

**MICHIGAN DESIGN MANUAL  
ROAD DESIGN**

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# MICHIGAN DESIGN MANUAL ROAD DESIGN

## CHAPTER 14

### PROCEDURES FOR PLAN PREPARATION

**14.01** (revised 12-17-2018)

#### GENERAL

The following list is a basic outline of the road design plan development process. The sequence is not intended to be a rigid format that must be adhered to, but instead, a guide that is flexible enough to apply to all projects. Small projects may not require all the steps, whereas, large projects may require additional meetings, reviews, etc. to properly develop a complete plan/proposal package with input from all the appropriate disciplines. Project Managers should consider value added versus resources expended when omitting, revising, or adding steps to the process.

Numbers in parentheses after a heading refer to a corresponding or similar PPD (Preconstruction Process Documentation) Task Number and/or Milestone Number. For additional information, reference to the PPD Task Manual and individual task descriptions is encouraged.

**14.02** (revised 2-26-2018)

#### DESIGN PACKAGE EVALUATIONS

The Design Package Evaluation (DPE) system has been retired and no longer exists. There is no replacement system at this time.

**14.03**

#### ESTIMATES

**14.03.01** (revised 12-17-2018)

##### Definitions

**AASHTOWare Project (AP) Preconstruction -** AP Preconstruction is an AASHTO software system used for managing transportation programs and is a series of computer program modules. It is used to record and analyze data from the design, estimating, letting, award, and construction processes. MDOT has adopted the following modules at this time.

- a. **Construction and Administration System (CAS)** - Is used by construction and utilizes Field Manager to track pay items and quantities in construction.
- b. **Decision and Support System (DSS)** - Is used by the Specifications and Estimates Unit to analyze bid data and to determine average unit prices (bid-based prices) when generating detailed cost estimates.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.03.01 (continued)

#### Definitions

**Program Estimates** - Cost estimates made prior to the assignment of a project for preliminary and final design.

**Preliminary Cost Estimates** - Cost estimates made at any time during plan development but prior to plan completion.

**Engineer's Estimate** - Cost estimate based on final quantities reviewed by the Specifications and Estimates Unit of the Design Division.

**Pay Item** - The name used to describe an item of work for a project.

**Unit Price** - The price estimated as the cost to complete one unit of a pay item.

**Pay Item Number** - A standard pay item number assigned to a pay item for use in AP Preconstruction and other automated systems.

**PPD Task Manual** - Preconstruction Process Documentation Manual, a.k.a. Project Management Development/Design Task Manual. This manual documents the MDOT preconstruction process pertaining to project development including working steps (tasks)

**Method of Measurement** - The method used to measure material or work used on a project. Measurement can be by unit, lump sum, or at times included in the measurement for other items.

### 14.03.02 (revised 12-17-2018)

#### Program Estimates

Original program estimates are usually made by Region/TSC personnel during the "Call-For-Projects" stage. These early estimates are broken down by major work items, such as; grading, pavement and shoulders, safety items, utilities, drainage, and so forth. Program estimates should be as complete and accurate as possible using such data as type of project, length, historical data, special features, etc. The program estimate is used by the Bureau of Transportation Planning to budget money for the project.

AP Preconstruction is available for use by Region System Managers and Region/TSC Design Engineers when preparing cost estimates. These program estimates are sent to Lansing with the Call-For-Projects submittals. When preparing these program estimates, only major pay item quantities would be estimated and inserted into the program under the proper code number. The resulting construction cost could then be adjusted to include miscellaneous unnamed pay items and for inflation. Use of AP Preconstruction would ensure that uniform and current unit prices would be used by all Region/TSCs for program cost estimates.

Program estimates should be reviewed by the Design Unit upon project assignment and during scope verification. This review should determine any obvious errors or omissions and/or if the estimate is reasonable. If the estimate is not reasonable, the Region/TSC or the author of the scope needs to obtain an approved cost increase or decrease, or re-scope the project. This needs to be completed before beginning the design.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.03.03** (revised 12-17-2018)

**14.04**

### **Preliminary Estimates**

Section deleted.

Preliminary estimates are made periodically throughout the design of the project to update the estimated cost. Design revisions, changes in scope, and changes in project limits all can contribute to increases or decreases in the cost of the project. Changes in cost should be reviewed with the Region System Manager. If the change is sizable, a request to increase or decrease the programmed amount should be sent to the Bureau of Transportation Planning. Increases should be requested as early as possible to avoid a project delay. If the change to the original project budget varies more than ten percent, an approval to the Fiscal Year STIP may also be needed.

### **14.03.04**

#### **Engineer's Estimate**

The Engineer's Estimate is the final cost estimate prepared by design before letting. The estimator uses the final quantities, plans and proposal material to estimate the unit prices and project costs. This is the official estimate used by the Department to determine if the low bid is reasonable.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.05

#### PROJECT STUDY TEAM

A Project Study Team is normally formed for all New Routes/Increased Capacity projects and comprises representatives of a number of divisions from various bureaus within MDOT, as well as the FHWA. The purpose of the team is to develop improvement alternatives for evaluation based on environmental, social, community and regional planning, engineering, traffic operations, safety, construction and right of way cost criteria. The goal of the Study Team is to reach a consensus, based on the evaluation of alternatives, on a recommended course of action for MDOT management approval. The recommendation must be consistent with MDOT strategies and goals.

The Study Team Chairperson is the Project Manager who is responsible for assembling the Project Study Team and who is usually from the Project Development Section of the Design Division. The Road Design Representative on the Study Team will normally be a Design Engineer-Road. The assignment is made similar to that described in [Section 14.06](#) (Project Assignment) of this chapter.

The Road Design Representative is assigned to a Project Study Team to provide practical design information during the Early Preliminary Engineering phase (EPE) when alternatives are developed and analyzed. The Road Design Representative on the Study Team will review all proposed alternatives and recommendations based on criteria of Design Standards and Guides, professional judgement, and construction procedures, and provide studies and cost estimates as may be required. As a Project Study Team member, the Road Design Representative fills an important role in the consensus building process. Such involvement and knowledge of a project's development during the EPE phase can be an invaluable tool since often the Design Engineer-Road is assigned the project once the Preliminary Engineering phase (PE) is initiated.

### 14.06 (revised 2-26-2018)

#### PROJECT ASSIGNMENT

MDOT projects that are ready to be designed are sent to the Region System Manager, who determines whether the project is to be designed by a Region/TSC design unit or by a consultant. The project is then assigned and authority transmitted through JobNet to the appropriate Design Unit.

The Design Unit should check the Design Division correspondence files for any pertinent documents that may impact the design of the project. Also, the Design Unit should check to see that all information in both JobNet and Phase Initiator is complete and correct on the electronic data screens for the project.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.07** (revised 12-17-2018)

### PROJECT NUMBERS

A project identification system is used to identify projects. A typical project identification would be: NH50022-05675PE.

**Funding Identity:** "NH" Identifies the funding category to which the project is being charged. See the [Financial Systems Codes](#) for a list of funds. (MDOT only, consultants contact your Project Manager)

**Control Section:** "50022" The first two digits identify the county (50-Macomb) and, in conjunction with the last three digits, define a specific section of trunkline, as shown in the Control Section Atlas-Report No. 42.

**Job Number:** "05675" A number assigned sequentially by JobNet. The digits in the number have no significance.

**Phase:** A phase designation identifies the stage of the project development process.

Additional information

1. A job number cannot be charged against until Phase Initiator indicates the "PE" or "PE-S" phase has been authorized with a chargeable account number and the Phase shows as "Active" vs "Programmed" in JobNet.
2. Time spent developing ROW plans is charged against the project "ROW" phase.
3. FHWA has agreed that the "PE" or "PE-S" phase can be charged against up to one month after the letting date (PE end date in JobNet).
4. Charges occurring after the Pre-Construction Meeting should be made against the "CON" phase.

The proper use of phases is outlined in the following table.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.07 (continued)

#### PROJECT NUMBERS

Phase	Phase Name	Description	Examples / Notes
EPE	Early Preliminary Engineering	<p>Work related to environmental clearance and classification of the project.</p> <p style="text-align: center;">Or</p> <p>Work related to study type projects.</p> <p style="text-align: center;">Or</p> <p>Work related to the design survey of the project.</p> <p style="text-align: center;">Or</p> <p>Work related to the scoping of the project.</p> <p style="text-align: center;">Or</p> <p>Work related to the operation of a transportation system component.</p> <p style="text-align: center;">Or</p> <p>Work that does not readily fit other phase definitions.</p>	<p>Note: design survey work can also be included in the PE or PE-S Phase.</p> <p>Traffic Operations Center (TOC) operations or maintenance.</p>
CON	Construction	Work related to the physical building of transportation system component.	
ROW	Real Estate	<p>Work related to the appraisal and acquisition of right-of-way necessary to construct a project, including planning and condemnation activities, and the relocation of displaced persons and personal property.</p> <p style="text-align: center;">Or</p> <p>Work related to the demolition of or preparation of property to construct the project.</p>	
PE	Road Preliminary Design	Work related to the construction design of the road (non-structure) portion of the project.	
PE-S	Structure Preliminary Design	Work related to the construction design of the structure portion of the project.	Note: JobNet requires a structure number.
UTL	Utility – Reimbursable Relocations	Work related to the project's reimbursable utility relocations.	

# MICHIGAN DESIGN MANUAL

## ROAD DESIGN

**14.07.01** (revised 12-17-2018)

### Work Type Codes and Descriptions

Each project is assigned a three digit work type code during the Region Call-for-Projects process. These work types exist in JobNet, and are provided here via Planisware for reference. They may change over time. The numbers correspond to the work descriptions listed below:

#### PRESERVATION

##### Traffic Operations

100	Raised Pavement Marking
110	Signing Replacement
111	Pavement Marking
112	Traffic Signals
113	Cantilevers/Trusses
114	Sign Replacement
264	Transit Operations
687	Delineation
688	Pedestrian Improvements

##### Safety

101	Relocate Roadside Obstacles
102	Rumble Strips – Shoulder
103	Intersection Geom. Imp. For Signals
104	Add Turn Lanes for Traffic Volumes
105	Vert/Horiz Alignment Revisions
120	Intersection Revisions
121	Lighting
122	Median Barriers
123	Guard Rails and Attenuators
126	Obstacle Removal
127	Culvert Extensions
128	Safety Upgrading-Slope Flattening
129	Widening for Accident Reduction
615	Security or Surveillance System
690	Centerline Rumble Strips
691	Segment Geom. Imp. for Safety
692	ADA Ramps

##### Railroads

124	RR Xing Imp & Safety Devices
630	Grade Crossing
633	Railroad Miscellaneous
635	Railroad Track
637	Rehabilitate Spurs

**14.07.01 (continued)**

### Bridge Preservation

115	Superstructure Repair
116	Substructure Repair
117	Substructure Replacement
130	Deck Replacement
135	Widening-Maintain Same # of Lanes
137	Superstructure Replacement
139	Miscellaneous Rehabilitation
152	Culvert Rehabilitation
234	Miscellaneous Replace
417	Overlay – Shallow
420	Scour Protection
424	Overlay – Deep
434	HMA Overlay w/Waterproofing Mem.
452	Culvert Replacement
618	Bridge Barrier Railing Replace
621	Superstructure Repair Steel
622	Superstructure Repair Concrete

### Road Restoration and Rehabilitation

140	Two Course HMA Resurfacing
141	Bit Resurfacing and HMA Shoulders
142	Bit Resurface-Mill and/or Pulverize
143	Bit Resurface and Minor Widening
144	Thin Concrete Overlay (<=4")
145	Concrete Overlay (> 4")
146	Bit Resurface and Drain Improvements
147	Bit Resurface and Curb And Gutter
148	Reconstruct Non-Freeway
149	HMA Resurfacing (One Course)
151	Shoulder Work
153	Pumpstation Rehabilitation
156	Unbonded Concrete Overlay
157	Asphalt Pavement Repair
158	Longitudinal and Transverse Joint Repairs
159	Minor Rehabilitation
165	Concrete Pavement Inlay
166	Concrete Pavement Repair
167	Crush & Shape & Asphalt Resurface
168	Cold In-Place Recycle & HMA Resurf
169	Conc Pavt Rubblize & HMA Resurf
170	Major Rehabilitation
199	General Miscellaneous
250	Multi-Course HMA Overlay
251	Multi-Crs HMA Over Composite Pavt
684	Mill and two Course HMA Overlay
685	Three Course Asphalt Resurfacing
693	Maintaining Traffic
695	Drainage Improvement
696	Curb and Gutter

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.07.01 (continued)

#### Work Type Codes and Descriptions

##### Reconstruction

- 160 Reconstruction
- 162 Interchange Reconstruction Only
- 163 Concrete Reconstruction
- 164 Asphalt Reconstruction

##### Minor Widening

- 171 Left Turn Lane
- 172 Right Turn Lane
- 173 Additional Lanes – Up to ½ mile
- 174 Passing Relief Lanes

##### Roadsides and Landscaping

- 183 Rest Area/Welcome Center Rehab
- 185 Misc. Roadside
- 186 Resurface Parking Area
- 187 Weigh Station Modernization
- 188 Landscaping Replacement
- 189 Streetscaping
- 191 Carpool Lots - Expansion
- 192 Drainage Assessments
- 198 Wetland Mitigation
- 240 Landscaping - Improve
- 241 Facility Expansion
- 242 New Non-Motorized Path
- 243 Parking Area Expansion
- 244 Sound Barrier Rehabilitation
- 245 Fence Upgrading
- 246 New Carpool Lots
- 247 Rest Area Repair/Rebuild
- 248 Weigh Station Replace or Rehab

### 14.07.01 (continued)

#### IMPROVE/EXPAND CAPACITY

##### Road

- 190 Non-Motorized Path Rehabilitation
- 210 Add one or more Lanes over ½ mile
- 212 Recon & Add Lanes over ½ mile
- 213 Interchange Redesign and Upgrading

##### Roadsides and Landscaping

- 243 Parking Area Expansion
- 244 Sound Barrier Rehabilitation
- 245 Fence Upgrading
- 246 New Carpool Lots

##### Bridge

- 221 Bridge Replacement
- 230 Bridge Widen and Add Lanes

##### Railroads

- 636 New Spurs

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.07.01 (continued)

#### Work Type Codes and Descriptions

#### NEW ROUTES/STRUCTURES

##### Road

- 308 Wetland Mitigation for New Route
- 310 New Road
- 317 Landscaping New Facility

##### Relocation

- 320 New Road – Relocate Existing Route
- 321 New Structure on Relocated Route

##### Bridge

- 311 New Structure on New Road
- 340 New Interchange on Existing Route
- 341 New Structure on Existing Route

#### Roadsides and Landscaping

- 312 New Sound Barrier – Type II
- 313 New Rest Area
- 314 New Welcome Center
- 315 New Weigh Station
- 316 New Sound Barrier – Type I
- 331 Rest Area on New or Relocated Route
- 332 Welcome Center
- 333 Weigh Station
- 335 Landscaping New Facility

### 14.07.01 (continued)

#### PREVENTATIVE MAINTENANCE AND MISCELLANEOUS

##### Road

- 186 Resurface Parking Area
- 400 Multiple Course Chip Seal
- 401 Cape Seal
- 402 Fog Seal
- 403 Diamond Grinding
- 404 Partial Depth Conc Pavt Repair
- 405 Overband Crack Fill
- 406 Concrete Crack Sealing
- 407 Ultra-Thin Bit Overlay (<0.75)
- 408 Cold Milling & Overlay (<1.5)
- 409 Hot In-Place Asphalt Recycling
- 410 Single Course Micro-Surfacing
- 411 Multiple Course Micro-Surfacing
- 412 Concrete Joint & Surface Spall Repair
- 413 Dowel Bar Retrofit
- 414 Paver Placed Surface Seal
- 415 Concrete Pavement Restoration
- 416 New Treatment Tech – Conc Pavts
- 440 Single Course Chip Seal
- 441 Slurry Seal
- 442 Skip Patching
- 443 Bituminous Overlay (<1.5)
- 444 Profile Milling
- 450 Full Depth Concrete Pavement Repair
- 451 Bituminous Shoulder Work
- 453 Underdrain Outlet Repair & Cleaning
- 454 Shoulder Slurry Seal
- 455 Shoulder Chip Seal
- 456 Bituminous Crack Treatment
- 457 Concrete Joint Resealing
- 459 New Treat Tech - Flex & Comp Pavts
- 499 Scoping
- 639 Real Estate Activities
- 686 Cold Milling
- 689 High Friction Surface
- 694 Carpool Lots Preservation

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.07.01 (continued)

#### Work Type Codes and Descriptions

##### Bridge

418	Overlay - Epoxy
419	Deck Patching
421	Miscellaneous Bridge Cpm
422	Painting Complete
423	Pin & Hanger Replacement
430	Joint Replacement
431	Substructure Patching
432	HMA Cap (No Membrane)
433	Painting - Zone
460	Superstructure Wash
461	Vegetation Control
462	Drain System Clean/Repair
463	Paint Spot
464	Joint Repair
465	Concrete Surface Coating
466	Crack Sealing
467	Minor Concrete Patching
468	Approach Pvmnt Relief Jts
469	Slope Paving Repair
470	Miscellaneous Bridge
471	New Technologies
472	Bridge Inspection
474	Bridge Removal
475	Special Needs
476	Miscellaneous Bridge CSM
479	Healer Sealer
617	Deck Patching - Full Depth
619	Bridge Barrier Railing Repair
620	Thrie Beam Retrofit
623	Bridge Approach
624	Metal Mesh Panels

##### Rail

477	Railroad Oversight
478	Relocation Of Railroad Facilities
634	Rail Structures

### 14.08 (revised 12-17-2018)

#### ACTIVATION OF “PE” / “PE-S” PHASE (PPD Task Description 2560)

Once an assignment is made, the Project Manager must activate funding for that project prior to charging any costs to the project. This is done by accessing Phase Initiator and entering additional information and/or revising existing information previously entered into the system. Information that may be added/revised includes:

- Job Location
- Character of Work
- Type of Job
- City
- County
- Urban Area
- Type of Highway
- Type of Improvement
- Length
- Highway System

### 14.09 (revised 11-22-2021)

#### RISK BASED PROJECT INVOLVEMENT (RBPI)

The Federal Highway Administration (FHWA) Michigan Division uses a risk-based stewardship and oversight (RBSO) approach to determine how and when the FHWA is involved in programs and projects, while remaining consistent with statutes, regulations, Executive orders, and administrative and financial controls. RBSO integrates risk management into the FHWA performance planning process to identify agency-wide stewardship and oversight (S&O) initiatives. See the [Michigan Division Risk Based Project Involvement Guidance](#) document.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.10** (revised 12-17-2018)

### **SCOPE VERIFICATION MEETING** **(PPD Task Description 3130)** **(PPD Milestone 312M)**

Once a project is assigned, the Project Manager/Cost and Scheduling Engineer should request from the office that scoped the project, a copy of the scoping documents. These documents may include such items as a completed copy of the appropriate scoping forms and checklists, the project concept statement, pavement coring information, a cost estimate, a sketch of the proposed typical cross section(s), and a preliminary survey. The initial Planisware Network should also be available. The Project Manager will then gather the necessary old plans, utility information, traffic data, and other useful background information and develop a preliminary cost estimate and compare it to the programmed cost. When sufficient information is available, the Project Manager will schedule the Scope Verification Meeting.

If this preliminary estimate differs significantly from the programmed cost, the Project Manager should discuss increasing the programmed cost, changing the scope of work, and/or reducing the project limits at the Scope Verification Meeting. Consensus should be reached at, or as soon as possible after, this meeting to minimize lost design time and to avoid a possible delay of the project.

Prior to or at the Scope Verification Meeting the Project Manager should verify that the "Pavement Design and Selection Policy" has been followed as described in [Section 6.01.06](#). Depending on the type of fix and estimated paving cost, a Life Cycle Cost Analysis (LCCA) may also be required. If the procedure has not been followed, the Project Manager should contact the Pavement Design Engineer or Region/TSC Soils Engineer to initiate adherence to the policy.

**14.10 (continued)**

In order to ensure that everyone understands and agrees with the proposed scope of work, it is essential that all the disciplines and work centers that will be involved in the development of the project be invited to this meeting. This will minimize possible "scope creep" and reduce the number of redesigns by verifying and documenting the scope of work as early as possible in the design process. Recommended attendees include:

- Project Manager/Cost and Scheduling Engineer
- Unit Leader(s)
- Environmental - Project Planning Division (BTP)
- Geometrics Unit
- Construction Field Services Division
- FHWA (FHWA Oversight)
- System Manager
- Region/TSC
  - Design/Development Engineer
  - Operations Engineer
  - Soils/Materials
  - Utilities/Permits
  - Construction Engineer
  - Maintenance
  - Development Services Division (if applicable)
  - Survey (if Right of Way is to be acquired or as otherwise applicable)

The Project Manager will write and distribute the meeting minutes. Copies should be sent to the Region/TSC System Manager, the Environmental Section in the Bureau of Transportation Planning and all attendees to the meeting.

If this meeting results in a revised scope of work and/or an increase in the project cost, it is the responsibility of the office that originally scoped the project to revise the project scope and/or schedule and request reprogramming of the project.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.10 (continued)

#### SCOPE VERIFICATION MEETING

**NOTE:** At this stage, the Project Manager should check to see if the project is required to be on the STIP (Statewide Transportation Improvement Plan). This may be done by accessing: JobNet

Job/CR Search (enter job number)  
Approved Job  
S/TIP

The **S/TIP Indicator** shows if the project is required to be on the STIP or TIP. The Phase tab in JobNet shows the S/TIP Cycle each phase is proposed for and the status. Project Managers needing clarification concerning the status of the STIP should contact the Region Planner or Statewide Planning Section of the Statewide Transportation Planning Division in the Bureau of Transportation Planning.

### 14.11 (revised 5-23-2022)

#### DESIGN EXCEPTIONS / VARIANCES

After the scope verification meeting is held and the project scope has been agreed upon, the Project Manager should identify any Design Exceptions or Variances (DE or DV) to MDOT standards that will be utilized in the design of the project (See [Section 3.08.01E](#)). Exceptions and Variances to MDOT design standards should be identified, and, ideally, completed during the scoping process. However, if this has not been done, a Design Exception Request (Form [DE26](#)) or Design Variance (Form [DV26](#)) should be completed. The Project Manager should consult with the Geometrics Unit of the Design Division when identifying and developing justification for design exceptions or variances. Previously completed Design Exceptions / Variances should also be reviewed for accuracy and revised at this time.

