (UAO) ensuring no conflicts exist between utility facilities and the DEPARTMENT's construction project. The CONSULTANT shall certify all utility negotiations have been completed with arrangements made for utility work to be undertaken. Special utility locations may be required to be done by the CONSULTANT by the SUB- CONSULTANT retained to do this type of work.

7.1 Kickoff Meeting

Prior to any contact with the UAO(s), the CONSULTANT shall meet with the District Utility Office (DUO) to receive guidance, as may be required, to assure that all necessary coordination will be accomplished in accordance with DEPARTMENT procedures. CONSULTANT shall bring a copy of the design project work schedule reflecting utility activities.

7.2 Identify Existing UAO(s)

Identify all utilities in the corridor; check with Maintenance for Permits, Sunshine State One Call, Subsurface Utility Engineering (SUE) Report, Design Location

Survey, and Existing Plans.

7.3 Make Utility Contacts

First Contact: Send letters and two sets of plans to each utility, one set for the utility office, one set each to construction and maintenance if required. Includes contact by phone for meeting coordination. Request information as type, size, location, easements, cost for compensable relocation, and justification for any utility exceptions. Include the meeting schedule (if applicable) and the design schedule. Include typical meeting agenda. Typically make at least 12 copies of the construction plans and send it to the Utility Office of DEPARTMENT to begin the process.

Second Contact: At a minimum of 4 weeks prior to the meeting, the CONSULTANT shall transmit two complete sets of Phase II plans to each UAO having facilities located within the project limits, and one set to the DEPARTMENT Offices as required by the District.

Third Contact: Identify agreements and assemble packages. Send agreements, letters and two sets of plans to the UAO(s) including all component sets, one set for the utility office, one set to construction and maintenance if required. Include the design schedule.

Projects under push-button drainage emergency request do not follow all the phases of review, only utility contacts locations and utility verifications for vertical and horizontal elevations. Typically push-button drainage projects require two contacts prior to receiving the final utility letter of clearance.

Not all projects will have all contacts requirements as described above.

7.4 Exception Coordination

The CONSULTANT shall be responsible for transmitting/coordinating the appropriate design reports including, but not limited to, the Resurfacing, Restoration and Rehabilitation (RRR) report, Project Scope and/or the Concept Report (if applicable) to each UAO in order to identify any condition that may require a Utility Exception. The CONSULTANT shall coordinate the processing of design exceptions involving Utilities with the UAO and the DEPARTMENT. Coordinate and process per the UAM.

7.5 Preliminary Utility Meeting

The CONSULTANT shall schedule (time and place), notify participants, and conduct a preliminary utility meeting with all affected UAO(s) for the purpose of presenting the project, review the current design schedule, evaluate the utility information collected, provide follow-up information on compensable interest requests, discuss the utility work by highway contractor option with each utility, and discuss any future design issues that may impact utilities. This is also an opportunity for the UAO(s) to present proposed facilities. The CONSULTANT

shall keep accurate minutes and distribute a copy to all attendees.

7.6 Individual/Field Meetings

The CONSULTANT shall meet with each UAO separately throughout the project design duration to provide guidance in the interpretation of plans, review changes to the plans and schedules, optional clearing and grubbing work, and assist in the development of the UAO(s) plans and work schedules. The CONSULTANT is responsible for motivating the UAO to complete and return the necessary documents after each Utility Contact or Meeting.

7.7 Collect and Review Plans and Data from UAO(s)

Make Determinations (Compensable Interest, Easements, Coordinate, Analyze). Ensure information (utility type, material and size) is sent to the designer for inclusion in the plans. Coordinate programming of funds.

7.8 Subordination of Easements Coordination

The CONSULTANT, if requested by the DEPARTMENT, shall transmit to and secure from the UAO the executed subordination agreements prepared by the appropriate DEPARTMENT office. The CONSULTANT shall coordinate with the DUO the programming of the necessary work program funds to compensate the UAO.

7.9 Utility Design Meeting

At a minimum of 3 weeks prior to the meeting, the CONSULTANT shall transmit two complete sets of Phase II plans to each UAO having facilities located within the project limits, and one set to the DEPARTMENT Offices as required by the District. The CONSULTANT shall schedule (time and place), notify participants, and conduct a Utility meeting with all affected UAO(s). The CONSULTANT shall be prepared to discuss drainage, traffic signalization, maintenance of traffic (construction phasing), review the current design schedule and letting date, evaluate the utility information collected, provide follow-up information on compensable interest requests, discuss the utility work by highway contractor option with each utility, discuss any future design issues that may impact utilities, etc., to the extent that they may have an effect on existing or proposed utility facilities with particular emphasis on drainage and maintenance of traffic with each UAO. The intent of this meeting shall be to identify and resolve conflicts between utilities and proposed construction prior to completion of the plans, including utility adjustment details. Also recommend resolution between known utility conflicts with proposed construction plans as practical. The CONSULTANT shall keep accurate minutes of all meetings and distribute a copy to all attendees.

7.10 Review Utility Markups and Work Schedules and Processing of Schedules and Agreements

Review utility marked up plans individually as they are received for content and coordinate review with the designer. Send color markups and schedules to the appropriate DEPARTMENT office(s) for review and comment if required by the District. Coordinate with the District for execution. Distribute Executed Final Documents. Prepare Work Order for UAO(s). Coordinate programming of funds.

7.11 Utility Coordination/Follow-up

This includes follow-up, interpreting plans, and assisting and the completions of the UAO(s) work schedule and agreements. Includes phone calls, face-to-face meetings, etc., to motivate and ensure the UAO(s) complete and return the required documents in accordance with the project schedule. Ensure the resolution of all known conflicts. This task can be applied to all phases of the project.

7.12 Utility Constructability Review

Review utility schedules against construction contract time, and phasing for compatibility. Coordinate with and obtain written concurrence from the construction office.

7.13 Additional Utility Services

Prepare and coordinate Utility Design Plans when the DEPARTMENT participates in cost of utility work. This item is not usually included in the scope at the time of negotiation. It is normally added as a supplemental agreement when the need is identified.

7.14 Processing Utility Work by Highway Contractor (UWHC)

This type of work was formerly called Utility Joint Participation Agreement (JPA). This includes coordination of utility design effort between the DEPARTMENT and the UAO(s). Determine the DEPARTMENT's cost participation, additional coordination meetings, prepare, negotiate, and process the agreements, review tabulation of quantities, prepare Summary of Pay Items (TRNS*PORT) - UWHC, perform UWHC constructability and biddability review, Technical Special Provisions (TSP) review. This does not include utility design effort. This item is not usually included in the scope at the time of negotiation. It is normally added as a supplemental agreement when the need is identified.

7.15 Contract Plans to UAO(s)

This includes transmittal of the contract plans as processed for letting. Transmittals to UAO(s) are by certified mail, return receipt requested.

7.16 Certification/Close-Out

This includes hours for transmitting utility files to the DUO and preparation of the Utility Certification Letter. The CONSULTANT shall certify to the appropriate DEPARTMENT representative the following:

All utility negotiations (Full execution of each agreement, approved Utility Work Schedules, technical special provisions written, etc.) have been completed with arrangements made for utility work to be undertaken and completed as required for proper coordination with the physical construction schedule.

OR

An on-site inspection was made and no utility work will be involved.

OR

Plans were sent to the Utility Companies/Agencies and no utility work is required.

7.17 Other Utilities

Push button drainage project may not follow all the items above, unless approved by the FDOT Project Manager, or per task work order.

8 ENVIRONMENTAL PERMITS

The CONSULTANT shall notify the DEPARTMENT Project Manager, Environmental Permit Coordinator and other appropriate personnel in advance of all scheduled meetings with the regulatory agencies to allow a DEPARTMENT representative to attend. The CONSULTANT shall copy in the Project Manager and the Environmental Permit Coordinator on all permit related correspondence and meetings.

8.1 Preliminary Project Research

The CONSULTANT shall perform preliminary project research and shall be responsible for early identification of and coordination with the appropriate regulatory agencies to assure that design efforts are properly directed toward permit requirements.

8.2 Complete Permit Involvement Form

The CONSULTANT shall document permit involvement in coordination with the District Permit Coordinator and DEPARTMENT Project Manager. This is to be done upon completion of preliminary project research.

8.3 Establish Wetland Jurisdictional Lines

(Done by the DEPARTMENT, unless participation of the CONSULTANT is anticipated as part of the task work order assignment)

The CONSULTANT shall collect all data and information necessary to determine the boundaries of wetlands and surface waters defined by the rules or regulations of each agency processing or reviewing a permit application necessary to

construct a DEPARTMENT project.

The CONSULTANT shall be responsible for, but not limited to, the following activities:

- Determine landward extent of state waters as defined in Chapter 62-340 FAC as ratified in Section 373.4211 FS
- Determine the jurisdictional boundaries of wetlands and surface waters as defined by rules or regulations of any other permitting authority that is processing a DEPARTMENT permit application.
- Prepare aerial maps showing the jurisdictional boundaries of wetlands and surface waters. Aerial maps shall be reproducible, of a scale no greater than 1"=200' and be recent photography. The maps shall show the jurisdictional limits of each agency. Xerox copies of aerials are not acceptable. All jurisdictional boundaries are to be tied to the project's baseline of survey. When necessary, jurisdictional maps shall be signed and sealed by either a Registered Professional Engineer or a Registered Land Surveyor.
- Acquire written verification of jurisdictional lines from the appropriate environmental agencies.

Prepare a written assessment of the current condition and relative value of the function being performed by wetlands and surface waters. Prepare data in tabular form which includes the ID number for each wetland impacted, size of wetland to be impacted, type of impact and identify any wetland within the project limits that will not be impacted by the project.

8.4 Agency Verification of Wetland Data

(Done by the DEPARTMENT)

The CONSULTANT shall be responsible for verification of wetland data identified in Section 8.3 and coordinating regulatory agency field reviews, including finalization of wetland assessments with applicable agencies.

8.5 Complete and Submit All Required Permit Applications

The CONSULTANT shall prepare permit packages as identified in the Project Description section.

The CONSULTANT shall collect all of the data and information necessary to obtain the environmental permits required to construct a project.

The CONSULTANT shall prepare each permit application for DEPARTMENT approval in accordance with the rules and/or regulations of the environmental agency responsible for issuing a specific permit and/or authorization to perform work.

8.6 Prepare Dredge and Fill Sketches

8.7 Prepare USCG Permit Sketches

8.8 Prepare Easement Sketches

8.9 Prepare Right-of-Way Occupancy Sketches

8.10 Prepare Coastal Construction Control Line (CCCL) Permit Sketches

8.11 Prepare Tree Permit Information

8.12 Mitigation Coordination and Meetings

The CONSULTANT shall coordinate with DEPARTMENT personnel prior to approaching any environmental permitting or reviewing agencies. Once a mitigation plan has been reviewed and approved by the DEPARTMENT, the CONSULTANT will be responsible for coordinating the proposed mitigation plan with the environmental agencies.

8.13 Mitigation Design

(Done by the DEPARTMENT) – Information below does not belongs to the CONSUTLTANT.

If wetland impacts cannot be avoided, the CONSULTANT shall prepare a mitigation plan to be included as a part of the Environmental Resource or Wetlands Resource Permit applications.

Prior to the development of alternatives, the CONSULTANT shall meet with the Project Manager to determine the DEPARTMENT's policies in proposing mitigation. The CONSULTANT shall proceed in the development of a mitigation plan based upon the general guidelines provided by the DEPARTMENT.

