IN DALLAS, TX

CONSTRUCTION PROJECT OF BUILDING TE WELD RD BRIDGE

DEPARTMENT OF TRANSPORTATION

STATE OF TEXAS
NORMAL GIRDER END
RECTANGULAR BEARING PAD

SKewed GIRDER END
RECTANGULAR BEARING PAD

PLAN VIEW OF SOLE PLATE DETAILS

Sole Plate Notes:
Provide constant thickness elastomeric bearings with beveled and
embled sole plates in accordance with these details when the
bearing supports exceed 10 percent of the otherwise required
capacity. Provide for all girders in the application.

See Figure 3.1.1 for required dimensions and tolerances. All
dimensions are to be taken as the distance between centerlines of
bearing supports unless otherwise indicated. All values are
shown in inches and feet.

Hole Detail:
All holes are to be countersunk to allow for a flush mount of
the elastomeric bearing when installed.

End Elevation:
All details and dimensions are shown in inches and feet.

Girder Details:
All girder dimensions and details are shown in inches and feet.

Elastomeric Bearing and Girder End Details
Prestressed Concrete I-Girders

HL93 Loading Sheet 3 of 3
Texas Department of Transportation
Bridge Division

IGEB
OPTION 1 ~ PLAN OF SLABS WITH NORMAL REINFORCEMENT

- AT ALL SPAN ENDS UNLESS NOTED OTHERWISE
- AT INTERIOR BENTS
- AT THICKENED END SLABS

OPTION 1 ~ PLAN OF SLABS WITH SKewed REINFORCEMENT

- AT ALL SPAN ENDS UNLESS NOTED OTHERWISE
- AT INTERIOR BENTS
- AT THICKENED END SLABS

**NOTE**: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

- For pre-stressed concrete (TOP) and steel (BMS)
- For conventional end (L Joint)
- For thickened slab ends for pre-stressed concrete (TOP) and steel (BMS)
- AT THICKENED END SLABS
- AT SLAB CONTINUOUS OVER CONVENTIONAL INTERIOR BENTS FOR ALL SIMPLE SPAN BMS
- AT SLAB CONTINUOUS OVER INVERTED-T BENTS FOR ALL BMS

See Span Details and Thickened Slab End Details for reinforcing and limits of thickened slab end.

Where possible, Bars E(#4) may be extended into overhangs to replace Bars P(#4).

Add flared Bars E(#4) (Min Spa = 6", Max Spa = 12") as required at panel ends.

PCP-FAB for details.

For reinforcing steel, see appropriate details elsewhere in plans.

Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

But adjacent bedding strips together with adhesive, cut v-notches, approx 1/2 deep, in the top of the bedding strips at 8' o.c.

Max spacing all noted unless otherwise shown.

At connection with cast-in-place slab, extend longitudinal panel reinforcement. See PCP-FAB for details.

Maintain one bar E(#4) parallel to panel ends (Typ). Bars E(#4) not continuous over beam flanges must overlap beam flange 6" Min.

Add flared bars E(#4): (Min Spa = 6", Max Spa = 12") as required at panel ends.

See Span Details and Thickened Slab End Details for reinforcing and limits of thickened slab end.

Where possible, Bars E(#4) may be extended into overhangs to replace Bars P(#4).

Bars E(#4) are required for sloped overhangs with U-beams.

See appropriate thickened slab and details for reinforcing and limits of thickened slab end.

### TABLE OF REINFORCING STEEL (Typ)

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>Min Spa (in.)</th>
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<tbody>
<tr>
<td>D #4</td>
<td>3</td>
</tr>
<tr>
<td>E #4</td>
<td>9</td>
</tr>
<tr>
<td>P #4</td>
<td>18</td>
</tr>
<tr>
<td>10P #4</td>
<td>12</td>
</tr>
<tr>
<td>16P #4</td>
<td>16</td>
</tr>
</tbody>
</table>
GENERAL NOTES:
Steel for Permanent Metal Deck Forms (PMDF) and support angles shall conform to AISI A53, Structural Steel (SS), with coating designation G165. Steel must have a minimum yield strength of 33 ksi. Minimum thickness of PMDF is 0.25" and 0.125" for stirrup locks. All support angles must be of the same thickness and must be shown on the forming plans. Support angles shall extend not less than 12" into the concrete with protective angle and to provide anchorage of metal form to slab concrete.

