STATE OF VERMONT
AGENCY OF TRANSPORTATION

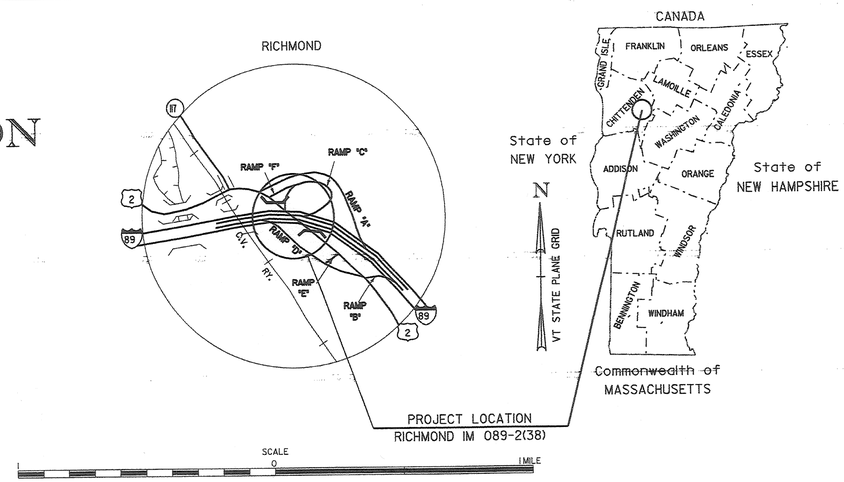
PROPOSED IMPROVEMENT
BRIDGE PROJECT

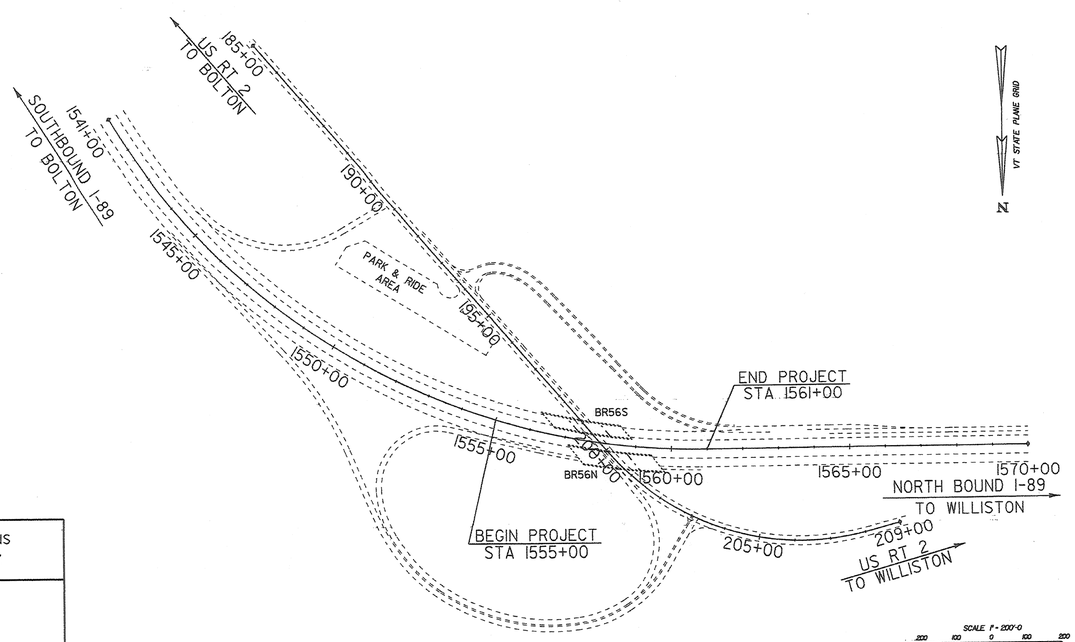
TOWN OF RICHMOND
COUNTY OF CHITTENDEN
ROUTE NO.: INTERSTATE 89, BRIDGE 56 N&S

PROJECT LOCATION: BEGINNING AT STA 1555+00 ON I89 IN RICHMOND AND CONTINUING ALONG I89 FOR 600 FEET.

PROJECT DESCRIPTION: REHABILITATION OF BRIDGES 56N & 56S TO INCLUDE PIER REPLACEMENTS.

LENGTH OF STRUCTURE = 227.00 FEET
LENGTH OF ROADWAY = 373.00 FEET
LENGTH OF PROJECT = 600.00 FEET





CONVENTIONAL SYMBOLS

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

SURVEYED BY : RECORD PLANS
SURVEYED DATE : 1960 & 1997

DATUM
VERTICAL 1929
HORIZONTAL N/A

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 2001, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JANUARY 4, 2001 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

/05a236/structures/sa236bdr.dgn sa236111.T

RECORD PLANS

CONTRACTOR: FW WHITCOMB CONSTRUCTION CORP. – WALPOLE, NH
RESIDENT ENGINEER: RICK HALE
CONSTRUCTION BEGAN: JUNE 28, 2006
CONSTRUCTION COMPLETE: NOVEMBER 27, 2007
RECORD PLANS BY: RICK HALE & C. PIERCE

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

BY _____ RESIDENT ENGINEER
DATE 2/12/10

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.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR
APPROVED Mark D Richter DATE 5-2-06

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE 3-27-06

PROJECT MANAGER : SHERWARD FARNSWORTH

PROJECT NAME : RICHMOND
PROJECT NUMBER : IM 089-2 (38)

SHEET 1 OF 43 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

INDEX OF SHEETS & GENERAL NOTES

INDEX OF SHEETS

1	TITLE SHEET
2	INDEX OF SHEETS & GENERAL NOTES
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5	GENERAL PLAN SHEET
6 & 7	BLANK
8	SOUTHBOUND - PIER #1 & PIER #2 LAYOUT
9	NORTHBOUND - PIER #3 & PIER #4 LAYOUT
10	PIER REINFORCING
11	BEARINGS SHEET 1 OF 2
12	BEARINGS SHEET 2 OF 2
13	DRAIN TROUGH REPLACEMENT
14	REINFORCING STEEL SCHEDULE
15 - 19	BLANK
20	EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE
21	EROSION PREVENTION & SEDIMENT CONTROL PLAN
22	EROSION PREVENTION & SEDIMENT CONTROL DETAILS: SILT FENCE
23	EROSION PREVENTION & SEDIMENT CONTROL DETAILS: CHECK DAMS
24	EROSION PREVENTION & SEDIMENT CONTROL DETAILS: STABILIZATION CONSTRUCTION ENTRANCE
25	EROSION PREVENTION & SEDIMENT CONTROL DETAILS: DITCH & SLOPE PROTECTION
26	TRAFFIC CONTROL SHEET 1 OF 3
27	TRAFFIC CONTROL SHEET 2 OF 3
28	TRAFFIC CONTROL SHEET 3 OF 3
29	BLANK

REFERENCE AS BUILT (1961) PLAN SHEETS

30	GENERAL PLAN & ELEVATION
31	PROFILES AND TYPICAL SECTIONS
32	PIERS LEFT (SOUTHBOUND) LANE
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34	FRAMING PLAN
35 - 39	BLANK

OLD STANDARDS

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41	SCB-30-60
42	SCB-42-60
43	SCB-D-60

STANDARDS

E-100	CONSTRUCTION APPROACH SIGNS	01/02/04
E-100A	SIDE ROAD CONSTRUCTION APPROACH SIGNS	01/02/04
E-101	CONSTRUCTION SIGN DETAILS	05/30/03
E-102	CONSTRUCTION SIGN DETAILS	06/30/03
E-102A	CONSTRUCTION SIGN DETAILS	05/01/04
E-106	TRAFFIC CONTROL MISCELLANEOUS DETAILS	03/01/04
E-107	DELINEATION, BARRICADES AND DETOURS FOR U-TURNS ON DIVIDED HIGHWAYS	06/30/03
E-107A	BREAKAWAY BARRICADE DETAILS	08/08/95
E-108	CONSTRUCTION ZONE LONGITUDINAL DROP OFFS	08/18/95
E-191	PAVEMENT MARKING DETAILS	02/01/99
E-192	PAVEMENT MARKING DETAILS	10/12/00

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS; AND THE AASHTO SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 17TH EDITION, DATED 2002, AND ITS LATEST REVISIONS.

2. A DETAILED FIELD SURVEY FOR THIS PROJECT WAS NOT PERFORMED. REFERENCES TO ELEVATIONS AND DIMENSIONS ARE BASED ON THE ORIGINAL INTERSTATE PROJECT CONSTRUCTED IN 1961. COPIES OF THESE ORIGINAL PLANS ARE INCLUDED. THE ONLY SURVEY PERFORMED IS AS DETAILED ON SHEET 5 AND AS DETAILED ON SHEET 8 AS, "APPROXIMATE EXISTING GROUND COVER OVER FOOTING" DETAIL AND TABLE, AND SPECIFIED BELOW.

   A. EXISTING GROUND AT FACE OF SQUARE PIER END COLUMNS ON US ROUTE 2 SIDE. SEE TABLE.
   B. EXISTING GROUND AT BACK OF PIER FOOTING AT END COLUMNS, ABUTMENT SIDE. SEE TABLE.
   C. FACE OF US ROUTE 2 GUARD RAIL MEASURED FROM FACE OF EXSITING PIER COLUMNS.

3. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 88 DEGREES.

4. ALL EXPOSED EDGES OF NEW CONCRETE SHALL BE CHAMFERED 1" X 1", UNLESS OTHERWISE NOTED.

5. REINFORCEMENT PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:
   SPACING: +/- 1"
   CLEARANCE: +/- 1/4"

6. THE CONTRACTOR SHALL CONSTRUCT THIS PROJECT USING METHODS AND TECHNIQUES OF THE CONTRACTOR'S CHOOSING, WHICH MEET THE FOLLOWING GENERAL TRAFFIC FLOW REQUIREMENTS AT ALL POINTS IN TIME.

   A. US 2 SHALL HAVE A MINIMUM OF TWO PAVED TWELVE FOOT TRAVEL LANES THROUGH THE PROJECT AREA. IN ADDITION TO THE 12 FOOT LANES, ANOTHER TWO FOOT DISTANCE TO THE RIGHT SIDE OF EACH LANE WILL BE KEPT CLEAR OF ALL OBJECTS. THE CONTRACTOR, WITH APPROVAL FROM THE ENGINEER, MAY TEMPORARILY MOVE THE CENTERLINE OF US 2 HORIZONTALLY TO MEET THE CONSTRUCTION NEEDS. THE CONTRACTOR SHALL DELINEATE AND MAINTAIN CLEAR LANE MARKINGS DURING ALL CONSTRUCTION PHASES.

   B. THE CONTRACTOR SHALL LEAVE THE TRAVEL WAY OF INTERSTATE 89 IN ITS EXISTING CONDITION.

   C. THE CONTRACTOR SHALL PLAN AND SCHEDULE OPERATIONS SUCH THAT EITHER THERE WILL BE NO IMPACT, OR THE CONFLICTS WILL BE MINIMIZED FOR THE USERS OF INTERSTATE 89, US 2, THE PARK & RIDE FACILITY, INTERSTATE RAMPS, VT 17, AND ALL OTHER TRANSPORTATION FEATURES.

7. THE ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE", HAS BEEN INCLUDED TO REMOVE EACH OF THE EXISTING PIERS BETWEEN THE LIMITS OF THE BOTTOM FLANGE OF THE BEAMS AND THE TOP ELEVATION OF THE EXISTING FOOTINGS. THIS INCLUDES THE PIER BEARINGS, CONCRETE PIER CAP AND COLUMNS, AND THEIR STEEL REINFORCEMENT. THE CONTRACTOR SHALL USE CARE TO PROTECT THE VERTICAL REINFORCEMENT COMING OUT OF THE FOOTING SO THAT IT MAY BE REUSED.

8. THE CONTRACTOR SHALL ORGANIZE OPERATIONS TO RECONSTRUCT THE PIERS IN THE FOLLOWING ORDER: SOUTHBOUND PIER #2; NORTHBOUND PIER #4; SOUTHBOUND PIER #1; NORTHBOUND PIER #3. AT LEAST ONE END OF THE SPAN DIRECTLY OVER US 2 SHALL BE SUPPORTED ON A PERMANENT PIER AT ALL TIMES. THE CONTRACTOR SHALL SUBMIT AN ALTERNATE PLAN FOR APPROVAL IF HE PROPOSES A DIFFERENT CONSTRUCTION SEQUENCE.

9. IN ACCORDANCE WITH SUBSECTION 502.03, THE BEAMS SPANNING US 2 SHALL BE SHORED IN PLACE WITH MINIMUM CHANGE IN ELEVATION (LESS THAN 1/2 INCH). AN ASSUMPTION HAS BEEN MADE THAT NONE OF THE EXISTING BEARINGS HAVE BEEN CHANGED OR SHIMMED FROM THE ORIGINAL DESIGN PLANS.

10. TRAFFIC CONTROL ON US 2 WILL BE MAINTAINED IN ACCORDANCE WITH THE APPROPRIATE 'E' STANDARDS REFERENCED IN THE PLANS, AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS & HIGHWAYS, 2003 EDITION.

11. THERE ARE UNDERGROUND UTILITY LINES WITHIN PROXIMITY OF THE PIER FOUNDATIONS. NO UTILITY PROVISIONS HAVE BEEN MADE FOR THIS PROJECT. DEPENDING ON THE PROPOSED CONSTRUCTION TECHNIQUE, THE CONTRACTOR SHALL MAKE ANY NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANIES. THE CONTRACTOR SHALL COMPLY WITH DIG SAFE FOR BURIED UTILITIES.

12. THE SIGN PACKAGE ON US 2 INCLUDES THE REDUCTION OF THE SPEED LIMIT TO 30 MPH. SEE SHEETS 26 TO 28 FOR SIGN PACKAGE, LANE SHIFTS, AND SHOULDER CLOSURES.

13. THE MINIMUM REINFORCING COVER FOR PIER COLUMNS AND PIER CAPS IS 4 INCHES.

14. ITEM #621.90, "TEMPORARY TRAFFIC BARRIER", HAS BEEN INCLUDED FOR USE ON US 2 TO PROTECT THE TRAVELLING PUBLIC FROM THE CONTRACTOR'S WORK ON THE PIERS.

15. ANY PAVING OF US 2 IN THE AREA OF THE PIER EXCAVATIONS, AND/OR SHEETING, WILL BE INCIDENTAL TO ITEM #204.25, "STRUCTURE EXCAVATION".

16. ALL EXISTING PIERS SHALL BE REPLACED DOWN TO THE TOPS OF THE EXISTING FOOTINGS AS SHOWN ON SHEETS 8 & 9. THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPERSTRUCTURE SHORING FOR REPLACEMENT OF PIERS 1, 2, 3, & 4. THE SCHEME FOR TEMPORARY SHORING SHALL BE SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL. ALSO, THE CONTRACTOR SHALL SUBMIT DETAILS AND CALCULATIONS, PREPARED BY A QUALIFIED REGISTERED PROFESSIONAL ENGINEER, TO THE STRUCTURES ENGINEER (FOR INFORMATION ONLY) AT LEAST 2 WEEKS PRIOR TO PERFORMING WORK. SHORING SHALL BE DESIGNED FOR HS20 LOADING. WELDING TO EXISTING STEEL SHALL NOT BE PERMITTED. ALL COSTS SHALL BE INCLUDED IN ITEM #502.10, "SHORING SUPERSTRUCTURE (BRIDGE 56N)", AND ITEM #502.10, "SHORING SUPERSTRUCTURE (BRIDGE 56S)".

17. ITEM #506.80, "DRAIN TROUGH" SHALL INCLUDE ALL INCIDENTAL WORK AND MATERIALS FOR THE REMOVAL AND REPLACEMENT OF THE BRIDGE TROUGH AS DETAILED ON SHEET 13.

SCOPE OF WORK - PHASED CONSTRUCTION

SOME OF THE MAJOR ACCOMPLISHMENTS TO BE MADE UNDER THIS REHABILITATION PROJECT INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

- INSTALLATION OF PROJECT SIGNING AND TRAFFIC CONTROL.
- RELOCATE STREET LIGHT POWER CONDUIT.
- EXCAVATION AROUND PIER COLUMNS.
- SHORING SUPERSTRUCTURE AT PIERS.
- COMPLETE REMOVAL OF ALL BEARINGS AT ALL PIERS, REMOVAL OF PIER CAP AND COLUMNS TO THE TOP OF EXISTING FOOTINGS.
- CONSTRUCTION OF NEW COLUMNS, PIER CAP AND PLACEMENT OF NEW BEARINGS. REMOVAL OF SHORING AND BACKFILLING AROUND PIER.
- REPLACE EXISTING DRAIN TROUGHS OVER PIERS.
- PROJECT CLEAN UP AND COMPLETION.

INDEX OF SHEETS AND GENERAL NOTES

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	IM 089-2(38)		
FILE NAME:	05a236\str\sa236ind.xls	PLOT DATE:	11/2/05
PROJECT LEADER:	SHERWARD FARNSWORTH	DRAWN BY:	R. PELLETT
DESIGNED BY:	G. SPILAK	CHECKED BY:	S. FARNSWORTH
iparm sa236ind.i		SHEET 2	OF 43

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
PIER NO. 1	PIER NO. 2	PIER NO. 3	PIER NO. 4			ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
123	182	105	120					530		530		CY	STRUCTURE EXCAVATION	204.25	6			
123	182	105	120					530		530		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	6			
56	55	68	68					247		247		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
		.5	.5					1		1		LS	SHORING SUPERSTRUCTURE (BRIDGE 56N)	502.10				
.5	.5							1		1		LS	SHORING SUPERSTRUCTURE (BRIDGE 56S)	502.10				
59	55	71	67					252		252		LF	DRAIN TROUGH	506.80				
10855	10595	13310	13340					48100		48100		LB	EPOXY COATED REINFORCING STEEL	507.17	23			
32	31	39	38					140		140		GAL	WATER REPELLENT (MOD. - SILANE)	514.10				
.5	.5	.5	.5					2		2		EACH	PARTIAL REMOVAL OF STRUCTURE	529.20				
10	10	14	14					48		48		EACH	BEARING DEVICE ASSEMBLY (FABRIC)	531.10				
348	383	453	596					1780		1780		CY	STONE FILL, TYPE I	613.10				
							62			62		CY	STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)	613.10				
							5			5		CY	STONE FILL, TYPE I (MOD. - CRUSHED STONE BERM)	613.10				
							1500			1500		LF	SNOW FENCE (MOD. - PDF)	620.70				
						4				4		EACH	ENERGY ABSORPTION ATTENUATOR (SAND-FILLED PLASTIC BARREL)	621.56				
						400				400		LF	REMOVING AND RESET GUARD RAIL	621.75				
						680				680		LF	TEMPORARY TRAFFIC BARRIER	621.90				
25	25	25	25			40		100		140		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
250	250	250	250			40		1000		1040		HR	FLAGGERS	630.15				
									1	1		LS	FIELD OFFICE-ENGINEERS	631.10				
									1	1		LS	TESTING EQUIPMENT - CONCRETE	631.16				
									1	1		LS	TESTING EQUIPMENT - BITUMINOUS	631.17				
									1	1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25				
.25	.25	.25	.25					1		1		LS	MOBILIZATION / DEMOBILIZATION	635.11				
						1				1		LS	TRAFFIC CONTROL	641.10				
						1				1		LS	PUBLIC RELATIONS OFFICER	641.12				
						2				2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15				
						2000				2000		LF	DURABLE 4" WHITE LINE (THERMOPLASTIC)	646.40				
						1200				1200		LF	DURABLE 4" YELLOW LINE (THERMOPLASTIC)	646.41				
						2000				2000		LF	TEMPORARY 4" WHITE LINE (TAPE, TYPE II)	646.60				
						2000				2000		LF	TEMPORARY 4" YELLOW LINE (TAPE, TYPE II)	646.61				
						1500				1500		SF	BLACK PAVEMENT MARKING MASKING TAPE	646.86				
132	110	160	174					576		576		SY	GEOTEXTILE UNDER STONE FILL	649.31				
							600			600		SY	GEOTEXTILE FOR SILT FENCE	649.51				
							30			30		LB	SEED	651.15				
							30			30		LB	SEED-WINTER RYE	651.17				
							250			250		LB	FERTILIZER	651.18				
							1			1		TON	AGRICULTURAL LIMESTONE	651.20				
							1			1		TON	HAY MULCH	651.25				
							10			10		EACH	HAY BALES FOR EROSION CONTROL	651.26				

PROJECT NAME: **RICHMOND**
PROJECT NUMBER: **IM 089-2(38)**

FILE NAME: **\05a236\str\sa236qs.xls** PLOT DATE: **04/06/2006**
PROJECT MANAGER: **SHERWARD FARNSWORTH** DRAWN BY: **R. PELLETT**
DESIGNED BY: **G. SPILAK** CHECKED BY: **S. FARNSWORTH**
QUANTITY SHEET #1 SHEET **3** OF **43**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

PIER NO. 1	PIER NO. 2	PIER NO. 3	PIER NO. 4			ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS
							1		
							20		
							1		
							700		
						250			

TOTALS

GRAND TOTAL	FINAL
1	
20	
1	
700	
250	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER	ROUND
LS	EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.10	
HR	MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.20	
LU	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30	
SY	EROSION MATTING	654.10	
LF	WIRED CONDUIT (2") (PVC)	678.23	

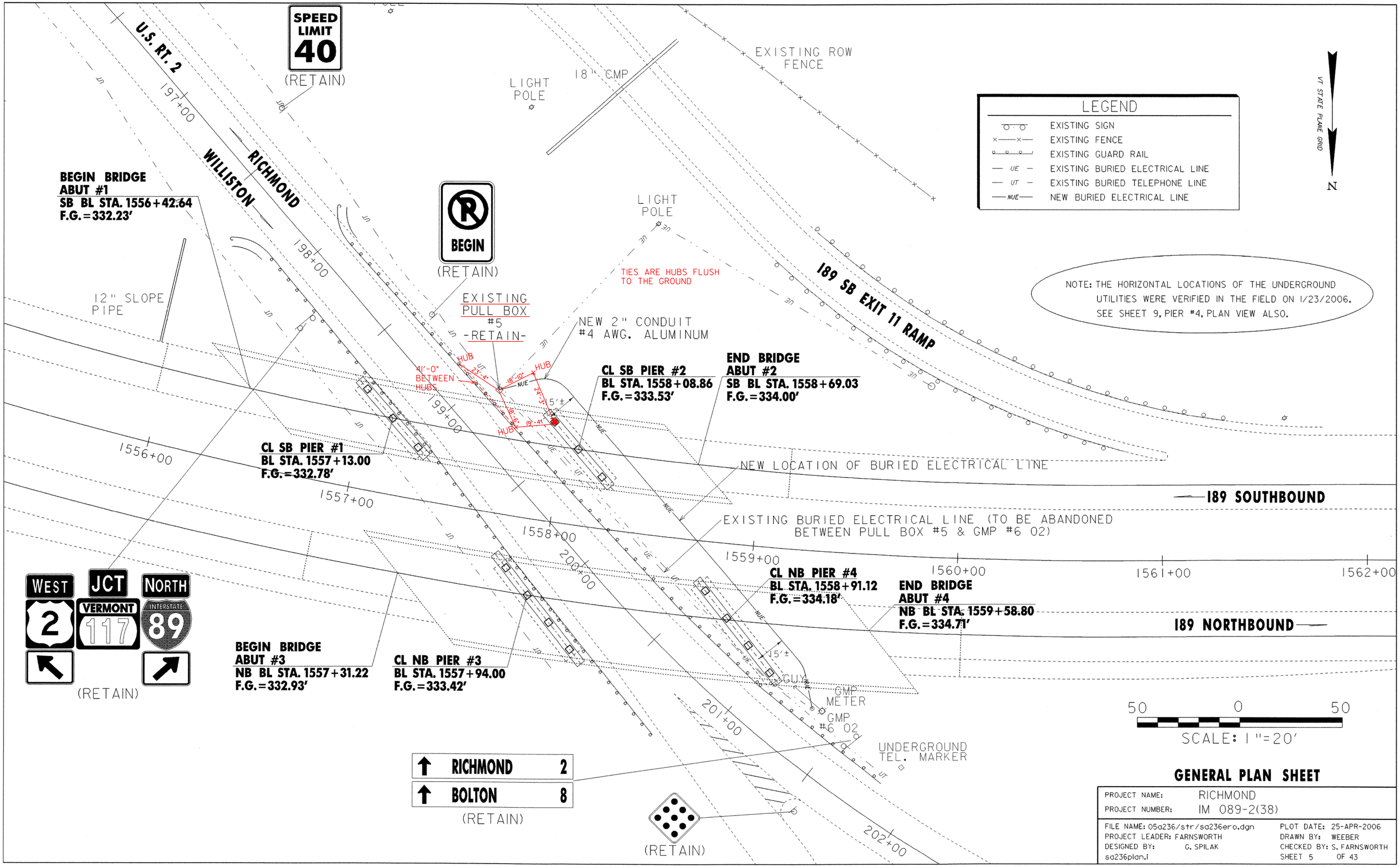
DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: **RICHMOND**
PROJECT NUMBER: **IM 089-2(38)**

FILE NAME: **\05a236\str\sa236qs.xls**
PROJECT MANAGER: **SHERWARD FARNSWORTH**
DESIGNED BY: **G. SPILAK**
QUANTITY SHEET #2

PLOT DATE: **04/27/2006**
DRAWN BY: **R. PELLETT**
CHECKED BY: **S. FARNSWORTH**
SHEET **4** OF **43**



BEGIN BRIDGE
ABUT #1
SB BL STA. 1556+42.64
F.G. = 332.23'

CL SB PIER #1
BL STA. 1557+13.00
F.G. = 332.78'

BEGIN BRIDGE
ABUT #3
NB BL STA. 1557+31.22
F.G. = 332.93'

CL NB PIER #3
BL STA. 1557+94.00
F.G. = 333.42'

CL SB PIER #2
BL STA. 1558+08.86
F.G. = 333.53'

END BRIDGE
ABUT #2
SB BL STA. 1558+69.03
F.G. = 334.00'

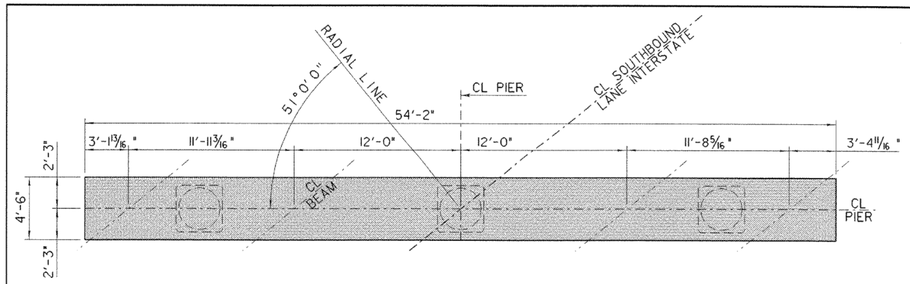
CL NB PIER #4
BL STA. 1558+91.12
F.G. = 334.18'

END BRIDGE
ABUT #4
NB BL STA. 1559+58.80
F.G. = 334.71'

NOTE: THE HORIZONTAL LOCATIONS OF THE UNDERGROUND UTILITIES WERE VERIFIED IN THE FIELD ON 1/23/2006. SEE SHEET 9, PIER #4, PLAN VIEW ALSO.

