BRIDGE DESIGN MANUAL

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CHAPTER 8 • PLAN NOTES

8.01 INTRODUCTION

(revised 4-19-2021)

This section contains general notes that should be placed on the sheet indicated or where applicable. The notes on each plan sheet should be grouped according to subject matter.

Brackets which contain text beginning with “insert” are to be filled in with the appropriate word or words. Words in parentheses show the most common options used in the note; other wordings may be necessary to fit the particular option. Words in brackets, otherwise, give instructions on when to use the note or give a general description of additional information that may be needed in the note. ***These notes are intended as a guide, not as a complete list for all cases.***

Care should be taken when writing unique plan notes. Do not use notes to add work to standard pay items or to add requirements to the contractor that are not already included in the spec book or special provisions. Use unique plan notes for the following cases:

Convey information regarding design methodology.

- Explain the purpose or intent of an unusual item of work so that the project engineer or contractor can judge the accuracy required or whether alternatives are suitable.
- Coordinate details across the plan set.
- Specify extents of application of standard and special pay items.
- Indicate specific materials or items to be used when the Standard Specifications language provides for a broader application.
- Specify intended sequence of activities.
- Emphasize (but not modify) critical elements of Standard Specification language.
- Convey information that cannot be reasonably included in plan details.

Care should be taken to ensure that the notes appearing on plan sheets apply to the work being performed on the project. A few notes contained herein are for Load Factor Design (LFD) projects. Most notes are for LRFD projects and some are specifically designated for LRFD projects.

Use caution when modifying notes contained herein or adding non-standard plan notes. If modifying a standard plan note, consider re-wording the entire note in lieu of changing a single word or phrase to ensure that it is clear that the note is unique.

8.02 TITLE SHEET

A. The design of (this) (these) structure(s) (except the railroad overpass(es) (is) (are) based on 1.2 times the current AASHTO LRFD Bridge Design Specification HL-93 loading with the exception that the design tandem portion of the HL-93 load definition is replaced by a single 60 kip axle load before application of this 1.2 factor. The resulting load is designated HL-93 Mod. Live load plus dynamic load allowance deflection does not exceed (1/425*) (1/800) (1/1000**) of span length (and (1/375) (1/300) of cantilever arm). [*Wood construction.] [**Use for structures with pedestrian loads.] (8-20-2009)

B. The design of this structure is based on current AASHTO LRFD Bridge Design Specification pedestrian loading of 90 psf (and a maintenance vehicle (H5) (H10) loading, not acting concurrently). Live load deflection does not exceed 1/360 of span length and 1/220 of cantilever arm. [Use for pedestrian bridges. For Clear Bridge Width, w, greater than 10'-0 in. in., use an H10 truck. For w between 7 ft.-0 in. in. and 10 ft.-0 in. in., use an H5 truck. For w less than 7 ft.-0 in. in. the bridge does not need to be designed for a maintenance vehicle.] (5-25-2015)

C. The design of the deck slab is based upon the (strip) (empirical) method as defined in the current AASHTO LRFD Bridge Design Specification, utilizing HL-93 Loading. (8-27-2021)

D. The (reconstruction) (rehabilitation) design is based on 1.2 times the current AASHTO LRFD Bridge Design Specification HL-93 loading with the exception that the design tandem portion of the HL-93 load definition is replaced by a single 60 kip axle load before application of this 1.2 factor. The resulting load is designated HL-93 Mod. Live load plus dynamic load allowance deflection does not exceed (1/425**) (1/800) (1/1000***) of span length (and 1/375) (1/300) of cantilever arm. The original structure was designed for [insert design loading] (and alternate military*) loading (based on AASHTO Standard Specifications for Highway Bridges). [*Used only for structures on interstate routes.] [**Wood construction.] [***Use for structures with pedestrian loads.] [See BDM Section 7.01.06 for deflection limits.] (8-20-2009)

E. [Load Factor Design (LFD)]

The (reconstruction) (rehabilitation) design is based on the 17th Edition of AASHTO Standard Specifications for Highway Bridges (HS25) (HS20-44) (and alternate military*) loading. Live load plus impact deflection does not exceed (1/425) (1/800) (1/1000) of span length (and 1/375) (1/300) of cantilever arm. The original structure was designed for [insert design loading] (and alternate military*) loading based on AASHTO Standard Specifications for Highway Bridges. [*Use only for structures on interstate routes.] [See 17th Edition of AASHTO for deflection limits.] [Use note for Load Factor Design (LFD) method of design.] (8-20-2009)

F. Except where otherwise indicated on these plans, or in the proposal and supplemental specifications contained herein, perform all work according to the Michigan Department of Transportation Standard Specifications for Construction [insert edition number] Edition.

G. The stationing as shown on these plans for the intersection of the centerline of bridge and the (roadway) (railroad) centerline is believed to be correct. Check stationing at the time of starting construction. If the stationing shown on the plans is incorrect, notify the Engineer, and stake out the structure using the actual intersection of the centerline of bridge and the (roadway) (railroad) centerline as the control point. [Use when the project includes proposed survey stationing.]

H. This contract is for "Structural Steel, [insert structural steel type] , Furn and Fab" only. Other items of work indicated on these plans are not a part of this contract. [Use when structural steel furnishing and fabricating must be done early in project to ensure timely delivery for construction.] (12-5-2005)

I. The Regulated Waste Activity Identification Numbers for this project are as follows:

Control Section:	Number:
[insert Control Section]	[insert Number]

[Use when hazardous material removal, cleaning or working on painted steel structure constructed prior to 1978 or when hydrodemolition is part of the project work. Place note directly above title block and use lettering twice the size of the other notes.] (1-27-2020)

J. The design of the structural members is based on material of the following grades and stresses:

Concrete: Grade 3500, 3500HP *	f'_c = 3000 psi	
Concrete: Grade 4000	f'_c = 3500 psi	
Concrete: Grade 4500, 4500HP *	f'_c = 4000 psi	
Steel Reinforcement	f_y = 60,000 psi	
Steel Reinforcement: Stirrups for Prestressed Beams (including stainless steel (SD) bars)	f_y = 60,000 psi	
Steel Reinforcement: Stirrups for 17 in. & 21 in. Box Beams (including stainless steel (SD) bars)	f_y = 40,000 psi	
Structural Steel: AASHTO M270 Grade 36	F_y = 36,000 psi	
Structural Steel (including H-Piles, splices and pile points): AASHTO M270 Grade 50, 50W	F_y = 50,000 psi	
Structural Steel Pins: ASTM A276 UNS Designation S20161 or S21800	F_y = 50,000 psi	
Temp Support Hanger Rods: ASTM A193 Grade B7 (AISI 4140) 2½ in. and under	F_u = 125,000 psi	F_y = 105,000 psi
Temp Support Hanger Rods: ASTM A193 Grade B7 (AISI 4140) Over 2½ in. to 4 in.	F_u = 115,000 psi	F_y = 95,000 psi
Temp Support Hanger Rods: ASTM A193 Grade B7 (AISI 4140)	F_u = 100,000 psi	F_y = 75,000 psi

Over 4 in. to 7 in.	
Prestressed Concrete **	f'_c = [insert compressive strength] psi
Prestressed Concrete Compressive Strength at Release	f'_{ci} = [insert compressive strength] psi
Prestressing Strands	F_{pu} = 270,000 psi
Foundation Piling (Steel Shells): ASTM A252 Grade 3 Modified	F_y = 50,000 psi
Foundation Piling (Timber)	F_{co} = 900 psi

[* Use Grade 3500HP and 4500HP on all MDOT projects. Grade 3500 and 4500 may be used on Local Agency projects if desired by the Owner.] (4-22-2024)

K. Bevel all exposed concrete corners shown square on the plans with ½ in. triangular moldings except as otherwise noted. (8-20-99)

L. Old plans do not exist for this structure. [Use on all projects where the designer is unable to verify that existing structure plans exist.] (8-20-2009)

M. The bridge paint may contain lead. [Use on all projects with existing painted structural steel regardless of work type. If no bridge Title Sheet is present with project place note on road Note Sheet. Also place on existing structural steel sheets (see note 8.09.06 D.)] (8-20-2009)

N. Unless otherwise shown on the plans, provide minimum concrete clear cover for reinforcement according to the following:

Concrete cast against earth:	3 in.
Prestressed Beams:	1 in.
All other unless shown on plans:	2 in.

