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7. JERSEY CURB TAPER
8. COVERED WALKWAY FRAMING DETAILS
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D8 REINFORCED CONCRETE DROP INLET WITH GRATE
D9 REINFORCED CONCRETE DROP INLET TOP
D10 TOP FOR A DROP INLET WITH BITUMINOUS CONCRETE CURB
D11 DETAILS OF GRATES AND COVERS
C1 PRECAST REINFORCED CEMENT CONCRETE CURB

Dated 22 June 1972

Contractor

Commissioner

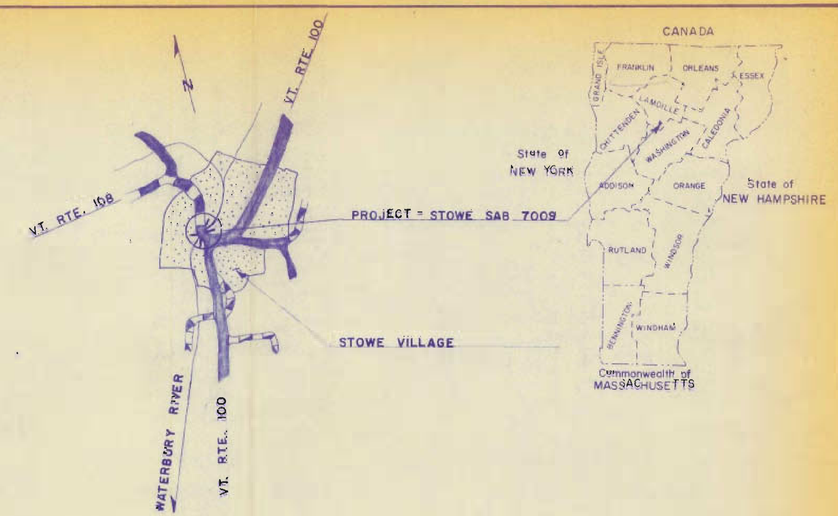
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

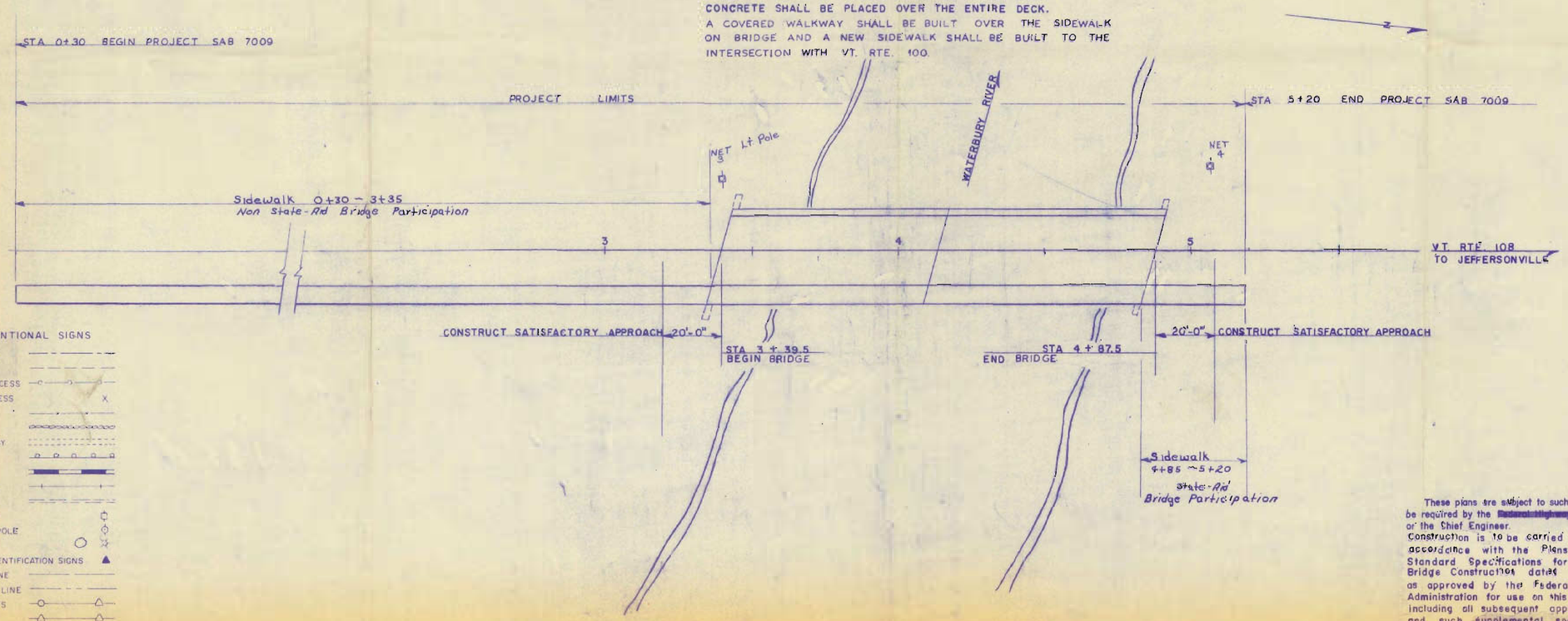
PROPOSED IMPROVEMENT

TOWN OF STOWE
COUNTY OF LAMOILLE
VT. RTE. 108

BEGINNING AT A POINT 0.0057 MILES WESTERLY OF INTERSECTION OF VT RTE 100 & VT RTE 108 AND EXTENDING 0.093 MILES WESTERLY

PROJECT - STOWE SAB 7009 - SHALL CONSIST OF REMOVING THE CURB, SIDEWALK AND A PORTION OF THE DECK AND REPLACING SAME WITH NEW CONCRETE. A CONCRETE OVERLAY SHALL BE PLACED ON THE REMAINING PORTION OF THE EXISTING DECK AND A WEARING SURFACE OF BITUMINOUS CONCRETE SHALL BE PLACED OVER THE ENTIRE DECK.
A COVERED WALKWAY SHALL BE BUILT OVER THE SIDEWALK ON BRIDGE AND A NEW SIDEWALK SHALL BE BUILT TO THE INTERSECTION WITH VT. RTE. 100.





CONVENTIONAL SIGNS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
F.A. CONST. IDENTIFICATION SIGNS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

These plans are subject to such revisions as may be required by the Federal Highway Administration or the Chief Engineer.
Construction is to be carried out in accordance with the Plans and the Standard Specifications for Highway and Bridge Construction dated January 3, 1972, as approved by the Federal Highway Administration for use on this project, including all subsequent approved revisions and such supplemental specifications and Special Provisions as are incorporated in these plans.

RECOMMENDED FOR APPROVAL — DISTRICT ENGINEER — DATE
RECOMMENDED FOR APPROVAL — BRIDGE ENGINEER — 5/2/72 — DATE
RECOMMENDED FOR APPROVAL — CONSTRUCTION ENGINEER — 3/24/72 — DATE
RECOMMENDED FOR APPROVAL — E. H. Tuckney — ASSISTANT CHIEF ENGINEER — 5/2/72 — DATE

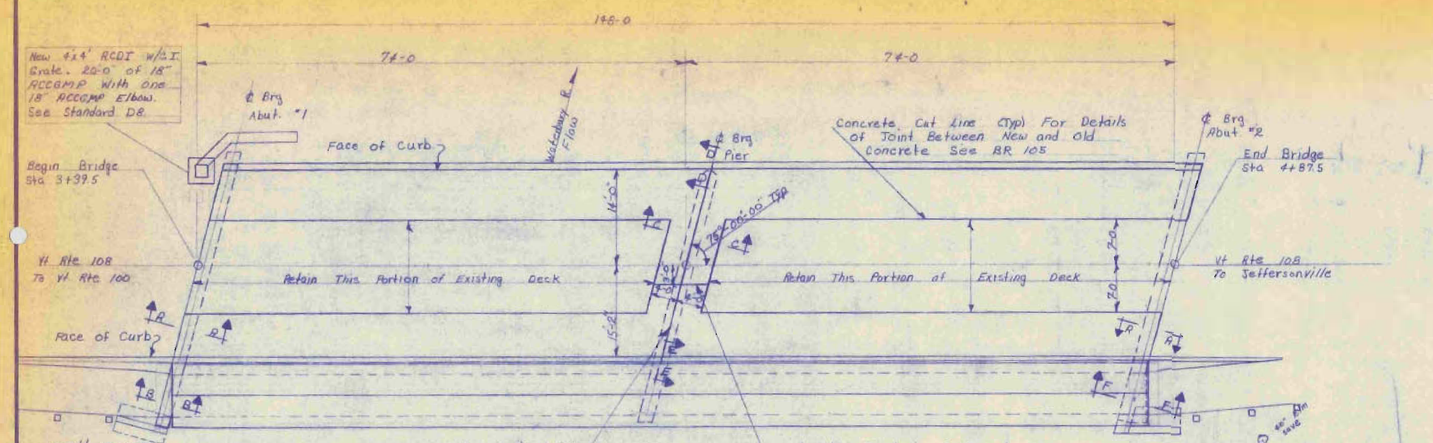
SUBMITTED BY ORDER OF THE STATE HIGHWAY BOARD
APPROVED R. H. ARNOLD — CHIEF ENGINEER — DATE 5/2/72

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED — DIVISION ENGINEER — DATE

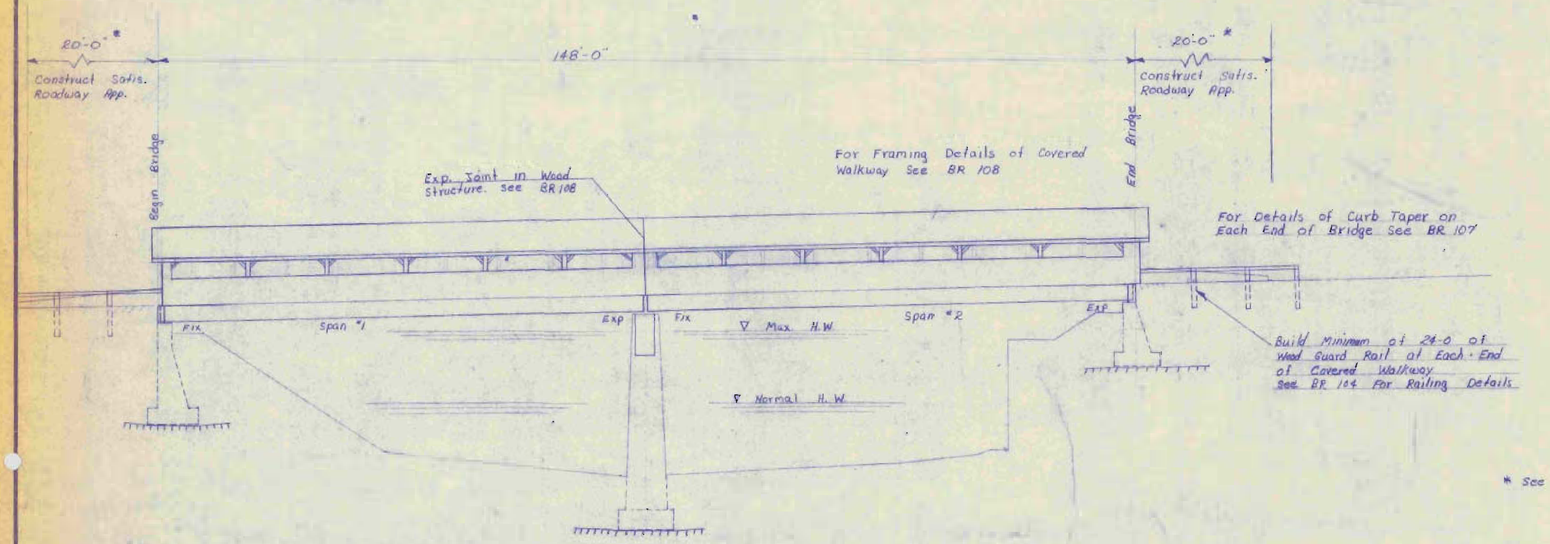
PROJECT STOWE № SAB 7009

SHEET 1 OF 10 SHEETS

SRS 12/17/70



Plan
3/32" = 1'-0"



* See General Note # 13

Elevation Along Right Fascia
3/32" = 1'-0"

GENERAL NOTES

1. For Additional Notes See SCB-D1-71, Notes 1, 3, 4, 5, 6, 7, 8, 11, 13, 14, 15 16, 18 and 19.
2. Design Load is Standard H 15-44.
3. Removal of All Existing Concrete or Masonry to the Lines Indicated on Plans or as Ordered by the Engineer Shall be Accomplished at the Unit Price Bid For Item 202.35 - Removal of Existing Concrete or Masonry. Removal of Existing Railing Shall be at the Unit Price Bid For Item 202.45 - Removal of Existing Railing.
4. All New Concrete in Deck and Curtain Walls Shall be Concrete Class A - Item 501.20. Concrete For Overlay Shall be Concrete Class A (Mod) as Per Special Provisions. All Concrete in Both Bridge Curb Sections Shall be Silicone Concrete, Item 515.41. Concrete in Abutments and Piers Shall be Concrete Class A, Item 501.20.
5. The New Concrete Overlay Shall be Placed Over the Entire Deck in Such a Manner that any Joints in the Concrete Overlay Shall Not Coincide With Joints Between Existing Concrete and the New Portion of the Deck. Place According to Item 501.12(b)
6. All New Structural Steel, Including Two New Exterior Beams With Necessary Bearings, Sidewalk Support Beams, Shim Plates, One New Diaphragm and All Other Incidentals Necessary For the Proper Placement of the New Steel Shall be Paid as Structural Steel, (Rolled Beam) Item 506.90.
7. All Existing Structural Steel Shall be Hand Cleaned, Spot Primed and Painted (Green) under Item 513.25.
8. Clean, Paint and Grease All Existing Expansion Bearings. All Exposed Surfaces of Expansion Bearings Shall be Cleaned as Specified in Subsection 513.09 (b) and any Exposed Sliding Surfaces Shall be Coated With Graphite and Grease. Deteriorated Bearings May be Replaced if Deemed Necessary by the Engineer. All Work on Bearings to be Included Under Item 506.90.
9. The Contractor Shall Maintain at Least One-Way Traffic Through the Project at All Times During the Construction Period. See Special Provisions For Details and Sequence of Operations.
10. Membrane Waterproofing, Type 1 - Item 519.21 Shall be Placed on the Concrete Overlay Before the Bituminous Concrete Surface is Placed. The Membrane Shall be Placed on ½ of the Bridge at a Time to Allow For One-Way Traffic. No Traffic Shall be Allowed Directly on the Waterproofing Membrane. Provision Shall be Made to Lap the Waterproofing Membrane Over a Cold Section by a Minimum of Two Feet
11. Water Repellent, Item 514.10, Shall be Applied to All New Exposed Concrete Not Otherwise Treated. The New Curbs Shall be Treated Up the Face, Across the Top, Down the Fascia and Underneath to the Drip Notch. The Abutments and Piers Shall Also be Treated. The Top of the Pier Shall be Coated With Epoxy Bonding Compound, Item 615.30.
12. The Contractor Shall Exercise Extreme Care to Prevent the Spillage of Pollutants and Debris Into the Waters of the Waterbury River. Special Care Shall be Taken During Painting Operations to Prevent Paint and Associated Materials From Entering the Water.
*13. Regrading of Approaches to Meet New Grade on Bridge to be Accomplished With Item 406.25, Bituminous Concrete Pavement.
14. All New Structural Steel Shall be Cleaned Prior to Shop Painting Using Any Method Specified in Section 513.03, Surface Preparation. Field Painting of New Structural Steel Shall be Paid as Item 513.20.
15. The Concrete Overlay Shall be Finished With Machine Operated Vibrating Screeds.

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Stowe	Bridge No. 2
	Log Sta. 4+20
HIGHWAY NO. Vt Rte 108	Surv. Sta. 4+20
Vt Rte 108 over Waterbury River	
Plan, Elevation & General Notes	
Designed by E. Leonard	Drawn by E. Leonard
Checked by W. Jarvis date 3-24-72	Bridge Design Supervisor A. R. Buchanan date
PROJECT Stowe	PROJECT NO. SPR 7009
Bridge Sheet No. BR 102	Sheet 2 of 10

BR9

EARTHWORK

V.C.	% GRD	STATION	GRADES ELEVATION ON TAN.	ON V.C.	CORR. V.C.	DIST.	AREA	CU. YDS.	AREA	CU. YDS.	AREA	CU. YDS.	AREA	CU. YDS.

BRIDGE QUANTITY SHEET

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
BRIDGE DIVISION

QUANTITY BREAKDOWN

NO.	ITEM	UNIT	Abut #1	Pier #1	Abut #2	Bridge Superstr.	Covered Walkway	Approaches	Sidewalk					Rounding	Non State-Aid Bridge Participation	State-Aid Bridge Participation	TOTAL	FINAL
																*		
202.16	Removal of Bridge Pavements	S.Y.				395										395	395	
202.35	Removal of Exist. Concrete or Masonry	C.Y.	2.0	1.0	1.0	87.0										91	91	
202.45	Removal of Exist. Railing	L.F.				296										296	296	
203.15	Common Excavation	C.Y.							54					6	60	5	65	
204.20	Trench Excavation of Earth	C.Y.						13						2		15	15	
202.25	Structure Excavation	C.Y.	19.0		16											35	35	
204.30	Granular Backfill for Structures	C.Y.	6.0		6.0									3		15	15	
301.15	Subbase of Gravel	C.Y.							40						40	5	45	
306.10	Overhaul (5 mi. Est.)	C.Y./mi.	30		30				240						200	100	200	
406.25	Bituminous Concrete Pavement	Ton				53		20								73	73	
501.202	Concrete Class A (Mod. for Overlay)	S.Y.				480										480	480	
501.20	Concrete Class A	C.Y.	6	2	4	71										82	82	
506.90	Structural Steel (Rolled Beam)	lb.				361	18,153							486		19,000	19,000	
507.15	Reinforcing Steel	lb.	428	188	259	25,989		263						373		27,500	27,500	
508.15	Shear Connectors (504 3/4" Studs)	L.S.				1										1	1	
513.20	Painting, New Structure	L.S.				1										1	1	
513.25	Painting, Hand-Tool Cleaning (174,000#) (Existing Structural Steel)	L.S.				1										1	1	
514.10	Water Repellent	Gal.	0.2	0.1	0.2	3.4								0.1		4	4	
517.21	Membrane Waterproofing, Type I	S.Y.				480										480	480	
518.20	Preparation of Concrete Surface	S.Y.				220										220	220	
516.31	Silicone Concrete	C.Y.				35		5								40	40	
601.109	Asph. Ctd. Corr. Galv. Met. Pipe (.064)	L.F.						20								20	20	
601.559	Asph. Ctd. Corr. Galv. Met. Pipe Elbow (.064)	EO.						1								1	1	
609.25	Precast Rein. Conc. Pipe Drop Inlet W/C.I. Grate	Ea.						1								1	1	
611.20	Untreated Lumber and Timber	MBF					9.2							0.3		9.5	9.5	
611.25	Treated Lumber and Timber	MBF					5.7							0.3		6.0	6.0	
614.10	Joint Sealer, Hot Poured	Gal.				3										3	3	
614.25	Joint Sealer, Polyurethane	Gal.				1										1.0	1.0	
615.30	Epoxy Bonding Compound	Gal.		2		6										8	8	
615.35	Epoxy Mortar Compound	Gal.		1												1	1	
616.21	Precast Reinf. Conc. Conc. Curb Type B	L.F.							310						310	20	330	
617.25	Bridge Railing - 2 Rail Aluminum	L.F.				148										148	148	
618.15	Bituminous Concrete Sidewalk	Ton							20						20	1	21	
621.10	Guard Rail, Plank W/Wood Posts	L.F.							50						25	25	50	
632.10	Maintenance of Traffic For Bridge Projects	L.S.				1										1	1	

* Per ROW, Finance and Maintenance Agreement the Town of Stowe shall reimburse the State of Vermont $5,000.00 on the Total Cost of Items in this column with the State-Aid Bridge Participation based on the Net Total. (Total Cost less $5,000.00)

