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MINNESOTA DEPARTMENT OF TRANSPORTATION DEVELOPED BY: Design Standards ISSUED BY: Design Services Section	TRANSMITTAL LETTER NO. (04-02) MANUAL: Standard Plates DATED: June 10, 2004
SUBJECT: Standard Plates 3145F, 8150C, 8330G(1-2), and 8338C(1-4).	

Standard Plate 3145F – See attachment for a list of changes.

Standard Plate 8150C – See the attachment for a list of the changes

Standard Plate 8330G(1-2) – This is the new Standard Plate for Triple Cable Guardrail (Wood Posts). This replaces the unapproved drawing, 3cablewood.dgn. See the attachment for a list of the changes.

Standard Plate 8338C(1-4) – New version of the W-Beam Guardrail & End Anchorages (Steel Posts). See the attachment for a list of the changes. There are now two anchorages shown on this plate.

INSTRUCTIONS:

1. Record the transmittal letter number, date and subject on the transmittal record sheet located in the front of the manual.
2. Remove from the manual: 3145E, 8150B, 8330F(1-2), 8338B(1-2).
3. Insert in the manual: 3145F (Approved 5-7-04), back 3146C (Approved 4-30-80); 8150C (Approved 5-3-04), back blank; 8330G(1) (Approved 10-1-02), back 8330G(2) (Revised 6-04-04); and 8338C (1-4) (Approved 3-31-04).
4. Standard Plates are now available on the Internet at <http://www.dot.state.mn.us/tecsup/> pick Standard Plates. They are available in PDF format. It will be the responsibility of the users to get them from our system.
5. Any technical questions regarding this transmittal should be directed to Colleen Oftedahl, Design Standards, at (651) 296-2743.
6. Any questions concerning missing manual sheets or extra transmittal letters should be directed to Map & Manual Sales, M.S. 260, Room 110, (651)296-2216. Please furnish in writing any address changes to: Mail Room G-18, Transportation Building, 395 John Ireland Blvd., St. Paul, MN 55155. Any questions concerning mailing of this material should be directed to the Mail Room G-18 (651) 296-2420.

Mohammad Dehdashti
Design Standards Engineer

Attachment: Standard Plate 3145F Concrete Pipe Ties

Removed Top View, Adjustable Tie and Eye Bolt Tie details.

See U Bolt tie:

1. Repositioned U Bolt Tie detail to top of sheet.
2. Added text (inside of pipe typ.) and (outside of pipe typ.).
3. Added inset circle and text (see Optional Recess detail).
4. Added note (3) to title.

Added Double Connection Tie and Optional Recess detail with reference to note (2).

See Single Connection Tie detail:

1. Changed title from (Welded Pipe Tie) to (Single Connection Tie).
2. Changed note on top from (See detail A (2)) to (See details A, B, C & D (3)).

See Detail B:

1. Changed title from (Optional Canopy Tie) to (Detail B).

Added Details C and D.

See tables under Placement of Holes:

1. Changed titles from (Rod Dia.) to (Rod Thread Dia.) on both charts.

See Notes:

1. Changed the fifth note down from (Tie rods shall be galvanized as per Spec. 3392 after fabrication. Steel shall conform to Spec. 3306 or equal) to (Tie rods shall be galvanized as per Spec. 3392 or power washed and dipped in an approved zinc rich epoxy prime paint after fabrication. The list for approved Paint Coating of Concrete Pipe Ties is located electronically at <http://www.mrr.dot.state.mn.us/> pick materials engineering section, pick approved products list. Steel shall conform to Spec. 3306 or equal.).
2. Changed note (1) from (Tie rod threads shall project outside of pipe or be recessed on cattle passes where children or others might enter the pipe.) to (Tie rod threads shall project to inside of pipe except as noted in plans.).
3. Note (2) changed from (Connection shall be placed at downstream end when connection is placed inside of structure.) to (Tie rod threads shall be recessed when pipe is used as Cattle Pass or Pedestrian Trail).
4. Added note (3).