The Project Manager should request that Design Exception/Variance folders be created in ProjectWise under the project number by e-mailing [MDOT-ProjectWise@michigan.gov](mailto:MDOT-ProjectWise@michigan.gov) with a link to the project or by providing the TSC and the Job Number. Consultant access to ProjectWise should also be requested at this time, if necessary. Two DE folders (MDOT and RBPI) and one DV folder will be created for each project, based on possible oversight type of Design Exception or Variance. The folders will be located under "Supporting Documents" and "Design Exception" or "Design Variance". For each design exception/variance submitted, the Project Manager should place a single Adobe (.pdf) file (no attachments) containing the Design Exception or Design Variance Form, a predictive Highway Safety Manual (HSM) Crash Analysis, and other supporting documents into the folder which matches the project oversight Design Exception type or Design Variance. The Design Exception or Design Variance Form should be flattened or printed to Adobe (no longer fillable). However, the Project Manager should also save a copy of the fillable form for future

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.11 (continued)

#### DESIGN EXCEPTIONS / VARIANCES

revisions. Changing the "state" of the document to "next" will shift control of the DE document to the Design Exception Coordinator for comments or the DV document to the Region Associate Engineer Development. The Project Manager should address the e-mail that appears after changing state, to the appropriate recipient (DE Coordinator for DE or Region Associate Engineer, Development for DV while maintaining the E-ProjectWise address) to indicate that a Design Exception or Variance has been submitted. A similar return e-mail indicates that control has shifted back to the Project Manager with comments provided. Revised documents should be inserted into the Adobe file with comment sheets deleted. Electronic signatures are added to the Design Exception or Variance, Crash Analysis, and Crash Analysis Approval Memo (if necessary) only after all changes are made and the documents are ready to be reviewed by the Engineer of Road Design or the Chief Structure Design Engineer (for DE's) or Region Associate Engineer, Development (for DV's).

For projects or project elements with "MDOT Oversight", the completed Design Exception Request (Form [DE26](#)) must be approved and signed by the Engineer of Road Design or the Chief Structure Design Engineer. For FHWA Risk Based Project Involvement (RBPI), the completed Design Exception Request (Form [DE26](#)) must be approved and signed by the Engineer of Road Design or the Chief Structure Design Engineer and subsequently approved by the FHWA Area Engineer as applicable. The Design Exception Request (Form [DE26](#)) and instructions (Form [DE26Instructions](#)) for completing the form are available on the MDOT website.

Design Variances (Form [DV26](#)) are signed by the Region Associate Engineer, Development who then changes the state of the DV to complete the DV process.

For additional information see Sections [3.09.02C](#), [3.10.03](#), [3.11.02D](#) and [3.11.03B](#).

### 14.12 (revised 12-17-2018)

#### REQUEST FOR SURVEY / MAPPING (PPD Task Descriptions 3310, 3320, 3330, 3340, 3350 & 4510)

Once the scope is verified, the need for a ground survey and/or aerial photography and/or laser scanning for mapping should be determined. Requests for this work can be made by the Region System Manager, Project Manager/Cost and Scheduling Engineer, or the Design Unit Leader. Ideally, the need for, and the requirements of, survey and mapping on a project should be discussed and agreed upon at the Scope Verification Meeting.

If Right-of-Way (ROW) may be acquired for the project, an early control survey should be ordered immediately to enable Real Estate personnel to begin landowner contact and reduce the timeline through the critical path. This early control survey would consist of horizontal survey control being set throughout the project area, government corners being tied in to the coordinate system, and enough property corners being tied to develop approximate non-legal ROW and property lines throughout the project area.

The Survey/Mapping Action Request (Form [0226](#)) should be used to initiate the work. If survey and/or mapping work was ordered and completed during the Call-for-Projects process or under an EPE phase, and additional information is required, a pick-up survey can be ordered using the above forms.

All survey requests should be directed to the Supervising Land Surveyor or Region Surveyor. The Region will decide whether to do the project themselves or request assistance from Lansing survey staff, either in the field or in hiring consultant surveyors. This should be done as soon as possible to allow for the survey and mapping to be completed in a timely manner that does not impact the project's critical path.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.12 (continued)

If a previous/existing consultant survey contract is still active, it may be possible to submit a revised scope of work to capture any additional information. During the original survey contract, if it is known additional information will be needed when design has furthered, additional information pick up should be included in the contract to reduce complications, keep information on the same datum, and create cohesion in data by utilizing the same team for data collection and compiling.

Also, when ordering survey or mapping work for complex projects, the requestor should consider all the disciplines involved and consolidate all of the survey needs prior to submitting a request. These disciplines may include such areas as bridges, hydraulics, utilities, electrical, railroads, signals, ADA, etc. This can save considerable time and effort by eliminating additional pick-up surveys and the resulting complications created when tying in multiple survey alignments and data.

Coordination of field survey data is necessary to support design. In order to ensure the necessary detail and accuracy for a set of plans, the Project Manager should discuss all requirements with the Supervising Land Surveyor or designated Survey Project Manager of Photogrammetry and Surveys. This will allow the most efficient methods to be used to obtain the field data.

Listed below are definitions for the different types of survey information that may be requested on the Survey/Mapping Action Request (Form [0226](#)).

### 14.12.01 (revised 12-17-2018)

#### Road

#### Alignment

Typically, there are three different types of data described as 'Horizontal Alignments' that are used for MDOT design, any of which may or may not be considered a legal alignment. These three types of alignments are: Survey, As Constructed, and Construction.

**Survey Alignment:** Historically, a survey alignment was primarily used as a baseline for locating topographic features, cross-sections, etc., along a proposed route. This was an alignment provided to or created by survey crews to lay out a preliminary location and collect data relative to that route.

**As-Constructed Alignment:** This is frequently referred to as a "best fit" alignment, which represents the physical road location at a specific point in time. These alignments are typically computed using survey points collected along the actual roadway centerline (crack, crown, paint stripe, curb split, etc.).

**Construction Alignment:** An alignment developed for the purpose of constructing a roadway. The construction alignment is proposed by an engineer. Additional R.O.W. needed for a project was frequently described from this alignment.

# MICHIGAN DESIGN MANUAL

## ROAD DESIGN

### 14.12.01 (continued)

#### Road

##### Legal vs. Non-legal

A **legal alignment** defines actual location of the Right-of-Way based on a survey alignment, as constructed alignment, and/or a construction alignment as referenced in property descriptions, conveyances, i.e. legal documents. It is considered a property controlling entity similar in standing to government section lines. A legal alignment is often used as a basic part of these descriptions. A survey to re-establish the location of the legal alignment is necessary when the purchase of additional R.O.W. is required, or the designer wishes to know where the existing R.O.W. is located to avoid acquiring additional R.O.W. There may be several "legal" alignments on any particular project from which different parcels have been purchased over time. Considerable research and survey work may be required. The legal alignment and the physical centerline may not coincide. Generally, if property is purchased, the Department's past policy has been to describe the conveyance from the construction alignment, potentially creating yet another "legal" alignment. In order to minimize the creation of multiple legal alignments and hereby the confusion and added cost of future surveys, future **R.O.W. acquisitions should be based on *previously established legal alignments whenever possible.***

A **non-legal alignment** is used primarily to locate features for the purpose of design. It can be considered a line that provides direction and stationing for locating features, determining quantities, and staking out the project. A non-legal alignment is not intended to relate to the location of the Right-of-Way and is not used for property acquisition.

### 14.12.01 (continued)

#### MDOT Alignment Standard

Alignments will be designated only as **legal** or **non-legal** by the surveyor/engineer. Differentiation and perpetuation of existing alignments will be done through annotation. Design alignment deliverables will be designated on CAD levels as

Ali\_Legal\_Line\_GS or

Ali\_NonLegal\_Line for MDOT\_01 workspace and

Geom\_Horiz\_Legal\_Wt0\_Line\_GS,

Geom\_Horiz\_Legal\_Wt1\_Line\_GS,

Geom\_Horiz\_NonLegal\_Wt0\_Line\_GS,

Geom\_Horiz\_NonLegal\_Wt1\_Line\_GS

for MDOT\_02 workspace in MicroStation for the plan alignment sheets.

**Bench Marks:** Points of known elevation. Bench marks are usually set along a project at a given interval to provide the construction crews elevations from which to work. May be an assumed (elev. = 300.000 ft), National Geodetic Vertical Datum (NGVD 1929) or North American Vertical Datum of 1988 (NAVD 1988, which is most current and recommended).

**Drainage:** Data specific to surface and underground storm drainage and related features. This usually includes a separate report describing any existing or potential problems, location and direction of flow of surface drainage, and underground storm systems.

**Government Corners:** Monuments representing the locations of the corners as originally set as part of the United States Public Land Survey System (USPLSS). These corners control the location of nearly all property boundaries. Preservation and perpetuation of these monuments is required by state law.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.12.01 (continued)

#### Road

**Hydraulic Survey:** A cross section survey used to analyze the flood flow and capacity of a given stream which helps to determine the design parameters of a stream crossing structure. (The Engineer of Hydraulics should always be consulted whenever this type of survey data is required.

**Photo Control:** X, Y and Z coordinate data on target points specified by Photogrammetry for the purpose of controlling aerial mapping. This process is very similar to that used to control laser scan mapping.

**Planimetric Mapping:** The act of locating all topographic features (by coordinates) for the purpose of creating a map. This is analogous to station plus and offset information. Typically, when speaking of planimetrics, this does not include terrain data (elevation/cross section). In practice, this information is collected together with the terrain data to produce a three dimensional model of the surface.

**Plat Maps:** Legal maps that indicate the description, easements, layout and dimensions of a platted subdivision and its included lots. These documents are recorded and on file with the County Register of Deeds.

**Property Owners:** Owners of property adjacent to a roadway or bridge outside of the Department's existing ROW limits.

**Property Ties:** Survey measurements that relate the location of existing property corners and or government corners to the alignment and horizontal coordinate system.

### 14.12.01 (continued)

**Riparian Owners:** Property owners adjacent to a lake, stream or river that may have some rights to the bottom lands of such a body of water or stream. Riparian ownership and contact information is usually required for the four quadrants around a bridge over water.

**Terrain Mapping:** The act of mapping the surface of the earth to determine the location and elevation of the ground features. This results in the creation of a Digital Terrain Model (DTM) and/or Triangulated Irregular Network (TIN) from which cross sections may be calculated. Usually collected at the same time as the planimetric data.

**Utilities:** Public and privately owned structures in place to carry electric, telephone, water, sanitary sewers, etc. Utility information would typically include ownership, location, rim and flow line elevations and pipe directions.

**Other:** Any other miscellaneous information.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.12.02** (revised 10-22-2012)

### Bridge

**Alignment:** Same as Road but should include exact stationing of the reference points (intersection of abutment and pier reference lines with the [as-constructed](#) alignment).

**Angle of Crossing of Substructure:** The angle at which the reference lines of the structure cross the as-constructed roadway alignment.

**Bench Marks:** Same as Road. Bench Marks should be left in the vicinity of the bridge structure on both sides of the crossing.

**Bridge Seat Elevation:** Elevations of the top of the abutment/pier that supports bearing pads/bridge beams.

**Bridge Survey:** A survey of a bridge structure. This survey often requires sketches in plan and elevation view, and diagrams to illustrate all critical dimensions, in addition to Microstation planimetric and terrain mapping.

**Dimension of Existing Sub-structure Elements:** Physical measurements of the abutments, piers, wingwalls, etc. such as width, length, face to face and height above natural ground, amount of cover and so on. Specific needs should be noted by the requestor.

**Dimensions of Existing Superstructure Elements:** Physical measurements of deck width, and length thickness, sidewalk and curb dimensions (face-face, width, height, etc.), bridge railing type and dimensions.

**Property Ties:** Same as road.

**Riparian Owners:** Same as road.

**14.12.02 (continued)**

**Top of Footing Elevation:** Elevations of existing bridge footings. Usually requires probing and/or digging for location. Often difficult or impossible to find.

**Topography:** Typically describes planimetric and terrain features together. The planimetric detail should include the bridge deck as a feature. The terrain data should model the surface as though the deck did not exist. This should result in contours that accurately represent the surface of the ground.

**Under clearance Elevation:** Elevations of the bottom of the existing bridge beams. Normally taken over pavement edges and lane lines for grade separations. For design purposes, minimum vertical clearance must be maintained over the complete usable shoulder. See [Section 3.12](#). For stream crossings the elevations would typically be taken over the intersection of the ground with the sub-structure units and over the highest low beam. The underclearance is then the difference between the elevation of the beams and the elevation of the appropriate feature below them. Any special locations should be noted in the request.

**Utilities:** See Road. Any utilities attached to the structure itself should be noted.

**Water Surface Elevation:** Elevation of the exact surface of the water on a given date, taken at intervals up and down stream to determine stream gradient. The date each measurement is made must be recorded.

**Other Elevations:** Any other elevations required that are not covered above.

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

**14.13** (revised 4-22-2019)

### **PROJECT AREA CONTAMINATION SURVEY (PPD Task Descriptions 2810 & 2820)**

The following interim procedures have been developed for identifying potential contaminated sites, conducting the necessary testing and estimating the cost of remediation.

1. The Project Manager/Cost and Scheduling Engineer sends a project description and location and requests a list of potential contaminated sites to both the Environmental Assessment Unit (EAU) in the Development Services Division and the Region/TSC Resource Specialist (RRS).
2. The EAU and PCU (Project Coordination Unit of the Environmental, Development Services Division) coordinate with the Region/TSC Resource Specialist to conduct a Project Area Contamination Survey (PACS) by searching state or local records, interviewing state and local officials and citizens.  
  
The Region/TSC Resource Specialist performs a visual inspection of the project area. The EAU and RRS notify the Project Manager.
3. If no known or potential sites are found, The Project Area Contamination Survey process terminates at this point. (The Project Manager would delete PPD Task Description 2820 from the project Planisware network.)

**14.13 (continued)**

4. If potential contamination sites do exist, the Project Manager adds the locations of the sites to the base plans and reviews the sites for conflicts with the proposed work. If the Project Manager determines the potential sites do not conflict with the proposed work, the Project Area Contamination Survey process terminates at this point. (The Project Manager would delete PPD Task Description 2820 from the project Planisware network.)
5. If potential contamination sites conflict with the proposed work, the Project Manager requests the Grading/Drainage & Consulting Contracting Unit (G/DCCU) in the Construction Field Services Division to prepare a scope of field work with a cost estimate for the Project Manager.
6. The Project Manager reviews and approves the scope and cost estimate.
7. The G/DCCU prepares the Health and Safety Plan, obtains clearance from Miss Dig, and assembles or coordinates with the Region/TSC all necessary resources and personnel.
8. The G/DCCU conducts/coordinates borings, monitors well installation and/or sample collection as necessary to complete the field work.
9. The G/DCCU notifies the Michigan Department of Environment, Great Lakes and Energy (MDEGLE) of any contaminated or hazardous materials found during field work.



## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.13 (continued)**

#### **PROJECT AREA CONTAMINATION SURVEY**

10. The G/DCCU submits collected samples to MDOT or contracted laboratory for analysis, receives the results from the laboratory, reviews and interprets them.
11. If the data is insufficient to draw complete conclusions, the G/DCCU repeats steps 4-10 for further testing.
12. Utilizing all U. S. EPA and MDEGLE guidance and policies, the G/DCCU develops and submits a report to the Project Manager and the Environmental Assessment Unit containing the location, nature, extent and volume of any contamination found and recommendations for dealing with it. Recommendations will include any permits or special procedures and/or provisions that are required and pay items with an estimate of construction costs relating to any contamination present.
13. The Project Manager incorporates the information in the plan/proposal package.

### **14.14**

#### **REVIEW / REVISE PLANISWARE NETWORK**

Once the scope of work has been agreed upon, the original Planisware network submitted by the Project Initiator should be reviewed. At this time, the network may be revised to better represent the actual tasks and corresponding durations required during the design of the project. Durations of tasks should not be altered without first consulting the work center involved. Any change in the plan completion date, ROW certification date or the letting date should also be included in any change request submitted for scope of work or cost.

### **14.15 (revised 2-26-2018)**

#### **CHANGE REQUEST (REVIEW OF PROJECT SCOPE, COST AND SCHEDULE)**

Once the scope has been verified, any changes in cost, limits, work, schedule or funding should be submitted to the appropriate System Manager or Statewide Transportation Planning Division. This change request is done through JobNet.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

14.16 (revised 12-17-2018)

### REQUEST FOR UTILITY INFORMATION (PPD Task Description 3610) (PPD Milestone 311M)

This process outlines the responsibilities and procedures for gathering utility information early in a project's design phase. Gathering utility information typically occurs after the project scope verification has been completed. For this procedure, utility is defined as any type of private, public, municipal, or county drain commission facility that is within or near the limits of the proposed construction project.

Capital preventive maintenance and pavement marking projects are examples of projects that do not require plan distribution to utilities. The project must not include any guardrail work or any work beyond the outside edge of the shoulder, or require any excavation, trenching, boring, etc., into the aggregate base or subbase material. The Project Manager evaluates each project and use discretion on whether plans need to be distributed for utility coordination.

Subsurface Utility Engineering (SUE) projects that use a consultant to provide the underground utility information may not need to follow this entire procedure. The Project Manager may need to coordinate this request for utility information with the SUE vender.

#### Procedure

Project Manager

1. Contact the TSC Utility Coordinator to request Letter Requesting Utility Information at Base Plan Stage, (Form 2480). Provide the following information:
  - Project Location
  - Scope of Work
  - Control Section(s)
  - Job Number(s)
  - Proposed Plan Completion Date
  - Consultant Information

14.16 (continued)

Note:

When project information exceeds the allowed space on Form 2480 an additional document is supplied by the Project Manager detailing this information. The applicable field(s) on Form 2480 state "see attached sheet" when this occurs.

2. Receive the Cover Letter and all Form 2480 letters within 7 working days from the TSC Utility Coordinator.
3. Review and sign Form 2480 letters
4. Send Form 2480 letters and plans to the utilities with courtesy copies to TSC Utility Coordinator.

Note:

Old plans, Right-of-Way maps, or MDOT Construction Base Plans are acceptable for sending to the utilities. The plans must provide the project's location and limits of work. Vicinity maps may be included for general information, but are not used as the sole project plans as they provide inadequate information for the utilities to plot their facilities. This includes log jobs that may affect a utility.

5. Receive returned Form 2480 and plans from the TSC Utility Coordinator

Note:

The TSC Utility Coordinator will follow-up with non-responsive utilities and provide a status to the Project Manager.

6. Plot all utility facilities on the Preliminary Plans.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

14.17 (revised 12-17-2018)

### FAA OBSTRUCTION EVALUATION

Federal regulation (14 CFR Part 77.9) requires notification with the FAA (Federal Aviation Administration) when construction alteration, or activity is planned in a zone that may impact aircraft flight operations. This may include changes in grades, structure elevations, lighting, towers, crane heights, etc.

Notification must be filed for any of the following conditions:

- Any construction or alteration exceeding 200 ft. above ground level
- Any construction or alteration:
  - Within 20,000 ft. of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 ft.
  - Within 10,000 ft. of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 ft.
  - Within 5,000 ft. of a public use heliport which exceeds a 25:1 surface.
- Any highway, railroad or other traverse way whose prescribed adjusted height would exceed the above noted standards.
- When requested by the FAA.
- Any construction or alteration located on a public use airport or heliport regardless of height or location.

The notice can be filed either by mail or electronically on the [FAA Obstruction Evaluation / Airspace Analysis](#) website.

14.17 (continued)

The website features a “Notice Criteria Tool” to assist in determining if a project location is in a zone of influence requiring notification. If the results produced by the tool are inconsistent with known vicinity location information, they should be verified by requesting assistance from MDOT's Office of Aeronautics, Planning and Development Section.

The Project Manager should determine as soon as possible if a notification is required. If a notification is required, it should be filed prior to FPC to allow the FAA to make a determination early enough to accommodate any conflicts. Allow 45 days from the time of submittal for FAA review.

Questions regarding the filing requirement or procedure should be directed to the Aeronautics Division, Planning and Development Section. Notices that require special airspace study may take up to 120 days.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.18** (revised 3-26-2012)

### PAVEMENT DESIGN

After the scope verification meeting, the Project Manager should determine the estimated pavement costs of the project. Depending on the type of work and estimated cost, a Life Cycle Cost Analysis (LCCA) may be required. This along with the actual pavement design will be done by either the Region/TSC Pavement Design Engineer or the Operations Unit of the Construction Field Services Division – Pavement Operations. Those done by the Operations Unit must be submitted for approval to the Engineering Operations Committee (EOC). See [Section 6.01.06](#).

**14.19** (revised 12-17-2018)

### REQUEST FOR PAVEMENT CORES / SOIL BORINGS (PPD Task Description 3110 & 3510)

Most projects will require pavement core information, especially those involving pavement removal, rubblizing, crushing and shaping and/or cold milling. This information is useful not only in verifying the type of fix but also in assisting the Contractor in developing their bid prices. Pavement cores should be requested as soon as possible, but no later than the Scope Verification Meeting if they have not been completed prior in an EPE phase. The Project Manager should check with the Region/TSC involved to find out if cores were taken during the Call-for-Projects process.

When requesting pavement cores the Project Manager should include the following:

- Set of plans
- Description of what information is needed
- Desired location
- A target date when the information is needed

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.20** (revised 12-17-2018)

### RECEIPT OF SURVEY / MAPPING DATA

(PPD Task Description 3310, 3320, 3330,  
3340, 3350 & 4510)

When the survey or mapping work is submitted, the Supervising Land Surveyor or Region Surveyor forwards the data, notes, maps, etc. to the requestor in electronic format unless requested otherwise. This could be the initial survey ordered during the Call-for-Projects process or a pick-up survey with specific information not identified in the initial survey.

