

## PLAN DEVELOPMENT PROCESS

### CONCEPT DEVELOPMENT

#### PROJECT SCOPING

##### REQUIRED STEPS

- Initiate project by establishing preliminary funding through finance by filing a project number request.
- Determine the need for consultant services and, if required, establish how consulting services will be obtained.
- Conduct a preliminary scoping meeting with project team. Project team should include representation from Environmental Studies, Utilities, Construction, Traffic, Real Estate, Team Support and, potentially, Maintenance and Operations, DTC, Public Relations and Finance. Set preliminary scheduling parameters such as length of project, type of project, project goals and initial thoughts on milestones. Field view/scope with all project team members. Provide a path forward for project team for baseline data collection and other tasks.
- Define the area of interest.
- If not done during scoping meeting, attend the monthly meeting with representatives from Project Development and Environmental Studies to discuss level of environmental documentation required (i.e. EIS, EA, or CEE), and natural and cultural resource survey requirements.
- Discuss public involvement strategy and environmental determination with FHWA
- Meet with state and federal environmental resource agencies. For larger more complex projects with significant wetlands and permit issues, the Joint Permit Review (JPR) quarterly meeting is the appropriate forum to discuss the purpose and need, logical termini and the NEPA (National Environmental Policy Act) process. Discuss the MATE (Mid-Atlantic Transportation and Environmental Streamlining) process, level of environmental documentation and public involvement strategy. Set up scoping meeting with pertinent environmental agencies and initiate Section 106 consultation if necessary. Note that the JPR should be updated on the project at subsequent quarterly meetings by coordination through Environmental Studies. For less complex projects with routine permit requirements, Environmental Studies Office (ESO) monthly agency field reviews, and/or Section 106 coordination meetings would be the appropriate forum.
- With the aid of Public Relations begin building a public involvement plan. The plan may include a working group (if needed), public workshops, media strategies, public surveys, organizational meetings, town meetings and potentially a website, newsletter and/or video.
- If a working group is established (for large, complex projects), members should clearly be a cross section of the affected community including business owners, residents, local officials, emergency response personnel, key community organization members, etc. Define role of working group members and project goals.
- Prepare a draft project schedule for the concept development plan package. This schedule integrates the environmental, public involvement, and engineering milestones into a cohesive timeline.

## **PURPOSE AND NEED**

### REQUIRED STEPS

- Write a clear and concise document that explains the project objective(s). Depending on project complexity, this document may be a couple of paragraphs or a couple of pages.
- Establish an appropriate level of detail necessary to conduct a needs study, and perform needs study by assessing current conditions and projecting future demand. Continue building environmental inventory concurrently with the needs study.
- Obtain concurrence from FHWA on Purpose and Need (MATE CONCURRENCE POINT).

## **DEVELOP AND EVALUATE ALTERNATIVES**

### REQUIRED STEPS

- Verify the study area boundaries and logical termini.
- Refine the environmental inventory started during the purpose and need step.
- Use current and predicted future conditions to develop multi-modal alternatives.
- Define the principal design and/or engineering items that could affect location and scope of transportation improvements.
- Select a preliminary range of multi-modal alternatives that will investigate improvement of the existing facility, including the no build alternatives, while recognizing context sensitive design solutions.
- Perform an analysis of each alternative on how well they satisfy the project's purpose and need.
- Determine the impact of each alternative as it relates to the environment. In order, attempt to avoid, minimize and lastly, mitigate environmental impacts.
- Determine the compatibility of each alternative as it relates to other relevant state and local transportation projects or developments.
- Note that development and evaluation of alternatives are done under the guidance and input of the working group, general public, environmental resource agencies, FHWA (if applicable), and department experts, requiring meetings with these groups throughout this phase.
- Refine alternatives to those that meet the goals and objectives of the project and address the issues in the purpose and need document, taking into consideration all socio-economic and environmental issues and other collected data.
- Continue working through MATE process and environmental documentation.
- Perform preliminary work zone impacts assessment to determine if constructability should be a factor in the preferred alternative selection.

