



Project Schedule Guide

Part 1: Project Schedule Concepts

Florida Department of Transportation
District 3
Program Management



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Introduction

Production Management Roles & Responsibilities

Roles:

Production Management oversees the development, monitoring, and updating of logic driven project schedules supporting the Five-Year Work Program. This oversight ensures reflection of status, alignment with scope and financial commitments, and resolution of conflicts from project conception to advertisement for construction. Coordination and collaboration are the key factors in delivering the Work Program and communicating program and project performance.

Responsibilities:

The responsibilities of Production Management include:

- Project schedule templates, initial and revised baselines
- Fiscal Year Lockdown Plans
- Production Performance Reports
- Technology project management
- Project controls coordination

Purpose & Why

The purpose of this document is to guide the user through the Program Management scheduling process. This document will include an overview of Primavera, steps for initial / revised schedules, an overview of our performance measures, a look at our reporting methods, how to close out a project schedule and lessons learned. Our goal is to line up with the Department's mission statement and Work Program Instructions to ensure that project schedules are accurate and are completed in a timely manner.

Historical Background

Beginning in the early 1980s, the Florida Department of Transportation (FDOT or the Department) used a Multi-Project Scheduling System (MPSS). MPSS was basically a tabular report in which all project schedule updating was done by hand. In 1990, the Project Scheduling Management System (PSM) was developed and implemented by IBM, Inc. as a logic-based solution for the Department's project schedules. Later in the 1990s, Primavera was introduced and used in conjunction with PSM to automate critical path scheduling. Starting in 2012, Project Suite Enterprise Edition (PSEE) provided multiple modules to enable users to view and update their schedules. The updates submitted in PSEE are then uploaded electronically to PSM.

Scope, Schedule & Funding Alignment

The three elements of Scope, Schedule, and Funding are a project's triple-constraint framework within an integrated change control structure. Whenever a change occurs in the scope, schedule or funding, the project team needs to ask, *"How does this change impact the other elements?"* Rarely, if ever, does a change impact only one of the elements. To ensure the project schedule is accurate, it needs to align with the scope and funding. This alignment is required per Work Program Instructions to ensure the project's resources and deliverables are managed to achieve performance measures. This alignment facilitates analysis for monitoring and implementing corrective actions, as needed. Central Office routinely audits the alignment of these elements. Part V: Production Management of the Work Program instructions provides a scheduling overview.



Triple Constraints - Project Management Triangle

Figure 1 – Scope, Schedule, and Funding Triangle



Statutory Authority

Program Management's statutory authority is based upon Section 334.045 Florida Statute (F.S.) transportation performance and productivity standards and as a requirement of reporting to the Florida Transportation Commission per Section 20.23, F.S. and Section 337.11 F.S. To provide evaluating performance and productivity of the Department's, both quantitative and qualitative, performance measures in delivering the Five-Year Work Program.



Scheduling Overview

Enterprise Project Structure

Enterprise Project Structure (EPS) represents the hierarchical structure of all projects in the database. The EPS can be subdivided into as many levels or nodes as needed to represent work at your organization. The below screenshot shows an example of our EPS. We use the EPS to categorize and organize projects by program.

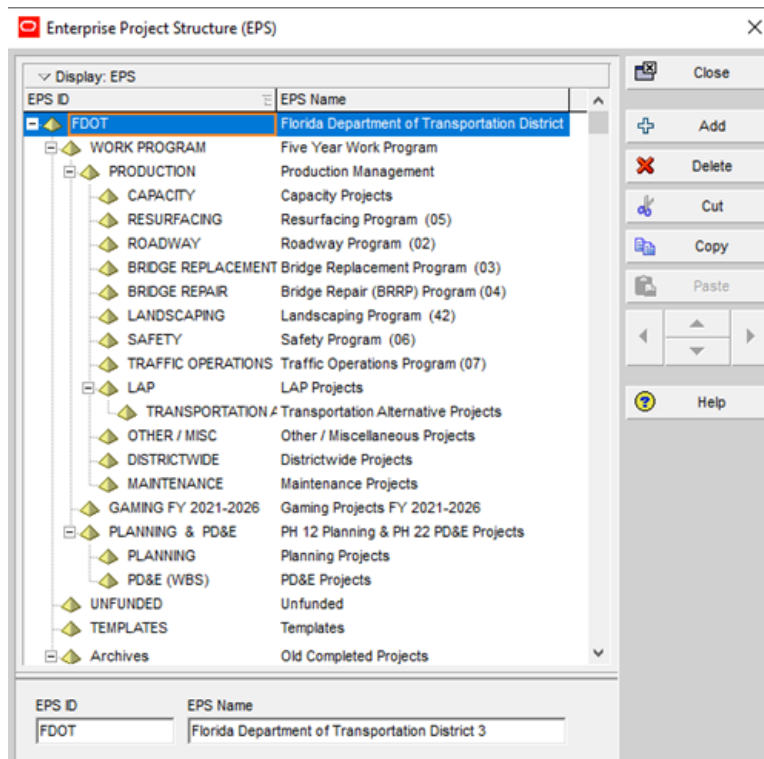


Figure 2 - EPS Sample



Work Breakdown Structure

Work Breakdown Structure (WBS) is a project management tool used to group scope of services deliverables together. We use the WBS to group activities by the funded phase they are tied to. The below screenshot is an example of our WBS.

