Road & Bridge Design Publications

Monthly Update – July 2015

Revisions for the month of **July** are listed and displayed below. The special detail index from June will remain in effect. E-mail questions related to the road changes to MDOT-Road-Design-Standards@michigan.gov. E-mail Bridge related questions to MDOT-Bridge-Design-Standards@michigan.gov.

Road Design Manual

9.02.04: Including Utility Work in Contracts: Added information regarding asbestos removal and disposal.

11.03.05: Citing Specifications and Standards: Added language regarding the use of the term "the standard specifications" when a reference to the Standard Specifications for Construction is not specific to a certain section, table, or etc.

14.17: FAA Obstruction Evaluation: Language was added regarding the "Notice Criteria Tool" and "Special Airspace Studies".

Bridge Design Manual

7.02.31 (LFD&LRFD) & Appendix 12.02 Page 2 of 3: Added clarification to the tables derived from A Policy on Geometric Design of Highways and Streets, 2004, published by AASHTO. The tables for traveled way and roadway widths do not include clearances for bridge rail offset. See the Bridge Design Guides for MDOT offset criteria (generally 2').

Updates to MDOT Cell Library, Bridge Auto Draw Program, etc., may be required in tandem with some of this month's updates. Until such updates to automated tools can be made, it is the designer's/detailer's responsibility to manually incorporate any necessary revisions to notes and plan details to reflect these revisions.

9.02.04 (revised 7-20-2015)

Including Utility Work in Contracts

The Utilities Coordination & Permits Section of the Development Services Division established a procedure for billing utility companies for expenses incurred as part of a construction project. The Designer should be aware of this procedure as it includes information on which items may be reimbursable.

A. General

Utility companies occupying trunkline right-of-way by virtue of Act 368, P.A. 1925, and the Michigan Department of Transportation's Utility Accommodation Policy are subject to relocating their facilities at their expense if a conflict exists due to a Department project. If during the preliminary design and utility coordination meetings it is determined that the Department can make adjustments to its plans which would allow either the utility company's facilities to remain in place or reduce their relocation cost, efforts should be made to do so if the overall Department project is not affected. If the utility company is located in MDOT right-of-way by permit, costs incurred by the Department to revise its plans in order to accommodate a utility company are billable to that utility company. Such adjustments will require coordination and concurrence with the Utilities Coordination and Permits Section of the Development Services Division.

9.02.04A (continued)

Utility companies with facilities that have manholes within the roadway are responsible for adjusting these manholes if required by the project. Most utility companies will adjust their own manholes during the course of the project which will require a Notice to Bidders - Utility Coordination in the proposal. However, provisions may be made at the utility company's request to include adjustment of their manholes in the work items of the project. Including manhole adjustments or any other utility work or project re-design costs, will be charged to the utility.

Municipal utilities shall not be charged any relocation costs due to project conflicts within their corporate limits except as provided for in the water main relocation policy. (See Section 9.02.01B) If they are operating outside their corporate limits, relocation costs would be at their expense and any chargeable project expenses are to be administered through the Governmental Coordination Engineer.

The Governmental Coordination Engineer is to be contacted if a project involves relocation of municipal utilities or chargeable expenses are incurred and the municipal utility is operating outside the corporate limits of the municipality.

An agreement shall be required in the event chargeable expenses are involved.

9.02.04 (continued)

Including Utility Work in Contracts

B. Procedures

This procedure shall be used when work on behalf of a non-municipal utility is to be performed by MDOT contractor during construction. Upon a mutual agreement between a utility and MDOT, work items are incorporated in MDOT road and/or bridge construction projects and charged to the utility.

Note: Municipal utility work shall be coordinated with the MDOT Design, Municipal Utility Section.

Example work items that may be chargeable to a utility through this process include adjustment of utility manholes, existing facility removals, supporting utility poles, and utility bridge attachments.

Project Manager / TSC Utility Coordinator

1. Convene a meeting with the TSC Utility Coordinator, Project Manager (PM), and each utility to determine whether any work on behalf of the utility shall be included in the project. The following utility coordination issues shall be discussed:

    - Proposed construction schedule
    - Type of work required
    - Plan Completion Date

Project Manager

2. Ensure the agreed upon utility work is included in the plans and appropriate contract documents.

9.02.04B (continued)

3. Complete Utility Charge Estimate, (Form 0223). See Utility Charge Estimate example.

    Note: When the total estimated cost of the utility work is less then $1,000, MDOT shall not charge the utility. MDOT shall incorporate the utility work into the project at no cost to the utility. If a pay item(s) is not federally participating, it shall be funded 100% by MDOT.