The CONSULTANT will be directed by the DEPARTMENT to investigate the following methods of mitigation:

- Payment to DEP/WMD per acre of wetlands impacted as defined in CH 373.4137 FS
- Monetary participation in offsite regional mitigation plans
- Monetary participation in a private mitigation bank
- Creation/restoration on public lands
- Creation/restoration on right-of-way purchased by the DEPARTMENT
- Creation/restoration on existing DEPARTMENT right-of-way

In the event that physical creation or restoration is the only feasible alternative to offset wetland impacts, the CONSULTANT shall collect all of the data and information necessary to prepare alternative mitigation plans that may be

acceptable to all permitting agencies and commenting agencies who are processing or reviewing a permit application for a DEPARTMENT project.

Prior to selection of a final mitigation site, the CONSULTANT will provide the following services in the development of alternative mitigation plans:

- Preliminary jurisdictional determination for each proposed site
- Selection of alternative sites
- Coordination of alternative sites with the DEPARTMENT/all environmental agencies
- Written narrative listing potential sites with justifications for both non-recommended

8.14 Environmental Clearances

(Done by the DEPARTMENT)

CONSULTANT may be requested to provide some information, but most of information below is to be done by the DEPARTMENT.

The CONSULTANT shall prepare clearances for all pond and/or mitigation sites identified after the PD&E was completed.

Archaeological and Historical Features: The CONSULTANT shall collect data necessary to completely analyze the impacts to all cultural and historic resources by the pond and/or mitigation sites and prepare a Cultural Resource Assessment Request Package.

Wetland Impact Analysis: The CONSULTANT shall analyze the impacts to wetlands for the pond and/or mitigation sites and complete the Wetlands Evaluation Report.

Wildlife and Habitat Impact Analysis: The CONSULTANT shall collect data necessary to perform an Endangered Species Biological Assessment, and analyze the impacts to wildlife and habitat by the pond and/or mitigation sites.

Contamination Impact Analysis: The CONSULTANT shall perform the necessary analysis to complete the Contamination Screening Evaluation for the pond and/or mitigation sites and complete the Contamination Screening Evaluation Report.

8.15 Other Environmental Permits

The CONSULTANT shall provide engineering and other technical services regarding the National Pollutant Discharge Elimination System (NPDES) Permit. The following NPDES tasks are delineated.

NPDES Inspections: The CONSULTANT will assist the District Drainage

Engineer in performing periodic inspections of the drainage systems of selected state roads. An inspection of the existing drainage system may be needed to help detect illicit connections/discharges outfall screenings, and to identify the source of chronic flooding problems. Also, inspections may be conducted in conjunction with other planned NPDES program activities (e.g., inventory of existing drainage structures).

Depending on the outcome of the inspection, the CONSULTANT may be requested to perform other services at the option of the District Drainage Engineer, including the construction, reconstruction, replacement, modification, or cleaning of all types of drainage structures (e.g., inlets, manholes, pipes) specified including all of associated appurtenances.

NPDES Inventory: The CONSULTANT will assist the District Drainage Engineer in performing an inventory of the drainage systems of selected state roads. The CONSULTANT will also assist the DEPARTMENT in developing enhanced mapping (i.e., GIS databases) that contain key information about the different types of drainage structures identified during the inventory. In performing this task, the CONSULTANT may be required to provide the following on an as-needed basis: a) CADD services, b) GIS services, c) Location survey services, and d) Video services (e.g., pictures taken inside drainage structures).

The CONSULTANT will assist the District Drainage Engineer in maintaining and updating the NPDES databases mentioned above for selected state roads using available construction plans ("as-builts") in electronic format where available.

Other NPDES Implementation Support Services: The CONSULTANT will assist the District Drainage Engineer in implementing selected measures regarding the District Six NPDES permit. Some possible measures to be implemented include a) Public education and outreach, b) Public involvement and participation, c) Illicit discharge and detection. d) Pollution prevention and best management practices (BMP), e) Preparation and submittal of annual report, and f) Other measures as required by the Florida Department of Environmental Protection (FDEP).

The CONSULTANT should have significant NPDES work experience and be knowledgeable of District Six Stormwater Management Program NPDES program, existing drainage issues in Monroe County, and the operations and maintenance practices conducted by FDOT District 6 in Monroe County.

Under this task, the CONSULTANT may be required to provide a person in the DISTRICT'S OFFICE to be assigned as a temporary or permanent as long as task work requires it by the Project Manager.

8.16 Technical Meetings

8.17 Quality Assurance/Quality Control

8.18 Supervision

8.19 Coordination

9.0 STRUCTURES - SUMMARY AND MISCELLANEOUS TASKS AND DRAWINGS

Per task work order required when a pump station (for stormwater drainage system) enclosure above ground or underground is required from the structural point of view. The CONSULTANT shall analyze and design all structures in accordance with applicable provisions as defined in Section 2.17, Provisions for Work. Individual tasks identified in Sections 9 through 15 are defined in the Staff Hour Estimation Handbook and within the provision defined in Section 2.17, Provisions for Work. Contract documents shall display economical solutions for the given conditions.

The CONSULTANT shall provide Design Documentation to the DEPARTMENT with each submittal consisting of structural design calculations and other supporting documentation developed during the development of the plans. The design calculations submitted shall adequately address the complete design of all structural elements. These calculations shall be neatly and logically presented on 8½"x11" paper (where possible) and all sheets shall be numbered. The final design calculations shall be signed and sealed by a Florida-registered professional engineer. A cover sheet indexing the contents of the calculations shall be included and the engineer shall sign and seal that sheet. All computer programs and parameters used in the design calculations shall include sufficient backup information to facilitate the review task.

10 STRUCTURES - BRIDGE HYDRAULICS REPORT

This task involves a complete analysis of the scour analysis, countermeasures, deck drainage, a bridge hydraulic recommendation sheet(s), which is part of a complete report requiring to be signed and sealed by the hydraulic engineer or coastal engineer that prepare the report.

10.1 Box or Round Culverts

Only drainage design analysis to size the culverts accompanied by the hydraulic table computations

10.2 Box or Round Culverts Extensions

Similar to information on 10.1

11.0 STRUCTURES - TEMPORARY BRIDGE

Not applicable under this contract.

12.0 STRUCTURES - SHORT SPAN CONCRETE BRIDGE

Not applicable under this contract.

13.0 STRUCTURES - MEDIUM SPAN CONCRETE BRIDGE

Not applicable under this contract.

14.0 STRUCTURES - STRUCTURAL STEEL BRIDGE

Not applicable under this contract.

15.0 STRUCTURES - SEGMENTAL CONCRETE BRIDGE

Not applicable under this contract.

16.0 STRUCTURES - MOVABLE SPAN

Not applicable under this contract.

17 STRUCTURES WITH DRAINAGE INVOLVEMENT - RETAINING WALL OR SEA WALLS WITH DRAINAGE OUTFALL STRUCTURES

The CONSULTANT shall prepare plans for Retaining Wall(s) as specified in Section 2.5.

General Requirements

17.1 Key Sheets

17.2 Horizontal Wall Geometry

Permanent Proprietary Walls

17.3 Vertical Wall Geometry

17.4 Semi-Standard Drawings

17.5 Wall Plan and Elevations (Control Drawings)

17.6 Details

Temporary Proprietary Walls

17.7 Vertical Wall Geometry

17.8 Semi-Standard Drawings

17.9 Wall Plan and Elevations (Control Drawings)

17.10 Details

Cast-In-Place Retaining Walls

17.11 Design

17.12 Vertical Wall Geometry

17.13 General Notes

17.14 Wall Plan and Elevations (Control Drawings)

17.15 Sections and Details

17.16 Reinforcing Bar List

Other Retaining Walls and Bulkheads

17.17 Design

17.18 Vertical Wall Geometry

17.19 General Notes, Tables and Miscellaneous Details

17.20 Wall Plan and Elevations

17.21 Details

18 STRUCTURES - MISCELLANEOUS

The CONSULTANT shall prepare plans for Miscellaneous Structure(s) as specified in Section 2.5.

18.1 Box Culverts

Covered under this contract

18.2 Box Culverts Extensions

Covered under this contract

18.3 Control Drawings

18.4 Design for Wall Height Covered by Standards

18.5 Design for Wall Height not Covered by Standards

18.6 Aesthetic Details

18.7 To be Determined by District

18.8 Other Structures

Design Services

Provide all necessary engineering and CADD services required for revising and updating previously prepared construction plans and specifications to conform to current FDOT FDM, FDOT Structures Design Guidelines, AASHTO Standards, MUTCD, FDOT Standards Specifications for Road and Bridge Construction, FDOT Roadway and Traffic Design Standards, and the desires of the Department, as made knows to the Consultant.

1. Prepare plans and drafts of all special provisions for all phases of construction for each design services project assigned under this contract. Plans shall include, as appropriate, structures, details, drainage facilities, special pollution control structures, modifications to drainage structures due to conflicts underground utility lines, maintenance of traffic, and incidental items. All plans are to be in accordance with AASHTO Standards, FDOT Standards and Specifications, and the desires of the Department, as made known to the Consultant. Plans shall be accurate, legible, and complete in design, drawn to scales as directed by the Department, furnished in CADD files in Microstation format and reproducible form suitable for bidding purposes.

2. The consultant shall provide qualified personnel to perform CADD related services. The consultant's personnel shall perform such tasks under the direction of the Design Project Manager and/or the Project Manager assigned to do the specific task.

3. Provided support to the primary Consultant for Quality Computation Books in a format acceptable by the Department. In addition to the original computation book all computer files related to computation book preparation shall also be provided by the Consultant.

4. The Consultant shall submit to the Department a Design Documentation Booklet with design notes, reports, calculations and other related information required to document the design conclusions reached during the development of the construction plans.

5. Provide support to the primary Consultant for preliminary estimates of construction cost.

6. The Consultant shall furnish preliminary prints and all CADD files (Geopak, Microstations, etc.), as required by the Department to adequately control, coordinate and approve the design.

7. The Consultant shall prepare permit application(s) as required for submittal to other agencies by the Department including forms, sketches, plan sheets and drawings as bridge hydraulic recommendation sheets information.

8. Structural design engineer assigned to the specific task must participate in reviews, attend meetings as requested by the Department's Project Manager as part of this

contract services

9. The Consultant or Sub-Consultant assigned under this task shall serve as an expert witness in the legal proceedings related to these design services if required by the Department. The fee for these services shall be established if and when they are needed.

10. The Consultant or the Sub-Consultant shall help the Consultant to prepare the Technical Special Provisions, Supplemental Specifications, and the Special Provisions required for the construction of any related structures, and traffic operations portions of the project which was involved.

19 SIGNING AND PAVEMENT MARKING ANALYSIS

The CONSULTANT shall re-store back Signing and Pavement Marking Plans in accordance with the original set of plans and all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums following the FDM including the following:

19.1 Traffic Data Analysis
N/A

19.2 No Passing Zone Study
N/A

19.3 Reference and Master Design File

The CONSULTANT shall prepare the Signing & Marking Design file to include all necessary design elements and all associated reference files.