WBS Name	WBS Path
Phase 32 Project Template with R/W (3R / Br Replmt / Intersec / etc) (100%)	Phase 32 Temp w/ R/W
PHASE 31	31
PH 31: PRELIMINARY ENGINEERING	31.1
PHASE 3X	3X
PH 32: DESIGN CONSULTANT ACQUISITION	3X.1
PH 3X: DESIGN PHASE I (30%)	3X.2
PH 3X: DESIGN PHASE II (60%)	3X.3
PH 3X: DESIGN PHASE III (90%)	3X.4
PH 3X: DESIGN PHASE IV (100%)	3X.5
PHASE 4X	4X
PH 4X: RIGHT OF WAY ACQUISITION	4X.1
PHASE 52	52
PH 52: CONTRACT FILE INDEX (CFI)	52.1
PH 52: PRODUCTION READY	52.2
PH 52: DESIGN / BUILD	52.4
PH 52: PLANS PROCESSING	52.3
PHASE 62	62
PH 62: CEI CONSULTANT ACQUISITION	62.1

Figure 3 - WBS Sample

Activities

Activities in a project schedule are used to track tasks. Attributes of an activity include an activity ID, activity name, duration, float, start and finish dates, user ID, responsible party, constraints, predecessors, and successors.

Relationships

Relationships are the logical ties between activities. Predecessors and successors are connected to related activities in the order they are planned to occur. A predecessor task must be completed before a successor task can start.

There are four types of relationships:

- Finish to Start means the successor cannot start until the predecessor finishes.



Figure 4 ~ FS Relationship

- Start to Finish means the successor activity finishes after the predecessor starts.

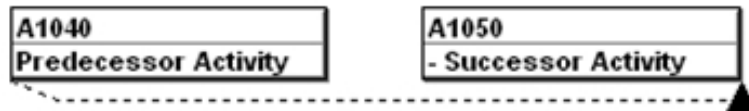


Figure 5 ~ SF Relationship

- Finish to Finish means the successor finishes at the same time as the predecessor.

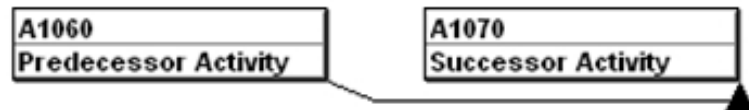


Figure 6 ~ FF Relationship

- Start to Start means the successor cannot start until the predecessor does.



Figure 7 ~ SS Relationship

Activity relationships can also be made between different projects if needed.



Durations

The activity duration is the number of days it takes to start and finish a task.

There are three types of durations:

- Original duration is the number of days planned to complete an activity.
- Remaining duration is the number of days left for an activity to meet its planned finish date.
- Actual duration is the number of days it took for an activity to finish.

Float

Float is the amount of time an activity can be delayed before the delaying the entire project.

There are three types of float:

- Total Float is the number of days an activity can be delayed before the project finish date is delayed.
- Free Float is the number of days an activity can be delayed before the successor's finish date is delayed.
- Negative Float is the number of days an activity is tracking late.

Calendars

Calendars define the dates an activity can occur. Most project schedule activities use a standard five-day work week calendar. Calendars are used to calculate future dates in the schedule.



Project Codes

Project codes define and organize specific attributes at the project level. Project codes are used in identifying and reporting project schedule information.

These are common project codes:

- FPID
- Managing District
- Project Description
- County
- Project Manager
- Contract Class
- Work Mix
- Trans System
- Project Status
- Advertised Days
- Letting Date
- Let Together Flag
- SIS Priority

Activity Codes

Activity codes are used to classify, categorize, and organize at the activity level.

These are common activity codes:

- User ID
- Responsible Party

Filters

Filters are used to search for and report on specific information. Filters can be saved and used to create different views of a project schedule's activities.



Layouts

Layouts allow different views of the project schedule data for analysis. They enable the grouping and sorting of activities. During monthly project schedule updates, layouts are used to run audits.

Templates

A template is a pre-defined framework for creating new project schedules based on program and work mix. Each template is structured based on standardized activities, durations, and relationships.

These are common templates:

- Capacity
- Resurfacing
- Design Build
- Landscaping



Initial and Revised Schedules

Initial Project Schedule

Initial schedules are to be submitted within 10 days of Notice to Proceed (NTP) or Kick-Off Meeting along with the final scope of services and when applicable the consultant's name and KN#. The PM will upload the schedule into the PSEE Change Management module. The initial schedule is used to transition from the generic durations in the template to the planned durations of the schedule. It is important to review the scope alongside the initial schedule to ensure that the necessary activities are in the schedule and that the schedule is within the negotiated timeframe. At this time coordination with the various supporting offices should occur.