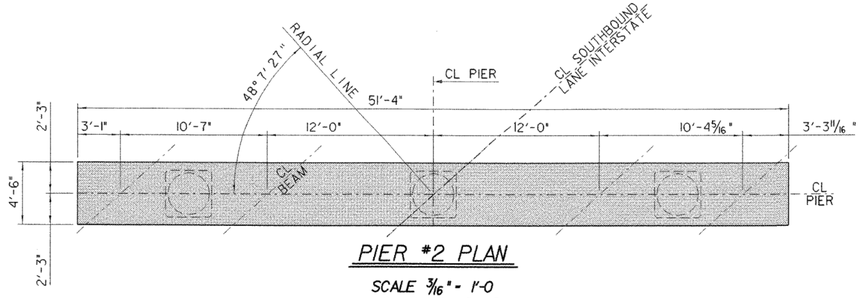
GENERAL PLAN SHEET

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	IM 089-2(38)
FILE NAME: 05a236/str/sa236ero.dgn	PLOT DATE: 25-APR-2006
PROJECT LEADER: FARNSWORTH	DRAWN BY: WEEBER
DESIGNED BY: G. SPILAK	CHECKED BY: S. FARNSWORTH
sa236plan.i	SHEET 5 OF 43



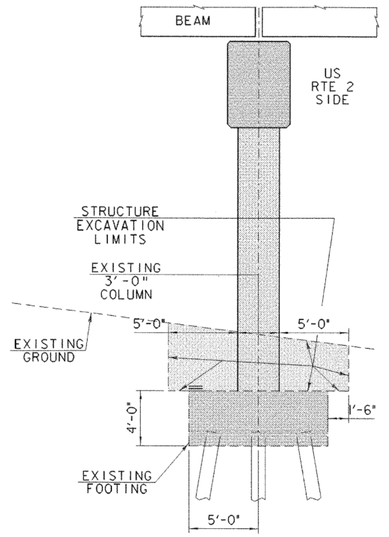
PIER #1 PLAN

SCALE 3/16" = 1'-0



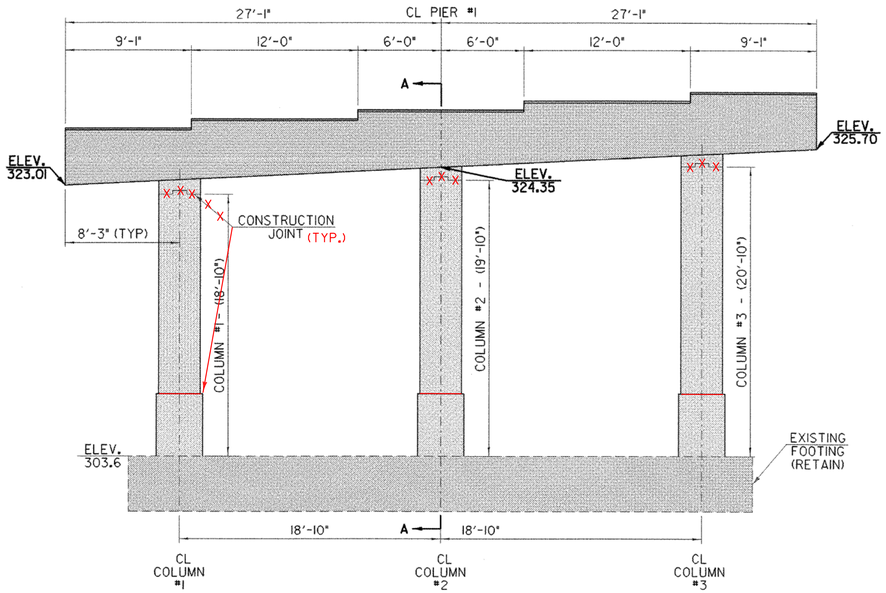
PIER #2 PLAN

SCALE 3/16" = 1'-0



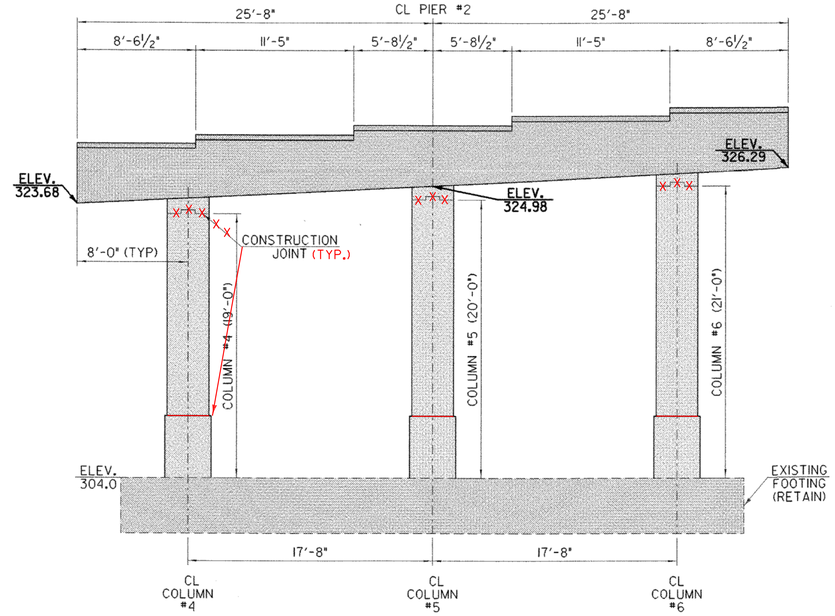
LIMITS OF FILL OR EXCAVATION - ELEVATION VIEW

SCALE 3/16" = 1'-0



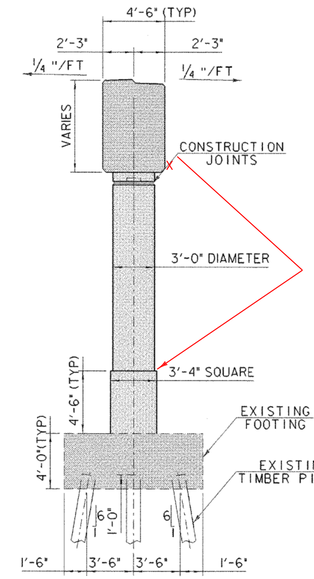
PIER #1 ELEVATION

SCALE 3/16" = 1'-0



PIER #2 ELEVATION

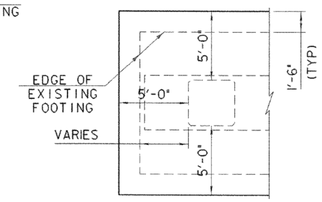
SCALE 3/16" = 1'-0



SECTION A-A - PIER #1

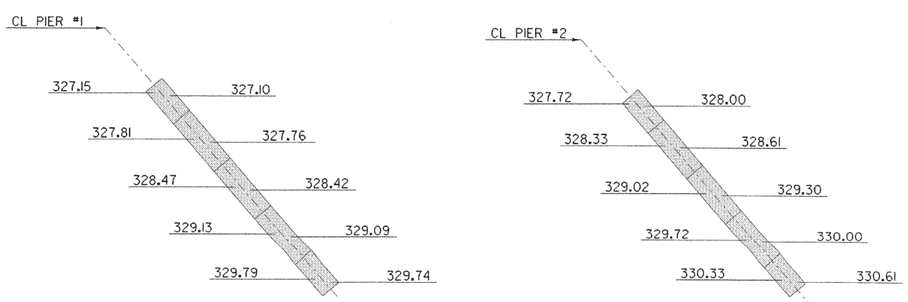
SCALE 3/16" = 1'-0

PIER #2, #3, AND #4 SIMILAR



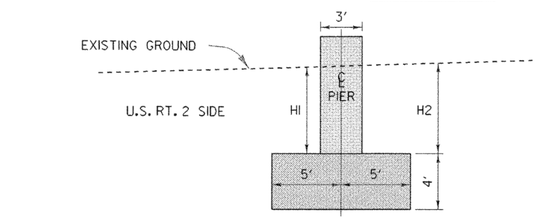
STRUCTURE LIMITS OF EXCAVATION- PLAN VIEW

SCALE 3/16" = 1'-0



KEY PLAN

N. T. S.



APPROXIMATE EXISTING GROUND COVER OVER FOOTING

SCALE 3/16" = 1'-0

PIER EXCAVATION TABLE

		NB Pier 3		NB Pier 4		SB Pier 1		SB Pier 2	
		Left Column	Right Column	Left Column	Right Column	Left Column	Right Column	Left Column	Right Column
H1	Cover over footing at front (US Rte 2 side at face of column).. (FT) =	4.3	5.0	5.0	6.1	4.3	5.5	4.0	4.8
H2	Cover over footing at back of footing (FT)	3.3	4.0	7.0	8.1	3.3	4.5	5.2	7.3

NOTE

1. SEE SHEET 10 FOR PIER REINFORCING DETAILS.

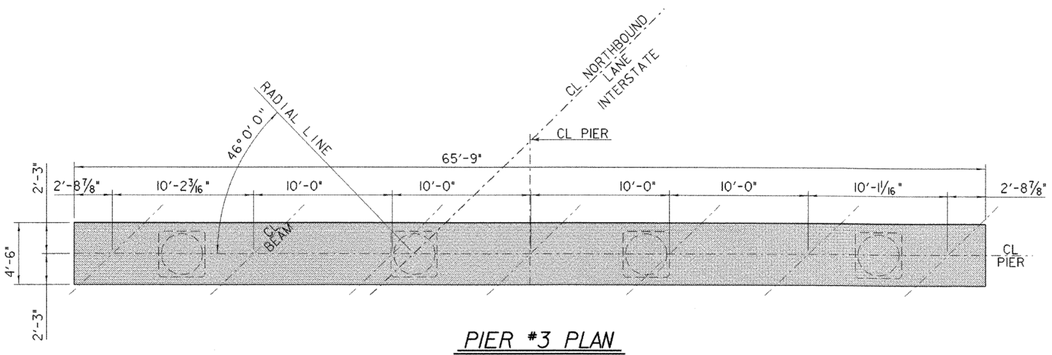
sa236ppsJ

SB PIER #1 AND PIER #2 LAYOUT

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

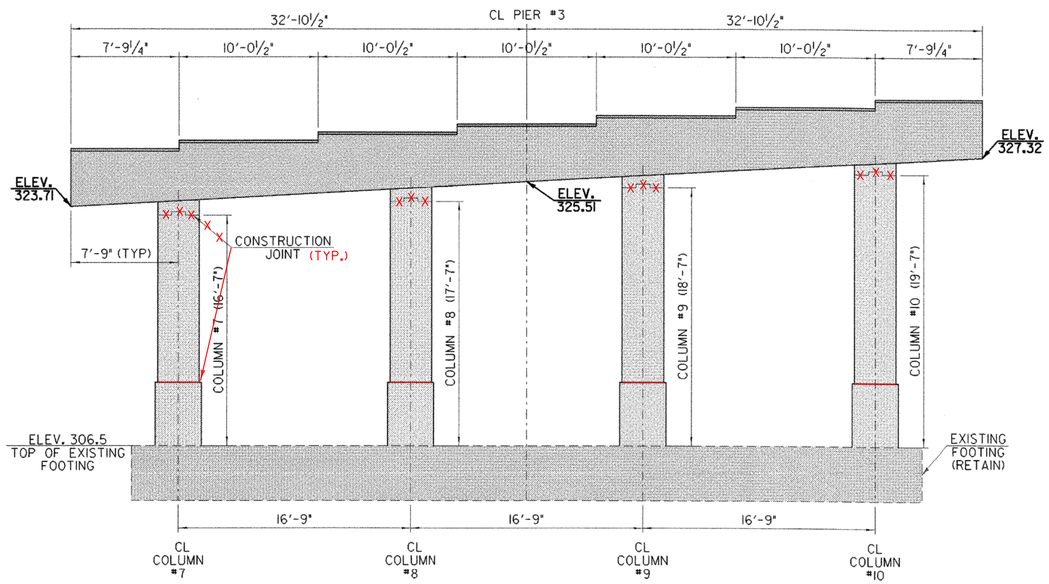
FILE NAME: 05a236\sa236newpiers.dgn
PROJECT LEADER: SHERWARD FARNSWORTH
DESIGNED BY: G. SPILAK
SOUTHBOUND - PIER #1 & PIER #2

PLOT DATE: 25-APR-2006
DRAWN BY: R. PELLETT
CHECKED BY: S. FARNSWORTH
SHEET 8 OF 43



PIER #3 PLAN

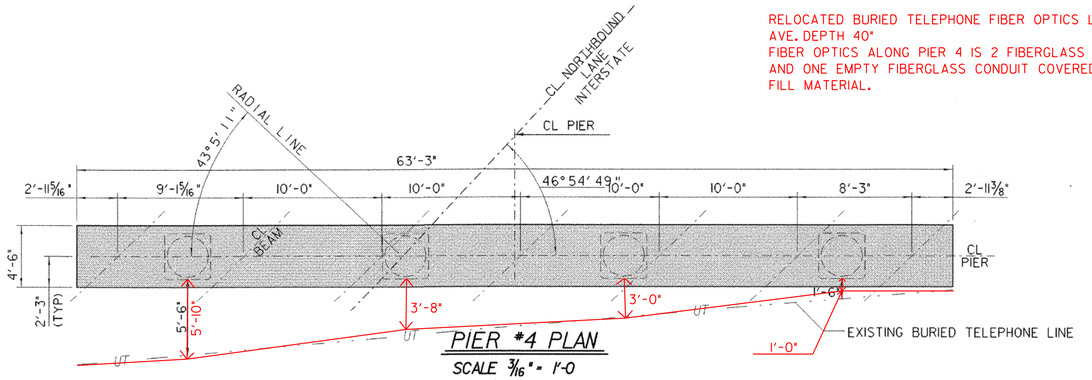
SCALE 3/16" = 1'-0



PIER #3 ELEVATION

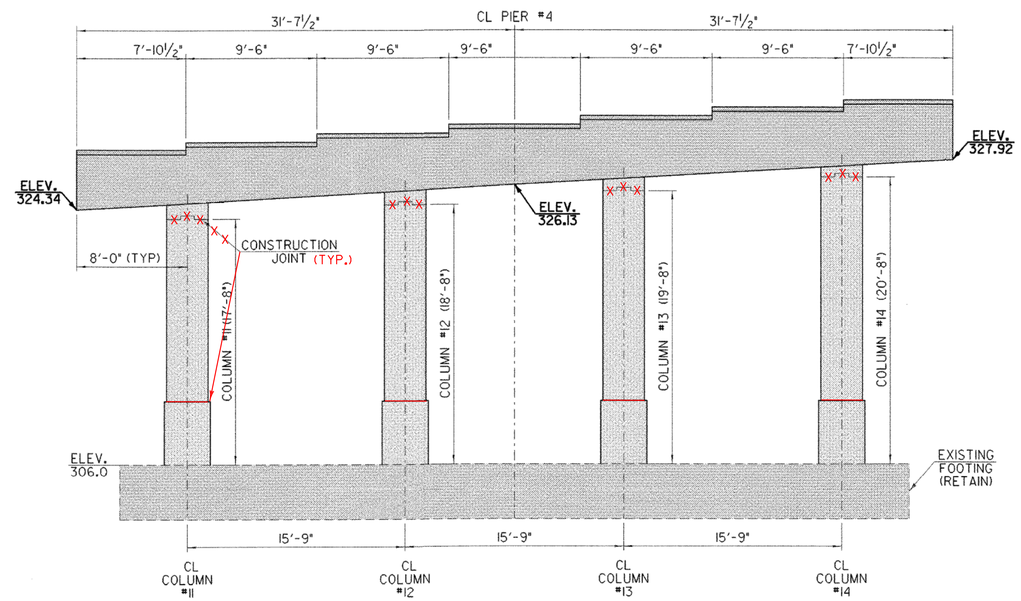
SCALE 3/16" = 1'-0

RELOCATED BURIED TELEPHONE FIBER OPTICS LINE
AVE. DEPTH 40"
FIBER OPTICS ALONG PIER 4 IS 2 FIBERGLASS CONDUITS AND ONE EMPTY FIBERGLASS CONDUIT COVERED WITH FLOWABLE FILL MATERIAL.



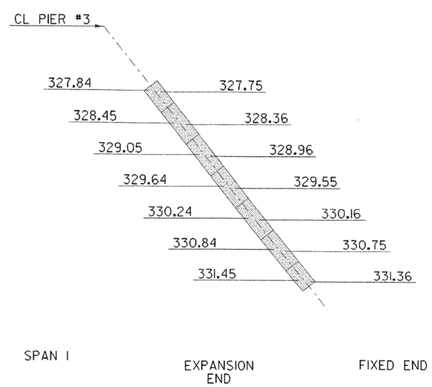
PIER #4 PLAN

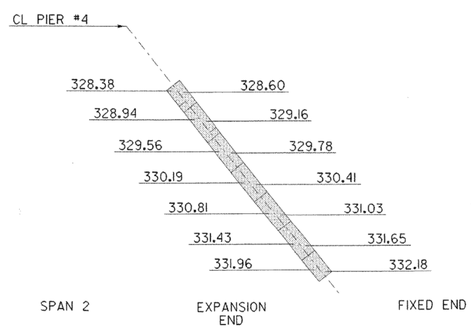
SCALE 3/16" = 1'-0



PIER #4 ELEVATION

SCALE 3/16" = 1'-0





KEY PLAN

N.T.S.

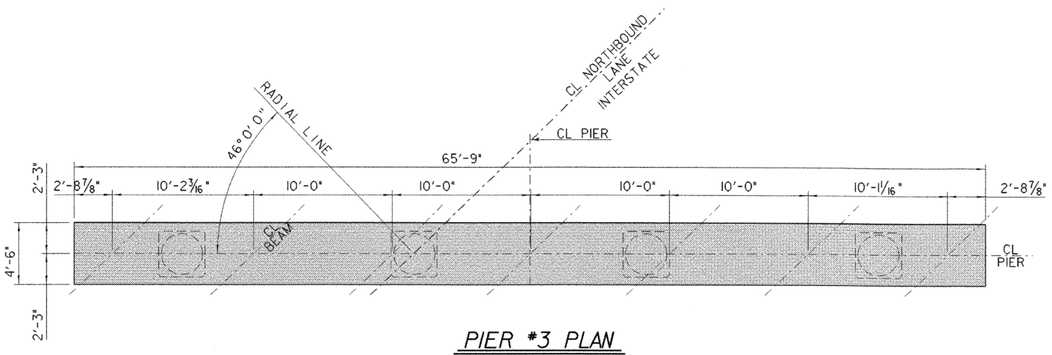
NOTE
1. SEE SHEET 8 & 10 FOR ADDITIONAL DETAILS.

NORTHBOUND LANE STATIONING

sa236ppnJ

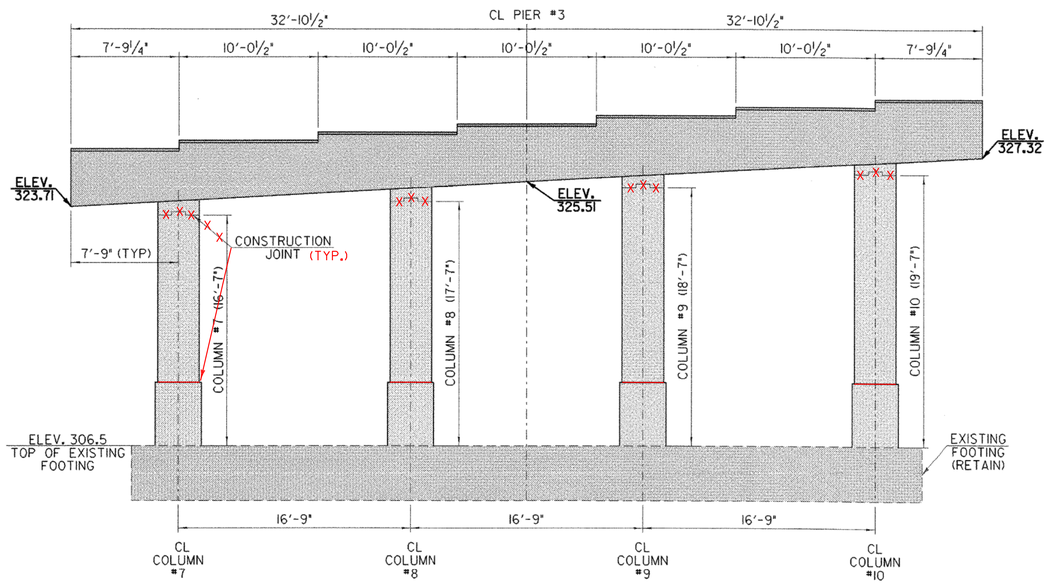
NB PIER #3 & PIER #4 LAYOUT

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(38)	
FILE NAME: 05a236\sa236newpiers.dgn	PLOT DATE: 25-APR-2006
PROJECT LEADER: SHERWARD FARNSWORTH	DRAWN BY: R. PELLETT
DESIGNED BY: G. SPILAK	CHECKED BY: S. FARNSWORTH
NORTHBOUND - PIER #3 & PIER 4	SHEET 9 OF 43



PIER #3 PLAN

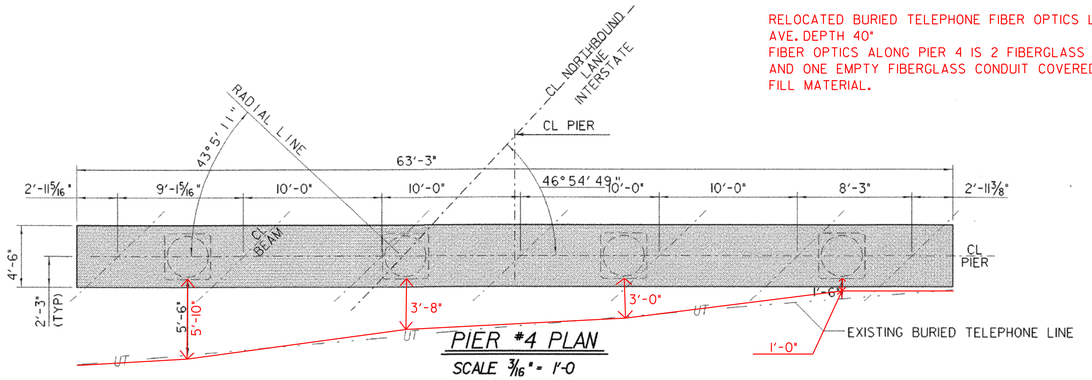
SCALE 3/16" = 1'-0



PIER #3 ELEVATION

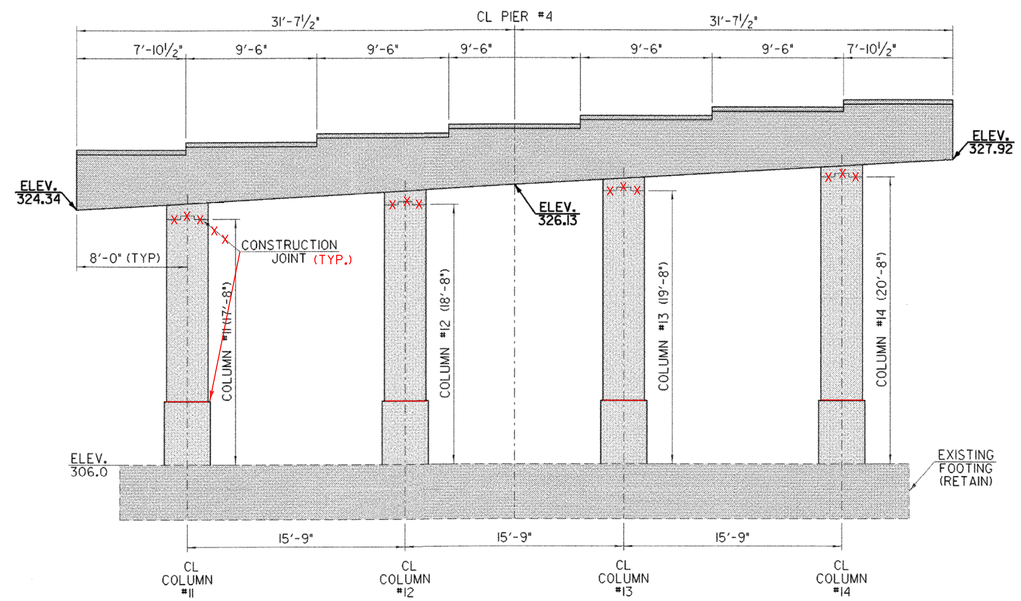
SCALE 3/16" = 1'-0

RELOCATED BURIED TELEPHONE FIBER OPTICS LINE
AVE. DEPTH 40"
FIBER OPTICS ALONG PIER 4 IS 2 FIBERGLASS CONDUITS AND ONE EMPTY FIBERGLASS CONDUIT COVERED WITH FLOWABLE FILL MATERIAL.



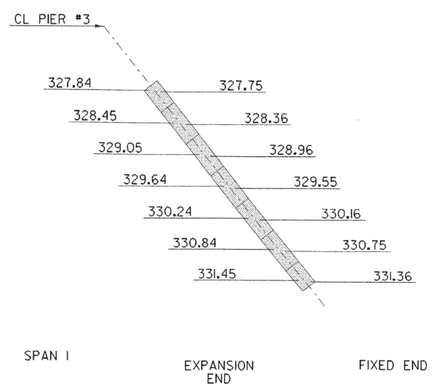
PIER #4 PLAN

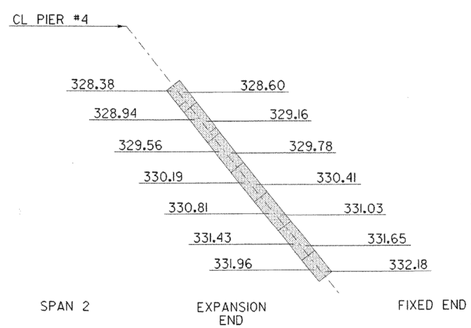
SCALE 3/16" = 1'-0



PIER #4 ELEVATION

SCALE 3/16" = 1'-0





KEY PLAN

N.T.S.

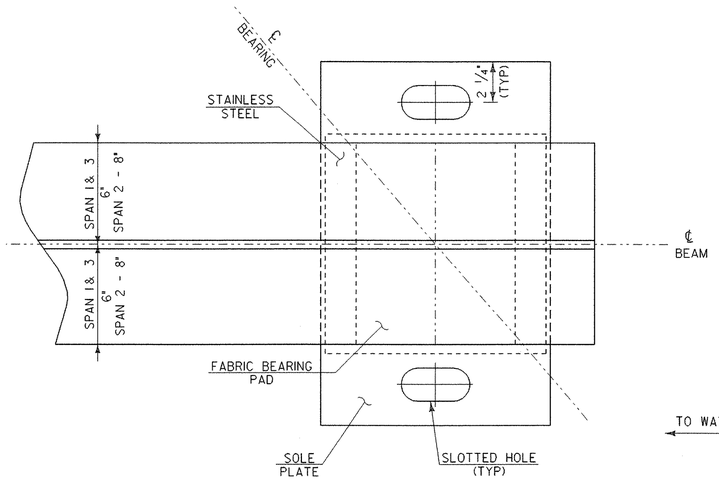
NOTE
1. SEE SHEET 8 & 10 FOR ADDITIONAL DETAILS.

NORTHBOUND LANE STATIONING

sa236ppnJ

NB PIER #3 & PIER #4 LAYOUT

PROJECT NAME: RICHMOND	
PROJECT NUMBER: IM 089-2(38)	
FILE NAME: 05a236\sa236newpiers.dgn	PLOT DATE: 25-APR-2006
PROJECT LEADER: SHERWARD FARNSWORTH	DRAWN BY: R. PELLETT
DESIGNED BY: G. SPILAK	CHECKED BY: S. FARNSWORTH
NORTHBOUND - PIER #3 & PIER 4	SHEET 9 OF 43



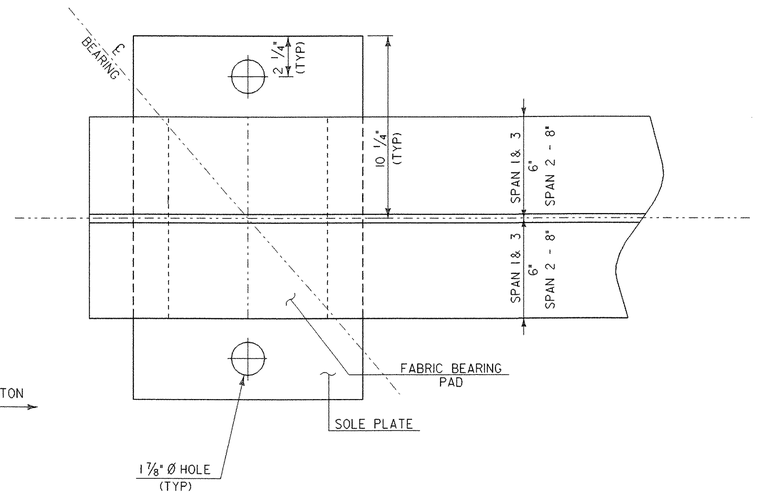
STATIONING

TO WATERBURY

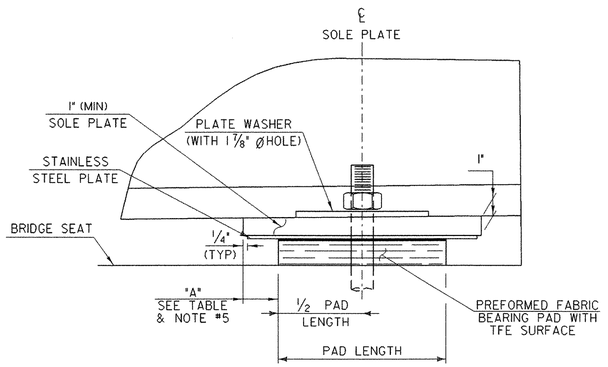
TO BURLINGTON

PLAN

N.T.S.

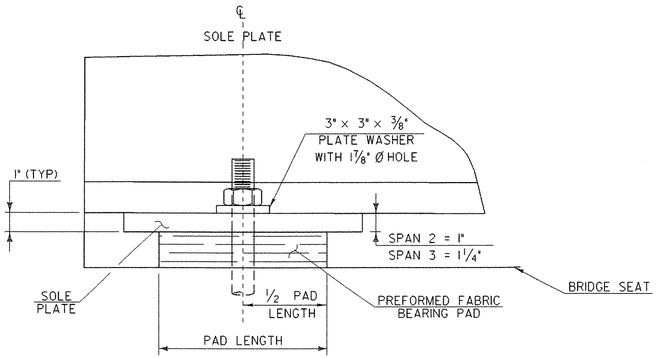


PLAN

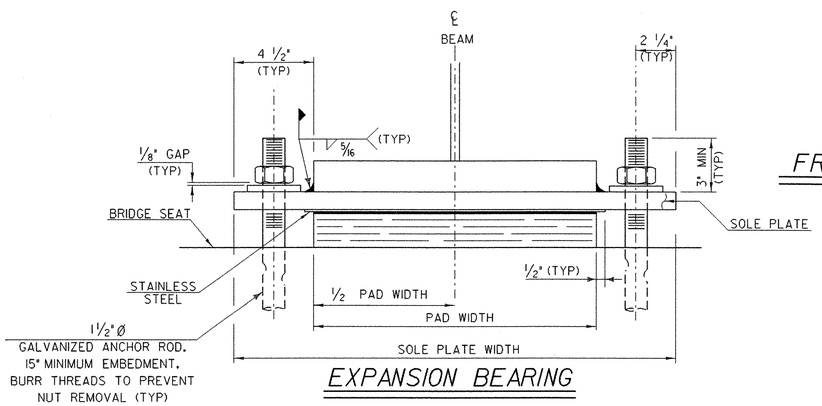


SIDE ELEVATION

N.T.S.



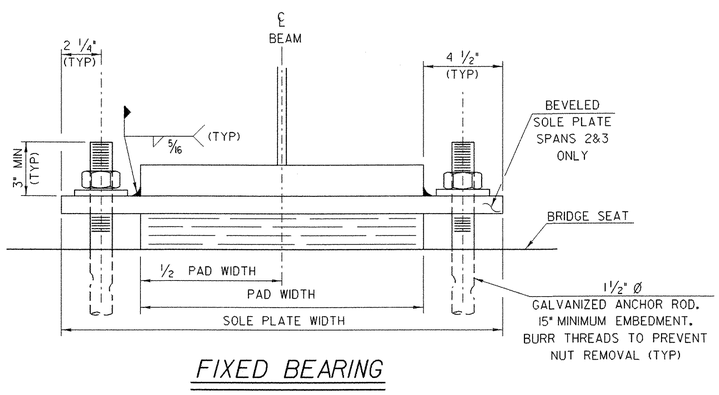
NOTE: SEE SHEET 12 FOR DIMENSIONS OF NEW BEARINGS, LOAD AND TEMPERATURE TABLES, AND ADDITIONAL BEARING NOTES



FRONT VIEW

N.T.S.

