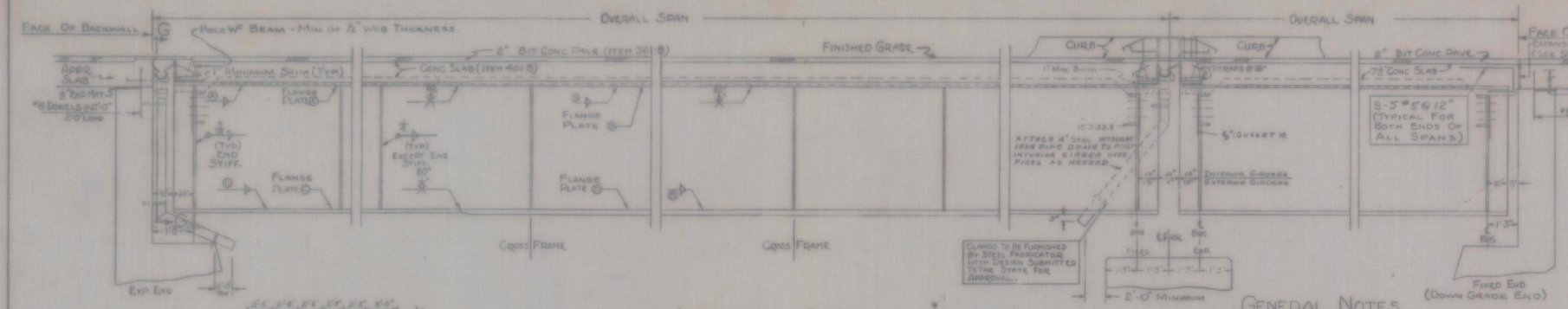

NOTES:
SEE SCB-D-60 FOR DETAIL OF BEAM HAUNCH, JOINT DETAIL, SCUPPER DETAIL. ADJACENT CROSS FRAMES MAY BE SLOPED EQUALLY OR PLACED HORIZONTAL TO FACILITATE FABRICATION. ALL END CONNECTIONS OF ANGLES SHALL BE MADE WITH 3 (THREE) RIVETS OR 3 HIGH STRENGTH BOLTS (MINIMUM).

GENERAL NOTES

SPECIFICATIONS: All materials and construction shall conform to the State of Vermont Dept. of Highways Standard Specifications for Road and Bridge Construction, dated Jan. 1956, and the A.A.S.H.O. Specifications dated 1957. Designed for H 20-S16 (44) loading modified for National System of Interstate Highways, applied in accordance with the provisions of the A.A.S.H.O. Standard Specifications, Art. 1.2.8.

STRUCTURAL STEEL: The steel shall conform to A.S.T.M. A 373-54T. Field splices will only be permitted provided that the length of girder is too excessive for shipment. Field splices are to be made with High Strength Bolts and details are to be submitted to the State for approval. Girders shall be cambered for dead load deflection plus ½", plus allowance for effect of vertical curvature. Loss of camber due to shrinkage shall be compensated for by additional camber to be determined by the fabricator.
The maximum allowable stiffener spacing is given in the accompanying table. Spacing shall be modified on skewed spans to match lateral bracing and or cross frames.
Unless otherwise noted: open holes are "⅞in", all bolts are ⅞"ø
For location of fixed and expansion bearings see contract plans.

One Scupper is to be placed midway between each cross frame @ both curbs except as follows: Scuppers are to be omitted over roadways or sidewalks under a bridge and placed at least 2'-0" outside of shoulder point or edge of sidewalk, but not within 4'-0" of face of abutment or pier. On a banked bridge, scuppers are to be placed on the lower side only.
Details of shear connectors shall be submitted to the State for approval. Either channel or stud shear connectors may be substituted for the designed spiral connectors.

WELDING: The metal arc process shall be used for shop and field fabrication. Fillet welds are unless otherwise noted. It is the intent that there shall be no field welding. Field welding of a minor nature will be permitted only with written permission of the Field Engineer.

PAINT: The final coat of field paint shall be green, unless otherwise directed by the Engineer.

CONCRETE: All concrete in slab to be Concrete Class 'B'. Exposed edges of concrete to be chamfered 1". All construction joints to be made as on Standard Structures Drawing SB-20-60, details (H) & (K) unless otherwise noted.

REINFORCING STEEL: When bridge is on a skew, transverse bars shall be furnished as for a square span. Bars shall be cut in field to fit skew end and cut-offs shall be used on opposite skew end.

QUANTITIES: Quantities given in the accompanying table are for a square single span bridge. Quantities include 15% Bituminous Concrete Pavement over-run, 5% Concrete over-run, and 2% Structural Steel over-run.

REVISIONS & CORRECTIONS

DRAWN BY: RND-WMS
TRACED BY: RSH-RND
CHECKED BY: WMS-JULEP
CORRECT Apr. 30 1960
BRIDGE ENGINEER
APPROVED
CHIEF ENGINEER

DETAILS OF 30 FT. ROADWAY-COMPOSITE WELDED PLATE GIRDER BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

1 OF 4

SCWPG-30-60

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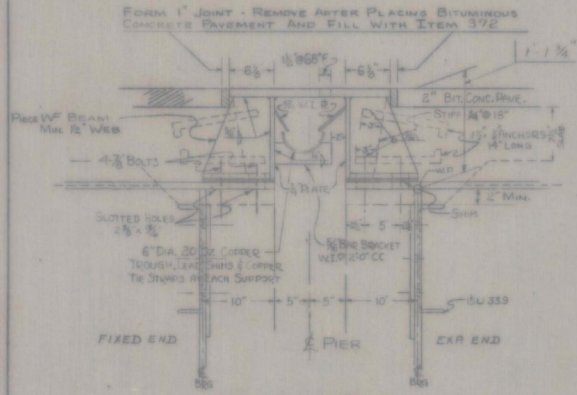
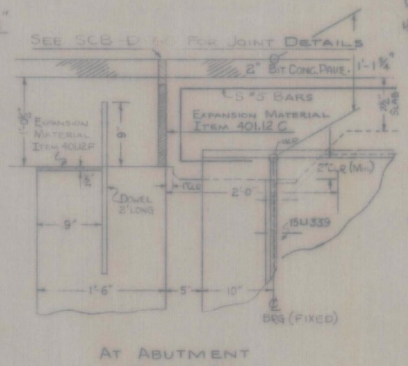


EXP. JT. AT PIER

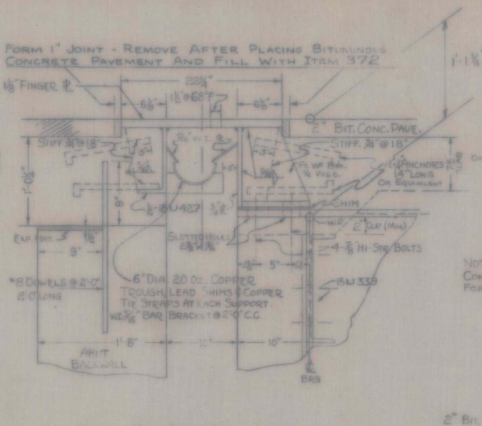
SCALE 1½"=1'0"



