**New Jersey Department of Transportation**

# Project Delivery Process Overview

***Presented by the***

**Program Management Office**

**January, 2012**

## Project Delivery Process Overview

The New Jersey Department of Transportation (NJDOT) uses the Project Delivery Process to guide work on transportation projects from the identification of a transportation related problem through final construction. This process helps NJDOT demonstrate to Federal and State Agencies that the Department is capable of managing projects and utilizing resources as good stewards. Ultimately the process shows that the Department can manage transportation projects that result in high quality changes to the transportation systems at the lowest cost possible. The Project Delivery Process at NJDOT is constantly evaluated and improved based on lessons learned and on best practices from other related industries.

## Project Delivery Process Overview Objectives

The objectives of this overview are: clarify the Project Delivery Process (PDP), show readers where to get PDP guidance, and answer Frequently Asked Questions (FAQs). To clarify the process, this overview includes defining what the process is, how the PDP changes were determined, and how the PDP changes were approved. Showing attendees where to get PDP guidance is essential for key stakeholders to understand their roles and responsibilities. Addressing PDP FAQs should make understanding the Process easier.

## Project Delivery Process Purpose

NJDOT delivers hundreds of millions of dollars worth of transportation projects annually and manages these projects using its PDP. This Process is how NJDOT evaluates, plans, designs and constructs Capital projects.

*Regulatory Compliance and Access to Funds* - The Federal Highway Administration (FHWA) requires use of a formal project delivery process in order to obtain approval and access to millions of dollars of Federal funding. The NJDOT's PDP aligns with FHWA's regulations and controls and makes it easier to obtain Federal approval.

*Consistent/Predictable Performance* and *Quality Results* - This Process is a model that provides consistency and is how the NJDOT works to ensure a quality product is created on time and at the lowest cost possible. Use of this standard process is necessary because it provides the foundation for all of the Department's service areas and provides guidance to Project Management staff.

## Why did the PDP change?

In 2009, the Department initiated a process to re-engineer much of the existing PDP. The NJDOT needed to change the delivery process to more consistently align with FHWA regulations. Additionally, both NJDOT Senior Management and

FHWA Officials wanted to revise the process to reduce design re-work by obtaining two major regulatory approvals (environmental document, design exception) before final design work is done.

The goals for the revision was to have more available funds for projects by reducing the number of design changes, reduce the impacts of the changes, and improve our relationship with our transportation partner, the FHWA.

**Improved performance and Efficiency**

NJDOT Senior Management and FHWA Officials agree that PDP goals can be accomplished by improving performance and efficiency. New PDP guidance and tools were developed to aid with compliance and success. Examples of these tools are the Quality Management Plan, revised Scope Statements, Interactive Communications, and Design Communications Report. The Quality Management Plan is a document in which the Designer must outline their procedures and process for producing a quality product or service. Each designer must have a company-specific Quality Management Plan, approved by the Department. Scope Statements are required for every development phase and outline the work to be accomplished in that phase. Interactive Communications are the method for project stakeholders to interact while the project is on-going and pushes for issues to be identified and addressed much earlier in the design development. The design decisions that result from interactive communications are recorded in the Design Communications Report.

**Results of PDP Changes**

The results of the PDP changes are:

- regulatory compliance achievement
- better design accountability
- consistent execution of the Process, resulting in fewer scope changes

**Critical Success Factors**

Critical Success factors (CSFs) are those few tools or concepts that absolutely must be performed to ensure overall success. For the Project Delivery Process, those CSFs can be divided into the following two categories:

- ***Key Work Products and Milestones***
- ***Methods***

Key Work Products and Milestones include:

- Comprehensive Scope Statements (for each design phase)
- NEPA Classification identified in Concept Development
- Ensuring the design addresses the Purpose and Need
- Environmental Document and Design Exception Report approved in Preliminary Engineering
- Designer selected in CD for PE, FD and Construction
- ROW acquired in FD

Key Methods include:

- Communication/Interactive Communications (telling people what they need to know when they need to know it)
- Clear and consistent guidance

- Teamwork across the organization (entire project team focused on the project goal)
- Project team accountability (project only succeeds when everyone does their part)
- Appropriate project customization (different problems need customized solutions)

In addition, it's crucial to have the right people at Core Group meetings. Service area representatives attending Core Group meetings need to be authorized to make decisions for the Department.