Photogrammetric and laser scan will be sent directly to ProjectWise. A transmittal memo with the map file names to be used on the project is sent to the requestor as notification the mapping has been completed.

### 14.21

#### BRIDGE REVIEW

Although the procedures discussed under Bridge Review should, ideally, occur during the scoping and Call-for-Projects process, the coordination described below should still be done during the initial stages of the design phase until the development of the Bridge Program is totally integrated into the Call-for-Projects process. This may sometimes eliminate any oversights during the programming of projects or due to scheduling changes of ongoing projects.

**14.21.01** (revised 12-17-2018)

#### Review by Bridge Design

Whenever there are structures within the limits of a project, regardless of the scope of work, Bridge Design should be notified. The notification should be in the form of a memo to the Bridge Management Engineer initiating a review of those structures to determine if any design work is presently ongoing, being planned, or might be considered at each structure. The Bridge Management Engineer will contact Operations Field Services Division to determine if periodic inspections have revealed the need for structure repair or upgrading. This insures any future construction is coordinated and possibly consolidated thereby reducing PE and CE costs as well as minimizing the number of disruptions to traffic.

The following information should be relayed to the Bridge Management Unit:

- Control Section
- Job Number
- Route Number
- Location-Project Limits
- Proposed Scope of Work
- All Structures within the project limits
  - a. names of crossroad/stream crossed by structure
  - b. structure/bridge number
- Project Manager/Cost and Scheduling Engineer
- Proposed Plan Completion Date
- Proposed Letting Date

After the review is completed, the Bridge Management Engineer will inform the Project Manager in writing of any recommended work on each structure.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.21.02

#### Historic Bridges

The following structures have been classified as historic bridges. Prior to initiating any design work on one of these structures, the Project Manager should contact the Project Planning Division in the Bureau of Transportation Planning. Any design restrictions should be identified as early in the design phase as possible.

BRIDGE	CROSSING	ROUTE
02041-B01	Sand River	M-28
05031-B01	Intermediate River	M-88
07012-B02	Sturgeon River	US-41
09032-B01	E. Channel-Saginaw River	M-13/M-84
10032-R01	Ann Arbor RR	US-31
11021-B02	St. Joseph River	US-12
11053-B01	St. Joseph River	M-63
15012-B01	Island Lake Outlet	US-31
16081-B03	Cheboygan River	US-23
17032-B02	Power Canal (Ashmun St.)	I-75BS
17034-B01	St. Mary River&Portage Ave. W.	I-75
17062-B01	E. Br. Tahquamenon River	M-28
20012-B01	Au Sable River	I-75BL
22023-B01	Sturgeon River	US-2
22031-B01	Menominee River	US-141
24011-B01	Bear Creek	US-31/M-68
26011-B03	Cedar Creek	M-18
31012-B01	Portage Lake	US-41&Soo RR
33021-B01	Sycamore Creek	M-36
33032-R01	GTW RR& Red Cedar River	I-96BL
34081-R01	Mid. Michigan RR	M-44/M-91
35012-B02	Au Sable River	M-65
36022-B01	Iron River	US-2
36023-B01	Paint River	M-69
41042-B01	Plaster Creek	M-21
41081-B01	Grand River	M-45(Fulton St.)
42012-B02	Fanny Hooe Creek	US-41
42021-B03	Eagle River	M-26(Ped. Only)
45041-B01	Lake Leelanau Narrows	M-204
46032-B02	Silver Creek	M-156
49023-B01	Cut River	US-2

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.21.02 (continued)

#### Historic Bridges

BRIDGE	CROSSING	ROUTE
50051-B01	Clinton River	M-3SB
51011-B01	Manistee River	US-31
51021-B03	Pine River	M-55
55011-B01	Menominee River	US-41
58151-R03	Conrail RR & W. Raison River	I-75
58151-S11	Dunbar Road	I-75
58152-S06	Sigler Road	I-75
60031-B01	Thunder Bay River	M-32 Spur
64012-B01	Pentwater River	US-31
66013-B12	Ontonagon River	M-64
66023-B01	Middle Branch Ontonagon River	M-28
70041-B02	Grand River	M-45
71073-B02	Ocqueoc River	US-23
75022-B01	Manistique River	US-2/M-94
77111-B04	St. Clair River	I-94/Blue Water Bridge
78021-B01	St. Joseph River	US-12(Pedestrian)
78061-B01	St. Joseph River	M-86
78061-B03	Prairie River	M-86
81063-S04	Wiard Road(Sbd)	US-12
81063-S05	Ford Exit Drive(Sbd)	US-12
82022-S33	I-94	US-12(Michigan)
82022-S34	I-94	US-12(Michigan)
82023-S22	I-94 Ramp	M-10SB
82023-S23	I-94 Ramp to M-10	I-94EB
82023-S24	I-94	M-10SB
82023-S25	M-10SB & I-94WB	I-94EB Ramp to M-10
82023-S26	M-10NB & I-94EB	I-94WB Ramp to M-10
82023-S27	I-94	M-10
82023-S28	I-94Ramp from M-10	I-94WB
82023-S29	I-94Ramp from M-10	M-10NB
82071-B04	Rouge River	Old US-25(Fort Street)
86000-B01	Straits of Mackinac	I-75

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.21.03**

#### **Bridge Loading and Under Clearance Review**

It is essential that the Department maintain accurate and detailed records and control of the added deadload on bridges and of the under clearance at underpasses. Occasionally these considerations will mean that deck surfacing material must be removed before a resurfacing can be undertaken or that surfacing under a bridge must be removed so that a new surface can be maintained at or near the existing elevation. On some H-15 bridges, 2" of surfacing may reduce the operating load capacity by 10,000 lbs.

After scope verification, a memo should be sent to the Bridge Management Unit listing structures within the limits of the project, proposed treatments, proposed plan completion and letting dates requesting recommendations. The Bridge Management Unit will contact the Operations Field Services Division to determine if periodic maintenance inspections have disclosed the need for remedial measures. Detailed recommendations will then be sent to the Project Manager.

### **14.21.04**

#### **Special Structures/Footing Design**

On occasion there may be situations where the scope of work includes disciplines beyond the expertise of the Project Manager and/or the unit assigned the project. Frequently, items such as sound walls, retaining walls, unique culverts and footings are assigned a bridge unit for design assistance. In these instances the Project Manager should request assistance from the Special Assignment Structures Unit in Bridge Design. The request should be by memo with copies to the Supervising Engineer-Bridge, and Engineer of Bridge Design. These requests should be made as soon as the need is known to allow the bridge unit(s) as much lead time as possible to accommodate the project's schedule while meeting their own schedules.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.22** (revised 11-22-2021)

### **RAILROAD COORDINATION (PPD Task Description 3650)**

Contact by the Department with the railroad company is required any time a railroad crossing is within a highway project Construction Influence Area (CIA). Coordination may also be required if queuing is expected to extend beyond the CIA and impact crossings. Contact and negotiations with the railroad company are made by the MDOT Office of Rail, Rail Infrastructure Section. See [Section 12.11](#) for more information and procedures.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.23** (revised 12-17-2018)

### **REQUEST FOR TRAFFIC VOLUMES (PPD Task Description 2120)**

Existing traffic volumes (ADT, DHV) for 3R projects should be requested from the Data Collection Section in the Bureau of Transportation Planning. Volumes from the latest available year should be included in the plans (Title Sheet).

Increased Capacity/New Routes (4R) projects require projected traffic volumes, usually 20 years in advance of the projected year of construction. Ordinarily these volumes have already been determined during the Project Development stage (see [Section 14.05](#)). However, if a significant period of time has elapsed, these volumes should be revised. Revisions are requested from the Project Planning Section in the Bureau of Transportation Planning. This request should be made as soon as the need becomes evident. (Traffic Analysis Request (TAR) Form [1730](#))

If the amount of traffic data is large (i.e. entrance & exit ramps at several interchanges), it may be desirable to show the information on a separate plan sheet.

**14.24** (revised 11-28-2022)

### **REQUEST FOR CRASH ANALYSIS AND SAFETY REVIEW (PPD Task Description 3560)**

All projects unless noted otherwise in the [Safety Analysis Matrix](#) shall have a crash analysis as called for in [Section 3.08.01F](#) conducted by the TSC or Region Traffic and Safety Engineer. The analysis may have already been completed as part of the Region/TSC's Call for Projects process, in which case an additional analysis may not be necessary. However, analyses older than 3 years should be updated by requesting another one. The analysis will identify any unusual occurrences or above expected number of crashes and will advise the Design Unit of any recommended safety countermeasures to address the situation and/or systemic improvements to incorporate within the project limits. The Project Manager should review the plans to verify these measures have indeed been incorporated into the plans prior to the FPC Meeting.

Road Safety Audits (RSA) are warranted based on the conditions defined in the [Road Safety Audit \(RSA\) Guidance](#) document. An RSA is a formal safety performance examination of an existing or future road or bridge project by an independent, multi-disciplinary RSA team. RSAs should be scheduled during the scoping process and are highly recommended to be scheduled prior to the Scope Verification meeting and include consideration for all users of the roadway to help achieve strategic safety goals. RSAs contribute to road safety by providing a fresh, unbiased assessment of the area or intersection to identify potential safety issues and solutions. The Project Manager (Project Owner) submits [Form 3767](#) to request the RSA and follows the process as laid out in the [Road Safety Audit Guidance](#) to meet this requirement. RSAs are not applicable for design exceptions.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.25** (revised 12-17-2018)

### **REQUEST FOR SPECIAL SOILS INVESTIGATIONS AND / OR DESIGNS (PPD Task Description 3510)**

Although the Region/TSC Soils and Materials Engineer is responsible for supplying soil borings, pavement cores and limits and quantities for removal of unstable materials (peat, muck, etc.), to the Design Unit, other types of soil analysis may also be necessary. Any soil information, analysis and design regarding the following should be requested from the Geotechnical Services Unit of the Construction Field Services Division.

- Sewers and culverts greater than 5'-0"
- Box culverts greater than 4'-0" x 4'-0"
- Retaining walls
- Sound walls (except Metro Region)
- Light Towers (except Metro Region)
- Mechanically stabilized earth (MSE) walls
- Reinforced soil slopes
- Pipe and culvert trenchless installations

In order to request any of the above, the Project Manager should send a memo and electronic access to the plan set with the following minimum information:

- Plan of site (location map)
- Alignment with stationing
- Benchmarks as close to the location as possible
- A detailed description of the requested information
- Plan completion date and a date when the information is needed.
- Proposed method of controlling water (during culvert construction)-diversion channel, temporary dam, pump across road, etc.

**14.26** (revised 7-25-2022)

### **DISTRIBUTION OF PRELIMINARY PLANS TO UTILITIES AND UTILITY COORDINATION MEETING (PPD Task Description 3660) (PPD Milestone 361M)**

Preliminary plan distribution to utilities must be completed whether or not utility conflicts have been identified. It is important to provide preliminary plans because it allows the utilities an opportunity to review the proposed project, to ensure facilities are plotted accurately, and provides notification to relocate facilities in conflict.

Distribution of preliminary plans, and the Utility Coordination Meeting if necessary, typically occurs after The Plan Review Meeting and before the Final Project Coordination (FPC) Meeting. The TSC Utility Coordinator and the Project Manager will work together to determine if a particular project warrants scheduling a Utility Coordination Meeting. Some projects may not require a Utility Coordination Meeting while others may require several meetings. Those invited usually include:

- TSC Utility Coordinator
- Project Manager/Cost and Scheduling Engineer
- Private/Public utilities
- Municipalities
- Municipal Utility Design Staff/Consultant
- Real Estate Services Section
- Road Commissions
- Design Team key members
- Design Consultant representatives
- MDOT construction team members

The preferred method for preliminary plan distribution is to send separate letters to public/private and municipal utilities that address the following:

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.26 (continued)

#### DISTRIBUTION OF PRELIMINARY PLANS TO UTILITIES AND UTILITY COORDINATION MEETING

- The Letter to Public/Private Utilities at Preliminary Plan Stage, (Form [2481](#)) includes the following:
  - References Public Act (PA) 368 of 1925 entitled Highway Obstructions and Encroachments; Use of Highway by Public Utilities
  - Gives legal notification to relocate
  - Authorizes preliminary engineering for reimbursable relocations
- The Letter to Municipal Utilities at Preliminary Plan Stage, (Form [2482](#)) is used because MDOT may be responsible for the relocation costs associated with municipal utility relocations within their corporate limits. This may require MDOT to complete the following:
  - Perform the relocation design
  - Include relocation work in the project plans
  - Formalize an agreement

If Forms [2481](#) and [2482](#) are not sent to the utilities, the Utility Coordination Meeting Invitation letter must cite PA 368, authorize preliminary engineering, provide relocation reimbursement information, and be accompanied by preliminary plans.

### 14.26 (continued)

#### Procedure

Project Manager/Cost and Scheduling Engineer

1. Send preliminary plans to the TSC Utility Coordinator for distribution to utilities.
2. Complete a preliminary assessment of utility issues and conflicts with the TSC Utility Coordinator and Design Team. Ensure all utilities appear on the preliminary plans. Approximate location, size, and type of utility should be indicated. All utilities carrying dangerous, hazardous, or critical materials should be flagged on all plan sheets where the utility is shown. Refer to the Road Sample Plans.

#### Note:

It may be beneficial to have a conflict list and special plans with cross section details for use as presentation tools to the utilities.

3. Distribute preliminary plans to all potentially impacted utilities with either a Utility Coordination Meeting invitation or Forms [2481](#) and/or [2482](#).
4. Prior to a Utility Coordination Meeting, municipalities, if affected, should evaluate and comment on the preliminary plan and review the extent of the work and decide who will develop plans for utility alterations, if necessary (Department, Department's consultant, municipality, or municipality's consultant).

## MICHIGAN DESIGN MANUAL ROAD DESIGN

14.27 (revised 3-23-2020)

### VALUE ENGINEERING (PPD Task Description 3375)

#### A. Definitions

**Value Engineering (VE)** - A systematic process of review and analysis of a project, during the concept and design phases, by a multi-disciplined team of persons not involved in the project, that is conducted to provide recommendations for:

1. Providing the needed functions safely, reliably, efficiently, and at the lowest overall cost;
2. Improving the value and quality of the project; and
3. Reducing the time to complete the project.

**Applicable VE Project** - A portion of highway that is proposed for construction, reconstruction, or improvement as described in the preliminary design report or applicable environmental clearance document. A project may consist of several job numbers/contracts or phases over several years.

**Estimated Total Cost of a Project** - The estimated cost of the project includes the cost of all phases of a project including environmental, design, right-of-way, utilities and estimated construction cost based on final design.

**Road Projects VE Study Cost Threshold** - The federal regulations on VE studies are in 23 CFR Section 627. MDOT's policy requires VE studies on all federal-aid road projects that have a total project cost of \$50 million or greater. The total project cost is the sum of the costs for all phases of the project. If any part of the environmental clearance document is to be let for construction, it must have a VE study even if the cost of the construction work is less than \$50 Million. When it is determined that it may be beneficial for a unique and/or complex project, VE studies may also be considered for federal-aid projects that are below the required project cost threshold, or for projects that are 100% state-funded.

14.27 (continued)

**Bridge Project VE Study Cost Threshold** - A project is considered a bridge project if the majority of the cost/work is related to bridge work. The federal regulations on VE studies are in 23 CFR Section 627. MDOT's policy requires VE studies on all federal-aid bridge projects that have a total project cost of \$40 million or greater. The total project cost is the sum of the costs for all phases of the project. If any part of the environmental clearance document is to be let for construction, it must have a VE study even if the cost of the construction work is less than \$40 Million. When it is determined that it may be beneficial for a unique and/or complex project, VE studies may also be considered for federal-aid projects that are below the required project cost threshold, or for projects that are 100% state-funded.

**Value Engineering Re-Study** - If a project has a change to the scope of work between the final design and the letting, then FHWA will require an updated VE analysis.

**Value Engineering Proposal/Recommendation** - The ideas resulting from a Value Engineering study that provide the project's functional requirements at less cost or improve value or service with no increase in cost. VE Proposals must have documented decisions and implementation. Proposals/recommendations that increase the cost of a project and still provide improved value are classified as Value Engineering Design Suggestions.

**Value Engineering Change Proposal (VECP)** - A frequently used special provision that is placed in all construction contracts except Construction Manager General Contractor (CMGC) and Design Build (DB) projects. It encourages the contractor to propose changes in contract work that will accomplish the project's functional requirements at less cost, reduced time, or improve value or service at little or no increase in cost. The net savings of each proposal is shared with the contractor at a stated rate (50-50). MDOT's procedures for Construction VECP's are contained in Section 104 in the current edition of the Construction Manual.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.27 (continued)

#### VALUE ENGINEERING

**MDOT State VE Coordinator** - Design Division staff person responsible to assure all VE studies are completed per the Federal Regulations. The State VE Coordinator works with the Design Project Manager and other design personnel to schedule, complete, follow up and document VE Studies and decisions. The State VE Coordinator determines if the study can be done by MDOT personnel or by a Consultant. To hire a Consultant, they solicit and establish the contract per current vendor selection procedures. At the year end, they prepare the annual FHWA report on VE Studies documenting VE studies and activities. They also determine if a recommendation may be warranted as a best practice and provide information statewide.

**VE Facilitator** - A qualified facilitator experienced in performing and leading VE studies. MDOT personnel who facilitate VE studies must be experienced in VE studies and have additional facilitation and process reengineering training. VE studies done by outside consultant firms must have a VE facilitator with sufficient VE training, education and experience to be recognized by SAVE International as meeting the requirements for certification.

**VE Team** - The group with diverse expertise suited to the scope and complexity of a project to participate in the VE study. At a minimum, design, construction, and maintenance will be represented on the team. In the event of specialized projects, individuals with specific expertise necessary to perform a proficient Value Engineering study should be included in the team makeup. The VE Team must also include member(s) experienced in estimating construction costs and cost-benefit analysis. All members should have completed a Module 1 Value Engineering training seminar or have prior Value Engineering experience. The composition of the expertise should reflect the complexity of the project design to be studied. At least two members of the team should be experienced in the high-cost areas of the project. Anyone directly involved in the design of the project should not be a team member but is expected to participate as an information source.

### 14.27 (continued)

#### B. Federal Regulation

Title 23 CFR 627 under the authority of 23 USC Chapter 1, Section 106(e) requires a Value Engineering study be conducted before the advertisement/letting of all Federal Aid projects with an estimated total project cost of \$50 million or greater for a road project, or \$40 million or greater for a bridge project. See the previous section for definitions of "project" and VE study requirements. The VE study might encompass a longer corridor of similar work, but only the projects for which there are design plans or sufficient scoping information available will receive VE credit

Design/Build projects used to expedite the completion of a project are exempt from VE requirement. However, a Value Engineering study may be conducted prior to advertising the Request for Proposals of the Design/Build contract if requested by the Region or Leadership.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.27 (continued)

#### VALUE ENGINEERING

##### C. Procedures

###### 1. Identification of Potential VE Studies.

The State VE Coordinator prepares a list of potential VE studies and sends it to the System Managers and FHWA for concurrence.

The VE study is commonly performed between concept and 30% plan completion. Holding the VE study early allows the recommendations to be considered without disruption to the design process.

###### 2. Funding. The Design Project Manager will confirm or obtain sufficient funding in the PE phase for the VE study.

###### 3. Scheduling VE Study. The Design Project Manager and State VE Coordinator determine the VE Team. Team members should not be directly involved in the project design.

Based on the project, the State VE Coordinator and the Design Project Manager will choose one of the following methods for conducting the VE study:

- a. A Consultant is hired to perform all parts of the VE study. Two to three MDOT/FHWA personnel may be invited to join the VE Team.
- b. MDOT performs all parts of the VE study, usually facilitated by personnel from Performance Excellence Division.
- c. A Consultant is hired to provide a VE Facilitator/Trainer and MDOT/FHWA will provide the VE Team.

### 14.27 (continued)

###### 4. Information Needed for VE Study. The Project Manager(s) gathers current project information and provides it to the VE Facilitator. The VE Facilitator distributes the information to the VE Team prior to the first day of the VE study. This information can include but is not limited to the following:

1. Existing Aerials
2. Project Photographs
3. As Built Plans, Base Plans
4. Project Area Map
5. Environmental Clearance Document or Issues
6. Right of Way Plans or Concerns
7. Agreements
8. Utility Plans or Encroachment Issues
9. Detour/Staging Concepts/Restrictions
10. Traffic Data
11. Crash Data
12. Context Sensitive Design Issues
13. Constructability Issues
14. Current Cost Estimate
15. Scoping Reports/Scope Verification Meeting Minutes
16. Design Exceptions/Variations
17. Construction/Letting Schedule
18. Structure Appraisal and Inventory
19. Bridge Safety Inspection Report
20. Geotechnical Soils Reports and Foundation Reports
21. Hydrology/Hydraulic Information
22. Maintenance Records

In addition, the Project Manager should develop a written document to provide the VE Team with information on functionality (what is main purpose of project), constraints, needs, and/or any requirements that the VE Team should know about.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.27 (continued)

#### VALUE ENGINEERING

5. **The VE Study.** The VE study consists of the following phases:

**Information Phase:** The Project Manager presents project background information and is available for questions. The VE Team determines the needs, requirements, and constraints of the owners/users/stakeholders, as well as the design criteria. The VE Team develops a cost model, breaks the project down into functions, and performs functional analysis.

**Speculation Phase:** Brainstorming takes place to generate ideas to add value to the project without changing the function.

**Evaluation Phase:** The best ideas from the Speculation Phase are selected for consideration based on best blend of performance, cost and schedule.

**Development Phase:** Best ideas are developed into VE proposals and design recommendations through sketches, cost estimates, and schedules. Both initial and life-cycle costs will be examined.

**Decision Phase:** The Decision Team decides if the VE Proposals should be Accepted, Accepted for Further Study or Rejected. The final decisions are documented by the VE Team facilitator in the final VE Report. If a VE recommendation has a potential savings of more than \$1.0 million, the Region Engineer must also be included on the Decision Team.

### 14.27 (continued)

6. **The VE Study Report.** The VE Facilitator/VE Team prepares and provides electronically a final report. A typical report includes the following: executive summary, participant list, research sources, project history (including project criteria, commitments, and constraints), existing design, performance criteria, basic functions, life cycle cost estimate, proposal descriptions and cost calculations, implementation plan and documentation of MDOT's decisions regarding the recommendations.

