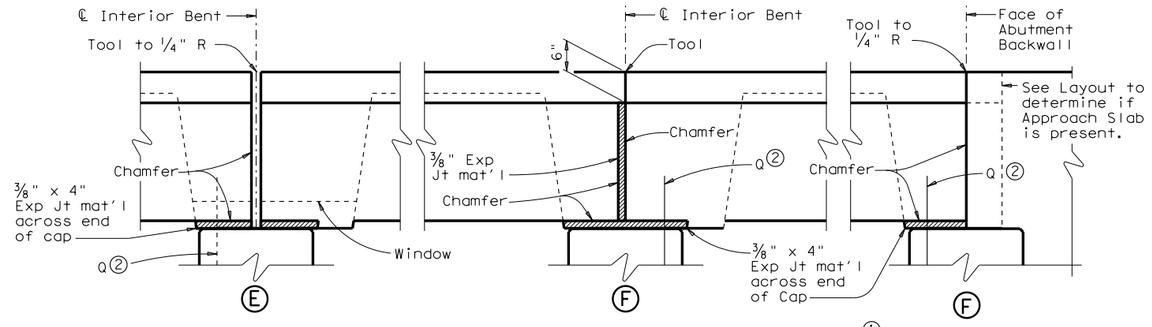
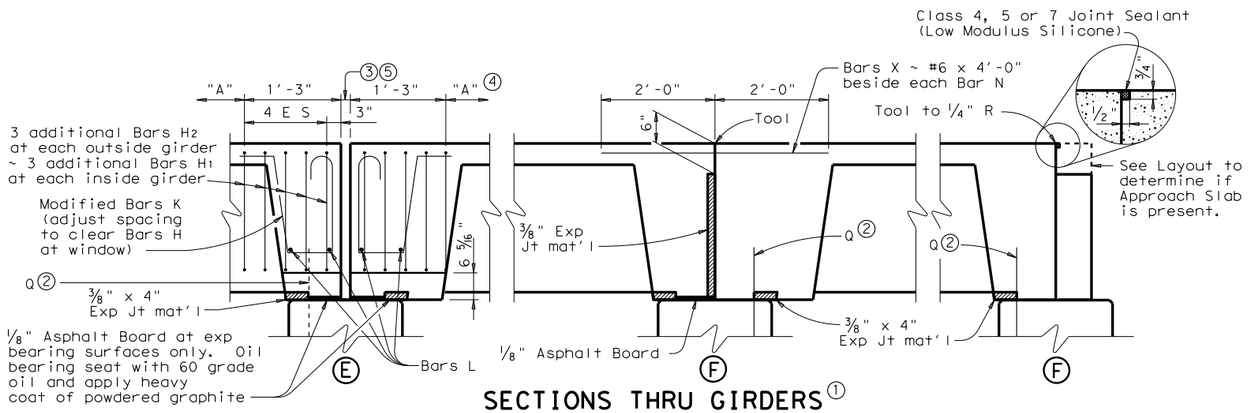
DATE:
FILE:

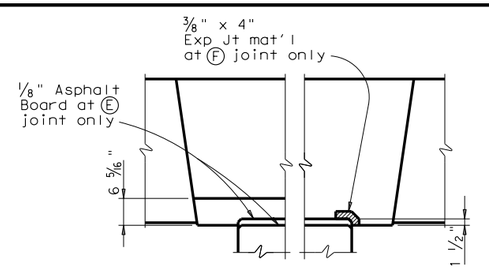


ELEVATION OF OUTSIDE GIRDERS ①



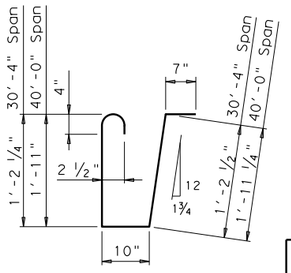
SECTIONS THRU GIRDERS ①

(Left side shows square and right side shows skewed condition)



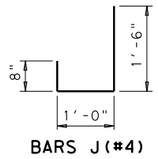
SECTION THRU SHEAR KEY

(Skewed Structures)



BARS K (#4)

(Mod for Ⓔ cond)



BARS J (#4)

① Joint conditions Ⓔ or Ⓕ shall be as shown on the Layout. Typically, for structures 120' long and under, no Expansion Joint Ⓔ is needed. Structures over 120' shall have Expansion Joint, Ⓔ located no farther than two spans from each Abutment and at 160' maximum spacing for the remainder of the structure.