AT ABUTMENT

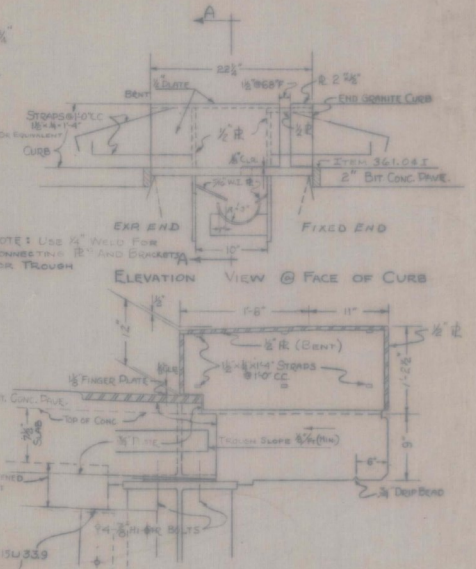
FIXED END

SCALE 1½"=1'0"



EXP. JT. AT ABUT.

SCALE 1½"=1'0"

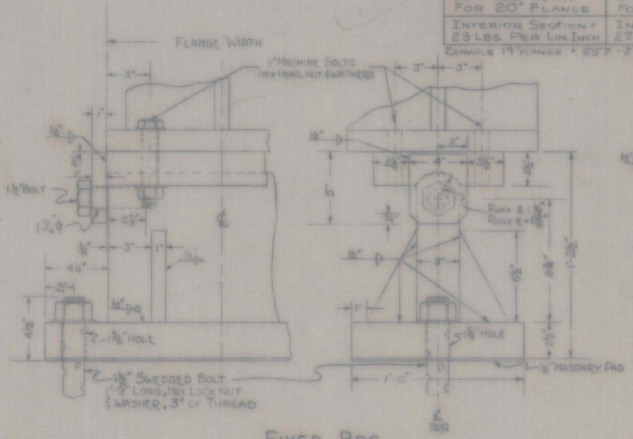


CURB DETAIL AT EXP. JT. (PIER)

SCALE 1½"=1'0"

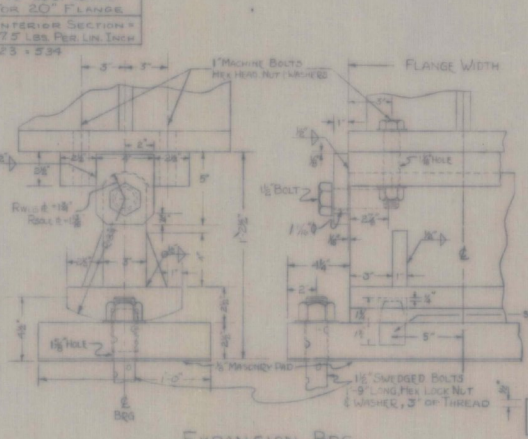
WEIGHT OF BEARING DEVICES	
FIXED END	EXPANSION END
557 LBS. TOTAL FOR 20" FLANGE	596 LBS. TOTAL FOR 20" FLANGE
INTERIOR SECTION = 23 LBS. PER LIN. INCH	INTERIOR SECTION = 27.5 LBS. PER LIN. INCH

EXAMPLE 19" FLANGE = 557 - 23 × 534



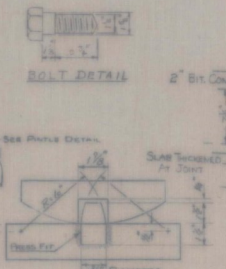
FIXED BRG

SCALE 3"=1'0"



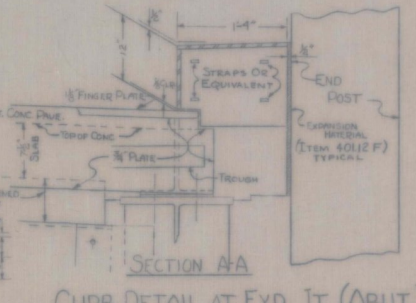
EXPANSION BRG

SCALE 3"=1'0"



PINTLE DETAIL

SCALE 3"=1'0"



CURB DETAIL AT EXP. JT. (ABUT.)

SCALE 1½"=1'0"

REVISIONS & CORRECTIONS

DRAWN BY: RND

TRACED BY: RND - WMS

CHECKED BY: WMS - JLH - EFP

CORRECT Dec. 30, 1960

BRIDGE ENGINEER

APPROVED

CHIEF ENGINEER

GIRDER END DETAILS - COMPOSITE WELDED PLATE GIRDER BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCWPG-30-60

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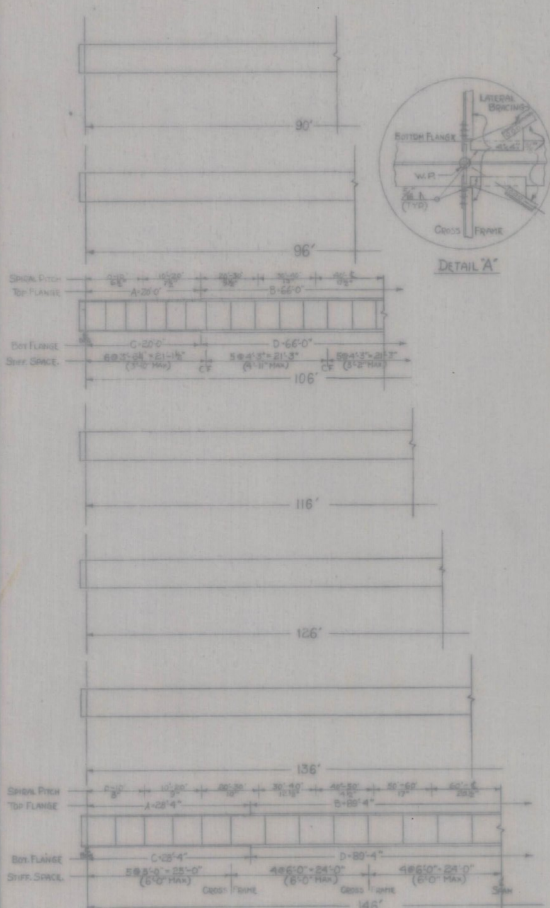
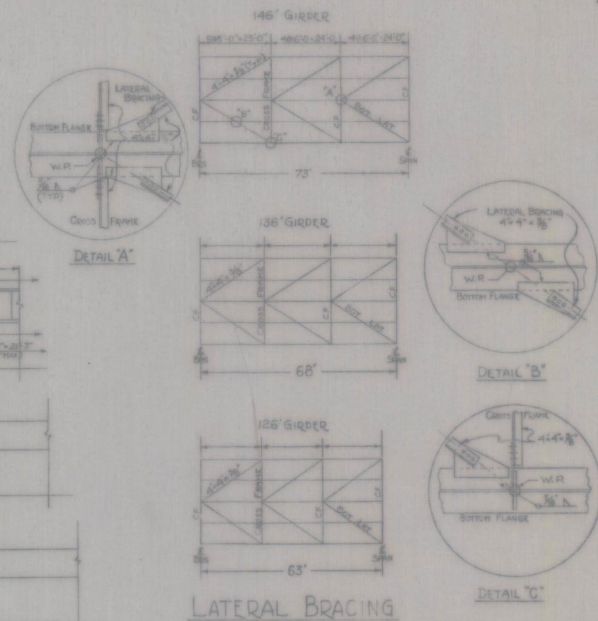