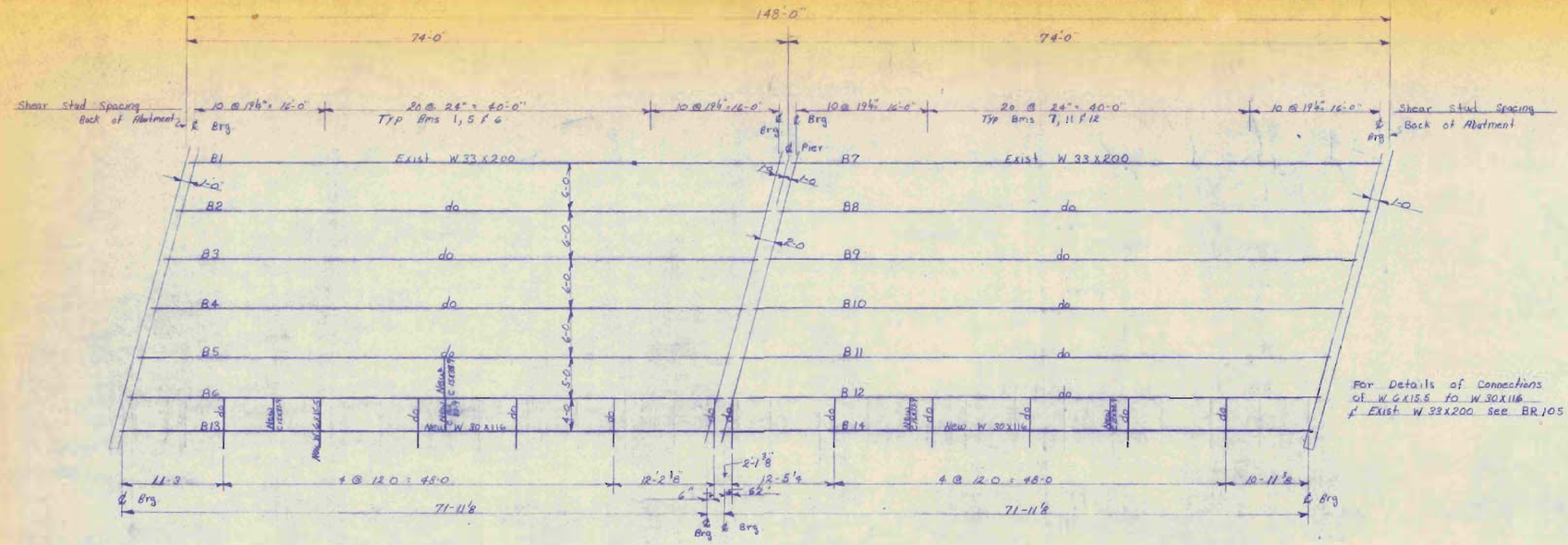
BRIDGE (S) AT STATION (S) 3+40
LOCATION (S) Vt. Rte. 108 Over Waterbury River STOWE

Prepared by: R. Leonard
Checked by: J.R. Tubnett
SUPERVISOR: R.P. Gearden

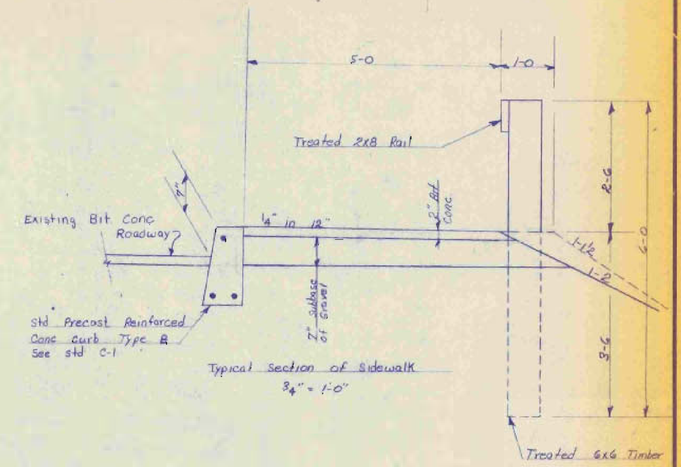
STOWE
BR 103 OF 110

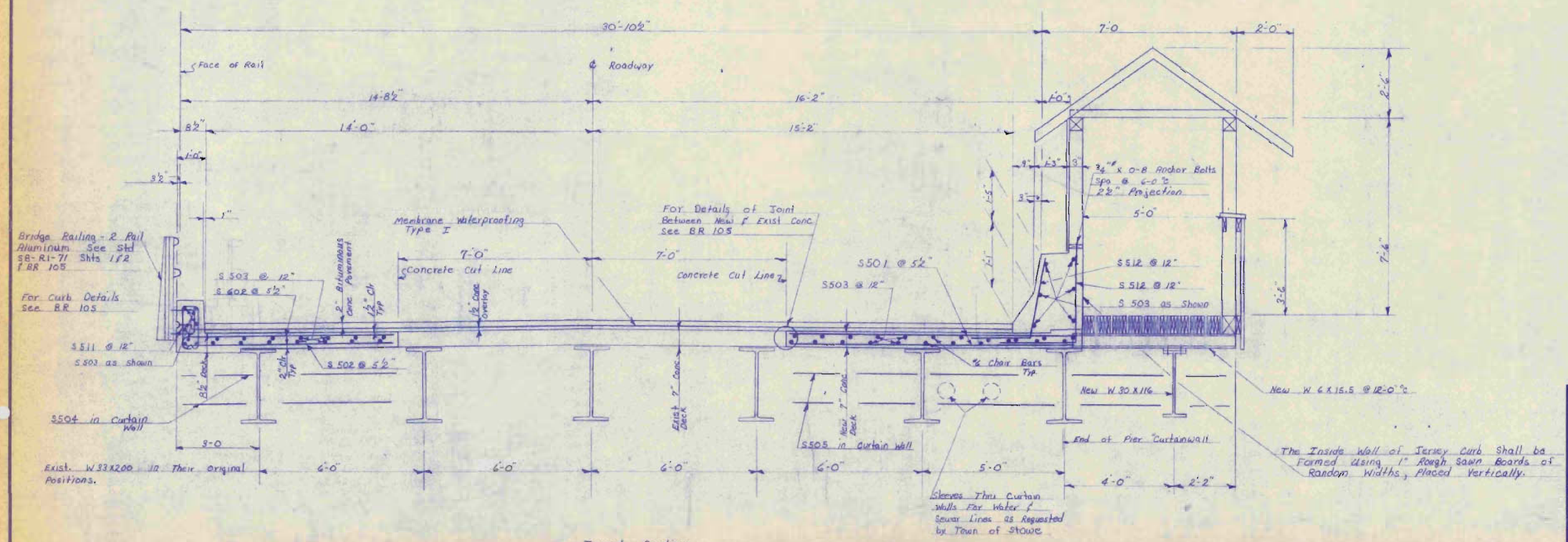
PROJECT NO. SAB 7009
SHEET NO. 3 OF 10

BR-1



Framing Plan
⅛" = 1'-0"



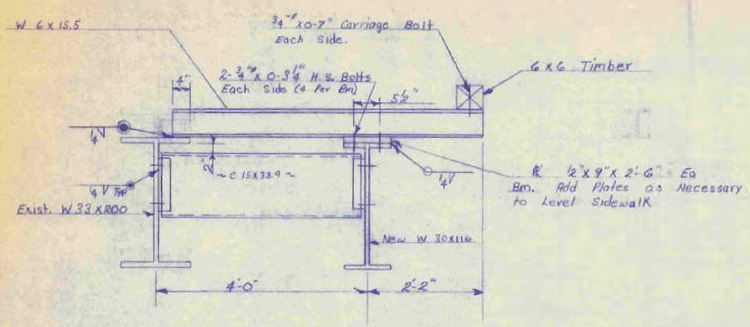


Typical Section
½" = 1'-0"

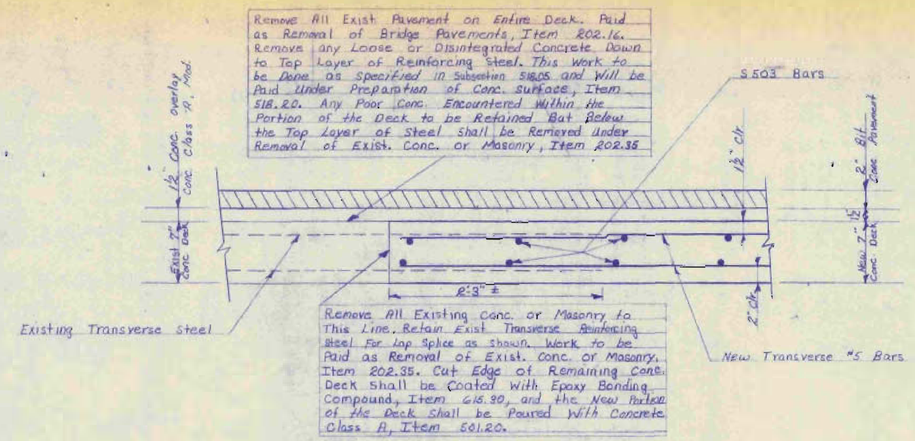
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF STOWE	Bridge No. / Log Sta. / Surv. Sta.
HIGHWAY NO. Vt Rte 108	
Vt Rte 108 over Waterbury River	
Framing Plan and Typical Section	
Designed by E. Leonard	Drawn by E. Leonard
Checked by W. Jarvis date 3-24-72	Bridge Design Supervisor R. R. Buchanan date 2/72
PROJECT STOWE	PROJECT NO. SRB 7009
Bridge Sheet No. BR 104	Sheet 4 of 10

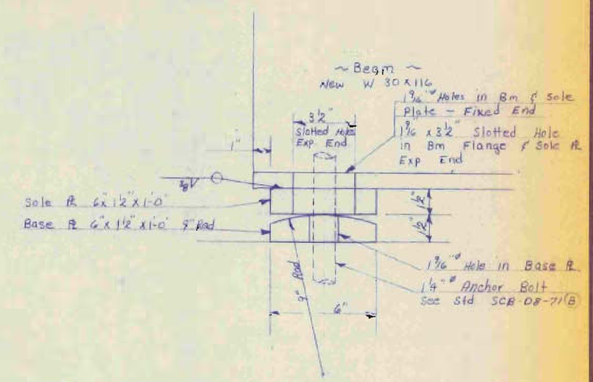
BR-9



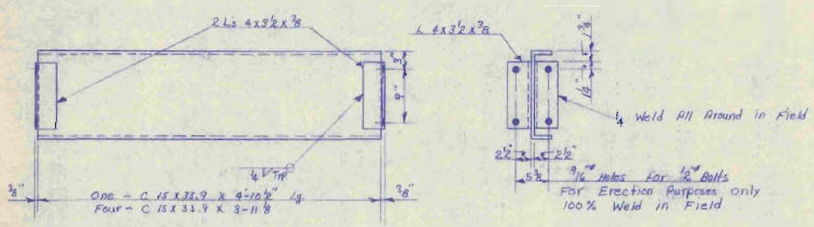
Connection Details - W 6 x 15.5
3/4" = 1'-0"



Typical Deck Joint Detail - Existing Conc. to New Conc.
1 1/2" = 1'-0"

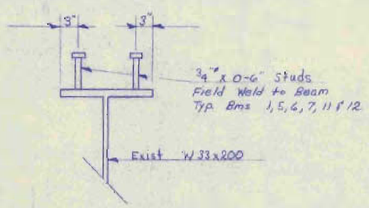


Detail of End Bearings on New Beams

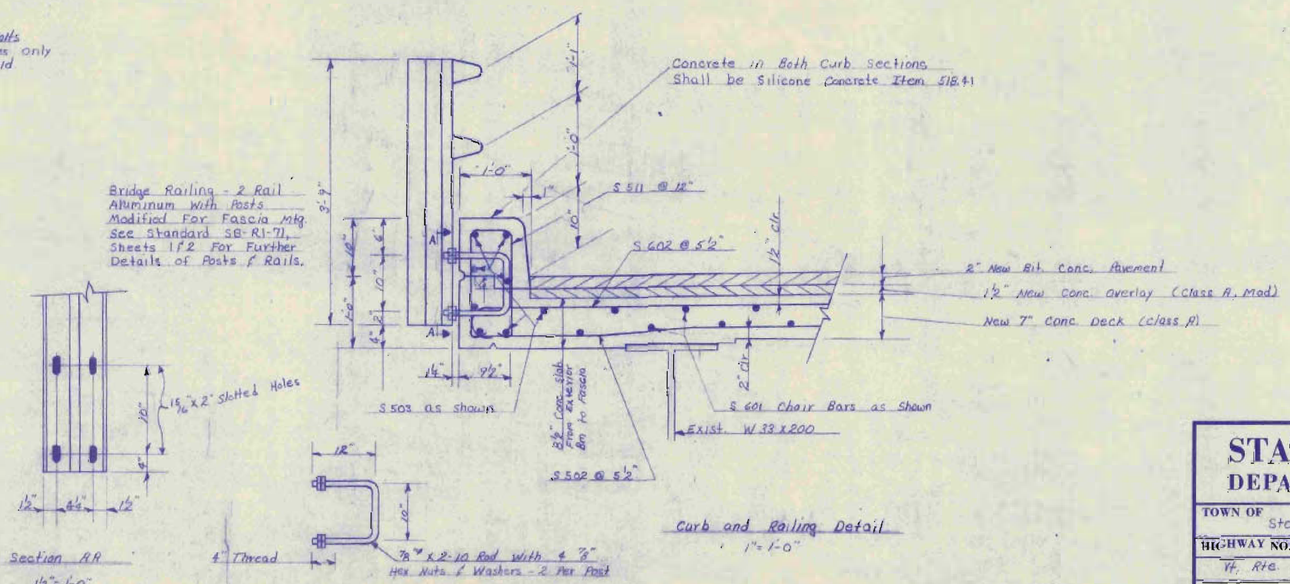


One New Diaphragm to Replace Rusted Diaphragm in Span #1

New Diaphragm Detail
1" = 1'-0"



Shear Stud Detail
1" = 1'-0"



Section AA
12" = 1'-0"

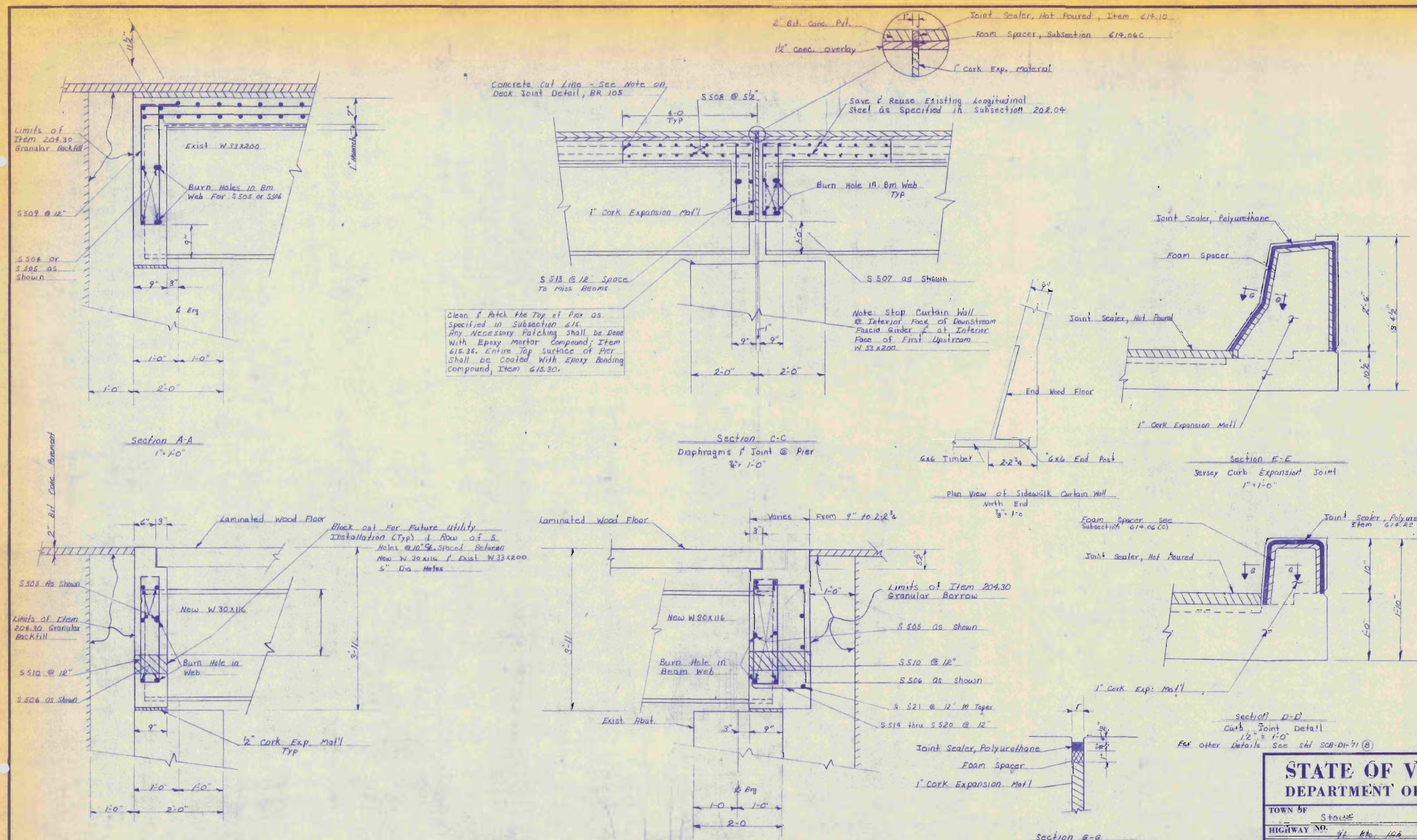
Post Anchor Bolt Detail
1" = 1'-0"

Curb and Railing Detail
1" = 1'-0"

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Stowe	Bridge No.
	Log Sta.
HIGHWAY NO. Vt Rte 108	Surv. Sta.
Vt. Rte. 108 over Waterbury River	
Steel & Concrete Details	
Designed by E. Leonard	Drawn by E. Leonard
Checked by W. Jarvis date 3-24-72	Bridge Design Supervisor R. R. Buchanan date 3/72
PROJECT Stowe	PROJECT NO. SAB 7009
Bridge Sheet No. BR 105	Sheet 5 of 10

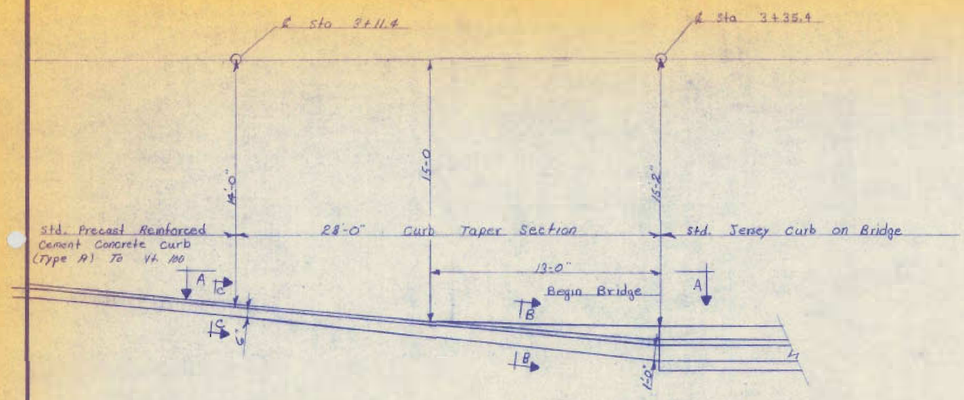
BR-9



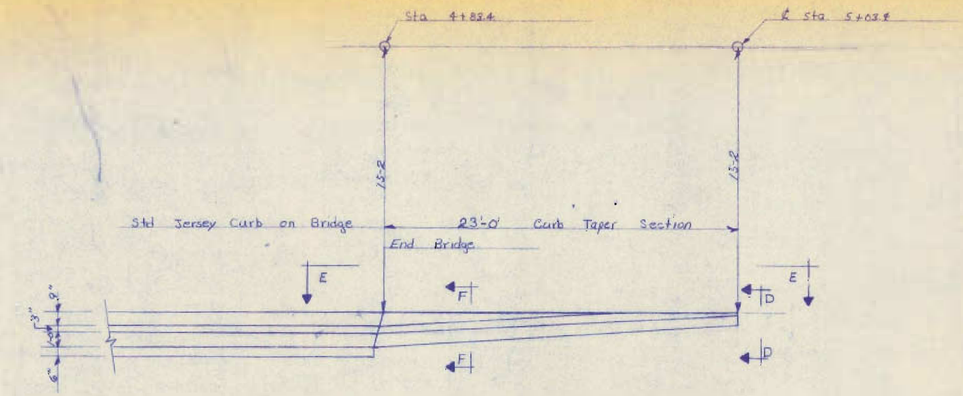
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Stowe	Bridge no.
	Log Sta.
HIGHWAY NO. Vt. Rte. 108	Surv. Sta.
Vt. Rte. 108 over Waterbury River	
Curtain Walls & Joint Details	
Designed by E. Leonard	Drawn by E. Leonard
Checked by W. Jervis date 3-24-72	Bridge Design Supervisor A. R. Buchanan date 8/72
PROJECT Stowe	PROJECT NO. SRB 7009
Bridge Sheet No. BR 106	Sheet 6 of 10

