GENERAL NOTES

1. Where a railing type does not require a terminal connector, TRANSITION USED STEEL POSTS ONLY.

2. Option for Curb and Gutter or Drainage Feature seen plan for information.

3. Steel or wood post is acceptable at Post 1. SEE SDD14B45-5A

TRANSITION USES STEEL POSTS ONLY. SEE STANDARD DETAIL DRAWING SDD 14B 42 FOR MORE INFORMATION.

PLAN VIEW

ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

SEE OTHER DETAILS
GENERAL NOTES

1. TOLERANCES ON BOLTS AND PAINTED STEEL ARE AS SHOWN ON THE PLAN. ALL JOINING BOLTS ARE TO BE INSPECTED FOR SIZE AND CONDITION.

2. WHEN USING STEEL POSTS AND WOOD ELEMENTS, INSTALL FOUR 30 GALVANIZED BOLTS. BOLTS MUST BE IN THE JACK COVER, IF ANY, AND THROUGH THE HOLE OVER THE FLANGE OF THE STEEL POST.

3. STEEL OR WOOD POST IS ACCEPTABLE AT POST 6. SEE SDD 14B 45-5b

4. TOLERANCE FOR TOP OF W-BEAM RAIL IS + 1".

5. LOCATIONS WITH REFLECTORS ON TOP OF W-BEAM RAIL ARE REQUIRED AT POST 6.

6. BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

7. GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE STEEL POST AND WOOD BLOCKOUTS.

8. WHEN USING STEEL POSTS AND WOOD BLOCKOUTS, INSTALL FOUR 10D STEEL NAILS.

9. GENERAL NOTES

10. MIDWEST GUARDRAIL SYSTEM (MGS)

11. MIDWEST GUARDRAIL SYSTEM (MGS)
12'-6" THRIE BEAM TRANSITION SECTION

6'-3" THRIE BEAM SECTION

12'-6" THRIE BEAM SECTION

STEEL POSTS 1-5

STEEL POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE 6 X 9 OR 6 X 8.5.

BOLT HOLES FOR POST ARE ON FRONT AND ON SIDE OF POST.

POSTS 6-11 = 6'-0"
POSTS 12-17 = 7'-0"

STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS.
SEE ALTERNATE WOOD BLOCK DETAIL.

S.D.D. 14 B 45-5c
SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3".

THE RECESSION FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO

DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN
APPROVED
DATE
FHWA
6
6
2'-7"

OPTIONAL CURB AND CURB/DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

TOLERANCE FOR TOP OF BEAM IS + 1".

DRILLING HOLE THROUGH THE PARAPET, BOLTS, NUTS, AND WASHERS REQUIRED.
DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

BOLT MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH TO ALLOW FOR A
TIGHT CONNECTION BETWEEN THRIE BARS AND THE Steel beam connection plate, connections to held
THEY MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH TO ALLOW FOR A
TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD

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APPROVED
DATE
FHWA
6
6
2'-7"

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BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH TO ALLOW FOR A
DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN
APPROVED

THREE BEAM TRANSITION (MGS)
MIDWEST GUARDRAIL SYSTEM

2'-7"
FRONT VIEW
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

3'-1"
4'-2"
5'-0"

CONNECTOR
W BEAM TERMINAL
W BEAM CONNECTION TO VERTICAL FACE PARAPET

FRONT VIEW

W BEAM CONNECTION TO VERTICAL FACE PARAPET
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

SECTION G-G

W BEAM CONNECTION TO VERTICAL FACED PARAPETS

GENERAL NOTES
These are typical connection details. Adjust the position of connections to fit the actual bridge and site conditions.

Optimal clear and gutter or drainage feature see plan for information.

Threading for top of beam is 5/8".

Drilling bolt holes through the parapet, bolts, nuts, washers and repairing damaged concrete and metal to the contract.

The holes may be bored 1/2" on 2400 bolts. Bolt length and thread length are to allow for a tight connection between the guardrail and the beam connection plate. Connectors is to fit the hex head bolts. The connector plate is to be flush with the top face of the beams. The holes may be 1/2" or 5/8" depending on the top face before the connector plate and the beam face before the connector plate. The holes may be 1/2" or 5/8" depending on the top face before the connector plate.

This is for a W-beam connection. The bolts on some parapets of the bridge shall be placed with a threethree inch diameter hole 3/4" from the edge of plate.

