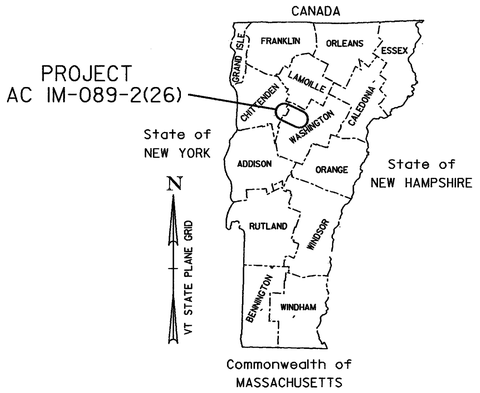
STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT

TOWNS OF MIDDLESEX, WATERBURY AND BOLTON
COUNTIES OF CHITTENDEN AND WASHINGTON
PROJECT AC IM-089-2(26)



ROUTE NO.: I-89

BRIDGE NO.: 43N&S, 48N&S, 49N&S, 50N&S

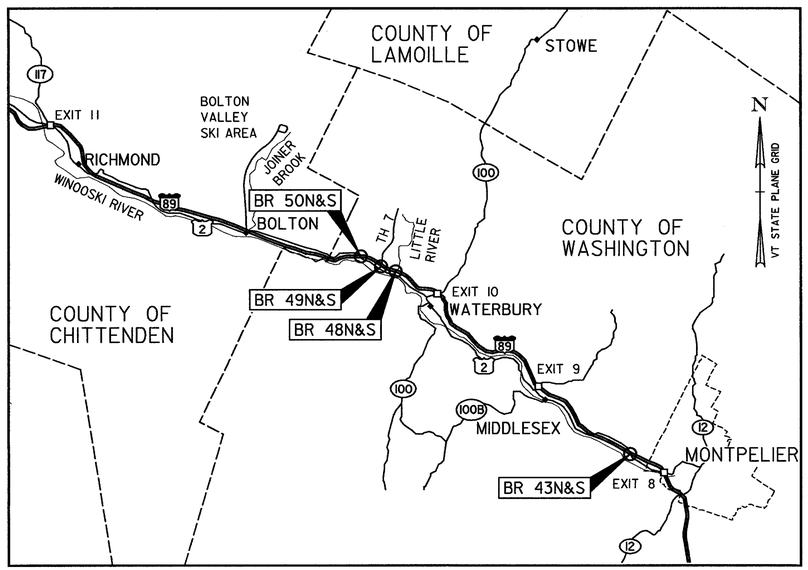
PROJECT LOCATION:
BR 43N&S OVER U.S. ROUTE 2 (MM 54.8)
BR 48N&S OVER LITTLE RIVER (MM 65.2)
BR 49N&S OVER TH 7 – LITTLE RIVER ROAD (MM 65.4)
BR 50N&S OVER U.S. ROUTE 2 (MM 66.6)

PROJECT DESCRIPTION: INSTALL TRAFFIC CONTROL, REHABILITATE STRUCTURES, REMOVE TRAFFIC CONTROL

LENGTH OF STRUCTURES:

BR 43N	175.11′	BR 43S	205.29′
BR 48N	299.70′	BR 48S	300.70′
BR 49N	100.63′	BR 49S	100.73′
BR 50N	237.87′	BR 50S	224.73′

TOTAL LENGTH OF STRUCTURES: 1644.76′



CONVENTIONAL SIGNS

COUNTY LINE	
TOWN LINE	
LIMITS OF ACCESS	
POINT OF ACCESS	X
FENCE LINE	x x
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
TOP OF CUT	
TOE OF SLOPE	

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE CHIEF ENGINEER.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON MARCH 15, 1990 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

APPROVED _____ DATE 11/4/99
DIRECTOR OF
PROJECT DEVELOPMENT

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ DATE 8-30-00
For DIVISION ADMINISTRATOR

TVGA ENGINEERING, SURVEYING, P.C.

PROJECT

SHEET 1 OF 307 SHEETS

INDEX OF SHEETS

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2	C-2	INDEX OF SHEETS
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4	C-4	QUANTITIES (1 OF 3)
5	C-5	QUANTITIES (2 OF 3)
6	C-6	QUANTITIES (3 OF 3)
7	C-7	GENERAL NOTES (1 OF 2)
8	C-8	GENERAL NOTES (2 OF 2)
9	C-9	BRIDGE INFORMATION SUMMARY
10	C-10	CONTROL POINT TIES (43N&S)
11	C-11	CONTROL POINT TIES (48N&S AND 49N&S)
12	C-12	CONTROL POINT TIES (50N&S)
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14	C-14	TRANSVERSE SECTIONS FOR TRAFFIC CONTROL
15	C-15	TYPICAL END OF DECK SLAB DETAILS
16	C-16	TYPICAL ROLLED BEAM DETAILS
17	C-17	TYPICAL PLATE GIRDER DETAILS (1 OF 2)
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20	C-20	TYPICAL GIRDER SPLICE DETAILS
21	C-21	FIXED BEARING DETAILS
22	C-22	BEARING NOTES & FIXED BRG. TABLES
23	C-23	EXPANSION BEARING DETAILS
24	C-24	EXPANSION BEARING TABLES
25	C-25	SOLE & MASONRY PLATE DETAILS
26	C-26	BR 49 FIXED BEARINGS - REPLACE IN KIND
27	C-27	TYPICAL TYPE "H" ABUTMENT JOINT PLAN
28	C-28	TYPE "H" ABUTMENT JOINT DETAILS (1 OF 3)
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35	C-35	TYPICAL FINGER JOINT PLAN (BR 48N&S)
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37	C-37	FINGER JOINT DETAILS (2 OF 3)
38	C-38	FINGER JOINT DETAILS (3 OF 3)
39	C-39	TYPICAL SCUPPER DETAILS
40	C-40	TYPICAL EXPANSION ABUTMENT REINFORCEMENT
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42	C-42	TYPICAL CURTAINWALL DETAILS
43	C-43	TYPICAL WINGWALL DETAILS (1 OF 2)
44	C-44	TYPICAL WINGWALL DETAILS (2 OF 2)
45	C-45	SUBSTRUCTURE REPAIR DETAILS AND NOTES
46	C-46	TYPICAL BRIDGE DETAILS
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46B	C-46B	GUARD RAIL APPR. SECTION, NETC 2 RAIL (2 OF 2)
46C	C-46C	RUMBLE STRIPS
		BRIDGE 43N&S SHEETS
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49	BR43-3	PROFILE (43S)
50	BR43-4	TRANSVERSE SECTION (43N&S)
51	BR43-5	DECK REINFORCEMENT PLANS (43N&S)
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54	BR43-8	FRAMING PLAN (43N)
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56	BR43-10	STRINGER ELEVATION (43N&S)
57	BR43-11	ABUTMENT MASONRY (43N)
58	BR43-12	ABUTMENT MASONRY (43S)
59	BR43-13	PIER CAP MASONRY AND REINFORCEMENT (43N&S)
60	BR43-14	REINFORCING STEEL SCHEDULE (43N&S)

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66	BR48-6	APPROACH SLAB DETAILS (48N&S)
67	BR48-7	CURB AND RAIL LAYOUT PLANS (48N&S)
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69	BR48-9	FRAMING PLAN (48S)
70	BR48-10	STRINGER ELEVATION (48N&S)
71	BR48-11	ABUTMENT MASONRY (48N)
72	BR48-12	ABUTMENT MASONRY (48S)
73	BR48-13	PIER CAP MASONRY (48N&S)
74	BR48-14	REINFORCING STEEL SCHEDULE (48N&S)
		BRIDGE 49N&S SHEETS
75	BR49-1	GENERAL PLAN (49N&S)
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77	BR49-3	PROFILE (49S)
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79	BR49-5	DECK REINFORCEMENT PLANS (49N&S)
80	BR49-6	APPROACH SLAB DETAILS (49N&S)
81	BR49-7	CURB AND RAIL LAYOUT PLANS (49N&S)
82	BR49-8	ABUTMENT MASONRY (49N)
83	BR49-9	ABUTMENT MASONRY (49S)
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86	BR50-2	PROFILE (50N)
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89	BR50-5	DECK REINFORCEMENT PLANS (50N&S)
90	BR50-6	APPROACH SLAB DETAILS (50N&S)
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94	BR50-10	STRINGER ELEVATION (50N&S)
95	BR50-11	ABUTMENT MASONRY (50N)
96	BR50-12	ABUTMENT MASONRY (50S)
97	BR50-13	PIER CAP MASONRY AND REINF. (50N&S)
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		SUBSTRUCTURE CONDITION SHEETS
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137	SC-3	EXIST. SUBSTR. CONDITION (43S) (1 OF 2)
138	SC-4	EXIST. SUBSTR. CONDITION (43S) (2 OF 2)
139	SC-5	EXIST. SUBSTR. CONDITION (48N) (1 OF 3)
140	SC-6	EXIST. SUBSTR. CONDITION (48N) (2 OF 3)
141	SC-7	EXIST. SUBSTR. CONDITION (48N) (3 OF 3)
142	SC-8	EXIST. SUBSTR. CONDITION (48S) (1 OF 3)
143	SC-9	EXIST. SUBSTR. CONDITION (48S) (2 OF 3)
144	SC-10	EXIST. SUBSTR. CONDITION (48S) (3 OF 3)
145	SC-11	EXIST. SUBSTR. CONDITION (49N)
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161	TC-1B	TRAFFIC CONTROL NOTES
162	TC-2	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
163	TC-3	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
164	TC-4	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
165	TC-5	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
166	TC-6	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
167	TC-7	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
168	TC-8	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
169	TC-9	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
170	TC-10	PHASE I SOUTHBOUND CROSSOVER BRIDGE 43
171	TC-11	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
172	TC-12	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
173	TC-13	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
174	TC-14	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
175	TC-15	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
176	TC-16	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
177	TC-17	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
178	TC-18	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
179	TC-19	PHASE I SOUTHBOUND CROSSOVER BRIDGE 48, 49, & 50
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189	TC-29	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
190	TC-30	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
191	TC-31	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
192	TC-32	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
193	TC-33	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
194	TC-34	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
195	TC-35	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
196	TC-36	PHASE II NORTHBOUND CROSSOVER BRIDGE 43
197	TC-37	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
198	TC-38	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
199	TC-39	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
200	TC-40	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
201	TC-41	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
202	TC-42	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
203	TC-43	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
204	TC-44	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
205	TC-45	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
206	TC-46	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
207	TC-47	PHASE II NORTHBOUND CROSSOVER BRIDGE 48, 49, & 50
208-214		SHEETS NOT USED
		REFERENCE SHEETS
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237-244		BRIDGE 49N&S REFERENCE SHEETS
245-259		BRIDGE 50N&S REFERENCE SHEETS
260-307		SHEETS NOT USED

SHEET	BRIDGE SHEET	STANDARD SHEETS
B-17	02/23/95	
BRI-97	06/05/98	
BR3-97	06/23/98	
C-1	06/01/99	
E-100	01/06/97	
E-100A	01/06/97	
E-101	03/10/97	
E-102	08/08/95	
E-102A	08/08/95	
E-103	09/23/98	
E-104	02/03/99	
E-104A	12/27/96	
E-105	04/01/99	
E-106	08/08/95	
E-107	08/08/95	
E-107A	08/08/95	
E-108	08/18/95	
E-109	08/08/95	
E-119	08/08/95	
E-120	08/08/95	
E-154	08/08/95	
E-160	08/18/95	
E-162	08/18/95	
E-164	05/20/99	
E-198	04/14/97	
E-199	08/18/95	
G-18	06/01/94	
G-19	10/21/98	
T-1	06/01/94	
T-2	06/01/94	

NOTE: THIS PROJECT ORIGINALLY INCLUDED BRIDGES 51N&S, WHICH HAVE BEEN SUBSEQUENTLY REMOVED TO FORM A NEW CONSTRUCTION CONTRACT FOR BRIDGES 43N&S, 48N&S, 49N&S, AND 50N&S ONLY. ANY REFERENCE IN THESE PLANS OR IN THE SPECIFICATIONS TO BRIDGES 51N&S SHALL BE IGNORED.

ANY REFERENCE IN THE PLANS OR SPECIFICATIONS TO VAOT OR AOT SHALL BE UNDERSTOOD AS REFERRING TO VTRANS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

INDEX OF SHEETS

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. Ilstosht	Date 08/00
Bridge Sheet No. **C-2**	Sheet 2 of 307

TVGA ENGINEERING, SURVEYING, P.C.

COMPOSITE QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
203.99	SHOULDER BERM REMOVAL	LF	1600
204.20	TRENCH EXCAVATION OF EARTH	CY	60
204.25	STRUCTURE EXCAVATION	CY	720
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	340
210.10	COLD PLANING-BIT.PAVEMENT	SY	8970
213.10	MILLED RUMBLE STRIPS	LF	8850
301.35	SUBBASE OF DENSE GRADED CRUSHED STONE	CY	100
404.65	EMULSIFIED ASPHALT	CWT	28
406.25	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	TON	2640
501.221	CONCRETE, CLASS A QC/QA	CY	1840
501.25	CONCRETE, CLASS B	CY	1238
501.60	SILICA-FUME CONCRETE	CY	247
506.50	STRUCTURAL STEEL (ROLLED BEAM)	LB	310070
506.55	STRUCTURAL STEEL(PLATE GIRDER)	LB	1078330
506.60	STRUCTURAL STEEL	LB	4300
507.16	DRILLING AND GROUTING DOWELS	LF	1910
507.17	EPOXY COATED REINFORCING STEEL	LB	692200
507.19	MECHANICAL BAR CONNECTOR	EACH	40
508.15	SHEAR CONNECTORS (2280 - 7/8" x 7" LONG - BR 43N)	LS	1
508.15	SHEAR CONNECTORS (2760 - 7/8" x 7" LONG - BR 43S)	LS	1
508.15	SHEAR CONNECTORS (3140 - 7/8" x 7" LONG - BR 48N)	LS	1
508.15	SHEAR CONNECTORS (3140 - 7/8" x 7" LONG - BR 48S)	LS	1
508.15	SHEAR CONNECTORS (1190 - 7/8" x 7" LONG - BR 49N)	LS	1
508.15	SHEAR CONNECTORS (1190 - 7/8" x 7" LONG - BR 49S)	LS	1
508.15	SHEAR CONNECTORS (2720 - 7/8" x 7" LONG - BR 50N)	LS	1
508.15	SHEAR CONNECTORS (2980 - 7/8" x 7" LONG - BR 50S)	LS	1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 43N - 4 TONS)	LS	1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 43S - 4 TONS)	LS	1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 48N - 6 TONS)	LS	1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 48S - 6 TONS)	LS	1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 50N - 5 TONS)	LS	1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 50S - 5 TONS)	LS	1
513.30	STRUCTURAL PAINTING,FIELD APPLIED (BR 49N - 132 TONS)	LS	1
513.30	STRUCTURAL PAINTING,FIELD APPLIED (BR 49S - 132 TONS)	LS	1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 43N - 4 TONS)	LS	1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 43S - 4 TONS)	LS	1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 48N - 6 TONS)	LS	1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 48S - 6 TONS)	LS	1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 50N - 5 TONS)	LS	1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 50S - 5 TONS)	LS	1
513.36	CONTAINMENT & ENVIRONMENTAL PROTECTION,FIELD (BR 49N - 132 TONS)	LS	1
513.36	CONTAINMENT & ENVIRONMENTAL PROTECTION,FIELD (BR 49S - 132 TONS)	LS	1
513.40	SURFACE PREPARATION,SHOP (BR 43N - 4 TONS)	LS	1
513.40	SURFACE PREPARATION,SHOP (BR 43S - 4 TONS)	LS	1
513.40	SURFACE PREPARATION,SHOP (BR 48N - 6 TONS)	LS	1
513.40	SURFACE PREPARATION,SHOP (BR 48S - 6 TONS)	LS	1
513.40	SURFACE PREPARATION,SHOP (BR 50N - 5 TONS)	LS	1
513.40	SURFACE PREPARATION,SHOP (BR 50S - 5 TONS)	LS	1
513.41	SURFACE PREPARATION, FIELD (BR 49N - 132 TONS)	LS	1
513.41	SURFACE PREPARATION, FIELD (BR 49S - 132 TONS)	LS	1
514.10	WATER REPELLENT	GAL	160
516.10	BRIDGE EXPANSION JOINT (ARMORED JOINT)	LF	302
516.10	BRIDGE EXPANSION JOINT (FINGER JOINT)	LF	81
519.20	SHEET MEMBRANE WATERPROOFING (MOD. - TORCH APPLIED)	SY	7600
524.21	JOINT SEALER, POLYURETHANE	LF	900
525.10	REMOVAL OF EXISTING RAILING (MOD. - SALVAGE)	LF	4690
525.33	BRIDGE RAILING - NETC 2 RAIL	LF	3730
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 43N)	LS	1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 43S)	LS	1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 48N)	LS	1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 48S)	LS	1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 49N)	LS	1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 49S)	LS	1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 50N)	LS	1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 50S)	LS	1

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL
529.10	REMOVAL OF BRIDGE PAVEMENT	SY	7090
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 43N)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 43S)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 48N)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 48S)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 49N)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 49S)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 50N)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 50S)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 43N)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 43S)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 48N)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 48S)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 50N)	EACH	1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 50S)	EACH	1
531.10	BEARING DEVICE ASSEMBLY (STEEL PLT. FIXED BEARINGS)	EACH	4
531.10	BEARING DEVICE ASSEMBLY (ELASTOMERIC TFE EXP. BEARINGS)	EACH	104
531.10	BEARING DEVICE ASSEMBLY (ELASTOMERIC FIXED BEARINGS)	EACH	30
580.13	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS I	SY	51
580.14	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS II	SY	273
580.15	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III	CY	8
580.40	FIBER REINFORCED POLYMER WRAP	SY	203
613.10	STONE FILL, TYPE I	CY	80
613.11	STONE FILL, TYPE II	CY	30
613.13	STONE FILL, TYPE IV	CY	50
616.28	CAST-IN PLACE CEMENT CONCRETE CURB, TYPE B	LF	1280
620.25	WOVEN WIRE FENCE W/STEEL POSTS	LF	800
620.55	REMOVAL OF EXISTING FENCE	LF	800
620.75	SNOW BARRIER - GALVANIZED	LF	860
621.20	STEEL BEAM GUARD RAIL	LF	300
621.505	MANUFACTURED TERMINAL SECTION	EACH	16
621.57	ENERGY ABSORPTION ATTENUATOR	EACH	2
621.72	GUARD RAIL APPR. SECTION,NETC 2 RAIL (MOD.)	EACH	32
621.75	REMOVING AND RESET GUARD RAIL	LF	290
621.80	REMOVL AND DISP OF GUARD RAIL	LF	1100
621.90	TEMPORARY TRAFFIC BARRIER	LF	34350
630.10	UNIFORMED TRAFFIC OFFICERS	HR	2700
630.15	FLAGGERS	HR	1750
631.10	FIELD OFFICE-ENGINEERS	LS	1
631.16	TESTING EQUIPMENT - CONCRETE	LS	1
631.17	TESTING EQUIPMENT - BITUMINOUS	LS	1
631.18	TESTING EQUIPMENT - PROTECTIVE COATINGS	LS	1
631.25	FIELD OFFICE - TELEPHONE (N.A.B.I.)	LU	1
634.10	EMPLOYEE TRAINEESHIP	HR	2080
635.10	MOBILIZATION	LS	1
641.10	TRAFFIC CONTROL (BR 43N&S)	LS	1
641.10	TRAFFIC CONTROL (BR 48N&S, 49N&S, 50N&S)	LS	1
641.10	TRAFFIC CONTROL (MOD. - PUBLIC RELATIONS OFFICER)	LS	1
641.15	PORTABLE CHANGEABLE MESSAGE SIGN	EACH	6
641.16	PORTABLE ARROW BOARD	EACH	8
646.414	DURABLE 6" WHITE LINE	LF	5270
646.415	DURABLE 6" YELLOW LINE	LF	4220
646.60	TEMPORARY 4" WHITE LINE	LF	3900
646.60	TEMPORARY 4" WHITE LINE (TAPE, TYPE II)	LF	68850
646.61	TEMPORARY 4" YELLOW LINE	LF	3650
646.61	TEMPORARY 4" YELLOW LINE (TAPE, TYPE II)	LF	79500
646.81	RAISED PAVEMENT MARKERS TYPE II	EACH	8100
646.86	BLACK PAVEMENT MARKING MASKING TAPE	SF	26050
649.31	GEOTEXTILE UNDER STONE FILL	SY	40
649.51	GEOTEXTILE FOR SILT FENCE	SY	2000
651.26	HAY BALES FOR EROSION CONTROL	EACH	320
654.10	EROSION MATTING	SY	800
675.20	TRAFFIC SIGNS, TYPE A (MOD.)	SF	80

TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

COMPOSITE QUANTITIES

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. quantities	Date 08/00
Bridge Sheet No. C-3	Sheet 3 of 307

QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	IM 089-2(26)										
			43N	43S	48N	48S	49N	49S	50N	50S	TRAINING	FULL C&E	TOTAL
203.99	SHOULDER BERM REMOVAL	LF	200	200	200	200	200	200	200	200			1600
204.20	TRENCH EXCAVATION OF EARTH	CY	10	10			10	10	10	10			60
204.25	STRUCTURE EXCAVATION	CY	120	120	80	80	70	70	90	90			720
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY	70	60	30	40	30	30	30	50			340
210.10	COLD PLANING-BIT.PAVEMENT	SY	1030	1060	1490	1100	1630	1610	400	650			8970
213.10	MILLED RUMBLE STRIPS	LF	1600	1750	1050	950	1050	1100	600	750			8850
301.35	SUBBASE OF DENSE GRADED CRUSHED STONE	CY	20	20	10	10			20	20			100
404.65	EMULSIFIED ASPHALT	CWT	3	3	4	4	4	4	3	3			28
406.25	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	TON	400	410	350	330	300	300	270	280			2640
501.221	CONCRETE, CLASS A QC/QA	CY	190	222	315	316	149	149	256	243			1840
501.25	CONCRETE, CLASS B	CY	186	185	124	124	131	132	186	170			1238
501.60	SILICA-FUME CONCRETE	CY	26	30	44	44	17	17	36	33			247
506.50	STRUCTURAL STEEL (ROLLED BEAM)	LB	133520	170950			2800	2800					310070
506.55	STRUCTURAL STEEL(PLATE GIRDER)	LB			327970	328850			219780	201730			1078330
506.60	STRUCTURAL STEEL	LB	400	400	550	550	800	800	400	400			4300
507.16	DRILLING AND GROUTING DOWELS	LF	280	280	230	230	160	170	280	280			1910
507.17	EPOXY COATED REINFORCING STEEL	LB	82430	90240	107340	107140	54380	54370	101060	95240			692200
507.19	MECHANICAL BAR CONNECTOR	EACH	20	20									40
508.15	SHEAR CONNECTORS (2280 - 7/8" x 7" LONG - BR 43N)	LS	1										1
508.15	SHEAR CONNECTORS (2760 - 7/8" x 7" LONG - BR 43S)	LS		1									1
508.15	SHEAR CONNECTORS (3140 - 7/8" x 7" LONG - BR 48N)	LS			1								1
508.15	SHEAR CONNECTORS (3140 - 7/8" x 7" LONG - BR 48S)	LS				1							1
508.15	SHEAR CONNECTORS (1190 - 7/8" x 7" LONG - BR 49N)	LS					1						1
508.15	SHEAR CONNECTORS (1190 - 7/8" x 7" LONG - BR 49S)	LS						1					1
508.15	SHEAR CONNECTORS (2720 - 7/8" x 7" LONG - BR 50N)	LS							1				1
508.15	SHEAR CONNECTORS (2980 - 7/8" x 7" LONG - BR 50S)	LS								1			1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 43N - 4 TONS)	LS	1										1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 43S - 4 TONS)	LS		1									1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 48N - 6 TONS)	LS			1								1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 48S - 6 TONS)	LS				1							1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 50N - 5 TONS)	LS							1				1
513.25	STRUCTURAL PAINTING,SHOP APPLIED (BR 50S - 5 TONS)	LS								1			1
513.30	STRUCTURAL PAINTING,FIELD APPLIED (BR 49N - 132 TONS)	LS					1						1
513.30	STRUCTURAL PAINTING,FIELD APPLIED (BR 49S - 132 TONS)	LS						1					1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 43N - 4 TONS)	LS	1										1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 43S - 4 TONS)	LS		1									1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 48N - 6 TONS)	LS			1								1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 48S - 6 TONS)	LS				1							1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 50N - 5 TONS)	LS							1				1
513.35	CONTAINMENT & ENVIRONMENTAL PROTECTION,SHOP (BR 50S - 5 TONS)	LS								1			1
513.36	CONTAINMENT & ENVIRONMENTAL PROTECTION,FIELD (BR 49N - 132 TONS)	LS					1						1
513.36	CONTAINMENT & ENVIRONMENTAL PROTECTION,FIELD (BR 49S - 132 TONS)	LS						1					1
513.40	SURFACE PREPARATION,SHOP (BR 43N - 4 TONS)	LS	1										1

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

QUANTITIES (1 OF 3)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. quantities	Date 08/00
Bridge Sheet No. C-4	Sheet 4 of 307

TVGA ENGINEERING, SURVEYING, P.C.

QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	IM 089-2(26)										
			43N	43S	48N	48S	49N	49S	50N	50S	TRAINING	FULL C&E	TOTAL
513.40	SURFACE PREPARATION,SHOP (BR 43S - 4 TONS)	LS		1									1
513.40	SURFACE PREPARATION,SHOP (BR 48N - 6 TONS)	LS			1								1
513.40	SURFACE PREPARATION,SHOP (BR 48S - 6 TONS)	LS				1							1
513.40	SURFACE PREPARATION,SHOP (BR 50N - 5 TONS)	LS							1				1
513.40	SURFACE PREPARATION,SHOP (BR 50S - 5 TONS)	LS								1			1
513.41	SURFACE PREPARATION, FIELD (BR 49N - 132 TONS)	LS					1						1
513.41	SURFACE PREPARATION, FIELD (BR 49S - 132 TONS)	LS						1					1
514.10	WATER REPELLENT	GAL	20	20	30	30	10	10	20	20			160
516.10	BRIDGE EXPANSION JOINT (ARMORED JOINT)	LF	52	51			48	48	53	50			302
516.10	BRIDGE EXPANSION JOINT (FINGER JOINT)	LF			41	40							81
519.20	SHEET MEMBRANE WATERPROOFING (MOD. - TORCH APPLIED)	SY	810	920	1220	1220	700	700	1040	990			7600
524.21	JOINT SEALER, POLYURETHANE	LF	100	110	160	160	60	60	130	120			900
525.10	REMOVAL OF EXISTING RAILING (MOD. - SALVAGE)	LF	510	580	780	780	380	380	660	620			4690
525.33	BRIDGE RAILING - NETC 2 RAIL	LF	390	460	660	660	260	260	540	500			3730
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 43N)	LS	1										1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 43S)	LS		1									1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 48N)	LS			1								1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 48S)	LS				1							1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 49N)	LS					1						1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 49S)	LS						1					1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 50N)	LS							1				1
527.11	TRAFFIC PROTECTION FOR BRIDGE PROJECT (BR 50S)	LS								1			1
529.10	REMOVAL OF BRIDGE PAVEMENT	SY	750	850	1150	1150	650	650	960	930			7090
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 43N)	EACH	1										1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 43S)	EACH		1									1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 48N)	EACH			1								1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 48S)	EACH				1							1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 49N)	EACH					1						1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 49S)	EACH						1					1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 50N)	EACH							1				1
529.20	PARTIAL REMOVAL OF STRUCTURE (BR 50S)	EACH								1			1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 43N)	EACH	1										1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 43S)	EACH		1									1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 48N)	EACH			1								1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 48S)	EACH				1							1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 50N)	EACH							1				1
529.20	PARTIAL REMOVAL OF STRUCTURE (MOD. - EXISTING STEEL BEAMS - BR 50S)	EACH								1			1
531.10	BEARING DEVICE ASSEMBLY (STEEL PLT. FIXED BEARINGS)	EACH					2	2					4
531.10	BEARING DEVICE ASSEMBLY (ELASTOMERIC TFE EXP. BEARINGS)	EACH	15	15	15	15	7	7	15	15			104
531.10	BEARING DEVICE ASSEMBLY (ELASTOMERIC FIXED BEARINGS)	EACH	5	5	5	5			5	5			30
580.13	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS I	SY	1	3	23	20	1	1	1	1			51

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
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	Surv. Sta.

QUANTITIES (2 OF 3)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. quantities Date 10/99
	Bridge Sheet No. C-5 Sheet 5 of 307

QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	IM 089-2(26)										
			43N	43S	48N	48S	49N	49S	50N	50S	TRAINING	FULL C&E	TOTAL
580.14	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS II	SY	11	17	129	110	1	1	3	1			273
580.15	REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III	CY	1	1	1	1	1	1	1	1			8
580.40	FIBER REINFORCED POLYMER WRAP	SY	104	99									203
613.10	STONE FILL, TYPE I	CY	10	10	10	10	10	10	10	10			80
613.11	STONE FILL, TYPE II	CY	10			10				10			30
613.13	STONE FILL, TYPE IV	CY			25	25							50
616.28	CAST-IN PLACE CEMENT CONCRETE CURB, TYPE B	LF	160	160	160	160	160	160	160	160			1280
620.25	WOVEN WIRE FENCE W/STEEL POSTS	LF	100	100	100	100	100	100	100	100			800
620.55	REMOVAL OF EXISTING FENCE	LF	100	100	100	100	100	100	100	100			800
620.75	SNOW BARRIER - GALVANIZED	LF	150	160			110	110	170	160			860
621.20	STEEL BEAM GUARD RAIL	LF	300										300
621.505	MANUFACTURED TERMINAL SECTION	EACH	4	4	2	2			2	2			16
621.57	ENERGY ABSORPTION ATTENUATOR	EACH	1							1			2
621.72	GUARD RAIL APPR. SECTION,NETC 2 RAIL (MOD.)	EACH	4	4	4	4	4	4	4	4			32
621.75	REMOVING AND RESET GUARD RAIL	LF		30	30	30	90	40	30	40			290
621.80	REMOVL AND DISP OF GUARD RAIL	LF	400	100	100	100	100	100	100	100			1100
621.90	TEMPORARY TRAFFIC BARRIER	LF	5600	5500	3850	3900	3850	3900	3850	3900			34350
630.10	UNIFORMED TRAFFIC OFFICERS	HR	675	675	225	225	225	225	225	225			2700
630.15	FLAGGERS	HR	425	425	150	150	150	150	150	150			1750
631.10	FIELD OFFICE-ENGINEERS	LS										1	1
631.16	TESTING EQUIPMENT - CONCRETE	LS										1	1
631.17	TESTING EQUIPMENT - BITUMINOUS	LS										1	1
631.18	TESTING EQUIPMENT - PROTECTIVE COATINGS	LS										1	1
631.25	FIELD OFFICE - TELEPHONE (N.A.B.I.)	LU										1	1
634.10	EMPLOYEE TRAINEESHIP	HR									2080		2080
635.10	MOBILIZATION	LS	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125			1
641.10	TRAFFIC CONTROL (BR 43N&S)	LS	0.5	0.5									1
641.10	TRAFFIC CONTROL (BR 48N&S, 49N&S, 50N&S)	LS			0.2	0.2	0.15	0.15	0.15	0.15			1
641.10	TRAFFIC CONTROL (MOD. - PUBLIC RELATIONS OFFICER)	LS	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125			1
641.15	PORTABLE CHANGEABLE MESSAGE SIGN	EACH	2	2	1					1			6
641.16	PORTABLE ARROW BOARD	EACH	2	2	1	1			1	1			8
646.414	DURABLE 6" WHITE LINE	LF	630	680	890	770	620	610	500	570			5270
646.415	DURABLE 6" YELLOW LINE	LF	500	540	710	620	490	500	400	460			4220
646.60	TEMPORARY 4" WHITE LINE	LF	900	1050	300	350	300	350	300	350			3900
646.60	TEMPORARY 4" WHITE LINE (TAPE, TYPE II)	LF	10250	11500	7750	7950	7750	7950	7750	7950			68850
646.61	TEMPORARY 4" YELLOW LINE	LF	950	900	300	300	300	300	300	300			3650
646.61	TEMPORARY 4" YELLOW LINE (TAPE, TYPE II)	LF	12450	16500	8350	8500	8350	8500	8350	8500			79500
646.81	RAISED PAVEMENT MARKERS TYPE II	EACH	1350	1650	850	850	850	850	850	850			8100
646.86	BLACK PAVEMENT MARKING MASKING TAPE	SF	4450	4500	2750	2950	2750	2950	2750	2950			26050
649.31	GEOTEXTILE UNDER STONE FILL	SY	20			10				10			40
649.51	GEOTEXTILE FOR SILT FENCE	SY	400	400	200	200	200	200	200	200			2000
651.26	HAY BALES FOR EROSION CONTROL	EACH	40	40	40	40	40	40	40	40			320
654.10	EROSION MATTING	SY	100	100	100	100	100	100	100	100			800
675.20	TRAFFIC SIGNS, TYPE A (MOD.)	SF	10	10	10	10	10	10	10	10			80

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
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QUANTITIES (3 OF 3)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. quantities Date 08/00
	Bridge Sheet No. C-6 Sheet 6 of 307

GENERAL NOTES:

1. A FIELD SURVEY WAS CONDUCTED BY VAOT, IN WHICH THE FACES OF ABUTMENTS AND PIER SURFACES OF THE EXISTING BRIDGES WERE LOCATED. THIS INFORMATION WAS THEN USED, IN COMBINATION WITH ORIGINAL BRIDGE DESIGN PLANS, TO DEVELOP THE APPROXIMATE EXISTING STRUCTURE INFORMATION SHOWN IN THESE PLANS. THE ORIGINAL BRIDGE DESIGN PLANS ARE INCLUDED IN THIS PLAN SET, AND ARE FOR INFORMATION ONLY. TRAFFIC CONTROL PLANS WERE DEVELOPED BASED SOLELY ON ORIGINAL HIGHWAY DESIGN PLANS. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING ANY AND ALL DIMENSIONS APPLICABLE TO THIS PROJECT.

2. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" (1990) AND ITS LATEST REVISIONS, AND AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" (1996) AND ITS LATEST REVISIONS.

3. DESIGN IS FOR HS-25 LOADING APPLIED IN ACCORDANCE WITH THE PROVISIONS OF AASHTO STANDARD SPECIFICATIONS.

4. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68°F, UNLESS SHOWN OTHERWISE.

5. ANY REFERENCE TO "LEFT" AND/OR "RIGHT" ON THE PLANS OR IN THE NOTES REFERS TO THE DIRECTION OF STATIONING AND NOT THE DIRECTION OF TRAFFIC.

6. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO DESIGNATION M270, GRADE 50W, EXCEPT AS NOTED IN THE PLANS.

7. THE FOLLOWING TABLE OF DESIGN STRENGTHS APPLIES TO THESE PLANS FOR DESIGN PURPOSES:

   CONCRETE: f'_c = 4,000 PSI (BRIDGE DECKS)

   f'_c = 3,500 PSI (PIERS AND ABUTMENTS)

   EXISTING STRUCTURAL STEEL (BR 49N&S): AASHO M165

   F_Y = 33,000 PSI

   NEW STRUCTURAL STEEL: AASHTO M270, GR50W

   F_Y = 50,000 PSI

   EXISTING REINFORCING STEEL:

   F_Y = 40,000 PSI (GRADE 40)

   NEW REINFORCING STEEL:

   F_Y = 60,000 PSI (GRADE 60)

   NEW STEEL PIPE PILES: ASTM 252 GRADE 2

   F_Y = 35,000 PSI

8. ALL CONNECTIONS OF UNPAINTED MEMBERS SHALL BE MADE WITH 7/8" DIAMETER AASHTO M-164, TYPE 3 BOLTS IN 15/16" DIAMETER HOLES, EXCEPT AS NOTED IN THE PLANS. ALL CONNECTIONS OF PAINTED OR GALVANIZED MEMBERS SHALL BE MADE WITH AASHTO M-164 TYPE 1 GALVANIZED BOLTS. NEW OR EXISTING BOLTS THAT HAVE BEEN FULLY TIGHTENED SHALL NOT BE RE-USED.

9. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS, THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.

10. ALL WELDING AND DIMENSIONAL TOLERANCES OF WELDED MEMBERS SHALL CONFORM TO THE LATEST ANSI / AASHTO / AWS BRIDGE WELDING CODE AND ITS LATEST REVISIONS.

11. WHERE GALVANIZING HAS BEEN REMOVED BY ANY MEANS FROM ANY BRIDGE COMPONENTS, INCLUDING DOWNSPOUTS AND ASSOCIATED HARDWARE, IT SHALL BE REPAIRED IN ACCORDANCE WITH SECTION 513 OF THE SPECIFICATIONS. COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO THE ITEM UNDER WHICH THE GALVANIZED COMPONENT IS PROVIDED.

12. ANY FORM BRACKET HOLES (IF REQUIRED) IN FASCIA STRINGERS OR STRINGER WEBS SHALL BE FILLED WITH BUTTONHEAD OR HEX-HEAD BOLTS, TYPE 3. FORM BRACKETS SHALL BE DESIGNED BY THE CONTRACTOR - MAXIMUM SPACING SHALL NOT EXCEED 4'-0" (TYP.).

13. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE.

14. REINFORCEMENT PLACING TOLERANCES SHALL BE:

   SPACING +/- 1"

   CLEARANCE +/- 1/4"

15. MINIMUM COVER FOR REINFORCING STEEL (EXCEPT IN THE DECK) SHALL BE 2" IN BACK FACES OF SUBSTRUCTURES AGAINST EARTH, 4" IN PIER COLUMNS AND CAP BEAMS, AND 3" ELSEWHERE, UNLESS OTHERWISE SHOWN.

16. FLAME CUTTING OF EPOXY COATED REINFORCING STEEL SHALL NOT BE PERMITTED.

17. ALL DECK SLAB, CURTAINWALL, AND EXPANSION JOINT HEADER CONCRETE SHALL BE ITEM 501.221, "CONCRETE, CLASS A QC/QA", IN ACCORDANCE WITH THE SPECIAL PROVISIONS. ALL BRUSH CURB CONCRETE SHALL BE ITEM 501.60, "SILICA-FUME CONCRETE". ALL SUBSTRUCTURE CONCRETE SHALL BE ITEM 501.25, "CONCRETE, CLASS B", EXCEPT AS SHOWN IN THE PLANS.

18. ALL EXPOSED EDGES OF CONCRETE IN THE SUBSTRUCTURE AND THE SUPERSTRUCTURE SHALL BE CHAMFERED 1" X 1", UNLESS OTHERWISE SHOWN.

19. ABUTMENT CONCRETE ABOVE THE ADJACENT BRIDGE SEAT ELEVATIONS SHALL NOT BE PLACED UNTIL GIRDERS HAVE BEEN ERECTED, BEAM PROFILES HAVE BEEN TAKEN, AND FINAL FINISH GRADE OF DECK IS ESTABLISHED BY THE ENGINEER.

20. BRIDGE SEATS SHALL BE SLOPED 1/2" PER FOOT EXCEPT UNDER BEARING PLATES WHERE THE SURFACE SHALL BE LEVEL WITH A CONSTRUCTION TOLERANCE OF 0.005 RADIANS, UNLESS OTHERWISE SHOWN IN THE PLANS. THE ENTIRE BRIDGE SEAT SHALL BE SMOOTH STEEL TROWEL FINISHED.

21. IN ALL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS, SHEAR KEYS SHALL BE FORMED AS SHOWN IN THE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46, AND THEY SHALL BE CONTINUOUS UP TO 3" FROM EACH END OF THE JOINT. THE UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.

22. POLYURETHANE JOINT SEALER SHALL BE USED IN CURB CONSTRUCTION JOINTS OR AT FIXED END CURB JOINTS AS DIRECTED BY THE ENGINEER, IN ACCORDANCE WITH THE CURB JOINT DETAILS SHOWN IN THE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.

23. THE COST OF INSTALLING PVC WATERSTOPS, AS SHOWN IN THE PLANS, SHALL BE SUBSIDIARY TO ITEM 501.25, "CONCRETE CLASS B". THE TYPE OF PVC WATERSTOP TO BE USED SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.

24. NOT USED.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

GENERAL NOTES (1 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. genotes	Date 10/99
Bridge Sheet No. C-7	Sheet 7 of 307

TVGA ENGINEERING, SURVEYING, P.C.

GENERAL NOTES (CONTINUED):

25. ITEM 514.10, "WATER REPELLENT" SHALL BE APPLIED TO ALL EXPOSED CONCRETE ON THE SUPERSTRUCTURE, EXCEPT THE BOTTOM OF THE DECK BETWEEN THE DRIP BEADS. IT SHALL ALSO BE APPLIED TO ALL EXPOSED SUBSTRUCTURES, EXCEPT AS NOTED IN NOTE 26.

26. WATER REPELLENT SHALL NOT BE APPLIED TO SURFACES THAT ARE TO BE COVERED BY FIBER REINFORCED POLYMER WRAP. IN ADDITION, THESE SURFACES SHALL BE PROTECTED FROM OVER-SPRAY OF WATER REPELLENT.

27. ABUTMENT AND PIER CONCRETE REPAIRS SHALL BE PERFORMED AS SHOWN IN THE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45. THE SUBSTRUCTURE CONDITION SHEETS, BRIDGE SHEETS SC-1 THROUGH SC-23, WERE DEVELOPED FROM NOTES OF AN OCTOBER 1998 PRELIMINARY INSPECTION, AND SHALL BE USED ONLY AS AN INDICATION OF THE GENERAL CONDITION OF THE SUBSTRUCTURE. A THOROUGH INSPECTION BY THE RESIDENT ENGINEER WILL BE MADE OF ALL SUBSTRUCTURE AREAS AT THE TIME OF CONSTRUCTION, AND THOSE AREAS FOUND TO HAVE SPALLED, DELAMINATED OR OTHERWISE UNSOUND CONCRETE WILL BE REPAIRED. THE CONTRACTOR SHALL SUPPLY ANY STAGING AND LADDERS REQUIRED FOR THIS INSPECTION, THE COST FOR WHICH SHALL BE SUBSIDIARY TO ITEM 635.10, "MOBILIZATION".

28. ALL FABRIC TROUGHS AND DOWNSPOUTS SHALL BE THOROUGHLY FLUSHED BY THE CONTRACTOR AFTER ALL PAVING IS COMPLETED. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE SUBSIDIARY TO ITEM 406.25, "BITUMINOUS CONCRETE PAVEMENT". FOLLOWING PAVING, ANY BITUMINOUS CONCRETE PAVEMENT THAT IS LODGED IN THE EXPANSION JOINTS, OR THAT ENTERS DRAIN TROUGHS, SCUPPERS, HOPPERS OR DOWNSPOUTS, SHALL BE REMOVED BY THE CONTRACTOR AT NO COST TO THE STATE.

29. SNOW FENCE SHALL BE INSTALLED ON BRIDGE RAIL OVER ALL ROADWAYS AS SHOWN ON STANDARD SHEET BR3-97, AND PAID FOR UNDER ITEM 620.75, "SNOW BARRIER - GALVANIZED".

30. ALL NEW PILING AT PIER 2 (BR 51N) AND PIER 3 (BR 51S) SHALL BE CAST-IN-PLACE CONCRETE PILING, WITH A MAXIMUM DESIGN LOAD OF 200 KIPS. METAL SHELLS FOR THE CAST-IN-PLACE CONCRETE PILES SHALL BE CLOSED END PP 12¾" WITH A MINIMUM WALL THICKNESS OF 3/8" CONFORMING TO ASTM 252 GRADE 2. A 1" THICK FLAT STEEL PLATE CONFORMING TO AASHTO M270 GRADE 36 SHALL BE WELDED TO THE END OF THE SHELLS AS SHOWN IN THE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46. THE FIRST PILE DRIVEN AT EACH PIER SHALL BE DYNAMICALLY TESTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS. PILES SHALL BE DRIVEN TO AN ULTIMATE LOAD CAPACITY OF 450 KIPS. ALL COSTS TO BE INCLUDED UNDER ITEM 505.25, "CAST-IN-PLACE CONCRETE PILING".

BRIDGE 5IN AND 5IS WERE NOT PART OF THIS PROJECT.

31. COSTS FOR ALL WORK REQUIRED FOR REMOVAL OF EXISTING CONCRETE BRUSH CURBS, CONCRETE DECK, CURTAINWALLS, EXPANSION JOINT HARDWARE, BEARINGS, WINGWALLS, ABUTMENT AND PIER CONCRETE, ACCORDING TO THE LIMITS OF WORK DEFINED IN THE PLANS, SHALL BE INCLUDED UNDER ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE (BRXXX)". PAYMENT FOR THIS ITEM SHALL INCLUDE ALL INCIDENTAL EXCAVATION NECESSARY TO PERFORM THE REQUIRED STRUCTURE REMOVAL WORK UNLESS OTHERWISE SHOWN IN THE PLANS. PAYMENT FOR BACKFILL AROUND ABUTMENTS AND PIERS FOLLOWING PLACEMENT OF NEW CONCRETE SHALL BE MADE UNDER ITEM 204.30, "GRANULAR BACKFILL FOR STRUCTURES".

32. PAYMENT FOR REMOVAL OF EXISTING BRIDGE PAVEMENT SHALL BE MADE UNDER ITEM 529.10, "REMOVAL OF BRIDGE PAVEMENT". PAYMENT FOR REMOVAL OF EXISTING APPROACH SLABS, AND EXCAVATION REQUIRED FOR NEW APPROACH SLAB CONSTRUCTION SHALL BE MADE UNDER ITEM 204.25, "STRUCTURE EXCAVATION".

33. EXISTING STEEL BEAMS TO BE REMOVED SHALL BE DELIVERED AND UNLOADED BY THE CONTRACTOR TO THE VAOT DISTRICT 6 MIDDLESEX MAINTENANCE GARAGE. THE CONTRACTOR IS RESPONSIBLE FOR UNLOADING STRUCTURAL STEEL AT THE GARAGE. CARE SHALL BE TAKEN NOT TO DAMAGE EXISTING BEAMS DURING REMOVAL OR TRANSPORTATION, AND ALL EXISTING CONCRETE SHALL BE REMOVED. THE BEAMS SHALL BE MARKED WITH IDENTIFICATION INFORMATION AS ORDERED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH REMOVAL AND SALVAGE OF EXISTING STEEL BEAMS SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURES (MOD. - EXISTING STEEL BEAMS - BRXX)" IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

34. ALL EXISTING BRIDGE RAIL SHALL BE SALVAGED AND DELIVERED TO THE VAOT DISTRICT 6 MIDDLESEX MAINTENANCE GARAGE. CARE SHALL BE TAKEN NOT TO DAMAGE THE RAIL DURING REMOVAL OR TRANSPORTATION. THE CONTRACTOR IS RESPONSIBLE FOR UNLOADING THE RAIL AT THE GARAGE. ALL COSTS ASSOCIATED WITH REMOVAL, TRANSPORT AND UNLOADING OF THE BRIDGE RAIL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 525.10, "REMOVAL OF EXISTING RAILING (MOD. - SALVAGE)" IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

35. REMOVAL OF ALL EXISTING BRIDGE APPROACH RAIL AND GUARD RAIL AT LOCATIONS SHOWN ON THE PLANS SHALL BE PAID FOR UNDER ITEM 621.80, "REMOVAL AND DISPOSAL OF GUARD RAIL".

36. ALL EXISTING GRANITE CURB SHALL BE SALVAGED AND DELIVERED TO THE VAOT DISTRICT 6 MIDDLESEX MAINTENANCE GARAGE. CARE SHALL BE TAKEN NOT TO DAMAGE THE CURB DURING REMOVAL OR TRANSPORTATION. THE CONTRACTOR IS RESPONSIBLE FOR UNLOADING THE CURB AT THE GARAGE. ALL COSTS ASSOCIATED WITH REMOVAL AND SALVAGE OF THE CURB SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE (BRXXX)".

37. THE CONTRACTOR SHALL REMOVE VEGETATION AROUND EXISTING SUBSTRUCTURE COMPONENTS AS ORDERED BY THE ENGINEER, INCLUDING THE SMALL TREES UNDER BRIDGE 51N&S. COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE (BRXXX)".

A PAD OF CONDRETE (CLASS A) 4' x4' x0.5' IN PLACE OF

38. A PAD OF STONE FILL, TYPE II (MINIMUM SIZE 6' x 6' x 2' THICK) SHALL BE CONSTRUCTED UNDER EACH SCUPPER DOWNSPOUT WHERE INADEQUATE PROTECTION AGAINST EROSION EXISTS IN THE OPINION OF THE ENGINEER. STONE FILL, TYPE II SHALL BE PLACED ON SLOPES ADJACENT TO WINGWALLS WHERE, IN THE JUDGEMENT OF THE ENGINEER, RUN-OFF MAY CAUSE POTENTIAL EROSION. IN ADDITION, ABUTMENT SLOPES SHALL BE REPAIRED BY PLACING STONE FILL AND RE-GRADING AS DIRECTED BY THE ENGINEER. STONE FILL SHALL BE PROVIDED UNDER ITEMS 613.10, 613.11, AND 613.13, AS DIRECTED BY THE ENGINEER AT EACH LOCATION. COSTS FOR RE-GRADING SLOPES SHALL BE SUBSIDIARY TO THE APPLICABLE STONE FILL ITEM.

39. TEMPORARY EROSION CONTROL MEASURES SHALL INCLUDE PLACEMENT OF SILT FENCE, HAY BALES AND EROSION CONTROL MATTING AROUND WINGWALLS, ABUTMENTS AND PIERS WHERE EXCAVATION AND BACKFILL IS PERFORMED, AS DIRECTED BY THE ENGINEER.

40. THE CONTRACTOR SHALL CALL "DIG-SAFE" PRIOR TO PERFORMING ANY EXCAVATION, IN ACCORDANCE WITH DIG-SAFE'S RULES OF NOTIFICATION. THE COST OF COORDINATING WITH DIG-SAFE AND THE FOLLOWING UTILITY COMPANIES SHALL BE SUBSIDIARY TO ITEM 635.10, "MOBILIZATION"; BELL ATLANTIC, BOLTON WATERWORKS, GREEN MOUNTAIN POWER CORP., AND NOVA CABLE. THE COST OF ANY EXPLORATORY EXCAVATION BY THE CONTRACTOR TO ASCERTAIN UTILITY LOCATIONS SHALL BE PAID UNDER ITEM 204.20, "TRENCH EXCAVATION OF EARTH" IN ACCORDANCE WITH THE SPECIAL PROVISIONS. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY AS DIRECTED BY THE RESPECTIVE UTILITY COMPANY OR THE ENGINEER AT THE CONTRACTOR'S OWN EXPENSE.

41. FOR TRAFFIC CONTROL NOTES, SEE BRIDGE SHEETS TC-1A AND TC-1B.

42. AN ESTIMATED QUANTITY OF ITEM 404.65, "EMULSIFIED ASPHALT" HAS BEEN INCLUDED TO BE USED, AT THE DISCRETION OF THE ENGINEER, AS A TACK COAT BETWEEN THE LIFTS OF ALL PAVEMENT AT AN APPLICATION RATE OF 0.015 GAL/SY.

STATE OF VERMONT
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Town Of MIDDLESEX-BOLTON	Bridge No.
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GENERAL NOTES (2 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. genotes	Date 08/00
Bridge Sheet No. C-8	Sheet 8 of 307

TVGA ENGINEERING, SURVEYING, P.C.

BRIDGE DATA

BRIDGE NUMBER	SUBSTRUCTURE ELEMENTS NOMENCLATURE PROPOSED	SUBSTRUCTURE ELEMENTS NOMENCLATURE ORIGINAL	APPROX. SKEW	SPAN NUMBER	PROPOSED LENGTH @ CL CONSTRUCTION	EXISTING STEEL BEAMS CONFIGURATION	EXISTING STEEL BEAMS APPROXIMATE WEIGHT (1) TO BE REMOVED	EXISTING STEEL BEAMS APPROXIMATE WEIGHT (1) TO REMAIN	EXISTING UNDERGROUND UTILITIES
43N	ABUTMENT 1	EAST ABUTMENT	45 °AHEAD RT.						
				1	52.95'	33WF130 W/ COVER PL. (INTERIOR) 36WF150 (FASCIA)			
	PIER 1	PIER 1	45° AHEAD RT.						TEL.
				2	74.14'	36WF170 W/ COVER PL.	84.1 TONS		
	PIER 2	PIER 2	45° AHEAD RT.						TEL.
				3	42.71'	33WF130 (INTERIOR)			
						36WF150 (FASCIA)			
	ABUTMENT 2	WEST ABUTMENT	45° AHEAD RT.						
43S	ABUTMENT 1	EAST ABUTMENT	45° AHEAD RT.						
				1	73.12'	36WF170 W/ COVER PL.			
	PIER 1	PIER 1	45° AHEAD RT.						TEL.
				2	84.10'	36WF245 W/ COVER PL.	123.7 TONS		
	PIER 2	PIER 2	45° AHEAD RT.						TEL.
				3	42.75'	33WF130 (INTERIOR)			
						36WF150 (FASCIA)			
	ABUTMENT 2	WEST ABUTMENT	45° AHEAD RT.						
48N	ABUTMENT 1	ABUTMENT 2	25° AHEAD LT.						
				1	98.13'	36WF300 W/ COVER PL'S.			
	PIER 1	PIER B	25° AHEAD LT.						
				2	99.07'	36WF300 W/ COVER PL'S.	282.4 TONS		
	PIER 2	PIER D	25° AHEAD LT.						
				3	98.04'	36WF300 W/ COVER PL'S.			
	ABUTMENT 2	ABUTMENT 4	25° AHEAD LT.						
48S	ABUTMENT 1	ABUTMENT 1	25° AHEAD LT.						
				1	98.51'	36WF300 W/ COVER PL'S.			
	PIER 1	PIER A	25° AHEAD LT.						
				2	99.42'	36WF300 W/ COVER PL'S.	283.5 TONS		
	PIER 2	PIER C	25° AHEAD LT.						
				3	98.36'	36WF300 W/ COVER PL'S.			
	ABUTMENT 2	ABUTMENT 3	25° AHEAD LT.						
49N	ABUTMENT 1	ABUTMENT 2	0°						
				1	96.88'	36WF300 W/ COVER PL'S.		131.6 TONS	
	ABUTMENT 2	ABUTMENT 4	0°						TEL.
49S	ABUTMENT 1	ABUTMENT 1	0°						
				1	96.98'	36WF300 W/ COVER PL'S.		131.6 TONS	
	ABUTMENT 2	ABUTMENT 3	0°						TEL.
50N	ABUTMENT 1	ABUTMENT 2	45° AHEAD RT.						
				1	66.33'	36WF150 W/ COVER PL.			
	PIER 1	PIER B	45° AHEAD RT.						TEL.
				2	96.50'	36WF300 W/ COVER PL.	148.1 TONS		
	PIER 2	PIER D	45° AHEAD RT.						ELECT.
				3	69.80'	36WF160 W/ COVER PL.			
	ABUTMENT 2	ABUTMENT 4	45° AHEAD RT.						
50S	ABUTMENT 1	ABUTMENT 1	45° AHEAD RT.						
				1	65.36'	36WF150 W/ COVER PL.			
	PIER 1	PIER A	45° AHEAD RT.						TEL.
				2	90.50'	36WF300 W/ COVER PL.	139.6 TONS		
	PIER 2	PIER C	45° AHEAD RT.						ELECT.
				3	63.50'	36WF150 W/ COVER PL.			
	ABUTMENT 2	ABUTMENT 2	45° AHEAD RT.						
51N	ABUTMENT 1	ABUTMENT 2	0°						
				1	38.15'	30WF108 (INTERIOR)			
						36WF150 (FASCIA)			
	PIER 1	PIER B	0°						
				2	88.95'	36WF300 W/ COVER PL.			
	PIER 2	PIER D	0°						
				3	84.35'				
						36WF300 W/ COVER PL.			
						36WF300 W/ COVER PL.	274.8 TONS		
						36WF194 W/ COVER PL.			
	PIER 3	PIER C	45° AHEAD LT.						CABLE TV
				4	98.71'	36WF300 W/ COVER PL'S.			
	PIER 4	PIER J	45° AHEAD LT.						TEL./WATER
				5	53.09'	33WF130 W/ COVER PL. (INTERIOR)			
						36WF150 (FASCIA)			
	ABUTMENT 2	ABUTMENT 4	45° AHEAD LT.						
51S	ABUTMENT 1	ABUTMENT 1	0°						
				1	38.37'	30WF108 (INTERIOR)			
						36WF150 (FASCIA)			
	PIER 1	PIER A	0°						
				2	88.89'	36WF300 W/ COVER PL.			
	PIER 2	PIER C	0°						
				3	87.46'	36WF300 W/ COVER PL.			
	PIER 3	PIER E	0°						
				4	83.82'				
						36WF300 W/ COVER PL.			
						36WF300 W/ COVER PL.	339.9 TONS		
						36WF194 W/ COVER PL.			
	PIER 4	PIER F	45° AHEAD LT.						CABLE TV
				5	98.18'	36WF300 W/ COVER PL'S.			
	PIER 5	PIER H	45° AHEAD LT.						TEL./WATER
				6	52.86'	33WF130 W/ COVER PL. (INTERIOR)			
						36WF150 (FASCIA)			
	ABUTMENT 2	ABUTMENT 3	45° AHEAD LT.						
TOTALS							1680 TONS	270 TONS	

SCOPE OF WORK

BRIDGE NUMBER	PROPOSED DECK TREATMENT	PROPOSED JOINT	PROPOSED STEEL STRINGERS TREATMENT	PROPOSED STEEL STRINGERS APPROX. WT.	PROPOSED BEARING TREATMENT	PROPOSED SUBSTRUCTURE TREATMENT	PROPOSED MIN. VERT. CLEARANCE OVER ROADWAY
43N	NEW 8 1/2" CONCRETE DECK W/ 2 1/2" WEARING SURFACE AND NEW APPROACH SLABS	FIXED TYPE C	NEW 30" WF CONTINUOUS ROLLED BEAMS AASHTO M270 GR 50W	66.5 TONS	NEW ELASTOMERIC FIXED	SEE NOTE 3	14'-11"
					NEW ELASTOMERIC EXP.	NPC / LCR / FWPC	
					NEW ELASTOMERIC EXP.	NPC / LCR / FWPC	
		EXP. TYPE H			NEW ELASTOMERIC EXP.	SEE NOTE 2	
43S	DO.	EXP. TYPE H	NEW 33' WF CONTINUOUS ROLLED BEAMS AASHTO M270 GR 50W	85.5 TONS	NEW ELASTOMERIC EXP.	SEE NOTE 2	14'-4"
					NEW ELASTOMERIC EXP.	NPC / LCR / FWPC	
					NEW ELASTOMERIC EXP.	NPC / LCR / FWPC	
		FIXED TYPE C			NEW ELASTOMERIC FIXED	SEE NOTE 3	
48N	DO.	FIXED TYPE C	NEW 32¾" WEB CONTINUOUS PLATE GIRDERS AASHTO M270 GR 50W	163.9 TONS	NEW ELASTOMERIC FIXED	SEE NOTE 3	NOT APPLICABLE
					NEW ELASTOMERIC EXP.	LCR	
					NEW ELASTOMERIC EXP.	LCR	
		FINGER JOINT			NEW ELASTOMERIC EXP.	SEE NOTE 2	
48S	DO.	FINGER JOINT	NEW 32¾" WEB CONTINUOUS PLATE GIRDERS AASHTO M270 GR 50W	164.3 TONS	NEW ELASTOMERIC EXP.	SEE NOTE 2	NOT APPLICABLE
					NEW ELASTOMERIC EXP.	LCR	
					NEW ELASTOMERIC EXP.	LCR	
		FIXED TYPE C			NEW ELASTOMERIC FIXED	SEE NOTE 3	
49N	DO.	FIXED TYPE C	N/A	N/A	JCPG/RIK FIXED	SEE NOTE 4	16'-2"
		EXP. TYPE H			NEW ELASTOMERIC EXP.	SEE NOTE 2	
49S	DO.	FIXED TYPE C	N/A	N/A	JCPG/RIK FIXED	SEE NOTE 4	15'-0"
		EXP. TYPE H			NEW ELASTOMERIC EXP.	SEE NOTE 2	
50N	DO.	FIXED TYPE C	NEW 30⅜" WEB CONTINUOUS PLATE GIRDERS AASHTO M270 GR 50W	109.9 TONS	NEW ELASTOMERIC FIXED	SEE NOTE 3	18'-5"
					NEW ELASTOMERIC EXP.	NPC/LCR	
					NEW ELASTOMERIC EXP.	NPC/LCR	
		EXP. TYPE H			NEW ELASTOMERIC EXP.	SEE NOTE 2	
50S	DO.	EXP. TYPE H	NEW 30⅜" WEB CONTINUOUS PLATE GIRDERS AASHTO M270 GR 50W	100.7 TONS	NEW ELASTOMERIC EXP.	SEE NOTE 2	16'-3"
					NEW ELASTOMERIC EXP.	NPC/LCR	
					NEW ELASTOMERIC EXP.	NPC/LCR	
		FIXED TYPE C			NEW ELASTOMERIC FIXED	SEE NOTE 3	
51N	DO.	FIXED TYPE C	NEW 30" WF ROLLED BEAMS AASHTO M270 GR 50W (SPAN 1)		NEW ELASTOMERIC FIXED	SEE NOTE 3	14'-9"
		EXP. TYPE H			NEW ELAST. EXP./NEW ELAST. EXP.	NPC / LCR / FWPC	
					NEW ELASTOMERIC FIXED	REPLACE PIER	
			NEW 33" WEB CONTINUOUS PLATE GIRDERS AASHTO M270 GR 50W (SPANS 2-5)	182.1 TONS		NPC LCR / FWPC (SEE NOTE 5)	
					NEW ELASTOMERIC EXP.		
					NEW ELASTOMERIC EXP.		
		EXP. TYPE H			NEW ELASTOMERIC EXP.	SEE NOTE 2	
51S	DO.	FIXED TYPE C	NEW 30" WF ROLLED BEAMS AASHTO M270 GR 50W (SPAN 1)		NEW ELASTOMERIC FIXED	SEE NOTE 3	15'-4"
		EXP. TYPE H			NEW ELAST. EXP./NEW ELAST. EXP.	NPC / LCR / FWPC	
					NEW ELASTOMERIC EXP.	REPLACE PIER	
			NEW 33" WEB CONTINUOUS PLATE GIRDERS AASHTO M270 GR 50W (SPANS 2-6)	213.3 TONS	NEW ELASTOMERIC FIXED	NPC LCR / FWPC (SEE NOTE 5)	
					NEW ELASTOMERIC EXP.		
					NEW ELASTOMERIC EXP.		
		EXP. TYPE H			NEW ELASTOMERIC EXP.	SEE NOTE 2	
TOTALS				1100 TONS			

SEQUENCE OF OPERATIONS:

PHASE I (FIRST CONSTRUCTION SEASON):

1. CONSTRUCT SOUTHBOUND CROSSOVERS AS SHOWN IN TRAFFIC CONTROL PLANS.
2. SHIFT I-89 SOUTHBOUND TRAFFIC TO I-89 NORTHBOUND SIDE.
3. REHABILITATE BRIDGES 43S, 48S, 49S, 50S, 51S.
4. SHIFT I-89 SOUTHBOUND TRAFFIC BACK TO I-89 SOUTHBOUND SIDE.

PHASE II (SECOND CONSTRUCTION SEASON):

1. CONSTRUCT NORTHBOUND CROSSOVERS AS SHOWN IN TRAFFIC CONTROL PLANS.
2. SHIFT I-89 NORTHBOUND TRAFFIC TO I-89 SOUTHBOUND SIDE.
3. REHABILITATE BRIDGES 43N, 48N, 49N, 50N, 51N.
4. SHIFT I-89 NORTHBOUND TRAFFIC BACK TO I-89 NORTHBOUND SIDE.

NOTES:

1. EXISTING STEEL WEIGHTS ARE APPROXIMATE, USING RATIO OF BRIDGE LENGTH TIMES THE TOTAL RECORD WEIGHT FOR EACH BRIDGE PAIR.
2. EXPANSION ABUTMENT TREATMENT INCLUDES: LOCALIZED CONCRETE REPAIR, REMOVE AND REPLACE WINGWALLS ABOVE BRIDGE SEAT ELEVATION, REMOVE BRIDGE SEAT AND REPLACE TO NEW SEAT ELEVATIONS, REMOVE CURTAINWALL, AND PLACE NEW BACKWALL.
3. FIXED ABUTMENT TREATMENT (EXCEPT BR 49N&S) INCLUDES: LOCALIZED CONCRETE REPAIR, REMOVE AND REPLACE WINGWALLS ABOVE BRIDGE SEAT ELEVATION. REMOVE BRIDGE SEAT AND REPLACE TO NEW SEAT ELEVATIONS, REMOVE CURTAINWALL AND REPLACE WITH NEW CURTAINWALL.
4. FIXED ABUTMENT TREATMENT (BR 49N&S) INCLUDES: LOCALIZED CONCRETE REPAIR, REMOVE AND REPLACE WINGWALLS ABOVE BRIDGE SEAT ELEVATION. REMOVE CURTAINWALL AND REPLACE WITH NEW CURTAINWALL.
5. AT BR 51N&S, FIBER WRAPPING OF THE PIER COLUMNS TO BE APPLIED TO CERTAIN COLUMNS ONLY, AS SHOWN ON SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

PIER CODES

LCR LOCALIZED CONCRETE REPAIR
NPC NEW PIER CAP
FWPC FIBER WRAP PIER COLUMNS

BEARING CODES

JCPG JACK, CLEAN, PAINT, GREASE EXISTING BEARINGS
RIK REPLACE EXISTING BEARINGS IN KIND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

BRIDGE INFORMATION SUMMARY

Designed By P.W. SZUSTAK	Drawn By P.A. MEREWETHER
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. brgsum	Date 10/99
Bridge Sheet No. C-9	Sheet 9 of 307

TVGA ENGINEERING, SURVEYING, P.C.

GPS CONTROL POINTS

TRAV. 1

VTGS SURVEY DISK STAMPED " BASELINE WEST 1970 "

N = 42565.15840

E = 10049.883

Z = 528.05

STATION DESCRIPTION

TO REACH FROM THE INTERSECTION OF US ROUTE 2, STATE STREET, AND BAILEY AVENUE IN MONPIELIER, GO WEST ALONG US ROUTE 2 FOR 1.9 MILES (3.1 KM) TO THE MARK ON THE NORTHEAST SIDE OF ROUTE 2.

THE MARK IS SET IN THE TOP OF A 6 INCH BY 6 INCH CONCRETE MONUMENT FLUSH WITH GROUND SURFACE.

IT IS 60.5 FEET (18.4 M) NORTHEAST OF THE CENTERLINE OF US ROUTE 2, 119 FEET (36.3 M) NORTH NORTHWEST OF A CLUMP APPLE, 50.5 FEET (15.4 M) SOUTHEAST OF A BRACE POST IN THE 189 R.O.W. FENCE, 106 FEET (32.3 M) NORTHWEST OF A 4 INCH BIRCH IN 189 R.O.W. FENCE, 1.8 FEET (0.5 M) SOUTHWEST OF A CARSONITE WITNESS POST IN I-89 R.O.W. FENCE.

TRAV. 2

CGS BENCHMARK DISK STAMPED " B 24 1935"

N = 43272.95550

E = 8735.81100

Z = 525.842

STATION DESCRIPTION

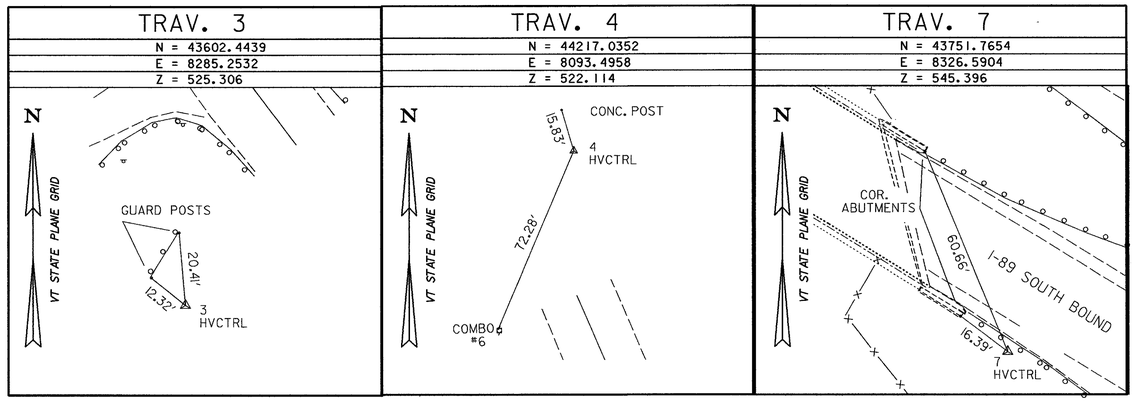
TO REACH FROM THE JUNCTION OF US ROUTE 2 AND VERMONT 100B IN MIDDLESEX, PROCEED 3.85 MI (6.20 KM) EAST ON ROUTE 2 AND THE MARK ON THE RIGHT.

THE MARK IS SET IN THE TOP OF A 6 INCH BY 6 INCH CONCRETE MONUMENT, PROJECTING 6 INCHES ABOVE GROUND SURFACE.

IT IS 90.0 FEET (27.4 M) SOUTHEAST OF A 20 INCH DIA. CAST IRON CULVERT, 42 FEET (12.8 M) SOUTHWEST OF THE CENTERLINE OF US ROUTE 2, 31.8 FEET (9.7 M) NORTHEAST OF THE CONER OF A 6 FOOT (1.8 M) CHAINLINK FENCE, 12.6 FEET (3.8 M) SOUTHWEST OF THE SOUTHWEST RAIL,
6.5 FEET (2.0 M) NORTHEAST OF THE RAILROAD R.O.W. FENCE 0.8 FEET (24.4 CM) NORTHEAST OF A FIBERGLASS WITNESS POST.
OWNERSHIP IS OF THE CENTRAL VERMONT RAILWAY.

• DESCRIPTIONS PROVIDED BY VTGS

TRAVERSE TIES



ALIGNMENT TIES

N =	N =	N =	N =	N =
E =	E =	E =	E =	E =

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83/92

NOTES:

1. VAOT TO PROVIDE ALIGNMENT TIES DURING CONSTRUCTION.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **43N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER US ROUTE 2	
CONTROL POINT TIES (43N&S)	
Designed By V.A.O.T.	Drawn By V.A.O.T.
Checked By V.A.O.T. Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43ties	Date 10/99
Bridge Sheet No. **C-10**	Sheet 10 of 307

GPS CONTROL POINTS

TRAV. 1

VTGS SURVEY DISK STAMPED
"PAPPY AZ MK. 1997"

N = 78677.96340

E = 60239.82600

Z = 510.696

STATION DESCRIPTION

TO REACH THIS MARK FROM THE VT ROUTE 100 BRIDGE OVER I-89 AT EXIT 10 IN THE TOWN OF WATERBURY.
TRAVEL NORTHBOUND ON I-89 FOR 3.1 MI (5.0 KM) TO THE MARK LOCATED ON THE RIGHT IN THE TOP OF A MASSIVE LEDGE OUTCROP. IT IS 0.15 MI (0.24 KM) NORTHWEST OF THE I-89 NORTHBOUND BRIDGE OVER U.S. ROUTE 2 AND 24M (78.7 FT) NORTHWEST OF MILEMARKER 66.80.

THIS MARK IS 7.1 M (23.3 FT) NORTHEAST OF AND ABOUT 3 M (9.8 FT) HIGHER THAN THE NORTHEAST EDGE OF PAVEMENT OF I-89 NORTHBOUND. THE MARK IS 15.7 M (51.5 FT) SOUTHWEST OF THE RIGHT-OF-WAY FENCE, 6.3 M (20.7FT) SOUTH SOUTHWEST OF A 25 CM PINE AND 0.3 M (1.0 FT) SOUTHWEST OF A FIBERGLASS WITNESS POST.

TRAV. 2

VTGS SURVEY DISK STAMPED
"PAPPY 1997"

N = 75885.77410

E = 66219.1800

Z = 528.577

STATION DESCRIPTION

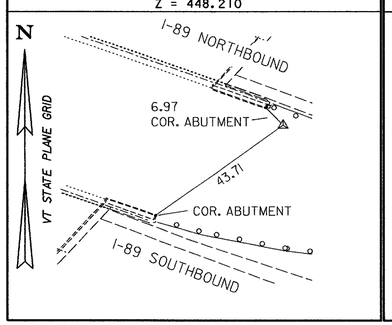
TO REACH THIS MARK FROM THE VT ROUTE 100 BRIDGE OVER I-89 AT EXIT 10 IN THE TOWN OF WATERBURY,
TRAVEL NORTHBOUND ON I-89 FOR 1.8 MI (2.9KM) TO THE MARK LOCATED ON THE SOUTHEAST END OF A MASSIVE ROCK CUT. IT IS POSITIONED ON THE RIGHT AT THE TOP OF THIS ROCK CUT, RESTING JUST NORTHWEST OF MILE MARKER 65.50.

THIS MARK IS 5.5 M (18.0 FT) NORTHEAST OF SOUTHWEST FACE OF ROCK CUT, 59.7 M (195.9FT) SOUTHWEST OF RIGHT-OF-WAY FENCE, 47.9 M (157.2 FT) SOUTHWEST OF A 30 CM PINE, 4.38 (14.37 FT) EAST OF A DRILL HOLE WITH CHISELED LINES, 2.35 M (7.71FT) NORTHWEST OF A DRILL HOLE AND 0.3 M (1.0FT) SOUTHWEST OF A FIBERGLASS WITNESS POST.

TRAVERSE TIES

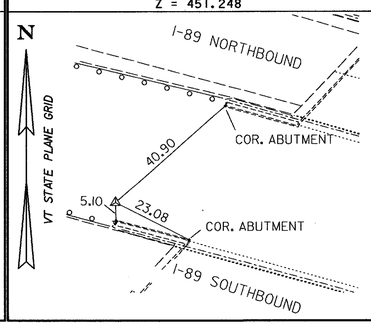
TRAV. 5

N = 75318.1287
E = 67862.7382
Z = 448.210



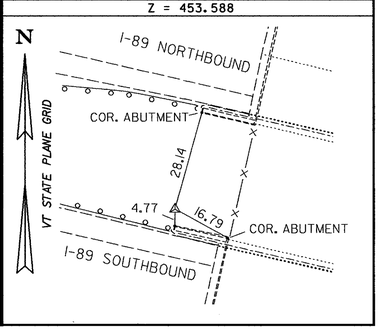
TRAV. 6

N = 75395.4279
E = 67513.3987
Z = 451.248



TRAV. 7

N = 75529.0261
E = 66959.9192
Z = 453.588



ALIGNMENT TIES

N =	N =	N =	N =	N =
E =	E =	E =	E =	E =

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83/92

NOTES:

1. VAOT TO PROVIDE ALIGNMENT TIES DURING CONSTRUCTION.

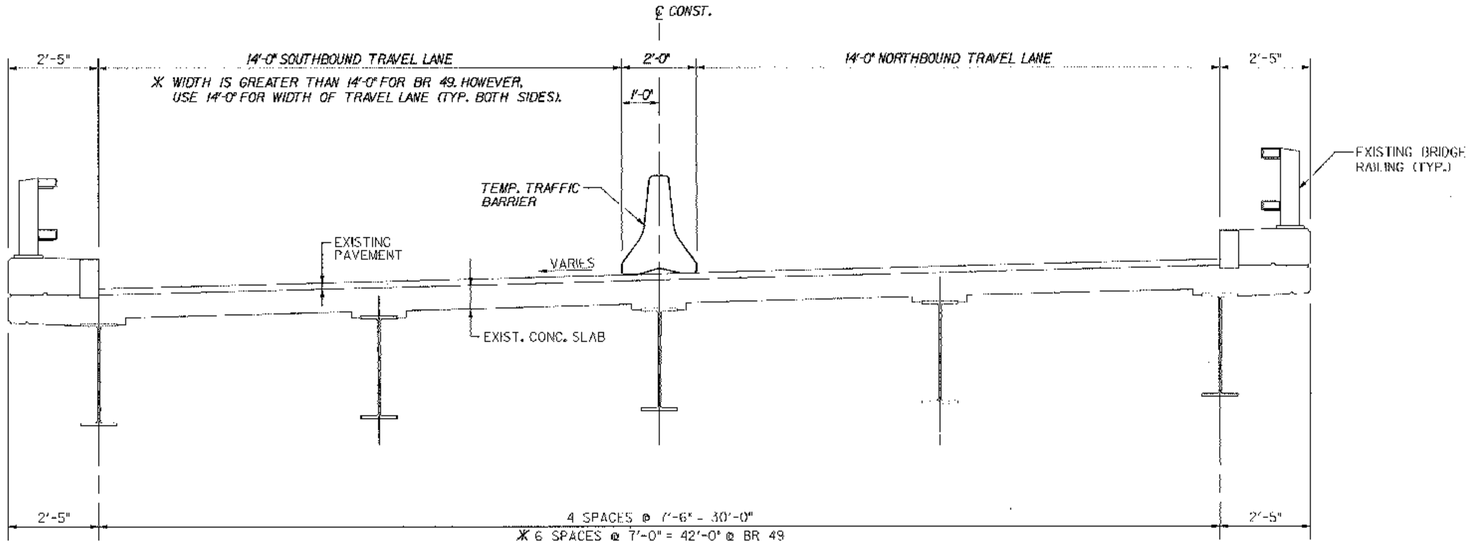
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48&49**
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 OVER LITTLE RIVER (48) / I-89 OVER TH 7 (49)

CONTROL POINT TIES (48N&S AND 49N&S)

Designed By V.A.O.T.	Drawn By V.A.O.T.
Checked By V.A.O.T. Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48&49tie	Date 10/99
Bridge Sheet No. **C-11**	Sheet 11 of 307

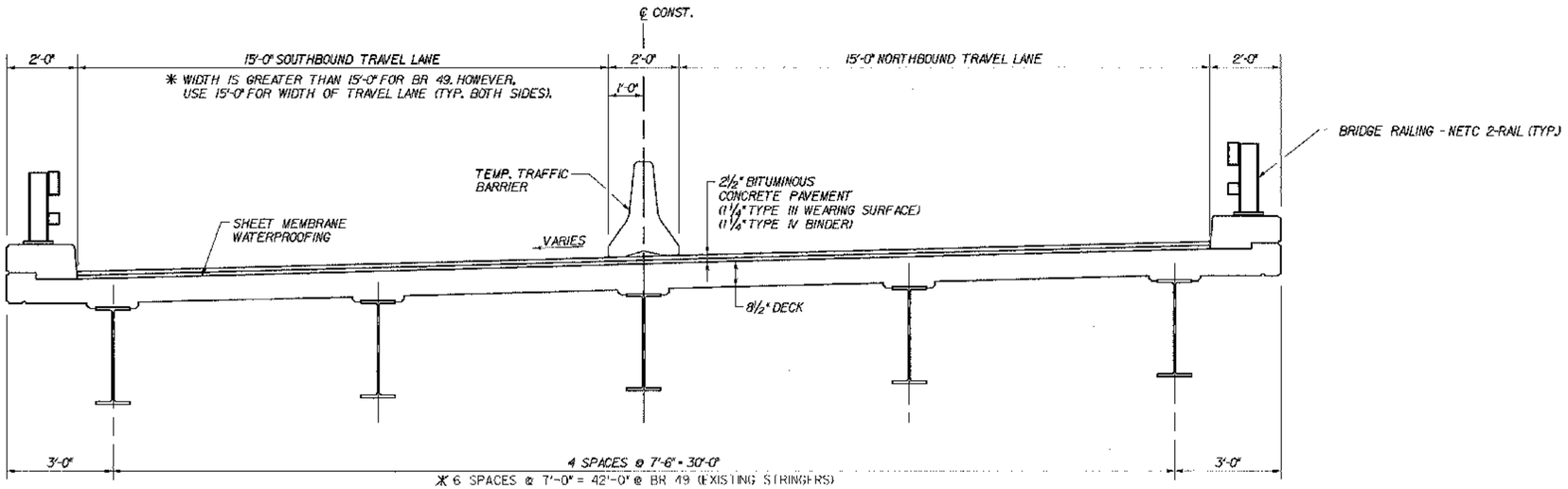


TYPICAL PHASE I TRAFFIC CONTROL ON EXISTING BRIDGE (NORTHBOUND)

SCALE: ½" = 1'-0"

NOTE:

* TRANSVERSE SECTIONS FOR BR 43, 48, 50 ~~AND 51~~ ARE SHOWN. TRANSVERSE SECTION FOR BR 49 IS SIMILAR EXCEPT AS NOTED.