## **RECOMMENDED ALTERNATIVE**

### REQUIRED STEPS

- Further refine alternatives by using context sensitive design criteria to avoid or minimize potential environmental impacts including sites contaminated by hazardous materials.
- Re-analyze alternatives to assess and mitigate various benefits, impacts and costs that are likely to result from implementation of each alternative.
- Based on costs, impacts, and deliverable goals and utilizing input from department personnel, working group, public meetings, environmental resource agencies, FHWA (if applicable) and project team, a selected alternative is recommended.
- Publish a document that summarizes how each alternative was analyzed and why it was dismissed resulting in the selection of the preferred alternative.
- Finish NEPA documentation and obtain concurrence from FHWA and resource agencies (CONCURRENCE POINT).

## **COMPILE CONCEPT PLAN FOR SELECTED ALTERNATIVE**

### **REQUIRED STEPS**

- Produce a conceptual design including typical sections and construction plans. Include limits of construction and right of way requirements.
- Collaborate with Utility Section to determine utility impacts and any possible reimbursable utility relocations required.
- Collaborate with the Real Estate Section to determine right-of-way requirements and prepare preliminary cost estimates for any acquisitions.
- Collaborate with Materials and Research for pavement design
- Collaborate with Traffic to determine the need for a Traffic Management Plan (TMP) and for signalization and coordination conduit needs
- Prepare a project cost estimate that includes all relevant sections, and complete the Construction Project Estimate and Capital Improvement Project Cost Estimate forms.
- Include any mitigation and minimization plans for the preferred action in the NEPA document to be included in the concept plan package.
- Review Concept Plan Package with Assistant Director for Project Development
- Present concept plan package to the Project Development Committee (PDC) for final approval. Package to include PDC Concept Plan Checklist with the following required items:
  - Location Map (showing general location and project limits)
  - Conceptual plans (approximately 20% design plans)  
(Conceptual plans shall address critical issues such as stormwater management, construction impacts, timing issues that affect when the project may be built, and the need for any advance right of way acquisition, among others)
  - Prioritization data and rating (CTP page)
  - Final NEPA Document
  - List of required permits
  - Summary of Cultural Resource consultation and requirements
  - Summary of multi-modal options considered and included
  - Summary of Public Involvement Process to date
  - Project estimate using Construction Project Estimate form
  - Final design schedule including real estate and environmental permitting timeframes
  - Design Exception(s)

**NOTE:** Project must be feasible from an engineering, economic and environmental impact perspective. The project must also incorporate concepts that improve maintainability upon completion of construction. It is also important to note that many tasks required to advance the project to, or beyond, survey plans may commence as the concept plan for the selected alternative is being finalized. These tasks may include the field survey and deed research, among others

**NOTE:** Depending on the complexity of the project, the project team may elect to have the existing utilities designated or field marked by Miss Utility prior to the field survey. This would allow for inclusion of existing utilities in the plans as early as possible. The determination of whether a project should take this approach at this early stage will be made by the Utilities Section and the Group Engineer for Project Development in conjunction with the Group Engineer for Construction. (See Utility Coordination Guidelines)

## **DESIGN**

### **SURVEY PLANS**

#### **REQUIRED SHEETS**

- Title sheet
- Plan sheet index
- Notes and legend sheet
- Horizontal and vertical control sheets including: traverse point diagrams and construction and right-of-way baselines (based on concrete monuments, iron pipes, or existing concrete pavement).
- Construction plan with existing detail labeled and existing right-of-way showing property owner, tax parcel number and deed book record (based on old plans and deeds).

