

Project Planning and Development Process

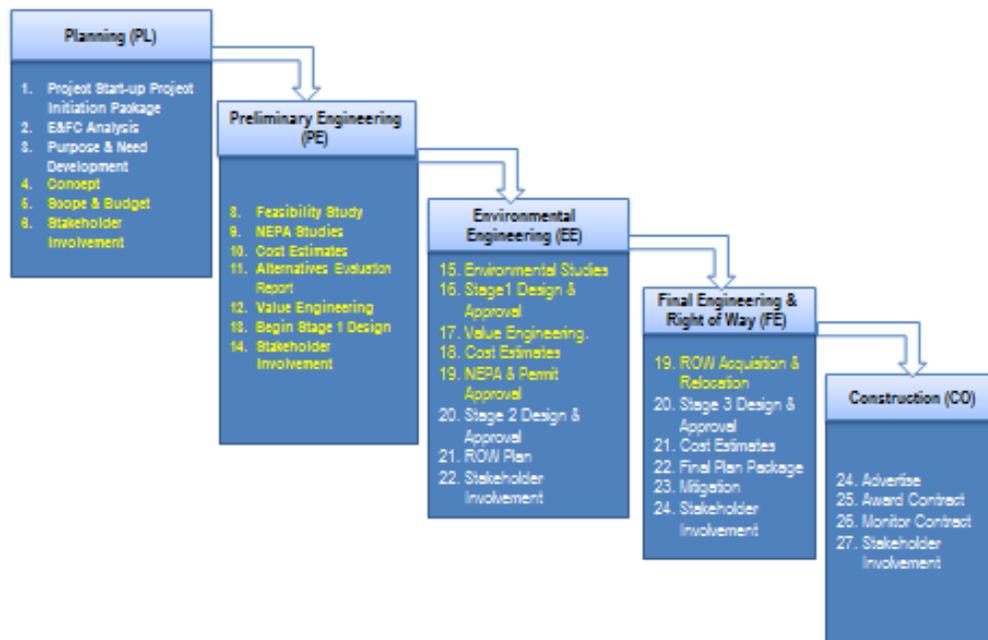
The project development process (PDP) involves hundreds of tasks. Many of these are internal agency activities that help an agency follow a methodical process of addressing the numerous tasks that have to be successfully completed in order to get a project ready for construction. Several DOTs have developed a detailed project development process which they use on projects. Examples of PDPs from three states are summarized below:

Ohio DOT

There are five major phases in the Ohio DOT's Project Development Process (PDP) process. The major phases along with the main steps are shown in the figure below.

The five phases are:

1. Planning (PL)
2. Preliminary Engineering (PE)
3. Environmental Engineering (EE)
4. Final Engineering and Right of Way (FE)
5. Construction (CO)



The majority of the Ohio DOT's projects do not involve the railroads. Hence, many of the activities listed in the DOT's Project Development Process do not involve coordinating or communicating with the

railroads. Since the training addresses activities involving transportation agencies and railroads the summary of the activities detailed below for each of the five phases focuses on activities that involve coordination with the railroads.

