ABOUT POSITION OF POST CONNECTION*

CULVERT HEADERS BOLT ASSEMBLY) FOR EACH SIDE OF ANCHOR 4-#6 BARS (TWO ON CULVERT HEADER 7" FOR 1'-6" CULVERT HEADER 4" FOR 1'-3"

STANDARDS.

AS SHOWN ON SDD 14 B 20
THREE BEAM CONNECTION SHALL HAVE PROVISIONS FOR
AT END POSTS, RAIL MEMBER WELD
SEAL
SLAB EDGE OF END OF WINGWALL

… 3

10
9
11
7
9
10
1
11
6
10
1-

6'-3" MAX.

FIRST PANEL VARIABLE IF NEEDED

REG. SPLICE TACK WELD @ 1/3 POINTS

FIELD CLIP FIXATION JOINT

ANCHORAGE DETAIL

OPTIONAL SHOP SPLICE

CHANNEL MEMBER DETAILS

STEEL RAILING TYPE 'W'

Approved: Bill Oliva

BILL OF BARS FOR SUPERSTRUCTURE. NOT REQ'D.

TIE TO TOP MAT OF STEEL. PUT THESE BARS IN PLACE OF BARS FOR SUPERSTRUCTURE. NOT NECESSARY.

STEEL RAILING STEMS MAY BE USED UNDER POSTS WHERE REQUIRED.

SEE BROCHURE NO. 8 FOR ALLOWED USE.

"W" STEEL RAILING

WEIGHT = 45 LB/FT

PAY LIMITS FOR TYPE "W" STEEL RAILING.

BILL ITEM SHALL BE "RAILING STEEL TYPE 'W' B-__-"

NOW INCLUDES ALL ITEMS SHOWN.

STEEL RAILING DIVISION HEAD OVER SHOULDER

STEEL POST SHIMS MAY BE USED UNDER POSTS WHICH INCLUDES ALL ITEMS SHOWN.

EXPANSION SLOTS ON JOINT SIDE

PLATE 5/32" x 5/32" x 5/32" HOLES IN PLATE.

PLATE 3/16" x 3/16" x 3/16" HOLES IN PLATE.

1/16" DIA. HOLE IN CHANNEL. EXPANSION SLOTS ON JOINT SIDE

PLATE 1" x 9 1/8" x 10 1/8" WITH 1 1/8" x 1 1/8" SLOTS IN FLG. (SLOT PREREDED FOR ANCHOR BOLTS NO. 4.

BASE PLATE 1" x 9 1/8" x 10 1/8" WITH 1 1/8" x 1 1/8" SLOTS IN FLG. (SLOT PREREDED FOR ANCHOR BOLTS NO. 4.

EXPANSION SPLICE IN DRAWING AND CHANNLES

EXCEPTION 3" X 12'-0" LONG.

POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POSTS VERTICAL AND NORMAL TO GRADE LINE.

PLACE POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM BURPS AND ALL EDGES SHAPED AND VERTICAL. ALL FLANGE PLATES SHALL BE MACHINED OR MACHINE

ALL MATERIAL USED IN FABRICATION SHALL BE MADE FROM MATERIALS CONFORMING TO ASTM DESIGNATION A709 GRADE 36 UNLESS NOTED

FLAME CUTS.

PLATE CUTS SHALL BE MACHINE OR MACHINE

SURFACES SMOOTH AND FREE FROM WARP AND

POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM BURPS AND ALL EDGES SHAPED AND VERTICAL. ALL FLANGE PLATES SHALL BE MACHINED OR MACHINE

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NOW INCLUDES ALL ITEMS SHOWN.

STEEL RAILING DIVISION HEAD OVER SHOULDER

STEEL POST SHIMS MAY BE USED UNDER POSTS WHICH INCLUDES ALL ITEMS SHOWN.