#### **PLAN SUBMITTAL AND COORDINATION REQUIRED**

- To Utilities Section for their distribution to utility companies for plotting existing facilities. In many cases existing facilities will be designated to determine exact locations in the early stages of the design process. Generally projects such as bridge and intersection projects should be designated, while designation for road projects should be done at the Preliminary Plan stage. When in question, the determination of whether a project will be designated or not will be made by the Utilities Section and the Group Engineer for Project Development in conjunction with the Group Engineer for Construction.
- To Team Support for existing R/W verification and deed research. In many cases researching the deeds and providing them to Survey Section during the field survey will allow them to pick up additional property corners which aids in generating the existing R/W. Identify need for a Town Agreement, required when project is within incorporated town limits. (See Team Support Plan Review Process document)
- To DTC for existing or proposed transit services and facilities.
- To Environmental Studies for verification or identification of wetland, historic or other sites potentially requiring permits. (In most cases sites should have been identified during the concept development phase and included in the concept plan package.)
- To Bicycle/Pedestrian Coordinator for identification of existing facilities and proposed facilities if not yet identified at the concept plan phase.
- To Materials and Research for structural borings (Bridge Design).
- To Materials & Research for pavement evaluation and design verification including pavement cores and subgrade soils analysis. (Pavement design should be obtained during the concept development phase and included in the concept plan package.)
- To Design Services for hazardous material delineation and remediation strategy.
- To Traffic for existing coordination conduit locations.

NOTE: As design is advanced it is important to maintain commitments made in the concept development phase. It is also important to further environmental impact minimization efforts thru the entire design process.

### **PRE-PRELIMINARY PLANS (IF SIGNAL PLANS ARE REQUIRED, NON CONSULTANT JOBS)**

- Title sheet
- Plan sheet index
- Notes and legend sheet
- Horizontal and vertical control
- Construction plan with existing utilities, conceptual drainage, and conceptual roadway design
- Existing profile

**REQUIRED PLAN REVIEW:** Internal Preliminary Plan Review (see Plan Review Process Outline) for Quality Assurance prior to Department wide review.

### **PRELIMINARY CONSTRUCTION PLANS**

- Title sheet
- Plan sheet index
- Notes and legend sheet
- Typical sections
- Horizontal and vertical control
- Construction plan with proposed design (including conceptual drainage layout and clear zone)
- Existing and proposed profile including existing drainage
- Grades and Geometrics showing where coordinates are to be given (edge of gutter, begin/end of transitions, and critical curve points) for proposed geometrics and tick marks where grades will be given (edge of gutter in intersections, superelevation transitions, and critical points)
- Conceptual stormwater management or a waiver from the SWM Engineer
- Construction details
- Conceptual construction phasing, not too detailed, enough to discuss and brainstorm
- Conceptual environmental compliance plan
- Lighting plans (including proposed pole locations)
- Signing and striping and coordination conduit plans with proposed striping, existing signs and proposed sign structure locations shown
- Signalization plans (including proposed signal pole and sign structure locations)

## PLAN SUBMITTAL AND COORDINATION REQUIRED

- To Utilities Section for distribution to utility companies for overhead facility relocation design (to determine real estate needs), and underground facility conflict review. Based upon extent of underground utility conflicts and coordination with Utilities Section, request appropriate number of utility test pits and designation where necessary through Utilities Section. Also, provide locations and approximate depths of large cuts and fills.
- To Team Support for verification of real estate needs and review and comment.
- To Stormwater Engineer for review and comment.
- To Environmental Studies for continued coordination with affected resource agencies and consistency with environmental documentation.
- To Traffic for review and comment pertaining to signal design, proposed signing and striping, and detour plan consideration.
- To Traffic Safety Program Manager for determining level of detail required for the Traffic Management Plan (TMP). The type of plan required depends on the significance of the project as defined in the DelDOT's Work Zone Safety and Mobility Procedures and Guidelines. For more information on TMP's, see Requirements for Traffic Management Plan on the DRC:  
[http://deldot.gov/information/business/drc/pd\\_files/plan\\_development/lane\\_restrictions\\_for\\_maintenance\\_and\\_construction\\_work.pdf](http://deldot.gov/information/business/drc/pd_files/plan_development/lane_restrictions_for_maintenance_and_construction_work.pdf).
- To Construction for overall plan review and comment.
- Coordinate tree impact and mitigation analysis with landscape architect to determine tree replacement requirements and subsequent real estate needs.
- Other submittals are to be made to the following for general review and comment: Materials and Research, Quality Section, Bicycle Pedestrian Coordinator, FHWA (as required), DTC, Chief Engineer and others (see current Plan Distribution List).
- Certain projects should be submitted to Maintenance and Operations for their review. These project submittals shall be limited to maintenance sensitive projects. These projects may include projects with intensive landscaping, guardrail placement, and other maintenance sensitive issues.