EXPANSION BEARING



FIXED BEARING

BEARINGS SHEET 1 OF 2

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	IM 089-2(38)

FILE NAME: 05a236\str\sa236brg.dgn	PLOT DATE: 25-APR-2006
PROJECT LEADER: SHERWARD FARNSWORTH	DRAWN BY: R. PELLETT
DESIGNED BY: G. SPILAK	CHECKED BY: S. FARNSWORTH
sa236brgl.i	SHEET 11 OF 43

BEARING LOADS TABLE (kips)			
	D.L.	L.L. + I	TOTAL
SPAN 1	47.7	81.9	130
SPAN 2	79.6	83.2	163
SPAN 3	47.7	81.9	130

TEMPERATURE TABLE (inches)		
TEMP	TABLE 1 "A" DIST	TABLE 2 "A" DIST
-30°F	2 3/8	2 9/16
-15°F	2 5/16	2 1/16
0°F	2 1/4	2 5/16
15°F	2 3/16	2 1/4
30°F	2 1/16	2 1/8
45°F	2	2
60°F	1 15/16	1 7/8
75°F	1 13/16	1 3/4
90°F	1 3/4	1 11/16

BEARING NOTES

1. Bearings shall conform to applicable Subsections of sections 531 & 731.
2. Bearings shall be paid for under the item 531.10 "BEARING DEVICE ASSEMBLY (FABRIC)".
3. Fabrication drawings conforming to Subsection 531.03 shall be submitted to include welding and bonding procedures.
4. The concrete surface under the bearing device shall be level.
5. "A" distance is the final setting for the bearing pad after the concrete slab, curb, pavement and bridge rail are placed. The final "A" distance, as shown in the table, must be attained within 1/16 of an inch.
6. Design criteria:
   A. Base plate to concrete design pressure = 1000 P.S.I. maximum
   B. Minimum allowable design rotation = 0.015 radians
   C. Horizontal capacity shall be a minimum of 10% of the vertical load
7. All steel in bearing devices (except stainless) shall be AASHTO M-270, Grade 36.
8. All Anchor rods shall be 1 1/2" diameter, set 15" minimum into the concrete. The rods shall meet the requirements of ASTM F-1554. Nuts shall meet the requirements of ASTM A194. Rods and nuts shall be galvanized.
9. Anchor bolts shall have a minimum of 15" embedment into the concrete and shall conform to Subsection 714.08.
10. All bearing devices shall be galvanized or metalized as per Subsection 531.04(b) and 506.15 of the General Special Provisions. Areas of galvanizing or metalizing damaged by field welding or handling shall be painted with a zinc rich paint in accordance with Supplemental Specification 513. Payment for recoating damaged areas will be considered incidental to Contract Item #531.10.
11. All the anchor bolts, nuts and washers shall be galvanized. All washers shall be 3/8" plate (minimum). Payment for anchor bolts, nuts and washers shall be included in the unit bid price for item #531.10, "BEARING DEVICE ASSEMBLY (FABRIC)".
12. See reference sheet 34 of 43 for Beam ID. Coding of "Beam ID" is as follows: "Number" is the span number, starting from the Waterbury end of the bridge. "Letter" is the beam, starting with "Beam A" at left fascia, to the last beam at the right fascia.

BEARINGS																						CHANGE IN BRIDGE SEAT ELEV. HEIGHT (ft.)
BEARING LOCATION								PAD			STAINLESS		SOLE PLATE					NEW HEIGHT	3/8" PLATE WASHER		TEMPERATURE TABLE	EXISTING HEIGHT	
BRIDGE	PIER NO.	SPAN NO.	BRG. MARK	FIX - EXP	BEAM ID	BEAM TYPE	FIG. WIDTH	WIDTH	LENGTH *	THICKNESS	WIDTH	LENGTH *	WIDTH	LENGTH *	THICKNESS	HOLE	SLOTTED HOLE		WIDTH	LENGTH			
SB	1	1	R1	EXP	1A - 1E	36X160	12"	12"	11"	2"	13"	14 1/4"	21"	14 3/4"	1"	---	1 7/8" X 3 7/8"	3"	3"	6 7/8"	1	2 1/2"	-0.04
SB	1	2	R2	FIXED	2A - 2E	36X300	16 5/8"	16"	10"	2 1/2"	N/A	N/A	25 1/2"	14"	1"	1 7/8" DIA.	---	3 1/2"	3"	3"		4"	+0.04
SB	2	2	R3	EXP	2A - 2E	36X300	16 5/8"	16"	10"	2 1/2"	17"	13 1/2"	25 1/2"	14"	1"	---	1 7/8" X 4 1/8"	3 1/2"	3"	8"	2	4"	+0.04
SB	2	3	R4	FIXED	3A - 3E	36X150	12"	12"	11"	2"	N/A	N/A	21"	14"	1" **	1 7/8" DIA.	---	3 1/8"	3"	3"		2 1/2"	-0.05
NB	3	1	R5	EXP	1A - 1G	36X150	12"	12"	11"	2"	13"	14 1/4"	21"	14 3/4"	1"	---	1 7/8" X 3 7/8"	3"	3"	6 7/8"	1	2 1/2"	-0.05
NB	3	2	R6	FIXED	2A - 2G	36X300	16 5/8"	16"	10"	2 1/2"	N/A	N/A	25 1/2"	14"	1"	1 7/8" DIA.	---	3 1/2"	3"	3"		4"	+0.04
NB	4	2	R7	EXP	2A - 2G	36X300	16 5/8"	16"	10"	2 1/2"	17"	13 1/2"	25 1/2"	14"	1"	---	1 7/8" X 4 1/8"	3 1/2"	3"	8"	2	4"	+0.04
NB	4	3	R8	FIXED	3A - 3G	36X160	12"	12"	11"	2"	N/A	N/A	21"	14"	1" **	1 7/8" DIA.	---	3 1/8"	3"	3"		2 1/2"	-0.05

* ALONG CENTERLINE OF BEAM

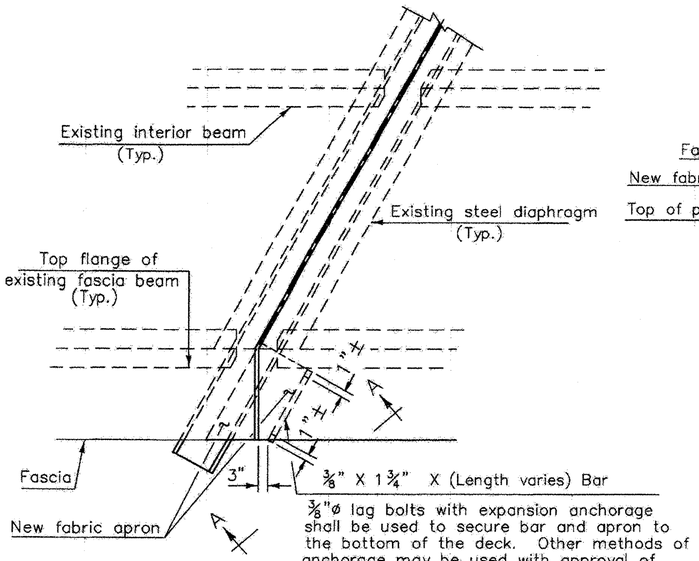
** BEVEL 1" TO 1 1/4"

BEARINGS SHEET 2 OF 2

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

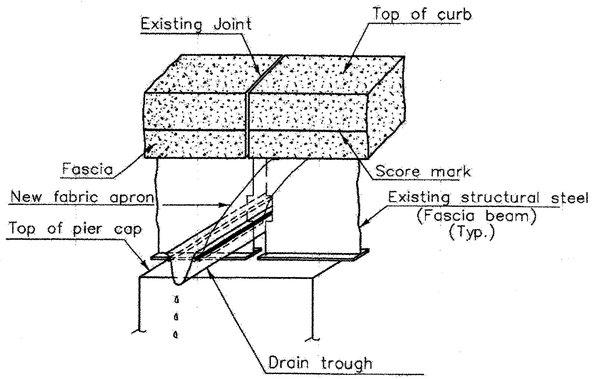
FILE NAME: 05a236\str\sa236brg.dgn
PROJECT LEADER: SHERWARD FARNSWORTH
DESIGNED BY: G. SPILAK
sa236brg2.i

PLOT DATE: 02-MAY-2006
DRAWN BY: R. PELLETT
CHECKED BY: S. FARNSWORTH
SHEET 12 OF 43



TYPICAL PARTIAL PLAN VIEW AT PIER

N.T.S.



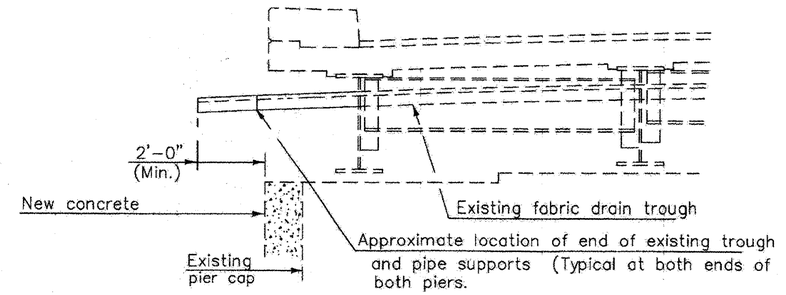
VIEW A–A

N.T.S.

The cost of the ⅜" bar, adhesive and anchorage bolts shall be subsidiary to the Item 506.80, Drain Trough

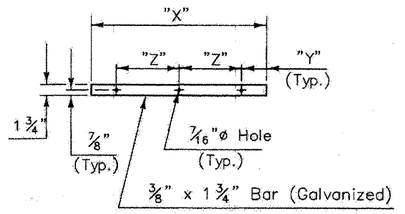
	"X"	"Y"	"Z"	NO. OF HOLES REQ'D	NO. OF BARS REQ'D
PIER 1	2'-6"	3"	8"	4	2
PIER 2	2'-6"	3"	8"	4	2
PIER 3	2'-4"	3½"	7"	4	2
PIER 4	2'-2"	4"	9"	3	2

The Contractor shall field verify that the "X" dimension is correct prior to fabricating the bars



DETAILS FOR EXTENDING DRAIN TROUGH AND SUPPORT PIPES

N.T.S.



BAR DETAILS

SCALE: 1' = 1'-0"

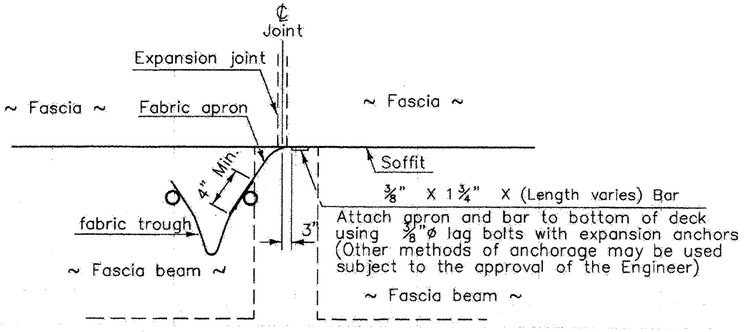
NOTES:

1. THE CONTRACTOR SHOULD BID ON THE COMPLETE REMOVAL AND TOTAL REPLACEMENT OF THE ENTIRE EXISTING DRAIN TROUGHS AND ALL RELATED HARDWARE AND COMPONENTS. THE ENGINEER WILL ONLY EVALUATE THE EXISTING CONDITIONS OF THE DRAIN TROUGH SUPPORTS ATTACHED TO THE BEAMS INCLUDING THE ½" X 4" CRADLES FOR POSSIBLE REUSE.

2. FABRIC USED IN THE CONSTRUCTION OF THE DRAIN TROUGHS SHALL BE A THREE PLY PEFORMED FABRIC MATERIAL AS SPECIFIED IN SECTION 707.07. IT WILL BE ONE CONTINUOUS STRIP. THE APPROXIMATE WIDTH FOR A 5" DEEP TROUGH IS ABOUT 16". HOWEVER A VARYING WIDTH MAY BE REQUIRED TO MAINTAIN A MINIMUM FLOW LINE GRADE OF ½" PER FOOT. A STEEPER GRADE IS DESIRABLE. THE ENGINEER WILL DETERMINE THE GRADE FOR EACH TROUGH BASED ON FIELD CONDITIONS.

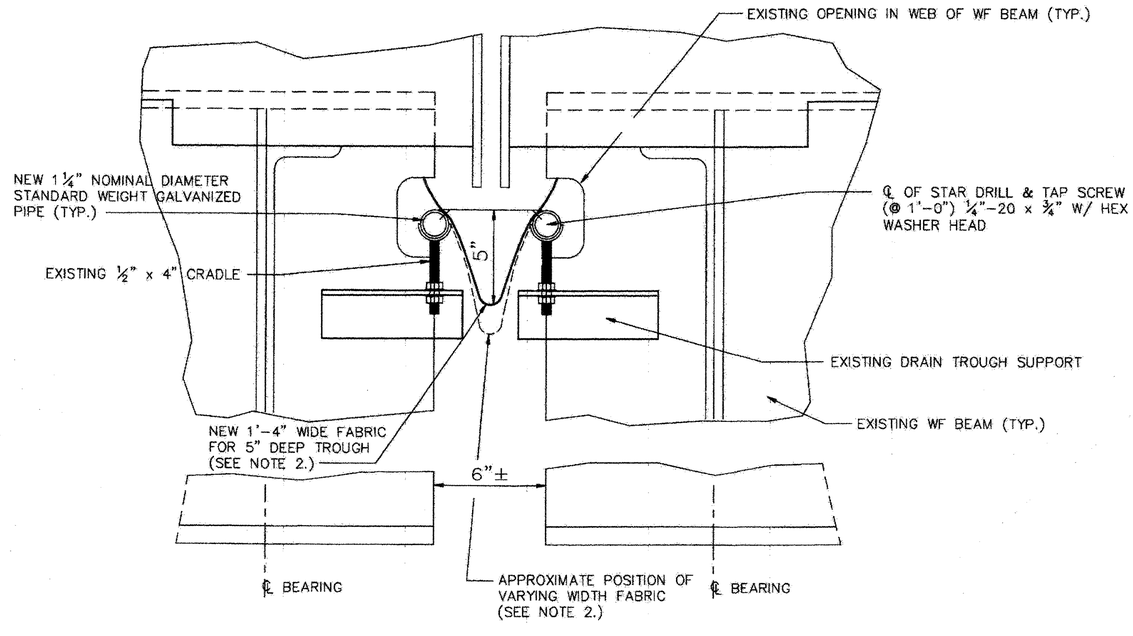
3. 1¼" (NOMINAL DIAMETER) STANDARD WEIGHT GALVANIZED PIPE SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF TROUGH. ALL COSTS FOR THE PIPE AND COUPLINGS, SUPPORTS, CRADLES, SCREWS AND RELATED HARDWARE SHALL BE INCLUDED IN THE UNIT BID PRICE FOR FABRIC DRAIN TROUGH.

4. THE ENGINEER WILL DETERMINE THE CROSS SLOPE OF EACH DRAIN AND REQUIRED TOTAL LENGTH OF EACH NEW DRAIN TROUGH LOCATION PRIOR TO REMOVAL OF THE EXISTING TROUGH.



ELEVATION VIEW OF APRON AT FASCIA

N.T.S.



DRAIN TROUGH REPLACEMENT DETAIL

N.T.S

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of RICHMOND	Bridge No. 56 N&S
	Log Sta. ~
Highway No. U.S.2	Surv. Sta. ~
I-89 OVER U.S.ROUTE 2 AT EXIT 11	
DRAIN TROUGH REPLACEMENT	
Designed By VTRANS	Drawn By VTRANS
Checked By G.SPILAK Date 02/06	Bridge Design Supervisor S.FARNSWORTH Date 02/06
PROJECT RICHMOND	PROJECT NO. IM 089-2(38)
I.G.C. Info.	
Bridge Sheet No.	Sheet 13 of 43

STATE OF VERMONT
AGENCY OF TRANSPORTATION

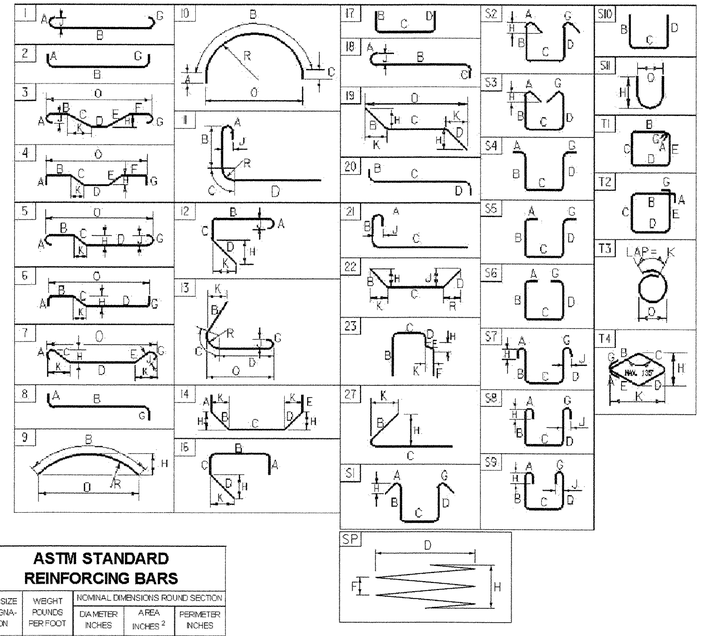
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
PIER 1																	
PIER 1 CAP																	
8	5		27'- 9"	1EP501	STR	27'- 9"											
15	5		11'- 4"	1EP502A	STR	11'- 4"											
10	5		8'- 5"	1EP502B	STR	8'- 5"											
7	9		37'- 0"	1EP902A	STR	37'- 0"											
7	9		21'- 0"	1EP902B	STR	21'- 0"											
14	9		29'- 0"	1EP903	STR	29'- 0"											
56	5		7'- 2"	1EP504	17		1'- 8"	3'- 10"	1'- 8"								
7	9		24'- 3"	1EP901A	19		3'- 4"	20'- 11"	---				3'- 4"		0'- 2"		---
7	9		40'- 4"	1EP901B	27		3'- 4"	37'- 0"					3'- 4"		0'- 2"		
92	5		12'- 6"	1EP503	T1	0'- 6"	2'- 5"	3'- 4"	2'- 5"	3'- 4"		0'- 6"					
COLUMN 1																	
12	9		20'- 5"	1EC901	STR	20'- 5"											
9	5		11'- 8"	1EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	1EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		557'- 1"	1EC401	SP				2'- 4"		0'- 3"		19'- 5"				
COLUMN 2																	
12	9		21'- 5"	2EC901	STR	21'- 5"											
9	5		11'- 8"	2EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	2EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		586'- 4"	2EC401	SP				2'- 4"		0'- 3"		20'- 5"				
COLUMN 3																	
12	9		22'- 6"	3EC901	STR	22'- 6"											
9	5		11'- 8"	3EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	3EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		615'- 8"	3EC401	SP				2'- 4"		0'- 3"		21'- 6"				
PIER 2																	
PIER 2 CAP																	
8	5		26'- 5"	2EP501	STR	26'- 5"											
15	5		10'- 9"	2EP502A	STR	10'- 9"											
10	5		7'- 11"	2EP502B	STR	7'- 11"											
7	9		39'- 3"	2EP902A	STR	39'- 3"											
7	9		15'- 11"	2EP902B	STR	15'- 11"											
14	9		27'- 7"	2EP903	STR	27'- 7"											
54	5		7'- 2"	2EP504	17		1'- 8"	3'- 10"	1'- 8"								
7	9		21'- 5"	2EP901A	19		3'- 4"	18'- 1"	---				3'- 4"		0'- 2"		---
7	9		40'- 4"	2EP901B	27		3'- 4"	37'- 0"					3'- 4"		0'- 2"		
88	5		12'- 6"	2EP503	T1	0'- 6"	2'- 5"	3'- 4"	2'- 5"	3'- 4"		0'- 6"					
COLUMN 4																	
12	9		20'- 7"	4EC901	STR	20'- 7"											
9	5		11'- 8"	4EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	4EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		557'- 1"	4EC401	SP				2'- 4"		0'- 3"		19'- 7"				
COLUMN 5																	
12	9		21'- 8"	5EC901	STR	21'- 8"											
9	5		11'- 8"	5EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	5EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		586'- 4"	5EC401	SP				2'- 4"		0'- 3"		20'- 8"				
COLUMN 6																	
12	9		22'- 8"	6EC901	STR	22'- 8"											
9	5		11'- 8"	6EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	6EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		615'- 8"	6EC401	SP				2'- 4"		0'- 3"		21'- 8"				

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
PIER 3																	
PIER 3 CAP																	
8	5		33'- 7"	3EP501	STR	33'- 7"											
25	5		9'- 5"	3EP502A	STR	9'- 5"											
10	5		7'- 1"	3EP502B	STR	7'- 1"											
14	9		18'- 0"	3EP902A	STR	18'- 0"											
7	9		38'- 0"	3EP902B	STR	38'- 0"											
14	9		26'- 5"	3EP903A	STR	26'- 5"											
7	9		21'- 2"	3EP903B	STR	21'- 2"											
66	5		7'- 2"	3EP504	17		1'- 8"	3'- 10"	1'- 8"								
7	9		35'- 11"	3EP901A	19		3'- 4"	32'- 7"	---				3'- 4"		0'- 2"		---
7	9		40'- 4"	3EP901B	27		3'- 4"	37'- 0"					3'- 4"		0'- 2"		
108	5		12'- 6"	3EP503	T1	0'- 6"	2'- 5"	3'- 4"	2'- 5"	3'- 4"		0'- 6"					
COLUMN 7																	
12	9		18'- 3"	7EC901	STR	18'- 3"											
9	5		11'- 8"	7EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	7EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		469'- 5"	7EC401	SP				2'- 4"		0'- 3"		16'- 10"				
COLUMN 8																	
12	9		19'- 3"	8EC901	STR	19'- 3"											
9	5		11'- 8"	8EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	8EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		527'- 9"	8EC401	SP				2'- 4"		0'- 3"		17'- 10"				
COLUMN 9																	
12	9		20'- 3"	9EC901	STR	20'- 3"											
9	5		11'- 8"	9EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	9EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		528'- 1"	9EC401	SP				2'- 4"		0'- 3"		18'- 10"				
COLUMN 10																	
12	9		21'- 3"	10EC901	STR	21'- 3"											
9	5		11'- 8"	10EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	10EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		557'- 4"	10EC401	SP				2'- 4"		0'- 3"		19'- 10"				
PIER 4																	
PIER 4 CAP																	
8	5		32'- 4"	4EP501	STR	32'- 4"											
25	5		8'- 10"	4EP502A	STR	8'- 10"											
10	5		7'- 3"	4EP502B	STR	7'- 3"											
14	9		17'- 9"	4EP902A	STR	17'- 9"											
7	9		36'- 0"	4EP902B	STR	36'- 0"											
14	9		25'- 8"	4EP903A	STR	25'- 8"											
7	9		20'- 2"	4EP903B	STR	20'- 2"											
66	5		7'- 2"	4EP504	17		1'- 8"	3'- 10"	1'- 8"								
7	9		33'- 5"	4EP901A	19		3'- 4"	30'- 1"	---				3'- 4"		0'- 2"		---
7	9		40'- 4"	4EP901B	27		3'- 4"	37'- 0"					3'- 4"		0'- 2"		
106	5		12'- 6"	4EP503	T1	0'- 6"	2'- 5"	3'- 4"	2'- 5"	3'- 4"		0'- 6"					
COLUMN 11																	
12	9		19'- 4"	11EC901	STR	19'- 4"											
9	5		11'- 8"	11EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	11EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		527'- 9"	11EC401	SP				2'- 4"		0'- 3"		17'- 11"				
COLUMN 12																	
12	9		20'- 4"	12EC901	STR	20'- 4"											
9	5		11'- 8"	12EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	12EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		528'- 1"	12EC401	SP				2'- 4"		0'- 3"		18'- 11"				
COLUMN 13																	
12	9		21'- 4"	13EC901	STR	21'- 4"											
9	5		11'- 8"	13EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	13EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		557'- 4"	13EC401	SP				2'- 4"		0'- 3"		19'- 11"				
COLUMN 14																	
12	9		22'- 4"	14EC901	STR	22'- 4"											
9	5		11'- 8"	14EC501	T1	0'- 6"	2'- 8"	2'- 8"	2'- 8"	2'- 8"		0'- 6"					
8	5		9'- 4"	14EC502	T1	0'- 6"	1'- 6"	2'- 8"	1'- 6"	2'- 8"		0'- 6"					
1	4		615'- 8"	14EC401	SP				2'- 4"		0'- 3"		20'- 11"				

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES^2	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

FILE NAME: \05a236\str\sa236rein.xls
PROJECT MANAGER: SHERWARD FARNSWORTH
DESIGNED BY: G. SPILAK
REINFORCING STEEL SCHEDULE SHEET

PLOT DATE: 2/24/2006
DRAWN BY: R. PELLETT
CHECKED BY: S. FARNSWORTH
SHEET 14 OF 43

STATE OF VERMONT
AGENCY OF TRANSPORTATION

EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE

DESCRIPTION OF PROJECT

The Interstate maintenance project involves the rehabilitation of Bridges 56 North and South on I-89 over US2 at exit 11 in Richmond, Vermont. It is limited to the removal of pier caps and columns from the existing steel bridge beams down to the footings; and then replacement of the pier caps and columns. Traffic will be maintained at all times on the Interstate. US 2 will remain open to both east and west bound traffic but minor disturbances to traffic flows can be expected during project construction activities.

The entire project area involves less than 2.5 acres of land. This includes about 1.2 acres of land in the southwest quadrant of the interchange which has been designated as available for locating the Engineer's office trailer and contractor's parking and storage area. The project does not involve exposing raw ground slopes, grading of soils, or affecting drainage patterns.

SITE INVENTORY & ANALYSIS

The Richmond Interchange is located in the Winooski River Valley. A mixture of open fields, woods, and hedge rows lines the valley which is approximately half a mile wide at this location. It is dominated by reasonably level to slightly undulating terrain that has been the site of farming and agricultural activities for many years.

The soil conservation service has classified the soil within the project area as Winooski Very Fine Sandy Loam and Hadley Very Fine Sandy Loam. The next plan sheet shows the boundaries of these soils classes.

VEGETATION:

All slopes are fill areas with grass cover or in the case of the old park-in-ride are gravel subbase covered with top soil & grassed.

SOILS:

Unknown as soils are fill slopes.

SENSITIVE RESOURCE AREAS:

No 'Threatened & Endangered Species' have been identified within the project limits and there will be no adverse effect to agricultural or archaeological features.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

There are no streams or other watercourses within the immediate project area. Approximately 400 feet northerly of the project area is a small stream. The Winooski River is approximately a thousand feet west of the project area. None of these features will be affected by this project as no earth slopes will be exposed to the elements.

There is a Class II wetland located north of northbound pier #1, as shown on sheet 21. All runoff from disturbed areas are directed south, away from any wetlands.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:
"Project Demarcation Fencing," denoted -PDF- on the plans, to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding, mulching and biodegradable erosion control matting, or an equivalent product, will be utilized on all slopes steeper than 3:1 that are not lined with stone fill. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity. All disturbed slopes shall be seeded, fertilized, and mulched.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for several days prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes.

Temporary stone check dams will be placed in ditches if stone lining is not being accomplished simultaneously with the ditch work. Check dams reduce flow velocities and thus reduce the potential for erosion. They will be placed along the ditches such that the elevation of the top of each check dam corresponds with the elevation of the toe of the preceding upslope check dam (See 'Erosion Controls Details' sheet). The check dams may be removed once the stone lining of the ditches is complete and the surrounding area is stabilized.

TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:
Silt fence will be installed a distance of 5 to 10 feet from the toe of slopes to prevent sediment transport to down gradient areas. Each line of silt fence will be placed along the contour with ends turned slightly uphill to create a ponding effect should water try to run along the fencing and around the ends. The maximum slope length between separate runs of silt fence is 100 feet. Silt fence shall be installed prior to any upslope earthwork.

Stabilized construction entrances to the project site, staging areas, as well as waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12 ft. by 50 ft. All surface water flowing to or diverted towards a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipes smaller than 6 inches diameter shall be used. See typical detail on 'Erosion Prevention & Sediment Control Plan' sheet for materials and construction method to be utilized when constructing a stabilized construction entrance (see sheet 24).

The sediment settling basin, if one is deemed necessary for dewatering purposes, should be sized based upon the pumping rate, and target particle size to be settled out. The following sizing criteria is based upon a target particle size of 0.01 mm and is provided as general guidance. (See Sediment Settling Basin Sizing Criteria.)

PERMANENT EROSION CONTROL MEASURES

PERMANENT EROSION CONTROL MEASURES TO BE UTILIZED INCLUDE:
Stone lining of roadway ditches (if disturbed) with clean, angular Stone Fill, Type I will be used to prevent erosion during storm events. See 'Erosion Control Details' sheet for typical ditch section.

Grass, or other suitable ground cover will be established outside of the roadway limits where stone lining has not been specified.

GRADING PLAN & CONSTRUCTION TIME TABLE

Grading plan and construction time table appears on sheet 21 of 43.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of receiving waters. The measures include stabilization and structural practices, stormwater controls and other pollution prevention controls.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed by the Engineer. See Subsection 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2001.

Install all erosion prevention and sediment control measures as shown in the Erosion Prevention and Sediment Control Plan, or as directed by the Engineer. Do not modify the type, size, or location of any control or practice without approval of the Engineer and On-site Coordinator. Any changes shall be noted on the plans, in the weekly inspection report, and reported to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Initiate repair measures promptly once damage is discovered.

Measures such as temporary stone check dams, silt fence, and sediment basins shall be checked regularly for accumulation of sediment. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an approved area such that they will not be subject to erosion.

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Temporary vegetation shall be established if the area is to be without construction activity for a period of 14 days. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds.

Maintaining vegetated buffers along stream banks, wetlands or other sensitive areas is a crucial erosion and sediment control measure that should be established wherever possible.

Control only sediment-laden runoff generated by the project site. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

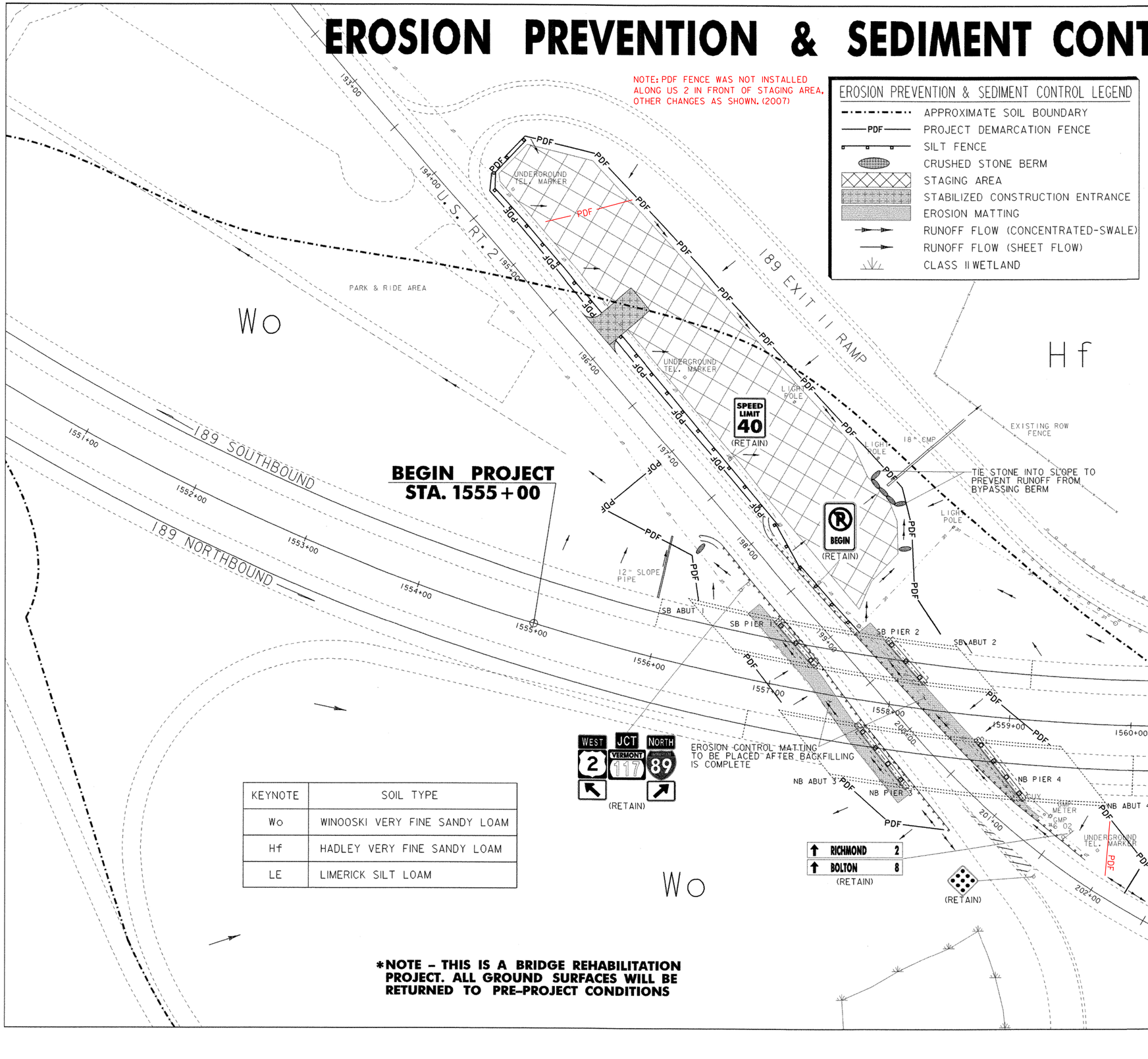
Do not allow construction equipment to operate on the down slope side of perimeter control measures.