TYPICAL PHASE II TRAFFIC CONTROL ON NEW BRIDGE (SOUTHBOUND)

SCALE: ½" = 1'-0"

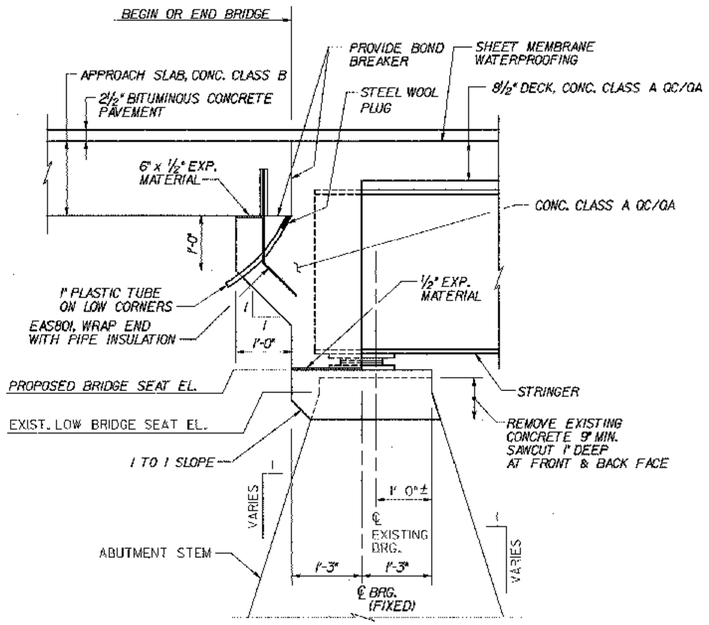
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TRANSVERSE SECTIONS FOR TRAFFIC CONTROL

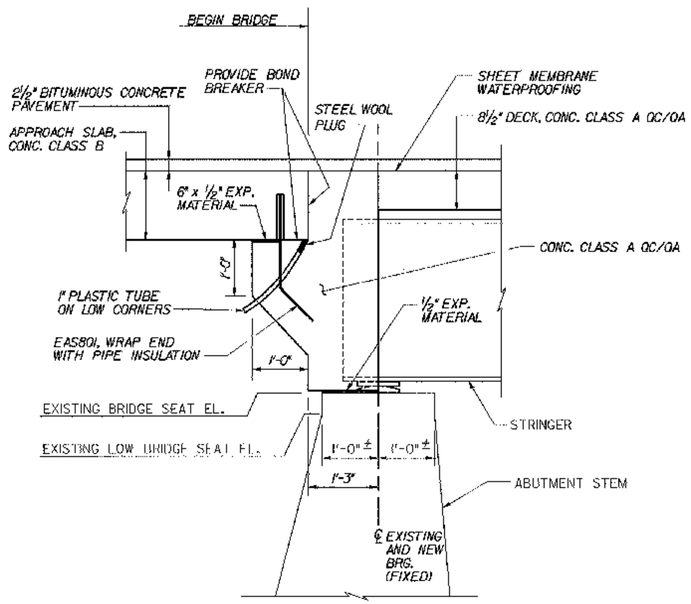
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. tstraf	Date 10/99
Bridge Sheet No. C-14	Sheet 14 of 307

TVGA ENGINEERING, SURVEYING, P.C.



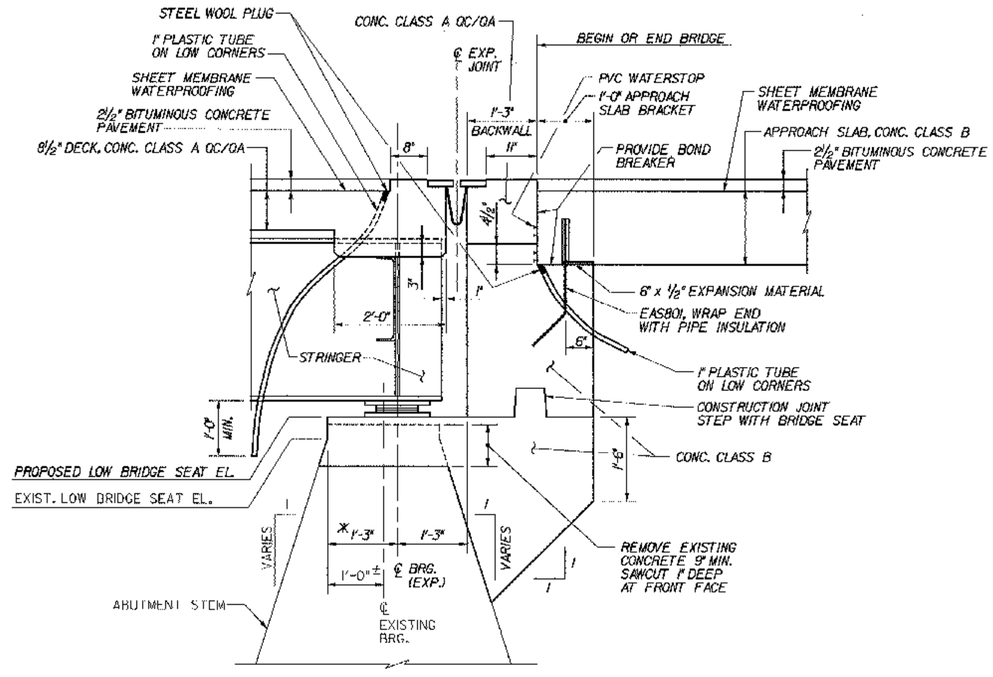
TYPICAL FIXED ABUT. DETAIL, TYPE "C"
(NORMAL TO ℄ BEARING)

SCALE: ¾"=1'-0"



FIXED ABUT. DETAIL, TYPE "C"
(NORMAL TO ℄ BEARING)
(BR 49N&S ONLY)

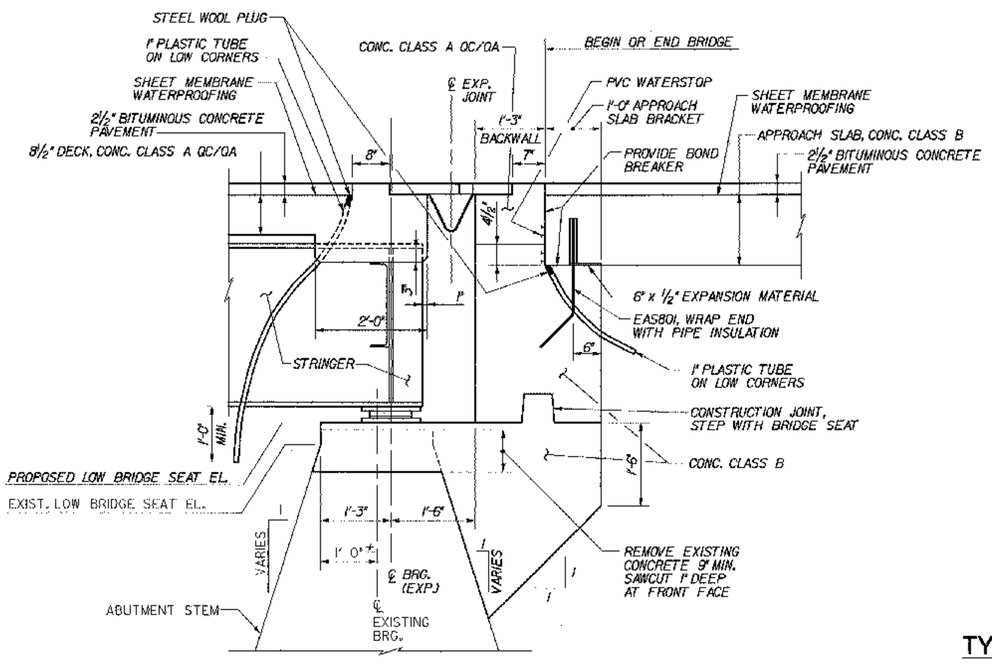
SCALE: ¾"=1'-0"



* 1'-0" FOR BR 49N&S

TYPICAL EXP. ABUT. DETAIL, TYPE "H"
(NORMAL TO ℄ BEARING)

SCALE: ¾"=1'-0"

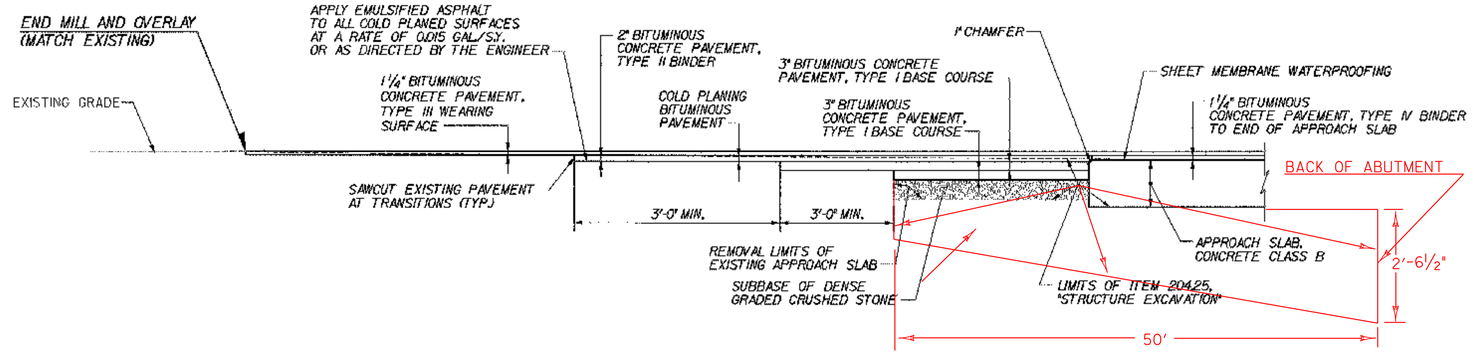


TYPICAL EXP. ABUT. DETAIL, FINGER JOINT
(NORMAL TO ℄ BEARING)

SCALE: ¾"=1'-0"

(NOT SHOWN - END OF DECK SLAB AT PIER SIMILAR TO END OF DECK SLAB AT TYPICAL EXP. ABUT. DETAIL, TYPE "H")

TYPICAL EXP. PIER DETAIL, TYPE "H"



APPROACH PAVEMENT TRANSITION DETAIL
N.T.S.

1. NEW AREA IS ALL DENSE GRADED CRUSHED STONE
2. NEW AREA IS ALSO THE LIMITS OF 204.25 STRUCTURE EXCAVATION
3. TYPICAL FOR ALL BRIDGES

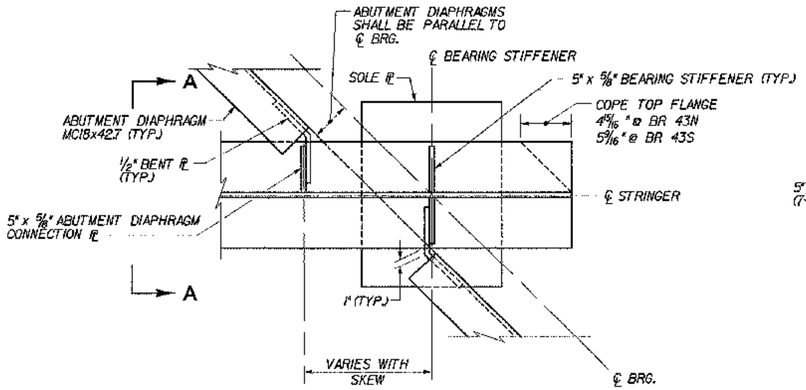
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

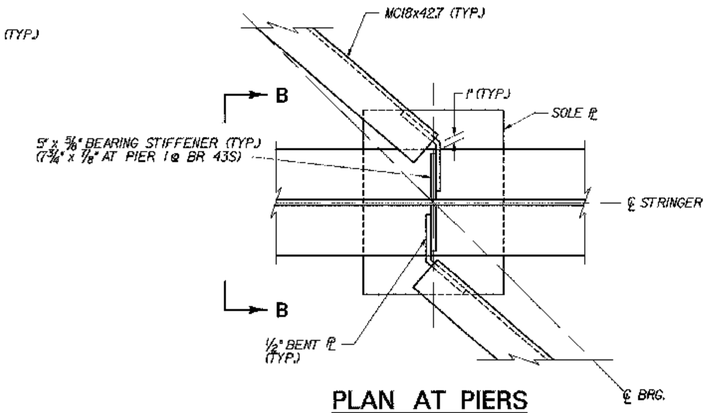
TYPICAL END OF DECK SLAB DETAILS

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. dslabdet	Date 10/99
Bridge Sheet No. C-15	Sheet 15 of 307

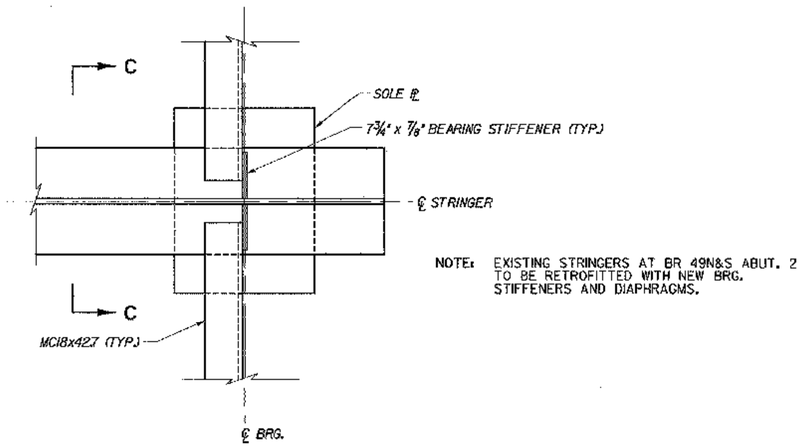
TVGA ENGINEERING, SURVEYING, P.C.



PLAN AT EXPANSION ABUTMENTS
(BR 43N&S)
N.T.S.

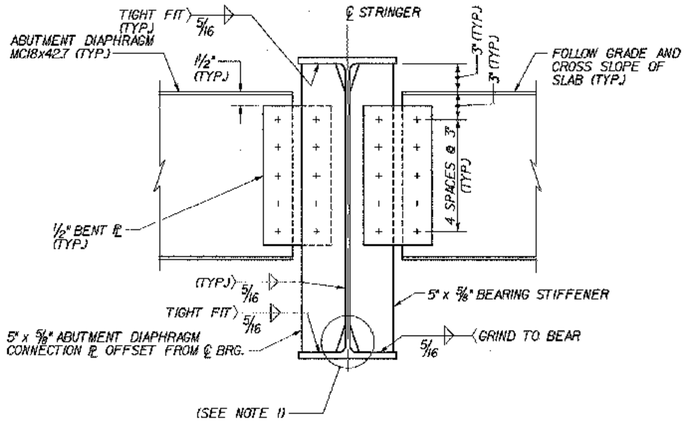


PLAN AT PIERS
(BR 43N&S)
N.T.S.

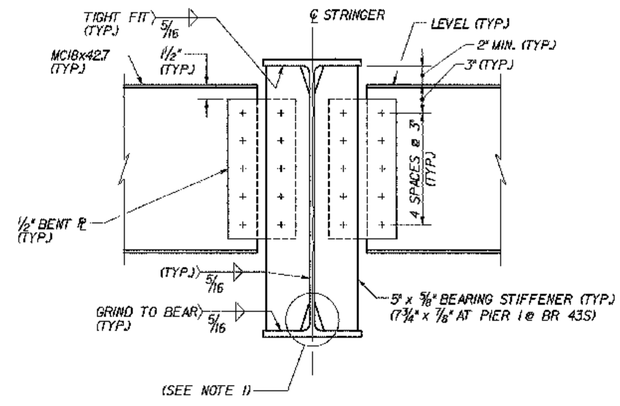


NOTE: EXISTING STRINGERS AT BR 49N&S ABUT. 2 TO BE RETROFITTED WITH NEW BRG. STIFFENERS AND DIAPHRAGMS.

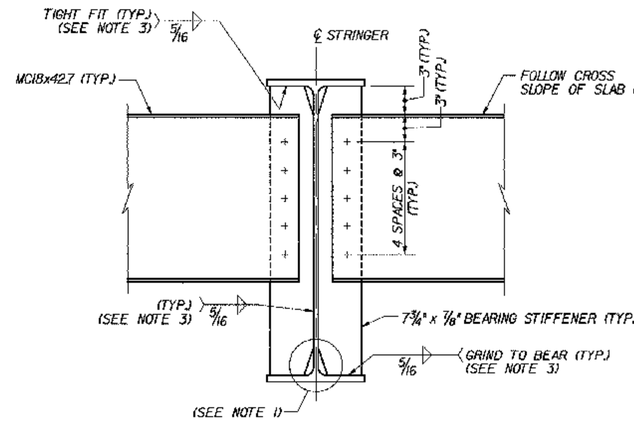
PLAN AT ABUTMENTS AND PIERS
~~(PIER 1 AT BR 51N&S)~~
(ABUTMENT 2 AT BR 49N&S)
N.T.S.



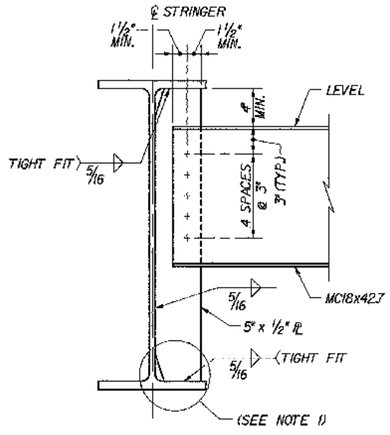
ELEVATION A–A
N.T.S.



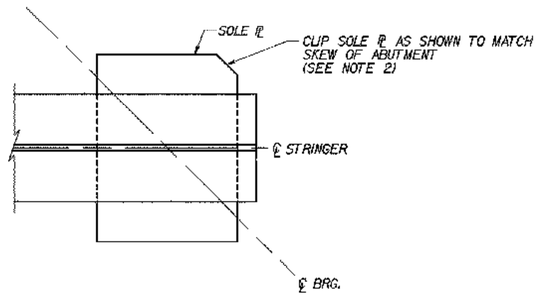
ELEVATION B–B
N.T.S.



ELEVATION C–C
N.T.S.



TYPICAL INTERMEDIATE DIAPHRAGM CONNECTION
N.T.S.



PLAN AT FIXED ABUTMENTS
(BR 43N&S SHOWN, ~~ABUTMENT 1 AT BR 51N&S~~ SIMILAR)
N.T.S.

NOTES:

1. FOR TYPICAL WELD TERMINATION AND COPING DETAIL, SEE TYPICAL PLATE GIRDER DETAILS (2 OF 2), BRIDGE SHEET C-18.
2. FOR DETAILS AND DIMENSIONS OF SOLE PLATE CLIP, SEE BEARING DETAILS ON BRIDGE SHEETS C-21 THROUGH C-25.
3. FIELD WELD AT BR 49N&S.
4. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.

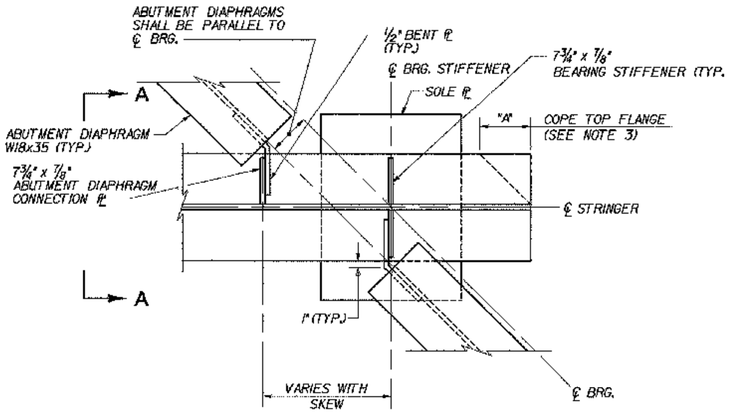
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TYPICAL ROLLED BEAM DETAILS

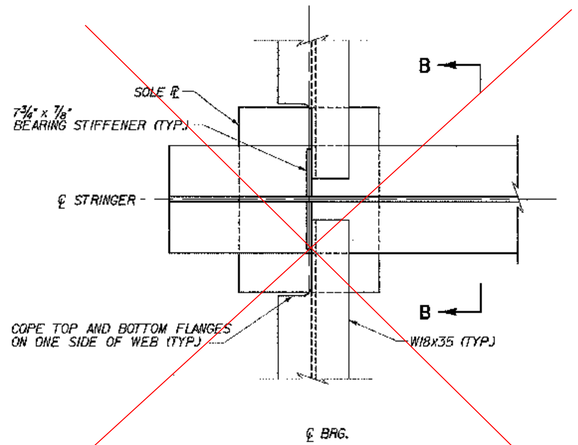
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. rollbeam	Date 10/99
Bridge Sheet No. C-16	Sheet 16 of 307

TVGA ENGINEERING, SURVEYING, P.C.



PLAN AT EXPANSION ABUTMENTS

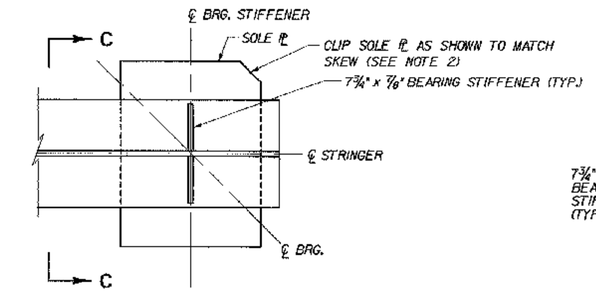
N.T.S.



PLAN AT PIERS WITH EXPANSION JOINTS

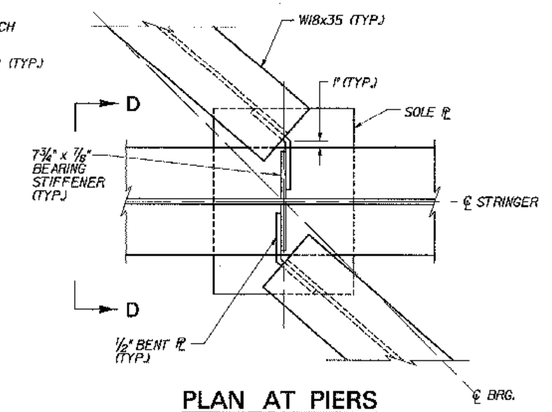
(PIER 1 AT BR51 N&S)

N.T.S.



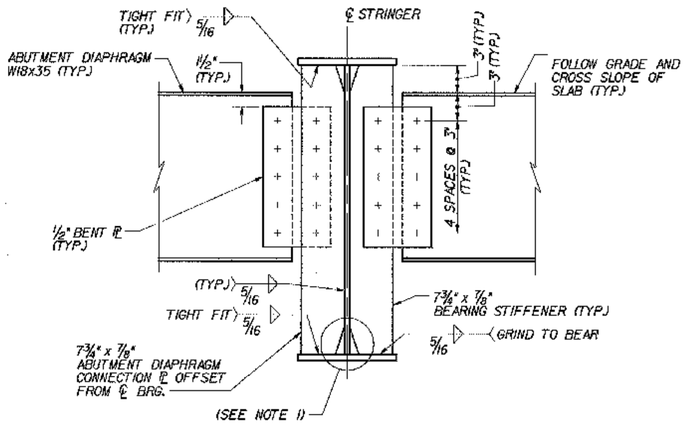
PLAN AT FIXED ABUTMENTS

N.T.S.



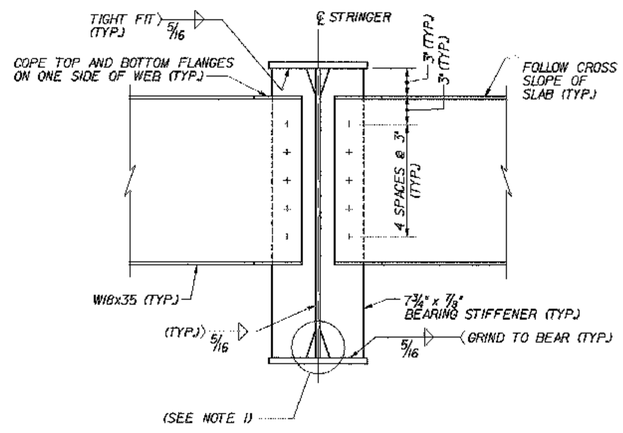
PLAN AT PIERS

N.T.S.



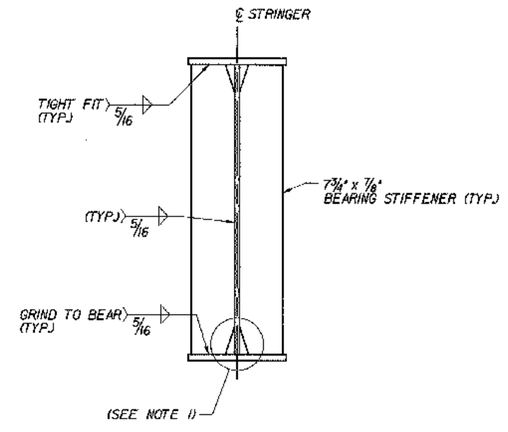
ELEVATION A–A

N.T.S.



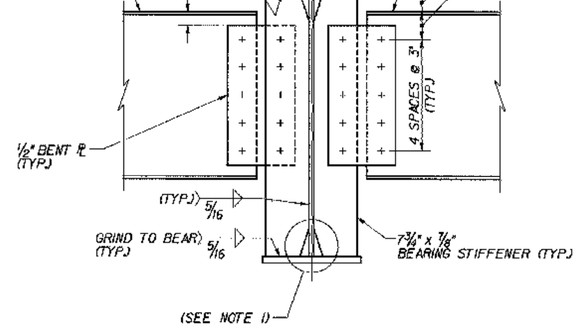
ELEVATION B–B

N.T.S.



ELEVATION C–C

N.T.S.



ELEVATION D–D

N.T.S.

NOTES:

1. FOR TYPICAL WELD TERMINATION AND COPING DETAIL, SEE TYPICAL PLATE GIRDER DETAILS (2 OF 2), BRIDGE SHEET C-18.
2. FOR DETAILS AND DIMENSIONS OF SOLE PLATE CLIP, SEE BEARING DETAILS ON BRIDGE SHEETS C-21 THROUGH C-25.
3. FOR TABLE OF TOP FLANGE COPE DIMENSION "A", SEE TYPICAL PLATE GIRDER DETAILS (2 OF 2), BRIDGE SHEET C-18.
4. THE TOP AND BOTTOM EDGES OF BEARING STIFFENERS SHALL BE CUT AT RIGHT ANGLES TO THE WEB.

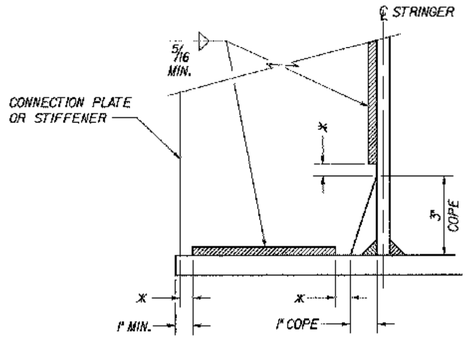
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TYPICAL PLATE GIRDER DETAILS (1 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. girdrdet	Date 10/99
Bridge Sheet No. C-17	Sheet 17 of 307

TVGA ENGINEERING, SURVEYING, P.C.



TYPICAL WELD TERMINATION AND COPING DETAIL

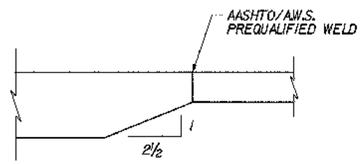
(PLATE GIRDER SHOWN – SIMILAR FOR ROLLED BEAM)

N.T.S.

* NO WELD PLACED FOR 1/4" MIN. 1/2" MAX. (EXCEPT MUST MAINTAIN 1" MINIMUM FROM EDGE OF FLANGE)

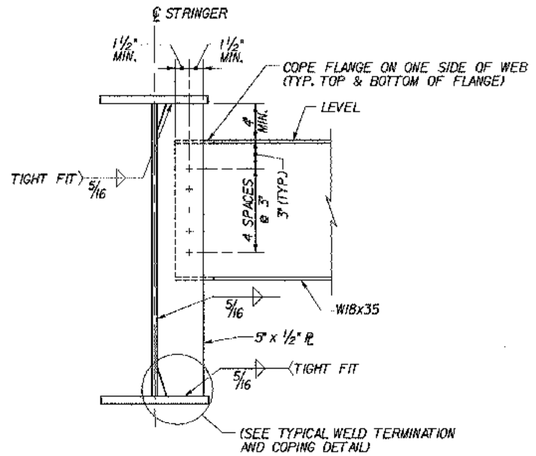
TOP FLANGE COPE		
BRIDGE	LOCATION	"A"
48N	ABUT. 2	4"
48S	ABUT. 1	3 3/8"
50N	ABUT. 2	7 3/8"
50S	ABUT. 1	8 3/16"
~~51N~~	~~ABUT. 2~~	~~8 1/8"~~
~~51S~~	~~ABUT. 1~~	~~8 1/4"~~

(SEE NOTE 1)



FLANGE BUTT SPLICE DETAIL

N.T.S.



INTERMEDIATE DIAPHRAGM CONNECTION

N.T.S.

NOTES:

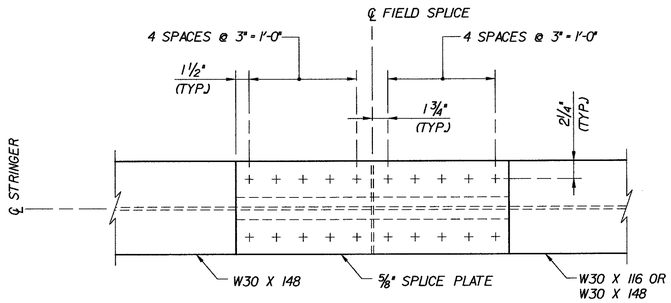
1. FOR LAYOUT OF FLANGE COPE, SEE "PLAN AT EXPANSION ABUTMENTS" DETAIL, ON TYPICAL PLATE GIRDER DETAILS (1 OF 2), BRIDGE SHEET C-17.
2. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

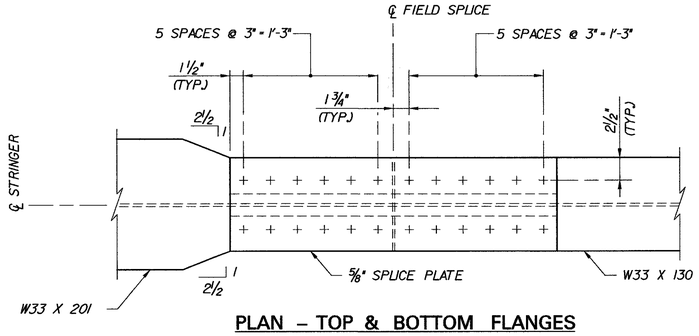
Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TYPICAL PLATE GIRDER DETAILS (2 OF 2)

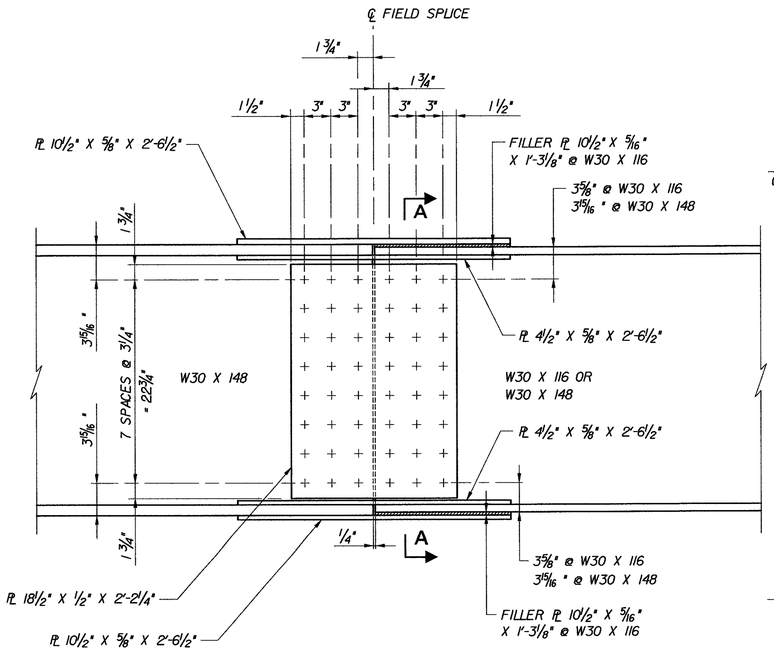
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. girdrde2 Date 10/99
	Bridge Sheet No. C-18 Sheet 18 of 307



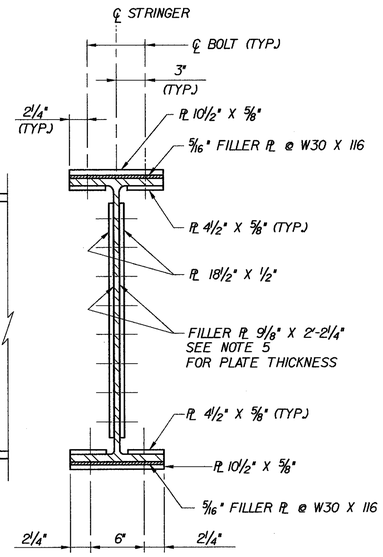
PLAN – TOP & BOTTOM FLANGES



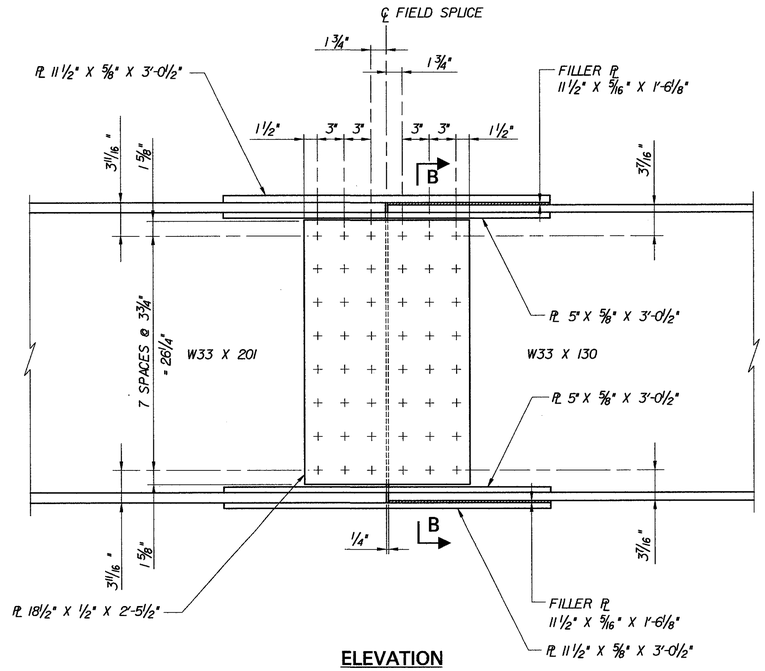
PLAN – TOP & BOTTOM FLANGES



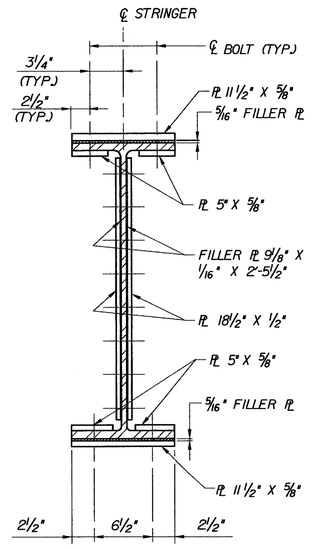
ELEVATION



SECTION A–A



ELEVATION



SECTION B–B

FIELD SPLICE @ BR 43N

NOT TO SCALE

FIELD SPLICE @ BR 43S

NOT TO SCALE

NOTES:

1. BOLTS SHALL BE 7/8" DIA. AASHTO M164 TYPE 3 HIGH STRENGTH BOLTS IN 15/16" DIA. HOLES. NUTS AND WASHERS SHALL ALSO CONFORM TO AASHTO M164. BOLT LENGTHS SHALL BE SUCH THAT THE BOLT THREADS ARE EXCLUDED FROM THE SHEAR PLANE.
2. ALL FIELD SPLICE CONNECTIONS SHALL BE "SLIP CRITICAL" WITH A CLASS B SURFACE (BLAST CLEAN SURFACE) FOR THE CONTACT SURFACES OF BOLTED PARTS.
3. STEEL FOR SPLICE & FILLER PLATES SHALL BE AASHTO M270 GRADE 50W (ASTM A709, GRADE 50W).
4. HOLES FOR FIELD SPLICES SHALL BE DRILLED IN THE SHOP WHILE STRINGERS ARE ASSEMBLED TO FIT BEARING ELEVATIONS.
5. PROVIDE 3/32" THICK PLATE @ EACH SIDE OF W30 X 116 AND 1/16" THICK PLATE @ EACH SIDE OF W30 X 148 FOR SPLICES AT BR 43N SPAN 2.
6. ALL FLANGE AND WEB SPLICE PLATES SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SECTION 714.01 OF THE SPECIFICATIONS.

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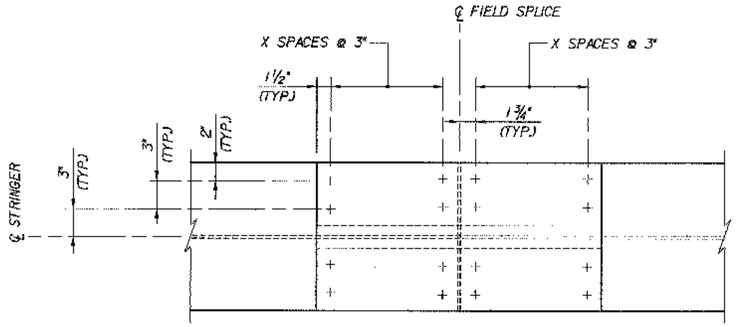
STATE OF VERMONT
AGENCY OF TRANSPORTATION

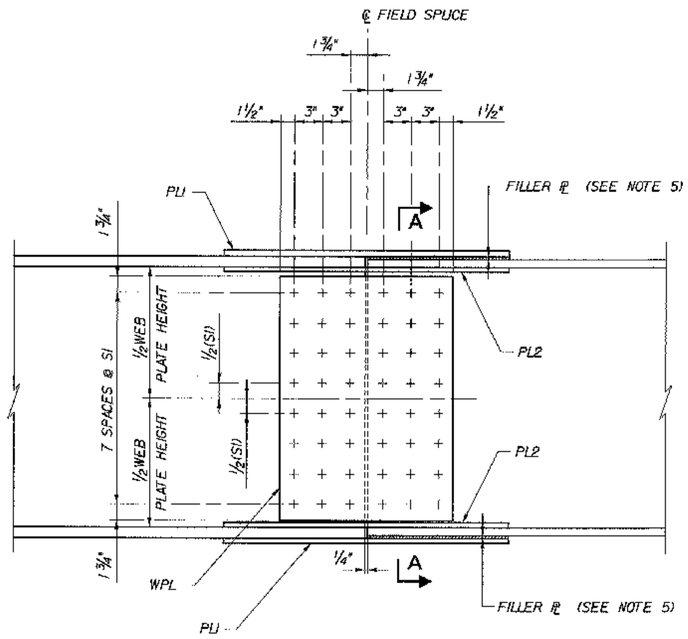
Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

TYPICAL ROLLED BEAM SPLICE DETAILS

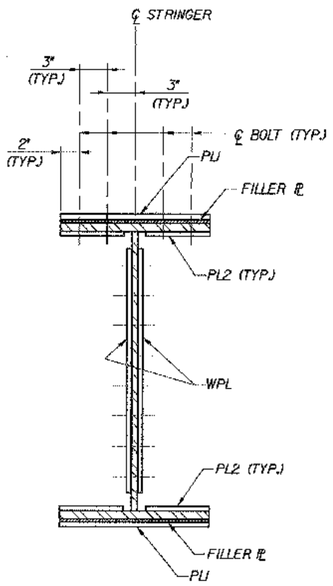
Designed By M.H. GALLO	Drawn By N.J. HOYT
Checked By K.L. JAMES Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127fsl.dgn	Date 10/99
Bridge Sheet No. C-19	Sheet 19 of 307



PLAN – TOP & BOTTOM FLANGES



ELEVATION



SECTION A–A

SPLICE PLATE ID	PLATE SIZE
A	18 1/2" X 1/2" X 2'-2 1/4"
B	18 1/2" X 1/2" X 2'-5 3/4"
C	16" X 5/8" X 2'-6 1/2"
D	7" X 5/8" X 2'-6 1/2"
E	16" X 3/4" X 2'-6 1/2"
F	7" X 3/4" X 2'-5 1/2"
G	16" X 1" X 3'-0 1/2"
H	7" X 1" X 3'-0 1/2"

BR. NO.	SPLICE LOCATION	WEB SPLICE		FLANGE SPLICE		
		PLATE SIZE	BOLT SPACING	PLATE SIZE		NO. OF BOLT SPACES
		WPL	S1	PL1	PL2	X
48N	ALL	B	3 3/4"	C	D	4
48S	ALL	B	3 3/4"	C	D	4
50N	ALL	A	3 1/4"	C	D	4
50S	ALL	A	3 1/4"	C	D	4
51N	SPANS 2 & 4	B	3 3/4"	E	F	4
	SPAN 3	B	3 3/4"	G	H	5
51S	ALL	B	3 3/4"	E	F	4

FIELD SPLICE @ BR 48, 50 & ~~51~~

NOT TO SCALE

NOTES:

1. BOLTS SHALL BE 7/8" DIA. AASHTO M164 TYPE 3 HIGH STRENGTH BOLTS IN 15/16" DIA. HOLES. NUTS AND WASHERS SHALL ALSO CONFORM TO AASHTO M164. BOLT LENGTHS SHALL BE SUCH THAT THE BOLT THREADS ARE EXCLUDED FROM THE SHEAR PLANE.
2. ALL FIELD SPLICE CONNECTIONS SHALL BE "SLIP CRITICAL" WITH A CLASS B SURFACE (BLAST CLEAN SURFACE) FOR THE CONTACT SURFACES OF BOLTED PARTS.
3. STEEL FOR SPLICE & FILLER PLATES SHALL BE AASHTO M270 GRADE 50W (ASTM A709, GRADE 50W).
4. HOLES FOR FIELD SPLICES SHALL BE DRILLED IN THE SHOP WHILE STRINGERS ARE ASSEMBLED TO FIT BEARING ELEVATIONS.
5. FILLER PLATE SIZE : MIN. THICKNESS = 1/16" WIDTH = 16" LENGTH = (1/2) (PLI) - 1/8"
6. ALL FLANGE AND WEB SPLICE PLATES SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SECTION 714.01 OF THE SPECIFICATIONS.

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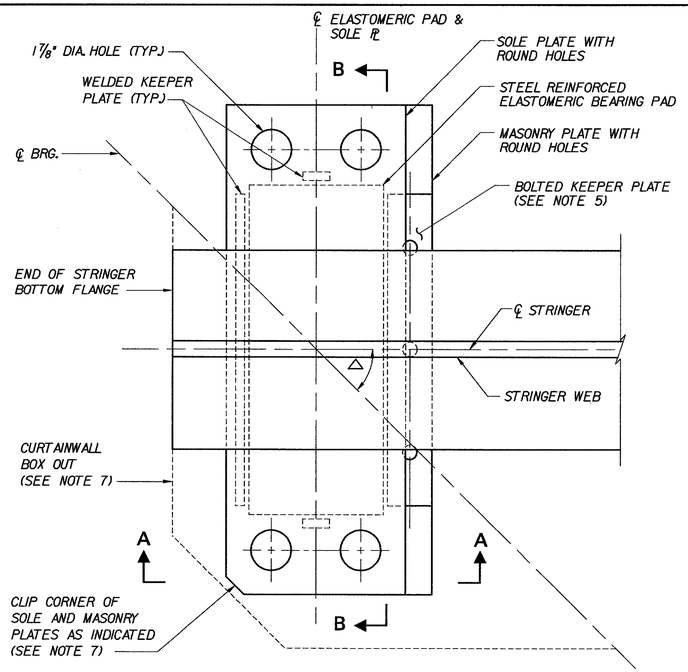
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

TYPICAL GIRDER SPLICE DETAILS

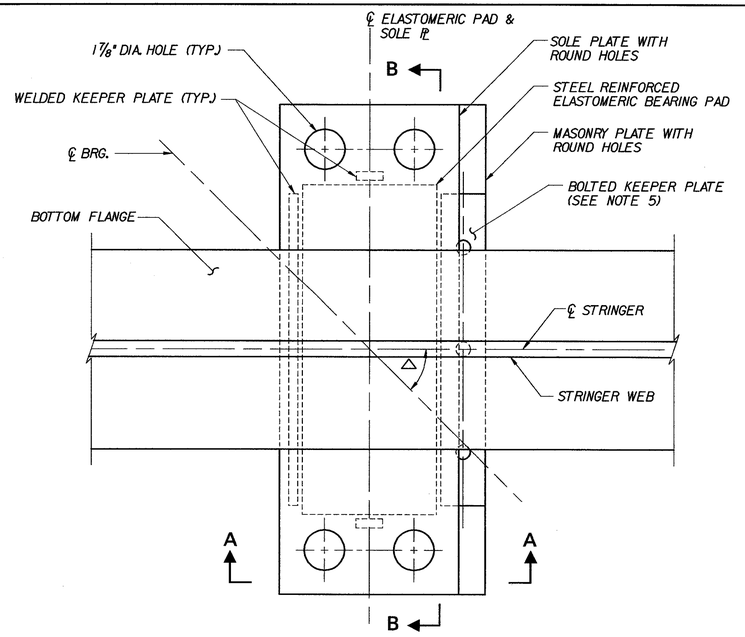
Designed By M.H. GALLO	Drawn By N.J. HOYT
Checked By K.L. JAMES Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127fs2.dgn	Date 10/99
Bridge Sheet No. C-20	Sheet 20 of 307



(ANCHOR BOLTS NOT SHOWN FOR CLARITY)

BEARING PLAN AT ABUTMENT

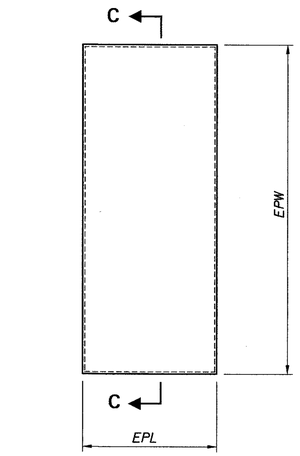
NOT TO SCALE



(ANCHOR BOLTS NOT SHOWN FOR CLARITY)

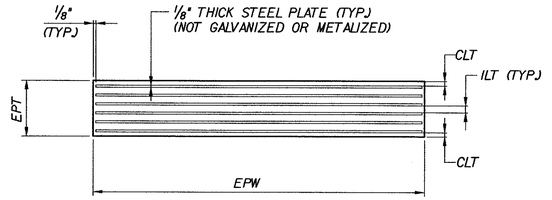
BEARING PLAN AT PIER

NOT TO SCALE



STEEL REINFORCED ELASTOMERIC PAD PLAN

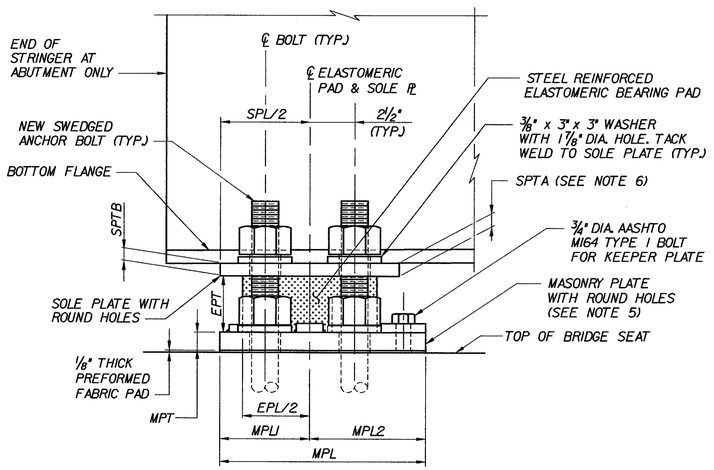
NOT TO SCALE



NOTE : NUMBER OF STEEL PLATES VARIES (SEE TABLE ON BRIDGE SHEET C-22)

SECTION C–C

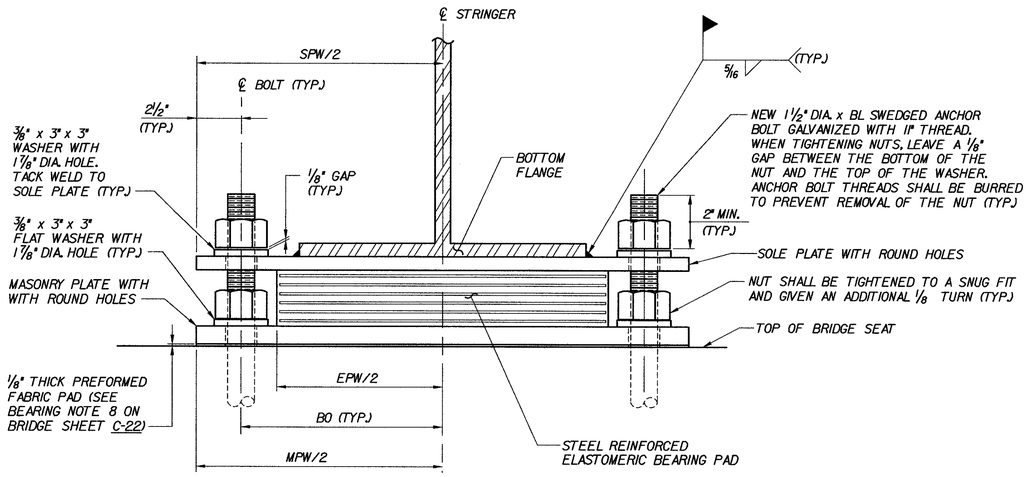
NOT TO SCALE



(BEARING AT ABUTMENT SHOWN, BEARING AT PIER SIMILAR)

SECTION A–A

NOT TO SCALE



SECTION B–B

NOT TO SCALE

NOTES:

1. SEE BRIDGE SHEET C-22 FOR BEARING NOTES & FIXED BEARING TABLES.
2. SEE BRIDGE SHEET C-25 FOR SOLE PLATE, MASONRY PLATE AND KEEPER PLATE DETAILS.
3. SKEW DIRECTION SHOWN IS "AHEAD RIGHT".
4. BEARING STIFFENERS/DIAPHRAGM CONNECTION PLATES ARE NOT SHOWN FOR CLARITY.
5. AT ABUTMENT, MASONRY PLATE SHALL BE ORIENTED SO THAT THE BOLTED KEEPER PLATE IS ACCESSIBLE FROM THE FACE OF THE ABUTMENT TO ACCOMMODATE ELASTOMERIC PAD REMOVAL, IF REQUIRED IN THE FUTURE. AT PIER, THE ENGINEER SHALL DETERMINE THE MASONRY PLATE ORIENTATION.
6. "SPTA" DIMENSION FOR SOLE PLATE SHALL BE MEASURED AND SET ON THE UPSTATION SIDE OF THE BEARING.
7. SOLE & MASONRY PLATES MAY REQUIRE ONE CORNER TO BE CLIPPED TO CLEAR CURTAINWALL AT FIXED ABUTMENTS ONLY. FOR DETAILS AND DIMENSIONS OF THE SOLE AND MASONRY PLATE CLIP, SEE BRIDGE SHEETS C-22 AND C-25. FOR CURTAINWALL DETAILS AND DIMENSIONS, SEE BRIDGE SHEET C-42.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

FIXED BEARING DETAILS

Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127fxb2.dgn	Date 10/99
Bridge Sheet No. C-21	Sheet 21 of 307

Hayashi Corporation
Consulting Engineers

FIXED BEARING GEOMETRY

BRIDGE NO.	SUB-STRUCTURE NO.	△ ASKEW ANGLE	DIRECTION OF SKEW	FIXED BEARING TYPE *	SOLE PLATE					MASONRY PLATE								ANCHOR BOLT	
					LENGTH (SPL)	WIDTH (SPW)	THICKNESS SPTA (UPSTATION)	THICKNESS SPTB (DOWNSTATION)	CORNER CLIP (SPCLIP)	LENGTH MPL1	LENGTH MPL2	LENGTH MPL	WIDTH (MPW)	THICKNESS (MPT)	CORNER CLIP (MPCLIP)	KEEPER PLATE WIDTH (KPW)	KEEPER PLATE OFFSET (KPO)	OFFSET (BO)	LENGTH (BL)
43N	ABUT. 1	44°42'11"	AHEAD RIGHT	AA	10 1/2"	24 1/2"	1"	1 1/4"	3/4"	5"	5 1/2"	10 1/2"	24 1/2"	7/8"	1/2"	14 1/2"	3"	9 3/4"	1'-11"
43S	ABUT. 2	45°05'18"	AHEAD RIGHT	BB	10"	22"	3/4"	1 1/8"	———	6 3/4"	7 1/4"	13"	22"	3/4"	———	12"	4 3/4"	8 1/2"	1'-11"
48N	ABUT. 1	66°34'38"	AHEAD LEFT	CC	13"	27 1/2"	7/8"	3/4"	———	5"	8 1/2"	11 1/2"	27 1/2"	1"	———	17 1/2"	4"	11 1/4"	1'-11"
48S	ABUT. 2	62°21'09"	AHEAD LEFT	CC	10"	27 1/2"	3/4"	3/4"	———	5"	8 1/2"	11 1/2"	27 1/2"	1"	———	17 1/2"	4"	11 1/4"	1'-11"
50N	ABUT. 1	44°11'07"	AHEAD RIGHT	AA	11"	26"	1 5/16"	1"	1 3/4"	5"	5 1/2"	10 1/2"	26"	1 1/8"	1 1/4"	14 1/2"	3"	10 1/2"	1'-11"
50S	ABUT. 2	45°44'11"	AHEAD RIGHT	AA	10"	26"	1 1/4"	1"	1 1/4"	5"	5 1/2"	10 1/2"	26"	1 1/8"	1 1/4"	14 1/2"	3"	10 1/2"	1'-11"
51N	ABUT. 1	90°00'00"	———	AA	10"	26"	1 1/8"	7/8"	———	5"	5 1/2"	10 1/2"	26"	1"	———	14 1/2"	3"	10 1/2"	1'-11"
51S	ABUT. 1	90°00'00"	———	AA	10 1/2"	26"	1 1/8"	7/8"	———	5"	5 1/2"	10 1/2"	26"	1"	———	14 1/2"	3"	10 1/2"	1'-11"
51N	PIER 2	90°00'00"	———	DD	14"	27 1/2"	15/16"	3/4"	———	6 3/4"	8 1/4"	15"	27 1/2"	1 1/8"	———	17 1/2"	5 3/4"	11 1/4"	1'-11"
51S	PIER 3	89°33'39"	AHEAD RIGHT	EE	13"	29 1/2"	1"	7/8"	———	6 1/4"	7 3/4"	14"	29 1/2"	1 1/8"	———	18 1/2"	5 1/4"	12 1/4"	2'-1"

BRIDGE 5IN AND 5IS ARE NOT A PART OF THIS PROJECT.

* SEE TABLE OF "FIXED BEARING TYPE DETAILS" BELOW

FIXED BEARING TYPE DETAILS

FIXED BEARING TYPE	STEEL REINFORCED ELASTOMERIC BEARING PAD						
	LENGTH (EPL)	WIDTH (EPW)	THICKNESS (EPT)	COVER LAYER THICKNESS (CLT)	INTERNAL LAYER THICKNESS (ILT)	NO. OF INTERNAL ELASTOMER LAYERS	NO. OF INTERNAL STEEL PLATES
AA	5 1/2"	16 1/2"	2 5/8"	1/4"	3/8"	4	5
BB	9"	13"	3 1/8"	1/4"	1/2"	4	5
CC	7 1/2"	18 1/2"	3 1/8"	1/4"	1/2"	4	5
DD	11"	18 1/2"	2 7/8"	1/4"	5/8"	3	4
EE	10"	20 1/2"	5 1/8"	1/4"	5/8"	6	7

BEARING NOTES :

1. THESE NOTES ARE APPLICABLE FOR THE BEARINGS AND THEIR COMPONENTS SHOWN ON BRIDGE SHEETS C-21, C-23, C-24 AND C-25, IN ADDITION TO THIS SHEET.
2. SEE BRIDGE SHEET C-21 FOR FIXED BEARING DETAILS.
   SEE BRIDGE SHEET C-23 FOR EXPANSION BEARING DETAILS.
   SEE BRIDGE SHEET C-24 FOR EXPANSION BEARING TABLES.
   SEE BRIDGE SHEET C-25 FOR SOLE AND MASONRY PLATE DETAILS.
3. BEARING ASSEMBLIES, INCLUDING ELASTOMERIC PADS, ANCHOR BOLTS, INTERNAL STEEL PLATES, PTFE SHEET, STAINLESS STEEL PLATES, SOLE PLATES, MASONRY PLATES, PREFORMED FABRIC PADS, BOLTS, NUTS, WASHERS AND ALL WORK REQUIRED TO FABRICATE AND INSTALL BEARINGS TO BE PAID AS ITEM 531.10, "BEARING DEVICE ASSEMBLY".
4. THE FABRICATION, TESTING AND INSTALLATION OF THE BEARINGS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THESE CONTRACT PLANS, THE STANDARD SPECIFICATIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DIVISION I- SECTION 14 AND DIVISION II- SECTION 18.
5. STEEL REINFORCED ELASTOMERIC BEARINGS WERE DESIGNED USING METHOD B IN AASHTO DIVISION I - SECTION 14.6.5.
6. ELASTOMER SHALL BE GRADE 4, 60 DUROMETER NEOPRENE CONFORMING TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18. THE AVERAGE SHEAR MODULUS (G) FOR THE ELASTOMER SHALL BE 150 PSI, WITH AN ALLOWABLE RANGE OF 127.5 PSI TO 172.5 PSI.
7. SOLE, MASONRY AND KEEPER PLATES SHALL CONFORM TO AASHTO M270 GRADE 50. ALL OTHER STEEL SHALL BE AASHTO M270 GRADE 36, EXCEPT AS NOTED OTHERWISE. ANCHOR BOLTS, NUTS AND WASHERS FOR BEARINGS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS. UNLESS NOTED OTHERWISE, ALL STEEL PLATES AND ALL STEEL COMPONENTS (ANCHOR BOLTS, HIGH-STRENGTH BOLTS, NUTS, WASHERS, ETC.) SHALL BE GALVANIZED OR METALIZED PER SUBSECTION 506.15 OF THE SPECIFICATIONS.
8. MINIMUM EMBEDMENT OF ALL ANCHOR BOLTS SHALL BE 1'-3".
9. THE 1/8" THICK PREFORMED FABRIC PAD BENEATH THE MASONRY PLATE SHALL HAVE THE SAME SIZE AND ANCHOR BOLT HOLE LAYOUT AS THE CORRESPONDING MASONRY PLATE.
10. IN ADDITION TO THE REQUIREMENTS OF SUBSECTION 531.03 OF THE SPECIFICATIONS, THE FABRICATOR OF BEARINGS FURNISHED UNDER THIS SECTION SHALL SUBMIT VULCANIZING PROCEDURES IN ACCORDANCE WITH SUBSECTIONS 105.03 AND 506.04.
11. THE DESIGN COEFFICIENT OF FRICTION BETWEEN THE PTFE AND THE STAINLESS STEEL SHALL NOT EXCEED 0.06 AT 800 PSI COMPRESSIVE LOADING.
12. BEARING HEIGHTS AND DIMENSIONS SHOWN ARE BEFORE APPLICATION OF LOADS.
13. THE CONTRACTOR SHALL ENSURE THAT THE HEAT FROM WELDING THE SOLE PLATE TO THE STRINGER DOES NOT DAMAGE THE ELASTOMERIC MATERIAL OR ANY PART OF THE BEARING.
14. THE 'A' DISTANCE IS THE SOLE PLATE ADJUSTMENT TO BE USED BEFORE DEAD LOADS ARE ADDED TO THE STRINGERS.

CONSTRUCTION NOTE:

CONCRETE SURFACES UNDER ALL BEARINGS SHALL BE LEVEL WITH A CONSTRUCTION TOLERANCE OF 0.005 RADIANS, EXCEPT FOR THE TOP OF THE PIERS AT BR 48N & 48S WHICH SHALL BE SLOPED TO MATCH THE ℄ CONSTRUCTION GRADE WITH A TOLERANCE OF 0.005 RADIANS.

Hayashi Corporation
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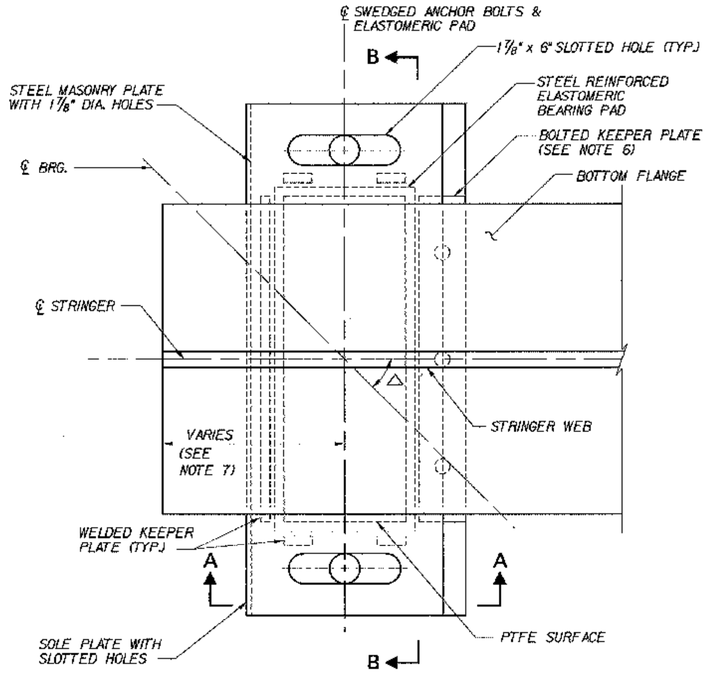
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

BEARING NOTES & FIXED BRG. TABLES

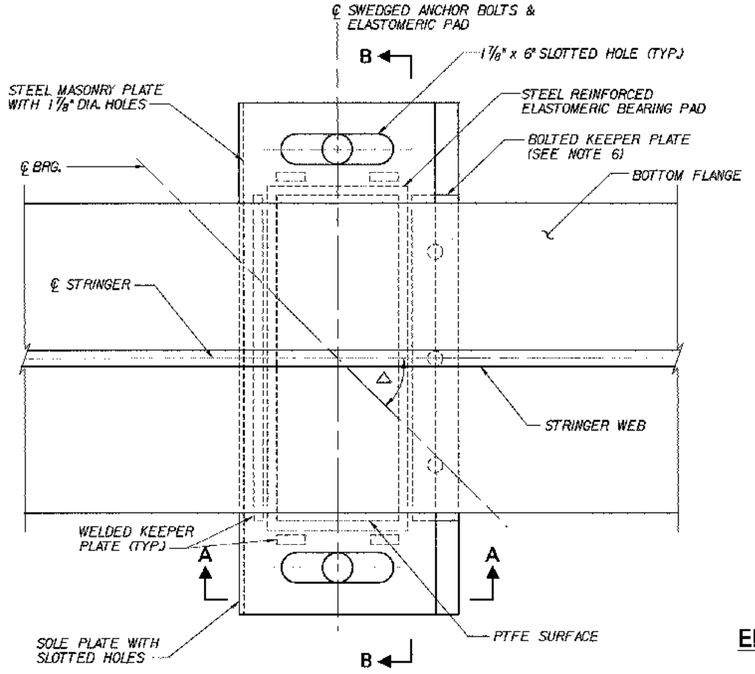
Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127tbl.dgn	Date 10/99
Bridge Sheet No. C-22	Sheet 22 of 307



(ANCHOR BOLTS NOT SHOWN FOR CLARITY)

BEARING PLAN AT ABUTMENT

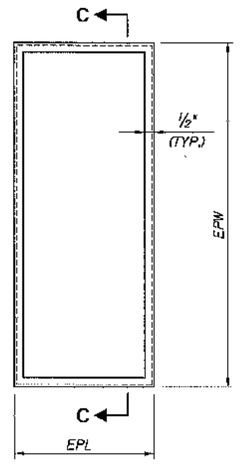
NOT TO SCALE



(ANCHOR BOLTS NOT SHOWN FOR CLARITY)

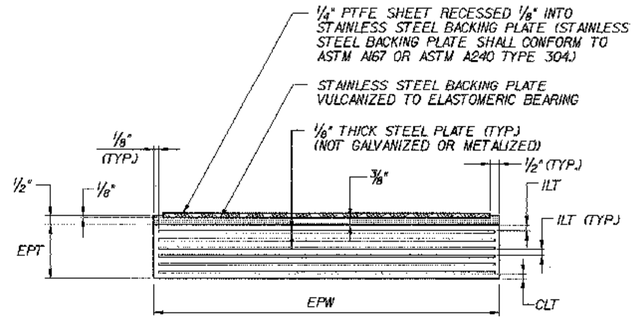
BEARING PLAN AT PIER

NOT TO SCALE



STEEL REINFORCED ELASTOMERIC PAD PLAN WITH PTFE SURFACE

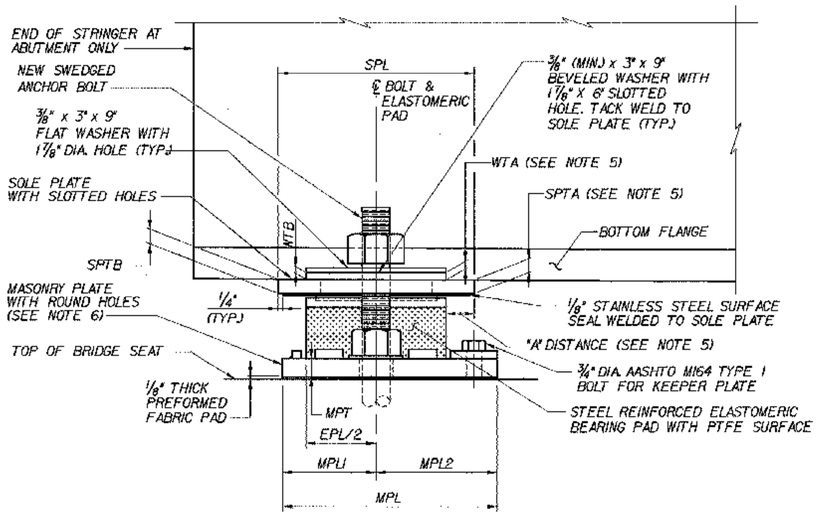
NOT TO SCALE



NOTE: NUMBER OF STEEL PLATES VARIES (SEE TABLE ON BRIDGE SHEET C-24)

SECTION C–C

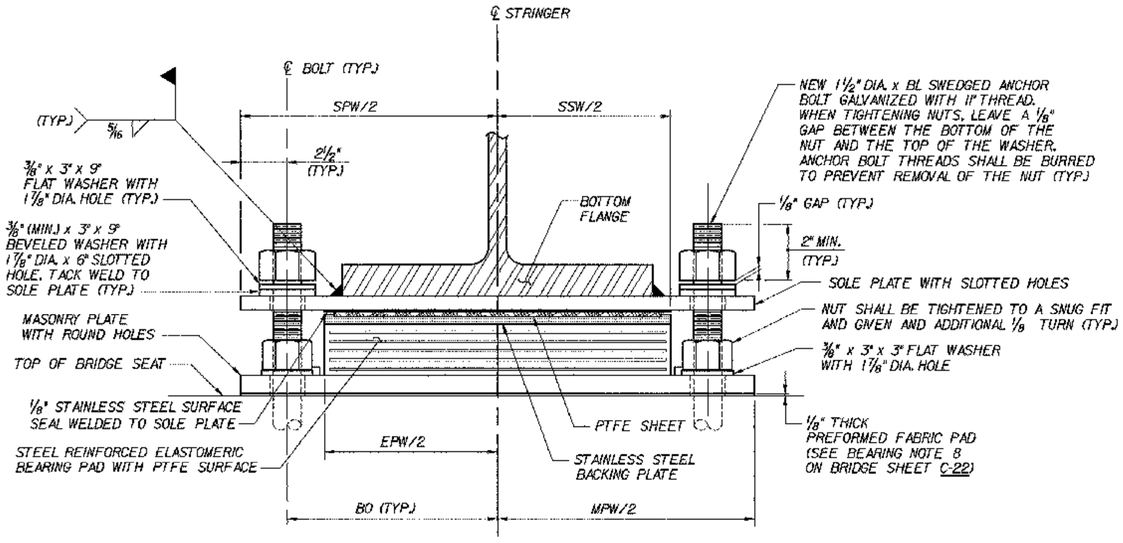
NOT TO SCALE



(BEARING AT ABUTMENT SHOWN, BEARING AT PIER SIMILAR)

SECTION A–A

NOT TO SCALE



SECTION B–B

NOT TO SCALE

NOTES:

1. SEE BRIDGE SHEET C-22 FOR BEARING NOTES AND C-24 FOR EXPANSION BEARING TABLES.
2. SEE BRIDGE SHEET C-25 FOR SOLE PLATE, MASONRY PLATE, AND KEEPER PLATE DETAILS.
3. SKEW DIRECTION SHOWN IS "AHEAD RIGHT".
4. BEARING STIFFENERS/DIAPHRAGM CONNECTION PLATES ARE NOT SHOWN FOR CLARITY.
5. THE "A" DISTANCE, "SPTA" AND "WTA" DIMENSIONS SHALL BE MEASURED AND SET ON THE UPSTATION SIDE OF THE BEARING.
6. AT ABUTMENT, MASONRY PLATE SHALL BE ORIENTED SO THAT THE BOLTED KEEPER PLATE IS ACCESSIBLE FROM THE FACE OF THE ABUTMENT TO ACCOMMODATE ELASTOMERIC PAD REMOVAL, IF REQUIRED IN THE FUTURE. AT PIER WITH ONE BEARING LINE, THE ENGINEER SHALL DETERMINE THE MASONRY PLATE ORIENTATION. AT PIER WITH TWO BEARING LINES (BR 51N PIER I AND BR 51S PIER I), THE MASONRY PLATE SHALL BE ORIENTED SO THAT THE BOLTED KEEPER PLATE IS ACCESSIBLE FROM THE PIER FACE NEAREST TO THE BEARING LINE.
7. THE DISTANCE FROM ℄ BEARING TO THE END OF THE STRINGER VARIES AT EACH BEARING LOCATION. FOR THIS DIMENSION AT BRIDGES 43, 48, 50 ~~AND 51~~, SEE THE STRINGER ELEVATION FOR EACH BRIDGE. FOR THIS DIMENSION AT BRIDGE 49, SEE THE TRANSVERSE SECTION, BRIDGE SHEET BR49-4.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	MIDDLESEX-BOLTON	Bridge No.	
Highway No.	I-89	Log Sta.	
		Surv. Sta.	