**REQUIRED PLAN REVIEW:** Preliminary Plan Review (see Plan Review Process Outline)

**REQUIRED PUBLIC WORKSHOP:** Depending on complexity of project at least one Design Public Workshop will typically be held soon after the Preliminary Plan submittal (see project initiation form). The public involvement strategy established in the concept development phase shall be maintained for project continuity. Major changes to scope as a result of the workshop will require immediate coordination with all sections involved with the project.

**REQUIRED COORDINATION:** Continued coordination with Utilities section and affected utility companies is required. Projects that require overhead utility relocation must have the location of relocated facilities soon after the preliminary plan submission. This is required so the proper amount of real estate can be acquired to facilitate the relocation, and the relocation of these facilities can be coordinated with other aerial items such as signal poles, light poles, and sign structures. It is also imperative that the utility test hole information be analyzed to determine which underground utility conflicts can not be avoided. This analysis is to be accomplished as part of generating detailed cross sections for the semi-final construction submission. Once it is determined that it is not possible to avoid the utility conflict, the affected utility company needs to be informed as soon as possible so underground relocation design can commence. If underground relocation will impact real estate needs, it should be identified at this time. It should also be noted that any conflicts that arise after preliminary plan submittal, as the result of a design change, should be brought to the attention of the affected utility company as soon as it is identified. (See Utility Coordination Guidelines).

Coordination with the Specifications Engineer is required so the necessary marked up special provisions can be included with the Semi-final plan submission.

For projects with complex maintenance of traffic issues a coordination meeting should be held with Construction and Traffic (including the Safety Section) to receive their input.

**REQUIRED PLAN REVIEW:** Internal S/F Plan review (see Plan Review Process Outline)

### **SEMI-FINAL RIGHT-OF-WAY PLANS**

- Title Sheet
- Symbol sheet
- Geometric sheet
- Mosaic
- Right-of-way plans
- Right-of-way data sheets
- Right-of-way tabulation sheets

### **PLAN SUBMITTAL AND COORDINATION REQUIRED**

- To Team Support for review and comment and preparation of draft town agreements if project is located within incorporated town limits. Final R/W plan approval will require submitting Revised Semi-final R/W plans to Design Support. In rare cases the submittal of revised plans may have to occur more than once. In all cases the semi-final R/W plans are to be accompanied by construction plans that have been advanced to at least the semi-final stage of design. (See Team Support Plan Review Process document)
- To Real Estate for review and comment.

## **SEMI-FINAL CONSTRUCTION PLANS**

- Title sheet
- Plan sheet index
- Notes and legend sheet
- Typical sections
- Horizontal and vertical control
- Construction plan with final proposed design (including final drainage with pipe sizes and inverts.)
- Existing and proposed profile including existing and proposed drainage, underground utilities with test hole data, soil boring, and test holes plotted
- Grades and Geometrics with final geometrics and grades
- Semi-final stormwater management plans and report or a waiver from the SWM Engineer
- Construction details
- Earthwork Summary (Filled out if possible)
- Construction phasing, M.O.T., & erosion control plans (with preliminary utility construction phasing taken into account)
- Environmental Compliance plan (notes and permit information provided by Environmental studies)
- Detour plans
- Lighting plan
- Landscaping plan
- Utility relocation plans (overhead utility relocations required; with underground facility relocation design when possible. Where underground facility relocation impacts real estate needs, horizontal location is required.)
- Signing and striping and coordination conduit plans with final striping and proposed signs and sign locations shown (including final sign structure locations.)
- Signalization plans
- Quantity Summary (Items mandatory with quantities if possible)
- Semi-final cross sections (existing surface, proposed surface, LOC, existing & proposed R/W, clear zones, proposed drainage and utility test hole data)
- Semi-final cost estimate and estimated number of calendar days to complete the construction with utility relocation work included. This cost estimate should be treated as a checkpoint to insure the total project cost has not increased by more than 20%. The CTP cost estimate form shall be used to insure a complete estimate. This estimate shall include updated real estate, environmental, and utility costs, as well as a detailed construction estimate commensurate with the level of detail in a set of semi-final construction plans. Any project with an estimate that increases by 20% or more is subject to approval by the Metropolitan Planning Organization in the region. As such, the importance of this estimate can not be emphasized enough.