The State VE Coordinator saves the final report in ProjectWise and provides a copy to the FHWA.

**Recommendations Accepted for Further Study.** The MDOT Project Managers will report the outcome of unresolved recommendations that were labeled as "Recommendations Accepted for Further Study" to the State VE Coordinator for the annual report.

7. **Annual Reporting**

**MDOT Annual Report.** The State VE Coordinator prepares an annual report on the VE recommendations received during the previous year. The report includes certain cost and savings data (recommendations, recommended cost savings, VE study cost, etc.). It is provided to MDOT Management and staff involved in scoping new projects to encourage alternate solutions that provide cost savings or maximized benefits at little or no increase in cost.

**FHWA Annual Report.** The State VE Coordinator submits an annual report to the FHWA Division Office each year for national compilation and distribution. The report includes the number and cost of VE's and VECP's held and the value of recommendations made (both accepted and rejected).



## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.28** (revised 1-23-2023)

### **REQUEST FOR PRELIMINARY MAINTAINING TRAFFIC (PPD Task Description 3390, 3540 & 3550)**

Once the design has proceeded to a point where the proposed scope of work has been defined (typicals with existing and proposed dimensions, plan sheets with existing and proposed curb lines, etc.), the Project Manager should request a preliminary maintaining traffic scheme from the Region/TSC Traffic and Safety representative. This may include such items as:

- a detour route with any required work to accommodate the proposed traffic, including non-motorized users. See the [Work Zone Safety and Mobility Manual](#) for more information
- identification of local special events that may influence traffic during construction or that may be substantial enough to require scheduling the project around the activity
- the use of temporary traffic signals
- the use of temporary cross-overs or a runaround
- preliminary maintaining traffic special provision
- temporary and or permanent pavement markings
- construction staging plans/typicals

It is at this stage when critical construction staging issues may be identified that may significantly influence the proposed scope of work and the corresponding project cost. Situations such as a proposed reconstructed section not wide enough to maintain traffic that has no available detour route or a structure on a detour route with load restrictions often are not identified until this stage. It is essential that a preliminary maintaining traffic scheme be included for review at The Plan Review Meeting.

**14.29** (revised 12-17-2018)

### **PRELIMINARY GEOMETRIC REVIEW FOR NON-FREEWAY RECONSTRUCTION / NEW CONSTRUCTION (4R) AND FREEWAY RESURFACING, RESTORATION, REHABILITATION AND RECONSTRUCTION / NEW CONSTRUCTION (3R/4R) (PPD Task Description 3560)**

During preliminary design on Non-Freeway Reconstruction/New Construction (4R) and Freeway Resurfacing, Restoration, Rehabilitation and Reconstruction/New Construction (3R/4R) projects, it is necessary to have a review by the Geometrics Section of the Design Division. For further discussions on these classifications see [Sections 3.08, 3.10 and 3.11](#). This review will evaluate such areas as:

- sight distance
- design speeds
- curve and interchange placement
- turning radii
- exit and entrance ramps
- driveways
- turn lanes
- roadside safety
- intersection design

Once the design elements have been identified and included in the plans, a memo with a set of plans (or appropriate plan sheets) should be sent to the Supervisor of the Geometrics Unit requesting a review and recommendations by a specified date. This should be done when base plans are available to allow any revisions/additions to be incorporated into the plans prior to The Plan Review. The memo should indicate the classification (3R or 4R) of the project in general (see [Section 3.08.01C](#) for combined work types).

Non-Freeway Resurfacing, Restoration and Rehabilitation (3R) projects (see [Section 3.09](#)) may be coordinated during plan development on an informal basis.

Regardless of the type of work, all outstanding geometric issues should be resolved prior to submitting for The Plan Review.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.30** (revised 12-17-2018)

### **PRELIMINARY CONSTRUCTABILITY REVIEW**

**(PPD Task Description 3565)**

Constructability is taken into account during the scoping and early plan development process (and in conjunction with the [Early Project Scoping Constructability Checklist Form 1961](#)). After the Job Concept Statement has been created in JobNet, the Project Manager/Concept Author should consult with the Region/TSC Delivery Engineer concerning items such as Coordinating with other Agencies, Permits, Staging, Maintaining Traffic, Site Investigation, and Right of Way. Much of the work under this task should occur before the Scope Verification Meeting. On small projects this task may consist of only the transmittal of base plans to the Resident/Delivery Engineer for comment. On large projects with complex staging, one or more meetings with the Resident/Delivery Engineer and Region/TSC Traffic and Safety Engineer may be required throughout this task. In both instances the review and incorporation of any comments must occur prior to Preliminary Plan Development.

**14.31** (revised 12-17-2018)

### **ENVIRONMENTAL REVIEW AND CLEARANCE**

Environmental review and clearance is a two step process: Environmental Classification (PPD Task 3150) and Environmental Certification (PPD Task 3155).

**14.31.01** (revised 12-17-2018)

#### **Environmental Classification (PPD Task 3150)**

Environmental Classification is required by the National Environmental Policy Act (NEPA). All projects must be reviewed for potential environmental impacts and classified according to the significance of those impacts. Class I Actions are those projects with significant environmental impacts and require the preparation of an Environmental Impact Statement (EIS). Class II Actions have minor or no environmental impacts and require Categorical Exclusion (CE) documentation (Form 1775). Class III Actions are projects where the significance of the impacts is not known and require the preparation of an Environmental Assessment (EA).

Most projects are classified as CEs. However, environmental review is still required to identify non-significant environmental impacts, and establish measures to mitigate those impacts. Measures to mitigate can include avoidance, design changes, protective measures, or replacement. Establishing mitigation measures can be complex and require coordination with state, federal and local resource agencies. Often, mitigation measures can be developed through collaboration between the Project Manager (PM)/Cost and Scheduling Engineer and MDOT Environmental Staff.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.31.01 (continued)

#### Environmental Classification

The Environmental Clearance Coordinator (ECC) will contact the PM about one year prior to the Base Plan Date (BPD), or upon notification of project programming (JobNet) for projects of short development duration. The ECC will request information about the scope and location of the project. This information can include the extent of grading and filling, right of way requirements, detour information, etc., and is critical in assessing project environmental impacts. The project description, location, and other pertinent project information are put on the Environmental Classification (Form 1775). MDOT Environmental Staff may contact the PM for more details about the project in order to assess impacts.

Once impacts are assessed, collaboration occurs between the PM and MDOT Environmental Staff, to develop mitigation measures. The goal of collaboration is to develop measures that both allow the project to accomplish its transportation goal and minimize impacts to the environment. Once impacts are identified and mitigation measures established the project can be classified as a CE. The PM will be notified and the Environmental Classification (Form 1775) and supporting documentation will be stored in ProjectWise under the Project Job Number. Classification is also recorded in JobNet. Classification is scheduled to occur on or before the completion of Base Plan Review (PPD Task 3380).

### 14.31.01 (continued)

#### A. Preliminary Design Activity

Prior to completions of the NEPA review process, preliminary engineering and other activities and analyses must not materially affect the objective consideration of alternatives in the NEPA review process. FHWA defines Preliminary Design as activities that define the general project location and design concepts. It includes, but is not limited to, preliminary engineering and other activities and analyses, such as environmental assessments, topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue estimate, hazardous materials assessments, general estimates of the types and quantities of materials, and other work needed to establish parameters for the final design.

If the information required for classification requires engineering work or environmental coordination extending beyond the BPD, the PM must receive approval from the ECC to continue work limited to the following tasks:

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.31.01A (continued)

#### Environmental Classification

Task	PPD Tasks	Task Extension	Approval
Preliminary Plan Preparation	3500 Series	Up to Plan Review	ECC notification of approval by Bureau of Development Environmental Manager
Utilities/Railroad	3600 Series		
Mitigation/Permits	3700 Series		
Prepare/Review Final Traffic Signal Operations	3825		
Early ROW Work	4100 Series		
ROW Technical Work	4150 Series		
ROW Appraisal Work	4350 Series		
Safety and Mobility Peer Team Review	3800	Up to Plan Completion	ECC notification of approval by FHWA and Bureau of Development Environmental Manager
Conduct Final Geometrics and Roadside Safety Reviews	3810		
Geotechnical Design Review - Structures	3815		
Prepare/Review Final Traffic Signal Design Plan	3821		
Complete Permanent Pavement Marking Plan	3822		
Complete Non-Freeway Signing Plan	3823		
Prepare/Review Final Traffic Signal Operations	3824		
Complete the Maintaining Traffic Plan	3830		
Develop Final Plans and Specification	3840		
Develop Structure Final Plans and Specifications	3850		
Final Constructability Review	3860		
Project Plan Quality Assurance Review	3865		

The Bureau of Development Environmental Manager will report to FHWA each quarter of the fiscal year the number of projects that have allowed any of the tasks noted above to be performed before the environmental classification.

Final design or right-of-way acquisition cannot proceed prior to classification. FHWA defines final design as any design activities following preliminary design and expressly includes the preparation of final construction plans and detailed specifications for the performance of construction work.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.31.01 (continued)

#### Environmental Classification

##### B. Mitigation Requirements

Between base plans and quality assurance review, environmental mitigation measures are to be fully developed and detailed in the plan package.

Development of the materials necessary to convey the environmental mitigation measures within the Form 1775 will include but not be limited to:

- Project specific Plan Notes
- Notice to Bidders
- Unique Special Provisions

Design staff must take into account that individual pay items needing modification to meet the requirements of environmental mitigation measures require the inclusion of an appropriate unique or frequently used Special Provision to ensure proper construction.

The Form 1775 filled out by the ECC will have highlighted mitigation measures in bold text to signify that those measures are to be transmitted directly to the TSC Construction Engineer for the project.

Design staff will prepare a Special Design Consideration Memo to be transmitted to the Construction Engineer for their use at the Pre-Construction meeting. The memo should highlight the specific environmental mitigation measures in the plans and proposal and include construction specific instructions related to environmental mitigation highlighted with bold text in the Form 1775.

### 14.31.01 (continued)

#### C. Special Design Considerations Memo

Preparation of the Special Design Considerations Memo (SDCM) if applicable to the project will be started in a draft form by the PM and in coordination with design personnel once the PM is in receipt of the Environmental Classification (Form 1775) from the ECC. This draft will include the bolded items from the 1775 form and any other design issues that may need special consideration to include but not be limited to:

- Environmental mitigation and restrictions.
- Property Owner Agreements from negotiations involving the purchase of Right of Way.
- Unique design features that must not be modified in construction.

The DRAFT SDCM should be submitted with The Plan Review Meeting material submittal for review.

A final SDCM should be prepared and submitted with the FPC package and defined on the Design Plan Submittal Form (0303 – Comments Section) and noted on the Milestone Checklist – Supporting Documents Section – Environmental Classification (1775) Row. This final copy should be reviewed by the ECC and the Construction Engineer to resolve any potential conflicts with constructability.

Transmittal of the SDCM from the PM to the TSC Construction Engineer will occur between the FPC Meeting and the Pre-Construction Meeting. A potential reason to wait for final submittal of the SDCM would be to include any items of note that should be brought to the attention of the Construction staff and the Contractor due to plan revisions, addenda, and contractor inquiries that occurred during that time frame.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.31.01C (continued)

#### Environmental Classification

It will be the responsibility of the Project Manager and the ECC to ensure that all mitigation measures whether or not highlighted in bold on the Form 1775 are incorporated into the project plans and proposal.

The Construction Engineer will be responsible for ensuring that the contractor is made aware of all environmental mitigation measures and the consequences of not meeting them.

The environmental section of the Pre-Con Boilerplate has been written to ensure this Memo is read at that meeting.

### 14.31.02 (revised 2-26-2018)

#### Environmental Certification (PPD Task 3155)

Environmental Certification is the final step in the Environmental Review and Clearance Process. This task takes place during Project Plan Quality Assurance Review (PPD Task 3865). During Certification, plans and other documents are reviewed to ensure that all areas of concern are avoided, all mitigation measures are in place, and all commitments adhered to. This review is conducted by the ECC and documented ([Form 2002](#)).

If all mitigation measures are in place and all commitments adhered to, the project will be certified. The PM will be notified and Environmental Certification Form ([Form 2002](#)) and supporting documentation will be stored in ProjectWise under the Project Job Number. Certification is also recorded in JobNet.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.32** (revised 4-22-2019)

### MDOT ENVIRONMENTAL PERMITS

Permits from the Michigan Department of Environment, Great Lakes and Energy (MDEGLE), the Michigan Department of Natural Resources (MDNR) and/or the Army Corps of Engineers are required for projects that involve work in wetlands, inland lakes, streams, drains, flood plains, critical sand dune areas along the shores of the Great Lakes and navigable rivers/harbors. A current summary of the most frequently needed environmental permits is listed below:

Michigan Act 451, Natural Resources and Environmental Protection Act of 1994

- Part 31: Water Resource Protection (including NPDES and Flood plain Authority)
- Part 91: Soil Erosion and Sediment Control
- Part 301: Inland Lakes and Streams
- Part 303: Wetland Protection
- Part 365: Endangered Species Protection

Federal Section 404: Clean Water Act of 1972

Federal Section 10: River and Harbor Act of 1899

The Environmental Section in the Project Planning Division determines which regulations apply to a specific project and can help make recommendations for the project to better address the applicable policies. To make such determinations, project scope, location and a set of plans are required. The review may also involve field inspections or wetland delineation. The Environmental Section is also responsible for submitting the appropriate paperwork to the regulatory agencies for permits.

**14.32.01** (revised 4-22-2019)

### Clearance

The scope of work statement on project authorizations must be accurate and complete to insure the appropriate concerns can be determined in a timely manner. Along with the analysis of other environmental impacts, the clearance process includes determining when permits are required for a project. This may involve discussions between the Design/Development Engineer and the Environmental Section and possibly a field review. Plans are often required in the environmental clearance process. It is important that when plans are requested by the Environmental Section, they are submitted as soon as possible or the clearance or permitting process could be delayed. Projects with substantial impacts may require a preliminary review with the MDEGLE.

**14.32.02** (revised 2-17-2015)

### Oversight

Once a project with environmental impacts receives a clearance, a letter is sent to the Design/Development Engineer identifying the contact people (environmental) for necessary coordination. Projects involving wetlands, flood plains, inland lakes and streams are entered into a database according to plan completion date. A project status record is maintained by the Environmental Services Section by entering permit request and review information. Therefore, any changes in scheduling or scope of work should be communicated to the Environmental Section so that project clearances and permit requirements may be monitored.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.32.03 (revised 4-22-2019)

#### Application

Project Managers of projects needing MDEGLE permit applications will receive a list of required information from the Environmental Services Section. Submitting incomplete application information will result in additional time before the permit application can be filed with the regulatory agency. Listed below is the required information for MDEGLE permit applications:

All projects must include the following.

- Project location map indicating approximate locations of each regulated activity. This must have road names legible on an 8.5" x 11" size (Example: a USGS quad map enlarged with culvert extensions at county drains circled.).
- County, township, range, and section numbers of regulated activities.
- Estimated project letting and construction start date.
- Electronic half-sized plan set (11" x 17") and a legible electronic set of 8.5" x 11" plan sheets and cross sections of regulated activities.
- Information on soil erosion and sedimentation controls planned in conjunction with regulated activities.
- Information on any temporary structures or measures to be used in the regulated area during construction.

### 14.32.03 (continued)

For culverts at regulated streams and drains, plans should include the following:

- Plan view of the culvert and road.
- Cross section view of the culvert and road. For projects that have similar treatments for all culvert work, a typical cross section that applies may be used. Projects requiring an Army Corps of Engineer Permit require a separate cross section for each culvert including elevations.
- Dimensions of pipe/culvert openings.
- Earth excavation (in cubic yards) needed to complete the crossing structure project.
- Volume of riprap (in cubic yards) needed to complete the crossing structure project.
- List of names and addresses of riparian owners on the four quadrants of the watercourse if work requires public notice by the MDEGLE. (Examples of work requiring public notice are culvert extensions that total more than 24'-0" or a replacement of a culvert of a diameter 66" or greater).
- For culvert replacements or new culverts, the bottom section of page 2 of the MDEGLE application must be completed. Information to be provided includes elevations of the invert, low steel, high water and road grades at the structure and the low point of approach.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.32.04** (revised 4-22-2019)

### **Duration**

It normally takes 60 to 90 days for the MDEGLE to complete the permit process. This may vary depending on federal involvement and public notice requirements. If a project becomes urgent, such as emergency scour protection, culvert failure or channel stabilization, the MDEGLE can issue permits on an expedited schedule. Projects with large impacts (such as new bridges or interchanges) are classified by the MDEGLE as red files and may require a longer processing period due to coordination with the Environmental Protection Agency and other federal agencies. Projects involving the Army Corps of Engineers also require a longer processing period. For MDEGLE red files and Army Corps of Engineers permit applications allow four to six months for permit processing. The Army Corps of Engineers often requires a higher degree of specificity in its applications compared to the MDEGLE and may request additional information depending on the project type.

**14.32.05** (revised 4-22-2019)

### **Issued Permits**

Permits should be incorporated into the proposal package so that any special requirements are included. Any changes in the project after permitting should be relayed to the permit coordinator in case a permit revision is required. The permit coordinator should also be notified if a project is shelved or the Critical Path indicates the construction scheduling extends beyond the effective date of the permit so that a permit extension can be requested.

For additional information on MDEGLE Permits for Sewer and Water Main Plans see Sections [9.04.03](#) and [9.04.07](#).

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.33** (revised 12-17-2018)

### **PRELIMINARY ROW SUBMITTAL** (PPD Task Description 3361) (PPD Milestone 331M)

Preliminary Right-of-Way (ROW) plans are developed for use by the Development Services Division to: conduct title searches and preliminary appraisals, assign parcel numbers, and prepare the ownership sheet. Preliminary ROW plans should be submitted at base plan submittal. An estimated number of parcels affected must be entered in the Planisware network to establish the task duration.

The Project Manager initiates the review process by including the Preliminary ROW plans for Base Plan Review in the ProjectWise workflow.

Additional information on preliminary ROW plans and plan requirements can be found in [Sections 5.16, 5.17 and 5.18](#).

### **14.34**

Section deleted.

**14.35** (revised 12-17-2018)

### **FINAL ROW SUBMITTAL** (PPD Task Description 3581) (PPD Milestone 361M)

The scheduled Final ROW date is one of the most important deadlines that must be met. Final ROW is submitted at the Preliminary Plan submittal stage. The signed Final ROW Plans and the Design Plan Submittal (Form [0303](#)) give the Development Services Division the authorization to initiate acquisition activities. The design plans must have enough detail and review to have reached a point where the designer is reasonably assured that the ROW being requested will not be changed except for minor design revisions to accommodate the actual acquisition.

**NOTE:** On large projects, it may be desirable to have an informal plan review with representatives from the Project Development and Control Section of the Development Services Division, the Region Real Estate Agent and the Design ROW Engineer in Quality Assurance prior to the formal ROW submittal. This may help avoid future revisions and ensure that the Development Services Division is receiving all the information it needs.

Additional information on final ROW plans including plan content requirements can be found in [Sections 5.16, 5.19 and 5.20](#).

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.36** (revised 12-17-2018)

### **THE PLAN REVIEW** (PPD Task Description 3590) (PPD Milestone 352M)

Most projects being designed by the Region/TSC or its Consultants require a Plan Review meeting. Refer to the table, [QA/QC Process by Template](#) on the [Plan Development Services](#) intranet website to verify the need for a Plan Review Meeting. The meeting and corresponding field review should be conducted by Quality Assurance. Under unusual circumstances such as expedited project schedules or when a Quality Assurance Engineer is unavailable, a Region/TSC Design Engineer or Region System Manager may arrange to facilitate The Plan Review meeting.

Section 14.36.01 identifies the information that should be provided in the Preliminary Plan file at a minimum if required. The Plan File must be developed consistently with [Section 1.02](#) and the current version of the [Road Sample Plans](#).

**14.36.01** (revised 12-17-2018)

### **Requirements**

The Plan Review material will be submitted in the following 3 files:

1. Supporting Documents File
  - A. See the project Milestone Checklist and Form [0303](#) Design Plan Submittal.
2. Proposal File
  - A. See the project Milestone Checklist and Form [0303](#) Design Plan Submittal.
3. Plan File
  - A. See [Road Sample Plans](#) and [Chapter 1](#).
4. RID
  - A. Place required RID files according to the [Design Submittal Requirements](#) in the RID Preliminary folder.

# MICHIGAN DESIGN MANUAL

## ROAD DESIGN

### 14.36.02 (revised 12-17-2018)

#### Procedure

1. When the Project Manager or Consultant determines the plans meet the requirements for The Plan Review, the project Milestone Checklist is completed to verify that supporting documents, proposal materials and plans are ready to submit. The materials are entered into ProjectWise using the file naming conventions outlined in [Section 1.03.02](#).
2. The Project Manager fills out a Design Plan Submittal (Form [0303](#)) and initiates the Certification Acceptance form. Include E-mail addresses for invitees outside of MDOT. Include dates that key personnel and conference rooms are available. They should be at least 3 weeks (preferably 4-5 weeks) from the submittal date.
3. The Project Manager will verify that ProjectWise (folder 3) is current with the following format;
  - 3 – Plan Review
    - Design Submittal Form and Minutes
    - RID Preliminary

If the format is not correct contact the ProjectWise administrator to apply the proper template.

4. When the project is ready for final review, Form [0303](#) is placed in the ProjectWise subfolder "Design Submittal Form and Minutes" using the file name *Job Number\_0303\_DPS\_Prelim.pdf* and the state is advanced to "Request for Meeting" to initiate submittal to Quality Assurance for review. The ProjectWise state on the three files containing plans, proposal material and supporting documents in the "Plan Review" folder are also advanced once to "Submitted for Review".