EXPANSION BEARING DETAILS

Designed By	K.L. JAMES	Drawn By	N.J. HOYT
Checked By	Date	Bridge Design Supervisor	
M.H. GALLO	10/99	J.P. HALSTEAD	Date 10/99
PROJECT	MIDDLESEX-BOLTON	PROJECT NO.	IM-089-2(26)
TVGA CAD Drawing No.	127exb2.dgn	Date	10/99
Bridge Sheet No.	C-23	Sheet 23	of 307

Hayashi Corporation
Consulting Engineers

EXPANSION BEARING GEOMETRY

BRIDGE NO.	SUB-STRUCTURE NO.	△ ASKEW ANGLE	DIRECTION OF SKEW	EXPANSION BEARING TYPE *	SOLE PLATE				STAINLESS STEEL		MASONRY PLATE						ANCHOR BOLT		BEVELED WASHER THICKNESS		"A" DISTANCE (UPSTATION SIDE OF BEARING)						
					LENGTH (SPL)	WIDTH (SPW)	THICKNESS SPTA (UPSTATION)	THICKNESS SPTB (DOWNSTATION)	LENGTH (SSL)	WIDTH (SSW)	LENGTH MPL1	LENGTH MPL2	LENGTH MPL	WIDTH (MPW)	THICKNESS (MPT)	KEEPER PLATE WIDTH (KPW)	OFFSET (BO)	LENGTH (BL)	WTA (UPSTATION)	WTB (DOWNSTATION)	TEMPERATURE (°F) 0	15	30	45	60	75	90
ABUTMENT BEARINGS																											
43N	ABUT. 2	45°07'37"	AHEAD RIGHT	A	13 1/2"	22"	3/4"	1 1/4"	13"	13"	5 3/4"	7 1/4"	13"	22"	3/4"	12"	8 1/2"	2'-0"	11/16"	3/8"	1 5/8"	1 7/8"	2 1/16"	2 1/4"	2 7/16"	2 5/8"	2 7/8"
43S	ABUT. 1	44°35'15"	AHEAD RIGHT	B	12"	26"	1"	1 3/16"	11 1/2"	17"	4 1/2"	6"	10 1/2"	26"	7/8"	16"	10 1/2"	2'-1"	1/2"	3/8"	3 7/16"	3 3/16"	3"	2 3/4"	2 1/2"	2 5/16"	2 1/16"
48N	ABUT. 2	62°40'28"	AHEAD LEFT	C	12 1/2"	27 1/2"	3/4"	3/4"	12"	18 1/2"	5"	6 1/2"	11 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	2'-0"	3/8"	3/8"	1 7/16"	1 13/16"	2 1/8"	2 1/2"	2 7/8"	3 3/16"	3 9/16"
48S	ABUT. 1	86°20'14"	AHEAD LEFT	C	13"	27 1/2"	7/8"	3/4"	12 1/2"	18 1/2"	5"	6 1/2"	11 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	2'-0"	3/8"	3/8"	3 13/16"	3 7/16"	3 1/8"	2 3/4"	2 3/8"	2 1/16"	1 11/16"
49N	ABUT. 2	90°00'00"	———	C	10 1/2"	27 1/2"	3/4"	3/4"	10"	18 1/2"	5"	6 1/2"	11 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	2'-0"	3/8"	3/8"	1 3/16"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 13/16"
49S	ABUT. 2	90°00'00"	———	C	10 1/2"	27 1/2"	3/4"	3/4"	10"	18 1/2"	5"	6 1/2"	11 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	2'-0"	3/8"	3/8"	1 3/16"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 13/16"
50N	ABUT. 2	46°29'46"	AHEAD RIGHT	B	13"	26"	1 1/4"	1"	12 1/2"	17"	4 1/2"	6"	10 1/2"	26"	7/8"	16"	10 1/2"	2'-1"	3/8"	9/16"	2 7/16"	2 11/16"	3"	3 1/4"	3 1/2"	3 13/16"	4 1/16"
50S	ABUT. 1	43°31'43"	AHEAD RIGHT	B	12 1/2"	26"	1 7/16"	1"	12"	17"	4 1/2"	6"	10 1/2"	26"	7/8"	16"	10 1/2"	2'-1"	3/8"	11/16"	3 3/4"	3 1/2"	3 1/4"	3"	2 3/4"	2 1/2"	2 1/4"
** 51N	ABUT. 2	43°40'33"	AHEAD LEFT	G	11"	26"	3/4"	3/4"	10 1/2"	16 1/2"	4 1/2"	6"	10 1/2"	26"	7/8"	15 1/2"	10 1/2"	1'-11"	3/8"	3/8"	1 3/8"	1 11/16"	1 15/16"	2 1/4"	2 9/16"	2 13/16"	3 1/8"
** 51S	ABUT. 2	43°08'46"	AHEAD LEFT	G	11"	26"	3/4"	3/4"	10 1/2"	16 1/2"	4 1/2"	6"	10 1/2"	26"	7/8"	15 1/2"	10 1/2"	1'-11"	3/8"	3/8"	1 3/8"	1 11/16"	1 15/16"	2 1/4"	2 9/16"	2 13/16"	3 1/8"
PIER BEARINGS																											
43N	PIER 1	44°50'07"	AHEAD RIGHT	D	12 1/2"	23"	3/4"	1 1/8"	12"	14"	6 1/4"	7 3/4"	14"	23"	1 1/8"	13"	9"	2'-0"	5/8"	3/8"	1 1/16"	1 1/8"	1 3/16"	1 1/4"	1 5/16"	1 3/8"	1 7/16"
43N	PIER 2	45°01'13"	AHEAD RIGHT	D	13"	23"	3/4"	1 1/8"	12 1/2"	14"	6 1/4"	7 3/4"	14"	23"	1 1/8"	13"	9"	2'-0"	5/8"	3/8"	1 1/16"	1 3/16"	1 3/8"	1 1/2"	1 5/8"	1 13/16"	1 15/16"
43S	PIER 1	44°46'15"	AHEAD RIGHT	E	13 1/2"	27 1/2"	3/4"	1 1/16"	13"	18 1/2"	5 3/4"	7 1/4"	13"	27 1/2"	1 1/4"	17 1/2"	11 1/4"	2'-0"	9/16"	3/8"	2 11/16"	2 9/16"	2 3/8"	2 1/4"	2 1/8"	1 15/16"	1 13/16"
43S	PIER 2	44°58'53"	AHEAD RIGHT	D	13 1/2"	23"	3/4"	1 1/8"	13"	14"	6 1/4"	7 3/4"	14"	23"	1 1/8"	13"	9"	2'-0"	5/8"	3/8"	1 7/8"	1 7/8"	1 13/16"	1 3/4"	1 11/16"	1 5/8"	1 5/8"
48N	PIER 1	85°16'48"	AHEAD LEFT	F	14 1/2"	27 1/2"	3/4"	3/4"	14"	18 1/2"	7"	8 1/2"	15 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	1'-11"	3/8"	3/8"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 7/8"
48N	PIER 2	63°58'14"	AHEAD LEFT	F	15 1/2"	27 1/2"	3/4"	3/4"	15"	18 1/2"	7"	8 1/2"	15 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	1'-11"	3/8"	3/8"	1 5/16"	1 9/16"	1 3/4"	2"	2 1/4"	2 7/16"	2 11/16"
48S	PIER 1	85°00'45"	AHEAD LEFT	F	15 1/2"	27 1/2"	3/4"	3/4"	15"	18 1/2"	7"	8 1/2"	15 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	1'-11"	3/8"	3/8"	2 11/16"	2 7/16"	2 1/4"	2"	1 3/4"	1 9/16"	1 5/16"
48S	PIER 2	63°58'14"	AHEAD LEFT	F	14 1/2"	27 1/2"	3/4"	3/4"	14"	18 1/2"	7"	8 1/2"	15 1/2"	27 1/2"	1"	17 1/2"	11 1/4"	1'-11"	3/8"	3/8"	1 7/8"	1 3/4"	1 5/8"	1 1/2"	1 3/8"	1 1/4"	1 1/8"
50N	PIER 1	44°50'40"	AHEAD RIGHT	E	13"	27 1/2"	1 1/16"	3/4"	12 1/2"	18 1/2"	5 3/4"	7 1/4"	13"	27 1/2"	1 1/4"	17 1/2"	11 1/4"	2'-0"	3/8"	9/16"	1 3/4"	1 7/8"	1 15/16"	2"	2 1/16"	2 1/8"	2 1/4"
50N	PIER 2	45°48'12"	AHEAD RIGHT	E	13"	27 1/2"	1 1/16"	3/4"	12 1/2"	18 1/2"	5 3/4"	7 1/4"	13"	27 1/2"	1 1/4"	17 1/2"	11 1/4"	2'-0"	3/8"	9/16"	1 7/16"	1 5/8"	1 13/16"	2"	2 3/16"	2 3/8"	2 9/16"
50S	PIER 1	44°11'11"	AHEAD RIGHT	E	12 1/2"	27 1/2"	1 1/8"	3/4"	12"	18 1/2"	5 3/4"	7 1/4"	13"	27 1/2"	1 1/4"	17 1/2"	11 1/4"	2'-0"	3/8"	5/8"	2 5/16"	2 1/8"	1 15/16"	1 3/4"	1 9/16"	1 3/8"	1 3/16"
50S	PIER 2	45°05'50"	AHEAD RIGHT	E	12 1/2"	27 1/2"	1 1/8"	3/4"	12"	18 1/2"	5 3/4"	7 1/4"	13"	27 1/2"	1 1/4"	17 1/2"	11 1/4"	2'-0"	3/8"	5/8"	2"	1 7/8"	1 13/16"	1 3/4"	1 11/16"	1 5/8"	1 1/2"
51N	PIER 1(S1)	90°00'00"	———	H	9"	26"	3/4"	3/4"	8 1/2"	16"	4 1/2"	6"	10 1/2"	26"	7/8"	15"	10 1/2"	2'-0"	3/8"	3/8"	1 1/8"	1 3/16"	1 3/16"	1 1/4"	1 5/16"	1 5/16"	1 3/8"
51N	PIER 1(S2)	90°00'00"	———	J	9 1/2"	29"	15/16"	3/4"	9"	20"	4 3/4"	8 1/4"	11"	29"	7/8"	19"	12"	1'-11"	3/8"	9/16"	1 9/16"	1 7/16"	1 3/8"	1 1/4"	1 1/8"	1 1/16"	0 15/16"
** 51N	PIER 3	44°34'59"	AHEAD LEFT	K	13 1/2"	27 1/2"	7/8"	3/4"	13"	18 1/2"	6 3/4"	8 1/4"	15"	27 1/2"	1 1/8"	17 1/2"	11 1/4"	2'-0"	3/8"	1/2"	0 7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"
** 51N	PIER 4	43°59'35"	AHEAD LEFT	L	14"	29 1/2"	7/8"	7/8"	13 1/2"	20 1/2"	8 1/4"	7 3/4"	14"	29 1/2"	1 1/8"	19 1/2"	12 1/4"	2'-2"	3/8"	3/8"	1 5/16"	1 9/16"	1 3/4"	2"	2 1/4"	2 7/16"	2 11/16"
51S	PIER 1(S1)	90°00'00"	———	H	9"	26"	3/4"	3/4"	8 1/2"	16"	4 1/2"	6"	10 1/2"	26"	7/8"	15"	10 1/2"	2'-0"	3/8"	3/8"	1 1/8"	1 3/16"	1 3/16"	1 1/4"	1 5/16"	1 5/16"	1 3/8"
51S	PIER 1(S2)	90°00'00"	———	J	10 1/2"	29"	15/16"	3/4"	10"	20"	4 3/4"	8 1/4"	11"	29"	7/8"	19"	12"	1'-11"	3/8"	9/16"	2 3/8"	2 3/16"	1 15/16"	1 3/4"	1 9/16"	1 5/16"	1 1/8"
51S	PIER 2	90°00'00"	———	K	14 1/2"	27 1/2"	15/16"	3/4"	14"	18 1/2"	6 3/4"	8 1/4"	15"	27 1/2"	1 1/8"	17 1/2"	11 1/4"	2'-0"	3/8"	1/2"	2 1/16"	1 15/16"	1 7/8"	1 3/4"	1 5/8"	1 9/16"	1 7/16"
** 51S	PIER 4	44°03'21"	AHEAD LEFT	L	13"	29 1/2"	7/8"	7/8"	12 1/2"	20 1/2"	8 1/4"	7 3/4"	14"	29 1/2"	1 1/8"	19 1/2"	12 1/4"	2'-2"	3/8"	3/8"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 7/8"
** 51S	PIER 5	43°27'53"	AHEAD LEFT	L	14"	29 1/2"	7/8"	7/8"	13 1/2"	20 1/2"	8 1/4"	7 3/4"	14"	29 1/2"	1 1/8"	19 1/2"	12 1/4"	2'-2"	3/8"	3/8"	1 5/16"	1 9/16"	1 3/4"	2"	2 1/4"	2 7/16"	2 11/16"

* SEE TABLE OF "EXPANSION BEARING TYPE DETAILS" BELOW

** THE "A" DISTANCES FOR THESE BEARINGS ARE FOR STRINGER 1 ONLY. SEE "BR 51 SUPPLEMENTARY "A" DISTANCE TABLE" FOR OTHER STRINGERS.

(S1) - SPAN 1
(S2) - SPAN 2

BRIDGE 51N AND 51S ARE NOT PART OF THIS PROJECT

EXPANSION BEARING TYPE DETAILS

EXPANSION BEARING TYPE	STEEL REINFORCED ELASTOMERIC PAD WITH PTFE SURFACE						
	LENGTH (EPL)	WIDTH (EPW)	THICKNESS (EPT)	COVER LAYER THICKNESS (CLT)	INTERNAL LAYER THICKNESS (ILT)	NUMBER OF INTERNAL ELASTOMER LAYERS	NUMBER OF INTERNAL STEEL PLATES
A	9"	13"	2 3/4"	1/4"	1/2"	4	4
B	6 1/2"	17"	3 3/4"	1/4"	3/8"	7	7
C	7 1/2"	18 1/2"	2 3/4"	1/4"	1/2"	4	4
D	10"	14"	2 3/4"	1/4"	1/2"	4	4
E	9"	18 1/2"	2 3/4"	1/4"	1/2"	4	4
F	11 1/2"	18 1/2"	2 1/2"	1/4"	5/8"	3	3
G	6 1/2"	16 1/2"	2 1/4"	1/4"	3/8"	4	4
H	6 1/2"	16"	3 1/4"	1/4"	3/8"	6	6
J	7"	20"	2 1/8"	1/4"	1/2"	3	3
K	11"	18 1/2"	2 1/2"	1/4"	5/8"	3	3
L	10"	20 1/2"	4 3/4"	1/4"	5/8"	6	6

BR 51 SUPPLEMENTARY "A" DISTANCE TABLE

BRIDGE NO.	SUB-STRUCTURE NO.	STRINGER NO.	"A" DISTANCE (UPSTATION SIDE OF BEARING) TEMPERATURE (°F) 0	15	30	45	60	75	90
51N	ABUT. 2	2	1 3/8"	1 11/16"	1 15/16"	2 1/4"	2 9/16"	2 13/16"	3 1/8"
		3 & 4	1 7/16"	1 11/16"	2"	2 1/4"	2 1/2"	2 13/16"	3 1/16"
		5	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"
51S	ABUT. 2	2	1 3/8"	1 11/16"	1 15/16"	2 1/4"	2 9/16"	2 13/16"	3 1/8"
		3 & 4	1 7/16"	1 11/16"	2"	2 1/4"	2 1/2"	2 13/16"	3 1/16"
		5	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"
51N	PIER 3	2 & 3	0 15/16"	1 1/16"	1 1/8"	1 1/4"	1 3/8"	1 7/16"	1 9/16"
		4 & 5	1"	1 1/16"	1 3/16"	1 1/4"	1 5/16"	1 7/16"	1 1/2"
51N	PIER 4	2	1 5/16"	1 9/16"	1 3/4"	2"	2 1/4"	2 7/16"	2 11/16"
		3 & 4	1 3/8"	1 9/16"	1 13/16"	2"	2 3/16"	2 7/16"	2 5/8"
		5	1 7/16"	1 5/8"	1 13/16"	2"	2 3/16"	2 3/8"	2 9/16"
51S	PIER 4	2 & 3	1 3/16"	1 5/16"	1 3/8"	1 1/2"	1 5/8"	1 11/16"	1 13/16"
		4 & 5	1 1/4"	1 5/16"	1 7/16"	1 1/2"	1 9/16"	1 11/16"	1 3/4"
51S	PIER 5	2	1 5/16"	1 9/16"	1 3/4"	2"	2 1/4"	2 7/16"	2 11/16"
		3 & 4	1 3/8"	1 9/16"	1 13/16"	2"	2 3/16"	2 7/16"	2 5/8"
		5	1 7/16"	1 5/8"	1 13/16"	2"	2 3/16"	2 3/8"	2 9/16"

NOTES:

1. SEE EXPANSION BEARING DETAILS ON BRIDGE SHEET C-23.
2. SEE SOLE & MASONRY PLATE DETAILS ON BRIDGE SHEET C-25.
3. SEE BEARING NOTES ON BRIDGE SHEET C-22.

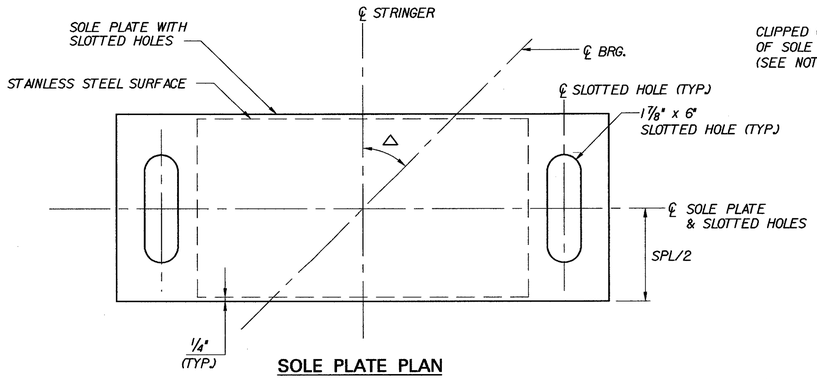
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

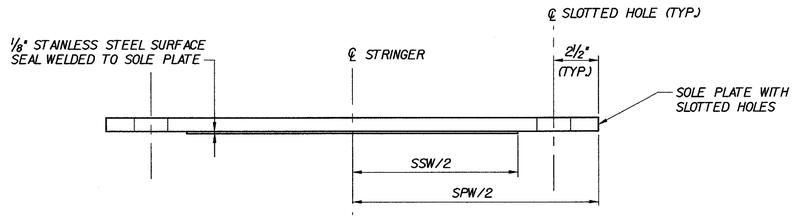
EXPANSION BEARING TABLES

Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127tbl2.dgn	Date 10/99
Bridge Sheet No. C-24	Sheet 24 of 307

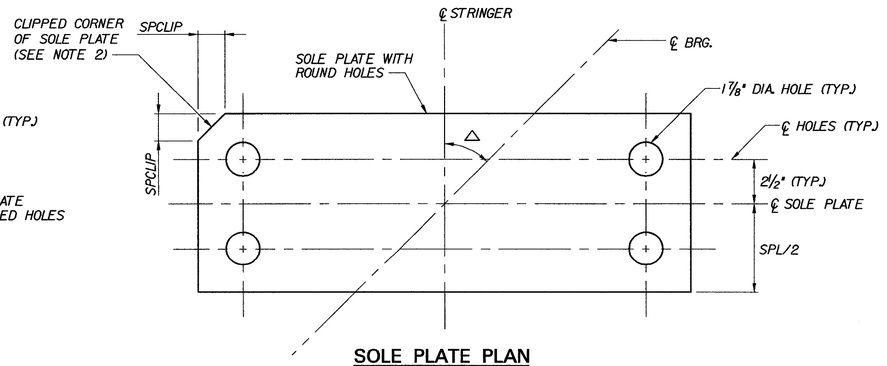
Hayashi Corporation
Consulting Engineers



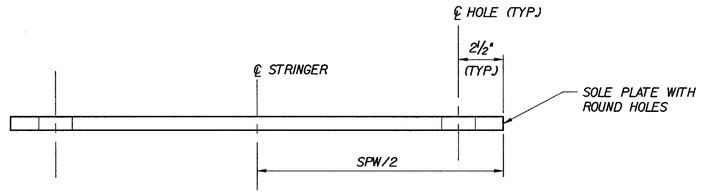
SOLE PLATE PLAN



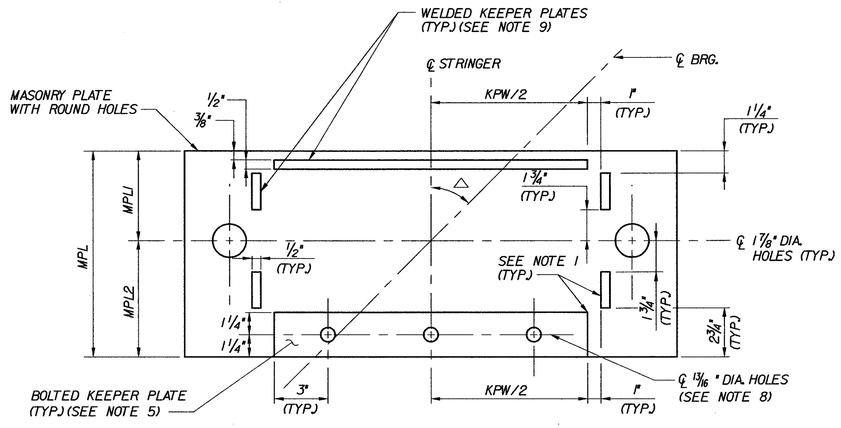
SOLE PLATE ELEVATION



SOLE PLATE PLAN

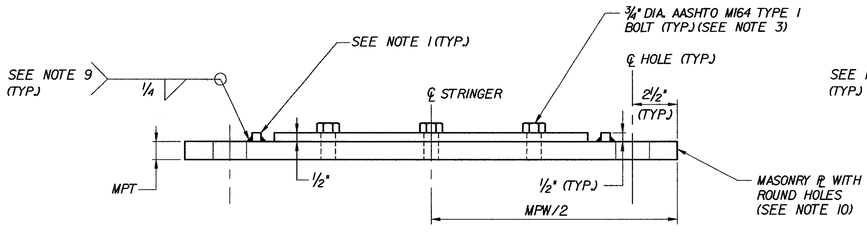


SOLE PLATE ELEVATION



(BOLTS NOT SHOWN FOR CLARITY)

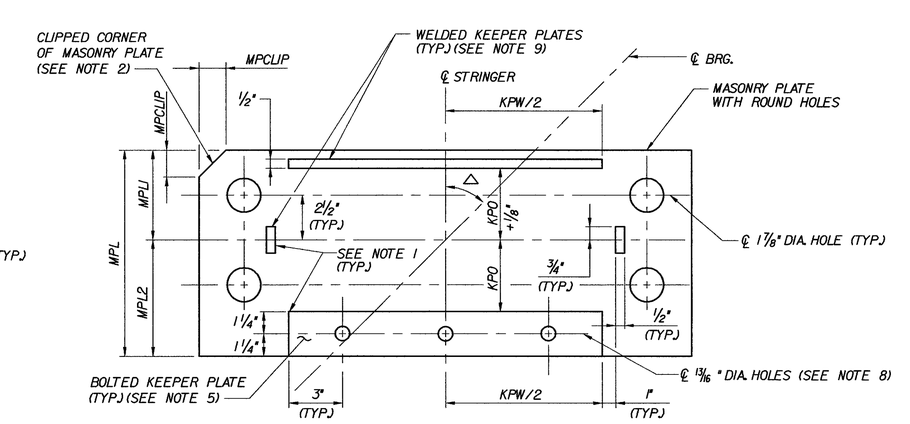
MASONRY PLATE PLAN



MASONRY PLATE ELEVATION

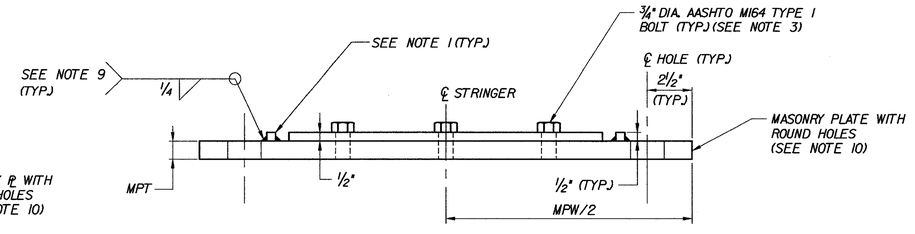
EXPANSION BEARING DETAILS

NOT TO SCALE



(BOLTS NOT SHOWN FOR CLARITY)

MASONRY PLATE PLAN



MASONRY PLATE ELEVATION

FIXED BEARING DETAILS

NOT TO SCALE

NOTES:

1. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT THE INSIDE CORNERS OF ALL KEEPER PLATES ARE GROUND PER SUBSECTION 531.04 OF THE SPECIFICATIONS TO REMOVE ALL SHARP EDGES WHICH MIGHT COME INTO CONTACT WITH THE ELASTOMERIC BEARING.
2. SOLE AND MASONRY PLATES AT FIXED BEARINGS MAY REQUIRE ONE CORNER TO BE CLIPPED TO CLEAR CURTAINWALL AT ABUTMENTS ONLY. SEE TABLE ON BRIDGE SHEET C-22 FOR CLIP DIMENSIONS.
3. KEEPER BOLT LENGTH SHALL BE 1½". COAT KEEPER BOLTS AND HOLES WITH "NEVER SEIZE GREASE". BOLTS SHALL BE FITTED WITH 5/16" THICK WASHERS AND TIGHTENED TO A SNUG FIT. WASHERS SHALL CONFORM TO AASHTO M164.
4. SKEW DIRECTION SHOWN IS "AHEAD RIGHT".
5. BOLTED KEEPER PLATES ARE REMOVABLE TO ALLOW FOR FUTURE REPLACEMENT OF ELASTOMERIC BEARINGS, IF REQUIRED.
6. SEE BRIDGE SHEET C-22 FOR BEARING NOTES.
7. SEE BRIDGE SHEET C-21 FOR FIXED BEARING DETAILS.
   SEE BRIDGE SHEET C-22 FOR FIXED BEARING TABLES.
   SEE BRIDGE SHEET C-23 FOR EXPANSION BEARING DETAILS.
   SEE BRIDGE SHEET C-24 FOR EXPANSION BEARING TABLES.
8. THE HOLES IN THE MASONRY PLATE FOR THE KEEPER PLATE BOLTS SHALL BE THREADED FOR THE ENTIRE THICKNESS OF THE MASONRY PLATE. THE KEEPER PLATE HOLES SHALL NOT BE THREADED.
9. WELDING PROCEDURE SHALL PROVIDE SUFFICIENT PREHEAT TO ENSURE SOUNDNESS OF THE WELD.
10. THE MASONRY PLATES SHALL BE COMPLETELY FABRICATED WHEN GALVANIZED OR METALIZED EXCEPT THAT THE BOLTED KEEPER PLATES SHALL BE GALVANIZED OR METALIZED SEPARATELY.

STATE OF VERMONT
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Town Of MIDDLESEX-BOLTON	Bridge No.
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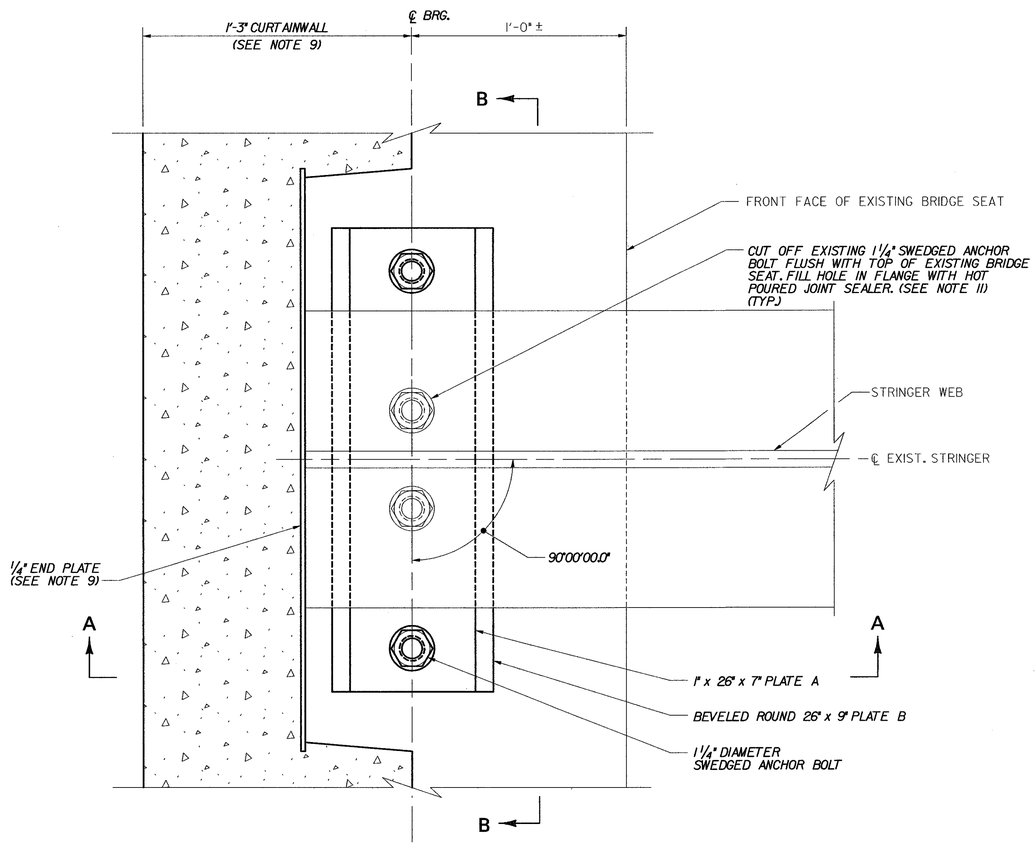
SOLE & MASONRY PLATE DETAILS

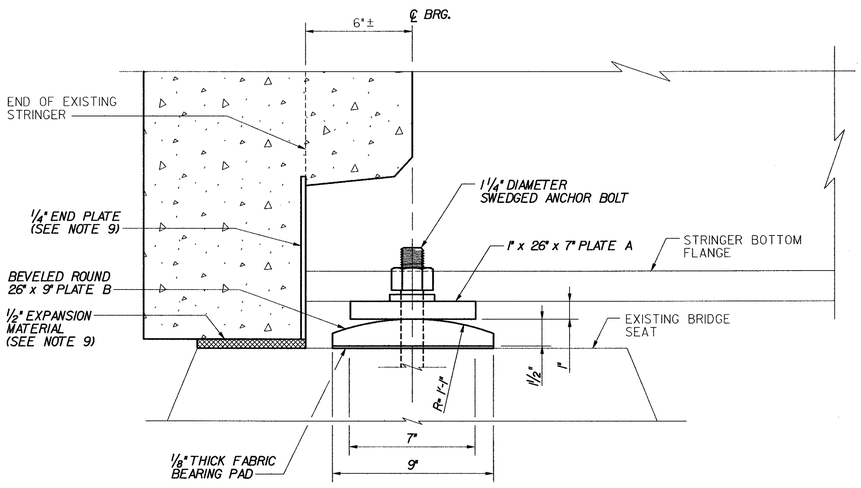
Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127smpl.dgn	Date 10/99
Bridge Sheet No. C-25	Sheet 25 of 307

Hayashi Corporation
Consulting Engineers



PLAN VIEW

SCALE: 3" = 1'-0"



SECTION A–A

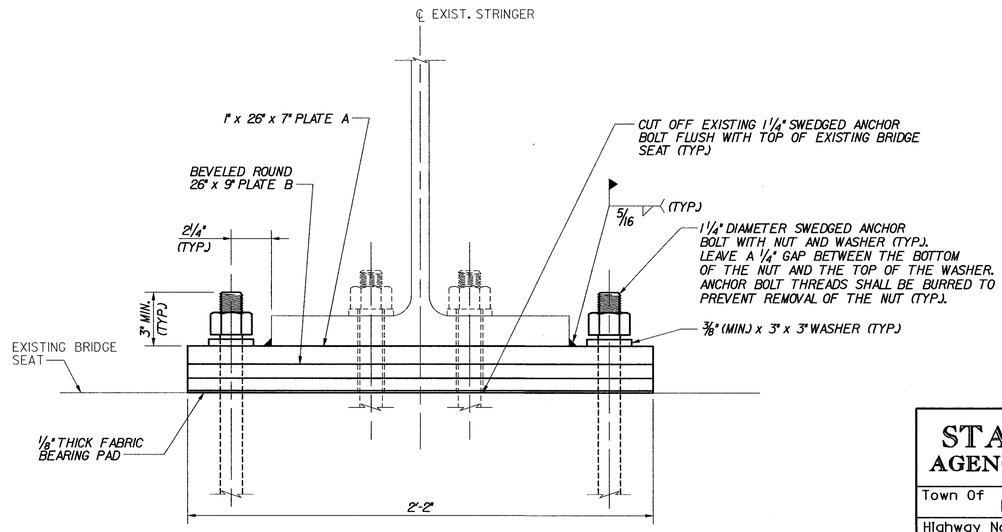
SCALE: 3" = 1'-0"

BEARINGS TO BE REPLACED		
BRIDGE	LOCATION	STRINGER
49N	ABUT. 1	S1, S7
49S	ABUT. 1	S1, S7

NOTE: ALL OTHER FIXED BEARINGS AT BR 49N&S TO BE JACKED, CLEANED, PAINTED AND GREASED.

NOTES:

1. THE WORK REQUIRED TO CUT EXISTING ANCHOR BOLTS AND TO REMOVE EXISTING BEARINGS, BEARING PLATES AND ANY EXISTING SHIM PLATES IN ORDER TO INSTALL NEW BEARING PLATES SHALL BE SUBSIDIARY TO ITEM 531.10, "BEARING DEVICE ASSEMBLY (STEEL PLT. FIXED BEARINGS)."
2. THE COST FOR THE BEARING PLATES, ANCHOR BOLTS, PREFORMED FABRIC PAD, NUTS, WASHERS AND ALL WORK REQUIRED TO FABRICATE AND INSTALL THE BEARINGS SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 531.10, "BEARING DEVICE ASSEMBLY (STEEL PLT. FIXED BEARINGS)."
3. ALL BRIDGE SEATS SHALL BE CLEANED OF ALL DIRT, DEBRIS AND FOREIGN MATERIAL PRIOR TO THE INSTALLATION OF THE NEW BEARINGS. AFTER REMOVAL OF FOREIGN MATERIAL, THE ABUTMENT STEM AND BRIDGE SEATS SHALL BE REPAIRED AS SHOWN ON THE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.
4. NEW PLATES REQUIRED FOR BEARINGS BEING REPLACED IN KIND SHALL BE FABRICATED TO MATCH EXACTLY THE DIMENSIONS OF THE PLATES BEING REPLACED, EXCEPT AS NOTED. THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF THE EXISTING PLATES BEFORE ORDERING ANY NEW BEARING PLATES.
5. ALL COSTS FOR CLEANING AND REPAINTING EXISTING BEAMS SHALL BE SUBSIDIARY TO ITEMS 513.30, 513.36 AND 513.41.
6. NEW 1 1/4" ANCHOR BOLTS SHALL BE GROUTED WITH A MINIMUM EMBEDMENT OF 1'-3".
7. ALL STEEL USED IN THE BEARINGS SHALL BE AASHTO M270 GRADE 36 STEEL. ANCHOR BOLTS, NUTS, AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS. ALL COMPONENTS SHALL BE GALVANIZED OR METALIZED PER SUBSECTIONS 531.04 (B) AND 506.15 OF THE SPECIFICATIONS.
8. ANY GALVANIZED AREAS THAT ARE WELDED IN THE FIELD (OR OTHERWISE DAMAGED) SHALL BE REPAIRED IN ACCORDANCE WITH SUBSECTION 513 OF THE SPECIFICATIONS.
9. DETAILS AND DIMENSIONS OF CURTAINWALL AND END PLATE NOT SHOWN FOR CLARITY. SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
10. ALL COSTS FOR JACKING, CLEANING, PAINTING AND GREASING THE EXISTING BEARINGS SHALL BE SUBSIDIARY TO ITEMS 513.30, 513.36 AND 513.41.
11. THE EXISTING ANCHOR BOLT HOLES IN THE FLANGES OF THE STRINGER SHALL BE FILLED WITH HOT POURED JOINT SEALER. COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO ITEM 531.10, "BEARING DEVICE ASSEMBLY (STEEL PLT. FIXED BEARINGS)".



SECTION B–B

SCALE: 3" = 1'-0"

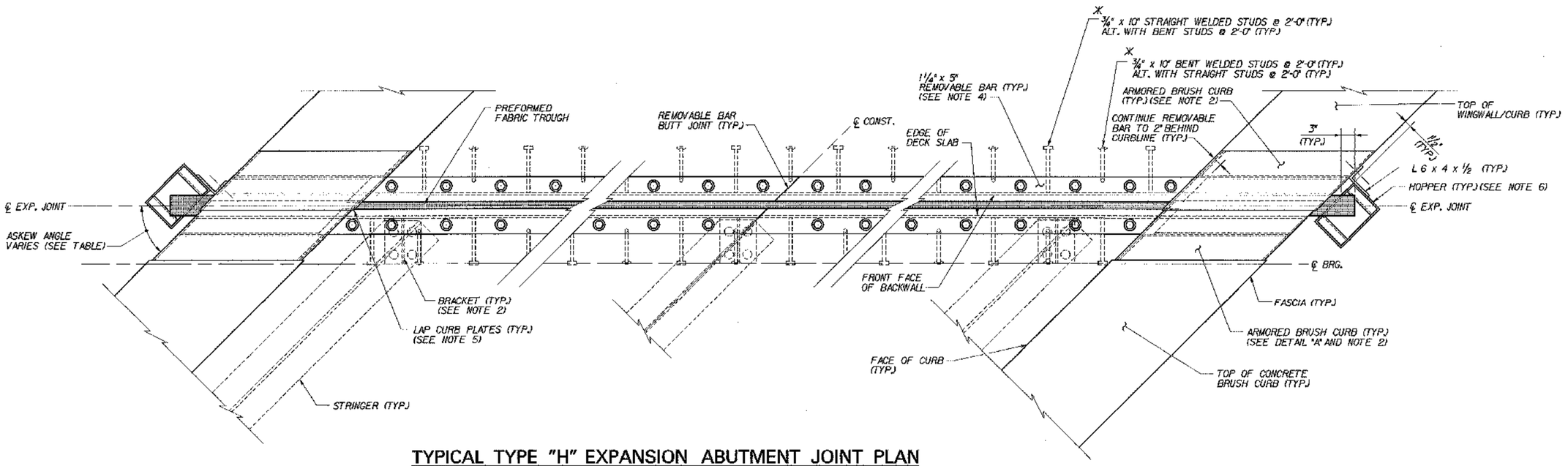
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

BR 49 FIXED BEARINGS – REPLACE IN KIND

Designed By P.W. SZUSTAK	Drawn By T.M. LONGO
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49f-brg	Date 10/99
Bridge Sheet No. C-26	Sheet 26 of 307

TVGA ENGINEERING, SURVEYING, P.C.

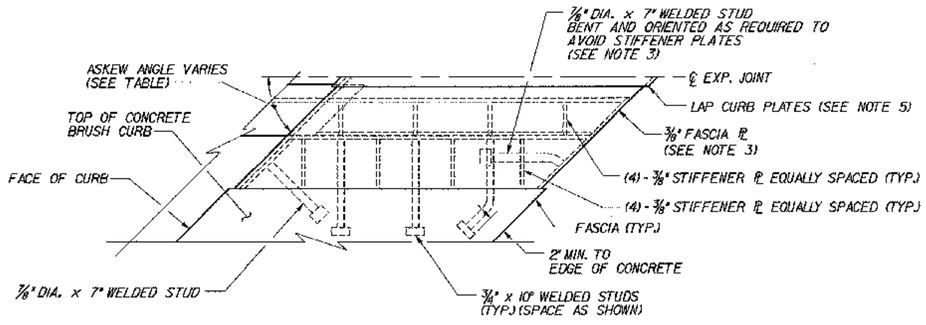


TYPICAL TYPE "H" EXPANSION ABUTMENT JOINT PLAN

(AHEAD RT. SHOWN – AHEAD LT. SIMILAR)

SCALE: 1"=1'-0"

* NOTE: STUDS NOT SHOWN IN BRUSH CURB FOR CLARITY.



DETAIL "A"

(ONE QUADRANT OF ARMORED BRUSH CURB SHOWN – ALL OTHER QUADRANTS SIMILAR)

SCALE: 1 1/2" = 1'-0"

BRIDGE	EXPANSION JOINT LOCATION	ASKEW ANGLE AT EXPANSION JOINT	DIRECTION OF SKEW	HOPPER LOCATION (SEE NOTE 6)	DIRECTION OF CURB PLATE LAP
43N	ABUT. 2	45°07'37"	AHEAD RT.	RT.	REVERSE AS SHOWN
43S	ABUT. 1	44° 35' 15"	AHEAD RT.	RT.	REVERSE AS SHOWN
49N	ABUT. 2	90° 00' 00"		BOTH	REVERSE AS SHOWN
49S	ABUT. 2	90° 00' 00"		BOTH	AS SHOWN
50N	ABUT. 2	46° 29' 48"	AHEAD RT.	LT.	REVERSE AS SHOWN
50S	ABUT. 1	43° 31' 43"	AHEAD RT.	LT.	REVERSE AS SHOWN
~~51N~~	~~ABUT. 2~~	~~43° 40' 33"~~	~~AHEAD LT.~~	~~LT.~~	~~REVERSE AS SHOWN~~
~~51S~~	~~ABUT. 2~~	~~43° 08' 46"~~	~~AHEAD LT.~~	~~LT.~~	~~AS SHOWN~~

NOTES:

1. TOP AND FACE OF BRUSH CURB ARE ATTACHED BY BOLTS AND ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
2. FOR TYPICAL SECTIONS OF EXPANSION JOINT AND ARMORED BRUSH CURB, SEE TYPE "H" ABUTMENT JOINT DETAILS, BRIDGE SHEETS C-28 AND C-29.
3. FOR VIEW OF FASCIA PLATES, AND LOCATION OF WELDED STUDS ON FASCIA PLATES, SEE TYPE "H" ABUTMENT JOINT DETAILS (3 OF 3), BRIDGE SHEET C-30.
4. BARS IN ROADWAY ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
5. LAP CURB PLATES IN DIRECTION OF TRAFFIC. SEE TABLE FOR DIRECTION OF LAP AT EACH EXPANSION JOINT LOCATION.
6. WHERE HOPPER IS NOT REQUIRED, PREFORMED FABRIC DRAIN TROUGH SHALL BE TERMINATED 2" INSIDE THE FASCIA.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

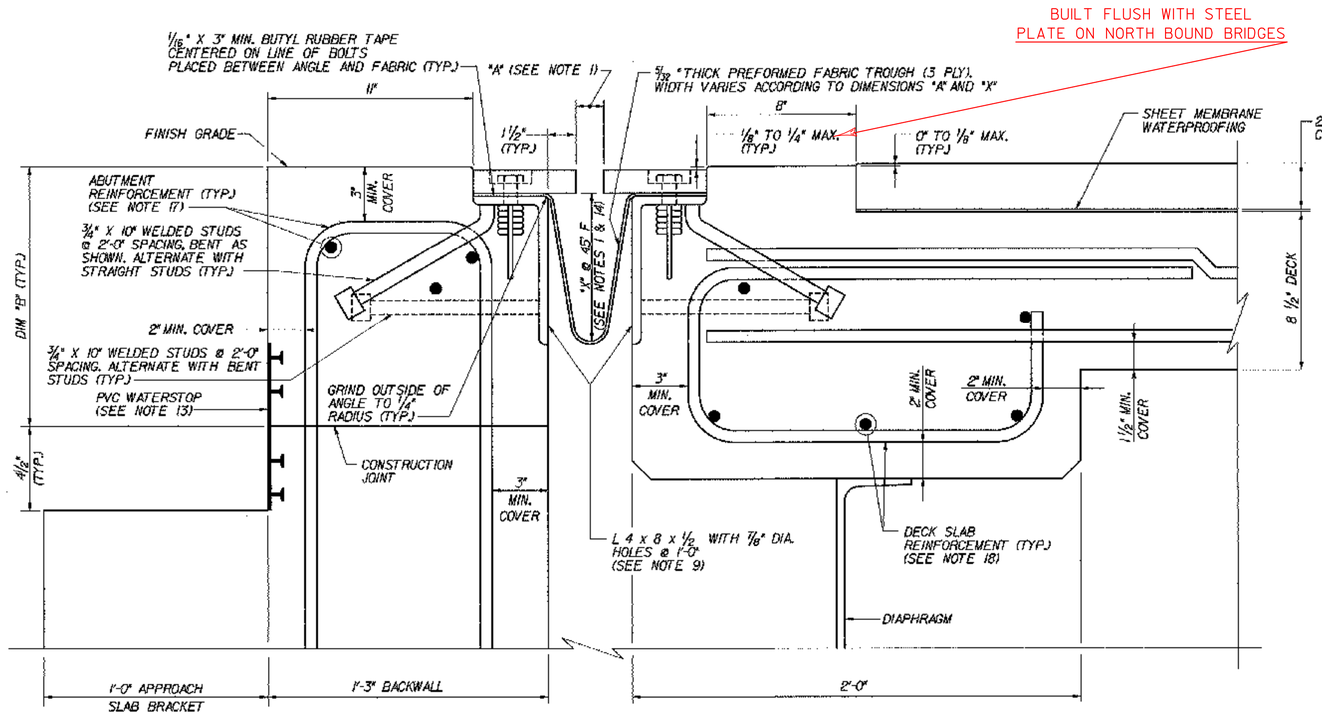
TYPICAL TYPE "H" ABUTMENT JOINT PLAN

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)

TVGA ENGINEERING, SURVEYING, P.C.

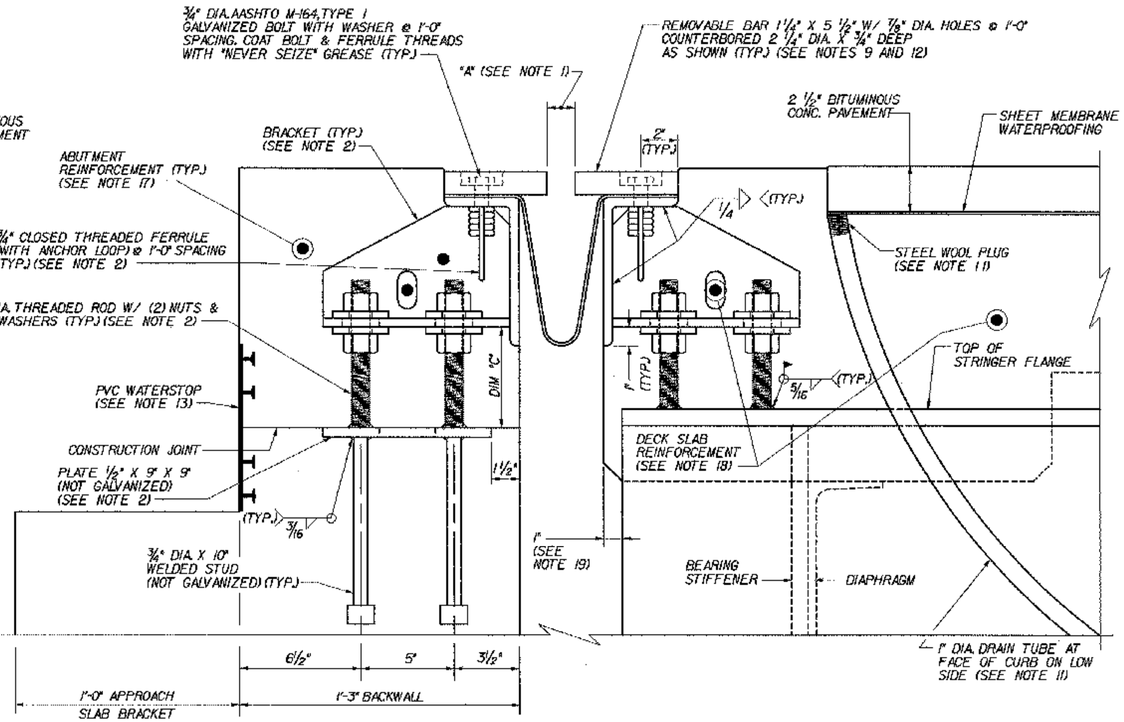
TVGA CAD Drawing No. h-jointp Date 10/99

Bridge Sheet No. C-27 Sheet 27 of 307



TYPICAL SECTION BETWEEN STRINGERS
(NORMAL TO ℄ BEARING)

SCALE: 3" = 1'-0"



TYPICAL SECTION AT STRINGERS
(NORMAL TO ℄ BEARING)

SCALE: 3" = 1'-0"

NOTES:

1. FOR TABLES OF "A" AND "X" DIMENSIONS, SEE TYPE "H" ABUTMENT JOINT DETAILS (2 OF 3), BRIDGE SHEET C-29.
2. FOR BRACKET, PLATE, WASHER AND ANCHOR FERRULE DETAILS, SEE TYPE "H" ABUTMENT JOINT DETAILS (2 OF 3), BRIDGE SHEET C-29.
3. DETAILS ON THIS SHEET ARE FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
4. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS AND SHALL CONFORM TO SUBSECTION 707.07 OF THE SPECIFICATIONS.
5. BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATION M-198, TYPE B.
6. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF BRIDGE DECK CONCRETE.
7. ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36, UNLESS OTHERWISE SPECIFIED. THREADED ROD AND ASSOCIATED NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS. ALL STEEL COMPONENTS AND HARDWARE SHALL BE GALVANIZED OR METALIZED PER SUBSECTION 506.15 OF THE SPECIFICATIONS, UNLESS OTHERWISE SPECIFIED.
8. PAYMENT FOR ITEM 516.10, "BRIDGE EXPANSION JOINT" SHALL INCLUDE THE FABRICATION AND ERECTION OF THE COMPLETE JOINT ASSEMBLY INCLUDING ALL STEEL PLATES, BRACKETS, ANGLES, WELDED STUDS OR RODS, PREFORMED FABRIC DRAIN TROUGH MATERIAL AND PLASTIC DRAIN TUBES, BUTYL RUBBER TAPE AND ANY OTHER MISCELLANEOUS MATERIAL NECESSARY TO INSTALL JOINT.
9. THE 4 x 8 x 1/2 ANGLES SHALL BE FURNISHED AS ONE CONTINUOUS PIECE. THE 1 1/4" X 5 1/2" BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
10. COAT CONCRETE CONTACT SURFACES WITH EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02 OF THE SPECIFICATIONS. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
11. A 1" DIAMETER PLASTIC DRAIN TUBE SHALL BE INSTALLED AS SHOWN AT THE FACE OF CURB. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO EXTEND BELOW THE BOTTOM OF THE ADJACENT STRINGER. THE DRAIN TUBES SHALL BE FASTENED TO THE STRINGERS USING A METHOD APPROVED BY THE ENGINEER.
12. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER BOLT INSTALLATION. COSTS FOR THE WORK SHALL BE SUBSIDIARY TO ITEM 516.10.
13. PAYMENT FOR WATERSTOP SHALL BE SUBSIDIARY TO ITEM 501.25, "CONCRETE CLASS B".
14. FABRIC TROUGHS SHALL BE INSTALLED SO THAT MINIMUM SLOPE IS 1% FOR POSITIVE DRAINAGE.
15. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
16. EXPANSION JOINTS SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.
17. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40.
18. FOR DECK SLAB REINFORCEMENT, SEE THE TRANSVERSE SECTION AND DECK REINFORCEMENT PLANS FOR EACH BRIDGE.
19. THE DIMENSION FROM END OF EXISTING STRINGER TO END OF NEW DECK SLAB SHALL BE 3 1/2" ± AT BR 49N AND 4 3/4" ± AT BR 49S.
20. WORK THIS SHEET WITH TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

BRIDGE	LOCATION	DIM "B"	DIM "C"
43N	ABUT. 2	1'-2"	5 3/8"
43S	ABUT. 1	1'-2"	5 3/8"
49N	ABUT. 2	1'-1"	4 3/8"
49S	ABUT. 2	1'-1"	4 3/8"
50N	ABUT. 2	1'-2"	5 3/8"
50S	ABUT. 1	1'-2"	5 3/8"
~~51N~~	~~ABUT. 2~~	~~1'-2"~~	~~5 3/8"~~
~~51S~~	~~ABUT. 2~~	~~1'-2"~~	~~5 3/8"~~

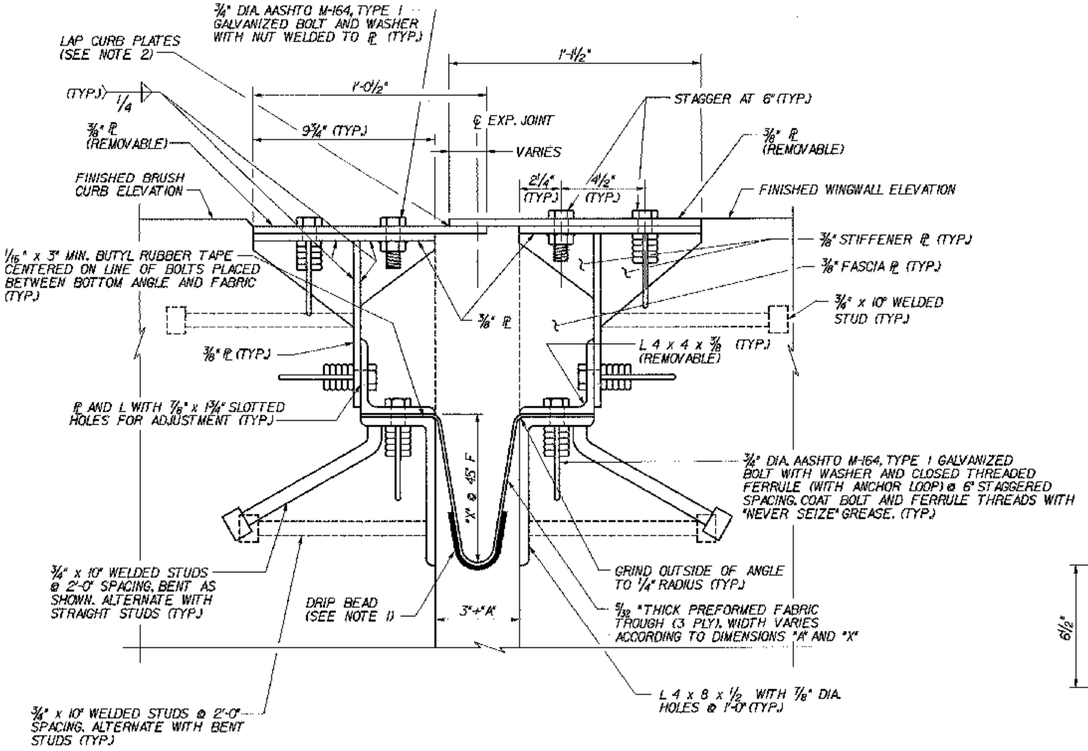
* THESE DIMENSIONS ARE THEORETICAL AND MAY CHANGE DEPENDING UPON THE OUTCOME OF THE STRINGER PROFILES.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

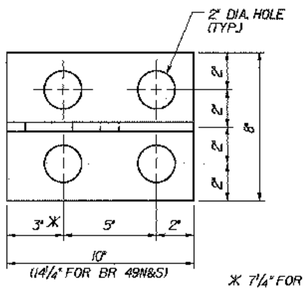
TYPE "H" ABUTMENT JOINT DETAILS (1 OF 3)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By Date J.P. HALSTEAD 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. h-jointdi Date 10/99
Bridge Sheet No. C-28	Sheet 28 of 307



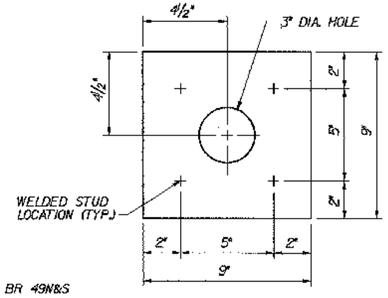
TYPICAL SECTION AT ARMORED BRUSH CURB
(NORMAL TO ℄ BEARING)

SCALE: 3" = 1'-0"



BRACKET PLAN

SCALE: 3" = 1'- 0"



* 7 1/4" FOR BR 49N&S

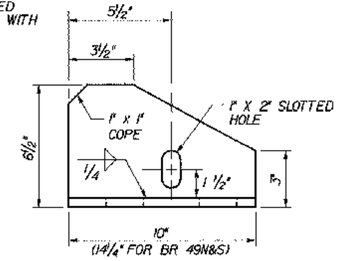
PLATE PLAN
(NOT GALVANIZED)

SCALE: 3" = 1'- 0"

NOTE: ALL PLATES 1/2" THICK

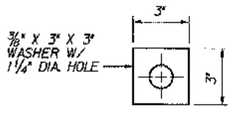
ANCHOR FERRULE DETAIL

SCALE: 3" = 1'- 0"



BRACKET ELEVATION

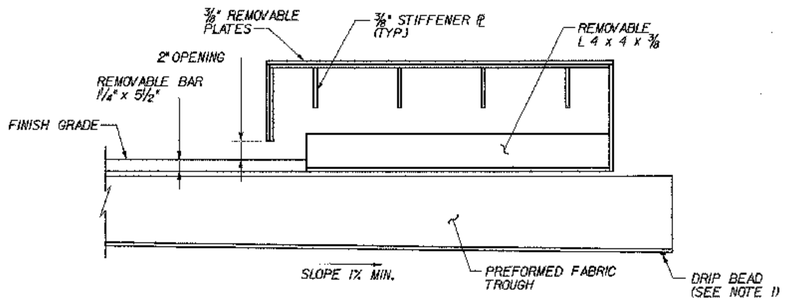
SCALE: 3" = 1'- 0"



WASHER FOR BRACKET

SCALE: 3" = 1'- 0"

BRIDGE	EXPANSION JOINT LOCATION	"X" @ 45° F		
		@ LEFT FASCIA	@ CL CONST.	@ RIGHT FASCIA
43N	ABUT. 2	8"	9 1/2"	9 1/2"
43S	ABUT. 1	8"	11"	11"
49N	ABUT. 2	8"	8"	8"
49S	ABUT. 2	8"	8"	8"
50N	ABUT. 2	8"	8"	8"
50S	ABUT. 1	8"	8"	8"
51N	ABUT. 2	8"	8"	8"
51S	ABUT. 2	8"	8"	8"



LONGITUDINAL SECTION THROUGH ARMORED BRUSH CURB

N.T.S.

BRIDGE	LOCATION	"A" DIMENSION							
		0° F	15° F	30° F	45° F	60° F	75° F	90° F	105° F
43N	ABUT. 2	1 5/8"	1 1/2"	1 3/8"	1 3/16"	1 1/16"	0 15/16"	0 13/16"	0 5/8"
43S	ABUT. 1	1 13/16"	1 5/8"	1 1/2"	1 5/16"	1 3/16"	1"	0 13/16"	0 11/16"
49N	ABUT. 2	1 7/16"	1 5/16"	1 3/16"	1 1/16"	0 15/16"	0 13/16"	0 3/4"	0 5/8"
49S	ABUT. 2	1 7/16"	1 5/16"	1 3/16"	1 1/16"	0 15/16"	0 13/16"	0 3/4"	0 5/8"
50N	ABUT. 2	2 1/16"	1 7/8"	1 11/16"	1 1/2"	1 5/16"	1 1/16"	0 7/8"	0 11/16"
50S	ABUT. 1	1 15/16"	1 3/4"	1 9/16"	1 3/8"	1 3/16"	1"	0 7/8"	0 11/16"
51N	ABUT. 2	2 1/8"	1 15/16"	1 3/4"	1 1/2"	1 5/16"	1 1/8"	0 15/16"	0 11/16"
51S	ABUT. 2	2 1/8"	1 7/8"	1 11/16"	1 1/2"	1 5/16"	1 1/8"	0 7/8"	0 11/16"

NOTES:

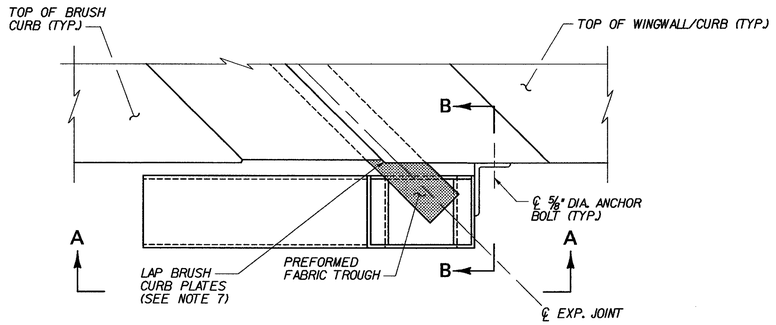
1. A DRIP BEAD OF 1/8" x 7" STRIP OF PREFORMED MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH.
2. LAP CURB PLATES IN DIRECTION OF TRAFFIC. FOR DIRECTION OF LAP AT EACH EXPANSION JOINT LOCATION, SEE TABLE ON TYPICAL TYPE "H" ABUTMENT JOINT PLAN, BRIDGE SHEET C-27.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

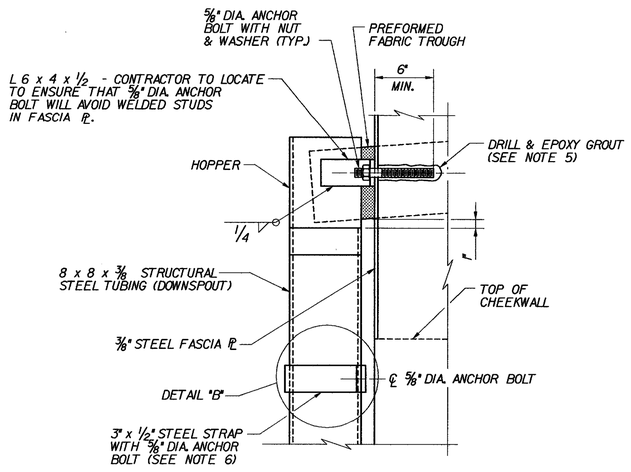
TYPE "H" ABUTMENT JOINT DETAILS (2 OF 3)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. h-jointd2 Date 10/99
	Bridge Sheet No. C-29 Sheet 29 of 307



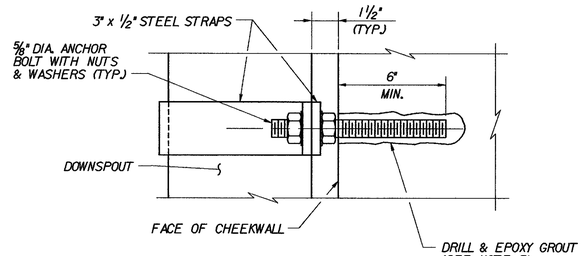
HOPPER LOCATION PLAN

SCALE: 1 1/2" = 1'-0"



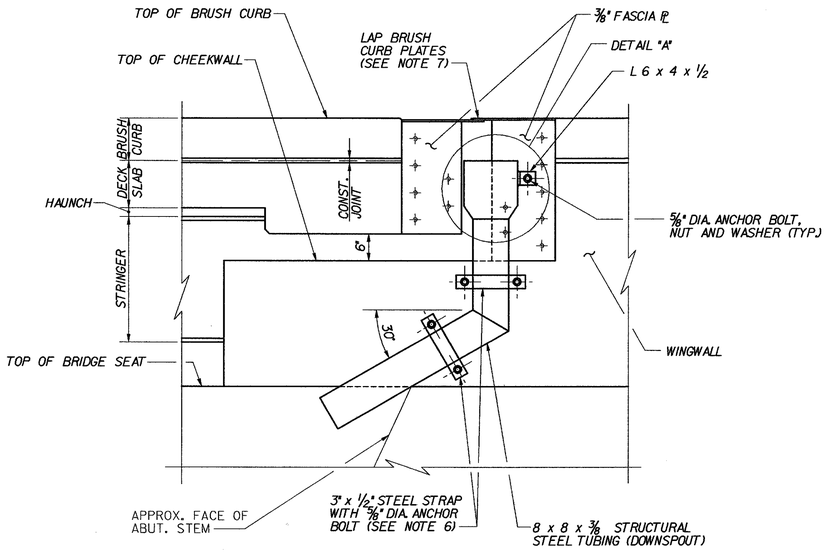
SECTION B–B

SCALE: 1 1/2" = 1'-0"



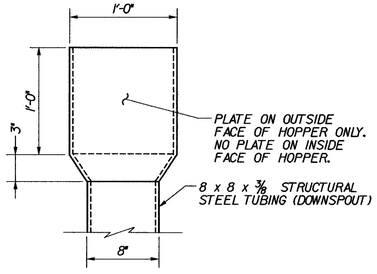
DETAIL "B"

N.T.S.



ELEVATION A–A

N.T.S.



DETAIL "A"

SCALE: 1 1/2" = 1'-0"

NOTES:

1. WORK THIS SHEET WITH TYPICAL TYPE "H" ABUTMENT JOINT PLAN, BRIDGE SHEET C-27, TYPE "H" ABUTMENT JOINT DETAILS (1 OF 3), BRIDGE SHEET C-28, AND TYPICAL TYPE "H" ABUTMENT JOINT DETAILS (2 OF 3), BRIDGE SHEET C-29.

2. HOPPERS AND ALL COMPONENTS SHALL BE AASHTO M270 GRADE 36 STEEL. STRUCTURAL TUBING (DOWNSPOUT) SHALL BE ASTM A-500 OR A-501 STEEL. ALL STEEL SHALL BE GALVANIZED OR METALIZED IN ACCORDANCE WITH SECTION 506.15 OF THE SPECIFICATIONS. ALL HOPPER AND DOWNSPOUT WORK SHALL BE PAID FOR UNDER ITEM 506.60, "STRUCTURAL STEEL".

3. HOPPERS SHALL BE FABRICATED FROM 3/8" STEEL PLATE. THE FABRICATION WELDS SHALL BE 1/4" FILLET WELDS ON THE INSIDE OF THE HOPPER AND SHALL BE FULL LENGTH TO ENSURE A WATERTIGHT CONTAINER.

4. THE HOPPERS SHALL BE PLACED TO LEAVE A ONE INCH VERTICAL GAP BETWEEN THE BOTTOM OF THE TROUGH AND THE HOPPER. THE TROUGH SHOULD BE ENCLOSED AS MUCH AS POSSIBLE BY THE HOPPER BUT SHOULD NOT BE BENT OR BUCKLED TO RESTRICT THE FLOW OF WATER.

5. ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS, AND BE GALVANIZED IN ACCORDANCE WITH SUBSECTION 506.15. ANCHOR BOLTS SHALL BE DRILLED AND EPOXY GROUTED 6" MINIMUM INTO THE CONCRETE. DRILL AND EPOXY GROUT SYSTEM SHALL BE:
   - DAYTON SUPERIOR SURE-ANCHOR J-51 SYSTEM
   - HILTI, INC. HIT HY-150 SYSTEM
   - UNITEX PRO-POXY 300 FAST SYSTEM

   OR EQUIVALENT APPROVED BY VAOT MATERIALS SECTION. ALL COSTS FOR DRILLING AND EPOXY GROUTING ANCHOR BOLTS SHALL BE SUBSIDIARY TO ITEM 506.60, "STRUCTURAL STEEL".

6. STRAPS SHALL NOT BE BENT IN THE FIELD.

7. LAP CURB PLATES IN DIRECTION OF TRAFFIC. FOR DIRECTION OF LAP AT EACH EXPANSION JOINT LOCATION, SEE TABLE ON TYPICAL TYPE "H" ABUTMENT JOINT PLAN, BRIDGE SHEET C-27.

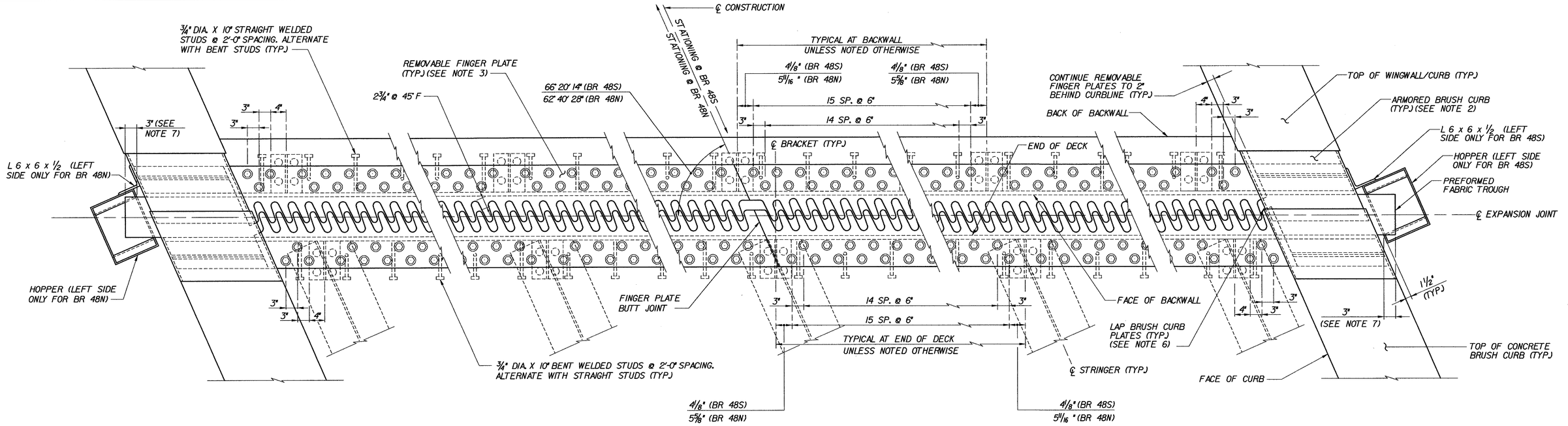
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TYPE "H" ABUTMENT JOINT DETAILS (3 OF 3)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. h-jointd3	Date 10/99
Bridge Sheet No. C-30	Sheet 30 of 307

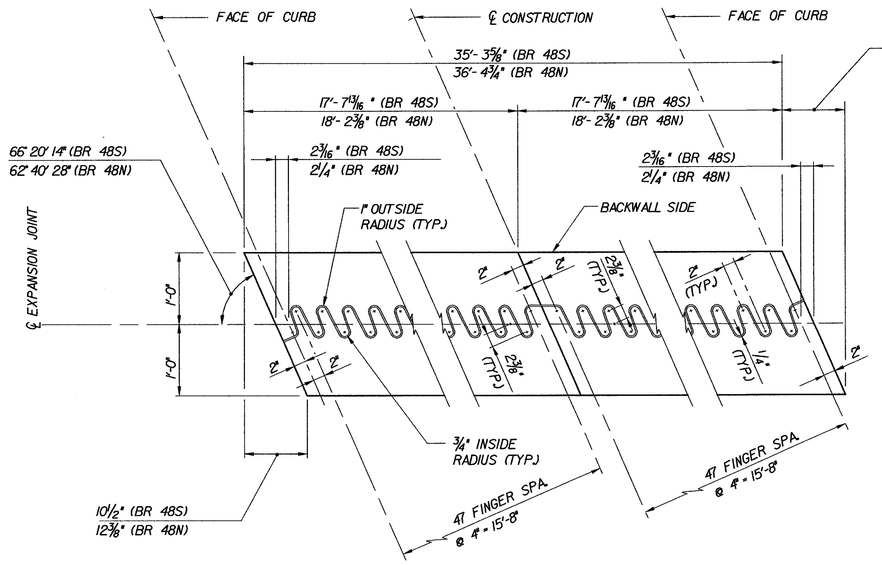
TVGA ENGINEERING, SURVEYING, P.C.



(STUDS NOT SHOWN IN BRUSH CURB FOR CLARITY)

TYPICAL FINGER PLATE EXPANSION JOINT PLAN

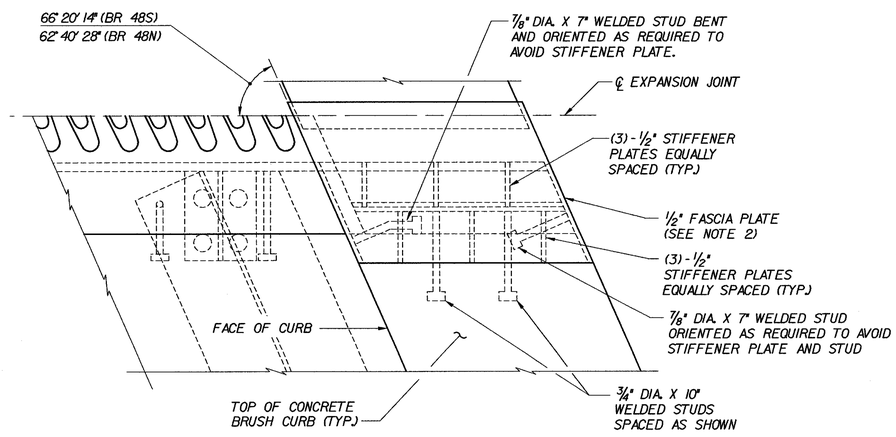
SCALE : 1" = 1'-0"



NOTE : ALL DIMENSIONS ARE TYPICAL FOR BOTH JOINTS EXCEPT AS NOTED (BR 48N OR BR 48S).

CUTTING DETAIL

NOT TO SCALE



(ONE QUADRANT OF ARMORED BRUSH CURB SHOWN. ALL OTHER QUADRANTS SIMILAR.)

ARMORED BRUSH CURB PLAN DETAIL

SCALE : 11/2" = 1'-0"

NOTES :

1. TOP AND FACE OF BRUSH CURB ARE ATTACHED BY BOLTS AND ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
2. FOR TYPICAL SECTIONS OF EXPANSION JOINT AND ARMORED BRUSH CURB, SEE BRIDGE SHEETS C-36 AND C-37.
3. FINGER PLATES IN ROADWAY ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
4. THE DETAILS SHOWN ON THIS SHEET SHALL BE COORDINATED WITH THE DETAILS SHOWN ON BRIDGE SHEETS C-36, C-37 AND C-38.
5. SEE BRIDGE SHEET C-37 FOR TEMPERATURE ADJUSTMENT TABLE.
6. LAP BRUSH CURB PLATES IN DIRECTION OF TRAFFIC.
7. WHERE HOPPER IS NOT REQUIRED (RIGHT SIDE OF BR 48N&S), PREFORMED FABRIC DRAIN TROUGH SHALL BE TERMINATED 2" INSIDE THE ARMORED BRUSH CURB.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
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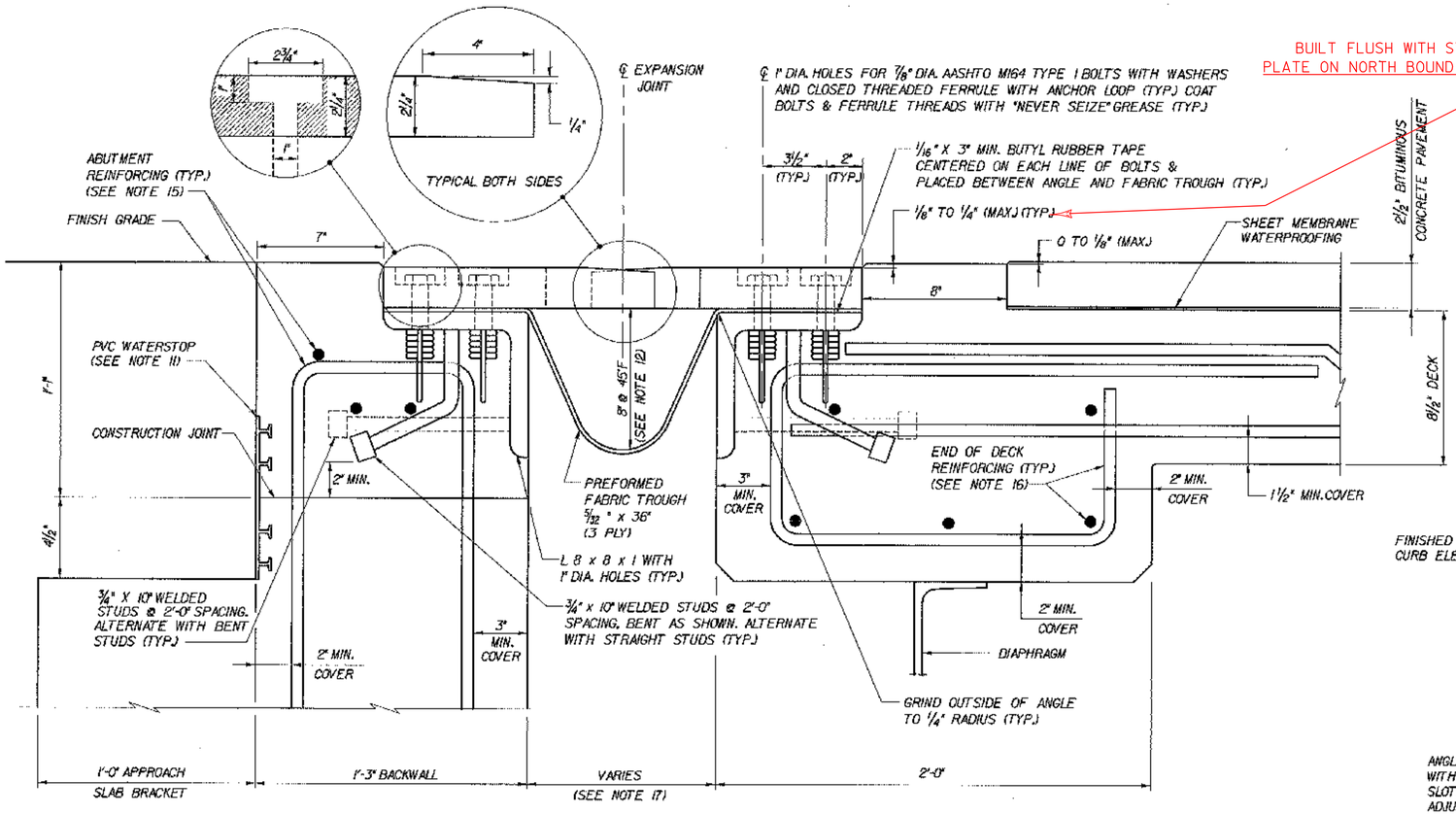
TYPICAL FINGER JOINT PLAN

Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127fjl.dgn	Date 10/99
Bridge Sheet No. C-35	Sheet 35 of 307

Hayashi Corporation
Consulting Engineers

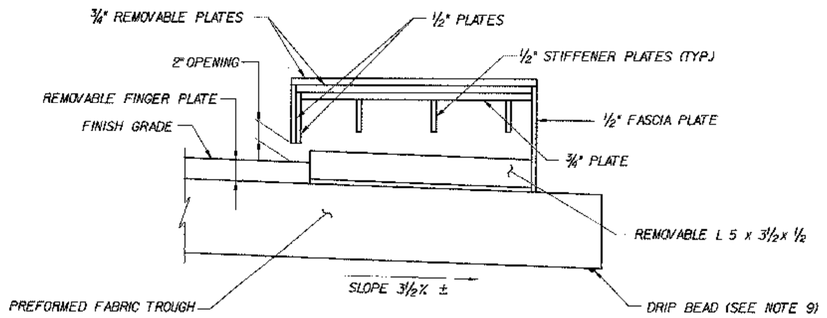


TYPICAL SECTION BETWEEN STRINGERS

(NORMAL TO ℄ BEARING)
SCALE : 3" = 1'-0"

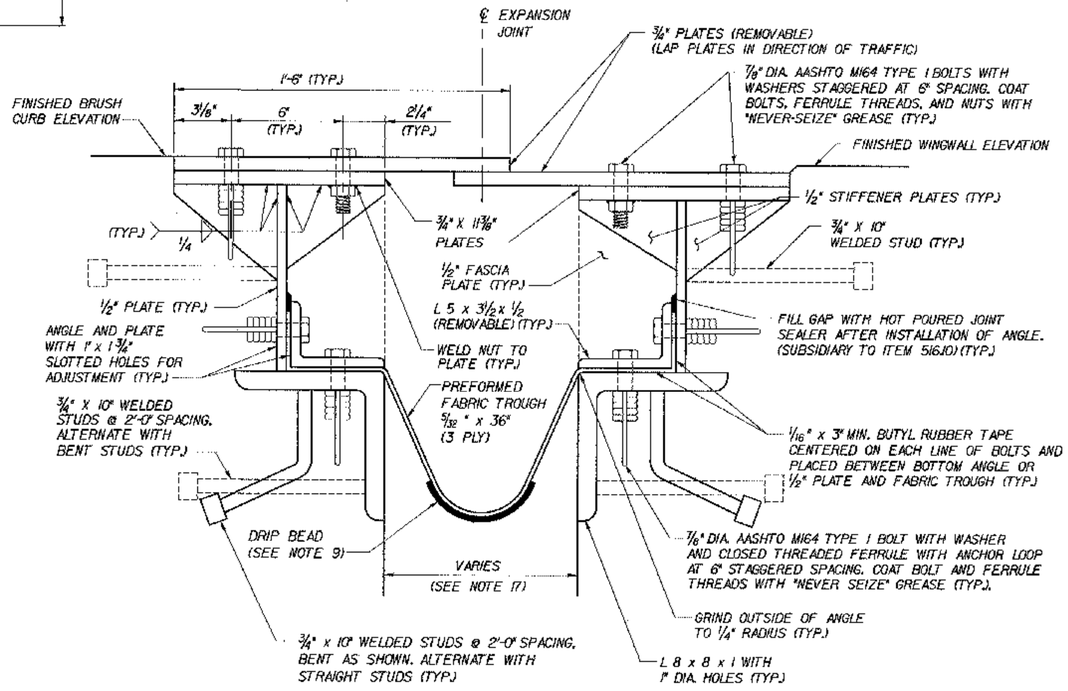
NOTES:

1. DETAILS ON THIS SHEET ARE FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
2. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS AND SHALL CONFORM TO SUBSECTION 707.07 OF THE SPECIFICATIONS.
3. BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATION M-198, TYPE B.
4. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF BRIDGE DECK CONCRETE.
5. STEEL FINGER PLATES SHALL BE AASHTO M270 GRADE 50. ALL OTHER STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36 UNLESS NOTED OTHERWISE. BOLTS, NUTS & WASHERS SHALL CONFORM TO AASHTO M164 TYPE I, UNLESS NOTED OTHERWISE. ALL STEEL COMPONENTS SHALL BE GALVANIZED OR METALIZED PER SUBSECTION 506.15 OF THE SPECIFICATIONS, UNLESS NOTED OTHERWISE.
6. PAYMENT FOR ITEM 516.10, "BRIDGE EXPANSION JOINT" SHALL INCLUDE THE FABRICATION AND ERECTION OF THE COMPLETE JOINT ASSEMBLY INCLUDING ALL STEEL PLATES, BRACKETS, ANGLES, WELDED STUDS OR RODS, PREFORMED FABRIC DRAIN TROUGH MATERIAL AND PLASTIC DRAIN TUBES, BUTYL RUBBER TAPE, JOINT FILLER AND ANY OTHER MISCELLANEOUS MATERIAL NECESSARY TO INSTALL JOINT.
7. THE 8 x 8 x 1 ANGLES SHALL BE FURNISHED AS ONE CONTINUOUS PIECE. THE FINGER PLATES ON EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
8. COAT CONCRETE CONTACT SURFACES WITH EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02 OF THE SPECIFICATIONS. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
9. A DRIP BEAD OF 1/4" X 7" STRIP OF PREFORMED MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH.
10. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER BOLT INSTALLATION. COSTS FOR THE WORK SHALL BE SUBSIDIARY TO ITEM 516.10.
11. PAYMENT FOR WATERSTOP SHALL BE SUBSIDIARY TO ITEM 501.25, CONCRETE CLASS B.
12. FABRIC TROUGHS SHALL BE INSTALLED SO THAT MINIMUM SLOPE IS 1% FOR POSITIVE DRAINAGE.
13. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
14. EXPANSION JOINTS SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT FOR EACH BRIDGE JOINT.
15. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40.
16. FOR DECK SLAB REINFORCEMENT, SEE THE TRANSVERSE SECTION AND DECK REINFORCEMENT PLANS FOR EACH BRIDGE.
17. SEE BRIDGE SHEET C-37 FOR TEMPERATURE ADJUSTMENT TABLE.



