GENERAL NOTES

Bolt the thrie beam to all posts and blockouts, drill or punch bolt holes in the beam if the post spacing is less than 6'-3".

Do not use steel posts and matched plastic blockouts in the steel thrie beam structural approach and the transition section of steel plate beam guard, CLASS "A" installations.

If rock is encountered, remove rock to full depth of post plus 2' and 3" diameter around post. See HWD for more details.

Bridge railing type "P" does not require a terminal connector.

Minimum embedment shall be 4'-6" where existing conditions do not permit the appropriate foundation shown on the plan. When conditions or details, the Engineer may allow the reduction or elimination of the 2 foot distance to the hinge point. Otherwise build as the plan shows or as the Engineer directs. If the 2 foot distance to the hinge point is reduced or eliminated, increase the post embedment depth to match the new more.

Post bolts are 

- 3/4" diameter ASTM A325 button head bolt, a post bolt requires a 3/4" diameter class 5.6 HEX or a 3/4" diameter class 8.8 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

All wood posts must be 6" x 8" and at least 7'-0" long.

Do not use steel posts and notch plastic blockouts in the steel thrie beam structural approach and the transition section of steel plate beam guard, CLASS "A" installations.

State of Wisconsin Department of Transportation

APPROVED (SDD 14B20-a)

Jerry H. Zogg

DATE 8-31-2012

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14b20-a Steel Thrie Beam Structure Approach
GENERAL NOTES

There 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 calibrated per standard specifications use.

1/4" diameter holes drilled thru parapet is required.

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".

Steel plates shall be galvanized per standard specifications 614.

Bolts, nuts, and washers shall conform to ASTM A325, A449, and calibrated per standard specifications 94.

(1) Bolts may be A325 bolts or A449 bolts. Bolt length and thread length are to allow for a tight connection between W-beam and W-thrie beam connection plate. Contractor is to field verify bolt length and thread length. One round washer is required between bolt head and thrie beam connection plate. One plate washer is required between plate and thrie beam connection plate. The contractor is to field verify bolt length and thread length.

(2) Use approved notched plastic blockouts with steel posts. Do not use steel posts and notched plastic blockouts in the W-thrie beam transition section of Steel plate guard, Class "A" installations.

(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'-5".

(4) Use 3/4" bolts when retrofitting into an existing rigid barrier. Threaded inserts (supplied with the bridge) and 3/4" hex head cap screws are required.

(5) 1" holes drilled thru parapet is required.

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'-5".

Steel plate shall be galvanized per standard specifications 614.

Bolts, nuts, and washers shall conform to ASTM A325, A449, and calibrated per standard specifications 94.

(1) Bolts may be A325 bolts or A449 bolts. Bolt length and thread length are to allow for a tight connection between W-beam and W-thrie beam connection plate. Contractor is to field verify bolt length and thread length. One round washer is required between bolt head and thrie beam connection plate. One plate washer is required between plate and thrie beam connection plate. The contractor is to field verify bolt length and thread length.

(2) Use approved notched plastic blockouts with steel posts. Do not use steel posts and notched plastic blockouts in the W-thrie beam transition section of Steel plate guard, Class "A" installations.

(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'-5".

(4) Use 3/4" bolts when retrofitting into an existing rigid barrier. Threaded inserts (supplied with the bridge) and 3/4" hex head cap screws are required.

(5) 1" holes drilled thru parapet is required.
GENERAL NOTES

These are typical connection details; adjust the position of connections to exist ing bridges to fit the actual bridge and site dimensions.

Bolts, nuts and washers shall conform to ASTM A325, A449 and galvanized per standard specifications, gal.

1. Drill bolt holes through the parapet. Bolts, nuts, washers and repairing damaged concrete are incidental 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 rigid barrier and three beam connection plate. Contract is to field verify bolt length and threading length. One round washer required between bolt head and three beam terminal connector. Bolts two extend through the parapet and out the back face require a hardened round steel washer that is 2 1/2" x 1/8" 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".

4. H6 x 9 or H6 x 8 1/2 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.

5. Bolts, 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.

6. 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.

Bolt, nut 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.

W BEAM CONNECTION TO VERTICAL FACE PARAPET

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

SECTION D-D

THREE BEAM CONNECTION TO VERTICAL FACED PARAPETS

THREE BEAM TERMINAL CONNECTOR

PLATE WASHER (TYP.)