**Effects on existing projects**

NJDOT required a transition plan to migrate projects from the former delivery process to the new Project Delivery Process. Program Managers assessed each project within their area and determined the appropriate development path that that particular project would follow. The PMO assembled the existing project list and posted the list on the CPD website.

**Capital Project Delivery Phases**

- Problem Screening – Formerly called "Project Screening" but was renamed to more accurately reflect the work that is accomplished during this phase.
- Concept Development – The work in this phase is comprised of the work that was previously in "Concept Development", "Feasibility Assessment" and a portion of "Preliminary Design".
- Preliminary Engineering – Formerly called "Preliminary Design" but was renamed to reflect the FHWA authorization for work during this phase.
- Final Design – Duration of this phase is longer because of requirement to delay start of ROW acquisition until the approved Environmental Document is obtained.
- Construction – Now includes Advertise and Award activities that were previously in Final Design.

**Project Delivery Phase Durations**


As the above graphic shows, the overall duration for the screening, planning, and production stages has not increased. More emphasis has been placed on planning tasks to minimize significant scope change.

**Problem Screening Overview**

The Department's Project Delivery Process begins with an evaluation of potential transportation problems. During evaluation, the Department researches the problem in order to have a clear understanding of the problem and its impact and determines how important that problem is relevant to other transportation problems. Problems are then ranked based on priority and importance. A primary goal of NJDOT is to address those problems that, when fixed, will have the most positive impact to the transportation system. Aside from priority, another consideration in the selection of potential projects includes the type of work required and the geographical location. Taking into consideration the priority, type and location, NJDOT makes the best decision for the state and its taxpayers. NJDOT tries to provide some level of balance in the numbers and types and locations of projects.

**Problem Screening Objectives**

The three main objectives for this Phase are:

- Ensure the problem is properly understood and documented and the screening consistent with the Statewide Capital Investment Strategy.
- Ensure that all work is properly authorized before work starts. For Capital projects, a Charter is required.
- Ensure that the problem is advanced along the proper path

**Problem Screening Key Products**

The Problem Screening Phase contains three main products:

- Tier 1 Screening Documentation
- Tier 2 Screening Report
- Charter

The Tier 1 Screening Documentation contains the Problem Statement assessment. The Tier 2 Screening Report verifies the magnitude of the problem and contains the preliminary scope of work recommendation. The Charter contains justification for the work and work objectives.

**What's new in Problem Screening**

- Creation of a Charter to formally authorize beginning the work
- Approval by the CPC to advance to formally authorize further development

If a project is advanced, it will either go directly to Maintenance or Concept Development. There are no pipeline assignments and no skipping to PE or FD.

**Who's involved in Problem Screening**

- Capital Investment Strategies
- Project Management
- Subject Matter Experts

**Major Responsibilities in Problem Screening**

Capital Investment Strategies

- *Validate Problem Statement*
- *Perform Tier 1 Screening*
- *Prepare Tier 1 Screening Documentation*
- *Prepare Charter*
- *Obtain Capital Program Committee Assignment (if advancing to Maintenance)*

Project Management

- *Perform Tier 2 Screening*
- *Prepare Tier 2 Screening Report*
- *Provide Charter concurrence*
- *Obtain Capital Program Committee approval (if advancing to CD)*

Subject Matter Experts

- *Assist Capital Investment Strategies and Project Management with Tier 1 and Tier 2 Screenings*

**Concept Development Overview**

In the planning stage, the NJDOT reviews the problems associated with the project and considers alternatives to solve the problem. Alternatives are developed and evaluated based on several factors, including environmental impacts, constructability, cost effectiveness, applicability and constructability. A recommended solution (i.e., Preliminary Preferred Alternative) is then developed. The Project Delivery Process helps ensure that the Preliminary Preferred Alternative is the best solution to fix the original problem, has the lowest negative impact, and that it can be delivered in a timely manner at the lowest cost possible.