LONGITUDINAL SECTION THROUGH ARMORED BRUSH CURB

NOT TO SCALE



TYPICAL SECTION AT ARMORED BRUSH CURB

(NORMAL TO ℄ BEARING)
SCALE : 3" = 1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

FINGER JOINT DETAILS (1 OF 3)

Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. I27-fj2.dgn	Date 10/99
Bridge Sheet No. C-36	Sheet 36 of 307

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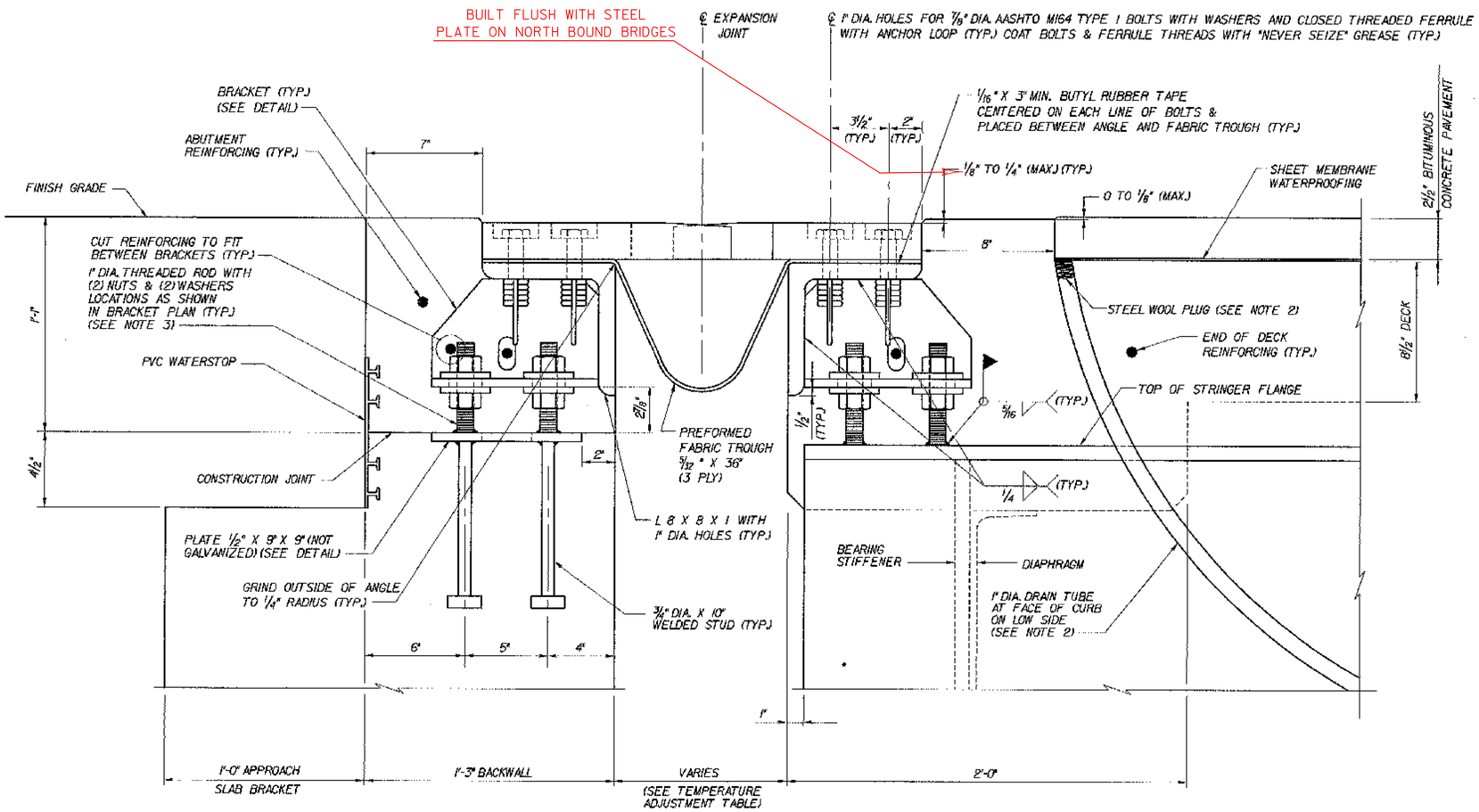
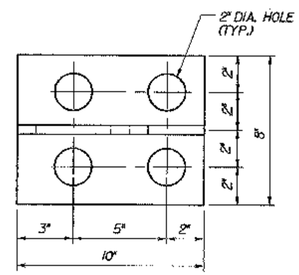


TYPICAL SECTION AT STRINGERS

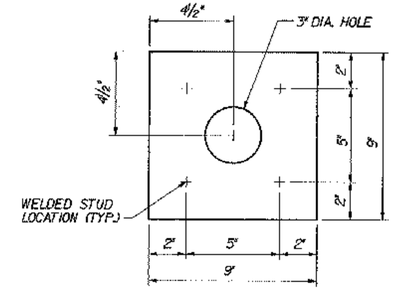
(NORMAL TO ℄ BEARING)
SCALE : 3" = 1'-0"

TEMPERATURE ADJUSTMENT TABLE		
TEMPERATURE	BR 48N	BR 48S
0°F	11 1/8"	11 1/4"
15°F	10 13/16"	10 15/16"
30°F	10 1/2"	10 9/16"
45°F	10 3/16"	10 1/4"
60°F	9 7/8"	9 15/16"
75°F	9 9/16"	9 5/8"
90°F	9 1/4"	9 5/16"
105°F	9"	9"



BRACKET PLAN

SCALE: 3" = 1'- 0"

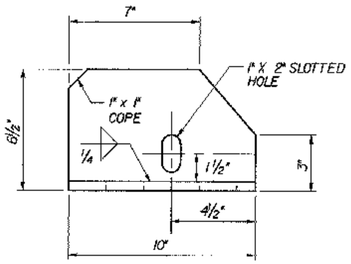


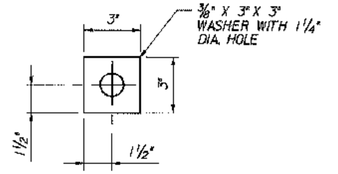
NOTE: THIS PLATE DOES NOT NEED TO BE GALVANIZED.

PLATE PLAN

SCALE: 3" = 1'- 0"

NOTE: ALL PLATES 1/2" THICK





WASHER FOR BRACKET

SCALE: 3" = 1'- 0"

BRACKET ELEVATION

SCALE: 3" = 1'- 0"

ANCHOR FERRULE DETAIL

NOT TO SCALE

NOTES:

1. SEE NOTES ON BRIDGE SHEET C-36.
2. A 1" DIAMETER PLASTIC DRAIN TUBE SHALL BE INSTALLED AS SHOWN AT THE FACE OF CURB. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO EXTEND BELOW THE BOTTOM OF THE ADJACENT STRINGER. THE DRAIN TUBES SHALL BE FASTENED TO THE STRINGERS USING A METHOD APPROVED BY THE ENGINEER.
3. THREADED ROD AND ASSOCIATED NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS.

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AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

FINGER JOINT DETAILS (2 OF 3)

Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127fj3.dgn	Date 10/99
Bridge Sheet No. C-37	Sheet 37 of 307

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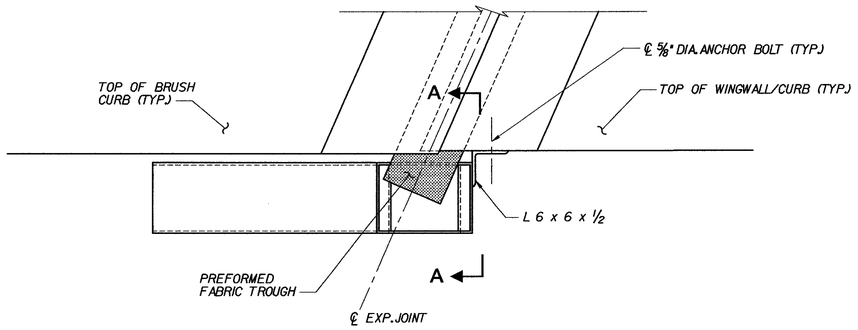
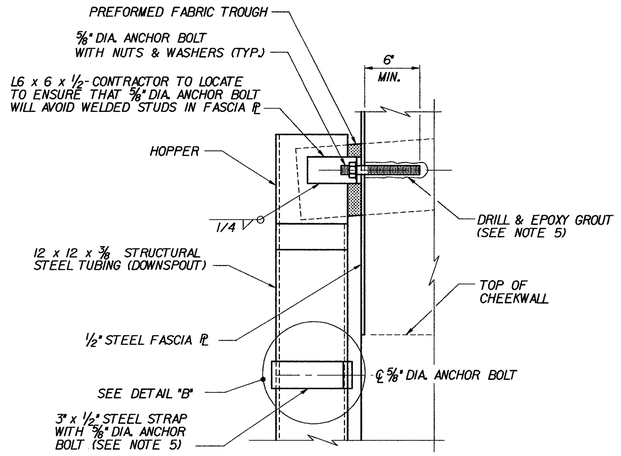


(HOPPER AT BR 48S SHOWN, HOPPER AT BR 48N SIMILAR)

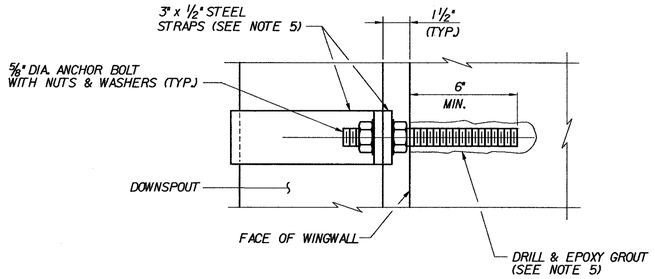
HOPPER LOCATION PLAN

NOT TO SCALE



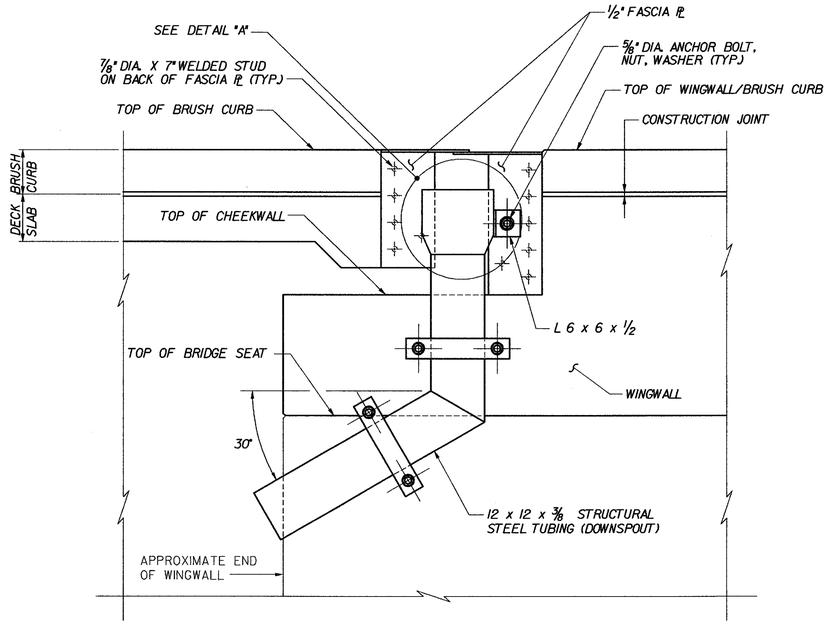
SECTION A–A

NOT TO SCALE



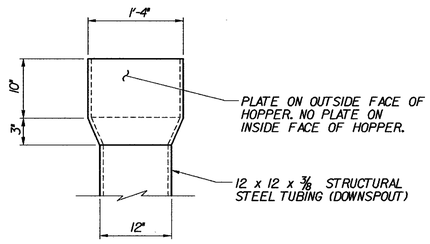
DETAIL "B"

NOT TO SCALE



ELEVATION

NOT TO SCALE



DETAIL "A"

NOT TO SCALE

NOTES:

1. HOPPERS AND ALL COMPONENTS SHALL BE AASHTO M270 GRADE 36 STEEL. STRUCTURAL TUBING (DOWNSPOUT) SHALL BE ASTM A-500 OR A-501 STEEL. ALL STEEL SHALL BE GALVANIZED OR METALIZED IN ACCORDANCE WITH SECTION 506.15 OF THE SPECIFICATIONS. ALL HOPPER AND DOWNSPOUT WORK SHALL BE PAID FOR UNDER ITEM 506.60, "STRUCTURAL STEEL".

2. HOPPERS SHALL BE FABRICATED FROM 3/8" STEEL PLATE. THE FABRICATION WELDS SHALL BE 1/4" FILLET WELDS ON THE INSIDE OF THE HOPPER AND SHALL BE FULL LENGTH TO ENSURE A WATERTIGHT CONTAINER.

3. ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS, AND BE GALVANIZED IN ACCORDANCE WITH SUBSECTION 506.15. ANCHOR BOLTS SHALL BE DRILLED AND EPOXY GROUTED 6" MINIMUM INTO THE CONCRETE. DRILL AND EPOXY GROUT SYSTEM SHALL BE:
   - DAYTON SUPERIOR SURE-ANCHOR J-51 SYSTEM
   - HILTI, INC. HIT HY-150 SYSTEM
   - UNITEX PRO-POXY 300 FAST SYSTEM

   OR EQUIVALENT APPROVED BY VAOT MATERIALS SECTION. ALL COSTS FOR DRILLING AND EPOXY GROUTING ANCHOR BOLTS SHALL BE SUBSIDIARY TO ITEM 506.60, "STRUCTURAL STEEL".

4. THE HOPPERS SHALL BE PLACED AS SHOWN ON THIS SHEET. THIS WILL REQUIRE THAT THE HOPPER BE FORCED AS FAR AS POSSIBLE UP UNDER THE TROUGH. THE TROUGH SHOULD BE ENCLOSED AS MUCH AS POSSIBLE BY THE HOPPER BUT SHOULD NOT BE BENT OR BUCKLED TO RESTRICT THE FLOW OF WATER.

5. STRAPS SHALL NOT BE BENT IN THE FIELD.

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Town Of MIDDLESEX-BOLTON	Bridge No.
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FINGER JOINT DETAILS (3 OF 3)

Designed By K.L. JAMES	Drawn By N.J. HOYT
Checked By M.H. GALLO Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 127fj4.dgn	Date 10/99
Bridge Sheet No. **C-38**	Sheet 38 of 307

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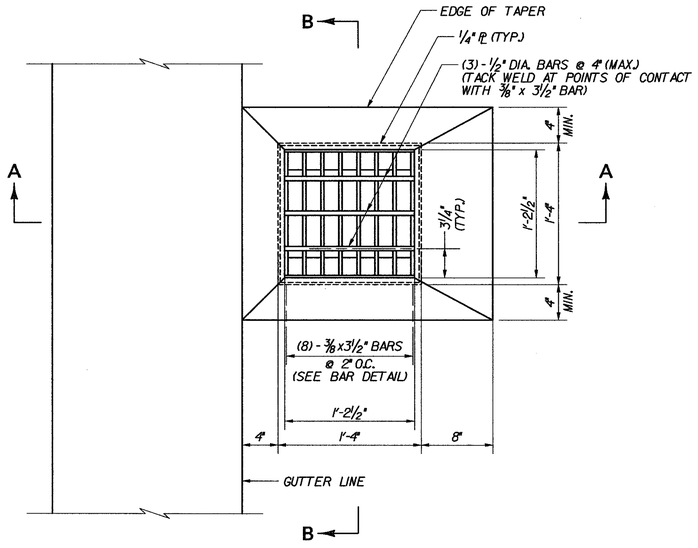
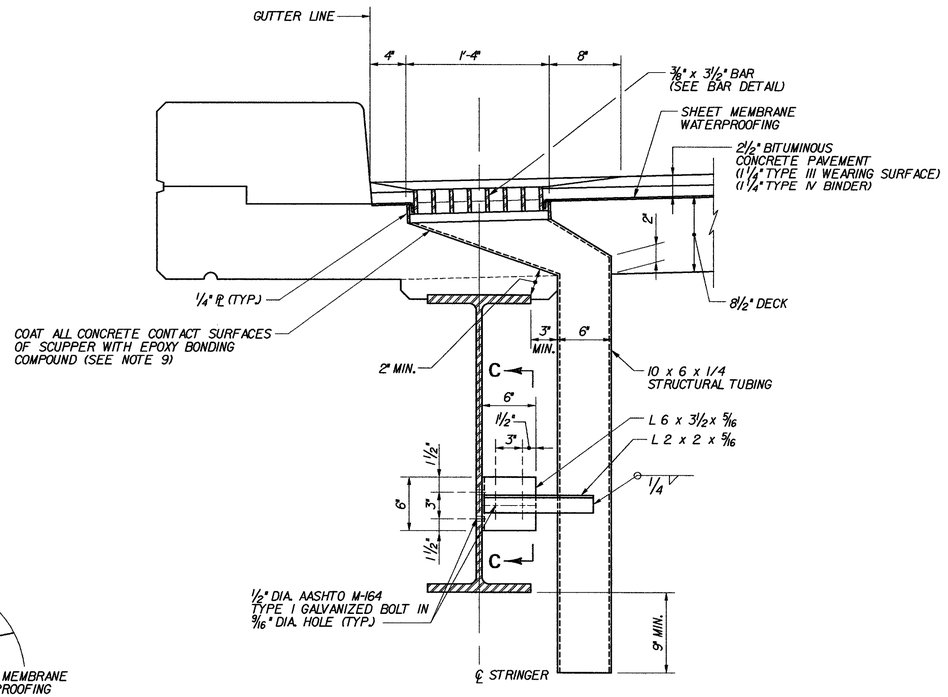
Consulting Engineers



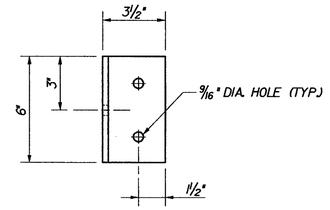
PLAN

SCALE: 1 1/2"=1'-0"



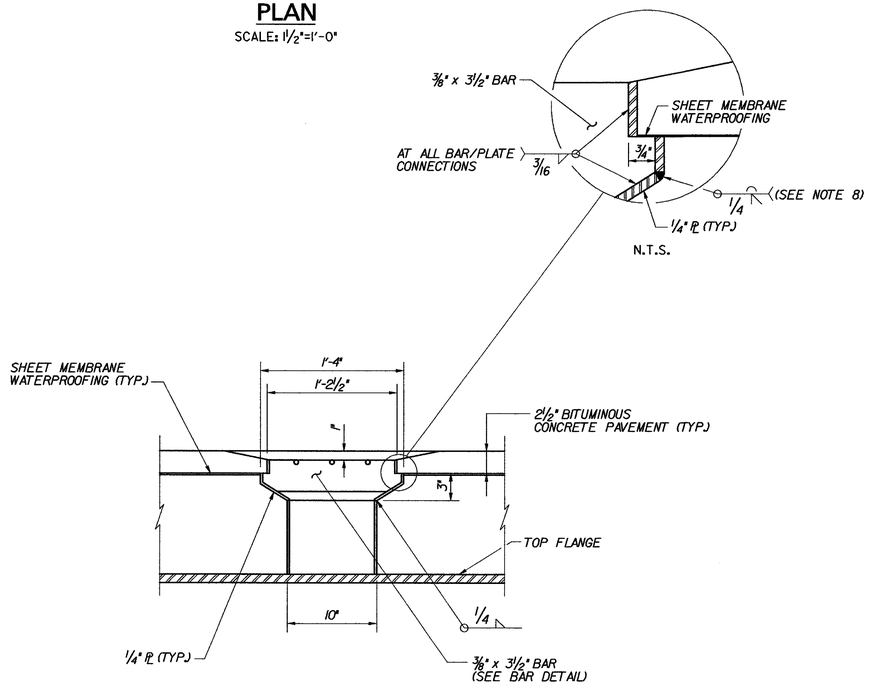
SECTION A–A

SCALE: 1 1/2"=1'-0"



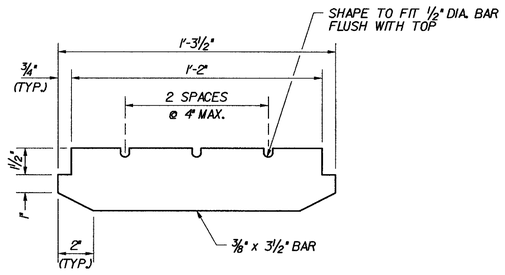
SECTION C–C

SCALE: 3"=1'-0"



SECTION B–B

SCALE: 1 1/2"=1'-0"



BAR DETAIL

SCALE: 3"=1'-0"

NOTES:

1. FOR LOCATION OF SCUPPERS, SEE FRAMING PLAN FOR EACH BRIDGE.
2. STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A-500 OR A-501.
3. ALL PLATES, BARS AND ANGLES SHALL CONFORM TO AASHTO M 270, GRADE 36. ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO AASHTO M-164, TYPE I.
4. SCUPPERS, INCLUDING COMPONENTS REQUIRED FOR ATTACHMENT TO SUPERSTRUCTURE, SHALL BE GALVANIZED OR METALIZED AFTER FABRICATION, IN ACCORDANCE WITH SUBSECTION 506.15 OF THE SPECIFICATIONS.
5. TOP SURFACE OF SCUPPERS MUST BE SLOPED TO MATCH ROADWAY CROSS SLOPE AND GRADE.
6. THE BAR AND GRATE SECTION MAY BE PREFABRICATED PROVIDING THAT THE GEOMETRY AND SECTION PROPERTIES ARE EQUIVALENT TO THE DETAILS SHOWN.
7. AT BR 43N&S, THE COST OF SCUPPERS SHALL BE PAID UNDER ITEM 506.50, "STRUCTURAL STEEL (ROLLED BEAM)". AT ALL OTHER LOCATIONS, THE COST SHALL BE PAID UNDER ITEM 506.55, "STRUCTURAL STEEL (PLATE GIRDER)".
8. SCUPPER MAY BE FABRICATED BY BENDING PLATES AT THESE JOINTS IN LIEU OF A WELDED CONNECTION. INSIDE RADII SHALL BE NOT GREATER THAN 1/2". GEOMETRICS OF BENT SECTION SHALL CONFORM TO 1/16" FABRICATION TOLERANCE.
9. EPOXY BONDING COMPOUND SHALL CONFORM TO THE REQUIREMENTS OF SECTION 719 OF THE SPECIFICATIONS. PAYMENT FOR EPOXY BONDING COMPOUND SHALL BE SUBSIDIARY TO ITEM 501.221, "CONCRETE CLASS A QC/QA".

STATE OF VERMONT
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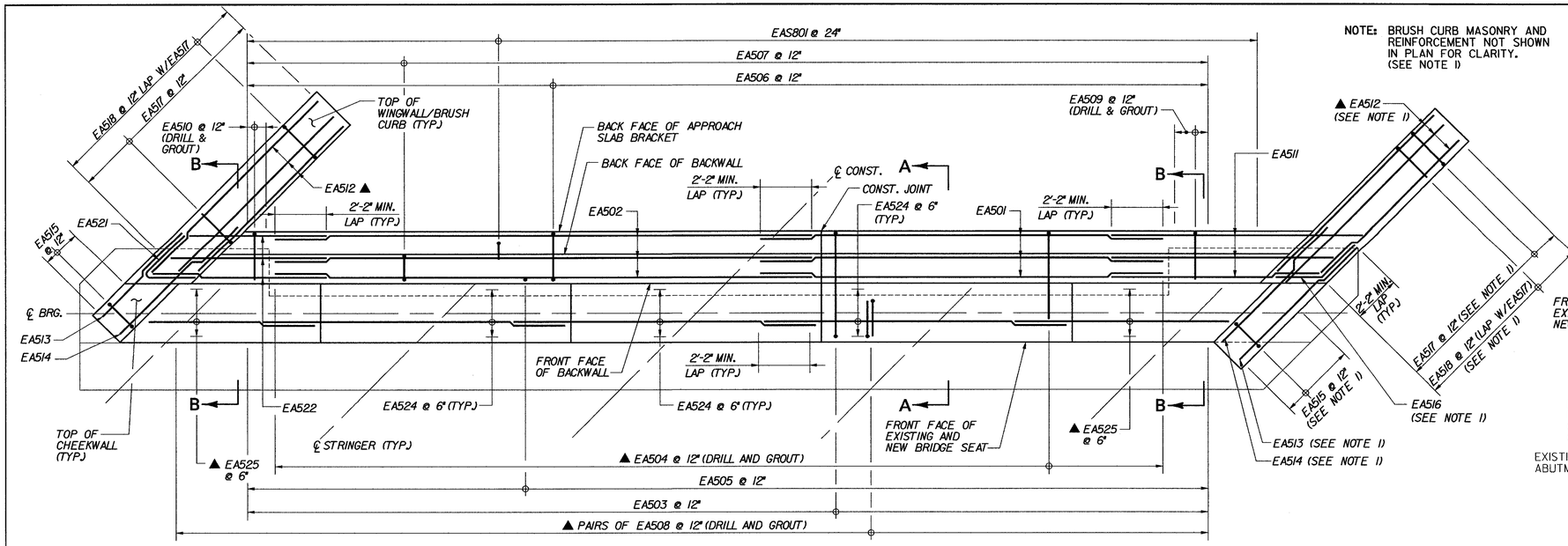
Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TYPICAL SCUPPER DETAILS

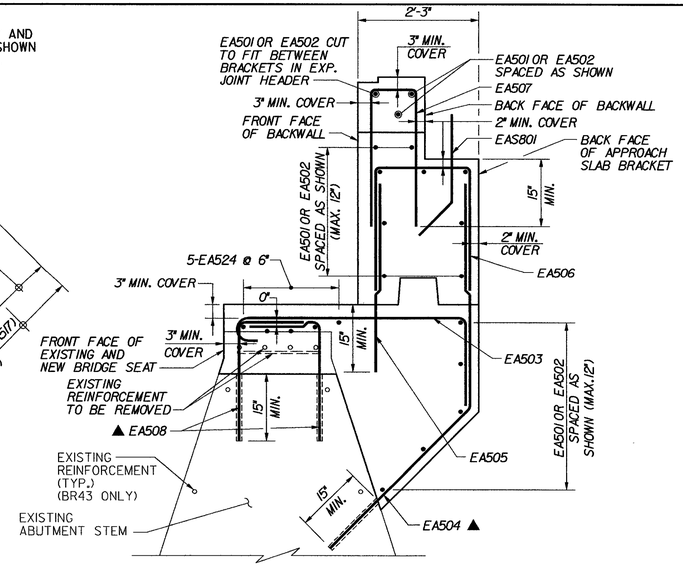
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. scup_det	Date 10/99
Bridge Sheet No. C-39	Sheet 39 of 307

TVGA ENGINEERING, SURVEYING, P.C.



PLAN
N.T.S.

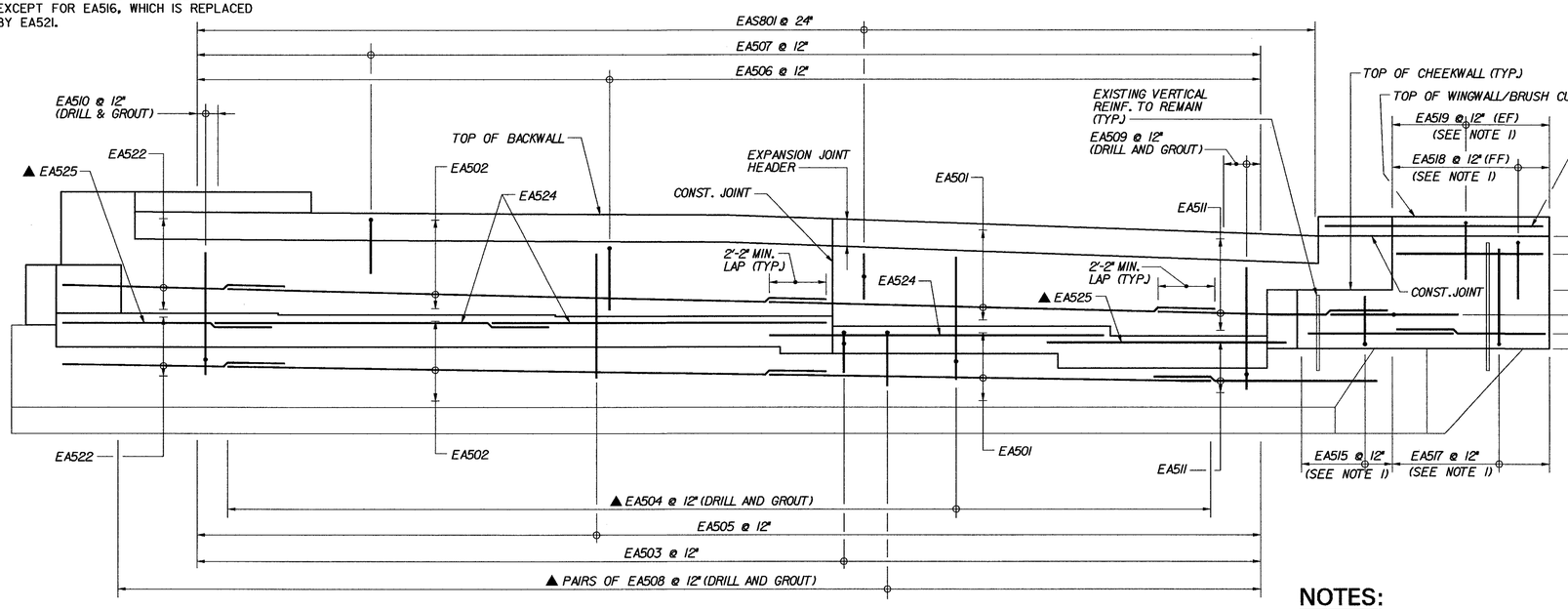
REINFORCEMENT LAYOUT SHOWN IS INTENDED AS GUIDANCE ONLY. CONTRACTOR MUST MAKE ADJUSTMENTS IN ORDER TO FIT ACTUAL FIELD CONDITIONS, AS APPROVED BY THE ENGINEER, AT NO ADDITIONAL EXPENSE TO THE CONTRACT.



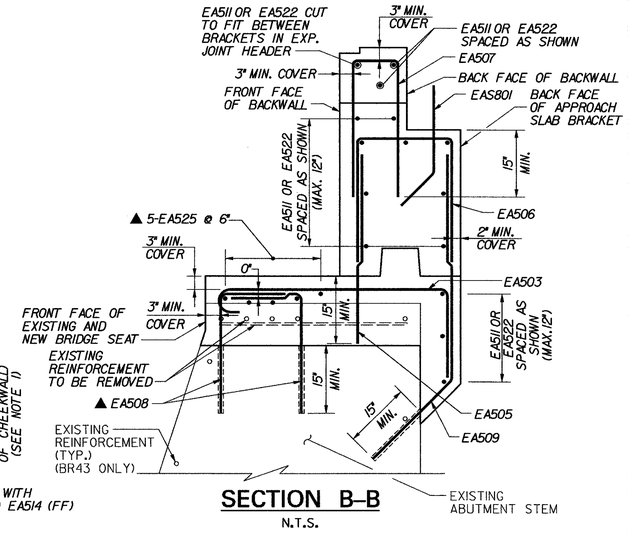
SECTION A–A
N.T.S.

NOTE: ACUTE WINGWALL REINFORCEMENT NOT SHOWN FOR CLARITY. LAYOUT SIMILAR TO OBTUSE WINGWALL, EXCEPT FOR EA516, WHICH IS REPLACED BY EA521.

CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM. REQUIRED REVISIONS TO REINFORCING STEEL LENGTHS WILL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE CONTRACT.



ELEVATION
N.T.S.



SECTION B–B
N.T.S.

KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

NOTES:

1. FOR ADDITIONAL WINGWALL AND BRUSH CURB DETAILS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
2. CONCRETE LIMITS AND DIMENSIONS ARE SHOWN IN ABUTMENT MASONRY PLANS FOR EACH BRIDGE.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

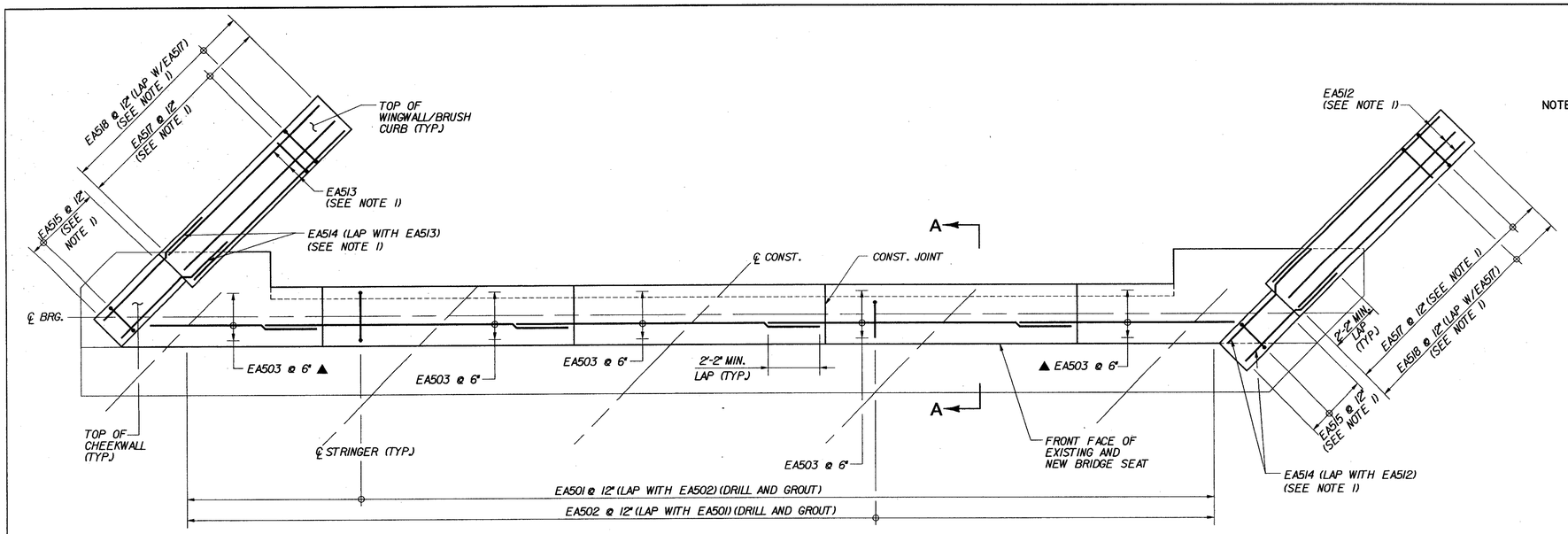
Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TYPICAL EXPANSION ABUTMENT

REINFORCEMENT

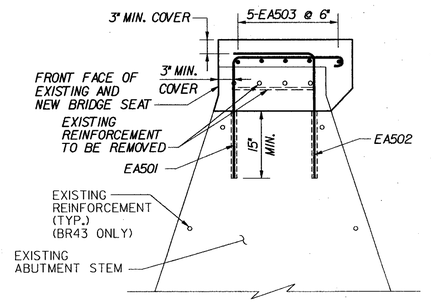
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. abrinf_e	Date 10/99
Bridge Sheet No. **C-40**	Sheet 40 of 307

TVGA ENGINEERING, SURVEYING, P.C.



PLAN
N.T.S.

NOTE: BRUSH CURB MASONRY AND REINFORCEMENT NOT SHOWN IN PLAN FOR CLARITY. (SEE NOTE 1)

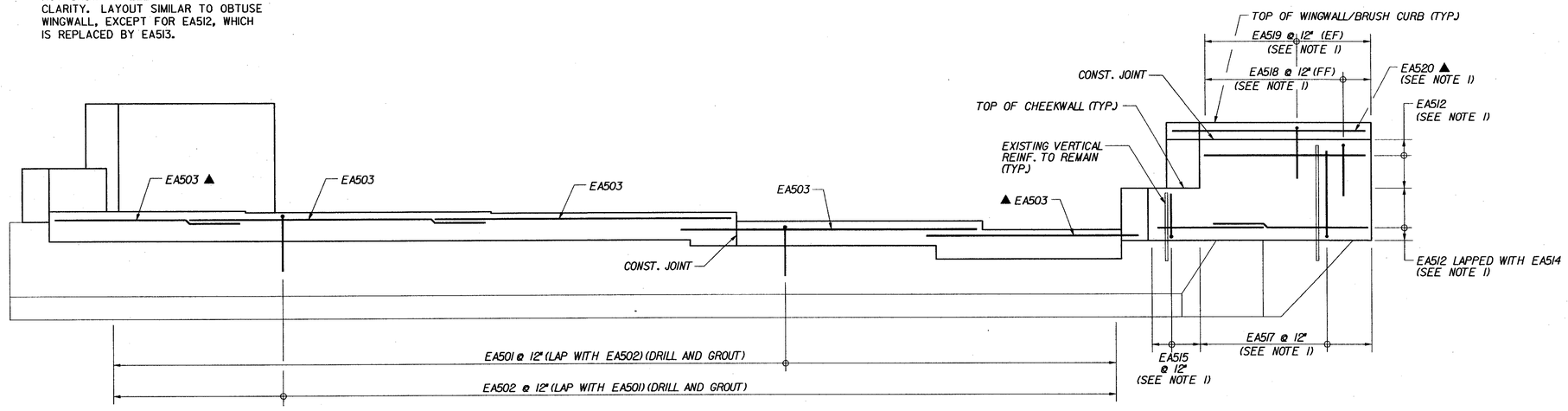


SECTION A–A
N.T.S.

REINFORCEMENT LAYOUT SHOWN IS INTENDED AS GUIDANCE ONLY. CONTRACTOR MUST MAKE ADJUSTMENTS IN ORDER TO FIT ACTUAL FIELD CONDITIONS, AS APPROVED BY THE ENGINEER, AT NO ADDITIONAL EXPENSE TO THE CONTRACT.

CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM. REQUIRED REVISIONS TO REINFORCING STEEL LENGTHS WILL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE CONTRACT.

NOTE: ACUTE WINGWALL REINFORCEMENT NOT SHOWN IN ELEVATION FOR CLARITY. LAYOUT SIMILAR TO OBTUSE WINGWALL, EXCEPT FOR EA512, WHICH IS REPLACED BY EA513.



ELEVATION
N.T.S.

KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

NOTES:

1. FOR ADDITIONAL WINGWALL AND BRUSH CURB DETAILS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
2. CONCRETE LIMITS AND DIMENSIONS ARE SHOWN IN ABUTMENT MASONRY PLANS FOR EACH BRIDGE.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.

TYPICAL FIXED ABUTMENT

REINFORCEMENT

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. abrinf_f	Date 10/99
Bridge Sheet No. C-41	Sheet 41 of 307

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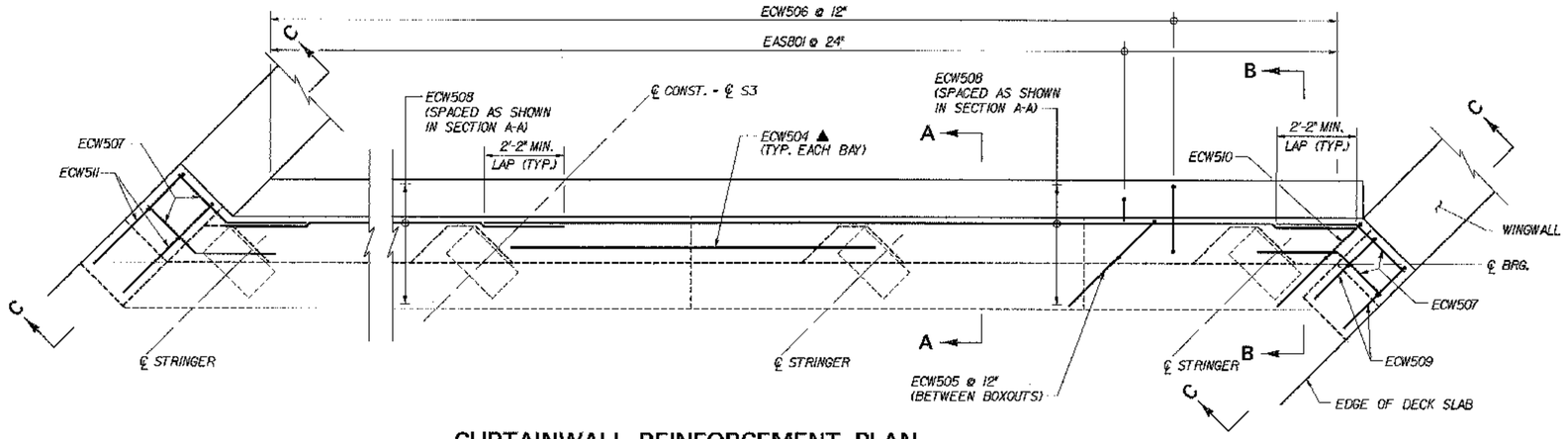
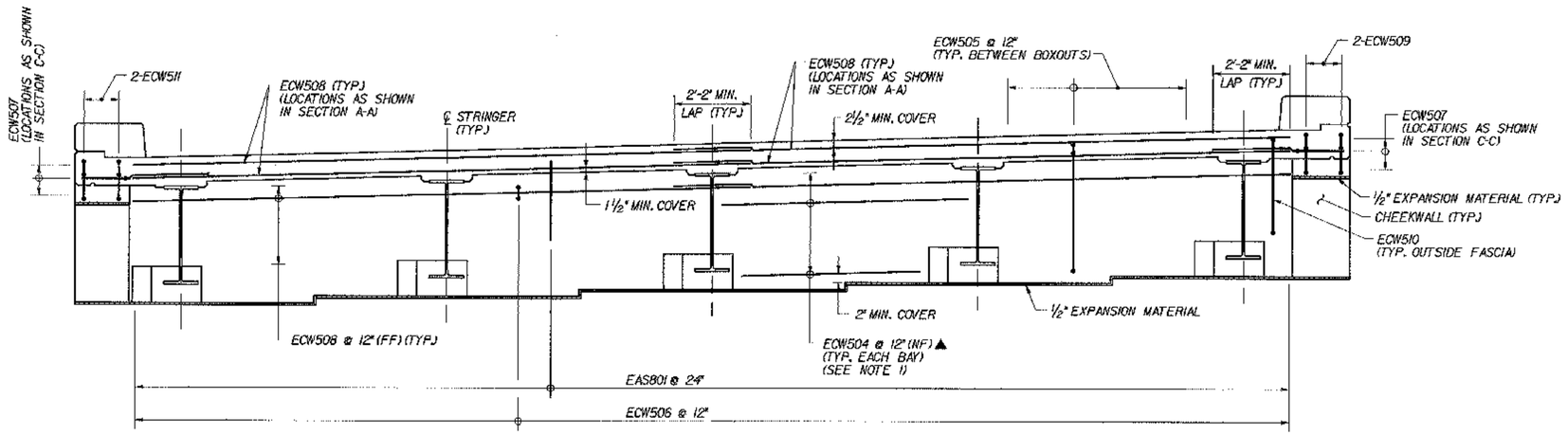


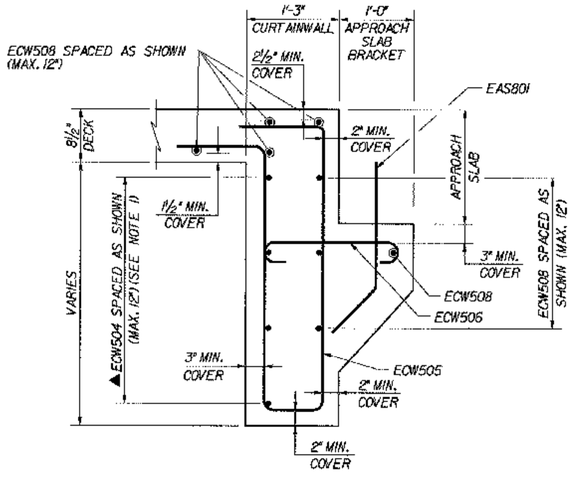
CURTAINWALL REINFORCEMENT PLAN

N.T.S.



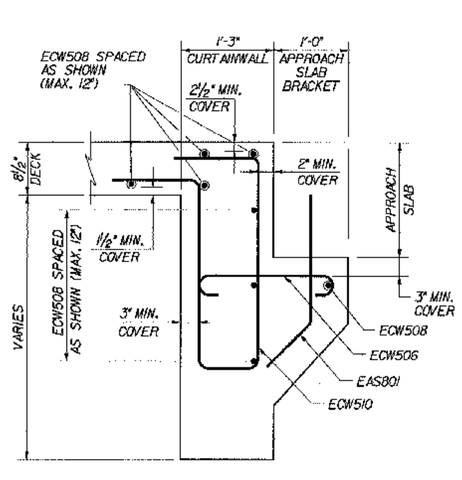
CURTAINWALL ELEVATION

N.T.S.



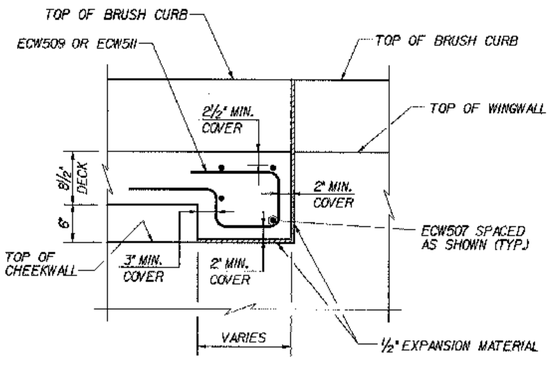
SECTION A–A

N.T.S.



SECTION B–B

N.T.S.

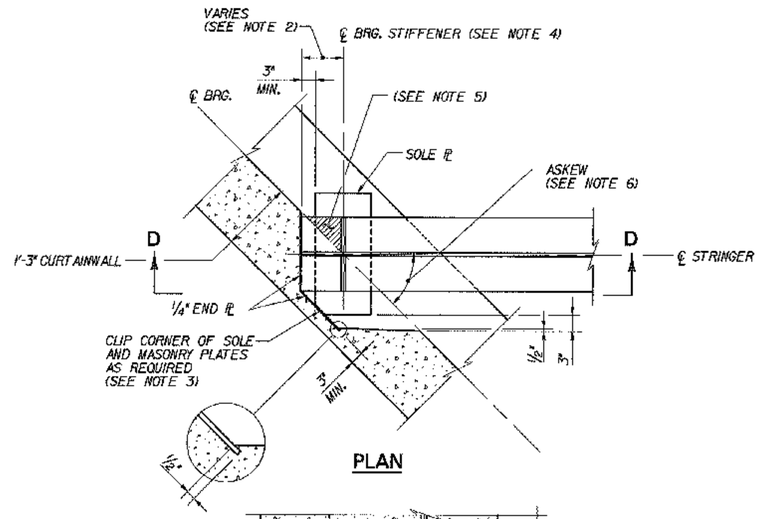


SECTION C–C

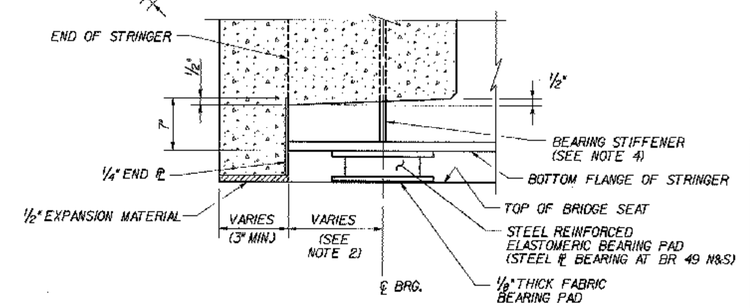
N.T.S.

KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD



PLAN



SECTION D–D

STRINGER BOXOUT DETAILS

N.T.S.

NOTES:

1. CUT BOTTOM ECW504 BARS TO FIT BETWEEN BOXOUTS.
2. THE DISTANCE FROM ℄ BEARING TO END OF STRINGER VARIES AT EACH BRIDGE. FOR THE DIMENSION AT BRIDGES 43, 48, 50 ~~AND 51,~~ SEE THE STRINGER ELEVATION FOR EACH BRIDGE. FOR THE DIMENSION AT BRIDGE 49, SEE TRANSVERSE SECTION (49N&S), BRIDGE SHEET BR49-4.
3. SOLE AND MASONRY PLATES MAY REQUIRE ONE CORNER TO BE CLIPPED TO CLEAR CURTAINWALL. FOR DETAILS AND DIMENSIONS OF THE CLIP, SEE FIXED BEARING DETAILS, BRIDGE SHEET C-21.
4. BEARING STIFFENER REQUIRED FOR PLATE GIRDER BRIDGES ONLY.
5. WHEN A BEARING STIFFENER IS REQUIRED, THE SHADED AREA (ABOVE THE BOXOUT) SHALL BE CONCRETE POURED CONTINUOUSLY WITH THE CURTAINWALL.
6. THE ASKEW ANGLE VARIES AT EACH SUBSTRUCTURE LOCATION. SEE THE ABUTMENT MASONRY DRAWINGS FOR EACH BRIDGE.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

TYPICAL CURTAINWALL DETAILS

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. curtain	Date 10/99
Bridge Sheet No. C-42	Sheet 42 of 307

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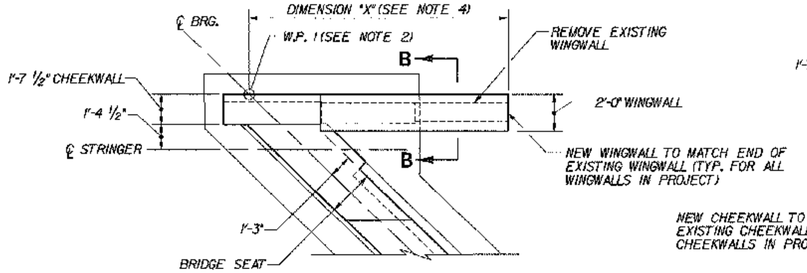
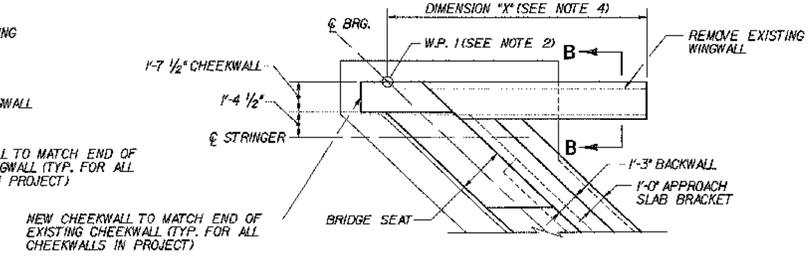


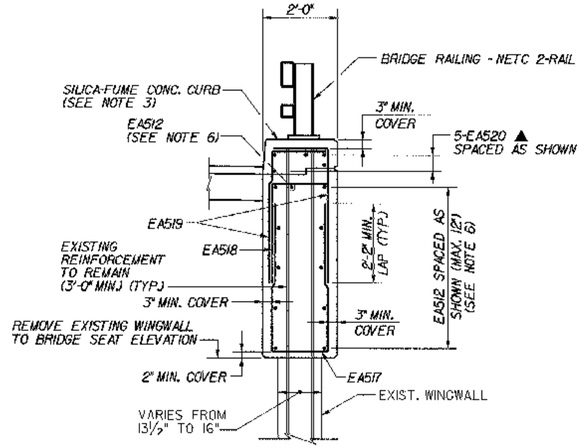
WINGWALL PLAN AT ACUTE CORNER OF FIXED ABUTMENTS

SCALE: 1/4"=1'-0"



WINGWALL PLAN AT ACUTE CORNER OF EXPANSION ABUTMENTS

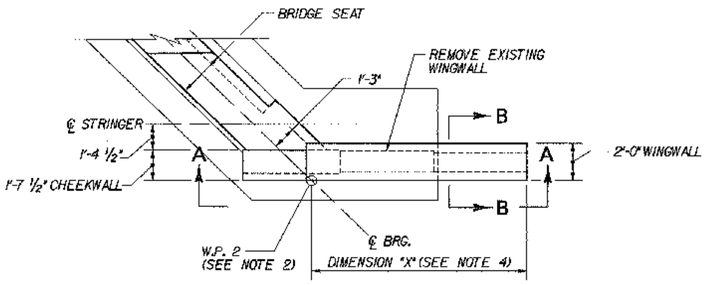
SCALE: 1/4"=1'-0"



SECTION B–B

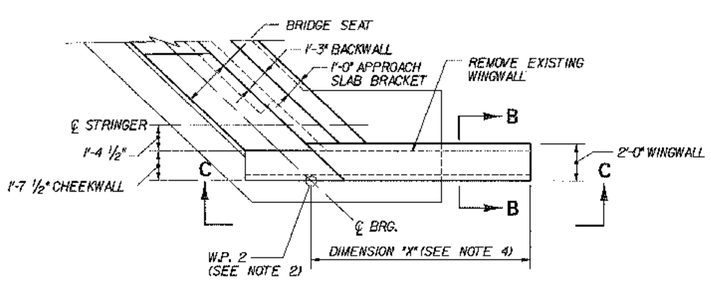
(ALL WINGWALLS SIMILAR)

SCALE: 1/2"=1'-0"



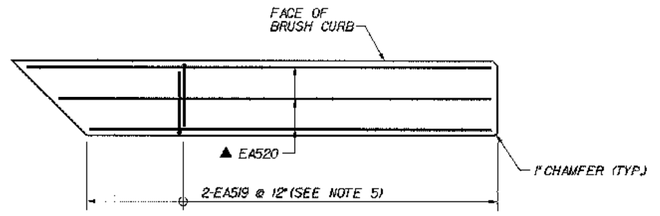
WINGWALL PLAN AT OBTUSE CORNER OF FIXED ABUTMENTS

SCALE: 1/4"=1'-0"



WINGWALL PLAN AT OBTUSE CORNER OF EXPANSION ABUTMENTS

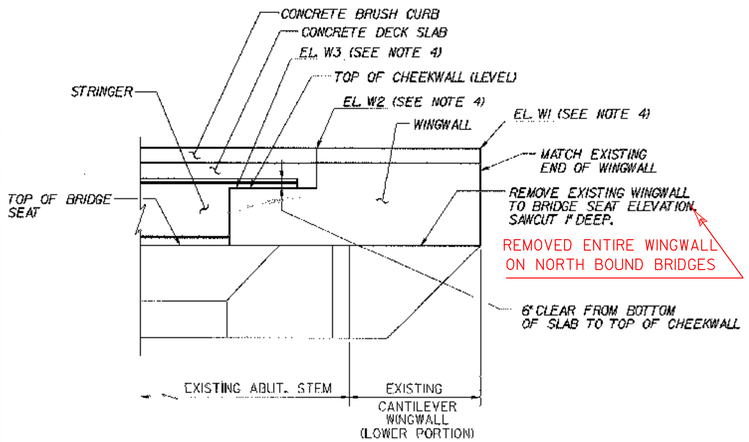
SCALE: 1/4"=1'-0"



BRUSH CURB END DETAIL

(CURB AT EXPANSION ABUT. SHOWN; FIXED SIMILAR)

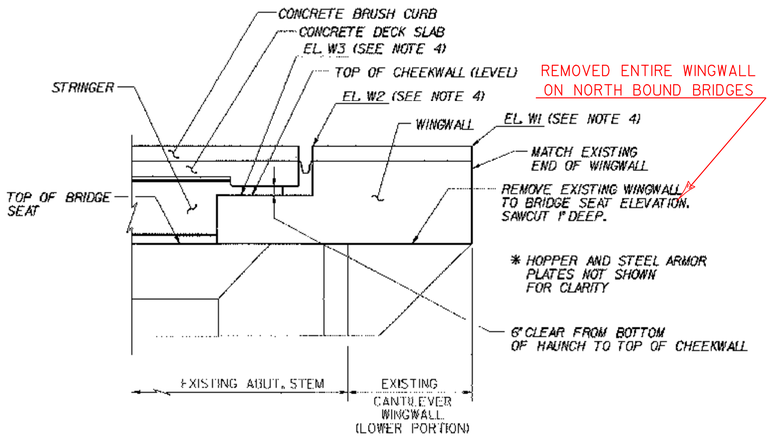
SCALE: 1/2"=1'-0"



ELEVATION A–A (FIXED ABUTMENTS)

(ACUTE CORNER SIMILAR)

SCALE: 1/4"=1'-0"



ELEVATION C–C (EXP. ABUTMENTS)

(ACUTE CORNER SIMILAR)

SCALE: 1/4"=1'-0"

NOTES:

1. DECK SLAB NOT SHOWN IN WINGWALL PLANS FOR CLARITY.
2. WORKING POINT (W.P.) 1 AND 2 LOCATIONS ARE SHOWN ON ABUTMENT MASONRY PLANS FOR EACH BRIDGE. FROM THE WORKING POINTS, THE CONTRACTOR MAY CONSTRUCT WINGWALLS CONCENTRIC TO THE CENTERLINE OF CONSTRUCTION, OR ON AN APPROXIMATE TANGENT LINE, AS APPROVED BY THE ENGINEER.
3. FOR DIMENSIONS OF CONCRETE CURB, SEE FASCIA DETAIL ON THE TRANSVERSE SECTION FOR EACH BRIDGE.
4. FOR TABLE OF DIMENSION "X" AND WINGWALL AND BRUSH CURB ELEVATIONS, SEE TYPICAL WINGWALL DETAILS (2 OF 2), BRIDGE SHEET C-44.
5. ADDITIONAL EA519 BARS WILL BE REQUIRED BELOW THE BRIDGE RAIL POSTS. FOR DETAILS OF THE REQUIRED STIRRUP SPACING, SEE NETC 2-RAIL STANDARD SHEET BRI-97. FOR LOCATIONS OF THE BRIDGE RAIL POSTS, SEE THE CURB AND RAIL LAYOUT PLANS FOR EACH BRIDGE.
6. AT FIXED ABUTMENTS, LONGITUDINAL REINFORCEMENT IN THE WINGWALL MAY BE EITHER EA512 OR EA513, AS SHOWN IN TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.

KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

TYPICAL WINGWALL DETAILS (1 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. wwdetail	Date 10/99
Bridge Sheet No. C-43	Sheet 43 of 307

TVGA ENGINEERING, SURVEYING, P.C.

RAISED FIN. GRADE OF WINGS

BRIDGE 5IN AND 5IS
ARE NOT PART OF THIS PROJECT

WINGWALL AND BRUSH CURB ELEVATIONS

BRIDGE	LOCATION	SIDE OF BRIDGE	DIM. "X" (SEE NOTE 2)	ELEVATION W1	ELEVATION W2	ELEVATION W3
43N	ABUT. 1 (FIXED)	LEFT	9' - 11"	544.28	543.98	541.81
		RIGHT	13' - 3"	543.30	543.02	540.85
	ABUT. 2 (EXP.)	LEFT	13' - 3"	538.58	538.86	536.22
		RIGHT	10' - 3"	537.61	537.92	535.34
43S	ABUT. 1 (EXP.)	LEFT	10' - 0"	545.84	545.75	543.08
		RIGHT	13' - 1"	545.31	545.12	542.46
	ABUT. 2 (FIXED)	LEFT	13' - 4"	540.66	540.94	538.77
		RIGHT	10' - 6"	539.67	540.00	537.83
46N	ABUT. 1 (FIXED)	LEFT	14' - 8"	449.44	449.50	447.34
		RIGHT	13' - 11"	450.70	450.77	448.61
	ABUT. 2 (EXP.)	LEFT	18' - 8"	451.23	451.13	448.45
		RIGHT	19' - 9"	452.47	452.38	449.62
46S	ABUT. 1 (EXP.)	LEFT	13' - 4"	449.66	449.71	447.05
		RIGHT	12' - 6"	450.92	450.98	448.24
	ABUT. 2 (FIXED)	LEFT	18' - 9"	451.37	451.28	448.11
		RIGHT	19' - 9"	452.63	452.54	450.37
49N	ABUT. 1 (FIXED)	LEFT	14' - 1"	453.94	454.01	451.85
		RIGHT	14' - 2"	453.81	453.88	451.72
	ABUT. 2 (EXP.)	LEFT	13' - 10"	454.64	454.57	451.74
		RIGHT	13' - 10"	454.52	454.45	451.62
49S	ABUT. 1 (FIXED)	LEFT	13' - 11"	453.69	453.77	451.60
		RIGHT	13' - 10"	453.82	453.90	451.73
	ABUT. 2 (EXP.)	LEFT	13' - 11"	454.51	454.43	451.60
		RIGHT	14' - 1"	454.64	454.56	451.73
50N	ABUT. 1 (FIXED)	LEFT	11' - 8"	475.25	475.53	473.38
		RIGHT	13' - 10"	476.90	477.14	474.97
	ABUT. 2 (EXP.)	LEFT	13' - 6"	481.40	481.17	478.50
		RIGHT	26' - 6"	483.35	482.72	479.95
50S	ABUT. 1 (EXP.)	LEFT	11' - 9"	466.39	466.75	464.18
		RIGHT	13' - 10"	466.29	466.59	465.91
	ABUT. 2 (FIXED)	LEFT	13' - 3"	473.80	473.52	471.35
		RIGHT	11' - 3"	475.64	475.29	473.12
~~51N~~	~~ABUT. 1 (FIXED)~~	~~LEFT~~	~~9' - 5"~~	~~364.63~~	~~364.77~~	~~362.60~~
		~~RIGHT~~	~~9' - 5"~~	~~365.30~~	~~365.44~~	~~363.27~~
	~~ABUT. 2 (EXP.)~~	~~LEFT~~	~~12' - 0"~~	~~368.99~~	~~368.93~~	~~366.22~~
		~~RIGHT~~	~~14' - 4"~~	~~369.47~~	~~369.41~~	~~366.67~~
~~51S~~	~~ABUT. 1 (FIXED)~~	~~LEFT~~	~~9' - 5"~~	~~364.42~~	~~364.56~~	~~362.39~~
		~~RIGHT~~	~~9' - 5"~~	~~365.09~~	~~365.23~~	~~363.06~~
	~~ABUT. 2 (EXP.)~~	~~LEFT~~	~~18' - 4"~~	~~369.02~~	~~368.92~~	~~366.22~~
		~~RIGHT~~	~~18' - 7"~~	~~369.49~~	~~369.41~~	~~366.67~~

RAISED FIN. GRADE OF WINGS 1/4"

RAISED FIN. GRADE OF WINGS 1 3/8"

RAISED FIN. GRADE OF WINGS 5 1/4"

RAISED FIN. GRADE OF WINGS 3 1/4"

RAISED FIN. GRADE OF WINGS 1/2"

RAISED FIN. GRADE OF WINGS 5/8"

RAISED FIN. GRADE OF WINGS 1 1/4"

RAISED FIN. GRADE OF WINGS 1/2"

RAISED FIN. GRADE OF WINGS

NOTES:

1. FOR LOCATIONS OF W1, W2, W3, AND DIMENSION "X", SEE TYPICAL WINGWALL DETAILS (1 OF 2), BRIDGE SHEET C-43.
2. DIMENSION "X" IS APPROXIMATE, BASED ON FIELD SURVEY INFORMATION. NEW WINGWALL TO MATCH END OF EXISTING WINGWALL.
3. REFERENCE TO "LEFT" AND "RIGHT" IS BASED ON THE DIRECTION OF STATIONING, NOT THE DIRECTION OF TRAFFIC.

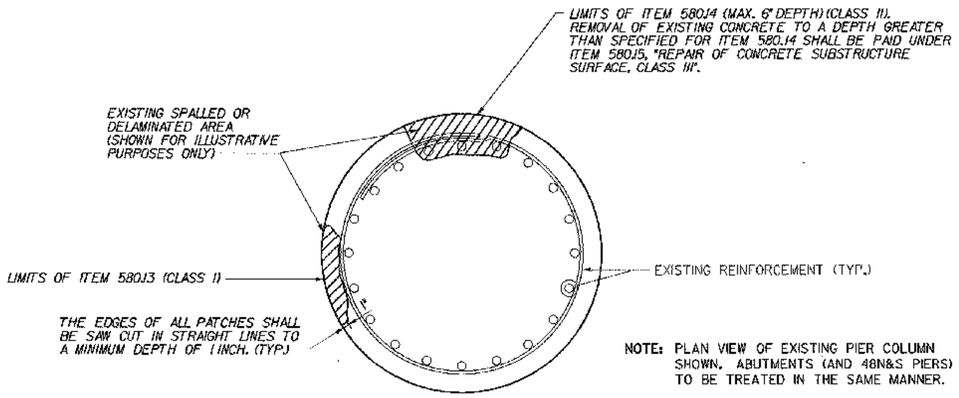
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

TYPICAL WINGWALL DETAILS (2 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. wwdetail	Date 10/99
Bridge Sheet No. C-44	Sheet 44 of 307

TVGA ENGINEERING, SURVEYING, P.C.



NOTE: PLAN VIEW OF EXISTING PIER COLUMN SHOWN. ABUTMENTS (AND 48N&S PIERS) TO BE TREATED IN THE SAME MANNER.

CONCRETE REPAIR DETAIL

SCALE: 1" = 1'-0"

SUBSTRUCTURE REPAIR NOTES:

1. COLUMNS, ABUTMENTS, AND 48N&S PIERS SHALL BE REPAIRED USING THE FOLLOWING ITEMS:
   - 580.13 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I
   - 580.14 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II
   - 580.15 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III

2. THIS WORK SHALL INCLUDE REMOVAL AND DISPOSAL OF UNSOUND AND DELAMINATED CONCRETE FROM ALL ABUTMENTS AND PIERS AS DIRECTED BY THE ENGINEER. THE PREPARED SURFACES SHALL BE THOROUGHLY BLASTED TO REMOVE ALL LOOSE MATERIAL AND ANY CONTAMINANTS OR EFFLORESCENCE. THE REINFORCING STEEL (IF EXPOSED) SHALL BE BLASTED. THE MATERIAL USED TO FILL A PATCH SHALL BE PLACED AND FINISHED OR FORMED SO THAT THE FINAL SURFACE WILL HAVE THE SAME SCORE MARKS AND EXTERIOR FACE APPEARANCE AS THE ORIGINAL SURFACES BEING REPAIRED. THE SURFACE SHALL BE THOROUGHLY WETTED PRIOR TO PLACEMENT OF PATCHING MATERIAL OR NEW CONCRETE. IMMEDIATELY PRIOR TO PLACEMENT, THE SURFACE SHALL BE COATED WITH NEAT CEMENT PASTE, MIXED TO THE CONSISTENCY OF THICK LATEX PAINT (THOROUGHLY BRUSHED INTO THE SURFACE). WHEN "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION 780.02 IS USED, THE BONDING AGENT (IF ANY REQUIRED) AND ITS APPLICATION PROCEDURE SHALL COMPLY WITH THE REQUIREMENTS OF THE PATCHING MATERIAL MANUFACTURER. PAYMENT FOR BONDING AGENT SHALL BE SUBSIDIARY TO ITEM 580.13, 580.14, OR 580.15.

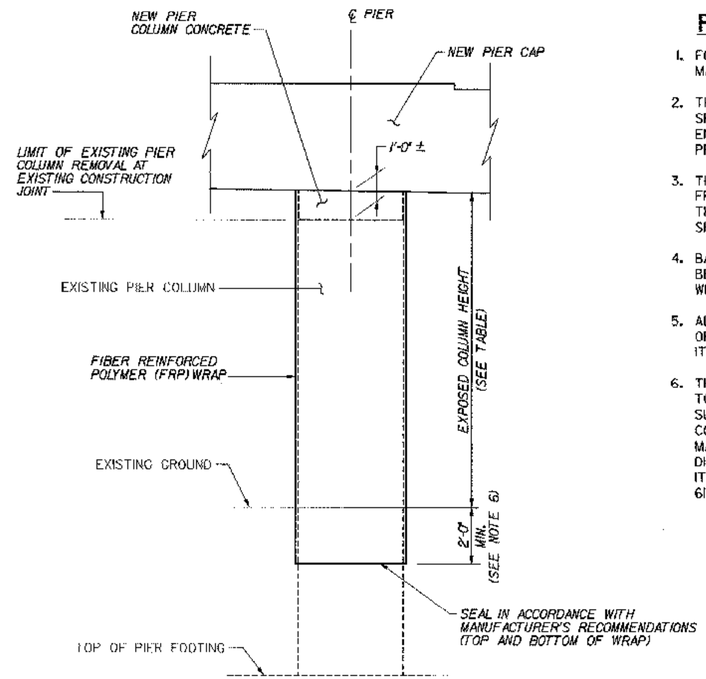
3. THE LIMITS FOR REMOVAL OF CONCRETE UNDER ITEM 580.13, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A MAXIMUM DEPTH OF THE OUTSIDE FACE OF THE REINFORCING STEEL. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 580.13. THE FILLING MATERIAL SHALL BE "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION 780.02. THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1 INCH. IF MORE THAN 1/4 OF THE REBAR IS EXPOSED OR THE BOND BETWEEN THE REBAR AND THE CONCRETE IS BROKEN, THEN PROCEED TO ITEM 580.14.

4. FOR CONCRETE NOT TO BE WRAPPED, THE LIMITS FOR REMOVAL OF CONCRETE UNDER ITEM 580.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A MINIMUM DEPTH OF 3/4" ± 1/4" INSIDE THE INSIDE FACE OF REINFORCING STEEL AND TO A MAXIMUM DEPTH OF 6" FROM THE EXISTING CONCRETE SURFACE. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 580.14. THE FILLING MATERIAL MAY BE EITHER "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION 780.02, "CONCRETE CLASS AA" OR AN ACCEPTABLE PNEUMATICALLY APPLIED CONCRETE (SEE SPECIAL PROVISIONS). THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1 INCH.

5. FOR CONCRETE TO BE WRAPPED, THE LIMITS FOR REMOVAL OF CONCRETE UNDER ITEM 580.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A MINIMUM DEPTH OF THE OUTSIDE FACE OF THE REINFORCING STEEL AND TO A MAXIMUM DEPTH OF 6" FROM THE EXISTING CONCRETE SURFACE. MINIMUM DEPTH OF 3/4" INSIDE THE INSIDE FACE OF REINFORCING STEEL IS NOT REQUIRED, AS LONG AS ALL UNSOUND CONCRETE IS REMOVED. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 580.14. THE FILLING MATERIAL MAY BE EITHER "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION 780.02, "CONCRETE CLASS AA" OR AN ACCEPTABLE PNEUMATICALLY APPLIED CONCRETE (SEE SPECIAL PROVISIONS). THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1 INCH.

6. THE LIMITS FOR REMOVAL OF CONCRETE UNDER THE ITEM 580.15, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A DEPTH OF GREATER THAN 6". ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 580.15. THE FILLING MATERIAL MAY BE EITHER "CONCRETE CLASS AA, CLASS A, CLASS B" OR AN ACCEPTABLE PNEUMATICALLY APPLIED CONCRETE (SEE SPECIAL PROVISIONS). THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1 INCH.

7. IF PNEUMATICALLY APPLIED CONCRETE IS SELECTED FOR REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II OR III, THEN THIS TYPE OF CONCRETE REPAIR SHALL BE CONFINED ONLY TO VERTICAL AND OVERHEAD SURFACES OF THE SUBSTRUCTURE. ALSO, THE BRIDGE BEARINGS AND BEAMS SHALL BE COMPLETELY PROTECTED FROM REBOUND MATERIAL DURING SHOTCRETE APPLICATION PROCEDURES.



FRP COLUMN WRAP DETAIL

SCALE: 3/8" = 1'-0"

BRIDGE	PIER	COLUMNS TO BE WRAPPED	AVERAGE EXPOSED COLUMN HEIGHT (APPROXIMATE)
43N	1	ALL	12'-9"
	2	ALL	9'-6"
43S	1	ALL	12'-9"
	2	ALL	8'-3"
51N	1	1, 2	19'-0"
	2	PIER TO BE REPLACED	-
	3	1, 3, 4	14'-10"
	4	1, 2	12'-2"
51S	1	1, 2, 3	18'-11"
	2	1, 2	19'-1"
	3	PIER TO BE REPLACED	-
	4	1, 2	16'-5"
	5	NONE	14'-5"

* COLUMNS ARE NUMBERED LEFT TO RIGHT LOOKING UPSTATION

BRIDGE 5IN AND 5IS ARE NOT A PART OF THIS PROJECT

FRP COLUMN WRAP NOTES:

1. FOLLOWING REPAIR OF COLUMNS, ALLOW CURING OF CONCRETE REPAIR MATERIAL FOR 28 DAYS MINIMUM PRIOR TO WRAPPING.
2. THE CONTRACTOR SHALL SUBMIT FRP COLUMN WRAP DATA FROM THE SPECIFIC MANUFACTURER AND INSTALLATION PROCEDURES TO THE ENGINEER FOR APPROVAL, IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
3. THE CONTRACTOR SHALL APPLY A U.V. PROTECTIVE COATING ON THE FRP WRAP FOLLOWING CURING OF THE WRAP IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE COATING COLOR SHALL BE A NATURAL CONCRETE GREY, AS APPROVED BY THE ENGINEER.
4. BACKFILL OF EXISTING GROUND AT THE BASE OF THE COLUMNS SHALL BE ACCOMPLISHED AFTER THE COATING HAS CURED, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
5. ALL COSTS ASSOCIATED WITH WRAPPING COLUMNS, WITH THE EXCEPTION OF CONCRETE REPAIRS, SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 580.40 "FIBER REINFORCED POLYMER WRAP."
6. THE DEPTH OF FRP WRAP SHOWN IS BELOW EXISTING GROUND, NOT BELOW TOP OF STONE FILL. ANY STONE FILL DISTURBED TO ALLOW REPAIR OF SUBSTRUCTURES OR WRAPPING OF PIERS SHALL BE REPLACED TO ITS ORIGINAL CONDITION AS DIRECTED BY THE ENGINEER. THE MINIMUM DEPTH OF FRP WRAP MAY BE INCREASED DUE TO REQUIRED LIMITS OF CONCRETE REPAIR, AS DIRECTED BY THE ENGINEER. REQUIRED EXCAVATION SHALL BE PAID FOR UNDER ITEM 204.25. REQUIRED BACKFILL SHALL BE PROVIDED UNDER ITEMS 204.30, 613.10, 613.11, OR 613.13, AS DIRECTED BY THE ENGINEER AT EACH PIER LOCATION.

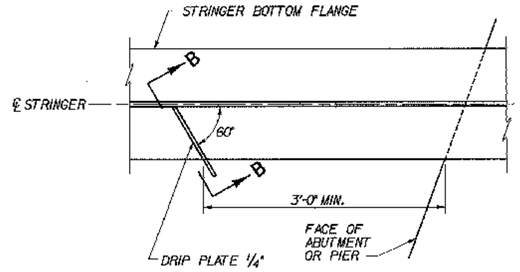
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

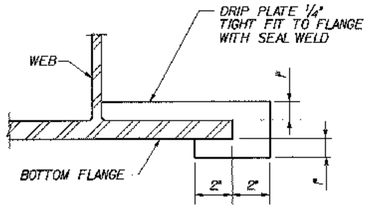
SUBSTRUCTURE REPAIR DETAILS AND NOTES

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By Date J.P. HALSTEAD 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. subrprdt	Date 10/99
Bridge Sheet No. C-45	Sheet 45 of 307

TVGA ENGINEERING, SURVEYING, P.C.



PLAN

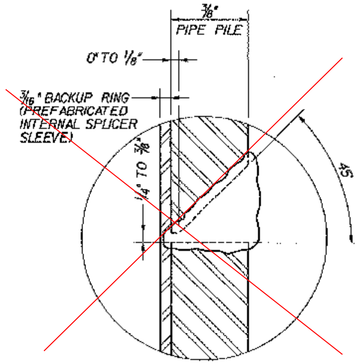


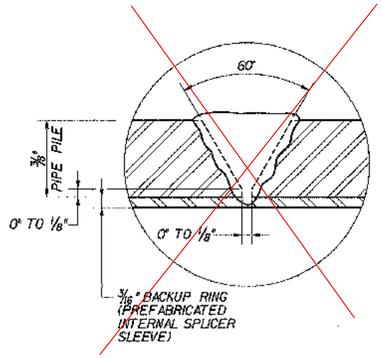
SECTION B-B

DRIP PLATE DETAIL

N.T.S.

NOTE: DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA STRINGERS ON THE HIGH SIDE OF ALL PIERS AND LOW ABUTMENTS OR AS INDICATED ON PROJECT PLANS.

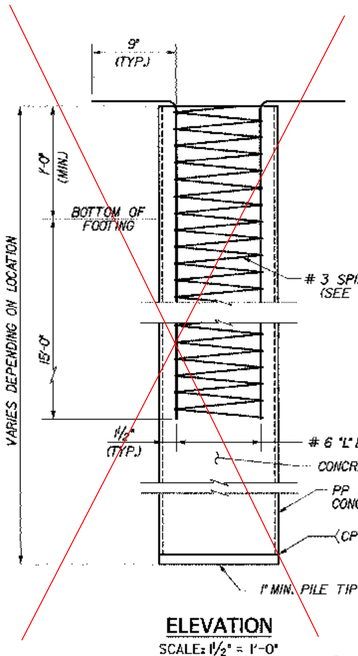




PIPE PILE SPLICE OPTIONS

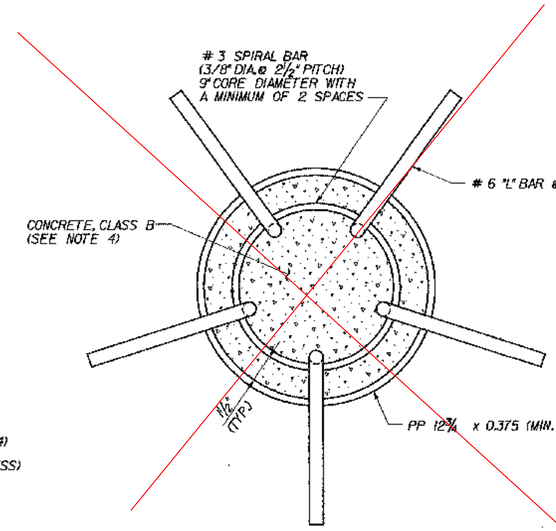
N.T.S.

BRIDGE 511S NOT A PART OF THIS PROJECT



ELEVATION

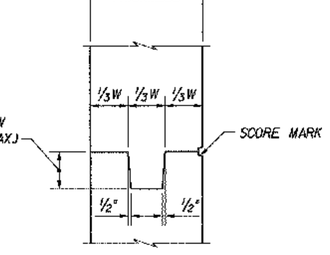
SCALE: 1 1/2" = 1'-0"



PLAN

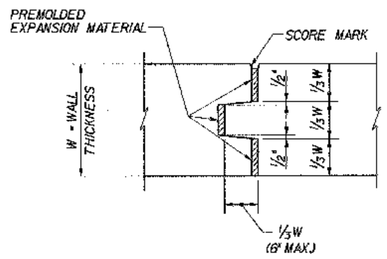
SCALE: 3" = 1'-0"

CAST-IN-PLACE CONCRETE PILING



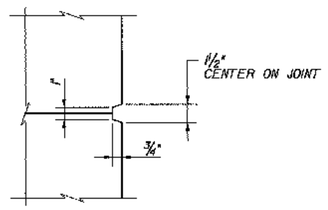
TYPICAL CONCRETE CONSTRUCTION JOINT

N.T.S.