Revised Project Schedule

Revised schedules are required when a schedule is tracking over 20 days late, any time a supplemental agreement is in progress, or any fund advancements, deferrals, or deletions occur. The PM will upload the revised schedule into the PSEE Change Management module to update the most recent baseline schedule.



Performance Measures

FTC Measures

The Florida Transportation Commission (FTC) was established in 1987 by the Florida Legislature listed in s. 20.23(2)(b), Florida Statutes.

In 1990, the Florida Legislature created s. 334.045, Florida Statutes, tasking the FTC to provide oversight and performance evaluation for the FDOT Five-Year Work Program investments. Performance measures are to provide focus for decision-making and awareness of FDOT's by connecting the agency's outcomes with those using Florida's transportation system. The FTC is charged with developing a system of measurement that may be both quantitative and qualitative which are simple, understandable, and meaningful goals.

There are 35 measures used by the commission to evaluate the department's performance, 17 of them are primary. FDOT's performance measure results are reported to the FTC and published quarterly and annually.

State Measures

The state measures for the monthly performance review are the Consultant Acquisition dollar & number, R/W Certification number, R/W Parcel Acquisition dollar, Letting dollar & number, Construction Cost Increase, Construction Time Increase, % of Contracts with <110% Cost Increase, % of Contracts with <120% Time Increase, and Maintenance dollar. The state measures are reported on and compared each month during the Executive Workshop which is presented to the State and District Secretaries and Directors on a statewide level.



Lockdown

Lockdown plans are set for lettings and consultant projects for the upcoming fiscal year each July. The state fiscal year occurs from July to June. These plans are used by Central Office to monitor the performance for the FTC and state measures. Our office coordinates with Professional Services who coordinates with the program managers to set the consultant plan. Our office coordinates with the project managers and program managers to set the letting plan.



Reporting

On Demand Reports

On Demand Reports can be used to prepare and deliver a variety of interactive reports for the supporting offices to review their projects. Following the monthly updates, reports are run from our Microsoft SQL Server and posted on the Production Management SharePoint site. Examples of these reports are the Planned Lettings Report, Project Progress Report and Design Status Report. These reports are provided for the project managers and program managers to manage their projects.

Primavera

Primavera provides a variety of reports using the project schedule activities to review project status. Following the monthly updates, reports are also run from Oracle Primavera to be posted on the Production Management SharePoint site. Examples of these reports are All Negative Float (By PM) and All Project Schedules (By PM). The reports are provided for the project managers and program managers to manage their projects.



Project Schedule Closure

Project Closeout

After a project has let or when all activities in the schedule have been completed it is time to close out the project schedule. We use a layout to compare the original duration to the actual variation of each activity to see where any activity removals, increases or decreases in durations occurred. During the closeout process we look at our templates to see if any changes are needed. A .pdf version of the project closeout schedule is uploaded into PSEE under the PSEE Project Documents section once completed.

Lessons Learned

Lessons learned throughout a project's lifecycle can be gathered and discussed for implementation into future efforts. The project closeout process is an important time for learning lessons about the templates and schedules. During this process lessons are learned about activity relationships, durations, activity removals and activity additions.

Risk Management

Risk management is the systematic process of identifying and controlling threats and opportunities before they occur to avoid impacts to scope, schedule, and funding. All projects have risks. Some risks are threats and others are opportunities. Whether, large or small, many or few, unique or common, these risks can cause delays and divert a project's success. Early identification, development of a Risk Management Plan to mitigate and monitor these risks is vital in meeting our commitments. Also, a risk can be an opportunity for gaining potential benefits which were unknown during the scoping process. Opportunities such as contractual let together (or goes with) projects, streamlining work processes, and partnerships with other stakeholders and project team members. Risk Management planning and actions are a project team responsibility with the Project Manager as the leader in proactive collaboration and notification.



Project Scheduling Technology Resources

Oracle Primavera

Oracle Primavera is the scheduling software that is used statewide by FDOT. Primavera provides a project management tool which enables the ability to track performance in a multi-project system. Primavera is used for planning, monitoring, and updating project schedules. Project scheduling in Primavera aligns and communicates a detailed plan for delivering the Five-Year Work Program.

PSEE

PSEE (Project Suite Enterprise Edition) is a project management one stop shop tool application. Production Management modules are available for usage, such as Project Scheduling (PSM), Change Management, Scheduling, and Monthly Schedule Update tab. On the Project Info tab key dates are listed.

PSM

PSM (Project Scheduling Management System) is a mainframe database and reporting application that is integrated with other departmental management systems. The Department's mainframe PSM system receives its data via regular transfers from each district's production Primavera databases.



Acronyms

EPS – Enterprise Project Structure
FTC – Florida Transportation Commission
MPSS - Multi-Project Scheduling System
NTP – Notice to Proceed
PSEE – Project Suite Enterprise Edition
PSM – Project Scheduling Management System
PM – Project Manager
R/W – Right of Way
WBS – Work Breakdown Structure