

Chapter 3

**PROJECT DEVELOPMENT
PROCESS**

MDT ENVIRONMENTAL MANUAL

October 2010

Table of Contents

<u>Section</u>	<u>Page</u>
3.1 GENERAL	3-1
3.1.1 Project Management System	3-1
3.1.2 Project Manager	3-1
3.2 ENVIRONMENTAL SERVICES BUREAU	3-2
3.2.1 ESB Management Units	3-2
3.2.2 Responsibilities.....	3-2
3.2.3 Standard Planning Values	3-2
3.2.4 Estimating Duration	3-3
3.2.5 Estimating Person-Hours.....	3-3

Chapter 3

PROJECT DEVELOPMENT PROCESS

3.1 GENERAL

3.1.1 Project Management System

MDT uses a Project Management System (PMS) to schedule, forecast, monitor and coordinate project development and resources. Projects are broken down into defined activities with estimated duration and person-hours required for completion. Duration is the number of working days required to complete each activity. Activity durations are used to estimate the length of time to develop a project. Person-hours are the anticipated number of hours that will be expended toward the completion of the activity. Person-hours are used to estimate the cost and budget required to develop a project.

Each activity has predecessor and successor activities. Arranging the activities in order from predecessor to successor creates the project schedule or flowchart. A list of defined activities with standard flowcharts for typical MDT projects has been developed by the Engineering Information Services Section (EISS) and is located on EISS intranet site.

MDT uses OPX2 software for PMS scheduling. For further information on OPX2, review the *OPX2 Manual* and/or consult with EISS.

3.1.2 Project Manager

After a project is nominated and approved by the Highway Commission, the EISS is initially responsible for inputting the project into OPX2 and for assigning standard person-hours and durations. The Project Manager is responsible for reviewing the system information to ensure it is correctly assigned based on the initial project nomination. The Project Manager schedules and conducts a Preliminary Field Review to better define the project scope. After the Preliminary Field Review Report is approved, transmitted to EISS and placed in the Document Management System (DMS), the initial assumptions are adjusted and the project is sent out for overrides to the functional managers (e.g., Project Development Engineers, District Biologists) or turned over to Consultant Design. The override process is where functional managers review the project and estimate durations and person-hours for their activities. If the Project Manager does not accept the overrides as returned, the Project Manager has the responsibility to negotiate with the functional manager in question until both Project Manager and functional managers agree to acceptable values.

3.2 ENVIRONMENTAL SERVICES BUREAU

A typical project can include hundreds of individual activities for all the various design and support units. Because the Environmental Services Bureau (ESB) is a support unit to the project design team (Road Design, Bridge Design, Traffic Engineering), only a few of the OPX2 activities are directly applicable to ESB. For complete project flowcharts and description of the activities for all the Units and Sections, the user should review the activity numbers and titles located on the EISS intranet site.

3.2.1 ESB Management Units

The following management units apply to ESB:

- 2100 — Environmental – Archeology,
- 2200 — Environmental – Wildlife,
- 2300 — Environmental – Storm Water,
- 2400 — Environmental – Agronomy,
- 2600 — Environmental – Hazardous Waste,
- 2700 — Environmental – Environmental Documentation, and
- 3100 — Environmental – Wetlands.

3.2.2 Responsibilities

The ESB functional managers are responsible for:

- estimating the duration and person-hours to complete their activities during the override process,
- updating the status of activities on the OPX2 at least bi-weekly and when requested by Project Managers to keep project schedules current,*
- entering appropriate issues, and
- notifying the Project Manager of changes that will require additional resources or activities.

* *ESB functional managers and project managers need to update the status of their projects according to OPX2 policy. Note that the ESBC supports more frequent status updates especially on high-profile or special need projects. It is vitally important that the project information on OPX2 be kept up to date so that project delivery managers and upper management can make informed decisions regarding funding scenarios and construction lettings.*

3.2.3 Standard Planning Values

Standard planning values for all activity durations and person-hours have been developed by EISS and are provided in OPX2. These values provide a baseline of an “average project” and

are periodically reviewed and updated by EISS. Durations are based on working days, not calendar days. Standard person-hour values are determined by averaging actual person-hours spent to complete an activity over several projects. For activities that have highly variable durations, standard planning values will not provide a very accurate estimate and functional managers must use their professional judgment in estimating the appropriate duration and person-hours on a project-specific basis.

3.2.4 Estimating Duration

To estimate the duration of an activity, consider the project scope, constraints, required person-hours, identified risks, historical data, standard planning value, time of year (e.g., ability to conduct field studies) and overall workload. The project scope indicates the level of complexity of a particular activity. An activity with higher complexity may increase the duration due to increased person-hours for completion, increased coordination efforts or increased decision time. Duration constraints include elapsed time or production rate for the completion of activities. Example duration dependent on elapsed time is the activity "Approve Scope of Work" that requires few person-hours but requires 3 to 4 weeks to provide time for comments and approvals. Example duration dependent on production rate is "Activity 710 – Prepare/Review Environmental Information Requests" that requires many person-hours. Production rates vary depending on how many people will be working on the activity, work that can be done concurrently and other competing priorities. Identified risks may include project delays, competing projects for resources, lower production rates, change in scope or poor estimate of person-hours.

Duration may need to account for both elapsed time and production rates. Standard planning values are typically close for activity durations that are dependent on elapsed time. Standard planning values of durations dependent on production rate should be adjusted based on the person-hour estimate.

Use an average production factor of 0.2 times the person-hours to determine duration (working days) based on production. For example, the duration for 40 person-hours would be equal to 8 working days. The production factor assumes one person working on an activity with allowance for other tasks, vacation, etc. Judgment, workload, project specifics, external factors and experience should also be applied to determine the durations.

3.2.5 Estimating Person-Hours

To estimate the person-hours to complete an activity, consider the project scope, identified risks, historical data and standard planning value. The project scope indicates the level of complexity of a particular activity (e.g., wetlands, hazardous wastes). Identified risks may include context-sensitive issues, resource agencies, Federal involvement, public involvement and change in scope. A project with high risks may require more development hours. Historical data of actual hours spent on similar projects can be accessed on Oracle. Standard planning values are provided in OPX2. These values provide a baseline of an "average project."

