**P.E. TRAINEE PROGRAM ENGINEER IN TRAINING PHASE GUIDELINES AND CHECKLISTS**

A. Planning – 1-2 weeks

B. Public Transportation / Modal Development – 1-2 weeks

C. Environmental Management – 2-3 weeks

D. Design (16-20 weeks)

1. Surveying and Mapping – 1-3 weeks
2. Roadway – 4-6 weeks
3. Drainage – 1-3 weeks
4. Traffic Plans and Standards – 1-3 weeks
5. Structures – 4-6 weeks

E. Right of Way Administration – 2-3 week

F. Traffic Operations – 6-8 weeks

G. Construction – 18-22 weeks

H. Materials (District) – 1-3 weeks

I. Materials (Gainesville) – 2 weeks

J. Maintenance – 8-10 weeks

K. Program Management – 1-2 week

**ATTACHMENT A**

TRAINEE:

**PLANNING** (Outline and Checklist)

(1) Transportation Statistics and Data Base

(a) Periodic Traffic Count Program

(b) Continuous Traffic Count Program

(c) Vehicle Classification Program

(d) Turning Movement Counts (TMC)

(e) 18-kip ESAL Analysis & Florida Traffic Online

(f) Roadway Characteristics Inventory

(g) Straight Line Diagrams

(h) Functional Classification & Federal Aid Classification

(i) IView

(j) Highway Performance Monitoring System (HPMS)

(2) Multi-Modal Transportation Planning

(a) Urban Transportation Planning

1. Metropolitan Planning Organization a. MPO's Relationship to DOT

b. Unified Planning Work Program

c. Transportation Improvement Program (TIP)

d. Efficient Transportation Decision Making (ETDM) Process

2. SIS Long Range Transportation Plan Development

3. Access Management in Project Development

(b) Systems Planning

1. Long Range Transportation Plan Development

a. Model Development

(I) Networks

(II) Calibration

(III) Validation

(IV) Forecast

1. Trip Generation
2. Trip Distribution
3. Trip Assignment

(V) Evaluation

(A) Needs Plan

(B) Cost Feasible Plan

2. Project Evaluation

1. Design Traffic

2. Access Management in Project Development

Signed:

Trainee Date

Verified:

Phase Supervisor Date

**ATTACHMENT B**

TRAINEE:

**PUBLIC TRANSPORTATION / MODAL DEVELOPMENT** (Outline and Checklist)

1. Office of Modal Development
   1. Organization Chart
   2. District Relationships
   3. Vision, Mission, Goals
   4. Business Plan Overview
   5. Multimodal Scoping Checklist (MMSC)
   6. Modal Production Overview
2. Aviation
   1. Central Office vs. District Coordinator Roles
   2. District Airports
      1. General Aviation vs. Commercial Service
   3. Aviation Grant Program
   4. Master Planning
      1. Airport Layout Plan
   5. Airspace Regulations
      1. Multimodal Scoping Checklist (MMSC)
   6. Florida Aviation Database
      1. Facility
         1. Documents, FBOs
         2. Disaster Preparedness
      2. JACIP
         1. Work Program
         2. Schedule B
         3. Project Management
         4. Pavement
   7. Airport/Project Visit
   8. Misc.
      1. Towers
      2. EMAS
      3. Customs and Border Protection
      4. Drones
      5. Wildlife
      6. Drainage
3. Seaports
   1. Central Office vs. District Coordinator Roles
   2. District Seaports Overview
   3. Seaport Grant Program (F.S. 311)
   4. Master Plans
   5. Florida Ports Council
   6. Florida Seaport Transportation & Economic Development Program (FSTED)
   7. SeaCIP
      * 1. Work Program
        2. Project Management
   8. Special Projects
      1. Business Plan
   9. Seaport/Project Visit
4. Freight
   1. South Florida Goods Movement Overview
   2. Supply Chain Introduction
      1. (Industry tour if possible)
   3. Trucking Regulatory Overview
      1. FMSCA
      2. FHP
      3. DOT
   4. Introduction to Freight Planning
      1. Roles (FDOT vs SIS Facilities vs MPOs vs RPCs)
      2. FDOT Projects
   5. Program Goals and Funding
      1. Freight Mobility and Trade Plan
      2. SIS
      3. Motor Carrier System Plan
      4. Air Cargo Plan
      5. South Florida Regional Freight Plan
      6. Treasure Coast Freight Component
      7. Area-wide Plans
   6. Work Program Project Review
      1. Freight Facilities Database
      2. Truck Routes
         1. Designated
         2. Undesignated
      3. AADT and T-Factor
      4. 18-Kip ESAL Report (and its projections)
      5. Land Use Considerations
      6. Freight Design Considerations
         1. Final Design
         2. MOT
      7. Stakeholder Outreach Best Practices
         1. Operational
         2. Planning
5. Rail
   1. Overview
      1. Functions
      2. Operational Objectives
   2. Rail Programs
      1. Development
         1. Grade Crossing Safety Projects
         2. Grade Separation
         3. Signal Safety Projects
         4. Commuter Rail Projects
         5. Rail Clear Letter Process
      2. Systems
         1. Rail Corridor overview
      3. Safety
         1. Trespassing
         2. Safety Initiatives
   3. Rail Operations
      1. Agreements
      2. Permits
      3. Reports
   4. Field Trip
      1. Track System
      2. Crossing Signals
      3. Crossing Surfaces
6. Transit
   1. Transit Overview
      1. Office Objectives
      2. Federal/State/Local
      3. Funding/Chapter 341
   2. Transit Development
      1. Program/Budget Development
      2. Application of Innovative Techniques
      3. New Programs for Florida
   3. Transit Operations
      1. Urban: Transit Program
      2. Small Urban/Rural Program
      3. Transportation Disadvantaged Program
      4. Service Support Program
         1. Design Engineering/Criteria
         2. Bus Fleet
         3. Bus Rehabilitation