Attachment: Standard Plate 8150C Installation of Culvert Markers

See unmarked notes on the lower left side of sheet (by Section A-A):

1. Changed the text from (Post shall conform to Spec. 3401 and have a nominal weight of) to (U Channel post shall conform to Spec. 3401 and have a nominal weight of).

See Notes on the lower right side of sheet:

1. Added new note (1) (Optional flexible post may be gray or yellow with the top 12" covered with black non-reflective material. The gray optional flexible post may have the top 12" covered with yellow VIP sheeting.).
2. Added new note (2) (Embedment for the optional flexible post shall be as specified).

See Marker Post Installation detail:

1. Added note (1) by the title of detail
2. Added note (2) by the embedment dimension.

Attachment: Standard Plate 8330G (1) 3-Cable Guardrail With Wood Posts (Assembly Details)

The sheet title was changed from (3-Cable Guardrail With Wood Posts, (Assembly) to (3-Cable Guardrail With Wood Posts, (Assembly Details)).

See Plan View, Typical Intermediate Anchorage Assembly and Typical End Anchorage Assembly:

1. The title (Assembly with Intermediate Anchorages) was changed to (Typical Intermediate Anchorage Assembly) and (Typical End Anchorage Assembly).
2. The ends of each anchored section overlap differently in the new version.
3. Added note (1) to the text (line post).

4. The text (overlap posts) and (end post) was deleted.
5. The old anchor was deleted. (It did not meet NCHRP Report No. 350 criteria.)
6. The new anchor was added to the two ends of the overlap section and at the right end of the cable system and text (Anchor unit (right hand), (Anchor unit (left hand), and (Anchor post) was added).
7. Dimensions were added on the left end of the overlap section (6' 3").
8. In the middle of view dimensions and text were added (43' 9" overlap between anchor posts), (12' 6" typical line post spacing), (12' 6" post spacing), (12' 6") and (length of need).
9. At the very right end of the view added the anchor and text (anchor unit (right hand), (anchor post (4)), the snow plow marker and note (2).
10. Added the text (three 3/4" dia. (3 X 7) steel cables).

See **Elevation** view, Typical Intermediate Anchorage Assembly and Typical End Anchorage Assembly detail:

1. Replaced the old anchor with the New York Anchor and deleted the related dimension (8' 0" ±) and text (End turnbuckle tie rods) (Turnbuckle anchor rod).
2. On the left side removed the note (For line post assembly details see sheet 2).
3. On the left side removed the End Assembly detail and the associated notes (Precast conc. bearing block.etc.).
4. on the outside of horizontal curves...etc.).
5. Added the fourth new unnumbered note (See Standard Plate 8333 (sheet 4), detail "A" steel turnbuckle cable end assembly and detail "B" spring cable end assembly (compensating device)).
6. Added new notes (2-4).
7. Added the text (line post (1)) in four places on view.
8. On the left side added text (anchor post (3)) and (anchor unit (left hand)).
9. In the middle added the text (anchor unit (right hand)) and (anchor post).
10. Replaced the note (three 3/4" dia. (3 X 7) steel cables) with (3/4" dia. (3 X 7) steel cables).
11. On the right removed the text (end turnbuckle tie rods) and (turnbuckle anchor rod).
12. On the far right removed the End Assembly and End View details and associated notes.
13. Removed the overlap posts throughout view.
14. Moved the cable spacing dimensions from far right end (4", 4"and 28") to the left of the 2nd to the last post.
15. Added the cable spacing dimensions showing at the right end (3", 3" and 27") along with note (3).

Deleted the detail Assembly with End Anchorages, Plan and Elevation views.

See Notes:

1. Deleted old note (1).
2. Added the first unnumbered note (The following criteria shall apply to cable systems).
3. Replaced the first and second unnumbered notes with new note (1).
4. Deleted the third unnumbered note (To set cable tension for temperature conditions, tighten cable at turnbuckles to snug tautness, then slacken as follows: "chart").
5. Added the second unnumbered note about distance requirements for turnbuckles and compensating devices.