(8-20-2009)

O. The bridge deck surface has an HMA overlay, HMA cap or HMA patches. Removal of HMA as a result of removal of other superstructure items is included in the removal of those items. (8-20-2009)

P. An FAA Determination (,) (and) (Michigan Tall Structure permit) (,) (and) (Local Airport Zoning permit) (have) (has) been obtained for this project. Perform all work in compliance with (this) (these) permit(s). [Use when a FAA determination is received and applicable permits have been obtained for the project. See Section 14.14 of the MDOT Bridge Design Manual for guidance and information on applicable permits and filing Notice with the FAA.] (6-23-2025)

Q. This project has been evaluated using the FAA Obstruction Evaluation Pre-Screening Tool for a structure height of [insert height] feet above a ground level elevation of [insert elevation] feet and no permits are required. [Use when FAA Notice, Michigan Tall Structure or Local Airport Zoning permits are not required for the project. See Section 14.14.05 of the MDOT Bridge Design Manual for information on the FAA Obstruction Evaluation Pre-Screening Tool.] (6-23-2025)

R. Do not open structure(s) to traffic until all proposed concrete attains 100% of its specified strength. [Use for all projects that have proposed superstructure or substructure concrete, bridge barrier railings, or any other concrete material that has a strength specified in the contract.] (10-24-2022)

8.03 GENERAL PLAN OF SITE

Urgent Needs and Request for Action projects do not require a Geometrics review for design exceptions / variances. Use notes A. or B. to identify project classification as defined below on the General Plan of Site Sheet:

Urgent Needs Project - projects intended to return an existing structure to its full capacity or to address immediate safety needs resulting from high load hits, inspection findings or other incidents. These projects typically have abbreviated design periods and quick turnarounds.

Request for Action Project - projects intended to address a specific condition identified during a routine inspection as a Request for Action but not the result of a high load hit, or other outside incident that qualifies it as an Urgent Needs Project. (11-24-2025)

A. The work covered by by (this Urgent Needs project) (this Request for Action project) (these plans) includes (channel excavation), (maintaining traffic), construction of the proposed bridge and placing (slope protection) (scour countermeasures) (riprap) to the limits shown. All other work is included in the road plans that are a part of this contract. [Used where bridge is part of a road-bridge package.] (11-24-2025)

B. The work covered by (this Urgent Needs project) (this Request for Action project) (these plans)includes (clearing), (grubbing), (tree removal), (channel excavation), (earth excavation), (maintaining traffic), (construction of the temporary road), (construction and removal of temporary trestle), (grading for temporary and permanent track work), construction of the proposed bridge and placing (granular material), (sodding or seeding) and (slope protection) (scour countermeasures) (riprap) to the limits shown. All other work is to be done by others and is not a part of this contract. [Used where bridge contractor constructs bridge only and approach work is done by a separate contract. Any work that is to be done by others prior to starting work on bridge contract is to be noted.] (11-24-2025)

C. Removal of (fences and) buildings is not a part of this contract.

D. Removal of temporary structure and approaches (is) (is not) a part of this contract.

E. Locate all active underground utilities prior to starting work and conduct operations in such a manner as to ensure that those utilities not requiring relocation will not be disturbed.

F. Remove unsuitable material under [insert substructure element or location] and backfill with [insert backfill material].

G. Remove ([insert volume] cubic yards of) peat and other unsuitable material below proposed approach fill location and backfill with ([insert volume] cubic yards of) “Embankment, Structure, CIP” (see Road Plans for treatment limits, method and quantity). [Use when large peat deposits must be removed by surcharging.] (12-5-2005)

H. (Scarify*) (Remove) roadway surfacing in area beneath proposed abutments prior to placing of fills. [Use for pile-supported abutments or where fill is 3 ft.-0 in. or less.] [*Use when roadway surfacing is gravel or crushed stone with or without a seal coat.] (8-6-1992)

I. Construct and backfill (all) pier(s) [insert pier identifier(s)] prior to the placement of abutment fills. [Use where piers are within or at toes of slope.]

J. Grade the ground adjacent to the tracks and structure to provide drainage.

K. (Maintain) (Detour) traffic over (the bridge) (the bridge by part-width construction) (other existing roads) (the temporary road). [Specify facility and other modes of transportation on the project. Use multiple notes if modes are detoured or maintained in separate ways.] (12-16-2019)

L. This bridge is part of an interchange and all area shown is within MDOT right-of-way.

M. (Proposed) Plan elevations refer to [enter datum] datum. (To obtain (alternate datum) (MDOT conventional datum) elevations from existing plans, subtract [insert difference] feet from existing plan elevations.) [Use correction parts of note when proposed plan elevations are not normal MDOT convention.] (10-24-2022)

N. Topography shown here represents conditions existing at the time the field survey was made. However, these conditions (may) have been materially altered by the operations of others prior to this contract. [Use when definite information exists that work has been done in the area.]

O. The train movement and speed information shown in the proposal does not represent a commitment by the [insert railroad name] railroad and is subject to change without notice.

P. Excavate crosshatched area to El [insert elevation]. [Place this note in the vicinity to which it applies.]

Q. Fill hatched area to El [insert elevation] with material from channel excavation. [Place this note in the vicinity to which it applies.]

R. Water level is subject to change. Make a determination of water levels that may exist during construction. [Use on all projects over water where the water level may impact the project work.]

S. Remove [insert volume] cubic yards of topsoil (and unsuitable material) and place [insert volume] cubic yards of “(Embankment, Structure,) (*Embankment,) CIP”. [*Use with pile supported footing.] (12-5-2005)

T. Undercut soil classified as [insert soil classification] and replace with “Embankment, Structure, CIP” compacted to 100 percent of maximum unit weight. Excavation and backfill quantities are based on an estimated undercut to elevation [insert elevation]. The Engineer will determine actual limits of excavation at the time of construction. (12-5-2005)

U. Railroad owned items (fittings, ties, rails, etc.) that are salvaged become the property of the railroad. [List specific items, as necessary.] (5-24-2021)

V. Implement measures to prevent debris from falling from the structure. (*If debris falls into the waterway, remove it within 24 hours. Since disturbance of the waterway bottom may be as harmful as the debris itself, the preventive measures must be effective.) Removal of debris is included in related items of work. [*Use for bridges over waterways.] (4-19-2021)

W. Immediately after the construction of an abutment is completed, place slope protection and seeding or sodding on the adjacent embankment slopes. [Use for bridges over waterways.] (9-1-1988)

X. The haul route shown has been approved by the Michigan Department of Environment, Great Lakes and Energy (MDEGLE). If desired, propose a detailed alternate route for MDOT review and submittal to the appropriate permitting agency. No payment will be made for additional time, project costs and project delays resulting from submittal, approval, and/or denial of an alternate route request. Implementation will be the responsibility of the contractor. [Use for bridges over waterways or wetlands.] (6-24-2019)

Y. Coordinates are not available for this project. [Use when coordinates not available due to lack of survey for project.] (12-5-2005)

8.04 LOG OF BORING SHEET

A. Numbers in circles denote number of blows required to drive a 2 in. O.D. (1½ in. I.D.) split spoon sampler 3 successive 6 in. increments using a 140 lbs. (automatic)(safety) hammer falling 30 in.

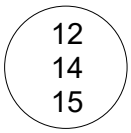


Figure 8.04 A- 1: A circle inscribed with the numbers "12, 14, and 15" listed in a column.

(Where the sampler is driven distances other than 18 in., the distance is shown in the circle with the number of blows in the form of a fraction.) [Indicate actual hammer type used]

(4-19-2021)



Figure 8.04 A- 2: A circle inscribed with 31 and 4 inches listed in column format

B. Consistency was determined by inspection of samples and substantiated by soils resistance to drilling tools. [This note shall be as written in field notes.]

C. Bottom of footing (Abut. [insert abutment identifier]) (Pier [insert pier identifier]), El. [insert elevation]. [1]

D. Estimated total scour limit (Abut. [insert abutment identifier]) (Pier [insert pier identifier]), El. [insert elevation].[1] (8-6-1992)

E. Minimum pile penetration (Abut. [insert abutment identifier]) (Pier [insert pier identifier]), El. [insert elevation]. [1]

F. Estimated bottom of piles (Abut. [insert abutment identifier]) (Pier [insert pier identifier]), El. [insert elevation]. [1]

[1]Show on plotted borings.

G. Water levels may be influenced by residual boring water. [Use when borings are made by hydraulic, rotary, or coring methods.]

H. Free water was first noted [insert distance] feet below the surface. The water level was [insert distance] feet below ground ([insert hours] hours after) (at) completion with the casing (in) (out). [Place under each soil boring log if applicable.] (9-1-1988)

I. The soil boring logs represent point information. Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.

J. See General Plan of Structure Sheet for soil boring locations. (4-19-2021)

K. Drilling was performed with a [insert drill type] drill rig utilizing [insert drilling methods] drilling methods. [Include hammer type and drilling method. Include changes in drilling methods and/or coring as well]. (4-19-2021)

L. L. Elevations reference the top of the standard penetration test (SPT), rock core run interval or Shelby tube sample. (4-19-2021)

M. The numbers in split circles denote rock recovery and rock quality designation (RQD) for each rock core run. (4-19-2021)

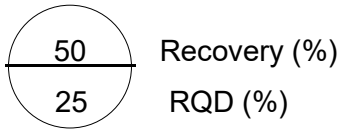


Figure 8.04 M- 1: A circle intersected in half by a line. Above the line is the number 50 indicating the recovery percentage. Below the line is the number 25 indicating the RQD percentage.

N. Circles with ST are Shelby tube samples pushed 2 ft unless otherwise noted. (4-19-2021)



Figure 8.04 N- 1: A circle intersected in half by a line. Above the line is the designation ST indicating the use of a Shelby Tube. Below the line is 4 inches indicating the recovery percentage.

