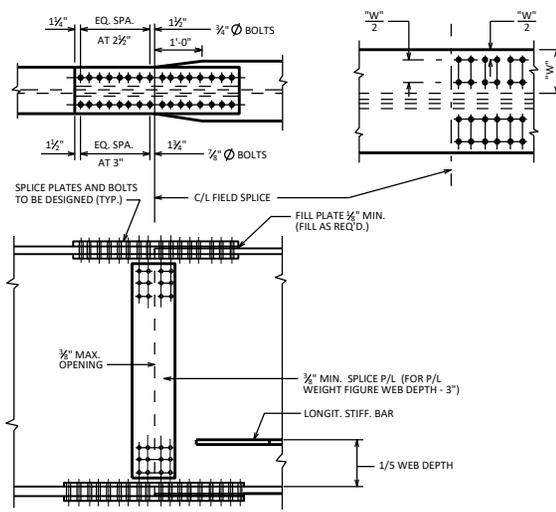


**PART GIRDER ELEVATION**



**FIELD SPICE DETAILS**

**NOTES**

OPTIONAL WELDED SHOP SPICES MAY BE USED FOR ALL FLANGE AND WEB PLATES OVER 60'-0" LONG. IF USED, THE LOCATION OF THE SPICE SHALL BE SHOWN ON SHOP DRAWINGS AND WILL BE SUBJECT TO THE APPROVAL OF THE STRUCTURES DESIGN SECTION.

OPTIONAL FLANGE BUTT SPICE. A FLANGE PLATE OF THE LARGER SIZE MAY BE FURNISHED FULL LENGTH, BUT PAY WEIGHT SHALL BE BASED ON SECTIONS AS DETAILED. IF A PERMANENT HOLD DOWN DEVICE IS USED AT THE ABUTMENT, THEN THE BUTT SPICE SHALL NOT BE OPTIONAL.

PRIOR TO STEEL BLAST, ALL FLAME CUT EDGES OF PLATE THAT ARE TO BE PAINTED SHALL BE GROUND OR PLAINED TO REMOVE THE HARDENED SURFACE CAUSE BY THE FLAME, AND CORNERS CHAMFERED 1/8" MINIMUM.

TOP FLANGE TENSION ZONE. FIELD WELDING PROHIBITED IN TOP FLANGE TENSION ZONE AREAS, EXCEPT SHEAR CONNECTORS.

BOTTOM FLANGE TENSION ZONE. FIELD WELDING PROHIBITED IN BOTTOM FLANGE TENSION ZONE AREAS.

**DESIGNER NOTES**

BASE BEAM SEAT ELEVATIONS AT ABUTMENT ON THICKER FLANGE AND DETAIL SHIM PLATES TO ACCOMMODATE THINNER FLANGE.

AT EXTERIOR GIRDERS PLACE INTERMEDIATE TRANSVERSE STIFFENERS ON INTERIOR FACE OF GIRDER. PLACE LONGITUDINAL STIFFENERS ON THE OUTSIDE FACE.

AT INTERIOR GIRDERS PLACE INTERMEDIATE TRANSVERSE STIFFENERS ON ONE SIDE OF GIRDER AND LONGITUDINAL STIFFENERS ON THE OPPOSITE SIDE OF GIRDER. KEEP INTERMEDIATE STIFFENERS ON ONE SIDE WHEN LONGITUDINAL STIFFENERS ARE NOT REQUIRED.

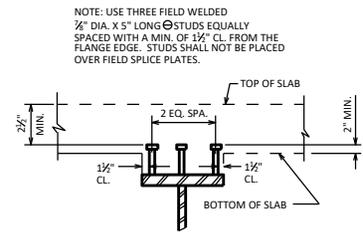
AVOID USE OF LONGITUDINAL STIFFENERS IF PRACTICAL BY THICKENING WEB. WHERE LONGITUDINAL STIFFENERS ARE USED, RUN THEM CONTINUOUS WITHOUT BREAKS AT CONNECTION STIFFENERS.