    Note: For asbestos removal and disposal estimates, contact Bridge Field Services.

4. Send Form 0223 to TSC Utility Coordinator if the total estimated cost of the utility work is greater than $1,000 and less than $100,000. The appropriate plan sheets that indicate or illustrate that the utility work has been included in the project shall also be sent, if available.

    Note: For costs greater than $100,000, an individual agreement shall be required. The PM shall contact MDOT Development Services Division - Agreements Section to initiate this request.

5. Receive copy of Form 0223 and Utility Approval Letter (see example of Utility Approval Letter) or notification of utility denial from TSC Utility Coordinator.

9.02.04B (continued)

Including Utility Work in Contracts

6. Develop a special provision that covers all work for the utility, except for asbestos removal and disposal as noted below. Refer to the Special Provision for Utility Coordination and Utility Work Example, (Exhibit 1802.06c). The pay item shall be established as a lump sum pay item, with an established maximum based on the line titled as "Maximum Contract Bid Amount (125% of Subtotal)" from Form 0223.

   Note: The maximum contract bid amount is not the "Total Maximum Charge to the Utility."

   Note: Lump sum pay item(s) for utility work are the preferred method. However, per unit pay item(s) can be considered for items of work that are not suitable as lump sum.

   Note: When the utility work involves asbestos removal and disposal, use the frequently used Special Provision for asbestos removal and disposal, (Document 12SP-204A-02). Asbestos related work will be paid as a dollar amount and not as a lump sum. The Special Provision for Utility Coordination and Utility Work is not needed for this work.

7. Establish a separate non-federally participating category in Trns·port for each utility.

8. Ensure MPINS reflects the utility funding.

11.03.05 (revised 7-20-2015)

Citing Specifications and Standards

MDOT Standard Specifications for Construction - Do not capitalize “section” and “subsection”, when used in references to the Standard Specifications for Construction book. When reference to the Standard Specifications for Construction book is not specific to a section, subsection, table, etc., the reference should simply be to “the standard specifications” (all lower case). Example: “Use materials in accordance with the standard specifications”.

MDOT Standard Plans and Special Details - To ensure that the most current version is applied, do not include the letter designation of standard plans. For example, refer to Standard Plan R-128 Series. The term “series” includes any subsequent interim special details for the named standard. All other special details not in the standard plan series are included in and considered part of the project plans.

AASHTO, ASTM and Michigan Test Methods - If it is not covered by section 101.02, the full title of the specification should be listed.

Michigan Public Acts - Cite by the <YEAR>PA<Act No.> followed by section/part number and name if necessary. Example: 1994 PA 451, Part 91, Soil Erosion and Sedimentation Control.

Code of Federal Regulations - Cite using the title, part and section number. Example: 23 CFR 623.1 refers to title 23, part 623, section 1.

Italics - Use italics for names of publications other than MDOT's standard specifications. For example Standard Specifications for Construction is not shown in italics but *AWS Bridge Welding Code* is italicized.

11.04

ORGANIZING THE SPECIAL PROVISION

11.04.01 (revised 5-26-2015)

Four-Part Document Outline

Use the standard four-part outline to establish a uniform approach to providing needed information, describing the work to be performed and identifying the responsibilities of the Contractor and the Department. Provide an organized logical progression of instructions. Each section should progress from general administrative information to specific technical instructions.

Divide the subsections for clarity using the outlining convention shown below. Only use bullets as shown below or when listing a group of items, as included in a plan submittal or similar listing.

a. Description.
b. Materials.
c. Construction.
1. Arabic number followed by a period
   A. Uppercase letter followed by a period
      (1) Arabic number in parentheses - no period
         (a) Lowercase letter in parentheses - no period
            (i) Lowercase Roman numeral in parentheses - no period
               1) Arabic number with single parentheses - no period
                  a) Lowercase letter with single parentheses - no period
                     - Bullet - solid dot only

14.16 (continued)

REQUEST FOR UTILITY INFORMATION

Note:
When project information exceeds the allowed space on Form 2480 an additional document shall be supplied by the Project Manager detailing this information. The applicable field(s) on Form 2480 shall 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 shall not be 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.

14.17 (revised 7-20-2015)

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.

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.

14.17 (continued)

FAA OBSTRUCTION EVALUATION

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 OEC 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.

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

REQUEST FOR PAVEMENT CORES / SOIL BORINGS

(PPMS Task Description #'s 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 after the Scope Verification Meeting. 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
BRIDGE DESIGN

The tables shown below are derived from A Policy on Geometric Design of Highways and Streets, 2004, published by AASHTO and do not include clearances for bridge rail offset. See the Bridge Design Guides for MDOT offset criteria. (7-20-2015)

MINIMUM WIDTH OF TRAVELED WAY FOR RURAL ARTERIALS (FROM Exhibit 7-3.)