8.05 GENERAL PLAN OF STRUCTURE SHEET

A. The design of this structure is based on 1.2 times the current AASHTO LRFD Bridge Design Specification HL-93 loading with the exception that the design tandem portion of the HL-93 load definition is replaced by a single 60-kip axle load before application of this 1.2 factor. The resulting load is designated HL-93 Mod. Live load plus dynamic load allowance deflection does not exceed (1/425*) (1/800) (1/1000**) of span length (and 1/375) (1/300) of cantilever arm. [*Wood construction.] [**Use for structures with pedestrian loads.] [See BDM Section 7.01.06 for deflection limits.] (8-20-2009)

B. The design of this structure is based on current AASHTO LRFD Bridge Design Specification pedestrian loading of 90 psf (and a maintenance vehicle (H5) (H10) loading, not acting concurrently). Live load deflection does not exceed 1/360 of span length and 1/220 of cantilever arm. [Use for pedestrian bridges. For Clear Bridge Width, w, greater than 10 ft.-0 in., use an H10 truck. For w between 7 ft.-0 in. and 10 ft.-0 in., use an H5 truck. For w less than 7 ft.-0 in. the bridge does not need to be designed for a maintenance vehicle.] (5-25-2015)

C. The design of the deck slab is based upon the (strip) (empirical) method as defined in the current AASHTO LRFD Bridge Design Specification, utilizing HL-93 Loading. (5-27-2020) (9-27-2021)

D. The (reconstruction) (rehabilitation) design is based on 1.2 times the current AASHTO LRFD Bridge Design Specification HL-93 loading with the exception that the design tandem portion of the HL-93 load definition is replaced by a single 60 kip axle load before application of this 1.2 factor. The resulting load is designated HL-93 Mod. Live load plus dynamic load allowance deflection does not exceed (1/425**) (1/800) (1/1000***) of span length (and 1/375) (1/300) of cantilever arm. The original structure was designed for [insert design loading] (and alternate military*) loading (based on AASHTO Standard Specifications for Highway Bridges). [*Used only for structures on interstate routes.] [**Wood construction.] [***Use for structures with pedestrian loads.] [See BDM Section 7.01.06 for deflection limits.] [Use note for **LRFD** method of design.] (8-20-2009)

E. [Load Factor Design (LFD)]

   The (reconstruction) (rehabilitation) design is based on the 17th Edition of AASHTO Standard Specifications for Highway Bridges (HS25) (HS20-44) (and alternate military*) loading. Live load plus impact deflection does not exceed (1/425) (1/800) (1/1000) of span length (and 1/375) (1/300) of cantilever arm. The original structure was designed for [insert design loading] (and alternate military*) loading based on AASHTO Standard Specifications for Highway Bridges. [*Use only for structures on interstate routes.] [See 17th Edition of AASHTO for deflection limits.] [Use note for Load Factor Design (LFD) method of design.] (4-19-2021)

F. [Place tables (Culvert Design Tables, and Summary of Hydraulic Analysis Form which contains Summary of Hydraulic Analysis and Summary of Scour Analysis Tables) located in MDOT Cell Library on all plans where applicable:] [Verify table's accuracy with MDOT Drainage Manual, Appendix 5-D and Appendix 6-B]. (9-28-2026)

G. [Select the appropriate note from the following that is applicable to the project.]

1. The drainage area contributory to this crossing is ____ square miles.
2. The existing bridge area below the low chord is ____ square feet.
3. Existing overtopping elevation is ____feet.
4. Proposed overtopping elevation is ____feet.
5. Do not use broken concrete for riprap.

H. The (existing) (adjacent) structure, [insert distance] (feet) (miles) (upstream) (downstream), provides a waterway area of [insert area] square feet to (high water) (underclearance*) elevation [insert elevation]. [*Use only if high water elevation is not available.]

I. Place geotextile liner on all slopes prior to placing riprap. Payment for geotextile liner is included in payment for riprap. [Use when recommended by the Hydraulic Unit Supervisor.] (9-18-1998)

J. The (abutment) (pier) maximum average foundation pressure(s) is (are) calculated to be [insert foundation pressure] psf for Service Limit State, and [insert foundation pressure] psf for Strength Limit State and are based on a gross footing width of [insert width] ft. [Use for **LRFD** projects when **gross footing width** assumptions are used for footing designs. Create one note for abutments and one note for piers. MDOT designed projects.] (8-20-2009)

K. The (abutment) (pier) maximum foundation pressure(s) is (are) calculated to be [insert foundation pressure] psf for Service Limit State based on an effective footing width of [insert width] ft, and [insert foundation pressure] psf for Strength Limit State based on an effective footing width of [insert width] ft. [Use for **LRFD** projects when **effective footing width** assumptions are used for footing designs. Create one note for abutments and one note for piers. Consultant designed projects.] (8-20-2009)

L. [Load Factor Design (LFD)]

The maximum unfactored foundation pressures are calculated to be:

Avg. D.L. only Case

Abutments [insert foundation pressure] psf
Piers [insert foundation pressure] psf

Avg. D.L. + L.L. Case

Abutments [insert foundation pressure] psf
Piers [insert foundation pressure] psf

[Note only on Preliminary Plans] [Use Avg. D.L. Case for cohesive soils only.] [Use for Load Factor Design (LFD) projects.] (4-19-2021)

M. For details of concrete slope paving protection, see Standard Plan B-102-Series. [Use for projects with slope paving.] (6-29-2020)

N. The nominal fatigue resistance is based on a design life of 75 years (and an average daily truck traffic of [insert ADTT value]). [Use for steel bridges only and add ADTT if applicable/available.] (3/16/2015)

O. A cofferdam has not been provided for this structure. Use other means of water control as approved by the Engineer. Do not disturb the stream bed. Water control, whether it be by cofferdam or other approved means, is included in the bid item "Excavation, Fdn". [Use on stream crossings when water control measures other than a cofferdam are appropriate. See BDM Section 7.03.04.] (12-5-2005)

P. The tremie seal design was based on a water surface at El. [insert elevation].

Q. Place (standard) (and) (limited deflection) temporary barrier according to (Standard Plan R-53-Series,) Standard Plan R-126-Series or as approved by the Engineer. (Place portable water-filled barrier as specified by the Engineer.) [Use on all projects requiring standard temporary barrier, limited deflection temporary barrier, and/or portable water-filled barrier. Modify paragraph as needed depending on the temporary barrier type(s) required on each project. Delete references to Standard Plan R-53-Series when limited deflection temporary barrier is not required according to Standard Plan R-126-Series. Place note on staging sheet(s) where applicable.] (12-28-2015)

R. The riprap quantity is based on the lateral dimensions of the area to be protected, regardless of the number of layers required. The estimated weight of riprap is [insert weight] tons. [Use only if riprap is paid by the square yard.] (4-19-2021)

S. Submit alternate methods of stream diversion to the Engineer for approval. [Use when stream diversion method is detailed on Plan Sheet.] (9-18-1998)

T. Place riprap from El [insert elevation] to El [insert elevation]. [Place this note in the vicinity to which it applies, when lateral limits are not fixed.]

U. False decking includes the area bounded by (Reference Lines [insert first reference line identifier] & [insert second reference line identifier]) (edges of shoulders) and outside flange fascias of fascia beams. The estimated area is [insert area] square feet during removal (and [insert area] square feet during proposed construction). [Detail limits on the plans and include areas in note.] (4-19-2021)

V. When casting items into structural precast concrete to facilitate bridge construction (forming, finishing, etc.) use items that are galvanized in accordance with ASTM B633, Service Condition 4 or epoxy coated. Cast inserts with the beams. Do not field install inserts. [Use for box and three-sided culverts, MSE walls, sound walls, precast bridge element systems, etc.] (4-19-2021)

W. Do not use wheeled, roller based or machine mounted compaction equipment to compact the subgrade, subbase, and base within 10 ft. of the sleeper slab after it is built. Use only hand/plate compactors. Use only hand/plate compactors with a contact pressure that does not exceed 10 psi. [Use on all projects with a sleeper slab.] (3-17-2014)

X. Design headwalls to develop an ultimate moment capacity (about the horizontal axis) to resist a horizontal load of 24 k (kips) distributed over 3.5 feet applied 32 inches above top of pavement, and to develop an ultimate moment capacity (about the vertical axis) of 16.7 kft (kip feet), per foot of headwall height. Design headwall connection to deck and/or other precast units to resist these loads. Space blockouts for thrie beam guardrail at a distance of 10 ft.-7¾ in. or less, center to center, along headwall. [Use when thrie beam guardrail is attached to the culvert headwalls and/or return walls. Use with Standard Plan B-23-Series.] (5-27-2014)

Y. Contact the Region Soils Engineer to perform a footing check at least 48 hours prior to excavating to the bottom of the excavation. [Use this note for spread footings and box culverts]. (4-19-2021)

Z. Contact the Region Soils Engineer to witness the Design Builder's Geotechnical Engineer perform a footing check at least 48 hours prior to excavating to the bottom of excavation. [Use this note for spread footings and box culverts on Design-Build projects only]. (4-19-2021)

AA. Install sheet piling using either an impact hammer or a variable moment driver/extractor operated to minimize vibrations. Do not use vibratory hammers that are not variable moment. [Use this note at the direction of the Geotechnical Engineer when there is concerns regarding potential vibration and/or settlement issues. For sensitive structures, alternate non-vibratory means should be considered instead of sheet piling.] (4-19-2021)

8.06 SUBSTRUCTURE

8.06.01 Miscellaneous Notes

A. (Bolts) (Position dowels) may be adhesive anchored in holes drilled in the concrete at (Pier [insert pier identifier]) (Abutment [insert abutment identifier]). [Use this note for steel beam or prestressed concrete beam bridges, where drilling holes will not damage substructure reinforcement.] (9-18-1998)

B. Uplift will occur at abutment(s) [insert abutment identifier] (and pier(s) [insert pier identifier]) during construction of the superstructure. Place anchor bolt nuts and jam nuts immediately after erection of the girders in Span(s) [insert span identifier(s)].