Signed:

Trainee Date

Verified:

Phase Supervisor Date

**ATTACHMENT C**

TRAINEE:

**ENVIRONMENTAL MANAGEMENT** (Outline and Checklist)

(1) Preliminary Engineering

(a) Advance Notification

(b) Efficient Transportation Decision Making (ETDM) Process

(c) Class of Action Determination and SWAT process

1. Categorical Exclusion

2. Environmental Assessment

3. Environmental Impact Statement

4. State Environmental Impact Report

(d) Preliminary Engineering Report

(e) Public Involvement/Community Impact Assessment

(2) Environmental Impact Analysis

(a) Environmental Documentation

1. Social and Economic Impacts

2. Cultural and Historical Resources

3. Natural and Physical Impacts

(b) Contamination Assessment and Remediation

1. Hazardous Materials

2. Petroleum Contamination

3. Asbestos

(3) Environmental Regulatory Permitting

(a) Federal Agencies

(b) State Agencies

(c) Mitigation

(d) NPDES (to be taken after Drainage)

(4) Commitment Compliance

(a) Environmental Documents

(b) Environmental Permits

Signed:

Trainee Date

Verified:

Phase Supervisor Date

**ATTACHMENT D-1**

TRAINEE:

**DESIGN - SURVEYING AND MAPPING** (Outline and Checklist)

(1) Introduction to Surveying

(a) Expectations/Objectives

(b) Methods/Techniques

(c) Liaison

(2) Surveys

(a) Control/Geodetic

(b) Design

(c) Right of Way

(d) Construction (e) Research

(f) Other

(3) Documents/Maps

(a) Instruments of Conveyance, i.e., Deeds Easements

(b) Title Searches

(c) Maps, i.e., Right of Way Maps, Control Maps, and Maintenance Maps

(d) Legal Descriptions

(e) Other

(4) Quality Assurance/Quality Control

(5) Surveys

Location surveys are conducted to obtain preferred alignment.

Project profiles and project cross-sections are provided after topographic surveys are prepared.

Surveys are necessary for development of final design plans and R/W map.

(6) Title Search

(a) Determines property boundaries and ownership interests and addresses other land title issues on the project. Should begin as soon as possible during the R/W mapping process.

(b) Property boundaries and ownership interests can be identified and platted on the R/W maps once title information is secured.

(7) R/W Maps

(a) Required to initiate the R/W phase of a project and are essential for the accurate appraisal and establishment of full compensation.

(b) R/W mapping can begin with the development of the baseline survey and some preliminary engineering work completed.

(c) As topographic surveys are available, the R/W maps must be updated to reflect more detailed information from the surveys.

(d) As final design reaches 60% completion (R/W limits established), the

preparation of final R/W maps and required legal descriptions for title conveyance documents can begin.

(e) Understand Department’s parcel numbering system.

Signed:

Trainee Date

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated as part of the phase examination administered by the Office of Design.

