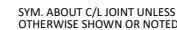


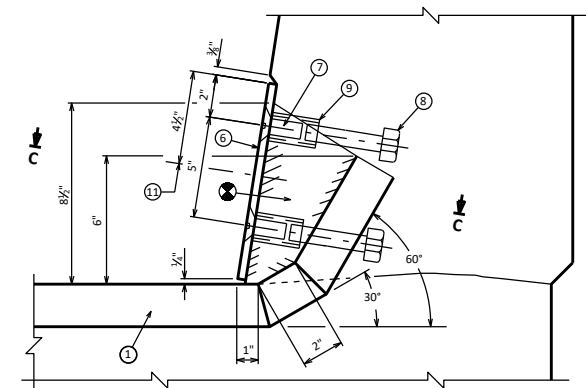
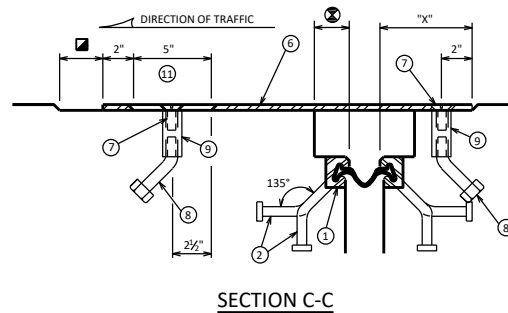
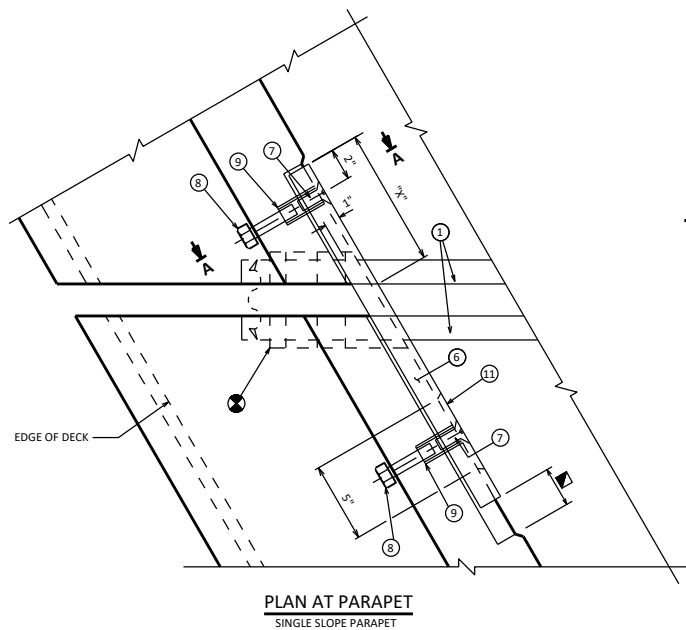
I IF TEMPERATURE TABLE IS SHOWN, PLACE FOLLOWING NOTE ADJACENT TO TABLE: "A SMALL JOINT OPENING DUE TO A HIGH TEMPERATURE AT TIME OF CONSTRUCTION MAY REQUIRE NEOPRENE STRIP SEAL INSTALLATION INTO STEEL EXTRUSIONS PRIOR TO SETTING THE EXPANSION JOINT."

REFER TO STANDARD 28.02 & 28.07

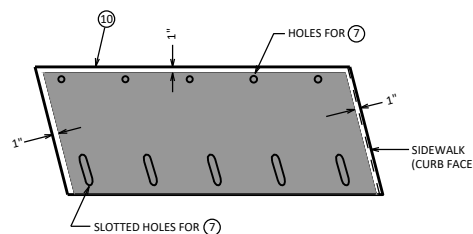
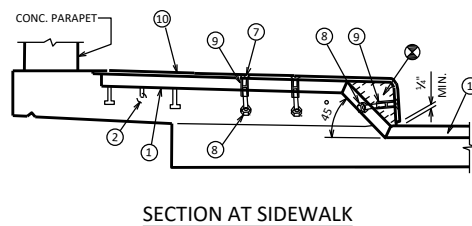
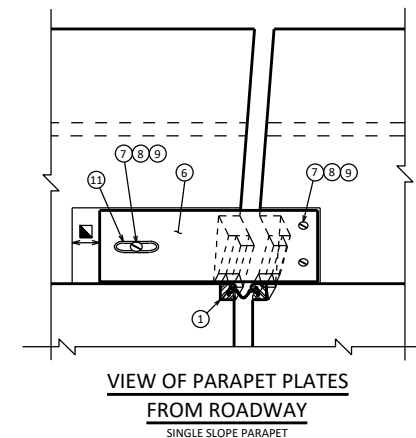
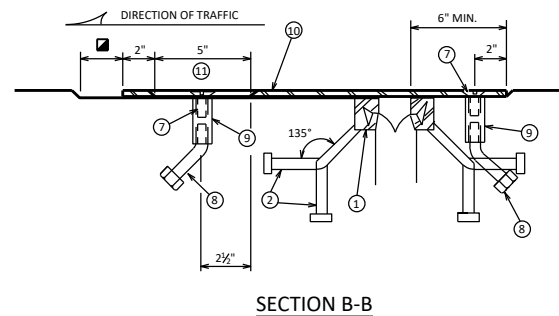
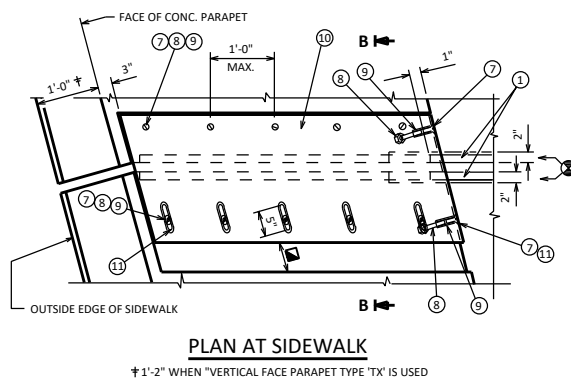
- 1 NEOPRENE STRIP SEAL (1-INCH) AND STEEL EXTRUSIONS. SET JOINT OPENING AT 1½" WHEN EXPANSION LENGTH ≤ 230'-0". WHEN EXPANSION LENGTH > 230'-0", PREPARE A TEMPERATURE TABLE SHOWING JOINT OPENINGS FROM 5" TO 85°F IN 10°F INCREMENTS. ACCOUNT FOR PRESTRESSED GIRDER SHRINKAGE DUE TO CREEP WHEN DETERMINING THIS TABLE. JOINT OPENINGS GIVEN NORMAL TO JOINT.
- 2 STUDS ¾" DIA. X 6⅝" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS AND BEND AS SHOWN AFTER WELDING.
- 2A ¾" THICK ANCHOR PLATE WITH ¾" DIA. ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO. 1 AT 1'-0" CENTERS BETWEEN GIRDERS.
- 3 ¾" DIA. THREADED ROD WITH 2 NUTS AND PLATE WASHERS, FOR PRESTRESSED GIRDERS, GROUT THREADED ROD INTO FIELD DRILLED HOLES ON C/L OF GIRDER. FOR STEEL GIRDERS, WELD THREADED ROD TO TOP FLANGE OR ATTACH BY BOLTING THRU FLANGE. ON ABUTMENT SIDE, GROUT THREADED ROD INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN.
- 4 ¾" DIA. THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
- 5 FABRICATE SUPPORT FROM 3" X ¾" BAR AS SHOWN OR EQUIVALENT. ONE PER GIRDER PER SIDE. SHOP OR FIELD WELD. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1½" DIA. HOLE FOR NO. 3 AND 1" DIA. HOLE FOR NO. 4.
- 6 GALVANIZED PLATE ¾" X 10" X (2'-2" LONG FOR SKEWS TO 45° AND 3'-0" LONG FOR SKEWS > 45°) WITH HOLES FOR NO. 7, FOR SINGLE SLOPE PARAPET. FOR SLOPED FACE PARAPET, SEE STANDARD 28.07.
- 7 ¾" DIA. X 1½" STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. PLANE IN COUNTERSUNK HOLE. RECESS ⅝" BELOW PLATE SURFACE.
- 8 ¾" DIA. X 4" GALVANIZED HEX HEAD BOLT, BEND 45°.
- 9 ¾" DIA. X 2½" GALVANIZED THREADED COUPLING.
- 10 SIDEWALK COVER PLATE ¾" X (2'-0" WIDE FOR SKEWS TO 45° AND 3'-0" WIDE FOR SKEWS > 45°) X LIMITS SHOWN. BEND DOWN FACE OF SIDEWALK WITH HOLES FOR NO. 7. GALVANIZE PLATE AFTER SLIP-RESISTANT SURFACE APPLIED.
- 11 1" X 5" SLOTTED COUNTERSUNK HOLE FOR NO. 7. PLACE SLOT PARALLEL TO DIRECTION OF MOVEMENT.