## PLAN SUBMITTAL AND COORDINATION REQUIRED

- To Stormwater Engineer with Semi-final Drainage Report for review and comment.
- To Construction with marked up Semi-final special provisions for review and comment.
- To Traffic for review and comment and to begin Traffic Statement preparation.
- To Environmental Studies for review and comment, continued resource agency coordination, permit requests and to begin Environmental Statement preparation.
- To Specifications Engineer for review and comment.
- To Roadside Development Administrator to insure proper selection of tree types for replacement policy.
- Other submittals are to be made to the following for general review and comment: Materials and Research, Quality Section, Chief Safety Inspector, Bicycle/Pedestrian Coordinator, FHWA (as required), Architectural Accessibility Board (for approval), DTC, Chief Engineer and others (see current plan distribution list).
- To Utilities Section for distribution to utility companies for final utility relocation design. Utility companies will prepare a semi-final utility statement which the Project Team Leader will incorporate into a bar chart showing the road construction sequencing and how it coordinates with the utility relocation sequencing. A coordination meeting will then be scheduled with the affected utility companies to review the semi-final statements and sequencing bar chart. Utility companies will modify the semi-final statements based upon the coordination meeting and final utility statements are to be submitted to DelDOT within 30 days of the meeting. The Project Team Leader will modify the bar chart based upon the coordination meeting for inclusion in the final utility statement. (See Utility Coordination Guidelines)
- Coordination will occur with the Quality Section to determine the construction time necessary for the project taking into account the time detailed in the final utility statements. The construction sequencing bar charts will be updated and ultimately included in the final advertisement package.
- Coordination will occur with the Traffic and Construction Sections to further develop the final Traffic Management Plan.

**REQUIRED PLAN REVIEW:** Semi-final Plan Review (see Plan Review Process Outline)

## **FINAL RIGHT-OF-WAY PLANS**

- Title Sheet (signed & sealed)
- Symbol sheet
- Geometric sheet
- Mosaic
- Right-of-way plans
- Right-of-way data sheets
- Right-of-way tabulation sheets
- Semi-final cross sections (existing surface, proposed surface, LOC, existing & proposed R/W)

## **PLAN SUBMITTAL AND COORDINATION REQUIRED**

- To Real Estate for Acquisition with nearly final Construction plans (note, minor changes to plans may occur as a result of real estate negotiations with property owners). Inform Real Estate of any advanced utility relocation anticipated.
- To Team Support for final town agreement preparation if project is located in incorporated town limits. (See Team Support Plan Review Process document)

## **FINAL CONSTRUCTION PLANS**

- Title sheet (signed & sealed)
- Plan sheet index
- Notes and legend sheet
- Typical sections
- Horizontal and vertical control
- Final construction plan
- Existing and proposed roadway profile, to include proposed drainage and soil borings
- Grades and Geometrics with final geometrics and grades
- Final stormwater management plans and report
- Construction details
- Final Earthwork Summary, completed and filled in.
- Construction phasing, M.O.T., & erosion control plans (with utility construction phasing included)
- Environmental Compliance plan
- Detour plans
- Lighting plan
- Landscaping plan
- Utility relocation plan
- Final signing and striping and coordination plans
- Signalization plans
- Quantity Summary
- Final cross sections (existing surface, proposed surface and pavement box, LOC, existing and proposed R/W, clear zone, proposed drainage, and proposed utilities)

## **PLAN SUBMITTAL AND COORDINATION REQUIRED**

- To Construction with final quantity calculations for review and comment
- To Real Estate for continued acquisition and preparation of R/W certification
- To Utilities Section for verification of final Utility Statement
- To Traffic with final Traffic Management Plan for preparation of final Traffic Statement
- To Environmental Studies for final Environmental Statement
- To Timing Engineer with final quantity computations for final time assessment
- To Stormwater Engineer with final Drainage Report
- Note: Final Plan submittal letter to include a summary of major changes to the plans since the Semi-final plan submission.