C. Apply low temperature protection of concrete according to Section 706.03 J. of the Standard Specifications for Construction. Low temperature protection of concrete is included in the related items of work. [Use when possibility of pouring concrete during cold weather. With known cold weather pours use the pay item for cold weather protection.] (4-19-2021)

8.06.02 Abutment Notes

See BDM Section 7.03.11 for usage and descriptions of concrete sealers.

A. Apply Substructure Horizontal Surface Sealer to the top horizontal surface of abutment [insert abutment identifier] (and [insert abutment identifier]) (prior to placing masonry plates) (after the elastomeric bearings have been placed in final position on the structure). Clean accidentally coated vertical surfaces at the contractor's expense. [Use when joint in deck exists above.] (12-5-2005)

B. Apply (Penetrating Water Repellent Treatment) (Concrete Surface Coating) (Silane) to the entire exposed surface of abutment [insert abutment identifier] (and [insert abutment identifier]) (except the tops) and the front face of independent backwall (prior to placing new masonry plates) (after the new elastomeric bearings have been placed in final position on the structure). (Use concrete surface coating AMS-STD-595 color number [insert number], [insert color].) [Use when no joint exists above. Apply to tops when Horizontal surface sealer is not applied to tops. Use Concrete Surface Coating when requested by Region or Roadside Development section.] (4-19-2021)

C. Prior to erecting the beams, do not backfill the backside of the abutment higher than the backfill on the front side. [Use on integral abutments.] (8-20-1999)

8.06.03 Pier Notes

See BDM Section 7.03.11 for usage and descriptions of concrete sealers.

A. Apply Substructure Horizontal Surface Sealer to the top horizontal surface of pier [insert pier identifier] (and [insert pier identifier]) (prior to placing masonry plates) (after the elastomeric bearings have been placed in final position on the structure). Clean accidentally coated vertical surfaces at the contractor's expense. [Use only when superstructure transverse joints are directly above the pier.] [Use for new construction.] (12-5-2005)

B. Apply (Penetrating Water Repellent Treatment) (Concrete Surface Coating) (Silane) to the entire exposed surface of piers [insert pier identifier] (except the tops) (prior to placing new masonry plates) (after the new elastomeric bearings have been placed in final position on the structure.) (Use concrete surface coating AMS-STD-595 color number [insert number], [insert color].) [Use when no joint exists above. Apply to tops when Horizontal Surface Sealer is not applied to tops. Use Concrete Surface Coating when requested by Region or Roadside Development section.] (4-19-2021)

8.06.04 Footing Notes

A. Pour footings against undisturbed soil. No allowance will be made in concrete quantities due to excavation outside of the footing neat lines. [Use when required by design.]

B. Construction joints in footings are optional. [Use unless design considerations deem the joints necessary.]

C. The footings are designed specific to the detailed (Box-Arch) (Arch) (Flat Top) structure. [Use for precast concrete three-sided or arch culverts.] (12-28-2015)

D. The footings are designed to resist an applied vertical load of [insert vertical load] kip/ft and horizontal load of [insert horizontal load] kip/ft (toward the center of the structure) (away from the center of the structure). [Use for precast concrete three-sided or arch culverts.] (12-28-2015)

E. Water mains and sewers must be cased within the influence zone of spread footings. [Use on project with water mains and sewers beneath spread footings]. (4-19-2021)

8.06.05 Pile Notes

A. Drive all piles to a nominal pile driving resistance not less than [insert resistance] kips. Determine nominal pile driving resistance (R_{ndr}) using (the FHWA Modified Gates Dynamic Formula) (dynamic test with signal matching (P.D.A. testing)) (static load tests). [Provided by MDOT Geotechnical Services Section or Geotechnical consultant. See BDM Section 7.03.09 for values and criteria. Use for **LRFD** projects only.] (8-20-2009)

B. [Load Factor Design (LFD)]
Drive all piles to a minimum bearing capacity of [insert bearing capacity] tons. [Use for Load Factor Design (LFD) projects]

C. [Load Factor Design (LFD)]
Do not use the pile driving formulas in the Standard Specifications to determine battered pile capacity. Drive battered piles to the elevation established for vertical piles. [Use on Load Factor Design (LFD) projects when piles are driven to a 2.5V:1H batter or flatter.]

D. Use pile shells with a minimum of (0.500 in.) (0.375 in.)(0.312) nominal wall thickness, (16 in.)(14 in.)(12 in.) O.D. [Use with C.I.P. concrete piles.] (5-24-2021)

E. The estimated pile length is based on the static analysis. (8-20-2009)

F. Drive batter piles for Abutment(s) [insert abutment identifier(s)] to a 3V:1H (2.5V :1H) batter angle. (9-18-1998)

G. Use (HP 10X42) (HP 10X57) (HP 12X53)
(HP 12X74) (HP 12X84) (HP 14X73)
(HP 14X89) Steel piles. (11-28-2011)

H. Drive piles to such accuracy that the ends of the piles to be embedded in the concrete are within 3 in. of the location shown on the plans. [Use for pile bents and integral abutments with one row of piles.] (4-19-2021)

I. Drive piles in a sequence that begins with the center of the pile group and proceeds outward in both directions or from one side of the pile group to the other side. The contractor may request Engineer approval to sequence the pile driving from the center of the pile group outward in a clockwise or counterclockwise pattern if four or more rows of piles exist. [Use for pipe piles to alleviate soil pressure from driven piles. A pile driving sequence will minimize detrimental effects of heave and lateral displacement of the ground as well as the influence the new construction has on adjacent structures.] (8-20-2009)

J. The estimated loss of nominal pile resistance due to scour after driving is [insert resistance loss] kips. [For information only. Use for **LRFD** projects only.] (8-20-2009)

K. The estimated factored downdrag after pile driving is [insert downdrag] kips. [For information only. **LRFD** projects only.] (8-20-2009)

L. The factored pile resistance available to resist all factored loads (including the estimated factored downdrag) is equal to (50) (65) percent of nominal pile driving resistance (that is reduced by the loss due to scour). [For information only. Add downdrag and scour when appropriate. See BDM Section 7.03.09 for values and criteria. Use for **LRFD** projects only.] (11-28-2011)

M. Pier (s) [insert pier identifier(s)] (is) (are) considered pile bent(s). Steel piles used for pile bents are considered main members and all welding must be according to AASHTO/AWS D1.5 Bridge Welding Code, as modified by the current Special Provision for Structural Steel and Aluminum Construction. [Use only when piles project above surface and function as a true pile bent. Do not use for integral abutment piles.] (5-28-2024)

N. Use only the pile splice details within the plans. [Use on piles for integral abutment, pile bents or any other piles that must resist bending. Do not include alternate splice (sleeve) details in plans]. (4-19-2021)

8.06.06 Steel Sheet Pile Notes

A. The substructure excavation and concrete quantities take into consideration the additional concrete and excavation necessary to excavate and pour to the Permanent Steel Sheet Piling. [Use on all projects where concrete is to be poured against Permanent Steel Sheet Piling.]