**ATTACHMENT D-2**

TRAINEE:

**DESIGN - ROADWAY** (Outline and Checklist)

(1) Introduction to Design Guidelines

(a) FDOT Design Manual

(b) AASHTO "A Policy on Geometric Design of Highways and Streets" (c) Design Standard Plans

(d) Standard Specifications

(e) Florida Greenbook

(f) Basis of Estimates Manual

(g) AASHTO “Roadside Design Guide”

(h) MUTCD

(2) Computer Applications

(a) CADD (AutoCAD and MicroStation)

(b) FDOT CADD Software

(3) Project Plans

(a) Survey Details

1. Alignment

2. Topo

3. Groundlines

4. RW Lines

(b) Alignment Determination

1. Horizontal

2. Horizontal Curves

(a) Superelevation

(b) Sight Distance

3. Vertical

(a) Stopping Sight Distance (b) Passing Sight Distance (c) Minimum Gutter Grades

(c) Typical Sections

(d) Cross Sections

(e) Intersections and Interchanges

(f) Drainage Structure Sheets

(g) Earthwork

(h) Temporary Traffic Control

(i) Utility Coordination and Adjustments

(j) Specification Package Development

(k) Quantities/Pay Items/Plans Notes

(4) Pavement Design

(a) Introduction

1. Review of Pavement Design Process

2. Orientation to Supporting Manuals/Procedures

3. Pavement Type Selection Process

Signed:

Trainee Date

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated as part of the phase examination administered by the Office of Design.

**ATTACHMENT D-3**

TRAINEE:

**DESIGN - DRAINAGE** (Outline and Checklist)

(1) Hydrology

(a) Review of Basic Hydrology Concepts

1. Estimating Runoff

2. Site Storage

3. Flood Routing

4. Software

(2) Hydraulics

(a) Estimating Spread

(b) Hydraulic Grade Lines

(c) Urban Storm Sewer Design

(d) Software used for Design

(3) Design Standards

(a) Inlets

1. Ditch Bottom

2. Curb Inlets

(b) Miscellaneous

(4) Scour and Bridge Hydraulics

(5) Pond Siting

(6) Drainage Connection (and Access) Permits

(7) Environmental Permitting

(8) Drainage Inquiries (Flooding Complaints)

Signed:

Trainee Date

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated as part of the phase examination administered by the Office of Design.

**ATTACHMENT D-4**

TRAINEE:

**DESIGN - TRAFFIC PLANS AND STANDARDS** (Outline and Checklist)

(1) Introduction

(a) FDOT Design Manual

(b) Manual of Uniform Traffic Control Devices (MUTCD) (c) Traffic Engineering Manual

(d) Design Standard Plans

(e) FDOT Standard Specifications for Road and Bridge Construction

(f) AASHTO Roadway Lighting Design Guide

(g) AASHTO Standard Specifications for Structural Supports

(2) Computer Applications

(a) Guidesign

(b) AGI32

(3) Project Reviews

(a) Signing and Markings

1. Roadway

2. Intersections

3. Interchanges

4. School

5. Railroad

(b) Lighting

1. Lighting Justification Procedure

2. Conventional Lighting

3. Highmast Lighting

4. External Sign Lighting

(c) Signals

|  |  |  |
| --- | --- | --- |
| 1. | Vehicle Detectors (Type) |  |
| 2. | Signal Operation Plans |  |
| 3. | Controller (Type) |  |
| 4. | Placement of Signal Heads |  |
| 5. | Signal Head Detail |  |
| 6. | Controller Timing |  |
| 7. | Span Wires and Mast Arms |  |
|  | Signed: Trainee | Date |

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated as part of the phase examination administered by the Office of Design.

**ATTACHMENT D-5**

TRAINEE:

**DESIGN - STRUCTURES** (Outline and Checklist)

(1) Orientation

(a) Organization

1. Central Office

2. District Offices

(b) Bridge Components

(c) Reference Documents

1. AASHTO: LRFD Bridge Design Specifications

2. Structures Manual

3. Design Standard Plans for Bridge Construction

(2) Structures Design

(a) Bridge Design

1. Superstructure

2. Substructure

(b) Miscellaneous

1. Retaining Walls

2. Sign Structures

3. Box Culverts

4. Traffic Signal Structures

(3) Plans Review

(a) BDR

(b) Preliminary Plans

(c) Final Plans

(d) Specifications

(e) Estimates

(4) Shop Drawing Review

(a) Administration/Process Review

(b) Component Review

1. Stay-In-Place Forms

2. Sign Structures

3. Structural Steel

4. Pedestrian/Bicycle Railings

5. Expansion Joints

6. Bearings

7. Proprietary Walls

8. Special Drainage Structures

(5) Miscellaneous

(a) Construction Assistance

(b) Field Trips

(c) Computer Applications (d) Maintenance Assistance (e) Moveable Bridges

(f) Architecture

Signed:

Trainee Date

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated as part of the phase examination administered by the Office of Design.

