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11. Std. Sh. E-7 9-19-73(R)
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14. Std. Sh. SB-R6-76 1-8-76

STATE OF VERMONT DEPARTMENT OF HIGHWAYS



PROPOSED IMPROVEMENT

BRIDGE PROJECT
TOWN OF CASTLETON
COUNTY OF RUTLAND
ROUTE NO. 137H #28 BRIDGE NO. 35

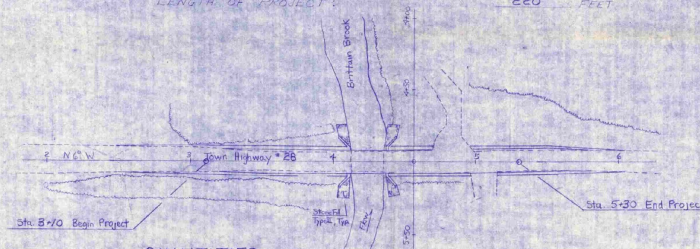
GENERAL NOTES:

1. See SCB-DI-75 for additional General Notes
2. Design Load is HS 20-44
3. See Special Provisions for details of Removal of Structure and Temporary Structure
4. All cut and fill slopes shall be Fertilized, seeded and mulched as directed by the Engineer. All cost of this work shall be subsidiary to contract items.

PROJECT LOCATION: CL 3 TH #28, BR 35 over Brittain Brook beginning at a point 250 ft. from the intersection of TH #3 and TH #28 and extending northerly 220 ft.

PROJECT DESCRIPTION: The project shall consist of removal of existing abutments, construction of new reinforced concrete sub-bridge and abutments, roadway approaches, and necessary channel work.

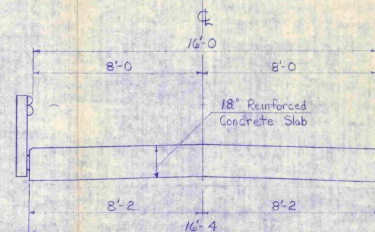
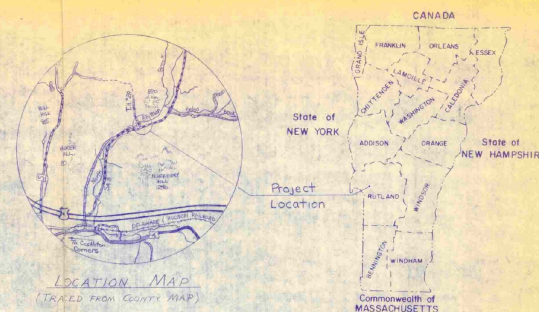
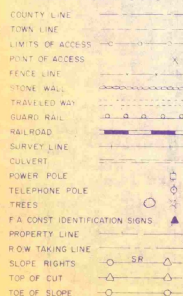
LENGTH OF STRUCTURE: 29'-0" FEET
LENGTH OF PARTICIPATION ROADWAY: 171' FEET
LENGTH OF NEW PARTICIPATION ROADWAY: 0' FEET
LENGTH OF PROJECT: 220' FEET



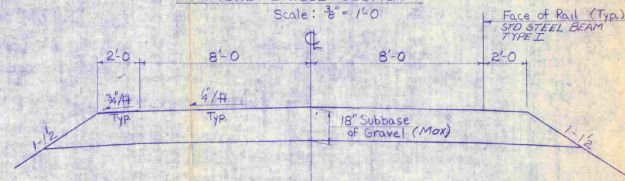
QUANTITIES

No.	ITEM	Unit	Superstructure	Abut. #1	Abut. #2	Channel	Roadway	TOTAL
202.25	Removal of Structure	EQ	1					1
203.27	Unclassified Channel Excavation	C.Y.				30		30
204.30	Earth Borrow	C.Y.					30	30
204.25	Structure Excavation	C.Y.	165	165				330
204.30	Granular Backfill for Structure	C.Y.	65	65				130
301.15	Subbase of Gravel	C.Y.	15	15		170		200
501.25	Concrete, Class B	C.Y.	28	13	43			114
507.15	Reinforcing Steel	LBS	4980	3670	3650			12300
613.11	Stone Fill, Type II	C.Y.		25	25			50
617.34	Bridge Rail, Standard Steel Beam	L.F.	58					58
621.25	Guard Rail, Standard Steel Beam w/Steel Posts, Type I	L.F.				120		120

CONVENTIONAL SIGNS



TYPICAL BRIDGE SECTION Scale: 3/8" = 1'-0"

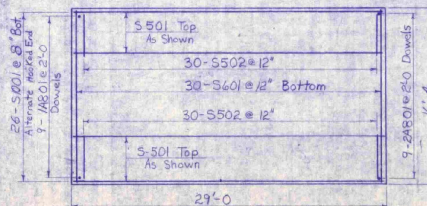
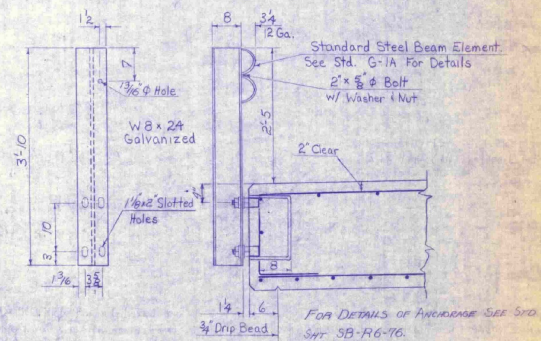
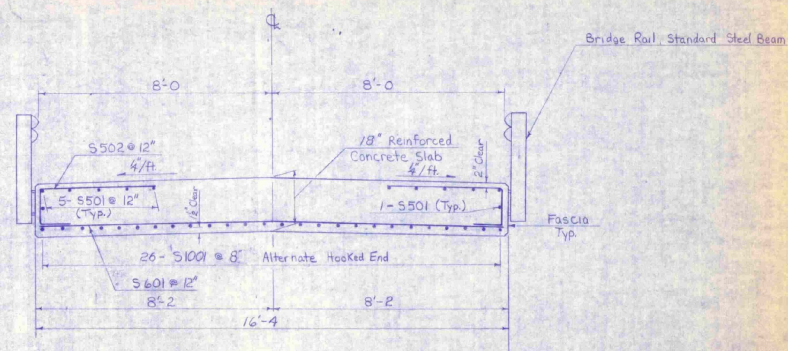
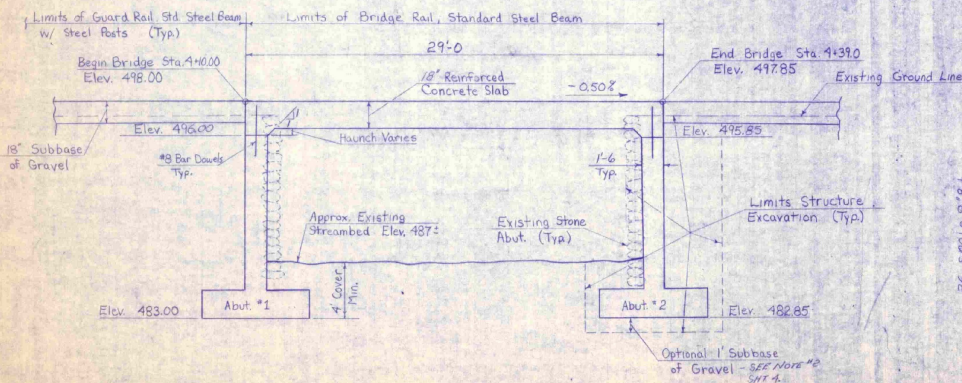