If Welded Studs Are Used In Lieu Of Spirals The Spacing (Pitch) Of 2 (Two) 3/4" Studs Shall Be 95% Of The Pitch Indicated For The Above Spiral Spacing.



Lateral Bracing

Note: Required only on spans greater than 125'.

Structural Steel

Span	Flange U.M. Plate A	Flange U.M. Plate B	Flange U.M. Plate C	Flange U.M. Plate D	Web	D.L. Defl. d	D.L. Defl. 3/4d	Depth H	Drains	Square Span Net Wgt. ‡ lbs	Max. Moments (Ft-Kips) DL	Max. Moments SDL	Max. Moments L.L.+I.	Moment of Inertia (Max) DL	Moment of Inertia (n=30) SDL	Moment of Inertia (n=10) L.L.+I.	Max. Reaction (Kips) (D+L.L.+I.) Gdr.*	Max. Reaction (Kips) Abut.	Max. Reaction (Kips) Pier **	Span
90																				90
96																				96
106	16"×3/4"	16"×15/16"	16"×1 1/2"	16"×1 13/16"	62"×3/8"	2 3/8"	1 3/4"	7.630			1430	365	1350	49,440	78,780	111,140	128	484	841	106
116																				116
126																				126
136																				136
146	20"×1"	20"×1 1/4"	20"×1 5/8"	20"×2"	84"×1/2"	3 3/8"	2 1/2"	9.500			3062	624	2100	138,200	193,700	261,560	166	671	1230	146

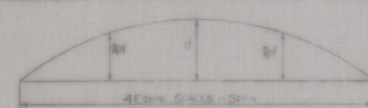
* Includes Impact ** Two Equal Spans ‡ Exclusive of Expansion Dams & Drains

Notes: The "H Depth" Indicated Above Is From Finish Grade To Bridge Seat Elevation

Roadway Cross Section (Square Span)

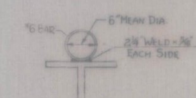
Bill of Materials

Span c/c Bearings	S-1 #5 No.	S-1 #5 Lgth.	S-2 #4 No.	S-2 #4 Lgth	S-3 #6 No.	S-3 #6 Lgth	S-4 #4 No.	S-4 #4 Lgth	S-5 #5 No.	S-5 #5 Lgth	Estimated Quantities: Conc. CY	Reinf. St. lbs	Bit. Conc. Tons	Spiral Bars lbs	Granite Cb. L.F.	Diagram (Dimensions Are Out to Out)
90		34'4"						5'-3"	60	4'-2"						S-4 #4: A=5", B=1'-6", C=1'-5", D=1'-6", E=5", Tot. Lgth = 5'-3"
96		do						do	do	do						
106	430	do	256	28'3"	40	28'9"	146	do	do	do						
116		do						do	do	do						S-5 #5: B=2'6", C=10", D=10", Tot. Lgth = 4'-2"
126		do						do	do	do						
136		do						do	do	do						
146	590	do	384	26'3"	60	26'8"	196	do	do	do						

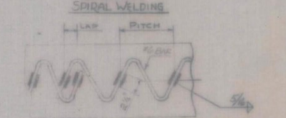


Dead Load Deflection

Parabolic Curve



Section of Spiral Welding



Plan of Spiral Welding

Data for Girders (Square Span)

Span c/c Brg	90'	96'	106'	116'	126'	136'	146'
Length of Girders			107'-8"				147'-8"
Size of Weld (A)			5/16"				5/16"
" " " (B)			5/16"				5/16"
" " " (C)			5/16"				3/8"
" " " (D)			3/8"				3/8"
Size End Stiff.			7"×1"				9"×1"
" Int. "			7"×1/2"				9"×5/8"
Mean Dia. Spiral			6"				6"
Dia. Spiral Bar			3/4"				3/4"
Length 3/4" Studs			6 1/2"				6 1/2"

Revisions & Corrections

Drawn By: RND

Traced By: RND-WMS

Checked By: WMS-JLH-EFP

Correct Dec. 30, 1960

[signature]

Bridge Engineer

Approved [signature]

Chief Engineer

Girder Details and Quantities - Composite Welded Plate Girder Bridges

Department of Highways Standard Structures

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SCWPG-30-60

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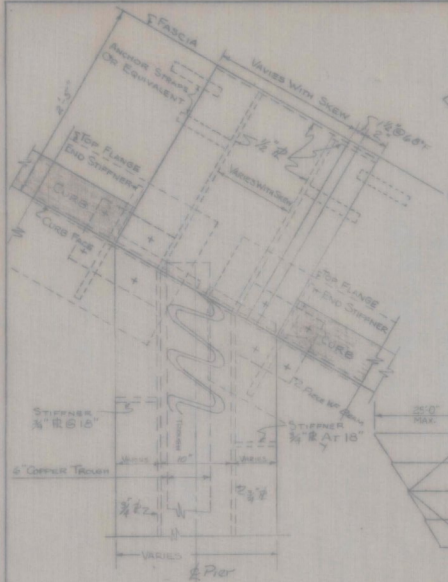
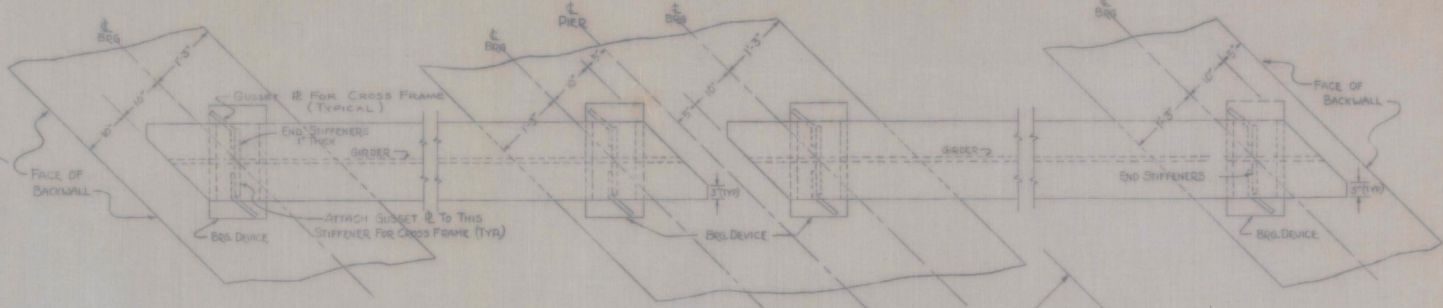


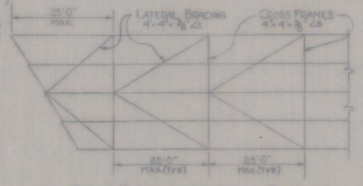
PLAN VIEW - SKEWED EXPANSION DAM AT PIER



EXP BRG. AT ABUT.

