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Dated MAY 11 1984

JEAN MEUNIER CONSTR. INC.
Contractor

Jean Meunier
Signature
President
Title

Arthur C. Hull
Transportation Secretary's Signature
ACTING

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

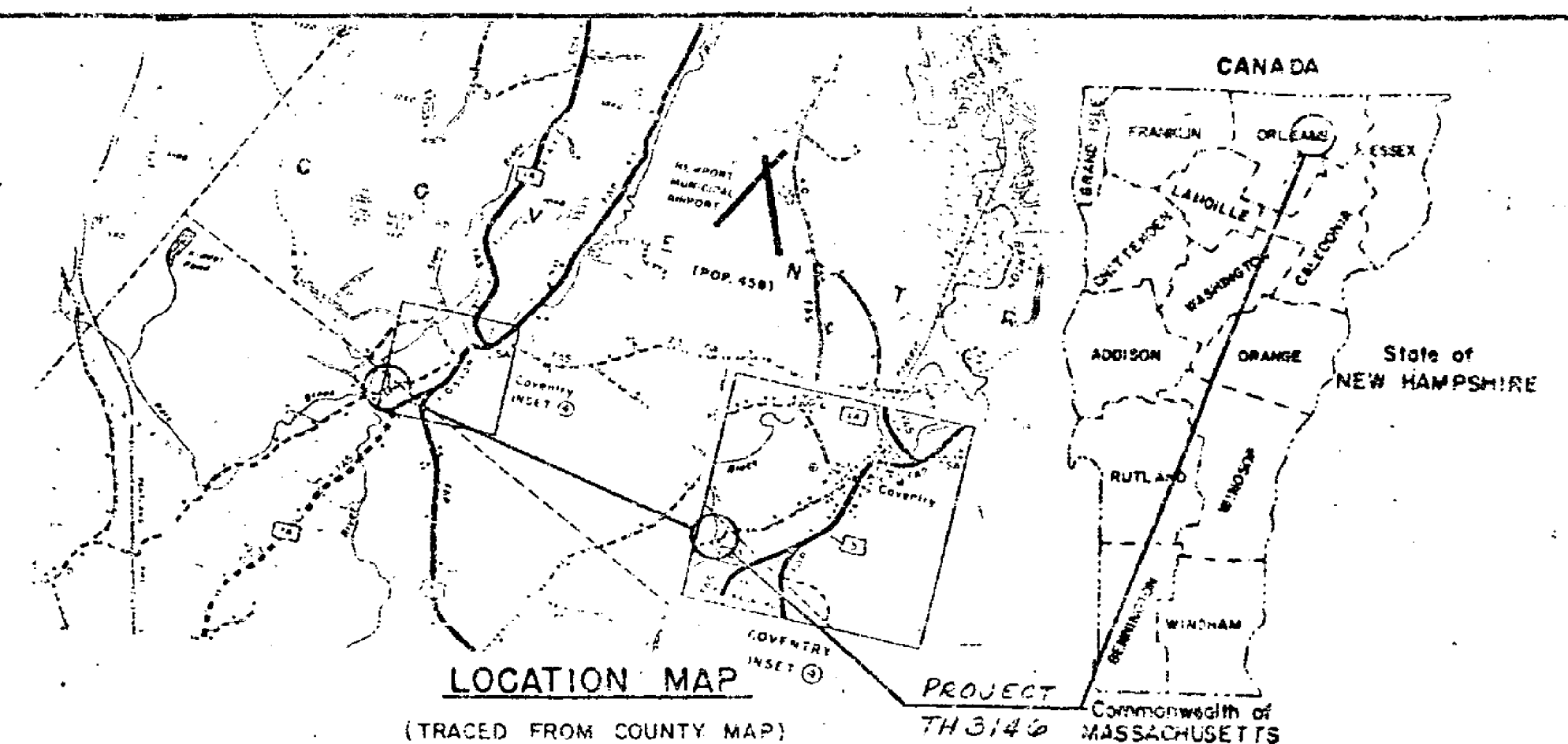
TOWN OF IRASBURG
COUNTY OF ORLEANS

ROUTE NO: CLASS 3, TH 8 BRIDGE NO: 20

PROJECT LOCATION: ON TH 8 LEADING FROM VT 58 TO COVENTRY, LESS THAN 0.1 MILE FROM THE IRASBURG-COVENTRY TOWN LINE CROSSING THE BLACK RIVER

PROJECT DESCRIPTION: REMOVE EXISTING DECK, FLOOR BEAMS, WOOD SIDING AND ANY OTHER DETERIORATED OR BROKEN WOOD MEMBERS PLUS EXISTING BACKWALLS, BEARING BLOCKS AND METAL ROOFING. INSTALL A NEW WOOD FLOOR SYSTEM, NEW METAL ROOFING, NEW WOOD SIDING, NEW BEARING BLOCKS, NEW CONCRETE BACKWALLS AND REPAIR CONCRETE ABUTMENTS

LENGTH OF STRUCTURE:	100.0 FEET
LENGTH OF PARTICIPATION ROADWAY:	0.0 FEET
LENGTH OF NON-PARTICIPATION ROADWAY:	0.0 FEET
LENGTH OF PROJECT:	100.0 FEET



CONTRACT PLANS
THESE PLANS DO NOT REFLECT
CHANGES MADE ON THE PROJECT.

GENERAL NOTES

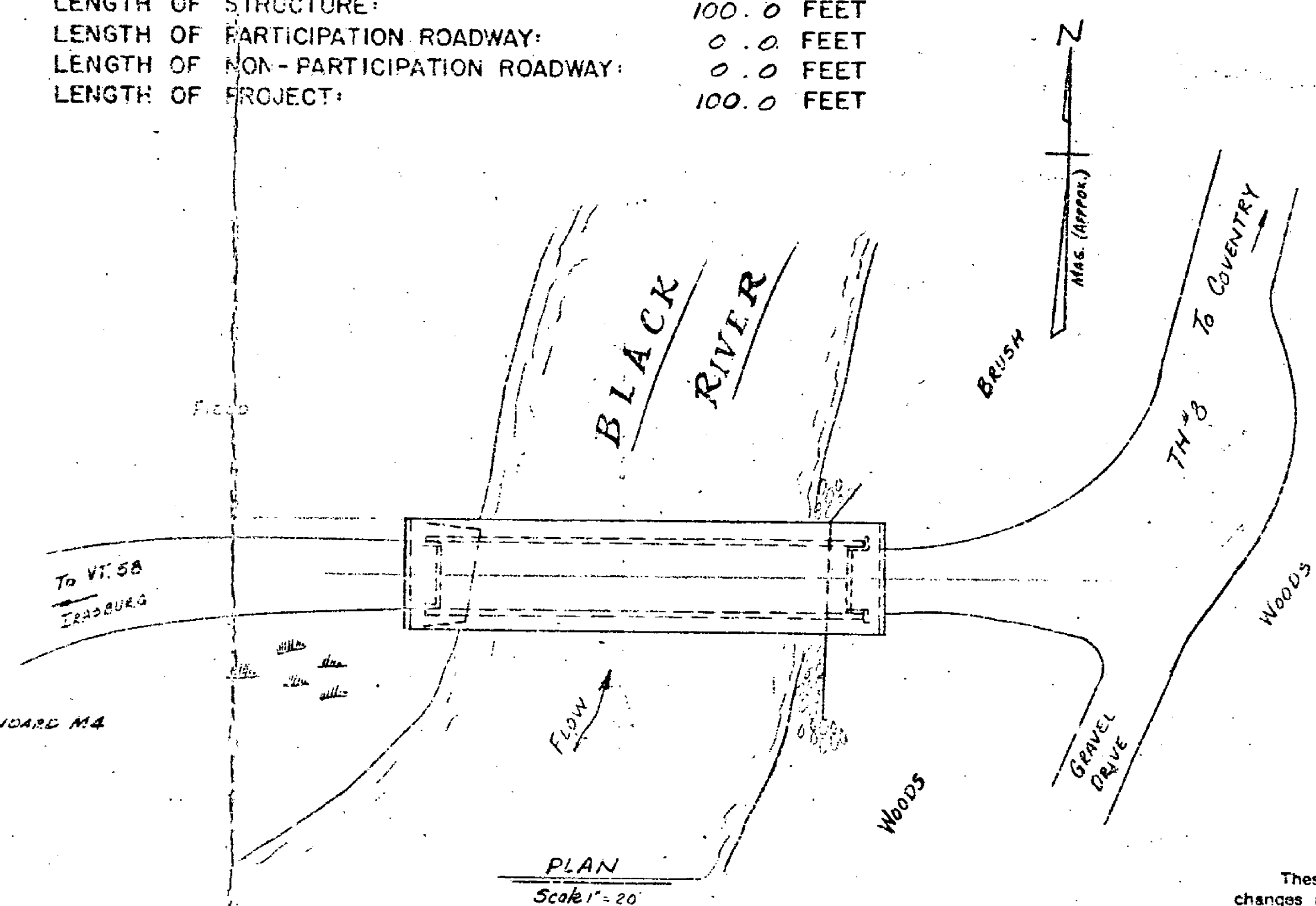
1. FOR ADDITIONAL GENERAL NOTES SEE STD. SCB-DI-75, NOTES WHICH APPLY: 4, 6, 7, 9, 10, 14 & 16
2. THE BRIDGE MAY BE CLOSED TO ALL TRAFFIC. THE CONTRACTOR SHALL GIVE THE SELECTMEN SEVEN DAYS NOTICE OF INTENT TO CLOSE THE BRIDGE. SEE SPECIAL PROVISIONS
3. THE COST OF ALL SIGNS AND BARRICADES SHALL BE SUBSIDIARY TO ALL OTHER CONTRACT ITEMS. OFF PROJECT DETOUR SIGNING WILL BE BY OTHERS.
4. GUARD RAIL, STANDARD STEEL BEAM WITH WOOD POSTS, TYPE II (A552 STEEL) SHALL BE INSTALLED AS SHOWN ON THESE PLANS AND ON STANDARDS G-1 & G-1d. LENGTH AND ALIGNMENT OF GUARD RAIL SHALL BE AS DIRECTED BY THE ENGINEER IN THE FIELD.
5. ALL EXISTING DIMENSIONS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO THE START OF WORK.
6. ALL NEW STRUCTURAL TIMBER SHALL BE EASTERN SPRUCE OR SOUTHERN PINE, SELECT STRUCTURAL OR NO. 1 GRADE, ROUGH SAWN TO NOMINAL DIMENSIONS (1/4" TOLERANCE) EXCEPT AS NOTED.
7. ALL EXISTING MEMBERS WHICH ARE BEING REPLACED SHALL BE REMOVED AND DISPOSED OF UNDER THE ITEM "PARTIAL REMOVAL OF STRUCTURE".
8. ALL STEEL ITEMS AND NAILS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153. ALL HARDWARE SHALL BE PAID FOR UNDER THE ITEM "STRUCTURAL STEEL". THE COST OF ALL NAILS SHALL BE SUBSIDIARY TO LUMBER AND TIMBER ITEMS. ALL NAILING SHALL BE AS SHOWN ON THESE PLANS OR AS DIRECTED BY THE ENGINEER.
9. ALL BOLTS SUPPLIED SHALL BE LONG ENOUGH TO ALLOW A 1/2" MINIMUM PROJECTION BEYOND THE NUT IN SNUG POSITION, AND SHALL HAVE SUFFICIENT THREAD LENGTH TO TIGHTEN AS MUCH AS NECESSARY. ALL HOLES SHALL BE 1/8" LARGER THAN THE BOLT. A SPECIAL EFFORT SHALL BE MADE TO DRILL HOLES PERPENDICULAR TO MEMBERS. BOLTS SHALL NOT BE FORCIBLY DRIVEN INTO HOLES. ALL BOLTS, NUTS & WASHERS SHALL BE A COMMON TYPE MEETING ASTM A307 STANDARD.
10. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES.
11. THE EXISTING METAL ROOFING SHALL BE REMOVED UNDER THE ITEM "REMOVE EXISTING ROOF". THE EXISTING ROOF BOARDS AND RAFTERS SHALL BE INSPECTED. ANY DAMAGED MEMBERS SHALL BE REPLACED UNDER THE ITEM "UNTREATED LUMBER AND TIMBER" AS DIRECTED BY THE ENGINEER.
12. THE EXISTING SIDING SHALL BE REMOVED AS DIRECTED BY THE ENGINEER UNDER THE ITEM "PARTIAL REMOVAL OF STRUCTURE". NEW BOARDS SHALL BE 1/2" RANDOM WIDTH, ROUGH CUT AND FASTENED WITH 8D GALV. NAILS IN A MANNER MATCHING EXISTING APPEARANCE. NEW SIDING IS TO BE PAID FOR AS "UNTREATED LUMBER AND TIMBER". ALL SIDING IN GOOD CONDITION SHALL BE SAVED AND REUSED.
13. THE EXISTING PLANK DECK AND FLOOR BEAMS SHALL BE REMOVED AND DISPOSED OF UNDER THE ITEM "PARTIAL REMOVAL OF STRUCTURE".
14. WHEN COMPLETED THE STRUCTURE SHALL BE STRAIGHT AND SQUARE, WITH 4" CAMBER IN THE SUPERSTRUCTURE.
15. ALL STRUCTURAL MEMBERS SHALL BE INSPECTED FOR DECAY. ALL AREAS OF DECAY SHALL BE CLEANED BY REMOVING UNSOUND WOOD. THESE AREAS SHALL BE TREATED WITH A SINGLE BRUSHED ON COAT OF PRESERVATIVE MEETING AN-PA5 STANDARD M-4 (OIL-BORNE). PAYMENT TO BE MADE AS "PARTIAL REMOVAL OF STRUCTURE".
16. ALL UNSOUND STRUCTURAL MEMBERS SHALL BE REPLACED AS DEEMED NECESSARY BY THE ENGINEER. ALL SPLICES AND JOINTS SHALL BE IN ACCORDANCE WITH THE NATIONAL DESIGN SPECIFICATIONS FOR STRESS GRADE LUMBER AND ITS FASTENINGS AND AS SHOWN ON THESE PLANS.
17. ALL DIAGONAL MEMBERS, CHORD MEMBERS, FLOOR BEAMS AND DECK MEMBERS WHICH ARE TO BE REPLACED SHALL BE REPLACED WITH PRESSURE TREATED LUMBER AND BE PAID FOR UNDER ITEM "TREATED LUMBER AND TIMBER". PRESSURE TREATMENT SHALL BE AS DIRECTED IN THE SPECIAL PROVISIONS. ALL OTHER WOOD MATERIALS WHICH ARE REPLACED SHALL BE INCLUDED UNDER THE ITEM "UNTREATED LUMBER AND TIMBER".

CONVENTIONAL SIGNS

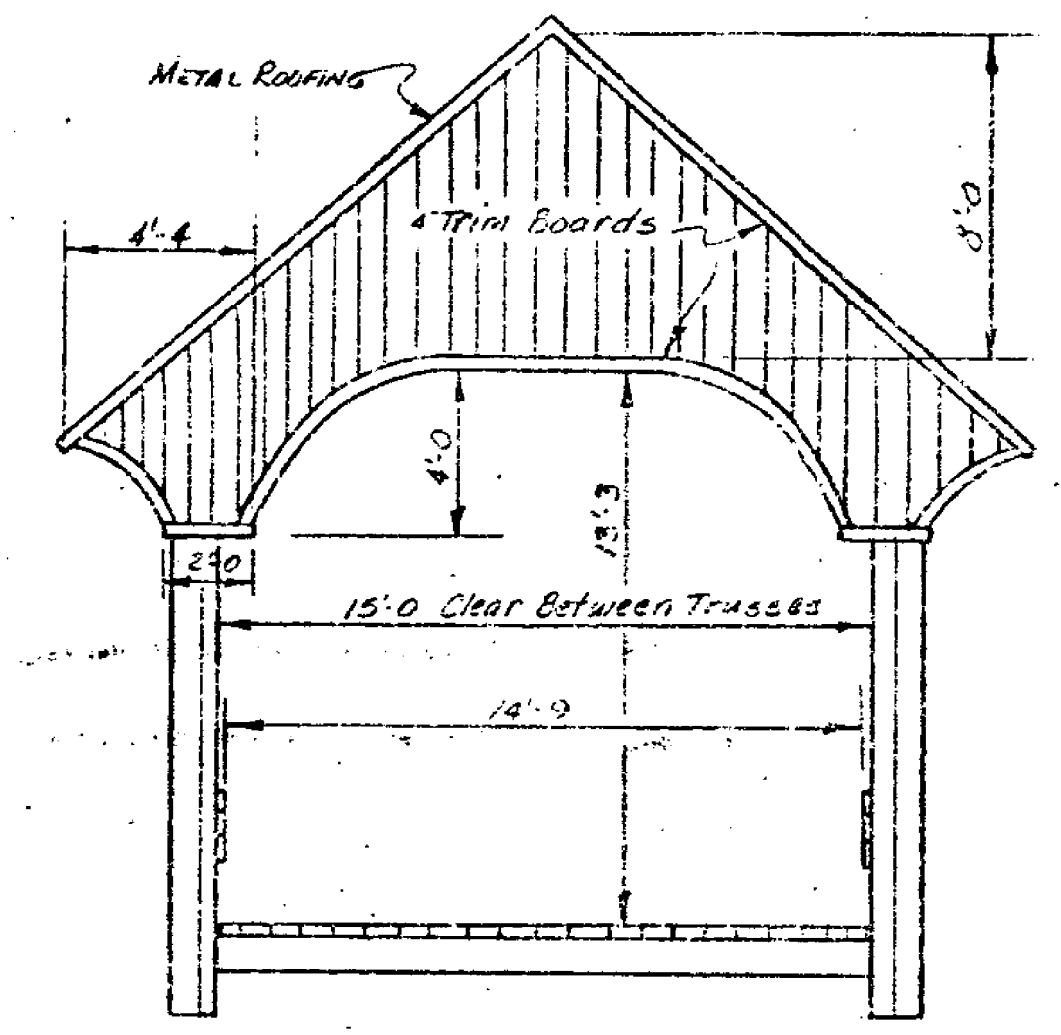
COUNTY LINE	---
TOWN LINE	- - - -
LIMITS OF ACCESS	○—○
POINT OF ACCESS	X
FENCE LINE	— · — · —
STONE WALL	— · · — · · —
TRAVELED WAY	— · · · — · · · —
GUARD RAIL	— · · · — · · · —
RAILROAD	— · · · — · · · —
SURVEY LINE	— · · · — · · · —
CULVERT	— · · · — · · · —
POWER POLE	○
TELEPHONE POLE	○
TREES	○
CONTROL OF ACCESS	— · · · — · · · —
PROPERTY LINE	— · · · — · · · —
R.O.T. TAKING LINE	— · · · — · · · —
SLOPE RIGHTS	○—SB—○
TOP OF CUT	○—○
TOE OF SLOPE	○—○

DATUM

VERTICAL	N/A
HORIZONTAL	N/A



~ EXISTING BRIDGE INFO ~
Wood Covered Bridge
Paddleford Type Truss
1881 By John Colton
88' Overall
15' Wide
10' High



These plans are subject to such engineering changes as may be required by the Federal Highway Administration or the Director of Engineering and Construction.