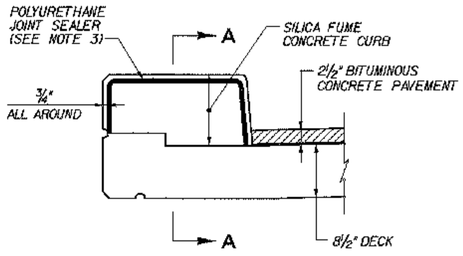
TYPICAL CONCRETE EXPANSION JOINT

N.T.S.

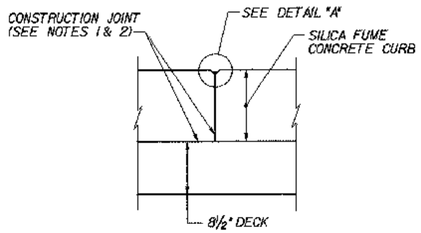


SCORE MARK DETAIL

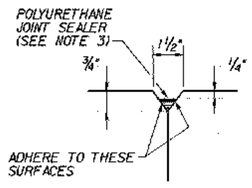
N.T.S.



TYPICAL SECTION THRU CONCRETE CURB CONSTRUCTION JOINT



SECTION A-A



DETAIL "A"

CURB JOINT DETAILS

N.T.S.

NOTES:

1. CONSTRUCTION JOINTS THROUGH CONCRETE CURB SHALL BE SPACED MAXIMUM 15'-0" CENTER TO CENTER AND SHALL BE 1'-6" MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.
3. POLYURETHANE JOINT SEALER, PER SUBSECTION 524.06(c) OF THE SPECIFICATIONS, COLOR TO MATCH CONCRETE. COST SHALL BE SUBSIDIARY TO ITEM 501.60, "SILICA-FUME CONCRETE".
4. THE COST OF CONCRETE AND REINFORCING STEEL SHALL BE SUBSIDIARY TO ITEM 505.25, "CAST-IN-PLACE CONCRETE PILING".

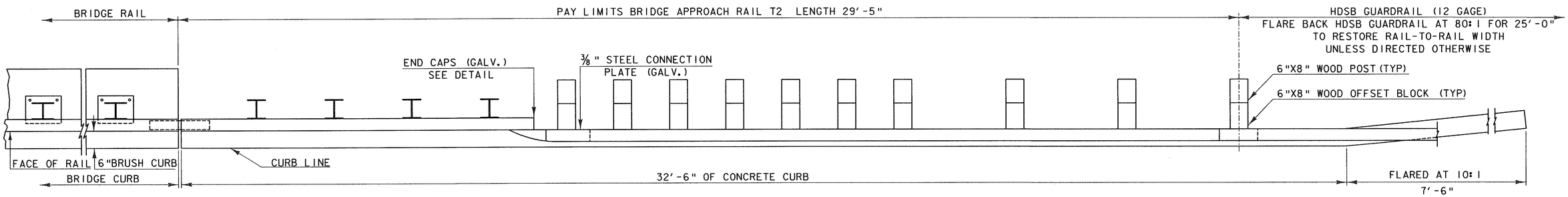
TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

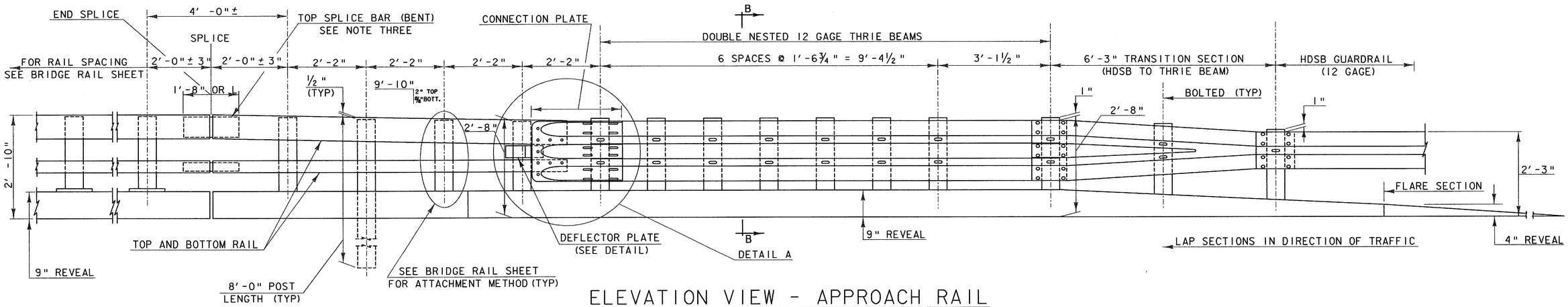
TYPICAL BRIDGE DETAILS

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. stddrdet	Date 10/99
Bridge Sheet No. C-46	Sheet 46 of 307



PLAN VIEW - APPROACH RAIL

SCALE 3/4" = 1'-0



ELEVATION VIEW - APPROACH RAIL

SCALE 3/4" = 1'-0

NOTES:
1) ALL BRIDGE APPROACH RAIL MATERIALS, DIMENSION SIZES, AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL UNLESS OTHERWISE NOTED.
2) CARRIAGE BOLTS SHALL BE ASTM A307 AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED).
3) WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD (B-U2).
4) REFER TO STANDARD DETAIL BRI-97 FOR ADDITIONAL DETAILS, NOTES, AND MATERIALS SPECIFICATIONS.
5) THE REFLECTORIZED ALUMINUM DELINEATION IS TO BE ERECTED EVERY 30' (OR THE CLOSEST POST) WITH 2 NO. 8 X 3/4" SELF TAPPING SCREWS. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052-H32.
6) REFLECTIVE MATERIAL SHALL MEET REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVERS LEFT AND SILVER ON THEIR RIGHT.
7) ON BRIDGES WITH A SIDEWALK, DELINEATORS ARE NOT TO BE INSTALLED ON THE SIDEWALK SIDE OF THE BRIDGE (I.E. DELINEATORS INSTALLED ONLY ON THE CURB SIDE AND ON THE APPROACH ON THE CURB SIDE). PAYMENT SHALL BE SUBSIDIARY TO ALL OTHER ITEMS.

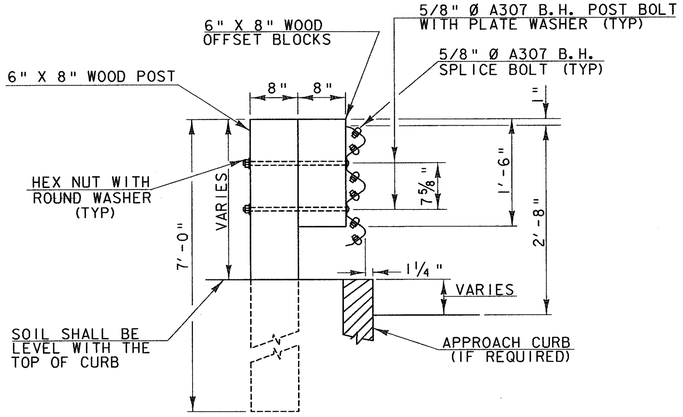
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta.
	Surv. Sta.

GUARD RAIL APPROACH SECTION

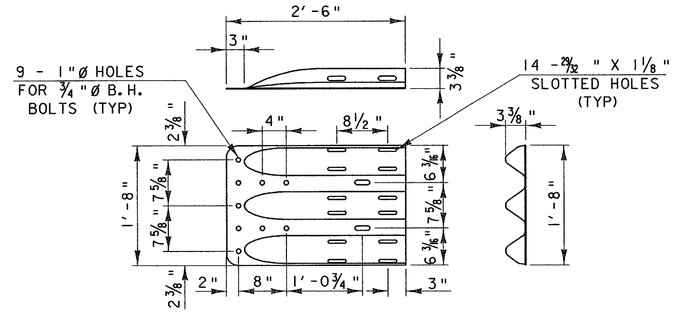
NETC 2 RAIL (SHEET 1 OF 2)

Designed By C.P.WILLIAMS	Drawn By D.G. BASSETT
Checked By S. FARNSWORTH Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. netcmbob	Date 10/99
Bridge Sheet No. **C-46A**	Sheet 46A of 307



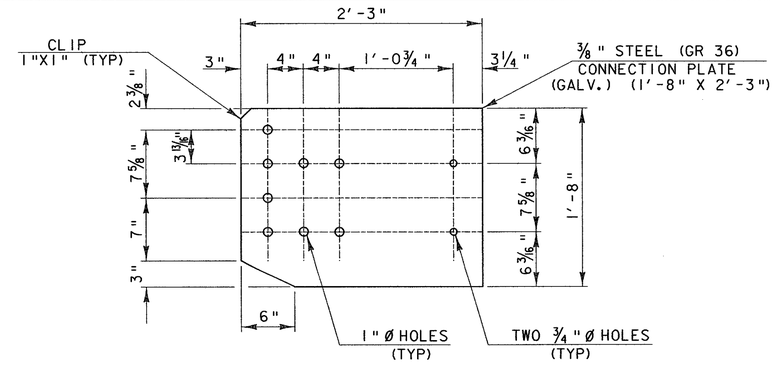
SECTION B-B (POST RAIL ASSEMBLY)

SCALE 1" = 1'-0



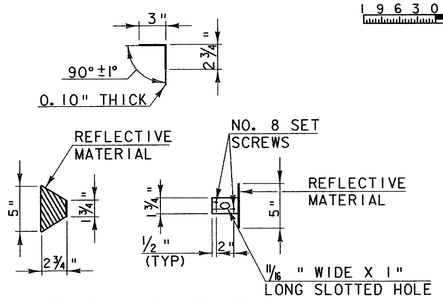
THRIE-BEAM TERMINAL CONNECTOR

SCALE 1" = 1'-0



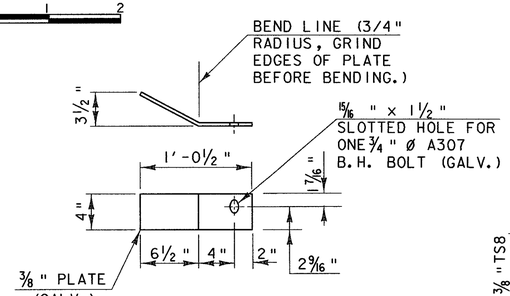
CONNECTION PLATE

SCALE 1 1/2" = 1'-0



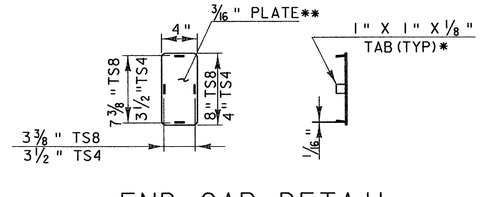
DELINEATION DEVICE DETAILS

SCALE 1 1/2" = 1'-0



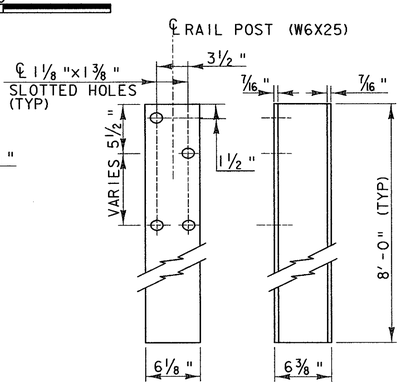
DEFLECTOR PLATE DETAIL

SCALE 1 1/2" = 1'-0



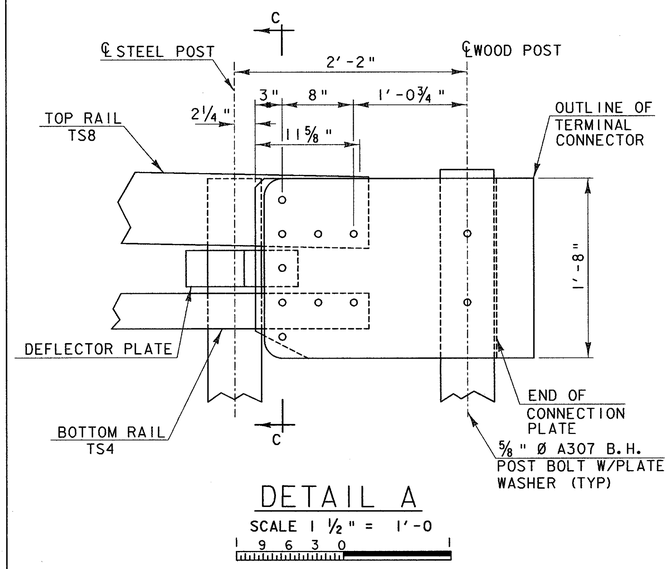
END CAP DETAIL

SCALE 1 1/2" = 1'-0



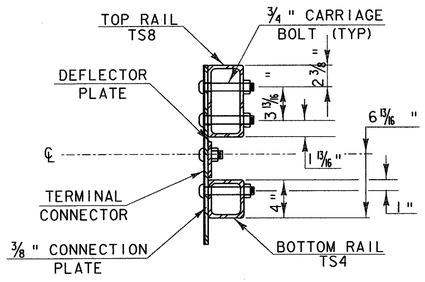
RAIL POST

SCALE 1 1/2" = 1'-0



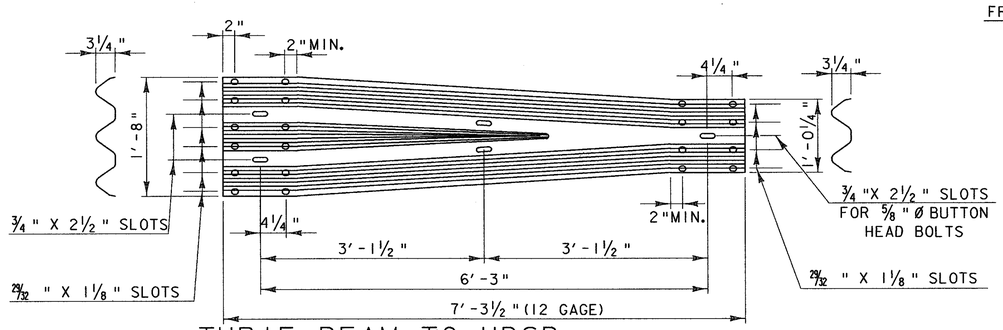
DETAIL A

SCALE 1 1/2" = 1'-0



SECTION C-C (CONNECTION PLATE)

SCALE 1 1/2" = 1'-0



THRIE-BEAM TO HDSB TRANSITION SECTION

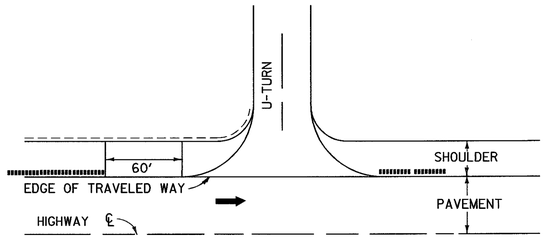
SCALE 1" = 1'-0

* WELD TABS TO END CAP PLATE IN TAPERED POSITION SO CAP CAN BE JAMMED INTO END OF RAIL TUBE.
** ROUND CORNERS 1/2" RADIUS (TYP)

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No.
Highway No. I-89	Log Sta. / Surv. Sta.
GUARD RAIL APPROACH SECTION	
NETC 2 RAIL (SHEET 2 OF 2)	
Designed By C.P.WILLIAMS	Drawn By D.G. BASSETT
Checked By S. FARNSWORTH Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. netcmbob	Date 10/99
Bridge Sheet No. **C-46B**	Sheet 46B of 307

MILLED RUMBLE STRIPS
U TURN DETAIL SHEET



LEGEND

➡ DIRECTION OF TRAFFIC FLOW

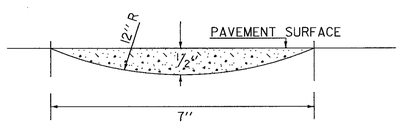
▪▪▪▪▪▪▪ MILLED RUMBLE STRIPS

NOT TO SCALE

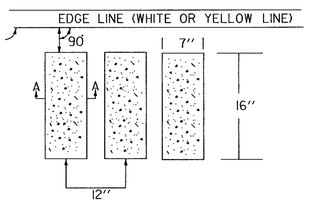
THIS DETAIL MAYBE MODIFIED AT THE RESIDENT ENGINEER DISCRETION
IF ACTUAL FIELD CONDITIONS NECESSITATE SUCH ACTIONS.

TYPICAL RUMBLE STRIP MILLING DETAIL

SECTION A-A



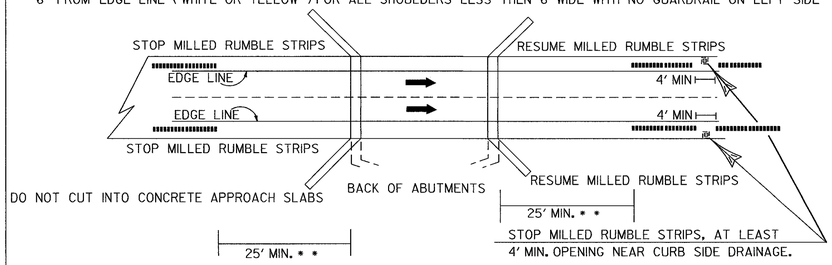
30" FROM EDGE LINE (WHITE OR YELLOW) FOR ALL SHOULDERS 6' OR WIDER
6" FROM EDGE LINES (WHITE OR YELLOW) FOR ALL SHOULDERS LESS
THAN 6' WIDE WITH NO GUARDRAIL.



NOTE: STOP MILLED RUMBLE STRIPS WHEN GUARDRAIL IS WITHIN 4' OF TRAVEL WAY

RUMBLE STRIP BRIDGE & DRAINAGE DETAIL

30" FROM EDGE LINE (WHITE OR YELLOW)FOR ALL SHOULDERS 6' OR WIDER
6" FROM EDGE LINE (WHITE OR YELLOW) FOR ALL SHOULDERS LESS THEN 6' WIDE WITH NO GUARDRAIL ON LEFT SIDE



* * NOTE: 4' OFFSET TO APPROACH RAIL WILL DETERMINE MINIMUM DISTANCE IN SOME CASES.

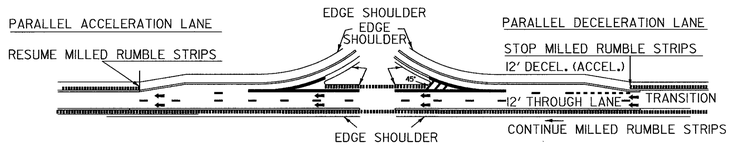
LEGEND

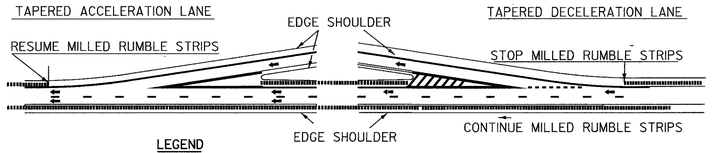
⬅ DIRECTION OF TRAFFIC FLOW

▪▪▪▪▪▪▪ MILLED RUMBLE STRIPS

NOT TO SCALE

TYPICAL RUMBLE STRIP MILLING AT INTERCHANGES & REST AREAS





LEGEND

⬅ DIRECTION OF TRAFFIC FLOW

▪▪▪▪▪▪▪ MILLED RUMBLE STRIPS

NOT TO SCALE

LOCATION OF STRIPS WILL VARY DEPENDING ON GUARDRAIL AND BRIDGE PRESENCE.
THIS TYPICAL MAYBE MODIFIED AT THE RESIDENT ENGINEER DISCRETION
IF ACTUAL FIELD CONDITIONS NECESSITATE SUCH ACTIONS.

1. MILLED RUMBLE STRIPS ARE TO BE INSTALLED AS DETAILED ON THIS SHEET UNLESS OTHERWISE APPROVED BY THE VTRANS PROJECT ENGINEER AND/OR VTRANS CONSULTANT PROJECT MANAGER.

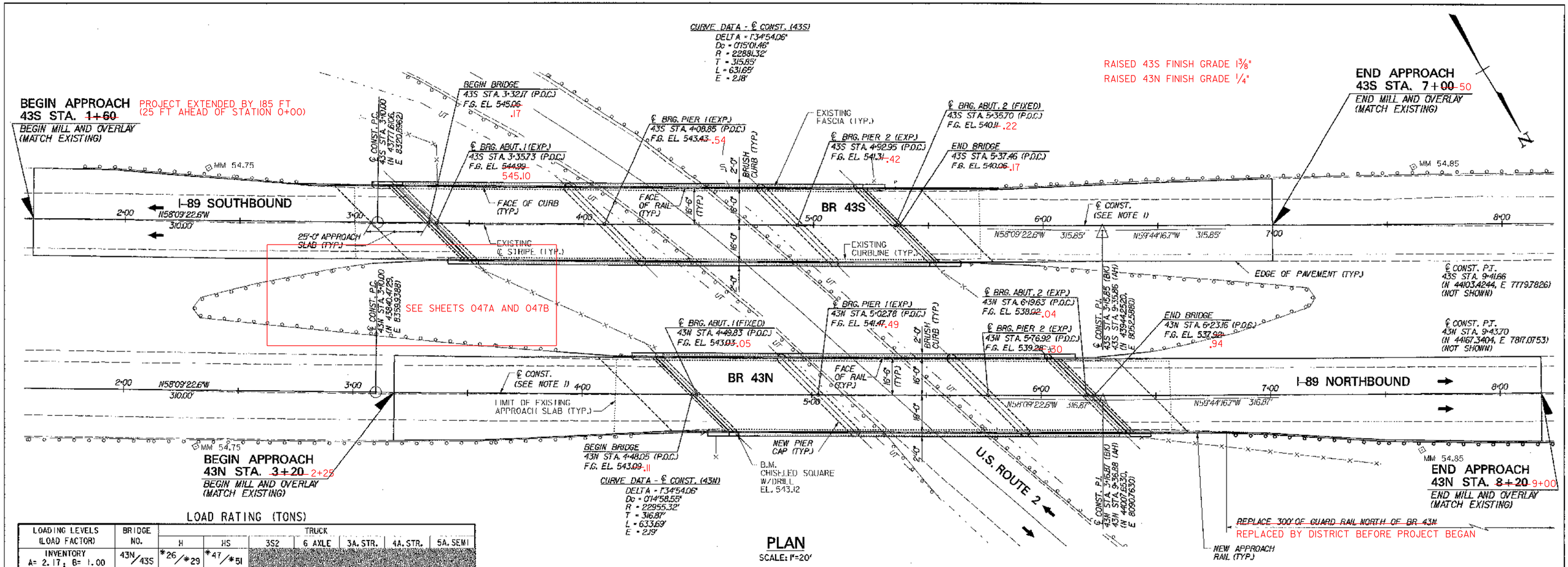
2. IF MILLED RUMBLE STRIPS ARE ALREADY INPLACE WHERE A CROSS-OVER IS TO BE CONSTRUCTED BETWEEN TWO LANES, THEN FOLLOWING APPLIES:
   - A. THE EXISTING MILLED RUMBLE STRIPS ARE NOT TO BE REMOVED OR FILLED IN MORE THEN TWO WEEKS BEFORE THE ACTUAL CROSS-OVER IS TO BE PLACED IN USE.
   - B. ONCE THE CROSSOVER FOR THE PHASE IT IS DESIGN FOR IS TAKEN OUT OF USE THE CONTRACTOR HAS A MAXIMUM OF THIRTY DAYS (30) TO CUT NEW MILLED RUMBLE STRIPS INTO THE MEDIAN SHOULDER.
   - C. MILLED RUMBLE STRIPS SHOULD BE STOPPED AT THE BEGINNING OF A CROSSOVER AS DETAILED FOR TAPERED DECELERATION LANE.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. ——
	Log Sta. ——
Highway No.	Surv. Sta. ——

RUMBLESTRIP DETAILS

Designed By AL JONES	Drawn By AL JONES
Checked By S. FARNSWORTH Date 8/00	Bridge Design Supervisor S. FARNSWORTH Date 8/00
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM 089-2 (26)
I.G.C. Info.	
Bridge Sheet No. C-46C	Sheet 46C of 307



PLAN
SCALE: 1"=20'

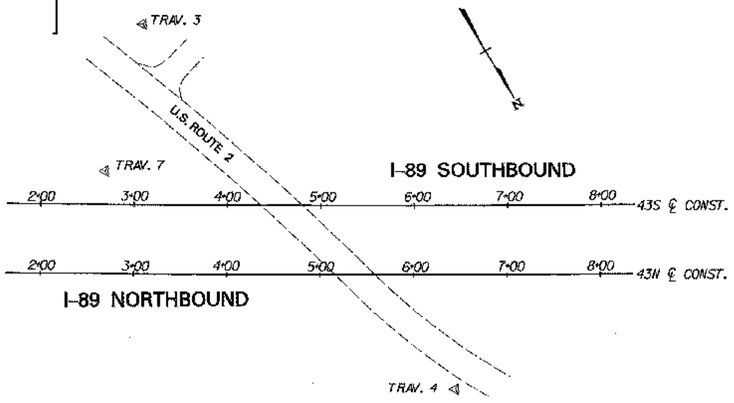
LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	BRIDGE NO.	TRUCK H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A= 2.17; B= 1.00	43N/43S	*26/*29	*47/*51					
POSTED A= 1.55; B= 1.40	43N/43S	*36/*41	*66/*72	*86/*89		*61/*65	*63/*66	*79/*80
OPERATING A= 1.30; B= 1.67	43N/43S		*78/*85	*101/*105	*96/*115	*73/*77	*75/*78	

NOTE: RATINGS ARE BASED ON A STRAIGHT-LINE GIRDER ANALYSIS, DIVIDED BY 1.05 TO ACCOUNT FOR THE EFFECTS OF CURVATURE.

$$\text{STRENGTH RF} = \frac{\phi M_n - 1.3\,M_{DL}}{A \times M_{LL+I}} \qquad \text{* SERVICEABILITY RF} = B\left[\frac{0.95F_y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67M_{LL+I}}\right]$$

BRIDGE	CL CONST. @	STATION	NORTHING	EASTING
43N	BEGIN BRIDGE	4+48.05	43912.8528	8242.4533
	CL BRG. ABUT. 1	4+49.83	43913.8830	8240.9347
	CL BRG. PIER 1	5+02.78	43941.4931	8196.7530
	CL BRG. PIER 2	5+76.92	43979.9770	8132.3833
	CL BRG. ABUT. 2	6+19.63	44002.0536	8095.8215
	END BRIDGE	6+23.16	44003.8739	8092.7999
43S	BEGIN BRIDGE	3+32.17	43789.2952	8302.0627
	CL BRG. ABUT. 1	3+35.73	43791.1710	8299.0352
	CL BRG. PIER 1	4+08.85	43829.5802	8236.8157
	CL BRG. PIER 2	4+92.95	43873.5109	8165.1017
	CL BRG. ABUT. 2	5+35.70	43895.7408	8128.6881
	END BRIDGE	5+37.46	43896.6558	8127.0793



CONTROL POINT LOCATION MAP

N.T.S.
(SEE NOTE 2)

BR 43N&S SPECIFIC CONSTRUCTION NOTES:

1. THE PROPOSED CONSTRUCTION CENTERLINE FOR EACH BRIDGE WAS ESTABLISHED BASED ON BEST FIT BETWEEN EXISTING CURB LINES. IT DOES NOT EXACTLY MATCH THE ORIGINAL CONSTRUCTION CENTERLINE.
2. FOR CONTROL POINT TIE SKETCHES, SEE CONTROL POINT TIES (43N&S), BRIDGE SHEET C-10.
3. REPLACE PIER CAPS, SUPERSTRUCTURE STEEL, BEARINGS, DECK SLABS, APPROACH SLABS, BRIDGE RAIL AND APPROACH RAIL. RESET GUARD RAIL.
4. NEW SCUPPERS ARE REQUIRED ON BRIDGE 43N. FOR LOCATIONS OF NEW SCUPPERS, SEE FRAMING PLAN (43N), BRIDGE SHEET BR43-8.
5. CONSTRUCT NEW BACKWALLS AT EXPANSION ABUTMENTS AND NEW CURTAINWALLS AT FIXED ABUTMENTS. REBUILD ABUTMENT BRIDGE SEATS AND MODIFY WINGWALLS AS SHOWN IN THE PLANS.
6. REPAIR ALL PIER COLUMNS AND APPLY FIBER REINFORCED POLYMER (FRP) COLUMN WRAP.
7. REPAIR ABUTMENT DELAMINATED AND SPALLED AREAS.
8. ~~REPLACE DAMAGED GUARD RAIL IMMEDIATELY NORTHEAST OF BR 43N.~~ REPLACED BY DISTRICT BEFORE THE PROJECT BEGAN.
9. RE-STRIPE BRIDGE AND APPROACH ROADWAY.

20 0 20
SCALE IN FEET

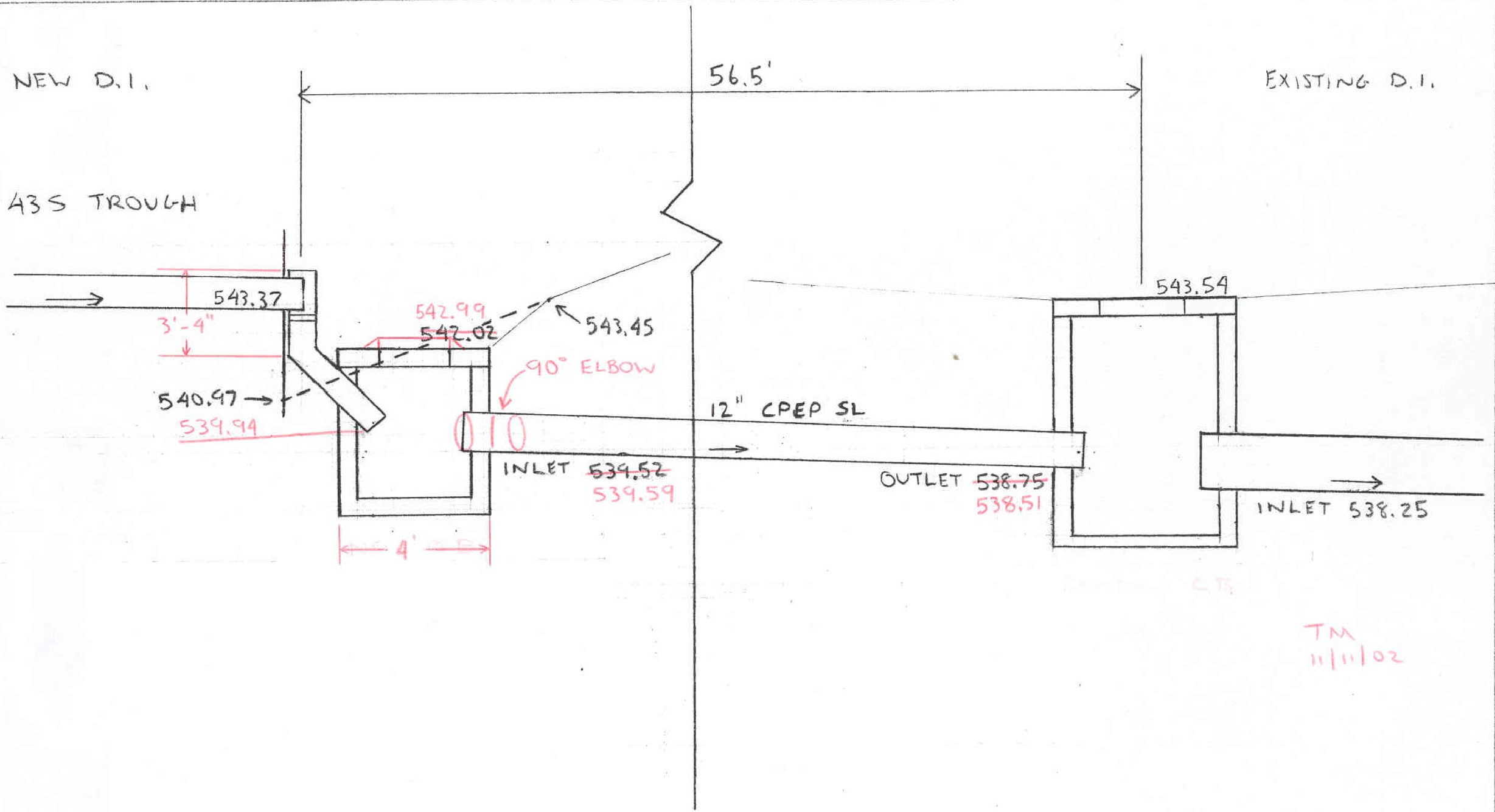
TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
GENERAL PLAN (43N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43gen_pl	Date 10/99
Bridge Sheet No. BR43-1	Sheet 47 of 307

BRIDGE 43S

SCALE: 1" = 4'



TM
11/11/02

047A

SOUTHBOUND

3+00

25'-0" APPROACH
SLAB (TYP.)

ABUTMENT 1

BRIDGE
43 N

FACE OF
(TYP.)

EXISTING
℄ STRIPE

NEW D.I.

DOWN SPOUT FOR
EXPANSION DAM

EXISTING D.I.

12" CPEP SL

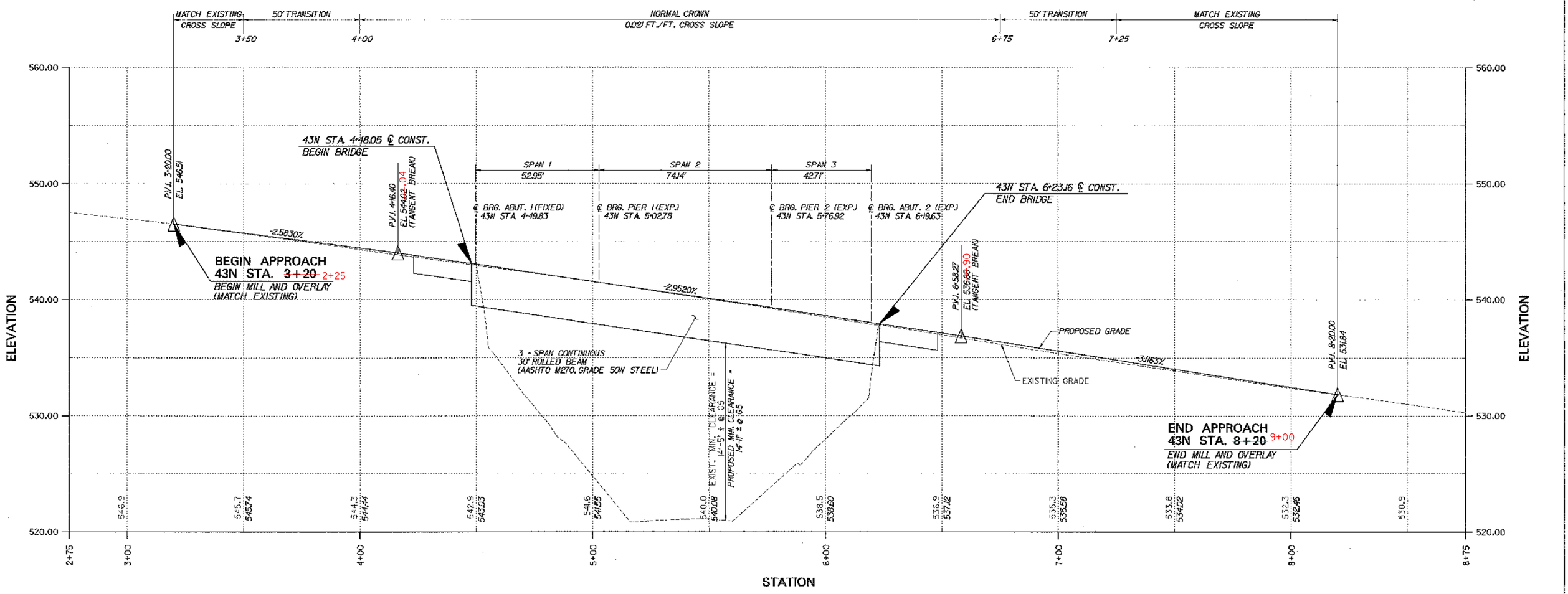
90° ELBOW

3+00

047B

℄ CONS
(SEE N

LIMIT OF EX



PROFILE – BR 43N

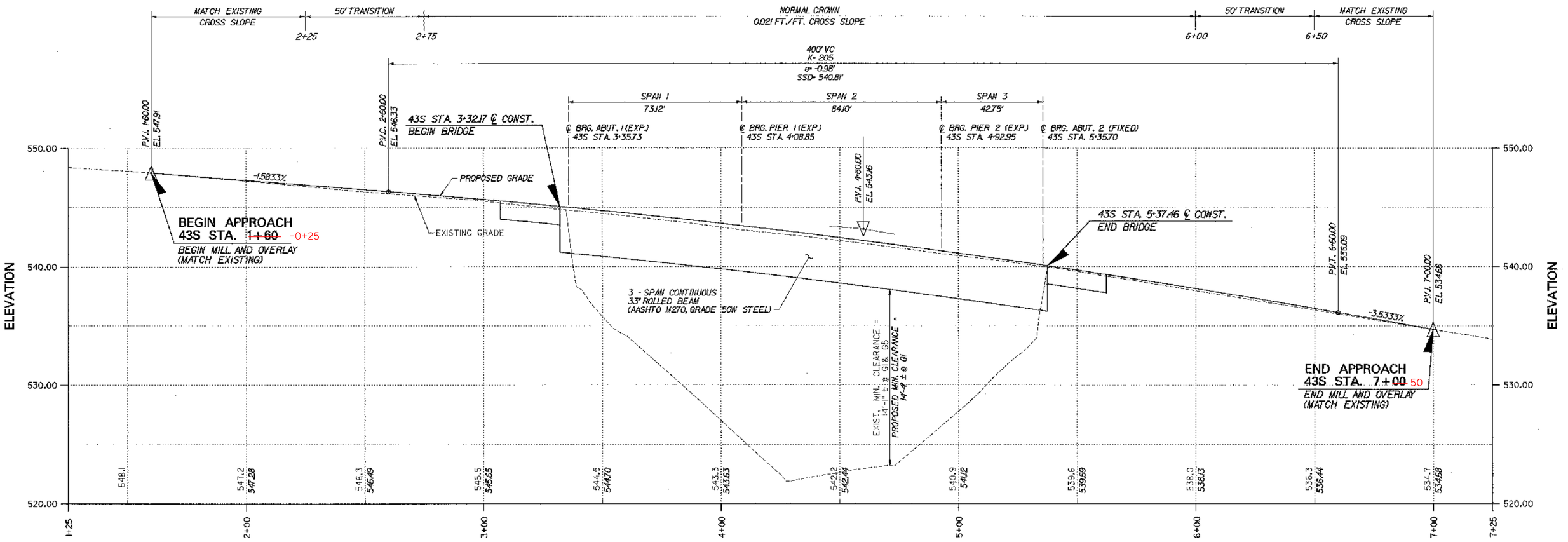
RAISED FINISH GRADE 1/4"

VERTICAL 12 8 4 0
HORIZONTAL 0 20 40 60
SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

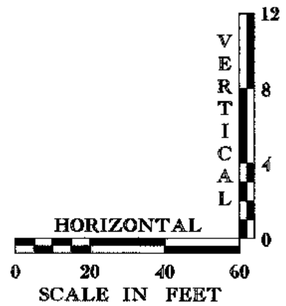
Town Of MIDDLESEX-BOLTON	Bridge No. 43N
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER U.S. ROUTE 2	
PROFILE (43N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43propIt	Date 10/99
Bridge Sheet No. BR43-2	Sheet 48 of 307

TVGA ENGINEERING, SURVEYING, P.C.



PROFILE – BR 43S

RAISED 43S FINISH GRADE 1⅜"



STATE OF VERMONT
AGENCY OF TRANSPORTATION

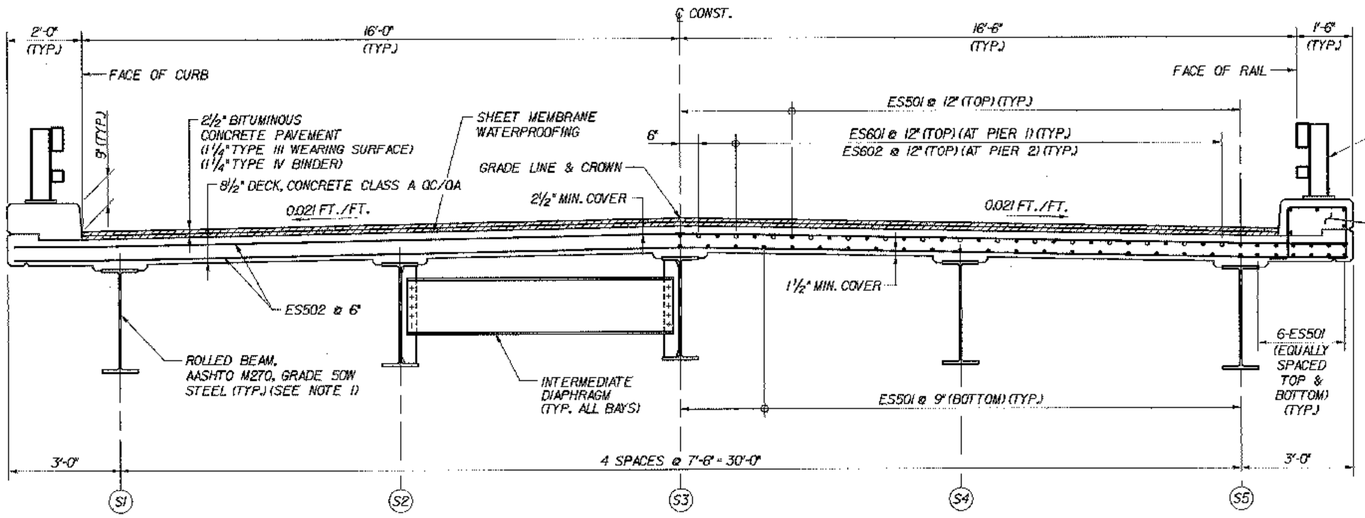
Town Of MIDDLESEX-BOLTON	Bridge No. 43S
Highway No. I-89	Log Sta.
	Surv. Sta.

I-89 SB OVER U.S. ROUTE 2

PROFILE (43S)

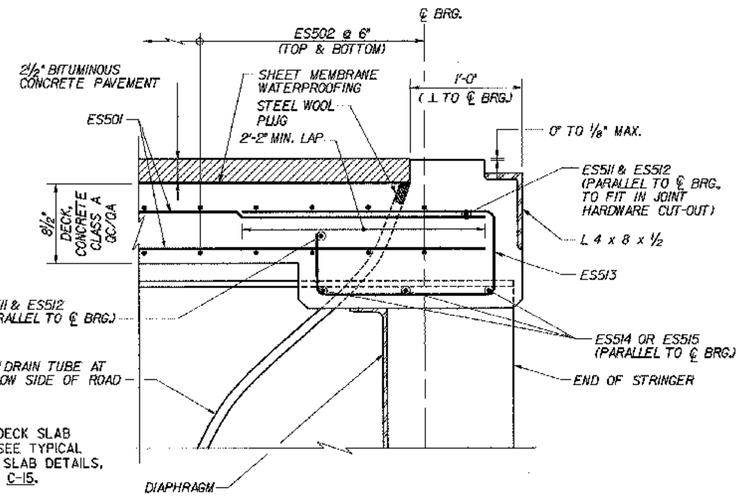
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By Date J.P. HALSTEAD 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43propIt	Date 10/99
Bridge Sheet No. BR43-3	Sheet 49 of 307

TVGA ENGINEERING, SURVEYING, P.C.



TRANSVERSE SECTION

SCALE: ½" = 1'-0"

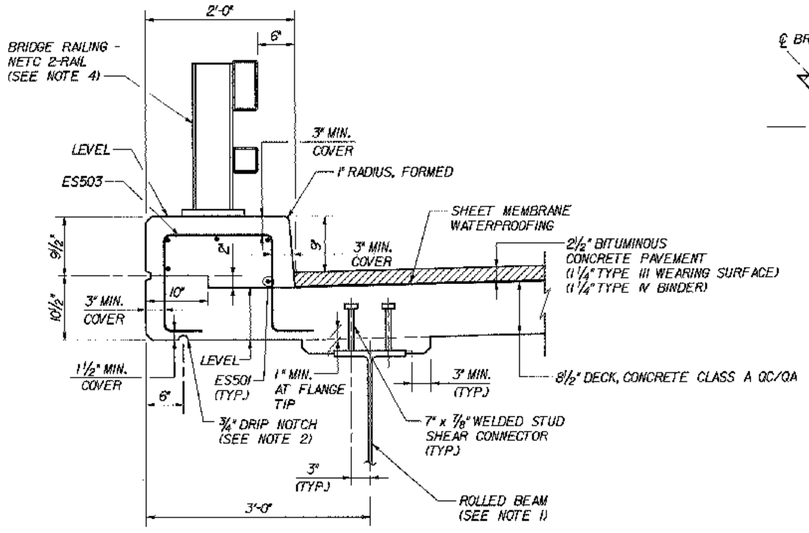


NOTE: FOR END OF DECK SLAB DIMENSIONS, SEE TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

END OF DECK SLAB REINFORCEMENT DETAIL

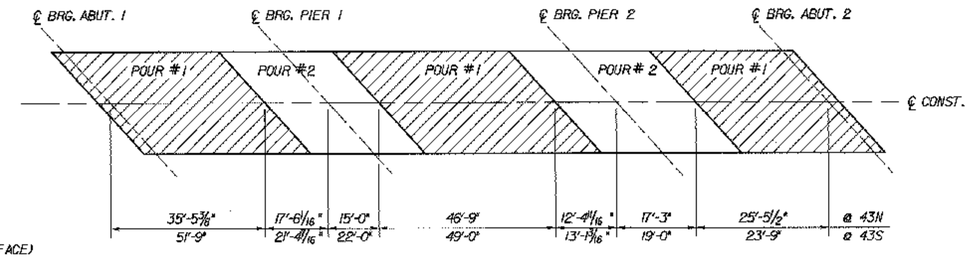
(EXP. END)

SCALE: 1½" = 1'-0"



FASCIA DETAIL

SCALE: 1"=1'-0"



DECK POUR SEQUENCE

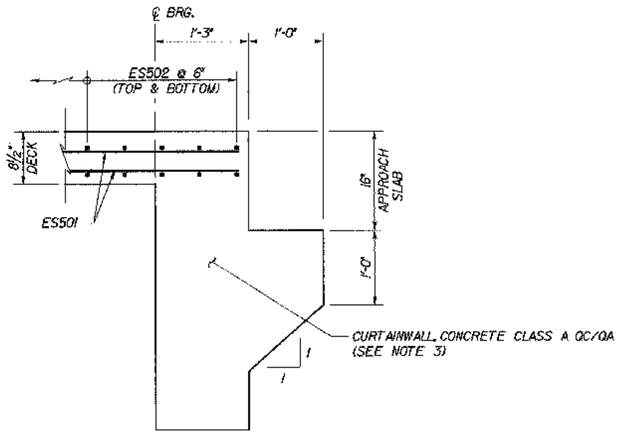
N.T.S.

BRIDGE 43N AND S WERE DONE IN A SINGLE POUR WITH NO CONSTRUCTION JOINTS

DECK SLAB PLACEMENT NOTES

A. EACH CONCRETE DECK POUR SHALL BE PLACED CONTINUOUSLY WITHIN ONE EIGHT HOUR WORKING DAY. THERE SHALL BE A MINIMUM DELAY PERIOD OF 96 HOURS AFTER COMPLETION OF EACH POUR BEFORE BEGINNING ANOTHER POUR. INDIVIDUAL POUR NUMBERS AS SHOWN MAY BE COMBINED INTO A SINGLE POUR IF APPROVED BY THE VAOT STRUCTURES ENGINEER.

B. THE DECK CONCRETE SHALL BE RETARDED SUFFICIENTLY TO REMAIN PLASTIC UNTIL EACH POUR IS COMPLETE. THE QUANTITY OF RETARDANT SHALL BE APPROVED BY THE CONCRETE ENGINEER PRIOR TO PLACEMENT. ANY DEVIATIONS FROM THIS PROCEDURE MUST BE APPROVED BY THE VAOT STRUCTURES ENGINEER IN WRITING BEFORE THE POUR BEGINS.



END OF DECK SLAB REINFORCEMENT DETAIL

(FIXED END)

SCALE: 1" = 1'-0"

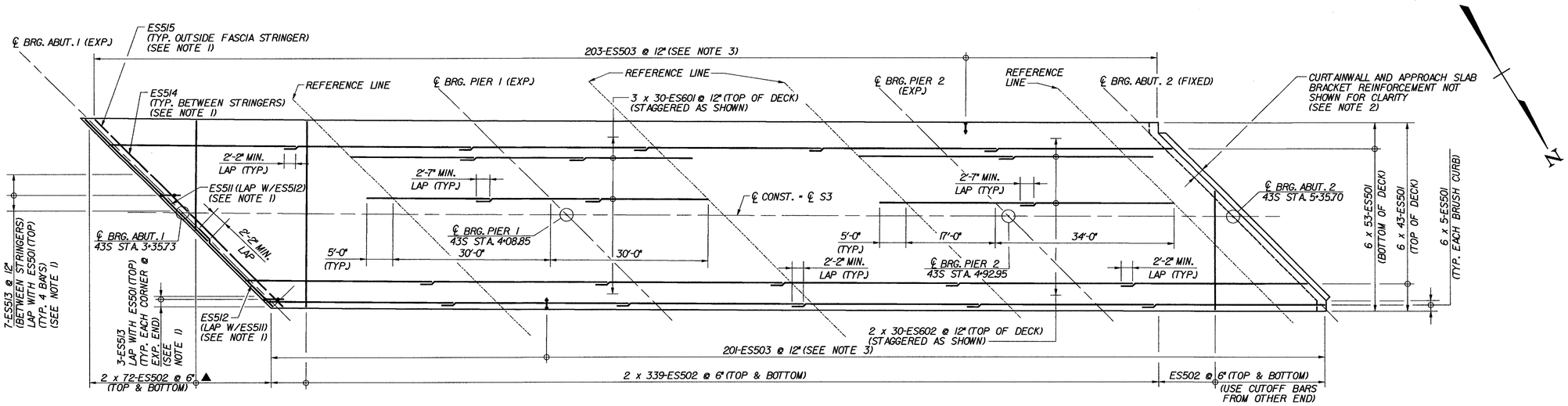
NOTES:

1. FOR ROLLED BEAM SIZES, SEE STRINGER ELEVATION (43N&S), BRIDGE SHEET BR43-10.
2. END DRIP NOTCH 5 FEET BEFORE END OF SLAB AT "DOWNHILL" ABUTMENTS AT 45°.
3. FOR CURTAINWALL DETAILS AND REINFORCEMENT LAYOUT, SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
4. FOR DETAILS OF NETC BRIDGE RAIL AND APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

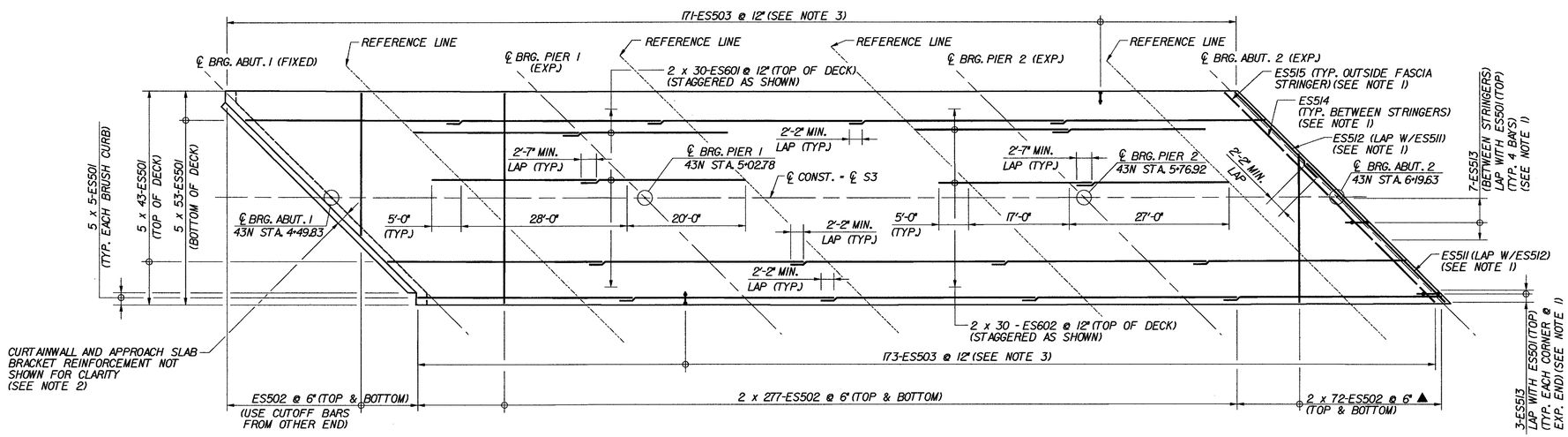
Town Of MIDDLESEX-BOLTON	Bridge No. **43N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
TRANSVERSE SECTION (43N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43tsect	Date 10/99
Bridge Sheet No. **BR43-4**	Sheet 50 of 307

TVGA ENGINEERING, SURVEYING, P.C.



DECK REINFORCEMENT PLAN – BR 43S

SCALE: 3/32 " = 1'-0"



DECK REINFORCEMENT PLAN – BR 43N

SCALE: 3/32 " = 1'-0"

NOTES:

1. FOR END OF DECK SLAB DETAILS, SEE TRANSVERSE SECTION (43N&S), BRIDGE SHEET BR43-4.
2. FOR CURTAINWALL REINFORCEMENT, SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
3. THE QUANTITY OF ES503 BARS SHOWN DOES NOT INCLUDE ADDITIONAL BARS REQUIRED BELOW THE BRIDGE RAIL POSTS. FOR DETAILS OF THE REQUIRED STIRRUP SPACING, SEE NETC 2-RAIL STANDARD SHEET BRI-97. FOR LOCATIONS OF THE BRIDGE RAIL POSTS, SEE CURB AND RAIL LAYOUT PLANS, BRIDGE SHEET BR43-7.

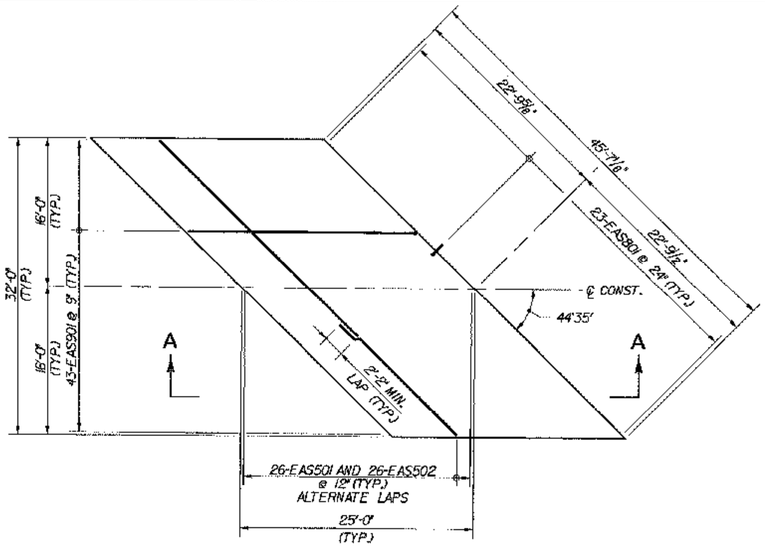
KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

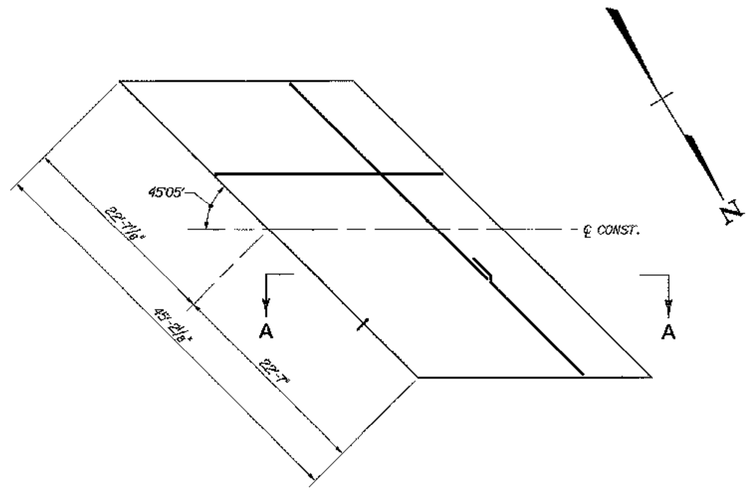
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
DECK REINFORCEMENT PLANS (43N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43drp	Date 10/99
Bridge Sheet No. **BR43-5**	Sheet 51 of 307

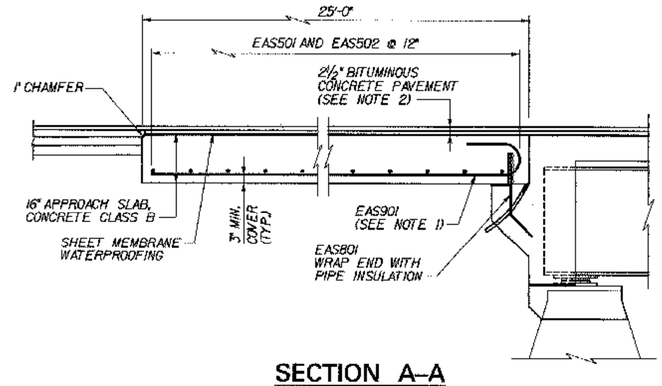
TVGA ENGINEERING, SURVEYING, P.C.



43S ABUTMENT 1



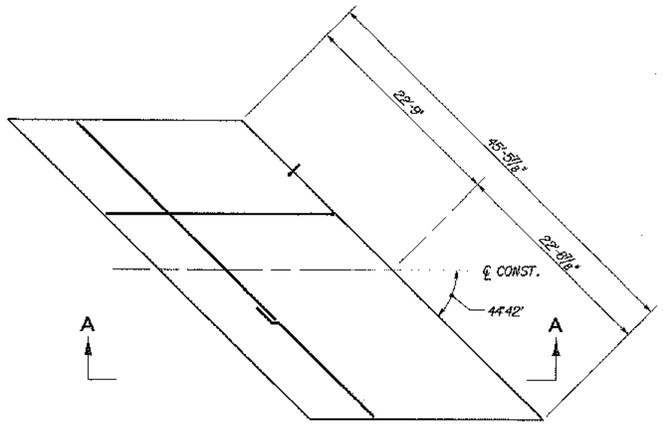
43S ABUTMENT 2



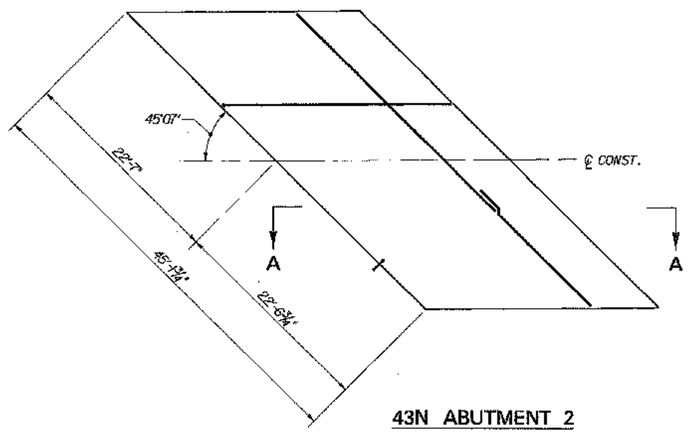
SECTION A–A

(APPROACH SLAB AT FIXED ABUT. SHOWN; SLAB AT EXPANSION ABUT. SIMILAR)

N.T.S.



43N ABUTMENT 1



43N ABUTMENT 2

TOP OF APPROACH SLAB ELEVATIONS					
BR 43N			BR 43S		
LOCATION	STATION	ELEVATION	LOCATION	STATION	ELEVATION
A	4+31.87	543.02 .04	A	3+15.91	544.82 .93
B	4+48.05	542.88 .90	B	3+32.17	544.85 .96
C	4+64.21	542.06 .08	C	3+48.39	544.19 .30
D	4+06.83	543.72 .74	D	2+90.90	545.27 .38
E	4+23.05	543.62 .64	E	3+07.17	545.32 .43
F	4+39.24	542.80 .82	F	3+23.43	544.68 .79
G	6+07.22	537.84 .86	G	5+21.50	539.07 .08
H	6+23.16	537.71 .73	H	5+37.46	538.85 .96
J	6+38.07	536.90 .92	J	5+53.40	539.04 .15
K	6+32.25	537.10 .12	K	5+46.53	539.24 .35
L	6+48.16	536.97 .99	L	5+62.46	539.10 .21
M	6+64.03	536.15 .17	M	5+78.36	538.27 .38

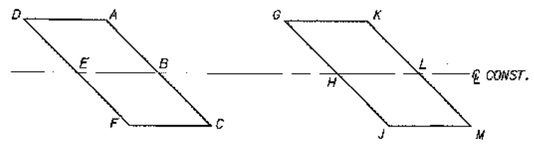
RAISED FIN. GRADE OF 43N - ¼" RAISED FIN. GRADE OF 43S - 0.11'

NOTES:

1. TIP HOOK END OF BAR AS REQUIRED TO ACHIEVE MINIMUM COVER.
2. FOR DETAILS OF APPROACH SLAB PAVEMENT AND TRANSITION TO EXISTING PAVEMENT, SEE DETAIL ON TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

APPROACH SLAB PLANS

SCALE: ⅛" = 1'-0"



ABUTMENT 1 ABUTMENT 2

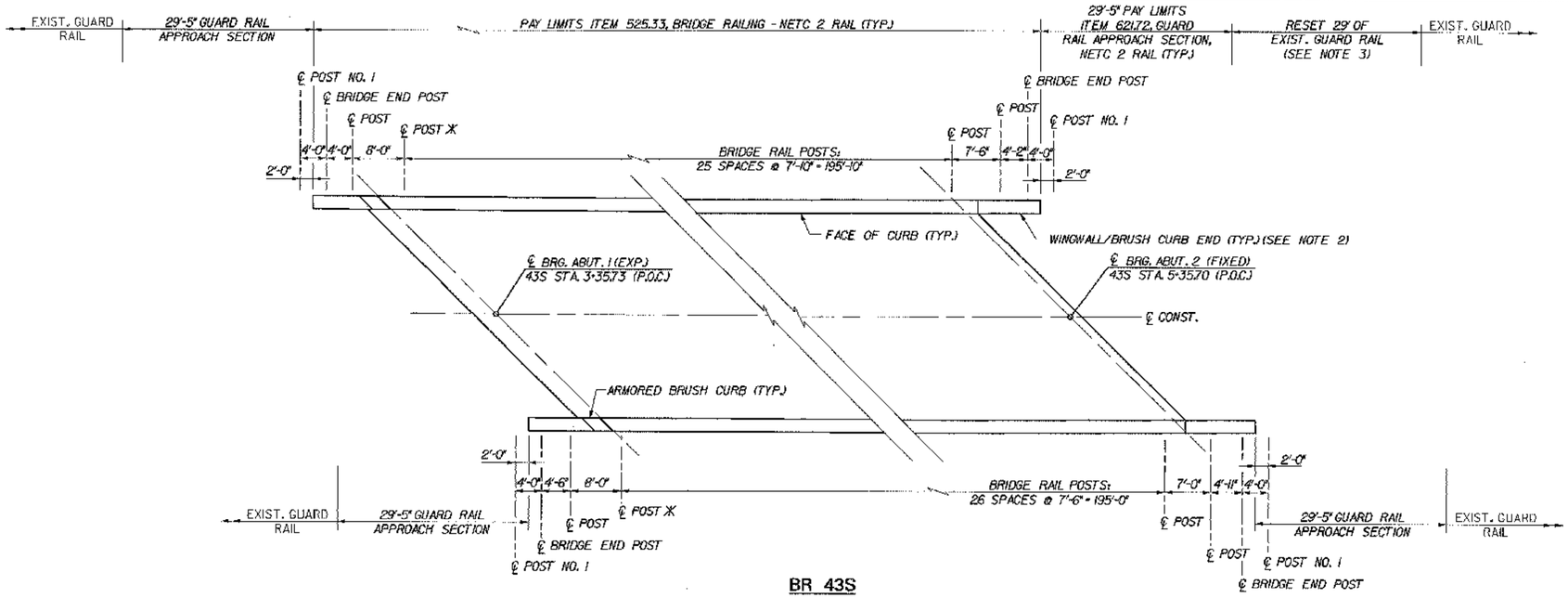
APPROACH SLAB ELEVATION KEY

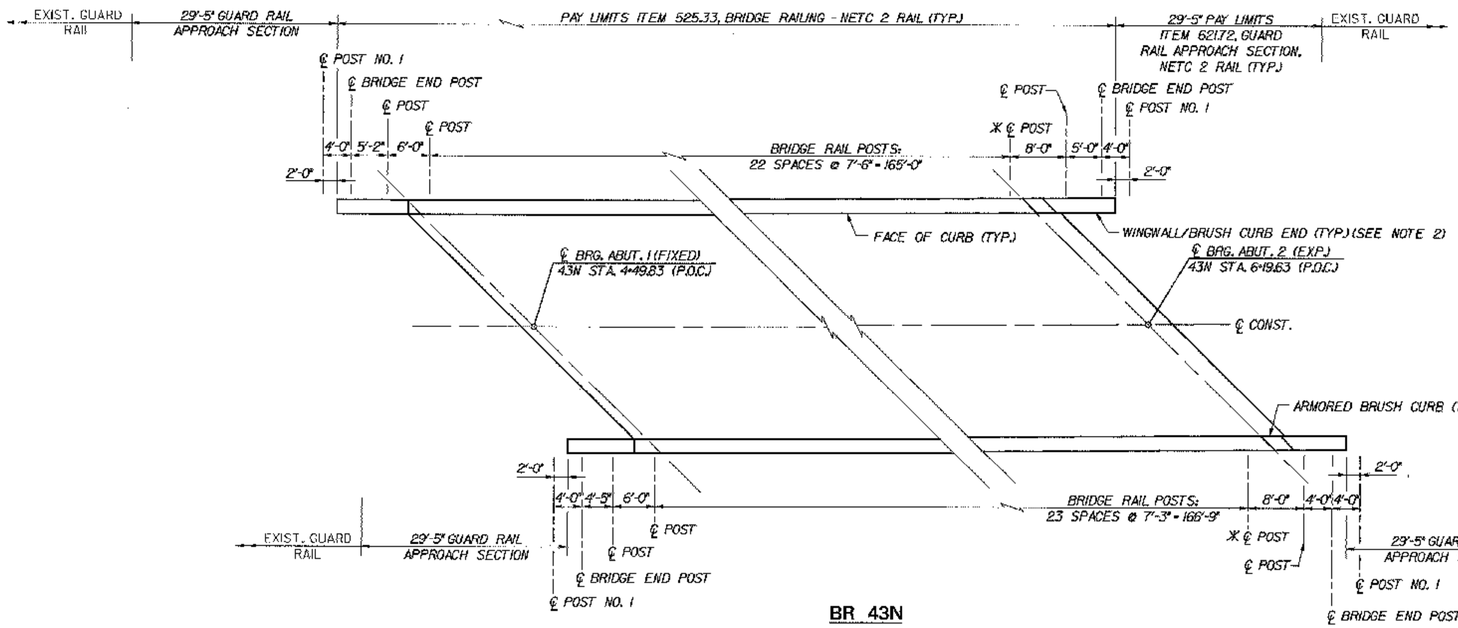
N.T.S.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43N&S
Highway No. I-89	Leg Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
APPROACH SLAB DETAILS (43N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43apslab	Date 10/99
Bridge Sheet No. BR43-6	Sheet 52 of 307

TVGA ENGINEERING, SURVEYING, P.C.





CONSTRUCTION NOTE:
END OF WINGWALLS HAVE BEEN LOCATED APPROXIMATELY BY VAOT SURVEY. CONTRACTOR SHALL VERIFY REQUIRED RAIL LENGTHS PRIOR TO SUBMITTING SHOP DRAWINGS FOR APPROVAL.

RAILING LAYOUT

SCALE: 3/32" = 1'-0"

✳ RAIL EXPANSION JOINT SHALL BE LOCATED 2'-0" FROM ℄ OF INDICATED POST, ON BRIDGE EXPANSION JOINT SIDE OF POST.

NOTES:

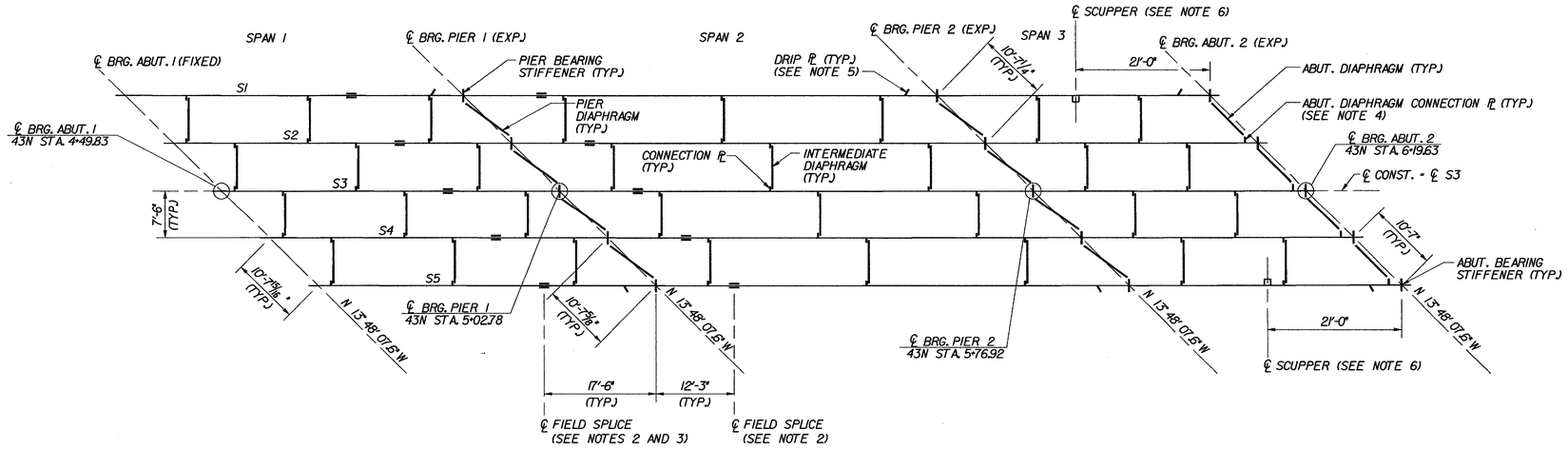
1. FOR NETC 2-RAIL BRIDGE RAILING DETAILS AND INFORMATION ABOUT THE NETC GUARD RAIL APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.
2. FOR BRUSH CURB END DETAIL, SEE TYPICAL WINGWALL DETAILS (1 OF 2), BRIDGE SHEET C-43.
3. ALL WORK REQUIRED TO RESET THE EXISTING GUARD RAIL SHALL BE PAID UNDER ITEM 621.75, "REMOVING AND RESET GUARD RAIL."
4. ALL WORK REQUIRED TO REPLACE GUARD RAIL, INCLUDING REMOVAL AND ATTACHMENT TO EXISTING GUARD RAIL, SHALL BE SUBSIDIARY TO ITEM 621.20, "STEEL BEAM GUARD RAIL."
5. A QUANTITY OF 40'-0" OF ITEM 616.28 "CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B" SHALL BE PLACED AT THE END OF EACH WINGWALL. SEE GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B FOR DETAILS.

REPLACE 300' OF EXIST. GUARD RAIL NORTH OF BR 43N (SEE NOTE 4) — REPLACED BEFORE PROJECT BEGAN BY DISTRICT

STATE OF VERMONT
AGENCY OF TRANSPORTATION

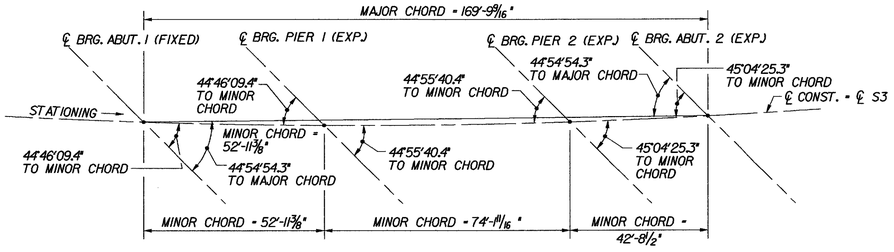
Town Of MIDDLESEX-BOLTON	Bridge No. 43N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER US ROUTE 2	
CURB AND RAIL LAYOUT PLANS (43N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43brrail	Date 10/99
Bridge Sheet No. BR43-7	Sheet 53 of 307

TVGA ENGINEERING, SURVEYING, P.C.



FRAMING PLAN – BR 43N

SCALE: 3/32" = 1'-0"



LAYOUT DIAGRAM

N.T.S.

STRINGER NUMBER	STRINGER RADIUS	SIDE	SPAN 1 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL	SPAN 2 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL	SPAN 3 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING			TOTAL
S1	22940.32'	LEFT					52' - 11 13/16"					74' - 2 1/4"				42' - 8 7/8"
		RIGHT	10' - 0"	19' - 0"	19' - 0"	4' - 11 13/16"		16' - 0"	25' - 0"	25' - 0"	8' - 2 1/4"		15' - 8 5/8"	16' - 0"	11' - 0 1/4"	
S2	22947.82'	LEFT	2' - 5"	19' - 0"	19' - 0"	12' - 6 5/8"	52' - 11 5/8"	8' - 5 7/16"	25' - 0"	25' - 0"	15' - 8 1/2"	74' - 1 15/16"	8' - 2 11/16"	16' - 0"	18' - 6"	42' - 8 11/16"
		RIGHT	10' - 0"	19' - 0"	19' - 0"	4' - 11 5/8"		16' - 0"	25' - 0"	25' - 0"	8' - 1 15/16"		15' - 8 3/8"	16' - 0"	11' - 0 5/16"	
S3	22955.32'	LEFT	2' - 5 1/16"	19' - 0"	19' - 0"	12' - 6 3/8"	52' - 11 7/16"	8' - 5 1/2"	25' - 0"	25' - 0"	15' - 8 3/16"	74' - 1 11/16"	8' - 2 1/2"	16' - 0"	18' - 6"	42' - 8 1/2"
		RIGHT	10' - 0"	19' - 0"	19' - 0"	4' - 11 7/16"		16' - 0"	25' - 0"	25' - 0"	8' - 1 11/16"		15' - 8 1/8"	16' - 0"	11' - 0 3/8"	
S4	22962.82'	LEFT	2' - 5 1/8"	19' - 0"	19' - 0"	12' - 6 1/16"	52' - 11 3/16"	8' - 5 9/16"	25' - 0"	25' - 0"	15' - 7 13/16"	74' - 1 3/8"	8' - 2 3/8"	16' - 0"	18' - 6"	42' - 8 3/8"
		RIGHT	10' - 0"	19' - 0"	19' - 0"	4' - 11 3/16"		16' - 0"	25' - 0"	25' - 0"	8' - 1 3/8"		15' - 7 15/16"	16' - 0"	11' - 0 7/16"	
S5	22970.32'	LEFT	2' - 5 3/16"	19' - 0"	19' - 0"	12' - 5 13/16"	52' - 11"	8' - 5 5/8"	25' - 0"	25' - 0"	15' - 7 7/16"	74' - 1 1/16"	8' - 2 3/16"	16' - 0"	18' - 6"	42' - 8 3/16"
		RIGHT														

STRINGER LAYOUT TABLE

(SEE NOTE 4)

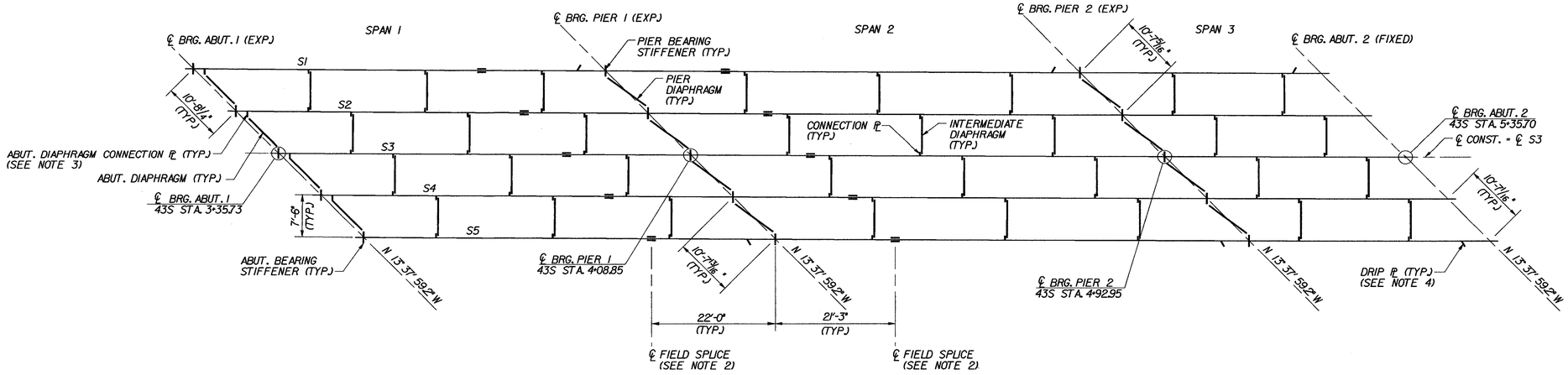
NOTES:

1. FOR ROLLED BEAM AND DIAPHRAGM DETAILS, SEE TYPICAL ROLLED BEAM DETAILS, BRIDGE SHEET C-16.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL ROLLED BEAM SPLICE DETAILS, BRIDGE SHEET C-19.
3. FIELD SPLICE IN SPAN 1 IS OPTIONAL.
4. STRINGER LAYOUT DIMENSIONS BEGIN AND END AT ABUTMENT CENTERLINES OF BEARING. LOCATION OF ABUTMENT DIAPHRAGM CONNECTION PLATES NOT INCLUDED IN TABLE. THE CONTRACTOR SHALL PROVIDE THIS DIMENSION IN SHOP DRAWINGS IN ACCORDANCE WITH DETAILS SHOWN IN TYPICAL ROLLED BEAM DETAILS, BRIDGE SHEET C-16.
5. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.
6. FOR SCUPPER DETAILS, SEE TYPICAL SCUPPER DETAILS, BRIDGE SHEET C-39.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

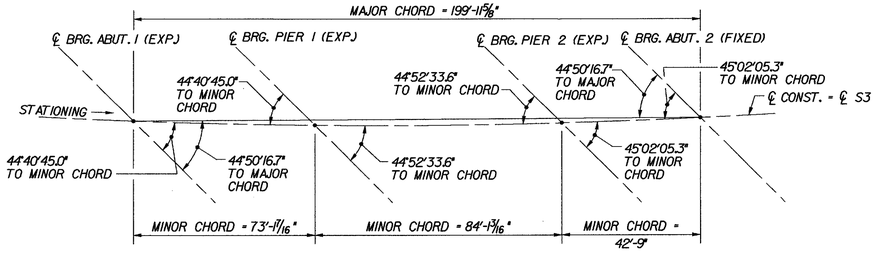
Town Of MIDDLESEX-BOLTON	Bridge No. **43N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER U.S. ROUTE 2	
FRAMING PLAN (43N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43nfp	Date 10/99
Bridge Sheet No. ***BR43-8***	Sheet 54 of 307

TVGA ENGINEERING, SURVEYING, P.C.