SIZING REQUIREMENT FOR SEDIMENT SETTLING BASIN

PUMP FLOW RATE		REQUIRED SURFACE AREA		LENGTH / WIDTH = 2:1			
Q(gpm)	Q(m^3/s)	(ft^2)	(m^2)	L (ft)	W (ft)	L (m)	W (m)
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9

EROSION PREVENTION & SEDIMENT CONTROL PLAN

NOTE: PDF FENCE WAS NOT INSTALLED ALONG US 2 IN FRONT OF STAGING AREA, OTHER CHANGES AS SHOWN. (2007)



KEYNOTE	SOIL TYPE
Wo	WINOOSKI VERY FINE SANDY LOAM
Hf	HADLEY VERY FINE SANDY LOAM
LE	LIMERICK SILT LOAM

***NOTE – THIS IS A BRIDGE REHABILITATION PROJECT. ALL GROUND SURFACES WILL BE RETURNED TO PRE-PROJECT CONDITIONS**

VT STATE PLANE GRID N

GRADING PLAN AND TIME TABLE

Below is an assumed time table for the "Erosion Prevention and Sediment Control Plan". No survey was taken specifically for this project, with the exception of existing singular measurements at face of pier columns to compute excavation depths to top of existing footings, and distance from face of columns to face of existing guard rail.

This is a one year project that consists of the removal of the existing piers of bridges 56N & 56S of Interstate 89 over U.S. Route 2 in Richmond. While the bridges are being supported by temporary shoring, existing pier caps and square columns will be removed to top of existing footings. Then new piers caps and round columns will be constructed. Traffic on 189 will not be disturbed, and traffic on US Rte 2 will be two-way, and one-way at times, using flaggers, as noted elsewhere in plans and/or project special provisions.

CONSTRUCTION SEQUENCE:

1. Erect project construction signs.
2. Install Project Demarcation Fence (PDF), and Silt Fence, and place Crushed Stone Berms.
3. Install temporary construction entrance to temporary staging area (Old Park-and-Ride Lot between South Bound off ramp & US Rte 2).

ASSUMING NORTH PIERS, (NB PIER 4 & SB PIER 2) ARE REPLACED FIRST:

4. Install traffic control package and shift traffic away from NB Pier 4 and SB Pier 2.
5. Remove guard rail and place sheeting if necessary. At piers, excavate down to top of existing footings.
6. Construct shoring.
7. Remove pier caps and columns of NB Pier 4 and SB Pier 2.
8. Construct new piers, remove shoring, and backfill to grade.
9. Reconstruct edge of lane and shoulder, pave, and reset guard rail.

SOUTH PIERS, (NB PIER 3 & SB PIER 1)

10. Adjust traffic control to shift traffic away from NB Pier 3 and SB Pier 1.
11. Remove guard rail and place sheeting if necessary. At piers, excavate down to top of existing footings.
12. Construct shoring.
13. Remove pier caps and columns of NB Pier 3 and SB Pier 1.
14. Construct new piers, remove shoring, and backfill to grade.
15. Reconstruct edge of lane and shoulder, pave, and reset guard rail.
16. Adjust traffic control on US Route 2.
17. Upon completion of pier work, remove Project Demarcation Fence (PDF), Silt Fence, Crushed Stone Berms, and Construction Entrance.
18. Remove project signs.
19. The staging area is to be returned back to its pre-project condition; seeded, fertilized and mulched.

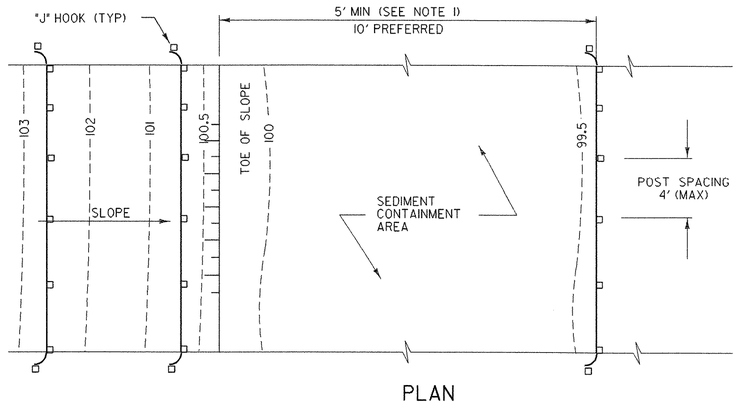
80 0 80

SCALE: 1" = 40'

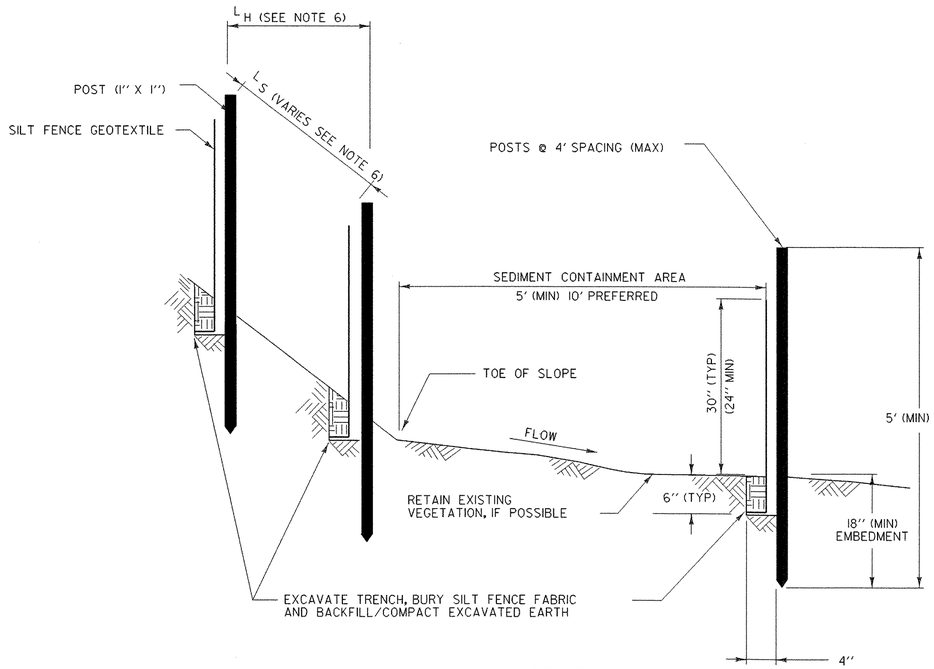
EROSION PREVENTION & SEDIMENT CONTROL PLAN

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	IM 089-2(38)

FILE NAME: 05a236/str/sa236ero.dgn	PLOT DATE: 25-APR-2006
PROJECT LEADER: SHERWARD FARNSWORTH	DRAWN BY: R. PELLETT
DESIGNED BY: G. SPILAK	CHECKED BY: S. FARNSWORTH
EROSION PLAN (sa236epsc.1)	SHEET 21 OF 43



PLAN



SECTION

SILT FENCE - TEMPORARY

SILT FENCE

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.

B. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.

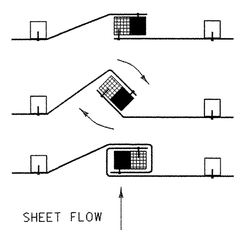
C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 5 FEET BEYOND TOE OF SLOPE, 10 FEET PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6 INCHES BELOW GROUND, AND KEYED IN 4 INCHES. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100 FEET OF SILT FENCE SHALL BE 0.25 ACRES.
6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

CONSTRUCTED SLOPE	SLOPE LENGTH (LS) FT	HORIZONTAL LENGTH (LH) FT
3 : 1	80	75
4 : 1	130	125
5 : 1	200	200
> 5 : 1	250	250

7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
9. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
10. PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.
11. PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SILT FENCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



1. PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL
3. DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

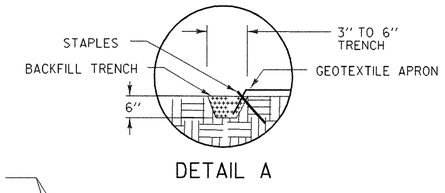
SPLICING DETAIL

EROSION PREVENTION & SEDIMENT CONTROL DETAILS: SILT FENCE

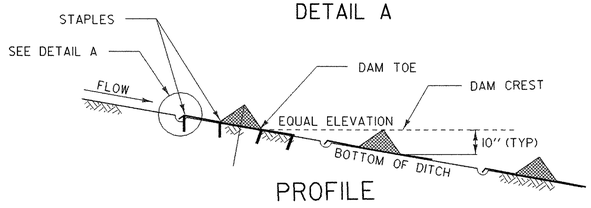
PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

FILE NAME: PW/05a236/sa236ero.dgn
PROJECT LEADER: Farnsworth
DESIGNED BY: STR6
sa236epscdetl.i

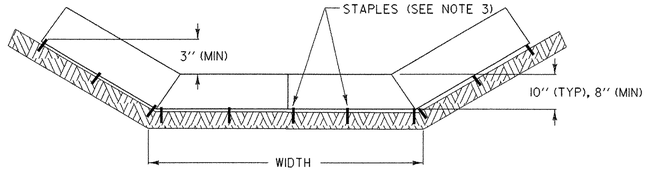
PLOT DATE: 25-APR-2006
DRAWN BY: Weeber
CHECKED BY: Farnsworth
SHEET 22 OF 43



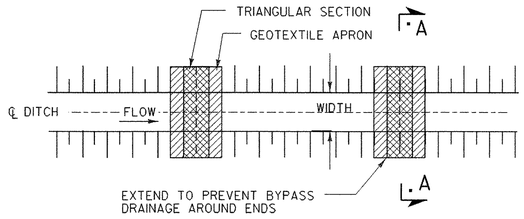
DETAIL A



PROFILE



SECTION A-A

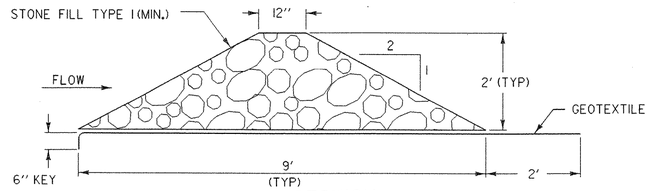


PLAN

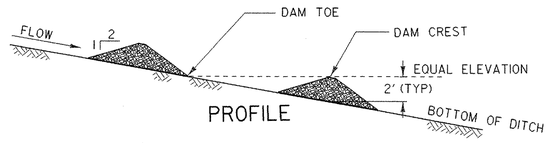
CHECK DAM - TEMPORARY (PREFABRICATED)

PREFABRICATED CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1%	50 FT
2 %	40 FT
3 %	25 FT
4 %	20 FT
5 %	15 FT

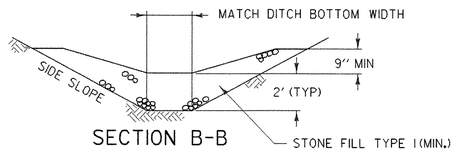
** BASED ON 10" TYPICAL HEIGHT



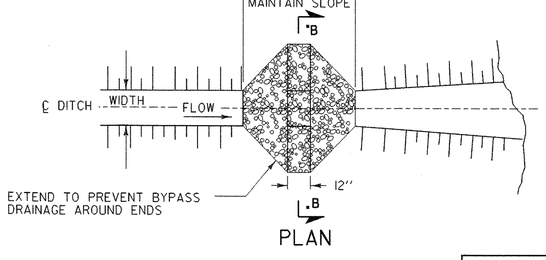
CROSS SECTION



PROFILE



SECTION B-B



PLAN

CHECK DAM - TEMPORARY (STONE)

STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1%	200 FT
2 %	100 FT
3 %	65 FT
4 %	50 FT
5 %	40 FT
6 %	30 FT
8 %	25 FT
10 %	20 FT

** BASED ON 2' TYPICAL HEIGHT

CHECK DAMS

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY.

B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CHECK DAM DUE TO DECREASED VELOCITY.

C. CHECK DAMS ARE NOT INTENDED TO FILTER SEDIMENT FROM TURBID WATER.

D. DETAILS SHOWN SHALL BE USED FOR TEMPORARY INSTALLATION ONLY.

E. PREFABRICATED DAMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5% OR PER MANUFACTURER'S SPECIFICATIONS.

F. PREFABRICATED DAM SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

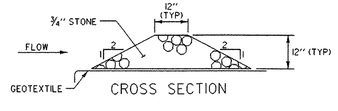
1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.
2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.
3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL "A" OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.
4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

GENERAL NOTES:

1. GEOTEXTILE SHALL BE INSTALLED UNDER CRUSHED STONE BERM. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.
2. STONE FOR THE CRUSHED STONE BERM SHALL BE CRUSHED ¾" STONE, CLEANED AND WASHED IN AN APPROVED MANNER, RESULTING IN MATERIAL THAT IS FREE OF ORGANIC MATTER AND FINE PARTICLES.
3. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
4. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
5. AT TIME OF REMOVAL OF THE CRUSHED STONE BERMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
6. PAYMENT FOR INSTALLATION AND REMOVAL OF CRUSHED STONE BERMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
7. PAYMENT FOR MONITORING CRUSHED STONE BERMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
8. PAYMENT FOR MAINTAINING CRUSHED STONE BERMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

APPLICATION NOTES:

1. THE PRIMARY PURPOSE OF A CRUSHED STONE BERM IS TO REMOVE SEDIMENT IN THE RUNOFF OF A NORMALLY DRY LOCATION AND FROM BRIDGE OPERATIONS WHERE WATER IS USED ON DECK CURING OR CONSTRUCTION.
2. CRUSHED STONE BERMS ARE TO FILTER OUT SEDIMENT WITHIN THE CRUSHED STONE BERM AND ALSO TO CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CRUSHED STONE BERM.
3. DETAILS SHOWN SHALL BE USED FOR TEMPORARY INSTALLATION ONLY.
4. CRUSHED STONE BERMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5% UNLESS DIRECTED BY THE ENGINEER.



CROSS SECTION

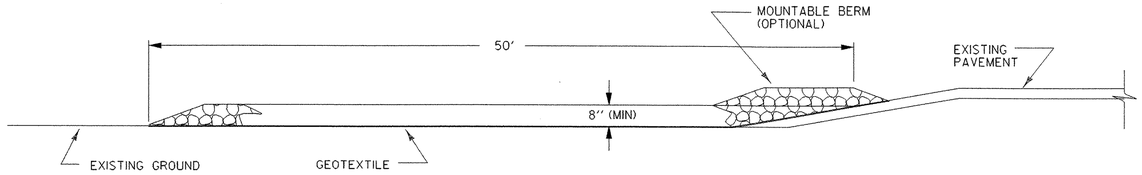
CRUSHED STONE BERM - TEMPORARY (3/4" STONE)

EROSION PREVENTION & SEDIMENT CONTROL DETAILS: CHECK DAMS

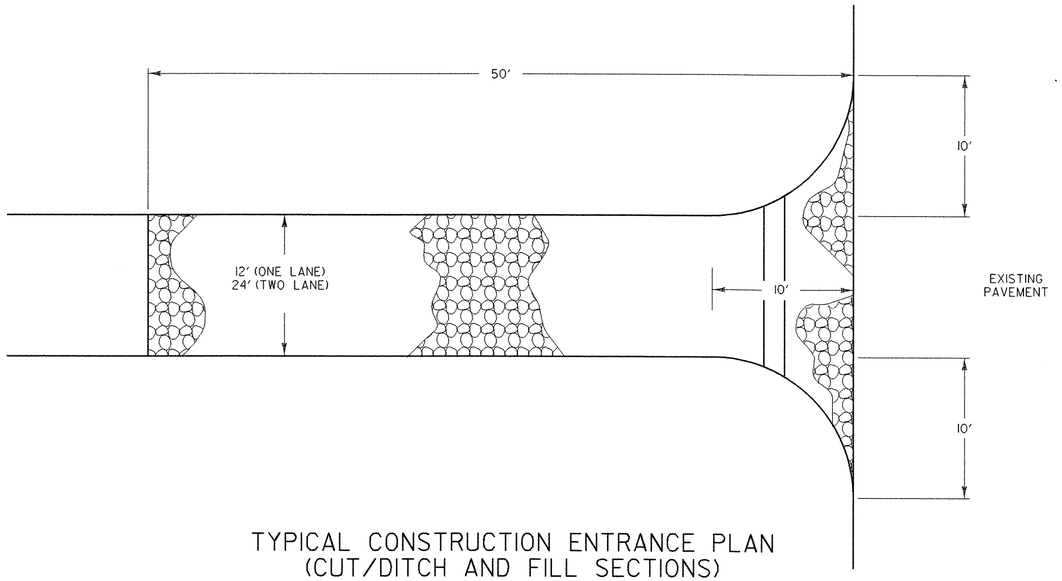
PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

FILE NAME: PW/05a236/sa236ero.dgn
PROJECT LEADER: Farnsworth
DESIGNED BY: STR6
sa236epscdet2.i

PLOT DATE: 25-APR-2006
DRAWN BY: Weeber
CHECKED BY: Farnsworth
SHEET 23 OF 43



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



TYPICAL CONSTRUCTION ENTRANCE PLAN
(CUT/DITCH AND FILL SECTIONS)

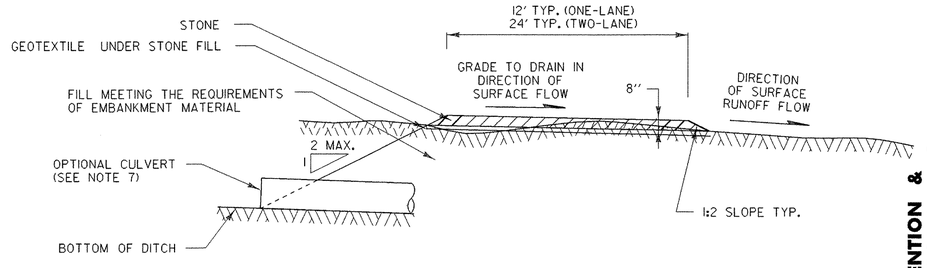
STABILIZED CONSTRUCTION ENTRANCE

APPLICATION NOTES:

A. THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.

GENERAL NOTES:

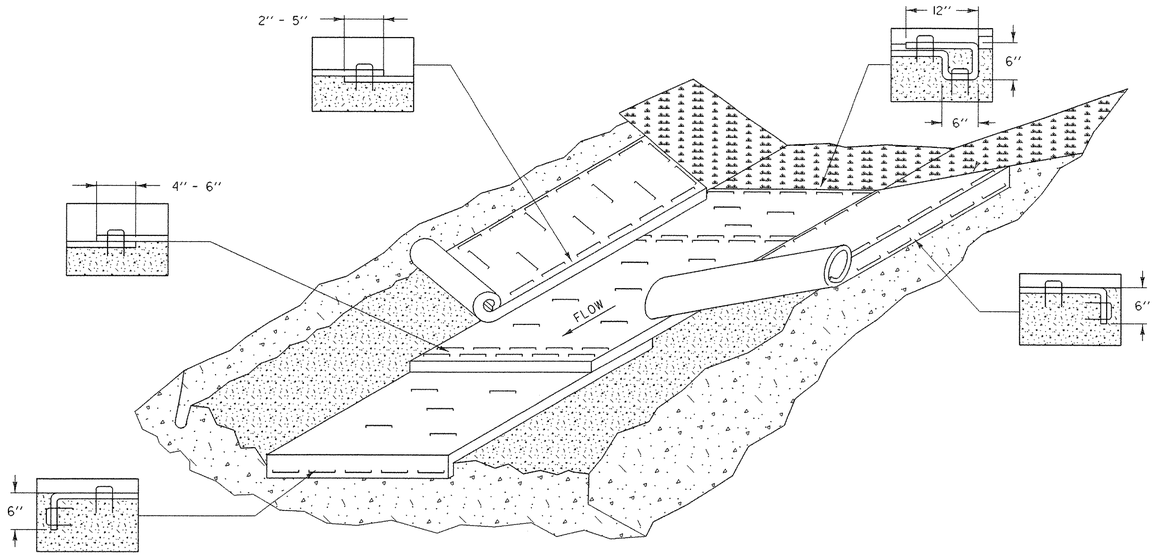
1. STONE SIZE - USE CLEAN STONE WITH GRADATION BETWEEN 2 INCHES AND 4 INCHES .
2. LENGTH - 50 FEET (MIN)
3. THICKNESS - 8 INCHES (MIN)
4. WIDTH - 12 FEET (MIN)
5. GEOTEXTILE UNDER STONE WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN WASHING OF VEHICLE IS NECESSARY, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. AT THE TIME OF REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
12. PAYMENT OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
13. PAYMENT FOR MONITORING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
14. PAYMENT FOR MAINTAINING THE CONSTRUCTION ENTRANCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



TYPICAL CONSTRUCTION ENTRANCE SECTION

EROSION PREVENTION & SEDIMENT CONTROL DETAILS: STABILIZED CONSTRUCTION ENTRANCE

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	IM 089-2(38)
FILE NAME: PW/05a236/sa236ero.dgn	PLOT DATE: 25-APR-2006
PROJECT LEADER: Farnsworth	DRAWN BY: Weeber
DESIGNED BY: STR6	CHECKED BY: Farnsworth
sa236epscdet3.i	SHEET 24 OF 43



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.

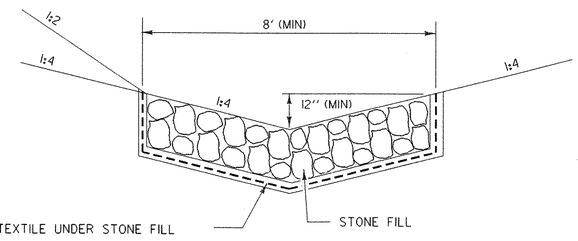
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

DITCH AND CHANNEL PROTECTION	
SLOPE	LINING
< 1%	GRASS
1% TO 4 %	EROSION MATTING
4 % TO 10 %	STONE FILL, TYPE I
> 10 %	STONE FILL, TYPE II

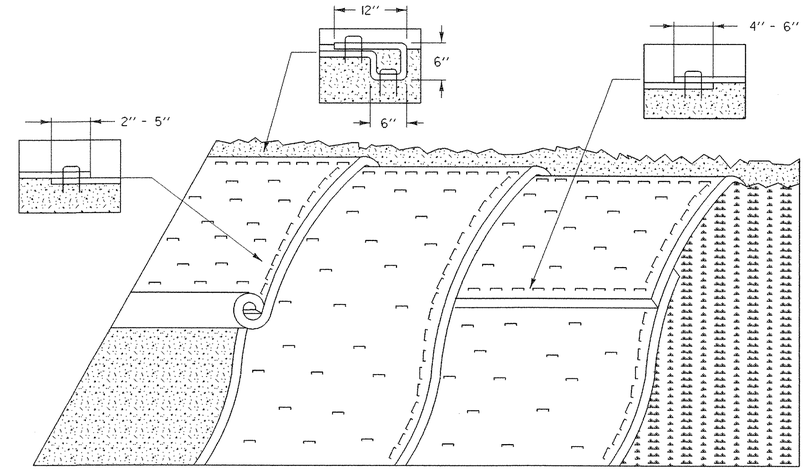
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	1 FT
TYPE II	2 FT

GENERAL NOTES:

1. WATER MAY NEED TO BE DIVERTED TO ALLOW PROPER MATTING INSTALLATION.
2. GRADE AND SMOOTH CHANNEL TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
3. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
4. INSTALL MATTING IN THE CENTER OF THE CHANNEL, IN THE DIRECTION OF THE WATER FLOW.
5. INSTALL MATTING ON THE SIDE SLOPES OF THE CHANNEL, OVERLAPPING THE CENTER MAT.
6. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INTALLATION INSTRUCTIONS.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
9. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION CONTROL WITH MATTING ITEM.
10. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
11. PAYMENT FOR MAINTAINING DITCH PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



TEMPORARY STONE LINED DITCH



EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

A. THE PURPOSE OF MATTING ON SIDE SLOPES IS TO REDUCE EROSION AND AID THE STABLISHMENT OF VEGETATION

B. EROSION CONTROL MATTING SHALL BE USED FOR THE FOLLOWING REASONS:

- SIDE SLOPES > 3:1 (H:V)
- AREAS WHERE SEED AND MULCH WILL NOT STAY IN PLACE ALONE
- WHERE SEEDING IS OUTSIDE THE GROWING SEASON.

GENERAL NOTES:

1. GRADE AND SMOOTH THE SLOPE TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
2. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
3. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INTALLATION INSTRUCTIONS.
4. UNROLL MATTING VERTICALLY DOWN SLOPE IN THE DIRECTION OF WATER FLOW.
5. OVERLAP UPPER MATTING OVER LOWER MATTING AS SHOWN.
6. OVERLAP ADJACENT MATTING AS SHOWN.
7. CUT EXCESS MATTING AT END OF SLOPE AND ANCHOR THE END.
8. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
9. MATTING SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
10. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION CONTROL WITH MATTING ITEM.
11. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SLOPE PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

EROSION PREVENTION & SEDIMENT CONTROL DETAILS: DITCH AND SLOPE PROTECTION

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

FILE NAME: PW/05a236/sa236ero.dgn
PROJECT LEADER: Farnsworth
DESIGNED BY: STR6
sa236epscdet4.i
PLOT DATE: 25-APR-2006
DRAWN BY: Weeber
CHECKED BY: Farnsworth
SHEET 25 OF 43

AHEAD
13'-6"
8 MILES

TOURIST INFORMATION

ROAD WORK AHEAD

TOURIST INFORMATION

SPEED LIMIT 50

TOURIST INFORMATION

EAST 2

MARKET PL

174+00 175+00 176+00 177+00 178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00

Match Line

SPEED LIMIT 40

ROAD WORK AHEAD

SPEED LIMIT 40

JCT VERMONT 89

SPEED LIMIT 30

↑ WILLISTON 3
↑ BURLINGTON 12
WATERBURY 15 →
MONTPELIER 27 →

SEE SHEET 28, TRAFFIC CONTROL SHEET 3 OF 3, FOR LANE SHIFTS AND SHOULDER CLOSURES AROUND THE BRIDGE.

FOOD 2 →
← PHONE →
24 HR GAS →
← DIESEL / GAS
LODGING 2 →
INFORMATION 2 →

EXISTING FENCE

ROAD WORK AHEAD
APP.LOC.

00+11 00+21 00+31 00+41

ROAD WORK AHEAD
APP.LOC.

LIGHT POLE

PARK & RIDE LEFT LANE

LIGHT POLE

LIGHT POLE

UNDERGROUND TEL. MARKER

PARK & RIDE 1-800-685-RIDE

STOP

STOP

UNDERGROUND TEL. MARKER

SPEED LIMIT 40

BEGIN

Match Line

187+00 188+00 189+00 190+00 191+00 192+00 193+00 194+00 195+00 196+00 197+00 198+00 199+00

RICHMOND 1
BOLTON 8

ROAD WORK 500 FT

SPEED LIMIT 40

← MONTPELIER 27
SOUTH VERMONT 89

END ROAD WORK

END

FINE DOUBLED FOR SPEEDING IN WORK ZONE

WEST 2 NORTH VERMONT 89 SOUTH VERMONT 89

ROAD WORK 500 FT

SOUTH VERMONT 89

SPEED LIMIT 30

SPEED LIMIT 40

COVER

SHOULDER CLOSED

PARK & RIDE 1-800-685-RIDE

2 YELLOW LINES

WHITE LINE

SHIFT TAPER 100' BARRELS @ 20'

BURLINGTON 12 ↗
↑ WILLISTON 3

WEST 2 JCT VERMONT 117 NORTH VERMONT 89

COVER
'35 M.P.H.'
ONLY

35 M.P.H.

PARK & RIDE AREA

RAMP 84

BEGIN PROJECT STA. 1555+00

189 SOUTHBOUND

1554+00 1555+00 1556+00 1557+00

Match Sheet 27 of 43

LEGEND

EXISTING SIGN

APP.LOC. APPROXIMATE LOCATION; TO BE PLACED IN THE FIELD BY ENGINEER

0 40 80
SCALE 1" = 40'

TRAFFIC CONTROL SHEET 1 OF 3

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

FILE NAME: sa236bdr.dgn
PROJECT LEADER: Farnsworth
DESIGNED BY: Farnsworth
iparm sa236signl.i

PLOT DATE: 02-MAY-2006
DRAWN BY: Weeber
CHECKED BY:
SHEET 26 OF 43

Match Sheet 26 of 43

WINOOSKI RIVER TRUSS

KENYON ROAD

SPEED LIMIT 30

NARROW BRIDGE

ROAD WORK AHEAD

SPEED LIMIT 40

SEE SHEET 28, TRAFFIC CONTROL SHEET 3 OF 3, FOR LANE SHIFTS AND SHOULDER CLOSURES AROUND THE BRIDGE.