Bolt, nut and washers not needed for the location when retrofitting an existing parapet and the hole is deeper above parapet or above 4 inches of the edge of parapet.

PLATE
(MOUNTING PLATE)

NUT (TYP.)
(BOLTS)
(PLOW WASHERS)
(HARD WASHERS)

W WASHER (TYP.)
(WASHER)

WASHER (TYP.)
(PLATE)

DAMAGED CONCRETE FROM BOLT INSTALLATION.

A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 1/8" THICK AND ONE PLATE WASHER. REPAIR ANY BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THREE BEAM CONNECTOR PLATE. TIGHT CONNECTION BETWEEN RIGID BARRIER AND THREE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED.

BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADER LENGTH ARE TO ALLOW FOR A TOLERANCE FOR TOP OF BEAM IS + 1".

DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE AND METAL TO THE CONTRACT.

THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE PLACED WITH A THREE-INCH DIAMETER HOLE 3/4" FROM THE EDGE OF PLATE.

No. 17 POST STEEL

SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3". THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE PLACED WITH A THREE-INCH DIAMETER HOLE 3/4" FROM THE EDGE OF PLATE.

PREFERRED CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

THREE BEAM TRANSITION (MGS)
MIDWEST GUARDRAIL SYSTEM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
By:

Rodney Taylor
UNIT SUPERVISOR
ROADWAY STANDARDS DEVELOPMENT

DATE: 07/2018
DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN
APPROVED DATE
FHWA (3 REQ'D.)
WITH NUT AND WASHER ‡" DIA. X 2" HEX BOLT

FRONT VIEW TUBULAR RAILING TYPE "F"

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

THRIE BEAM TRANSITION (MGS)
MIDWEST GUARDRAIL SYSTEM

DECK BRIDGE APPROACH THRIE BEAM STRUCTURE LIMIT OF STEEL STEEL RAILING TYPE "W"

UNIT SUPERVISOR ROADWAY STANDARDS DEVELOPMENT /S/ Rodney Taylor 07/2018

GENERAL NOTES
1. TOLERANCE FOR TOP OF BEAM IS + 1".
2. DRILL HOLES THROUGH THE PAPRPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

TOLERANCE FOR TOP OF BEAM IS + 1".

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TOLERANCE FOR TOP OF BEAM IS + 1".

DRILL HOLES THROUGH THE PAPRPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
GENERAL NOTES

COVER PLATE PANELS ARE 10" WIDE.
ALL STIFFENERS ARE 1½" THICK.
CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
ALL MILE PLATES SHALL BE M.
FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.
STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS MIRRORED.
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 6½" FILLER PLATE MELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
STIFFENERS LOCATED ON THE FACE OF THE COVER PLATE SHALL BE WELDED 45° AS MIRRORED.
6½" FILLER PLATE MELD BY 1" LONG SPACED AT 2".

STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS MIRRORED.
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 6½" FILLER PLATE MELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
STIFFENERS LOCATED ON THE FACE OF THE COVER PLATE SHALL BE WELDED 45° AS MIRRORED.
6½" FILLER PLATE MELD BY 1" LONG SPACED AT 2".

WELDING INSTRUCTION

CONNECTOR PLATE DIMENSION

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PLATE AND STIFFENER IDENTIFICATION

SINGLE SLOPE CONNECTION PLATE
THREE BEAM CONNECTION TO SINGLE SLOPE BARRIER

SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

- CONNECTION PLATE, DRILLING BOLT HOLE THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

- BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREAD LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN THREE BEAM AND THREE BEAM CONNECTION PLATE. CONNECTOR PLATE TO BE INSTALLED WITH BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THREE BEAM CONNECTION PLATE, BOLT, WASHER (TYP.) THRU HOLE, THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X "THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

- CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND BOLT (TYP.) THRU HOLE, THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X "THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

- OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

- MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)

- STATE OF WISCONSIN

- DEPARTMENT OF TRANSPORTATION

- UNIT SUPERVISOR

- ROADWAY STANDARDS DEVELOPMENT

- S.D.D. 14 B 45-5
GENERAL NOTES

1. TOLERANCE FOR TOP OF BEAM IS ± 1".

2. BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREAD LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN THE RIGID BAR and THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTION PLATE ON BACKSIDE OF PARAPET. ONE ROUND WASHER AND NUT REQUIRED. BOLT THREAD IS TO EXTEND 10 INCH BEYOND NUT.

ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT
FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY3"
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY4"
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

1. TOLERANCE FOR TOP OF BEAM IS ± 1".

2. BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A
   TIGHT CONNECTION BETWEEN THE PLATE AND THE BEAM CONNECTOR PLATE. CONTRACTOR IS TO VERIFY
   BOLT LENGTH AND THREAD LENGTH BETWEEN 1½" AND 3½". ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD
   AND BEAM CONNECTOR PLATE. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND ONE ROUND WASHER
   BETWEEN BOLT HEAD AND MIDWAY OF BOLT THREAD.

3. MGS BEAM GUARD IS TO EXTEND ½" INCH BEYOND NUT.

4. BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A
   TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD
   BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREAD LENGTH ARE TO ALLOW FOR A

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

APPROVED

UNIT SUPERVISOR

ROADWAY STANDARDS DEVELOPMENT

7/2018

/S/ Rodney Taylor
Midwest Guardrail System (MGS) Thrie Beam Transition

References:
- Standard Spec 614
- FDM 11-45-2
- AASHTO Roadside Design Guide
- Midwest Roadside Safety Facility (MwRSF) Report No. TRP-03-047-95
- MwRSF Report No. TRP-03-167-07
- MwRSF Report No. TRP-03-210-10
- MwRST Report No. TRP-03-291-14

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Standardized Special Provisions associated with this drawing:

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Other SDDs associated with this drawing:
- SDD8D1: Concrete Curb, Concrete Curb and Gutter and Ties
- SDD14B28: Mow Strip Detail
- SDD14B42: Midwest Guardrail System (Required)
- SDD14B44: Midwest Guardrail System Terminal (MGS)
- SDD14B45: Midwest Guardrail System Transitions (MGS)
- SDD14B47: Midwest Guardrail System Type 2 terminal (MGS)

Design Notes:
- Midwest Guardrail System Thrie Beam Transition (MGS transition) is a specially designed transition to rigid barrier for the MGS system. MGS transition is required when connecting MGS to rigid barriers (roadway concrete barrier, bridge parapets).
- Provide working width for MGS transition. Document in Design Study Report (DSR) when working width cannot be provided. Thrie beam transition working width is the same as standard MGS.
- Modifications shown on SDD allow for the MGS transition to have TBT, and TBTT curb installed. Flow line of curb is to line up with front face of block. Install TBT or TBTT curb when MGS transition is connecting to concrete bridge parapets, older New Jersey shaped barrier (SDD 14B11 or SDD 14B22).
Single Slope Thrie Beam Anchorages (SDD 14B33) do not require TBT or TBTT curb for operation of the thrie beam transition. However, TBT or TBTT curb and gutter can be installed to control water. M, W, F, NY3, NY4, should not have curb and gutter installed by them.

| Note: If designer is planning to use SDD 8D2 or SDD 8D3 to control drainage by a structure, modifications to the curb head will be required. The curb head should match the TBT or TBTT design. BPD is in the process of updating SDD 8D2 and SDD 8D3, but was not able to get the drawing updated in time for this publication. |

The 12.5 feet of MGS beam guard at half post spacing beyond the asymmetrical transition piece is required for all installations.

Do not flare MGS thrie beam transition. Install 25 feet of MGS beam guard tangent to the MGS thrie beam transition. The 25 feet of additional tangent MGS may include the 12.5 feet of half post spacing MGS beam guard shown on sheet A. After the 25 feet of tangent MGS beam guard, the MGS beam guard may be flared. No additional beam guard is needed when an EAT is flared.

Use this SDD for temporary thrie beam installations.

Individual construction detail drawings are required (See FDM 11-45-2.5.2). Review drainage and grading near MGS transitions to rigid barrier. Installing MGS transition with missing posts, improper embedment, or improper grading behind post may cause system not to function as intended. Review FDM 11-45-2.5.2.10 for more information.

MGS transition may use grading and shaping item.

See SDD 14B42 for additional guidance.

Sheets H and I are required when connecting to a single slop thrie beam anchorage (SDD 14B33).

If installing a thrie beam transition on to an existing NY3 or NY4 parapet that does not have the additional hardware for attaching the thrie beam (see Bridge Standard Detail 30.28), provide special provisions and detail drawings to have contractor install hardware.

Contact Person:
Erik Emerson (608) 266-2842