Added the third new unnumbered note (with chart) about the use of turnbuckles and compensating devices on horizontal curves. This replaces the last unnumbered note (Intermediate anchors shall be equally spaced at intervals not to exceed 1000 ft. on tangents and

Attachment: Standard Plate 8330G (2) 3-Cable Guardrail With Wood Posts (Details)

Deleted details Turnbuckle Anchor Rod, End Post Assembly, Overlap Post Assembly, Anchor Block, Detail A, Detail B and End Turnbuckle Tie Road.

See Cable Splice Assembly detail:

Added new note (3) Notes.

See Notes:

1. Added new note (3).

Attachment: Standard Plate 8338C (1) W- Beam Guardrail & End Anchorages, Installation with Steel Posts

The sheet title was changed from (Steel Plate Beam Guardrail Installation with Steel Posts) to (W- Beam Guardrail & End Anchorages Installation with Steel Posts).

See Installation detail:

1. The buried anchor was removed from this sheet. (See sheet 4 of 4).
2. Deleted note (Anchorage assembly. See details on sheet 2 and Standard Plate 8330).
3. Added note (Anchorage assemblies are only to be used if not in the clear zone of the opposing traffic. If in the clear zone of the opposing traffic, must use crashworthy terminal.).
4. Added the text (Ground line at face of guardrail).

See Notes:

1. The second note had a sentence added to it (All guardrail shall be 12 gage.).
2. The third note from the top was added (Steel Posts shall be AASHTO M 270M (ASTM A 709 grade 36 steel. After all the holes are punched and cuts are made, posts shall be zinc.....)).

Attachment: Standard Plate 8338C (2) W- Beam Guardrail & End Anchorages, Details for Steel Posts

The sheet title was changed from (Steel Plate Beam Guardrail, With Steel Posts, Details) to (W- Beam Guardrail & End Anchorages, Details for Steel Posts).

See W6 x 9 Steel Post (2) details:

The title changed from (Wide Flange Steel Post, W6 x 9) to (W6 x 9 Steel Post (2)).

See Spacer Blocks For W6 x 9 Steel Post detail:

Changed the title of detail from (Wide Flange Steel Post) to (Spacer Blocks for W6 x 9 Steel Post).

1. Added dimension (6") to Routed Groove detail.
1. Added text to note at top of End View detail (...or 6" x 8" x 21" block with routed groove (1)).

Added W8 x 21 Steel Post details and Spacer Blocks for W8 x 21 Steel Post details.

Moved the W-Beam Flared End Section details to new sheet (3 of 4). Moved the details Anchorage Bolt, Anchorage Plate Washer, Anchorage Plate, and Section A-A to new sheet (4 of 4).

See Notes:

1. Changed note (1) from (Use a wood block or an NCHRP 350 approved alternate) to (Use a wood block or an approved alternate)
2. Added note (2) (W6 x 8.5 Lbs/Ft wide flange steel posts are an acceptable alternative for W6 x 9 Lbs/Ft wide flange steel posts.).

Attachment: Standard Plate 8338C (3) W- Beam Guardrail & End Anchorages, Strut Anchorage Assembly Details (Steel Posts)

This is a new sheet showing the strut anchorage assembly. This assembly has all the parts from the ET2000 or the SKT minus the impact heads. The bolts are installed per this drawing, not per installation instructions for the proprietary terminals.

The W-Beam Flared End Section detail is from 8338B(2).

Attachment: Standard Plate 8338C (4) W- Beam Guardrail & End Anchorages, Buried Anchorage Assembly Details (Steel Posts)

1. The details Turnbuckle Anchor Rod, Anchor Block, and Detail A were previously on Standard Plate 8330F(2).
2. The detail, Buried Anchorage Assembly, Plan View is from Standard Plate 8338B (1).
3. The details, Anchorage Bolt, Anchorage Plate Washer, Anchorage Plate, and Section A-A are from Standard Plate 8338B (2).