**NOTE:** This type is to be used for skewed ends only.

**TYPES OF END CLOSURES**

- **Preclosed ANGLE HEADER**

**SIDE LAP DETAILS**

1. Slab thickness minus 0.5 if corrugations match reinforcing bars.
2. Welding of form supports to tension flanges shall be made by the following methods:
   - Vertical loads shall be supported by welded angles.
   - Horizontal loads shall be supported by welded angles.
3. Form supports shall be placed in direct contact with beam flanges.
4. Form supports shall beCast-in-place for beam flanges.
5. Form supports shall be placed in the clear distance between beam flanges.

**CONSTRUCTION NOTES:**
Forms shall be used to form concrete for the construction of permanent metal deck forms (PMDF) and support angles. All material, labor, tools and incidentals necessary to form these concrete forms shall be cast-in-place for beam flanges. Form supports shall be placed in direct contact with beam flanges. Form supports shall be placed in the clear distance between beam flanges.

**NOTE:** These details and notes are to be used as a guide in the preparation of the forming plans. All material, labor, tools and incidentals necessary to form these concrete forms shall be cast-in-place for beam flanges. Form supports shall be placed in the clear distance between beam flanges.

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**FILE:**

[Insert file information]

**DATE:** January 2015

**SHEET NO.:**

[Insert sheet number]

**JOB:**

[Insert job information]

**COUNTY:**

[Insert county information]

**SECT:**

[Insert section information]

**DIST:**

[Insert district information]

**REVISIONS:**

[Insert revision information]

**TxDOT:**

[Insert TxDOT information]

**HIGHWAY:**

[Insert highway information]

**CONTRACT:**

[Insert contract information]

**PMDF:**

[Insert PMDF information]
Sections thru rail without raised sidewalk

Sections thru rail with raised sidewalk

OPTIONAL SIDE SLOT DRAIN DETAIL

Note: Side slot drains may be used where shown regardless of the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.

1. Increase 2" for structures with overlap.
2. 5" when vertical reinforcing has closer clear cover over horizontal reinforcing or abutment wingwalls or retaining walls on traffic side of wall.
3. As an aid in supporting reinforcement, additional longitudinal bars may be used at the top of slab with written approval of the engineer. Such bars must be furnished at the Contractor's expense.
4. Top longitudinal slab bar may be adjusted laterally 2" plus or minus to tie reinforcing.
5. Raised Sidewalk
6. Space W(#4) bars at 4'-0" Max when end of region of panel length is less than 6'-0" to side slot drain. Space W(#4) bars at 8" Max when end of region of panel length is 6'-0" and greater to side slot drain.
**VERTICAL WIRES**

0.267 Sq In. per Ft

**LONGITUDINAL WIRES**

- 8" Spacing
- 5 Bars WU (#4)

**MAX CHORD**

- 2'50"

**DISCLAIMER**

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**DATE:**

July 2014

**FILE:**

ds218.dgn

**COMBINATION RAIL**

**TYPE C221**

**CONSTRUCTION NOTES:**

- This railing may be constructed with slip-forms when approved by the Engineer. Engineer approved and when epoxy adhesive anchor bolts are used.
- Slip-form parapet is not allowed if anchor bolts are cast with parapet wall. Provide center control for both top and bottom. Task welding to provide bracing for slip-form operations is acceptable. Welding can be performed at a minimum gap of 3" between the cages as long as all bars are equal in size.
- Increased bracing is needed, additional anchorage devices must be added and welding must be performed in the upper two thirds of the cage.
- Each set of rail, parapet must be pushed unless otherwise approved by the Engineer. HSS rail gaps must be square to the top of parapet. Use epoxy mortor under post base if gaps larger than 1/2" exist.
- Round or channel expanded holes of HSS rail and HSS rail posts to approximately 3/8" by grinding.
- At the contractors option anchor bolts may be cast with the parapet (See Cash-in-Place Anchor Bolt Options). TxDOT will not include more than one post per 1000linear ft and no more than four (4) anchorages on the same post. Gaps must be filled with mortar.