ALL MATERIAL IN THE EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS AND HARDWARE SHALL BE PAID AT THE UNIT PRICE BID FOR "EXPANSION DEVICE", LF.





"X" - VALUES IN INCHES												
USE "X" = 6 1/2" FOR 0° SKEW												
SKEW	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°
RHF	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	7	7 1/2	8
LHF	7	7 1/2	8	8 1/2	9	9 1/2	10 1/2	11	11 1/2	13	13 1/2	15 1/2



PLAN OF SIDEWALK COVER PLATE WITH SLIP-RESISTANT SURFACE

PLACE SLIP-RESISTANT SURFACE ON TOP WALKING SURFACE
IN SHADED AREA ONLY (NOT ON CURB FACE).

DESIGNER NOTES

FOR NEW BRIDGES, JOINT TO BE DETAILED STRAIGHT.

FOR JOINT REPLACEMENT PROJECTS, JOINT SHALL
BE DETAILED TO MATCH ORIGINAL CONFIGURATION
(STRAIGHT OR KINKED) IN ORDER TO REDUCE
SUBSTRUCTURE MODIFICATIONS REQUIRED.

PLAN DETAILS SHALL REMOVE ENOUGH PARAPET
LATERALLY, AND FULL HEIGHT, TO ENSURE
DURABILITY OF THE JOINT REPLACEMENT.

APPROVED SLIP-RESISTANT APPLIED SURFACES FOR STEEL PLATES		
PRODUCT	MANUFACTURER	CONTACT AT
SLIPNOT GRADE 2, STEEL	W. S. MOLNAR COMPANY	1-800-SLIPNOT
ALGRIP, STEEL	ROSS TECHNOLOGY CORP.	1-800-345-8170

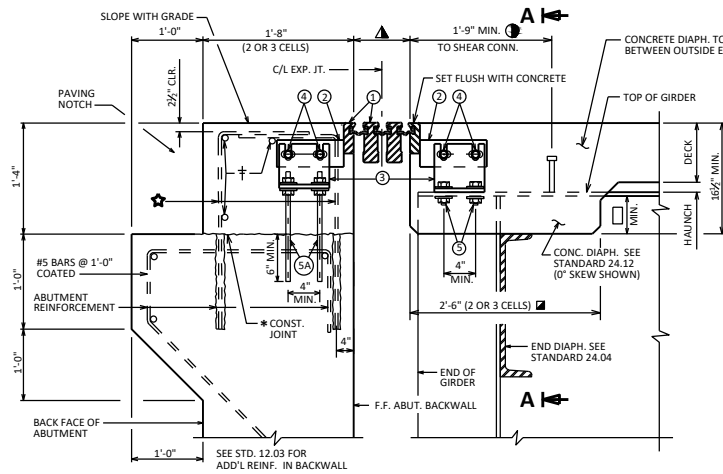
STRIP SEAL COVER PLATES SINGLE SLOPE PARA./SDWK.



**BUREAU OF
STRUCTURES**

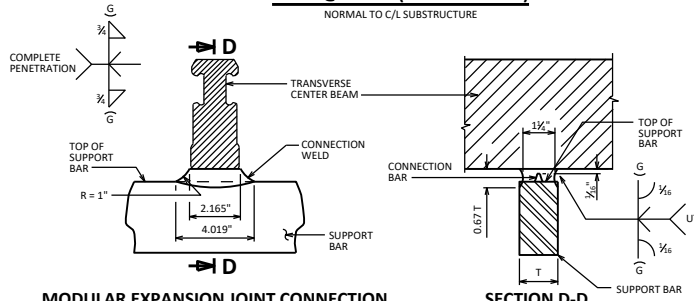
APPROVED: *Laura Shadewald*

DATE:
7-19

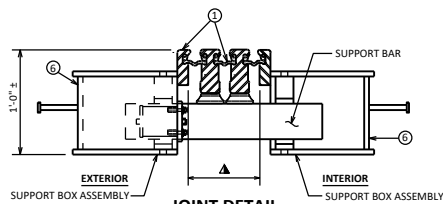


JOINT @ ABUT. (STEEL GIRDERS)