19.4 Multi-Post Sign Support Calculations
N/A

19.5 Sign Panel Design Analysis
N/A

19.6 Sign Lighting/Electrical Calculations
N/A

19.7 Quantities

N/A

19.8 Computation Book

N/A

19.9 Cost Estimates

N/A

19.10 Technical Special Provisions

N/A

19.11 Other Signing and Pavement Marking Analysis

19.12 Field Reviews

N/A

19.13 Technical Meetings

19.14 Quality Assurance/Quality Control

19.15 Independent Peer Review

19.16 Supervision

19.17 Coordination

20 SIGNING AND PAVEMENT MARKING PLANS

The CONSULTANT shall prepare a set of Signing and Pavement Marking Plans in accordance with the FDM that includes the following.

20.1 Key Sheet

20.2 Summary of Pay Items Including Trns*port Input

20.3 Tabulation of Quantities

20.4 General Notes/Pay Item Notes

20.5 Project Layout

20.6 Plan Sheet

20.7 Typical Details

20.8 Guide Sign Work Sheet(s)

20.9 Traffic Monitoring Site

20.10 Cross Sections

20.11 Special Service Point Details

20.12 Special Details

20.13 Interim Standards

20.14 Quality Assurance/Quality Control

20.15 Supervision

21.0 SIGNALIZATION ANALYSIS

Not applicable to this contract.

22.0 SIGNALIZATION PLANS

Not applicable to this contract.

23 LIGHTING ANALYSIS (NOT PART OF THIS CONTRACT; UNLESS FOR PUMP STATIONS)

The CONSULTANT shall analyze and document Lighting Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design **memorandums.**

23.1 Lighting Justification Report

N/A

23.2 Lighting Design Analysis Report

N/A

23.3 Aeronautical Evaluation

N/A

23.4 Voltage Drop Calculations

N/A

23.5 FDEP Coordination and Report

23.6 Reference and Master Design Files

N/A

23.7 Temporary Lighting

N/A

23.8 Design Documentation (N/A to this contract; unless part of a pump station)

The CONSULTANT shall submit a Roadway Lighting Design Documentation Book with each lighting plans submittal under a separate cover and not part of the roadway documentation book. At a minimum, the design documentation book shall include:

- Lighting Calculations.
- Back up sheet for each bid item quantity total on each lighting plan sheet (Phase III and Phase IV submittals).
- Phase submittal checklist.
- Three-way quantity check list (Phase III and IV submittals).
- Structural calculations for special conventional pole concrete foundations.
- Structural calculations for the high mast pole foundations.

- Letter to the power company requesting service.
- Power company confirmation letter on the requested services (Phase III and Phase IV submittals).
- Voltage drop calculations (Phase III and Phase IV submittals).
- Load analysis calculations (Phase III and Phase IV submittals).

23.9 Quantities

23.10 Cost Estimate

23.11 Technical Special Provisions

23.12 Other Lighting Analysis

23.13 Field Reviews

The CONSULTANT shall collect information from the maintaining agencies and conduct a field review. The review should include but is not limited to the following:

- Existing Lighting Equipment
- Load Center, Capabilities and Condition/Age
- Condition of Lighting Structure(s)

23.14 Technical Meetings

23.15 Quality Assurance/Quality Control

23.16 Independent Peer Review

23.17 Supervision

23.18 Coordination

24 LIGHTING PLANS (NOT PART OF THIS CONTRACT; UNLESS LIGHTING FOR PUMP STATION)

The CONSULTANT shall prepare a set of Lighting Plans in accordance with the FDM, which includes the following:

24.1 Key Sheet

24.2 Summary of Pay Item Sheet Including Trns*port Input

24.3 Tabulation of Quantities

24.4 General Notes/Pay Item Notes

24.5 Pole Data and Legend & Criteria

24.6 Service Point Details

24.7 Project Layout

24.8 Plan Sheet

24.9 Special Details

24.10 Temporary Lighting Data and Details

24.11 Traffic Control Plan Sheets

24.12 Interim Standards

24.13 Quality Assurance/Quality Control

24.14 Supervision

25 LANDSCAPE ARCHITECTURE ANALYSIS (NOT PART OF THIS CONTRACT, BUT CERTAIN INFORMATION MAY BE REQUIRED)

The CONSULTANT shall analyze and document Landscape Architecture Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

25.1 Data Collection (Applies to this contract)

Identify existing trees for relocation or to be replaced.

25.2 Site Inventory and Analysis (If assigned under the specific task work order)

Includes identification of opportunities and constraints for the proposed project based on existing site conditions. Summary of analysis, if required, is included in conceptual design.

25.3 Planting Design (N/A under this contract)

Conceptual Design: Includes delineation of all proposed planting types, scheme development and preliminary costs, and areas and reports. The design shall be submitted with the Phase I plans.

Final Design: Includes identifying the species/type, size, location, spacing, and quality of all plants.

25.4 Irrigation Design (N/A under this contract)

Feasibility Report: Includes analysis of methods, materials and operation costs associated with proposed irrigation system design.

Conceptual Design: Typically not done in master design file. Includes determination of water and power sources. Phase I design level.

Final Design: Includes all work in master design files. Irrigation Design includes,

but is not limited to, the locations and sizes of pumps, pump stations, mainlines, lateral lines, irrigation heads, valves, backflow and control devices.

25.5 Hardscape Design (N/A under this contract)

Conceptual design - scheme development and preliminary costs: Typically not done in master design file. Delineation of areas and elements to be included in design. Select cut sheets, prepare image boards. Includes report, if required.

Final Design: Includes all work in master design files. Hardscape Design includes, but is not limited to, sidewalks, plazas, Steps, Fountains, Walls, Pedestrian bridges, non-regulatory signs or project graphics, roadway aesthetics, site furnishings.

25.6 Computation Book and Quantities

25.7 Cost Estimates

25.8 Technical Special Provisions

25.9 Other Landscape Architecture

25.10 Field Reviews

25.11 Technical Meetings

25.12 Quality Assurance/Quality Control

25.13 Independent Peer Review

25.14 Supervision

25.15 Coordination

26 LANDSCAPE ARCHITECTURE PLANS (N/A UNDER THIS CONTRACT)

The CONSULTANT shall prepare a set of Landscape Plans which includes the following.

26.1 Key Sheet

26.2 Tabulation of Quantities

26.3 General Notes

26.4 Tree and Vegetation Inventory, Protection and Relocation Plans

26.5 Planting Plans for Linear Roadway Projects

26.6 Planting Plans (Interchanges and Toll Plazas) (N/A under this contract)

26.7 Planting Details and Notes (N/A)

The CONSULTANT shall include a written or graphic guide for care and

maintenance of the irrigation system after the warranty period. This Maintenance Plan will be developed in coordination with the local government entity who assumes the maintenance obligation.

26.8 Irrigation Plans for Linear Roadway Project

26.9 Irrigation Plans for Interchange and Toll Plazas (N/A)

26.10 Technical Maintenance Plan

Written or graphic guide for care of the plantings, irrigation system and hardscape maintenance after the warranty period. Maintenance details and specifications shall recommend: a mowing schedule and maintained grass height; fertilization schedules, formulas, rates and methods of application; weeding schedule and method chemical, mechanical, or manual; edging schedule; herbicide schedules formulas, rates, methods of application, precautions; pruning schedule and methods to maintain health and clear sight requirements; mulching materials, thickness and replacement frequency; irrigation schedule and warranty period maintenance (flushing, adjustments, clean-up); litter pick-up; and hardscape care. This Maintenance Plan will be developed in coordination with the local government entity that assumes the maintenance obligation.

26.11 Irrigation Details and Notes

26.12 Hardscape Plans

26.13 Hardscape Details and Notes (N/A)

The CONSULTANT shall include a written or graphic guide for care and maintenance of the irrigation system after the warranty period. This Maintenance Plan will be developed in coordination with the local government entity who assumes the maintenance obligation.

26.14 Cost Estimate

26.15 Quality Assurance/Quality Control

26.16 Supervision

27 SURVEY (GENERALLY, THIS WORK IS DONE BY THE DEPARTMENT)

The CONSULTANT must be aware that some task work orders may require the Sub-Consultant to do the full design survey.

The CONSULTANT or Sub-Consultant shall perform survey tasks in accordance with all applicable statutes, manuals, guidelines, standards, handbooks, procedures, and current design memoranda.

The CONSULTANT shall submit all survey notes and computations to document the

surveys. All field survey work shall be recorded in approved media and submitted to the DEPARTMENT. Field books submitted to the DEPARTMENT must be of an approved type. The field books shall be certified by the surveyor in responsible charge of work being performed before the final product is submitted.

The survey notes shall include documentation of decisions reached from meetings, telephone conversations or site visits. All like work (such as bench lines, reference points, etc.) shall be recorded contiguously. The DEPARTMENT may not accept field survey radial locations of section corners, platted subdivision lot and block corners, alignment control points, alignment control reference points and certified section corner references. The DEPARTMENT may instead require that these points be surveyed by true line, traverse or parallel offset.

27.1 Horizontal Project Network Control (HPNC)

Establish or recover HPNC, for the purpose of establishing horizontal control on the Florida State Plane Coordinate System or datum approved by the District Location Surveyor (DLS); may include primary or secondary control points. Includes analysis and processing of all field collected data, and preparation of forms**.**

27.2 Vertical Project Network Control (VPNC)

Establish or recover VPNC, for the purpose of establishing vertical control on datum approved by the District Location Surveyor (DLS); may include primary or secondary vertical control points. Includes analysis and processing of all field collected data, and preparation of forms.

27.3 Alignment and/or Existing Right of Way Lines

Establish, recover or re-establish project alignment. Also includes analysis and processing of all field collected data, existing maps, and/or reports for identifying mainline, ramp, offset, or secondary alignments. Depict alignment and/or existing R/W lines (in required format) per DEPARTMENT R/W Maps, platted or dedicated rights of way.

27.4 Aerial Targets

Place, locate, and maintain required aerial targets and/or photo identifiable points. Includes analysis and processing of all field collected data, existing maps, and/or reports.

27.5 Reference Points

Reference HPNC points, project alignment, vertical control points, section, ¼ section, center of section corners and G.L.O. corners as required.

27.6 Topography (2D)

Locate all above ground features and improvements. Deliver in appropriate electronic format. Effort includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.7 Digital Terrain Model (DTM)

Locate all above ground features and improvements for the limits of the project by collecting the required data for the purpose of creating a DTM with sufficient density. Shoot all break lines, high and low points. Effort includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.8 Roadway Cross Sections/Profiles

Perform field survey check sections or profiles to verify the required accuracy of the digital terrain model and/or to determine existing cross slope. Includes analysis and processing of all field-collected data for comparison with DTM.

27.9 Side Street Surveys

Refer to tasks of this document as applicable.

27.10 Underground Utilities

(To be done by the Department)

Designation includes 2-dimensional collection of existing utilities and selected 3-dimensional verification as needed for designation. Location includes non-destructive excavation to determine size, type and location of existing utility, as necessary for final 3-dimensional verification. Survey includes collection of data on points as needed for designates and locates. Includes analysis and processing of all field collected data, and delivery of all appropriate electronic files.

27.11 Outfall Survey

Locate all above ground features and improvements for the limits of the project by collecting the required data for the purpose of a D.T.M. Survey with sufficient density of shots. Shoot all break lines, high and low points. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.12 Drainage Survey

Locate underground data (XYZ, pipe size, type, condition and flow line) that relates to above ground data. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.13 Bridge Survey

(To be done by the Department)

Locate required above ground features and improvements for the limits of the bridge. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

27.14 Channel Survey

(To be done by the Department, unless included as part of the task work order)

Locate all topographic features and improvements for the limits of the project by collecting the required data for the purpose of a D.E.M. Survey with sufficient density of shots. Shoot all break lines, high and low points. Includes field edits, analysis and processing of all field collected data, maps, and/or reports.