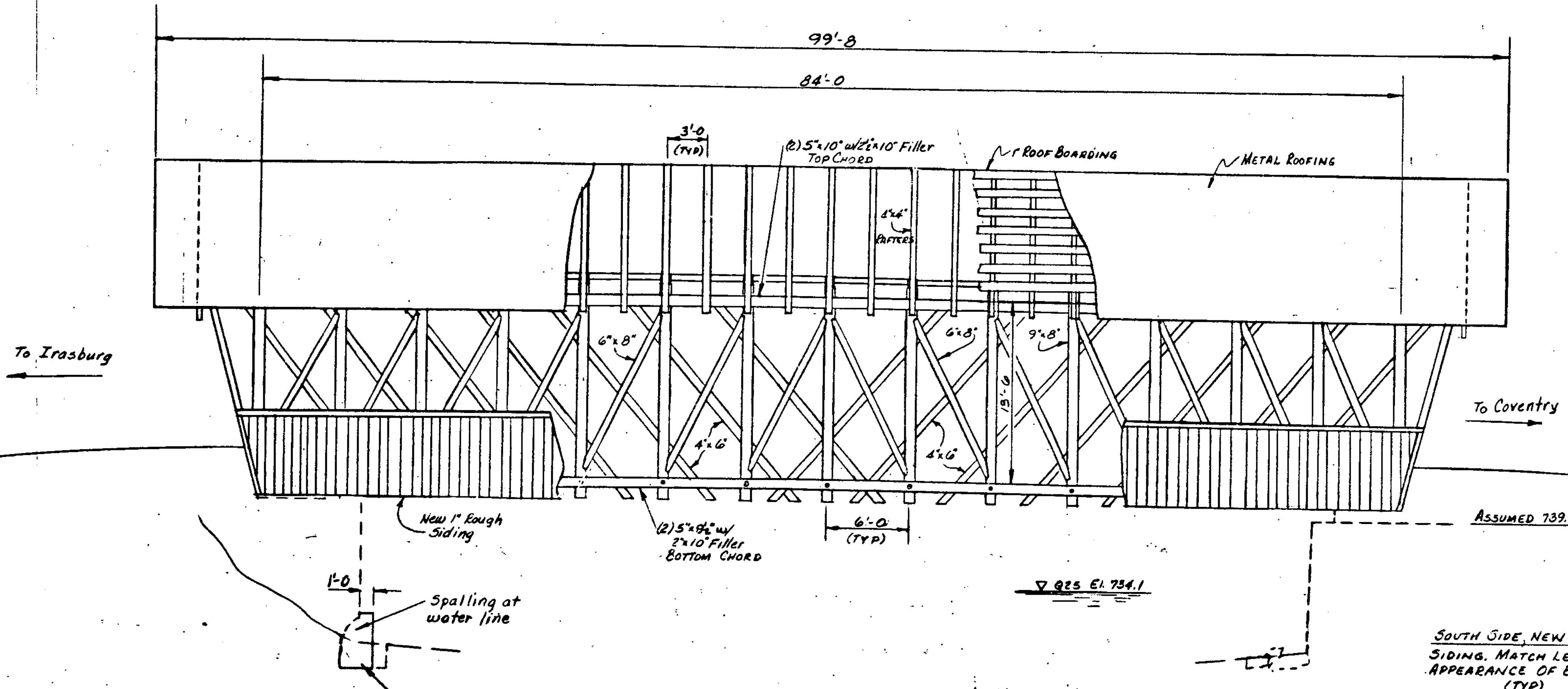
Construction is to be carried on in accordance with these plans and the Standard Specifications for Highway and Bridge Construction dated March, 1975, as approved by the Federal Highway Administration on October 27, 1975 for use on this project, including all subsequent revisions and such revised specifications and special provisions as are incorporated in these plans.

SUBMITTED BY ORDER OF THE STATE TRANSPORTATION BOARD

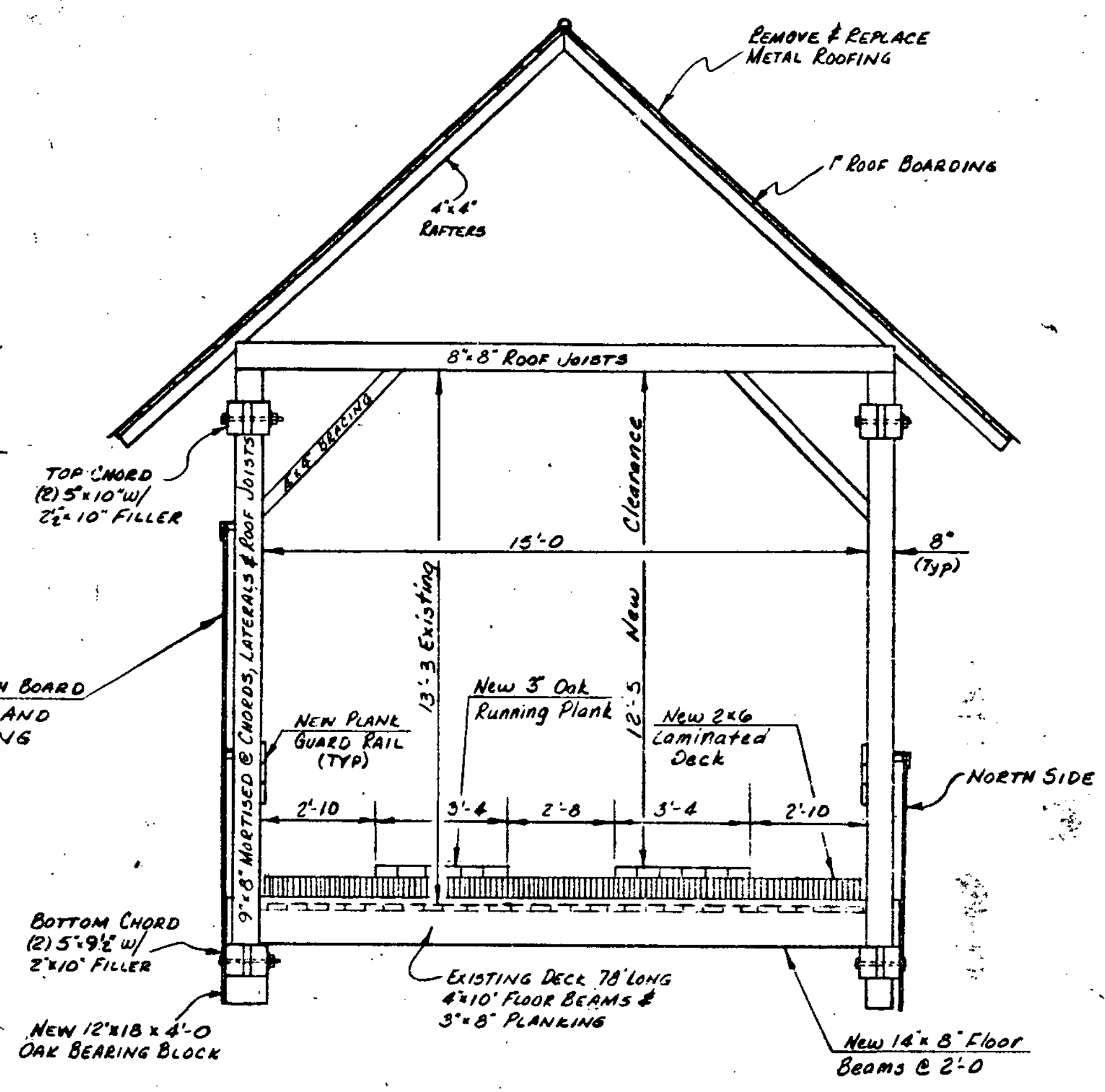
APPROVED S. J. ... DATE 3-25-81
DIRECTOR OF ENGINEERING AND CONSTRUCTION

PROJECT IRASBURG PROJECT NO. TH 3146

SHEET 1 OF 10 SHEETS



~ELEVATION UPSTREAM FASCIA~
Scale 3/8" = 1'-0"



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

Excavate and pour new concrete along bottom of existing abutment as shown and as directed by the Engineer.

SOUTH SIDE, NEW 1" ROUGH BOARD SIDING. MATCH LENGTH AND APPEARANCE OF EXISTING (TYP)

~QUANTITIES~

No.	ITEM	UNIT	TOTAL	FINAL
202.30	PARTIAL REMOVAL OF STRUCTURE	Ea.	1	
204.25	STRUCTURE EXCAVATION	CY	50	
301.15	SUBBASE OF GRAVEL	CY	50	
501.25	CONCRETE, CLASS B	CY	20	
502.10	SHORING SUPERSTRUCTURE	L.S.	1	
506.93	STRUCTURAL STEEL	Lbs.	230	
507.15	REINFORCING STEEL	Lbs.	1600	
514.10	WATER REPELLENT	Gal.	12	
611.20	UNTREATED LUMBER & TIMBER	MBF	3.4	
611.25	TREATED LUMBER & TIMBER	MBF	14.9	
613.11	STONE FILL, TYPE II	CY	10	
621.38	GUARD RAIL, HEAVY DUTY STEEL BEAM w/ WOOD POSTS, TYPE II (ASTM A588)	L.F.	200	
635.10	MOBILIZATION	L.S.	1	
665.15	REMOVE EXISTING ROOF	SF	3100	
665.18	METAL ROOFING	SF	3100	

~HYDRAULIC DATA~

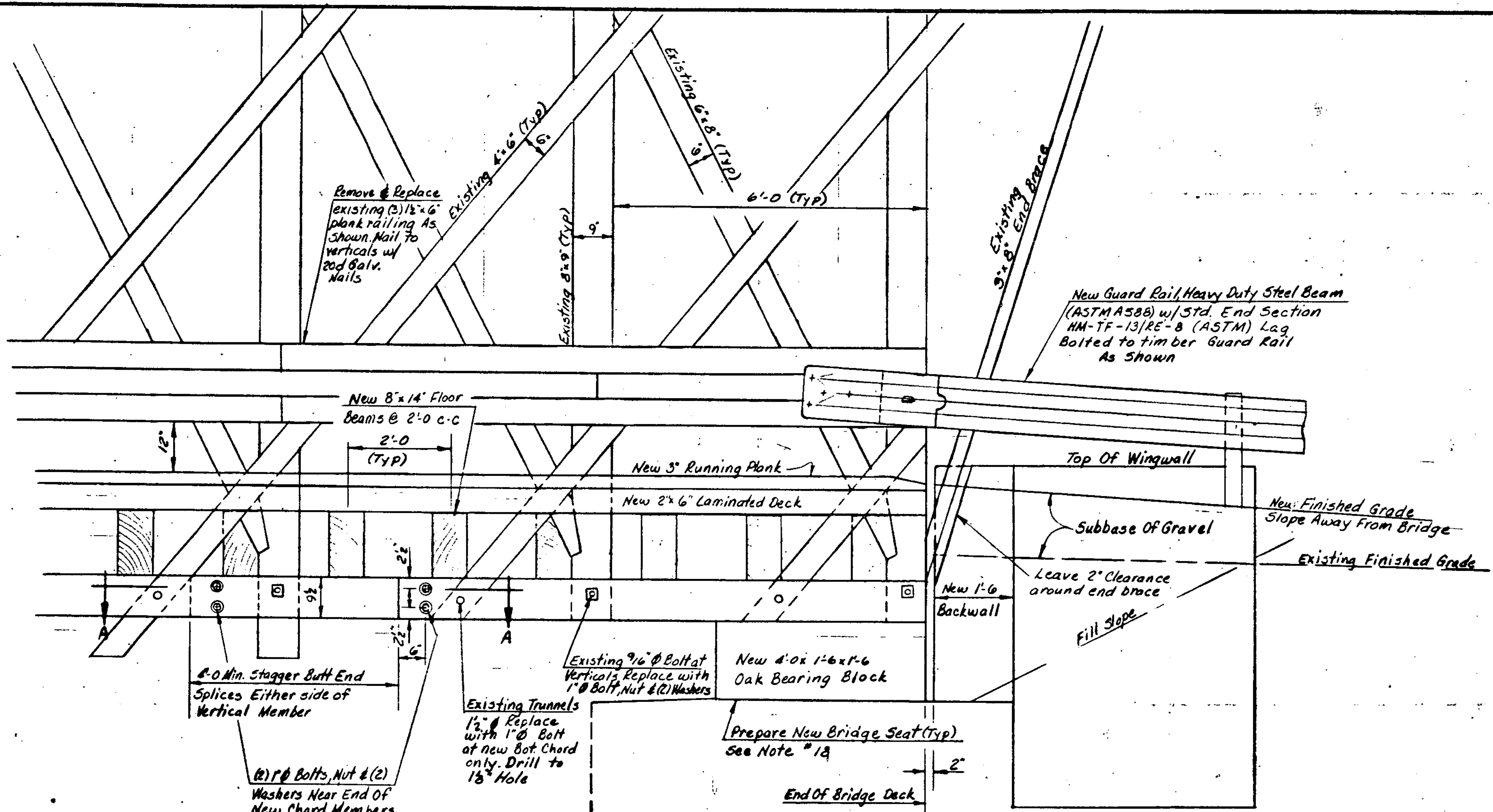
DRAINAGE AREA = 109.4 Sq. Mi.
 Q2.33 = 1860 cfs, H.W. EL. 732.1, VELOCITY 5.1 f.p.s.
 Q10 = 2700 cfs, H.W. EL. 733.4, VELOCITY 5.9 f.p.s.
 Q25 = 3150 cfs, H.W. EL. 734.1, VELOCITY 6.3 f.p.s.
 Q50 = 3500 cfs, H.W. EL. 734.6, VELOCITY 6.6 f.p.s.
 Q100 = 3800 cfs, H.W. EL. 734.9, VELOCITY 6.7 f.p.s.

HARDWARE (STRUCTURAL STEEL)				
No.	ITEM	LENGTH	WEIGHT	REMARKS
36	1" Ø Bolts	1'-2"	130	w/(1) Hex Nut & (2) washers
450	3/8" Ø Lag Bolts	0'-6"	100	w/(1) Washer

ALL NAILS AND HARDWARE SHALL BE GALVANIZED PER ASTM A153. NAILS SHALL BE PAID FOR UNDER TREATED & UNTREATED LUMBER AND TIMBER. SEE NOTES #8 & #9