FIXED & EXP. BRG. AT PIER

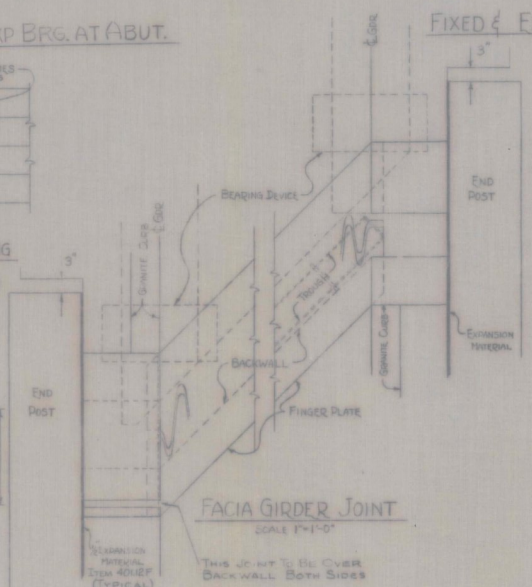
FIXED BRG. AT ABUT.



CROSS FRAMES & LATERAL BRACING

No Scale

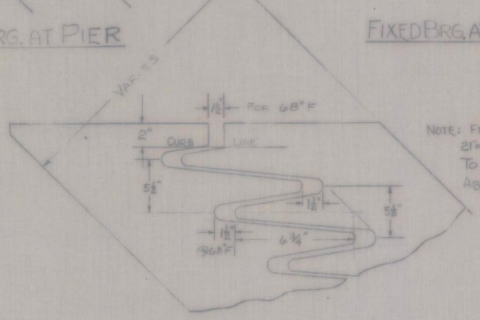
NOTE: Additional stiffeners may be used to allow for proper alignment of cross frames.



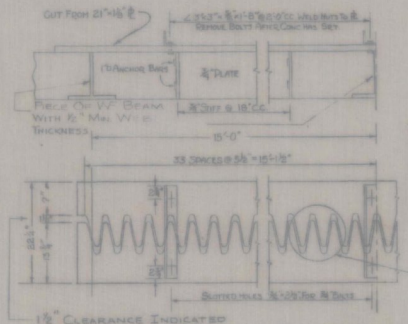
FACIA GIRDER JOINT

SCALE 1"=1'-0"

THIS JOINT TO BE OVER BACKWALL BOTH SIDES



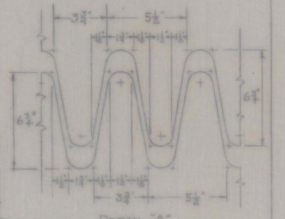
NOTE: Flame cut from 21"x1⅛" Plate. Fingers To Be Symmetrical About ℄ Of Plate



1½" CLEARANCE INDICATED BETWEEN FINGER R^S IS FOR 68° F.

EXPANSION DAM

SCALE 1"=1'-0"

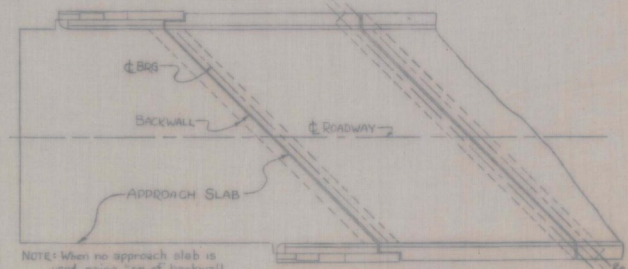


DETAIL "A"

SCALE 3"=1'-0"

SKEWED FINGER PLATE

No Scale



NOTE: When no approach slab is used, raise top of backwall to grade and attach joint devices directly to backwall.

PLAN VIEW

SCALE ½"=1'-0"

REVISIONS & CORRECTIONS

DRAWN BY: RNO - WMS

TRACED BY: RNO

CHECKED BY: WMS - JLH - EFP

CORRECT Dec. 30, 1960
Bridge Engineer

APPROVED
Chief Engineer

SKEW DETAILS AND EXPANSION DEVICE - COMPOSITE WELDED PLATE GIRDER BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

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SCWPG-30-60

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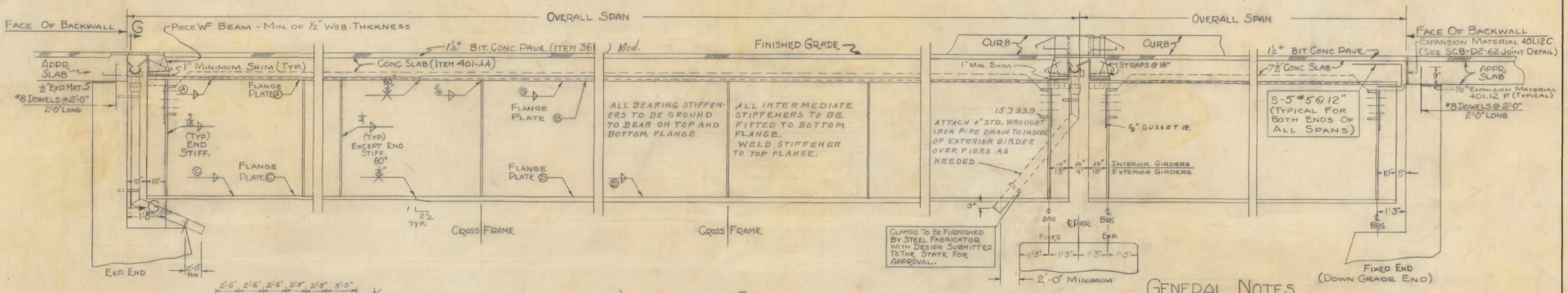
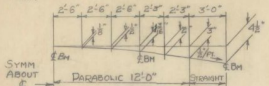
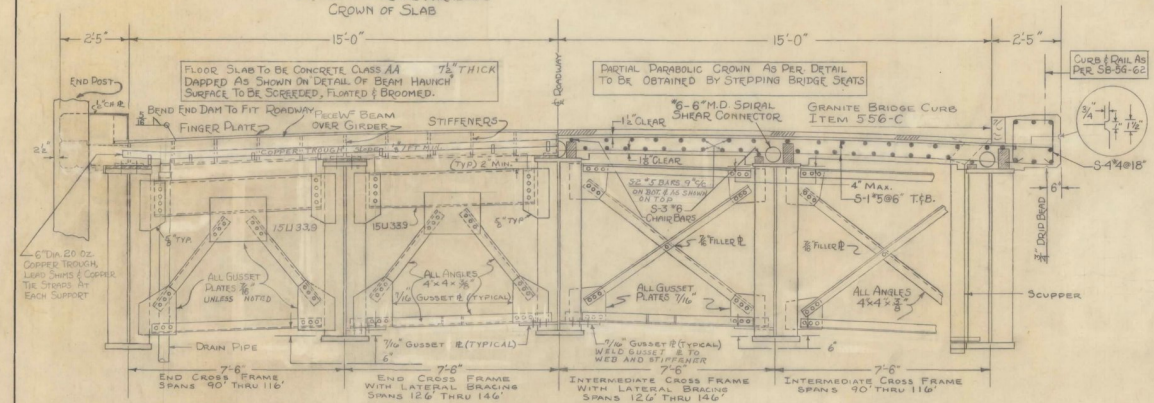


