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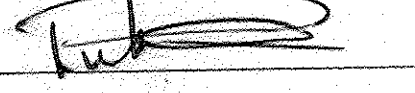
STANDARD SHEETS

E-100	01-02-2004
E-100A	01-02-2004
E-101	05-30-2003
E-102	06-30-2003
E-102A	05-01-2004
E-103	03-01-2004
E-106	03-01-2004
E-107	06-30-2003
E-107A	06-08-2009

RECORD PLANS

CONTRACTOR:	ATLAS PAINTING & SHEETING CORP. - AMHURST, NY
RESIDENT ENGINEER:	TIM POCKETTE
CONSTRUCTION BEGAN:	MAY 8, 2013
CONSTRUCTION COMPLETE:	NOVEMBER 14, 2014
RECORD PLANS BY:	TIM POCKETTE

I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

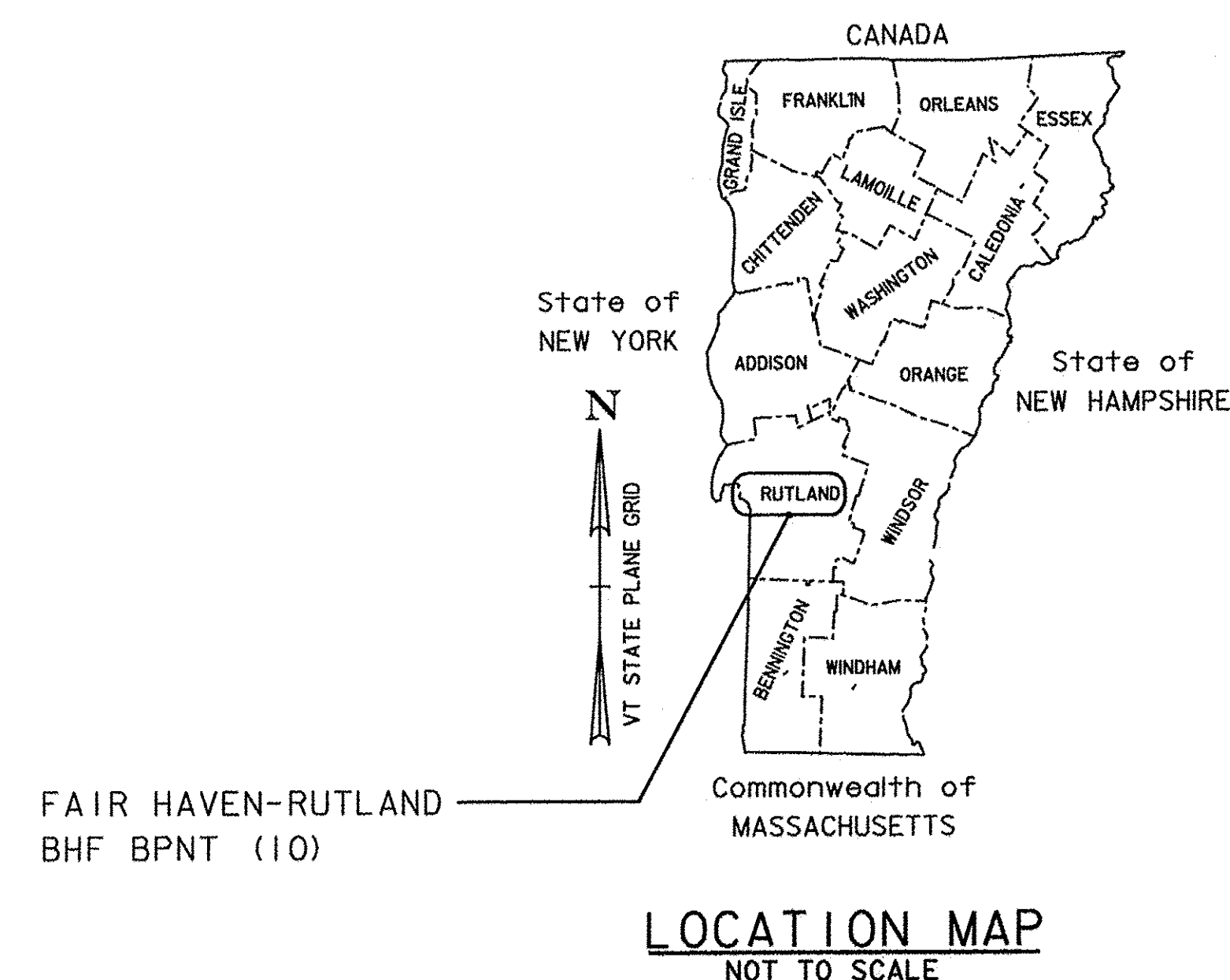
BY  RESIDENT ENGINEER
DATE 02-19-2015

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

STATE OF VERMONT AGENCY OF TRANSPORTATION

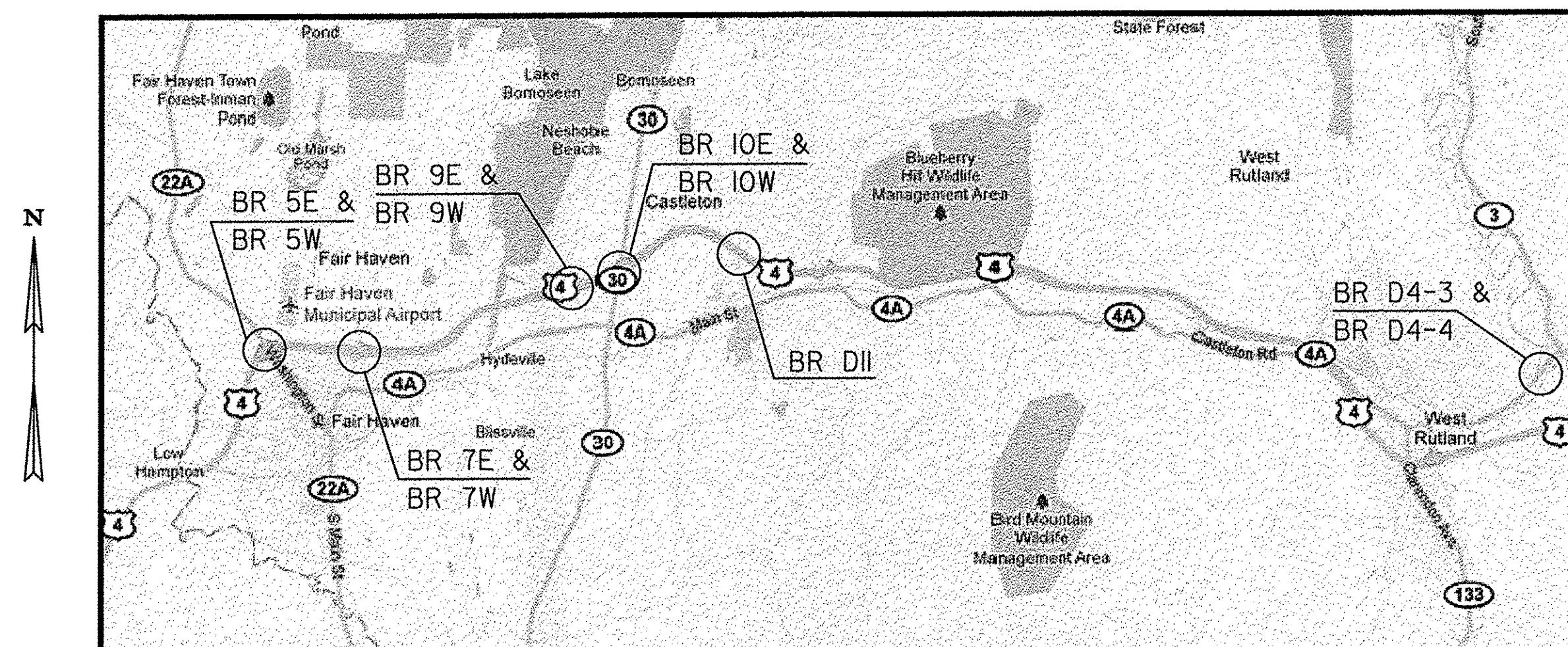


PROPOSED IMPROVEMENT BRIDGE PROJECT FAIR HAVEN - RUTLAND COUNTY OF RUTLAND ELEVEN BRIDGES ON OR OVER US ROUTE 4



PROJECT LOCATION: RUTLAND BR D4-3 (BUSINESS ROUTE 4 OVER CLARENDON RIVER) (MM 3.19)
RUTLAND BR D4-4 (BUSINESS ROUTE 4 OVER OTTER CREEK) (MM 6.28)
FAIR HAVEN BR 5E & 5W (US ROUTE 4 OVER VT ROUTE 22A) (MM 16.76)
FAIR HAVEN BR 7E & 7W (DUTTON AVE OVER US ROUTE 4) (MM 25.73)
CASTLETON BR 9E & 9W (DRAKE ROAD OVER US ROUTE 4) (MM 49.94)
CASTLETON BR 10E & 10W (US ROUTE 4 OVER VT ROUTE 30) (MM 54.49)
CASTLETON BR D11 (OLD NORTH ROAD OVER US ROUTE 4) (MM 68.96)

PROJECT DESCRIPTION: THIS PROJECT INVOLVES CLEANING, LEAD PAINT REMOVAL AND REPAINTING THE EXISTING STEEL SUPERSTRUCTURE MEMBERS AND MINOR ASSOCIATED WORK.

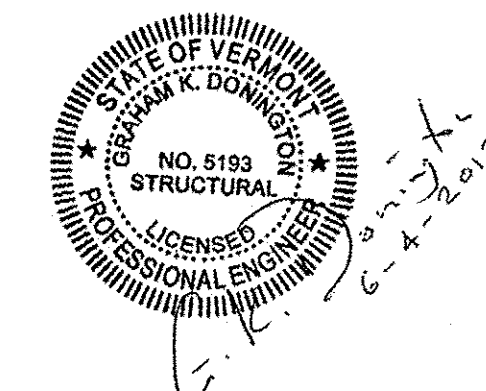


PROJECT LIMITS PLAN NOT TO SCALE

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED  DATE 6-20-12
PROJECT MANAGER : MARK SARGENT
PROJECT NAME : FAIR HAVEN - RUTLAND
PROJECT NUMBER : BHF BPNT (10)
SHEET 1 OF 28 SHEETS

PB PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101



CONVENTIONAL SYMBOLS

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	
CONTROL OF ACCESS	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	
TOP OF CUT	
TOE OF SLOPE	

SURVEYED BY : N/A
SURVEYED DATE : N/A
DATUM
VERTICAL N/A
HORIZONTAL N/A

PROJECT NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ITS LATEST REVISIONS AND THE CONTRACT SPECIAL PROVISIONS.
2. ALL WORK AND ANY ASSOCIATED ACTIVITY ON THIS PROJECT SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY LIMITS. THE RIGHT-OF-WAY FOR ALL HIGHWAYS OTHER THAN US ROUTE 4 SHALL BE ASSUMED TO BE A MINIMUM OF 3 RODS UNLESS SHOWN OTHERWISE ON REFERENCE PLANS.
3. VTRANS WILL REVIEW CONSTRUCTION STAGING AREAS FOR ADEQUACY AND EXISTING CONDITIONS. THESE STAGING AREAS SHALL BE RESTORED TO ORIGINAL CONDITION. EROSION CONTROL MEASURES SHALL BE INCORPORATED FOR ALL DISTURBED AREAS AND PAID FOR UNDER ITEMS 649.51 AND 653.20.
4. ALL COSTS ASSOCIATED WITH EXTENDING OR FILLING THE DRAIN TUBES SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL).
5. THE LENGTHS OF BEAMS OR GIRDERS TO BE GREASE COATED (AT THE ENDS) SHALL BE EQUAL TO THE END DEPTH OF THE MEMBER INCLUDING ALL EXPOSED SURFACE AREAS OF MEMBER AND ATTACHMENTS, SUCH AS CROSS MEMBERS, WITHIN THIS DISTANCE.
6. STAGING AND CONTAINMENT STRUCTURES SHALL NOT BE ANCHORED INTO PIERS. ANCHORING INTO THE ABUTMENTS IS ALLOWED AS APPROVED BY THE ENGINEER. CONTRACTOR SHALL PROVIDE A DETAILED PLAN FOR CLEANING AND PAINTING BEARING DEVICES IF ANCHOR CABLES ARE PLACED AROUND BEARING PLATES. PAYMENT WILL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 900.645 SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES.)
7. UTILITIES AND GALVANIZED METAL DOWNSPOUTS THAT ARE PRESENT ON THE STRUCTURES SHALL NOT BE BLASTED OR PAINTED. THESE UTILITIES MUST BE PROTECTED.
8. CONTRACTOR SHALL VERIFY THE CAPACITY, THROUGH LOAD CALCULATIONS, OF THE EXISTING BRIDGE IF THE VACUUM RECYCLER UNIT TRUCK IS PLACED ON THE BRIDGE.
9. THE CONTRACTOR SHALL NOT IMPEDE THE TOWN CONTROLLED PORTION OF THE RIGHT OF WAY WITH EQUIPMENT OR ANY STAGING MATERIALS FOR STRUCTURES CARRYING TOWN HIGHWAYS OVER THE INTERSTATE.
10. WORK OUTSIDE THE SEASONAL LIMITATIONS WILL NOT BE ALLOWED UNLESS BY SPECIAL PERMISSION GRANTED BY THE PROJECT MANAGER. WORK OUTSIDE THE SEASONAL LIMITATION WILL ONLY BE ALLOWED FOR A SHORT PERIOD OF TIME IF GIVEN, TO FINALIZE TOUCHUPS OR OTHER REPAIRS. NO LONG TERM OUT OF SEASON WORK WILL BE ALLOWED OR CONSIDERED.

TRAFFIC CONTROL:

1. THE CONTRACTOR SHALL SUBMIT SITE SPECIFIC TRAFFIC CONTROL PLANS DEPICTING EACH PHASE OF THE PLANNED WORK FOR ANY WORK ON US ROUTE 4 AND OTHER ROADWAYS. THE DESIGN SHALL ENSURE STATE-REGULATED WIDE LOADS CAN BE ACCOMMODATED DURING THE LANE CLOSURES. PLANS SHALL BE SUBMITTED IN ACCORDANCE WITH SECTION 641 AND SUBSECTION 105.03 AND SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN AN APPROPRIATE DISCIPLINE IN THE STATE OF VERMONT.
2. THE CONTRACTOR SHALL OBTAIN THE MOST CURRENT TRAFFIC VOLUMES FOR US ROUTE 4 AND CROSS ROADS FOR USE IN THE SPECIFIC TRAFFIC CONTROL PLANS.

TOWN	ROUTE 4 BRIDGE No	US ROUTE 4 2011 AADT		CROSSROAD	CROSSROAD 2011 AADT SUM OF BOTH DIRECTIONS	BUSINESS ROUTE 4 2011 AADT
		EASTBOUND	WESTBOUND			
RUTLAND	BR D4-3	N/A	N/A	N/A	N/A	11100
RUTLAND	BR D4-4	N/A	N/A	N/A	N/A	11100
FAIR HAVEN	5E & 5W	2400	2300	VT ROUTE 22A	5700	N/A
FAIR HAVEN	7E & 7W	3400	3400	DUTTON AVE	1800	N/A
CASTLETON	9E & 9W	4300	4300	DRAKE ROAD	N/A	N/A
CASTLETON	10E & 10W	3500	3700	VT ROUTE 30	5100	N/A
CASTLETON	D 11	5900	5900	OLD NORTH ROAD	660	N/A

3. THE TRAFFIC CONTROL PLANS SHALL SHOW ALL RAMPS AND US ROUTE 4 ACCELERATION LANES AND DECELERATION LANES.
4. UNIFORMED TRAFFIC OFFICERS ARE REQUIRED FOR THE TRAFFIC CONTROL ON US ROUTE 4.
5. THE TRAFFIC CONTROL DEVICES SHOWN ON THESE PLANS ARE FOR ILLUSTRATIVE PURPOSES AND DO NOT RELIEVE THE CONTRACTOR FROM ADHERING TO ALL VTRANS TRAFFIC CONTROL STANDARDS, REQUIREMENTS AND SPECIFICATIONS. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE 2009 MUTCD AND ITS LATEST REVISIONS. WHERE CONFLICTS EXIST BETWEEN AOT STANDARDS AND MUTCD, THE MUTCD SHALL GOVERN.
6. UNLESS COVERED UNDER INDIVIDUAL PAY ITEMS, ALL COSTS FOR TEMPORARY TRAFFIC CONTROL DEVICES WILL BE CONSIDERED TO BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR TRAFFIC CONTROL, ITEM 641.10.

BRIDGE NOTES:

RUTLAND, BRIDGE D4-3 - BUSINESS ROUTE 4 OVER CLARENDON RIVER

1. REMOVE GREASE COATING ON ENDS OF STEEL BEAMS, END CROSS MEMBERS AND BEARINGS
2. CLEAN AND PAINT EXISTING STEEL
3. REPAIR AND CLEAN BRIDGE SCUPPERS (REFER TO SHEET 4)
4. REPLACE DRAIN ON ~~WEST END~~ ONLY (REFER TO SHEET 3) EAST END
5. UTILITIES LOCATED ON NORTH SIDE OF BRIDGE (REFER TO PROJECT NOTE 7 ON THIS SHEET)

RUTLAND, BRIDGE D4-4 - BUSINESS ROUTE 4 OVER OTTER CREEK

1. REMOVE GREASE COATING ON ENDS OF STEEL BEAMS, END CROSS MEMBERS AND BEARINGS
2. CLEAN AND PAINT EXISTING STEEL
3. REPAIR AND CLEAN BRIDGE SCUPPERS (REFER TO SHEET 4)
4. REMOVE DIAPER DRAIN AT CENTER PIER (DO NOT REPLACE)
5. UTILITIES LOCATED ON NORTH SIDE OF BRIDGE AND WATERLINE ON SOUTH SIDE OF BRIDGE (REFER TO PROJECT NOTE 7 ON THIS SHEET)

FAIR HAVEN, BRIDGES 5E & 5W - US ROUTE 4 OVER VT ROUTE 22A

1. ALL STEEL BEAMS, CROSS MEMBERS, AND BEARINGS ARE COVERED IN GREASE FOR THE TOTAL LENGTH OF THE BRIDGE. REMOVE GREASE FROM ALL SURFACES.
2. CLEAN AND PAINT EXISTING STEEL
3. REPLACE DRAIN ON EAST END OF BRIDGE (5E & 5W) (REFER TO SHEET 5)
4. EXTEND BRIDGE DRAIN WEEPERS AND ATTACH TO GIRDER FLANGES ON NORTH SIDE OF BRIDGE (REFER TO SHEET 3)

FAIR HAVEN, BRIDGES 7E & 7W - DUTTON AVE OVER US ROUTE 4

1. REMOVE GREASE COATING ON ENDS OF STEEL BEAMS, END CROSS MEMBERS AND BEARINGS
2. CLEAN AND PAINT EXISTING STEEL
3. EXTEND BRIDGE DRAIN WEEPERS AND ATTACH TO GIRDER FLANGES (REFER TO SHEET 3)
4. REPLACE DIAPER DRAIN ON NORTH ABUTMENT (7E & 7W) (REFER TO SHEET 5)
5. GALVANIZED METAL DOWNSPOUTS LOCATED ON BRIDGE (REFER TO PROJECT NOTE 7 ON THIS SHEET)

CASTLETON, BRIDGES 9E & 9W - DRAKE ROAD OVER US ROUTE 4

1. REMOVE GREASE COATING ON ENDS OF STEEL BEAMS, END CROSS MEMBERS AND BEARINGS
2. CLEAN AND PAINT EXISTING STEEL
3. EXTEND BRIDGE DRAIN WEEPERS AND ATTACH TO GIRDER FLANGES (REFER TO SHEET 3)

CASTLETON, BRIDGES 10E & 10W - US ROUTE 4 OVER VT ROUTE 30

1. REMOVE GREASE COATING ON ENDS OF STEEL BEAMS, END CROSS MEMBERS AND BEARINGS
2. CLEAN AND PAINT EXISTING STEEL
3. CLEAN METAL BRIDGE DRAINS
4. EXTEND BRIDGE DRAIN WEEPERS ("10 E" NORTH SIDE ALREADY EXTENDED) AND ATTACH ALL WEEPERS TO GIRDER FLANGES (REFER TO SHEET 3)

CASTLETON, BRIDGE D11 - OLD NORTH ROAD OVER US ROUTE 4

1. REMOVE GREASE COATING ON ENDS OF STEEL BEAMS, END CROSS MEMBERS AND BEARINGS
2. CLEAN AND PAINT EXISTING STEEL
3. CLEAN EXISTING METAL DRAINS (DO NOT COAT INSIDE OF DRAINS)
4. EXTEND BRIDGE DRAIN WEEPERS AND ATTACH TO GIRDER FLANGES (REFER TO SHEET 3)

TRAFFIC CONTROL CONTINUED:

7. THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) AND PRINT MEDIA SHALL BE IMPLEMENTED 2 WEEKS IN ADVANCE OF LANE CLOSURES AS DIRECTED BY THE ENGINEER.
8. RIGHT-OF-WAY FENCE MAY HAVE TO BE REMOVED AND RESET IN ACCORDANCE WITH SECTION 620 FOR EGRESS AND INGRESS. THIS WORK SHALL BE PAID UNDER ITEM 620.50.

PROJECT NOTES

PROJECT NAME: FAIR HAVEN - RUTLAND

PROJECT NUMBER: BHF BPNT (10)

FILE NAME: I0bl82/str/zl0bl82det.dgn

PROJECT LEADER: G.K.DONINGTON

DESIGNED BY: A.STOCKIN

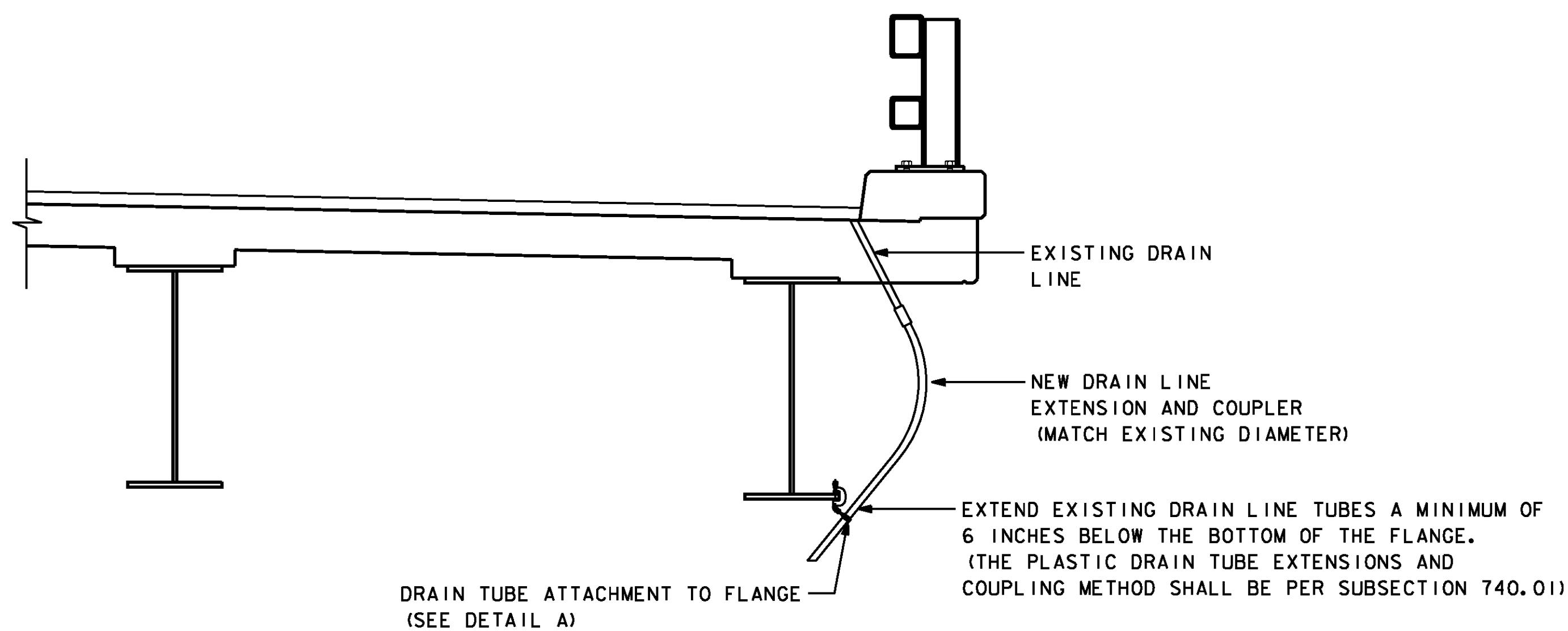
PLOT DATE: 6/19/2012

DRAWN BY: W.GERHOLD

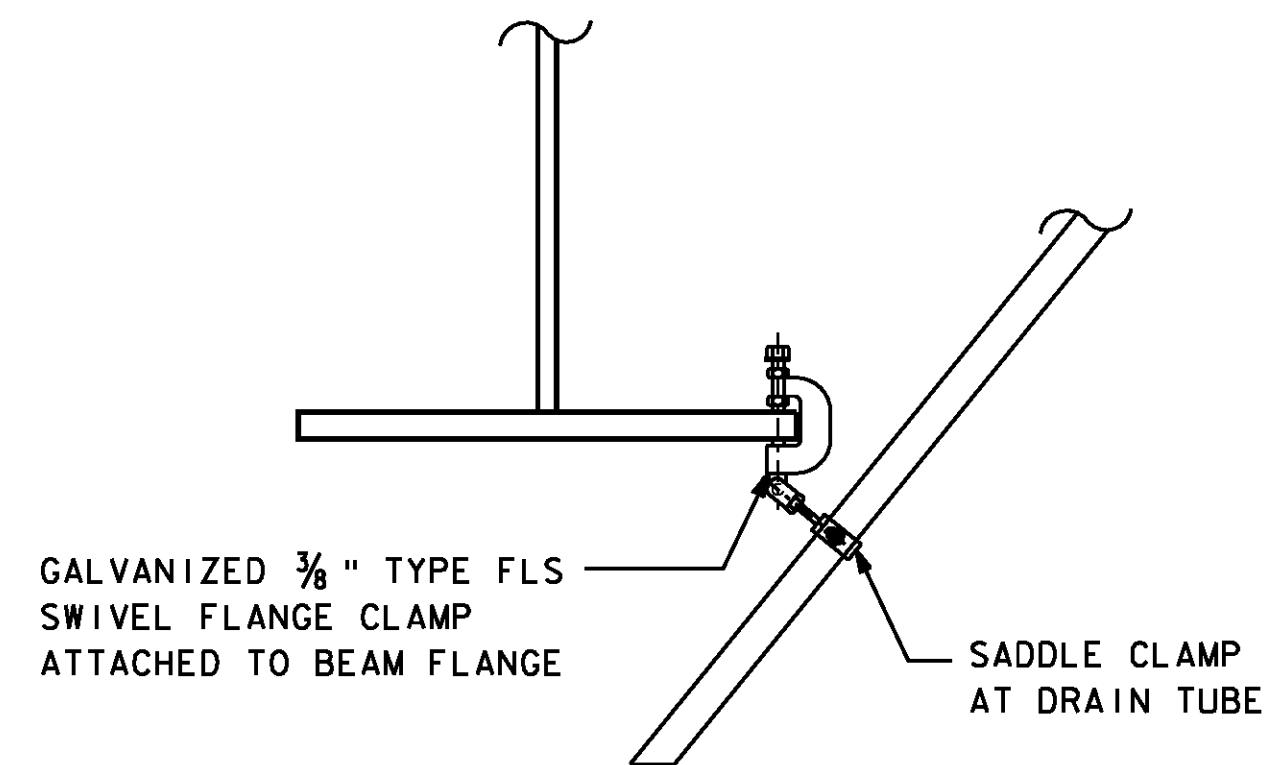
CHECKED BY: D.SARGENT

SHEET 2 OF 28





DRAIN TUBE EXTENSION DETAIL
NOT TO SCALE



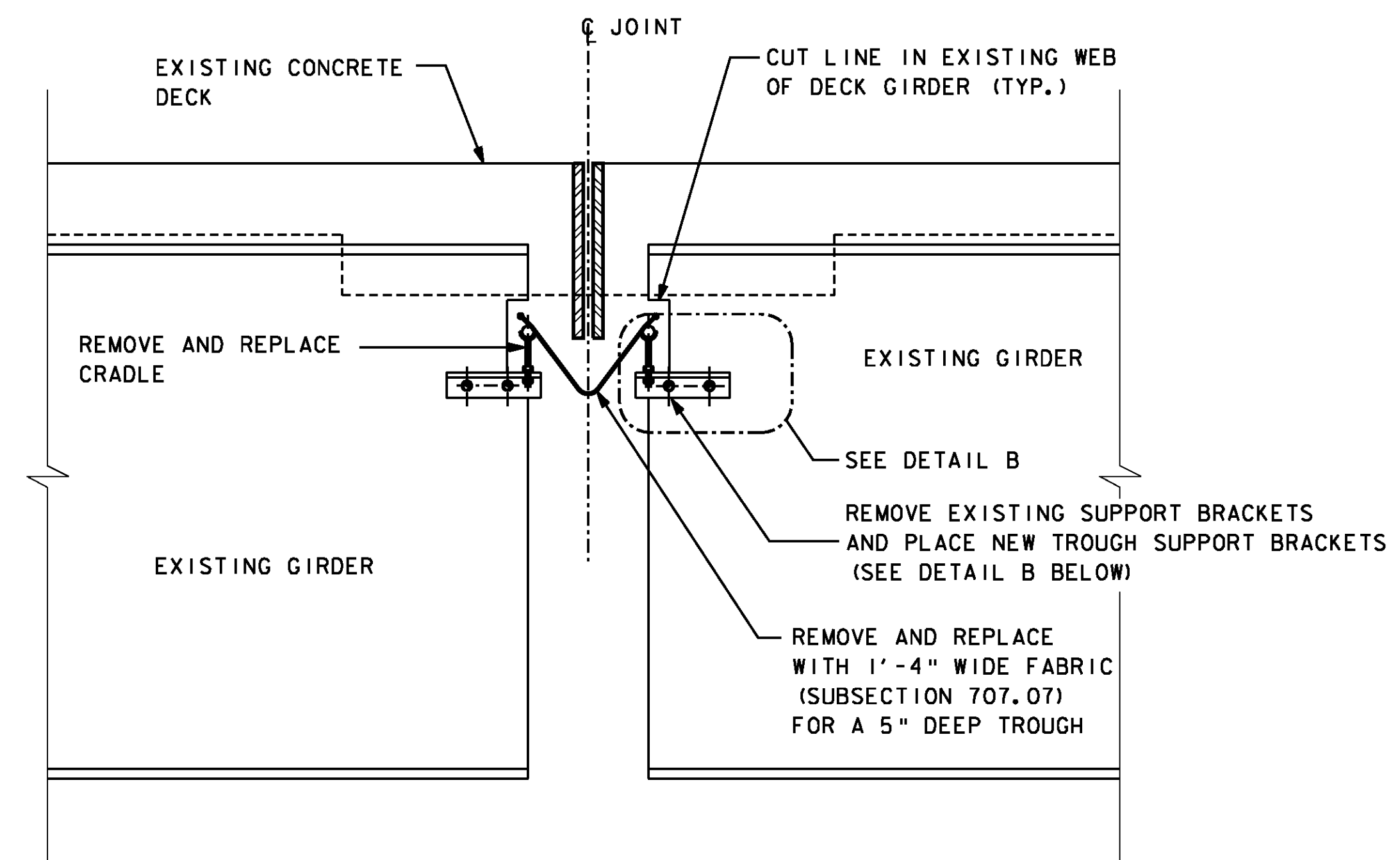
DETAIL A
NOT TO SCALE

NOTES:

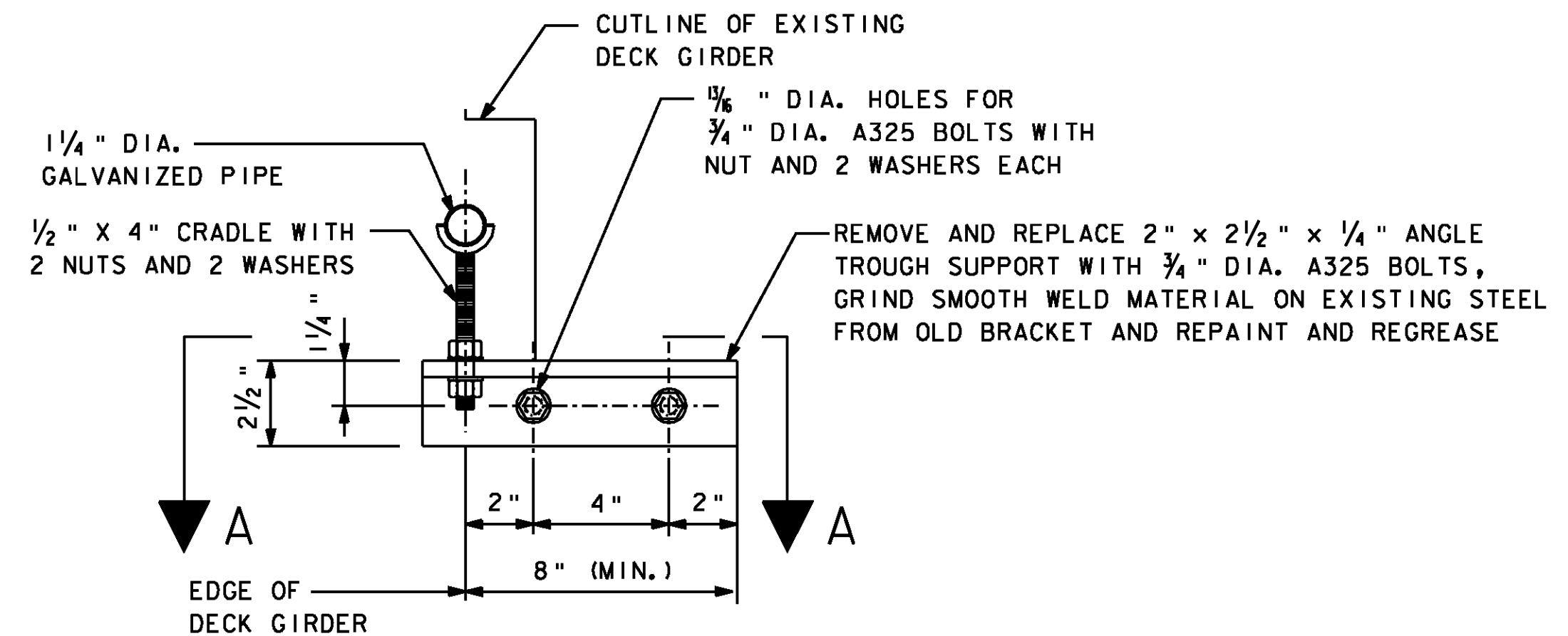
1. IF EXISTING DRAIN TUBE IS TOO SHORT TO PROVIDE ADEQUATE CONNECTION, THE CONTRACTOR SHALL COMPLETELY FILL THE TUBE WITH POLYURETHANE SEALANT CONFORMING TO SUBSECTION 707.05. TUBES TO BE FILLED WITH POLYURETHANE SEALANT SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEING FILLED.

DIAPER DRAIN REPAIR NOTES:

1. TROUGH SUPPORT BRACKETS SHALL NOT BE WELDED TO GIRDER WEB.
2. STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM-A500 OR ASTM-A501 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123 AFTER FABRICATION. ALL PLATES, BARS AND ANGLES SHALL CONFORM TO ASTM A-36 AND SHALL ALSO BE GALVANIZED IN ACCORDANCE WITH ASTM-123 AFTER FABRICATION. CRADLE ASSEMBLIES SHALL CONSIST OF THREADED RODS (ASTM A568, CLASS 4.6), NUTS (ASTM A563), AND WASHERS (ASTM F486), FINISH TO BE HOT-DIP ZINC COATING (ASTM A153).
3. THE $\frac{1}{4}$ " (NOMINAL DIAMETER) GALVANIZED STEEL PIPE, PREFORMED FABRIC MATERIAL, CRADLES AND RELATED HARDWARE, TAP SCREWS, CUTTING OF THE EXISTING STRUCTURAL STEEL AS REQUIRED, REMOVAL AND DISPOSAL OF THE EXISTING DRAIN TROUGH SYSTEM AND FLUSHING OF ALL PIER CAPS SHALL BE PAID UNDER ITEM 506.75, STRUCTURAL STEEL.
4. THESE DETAILS ARE ILLUSTRATED AS AN EXAMPLE. CONTRACTOR TO SUBMIT FABRICATION DRAWINGS FOR APPROVAL.

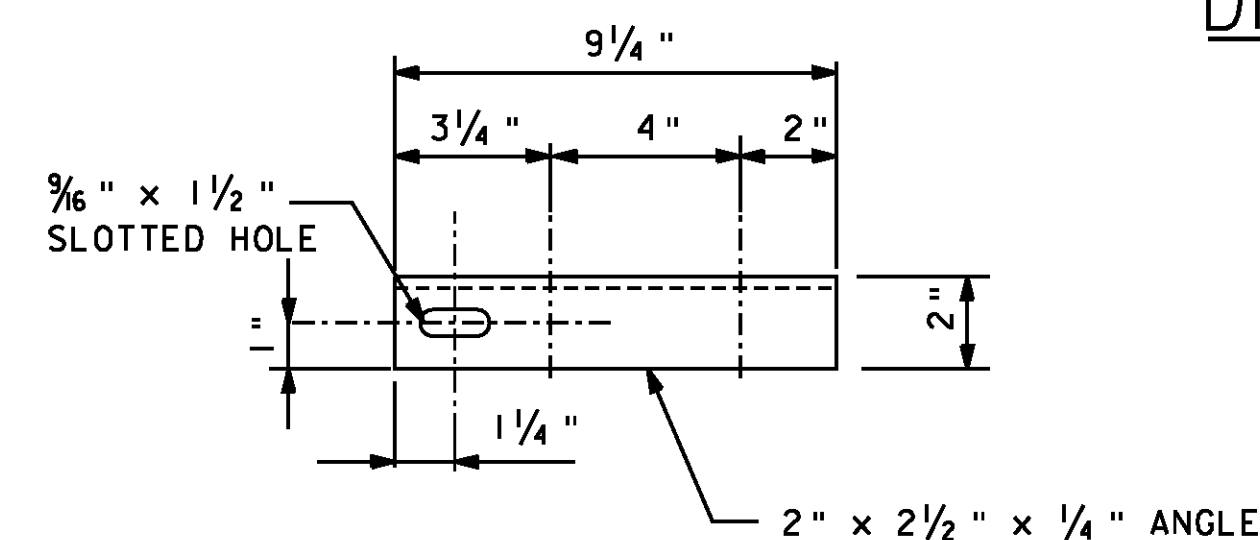


TYPICAL SECTION AT EXISTING DIAPER DRAIN
SCALE: $1" = 1'-0"$



DETAIL B
 $3" = 1'-0"$

DIAPER DRAIN REPAIR DETAILS



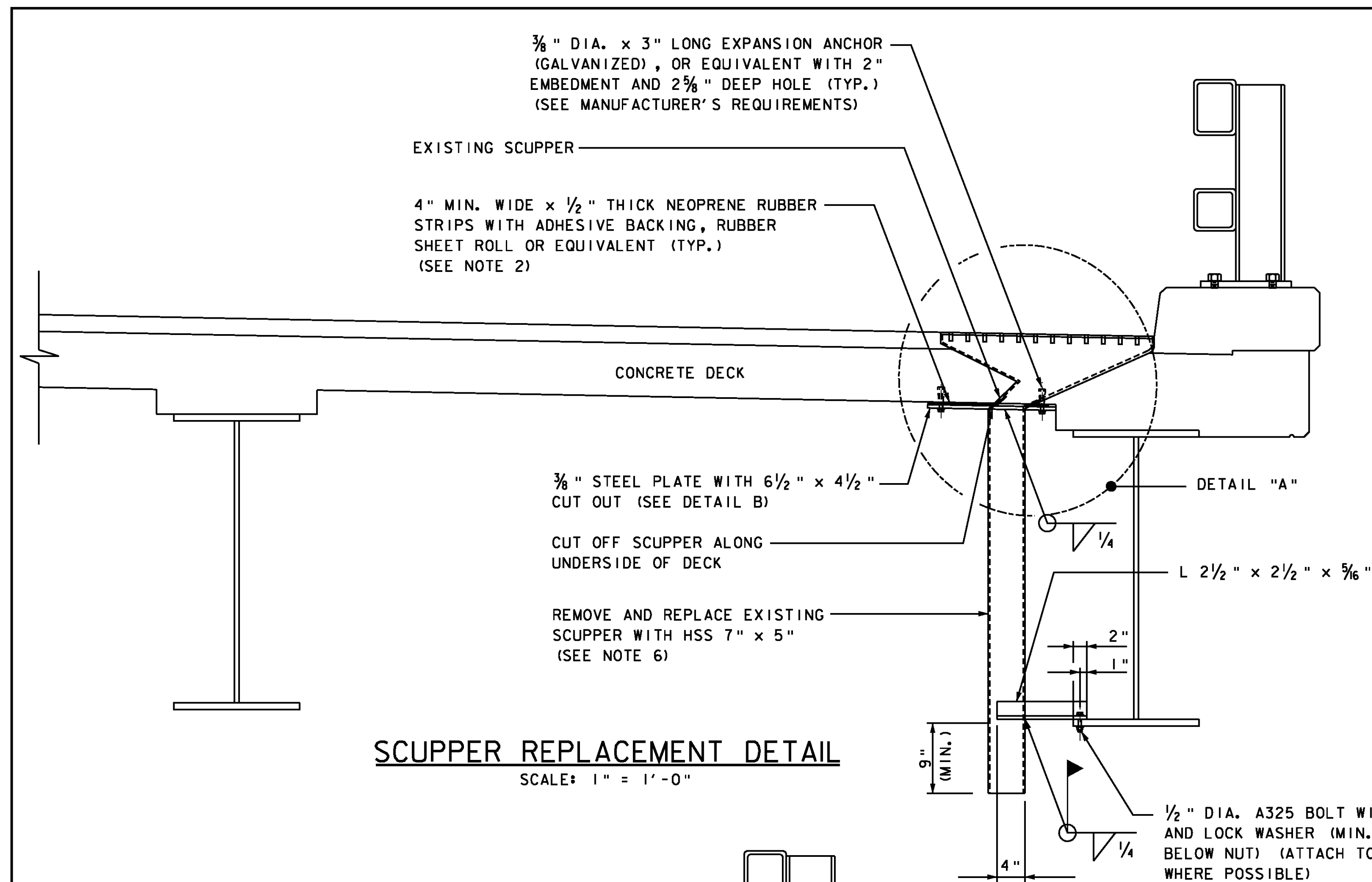
TROUGH SUPPORT BRACKET DETAIL A
PLAN VIEW
 $3" = 1'-0"$

**PROJECT STANDARD
DETAILS SHEET (1)**

PROJECT NAME: FAIR HAVEN - RUTLAND
PROJECT NUMBER: BHF BPNT (10)

FILE NAME: i0bi82/str/z10bi82det.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: A.STOCKIN
det_2.dgn

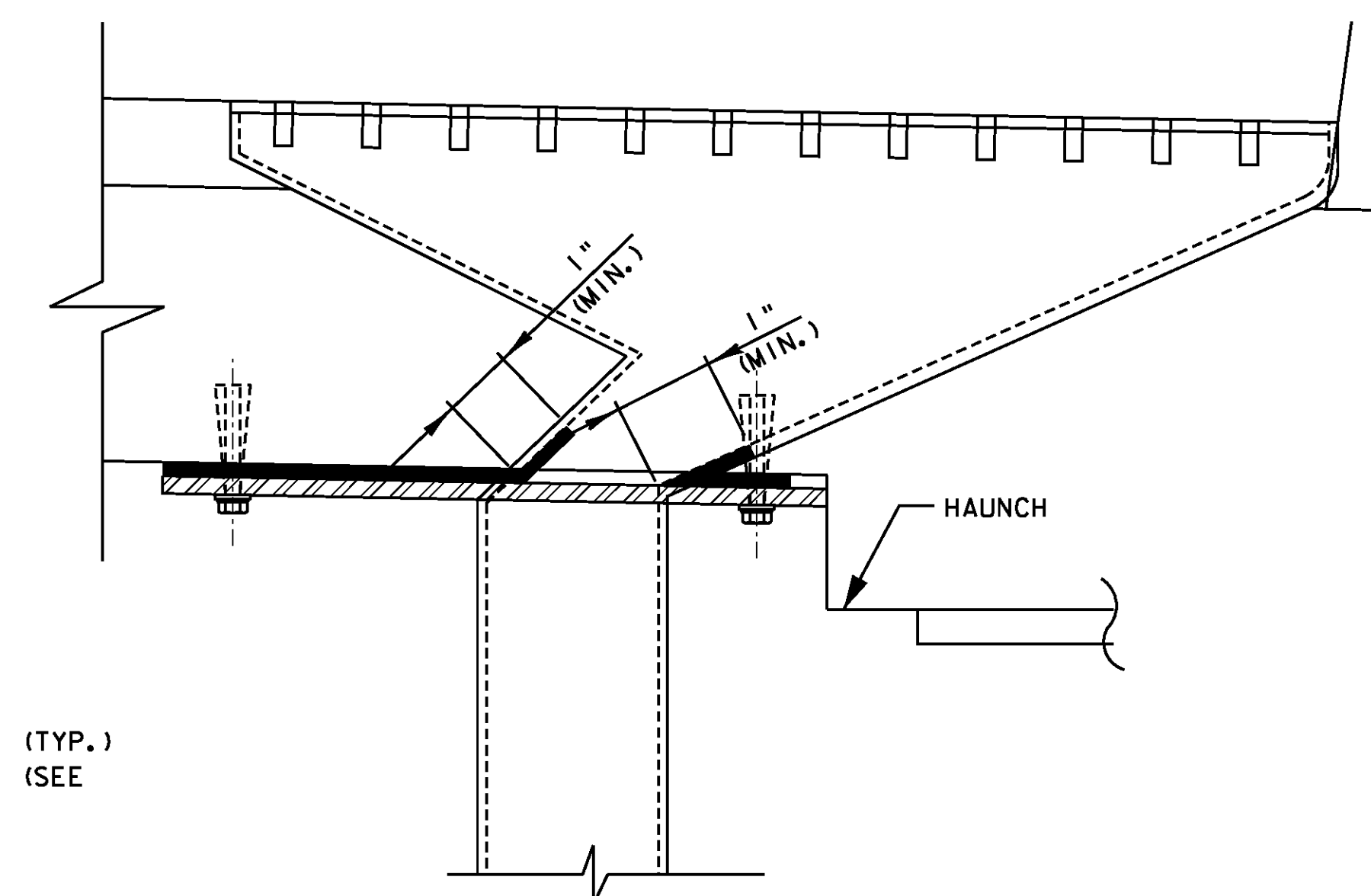
PLOT DATE: 24-JAN-2012
DRAWN BY: W.GERHOLD
CHECKED BY: D.SARGENT
SHEET 3 OF 28



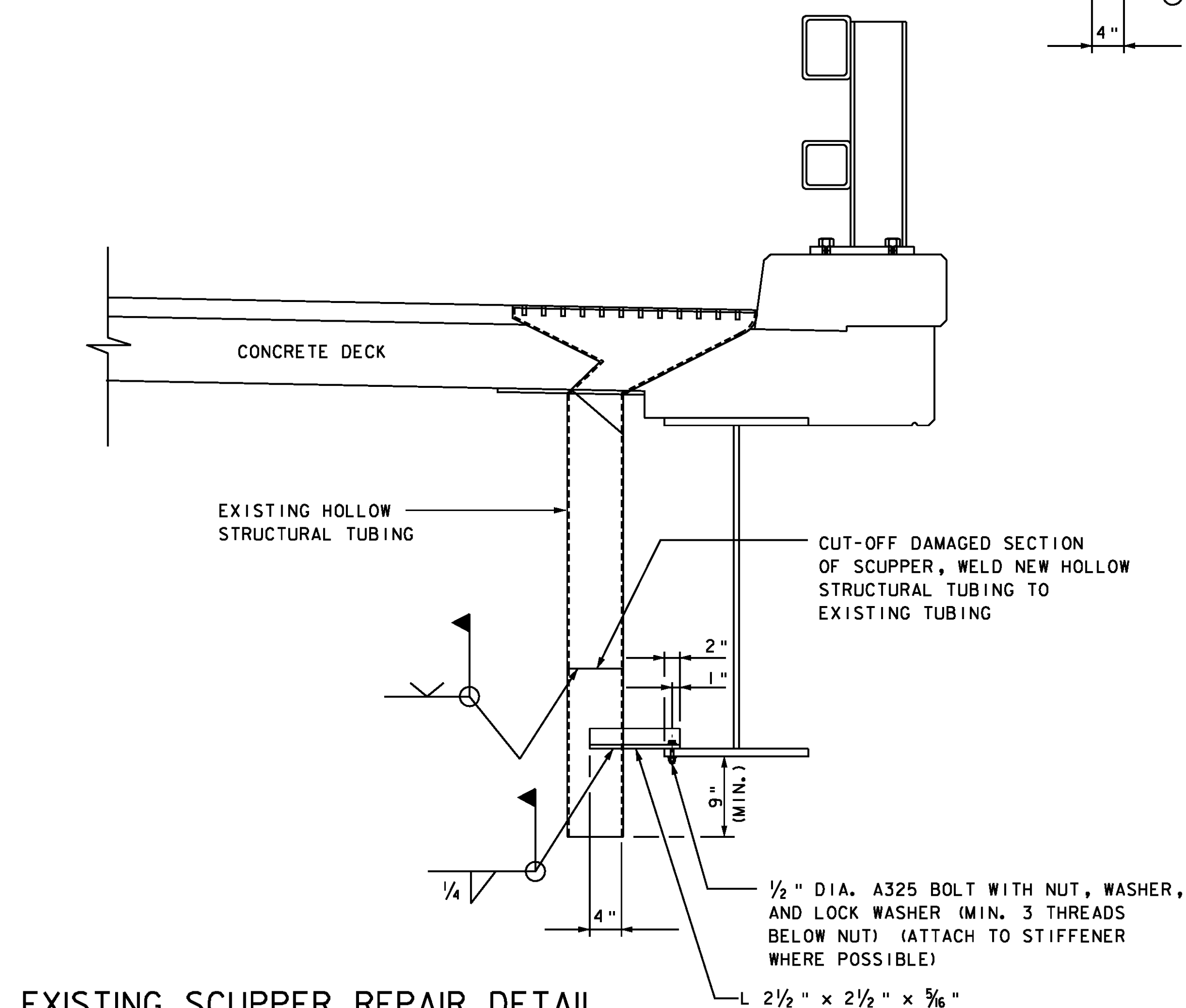
SCUPPER REPLACEMENT DETAIL
SCALE: 1" = 1'-0"

NOTES:

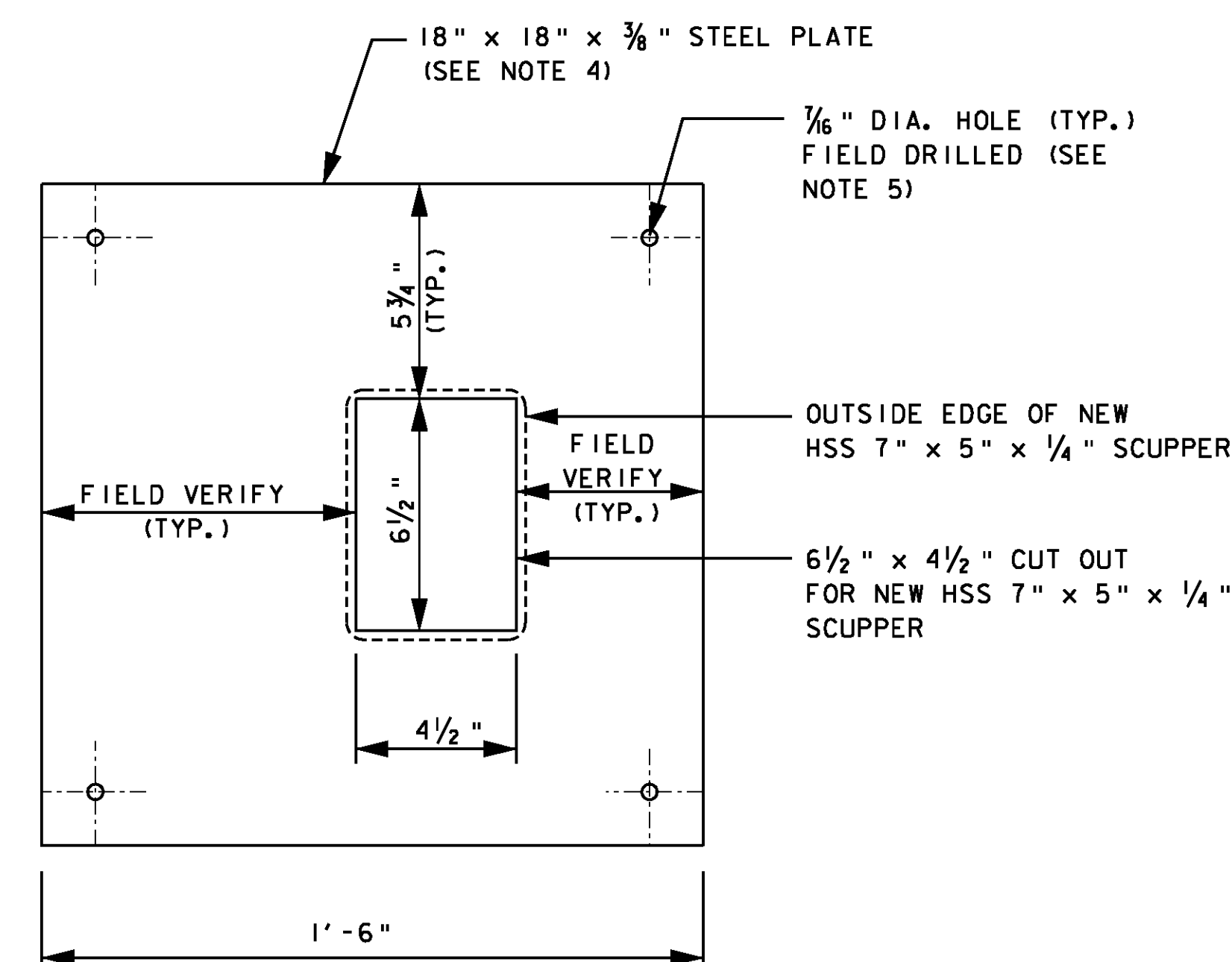
1. ALL THE DETERIORATED SCUPPERS WITH SIGNIFICANT LOSS OF SECTION SHALL BE CUT OFF ABOVE THE DETERIORATION AREA. IF THE DETERIORATION EXTENDS TO THE UNDERSIDE OF THE DECK, THE SCUPPER SHALL BE CUT OFF AND REPLACED. THE ENGINEER SHALL APPROVE THE EXTENT OF THE REPAIR FOR EACH DETERIORATED SCUPPER IDENTIFIED BY THE CONTRACTOR PRIOR TO BEING REPAIRED OR REPLACED.
2. ADHESIVE SIDE OF NEOPRENE SHALL BE PLACED ON THE UNDERSIDE OF CONCRETE DECK AND INTERIOR OF EXISTING SCUPPER AROUND PERIMETER OF DRAIN. NEOPRENE SHALL COVER ENTIRE SURFACE OF THE STEEL PLATE AND EXTEND A MINIMUM OF 1" UP INTO THE INTERIOR OF THE EXISTING SCUPPER DRAIN.
3. ALL EXISTING DIMENSIONS AND SCUPPER SIZES SHALL BE FIELD VERIFIED.
4. PLATE SHALL BE CUT IN THE FIELD TO ACCOMMODATE HAUNCH.
5. BOLT HOLES SHALL BE FIELD DRILLED AND SHALL HAVE A MINIMUM EDGE DISTANCE OF 1 1/2" EXCEPT WHERE NOTED OTHERWISE.
6. ALL NEW STEEL SHALL BE ZINC PRIMED AND PAINTED WITH NEP COAT SYSTEM.
7. ALL WELDING SHALL CONFORM WITH THE PROVISIONS OF SUBSECTION 506.10.
8. HOLLOW STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A-500 GRADE C.
9. STEEL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270, GRADE 50 (ASTM A709, GRADE 50).
10. HIGH STRENGTH BOLTS, NUTS AND CIRCULAR WASHERS SHALL CONFORM TO SUBSECTION 714.05 OF THE 2011 STANDARD SPECIFICATIONS.
11. ALL WORK TO BE PAID UNDER ITEM 506.75, STRUCTURAL STEEL.
12. THESE DETAILS ARE ILLUSTRATED AS AN EXAMPLE. CONTRACTOR TO SUBMIT FABRICATION DRAWINGS FOR APPROVAL.