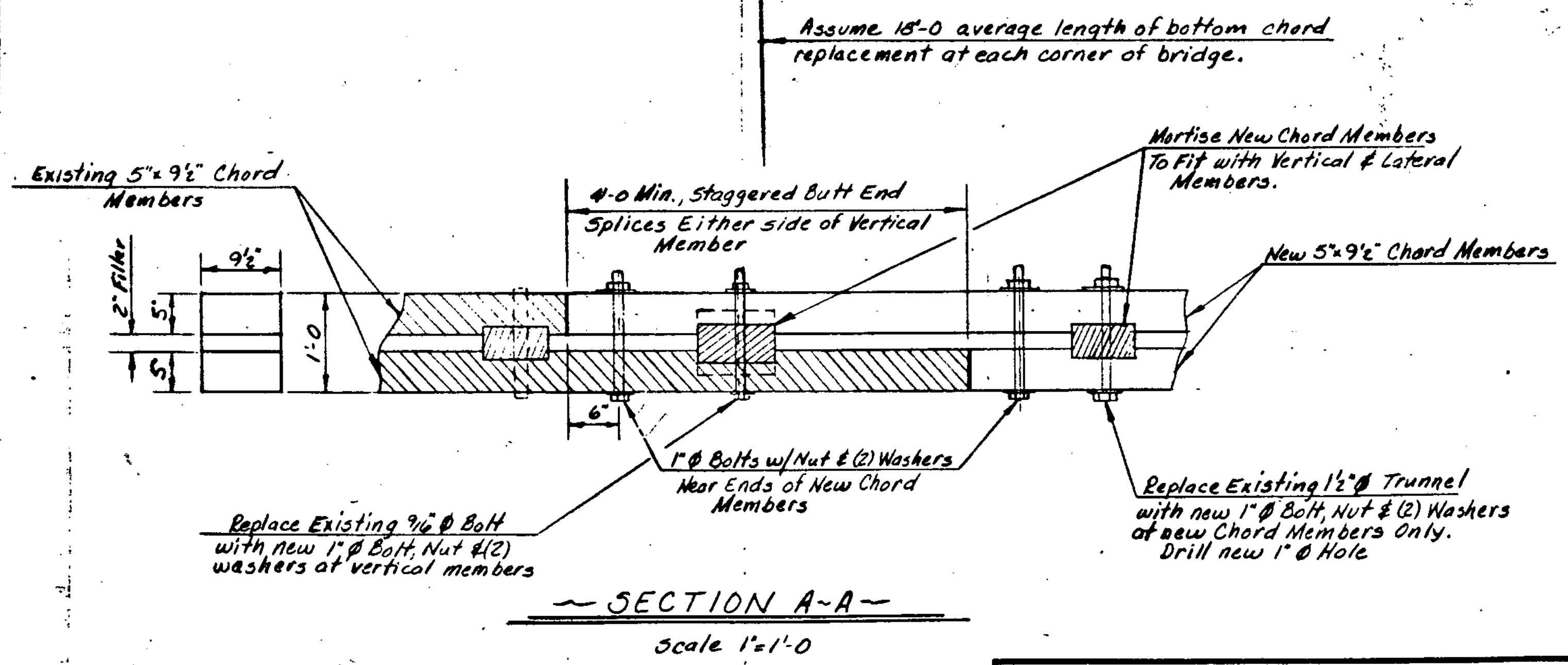
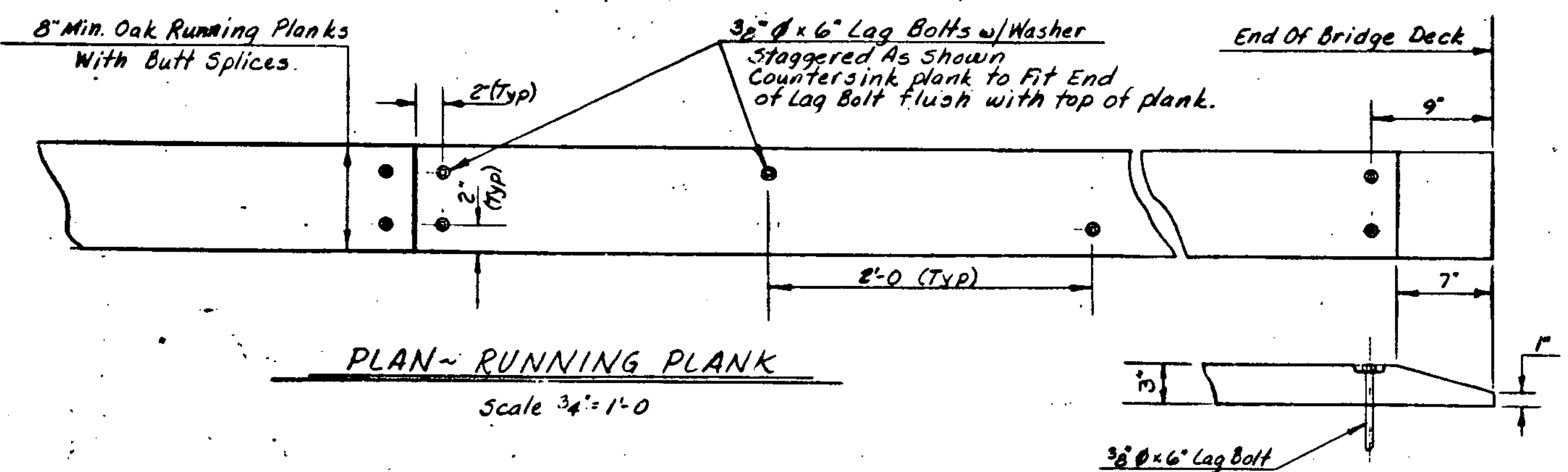
STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF IRASBURG	Bridge No. 20
HIGHWAY NO. CLASS 3, TH B	Log Sta. —
TH B OVER BLACK RIVER	Surv. Sta. —
ELEVATION & TYPICAL SECTION	
Designed by	Drawn by M. CERUTTI
Checked by G. SCHELLEY date 8/83	Bridge Design Supervisor E.L. DOLLEY date 2-84
PROJECT IRASBURG	PROJECT NO. TH 3146
Bridge Sheet No.	Sheet 2 of 10



- GENERAL NOTES (CONTINUED)**
18. EXISTING BACKWALLS AND TOPS OF ABUTMENTS SHALL BE REMOVED AND NEW BRIDGE SEATS POURED FOR BEARING BLOCKS AS DIRECTED BY THE ENGINEER. BRIDGE SEATS SHALL BE SLOPED AWAY FROM BEARING BLOCKS.
 19. ALL WINGWALLS SHALL BE SKEWED TO MATCH AVAILABLE FOUNDATION CONDITIONS AS DIRECTED BY THE ENGINEER.
 20. NEW FLOOR BEAMS SHALL BE TOE NAILED TO THE BOTTOM CHORD USING 20d GALV. NAILS.
 21. NEW DECKING SHALL BE 2" x 6" STRIPS PLACED ON EDGE LONGITUDINALLY WITH STAGGERED BUTT JOINTS. EVERY OTHER STRIP SHALL BE TOE NAILED TO EVERY OTHER FLOOR BEAM WITH 16d GALV. NAILS.
 22. AN ESTIMATED QUANTITY OF 10CY. OF STONE FILL, TYPE II HAS BEEN INCLUDED TO BE PLACED AROUND THE BOTTOM OF SOUTH ABUTMENT.
 23. STRUCTURE EXCAVATION SHALL INCLUDE REMOVAL OF EXISTING BACKWALLS, MATERIAL AT EXISTING BRIDGE SEATS, AROUND NEW BACKWALLS & WINGWALLS AND ALONG THE BASE OF EXISTING SOUTHERN ABUTMENT.
 24. THE NUMBERS OF STRUCTURAL STEEL ITEMS SHOWN IN THE HARDWARE TABLE ARE FOR ESTIMATING PURPOSES ONLY. EXACT NUMBERS AND LENGTHS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 25. "STRUCTURAL STEEL" AND "TIMBER" QUANTITIES ARE ESTIMATES ONLY. THE ACTUAL QUANTITIES MAY VARY.
 26. ALL WORK SHALL PROCEED IN AN ORDERLY, WORKMANLIKE MANNER AS DIRECTED BY THE ENGINEER TO ASSURE THAT THE COMPLETED PROJECT WILL HAVE A SYMMETRICAL, PLEASING APPEARANCE AND WILL MEET THE SPECIFICATIONS NOTED ABOVE.
 27. ALL BROKEN TRUNNELS IN ANY CHORDS SHALL BE REPLACED WITH 1" BOLT.
 28. STONE FILL SHALL BE PLACED DURING THE PERIOD JUNE 1 - OCT. 1

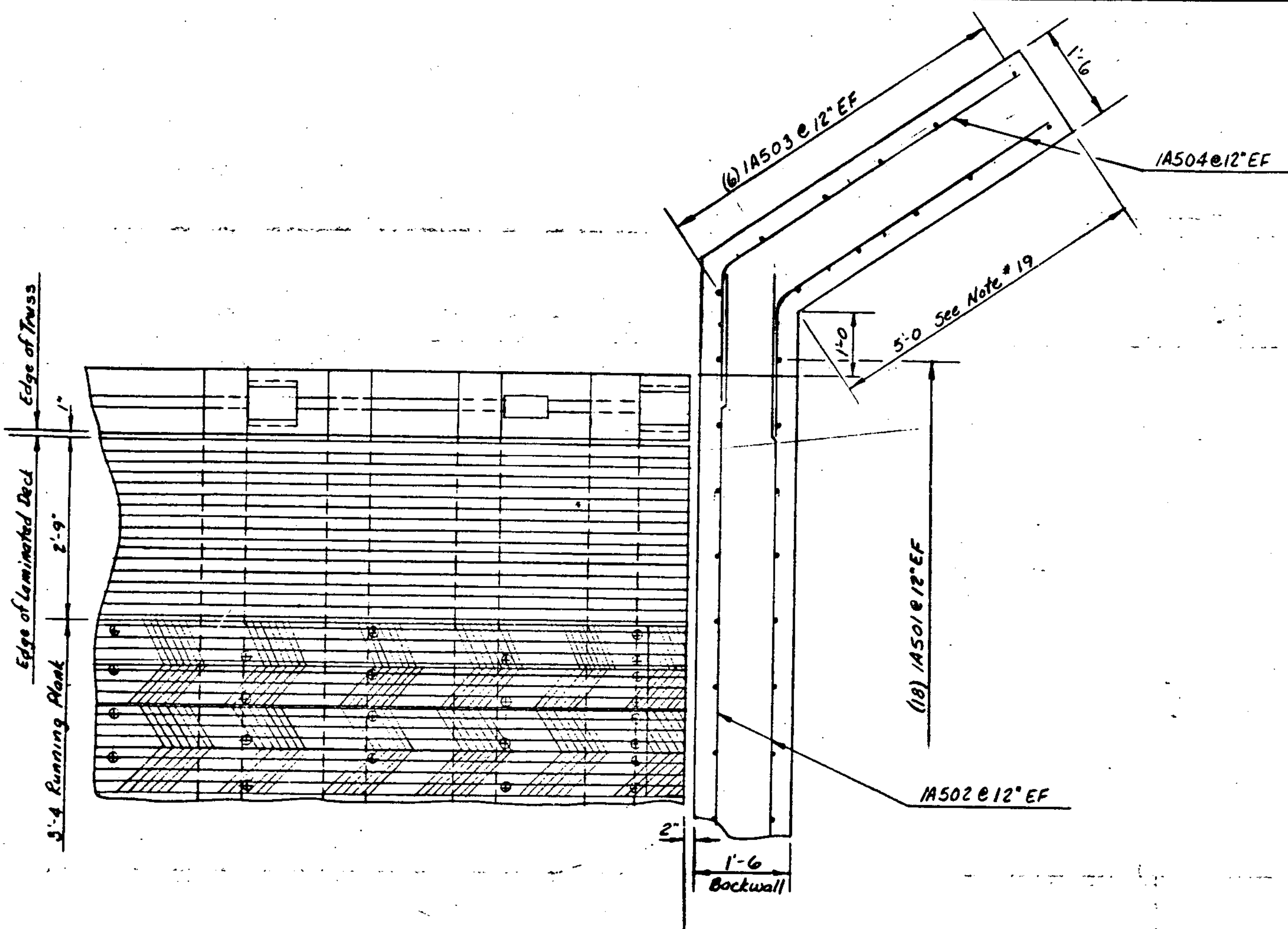
~ VIEW FROM INSIDE BRIDGE ~
Scale 3/4" = 1'-0"



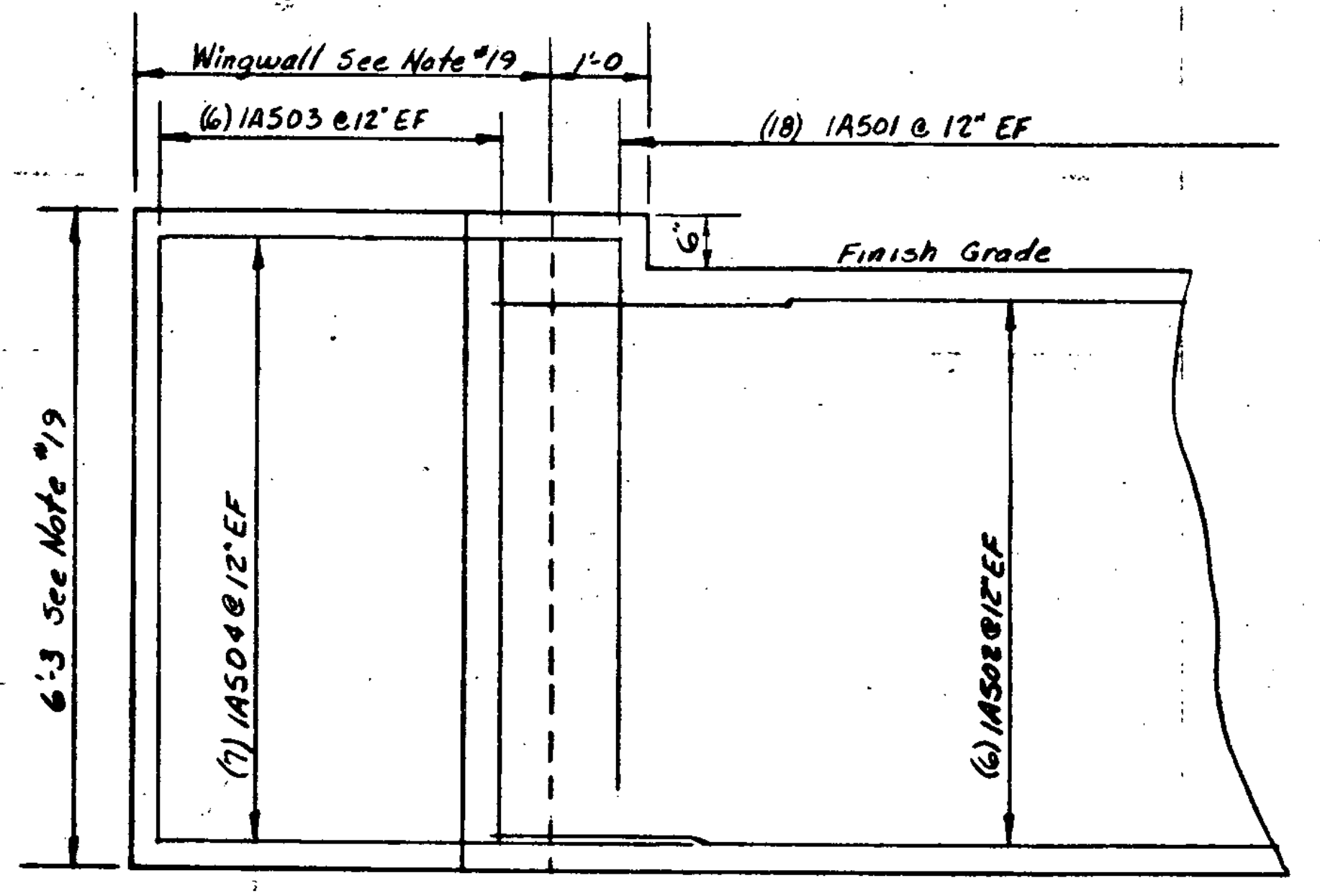
Assume 15'-0" average length of bottom chord replacement at each corner of bridge.

STATE OF VERMONT	
AGENCY OF TRANSPORTATION	
TOWN OF IRASBURG	Bridge No. 20
HIGHWAY NO. CLASS 3, TH 8	Log Sta. —
TH 8 OVER BLACK RIVER	Surr. Sta. —
~ MISCELLANEOUS DETAILS ~	
Designed by R. OATLEY	Drawn by M. CERUTTI
Checked by G. SCHELLEY date 6/83	Bridge Design Supervisor R.L. O'Neil date 2-84
PROJECT IRASBURG	PROJECT NO. TH 3146
Bridge Sheet No.	Sheet 3 of 10