NORTH

N

Match Line #1

189 SOUTH

189 NORTH

1558+00 1559+00 1560+00 1561+00 1562+00 1563+00 1564+00 1565+00 1566+00 1567+00 1568+00 1569+00 1570+00 1571+00

END PROJECT STA. 1561+00

RICHMOND 2
BOLTON 8

EAST WEST TO
2 2 VERMONT 117

BURLINGTON 12
NORTH 89 SOUTH 89 EAST 2

WEST EAST JCT
VERMONT 117 2 89

SHOULDER CLOSED

RICHMOND 2
ESSEX JCT. 8

ROAD WORK 500 FT

WILLISTON 3
ESSEX JCT. 8

WEST 2

WILLISTON 3
BURLINGTON 11

END ROAD WORK

ROAD WORK 500 FT

VERMONT 117

Match Line #2

COVER '35 M.P.H.' ONLY

SPEED LIMIT 30

35 M.P.H.

VERBURG ROAD

FINE DOUBLED FOR SPEEDING IN WORK ZONE

CAT LANE

SPEED LIMIT 40

Match Line #1

NARROW BRIDGE

APP.LOC.
END ROAD WORK

ROAD WORK AHEAD
APP.LOC.

ROAD WORK AHEAD
APP.LOC.

RAMP BC

RAMP BC-3D

Match Line #2

180'

97'

2+00 3+00 4+00 11+00 12+00

ROAD WORK AHEAD

END ROAD WORK

GOV. PECK ROAD

SUMMERS ST.

SPEED LIMIT 40

ROAD WORK AHEAD

0 40 80
SCALE 1" = 40'

LEGEND

EXISTING SIGN

APP.LOC. APPROXIMATE LOCATION; TO BE PLACED IN THE FIELD BY ENGINEER

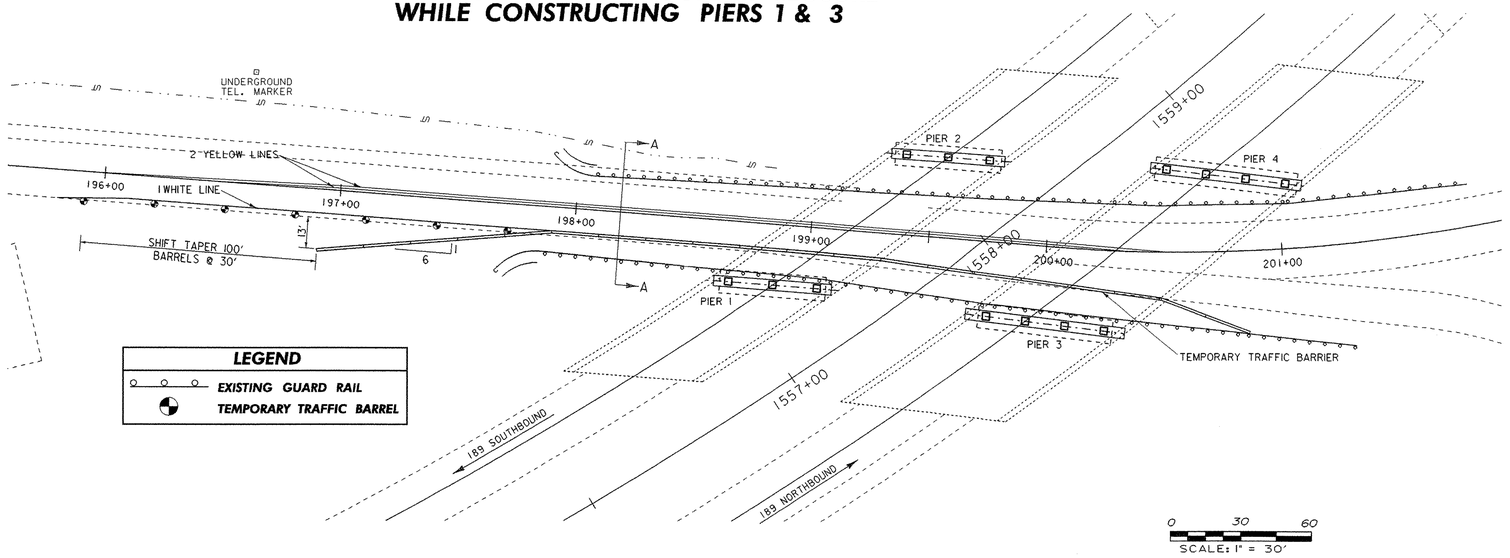
TRAFFIC CONTROL SHEET 2 OF 3

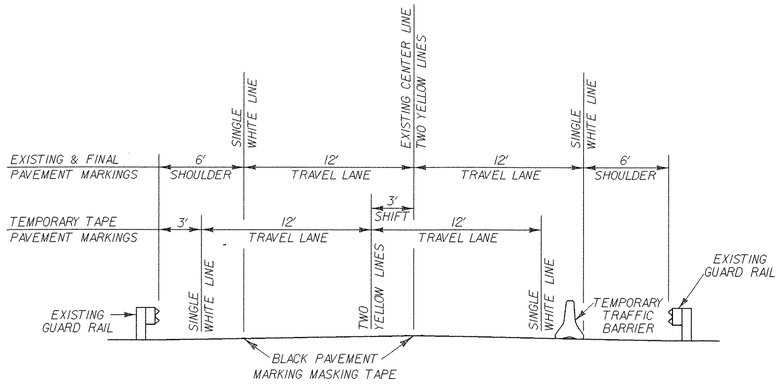
PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

FILE NAME: sa236bdr.dgn
PROJECT LEADER: Farnsworth
DESIGNED BY: Farnsworth
iparm sa236sign2.i

PLOT DATE: 02-MAY-2006
DRAWN BY: Weeber
CHECKED BY:
SHEET 27 OF 43

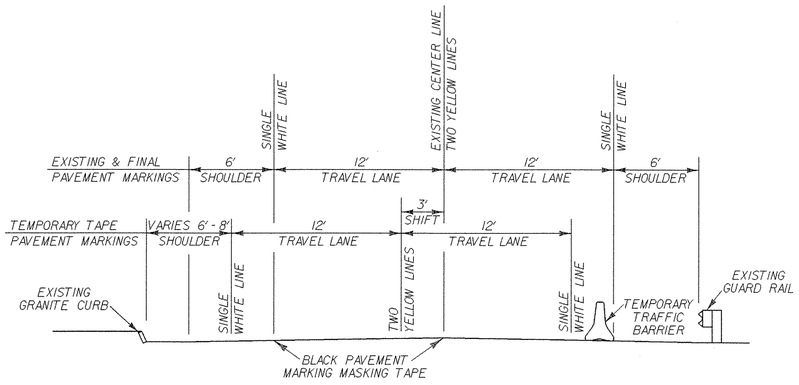
LANE SHIFT AND SHOULDER CLOSURE WHILE CONSTRUCTING PIERS 1 & 3





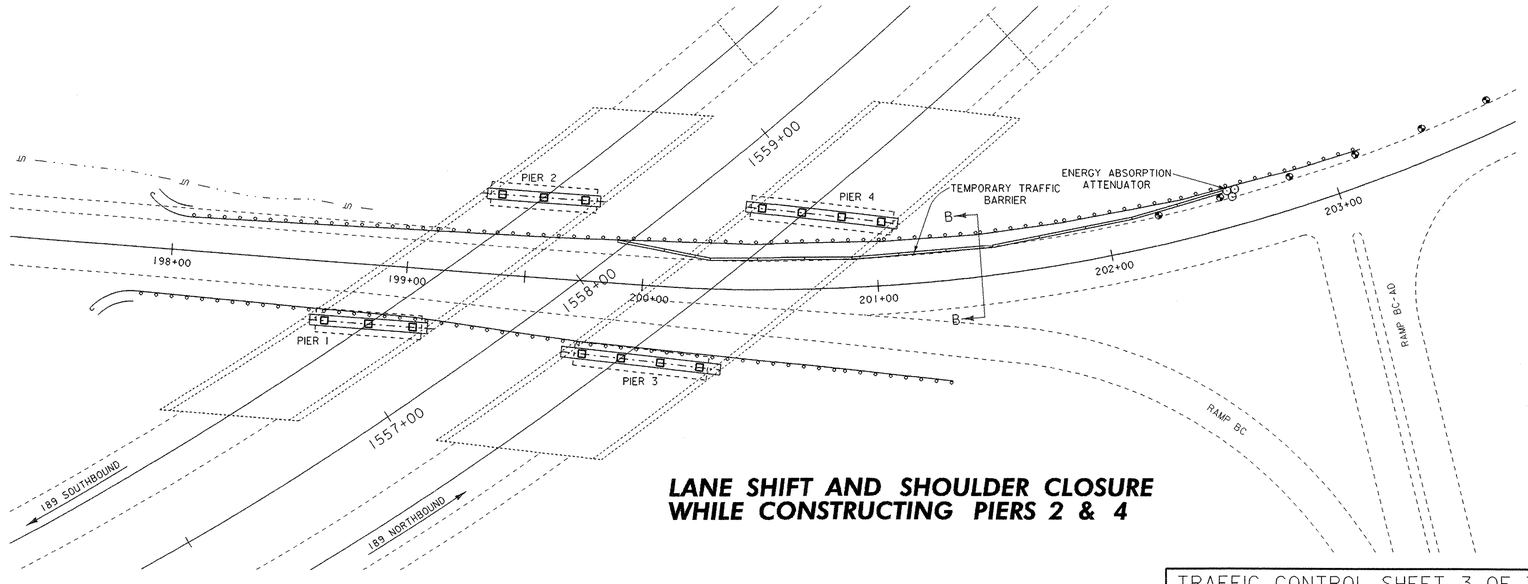
SECTION A – A

0 5 10
SCALE: 1" = 5'



SECTION B – B

0 5 10
SCALE: 1" = 5'



LANE SHIFT AND SHOULDER CLOSURE WHILE CONSTRUCTING PIERS 2 & 4

LEGEND
EXISTING GUARD RAIL
TEMPORARY TRAFFIC BARREL

0 30 60
SCALE: 1" = 30'

TRAFFIC CONTROL SHEET 3 OF 3

PROJECT NAME: RICHMOND
PROJECT NUMBER: IM 089-2(38)

FILE NAME: 05a236sign.dgn
PROJECT LEADER: Farnsworth
DESIGNED BY: Farnsworth
lparm sa236sign3.i

PLOT DATE: 25-APR-2006
DRAWN BY: Weeber
CHECKED BY:
SHEET 28 OF 43

Approx. Toe of Slope

Chord Definition ℄ Interstate
Δ = 61°-19' Lt.
D = 3°-0'
R = 1910.08'
T = 1132.3'
L = 2043.9'
E = 310.4'
Bank = 15/16"/ft.

Shld. Varies

℄ Left Lane

Ditch Line

12'-0"

12'-0"

Varies

Varies

Varies

Varies

℄ Interstate

℄ Interstate

℄ Right Lane

12'-0"

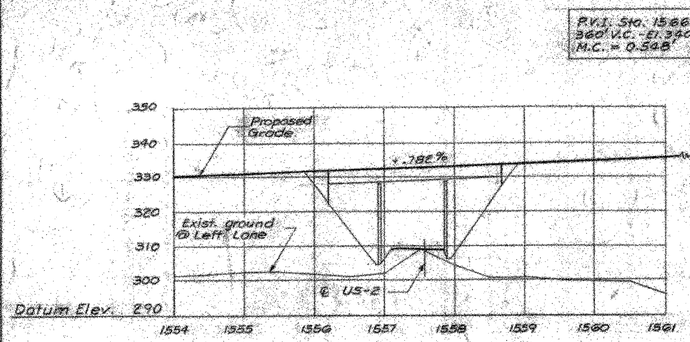
12'-0"

Varies

Varies

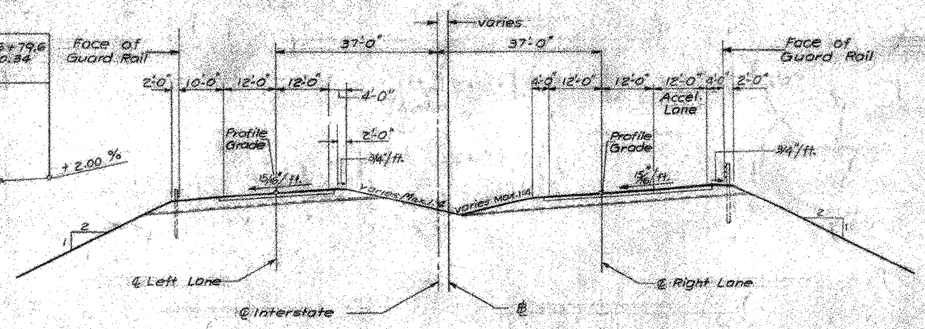
Varies

Varies



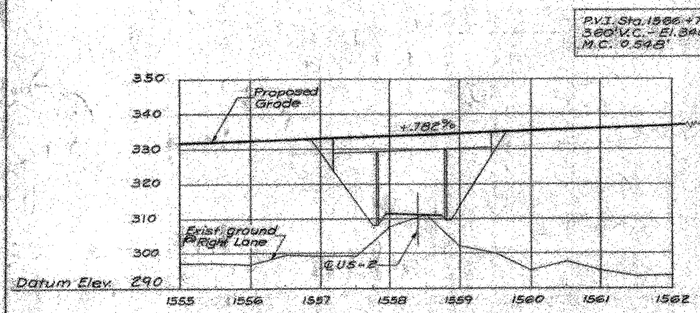
INTERSTATE PROFILE - LEFT LANE

Scales: Horiz.: 1" = 100'
Vert.: 1" = 20'



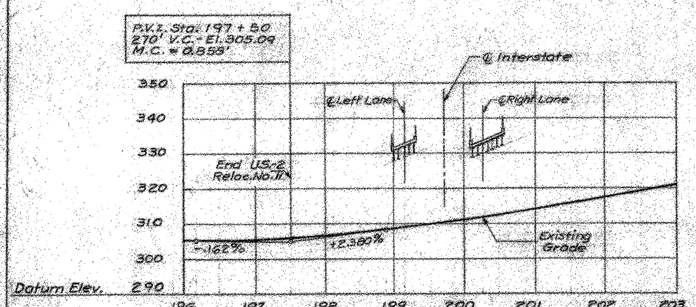
TYPICAL INTERSTATE APPROACH SECTION

Scale: 1/16" = 1'-0"



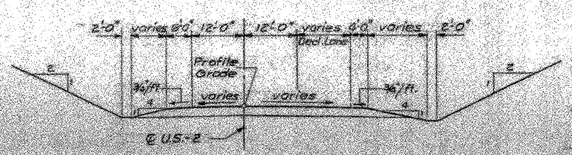
INTERSTATE PROFILE - RIGHT LANE

Scales: Horiz.: 1" = 100'
Vert.: 1" = 20'



U-S-2 PROFILE

Scales: Horiz.: 1" = 100'
Vert.: 1" = 20'



TYPICAL U.S.-2 APPROACH SECTION

Scale: 1/16" = 1'-0"

INDEX OF DRAWINGS:

BR. 1. GENERAL PLAN & ELEVATION.
BR. 2. PROFILES, SECTIONS & QUANTITIES.
BR. 3. BORING LOGS.
BR. 4. EAST ABUTMENT - LEFT LANE.
BR. 5. WEST ABUTMENT - LEFT LANE.
BR. 6. EAST ABUTMENT - RIGHT LANE.
BR. 7. WEST ABUTMENT - RIGHT LANE.
BR. 8. ABUTMENT DETAILS.
BR. 9. PIERS - LEFT LANE.
BR. 10. PIERS - RIGHT LANE.
BR. 11. FRAMING PLANS & RAILING PLANS.
BR. 12. EAST APPROACH SLAB - LEFT LANE.
BR. 13. WEST APPROACH SLAB - LEFT LANE.
BR. 14. EAST APPROACH SLAB - RIGHT LANE.
BR. 15. WEST APPROACH SLAB - RIGHT LANE.
BR. 16. REINFORCEMENT SHEET 1 OF 3.
BR. 17. REINFORCEMENT SHEET 2 OF 3.
BR. 18. REINFORCEMENT SHEET 3 OF 3.

REFERENCE DRAWINGS

STANDARD SHEETS:

SCB-30-60
SCB-42-60
SCB-D-60
SB-SG-60
SB-20-60
SB-22-60

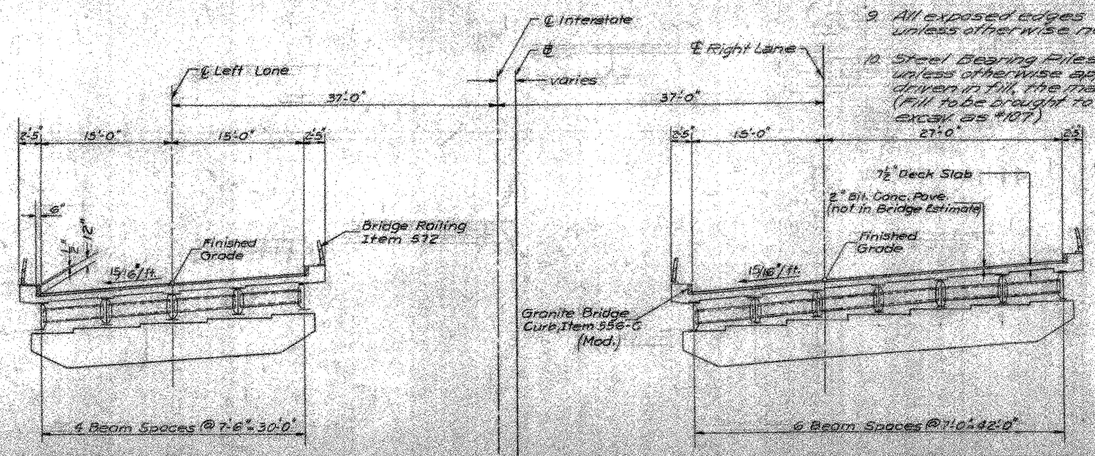
SUMMARY OF QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	TOTAL			FINAL
	107	Structure Excavation	C.Y.	~~435~~			320
	204	Sub-base of Crushed Rock, Mod., Ind. Structures	C.Y.	~~415~~			339
*	318	Tar Emulsion for Bridge Floors	gal.	1,027			
*	361-B	Bituminous Concrete Pavement, Mod.	ton	287			
*	372	Joint Sealer-Hot-Poured Elastic Type	l.f.	420			
	401-B	Concrete Class B, Mod.	C.Y.	~~1,240~~			1,902
	402	Reinforcing Steel	lb.	~~294,870~~			294,510
	403	Spiral Reinforcement (15,530*)	l.s.	1			1
	404-A	Structural Steel	lb.	~~745,000~~			744,956
	407	Asphaltic-Asbestos Coating	S.Y.	~~152~~			137
	501	Furnishing Equipment for Driving Piles	l.s.	1/3			1/3
	502-B	Treated Timber Piling	l.f.	~~5,040~~			5,113
	503	Splices for Steel Piling	ea.	~~48~~			2
	504	Steel Piling	l.f.	~~5,891~~			5,530
	556-C	Granite Bridge Curb, Mod.	l.f.	~~1,119~~			1,114
	572	Bridge Railing	l.f.	~~1,036~~			1,034

* These items are to be included in roadway summary of quantities

GENERAL NOTES:

1. Materials and Construction shall conform to State of Vermont Department of Highways Standard Specifications for Highway and Bridge Construction, dated 1956.
2. All design in accordance with AASHO Standard Specifications for Highway Bridges, dated 1957. Loading is H20-S16-44 truck as modified for National System of Interstate Highways.
3. Abutments shall be supported on 12 BP 53 Steel Bearing Piles:
   Item 504 Estimated length of piles:
   Lt. Lane E. Abut. = 60' Rt. Lane E. Abut. = 60'
   Lt. Lane W. Abut. = 65' Rt. Lane W. Abut. = 65'
4. Piers shall be supported on Treated Timber Piles Item 502-B.
   Estimated length of piles:
   Lt. Lane Pier #1 = 30' Rt. Lane Pier #1 = 30'
   Lt. Lane Pier #2 = 30' Rt. Lane Pier #2 = 30'
5. The final coat of field paint shall be green unless otherwise directed by the Engineer.
6. All dimensions given are measured horizontally or vertically unless otherwise noted or shown.
7. All dimensions given at 68°F.
8. All reinforcement to have a clear cover of 2" unless otherwise noted.
9. All exposed edges of concrete shall be chamfered 1" x 1" unless otherwise noted.
10. Steel Bearing Piles shall be driven to ledge rock or refusal unless otherwise approved by the Engineer. When piles are driven in fill, the material shall be Granular Borrow, Item 106-A (Fill to be brought to elev. at top of piles before driving - then excav. as per 107.)
11. Unless otherwise called for all beams shall be cambered as specified on SCB-D-60.
12. All expansion material shall be premoulded cork containing no bituminous or asphalt.



TYPICAL BRIDGE SECTION

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

RICHMOND
IM 089-2(38) - BR 56 N&S
This sheet for information only.
Sheet 31 of 43

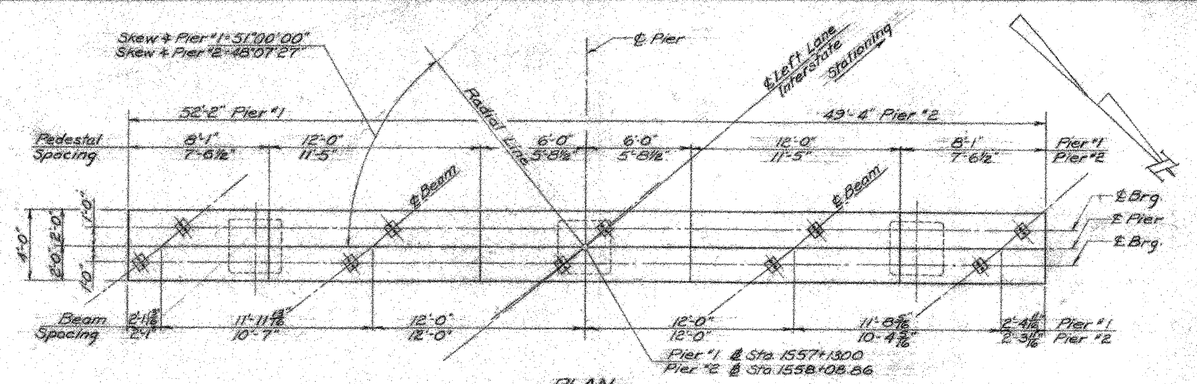
PRELIMINARY INFORMATION SHEET FOR BRIDGES

VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON - RICHMOND
INTERSTATE ROUTE 89

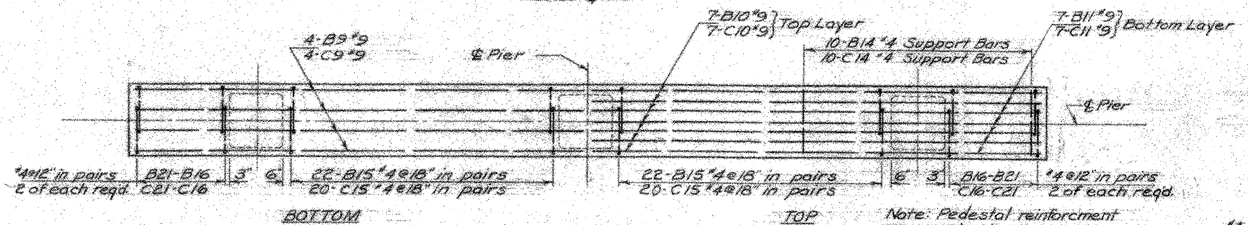
INTERSTATE BRIDGE OVER US-2
RICHMOND INTERCHANGE
PROFILES, SECTIONS AND QUANTITIES

McFARLAND - JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

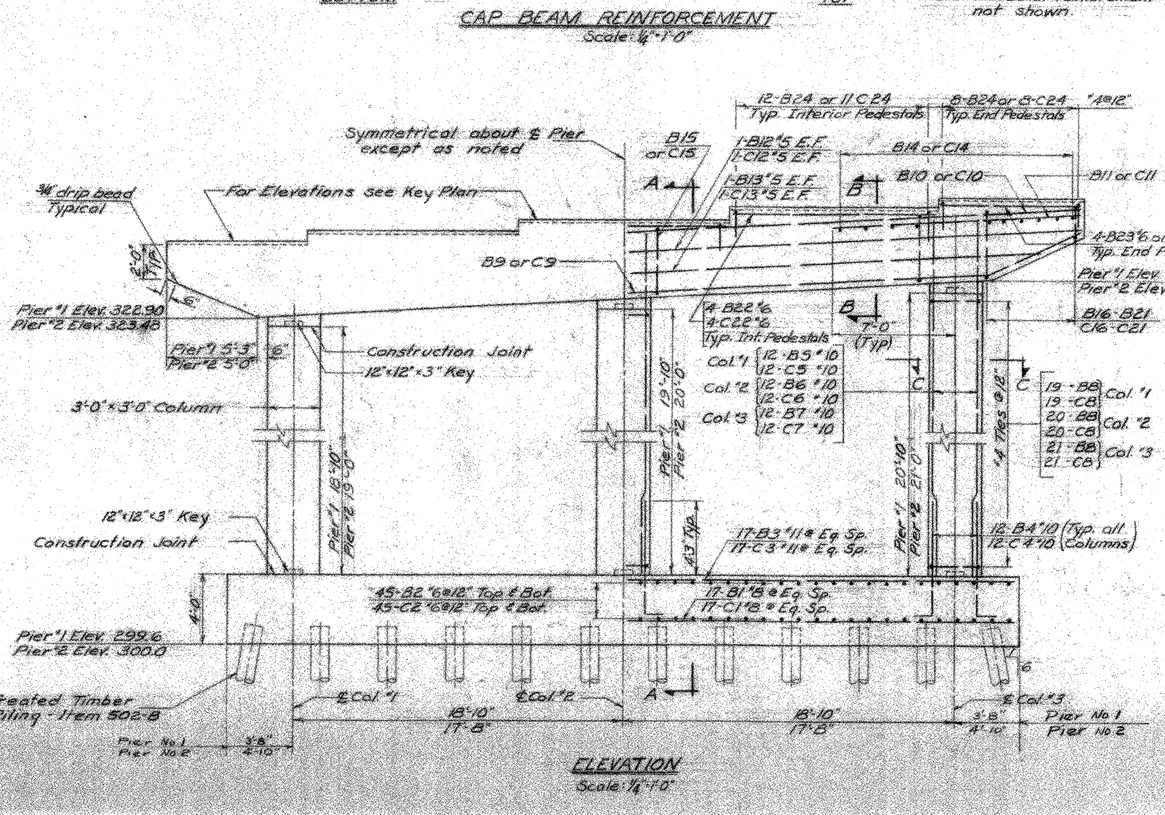
DESIGNED L.M. CHECKED H.E.B. DATE 2-25-60
DRAWN H.T. IN CHARGE H.E.B. SCALE As Noted
PROJECT NO. I 89-2(8) SH. 118 OF 261
CONTRACT NO. 4 BRIDGE SHEET 2 OF 18



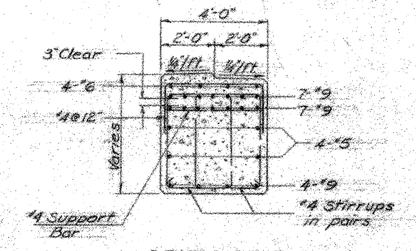
PLAN
Scale: ¼"=1'-0"



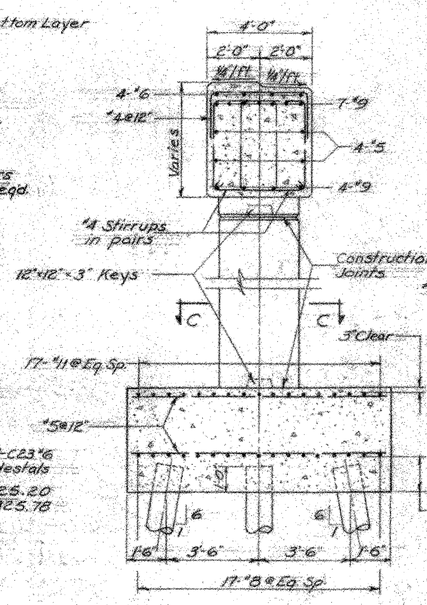
CAP BEAM REINFORCEMENT
Scale: ¼"=1'-0"



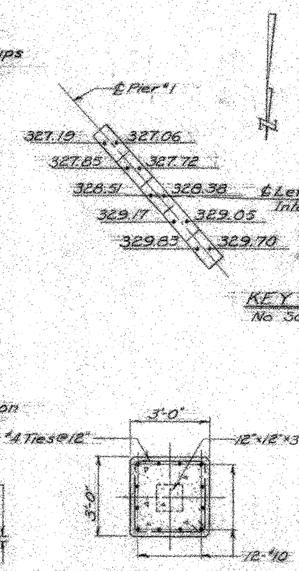
ELEVATION
Scale: ¼"=1'-0"



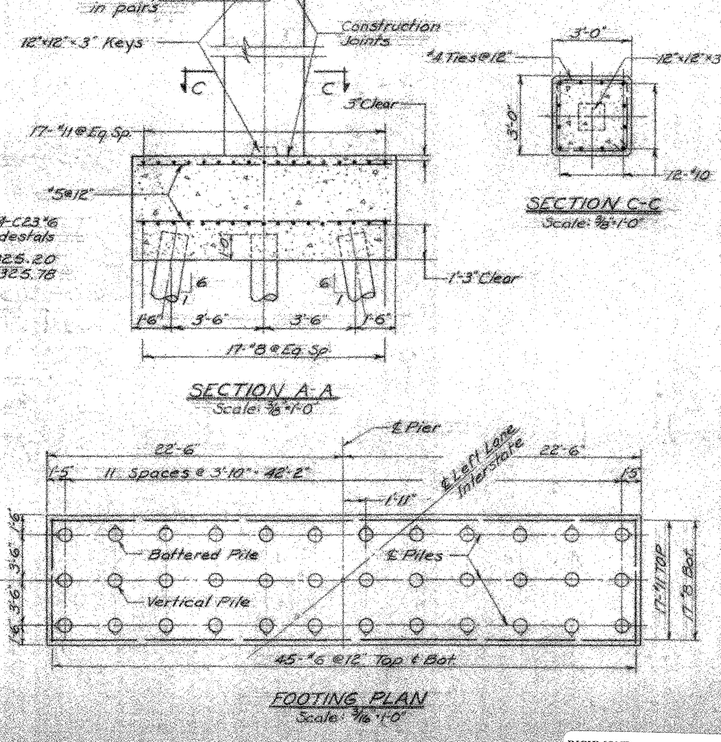
SECTION B-B
Scale: ⅜"=1'-0"



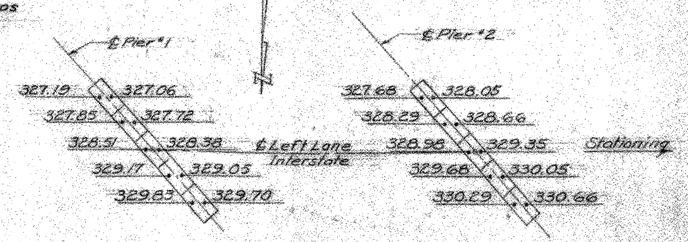
SECTION A-A
Scale: ⅜"=1'-0"