DETAIL A
SCALE: 3" = 1'-0"



EXISTING SCUPPER REPAIR DETAIL
SCALE: 1" = 1'-0"



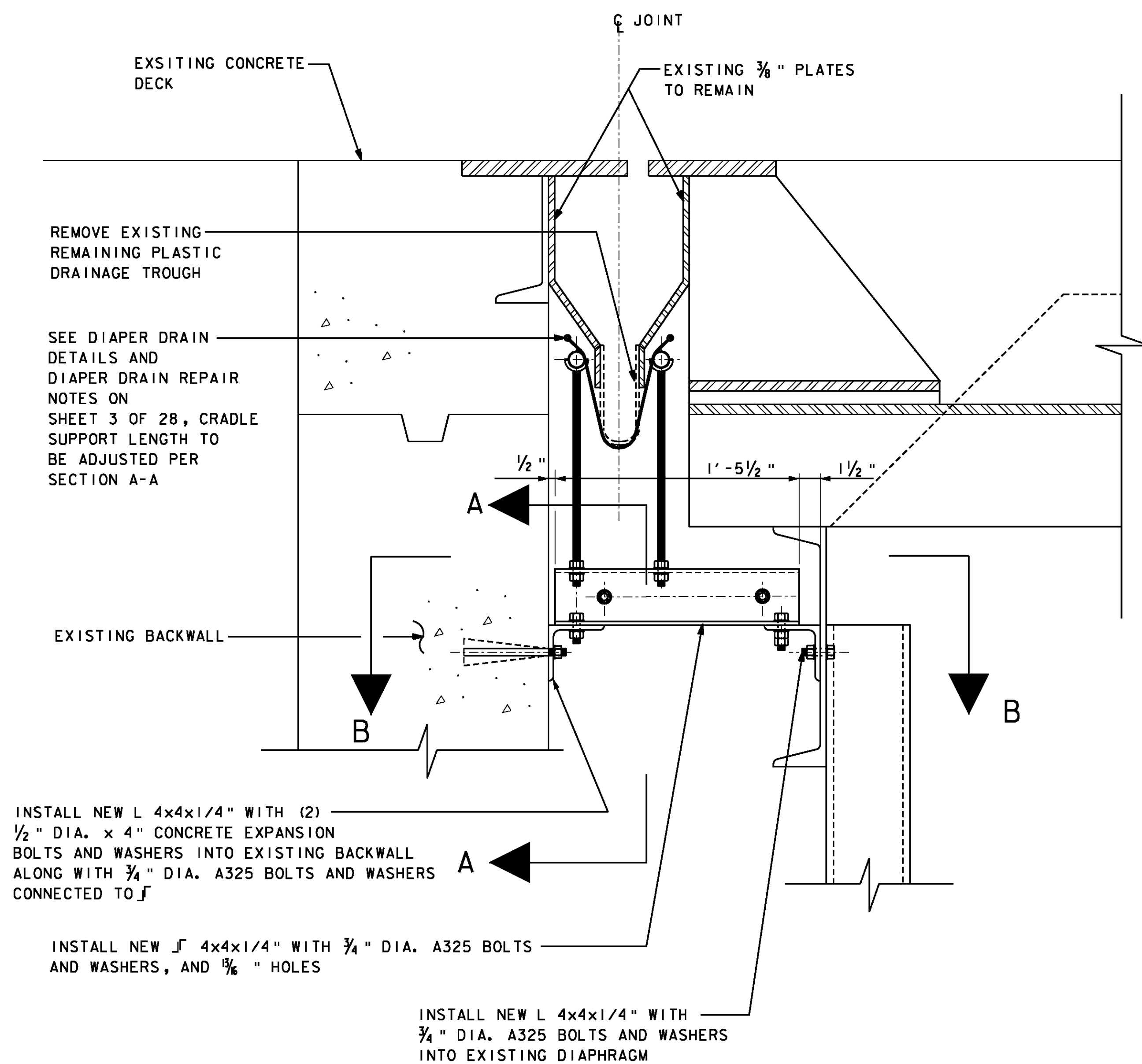
DETAIL B
SCALE: 3" = 1'-0"

PROJECT STANDARD DETAILS SHEET (2)

PROJECT NAME: FAIR HAVEN - RUTLAND
PROJECT NUMBER: BHF BPNT (10)

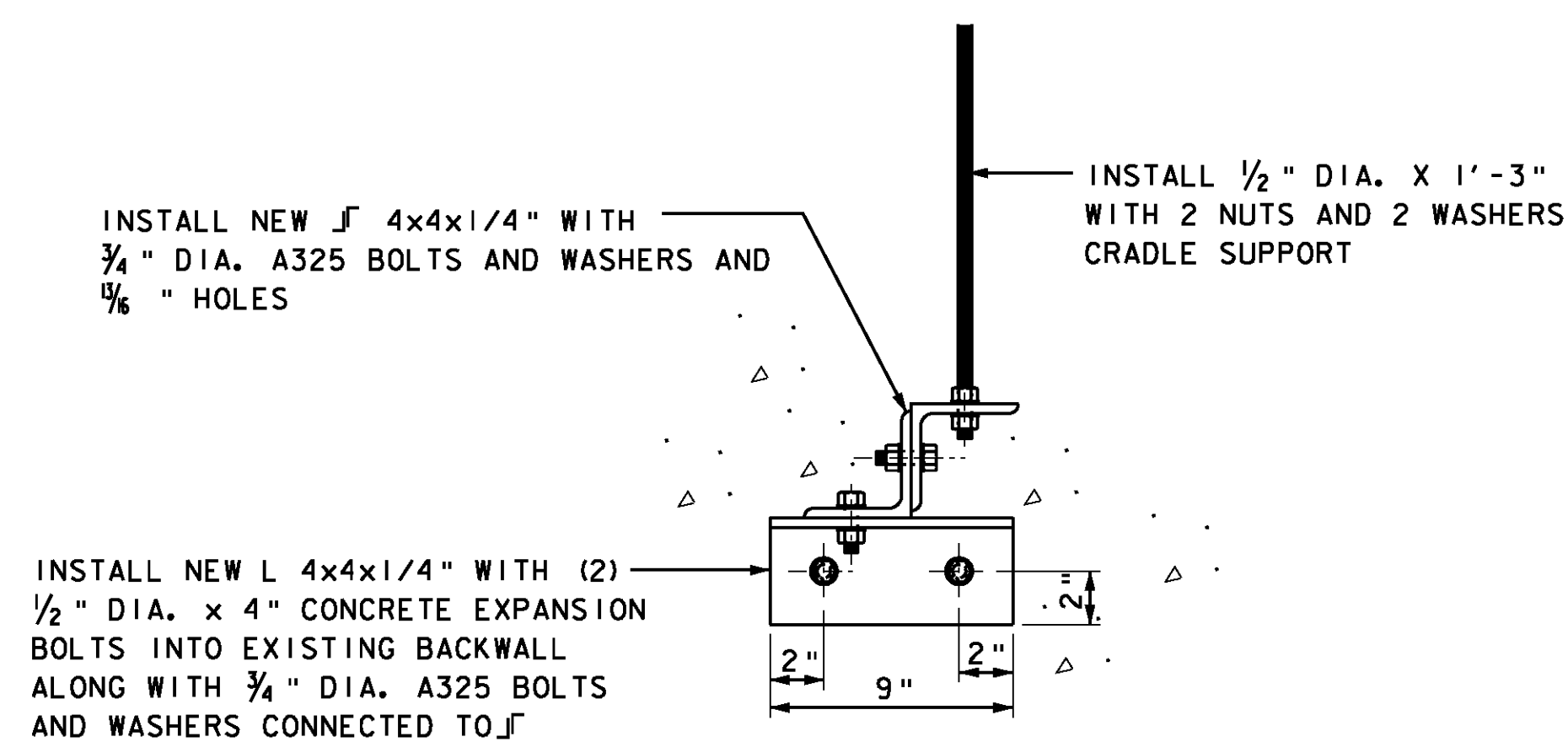
FILE NAME: 10b182/str/z10b182.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: A.STOCKIN
det_3.dgn

PLOT DATE: 24-JAN-2012
DRAWN BY: W.GERHOLD
CHECKED BY: D.SARGENT
SHEET 4 OF 28



DRAINAGE TROUGH REPLACEMENT DETAIL

(FOR BRIDGES 5E, 5W, 7E, AND 7W)
SCALE: 2" = 1'-0"



SECTION A-A

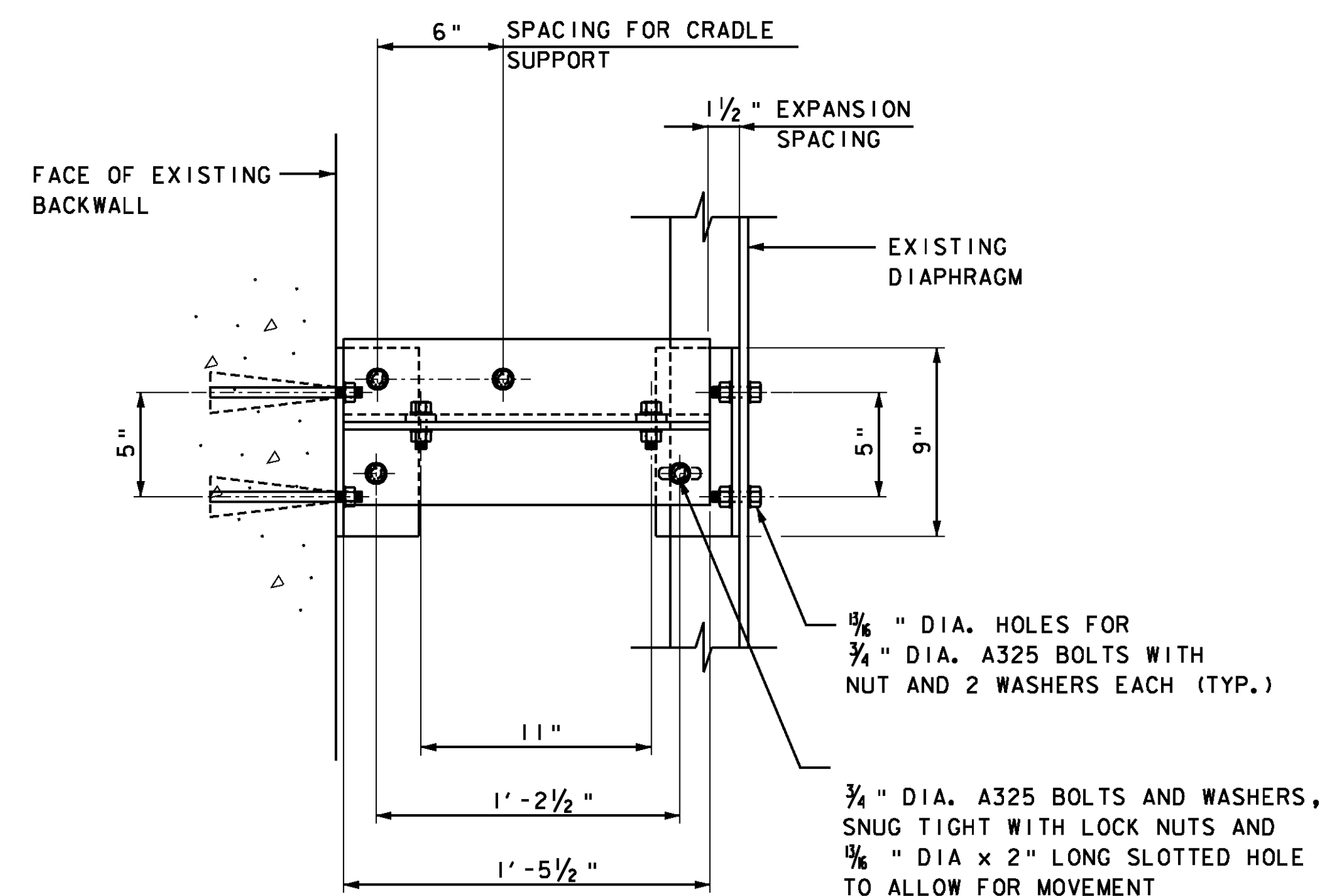
SCALE: 2" = 1'-0"

NOTES:

1. ALL EXISTING DIMENSIONS SHALL BE FIELD VERIFIED.
2. BOLT HOLES SHALL HAVE A MINIMUM EDGE DISTANCE OF 1 1/2".

DIAPER DRAIN NOTES

1. TROUGH SUPPORT BRACKETS SHALL NOT BE WELDED TO GIRDER WEB.
2. STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM-A500 OR ASTM-A501 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123 AFTER FABRICATION. ALL PLATES, BARS AND ANGLES SHALL CONFORM TO ASTM A-36 AND SHALL ALSO BE GALVANIZED IN ACCORDANCE WITH ASTM-123 AFTER FABRICATION. CRADLE ASSEMBLIES SHALL CONSIST OF THREADED RODS (ASTM A568, CLASS 4.6), NUTS (ASTM A563), AND WASHERS (ASTM F486), FINISH TO BE HOT-DIP ZINC COATING (ASTM A153).
3. THE 1 1/4" (NOMINAL DIAMETER) GALVANIZED STEEL PIPE, PREFORMED FABRIC MATERIAL, CRADLES AND RELATED HARDWARE, TAP SCREWS, CUTTING OF THE EXISTING STRUCTURAL STEEL AS REQUIRED, REMOVAL AND DISPOSAL OF THE EXISTING DRAIN TROUGH SYSTEM AND FLUSHING OF ALL PIER CAPS SHALL BE PAID UNDER ITEM 506.75, STRUCTURAL STEEL.
4. THESE DETAILS ARE ILLUSTRATED AS AN EXAMPLE. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL.



SECTION B-B

SCALE: 2" = 1'-0"

PROJECT STANDARD DETAILS SHEET (3)

PROJECT NAME: FAIR HAVEN - RUTLAND
PROJECT NUMBER: BHF BPNT (10)

FILE NAME: i0bi82/str/z10bi82det.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: A.STOCKIN
det_4.dgn

PLOT DATE: 24-JAN-2012
DRAWN BY: W.GERHOLD
CHECKED BY: D.SARGENT
SHEET 5 OF 28

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

STATE OF VERMONT AGENCY OF TRANSPORTATION											QUANTITY SHEET 1									
SUMMARY OF ESTIMATED QUANTITIES											TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
ROADWAY	EROSION CONTROL	BRIDGE NO. D4-4	BRIDGE NO. D4-3	BRIDGE NO. D11	BRIDGE NO. 10E	BRIDGE NO. 9E	BRIDGE NO. 7E	BRIDGE NO. 5E	FULL C.E. ITEMS		GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS	
		1	1								1		LS	STRUCTURAL STEEL (BUSINESS RTE 4 - BRIDGE NO. D4-3)	506.75					
											1		LS	STRUCTURAL STEEL (BUSINESS RTE 4 - BRIDGE NO. D4-4)	506.75					
							1				1		LS	STRUCTURAL STEEL (DUTTON AVE OVER US RTE 4 - BRIDGE NO. 7E)	506.75					
								1			1		LS	STRUCTURAL STEEL (US RTE 4 - BRIDGE NO. 5E)	506.75					
				120	120	120	120	120			600		HR	TRUCK-MOUNTED ATTENUATOR	606.45					
		100	100	100	100	100	100	100			700		LF	REMOVING AND RESETTNG FENCE	620.50					
		650	650	1170	700	1170	1170	450			5960		LF	TEMPORARY TRAFFIC BARRIER	621.90					
		300	300	300	300	300	300	300			2100		HR	UNIFORMED TRAFFIC OFFICERS	630.10					
		300	300	300	300	300	300	300			2100		HR	FLAGGERS	630.15					
									1		1		LS	FIELD OFFICE, ENGINEERS	631.10					
									1		1		LS	TESTING EQUIPMENT, PROTECTIVE COATNGS	631.18					
									3000		3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26					
									540		540		HR	EMPLOYEE TRANEESHIP	634.10					
1											1		LS	MOBILIZATION/DEMObILIZATION	635.11					
			1								1		LS	TRAFFIC CONTROL (BUSINESS RTE 4 - BRIDGE NO. D4-3)	641.10					
		1									1		LS	TRAFFIC CONTROL (BUSINESS RTE 4 - BRIDGE NO. D4-4)	641.10					
						1					1		LS	TRAFFIC CONTROL (DRAKE ROAD OVER US RTE 4 - BRIDGE NO. 9E)	641.10					
							1				1		LS	TRAFFIC CONTROL (DUTTON AVE OVER US RTE 4 - BRIDGE NO. 7E)	641.10					
				1							1		LS	TRAFFIC CONTROL (OLD NORTH ROAD OVER US RTE 4 - BRIDGE NO. D11)	641.10					
					1						1		LS	TRAFFIC CONTROL (US RTE 4 - BRIDGE NO. 10E)	641.10					
								1			1		LS	TRAFFIC CONTROL (US RTE 4 - BRIDGE NO. 5E)	641.10					
				30		30	30				90		DAY	PORTABLE CHANGEABLE MESSAGE SIGN RENTAL	641.17					
		1300	1300		1400			900			4900		LF	4 INCH WHITE LINE	646.20					
				6180		3090	3090				12360		LF	6 INCH WHITE LINE	646.214					
		1300	1300		2800			1800			7200		LF	TEMPORARY 4 INCH WHITE LNE, TYPE II TAPE	646.601					
				6180		3090	3090				12360		LF	TEMPORARY 6 INCH WHITE LNE, TYPE II TAPE	646.621					
				100		100	100				300		SF	PAVEMENT MARKING MASK	646.86					
	1100										1100		SY	GEOTEXTILE FOR SILT FENCE	649.51					
	2200										2200		SY	TEMPORARY EROSION MATTING	653.20					
			1								1		LS	SPECIAL PROVISION (CONTAMNMENT AND DISPOSAL OF LEAD PANT CLEANNG RESDUES) (BUS4-BR. NO. D4-3)	900.645					
		1									1		LS	SPECIAL PROVISION (CONTAMNMENT AND DISPOSAL OF LEAD PANT CLEANNG RESDUES) (BUS4-BR. NO. D4-4)	900.645					
					1						1		LS	SPECIAL PROVISION (CONTAMNMENT AND DISPOSAL OF LEAD PANT CLEANNG RESDUES) (US4-BR. NO. 10E)	900.645					
								1			1		LS	SPECIAL PROVISION (CONTAMNMENT AND DISPOSAL OF LEAD PANT CLEANNG RESDUES) (US4-BR. NO. 5E)	900.645					
							1				1		LS	SPECIAL PROVISION (CONTAMNMENT AND DISPOSAL OF LEAD PANT CLEANNG RESDUES) (US4-BR. NO. 7E)	900.645					
						1					1		LS	SPECIAL PROVISION (CONTAMNMENT AND DISPOSAL OF LEAD PANT CLEANNG RESDUES) (US4-BR. NO. 9E)	900.645					
				1							1		LS	SPECIAL PROVISION (CONTAMNMENT AND DISPOSAL OF LEAD PANT CLEANNG RESDUES) (US4-BR. NO. D11)	900.645					

QUANTITY SHEET (1)

PROJECT NAME: FAIR HAVEN - RUTLAND
PROJECT NUMBER: BHF BPNT (1Q)

FILE NAME: i0b182/st1r/z0b182qs.dgn
PROJECT LEADER: G.K.DONNIGTON
DESIGNED BY: C.CARNEY
qs.dgn

PLOT DATE: 4-MAY-2012
DRAWN BY: W.GERHOLD
CHECKED BY: R.BENJAMIN
SHEET 6 OF 28



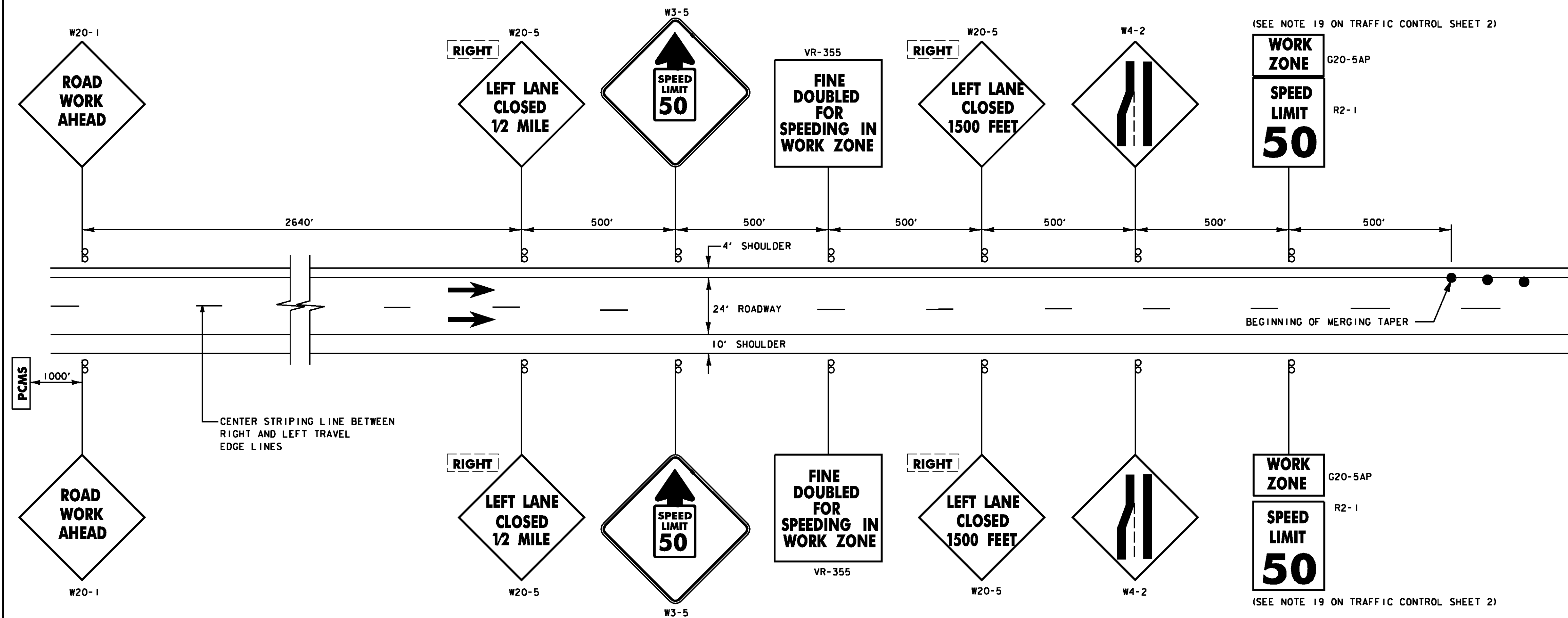
QUANTITY SHEET (2)

PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101

QUANTITY SHEET (3)

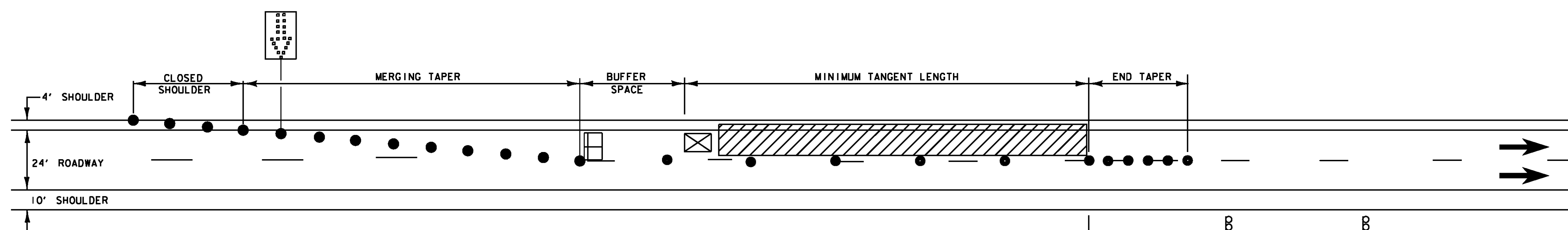


PARSONS BRINCKERHOFF
650 ELM STREET
MANCHESTER, NH 03101



CONSTRUCTION APPROACH SIGNING ON US ROUTE 4, LEFT LANE CLOSED

NOT TO SCALE



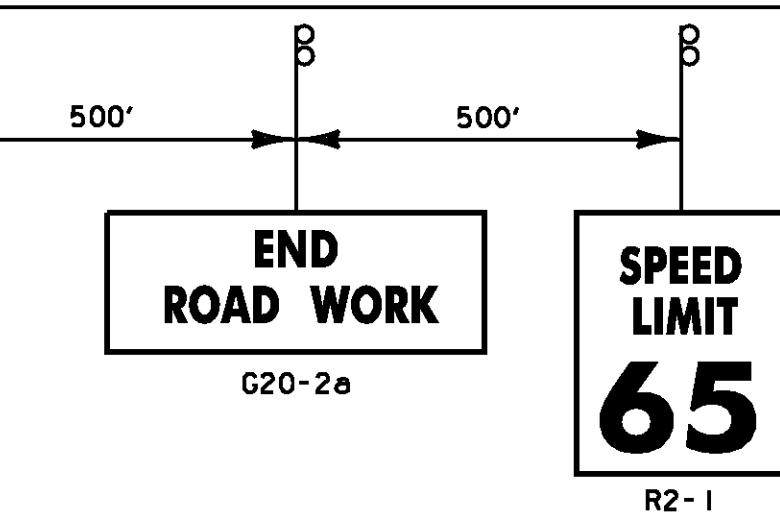
LEGEND

- FLOW OF TRAFFIC
- WORK AREA
- REFLECTORIZED PLASTIC DRUM
- TYPE III BARRICADE
- TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)
- FLASHING ARROW PANEL
- PORTABLE CHANGEABLE MESSAGE SIGN

TRAFFIC CONTROL ON US ROUTE 4, LEFT LANE CLOSED

NOT TO SCALE

POSTED SPEED LIMIT	TAPER LENGTHS (FT)		TANGENT W= 12 FT (L/2)	MINIMUM BUFFER SPACE LENGTH (FT)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W= 10 FT	MERGING 1/2 FT LANE			TAPER	TANGENT
40	90	320	160	305	40	80
45	150	540	270	360	45	90
50	170	600	300	425	50	100
55	185	660	330	495	55	110
60	200	720	360	570	60	120
65	215	780	390	645	65	130



TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 $L = WS$ FOR POSTED SPEEDS OF 45 MPH OR GREATER
 $L = WS^2/60$ FOR POSTED SPEEDS OF 40 MPH OR LESS

L = MINIMUM LENGTH OF TAPER
 W = WIDTH OF OFFSET IN FEET
 S = POSTED SPEED IN MPH



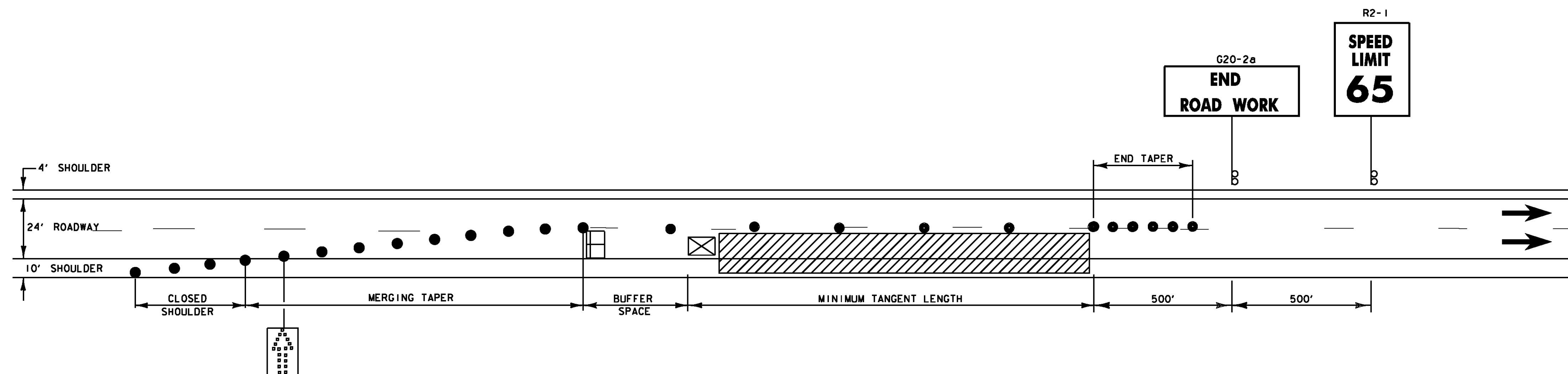
TRAFFIC CONTROL NOTES - US ROUTE 4:

- THE TRAFFIC CONTROL PLAN SHOWN IS A SCHEMATIC ONLY AND SHOULD BE USED AS A REFERENCE. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR BRIDGES 7E & W, 9E & W AND D11 TO VTRANS FOR APPROVAL. PAYMENT FOR PREPARING AND SUBMITTING THE TRAFFIC CONTROL PLAN, AND MAKING NECESSARY REVISIONS TO THE PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10 - TRAFFIC CONTROL. THE CONTRACTOR SHALL ALLOW TWO WEEKS FOR APPROVAL OF THE TRAFFIC CONTROL PLAN. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR HAS AN APPROVED TRAFFIC CONTROL PLAN.
- THE EXISTING SPEED LIMIT FOR US ROUTE 4 IS 65 MPH. THE SPEED LIMIT WILL BE REDUCED TO 50 MPH IN THE WORK ZONE FOR THIS PROJECT. ANY EXISTING SPEED LIMIT SIGNS WITHIN THE SPEED REDUCTION AREA SHALL BE COMPLETELY COVERED.
- CONSTRUCTION SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
- ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS" BOOK (SHS) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
- ORANGE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE REQUIREMENTS OF SECTION 750 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR TYPE VII, VIII OR IX, UNLESS OTHERWISE NOTED.
- ROLL UP SIGNS SHALL HAVE A RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE REQUIREMENTS OF SECTION 750 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR TYPE VI.
- SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES AND DURING PERIODS OF INACTIVITY. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMAN LIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
- FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE A LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE THE GUARDRAIL.
- PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A ONE FOOT MINIMUM HEIGHT ABOVE TRAVELED WAY. WHEN PLACED BEHIND THE GUARD RAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. PAYMENT FOR REMOVAL IS INCIDENTAL TO THE APPROPRIATE CONTRACT ITEMS.
- WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
- THE CONTRACTOR SHALL HAVE SIGNS FOR CLOSURE OF LEFT AND RIGHT LANES INSTALLED BEFORE WORK COMMENCES.
- THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
- PLACE LAST CHANNELIZING DEVICE 100 FEET BEYOND THE ANTICIPATED WORK ZONE TERMINAL POINT EACH DAY AND START THE END TAPER. THE END TAPER SHALL BE CONSTRUCTED OF 5 ADDITIONAL RETROREFLECTIVE DRUMS SPACED AT 10 FEET ON CENTER.
- THE ARROW BOARD SHALL BE PLACED ON THE SHOULDER OF THE ROADWAY, OR, IF PRACTICAL, FURTHER FROM THE TRAVELED LANE AT THE END OF THE SHOULDER TAPER.
- THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE USED FOR US ROUTE 4 LANE CLOSURES AND AT THE DISCRETION OF THE ENGINEER FOR LANE CLOSURES ON OTHER ROADWAYS.
- TRAVEL LANE SHALL BE A MINIMUM OF 12 FEET WIDE ON US ROUTE 4.
- AT NO TIME WILL THE CONTRACTOR BE ALLOWED TO HAVE WORKERS' VEHICLES, CONSTRUCTION EQUIPMENT OR STOCKPILED MATERIALS WITHIN THE CLEAR ZONE OF US ROUTE 4 WITHOUT POSITIVE PROTECTION. POSITIVE PROTECTION SHALL BE AS DIRECTED BY THE ENGINEER.
THE CLEAR ZONE IS DEFINED AS FOLLOWS:
US ROUTE 4 - 34 FEET FROM THE TRAVELED WAY

NOTES CONTINUED ON TRAFFIC CONTROL SHEET 2.

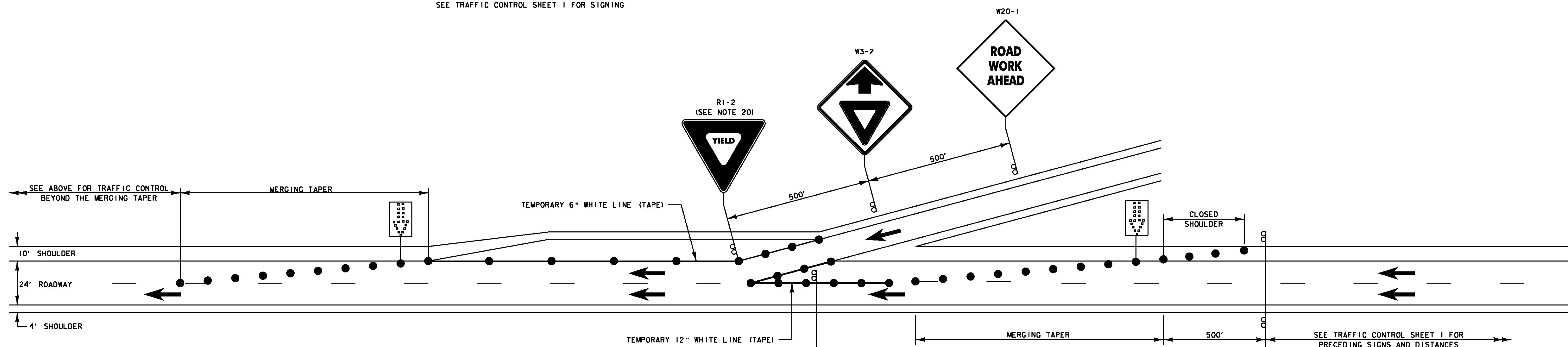
TRAFFIC CONTROL SHEET (1)

PROJECT NAME:	FAIR HAVEN - RUTLAND	FILE NAME:	I0b182/str/z10b182tc.dgn	PLOT DATE:	24-JAN-2012
PROJECT NUMBER:	BHF BPNT (10)	PROJECT LEADER:	G.K.DONNINGTON	DRAWN BY:	W.GERHOLD
		DESIGNED BY:	C.CARNEY	CHECKED BY:	R.BENJAMIN
			tc-1.dgn		SHEET 9 OF 28



TRAFFIC CONTROL ON US ROUTE 4, RIGHT LANE CLOSED

NOT TO SCALE
SEE TRAFFIC CONTROL SHEET 1 FOR SIGNING



TRAFFIC CONTROL ON US ROUTE 4, RIGHT LANE CLOSED BRIDGE 9W

NOT TO SCALE

LEGEND

- - FLOW OF TRAFFIC
- ▨ - WORK AREA
- - REFLECTORIZED PLASTIC DRUM
- - TYPE III BARRICADE
- ⊠ - TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)
- ⬢ - FLASHING ARROW PANEL
- PCMS - PORTABLE CHANGEABLE MESSAGE SIGN

POSTED SPEED LIMIT	TAPER LENGTHS (FT)		TANGENT W=12 FT (L/2)	MINIMUM BUFFER SPACE LENGTH (FT)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W=10 FT	MERGING 12 FT LANE			TAPER	TANGENT
40	90	320	160	305	40	80
45	150	540	270	360	45	90
50	170	600	300	425	50	100
55	185	660	330	495	55	110
60	200	720	360	570	60	120
65	215	780	390	645	65	130

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 $L = WS$ FOR POSTED SPEEDS OF 45 MPH OR GREATER
 $L = WS^2/60$ FOR POSTED SPEEDS OF 40 MPH OR LESS

L = MINIMUM LENGTH OF TAPER
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED IN MPH



TRAFFIC CONTROL NOTES - US ROUTE 4:

NOTES CONTINUED FROM TRAFFIC CONTROL SHEET 1:

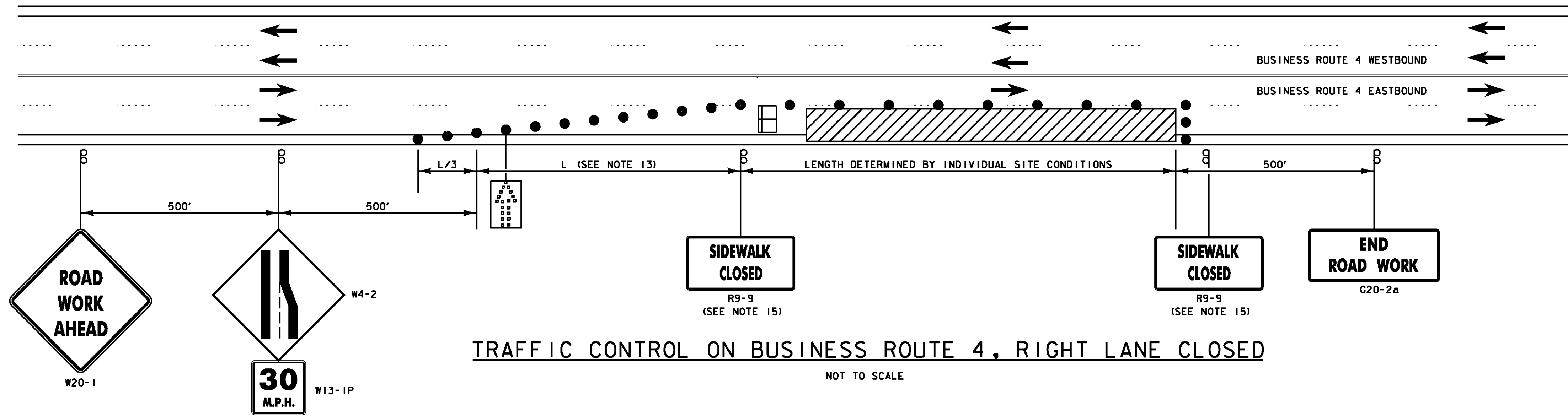
18. BRIDGE 7W, RIGHT LANE CLOSED: COMPLETE MAINLINE RIGHT SHOULDER CLOSURE BEFORE EXIT RAMP TAPER TO SCOTCH HILL ROAD. BEGIN MAINLINE RIGHT LANE MERGING TAPER AT THE PHYSICAL NOSE.
19. BRIDGE 7W, RIGHT LANE CLOSED: PLACE SIGNS G20-5AP AND R2-1 AT END OF RIGHT SHOULDER CLOSURE ON BOTH SIDES OF THE ROADWAY. PLACE PRECEDING SIGNS AS SHOWN ON TRAFFIC CONTROL SHEET 1.
20. MOUNT ON TYPE III BARRICADE - MODIFIED. SEE STANDARD E-107A.

TRAFFIC CONTROL SHEET (2)

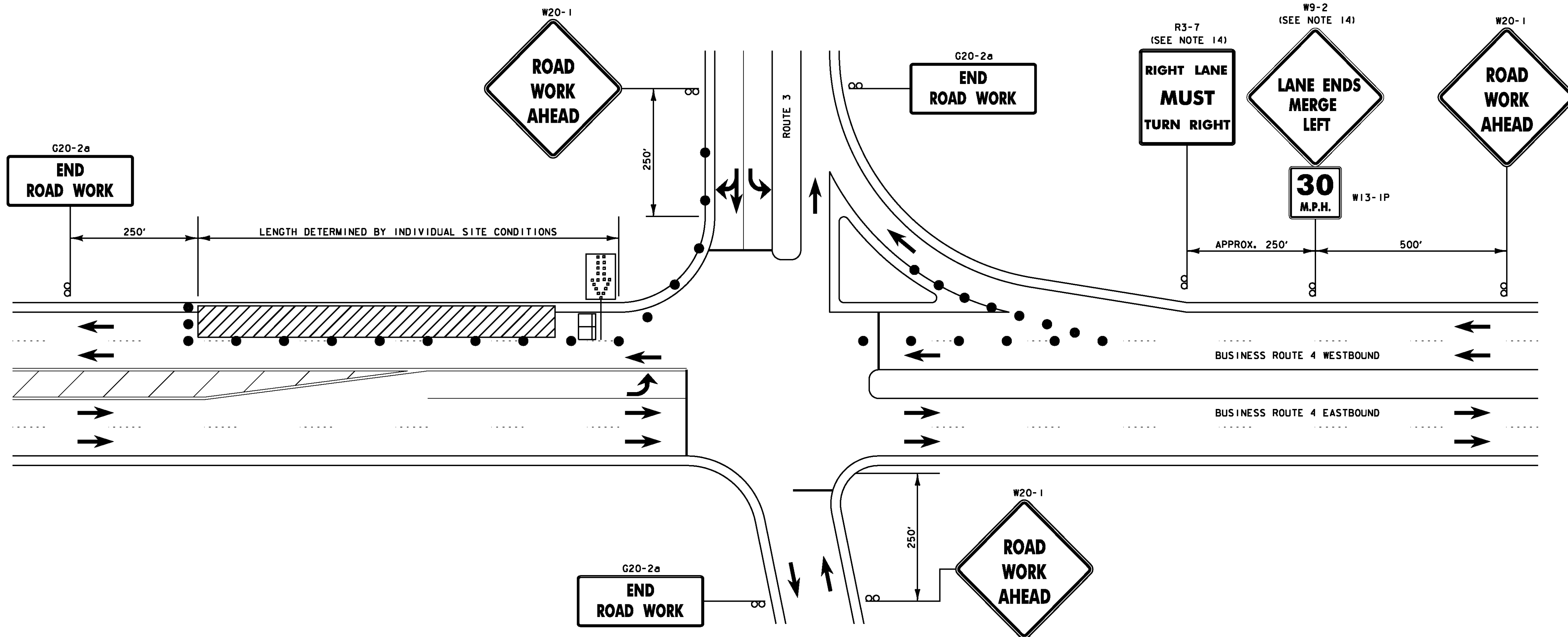
PROJECT NAME: FAIR HAVEN - RUTLAND
PROJECT NUMBER: BHF BPNT (10)

FILE NAME: I0b182/str/z10b182tc.dgn
PROJECT LEADER: G.K.DONINGTON
DESIGNED BY: C.CARNEY
+c_2.dgn

PLOT DATE: 24-JAN-2012
DRAWN BY: W.GERHOLD
CHECKED BY: R.BENJAMIN
SHEET 10 OF 28



TRAFFIC CONTROL ON BUSINESS ROUTE 4, RIGHT LANE CLOSED
NOT TO SCALE



TRAFFIC CONTROL ON BUSINESS ROUTE 4, RIGHT LANE CLOSED
BRIDGE D4-4, WESTBOUND TRAVEL DIRECTION
NOT TO SCALE

LEGEND

- - FLOW OF TRAFFIC
- ▨ - WORK AREA
- - REFLECTORIZED PLASTIC DRUM
- - TYPE III BARRICADE
- ⬢ - FLASHING ARROW PANEL

POSTED SPEED LIMIT	TAPER LENGTHS (FT)		MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W= 10 FT (L/3)	MERGING W= 12 FT (L)	TAPER	TANGENT
30	50	180	30	60
35	70	245	35	70
40	90	320	40	80

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 $L = WS$ FOR POSTED SPEEDS OF 45 MPH OR GREATER
 $L = WS^2/60$ FOR POSTED SPEEDS OF 40 MPH OR LESS

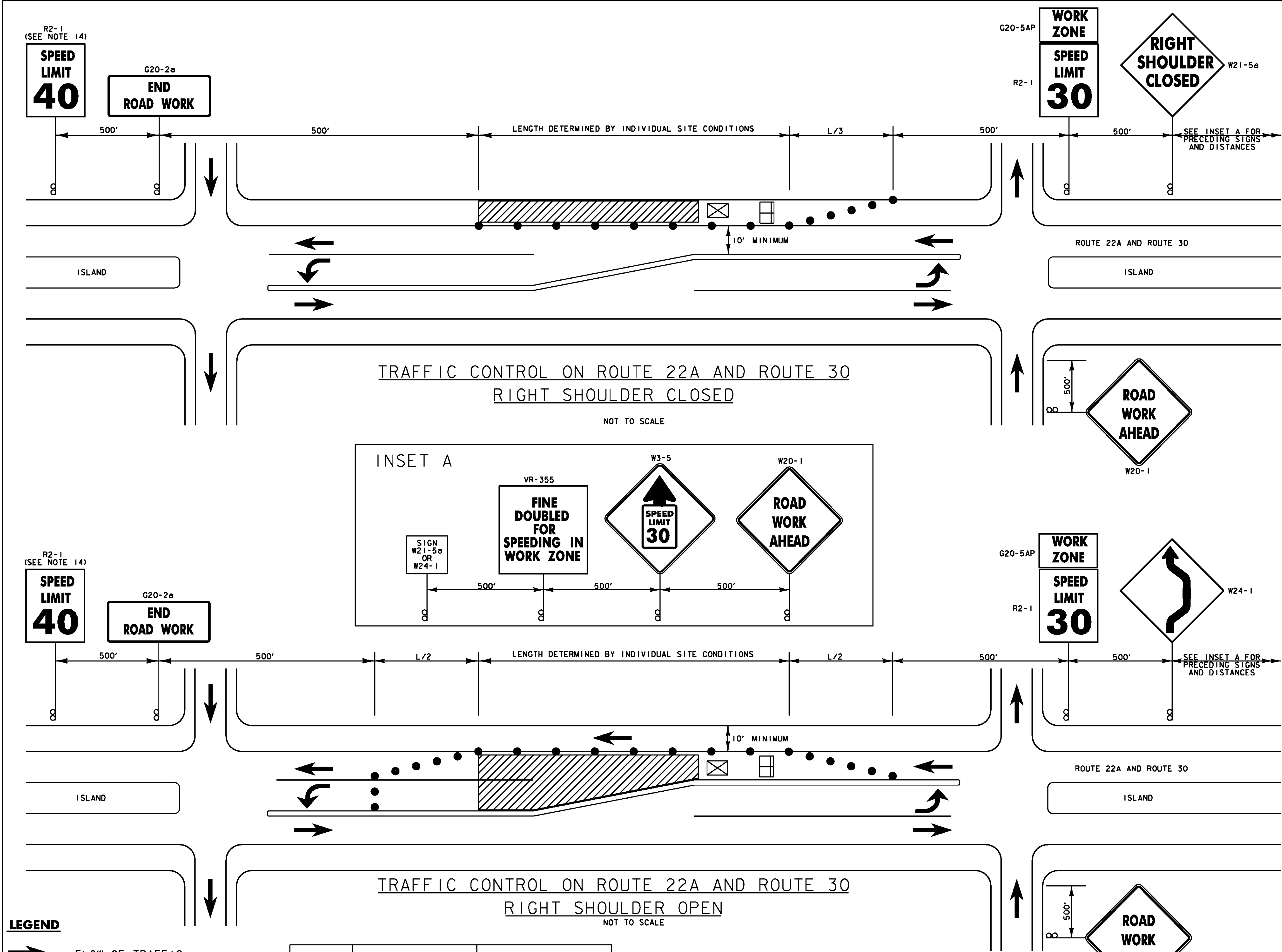
L = MINIMUM LENGTH OF TAPER
W = WIDTH OF OFFSET IN FEET
S = POSTED SPEED IN MPH

TRAFFIC CONTROL NOTES - BUSINESS ROUTE 4:

- THE TRAFFIC CONTROL PLAN SHOWN IS A SCHEMATIC ONLY AND SHOULD BE USED AS A REFERENCE. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR BRIDGES D4-3 AND D4-4 TO VTTRANS FOR APPROVAL. PAYMENT FOR PREPARING AND SUBMITTING THE TRAFFIC CONTROL PLAN, AND MAKING NECESSARY REVISIONS TO THE PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10 - TRAFFIC CONTROL. THE CONTRACTOR SHALL ALLOW TWO WEEKS FOR APPROVAL OF THE TRAFFIC CONTROL PLAN. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR HAS AN APPROVED TRAFFIC CONTROL PLAN.
- THE EXISTING SPEED LIMIT FOR BUSINESS ROUTE 4 IN THIS AREA VARIES BETWEEN 35 MPH AND 40 MPH. AN ADVISORY SPEED LIMIT OF 30 MPH WILL BE POSTED IN THE WORK ZONE FOR THIS PROJECT.
- CONSTRUCTION SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
- ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS" BOOK (SHS) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
- ORANGE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE REQUIREMENTS OF SECTION 750 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR TYPE VII, VIII OR IX, UNLESS OTHERWISE NOTED.
- ROLL UP SIGNS SHALL HAVE A RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE REQUIREMENTS OF SECTION 750 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR TYPE VI.
- SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES AND DURING PERIODS OF INACTIVITY. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMAN LIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
- FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE A LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE THE GUARDRAIL.
- PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A ONE FOOT MINIMUM HEIGHT ABOVE TRAVELED WAY. WHEN PLACED BEHIND THE GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. PAYMENT FOR REMOVAL IS INCIDENTAL TO THE APPROPRIATE CONTRACT ITEMS.
- WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
- THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
- AT NO TIME WILL THE CONTRACTOR BE ALLOWED TO HAVE WORKERS' VEHICLES, CONSTRUCTION EQUIPMENT OR STOCKPILED MATERIALS WITHIN THE CLEAR ZONE OF BUSINESS ROUTE 4 WITHOUT POSITIVE PROTECTION. POSITIVE PROTECTION SHALL BE AS DIRECTED BY THE ENGINEER. THE CLEAR ZONE IS DEFINED AS FOLLOWS:
BUSINESS ROUTE 4 - 16 FEET FROM THE TRAVELED WAY
- BRIDGE D4-4, EASTBOUND RIGHT LANE CLOSED: THE INTERSECTION WITH SIMONS AVE CLOSEST TO BRIDGE D4-4 FALLS WITHIN THE MERGING TAPER OF THE RIGHT LANE. PROVIDE A GAP IN THE REFLECTORIZED PLASTIC DRUMS AT THIS INTERSECTION, SO VEHICLES CAN ENTER AND EXIT SIMONS AVE.
- BRIDGE D4-4, WESTBOUND RIGHT THRU LANE CLOSED: PLACE SIGN W9-2 AT FAR SIDE OF THE BUSINESS ROUTE 4 AND EAST PROCTOR ROAD INTERSECTION. PLACE SIGN R3-7 AT BEGINNING OF SLIP LANE TAPER TO ROUTE 3.
- SIGN R9-9 SHOULD BE INSTALLED AT THE BEGINNING OF THE CLOSED SIDEWALK AND AT INTERSECTIONS PRECEDING THE CLOSED SIDEWALK.

TRAFFIC CONTROL
SHEET (3)

PROJECT NAME:	FAIR HAVEN - RUTLAND	
PROJECT NUMBER:	BHF BPNT (10)	
FILE NAME:	10b182/str/z10b182tc.dgn	PLOT DATE: 24-JAN-2012
PROJECT LEADER:	G.K.DONNINGTON	DRAWN BY: W.GERHOLD
DESIGNED BY:	C.CARNEY	CHECKED BY: R.BENJAMIN
tc_3.dgn		SHEET 11 OF 28



- TRAFFIC CONTROL NOTES - ROUTE 22A AND ROUTE 30:**
1. THE TRAFFIC CONTROL PLAN SHOWN IS A SCHEMATIC ONLY AND SHOULD BE USED AS A REFERENCE. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR BRIDGES 5E & W AND 10E & W TO VTRANS FOR APPROVAL. PAYMENT FOR PREPARING AND SUBMITTING THE TRAFFIC CONTROL PLAN, AND MAKING NECESSARY REVISIONS TO THE PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10 - TRAFFIC CONTROL. THE CONTRACTOR SHALL ALLOW TWO WEEKS FOR APPROVAL OF THE TRAFFIC CONTROL PLAN. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR HAS AN APPROVED TRAFFIC CONTROL PLAN.
 2. THE EXISTING SPEED LIMITS FOR ROUTE 22A AND ROUTE 30 VARY BETWEEN 40 MPH AND 50 MPH IN THE PROJECT AREAS. THE SPEED LIMITS WILL BE REDUCED TO 30 MPH IN THE WORK ZONES FOR THIS PROJECT. ANY EXISTING SPEED LIMIT SIGNS WITHIN THE SPEED REDUCTION AREA SHALL BE COMPLETELY COVERED.
 3. CONSTRUCTION SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
 4. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS" BOOK (SHS) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
 5. ORANGE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE REQUIREMENTS OF SECTION 750 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR TYPE VII, VIII OR IX, UNLESS OTHERWISE NOTED.
 6. ROLL UP SIGNS SHALL HAVE A RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE REQUIREMENTS OF SECTION 750 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR TYPE VI.
 7. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES AND DURING PERIODS OF INACTIVITY. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMAN LIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
 8. FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE A LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE THE GUARDRAIL.
 9. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A ONE FOOT MINIMUM HEIGHT ABOVE TRAVELED WAY. WHEN PLACED BEHIND THE GUARD RAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. PAYMENT FOR REMOVAL IS INCIDENTAL TO THE APPROPRIATE CONTRACT ITEMS.
 10. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
 11. THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
 12. AT NO TIME WILL THE CONTRACTOR BE ALLOWED TO HAVE WORKERS' VEHICLES, CONSTRUCTION EQUIPMENT OR STOCKPILED MATERIALS WITHIN THE CLEAR ZONE OF ROUTE 22A OR ROUTE 30 WITHOUT POSITIVE PROTECTION. POSITIVE PROTECTION SHALL BE AS DIRECTED BY THE ENGINEER.
THE CLEAR ZONES ARE DEFINED AS FOLLOWS:
ROUTE 22A - 16 FEET FROM THE TRAVELED WAY
ROUTE 30 - 22 FEET FROM THE TRAVELED WAY
 13. THE SHOULDER AND TRAVEL LANE CLOSURE SCHEMES SHOWN IN THE TRAFFIC CONTROL PLANS FOR ROUTE 22A AND ROUTE 30 ARE TO BE USED FOR THE NORTHBOUND AND SOUTHBOUND CLOSURES.
 14. SPEED LIMIT IS 40 MPH FOR ROUTE 22A NORTHBOUND/SOUTHBOUND AND ROUTE 30 SOUTHBOUND. SPEED LIMIT IS 50 MPH FOR ROUTE 30 NORTHBOUND.