LONGITUDINAL SECTION

SCALE ½"=1'-0"



DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB



END SECTION G-G

TYPICAL SECTION

SCALE ½"=1'-0"

NOTES:
SEE SCB-D2-62, SCB-D6-62 FOR DETAIL OF BEAM HAUNCH, JOINT DETAIL, & SCUPPER DETAIL. ADJACENT CROSS FRAMES MAY BE SLOPED EQUALLY OR PLACED HORIZONTAL TO FACILITATE FABRICATION. ALL END CONNECTIONS OF ANGLES SHALL BE MADE WITH 3 (THREE) RIVETS OR 3 HIGH STRENGTH BOLTS (MINIMUM).

ALLOWABLE DESIGN STRESSES:
Concrete $f_c = 3000$ P.S.I. $f_c = 1200$ P.S.I.
Structural steel $f_s = 20{,}000$ P.S.I. (A 36)
other steel as per A.A.S.H.O. Specifications
Reinforcing steel $f_s = 20{,}000$ P.S.I. Tension
$f_s = 16{,}000$ P.S.I. Compression

GENERAL NOTES

SPECIFICATIONS: All materials and construction shall conform to the State of Vermont Dept. of Highways Standard Specifications for Road and Bridge Construction, dated April 1964, and the A.A.S.H.O. Specifications dated 1961. Designed for H S 20-44 loading modified for National System of Interstate Highways, applied in accordance with the provisions of the A.A.S.H.O. Standard Specifications, Art. 1.2.8.

STRUCTURAL STEEL: The steel shall conform to A.S.T.M. A 36 - 62T. Field splices will only be permitted provided that the length of girder is too excessive for shipment. Field splices are to be made with High Strength Bolts and details are to be submitted to the State for approval. Girders shall be cambered for dead load deflection plus 2", plus allowance for effect of vertical curvature. Loss of camber due to shrinkage shall be compensated for by additional camber to be determined by the fabricator.
The maximum allowable stiffener spacing is given in the accompanying table. Spacing shall be modified on skewed spans to match lateral bracing and or cross frames.
Unless otherwise noted: open holes are 15/16", all bolts are ⅞"ø
For location of fixed and expansion bearings see contract plans.
Expansion bearing rockers are to be plumb at 45° F.

One Scupper is to be placed midway between each cross frame ℄ both curbs except as follows: Scuppers are to be omitted over roadways or sidewalks under a bridge and placed at least 2'-0" outside of shoulder point or edge of sidewalk, but not within 4'-0" of face of abutment or pier. On a banked bridge, scuppers are to be placed on the lower side only.
Details of shear connectors shall be submitted to the State for approval. Either channel or stud shear connectors may be substituted for the designed spiral connectors.

WELDING: The metal arc process shall be used for shop and field fabrication. Fillet welds ¼" unless otherwise noted. It is the intent that there shall be no field welding. Field welding of a minor nature will be permitted only with written permission of the Field Engineer.

PAINT: The final coat of field paint shall be green, unless otherwise directed by the Engineer.

CONCRETE: All concrete in slab to be Concrete Class AA. Exposed edges of concrete to be chamfered 1". All construction joints to be made as on Standard Structures Drawing SCB-D6-62 details Ⓑ & Ⓒ unless otherwise noted.

REINFORCING STEEL: When bridge is on a skew, transverse bars shall be furnished as for a square span. Bars shall be cut in field to fit skew end and cut-offs shall be used on opposite skew end.

QUANTITIES: Quantities given in the accompanying table are for a square single span bridge.

REVISIONS & CORRECTIONS
Specifications changed to April 1964 3/1/65 WMS
Loading designated as H S 20-44 3/1/65 WMS
Allowable Design Stresses Added 3/1/65 WMS

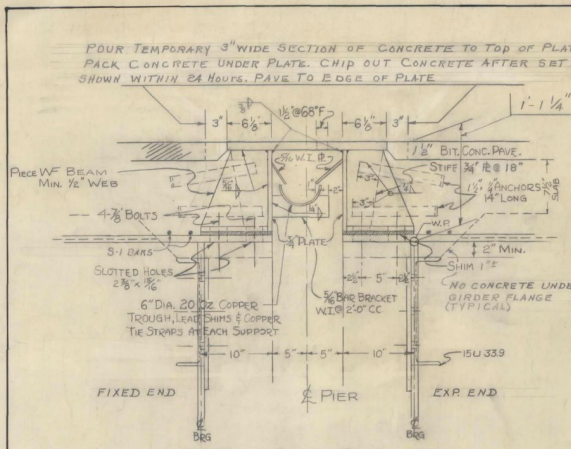
DRAWN BY: RND-WMS
TRACED BY: RSH-RND
CHECKED BY: WMS-JLH-EFP
CORRECT Dec. 30 1960
BRIDGE ENGINEER
APPROVED Dec. 30, 1960
CHIEF ENGINEER

DETAILS OF 30 FT. ROADWAY-COMPOSITE WELDED PLATE GIRDER BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

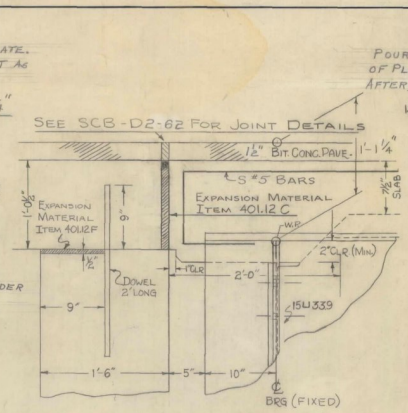
1 OF 4

SCWPG-30-62



EXP. JT. AT PIER

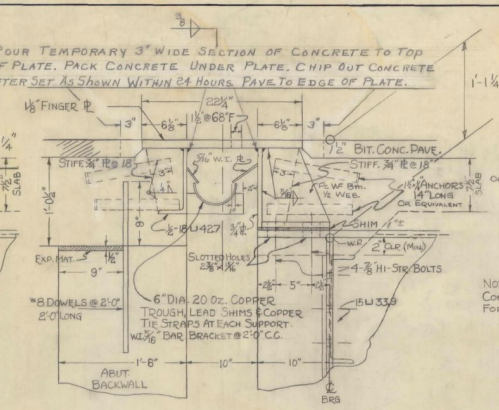
SCALE 1½"=1'-0"