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PLATE CUTS SHALL BE MACHINE OR MACHINE

SURFACES SMOOTH AND FREE FROM WARP AND
**AT ABUTMENTS**

ELEVATION OF PARAPET

**AT DEFLECTION JOINTS**

1. **DEFLECTION JOINT MANDATORY**
   - Openings shall be located for expansion joint, use of opening with filler for all abutments

2. **DEFLECTION JOINTS**
   - Use with filler for all abutments
   - **SECTION C**
     - View showing outside face of parapet & reinforcement
     - JOINT SEALER
     - GRAY NON-BITUMINOUS FILL WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER

3. **DETAILS OF ANCHOR ASSEMBLY**
   - Note: Holes for anchor assembly are to be spaced approx. 4'-0" each
   - Assemble 4" x 4" x 1/2" zinc or plastic plate in lieu of plate joint
   - **R501**
     - **S501**
     - **R502/S502**

4. **BILL OF BARS**
   - **Bar Series**
     - **R501**
     - **S501**
     - **R502**

**NOTE**

- WHEN PARAPETS ARE POURED CONTINUOUSLY FROM END TO END, THEY SHALL BE SEPARATED AT THE DEFLECTION JOINTS BY A PIECE OF 2" "V" GROOVE, A MINIMUM OF 1'-9" LONG CALIBRATED HEA 4" BAR, CROSSED OUT IN THE SHEET AND PARAPETS OVERJOINTED AS SHOWN.

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ASSEMBLY OF ANCHOR for the beam.

DESIGNER NOTES

SECTION THRU PARAPET ON BRIDGE

IN Inside Elevation

PLAN

SECTION A  SECTION B  SECTION C

FINISH SURFACE NOT COVERED BY PARAPET SAME AS ROADWAY.

ADHESIVE ANCHOR CONNECTION

STEEL POST

STEEL TOP RAIL

PARAPET FOOTING

BUREAU OF STRUCTURES

STANDARD 30.10

Bill Oliva

STANDARD SPECIFICATIONS.

SHALL CONFORM TO SECTION 502.2.12 OF THE

PARAPET FOOTING CAST-IN-PLACE REINFORCEMENT (AT THE

PARAPET SHALL BE DETAILED WITH

THIS DETAIL IF DESIRED.

DO NOT SHOW THE ADHESIVE ANCHOR CONNECTION

DETAIL ON THE PLAN. THE CONTRACTOR MAY REQUEST

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STANDARD SPECIFICATIONS.
Combination railings type C1-C6 may also be used as a traffic barrier is required between the roadway and the sidewalk. For this pedestrian railing, a minimum 12'-0" wing length is recommended to accommodate the rail end transition and provide a post spacing on the wing that will maintain the rail aesthetics.

See standard 30.18 for additional railing details.

See standard 30.07 for:
- Deflection joint details and notes
- Beam guard anchor assembly details
- Field erection joint location. See "Detail A" for straight member field splice detail. See STD. 30.18 for straight member field splice detail. For curved member end joint detail. See STD. 30.18 for additional railing details.

A minimum unjointed wing length is recommended to accommodate the rail end transition and provide a post spacing on the wing that will maintain the rail aesthetics.

Approved:

Bill Oliva

DATE: 11-19

STANDARD 30.17
INSTRUCTION ELEVATION

- Install openings on 30'-0" for expansion joint. See 12'-0" opening with filler for all applications.

SECTION A

PLAN

- Expansion joint may be used, see detail for description.
- Optional construction joint in the parapet may be used, see detail for description.
- SLOPED FACE PARAPET '51F' may be used in median area of adjacent structures when median barrier is not present.
- See "GENERAL PLAN" for values on 12'-0" opening with filler for all applications.

OUTSIDE ELEVATION

SECTION THRU PARAPET ON BRIDGE

BILL OF BARS FOR ABUTMENT PARAPETS

<table>
<thead>
<tr>
<th>BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>R501</td>
</tr>
<tr>
<td>R502/S5</td>
</tr>
<tr>
<td>S5</td>
</tr>
</tbody>
</table>

ABUTMENT PARAPETS

- WEIGHT = 512 LBS./FT.
- AREA = 3.41 FT.

SLOPED FACE PARAPET '51F'

- See detail for values on 12'-0" opening with filler for all applications.
- A 4'-6" V-GROOVE DETAILS SEE STD. 12.01.
**Designer Notes**

The standards accommodate electrical service to light standards mounted on structures. Additional requirements may be required for other systems. See Bridge Manual Section 30 for additional information.