SECTION C-C
Scale: ⅜"=1'-0"



FOOTING PLAN
Scale: ⅜"=1'-0"



KEY PLAN
No Scale

ESTIMATED QUANTITIES

ITEM NO.	ITEM	PIER NO.	TOTAL	FINAL
107	Structure Excavation (cubic yards)	1	~~134~~	147
		2	~~42~~	32
401 B	Concrete Class B, Mod. (cubic yards)	1	119	119
		2	119	119
407	Asphaltic-Asbestos Coating (square yards)	1	~~22~~	23
		2	~~21~~	21
502 B	Treated Timber Piling (linear feet)	1	~~1080~~	1170
		2	~~1080~~	1081

NOTES

1. For General Notes see bridge sheet 2.
2. For beam angles see Framing Plan, bridge sheet 11.
3. Bridge seats to be sloped ½" per foot and coated with Asphaltic-Asbestos Coating, Item 407, (½" thick) after superstructure is in place.
4. For design purposes the maximum pile load does not exceed 20 tons.
5. For reinforcing bar schedule see bridge sheet 16.
6. Pier #1 reinforcing bar marks begin with letter "B". Pier #2 reinforcing bar marks begin with letter "C".
7. Estimated pile length = 30'

VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON – RICHMOND
INTERSTATE ROUTE 89
INTERSTATE BRIDGE OVER US-2
RICHMOND INTERCHANGE
PIERS
LEFT LANE

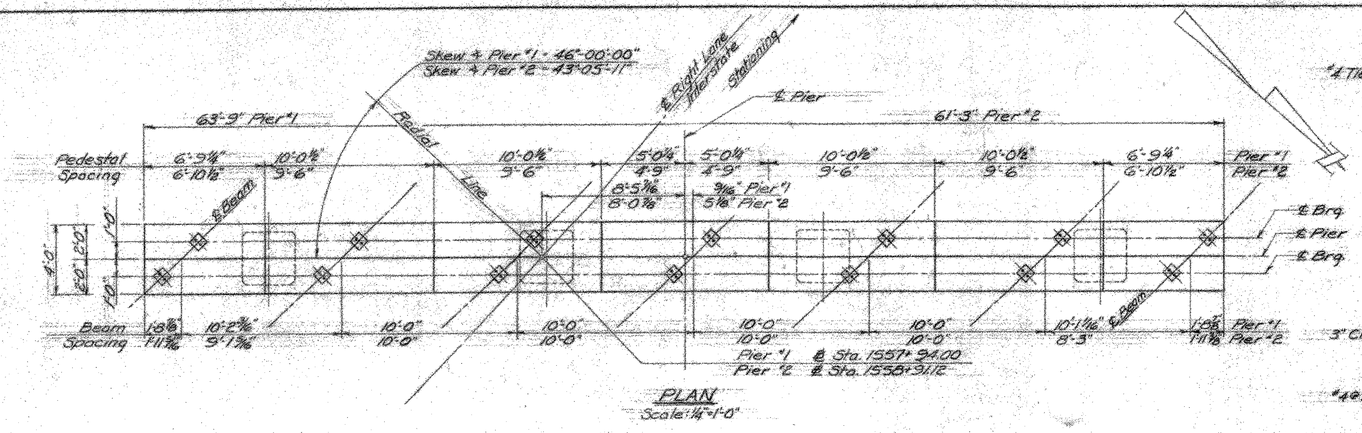
McFARLAND – JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

DESIGNED: HGC | CHECKED: LHS | DATE: 7-25-61
DRAWN: DAS | IN CHARGE: HGC | SCALE: AS SHOWN

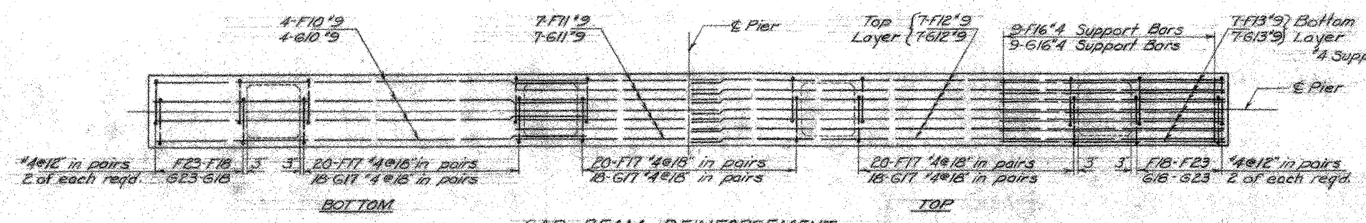
PROJECT NO. I 89-2(8) SH. 120 OF 120

CONTRACT NO. 4 BRIDGE SHEET 9 OF 18

RICHMOND
IM 089-2(38) - BR 56 N&S
This sheet for information only.
Sheet 32 of 43

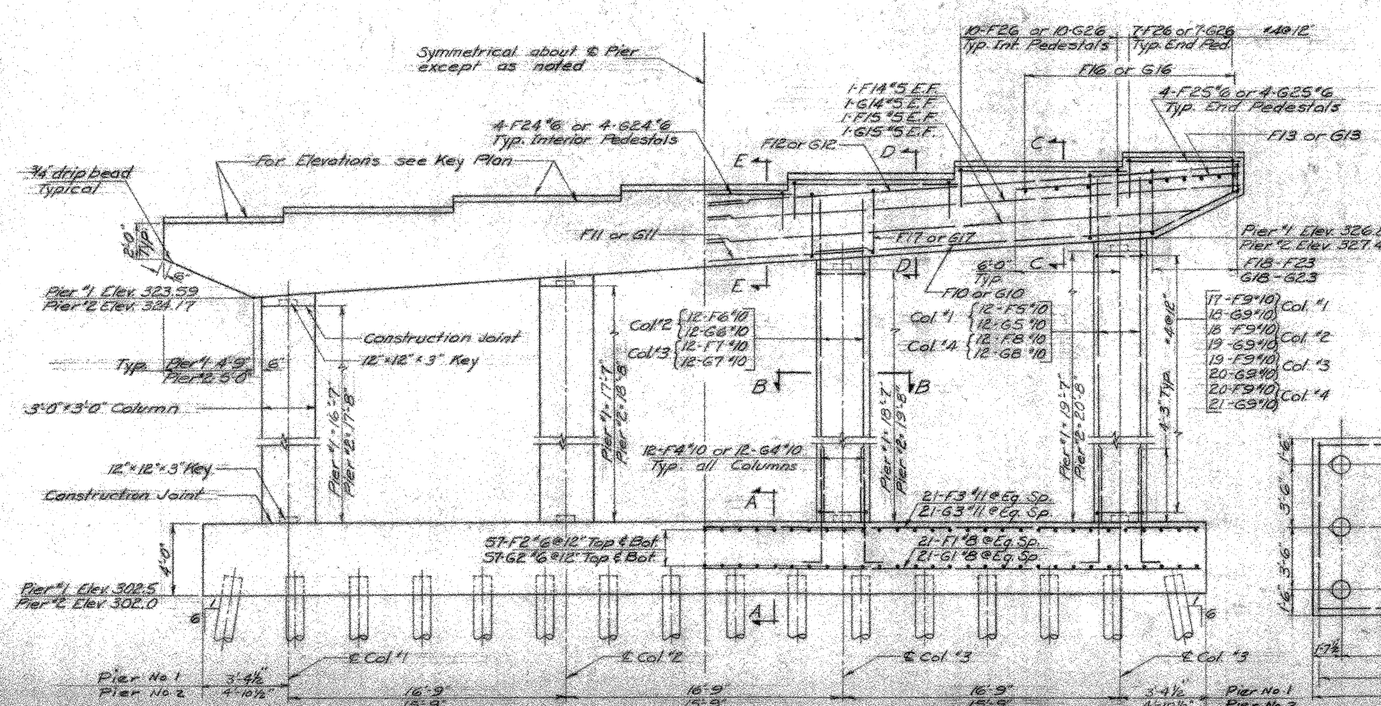


PLAN
Scale: ¼"-1'-0"

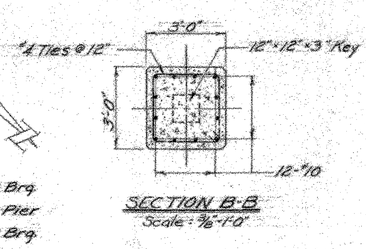


BOTTOM TOP

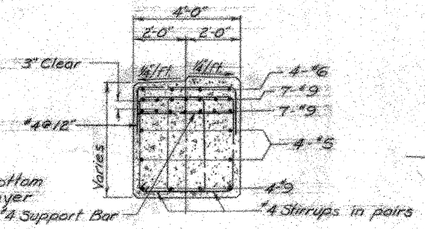
CAP BEAM REINFORCEMENT
Scale: ¼"-1'-0"



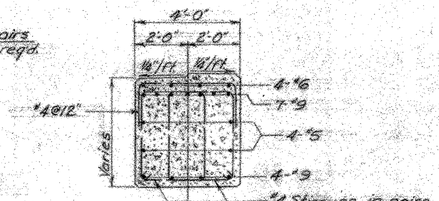
ELEVATION
Scale: ¼"-1'-0"



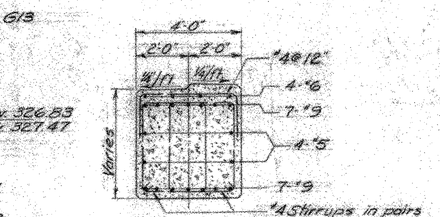
SECTION B-B
Scale: ⅜"-1'-0"



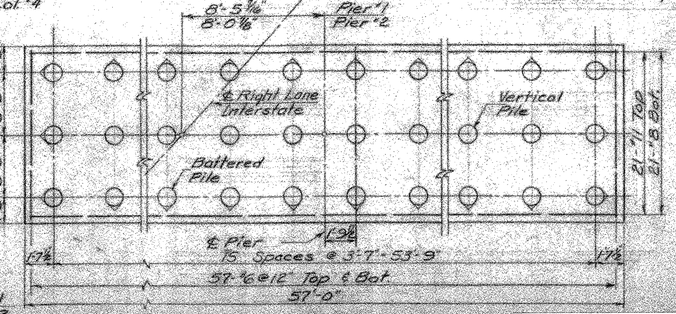
SECTION C-C
Scale: ⅜"-1'-0"



SECTION D-D
Scale: ⅜"-1'-0"



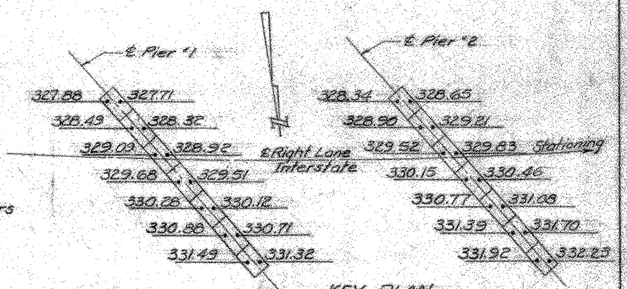
SECTION E-E
Scale: ⅜"-1'-0"



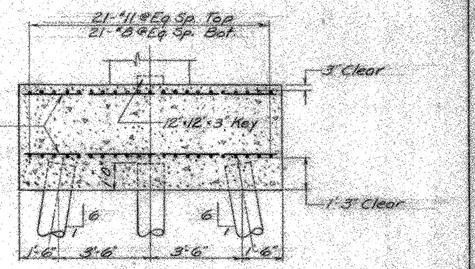
FOOTING PLAN
Scale: ¼"-1'-0"

ESTIMATED QUANTITIES

ITEM NO.	ITEM	PIER NO.	TOTAL		FINAL
107	Structure Excavation, (cubic yards)	1	~~88~~		95
		2	~~79~~		92
401.B	Concrete Class B Mod. (cubic yards)	1	149		149
		2	150		150
407	Asphaltic-Asbestos Coating (square yards)	1	~~27~~		30
		2	~~26~~		30
502.B	Treated Timber Piling (linear feet)	1	~~1440~~		1,544
		2	~~1440~~		1,548



KEY PLAN
No Scale



SECTION A-A
Scale: ⅜"-1'-0"

NOTES

1. For General Notes see bridge sheet 2.
2. For beam angles see Framing Plan, bridge sheet 11.
3. Bridge seats to be sloped ¼" per foot and coated with Asphaltic-Asbestos Coating, Item 407, (¼" thick) after superstructure is in place.
4. For design purposes the maximum pile load does not exceed 20 tons. Estimated pile length = 30'
5. For reinforcing bar schedule see bridge sheet 17.
6. Pier #1 reinforcing bar marks begin with letter "F".
7. Pier #2 reinforcing bar marks begin with letter "G".

VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON – RICHMOND
INTERSTATE ROUTE 89
INTERSTATE BRIDGE OVER US-2
RICHMOND INTERCHANGE
PIERS
RIGHT LANE

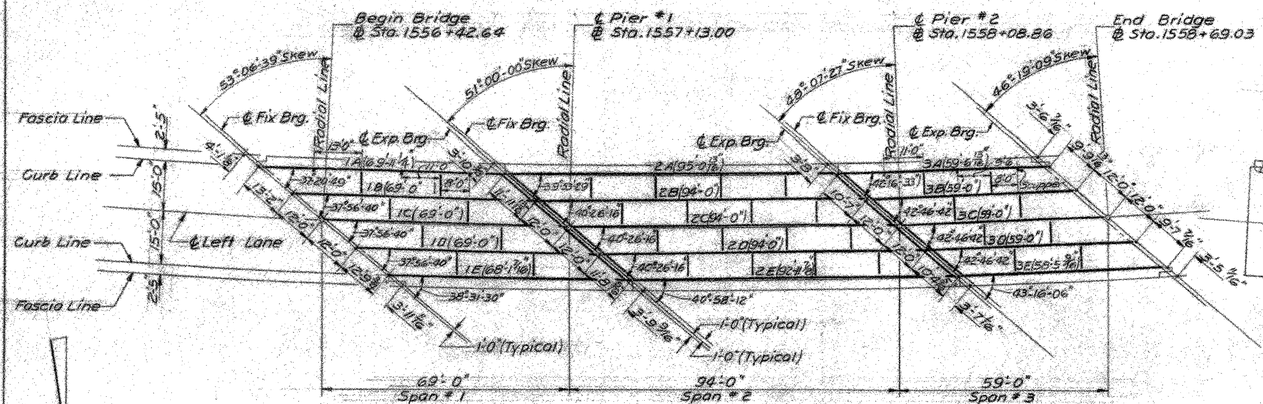
McFARLAND – JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

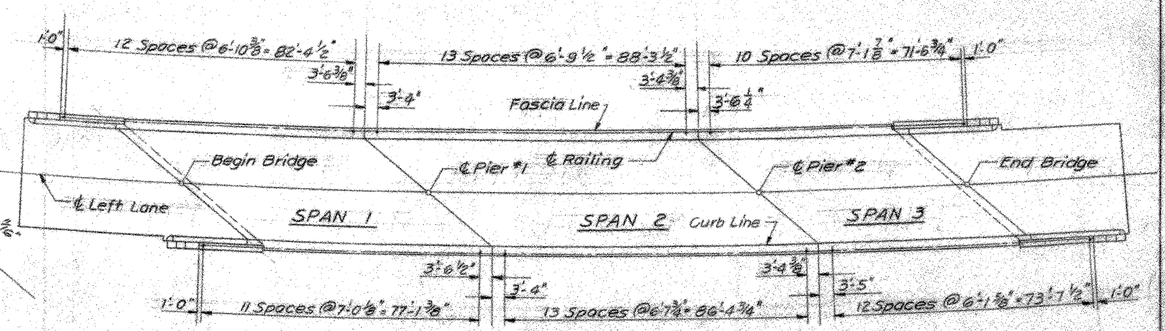
DESIGNED H.E.C. CHECKED L.H.S. DATE: 7-25-61
DRAWN: D.A.S. IN CHARGE: H.E.C. SCALE: #3 SHOWN

PROJECT NO. I 89-2(8) SH. 123 OF 261

CONTRACT NO. 4 BRIDGE SHEET 10 OF 18

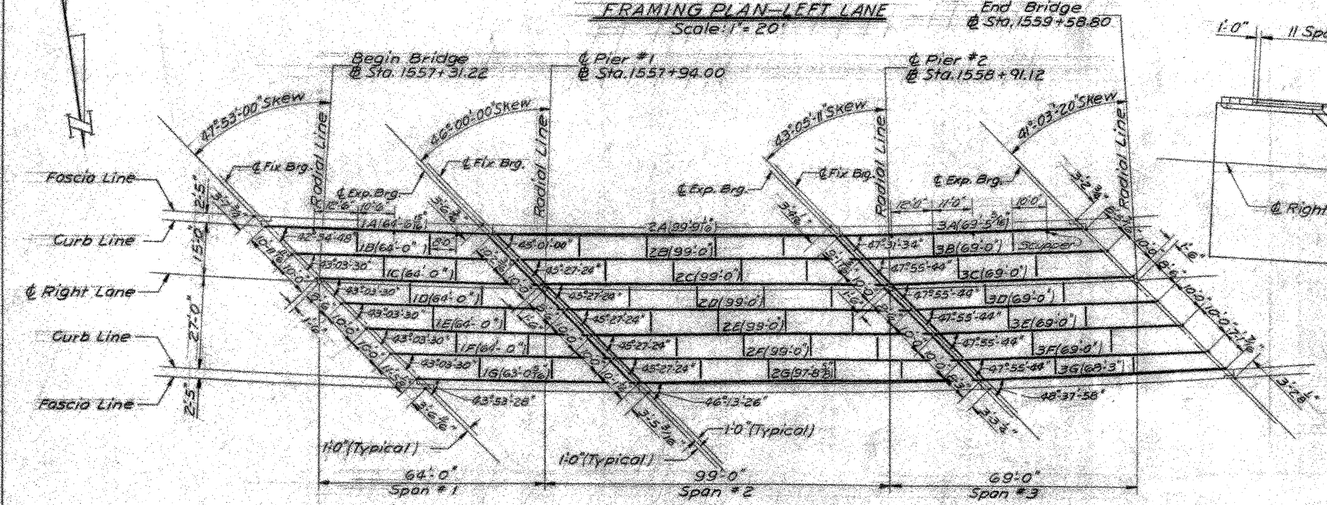
RICHMOND
IM 089-2(38) - BR 56 N&S
This sheet for information only.
Sheet 33 of 43

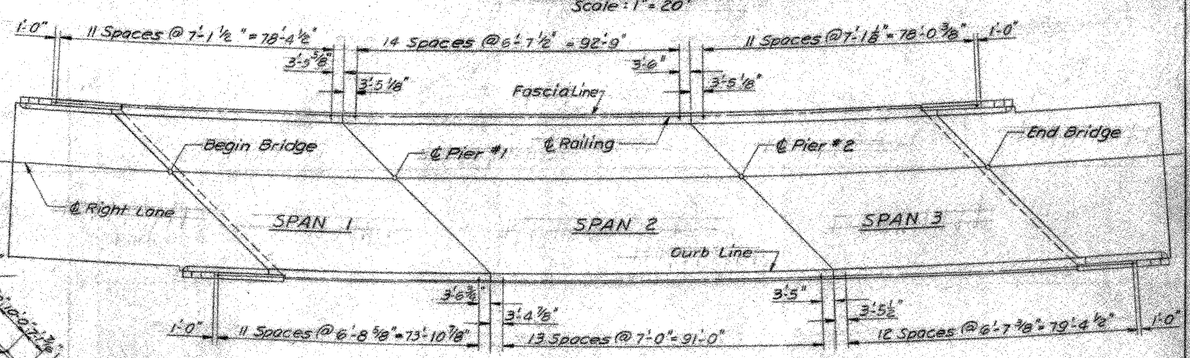




RAILING PLAN — LEFT LANE
Scale: 1" = 20'

FRAMING PLAN — LEFT LANE
Scale: 1" = 20'





RAILING PLAN — RIGHT LANE
Scale: 1" = 20'

Note:
See Standard Sheets
SCB-30-60, SCB-42-60, SCB-0-60,
SB-20-60, SB-50-60

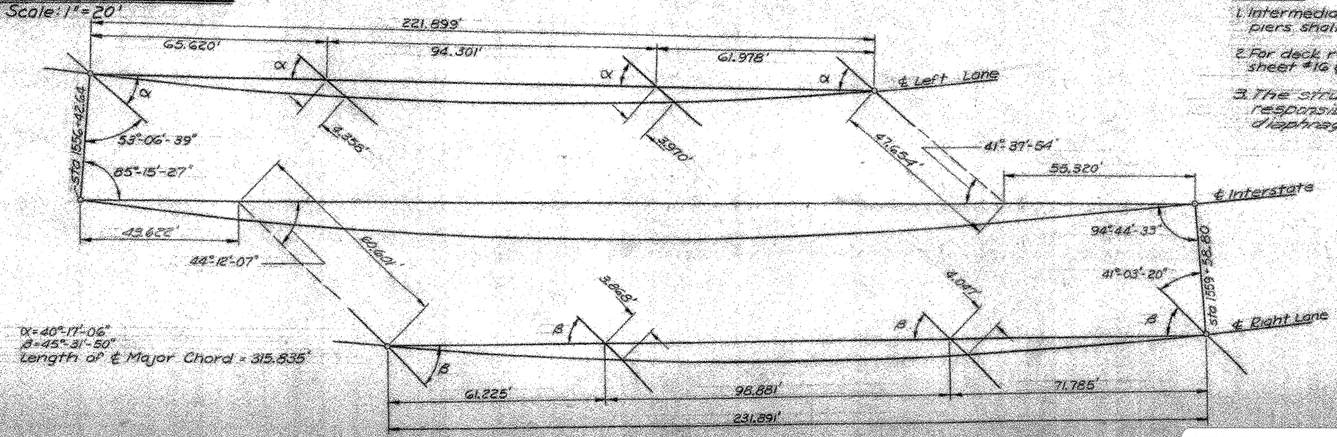
FRAMING PLAN — RIGHT LANE
Scale: 1" = 20'

NOTES:

1. Intermediate diaphragms and end diaphragms at piers shall be 18 C 42.7
2. For deck reinforcing bar schedule see bridge sheet #16 & #17
3. The structural steel fabricator shall be responsible for the location and length of steel diaphragms.



TIE TO BASELINE (no scale)



α = 40°-17'-06"
β = 45°-31'-50"
Length of ℄ Major Chord = 315.835'

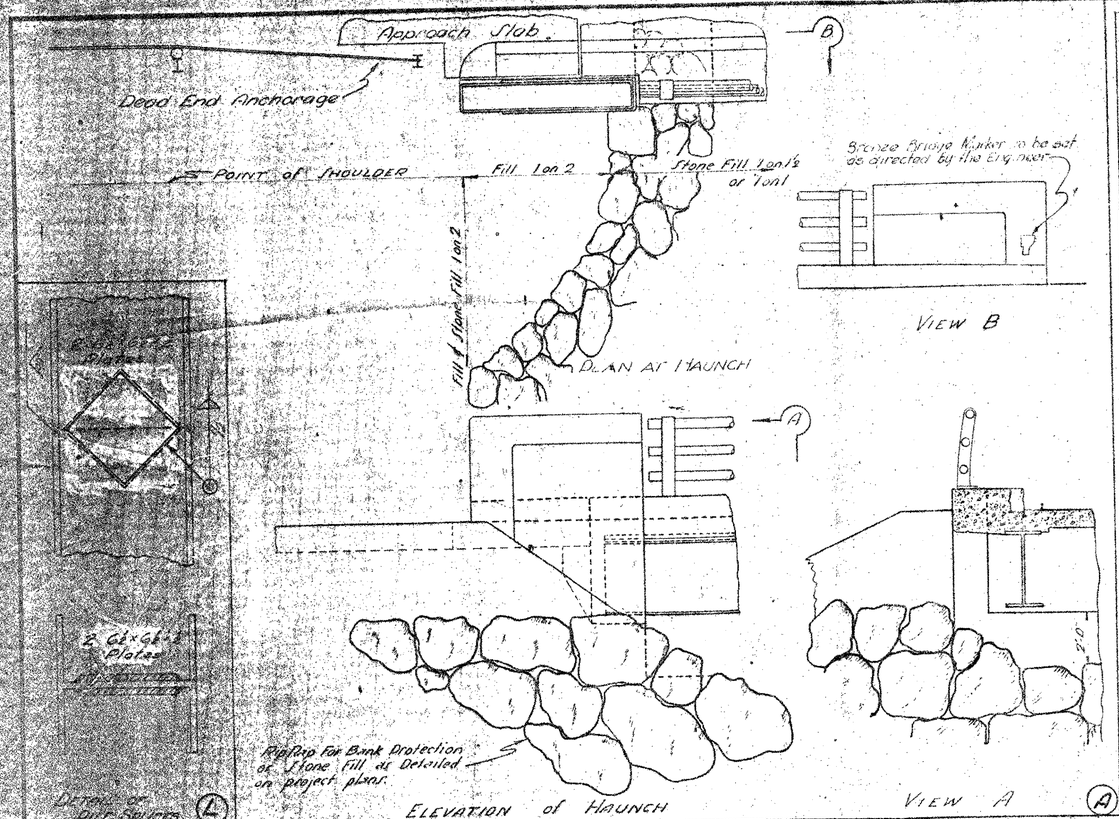
LAYOUT FROM MAJOR CHORD (no scale)

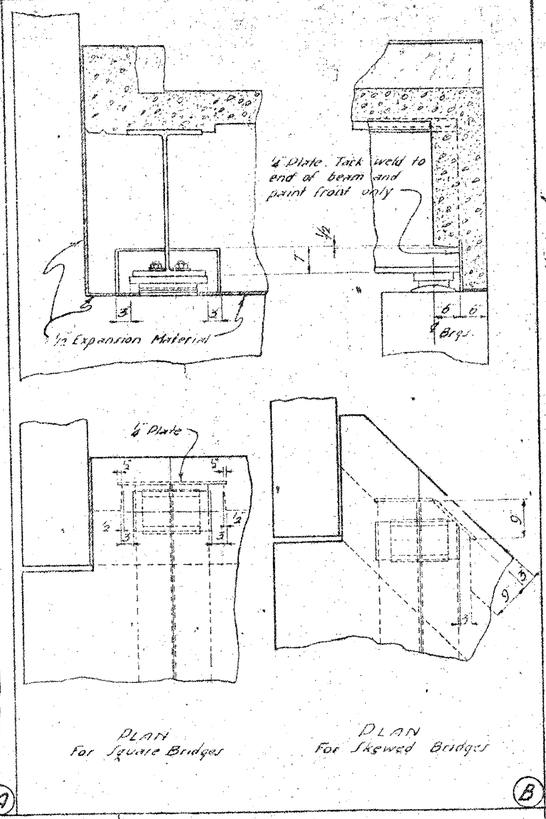
VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON - RICHMOND
INTERSTATE ROUTE 89
INTERSTATE BRIDGE OVER US-2
RICHMOND INTERCHANGE
FRAMING PLANS & RAILING PLANS
McFARLAND-JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

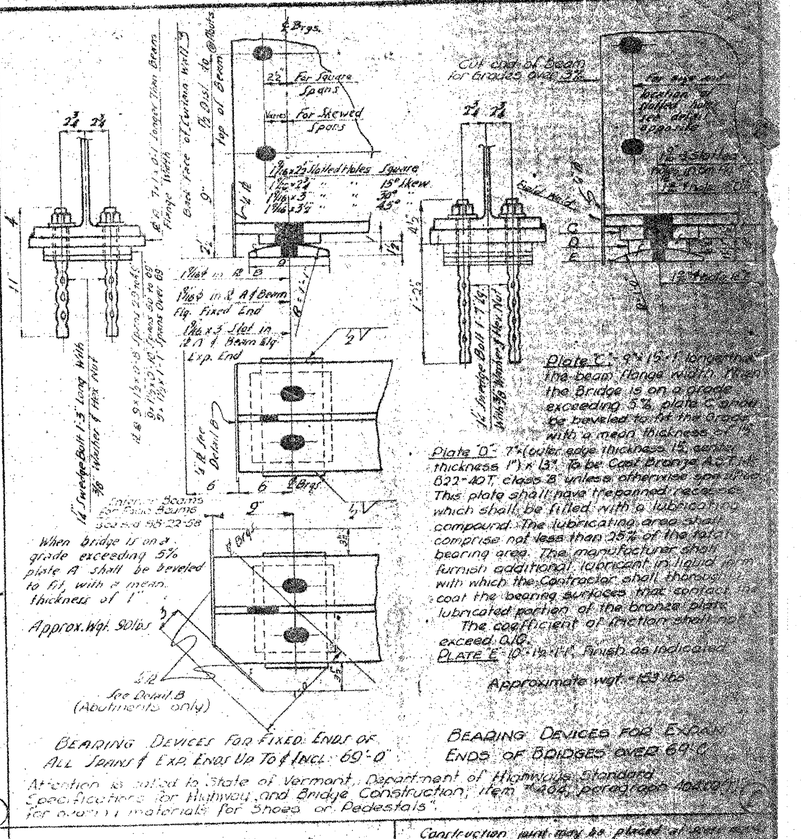
DESIGNED: L.H.S	CHECKED: R.A.S	DATE: 7-65-67	
DRAWN: H.H.T.	IN CHARGE: H.J.C.	SCALE: 1" = 20'	

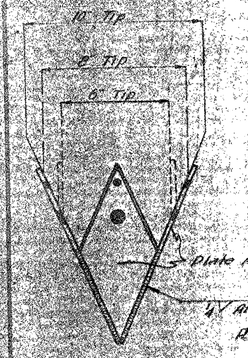
PROJECT NO. I 89-2(8) SH 123 OF 224
CONTRACT NO. 4 BRIDGE SHEET 11 OF 18

RICHMOND
IM 089-2(38) - BR 56 N&S
This sheet for information only.
Sheet 34 of 43

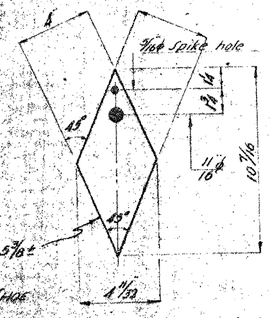






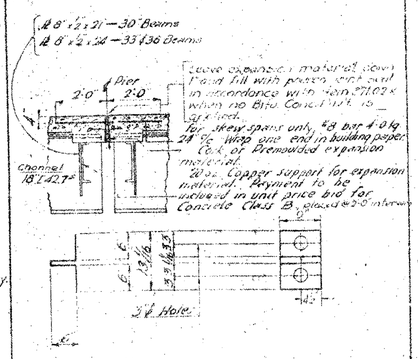


If jetting is necessary, two water jets should be used with a water pressure of at least 150 lbs/in². Pump to be piston type with a 6" diameter intake pipe and a 4" diameter outlet pipe. The jet pipe shall be about 2" diameter nozzle to be circular in section and ½" to ¾" in diameter.