**ATTACHMENT E**

TRAINEE:

**RIGHT OF WAY ADMINISTRATION** (Outline and Checklist)

(1) Central Office: Successful completion of CD-ROM course and exam on Right of Way (R/W) organization and functions in Surveys, Conceptual Stage R/W Planning, R/W Cost Estimates, Title Search, R/W Maps, Appraising, Acquisition, Relocation, and Property Management. Course is available by contacting the Central Office R/W Resource Administrator at 414-4606.

(2) District Office: Assignment of R/W staff by District R/W Manager to observe R/W functions such as negotiation of a parcel or attending a mediation.

**OUTLINE FOR P.E. TRAINING**

R/W Mission Statement: Provide R/W necessary to support the Department’s work program in a cost efficient, high quality manner while ensuring full compensation is paid for all property acquired.

***The following is a general overview of the R/W acquisition process. The R/W phase of a project includes appraisal*, *acquisition, condemnation, relocation, clearing, and certification. Several pre-R/W activities must be completed to initiate this process. This overview is generally in chronological order; however, some R/W activities may be performed concurrently.***

**PRE-R/W ACTIVITIES**

**A. Close coordination between the parties involved in surveying, mapping, design, and R/W acquisition activities is critical to the success of the project.**

**B. Conceptual Stage R/W Planning**

 Developed during (Project Development and Environment) PD&E phase - provides basic information about upcoming R/W phases, such as estimated number of parcels, businesses, relocates, etc.

 Assists in organizing the R/W work effort and improves the accuracy of cost estimates and analysis toward the preferred alignment.

 Can also provide valuable information about the types of parcels to be acquired, the likelihood of business damage claims, the likelihood of litigation, the type and extent of displacements that will occur, and the type and extent of R/W clearing activities.

**C. R/W Cost Estimates**

 Should be prepared in the PD&E phase to assist in alignment and preliminary engineering decisions.

 Any changes in the real estate market, ownership, use, and/or applicable case law should be periodically updated. Updates are also necessary to

recognize severance and business damages that become evident as the preliminary and final design engineering process progresses.

 Identify the anticipated costs of land and severance damages, relocation, business damages, R/W clearing, and attorney fees and costs (also includes estimated in-house staff and consultant costs)

**THE R/W PHASE**

The rights and interests of three separate entities are protected during the right of way process: 1) the property owner(s) interest; 2) the business owner; 3) the displaced resident or business.

If it is a federal-aid project, a request for authorization to proceed with the R/W phase must be made after completion of environmental documentation pursuant to NEPA and completion of R/W maps. A current R/W estimate must accompany the request.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) prescribes certain processes throughout the R/W phase, which are performed in a sequential fashion. Changes in design can affect each of these processes and, subsequently, the R/W schedule. For example, an offer to purchase cannot be made without an appraisal and various relocation notices cannot be given until an offer is made.

**A. Appraisal**

 Appraisals must be prepared for each parcel.

 Appraisals must include an estimate of the fair market value of the land and improvements taken, including severance damages.

 Partial takings:

a. Design requires only a portion of the property owned (parent tract).

b. Appraiser evaluates impact of taking to remaining property—any reduction in value to remainder is severance damages. Engineer’s decision to use a portion of the property impacts the valuation problem.

c. Partial taking also creates potential for business damage claim.

d. Partial takings can result in large monetary claims for severance and business damages.

e. Early participation of R/W experts in the pre-right of way phases can result in reducing or mitigating those damages.

 Appraisal is reviewed and amount of compensation is approved before offer is made to property owner.

 Schedule considerations: 1) time to hire appraiser(s); 2) time to complete appraisals; 3) time to review and approve appraisals.

 The appraisal is revised and the schedule is increased when design changes affecting R/W requirements occur after the appraisal process begins.

**B. Acquisition**

 Statutory requirements for negotiating with a property owner:

a. Negotiate in good faith with owner.

b. Provide written notification of project and recitation of owner’s rights.

c. Provide written offer of approved compensation to purchase the subject property, which may not be less than fair market value as established in approved appraisal.

d. Provide copy of the appraisal report, R/W maps, construction plans, and other documents to the owner, if requested.

e. Attempt, through good faith negotiations, to reach an agreement for the parcel.

f. Reimburse the property owner’s reasonable attorney fees and costs.

 Amount of compensation:

a. Must offer amount for land taken, improvements taken, and severance damages to / cost to cure the remaining property.

b. Business damages to a qualified business may also be required.

c. The property owner’s reasonable attorney fees and costs must also be paid.

