

CHAPTER 13

ROADWAY PLANS

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The development of roadway plans is the primary responsibility of the Roadway Design Unit. The completed roadway plans consist of the following basic information: typical sections for the roadways to be constructed, the horizontal and vertical alignments, the proposed drainage pipes, ditches, structures, and the proposed right of way necessary for the roadway construction. Also included are basic summaries such as earthwork, guardrail, and pavement removal.

There are many other items that are also shown on the roadway plans. In order to develop roadway plans, there are four basic design phases that occur. These phases are functional design, preliminary design, right of way plan preparation, and final design. The various design phases require many activities and much coordination with other units within the Highway Design Branch, Project Development and Environmental Analysis Branch, Right of Way Branch, Construction Unit, and the public. While the activities vary depending upon the complexity of the project, the following provides a general listing of the Roadway Design Unit's activities during the various design phases.

FUNCTIONAL DESIGN (R/3 FUNCTIONAL AREA CODE 2060)

A project is included within the Transportation Improvement Program.

The project is assigned to a Roadway Project Engineer and Roadway Project Design Engineer.

A schedule, which outlines the time sequence for design phases, is established according to the TIP.

Attend project-scoping meeting, which is normally conducted by the Project Development and Environmental Analysis Branch.

Coordinate with the Location and Surveys Unit and Photogrammetry Unit to obtain mapping (quad mapping and aerial photography.)

Attend public/public officials' meetings as necessary.

Develop corridors and functional designs within each corridor.

Obtain right of way cost estimates and construction cost estimates for each corridor.

Finalize recommended “feasible” corridors based on information gathered from public meetings, correspondence with Project Development and Environmental Analysis Branch, and right of way and construction estimates.

Prepare a corridor public hearing map which shows the feasible corridors.

Schedule a corridor hearing map review.

Make necessary corrections to hearing map and obtain copies for the Public Involvement and Community Studies.

Attend corridor public hearing and prepare notes on major issues discussed.

Schedule and attend the post corridor public hearing meeting.

Implement comments following the post corridor public hearing meeting and determine if a corridor can be recommended.

After a corridor is selected proceed to preliminary design.

PRELIMINARY DESIGN (R/3 FUNCTIONAL AREA CODE 2060)

Obtain updated traffic projections.

Supply recommended and approved corridor to the Photogrammetry Unit to fly so preliminary contour mapping can be obtained.

Establish design criteria in accordance with AASHTO and the Roadway Design Manual.

Develop the preliminary design within the corridor.

Establish a recommended design and obtain a right of way and construction cost.

Prepare a design public hearing map.

Schedule and attend the design public hearing map review.

Make changes as recommended to the map, obtain copies of the map and furnish to the Public Involvement and Community Studies.

Attend the design public hearing and note issues discussed.

Schedule and conduct the post design public hearing meeting to discuss concerns and needed changes in the recommended design.

Implement recommendations and provide a recommended alignment to the Location and Surveys Unit for staking.

Obtain plan sheets from the Photogrammetry Unit and proceed to the development of right of way plans.

RIGHT OF WAY PLAN PREPARATION (R/3 FUNCTIONAL AREA CODE 2070)

Obtain the preliminary pavement design from the Pavement Management Unit.

Develop preliminary typical section for mainline.

Finalize horizontal alignment.

Establish the gradelines.

Using CADD levels and files, place travel lanes, paved shoulder or curb and gutter on the plan sheets.

From updated traffic data, analyze each intersection.

Develop designs for each intersection and/or interchange.

Finalize typical sections for the mainline and Y lines.

Place templates on cross sections.

Place slopestakes onto plan sheets.

Furnish the Hydraulics Unit and Geotechnical Engineering Unit with a set of plans, so they can prepare their design and recommendations.

Receive the drainage recommendations and preliminary erosion control recommendations from the Hydraulics Unit.

Prepare structure recommendation plans for all bridges within the project and send to the Structure Design Unit.

After receipt of the erosion control recommendations, establish the proposed right of way and necessary easements.