AT EXTERIOR GIRDER PLACE INTERMEDIATE STIFFENERS ALONG ENTIRE LENGTH OF GIRDER AT A MAX. SPACING EQUAL TO 1.5 X THE DEPTH OF WEB. SPACE EQUALLY BETWEEN DIAPHRAGM CONNECTION STIFFENER. THIS REQUIREMENT IS NECESSARY TO SUPPORT THE FALSEWORK FOR THE SLAB OVERHANG AND MAY BE DISREGARDED IF THE SLAB OVERHANG, MEASURED FROM C/L WEB, IS 1'-6" OR LESS OR ANY OF THE FOLLOWING CRITERIA ARE SATISFIED:

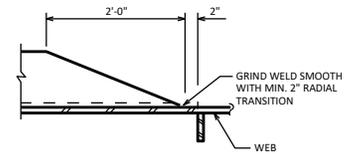
- ...WEB THICKNESS > 3/8" AND WEB DEPTH < 48"
- ...WEB THICKNESS > 3/16" AND WEB DEPTH < 60"
- ...WEB THICKNESS > 3/8" AND WEB DEPTH < 66"

SEE STANDARD 40.07 FOR CONNECTING ANY NEW STIFFENERS TO EXISTING GIRDERS.

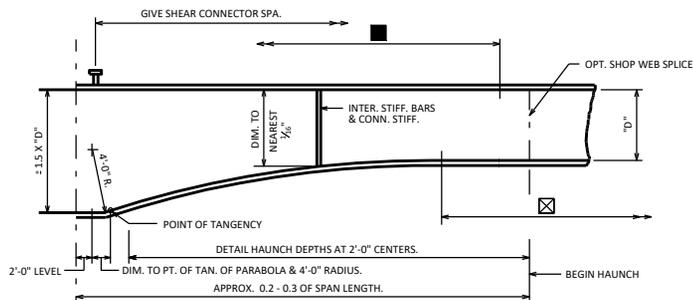
SHOW THE TENSION ZONES ON THE PLANS.



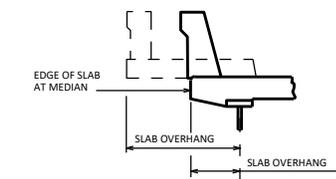
**SHEAR CONN. DETAILS**



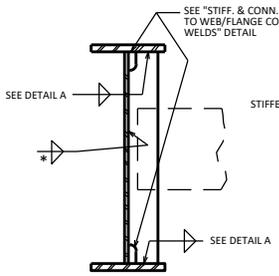
**LONGIT. STIFF. TERMINATION**



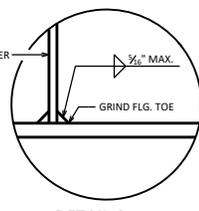
**PARABOLIC HAUNCH DETAILS**



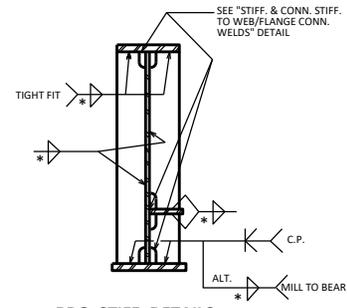
**SLAB OVERHANG DEFINITION**



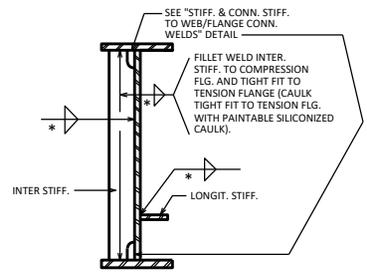
**CONNECTION STIFF. DETAILS**



**DETAIL A**  
CONNECTION STIFFENER DETAIL @ TENSION FLANGE



**BRG. STIFF. DETAILS TYP. AT ABUT. & PIER**

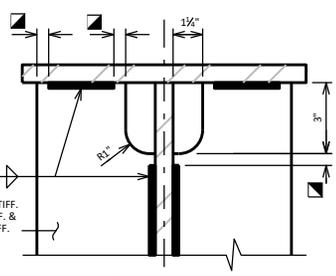


**INTERMEDIATE & LONGITUDINAL STIFF. DETAILS (ALL GIRDERS)**

**\* TABLE OF FILLET WELD SIZES**

MATERIAL THICKNESS OF THICKER PART JOINED.	+ MIN. SIZE OF FILLET WELD
TO 3/8" INCLUSIVE	3/16"
OVER 3/8" TO 3/4"	1/8"
OVER 3/4" TO 1 1/2"	1/4"
OVER 1 1/2"	3/8"