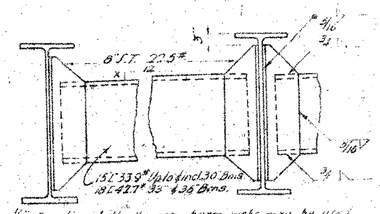
Unit price bid for Timber Piling shall include furnishing and setting of metal shoes for Timber Piling and jetting if necessary.

(D)



Detail of 20 oz. Copper Support of Piers

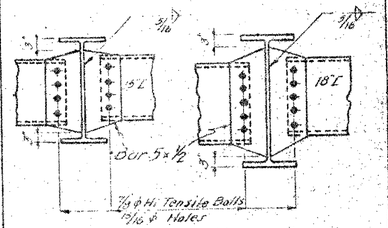
(E)



½" Erection bolts through Beam webs may be used for Spans 29'-0" through 43'-0" Use One Set Diaphragms
" " 44'-0" " 69'-0" " Two Sets
" " 70'-0" " 89'-0" " Three " "
" " 89'-0" " 99'-0" " Four " "

DETAIL OF WELDED DIAPHRAGMS

(F)



American Standard Heavy Round, Hardened Washer to be used under all heads and nuts.

ALTERNATE DESIGN RIVETED OR BOLTED DIAPHRAGMS

(G)

Construction joint may be placed at other points if convient. Care shall be taken to square joint in all exposed surfaces.



Horizontal scale marks to be placed at abutments, piers, culvert wings, etc. at intervals as shown or as directed by the Engineer.

DETAIL OF HORIZONTAL CONSTRUCTION JOINT AT ABUTMENTS



DETAIL 1 — DETAIL 2

Detail 1 or Detail 2 to be used as shown on Contract Plans.

DETAIL of VERTICAL EXPANSION JOINT

REVISIONS & CORRECTIONS
Slotted holes in beam web at piers deleted. Pile splice changed. 8-26-60

Drawn By L.M. Bjorn 2-36
Traced By A.A. MacDougal 2-36
Checked By L.E. Hubbard 2-36

Correct 13 July 1960
Chief Engineer

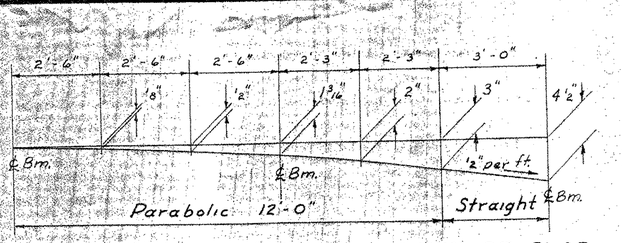
Approved 17 July 1960
By direction
Chief Engineer

CONSTRUCTION DETAILS FOR [illegible] BRIDGE

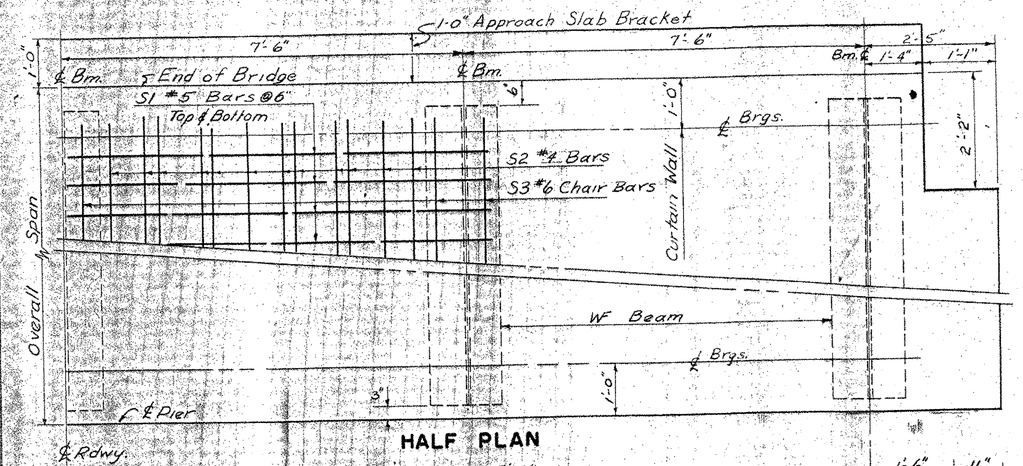
DEPARTMENT OF HIGHWAYS
STATE STRUCTURES

RICHMOND
IM 089(38) - BR 56 N&S
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Sheet 40 of 43

SB-20-60



DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB



TYPICAL HALF SECTION

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

Span, Out to Out	99'-0	94'-0	89'-0	84'-0	79'-0	74'-0	69'-0	64'-0	59'-0	54'-0	49'-0	44'-0	39'-0	34'-0
Span, ℄ to ℄ Brngs.	97'-0	92'-0	87'-0	82'-0	77'-0	72'-0	67'-0	62'-0	57'-0	52'-0	47'-0	42'-0	37'-0	32'-0
Length of Bms.	98'-0	93'-0	88'-0	83'-0	78'-0	73'-0	68'-0	63'-0	58'-0	53'-0	48'-0	43'-0	38'-0	33'-0
Size WF Beam	36WF300	36WF300	36WF300	36WF245	36WF194	36WF170	36WF160	36WF150	36WF150	36WF150	36WF150	36WF150	33WF130	30WF116
Lgth. & Size Bot. Cover Pl.	66'-9" lg. 18" x 1⅝"	59'-8" lg. 18" x 1"	52'-8" lg. 14" x 1"	51'-10" lg. 14" x 1"	54'-0" lg. 14" x 1⅛"	51'-9" lg. 14" x 1"	46'-3" lg. 13" x ⅞"	39'-6" lg. 10" x ⅞"	32'-6" lg. 10" x ½"	23'-0" lg. 9" x 5/16"	—	—	—	—
" " " Top " "	63'-6" lg. 12" x ⅞"	—	—	—	—	—	—	—	—	—	—	—	—	—
Dead Load Deflection	3"	2¾"	2⅜"	2¼	1⅞"	1½"	1¼"	1"	⅞"	⅝"	½"	⅜"	¼"	¼"
Dia. of Spiral Bars	←	←	←	←	←	←	⅝"	←	←	←	←	"	"	"
Mean Dia. of Spiral	←	←	←	←	←	←	6"	←	←	←	←	"	"	"
Spiral Pitch 0'-10" from Brng.	Double @ 5½	Double @ 5½	Double @ 6"	Double @ 5½	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5½	Double @ 5½	Double @ 5½	"	"	"
" " 10'-20' or ℄ Span	Double @ 6½	Double @ 6½	Double @ 7"	Double @ 6½	Double @ 6"	Double @ 6½	Double @ 6½	Double @ 6½	Double @ 7"	Double @ 7½	Double @ 8"	"	"	"
" " 20'-30' or ℄ Span	4½"	4"	4½"	4"	4½"	4½"	4½"	5"	5½"	6"	6½"	"	"	"
" " 30'-40' or ℄ Span	5½"	5½"	5½"	5½"	6"	6"	7"	7½"	—	—	—	"	"	"
" " 40'-℄ Span	7"	7"	8"	8"	—	—	—	—	—	—	—	"	"	"
Length of ¾" ϕ Studs (Alternate to Spirals)	(2 Studs required per pitch. 6½ long unless otherwise specified on the plans)											Non Composite		
Tot. Struct. Steel (1 span) (Lbs.)	192,860	169,900	156,410	123,370	99,000	82,950	69,500	59,080	52,070	46,560	41,610	37,780	28,150	22,190
Reinforcing Bars ~ S1	396	376	356	336	316	296	276	256	236	216	196	176	156	136
" " ~ S2	192	192	192	192	192	192	192	128	128	128	128	128	128	64
" " ~ S3	30	30	30	30	30	30	30	20	20	20	20	20	20	10
" " ~ S4	128	120	114	108	100	94	88	80	74	68	60	54	48	40
" " ~ S5	16	16	16	16	16	16	16	16	16	16	16	16	16	16
" " ~ S6A	52	52	52	52	52	52	52	52	52	52	52	52	52	52
" " ~ S7	44	44	44	44	44	44	44	44	44	44	44	44	44	44
Tot. Weight - Reinf. Bars (Lbs.)	21,370	20,530	19,320	18,480	17,450	16,440	15,400	14,220	13,190	12,170	11,140	10,120	9,070	7,900
Approx. Wt Spiral Reinf. (Lbs.)	2,550	2,520	2,280	2,370	2,320	2,190	2,090	1,960	1690	1550	1430	Non Composite		
Tot Cu Yds. Conc. Class B (Mod) (Cu yds)	116	111	106	101	95	90	85	79	73	68	63	58	51	45
Tot. Wt Bitum. Conc. Pavt. (Mod.) (Tons)	42	40	38	36	34	32	29	27	25	23	21	19	17	15
Tar Emulsion for Bridge Floors (Gals.)	132	125	119	112	105	99	92	85	79	72	65	59	52	45
Approx. Quantity ¾" x 6½" Studs	3000	2900	2600	2700	2700	2500	2400	2250	1990	1810	1660	Non Composite		

REINFORCING STEEL SCHEDULE

S1 - #5 34'-4" Straight | S5 - #5 32'-2" Straight

Span	S2 - #4 Str. Length	S3 - #6 Str. Length	S6A - #4 B & D	S6A - #4 Total Length
34	33'-6"	33'-6"	2'-6"	6'-6"
39	20'-3"	20'-6"	2'-9"	7'-0"
44	22'-9"	23'-0"	3'-0"	7'-6"
49	25'-3"	25'-6"	3'-0"	7'-6"
54	27'-9"	28'-0"	3'-0"	7'-6"
59	30'-3"	30'-6"	3'-0"	7'-6"
64	32'-9"	33'-0"	3'-0"	7'-6"
69	24'-3"	24'-6"	3'-2"	7'-10"
74	26'-0"	26'-3"	3'-2"	7'-10"
79	27'-6"	28'-0"	3'-3"	8'-0"
84	29'-3"	29'-6"	3'-3"	8'-0"
89	31'-0"	31'-3"	3'-3"	8'-0"
94	32'-6"	33'-0"	3'-4"	8'-2"
99	34'-3"	34'-6"	3'-4"	8'-2"

S4 - #4: T.L. = 5'-3", B = 1'-6", D = 1'-6", C = 1'-5", H = 3", A = 5", G = 5"

S6A - #4: T.L. Varies, A = 5", G = 5", H = 3", B, D, C = 8"

S7 - #6: T.L. = 3'-0", B = 1'-8", J = 6", A = 8", G = 8"

S6P - #5: T.L. = 4'-2", B = 2'-6", C = 8", D = 1'-0"

Revisions & Corrections
Reused July 1960

Drawn By: R.S.H. June 1960
Traced By: R.S.H. June 1960
Checked By: R.T.B. & R.S.H. July 1960
Correct: 13 July 1960
Bridge Engineer
Approved: 13 July 1960
Chief Engineer

TYPICAL SECTION, PLAN VIEW, & QUANTITIES 30 FOOT ROADWAY WF BEAM BRIDGES

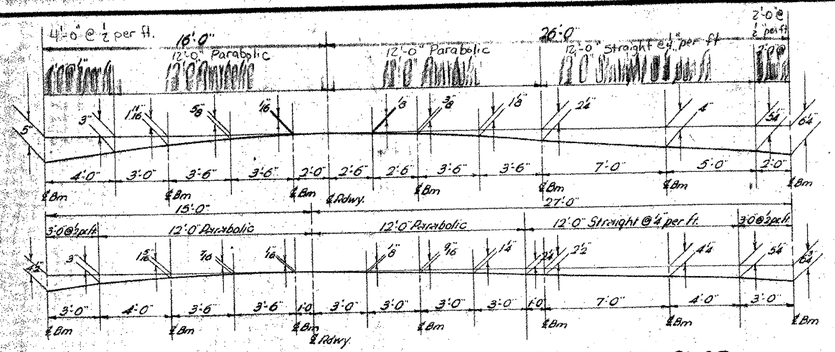
34-44 NON COMPOSITE, 49-99 COMPOSITE

FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-60

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-30-60

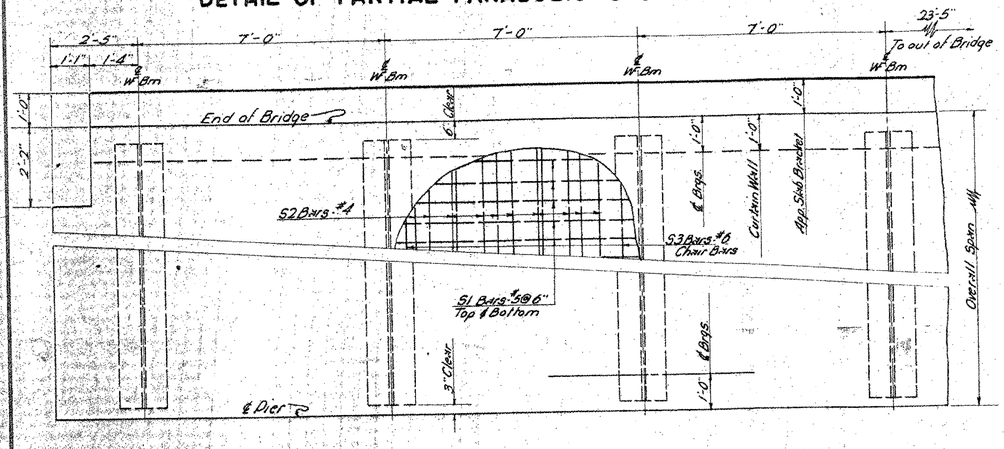
RICHMOND
IM 089(38) - BR 56 N&S
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Sheet 41 of 43



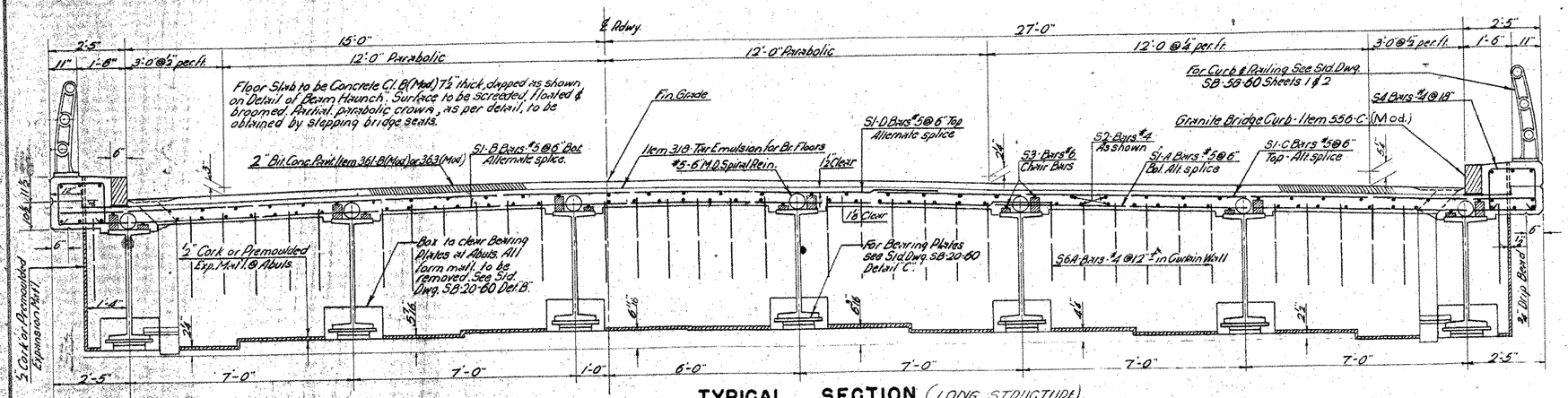
SHORT STRUCTURE

LONG STRUCTURE

DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB



PARTIAL PLAN



TYPICAL SECTION (LONG STRUCTURE)

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

Span - Out to Out	99'-0"	94'-0"	89'-0"	84'-0"	79'-0"	74'-0"	69'-0"	64'-0"	59'-0"	54'-0"	49'-0"	44'-0"	39'-0"	34'-0"
Span - ℄ to ℄ Bearings	97'-0"	92'-0"	87'-0"	82'-0"	77'-0"	72'-0"	67'-0"	62'-0"	57'-0"	52'-0"	47'-0"	42'-0"	37'-0"	32'-0"
Length of Beams	98'-0"	93'-0"	88'-0"	83'-0"	78'-0"	73'-0"	68'-0"	63'-0"	58'-0"	53'-0"	48'-0"	43'-0"	38'-0"	33'-0"
Size WF Beams	36WF300	36WF300	36WF300	36WF245	36WF194	36WF170	36WF160	36WF150	36WF150	36WF150	36WF150	36WF150	33WF130	30WF116
Lgth. & Size Bot. Cover Pl.	66'-9" Lg. 18"x1⅛"	59'-8" Lg. 18"x1"	53'-8" Lg. 14"x1"	51'-10" Lg. 14"x1"	52'-0" Lg. 14"x⅞"	50'-9" Lg. 14"x1"	49'-3" Lg. 13"x⅞"	39'-6" Lg. 10"x⅞"	32'-8" Lg. 10"x⅝"	23'-0" Lg. 9"x⅝"	—	—	—	—
Lgth. & Size Top Cover Pl.	63'-6" Lg. 12"x⅝"	←	←	←	←	←	None	←	←	←	←	—	—	—
Dead Load Deflection	3"	2¾"	2⅝"	2¼"	1⅞"	1⅝"	1¼"	1"	⅞"	⅝"	½"	⅜"	¼"	¼"
Diameter of Spiral Bars	←	←	←	←	←	←	⅝"	←	←	←	←	Non Composite		
Mean Diameter of Spiral	←	←	←	←	←	←	6"	←	←	←	←	" "		
Spiral Pitch 0'-10" From Brng.	Double @ 5½"	Double @ 5½"	Double @ 6"	Double @ 5½"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5½"	Double @ 5½"	Double @ 5½"	Non Composite		
" " 10'-20' or ℄ Span	Double @ 6½"	Double @ 6½"	Double @ 7"	Double @ 6½"	Double @ 6"	Double @ 6½"	Double @ 6½"	Double @ 6½"	Double @ 7"	Double @ 7½"	Double @ 8"	" "		
" " 20'-30' " "	4½"	4"	4½"	4"	4½"	4½"	4½"	5"	5½"	6"	6½"	" "		
" " 30'-40' " "	5½"	5½"	5½"	5½"	6"	6"	7"	7½"	—	—	—	" "		
" " 40'-℄ Span	7"	7"	8"	8"	—	—	—	—	—	—	—	" "		
Lgth. of ¾"ø Studs (Alt. to Spirals)	←	←	6½" Long unless otherwise specified on the Plans. 2 Studs required per Pitch.									" "		
Total Struct. Steel (1 Span) (lbs)	269,740	237,590	218,700	172,520	138,420	115,910	97,140	82,550	72,740	65,010	58,080	52,730	39,290	30,930
Reinforcing Bars - S1-A	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S1-B	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S1-C	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S1-D	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S2	264	264	264	264	264	264	264	176	176	176	176	176	176	88
" " S3	42	42	42	42	42	42	42	28	28	28	28	28	28	14
" " S4	128	122	114	108	102	94	88	82	74	68	62	54	48	42
" " S5	32	32	32	32	32	32	32	32	32	32	32	32	32	32
" " S6A	76	76	76	76	76	76	76	76	76	76	76	76	76	76
" " S7	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Total Weight Reinf. Bars (lbs)	30,140	28,710	27,290	25,840	24,400	22,980	21,530	19,900	18,460	17,030	15,600	14,160	12,710	11,080
Approx. Weight Spiral Reinf. (lbs)	3,570	3,530	3,180	3,310	3,250	3,070	2,920	2,740	2,600	2,360	2,170	Non Composite		
Total Concrete Class B (Cu yds)	151	144	137	131	124	117	110	103	95	89	82	75	67	59
Total Weight Bitum. Conc. Anvil (Tons)	59	56	53	50	47	44	41	38	35	32	29	26	23	20
Tar Emulsion for Bridge Floors (Gals)	185	176	166	157	148	138	129	120	110	101	92	82	73	64
Approx. Quantity ¾" x 6½" Studs	4,150	4,050	3,650	3,800	3,750	3,500	3,300	3,100	3,000	2,700	2,500	Non Composite		

REINFORCING STEEL SCHEDULE

S1-A #5	17'-3"	Straight	S1-B #5 31'-3" Straight
S1-C #5	20'-9"	Straight	S1-D #5 27'-9" Straight
S5 #5	23'-3"	Straight	

Span	S2-#4 Straight Length	S3-#6 Straight Length	S6A-#4 B & D	S6A-#4 Total Length	S4-#4	S6A-#4
34	33'-6"	33'-6"	2'-6"	6'-6"	T.L. = 5'-3" B = 1'-6" D = 1'-6" C = 1'-5"	T.L. Varies A-S G-S
39	20'-3"	20'-6"	2'-9"	7'-0"		
44	22'-9"	23'-0"	3'-0"	7'-6"		
49	25'-3"	25'-6"	3'-0"	7'-6"		
54	27'-9"	28'-0"	3'-0"	7'-6"		
59	30'-3"	30'-6"	3'-0"	7'-6"		
64	32'-9"	33'-0"	3'-0"	7'-6"		
69	24'-3"	24'-6"	3'-2"	7'-10"		
74	26'-0"	26'-3"	3'-2"	7'-10"	S7 = #6	S6D = #5
79	27'-6"	28'-0"	3'-3"	8'-0"	T.L. = 3'-0" B = 1'-8" J = 6" A = 8" G = 8"	T.L. = 4'-2" A = 2'-6" C = 1'-0" D = 1'-0"
84	29'-3"	29'-6"	3'-3"	8'-0"		
89	31'-0"	31'-3"	3'-3"	8'-0"		
94	32'-6"	33'-0"	3'-4"	8'-2"		
99	34'-3"	34'-6"	3'-4"	8'-2"		

Revisions & Corrections
Revised July 1962

Drawn By: A.B.M. 6-17-60
Traced By: A.B.M. 6-17-60
Checked By: R.T.B. & R.S.H. July 1960
Correct: 13 July 1960
Bridge Engineer
Approved: 13 July 1960
Chief Engineer

TYPICAL SECTION, PLAN VIEW, & QUANTITIES
42 FOOT ROADWAY WF BEAM BRIDGES

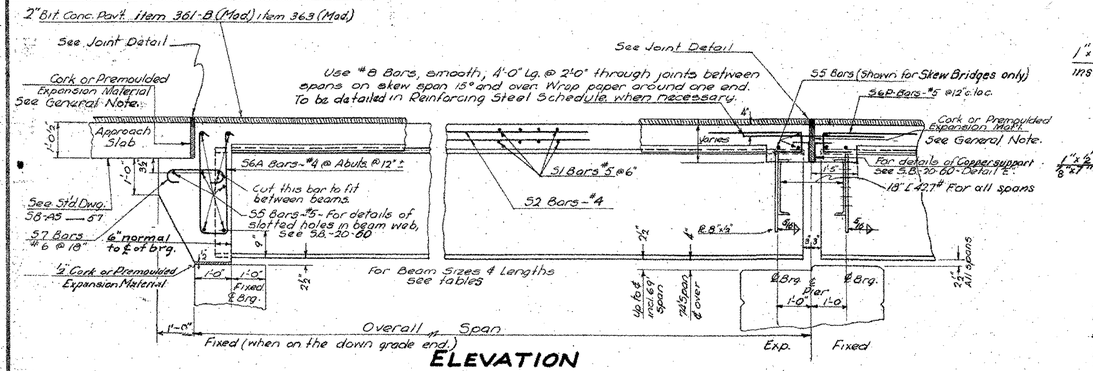
34-44 NON COMPOSITE, 49-99 COMPOSITE

FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-60

RICHMOND
IM 089(38) - BR 56 N&S
This sheet for information only.
Sheet 42 of 43

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-42-60



GENERAL NOTES

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

Quantities given in accompanying standards are for a single span, square bridge. These are net quantities.

For skewed bridges:- transverse bars shall be furnished as for square spans; bars shall be cut in the field to fit skewed end and cut-off bars used at opposite end of span; the 55 bars shall be lengthened and the number of 56A and 57 bars increased; the 56P bars are to be used at piers only; increase the beam lengths as indicated on this sheet and S.B.-22-60; for variation in treatment of cut-off for interior and exterior beams see details on this sheet and standard S.B.-22-60.

All materials and construction shall conform to the State of Vermont, Department of Highways, Standard Specifications for Highway & Bridge Construction, dated January 1956, and the A.A.S.H.O. specifications date 1961. Design is for H20-S16-44 loading modified for National System of Interstate Highways, applied in accordance with the provisions of the A.A.S.H.O. Standard Specifications Article 1.2.8.

For location of fixed and expansion bearings, see the Contract Plans. In general the fixed end bearing device is on the down grade end of the span. For details of bearing devices, see standard S.B.-20-60, detail 'C'.

Intermediate diaphragms shall be 15"[-33.9# for 30' beams and 18"[-42.7# for 33' and 36' beams. On skewed spans, the diaphragms shall be spaced at equal intervals between adjacent beams. For details of diaphragms, see standard S.B.-20-60 detail 'F' or 'G'.

The welding of cover plates shall be done in such a manner that no internal stresses are introduced into the beam flanges. When a cover plate is wider than a beam flange, the weld is to be omitted one inch (1") either side of the intersection of the cover plate and the edge of the beam flange. All welds on cover plates shall be continuous fillets of size noted.

Scuppers are to be omitted over roadways and sidewalks under a bridge; place the scuppers a minimum of 2'-0" outside of shoulder or back of sidewalk, but not within 4'-0" of face of Abutment or Pier. On Superelevated bridges, scuppers are placed on the low side only. Payment for scuppers shall be under item #401-Steel.

All exposed edges of concrete shall be chamfered 1"×1" unless otherwise indicated on the plans.

All construction joints to be made as indicated on standard S.B.-20-60, details 'H' & 'K' unless otherwise noted.

Details of shear connectors shall be submitted to the State for approval. Either channel or stud connectors may be substituted for the designed spiral steel. The studs shall be substituted on the basis of two (2) ¾" studs for each pitch of a ⅝" spiral, or on the basis of two (2) ⅞ studs to 1½ times the pitch of a ⅜" spiral.

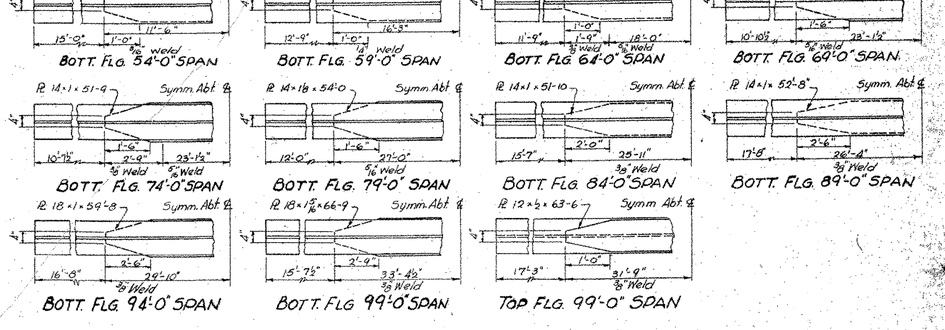
Abutments (fixed end) use ½ expansion material. Abutments (expansion end) & piers, for temperatures less than 60°F, use 1" thick expansion material, & for temperatures over 60°F, use ½ thick expansion material.

Expansion material to be as noted on this sheet or as indicated on SB-20-60

After the superstructure steel has been erected, beam profiles shall be taken under the direction of the engineer to determine the final grade.

Unless otherwise called for, beams shall be cambered to the minimum camber likely to remain permanent as indicated in the A.I.S.C. Handbook. The camber shall approximate a simple regular curve from end to end of beam. Tolerances in camber shall be as indicated in the A.I.S.C. Handbook.

All Structural Steel shall meet ASTM Designation: A 36-60 T unless specified otherwise.



Revisions & Corrections
Corrected for latest details April 1962

Drawn By: H.W.S. June 1960
Traced By: H.W.S. June 1960
Checked By: R.T.B. & R.S.H. June 1960
Correct: 13 July 1960
Bridge Engineer
Approved: 13 July 1960
Chief Engineer

DETAILS OF WF BEAM BRIDGES 34' TO 44' NON COMPOSITE ~ 49' TO 99' COMPOSITE

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

RICHMOND
IM 089(38) - BR 56 N&S
This sheet for information only.
Sheet 43 of 43

SCB-D-60

OK. ROM July 1962

State of Vermont
Agency of Transportation
1 National Life Drive
Drawer 33
Montpelier, Vermont
05633-5001

VTrans *Working to Get You There*

STRUCTURES SECTION
Phone: (802) 828-2621 – FAX (802) 828-3566

August 1, 2006

COSMEC, INC
70 South Street, P O Box 390,
Walpole, MA 02081

REF: VTrans – Project: Richmond IM 089-2(38)
General Contractor: Whitcomb Construction Corp.

Project Name: Richmond **Project #:** IM 089-2(38)

Structure Identification: Bridges 56 N&S

The following Preformed Fabric Bearing details [Item #, 531 10, "BERAING DEVICE ASSEMBLY (FABRIC)] for the above project (Vendor's Job # 60619) transmitted with your letter dated 7/25/2006 have been reviewed and are being returned herewith.