### 14.36.02 (continued)

5. The plans will be reviewed by Quality Assurance for completeness and a meeting date scheduled 4-5 weeks from the time of submittal. Instances where projects require a compressed schedule or scheduling without plans should be kept to a minimum. The 4-5 week period is needed to assure all participants are given ample time to review the plans prior to the meeting. This is essential to making The Plan Review as useful and productive as possible.
6. Plans and other material are made accessible in ProjectWise by the Project Manager. Quality Assurance distributes the same to non-ProjectWise users in an alternate deliverable and usable format. The reviewers include the following:
  - Operations Field Services Division
  - Region System Manager
  - TSC Manager
  - Region/TSC Resident/Delivery Engineer
  - TSC Development Engineer
  - Region/TSC Operations Engineer
  - Region/TSC Soils/Materials Engineer
  - Region/TSC Traffic and Safety Engineer
  - Region/TSC Maintenance Engineer
  - Region/TSC Utilities/Permits Engineer
  - Region/TSC Real Estate Agent
  - Region Resource Specialist
  - Region Bridge Engineer  
(Bridge Jobs Only)
  - Region Bridge Inspection Engineer  
(Bridge Jobs Only)
  - Environmental Services Section
  - FHWA Oversight
  - Design Utilities Section
  - Railroad Coordination Unit – Office of Rail  
(if applicable)
  - Geometrics Section- Design
  - Utilities/Permits Development Services
  - Division
  - MDOT-RIDSupport
  - City or Village (if applicable)
  - County Drain Commissioner  
(if applicable)
  - County Road Commission
  - Department of Management and Budget  
(MIR Program)
  - Others identified by the Project Manager

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.36.02 (continued)

#### Procedure

During the review process, reviewers can deposit comments in to the Review Comments subfolder in ProjectWise. Prior to the meeting, the Project Manager incorporates all comments received into the plan set for discussion at the meeting.

7. After The Plan Review Meeting is held, either the Quality Assurance Engineer or Region/TSC Design Engineer must resolve any undecided or controversial issues and inform the individuals involved of the outcome (approval/rejection) of their proposal prior to the distribution of the meeting minutes. The meeting minutes and an electronic set of plans with Plan Review comments will be given to the Design Unit, and should remain in the project files until the project is closed out.

### 14.37 (revised 11-26-2018)

#### REVIEW OF PROJECT SCOPE, COST AND SCHEDULE

After The Plan Review has been completed, the Project Manager should review the project scope, cost (preliminary engineering and construction) and schedule. Any significant changes to the scope, cost and/or schedule should be submitted to the appropriate System Manager or Statewide Transportation Planning Division. See [Section 14.15](#) (Change Request/Review of Project Scope, Cost and Schedule). Project Managers can access the JobNet home screen for more information on the S/TIP User Guides and the MPO/RTF Actions Page for more information on changes that trigger a Federal amendment.

**NOTE:** If the project was required to be, but not, on the approved STIP at the time of the Scope Verification Meeting (see [Section 14.10](#)), the Project Manager should again check to see if the project is on the STIP by following the instructions given in that section.

If the project is not on the STIP, the Project Manager must immediately notify Statewide Planning Section of the Statewide Transportation Planning Division in the Bureau of Transportation Planning. The approval process for the STIP involves many independent entities and cannot be expedited. Therefore, it is imperative that the Project Manager take action at this time to avoid possible delays in advertising the project.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.38** (revised 12-17-2018)

### ROW REVISIONS

ROW revisions occur only after final ROW is submitted, not between preliminary and final ROW submittals. Revisions should be processed whenever changes in proposed ROW occur or when changes in the design plans could affect the appraisal of and/or negotiations for a ROW parcel(s). ROW revisions are processed by submitting a completed Design Plan Submittal (Form [0303](#)) to the Design ROW Engineer in Quality Assurance with the standard size reproducible(s) of the revised sheets and one print of each sheet with the revision circled in red. The Design Plan Submittal (Form [0303](#)) should include a description of each revision. The Design ROW Engineer will review the plans and submit the ROW revision to the Development Services Division.

Revisions, unless originated by the Development Services Division, are strongly discouraged within six months of the project letting date. If a revision is necessary within six months of the letting, consult with the Project Development and Control Section of the Development Services Division, or the Design ROW Engineer to determine the best method for processing the revision.

Additional information on ROW revisions can be found in [Section 5.21](#).

**14.39** (revised 12-17-2018)

### UTILITIES STATUS REPORT CERTIFICATION (PPD Task Description 3660)

All projects require a utility certification prior to the contract award. The utility certification is comprised of the completion and inclusion of the Utilities Status Report (Form [2286](#)), and the Notice to Bidders – Utility Coordination document if necessary, in the final plan/proposal package distributed for review at the Final Project Coordination (FPC) Meeting and later submitted to the Specifications and Estimates Unit for processing prior to advertisement.

Form [2286](#) informs project bidders and the awarded contractor of utility impacts and/or coordination requirements that can be expected. Utility impacts will be described using the following four categories as indicated on Form [2286](#):

- Relocation work identified
- Utility to relocate prior to start date
- Notice to Bidders - Utility Coordination
- Work included in contract

A Notice to Bidders - Utility Coordination document must be used when one of the following conditions applies:

- There is contract work which will need to be coordinated with a utility's work. The document describes in detail the coordination effort necessary.
- There may be utility facilities that could affect normal contractor operations and/or scheduling. The document includes additional information that may be useful to the contractor.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.39 (continued)

#### UTILITIES STATUS REPORT CERTIFICATION

##### Procedure

Project Manager

1. Request preliminary Form [2286](#) and Notice to Bidders - Utility Coordination from the TSC Utility Coordinator in preparation for the Plan Review Meeting mailing.

##### Note:

If no utility involvement in the project, the TSC Utility Coordinator may provide the final Form [2286](#) and Notice to Bidders - Utility Coordination.

2. Request final Form [2286](#) and Notice to Bidders - Utility Coordination after the Plan Completion Date in preparation for final plan turn-in .

### 14.40 (revised 4-22-2019)

#### MDEGLE PERMITS FOR SEWER AND WATER MAINS (PPD Task Description 3680)

Plans that include additions or changes to water mains, sanitary sewers or combination storm and sanitary sewers require a Michigan Department of Environment, Great Lakes and Energy (MDEGLE) permit. The Project Manager should contact the Design Engineer-Municipal Utilities as early as possible in the scope verification/plan development process when water mains or sanitary sewers are involved. The Municipal Utilities Unit will complete the required plan sheets and specifications, seal the plans (Licensed Professional Engineer) and make the distribution to any municipalities involved. The municipalities will request the permit from the MDEGLE and return an approved copy to MDOT. If possible, a copy of the permit should be included in the proposal. For additional information see [Section 9.04.07](#).

# MICHIGAN DESIGN MANUAL

## ROAD DESIGN

### 14.41

#### **PARTICIPATION AGREEMENTS** **(PPD Task Description 3630)**

##### **14.41.01** (revised 12-17-2018)

###### **General**

Any questions with respect to the necessity of an agreement, cost participation, cost splits, or negotiation of terms in an agreement should be coordinated with the Utility Coordination, Permits and Agreements Section - Development Services Division. Agreements for State trunkline highway projects are prepared by the Utility Coordination, Permits and Agreements Section - Development Services Division in the following categories:

- Memos of Understanding (for activities performed by local agencies-PE, CE, ROW acquisition, etc.
- Trunkline Transportation Alternatives Program projects
- Statutory-Act 51 Participation
- Extra Width Construction and Resurfacing Non-trunkline Work
- Municipal Utility (betterment or relocation)
- Turn back
- Parking
- Maintenance and Operation (bike path, sound walls, pedestrian bridges, etc.)
- Michigan Institutional Roads
- Joint Storm Sewers
- Detour Route Improvements
- Local Agency Permit Work within Trunkline right-of-way
- Lighting on non-freeway projects

The Utility Coordination, Permits and Agreements Section - Development Services Division is responsible for the negotiation of terms and preparation of agreements. Contact should be made as early as possible in the plan development process to allow adequate time for the proper coordination to process an agreement.

### **14.41.01 (continued)**

Any correspondence with a local unit of government that involves participation, whether statutory or special, should be originated by or cleared through the Utility Coordination, Permits and Agreements Section - Development Services Division. Particular care should be used when citing cost estimates and federal participation since the agreement cost estimate figures may include higher contingency percentage and lower federal-aid participation ratios.

Information on work to be included in a contract at 100% local expense should be submitted to the Utility Coordination, Permits and Agreements Section - Development Services Division upon request for the additional work from the local agency.

Requests for agreements should be submitted to the Governmental Trunkline Engineer by e-mailing [MDOT-TLAgreements@michigan.gov](mailto:MDOT-TLAgreements@michigan.gov)

Requests for agreements should be submitted prior to scheduling an FPC Meeting. The following information should be submitted for an agreement preparation:

- Project Agreement Checklist (Form [2047](#)) - with any special conditions included in the project.
- Engineer's Estimate-with proper agency splits (proposal level in AP Preconstruction).

Plans should include the following:

1. Corporate limits and itemized quantity splits to be participated in by the city for Act 51 work.
2. Itemized quantity splits for any 100% local work (work not participated in with MDOT funds).

Other agreements such as, non-contract traffic signal (Operational Services), right-of-way (Development Services Division) and general road and bridge maintenance (Maintenance Services) are processed by other areas within MDOT.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.41.02 (revised 12-17-2018)

#### Estimates

The estimate provided to the Utility Coordination, Permits and Agreements Section - Development Services Division for agreement purposes should NOT include contingencies since a contingency factor will be added to the construction cost for agreement purposes. The estimate should be refined to such a degree that it will be within 25% of the final engineer's estimate. Anything in excess of 25% should be called to the attention of the Utility Coordination, Permits and Agreements Section - Development Services Division. The estimate must be split along corporate limits for projects with city participation. Any modifications to the scope should be incorporated in a revised or amended agreement.

Upon receipt of the request for involvement, the Utility Coordination, Permits and Agreements Section - Development Services Division will contact the Design Unit to request any additional information required and will coordinate the agreement processing procedure.

### 14.41.03 (revised 11-22-2021)

#### Act 51 Participation

[Act 51 Public Acts of 1951](#), as amended (1982), as amended by Public Act 459 of 2016, provides that cities having a population of 25,000 or more will participate with the Department in the cost of opening, widening and improving, including construction and reconstruction, of State trunkline highways within said cities not within limited access trunkline right-of-way. Cities required to participate, based on the 2020 census, are:

### 14.41.03 (continued)

<b>OVER 50,000 12.5 % Participation</b>	
Ann Arbor	Novi
Battle Creek	Pontiac
Dearborn	Rochester Hills
Dearborn Heights	Royal Oak
Detroit	St. Clair Shores
Farmington Hills	Southfield
Flint	Sterling Heights
Grand Rapids	Taylor
Kalamazoo	Troy
Kentwood *	Warren
Lansing	Westland
Livonia	Wyoming
<b>40,000 to 50,000 11.25 % Participation</b>	
East Lansing	Portage
Lincoln Park *	Roseville
Midland	Saginaw *
<b>25,000 to 40,000 8.75 % Participation</b>	
Allen Park	Madison Heights
Bay City	Muskegon
Burton	Norton Shores *
Eastpointe	Oak Park
Garden City	Port Huron
Hamtramck *	Romulus *
Holland	Southgate
Inkster	Walker *
Jackson	Wyandotte

\* City has changed participation range.

Guidelines for determining types of work which should or should not be included in Act 51 categories in AP Preconstruction for participating Cities and Villages are posted at [Act 51 Participation Items](#).

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.41.03 (continued)

#### Act 51 Participation

In order to facilitate the administration of this portion of Act 51, P.A. 1951, as amended, the Utility Coordination, Permits and Agreements Section - Development Services Division should be contacted to determine whether an agreement is required for a project and to determine the items requiring participation if the project lies within or partially within the corporate limits of any of the previously noted cities.

### 14.41.04 (revised 12-17-2018)

#### Maintenance

Maintenance work is excluded from statutory participation. The distinction between maintenance and construction items in a contract is sometimes hard to determine. The Utility Coordination, Permits and Agreements Section - Development Services Division will make the final determination. Generally, the following items are considered as non-participating, even though they may be in a construction contract:

- Replacing aggregate in a thickness of less than 3" on an existing gravel or stone surface where the original material has been lost or bladed off.
- The installation of traffic signs, delineators, or pavement markings other than those required for the maintenance of traffic during construction.
- Installation of freeway lighting for traffic safety.
- Nominal repair or painting of structures.
- Replacement of pavement joints unless performed in conjunction with a project to prepare the roadway for resurfacing.
- At existing railroad crossings, the installation of railroad crossing warning devices and the reconstruction or replacement of crossing materials, including maintaining traffic, detours and minor roadway approach work.

### 14.41.04 (continued)

- Seal coating, patching and repairing of roadway surfaces.
- Snow and ice removal.
- Cleaning of road and street surfaces.
- County drain assessments.
- The trunkline share of traffic signals unless specifically included as part of the agreement with the participating city or village.
- Brushing and tree trimming other than in connection with a roadway improvement.
- Reconditioning of hot mix asphalt surfaces of any length by scarifying and remixing in place, or resurfacing without scarifying when the new material added increases the existing HMA surface less than 1½".
- Application of dust control layers, sprinkling and flushing.
- Outdoor advertising sign removals without widening or relocating the roadway.
- All work programmed as Capital Preventive Maintenance (CPM).
- Upgrading of existing sidewalk ramps or construction of new sidewalk ramps in order to comply with federal requirements under the Americans with Disabilities Act (ADA), ONLY when required ADA compliance is a direct result of CPM work.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.41.05 (revised 12-17-2018)

#### **Extra Width Construction or Resurfacing**

Act 51 is specific as to the width of pavement for which the Department is responsible. An agreement is necessary whenever the proposed work covers a width greater than the Department can justify.

In any city or village, the width of a State trunkline highway will be the width required to serve expected future traffic needs for a 20 year period, as determined by a Department transportation survey. This width, except as noted below, will not be less than (1)the currently accepted standards for a 4-lane highway, (2)such width as may be built on the same trunkline route immediately beyond and adjacent to either legal boundary of the city or village, or (3)on trunklines eligible for federal highway funds, such width as may be prescribed by the federal government, whichever is greater. The Department and the governing body of a city or village by mutual agreement may determine that the width of a State trunkline highway will be less than the width prescribed above. If any city or village desires to widen a State trunkline highway for local purposes beyond the width prescribed above, the entire cost of the extra width must be borne by the city or village.

Resurfacing of any width greater than 47'-3" (64'-0" if parking is prohibited and marking is for 5 lane operation) or of any lane or bay on which parking is permitted should be reviewed with the Utility Coordination, Permits and Agreements Section - Development Services Division.

The Department will pay the costs for any construction on a trunkline highway where parking is permitted when the width is 47'-3" or less. If the resurfacing of the parking lanes is done at project cost, an agreement will be written that states that the Department may use the additional width for trunkline purposes, when and if, necessary.

### 14.41.05 (continued)

The Utility Coordination, Permits and Agreements Section - Development Services Division should be notified if there is a possibility of extra width construction or resurfacing. If so, it will conduct negotiations, make a final determination, and prepare an agreement if necessary.

### 14.41.06 (revised 12-17-2018)

#### **100% Betterment for Local Party (non-trunkline work)**

A local party, whether governmental or private, may request betterments to their local facilities, to be constructed in conjunction with a state trunkline project. Any such work requires a participation agreement. Regardless of the Division contacted, the Utility Coordination, Permits and Agreements Section - Development Services Division should be notified so that negotiations on the cost agreement can be started.

Betterments may be either improvement of utilities or any construction not required because of the trunkline project. Generally, this includes any construction beyond the spring points of the intersection on the local legs or the trunkline right-of-way lines extended (whichever is smaller), other than the minimum work to transition either in width or grade back to the existing road.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.41.07** (revised 12-17-2018)

### **Municipal Utilities**

General relocation of municipally owned utilities within their corporate limits is done at project expense, except for water main relocation (See [Section 9.02.01B](#)). If the relocation is part of the Department's contract, no agreement is necessary; however, local notification is secured through the procedure outlined in [Chapter 9 "Utilities."](#) If the relocation is to be done by the owner, or if the utility is located outside the corporate limits of the owner, an agreement is required. The Utility Coordination, Permits and Agreements Section - Development Services Division and the Municipal Utilities Unit will make the determination. For more information see [Section 9.02](#).

**14.41.08** (revised 12-17-2018)

### **Bicycle Paths**

An agreement is necessary with the local government agency for the construction of independent bike paths within the limits of that agency. The Department will construct the path, including the initial signing, provided that the governmental agency agrees to certain conditions, principally a willingness to assume all maintenance responsibility. The agreement should be requested from the Utility Coordination, Permits and Agreements Section - Development Services Division at the beginning of the design phase. No agreement is required for shoulders designated as bike paths other than for reasons listed in other categories of agreements. For more information see [Section 12.12](#).

**14.41.09**

### **Turnbacks**

Turn back work will require an agreement. Cities with a population over 25,000 participate by statute. Special items or betterments are treated the same as regular trunkline work. Under some circumstances an agreement will be obtained only to outline the procedure for design, construction and transferring jurisdiction. Care in meeting these provisions must be exercised in the design process. Any work done in advance of or in anticipation of turn back may require an agreement to protect the Department's interest. The Turn Back Law also contains provisions for making a lump sum payment to the local agency in lieu of a rehabilitation project. For more information see [Section 12.03](#).

**14.41.10** (revised 12-17-2018)

### **Parking**

The Project Manager should notify the Traffic and Safety Unit of the possibility that a parking restriction agreement is required. The Traffic and Safety Unit will investigate the situation and formally request an agreement, if required. Any section of roadway being widened within the corporate limits of a city or village should be referred to and reviewed by the Traffic and Safety Unit. Resurfacing of any roadway in any city or village where parking is not prohibited should be reviewed.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.41.11** (revised 12-17-2018)

### **Special Maintenance and Operational Obligations**

When special conditions for either maintenance or operational obligations exist (sidewalks, bike paths, sound walls, pedestrian bridges, etc.), contact the Utility Coordination, Permits and Agreements Section - Development Services Division, as these must be covered by an agreement.

**14.41.12** (revised 12-17-2018)

### **Michigan Institutional Roads (MIR Program)**

Work done with MIR funds does not require an agreement since these are budgeted MDOT funds. Work is confined to roads open to the public. Institutions may request work on private roads, parking lots, or other items of benefit to them such as drainage or lighting. These items are not eligible for MIR funds and must be funded with a special account number. An agreement must be secured with the Department of Management and Budget by the Utility Coordination, Permits and Agreements Section - Development Services Division.

**14.42** (revised 3-16-2015)

### **SPECIAL USE PERMITS**

Special Use Permits (SUPs) are issued by local governmental agencies. Currently, except in a few instances, the Contractor is responsible for obtaining Special Use Permits. However, on occasion, construction delays can be caused if certain SUPs are required. Therefore, the Project Manager needs to address SUPs during the plan development process.

All SUPs are not required to be obtained during the design phase, only those that have the potential to delay construction. To determine which SUPs could impact construction schedules, the Project Manager should list any possible SUPs on the title sheet prior to submittal for The Plan Review. These can be discussed separately at The Plan Review and a determination made as to which, if any, are required to be obtained prior to advertising. The minutes from The Plan Review will indicate any SUPs that are required. The Project Manager will coordinate the work with the appropriate individual(s) to obtain the SUPs prior to the distribution of the plan/proposal package for the FPC Meeting. Any required SUPs should be included in the plan/proposal package submitted to the Specifications and Estimates Unit.

A partial list of Special Use Permits is given below:

- Mining (wetland)
- Night work
- Noise
- Tree cutting/replacement
- Burning
- Water system connections
- Public utility
- Concrete plants of crushers
- Pavement breakers
- County drain
- Dust control
- Storm sewer connection
- City/Township ordinance
- Other

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.43** (revised 4-26-2021)

### SPECIAL DRAINAGE DESIGNS

Specialized units within the Department assist in the preparation of plans and specifications for various highway drainage structures including mechanical systems for pump houses, tunnel storm sewers, inverted siphons, special manholes, junction chambers, slab culverts, box culverts, precast three sided culverts, precast arch culverts, head walls, and circular culvert extensions. All requests for such work should be directed to the Bureau of Bridges & Structures, Structure Design Section, Special Structures Unit, as well as Utilities, Drainage, and Roadside Section of Design Division. Requests for design assistance must be made as soon as possible after the scope verification meeting.

**14.44** (revised 3-26-2012)

### COUNTY DRAIN REVIEW

When it becomes evident a county drain will be affected by a project, the Project Manager should contact **both** the Region/TSC Drainage Coordinator and MDOT Drainage Coordinator (Supervising Engineer – Utilities, Drainage & Roadside Section in the Design Division) as soon as possible.

MDOT drainage coordination responsibilities are described in the **MDOT Drainage Manual**, Section 2 Legal Policy and Procedures, Appendix 2-D, Attachment B.

**14.45** (revised 12-17-2018)

### MAINTAINING TRAFFIC AND CONSTRUCTION STAGING (PPD Task Descriptions 3820 & 3830)

After The Plan Review Meeting has been held and the plans revised accordingly, the Project Manager should request the final maintaining traffic scheme from the Region/TSC Traffic and Safety representative. This should include the following applicable items:

- maintaining traffic special provision
- all pay items and quantities
- temporary and/or permanent signing
- temporary and/or permanent signals (this may have to be coordinated with the Operations Field Services Division)
- a copy of any agreement(s) authorizing MDOT use of a detour route
- maintaining traffic plans and staging typical/plans

The above request can be initiated by sending a memorandum and an up-to-date set of plans to the Region/TSC Traffic and Safety representative. On large projects with separate staging typicals and/or plan sheets or unique/complex projects, a meeting with the Project Manager, Resident/Delivery Engineer, Traffic and Safety representative(s) and Utilities and Permit representative(s) may be beneficial to guarantee the plans, proposal and maintaining traffic special provision are compatible.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.46** (revised 12-17-2018)

### **FINAL GEOMETRIC AND SAFETY REVIEW (PPD Task Description 3810)**

After The Plan Review Meeting has been held and the comments are incorporated into the plans the Project Manager should transmit a set of plans to the Geometrics Unit of the Design Division for review. On large projects this may include several transmittals, discussions, meetings, etc. periodically during development of the final plan/proposal package. It is essential to have geometric and safety items reviewed and approved prior to the FPC Meeting to avoid delays and last second revisions. Items to review may include:

- sight distances
- design speeds
- curve and interchange location
- turning radii
- exit and entrance ramps
- driveways
- turn lanes
- storage and transition lengths
- superelevation
- roadside safety
- intersection layout

This review is only to allow the Geometrics Unit to verify that all previous recommendations have been incorporated in the plans.