FRAMING PLAN – BR 43S

SCALE: 3/32 " = 1'-0"



LAYOUT DIAGRAM

N.T.S.

STRINGER NUMBER	STRINGER RADIUS	SIDE	SPAN 1 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL	SPAN 2 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL	SPAN 3 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING			TOTAL
S1	22866.32'	LEFT					73' - 2 1/16"					84' - 1 7/8"				42' - 9 5/16"
		RIGHT	21' - 6"	21' - 6"	21' - 6"	8' - 8 1/16"		25' - 0"	25' - 0"	25' - 0"	9' - 1 7/8"		16' - 9 3/16"	19' - 6"	6' - 6 1/8"	
S2	22873.82'	LEFT	13' - 10 11/16"	21' - 6"	21' - 6"	16' - 3 1/16"	73' - 1 3/4"	17' - 5 1/4"	25' - 0"	25' - 0"	16' - 8 1/4"	84' - 1 1/2"	9' - 3 3/16"	19' - 6"	14' - 0"	42' - 9 3/16"
		RIGHT	21' - 6"	21' - 6"	21' - 6"	8' - 7 3/4"		25' - 0"	25' - 0"	25' - 0"	9' - 1 1/2"		16' - 9"	19' - 6"	6' - 6 3/16"	
S3	22881.32'	LEFT	13' - 10 3/4"	21' - 6"	21' - 6"	16' - 2 11/16"	73' - 1 7/16"	17' - 5 5/16"	25' - 0"	25' - 0"	16' - 7 7/8"	84' - 1 3/16"	9' - 3"	19' - 6"	14' - 0"	42' - 9"
		RIGHT	21' - 6"	21' - 6"	21' - 6"	8' - 7 7/16"		25' - 0"	25' - 0"	25' - 0"	9' - 1 3/16"		16' - 8 3/4"	19' - 6"	6' - 6 1/4"	
S4	22888.82'	LEFT	13' - 10 13/16"	21' - 6"	21' - 6"	16' - 2 3/8"	73' - 1 3/16"	17' - 5 3/8"	25' - 0"	25' - 0"	16' - 7 1/2"	84' - 0 7/8"	9' - 2 13/16"	19' - 6"	14' - 0"	42' - 8 13/16"
		RIGHT	21' - 6"	21' - 6"	21' - 6"	8' - 7 3/16"		25' - 0"	25' - 0"	25' - 0"	9' - 0 7/8"		16' - 8 1/2"	19' - 6"	6' - 6 5/16"	
S5	22896.32'	LEFT	13' - 10 7/8"	21' - 6"	21' - 6"	16' - 2"	73' - 0 7/8"	17' - 5 7/16"	25' - 0"	25' - 0"	16' - 7 1/16"	84' - 0 1/2"	9' - 2 11/16"	19' - 6"	14' - 0"	42' - 8 11/16"
		RIGHT														

STRINGER LAYOUT TABLE

(SEE NOTE 3)

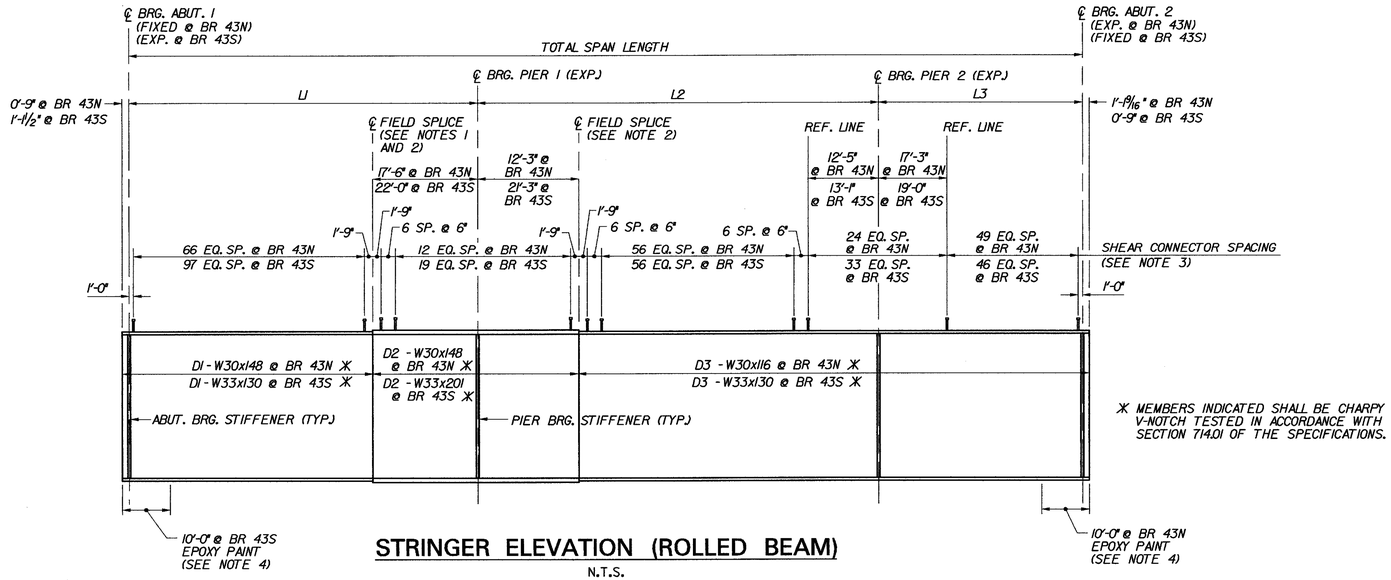
NOTES:

1. FOR ROLLED BEAM AND DIAPHRAGM DETAILS, SEE TYPICAL ROLLED BEAM DETAILS, BRIDGE SHEET C-16.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL ROLLED BEAM SPLICE DETAILS, BRIDGE SHEET C-19.
3. STRINGER LAYOUT DIMENSIONS BEGIN AND END AT ABUTMENT CENTERLINES OF BEARING. LOCATION OF ABUTMENT DIAPHRAGM CONNECTION PLATES NOT INCLUDED IN TABLE. THE CONTRACTOR SHALL PROVIDE THIS DIMENSION IN SHOP DRAWINGS IN ACCORDANCE WITH DETAILS SHOWN IN TYPICAL ROLLED BEAM DETAILS, BRIDGE SHEET C-16.
4. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

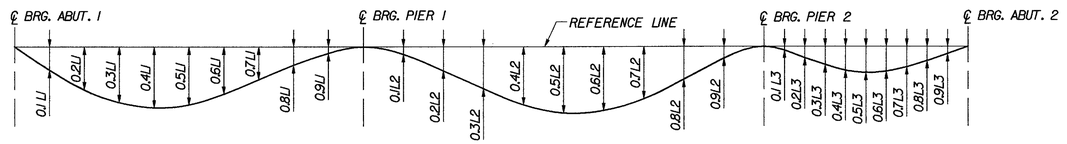
Town Of MIDDLESEX-BOLTON	Bridge No. **43S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER U.S. ROUTE 2	
FRAMING PLAN (43S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43sfp	Date 10/99
Bridge Sheet No. **BR43-9**	Sheet 55 of 307

TVGA ENGINEERING, SURVEYING, P.C.



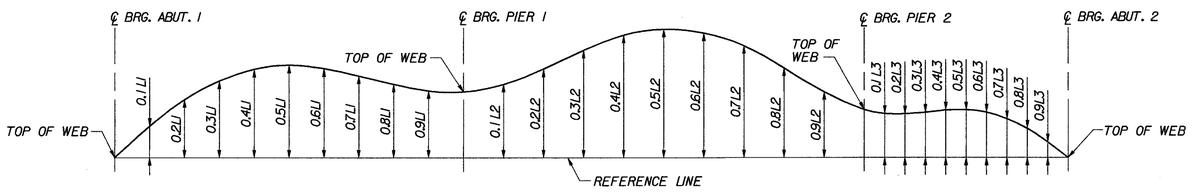
STRINGER ELEVATION (ROLLED BEAM)

N.T.S.



DEAD LOAD DEFLECTION DIAGRAM

N.T.S.



CAMBER DIAGRAM

N.T.S.

BR 43N				
		SPAN LENGTHS (ALONG ARC)		TOTAL
STRINGER	RADIUS	L1	L2	L3	SPAN LENGTH
S1	22940.32'	52' - 11 13/16"	74' - 2 1/4"	42' - 8 7/8"	169' - 10 15/16"
S2	22947.82'	52' - 11 5/8"	74' - 1 15/16"	42' - 8 11/16"	169' - 10 1/4"
S3	22955.32'	52' - 11 7/16"	74' - 1 11/16"	42' - 8 1/2"	169' - 9 5/8"
S4	22962.82'	52' - 11 3/16"	74' - 1 3/8"	42' - 8 3/8"	169' - 8 15/16"
S5	22970.32'	52' - 11"	74' - 1 1/16"	42' - 8 3/16"	169' - 8 1/4"
		SECTION LENGTHS (ALONG ARC)			
STRINGER		D1	D2	D3	
S1		36' - 2 13/16"	29' - 9"	105' - 9 11/16"	
S2		36' - 2 5/8"	29' - 9"	105' - 9 3/16"	
S3		36' - 2 7/16"	29' - 9"	105' - 8 3/4"	
S4		36' - 2 3/16"	29' - 9"	105' - 8 5/16"	
S5		36' - 2"	29' - 9"	105' - 7 13/16"	

BR 43S				
		SPAN LENGTHS (ALONG ARC)		TOTAL
STRINGER	RADIUS	L1	L2	L3	SPAN LENGTH
S1	22866.32'	73' - 2 1/16"	84' - 1 7/8"	42' - 9 5/16"	200' - 1 1/4"
S2	22873.82'	73' - 1 3/4"	84' - 1 1/2"	42' - 9 3/16"	200' - 0 7/16"
S3	22881.32'	73' - 1 7/16"	84' - 1 3/16"	42' - 9"	199' - 11 5/8"
S4	22888.82'	73' - 1 3/16"	84' - 0 7/8"	42' - 8 13/16"	199' - 10 7/8"
S5	22896.32'	73' - 0 7/8"	84' - 0 1/2"	42' - 8 11/16"	199' - 10 1/16"
		SECTION LENGTHS (ALONG ARC)			
STRINGER		D1	D2	D3	
S1		52' - 3 9/16"	43' - 3"	106' - 5 3/16"	
S2		52' - 3 1/4"	43' - 3"	106' - 4 11/16"	
S3		52' - 2 15/16"	43' - 3"	106' - 4 3/16"	
S4		52' - 2 11/16"	43' - 3"	106' - 3 11/16"	
S5		52' - 2 3/8"	43' - 3"	106' - 3 3/16"	

NOTES:

1. THE FIELD SPLICE IN SPAN 1 IS OPTIONAL AT BR 43N.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL ROLLED BEAM SPLICE DETAILS, BRIDGE SHEET C-19.
3. EACH ROW OF SHEAR CONNECTORS SHALL CONSIST OF 2 STUDS. FOR LATERAL SPACING, SEE TRANSVERSE SECTION (43N&S), BRIDGE SHEET BR43-4.
4. ALL STRUCTURAL STEEL WITHIN 10 FEET OF END OF STRINGER AT EXPANSION ENDS SHALL BE COATED WITH A PROTECTIVE PAINT SYSTEM, WITH THE FINAL COAT TO BE DARK BROWN (COLOR CHIP #20059) TO BLEND WITH THE WEATHERING STEEL. THE COST OF PAINTING SHALL BE PAID FOR UNDER ITEM 513.25, "STRUCTURAL PAINTING, SHOP APPLIED".

DL DEFLECTION																												
BRIDGE	CL ABUT. 1	0.1 L1	0.2 L1	0.3 L1	0.4 L1	0.5 L1	0.6 L1	0.7 L1	0.8 L1	0.9 L1	CL PIER 1	0.1 L2	0.2 L2	0.3 L2	0.4 L2	0.5 L2	0.6 L2	0.7 L2	0.8 L2	0.9 L2	CL PIER 2	0.1 L3	0.2 L3	0.3 L3	0.4 L3	0.5 L3	0.6 L3	0.7 L3	0.8 L3	0.9 L3	CL ABUT. 2
43N	0"	0 1/8"	0 3/16"	0 1/4"	0 1/4"	0 3/16"	0 1/8"	0 1/16"	0"	-0 1/16"	0"	0 1/4"	0 11/16"	1 1/16"	1 5/16"	1 7/16"	1 3/8"	1 1/8"	0 3/4"	0 5/16"	0"	-0 1/16"	-0 1/8"	-0 1/16"	0"	0"	0 1/16"	0 1/16"	0 1/16"	0 1/16"	0"
43S	0"	0 1/2"	0 15/16"	1 3/16"	1 5/16"	1 1/4"	1"	0 11/16"	0 3/8"	0 1/8"	0"	0 1/8"	0 1/2"	0 7/8"	1 1/4"	1 7/16"	1 3/8"	1 3/16"	0 3/4"	0 5/16"	0"	-0 1/16"	-0 1/8"	-0 1/8"	-0 1/16"	-0 1/16"	0"	0"	0"	0"	0"

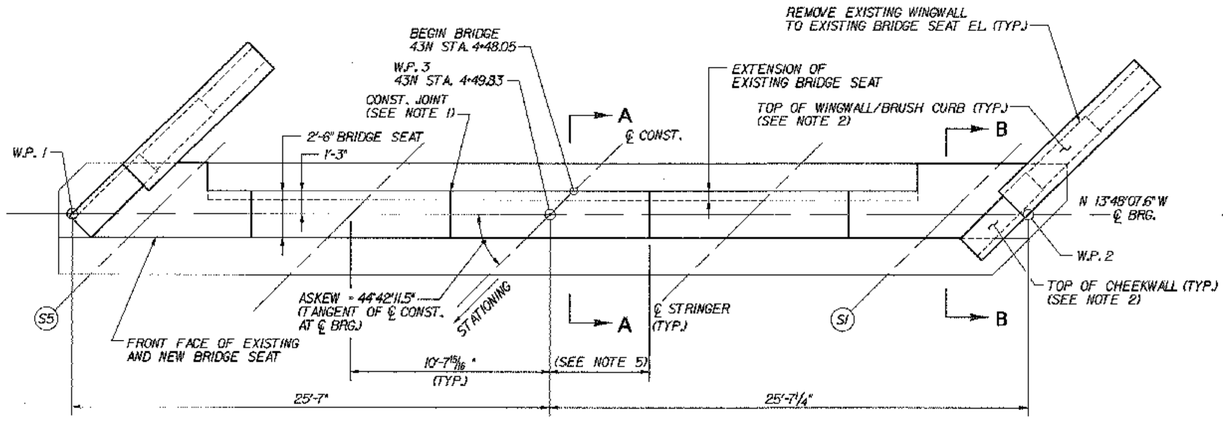
TOTAL CAMBER																												
BRIDGE	CL ABUT. 1	0.1 L1	0.2 L1	0.3 L1	0.4 L1	0.5 L1	0.6 L1	0.7 L1	0.8 L1	0.9 L1	CL PIER 1	0.1 L2	0.2 L2	0.3 L2	0.4 L2	0.5 L2	0.6 L2	0.7 L2	0.8 L2	0.9 L2	CL PIER 2	0.1 L3	0.2 L3	0.3 L3	0.4 L3	0.5 L3	0.6 L3	0.7 L3	0.8 L3	0.9 L3	CL ABUT. 2
43N	0"	0 9/16"	0 15/16"	1 3/16"	1 1/4"	1 1/8"	0 7/8"	0 1/2"	0 3/16"	0"	0"	0 5/16"	0 15/16"	1 5/8"	2 3/16"	2 7/16"	2 1/4"	1 11/16"	1"	0 3/8"	0"	0"	0 1/8"	0 7/16"	0 13/16"	1"	1 1/16"	1"	0 13/16"	0 1/2"	0"
43S	0"	1 1/16"	2 1/16"	2 13/16"	3 3/8"	3 5/8"	3 9/16"	3 5/16"	3"	2 3/4"	2 11/16"	3"	3 9/16"	4 3/16"	4 3/4"	4 15/16"	4 11/16"	4 3/16"	3 3/8"	2 5/8"	1 15/16"	1 13/16"	1 13/16"	1 13/16"	1 7/8"	1 7/8"	1 13/16"	1 1/2"	1 1/8"	0 9/16"	0"

TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

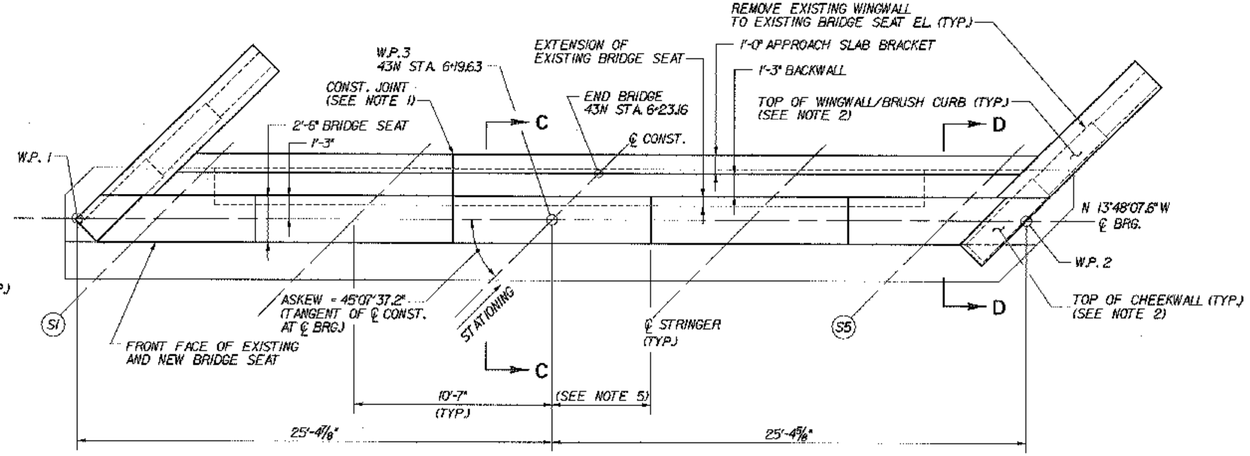
Town Of MIDDLESEX-BOLTON	Bridge No. 43N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
STRINGER ELEVATION (43N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43str_el	Date 08/00
Bridge Sheet No. BR43-10	Sheet 56 of 307

NOTE: RAISED 43N FIN. GR. - 1/4"



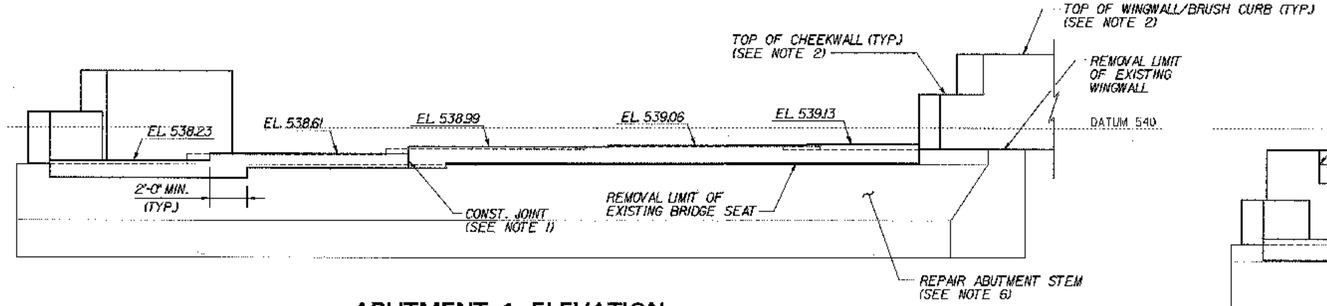
ABUTMENT 1 PLAN (FIXED)

SCALE: 1/4"=1'-0"



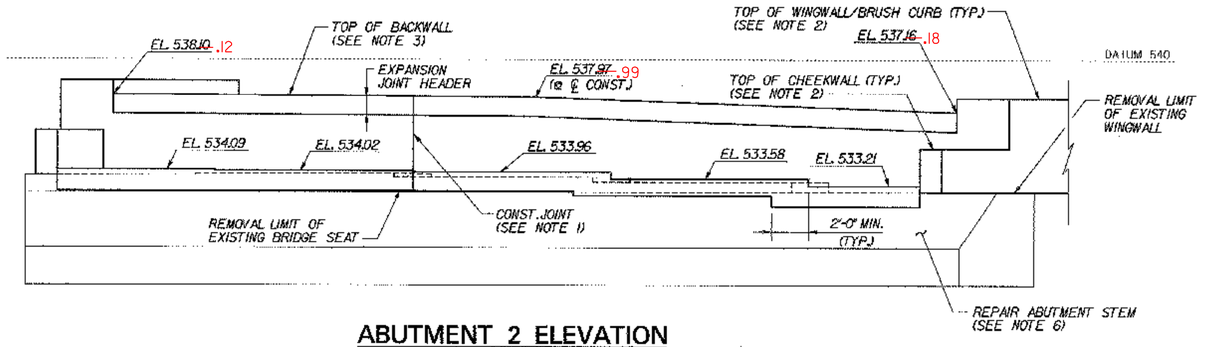
ABUTMENT 2 PLAN (EXP.)

SCALE: 1/4"=1'-0"



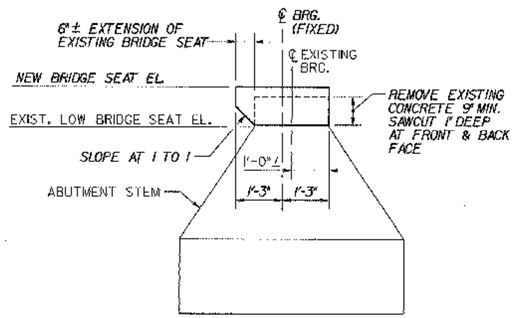
ABUTMENT 1 ELEVATION

SCALE: 1/4"=1'-0"



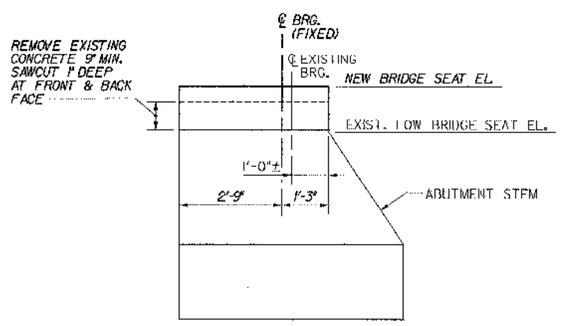
ABUTMENT 2 ELEVATION

SCALE: 1/4"=1'-0"



SECTION A-A

SCALE: 1/2"=1'-0"



SECTION B-B

SCALE: 1/2"=1'-0"

NOTE: FOR SECTIONS C-C AND D-D, SEE ABUTMENT MASONRY (43S), BRIDGE SHEET BR43-12.

NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40, AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-1 THROUGH SC-4 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

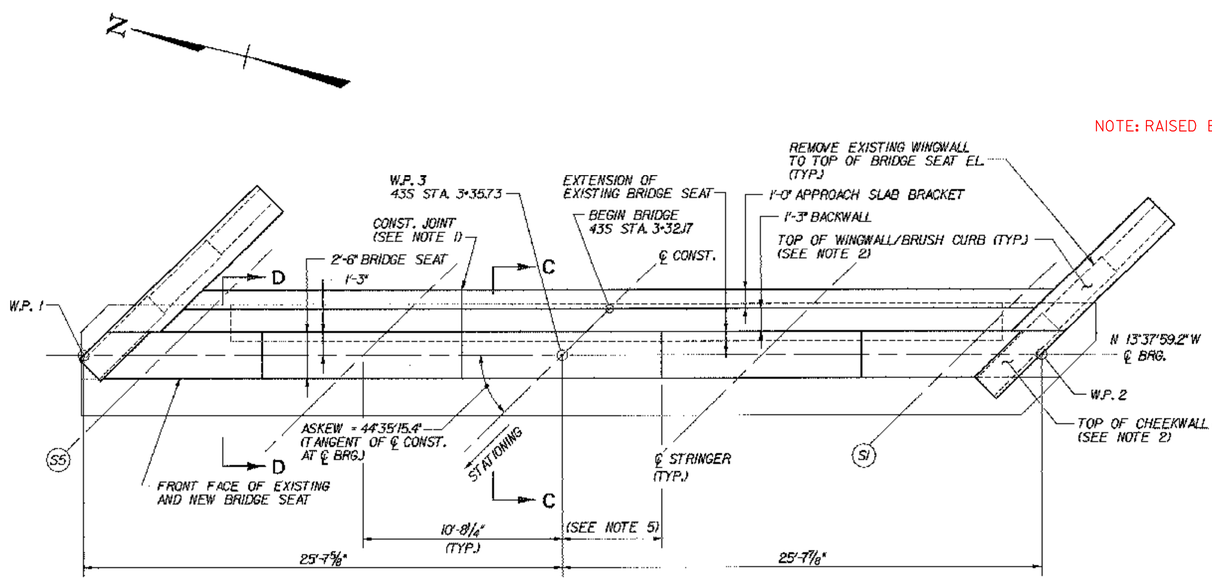
Town Of MIDDLESEX-BOLTON	Bridge No. 43N
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 NB OVER U.S. ROUTE 2

ABUTMENT MASONRY (43N)

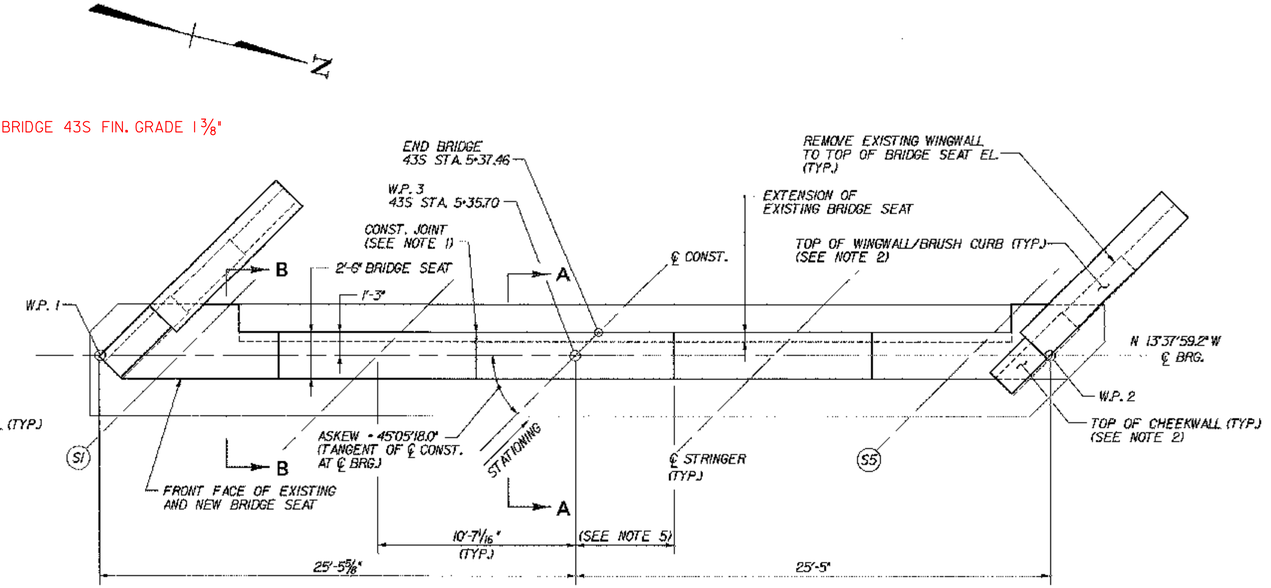
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43abmas	Date 10/99
Bridge Sheet No. BR43-11	Sheet 57 of 307

NOTE: RAISED BRIDGE 43S FIN. GRADE 1 3/8"



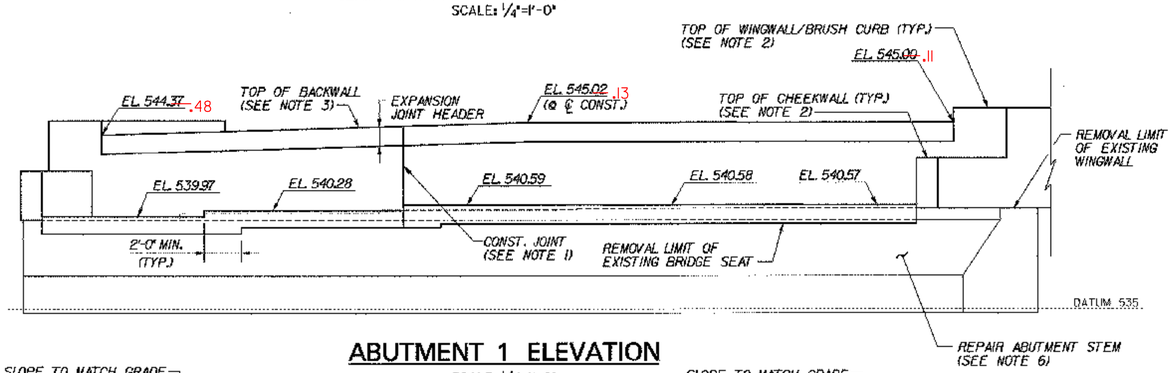
ABUTMENT 1 PLAN (EXP.)

SCALE: 1/4"=1'-0"



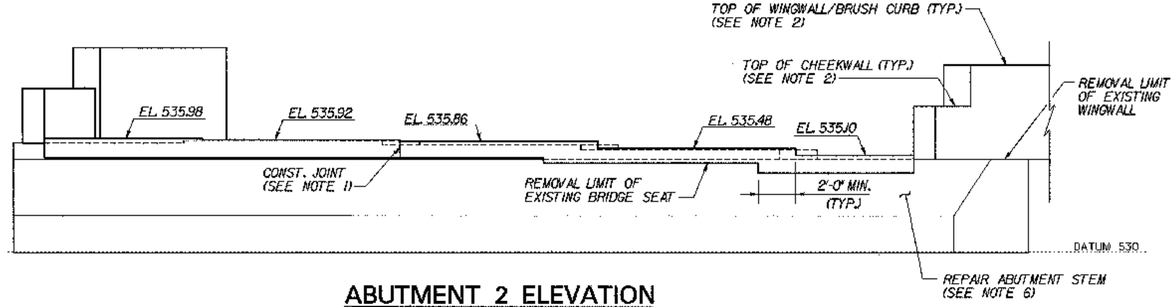
ABUTMENT 2 PLAN (FIXED)

SCALE: 1/4"=1'-0"



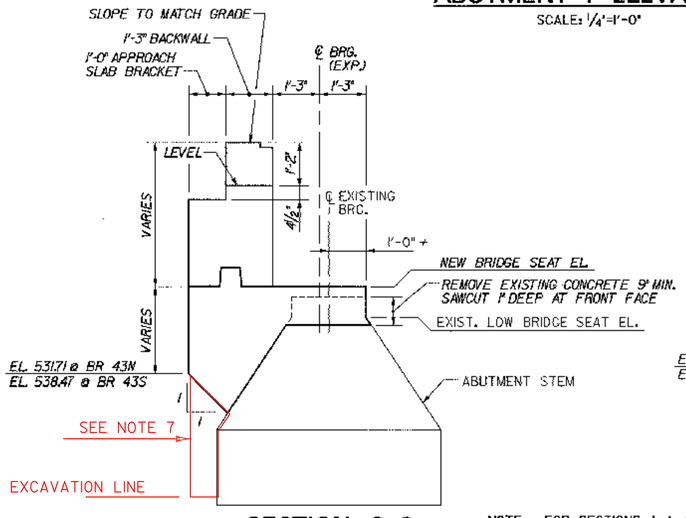
ABUTMENT 1 ELEVATION

SCALE: 1/4"=1'-0"



ABUTMENT 2 ELEVATION

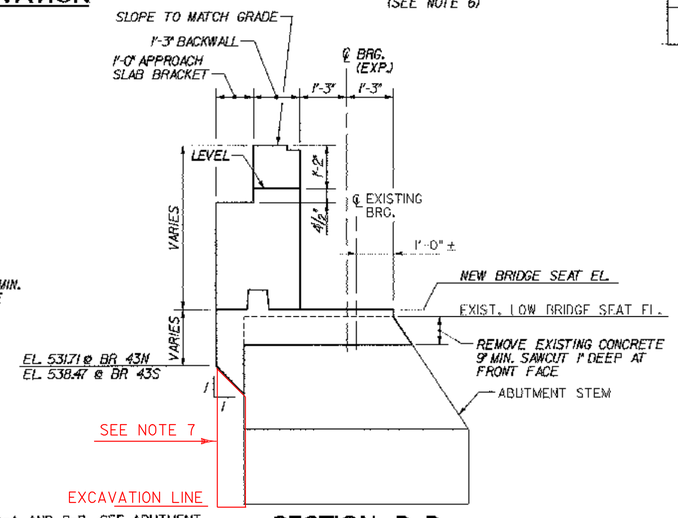
SCALE: 1/4"=1'-0"



SECTION C–C

SCALE: 1/2"=1'-0"

NOTE: FOR SECTIONS A-A AND B-B, SEE ABUTMENT MASONRY (43N), BRIDGE SHEET BR43-11.



SECTION D–D

SCALE: 1/2"=1'-0"

NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40, AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-1 THROUGH SC-4 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.
7. BRIDGE 43N ONLY: CONTRACTOR FOR EASE OF FORMING, FORMED THE BACK OF ABUTMENT #2 STRAIGHT DOWN TO THE BOTTOM OF THE EXCAVATION. THEY INSTALLED EXTRA REBAR IN THE AREA. ALL MATERIAL AND LABOR WAS AT THE EXPENSE OF THE CONTRACTOR.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43S
Highway No. I-89	Log Sta. / Surv. Sta.

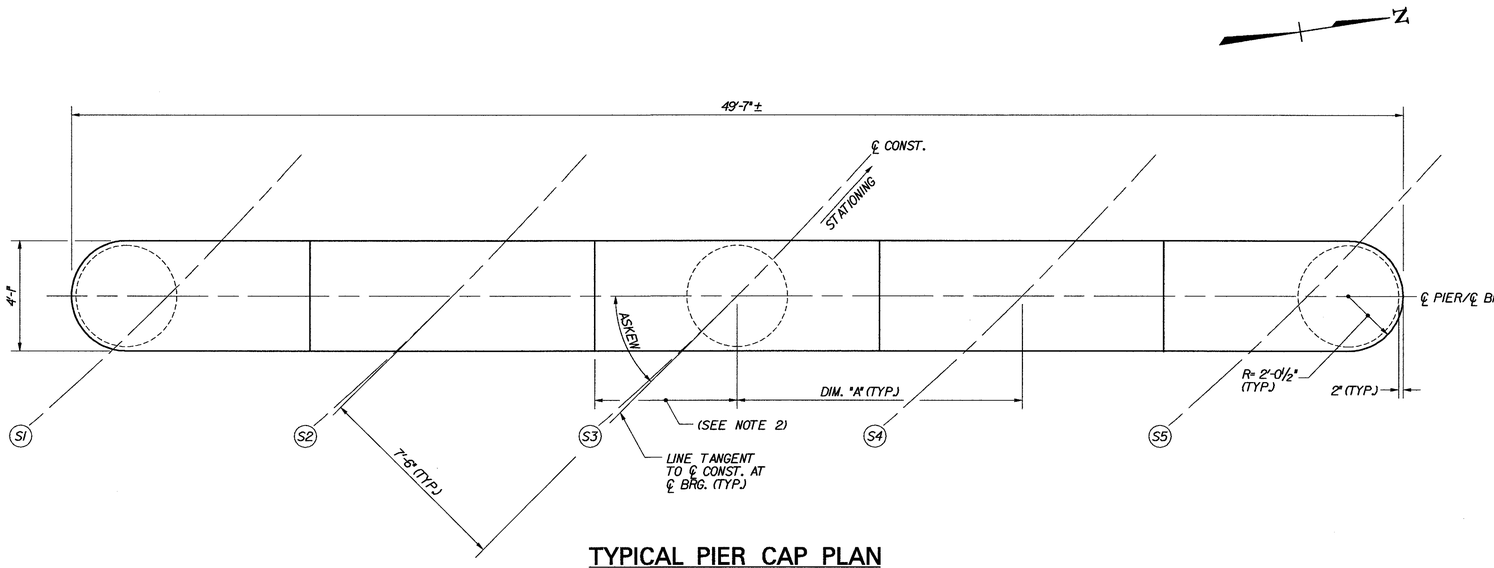
I-89 SB OVER U.S. ROUTE 2

ABUTMENT MASONRY (43S)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43abmas	Date 10/99
Bridge Sheet No. BR43-12	Sheet 58 of 307

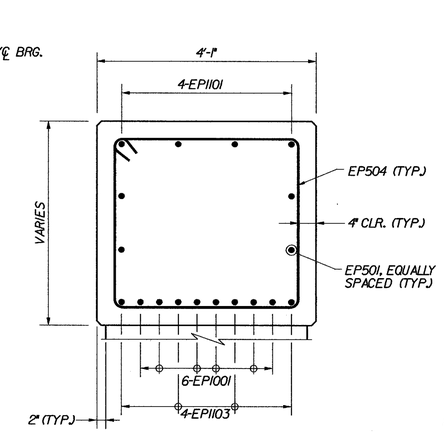
TVGA ENGINEERING, SURVEYING, P.C.

BRIDGE	PIER	STA.	ASKEW ANGLE	DIM. "A"	CL BEARING DIRECTION	PIER SEAT ELEVATIONS					BOTTOM OF PIER CAP ELEVATIONS		
						S1	S2	S3	S4	S5	C1	C2	C3
43N	1	5+02.78	44°50'07.3"	10'-7 5/8"	N 13°48'07.6" W	537.49	537.43	537.36	536.98	536.60	533.79	533.33	532.87
	2	5+76.92	45°01'13.4"	10'-7 1/4"	N 13°48'07.6" W	535.32	535.26	535.19	534.81	534.44	531.41	531.04	530.67
43S	1	4+08.85	44°46'14.5"	10'-7 13/16"	N 13°37'59.2" W	539.10	539.09	539.07	538.74	538.40	535.29	534.95	534.61
	2	4+92.95	44°58'52.7"	10'-7 5/16"	N 13°37'59.2" W	537.07	537.03	536.98	536.62	536.26	533.36	533.01	532.66



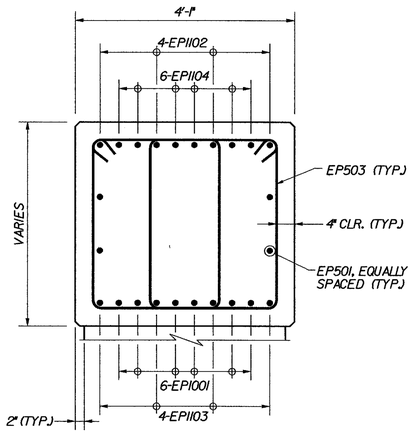
TYPICAL PIER CAP PLAN

SCALE: 3/8"=1'-0"



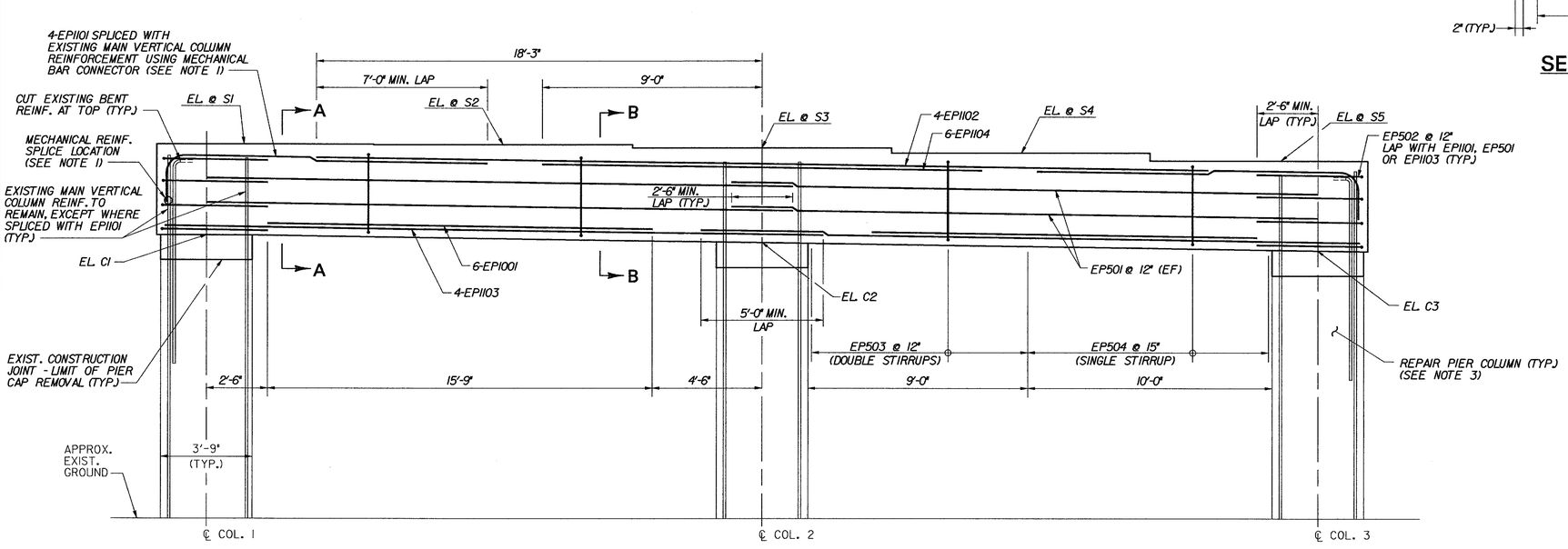
SECTION A–A

SCALE: 3/4"=1'-0"



SECTION B–B

SCALE: 3/4"=1'-0"



(REINFORCEMENT SYMMETRICAL ABOUT ℄ COL. 2)

TYPICAL PIER ELEVATION

SCALE: 3/8"=1'-0"

NOTES:

1. THE CONTRACTOR SHALL SUBMIT PRODUCT DATA FROM THE MANUFACTURER OF THE PROPOSED MECHANICAL BAR CONNECTOR, FOR APPROVAL OF THE STRUCTURES ENGINEER. THE CONTRACTOR SHALL ALSO PROVIDE CERTIFICATION THAT THE SPECIFIED CONNECTOR MEETS THE REQUIRED STRENGTH PROVISIONS OF AASHTO SECTION 8.32.2. THE COST OF SUPPLYING AND PLACING THE CONNECTOR SHALL BE PAID UNDER ITEM 507.19, "MECHANICAL BAR CONNECTOR".
2. STEPS IN PIER CAP SEAT SHALL BE EQUIDISTANT BETWEEN STRINGERS.
3. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS AND PLACE FIBER-REINFORCED POLYMER (FRP) COLUMN WRAP AT EACH OF THE PIER COLUMNS. CONCRETE REPAIR AND FRP WRAP SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS SHOWN ON SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **43N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	

PIER CAP MASONRY & REINFORCEMENT (43N&S)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43piermas	Date 10/99
Bridge Sheet No. **BR43-13**	Sheet 59 of 307

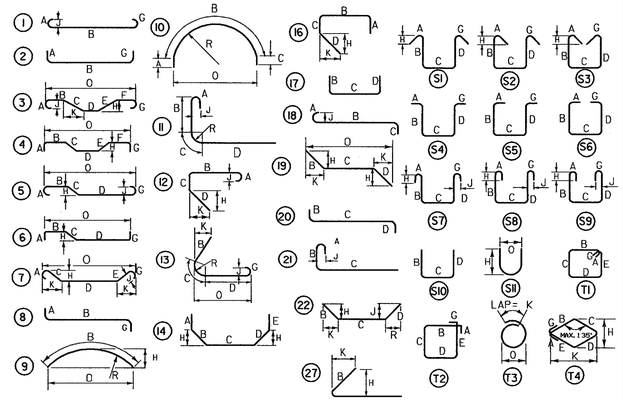
TVGA ENGINEERING, SURVEYING, P.C.

BRIDGE 43 NORTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (43N)																
✳	2	27	5	30' - 0"	E1AS501	STR.												
✳	3	27	5	17' - 2"	E1AS502	STR.												
	4	24	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	5	45	9	25' - 9"	E1AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	6	APPROACH SLAB 2 (43N)																
✳	7	27	5	30' - 0"	E2AS501	STR.												
✳	8	27	5	17' - 2"	E2AS502	STR.												
	9	24	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	10	45	9	25' - 9"	E2AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	11	SUPERSTRUCTURE (43N)																
	12	530	5	36' - 2"	ES501	STR.												
▲	13	698	5	35' - 6"	ES502	STR.												
	14	485	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
✳	15	3	5	33' - 0"	ES511	STR.												
✳	16	3	5	20' - 0"	ES512	STR.												
	17	34	5	5' - 1 1/2"	ES513	16	0' - 7 1/2"	1' - 6"	0' - 10"	2' - 2"				0' - 0"		2' - 2"		
	18	12	5	10' - 1"	ES514	STR.												
	19	6	5	3' - 8"	ES515	STR.												
✳	20	61	6	27' - 10"	ES601	STR.												
✳	21	61	6	25' - 10"	ES602	STR.												
	22	CURTAINWALL (43N)																
✳▲	23	17	5	10' - 0"	ECW504	STR.												
	24	32	5	12' - 0"	ECW505	S5	2' - 2"	3' - 5"	1' - 2"	3' - 1"			2' - 2"					
	25	45	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
▲	26	12	5	3' - 11"	ECW507	19		2' - 2"	1' - 9"	0' - 0"								3' - 4"
✳	27	17	5	23' - 9"	ECW508	STR.												
	28	2	5	4' - 7"	ECW509	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	29	2	5	9' - 10"	ECW510	S5	2' - 2"	2' - 4"	1' - 2"	2' - 0"			2' - 2"					
	30	2	5	5' - 7"	ECW511	S5	1' - 3"	0' - 10"	1' - 9"	0' - 6"			1' - 3"					
	31	ABUTMENT 1 (43N)																
	32	45	5	4' - 7"	E1A501	21	0' - 7"	2' - 0"	2' - 0"									
	33	45	5	3' - 6"	E1A502	17		1' - 6"	2' - 0"	0' - 0"								
▲	34	25	5	13' - 0"	E1A503	STR.												
	35	11	5	9' - 6"	E1A512	STR.												
✳	36	12	5	9' - 0"	E1A513	STR.												
	37	12	5	6' - 3"	E1A514	STR.												
	38	9	5	4' - 1"	E1A515	17		1' - 6"	1' - 1"	1' - 6"								
✳	39	22	5	7' - 6"	E1A517	17		3' - 0"	1' - 6"	3' - 0"								
✳	40	22	5	4' - 6"	E1A518	17		1' - 6"	3' - 0"	0' - 0"								
✳	41	67	5	5' - 6"	E1A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	42	10	5	9' - 6"	E1A520	STR.												
	43	ABUTMENT 2 (43N)																
	44	17	5	27' - 6"	E2A501	STR.												
✳	45	18	5	12' - 3"	E2A502	STR.												
	46	42	5	6' - 1"	E2A503	21	0' - 7"	4' - 4"	1' - 3"						0' - 5"			
▲	47	39	5	7' - 1"	E2A504	19		2' - 7"	4' - 6"	0' - 0"								6' - 4"
	48	42	5	3' - 8"	E2A505	STR.												
	49	42	5	6' - 1"	E2A506	S10		2' - 2"	1' - 10"	2' - 2"								
	50	42	5	5' - 10"	E2A507	17		2' - 6"	0' - 10"	2' - 6"								
▲	51	90	5	3' - 7"	E2A508	17		1' - 6"	2' - 1"	0' - 0"								
	52	2	5	5' - 7"	E2A509	19		2' - 1"	3' - 6"	0' - 0"								5' - 0"
	53	1	5	6' - 7"	E2A510	19		2' - 1"	4' - 6"	0' - 0"								6' - 0"
	54	15	5	11' - 0"	E2A511	STR.												
▲	55	22	5	10' - 6"	E2A512	STR.												
	56	6	5	7' - 6"	E2A513	STR.												
	57	6	5	5' - 9"	E2A514	STR.												
	58	7	5	4' - 1"	E2A515	17		1' - 6"	1' - 1"	1' - 6"								
	59	5	5	4' - 6"	E2A516	19		2' - 3"	2' - 3"	0' - 0"								3' - 10"
	60	19	5	7' - 6"	E2A517	17		3' - 0"	1' - 6"	3' - 0"								
	61	19	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	62	62	5	5' - 6"	E2A519	17		1' - 6"	4' - 0"	0' - 0"								
✳▲	63	11	5	10' - 6"	E2A520	STR.												
	64	5	5	4' - 6"	E2A521	27		2' - 3"	2' - 3"	0' - 0"								
	65	15	5	8' - 0"	E2A522	STR.												
	66	15	5	12' - 9"	E2A524	STR.												
▲	67	10	5	10' - 3"	E2A525	STR.												
	68	PIER CAP 1 (43N)																
✳	69	9	5	24' - 0"	E1P501	STR.												
✳	70	9	5	10' - 3"	E1P502	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
	71	40	5	11' - 7"	E1P503	T1	0' - 5 1/2"	2' - 4"	3' - 0"	2' - 4"	3' - 0"		0' - 5 1/2"					
	72	16	5	13' - 9"	E1P504	T1	0' - 5 1/2"	3' - 5"	3' - 0"	3' - 5"	3' - 0"		0' - 5 1/2"					
△	73	14	10	15' - 9"	E1P1001	STR.												
✳	74	9	11	15' - 0"	E1P1101	20		0' - 0"	13' - 0"	2' - 0"								
	75	4	11	36' - 6"	E1P1102	STR.												
	76	8	11	27' - 0"	E1P1103	STR.												
✳	77	7	11	18' - 0"	E1P1104	STR.												
	78	PIER CAP 2 (43N)																
	79	8	5	24' - 0"	E2P501	STR.												
✳	80	9	5	10' - 3"	E2P502	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
✳	81	41	5	11' - 7"	E2P503	T1	0' - 5 1/2"	2' - 4"	3' - 0"	2' - 4"	3' - 0"		0' - 5 1/2"					
✳	82	17	5	13' - 9"	E2P504	T1	0' - 5 1/2"	3' - 5"	3' - 0"	3' - 5"	3' - 0"		0' - 5 1/2"					
△	83	14	10	15' - 9"	E2P1001	STR.												
	84	8	11	15' - 0"	E2P1101	20		0' - 0"	13' - 0"	2' - 0"								
✳	85	5	11	36' - 6"	E2P1102	STR.												
✳	86	9	11	27' - 0"	E2P1103	STR.												
	87	6	11	18' - 0"	E2P1104	STR.												
	88																	
	89																	
	90																	

BRIDGE 43 SOUTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (43S)																
✳	2	27	5	30' - 0"	E1AS501	STR.												
✳	3	27	5	17' - 2"	E1AS502	STR.												
	4	24	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	5	45	9	25' - 9"	E1AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	6	APPROACH SLAB 2 (43S)																
✳	7	27	5	30' - 0"	E2AS501	STR.												
✳	8	27	5	17' - 2"	E2AS502	STR.												
	9	24	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	10	45	9	25' - 9"	E2AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	11	SUPERSTRUCTURE (43S)																
	12	582	5	35' - 6"	ES601	STR.												
✳▲	13	823	5	35' - 6"	ES602	STR.												
	14	563	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
	15	2	5	33' - 0"	ES511	STR.												
✳	16	3	5	20' - 6"	ES512	STR.												
	17	34	5	5' - 1 1/2"	ES513	16	0' - 7 1/2"	1' - 6"	0' - 10"	2' - 2"				0' - 0"		2' - 2"		
	18	12	5	10' - 2"	ES514	STR.												
	19	6	5	3' - 8"	ES515	STR.												
✳	20	91	6	23' - 5"	ES601	STR.												
✳	21	61	6	29' - 4"	ES602	STR.												
	22	CURTAINWALL (43S)																
✳▲	23	21	5	10' - 0"	ECW504	STR.												
	24	32	5	12' - 6"	ECW505	S5	2' - 2"	3' - 8"	1' - 2"	3' - 4"			2' - 2"					
	25	44	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
▲	26	12	5	3' - 11"	ECW507	19		2' - 2"	1' - 9"	0' - 0"								3' - 4"
✳	27	17	5	23' - 9"	ECW508	STR.												
	28	2	5	4' - 7"	ECW509	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	29	2	5	10' - 4"	ECW510	S5	2' - 2"	2' - 7"	1' - 2"	2' - 3"			2' - 2"					
	30	2	5	5' - 7"	ECW511	S5	1' - 3"	0' - 10"	1' - 9"	0' - 6"			1' - 3"					
	31	ABUTMENT 1 (43S)																
	32	17	5	31' - 3"	E1A501	STR.												
	33	17	5	12' - 3"	E1A502	STR.												
	34	42	5	6' - 1"	E1A503	21	0' - 7"	4' - 4"	1' - 3"						0' - 5"			
▲	35	41	5	6' - 10"	E1A504	19		2' - 7"	4' - 3"	0' - 0"								6' - 1"
	36	42	5	3' - 6"	E1A505	STR.												
	37	42	5	6' - 10"	E1A506	S10		2' - 6"	1' - 10"	2' - 6"								
	38	42	5	5' - 10"	E1A507	17		2' - 6"	0' - 10"	2' - 6"								
▲	39	92	5	3' - 7"	E1A508	17		1' - 6"	2' - 1"	0' - 0"								
	40	1	5	6' - 7"	E1A510	19		2' - 1"	4' - 6"	0' - 0"								6' - 0"
✳	41	16	5	8' - 3"	E1A511	STR.												
✳▲	42	22	5	10' - 6"	E1A512	STR.												
✳	43	7	5	7' - 9"	E1A513	STR.												
	44	6	5	5' - 9"	E1A514	STR.												
	45	9	5	4' - 7"	E1A515	17		1' - 9"	1' - 1"	1' - 9"								
	46	5	5	4' - 6"	E1A516	19		2' - 3"	2' - 3"	0' - 0"								3' - 10"
	47	21	5	8' - 0"	E1A517	17		3' - 3"	1' - 6"	3' - 3"								
	48	21	5	4' - 6"	E1A518	17		1' - 6"	3' - 0"	0' - 0"								
	49	66	5	5' - 6"	E1A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	50	10	5	10' - 6"	E1A520	STR.												
	51	5	5	4' - 6"	E1A521	27		2' - 3"	2' - 3"	0' - 0"								
	52	15	5	9' - 3"	E1A522	STR.												
	53	15	5	13' - 0"	E1A524	STR.												
▲	54	10	5	8' - 6"	E1A525	STR.												
	55	ABUTMENT 2 (43S)																
	56	45	5	4' - 7"	E2A501	21	0' - 7"	2' - 0"	2' - 0"									
	57	45	5	3' - 6"	E2A502	17		1' - 6"	2' - 0"	0' - 0"								
▲	58	25	5	13' - 0"	E2A503	STR.												
	59	11	5	10' - 6"	E2A512	STR.												
✳	60	12	5	9' - 6"	E2A513	STR.												
	61	12	5	7' - 9"	E2A514	STR.												
	62	9	5	4' - 7"	E2A515	17		1' - 9"	1' - 1"	1' - 9"								
	63	23	5	8' - 0"	E2A517	17		3' - 3"	1' - 6"	3' - 3"								
✳	64	24	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
✳	65	71	5	5' - 6"	E2A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	66	10	5	10' - 3"	E2A520	STR.												
	67	PIER CAP 1 (43S)																
✳	68	9	5	24' - 0"	E1P501	STR.												
✳	69	9	5	10' - 3"	E1P502	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
	70	40	5	11' - 7"	E1P503	T1	0' - 5 1/2"	2' - 4"	3' - 0"	2' - 4"	3' - 0"		0' - 5 1/2"					
	71	16	5	13' - 9"	E1P504	T1	0' - 5 1/2"	3' - 5"	3' - 0"	3' - 5"	3' - 0"		0' - 5 1/2"					
△	72	14	10	15' - 9"	E1P1001	STR.												
✳	73	9	11	15' - 0"	E1P1101	20		0' - 0"	13' - 0"	2' - 0"								
	74	4	11	36' - 6"	E1P1102	STR.												
✳	75	9	11	27' - 0"	E1P1103	STR.												
	76	6	11	18' - 0"	E1P1104	STR.												
	77	PIER CAP 2 (43S)																
✳	78	9	5	24' - 0"	E2P501	STR.												
	79	8	5	10' - 3"	E2P502	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
✳	80	41	5	11' - 7"	E2P503	T1	0' - 5 1/2"	2' - 4"	3' - 0"	2' - 4"	3' - 0"		0' - 5 1/2"					
✳	81	17	5	13' - 9"	E2P504	T1	0' - 5 1/2"	3' - 5"	3' - 0"	3' - 5"	3' - 0"		0' - 5 1/2"					
△	82	14	10	15' - 9"	E2P1001	STR.												
	83	8	11	15' - 0"	E2P1101	20		0' - 0"	13' - 0"	2' - 0"								
✳	84	5	11	36' - 6"	E2P1102	STR.												
✳	85	8	11	27' - 0"	E2P1103	STR.												
✳	86	7	11	18' - 0"	E2P1104	STR.												
	87																	
	88																	
	89																	
	90																	



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 615-91). 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 WHEN NECESSARY TO MAINTAIN CLEARANCES.
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.

LEGEND

▲ DENOTES BARS TO BE CUT IN THE FIELD.

✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.

△ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.

"E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT (POUNDS PER FOOT)	NOMINAL DIMENSIONS ROUND SECTION: DIAMETER (INCHES)	CROSS SECTIONAL AREA (SQ. INCHES)	PERIMETER (INCHES)
#3	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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

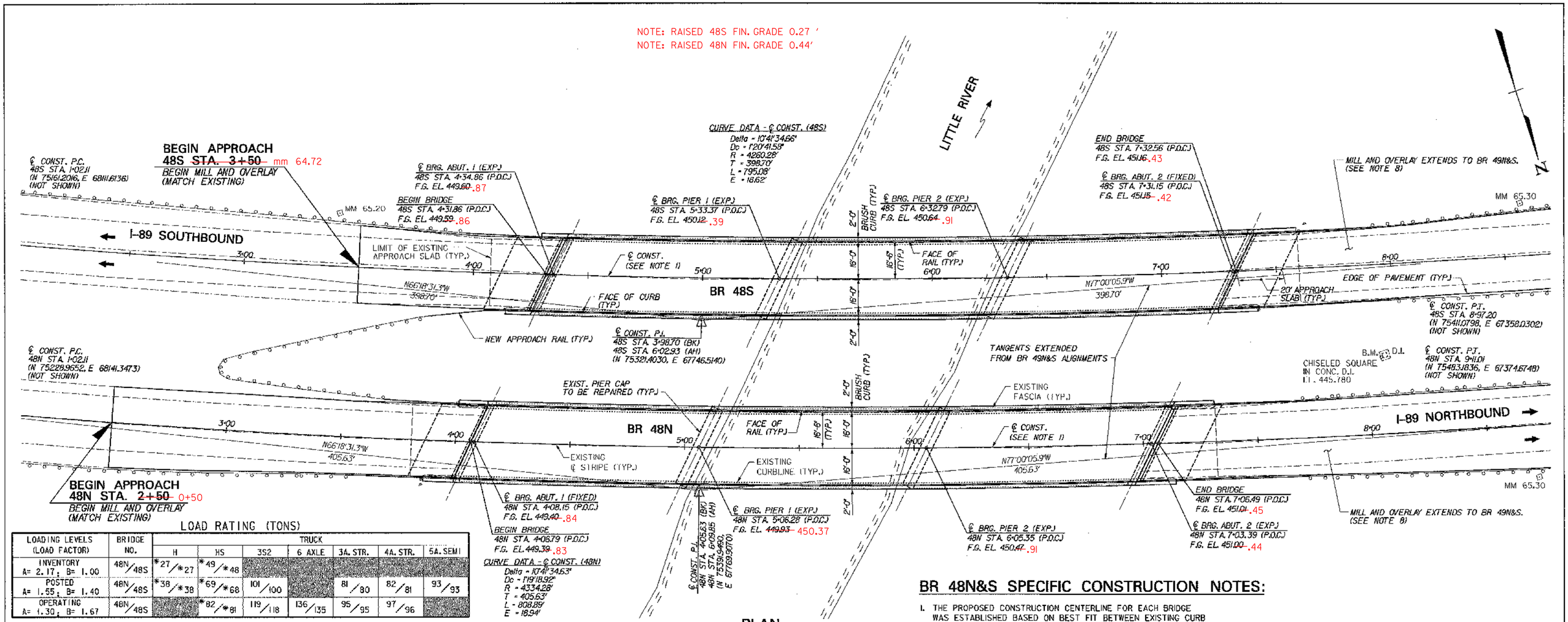
Town Of MIDDLESEX-BOLTON	Bridge No. 43N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER US ROUTE 2	

REINFORCING STEEL SCHEDULE (43N&S)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. reinf43	Date 10/99
Bridge Sheet No. BR43-14	Sheet 60 of 307

TVGA ENGINEERING, SURVEYING, P.C.

NOTE: RAISED 48S FIN. GRADE 0.27 '
NOTE: RAISED 48N FIN. GRADE 0.44'



PLAN
SCALE: 1"=20'

LOAD RATING (TONS)

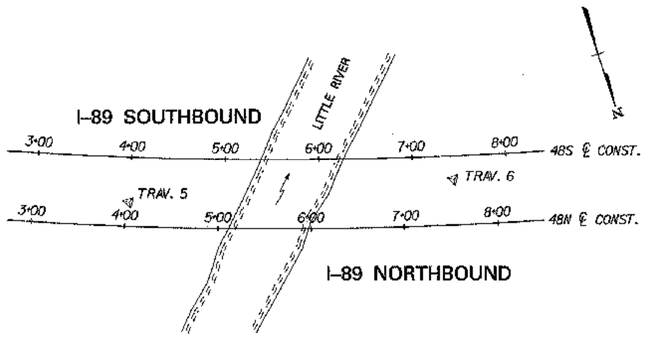
LOADING LEVELS (LOAD FACTOR)	BRIDGE NO.	TRUCK						
		H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A= 2.17; B= 1.00	48N/48S	*27/*27	*49/*48					
POSTED A= 1.55; B= 1.40	48N/48S	*38/*38	*69/*68	101/100		81/80	82/81	93/93
OPERATING A= 1.30; B= 1.67	48N/48S		*82/*81	119/118	136/135	95/95	97/96	

NOTE: RATINGS ARE BASED ON A STRAIGHT-LINE GIRDER ANALYSIS, DIVIDED BY 1.05 TO ACCOUNT FOR THE EFFECTS OF CURVATURE.

$$\text{STRENGTH RF} = \frac{\phi M_n - 1.3 M_{DL}}{A \times M_{LL+I}} \qquad * \text{SERVICEABILITY RF} = B\left[\frac{0.95 F_y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67 M_{LL+I}}\right]$$

TABLE OF BRIDGE COORDINATES

BRIDGE	CL CONST. @	STATION	NORTHING	EASTING
48N	BEGIN BRIDGE	4+06.79	75341.4636	67856.2782
	CL BRG. ABUT. 1	4+08.15	75341.9417	67856.9955
	CL BRG. PIER 1	5+06.28	75373.8843	67764.2122
	CL BRG. PIER 2	6+05.35	75403.9939	67669.8307
	CL BRG. ABUT. 2	7+03.39	75431.6592	67575.7772
	END BRIDGE	7+06.49	75432.4982	67572.7971
48S	BEGIN BRIDGE	4+31.86	75281.8840	67804.8348
	CL BRG. ABUT. 1	4+34.86	75282.8731	67802.0004
	CL BRG. PIER 1	5+33.37	75314.2178	67708.6125
	CL BRG. PIER 2	6+32.79	75343.6544	67613.6526
	CL BRG. ABUT. 2	7+31.15	75370.5887	67519.0545
	END BRIDGE	7+32.56	75370.9593	67517.6927



CONTROL POINT LOCATION MAP
N.T.S.
(SEE NOTE 2)

BR 48N&S SPECIFIC CONSTRUCTION NOTES:

1. THE PROPOSED CONSTRUCTION CENTERLINE FOR EACH BRIDGE WAS ESTABLISHED BASED ON BEST FIT BETWEEN EXISTING CURB LINES. IT DOES NOT EXACTLY MATCH THE ORIGINAL CONSTRUCTION CENTERLINE.
2. FOR CONTROL POINT TIE SKETCHES, SEE CONTROL POINT TIES (48N&S AND 49N&S), BRIDGE SHEET C-11.
3. REPLACE SUPERSTRUCTURE STEEL, BEARINGS, DECK SLABS, APPROACH SLABS, BRIDGE RAIL AND APPROACH RAIL. RESET GUARD RAIL.
4. NEW SCUPPERS ARE REQUIRED ON BRIDGE 48S. FOR LOCATION OF NEW SCUPPERS, SEE FRAMING PLAN (48S), BRIDGE SHEET BR48-9.
5. CONSTRUCT NEW BACKWALLS AT EXPANSION ABUTMENTS AND NEW CURTAINWALLS AT FIXED ABUTMENTS. REBUILD ABUTMENT BRIDGE SEATS AND MODIFY WINGWALLS AS SHOWN IN THE PLANS.
6. REPAIR PIER STEM AND PIER CAP DELAMINATED AND SPALLED AREAS. REBUILD PIER SEAT TO PROPOSED ELEVATIONS.
7. REPAIR ABUTMENT DELAMINATED AND SPALLED AREAS.
8. MILL AND OVERLAY EXTENDS TO BR 49N&S. FOR END LIMITS OF MILL AND OVERLAY, SEE GENERAL PLAN (49N&S), BRIDGE SHEET BR49-1.
9. RE-STRIPE BRIDGE AND APPROACH ROADWAY.

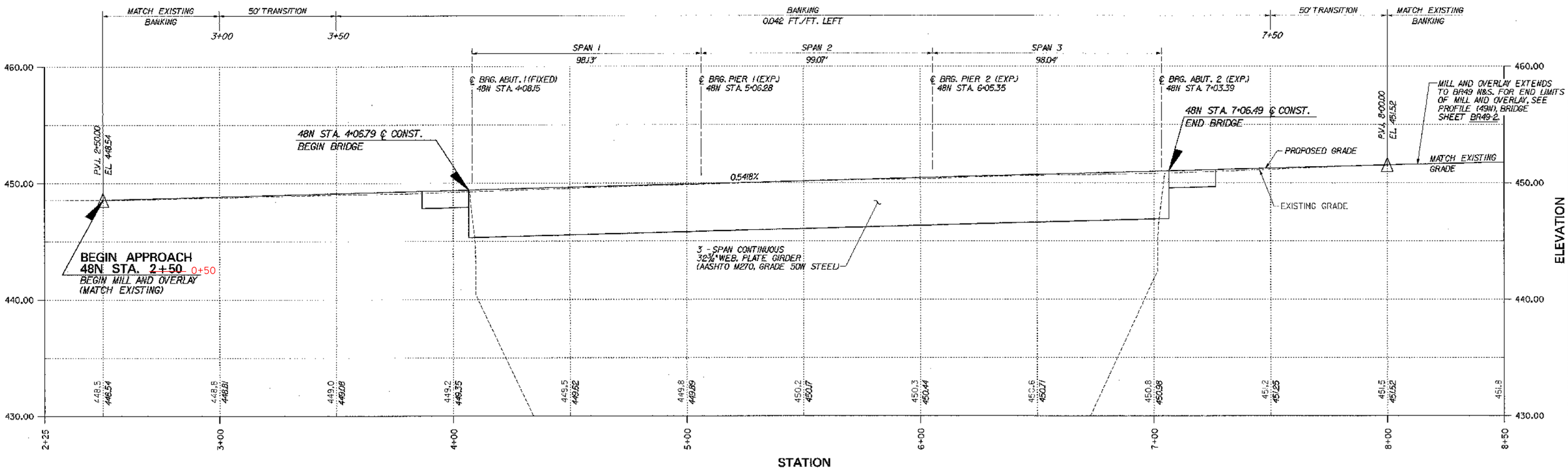
20 0 20
SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

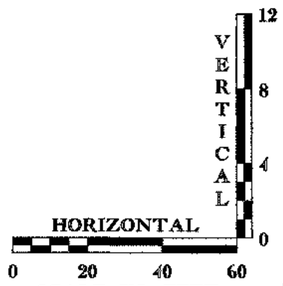
Town Of MIDDLESEX-BOLTON	Bridge No. 48N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER LITTLE RIVER	
GENERAL PLAN (48N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48gen_pl	Date 10/99
Bridge Sheet No. BR48-1	Sheet 61 of 307

TVGA ENGINEERING, SURVEYING, P.C.

NOTE: RAISED BRIDGE 48N FIN. GRADE 0.44 '



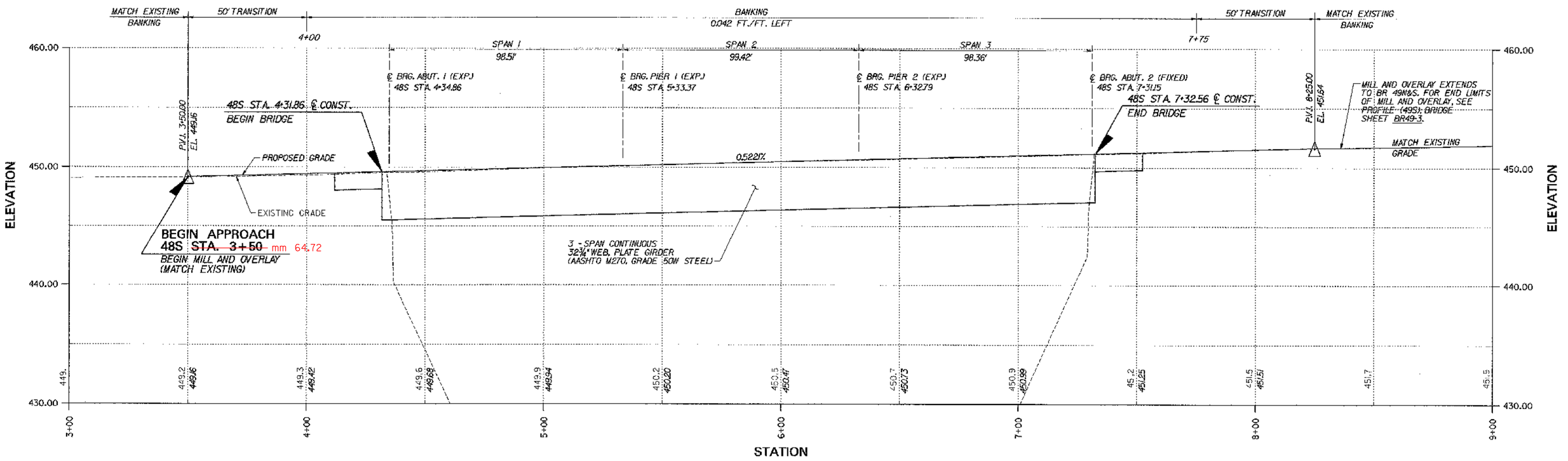
PROFILE – BR 48N



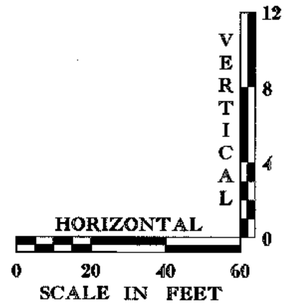
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER LITTLE RIVER	
PROFILE (48N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. 48nprof Date 10/99
	Bridge Sheet No. ***BR48-2*** Sheet 62 of 307

NOTE: RAISED BRIDGE 48S FIN. GRADE 0.27'



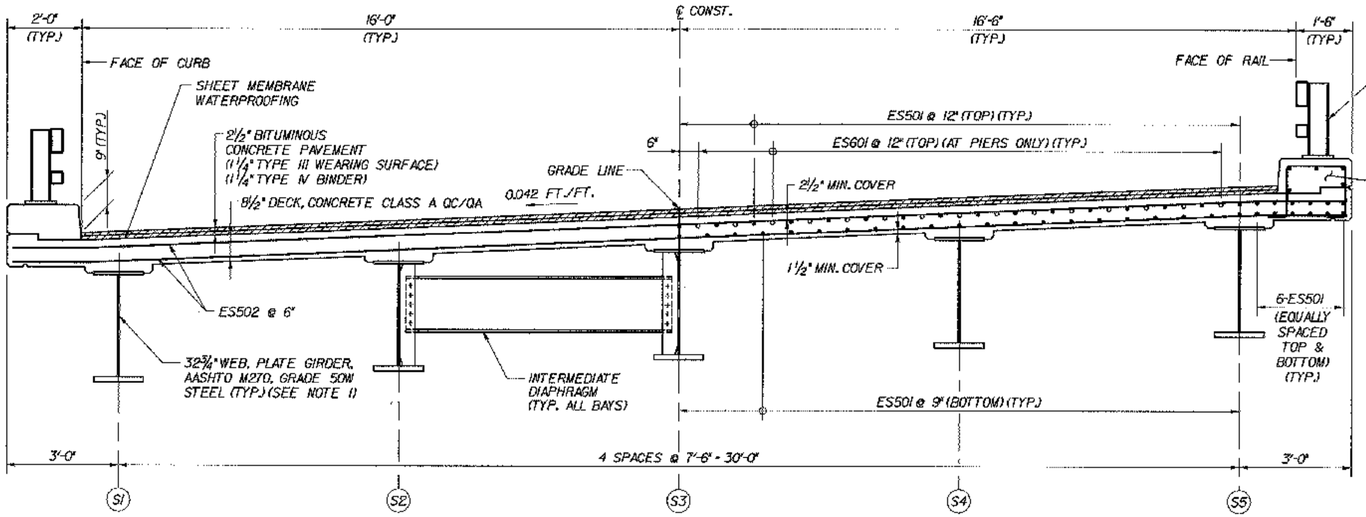
PROFILE – BR 48S



TVGA ENGINEERING, SURVEYING, P.C.

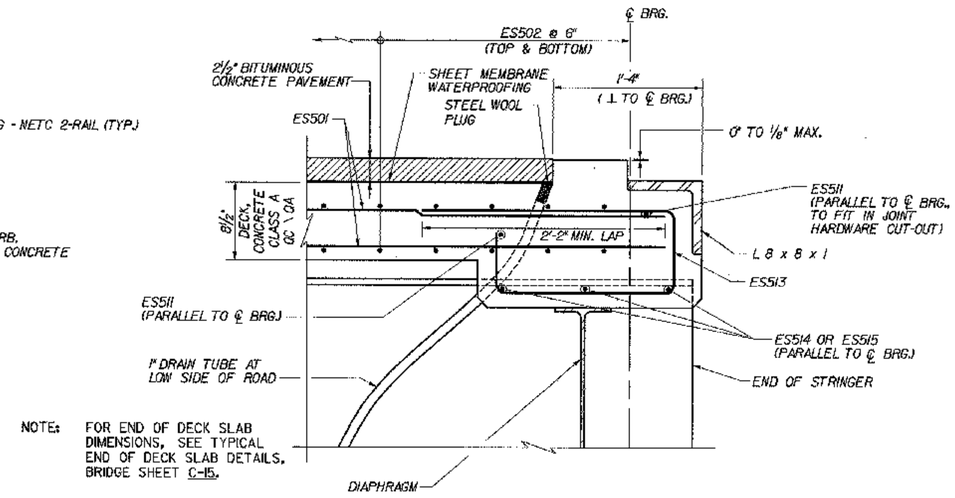
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 48S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER LITTLE RIVER	
PROFILE (48S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48sprof	Date 10/99
Bridge Sheet No. BR48-3	Sheet 63 of 307



TRANSVERSE SECTION

SCALE: ½" = 1'-0"

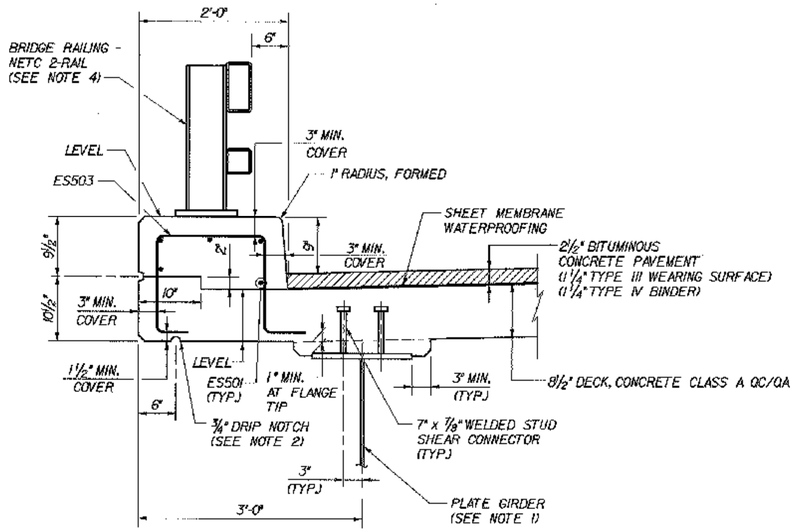


NOTE: FOR END OF DECK SLAB DIMENSIONS, SEE TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

END OF DECK SLAB REINFORCEMENT DETAIL

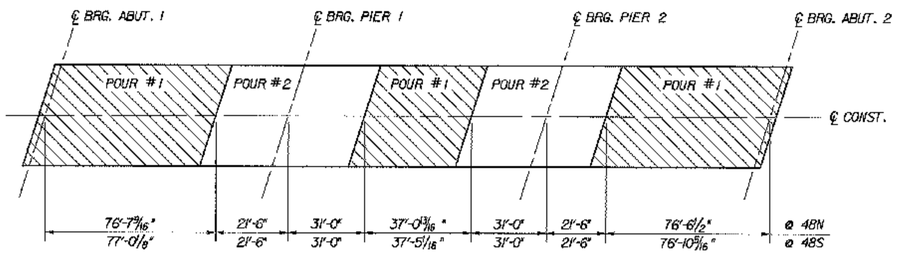
(EXP. END)

SCALE: 1½" = 1'-0"



FASCIA DETAIL

SCALE: 1"=1'-0"



DECK POUR SEQUENCE

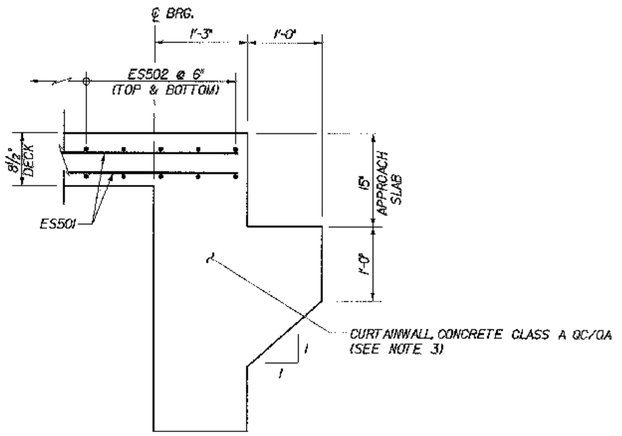
N.T.S.