BRUNING 44.131 9234



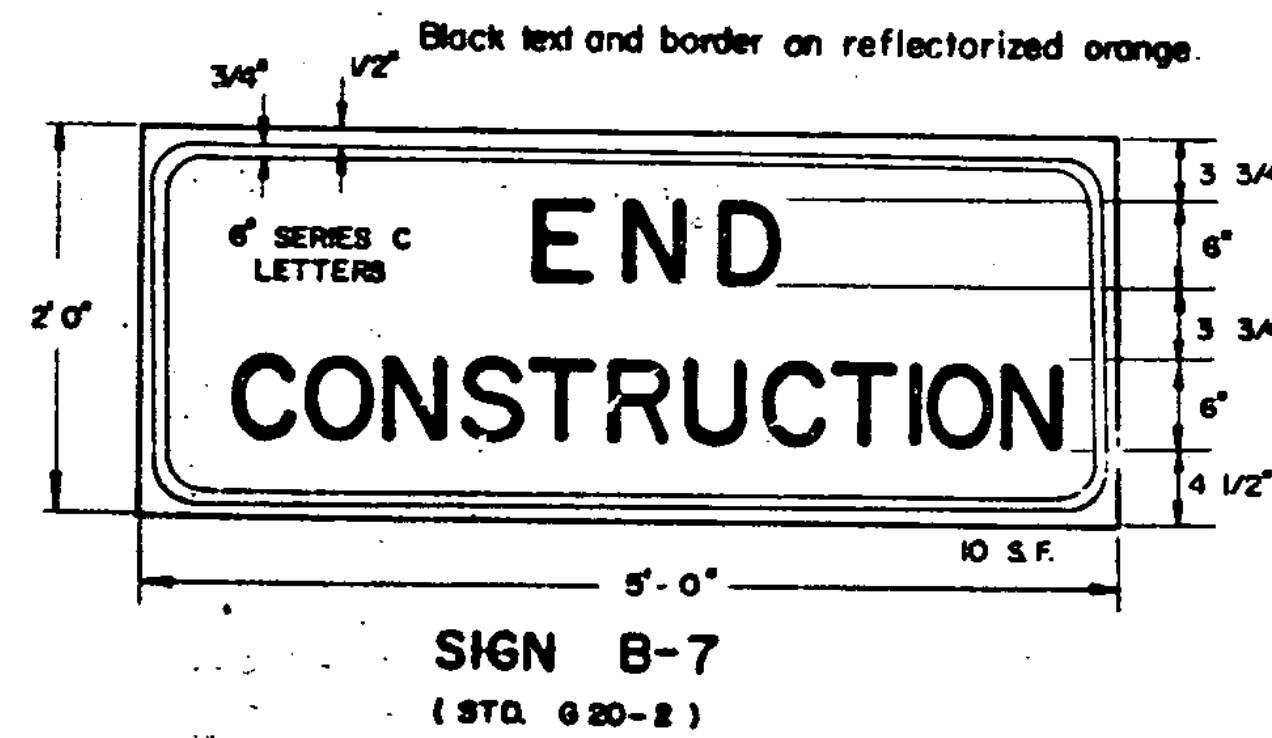
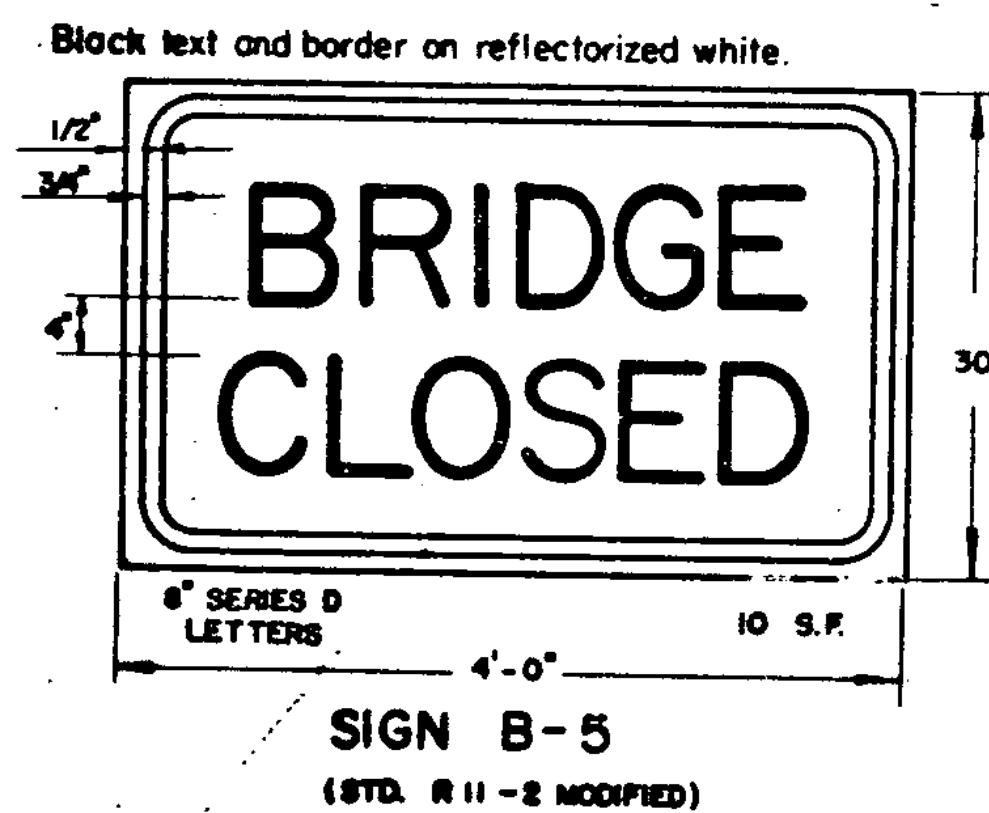
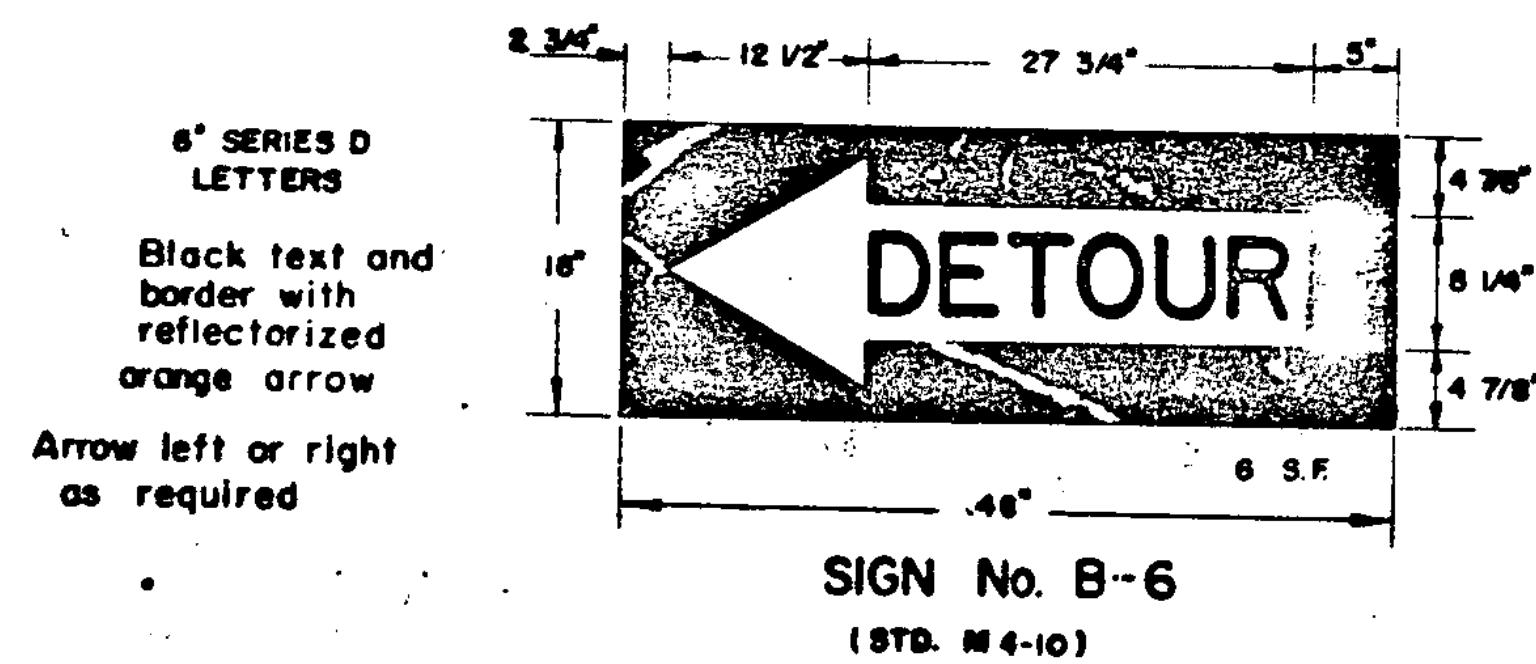
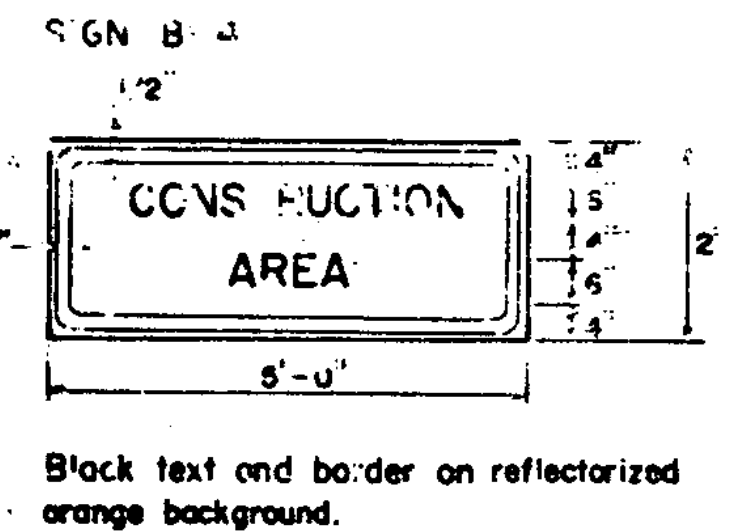
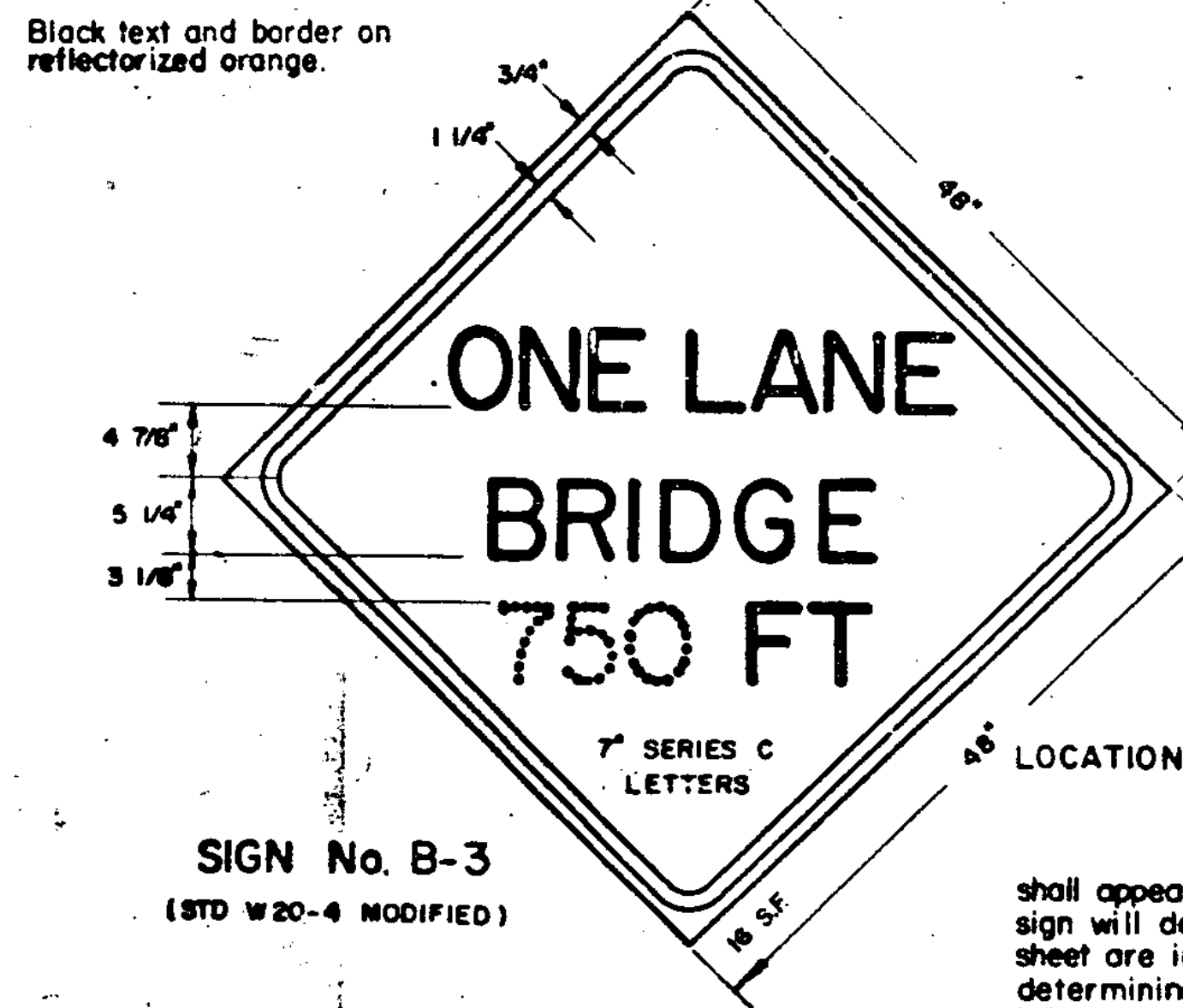
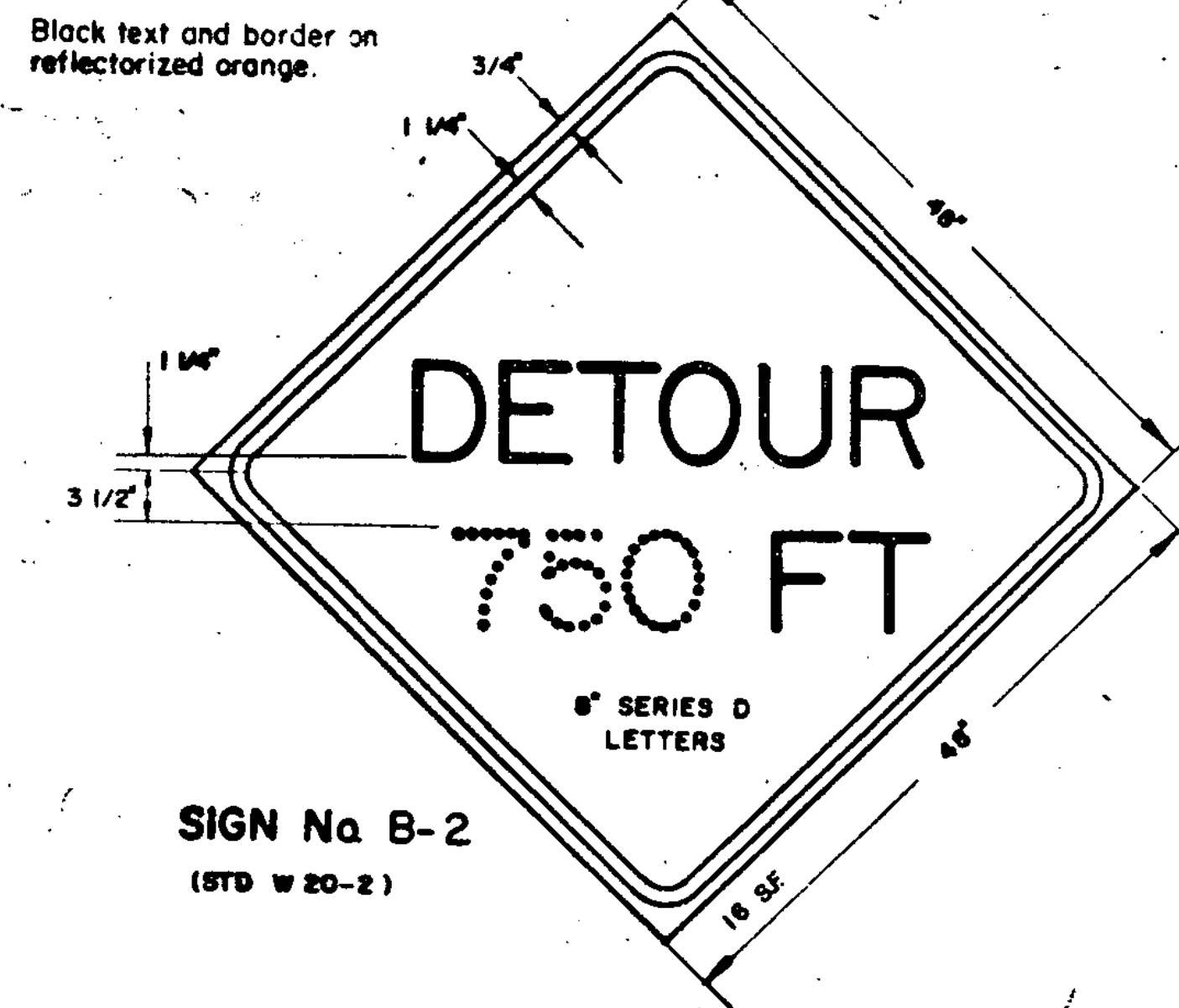
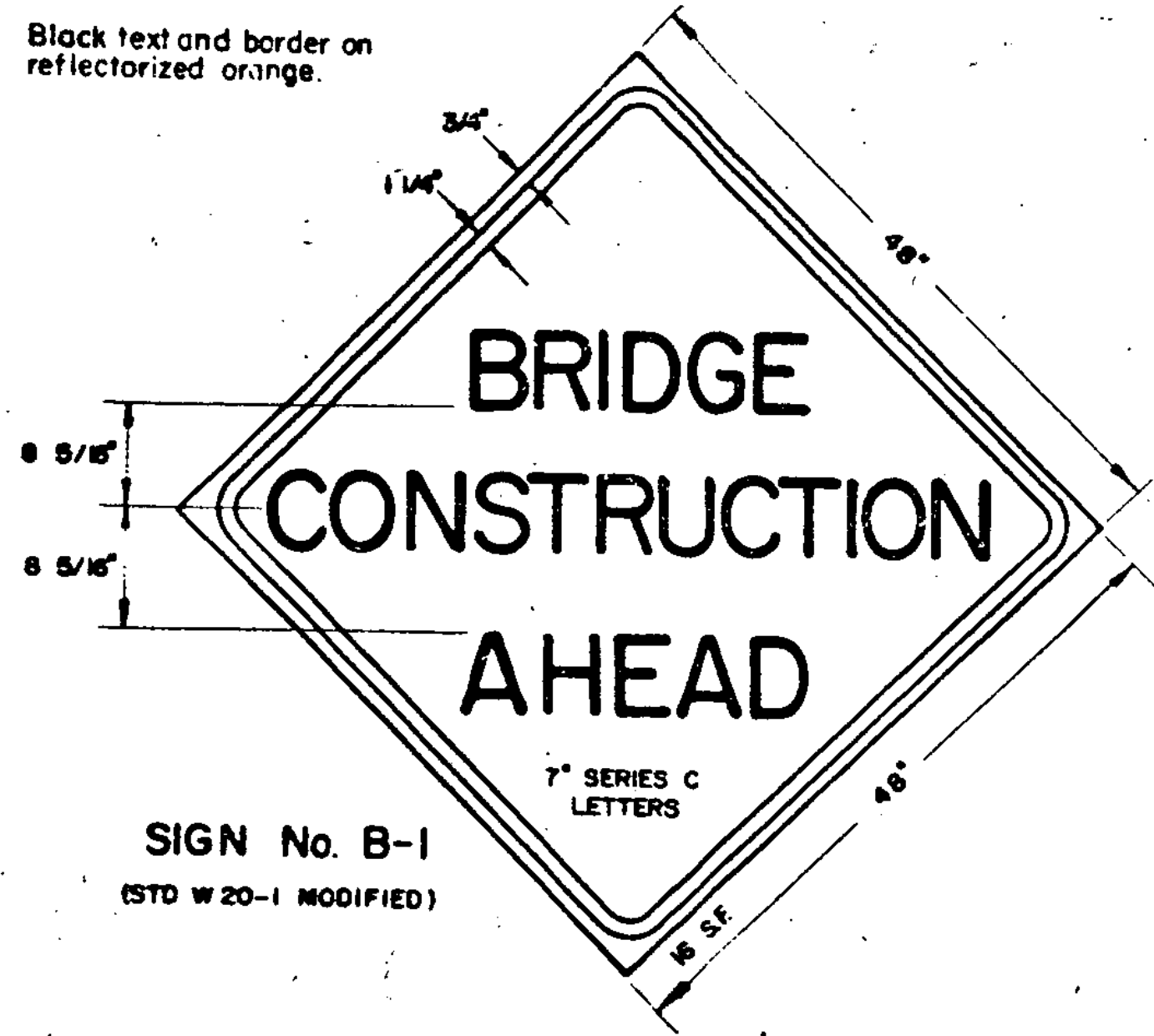
~PARTIAL PLAN AT END OF BRIDGE~
Scale 3/4" = 1'-0"



~ ELEVATION OF BACKWALL & WINGWALL ~
Scale 3/4" = 1'-0"

STATE OF VERMONT	
AGENCY OF TRANSPORTATION	
TOWN OF <i>IRASBURG</i>	Bridge No. <i>20</i>
HIGHWAY NO. <i>CLASS 3 TH 8</i>	Log Sta. <i>—</i>
	Surr. Sta. <i>—</i>
<i>TH 8 OVER BLACK RIVER</i>	
~ MISCELLANEOUS DETAILS ~	
Designed by	Drawn by <i>M. CERUTTI</i>
Checked by <i>G. SCHELLEY</i> date <i>8/93</i>	Bridge Design Supervisor <i>E. L. O'Leary</i> date <i>2-84</i>
PROJECT <i>IRASBURG</i>	PROJECT NO. <i>TH 3146</i>
Bridge Sheet No.	Sheet <i>4</i> of <i>10</i>

BRUNING 44-131 50304



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 at an intersecting public highway. 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 will be approved that will deteriorate by exposure to the weather during the required life of the sign.