NORMAL TO C/L SUBSTRUCTURE

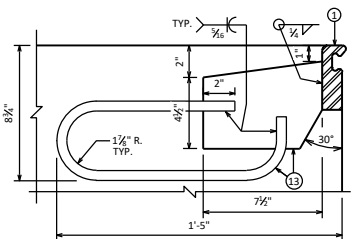


MODULAR EXPANSION JOINT CONNECTION DETAIL AND WELD SPECIFICATION



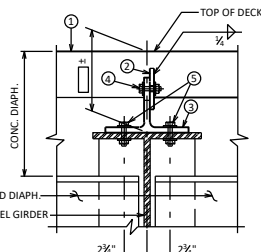
JOINT DETAIL

AT SUPPORT BAR & SUPPORT BOX ASSEMBLY

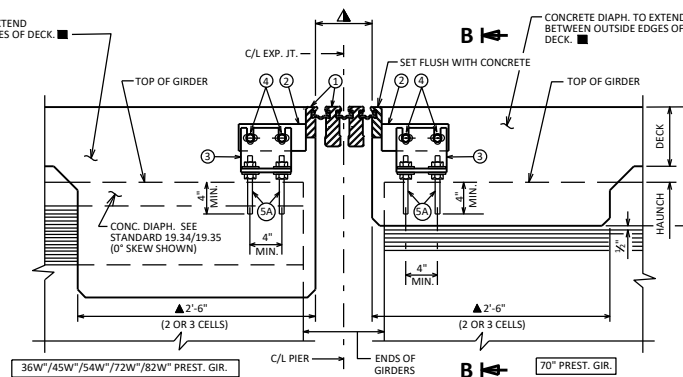


ANCHORAGE DETAIL

PLACE ADJACENT TO SUPPORT BOXES IN PAVING BLOCK @ ABUT. & IN DECK @ CONC. DIAPH.

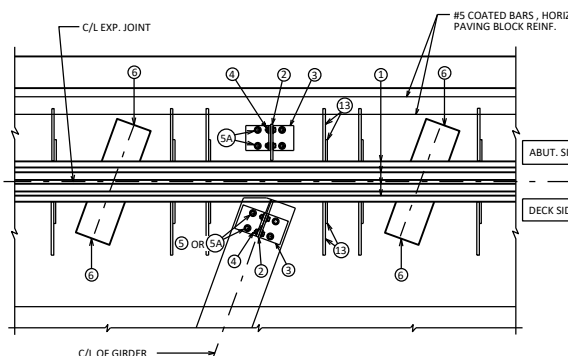


SECTION A-A



JOINT @ PIER (PRESTRESSED GIRDERS)

NORMAL TO C/L SUBSTRUCTURE



PART PLAN

NOTE:
MODULAR EXPANSION DEVICE DESIGN AND DETAILS ARE SPECIFIC TO THE MANUFACTURER SELECTED FROM THOSE LISTED IN THE SPECIAL PROVISIONS.

▲ SUPPORT BOXES ARE SHOWN FOR GENERAL INFORMATION AND LOCATION MAY VARY ACCORDING TO FABRICATOR DESIGN. SPACE SUPPORT BOXES TO MISS GIRDER TOP FLANGES WHEN POSSIBLE, BUT NOT TO EXCEED MAXIMUM SPACING PER SPECIAL PROVISIONS.

● SLIP-RESISTANT SURFACE IS APPLIED TO SIDEWALK COVER PLATES BY THE MANUFACTURER AND THEN HOT DIPPED GALVANIZED TO MAINTAIN THE INTEGRITY OF THIS SURFACE.

TEMP. TABLE

TEMPERATURE TABLE FOR SETTING JOINT OPENINGS TO BE DETERMINED BY JOINT MANUFACTURER WITH THE FOLLOWING DESIGN DATA:

1. \square IN. OF MOVEMENT PER 10° F
2. MEDIAN TEMPERATURE OF 45° F
3. TEMP. RANGE IN TABLE FROM (5°F) TO (85°F) FOR PRESTRESSED CONCRETE GIRDERS AND FROM (-5°F) TO (+95°F) FOR STEEL GIRDERS.
4. ADJUST INITIAL JOINT OPENINGS BY A REDUCTION OF \square IN., WHICH ACCOUNTS FOR SHRINKAGE (CREEP) OF THE SUPERSTRUCTURE OVER TIME, TO PRODUCE FINAL JOINT OPENINGS FOR TABLE.

A TABLE OF JOINT OPENINGS BASED ON ABOVE DATA SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

INCLUDE ITEM 4. FOR PRESTRESSED GIRDER STRUCTURES ONLY. SEE CHART, 28 IN BRIDGE DESIGN MANUAL FOR ADJUSTMENT FACTOR.

STANDARD COVERS:

- SKEWS $\leq 30^\circ$
- 2 OR 3 CELL MODULAR EXPANSION JOINTS
- STEEL GIRDER BRIDGES
- PRESTRESSED GIRDER BRIDGES (70", 36W", 45W", 54W", 72W" AND 82W" SECTION)

LEGEND

1. MODULAR EXPANSION JOINT DEVICE, \square CELLS.
2. $\frac{1}{2}$ " PLATE, ONE PER GIRDER MIN. PROVIDE 2 - 1" X 2" MIN. SLOTTED HOLES PLACED HORIZONTALLY FOR NO. 4.
3. WT 6 X 25 (OR EQUIVALENT BUILT UP T-SECTION), ONE PER GIRDER. PROVIDE 2 - 1" X 3" MIN. SLOTTED HOLES PLACED VERTICALLY IN WEB OF WT FOR BOLTS NO. 4.
4. $\frac{1}{2}$ " DIA. HIGH STRENGTH BOLTS WITH NUTS & WASHERS. (A325 GALV.)
5. $\frac{1}{2}$ " DIA. HIGH STRENGTH BOLTS WITH NUTS & WASHERS. FIELD DRILL HOLES IN GIRDER TOP FLANGE. (A325 GALV.)
- 5A. $\frac{1}{2}$ " DIA. THREADED ROD WITH 2 NUTS & WASHERS. GROUT THREADED ROD INTO FIELD DRILLED HOLES (GALV.)
6. SUPPORT BOX ASSEMBLY FOR SUPPORT BAR (SPA. PER MANUFACTURER). FABRICATE BOX FROM $\frac{1}{2}$ " PLATES.
7. $\frac{1}{2}$ " BULKHEAD PLATE. WELD TO NO. 1, NO. 8 AND NO. 14 WHEN CONDUIT IS PRESENT IN PARAPET OR SIDEWALK, ACCOMMODATE FOR BY PROVIDING OPENING IN NO. 7.
8. INSIDE PLATE. FABRICATE FROM $\frac{3}{8}$ " PLATE.
9. OUTSIDE PLATE. FABRICATE FROM $\frac{3}{8}$ " PLATE.
10. $\frac{7}{8}$ " SQUARE BAR. WELD TO NO. 8 AS SHOWN.
11. $\frac{1}{2}$ " DIA. X 4" LONG STUDS. WELD TO NO. 7, 8, & 14 AS SHOWN.
12. $\frac{1}{2}$ " DIA. X 2" STAINLESS STEEL FLAT CTSK. SLOTTED HEAD CAP SCREWS W/ ANTI-SEIZE LUBRICANT. RECESS $\frac{1}{8}$ " BELOW PL. SURFACE.
13. $\frac{1}{2}$ " PLATE WITH $\frac{1}{2}$ " DIA. LOOP ANCHOR FABRICATED AS SHOWN. SPACED AT MANUFACTURER'S SPEC.
14. INSIDE PLATE. FABRICATE FROM $\frac{3}{8}$ " PLATE
15. ADIPRENE BUTTON. SEE DETAIL. SET IN OUTSIDE PLATE.