BRIDGE 48N AND 48S WAS DONE IN A SINGLE POUR WITH NO CONSTRUCTION JOINT.

DECK SLAB PLACEMENT NOTES

A. EACH CONCRETE DECK POUR SHALL BE PLACED CONTINUOUSLY WITHIN ONE EIGHT HOUR WORKING DAY. THERE SHALL BE A MINIMUM DELAY PERIOD OF 96 HOURS AFTER COMPLETION OF EACH POUR BEFORE BEGINNING ANOTHER POUR. INDIVIDUAL POUR NUMBERS AS SHOWN MAY BE COMBINED INTO A SINGLE POUR IF APPROVED BY THE VAOT STRUCTURES ENGINEER.

B. THE DECK CONCRETE SHALL BE RETARDED SUFFICIENTLY TO REMAIN PLASTIC UNTIL EACH POUR IS COMPLETE. THE QUANTITY OF RETARDANT SHALL BE APPROVED BY THE CONCRETE ENGINEER PRIOR TO PLACEMENT. ANY DEVIATIONS FROM THIS PROCEDURE MUST BE APPROVED BY THE VAOT STRUCTURES ENGINEER IN WRITING BEFORE THE POUR BEGINS.



END OF DECK SLAB REINFORCEMENT DETAIL

(FIXED END)

SCALE: 1" = 1'-0"

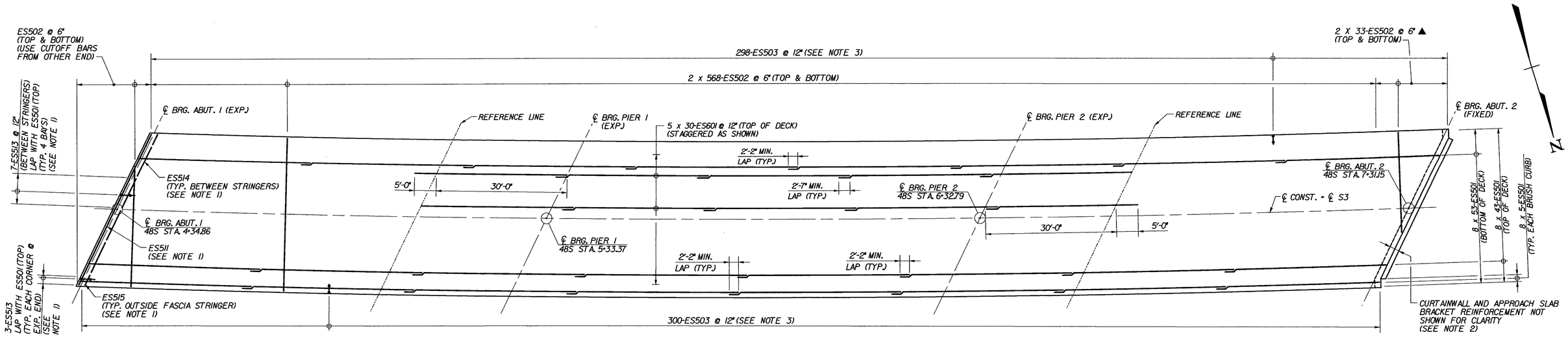
NOTES:

1. FOR PLATE GIRDER SIZES SEE STRINGER ELEVATION (48N&S), BRIDGE SHEET BR48-10.
2. END DRIP NOTCH 5 FEET BEFORE END OF SLAB AT "DOWNHILL" ABUTMENTS AT 45°.
3. FOR CURTAINWALL DETAILS AND REINFORCEMENT LAYOUT, SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
4. FOR DETAILS OF NETC BRIDGE RAIL AND APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.

TVGA ENGINEERING, SURVEYING, P.C.

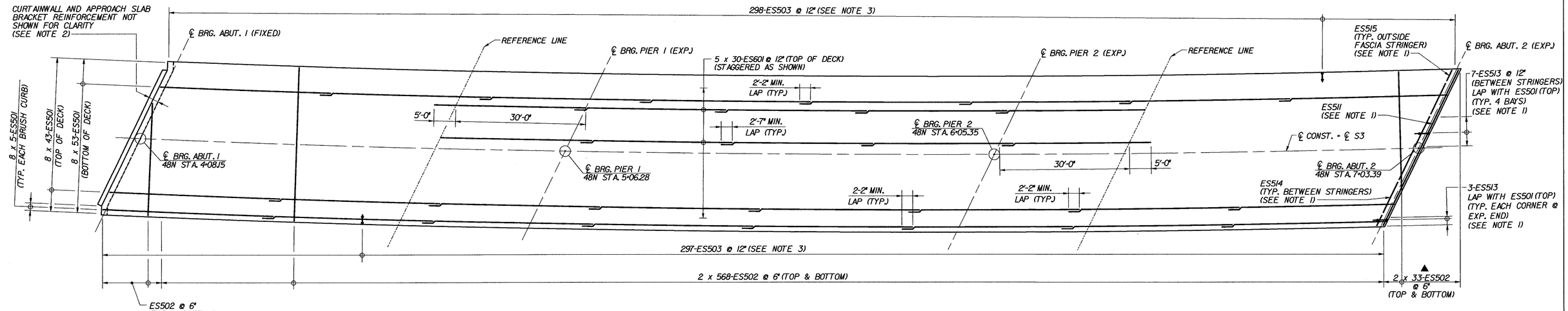
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 48N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER LITTLE RIVER	
TRANSVERSE SECTION (48N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48tsect	Date 10/99
Bridge Sheet No. BR48-4	Sheet 64 of 307



DECK REINFORCEMENT PLAN – BR 48S

SCALE: 3/32 " = 1'-0"



DECK REINFORCEMENT PLAN – BR 48N

SCALE: 3/32 " = 1'-0"

NOTES:

1. FOR END OF DECK SLAB DETAILS, SEE TRANSVERSE SECTION (48N&S), BRIDGE SHEET BR48-4.
2. FOR CURTAINWALL REINFORCEMENT, SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
3. THE QUANTITY OF ES503 BARS SHOWN DOES NOT INCLUDE ADDITIONAL BARS REQUIRED BELOW THE BRIDGE RAIL POSTS. FOR DETAILS OF THE REQUIRED STIRRUP SPACING, SEE NETC 2-RAIL STANDARD SHEET BRI-97. FOR LOCATIONS OF THE BRIDGE RAIL POSTS, SEE CURB AND RAIL LAYOUT PLANS, BRIDGE SHEET BR48-7.

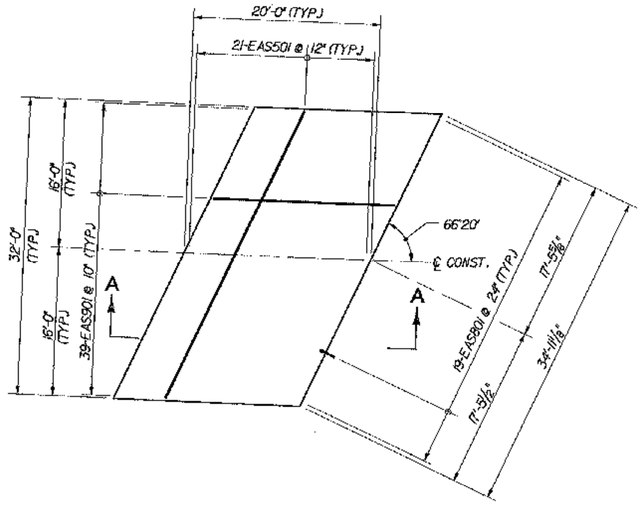
KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

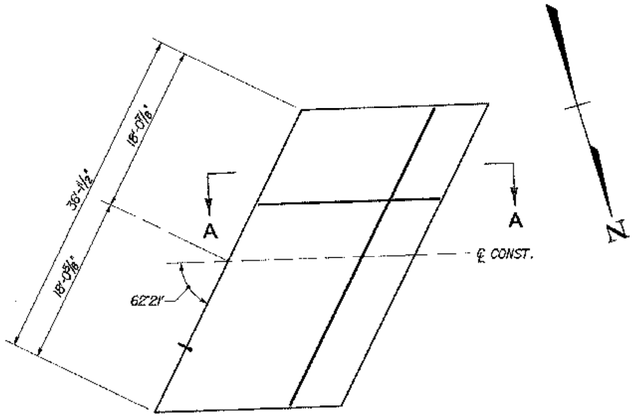
TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

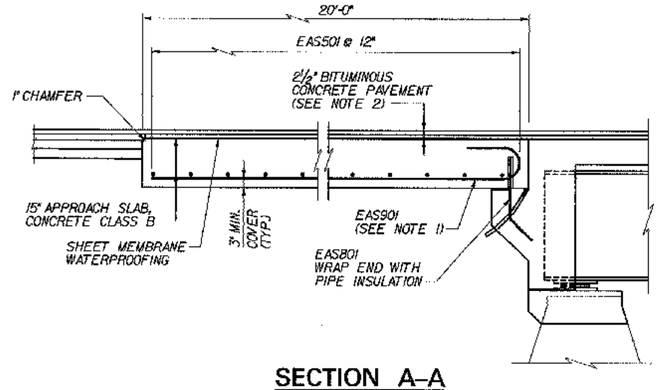
Town Of MIDDLESEX-BOLTON	Bridge No. **48N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER LITTLE RIVER	
DECK REINFORCEMENT PLANS (48N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48drp	Date 10/99
Bridge Sheet No. ***BR48-5***	Sheet 65 of 307



48S ABUTMENT 1

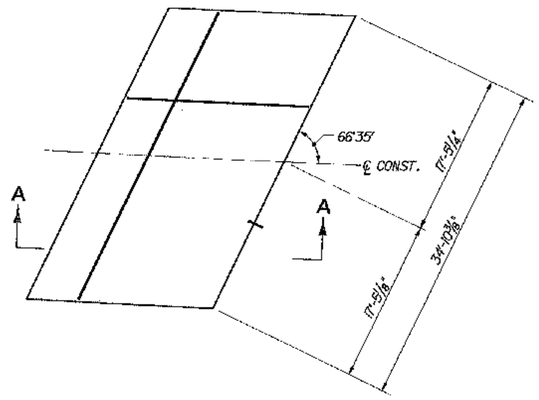


48S ABUTMENT 2

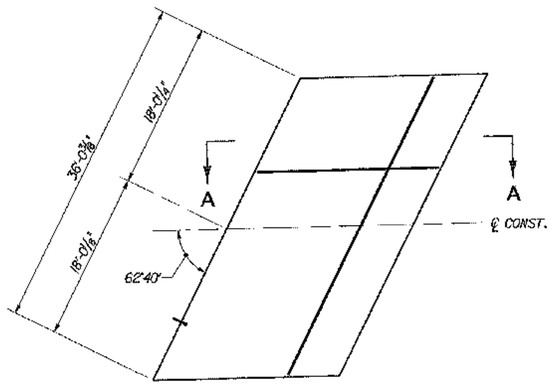


SECTION A–A

(APPROACH SLAB AT FIXED ABUT. SHOWN; SLAB AT EXPANSION ABUT. SIMILAR)
N.T.S.



48N ABUTMENT 1



48N ABUTMENT 2

RAISED FINISHED GRADE 5¼" RAISED FINISHED GRADE 3¼"

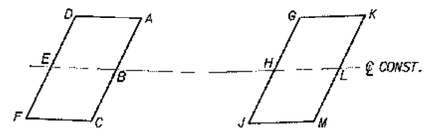
TOP OF APPROACH SLAB ELEVATIONS						
BR 48N			BR 48S			
LOCATION	STATION	ELEVATION	LOCATION	STATION	ELEVATION	
A	4+13.74	~~448.55~~ 449.01	A	4+38.89	~~448.74~~	449.01
B	4+06.79	~~449.18~~ 449.65	B	4+31.86	~~449.38~~	449.65
C	3+99.89	~~449.81~~ 450.28	C	4+24.89	~~450.01~~	450.28
D	3+93.66	~~448.44~~ 448.91	D	4+18.80	~~448.64~~	448.91
E	3+86.79	~~449.07~~ 449.54	E	4+11.86	~~449.27~~	449.54
F	3+79.98	~~449.71~~ 450.18	F	4+04.98	~~449.91~~	450.18
G	7+14.80	~~450.17~~ 450.59	G	7+40.99	~~450.32~~	450.59
H	7+08.49	~~450.80~~ 451.22	H	7+32.56	~~450.95~~	451.22
J	6+98.24	~~451.43~~ 451.85	J	7+24.21	~~451.58~~	451.85
K	7+34.89	~~450.28~~ 450.70	K	7+61.08	~~450.43~~	450.70
L	7+26.49	~~450.91~~ 451.32	L	7+52.56	~~451.05~~	451.32
M	7+18.14	~~451.54~~ 451.95	M	7+44.11	~~451.68~~	451.95

NOTES:

1. TIP HOOK END OF BAR AS REQUIRED TO ACHIEVE MINIMUM COVER.
2. FOR DETAILS OF APPROACH SLAB PAVEMENT AND TRANSITION TO EXISTING PAVEMENT, SEE DETAIL ON TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

APPROACH SLAB PLANS

SCALE: ⅛" = 1'-0"



ABUTMENT 1 ABUTMENT 2

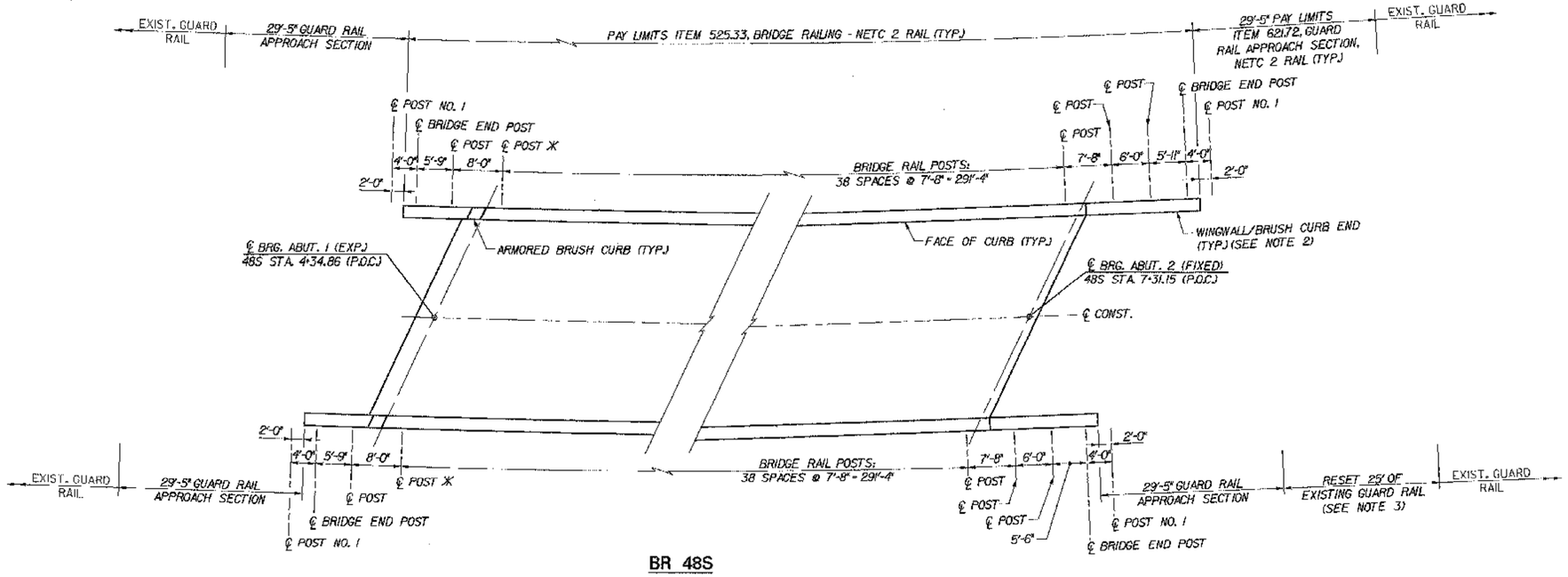
APPROACH SLAB ELEVATION KEY

N.T.S.

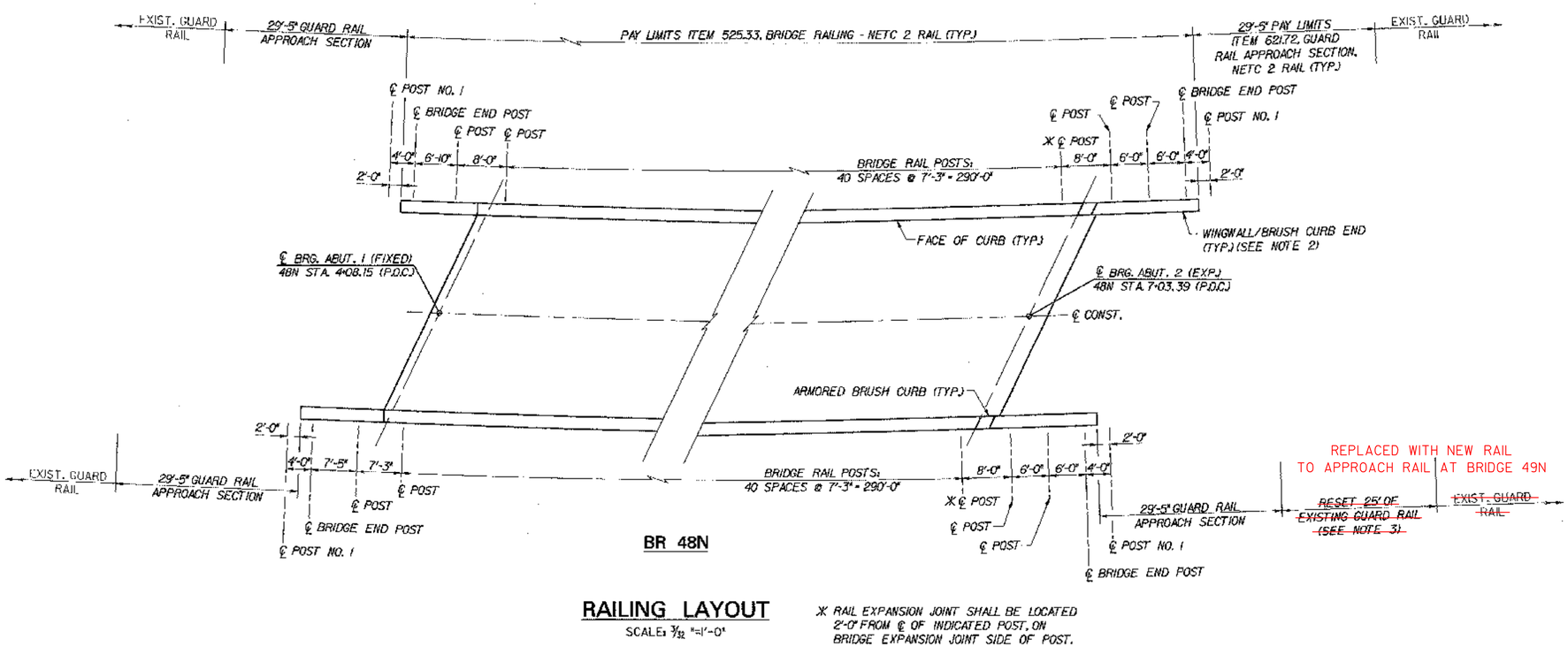
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER LITTLE RIVER	
APPROACH SLAB DETAILS (48N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48apslab	Date 10/99
Bridge Sheet No. **BR48-6**	Sheet 66 of 307

TVGA ENGINEERING, SURVEYING, P.C.



CONSTRUCTION NOTE:
END OF WINGWALLS HAVE BEEN LOCATED APPROXIMATELY BY VAOT SURVEY. CONTRACTOR SHALL VERIFY REQUIRED RAIL LENGTHS PRIOR TO SUBMITTING SHOP DRAWINGS FOR APPROVAL.



RAILING LAYOUT

SCALE: 3/32 "=1'-0"

* RAIL EXPANSION JOINT SHALL BE LOCATED 2'-0" FROM ℄ OF INDICATED POST, ON BRIDGE EXPANSION JOINT SIDE OF POST.

NOTES:

1. FOR NETC 2-RAIL BRIDGE RAILING DETAILS AND INFORMATION ABOUT THE NETC GUARD RAIL APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.
2. FOR BRUSH CURB END DETAIL, SEE TYPICAL WINGWALL DETAILS (1 OF 2), BRIDGE SHEET C-43.
3. ALL WORK REQUIRED TO RESET THE EXISTING GUARD RAIL SHALL BE PAID UNDER ITEM 621.75, "REMOVING AND RESET GUARD RAIL."
4. A QUANTITY OF 40'-0" OF ITEM 616.28 "CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B" SHALL BE PLACED AT THE END OF EACH WINGWALL. SEE GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B FOR DETAILS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

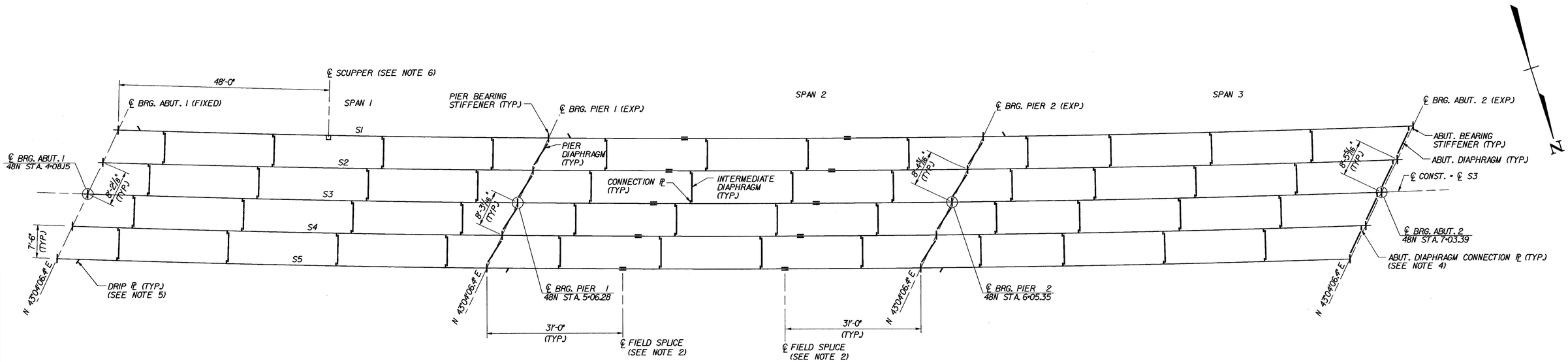
Town Of MIDDLESEX-BOLTON	Bridge No. **48N&S**
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 OVER LITTLE RIVER

CURB AND RAIL LAYOUT PLANS (48N&S)

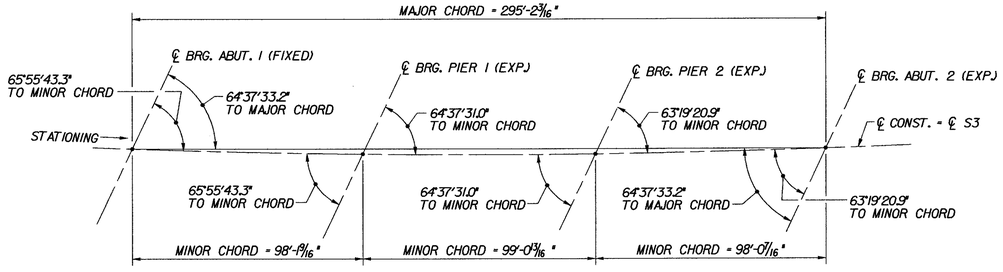
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48brrail	Date 10/99
Bridge Sheet No. **BR48-7**	Sheet 67 of 307

TVGA ENGINEERING, SURVEYING, P.C.



FRAMING PLAN – BR 48N

SCALE: 3/32" = 1'-0"



LAYOUT DIAGRAM

N.T.S.

NOTES:

1. FOR PLATE GIRDER AND DIAPHRAGM DETAILS, SEE TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL GIRDER SPLICE DETAILS, BRIDGE SHEET C-20.
3. THE CONTRACTOR SHALL HAVE THE OPTION TO PLACE ADDITIONAL FIELD SPLICES AT POINTS OF DL CONTRAFLEXURE IN SPANS 1 AND 3 (TO BE APPROVED BY THE STRUCTURES ENGINEER).
4. STRINGER LAYOUT DIMENSIONS BEGIN AND END AT ABUTMENT CENTERLINES OF BEARING. LOCATION OF ABUTMENT DIAPHRAGM CONNECTION PLATES NOT INCLUDED IN TABLE. THE CONTRACTOR SHALL PROVIDE THIS DIMENSION IN SHOP DRAWINGS IN ACCORDANCE WITH DETAILS SHOWN IN TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
5. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.
6. FOR SCUPPER DETAILS, SEE TYPICAL SCUPPER DETAILS, BRIDGE SHEET C-39.

STRINGER NUMBER	STRINGER RADIUS	SIDE	SPAN 1 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL	SPAN 2 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL	SPAN 3 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL
S1	4319.28'	LEFT						98' - 2 3/8"						99' - 1 13/16"						98' - 1 1/2"
		RIGHT	10' - 8 5/8"	25' - 0"	25' - 0"	25' - 0"	12' - 5 3/4"		13' - 3 1/8"	23' - 0"	23' - 0"	23' - 0"	16' - 10 11/16"		10' - 1 1/2"	19' - 0"	23' - 0"	23' - 0"	23' - 0"	
S2	4326.78'	LEFT	14' - 0"	25' - 0"	25' - 0"	25' - 0"	9' - 1 15/16"	98' - 1 15/16"	16' - 9"	23' - 0"	23' - 0"	23' - 0"	13' - 4 5/16"	99' - 1 5/16"	13' - 11 3/16"	19' - 0"	23' - 0"	23' - 0"	19' - 1 13/16"	98' - 1"
		RIGHT	10' - 8 11/16"	25' - 0"	25' - 0"	25' - 0"	12' - 5 1/4"		13' - 3 1/4"	23' - 0"	23' - 0"	23' - 0"	16' - 10 1/16"		10' - 1"	19' - 0"	23' - 0"	23' - 0"	23' - 0"	
S3	4334.28'	LEFT	14' - 0"	25' - 0"	25' - 0"	25' - 0"	9' - 1 9/16"	98' - 1 9/16"	16' - 9"	23' - 0"	23' - 0"	23' - 0"	13' - 3 13/16"	99' - 0 13/16"	13' - 10 5/8"	19' - 0"	23' - 0"	23' - 0"	19' - 1 7/8"	98' - 0 1/2"
		RIGHT	10' - 8 13/16"	25' - 0"	25' - 0"	25' - 0"	12' - 4 3/4"		13' - 3 5/16"	23' - 0"	23' - 0"	23' - 0"	16' - 9 1/2"		10' - 0 1/2"	19' - 0"	23' - 0"	23' - 0"	23' - 0"	
S4	4341.78'	LEFT	14' - 0"	25' - 0"	25' - 0"	25' - 0"	9' - 1 1/8"	98' - 1 1/8"	16' - 9"	23' - 0"	23' - 0"	23' - 0"	13' - 3 3/8"	99' - 0 3/8"	13' - 10"	19' - 0"	23' - 0"	23' - 0"	19' - 2"	98' - 0"
		RIGHT	10' - 8 7/8"	25' - 0"	25' - 0"	25' - 0"	12' - 4 1/4"		13' - 3 7/16"	23' - 0"	23' - 0"	23' - 0"	16' - 8 15/16"		10' - 0"	19' - 0"	23' - 0"	23' - 0"	23' - 0"	
S5	4349.28'	LEFT	14' - 0"	25' - 0"	25' - 0"	25' - 0"	9' - 0 3/4"	98' - 0 3/4"	16' - 9"	23' - 0"	23' - 0"	23' - 0"	13' - 2 15/16"	98' - 11 15/16"	13' - 9 3/8"	19' - 0"	23' - 0"	23' - 0"	19' - 2 1/16"	97' - 11 7/16"
		RIGHT																		

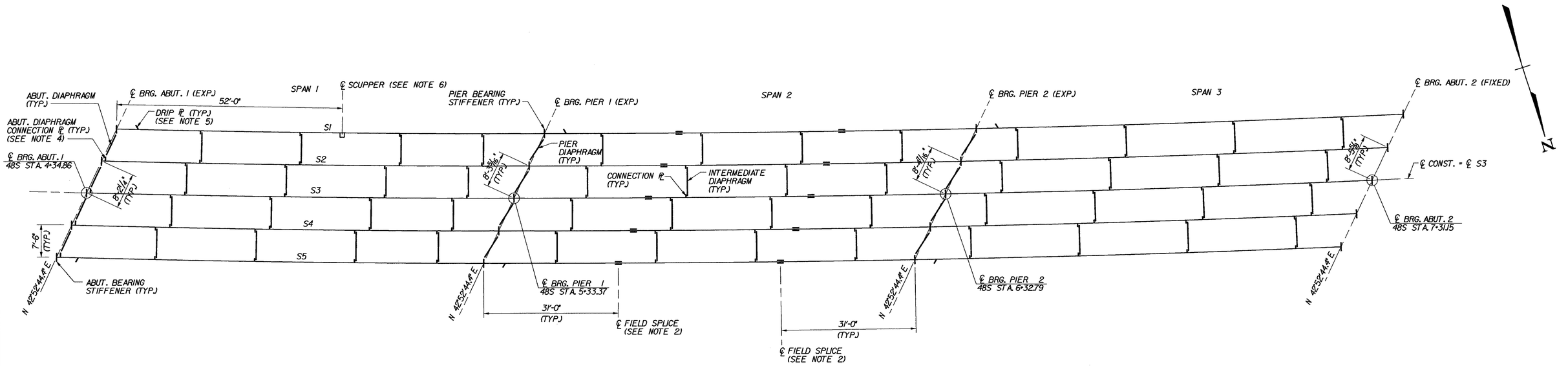
STRINGER LAYOUT TABLE

(SEE NOTE 4)

STATE OF VERMONT
AGENCY OF TRANSPORTATION

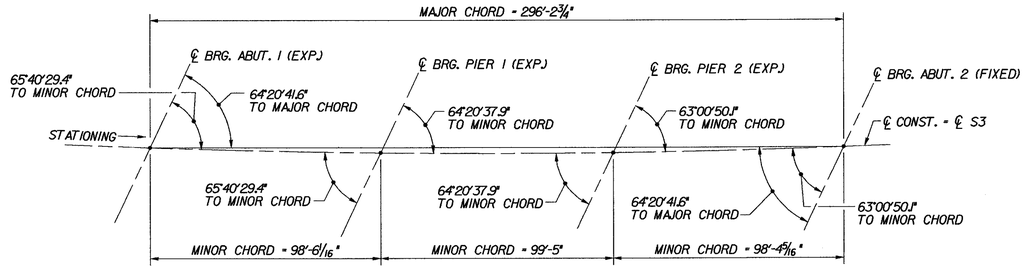
Town Of MIDDLESEX-BOLTON	Bridge No. 48N
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER LITTLE RIVER	
FRAMING PLAN (48N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48nfp	Date 10/99
Bridge Sheet No. BR48-8	Sheet 68 of 307

TVGA ENGINEERING, SURVEYING, P.C.



FRAMING PLAN – BR 48S

SCALE: 3/32" = 1'-0"



LAYOUT DIAGRAM

N.T.S.

STRINGER NUMBER	STRINGER RADIUS	SIDE	SPAN 1 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL	SPAN 2 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL	SPAN 3 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL
S1	4245.28'	LEFT						98' - 7"						99' - 6"						98' - 5 3/8"
		RIGHT	19' - 8"	23' - 0"	23' - 0"	19' - 0"	13' - 11"		13' - 5 1/2"	23' - 0"	23' - 0"	23' - 0"	17' - 0 1/2"		9' - 5 3/8"	25' - 0"	25' - 0"	25' - 0"	14' - 0"	
S2	4252.78'	LEFT	23' - 0"	23' - 0"	23' - 0"	19' - 0"	10' - 6 9/16"	98' - 6 9/16"	17' - 0"	23' - 0"	23' - 0"	23' - 0"	13' - 5 1/2"	99' - 5 1/2"	13' - 3 15/16"	25' - 0"	25' - 0"	25' - 0"	10' - 0 15/16"	98' - 4 7/8"
		RIGHT	19' - 8 1/16"	23' - 0"	23' - 0"	19' - 0"	13' - 10 1/2"		13' - 5 9/16"	23' - 0"	23' - 0"	23' - 0"	16' - 11 15/16"		9' - 4 7/8"	25' - 0"	25' - 0"	25' - 0"	14' - 0"	
S3	4260.28'	LEFT	23' - 0"	23' - 0"	23' - 0"	19' - 0"	10' - 6 1/8"	98' - 6 1/8"	17' - 0"	23' - 0"	23' - 0"	23' - 0"	13' - 5 1/16"	99' - 5 1/16"	13' - 3 1/4"	25' - 0"	25' - 0"	25' - 0"	10' - 1 1/16"	98' - 4 5/16"
		RIGHT	19' - 8 1/8"	23' - 0"	23' - 0"	19' - 0"	13' - 10"		13' - 5 11/16"	23' - 0"	23' - 0"	23' - 0"	16' - 11 3/8"		9' - 4 5/16"	25' - 0"	25' - 0"	25' - 0"	14' - 0"	
S4	4267.78'	LEFT	23' - 0"	23' - 0"	23' - 0"	19' - 0"	10' - 5 11/16"	98' - 5 11/16"	17' - 0"	23' - 0"	23' - 0"	23' - 0"	13' - 4 9/16"	99' - 4 9/16"	13' - 2 5/8"	25' - 0"	25' - 0"	25' - 0"	10' - 1 3/16"	98' - 3 13/16"
		RIGHT	19' - 8 1/4"	23' - 0"	23' - 0"	19' - 0"	13' - 9 7/16"		13' - 5 3/4"	23' - 0"	23' - 0"	23' - 0"	16' - 10 13/16"		9' - 3 13/16"	25' - 0"	25' - 0"	25' - 0"	14' - 0"	
S5	4275.28'	LEFT	23' - 0"	23' - 0"	23' - 0"	19' - 0"	10' - 5 5/16"	98' - 5 5/16"	17' - 0"	23' - 0"	23' - 0"	23' - 0"	13' - 4 1/16"	99' - 4 1/16"	13' - 2"	25' - 0"	25' - 0"	25' - 0"	10' - 1 1/4"	98' - 3 1/4"
		RIGHT																		

STRINGER LAYOUT TABLE

(SEE NOTE 4)

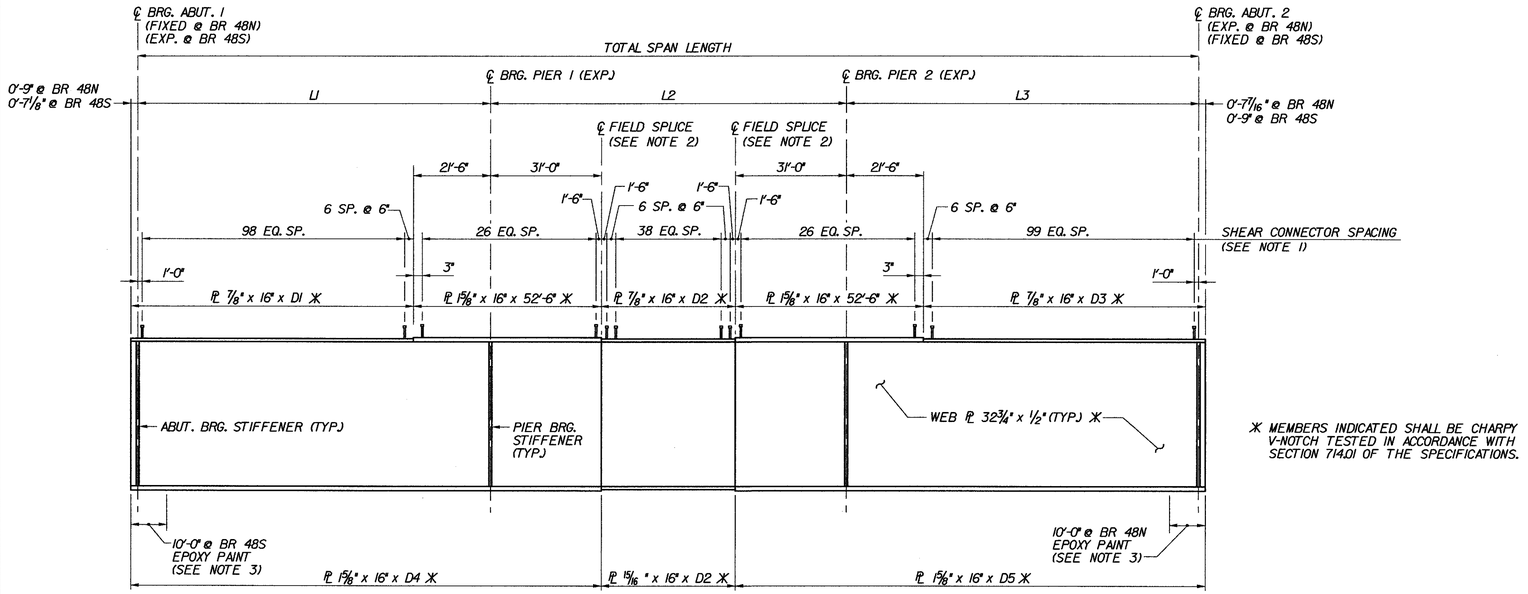
NOTES:

1. FOR PLATE GIRDER AND DIAPHRAGM DETAILS, SEE TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL GIRDER SPLICE DETAILS, BRIDGE SHEET C-20.
3. THE CONTRACTOR SHALL HAVE THE OPTION TO PLACE ADDITIONAL FIELD SPLICES AT POINTS OF DL CONTRAFLEXURE IN SPANS 1 AND 3 (TO BE APPROVED BY THE STRUCTURES ENGINEER).
4. STRINGER LAYOUT DIMENSIONS BEGIN AND END AT ABUTMENT CENTERLINES OF BEARING. LOCATION OF ABUTMENT DIAPHRAGM CONNECTION PLATES NOT INCLUDED IN TABLE. THE CONTRACTOR SHALL PROVIDE THIS DIMENSION IN SHOP DRAWINGS IN ACCORDANCE WITH DETAILS SHOWN IN TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
5. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.
6. FOR SCUPPER DETAILS, SEE TYPICAL SCUPPER DETAILS, BRIDGE SHEET C-39.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 48S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER LITTLE RIVER	
FRAMING PLAN (48S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48sfp	Date 10/99
Bridge Sheet No. **BR48-9**	Sheet 69 of 307

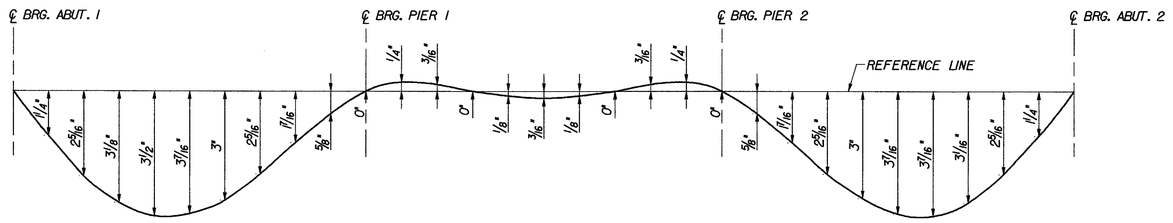
TVGA ENGINEERING, SURVEYING, P.C.



* MEMBERS INDICATED SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SECTION 714.01 OF THE SPECIFICATIONS.

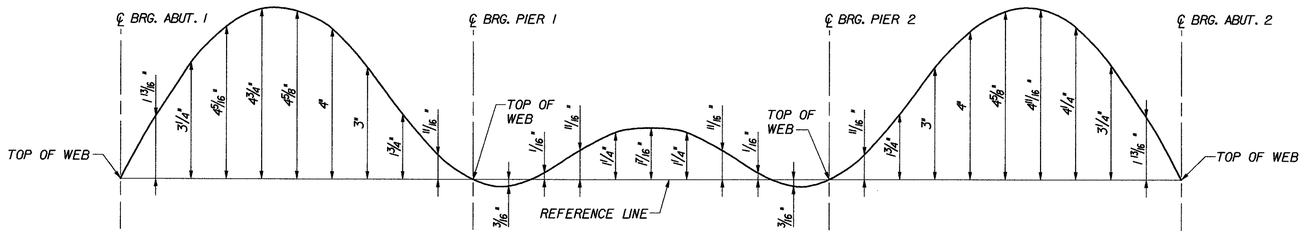
STRINGER ELEVATION (PLATE GIRDER)

N.T.S.



DEAD LOAD DEFLECTION DIAGRAM

N.T.S.



CAMBER DIAGRAM

N.T.S.

BR 48N					
		SPAN LENGTHS (ALONG ARC)			TOTAL
STRINGER	RADIUS	L1	L2	L3	SPAN LENGTH
S1	4319.28'	98' - 2 3/8"	99' - 1 13/16"	98' - 1 1/2"	295' - 5 11/16"
S2	4326.78'	98' - 1 15/16"	99' - 1 5/16"	98' - 1"	295' - 4 1/4"
S3	4334.28'	98' - 1 9/16"	99' - 0 13/16"	98' - 0 1/2"	295' - 2 7/8"
S4	4341.78'	98' - 1 1/8"	99' - 0 3/8"	98' - 0"	295' - 1 1/2"
S5	4349.28'	98' - 0 3/4"	98' - 11 15/16"	97' - 11 7/16"	295' - 0 1/8"
		SECTION LENGTHS (ALONG ARC)			
STRINGER	D1	D2	D3	D4	D5
S1	77' - 5 3/8"	37' - 1 13/16"	77' - 2 15/16"	129' - 11 3/8"	129' - 8 15/16"
S2	77' - 4 15/16"	37' - 1 5/16"	77' - 2 7/16"	129' - 10 15/16"	129' - 8 7/16"
S3	77' - 4 9/16"	37' - 0 13/16"	77' - 1 15/16"	129' - 10 9/16"	129' - 7 15/16"
S4	77' - 4 1/8"	37' - 0 3/8"	77' - 1 7/16"	129' - 10 1/8"	129' - 7 7/16"
S5	77' - 3 3/4"	36' - 11 15/16"	77' - 0 7/8"	129' - 9 3/4"	129' - 6 7/8"

BR 48S					
		SPAN LENGTHS (ALONG ARC)			TOTAL
STRINGER	RADIUS	L1	L2	L3	SPAN LENGTH
S1	4245.28'	98' - 7"	99' - 6"	98' - 5 3/8"	296' - 6 3/8"
S2	4252.78'	98' - 6 9/16"	99' - 5 1/2"	98' - 4 7/8"	296' - 4 15/16"
S3	4252.78'	98' - 6 1/8"	99' - 5 1/16"	98' - 4 5/16"	296' - 3 1/2"
S4	4252.78'	98' - 5 11/16"	99' - 4 9/16"	98' - 3 13/16"	296' - 2 1/16"
S5	4252.78'	98' - 5 5/16"	99' - 4 1/16"	98' - 3 1/4"	296' - 0 5/8"
		SECTION LENGTHS (ALONG ARC)			
STRINGER	D1	D2	D3	D4	D5
S1	77' - 8 1/8"	37' - 6"	77' - 8 3/8"	130' - 2 1/8"	130' - 2 3/8"
S2	77' - 7 11/16"	37' - 5 1/2"	77' - 7 7/8"	130' - 1 11/16"	130' - 1 7/8"
S3	77' - 7 1/4"	37' - 5 1/16"	77' - 7 5/16"	130' - 1 1/4"	130' - 1 5/16"
S4	77' - 6 13/16"	37' - 4 9/16"	77' - 6 13/16"	130' - 0 13/16"	130' - 0 13/16"
S5	77' - 6 7/16"	37' - 4 1/16"	77' - 6 1/4"	130' - 0 7/16"	130' - 0 1/4"

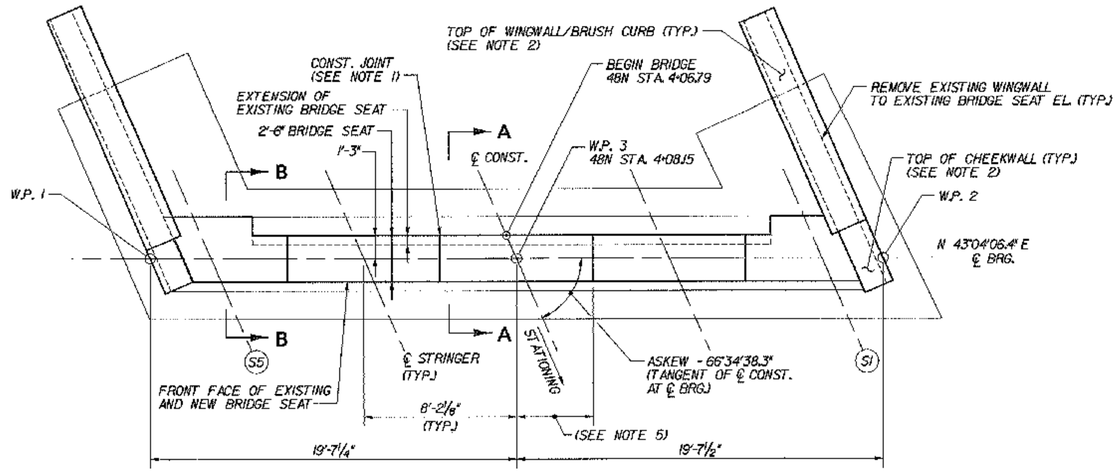
NOTES:

1. EACH ROW OF SHEAR CONNECTORS SHALL CONSIST OF 2 STUDS. FOR LATERAL SPACING, SEE TRANSVERSE SECTION (48N&S), BRIDGE SHEET BR48-4.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL GIRDER SPLICE DETAILS, BRIDGE SHEET C-20.
3. ALL STRUCTURAL STEEL WITHIN 10 FEET OF END OF STRINGER AT EXPANSION ENDS SHALL BE COATED WITH A PROTECTIVE PAINT SYSTEM, WITH THE FINAL COAT TO BE DARK BROWN (COLOR CHIP #20059) TO BLEND WITH THE WEATHERING STEEL. THE COST OF PAINTING SHALL BE PAID FOR UNDER ITEM 513.25, "STRUCTURAL PAINTING, SHOP APPLIED".

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER LITTLE RIVER	
STRINGER ELEVATION (48N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. 48str_el Date 10/99
	Bridge Sheet No. **BR48-10** Sheet 70 of 307

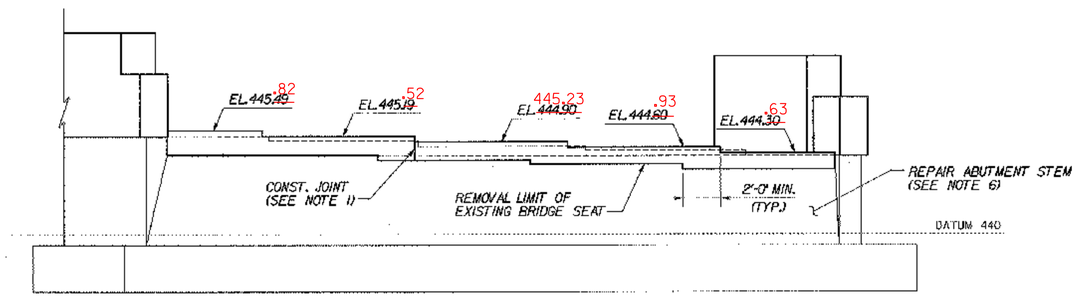
NOTE: RAISED 48N FINISH GR. 5¼"



ABUTMENT 1 PLAN (FIXED)

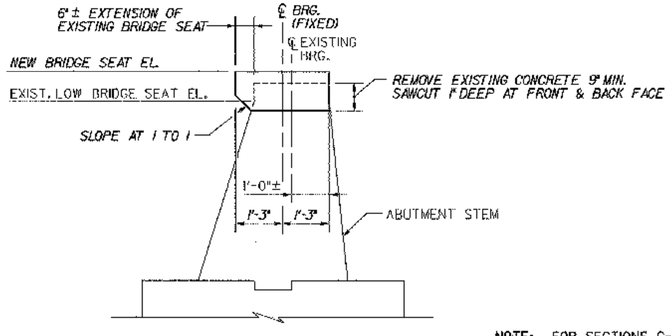
SCALE: ¼"=1'-0"

NOTE: RAISED PIER AND ABUT. SEATS 4"



ABUTMENT 1 ELEVATION

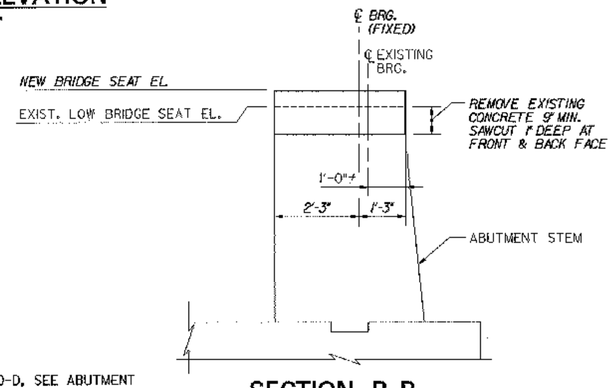
SCALE: ¼"=1'-0"



SECTION A-A

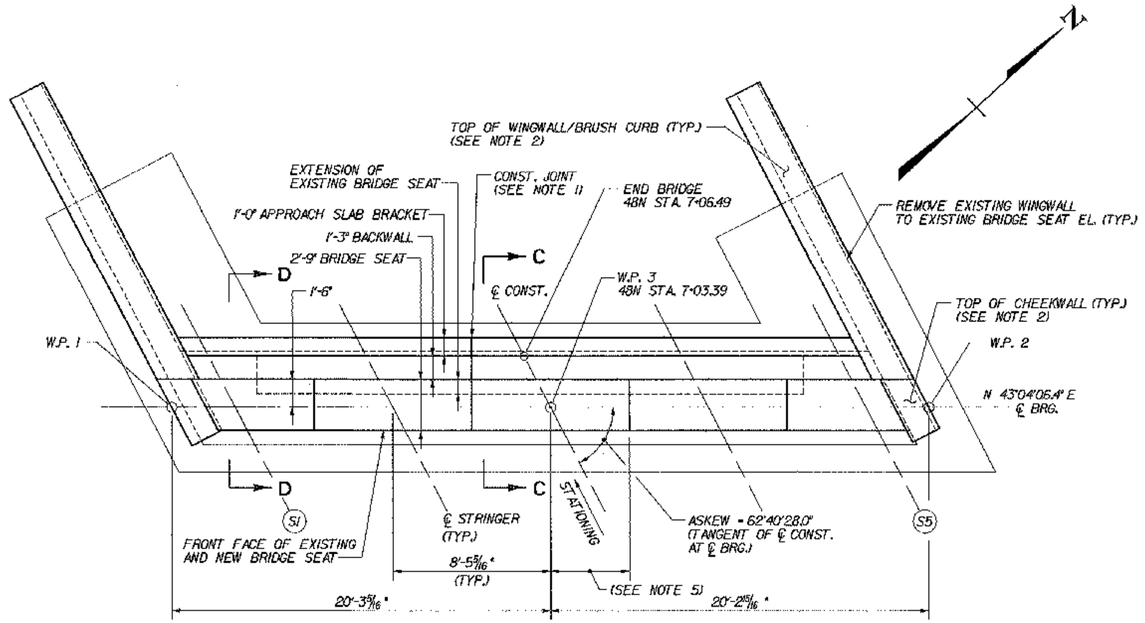
SCALE: ½"=1'-0"

NOTE: FOR SECTIONS C-C AND D-D, SEE ABUTMENT MASONRY (48S), BRIDGE SHEET BR48-12.



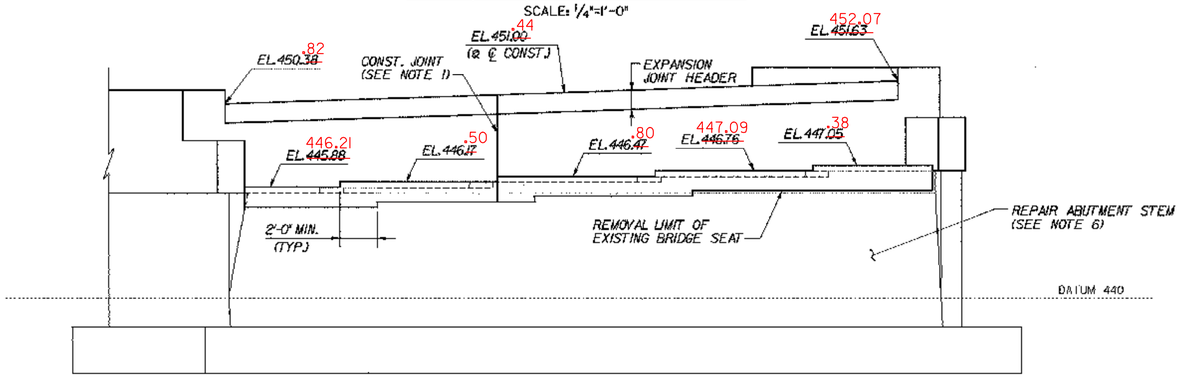
SECTION B-B

SCALE: ½"=1'-0"



ABUTMENT 2 PLAN (EXP.)

SCALE: ¼"=1'-0"



ABUTMENT 2 ELEVATION

SCALE: ¼"=1'-0"

NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40, AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-5 THROUGH SC-10 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

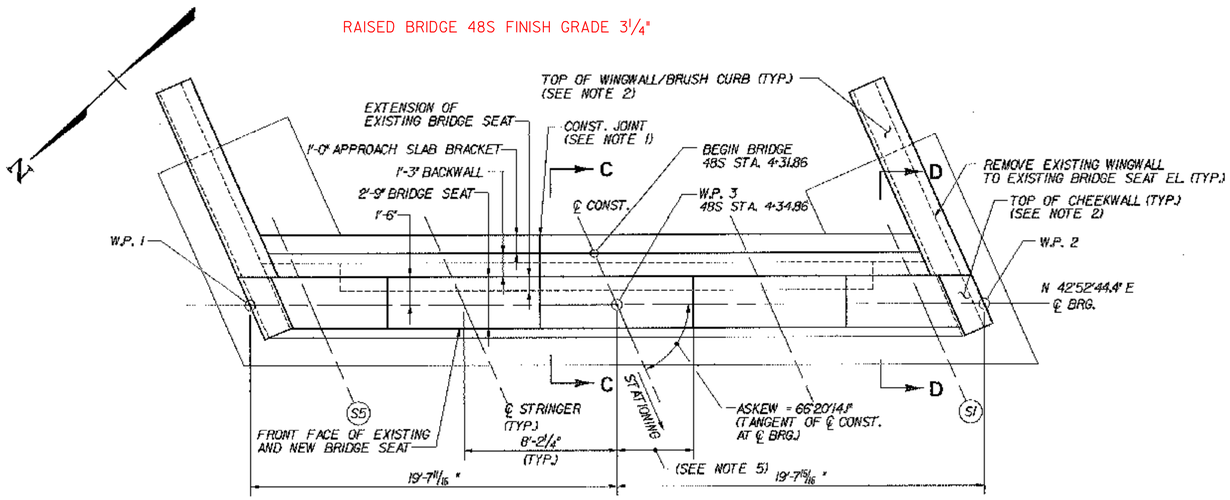
Town Of MIDDLESEX-BOLTON	Bridge No. 48N
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 NB OVER LITTLE RIVER

ABUTMENT MASONRY (48N)

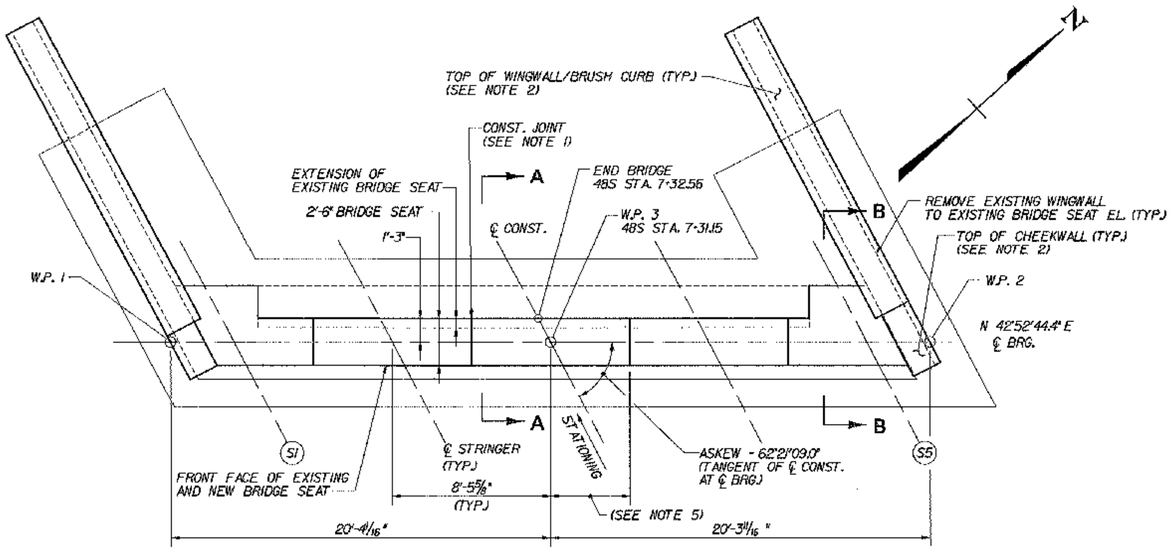
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. 48abmas Date 10/99
	Bridge Sheet No. BR48-11 Sheet 71 of 307

RAISED BRIDGE 48S FINISH GRADE 3¼"



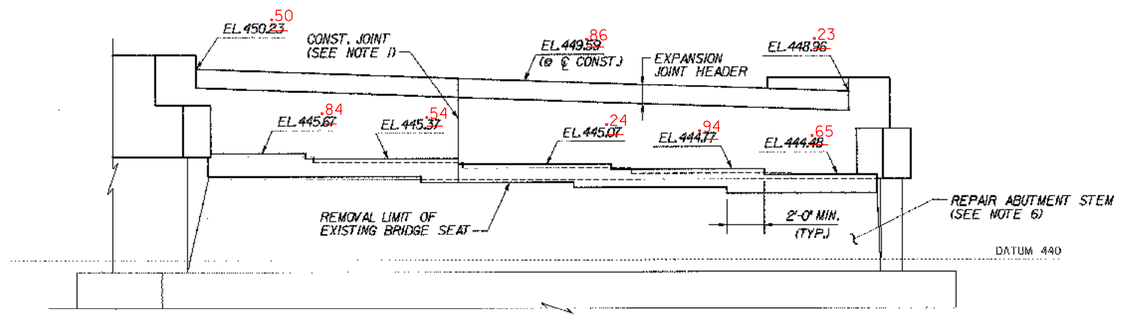
ABUTMENT 1 PLAN (EXP.)

SCALE: ¼"=1'-0"



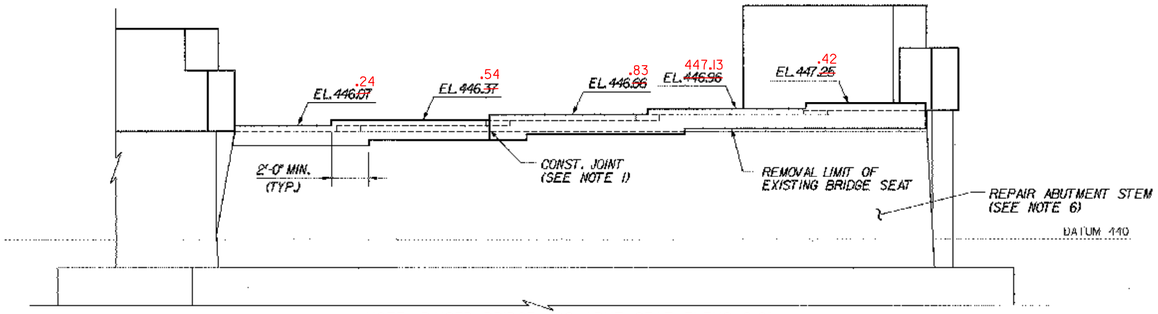
ABUTMENT 2 PLAN (FIXED)

SCALE: ¼"=1'-0"



ABUTMENT 1 ELEVATION

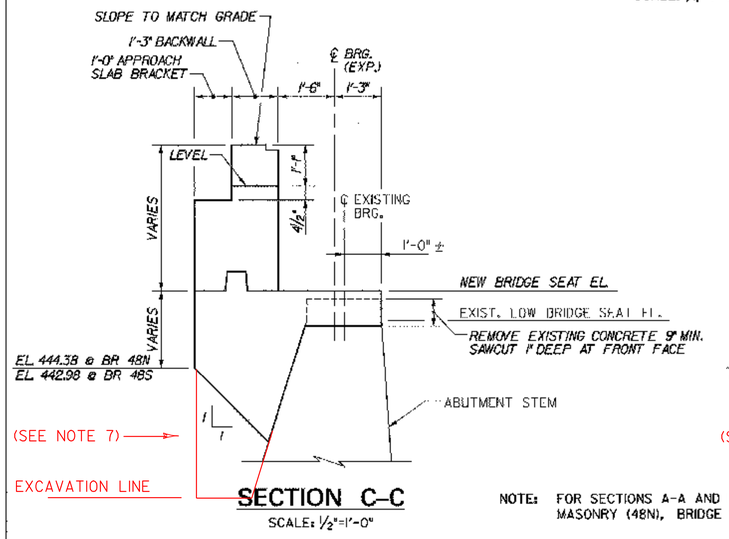
SCALE: ¼"=1'-0"



NOTE: RAISED BRIDGE 48S ABUT. SEAT ELEVS. 2.0'

ABUTMENT 2 ELEVATION

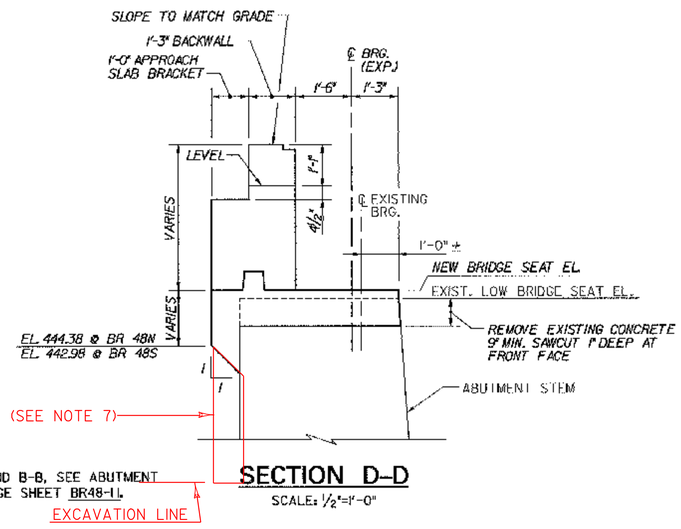
SCALE: ¼"=1'-0"



SECTION C–C

SCALE: ½"=1'-0"

NOTE: FOR SECTIONS A-A AND B-B, SEE ABUTMENT MASONRY (48N), BRIDGE SHEET BR48-11.



SECTION D–D

SCALE: ½"=1'-0"

7. APPLIES TO BRIDGES 48N AND S. THE CONTRACTOR FOR EASE OF FORMING FORMEDTHE BACK OF THE EXPANSION ABUTMENT STRAIGHT DOWN TO THE BOTTOM OF THE EXCAVATION. THEY INSTALLED EXTRA REBAR IN THE AREA. ALL MATERIAL AND LABOR WAS AT THE EXPENSE OF THE CONTRACTOR

NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40, AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-5 THROUGH SC-10 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

TVGA ENGINEERING, SURVEYING, P.C.

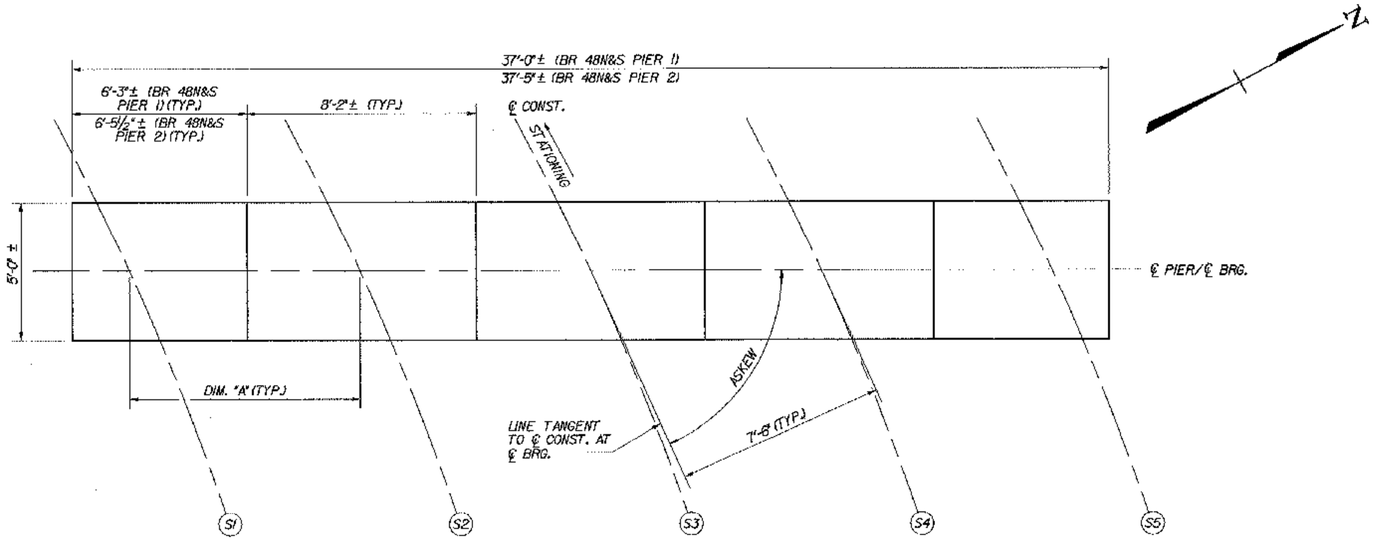
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 48S
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 SB OVER LITTLE RIVER

ABUTMENT MASONRY (48S)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48abmas	Date 10/99
Bridge Sheet No. BR48-12	Sheet 72 of 307



TYPICAL PIER CAP PLAN

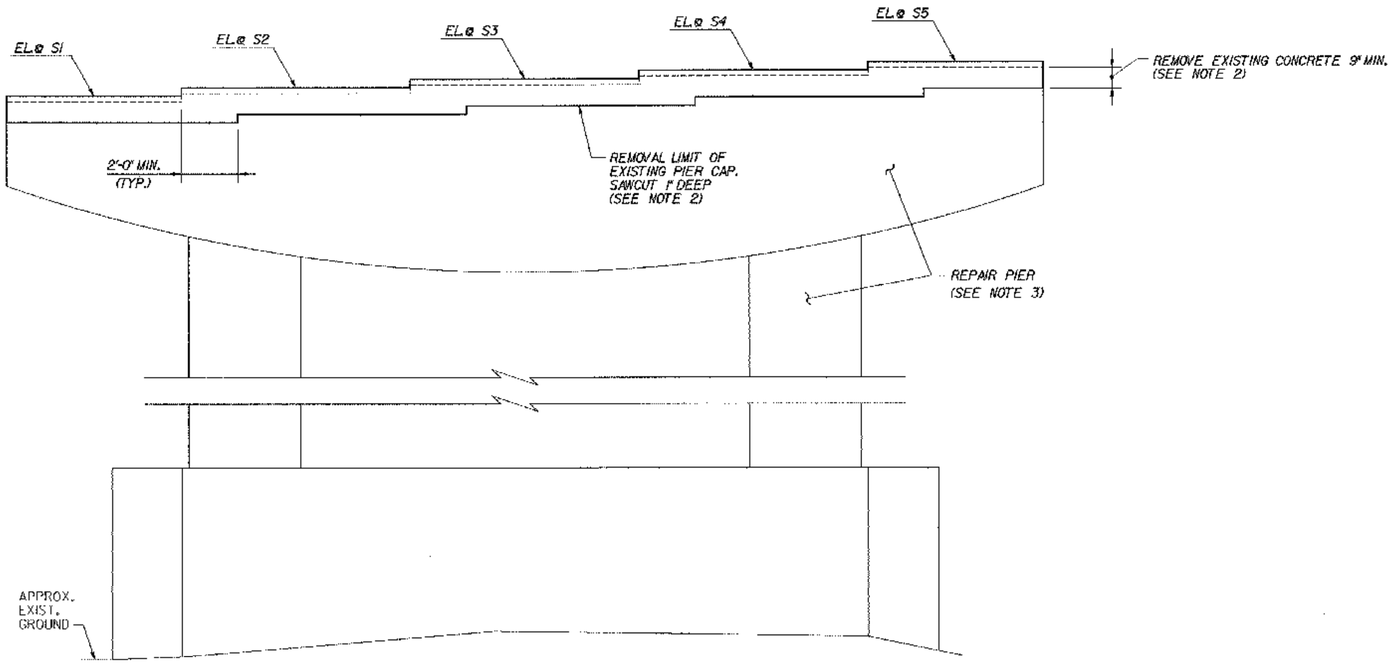
SCALE: 3/8"=1'-0"

RAISED BM SEAT ELEVATIONS 4" SO AS TO GET PROPER CLR. FOR REINFORCING STEEL

BRIDGE	PIER	STA.	ASKEW ANGLE	DIM. "A"	CL BEARING DIRECTION	BEARING SEAT ELEVATIONS AT CL BRG. (SEE NOTE 1)				
						S1	S2	S3	S4	S5
48N	1	5+08.26	65°16'48.3"	8'-3 1/16"	N 43°04'06.4" E	444.83	445.12	445.42	445.72	446.01
	2	6+05.35	63°56'13.7"	8'-4 3/16"	N 43°04'06.4" E	445.36	445.66	445.96	446.25	446.55
48S	1	5+33.37	65°00'44.7"	8'-3 5/16"	N 42°52'44.4" E	445.01	445.31	445.61	445.90	446.20
	2	6+32.79	63°40'31.2"	8'-4 7/16"	N 42°52'44.4" E	445.54	445.85	446.13	446.42	446.72

RAISED PIER CAP GRADES 0.17 FT.

48S RAISED BM SEAT ELEVATIONS 2" SO AS TO GET PROPER CLEARANCE FOR REINFORCING STEEL.



TYPICAL PIER ELEVATION

SCALE: 3/8"=1'-0"

NOTES:

1. AS REQUIRED BY THE BEARING DESIGN, THE NEW BEARING SEATS SHALL BE SLOPED TO MATCH THE ℄ CONST. GRADE.
2. ALL EXISTING REINFORCEMENT IN THE PIER CAP TO REMAIN. REMOVAL LIMITS SHALL EXTEND 3" MINIMUM BELOW EXISTING LONGITUDINAL REINFORCEMENT.
3. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON PIER. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-5 THROUGH SC-10 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER LITTLE RIVER	
PIER CAP MASONRY (48N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. 48piermas Date 10/99
	Bridge Sheet No. **BR48-13** Sheet 73 of 307

BRIDGE 48 NORTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (48N)																
△	2	23	5	34' - 4"	E1AS501	STR.												
	3	19	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	4	41	9	20' - 9"	E1AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	5	APPROACH SLAB 2 (48N)																
△	6	23	5	35' - 6"	E2AS501	STR.												
	7	19	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	8	41	9	20' - 9"	E2AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	9	SUPERSTRUCTURE (48N)																
	10	848	5	39' - 4"	ES501	STR.												
✱▲	11	1203	5	35' - 6"	ES502	STR.												
	12	841	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
	13	2	5	40' - 0"	ES511	STR.												
	14	34	5	5' - 1"	ES513	16	0' - 8"	1' - 6"	0' - 10"	2' - 2"				0' - 0"		2' - 2"		
✱	15	13	5	7' - 11"	ES514	STR.												
	16	6	5	2' - 10"	ES515	STR.												
	17	150	6	35' - 0"	ES601	STR.												
	18	CURTAINWALL (48N)																
✱▲	19	21	5	7' - 8"	ECW504	STR.												
	20	24	5	12' - 9"	ECW505	S5	2' - 2"	3' - 11"	0' - 11"	3' - 7"			2' - 2"					
	21	36	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
▲	22	19	5	3' - 11"	ECW507	19		2' - 2"	1' - 9"	0' - 0"				1' - 0"		1' - 11"		3' - 8"
✱	23	17	5	18' - 3"	ECW508	STR.												
	24	2	5	4' - 7"	ECW509	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	25	2	5	10' - 7"	ECW510	S5	2' - 2"	2' - 10"	0' - 11"	2' - 6"			2' - 2"					
	26	2	5	4' - 10"	ECW511	S5	1' - 3"	0' - 10"	1' - 0"	0' - 6"			1' - 3"					
	27	ABUTMENT 1 (48N)																
	28	35	5	4' - 7"	E1A501	21	0' - 7"	2' - 0"	2' - 0"									
	29	35	5	3' - 6"	E1A502	17		1' - 6"	2' - 0"	0' - 0"								
▲	30	25	5	10' - 7"	E1A503	STR.												
✱	31	12	5	12' - 0"	E1A512	STR.												
	32	12	5	13' - 0"	E1A513	STR.												
	33	10	5	6' - 0"	E1A514	STR.												
	34	9	5	5' - 1"	E1A515	17		2' - 0"	1' - 1"	2' - 0"								
✱	35	28	5	8' - 6"	E1A517	17		3' - 6"	1' - 6"	3' - 6"								
	36	27	5	4' - 6"	E1A518	17		1' - 6"	3' - 0"	0' - 0"								
	37	78	5	5' - 6"	E1A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	38	10	5	13' - 0"	E1A520	STR.												
	39	ABUTMENT 2 (48N)																
	40	19	5	17' - 9"	E2A501	STR.												
	41	19	5	14' - 9"	E2A502	STR.												
	42	36	5	6' - 4"	E2A503	21	0' - 7"	4' - 7"	1' - 3"						0' - 5"			
▲	43	30	5	9' - 3"	E2A504	19		4' - 3"	5' - 0"	0' - 0"								8' - 0"
	44	36	5	4' - 0"	E2A505	STR.												
	45	36	5	8' - 9"	E2A506	S10		3' - 6"	1' - 10"	3' - 6"								
	46	36	5	5' - 10"	E2A507	17		2' - 6"	0' - 10"	2' - 6"								
▲	47	72	5	3' - 7"	E2A508	17		1' - 6"	2' - 1"	0' - 0"								
	48	3	5	7' - 1"	E2A509	19		2' - 1"	5' - 0"	0' - 0"								6' - 6"
	49	3	5	6' - 1"	E2A510	19		2' - 1"	4' - 0"	0' - 0"								5' - 6"
	50	17	5	8' - 9"	E2A511	STR.												
▲	51	22	5	17' - 6"	E2A512	STR.												
	52	6	5	5' - 6"	E2A513	STR.												
	53	7	5	6' - 6"	E2A514	STR.												
	54	8	5	5' - 1"	E2A515	17		2' - 0"	1' - 1"	2' - 0"								
	55	6	5	4' - 6"	E2A516	19		2' - 3"	2' - 3"	0' - 0"				1' - 2"		2' - 0"		4' - 3"
	56	36	5	8' - 6"	E2A517	17		3' - 6"	1' - 6"	3' - 6"								
	57	36	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	58	108	5	6' - 0"	E2A519	17		2' - 0"	4' - 0"	0' - 0"								
✱▲	59	11	5	17' - 3"	E2A520	STR.												
	60	6	5	4' - 6"	E2A521	27		2' - 3"	2' - 3"	0' - 0"				1' - 2"		2' - 0"		
	61	17	5	8' - 9"	E2A522	STR.												
	62	15	5	10' - 9"	E2A524	STR.												
✱▲	63	11	5	9' - 0"	E2A525	STR.												
	64																	
	65																	
	66																	
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	80																	

BRIDGE 48 SOUTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (48S)																
△	2	23	5	34' - 4"	E1AS501	STR.												
	3	19	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	4	41	9	20' - 9"	E1AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	5	APPROACH SLAB 2 (48S)																
△	6	23	5	35' - 7"	E2AS501	STR.												
	7	19	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	8	41	9	20' - 9"	E2AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	9	SUPERSTRUCTURE (48S)																
✱	10	849	5	39' - 4"	ES501	STR.												
▲	11	1202	5	35' - 6"	ES502	STR.												
	12	832	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
	13	2	5	38' - 9"	ES511	STR.												
	14	34	5	5' - 1"	ES513	16	0' - 8"	1' - 6"	0' - 10"	2' - 2"				0' - 0"		2' - 2"		
✱	15	13	5	7' - 8"	ES514	STR.												
	16	6	5	2' - 9"	ES515	STR.												
	17	150	6	35' - 0"	ES601	STR.												
	18	CURTAINWALL (48S)																
✱▲	19	21	5	7' - 10"	ECW504	STR.												
	20	24	5	12' - 11"	ECW505	S5	2' - 2"	4' - 0"	0' - 11"	3' - 8"			2' - 2"					
	21	37	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
▲	22	12	5	3' - 11"	ECW507	19		2' - 2"	1' - 9"	0' - 0"				1' - 0"		1' - 11"		3' - 8"
✱	23	17	5	18' - 9"	ECW508	STR.												
	24	2	5	4' - 7"	ECW509	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	25	2	5	10' - 9"	ECW510	S5	2' - 2"	2' - 11"	0' - 11"	2' - 7"			2' - 2"					
	26	2	5	5' - 1"	ECW511	S5	1' - 3"	0' - 10"	1' - 3"	0' - 6"			1' - 3"					
	27	ABUTMENT 1 (48S)																
	28	19	5	17' - 9"	E1A501	STR.												
✱	29	20	5	14' - 0"	E1A502	STR.												
	30	35	5	6' - 4"	E1A503	21	0' - 7"	4' - 7"	1' - 3"						0' - 5"			
	31	29	5	8' - 3"	E1A504	19		4' - 3"	4' - 0"	0' - 0"								7' - 0"
	32	35	5	4' - 0"	E1A505	STR.												
	33	35	5	8' - 9"	E1A506	S10		3' - 6"	1' - 10"	3' - 6"								
	34	35	5	5' - 10"	E1A507	17		2' - 6"	0' - 10"	2' - 6"								
▲	35	70	5	3' - 7"	E1A508	17		1' - 6"	2' - 1"	0' - 0"								
	36	2	5	6' - 1"	E1A509	19		2' - 1"	4' - 0"	0' - 0"								5' - 6"
	37	4	5	6' - 1"	E1A510	19		2' - 1"	4' - 0"	0' - 0"								5' - 6"
	38	17	5	8' - 9"	E1A511	STR.												
▲	39	22	5	11' - 0"	E1A512	STR.												
	40	6	5	5' - 9"	E1A513	STR.												
	41	6	5	5' - 3"	E1A514	STR.												
	42	6	5	5' - 1"	E1A515	17		2' - 0"	1' - 1"	2' - 0"								
	43	6	5	4' - 6"	E1A516	19		2' - 3"	2' - 3"	0' - 0"					1' - 2"		2' - 0"	4' - 3"
	44	25	5	8' - 6"	E1A517	17		3' - 6"	1' - 6"	3' - 6"								
	45	25	5	4' - 6"	E1A518	17		1' - 6"	3' - 0"	0' - 0"								
✱	46	75	5	6' - 0"	E1A519	17		2' - 0"	4' - 0"	0' - 0"								
▲	47	10	5	11' - 3"	E1A520	STR.												
	48	6	5	4' - 6"	E1A521	27		2' - 3"	2' - 3"	0' - 0"					1' - 2"		2' - 0"	
	49	17	5	8' - 9"	E1A522	STR.												
	50	15	5	10' - 3"	E1A524	STR.												
▲	51	10	5	8' - 6"	E1A525	STR.												
	52	ABUTMENT 2 (48S)																
	53	36	5	4' - 7"	E2A501	21	0' - 7"	2' - 0"	2' - 0"									
	54	36	5	3' - 6"	E2A502	17		1' - 6"	2' - 0"	0' - 0"								
✱▲	55	26	5	10' - 7"	E2A503	STR.												
	56	11	5	18' - 0"	E2A512	STR.												
✱	57	12	5	17' - 0"	E2A513	STR.												
	58	10	5	6' - 6"	E2A514	STR.												
	59	9	5	6' - 1"	E2A515	17		2' - 6"	1' - 1"	2' - 6"								
	60	37	5	8' - 6"	E2A517	17		3' - 6"	1' - 6"	3' - 6"								
	61	37	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	62	110	5	6' - 0"	E2A519	17		2' - 0"	4' - 0"	0' - 0"								
▲	63	10	5	18' - 0"	E2A520	STR.												
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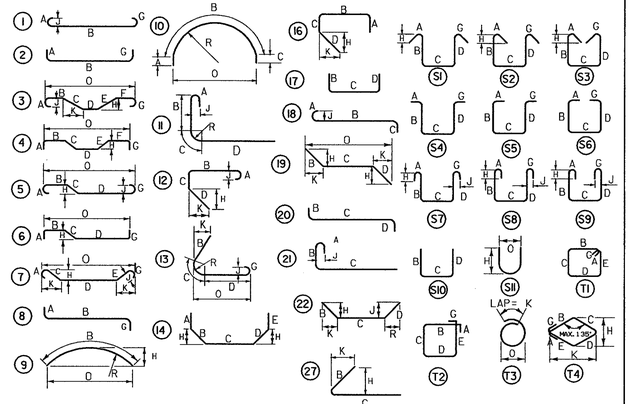


NOTES:

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 615-91). 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 WHEN NECESSARY TO MAINTAIN CLEARANCES.
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.