② Dowel Bars Q required at one side of cap only at Fixed Joint. May be required at Exp Joint, See General Notes.

③ See Armor Joint sheet or Sealed Expansion Joint sheet for joint details and openings

④ See Concrete Slab and Girder Spans.

⑤ Use styrofoam as fill for joint opening when casting adjacent span. Remove when concrete has set.

⑥ 5" usual ~ 12" for 26°34' and greater skew at Interior Bents ~ outside Girders only

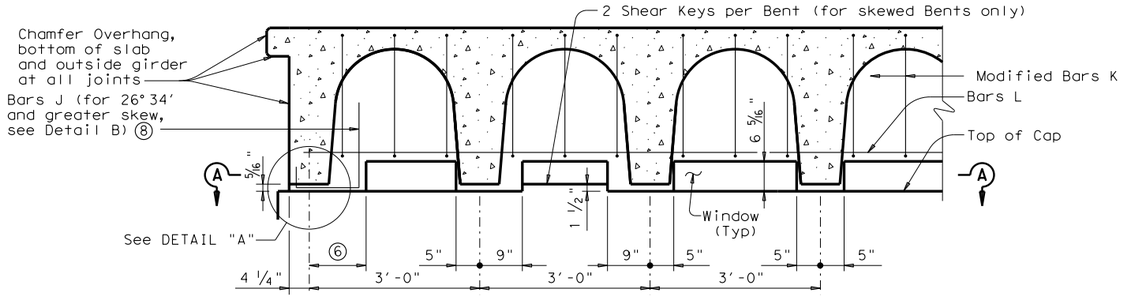
⑦ Showing end of outside stem for Spans with 1 3/4" Overhangs. For Spans with 7 3/4" and 1'-1 3/4" Overhangs, a breakback in outside stem will be required.

⑧ Adjustments in steel quantities do not include bars J required in outside stems at expansion bents. The number of bars J will vary with skew and overhang.

ADJUSTMENT IN REINFORCING STEEL QUANTITIES ⑧

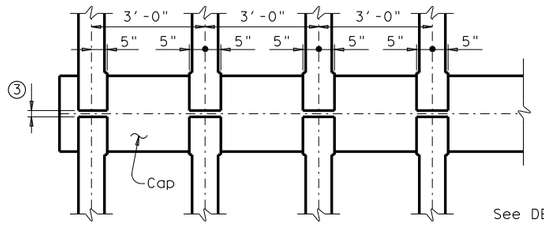
Rdwy width	30'-4" & 40'-0" SPANS				30'-4" SPANS				40'-0" SPANS			
	Ⓕ Cond		Ⓔ Cond		Ⓔ Cond		Ⓔ Cond		Ⓔ Cond		Ⓔ Cond	
	Bars X		Mod Bars K		Bars H1		Bars H2		Bars H1		Bars H2	
	6.01 lb/bar		Ded 0.67 lb/bar		1.75 lb/bar		1.75 lb/bar		2.29 lb/bar		2.29 lb/bar	
	No.	Wt	No.	Wt	No.	Wt	No.	Wt	No.	Wt	No.	Wt
24'	36	216	48	-32	42	74	12	21	42	96	12	27
28'	42	252	54	-36	48	84	12	21	48	110	12	27
30'	44	264	60	-40	54	95	12	21	54	124	12	27
38'	54	325	78	-52	72	126	12	21	72	165	12	27
44'	62	373	90	-60	84	147	12	21	84	192	12	27

Note: The above quantities are for the Ⓔ or Ⓕ Condition over one Bent, and are for information only.