■ AT LOCATION WHERE EXT. GIR. IS ADJACENT TO A RAISED SIDEWALK (STD 30.07), CONC. DIAPH. DOES NOT EXTEND OUT TO EDGE OF DECK, BUT IS TERMINATED AT INSIDE FACE OF EXT. GIR.

† 5# COATED BARS $\pm 8'-0"$ LONG, 1'-0" MIN. LAP. CUT IN FIELD TO CLEAR JOINT SUPPORT SYSTEM AS REQ'D.

* POUR CONC. ABOVE THIS JOINT AFTER SUPERSTRUCTURE CONC. IS IN PLACE. STRIKE OFF & LEAVE ROUGH.

Ⓢ DIMENSION IS PARALLEL TO C/L GIRDER.

▲ MANUFACTURER'S RECOMMENDED JOINT OPENING BASED ON THE TEMPERATURE ON THE DAY OF PLACEMENT PER TEMPERATURE TABLE. THE MODULAR EXPANSION DEVICE SHALL HAVE THE NUMBER OF CELLS AS INDICATED IN Ⓢ.

☆ (Z) COATED L-SHAPED ADHESIVE ANCHORS NO. 5 BAR. EMBED 12" IN CONCRETE. SPACE AT 1'-0". PLACE ADHESIVE ANCHORS AFTER MODULAR JOINT IS IN POSITION.

■ TOP FLANGE WIDTH WITHIN LIMITS OF CONC. DIAPH. SHALL BE $\leq 20"$ FOR SKEWS $\leq 30^\circ$

▲ FOR PRESTRESSED GIRDERS, PLACE THE FOLLOWING NOTE ON PLANS: "JOINT MANUFACTURER SHALL INFORM AND PROVIDE NECESSARY DETAILS TO THE PRESTRESSED GIRDER FABRICATOR, WHEN FORM-OUT OF THE TOP FLANGE IS REQ'D. TO ALLOW PLACEMENT OF SUPPORT BOX ASSEMBLY."

NOTES

ONE FIELD SPICE PERMITTED IN STEEL EXTRUSIONS. DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPLICING PERMITTED IN NEOPRENE GLAND.

AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST & SWEEP.

NO EXPANSION JOINT PROTRUSIONS PERMITTED ABOVE ROADWAY SURFACE, ON PARAPET ROADWAY FACE OR ABOVE SIDEWALK SURFACE (FOR RAISED SIDEWALK).

THE EXPANSION JOINT SEALS SHALL BE PLACED, BONDED & SEALED AS RECOMMENDED BY THE MANUFACTURER. FORM WORK SHALL BE PLACED BETWEEN THE SUPPORT BOXES TO PREVENT CONCRETE INTRUSION INTO THE SUPPORT BOX. A TECHNICAL REPRESENTATIVE OF THE MANUFACTURER SHALL BE PRESENT DURING INSTALLATION. PRIOR TO SETTING THE JOINT ASSEMBLY INTO POSITION, THE PROJECT ENGINEER SHALL DETERMINE THE PROPER JOINT OPENING.

EXPANSION JOINT EXTRUSIONS SHALL BE FABRICATED TO CONFORM TO ROADWAY CROWN & GRADE. FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN & SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

SANDBLAST BARS, PLATES, WT-SECTION, ANCHORAGE LOOP, & EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLAST CLEANING". AFTER BLAST CLEANING, THIS ASSEMBLY SHALL BE HOT DIPPED GALVANIZED.

ALL MATERIAL IN THE EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS, PARAPET PLATES, SIDEWALK PLATES, AND HARDWARE SHALL BE PAID AT THE UNIT PRICE BID FOR STSP "EXPANSION DEVICE MODULAR", LF.

BAR STEEL REINF. IN DECK AND CONC. DIAPHRAGM SHALL BE RESPAVED AS NECESSARY TO ALLOW PLACEMENT OF JOINT ASSEMBLY. TOP TRANSVERSE BARS, ADJACENT TO MOD. JT., TO BE CUT AND PLACED BETWEEN JT. SUPPORT SYSTEM.