TYPICAL ROADWAY SECTION Scale: 3/8" = 1'-0"

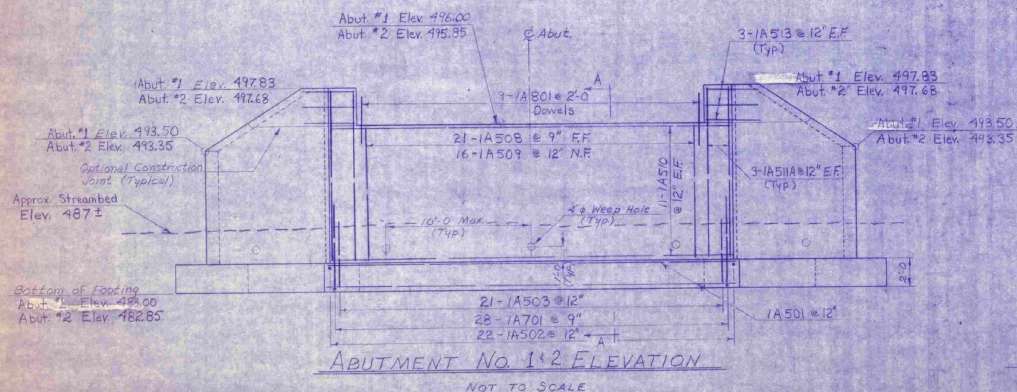
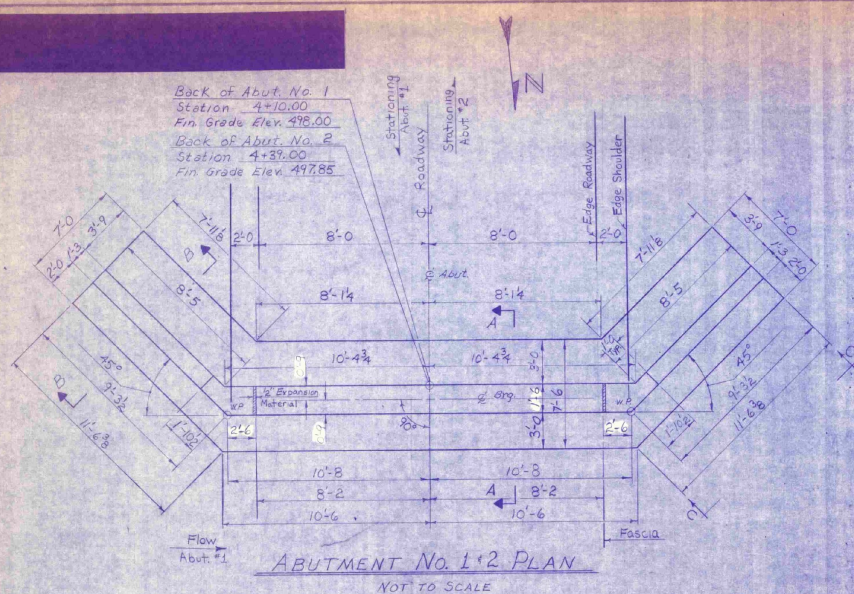
Date: Sept 14, 1976
Project: North East Bridge and C.I. Inc.
Contractor: [Signature]
Assistant: [Signature]
Vice President: [Signature]
Access Construction's Signature

SUBMITTED BY ORDER OF THE STATE HIGHWAY BOARD
APPROVED: [Signature] DATE: 6/22/76
CHIEF ENGINEER

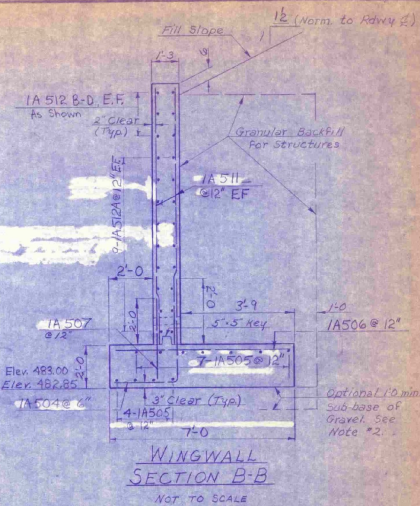
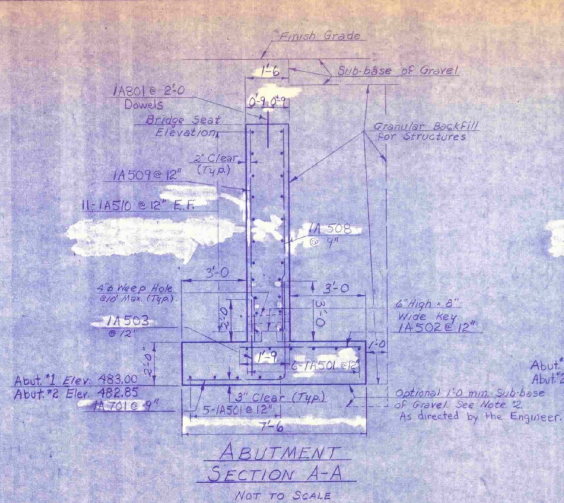
PROJECT: CASTLETON
NO. 17H 3709
SHEET 1 OF 12 SHEETS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF	CASTLETON	Bridge No.	35
HIGHWAY NO.	T.H. #28	Log. Sta.	
		Surr. Sta.	4+25
CL.3 TH #28 over Brittain Brook			
Superstructure Details			
Designed by J.R. Guilmette		Drawn by J.R. Guilmette	
Checked by G.HOPKINS		Bridge Design Supervisor	
date 7/16/70		date 6/17/70	
PROJECT		PROJECT NO.	
CASTLETON		TH 3109	
Bridge Sheet No.	Sheet	3 of 13	