B. Provide hot-dip galvanized sheet piling at [insert location]. [Specify location and use when sheet piling will be subjected to heavy chlorides or sulfates. Include a Special Provision.] (3-18-2013)

C. Provide [insert sheet pile designation] Permanent Steel Sheet Piling. Where allowed by the Engineer, select alternate hot rolled sheet piling with a nominal section modulus of at least [insert sectional modulus] in^3/ft or cold rolled sheet piling with a nominal section modulus of at least [insert sectional modulus] in^3/ft. [Specify designation and appropriate section modulus. Verify availability of specified sheet pile designation with manufacturers. Refer to BDM Section 7.03.08 D. for design criteria.] (12-5-2005)

D. Provide hot rolled permanent steel sheet piling. Do not use cold rolled piling. [Use when recommended by the geotechnical engineer.] (4-19-2021)

8.06.07 Substructure Repair Notes

A. Apply (Penetrating Water Repellent Treatment) (Concrete Surface Coating) (Silane) to the entire exposed surface of abutment [insert abutment identifier] (and [insert abutment identifier]) (except the tops) (and the front face of the independent backwall). (Use concrete surface coating AMS-STD-595 color number [insert number], [insert color].) [Use when no joint exists above or the abutment is adjacent to a pavement. Apply to tops when Horizontal Surface Sealer is not applied to tops. Use Concrete Surface Coating when requested by Region or Roadside Development section.] (2-26-2018)

B. Apply (Penetrating Water Repellent Treatment) (Concrete Surface Coating) (Silane) to entire exposed surfaces of pier(s) [insert pier identifier(s)] (except top). (Use concrete surface coating AMS-STD-595 color number [insert number], [insert color].) [Use when no joint exists above or the pier is adjacent to a pavement. Apply to tops when Horizontal Surface Sealer is not applied to tops. Use Concrete Surface Coating when requested by Region or Roadside Development section.] (4-19-2021)

C. Apply Substructure Horizontal Surface Sealer to the top of (all) Pier(s) ([insert pier identifier(s)]) (and) Abutment(s) ([insert abutment identifier(s)]). Clean accidentally coated vertical surfaces at contractor's expense. [Use when the abutment or pier has been repaired and there is a superstructure transverse joint directly above or the unit is adjacent to a pavement.] (12-5-2005)

8.06.08 MSE Wall Notes

(8-20-2009)

A. Use soil reinforcement for MSE walls of a length not less than [insert percent] percent of the wall height (H), as defined by these plans, or 8 feet (whichever is greater). [Use this note when the soil reinforcement length required by the Geotechnical investigation exceeds the minimum length (0.7H) required by the specifications.]

B. The factored bearing resistance of the subgrade is [insert bearing resistance] psf at abutment A and [insert bearing resistance] psf at abutment B.

C. Adjust MSE soil reinforcement to avoid foundation piles. Do not cut soil reinforcement.

D. Use precast concrete facing panels with a nominal height of [insert height] feet and nominal width of [insert width] feet for MSE walls. [Use this note if aesthetic or design concerns dictate the panel size beyond what is allowed by the MSE specifications.]

E. Use either precast or cast in place (CIP) MSE wall coping unless specified to be cast in place. [Include this note only if there are areas where cast in place coping is required and other areas may utilize precast coping.]

F. Use cast in place (CIP) MSE wall coping. [Use this note only if coping is required to be cast in place.]

G. Texture the exposed face of the precast concrete facing panels with a [insert pattern type] pattern meeting the approval of the Engineer. Payment for texturing panels is included in the bid item “Mechanically Stabilized Earth Wall, Precast, Furn”. (4-19-2021)

H. Coordinate placement of soil reinforcement with drainage structures and pipes and other obstructions.

I. The 100 year flood elevation is [insert elevation]. [Use where MSE walls are placed near areas subject to fluctuations in water level.]

J. Do not cut MSE soil reinforcement.

K. Set the top row of soil reinforcement a minimum of 6 in. below the bottom of footing. [Use on abutment sheet.]

L. Water mains and sewers must be cased within the influence zone of MSE walls. [Use on projects with water mains and sewers beneath MSE walls.] (4-19-2021)

M. Do not place electric lines within or near MSE walls. [Use on projects with electric lines.] (4-19-2021)

8.07 SUPERSTRUCTURE

8.07.01 Miscellaneous Notes

A. Alphabetical designation of deck pours is not to be construed as a pour sequence. [Use for simple spans.]

B. Place deck pours according to the following sequence: Pour [insert pour designation], then Pour [insert pour designation] and Pour [insert pour designation] in any order. Pour [insert pour designation] and Pour [insert pour designation] in any order. Do not begin placement of subsequent pours for a minimum of 15 hours after completing placement of adjacent pours. This includes sections separated by longitudinal as well as transverse joints. [Use with simple spans regardless of beam and superstructure type and continuous steel spans. Approach slabs shall be cast separate from and after the deck is poured on the bridge. Modify note as required based on number of spans and pours.] (2-24-2025)

C. Alphabetical designation of deck pours is not a pour sequence. Cast deck pours over piers after other deck pours have been cast. Do not begin placement of subsequent pours for a minimum of 15 hours after completing placement of adjacent pours. This includes sections separated by longitudinal as well as transverse joints. [Use for prestressed concrete beams that are continuous for live load.] (8-20-2009)

D. Apply low temperature protection of concrete according to Section 706.03 J. of the Standard Specifications for Construction. Low temperature protection of concrete is included in the related items of work. [Use when possibility of pouring concrete during cold weather. With known cold weather pours use the pay item for cold weather protection.] (4-19-2021)

E. Over active roadbeds, maintain formwork above the bottom of beams. [Use where bridge deck is to be cast over traffic.] (4-19-2021)

F. Notify the utility company one week prior to beginning installation of the ducts in the (sidewalk) (barrier). [Use when ducts are to be installed by others.] (9-18-1998)

G. The contractor may use permanent metal deck forms. If used, corrugations must be filled with polystyrene foam. [Use when metal stay-in-place forms are permitted.] (4-19-2021)

H. Do not use permanent metal deck forms. Remove all materials used to form the deck prior to opening the bridge to traffic. [Use where beam spacing or form loads preclude the use of stay-in-place forms.] (9-2-2003)

I. Saw-cut the deck on both the top and bottom surface prior to deck removal procedures. [Use with bridge widening or with removal procedures required for stage construction.] (8-20-2009)

J. Note Deleted. (6-26-2023)

K Provide a sawed joint 1½ in. deep by ¼ in. wide (minimum) in the top of slab at the locations shown in section(s) [insert section(s)]. Saw the joint within 24 hours of placing the curing and fill to ½ in. below top of concrete with polyurethane or polyurethane hybrid sealant. (Included in the bid item "Superstructure Conc, Form, Finish, and Cure, Night Casting (Structure Identification)"). [Use at all locations shown for continuous for live load slabs (generally at piers).] (6-26-2023)

L. In order to maintain the integrity of the existing structure during Stage [insert stage] construction, saw cut entirely through the (abutment) (pier) and a minimum of 4 in. into the top of footing for removal purposes. [Used with part width construction]. (12-17-2012)

M. Provide a sawed joint 1 1/8 in. deep by ¼ in. wide (minimum) in the top of slab at [transverse] [and longitudinal] [construction joints] [and] [reference joints] [and at fixed pin & hanger joints]. Saw the joint within 24 hours of placing the curing and fill to ½ in. below top of concrete with polyurethane or polyurethane hybrid sealant. (Included in the bid item "Superstructure Conc, Form, Finish, and Cure, Night Casting (Structure Identification)"). [Use at all bridge deck slab construction joints and reference joints over integral and semi-integral backwalls.] (6-26-2023)

N. Apply (Concrete Surface Coating) (Silane) to the (entire concrete portion of bridge railing (including brush block),)(front face and top of concrete bridge barrier) (back face of concrete bridge barrier) (slab fascia,) (sidewalk fascia,) (underside of deck from slab fascia to fascia beam flange,) (exterior face and bottom of bottom flange of fascia beam). (See Special Provision for coating color.) (Use concrete surface coating AMS-STD-595 color number [insert number], [insert color].) * The estimated area of coating is [insert coating area] syd. [Include any and all parts that are to be coated. Add sketch to plans for clarity if desired. Use note twice if applying silane and surface coating to differing faces of barriers. *Specify color in note if Frequently Used Special Provision is not used.] (4-19-2021)

O. Salvage and reuse the existing stud type shear developers. See the Special Provision for Bridge Deck Removal and Salvaging Shear Developers on Steel Beams for limitations on the equipment that may be used during demolition of the existing bridge deck. Remove and replace damaged shear developers identified by the Engineer. [Install additional shear developers at the locations shown on the plans.] [Use on full and partial deck removal projects with existing stud type shear developers.] (4-19-2021) (11-28-2022)

P. The slab haunches on this project are estimated to range from __" to __". Actual haunches may vary based on construction tolerances and the fabricated camber of the beams.[For information only. See BDM Section 7.02.19 C. for design criteria.] (2-24-2025)

Q. The slab haunches on this project are estimated to range from [insert minimum haunch height]" to [insert maximum haunch height]". Actual haunches may vary based on construction tolerances and the fabricated camber of the beams. [For information only. See Section 7.02.19 C. for design criteria.] (2-24-2025)

8.07.02 Elastomeric Bearings

A. If the position dowels at (Abutment [insert abutment identifier]) (Pier [insert pier identifier]) are misaligned, in relationship to the centerline of bearings, due to temperature effects on the (beams) (girders), place elastomeric bearings with holes centered on the dowels. [Use for elastomeric expansion bearings. See Design Guide 8.43.01 and 8.43.01A.] (9-1-1988)

B. The design of the bearings at (Abutment [insert abutment identifier]) (and Pier [insert pier identifier]) is based on AASHTO LRFD Method [insert method]. [Use on all projects with plain or laminated elastomeric bearings. Method B shall not be used unless approved by MDOT Structural Fabrication Engineer. This note is not required for elastomeric leveling pads.] (9-26-2022)

8.07.03 Prestressed Concrete I-Beam, Bulb-Tee Beam and Box Beam Notes

A. The contractor is responsible for accurately locating the rod connection between box beams. [Use when widening box beam structures.]