**REQUIRED REVIEW:** A final review of the PS&E package including all statements and the special provisions is required by the Project Team Leader and the Squad Manager. This review should insure that the statements and the special provisions in no way conflict with information provided in the final plans.

### **PS&E SUBMISSION**

- Final Plans and Engineers Estimate to PS&E coordinator for final bid package preparation.
- Any changes that occur between the Final Plan submission and submission to PS&E, or after PS&E throughout the advertisement process, will require that the plans be re-submitted to the sections affected by the change (to be re-submitted to Construction in all cases). After awarding the project, a complete set of plans including any revisions is to be re-submitted to Utilities section for distribution to utility companies.
- It is also important that the Construction Project Manager forward any plan revisions to the Utilities Section for distribution to utility companies to continue coordination.

### **ADVERTISEMENT**

#### **COORDINATION REQUIRED**

- Depending on the complexity of the project, a pre-advertisement or pre-bid meeting may be required. This meeting is held for the benefit of prospective bidders to discuss complex tasks included in the contract plans. The determination of whether a pre-bid meeting will be held will be made in conjunction with Contract Administration.
- After the project has been advertised it is important for the Project Team Leader to be available to Contract Administration to answer any questions prospective bidders may have with regards to the plans. It is important for any questions to be answered immediately as any delay may result in a delay in taking bids for the project. Should any questions result in the need for an addendum to the project, it is important for the Project Team Leader to closely coordinate with Contract Administration to determine when the addendum needs to be completed to avoid any delay in awarding the project.
- Once the bids are received and opened, Contract Administration forwards the bids to the Project Team Leader for their review. The bids are forwarded with a date that the review is required to be completed by. It is important to complete the review by this date so that no delay in awarding the project will be incurred.
- Upon receipt of the bid tabulations, the Project Team Leader is to perform a bid tabulation analysis. This analysis is performed to insure that awarding the project to the low bidder is in the best interest of the Department, and that the bid is not considered unbalanced. This analysis should include a comparison of the low bidders unit prices with the other bidders for the project, as well as a comparison with historical bid data to insure the low bidders unit prices are within the historic range. Any irregularities in the low bid prices require a check of the calculated quantity for that item to insure the quantity is true and correct. The bid tabulations should also be provided to the appropriate construction personnel for their review and concurrence.

- When it is determined that the bids are acceptable, the Project Team Leader will send a recommendation to award letter to the Finance section, and copy the Contract Administration section. It is important to note that from the time bids are opened there is a 30 day time frame to make award. It is important to conduct the bid tab analysis quickly so the requisite signatures that accompany the award letter can be obtained within the 30 days allotted. If the bids are determined to be unacceptable, immediate consultation with the Contract Administration section is required to determine the appropriate path forward.
- If any stipulated statements were required to advertise the project, it is the Project Team Leaders responsibility, in conjunction with the appropriate section, to make sure any outstanding right of way, or environmental issues are resolved. Revised statements are required to remove any stipulation, and the revised statement must then be added to the plan package as soon as possible.
- Upon completion of the advertisement and award process, a preconstruction meeting will be scheduled by the Regional Group Engineer for Construction. The preconstruction meeting will involve Construction personnel, the project team leader for project development, all required support sections, and the contractor. This meeting will serve as a transition of project team leader responsibilities from Project Development to Construction. The project team leader for project development will need to remain available to attend progress meetings, answer construction questions, or provide assistance to complete the construction of the project.