 Be aware of the minimum timeframe for negotiations with owner: must allow at least 30 days from written offer before suit can be filed. If new parcel is added, or the design changes significantly, a new written offer is required and the schedule will be affected.

 Possible outcomes of negotiations with property owner.

 Eminent domain and condemnation.

 Order of taking requirements—evidentiary hearing:

a. Valid public project (project resolution).

b. Property taken is necessary for the project (engineer expert witness).

c. Good faith estimate of value based on valid appraisal (appraiser expert witness).

d. Conveyance of title with deposit of appraised value in court registry. e. Determination of final amount paid for property.

 Payment of property owner attorney fees—attorney can also request payment for obtaining a non-monetary benefit for the client, i.e., a design change such as a median cut. R/W personnel should be consulted prior to granting such concessions to determine impact of non-monetary benefits.

 Schedule considerations: 1) preparation, filing, and service of the lawsuit; 2) time necessary to secure an Order of Taking hearing on the court docket (normally 90-120 days or longer); 3) length of times established by court for property owner to surrender possession.

 Late design changes (after lawsuit is filed) can cause the appraisal

problems, cause delays in court dates and impact schedules.

**C. Relocation**

 Purpose of Uniform Act.

 Minimum time period for all displaced persons to move.

 Benefits available to residential displaced persons.

 Purpose of replacement housing payments.

 Benefits available to nonresidential displaced persons.

 Court may have ultimate control over the date displaced persons vacate the property and Department obtains possession.

 Schedule consideration: late design changes which change R/W requirements and create new relocatees can impact the schedule.

**D. Property Management**

 Removal of improvements from the R/W.

 Requirements to certify right of way clear for construction. This is a key process measure for R/W.

Signed:

Trainee Date

Verified:

Phase Supervisor Date

**ATTACHMENT F**

TRAINEE:

**TRAFFIC ENGINEERING AND OPERATIONS** (Outline and Checklist)

(1) Signing and Pavement Markings

(a) Information Systems Concepts

(b) General Procedures

(c) Review of Technical Manuals and Standards

(d) Legal Requirements

(e) Positive Guidance

(f) School Zones (g) Crosswalks (h) Review

(2) Operational Analysis

(a) Review of Technical Manuals (Traffic Engineering Manual (TEM), Manual on Uniform Traffic Studies (MUTS), Manual on Uniform Traffic Control Devices (MUTCD), Speed Zoning Manual, ITE Traffic Engineering Handbook)

(b) Speed Zone Studies

(c) Parking Studies

(d) Data Collection Techniques

(e) Operational Studies (Purpose and Methodology)

1. Roadway Operation

2. Intersection Operation

(f) Analysis Techniques

1. Manual Methods

2. Computer Methods

(g) Review

(3) Signalization and Signal Systems

(a) Legal Requirements

(b) Signal Warrant Studies

(c) Signal Operation

(d) Computerized Traffic Control

(e) Traffic signal devices and hardware; Approved Products List (APL) (f) Review

(4) Safety

(a) Literature Review

(b) Accident Data Analysis

(c) Highway Safety Evaluation Studies

(d) Review

(e) Community Traffic Safety Team (CTST)

(5) Transportation Systems Maintenance & Operations (TSM&O)

(a) Overview of TSM&O concepts and their applications within FDOT

(b) Overview of TSM&O components (e.g. communication system, field devices, TMC)

(c) Specific TSM&O applications within the District

(6) Access Management

(a) Guidelines

(b) Access Review

(c) Highway Capacity Manual (HCM) / Highway Capacity Software (HCS) (7) Other Related Functions

Signed:

Trainee Date

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated by a phase examination administered by the Traffic Engineering and Operations Office.

**ATTACHMENT G**

TRAINEE:

**CONSTRUCTION** (Outline and Checklist)

(1) Orientation

(a) Function and Organization of District Construction Office

(b) Duties of Resident/Operations Engineer

(c) Duties of Project Administrator, Construction Project Manager

(2) Construction Layout and Measurements

(a) Alignment - Horizontal and Vertical Control

(b) Cross Sectioning

(c) Quantity Measurements

(3) Construction Inspection

(a) Clearing and Grubbing

(b) Earthwork

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1. | | Excavation |
| 2. | | Embankment |
| 3. | | Stabilization |
| 4. | | Densities |
| (c) | Base | |  |
|  | 1. | | Materials |
|  | 2. | | Placement |
|  | 3. | | Density |
|  | 4. | | Finishing |
|  | 5. | | Priming |
|  | 6. | | Subgrade Preparation |
| (d) Drainage Systems | | | |
|  | 1. | 1. Excavation | |
|  | 2. | 2. Dewatering | |
|  | 3. | 3. Pipe laying | |
|  | 4.4. | 4. Backfill | |
|  | 5. | 5. Manholes/Inlets | |
| (e) |  | Box Culvert Construction | |
|  | 1. | 1. Line and Grade | |
|  | 2.2. | 2. Excavation | |
|  | 3. | 3. Forming | |