MODULAR EXPANSION JOINT DETAILS

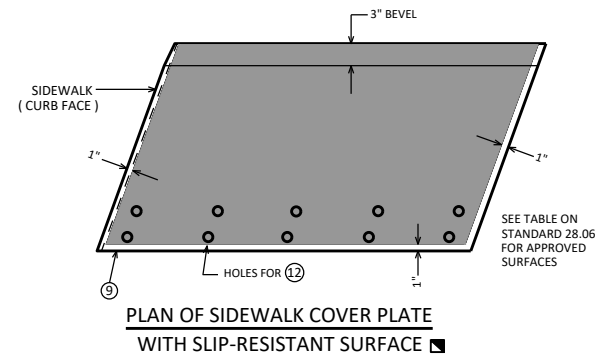
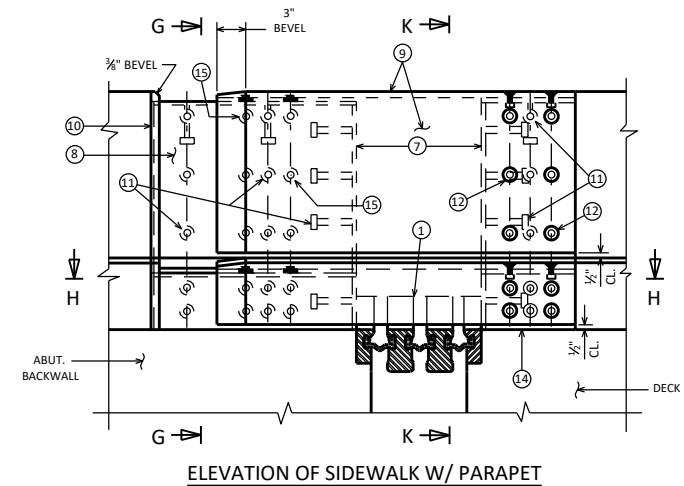
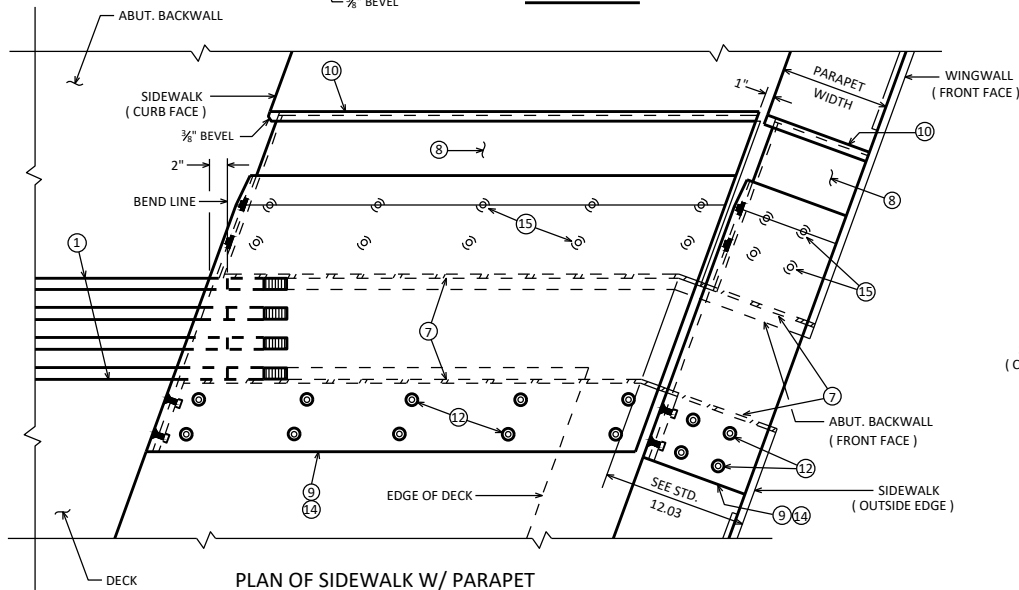
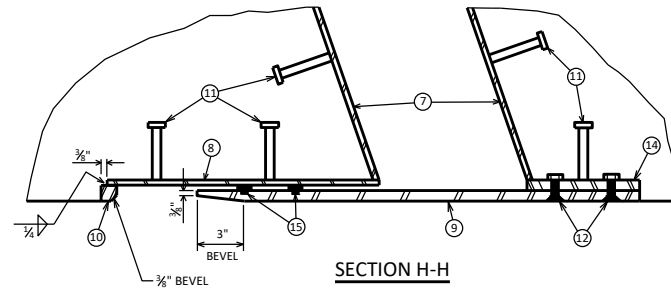
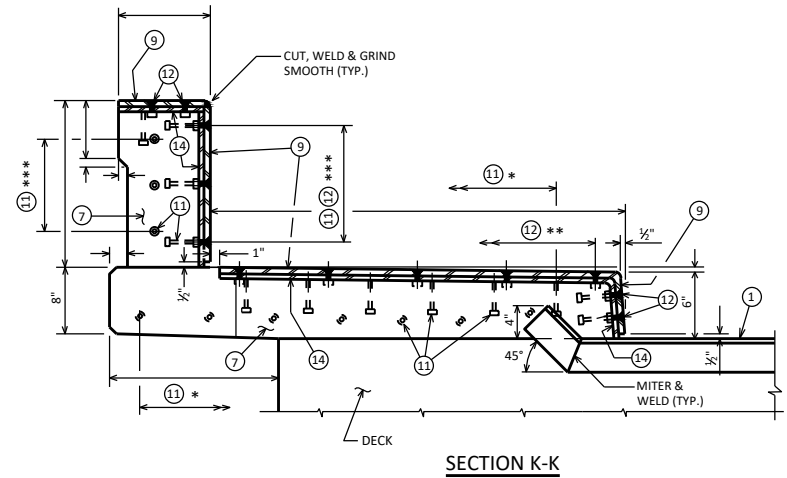
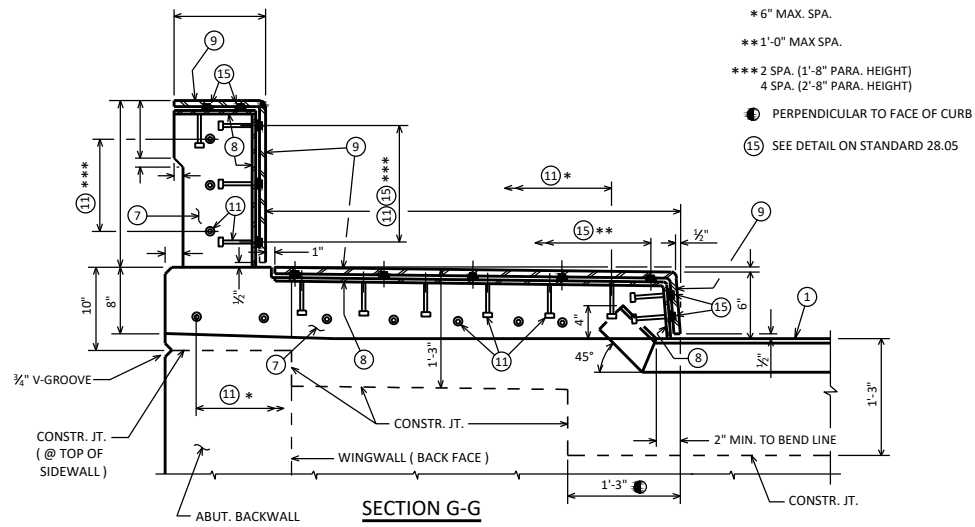


**BUREAU OF
STRUCTURES**

APPROVED: *Laura Shadewald*

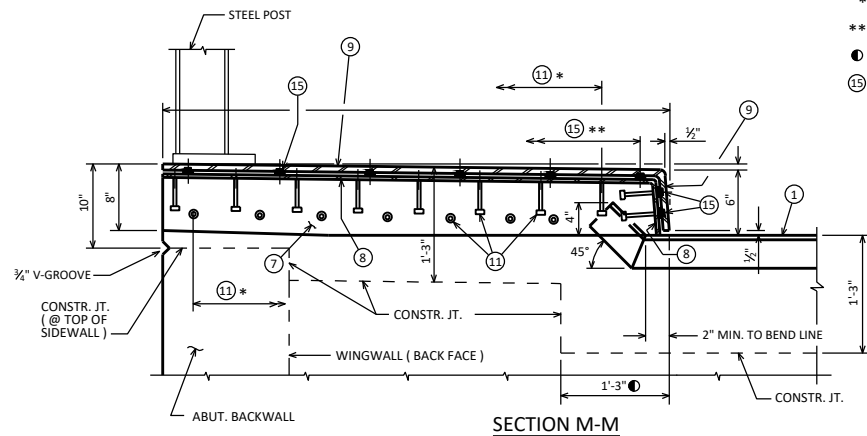
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STANDARD 28.03

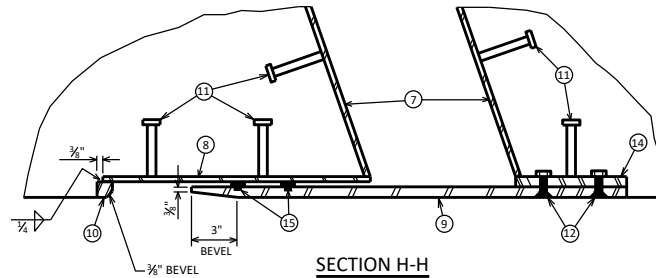


■ PLACE SLIP-RESISTANT SURFACE ON TOP WALKING SURFACE IN SHADED AREA ONLY (NOT ON CURB FACE). GALVANIZE PLATE AFTER SLIP-RESISTANT SURFACE IS APPLIED.