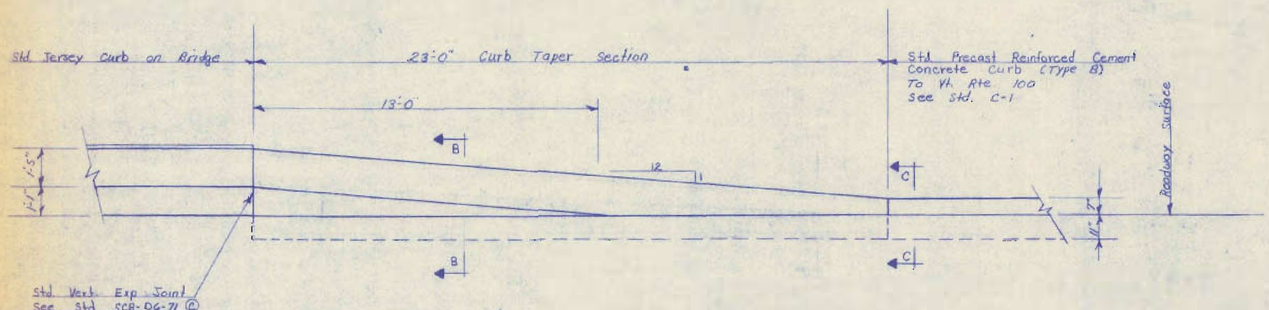
BR-9



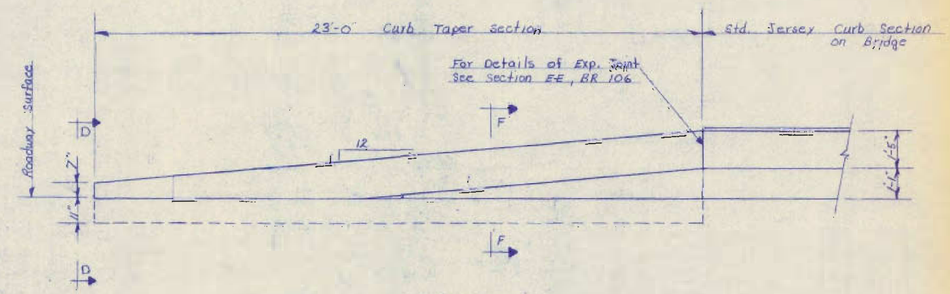
Plan View of Curb Taper @ South End of Bridge
1/4" = 1'-0"



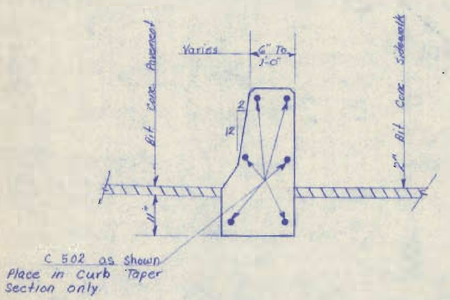
Plan View of Curb Taper @ North End of Bridge
1/4" = 1'-0"



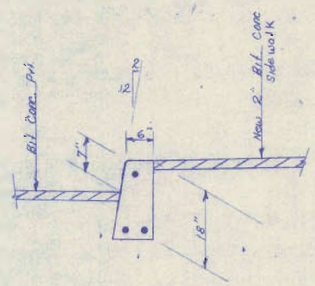
View A-A
3/8" = 1'-0"



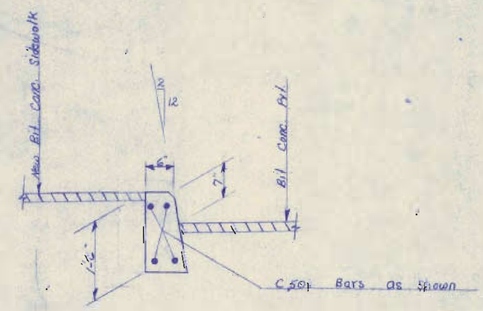
View E-E
3/8" = 1'-0"



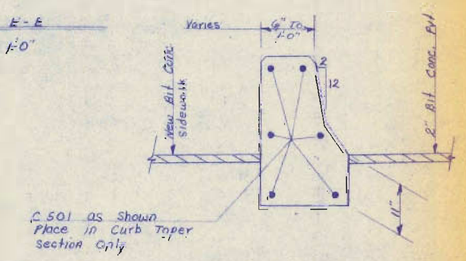
Section B-B
3/4" = 1'-0"



Section C-C
3/4" = 1'-0"
Std. Precast Reinforced Cement Concrete Curb (Type B) See Std C-1.



View D-D
3/4" = 1'-0"

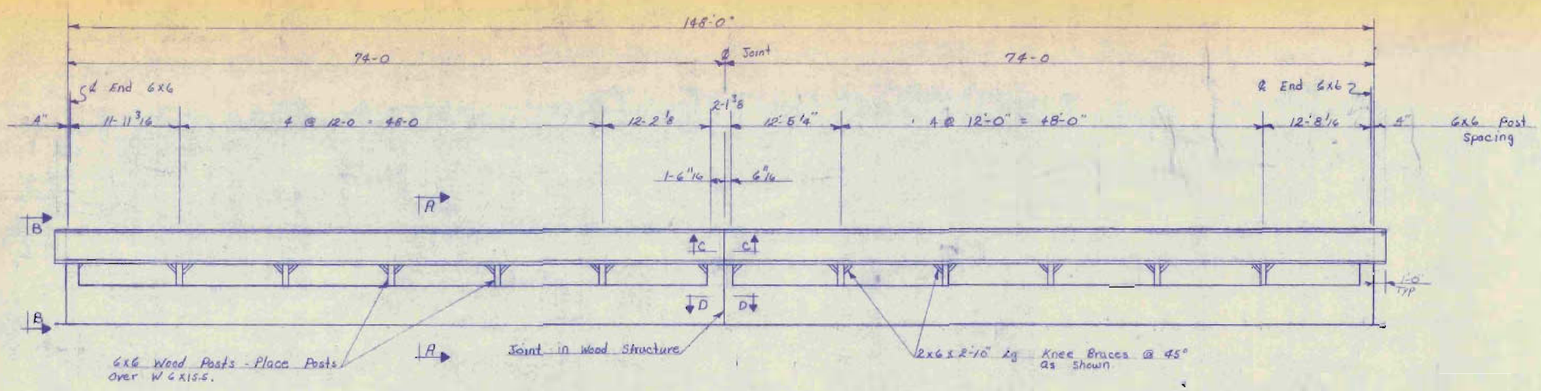


Section E-F
3/4" = 1'-0"

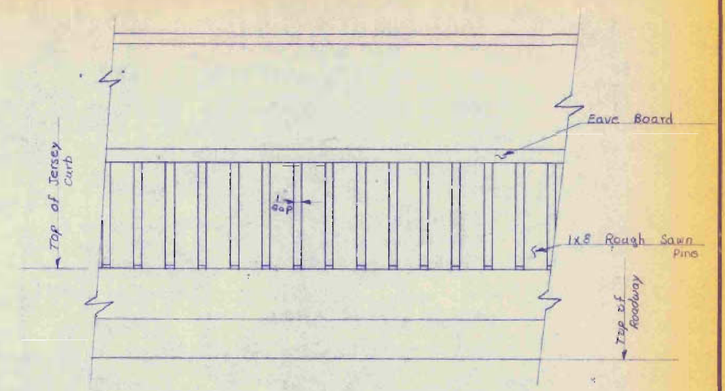
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Stowe	Bridge No.
HIGHWAY NO. Vt. Rte 108	Log Sta. / Surv. Sta.
Vt. Rte. 108 over Waterbury River	
Details of Jersey Curb Taper	
Designed by E. Leonard	Drawn by E. Leonard
Checked by W. Travis date 2-24-72	Bridge Design Supervisor R. R. Buchanan date 3/72
PROJECT Stowe	PROJECT NO. SAB 7009
Bridge Sheet No. BR 107	Sheet 7 of 10

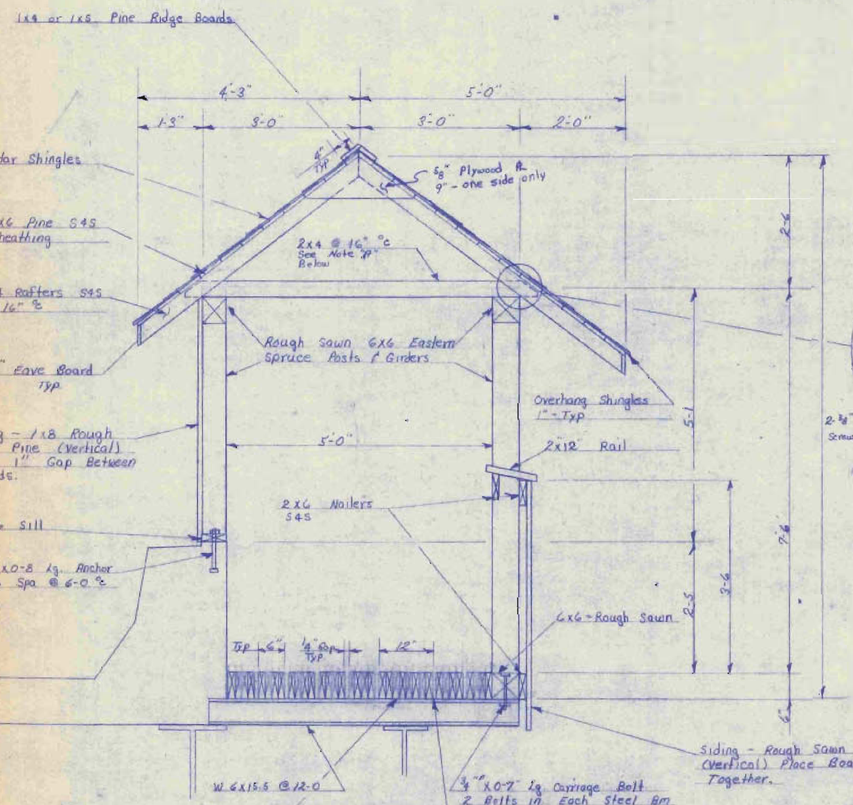
BR-9



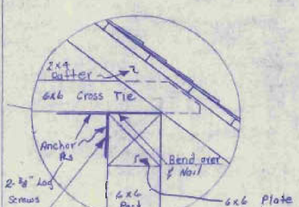
Elevation Along Upstream Side of Walkway
1/8" = 1'-0"



Elevation Along Roadway Side of Walkway
1/2" = 1'-0"

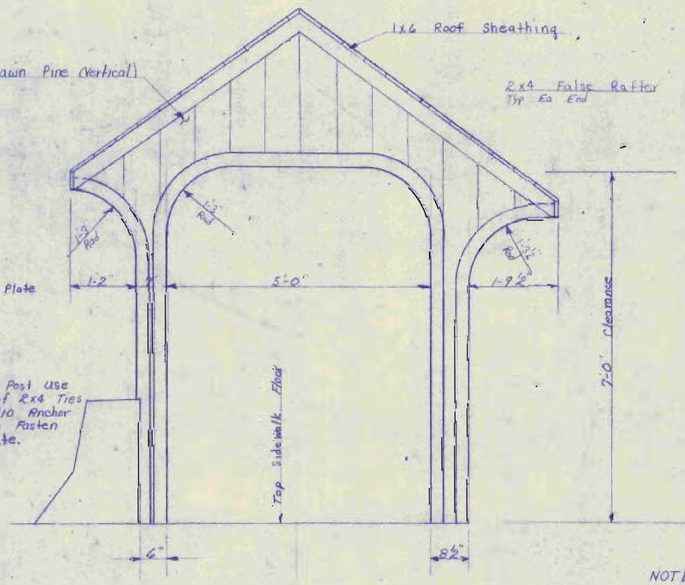


Section A-A
Typical Section
3/4" = 1'-0"

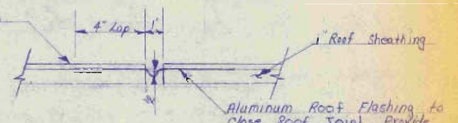


Cross Tie Detail
1 1/2" = 1'-0"

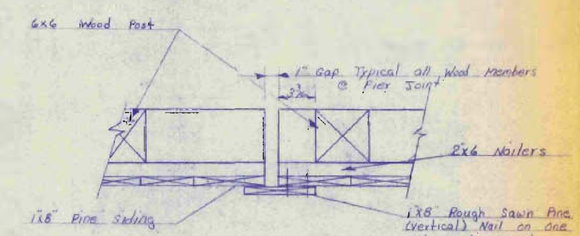
Note R: Over Each 6x6 Wood Post use a 6x6 Cross Tie in Place of 2x4 Ties Shown. Use Stanley # 9830 - #10 Anchor Plates or Approved Equal to Fasten 6x6 Cross Ties to 6x6 Plate.



View B-B
Typical End Treatment
3/4" = 1'-0"



Section C-C
Roof Joint Detail
3" = 1'-0"



Section D-D
Wall Joint Detail
1 1/2" = 1'-0"

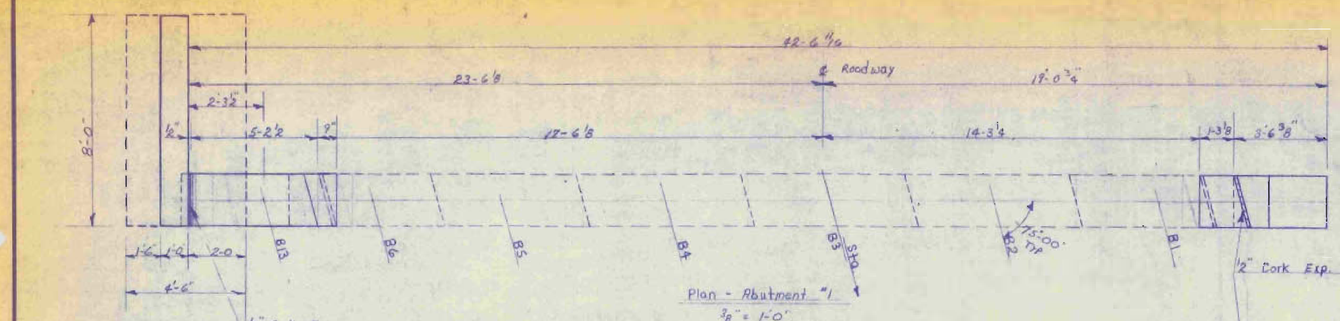
NOTES

1. All Lumber in Wooden Walkway Shall be Rough Sawn (Full Dimension) Except as Noted.
2. Finish - The Cedar Shingles Shall be Left Natural. All other Exterior Surfaces Shall be Given Two Coats of Cabot's #241 Bleaching Oil in Accordance With the Manufacturers Instructions. The 2x6 For the Laminated Floor Shall be Pressure Treated With Creosote.

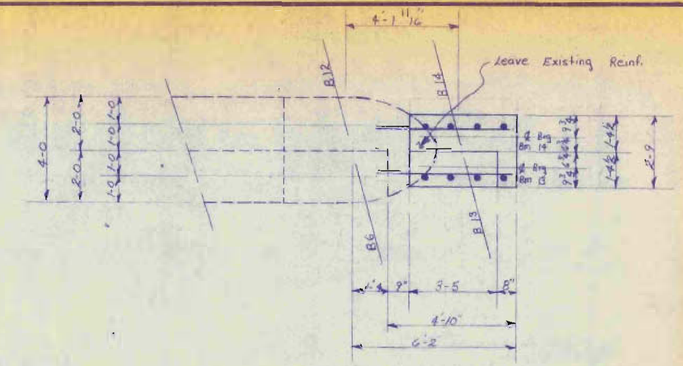
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Stowe	Bridge No.
HIGHWAY NO. VT Rte 108	Log Sta.
VT Rte 108 over Waterbury River	Surv. Sta.
Covered Walkway Framing Details & Joint Detail	
Designed by E. Leonard	Drawn by E. Leonard
Checked by W. Tarvis date 3-24-72	Bridge Design Supervisor R. R. Buchanan date 3/72
PROJECT Stowe	PROJECT NO. SAB 9009
Bridge Sheet No. BR 108	Sheet 8 of 10

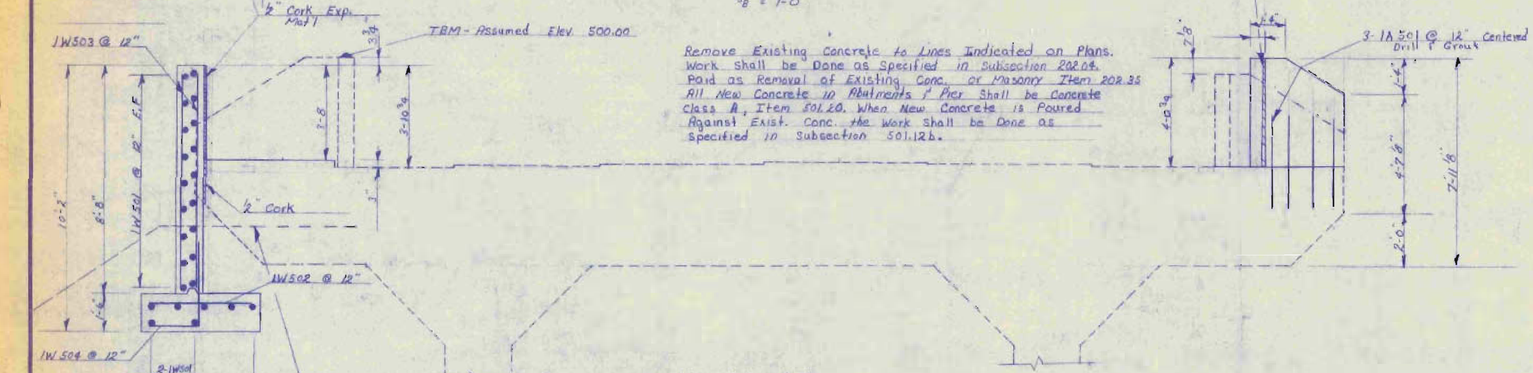
BR-9



Plan - Abutment #1
3/8" = 1'-0"



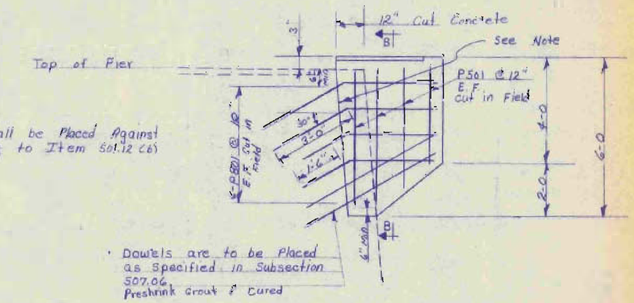
Plan - upstream End of Pier
3/8" = 1'-0"



Remove Existing Concrete to Lines Indicated on Plans. Work Shall be Done as Specified in Subsection 202.04. Paid as Removal of Existing Conc. or Masonry Item 202.35 All New Concrete in Abutments & Pier Shall be Concrete Class A, Item 501.20. When New Concrete is Poured Against Exist. Conc. the Work Shall be Done as Specified in Subsection 501.12b.