4. Steel Placement

5. Pouring Concrete

6. Stripping and Finishing

(f) Miscellaneous Concrete Construction

1. Curb and Gutter

2. Sidewalk

3. Ditch Pavement

4. Endwalls

5. Barrier wall

(g) Pavement Construction

1. Concrete Pavement

a. Base Preparation b. Placing Concrete c. Finishing

2. Asphalt Pavement

a. Placement - Thickness Determination b. Rolling

c. Equipment Inspection d. Straightedging

e. Recycling Pavement

(h) Materials Batching Plants

1. Concrete Batch Plant a. Inspection

b. Sampling and Testing c. Reports

2. Asphalt Plant

a. Inspection

b. Sampling and Testing c. Reporting

(i) Bridge Construction

1. Layout, Grades

2. Substructure Construction

(Forming, Steel, Concrete)

3. Super-structure Construction

(Forming, Steel, Concrete)

4. Geotechnical

a. Pile Driving

b. Drilled Shaft

c. Auger Cast

(j) Other Construction Items

1. Traffic Signals

a. Material Certification

b. Controllers, Heads

c. Mast Arms

2. Sign Placement a. Structure b. Material

c. ITS

3. Pavement Markings

4. Grassing, Mulching, Sodding

5. Guardrail

6. Highway Lighting

7. Maintenance of Traffic

8. Environmental Concerns

(4) Contract Administration

(a) Contract Package

1. Plans Review

2. Specifications, Special Provisions

3. Contract Types

(b) Preconstruction Conference

(c) Project Diary

1. Daily Report

2. Engineer's Weekly Report

3. Work Plan

(d) Contract Changes

1. Plan Errors, Changed Conditions, Error and Omissions Process

2. Time Extensions

3. Supplemental Agreements

4. Claims

5. Extra Work

6. Delinquency and Liquidated Damages

7. Negotiating

(e) Other Contract Items

1. Construction Scheduling

2. Weekly, Monthly, Final Estimates

3. DBE/EEO Provisions

4. Contractor Past Performance Rating

5. Consultant CEI Management

6. Project Solve/EDMS

(f) Utilities

(g) Final Inspections

(5) Relations with Others

(a) FHWA

(b) Inspector General

(c) Central Office

1. Quality Assurance Reviews

2. Area Engineers

(d) Public

(e) Contractor

(f) Utilities

(g) Other Government Agencies

1. Maintaining agencies

2. Permitting agencies

3. Other

(6) DOT Policies

(a) Construction Procedures

(b) Materials Procedures

(c) Instructional Memorandums

(7) Engineer's Supervisory Responsibilities

(a) Technician Training

1. Qualification Programs

2. Self-Study Courses

3. Technical Training

(b) Personnel Rules, Regulations, and Procedures

(c) Engineer Training

1. Administrative, Managerial

2. Technical

Signed:

Trainee Date

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated by a phase examination administered by the Office of Construction.

**ATTACHMENT H**

TRAINEE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MATERIALS - DISTRICT** (Outline and Checklist)