AT ABUTMENT

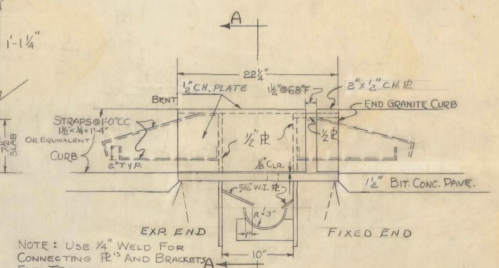
FIXED END

SCALE 1½"=1'-0"

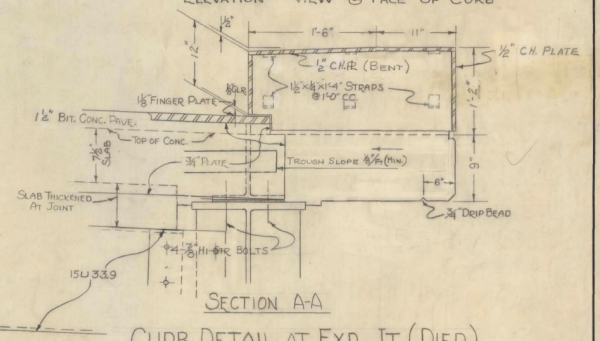


EXP. JT. AT ABUT.

SCALE 1½"=1'-0"



ELEVATION VIEW @ FACE OF CURB



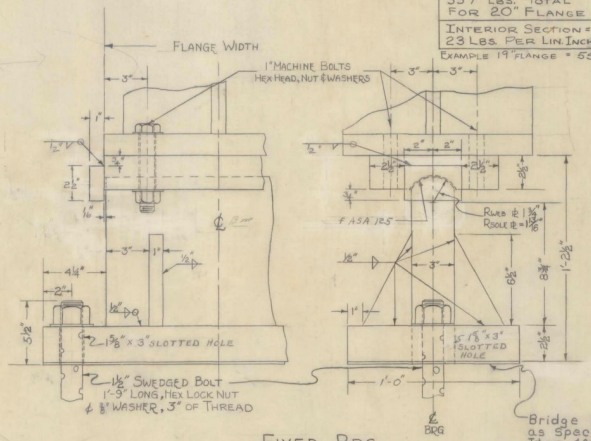
SECTION A-A

CURB DETAIL AT EXP. JT. (PIER)

SCALE 1½"=1'-0"

WEIGHT OF BEARING DEVICES	
FIXED END	EXPANSION END
557 LBS. TOTAL FOR 20" FLANGE	596 LBS. TOTAL FOR 20" FLANGE
INTERIOR SECTION = 23 LBS. PER LIN. INCH	INTERIOR SECTION = 27.5 LBS. PER LIN. INCH

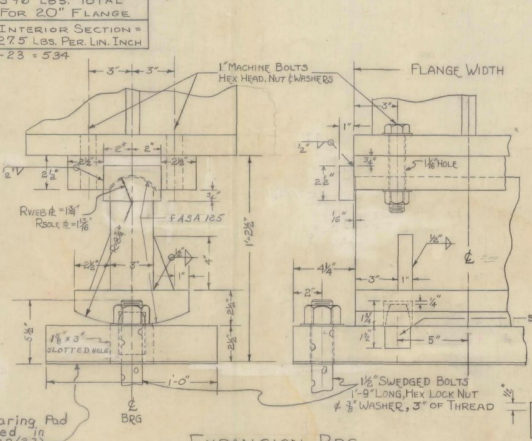
EXAMPLE 19" FLANGE = 557 - 23 = 534



FIXED BRG

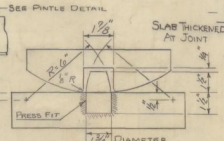
SCALE 3"=1'-0"

Bridge Bearing Pad as Specified in Item 404.02(E3)



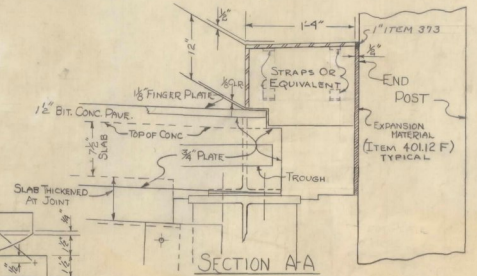
EXPANSION BRG

SCALE 3"=1'-0"



PINTLE DETAIL

SCALE 3" = 1'-0"



SECTION A-A

CURB DETAIL AT EXP. JT. (ABUT.)

SCALE 1½"=1'-0"

REVISIONS & CORRECTIONS

REVISED JOINT AT EDGES OF FINGER PLATES WMS 2/17/64
REVISED TO CONFORM TO APRIL 1964 SPECS. 3/1/65 WMS
BEARINGS REVISED 3/1/65 WMS

DRAWN BY: RND
TRACED BY: RND - WMS
CHECKED BY: WMS - JLH - EFP

CORRECT Dec 30 1960
Lyn Bjorn
BRIDGE ENGINEER

APPROVED Dec 30, 1960
C.O. Sorlien
CHIEF ENGINEER

GIRDER END DETAILS - COMPOSITE WELDED PLATE GIRDER BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

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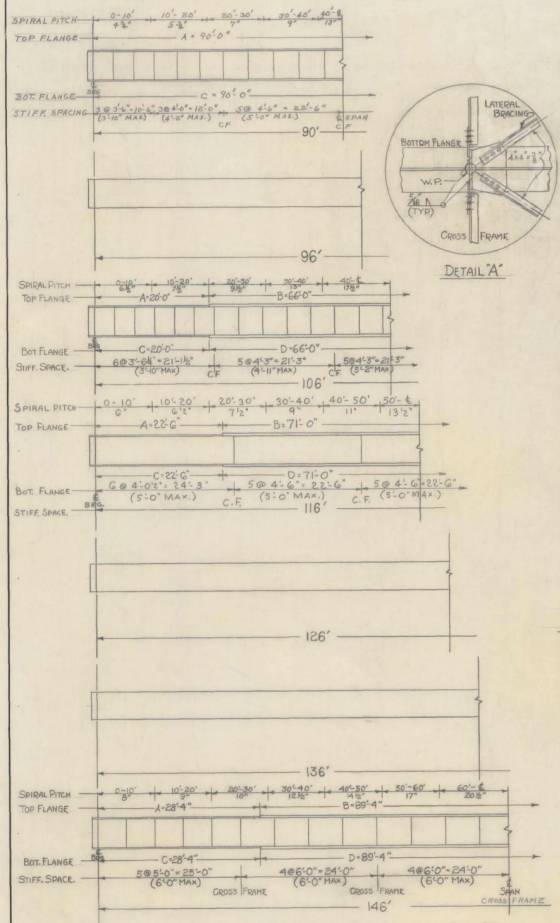
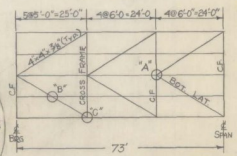
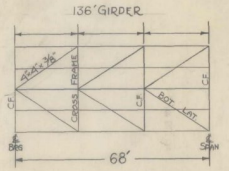
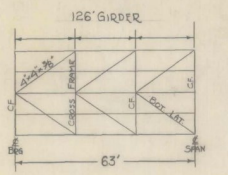


