AT ABUTMENTS

VIEW A

SECTION B

SECTION C

VIEW SHOWING outside face of parapet & reinf.

AT ABUTMENTS

ELEVATION OF PARAPET

AT DEFLECTION JOINTS

PLAN OF PARAPET

AT DEFLECTION JOINTS

DETAIL OF ANCHOR ASSEMBLY

NOTE: All vertical bars #5 bars at abutments

Bill Oliva

Date:

STANDARD 3G07

APP. NOTE

2.50 SF

375 LB/FT
NOTES
1. Steel shall be "Combination Railing Type 3T", which shall include all steel items shown.
2. Steel items shall be painted at all field and expansion joints to the satisfaction of the Engineer at no extra cost.
3. Steel items shall be painted at all field and expansion joints to be painted by the Contractor at no extra cost.

LEGEND
- Structural Tubing 2" x 2" x 1/8" x 1' x 1" STeel.
- Structural Tubing 2" x 2" x 1/8" x 1' x 1" STeel.
- Structural Tubing 2" x 2" x 1/8" x 1' x 1" STeel.
- Structural Tubing 2" x 2" x 1/8" x 1' x 1" STeel.
- Structural Tubing 2" x 2" x 1/8" x 1' x 1" STeel.

ANCHORAGE FOR RAIL POSTS
Note: Anchor plate not required when anchor plate is used.

ANCHOR PLATE

SLEEVE DETAIL

FIELD ERECTION JOINT DETAIL

SECTION A-A

COMBINATION RAILING
TYPE 3T DETAILS

BUREAU OF STRUCTURES
SECTION A

SECTION B

SECTION C

DESIGNER NOTES

SECTION THRU PARAPET ON BRIDGE

INSIDE ELEVATION

PLAN

SECTION THRU PARAPET ON BRIDGE

CHAIN LINK FENCE MOUNTED ON DECK

ADHESIVE ANCHOR CONNECTION

ADHESIVE ANCHORS MAY BE AN APPROVED ADHESIVE ANCHOR SYSTEM, BUT MUST BE AT LEAST 0.03".

ALTERNATIVE - SEE ADHESIVE ANCHOR CONNECTION DETAIL ON THE PLAN. THE CONTRACTOR MAY REQUEST THIS DETAIL IF DESIRED.

SEPARATE SECTION PLUS S.P.

STEEL TOP RAIL

STEEL POST

ORNAMENTAL CAPS

SEPARATE SECTION PLUS S.P.

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NOTE 6

ANCHOR PLATE

1. SECTION THRU RAILING ON DECK

2. SECTION B-B

3. SECTION THRU WEB

4. SECTION THRU RAIL

5. TYPICAL RAIL TO POST CONNECTIONS

6. NOTES CONNCECTIONS AT PART A-A, DETAIL AT TOP RAIL SIMILAR.

7. FIELD ERECTION JOINT DETAIL

8. SNAP RAIL SPLICE DETAIL

9. FIELD ERECTION JOINT

10. SHOWN ON SHOP DRAWINGS

11. LEGEND

12. LB = 144 LBS

13. MIN.

14. AS REQ'D.

15. 3/4" DIA. DRAIN HOLES IN LOW CONSTRUCTIBILITY.

16. WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG.  USE 10" LONG AT

17. SUPPORT PLATING FOR valve MAY BE Substituted FOR ANCHOR BOLTS IN WINGS

18. ALL OTHER LOCATIONS.  (AN EQUIVALENT THREADED ROD WITH NUTS AND

19. WASHERS, AND LOCK WASHERS FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.

20. REQUIRED AT THREE DECK GIRDERS AND ATTACHMENTS ONLY.  PLACE SYMMETRICALLY AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-MAGNETIC PASTE CONCRETE.

21. END OF TUBE SECTIONS SHALL BE SAWED.  GRIND SMOOTH EXPOSED END AS SHOWN.  USE 1'-2" MAX. 2'-10" EIGHTS NO. 5A.  2 PER RAIL.

22. TUBES NO. 5A.  2 PER RAIL.  USED IN NO. 5 & 5A.

23. ALLOW 3/4" X 2" ANCHOR BOLTS WITH NUT AND BOLTED WASHER USE 10" LONG AT EACH RAIL TO POST LOCATION.

24. 3/4" X 2" LONGIT. SLOTTED Holes AT EXP. JOINTS IN PLATE NO. 10A.