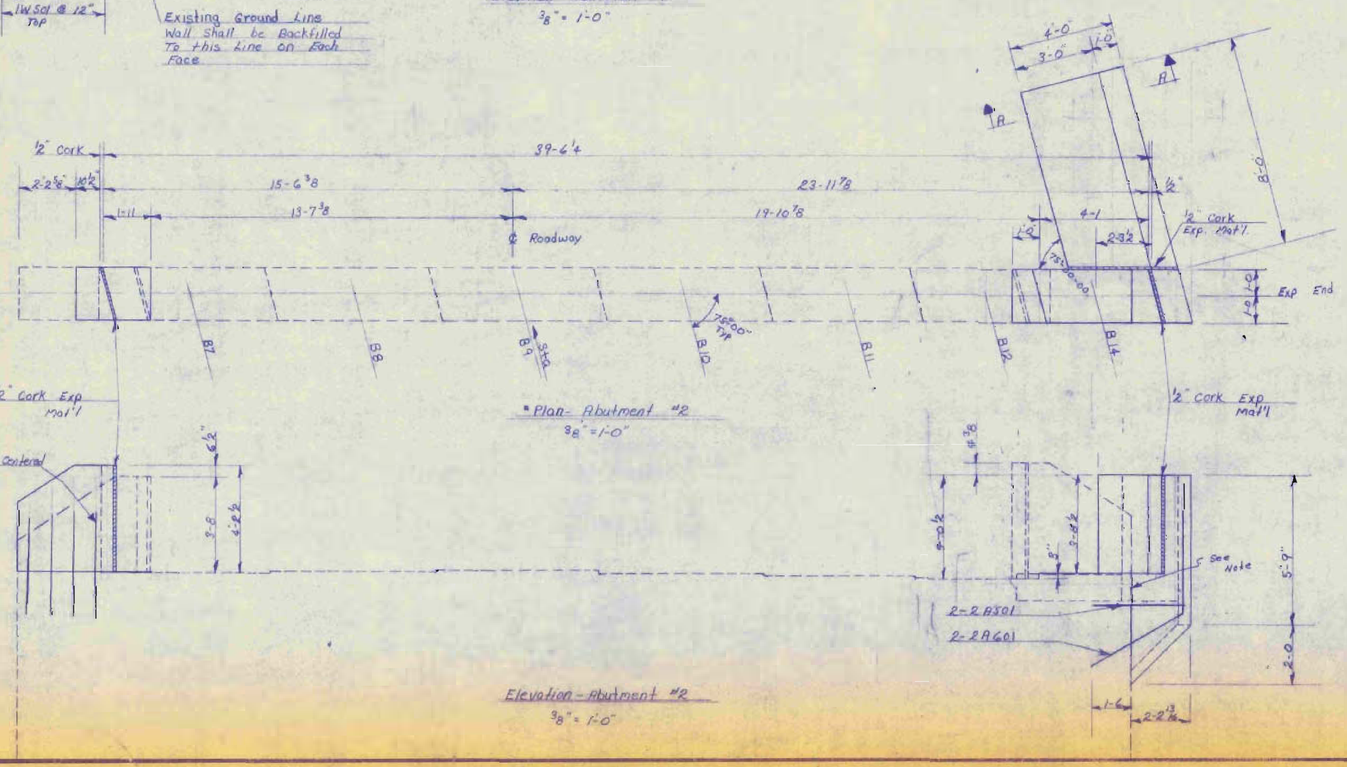
Elevation - Abutment #1
3/8" = 1'-0"

Note: All New Concrete Shall be Placed Against Existing Concrete According to Item 501.12 (b)



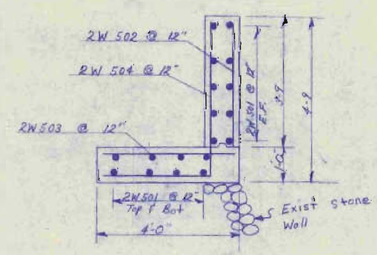
* Dowels are to be Placed as Specified in Subsection 507.06 Preshrink Grout & Cured

Elevation Upstream End of Pier
3/8" = 1'-0"

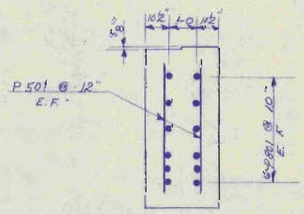


Plan - Abutment #2
3/8" = 1'-0"

Elevation - Abutment #2
3/8" = 1'-0"



Section A-A
1/2" = 1'-0"



Section B-B
3/8" = 1'-0"

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Stowe	Bridge No. / Log Sta.
HIGHWAY No. Vt Rte 108	Surv. Sta.
Vt Rte 108 over Waterbury River	
Abutments & Pier - Widening Details	
Designed by F. Leonard	Drawn by F. Leonard
Checked by W. Jarvis date Apr. 72	Bridge Design Supervisor A.R. Buchanan date 8/72
PROJECT Stowe	PROJECT NO. SAB 7009
Bridge Sheet No. BR 109	Sheet 9 of 10

BR-9

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
1																	
2				Abutment #1													
3	3	5	2-9	1AS01	str												
4																	
5				Wing Wall #1													
6	25	5	7-6	1WS01	str												
7	8		4-0	1WS02													
8	16		8-3	1WS03	str												
9	8	5	7-4	1WS04	17		5-4	2-0									
10																	
11																	
12																	
13				Pier #1													
14																	
15	8	5	5-6	P501	str												
16																	
17	8	8	6-10	PA01	19		3-0	3-8					0-9		2-7		4-11½
18	4	8	5-9	PB01	str												
19																	
20																	
21																	
22				Wing Wall #2													
23																	
24	18	5	7-6	2WS01	str												
25	8	5	2-5	2WS02	str												
26	8	5	2-6	2WS03	str												
27	8	5	7-3	2WS04	17		4-3	3-0									
28																	
29																	
30																	
31				Superstructure													
32																	
33	*650	5	10-3	S501	str												
34	325		7-6	S502													
35	258		26-6	S503													
36	8		7-6	S504													
37	8		15-10	S505													
38	4		15-10	S506													
39	8		30-6	S507													
40	36		18-0	S508													
41	4		6-0	S521	str												
42	16		6-1	S509	S5	0-4	2-6	0-5	2-6				0-4				
43	34		5-9	S510	S6	0-3	2-5	0-6	2-5				0-3				
44	148		8-6	S511	S8	0-5½	1-6	0-7	1-6				0-5½	0-3¾			
45	300		5-5	S512	17		2-6	2-11									
46	58		5-5	S513	S5	0-4	2-2	0-5	2-2				0-4				
47	1		6-10	S514	S9	0-7	2-6	0-8	0-6				0-7				
48			Varies Equal Increments	S515		0-7	Varies Equal Increments	2-8	Varies Equal Increments				0-7				
49				S516		0-7		2-8					0-7				
50				S517		0-7		2-8					0-7				
51				S518		0-7		2-8					0-7				
52				S519		0-7		2-8					0-7				
53	1	5	6-0	S520	S9	0-7	1-1	2-8	1-1				0-7				
54																	
55	36	6	26-6	S601	str												
56	325	6	8-2	S602	1	0-8	7-6										
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ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
81																	
82							Abutment #2										
83																	
84	2	5	3-6	2AS01	str												
85	4	5	2-9	2AS01	str												
86	2	6	9-0	2AE01	19		4-0	5-0					3-6		1-9		
87																	
88																	
89																	
90																	
91							Curb Taper										
92																	
93	6	5	22-6	C501	str												
94	6	5	22-6	C502	str												
95																	
96																	
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ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
161																	
162																	
163																	
164																	
165																	
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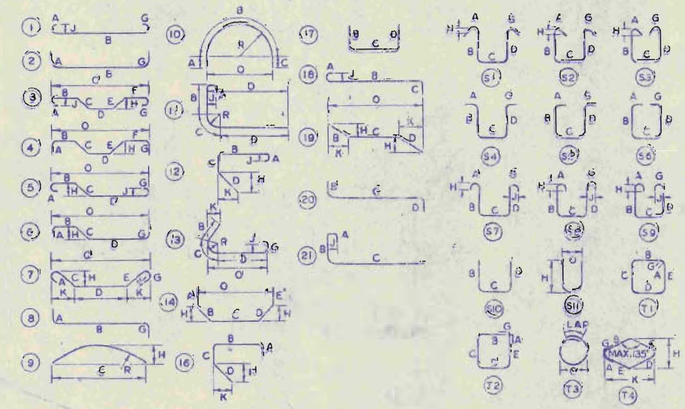
177																	
178																	
179																	
180																	

ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	CROSS SECTIONAL AREA SQ. INCHES	PERIMETER INCHES
#3	.376	.375	.11	1.178
#4	.668	.500	.20	1.571
#5	1.043	.625	.31	1.963
#6	1.502	.750	.44	2.356
#7	2.044	.875	.60	2.749
#8	2.670	1.000	.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

TYPICAL BAR BENDS



NOTES

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT" AASHO M 31 (ASTM A 615), GRADE 40.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS AND OTHER STANDARD PRACTICE SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE."
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" FOR STANDARD 180° AND 135° HOOKS.
5. "J" DIMENSION ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45° DIMENSIONS "A" AND "K" MUST BE SHOWN.

* DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES

REV. NO.	MADE BY	DATE	DESCRIPTION

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Stowe	BRIDGE NO. 2
HIGHWAY NO. Vt. Rte 108	LOG STA. 4+20
	SURV. STA. 4+20

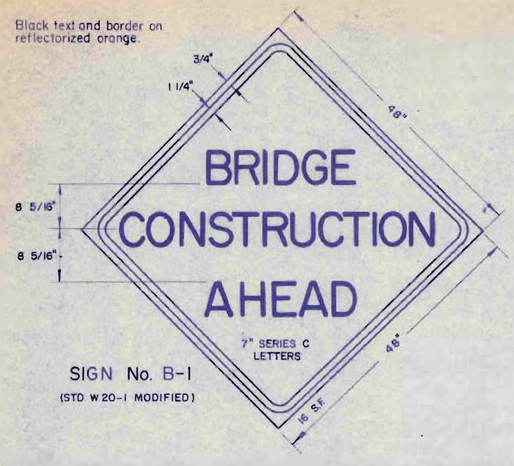
Vt. Rte 108 Over Waterbury River

REINFORCING STEEL SCHEDULE

DESIGNED BY E. Leonard	DRAWN BY E. Leonard
CHECKED BY W. Jarvis DATE Apr.-72	BRIDGE DESIGN SUPERVISOR A. R. Buchanan DATE 4/72
PROJECT Stowe	PROJECT NO. SAB 7009
BRIDGE SHEET NO. 110	SHEET 10 OF 10

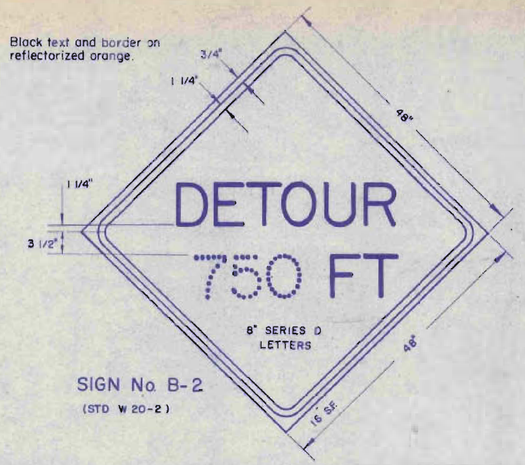
BR 6

Black text and border on reflectorized orange.



SIGN No. B-1
(STD W 20-1 MODIFIED)

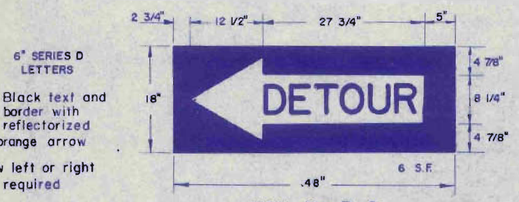
Black text and border on reflectorized orange.



SIGN No. B-2
(STD W 20-2)

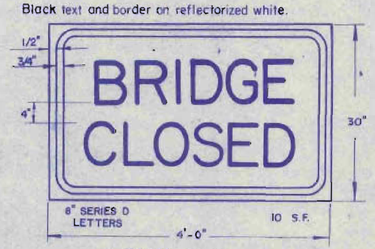
Black text and border on reflectorized orange.

SIGN No. B-3
(STD W 20-4 MODIFIED)



SIGN No. B-6
(STD. M 4-10)

Black text and border on reflectorized white.



SIGN B-5
(STD. R 11-2 MODIFIED)

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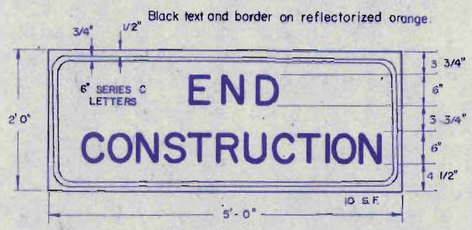
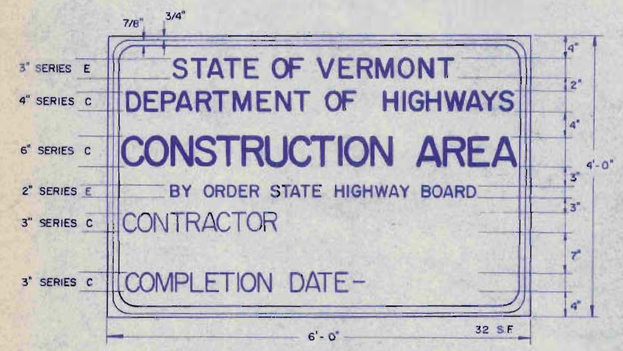


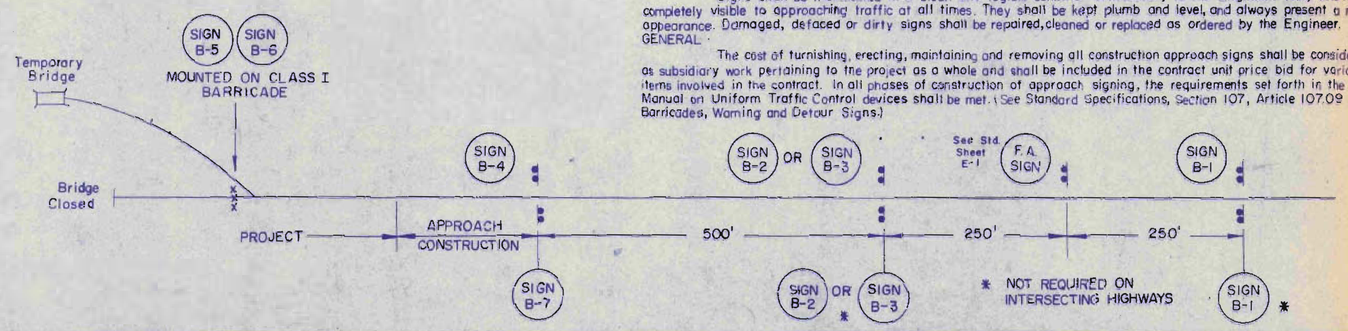
SIGN B-7
(STD. G 20-2)



Black text and border on non-reflectorized white

SIGN No. B-4
VERMONT CONSTRUCTION IDENTIFICATION SIGN

The bridge construction approach signs shown on this sheet are intended for use in providing warning and information at isolated bridge projects, although they may be ordered by the Engineer at bridge work on a road construction project. When additional approach signs or other types of signing or control are necessary, the plans and/or the Special Provisions for that project will give the details of the signs and controls required.



NOTES

LOCATION Bridge construction approach signs shall be located as detailed on this sheet or otherwise shown on the plans. They shall appear at each end of the project under construction, and on intersecting public highways. The exact placement of any sign will depend upon the alignment of the highway and the character of the roadsides. The location measurements on this sheet are intended to indicate the sequence to be followed, and the minimum spacing to be observed by the Engineer in determining exact locations.

DESIGN

The designs of the signs shall conform with the details shown on this sheet and with the standards prescribed in the Manual on Uniform Traffic Control Devices prepared by National Joint Committee on Uniform Traffic Control Devices.

MATERIALS

The signs shall be of metal, wood, plywood, hardboard or any other material satisfactory to the Engineer. No material shall be approved that will deteriorate by exposure to the weather during the required life of the sign.

REFLECTORIZATION

For reflectorizing sign backgrounds, either reflective sheeting or the direct process of glass beads on paint will be acceptable. So-called reflective paint may be used to stripe the barricades, but not for signs.

ILLUMINATION

If desired by the contractor, and approved by the Engineer, a sign may be illuminated instead of reflectorized. The illumination may be provided by incandescent or flourescent lamps, or by spotlights. Lamps shall be properly shielded to protect drivers from glare. Torches, lanterns, or existing street lighting are not acceptable for sign illumination. If the Engineer considers that a reflectorized sign is not adequate, he may order that it be illuminated.

INSTALLATION

The signs shall be in place at the time the project officially commences. Each sign shall be erected in a neat and workmanlike manner on wood or metal posts set securely in the ground. The bottom of a sign shall be at least 5 feet above road level, and the nearest edge of a sign shall be at least 6 feet outside the shoulder point or 2 feet outside the guard rail, curbing or sidewalk. Posts and signs shall be braced or reinforced in back as necessary. The installation of signs and barricades shall be subject to the approval of the Engineer.

MAINTENANCE

Signs shall be maintained in a clean and legible condition satisfactory to the Engineer. They shall be completely visible to approaching traffic at all times. They shall be kept plumb and level, and always present a neat appearance. Damaged, defaced or dirty signs shall be repaired, cleaned or replaced as ordered by the Engineer.

GENERAL

The cost of furnishing, erecting, maintaining and removing all construction approach signs shall be considered as subsidiary work pertaining to the project as a whole and shall be included in the contract unit price bid for various items involved in the contract. In all phases of construction of approach signing, the requirements set forth in the Manual on Uniform Traffic Control devices shall be met. (See Standard Specifications, Section 107, Article 107.09 Barricades, Warning and Detour Signs.)

REVISIONS AND CORRECTIONS

APPROVED
Dec. 14, 1971
DATE

R. H. Arnold
CHIEF ENGINEER

E. H. Stickney
ASST. CHIEF ENGINEER

G. M. Lane
HIGHWAY ENGINEER

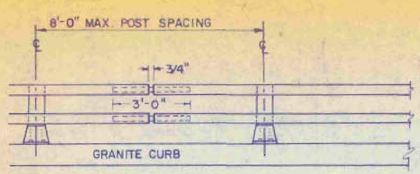
TRAFFIC SIGNS

BRIDGE CONSTRUCTION APPROACH SIGNS

VERMONT DEPARTMENT OF HIGHWAYS STANDARD

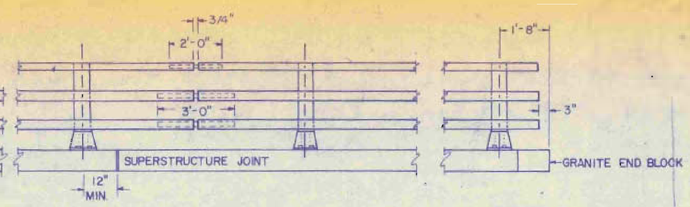
E-3

D-8



TWO RAIL

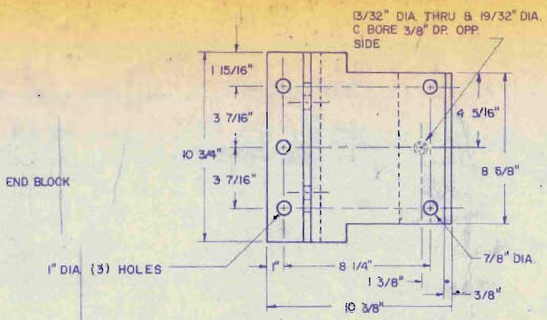
ALLOWABLE STRESSES:
RAILING 21,000 P.S.I.
POSTS 17,000 P.S.I.



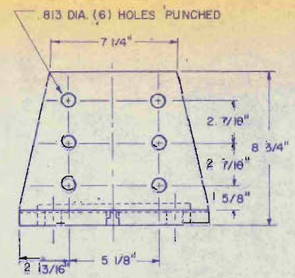
THREE RAIL

NOTE: RAIL POSTS ARE TO BE SET NORMAL TO GRADE UNLESS OTHERWISE DESIGNATED ON BRIDGE PLANS.

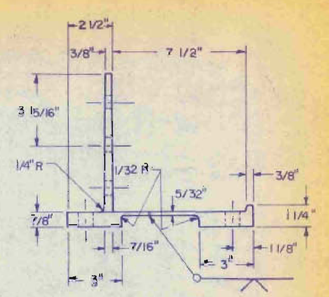
ALL DIMENSIONS ARE TYPICAL UNLESS OTHERWISE DESIGNATED ON BRIDGE PLANS.