Design Speed(mph)	Design Traffic Volume (veh/day) Under 400	400-1500	1500 -2000	over 2000
	Width of Traveled Way (ft)[a]			
40-45	22	22	22	24
50-55	22	22	24	24
60-75	24	24	24	24

[a] Where the width of traveled way is shown to be 24 ft, it may remain 22 ft on reconstructed bridges where alignment and safety record are satisfactory.

MINIMUM CLEAR ROADWAY WIDTHS FOR RURAL ARTERIAL BRIDGES BEING RECONSTRUCTED (FROM Exhibit 7-3.)

Design Traffic Volume(veh/day)	Min. Clear Roadway Width of Bridge
under 400	Traveled way + 4 ft (ea. side)
400-2000	Traveled way + 6 ft (ea. side)[b]
over 2000	Traveled way + 8 ft (ea. side)[b]

[b] For bridges in excess of 200 ft in length, a minimum width of traveled way + 4 ft on each side will be acceptable.

Exhibit 6-5. MINIMUM WIDTH OF TRAVELED WAY FOR COLLECTOR ROADS

Design Speed(mph)	Design Traffic Volumes (veh/day) Under 400	400-1500	1500 -2000	over 2000
	Width of Traveled Way (ft)			
20-30	20[a]	20	22	24
35-40	20[a]	22	22	24
45-50	20	22	22	24
55-60	22	22	24	24

On roadways to be reconstructed, a 22 ft traveled way may be retained where the alignment and safety records are satisfactory.

[a] A 18 ft minimum width may be used for roadways with design volumes under 250 veh/day.

The tables shown below are derived from A Policy on Geometric Design of Highways and Streets, 2004, published by AASHTO and do not include clearances for bridge rail offset. See the Bridge Design Guides for MDOT offset criteria. (7-20-2015)

MINIMUM WIDTH OF TRAVELED WAY FOR RURAL ARTERIALS (FROM Exhibit 7-3.)

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	Width of Traveled Way (ft)[a]			
40-45	22	22	22	24
50-55	22	22	24	24
60-75	24	24	24	24

[a] Where the width of traveled way is shown to be 24 ft, it may remain 22 ft on reconstructed bridges where alignment and safety record are satisfactory.

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400-2000	Traveled way + 6 ft (ea. side)[b]
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	Width of Traveled Way (ft)			
20-30	20[a]	20	22	24
35-40	20[a]	22	22	24
45-50	20	22	22	24
55-60	22	22	24	24

On roadways to be reconstructed, a 22 ft traveled way may be retained where the alignment and safety records are satisfactory.

[a] A 18 ft minimum width may be used for roadways with design volumes under 250 veh/day.

The tables shown in this appendix are derived from A Policy on Geometric Design of Highways and Streets, 2004, published by AASHTO and do not include clearances for bridge rail offset. See the Bridge Design Guides for MDOT offset criteria. (3-26-2012) (7-20-2015)

Exhibit 6-7. **STRUCTURAL CAPACITIES AND MINIMUM ROADWAY WIDTHS FOR BRIDGES BEING REHABILITATED CARRYING RURAL COLLECTOR ROADS**

Design Traffic Volume(veh/day)	Design Loading Structural Capacity	Minimum Clear Roadway Width (ft)[(a)]
Under 400	H 15	22
400 to 1500	H 15	22
1500 to 2000	H 15	24
over 2000	H 15	28

(a) Clear width between curbs or railings, whichever is the lesser, shall be equal to or greater than the approach traveled way width, wherever practical.

The values in Exhibit 6-7. do not apply to structures with a total length greater than 100 ft. These structures should be analyzed individually by taking into consideration the clear width provided, safety, traffic volumes, remaining life of the structure, design speed, and other pertinent factors.

Exhibit 6-5. **MINIMUM WIDTH OF TRAVELED WAY FOR COLLECTOR ROADS**

Design Speed(mph)	Design Traffic Volumes (veh/day)			
	Under 400	400-1500	1500 -2000	over 2000
	Width of Traveled Way (ft)			
20-30	20[(a)]	20	22	24
35-40	20[(a)]	22	22	24
45-50	20	22	22	24
55-60	22	22	24	24

(a) A 18 ft minimum width may be used for roadways with design volumes under 250 veh/day.

On roadways to be reconstructed, a 22 ft traveled way may be retained where the alignment and safety records are satisfactory.