- LEGEND**
- - FLOW OF TRAFFIC
 - ▨ - WORK AREA
 - - REFLECTORIZED PLASTIC DRUM
 - - TYPE III BARRICADE
 - ⊠ - TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)

POSTED SPEED LIMIT	TAPER LENGTHS (FT)		MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W=10 FT (L/3)	SHIFTING W=10 FT (L/2)	TAPER	TANGENT
30	50	75	30	60
35	70	105	35	70
40	90	135	40	80
45	150	225	45	90
50	170	250	50	100

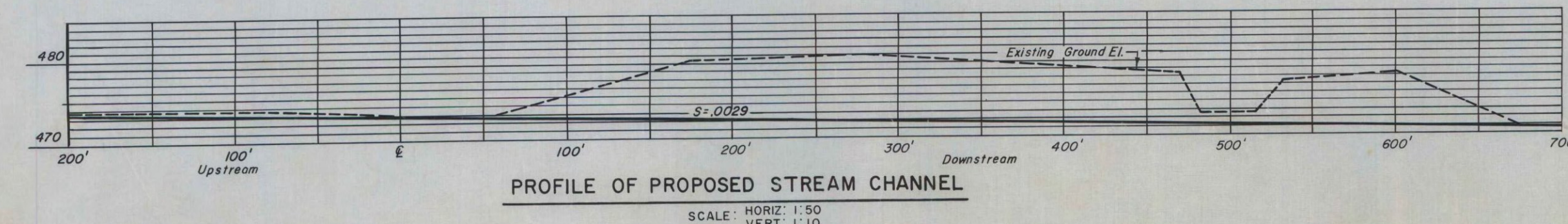
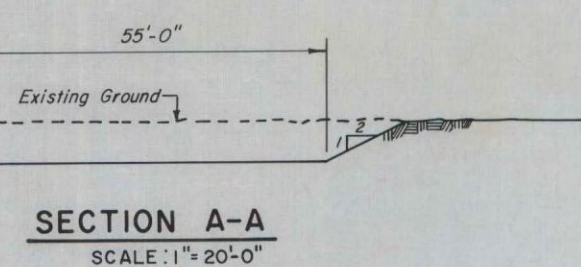
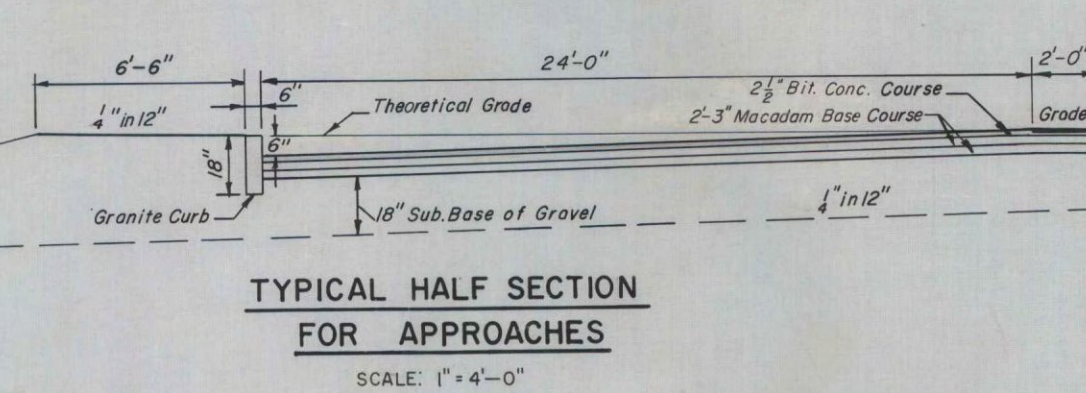
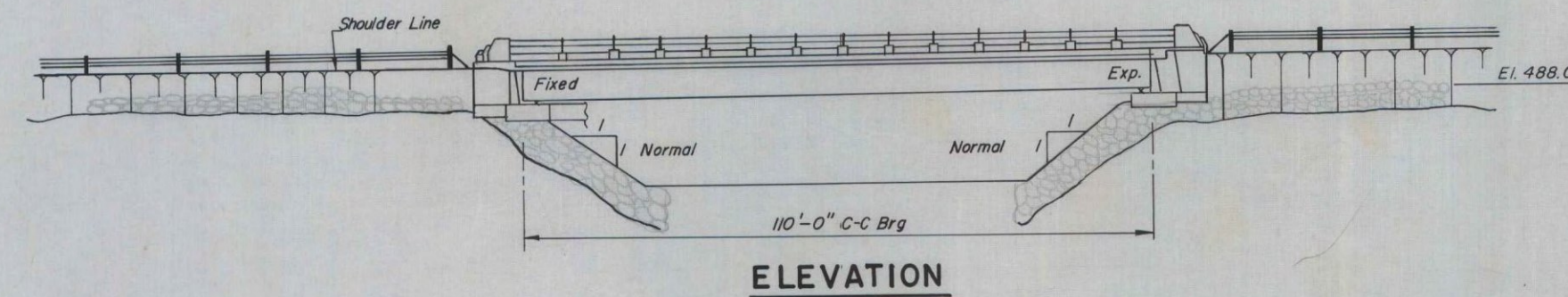
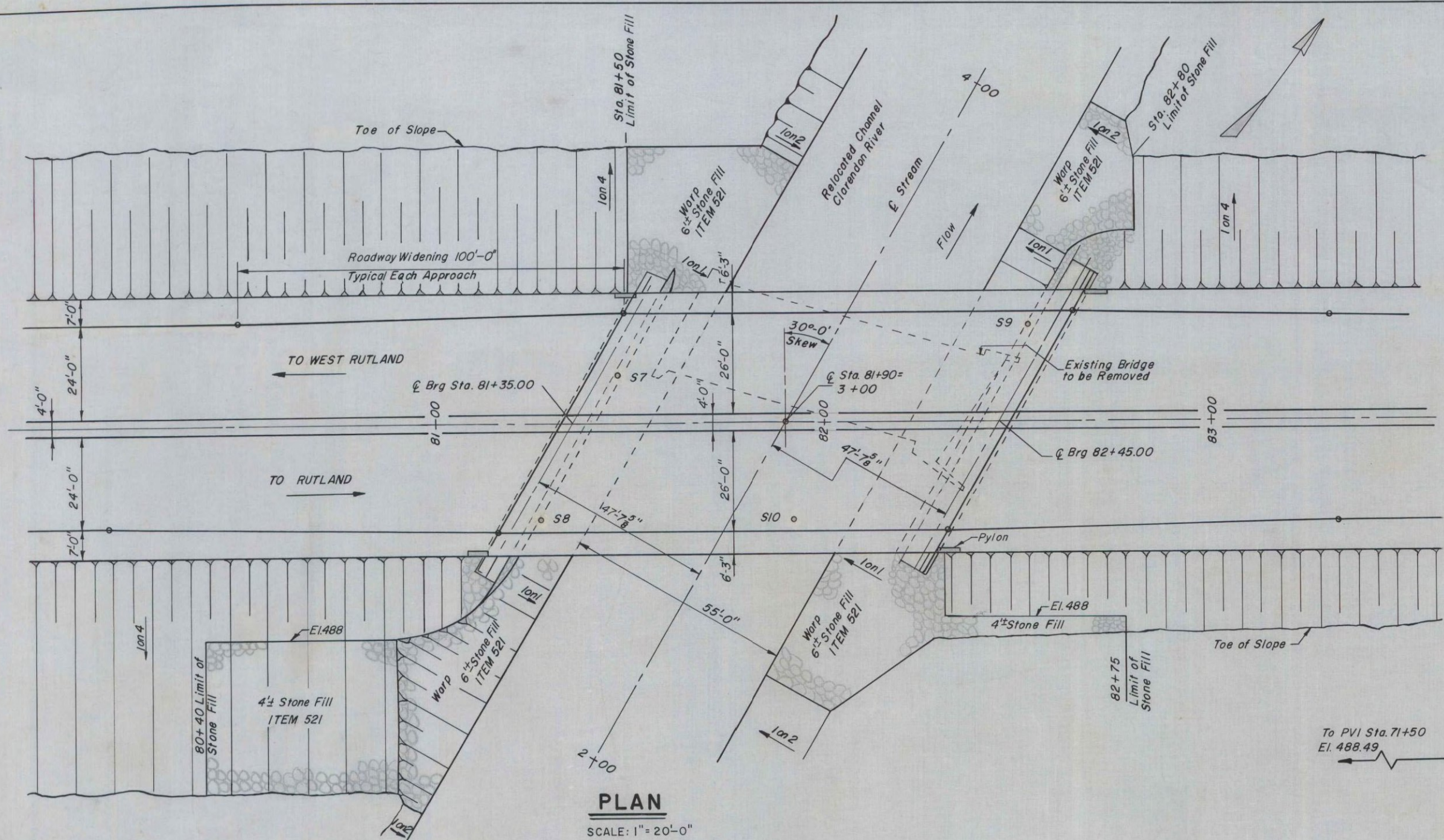
TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATIONS:
 $L = WS$ FOR POSTED SPEEDS OF 45 MPH OR GREATER
 $L = WS^2/60$ FOR POSTED SPEEDS OF 40 MPH OR LESS

 L = MINIMUM LENGTH OF TAPER
 W = WIDTH OF OFFSET IN FEET
 S = POSTED SPEED IN MPH

TRAFFIC CONTROL SHEET (4)

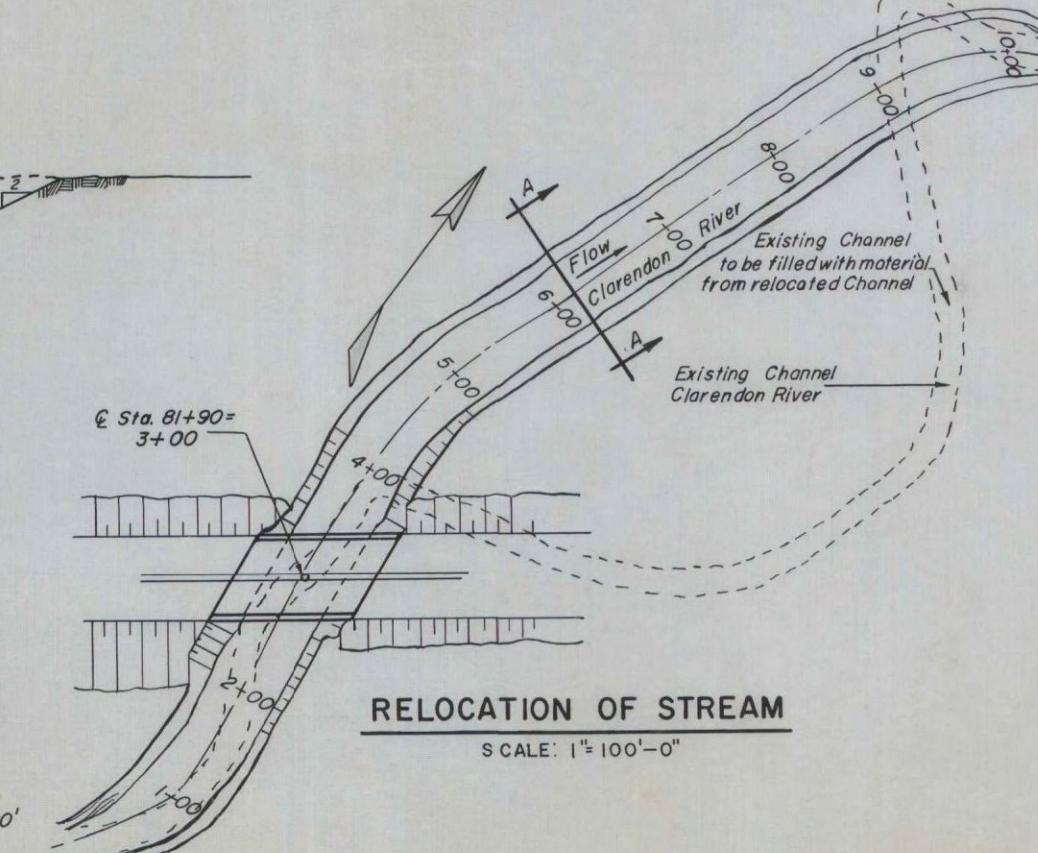
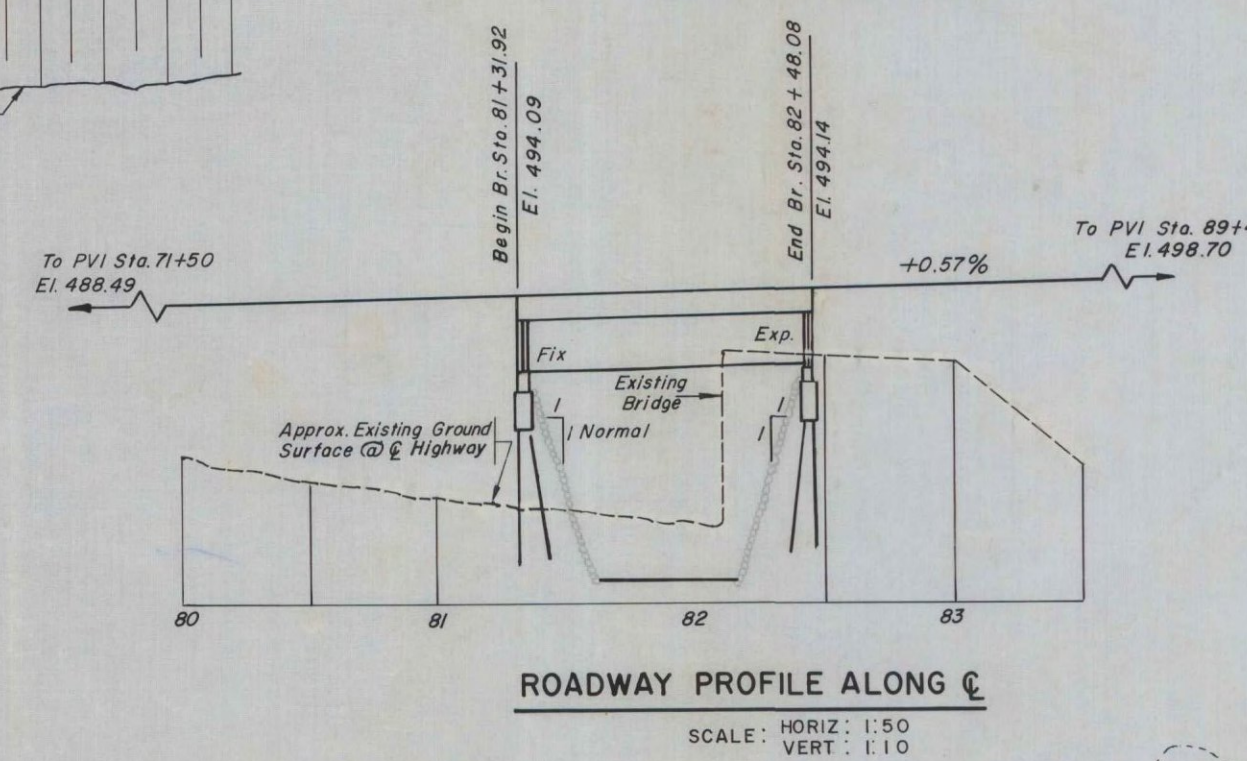
PROJECT NAME:	FAIR HAVEN - RUTLAND	FILE NAME:	10b182/str/z10b182tc.dgn	PLOT DATE:	24-JAN-2012
PROJECT NUMBER:	BHF BPNT (10)	PROJECT LEADER:	G.K.DONINGTON	DRAWN BY:	W.GERHOLD
		DESIGNED BY:	A.STOCKIN	CHECKED BY:	R.BENJAMIN
			tc_4.dgn		SHEET 12 OF 28





ITEM NO	DESCRIPTION	UNIT	QUANTITY
107	Structure Excavation	C.Y.	100
401B	Concrete Class B, mod.	C.Y.	515
402	Reinforcing Steel	LB.	65,000
403	Spiral Reinforcement	L.S.	1
404A	Structural Steel	LB.	340,000
441	Temporary Bridge	L.S.	1
442	Removal of Present Superstructure	L.S.	1
501	Furnishing Equipment for Driving Piles	L.S.	1
502-B	Treated Timber Piling	L.F.	4,200
521	Stone Fill (Heavy Type)	C.Y.	2,050
572	Bridge Piling	L.F.	234

FOUNDATION INFORMATION
 Obtained for design purposes only, and the state assumes no responsibility whatsoever for the sufficiency or accuracy of the information shown. Boulders may be encountered at either of the abutment locations.
 Dia. of Casing - 24"
 Thickness of Shell - 4"
 Hammer Weight - 350#
 Hammer Drop - 24"
 Figures indicate No. of Blows Req. to Drive Casing - 1'



ITEM NO	DESCRIPTION	UNIT	QUANTITY
107	Structure Excavation	C.Y.	100
401B	Concrete Class B, mod.	C.Y.	515
402	Reinforcing Steel	LB.	65,000
403	Spiral Reinforcement	L.S.	1
404A	Structural Steel	LB.	340,000
441	Temporary Bridge	L.S.	1
442	Removal of Present Superstructure	L.S.	1
501	Furnishing Equipment for Driving Piles	L.S.	1
502-B	Treated Timber Piling	L.F.	4,200
521	Stone Fill (Heavy Type)	C.Y.	2,050
572	Bridge Piling	L.F.	234

NOTES
 1. See Bridge Sheet 7 for General Notes.
 2. Foundations of existing bridge to be removed. Cost to be included in the unit price bid for structure excavation, item 107, and Channel, item 106 C.
 3. Existing superstructure is to remain the property of the state. Removal and storage of superstructure to be paid for under item 442. See Specifications.

REFERENCE DRAWINGS	
West Abutment	Bridge Sheet 2
East Abutment	" " 3
Framing Plan and Girder Details	" " 4
Deck and Railing Plan - Misc. Details	" " 5
Typical Bridge Details	" " 6
Superstructure Sections and General Notes	" " 7

FAIRHAVEN-RUTLAND
 BHF BPNT (10)
 PROJECT BRIDGE #D4-3
 SHEET 13 OF 28
 FOR INFORMATION ONLY

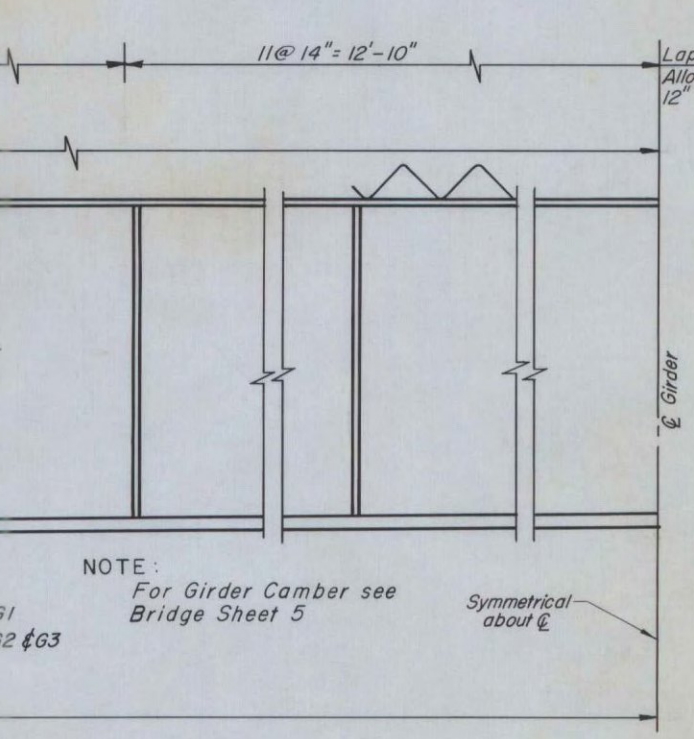
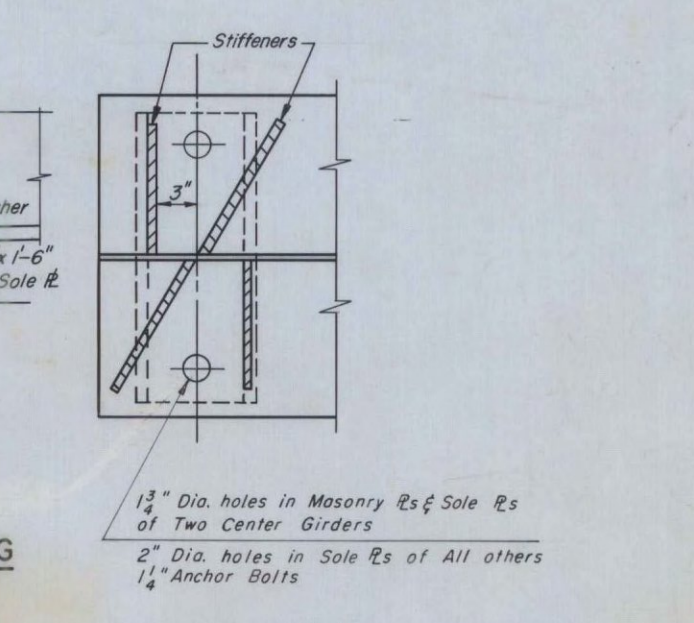
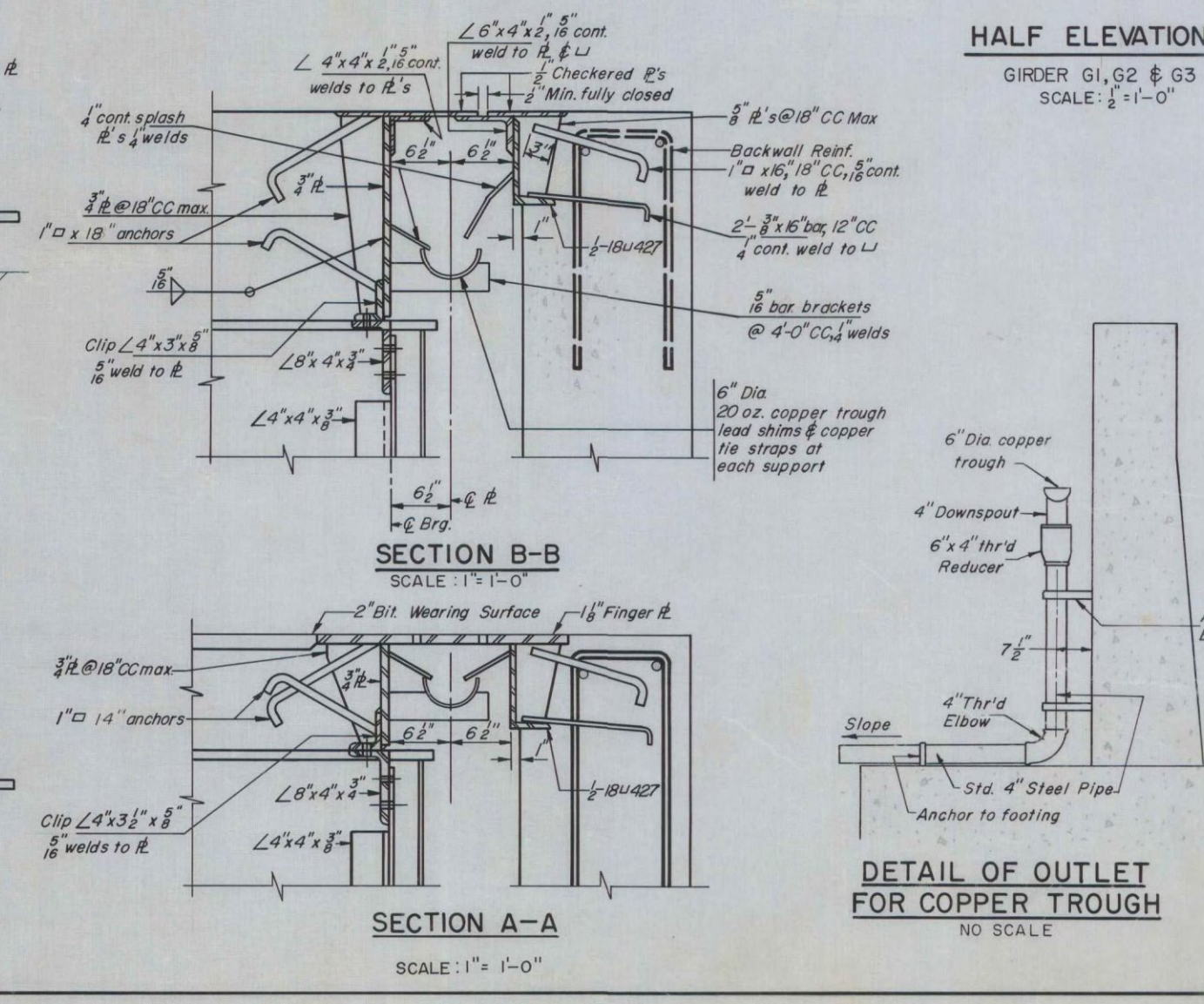
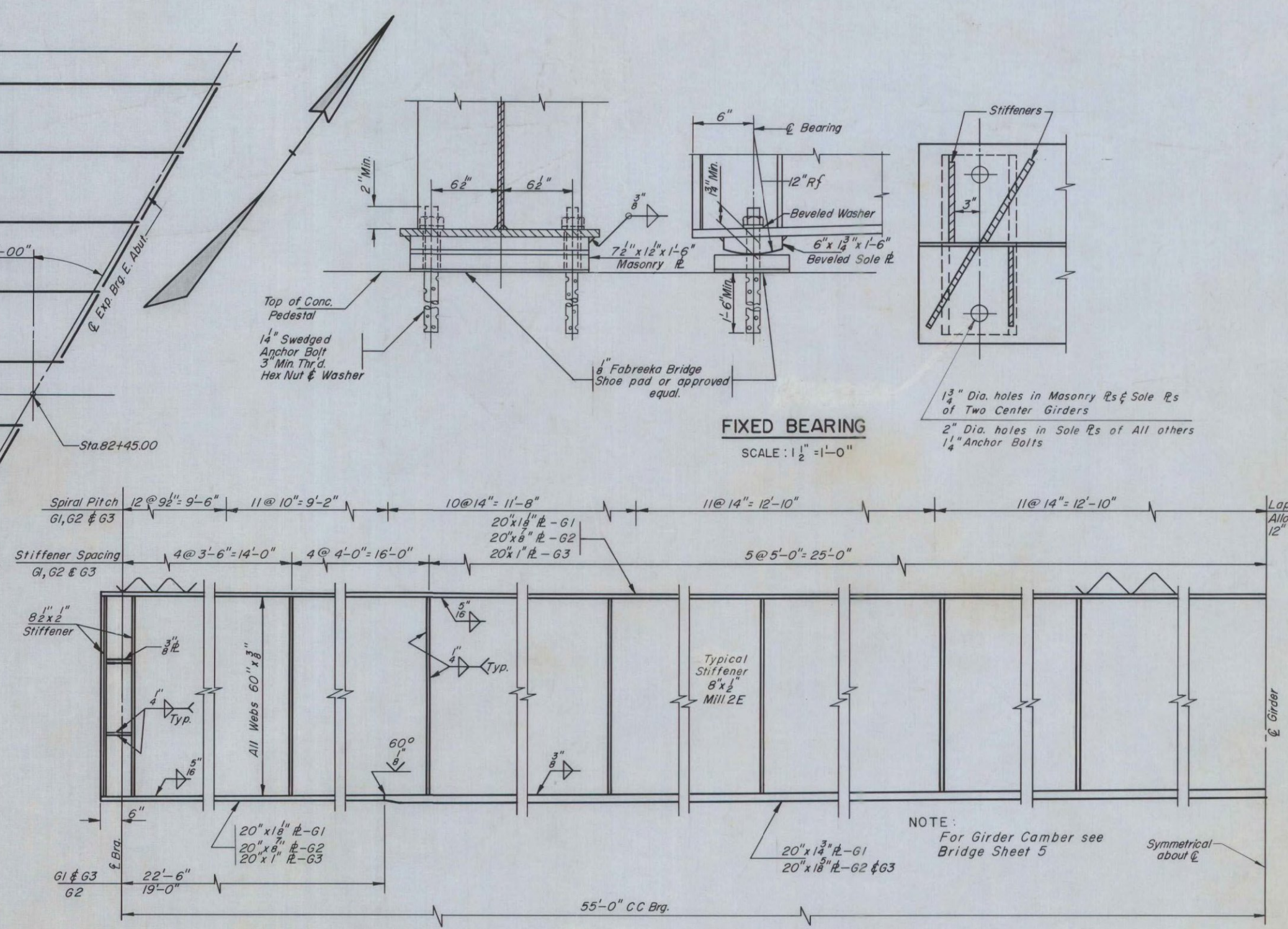
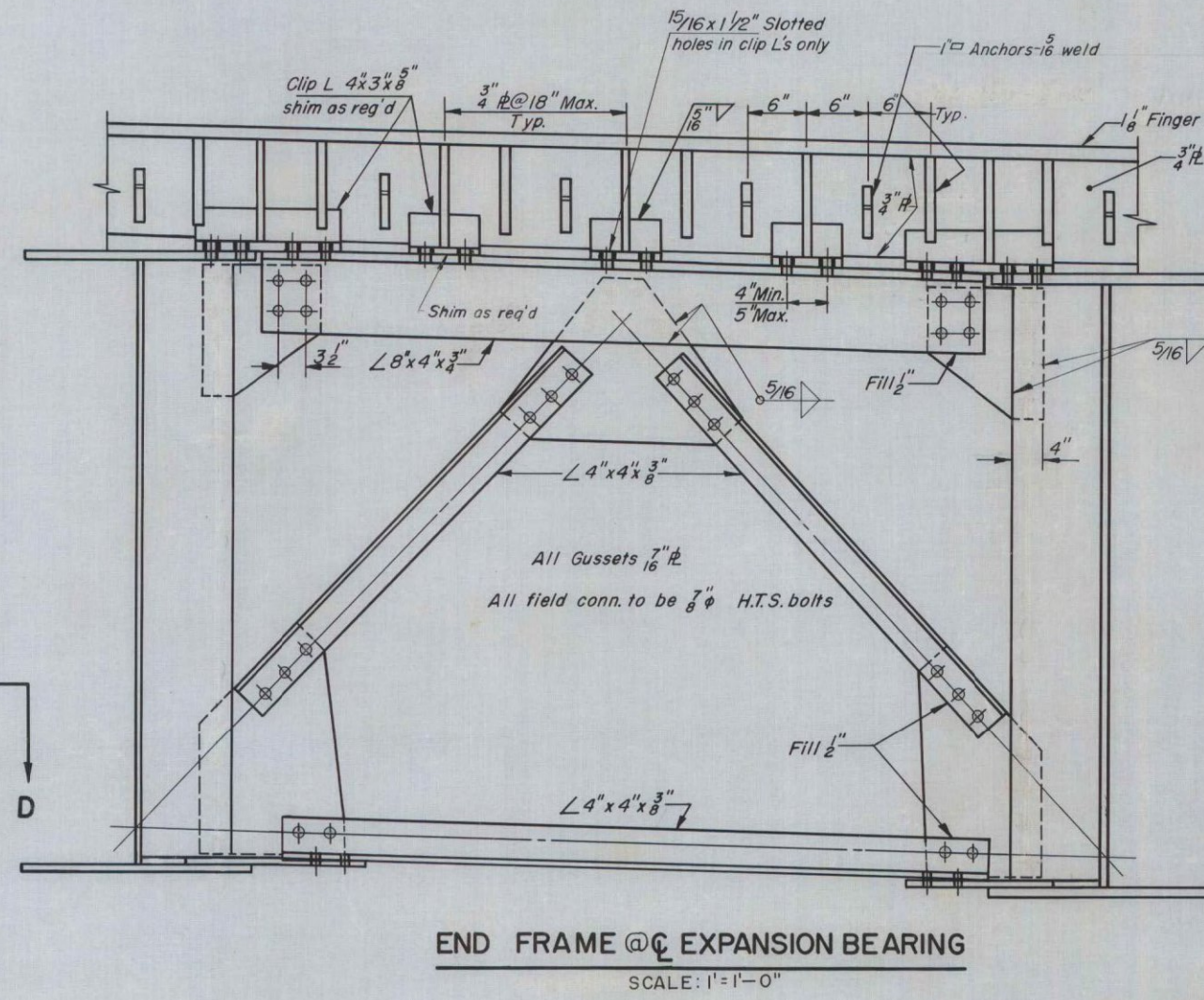
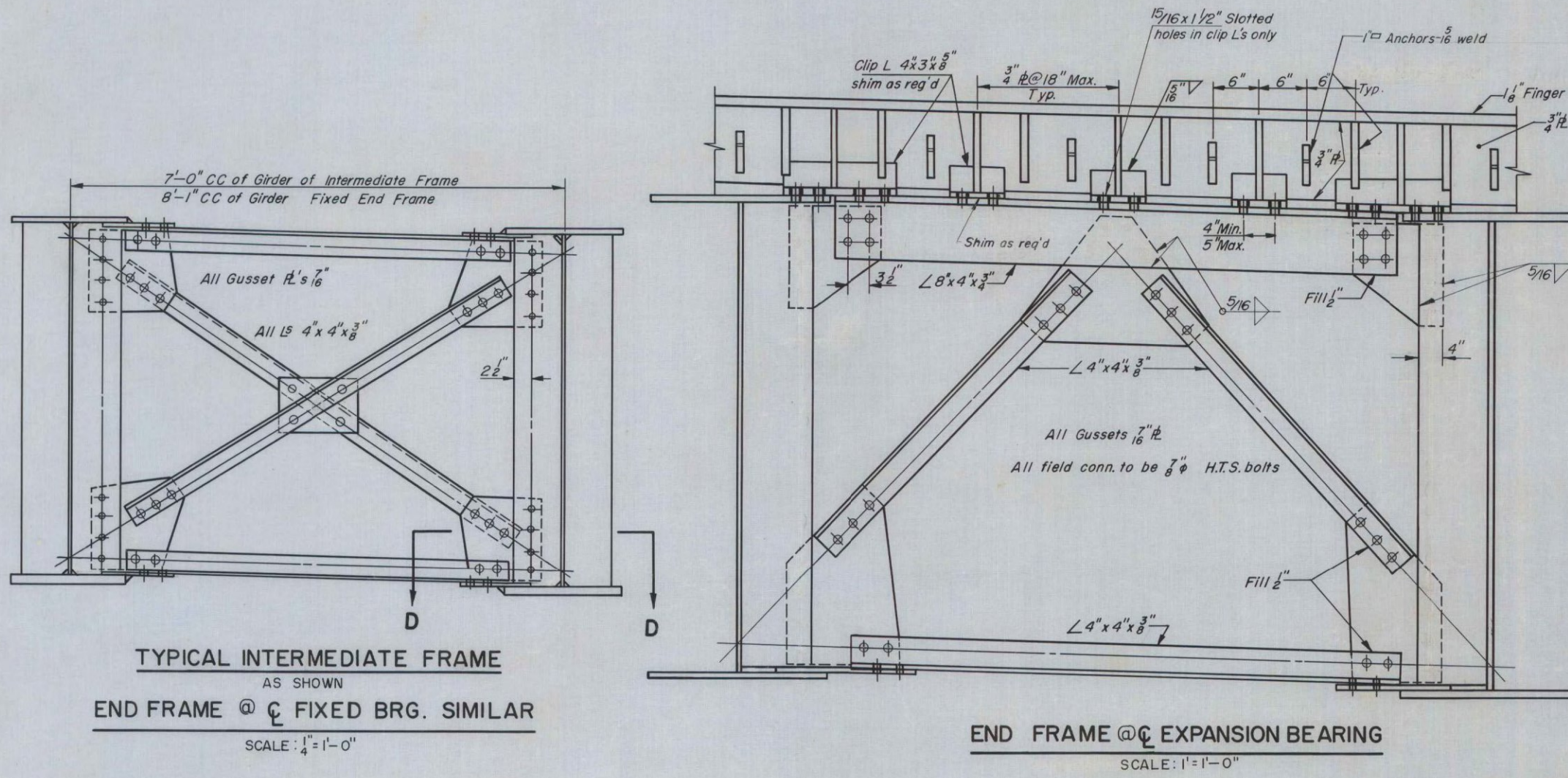
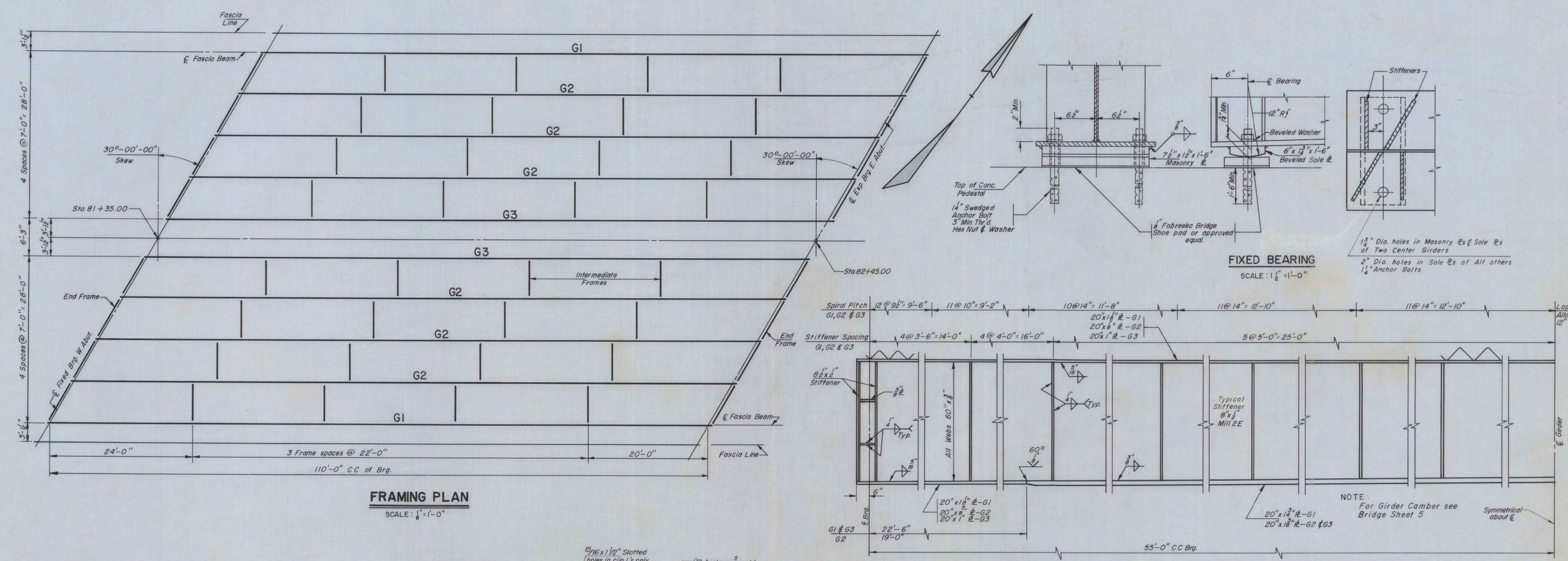
VERMONT
 STATE HIGHWAY DEPARTMENT
 TOWN OF RUTLAND
 WEST RUTLAND-RUTLAND
 CLARENDON RIVER BRIDGE

**GENERAL PLAN
 ELEVATIONS & PROFILES**

Wm. H. McFarland
 CONSULTING ENGINEER
 BINGHAMTON, N.Y.

DESIGNED - L.H.S. CHECKED - L.H.S. DATE 2-28-57
 DRAWN - S.G.S. IN CHARGE - F.S.P. SCALE AS NOTED

PROJECT NO. SHEET 13 OF 28
 BRIDGE SHEET 1 OF 12



NOTES

- See Bridge Sheet 7 for General Notes.
- The indicated stiffener spacings are the maximum allowable for the given distances. Spacing may be modified to suit fabrication.
- Loss of camber due to shrinkage shall be compensated by additional camber to be determined by the fabricator.
- Minimum distance between web and flange splices to be 5'. Fabricator to indicate locations of splices in details to be submitted for approval.
- See Bridge Sheet 6 for spiral reinforcement detail.
- Open holes 1/4", rivets 7/8", minimum pitch 3 1/2", rolled edge distances 1 1/4", sheared edge distances 1 1/2".
- Gross frames to be initially connected prior to placing of concrete in deck slab and fully connected after dead load deflection has been completed.
- For Section D-D see Bridge Sheet 6.

**FAIRHAVEN-RUTLAND
BHF BPNT (10)
PROJECT BRIDGE #D4-3
SHEET 14 OF 28
FOR INFORMATION ONLY**

**VERMONT
STATE HIGHWAY DEPARTMENT
TOWN OF RUTLAND
WEST RUTLAND - RUTLAND
CLARENDON RIVER BRIDGE**

**FRAMING PLAN AND GIRDER
DETAILS**

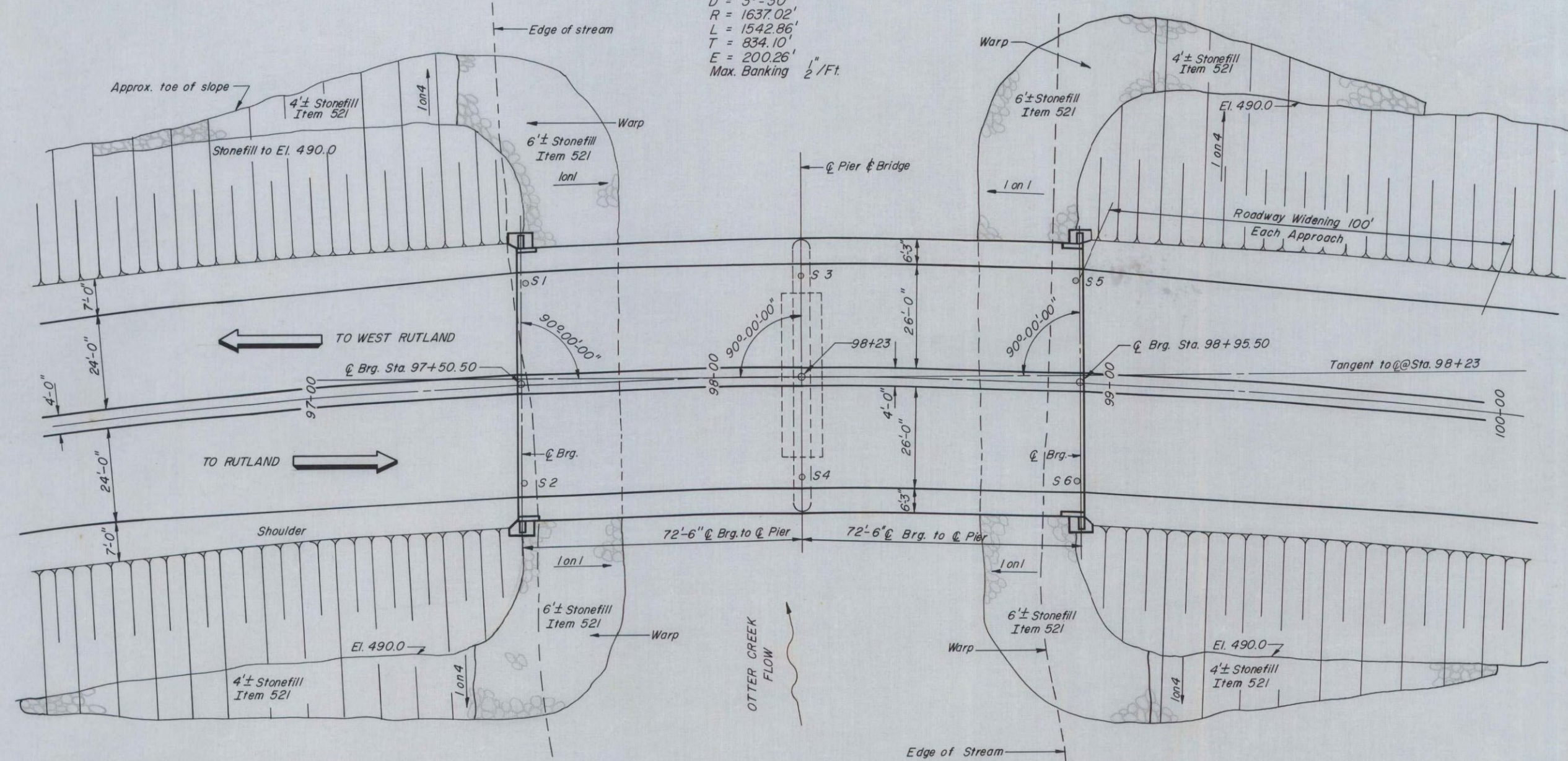
Wm. H. McFarland
CONSULTING ENGINEER
BINGHAMTON, N.Y.

DESIGNED L.H.S.	CHECKED L.H.S.	DATE 2-28-57
DRAWN S.G.S.	IN CHARGE F.S.P.	SCALE AS NOTED

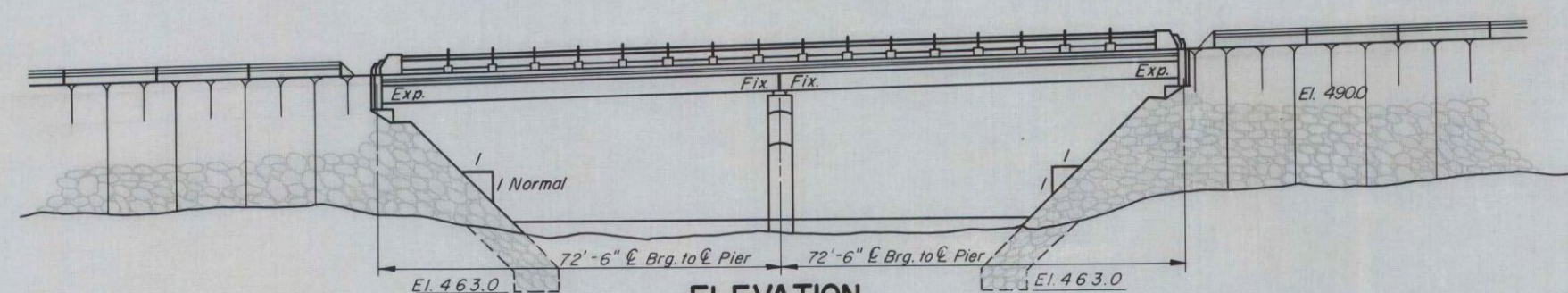
PROJECT NO. 65-2 SHEET 24 OF 141
BRIDGE SHEET 4 OF 12

HIGHWAY CURVE DATA

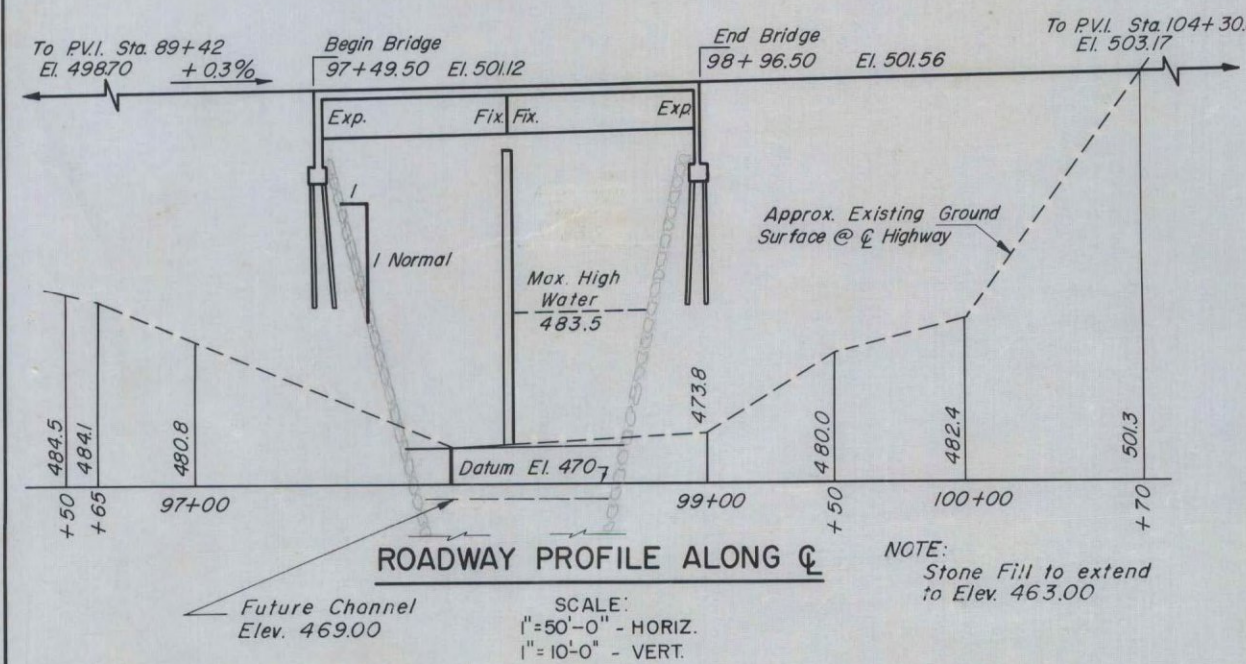
$\Delta = 54^{\circ}00'00''$
 $D = 3^{\circ}30'$
 $R = 1637.02'$
 $L = 1542.86'$
 $E = 834.10'$
 $T = 200.26'$
 Max Banking $\frac{1}{2}$ / Ft



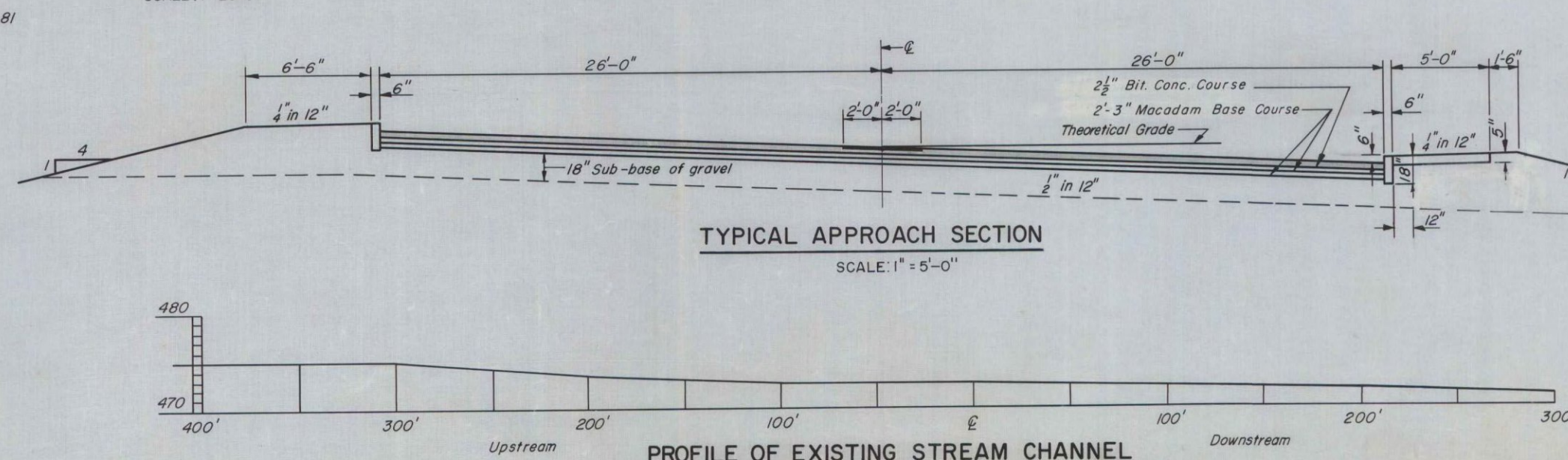
PLAN



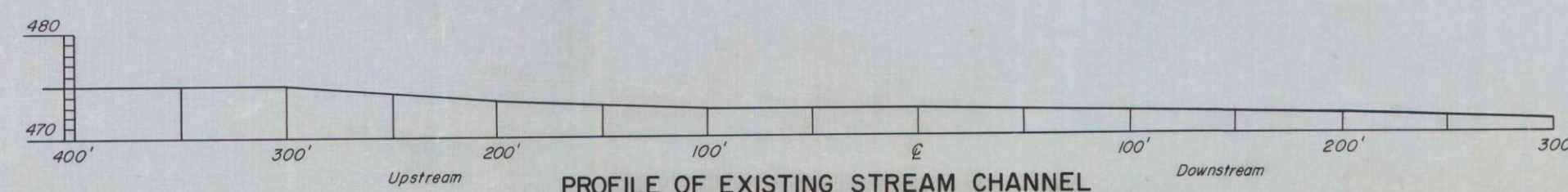
ELEVATION



NOTE: Slope of fill to extend to Elev. 463.00'



TYPICAL APPROACH SECTION



PROFILE OF EXISTING STREAM CHANNEL

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
107	Structure Excavation	CY	26.0
401B	Concrete Class B, mod.	CY	7.40
402	Reinforcing Steel	lb	93,000
403	Spiral Reinforcement	LS	
404A	Structural Steel	lb	320,000
501	Form Equipment for Driving Piles	LS	
502-B	Treated Timber Piling	LF	2,400
521	Stone Fill (Heavy Type)	CY	4,020
572	Bridge Railing	LF	27.6
442	Removal of Present Superstructure	LS	
106-A	Channel Excavation of Earth	cyl	
361-B	Bituminous Concrete Pavement	ton	
504	Steel Piling (12" H. 53.6")	lf	

Boring	S 1	S 2	S 3	S 4	S 5	S 6
480.0	El. 477.0	El. 477.0	El. 477.0	El. 477.0	El. 477.0	El. 477.0
470.0	El. 474.9	El. 474.9	El. 474.9	El. 474.9	El. 474.9	El. 474.9
460.0	El. 470.0	El. 470.0	El. 470.0	El. 470.0	El. 470.0	El. 470.0
450.0	El. 465.0	El. 465.0	El. 465.0	El. 465.0	El. 465.0	El. 465.0

FOUNDATION INFORMATION

Obtained for design purposes only, and the state assumes no responsibility whatsoever for the sufficiency or accuracy of the information shown. Boulders may be encountered at any pier or abutment location.

Da of Casing - 2 1/2" x 3/4"
 Thickness of Shell - 8"
 Hammer Weight - 350 lb.
 Hammer Drop - 24"
 * Blasted
 Figures indicate no. of blows
 req'd to drive Casing 1'

NOTES:

- See bridge sheet 7 for general notes.
- See bridge sheet 6 for railing, pylons, spirals and steel pile splice details.
- Existing superstructure is to remain the property of the state. Removal and storage of superstructure to be paid for under item 442. See specifications.

REFERENCE DRAWINGS

- | | |
|---|----------------|
| Typical Bridge Details | Bridge Sheet 6 |
| Superstructure Sections and General Notes | 7 |
| Pier Details, Deck and Railing Plan | 9 |
| Abutment Plans, Elevations and Sections | 10 |
| Framing Plan and Beam Details | 11 |

FAIRHAVEN-RUTLAND
 BHF BPNT (10)
 PROJECT BRIDGE #D4-4
 SHEET 15 OF 28
 FOR INFORMATION ONLY

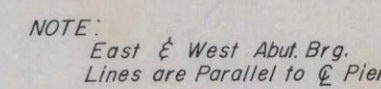
VERMONT
 STATE HIGHWAY DEPARTMENT
 TOWN OF RUTLAND
 WEST RUTLAND-RUTLAND
 OTTER CREEK BRIDGE

GENERAL PLAN ELEVATIONS & PROFILES

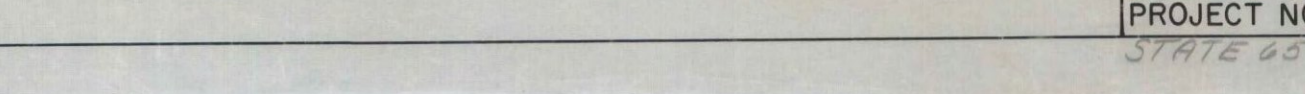
Wm. H. McFARLAND
 CONSULTING ENGINEER
 BINGHAMTON, N.Y.

DESIGNED L.H.S. CHECKED L.H.S. DATE 2-28-57
 DRAWN S.G.S. IN CHARGE F.S.P. SCALE AS NOTED

PROJECT NO. SHEET 26 OF 141
 STATE 65-2 BRIDGE SHEET 8 OF 12



SCALE: $\frac{1}{8}'' = 1'-0''$

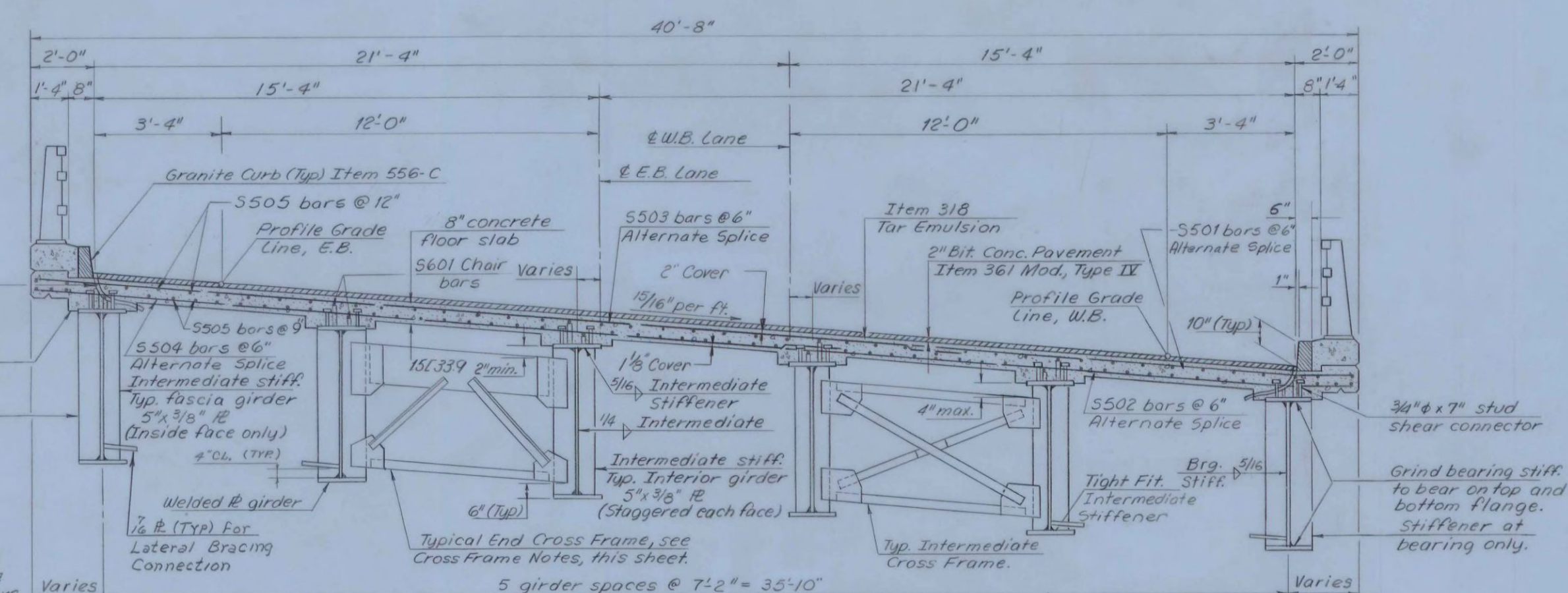


VERMONT
STATE HIGHWAY DEPARTMENT

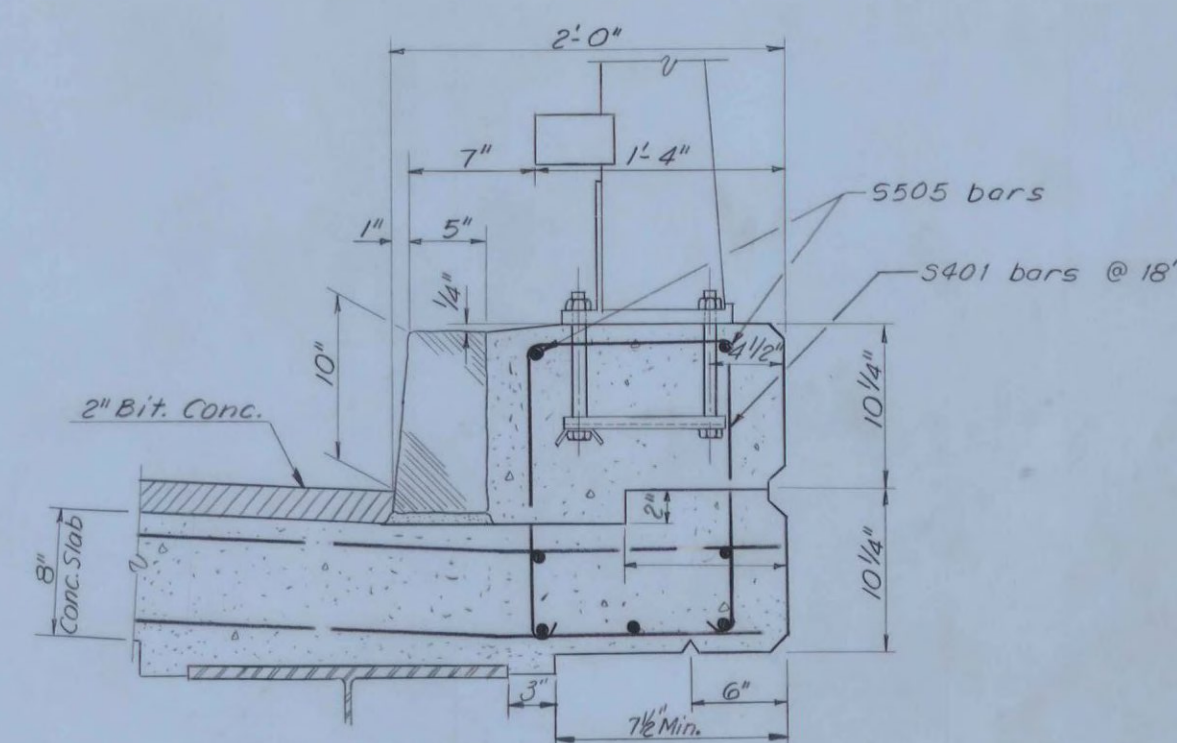
FRAMING PLAN AND

DESIGNED <u>L.H.S.</u>	CHECKED <u>L.H.S.</u>	DATE <u>2-28-5</u>
DRAWN <u>S.G.S.</u>	IN CHARGE <u>F.S.P.</u>	SCALE <u>AS N</u>

5501, 5502, 5503, 5504 bars shall be cut in the field to fit the skewed end. The cut-off bars shall be used at the opposite end.