PLAN

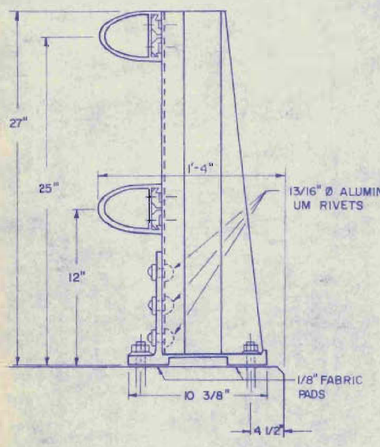


FRONT ELEVATION

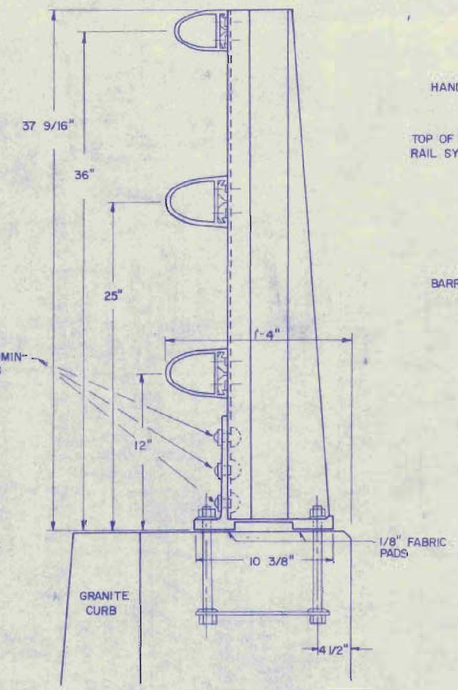


SECTION

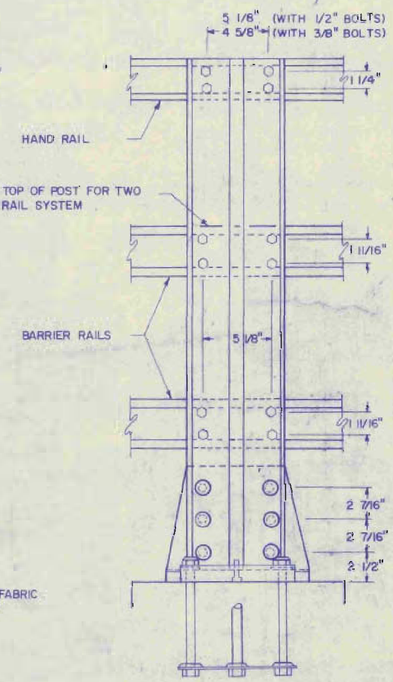
POST BASE DETAILS



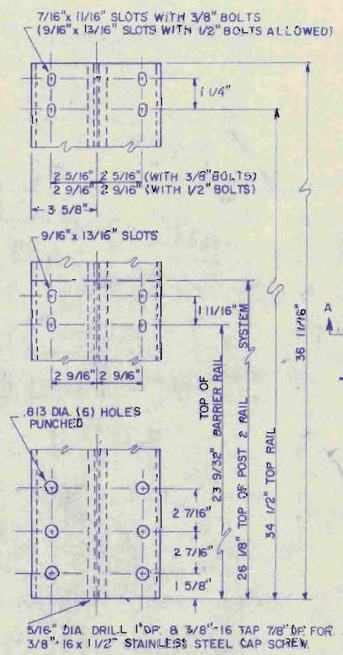
SIDE ELEVATION TWO RAIL



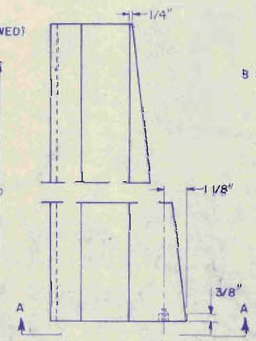
SIDE ELEVATION THREE RAIL



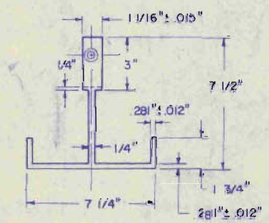
BACK ELEVATION



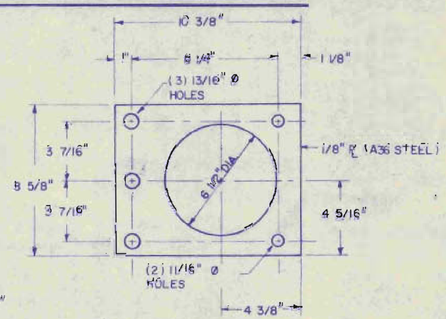
FRONT VIEW



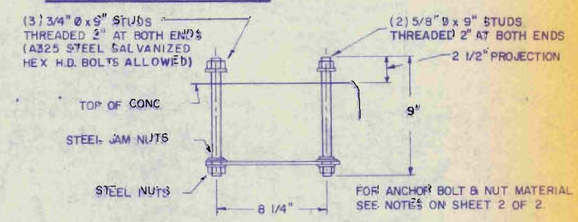
SIDE VIEW



VIEW AA



ANCHOR PLATE



POST ANCHOR ASSEMBLY

RAIL POST DETAILS

REVISIONS AND CORRECTIONS

APPROVED: DATE: 8/24/1971

R. W. Carroll
CHIEF ENGINEER

E. W. Stickney
ASST. CHIEF ENGINEER

L. M. Bjorn
BRIDGE ENGINEER C.H.E.

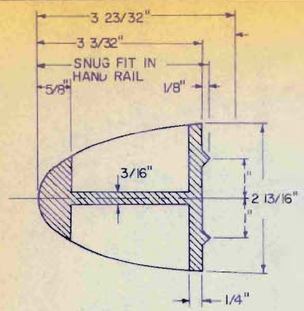
ALUMINUM BRIDGE RAILING DETAILS

VERMONT DEPARTMENT OF HIGHWAYS STANDARD

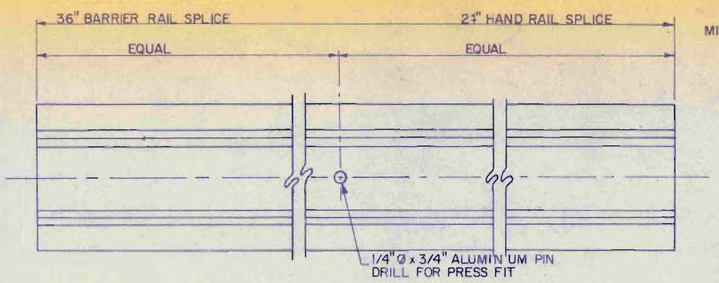
SB-RI-71

SHEET 1 OF 2

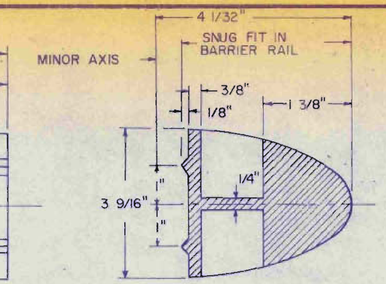
D-8



HAND RAIL SPLICE SECTION

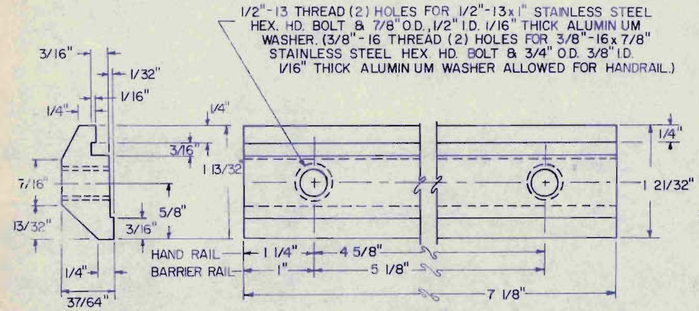


ELEVATION



BARRIER RAIL SPLICE SECTION

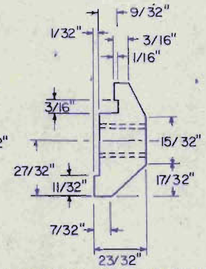
SPLICE DETAILS



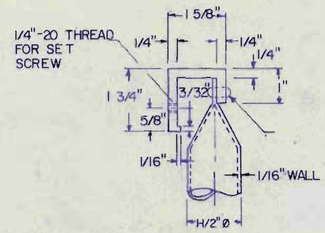
HAND RAIL SECTION

ELEVATION

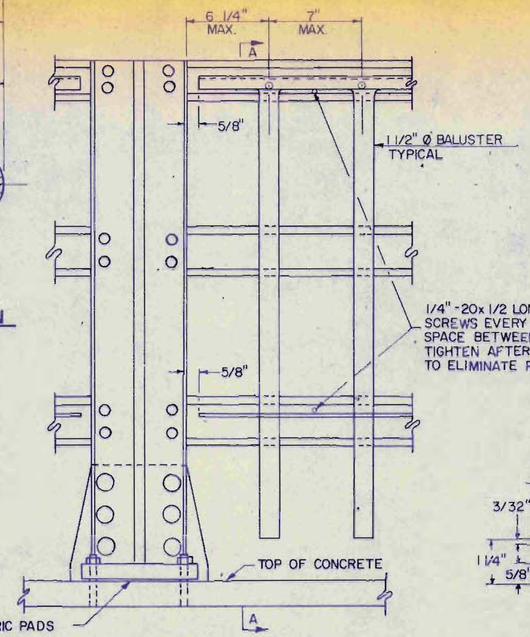
POST CONNECTION



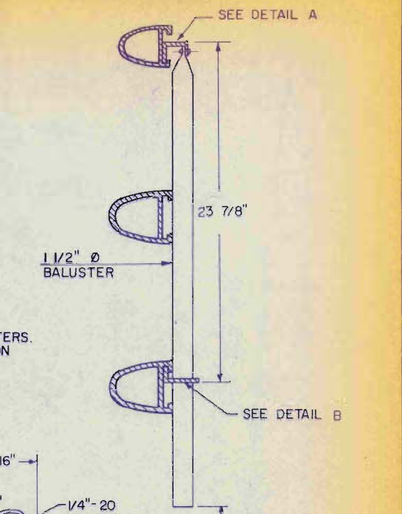
BARRIER RAIL SECTION



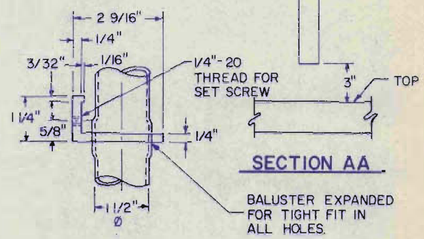
DETAIL A



OUTSIDE ELEVATION OF POSTS

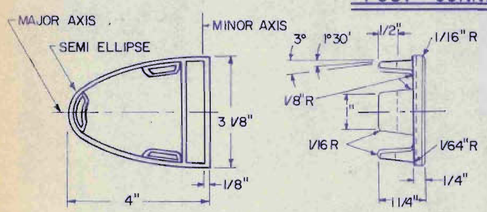


SECTION AA

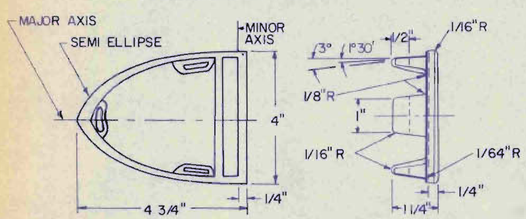


DETAIL B

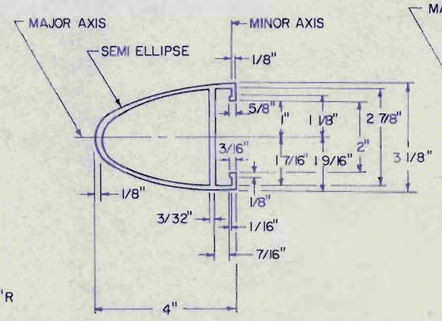
DETAILS OF SPINDLES FOR ALUMINUM RAILING



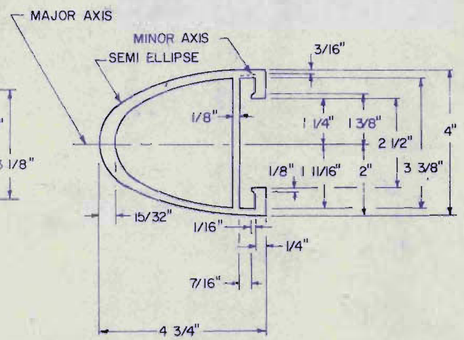
HAND RAIL END CAP



BARRIER RAIL END CAP



HAND RAIL SECTION



BARRIER RAIL SECTION

NOTES

1. Design specifications: Current AASHO specifications and ASTM standards.
2. Material specifications for Anchor Bolts: (a) Stainless steel ASTM A276 type 430 (100,000 psi min. ultimate strength) with aluminum nuts and washers (top nuts only), or (b) High strength steel bolts, nuts, and washers ASTM A-325, galvanized in accordance with ASTM A-153.
   Posts, post bases, splice bars, connection bars, baluster tubes, and baluster frames: Aluminum ASTM B-221 Alloy 6061-T6 or Alloy 6351-T5.
   Rail end caps (a) Aluminum permanent mold castings ASTM B-108 Alloy SG 70 A or B, or (b) Aluminum sand castings ASTM B-26 Alloy SG 70A
   Top nuts for stainless steel anchor bolts and for post connection bolts. Aluminum ASTM B-211 Alloy 6061-T6 or Alloy 6262-T9 with suitable lubricant, American Standard finished hexagon thick nuts, class 2B thread.
   Washers for stainless steel anchor bolts and for post connection bolts: Aluminum ASTM B-209 Alloy Alclad 2024-T4.
   Set screws, cap screws, and post connection bolts: Stainless steel ASTM A-276.
   Rivets: (a) Aluminum ASTM B-221 Alloy 6061-T6 or, (b) Aluminum ASTM B-316 Alloy 6061-T6.
   Anchor plates: (a) Steel ASTM A-7, or (b) Steel ASTM A-36.
   Welds: Weld filler wire ASTM B-285 Alloy ER-5356, metal inert gas process.
   Fabric Pad: Preformed fabric AASHO 2.10.3 (M); 1/8 inch thick.
3. Railing system shall be continous with each rail section attached to a minimum of three posts where possible. Each joint in rail lengths shall be spliced as detailed with splices of all rails occurring in the same panel.
4. Railing is to be paid for per lineal foot and the cost shall include all hardware, post connections, and fabric pads necessary to erect railing.
5. Anchor bolts are to be preset in concrete.
6. Ends of tube sections are to be sawed or milled. Cut ends are to be true, smooth, and free from burrs or ragged edges. Exposed ends of rail tube shall be closed with drive in type rail end caps.
7. Rivets shall be button head, cone point, cold driven.
8. All aluminum surfaces in contact with concrete shall be field coated with approved Aluminum Impregnated Caulking Material as specified in Subsection 707.06. It is to be anticipated that bush hammering in addition to shimming will be necessary in aligning of the post. Necessary shimming of the post shall be accomplished with 3" wide aluminum shims cut full length for the base area being shimmed, and shall be slotted at bolt locations. The shim material shall be 1100-0 as specified in ASTM B209, Condition O and provided in two thicknesses, 1/16" and 1/8". In no case shall the shim material exceed 1/4" total thickness, filling in excess of 1/4" shall be accomplished with epoxy mortar compound material as specified in Section 719 of the specifications. (The cost included in price bid for bridge railing.)
9. Four sets of shop drawings shall be submitted to the Department of Highways for approval prior to fabrication.

REVISIONS AND CORRECTIONS

1. REVISED NOTE # 8 – SHIM MATERIAL 10/5/71

APPROVED: DATE 8/24/1971

R. W. Arnold
CHIEF ENGINEER

E. B. Hickey
ASST. CHIEF ENGINEER

L. M. Bjorn
BRIDGE ENGINEER

ALUMINUM BRIDGE RAILING DETAILS

VERMONT DEPARTMENT OF HIGHWAYS STANDARD

SB-RI-71

SHEET 2 OF 2

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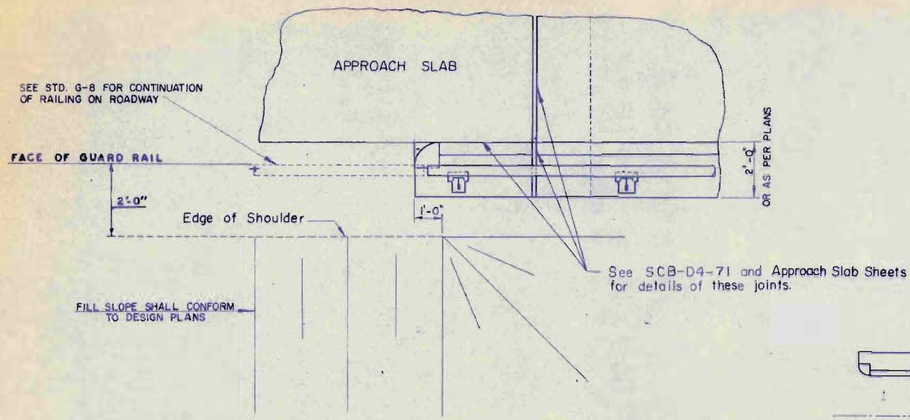
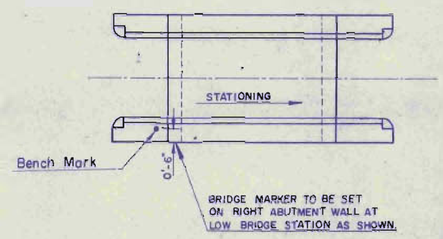
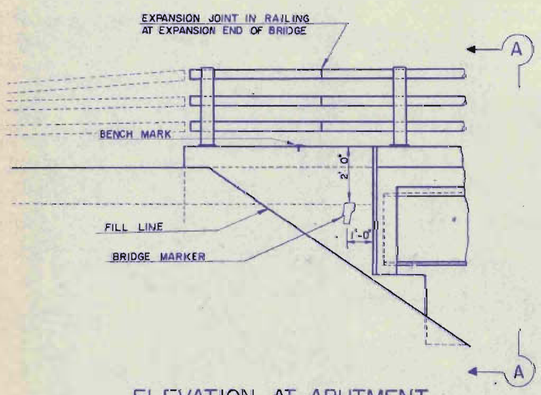
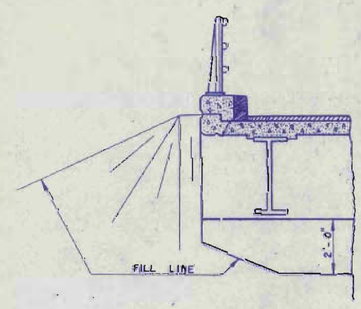


PLAN AT ABUTMENT





ELEVATION AT ABUTMENT



SECTION A-A

GENERAL NOTES

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, DATED JAN. 1972, AND THE A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1969 AND ITS LATEST REVISIONS. DESIGN IS FOR H520-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF A.A.S.H.O. STANDARD SPECIFICATIONS.

THE FOLLOWING NOTES SHALL APPLY UNLESS OTHERWISE NOTED ON PROJECT PLANS:

1. ALL STRUCTURAL STEEL SHALL CONFORM TO A.S.T.M. DESIGNATION A-36. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø A.S.T.M. A325 BOLTS IN 15/16" Ø HOLES. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.
2. SIMPLE BEAMS SHALL BE CAMBERED FOR THE DEAD LOAD DEFLECTION PLUS ONE-EIGHTH (1/8) INCH FOR EACH TEN FEET OF SPAN OR FRACTION THEREOF. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES IN CAMBER SHALL BE AS INDICATED IN THE A.I.S.C. HANDBOOK FOR ROLLED BEAMS AND AS INDICATED IN THE A.W.S. SPECIFICATIONS FOR WELDED GIRDERS.
3. **ALL WELDING AND DIMENSIONAL TOLERANCES OF WELDED MEMBERS SHALL CONFORM TO CURRENT "SPECIFICATIONS FOR WELDED HIGHWAY AND RAILWAY BRIDGES" OF THE AMERICAN WELDING SOCIETY EXCEPT AS MODIFIED BY THE WELDING SPECIAL PROVISIONS.**
4. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS AT INTERVALS ALONG THE TOP OF THE ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER FOR USE IN DETERMINING THE FINAL GRADE.
5. SCUPPERS SHALL BE USED ONLY WHEN INDICATED ON THE PROJECT PLANS. THEY SHALL BE PLACED MIDWAY BETWEEN INTERMEDIATE DIAPHRAGMS. ON SUPERELEVATED BRIDGES PLACE SCUPPERS ON LOW SIDE ONLY. PAYMENT FOR SCUPPERS SHALL BE AT THE UNIT PRICE BID FOR STRUCTURAL STEEL. **SECTION 506.**
6. CHANNEL SHEAR CONNECTORS MAY BE SUBSTITUTED FOR THE STUDS SHOWN ON THE STANDARDS. DETAILS OF SHEAR CONNECTORS SHALL BE SUBMITTED TO THE STATE FOR APPROVAL.
7. THE FINAL COAT OF FIELD PAINT SHALL BE GREEN.
8. ALL CONCRETE IN THE SUPERSTRUCTURE SHALL BE CLASS A. ALL EXPOSED EDGES OF CONCRETE IN THE SUBSTRUCTURE AND SUPERSTRUCTURE SHALL BE CHAMFERED 1" X 1".
9. SLAB REINFORCING STEEL FOR SKEWED BRIDGES SHALL BE MODIFIED FROM THAT INDICATED ON THE STANDARDS FOR SQUARE SPANS AS FOLLOWS:
   - A. TRANSVERSE BARS SHALL BE FURNISHED AS FOR A SQUARE SPAN. THESE BARS SHALL BE CUT IN THE FIELD TO FIT ONE END, WITH CUT-OFF BARS USED AT THE OPPOSITE END OF THE SPAN.
   - B. THE S506 BARS SHALL BE LENGTHENED.
   - C. THE QUANTITY OF S402 AND S 602 BARS SHALL BE INCREASED.
   - D. S506 AND S507 BARS SHALL BE INCREASED.
10. SPIRAL COLUMN REINFORCEMENT SHALL CONFORM TO A.A.S.H.O. SPECIFICATION M-32 COLD DRAWN STEEL WIRE FOR CONCRETE REINFORCEMENT.
11. MINIMUM COVER FOR REINFORCING STEEL SHALL BE 2" MEASURED FROM THE CONCRETE SURFACE TO THE FACE OF THE REINFORCEMENT.
12. LAYOUT AND DETAIL DRAWINGS FOR GRANITE BRIDGE CURB SHALL BE SUBMITTED IN TRIPLICATE TO THE STATE OF VERMONT FOR APPROVAL PRIOR TO FABRICATION AND SHIPMENT. GRANITE CURB ENDS SHALL BE SAWED ON EACH SIDE OF ALL JOINTS WHERE NEOPRENE JOINT SEALER-PREFORMED IS USED OR WHERE THE CURB BUTTS A METAL EXPANSION JOINT. GRANITE CURB SHALL BE FURNISHED IN RANDOM LENGTHS RANGING FROM 4' MINIMUM TO 10' MAXIMUM.
13. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES NOT OTHERWISE TREATED IN BOTH SUPERSTRUCTURE AND SUBSTRUCTURE, EXCEPT FOR THAT PORTION OF THE DECK SLAB AND CURTAIN OR BACK WALLS BETWEEN FASCIA BEAMS
14. BRIDGE SEATS OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/4" PER FOOT EXCEPT UNDER BEARING PLATES WHERE THE SURFACES SHALL BE LEVEL. ABUTMENT BRIDGE SEATS SHALL BE SLOPED THE FULL WIDTH, AND PIER BRIDGE SEATS SHALL BE SLOPED EACH WAY FROM THE CENTERLINE OF PIER.