REFLECTORIZATION
All reflectorized material shall consist of encapsulated lens reflective sheeting.

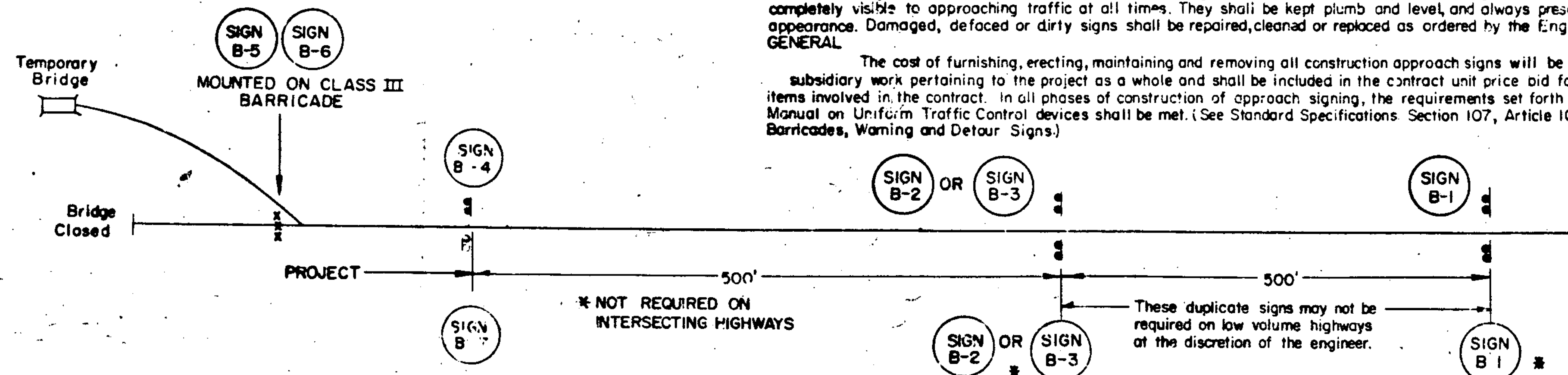
INSTALLATION
If assured by the construction, signs approved by the Engineer, shall be furnished instead of signs shown on this sheet. Signs shall be placed in a neat and workmanlike manner on wood or metal posts set securely in the ground. The bottom of a sign shall be at least 5 feet above road level, 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 will be considered 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 - REVISIONS MADE BY CHWAE
DEC. 12, 1975 - REVISED TO CONFORM TO STANDARD E-2.
JULY 20, 1976 - REVISED PER ORDER OF FHWA.
JUNE 7, 1977 - REFLECTIVE MATERIAL NOTE CHANGED.
DEC. 15, 1978 - ILLUMINATION DELETED.

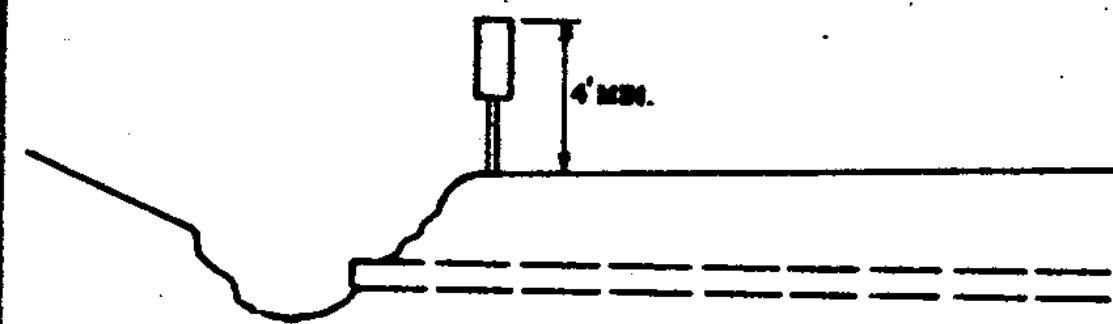
APPROVED
DATE Dec. 14, 1971
R. H. Arnold
CHIEF ENGINEER
E. H. Stinson
ASST. CHIEF ENGINEER
G. M. Lane
HIGHWAY ENGINEER

TRAFFIC SIGNS
BRIDGE CONSTRUCTION
APPROACH SIGNS

VERMONT
DEPARTMENT
OF HIGHWAYS
STANDARDS

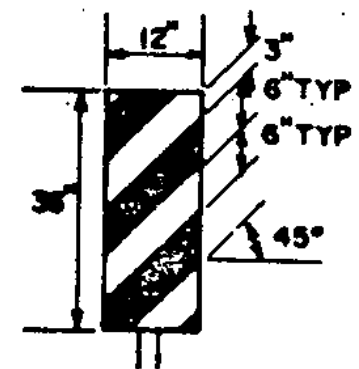
E-3

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



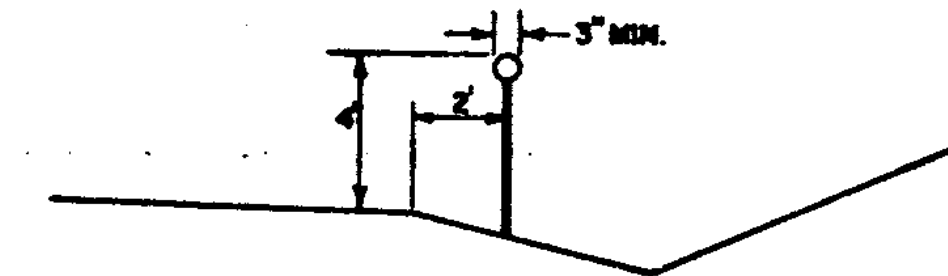
HAZARD MARKER TYPICAL

OBJECTS ADJACENT TO THE ROADWAY SHALL REQUIRE HAZARD MARKER TO MARK THE OBSTRUCTION. IN SOME CASES THERE MAY NOT BE A PHYSICAL OBJECT INVOLVED BUT OTHER ROADSIDE CONDITIONS SUCH AS NARROW SHOULDER DROP-OFFS, GORES, D.I. EXCAVATIONS OR ABRUPT CHANGE IN THE ROADWAY ALIGNMENT MAY MAKE IT UNDESIRABLE FOR A DRIVER TO LEAVE THE ROADWAY. THE INSIDE EDGE OF THE HAZARD MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION, WHENEVER POSSIBLE.



VERTICAL PANEL

VERTICAL PANELS SHALL HAVE ALTERNATING ORANGE AND WHITE REFLECTORIZED STRIPES (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS). THESE DEVICES MAY BE USED FOR TRAFFIC SEPARATION OR SHOULDER BARRICADING WHERE SPACE IS AT A MINIMUM.

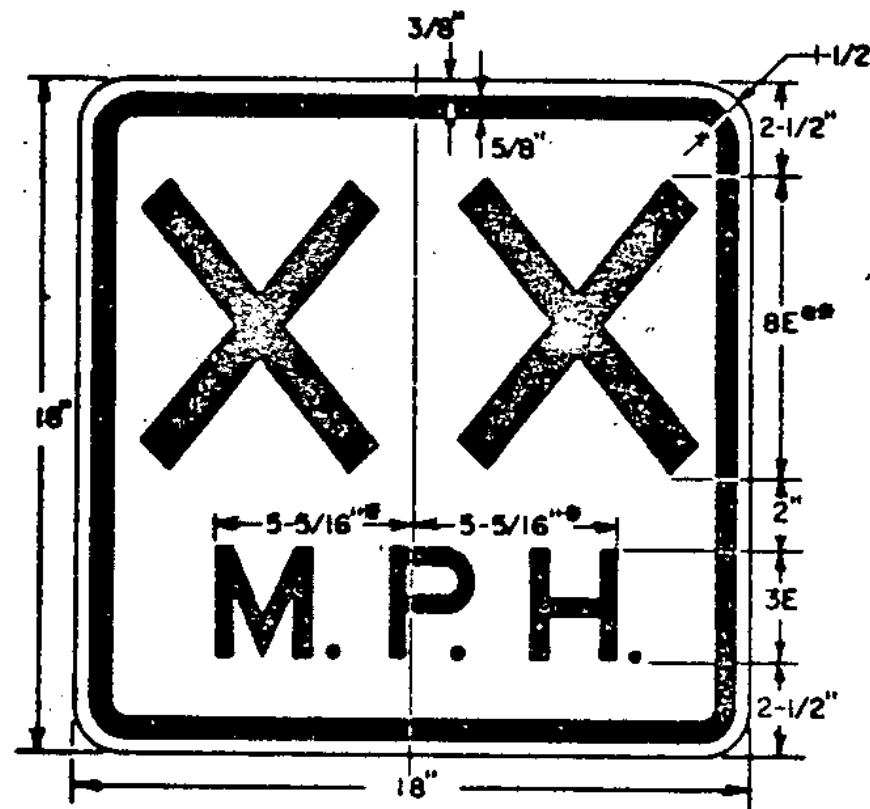


SYMBOL

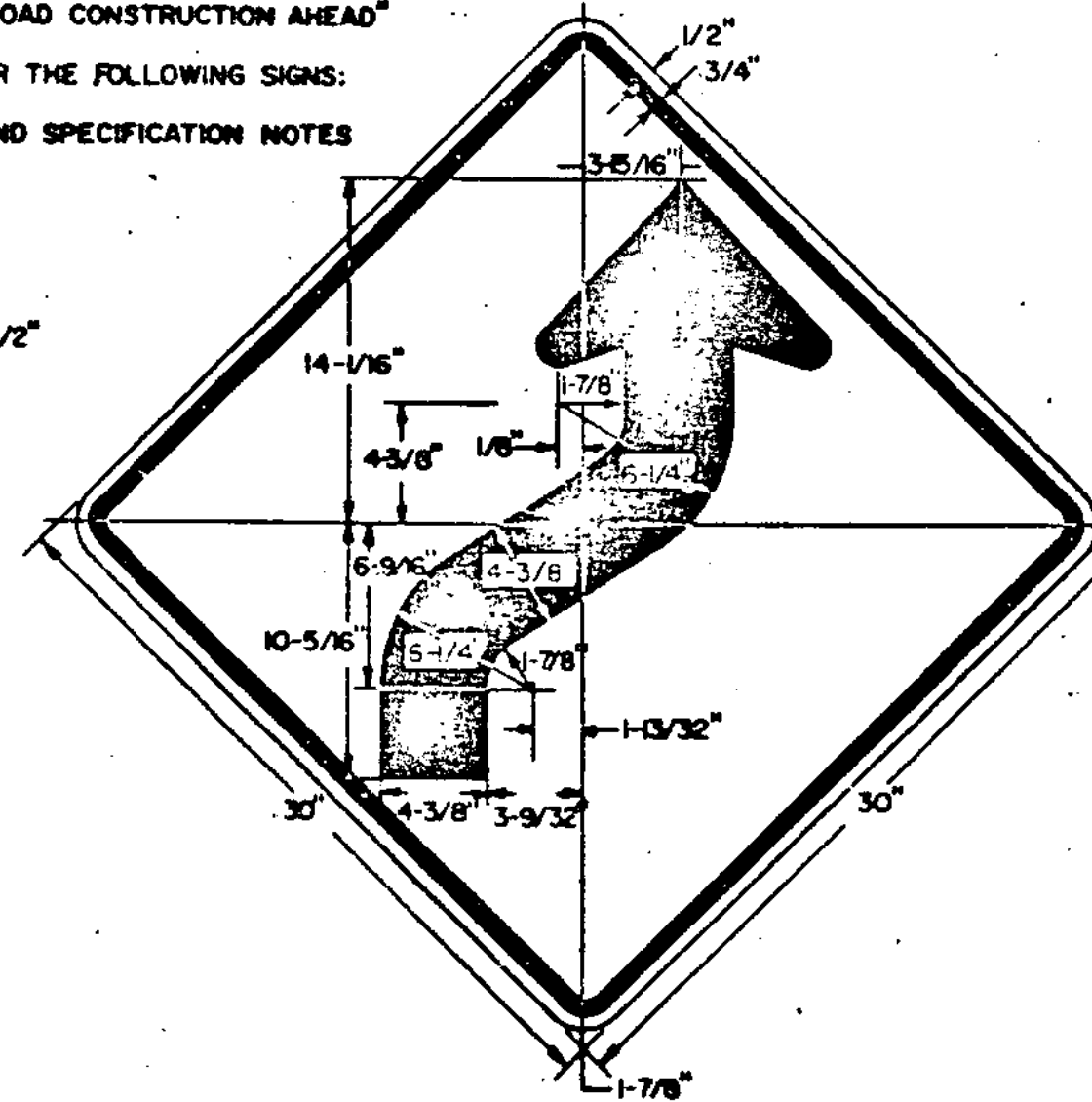
DELINEATOR TYPICAL

DELINEATORS SHALL BE OF A REFLECTORIZED 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- REFLECTORIZED TAPE APPLIED DIRECTLY TO POSTS.
 3- REFLECTORIZED PAINT APPLIED DIRECTLY TO POSTS.
 WHEN PAINT OR TAPE IS APPLIED DIRECTLY TO POST, A SURFACE OF 3" MINIMUM WIDTH FACING TRAFFIC IS REQUIRED.

SEE STANDARD SHEET E-2 FOR SIGN DETAILS FOR "ROAD CONSTRUCTION AHEAD" AND "END CONSTRUCTION" SIGNS.
 SEE STANDARD SHEET E-6 FOR SIGN DETAILS FOR THE FOLLOWING SIGNS: "DETOUR AHEAD", "ROAD CLOSED", "DETOUR" ARROW.
 SEE STANDARD SHEET E-6 FOR SIGN MATERIAL AND SPECIFICATION NOTES FOR ALL SIGNS DETAILED ON THIS SHEET.



#INCREASE SPACING 100%
 #OPTICALLY SPACE NUMERALS ABOUT VERT. CENTERLINE.

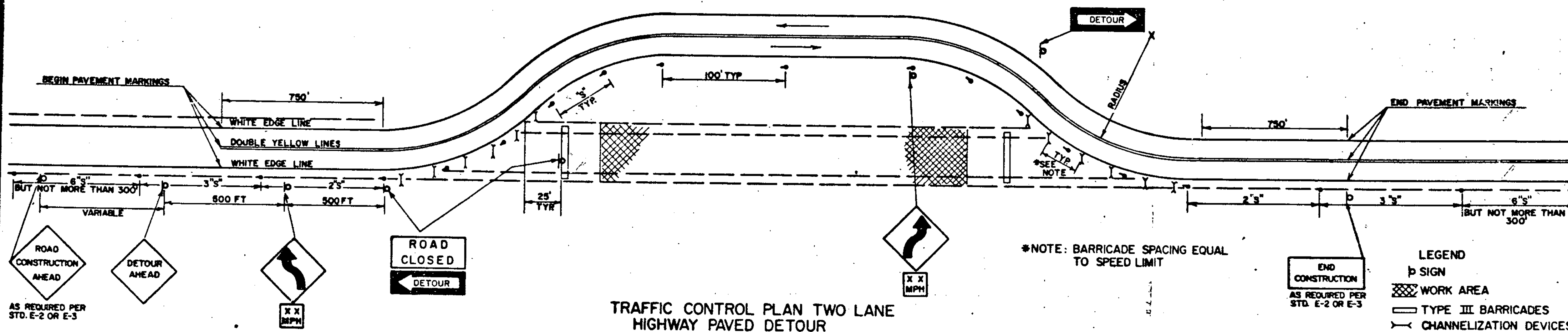


NOTES

1. SIGNS & DELINEATION SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. CHANNELIZING DEVICES SHALL CONSIST OF TYPE II BARRICADES WITH STEADY BURN LIGHTS EXCEPT ON THE FIRST AND LAST BARRICADES WHICH SHALL HAVE A FLASHING LIGHT.
3. FLASHING WARNING LIGHTS MAY BE USED TO CALL ATTENTION TO THE EARLY WARNING SIGNS.
4. CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
5. ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
6. UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS FOR TRANSITIONS ON EXISTING PAVEMENT.

DELINEATOR SPACING

DESIGN SPEED MPH	REQUIRED RADIUS FT	SPACING - "S" FT
25	150	30
30	250	40
40	450	60
50*	750	75



TRAFFIC CONTROL PLAN TWO LANE HIGHWAY PAVED DETOUR

BARRICADES

APPLICATION NOTES

TYPE I BARRICADES ARE TO BE USED ON CONVENTIONAL ROADS OR URBAN STREET AND ARTERIALS TO MARK A SPECIFIC HAZARD TO CHANNELIZE TRAFFIC.

TYPE II BARRICADES ARE TO BE USED ON EXPRESSWAYS AND FREEWAYS, SERVING THE SAME FUNCTIONS AS THE TYPE I BARRICADES.