27.15 Pond Site Survey

(To be done by the Department, unless included as part of the task work order)

Refer to tasks of this document as applicable.

27.16 Mitigation Survey

(To be done by the Department, unless included as part of the task work order)

Refer to tasks of this document as applicable.

27.17 Jurisdiction Line Survey

(To be done by the Department, unless included as part of the task work order)

Perform field location (2-dimensional) of jurisdiction limits as defined by respective authorities, also includes field edits, analysis and processing of all field collected data, preparation of reports.

27.18 Geotechnical Support

(To be done by the Department, unless included as part of the task work order)

Perform 3-dimensional (X,Y,Z) field location, or stakeout, of boring sites established by geotechnical engineer. Includes field edits, analysis and processing of all field collected data and/or reports.

27.19 Sectional/Grant Survey

(To be done by the Department, unless included as part of the task work order)

Perform field location/placement of section corners, 1/4 section corners, and fractional corners where pertinent. Includes analysis and processing of all field-collected data and/or reports.

27.20 Subdivision Location

(To be done by the Department)

Survey all existing recorded subdivision/condominium boundaries, tracts, units, phases, blocks, street R/W lines, common areas. Includes analysis and processing of all field collected data and/or reports. If unrecorded subdivision is on file in the public records of the subject county, tie existing monumentation of the beginning and end of unrecorded subdivision.

27.21 Maintained R/W

(To be done by the Department, unless included as part of the task work order)

Perform field location (2-dimensional) of maintained R/W limits as defined by respective authorities, if needed. Also includes field edits, analysis and processing of all field collected data, preparation of reports.

27.22 Boundary Survey

(To be done by the Department, unless included as part of the task work order)

Perform boundary survey as defined by DEPARTMENT standards. Includes analysis and processing of all field-collected data, preparation of reports.

27.23 Water Boundary Survey

(To be done by the Department, unless included as part of the task work order)

Perform Mean High Water, Ordinary High Water and Safe Upland Line surveys as required by DEPARTMENT standards.

27.24 Right of Way Staking

(To be done by the Department, unless included as part of the task work order)

Perform field staking and calculations of existing/proposed R/W lines for on-site review purposes.

27.25 Right of Way Monumentation

(To be done by the Department, unless included as part of the task work order)

Set R/W monumentation as depicted on final R/W maps for corridor and water retention areas.

27.26 Line Cutting

Perform all efforts required to clear vegetation from the line of sight.

27.27 Work Zone Safety

Provide work zone as required by DEPARTMENT standards.

27.28 Miscellaneous Surveys

Refer to tasks of this document, as applicable, to perform surveys not described herein.

27.29 Supplemental Surveys

Supplemental survey days and hours are to be approved in advance by DLS. Refer to tasks of this document, as applicable, to perform surveys not described herein.

27.30 Document Research

Perform research of documentation to support field and office efforts involving surveying and mapping.

27.31 Field Review

Perform verification of the field conditions as related to the collected survey data.

27.32 Technical Meetings

Attend meetings as required and negotiated by the Surveying and Mapping Department.

27.33 Quality Control/Quality Assurance

Establish and implement a QAQC plan. Also includes subconsultant review, response to comments and any resolution meetings if required, preparation of submittals for review, etc.

27.34 Supervision

Perform all activities required to supervise and coordinate project. These activities must be performed by the project supervisor, a Florida Professional Surveyor.

27.35 Coordination

28 PHOTOGRAMMETRY (THIS TYPE OF WORK EFFORT IS NOT APPLICABLE TO THIS CONTRACT)

The CONSULTANT shall perform photogrammetric tasks in accordance with all applicable statues, manuals, guidelines, standards, handbooks, procedures, and current design memoranda.

In addition to the maps and photographic products, the CONSULTANT shall submit all computations to document the mapping. This will include documentation of all decisions reached from meetings, telephone conversations, and site visits.

28.1 Flight Preparation

Review record data, create target diagrams, and plan the mission.

28.2 Control Point Coordination

Determine photo identifiable control points, and mark contact prints.

28.3 Mobilization

Perform pre- and post-flight aircraft inspection; prepare the aircraft and camera for the mission.

28.4 Flight Operations

Operate the aircraft, aerial camera, and other instruments to obtain aerial photography.

28.5 Film Processing

Process, check, and annotate the aerial film.

28.6 Photo Products

Prepare contact prints, contact diapositives, and photo enlargements.

28.7 Scanning

Scan photographic images.

28.8 Lidar

Post process lidar data to XYZ coordinates.

28.9 Aerial Triangulation

Measure and adjust control within aerial images.

28.10 Surfaces

Collect spot elevations and break lines to create surface model.

28.11 Ortho Generation

Create the ortho image.

28.12 Rectified Digital Imagery (Georeferenced)

Create the rectified digital image.

28.13 Mosaicking

(May be required in certain task work orders)

Create the mosaic.

28.14 Sheet Clipping

(May be required in certain task work orders)

Create plot files for sheets from the database.

28.15 Topographics (3D)

Prepare 3D topographic map.

28.16 Planimetrics (2D)

Prepare 2D planimetric map.

28.17 Drainage Basin

Prepare drainage basin maps.

28.18 CADD Edit

Perform final edit of graphics for delivery of required Microstation .dgn, CADD, and Geopak files.

28.19 Data Merging

Merge photogrammetric files, field survey files, and data from other sources.

28.20 Miscellaneous

Perform any other task not identified by numbered tasks.

28.21 Field Review

Perform on site review of maps.

28.22 Meetings

Attend meetings as required.

28.23 Quality Control/Quality Assurance

Establish and implement a QC/QA plan.

28.24 Supervision

Supervise all photogrammetric activities. This task must be performed by the project supervisor, a Florida P.S.M.

28.25 Coordination

Coordinate with all elements of the project to produce a final photogrammetric product.

29 MAPPING (TO BE DONE BY THE DEPARTMENT, UNLESS CERTAIN ACTIVITIES BELOW ARE REQUIRED IN THE TASK WORK ORDER)

The CONSULTANT will be responsible for the preparation of control survey maps, right of way maps, maintenance maps, sketches, other miscellaneous survey maps, and legal descriptions as required for this project in accordance with all applicable DEPARTMENT Manuals, Procedures, Handbooks, and Florida Statutes. All maps, surveys and legal descriptions will be prepared under the direction of a Florida Professional Surveyor and Mapper (PSM) to DEPARTMENT size and format requirements utilizing DEPARTMENT approved software, and will be designed to provide a high degree of uniformity and maximum readability. The CONSULTANT will submit maps, legal descriptions, quality assurance check prints, checklists, electronic media files and any other documents as required for this project to the DEPARTMENT for review at stages of completion as negotiated.

29.1 Alignment

29.2 Section and 1/4 Section Lines

29.3 Subdivisions

29.4 Existing Right of Way

29.5 Topography

29.6 Parent Tract Properties and Existing Easements

29.7 Proposed Right of Way Requirements

The ENGINEER OF RECORD (EOR) will provide the proposed requirements. The PSM is responsible for calculating the final geometry.

29.8 Limits of Construction

The limits of construction DGN file as provided by the EOR will be imported or referenced to the master CADD file. Additional labeling will be added as required. The PSM is required to advise the EOR of any noted discrepancies between the limits of construction line and the existing/proposed right of way lines, and for making adjustments as needed when a resolution is determined.

29.9 Jurisdictional/Agency Lines

These lines may include, but are not limited to, jurisdictional, wetland, water boundaries, and city/county limit lines.

29.10 Control Survey Cover Sheet

29.11 Control Survey Key Sheet

29.12 Control Survey Detail Sheet

29.13 Right of Way Map Cover Sheet

29.14 Right of Way Map Key Sheet

29.15 Right of Way Map Detail Sheet

29.16 Maintenance Map Cover Sheet

29.17 Maintenance Map Key Sheet

29.18 Maintenance Map Detail Sheet

29.19 Reference Point Sheet

This sheet(s) will be included with the Control Survey Map, Right of Way Map and Maintenance Map.

29.20 Project Network Control Sheet (Provided by the DEPARTMENT)

Unless task work order assignment request the CONSULTANT or SUB-CONSULTANT to provide the Project Network Control Sheet (PNC).

This sheet depicts the baseline, the benchmarks, the primary and secondary control points and their reference points including the type of material used for each point, their XYZ coordinates, scale factors and convergence angles. This

sheet(s) may be included with the Control Survey Map, Right of Way Map and Maintenance Map.

29.21 Table of Ownerships Sheet

29.22 Parcel Sketches

29.23 TIITF Sketches

29.24 Other Specific Purpose Survey(s)

29.25 Boundary Survey(s) Map

29.26 Right of Way Monumentation Map

29.27 Title Search Map

29.28 Title Search Report

29.29 Legal Descriptions

29.30 Final Map/Plans Comparison

The PSM will perform a comparison of the final right of way maps with the available construction plans to review the correctness of the type of parcel to be acquired and the stations/offsets to the required right of way. The PSM will coordinate with the EOR to resolve any conflicts or discrepancies and provide documentation of the review.

29.31 Field Reviews

29.32 Technical Meetings

29.33 Quality Assurance/Quality Control

29.34 Supervision

29.35 Coordination

29.36 Supplemental Mapping

This task is to cover efforts resulting from major design changes after 60% and 90% map development and may include any number of tasks. The house negotiated under this task may or may not be utilized, at the Department's option, on this project. Request and approval to utilize Supplemental Mapping hours will be in writing.

30 GEOTECHNICAL (TO BE DONE BY THE DEPARTMENT)

The Consultant must be aware that the Sub-Consultant may have to be involved in some of this work requests as per task work order.

The CONSULTANT shall, for each project, be responsible for a complete geotechnical investigation. All work performed by the CONSULTANT shall be in accordance with DEPARTMENT standards, or as otherwise directed by the District Geotechnical Engineer. The District Geotechnical Engineer will make interpretations and changes regarding geotechnical standards, policies and procedures and provide guidance to the CONSULTANT.

Prior to beginning each phase of investigation and after the Notice to Proceed is given, the CONSULTANT shall submit investigation plan for approval and meet with the DEPARTMENT's Geotechnical Engineer or representative to review the project scope and DEPARTMENT requirements. The investigation plan shall include, but not be limited to, the proposed boring locations and depths, and all existing geotechnical information from available sources to generally describe the surface and subsurface conditions of the project site. Additional meetings may be required to plan any additional field efforts, review plans, resolve plans/report comments, resolve responses to comments, and/or any other meetings necessary to facilitate the project.

The CONSULTANT shall notify the DEPARTMENT in adequate time to schedule a representative to attend all related meetings and field activities.

30.1 Document Collection and Review

CONSULTANT will review printed literature including topographic maps, county agricultural maps, aerial photography (including historic photos), ground water resources, geology bulletins, potentiometric maps, pile driving records, historic construction records and other geotechnical related resources. Prior to field reconnaissance, CONSULTANT shall review U.S.G.S., S.C.S. and potentiometric maps, and identify areas with problematic soil and groundwater conditions.

30.2 Detailed Boring Location Plan

(To be done by the Department, unless certain activities required in the task work order.)

Develop a detailed boring location plan. Meet with DEPARTMENT Geotechnical Project Manager for boring plan approval. If the drilling program expects to encounter artesian conditions, the CONSULTANT shall submit a methodology(s) for plugging the borehole to the DEPARTMENT for approval prior to commencing with the boring program.