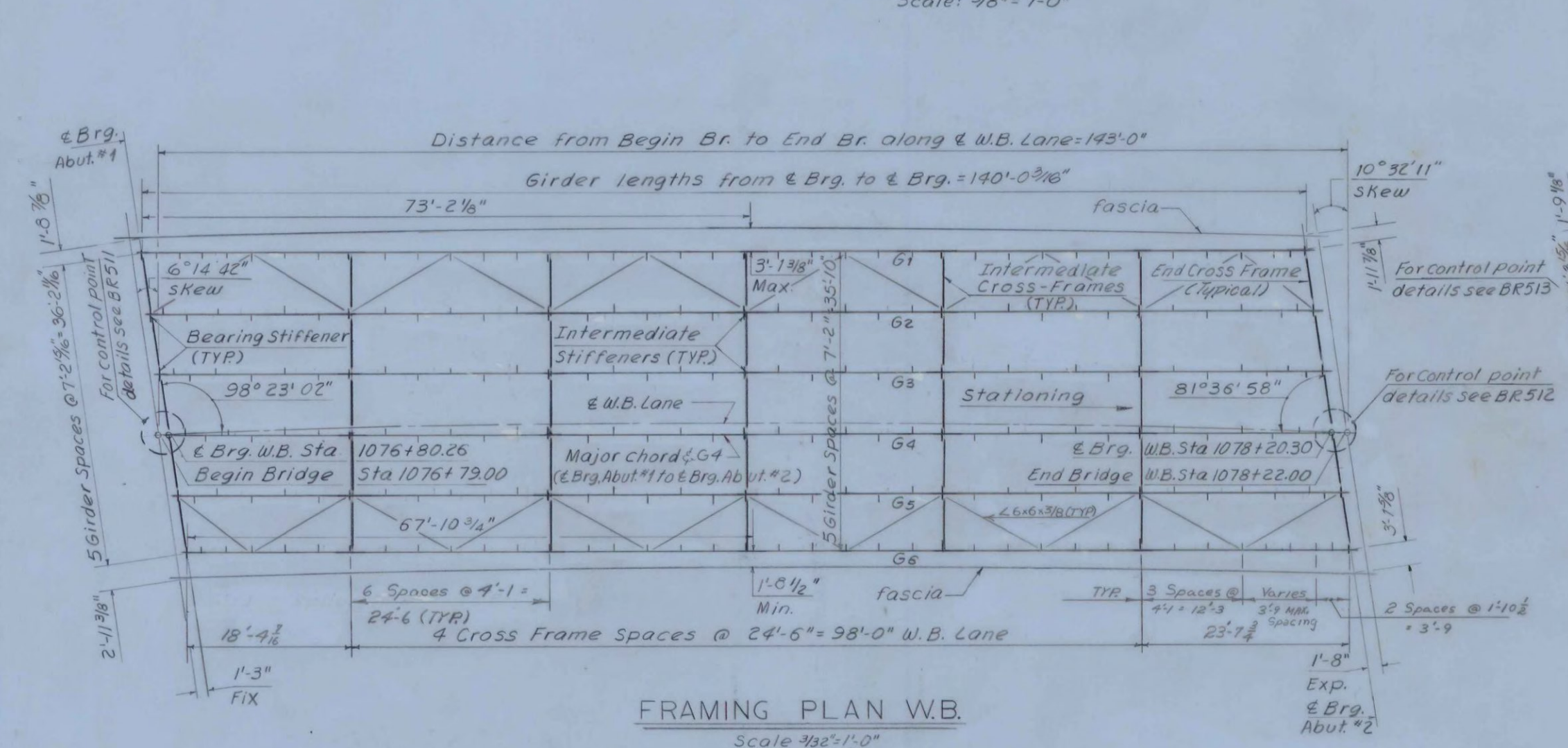


TYPICAL SECTION
Scale: $\frac{3}{8}'' = 1'-0''$

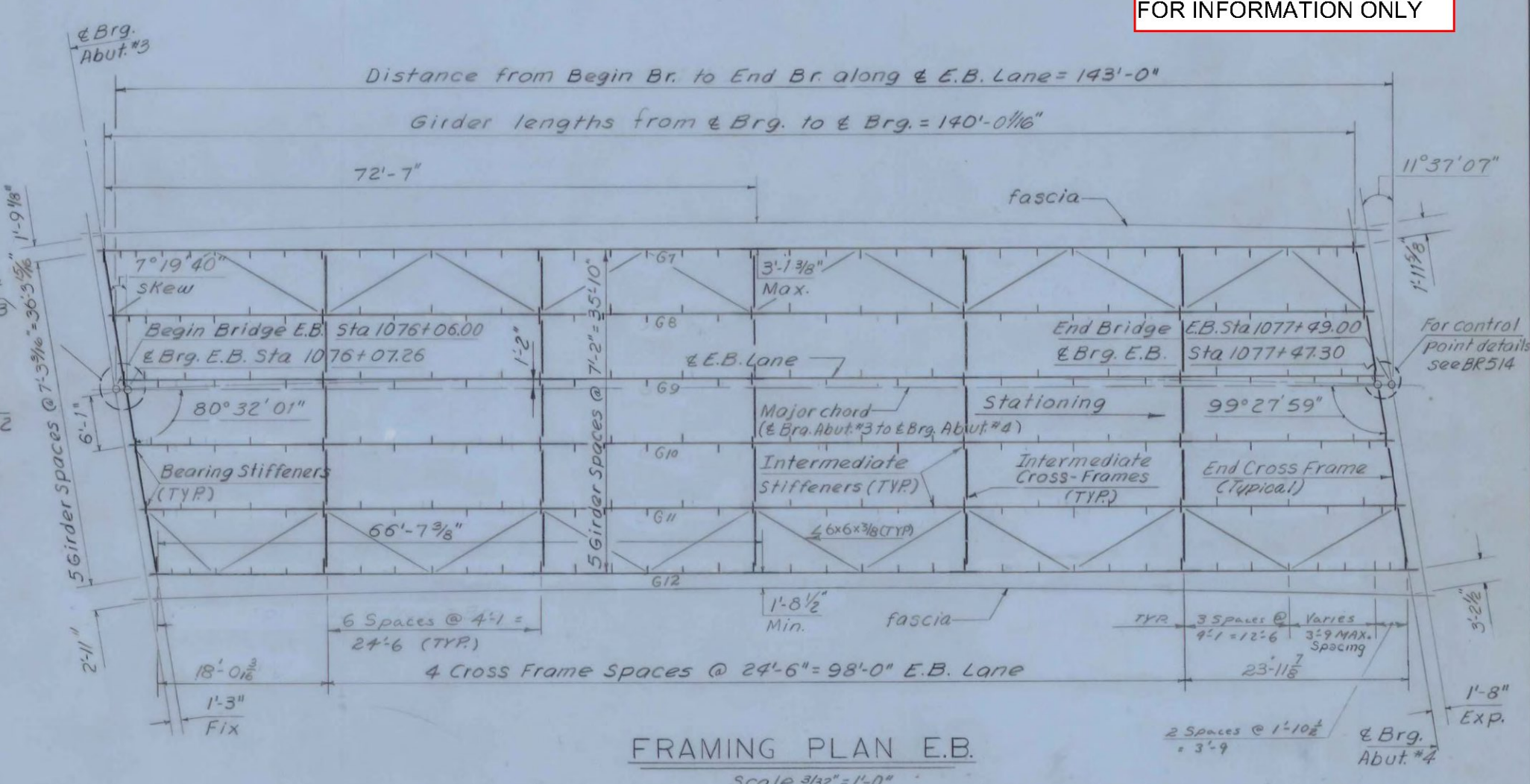


TYPICAL CURB SECTION
Scale: $1\frac{1}{2}" = 1'-0"$

FAIRHAVEN-RUTLAND
BHF BPNT (10)
PROJECT BRIDGE #5E &5W
SHEET 18 OF 28
FOR INFORMATION ONLY



FRAMING PLAN W.B.
Scale $\frac{3}{32}'' = 1'-0''$



FRAMING PLAN E.B.
Scale $\frac{3}{32}'' = 1'-0''$

NOTES

1. For General Notes, see BR 5/1.
2. For Joint Details, see BR 5/1.
3. For Beam Haunch Details, see 3CB-02-67.
4. All studs are to be 3/4"x7" welded studs.
5. For 3/4" studs are used, increase the spacing shown for 3/4" studs by 50% (see BR 208).
6. Cross Frame Notes: All gusset & connection plates shall be 1/4" plates.
7. Cross Frame angles shall be 4-L x 3-L.
8. All shop connections for Cross Frames and Lateral Bracing shall be 3/8" Fillet welds. All Field connections shall be 3/8" high strength bolts meeting the requirements of AISC 308.
9. All Girders are parallel to the major chord.
10. Cross Frames shall be bolted to stiffeners.

VERMONT
STATE HIGHWAY DEPARTMENT
TOWN OF FAIR HAVEN
U.S. ROUTE 4

U.S. RTE. 4 RELOCATION
OVER VT. 22 A RELOC.

SUPERSTRUCTURE DETAILS

McFARLAND AND JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

DESIGNED ELM CHECKED EEG DATE 5-23-68
DRAWN HWB IN CHARGE HGC SCALE AS SHOWN

PROJECT NO. F020 - (8) SHEETS OF 25

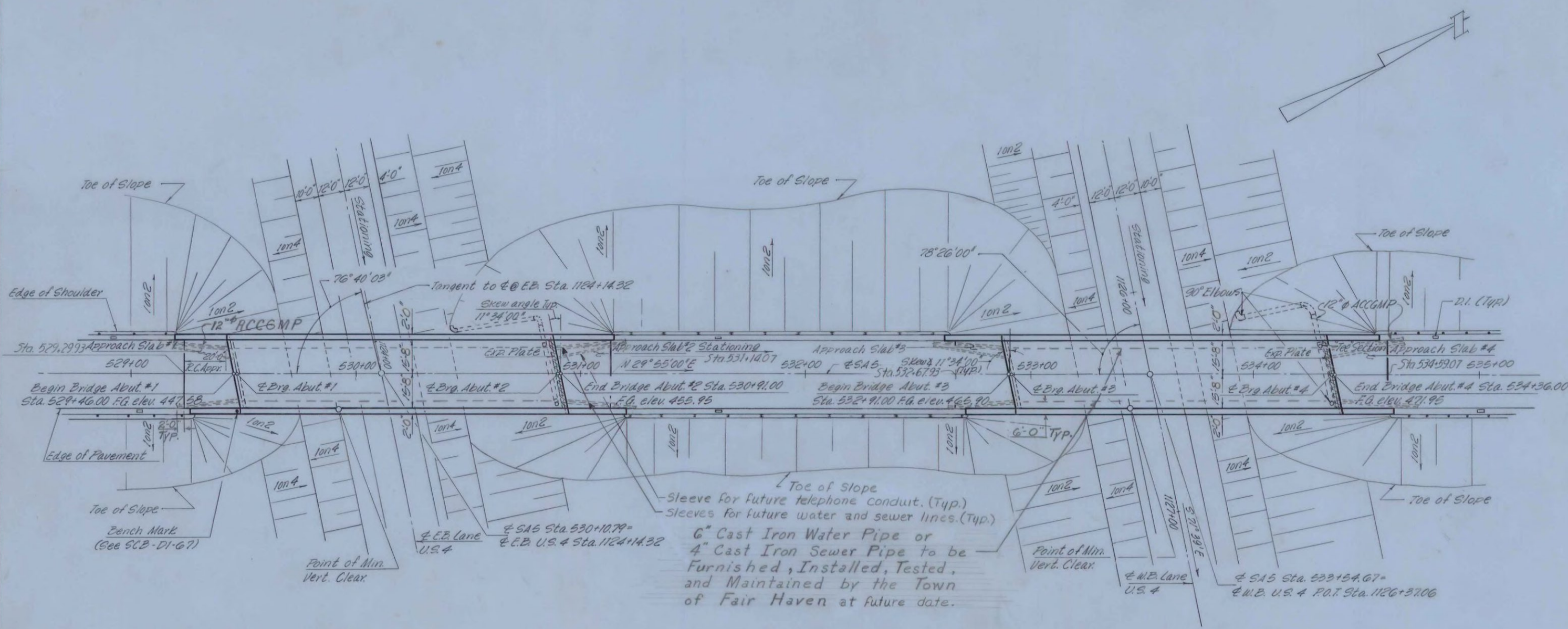
CONTRACT NO. BR 507 183

REVISIONS (5-15-69)
R.D.H.

- 1) CHANGE STIFFENER SPACING
- 2) ADD LATERAL BRACING
- 3) ELIMINATE GIRDER SPLICE

REVISIONS (6-23-69)
R.D.H.

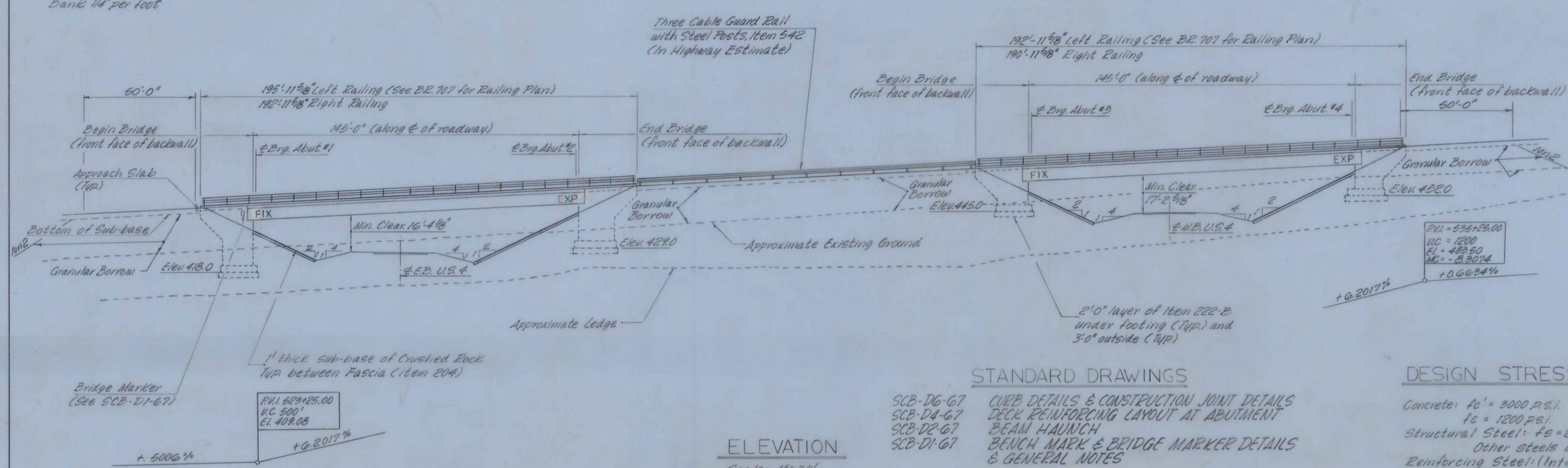
- 1) CHANGE LATERAL BRACING FROM $L \times 5 \times \frac{1}{4}$ TO $L \times 6 \times \frac{3}{8}$.



E.B. US 4 CURVE DATA
CURVE NO. 4

Δ = 8° 35' 20" L
D = 0° 30'
E = 1459.16'
F = 860.50'
G = 1717.78'
H = 32.26'
Bank 14' per foot

PLAN
Scale: 1"=50'



ELEVATION
Scale: 1"=30'

STANDARD DRAWINGS

SCB-DG-67 CURB DETAILS & CONSTRUCTION JOINT DETAILS
SCB-DH-67 REINFORCING LAYOUT AT ABUTMENT
SCB-DI-67 BEAM HAUNCH
SCB-DJ-67 BRUSH MARK & BRIDGE MARKER DETAILS & GENERAL NOTES
SB-PP-65 STEEL RAILING DETAILS
SB-BI-64 SHEETS 1&2 ALUMINUM RAILING DETAILS

DESIGN STRESSES

Concrete: $f_c = 3000$ p.s.i.
 $f_t = 1200$ p.s.i.
Structural Steel: $f_y = 50,000$ p.s.i. 1.36 Steel
Other Steels as per AISC 1959 specs.
Reinforcing Steel (Intermediate)
 $f_y = 20,000$ p.s.i. (tension)
 $f_s = 16,000$ p.s.i. (compression)

Revision 1: Included Sleeves for Water and Sewer Pipe. 7-26-68 RPG

GENERAL NOTES

SPECIFICATIONS:
All materials and construction shall conform to the State of Vermont, Department of Highways, Standard Specifications for Highway and Bridge Construction, dated April 1964, and the AASHTO, Standard Specifications dated 1965 as modified by current Interim Specifications.
LIVE LOAD:
Structure designed for HS 20-44 loading modified for National System of Interstate Highways applied in accordance with the provisions of the AASHTO standard Specifications Article 1.5B.
CONCRETE:
All exposed edges of concrete shall be chamfered 1"x1" unless otherwise noted. All construction joints to be made as shown on SCB-DG-67, Details B and C unless otherwise noted.
REINFORCEMENT:
All reinforcement to have a clear cover of 2" unless otherwise noted.
DIMENSIONS:
All dimensions given are measured horizontally or vertically unless otherwise noted. Dimensions given are for 60°F unless otherwise noted. Elevation datum sea level based on nearest U.S. Government vertical control.
STRUCTURAL STEEL:
Item 404.4 shall include all structural steel, copper, wrought iron, and any other materials indicated or required in the completed structure which are not otherwise classified.
All structural steel shall be structural carbon steel conforming to the requirements of the specifications for steel bridges and buildings A.S.T.M. designation A-50-A-52, except as otherwise noted.
The contractor shall submit complete details of the structural steel to the State of Vermont, Department of Highways, and receive their written approval prior to the start of fabrication. The steel details shall include provisions for cambering of beams for dead load deflection as well as erection diagrams and falsework details.
The final coat of field paint shall be green.
WATER REPELLENT:
The top surface of safety walks, fascia, and back to the fascia beam under the slab, exposed areas of abutments not otherwise treated shall be covered with water repellent (Item 440).
FIELD BOLTING:
Field bolted connections shall be made with 7/8" A-325 High Strength Bolts. 1/4" bolts are not allowed.
ABUTMENTS:
The top surfaces of all abutments, (12.5%), shall be sloped 1/4" per foot from the back edge of the abutment to the front edge of the abutment except for sloping racks which shall be level. Elevation of bridge seats given are for centerline of bearings. The entire exposed top surface of abutments (12.5%) shall be coated with asphaltic-Asbestos coating 1/2" thick as per Item 407 of the specifications. The application of this item shall be after all painting and incidental items are completed.
GENERAL:
Cross slopes of approach slabs to conform to the cross slope of the bridge.
All expansion material shall be formulated core containing no bitumen or asphalt.
BITUMINOUS CONCRETE PAVEMENT:
Bituminous Concrete Pavement Item 261 Modified, Type II shall be applied in two courses.

INDEX OF DRAWINGS

BR 701 PLAN & ELEVATION	BR 713 FOOTING DETAILS, ABUTMENT No. 1 & TYPICAL SECTIONS
BR 702 BRIDGE QUANTITIES	BR 714 FOOTING DETAILS, ABUTMENT No. 2 & TYPICAL SECTIONS
BR 703 PRELIMINARY INFORMATION SHEET	BR 715 FOOTING DETAILS, ABUTMENT No. 3 & TYPICAL SECTIONS
BR 704 BORING LOG	BR 716 APPROACH SLAB No. 1
BR 705 SUPERSTRUCTURE DETAILS	BR 717 APPROACH SLAB No. 2
BR 706 SUPERSTRUCTURE DETAILS	BR 718 APPROACH SLAB No. 3
BR 707 JUNCTION DETAILS	BR 719 APPROACH SLAB No. 4
BR 708 ABUTMENT No. 1 WINDOW No. 1	BR 720 REINFORCING DETAILS
BR 709 ABUTMENT No. 2 WINDOW No. 2	BR 721 REINFORCING DETAILS
BR 710 ABUTMENT No. 3 WINDOW No. 3	BR 722 REINFORCING DETAILS
BR 711 ABUTMENT No. 4 WINDOW No. 4	BR 723 SCB-3067T

FAIRHAVEN-ROUTLAND
BHF BPNT (10)
PROJECT BRIDGE #7E & 7W
SHEET 19 OF 28
FOR INFORMATION ONLY

Revisions: Revised to 2'0" brush curbs.
Removed cheekwalls. 6-11-68 RPG & RFS

VERMONT
STATE HIGHWAY DEPARTMENT
TOWN OF FAIR HAVEN
U.S. ROUTE 4
SA 5 RELOCATED OVER
U.S. ROUTE 4 RELOCATED
PLAN AND ELEVATION

McFARLAND & JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK
DESIGNED BY: [] CHECKED BY: [] DATE: OCT 1, 1967
DRAWN BY: [] IN CHARGE: HGC SCALE: AS NOTED
PROJECT NO. F0201(4) SH-10 OF 32

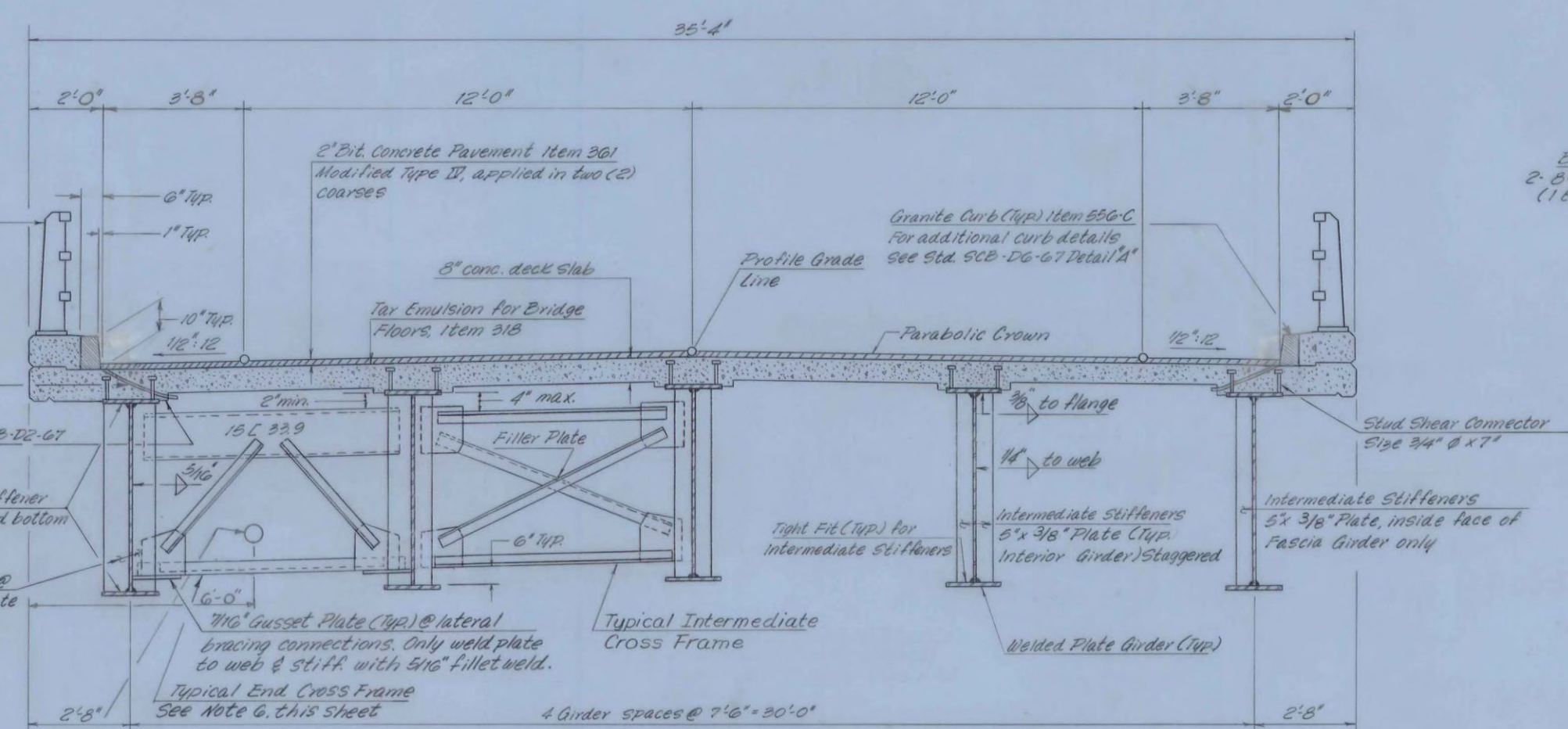
CONTRACT NO. 1 BR 701

NOTE: The concrete floor slab surface shall be finished with a self-propelled concrete finishing machine.

For railing details, see Std. Sht. 62-R1-64 & 62-R2-65.

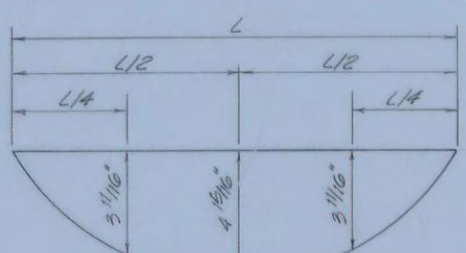
For haunch details, see SCD-52-67.

NOTE: For slab reinforcing details, see B.R. 723. 5/8" bars shall be cut in the field to fit the skewed end. The cut off bars shall be used at the opposite end.

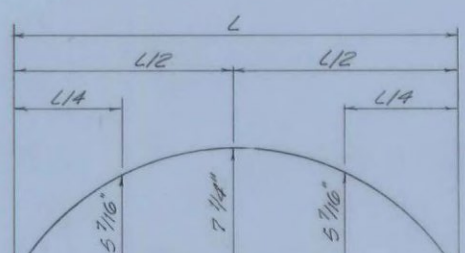


TYPICAL SECTION

Scale: 1/8" = 1'-0"



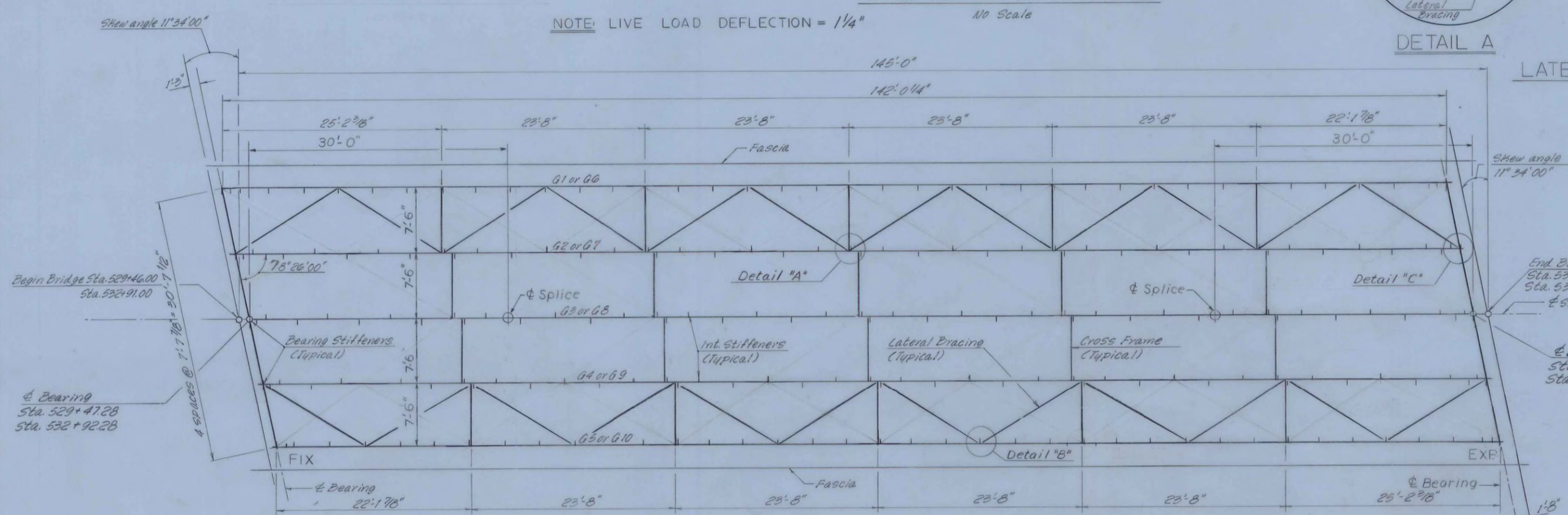
DEFLECTION DIAGRAM



CAMBER DIAGRAM

INTERIOR GIRDER (TYPICAL)

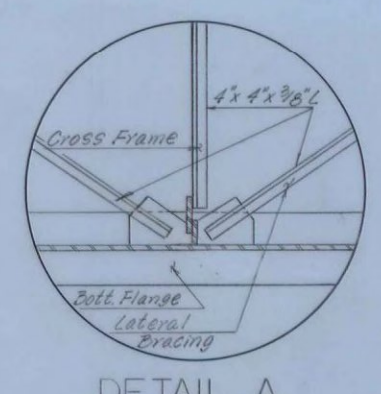
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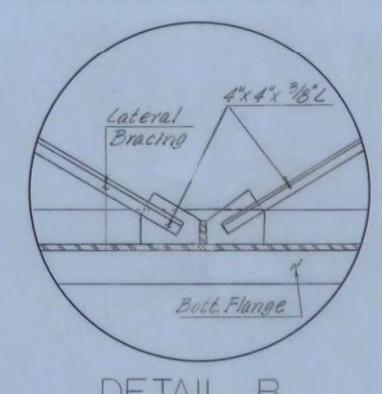
FRAMING PLAN TYPICAL

Scale: 1/8" = 1'-0"

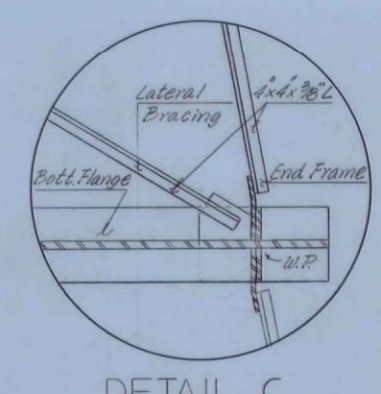
Added Note No. 7 R.P.G. 3-25-67



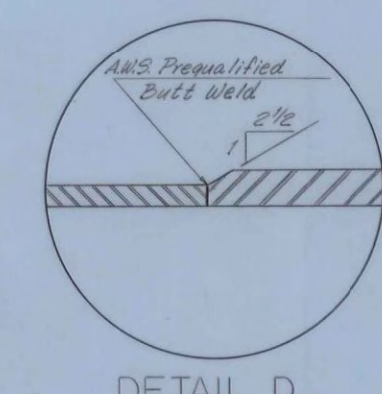
DETAIL A



DETAIL B



DETAIL C



DETAIL D

LATERAL BRACING DETAILS

No Scale

NOTES:

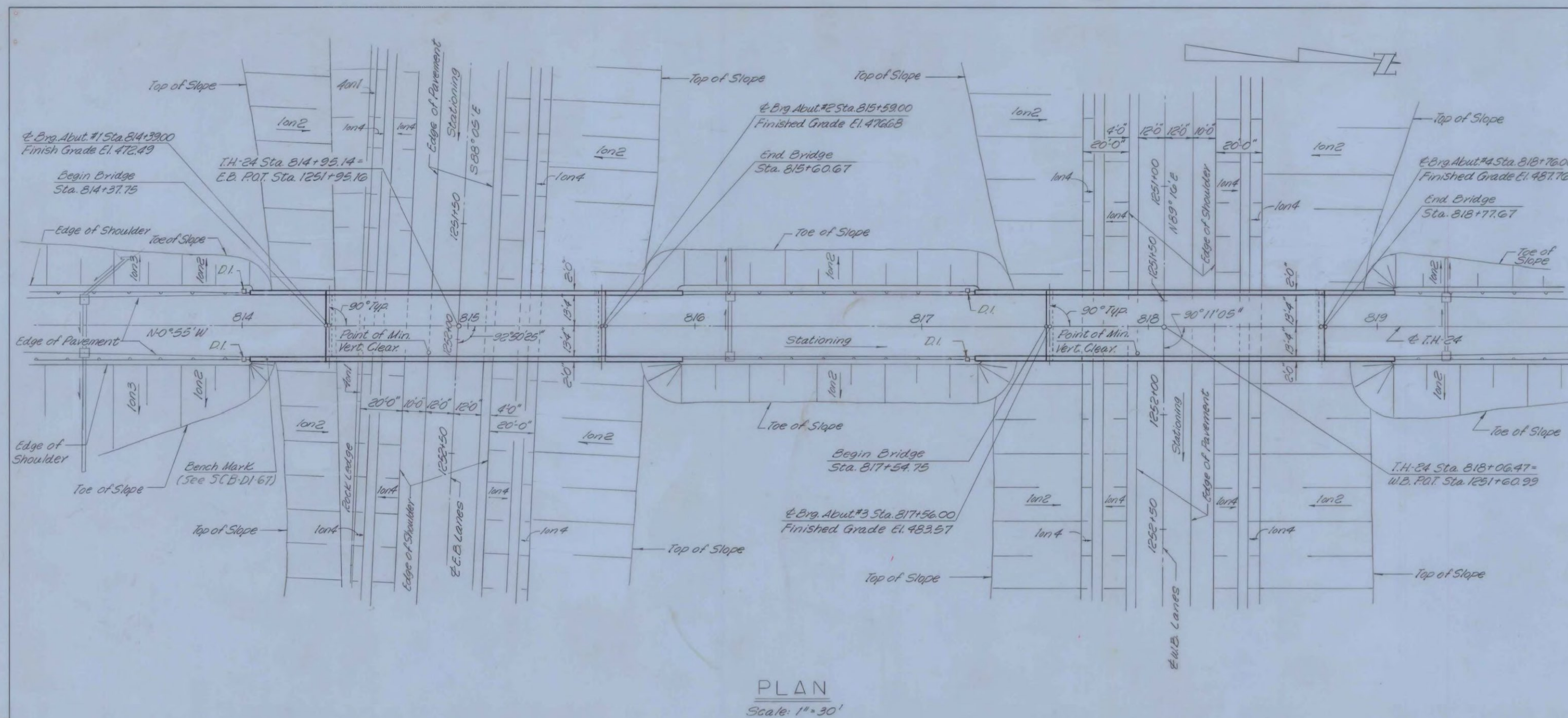
1. For General Notes, see B.R. 701.
2. For Joint Detail at Abutments, see B.R. 702. For Bearing Details, see B.R. 707.
3. For Steel Shear Connector details, see B.R. 707.
4. For Beam Haunch Details, see SCD-52-67.
5. All studs are to be 3/4" x 7" welded studs. If 3/8" studs are used, increase the spacing shown for 3/4" studs by 20%.
6. All gusset and connection plates shall be 3/16" plates. Gusset plates shall be welded to stiffeners with 3/16" fillet welds. All angles shall be 4" x 4" x 1/2".
7. Connection plates shall be bolted to stiffeners.

VERMONT STATE HIGHWAY DEPARTMENT TOWN OF FAIR HAVEN U.S. ROUTE 4		
SA 5 RELOCATED OVER U.S. ROUTE 4 RELOCATED SUPERSTRUCTURE DETAILS		
DESIGNED: A.B.P.	CHECKED: R.C.	DATE: OCT. 1, 1967
DRAWN: L.R.S.	IN CHARGE: H.G.C.	SCALE: AS NOTED
PROJECT NO. F0201(4) SH-28 OF 332		

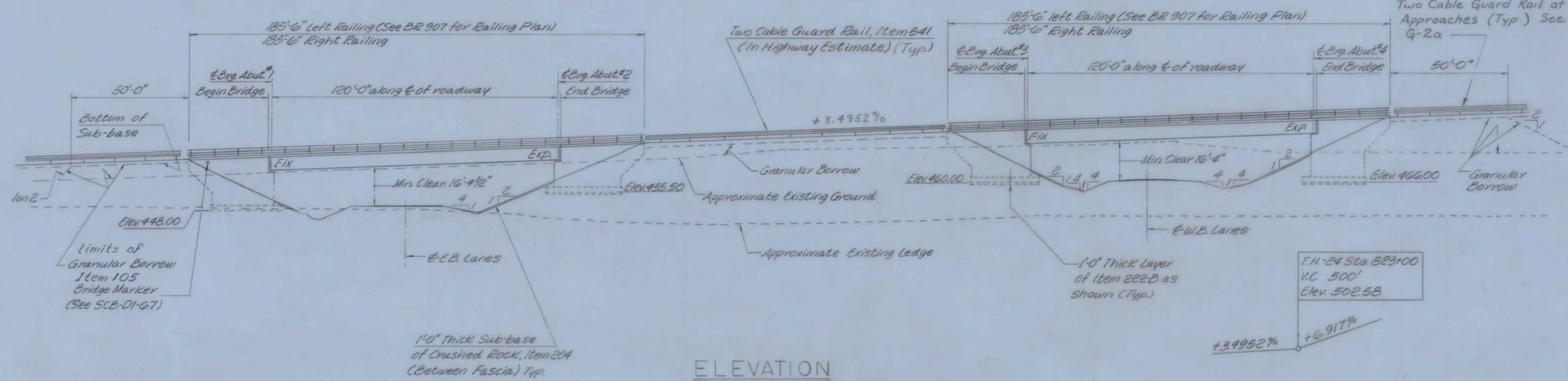
FAIRHAVEN-RUTLAND
BHP BPNT (10)
PROJECT BRIDGE #7E & 7W
SHEET 20 OF 28
FOR INFORMATION ONLY

CONTRACT NO. 1

BR 706



PLAN
Scale: 1"=30'



ELEVATION
Scale: 1"=30'

STANDARD DRAWINGS

SCB-DE-67 CURB DETAILS & CONSTRUCTION JOINT DETAILS-DET. A,B & D MAY 23-69 R
SCB-DE-67 DECK REINFORCING LAYOUT AT ABUTMENT- DEC. 17-68
SCB-DE-67 BEAM HAUNCH- DET. C JAN. 24-68
SCB-DE-67 BENCH MARK & BRIDGE MARKER DETAILS & GENERAL NOTES JAN. 24-68
SB-DE-65 STEEL RAILING DETAILS- NOV 8-66
SB-DE-64 (SHEETS 1 & 2) ALUMINUM RAILING DETAILS- SH. 1 DEC. 16-68R SH. 2 NOV. 8-66R
SCB-DE-67 PLASTIC TUBES AT EXPANSION PLATE- DET. A JAN. 24-68

DESIGN STRESSES

Concrete: $f_c = 3,000$ p.s.i., $f_t = 1,000$ p.s.i.
Structural Steel: $f_s = 20,000$ p.s.i.
(A 36- other steels as per AASHTO Specifications)
Reinforcing Steel: (Intermediate Grade)
 $f_s = 20,000$ p.s.i. (Tension)
 $f_s = 16,000$ p.s.i. (Compression)

GENERAL NOTES

SPECIFICATIONS:
All materials and construction shall conform to the State of Vermont, Department of Highways, Standard Specifications for Highway and Bridge Construction, dated April, 1964, and the AASHTO Standard Specifications dated 1965 as modified by current Interim Specifications.

LIVE LOAD:
Structure designed for HS 20-44 loading modified for National System of Interstate Highways applied in accordance with the provisions of the AASHTO Standard Specifications Article 12.8.

CONCRETE:
All exposed edges of concrete shall be chamfered 1"x1" unless otherwise noted. All construction joints to be made as shown on SCB-DE-67, Details B and C unless otherwise noted.

REINFORCEMENT:
All reinforcement to have a clear cover of 2" unless otherwise noted.

DIMENSIONS:
All dimensions given are measured horizontally or vertically unless otherwise noted. Dimensions given are for 65°F unless otherwise noted. Elevation datum Sea level based on nearest U.S. Government vertical control.

STRUCTURAL STEEL:
Item 404-A shall include all Structural Steel, copper, wrought iron, and any other materials indicated or required in the completed structure which are not otherwise classified. All structural steel shall be structural carbon steel conforming to the requirements of the specifications for steel bridges and buildings A.S.T.M. designation A-36-62, except as otherwise noted. The contractor shall submit complete details of the structural steel to the State of Vermont, Department of Highways, and receive their written approval prior to the start of fabrication. The steel details shall include provisions for cambering of beams for dead load deflection as well as erection diagrams and falsework details. The final coat of field paint shall be green.

WATER REPELLENT:
The top surface of safety walks, fascia and back to the fascia beam under the slab, exposed areas of abutments not otherwise treated, shall be covered with Water Repellent (Item 404).

FIELD BOLTING:
Field bolted connections shall be made with 7/8" ϕ A325 High Strength Bolts. A490 bolts are not allowed.

ABUTMENTS:
The top surfaces of all abutments (1234) shall be sloped 1/4" per foot from the back edge of the abutment to the front edge of the abutment except for bearing pads which shall be level. Elevation of Bridge Seats given are for centerline of bearings. The entire exposed top surface of abutments (1234) shall be coated with asphaltic asbestos coating 1/2" thick as per item 407 of the specifications. The application of this item shall be after all painting and incidental items are completed.

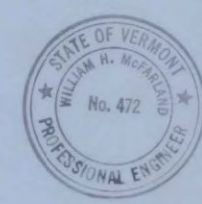
GENERAL:
All expansion material shall be premoistened cork containing no bitumen or asphalt. Payment for waterstop sealing strips and all labor necessary to install same, shall be included in the unit price bid for concrete class B, item 401.8.

BITUMINOUS CONCRETE PAVEMENT:
Bituminous Concrete Pavement item 361 Modified Type II shall be applied in two courses.

INDEX OF DRAWINGS

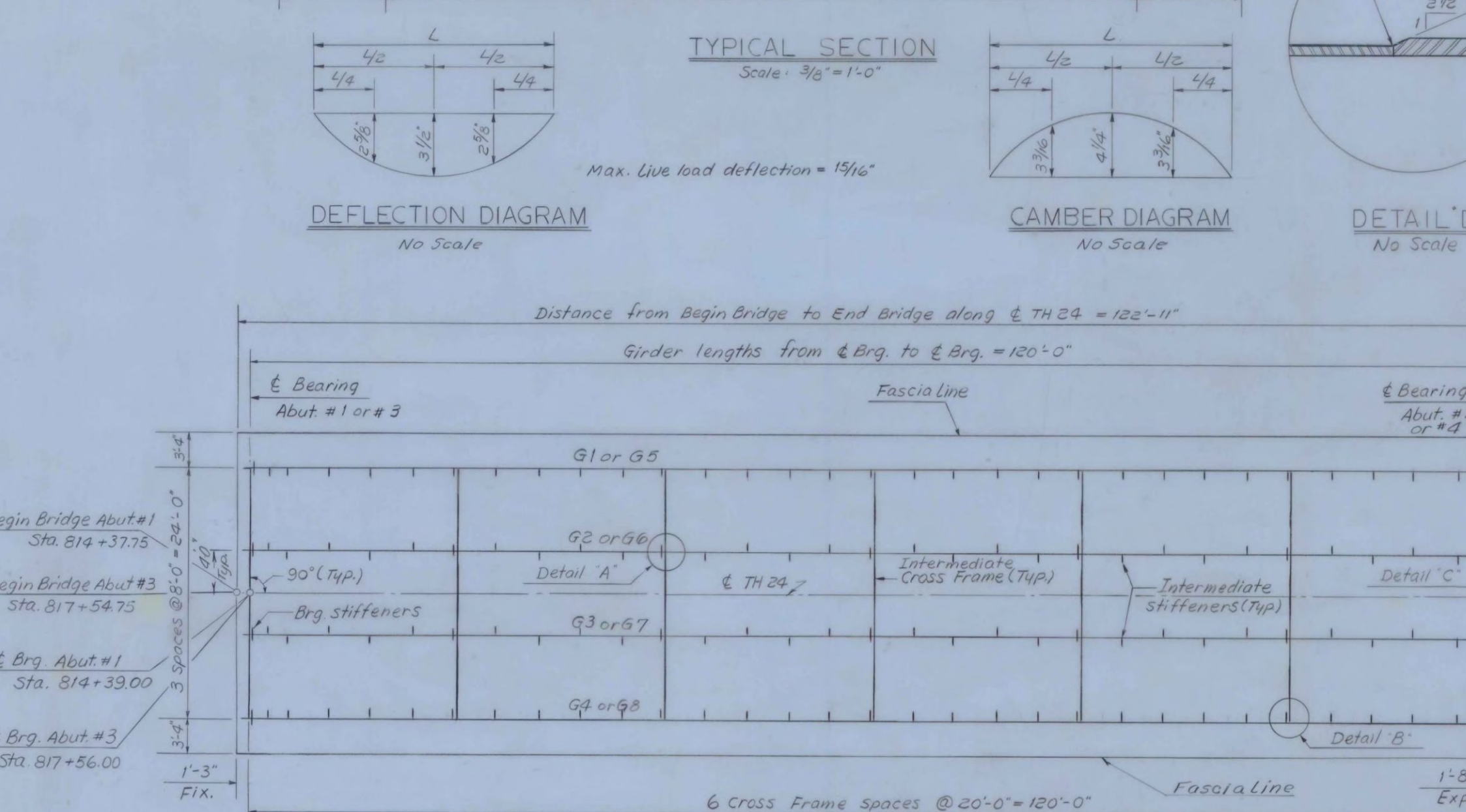
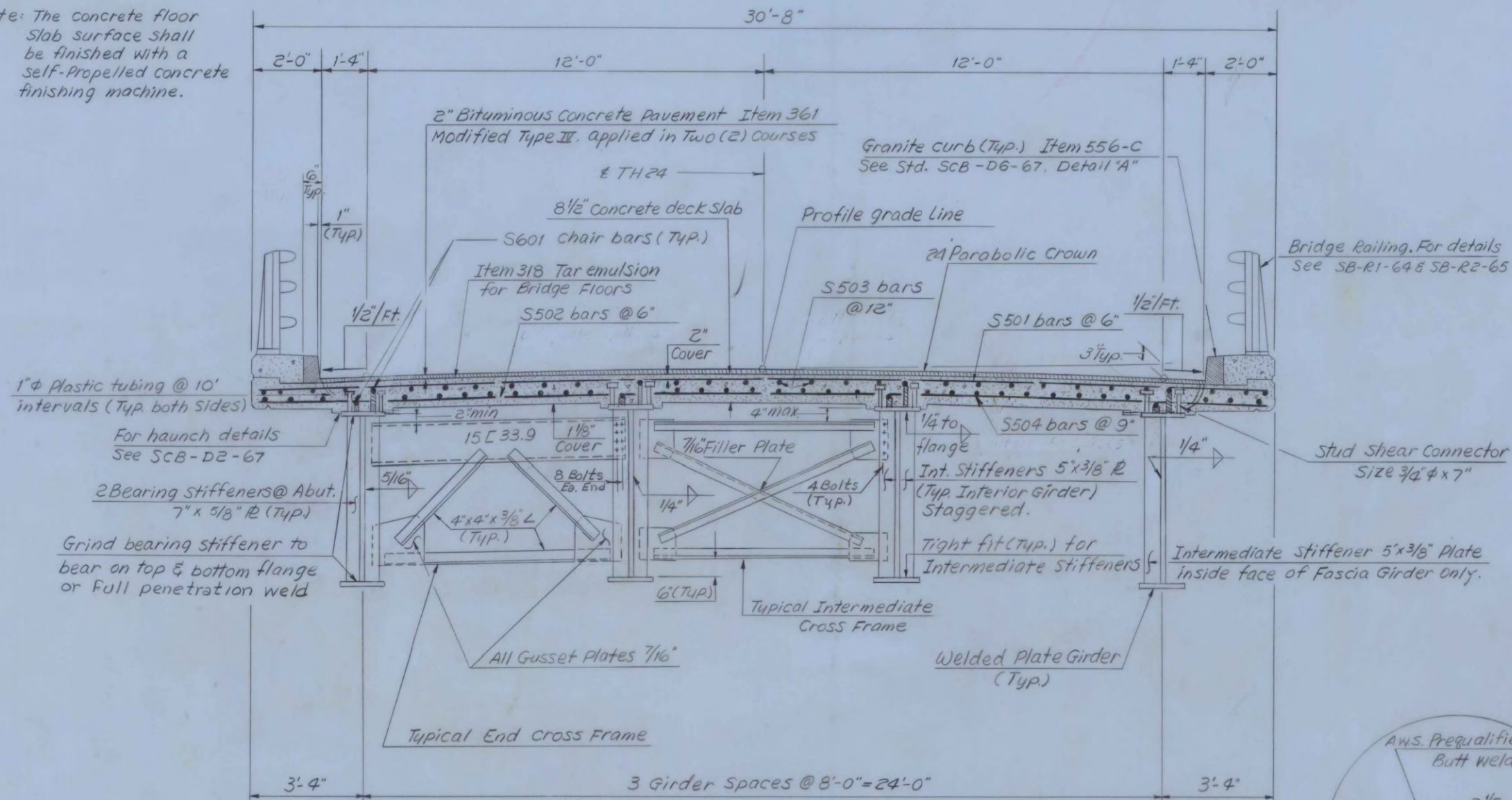
BR 901 PLAN AND ELEVATION
BR 902 BRIDGE QUANTITIES
BR 903 PRELIMINARY INFORMATION SHEET
BR 904 BORING LOG
BR 905 BORING LOG
BR 906 SUPERSTRUCTURE DETAILS
BR 907 SUPERSTRUCTURE DETAILS
BR 908 JOINT DETAILS
BR 909 ABUTMENT NO. 1, WINGWALL NO. 1
BR 910 ABUTMENT NO. 2, WINGWALL NO. 2
BR 911 ABUTMENT NO. 3, WINGWALL NO. 3
BR 912 ABUTMENT NO. 4, WINGWALL NO. 4
BR 913 ABUTMENT NO. 1 THROUGH 4 TYPICAL SECTIONS
BR 914 REINFORCING DETAILS
BR 915 REINFORCING DETAILS
BR 916 REINFORCING DETAILS
BR 917 REINFORCING DETAILS

FAIRHAVEN-RUTLAND
BHF BENT (10)
PROJECT BRIDGE #9E & 9W
SHEET 21 OF 28
FOR INFORMATION ONLY



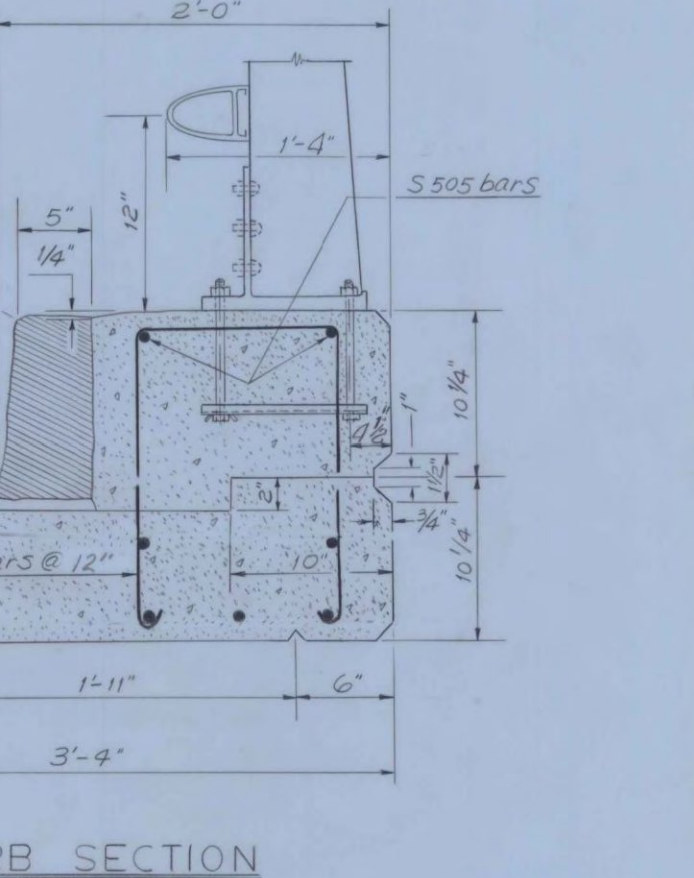
VERMONT
STATE HIGHWAY DEPARTMENT
TOWN OF CASTLETON
U.S. ROUTE 4
TH-24 OVER U.S. RTE. 4
RELOCATION
PLAN AND ELEVATION
McFARLAND-JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK
DESIGNED WJS CHECKED JEL DATE 3-16-68
DRAWN LRS IN CHARGE HGC SCALE AS NOTED
PROJECT NO. APO20450 SH 135 OF 421
CONTRACT NO. BR 901

Note: The concrete floor slab surface shall be finished with a self-applied concrete finishing machine.



- NOTES
1. For General Notes, see BE 901
 2. For Joint Details, see BE 905
 3. For Beam Haunch Details, see SCB-D2-67
 4. All studs are to be 3/4" x 7" welded studs. If 3/4" studs are used, increase spacing shown for 3/4" studs by 50%.
 5. CROSS FRAME NOTES: All gusset and connection plates shall be 7/16" plates. Gusset and connection plates shall be welded to stiffeners with a 5/16" fillet weld. All angles shall be 4'-4" x 3/8" angles.
 6. All shop connections for cross frames shall be 5/16" fillet welds. All field connections shall be 7/8" high strength bolts.
 7. For Stud Shear Connector Detail, see BE 907.

REVISIONS	
DELETED OPTIONAL GIRDER	SPICE R.S.H. 5-21-69
CURB REINFORCING REVISED	R.S.H. 7-31-69



FAIRHAVEN-RUTLAND
BHF BPNT (10)
PROJECT BRIDGE #9E & 9W
SHEET 22 OF 28
FOR INFORMATION ONLY

NOTE: Fascia girders are identical to interior girders except for the intermediate stiffeners, which shall be placed on the inside face only of the fascia girders.

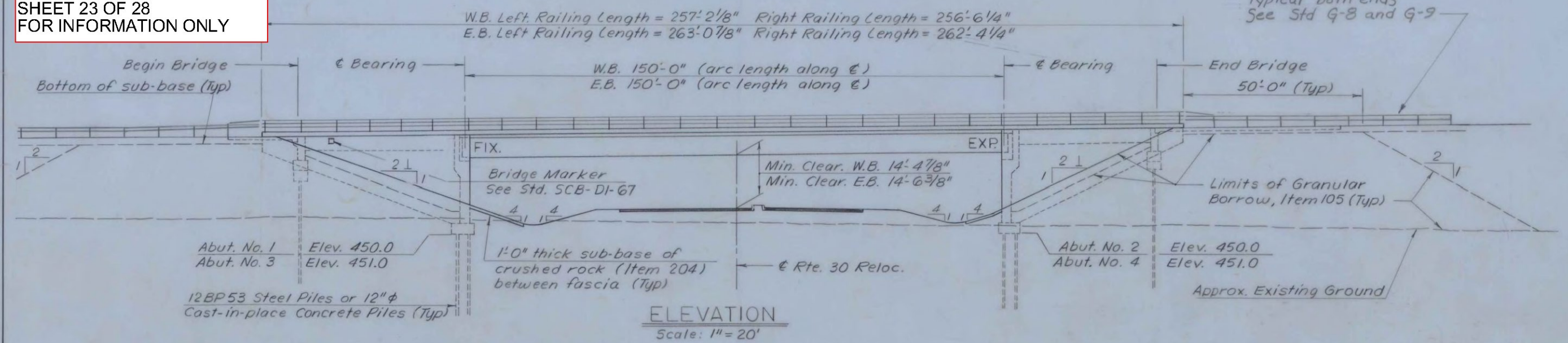
VERMONT
STATE HIGHWAY DEPARTMENT
TOWN OF CASTLETON
U.S. ROUTE 4
TH-24 OVER U.S. RTE 4
RELOCATION
SUPERSTRUCTURE DETAILS

McFARLAND-JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK
DESIGNED W.D.S. CHECKED DEL. DATE 3-18-68
DRAWN L.W.C. IN CHARGE H.G.C. SCALE AS NOTED
PROJECT NO. APO20-160 SH. 400F-421

CONTRACT NO. BR. 906



FAIRHAVEN-RUTLAND
BHF BPNT (10)
PROJECT BRIDGE #10E & 10W
SHEET 23 OF 28
FOR INFORMATION ONLY



GENERAL NOTES

SPECIFICATIONS:

All materials and construction shall conform to the State of Vermont, Department of Highways, Standard Specifications for Highway and Bridge Construction dated April, 1964, and the A.A.S.H.O. Standard Specifications dated 1965, as modified by current Interim Specifications.

LIVE LOAD:

Structure designed for HS-20-44 loading modified for National System of Interstate Highways applied in accordance with the provisions of the A.A.S.H.O. Standard Specifications, Article 1.2.8.

CONCRETE:

All exposed edges of concrete shall be chamfered 1"x1" unless otherwise noted. All construction joints to be made as shown on SCB-D6-67, details B and C, unless otherwise noted.

REINFORCEMENT:

All reinforcement to have a clear cover of 2", unless otherwise noted.

DIMENSIONS:

All dimensions given are measured horizontally or vertically unless otherwise noted. Dimensions given are for 68°F, unless otherwise noted. Elevation datum, sea level, based on nearest U.S. Government vertical control.

STRUCTURAL STEEL:

Item 404-A shall include all structural steel, copper, wrought iron, and any other materials indicated or required in the completed structure which are not otherwise classified.

All structural steel shall be structural carbon steel conforming to the requirements of the specifications for steel bridges and buildings ASTM Designation A-36-62T, except as otherwise noted.

The contractor shall submit complete details of the structural steel to the State of Vermont, Department of Highways, and receive their written approval prior to the start of fabrication. The steel details shall include provisions for cambering of beams for dead load deflection as well as erection diagrams and falsework details. The final coat of field paint shall be green.

WATER REPELLENT:

The top surfaces of safety walks, fascia and back to the fascia beam under the slab, and on exposed areas of abutments not otherwise treated, and the area inside the abutments shall be covered with water-repellent (Item 440).

FIELD BOLTING:

Field bolted connections shall be made with 7/8" A 325 High Strength bolts. A490 bolts are not allowed.

ABUTMENTS:

The top surfaces of all abutments shall be sloped 1/4" per foot from the front edge of abutment curtainwalls, except for bearing pads projecting 1" or more above the general area, which surfaces shall be level. Elevations of bridge seats given are for centerline of bearings. The entire exposed top surface of abutments shall be coated with Asphaltic-Asbestos Coating, 1/8" thick, as per Item 407 of the specifications. The application of this item shall be after all painting and incidental items are completed. Fill inside the abutments shall be graded to 3" above the bottom of the exterior concrete girders of the abutment section and shall meet the requirements of Item 105.

PILES:

Cast-in-place piling or steel piling will be chosen by alternate bids. Vertical Design Loads: 40 tons/pile (12" cast-in-place); 58 tons/pile (12" BP-53 steel). Horizontal Design Load: 10 tons per pile. Steel piling shall be driven to edge. Cast-in-place piling shall be driven to the lengths indicated on the plans unless otherwise directed by the Engineer. Care shall be taken not to damage the tip of the cast-in-place piles.

GENERAL:

Cross slopes of the approach slabs to conform to the cross slope of the bridge. All expansion material shall be premoulded cork containing no bitumen or asphalt.