# EXCEPT THAT THE WELD SIZE SHALL NOT EXCEED THE THICKNESS OF THE THINNER PART JOINED.  
 Δ MIN. PASS SIZE IS 1/16"



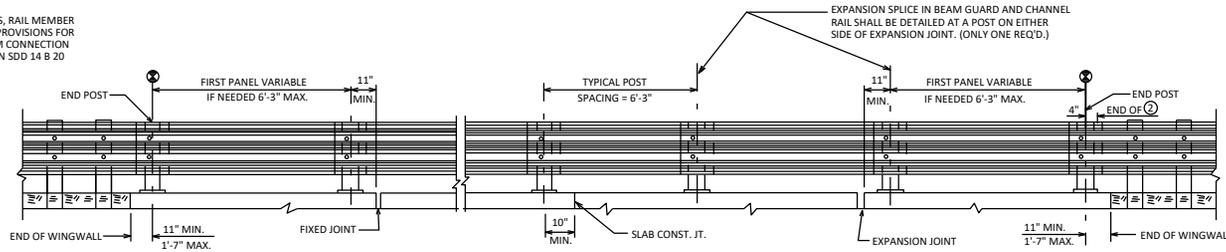
**3/16" MIN., 3/8" MAX. TYP. STIFF. & CONN. STIFF. TO WEB/FLANGE CONN. WELDS**

**PLATE GIRDER DETAILS**

**BUREAU OF STRUCTURES**

APPROVED: *Laura Shadewald* DATE: 1-24

AT END POSTS, RAIL MEMBER SHALL HAVE PROVISIONS FOR A THREE BEAM CONNECTION AS SHOWN ON SDD 14 B 20 STANDARDS.



**ELEVATION OF RAILING**

**LEGEND**

- ① W6x25 WITH 2 - 3/4" X 2 1/2" VERT. SLOTS IN FLG. (SLOT ON OTHER SIDE OF WEB IS OPTIONAL) FOR NO.7 CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POSTS VERTICAL AND NORMAL TO GRADE LINE.
- ② C8x11.5 WITH 3/16" DIA. HOLES FOR NO. 8.
- ③ BASE PLATE 1" X 9 1/2" X 10" WITH 1 1/2" X 1 1/2" SLOTTED HOLES FOR ANCHOR BOLTS NO.4 WELD TO NO.1 AS SHOWN.
- ④ A325 - 3/4" HEX BOLTS (GALVANIZED) WITH A325 NUT AND WASHER. 14" LONG AT END POSTS AND AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 15". USE 8" LONG AT ALL OTHER LOCATIONS. 4 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO.3 CHAMFER TOP OF BOLTS BEFORE THREADING.
- ⑤ 1/2" X 8" X 8" FLAT BAR WITH 3/16" DIA. HOLES FOR ANCHOR BOLTS NO.4.
- ⑥ 1 1/2" X 3" MOUNTING BOLT WASHER (GALVANIZED).
- ⑦ 3/4" DIA. BUTTON HEAD POST MOUNTING BOLT WITH ROUND WASHER AND NUT.
- ⑧ 3/8" DIA. X 2" HEX BOLTS WITH NUT AND TWO WASHERS EACH.
- ⑨ PLATE 1/2" X 5 1/2" X 6" AT BASIC POST CONNECTION. 1 1/2" DIA. HOLES IN PLATE. 3/16" DIA. HOLES IN CHANNEL.
- ⑩ PLATE 1/2" X 5 1/2" X 11 1/2". 1 1/2" DIA. HOLES IN PLATE. 3/16" DIA. HOLES IN CHANNEL. EXPANSION SLOTS ON JOINT SIDE OF POST. 1 1/2" X 2 1/2" IN PLATE. 3/16" X 2 1/2" IN CHANNEL. (AT EXPANSION SPLICE.)
- ⑪ PLATE 1/2" X 5 1/2" X 11 1/2". 1 1/2" DIA. HOLES IN PLATE. 3/16" DIA. HOLES IN CHANNEL. (AT TYPICAL SPLICE.)