**PERMITTED WELDED WIRE REINFORCEMENT (WWR)**

- Option of 40% or more of the larger wire. The smaller wire must have an area equal to the smaller of the two equal wires, and the larger wire must have an area equal to the larger of the two equal wires.

**PIPE SPLICE DETAILS**

- Minimum (Cumulative) Wire Area: 1.067 Sq In.
- Maximum No. of Wires: 4
- Maximum Size Differential: The smaller wire must have an area of 40% or more of the larger wire.

**DESCRIPTION**

- Minimum Wire Area per 1000 linear ft:
  - 1.067 Sq In.
  - 0.267 Sq In. per ft

**GENERAL NOTES:**

- All materials shown except reinforcing steel unless otherwise shown on plans.
- Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.
- Provide ASTM A36 Grade B or A36 Grade F72 as shown.
- Epoxy coated all rail reinforcement if slab bars are epoxy coated.
- Deflected WRF (WRF) may be substituted when equal size and spacing may be substituted for Bars #4 and 2" unless otherwise shown of reinforcing steel and WWR or configurations of WWR after that shall be permitted only if conditions in the table are satisfied.
- Provide ASTM A490 of 40 ksi Grade B or 49 Grade F72 as shown. Anchor bolts for horizontal reinforcement must be 3/8" Dia ASTM A325 with one hex nut at each bolt. Provide the same laps as required for reinforcing bars.
- Do not use this railing on bridges with expansion joints providing more than 20" of movement or less due to the presence of the HSS rail.
- This rail, without the HSS rail, has been evaluated and accepted to be of equal or greater performance than the NCHRP Report 350 TL-4 criteria. However, its use is limited to speeds of 45 mph or less due to the presence of the HSS rail.
- Do not use this railing or bridges with expansion joints providing more than 5" movement.
- Rail anchorage details shown on this standard may require modification for other structure types. See appropriate details elsewhere in plans for these modifications.

**MATERIAL NOTES:**

- Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.
- Galvanize all steel components except reinforcing steel unless otherwise shown on plans.
- Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.
- Provide ASTM A36 Grade B or A36 Grade F72 as shown.
- Epoxy coated all rail reinforcement if slab bars are epoxy coated.
- Deflected WRF (WRF) may be substituted when equal size and spacing may be substituted for Bars #4 and 2" unless otherwise shown.
- Provide ASTM A490 of 40 ksi Grade B or 49 Grade F72 as shown.
- Anchor bolts for horizontal reinforcement must be 3/8" Dia ASTM A325 with one hex nut at each bolt. Provide the same laps as required for reinforcing bars.
- Provide bar tabs, where required, as follows:
  - Uncoated = #4 = 1-1/16"
  - Epoxy coated = #4 = 2-1/16"

**CAST-IN-PLACE ANCHOR BOLT OPTIONS**

- Increase 2" for structures with overlay.
- HSS 2.375 x 0.154
- HSS 2.375 x 0.154
- Shop drawings for approval required for tubular steel sections.
- No longitudinal wire may be in top center of cage.
- Bend or cut as required to clear drain slots.
- For raised sidewalks, add sidewalk height to total bar height.
- See "Material Notes" for anchor bolt information.

**CONTRACTOR/ENGINEER**

- JMH
- County
- Highway
- Job
- Sheet

**AUTHORITY**

- Texas Department of Transportation
- Division
- Bridge

**REV**

September 2014
### Shipping Parts List - Poles and Luminaire Arms

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<th>Type</th>
<th>Designation</th>
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<th>Quantity</th>
<th>Dimensions</th>
<th>Notes</th>
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<td>50</td>
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<td></td>
</tr>
</tbody>
</table>

**General Notes:**

- All works, materials, and services not shown on the plans shall be performed, furnished, and installed by the contractor. Any work, materials, or services not specified shall be considered at the contractor's own risk and expense. All materials provided by the contractor shall be acceptable to the owner. The contractor shall be responsible for any additional costs incurred due to deviations from the plans and specifications.

- The owner reserves the right to reject any and all materials, work, or services furnished by the contractor if they are not in accordance with the plans and specifications.

- The contractor shall be responsible for all workmanship, materials, and services furnished under this contract. The contractor shall ensure that all workmanship, materials, and services furnished under this contract comply with all applicable laws, regulations, and standards.

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