- Use (2) 2" DIA. conduit if an additional electrical service is required.
- Use (1) 2" DIA. conduit to provide electrical service to lights mounted on top of the structure. Additional electrical service is required.
- Use a 18" X 6" X 6" junction box when (1) - 2" DIA. conduit is used.
- Use a 18" X 12" X 6" junction box when (2) - 2" DIA. conduit is used.
- See Standard 30.22 for conduit details and notes.
- See Standard 30.14 for anchorage detail and limitations.

**Bill of Bars**

<table>
<thead>
<tr>
<th>Bar No.</th>
<th>Material</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>S506</td>
<td>X</td>
<td>LIGHT STA. - TRANS - DECK</td>
</tr>
<tr>
<td>S507</td>
<td>X</td>
<td>LIGHT STA. - TRANS - PARAPET</td>
</tr>
<tr>
<td>S508</td>
<td>X</td>
<td>LIGHT STA. - TRANS - PARAPET</td>
</tr>
<tr>
<td>S509</td>
<td>X</td>
<td>LIGHT STA. - TRANS - PARAPET</td>
</tr>
<tr>
<td>S510</td>
<td>X</td>
<td>LIGHT STA. - TRANS - PARAPET</td>
</tr>
</tbody>
</table>

**Legend**

- Construction Joint: Strip off as shown.
- Use (2) 2" X 6" X 6" junction box when (1) - 2" DIA. conduit is used.
- Location of conduit is measured from outside edge of junction box cover.
- Nonmetallic conduit to metallic conduit is required.

**Approved: Bill Oliva**

**Date:** 1-18

**Standard:** 30.21
1. Timberrail attached to concrete slab
2. Plan view showing details of concrete slab and beam guard transition connection assembly.
3. Elevation view showing details of concrete slab, beam guard transition, and connecting assembly.
4. Section through rail showing details of concrete slab and beam guard transition.
5. Back elevation showing details of concrete slab and beam guard transition.
6. Edge of slab details showing dimensional requirements.
7. Anchorage detail showing requirements for anchorage.
8. Bill of bars noting the required size of bars and their positioning.
10. Date: 7-11.
The vicinity of the railing to maintain the req'd. (crash tested) distance from top of slab to top of rail when placing overlay (FWS) on top of existing slab, the thickness of the overlay must be tapered near.

Destroy threads on all bolts with a center punch after tightening. All exposed bolt projection over 1" shall be cut off before end of bolt is painted. Paint 15" from top.

In the vicinity of the railing to maintain the req'd. distance from top of slab to top of rail when placing overlay (FWS) on top of existing slab, the thickness of the overlay must be tapered near.

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SIDEWALK DETAILS FOR TUBULAR STEEL RAILING TYPE NY4

LEGEND
1. 6" x 6" x 5/8" HORIZONTAL SLOTTED HOLES ON EACH SIDE OF POST.  FOR SIDEWALK 2'-0" AT TOP AND 6'-0" AT BOTTOM HOLES 2'-0" X 5/8" IN TOP, 3'-0" X 5/8" IN BOTTOM OF POST TO MATCH SLOPE OF SIDEWALK.  PLACE POST VERTICAL, PLATE PLUMB NORMAL TO GRADE LINE.
2. PLATE 5" x 6" x 5/8" MOUNTING (5/8", SLOTTED HOLES FOR ANCHOR BOLTS NO. 5).  PLATE PLUMB NORMAL TO SHORT SIDE OF POST.
3. ANCHORAGE (7/16" X 3" BARS) HORIZONTAL RAILING WITH HEAVY WELD NO. 5A AND 5/16" MOUNTED WASHERS (1-1/4" DIAMETER) REQUIRED AT POST, PLACE VERTICAL, PLACE NORMAL TO GRADE LINE.  PLACE TOP 1/2" X 1/4" HORIZONTAL RAILING.  1/2" DIAMETER SOLID ROUND HEAD BOLTS WITH WELD NO. 5A REQUIRED AT POST TO MATCH SLOPE OF SIDEWALK.  PLACE NORMAL TO GRADE LINE.  USE 1" X 1.5" WASHERS UNDER BOLTS.
4. PLACE SYM. ABOUT 4-#6 BARS 6'-0" LONG.  BEND AS SHOWN.  TIE TO TOP MAT OF STEEL TUBE RAILING.  USE 1/2" DIAMETER SOLID ROUND HEAD BOLTS WITH WELD NO. 5A REQUIRED AT RAIL TO POST. PLACE NORMAL TO GRADE LINE.  USE 1" X 1.5" WASHERS UNDER BOLTS.
5. #6 X 5/16" ANCHOR PLATE ISOLATED WITH 5/16" DRILL HOLES FOR ANCHOR BOLTS NO. 5A & NO. 7.
6. 6" x 6" x 5/8" STRUCTURAL TUBING.  USE 1" X 3" MOUNTED WASHERS UNDER BOLTS.
7. #6 X 2-1/2" STRUCTURAL TUBING.  USE 1" DIAMETER HOLE FOR BOLT NO. 5A IN TOP RAIL, PLUMB NORMAL TO GRADE LINE.  USE 1" DIAMETER HOLE FOR BOLT NO. 5A IN BOTTOM RAIL.  PLUMB NORMAL TO GRADE LINE.
8. 3" X 3" X 1/8" STRUCTURAL ANGLE, ATTACH TO NO. 7. PLACE SYM. ABOUT 2 REQUIRED AT ANGLE TO POST LOCATIONS SHOWN WITH 3" X 3" X 1/8" ANGLE AND 3" X 3" X 1/8" ANGLE.
9. 6" X 6" X 5/8" STRUCTURAL ANGLE, ATTACH TO NO. 1 AND NO. 5 AS SHOWN.