**NOTES**

BID ITEM SHALL BE "RAILING STEEL TYPE 'W' WHICH INCLUDES ALL ITEMS SHOWN."  
 POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.  
 ALL MATERIAL EXCEPT ANCHORAGE DETAIL NO. 5 SHALL BE GALVANIZED AFTER FABRICATION.  
 PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS AND CHANNELS SHALL BE GIVEN A NO. 6 COMMERCIAL BLAST CLEANING BY SSPC SPECS.

ALL MATERIAL USED IN FABRICATION SHALL BE MADE FROM MATERIALS CONFORMING TO ASTM DESIGNATION A709 GRADE 56 UNLESS NOTED OTHERWISE.

FILL BOLT SLOT OPENINGS IN POST SHIMS & PLATE NO. 3 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

SEE STANDARD SPECIFICATIONS FOR RAIL TYPE.

CHANNEL MEMBER SHALL BE ATTACHED CONTINUOUSLY TO A MINIMUM OF FOUR POSTS AND A MAXIMUM OF EIGHT (EXCEPT AT ABUTMENTS).

AT EXPANSION SLOTS IN RAIL AND CHANNEL MEMBERS, TIGHTEN BOLTS, BACK OFF ONE HALF TURN AND BURR THREADS. RAIL MEMBERS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC AND THE UPPER RAIL SHALL LAP THE LOWER RAIL.

STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.

SEE BRIDGE MANUAL 30.2 FOR ALLOWED USE.

▲ TIE TO TOP MAT OF STEEL. PUT THESE BARS IN BILL OF BARS FOR SUPERSTRUCTURE. NOT REQ'D. FOR BOX CULVERT HEADERS.

● PAY LIMITS FOR TYPE "W" STEEL RAILING.

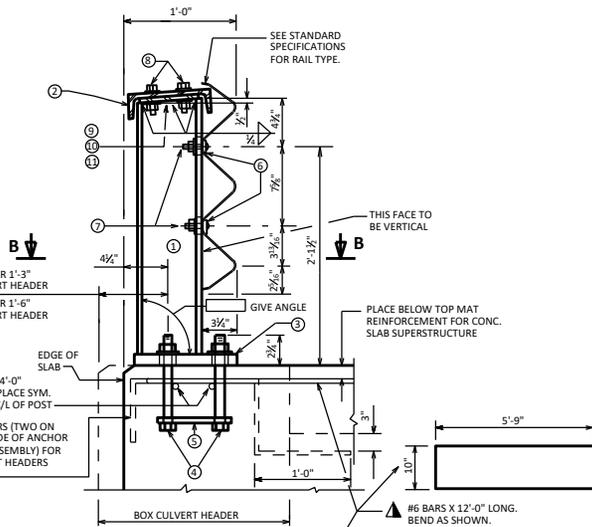
WEIGHT = 45 LB/FT

**STEEL RAILING TYPE 'W'**

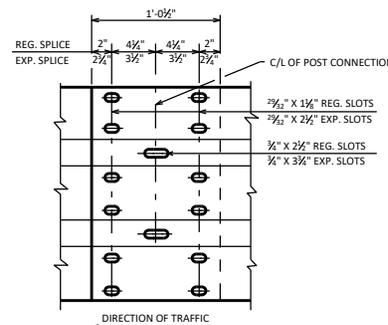


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DATE: 1-24

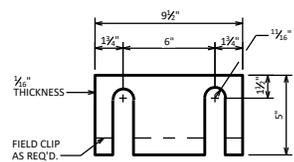


**SECTION THRU RAILING**



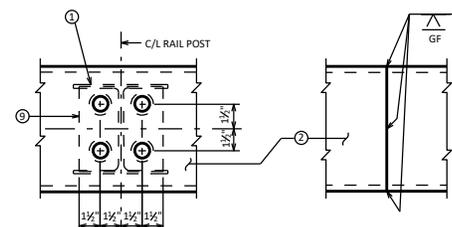
**RAIL MEMBER SPLICE**

3/8" DIA. BUTTON HEAD OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS.