30.3 Stake Borings/Utility Clearance

Stake borings and obtain utility clearance.

30.4 MOT Plans for Field Investigation

Coordinate and develop Maintenance of Traffic (MOT) plan. All work zone traffic

control will be performed in accordance with the DEPARTMENT's Roadway and Traffic Design Standards Index 600 series.

30.5 Drilling Access Permits

Obtain all State, County, City, and Water Management District permits for performing geotechnical borings, as needed.

30.6 Property Clearances

Notify property tenants in person of drilling and field activities, if applicable. Written notification to property owners/tenants is the responsibility of the DEPARTMENT's Project Manager.

30.7 Groundwater Monitoring

Monitor groundwater, using piezometers.

30.8 LBR Sampling

Collect appropriate samples for Limerock Bearing Ratio (LBR) testing.

30.9 Coordination of Field Work

Coordinate all field work required to provide geotechnical data for the project.

30.10 Soil and Rock Classification - Roadway

Refine soil profiles recorded in the field, based on results of laboratory testing.

30.11 Design LBR

Determine design LBR values from the 90% and mean methods.

30.12 Laboratory Data

Tabulate laboratory test results for inclusion in the geotechnical report, the report of tests sheet (Roadway Soil Survey Sheet), and for any necessary calculations and analyses.

30.13 Seasonal High Water Table

Review the encountered ground water levels and estimate seasonal high ground water levels. Estimate seasonal low ground water levels, if requested.

30.14 Parameters for Water Retention Areas

Calculate parameters for water retention areas, exfiltration trenches, and/or swales.

30.15 Limits of Unsuitable Material

Delineate limits of unsuitable material(s) in both horizontal and vertical directions. Assist the Engineer of Record with detailing these limits on the cross-sections. If requested, prepare a plan view of the limits of unsuitable material.

30.16 ASCII Files for Cross-Sections

Create ASCII files of boring data for cross-sections.

30.17 Embankment Settlement and Stability

Estimate the total magnitude and time rate of embankment settlements. Calculate the factor of safety against slope stability failure.

30.18 Stormwater Volume Recovery and/or Background Seepage Analysis

Perform stormwater volume recovery analysis as directed by the DEPARTMENT.

30.19 Geotechnical Recommendations

Provide geotechnical recommendations regarding the proposed roadway construction project including the following: description of the site/alignment, design recommendations and discussion of any special considerations (i.e. removal of unsuitable material, consolidation of weak soils, estimated settlement time/amount, groundwater control, high groundwater conditions relative to pavement base, etc.) Evaluate and recommend types of geosynthetics and properties for various applications, as required.

30.20 Preliminary Roadway Report and Pavement Evaluation Report

If a preliminary roadway investigation is performed, a preliminary roadway report shall be submitted before the Phase I plans submittal. The purpose of the preliminary roadway report will be to assist in setting road grades and locating potential problems.

- Copies of U.S.G.S. and S.C.S. maps with project limits shown.
- A report of tests sheet that summarizes the laboratory test results, the soil stratification (i.e. soils grouped into layers of similar materials) and construction recommendations relative to Standard Indices 500 and 505.
- Results of all tasks discussed in the previous section (Data Interpretation and Analysis).
- An appendix that contains stratified soil boring profiles, laboratory test data sheets, sample embankment settlement and stability calculations, design LBR

calculation/graphs, and other pertinent calculations.

The CONSULTANT will respond in writing to any changes and/or comments from the DEPARTMENT and submit any responses and revised reports.

If a pavement evaluation is performed, the evaluation and report submittal shall be in accordance with Section 3.4 of the Materials Manual: Pavement Coring and Evaluation.

30.21 Final Report

The Final Roadway Report shall include the following:

- Copies of U.S.G.S. and S.C.S. maps with project limits shown.
- A report of tests sheet that summarizes the laboratory test results, the soil stratification (i.e. soils grouped into layers of similar materials) and construction recommendations relative to Standard Indices 500 and 505.
- Results of all tasks discussed in the previous section (Data Interpretation and Analysis).
- An appendix that contains stratified soil boring profiles, laboratory test data sheets, sample embankment settlement and stability calculations, design LBR calculation/graphs, and other pertinent calculations.

The CONSULTANT will respond in writing to any changes and/or comments from the DEPARTMENT and submit any responses and revised reports.

30.22 Auger Boring Drafting

Draft auger borings as directed by the DEPARTMENT.

30.23 SPT Boring Drafting

Draft SPT borings as directed by the DEPARTMENT.

30.24 Detailed Boring Location Plan

Develop a detailed boring location plan. Meet with DEPARTMENT Geotechnical Project Manager for boring plan approval. If the drilling program expects to encounter artesian conditions, the CONSULTANT shall submit a methodology(s) for plugging the borehole to the DEPARTMENT for approval prior to commencing with the boring program.

30.25 Stake Borings/Utility Clearance

Stake borings and obtain utility clearance.

30.26 MOT Plans for Field Investigation

Coordinate and develop MOT plan. All work zone traffic control will be performed in accordance with the DEPARTMENT's Roadway and Traffic Design Standards Index 600 series.

30.27 Drilling Access Permits

Obtain all State, County, City, and Water Management District permits for performing geotechnical borings, as needed.

30.28 Property Clearances

Notify property tenants in person of drilling and field activities, if applicable. Written notification to property owners/tenants is the responsibility of the DEPARTMENT's Project Manager.

30.29 Collection of Corrosion Samples

Collect corrosion samples for determination of environmental classifications.

30.30 Coordination of Field Work

Coordinate all field work required to provide geotechnical data for the project.

30.31 Soil and Rock Classification - Structures

Soil profiles recorded in the field should be refined based on the results of laboratory testing.

30.32 Tabulation of Laboratory Data

Laboratory test results should be tabulated for inclusion in the geotechnical report and for the necessary calculations and analyses.

30.33 Design Groundwater Level for Structures

Review encountered groundwater levels, estimate seasonal high groundwater levels, and evaluate groundwater levels for structure design.

30.34 Selection of Foundation Alternatives (BDR)

(To be done by the Department)

Evaluation and selection of foundation alternative, including the following:

- Spread footings
- Prestressed concrete piling - various sizes
- Steel H- piles
- Steel pipe piles
- Drilled shafts

Foundation analyses shall be performed using approved DEPARTMENT methods. Assist in selection of the most economical, feasible foundation alternative.

30.35 Detailed Analysis of Selected Foundation Alternate(s)

(To be done by the Department)

Detailed analysis and basis for the selected foundation alternative. Foundation analyses shall be performed using approved DEPARTMENT methods and shall include:

- For pile and drilled shaft foundations, provide graphs of ultimate axial soil resistance versus tip elevations. Calculate scour resistance and/or downdrag (negative skin friction), if applicable.
- CONSULTANT shall assist the Engineer of Record in preparing the Pile Data Table (including test pile lengths, scour resistance, downdrag, minimum tip elevation, etc.)
- Provide the design soil profile(s), which include the soil model/type of each layer and all soil-engineering properties required for the Engineer of Record to run the FBPier computer program. Review lateral analysis of selected foundation for geotechnical compatibility.
- Shallow foundation bearing capacity (including soil bearing capacity, minimum footing width, and minimum embedment depth).
- Estimated maximum driving resistance anticipated for pile foundations.
- Provide settlement analysis.

30.36 Bridge Construction and Testing Recommendations

(Not applicable to this contract)

Provide construction and testing recommendations including potential constructability problems.

30.37 Lateral Load Analysis (Optional)

(To be done by the Department)

Perform lateral load analyses as directed by the DEPARTMENT.

30.38 Walls (gravity walls, outfalls, etc.)

(To be done by the Department, unless there is stormwater runoff involvement)

Provide the design soil profile(s), which include the soil model/type of each layer and all soil engineering properties required by the Engineer of Record for conventional wall analyses and recommendations. Review wall design for geotechnical compatibility and constructability.

Evaluate the external stability of conventional retaining walls and retained earth wall systems. For retained earth wall systems, calculate and provide minimum soil reinforcement lengths versus wall heights, and soil parameters assumed in analysis. Estimate differential and total (long term and short term) settlements. Provide wall construction recommendations.

30.39 Sheet Pile Wall Analysis (Optional)

(If included in the task work order)

Analyze sheet pile walls as directed by the DEPARTMENT.

30.40 Soil Parameters for Signs, Signals, High Mast Lights, and Strain Poles and Geotechnical Recommendations

(Not applicable, but to be done by the Department, unless stated in the task work order.)

Provide the design soil profile(s) that include the soil model/type of each layer and all soil properties required by the Engineer of Record for foundation design. Review design for geotechnical compatibility and constructability.

30.41 Box Culvert Analysis

(As per task work order)

- Provide the design soil profile(s) that include the soil model/type of each layer and all soil properties required by the Engineer of Record for foundation design. Review design for geotechnical compatibility and constructability.
- Provide lateral earth pressure coefficients.
- Provide box culvert construction and design recommendations.
- Estimate differential and total (long term and short term) settlements.
- Evaluate wingwall stability.

30.42 Preliminary Report – BDR

(Not applicable, unless provided by the Department)

The preliminary structures report shall contain the following discussions as appropriate for the assigned project:

- Copies of U.S.G.S. and S.C.S. maps with project limits shown.
- Summary of structure background data, SCS, USGS, geologic and potentiometric data.
- The results of all tasks discussed in the previous section (Data Interpretation and Analysis).
- Recommendations for foundation installation, or other site preparation soils-related construction considerations with plan sheets as necessary.
- Any special provisions required for construction that are not addressed in the DEPARTMENT's Standard specification.
- An Appendix which includes SPT and CPT boring/sounding profiles, data from any specialized field tests, engineering analysis, notes/sample calculations, sheets showing ultimate bearing capacity curves versus elevation for piles and drilled shafts, a complete FHWA check list, pile driving records (if available), and any other pertinent information.

30.43 Final Report - Bridge and Associated Walls

(Not applicable, unless provided by the Department)

The final structures report shall include the following:

- Copies of U.S.G.S. and S.C.S. maps with project limits shown.
- Summary of structure background data, SCS, USGS, geologic and potentiometric data.
- The results of all tasks discussed in the previous section (Data Interpretation and Analysis).
- Recommendations for foundation installation, or other site preparation soils-related construction considerations with plan sheets as necessary.
- Any special provisions required for construction that are not addressed in the DEPARTMENT's Standard specification.
- An Appendix which includes SPT and CPT boring/sounding profiles, data from any specialized field tests, engineering analysis, notes/sample calculations, sheets showing ultimate bearing capacity curves versus elevation for piles and drilled shafts, a complete FHWA check list, pile driving records (if available), and any other pertinent information.

30.44 Final Reports - Box Culvert, Walls (Outfalls, etc.)

The final reports shall include the following:

- Copies of U.S.G.S. and S.C.S. maps with project limits shown.
- Summary of structure background data, SCS, USGS, geologic and potentiometric data.
- The results of all tasks discussed in the previous section (Data Interpretation and Analysis).
- Recommendations for foundation installation, or other site preparation soils-related construction considerations with plan sheets as necessary.
- Any special provisions required for construction that are not addressed in the DEPARTMENT's Standard specification.
- An Appendix which includes SPT and CPT boring/sounding profiles, data from any specialized field tests, engineering analysis, notes/sample calculations, sheets showing ultimate bearing capacity curves versus elevation for piles and drilled shafts, a complete FHWA check list, pile driving records (if available), and any other pertinent information.