25. 3/4" X 2" X 2" PLATE USED IN NO. 5A.  2 PER RAIL.

26. " X 1" THREADED SHOP WELDED STUDS 2 REQUIRED.

27. " X 1" THREADED SHOP WELDED STUDS 2 REQUIRED.

28. " X 1" X 1" THREADED SHOP WELDED STUDS (2 REQ'D).  PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.

29. " X 1" X 1" HORIZONTAL SLOTS ON EACH SIDE OF POST FOR POST SPACING.

30. " X 1" HORIZONTAL SLOTS ON EACH SIDE OF POST FOR POST SPACING.
Combination railings type C1-C6 may also be used as a traffic barrier if a WordPress 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.

A minimum joint size jotted is 3 x 3 x 1/16. A minimum filler is 3 x 3 x 1/16 for the wing and 1 x 1/16 for the pier. The deflection joint in the wing will be a minimum of 30" and a maximum of 48".

For curved member end closure, see STD. 30.17 for details.

Optional construction joints in the parapets may be used. See STD. 30.17 for details.

Use the end transition for all railing types unless shown otherwise.
Designer Notes

*THE STANDARD ACCOMMODATES ELECTRICAL SERVICE TO LIGHT STANDARDS MOUNTED ON THE PARAPET.

**CONDUIT RIGID METALLIC 2-INCH**

**CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH**

*JUNCTION BOXES 18X6X6-INCH*, EACH

*JUNCTION BOXES 18X12X6-INCH*, EACH

POSSIBLE BID ITEMS:

- JUNCTION BOX FOR PARAPETS
- LIGHT STANDARD AND TRANSVERSE FOR CONDUIT
- JUNCTION BOX FOR PARAPETS
- LIGHT STANDARD AND TRANSVERSE FOR CONDUIT

**BILL OF BARS**

<table>
<thead>
<tr>
<th>BAR</th>
<th>LENGTH</th>
<th>LOCATION</th>
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<tbody>
<tr>
<td>S504</td>
<td>3'-6&quot;</td>
<td>LEFT ST - TRANS - PARAPET</td>
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<tr>
<td>S505</td>
<td>3'-6&quot;</td>
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**LEGEND**

- CONSTRUCTION JOT, STRIKE OFF AS SHOWN.
- CUT OUT 1/16" OF CASSETTE AT BOTTOM OF JUNCTION BOX COVER TO AVOID FOR DISPLACEMENT.
- LOCATION OF CONDUIT IS Measured FROM OUTSIDE EDGE OF JUNCTION BOX.
- NONMETALLIC CONDUIT TO METALLIC CONDUIT ADAPTER FITTING IS REQUIRED.
- USE (2) - 2" DIA. CONDUITS IF AN ADDITIONAL ELECTRICAL SERVICE IS REQUIRED.
- USE (1) - 2" DIA. CONDUIT TO PROVIDE ELECTRICAL SERVICE TO LIGHTS MOUNTED ON TOP OF THE LIGHT STANDARD.
**RAILING ANGLE DETAIL**

- **SECTION C-C**
  - Place angle tube of required size in position if required for constructibility.
  - Bolt angle to post with 5/8 x 8 washers and nuts.
  - Use wedge washers and nuts at rail to post locations shown.
  - The nut securing the post base plate to the concrete shall be tightened to the requirements of ASTM A500 Grade B or C with a certified tensile strength = 50 ksi.
  - Anchor bolts shall be required at the concrete face of the abutment.
  - Anchors and splices shall be provided and used under plate No. 2 where required for constructibility.

**ANCHOR BOLTS**

- **SECTION A-A**
  - Post base plates shall be placed in the concrete with 5/8 x 8 washers and nuts. 1 per railused in No. 5.
  - Use M6 x 1" long screws for bolt No. 3.
  - Use M6 x 1" long screws for bolt No. 6.
  - Use M6 x 1" long screws for bolt No. 7.
  - Cut bottom of post to match cross slope of roadway. Place post vertical. Place posts normal to grade line.
  - Steel railing posts, angles, splice tubes, splice bars, and steel tubing shall be galvanized after fabrication. Prior to galvanizing, all protrusions caused by welding or galvanizing are not permitted on the railing except for bolt nos. 3, 4, 6, and 7. A 1" diameter hole shall be provided for bolt no. 6 at top and bottom of rails.