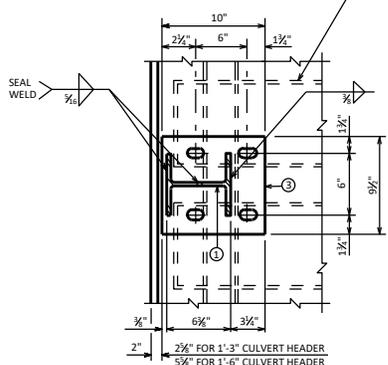
**POST SHIM DETAIL**

4 PER POST

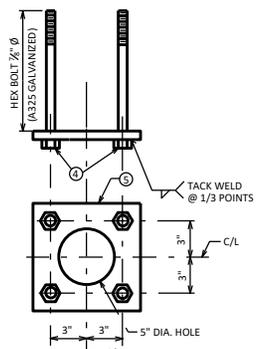


**BASIC POST CONNECTION**

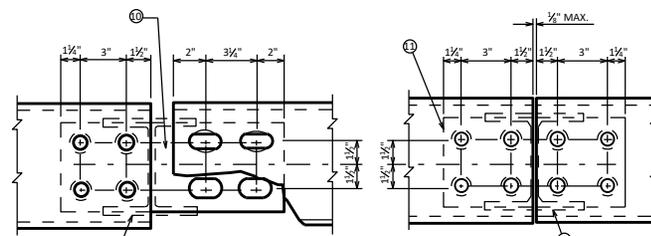
**OPTIONAL SHOP SPLICE**



**SECTION B-B**



**ANCHORAGE DETAIL**

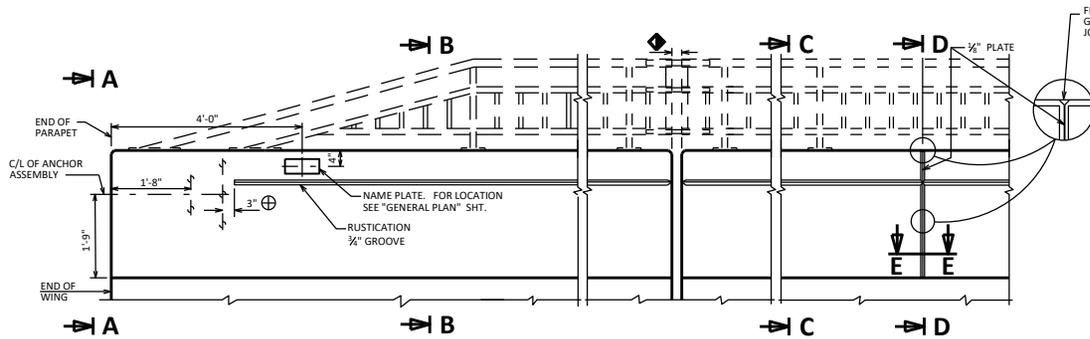


**EXPANSION SPLICE**

**TYPICAL SPLICE**

**CHANNEL MEMBER DETAILS**

SHIM PLATES 6" X 3/4" X 6" MAY BE USED BETWEEN TOP OF POST AND CHANNEL MEMBER TO ACHIEVE VERT. ALIGNMENT.