**Concept Development Objectives**

The four main objectives for this Phase are:

- Complete Purpose and Need Statement
- Select a Preliminary Preferred Alternative (PPA) after identifying and analyzing reasonable alternatives and obtain stakeholder buy-in
- Obtain approval and authorization to proceed into Preliminary Engineering
- Procure a Designer for future phases of work

**Concept Development Key Products**

The Concept Development Phase contains ten main products:

- CD Scope Statement, which is based on the Work Breakdown Structure (WBS) and network activities.
- Purpose and Need Statement
- Preliminary Preferred Alternative (PPA)
- Public Involvement Action Plan (PIAP)
- CD Report
- Design Communications Report
- PE Scope Statement
- PE Schedule and Budget
- CD Quality Management Certification
- Consultant Agreement – not needed for in-house Design

**What's new in Concept Development**

- PM prepares CD Scope Statement
- Designer updates Design Communications Report as required
- PM approves Design Communications Report updates
- Designer and PM complete the Complete Streets Checklist
- Initially Preferred Alternative (IPA) is now called the Preliminary Preferred Alternative (PPA)
- NJDOT Value Engineering (VE) Unit prepares a VE Technical Report, if applicable
- PM prepares a Railroad Agreement, if applicable
- Designer prepares Hydrologic and Hydraulic (H&H) Analysis, if applicable

- Designer conducts Scour and Seismic Retrofit Analysis, if applicable
- Designer conducts ITS Needs Assessment
- Designer performs storm water management analysis, if applicable
- Designer conducts soil testing for Stormwater Compliance, if applicable
- Bureau of Construction Management reviews PPA
- Designer prepares Systems Engineering Review Form (SERF), if applicable
- PM prepares PE Project Management Plan
- Designer prepares CD Quality Management Certification
- PM approves CD Quality Management Certification once CPC approves project

**Who's involved in Concept Development**

- Project Management
- Designer
- Subject Matter Experts
- FHWA

**Major Responsibilities in Concept Development**

Project Management

- *Develop CD Scope Statement*
- *Execute CD Task Order*
- *Create CD Schedule*
- *Prepare CD Public Involvement Action Plan*
- *Present Preliminary Preferred Alternative to Capital Program Committee*
- *Approve all Design Communications Report Entries*
- *Prepare PE Public Involvement Action Plan*
- *Develop PE Schedule and Budget*
- *Procure Designer for PE*
- *Close out CD*

Designer

- *Prepare Purpose and Need Statement*
- *Develop Preliminary Preferred Alternative*
- *Prepare Design Communications Report*
- *Prepare Environmental Screening Report*
- *Prepare CD Quality Management Certification*
- *Prepare CD Report*
- *Prepare PE Scope Statement*

Subject Matter Experts

- *Provide input and make decisions in Scope Team and Core Group Meetings*
- *Review CD Scope Statement, if necessary*
- *Concur/Sign PE Scope Statement*

FHWA

- *Provide input and make decisions in Scope Team and Core Group Meetings*
- *Review and approve CD Report*
- *Authorize PE Funding*

**Preliminary Engineering Overview**

Preliminary Engineering includes all the work needed to obtain an approved Environmental Document and an approved Design Exception Report, if required. This is important to ensure the work starting in Final Design will be based on an Approved Project Plan which is not likely to change in any significant way.

**Preliminary Engineering Objectives**

The two main objectives for this Phase are:

- Obtain an approved Environmental Document
- Obtain an approved Design Exception Report (if required)

**Preliminary Engineering Key Products**

The Preliminary Engineering Phase contains seven main products as follows:

- Approved Environmental Document
- Approved Design Exception Report (if required)
- Approved Project Plan
- PE Quality Management Certification
- PE Report
- Final Design Scope Statement
- FD Schedule and Budget