For all tubular steel railing type NY4 details see STD. 30.29.
### Bill of Bars for Parapets

<table>
<thead>
<tr>
<th>Bar Name</th>
<th>A</th>
<th>B</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>R501</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R502</td>
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<td>R506</td>
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</tr>
<tr>
<td>R507</td>
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</tr>
</tbody>
</table>

**Sections**

- **Section A**: Internal view of anchor assembly, showing the location of bars.
- **Section B**: Plan view of parapet assembly, indicating the depth and placement of bars.
- **Section C**: External view of parapet assembly, highlighting the bar arrangement.

**Key Points**

- **Bar Placement**: Bars are placed at specific locations as indicated in the Bill of Bars.
- **Location Details**: Each section (A, B, C) provides detailed views and dimensions for bar placement.
- **Construction Joints**: Construction joints are marked to ensure proper concrete placement.

**Note**

- Bars are to be placed as per the Bill of Bars, with specific lengths and locations as indicated.
- Joints are to be properly marked and constructed to maintain structural integrity.

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**Plan and Elevation Diagrams**

- **Plan Diagram**: Shows the overall arrangement of bars and the structural layout.
- **Elevation Diagrams**: Include internal and external views, detailing the bar placement and alignment.

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**Technical Details**

- **Bar Types**: Different types of bars are used, each with specific functions and placements.
- **Anchor Assembly**: The anchor assembly is highlighted, indicating its purpose and location.
- **Parapet Terminology**: Terms such as parapet-vert., parapet-horiz., and parapet-sec. are used to describe different sections of the parapet.

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**Bureau of Structures**

- **Approved**: Bill Oliva
- **Date**: 11/18

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**Standard 30.30**

- **Single Slope Parapet 32SS**
- **Purpose**: Designed for specific structural applications, focusing on parapet construction.

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**Additional Information**

- **Bench Mark**: Bench mark can be used after initial concrete placement but before final set to avoid deformation.
- **Construction**: Proper construction and marking are crucial to maintain the integrity of the parapet.
### Bill of Bars

<table>
<thead>
<tr>
<th>Bar</th>
<th>No.</th>
<th>Length</th>
<th>Diameter</th>
<th>Bar Code</th>
</tr>
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<tbody>
<tr>
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<tr>
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### Bar Series Table

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</tr>
<tr>
<td>2'-9&quot;</td>
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<td></td>
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<tr>
<td>2'-0&quot;</td>
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<td>1'-0&quot;</td>
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</tr>
<tr>
<td>3'-3&quot;</td>
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</table>

### General Notes
- **Section A**: This section is for the parapet terminations on a wing where the parapet is supported on the bridge abutments. The parapet may be used to transition from the roadway to the parapet. The parapet-vert. is shown for parapet same finish surface. The parapet-vert. may be used for parapet-vert. on bridge parapets.