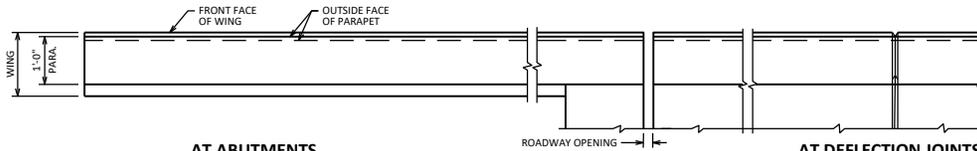
**AT ABUTMENTS**

**ELEVATION OF PARAPET**

**AT DEFLECTION JOINTS**

⊕ EXTEND 3/4" GROOVE TO END OF PARAPET WHEN ANCHOR ASSEMBLY IS NOT USED

◆ ROADWAY OPENING OR 2 1/2" MIN. FOR EXPANSION JOINT. USE 1/2" OPENING WITH FILLER FOR A1 ABUTMENTS

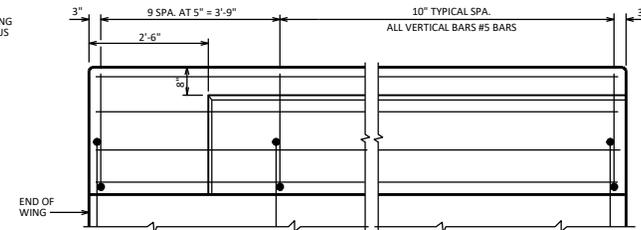


**AT ABUTMENTS**

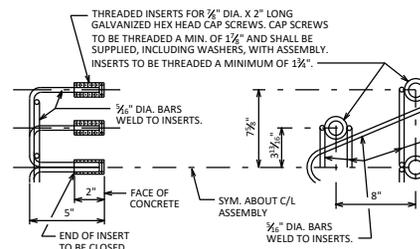
**PLAN OF PARAPET**

(RAILING NOT SHOWN FOR CLARITY)

**AT DEFLECTION JOINTS**



**VIEW SHOWING OUTSIDE FACE OF PARAPET & REINF.**



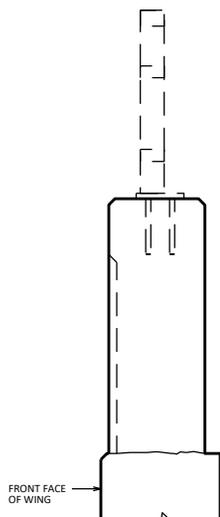
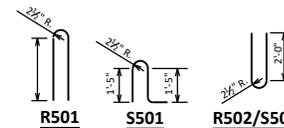
**DETAIL OF ANCHOR ASSEMBLY**

NOTE: HEX. HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH ASTM F2323.

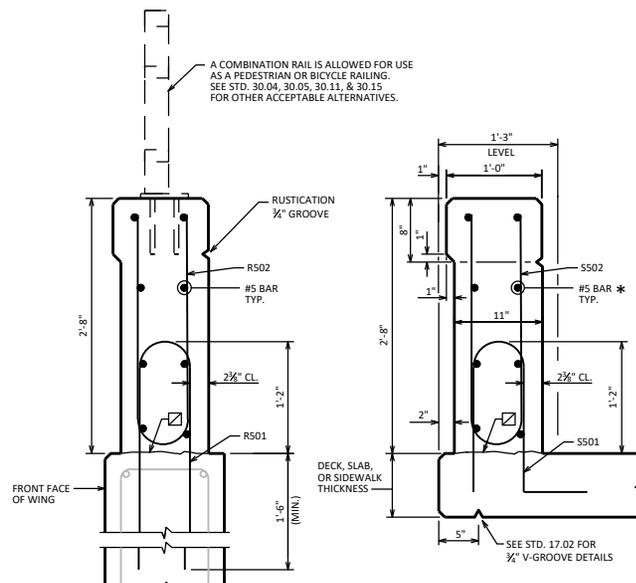
ASSEMBLY BID ITEM SHALL BE "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

**BILL OF BARS**

BAR MARK	CONC.	NO. REQ'D.	LENGTH	BEND	BAR SERIES	LOCATION
R501	X			X		PARAPET VERT.
RS02	X		4'-9"	X		PARAPET VERT.
SS01	X		4'-4"	X		PARAPET VERT.
SS02	X		4'-9"	X		PARAPET VERT.



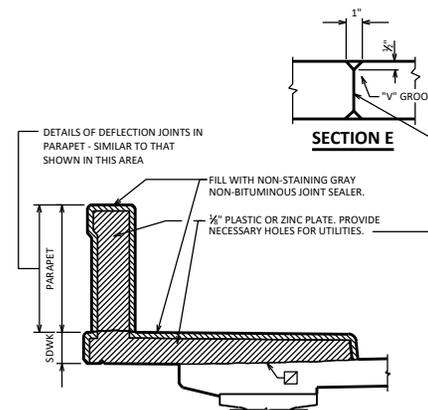
**VIEW A**



**SECTION B**

**SECTION C**

(PARAPET ON DECK, SLAB, OR SIDEWALK)  
(RAILING NOT SHOWN FOR CLARITY)



**SECTION D**

SHOWING DEFLECTION JOINT IN PARAPET OR SIDEWALK USING THE FOLLOWING CRITERIA:

1. GIRDER STRUCTURES AND SLAB STRUCTURES WITH A SIDEWALK SHOULD HAVE A DEFLECTION JOINT IN THE SIDEWALK AND PARAPET OVER THE PIER.