(1) Orientation

(a) Briefing on District Materials and Research Organization and Functions

(b) Introduction to Personnel

(2) Laboratory

(a) Lab Tests

1. Gradation (coarse & fine aggregate)

2. Proctors (standard & modified)

3. Limerock Bearing Ratio (LBR)

4. Concrete Cylinders (storage & breaking procedures)

5. Soil Classification

6. Testing (asphalt content, gradations,volumetrics)

(3) Geotechnical Engineering

(a) Sampling Procedures

1. Standard Penetration Test

2. Auger Borings

(b) Field Test

1. Drilling Exploration

2. Field Visits to Geotech Construction Sites

(c) Geotechnical Analysis and Design

(d) Dynamic Pile Analysis

(4) Prestress & Precast Concrete Structures

(a) Piles and Beams

1. Layout

2. Stressing

3. Pouring and Sampling

4. Final Inspection

(b) Precast Units

1. Manufacture

2. Final inspection

(5) Cast-in-Place Concrete

(a) Testing

1. Sampling Freshly Mixed Concrete

2. Testing for Air Content, Temperature, Unit Weight, Water-Cement Ratio and Slump

(b) Concrete Plant Inspection

1. Aggregate Handling and Testing

2. Cementitious Materials Handling and Testing

3. Records

(c) Acceptance Methods

(d) Progress Records/Independent Assurance

(6) Pavement Management

(a) Pavement Section Overview

(b) Plant Inspection

(c) Pavement Evaluation

(d) Roadway Inspection

(7) Miscellaneous Materials

(a) Sign Inspection

(b) Pavement Marking Materials

(c) Timber Products

(d) Project Certification

(e) MAC (Materials Acceptance & Certification System) Overview

(8) Aggregate Control Program

(a) Mine Inspection

(b) Overview of Aggregate Mines, Sampling, Testing & Inspection

(c) QC Plan Review

(d) MAC Data Entry and Review

(9) Earthwork Density Logbook Procedure

(a) Nuclear Density Testing and Density Logbook Review

Signed:

Trainee Date

Verified:

Phase Supervisor Date

**ATTACHMENT I**

TRAINEE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MATERIALS (GAINESVILLE)** (Outline and Checklist)

**(1) ORIENTATION:**

(a) Welcome by P.E. Trainee Coordinator (or alternate)

(b) Function and Organization of the State Materials Office.

**(2) BITUMINOUS MATERIAL SYSTEMS:**

(a) Orientation in the organization and basic functions of the Bituminous Materials Section.

(b) Familiarization with the basics of asphalt materials, pavement construction and current FDOT specifications.

(c) Overview of Bituminous Laboratory and Research operations.

(d) Develop an asphalt mix design and assist laboratory personnel with basic testing.

(e) Field visit to asphalt plant and paving operation.

**(3) PAVEMENT MATERIAL SYSTEMS:**

(a) Orientation in the activities, equipment, and processes involved in pavement performance evaluation and pavement research. This applies to both flexible and rigid pavement systems.

(b) Pavement performance is assessed through visual surveys, and field test equipment such as profilers, friction devices, deflection devices, etc.

(c) Pavement research is conducted with a combination of accelerated pavement testing and conventional laboratory work.

**(4) CHEMICAL LABORATORY:**

(a) The Chemical laboratory evaluates a number of the materials on the Department’s Qualified Product List which are products considered critical to roadway construction.

(b) A host of analytical and physical testing techniques are performed. Activities will be conducted in a fashion that will familiarize P.E. Trainees with these techniques.

(c) Equipment and instruments required to perform these evaluations, along with the governing Specifications and Florida Test Methods, will be presented.

(d) A tour of a galvanizing plant will also be included.

**(5) ADMINISTRATION / QUALITY SYSTEMS:**

(a) Familiarization with activities of statewide quality control program, to certify conformance of all materials and workmanship in construction projects with specifications. Primary activities include operation of a computerized sampling, testing, and reporting program; in-depth project inspections; issuance of Florida sampling and testing methods and coordination of these Methods with AASHTO, ASTM, and other agency methods.

**(6) STRUCTURAL MATERIAL SYSTEMS:**

(a) Orientation in equipment and procedures for testing concrete cylinders, cubes, beams, and aggregates.

(b) Participate in sampling and testing operations.

(c) Discussions of quality control requirements for cement, aggregates, steel, and concrete.

(d) Discussion of current research projects and future trends in concrete research, including related problems such as shrinkage, creep, temperature effects, corrosion, and reactive aggregates.

(e) Instruction in procedures used to test, evaluate, and approve materials.

(f) Participation in and discussion of ongoing research on corrosion control materials and methods.

(g) Analysis of environmentally sensitive materials.

**(7) GEOTECHNICAL MATERIAL SYSTEMS:**

(f) Orientation in the use of soils testing equipment and procedures in the Central Soils Lab, including discussion of relationship between District Materials Labs and Central Lab.

(g) Explanation of the statewide functions and responsibilities of the Aggregate Control Section, including the importance of random sampling to the control program.

(c) Explanation of the functions of the Field Section, including discussion of the use of the various field testing equipment.