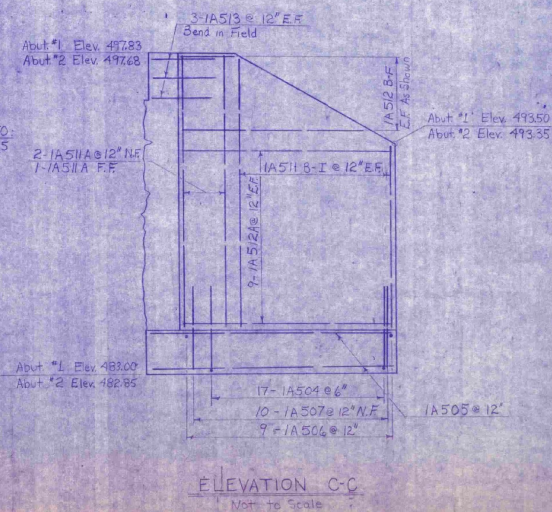


Abutment 2 Reinforcing Bar Marks Prefix 2A (Typ.)

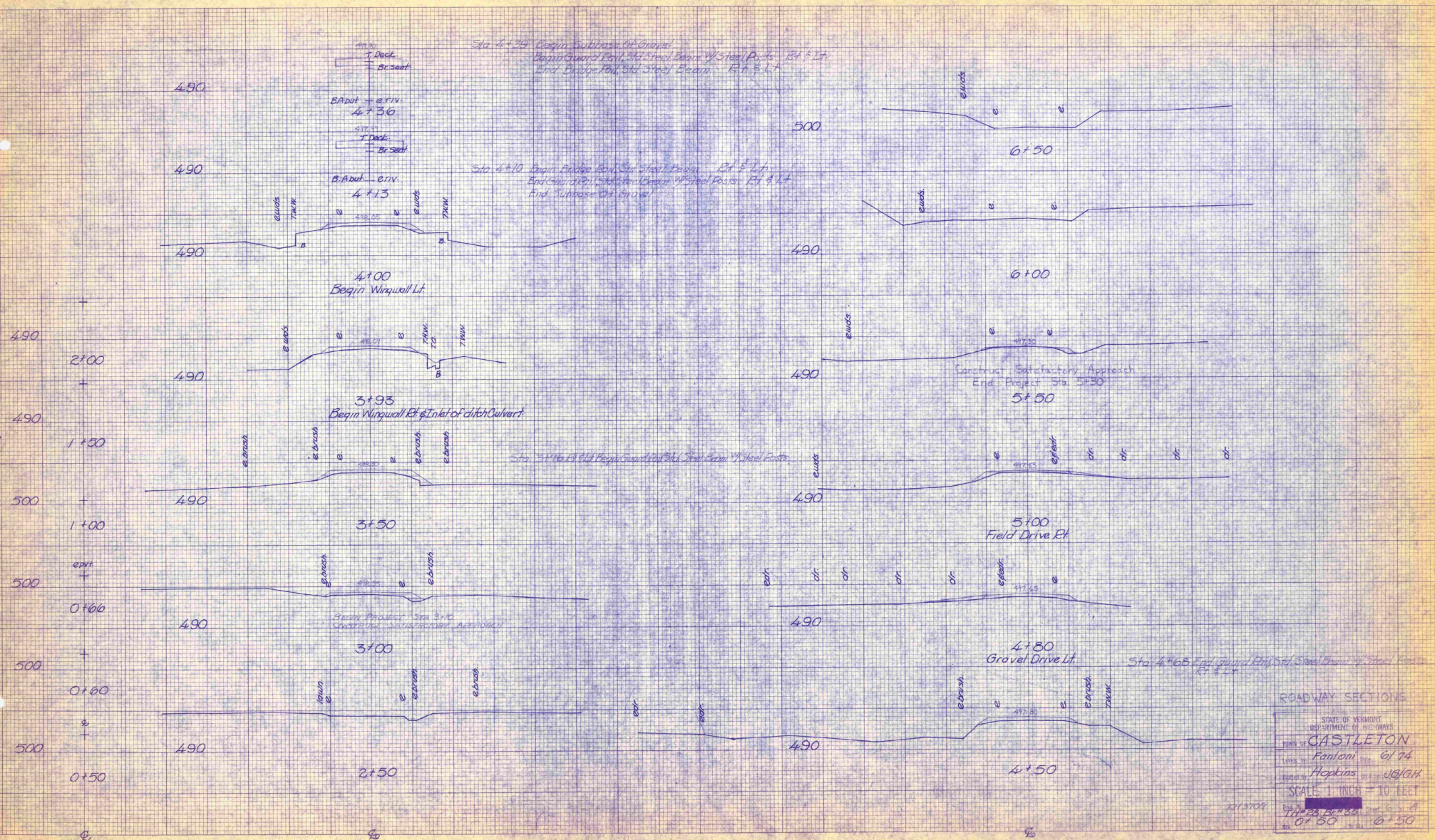


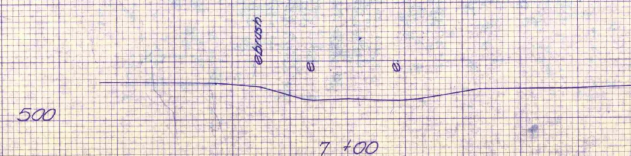
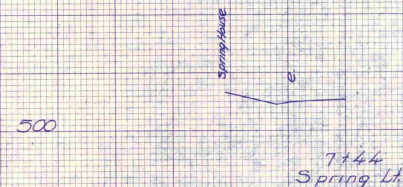
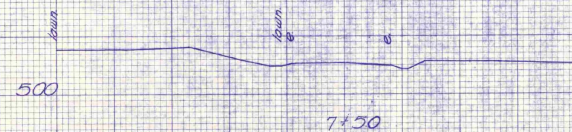
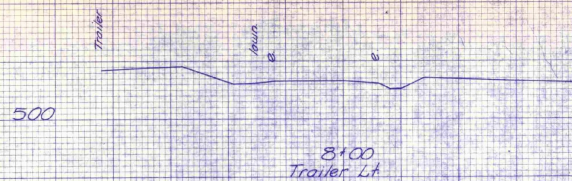
NOTES:

1. All materials and construction shall conform to the latest Standard specification for Highway and Bridge Construction, AASHTO and A.A.S.H.O. Standard Specifications for Highway Bridges.
2. Abutments and wingwalls are designed for a maximum bearing of 4 k.s.f. for 10 min. Sub-base of gravel under footings in areas of poor Foundation material.
3. Reinforcing steel design stress: $F_y = 50,000$ psi. All bar reinforcement shall conform to "Specifications for Deformed Bar-Steel Bars for Concrete Reinforcement" (ASTM A618) Grade 60.
4. Concrete shall be Class B, $f'_c = 5,000$ psi, $F_y = 40,000$ psi.
5. All reinforcing steel shall be lapped 30 bar diameters (20 minimum lap).
6. All exposed concrete shall be chamfered 1" x 1".



STATE OF VERMONT		DEPARTMENT OF HIGHWAYS	
TOWN OF	CASTLETON	Bridge No.	35
HIGHWAY NO.	TH. #28	Log Sta.	
		Start Sta.	+425
CL3 TH. #28 over Brittain Brook			
Abutment & Wingwall Details			
Designed by	J.R. Guilmette	Drawn by	J.R. Guilmette
Checked by	W. J. Thompson	Bridge No.	35
Project No.	date 11/6/76	TH. #28	date 6/1/76
CASTLETON		PROJECT NO.	
TH 3709		TH 3709	
Bridge Sheet No.	Sheet	9 of 14	





ROADWAY SECTIONS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF CASTLETON

Section by Fontani date 6/74

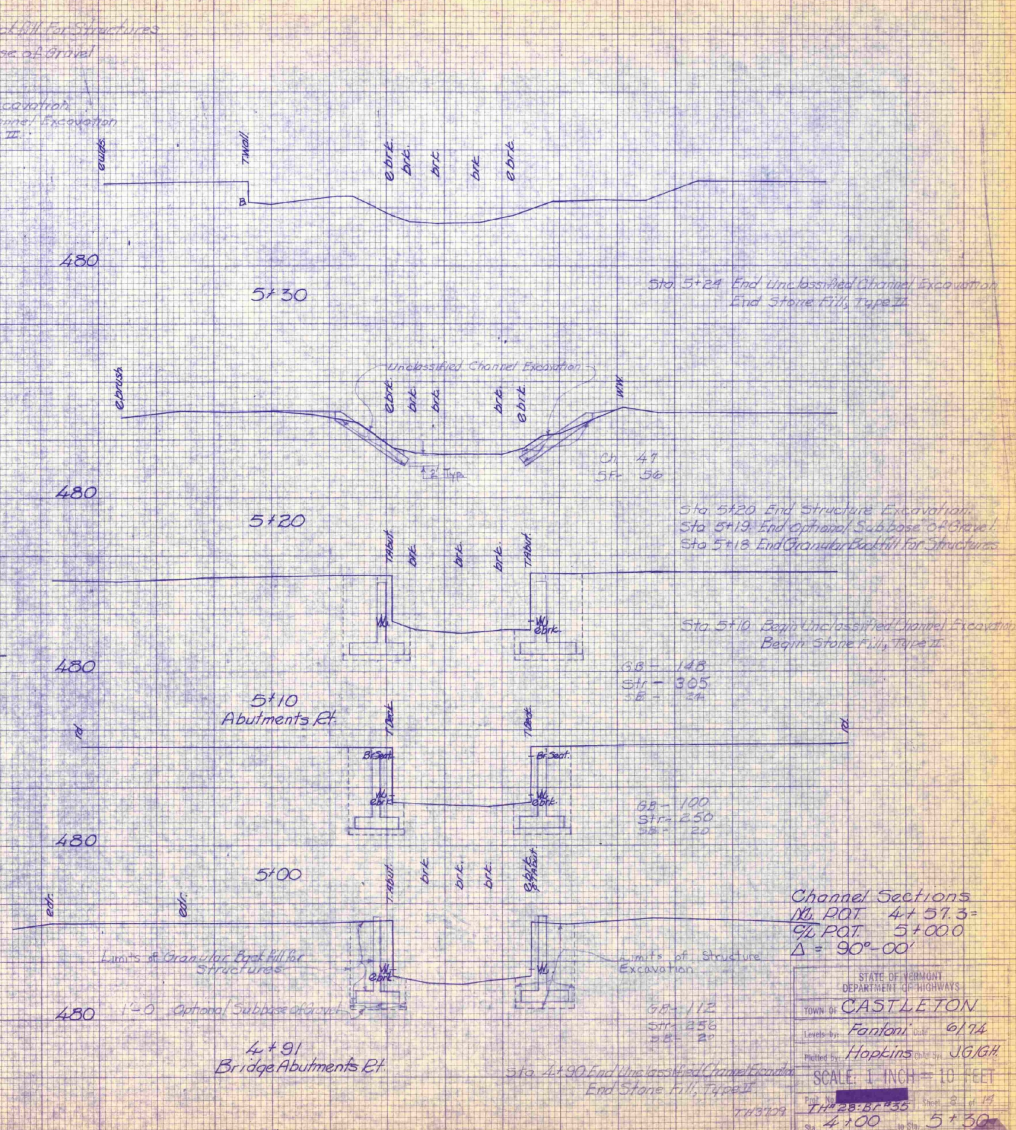
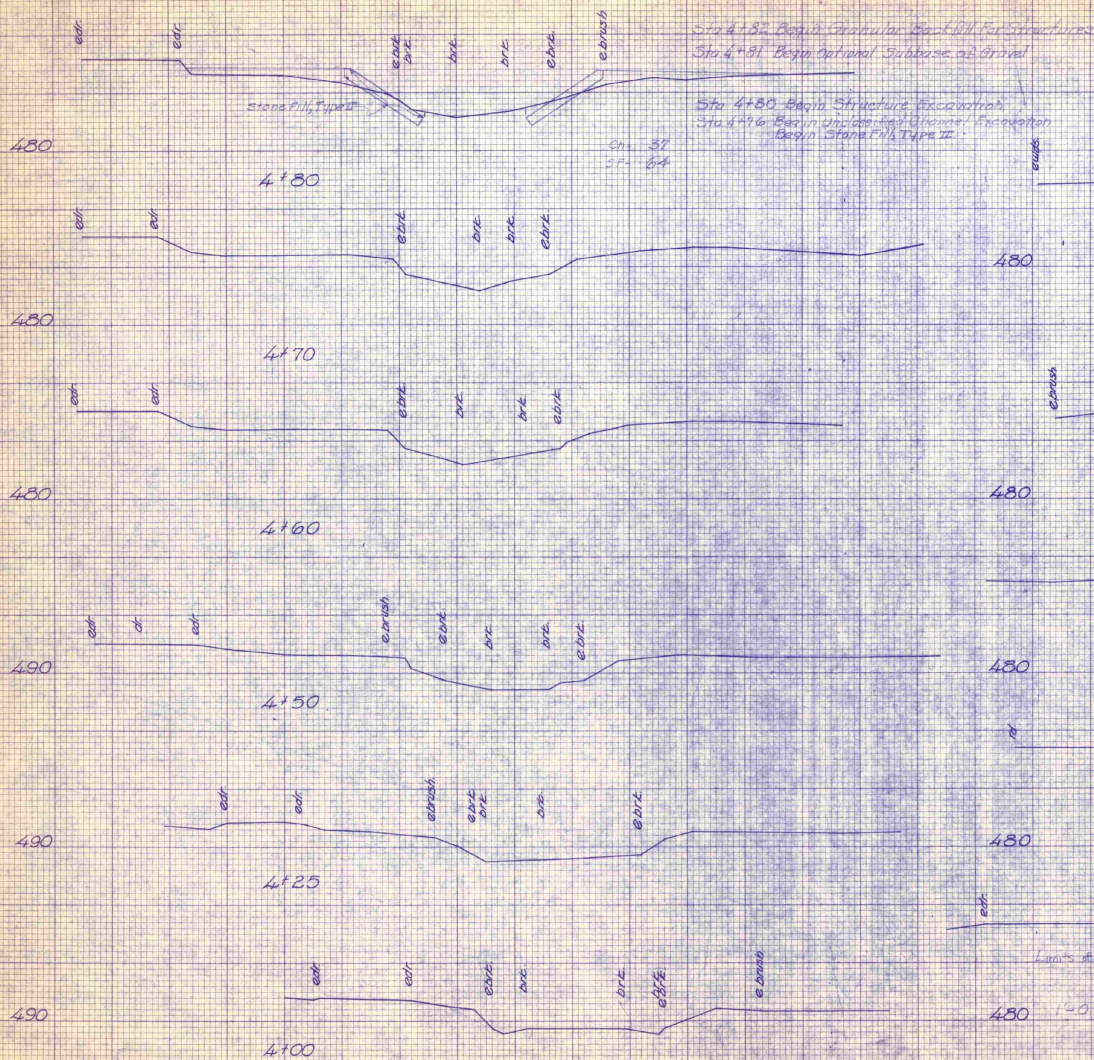
Revised by Hopkins JG/GH