IF THERE IS A LIGHT STANDARD AT THE PIER, PLACE A DEFLECTION JOINT APPROX. 4'-0" EACH SIDE OF PIER, WITH NONE DIRECTLY OVER THE PIER.

2. GIRDER STRUCTURES AND SLAB STRUCTURES WITHOUT SIDEWALKS SHOULD HAVE NO DEFLECTION JOINTS IN THE PARAPETS.

**NOTE**

WHEN PARAPETS ARE POURED CONTINUOUSLY FROM END TO END, THEY SHALL BE SEPARATED AT THE DEFLECTION JOINTS BY A PIECE OF 1/2" ZINC OR PLASTIC PLATE CUT AS SHOWN IN SECTION "D" BY SHADED AREA. IF CONSTRUCTION JOINTS IN PARAPETS ARE USED AT THE DEFLECTION JOINTS, ONE SIDE OF JOINT SHALL BE COATED WITH AN APPROVED LIQUID BOND BEAKER AND PLATE SEPARATORS MAY BE OMITTED.

**LEGEND**

☒ HORIZ. CONST. JOINT-STRIKE OFF AS SHOWN AND LEAVE ROUGH.

\* OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT, LAP LONGIT. BARS A MIN. OF 1'-9". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A 3/2" - V GROOVE.

**DESIGNER NOTE**

A S501 BAR MAY BE USED IN LIEU OF A S501 BAR ADJACENT TO THE PAVING NOTCH ON TYPE A1 ABUTMENTS.

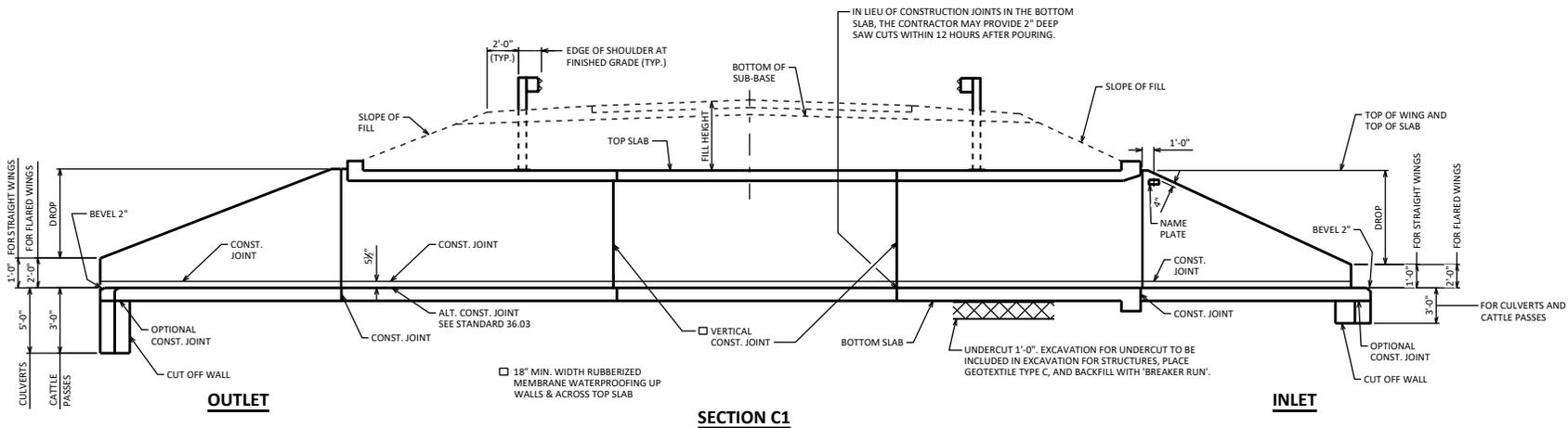
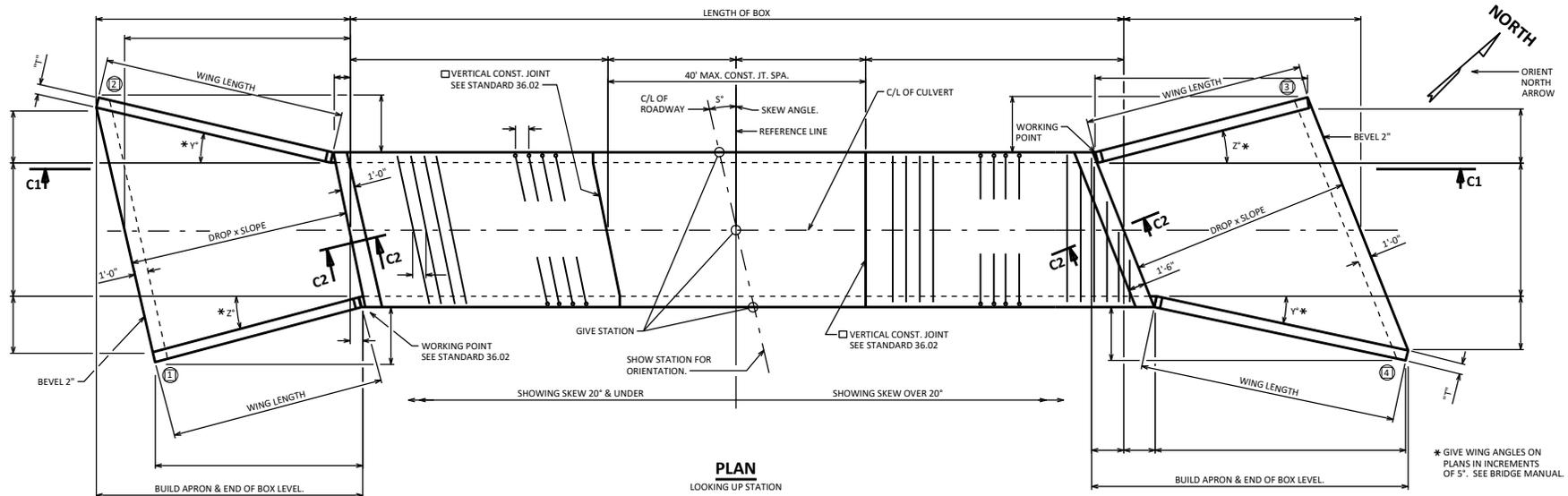
	PARAPET
AREA	2.50 SF
WEIGHT	375 LB/FT