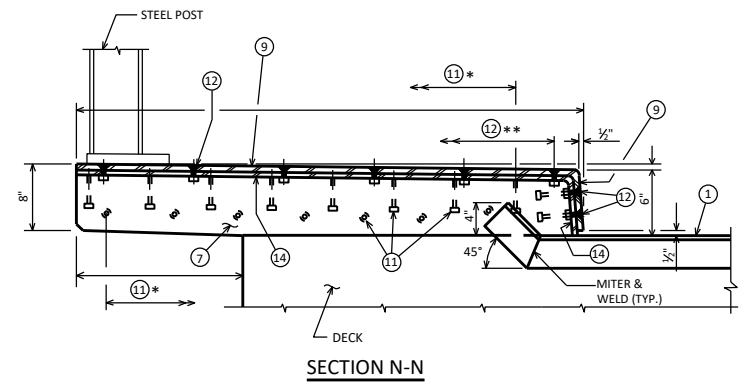
COVER PLATES FOR SIDEWALK WITH CON. PARA.	
	BUREAU OF STRUCTURES
	APPROVED: <i>Laura Shadewald</i>
DATE: 7-11	



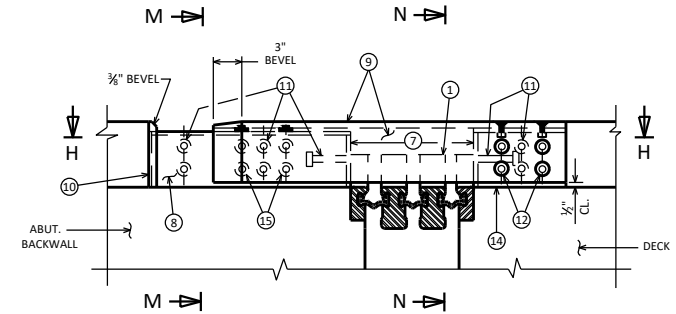
SECTION M-M



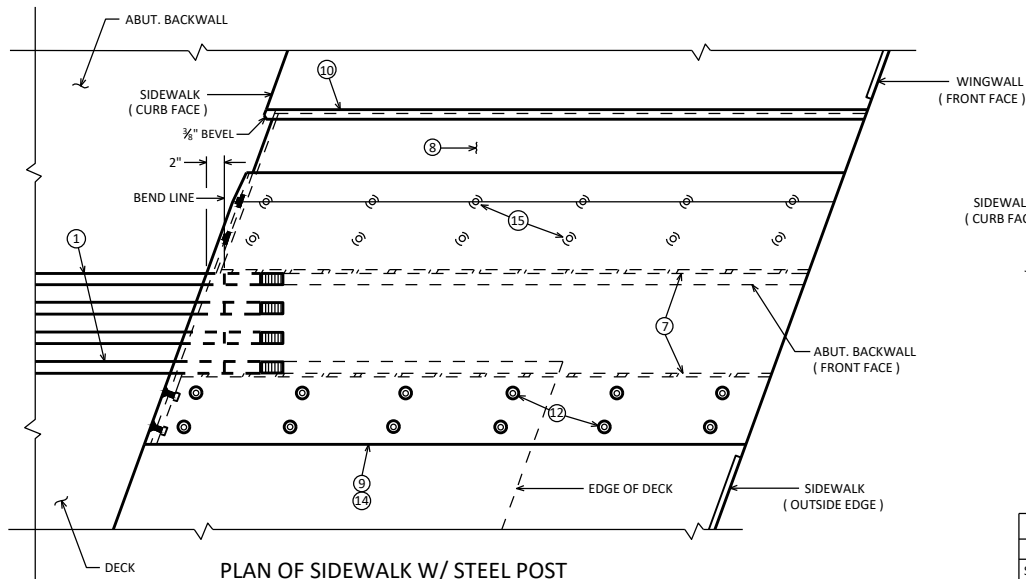
SECTION H-H



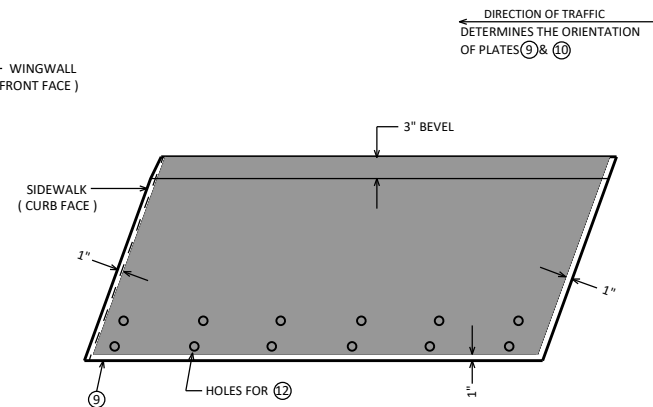
SECTION N-N



ELEVATION OF SIDEWALK W/ STEEL POST



PLAN OF SIDEWALK W/ STEEL POST



PLAN OF SIDEWALK COVER PLATE WITH SLIP-RESISTANT SURFACE

APPROVED SLIP-RESISTANT APPLIED SURFACES FOR STEEL PLATES		
PRODUCT	MANUFACTURER	CONTACT AT
SLIPNOT GRADE 2, STEEL	W. S. MOLNAR COMPANY	1-800-SLIPNOT
ALGRIP, STEEL	ROSS TECHNOLOGY CORP.	1-800-345-8170

PLACE SLIP-RESISTANT SURFACE ON TOP WALKING SURFACE IN SHADED AREA ONLY (NOT ON CURB FACE). GALVANIZE PLATE AFTER SLIP-RESISTANT SURFACE IS APPLIED.