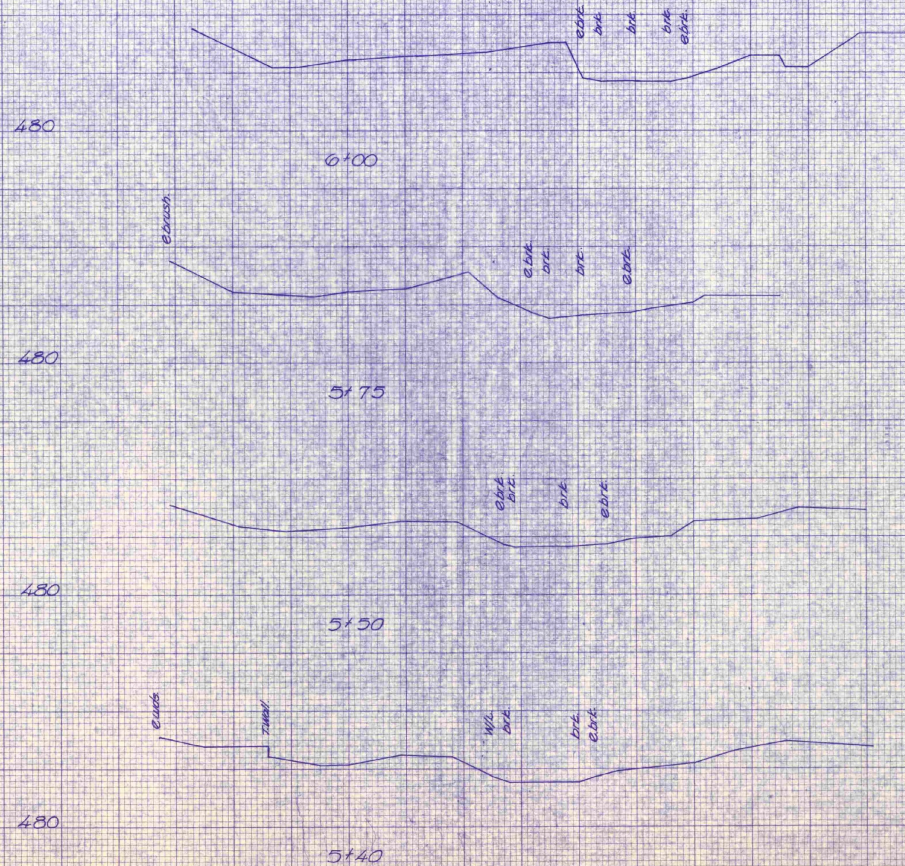
SCALE 1 INCH = 10 FEET

Sheet 7 of 4

7+00 8+00

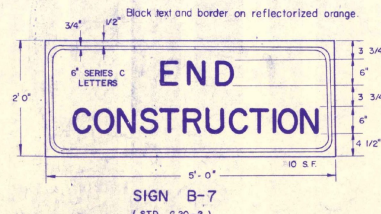
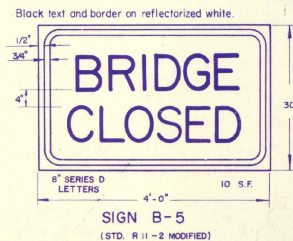
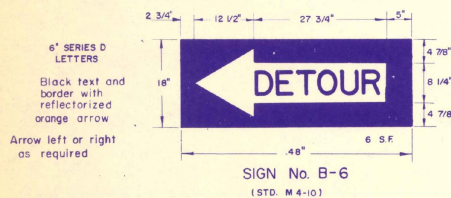
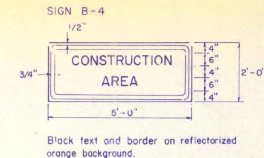
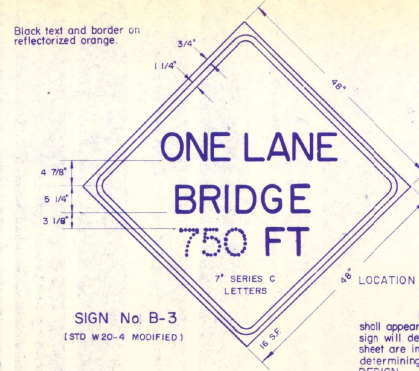
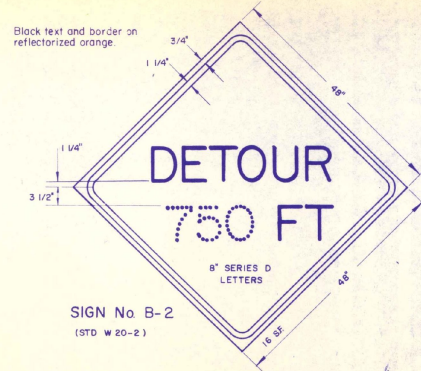
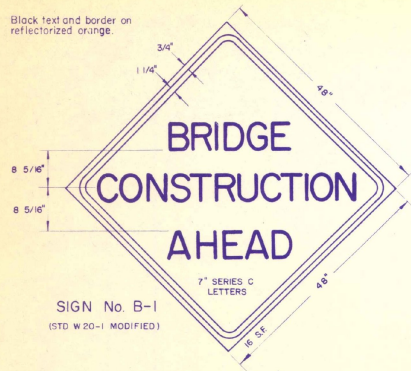
743709





Channel Sections
 1/2 P.O.T. 4+51.5
 3/4 P.O.T. 5+00.0
 $\Delta = 90^{\circ} 00'$

STATE OF VERMONT
 DEPARTMENT OF HIGHWAYS
CASTLETON
 TOWN OF
 Fontenay
 Surveyed by Hopkins
 Date 6/74
 Scale 1" = 10' feet
 1/2 P.O.T. 4+51.5
 3/4 P.O.T. 5+00.0
 5+40 6+00



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 roadides. 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
All new signs requiring an orange background shall have encapsulated lens reflective sheeting material as of January 1, 1975.

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 fluorescent 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.

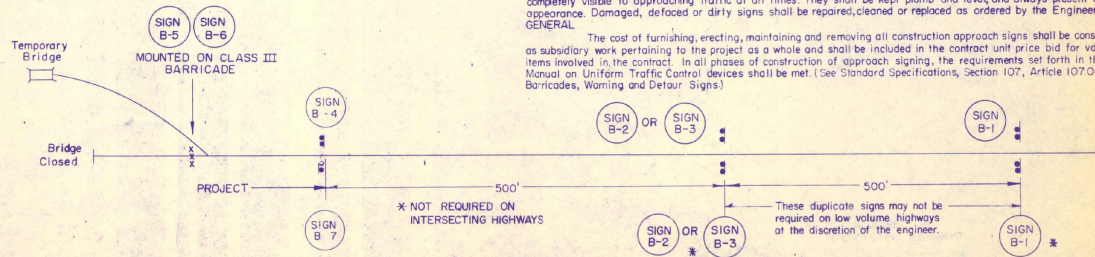
INSTALLATION
The signs shall be in place at the time the project officially commences. Each sign shall be erected in a neat and workmanlike manner on wood or metal posts set securely in the ground. The bottom of a sign shall be at least 5 feet above road level, and the nearest edge of a sign shall be 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.