**VERTICAL FACE PARAPET 'A'**



APPROVED: *Laura Shadewald*

DATE:  
1-24



**LEGEND**  
 ○ INDICATES WING NUMBER

**DESIGN DATA**  
**LIVE LOAD:**  
 DESIGN LOADING: HL-93  
 INVENTORY RATING FACTOR: RF=1.\_\_\_\_  
 OPERATING RATING FACTOR: RF=1.\_\_\_\_  
 WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): \_\_\_\_ (KIPS)  
 \*\* DESIGNED FOR FILL HEIGHT RANGE OF \_\_ TO \_\_ FEET  
**MATERIAL PROPERTIES:**  
 CONCRETE MASONRY  $f'_c = 3,500$  P.S.I.  
 BAR STEEL REINFORCEMENT  $f_y = 60,000$  P.S.I.

**NOTES**  
 SEE STANDARD 36.02 FOR NOTES.

**DESIGNER NOTES**  
 TYPICAL UNDERCUT SHOWN. SEE STANDARD 9.01 FOR ALTERNATIVES AND ADDITIONAL NOTES.  
 FOR SECTION C2 AND CONST. JOINT DETAILS SEE STANDARD 36.03  
 \*\* SEE SECTION 36.5 FOR DESIGN RANGE OF FILL HEIGHTS. HEIGHT TO BE TO THE NEAREST 0.5 FEET ON FILLS UNDER 4 FEET AND TO THE NEAREST FOOT ON FILLS OVER 4 FEET.  
 SEE STANDARD 36.02 FOR ADDITIONAL DESIGNER NOTES.  
 SEE CHAPTER 45 FOR LOAD RATING OF EXISTING CONCRETE BOX CULVERTS

**BOX CULVERT LAYOUT**



**BUREAU OF STRUCTURES**

APPROVED: *Laura Shadewald* DATE: 1-24