Final reports will incorporate comments from the DEPARTMENT and contain any additional field or laboratory test results, recommended foundation alternatives along with design parameters and special provisions for the contract plans. These reports will be submitted to the District Geotechnical Engineer for review prior to project completion. After review by the District Geotechnical Engineer, the reports will be submitted to the District Geotechnical Engineer in final form and will include the following:

- All original plan sheets (11" x 17")
- One set of all plan and specification documents, in electronic format, according to Department requirements
- Two sets of record prints
- Six sets of any special provisions
- All reference and support documentation used in preparation of contract plans package

Additional final reports (up to four), aside from stated above, may be needed and requested for the DEPARTMENT's Project Manager and other disciplines.

The final reports, special provisions, as well as record prints, will be signed and sealed by a Professional Engineer registered in the State of Florida.

Draft the detailed boring/sounding standard sheet, including environmental classification, results of laboratory testing, and specialized construction requirements, for inclusion in final plans.

30.45 Drafting

Prepare a complete set of drawings to include all SPT borings, auger borings and other pertinent soils information in the plans. Include these drawings in the Final Geotechnical Report. Draft borings, location map, S.C.S. map and U.S.D.A. map as directed by the DEPARTMENT. Soil symbols must be consistent with those presented in the latest Florida Department of Transportation Soils and Foundations Handbook.

SPT borings are required on all projects where Exfiltration trenches as French drains or deep excavations are expected on a specific project.

30.46 Other Geotechnical

Define

30.47 Technical Special Provisions

30.48 Field Reviews

Identify and note surface soil and rock conditions, surface water conditions and locations, and preliminary utility conflicts. Observe and note nearby structures and foundation types.

30.49 Technical Meetings

30.50 Quality Assurance/Quality Control

30.51 Supervision

30.52 Coordination

30.53 Optional Preliminary Contamination Assessment

(Not Applicable To This Contract)
If required, it should be done by the Department unless noted otherwise.

When required, all work shall be performed in accordance with current Florida Department of Environmental Regulation (DER) and Federal OSHA and EPA standards. The following work shall be included, but not limited to:

- A minimum of four borings will be required per site.
- Soil gas analysis will be required by use of a flame ionization detector; e.g. Organic Vapor Analyzer (OVA).
- Installation of monitoring wells may be required.
- Water sampling and laboratory analysis may be required. The State of Florida Department of Health shall certify the laboratory performing the analysis.

- Four copies of the draft PCA report will be required for review and comment by the Department. After comments have been addressed, six signed and sealed copies of the final PCA report shall be submitted to the Department. Copies of all documents will be additionally transmitted to the Department in electronic format in accordance with the Department's current standards.

31 ARCHITECTURE DEVELOPMENT (THIS WORK ASSIGNMENT MUST BE DONE BY A STRUCTURAL, MECHANICAL & ELECTRICAL ENGINEERS)

(Not Applicable in the majority of the cases to this Contract, but if stormwater pumps design are required, then architectural and civil site plan may be required.)

PHASE I - 30% DESIGN DEVELOPMENT

After receipt of written authorization to proceed from the DEPARTMENT and based on the approvals and any authorized adjustments to the Project Scope, Project Schedule or Budget, the Design Professional shall prepare, submit and present for approval by the DEPARTMENT, Phase I (30%) documents, comprised of, but not limited, to the following:

Documents

- Architectural and Civil site plan(s) showing, in addition to site survey requirements, landscaping, drainage lines, water retention ponds, sewage disposal and storm water supply system, chilled water supply and return piping and such physical features that may adversely affect or enhance the safety, health, welfare, visual environment, or comfort of the occupants.
- A statement on the site plan signed and dated by the Design Professional or his designated SUB-CONSUNTANT, including identifying the number of existing trees, the number and size of required trees, and the number of proposed trees to be planted, and other relevant features.
- Soil testing results including a copy of the Geotechnical Engineer's report on the site, and proposed method of treatment when unusual soil conditions or special foundation problems are indicated.

Drawing(s) to include as a minimum, the following deliverables:

- Floor plan drawn at an architectural scale that will allow the entire facility to be shown on one sheet, without break lines, and which indicates project phasing as applicable to the Scope.
- Floor plans drawn at 1/8 inch or larger scale showing typical occupied spaces or special rooms with dimensions, sanitary facilities, stairs, elevators, identification of accessible areas for the disabled and other program requirements.
- Floor plans drawn at 1/4 inch or larger scale showing typical spaces or special rooms with dimensions, indicating door and window layouts and other relevant features.
- For alterations or additions to an existing facility: Indicate the connections and tie-ins

to the existing facilities, including all existing spaces, exits, plumbing fixtures and locations and any proposed changes thereto. Distinguish between new and existing areas for renovation, remodeling, or an addition and show demolition plans of areas to be removed.

- Furniture and Equipment plans drawn at 1/4 inch or larger scale showing typical spaces or special rooms with dimensions, equipment and furnishing layouts and other relevant features.
- Reflected ceiling plans drawn at 1/4 inch or larger scale showing typical spaces or special rooms with dimensions, lighting equipment and ceiling panel layouts.
- Roof and miscellaneous plans to be drawn at 1/8 inch or larger scale showing dimensioned features penetrations, equipment and other relevant features.
- Plumbing fixture locations and fixture unit calculations, isometrics, one line diagram and riser details, schedule and other relevant features.
- All exterior building elevations to illustrate and indicate the scale, finish, size and detail of the facility.
- Sufficient building and wall sections to show dimensions, proposed construction material, and relationship of finished floor to finished grades.
- Preliminary Structural Drawings to include plans and sections indicating systems, connections and foundations.
- **Mechanical Drawings** to include ceiling plans with a single line duct layout, location of grease trap(s), LP gas tank location, natural gas piping to existing utilities. Provide narrative description to include a description of proposed HVAC system equipment including the chiller, storm pumps, and pipe connections layouts, AHUs, cooling tower, electric duct heaters and other relevant features.
- **Electrical Drawings** include plans with lighting layouts for outdoors and interior spaces, and a single-line diagram of the electrical distribution and electrical outlets for all spaces. Provide layout for energy management, computer networking and security systems, and show location of all the main components of the electrical system, transformers, panels, main switchboard, emergency generator, intercom console and fire alarm panel. Also show locations of mechanical equipment such as chillers, compressors and air handler units and their respective electrical connections and other relevant features.
- Equipment and Furnishing Schedules to indicate equipment that will be provided by the Contractor and those that will be provided by the DEPARTMENT or others.
- Life-Safety plans to show exit strategy, rated doors, emergency wall openings, range and fume hoods, eye wash, emergency showers, ramps, vertical lifts, and other relevant features.
- By symbol, indicate fire extinguishers, fire alarm equipment, smoke vents, master valves and emergency disconnects, emergency lighting, emergency power equipment, fire sprinklers, exit signs, smoke and fire dampers, and other life-safety equipment relevant to the facility.

- By symbol, indicate connections and tie-ins to existing equipment.

For existing facilities where remodeled or renovated spaces are required and where an ADA and code conforming ramp cannot be utilized, document proposed vertical platform lifts or inclined wheelchair lifts and provide the following documents as part of or in addition to the required life safety plans:

- Floor plans of proposed vertical platform lifts including layout drawings showing corridor widths and exiting from the affected facility.
- Sketches of proposed inclined wheel chair lift to include layout drawings showing clear and affected areas of the following conditions stairway width in the folded and unfolded position, the upper and lower platform storage locations, and the means of egress from the affected areas of the facility.

Outline Specifications

- Organized to conform to the formats for outline specifications as established by the Construction Specifications Institute's current edition of Master Format on the date of execution of the Contract.
- Complete for Divisions 2 through 16 for finishes, material, and systems including civil, structural, HVAC, electrical, plumbing and specialty items, including fire sprinklers, alarm systems, electronic controls and computer networking components.

Other Requirements

- Provide a Life-Cycle Cost Analysis (LCCA) for review and approval. LCCA shall be by a commercially available life-cycle cost analysis program and as required by the State of Florida and the DEPARTMENT.
- Deign to meet or exceed Florida Energy Efficiency Code for Building Construction (FEEC). Submit completed FEEC forms, including calculations for mechanical systems, documenting energy efficiency ratio rating of HVAC equipment, electrical systems, insulation, and building envelope shall be submitted to the DEPARTMENT for review and approval.
- The Design Professional shall advise the DEPARTMENT of any adjustments to the budget and shall submit a fully detailed Phase I estimate of probable construction cost, projected to the expected time of bid and containing sufficient detail to provide information necessary to evaluate compliance with the Construction Budget set for this project. Format estimate and provide detail matching the organization and content of the project's Outline Specifications complete for Divisions 2 through 16.
- Provide an updated Project Development Schedule reflecting development and anticipated schedules for all subsequent project activities.
- A letter indicating, the extent of any known or suspected asbestos containing materials or other potentially hazardous materials which might require mitigation by the Owner prior to or during construction of the Project. Establish and confirm responsibility for removing the asbestos or other hazardous materials in the design

development documents and coordinate with Project Development Schedule, Statement of Probable Construction Cost and other documentation.

- Preliminary color boards to review two color selection schemes.

Staff from each of the Design Professional's major technical disciplines, and subconsultants shall attend coordination, review and presentation meetings with the Owner to explain the design concept and technical resolution of their respective building or site systems.

The Design Professional shall submit five (5) sets of all documents required under this phase without additional charge, for approval by the Owner. The Design Professional shall not proceed with the next phase until the completion of all required presentations and reports and receipt of a written Authorization to Proceed with the next phase.

PHASE II - 60% DOCUMENTS:

After written authorization to proceed from department and based on the approved phase I documents, and any adjustments in the scope or quality of the project or in the fixed limit of construction cost authorized by department, the design professional shall prepare for approval by department, phase II (60% construction) documents setting forth in detail the requirements for the construction of the project. The design professional is responsible for the full compliance of the design with all applicable codes. Phase II documents comprised of, but not limited to, the following:

Documents

- Updated Florida Energy Efficiency Code for Building Construction (FEEC) compliance forms.
- Calculations: Provide preliminary calculations for structural, mechanical and electrical systems.

Drawings

- Site Plan(s) and detailing which, in addition to the Phase I requirements, indicate the following:(Some of these items below N/A under this contract)
- Spot elevations, based on the civil grading plan, for the perimeter of the new construction, sidewalk, or any other areas pertinent to the drainage of rainwater.
- Location of storm water service for new construction roof drainage.
- Parking lot lighting poles, location and type.
- Final locations for manholes, handholds, pull boxes.
- Layout of underground distribution systems (normal power emergency power, fire alarm, master clock, intercommunication, television, telephone, security, control and spares).
- Locations of all site improvements, playground and equipment, street furniture, planters and other features.

- Details of all curbing, typical parking spaces (regular and handicap accessible), handicap ramps, directional signage, site lighting, flagpole and fence foundations, and any other site conditions pertinent to the scope of work.

A plan to delineate staging areas, site barriers, and other area designations to control the public from construction activities and traffic.

Landscape plans and details including, a plant list clearly noted and cross-referenced, details for shrub and tree plantings, identification of plants and trees to remain, to be removed or relocated, and other necessary documentation. (N/A to the CONSULTANT)

Irrigation plans and details delineating the entire area of the project, and addressing necessary connections, alteration, repair or replacement of any existing irrigation.(N/A to the CONSULTANT)

Floor plans to include the following:

- All dimensions and any cross references explaining the extent of work, wall types, or other component, assembly or direction regarding the Construction.
- Wall chases, floor drains and rainwater leaders.
- Show structural tie columns and coordinate with the floor plan.
- Cross referenced interior elevations.
- Delineate and note all built-in cabinetry or equipment.
- Identify room and door numbers with all doors having individual numbers.