When project is closed down for temporary periods the signs shall be covered in a workmanlike manner.

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.)

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.



REVISIONS AND CORRECTIONS
SEPT. 11, 1973 - REVISED PER ORDER OF FHWA, SEPT. 11, 1973.
NOV. 7, 1973 - REVISED PER ORDER OF FHWA.
MAY 14, 1974 - 1 1/2" REFLECTIVE MATERIAL, 1 1/2" BARRICADE.
DEC. 12, 1975 - REVISED TO CONFORM TO STANDARD E-2.
JULY 20, 1976 - REVISED PER ORDER OF FHWA.

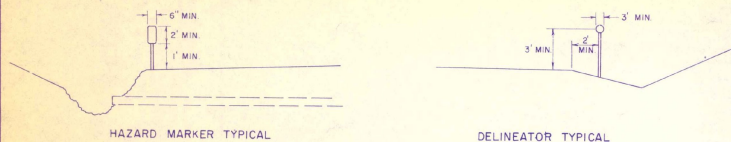
APPROVED
Dec 14, 1977
DATE
R. H. Connelley
CHIEF ENGINEER
E. V. Stebbins
ASST. CHIEF ENGINEER
G. M. Lane
HIGHWAY ENGINEER

TRAFFIC SIGNS BRIDGE CONSTRUCTION APPROACH SIGNS

VERMONT
DEPARTMENT
OF HIGHWAYS
STANDARD

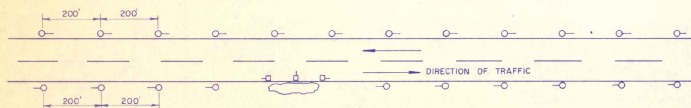
E-3

DELINEATOR AND HAZARD MARKER DETAILS
FOR CONSTRUCTION AREAS WHERE TRAFFIC IS MAINTAINED

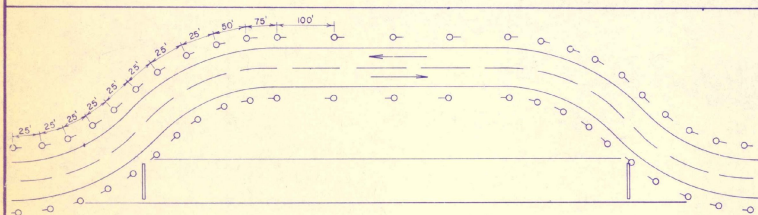


HAZARD MARKER TYPICAL

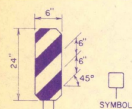
DELINEATOR TYPICAL



DELINEATOR AND HAZARD MARKER LOCATION DETAIL FOR TWO WAY TRAFFIC
(FOR INTERSTATE TYPE HIGHWAYS
200' SPACING ON RT.
AND 400' SPACING ON MEDIAN EDGE)



DELINEATOR LOCATION DETAIL FOR CONSTRUCTION DETOUR



HAZARD MARKER

HAZARD MARKER
TO BE USED AROUND EXCAVATION DURING NON-WORKING HOURS
OR WHEN AN OPERATION IS NOT BEING CARRIED ON

POSTS
POSTS SHALL BE OF SUITABLE MATERIAL TO SUPPORT DELINEATORS
OR HAZARD MARKERS, SHARPENED TO DRIVE.