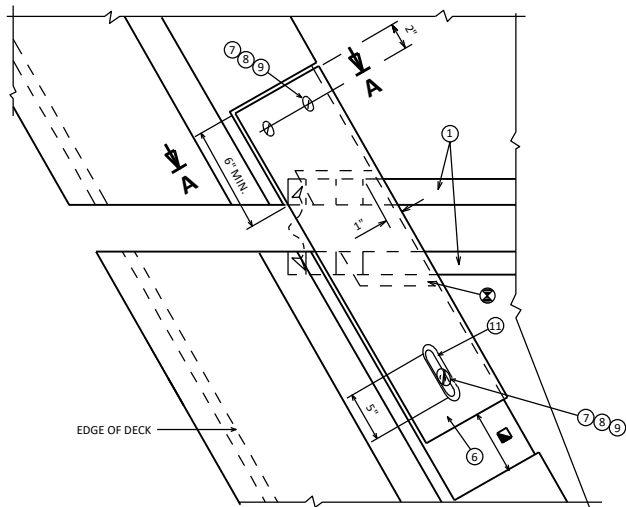
COVER PLATES FOR SIDEWALK WITH STEEL RAIL



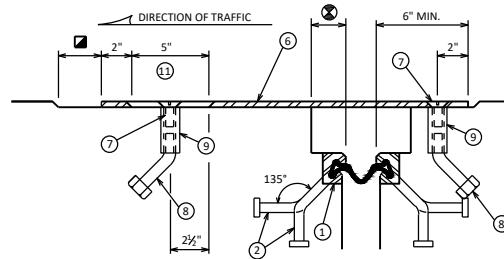
BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

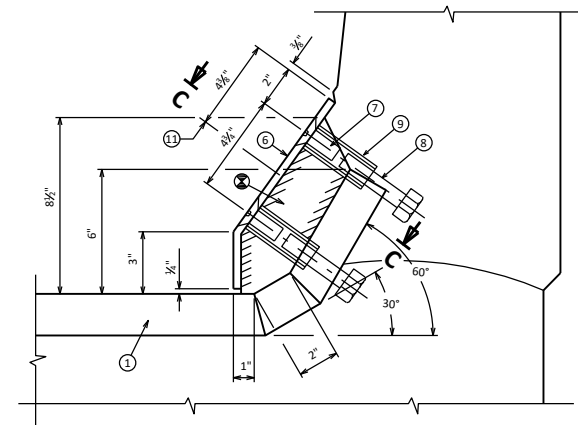
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PLAN AT PARAPET
SLOPED FACE PARAPET

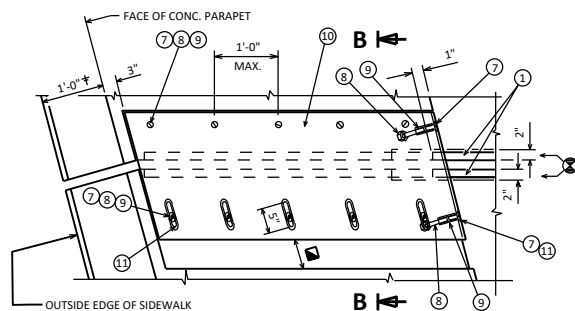


SECTION C-C



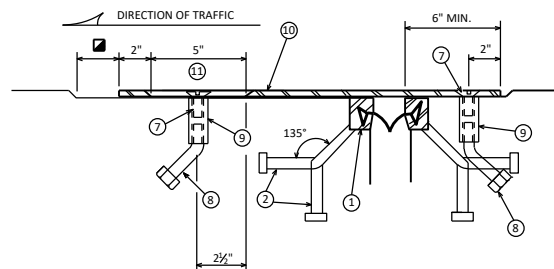
SECTION A-A
SLOPED FACE PARAPET

⑥ GALVANIZED PLATE $\frac{1}{8}$ " X $10\frac{1}{2}$ " X (2'-2" LONG FOR SKEWS $\geq 45^\circ$ AND 3'-0" LONG FOR SKEWS $\geq 45^\circ$) WITH HOLES FOR NO. 7. BEND AS SHOWN.

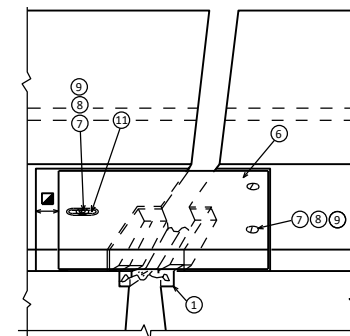


PLAN AT SIDEWALK

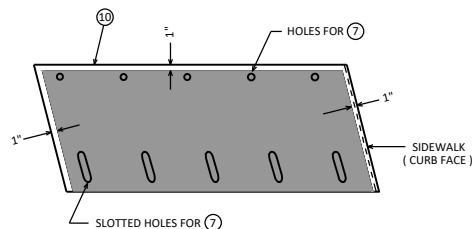
† 1'-2" WHEN "VERTICAL FACE PARAPET TYPE 'TX' IS USED



SECTION B-B



**VIEW OF PARAPET PLATES
FROM ROADWAY**
SLOPED FACE PARAPET



**PLAN OF SIDEWALK COVER PLATE
WITH SLIP-RESISTANT SURFACE**

PLACE SLIP-RESISTANT SURFACE ON TOP WALKING SURFACE IN SHADED AREA ONLY (NOT ON CURB FACE).

DESIGNER NOTES

FOR JOINT REPLACEMENT PROJECTS, JOINT SHALL BE DETAILED TO MATCH ORIGINAL CONFIGURATION (STRAIGHT OR KINKED) IN ORDER TO REDUCE SUBSTRUCTURE MODIFICATIONS REQUIRED.

PLAN DETAILS SHALL REMOVE ENOUGH PARAPET Laterally, AND FULL HEIGHT, TO ENSURE DURABILITY OF THE JOINT REPLACEMENT.

- ⊗ BLOCK OUT CONCRETE 2" EACH SIDE OF JOINT OPENING
- ☑ JOINT OPENING DIM. ALONG SKEW PLUS $\frac{1}{2}$ "

STRIP SEAL COVER PLATES SLOPED FACE PARA./SDWK.