BITUMINOUS CONCRETE PAVEMENT:

Bituminous concrete pavement, Item 361 Modified, Type II, shall be applied in two courses.

INDEX OF DRAWINGS

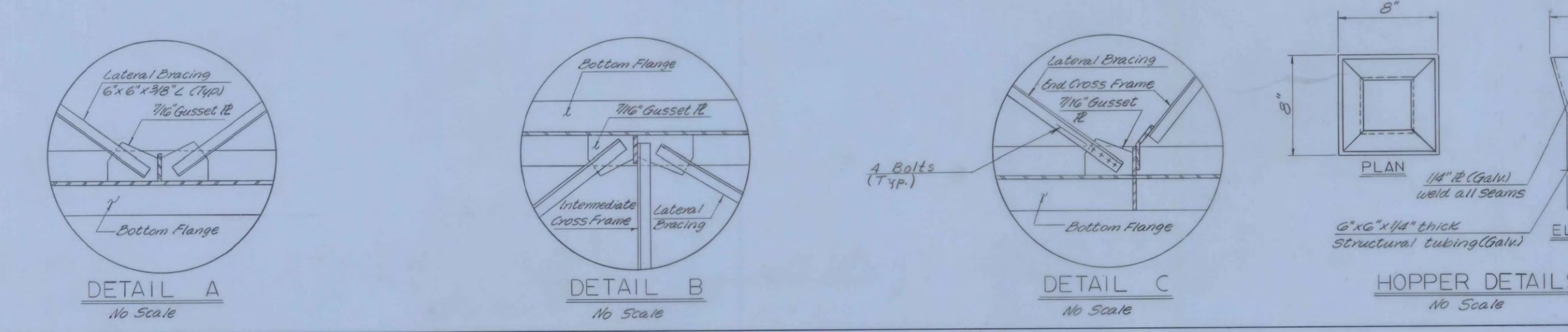
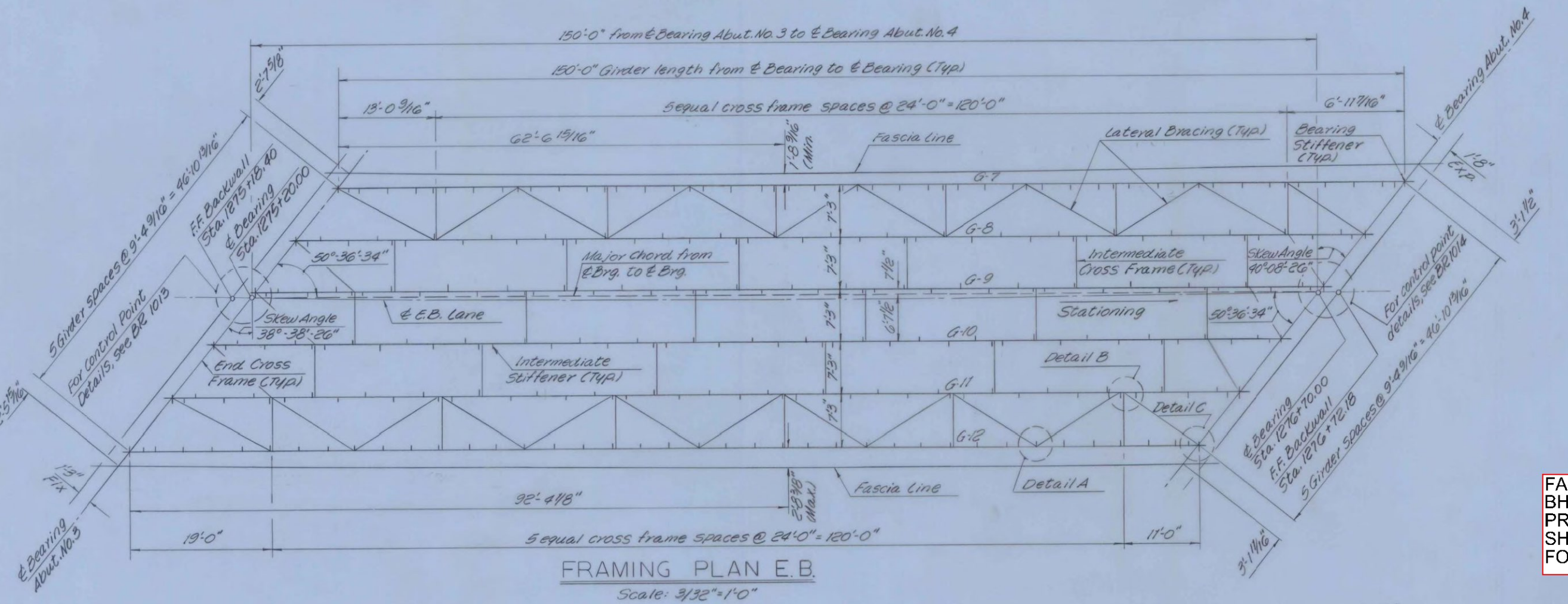
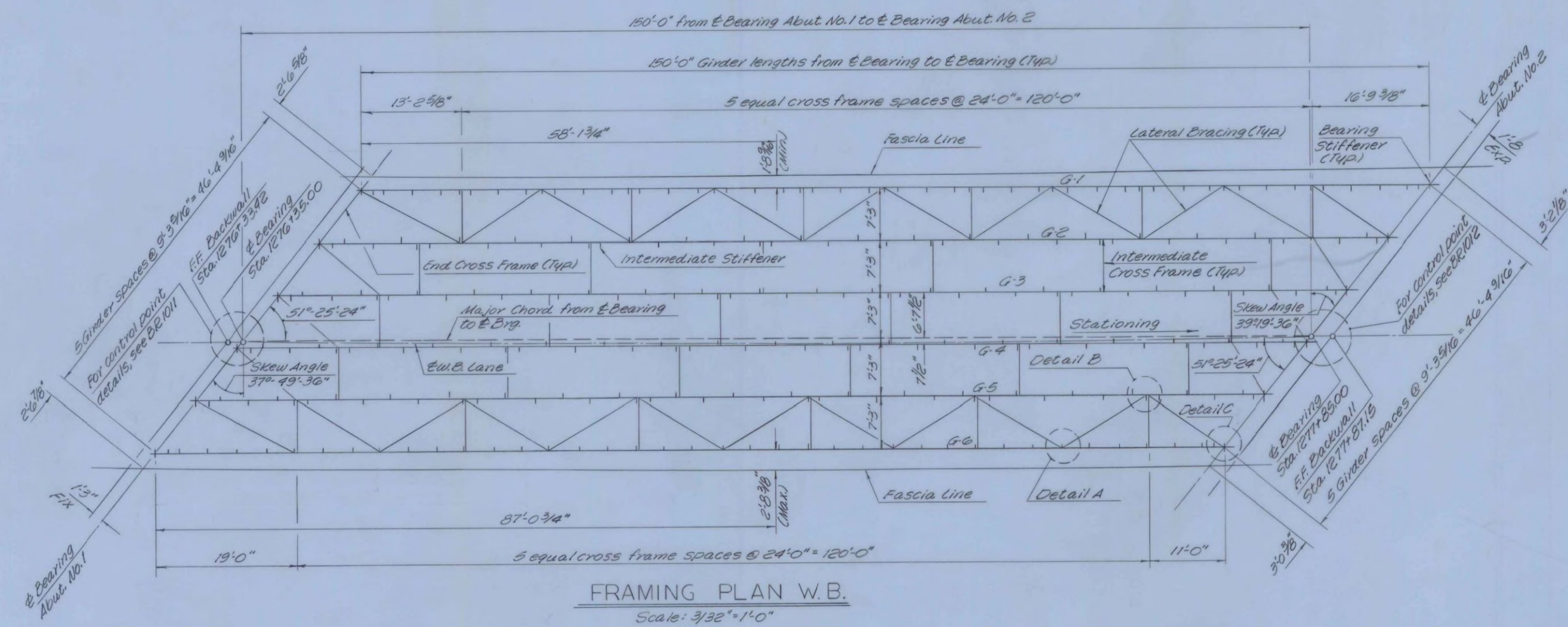
BR1001 PLAN AND ELEVATION
BR1002 QUANTITY SHEET
BR1003 PRELIMINARY INFORMATION SHEET
BR1004 BORING LOG
BR1005 BORING LOG
BR1006 BORING LOG
BR1007 SUPERSTRUCTURE DETAILS
BR1008 SUPERSTRUCTURE DETAILS
BR1009 SUPERSTRUCTURE DETAILS
BR1010 JOINT DETAILS
BR1011 ABUTMENT NO. 1 DETAILS
BR1012 ABUTMENT NO. 2 DETAILS
BR1013 ABUTMENT NO. 3 DETAILS
BR1014 ABUTMENT NO. 4 DETAILS
BR1015 EXTERIOR GIRDERS ABUTMENTS 1 & 2
BR1016 EXTERIOR GIRDERS ABUTMENTS 3 & 4
BR1017 FOOTING DETAILS & TYPICAL SECTIONS
BR1018 FOOTING DETAILS & TYPICAL SECTIONS
BR1019 APPROACH SLAB NO. 1
BR1020 APPROACH SLAB NO. 2
BR1021 APPROACH SLAB NO. 3
BR1022 APPROACH SLAB NO. 4
BR1023 REINFORCING DETAILS
BR1024 REINFORCING DETAILS
BR1025 REINFORCING DETAILS
BR1026 REINFORCING DETAILS

DESIGN STRESSES
Concrete $f_c = 3,000$ p.s.i.
 $f_c = 1,200$ p.s.i.
Structural Steel $f_s = 20,000$ p.s.i.
(A36, other steels as per AASHTO specs)
Reinforcing Steel $f_s = 20,000$ p.s.i. (tension)
(intermediate) $f_s = 16,000$ p.s.i. (compression)

STANDARD DRAWINGS

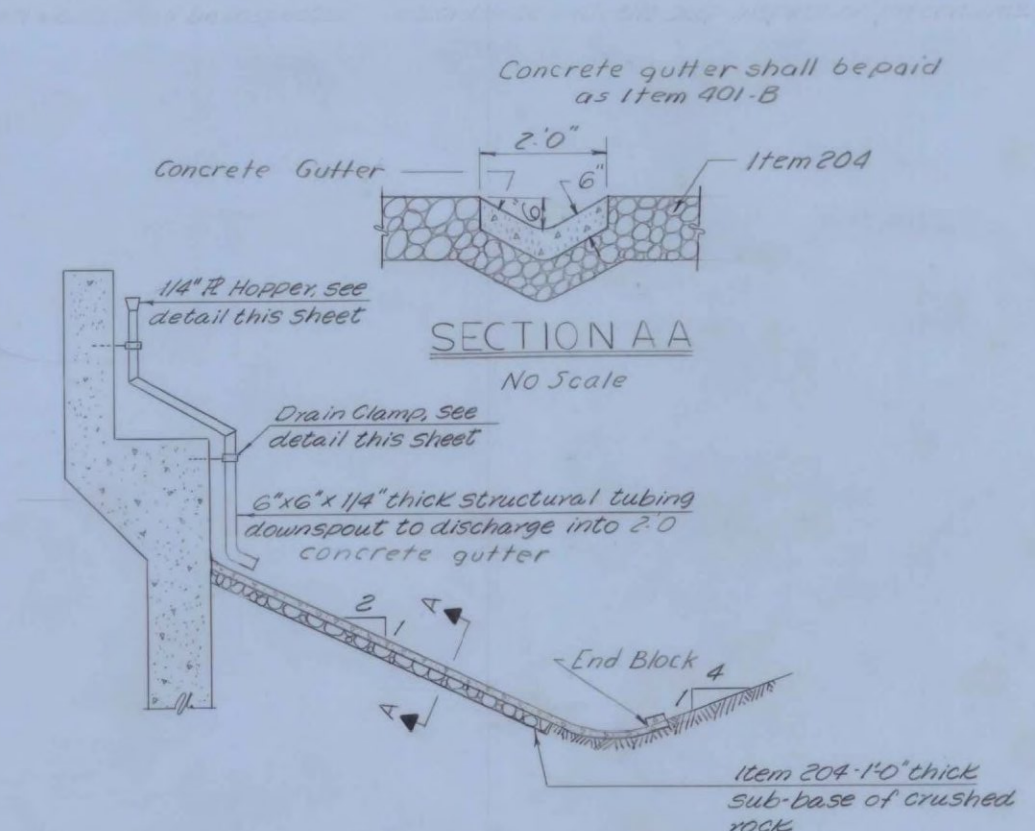
SCB-D6-67 PILE SPLICE DETAILS & CONSTRUCTION JOINT DETAILS MAY 13-63R
SCB-D4-67 DECK REINFORCING LAYOUT AT ABUTMENTS DEC. 17-68
SCB-D2-67 BEAM HAUNCH JAN. 24-68
SCB-D1-67 BENCH MARK & BRIDGE MARKER DETAILS AND GENERAL NOTES JAN. 24-68
SB-R2-65 STEEL RAILING DETAILS NOV. 8-64
SB-R1-64 (SHEETS 1 AND 2) ALUMINUM RAILING DETAILS SH 1 OF 2 DEC. 16-68
SH-2 OF 2 NOV. 8-66
SB-F1-66 CAST-IN-PLACE CONCRETE PILING NOV. 8-66
G-8 BRIDGE RAILING (BRIDGE APPROACHES) FEB. 13-68
G-9 BRIDGE RAILING (BRIDGE APPROACHES) AUG. 21-68

VERMONT
STATE HIGHWAY DEPARTMENT
TOWN OF CASTLETON
U.S. ROUTE 4
U.S. RTE. 4 RELOCATION
OVER RTE. 30 RELOC.
PLAN AND ELEVATION
MEFARLAND-JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK
DESIGNED BRK. CHECKED REG. DATE 9-16-68
DRAWN RMG. IN CHARGE HGC SCALE AS SHOWN
PROJECT NO. APO20K01SH 152 OF 221
CONTRACT NO. F (C) BR 1001



FAIRHAVEN-RUTLAND
 BHF BPNT (10)
 PROJECT BRIDGE #10E & 10W
 SHEET 24 OF 28
 FOR INFORMATION ONLY

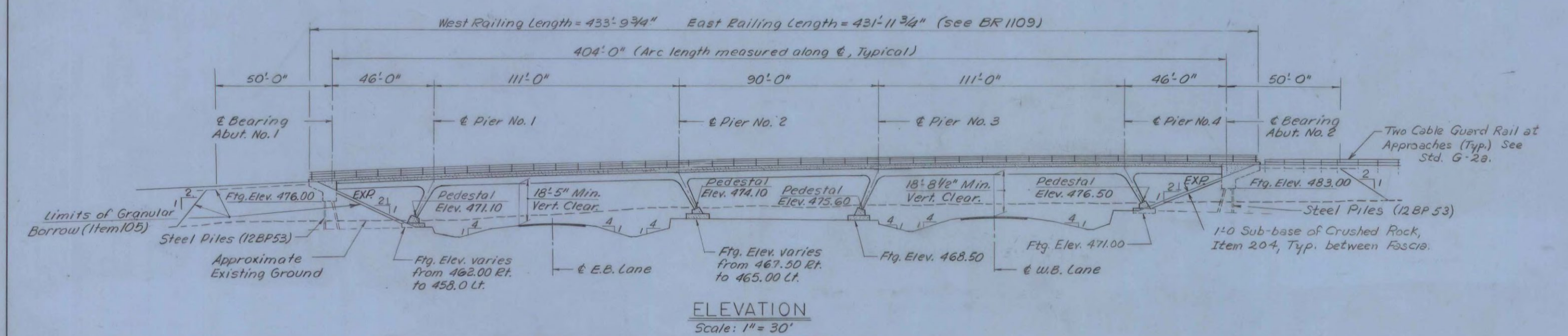
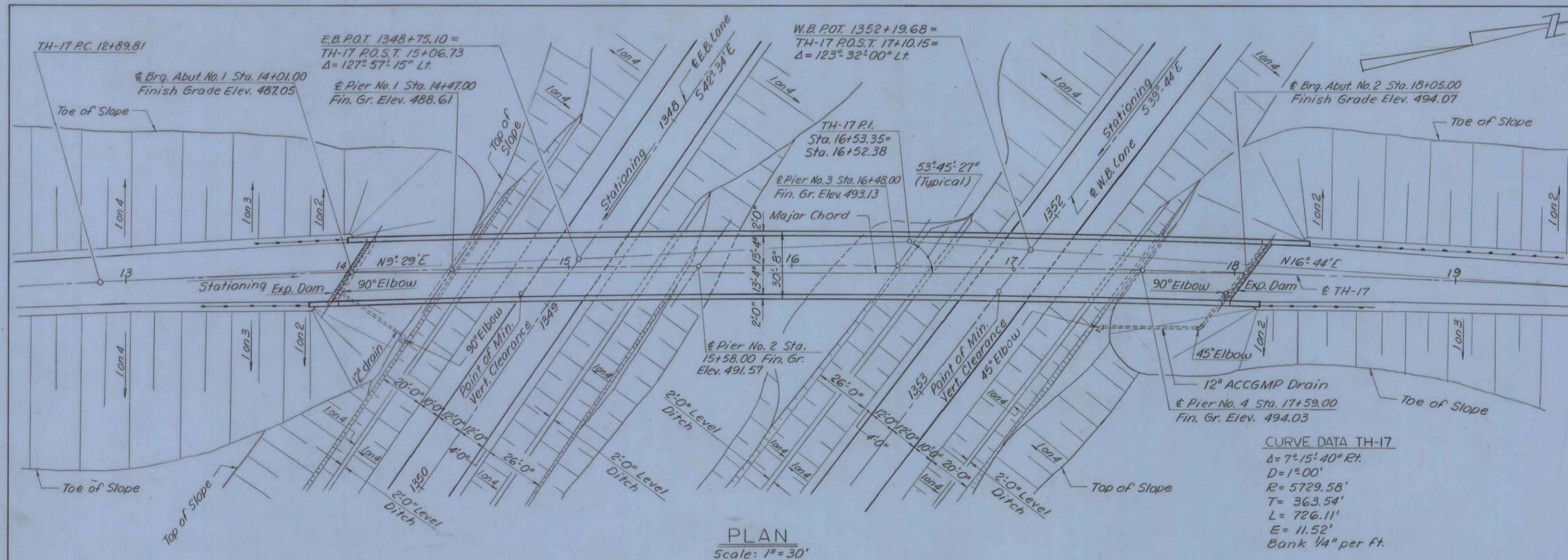
REVISION
 DELETED OPTIONAL GIRDER
 SPICE
 INCREASED LATERAL BRACING
 TO 6X6X7/8 & RSH 5-21-69



Downspouts to be placed inside of north fascia girders. Downspout is included in the price of the expansion joint. (To be paid for under Item 404-A)
 DOWNSPOUT DETAIL AT EXPANSION JOINT
 No Scale

NOTES:
 1. For General Notes, see BE 1001.
 2. For Cross Frame Notes, see BE 1007.
 3. All girders are parallel to the Major Chord.

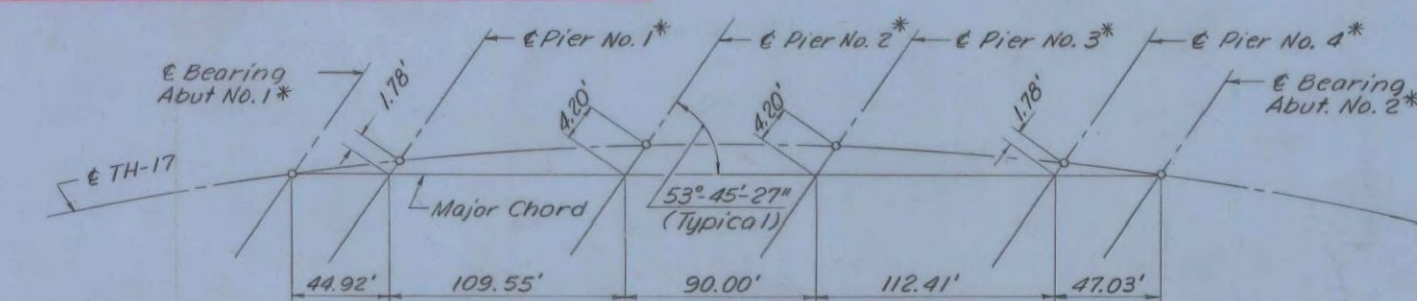
VERMONT
 STATE HIGHWAY DEPARTMENT
 TOWN OF CASTLETON
 U.S. ROUTE 4
 US RTE. 4 RELOCATION
 OVER RTE. 30 RELOC.
 SUPERSTRUCTURE DETAILS
 McFARLAND-JOHNSON
 CONSULTING ENGINEERS
 BINGHAMTON, NEW YORK
 DESIGNED WDS. CHECKED REC. DATE 9-16-68
 DRAWN L.R.S. IN CHARGE H.G.C. SCALE AS SHOWN
 PROJECT NO. AP020-150 SH 159 OF 24
 CONTRACT NO. BR 1008



INDEX OF DRAWINGS

BE 101	PLAN AND ELEVATION
BE 102	BRIDGE QUANTITY SHEET
BE 103	PRELIMINARY INFORMATION SHEET
BE 104	BOILING LOG
BR 105	SUPERSTRUCTURE DETAILS
BR 106	SUPERSTRUCTURE DETAILS
BR 107	SUPERSTRUCTURE DETAILS
BR 108	SUPERSTRUCTURE DETAILS
BR 109	SUPERSTRUCTURE DETAILS
BR 110	JOINT DETAILS
BR 111	ABUTMENT NO. 1 DETAILS
BR 112	ABUTMENT NO. 2 DETAILS
BR 113	ABUTMENT FOOTING DETAILS & TYPICAL SECTIONS
BR 114	PIER NO. 1 & PIER NO. 2
BR 115	PIER NO. 3 & PIER NO. 4
BR 116	REINFORCING STEEL DETAILS
BR 117	REINFORCING STEEL DETAILS

CONTRACTOR E.T. O'NEIL & SON
RESIDENT ENGINEER N.W. BITTNER
RECORD PLANS R.L. WEIGHERT
MATERIALS
CONCRETE (AA & B) J. CARRARA
REINFORCING STEEL BETHLEHEM STEEL
STRUCTURAL STEEL V.T. STRUCT. STEEL
BRIDGE RAILINGS S.T. GRISWOLD



SUPERSTRUCTURE LAYOUT FROM MAJOR CHORD
 No Scale
 * WORKING POINTS ARE LOCATED AT TOP OF STEEL FRAME AS SHOWN ON BR. 1106. FOR SUBSTRUCTURE LAYOUT SEE BR. 1113

STANDARD DRAWINGS
 SCB-DI-67 BENCH MARK DETAILS & GENERAL NOTES APRIL 28, 1970 R
 SCB-D6-67 CURB DETAILS, PILE SPICE DETAILS, & CONSTRUCTION JOINT DETAILS APRIL 28, 1970 R
 SB-E2-65 STEEL RAILING DETAILS Nov. 8, 1964 R
 SB-EI-64 (SHEETS 1 & 2) ALUMINUM RAILING DETAILS APRIL 28, 1970 R
 SCB-D2-67 BEAM HAUNCH Jan. 24, 1968
 SCB-D7-67 DIAPHRAGM DETAILS Jan. 24, 1968

DESIGN STRESSES
 CONCRETE: $f'_c = 3,000 \text{ p.s.i.}$
 $f_c = 1,200 \text{ p.s.i.}$
 STRUCTURAL STEEL: $f_s = 20,000 \text{ p.s.i.}$ (A36, other steels as per AASHTO Specifications)
 REINFORCING STEEL: $f_s = 20,000 \text{ p.s.i.}$ (Tension)
 $f_s = 16,000 \text{ p.s.i.}$ (Compression) (intermediate grade)

GENERAL NOTES

SPECIFICATIONS:
 All materials and construction shall conform to the State of Vermont, Department of Highways, Standard Specifications for Highway and Bridge Construction, dated April, 1964 and the AASHTO Standard Specifications dated 1963, as modified by current Interim Specifications.

LIVE LOAD:
 Structure designed for HS-20-44 loading modified for National System of Interstate Highways applied in accordance with the provisions of the AASHTO Standard Specifications Article 1.2.8.

CONCRETE:
 All exposed edges of concrete shall be chamfered 1" x 1" unless otherwise noted. All construction joints to be made as shown on SCB-D6-67 details B and C unless otherwise noted.

REINFORCEMENT:
 All reinforcement to have a clear cover of 2", unless otherwise noted.

DIMENSIONS:
 All dimensions given are measured horizontally or vertically unless otherwise noted. Dimensions given are for 68°F, unless otherwise noted. Elevation datum sea level based on nearest U.S. Government vertical control.

STRUCTURAL STEEL:
 Item 404-A shall include all structural steel, copper, wrought iron, and any other materials indicated or required in the completed structure which are not otherwise classified. Structural steel shall be structural carbon steel conforming to the requirements of the specifications for steel bridges and buildings ASTM Designations as noted on the project plans. The contractor shall submit complete details of the structural steel to the State of Vermont, Department of Highways, and receive their written approval prior to start of fabrication. The steel details shall include provisions for cambering of beams for dead load deflection as well as erection diagrams and falsework details. The final coat of field paint shall be green.

WATER REPELLENT:
 The top surfaces of safety walks, fascia, bottom of deck slab back to the exterior frame and the exposed areas of the piers and abutments not otherwise treated shall be covered with Water Repellent (Item 440).

FIELD BOLTING:
 Field bolted connections shall be made with 3/8" x A325 High Strength bolts. A490 bolts are not allowed.

ABUTMENTS AND PIERS:
 The top surfaces of all abutments shall be sloped 1/4" ft. from the front edge of abutment and curbside walls except for bearing pads, which shall be level. Elevation of bridge seats given are for centerline of bearings. The entire exposed top surface of abutments shall be coated with Asphaltic-Asbestos coating 1/8" thick as per Item 407 of the specifications. The application of this item shall be after all painting and incidental items are completed.

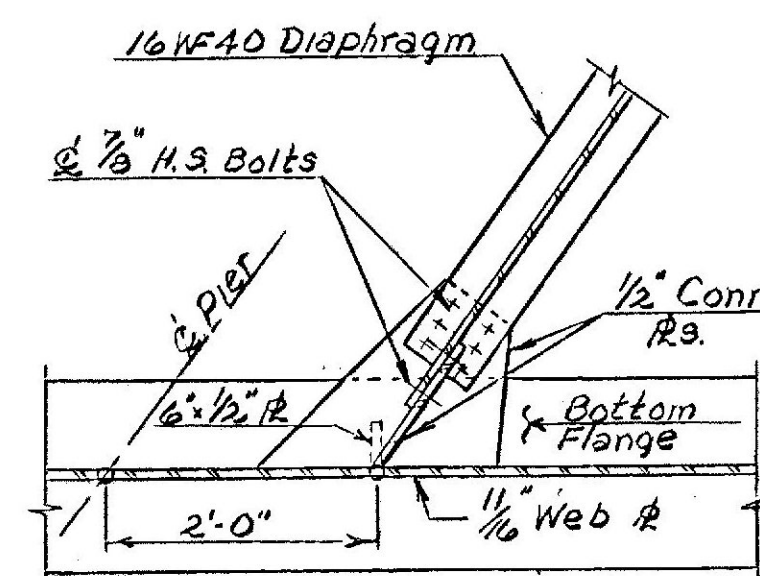
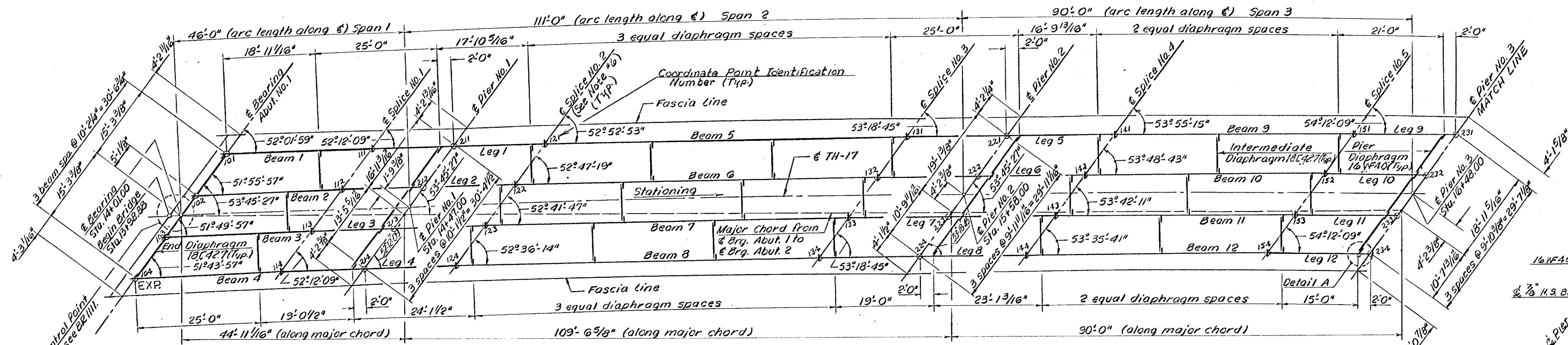
STEEL PILES:
 Steel bearing piles shall be driven to ledge rock unless otherwise approved by the engineer. When piles are driven in fill the material shall be such as to have no stones large enough to interfere with the driving of the piles. All pile points shall be reinforced with steel plates as specified in Article 503.03, Subarticle C, Part 1 of the Special Provisions for Item 503-C, Steel Piling.

GENERAL:
 All expansion material shall be premixed cork containing no bitumen or asphalt. Pavement sealing strips and all labor necessary to install same shall be included in the unit price bid for Concrete Class B, Item 401-B.

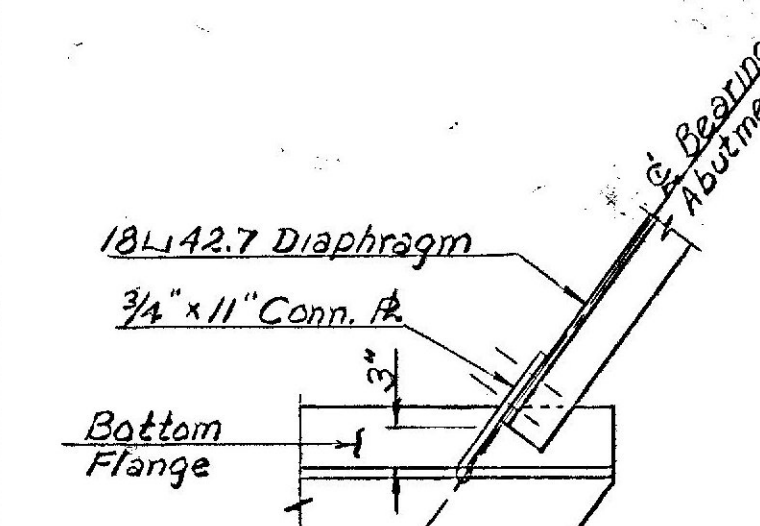
BITUMINOUS CONCRETE PAVEMENT
 Bituminous Concrete Pavement, Item 361 (Modified) Type II mix shall be applied in two courses.

FAIRHAVEN-RUTLAND
 BHP BPNT (10)
 PROJECT BRIDGE #D11
 SHEET 25 OF 28
 FOR INFORMATION ONLY

VERMONT
 STATE HIGHWAY DEPARTMENT
 TOWN OF CASTLETON
 U.S. ROUTE 4
 TH-17 RELOC. OVER U.S. RTE 4 RELOC.
 PLAN AND ELEVATION
 MCFARLAND & JOHNSON
 CONSULTING ENGINEERS
 BINGHAMTON, NEW YORK
 DESIGNED BRK [CHECKED BFC] DATE 7-12-68
 DRAWN RMG IN CHARGE HGC SCALE AS SHOWN
 PROJECT NO. F020-1(7) SH 43 OF 204
 CONTRACT NO. BR. 1101



DETAIL A
Scale: 3/4" = 1'-0"



DETAIL B
Scale: 3/4" = 1'-0"

Beam 1	28'-11 1/4"	Legs 9-12	41'-0"
Beam 2	28'-11 3/4"	Beam 13	72'-10 5/8"
Beam 3	29'-0 3/16"	Beam 14	72'-11 9/16"
Beam 4	29'-0 11/16"	Beam 15	73'-0 7/16"
Legs 1-4	35'-0"	Beam 16	73'-1 3/8"
Beam 5	72'-10 3/8"	Legs 13-16	35'-0"
Beam 6	72'-11 1/2"	Beam 17	28'-11 7/16"
Beam 7	73'-0 9/16"	Beam 18	28'-11 13/16"
Beam 8	73'-1 7/8"	Beam 19	29'-0 3/16"
Legs 5-8	41'-0"	Beam 20	29'-0 9/16"
Beam 9	47'-10 3/4"		
Beam 10	47'-11 1/16"		
Beam 11	48'-0 3/8"		
Beam 12	48'-1 3/16"		

* @ Top of Steel Frame

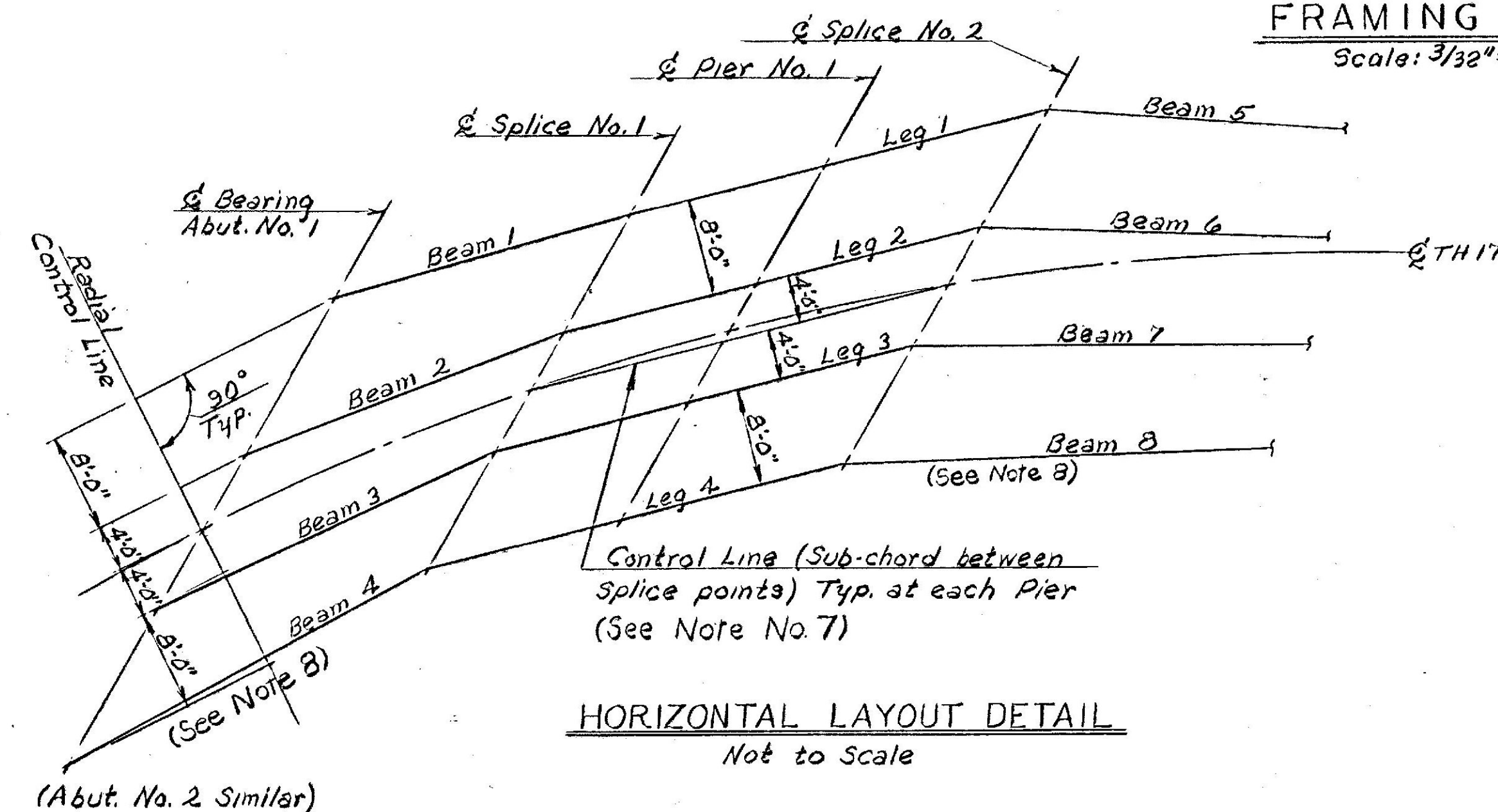
FAIRHAVEN-RUTLAND
BHF BPNT (10)
PROJECT BRIDGE #D11
SHEET 26 OF 28
FOR INFORMATION ONLY

FRAMING PLAN
Scale: 3/32" = 1'-0"

Point	North	South	Point	North	South
101	3762.123	3949.430	151	3983.326	3935.676
102	3754.750	3956.133	152	3975.898	4002.165
103	3747.077	3962.837	153	3968.470	4008.654
104	3739.404	3969.540	154	3961.042	4015.144
111	3790.842	3954.898	231	4003.756	4000.415
112	3783.218	3961.593	232	3996.328	4006.904
113	3775.593	3968.220	233	3988.901	4013.394
114	3767.969	3974.881	234	3981.473	4019.884
211	3807.506	3958.155	161	4023.265	4004.731
212	3799.882	3964.816	162	4015.837	4011.220
213	3792.257	3971.477	163	4008.410	4017.710
214	3784.633	3978.138	164	4000.982	4024.200
121	3825.192	3961.612	171	4024.057	4022.276
122	3817.567	3968.273	172	4016.631	4028.766
123	3809.943	3974.934	173	4009.204	4035.256
124	3802.319	3981.595	174	4001.777	4041.746
131	3896.534	3976.437	241	4111.491	4026.277
132	3888.901	3983.098	242	4104.064	4032.767
133	3881.267	3989.759	243	4096.637	4039.257
134	3873.633	3996.420	244	4089.210	4045.747
221	3916.057	3980.448	181	4127.992	4030.811
222	3908.433	3987.109	182	4120.565	4037.301
223	3900.809	3993.770	183	4113.138	4043.791
224	3893.185	4000.431	184	4105.711	4050.281
141	3936.613	3983.081	191	4156.008	4038.133
142	3929.000	3989.742	192	4148.581	4044.623
143	3921.387	3996.403	193	4141.154	4051.113
144	3913.774	4003.064	194	4133.727	4057.603

NOTES

- For General Notes, see BR 1101.
- For Diaphragm Details, see Std. SCB-D7-67.
- For Pier Diaphragm Details, see BR 1108.
- All shop connections for Diaphragms shall be 5/16" fillet welds. All field connections shall be 1/8" & high-strength bolts.
- & Pier is defined as the intersection of & Frame Leg and top of steel frame.
- Frames are bent at each splice point.
- Legs between splice points are of equal length and are parallel to each other.
- Beams are of unequal lengths and are not parallel to each other.
- Lengths of end beams are measured from & bearing at abutments to & splice.
- Lengths of legs and intermediate beams are measured from & splice to & splice.
- & bearing lines at abutments, & Pier lines and & splice lines are parallel to each other. & bearing lines at piers are not parallel to each other.



Added Horizontal Layout Detail and
Beam & Leg Coordinates Table, Revised
Detail A.

W. Tripp 10-29-69

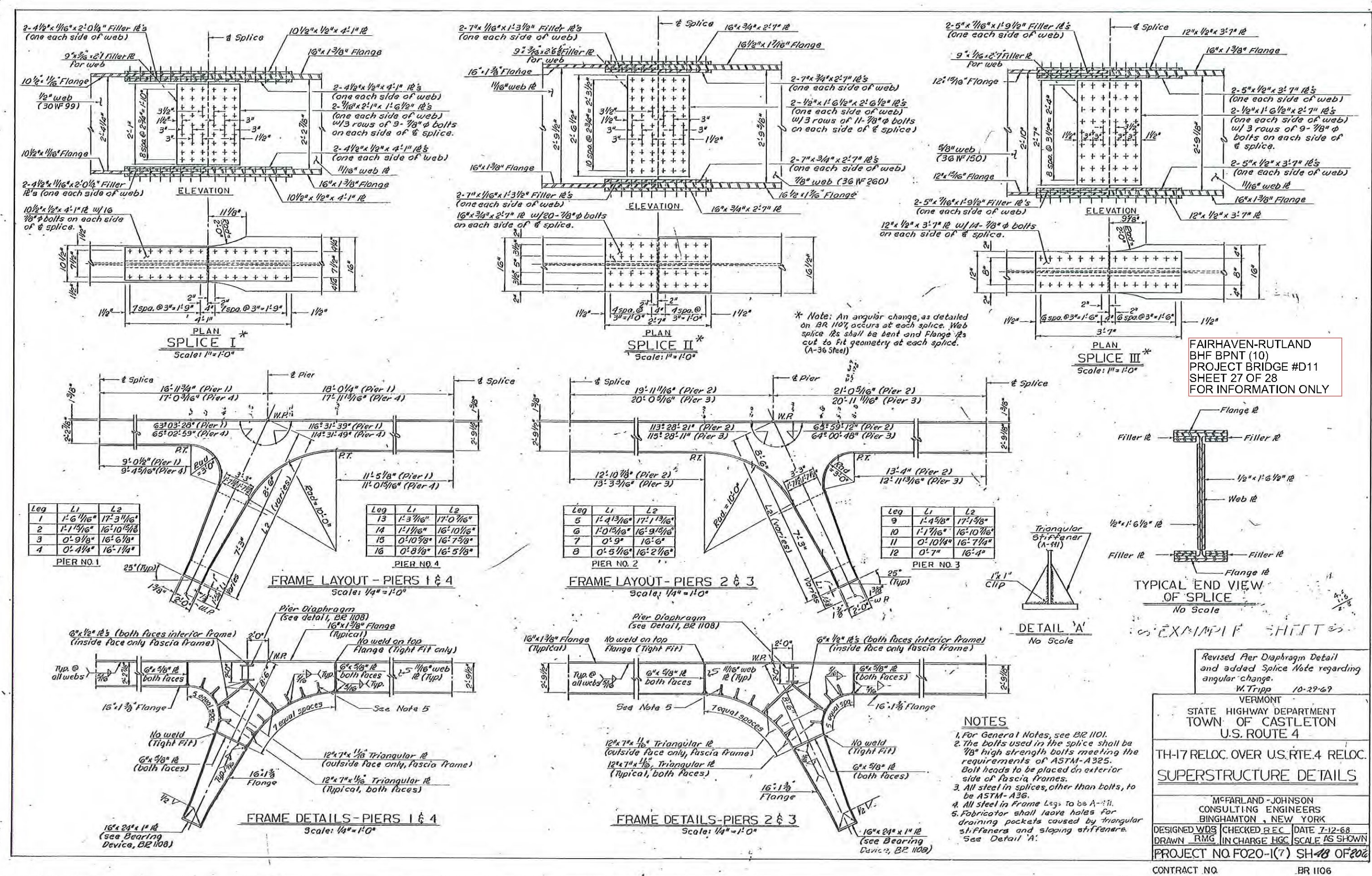
VERMONT
STATE HIGHWAY DEPARTMENT
TOWN OF CASTLETON
U.S. ROUTE 4

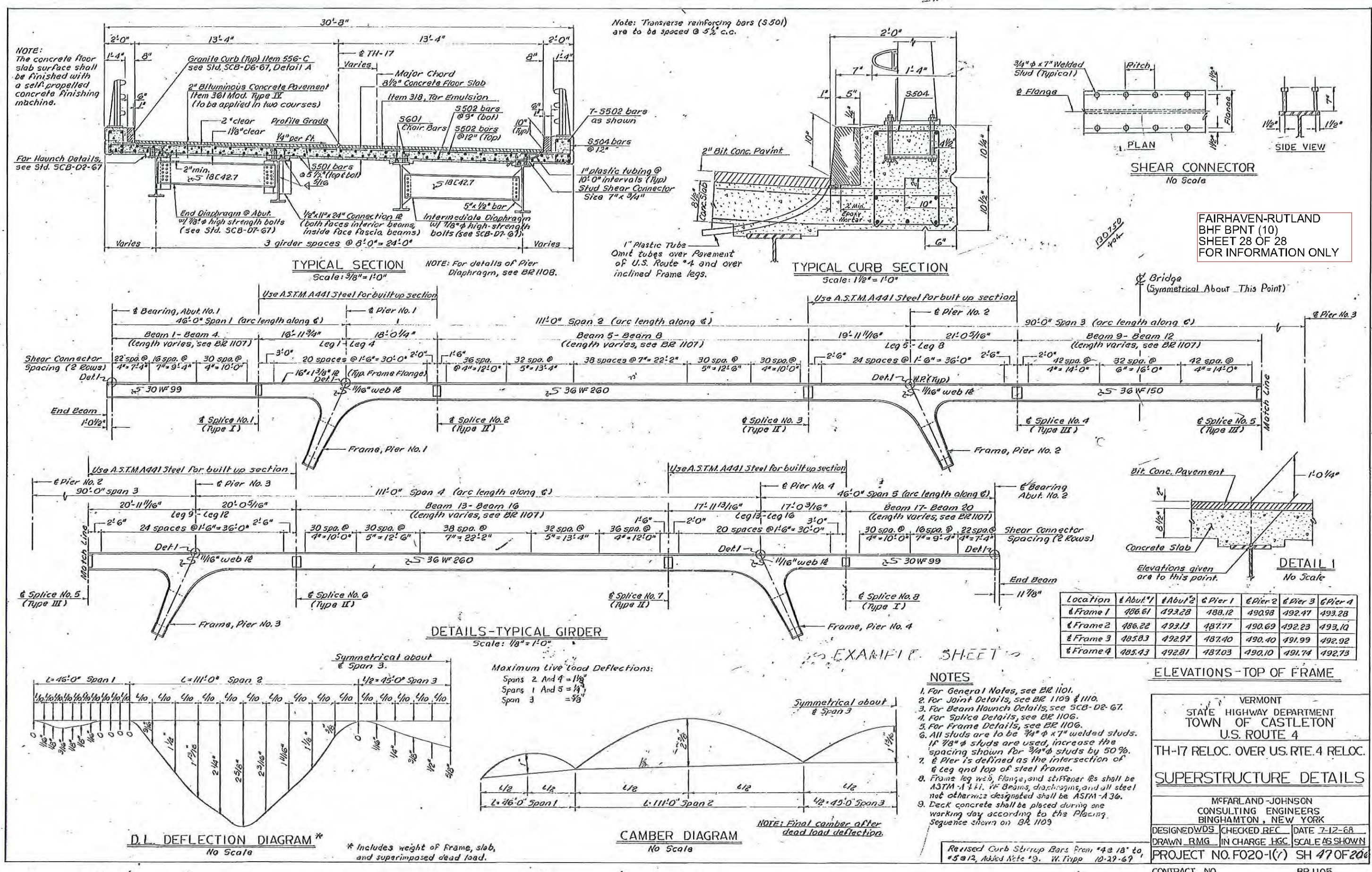
TH-17 RELOC. OVER U.S. RTE. 4 RELOC.
SUPERSTRUCTURE DETAILS

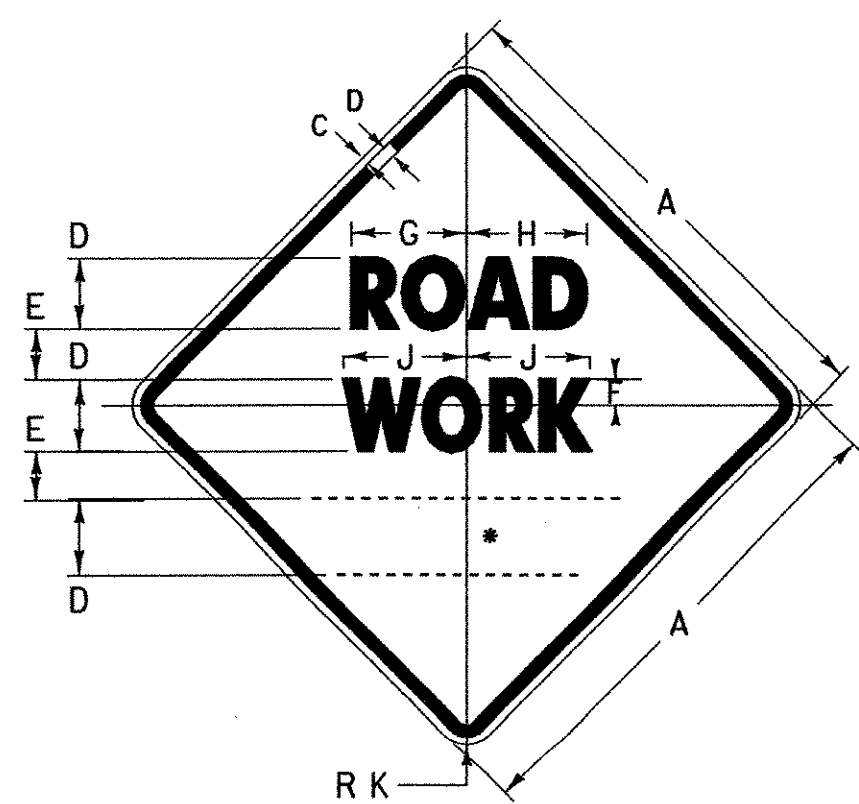
McFARLAND-JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

DESIGNED WDS CHECKED REC. DATE 7-12-68
DRAWN RMG IN CHARGE HGC SCALE AS SHOWN
PROJECT NO. F020-1(7) SH 49 OF 206

CONTRACT NO. BR. 1107

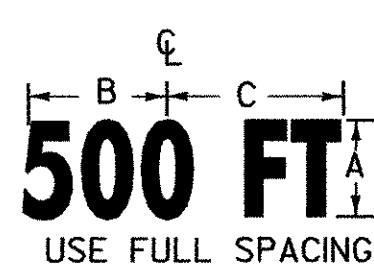




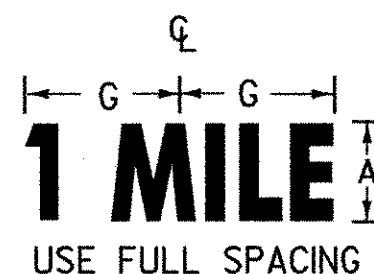


W20-1

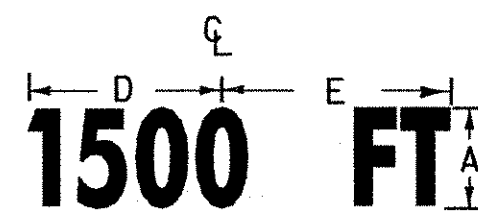
* SEE DISTANCE DETAILS



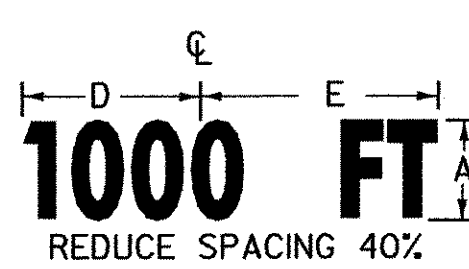
USE FULL SPACING



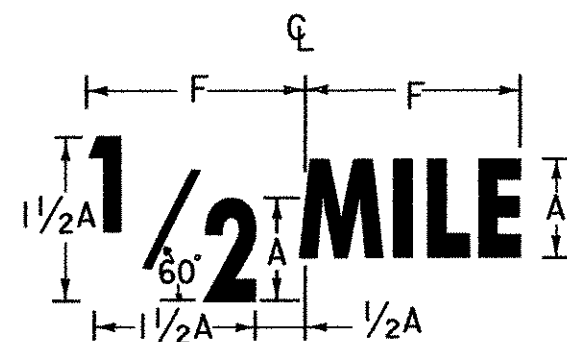
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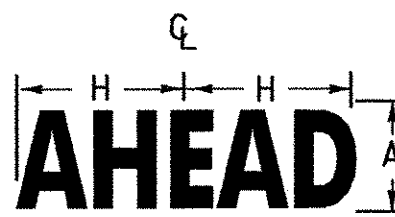
REDUCE SPACING 40%



REDUCE SPACING 40%

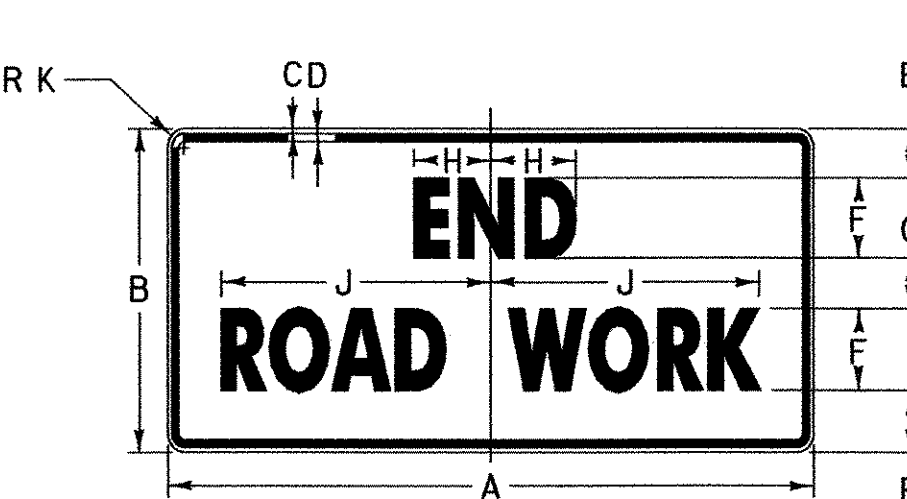


REDUCE SPACING 50%

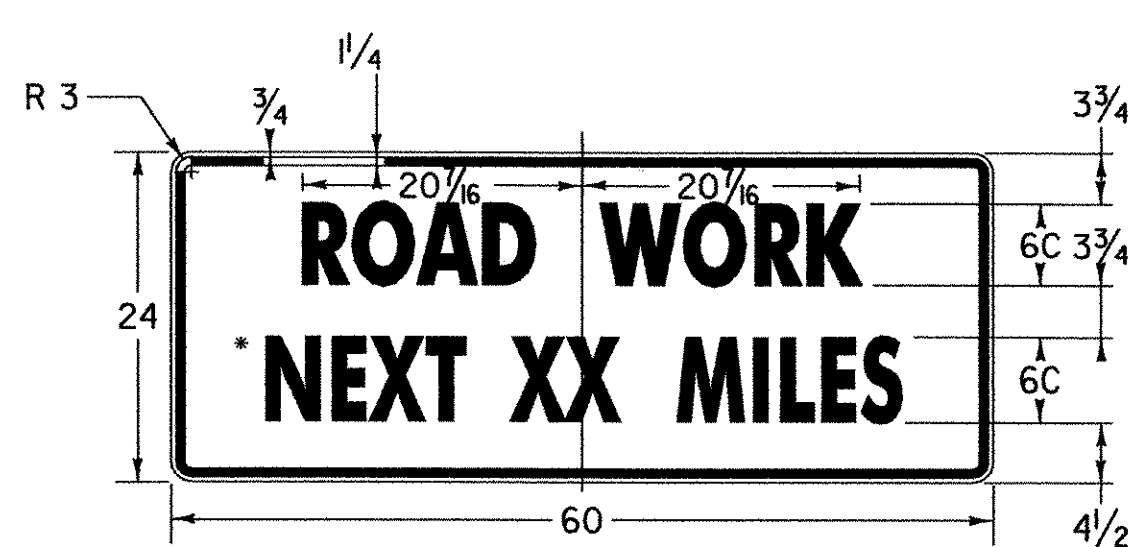


USE FULL SPACING

DISTANCE DETAILS



G20-2A



G20-1

* OPTICALLY CENTER

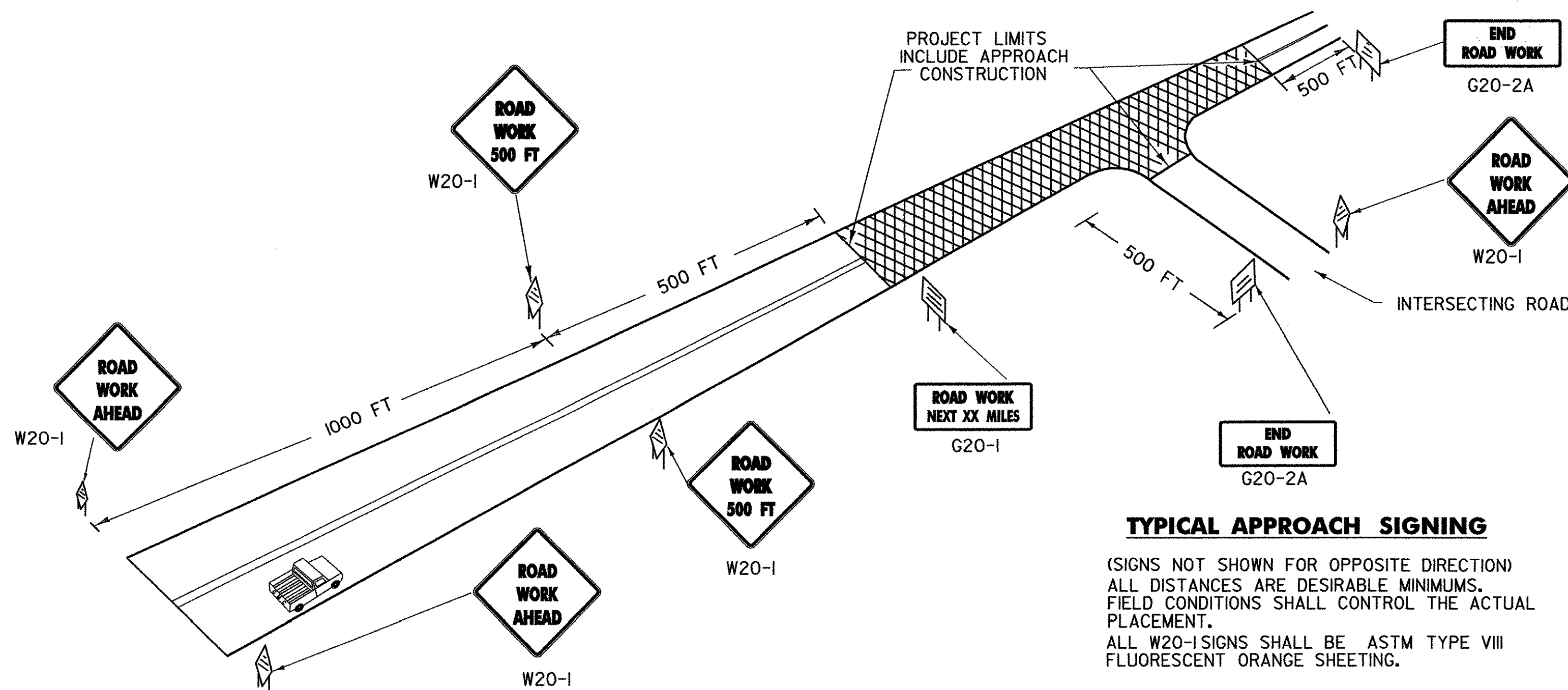
THIS SIGN TO BE USED WHEN PROJECT LENGTH EXCEEDS 2 MILES OR AS REQUESTED BY THE RESIDENT ENGINEER. SHOW MILEAGE TO NEAREST 1/4 MILE USING FRACTIONS, NOT DECIMALS. HAND LETTERING OF MILEAGE WILL NOT BE ALLOWED.