NUT (TYP.)

WASHER (TYP.)

BACKSIDE OF RIGID BARRIER

BOLT HEAD

WASHER (TYP.)

TRAFFIC SIDE OF RIGID BARRIER

8 1/2" DIA. HEX HEAD CAP SCREWS INTO THREADED HOLES (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER. 5/8" DIA ALLOY BOLT AND WASHERS REQUIRED FOR HOLES DRILLED THRU PARAPET (4 REQ'D).

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

STATE ENGINEER

8/31/2012
/S/ Jerry H. Zogg

S.D.D. 14b20-c  Steel Thrie Beam Structure Approach, Connection to Vertical Faced Parapets
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.

Drilling bolt holes through the parapet, bolts, nuts, and washers are
required. Any metal plates are acceptable to the contract.

Bolts may be AISI bolts or A499 bolts. Bolt length and threading are to allow for a
bolts connected between end guard and the beam connection plate. Additional holes are to
allow for a total length of 1/4" of bolt length and threading length. One round washer required
between bolt head and the beam connection plate. Bolts that extend through the parapet and out the
back face require a hardened round steel washer that is 3/4" Od x 1/8" thick and one plate washer. Repair any
damaged concrete from bolt installation.

When retrofitting into an existing rigid barrier threaded inserts (furnished with the bridge)
shall be adequate. Do not use steel posts and notched plastic block-outs in the steel thrie beam
structural approach and the transition section of steel plate beam guard class "A" installations.

Parapets with sloped ends

9/30/2012

S.D.D. 14 B 20-11d

SDD 14b20-d  Steel Thrie Beam Structure Approach, Connection to Sloped End Parapets

S.D.D. 14 B 20-11d

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/28/2012

ENGINEER

ROADWAY STANDARDS DEVELOPMENT
DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN

APPROVED
DATE

FHWA

S.D.D. 14 B 20-11d

SDD 14b20-d  Steel Thrie Beam Structure Approach, Connection to Sloped End Parapets

S.D.D. 14 B 20-11d

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/28/2012

ENGINEER

ROADWAY STANDARDS DEVELOPMENT
DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN

APPROVED
DATE

FHWA

S.D.D. 14 B 20-11d

SDD 14b20-d  Steel Thrie Beam Structure Approach, Connection to Sloped End Parapets

S.D.D. 14 B 20-11d

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/28/2012

ENGINEER

ROADWAY STANDARDS DEVELOPMENT
DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN

APPROVED
DATE

FHWA
GENERAL NOTES

BOLTS, PLATES, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM
SPECIFICATIONS A 325 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

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

2) VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, MINI Wall DETAILS, AND ANGLE
   OF SKILL PLACE THE FIRST WOOD POST OFF THE BRIDGE AS CLOSE AS FEASIBLE
   TO THE STEEL END POST.

STEEL THRIE BEAM STRUCTURE
APPROACH CONNECTION TO BRIDGE
RAILING TYPES "F" AND "W"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012
/S/ Jerry H. Zogg
**GENERAL NOTES**

 COVER PLATE PANELS ARE 1/2" THICK.

 ALL STIFFENERS ARE 1/4" THICK.

 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 1½".

 FOR DETAILED INSTALLATION DRAWINGS,

 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 1" LONG SPACED AT 2" ON INTERNAL SIDES.

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

 STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL

 STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

 APPROVED
 DATE

 STATEWIDE STANDARDS DEVELOPMENT OFFICE
**GENERAL NOTES**

Construct per Standard Specification 614, Connector Plate, Drilling Holes Through Parapet, Bolts, Nuts, Washers and Repairing Damaged Concrete and Adjacent to the Contract.

BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREAD LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN TIE Bars 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 0.05" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

**STEEL THRIE BEAM STRUCTURE APPROACH**

**STEEL THRIE BEAM STRUCTURE APPROACH**

**STATE OF WISCONSIN**

**DEPARTMENT OF TRANSPORTATION**

**APPROVED:**

**DATE:**

**FHWA:**

**S.D.D. 14 B 20-11h**

**SDD 14b20-h Steel Thrie Beam Structure Approach, Single Slope Attachment**
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

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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