**FIELD ERECTION JOINT DETAIL**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**SECTION D-D**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**POST SHIM DETAIL**

- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**SPlice BAR**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**SPlice SLEEVE FABRICATED FROM PLATE. PROVIDE SLIDING FIT.**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**SHOP RAIL SPlice DETAIL**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**RAILING TRANSITION DETAILS AND CONNECTIONS see std. 30.28**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**PLAN**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**TUBULAR STEEL RAILING TYPE NY4**

- Place post vertical. Place posts normal to grade line.
- Use M6 x 1" long screws for bolt No. 3.
- Place washers, nuts, and washers under bolt head.

**STANDARD 30.27**

**BUREAU OF STRUCTURES**

**APPROVED: Bill Oliva**

**DATE: 1-19**
SIDEWALK DETAILS FOR TUBULAR STEEL RAILING TYPE NY4

LEGEND

1. 6 x 6 x 6/8" x 10" structural tubing.  Use 1 1/8" holes for bolt holes in front and back of post.  Use 1 3/4" holes for bottom holes in front and back.

2. 3 x 3 x 1/2" structural tubing.  Use 1 1/8" holes for bolt holes in front and back of post.  Use 1 3/4" holes for bottom holes in front and back.

3. Use 3/4" dia. A325 bolts with hex nut and 1 5/8" x 1 1/8" washers.  Use washers and lock washers on outside of bolts.  Use through bolts for top and bottom rails.  Use 1 1/8" x 1 3/4" washers.

4. Use 1" dia. A325 bolts with hex nut and 2" O.D. hardened washers.  Use washers and lock washers.  Use through bolts for top and bottom rails.  Use 1 1/8" x 1 3/4" washers.

5. 3 x 3 x 1/2" angle.  Attach to post with 3/4" dia. bolts.  Use through bolts for top and bottom rails.  Use 1 1/8" x 1 3/4" washers.

6. Use 1 1/4" dia. washers.  Use 1/8" dia. A325 bolts.  Use washers and lock washers.

7. 6 x 6 x 6" x 10" angle.  Attach to post with 1" dia. bolts.  Use washers and lock washers.  Use through bolts for top and bottom rails.

8. Use 1/8" dia. A325 bolts with hex nut.  Use washers and lock washers.  Use through bolts for top and bottom rails.

FOR ALL TUBULAR STEEL RAILING TYPE NY4 DETAILS SEE STD. 30.27.

APPORVED: Bill Oliva

STANDARD 30.29
Define const. joint with a 3" - 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.

A designer notes: Use a 1'-6" wing width for wings parallel to the roadway.

Approved: Bill Oliva

Date: 7-19
FOR WING LOCATIONS.

"GENERAL PLAN" SHT.
FOR THREE BEAM.  SEE OF ANCHOR ASSEMBLY

1'-8"
2'-6"

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DESIGNER NOYES
SEE STRUCTURAL APPROACH SLAB STANDARDS 12.2 AND 12.6 FOR APPROACH SLAB INFORMATION.
AS ABUT. SHOWN, SEE STANDARD 12.2 FOR AS TABL DETAILS.
FOR APPROACH SLAB INFORMATION.
SEE STRUCTURAL APPROACH SLAB STANDARDS 12.10 AND 12.11

REMARKS: WHEN SUPPLIED, AVOID INSTALLING A TON OF RAILS OR FENCES SYSTEMS THAT IS ATTACHED TO THE TOP OF THE PARAPET.

BILL OF BARS
FOR STRUCTURAL APPROACH SLAB PARAPETS

STANDARD 30.35
DURBAN OF STRUCTURES
'V' GROOVE.
DEFINE CONST. JOINT WITH A 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 STRUCTURAL APPROACH SLAB PARAPETS

DESIGNER NOTES
THE '56SS' PARAPET IS ONLY TO BE USED IF A 'TYPE S56' SINGLE SLOPE CONCRETE ROADWAY BARRIER ADOPTS THE END OF
THE '56SS' PARAPET.
SEE STRUCTURAL APPROACH SLAB STANDARDS 12.10 AND 12.11
FOR APPROACH SLAB INFORMATION.
AS SHOWN, SEE STANDARD 11.02 FOR AS-HABIT DETAILS.
SEE STANDARD 30.33 FOR DETAILS OF '56SS' PARAPET ON SLAB.

SINGLE SLOPE PARAPET
56SS WITH STRUCTURAL APPROACH SLAB

BUREAU OF STRUCTURES
APPROVED
Bill Oliva
DATE: 1-18
STANDARD 30.37