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
MIN.	36	18	5/8	7/8	3 3/4	4C	2 1/2	4	12 5/8	2 1/4
STD.	48	24	3/4	1 1/4	4 1/8	6C	3 3/4	5 7/8	22	3

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
MIN.	36	5/8	7/8	5D	3 1/2	3 3/4	8 3/8	8 7/8	9	2 1/4
STD.	48	3/4	1 1/4	7D	4 3/4	4 1/2	11 1/8	12 1/8	12 5/8	3

DIMENSIONS (INCHES)							
A	B	C	D	E	F	G	H
5D	10 3/8	10 3/8	11 5/8	11 1/4	11 1/4	9 1/2	10 7/8
7D	14 1/4	15 1/8	14 7/8	15 3/4	15 3/4	13 1/8	15 1/2

(ALL DIMENSIONS SHOWN IN INCHES)



TYPICAL APPROACH SIGNING

(SIGNS NOT SHOWN FOR OPPOSITE DIRECTION)
ALL DISTANCES ARE DESIRABLE MINIMUMS.
FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
ALL W20-1 SIGNS SHALL BE ASTM TYPE VIII FLUORESCENT ORANGE SHEETING.

NOTES

THE SIGNS SHOWN ON THIS SHEET ARE INTENDED FOR USE IN PROVIDING ADVANCE WARNING AND INFORMATION ON CONSTRUCTION PROJECTS OVER WHICH TRAFFIC WILL BE MAINTAINED. WHEN ADDITIONAL APPROACH SIGNS OR OTHER TYPES OF ADVANCE SIGNING OR CONTROL ARE NECESSARY, THE PLANS AND/OR THE SPECIFICATIONS FOR THAT PROJECT WILL GIVE THE DETAILS OF THE SIGNS AND DEVICES REQUIRED. FOR ON-PROJECT CONSTRUCTION SIGNS, REFER TO APPROPRIATE STANDARD SHEETS.

APPLICATION OF STANDARDS

SINCE IT IS NOT POSSIBLE TO PRESCRIBE DETAILED STANDARDS OF APPLICATION FOR ALL OF THE SITUATIONS THAT MAY CONCEIVABLY ARISE ON A CONSTRUCTION PROJECT, REFERENCE SHALL BE MADE TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR THE PRINCIPLES, PROCEDURES, AND STANDARDS THAT WILL BE REQUIRED IN CONNECTION WITH ADVANCED WARNING AND ON-PROJECT CONSTRUCTION SIGNS AND BARRICADES. THE SIGNS SHOWN IN E-101 AND E-102 REPRESENT A SAMPLE OF THOSE MORE COMMONLY USED.

LOCATION

THE SIGNS SHALL BE LOCATED AS DETAILED ON THIS SHEET OR AS OTHERWISE SHOWN ON THE PLANS. THEY SHALL APPEAR AT EACH END OF THE HIGHWAY UNDER CONSTRUCTION AND ON ALL INTERSECTING PUBLIC HIGHWAYS. THE ENGINEER SHALL DETERMINE THE EXACT LOCATIONS.

DESIGN

LETTERS, DIGITS, ARROWS, SPACING AND TEXT DIMENSIONS SHALL CONFORM WITH THE "STANDARD HIGHWAY SIGNS BOOK" AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) ADOPTED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION (FHWA).

MATERIALS

THE SIGN BASE MATERIAL USED FOR THE SIGNS ON THIS SHEET MAY BE ANY OF THE FOLLOWING, WITH MINIMUM THICKNESS AS NOTED.
FLAT SHEET ALUMINUM 0.125 INCHES
HIGH DENSITY OVERLAYED PLYWOOD 5/8 INCHES

REFLECTORIZATION

ALL LEAD SIGNS (W20-1) ON THIS SHEET SHALL BE ASTM TYPE VIII FLUORESCENT ORANGE SHEETING. ALL OTHER SIGNS ON THIS SHEET SHALL BE ASTM TYPE III RETROREFLECTORIZED SHEETING.

COLORS

THE COLORS SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA. COLORS SHOWN ON THIS SHEET CONSIST OF BLACK TEXT AND BORDER ON A RETROREFLECTORIZED ASTM TYPE III OR TYPE VIII ORANGE BACKGROUND.

INSTALLATION

THE SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES. DURING PERIODS OF INACTIVITY, OR UPON COMPLETION OF THE WORK, EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. POSTS SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST 7 FEET ABOVE THE EDGE OF PAVEMENT. AND THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST 6 FEET OUTSIDE THE SHOULDER POINT, 4 FEET OUTSIDE GUARD RAIL, OR 2 FEET OUTSIDE CURBING, OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST 7 FEET ABOVE THE SIDEWALK. SIGNS MAY BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.

NOTES CONT.

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, INSTALLING, MAINTAINING AND REMOVING ALL CONSTRUCTION APPROACH SIGNS WILL BE CONSIDERED INCIDENTAL 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. DURING ALL PHASES OF CONSTRUCTION THE REQUIREMENTS SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE MET.

SIGN COVERS

SIGN COVERS SHALL CONSIST OF A PANEL PAINTED FLAT BLACK, THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.

CONTRACTORS SHALL COORDINATE THEIR SIGNING ACTIVITIES WITH OTHER CONTRACTORS WITHIN THE PROJECT LIMITS, AS DIRECTED BY THE REGIONAL CONSTRUCTION ENGINEER.

SIGN POSTS

WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARD RAIL OR OTHER APPROVED TRAFFIC BARRIERS, THE POSTS ON WHICH THE SIGNS ARE MOUNTED SHALL BE YIELDING METAL POSTS AS DESIGNATED IN THE E SERIES OF STANDARD DRAWINGS OR YIELDING WOODEN POSTS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

WOODEN POSTS ARE ACCEPTABLE FOR USE WITH CONSTRUCTION SIGNS. THESE POSTS SHALL HAVE A UNIFORM CROSS-SECTION AND SHALL BE MADE FROM GRADE 2, AIR-DRIED SOUTHERN YELLOW PINE OR ANOTHER EQUIVALENT SOFTWOOD. AN ACCEPTABLE EQUIVALENT SOFTWOOD SHALL HAVE AN EXTREME FIBER IN BENDING "Fb" DESIGN VALUE NOT TO EXCEED 1400 psi AND HORIZONTAL SHEAR "Fv" DESIGN VALUE NOT TO EXCEED 90 psi SPECIFICATION. DESIGN VALUES FOR WOOD CONSTRUCTION AND RELATED SUPPLEMENT, LATEST EDITION.

AS ESTABLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION IN THEIR NATIONAL DESIGN. THE FOLLOWING ARE CONSIDERED TO BE ACCEPTABLE WOODEN POSTS:

- 4" X 4" (ACTUAL DIMENSIONS ARE 3.5" X 3.5")
- ACCEPTABLE FOR SINGLE OR DUAL POSTS INSTALLATION WITH NO MODIFICATIONS.

ALL WOODEN POSTS SHALL HAVE AN EMBEDMENT DEPTH OF 4 FEET. NO CROSS-BRACING OR BACK-BRACING TO KEEP THE POSTS PLUMB WILL BE ALLOWED. CONCRETE FOUNDATIONS, COLLARS, OR SOIL BEARING PLATES ARE NOT PERMITTED. CONSTRUCTION SIGNS SHALL BE PLACED ON TWO OR MORE POSTS WHEN ANY OF THE FOLLOWING CONDITIONS GOVERN:

- THE SIGN WIDTH (HORIZONTAL DIMENSIONS FOR DIAMOND SHAPED SIGNS) EXCEEDS 3 1/2 FEET.
- THE EXPOSED SIGN AREA OF ANY SINGLE SIGN OR ASSEMBLY EXCEEDS 7 SQ. FEET.
- THE Sv OF A SINGLE POST IS 64.

OTHER STDS. E-100A, E-101, E-102
REQUIRED:

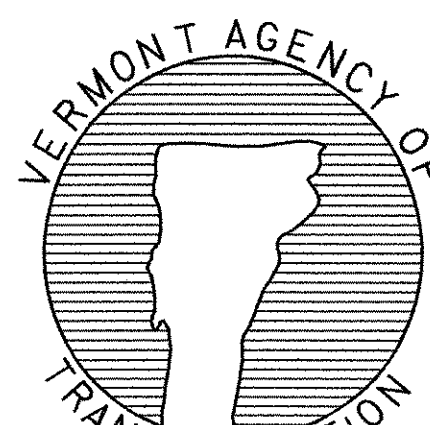
REVISIONS AND CORRECTIONS

MAY 26, 1989 - DATE OF ORIGINAL ISSUE
OCT 21, 1992 - REVISED WOOD POST REQUIREMENTS, ADDED SIGN DETAILS, & REVISED TITLE BLOCK
AUG. 08, 1995 - MINOR NOTE REVISIONS
JAN. 06, 1997 - MINOR NOTE AND DIMENSION REVISIONS
JAN. 2, 2004 - CHANGED REFLECTIVE SHEETING TO ASTM TYPE III OR TYPE VIII

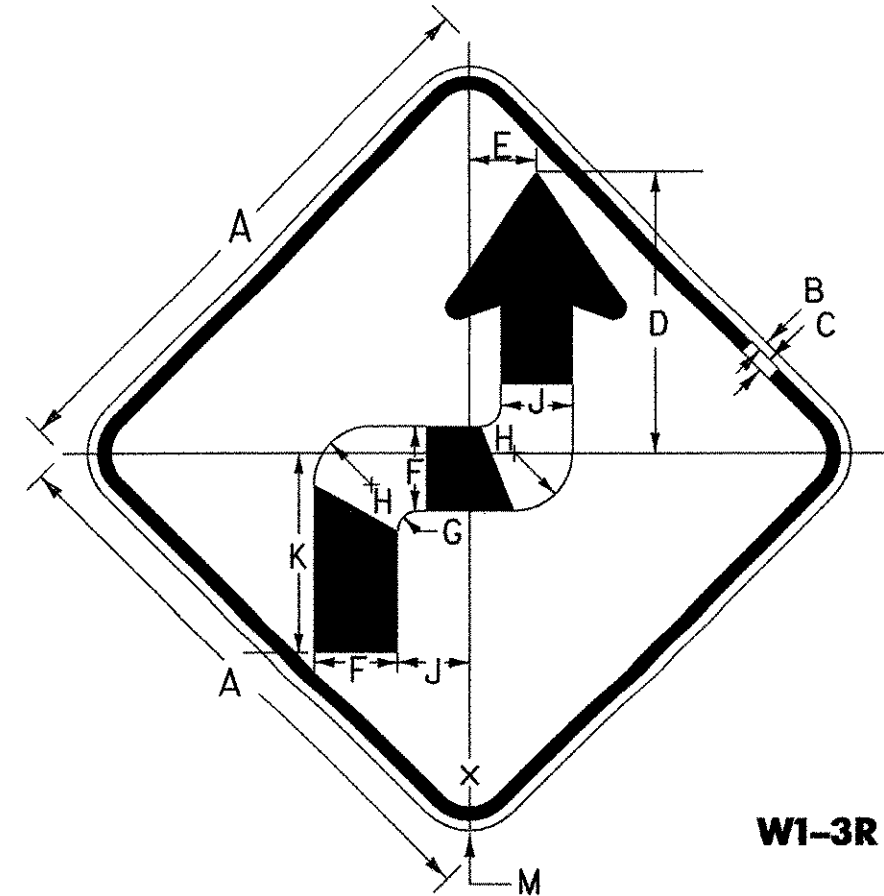
APPROVED

DIRECTOR OF PROGRAM DEVELOPMENT
TRAFFIC OPERATIONS ENGINEER
FEDERAL HIGHWAY ADMINISTRATION

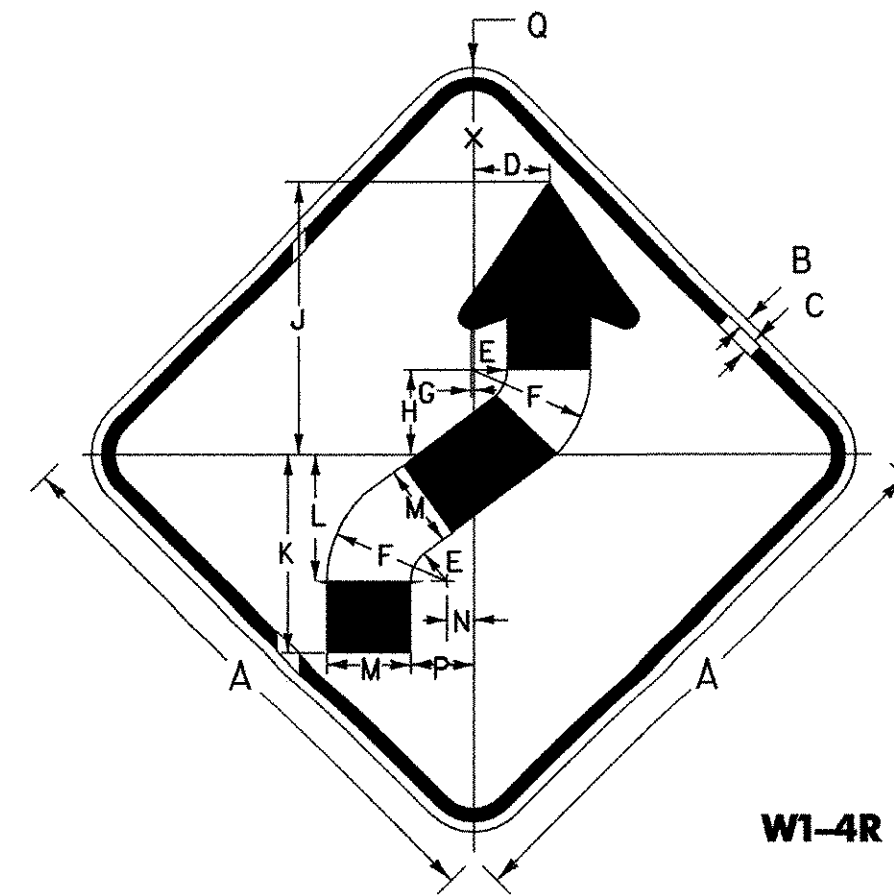
**CONSTRUCTION APPROACH
SIGNS**



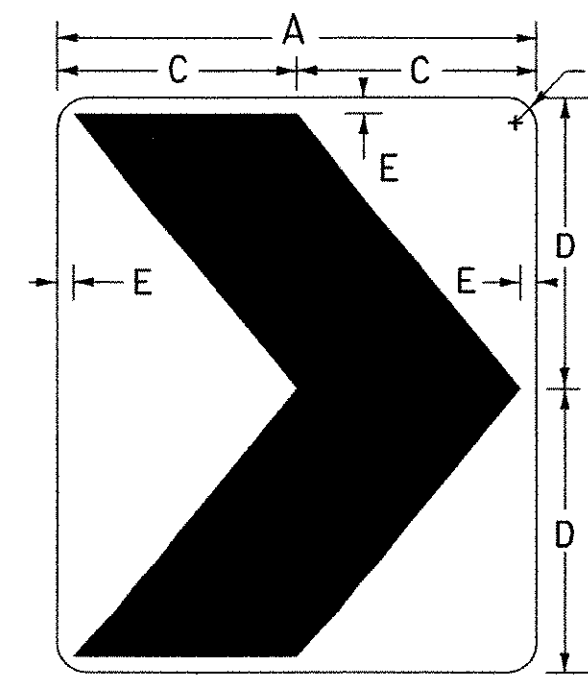
**STANDARD
E-100**



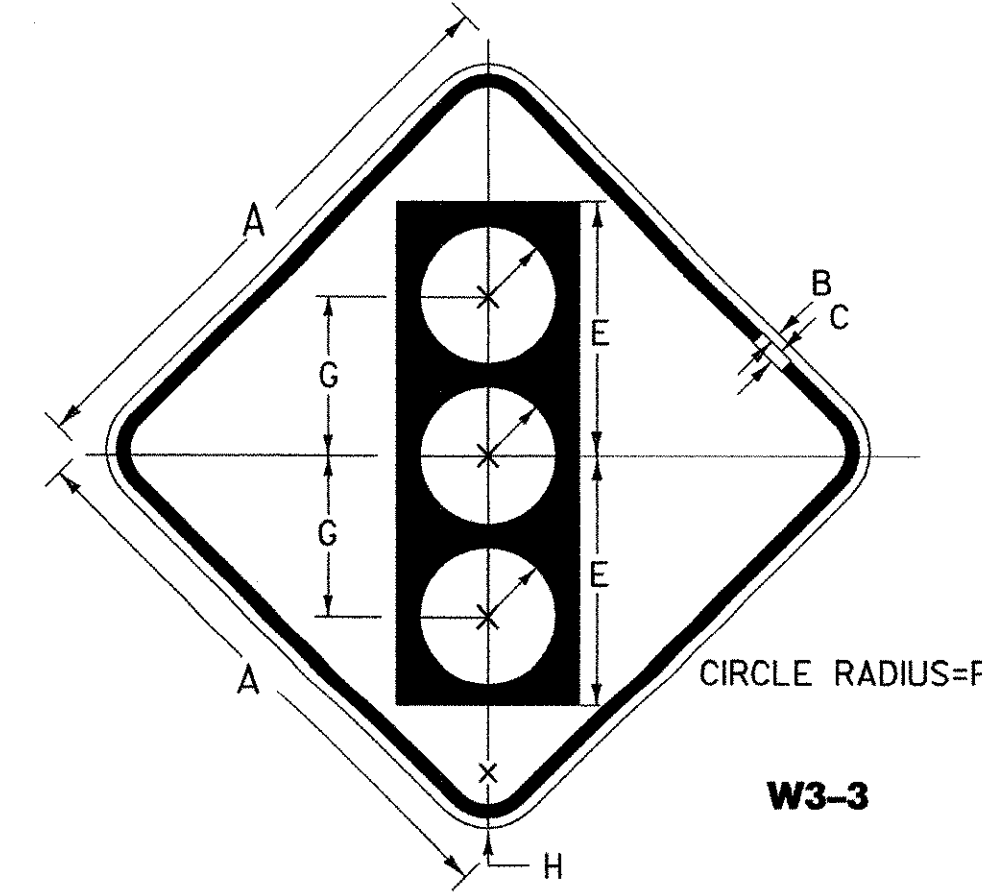
SIGN	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	J	K	L	M
STD. & MIN.	36	5/8	7/8	17 1/16	4 1/32	5 1/4	1 1/4	3 5/8	4 1/2	12 15/32	1 3/4	2 1/4
SPECIAL	48	3/4	1 1/4	23 3/16	5 5/8	7	1 5/8	4 7/8	6	16 5/8	2 3/16	3



SIGN.	DIMENSIONS (INCHES)														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
STD. & MIN.	36	5/8	7/8	4 7/32	2 1/4	7 1/2	5/32	5/4	16 7/8	12 3/8	7 7/8	5/4	1 1/16	3 1/16	2 1/4
SPECIAL	48	3/4	1 1/4	6 5/16	3	10	3/16	7	22 1/2	16 1/2	10 1/2	7	2 1/4	5/4	3



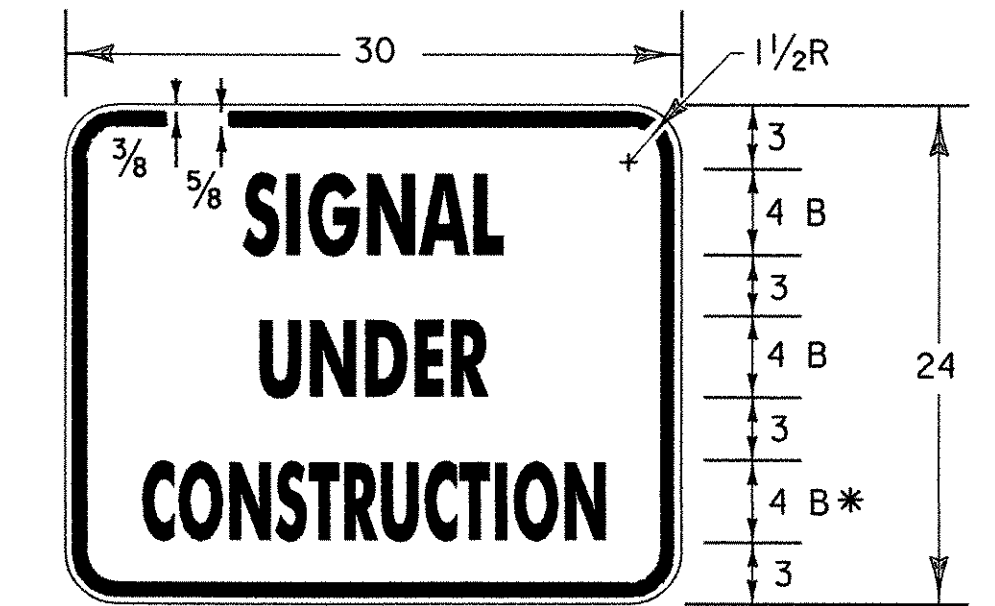
SIGN	DIMENSIONS(INCHES)					
	A	B	C	D	E	F
STD.	18	24	9	12	3/4	1 1/2
SPECIAL	24	30	12	15	7/8	1 1/2
EXPWY.	30	36	15	18	1	1 7/8
FRWY.	36	48	18	24	1 1/8	2 1/4



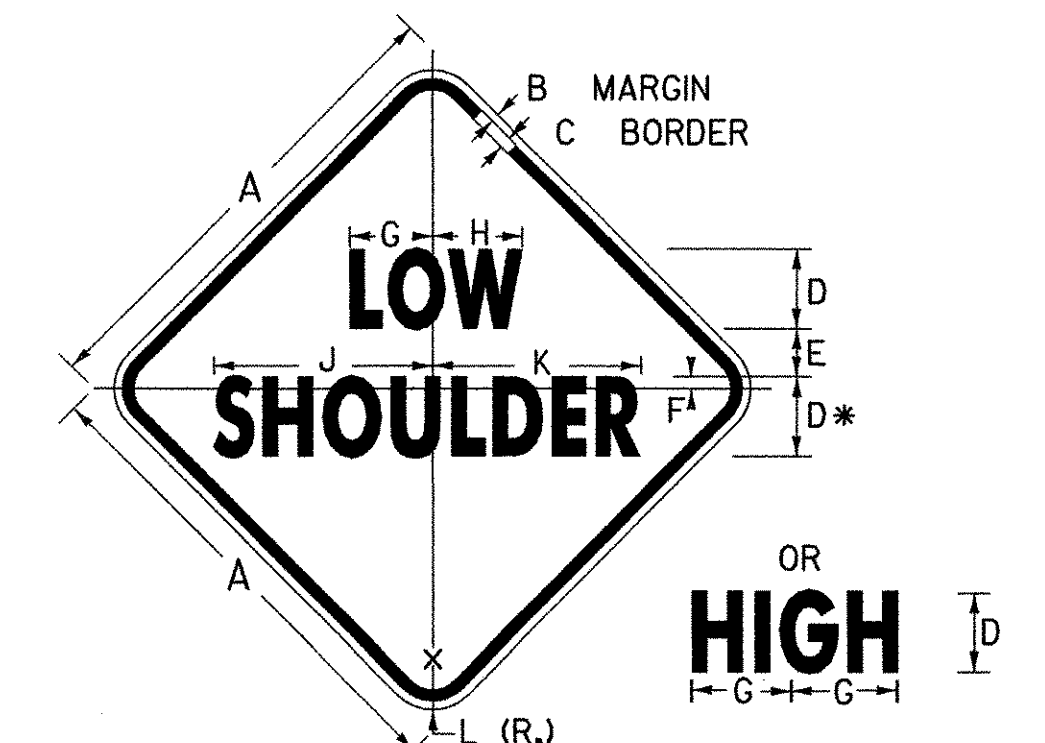
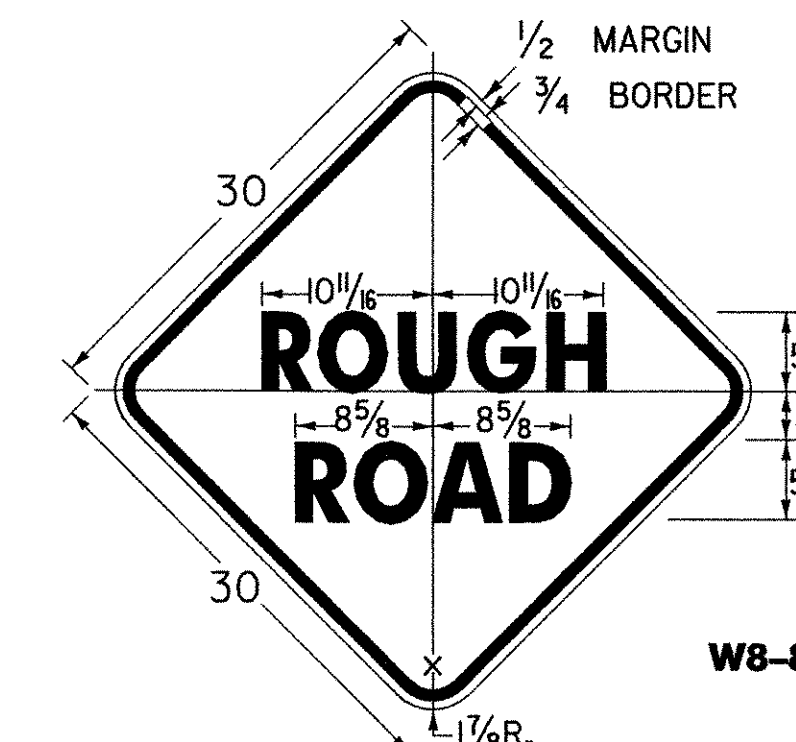
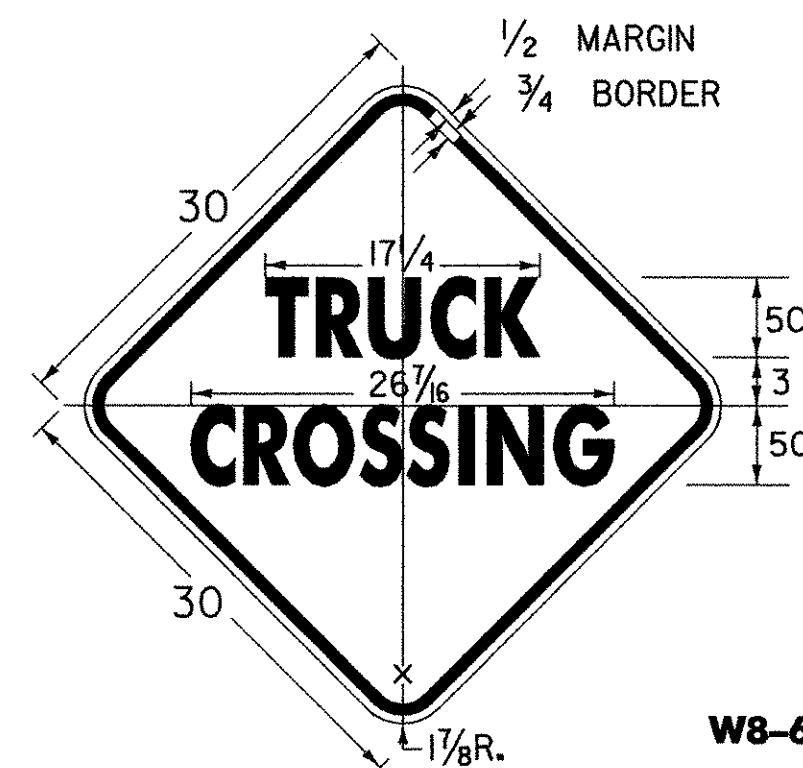
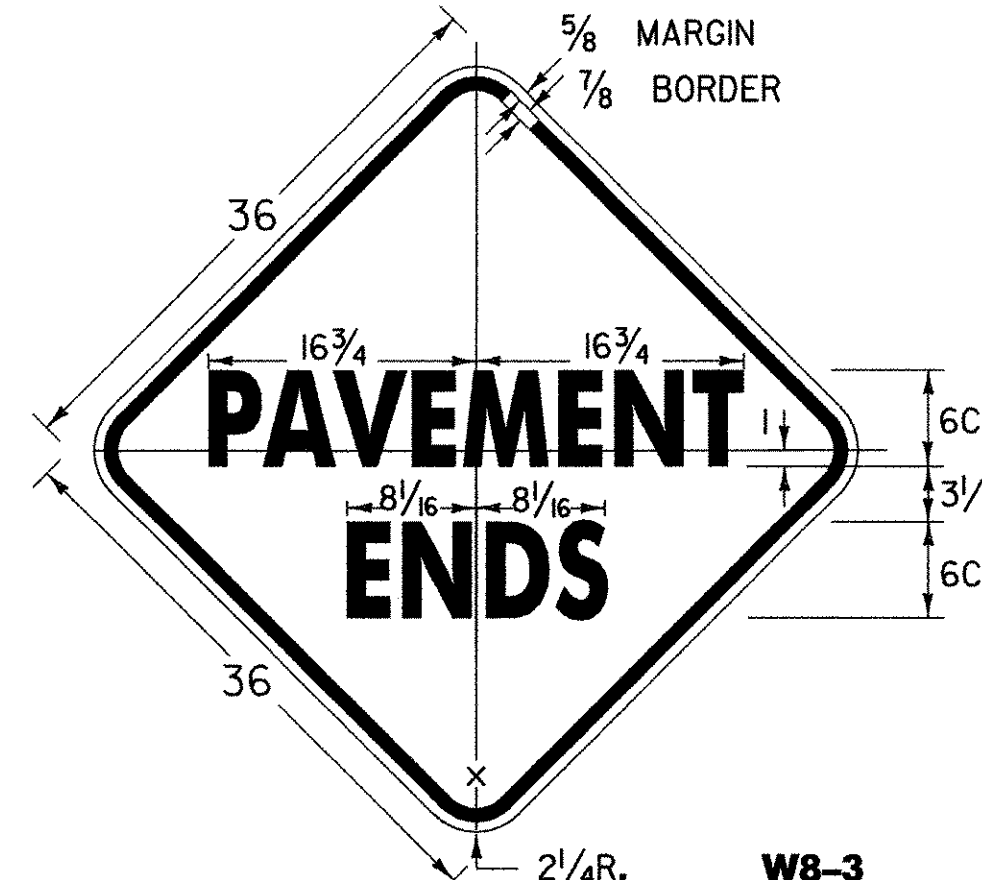
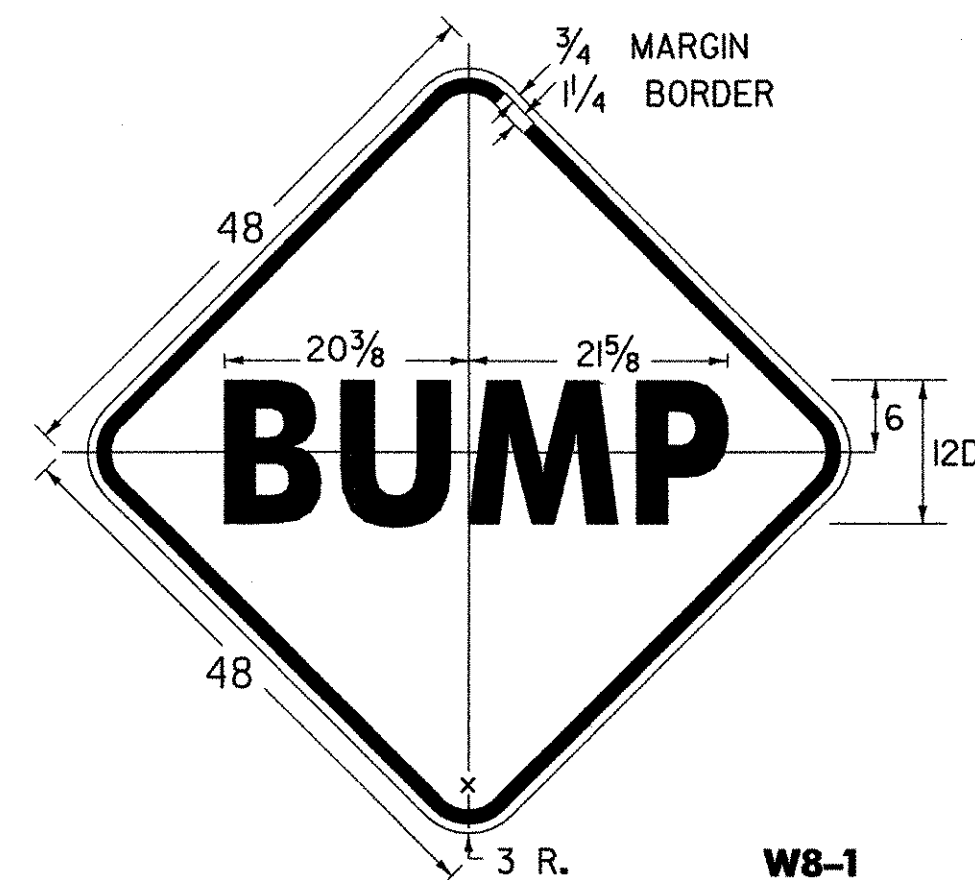
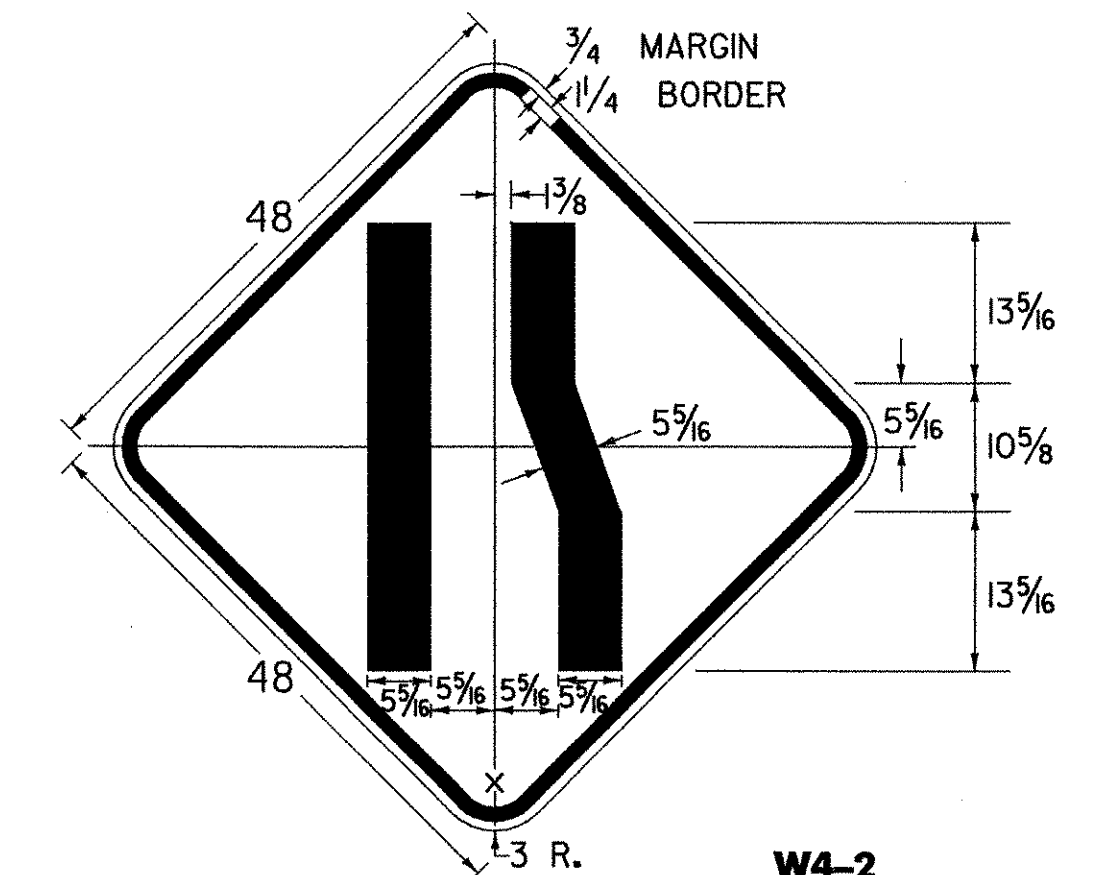
SIGN	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
STD. & MIN.	36	5/8	7/8	5 3/4	15 3/4	4 1/4	10	2 1/2
SPECIAL	48	3/4	1 1/4	7 1/2	20	5	12 1/2	3

COLORS

SYMBOL & LEGEND - BLACK (NON-REFL)
BACKGROUND - ORANGE (REFL)



* REDUCE SPACING 50%.

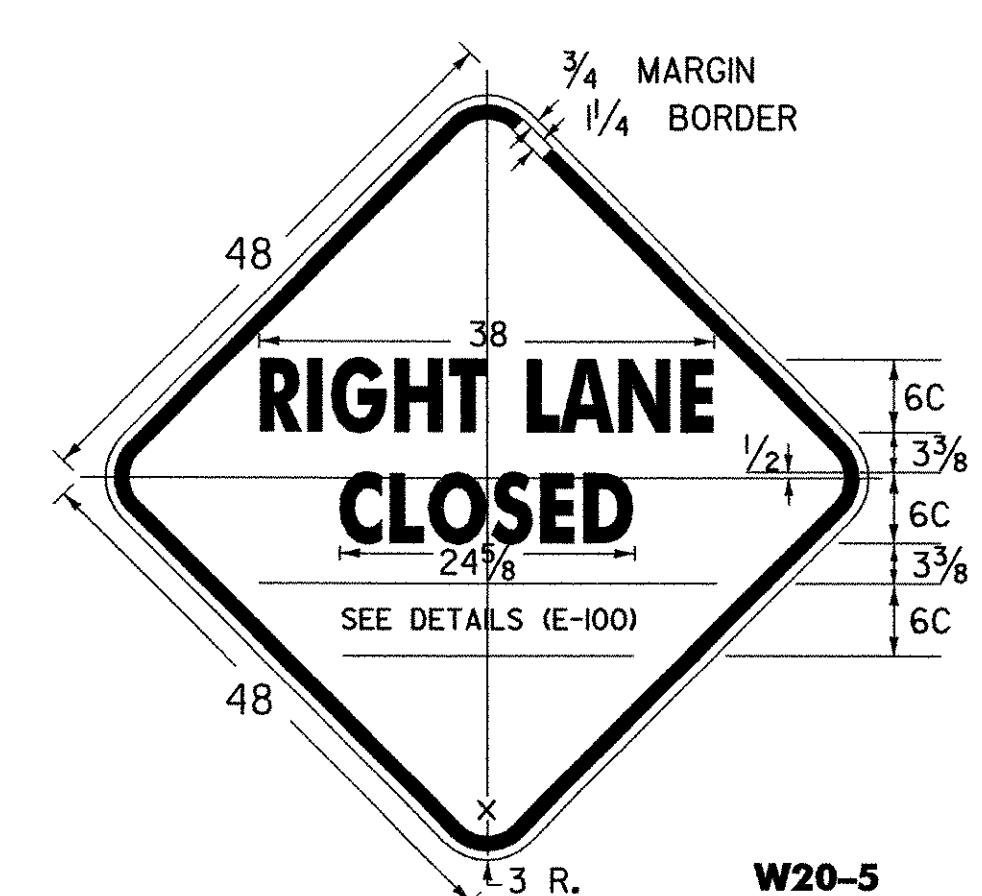
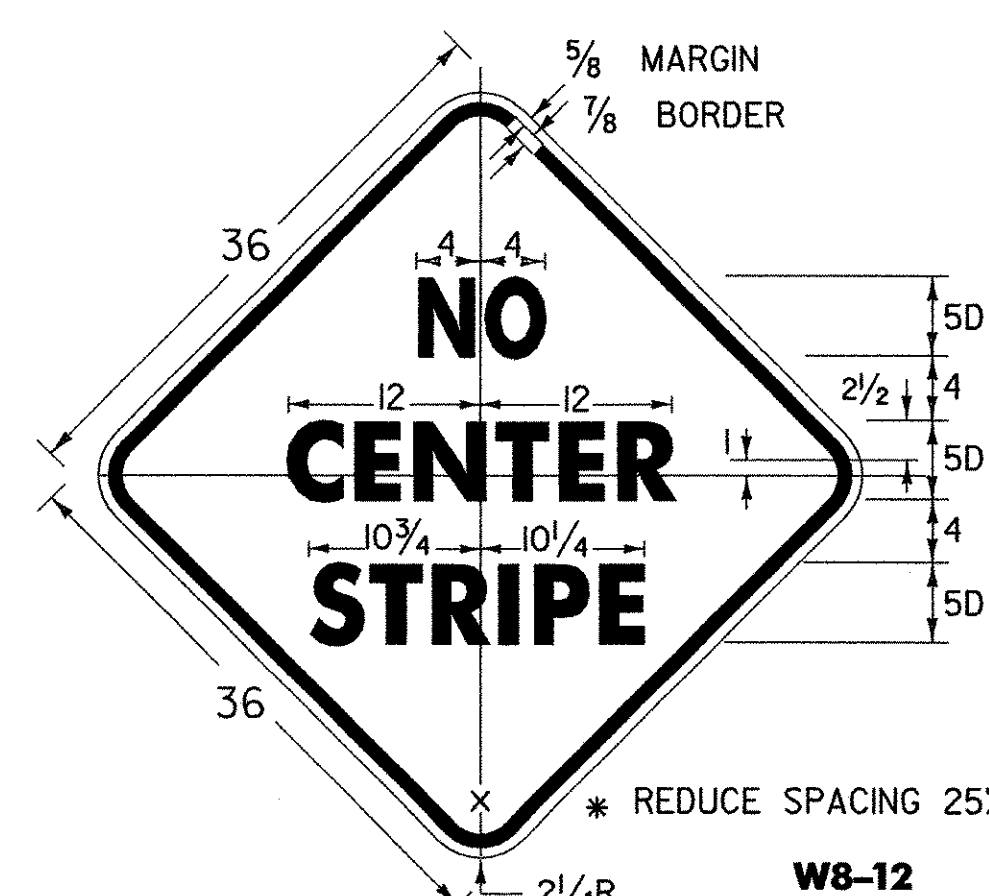
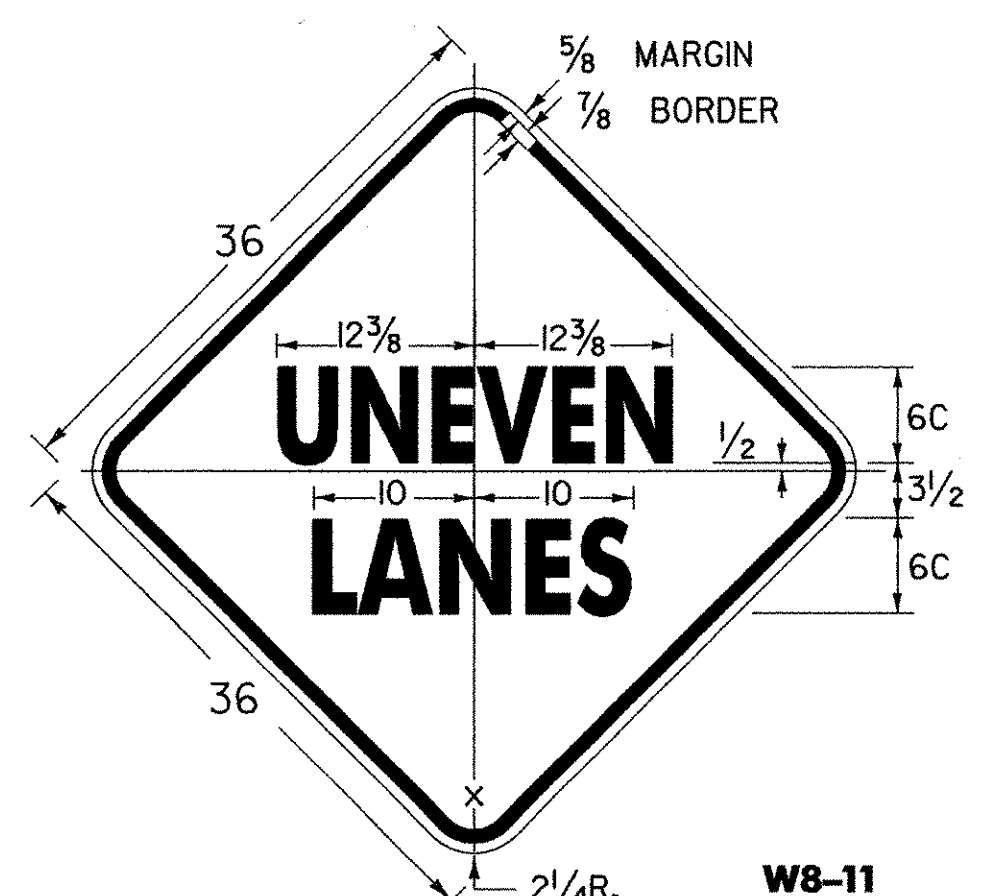
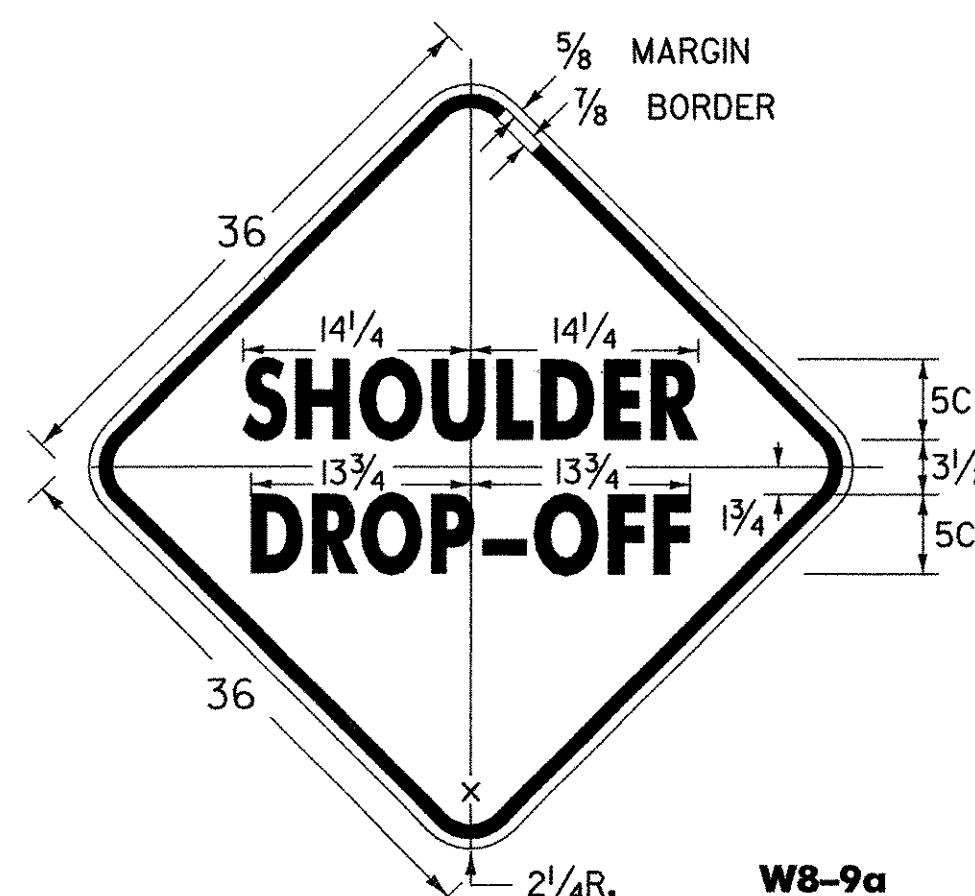


DIMENSIONS(INCHES)											
SIGN	A	B	C	D	E	F	G	H	J	K	L
STD.	30	1/2	3/4	5C	3	3/4	5 1/2	5 5/8	13 1/16	13 1/16	1 7/8
FWY.	48	3/4	1 1/4	8C	5	1 1/4	8 1/4	9	21 1/2	20 1/2	1 3/8

NOTES

SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS

COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT,
BORDER AND SYMBOLS ON ASTM TYPE III OR TYPE VI
RETROREFLECTORIZED ORANGE BACKGROUND, UNLESS OTHERWISE NOTED.



(ALL DIMENSIONS SHOWN IN INCHES)