SYMBOL

DELINEATORS SHALL BE OF A REFLECTORIZED SILVER OR
WHITE COLOR. THEY SHALL HAVE A MINIMUM OF 7 SQUARE
INCHES. THEY MAY BE ROUND, SQUARE, OR OBLONG. THEY
SHALL BE OF THE FOLLOWING:
1- REFLECTORIZED TAPE WITH METAL BACKING.
2- REFLECTIVE TAPE APPLIED DIRECTLY TO POSTS.
3- REFLECTORIZED PAINT APPLIED DIRECTLY TO POSTS.
WHEN PAINT OR TAPE IS APPLIED DIRECTLY TO POSTS, A
SURFACE OF 3" MINIMUM WIDTH FACING TRAFFIC IS
REQUIRED.

MATERIALS

The barricades shown on this sheet normally will be of wood or wood and metal construction and type II barricades may be of metal construction.

DESIGN

The design of the barricades shall conform with the details shown on this sheet and the markings on the barricades shall be alternate orange and white stripes (sloping downward at an angle of 45 degrees in the direction traffic is to pass).

COLORS

The barricades shown on this sheet shall have alternating reflectORIZED white and orange stripes. The orange shall conform with the standard color adopted by the American Association of State Highway Officials and approved by the U.S. Department of Transportation Federal Highway Administration.

REFLECTORIZATION

The barricades shall be reflectORIZED with reflective sheeting.

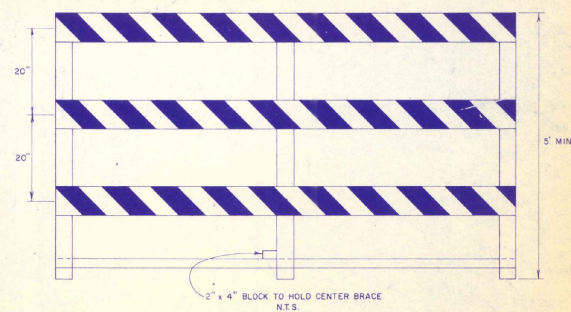
LOCATION

The barricades shown on this sheet will be located by the Engineer in the field or as shown on the plans. The locations of the barricades shall follow the procedures set forth in the Manual on Uniform Traffic Control Devices.

MAINTENANCE

Barricades shall be maintained in a clean and legible condition satisfactory to the Engineer. They shall be completely visible to approaching traffic at all times. Damaged, defaced, or dirty barricades shall be repaired, cleaned, or replaced as ordered by the Engineer.

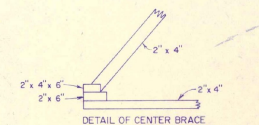
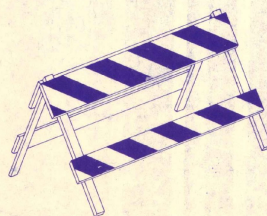
TYPE III



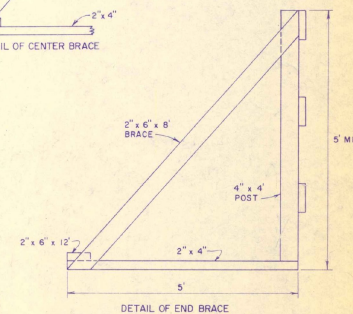
TYPE I



TYPE II



DETAIL OF CENTER BRACE



DETAIL OF END BRACE

	I	II	III
WIDTH OF RAIL	8' min. 12" max.	8' min. 12" max.	8' min. 12" max.
LENGTH OF RAIL	6' - 8'	3' min. 4' max.	12'
WIDTH OF STRIPES	6"	6"	6"
HEIGHT	3' min.	3' min.	5' min.
TYPE OF FRAME	Demountable or Heavy A' Frame	Light 'A' Frame	Skids or Posts
FLEXIBILITY	Essentially Moveable	Portable	Essentially Permanent
ANGLE OF STRIPE	45°	45°	45°
COLOR OF STRIPES	Orange and White	Orange and White	Orange and White

TRAFFIC SIGNS

DELINEATION AND BARRICADES
FOR CONSTRUCTION AREAS

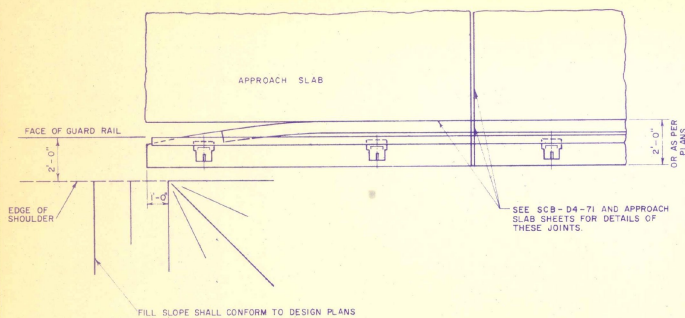
VERMONT
DEPARTMENT
OF HIGHWAYS
STANDARD

E-7

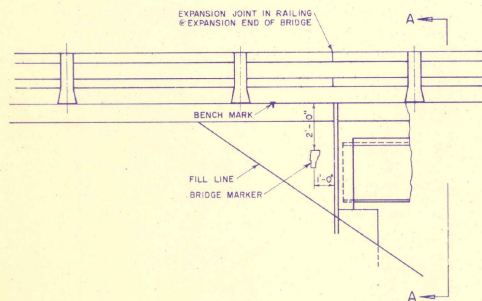
REVISIONS AND CORRECTIONS
V.M.D. 12, 1973 - DELINEATOR SPACING REVISED
SEPT 19, 1973 - DELINEATOR SPACING REVISED

APPROVED
Feb 15, 1973
DATE

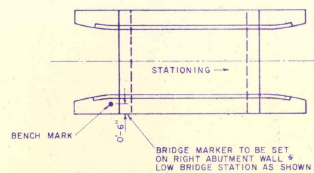
[Signature]
CHIEF ENGINEER
[Signature]
ASST. CHIEF ENGINEER
[Signature]
HIGHWAY ENGINEER



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 MARCH 1976, AND ITS LATEST REVISIONS AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1973 AND ITS LATEST REVISIONS. DESIGN IS FOR HS-20-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF AASHTO STANDARD SPECIFICATIONS.