**14.47** (revised 12-17-2018)

### **RIGHT OF WAY MONUMENTING**

Monumentation of trunkline Right-of-Way has presently been discontinued due to both a lack of funding and shortage of personnel. Permanently monumented Rights-of-Way benefit the Department both as physical evidence of the location of trunkline and property boundaries as well as reducing the costs of future surveys, adjacent surveys and other boundary control issues. Therefore, it is still to be included in construction plans as defined by the situations below.

Right-of-Way monumenting and documentation must be done by a Professional Surveyor licensed to practice in the State of Michigan.

#### **14.47.01**

##### **New Construction**

On new construction, ROW monumentation should be placed along the ROW at every deflection, Curve PC and PT, intersections with section lines, plat boundaries, and crossings with municipal Rights-of-Way. The monument locations should be coordinated with the project control and shown on the construction and ROW plans labeled with their Station and Coordinate values. The actual numbering of monuments should be coordinated with the Lansing Design Survey Unit. The scope of services for such a contract should be prepared by the Lansing Survey consultant management staff or the Regional Surveyor (if not included in the construction contract). Funding must be identified for any such work.

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.47.02**

#### **Improvements Requiring ROW Acquisition**

On existing facilities requiring ROW, monuments should be placed so as to define the boundary of any newly acquired parcel (total or partial take). Those extending through platted areas should monument any new plat corner locations. These locations should be coordinated with the project control and shown on the construction and ROW plans labeled with their Station and Coordinate values. The actual numbering of monuments should be coordinated with the Lansing Design Survey Unit. The scope of services for such a contract should be prepared by the Lansing Survey consultant management staff or the Regional Surveyor (if not included in the construction contract). Funding must be identified for any such work.

### **14.47.03**

#### **Improvements Not Requiring Row Acquisition**

Existing Rights-of-Way typically have sufficient evidence or occupation (i.e.: fences, existing monumentation, etc.) to indicate the location of the boundary. Monumentation in these situations is not recommended. Any dispute involving the location of any ROW boundary should be resolved by formal survey on a case by case basis.

### **14.47.04**

#### **Coordination**

Currently, MDOT rarely provides funding for monumentation. Project Managers for projects requiring ROW acquisition should contact the Lansing Design Survey Unit for direction in what, if any, monumentation information should be included in the plans.

### **14.48** (revised 12-17-2018)

#### **REQUEST FOR TURF ESTABLISHMENT RECOMMENDATIONS**

Once the limits of earthwork are known and the construction schedule has been determined, the Project Manager should include the Region Soils Engineer and the Statewide NPDES Resource Specialist in all electronic plan submittals throughout the duration of the project to confirm the correct Soil Erosion Sedimentation Control (SESC) Measures have been properly implemented and finalized before the FPC Meeting. The Project Manager will contact Region/TSC construction staff or the Roadside Development Unit for turf establishment recommendations.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.49

Section deleted.

### 14.50 (revised 12-17-2018)

#### **FINAL CONSTRUCTABILITY REVIEW (PPD Task Description 3860)**

Once the revisions from The Plan Review Meeting have been incorporated into the plans, Final Plans begin. After the final maintaining traffic special provision has been received, and staging typicals and/or plan sheets have been completed, this information plus any unique special provisions should be sent to the Resident/Delivery Engineer for review. Discussions concerning a Construction Critical Path Network, if applicable, should also occur at this stage. In conjunction with the [Constructability Review Checklist \(Form 1960\)](#) for the Project Development/Design Phase, the work in this task must be addressed prior to the distribution of the final plan/proposal package for the FPC Meeting.

The final constructability review applies to all projects. On small projects this task may consist of only the transmittal of plans to the Resident or Delivery Engineer for comment. On large projects with complex staging, one or more meetings with the Resident/Delivery Engineer and Region/TSC Traffic and Safety Engineer may be required throughout this task. For projects in templates that do not require an FPC Meeting, the Final Constructability Review must be completed prior to Plan Completion.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.51** (revised 12-17-2018)

### **INCENTIVE AND LIQUIDATED DAMAGES CLAUSES**

There are two inducements to completing work by the prescribed completion date or time. These are in addition to the normal schedule of Liquidated Damages included in Section 108.10 of the current Standard Specifications for Construction. Both are listed below.

1. Incentive payments - used primarily on critical projects where traffic inconvenience and delays are to be held to a minimum. The amounts are based on estimates of items such as traffic safety, traffic maintenance, and road user delay costs.
2. Liquidated Damages for Other Department Costs - based on increased user costs and/or additional cost incurred by MDOT; such as increased maintenance costs or costs due to the type of designs for temporary roads.

**14.51.01** (revised 3-16-2015)

#### **Guidelines**

Guidelines for the development and use of Incentive or Liquidated Damages Clauses are as follows:

- Projects that are to be on an expedited schedule should be identified during the "Call for Projects" process and in the Project Concept Statement.
- Justification material such as hourly counts, user cost data and construction costs should be available prior to The Plan Review Meeting so a traffic control plan can be presented and reviewed at the meeting.
- When Incentive clauses or special expedited schedules are used, adequate Department staff must be available to maintain proper inspection and to assure a quality product.
- Projects should be straight forward and not require several different types of construction procedures or typical sections.

**14.51.02** (revised 7-22-2013)

#### **Applications**

Incentive Clauses would be appropriate where the following conditions exist:

- A substantial savings in user costs can be realized by shortening the time of the traffic restrictions or completing the project ahead of schedule.
- Total additional user costs should be at least in the neighborhood of 5% of the project cost. \$5000 per day should be considered as the daily minimum incentive for major projects. For smaller interim elements of a project, a lesser value may be used.
- The time of the traffic restriction should be long enough to allow the construction schedule to be compressed at least an additional 15 days, based on a completion date using an expedited schedule.
- Where capacity will be reduced below an acceptable level of service and no detour route is available.
- Where a detour route must be used and the detour has an unacceptable level of service.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.51.02 (continued)

Liquidated Damages for Other Department Costs would be appropriate where the following conditions exist:

- Where additional costs would be incurred by MDOT in the form of maintenance costs on temporary roads, costs of over-designing temporary roads, maintaining traffic costs, etc. and where substantial additional user costs would be incurred or could be justified. An example would be a road being maintained on a detour or a temporary road through the construction area. The level of service would not be reduced but maintaining this situation beyond a specified date (winter shutdown) would create additional costs for MDOT. The amount of the Liquidated Damages should be substantive enough to cause the contractor to follow the schedule and to do the work as required otherwise the contractor may choose to pay the Liquidated Damages payment.
- Where the substantial user costs could be justified but the construction time is too short to allow a meaningful incentive period before the established completion date. An example would be to assess Liquidated Damages to assure the daily lane closures will not extend into the rush hour.

### 14.51.03 (revised 7-22-2013)

#### Procedure

As soon as the Project Managers are aware that Incentive or Liquidated Damages Clauses will be included in a project, they should request an analysis. Since the analysis often requires considerable data from different work centers, it is essential to give as much lead time as possible. The Project Manager should supply, as a minimum, the following information:

- all available traffic counts (24 hour)
- the number of lane closures, if applicable
- detour routes - distance and estimated travel times

Once the analysis is completed, reviewed, and approved the information is forwarded to the Project Manager and is incorporated into the progress clause.

The maximum cost (usually 5% of the total contract) must be included in the construction cost of the project and remain within the approved programmed amount.

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

**14.52** (revised 12-17-2018)

### **REVIEW OF PROJECT SCOPE, COST AND SCHEDULE**

Once the plans and proposal are completed and quantities have been entered into AP Preconstruction, the Project Manager should compare the estimate with the programmed cost. If a revision to the cost (or schedule) is required, a change request through JobNet should be submitted immediately. This will insure a decision concerning cost is reached prior to the FPC Meeting. If the cost increase is denied a revised scope, change in limits, etc. needed to reduce the cost to within the programmed amount can be incorporated into the plan/proposal package prior to distribution of the material for the FPC Meeting. It is essential that the AP Preconstruction estimate, when submitted to the Specifications and Estimates Section, be within the JobNet programmed budget allowable limits. This eliminates any delays in advertising due to funding.

**14.53**

Section deleted.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.54** (revised 12-17-2018)

**14.54 (continued)**

### FINAL PROJECT COORDINATION (FPC) (PPD Task Description 3870) (PPD Milestone 387M)

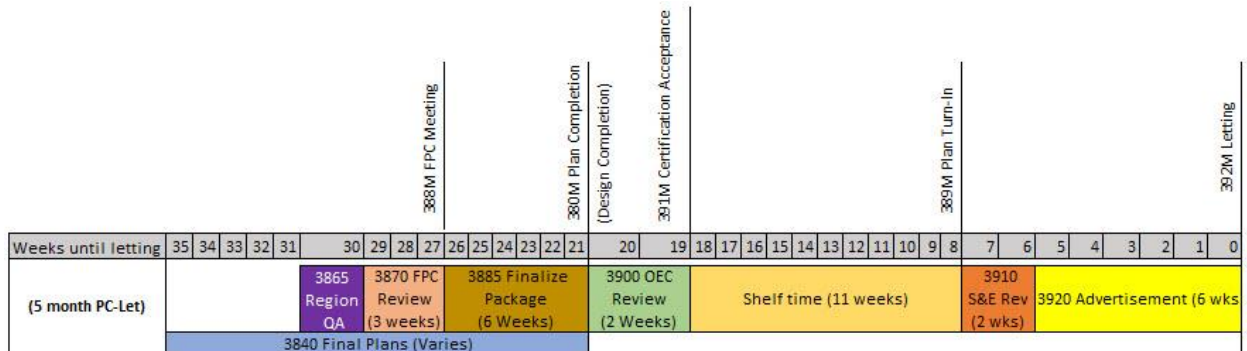
The Final Project Coordination indicates 90-95% completion of the plans, proposal and supporting documents herein after referred to as the FPC package. The FPC Meeting takes place 6-8 weeks prior to Plan Completion. See task timeline below.

Often, multiple projects and/or project elements are designed across multiple groups (i.e. bridge, road, signals, municipal utilities, etc.) At this stage, design is essentially complete for all collective pieces. This milestone allows designers and stakeholders to coordinate, collaborate, and finalize the details of the project(s) as a whole. Exceptions/clarifications to the FPC package are:

- Miscellaneous quantities may be preliminary
- Detail grade sheets may not be complete
- Progress Clause may be draft
- Permits may not be finalized
- Unique Special Provisions have been submitted but may not be approved
- Cost Summary may have some estimated items

PPD Task	Duration	Weeks Prior to Letting
3840 Final Plans	Varies	36 (Varies)
3865 Region QA	1 week	31
3870 FPC Review	3 weeks	30
388M FPC Review Meeting	1day	27
3885 Finalize Package	6 weeks	27
380M Plan Completion	(Milestone)	21
3900 OEC / 391M Certification Acceptance	2 weeks	21
389M Plan Turn-In	(Milestone)	8
3910 Final Project Package 910 S&E Review	2 weeks	6
3920 * Advertisement	6 weeks	6

\* The Supervisor of the Specifications and Estimates Unit will determine which projects are candidates for letting with 3 or 4 week advertisements. Projects proposed for 3 week advertisements must have the approval of the Engineer of Design (except for Capital Preventive Maintenance, Non-Freeway Resurfacing Program and Pavement Marking projects).



TASK TIMELINE

Note: This is a general timeline. See Planisware for project specific network.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.54.01** (revised 12-17-2018)

### Requirements

The FPC Package material must include applicable items from the Milestone Checklist. If the submitted material is missing enough of the listed essential items, the System Manager will direct the Project Manager to cancel the meeting and reschedule when the material is more complete and/or available.

**Every effort should be made to submit the project for FPC with Environmental Certification, ROW Certification, and approved design exceptions or variances, as well as any draft/approved Unique Special Provisions.**

The FPC material will be submitted in the following files:

1. Supporting Documents
2. Proposal
3. Plans
4. RID

Place required RID files according to the [Design Submittal Requirements](#) in the folder 5-Final Project Coordination RID. The materials are entered into ProjectWise using the file naming conventions outlined in [Section 1.03.02](#). [MDOT-RID Support](#) will review the ProjectWise RID FPC folder and provide comments prior to the FPC Meeting. The Design Team will address the comments in the RID FPC folder and place the files for letting in the RID Documents folder located in folder 6-Letting Plans and Proposal > RID Documents. [MDOT-RID Support](#) will then confirm that all comments have been addressed and the RID files are ready for letting.

**14.54.02** (revised 12-17-2018)

### Procedure

1. When the Project Manager or Consultant determines the plans meet the requirements for the Final Project Coordination, the Milestone Checklist is updated to verify the supporting documents, proposal materials and plans are ready to submit. The materials are entered into ProjectWise using the file naming conventions outlined in [Section 1.03.02](#).
2. The Project Manager updates the Design Plan Submittal (Form [0303](#)) and CA form.
3. The Project Manager will verify that ProjectWise (folder 5) is current with the following format:
  - 5 – Final Project Coordination
    - Design Submittal Form
    - RID

If the format is not correct contact the ProjectWise administrator to apply the proper template.

4. When the project is ready for FPC review, a PDF copy of Form [0303](#) is placed in the ProjectWise subfolder "Design Submittal Form" and the state is advanced to "Ready for System Manager Review".
5. The System Manager will verify that the package is sufficient to hold a productive FPC review meeting and items from the Milestone Checklist are included. The System Manager advances the state to "Meeting Scheduled and Ready for Review". The Project Manager schedules the FPC meeting with a calendar appointment, 3 weeks from the time of submittal, with the date, time and location of the meeting with a link to the FPC package. See [Section 14.54.03](#) for recommended review invitees. See [chapter 1.3](#) of the Development Guide for further guidance on creating the review meeting appointment.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.54.02 (continued)

6. The Project Manager advances the state on Form **0303** and the three files in folder 5 (plans, proposal and supporting documents) to "Review in Progress".
7. The Project Manager will conduct the FPC Meeting. During the meeting the Project Manager will document responses to the review comments within the electronic files. The purpose of this meeting is to discuss and resolve all final conflicts, contradictions, omissions, etc. If participants at the meeting are unable to resolve a conflict, the Project Manager should report the conflict to his/her supervisor for resolution.
8. Following the meeting, the design team will respond to the review comments that were not documented during the meeting and change the state from "Design Team Response" to "Completed".

### 14.54.03 (revised 12-17-2018)

#### Attendees

See "Review meeting contacts list.xls" in Supporting Documents Milestone Forms list for the reviewers to be included for the Final Project Coordination. The following should attend the FPC Meeting:

- Project Manager/Cost and Scheduling Engineer
- Design Engineer(s)
- Construction Engineer(s)
- Operations Engineer
- Traffic & Safety Engineer
- Utilities/Permits Engineer
- TSC Maintenance Coordinator
- Region Quality Assurance Engineer
- Quality Assurance
- Geometrics Unit
- Environmental Clearance Coordinator
- Construction Field Services Division

Others (if applicable):

- FHWA Oversight
- Consultant Coordinator
- Consultant
- Electrical Unit/Lighting Unit
- Municipal Utilities Unit
- Hydraulics/Hydrology Unit
- Roadside Development Unit
- Signals (Operation Field Services Division)
- Signs
- Pavement Marking
- Region Real Estate
- Railroad Coordination Unit
- City or Village
- County Drain Commissioner
- County Road Commission
- MDOT Geotechnical Services Unit (if project includes bridge foundation work)
- MDOT Bridge Structural Fabrication Unit (if project includes bridge fabrication work)

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.54.03 (continued)**

Ensure the Specifications & Estimates Unit receives notification of the FPC review. An estimator will review the estimate, adjust any unit costs and return it to the Project Manager prior to the FPC Meeting so that any funding problems can be discussed at the FPC Meeting.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

14.55

### CONTRACT SELECTION TEAM (DBE PROGRAM)

Each fiscal year the State Transportation Commission adopts a percentage goal for Disadvantaged Business Enterprise (DBE) participation on selected federally funded projects (all projects with any federal funding are eligible). The Contract Selection Team was established to set the DBE percentage on each MDOT construction project in order to meet or exceed the MDOT goal.

The DBE program attempts to aid DBE contractors in gaining the necessary skills to compete in their chosen field.

The Contract Selection Team may establish varying DBE levels of participation in order to achieve MDOT's annual goal. However, due to location, type of work, or cost, some projects are not appropriate candidates for DBE participation.

The Project Manager should contact the Contract Selection Committee with any questions concerning established percentages.

14.56 (revised 12-17-2018)

### PACKAGING OR CONSOLIDATING PROJECTS

Occasionally it may be advantageous to combine two or more projects into one contract. The benefits may include lower bid prices, improved maintaining traffic coordination, eliminating possible conflicts with more than one contractor working in the same area and reduction and/or simplification of required documentation during construction of the project. Projects that are scheduled for the same letting and are located in the same area should be considered for consolidating or packaging under one contract.

Consolidation is the combining of projects into one contract under one job number. Packaging is combining of projects into one contract but with separate job numbers for each project.

When consolidating, projects must have the same construction funding. Federal-aid projects must be on the same federal route and section. If projects are consolidated under one job number, usually the number associated with the largest project is the remaining number.

Projects programmed with different types of construction funding or that are not in the same federal section, although not eligible for consolidation, can be packaged into one contract. The projects have to retain separate job numbers but are advertised, bid, and let under one contract. Construction personnel have to maintain separate records for each project. The shared Contract ID is developed from the predominate Control Section with in the lowest job number of those being packaged together. This will also apply to the Progress Clause and MOT Special Provision where the Contract ID is also listed. Other locations, separate job numbers will be listed.

Projects with DBE (Disadvantaged Business Enterprises) requirements cannot be consolidated or packaged without prior approval from the Contract Selection Committee (DBE).

## MICHIGAN DESIGN MANUAL ROAD DESIGN

14.57 (revised 11-22-2021)

### PLAN COMPLETION & OEC/CERTIFICATION ACCEPTANCE (PPD Milestone 380M) (PPD Milestone 391M)

The Plan Completion date indicates 100% completion of the plans, proposal and supporting documents.

As part of the stewardship agreement with the FHWA, MDOT developed a procedure involving a system of checks/reviews to verify all requirements of the agreement are met. The Department also made the decision to use the majority of the process (completion of the Certification Acceptance form) on all projects (Federal and M funded), including those classified FHWA Oversight. The verification is accomplished by completing the Certification Acceptance form. The form includes reviews (with confirmation by e-signatures) by several divisions and sections within the Bureau of Highways. Once the form is complete in the ProjectWise Supporting Documents folder, it is submitted to the Specifications and Estimates Unit at final turn-in. The required signatures (or initials) are listed below:

- Bridge Design Unit (if applicable)
- Project Manager/Cost and Scheduling Engineer / Design Engineer / Consultants
- Quality Assurance Engineer
- Specifications and Estimates Engineer
- Utility Coordination and Permits
- Governmental Coordination and Engineering
- Office of Rail
- Drainage Engineer
- Force Account Work (if applicable)
- Geometric Design Engineer
- Traffic Signs and Delineation
- Traffic Signals
- Region/TSC Traffic and Safety
- Resident/Delivery Engineer
- FHWA Area Engineer (if applicable)

14.57 (continued)

The following documentation should be in the applicable ProjectWise location prior to final submittal to the Specifications and Estimate Unit.

- Environmental Classification (Form 1775)  
Special Design Considerations Memo
- Mitigation measures required in the environmental document (EIS, FONSI)
- Permits
- Copies of Scope Verification and The Plan Review Meeting minutes.
- Design Exceptions / Variances
- Waiver-Planting Wildflower Expenditures
- Pavement Selection Review Committee Approval Letter.
- Approved Unique Special Provisions
- Signed / Completed  
Certification Acceptance File
- Signed / Completed  
Project Signature Sheet

On FHWA Oversight projects, in addition to the Certification Acceptance File being **complete**, the corresponding signed Risk Based Project Involvement Stewardship & Oversight Plan (RBPI S&O) form must also be obtained, completed/signed, and placed in the ProjectWise Supporting Documents folder prior to submitting the final plan/proposal submittal to the Specifications and Estimates Unit.

Note – the applicable FHWA Area Engineer will supply the RBPI Stewardship & Oversight Plan form on applicable projects with FHWA Oversight.

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.57.01**

#### **Procedure**

1. Following the Final Project Coordination Meeting, the design team will incorporate the accepted review comments and complete the final plans and proposal package.
2. When plans are 100% complete (Plan Completion) the plan and proposal files are placed in folder 6 – Letting Plans and Proposal. The design team advances the state to “PM Review in Progress”. The Project Manager is responsible for verifying all the agreed-upon revisions are incorporated into the plans.
3. The reviewers from FPC and those required to sign the Certification Acceptance are notified with the state change to “CA Sign Off”. The reviewers and signers are responsible for verifying that their concerns have been resolved with the final plans. Certification Acceptance signers will e-sign the CA form.
4. The Project Manager advances the state to “Initiate Final Project Review” to submit the completed plans to Specifications and Estimates.
5. The Project Manager will also submit the Supporting Documents by selecting all files in that folder and changing state to “e-Prop – Initial Final Project Review – Supporting Documents”.

### **14.58** (revised 12-17-2018)

#### **APPROVAL OF SPECIAL PROVISIONS**

In order to clarify terminology surrounding this subject, the following definitions are provided:

1. Standard Specifications.- The book of specifications approved for general application and repetitive use.
2. Supplemental Specifications.- Detailed specifications that add to or supersede the Standard Specifications.
3. Special Provisions.- Revisions or additions to the Standard and Supplemental Specifications applicable to an individual project.
4. Frequently Used Special Provisions.- An approved special provision with stable requirements applicable to a number of projects used on a regular basis.
5. Addendum - a change, addition and/or deletion to the contract documents occurring after a project is advertised but before the letting date.