Schedule a Final Design Field Inspection and send plans and memorandums to all involved personnel.

Attend the Final Design Field Inspection.

Gather and implement comments rendered there.

If project is a National Highway System project, obtain the Federal Highway Administration's approval of the plans.

Finalize the right of way plans.

Obtain Location and Design Approval.

Obtain Right of Way authorization.

Distribute plans to the Right of Way Branch.

Compute updated construction cost estimate.

Review the application for the environmental permits to ensure the permit application is in conformance with the roadway plans.

Request the final pavement design.

Proceed to the development of final plans.

FINAL PLAN PREPARATION (R/3 FUNCTIONAL AREA CODE 2080)

Coordinate with the right of way agents as necessary to make needed right of way plan revisions.

Coordinate as required with the Structure Design Unit, Traffic Engineering and Safety Systems, Work Zone Traffic Control Unit, the Geotechnical Engineering Unit, the Division, and the Roadside Environmental Unit to obtain their recommendations.

Receive the final pavement design and incorporate and finalize typical sections.

Schedule a Pre-Let Field Inspection, distribute plans and memorandums to all involved personnel.

Incorporate comment from the field inspection as well as other units.

Compute contract quantities.

Complete the final plans review checklist to ensure accuracy and completeness of the plans.

Correct all errors on plans and review plans sent in by other units for conformance.

Complete the formal summaries to be placed within the plans such as Earthwork Summary, Guardrail Summary and Pavement Removal Summary.

Note applicable General Notes, standards and any needed special provisions.

Complete the response to the Division Engineer and explain why certain Division recommendations were not included within the plans.

Upon receipt of environmental permits, review the permits to ensure permit conditions have been met and the permit is in conformance with the design.

Compile a list of final quantities and prepare an estimate.

Compile the project file; purge any unnecessary or trivial data from the files.

PROJECT FILE CONTENT

Required content for files submitted with final plans to the Contract Office, at the specified flow chart date, is contained in bound files and loose files.

The Bound File (Brown Folder) should include information as follows:

1. All approvals and denials.
2. Field inspection correspondence.
3. Information related to any pending actions.
4. Correspondence providing historical or background information on controversial matters.
5. Justification studies for special or unusual matters.
6. Correspondence originated in the Highway Design Branch.
7. Correspondence in which the Highway Design Branch was the primary recipient.
8. Geology recommendations.
9. Structure recommendations.
10. Any other items that in the judgement of the Project Engineer should be retained.

The loose file (Manila Folder) should contain information as follows:

1. Review list for final construction plans (Complete each requirement on the list prior to indicating it complete with a check mark).
2. Completed check list for coordination of Roadway and Structure plans.
3. Estimates.
 - A. Latest Roadway Computer Estimate.
 - B. Estimates from other units.
 - C. Cost Based Estimates Quantity Breakdown Summary Sheet.
 - D. Force Account Estimates.
4. Earthwork Summary Worksheet.
5. Earthwork Computations
6. Calculation of Quantities Package.
7. List of Roadway Standard Drawings.
8. General Notes.
9. Special Provisions.
10. The XY_Coord. CSV electronic File generated by the "Centerline coordinate list" procedure.

Materials and/or correspondence that should be removed is as follows:

1. Preliminary Designs.
 - A. Drawings.
 - B. Estimates.
 - C. Calculations.
2. Subsurface investigations and reports (These are included in the Subsurface Plans).
3. Transmittal slips and/or memorandum forms (except the last one) and right-of-way revision memorandums.
4. All Duplications.
5. All Engineers Estimates except the latest printout.

Please label file tabs with the WBS Element, T.I.P. number, Contract Number, and County.

Submit the plans to the Plan Review Section

Receive and incorporate comments from the Plan Review Section.

Once the project is sent to the Proposals and Contract Section, answer any questions that may arise.

Project is advertised for bid; project is let and then awarded.

Make any necessary construction revisions and charge these revisions to function code 264.