B. Use 0.6 in. nominal diameter prestressing strand meeting the requirements of AASHTO M203 (ASTM A416), Grade 270, low relaxation strand. (4-19-2021)

C Tension 0.6 in. dia. prestressing strands to an initial prestress of 44,000 lbs. (4-19-2021)

D. Provide concrete inserts for drain casting assembly brackets according to Standard Plan B-101-Series. Cast inserts with the beams. Do not field install inserts. (9-1-1988)

E. End blocks are (required) (optional). [Use for I-Beams.] (9-1-1988)

F. Total estimated change of length of bottom flange at transfer of prestress force is [insert length] in.

G. The estimated beam camber at release is [insert camber] in. This camber is due to prestress and dead load of the beam only and is measured in the erected position. (8-6-1992)

H. During handling and transportation, support beams [insert distance] feet from the end. If two additional strands are draped, support beams [insert distance] feet from the end. [Use with 70 in. deep beam, Michigan 1800 beam and Bulb-Tee beams.] (4-17-2017)

I. Beams in span(s) [insert span(s) identifier] may be laterally unstable. Take precautions to ensure that beams are not damaged during handling and transportation. [Use when factor of safety for lateral buckling is 1.2 or less.] (8-6-1992)

J. Threading of reinforcement and installation into concrete inserts is included in the bid item ("Prest Conc I Beam, Furn, [insert beam depth] inch") (“Prest Conc Box Beam, Furn, [insert beam depth] inch”) (“Prest Conc 1800 Beam, Furn”) (“Prest Conc Bulb-Tee Beam, Furn, [insert beam depth] inch by [insert beam top flange width] inch”). (5-24-2021)

K. Remove lifting devices after beams are erected. Cut lifting devices 1" above steel reinforcement and protect reinforcement from damage. Removal is included in the bid item ("Prest Conc I Beam, Erect, [insert beam depth] inch") ("Prest Conc 1800 Beam, Furn") ("Prest Conc Box Beam, Erect, [insert beam depth] inch") ("Prest Conc Bulb-Tee Beam, Erect, [insert beam depth] inch by [insert beam top flange width] inch"). (12-22-2025)

L. Fill holes cast or formed in the beam with non-shrinking grout. Included in the bid item ("Prest Conc 1800 Beam, Erect") (Prest Conc Bulb-Tee Beam, Erect, [insert beam depth] inch by [insert beam top flange width] inch"). [Use for Michigan 1800 Prestressed I-Beam and Bulb-Tee Beams.] (4-17-2017)

M. At the locations shown on the plans, apply Silane to the beam ends for a distance of [insert distance] feet, starting from the beam end at the joint, coating both sides, bottom and ends of beams (Do not coat outside and bottom of fascia beams.). [Use on Prestressed I-Beam, Michigan 1800 beam, Bulb-Tee Beams and spread box beam projects with expansion joints. Show the locations to be coated on the erection diagram. If concrete surface coating is being applied to fascia beams, do not apply silane in areas that will receive Concrete Surface Coating. Include Special Provision for Silane Treatment for Bridge Concrete.] (2-26-2018) (8-29-2022)

N. Apply concrete surface coating to the entire outside and bottom of the fascia beams. (Use concrete surface coating AMS-STD-595 color number [insert number], [insert color].) [Use on Prestressed I-Beam, Michigan 1800 beam, Bulb-Tee Beams and spread box beam bridges where coating fascia beams will not significantly affect the maintaining traffic and when requested by the Region or Roadside Development Section.] (2-26-2018) (8-29-2022)

O. Provide Grade 60 (ksi) beam steel reinforcement, including stirrups. (*Provide stainless steel reinforcement according to Section 905 of the Standard Specifications for bars denoted/detailed as "SD". Add Special Provision for Stainless Steel Reinforcement to the proposal.) [Use for Prestressed I-Beams, Michigan 1800 beam, Bulb-Tee Beams and all box beams except 17 in. & 21 in. box beams.] [*Use for box beams using stainless steel reinforcement.] (12-27-2021)

P. Provide Grade 60 (ksi) longitudinal beam steel reinforcement (EA bars). The design of transverse beam steel reinforcement, slab ties (epoxy coated ED bars) and stirrups (stainless steel SD bars or epoxy coated ED bars) is based on Grade 40 (ksi); use either Grade 40 or Grade 60 in fabrication of the beam. (*Provide stainless steel reinforcement according to Section 905 of the Standard Specifications for bars denoted/detailed as "SD". Add Special Provision for Stainless Steel Reinforcement to the proposal.) [Use for 17 in. & 21 in. box beams.] [*Use for box beams using stainless steel reinforcement.] (12-27-2021)

Q. Field drilling is allowed for sign support anchors only. Location of anchors is as detailed on Traffic & Safety Sign Support Special Details. Repair any damage to the beams at the contractor's expense as approved by the Engineer. (8-20-2009)

R. Note Deleted. (3-24-2025)

S. Use (¾ in.) (1 in.) diameter concrete inserts; Dayton Superior, Type B-1 Two Strut Coil Tie - (Heavy) [¾ in.] (Standard) [1 in.] or Type B18 Single Flared Coil Loop Insert; Williams Form, Type C12 Two Strut Coil Tie or Type C19 Flared Coil Loop Insert; Meadow Burke, Type CX-4 Coil Loop Insert-Flared; or Engineer approved equal. Electroplate galvanize coil inserts in accordance with ASTM B633, Service Condition 4. Cast inserts with the beams. Do not field install inserts. [Use for Prestressed I-Beams, Bulb-Tee beams and spread box beams at backwalls or concrete diaphragms.] (4-19-2021)

T. Use (¾ in.) (1 in.) diameter concrete inserts; Dayton Superior, F63 Flared Thin Slab Coil Insert; Williams Form, C18 Coil Wingnut Insert; Meadow Burke, CX-28 Coil Wingnut Insert; or Engineer approved equal. Electroplate galvanize coil inserts in accordance with ASTM B633, Service Condition 4. Cast inserts with the beams. Do not field install inserts. [Use for Michigan (MI) 1800 beams at backwalls or concrete diaphragms.] (4-19-2021)

U. Use ⅞ in. bolt diameter concrete inserts; Dayton Superior, F42 or F64 Ferrule Loop Insert; Williams Form, F15 or F16 Ferrule Loop Insert; Meadow Burke, FX-2 or FX-5 Ferrule Insert - Loop; or Engineer approved equal. Electroplate galvanize ferrule inserts and bolts in accordance with ASTM B633, Service Condition 4. Cast inserts with the beams. Do not field install inserts. [Use with 70 in. deep beam, Type III & IV beams and Bulb-Tee beams with steel diaphragms.] (4-19-2021)

V. Use ⅞ in. bolt diameter, 4½ in.(4⅝ in.) long concrete inserts; Dayton Superior, F42 or F64 Loop Ferrule Insert; Williams Form, F15 or F16 Ferrule Loop Insert; Meadow Burke, FX-2 or FX-5 Ferrule Insert - Loop; or Engineer approved equal. Electroplate galvanize ferrule inserts and bolts in accordance with ASTM B633, Service Condition 4. Cast inserts with the beams. Do not field install inserts. [Use for Michigan 1800 beams and Type I & II beams with steel diaphragms.] (4-19-2021)

8.07.04 Screed Notes

A. Bottom of slab elevations (are at right angles to the beam centerline and*) are based on the condition that the beams and diaphragms are completely erected with no other loads applied. (No temporary supports are allowed at this time.) These elevations include allowance for vertical curve and deflection due to forms, steel reinforcement, concrete slab, (sidewalks, railing) (barrier) and utilities. [*Use when dual bottom of slab elevations are shown.]

B. If screeds are affected by loads in other spans, set to the elevations shown before casting any concrete. Cast concrete in the suspended span(s) before the concrete in the anchor spans.

C. Screed elevations are based on the condition that no slab concrete has been cast and that formwork (shear developers) and steel reinforcement are in place (and the temporary supports are brought to a snug fit under each beam).

D. (On span(s) [insert span identifier(s)] ,) provide transverse finishing parallel to reference lines. [Use when the angle of crossing is less than or equal to 75˚ or greater than or equal to 105° (skew angle greater than or equal to 15°).] (1-29-2024)

E. Locate (outer*) screed rails for finishing of structural concrete over fascia beams (and over the beam adjacent to the open joint**).

* Omit the word "outer" on narrow decks, one pour wide.
** Add this where diaphragms are not continuous across wide decks.

F. Stage A is beams and diaphragms erected with no other loads applied. [For use with top of beam elevations.] (9-1-1988)

G. Stage B is forms and steel reinforcement in place (all spans complete). [For use with top of beam and bulkhead elevations.] (9-1-1988)

8.07.05 Deck Replacement Notes

(4-19-2021)

A. Obtain the Engineer's written approval for proposed sequence and methods of removal before removing portions of the bridge superstructure according to Subsection 712.03 of the Standard Specifications.