Occasionally, information in the plan/proposal package may differ or conflict. To help in resolving such conflicts, the following order of preference has been established per the 2012 Standard Specifications for Construction:

1. All proposal material except those listed in subsections 104.06B through 104.06F
2. Special Provisions
3. Supplemental Specifications
4. Project Plans and Drawings
5. Standard Plans
6. Standard Specifications

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.58 (continued)

#### APPROVAL OF SPECIAL PROVISIONS

All unique special provisions that are part of the proposal must have the approval of the Design Division prior to contract printing and advertising. When a project is submitted to the Specifications and Estimates Unit for advertisement with unapproved unique special provisions, the Project Manager must complete [Form 2908](#) Special Provision - Exception Risk Analysis, including approval by the appropriate Region Engineer. Although minimal use is encouraged, this form does allow for exceptions for multiple unique special provisions. These do not include the Frequently Used Special Provisions, which are reviewed and approved before they are placed on the FUSP list. The Project Manager should submit any unique special provisions for approval as soon as possible during project design, but no later than 30 working days (6 weeks) prior to the plan completion date. The special provision(s) must be placed in folder "Special Provisions – Unique" under "Letting Plans and Proposal" (folder 6) and state advanced to begin the review and approval process. Special provisions must be submitted in MSWord format following the guidelines outlined in [Chapter 11](#). Consultant-written Special Provisions must also be submitted for approval by the MDOT Project Manager following the same process as internal designs. Drafts of these should be available for review and discussion at The Plan Review meeting.

### 14.58 (continued)

Project Managers are encouraged to use previously approved Special Provisions whenever possible. To review an index of available approved Special Provisions, see the [Previously Approved Special Provisions](#) page on the MDOT Web site. If any changes are made to the approved document, it must be saved with another filename. When submitting a revised (previously approved) Special Provision, the redline and strikethrough features under MSWord (track changes) should be used to delineate the changes made to the original document. This will substantially expedite the approval process.

For additional information regarding Special Provisions including a sample format see [Chapter 11](#) (Specifications and Estimates) of the Road Design Manual.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.59** revised 12-17-2018)

### **SHELF PROJECTS**

Projects with completed plan/proposal packages that do not have funding or approval for advertising and letting should not be submitted to the Specifications and Estimates Unit for processing. The Project Manager should verify all the contents of the plan/proposal package necessary for submission to the Specifications and Estimates Unit are included and correct. Once completed, the Project Manager should inform the Region System Manager of the completion of a “shelf project.” The Region System Manager will verify the project is indeed a “shelf project.” The Project Manager should periodically inquire about the status of the project.

Prior to submitting a “shelf project” to the Specifications and Estimates Unit for processing, the Project Manager must review the plan/proposal package and determine the amount and extent of revisions required to update the package. If a project has been on the shelf a significant amount of time the Project Manager should consider holding another FPC Meeting.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.60

#### SUBMISSION OF COMPLETED PLANS

14.60.01 (revised 11-22-2021)

##### General

The final plan/proposal package should be submitted to the Specifications and Estimates Unit on or before the date listed in the calendar year's schedule of Letting and Board Dates. This date should not be confused with "Plan Completion Date." Plan completion date occurs after the FPC Meeting and is the date when 100% of the plans are completed. See [Section 14.54](#) for task timelines. A copy of the letting schedule is located on the Plan Development SharePoint site.

The Supervisor of the Specifications and Estimates Unit will determine which projects are candidates for letting with 3 or 4 week advertisements. Projects proposed for 3 week advertisements must have the approval of the Engineer of Design (except for Capital Preventive Maintenance, Non-Freeway Resurfacing Program and Pavement Marking projects). Projects proposed for a 6 week advertisement require notification with the Supervisor of the Specifications and Estimates Unit, and must be submitted one week prior to normal turn in. All other projects will utilize a 5 week advertisement period.

Once a project is submitted to the Specifications and Estimates Unit the Project Manager can check ProjectWise for the status of a project.

Upon receipt of the plan/proposal package for processing, the Specifications and Estimates Unit may ask to review the project with the Design Unit in order to gain an insight into the type of work involved to determine if any additional special provisions and/or supplemental specifications are required.

14.60.02 (revised 11-22-2021)

##### Requirements

Advertisement cannot occur until all projects within a contract have funding obligation. Funding obligation requests cannot occur without the following:

- All change requests in JobNet are approved
- Environmental Certification or Classification in JobNet is up to date
- ROW Certification or Conditional Certification is approved
- S/TIP CON phase is approved – if a JobNet change request increases the project budget significantly, a previously approved S/TIP phase may become pending, and will need to be approved again before obligation can occur
- FHWA has signed off on the CA Form, if necessary

Expedited or other projects requiring special attention should be brought to the attention of the Supervisor of the Specifications and Estimates Unit prior to submittal. This includes projects without all the material described above.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.60.02 (continued)

All plan/proposal package and final supporting document submittals should include at least the following, in addition to the plans:

1. Title Sheet
2. Signed / Completed Project Signature Sheet
3. Milestone Checklist
4. Proposal level cost summary (AP Preconstruction)
5. Unique special provisions (approved for project use) including maintaining traffic
6. Frequently used supplemental specifications and special provisions (package and checklist)
7. Required permits
8. Utility Relocation Status Report (Form [2286](#))
9. Utility Charge Estimate (Form [0223](#)) - for bridge projects
10. ROW Certification for Advertising (Form [0725I](#) or Form [0725N](#))
11. Coordination clauses
12. Signed / Completed Certification Acceptance File
13. Notices to Bidder
14. Progress schedule with any incentive/disincentive clauses
15. Project Cost Estimating Checklist (Form [0268](#))
16. Exception with a memorandum signed by the Region Engineer acknowledging the risks and a completed Exception Risk Analysis (Form [2912](#)).
17. Structure Lump Sum Items Worksheet (Form [2911](#)) if applicable
18. Signed / Completed PoDI Stewardship & Oversight Action Plan form (if applicable)

The Project Manager must get approval from the Supervisor of the Specifications and Estimates Unit prior to submitting a final package without **ALL** of the above items.

### 14.60.03 (revised 12-28-2020)

#### Exceptions

There are some exceptions to the above minimum requirements for submittal of plan/proposal packages to the Specifications and Estimates Section. Exceptions are permitted in the following areas:

1. Permits
2. ROW Certification on non-federally funded projects
3. Trunkline agreements with local agencies
4. Unique Special Provisions (not desirable and must have supporting signed/approved Special Provision Exception Risk Analysis Form [2908](#), also see [Section 14.58](#))

In order to submit a package to the Specifications and Estimates unit with an allowable exception for items 1-3 above, the following steps must be followed:

- Perform a risk analysis for each appropriate exception.
- Invite appropriate experts for each exception to the FPC Meeting.
- Send the Exception Risk Analysis (Form [2912](#)) along with the other required documents to the FPC participants (two weeks prior to the meeting).
- If the participants at the FPC meeting agree with your request for an exception, have them initial the Exception Risk Analysis (Form [2912](#)).
- If the participants disagree with the need for an exception, they must attach written comments to the Exception Risk Analysis (Form [2912](#)).
- The Exception Risk Analysis (Form [2912](#)) along with any comments should be forwarded to the Region Engineer for their signature. The form is placed in the Supporting Documents folder in ProjectWise when the plan/proposal package is submitted to the Specifications and Estimates unit.
- If the exception is a permit, include a Notice to Bidders that a permit is required, the projected date of permit approval and identify any restrictive conditions.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.60.03 (continued)

Specifications and Estimates will not submit the package for advertisement without an approved exception.

### 14.60.04 (revised 12-17-2018)

#### QA/QC Review

It is the responsibility of the Project Manager to perform a QA/QC review of the entire plan/proposal package prior to submittal to the Specifications and Estimates Unit. As a minimum, in addition to those items listed under [Section 14.60.02](#), the following items **must** be correct:

- Quantities and pay items on plan sheets must match those in AP Preconstruction.
- All Unique Special Provisions with a pay item must have a matching pay item in the plans and in AP Preconstruction.
- All 7000 numbers in AP Preconstruction must have a Unique Special Provision in the proposal with matching units.
- Any Frequently Used Special Provision with a pay item must have a matching pay item in the plans and in AP Preconstruction.
- All Frequently Used Special Provisions and Specifications include in the package are the latest version.
- AP Preconstruction files must be complete and correct.
- All references to standard plans and special details are the latest version.

### 14.60.05 (revised 11-22-2021)

#### AASHTOWare Project (AP)Preconstruction Files

Listed below are some directions/reminders concerning AP Preconstruction files:

- Project should be identified as J.N. with A (#####A)
- Proposal Contract ID should be "C.S.-J.N.", with no extra spaces or characters, job number does not have an "A" or any other suffix
- If more than one job is packaged together, the Contract ID number is based on the predominate C.S. in the lowest numerical job number of those being packaged together.
- County number is filled in
- Spec year is correct, both at proposal and project level
- Section and Line number have been run
- Primary Region has been filled in
- Section List indicate "Road Work" or "Bridge Work"
- Long description entered using standard wording
- Number of plan sheets filled in
- Contract type is filled in
- All Pre-established prices have been marked
- Funding distribution adds to 100%
- Each Lump Sum item adds to a combined total of 1.00
- Administrative unit has been filled in
- Beginning and Ending termini have been filled in
- CE dollar amount is correct
- Control group changed to "DS" in the Project and Proposal level
- The unit bid requirement code (on Items tab) is fixed, NOT LOCKED, for all dollar items
- Project start date and completion date filled in
- The supplemental description for all 7000 items is the same as the pay item in the Special Provision.



## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.60.05 (continued)**

#### **AASHTOWare Project (AP)Preconstruction Files**

Listed below are some common oversights of plan/proposal packages submitted to the Specifications and Estimates Unit:

- Copies of Special Details not included in the plans.
- Undefined pay items. Every pay item used on the project must be covered by the Standard Specifications for Construction, Special Provision or Supplemental Specification.
- Identical pay items in both the road and bridge sections. These should be revised to appear in only one section. This eliminates the possibility of a Contractor bidding differently on the same pay item.
- Packaging of projects. Packages with road, bridge, utilities, signals, signing, etc. should be packaged prior to submittal to the Specifications and Estimates Unit.
- Project cost, including CE, not within the limits of JobNet CON phase programmed budget.
- Construction completion date exceeding a permit's expiration date.
- Missing or incorrect Mobilization maximum amount.
- Funding for Incentive/Disincentive clause not programmed or quantity not properly entered in AP Preconstruction.

### **14.61 (revised 12-17-2018)**

#### **PRE-LETTING BRIEFING/PRE-BID MEETING**

Pre-Bid Meetings are held for Contractors on complex or unique projects. These meetings are usually recommended by the Project Manager, Unit Leader or Engineer of Design, although others may propose the meeting be scheduled. Responsibility for arranging the meeting rests with the Project Manager. The Project Manager is also responsible for notifying the appropriate MDOT representatives (Construction, Utility- Permits, Traffic and Safety, Contracts, etc.) as well as outside agencies (cities, villages, counties, etc.) of the time and place. The Contracts Division will advertise the briefing.

The briefing consists of a presentation of the project by a spokesman of the Department before interested Contractors. The briefing is opened to questions after the presentation. Minutes should be recorded and distributed to the attendees.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.61.01

#### Procedure

1. The Project Manager determines the need for a Pre-Bid Meeting. Projects with one or more of the following should be considered for a Pre-Bid Meeting:
  - a major project with programmed cost of \$20 million or more.
  - a high impact project with a complex progress schedule.
  - a project with an expedited schedule, incentive/disincentive or increased liquidated damages.
  - project with complex traffic control and staging requirements.
  - project with extensive, new or unusual special provisions.
  - project in an environmentally sensitive areas (i.e. superfund site).
  - other projects which are unique, complex or experimental in nature.

Also, a determination as to whether the Pre-Bid Meeting is mandatory must be made at this time. Mandatory Pre-Bid Meetings should be rarely used.

### 14.61.01 (continued)

2. Project Manager requests approval for Pre-Bid Meeting from Supervisor of the Specifications and Estimates Unit prior to advertisement of project, who reviews the request with Engineer of Design and notifies Project Manager and Financial Services (approvals only) of decision.
3. Project Manager arranges time and location of meeting. Pre-Bid Meetings should be scheduled a minimum of three weeks prior to letting to allow incorporation of any necessary changes by addendum. When selecting a location, consideration should be given as to whether the potential bidders may need/wish to visit the construction site.
4. Project Manager prepares a Notice to Bidders for inclusion in the proposal. This should be submitted with the plan/proposal package.
5. Project Manager identifies attendees (from MDOT) and notifies each of time and location of meeting.
6. Project Manager conducts meeting including preparation of agenda, distributing material to attendees, and taking notes at the meeting. For meetings which require attendance, a list of bidders in attendance must be submitted to Financial Services. Contractors must complete and sign the registration form to certify attendance.
7. Project Manager submits any changes (if required) to the Specifications and Estimates Unit for issuance of addendum.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

14.62 (revised 3-29-2021)

### CONTRACTOR INQUIRIES

During the advertising period, Contractors may contact the Department for clarification of plan/proposal material. Each proposal has a Notice to Bidders that specifies all inquiries be made by E-mail through the MDOT e-Proposal system. This is to ensure that all Contractors are given the same information (responses/answers) and, therefore, an equal opportunity to bid the project. An MDOT e-Proposal Resource will post all contractor inquiries within the NTB Inquiry folder in folder 6, (Letting Plans and Proposal). The MDOT PM (Project Manager) will then post the response to the Inquiry within the same document when the correct response is determined.

The MDOT Project Manager/Cost and Scheduling Engineer will evaluate each inquiry and determine if it will have a significant impact on the bids and if an addendum is required. These inquiries may identify errors or oversights in the bidding document. If an addendum is required, the MDOT PM will submit the necessary information to the Specifications and Estimates Unit for review and distribution. The following information is intended to give some direction in dealing with Contractor Inquiries.

If the answer is only a clarification of proposal or plan material that will not give the Contractor an unfair advantage in bidding the project, the MDOT PM can simply provide the answer via the NTB Inquiry e-Proposal System. If possible, to provide clarity and improve effective bid prices, the PM should cite the page or page range for the NTB Response. It is good practice for the PM to utilize their team within their TSC and/or Region to help determine responses and level of detail to any appropriate inquiries.

14.62 (continued)

If the answer will give the Contractor an unfair advantage in bidding the project, the item is reviewed with the Supervisor of the Specifications and Estimates Unit to determine if an addendum should be issued.

If an addendum is required, the MDOT PM must take the necessary steps to ensure one is issued.

If it is too late to issue an addendum, the item should be bid as proposed. If the error or omission is significant enough, the project may have to be postponed or withdrawn from letting. See [Section 14.64](#). Although undesirable, an alternate Letting may be necessary if the changes are too great from the original bid submittal.

Although all inquiries are supposed to be made a minimum of one week prior to the letting date (as stated in the proposal), they can still occur during the last week of advertising. Occasionally, these require a late addendum. The decision to submit a late addendum during the week of the letting should be discussed with and approved by the Supervisor of the Specifications and Estimates Unit.

Addenda are sent to prime Contractors only. If a Subcontractor makes an inquiry that results in an addendum, the addendum is sent only to the prime Contractor. MDOT is not responsible for notifying Subcontractors or suppliers.

Contractors may ask for additional information not contained in the plans such as exact locations of miscellaneous quantities on the note sheet or approval to substitute materials. These are examples of information the MDOT PM should **not** provide. Answers should be concise and only clarify, not expand the content of the plan/proposal material. If the question only warrants a yes or no response, briefly state how the inquiry item was or was not determined appropriate for the project in question.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.62 (continued)

#### CONTRACTOR INQUIRIES

Please use the following standard language when responding to inquiries **NOT** made through the e-Proposal system:

*“This inquiry was not made through the MDOT e-Proposal System. Please submit your inquiry using the e-Proposal System by using the link provided within the corresponding proposal page.”*

In addition, when responding to Contractor Inquiries within ProjectWise, please use the following standard language and format for responses to the scenarios described:

1. Response WITH an Answer - Notifies Contractor that an answer to their inquiry has been provided

- *Answer supplied to submitted inquiry including page range where possible.*

2. Response WITH an Addendum - Notifies Contractor that an addendum will be coming and gives them preliminary information as to what areas of the package it may alter

*“The above inquiry was received and reviewed by the MDOT Project Manager. It has been determined that an addendum will be necessary to address the requested information. An addendum will be issued to edit the following areas of the plan and proposal package:”*

- *Plans*
- *Proposal*
- *RID*
- *etc.*

### 14.62 (continued)

3. Response WITHOUT an Addendum where an answer will not be issued - **Please note** - this option is to be utilized sparingly. Whenever possible, the PM and responding team should try to provide a reason as to why the inquiry will not be responded to or supply additional details to help promote better bid prices. In circumstances where more information cannot be supplied, the following response can be issued.

*“The above inquiry was received and reviewed by the MDOT Project Manager. A more detailed response to this inquiry will not be issued. Please review the plan and proposal package or RID documents for further information or resubmit your inquiry with more specific detail applicable to the contract.”*

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.63** (revised 3-29-2021)

### **ADDENDA**

Changes to the contract (plans, specifications and special provisions) are sometimes necessary when they affect the way a Contractor bids a project. Notification to Contractors is sent out by the Contract Services Division in the form of an addendum (an amendment to the contract documents as advertised). Changes most often originate by Contractor Inquiry. Addenda are issued at the request of the Project Manager/Cost and Scheduling Engineer, after a project is advertised but before the letting. Once the plans and proposal have been sent to the Contract Services Division, for advertising, the plan/proposal package cannot be changed except by addendum.

The Project Manager should determine if changes are necessary by determining the effect on the way the work will be bid. The Project Manager should consult with the Supervisor of the Specifications and Estimates Unit to determine the impacts. If there is no effect on the bidding, an addendum may not be necessary. This type of change can be handled by a plan revision after the project is let, prior to construction.

If an addendum is needed, it is initiated by supplying the required information to the Specifications and Estimates Unit. Detailed instructions and templates for submitting an addendum request can be found in ProjectWise or on the [Plan Development](#) website.

**14.63 (continued)**

Typically there are three types of changes made to the Contract Documents by an addendum. Pay item, proposal, and plan changes require the following information:

#### **1. If Pay Items are Affected:**

The proposal line number, pay item number, pay item description, and quantity and units as specified in the Schedule of Items in the Proposal.

#### **2. If the Proposal is Affected:**

The proposal page number of the document affected along with the change in the page(s) if not supplying additional or replacement page(s).

#### **3. If Plan Sheets are Affected:**

The sheet number(s) of the plan set(s) affected along with the change to the plan sheet(s) if not supplying additional or replacement plan sheet(s).

The FHWA must give prior approval for applicable addenda involving FHWA oversight projects before they can be published. The Project Manager is responsible for obtaining FHWA approval. E-mail approval from the FHWA Area Engineer is sufficient documentation.

Addenda issued later than four days prior to letting require the approval of the Specifications and Estimates Supervisor. The decision to submit a late addendum during the week of the letting should be discussed with and approved by the Supervisor of the Specifications and Estimates Unit.

Project Managers should make every attempt to minimize the number of addenda requests, especially those within the final five days prior to the letting date. Addenda must NOT be used as a process for completing the design of a project after advertisement.

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

**14.64** (revised 7-29-2019)

### **POSTPONEMENT, WITHDRAWAL, OR REJECTIONS FROM LETTING**

The Project Manager will be notified by the Specifications and Estimates Supervisor of any project that requires the following action:

#### **1. Postponement from Letting**

Takes place prior to the letting and is usually a delay to the next available letting. The Contractor retains the plans and proposal and an addendum will be issued.

A copy of the postponement memo signed by the Director of the Bureau of Development will be sent to the Director of the Bureau of Finance and Administration for appropriate action.

The Project Manager will make the required changes and submit an addendum request to the Specifications and Estimates Unit.

#### **2. Withdrawal from Letting**

Takes place prior to the letting and is usually a delay of more than one letting. The original plans and proposal material will be retained in ProjectWise and AP Preconstruction for historic records.

A copy of the withdrawal memo signed by the Director of the Bureau of Development will be sent to the Director of the Bureau of Finance and Administration for appropriate action.

The Project Manager has the responsibility to pursue whatever contract changes are necessary and resubmit the project back to the Specifications and Estimates Unit for re-advertising. See Section 14.64 Subsection 7 titled "Resubmission of a Withdrawn or Rejected Project".

**14.64 (continued)**

#### **3. Rejection from Letting**

Takes place after letting and Executive Bid Review. The original plans and proposal material will be retained in ProjectWise and AP Preconstruction for historic records.

A copy of the rejection memo signed by the Director of the Bureau of Development will be sent to the Director of the Bureau of Finance and Administration for appropriate action.

The Project Manager has the responsibility to pursue whatever contract changes are necessary and resubmit the project back to the Specifications and Estimates Unit for re-advertising. See Section 14.64 Subsection 7 titled "Resubmission of a Withdrawn or Rejected Project".

#### **4. Bid Rejections Less Than 10% Over the Engineer's Estimate**

- a) The Project Manager contacts the Specifications and Estimates Unit with concerns that the bids received are not reflective of previous projects with similar scope and type of work or that the project cannot be built as advertised.
- b) The Specifications and Estimates Unit and the Project Manager review the proposal package to document why the bids are not acceptable. The Project Manager, in cooperation with the Region Engineer, recommends that bids be rejected to the Director of the Bureau of Development.
- c) If the decision is made to reject all bids, a memo is sent to the Director of the Bureau of Finance and Administration from the Director of the Bureau of Development requesting rejection of all bids with an explanation why the bids should be rejected.

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.64 (continued)**

#### **POSTPONEMENT, WITHDRAWAL, OR REJECTIONS FROM LETTING**

##### **5. Bid Rejections More Than 10% Over the Engineer's Estimate**

- a) Design Division's Specifications and Estimates Unit reviews the bid tabulation with the Project Manager to determine what items caused the bid amounts to exceed the Engineer's estimate.
- b) The Specifications and Estimates Unit and the Project Manager reviews the proposal package to see if the bid amount is reasonable. The Project Manager, in cooperation with the Region Engineer, recommends that bids be rejected or accepted to the Director of the Bureau of Development.
- c) If bids are rejected, a memo is sent to the Bureau of Finance and Administration from the Director of the Bureau of Development requesting rejection of all bids.
- d) If bids are accepted, a "Justification Memo" is sent to the Bureau of Finance and Administration from the Director of the Bureau of Development with reasons why the bids should be considered reasonable and be awarded to the low bidder.
- e) If the low bid is \$500,000 or greater, the justification memo is placed on the next State Transportation Commission agenda for approval, before it is submitted to the State Administrative Board agenda for approval.