**What's new in Preliminary Engineering**

- Designer updates Design Communications Report as required
- PM approves Design Communications Report updates
- Designer and PM complete the Complete Streets Checklist
- Designer and PM hold a Diagnostic Team Meeting, if applicable
- Designer prepares a ROW Report
- Designer prepares PE Quality Management Certification
- PM approves PE Quality Management Certification
- PM updates Project Management Plan

- Designer prepares a PE Report
- FHWA approves the Environmental Document with the PE Report
- Design Exceptions and the Environmental Document must be approved before proceeding to FD
- The Approved Project Plan is the approved PPA (24" x 36" plan sheets)
- No more Preliminary Design Checklist
- No more mandatory Interim Design Submissions

**Who's involved in Preliminary Engineering**

- Project Management
- Designer
- Subject Matter Experts
- FHWA

**Major Responsibilities in Preliminary Engineering**

Project Management

- *Approve all Design Communications Report entries*
- *Present project to Capital Program Screening Committee*
- *Prepare FD Public Involvement Action Plan*
- *Concur/Sign FD Scope Statement*
- *Develop FD Schedule*
- *Develop FD Budget*
- *Close out PE*

Designer

- *Prepare Design Communications Report*
- *Prepare Environmental Document*
- *Prepare Design Exception Report (if required)*
- *Refine Preliminary Preferred Alternative*
- *Complete PE Quality Management Certification*
- *Prepare PE Report*
- *Prepare FD Scope Statement*

Subject Matter Experts

- *Provide input and make decisions regarding respective disciplines*
    - *BLAES for Environmental Document*
    - *Quality Management Services for Design Exception Report*
- *Concur/Sign FD Scope Statement*
- *Provide comments on PE Report*

FHWA

- *If necessary, review and approve the Environmental Document*
- *If necessary, review and approve the Design Exception Report*
- *Review and approve PE Report*
- *Authorize FD Funding*

**Final Design Overview**

During Final Design, a set of detailed construction plans and specifications are developed for construction of the project. A primary goal of the Department is to ensure that a quality design is developed so that during construction, a quality product can be built. In addition to developing the detailed plans and specifications, the Department also obtains the necessary permits to begin construction of the project. The Project Delivery Process helps ensure that all design decisions involve the right subject matter experts, the design will be constructible, the end result addresses the Purpose and Need Statement, and that few changes will be required during the Construction phase.

**Final Design Objectives**

The four main objectives for this Phase are:

- Obtain the ROW
- Obtain required authorizations and approvals
- Complete the contract documents
- Obtain Authorization to Advertise

**Final Design Key Products**

The Final Design Phase contains eight main products as follows:

- Environmental Reevaluations
- Environmental Permits, Licenses and Plans
- Certifications and Clearances
- Acquired ROW
- FD Submission
- PS&E Submission
- Quality Management Certifications
- Authorization Package for Advertisement

**What's new in Final Design**

- Designer updates Design Communications Report as required
- PM approves Design Communications Report updates
- Designer prepares FD Submission Quality Management Certification
- Designer prepares PS&E Submission Quality Management Certification

**Who's involved in Final Design**

- Project Management
- Designer
- Subject Matter Experts
- FHWA

**Major Responsibilities in Final Design**

Project Management

- *Coordinate Interactive Communications*
- *Approve all Design Communications Report entries*
- *Review the FD Submission*
- *Review the PS&E Submission*
- *Complete Department Certification*
- *Close out FD*

Designer

- *Prepare Design Communications Report*
- *Prepare FD Submission package*
- *Complete FDS Quality Management Certification*
- *Prepare PS&E Submission package*
- *Complete PS&E Quality Management Certification*

Subject Matter Experts

- *Provide input and make decisions regarding respective disciplines*
- *Obtain permits and licenses*
- *Prepare Environmental Reevaluations*
- *Acquire ROW*
- *Provide certifications and clearances*
- *Review the FD Submission*
- *Review the PS&E Submission*

FHWA

- *If necessary, review and approve the FD Submission*
- *If necessary, review and approve the PS&E Submission*
- *Authorize Construction Funding*

**Construction Overview**

The public usually only sees what happens in the Construction Phase of the Project Delivery Process. During construction, the Department focuses on ensuring minimal impacts to the existing infrastructure and the traveling public. The Department must also ensure that the contractor is building the project in accordance with the contract documents.