Demolition Plans

- Indicate required demolition activities.
- Provide separate demolition plan(s) and other drawings (elevations, sections, etc.) if the scope of work includes demolition which is too excessive to indicate in drawings depicting new construction.
- Indicate notes on the extent of the demolition: address dimensions at locations where partial walls are being removed or altered, existing room names and numbers, existing partitions, equipment, plumbing, HVAC or electrical elements,
- Include notes dealing with protection of existing areas as a result of demolition.
- Delineate any modifications to existing buildings involving structural elements within the structural documents rather than on the architectural.

Building elevations developed further than at Phase II and including delineation of building joints (including dimensionally located stucco control joints), material locations, elevation height, and other building features.

Building and wall sections to establish vertical controls and construction types. Include clear graphic, and notes on construction assemblies and systems to be used, dimensions,

heights. Provide, associated detailing to delineate solutions for difficult connections.

Reflected ceiling plans to indicate ceiling types, heights, light fixture types, mechanical diffuser and return location, and sprinkler heads if area is sprinklered. Delineate and detail any dropped soffits or joint conditions between different materials. Coordinate with architectural, electrical, mechanical, and plumbing disciplines.

Roof Plans (Used this item, if specifically related to storm drains related problems and as per task work order)

- Indicate all roof penetrations, including drains, scuppers, exhaust fans, and any other equipment on the roof. Show direction of roof slopes with elevations at the high and low points, type of roofing system to be used, expansion joints, typical parapet, and flashing details.
- Provide dimensions to locate all penetrations and cross-reference details.

Large scale building details as appropriate to this level of document development and as required to establish vertical controls for the Project. Include clear graphics and notes on construction assemblies and systems to be used, and dimensions and heights. Provide associated detailing to delineate solutions for difficult connections.

Interior elevations of all rooms including cross references of cabinetry details, dimensions and heights, notes indicating type of equipment (and whether equipment is in or out of contract), wall materials, finishes, and classroom equipment, and accessories.

Details of casework as necessary to appropriately delineate custom or pre-manufactured casework. Provide appropriate schedules referencing manufacturer's numbers or catalogs, finishes, hardware, and other construction characteristics.

Details of the following:

- Door jamb, head and sill conditions.
- Wall and partition types.
- Window head, sill and jamb conditions, and anchorage methods shown, in lieu of referencing to manufacturer's standards.
- Interior signage to include classroom and building identification, emergency exiting and equipment signs, and any other items pertinent to the identification of the project. Coordinate with electrical discipline.
- Interior and exterior expansion control connections.
- Any other specialized items necessary to clearly express the intent of the project design.
- Room finishes and door schedules coordinated with the floor plans, developed to 60% completion.
- Structural foundation and framing plans, with associated diagrams, schedules, notes,

detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.

Mechanical Drawings (Prepared by a Mechanical Engineer)

- Provide double line ductwork layout and HVAC equipment layout drawings with related diagrams and schematic diagrams, schedules, notes, detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.
- Provide plumbing equipment, and fixture drawings with related diagrams, schedules, notes, detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.
- Provide dimensioned 1/2 inch scale plans, elevations and sections of the mechanical rooms showing service, clearance, room openings, nominal equipment size, ceiling height, duct clearance between bottom of joist and top of ceiling and any ceiling mounted lighting fixtures, electrical equipment or other building assembly or component, etc.

Electrical (Prepared by an Electrical Engineer)

Provide drawings for the following systems:

- Lighting including, circuiting and luminaire identification and switching. Also provide illuminance computer print out for all indoor typical indoor spaces and parking lots.
- Convenience outlets and circuiting, special outlets and circuiting, and power systems and equipment. Provide riser diagrams for all electrical systems including master clock, intercom, fire alarm, ITV, computer networking/telephone. Also, provide for emergency and normal power distribution. Provide light fixture schedule.
- Panel schedule may be in preliminary form but circuitry must be included.
- Applicable installation details.
- General legend and list of abbreviations.
- Voltage drop computations for all main feeders.
- Short circuit analysis
- Provide 1/2" scale floor plan and wall elevations for all electrical rooms.
- Indicate surge protector for main switchboard and electrical panels.

Specifications

- Provide preliminary Project Manual including front-end documents. Completion of fill-in items in Bidding documents and other "Division 0"documents is not required.
- Provide a preliminary Division 1 based upon the standard documents provided by the Owner and edited by the Design Professional after consultation with the Owner to establish project specific requirements.

- Include progress set of all other Sections in Divisions 2-16 with each section developed to demonstrate to the Owner an understanding of the project and an appropriate level of developmental progress comparable to that of the drawings.
- Specification sections shall be organized to follow the Construction Specification Institute's (CSI) current edition of Master Format with each section developed to include CSIs standard 3-part section and page formats with full paragraph numbering.

An updated Project Development Schedule, formatted as a preliminary construction schedule reflecting continued Project development and illustrating anticipated schedules for all subsequent project activities including permitting and submittal coordination with all agencies having jurisdiction on the Project, project phasing, site, mobilization, temporary facilities, general construction sequencing, anticipated substantial completion dates, DEPARTMENT occupancy, and all other significant Project events.

Colorboards illustrating color selections, finishes, textures and aesthetic qualities for all finish materials for final review and approval by the DEPARTMENT, and to establish a final palette of material selections for development of subsequent specifications, schedules and other requirements for incorporation into the Contract Documents.

A letter from the Design Professional and each of the major technical disciplines and any necessary subconsultants or explaining how each previous comment concerning the project has been addressed or corrected.

Staff from each of the Design Professional's major technical disciplines, and subconsultants shall attend coordination, review and presentation meetings with the Owner to explain the design concept and technical resolution of their respective building or site systems.

The Design Professional shall submit five (5) sets of all documents required under this phase without additional charge, for approval by the Owner. The Design Professional shall not proceed with the next phase until the completion of all required presentations and reports and receipt of a written Authorization to Proceed with the next phase.

PHASE III - 100% CONSTRUCTION DOCUMENTS SUBMITTAL

After written Authorization to Proceed from DEPARTMENT and based on the approved Phase II documents and any adjustments in the scope or quality of the project or in the Fixed Limit of Construction Cost authorized by DEPARTMENT, the Design Professional shall prepare for approval by DEPARTMENT, Phase III (100% Construction) Documents setting forth in detail the requirements for the construction of the Project. The Design Professional is responsible for the full compliance of the design with all applicable codes. Phase III documents are to be comprised of, but not limited to, the following:

General Requirements

- Updated Florida Energy Efficiency Code for Building Construction (FEEC) compliance forms. Submit five (5) copies signed and sealed by a State of Florida registered design professional.

- Signed and Sealed/Statements of Compliance: Only complete documents, properly signed and sealed by the Project Consultant and respective subconsultants, will be accepted for review; in addition, these documents shall contain a statement of compliance by the architect or engineer of record as follows: "To the best of my knowledge and belief these drawings, and the project manual are complete, and comply with the Department of Transportation Requirements".
- Submit engineering calculations for mechanical, electrical, and structural systems in a separately bound manual.

Drawings

The drawings shall include all previous phase review requirements, and the Phase III 100% document requirements specified above, along with the following:

- Site plans including, but not limited to, area location map, legal description of property, demolition, excavation, utilities, finish grading, landscaping, mechanical, electrical, civil/structural, and architectural site plans:
- Drawings include at a minimum, the following:
- Key sheets including a table of contents and statement of compliance by the design professional. Each discipline shall have a list of abbreviations, schedule of material indications, and schedule of notations and symbols at the beginning of their section of the plans.
- Architectural drawings including floor plans, door, window and finish schedules, roof plans, elevations, sections, and details.
- Civil/Structural drawings including paving, traffic loops, service drives, parking; drainage; foundation plans; floor plans; roof plans; structural plans; sections; details; and, pipe, culvert, beam and column schedules.
- Mechanical drawings including floor plans; sections; details; riser diagrams; kitchen exhaust hoods; and, equipment, fan, and fixture schedules.
- Electrical drawings including floor plans; sections; details; riser diagrams, and fixture and panel schedules.
- The drawings should indicate that the approved mechanical/electrical systems, from the previous phases FEEC/LCCA analysis, have been incorporated into the documents.

Staff from each of the Design Professional's major technical disciplines, and subconsultants shall attend coordination, review and presentation meetings with the Owner to explain the design concept and technical resolution of their respective building or site systems.

The Design Professional shall submit five (5) sets of all documents required under this phase without additional charge, for approval by the Owner. The Design Professional shall not proceed with the next phase until the completion of all required presentations and reports and receipt of a written Authorization to Proceed with the next phase.

PHASE IV FINAL CONSTRUCTION DOCUMENTS SUBMITTAL:

After written Authorization to Proceed from DEPARTMENT and based on the approved Phase III documents and any adjustments in the scope or quality of the project or in the Fixed Limit of Construction Cost authorized by DEPARTMENT, the Design Professional shall prepare for approval by DEPARTMENT, Phase IV (Final Construction) Documents setting forth in detail the requirements for the construction of the Project: The Design Professional is responsible for the full compliance of the design with all applicable codes. Phase IV documents are to be comprised of, but not limited to, the following:

General Requirements

- This submittal is the official record set and shall be the bid documents.
- Signed and Sealed/Statements of Compliance: Only complete documents, properly signed and sealed by the Project Consultant and respective subconsultants, will be accepted for review; in addition, these documents shall contain a statement of compliance by the architect or engineer of record as follows: "To the best of my knowledge and belief these drawings, and the project manual are complete, and comply with the DEPARTMENT of Transportation Requirements".
- Submit engineering calculations for mechanical, electrical, and structural systems in a separately bound manual.

Drawings

The drawings shall include all previous phase review requirements and the Phase IV final document requirements specified above, along with the following:

- Site plans including, but not limited to, area location map, legal description of property, demolition, excavation, utilities, finish grading, landscaping, mechanical, electrical, civil/structural, and architectural site plans:
- Drawings include at a minimum, the following:
- Key sheets including a table of contents and statement of compliance by the design professional. Each discipline shall have a list of abbreviations, schedule of material indications, and schedule of notations and symbols at the beginning of their section of the plans.
- Architectural drawings including floor plans, door, window and finish schedules, roof plans, elevations, sections, and details.
- Civil/Structural drawings including paving, traffic loops, service drives, parking; drainage; foundation plans; floor plans; roof plans; structural plans; sections; details; and, pipe, culvert, beam and column schedules.
- Mechanical drawings including floor plans; sections; details; riser diagrams; kitchen exhaust hoods; and, equipment, fan, and fixture schedules.
- Electrical drawings including floor plans; sections; details; riser diagrams, and fixture and panel schedules.

- The drawings should indicate that the approved mechanical/electrical systems, from the previous phases FEEC/LCCA analysis, have been incorporated into the documents.

Upon completion of the Final Construction Documents, the Design Professional shall submit to the Owner five (5) copies of the Drawings, Specifications, reports, programs, a final up dated Project Development Schedule, a final up-dated Statement of Probable Construction Cost and such other documents as reasonably required by Owner.

All documents for this phase shall be provided in both hard copy and in electronic media. The DEPARTMENT will approve Phase IV documents for submission to the DEPARTMENT for review and approval.