34/8
LEFT LANE

**OTHER STDS. E-100
REQUIRED:**

REVISIONS AND CORRECTIONS

OCT. 30, 1987 - DATE OF ORIGINAL ISSUE

OCT. 21, 1992 - ADDED ADDITIONAL SIGN DIMENSIONS,
REVISED CHEVRON BACKGROUND TO ORANGE,
& REVISED TITLE BLOCK

AUG. 08, 1995 - ADDED AND DELETED VARIOUS
SIGN DETAILS

MAR., 10 1997 - REVISED SIGN DETAILS

MAY 30, 2003 - CHANGED REFLECTIVE SHEETING TO ASTM
TYPE III OR TYPE VI

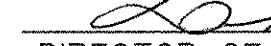
APPROVED



DIRECTOR OF PROGRAM DEVELOPMENT

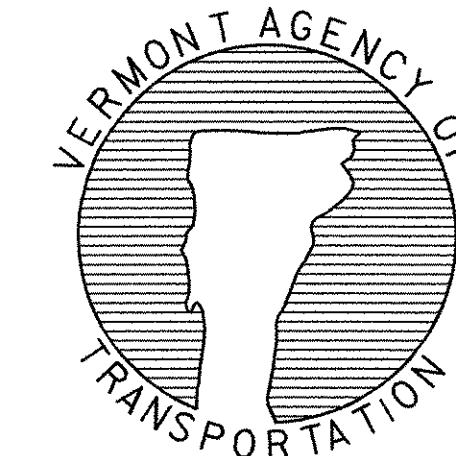


TRAFFIC OPERATIONS ENGINEER

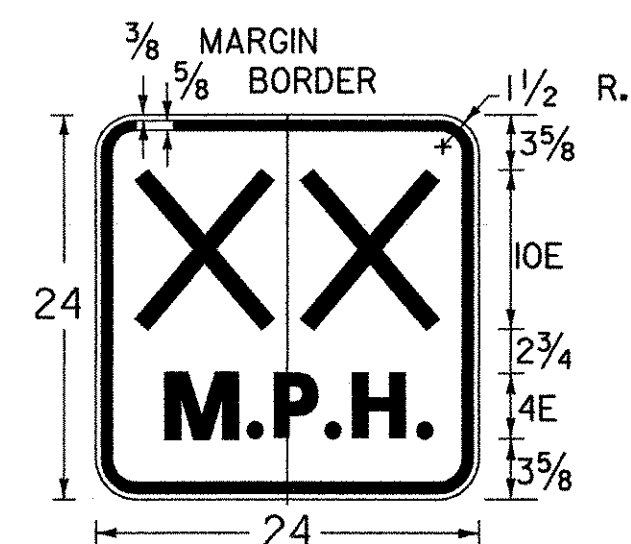


FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION SIGN DETAILS

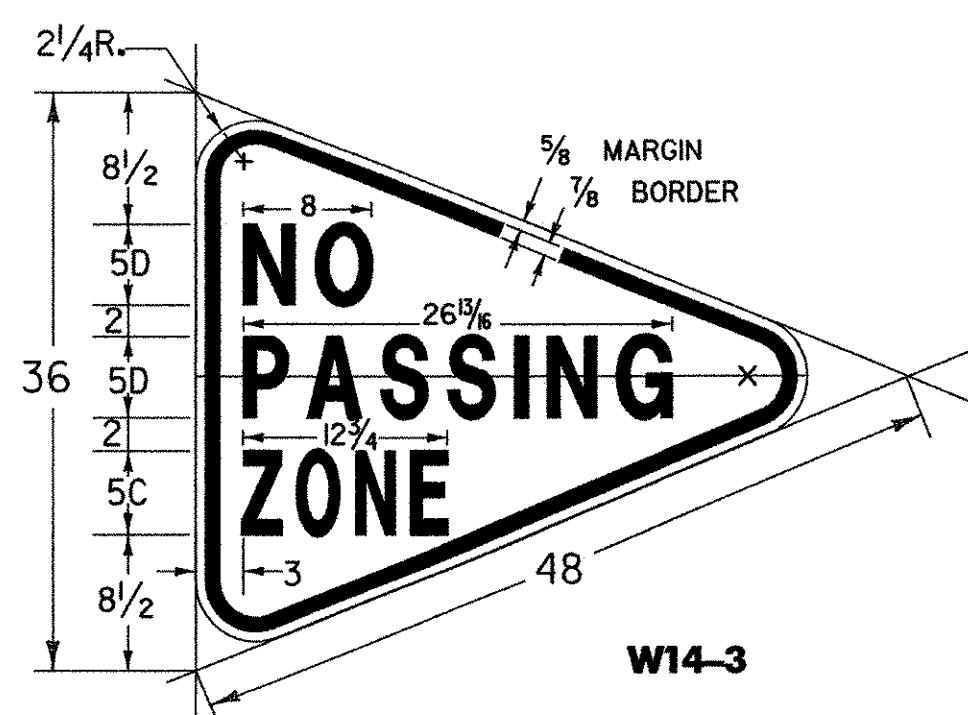


STANDARD E-101

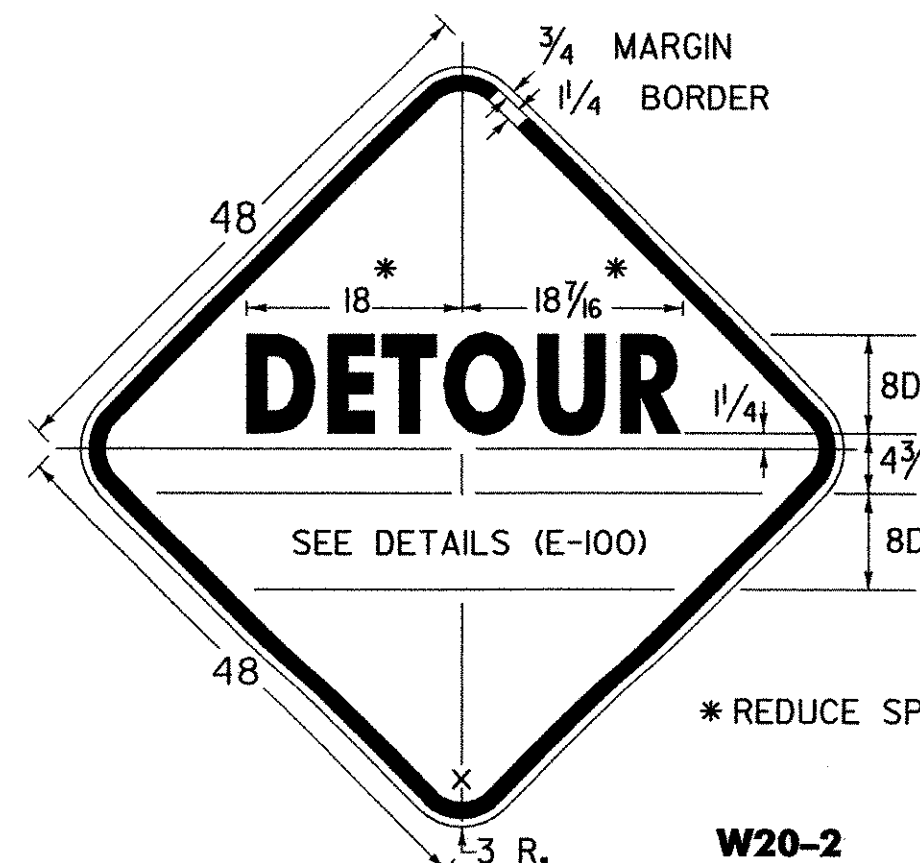


XX DENOTES ADVISORY SPEED AS SHOWN ON THE PLANS

W13-1

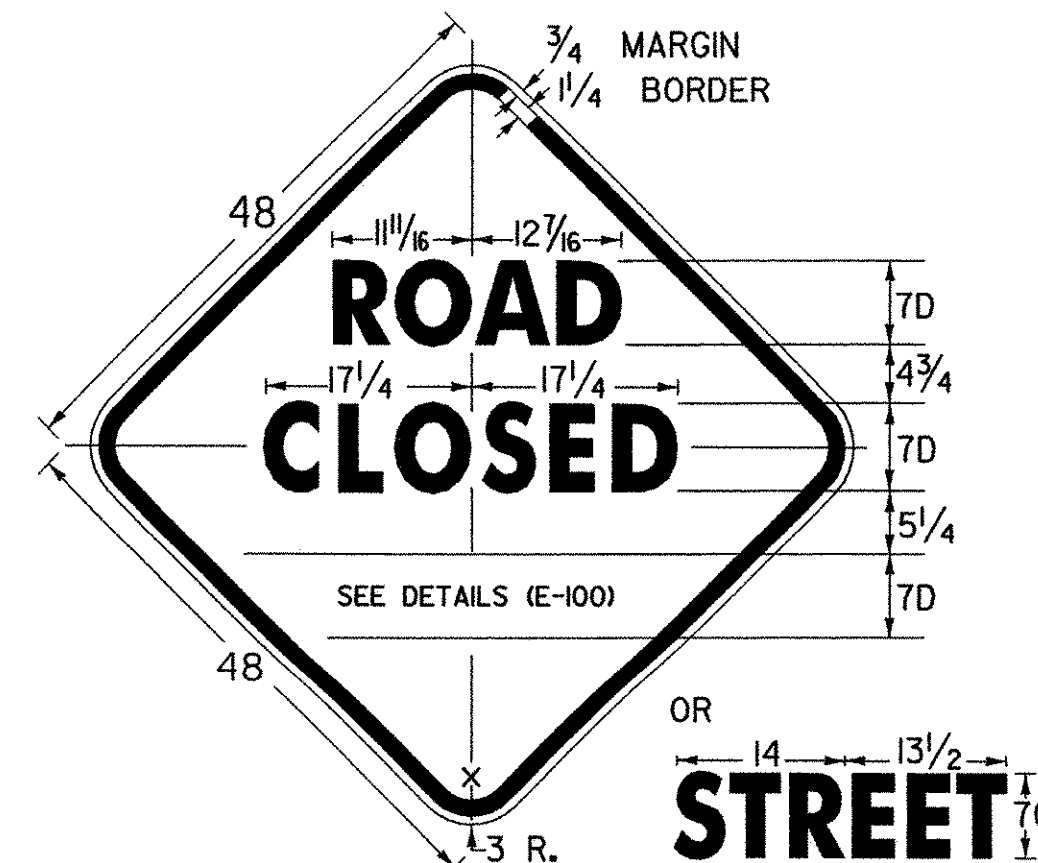


W14-3



* REDUCE SPACING 40%

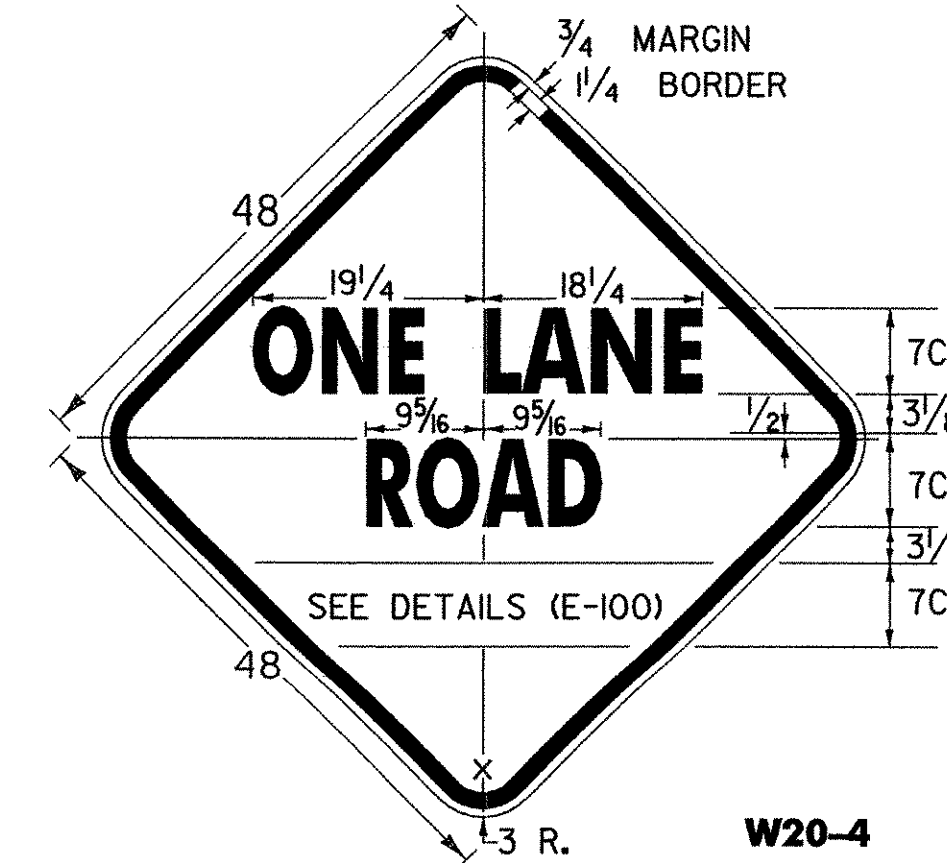
W20-2



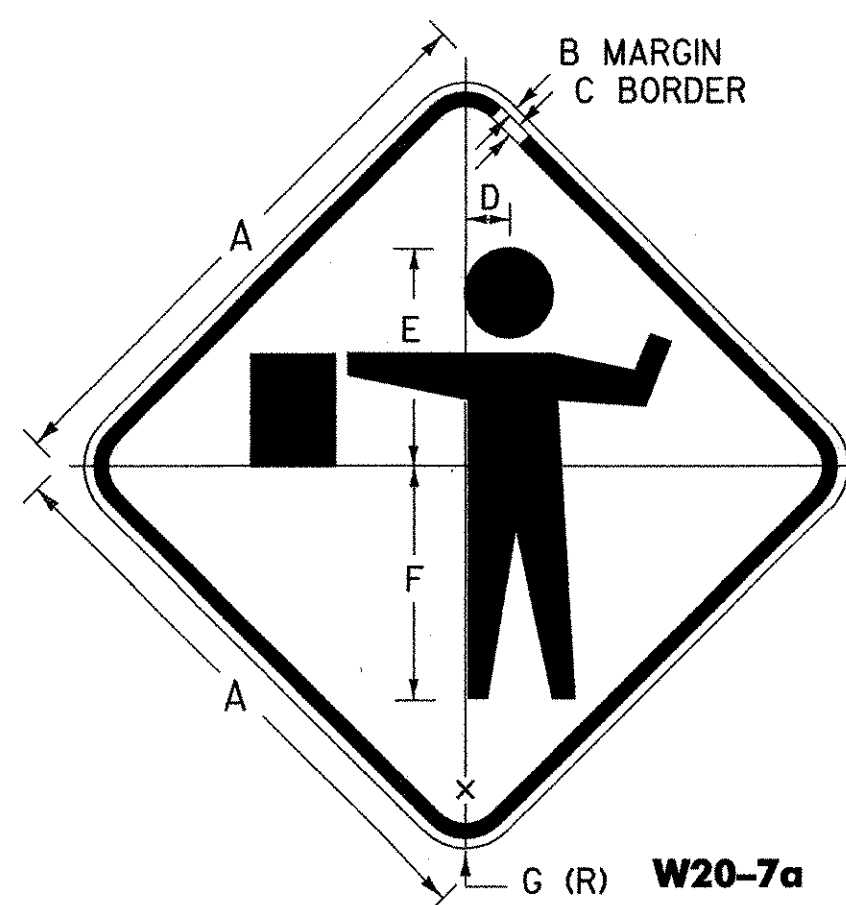
OR

STREET

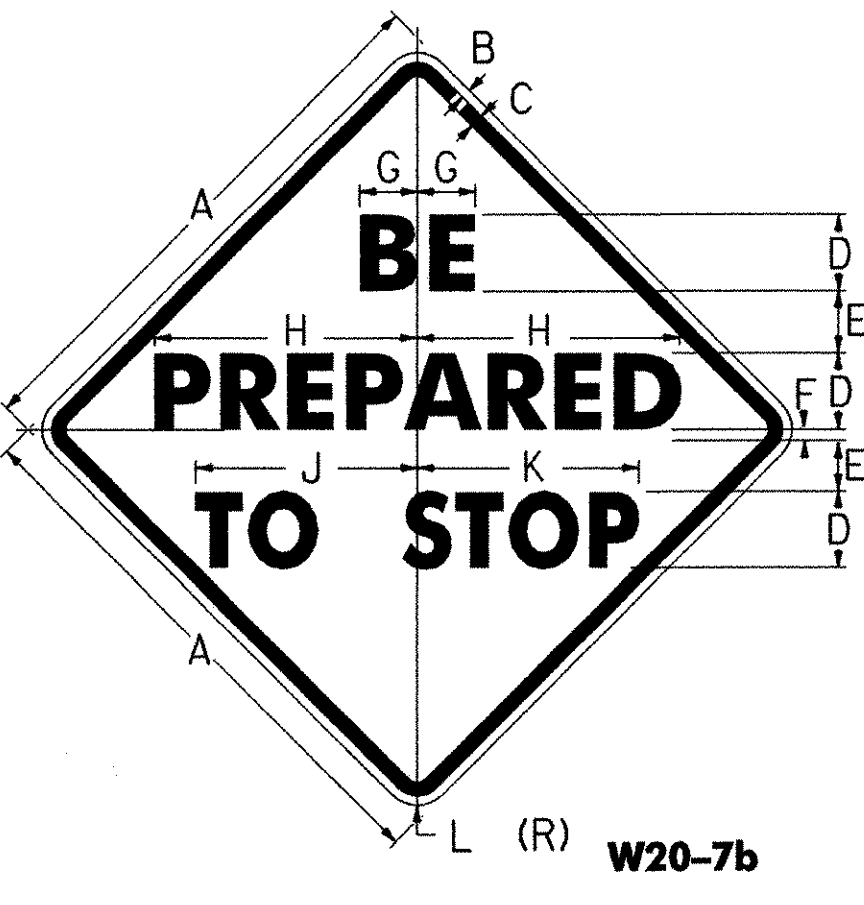
W20-3



W20-4



W20-7a

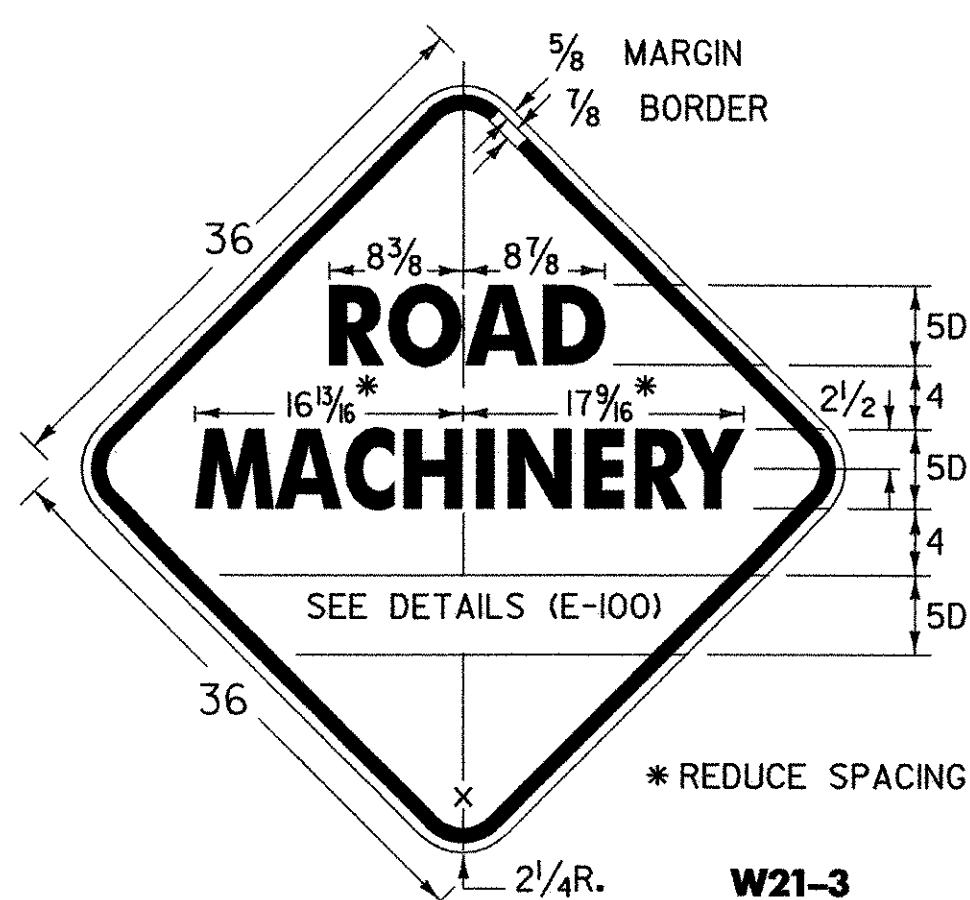


W20-7b

COLORS:
BLACK BORDER AND TEXT (NON RETRORFL.)
ORANGE BACKGROUND (RETRORFL.)

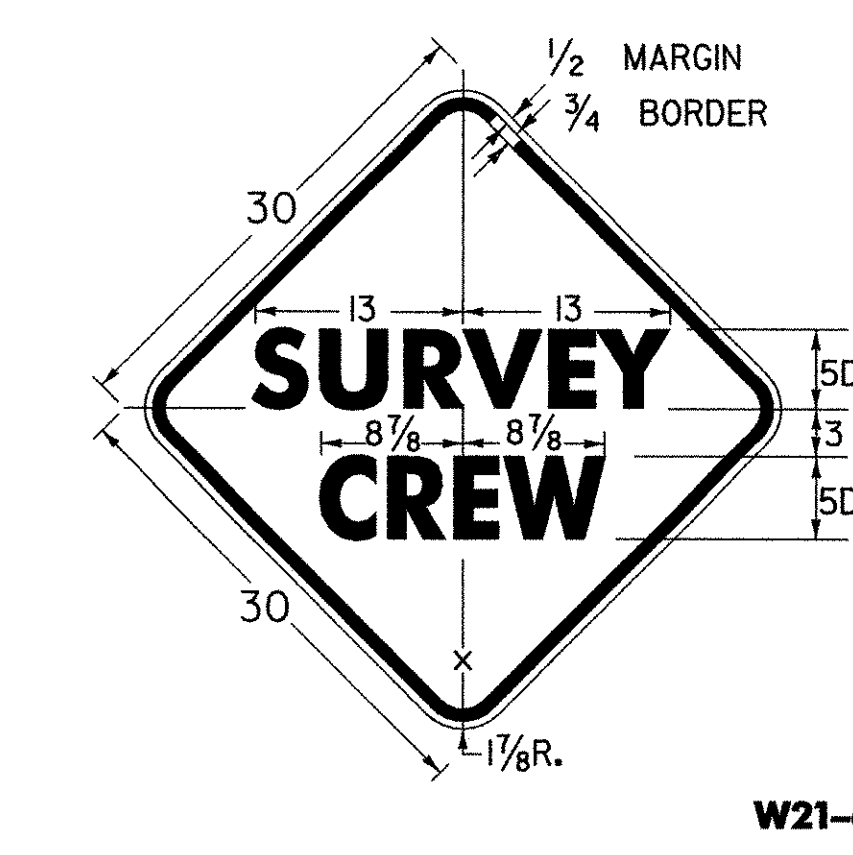
W3-4

COLORS:
BLACK BORDER AND TEXT (NON RETRORFL.)
YELLOW BACKGROUND (RETRORFL.)



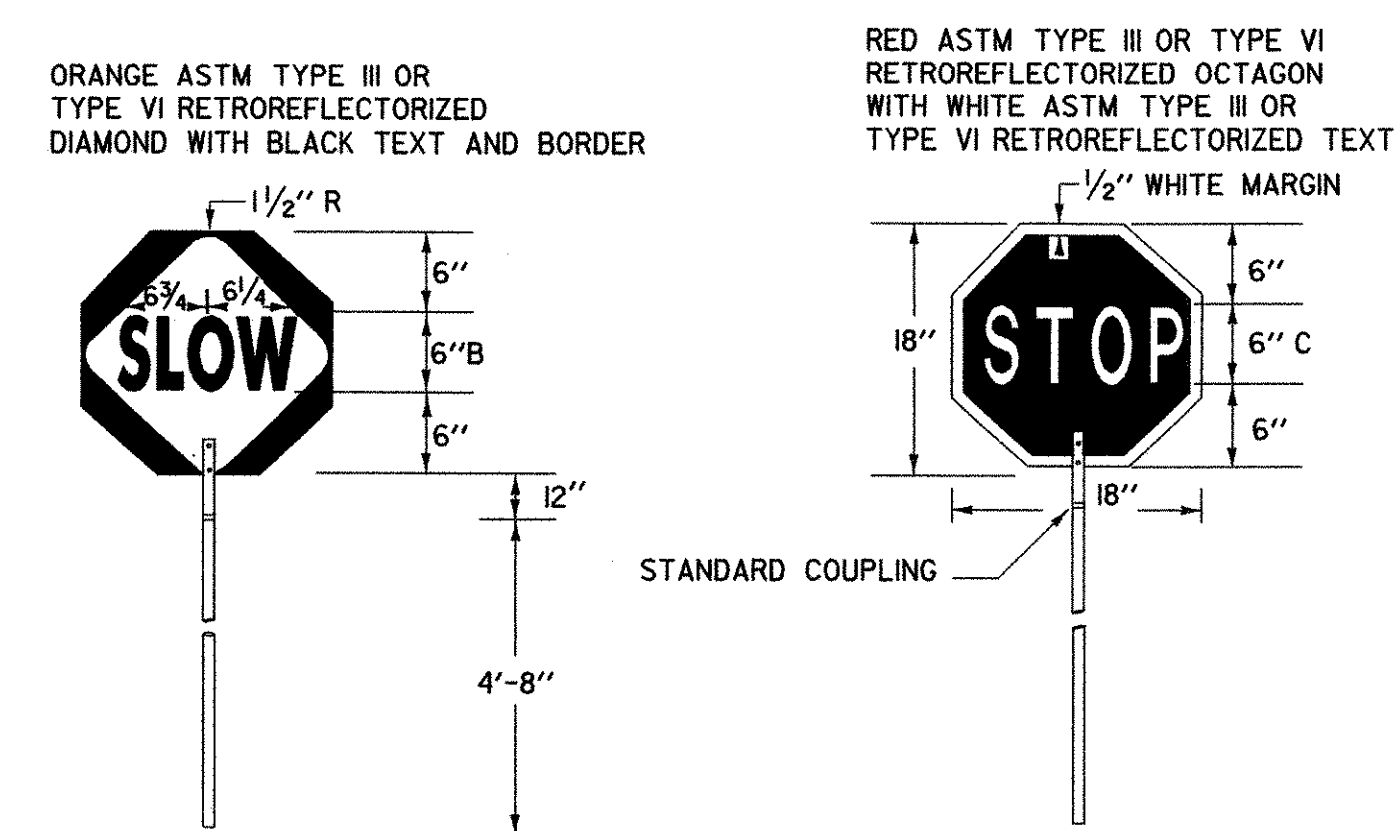
* REDUCE SPACING 40%

W21-3

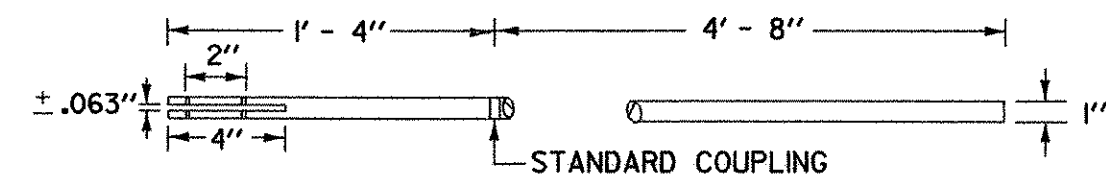


W21-6

SIGN PADDLE FOR FLAGPERSON



SIGN DETAIL



STAFF DETAIL

MATERIALS
THE SIGN MATERIALS SHALL BE 0.063" ALUMINUM WITH COLORS AS INDICATED ON DETAILS.
THE STAFF SHALL BE 3/4" TO 1 1/4" DIAMETER RIGID ALUMINUM CONDUIT/TUBING WITH A WALL THICKNESS OF 0.125" OR 1" TO 1 1/2" DIAMETER RIGID PVC CONDUIT/TUBING WITH 0.125" WALL THICKNESS

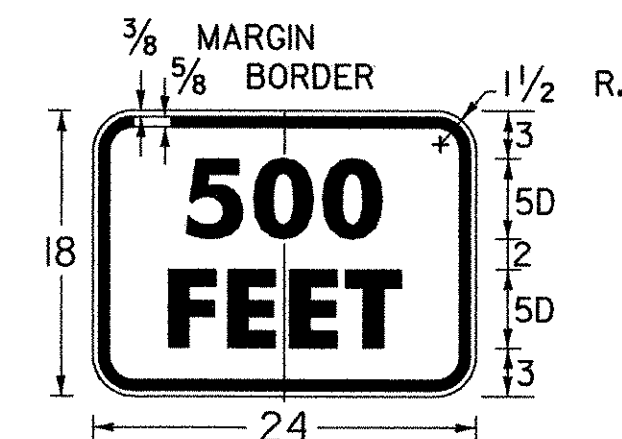
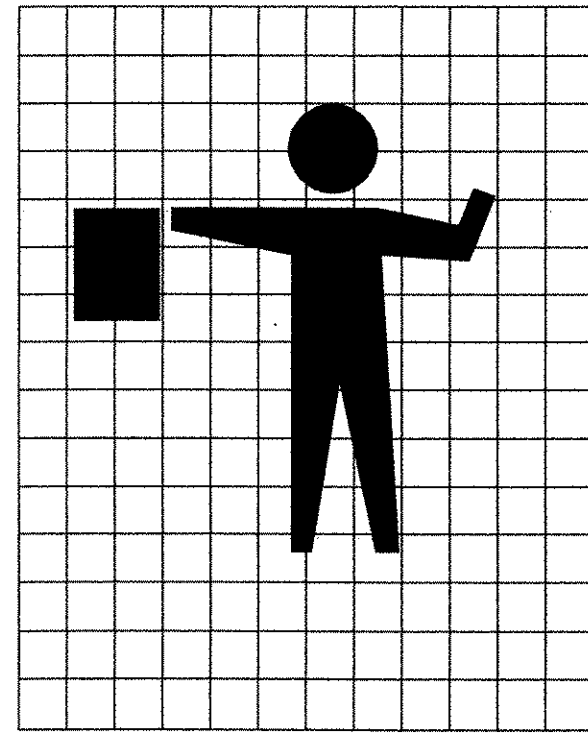
MOUNTING
THE STAFF SHALL BE MOUNTED WITH EITHER TWO 1/4" DIAMETER ALUMINUM BOLTS OR TWO 1/4" DIAMETER ALUMINUM RIVETS.

NOTES

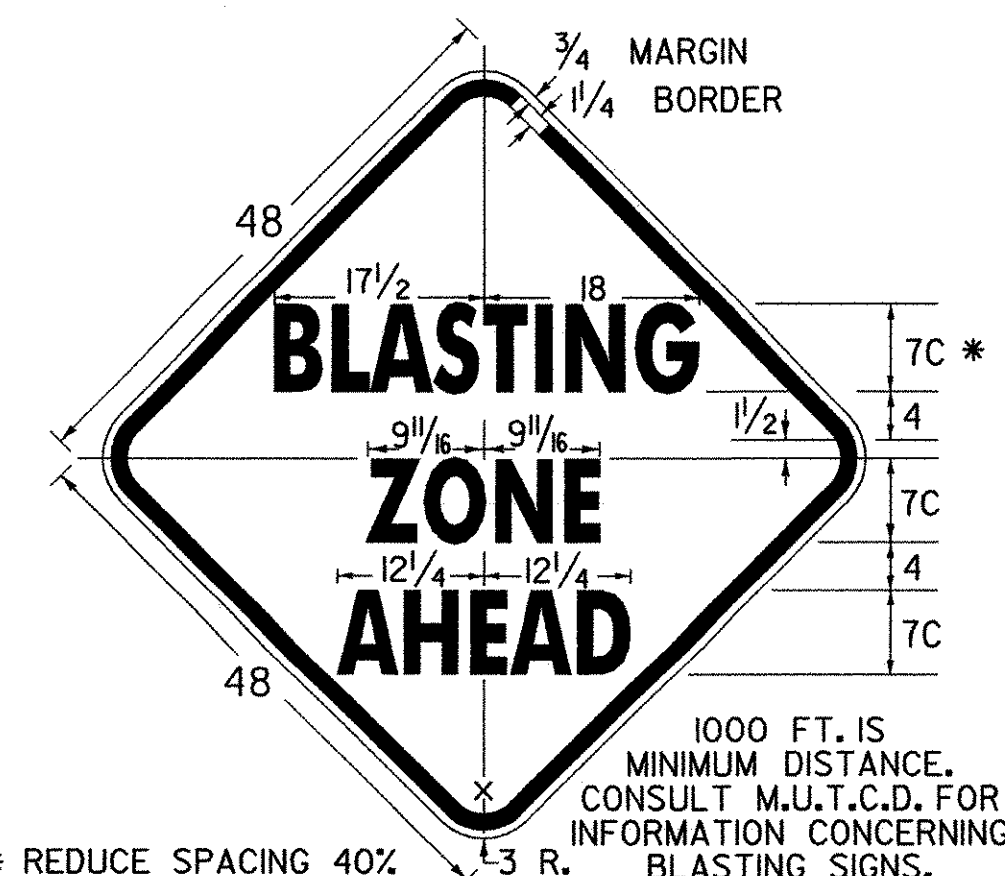
SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS
COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT, BORDER AND SYMBOLS ON ASTM TYPE III OR TYPE VI RETROREFLECTORIZED ORANGE BACKGROUND, UNLESS OTHERWISE NOTED
SIGN DETAILS INDICATE THE APPROPRIATE COLOR.

SIGN	A	B	C	D	E	F	G
STD.	36	5/8	7/8	2 3/4	13 1/2	14 5/8	2 1/4
FWY.	48	3/4	1 1/4	3 3/4	18	19 1/2	3

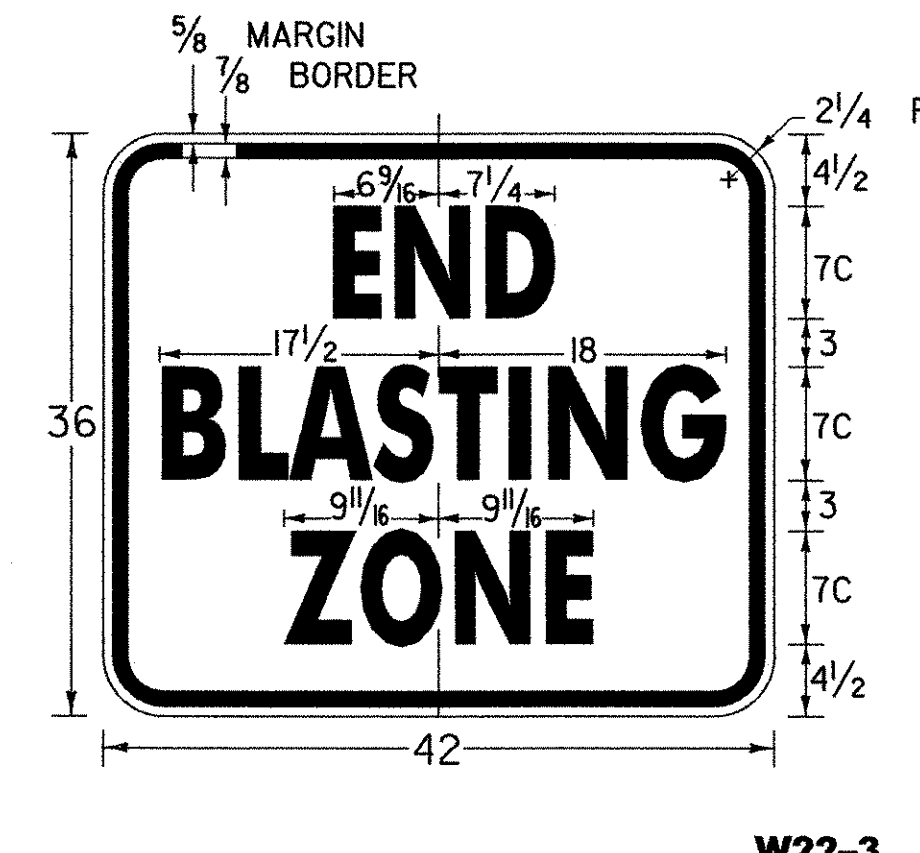
SIGN	A	B	C	D	E	F	G	H	J	K	L
MIN.	36	5/8	7/8	6C	3 3/8	7/8	3 3/4	16 3/8	13	13 3/8	2 1/4
STD.	48	3/4	1 1/4	8C	4 7/8	1 1/4	5	21 7/8	17 3/8	18 1/2	3
EXPWY.	60	3/4	1 1/4	9C	5 3/8	1 3/8	5 5/8	24 3/4	19 3/8	20 1/4	3



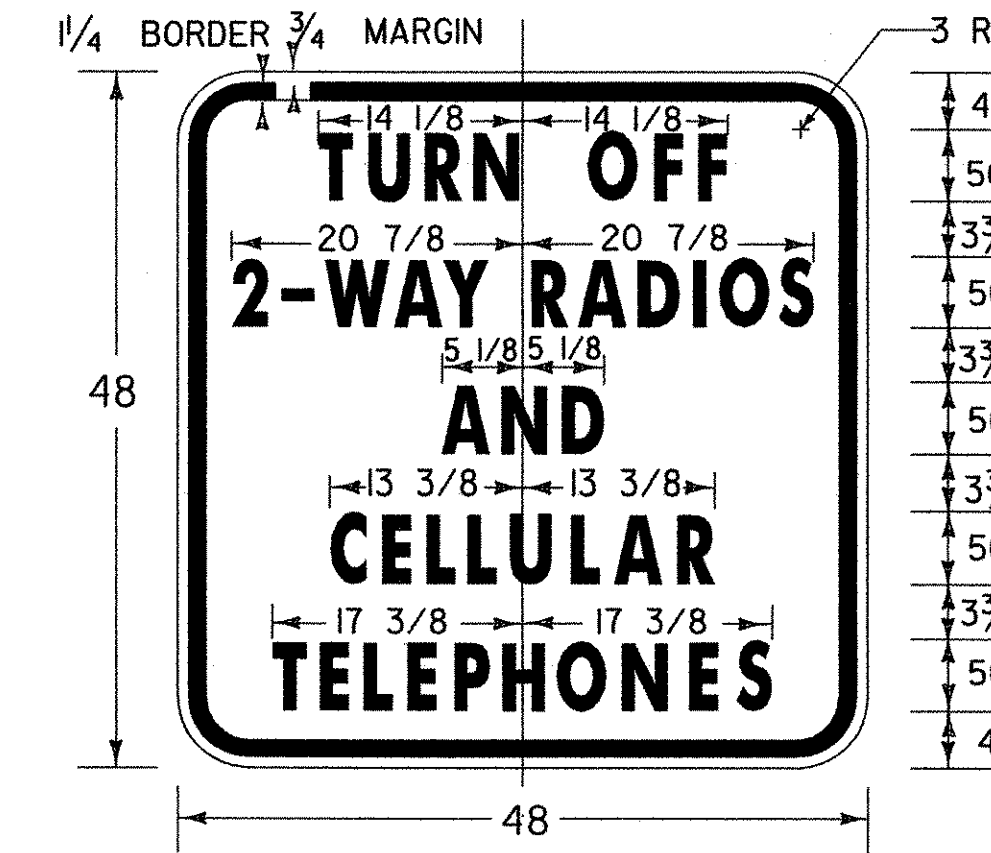
W16-2a



W22-1



W22-3



VW22-1

REVISIONS AND CORRECTIONS

OCT. 30, 1987 - DATE OF ORIGINAL ISSUE
JAN. 23, 1989 - DELETE MOTORCYCLE SYMBOL SIGN AND SPEED SIGN, ADDED TWO SIGNS
OCT. 21, 1992 - ADDED A SIGN, REVISED A SIGN DIMENSION & TYPE ERROR & REVISED TITLE BLOCK
AUG. 08, 1995 - ADDED FLAGGER GRID
JUNE 30, 2003 - CHANGED REFLECTIVE SHEETING TO ASTM TYPE III OR TYPE VI CHANGED TEXT ON W20-7b SIGN

APPROVED

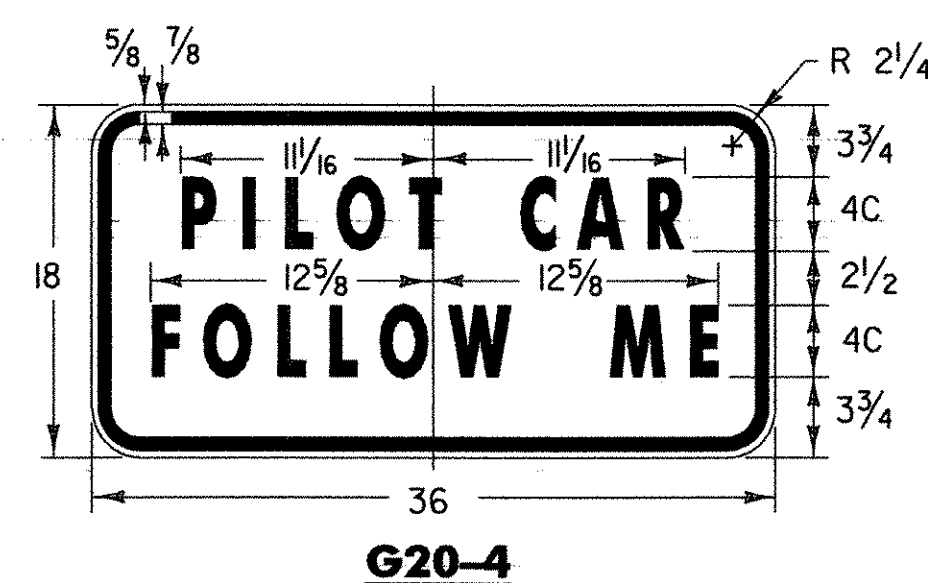
[Signature]
DIRECTOR OF PROGRAM DEVELOPMENT
[Signature]
TRAFFIC OPERATIONS ENGINEER
[Signature]
FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION SIGN DETAILS

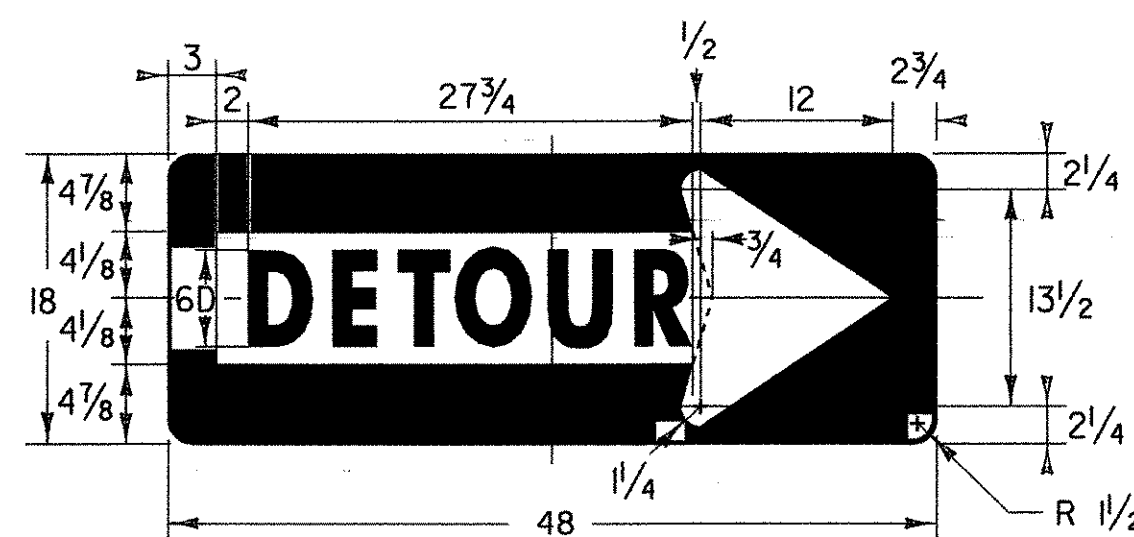


STANDARD E-102

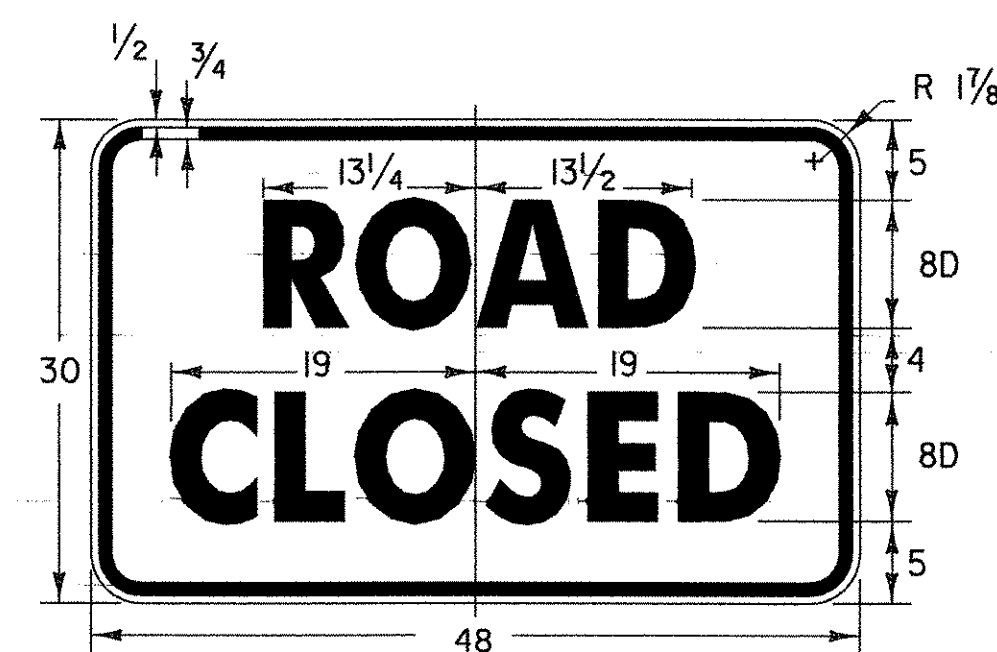
OTHER STDS. E-100 REQUIRED:
NOTE: ALL DIMENSIONS SHOWN IN INCHES EXCEPT WHERE NOTED



G20-4

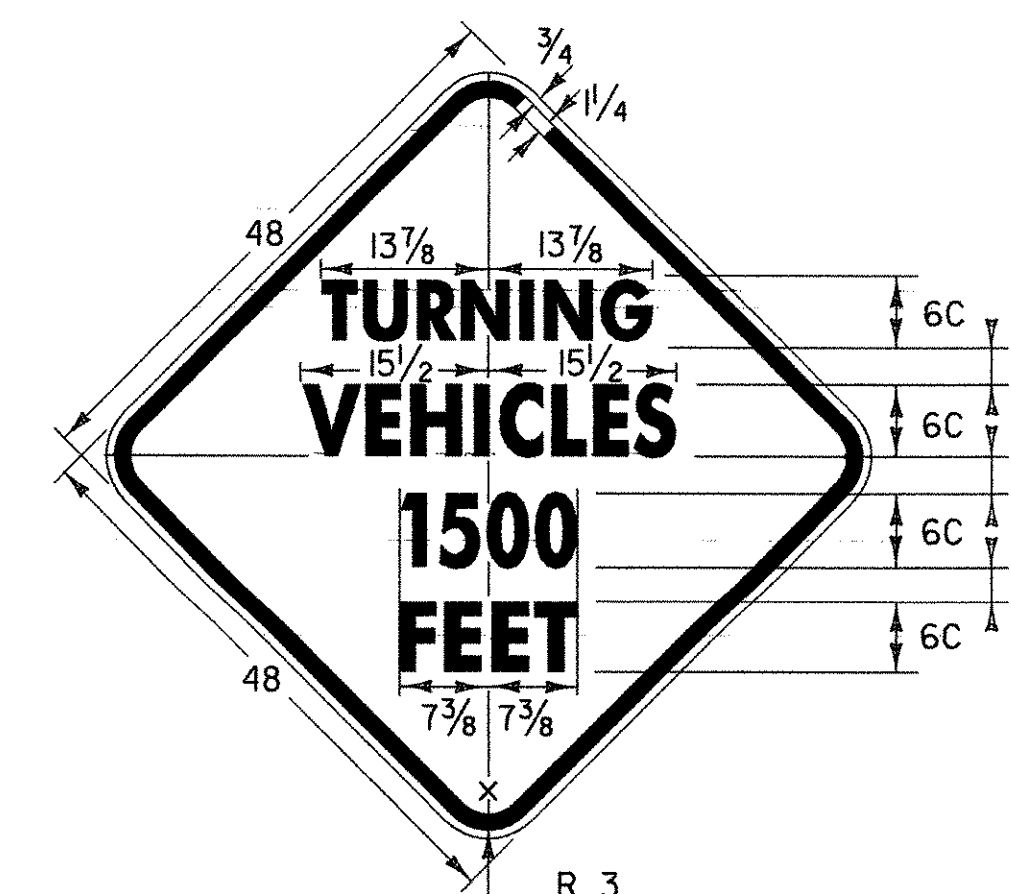


M4-10(R)

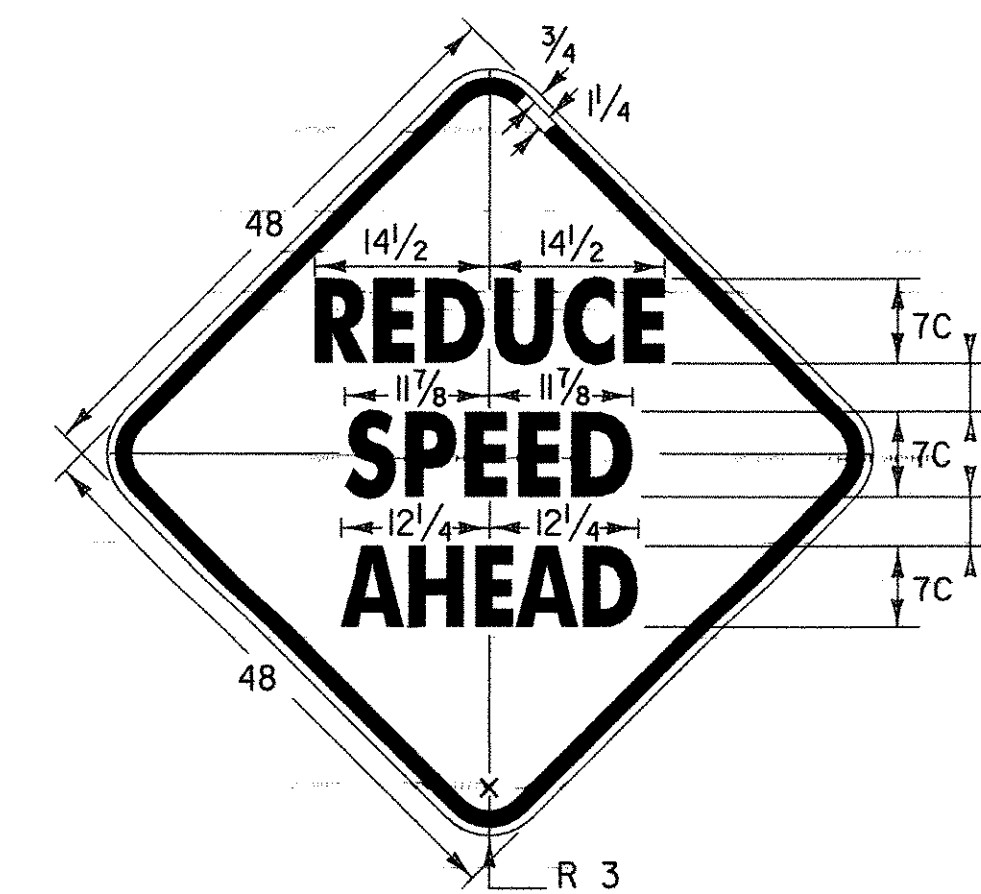


R11-2

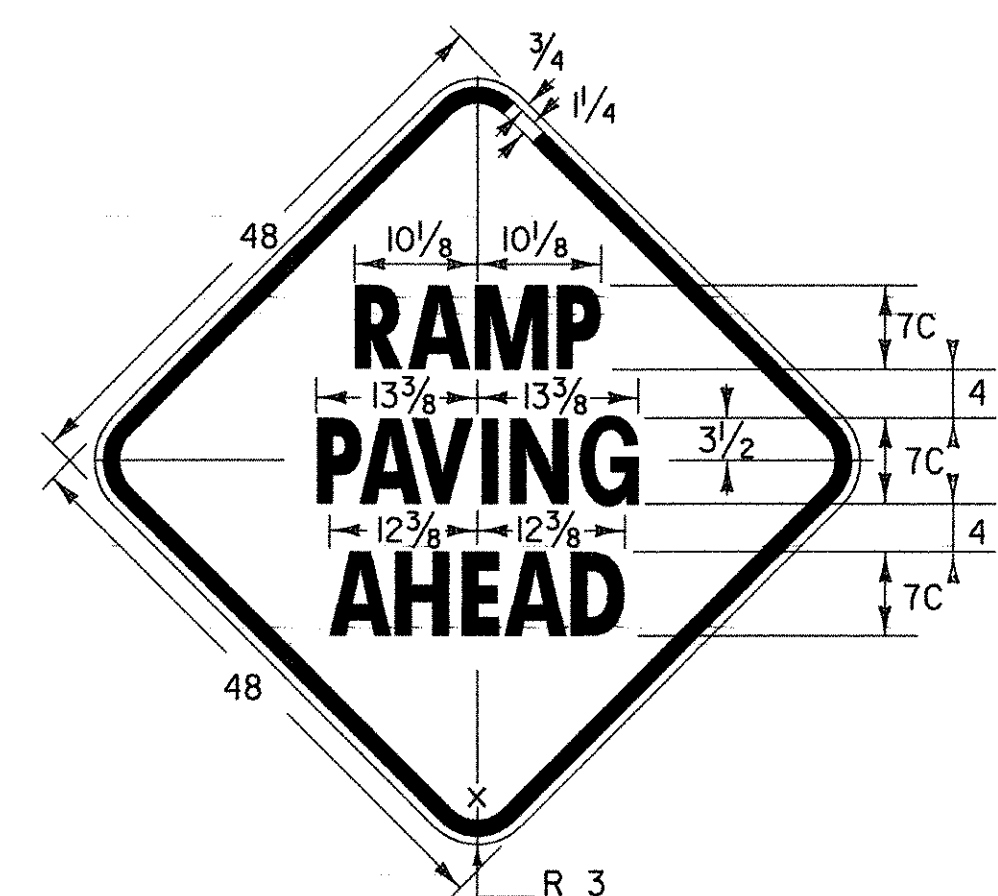
COLORS:
BLACK TEXT AND BORDER
WHITE RETROREFLECTORIZED BACKGROUND



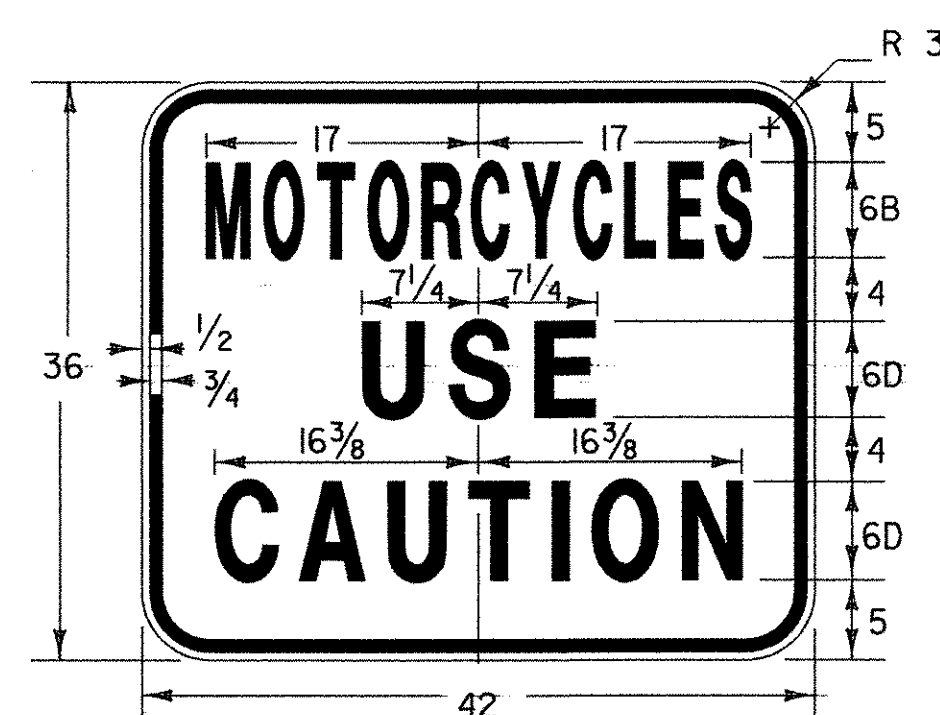
VC-001



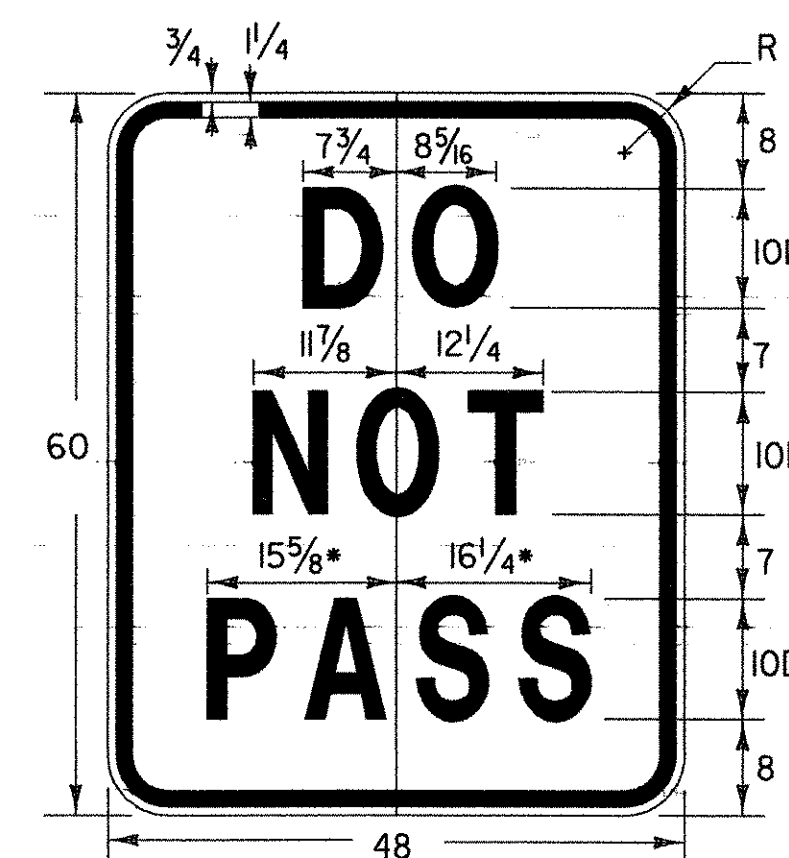
VC-002



VC-003

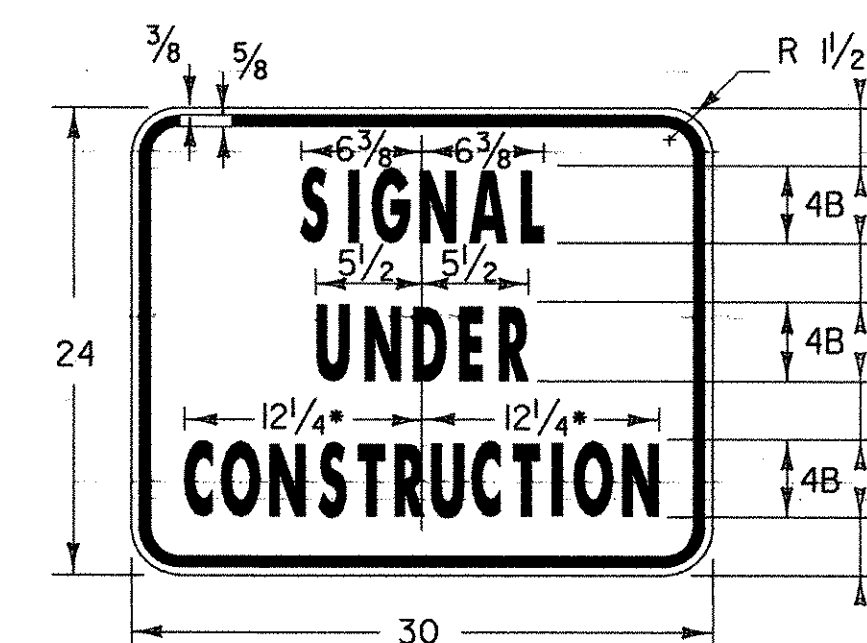


VC-004



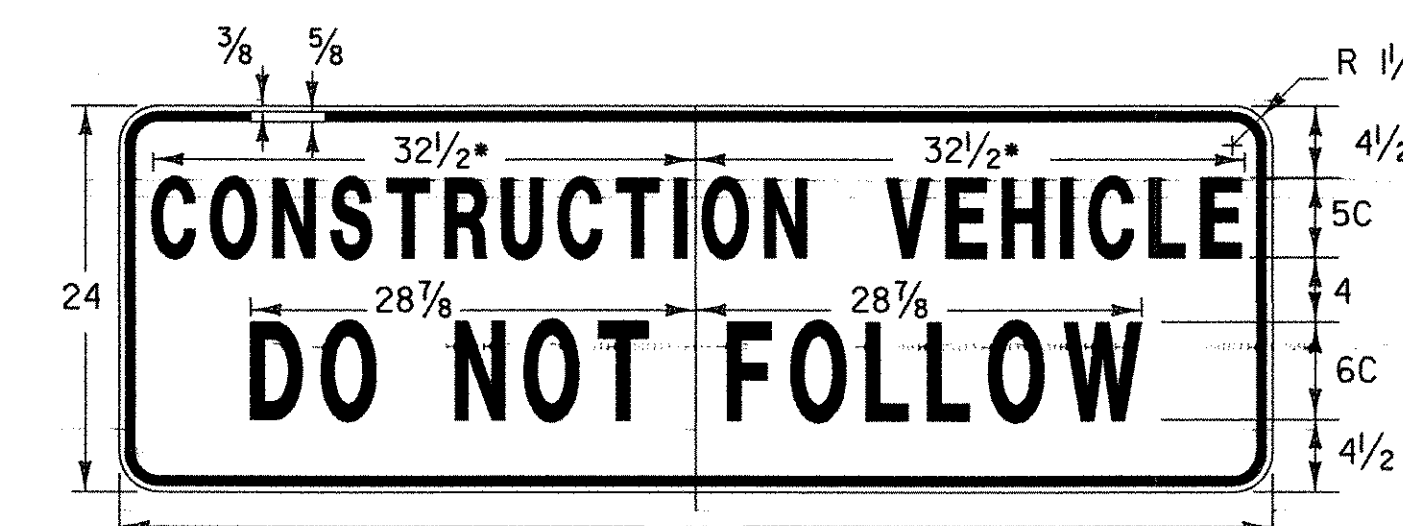
VC-005

* REDUCE SPACING BY 40%



VC-820

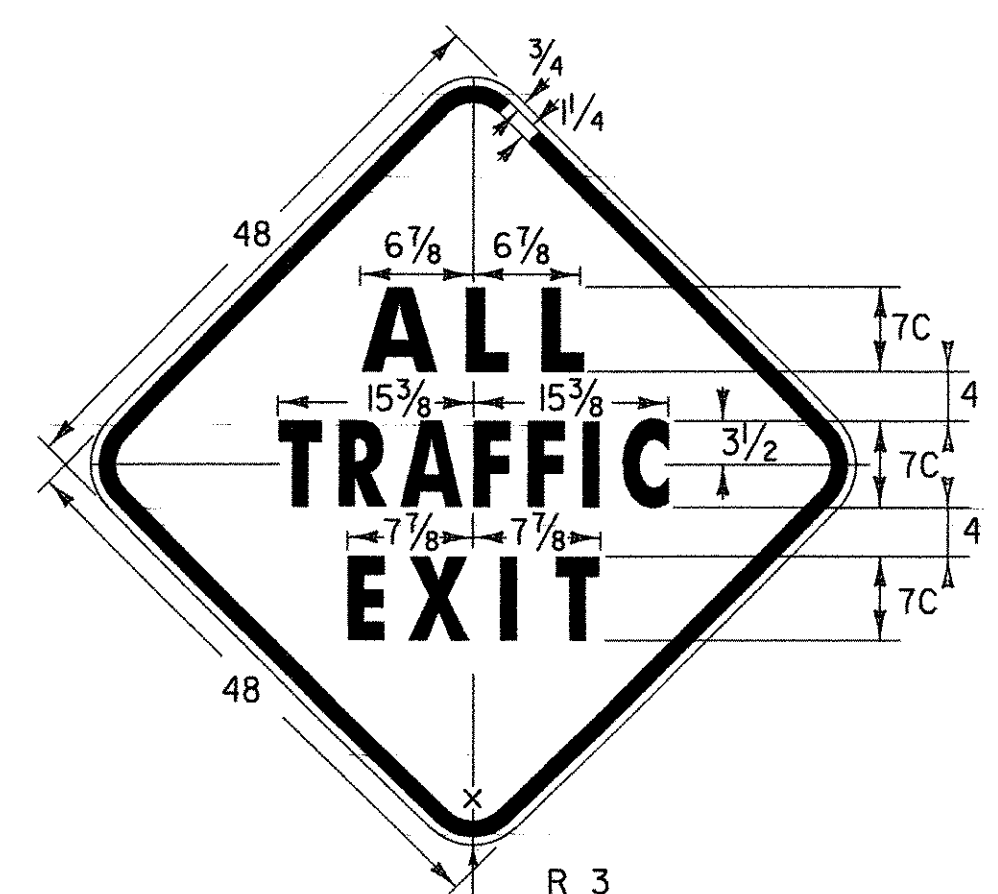
* REDUCE SPACING 25%



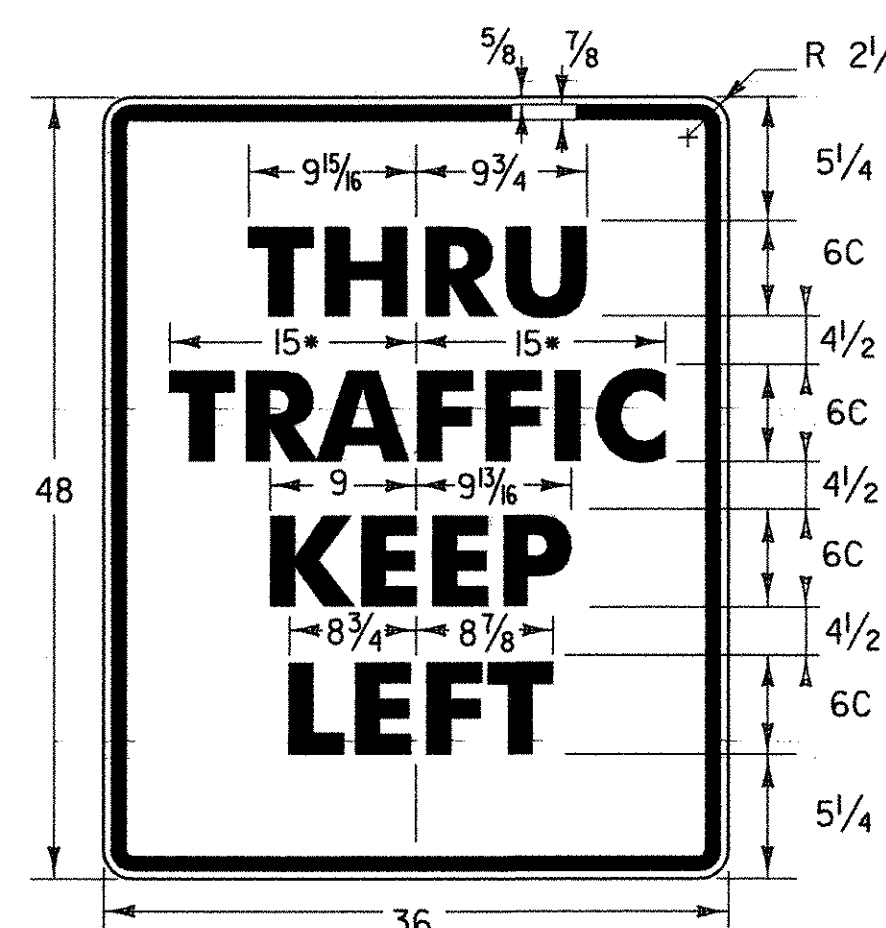
VC-007

* REDUCE SPACING 20%

IT IS SUGGESTED THAT THIS SIGN BE DESIGNED TO FOLD, (DOWN OR ACROSS), BE COVERED, OR BE REMOVED WHEN NOT IN USE. THE SIGN SHOULD ALSO BE MOUNTED AS TO NOT INTERFERE WITH THE VISIBILITY OF DIRECTIONAL OR TAIL LIGHTS AS REQUIRED BY LAW.