Additionally, during the construction phase, the Department seeks expert advice from various disciplines to ensure the right thing is being done. By using this process, the Department utilizes the available resources in the best way possible. The Project Delivery Process also helps ensure that all work adheres to state and federal regulations.

**Objectives**

The three main objectives for this Phase are:

- Advertise and Award the project
- Construct the project
- Close the project

**Construction Key Products**

The Preliminary Engineering Phase contains seven main products as follows:

- Advertising Package
- Awarded Contract
- Working Drawings
- Change Requests
- Contractor Claims
- Agreement Closeouts
- Final Audit

**What's new in Construction**

- Advertise and Award activities were moved from Final Design to Construction

**Who's involved in Construction**

- Construction Management
- Procurement
- Project Management
- Regional Construction
- Contractor
- Designer
- Subject Matter Experts

**Major Responsibilities in Construction**

Project Management

- *Approve all Design Communications Report Entries*
- *Approve Construction Change Requests*
- *Review Contractor Claims*
- *Complete Agreement Closeouts*

- *Close out Construction*

Construction Management

- *Prepare Advertising Package*

Procurement

- *Process Advertising Package*

Regional Construction

- *Monitor the Contractor's progress in the field*
- *Process Construction Change Requests*
- *Process Contractor Claims*
- *Review and accept Working Drawings*
- *Prepare Contractor Evaluations*
- *Perform Substantial Completion Review*
- *Perform Final Acceptance Review*

Contractor

- *Prepare Bid*
- *Prepare Working Drawings*
- *Prepare VE Construction Proposals*
- *Prepare Construction Change Requests*
- *Prepare Contractor Claims*

Designer

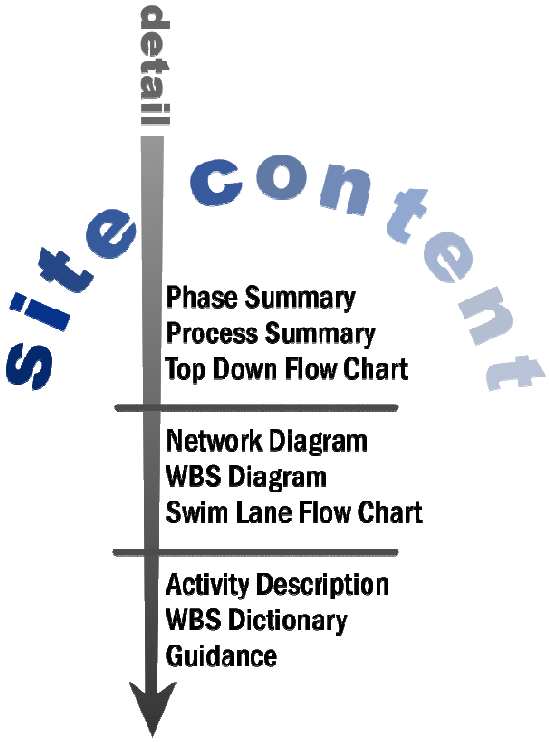
- *Prepare Design Communications Report*
- *Provide Construction Engineering Support*

Subject Matter Experts

- *Assist Project Management and Regional Construction*

**Guidance Hierarchy**

NJDOT's Project Delivery Process guidance is structured to have an information hierarchy. The hierarchy ranges from summary to detailed information. Summary information is useful to achieve an overall understanding of the process, while the detailed information is used to accomplish the work. The summary information includes the Project Delivery Process Diagram, Process and Service Area Summaries, and Phase Summaries. The next level of detail includes top down flow charts. A Top Down Flow Chart shows the high-level view of how a process works and the major activities and the relationships between the activities (the logic). Following that level is the more detailed guidance information, such as Swim Lane Flow Charts, Network Diagrams, Activity Descriptions, Work Breakdown Structure (WBS) Diagrams, and WBS Dictionaries. The final level of detailed guidance documents are Guidelines, templates, Checklists, etc. The following graphic illustrates this information hierarchy:




**Where to find the Project Delivery Process Guidance**

The Project Delivery Process guidance can be found on NJDOT's homepage at http://www.state.nj.us/transportation/. Click on the "Doing Business" tab and then the "Capital Project Delivery" option in the drop down menu. This will take you the Capital Project Delivery Overview page: http://www.state.nj.us/transportation/capital/pd/.