1. Observation of research in progress in the test pit.

**(8) CLOSE OUT:**

(a) Critique

Signed:

Trainee Date

Verified:

Phase Supervisor Date

**ATTACHMENT J**

TRAINEE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MAINTENANCE** (Outline and Checklist)

(1) Orientation

(a) Maintenance definition and purpose

(b) Value of adequate maintenance program to Department

(c) Organization of maintenance unit

(d) Source of revenue

(e) Cost distribution

(f) Coordination with District Construction Office

(g) Emergency Response

(h) Open Roads Policy

(2) District Maintenance Personnel (a) Duties and responsibilities (b) Public contact

(c) Work identification

(d) Work assignments

1. District Maintenance Engineer
2. Deputy District Maintenance Engineer
3. Deputy District Maintenance Administrator
4. Area Maintenance Engineer/Manager
5. District Structures Maintenance Engineer
6. District Structures Engineering Section Manager
7. District Structures Maintenance Section Manager
8. District Structures Inspection Section Manager
9. District Maintenance Contracts Administrator
10. District Asset Maintenance Program Manager
11. District Permits Engineer
12. Maintenance Environmental Specialist
13. Fleet Manager
14. Maintenance Systems Administrator
15. Roadside Vegetation Coordinator

(3) Maintenance Office

(a) Permits, reports, policies, and correspondence

(b) File system and records

(c) Maintenance budget preparation and execution

(d) Liability and claims issues

(4) Maintenance Management System

(a) Inventories

(b) Work plans

(c) Reporting and reports

(d) Roadway Characteristics Inventory

(e) Maintenance Rating Program

(5) Permitting

(a) Rules 14.96 and 14.97, Florida Administrative Code

(b) Driveway

(c) Utility

(d) Drainage

(e) General Use

(f) Permit Inspection / Documentation

(g) NPDES Administration

(6) Contract Management

(a) General

(b) Asset Maintenance

1. Performance based contract

2. Quality assurance program

3. Asset Maintenance and Department coordination

a. Construction projects

b. Permitted projects

c. Incident Management

d. MOA’s

(7) Structures Maintenance

(a) District Bridge Inspection Program

1. State System

2. Off State System

(b) Structures Accidents – Reports and Repairs

(c) Painting Steel Structures

(d) Introduction to Bridge Load Rating Analysis

(e) District Bridge Rehabilitation Program

(f) Innovative Structures Maintenance

(8) Field Operations

(a) Roadway Base and Surface

1. Various surface and base combinations

2. Base and pavement failure causes and repair methods

(b) Shoulders and Side Approaches

|  |  |  |
| --- | --- | --- |
|  | 1. | Shoulder adjustment (raising or lowering as needed) |
| 2. | Stabilizing |
| 3. | Addition of paved apron for protection of pavement edge |
|  |  |  |
| (c) | Roa | dside and Drainage |
|  | 1. | Periodic inspection |
|  | 2. | Cleaning storm sewers and cross drains |
|  | 3. | Methods of sealing leaking joints in storm sewers |
|  | 4. | Ditch paving - type and when used |
|  | 5. | Roadside and outfall ditches |
|  | 6. | Sub-drains |
|  | 7. | Sidewalk inspections |
| (d) | Gua | rdrails and Fences |
|  | 1. | Types used |

2. Maintenance required

(e) Landscape and Mowing

1. Coordination of hand labor

2. Planting

3. Mulching, seeding, grassing, and fertilizing

4. Machine mowing

5. Chemical control

6. Wild flower program

(f) Structures

1. Routine inspection

2. Bridge repair methods

3. Maintenance and repair of drawbridges

4. Bridge tenders and draw bridge

5. Ancillary Structures

(g) Traffic Controls and Services

1. Sign crews and sign policy

2. Symbol crews

3. Pavement striping procedure and crews (district wide)

4. Traffic signal policy

5. School zone policy

(h) Safety

1. Yard

2. Field

(i) Other Services

1. Rest areas

2. Wayside parks, board ramps, fishing walks

3. Weigh stations

(j) Skilled Trades

1. Electrician

2. Plumber

3. Carpenter

4. Trades foreman

(k) Correctional Inmates

1. Type crews

2. Where used

3. Jurisdiction of DOT and Department of Corrections

(l) Field Operations Supervisor

1. Duties and responsibilities

2. Supervision of work

(9) Procurement by Distribution Agent

(a) Personnel and duties

(b) Procurement Processes

(c) Proper storage and handling of supplies

(d) Accounting procedure

(e) Disposal of scrapped or obsolete material

(10) Vehicle Maintenance Process (a) Personnel and duties (b) Tolls and equipment

(c) Procedure for obtaining parts

(d) Equipment replacement program (e) Routine maintenance of equipment (f) Equipment inventory program

(g) Fuel conservation program

(11) Statewide Support

(a) Sign shop

(b) Aluminum fabrication shop

Signed:

Trainee Date

Verified:

Phase Supervisor Date

Successful completion of this phase will be evaluated by of a phase examination administered by the Office of Maintenance.

**ATTACHMENT K**

**Program Management** (Outline and Checklist)

**UNDER DEVELOPMENT**