B. If removal operations result in damage to the retained portions of the structure, submit a corrective action plan to the Engineer according to Subsection 712.03 C. of the Standard Specifications. (9-18-1998)

8.07.06 Structural Steel Notes

A. Elastomeric bearing pads (⅛ in.) used under steel masonry plates are included in the quantity for Structural Steel. (9-2-2003)

B. Anchor bolt lengths shown are minimum. Bolts longer than those shown may be furnished at no additional cost.

C. Coat structural steel according to Section 716 of the Standard Specifications. Use light gray urethane protective coat, AMS-STD-595 color number 16440. [Use with shop or field coating. Check with Roadside Development Unit if other color is desired.] (12-26-2017)

D. Provide structural steel conforming to AASHTO M270, Grade 50, or AASHTO M270, Grade 50W. (AASHTO M270, Grade 36, steel may be used in lieu of these steels for bearings, diaphragms, and cross frames.) (9-18-1998)

E. Use steel for cross frames meeting the impact test requirements for main structural members shown in Subsection 906.04 of the Standard Specifications. [Use when bridge has horizontally curved girders.]

F. Field splice(s) ____ , if used, is (are) optional and will not be paid for.

G. The following steel bridge members and member components have been designated as fracture critical, regardless of the direction of stress: [insert bridge member and member component identifier(s)]*. Steel and fabrication procedures and requirements are according to the Standard Specifications. [*Identify component] [Use for structures that have fracture critical members other than pins and link plates.] (6-28-2021)

H. Field drill and bolt end diaphragms to the existing beams prior to pouring the deck. Field drill and bolt intermediate diaphragms to the existing beams after pouring the deck. [Use when widening structural steel bridge with diaphragms.] (9-18-1998)

I. The plate surfaces of the main girder splices, and all other bolted connections are considered Slip Critical Connections unless noted otherwise. (8-20-2009)

8.07.07 Treatment of Epoxy-Coated Bars

A. Shop cut reinforcement as shown. Repair the epoxy coating according to Subsection 706.03 E.8. of the Standard Specifications. [Place near cutting diagrams.] (8-6-1992)

8.08 RAILROAD OVERPASS

8.08.01 Introduction

The railroad overpass general notes are to be used in conjunction with the general notes.

8.08.02 Title Sheet

A. The design of the railroad overpass(es) is based on the current American Railway Engineering and Maintenance-of-Way Association Specifications, Cooper's E 80 * Loading, and [insert percent] percent of the specified impact. [This note is to replace or be used in conjunction with general note 8.02 A.] [*Or as specified by the railroad company]

B. Except where otherwise indicated on these plans or in the proposal and supplemental specifications contained herein, perform all work according to the current American Railway Engineering and Maintenance-of-Way Association Specifications.

8.08.03 General Plan of Site Sheet

A. Railroad traffic will be maintained on a temporary trestle.

B. The railroad will furnish all ties, ballast, rails, and all necessary materials and labor for all track work on a force account basis. [This note should be amended for each job by consulting the railroad agreement on each project.]

C. The information concerning the movements of trains and speed thereof does not represent any commitment on the part of the railroad to continue them unchanged, inasmuch as they are subject to change without notice.

D. Details of temporary steel sheet piling and bracing must meet with the approval of the railroad.

8.08.04 General Plan of Structure Sheet

A. The design of this structure is based on the current American Railway Engineering and Maintenance-of-Way Association Specifications, Cooper's E 80 * Loading, and [insert percent] percent of the specified impact. [*Or as specified by the railroad company]

8.08.05 Structural Steel Notes

A. Shop and field coat steel according to Subsections 716 & 715 of the Standard Specifications.

8.08.06 Temporary Trestle

A. Maintain the temporary trestle throughout the entire construction period as directed by the Engineer.

B. The design of the temporary trestle is based on the American Railway Engineering and Maintenance-of-Way Association Specifications, Cooper's [insert loading designation]** Loading, and [insert percent] percent of the specified impact. [**As specified by the railroad company or supplier of temporary trestle]

C. At any stage of construction, do not cause unreasonable delay to the railroad traffic, as per the agreement with the [insert railroad name] railroad.

D. Coating of structural steel is not required on the temporary trestle.

8.09 REHABILITATION PROJECTS

8.09.01 Miscellaneous Notes

(4-19-2021)

A. The work covered by these plans includes (resurfacing the existing bridge deck), (replacing the existing barriers) (removing) (retaining) the existing railing and constructing a new concrete block retrofit railing, B-50-Series, at the curb line atop the existing sidewalk or brush block), and maintaining traffic. (11-25-2019)

B. Apply (Concrete Surface Coating) (Silane) to the (entire concrete portion of bridge barrier (including brush block),)(front face and top of concrete bridge barrier) (back face of concrete bridge barrier) (slab fascia,) (sidewalk fascia,) (underside of deck from slab fascia to fascia beam flange,) (exterior face and bottom of bottom flange of fascia beam). (See Special Provision for coating color.) (Use concrete surface coating AMS-STD-595 color number [insert number], [insert color].) * The estimated area of coating is [insert area] Syd. [Include any and all parts that are to be coated. Add sketch to plans for clarity if desired. Use note twice if applying silane and surface coating to differing faces of barriers. *Specify color in note if Frequently Used Special Provision is not used.] (4-19-2021)

C. Apply low temperature protection of concrete according to Section 706.03 J. of the Standard Specifications for Construction. Low temperature protection of concrete is included in related items of work. (12-5-2005)

D. Implement measures to prevent debris from falling from the structure. (*If debris falls into the waterway, remove it within 24 hours. Since disturbance of the waterway bottom may be as harmful as the debris itself, the preventive measures must be effective.) Removal of debris is included related items of work. [*Use for bridges over waterways.] (4-19-2021)

E. Notify each utility company a minimum of three full working days in advance of work impacting that company's conduits or facilities. (8-20-2009)

F. Do not weld on existing girders (beams) (except as noted).

G. Remove all accumulated foreign matter from the (bridge deck including (sidewalk)(curbs)(expansion joints)),(tops of abutments (including bearings)), (tops of piers (including bearings)) (lower flanges of (beams)(girders) (within [insert distance] feet of reference line(s) [insert reference line identifier(s)]). Stage work such that elements are clean and free of debris after completion of all bridge work. If cleaning of elements is required for access or to safely perform work operations, cleaning may be required before and after other items of work. Included in the bid item “Bridge Cleaning (Structure Identification)”. (Payment for cleaning area of steel requiring painting is included in the cleaning and coating pay items.) [Use when requested by Region Bridge Engineer for bridges receiving preventative maintenance or rehabilitation work. Include all parts that are to be cleaned. Include Special Provision for Bridge Cleaning.]

H. At the locations shown on the plans, apply Silane to the beam ends for a distance of [insert distance] feet, starting from the beam end at the joint, coating both sides, bottom and end of beam (after completion of any beam repairs). (Do not coat outside and bottom of fascia beams.). [Use on rehabilitation projects with Prestressed I-Beam, Michigan 1800 beam, Bulb-Tee Beams and box beam bridges with expansion joints. Show locations to be coated on the erection diagram or on the existing general plan of structure. If concrete surface coating is being applied to fascia beams, do not apply silane in areas that will receive Concrete Surface Coating. Include Special Provision for Silane Treatment for Bridge Concrete.] (8-29-2022)

I. The steel density of the existing reinforcement (in the _____) to be protected by galvanic anodes is _____. [This note is to be used with the Frequently Used Special Provision for Embedded Galvanic Anodes, High Performing for Corrosion Control on all rehabilitation projects that include concrete repair. Include separate notes or provide a table to report the steel density for each repair location where existing reinforcement will be exposed (deck, barrier, abutment).] (8-25-2025)

8.09.02 Bridge Deck Repair Notes

A. The volume of “Conc (Bridge Deck Only) (Silica Fume Modified)” is based on the overlay and an estimated quantity to replace unsound concrete and to make (crown) (superelevation) (grade) adjustments as determined by the Engineer. (12-5-2005)

B. Completely remove and replace the (barrier) (sidewalk) (brush block) within the limits of the joint replacement detailed on the plans. The work to remove the existing concrete and reinforcement is included in the bid item “Deck Joint, Rem”. (9-23-2024)

C. Sound concrete before overlaying to determine whether the removal at either side of transverse joints will be adequate. Increase the removal limits as approved by the Engineer. (5-22-2017)

D. Silica Fume Modified Concrete or Latex Modified Concrete may be selected for the bridge deck overlay concrete. (9-2-2003)

E. False decking includes the area bounded by (Reference Lines [insert first reference line identifier] & [insert second reference line identifier]) (edges of shoulders) and outside flange fascias of fascia beams. [Use when limits are not detailed on the plans.] (4-19-2021)

F. Construct bridge overlay to a cross slope of (2%) (1.5%) (to match existing slope). [Use 2% cross slope unless compelling reasons warrant the use of 1.5% or existing cross slope. See BDM Section 7.02.19 G. for additional information.] (8-20-2009)

G. Heavy equipment, including concrete trucks and vacuum trucks for removing concrete debris, is not allowed on hydrodemolished surfaces of the deck. (4-19-2021)

H. Do not scarify or hydrodemolish the area(s) designated as link slab(s). [Detail limits on deck plan.] (12-5-2005)

I. Maintain formwork above the bottom of beams over active roadbeds. [Use where bridge deck is to be cast over traffic.] (4-19-2021)

8.09.03 Railing Replacement Notes

A. Removal of existing guardrail is included in the bid item "Guardrail, Type [insert guardrail type]". [Applies to projects where the quantity is low or is not included in road plans.]