31.1 General Notes, Abbreviations, Symbols, and Legends

31.2 Civil Site Plan

31.3 Site Work Details

31.4 Grading Plans

31.5 Utilities Plans

31.6 Utilities Details

31.7 Horizontal Control Plan

31.8 Repetitive Sheets

31.9 Other Pertinent Project Documentation

31.10 Cost Estimate

31.11 Technical Special Provisions Package

31.12 Field Reviews

31.13 Technical Meetings

31.14 Quality Assurance/Quality Control

31.15 Independent Peer Review

31.16 Supervision

31.17 Key Sheet and Index of Sheets

31.18 General Notes, Abbreviations, Symbols, and Legend

31.19 Life Safety Plan(s)

31.20 Site Plan(s)

31.21 Floor Plan(s) (small scale)

31.22 Floor Plan(s) (large scale)

31.23 Exterior Elevation(s)

31.24 Roof Plan(s)

31.25 Roof Details

31.26 Interior Elevation(s)

31.27 Rest Room Plan(s) (Enlarged)

31.28 Rest Room Elevation(s)

31.29 Building Section(s)

31.30 Reflective Ceiling Plan(s)

31.31 Room Finish Schedule

31.32 Door Finish Schedule

31.33 Door Jamb Detail(s)

31.34 Exterior Wall Section(s)

31.35 Interior Wall Section(s)

31.36 Overhead Door Detail(s)

31.37 Curtain Wall Detail(s)

31.38 Fascia, Soffit and Parapet Details

31.39 Signage Detail(s)

31.40 Miscellaneous Detail(s)

31.41 Repetitive Sheets

31.42 Design Narrative Reports

31.43 Permitting

31.44 Other Pertinent Project Documentation

31.45 Cost Estimate

31.46 Technical Special Provisions Package

31.47 Field Reviews

31.48 Technical Meetings

31.49 Quality Assurance/Quality Control

31.50 Independent Peer Review

31.51 Supervision

31.52 General Notes, Abbreviations, Symbols, and Legend

31.53 Foundation Plan(s) (Small Scale)

31.54 Foundation Plan(s) (Large Scale)

31.55 Slab Plan(s) (Small Scale)

31.56 Slab Plan(s) (Large Scale)

31.57 Slab Placement Plan(s)

31.58 Slab Placement Detail(s)

31.59 Foundation Section(s)

31.60 Foundation Detail(s)

31.61 Slab Section(s)

31.62 Slab Detail(s)

31.63 Roof Framing Plan(s) (Small Scale)

31.64 Roof Framing Plan(s) (Large Scale)

31.65 Roof Loading Plan(s) and Detail(s)

31.66 Roof Section(s)

31.67 Roof Detail(s)

31.68 Bearing Wall Section(s)

31.69 Bearing Wall Detail(s)

31.70 Column Section(s)

31.71 Column Detail(s)

31.72 Miscellaneous Sections

31.73 Repetitive Sheets

31.74 Other Pertinent Project Documentation

31.75 Cost Estimate

31.76 Technical Special Provisions Package

31.77 Field Reviews

31.78 Technical Meetings

31.79 Quality Assurance/Quality Control

31.80 Independent Peer Review

31.81 Supervision

31.82 General Notes, Abbreviations, Symbols, Legend, and Code Issues

31.83 Plan(s) (Small Scale)

31.84 Plan(s) (Large Scale)

31.85 Detail(s)

31.86 Section(s)

31.87 Piping Schematic(s)

31.88 Control Plan(s)

31.89 Schedule(s)

31.90 HVAC Calculations

31.91 Life Cycle Cost Analysis

31.92 Repetitive Sheets

31.93 Other Pertinent Project Documentation

31.94 Cost Estimate

31.95 Technical Special Provisions Package

31.96 Field Reviews

31.97 Technical Meetings

31.98 Quality Assurance/Quality Control

31.99 Independent Peer Review

31.100 Supervision

31.101 General Notes, Abbreviations, Symbols, Legend, and Code Issues

31.102 Plan(s) (Small Scale)

31.103 Plan(s) (Large Scale)

31.104 Isometric(s)

31.105 Riser Diagram(s)

31.106 Detail(s)

31.107 Repetitive Sheets

31.108 Other Pertinent Project Documentation

31.109 Cost Estimate

31.110 Technical Special Provisions Package

31.111 Field Reviews

31.112 Technical Meetings

31.113 Quality Assurance/Quality Control

31.114 Independent Peer Review

31.115 Supervision

31.116 General Notes, Abbreviations, Symbols, Legend, and Code Issues

31.117 Fire Protection Plan

31.118 Riser Diagram, Details, and partial Plans

31.119 Hydraulic Calculation

31.120 Repetitive Sheets

31.121 Other Pertinent Project Documentation

31.122 Cost Estimate

31.123 Technical Special Provisions Package

31.124 Field Reviews

31.125 Technical Meetings

31.126 Quality Assurance/Quality Control

31.127 Independent Peer Review

31.128 Supervision

31.129 General Notes, Abbreviations, Symbols, Legend, and Code Issues

31.130 Electrical Site Plan

31.131 Lighting Plan(s)

31.132 Lighting Fixtures Schedule(s)

31.133 Lighting Fixtures Detail(s)

31.134 Lightning Protection Plan(s)

31.135 Lightning Protection Details

31.136 Power Plan(s)

31.137 Power Distribution Riser Diagram(s)

31.138 Panel Board Schedule(s)

31.139 Data Plan(s)

31.140 Data Detail(s)

31.141 Communication Plan(s)

31.142 Communication Detail(s)

31.143 Security Alarm System Plan(s)

31.144 Miscellaneous Detail(s)

31.145 Repetitive Sheets

31.146 Energy Analysis

31.147 Other Pertinent Project Documentation

31.148 Cost Estimate

31.149 Technical Special Provisions Package

31.150 Field Reviews

31.151 Technical Meetings

31.152 Quality Assurance/Quality Control

31.153 Independent Peer Review

31.154 Supervision

31.155 Coordination

32.0 NOISE IMPACT DESIGN ASSESSMENT

Not applicable to this contract.

33 PROJECT REQUIREMENTS

33.1 Liaison Office

The DEPARTMENT and the CONSULTANT will designate a Liaison Office and a Project Manager who shall be the representative of their respective organizations for the Project. While it is expected the CONSULTANT shall seek and receive advice from various state, regional, and local agencies, the final direction on all matters of this project remain with the DEPARTMENT Project Manager.

33.2 Key Personnel

The CONSULTANT's work shall be performed and directed by the key personnel identified in the proposal presentations by the CONSULTANT. Any changes in the indicated personnel shall be subject to review and approval by DEPARTMENT. The CONSULTANT personnel involved in each task may be involved directly with the DEPARTMENT's Project Manager at any time by telephone or in person and the CONSULTANT Project Manager designated as a Liaison Project Manager must be notified at all times.

The DEPARTMENT's Project Manager has full accessibility to contact any of the engineers assigned to work on any of the task work orders at any time without being restricted to talk only with the assign CONSULTANT Project Manager.

In-House Staffing

The CONSULTANT shall be able to provide in-house staff or add a person to work onsite in the office of the Department's Project Manager to assist the Drainage Office from the District-wide Drainage Design Consultant Design Services Contract/Agreement to help handle requests from Directors and overwhelming work activities applicable to this contract. This assigned person will serve as a liaison between the Drainage Office and other internal offices of the Department.

Additionally, this In-House Staff person will be able to provide support in the preparation of draft letters of response, documents, project reviews with drainage involvement and close coordination with South and North Dade Maintenance Offices.

FDOT will provide access to the FDOT's computer system and softwares needed

to accomplish work task assignments as necessary. FDOT will provide an office space for the Consulting Engineer staff member to be able to perform the required work.

The support In-House staff will be required as needed by the FDOT Project Manager for this support services under this contract.

33.3 Progress Reporting

The CONSULTANT shall meet with the DEPARTMENT as required and shall provide a written progress and schedule status reports that describe the work performed on each task. Progress and schedule status reports shall be delivered to the DEPARTMENT concurrently with the monthly invoice. The Project Manager will make judgment on whether work of sufficient quality and quantity has been accomplished by comparing the reported percent complete against actual work accomplished.

33.4 Correspondence

Copies of all written correspondence between the CONSULTANT and any party pertaining specifically to this contract shall be provided to the DEPARTMENT for their records within one (1) week of the receipt or mailing of said correspondence.

33.5 Professional Endorsement

The CONSULTANT shall have a Registered Professional Engineer in the State of Florida sign and seal all reports, documents, and plans as required by DEPARTMENT standards.

33.6 Computer Automation

The project will be developed utilizing Computer Aided Drafting and Design (CADD) systems. The DEPARTMENT makes available software to help assure quality and conformance with policy and procedures regarding CADD. It is the responsibility of the CONSULTANT to meet the requirements in the DEPARTMENT's CADD Manual. The CONSULTANT will submit final documents and files as described therein.

33.7 Coordination with Other Consultants

The CONSULTANT is to coordinate his work with any and all adjacent and integral consultants so as to effect complete and homogenous plans and specifications for the project(s) described herein.

33.8 Optional Services

At the DEPARTMENT's option, the CONSULTANT may be requested to provide optional services. The fee for these services shall be negotiated in accordance with the terms detailed in Exhibit B, Method of Compensation, for a fair, competitive

and reasonable cost, considering the scope and complexity of the project(s). Additional services may be authorized by Letter of Authorization or supplemental amendment in accordance with paragraph 2.00 of the Standard Consultant Agreement. The additional services may include Construction Assistance as Post-Design Services; Shop Drawings revisions/reviews; Reviews of Bridge Hydraulic Reports including Deck Drainage Calculations and Conveyance System; N.P.D.E.S. activities for assessments of existing drainage infrastructures; Assist the DEPARTMENT in the preparation of N.P.D.E.S. annual reports, GIS data base information; utilization of divers and survey for special drainage structures under water; Preparation of Construction Plans with Drainage Involvement and Drainage Reports for Phases (30%, 60%, 90% and 100%).

34.0 INVOICING LIMITS

Payment for the work accomplished will be in accordance with Method of Compensation of this contract. Invoices shall be submitted to the DEPARTMENT, in a format prescribed by the DEPARTMENT. The DEPARTMENT Project Manager and the CONSULTANT shall monitor the cumulative invoiced billings to insure the reasonableness of the billings compared to the project schedule and the work accomplished and accepted by the DEPARTMENT.

The CONSULTANT will provide a list of key events and the associated total percentage of work considered to be complete at each event. This list will be used to control invoicing. Payments will not be made that exceed the percentage of work for any event until those events have actually occurred and the results are acceptable to the DEPARTMENT.

The Drainage Section has establish a methodology to submit the Scope of Work activities involvement for each task assignment and a simple spreadsheet to be used on each task work order assignment for the PRIME CONSULTANT and any attachments from the SUB-CONSULTANTS involved in each specific task work assignment.

The CONSULTANT must be aware that some task work orders will be assign as per lump sum amount and pay by percentage of work performed until 100% of the work is completed. Other task work orders may be assigned by salary related cost and CONSULTANT must submit backup documentation (timesheets) of hours involved by each personnel assigned before invoices are approved by the DEPARTMENT’s Project Manager in the Consultant Invoice Transmittal System (CITS).

The CONSULTANT must meet with the DEPARTMENT Project Manager once a month to go over the status of Task Work Order Assignments.