1. **Planning Phase:** This phase involves a series of steps to identify the problem, assess the needs, determine the scope and develop the goals and objectives of the project. Steps include,
 - a. Conduct internal meeting and include stakeholders if appropriate in the early planning phase;
 - b. Identify right-of-way, utility and engineering issues in the project initiation package;
 - c. Define study area and logical termini. Conduct research and technical studies. This includes creating base maps, conforming study area and logical termini, and developing a red flag summary;
 - d. Identify discipline-specific issues for project initiation package and submittal. Environmental, design and construction issues are identified. Site visit is conducted and utilities and railroads that can be in or close to the intended project footprint are identified;
 - e. Develop base maps to sufficient scale and level of detail;
 - f. Develop plans for stakeholder meetings. These plans should include coordination and communication with the railroads;
 - g. Concept scope and budget estimates are developed. This will address the right-of-way acquisition needs. This step includes recommending design concepts and scope. This is one of the “points of concurrence”. In projects involving the railroads, interacting with the railroads to make sure that both sides concur on the design concept and scope is a best practice to ensure that in concept, both sides support the continued development of details of the project;
 - h. Develop the scope for the Preliminary Engineering Phase. This includes developing preliminary schedule, deliverables and budget for the project.
2. **Preliminary Engineering Phase:** In this second phase, field investigations are conducted and more detailed information is collected to identify various options and evaluate the feasibility of the options.
 - a. Feasibility study developed, submitted and approved: In this step of the process, the DOT will also do a railroad and right-of-way assessment. During this step, alternatives are developed based on feedback received from stakeholders in earlier steps. The study will be refined to address internal and stakeholder feedback. This is the second concurrence point;

- b. NEPA studies conducted and cost estimates updated;
- c. Alternative evaluation report developed, submitted and approved: This process includes evaluating and identifying the feasible alternatives and eliminating non-feasible alternatives. The alternative elements evaluated will include horizontal and vertical alignment and horizontal and vertical clearances. It will include field survey information including topography, bridges and railroads that will be in and around the various project alternatives. It will include right-of-way, construction and utility reimbursement cost estimates. This step will address any railroad coordination that may be required on the project. It will provide the information necessary for early coordination with the railroads. Based on evaluation of various feasible alternatives the preferred alternative is approved;
- d. Value Engineering: Value engineering analysis is done to identify the function and worth of the project. Various alternatives are generated to provide the project function at the lowest cost;
- e. Begin Stage 1 Design: This step after preferred alternatives are identified includes meetings with railroad and utility coordination managers. Design elements including typical sections and preliminary structure designs, drainage etc. that dictate the need for right-of-way acquisition will be part of this step. Coordination and concurrence with the railroad at this step is very important, with development and execution of an Engineering Agreement being the first form of communication with the RR prior to submission of any studies or drawings.

1. Upon definition of Scope, and/or recognition of the need for railroad involvement during design, the District will notify the Central Office (CO) State Rail Coordinator, noting:

- the Project Identification Number (PID)
- the county, route and section number
- the railroad involved (if known)
- the American Association of Railroads Department of Transportation (AARDOT)
- crossing number (if known)
- milepost number (in known) and

if, Federal funds are involved in paying for engineering reviews by the railroad, confirmation that approval has been received from FHWA for authorization for a railroad to proceed with engineering reviews for a project. *After consulting with the State Rail Coordination*, the District will encumber and/or secure a Funding Event in ELLIS the necessary funds to cover the amount needed for the railroad's engineering review for the project.

Upon execution of an Engineering Agreement, Stage 1 is a critical milestone for railroad review, and should provide the scope and details pertinent to the railroad, including vertical and horizontal clearances, drainage, and any other above or below grade structures that are within the railroad's Right-of-Way. Adequate time should be built into a project's schedule to allow for the railroad's review of Stage 1 plans (normally 2-3 months). Several entities within the railroad normally need to review proposed construction plans, including Operations, Signal, Communications, Industrial Development, Strategic Planning, Maintenance-of-Way, and others as deemed necessary by the railroad before the railroad can respond back with comments. Projects should not be advanced substantially into Stage 2 without receiving review comments from the railroad. Upon receipt of review comments from the railroad of Stage 1 plans, the District will ensure that any technical comments and/or notes mandated by the railroad are incorporated into plan documents. Each railroad has different requirements for plan/general notes that are normally required to be shown on the drawings, and verification of note requirements by each railroad is required, as each railroad's requirements will be different;

Usually during Stage 1, the proposed Construction Agreement is drafted and forwarded to the RR for review, comment and execution. Some RR's will wait until all technical comments have been addressed by the Agency before executing and signing the Construction Agreement