    THE ENTIRE EXPOSED TOP SURFACE OF THE ABUTMENTS AND PIERS, EXCEPT THE TOP OF ABUTMENT WINGS SHALL BE SMOOTH STEEL TROWEL FINISHED.
15. ALL EXPANSION MATERIAL SHALL CONFORM TO A.A.S.H.O. DESIGNATION M153, AND SHALL NOT CONTAIN ASPHALT OR BITUMINOUS MATERIAL.
16. WHERE BITUMINOUS CONCRETE PAVEMENT IS CALLED FOR AS A WEARING SURFACE ON BRIDGE DECKS AND APPROACH SLABS, IT SHALL BE TYPE IV MIX APPLIED IN TWO COURSES.
17. BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND ARE NOT WARRANTED TO SHOW ACTUAL SUB-SURFACE CONDITIONS.
18. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL.
19. ALLOWABLE DESIGN STRESSES:

    CONCRETE: $F'C = 3,000$ P.S.I. FC = 1,200 P.S.I.

    STRUCTURAL STEEL: FS = 20,000 P.S.I. - A36 (ALL OTHER STEELS AS PER A.A.S.H.O. SPECIFICATIONS)

    REINFORCING STEEL: FS = 20,000 P.S.I. TENSION

    FS = 16,000 P.S.I. COMPRESSION
20. WHEN PILE SUPPORTED SUBSTRUCTURES ARE PLACED ON EMBANKMENTS, THE CONSTRUCTION PROCEDURE OUTLINED UNDER **SUB-SECTION 505.04 SHALL BE FOLLOWED.** MATERIAL REMOVED WITHIN THE SIX (6) INCH DEPTH SHALL BE PAID FOR AS **EXCAVATION FOR STRUCTURES.**

REVISIONS AND CORRECTIONS

1. REVISED NOTE #3 W.B.T. 1-24-72

APPROVED: DATE: 12/14/71

R.H. Carwell
CHIEF ENGINEER

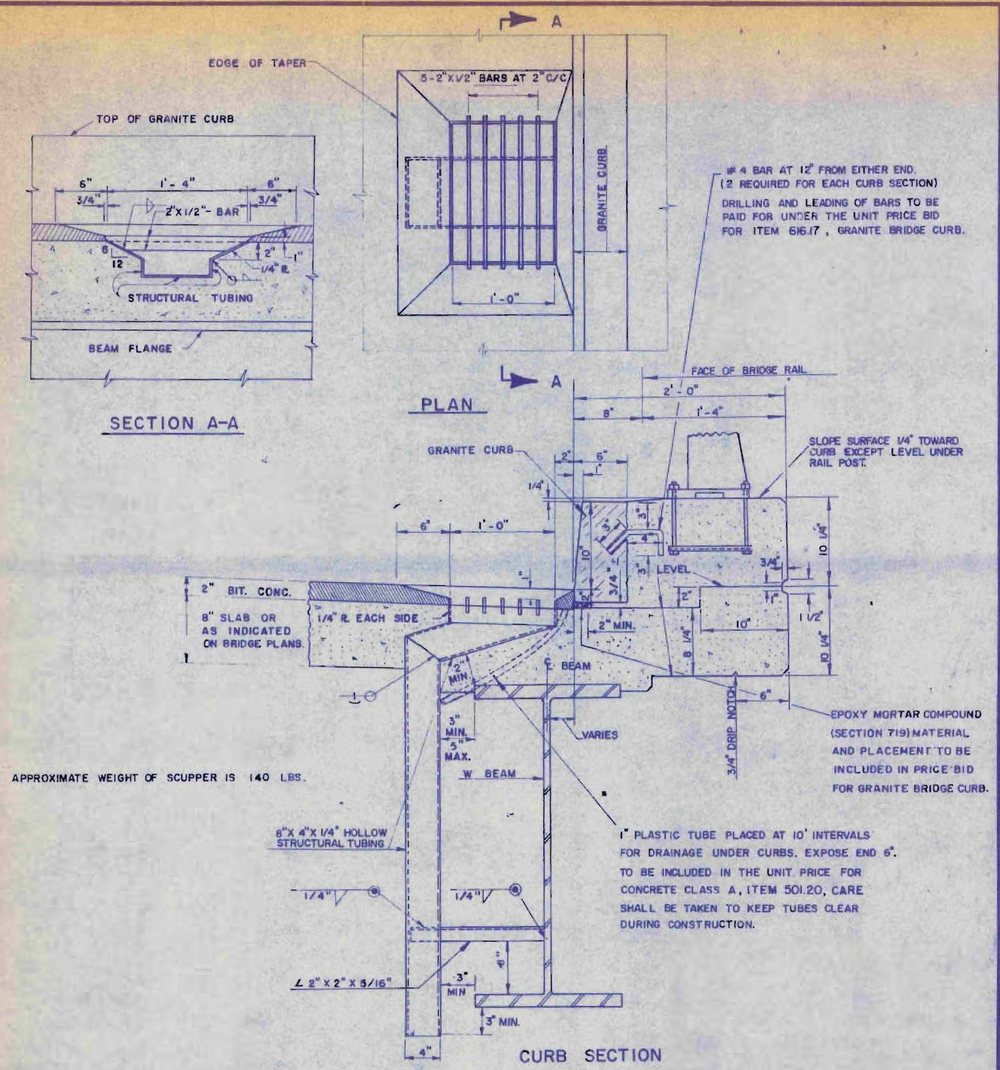
C.W. Stickney
ASST. CHIEF ENGINEER

L.M. Bian
BRIDGE ENGINEER

DETAILS OF W BEAM BRIDGES
GENERAL INFORMATION AND GENERAL NOTES

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

SCB-DI-71



4 BAR AT 12" FROM EITHER END. (2 REQUIRED FOR EACH CURB SECTION)

DRILLING AND LEADING OF BARS TO BE PAID FOR UNDER THE UNIT PRICE BID FOR ITEM 616.17, GRANITE BRIDGE CURB.

1" PLASTIC TUBE PLACED AT 10' INTERVALS FOR DRAINAGE UNDER CURBS. EXPOSE END 6". TO BE INCLUDED IN THE UNIT PRICE FOR CONCRETE CLASS A, ITEM 501.20, CARE SHALL BE TAKEN TO KEEP TUBES CLEAR DURING CONSTRUCTION.

UNLESS OTHERWISE CALLED FOR ON THE PLANS:

1.- END SCUPPERS ARE TO BE PLACED MIDWAY BETWEEN ℄ BRG. AND FIRST DIAPHRAGM ASSEMBLY.

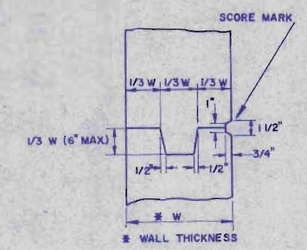
2.- INTERMEDIATE SCUPPERS ARE TO BE PLACED MIDWAY BETWEEN DIAPHRAGM ASSEMBLIES.

SCUPPER AND CURB DETAILS

(A)

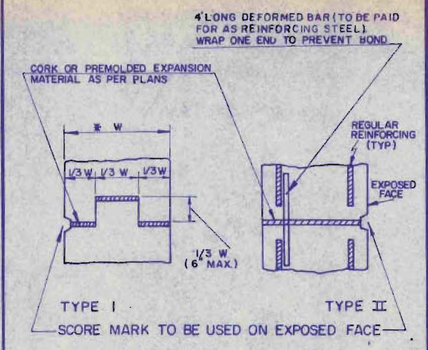
CONSTRUCTION JOINTS SHALL BE PLACED AS INDICATED ON THE PLANS.

HORIZONTAL SCORE MARKS SHALL BE PLACED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.



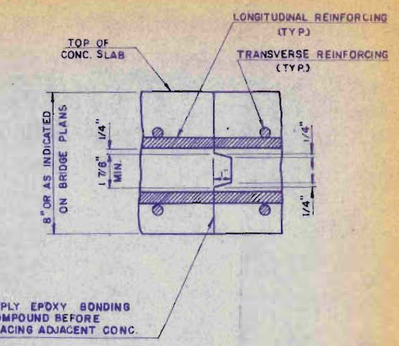
TYPICAL DETAIL OF CONSTRUCTION JOINT AND SCORE MARKS

(B)



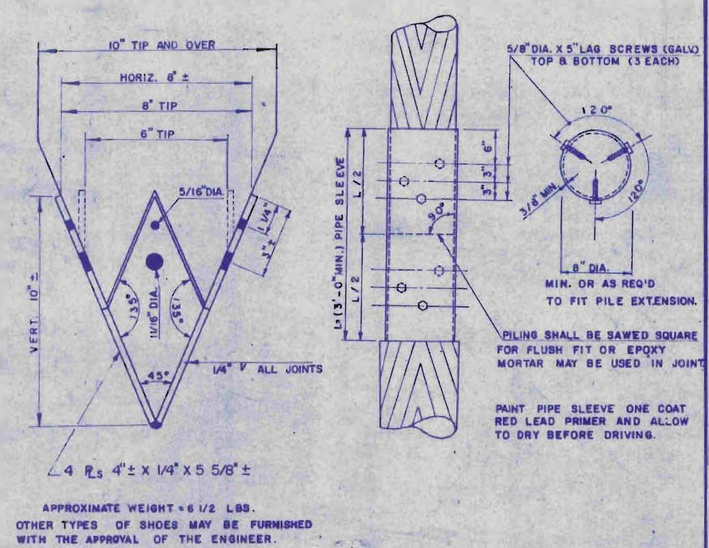
DETAILS OF VERTICAL EXPANSION JOINTS

(C)



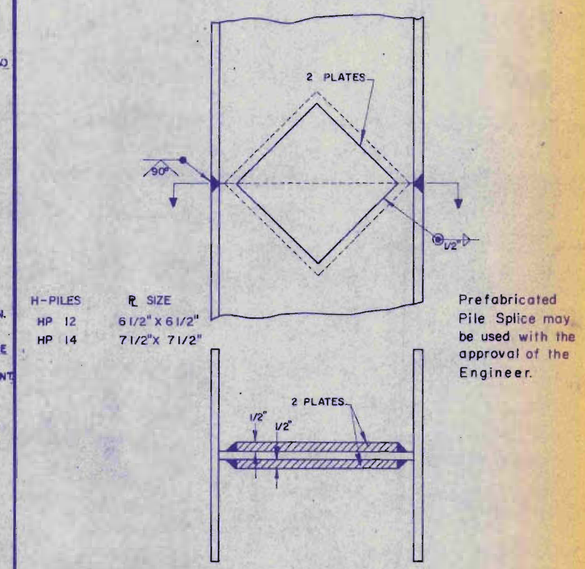
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS

(D)



DETAILS FOR TIMBER PILES

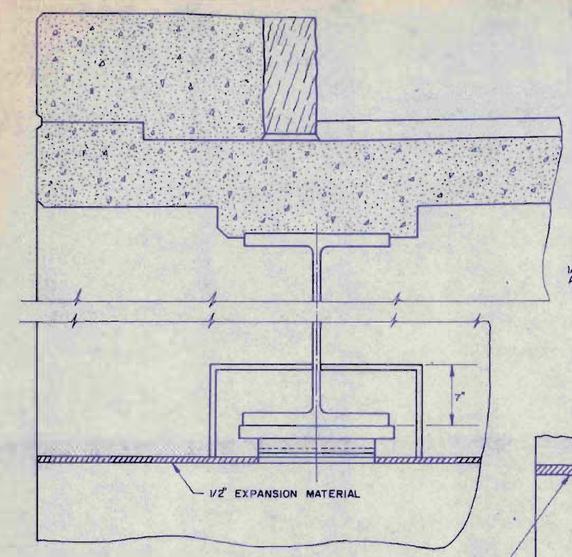
(E)



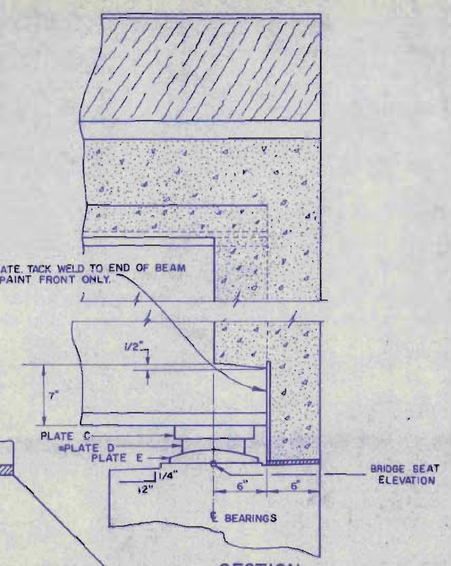
DETAIL OF PILE SPLICE

(F)

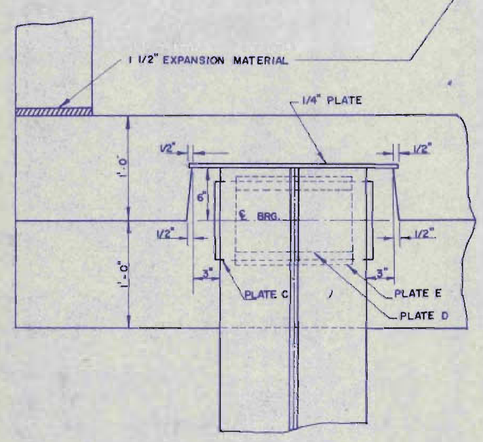
REVISIONS AND CORRECTIONS	APPROVED: DATE: 12/14/71	DETAILS OF W BEAM BRIDGES	VERMONT DEPARTMENT OF HIGHWAYS STRUCTURE STANDARDS
	R.A. Conrad CHIEF ENGINEER C.W. Stickney ASST. CHIEF ENGINEER Lin Byers BRIDGE ENGINEER	(A) SCUPPER AND CURB DETAILS (B)(C)(D) CONSTRUCTION DETAILS (E)(F) PILE DETAILS	SCB-D6-71



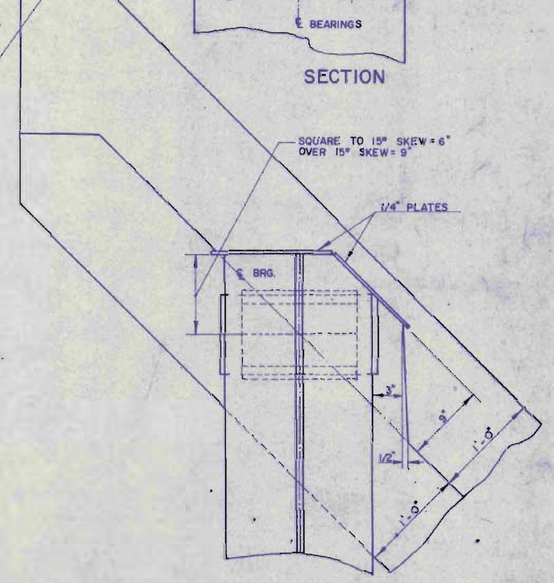
ELEVATION



SECTION

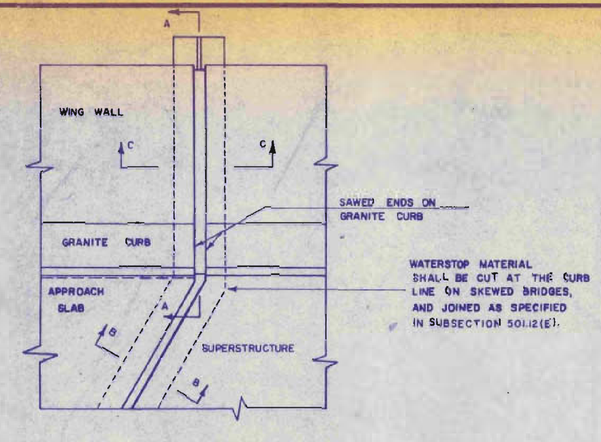


PLAN FOR SQUARE BRIDGES

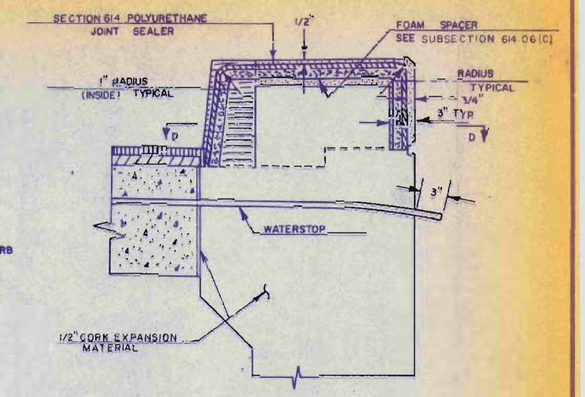


PLAN FOR SKEWED BRIDGES

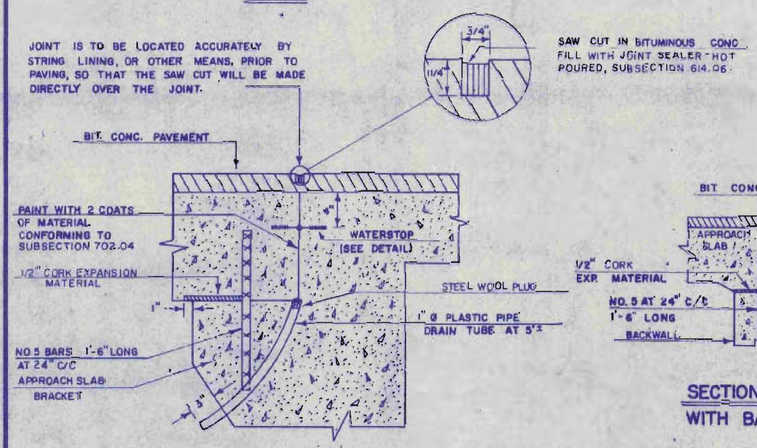
(DETAILS SHOWN FOR EXP END; FIXED END SIMILAR EXCEPT ℄s A AND B IN LIEU OF ℄s C, D AND E; SEE SCB-D8-71) Ⓐ



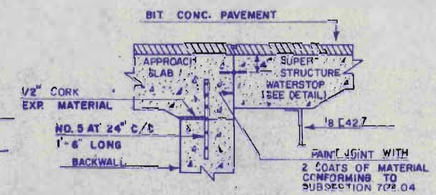
PLAN



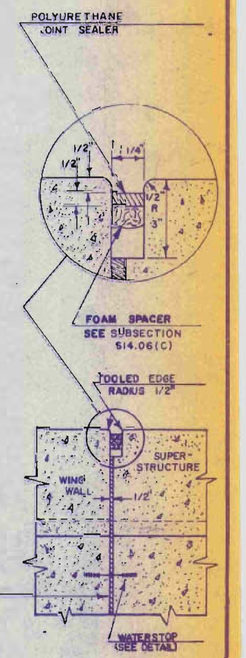
SECTION A-A



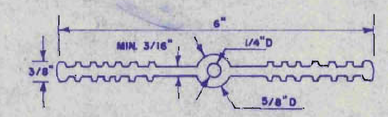
SECTION B-B



SECTION B-B
WITH BACKWALL



SECTION C-C Ⓑ

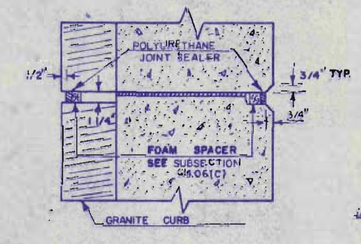


WATERSTOP DETAIL

MATERIAL TO BE POLYVINYLCHLORIDE, AS SPECIFIED IN SUBSECTION 707.30. OTHER CONFIGURATIONS, WITH MINOR DIMENSION VARIATIONS, MAY BE USED WITH THE APPROVAL OF THE BRIDGE ENGINEER.