**"Limited Scope Project" Initiative**

The PMO is spearheading an effort to develop a Network Diagram and supporting guidance for limited scope projects. These projects are to address problems usually identified from one of NJDOT's Management systems, such as the Pavement Management system, Drainage Management System, or Safety Management system. The scopes of these projects are very limited and do not include ROW acquisition, permanent utility relocation and access issues.

**Frequently Asked Questions**

*Why did the PMO change the Project Delivery Process?*

The PMO didn't change the Project Delivery Process; it acted as the facilitator for this effort on behalf of the Department.

*Who was involved in developing the new Project Delivery Process?*

The PMO coordinated with over 150 NJDOT employees in 35 service areas, the design consultant community and FHWA.

*How was FHWA involved in revising the Project Delivery Process?*

FHWA staff were on the process team and approved the final Project Delivery Process.

*Why was ROW acquisition moved to FD?*

ROW acquisition was moved to Final Design because NJDOT Senior Management and FHWA agreed that beginning the ROW process prior to obtaining an approved Environmental Document and Design Exception resulted in too many design changes.

*Why does the schedule template show such a long duration?*

The schedule template shows all of the activities for NJDOT Capital projects. The schedule template is to be used as a starting point and is to be customized on a project by project basis.

*Why was Preliminary Design (PD) changed to Preliminary Engineering (PE)?*

Preliminary Design was renamed to reflect the FHWA authorization for work during this phase.

*Why were the activity numbers renumbered?*

The activity numbers were renumbered for several reasons. The first is that activity descriptions were revised and as a result, existing activity names were deleted and new activities were added. Also, the first number in the new activity numbers reflects the phase of work in which the activity occurs (e.g., 1000 Problem Screening, 2000 Concept Development).

*Why were the activity descriptions rewritten?*

The activity descriptions were revised to reflect the current delivery process. Some of the previous description information (tasks or service areas (Bureaus/Units/Offices)) were incomplete or were obsolete.

*What is the Work Breakdown Structure (WBS) and what is a WBS element?*

The Work Breakdown Structure (WBS) is a deliverable oriented decomposition of a project into smaller components. It defines and groups a project's WBS elements. A WBS Element is product or deliverable.

*What happened to the PD Submission?*

The PD Submission was eliminated. The design-related work product in PE is provided as part of the PE Report.

*What's a Design Communications Report (DCR)?*

A DCR is an electronic file that documents design decision communications. The DCR documents design decisions at the point in the process in which they occur.

*What engineering work gets done in PE?*

The engineering work done in PE is only that work in support of the Environmental Document or the Design Exception Report, if required.

*Do we need CPC approval to enter FD?*

CPC approval is needed to enter FD to ensure that Senior Management is in agreement with advancing the project to the final level of design production.

*Where do I get additional Project Delivery Process Guidance?*

Project Delivery Process guidance can be found on the Capital Project Delivery website. The website contains an overview and links to summaries, guidelines, templates, activity descriptions, etc. The site can be accessed by internal and external project stakeholders.

*Why do I have to go back to the website each time I need a template or form?*

Because templates or forms are subject to revisions, the PMO recommends that the user acquire them from the CDP website to ensure the most current version.

*What's a Charter?*

Simply put, a Charter is the formal authorization to begin the work. The Charter contains the project description, objectives, background, products/deliverable, and what is the PM's authority. The Charter is approved by the project sponsor.

*What happened to the FD Submission Checklist?*

The FD Submission Checklist was eliminated. The checklist was implemented several years ago as a quality control tool. Unfortunately, the checklist didn't successfully accomplish that goal. The FD Submission Checklist has been replaced by the designer certifying quality based on the Final Design Scope Statement.