GENERAL NOTES

These are typical connection details, adjust the position of connections to existing bridges to fit the actual bridge and site dimensions.

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALLVANIZED PER STANDARD SPECIFICATIONS.

1. Drilling bolt holes through the parapets, bolts, nuts, washers and repairing damaged concrete are incidental to the contract.
2. Bolts may be ASTM A325 bolts or A449 bolts, bolt length and threading length are to allow for a tight connection between head barrier and three beam connection plate, contractor is to field verify bolt length and threading length. One round washer required between bolt head and three beam connection plate and one plate washer to be placed between three beam connection plate and bridge structure. Contractor is to verify bolt length and threading length. One hardened round steel washer that is 2" O.D. x 3/16" and one plate washer, repair any damaged concrete from bolt installation.

3. The recess for a head barrier connection, where exists on some parapets of this type, shall be filled with a treated timber blockout. Blockout size is 1'-6" x 2'-0" x 3".

4. NE 4" or NW 4" steel posts and notched plastic blockouts are acceptable alternatives for 6" x 8" wood posts. New wood or plastic blockouts are approved options. Plastic blockouts with steel posts do not use steel posts and notched plastic blockouts in the Steel Three Beam Structural Approach and the Transition Section of Steel Plate Guard, Class "A" installation.

ENGINEER
ROADWAY STANDARDS DEVELOPMENT
DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN

APPROVED
FHWA
DATE
8/31/2012
S.D.D. 14b20-b  Steel Thrie Beam Structure Approach, Connection to Square End Parapets
GENERAL NOTES

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

Bolts, nuts and washers shall conform to ASTM A325, A449 and galvanized per standard specifications (SD.14.B.20-c).

1. Drilling bolt holes through the parapet, bolts, nuts, washers and repairing damaged concrete are incidental to the contract.
2. Bolts may be A325 bolts. Bolt length and thread length are to allow for a tight connection between the barrier and the beam connection plate. Contractör shall provide the bolt length to fit the bottom bolt length and design length. Round washers required between bolt head and thrie beam terminal connector. Bolts and nuts extend through the parapet and out the back face require a hardened round steel washer that is 2" x 3/16" thick and one plate washer. Repair any damaged concrete from bolt installation.
3. The recess for a W-beam connection, which exists on some parapets of this type, shall be filled with a treated timber blockout. Blockout size is 1'-6" x 2'-0" x 3". W6 x 9 or W6 x 8.5 steel posts and notched plastic blockouts are acceptable alternatives for 6" x 8" wood post with wood or plastic blockouts, use approved notched plastic blockouts with steel posts.
4. Bolt, nuts and washers not required for this location when retrofitting an existing parapet and the hole is either above parapet or within 4 inches of the edge of parapet.

Steel thrie beam structure approach and the transition section of steel plate beam guard, class "A" installations.

W BEAM CONNECTION TO VERTICAL FACE PARAPET

(Use only on the traffic exit end of one way bridges)

SECTION E-E

THREE BEAM CONNECTION TO VERTICAL FACED PARAPETS

SECTION D-D

W BEAM TERMINAL CONNECTOR

A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 3/16" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREAD LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THE THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO PROVIDE THE BOLT LENGTH TO FIT THE BOTTOM BOLT LENGTH AND DESIGN LENGTH.

BOLTS AND NUTS EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" X 3/16" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

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GENERAL NOTES

These are typical connection details. Adjust the position of connections to existing bridges to fit the actual bridge and site dimensions. Bolts, nuts, and washers shall conform to ASTM A325, A449 and galvanized per standard specifications as issued.

1. Drilling bolt holes through the parapet. Bolts, nuts, washers and repairing damaged concrete are accidental to the contract.

2. Bolts may be A325 bolts or A449 bolts. Bolt length and threading length are to allow for a tight connection between the barrier and the beam connection plate. Contractor is to field verify bolt length and threading length. One round washer required between bolt head and thrie beam terminal connector. Bolts that extend through the parapet and out the back face require a hardened round steel washer that is 0.375 OD x 0.625 thick and one plate washer. Repair any damaged concrete from bolt installation.

3. W 6 x 9 or W 6 x 8.5 steel posts and notched plastic blockouts are acceptable alternatives for the bolt post. New wood or plastic blockouts may approved notched plastic blockouts from steel plates. Do not use steel posts and notched plastic blockouts in the steel thrie beam structural approach and the transition section of steel plate guard class "A" installations.

THRIE BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

SECTION F-F

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

NOTE:

1. Use only at traffic exit end of one way bridge.

2. 3/8" HDL CAP SCREWS INTO THICKED HOLES (4 REQUIRED) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER. 3/8" HDL BOLT AND WASHERS REQUIRED. 3/8" HOLES DRILLED THRU PARAPET.