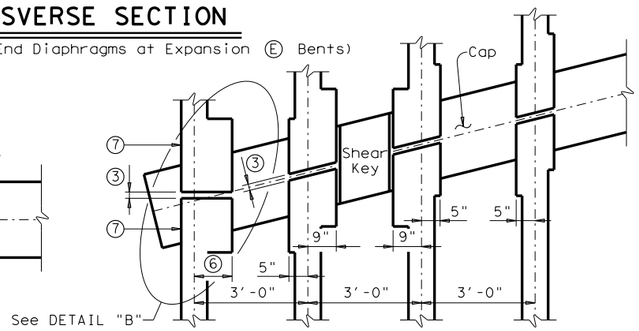
TRANSVERSE SECTION

(Showing Windows in End Diaphragms at Expansion Ⓔ Bents)



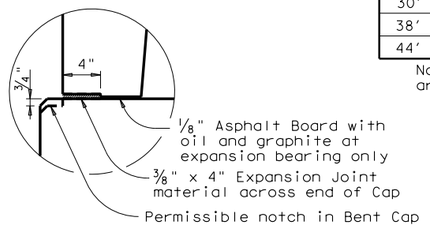
SECTION A-A

(Normal Bent)

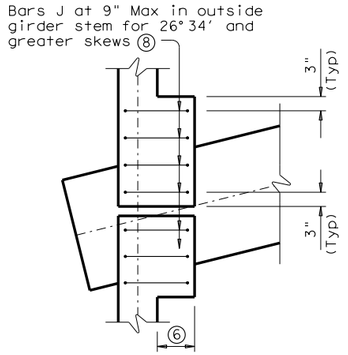


SECTION A-A

(Skewed Bent)



DETAIL "A"



DETAIL "B"

GENERAL NOTES:

Where shown Ⓔ on the layouts, provide diaphragm windows and Armor Joints or SEJ. Where shown Ⓕ on the layouts, Bars X shall be provided over the Bent.

If both ends of a span are shown Ⓔ on the layouts, Dowel Bars Q are required in one end of the span at each girder stem with no adjustment in reinforcing quantities for the added dowels.

No adjustment of the concrete pay quantities shown on the span details shall be made for the windows.

Cost of Drains shall be considered subsidiary to the Item 422, "Concrete Superstructures".

The type of expansion joint shall be as shown on the layout. See railing details and standard CGRAD for rail anchorage.

HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

CONCRETE SLAB & GIRDER MISCELLANEOUS DETAILS

CG-MD

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REVISIONS					
		DIST	COUNTY		SHEET NO.

DATE:
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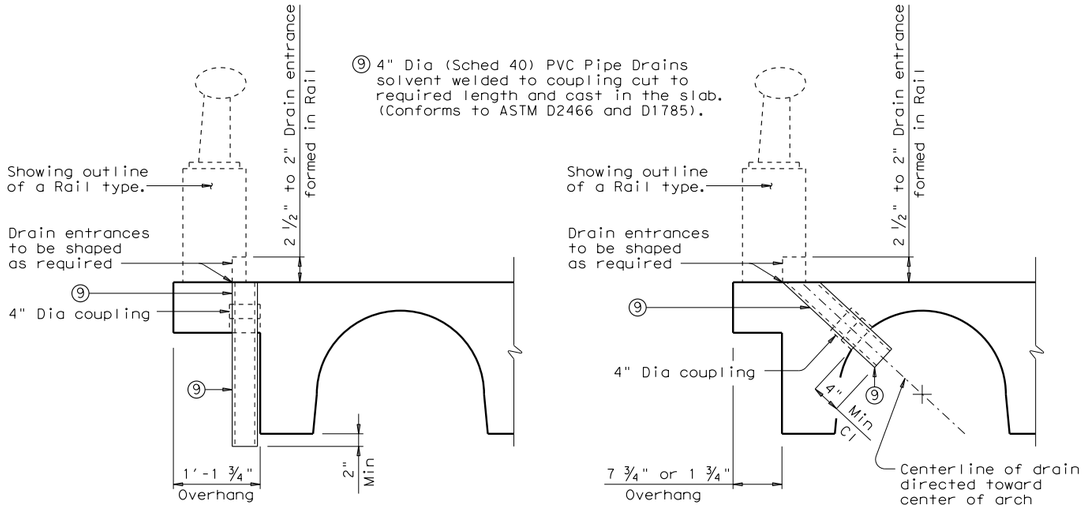
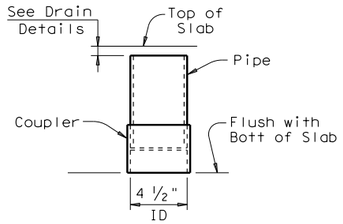