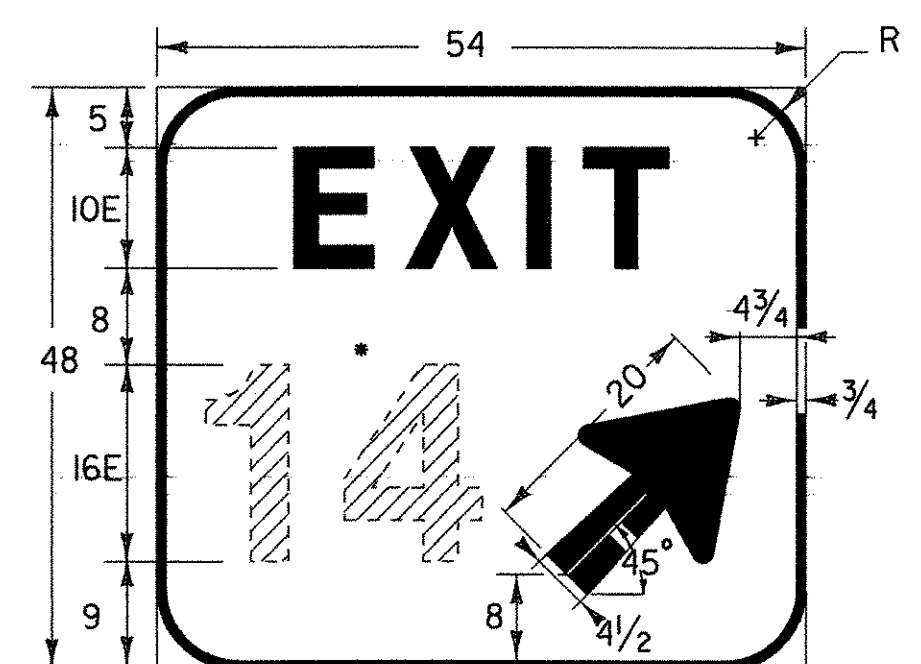
VC-008



VR-118L

* REDUCE SPACING 25 %

COLORS:
BLACK TEXT AND BORDER
WHITE (RETROREFLECTORIZED) BACKGROUND



E5-1a

* EXIT NUMBER AS PER PLANS OPTICALLY SPACED

COLORS:
WHITE RETROREFLECTORIZED BORDER, ARROW AND LEGEND
GREEN RETROREFLECTORIZED BACKGROUND

(ALL DIMENSIONS SHOWN IN INCHES EXCEPT WHERE NOTED)

NOTES

SEE STANDARD SHEET E-100 FOR NOTES AND TEXT DETAILS

COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT, BORDER AND SYMBOLS ON ASTM TYPE III OR TYPE VIII RETROREFLECTIVE ORANGE BACKGROUND, UNLESS OTHERWISE NOTED.

SIGN DETAILS INDICATE THE PROPER COLOR.

**OTHER STDs. E-100, E-151
REQUIRED:**

REVISIONS AND CORRECTIONS

AUG 08, 1995 - DATE OF ORIGINAL ISSUE
MAY 01, 2004 - CHANGED REFLECTIVE SHEETING TO TYPE III

APPROVED

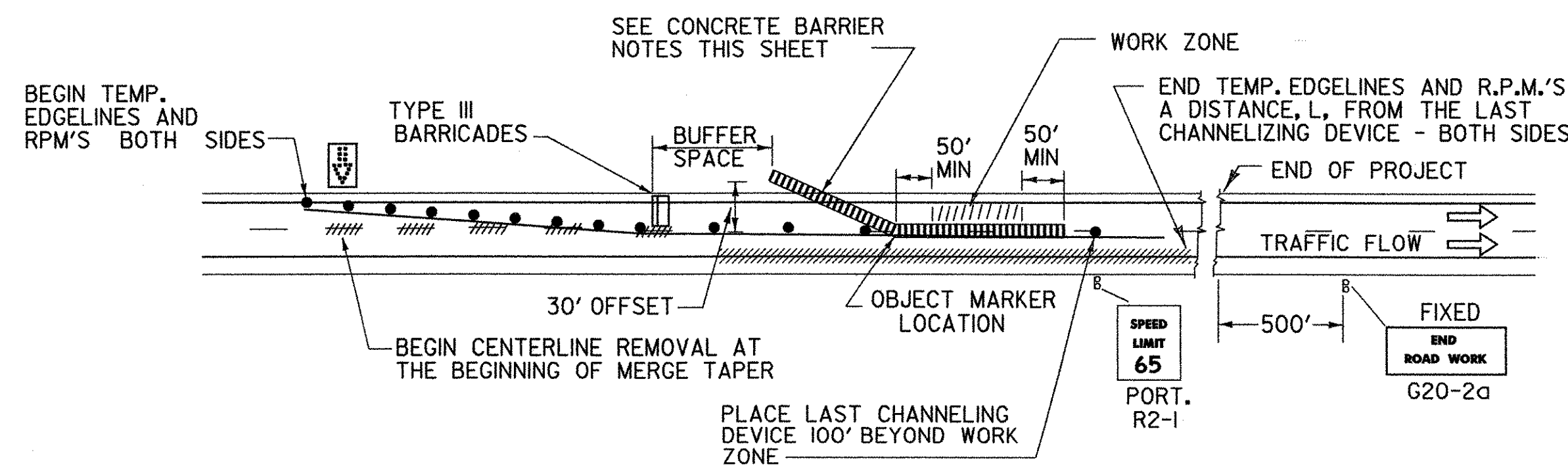
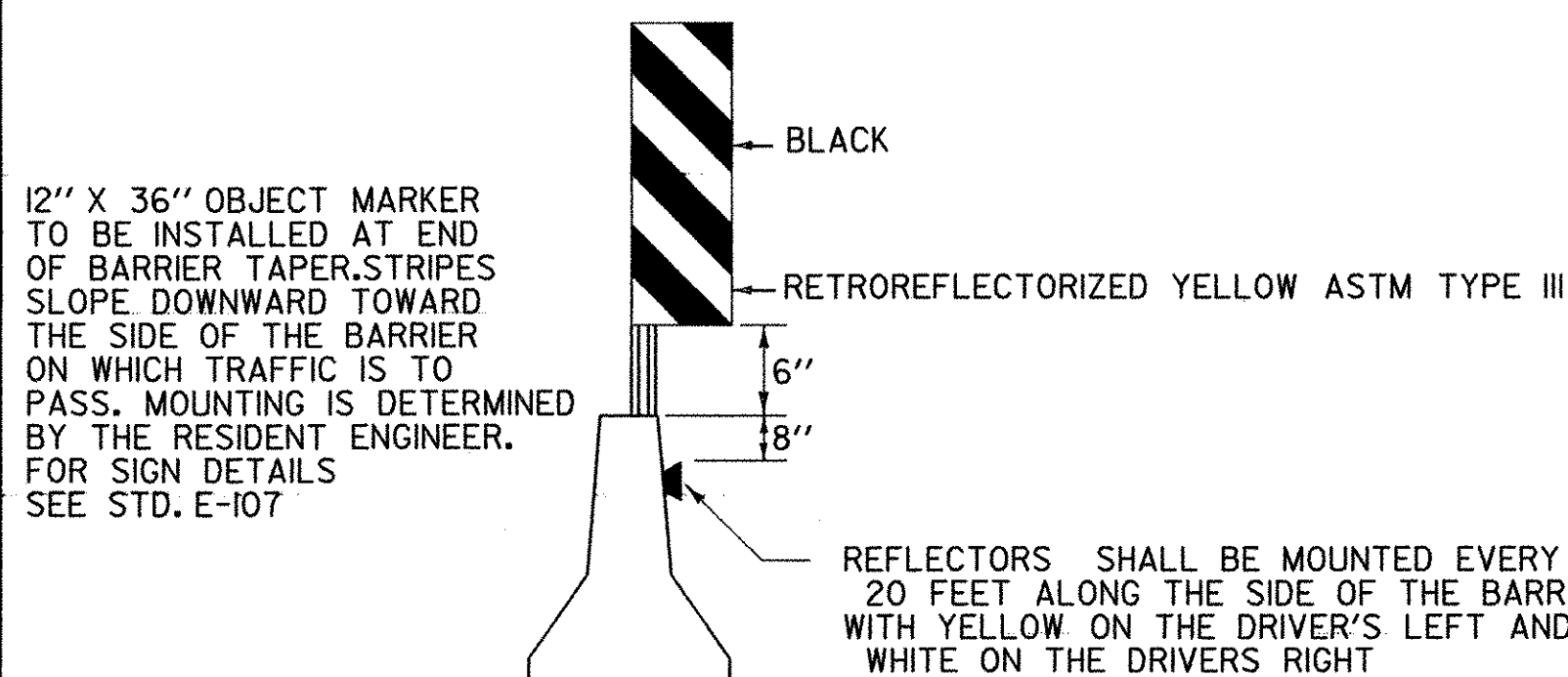
[Signature]
DIRECTOR OF PROGRAM DEVELOPMENT
[Signature]
TRAFFIC OPERATIONS ENGINEER
[Signature]
FEDERAL HIGHWAY ADMINISTRATION

CONSTRUCTION SIGN DETAILS



STANDARD E-102A

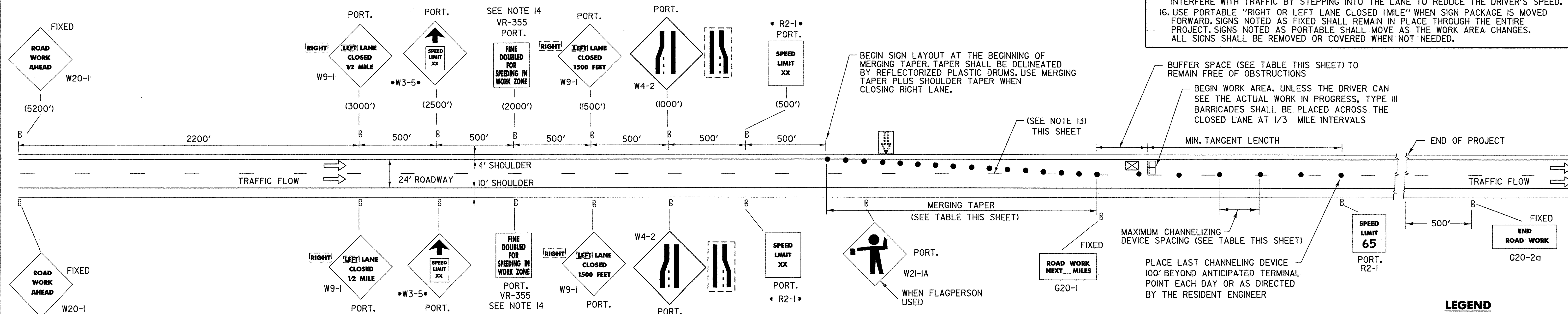
1. BARRIER SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE CENTERLINE TO ALLOW THE TRAFFIC TO USE THE NORMAL LANE WIDTH.
2. EDGELINES SHALL BE REMOVED AND NEW TEMPORARY TAPE EDGELINES SHALL BE APPLIED. THE DRIVERS LEFT EDGELINE SHALL BE A MINIMUM OF ONE FOOT (TWO FEET IS DESIRABLE) FROM BARRIER. TRAVEL LANE SHALL BE 12 FEET WIDE.
3. THE TEMPORARY TAPE PAVEMENT MARKINGS SHALL BE OF A TYPE WHICH CAN BE COMPLETELY REMOVED AFTER THE PROJECT IS COMPLETED WITHOUT, SCARRING OR MARKING THE PAVEMENT SURFACE.
4. PAYMENT FOR THE TAPE MARKINGS SHALL BE UNDER THE APPROPRIATE ITEM NUMBERS. PAVEMENT MARKING REMOVALS SHALL BE PAID UNDER THE APPROPRIATE ITEM NUMBER. TEMPORARY TAPE REMOVAL IS NOT PAID UNDER THE REMOVAL ITEM, IT IS PAID INCIDENTAL TO THE TAPE ITEM.
5. THE RAISED PAVEMENT MARKERS (RPM'S) SHALL BE OF A TYPE WHICH CAN BE EASILY REMOVED AND, SHALL BE PLACED TO THE OUTSIDE OF THE TEMPORARY TAPE PAVEMENT MARKINGS. THE RPM'S SHALL BE SPACED AT 20 FEET. THE RPM'S ARE INCIDENTAL TO ITEM 646.08 TEMPORARY PAVEMENT MARKINGS.
6. THE COST OF THE RAISED PAVEMENT MARKERS SHALL BE CONSIDERED A PART OF THE TEMPORARY PAVEMENT MARKING ITEM AND SEPARATE RPM'S SHALL NOT BE REQUIRED.



ADVANCE SIGNS AND LAYOUT REQUIREMENTS ARE THE SAME
AS SHOWN BELOW USING FIXED SIGN MOUNTING THROUGHOUT

1. PROVIDE A MINIMUM TAPER RATE AS SHOWN IN THE TABLE BELOW, WITH A MINIMUM OF 50 FEET OF TANGENT SECTION ON EACH END OF THE WORK ZONE.
2. THE END OF THE BARRIER FACING APPROACHING TRAFFIC SHALL MEET THE FOLLOWING REQUIREMENTS
 - A. WHEN NO GUARDRAIL IS PRESENT, USE 30 FOOT OFFSET FROM EDGE OF TRAVELLED WAY.
 - B. IF GUARDRAIL IS PRESENT, THEN CONCRETE BARRIER CAN BE TAPERED TO A DISTANCE BEYOND THE DEFLECTION DISTANCE OF THE GUARDRAIL.
IF A 30 FOOT OFFSET IS NOT ATTAINABLE OR TO A DISTANCE BEYOND THE DEFLECTION DISTANCE OF THE GUARDRAIL, THEN A CRASH ATTENUATOR SHALL BE PROVIDED.
3. IF THE BARRIER IS PLACED SUCH THAT THE TEMPORARY TAPE CAN BE PLACED OVER THE EXISTING DASHED LINE, THEN THE EDGELINES DO NOT NEED TO BE TAPERED BEFORE THE BARRIER AND THE DASHED MARKINGS DO NOT NEED TO BE REMOVED IN THE TANGENT SECTION. IF THE BARRIER LINE IS PLACED SUCH THAT COVERING THE DASHED EDGELINE WITH TEMPORARY TAPE IS NOT POSSIBLE, THE EDGELINES SHALL BE TAPERED A LENGTH 'L', BOTH IN ADVANCE AND BEYOND THE BARRIER PLACED ON THE TANGENT.

1. WHEN CONSTRUCTION EQUIPMENT IS WORKING AT OR NEAR THE EXIT OR ENTRANCE RAMPS, FLAGPERSONS OR UNIFORMED TRAFFIC CONTROL OFFICERS (UTO'S) SHOULD BE USED TO ASSIST IN CONTROLLING TRAFFIC. SEE STD. E-106 FOR TRAFFIC CONTROL DETAILS.
2. ALL SIGNS SHALL BE PLACED BEFORE ANY WORK BEGINS OR EQUIPMENT IS PUT ON THE ROADWAY. SIGNS SHALL BE COVERED OR REMOVED WHEN NOT APPLICABLE. SEE STANDARD SHEET E-100 FOR REQUIREMENTS.
3. CONTRACTOR SHALL HAVE CHANNELIZING DEVICES AND SIGNS FOR LEFT SIDE CLOSURE AND RIGHT SIDE CLOSURE ON PROJECT BEFORE STARTING PROJECT.
4. EXISTING SPEED LIMIT SIGNS SHALL BE COVERED WHEN REDUCED SPEED SIGNS ARE POSTED.
5. CHANNELIZING DEVICES OTHER THAN REFLECTORIZED PLASTIC DRUMS WILL BE ALLOWED ALONG TANGENT SECTIONS AS LONG AS THEY CONFORM TO THE M.U.T.C.D. AND ARE APPROVED BY THE RESIDENT ENGINEER. THE TYPE OF DEVICE SHALL BE CONSISTENT THROUGHOUT THE TANGENT SECTION.
6. THE "SPEED LIMIT XX" AND OTHER RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN WORK IS NOT IN PROGRESS AND ROADWAY IS NOT RESTRICTED.
7. "REDUCED SPEED AHEAD" SIGNS MAY BE USED IN LIEU OF "SPEED ZONE AHEAD".
8. FOR RELATIVELY SHORT TERM PROJECTS WITH NO OFFICIAL SPEED ZONE ENACTMENT, THE SPEED LIMIT AND REDUCED SPEED LIMIT SIGNS CAN BE SUBSTITUTED WITH ADVISORY SPEED PLAQUES MOUNTED AS SUPPLEMENTAL SIGNS ON OTHER WARNING SIGNS.
9. ALL FIXED SIGNS SHALL BE MOUNTED ON YIELDING STEEL, ALUMINUM OR WOOD SUPPORTS AS SHOWN ON APPROPRIATE STANDARD SHEETS.
10. PORTABLE SIGNS SHALL BE KEPT LEVEL WHEN PLACED ON THE EDGE OF ROADWAY AND ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. PAYMENT INCIDENTAL TO OTHER CONTRACT ITEMS. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACES SHALL BE PLACED ABOVE THE TOP OF THE GUARDRAIL.
11. WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
12. THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE, ETC.)
13. FOR ANY LONG TERM CLOSURE (GREATER THAN 3 DAYS) EXISTING CENTERLINE SHALL BE REMOVED AND TEMPORARY EDGELINES PLACED AS SHOWN WITH POSITIVE BARRIER.
14. FINE DOUBLED FOR SPEEDING IN WORK ZONE WILL ONLY BE USED IF TEMPORARY SPEED LIMIT FORM HAS BEEN FILED.
15. IF CONSTRUCTION ACTIVITIES REDUCE LANE WIDTHS TO THE POINT WHERE 40 MPH CANNOT MAINTAINED, ADDITIONAL ADVISORY SPEED PLATE SIGNS SHALL BE INSTALLED UNDER THE LANE REDUCTION TRANSITION SIGN. FLAGPERSONS AND U.T.O.'S SHALL NOT BE ALLOWED TO INTERFERE WITH TRAFFIC BY STEPPING INTO THE LANE TO REDUCE THE DRIVER'S SPEED.
16. USE PORTABLE "RIGHT OR LEFT LANE CLOSED AHEAD" WHEN SIGN PACKAGE IS MOVED FORWARD. SIGNS NOTED AS FIXED SHALL REMAIN IN PLACE THROUGH THE ENTIRE PROJECT. SIGNS NOTED AS PORTABLE SHALL MOVE AS THE WORK AREA CHANGES. ALL SIGNS SHALL BE REMOVED OR COVERED WHEN NOT NEEDED.



TAPER RATES ARE DETERMINED
USING THE FOLLOWING EQUATION:
L = WS FOR DESIGN SPEEDS OF
45 MPH OR GREATER
L = WS²/60 FOR DESIGN SPEEDS
OF 40 MPH OR LESS
WHERE: L = MINIMUM LENGTH OF
TAPER
W = WIDTH OF OFFSET (USUALLY
LANE WIDTH) IN FEET
S = DESIGN SPEED IN MPH

POSTED SPEED OR 85th PERCENTILE (mph)	DESIGN SPEED (mph)	TAPER LENGTHS (ft)			TANGENT SECTION LENGTHS (L/2) (ft)	MINIMUM BUFFER SPACE LENGTH (ft)	MAXIMUM CHANNELIZING DEVICE SPACING (ft)		BARRIER FLARE RATE (MIN)
		MERGING LANE (L)	SHIFTING W/10 ft (L/2)	SHOULDER W/10 ft (L/3)			TAPER	LONG LANE & WORK ZONE	
≤ 40	40	320	215	90	160	160	35	70	1:9
45	45	540	360	150	270	270	40	80	1:9
50	50	600	400	170	300	300	50	100	1:11
55	55	660	440	185	330	330	55	110	1:13
60 & 65	60	720	480	200	360	360	60	120	1:13
70	70	840	560	235	420	440	65	130	1:13

- - FLASHING ARROW PANEL
- - REFLECTORIZED PLASTIC DRUM
- - PAVEMENT MARKING REMOVAL
- - CONCRETE MEDIAN BARRIER
- - TYPE III BARRICADE
- - TRUCK/TRAILER MOUNTED ATTENUATOR (OPTIONAL)

OTHER STDS. E-100, E-101, E-102, E-102A, E-106, E-107, E-107A, E-108
REQUIRED:

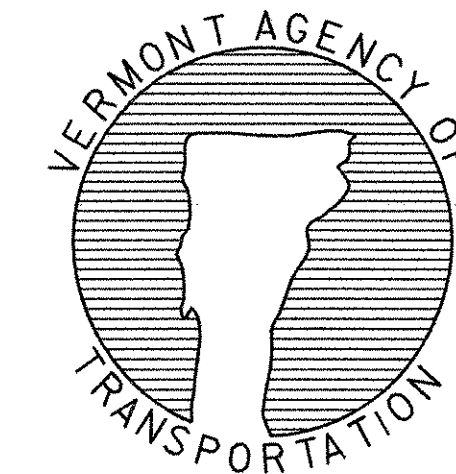
OCT. 30, 1987 - DATE OF ORIGINAL ISSUE
JAN. 23, 1989 - FHWA COMMENTS - CHANGE TO
65 M.P.H. TAPER RATES
OCT. 21, 1992 - ADDED TAPER RATE TABLE &
REVISED TITLE BLOCK
AUG. 08, 1995 - DELETED AN INVALID NOTE
SEPT. 23, 1998 - ADDED FINE SIGN VR-355
MAR. 01, 2004 - CHANGED REFLECTIVE SHEETING
AND REVISED TO MUTCD 2003


DIRECTOR OF PROGRAM DEVELOPMENT


TRAFFIC OPERATIONS ENGINEER

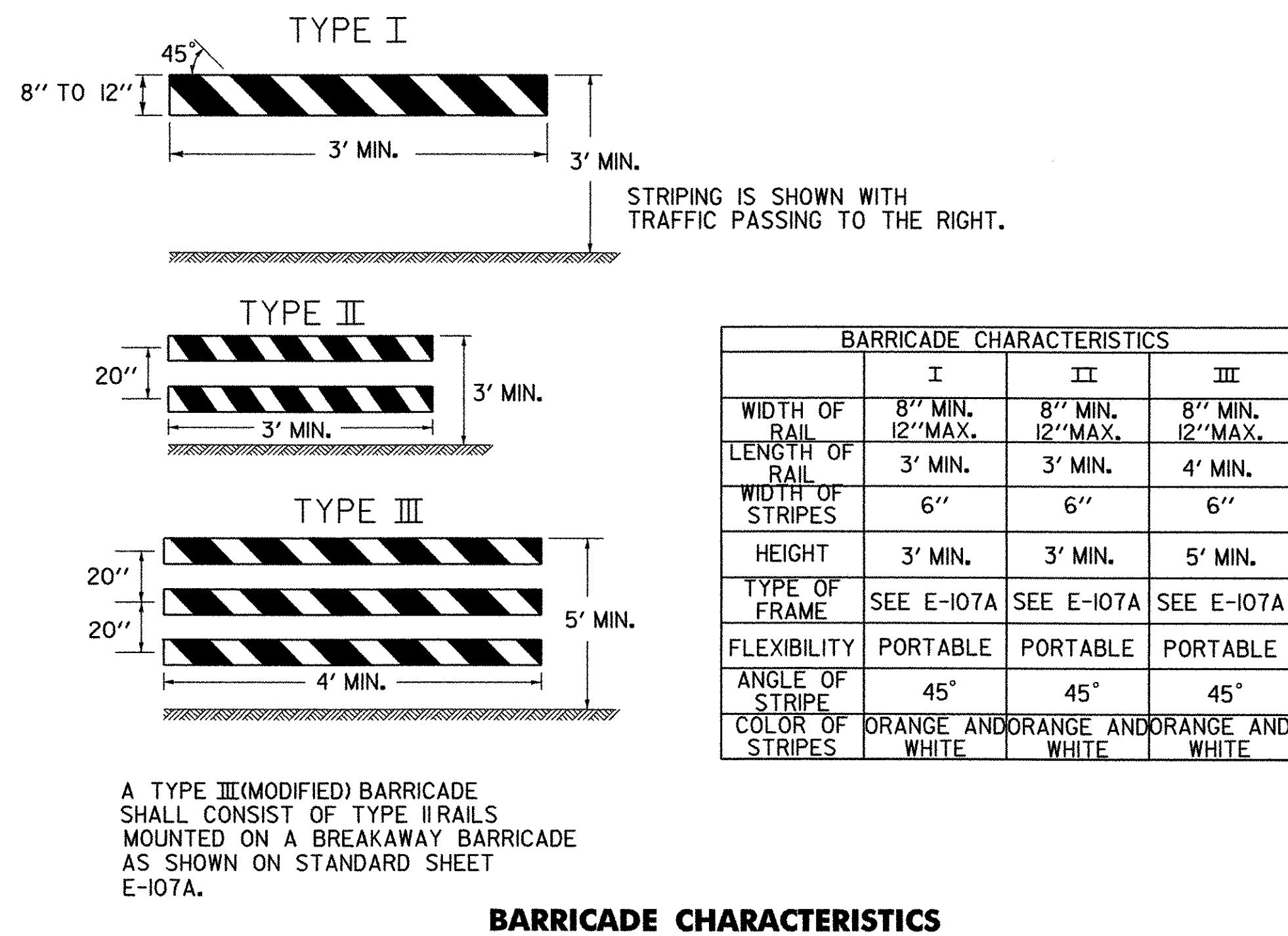

FEDERAL HIGHWAY ADMINISTRATION

MAINLINE TRAFFIC CONTROL DIVIDED HIGHWAY ONE LANE CLOSED



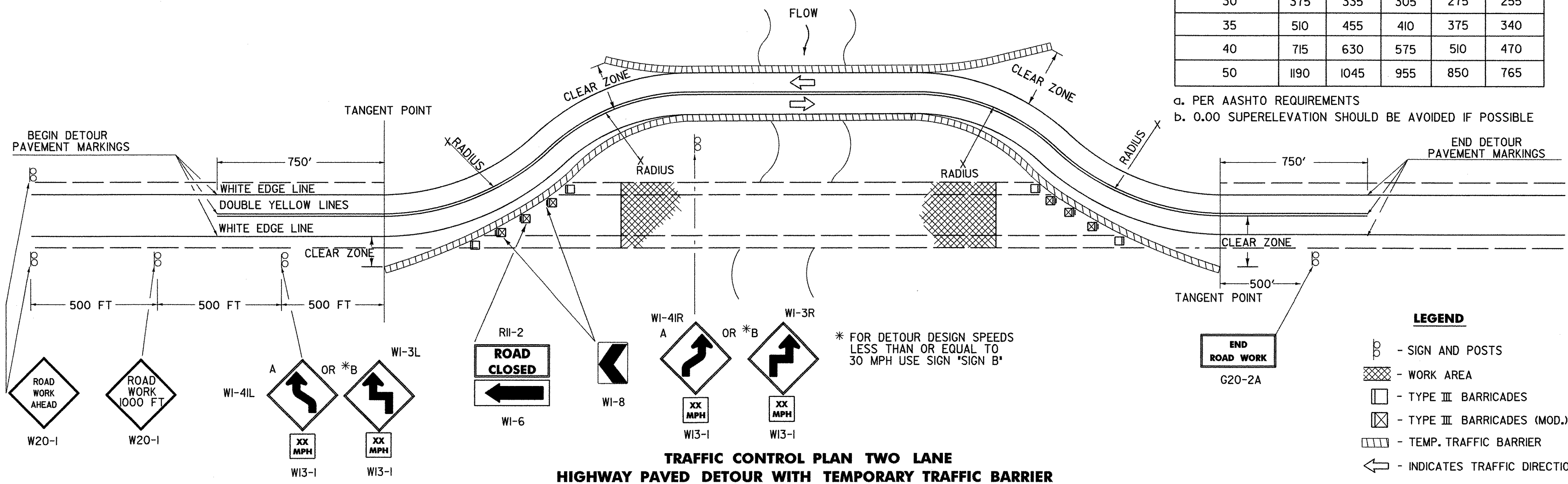
STANDARD E-103

STANDARD E-106



DETOUR DESIGN SPEED	MINIMUM RADIUS (FT.) ^a				
	SUPERELEVATION (FT./FT.)				
(M.P.H.)	0.00 ^b	0.02	0.04	0.06	0.08
20	160	140	130	120	110
25	245	220	200	185	170
30	375	335	305	275	255
35	510	455	410	375	340
40	715	630	575	510	470
50	1190	1045	955	850	765

a. PER AASHTO REQUIREMENTS
b. 0.00 SUPERELEVATION SHOULD BE AVOIDED IF POSSIBLE



REVISIONS AND CORRECTIONS

SEPT. 10, 1987	-	DATE OF ORIGINAL ISSUE
APRIL 29, 1988	-	FHWA REVIEW COMMENTS
SEPT. 20, 1993	-	NEW RADIUS CHART, BARRICADE ALIGNMENT AND USE OF TEMPORARY TRAFFIC BARRIER
AUG. 08, 1995	-	REVISED SIGNING PER MUTCD
JUNE 30, 2003	-	CHANGED REFLECTIVE SHEETING TO TYPE III

APPROVED



DIRECTOR OF PROGRAM DEVELOPMENT

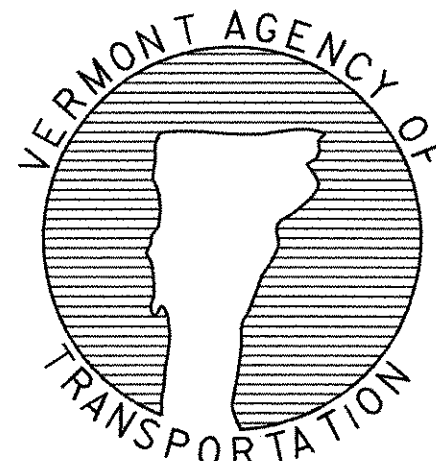


TRAFFIC OPERATIONS ENGINEER



FEDERAL HIGHWAY ADMINISTRATION

DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS



STANDARD E-107

APPLICATION NOTES

TYPE I BARRICADES SHALL BE USED ON CONVENTIONAL ROADS OR URBAN STREETS AND
ARTERIALS TO MARK A SPECIFIC HAZARD.

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

TYPE III BARRICADES (SEE STD. E-107A) SHALL ONLY BE USED WHEN A ROAD SECTION OR
LANE IS CLOSED TO TRAFFIC AND ARE TO BE ERECTED AT THE POINT OF CLOSURE.

MATERIALS

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

1. WOODEN BARRICADES (TYPE 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 M.P.H. ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.
 - B) MAY BE USED WHERE OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.
2. TYPE III WOODEN BARRICADES SHALL NOT BE USED.

COLORS

THE BARRICADE PANELS SHOWN ON THIS SHEET SHALL HAVE ALTERNATING RETRO-REFLECTORIZED WHITE AND ORANGE STRIPES. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE US DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION. THE BARRICADE COMPONENTS SHALL BE WHITE UNLESS UNPAINTED METAL OR ALUMINUM IS USED.

REFLECTORIZATION

THE RETROREFLECTIVE SHEETING ON BARRICADE PANELS SHALL BE ASTM TYPE III.

LOCATION

THE BARRICADES SHOWN ON THIS SHEET WILL BE LOCATED BY THE RESIDENT 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.

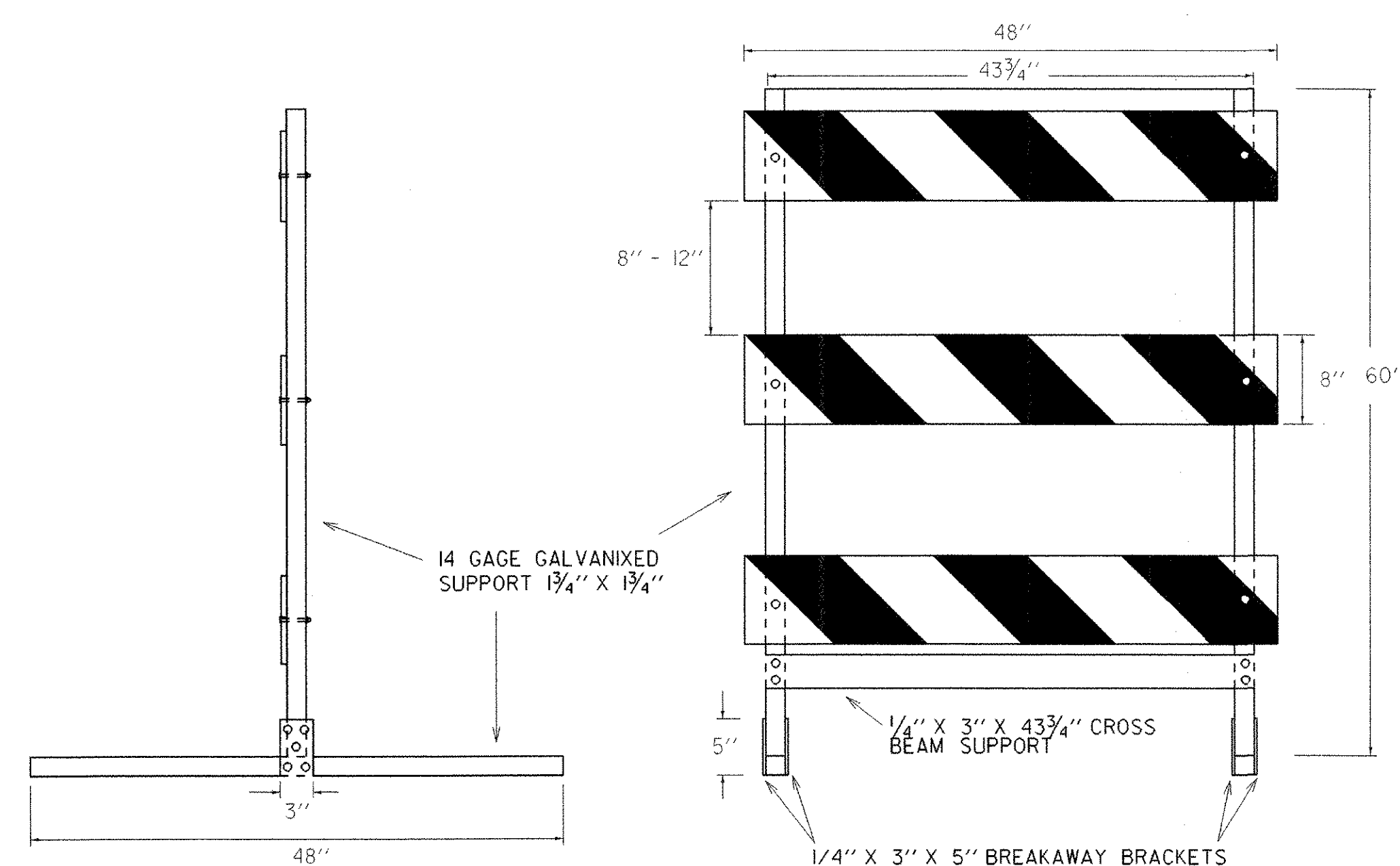
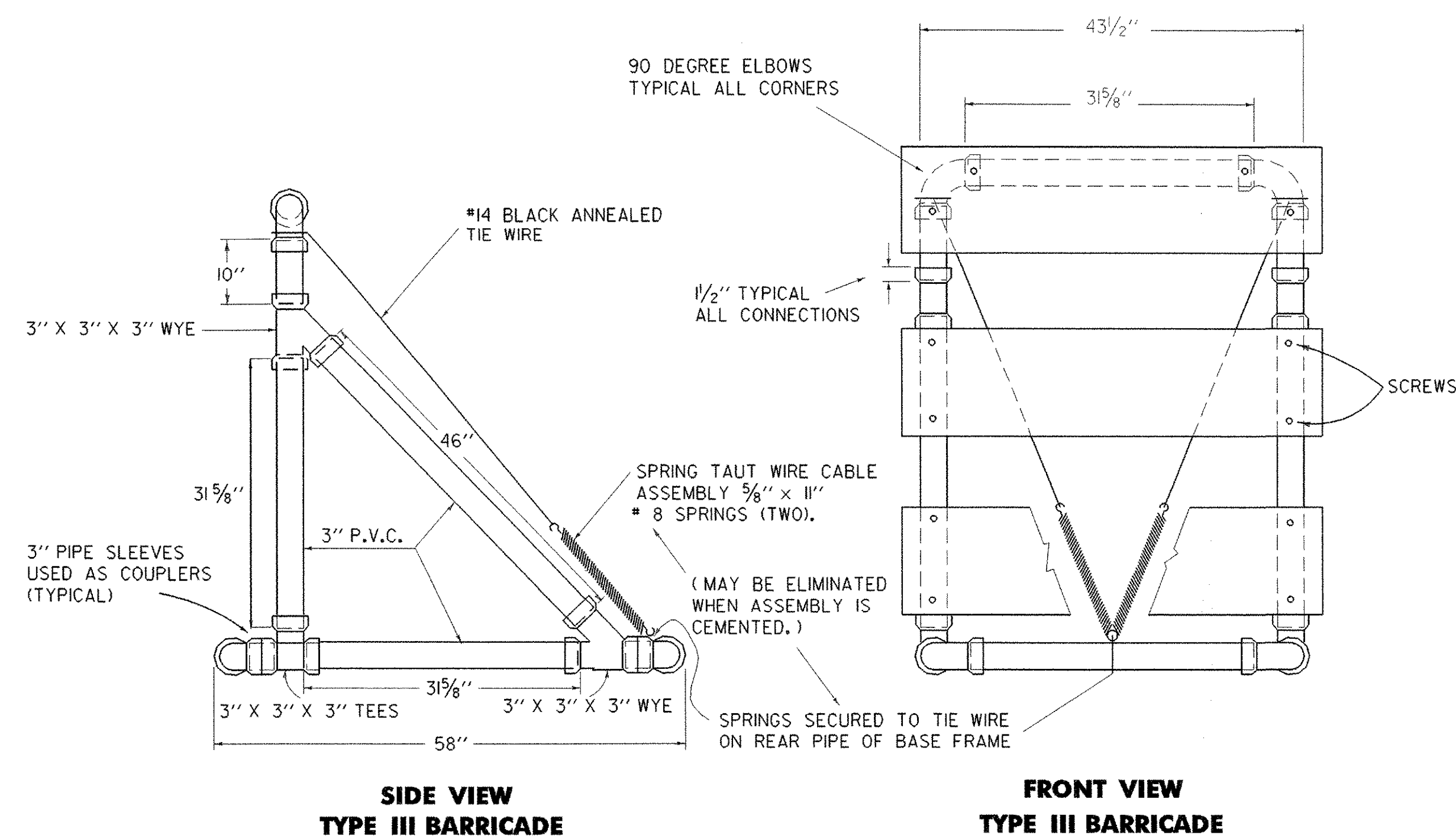
MAINTENANCE

BARRICADES SHALL BE MAINTAINED IN CLEAN CONDITION, SATISFACTORY TO THE RESIDENT ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO THE APPROACHING TRAFFIC AT ALL TIMES. DAMAGED, DEFACED, OR DIRTY BARRICADES SHALL BE REPAIRED, CLEANED, OR REPLACED AS ORDERED BY THE RESIDENT ENGINEER.

DETOUR NOTES

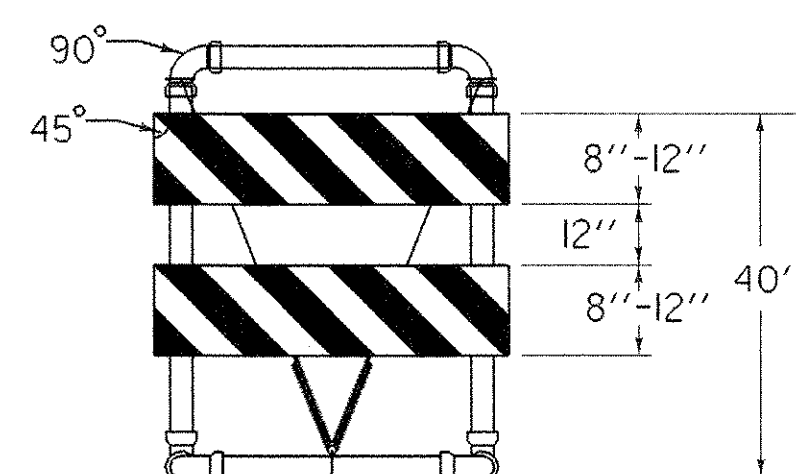
- 1.) SIGNS AND DELINEATION SHOWN FOR ONE DIRECTION OF TRAFFIC ONLY.
- 2.) THE CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
- 3.) ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE RESIDENT ENGINEER.
- 4.) UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS FOR TRANSITIONS FROM EXISTING PAVEMENT.
- 5.) THE NUMBER OF CHANNELIZING DEVICES, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED SHALL BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR CURVE, ETC.).
- 6.) AASHTO CLEAR ZONE REQUIREMENTS SHOULD BE MET. IF NOT THEN AN APPROVED ENERGY ABSORPTION ATTENUATOR (SUITABLE FOR THE TEMPORARY TRAFFIC BARRIER USED AND FOR THE DESIGN SPEED) SHALL BE INSTALLED PER THE CURRENT AASHTO ROADSIDE DESIGN GUIDE.
- 7.) THE DETOUR DESIGN SPEED SHOULD BE NO LESS THAN 10 M.P.H. BELOW THE POSTED SPEED LIMIT, UNLESS PHYSICAL RESTRICTIONS PREVENT THIS.
- 8.) SEE STANDARD SHEETS E-100, E-101 AND E-102 FOR SIGN DETAIL AND MATERIAL REQUIREMENTS.
- 9.) IF THE USE OF TEMPORARY TRAFFIC BARRIER IS NOT REQUIRED, THEN REFLECTORIZED PLASTIC DRUMS SHALL BE USED.

OTHER STDs.	E-100	E-102	E-107a
REQUIRED:	E-101	E-102a	E-198

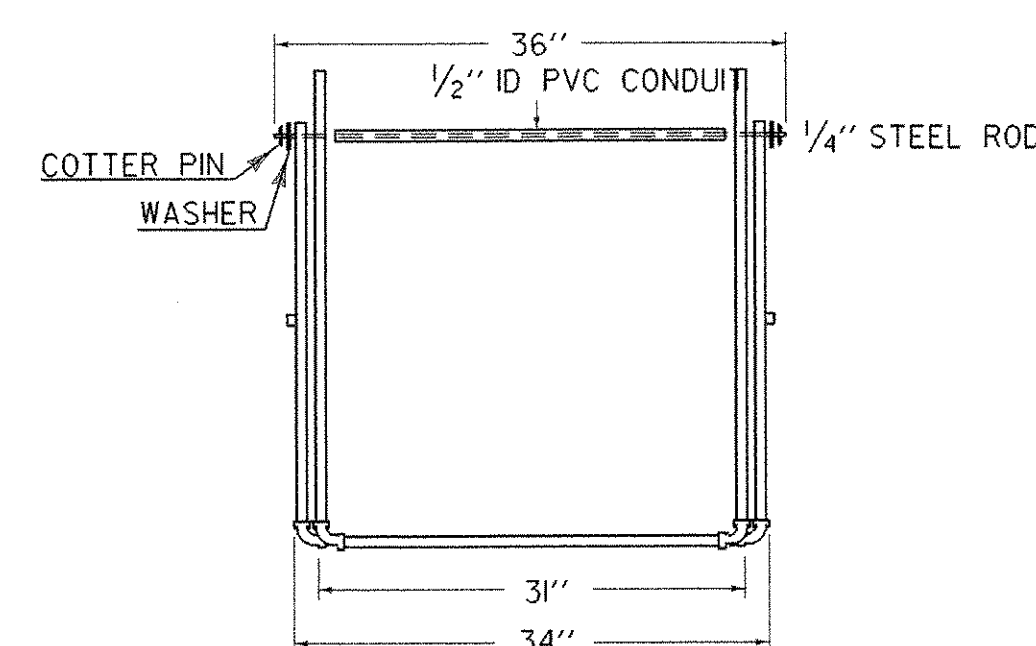
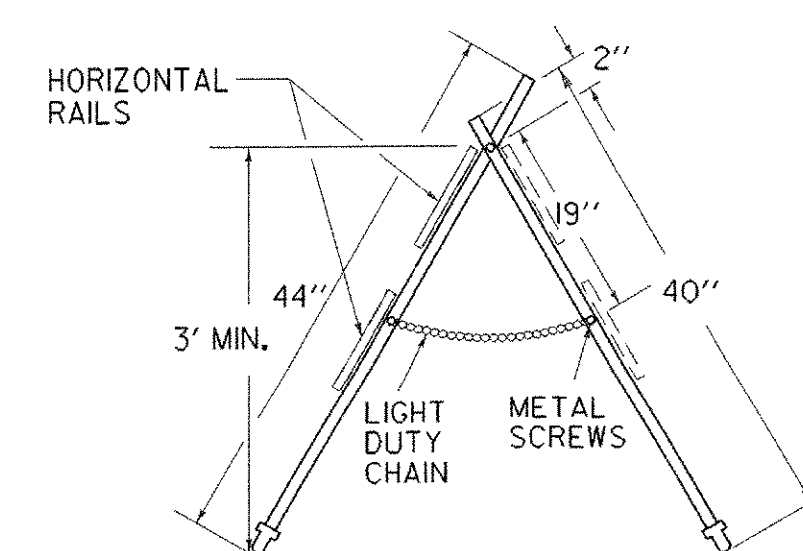


- MATERIALS FOR TYPE I AND II BARRICADES
- 20' - 1" PVC
4 - 1" PVC 90° ELBOWS
30" - 1/2" ID THINWALL PVC CONDUIT
36" - 1/4" STEEL ROD
4 - 1" WASHERS
24" - LIGHT DUTY CHAIN
1/2" - #14 PAN HEAD METAL SCREWS (AS REQUIRED)
2 - 3/4" COTTER PINS
2 OR 4 - 8" OR 12" X 36" X 0.025 "
BARRICADE RAILS (AS REQUIRED)

- | MATERIALS FOR TYPE III BARRICADES | | |
|-----------------------------------|----------|-------------------------------|
| 30 | LF - 3'' | 1 D. PVC PIPE |
| 6 | 3'' | 90° ELBOWS |
| 2 | 3'' | TEES |
| 4 | 3'' | WYES |
| 3 | 8'' | OR 12'' X 48'' X 0.025'' |
| BARRICADE RAILS | | |
| 2 | 5/8'' | X 1 1/2'' SPRING |
| | | (IF ASSEMBLY IS NOT CEMENTED) |
| 12 | 1 1/2'' | PAN HEAD METAL SCREWS |
| 15 | LF - #14 | BALCK ANNEALED TIE WIRE |
| | | (IF ASSEMBLY IS NOT CEMENTED) |



- MATERIALS FOR METAL TYPE III BARRICADES
- PANELS (3):
8' X 48" GALVANIZED STEEL..COVERED
1 OR 2 SIDES WITH WHITE/ORANGE, DIAGONALLY
STRIPED REFLECTIVE SHEETING
- VERTICAL SUPPORTS (2): 14 GAGE GALVANIZED
TUBING 1 3/4" X 1 3/4" X 60"
HORIZONTAL SUPPORTS (2): 14 GAGE GALVANIZED
TUBING 1 3/4" X 1 3/4" X 48"
CROSS BEAM SUPPORT (1): COLD GALVANIZED
STEEL 1/4" X 3" X 43 3/4"
BREAKAWAY BRACKETS (4): COLD-GALVANIZED
STEEL 1/4" X 3" X 5"
- FASTENERS:
6 - SHEAR BOLTS WITH LOCK NUTS 1/4" D X 2 3/4"
4 - FULCRUM BOLTS WITH LOCK NUTS 3/8" D X 2"
4 - FASTENER BOLTS WITH LOCK NUTS 3/8" D X 2"
6 - PANEL BOLTS WITH LOCK NUTS AND WASHERS
1/4" D X 2"
- ALL FASTENERS GALVANIZED STEEL.
ALL BOLTS HEX HEAD.



TYPE I AND TYPE II BARRICADE

MATERIALS

THE PIPE, WYES, TEES AND ELBOWS USED TO CONSTRUCT BARRICADES SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A 53, A 133, A 160, A 182, OR A 232. THE PRESSURE RATING 200 PSI. THE WYES, TEES AND ELBOWS SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION D 2466, TYPE II, GRADE I. ALL JOINTS SHALL BE SLIP-FIT AND MAY BE LIGHTLY CEMENTED. THE BARRICADE RAILS SHALL BE FABRICATED FROM 0.025" ANODIZED ALUMINUM AND SHALL HAVE REFLECTORIZED ALTERNATING ORANGE AND WHITE STRIPES (SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS).

MAINTENANCE

BARRICADES SHALL BE MAINTAINED IN CLEAN AND LEGIBLE CONDITIONS SATISFACTORY TO THE ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO APPROACHING TRAFFIC AT ALL TIMES. DAMAGED, DEFAUCED, OR DIRTY BARRICADES SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER. THE P.V.C. PIPE AND FITTINGS SHALL BE WHITE IN COLOR. AT LEAST TWO (2) HOLES SHALL BE DRILLED ($\frac{3}{8}$ " DIAM.) IN EACH SECTION OF PIPE AND FITTINGS IF THE ASSEMBLY IS NOT CFMNTFD.

BARRICADES SHALL BE STABILIZED WITH SAND BAGS OF MINIMUM WEIGHT WHICH WILL NOT CONSTITUTE A HAZARD IF THE BARRICADE IS HIT. THESE SHALL BE PLACED ONLY ON THE FRONT AND REAR PIPES OF THE BASE FRAME OF THE BARRICADE. SAND BAG 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.

TYPE I BARRICADES SHALL UTILIZE ONE HORIZONTAL RAIL IN EACH DIRECTION.

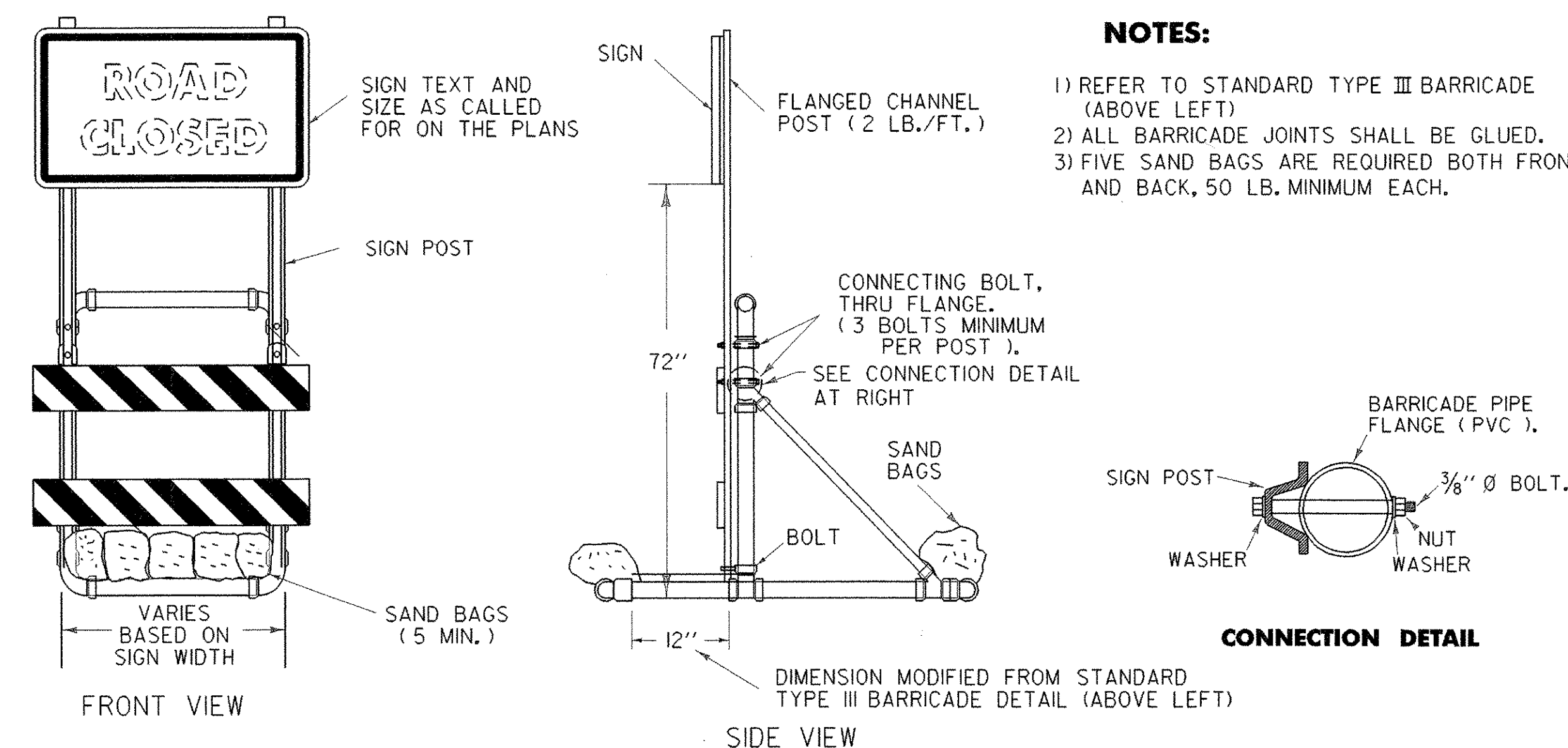
TYPE II BARRICADES SHALL BE A TYPE I BARRICADE WITH AN ADDITIONAL HORIZONTAL RAIL MOUNTED BELOW THE OTHER IN EACH DIRECTION.

TYPE III BARRICADES (MODIFIED) SHALL CONSIST OF THE BREAKAWAY
3" PVC DESIGN SHOWN ON THIS SHEET WITH THE TWO RAIL LAYOUT
DETAILED ABOVE LEFT.

SEE STD E-107 FOR ADDITIONAL INFORMATION.

NOTES:

- 1) REFER TO STANDARD TYPE III BARRICADE (ABOVE LEFT)
- 2) ALL BARRICADE JOINTS SHALL BE GLUED.
- 3) FIVE SAND BAGS ARE REQUIRED BOTH FRONT AND BACK, 50 LB. MINIMUM EACH.



SIGN MOUNTING ON TYPE III BARRICADE (MODIFIED)

OTHER STDS. E-107
REQUIRED:

REVISIONS AND CORRECTIONS

SEPT. 10, 1987 - ORIGINAL APPROVAL DATE

SEPT. 20, 1993 - REVISED NOTES AND TYPE III (MOD.)
BARRICADE DETAIL

AUG. 08, 1995 - ADDED METAL TYPE III BARRICADE

JUN. 08, 2009 - MINOR CORRECTIONS

APPROVED

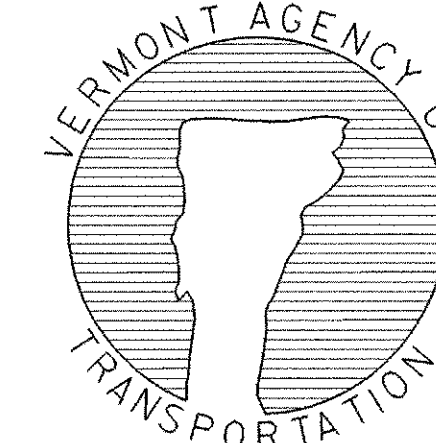
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FEDERAL HIGHWAY ADMINISTRATION

BREAKAWAY BARRICADE DETAILS

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STANDARD E-107 A