3. 3/8" HDL CAP SCREWS INTO THICKED HOLES (4 REQUIRED) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER. 3/8" HDL BOLT AND WASHERS REQUIRED. 3/8" HOLES DRILLED THRU PARAPET.

4. DRILLING HOLES THROUGH PARAPET. BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

5. GALVANIZED PER STANDARD SPECIFICATIONS 614. BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS AS ISSUED.

6. INSTALLATION OF W-6 X 9 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR W 6 X 8.5 POST OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

7. STUDIED IF HOLES DRILLED THRU PARAPET IS REQUIRED.

8. W 6 X 9 OR W 6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR W 6 X 8.5 POST OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

9. STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SLOPED END PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED:

8/31/2012
S/E Jerry H. Zogg
S.D.D. 14b20-d  Steel Thrie Beam Structure Approach, Connection to Sloped End Parapets

S.D.D. 14 B 20-114

S.D.D. 14 B 20-114
GENERAL NOTES

1. This dimension depends on abutment type, approach details, and angle of skew. Place the first wood post off of bridge shall be as close as feasible to the steel end post.

PLATE THICKNESS

FRONT VIEW

PLAN VIEW

SECTION H-H

ANCHOR AND BACK-UP PLATE MOUNTING TO BRIDGE RAILING. TYPE "M"

SECTION II

THREE BEAM CONNECTION TO TUBULAR RAILING. TYPE "M"
GENERAL NOTES

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

COVER PLATE PANELS ARE 1/8" THICK.

ALL STIFFENERS ARE 1/8" THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 1/8" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.

STIFFENERS LOCATED AT THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
1/8" FILLET WELD BY 1" LONG SPACED AT 2".

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED:
7/31/2012
STATE ROADWAY STANDARDS DEVELOPMENT BRANCH

Jerry H. Zogg

CONNECTOR PLATE DIMENSION
(PER ASSEMBLY)

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**STEEL THRIE BEAM STRUCTURE APPROACH**

**GENERAL NOTES**

Construct per Standard Specification 614.

1. Bolts may be A325 bolts or A449 bolts. Bolt length and thread length are to allow for a tight connection between the barrier and thrie beam connection plate. Contractor is to field verify bolt length and thread length. One round washer required between bolt head and thrie beam terminal connector. Bolts that extend through the parapet and out the back face require a hardened round steel washer that is 0.020 x 2" thick and one plate washer. Repair any damaged concrete from bolt installation.

2. Connectors are to be used for thrie beam connections. See other details for connector plate location.
**Steel Thrie Beam Structure Approach**

### References:
- Standard Spec 614
- FDM 11-45-2
- FDM 11-45-1
- AASHTO Roadside Design Guide
- NCHRP Report 350 Test 3-21 of the Thrie Beam Transition to Wisconsin Type "M" Tubular Steel Bridge Rail, January 2003
- MwRSF report TRP-03-47-95

### Bid items associated with this drawing:

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### Standardized Special Provisions associated with this drawing:

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### Other SDDs associated with this drawing:
- **SDD 14B11**  
  Concrete Barrier (Double Faced)
- **SDD 14B15**  
  Steel Plate Beam Guard, Class “A”, Installation & Elements, Mow Strip Detail
- **SDD 14B22**  
  Concrete Barrier, Single-Faced (With Anchorage)
- **SDD 14B24**  
  Steel Plate Beam Guard Energy Absorbing Terminal
- **SDD 14B32**  
  Concrete Barrier Single Slope
- **SDD 14B33**  
  Thrie Beam Anchorages
- **SDD 14B34**  
  Short Concrete Barrier Sections (Use for runs of less than 40'
- **SDD 14B41**  
  Roadside Retaining Wall Barrier

### Design Notes:

Projects with PSE due August 2011 or later are required to install MGS beam guard (MGS) for new beam guard installations. Some exceptions allowing the installation of new non-MGS beam guard may be granted by Bureau of Project Development (BPD). A few of these exceptions require minimum documentation (e.g. there is no short radius version of MGS designer would need to install non-MGS beam guard). Other exceptions require more documentation and discussion with Bureau of Project Development. Projects on the NHS or subject to FHWA oversight are to review the use of MGS with FHWA.

Consider surface runoff from a structure when installing thrie beam structural approach. Excessive run-off will scour beam guard posts in the structural approach affecting the performance of the system. Include...
appropriate protection for these areas by providing concrete surface drains. Avoid removing of post to accommodate drainage structures.

It may be necessary to increase post length to accommodate steeper slopes.

Do not install curb and gutter in front of Steel Thrie Beam Structure Approach when installing concrete barrier single slope anchor.

Contact Person:

Erik Emerson (608) 266-2842