If Welded Studs Are Used In Lieu Of Spirals The Spacing (Pitch) Of 2 (Two) ¾" Studs Shall Be 95% Of The Pitch Indicated For The Above Spiral Spacing.

DETAIL "A"

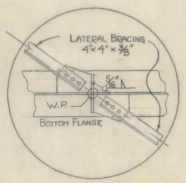




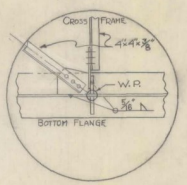


LATERAL BRACING

Note: Required only on spans greater than 125'.



DETAIL "B"



DETAIL "C"

NOTE: NO GUSSET PLATES, STIFFENERS, OR BRACKETS TO BE WELDED TO BOTTOM FLANGE.

STRUCTURAL STEEL

SPAN	UNIV. MILL FLANGE PLATES A	B	C	D	WEB	D.L. DEFL. d	¾d	DEPTH H	DIAPHS	SQUARE SPAN NET WGT. lbs	MAX. MOMENTS D.L.	(FT-KIPS) S.D.L.	L.L.+I.	MOMENT OF INERTIA (MAX) D.L.(in⁴)	(n=30) S.D.L.	(n=10) L.L.+I.	DEAD LOAD PLUS LIVE LOAD MAX. REACTION (KIPS) (D+L+I) GDR.*	(KIPS) ABUT.	** PIER	SPAN
90	16"x⅞"	-	16"x1½"	-	60"x⅜"	1⅞"	1⅜"	7.45'	8	117,800	1023	344	1132	38,040	67,170	93,832	116	438	787	90
96																				96
106	16"x⅞"	16"x1⅝"	16"x1½"	16"x1⅝"	62"x⅜"	2⅜"	1¾"	7.59'	10	157,900	1475	478	1353	58,080	83,970	117,860	129	505	838	106
116	18"x⅜"	18"x⅞"	18"x1⅜"	18"x1¾"	64"x7/16"	3"	2¼"	7.74'	10	176,300	1766	511	1494	56,510	91,780	128,480	134	530	996	116
126																				126
136																				136
146	20"x1"	20"x1¼"	20"x1⅜"	20"x2"	84"x½"	3⅜"	2⅝"	9.46'	12	326,770	3197	906	2100	140,040	195,990	263,720	179	715	1381	146

* Includes Impact ** Two Equal Spans # Exclusive of Expansion Dams & Drains

Notes: The "H Depth" Indicated Above Is From Finish Grade To Bridge Seat Elevation. All Above Information Computed For Interior Girders Assuming Any Dead Load Applied After The Slab Has Cured To Be Equally Distributed Over All Girders. Interior And Exterior Girders To Be Same Steel Section.

ROADWAY CROSS SECTION (SQUARE SPAN)

BILL OF MATERIALS

SPAN c/c BEARINGS	S-1*5 No.	LGTH.	S-2*5 No.	LGTH.	S-3*6 No.	LGTH.	S-4*4 No.	LGTH.	S-5*5 No.	LGTH.	ESTIMATED QUANTITIES CONC. CY	REINF. ST. lbs	BIT. CONC. TONS	SPIRAL BARS lbs	GRANITE CB. L.F.
90	362	34'4"	300	24'3	40	24'9	180	5'-3"	60	4'-2"					
96		do		do		do		do		do					
106	430	do	300	28'3"	40	28'9"	146	do		do					
118	470	do	410	25'-3	50	25'-6	158	do		do					
126		do						do		do					
136		do						do		do					
146	590	do	450	26'3"	60	26'8"	196	do		do					

DIAGRAM

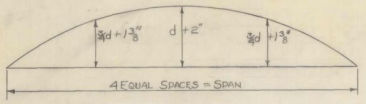
Dimensions Are Out To Out

S-4*4: A=5", B=1'-6", C=1'-5", D=1'-6", Tot. Lgth = 5'-3"

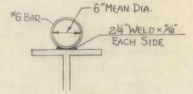
S-5*5: B=2'-6", C=10", D=10", Tot. Lgth = 4'-2"

DATA FOR GIRDERS (SQUARE SPAN)

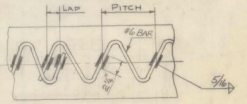
SPAN c/c BRG	90'	96'	106'	116'	126'	136'	146'
LENGTH OF GIRDERS	91'-8"		107'-8"	117'-8"			147'-8"
SIZE OF WELD Ⓐ	5/16"		5/16"	5/16"			5/16"
" " " Ⓑ	-		5/16"	5/16"			5/16"
" " " Ⓒ	5/16"		5/16"	3/8"			3/8"
" " " Ⓓ	-		5/16"	3/8"			3/8"
SIZE END STIFF.	7"x⅝"		7"x1"	8"x¾"			9"x1"
" INT. "	6"x⅜"		7"x7/16"	7"x7/16"			9"x⅜"
MEAN DIA. SPIRAL	6"		6"	6"			6"
DIA. SPIRAL BAR	¾"		¾"	¾"			¾"
LENGTH ¾" STUDS	7"		7"	7"			7"



CAMBER DIAGRAM



SECTION OF SPIRAL WELDING



PLAN OF SPIRAL WELDING

REVISIONS & CORRECTIONS

Corrected Depth H for 106' & 146' Spans. 2/17/64 W.S.
Corrected Camber Diagram 2/17/64 W.S.