### **14.64 (continued)**

##### **6. Single Bid Rejection less than 10% over the Engineer's Estimate**

- a) If the single bid is not acceptable, the Project Manager contacts the Design Division's Specifications and Estimates Supervisor with concerns that the low bid received is not reflective of previous projects with similar scope and type of work or that the project cannot be built as advertised.
- b) The Specifications and Estimates Supervisor and the Project Manager review the proposal package to document why the single bid is not acceptable. The Project Manager, in cooperation with the Region Engineer, recommends the bid be rejected to the Director of the Bureau of Development.
- c) If the decision is made to reject the bid, a memo is sent to the Director of the Bureau of Finance and Administration from the Director of the Bureau of Development requesting rejection of the bid with an explanation why the single bid should be rejected.
- d) If the single bid is deemed acceptable, the Bureau of Finance and Administration will process the bid in the normal manner. This includes the extra step of reporting the single bid contract to the State Transportation Commission agenda for approval.

## **MICHIGAN DESIGN MANUAL ROAD DESIGN**

### **14.64 (continued)**

#### **POSTPONEMENT, WITHDRAWAL, OR REJECTIONS FROM LETTING**

##### **7. Resubmission of a Withdrawn or Rejected Project**

- a) Once the withdrawal or rejection memo has been signed, a new ProjectWise folder is created with a "-2" extension (e.g. 123456-2), and an email notification is sent to the Project Manager.
- b) The Project Manager must email MDOT-DesignEstimates to request the creation of a new Proposal file in AP Preconstruction with a "-2" extension (e.g. 63172-123456-2).
- c) The Project Manager will revise the letting date in JobNet and make updates to the plans, proposal, AP Preconstruction and applicable supporting documents prior to resubmitting the project to the Specifications and Estimates.



## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.65** (revised 12-17-2018)

### REFERENCE INFORMATION DOCUMENTS

The Reference Information Document (RID) process provides availability of electronic data files through the e-Proposal website. RID files are non-contractual items for contractor use prior to bidding on construction projects. They include design files, survey deliverable files, miscellaneous files and the [RID Index.xlsx](#).

Milestone reviews by [MDOT-RIDSupport](#) are intended to be on the same timeline as other reviews mentioned in the previous sections. RID files will be submitted to the Specifications and Estimates Unit and [MDOT-RIDSupport](#) for review prior to final turn in. The files are subsequently published at the same time as the Proposal and Plans. Any changes made to the RID files after this time, due to an addendum, will be the responsibility of the Project Manager. Each published 'set' released after the original publication includes a revised RID Index.xlsx using the Project Changes tab that includes only the changed files and a brief explanation of the changes made to the files.

See the [Design Submittal Requirements in the MDOT Development Guide](#) for more information.

**14.66** (revised 5-28-2013)

### TABULATIONS OF BIDS

Approximately one week after the letting, bid tabulations with the Engineer's Estimate, the low bid Contractor and the other prime Contractor's bids are posted to the MDOT website. Some projects require an additional review and may take longer. The Tabulation of Bids can also be accessed through the [Bid Letting System](#) on the Plan Development website by selecting the appropriate letting date and letting item number.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.67** (revised 12-17-2018)

### **PRE-CONSTRUCTION MEETING**

A pre-construction meeting is usually held with the low-bid contractor, subcontractors, and MDOT representatives after the letting and award of a project. Participants usually include (when applicable):

- Contractor
- Subcontractor(s)
- Resident/Delivery Engineer
- Project Manager/Cost and Scheduling Engineer/Designer/Consultant
- Soils Engineer
- Traffic Engineer
- Utility/Permits Engineer
- Region/TSC Materials Engineer
- Utility Companies
- Counties and/or Municipalities
- Railroad Companies
- FHWA Area Engineer

The agenda may include:

- Introduction of attendees
- Recording of Minutes & Attendance record
- Project description
- Designation of Supervisors
- Proposal (including any addenda)
- Subcontractors
- Real Estate
- Utilities and Railroads
- Affected Municipalities and or Counties
  - Haul routes and hours
  - Special use permits
  - local ordinances
- Testing Order
- Soils/Materials
- Traffic
- Progress Schedule
- Safety Program/Issues
- Work Orders and Contract Modifications
- Labor Compliance
- OJT/EEO/DBE Requirements
- Miscellaneous
- Erosion Control
- Environmental Mitigation Requirements Review and/or Special Design Considerations Memo
- NPDES NOC and BMP Measures

**14.67 (continued)**

The Project Manager should be invited to all pre-construction meetings. However, due to the limited time to schedule and hold the meeting, advanced notification may be short. Also, the Project Manager may want to contact the Resident/Delivery Engineer prior to the meeting to discuss the need for their participation. In some instances attendance at the pre-construction meeting is not required on the simplest, most straightforward projects.

Minutes at this meeting are recorded by a Region/TSC representative and copies are distributed to the Engineer of Construction Field Services Division, Region Engineer, TSC Manager, and all participants.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.68** (revised 6-28-2021)

### DESIGN ERRORS PROCESS

The following process was developed in compliance with State Transportation Commission (STC) policy. It outlines the identification, responsibilities, and resolution of design errors.

If the TSC Construction Engineer identifies a potential design issue, and the construction contract value/correction cost combination meets the criteria below, or the impact of the issue is significant to the project, further investigation will be needed.

Construction Contract Value	Correction Cost
≤ \$3 million	≥ \$30,000
\$3 million to \$10 million	≥ 1% of Construction Contract Value
> \$10 million	≥ \$100,000

The TSC Construction Engineer will coordinate and work collaboratively with the Design Project Manager/Project Designer (Engineer of Record, EOR) and the TSC Manager to evaluate the issue. Considerations to include among others, are the information available during development, the process documentation, and any assumptions made. The TSC Manager will determine if the issue is a design error. A design error must be reported if the project, or a portion of the project, cannot be practically built as designed due to omissions or errors.

Additional consideration and dialogue will be conducted to determine if there are associated premium costs as defined in the Construction Manual. Documentation of the evaluation, assessment, and determination must be retained in the construction files.

**14.68 (continued)**

The TSC Manager is required to communicate all design errors exceeding the previously defined impact or cost thresholds, to the Associate Region Engineer - Development, Quality Assurance Engineer, the Engineer of Design, and Chief Structure Design Engineer (for bridge projects) for reporting. Information provided shall include: Region, Contract ID, Job Number, Consultant (if applicable), Issue Description, Impact to Construction (cost and time), Issue Resolution (how resolved), and any suggestions on how this could have been addressed during design. This information will also include lessons learned and possible process change considerations to be shared as needed. The Quality Assurance Engineer will assemble and retain this information for quarterly reporting to the Statewide Design Alignment Team (SDAT).

## MICHIGAN DESIGN MANUAL ROAD DESIGN

**14.69** (revised 12-17-2018)

### DESIGN PROJECT RECORD

As soon as a project has been assigned, the Project Manager should begin to compile a Design Project Record. This is done by maintaining a chronological record of any events affecting plan development which:

1. Affect the cost of design or construction of the project
2. Change the scheduled dates (plan completion, ROW or letting).
3. Deviate from standard design practices via Design Exceptions, Design Variances, or Performance Based Practical Design decisions.

**14.70** (revised 6-28-2021)

### PLAN REVISIONS

Occasionally plans must be revised after a contract is let and, in extreme instances, after construction has begun. Changes issued by design teams are documented on a Revision of Plans (Form [0291](#)). A Plan Revision Distribution (Form [0211](#)) should accompany the Revision of Plans (Form [0291](#)). No other letters of transmittal are required.

Plan revisions should contain a concise and accurate description of the work involved so as to be understood by anyone not associated with the project. The following are some guidelines for preparing a plan revision:

**14.70 (continued)**

- The use of revised plan sheets should be avoided whenever possible. If the changes can be described easily and adequately on the Revision of Plans (Form [0291](#)), revised plan sheets do not need to be included in the distribution. However, if the changes are complex and/or extensive, revised plan sheets should accompany the Revision of Plans distribution.
- When revised plan sheets include changes to dimensions or quantities, cross out the corrected values, leaving them still legible, and place the new values above or adjacent to the old (crossed out) values.
- Plan revisions involving FHWA Oversight projects must be reviewed and approved by the FHWA Area Engineer prior to revision distribution. A note stating FHWA concurrence (and by whom) should be included on the Revision of Plans (Form [0291](#)).
- Plan revisions are numbered in ascending order with a letter prefix for the section issuing the revision (R-Road, B-Bridge, U-Utilities). The first plan revision distribution by Road Design would be R-1, the next R-2, and so on.
- Quantities should be exact. If exact quantities cannot be determined until after the work is completed, they should be estimated as accurately as possible.
- Do not revise the quantity sheet. This will be corrected with a Contract Modification submitted by the project office.
- If most of the plan sheets are affected, the complete set should be reissued to avoid possible confusion.
- If the RID files need to be changed submit the revised files consistent with the [Design Submittal Requirements](#) outlined in the [MDOT Development Guide](#).

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.70.01 (revised 6-28-2021)

#### Procedure

The following general procedure should be used when preparing and distributing plan revisions:

1. Revise the plan sheet(s) affected (if required).
2. Complete Revision of Plans (Form [0291](#)) and Plan Revision Distribution (Form [0211](#)).
3. Discuss the proposed changes with the FHWA Area Engineer (FHWA Oversight).
4. Gather the following signatures:
  - a. Project Manager/Cost and Scheduling Engineer/Development Engineer
  - b. Resident/Delivery Engineer
5. Combine completed Forms [0211](#) and [0291](#) with the revised sheets in PDF format and name the file PLANREV1.pdf (or subsequent numerical naming if multiple). Send an email (including the ProjectWise Project folder link) to [MDOT-ProjectWise@michigan.gov](mailto:MDOT-ProjectWise@michigan.gov) requesting a "Plan Revisions" folder be created in ProjectWise under the "7 - As Builts and Revisions" folder. The responding folder creation email will contain a ProjectWise link to the "Plan Revisions" folder. Save the combined plan revision file in the "Plan Revisions" folder.
6. Distribute electronic copies per the instructions on each form. Copies must also be sent to any affected agencies and/or the FHWA Area Engineer (FHWA Oversight).

### 14.71 (revised 6-28-2021)

#### CONTRACT MODIFICATIONS

Contract modifications are the formal process by which revisions to the contract are formally authorized, approved and incorporated into the construction contract. Contract modifications are processed for any revisions to the contract that alters the nature, scope, cost and/or schedule of the project.

### 14.71 (continued)

The Design Project Manager (PM)/Cost and Scheduling Engineer is included in the email distribution for all Contract Modifications which TSC Managers approve in ProjectWise. This email includes the ProjectWise link to the Contract Modification as well as any comments the TSC manager added to the body of the message.

Once the email is received, it is recommended that the Design PM does the following:

1. Review the file in ProjectWise to become familiar with the changes.
2. Take note of items that can be addressed as plan improvements for future projects.
3. Share changes and information with other internal designers and external design consultants involved in the plan design for future considerations to avoid similar revisions outwardly.

As Design PMs receive contract modification approval emails from various projects, they are asked to take notice of repetitive or similar modifications that can be identified as opportunities for future plan improvements, cost savings and innovations. Patterns should also be shared with applicable Development teams and/or applicable external design consultants.

The Design PM is highly recommended to take a proactive stance, keep lines of communication open with construction, and become familiar with the modifications being made to the project during construction activities. This enables the Design PM to become more informed and be better prepared to engage in productive discussions during the post-construction review meetings, as well as maintain accurate records for future design considerations, maintenance strategies, and fixes.

For specific details regarding the Construction Contract Modification Process refer to [http://mdotwiki.state.mi.us/construction/index.php/103.02\\_Contract\\_Revisions](http://mdotwiki.state.mi.us/construction/index.php/103.02_Contract_Revisions) of the MDOT Construction Wiki website.

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**14.72** (revised 12-17-2018)

### **POST-CONSTRUCTION REVIEW MEETING**

The purpose of a post-construction review is to provide feedback to design staff and other stakeholders to improve the quality and cost effectiveness of future projects. These meetings are initiated by Construction and held for selected projects per construction season.

It is essential for the Design Project Manager (PM)/Cost and Scheduling Engineer to take a proactive stance on all projects, keep lines of communication open with construction, and become familiar with any field implemented changes being made to projects during construction activities that differ from design. It is essential to understand why these changes were made and if they warrant a new perspective in design on certain fixes, or if it was a circumstantial instance. This enables the Design PM to become more informed and be better prepared to engage in productive discussions during the post-construction review meetings, as well as prepare better plans for future similar projects, and maintain quality records with a higher level of accuracy for future corridor improvement plans.

The Design PM should attend and coordinate invitations to internal designers and external design consultants who participated in the design process.

Upon completion of the post-construction meeting, the meeting minutes will be deposited into ProjectWise and an email notification will be sent to the project stakeholders letting them know that the minutes have been compiled, completed and ready for viewing.

For more specific details regarding Post-Construction Review Meetings criteria and agenda items, refer to [http://mdotwiki.state.mi.us/construction/index.php/Plans, Proposal, Input, Review and Evaluation#Post-Construction Reviews](http://mdotwiki.state.mi.us/construction/index.php/Plans,_Proposal,_Input,_Review_and_Evaluation#Post-Construction_Reviews) of the MDOT Construction Wiki website.

**14.73** (revised 9-21-2009)

### **MARKED FINAL PLANS**

As Built Plans, also referred to as As Constructed Final Plans (ACFP), or Marked Final Plans, are original awarded project plan sheets that have been updated to show changes, corrections and comments made during construction.

After construction is complete, the Resident/Delivery Engineer's office is responsible for creating and placing marked As Built Plans in ProjectWise.

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### 14.73.01 (revised 12-17-2018)

#### Mark-Up Standards

Use the following guidelines to capture the As Built changes and corrections made to the As Let Plans:

**Horizontal Control:** Changes in alignment, bearings, PC's, PI's, PT's, curve data, government corner witnesses, witnesses to alignment monuments, right-of-way monuments and boxes, and right-of-way fence should be shown on plan sheets.

**Vertical Control:** Changes in vertical curves, benchmarks, grade changes, structure grade changes, and changes in elevation and/or percent grade of ditch flow line should be shown on profile and plan sheets where applicable.

**Drainage and Topography:** Changes in location, elevation, length and size of culverts, sewers, edge drain, manholes, and catch basins should be shown on plan and profile sheets. This information should include stationing, offset from centerline, flow line elevation, types, sizes, lengths, end section types/materials, and quantities. Other topography changes including guardrail, slopes, drives (location, surface material type (HMA/Agg/Conc), and width) utility changes such as water main, lighting, etc. should also be shown.

### 14.73.01 (continued)

**Earthwork and Surfacing:** It is not necessary to show minor changes in earthwork, sub-base or surfacing on plan and profile sheets if such changes are broken by balances on the quantity sheets. When borrow is contractor-furnished, actual earthwork balances are not important. Use the same station to station breakdown as was used for plan quantities. Undercuts also do not need to be shown as most reconstruction projects require a new soils investigation.

When capturing As Built mark-ups, adhere to the following As Built Mark-Up Standards:

- Mark-ups can be made in either CAD or by hand
- Use black ink only to mark-up plans
- Mark-ups must be clear and legible
- Hand comments must appear opaque (solid)
- Do not obliterate As Let plan data – only line out or place an “x” through item
- Final output must be PDF format in PLANHALF size of 11” x 17”
- Plan sheets with As Built mark-ups are to be saved individually outside of the original plan set

# MICHIGAN DESIGN MANUAL

## ROAD DESIGN

**14.73.02** (revised 3-16-2015)

### File Standards And Requirements

Once the As Built mark-ups are complete and formatted properly, use the following requirements to ensure the As Built plans are ready for submission.

**Review Mark-ups for Legibility:** Ensure the As Built Plan sheets being submitted meet the data capture and mark-up requirements as outline in [Section 14.73.01](#).

**File Requirements:** As Built Plans must be in PDF format. They must also be sized and scaled to the PLANHALF size of 11" x 17".

**As Built File Naming Standards:** In order to ensure consistency and proper search results, specific naming conventions must be maintained for all As Built sheets.

- File names must follow the naming conventions used in the Letting Plan or Proposal, including capitalization.
- The page number given to the sheet must be the page it represents in the PDF As Let plan set and NOT the page in the project drawing plan set.
- As Built plans sheets that are PDF pages 1-9 should be named as "01, 02, 03"... in order to keep them in proper page sequence in the folder.
- Corrected PDF plan sheets must be saved and named individually.
- Consecutive As Built sheets can be saved in a single pdf file and named according to the following format: "Road\_09-22.pdf", "Bridge\_09-22.pdf". Use this format only when the As Built contain corrected sheets that are in sequence.

The following list provides examples of the standard naming conventions for As Built.

- Proposal\_15.pdf
- Road\_01.pdf
- Bridge\_22-46.pdf
- Road1\_07.pdf
- Bridge1\_22.pdf

**14.73.03** (revised 12-17-2018)

### As Built Turn In Process

After ensuring the As Built meet the required criteria, they are ready to be submitted.

Submit the As Built Plans using ProjectWise by:

- Contacting your local ProjectWise administrator for As Built folder set-up
- Adding As Built plan sheets to the As Built folder for the designated job number
- Filling out and submitting Form 250

Detailed instructions can be found in the ProjectWise Reference documents for As Built under the Standards and Submittal Instructions folder at:

<pwname://MDOTProjectWise/Documents/Reference Documents/As Built/~ Standards and Submittal Instructions>

**14.73.04** (revised 9-21-2009)

### Design Division Review and Approval Process

Upon receiving the submitted As Built plan information, the As Built Administrator reviews the As Built to determine if they are ready to be turned to Final status or if they need further correction.

When the As Built are approved, an electronic notification is sent to the submitter acknowledging the As Built are approved and marked to Final status. No further action is required by the submitter.

If the administrator rejects the submitted As Built, an electronic notification is sent to the submitter indicating the items that need to be re-addressed before the plans can be approved. Once the items have been re-addressed the submitter can re-submit the As Built for approval.



# MICHIGAN DESIGN MANUAL

## ROAD DESIGN

**14.74** (revised 9-21-2009)

### DOCUMENT RETENTION

Once a project has been completed and closed-out, document retention for the project is necessary.

**14.74.01** (revised 12-17-2018)

#### Permanent Records

Permanent, or indefinite, paper files and electronic documents, are to be stored in ProjectWise. (Permanent paper files must be scanned and saved in the PDF format prior to storing in ProjectWise.) Such documentation includes:

- PDF plan sheets with “AsBuilt” changes and/or corrections
- Contract plans or proposal
- Agreement file
- Permit file

The following items should also be included in the permanent records as well:

- Drainage calculations
- Environmental Impact Statement
- Environmental Assessment
- Engineering Report
- Correspondence (only correspondence concerning design decisions on the project)
- Survey data (benchmark, government corner tie information only)
- Design exceptions / variances
- Design project records
- Guardrail Designs

All other information, paper or electronically stored in ProjectWise, including review sets and calculations not described above, should be discarded. This specifically includes the Plan Review plans, FPC plans, design data, line and grade plans, office check plans, drainage approval plans, municipal approval plans and Health Department plans, etc.



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### APPENDIX D - ACRONYMS

Acronym	Description
ADT	Average Daily Traffic
BOH	Bureau of Highways
BTP	Bureau of Transportation Planning
CA	Certification Acceptance
CE	Construction Engineering
CFR	Code of Federal Register
COR	Construction Office Review
CPM	Critical Path Method(Network)
DBE	Disadvantaged Business Enterprise
DHV	Design Hourly Volume
DTM	Digital Terrain Model
EAU	Environmental Assessment Unit
EEO	Equal Employment Opportunity
EIS	Environmental Impact Statement
EOC	Engineering Operations Committee
EPA	Environmental Protection Agency
EPE	Early Preliminary Engineering
FHWA	Federal Highway Administration
FOIA	Freedom of Information Act
FONSI	Finding of No Significant Impacts
FUSP	Frequently Used Special Provisions
FUSS	Frequently Used Supplemental Specifications
G/DCCU	Grading/Drainage Consulting Contracting Unit
GRCU	Governmental and Railroad Coordination Unit
I/D	Incentive/Disincentive
LCCA	Life Cycle Cost Analysis
LSUM	Lump Sum

## MICHIGAN DESIGN MANUAL ROAD DESIGN

### APPENDIX D - ACRONYMS

Acronym	Description
MDEGLE	Michigan Department of Environment, Great Lakes and Energy
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
MIR	Michigan Institutional Roads
NAVD	North American Vertical Datum
NHS	National Highway System
NPDES	National Pollutant Discharge Elimination System
NVD	National Vertical Datum
OEC	Omissions/Errors/Check
OJT	On the Job Training
PCS	Project Area Contamination Survey
PC	Point on Curve
PCU	Project Coordination Unit
PE	Preliminary Engineering
PI	Point of Intersection
PMS	Pavement Management System
POB	Point of Beginning
POE	Point of Ending
PPMS	Program/Project Management System
PRSC	Pavement Review Selection Committee
PT	Point on Tangent
QAQC	Quality Assurance/Quality Control
ROR	Region Office Review
ROW	Right of Way
RQFS	Road Quality Forecastting System
RRS	Region/TSC Resource Specialist
S&E	Specifications and Estimates

**MICHIGAN DESIGN MANUAL  
ROAD DESIGN**

**APPENDIX D - ACRONYMS**

Acronym	Description
SLD	Special Liquidated Damages
STIP	Statewide Transportation Improvement Plan
SUE	Subsurface Utility Engineering
SUP	Special Use Permits
TSC	Transportation Service Center
URTS	Utility Relocation Tracking System
USGS	United States Geological Survey
USPLSS	United States Public Land Survey System
VE	Value Engineering
VECP	Value Engineering Change Proposal