TYPE III (SEE STANDARD E-7A) SHALL ONLY BE USED WHEN A ROAD SECTION IS CLOSED TO TRAFFIC TO BE ERECTED AT THE POINT OF CLOSURE.

MATERIALS

THE BARRICADES SHOWN ON THIS SHEET NORMALLY WILL BE OF LIGHTWEIGHT MATERIAL. IF WOOD IS USED THE FOLLOWING CONDITIONS SHALL APPLY.

1. WOODEN BARRICADES (TYPES I AND II)

A. SHALL NOT BE USED TO CHANNELIZE OR DELINEATE WORK AREAS WITHIN THE CLEAR ZONE OF ANY HIGHWAY WHERE OPERATING SPEEDS IN EXCESS OF 20 MILES PER HOUR ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.

B. MAY BE USED IF OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.

2. TYPE III WOODEN BARRICADES SHALL NOT BE USED WITHIN THE CLEAR ZONE OF ANY HIGHWAY REGARDLESS OF THE TRAFFIC OPERATING SPEED.

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° IN THE DIRECTION TRAFFIC IS TO PASS).

COLORS

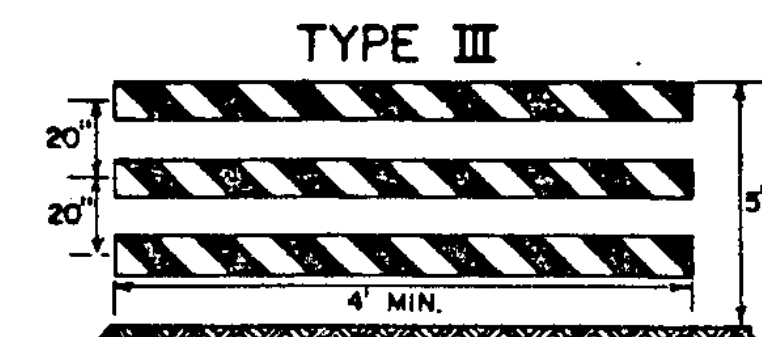
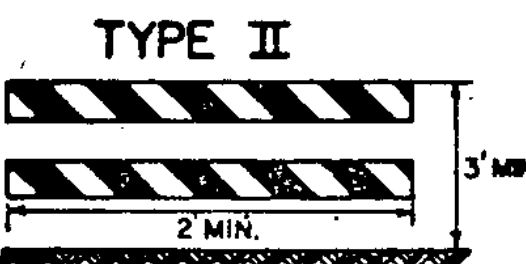
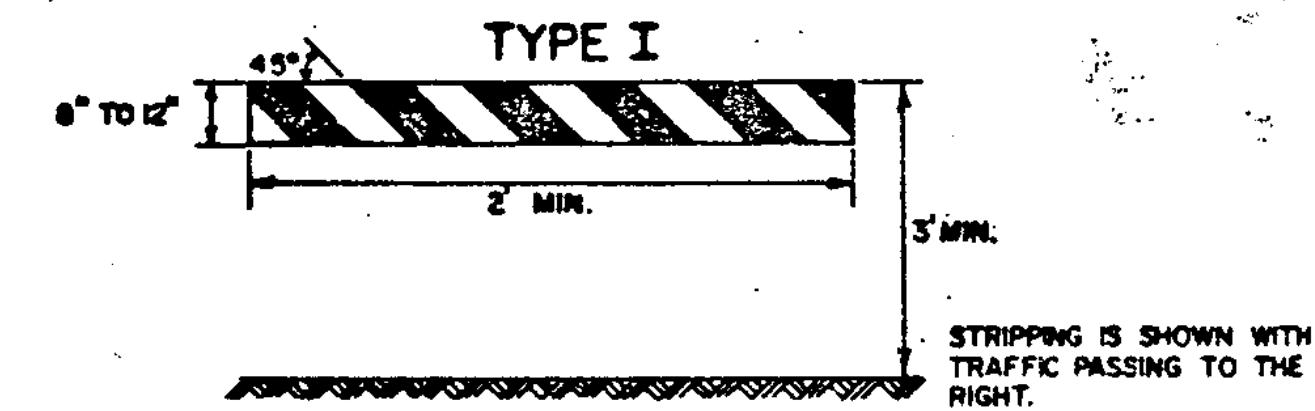
THE BARRICADES PANELS SHOWN ON THIS SHEET SHALL HAVE ALTERNATING REFLECTORIZED WHITE AND ORANGE STRIPES. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS AND APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION. THE BARRICADE COMPONENTS SHALL BE WHITE EXCEPT THAT UNPAINTED METAL OR ALUMINUM MAY BE USED.

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 LOCATION OF THE BARRICADES SHALL FOLLOW THE PROCEDURES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, OR AS OTHERWISE NOTED.



BARRICADE CHARACTERISTICS	BARRICADE CHARACTERISTICS	
	I	II
WIDTH OF RAIL	8" MIN. 12" MAX.	8" MIN. 12" MAX.
LENGTH OF RAIL	2' MIN.	2' MIN.
WIDTH OF STRIPS	6"	6"
HEIGHT	3' MIN.	3' MIN.
TYPE OF FRAME	DEMOUNTABLE OR "A" FRAME	LIGHT "A" FRAME NO STRY BRACE
FLEXIBILITY	ESSENTIALLY MOVEABLE	PORTABLE
ANGLE OF STRIPE	45°	45°
COLOR OF STRIPS	ORANGE AND WHITE	ORANGE AND WHITE

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.

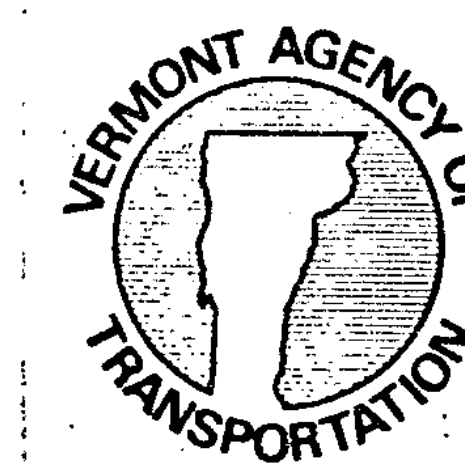
LIGHTING

FOR NIGHTTIME USE ADD FLASHING WARNING LIGHTS WHEN BARRICADES ARE USED SINGLY AND STEADY BURN LIGHTS WHEN BARRICADES ARE USED IN A SERIES FOR CHANNELIZATION. THE LIGHTING DEVICES SHALL CONFORM TO THOSE SPECIFIED IN THE MUTCD.

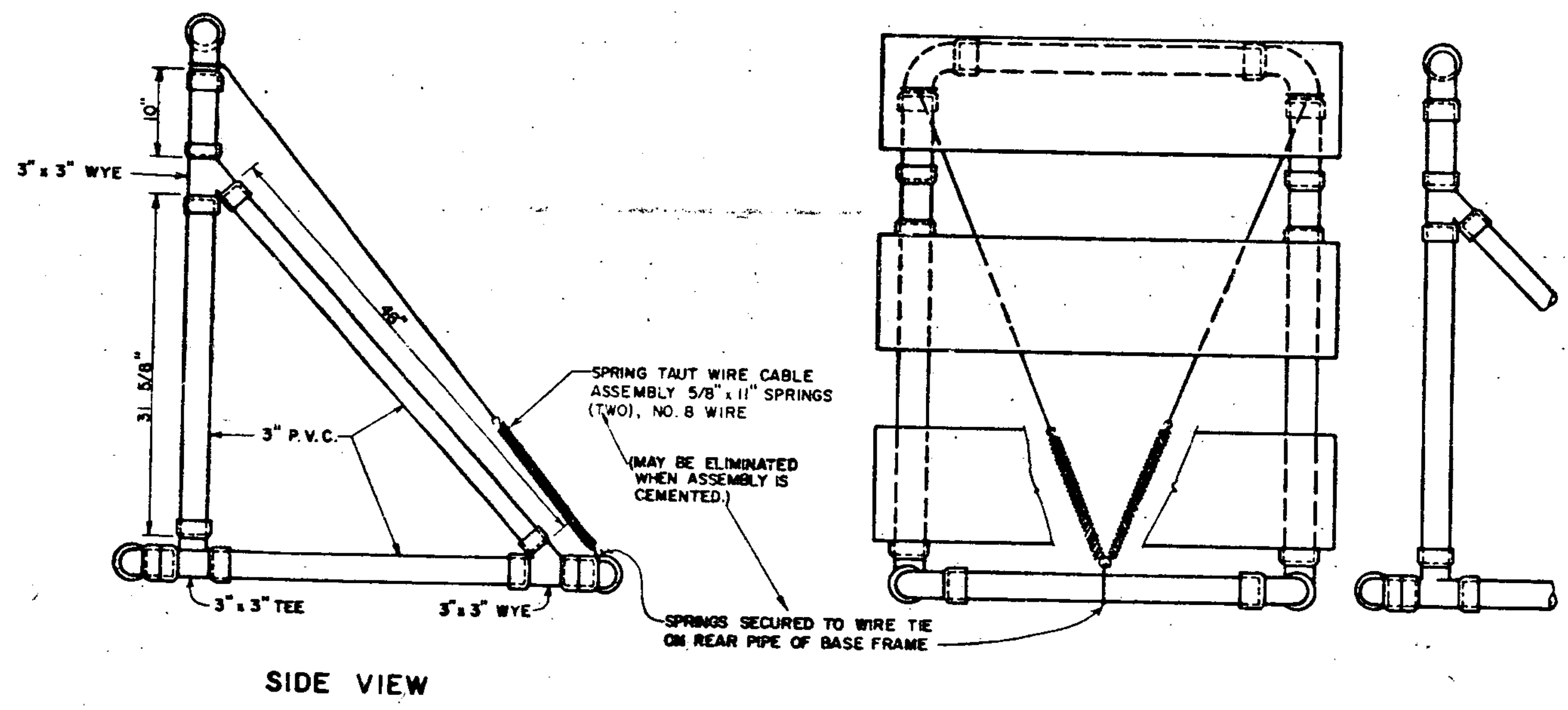
REVISIONS AND CORRECTIONS
 FEB. 12, 1982 MATERIALS NOTE CLARIFIED, SIGN ADDITIONS.
 FEB. 2, 1983 NOTE # 6 RE: UNPAVED DETOURS ADDED.

APPROVED: _____
 DATE: SEPT. 22, 1981
 DIRECTOR OF ENGINEERING AND CONSTRUCTION
 CHIEF OF DESIGN
 TRANSPORTATION DESIGN ENGINEER

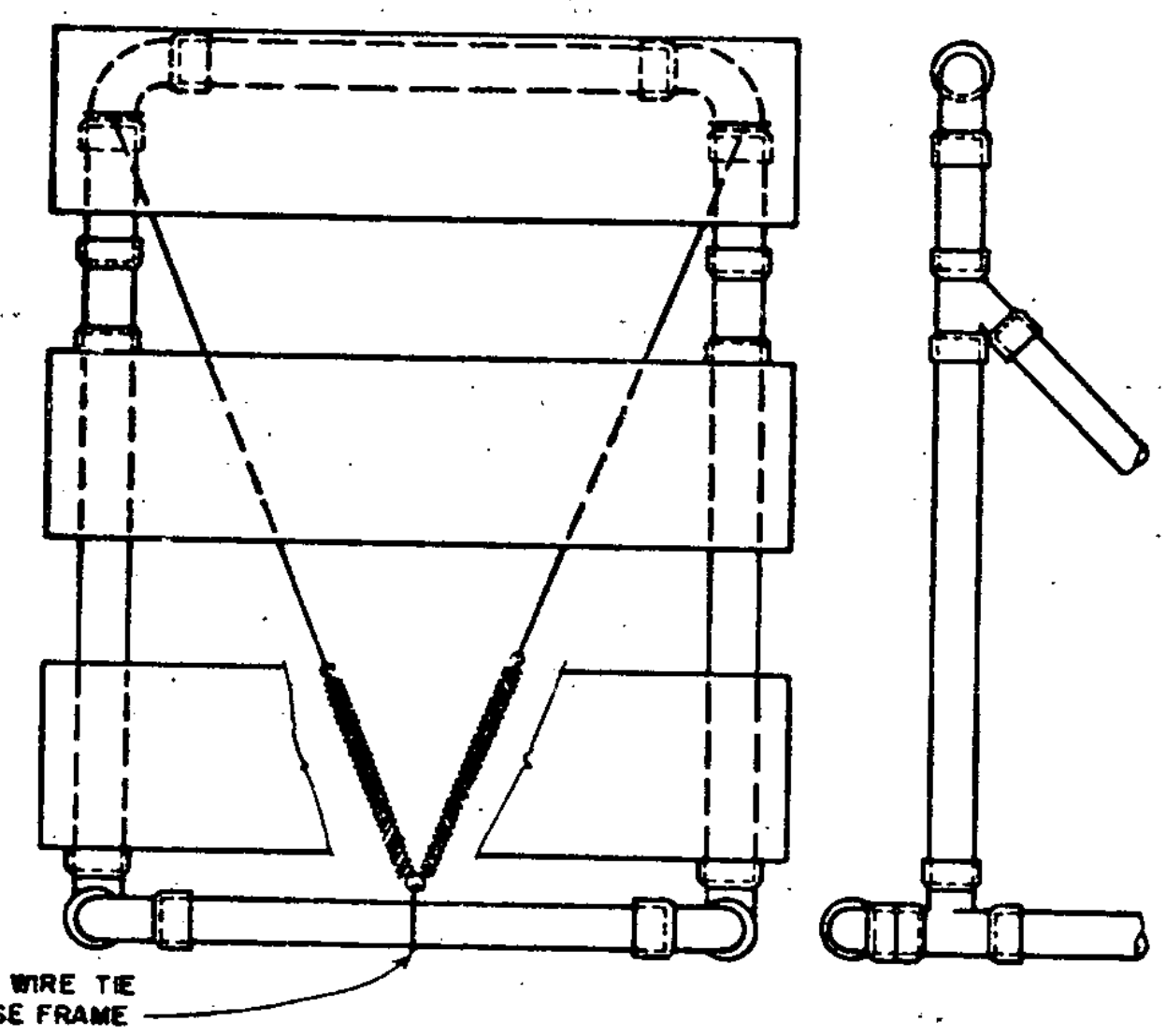
DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS



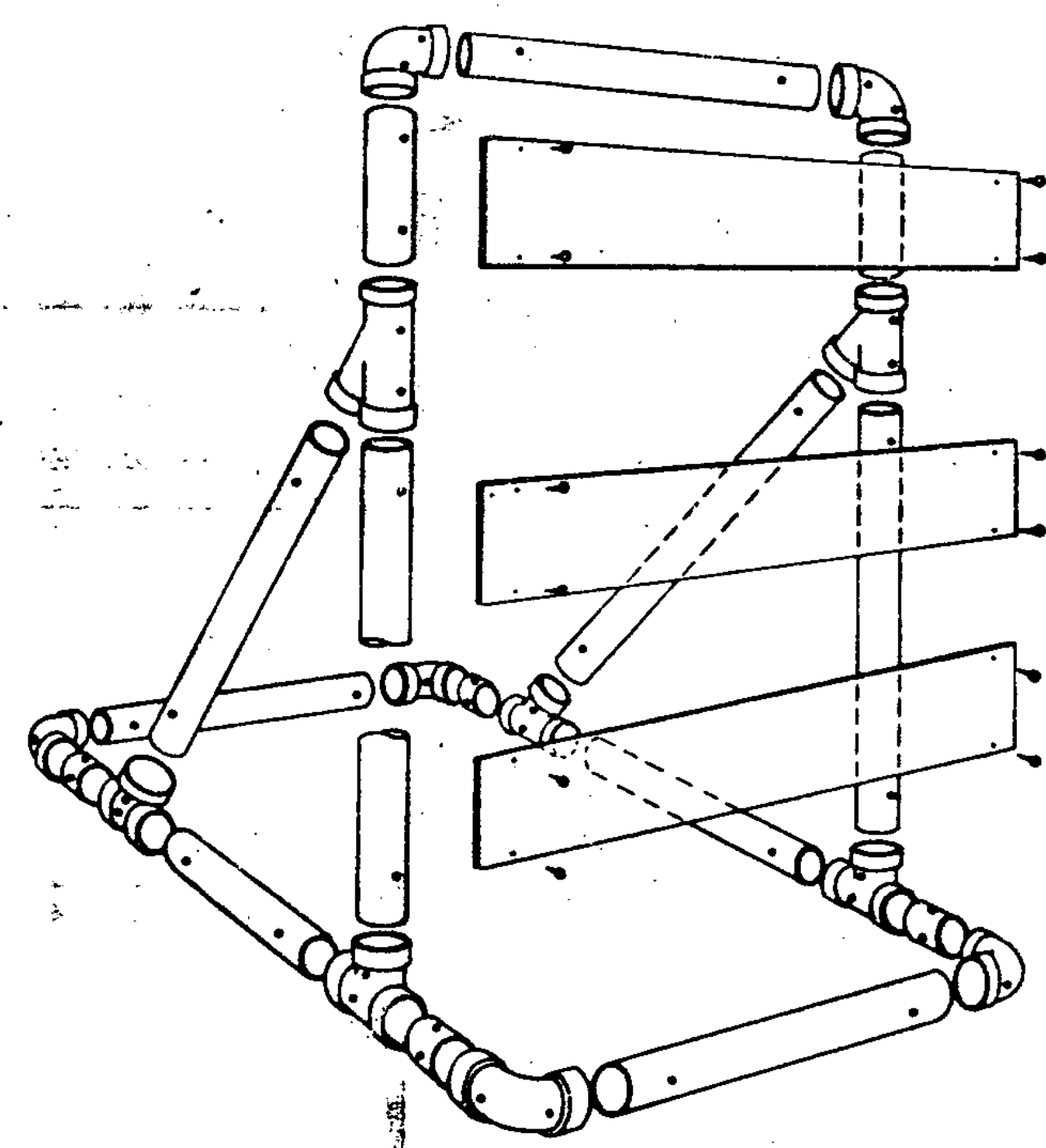
STANDARD E-7



SIDE VIEW



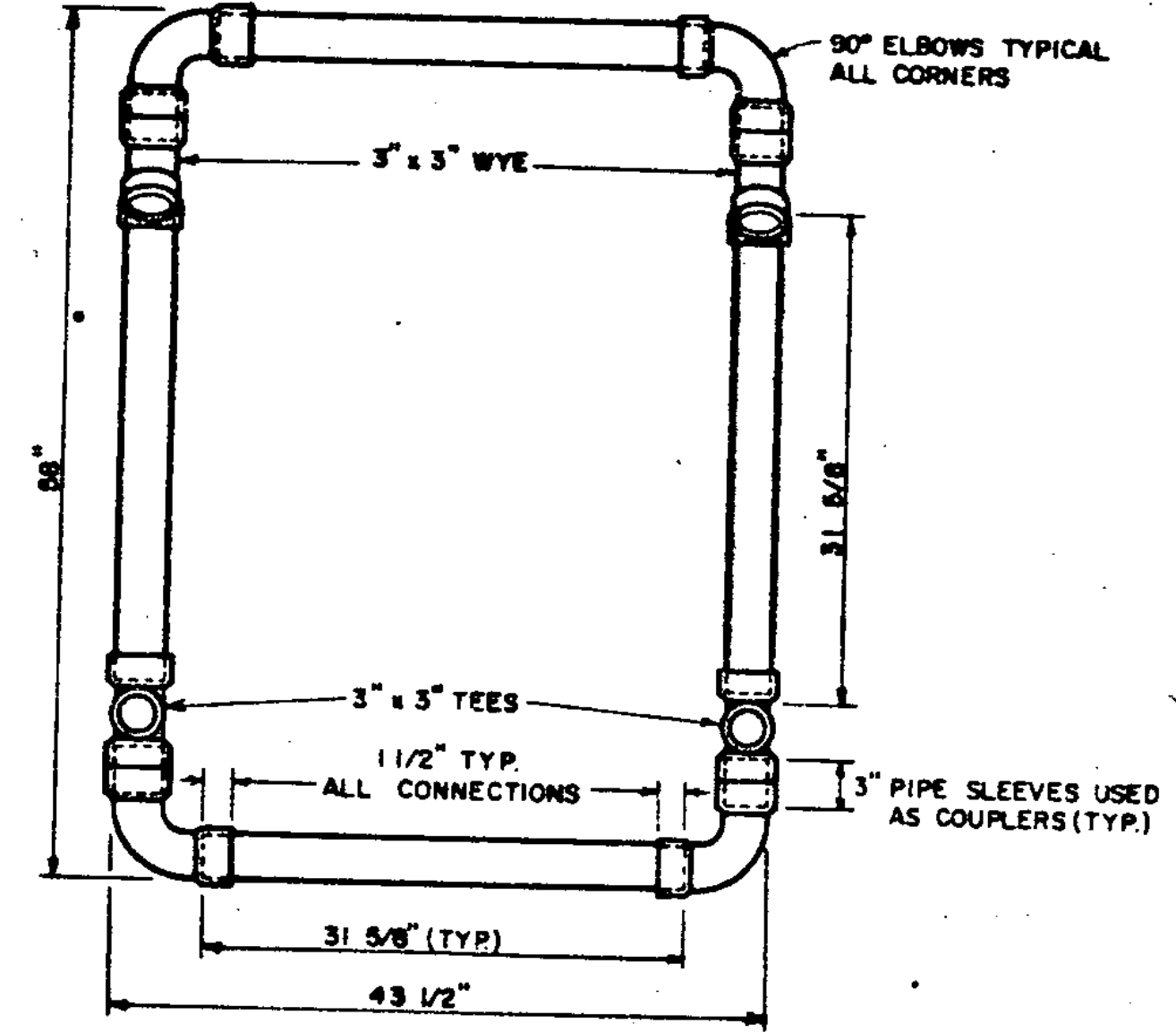
BARRICADES SHALL BE STABILIZED WITH SAND BAGS OR FLEXIBLE CONTAINERS OF SAND WHICH WILL NOT CONSTITUTE A HAZARD WHEN BARRICADE IS HIT. STABILIZERS SHALL BE SO PLACED AS NOT TO BE A HAZARD TO VEHICLES PASSING ON EITHER SIDE. IF BARRICADE REPLACEMENT COSTS CAN BE CONSIDERED NEGLIGIBLE, GLUED JOINTS MAY PROVIDE ADDITIONAL STABILITY TO THE INSTALLATION.



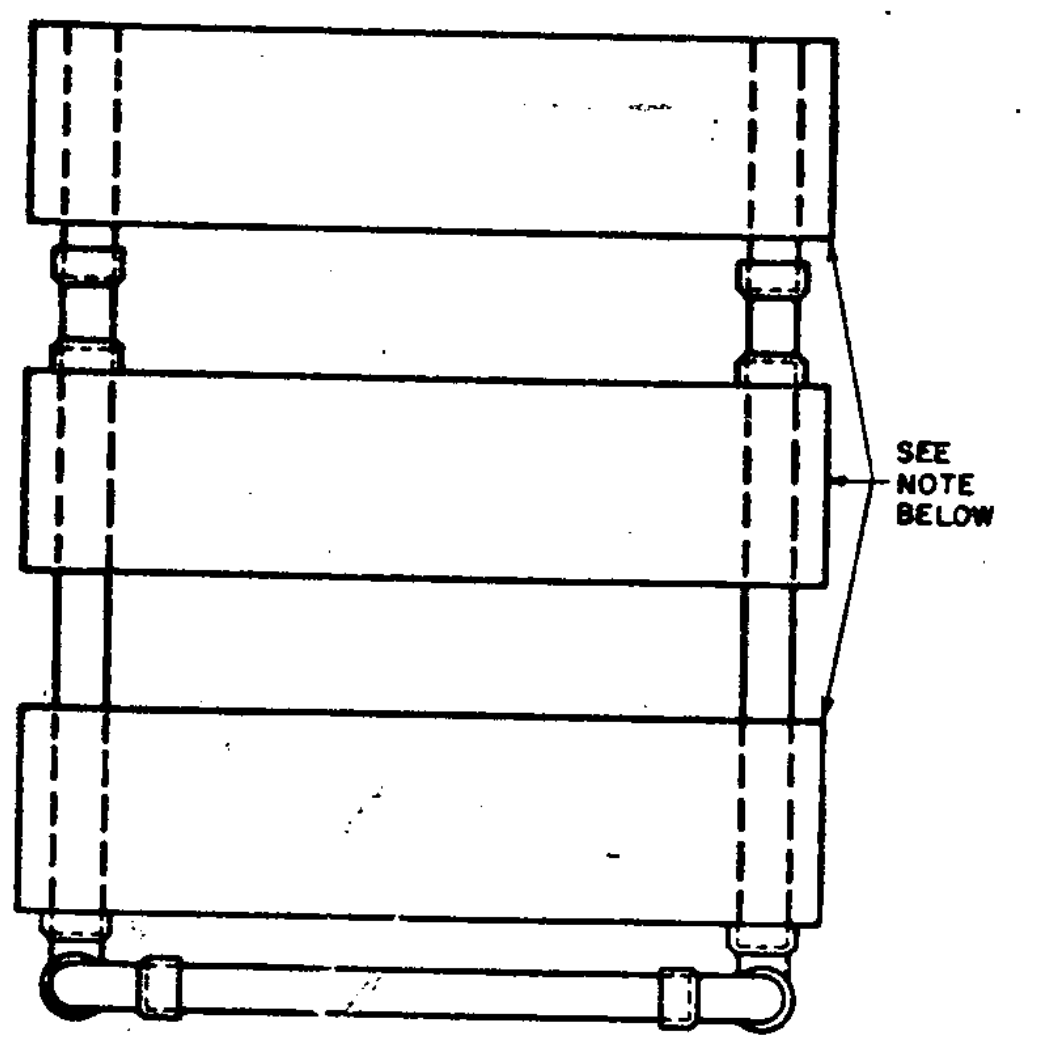
BARRICADE ASSEMBLY

MATERIALS LIST FOR ONE BARRICADE

3" Diameter Pipe	30 LF
3" 1/4 Bend Elbow	6 EA
3" Tees	2 EA
3" Wyes	4 EA
9" x 48" x .025 Barricade Panels	3 EA
5/8" x 11" No. 8 Spring	2 EA
1" No. 14 Pan Head Metal Screws	12 EA
No. 14 Black Annealed Tie Wire	18 LF

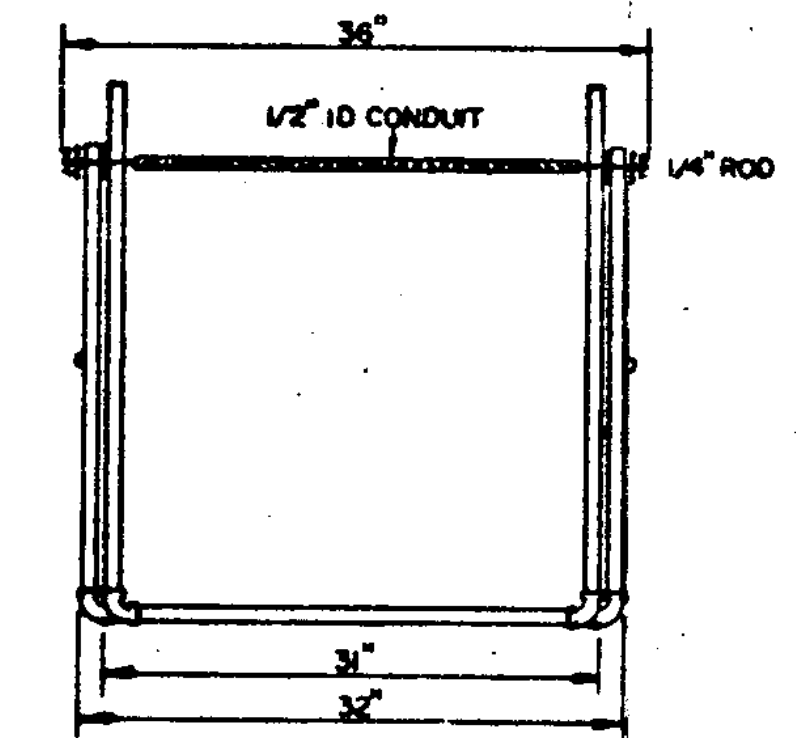


TOP VIEW OF BASE

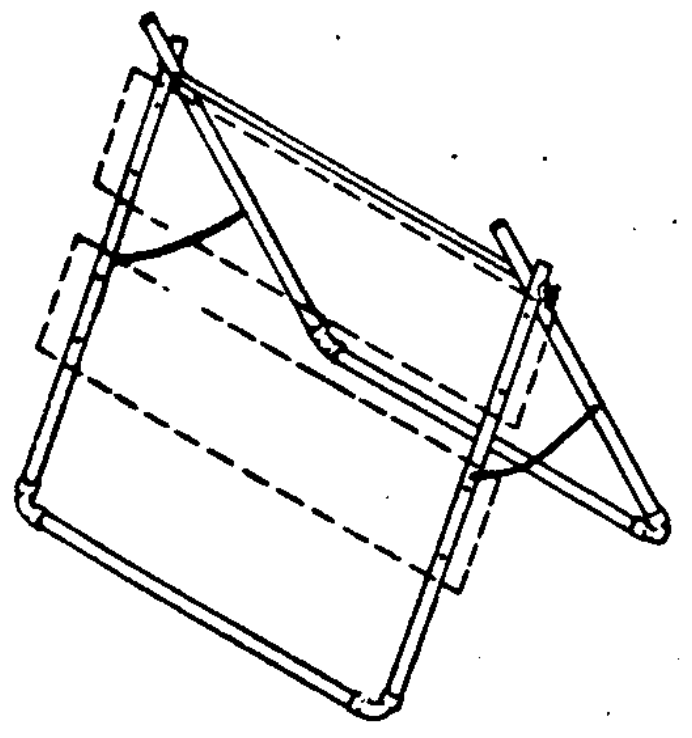
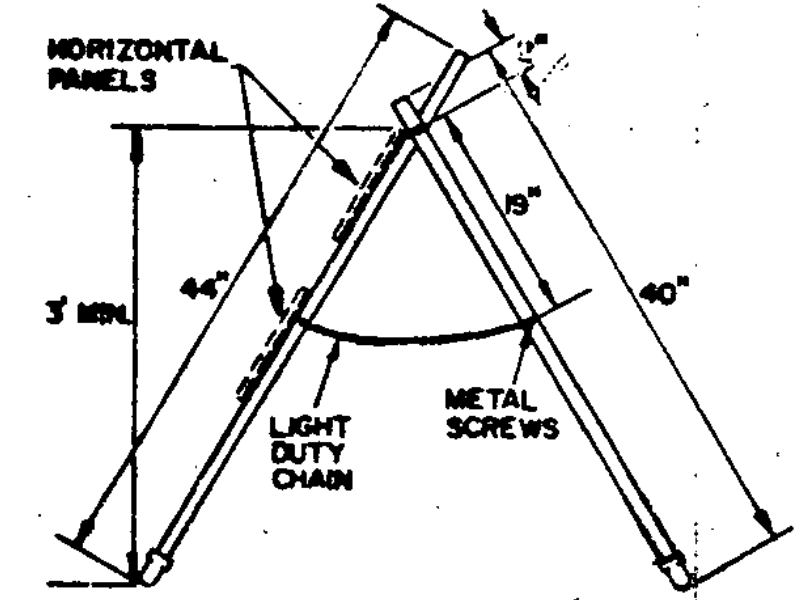


FRONT VIEW

NOTE - 9" x 48" BARRICADE HAZARD PANELS ORANGE AND WHITE RIGHT OR LEFT. (.025 ANODIZED ALUMINUM). PANELS ATTACHED WITH 1" NO. 14 PAN HEAD METAL SCREW.



MATERIALS FOR TYPE I & II BARRICADES
 20'-1" PVC
 4'-1" PVC 90° ELBOWS
 30'-1/2" ID THINWALL CONDUIT
 36'-1/4" STEEL ROD
 4'-1" WASHERS
 24'- LIGHT DUTY CHAIN
 4'- METAL SCREWS
 2'- 3/4" COTTER PINS



TYPE I & II BARRICADE DETAILS

TYPE I BARRICADES SHALL CONSIST OF ONE HORIZONTAL PANEL.
 TYPE II BARRICADES SHALL CONSIST OF AN ADDITIONAL HORIZONTAL PANEL MOUNTED BELOW THE OTHER.
 SEE STD E-7 FOR USE REQUIREMENTS.

REVISIONS & CORRECTIONS
 JAN. 11, 1977 - REVISED ACCORDING TO FHWA REQUIREMENTS.
 JUNE 8, 1977 - MATERIALS LIST ADDED.
 APR. 8, 1982 - CEMENTING NOTE AND BARRICADES TYPE I & II ADDED.

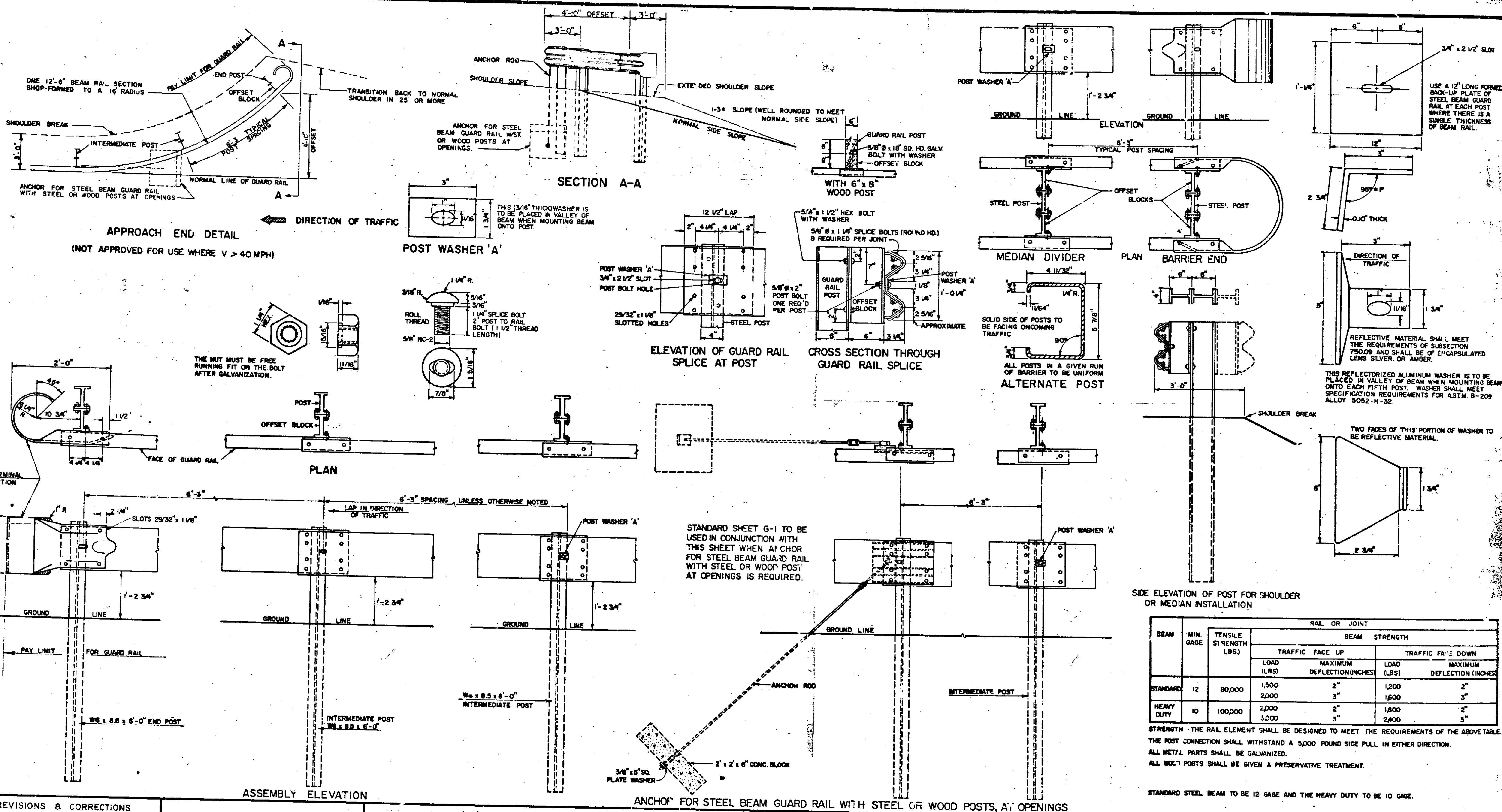
APPROVED
 DATE Dec 30, 1976
E. W. Stinchey
 CHIEF ENGINEER
R. O. Munn
 ASST. CHIEF ENGINEER
Lois L. Jones
 HIGHWAY ENGINEER