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

- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM DESIGNATION A-588 UNPAINTED. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø ASTM A-325, TYPE III BOLTS IN 1/4" Ø HOLES. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.
- WHEN NOT DETAILED ON THE PLANS, SIMPLE SPAN 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 AISC HANDBOOK FOR ROLLED BEAMS AND AS INDICATED IN THE AWS SPECIFICATION FOR WELDED JOINTS.
- ALL WELDING AND DIMENSIONAL TOLERANCES OF WELDED MEMBERS SHALL CONFORM TO AWS D1.1-72 STRUCTURAL WELDING CODE AND ITS LATEST REVISIONS EXCEPT AS MODIFIED BY THE AASHTO STANDARD SPECIFICATIONS FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES, DATED 1974 AND ITS LATEST REVISIONS.
- ALLOWABLE DESIGN STRESSES:

CONCRETE	CLASS A	f c	3,000 psi	f c	1400 psi
CLASS B	f c	3,500 psi	f c	1400 psi	

 STRUCTURAL STEEL
 A-588 MAX DESIGN STRESS: 27,000 psi (or as per AASHTO Specs)
 REINFORCING STEEL
 GRADE 40
 DESIGN STRESS(TENSION) 20,000 psi
 DESIGN STRESS(COMPRESSION) 16,000 psi
 GRADE 60
 DESIGN STRESS(TENSION) 24,000 psi
 DESIGN STRESS(COMPRESSION) 20,000 psi
- AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER FOR USE IN DETERMINING THE FINAL GRADE.
- MINIMUM COVER FOR REINFORCEMENT STEEL SHALL BE 2" MEASURED FROM THE CONCRETE SURFACE TO THE FACE OF THE REINFORCEMENT (3" IN ALL FOOTINGS).
- ALL EXPOSED EDGES OF CONCRETE IN THE SUBSTRUCTURE AND SUPERSTRUCTURE SHALL BE CHAMFERED 1" x 1".
- DECK CONCRETE SHALL BE CONCRETE CLASS A. ALL OTHER CONCRETE SHALL BE CONCRETE CLASS B.
- BRIDGE SEATS OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/2" PER FOOT EXCEPT UNDER BEARING PLATES WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FULL WIDTH. PIERS SHALL BE SLOPED EACH WAY FROM CENTER. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE SMOOTH STEEL TROWEL FINISHED.
- ABUTMENT CONCRETE ABOVE THE ADJACENT BRIDGE SEAT ELEVATIONS SHALL PREFERABLY NOT BE PLACED UNTIL FINAL FINISHED GRADE OF DECK IS ESTABLISHED BY THE ENGINEER.
- BRIDGE DECKS AND APPROACH SLABS CALLING FOR BITUMINOUS CONCRETE PAVEMENT SHALL BE PAVED WITH A TYPE IX MIX APPLIED IN TWO COURSES.
- GRANULAR BORROW USED IN AREAS THROUGH WHICH PILES ARE TO BE DRIVEN SHALL HAVE A MAXIMUM STONE SIZE OF NINE INCHES.
- BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND DO NOT WARRANT ACTUAL SUB-SURFACE CONDITIONS.
- ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL.

*NOTE: SPECIFICATIONS CALL FOR A CLASS A CONCRETE WHICH WILL PRODUCE 4000 PSI AT 28 DAYS. HOWEVER, SUPERSTRUCTURE CONCRETE IS DESIGNED ON THE BASIS OF f c = 3500 THUS PROVIDING AN ADDITIONAL FACTOR OF SAFETY IN BRIDGE SLABS.

15. ANY FORM BRACKET HOLES IN FASCIA BEAMS OR GIRDER WEBS SHALL BE FILLED WITH BUTT-HEAD BOLTS (TYPE III, ON A-588 STEEL).

REVISIONS AND CORRECTIONS
 1- Added word seat in line 3 of Note #9 J.WOOD 4-23-75
 2- CHANGED VERMONT SPEC DATE, GEN.NOTE, AND
 ADDED NOTE NO.15, W. TRIPP 4-26-76.

APPROVED

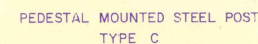
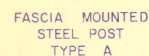
DATE

7-14-75
 L.H. Johnson
 CHIEF ENGINEER
 R.O. Mann
 ASST. CHIEF ENGINEER
 J.W. Smith
 BRIDGE ENGINEER

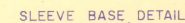
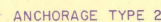
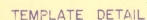
DETAILS OF W BEAM BRIDGES GENERAL INFORMATION AND GENERAL NOTES

VERMONT
 DEPARTMENT
 OF HIGHWAYS
 STANDARD

SCB-DI-75



1. SEE STANDARD DRAWINGS G-1 AND G-1a FOR ADDITIONAL DETAILS.
2. FASCIA MOUNTED POSTS (TYPE A & B) MAY BE USED WITH EITHER ANCHORAGE TYPE 1, 2 OR 3 UNLESS OTHERWISE SPECIFIED ON PROJECT PLANS.
3. ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF STD. SPEC. SECTION 714.6, "ANCHOR BOLTS".
4. DESIGN STRESSES:
 - ULTIMATE STRENGTH DESIGN USED IN SELECTION OF POSTS 1/2" 29000 PSI STEEL POSTS
 - NON-SHRINKING GROUT SHALL CONFORM WITH SUBSECTION 707.04, MORTAR TYPE III, PACK UNDER BASE PLATE.
 - ALL STEEL POSTS AND FIXTURES SHALL BE ASTM A-36 EXCEPT AS OTHERWISE NOTED, AND SHALL BE GALVANIZED AFTER FABRICATION TO CONFORM WITH ASTM A-123.
7. ALL ANCHOR BOLTS SHALL BE SET NORMAL TO FACE UNLESS OTHERWISE NOTED.
8. OFFSET BLOCKS ARE TO BE USED UNLESS OTHERWISE DESIGNATED ON PROJECT PLANS. SEE STANDARD DRAWING G-1 FOR OFFSET BLOCK DETAIL.



D-1