- f. Stakeholder Involvement: Stakeholders are involved, briefed and their feedback is obtained. The feedback is addressed in each phase of the project. Costs are updated. This will include updating estimates for construction, railroad and utility reimbursement, and right-of-way acquisition.
3. **Environmental Engineering:** In this third phase of the PDP, detailed engineering and environmental analysis of the preferred alternative is conducted.
- a. Environmental studies: Environmental studies are done on the preferred alternatives to refine any impact associated with alignment;
 - b. Stage1 Design Approval: This ensures that value engineering analysis has been completed and design is approved and the project development can continue; If any segment of the railroad within the project footprint needs to be relocated it will begin at this stage of the project.
 - c. Preliminary Right-of-Way Plan Submitted & Approved: This step will involve working closely with the railroad to ensure that the Right-of-Way plans are acceptable to the railroads and they concur on the aspects of the plan that affects the railroad right-of-way and operations;

- d. **Stage 2 Design Submitted & Approved:** This step incorporates feedback from the Stage 1 Design. By this stage of the design process, the plan preparation, design, and detailing are close to complete. A second constructability review may be conducted that addresses right-of-way, environmental, geotechnical, utilities and railroads, site plan and profile, drainage, structure, maintenance of traffic, construction completion date, construction project phasing and access, assessment of build-ability of the design details and overall bid-ability of the project. This step also includes the request, review and acceptance of applicable railroads RR Force Account work.
 - e. **Final Right-of-Way Plan Submitted & Approved:** Preliminary Right-of-Way Plans with property maps, summary of additional Right-of-Way, detailed Right-of-Way Plan sheet and Right-of-Way acquisition estimates are completed and submitted for approval. The right-of-way acquisition begins at this step and any utility and railroad relocation that is required begins at this step of the project. The goal is to achieve milestones for right-of-way acquisition. A main milestone is the review, approval and sale of the right-of-way by the railroads.
4. **Final Engineering:** The final detailed design of the preferred alternative is performed in this phase of the PDP.
- a. **Right-of-Way Acquisition & Relocation:** All right-of-way acquisition should be complete by this step in the process. The transportation agency and the railroads have to work closely to ensure that this step of the process is completed to the satisfaction of both parties. On projects involving transportation agencies and railroads, the completion of right-of-way acquisition and utility coordination is a milestone;
 - b. **Stage 3 Plans Design & Approval:** The design and detailing of the project is complete by this step of the PDP. The plans will include the final estimated project cost and all the details of quantities to bid the project. The district reviews and approves the submission. At this stage a final review of all design elements is done. If the plan was shelved for more than two years it is important for the transportation agency to coordinate with the railroads and communicate the status and next steps in the project to them;
 - c. **Update Cost Estimates;**
 - d. **Prepare Final Plan Package and send to CO:** The district submits a plan package when the project is ready to be advertised. During this stage, final construction plans are submitted to the railroad along with a cover letter with the anticipated project sale date.
5. **Construction Phase:** This is the final step in the PDP. It is important to include the railroads in the pre-construction meetings. It provides an opportunity for the transportation agency and the

railroad to collaborate and establish partnering. This also helps expedite the resolution of any issues that arise during the construction phase.

- a. Advertise project;
- b. Award Contract;
- c. Preconstruction Meeting: A preconstruction meeting is held prior to start of construction with the winning bidder. It is important to include the railroads at the preconstruction meeting. Railroad coordination between the contractor and the railroads are discussed after award at a preconstruction meeting.
- d. Begin Construction: Close coordination and communication between the contractor, the transportation agency and the railroad during the construction is very important to meeting the cost and schedule project milestones;
- e. End Construction: Final acceptance of the project will involve approval and signoffs by the railroad on projects that involve the railroad right-of-way;
- f. Post-construction meeting: This is an opportunity for the transportation agency and railroad to discuss expectations on maintenance and any access to the railroad right-of-way that may be required.