"Sheets 4846 **is approved as noted"**

"Sheets: 4847, 4848, 4849, Weld Procedure Specifications , and Bond Procedures **are approved. "**

You must provide written notice to the Vermont Agency of Transportation, Structures Section office as to the date fabrication represented by these drawing will begin **This notice must be received at least seven days prior to that date, as per specification 506 03 Any material fabricated prior to the notification date is subject to rejection without further cause**

If you or Whitcomb Construction Corp has any questions, I can be reached at 802-828-3874 or by email at Sherward.Farnsworth@state vt.us

Sincerely,

Sherward G Farnsworth, P E
Project Manager – Structures Section

cc [X] VTRANS Resident Engineer Rick Hale, w/prints
[X] Contractor Whitcomb Construction Corp, w/prints
[X] Construction Section – letter only
(To Const Engineer David Hoyne, Att Asst Reg Eng Nat Danforth)
[X] Construction Division Doug Bonneau, ~~w/prints~~
[X] Structures Section – Shop Inspector Jeff Clark, w/prints
[X] Structures Section – Project Manager Sherward Farnsworth, w/prints w/plans
[X] VTRANS Materials & Research Section (C&IA Unit)- Letter only

VT A D.T
PROJ. NO. IM 089-2(38)
CHITTENDEN COUNTY

COSMEC, INC
70 SOUTH STREET
WALPOLE, MA 02081
PH# 508-668-6600
FAX# 508-660-1022

VTRANS
JUL 7 2006
DATE 8-1-06

ENGINEERING AND MANUFACTURING STANDARD
PTFE FACING AND STEEL
OR PREFORMED FABRIC SUBSTRATE
SURFACE PREPARATION AND ADHESIVE PROCEDURE

The PTFE facing shall be prepared for bonding to a substrate material by chemically etching the face to be bonded using the sodium ammonia process

The mating surface of the substrate shall be prepared for bonding using a three-step process as follows

1 preliminary degrease using methyl ethyl ketone
2 mechanically roughen to approx 125 RMS and thoroughly brush and clean for final degreasing
3 final degrease using methyl ethyl ketone

The PTFE and substrate mating surfaces shall be clean and dry with final degreasing performed within 30 minutes of bonding Adhesive shall consist of a two-part epoxy adhesive system conforming to Military Specification MMM-A-134

The adhesive shall be applied to the full area of the contact surface in an even manner so as to establish a glue line not less than 002 inch nor more than 010 inch thick. Surfaces being bonded are to be assembled immediately with open assembly time not to exceed 20 minutes

The PTFE material shall be greater in width and length than the substrate material by at least ½ inch when bonded The PTFE shall be applied with contact starting at one edge and with contact progressing across entire bonded surface to eliminate air entrapment The PTFE is to be in full contact with the steel or preformed fabric substrate Curing of the bond shall be done under pressure of approx 2-100 psi for 10-12 hours at approx 70°F or other schedules as established by the manufacturer of the adhesive

The PTFE shall be carefully trimmed to the same size as the substrate after bond curing and all bonds shall be visually inspected for bond retention

VI. A.1

PROJ NO IM 089-2(38)

CHITTENDEN COUNTY

COSMEC INC

WELDING PROCEDURE SPECIFICATION

VTRANS RECEIVED JUL 21 2006

SPECIFICATIONS AND CODE D1 6 (D1 3)
MATERIAL SPECIFICATION ASTM A240 TYPE 304 TO ASTM A709 GR 50W
WELDING PROCESS——— GTAW
MANUAL OR MACHINE——— MANUAL
POSITION OF WELDING—— 1F & 2F
FILLER METAL SPECIFICATION ER309L CLASSIFICATION A5 9
MANUFACTURER HARRIS WELCO TRADENAME
FLUX—— INTERNAL
SHIELDING GAS———— ARGON FLOW RATE 45 CFH
SINGLE OR MULTIPLE PAS S SINGLE
SINGLE OR MULTIPLE ARC SINGLE
WELDING CURRENT——— DC
POLARITY REVERSE (EN)
WELDING PROGRESSION———————————————————————————
ROOT TREATMENT———— CLEANED & PREPARED BRIGHT METAL
PREHEAT AND INTERPASS TEMPERATURE———— SEE BELOW
POSTHEAT TEMPERATURE N/A
HEAT IMPUT MIN ———————————— MAX ——

WELDING PROCEDURE

PASS NO	ELECTRODE SIZE	WELDING CURRENT AMPERES	VOLTS	TRAVEL SPEED	JOINT DETAIL
ALL	3/32"	130–155 16 GA THRU 10 GA BM THICKNESS	14-17	6 75–8 5	LAP JOINT

PREHEAT TEMPS. ***PREHEAT UNTIL NO MOSITURE PRESENT

THICKNESS	TEMP
UP TO 3/4"	100 DEG
OVER 3/4" TO 1 1/2"	100 DEG
OVER 1 1/2" TO 2 1/2"	100 DEG
OVER 2 1/2"	100 DEG

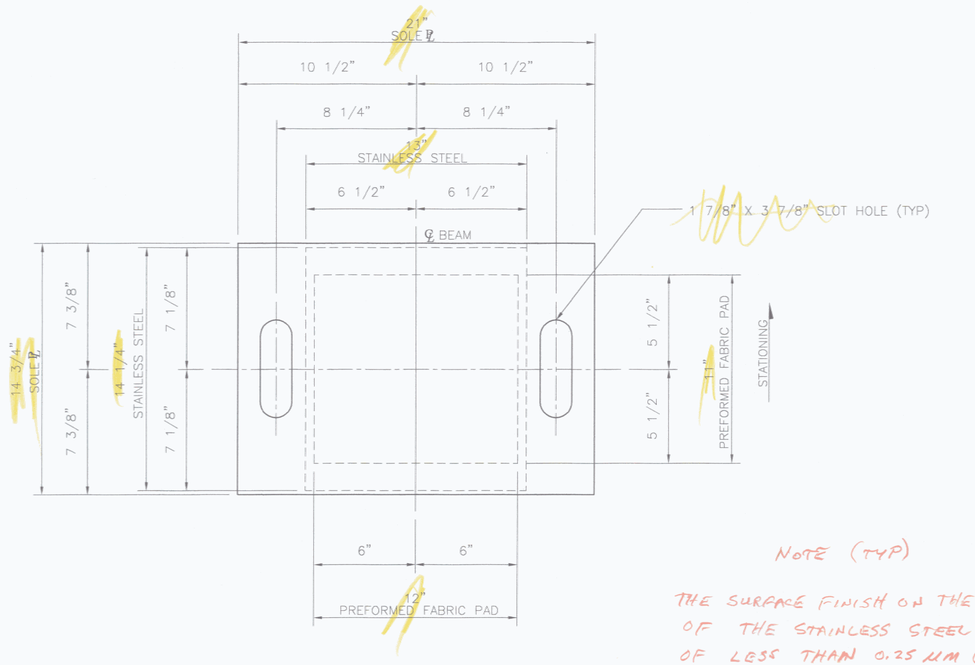
THIS PROCEURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE ETC
WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5
SUPPORTING PQR GTAW-WF-05
PROCEDURE NO GTAW-WF

CONTRACTOR COSMEC INC
AUTHORIZED BY DONALD VOSE
CWI# 01100651 Donald Vose

REVISION NO 1

DATE — 2/1/2005

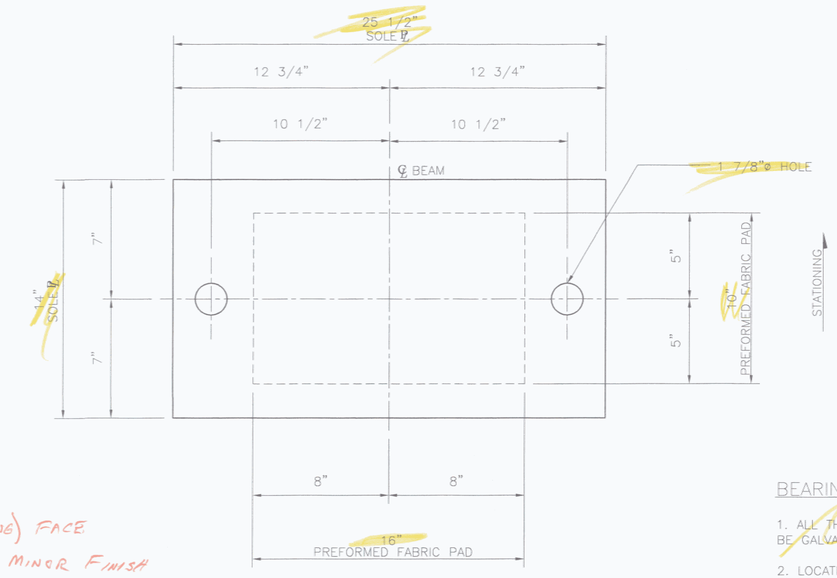
AWS QC 1 DONALD F VOSE 01100651 CWI



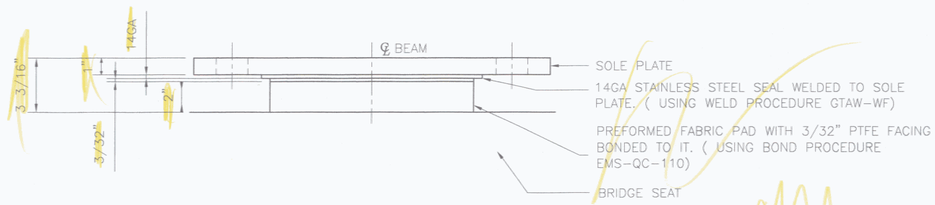
PLAN

NOTE (TYP)

THE SURFACE FINISH ON THE CONTACT (SLIDING) FACE OF THE STAINLESS STEEL SHALL HAVE A MINOR FINISH OF LESS THAN 0.25 µM (10 MICRO INCHES) RMS (ROOT MEAN SQUARE)



PLAN

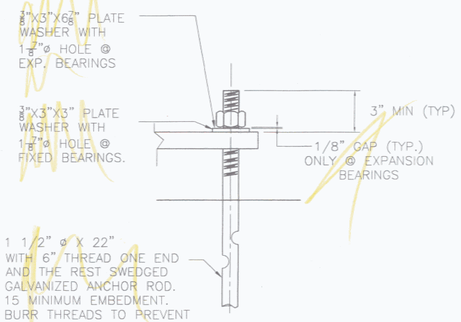


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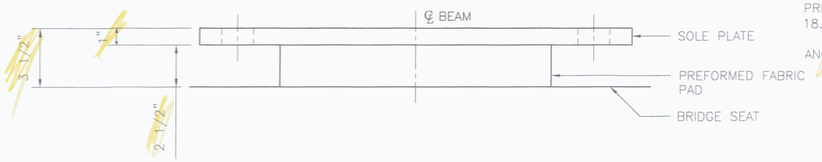
COSMEC EXPANSION FABRIC BEARING

QTY. – 5

LOCATION – BRG. MARK R1, SB PIER 1 SPAN 1



ANCHOR BOLT DETAIL



FRONT ELEVATION

COSMEC FIXED FABRIC BEARING

QTY. – 5

LOCATION – BRG. MARK R2, SB PIER 1 SPAN 2

RECEIVED
CK'D BY AJD OK'D BY
JUL 27 2006
RESUBMIT APPROVED ✓ AS NOTED
BY DATE 8/1/06

BEARING NOTES:

1. ALL THE ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
2. LOCATION OF FABRICATION – 70 SOUTH STREET WALPOLE, MA 02081
3. COSMEC, INC. REPRESENTATIVE: MR. MATT McANDREWS (508-668-6600)

MATERIALS:

STEEL – AASHTO M-270 GR 36 ZINC METALLIZED

PREFORMED FABRIC PAD – MIL-C-882.C, AASHTO 18.4.9.1 DIV.II

ANCHOR BOLTS – F1554 GR 55 GALVANIZED

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE REHABILITATION
TOWN OF RICHMOND
COUNTY OF CHITTENDEN
ROUTE NO.:
INTERSTATE 89, BRIDGE 56 N&S
PROJECT NO.: IM 089-2(38)

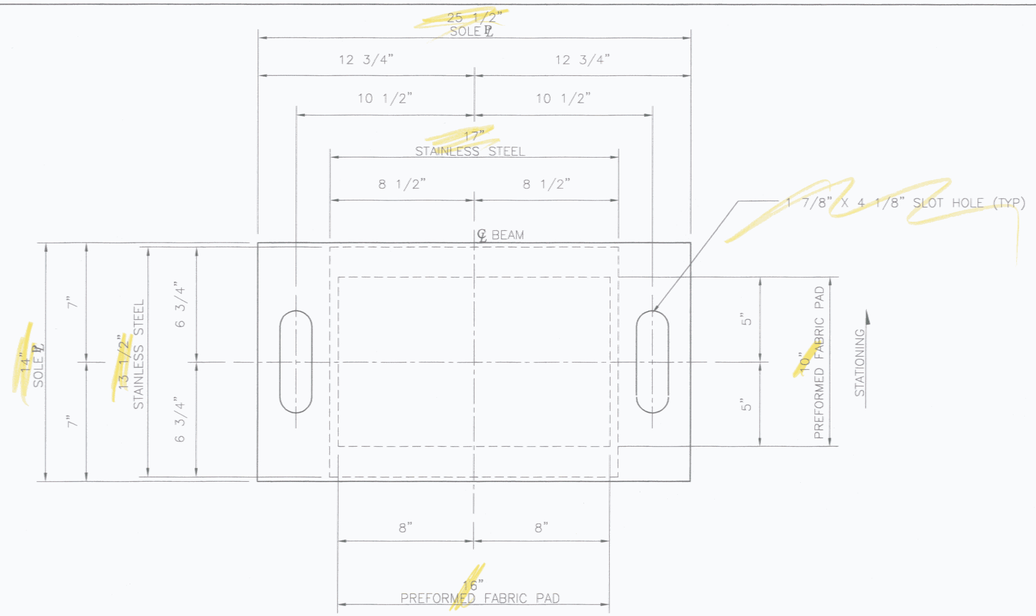
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

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	DATE: 6/5/06	DATE 7/17/06

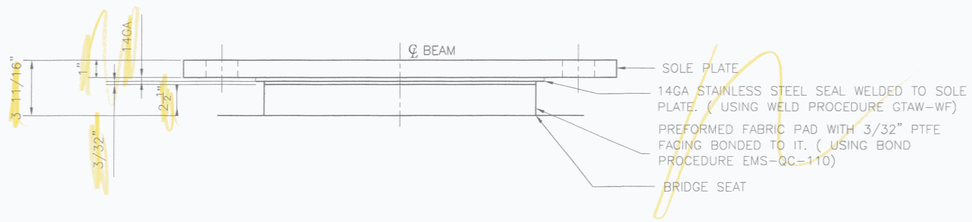
COSMEC BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
F.W. WHITCOMB CONSTR.	60619	4846	

REV.		BY:	DATE	CK'D BY:	DATE



PLAN

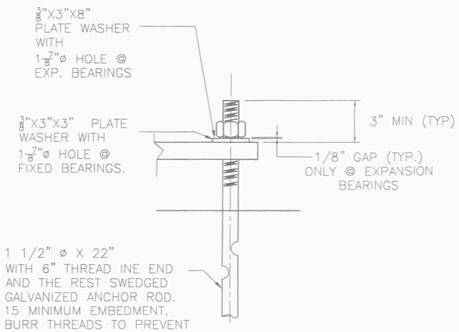


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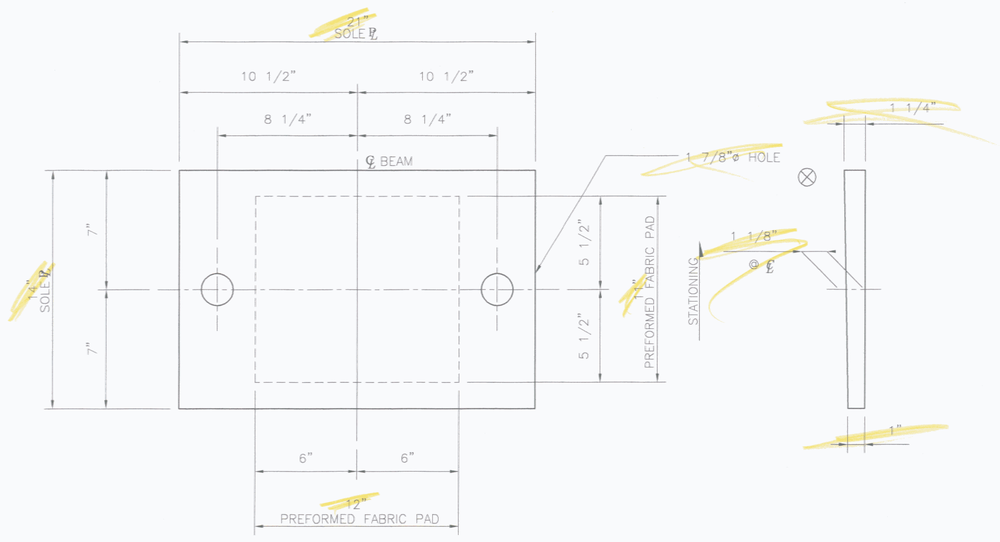
COSMEC EXPANSION FABRIC BEARING

QTY. – 6

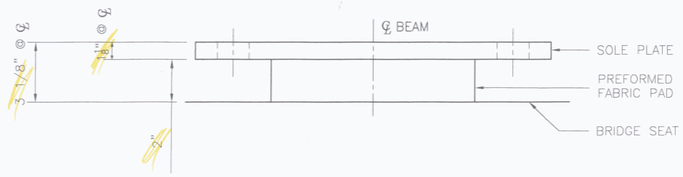
LOCATION – BRG. MARK R3, SB PIER 2 SPAN 2



ANCHOR BOLT DETAIL



PLAN



FRONT ELEVATION

COSMEC FIXED FABRIC BEARING

QTY. – 6

LOCATION – BRG. MARK R4, SB PIER 2 SPAN 3

BEARING NOTES:

1. ALL THE ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
2. LOCATION OF FABRICATION – 70 SOUTH STREET WALPOLE, MA 02081
3. COSMEC, INC. REPRESENTATIVE: MR. MATT McANDREWS (508-668-6600)
4. ⊗ MARKS THE THICK END OF SOLE PLATE.

MATERIALS:

STEEL – AASHTO M-270 GR 36 ZINC METALLIZED

PREFORMED FABRIC PAD – MIL-C-882.C, AASHTO 18.4.9.1 DIV. II

ANCHOR BOLTS – F1554 GR 55 GALVANIZED

RECEIVED
CK'D BY AW CK'D BY
JUL 27 2006
RESUBMIT APPROVED
BY DATE 8/1/06

REV.		BY:	DATE	CK'D BY:	DATE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

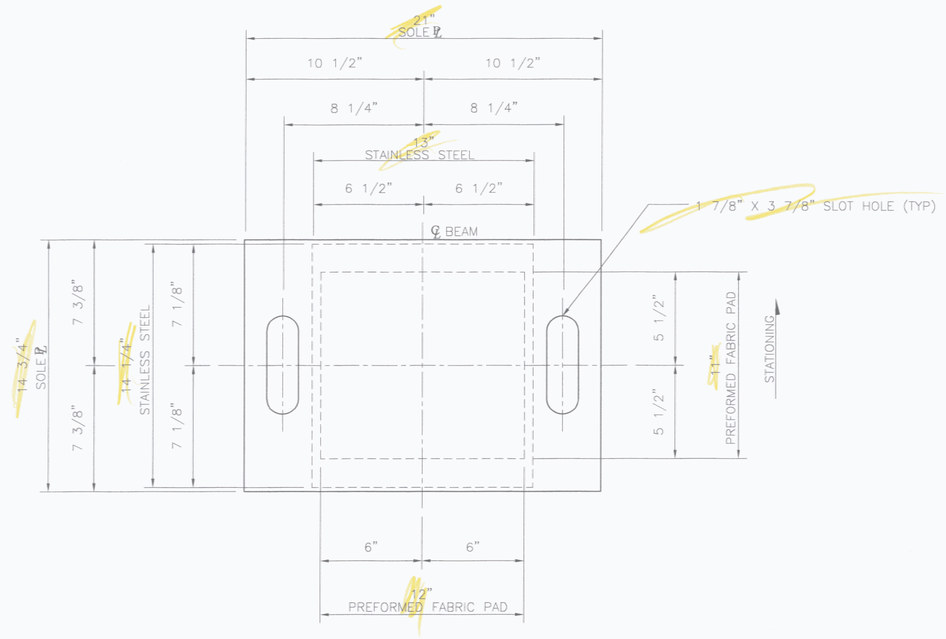
BRIDGE REHABILITATION
TOWN OF RICHMOND
COUNTY OF CHITTENDEN
ROUTE NO.:
INTERSTATE 89, BRIDGE 56 N&S
PROJECT NO.: IM 089-2(38)

COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

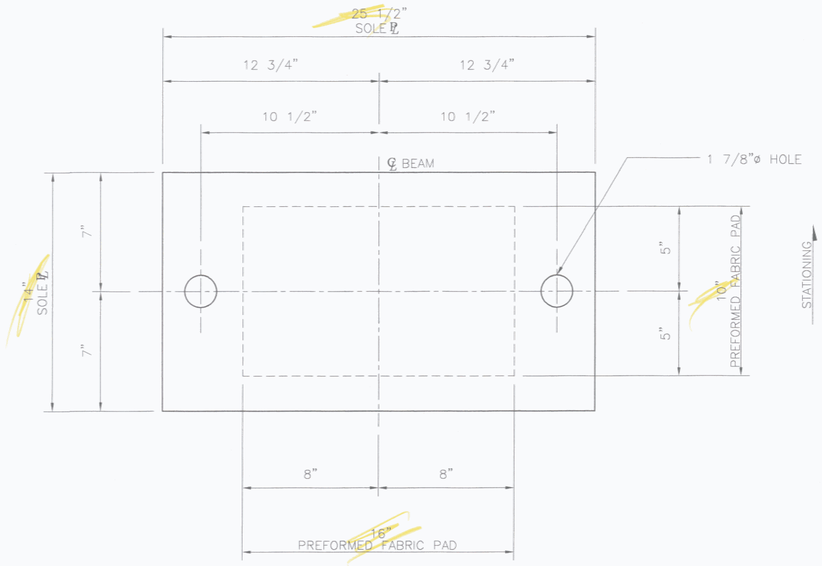
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	DATE: 6/5/06	DATE 7/18/06

COSMEC BEARINGS

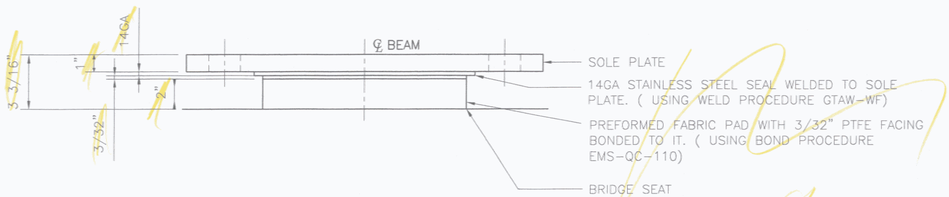
CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
F.W. WHITCOMB CONSTR.	60619	4847	



PLAN



PLAN

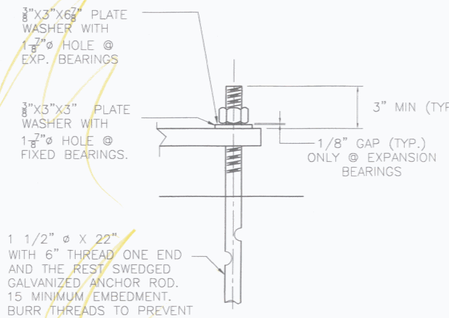


FRONT ELEVATION

COSMEC EXPANSION FABRIC BEARING

QTY. – 7

LOCATION – BRG. MARK R5, NB PIER 3 SPAN 1



ANCHOR BOLT DETAIL



FRONT ELEVATION

COSMEC FIXED FABRIC BEARING

QTY. – 7

LOCATION – BRG. MARK R6, NB PIER 3 SPAN 2

RECEIVED
CK'D BY CWA OK'D BY
JUL 27 2006
RESUBMIT APPROVED
BY DATE 8/1/06

BEARING NOTES:

1. ALL THE ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
2. LOCATION OF FABRICATION – 70 SOUTH STREET WALPOLE, MA 02081
3. COSMEC, INC. REPRESENTATIVE: MR. MATT McANDREWS (508-668-6600)

MATERIALS:

STEEL – AASHTO M-270 GR 36 ZINC METALLIZED

PREFORMED FABRIC PAD – MIL-C-882.C, AASHTO 18.4.9.1 DIV.II

ANCHOR BOLTS – F1554 GR 55 GALVANIZED

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE REHABILITATION
TOWN OF RICHMOND
COUNTY OF CHITTENDEN
ROUTE NO.:
INTERSTATE 89, BRIDGE 56 N&S
PROJECT NO.: IM 089-2(38)

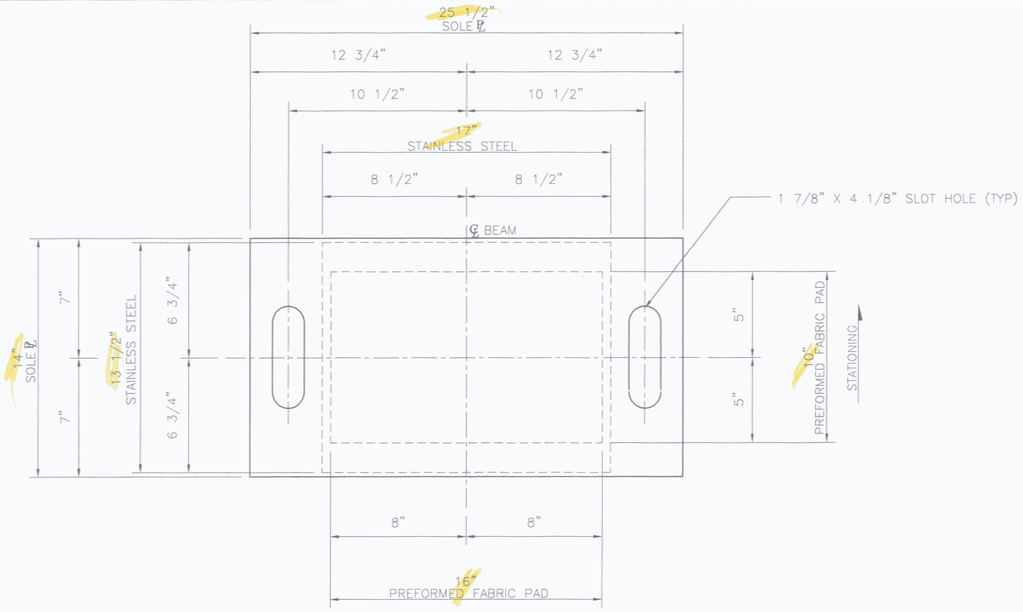
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 1/4"=1"	DRAWN BY: MAE	CHECKED BY: MRR
	DATE: 6/5/06	DATE 7/19/06

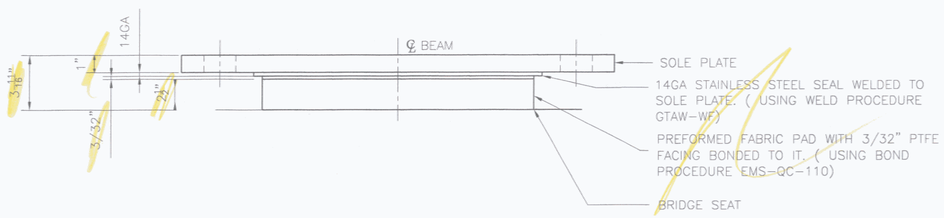
COSMEC BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
F.W. WHITCOMB CONSTR.	60619	4848	

REV.		BY:	DATE	CK'D BY:	DATE



PLAN

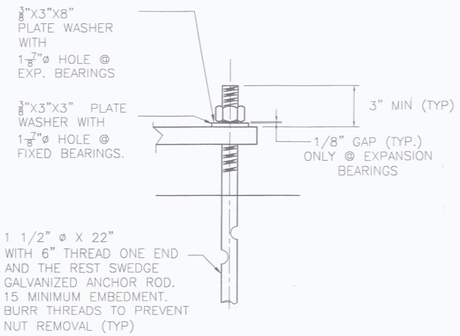


FRONT ELEVATION

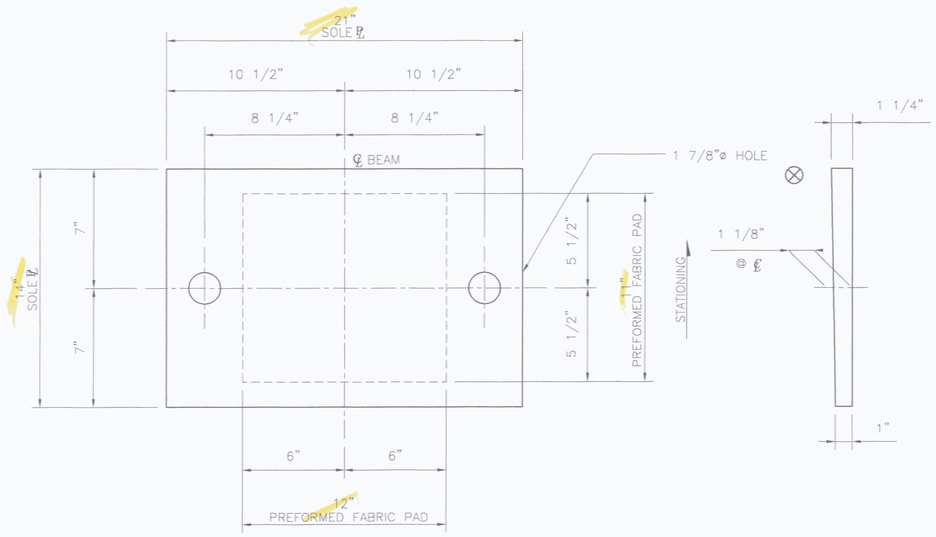
COSMEC EXPANSION FABRIC BEARING

QTY. – 7

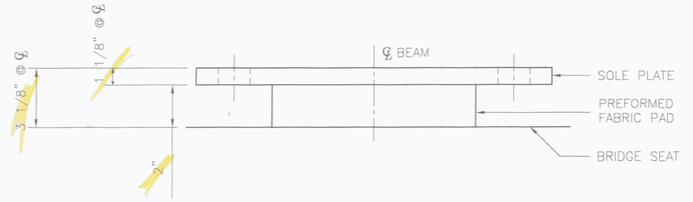
LOCATION – BRG. MARK R7, NB PIER 4 SPAN 2



ANCHOR BOLT DETAIL



PLAN



FRONT ELEVATION

COSMEC FIXED FABRIC BEARING

QTY. – 7

LOCATION – BRG. MARK R8, NB PIER 4 SPAN 3

RECEIVED
CK'D BY EWA OK'D BY
JUL 27 2006
RESUBMIT APPROVED
BY DATE 8/1/06

BEARING NOTES:

1. ALL THE ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.
2. LOCATION OF FABRICATION – 70 SOUTH STREET WALPOLE, MA 02081
3. COSMEC, INC. REPRESENTATIVE: MR. MATT McANDREWS (508-668-6600)
4. ⊗ MARKS THE THICK END OF SOLE PLATE.

MATERIALS:

STEEL – AASHTO M-270 GR 36 ZINC METALLIZED

PREFORMED FABRIC PAD – MIL-C-882.C, AASHTO 18.4.9.1 DIV.II

ANCHOR BOLTS – F1554 GR 55 GALVANIZED

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE REHABILITATION
TOWN OF RICHMOND
COUNTY OF CHITTENDEN
ROUTE NO.:
INTERSTATE 89, BRIDGE 56 N&S
PROJECT NO.: IM 089-2(38)

COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

SCALE: 1/4"=1"	DRAWN BY: MAE	CHECKED BY: MRR
	DATE: 6/5/06	DATE 7/18/06

COSMEC BEARINGS

REV.		BY:	DATE	CK'D BY:	DATE

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
F.W. WHITCOMB CONSTR.	60619	4849	