COST OF THE WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 501.20 CONCRETE.

THE CONTRACTOR SHALL PROVIDE ADEQUATE SUPPORT TO MAINTAIN PROPER ALIGNMENT OF WATERSTOP DURING CONSTRUCTION.

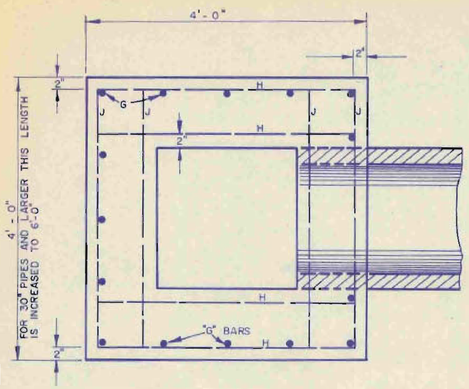


SECTION D-D

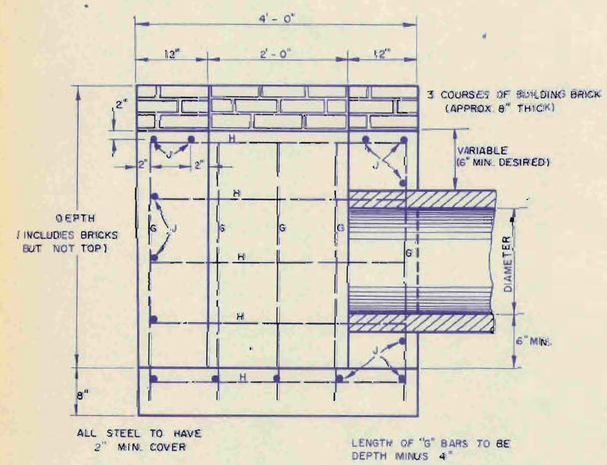
REVISIONS AND CORRECTIONS	APPROVED: DATE: 12/14/71	DETAILS OF W BEAM BRIDGES	VERMONT DEPARTMENT OF HIGHWAYS STRUCTURE STANDARDS
	R. H. Crook, CHIEF ENGINEER E. H. Stickney, ASST. CHIEF ENGINEER Earl Brown, BRIDGE ENGINEER	Ⓐ CURTAIN WALL AT BEARING DEVICES Ⓑ FIXED END JOINT DETAILS	SCB-D9-71

REINFORCED CONCRETE DROP INLET WITH GRATE (BOTTOM SECTION)

SEE SHEETS D-9, D-10, D-11 AND D-16 FOR TOP SECTION



TOP VIEW



SIDE VIEW

STEEL SCHEDULE FOR DROP INLET (BOTTOM SECTION ONLY)

DEPTH	12" TO 24" DIAMETER 4' X 4' D.I. NO. J	LENGTH	NO. H	LENGTH	NO. G	LENGTH	30" DIAMETER 4' X 6' D.I. NO. J	LENGTH	NO. H	LENGTH	NO. G	LENGTH
3'-0"	12	3'-8"	13	3'-8"	15	2'-8"						
3'-6"	12	3'-8"	13	3'-8"	15	3'-2"						
4'-0"	14	3'-8"	15	3'-8"	15	3'-8"						
4'-6"	14	3'-8"	15	3'-8"	15	4'-2"	12	5'-8"	17	3'-8"	17	4'-8"
5'-0"	16	3'-8"	17	3'-8"	15	4'-8"	14	5'-8"	19	3'-8"	17	4'-8"
5'-6"	16	3'-8"	17	3'-8"	15	5'-2"	14	5'-8"	19	3'-8"	17	5'-2"
6'-0"	18	3'-8"	19	3'-8"	15	5'-8"	16	5'-8"	21	3'-8"	17	5'-8"

MINIMUM DEPTH FOR
15" 3'-6"
18" 3'-6"
24" 4'-0"

DEPTH	36" DIAMETER 4' X 6' D.I. NO. J	LENGTH	NO. H	LENGTH	NO. G	LENGTH
5'-0"	14	5'-8"	19	3'-8"	17	4'-8"
5'-6"	14	5'-8"	19	3'-8"	17	5'-2"
6'-0"	16	5'-8"	21	3'-8"	17	5'-8"

BRICKS ARE INCLUDED IN CONCRETE QUANTITIES IN CHART

CONCRETE AND STEEL QUANTITIES FOR DROP INLETS (BOTTOM SECTION ONLY)

DEPTH	12"-24" DIA. CONC. B C.Y.	STEEL	30" DIA. CONC. B C.Y.	STEEL	36" DIA. CONC. B C.Y.	STEEL
3'-0"	1.73	138				
3'-6"	1.95	145				
4'-0"	2.17	168				
4'-6"	2.40	176	3.08	210		
5'-0"	2.62	199	3.37	238	3.29	238
5'-6"	2.84	207	3.67	247	3.59	247
6'-0"	3.06	230	3.97	276	3.89	276

TO FIND VOLUME OF CONCRETE FOR THE ENTIRE STRUCTURE, ADD THE VOLUME FOR THE TOP USED, TO THE VOLUME IN THIS TABLE. FOR VOLUME IN TOP, SEE SHEETS D-9, D-10

ALL REINFORCING STEEL TO BE NO.5 Ø DEFORMED BARS, EVENLY SPACED, WITH A MAXIMUM SPACING OF 12" CENTER TO CENTER.

DROP INLET TO BE CONSTRUCTED IN ACCORDANCE WITH STRUCTURAL CONCRETE, SECTION 501.

FURNISHING AND LAYING OF BRICKS FOR ADJUSTING ELEVATION OF GRATE, SHALL BE INCLUDED IN UNIT BID PRICE FOR CONCRETE, CLASS B, PAY ITEM 501.25, AND THEIR VOLUME TO BE INCLUDED IN THE FINAL QUANTITIES.

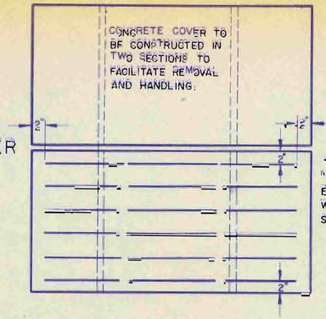
MORTAR, TYPE II, TO BE USED FOR JOINT FILLER AND LAYING OF BRICK.

FOR PIPES OF 30" OR MORE IN DIAMETER, ALLOWANCE SHALL BE MADE FOR THE OPENING IN COMPUTING CONCRETE VOLUMES. THIS DEDUCTION WILL BE BASED ON THE RATED DIAMETER OF THE PIPE USED, WITH THE SAME DEDUCTION FOR CONCRETE AND METAL PIPE.

REINFORCED CONCRETE DROP INLET WITH PRECAST COVER

DROP INLET AND COVER TO BE CONSTRUCTED IN ACCORDANCE WITH STRUCTURAL CONCRETE, SECTION 501

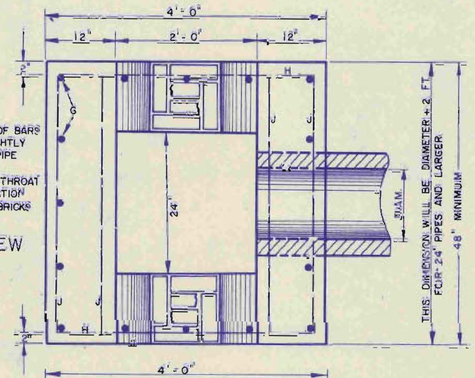
PRECAST COVER

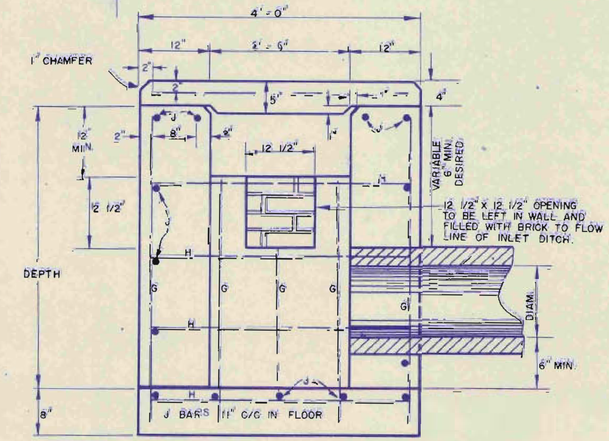


"H" BARS SPACED EVENLY IN COVER WITH A MAXIMUM SPACING OF 4" C/C

NOTE: SPACING OF BARS WILL VARY SLIGHTLY WITH SIZE OF PIPE USED.
CUT "G" BARS IN THROAT AREA TO ELEVATION AT BOTTOM OF BRICKS

TOP VIEW OF D.I.





ALL REINFORCING STEEL TO HAVE 2" MIN. COVER EXCEPT IN COVER

SIDE VIEW OF D.I.

STEEL SCHEDULE FOR DROP INLETS WITH PRECAST COVERS

DEPTH	12" TO 24" DIAMETER G	LENGTH	H=J	LENGTH	30" DIAMETER G	LENGTH	J	LENGTH	H	LENGTH
2'-0"	15	2'-4"	31	3'-8"						
2'-6"	15	2'-10"	33	3'-8"						
3'-0"	15	3'-4"	36	3'-8"						
3'-6"	15	3'-10"	36	3'-8"	16	3'-10"	12	4'-2"	23	3'-8"
4'-0"	15	4'-4"	39	3'-8"	16	4'-4"	14	4'-2"	23	3'-8"
4'-6"	15	4'-10"	39	3'-8"	16	4'-10"	14	4'-2"	25	3'-8"
5'-0"	15	5'-4"	42	3'-8"	16	5'-4"	15	4'-2"	25	3'-8"
5'-6"	15	5'-10"	42	3'-8"	18	5'-10"	16	4'-2"	27	3'-8"
6'-0"	15	6'-4"	45	3'-8"	16	6'-4"	18	4'-2"	27	3'-8"

DEPTH	36" DIAMETER G	LENGTH	J	LENGTH	H	LENGTH
4'-0"	16	4'-4"	14	4'-8"	28	3'-8"
4'-6"	16	4'-10"	14	4'-8"	28	3'-8"
5'-0"	16	5'-4"	16	4'-8"	30	3'-8"
5'-6"	16	5'-10"	16	4'-8"	30	3'-8"
6'-0"	16	6'-4"	18	4'-8"	32	3'-8"

CONCRETE AND STEEL QUANTITIES FOR DROP INLETS OF VARIOUS DEPTHS

DROP INLETS WITH PRECAST COVERS

DEPTH	12" 15" 18" CONC. B C.Y.	STEEL LBS.	24" CONC. B C.Y.	STEEL LBS.	30" CONC. B C.Y.	STEEL LBS.	36" CONC. B C.Y.	STEEL LBS.
2'-0"	1.4	158						
2'-6"	1.6	171	1.6	171				
3'-0"	1.8	195	1.8	190				
3'-6"	2.0	198	2.0	198	2.1	204		
4'-0"	2.3	217	2.3	217	2.3	221	2.5	248
4'-6"	2.5	226	2.6	225	2.6	237	2.7	255
5'-0"	2.7	244	2.7	244	2.8	254	3.0	282
5'-6"	2.9	252	2.9	252	3.0	270	3.2	295
6'-0"	3.2	271	3.2	271	3.3	287	3.5	316

ALL REINFORCING BARS SHALL BE NO.5 Ø DEFORMED BARS, EVENLY SPACED, WITH A MAXIMUM SPACING OF 12" CENTER TO CENTER, EXCEPT IN THE COVER, WHERE THE MAXIMUM SPACING IS 4" CENTER TO CENTER.

FOR PIPES OF 30" OR MORE IN DIAMETER, ALLOWANCE SHALL BE MADE FOR THE OPENING IN COMPUTING CONCRETE VOLUMES THIS DEDUCTION WILL BE BASED ON THE RATED DIAMETER OF THE PIPE USED, WITH THE SAME DEDUCTION FOR CONCRETE AND METAL PIPE.

FURNISHING AND LAYING OF BRICKS, SHALL BE INCLUDED IN THE UNIT BID PRICE FOR CONCRETE, CLASS B, PAY ITEM 501.25, AND THEIR VOLUME TO BE INCLUDED IN THE FINAL QUANTITIES. ONLY SUFFICIENT MORTAR TO BE USED TO PROVIDE A VERY LIGHT BOND TO ALLOW WITH EASE, FUTURE REMOVAL, FOR CORRECTION OF ELEVATION OF FLOW LINE.

MORTAR, TYPE II, TO BE USED FOR JOINT FILLER AND LAYING OF BRICK.

REVISIONS AND CORRECTIONS

APPROVED: DATE Oct. 6, 1971

R.N. Arnold
CHIEF ENGINEER

E.H. Ohlmacher
ASST. CHIEF ENGINEER

G.M. Lane
HIGHWAY ENGINEER

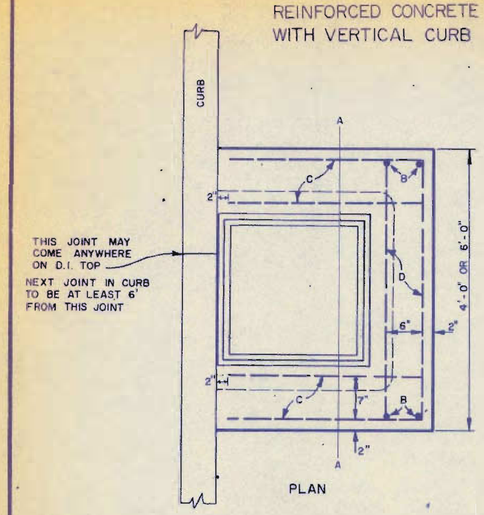
DRAWN: R.N.
TRACED: A.J.A.

REINFORCED CONCRETE DROP INLET WITH PRECAST COVER
REINFORCED CONCRETE DROP INLET WITH GRATE (BOTTOM SECTION)
(SEE SHEETS D-9, D-10 & D-11 FOR TOP SECTION)

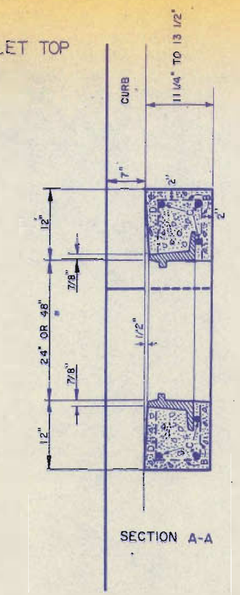
VERMONT DEPARTMENT OF HIGHWAYS STANDARD

D-8

REINFORCED CONCRETE DROP INLET TOP WITH VERTICAL CURB



PLAN



SECTION A-A

STEEL SCHEDULE FOR 4'-0" X 4'-0" DI.

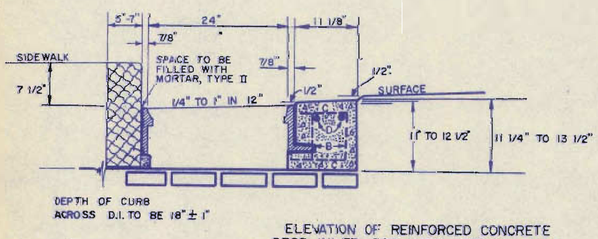
BAR	NO.	LENGTH	
B	2	4'-8"	0'-6" 3'-8" 0'-6"
C	6	2'-9"	STRAIGHT
D	2	3'-8"	STRAIGHT

CONCRETE CLASS B 0.28 C.Y.
REINFORCING STEEL 35 LBS.

STEEL SCHEDULE FOR 4'-0" X 6'-0" DI.

BAR	NO.	LENGTH	
B	2	6'-8"	0'-6" 5'-8" 0'-6"
C	6	2'-9"	STRAIGHT
D	2	5'-8"	STRAIGHT

CONCRETE CLASS B 0.34 C.Y.
REINFORCING STEEL 43 LBS.



ELEVATION OF REINFORCED CONCRETE DROP INLET TOP WITH VERTICAL CURB

GENERAL NOTES:

CONCRETE TO CONFORM TO STRUCTURAL CONCRETE, SECTION 601

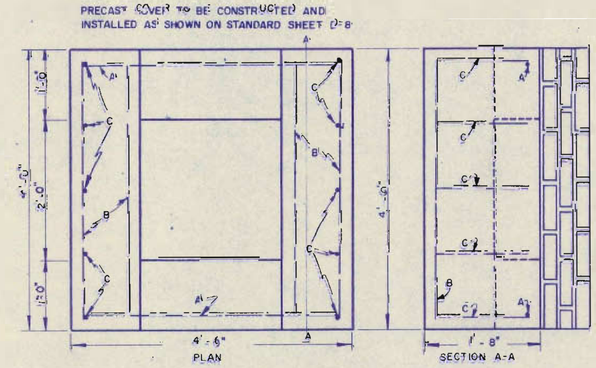
ALL REINFORCING STEEL TO BE NO. 5 DEFORMED BARS

THESE TOPS TO BE USED WITH BOTTOM SECTIONS SHOWN ON STANDARD SHEETS D-5, D-8 AND D-13.

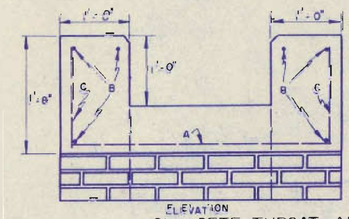
ALL REINFORCING STEEL TO HAVE A 2" MINIMUM COVER

CAST IRON GRATE AND FRAME IN ACCORDANCE AND PAID FOR UNDER SECTION 604

PRECAST COVER TO BE CONSTRUCTED AND INSTALLED AS SHOWN ON STANDARD SHEET D-8



PLAN SECTION A-A



ELEVATION

STEEL SCHEDULE

BAR	NO	LENGTH	TYPE
A	2	3'-8"	STRAIGHT
B	6	3'-8"	STRAIGHT
C	10	1'-4"	STRAIGHT

ALL REINFORCING STEEL TO BE NO. 5 DEFORMED BARS

CONCRETE TO CONFORM TO STRUCTURAL CONCRETE SECTION 501

CONCRETE CLASS B (NOT INCLUDING COVER) 0.59 C.Y.
REINFORCING STEEL 45 LBS.

CONCRETE THROAT ADAPTER

REVISIONS AND CORRECTIONS

APPROVED DATE Dec. 8, 1971

R. N. Arnold
CHIEF ENGINEER

E. S. Stickney
ASST. CHIEF ENGINEER

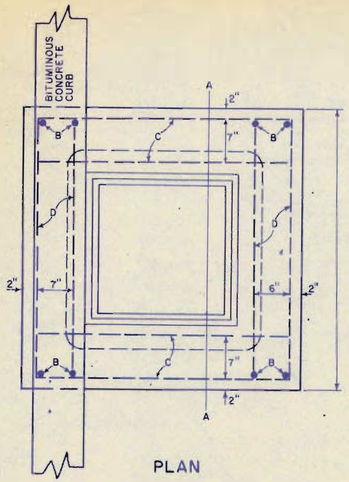
G. M. Lane
HIGHWAY ENGINEER

DRAWN: R. F.
TRACED: A.J.A.