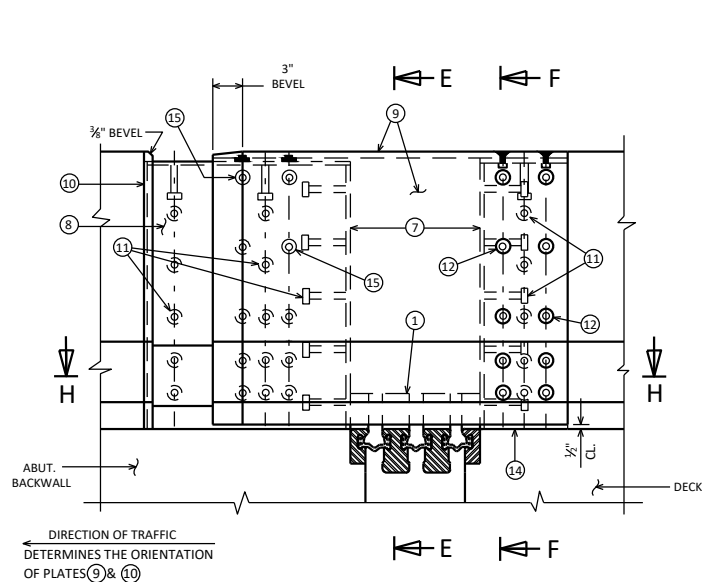


**BUREAU OF
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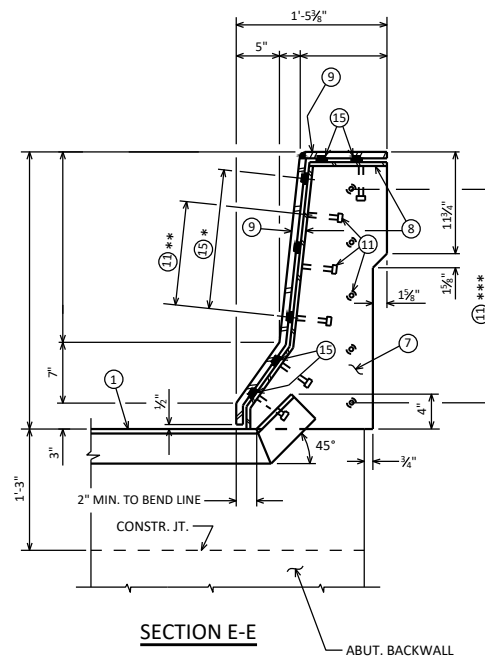
APPROVED: *Laura Shadewald*

DATE:
1-20

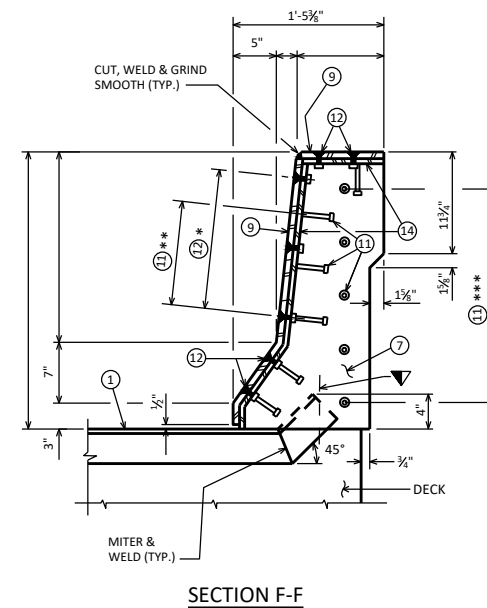
APPROVED SLIP-RESISTANT APPLIED SURFACES FOR STEEL PLATES		
PRODUCT	MANUFACTURER	CONTACT AT
SLIPNOT GRADE 2, STEEL	W. S. MOLNAR COMPANY	1-800-SLIPNOT
ALGRIP, STEEL	ROSS TECHNOLOGY CORP.	1-800-345-8170



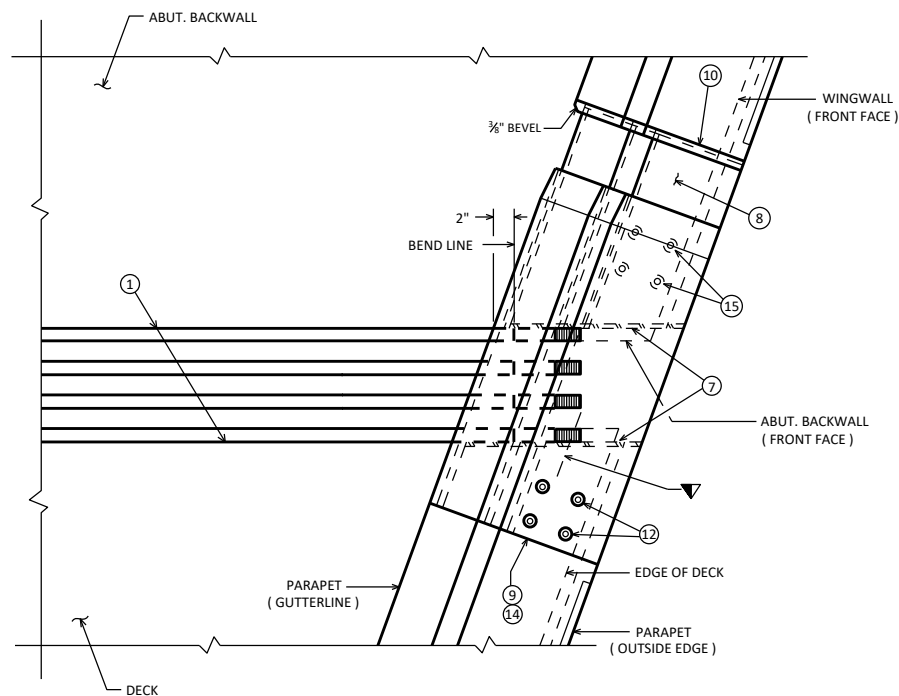
ELEVATION OF PARAPET LF/HF



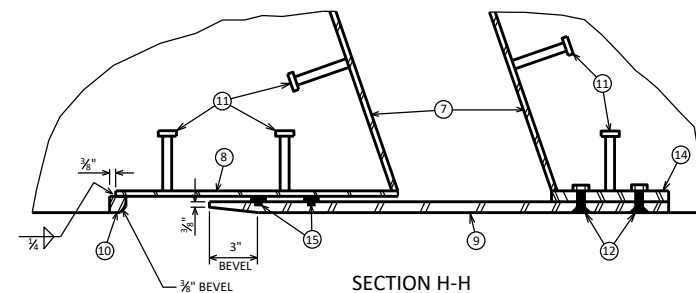
SECTION E-E



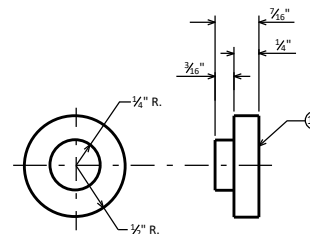
SECTION F-F



PLAN OF LF/HF



SECTION H-H



ADIPRENE BUTTON DETAIL

- * 2 EQ. SPA. (LF)
- 4 EQ. SPA. (HF)
- ** 2 SPA. (LF)
- 4 SPA. (HF)
- *** 4 SPA. (LF)
- 6 SPA. (HF)

▼ FOR STRUCTURES WITH SKEWS ADD NOTE
TO PLANS: "MITER EXTRUSION ENDS AS
REQ'D TO PROVIDE CLEARANCE"

**COVER PLATES FOR
PARAPET 'LF/HF'**



**BUREAU OF
STRUCTURES**

APPROVED: *Laura Shadewald*

DATE:
7-18