Drawn By: RND
Traced By: RND-WMS
Checked By: WMS-JLH-EFP

Correct Dec. 30 1960
Bridge Engineer

Approved Dec 30 1960
Chief Engineer

GIRDER DETAILS AND QUANTITIES - COMPOSITE WELDED PLATE GIRDER BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

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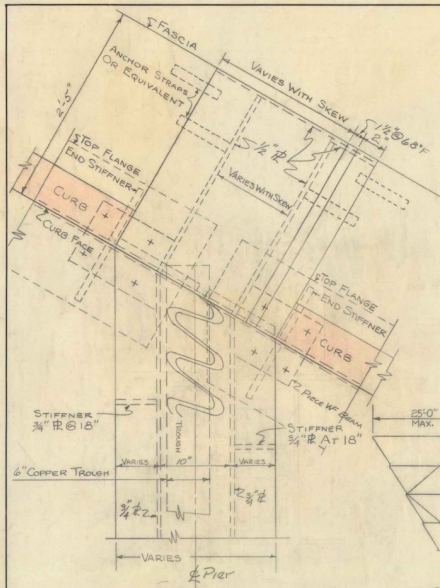
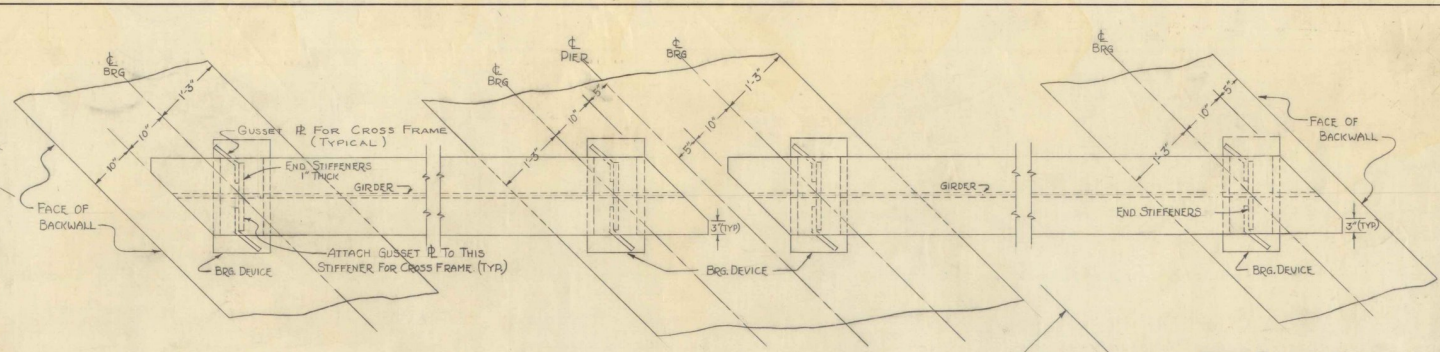


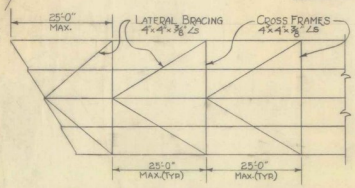
PLAN VIEW - SKEWED EXPANSION DAM AT PIER



EXP BRG. AT ABUT.

FIXED ℄ EXP. BRG. AT PIER

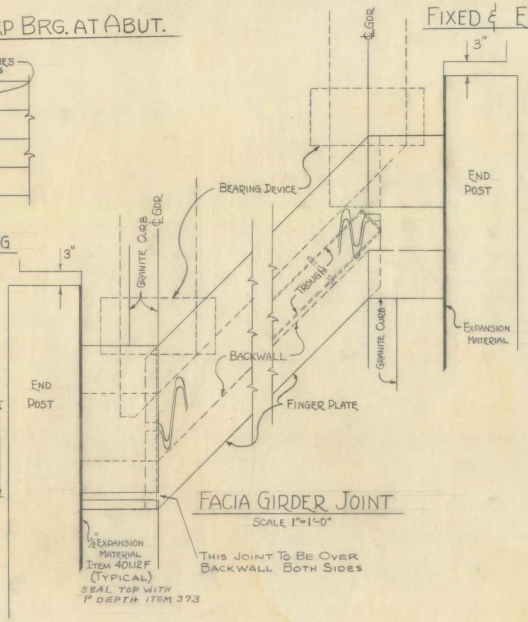
FIXED BRG. AT ABUT.



CROSS FRAMES ℄ LATERAL BRACING

No Scale

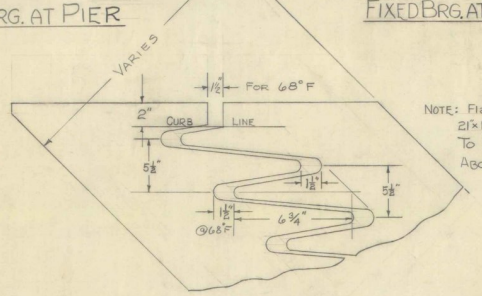
NOTE: Additional stiffeners may be used to allow for proper alignment of cross frames.



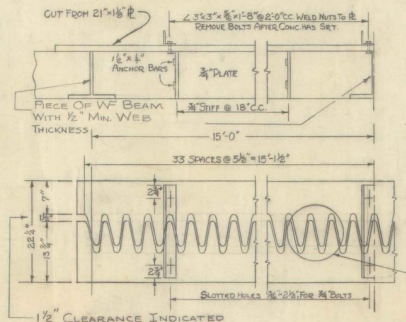
FACIA GIRDER JOINT

Scale 1"=1'-0"

THIS JOINT TO BE OVER BACKWALL BOTH SIDES



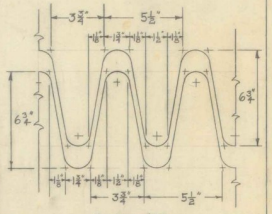
NOTE: Flame cut from 21"x1⅛" Plate. Fingers To Be Symmetrical About ℄ Of Plate



1½" CLEARANCE INDICATED BETWEEN FINGER ℄'S IS FOR 68° F.

EXPANSION DAM

Scale 1"=1'-0"

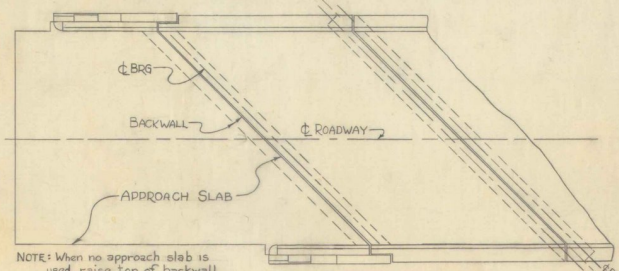


DETAIL "A"

Scale 3"=1'-0"

SKEWED FINGER PLATE

No Scale



NOTE: When no approach slab is used, raise top of backwall to grade and attach joint devices directly to backwall.

PLAN VIEW

Scale ½"=1'-0"

REVISIONS & CORRECTIONS

DRAWN BY: RND - WMS
TRACED BY: RND
CHECKED BY: WMS - JLH - EFP

CORRECT Dec. 30, 1960
Lyn Bjorn
BRIDGE ENGINEER

APPROVED Dec. 30, 1960
CHIEF ENGINEER

SKEW DETAILS AND EXPANSION DEVICE - COMPOSITE WELDED PLATE GIRDER BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

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