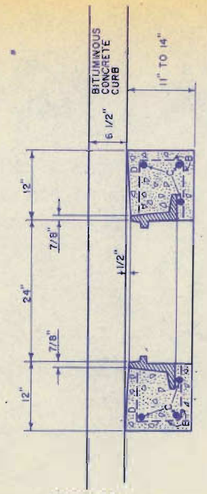
REINFORCED CONCRETE DROP INLET TOP WITH VERTICAL CURB
REINFORCED CONCRETE DROP INLET THROAT ADAPTER

VERMONT DEPARTMENT OF HIGHWAYS STANDARD

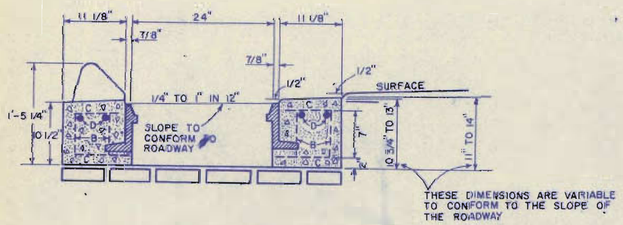
D-9



PLAN



SECTION A-A



ELEVATION

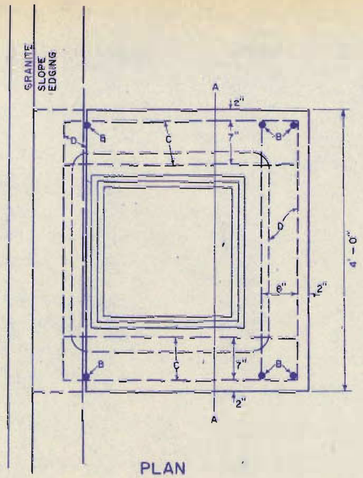
TOP FOR A REINFORCED CONCRETE DROP INLET WITH BITUMINOUS CONCRETE CURB

4'-0" x 4'-0"
STEEL SCHEDULE

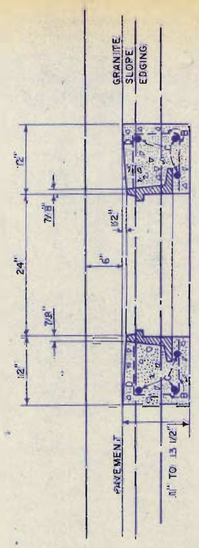
BAR	NO.	LENGTH	
B	4	4'-8"	0'-6" 3'-8" 0'-6"
C	6	3'-6"	STRAIGHT
D	4	3'-8"	STRAIGHT

CONCRETE CLASS B = 0.41 C.Y.
REINFORCING STEEL = 518 LBS.

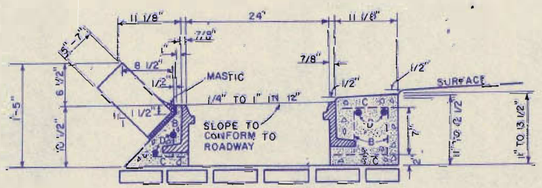
4'-0" x 6'-0"
CONCRETE CLASS B = 0.54 C.Y.
REINFORCING STEEL = 74 LBS



PLAN



SECTION A-A



ELEVATION

TOP FOR A REINFORCED CONCRETE DROP INLET WITH GRANITE SLOPE EDGING

4'-0" x 4'-0"
STEEL SCHEDULE

BAR	NO.	LENGTH	
B	2 1	4'-8" 4'-4"	4" OR 6" 3'-8" 4" OR 6"
C	4 2	3'-4" 2'-10"	STRAIGHT
D	4	3'-8"	STRAIGHT

CONCRETE CLASS B = 0.53 C.Y.
REINFORCING STEEL = 48 LBS.

4'-0" x 6'-0"
CONCRETE CLASS B = 0.42 C.Y.
REINFORCING STEEL = 63 LBS.

ALL REINFORCING STEEL TO BE No. 5 DEFORMED BARS

FOR CAST IRON GRATE AND FRAME DETAIL, SEE STANDARD SHEET D-11 OR D-16.

REVISIONS AND CORRECTIONS

APPROVED:

Dec. 6, 1971
DATE

R. H. Arnold
CHIEF ENGINEER

E. J. Ritchney
ASST. CHIEF ENGINEER

G. M. Lane
HIGHWAY ENGINEER

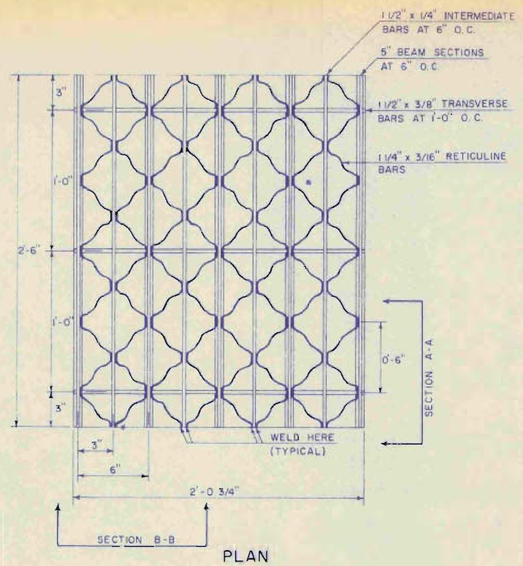
TOP FOR A DROP INLET WITH BITUMINOUS CONCRETE CURB

TOP FOR A DROP INLET WITH GRANITE SLOPE EDGING

VERMONT DEPARTMENT OF HIGHWAYS STANDARD

D-10

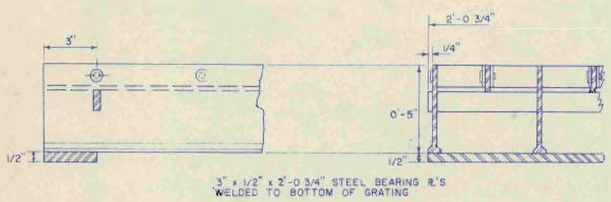
STEEL GRATE



PLAN

GRATE SIZE SINGLE 24 3/4" x 30"
DOUBLE 24 3/4" x 54"
WEIGHT 95 LBS OR MORE
GRATES SHALL BE CAPABLE OF SUPPORTING H-20 (32,000 LB AXLE LOAD) INCLUDING 30% IMPACT

UNIT STRESSES (LBS PER SQ. IN.)		18,000	20,000
MAIN BAR PARALLEL TO TRAFFIC	H-20	49"	53"
MAIN BAR PERPENDICULAR TO TRAFFIC	H-20	39"	42"

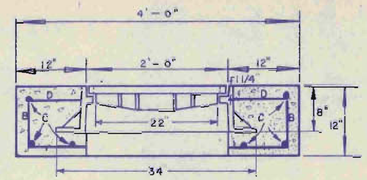


SECTION A-A

SECTION B-B

CAST IRON COVER WITH FRAME

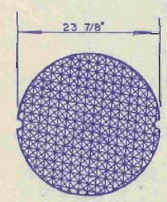
BAR	NO.	LENGTH	
B	4		3/8" 3'-8" 3/8"
C	6	3'-8"	STRAIGHT
D	4	3'-8"	STRAIGHT



ELEVATION

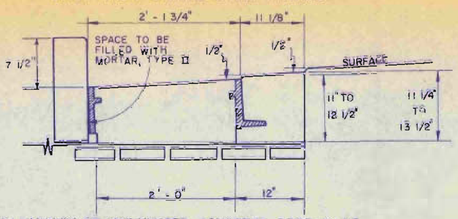
ALL REINFORCING STEEL TO BE No. 5 DEFORMED BARS

GENERAL NOTES:
WEIGHT OF FRAME AND COVER = 425 LBS



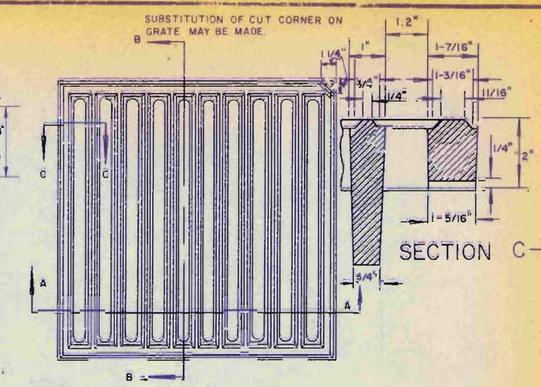
PLAN

CAST IRON GRATE WITH FRAME



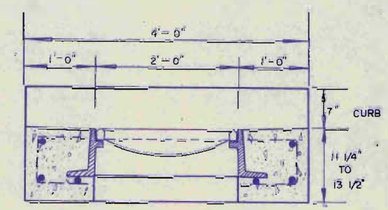
ELEVATION OF REINFORCED CONCRETE DROP INLET WITH VERTICAL GRANITE CURB AND 3 FLANGE CAST IRON FRAME FOR CAST IRON GRATE

SEE STANDARD D-9 FOR CONCRETE VOLUME, REINFORCING STEEL SCHEDULE AND CURB JOINT DETAIL.

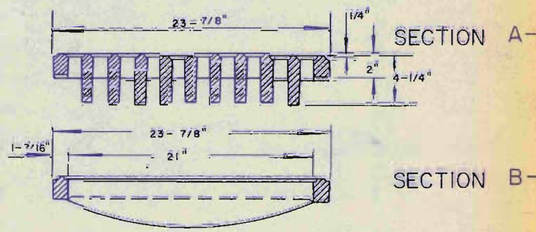


PLAN

SECTION C-C



ELEVATION

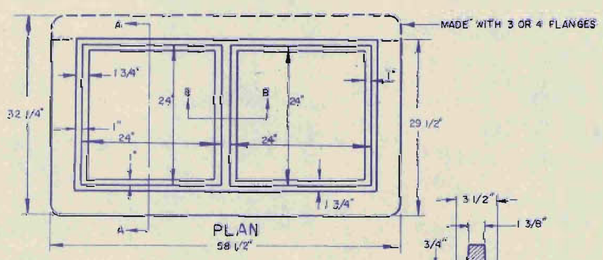


SECTION A-A

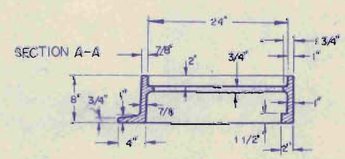
SECTION B-B

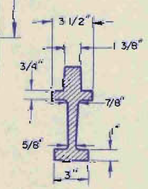
WEIGHT OF 3 FLANGED FRAME AND GRATE

GRATE	220 LBS
FRAME	260 LBS
TOTAL	480 LBS



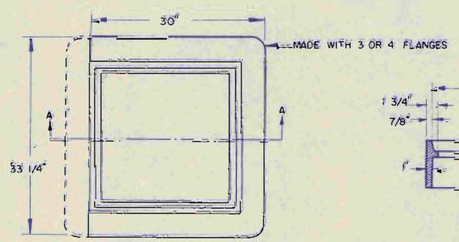
PLAN



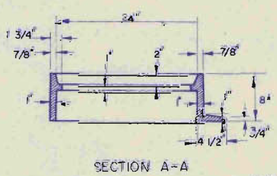


SECTION B-B

RECTANGULAR CAST IRON FRAME FOR TWO 24" SQUARE CAST IRON GRATES



PLAN



SECTION A-A

SQUARE CAST IRON FRAME FOR CAST IRON GRATE TYPE A

THIS FRAME TO BE PLACED IN DROP INLET TOP BEFORE CONCRETE IS POURED.
4 FLANGES UNLESS OTHERWISE INDICATED.
FRAMES TO BE FURNISHED WITH 3 FLANGES WHEN USED IN CONJUNCTION WITH CURB OR AS DIRECTED BY THE ENGINEER.

REVISIONS AND CORRECTIONS
APRIL 25, 1972 CAST IRON COVER CHANGED FROM SQUARE TO CIRCULAR

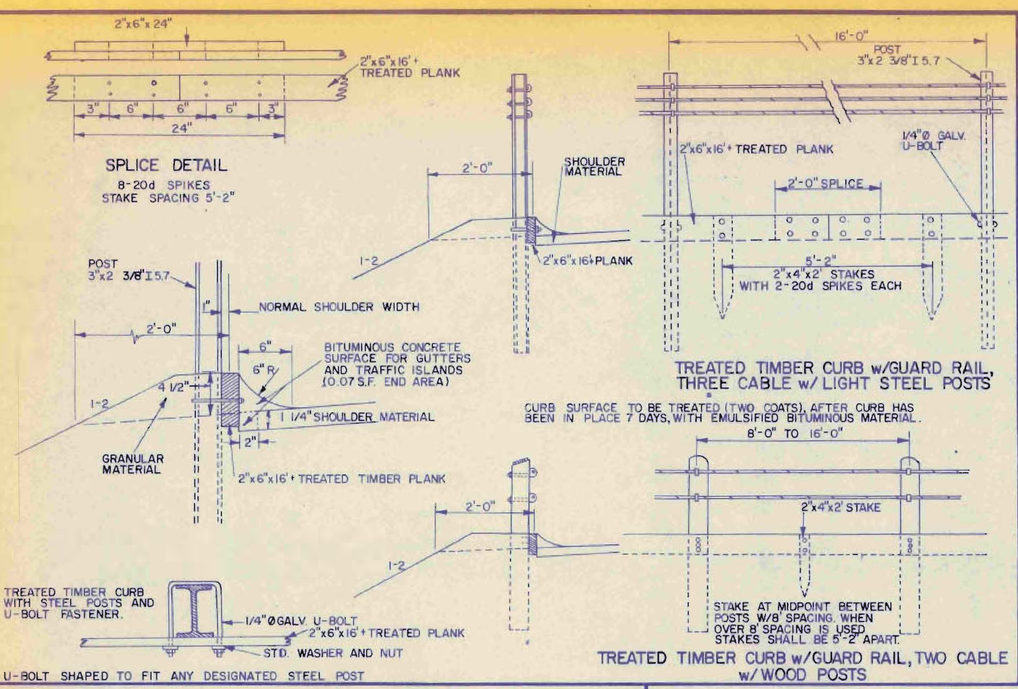
APPROVED DATE: Dec 6, 1971
R. W. Arnold — CHIEF ENGINEER
E. H. Ritchney — ASST. CHIEF ENGINEER
G. M. Lane — HIGHWAY ENGINEER

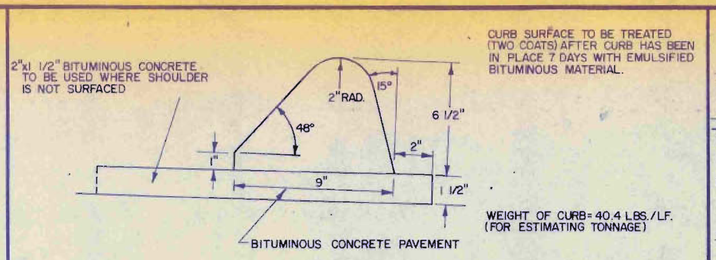
DRAWN: G. AJA
TRACED: A J A

STEEL GRATE
CAST IRON GRATE TYPE A
CAST IRON COVER

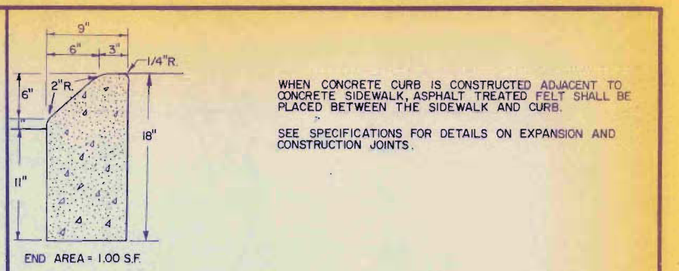
VERMONT DEPARTMENT OF HIGHWAYS STANDARD

D-11

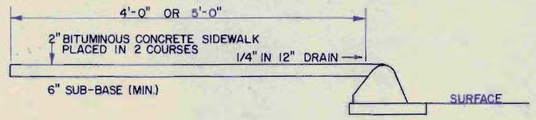




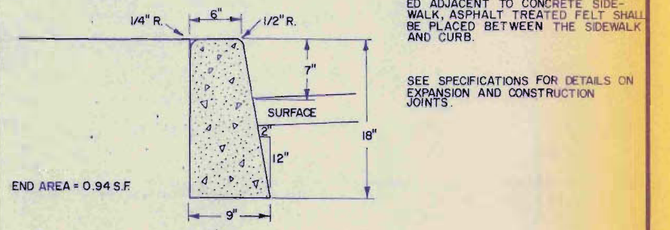
BITUMINOUS CONCRETE CURB, TYPE A



CAST IN PLACE CEMENT CONCRETE CURB, TYPE A

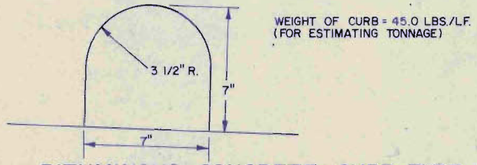


BITUMINOUS CONCRETE SIDEWALK

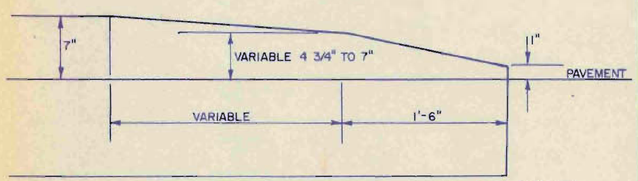


CAST IN PLACE CEMENT CONCRETE CURB, TYPE B

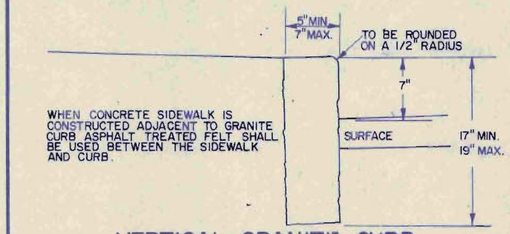
CURB SURFACE TO BE TREATED (TWO COATS), AFTER CURB HAS BEEN IN PLACE 7 DAYS, WITH EMULSIFIED BITUMINOUS MATERIAL.



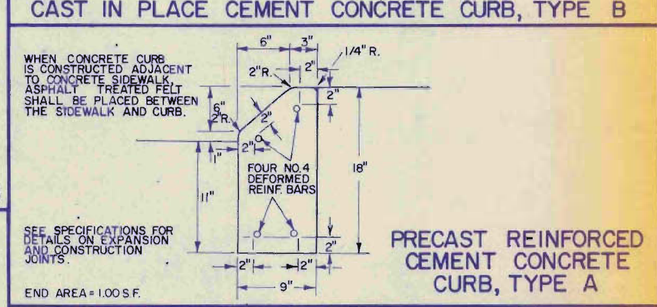
BITUMINOUS CONCRETE CURB, TYPE B



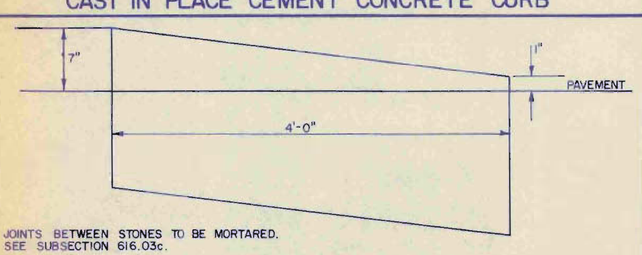
DETAIL OF CONCRETE CURB END FOR PRECAST REINFORCED CEMENT CONCRETE CURB OR CAST IN PLACE CEMENT CONCRETE CURB



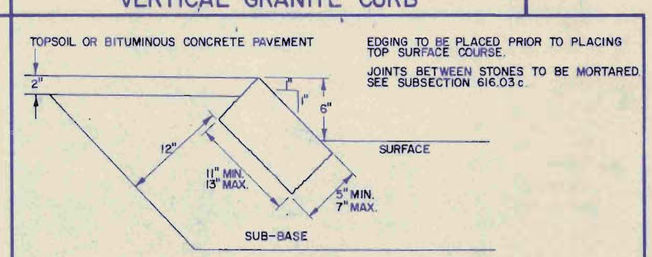
VERTICAL GRANITE CURB



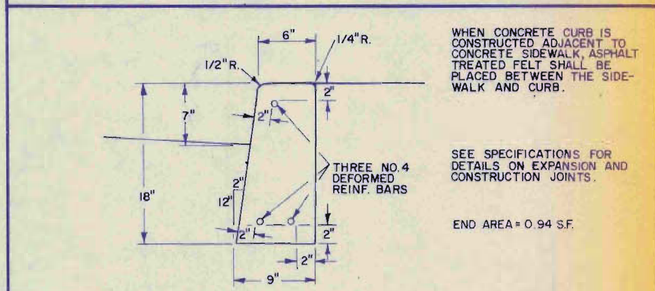
PRECAST REINFORCED CEMENT CONCRETE CURB, TYPE A



DETAIL OF GRANITE CURB END FOR VERTICAL GRANITE CURB



GRANITE SLOPE EDGING



PRECAST REINFORCED CEMENT CONCRETE CURB, TYPE B

REVISIONS AND CORRECTIONS

APPROVED: DATE: Dec. 8, 1971

R. N. Arnold
CHIEF ENGINEER

E. H. Stickney
ASST. CHIEF ENGINEER

G. M. Lane
HIGHWAY ENGINEER

GRANITE SLOPE EDGING
VERTICAL GRANITE CURB
PRECAST REINFORCED CEMENT CONCRETE CURB
CAST IN PLACE CEMENT CONCRETE CURB
BITUMINOUS CONCRETE CURB
TREATED TIMBER CURB

VERMONT DEPARTMENT OF HIGHWAYS STANDARD

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