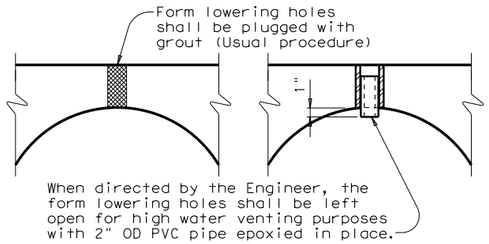
DRAIN DETAILS

NOTE: All drain pipe and fittings to be 4" diameter (Sch 40) PVC. Bend reinforcing steel to clear PVC 1". Drain length and location shall be as directed by the Engineer. No drains shall be permitted over roadways or railways, or within 10'-0" of Bent Caps. Variations of the above designs, as required for the type of rail used and it's location on the structure, shall be installed with the approval and direction of the Engineer. No water shall be discharged onto girders.



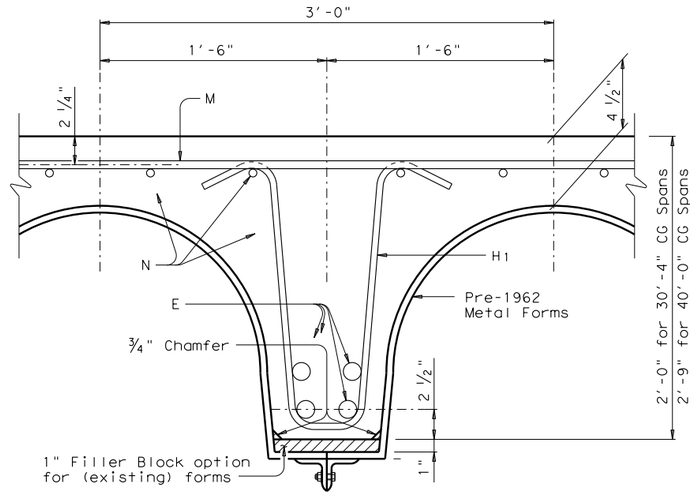
C.I.P. DRAIN DETAIL

NOTE: Roughen outside of PVC with coarse rasp or equal to ensure bond with cast-in-place concrete.



When directed by the Engineer, the form lowering holes shall be left open for high water venting purposes with 2" OD PVC pipe epoxied in place.

FORM LOWERING HOLE TREATMENT



PRE-1962 METAL FORM OPTION

NOTE: Circa 1962, the design of pan girders was changed to increase the thickness of the top of the arch from 3 ½" to 4 ½". Pre-1962 metal forms may be used to construct the superstructure by dropping them down 1" with respect to the grade line and adding a 1" filler block (of wood, steel, neoprene, styrofoam, or other material approved by the Engineer) in the bottom of the girder stems. The concrete quantity required will be about the same as with the newer form dimensions. If the contractor wishes to lower the forms 1" and not use filler blocks, he may do so. However, measurement and payment for concrete quantity will be based on plan dimensions and the cage of reinforcement will be raised up and placed as shown above. If the contractor elects to use the latter method, the forming system will require modification to allow for a minimum of a 1" space between the ends of girders and diaphragms and bent caps where the girders and diaphragms drop below the top of the bent cap.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

CONCRETE SLAB & GIRDER MISCELLANEOUS DETAILS

CG-MD

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