- **Section B**: This section is for the parapet-vert. on a bridge wing or end of b.f. abut. The parapet-vert. is shown for parapet same finish surface. The parapet-vert. may be used for parapet-vert. on bridge parapets.

- **Section C**: This section is for the parapet-horiz. on a bridge wing or end of b.f. abut. The parapet-horiz. is shown for parapet same finish surface. The parapet-horiz. may be used for parapet-horiz. on bridge parapets.

### Drawing Information
- **Designated by**: Bill Oliva
- **Date**: 7-18
- **Standard**: 30.32
- **Approved**
'V' GROOVE.
DEFINE CONST. JOINT WITH A \( f'' \) - MIN. JOINT SPACING OF 80'-0".
LAP LONGIT. BARS A MIN. OF 1'-9".
RUN BAR REINF. THRU THE JOINT.
IN THE PARAPETS MAY BE USED.
OPTIONAL CONSTRUCTION JOINTS

BILL OF BARS
FOR ABUTMENT PARAPETS

DESIGNER NOTES
THE '56SS PARAPET IS ONLY TO BE USED IF A "TYPE S5" SINGLE SLOPE CONCRETE ROADWAY BARRIER ALONGS THE END OF THE '56SS PARAPET.
USE A 3'-0" WING WIDTH FOR WINGS PARALLEL TO THE ROADWAY.

SINGLE SLOPE PARAPET 56SS
FOR WING LOCATIONS.

"GENERAL PLAN" SHT.

FOR THREE BEAM. SEE OF ANCHOR ASSEMBLY

1'-8"  2'-6"  2'-0"  9"

1'-9"

BAR MARK

C O A B E N T abut.

LENGTH LOCATION

BILL OF BARS

r501  r502  r503  r504  r505  r506  r507  r508

4-5  5-0  2'-9  4'-4  4'-9  4'-10

x  x  x  x  x  x  x  x

x  x  x  x  x  x  x  x


A1 ABUT. SHOWN. SEE STANDARD 12.12 FOR A3 ABUT. DETAILS.

FOR APPROACH SLAB INFORMATION.

SEE STRUCTURAL APPROACH SLAB STANDARDS 12.10 AND 12.11 FOR APPROACH SLAB INFORMATION.

AS ABUT. SHOWN, SEE STANDARD 12.2 FOR A3 ABUT. DETAILS.

SEE STANDARD 30.30 FOR DETAILS OF 32SS PARAPET ON BRIDGE.

DESIGNER NOTES

SEE STRUCTURAL APPROACH SLAB STANDARDS 12.2 AND 12.6 FOR APPROACH SLAB INFORMATION.

AS ABUT. SHOWN, SEE STANDARD 12.2 FOR A3 ABUT. DETAILS.

SEE STANDARD 30.30 FOR DETAILS OF 32SS PARAPET ON BRIDGE.

STANDARD 30.34
### DESIGNER NOTES

The *56ss parapet* is only to be used if a "type 56" single slope concrete roadway barrier adjoins the end of the approach slab.

See structural approach slab standards 12.10 and 12.11 for approach slab information.

See standard 12.12 for abutment details.

See structural approach slab standards 12.10 and 12.11 for approach slab information.

At abutments, see standard 12.12 for abutment details.

See standard 30.33 for details of 56ss parapet on bridge.

### BILL OF BARS

<table>
<thead>
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<th>DIA.</th>
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<th>LOCATION</th>
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<td>&quot;</td>
<td>8'</td>
<td>PARAPET-VERT</td>
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<tr>
<td>R502</td>
<td>5”</td>
<td>&quot;</td>
<td>8’</td>
<td>PARAPET-VERT</td>
</tr>
<tr>
<td>R503</td>
<td>5”</td>
<td>&quot;</td>
<td>10’</td>
<td>PARAPET HORIZ</td>
</tr>
</tbody>
</table>

### STANDARD 30.37

- Single Slope Parapet

**Standard 56SS with Structural Approach Slab**

**Approved:** Bill Oliva

**Date:** 1-18

**Bureau of Structures**