B. Do not coat the metal expansion joint except for exposed metal surfaces at the concrete barrier. Shop and/or field coat according to Subsections 716 & 715 of the Standard Specifications. (Included in the bid item "Bridge Joint, Revise Expansion Device".) [Use when revising existing metal expansion joints.]

C. Remove rail and posts from parapet railing and retain anchor bolts. (Included in the bid item, "Bridge Railing, Thrie Beam Retrofit".) [Use when circumstances such as sight distance or poor condition warrant rail and post removal.] (8-20-2009)

8.09.04 Maintenance Painting Notes

A. This bridge is coated with lead based paint. [Existing bridge was built before 1967, has never been repainted, and has the original paint system (i.e. not uncoated A588 steel).] (8-20-2009)

B. This bridge is coated with lead based paint. The structural steel has been blast cleaned prior to coating. The additional effort to clean the structural steel will not be paid for separately but will be considered included in the bid items. [Existing bridge was built between 1967 and 1978, has never been repainted, and has the original paint system (i.e. not uncoated A588 steel).] (8-20-2009)

C. This bridge is coated with a lead based coating system. The structural steel has been blast cleaned prior to coating. The additional effort to clean the structural steel will not be paid for separately but will be considered included in the bid items. [Existing bridge was repainted between 1967 and 1978.] (8-20-2009)

D. This bridge is coated with a zinc based coating system. The structural steel has been blast cleaned prior to coating. The additional effort to clean the structural steel will not be paid for separately but will be considered included in the bid items. [Existing bridge was built after 1978, or was repainted after 1978. It does not have uncoated A588 steel.] (8-20-2009)

E. This bridge has uncoated A588 structural steel. The additional effort to clean the structural steel and the additional coating material required due to excessive surface profile will not be paid for separately but will be considered included in the bid items. [Existing bridge has uncoated A588 steel.] (1-23-2012)

F. (*Do not) clean and coat [insert utility company name] (conduits) (mains). (*See Subsection 715 of the Standard Specifications.) [*Use for Johns Manville Transite (asbestos) ducts or when protective shielding is requested by the utility company.] (8-6-1992)

G. Remove and replace end diaphragms of spans [insert span identifier(s)] to permit proper cleaning and coating. Included in the bid item “End Diaphragm, Rem and Replace”. See Subsection 715.03 E. of the Standard Specifications. [Use when clearance between end diaphragms and backwall or adjacent diaphragms is 14 in. or less and the slab above the diaphragms is not to be removed.] (8-6-1992)

H. When hanger assemblies are not to be replaced, protect the existing paint under the link plates from damage due to blast cleaning by inserting an approved material around the periphery of the link plates. Remove the material prior to coating. (Included in the bid item “Steel Structure, Cleaning, Type 4 (Structure Identification)".) (12-5-2005)

I. The Engineer will inspect the structural steel parts that have been blast cleaned for evidence of cracks or loss of section due to corrosion of more than 25 percent. The Engineer will report deterioration in writing to the Region Bridge Engineer. [Use on all projects with blast cleaning and coating structural steel.] (2-16-2016)

J. The estimated area of structural steel to be coated is [insert area] square feet.

K. Apply Substructure Horizontal Surface Sealer to the top of Abutment [insert abutment identifier] (and [insert abutment identifier]) (and the front face of the independent backwall). Clean accidentally coated vertical surfaces at contractor’s expense. [Use when there is a superstructure transverse joint directly above or the unit is adjacent to a pavement.] (12-5-2005)

L. Apply Substructure Horizontal Surface Sealer to the top of (all) Pier(s) ([insert abutment identifier(s)]) Clean accidentally coated vertical surfaces at contractor’s expense. [Use only when superstructure transverse joints are directly above the pier.] (12-5-2005)

M. Remove shear locks by methods approved by Engineer before structure is blast cleaned. (Included in the bid item “Steel Structure, Cleaning, Type 4 (Structure Identification)".) (12-5-2005)

N. Remove the sign(s) over (description of location) to permit proper cleaning and coating of the fascia beam(s). After the coating has been cured in accordance with Subsection 715.03 D.3. of the Standard Specifications, reinstall sign(s) using new connection hardware. [Use where it has been determined that signs must be removed to allow cleaning and coating of fascia beams.] (12-27-2022)

O. Apply sealant around the perimeter of bearing plate to concrete contact surfaces after cutting away any protruding portion of lead plate. [Use when superstructure transverse joints are directly above pier or abutment.] (9-18-1998)

P. Apply sealant around the perimeter of bolted end diaphragm connection plates and angles. [Use when end diaphragms are under an open transverse deck joint.] (9-18-1998)

Q. Apply sealant around the perimeter of all riveted girder plates and angles. [Use at riveted plate girders.] (9-18-1998)

R. Apply sealant around the perimeter of all beam ends where encased in the backwalls. (9-18-1998)

S. Apply sealant to the perimeter of all riveted (bolted) girder plate and angle contact surfaces at the outside face of the fascia beams for the entire length and at each girder end, below deck joints, for a total length of 5 ft.-0 in. [Use at riveted or bolted plate girders on outside of fascia only.] (9-18-1998)

T. Blast clean and prime faying surfaces prior to erecting (diaphragms) (bent plates). Included in the pay items for cleaning and coating existing structural steel. [Use where project includes field coating and steel members will be added or replaced.] (9-18-1998)

U. Apply sealant around the perimeter of riveted pin plates and stiffeners. (9-18-1998) (11-26-2012)

V. Apply sealant around the connection of new structural steel member to existing structural steel member. (8-23-2021)

W. Use light gray urethane protective coat, AMS-STD-595 color number 16440. [Use with shop or field coating. Check with Roadside Development Unit if other color is desired.] (12-26-2017)

X. Protect portions of the structure, including superstructure, substructure, slope protection, and highway appurtenances from spatter and overspray of coating material. Included in the bid item “Steel Structure, Coating, Type 4 (Structure Identification)"). (12-5-2005)

Y. The plate surfaces of the main girder splices, and all other bolted connections are considered Slip Critical Connections unless noted otherwise. (4-19-2021)

8.09.05 Hanger Assembly Replacement Notes

A. Clean and coat the area within 3 feet each side of the centerline of the hanger assembly prior to installing the new link plates and pins. Shop coat proposed link plates. (Field coat proposed stiffeners.) (12-5-2005)

B. Repair the end diaphragm after installation of the new hanger assembly as shown on the plans. [Use if diaphragm repair is required.]

8.09.06 Existing Plan Sheet Notes

(4-19-2021)

A. Do not work from this sheet. The information shown here is for reference only. No pay items are shown. [Use on existing plan sheets used for information only.] (9-18-1998)

B. The only items of work to be done from this sheet are identified by the legend box below, labeled with this project's job number. [Use on existing plan sheets used for removal and proposed work. Add the legend box below.] (9-18-1998)

JOB NO. <New Number>
Proposed Work
Denotes Removal Portions

Table 8.09.06 B depicts a legend with the title containing "Job No. [insert new number]", and two symbols defined as proposed work, represented by blank fill, and removal portions, represented by crosshatched fill.

C. Only the hatched areas, indicating removals, are to be used for bidding purposes. [Use if just removals are shown, with no legend box.] (9-18-1998)

D. The bridge paint may contain lead. [Use on all projects with existing painted structural steel regardless of work type.] (8-20-2009)

8.09.07 Temporary Support Notes

(revised 7-25-2022)

A. Contact the Region Soils Engineer at least 48 hours in advance to request a foundation inspection prior to the placement of the temporary support footing (or the "Embankment, Structure, CIP"). (6-24-2024)

B. Use structural grade timber with a minimum flexural strength of 1,200 psi and a minimum horizontal shear strength of 100 psi.

C. Do not load temporary supports for a continuous period greater than four weeks. [Use when footing is placed on soil or paved surface.]

D. Use temporary concrete barrier to protect the temporary support as shown on the plans or as directed by the Engineer. [Use when protection of temporary support is not covered in maintaining traffic.]

E. Submit alternative design of the temporary support shown to the Engineer according to the Standard Specifications when any plan dimension, detail, or material is changed. Base alternate designs of the temporary support on loads as follows:

[insert dead load] tons vertical girder load (Dead Load).
[insert live load] tons vertical girder load (Live Load).
[insert allowable soil pressure] psf allowable soil pressure.

F. The temporary support design does not include the weight of construction equipment. If construction equipment is to be used on the span while the temporary support is in place, submit an alternative design and working drawings to the Engineer in accordance with the Standard Specifications for Construction. The alternative design must include a check of the existing superstructure that accounts for the current condition of bridge members and must include details for any strengthening of the existing structure required to prevent damage from the temporary support loads. (9-26-2022)

8.10 STEEL REINFORCEMENT

(revised 9-28-2026)

A. Bundle and tag reinforcement according to the location as shown on this sheet. (9-1-1988)

B. ChromX steel reinforcement cannot be in direct contact with dissimilar metals including galvanized steel. [Use when ChromX steel reinforcement is used in a project.] (9-28-2026)