TRAFFIC SIGNS

BREAKAWAY BARRICADE DETAILS



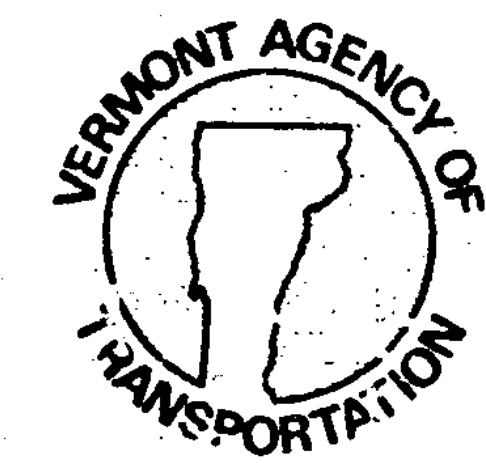
STANDARD
 E-7A



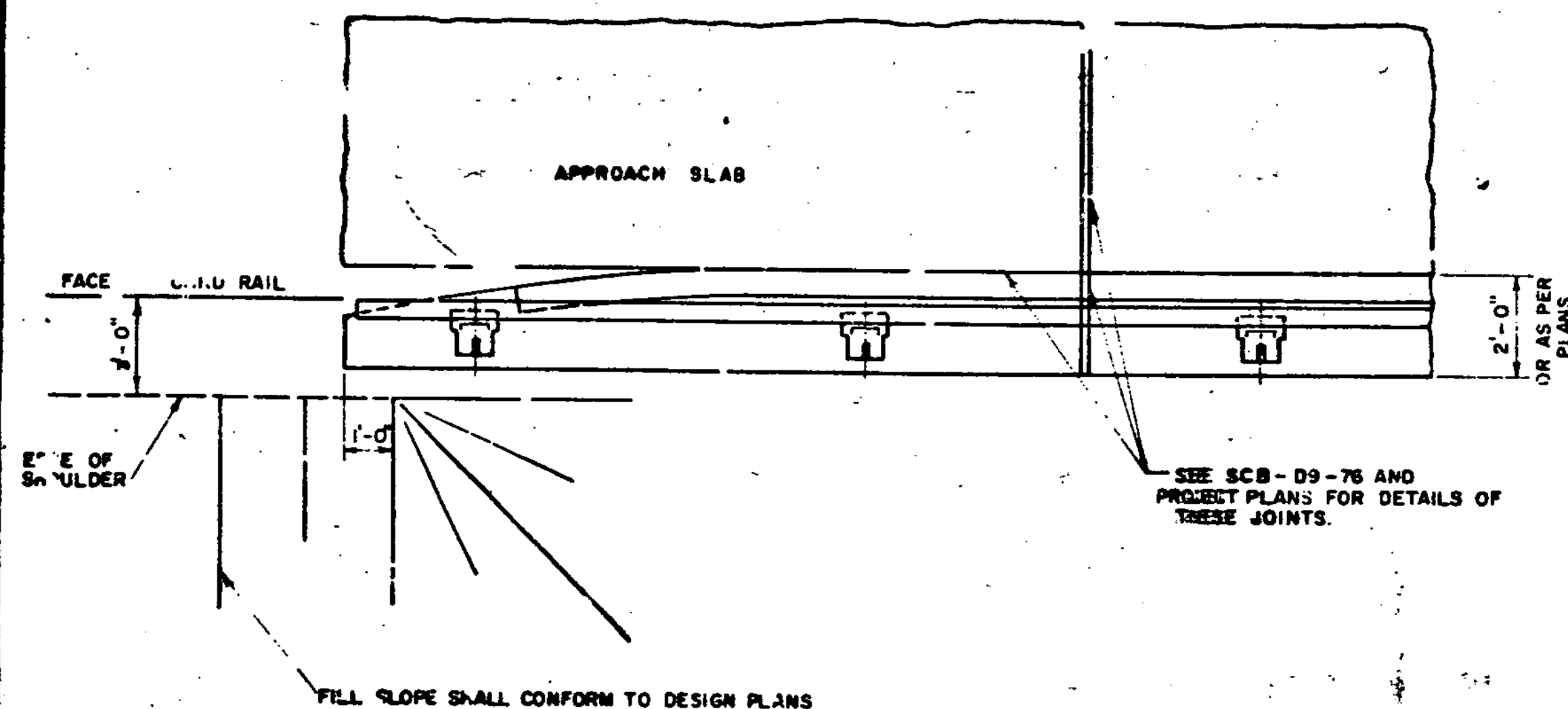
REVISIONS & CORRECTIONS
 SEPT. 10, 1976 - MINIMUM LENGTH & ADVANCE OF NEED NOTES REMOVED.
 MAR. 2, 1977 - ROUND WOOD POSTS REMOVED.
 SEPT. 12, 1977 - REFERENCE TO ROUND WOOD POSTS REMOVED.
 MAY 29, 1979 - NOTE ON REFLECTIVE MATERIAL CHANGED
 APRIL 28, 1980 - APPROACH END DETAILS REDRAWN
 DEC. 16, 1980 - INCREASED SHOULDER WIDENING FOR GUARD RAIL.

APPROVED: *E. H. Stickney*
 DATE: May 6, 1976
 CHIEF ENGINEER
R. O. Munn
 ASST. CHIEF ENGINEER
Lynn E. Jones
 HIGHWAY ENGINEER

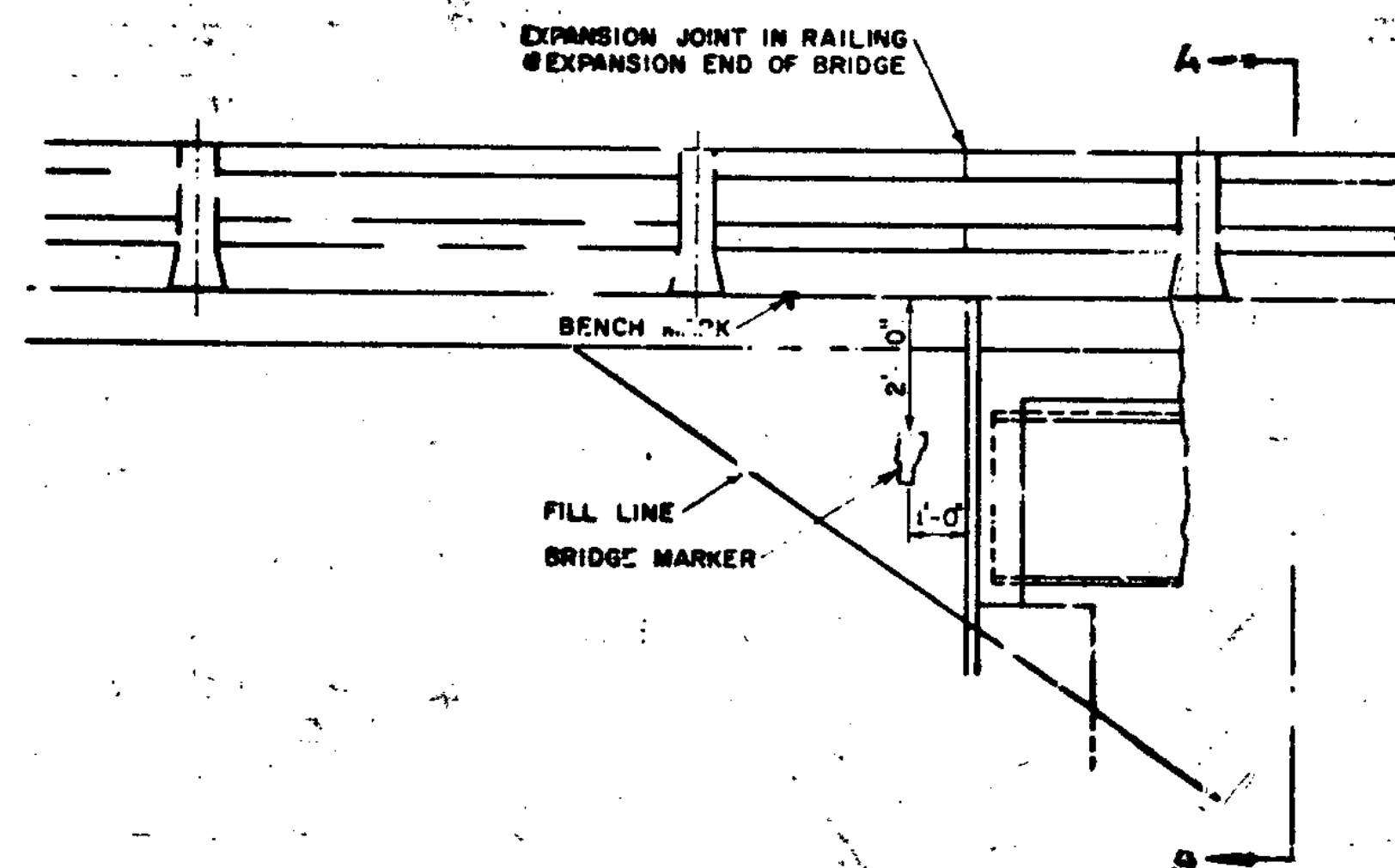
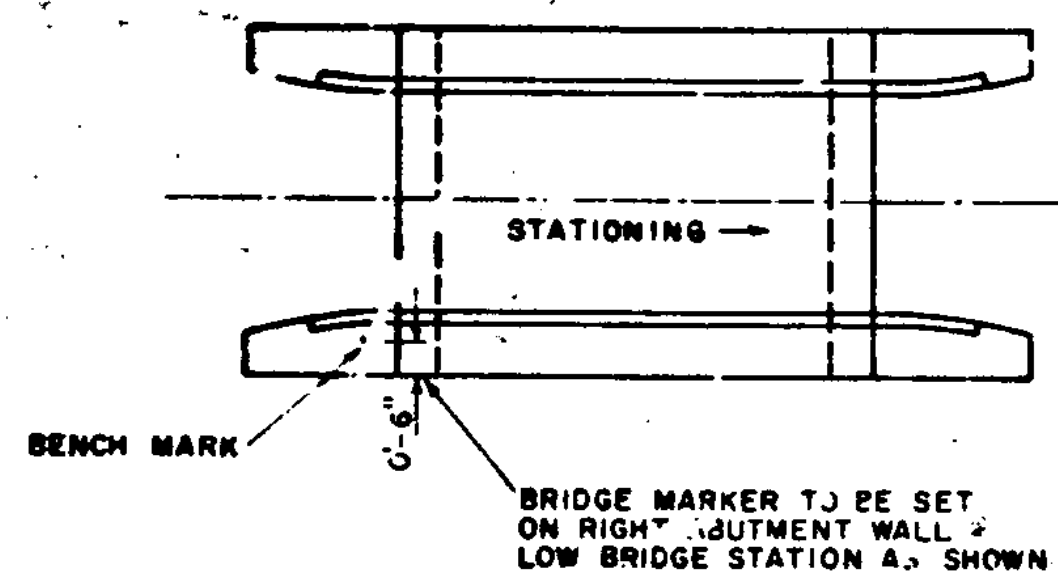
GUARD RAIL, STANDARD STEEL BEAM WITH STEEL POSTS, TYPE II
 GUARD RAIL, STANDARD STEEL BEAM WITH WOOD POSTS, TYPE II
 GUARD RAIL, HEAVY DUTY STEEL BEAM WITH STEEL POSTS, TYPE II
 GUARD RAIL, HEAVY DUTY STEEL BEAM WITH WOOD POSTS, TYPE II



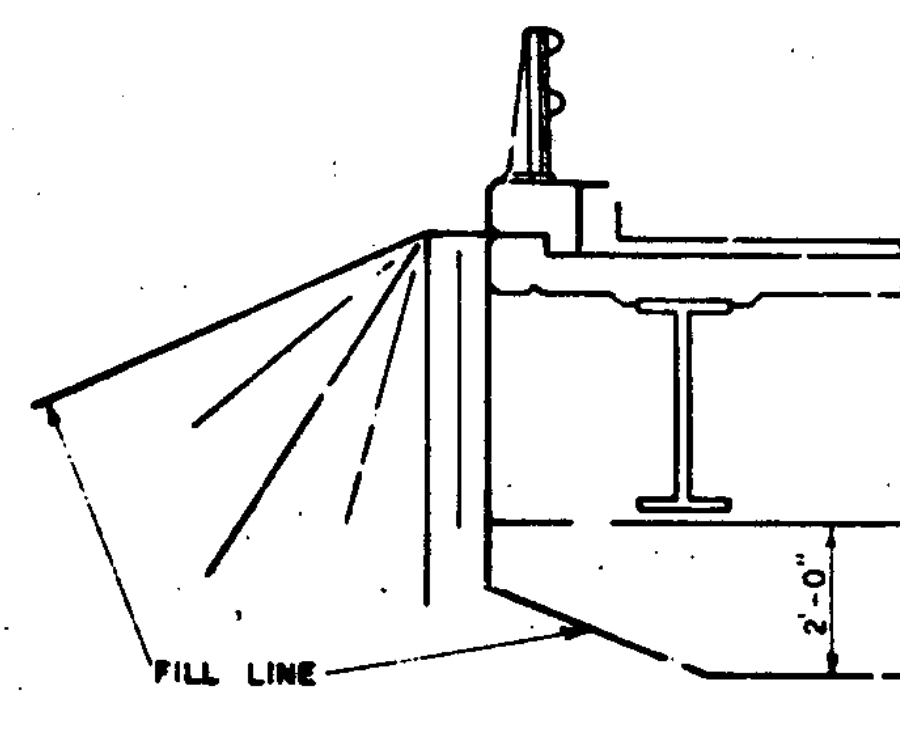
STANDARD G-1d



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 1, 76, AND ITS LATEST REVISIONS AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1977 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 THE PLANS.

- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM DESIGNATION A-573 (UNPAINTED). ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø ASTM A-325 TYPE III 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.
 - 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 SIMILE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES FOR CAMBERS SHALL BE AS INDICATED IN THE AISC HANDBOOK FOR ROLLED BEAMS AND AS INDICATED IN THE AISC SPECIFICATION FOR WELDED GIRDERS.
 - ALL WELDING AND DIMENSIONAL TOLERANCES OF WELDED MEMBERS SHALL CONFORM TO AWS D1.1-80 STRUCTURAL WELDING CODE AND ITS LATEST REVISIONS EXCEPT AS MODIFIED BY THE AASHTO STANDARD SPECIFICATIONS FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES, DATED 1981 AND ITS LATEST REVISIONS.
 - ALLOWABLE DESIGN STRESSES:

CONCRETE CLASS A	f _c 3,000 psi	f _c 1400 psi
CLASS B	f _c 2,500 psi	f _c 1400 psi
STRUCTURAL STEEL	A-588 MAX. DESIGN STRESS 27,000 psi (or as per AASHTO Specs)	
REINFORCING STEEL:	GRADE 40	GRADE 60
DESIGN STRESS (TENSION)	20,000 psi	24,000 psi
DESIGN STRESS (COMPRESSION)	16,000 psi	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 REINFORCING STEEL (EXCEPT IN DECK) SHALL BE 2" IN BACK FACES OF WALLS AGAINST EARTH AND 3" ELSEWHERE.
 - 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.
 - ANY FORM BRACKET HOLES IN FASCIA BEAMS OR GIRDER WEBS SHALL BE FILLED WITH BUTT-HEAD OR HEX-HEAD BOLTS (TYPE III ON A-588 STEEL).
 - 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, UNLESS OTHERWISE NOTED.
- *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.
- IF ALL DECK CONCRETE IS NOT PLACED IN ONE WORKING DAY, A MINIMUM DELAY PERIOD OF 96 HOURS (FOLLOWING END OF PLACEMENT OF THE PREVIOUS CONCRETE) WILL BE REQUIRED BEFORE PLACING ADDITIONAL CONCRETE. THE MINIMUM DELAY PERIOD SHALL BE INCREASED WHEN SO ORDERED BY THE ENGINEER. IN ALL CASES THE PLACEMENT SEQUENCE INDICATED ON THE PLANS SHALL BE FOLLOWED.
 - REINFORCING PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:

SPACING TOLERANCE	± 1"
CLEARANCE TOLERANCE	± 1/4"

REVISIONS AND CORRECTIONS

- Added word seat in line 3 of Note #9 J. WOOD 4-23-75
- CHANGED VERMONT SPEC. DATE, GEN. NOTE, AND ADDED NOTE NO. 15, W. TRIPP 4-26-76
- REVISED NOTES, W. TRIPP, 11-13-76
- REVISED DATES, NOTE NO. 3, W. TRIPP 4-25-77
- REVISED NOTES W. TRIPP 11-13-79
- REVISED NOTE NO. 3, DATES W. TRIPP 9-14-81

APPROVED: _____ DATE _____

CHIEF ENGINEER

ASST. CHIEF ENGINEER

BRIDGE ENGINEER

DETAILS OF W BEAM BRIDGES
GENERAL INFORMATION
AND
GENERAL NOTES

VERMONT
DEPARTMENT
OF HIGHWAYS
STANDARD

SCB-DI-75