LEGEND

▲ DENOTES BARS TO BE CUT IN THE FIELD.

✱ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.

△ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.

"E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

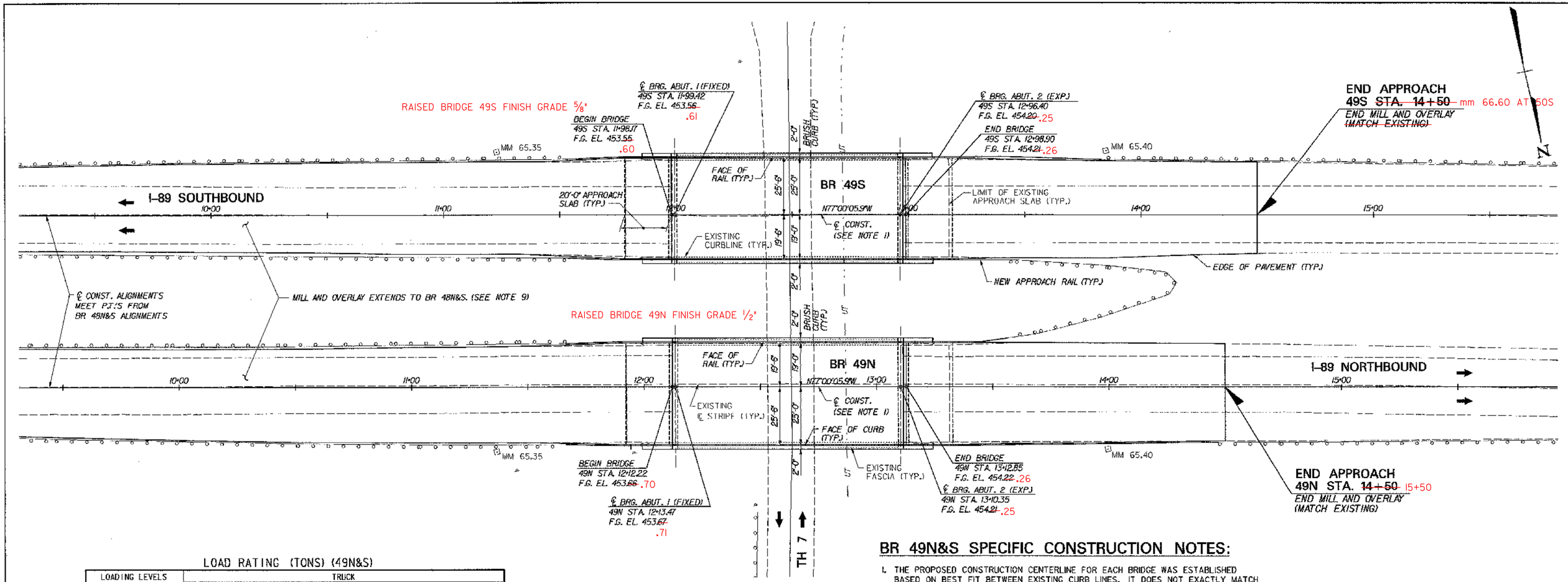
ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT (POUNDS PER FOOT)	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER (INCHES)	CROSS SECTIONAL AREA (SQ. INCHES)	PERIMETER (INCHES)
#3	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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER LITTLE RIVER	
REINFORCING STEEL SCHEDULE (48N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. reinf48	Date 10/99
Bridge Sheet No. ***BR48-14***	Sheet 74 of 307

TVGA ENGINEERING, SURVEYING, P.C.



PLAN
SCALE: 1"=20'

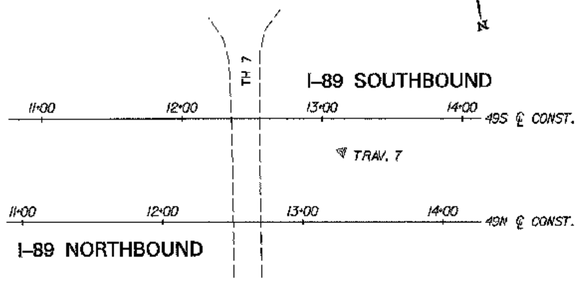
LOAD RATING (TONS) (49N&S)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A= 2.17; B= 1.00	52	76					
POSTED A= 1.55; B= 1.40	73	107	124		100	102	115
OPERATING A= 1.30; B= 1.67		127	147	171	118	121	

$$\text{STRENGTH RF} = \frac{\phi M_N - 1.3\,M_{DL}}{A \times M_{LL+I}} \qquad \text{*SERVICEABILITY RF} = B\left[\frac{0.95F_y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67M_{LL+I}}\right]$$

TABLE OF BRIDGE COORDINATES

BRIDGE	CL CONST. @	STATION	NORTHING	EASTING
49N	BEGIN BRIDGE	12+12.22	75550.9332	67081.1808
	CL BRG. ABUT. 1	12+13.47	75551.2144	67079.9628
	CL BRG. ABUT. 2	13+10.35	75573.0049	66985.5653
	END BRIDGE	13+12.85	75573.5672	66983.1293
49S	BEGIN BRIDGE	11+98.17	75478.7754	67054.7699
	CL BRG. ABUT. 1	11+99.42	75479.0568	67053.5519
	CL BRG. ABUT. 2	12+96.40	75500.8696	66969.0569
	END BRIDGE	12+98.90	75501.4320	66966.8209



CONTROL POINT LAYOUT MAP
N.T.S.
(SEE NOTE 2)

BR 49N&S SPECIFIC CONSTRUCTION NOTES:

1. THE PROPOSED CONSTRUCTION CENTERLINE FOR EACH BRIDGE WAS ESTABLISHED BASED ON BEST FIT BETWEEN EXISTING CURB LINES. IT DOES NOT EXACTLY MATCH THE ORIGINAL CONSTRUCTION CENTERLINE.
2. ADDITIONAL CONTROL POINTS ARE LOCATED ADJACENT TO BR 48N&S, AS SHOWN ON GENERAL PLAN (48N&S), BRIDGE SHEET BR48-1. FOR CONTROL POINT TIE SKETCHES, SEE CONTROL POINT TIES (48N&S AND 49N&S), BRIDGE SHEET C-11.
3. REMOVE SCUPPERS. REPLACE DECK SLABS, SHEAR CONNECTORS, APPROACH SLABS, BRIDGE RAIL AND APPROACH RAIL. RESET GUARD RAIL.
4. NEW SCUPPERS ARE NOT REQUIRED ON THESE BRIDGES.
5. AT EXPANSION ABUTMENTS, CONSTRUCT NEW BACKWALLS, REBUILD BRIDGE SEATS AND MODIFY WINGWALLS AS SHOWN IN THE PLANS. INSTALL NEW ELASTOMERIC BEARINGS. INSTALL NEW BEARING STIFFENERS AND DIAPHRAGMS.
6. AT FIXED ABUTMENTS, CONSTRUCT NEW CURTAINWALLS AND MODIFY WINGWALLS AS SHOWN IN THE PLANS. AT FASCIA STRINGERS, REPLACE BEARINGS IN KIND. AT INTERIOR STRINGERS, JACK, CLEAN, PAINT AND GREASE EXISTING BEARINGS.
7. REPAIR ABUTMENT DELAMINATED AND SPALLED AREAS.
8. REMOVE 100% OF EXISTING PAINT COATING FROM EXISTING STRUCTURAL STEEL. PAINT EXISTING AND NEW STRUCTURAL STEEL.
9. MILL AND OVERLAY EXTENDS TO BR 48N&S. FOR BEGIN LIMITS OF MILL AND OVERLAY, SEE GENERAL PLAN (48N&S), BRIDGE SHEET BR48-1.
10. RE-STRIPE BRIDGE AND APPROACH ROADWAY.
11. THE CONTRACTOR SHALL MAINTAIN A MINIMUM 12' WIDE TRAFFIC LANE AT ALL TIMES ON TH 7. FOR ADDITIONAL TRAFFIC CONTROL REQUIREMENTS, SEE TRAFFIC CONTROL NOTES, BRIDGE SHEETS TC-1A AND TC-1B.

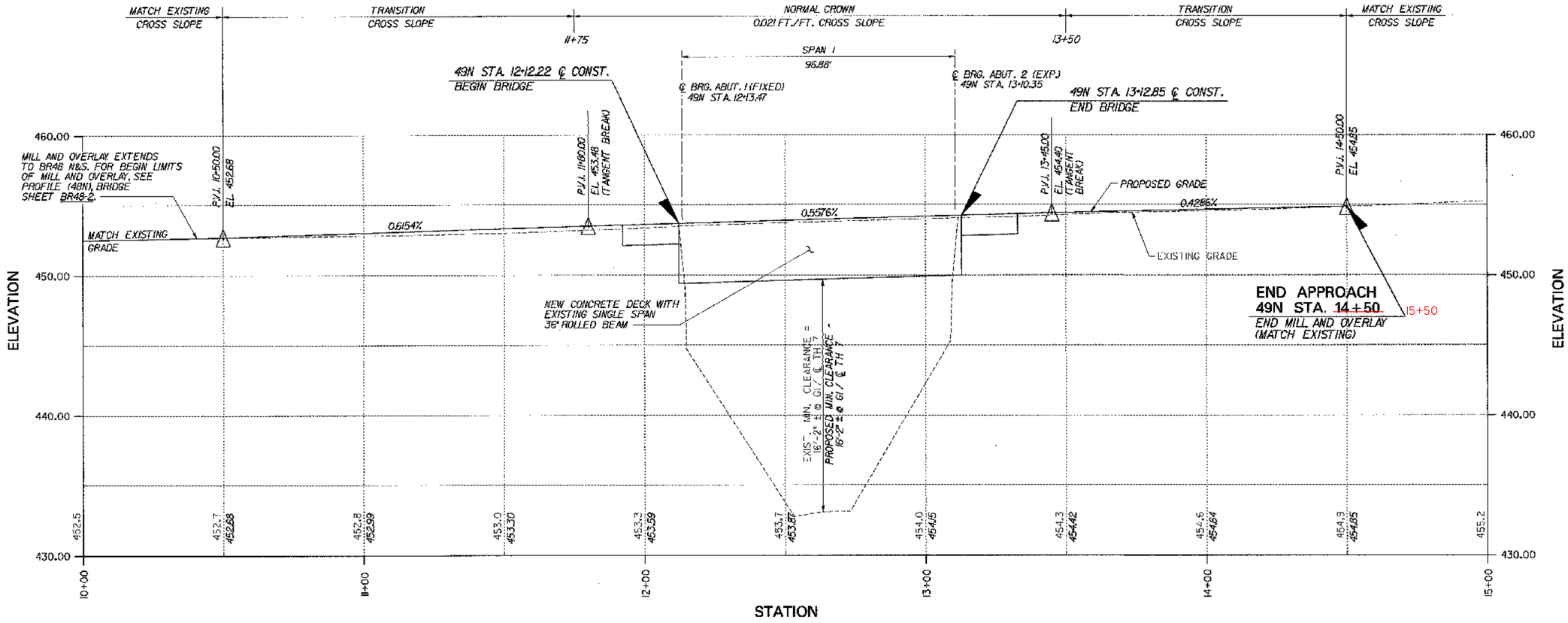
20 0 20
SCALE IN FEET

TVGA ENGINEERING, SURVEYING, P.C.

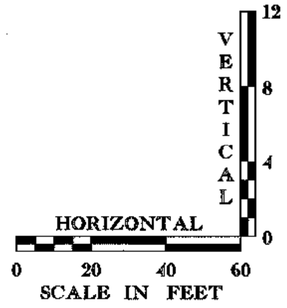
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 49N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER TH 7	
GENERAL PLAN (49N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49gen pl	Date 10/99
Bridge Sheet No. BR49-1	Sheet 75 of 307

NOTE: RAISED BRIDGE 49N FINISHED GRADE ½"



PROFILE – BR 49N

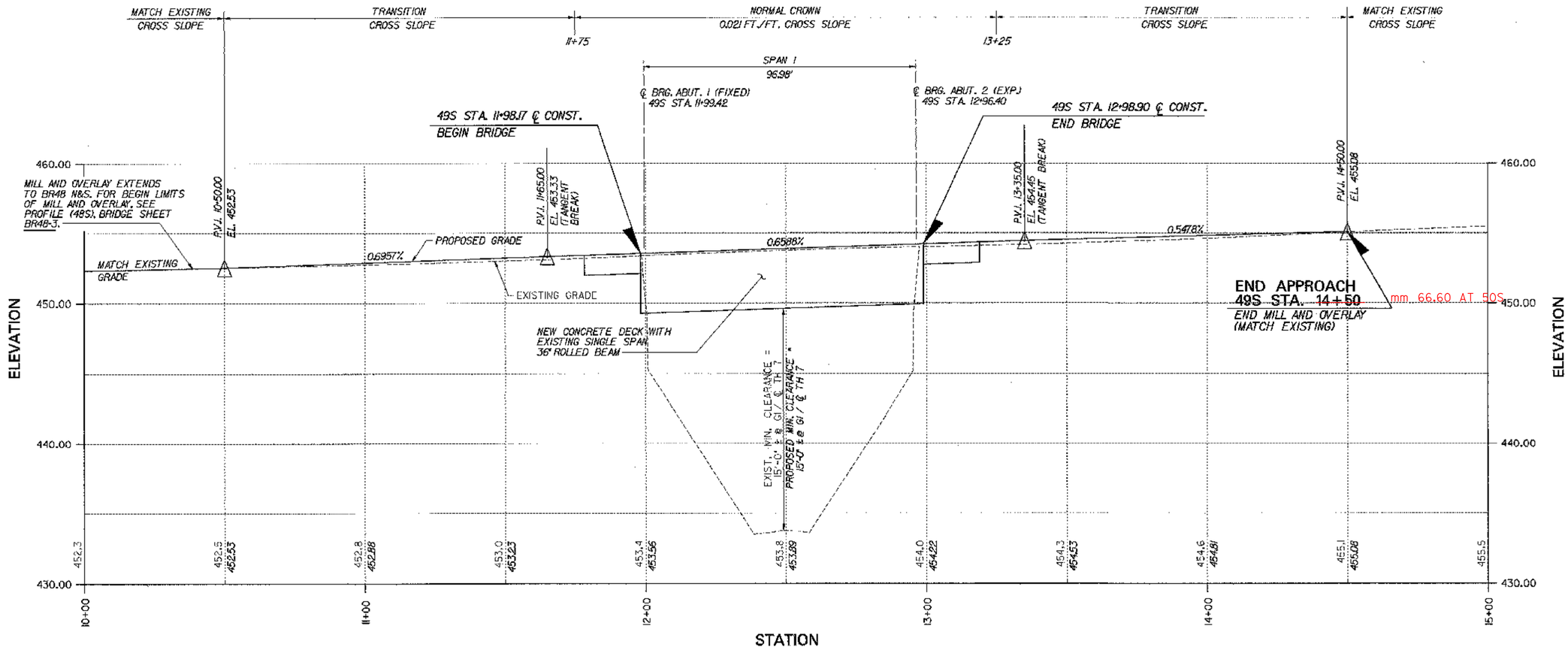


STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **49N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER TH 7	
PROFILE (49N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49nprof	Date 10/99
Bridge Sheet No. ***BR49-2***	Sheet 76 of 307

TVGA ENGINEERING, SURVEYING, P.C.

NOTE: RAISED BRIDGE 49S FINISH GRADE 5/8"



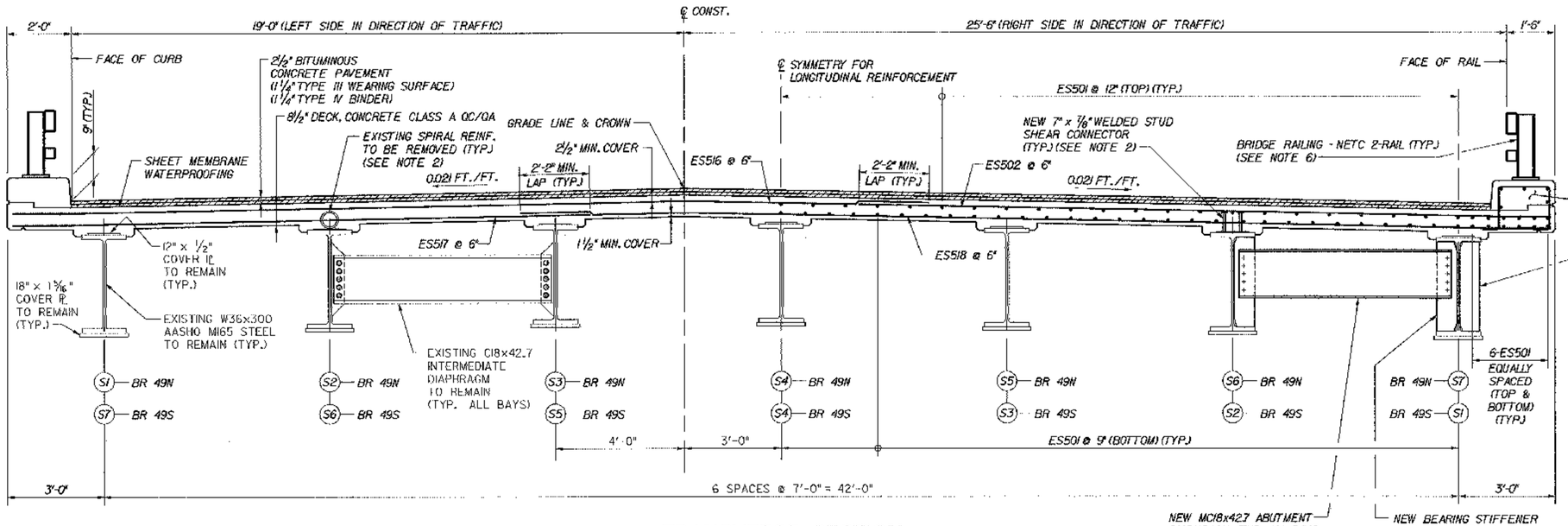
PROFILE – BR 49S

VERTICAL 12 8 4 0
HORIZONTAL
0 20 40 60
SCALE IN FEET

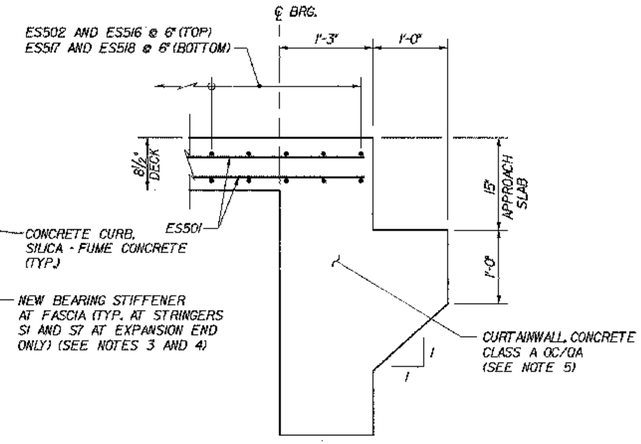
TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

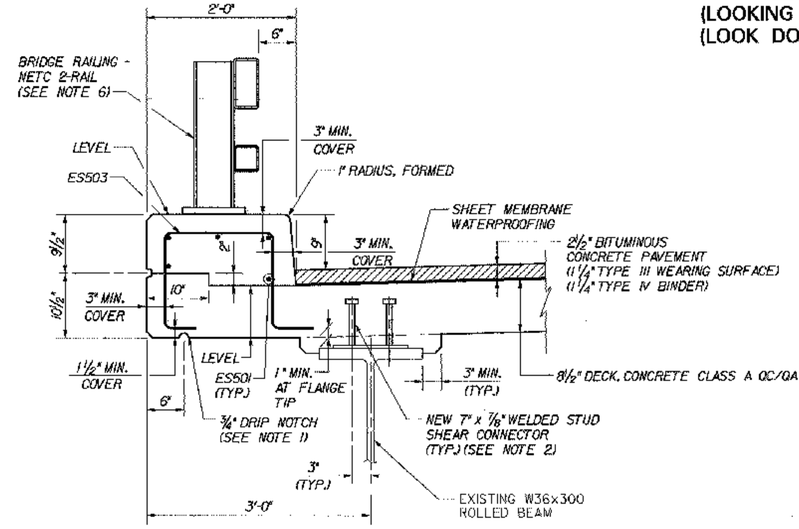
Town Of MIDDLESEX-BOLTON	Bridge No. 49S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER TH 7	
PROFILE (49S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49sprof	Date 10/99
Bridge Sheet No. BR49-3	Sheet 77 of 307



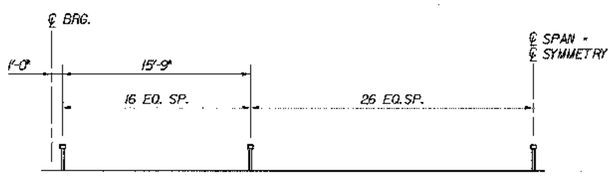
TRANSVERSE SECTION
(LOOKING UP STATION FOR BR 49N)
(LOOK DOWN STATION FOR BR 49S)
SCALE: ½" = 1'-0"



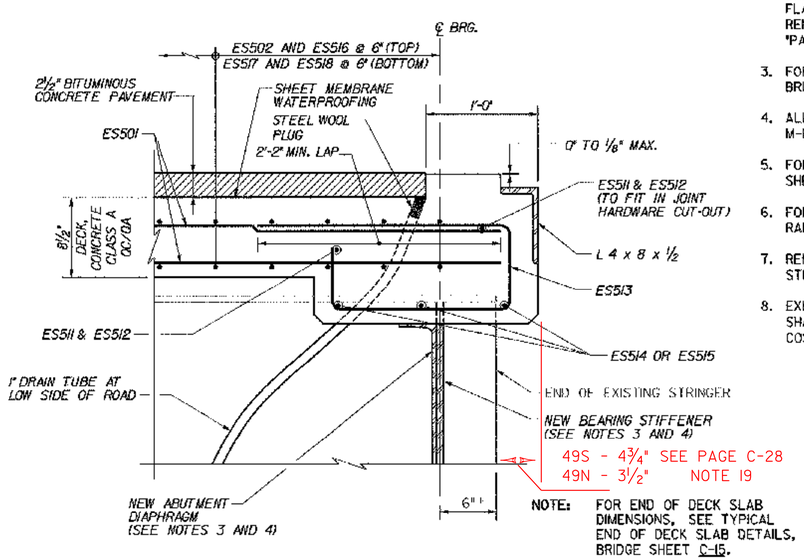
END OF DECK SLAB REINFORCEMENT DETAIL
(FIXED END)
SCALE: 1" = 1'-0"



FASCIA DETAIL
SCALE: 1"=1'-0"



SHEAR CONNECTOR LAYOUT
N.T.S.
(SEE NOTE 2)



NOTE: FOR END OF DECK SLAB DIMENSIONS, SEE TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

END OF DECK SLAB REINFORCEMENT DETAIL
(EXP. END)
SCALE: 1½" = 1'-0"

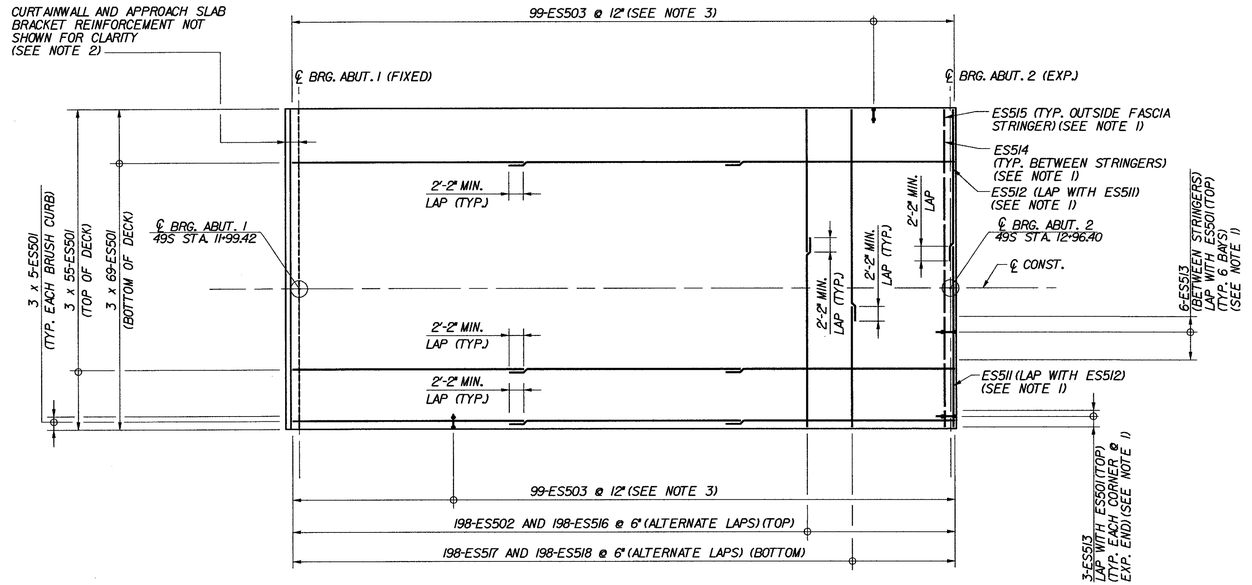
NOTES:

1. END DRIP NOTCH 5 FEET BEFORE END OF SLAB AT "DOWNHILL" ABUTMENTS AT 45°.
2. EXISTING SPIRAL REINFORCEMENT (IF ENCOUNTERED) SHALL BE REMOVED AND REPLACED WITH WELDED STUD SHEAR CONNECTORS, ITEM 508.15, AS SHOWN. EXISTING SHEAR STUDS (IF ENCOUNTERED) SHALL BE REMOVED AND REPLACED WITH WELDED SHEAR STUDS AT THE DISCRETION OF THE RESIDENT ENGINEER. THESE ATTACHMENTS SHALL BE CUT OFF SLIGHTLY ABOVE THE FLANGE, THEN REMAINING MATERIAL SHALL BE GROUND FLUSH WITH THE FLANGE. GRINDING SHALL BE DONE IN THE LONGITUDINAL DIRECTION SO THAT NO TRANSVERSE MARKS ARE LEFT. REMOVAL OF EXISTING SPIRAL REINFORCEMENT OR STUDS SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE."
3. FOR DETAILS OF NEW BEARING STIFFENERS AND ABUTMENT DIAPHRAGMS, SEE TYPICAL ROLLED BEAM DETAILS, BRIDGE SHEET C-16.
4. ALL NEW STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 50W STEEL. BOLTS SHALL BE ⅞" DIAMETER AASHTO M-164 TYPE 3 BOLTS IN 15/16" DIAMETER HOLES.
5. FOR CURTAINWALL DETAILS AND REINFORCEMENT LAYOUT, SEE TYPICAL CURTAINWALL REINFORCEMENT, BRIDGE SHEET C-42.
6. FOR DETAILS OF NETC BRIDGE RAIL AND APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.
7. REMOVE 100% OF EXISTING PAINT COATING FROM EXISTING STRUCTURAL STEEL. PAINT ALL NEW AND EXISTING STRUCTURAL STEEL, USING ITEMS 513.30, 513.36 AND 513.41. FINAL COAT TO BE DARK BROWN (COLOR CHIP #20059).
8. EXISTING SCUPPER DOWNSPOUTS SHALL BE REMOVED PRIOR TO REMOVAL OF DECK CONCRETE. REMOVAL OF WELDS SHALL BE PERFORMED BY GRINDING, IN ACCORDANCE WITH THE PROCEDURES SHOWN IN NOTE 2, THIS SHEET. ALL COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE".

STATE OF VERMONT
AGENCY OF TRANSPORTATION

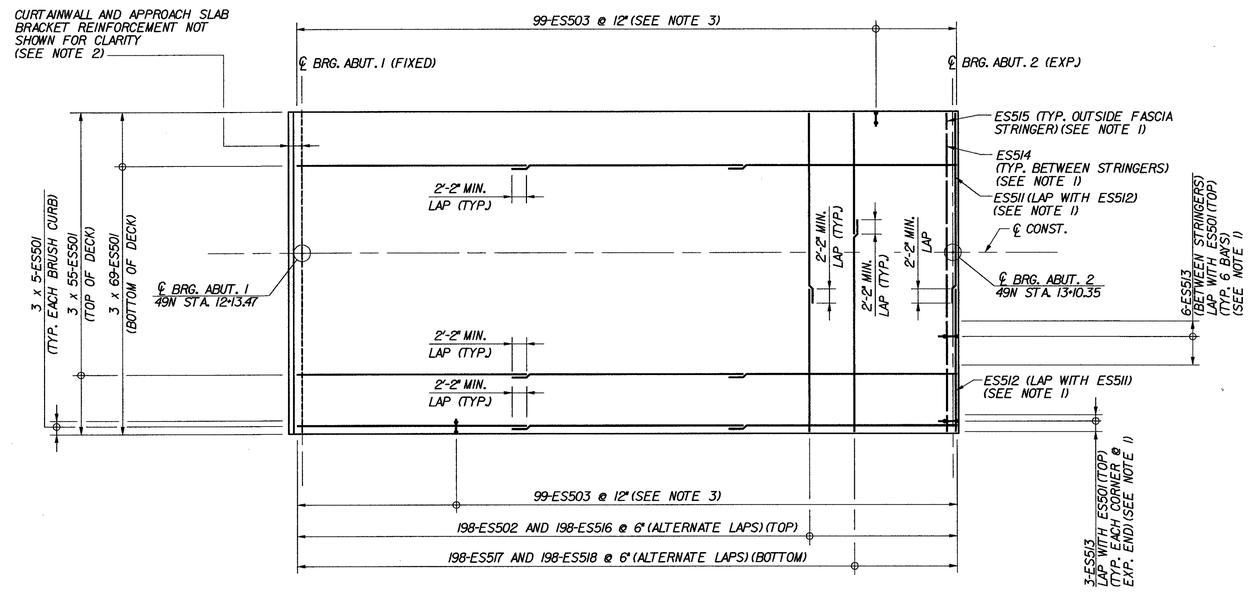
Town Of MIDDLESEX-BOLTON	Bridge No. 49N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER TH 7	
TRANSVERSE SECTION (49N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49tsect	Date 10/99
Bridge Sheet No. BR49-4	Sheet 78 of 307

TVGA ENGINEERING, SURVEYING, P.C.



DECK REINFORCEMENT PLAN – BR 49S

SCALE: 3/32 " = 1'-0"



DECK REINFORCEMENT PLAN – BR 49N

SCALE: 3/32 " = 1'-0"

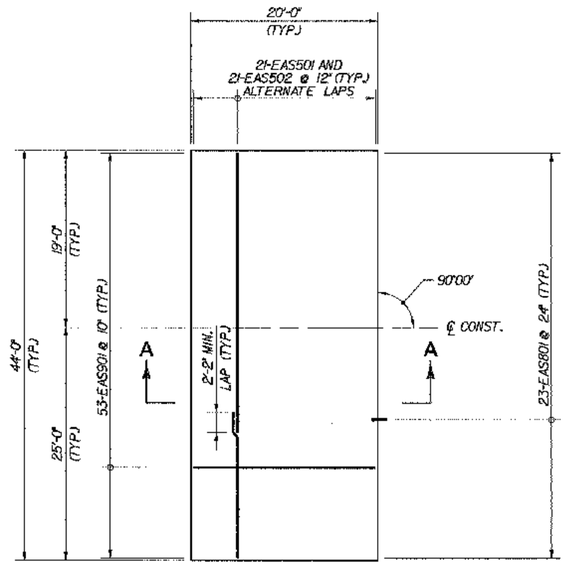
NOTES:

1. FOR END OF DECK SLAB DETAILS, SEE TRANSVERSE SECTION (49N&S), BRIDGE SHEET BR49-4.
2. FOR CURTAINWALL REINFORCEMENT, SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
3. THE QUANTITY OF ES503 BARS SHOWN DOES NOT INCLUDE ADDITIONAL BARS REQUIRED BELOW THE BRIDGE RAIL POSTS. FOR DETAILS OF THE REQUIRED STIRRUP SPACING, SEE NETC 2-RAIL STANDARD SHEET BRI-97. FOR LOCATIONS OF THE BRIDGE RAIL POSTS, SEE CURB AND RAIL LAYOUT PLANS, BRIDGE SHEET BR49-7.

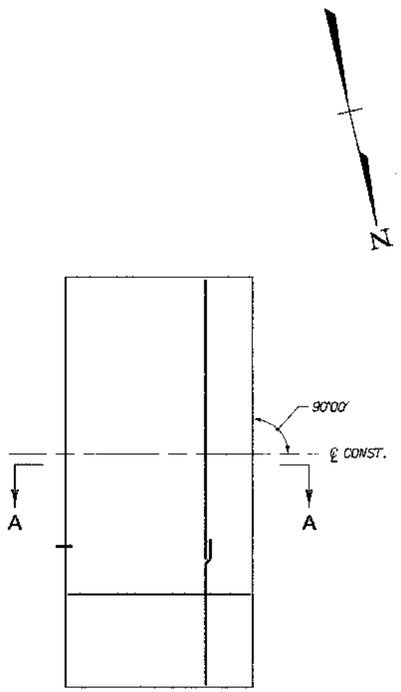
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **49N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER TH 7	
DECK REINFORCEMENT PLANS (49N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49drp	Date 10/99
Bridge Sheet No. ***BR49-5***	Sheet 79 of 307

TVGA ENGINEERING, SURVEYING, P.C.

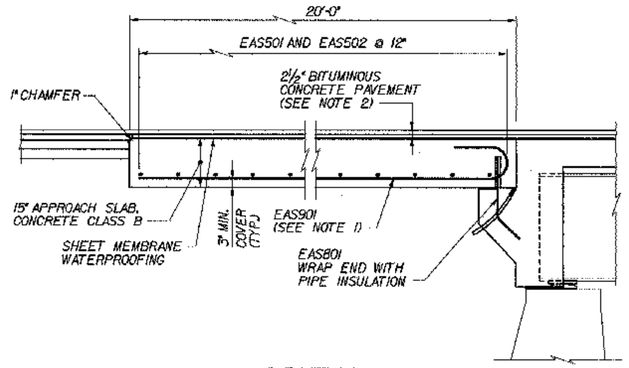


49N ABUTMENT 1



49N ABUTMENT 2

APPROACH SLAB PLANS
(49N SHOWN; 49S SIMILAR)
SCALE: 1/8" = 1'-0"



SECTION A–A
(APPROACH SLAB AT FIXED ABUT. SHOWN;
SLAB AT EXPANSION ABUT. SIMILAR)
N.T.S.

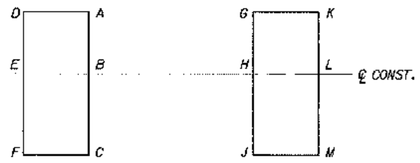
RAISED BRIDGE 49S FINISHED GR. 5/8"

RAISED BRIDGE 49N FINISH GR. 1/2"

TOP OF APPROACH SLAB ELEVATIONS						
BR 49N			BR 49S			
LOCATION	STATION	ELEVATION	LOCATION	STATION	ELEVATION	
A	12+12.22	~~453.05~~ .09	A	11+98.17	~~452.82~~	452.87
B	12+12.22	~~453.45~~ .49	B	11+98.17	~~453.34~~	453.39
C	12+12.22	~~452.93~~ .97	C	11+98.17	~~452.94~~	453.99
D	11+92.22	~~452.94~~ .98	D	11+78.17	~~452.68~~	452.73
E	11+92.22	~~453.34~~ .38	E	11+78.17	~~453.21~~	453.26
F	11+92.22	~~452.82~~ .86	F	11+78.17	~~452.81~~	452.86
G	13+12.85	~~453.61~~ .65	G	12+98.90	~~453.48~~	453.53
H	13+12.85	~~454.01~~ .05	H	12+98.90	~~454.00~~	454.05
J	13+12.85	~~453.49~~ .53	J	12+98.90	~~453.60~~	453.65
K	13+32.85	~~453.73~~ .77	K	13+18.90	~~453.61~~	453.66
L	13+32.85	~~454.12~~ .16	L	13+18.90	~~454.13~~	454.18
M	13+32.85	~~453.80~~ .64	M	13+18.90	~~453.73~~	453.78

NOTES:

1. TIP HOOK END OF BAR AS REQUIRED TO ACHIEVE MINIMUM COVER.
2. FOR DETAILS OF APPROACH SLAB PAVEMENT AND TRANSITION TO EXISTING PAVEMENT, SEE DETAIL ON TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

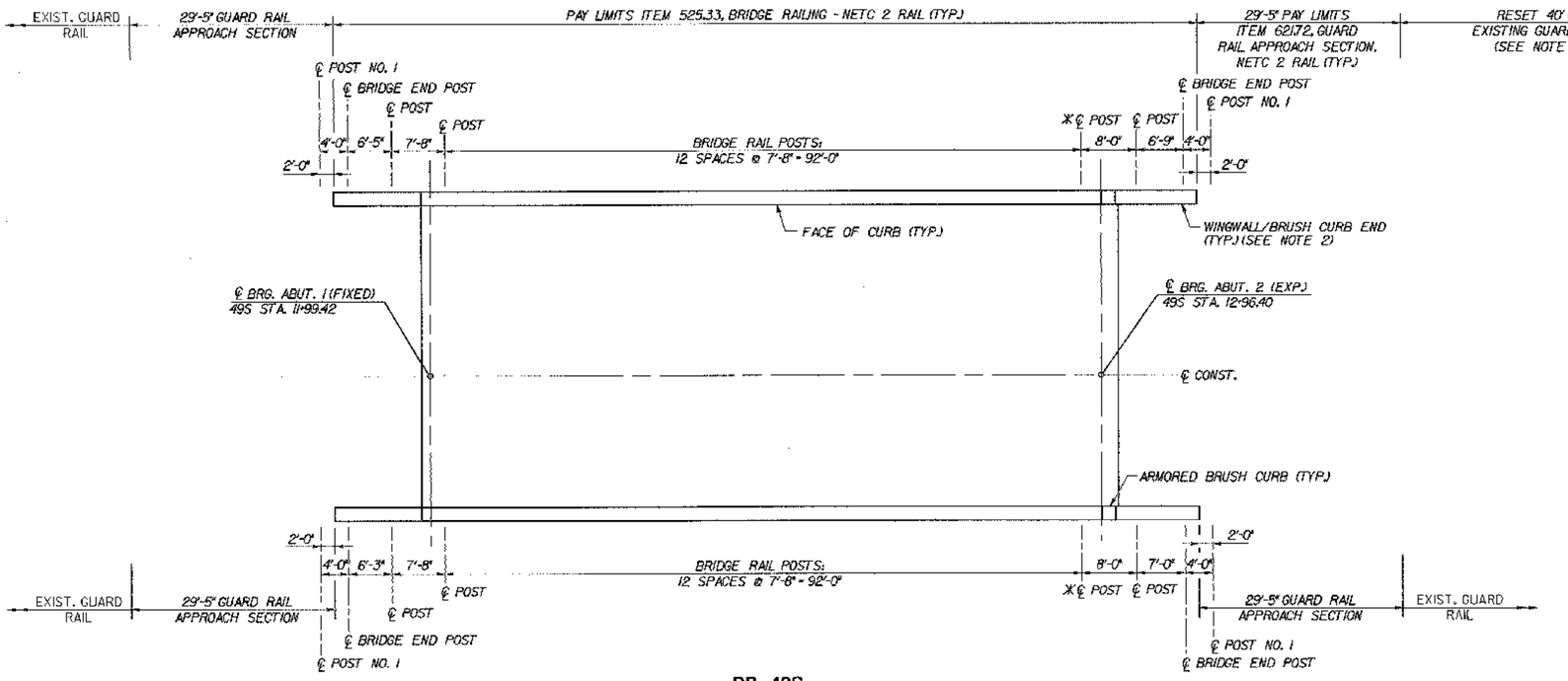


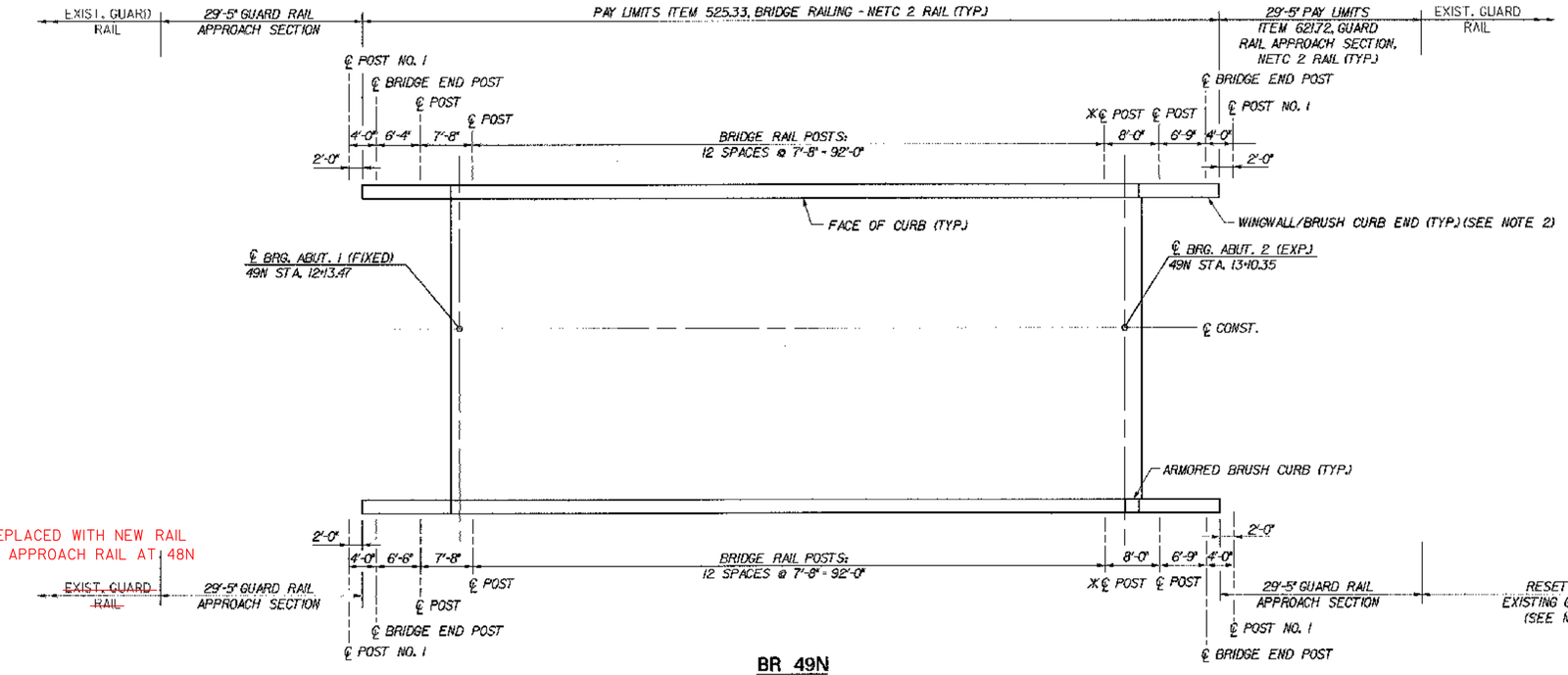
ABUTMENT 1 ABUTMENT 2

APPROACH SLAB ELEVATION KEY
N.T.S.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 49N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER TH 7	
APPROACH SLAB DETAILS (49N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. 49apslab Date 10/99
	Bridge Sheet No. BR49-6 Sheet 80 of 307





RAILING LAYOUT

SCALE: 3/32 "=1'-0"

* RAIL EXPANSION JOINT SHALL BE LOCATED 2'-0" FROM ℄ OF INDICATED POST, ON BRIDGE EXPANSION JOINT SIDE OF POST.

CONSTRUCTION NOTE:
END OF WINGWALLS HAVE BEEN LOCATED APPROXIMATELY BY VAOT SURVEY. CONTRACTOR SHALL VERIFY REQUIRED RAIL LENGTHS PRIOR TO SUBMITTING SHOP DRAWINGS FOR APPROVAL.

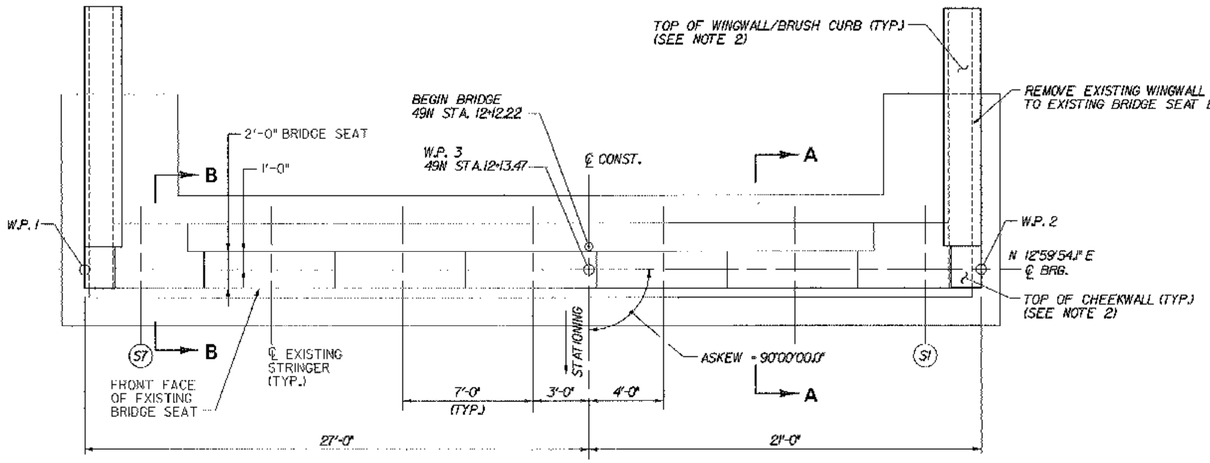
NOTES:

1. FOR NETC 2-RAIL BRIDGE RAILING DETAILS AND INFORMATION ABOUT THE NETC GUARD RAIL APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.
2. FOR BRUSH CURB END DETAIL, SEE TYPICAL WINGWALL DETAILS (1 OF 2), BRIDGE SHEET C-43.
3. ALL WORK REQUIRED TO RESET THE EXISTING GUARD RAIL SHALL BE PAID UNDER ITEM 621.75, "REMOVING AND RESET GUARD RAIL."
4. A QUANTITY OF 40'-0" OF ITEM 616.28 "CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B" SHALL BE PLACED AT THE END OF EACH WINGWALL. SEE GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B FOR DETAILS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

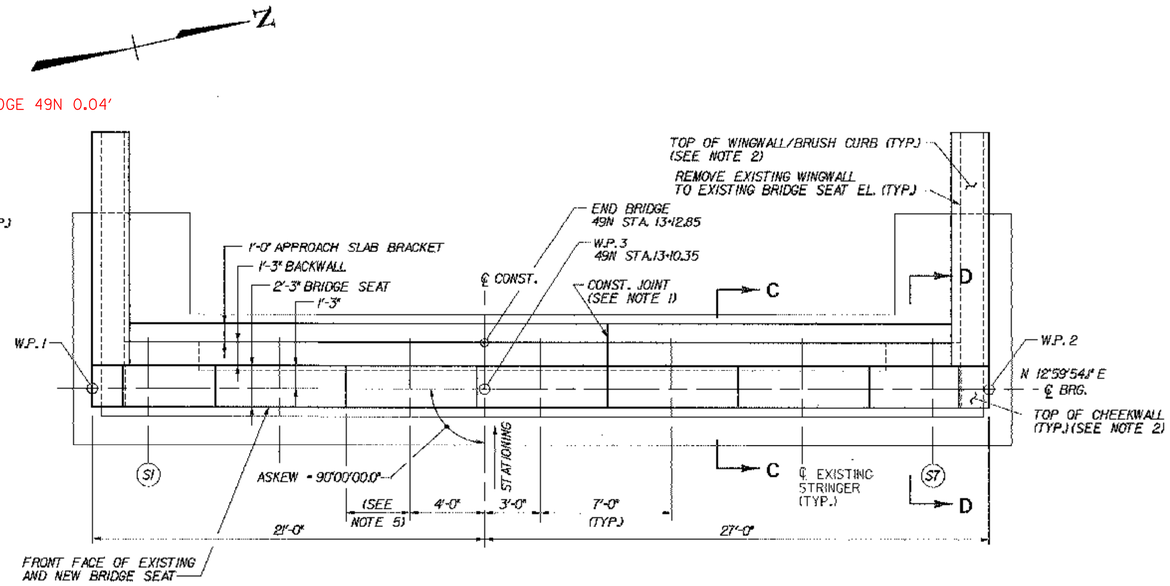
Town Of MIDDLESEX-BOLTON	Bridge No. 49N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER TH 7	
CURB AND RAIL LAYOUT PLANS (49N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. 49brrail Date 10/99
	Bridge Sheet No. BR49-7 Sheet 81 of 307

RAISED FINISHED GRADE AT BRIDGE 49N 0.04'



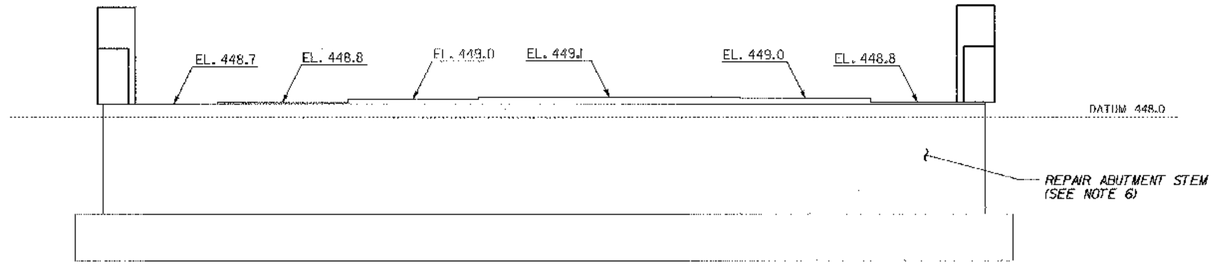
ABUTMENT 1 PLAN (FIXED)

SCALE: 1/4"=1'-0"



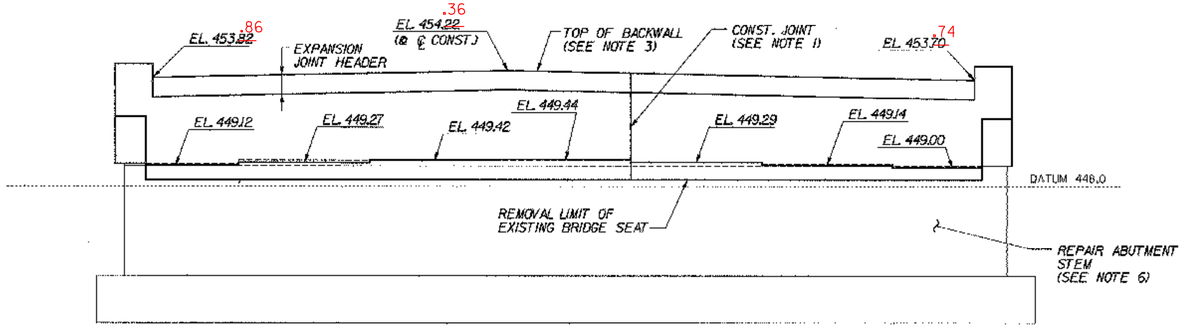
ABUTMENT 2 PLAN (EXP.)

SCALE: 1/4"=1'-0"



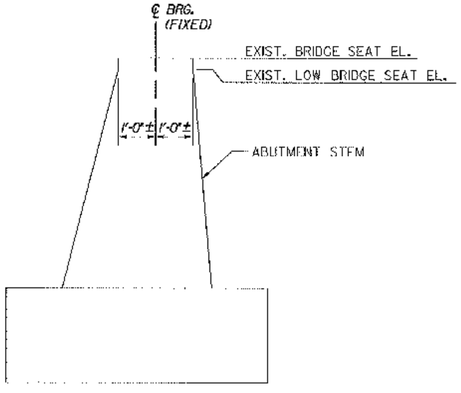
ABUTMENT 1 ELEVATION

SCALE: 1/4"=1'-0"



ABUTMENT 2 ELEVATION

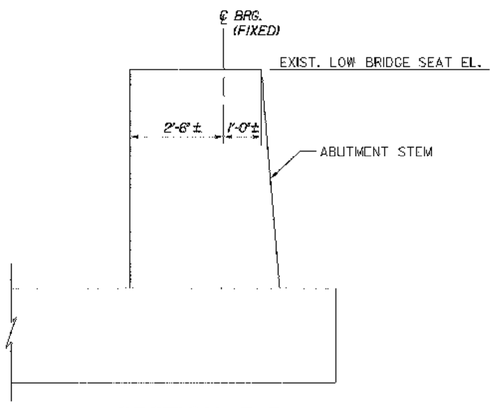
SCALE: 1/4 "=1'-0"



SECTION A–A

SCALE: 1/2"=1'-0"

NOTE: FOR SECTIONS C-C AND D-D, SEE ABUTMENT MASONRY (49S), BRIDGE SHEET BR49-9.



SECTION B–B

SCALE: 1/2"=1'-0"

NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40, AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-11 AND SC-12 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	MIDDLESEX-BOLTON	Bridge No.	49N
Highway No.	I-89	Log Sta.	
		Surv. Sta.	

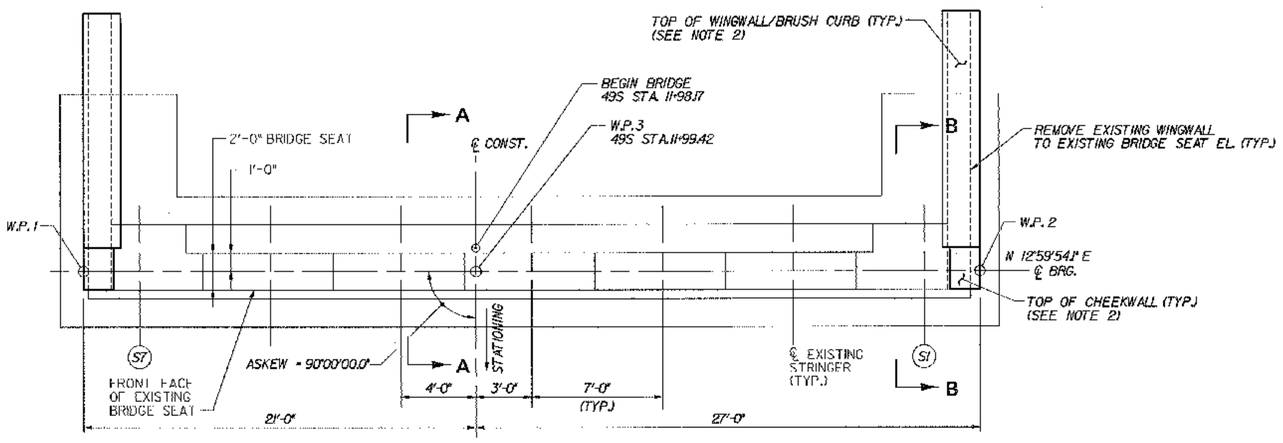
I-89 NB OVER TH 7

ABUTMENT MASONRY (49N)

Designed By	P.W. SZUSTAK	Drawn By	R.A. BOTZENHART
Checked By	Date	Bridge Design Supervisor	
J.P. HALSTEAD	10/99	J.P. HALSTEAD Date	10/99
PROJECT	MIDDLESEX-BOLTON	PROJECT NO.	IM-089-2(26)
TVGA CAD Drawing No.	49abmas	Date	10/99
Bridge Sheet No.	BR49-8	Sheet	82 of 307

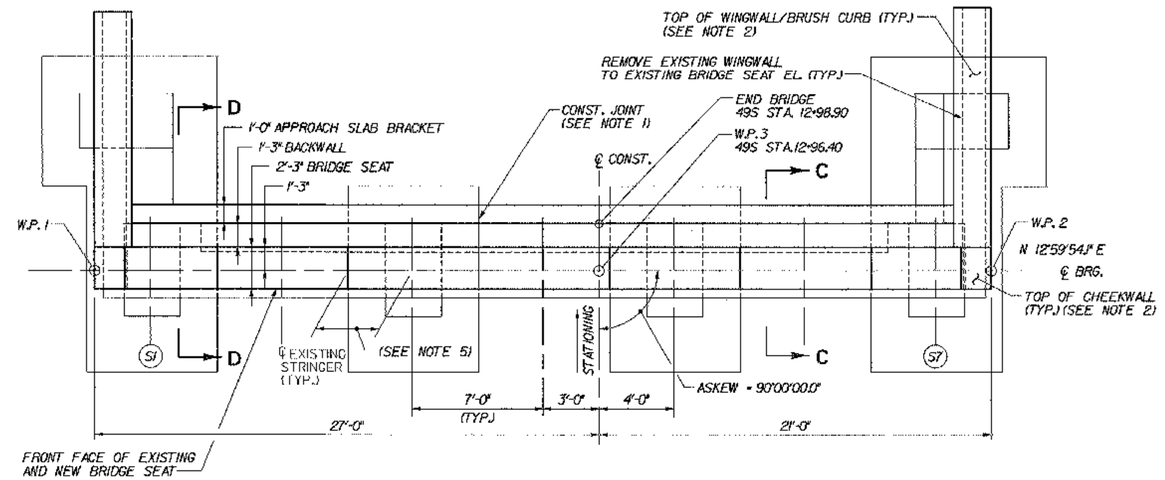
7. THIS APPLIES TO BRIDGES 49N AND S. THE CONTRACTOR FOR EASE OF FORMING FORMED THE BACK OF THE EXPANSION ABUTMENT STRAIGHT DOWN TO THE BOTTOM OF THE EXCAVATION. THEY INSTALLED EXTRA REBAR IN THE AREA. ALL MATERIAL AND LABOR WAS AT THE EXPENSE OF THE CONTRACTOR

NOTE: RAISED FINISH GRADE AT BRIDGE 49S 0.05'



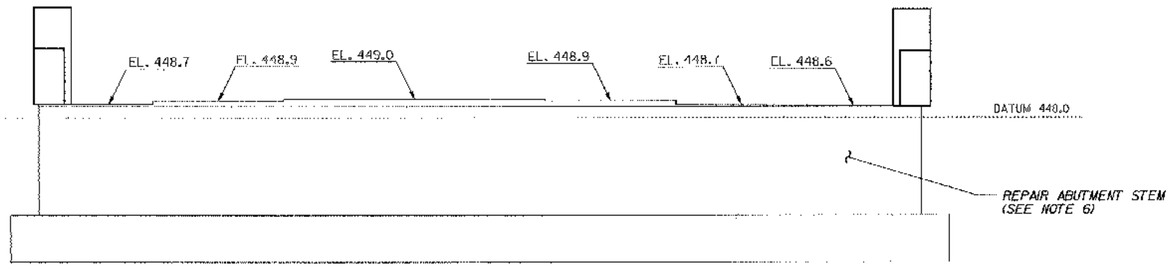
ABUTMENT 1 PLAN (FIXED)

SCALE: 1/4"=1'-0"



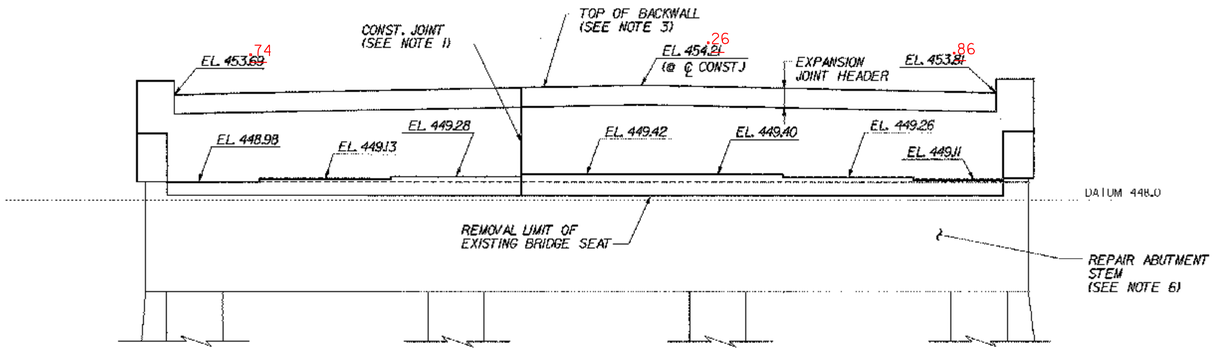
ABUTMENT 2 PLAN (EXP.)

SCALE: 1/4"=1'-0"



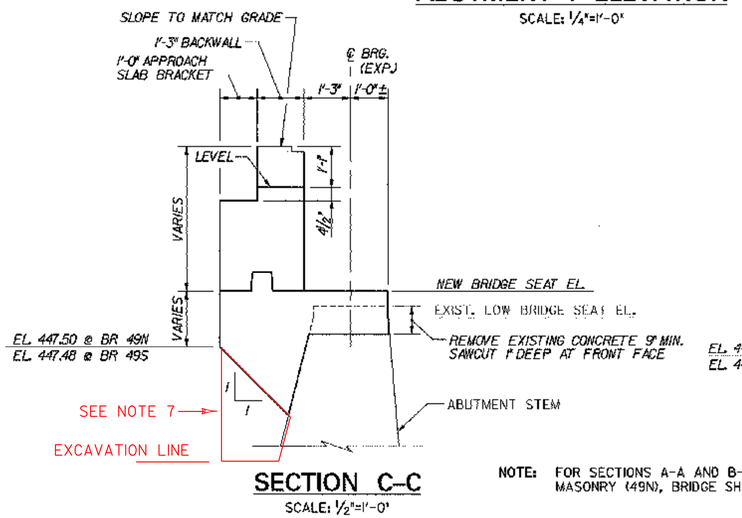
ABUTMENT 1 ELEVATION

SCALE: 1/4"=1'-0"



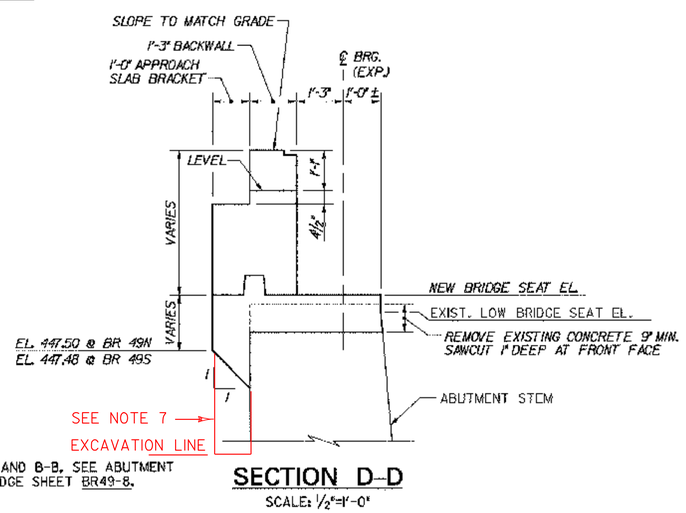
ABUTMENT 2 ELEVATION

SCALE: 1/4"=1'-0"



SECTION C-C

SCALE: 1/2"=1'-0"



SECTION D-D

SCALE: 1/2"=1'-0"

NOTE: FOR SECTIONS A-A AND B-B, SEE ABUTMENT MASONRY (49N), BRIDGE SHEET BR49-8.

NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40. AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-11 AND SC-12 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	MIDDLESEX-BOLTON	Bridge No.	49S
Highway No.	I-89	Log Sta.	
		Surv. Sta.	

I-89 SB OVER TH 7

ABUTMENT MASONRY (49S)

Designed By	P.W. SZUSTAK	Drawn By	R.A. BOTZENHART
Checked By	Date	Bridge Design Supervisor	
J.P. HALSTEAD	10/99	J.P. HALSTEAD	Date 10/99
PROJECT	MIDDLESEX-BOLTON	PROJECT NO.	IM-089-2(26)
TVGA CAD Drawing No.	49abmas		Date 10/99
Bridge Sheet No.	BR49-9	Sheet 83 of 307	

TVGA ENGINEERING, SURVEYING, P.C.

BRIDGE 49 NORTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (49N)																
✱	2	22	5	30' - 0"	E1AS501	STR.												
✱	3	22	5	15' - 8"	E1AS502	STR.												
	4	23	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	5	55	9	20' - 9"	E1AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	6	APPROACH SLAB 2 (49N)																
✱	7	22	5	30' - 0"	E2AS501	STR.												
✱	8	22	5	15' - 8"	E2AS502	STR.												
	9	23	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	10	55	9	20' - 9"	E2AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	11	SUPERSTRUCTURE (49N)																
✱	12	403	5	34' - 4"	ES501	STR.												
	13	198	5	21' - 4"	ES502	STR.												
	14	276	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
	15	2	5	28' - 4"	ES511	STR.												
	16	2	5	21' - 4"	ES512	STR.												
	17	42	5	5' - 5 1/2"	ES513	16	0' - 10"	1' - 6"	0' - 11 1/2"	2' - 2"				0' - 0"		2' - 2"		
	18	18	5	6' - 6"	ES514	STR.												
	19	6	5	2' - 6"	ES515	STR.												
	20	198	5	28' - 4"	ES516	STR.												
✱	21	199	5	17' - 10"	ES517	STR.												
	22	198	5	31' - 10"	ES518	STR.												
	23	CURTAIN WALL (49N)																
▲	24	30	5	6' - 6"	ECW504	STR.												
✱	25	31	5	12' - 6"	ECW505	S5	2' - 2"	3' - 10"	0' - 10"	3' - 6"			2' - 2"					
	26	45	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
▲	27	12	5	3' - 11"	ECW507	STR.												
✱	28	17	5	23' - 3"	ECW508	STR.												
	29	2	5	4' - 7"	ECW509	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	30	2	5	10' - 7"	ECW510	S5	2' - 2"	3' - 0"	0' - 10"	2' - 5"			2' - 2"					
	31	2	5	4' - 7"	ECW511	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	32	ABUTMENT 1 (49N)																
	33	11	5	12' - 0"	E2A512	STR.												
✱	34	12	5	11' - 9"	E2A513	STR.												
	35	6	5	6' - 1"	E2A515	17		2' - 6"	1' - 1"	2' - 6"								
	36	27	5	8' - 6"	E2A517	17		3' - 6"	1' - 6"	3' - 6"								
	37	27	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	38	78	5	5' - 6"	E2A519	17		1' - 6"	4' - 0"	0' - 0"								
✱▲	39	11	5	11' - 6"	E2A520	STR.												
	40	ABUTMENT 2 (49N)																
	41	19	5	24' - 0"	E2A501	STR.												
	42	19	5	14' - 3"	E2A502	STR.												
	43	45	5	6' - 9"	E2A503	21	0' - 7"	4' - 0"	2' - 2"						0' - 5"			
▲	44	37	5	7' - 3"	E2A504	19		3' - 3"	4' - 0"	0' - 0"								6' - 4"
	45	45	5	3' - 9"	E2A505	STR.												
▲	46	45	5	8' - 6"	E2A506	S10		3' - 4"	1' - 10"	3' - 4"								
	47	45	5	5' - 10"	E2A507	17		2' - 6"	0' - 10"	2' - 6"								
▲	48	90	5	3' - 7"	E2A508	17		1' - 6"	2' - 1"	0' - 0"								
	49	4	5	6' - 3"	E2A509	19		2' - 3"	4' - 0"	0' - 0"								5' - 7"
	50	4	5	6' - 3"	E2A510	19		2' - 3"	4' - 0"	0' - 0"								5' - 7"
	51	17	5	7' - 8"	E2A511	STR.												
✱▲	52	23	5	12' - 0"	E2A512	STR.												
	53	6	5	4' - 6"	E2A513	STR.												
	54	6	5	4' - 6"	E2A514	STR.												
	55	6	5	5' - 1"	E2A515	17		2' - 0"	1' - 1"	2' - 0"								
	56	6	5	5' - 0"	E2A516	17		2' - 6"	2' - 6"	0' - 0"								
	57	28	5	8' - 6"	E2A517	17		3' - 6"	1' - 6"	3' - 6"								
	58	28	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	59	80	5	5' - 6"	E2A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	60	10	5	12' - 0"	E2A520	STR.												
	61	6	5	5' - 0"	E2A521	17		2' - 6"	2' - 6"	0' - 0"								
✱	62	18	5	8' - 0"	E2A522	STR.												
	63	25	5	9' - 3"	E2A524	STR.												
▲	64	10	10	7' - 3"	E2A525	STR.												
	65																	
	66																	
	67																	
	68																	
	69																	
	70																	
	71																	
	72																	
	73																	
	74																	
	75																	
	76																	
	77																	
	78																	
	79																	
	80																	

BRIDGE 49 SOUTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (49S)																
✱	2	22	5	30' - 0"	E1AS501	STR.												
✱	3	22	5	15' - 8"	E1AS502	STR.												
	4	23	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	5	55	9	20' - 9"	E1AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	6	APPROACH SLAB 2 (49S)																
✱	7	22	5	30' - 0"	E2AS501	STR.												
✱	8	22	5	15' - 8"	E2AS502	STR.												
	9	23	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	10	55	9	20' - 9"	E2AS901	1	1' - 3"	19' - 6"					0' - 0"		1' - 0"			
	11	SUPERSTRUCTURE (49S)																
	12	402	5	34' - 4"	ES501	STR.												
✱	13	199	5	21' - 4"	ES502	STR.												
	14	276	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
	15	2	5	28' - 4"	ES511	STR.												
	16	2	5	21' - 4"	ES512	STR.												
	17	42	5	5' - 5 1/2"	ES513	16	0' - 10"	1' - 6"	0' - 11 1/2"	2' - 2"				0' - 0"		2' - 2"		
✱	18	19	5	6' - 6"	ES514	STR.												
	19	6	5	2' - 6"	ES515	STR.												
	20	198	5	28' - 4"	ES516	STR.												
	21	198	5	17' - 10"	ES517	STR.												
	22	198	5	31' - 10"	ES518	STR.												
	23	CURTAIN WALL (49S)																
✱▲	24	31	5	6' - 6"	ECW504	STR.												
	25	30	5	12' - 6"	ECW505	S5	2' - 2"	3' - 10"	0' - 10"	3' - 6"			2' - 2"					
	26	45	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
▲	27	12	5	3' - 11"	ECW507	STR.												
✱	28	17	5	23' - 3"	ECW508	STR.												
	29	2	5	4' - 7"	ECW509	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	30	2	5	10' - 7"	ECW510	S5	2' - 2"	3' - 0"	0' - 10"	2' - 5"			2' - 2"					
	31	2	5	4' - 7"	ECW511	S5	1' - 3"	0' - 10"	0' - 9"	0' - 6"			1' - 3"					
	32	ABUTMENT 1 (49S)																
✱	33	12	5	12' - 0"	E2A512	STR.												
	34	11	5	11' - 9"	E2A513	STR.												
	35	6	5	6' - 1"	E2A515	17		2' - 6"	1' - 1"	2' - 6"								
✱	36	28	5	8' - 6"	E2A517	17		3' - 6"	1' - 6"	3' - 6"								
	37	27	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	38	78	5	5' - 6"	E2A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	39	10	5	11' - 6"	E2A520	STR.												
	40	ABUTMENT 2 (49S)																
	41	19	5	24' - 0"	E2A501	STR.												
	42	19	5	14' - 3"	E2A502	STR.												
	43	45	5	6' - 9"	E2A503	21	0' - 7"	4' - 0"	2' - 2"						0' - 5"			
▲	44	37	5	7' - 3"	E2A504	19		3' - 3"	4' - 0"	0' - 0"								6' - 4"
	45	45	5	3' - 9"	E2A505	STR.												
▲	46	45	5	8' - 6"	E2A506	S10		3' - 4"	1' - 10"	3' - 4"								
	47	45	5	5' - 10"	E2A507	17		2' - 6"	0' - 10"	2' - 6"								
▲	48	90	5	3' - 7"	E2A508	17		1' - 6"	2' - 1"	0' - 0"								
	49	4	5	6' - 3"	E2A509	19		2' - 3"	4' - 0"	0' - 0"								5' - 7"
	50	4	5	6' - 3"	E2A510	19		2' - 3"	4' - 0"	0' - 0"								5' - 7"
	51	17	5	7' - 8"	E2A511	STR.												
▲	52	22	5	12' - 0"	E2A512	STR.												
	53	6	5	4' - 6"	E2A513	STR.												
	54	6	5	4' - 6"	E2A514	STR.												
	55	6	5	5' - 1"	E2A515	17		2' - 0"	1' - 1"	2' - 0"								
	56	6	5	5' - 0"	E2A516	17		2' - 6"	2' - 6"	0' - 0"								
	57	28	5	8' - 6"	E2A517	17		3' - 6"	1' - 6"	3' - 6"								
	58	28	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	59	80	5	5' - 6"	E2A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	60	10	5	12' - 0"	E2A520	STR.												
	61	6	5	5' - 0"	E2A521	17		2' - 6"	2' - 6"	0' - 0"								
✱	62	18	5	8' - 0"	E2A522	STR.												
	63	25	5	9' - 3"	E2A524	STR.												
✱▲	64	11	10	7' - 3"	E2A525	STR.												
	65																	
	66																	
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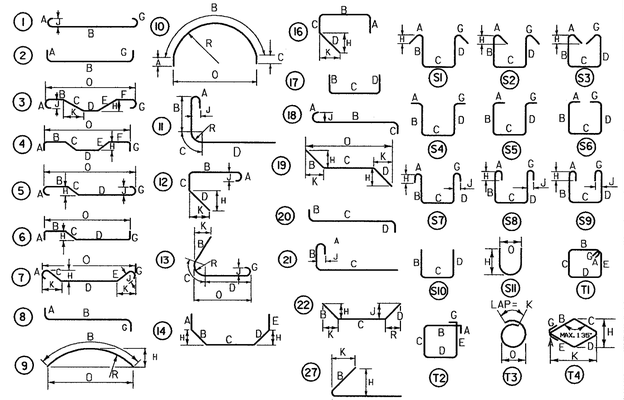


NOTES:

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 615-91). 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 WHEN NECESSARY TO MAINTAIN CLEARANCES.
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.

LEGEND

▲ DENOTES BARS TO BE CUT IN THE FIELD.

✱ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.

△ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.

"E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT (POUNDS PER FOOT)	NOMINAL DIMENSIONS ROUND SECTION: DIAMETER (INCHES)	CROSS SECTIONAL AREA (SQ. INCHES)	PERIMETER (INCHES)
#3	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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 49N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER TH 7	

REINFORCING STEEL SCHEDULE (49N&S)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. reinf49	Date 10/99
Bridge Sheet No. ***BR49-10***	Sheet 84 of 307

TVGA ENGINEERING, SURVEYING, P.C.

RAISED BRIDGE 50S FINISH GRADE ½"
RAISED BRIDGE 50N FINISHED GRADE 1¼"

BEGIN APPROACH
50S STA. ~~3+65~~ mm 65.51 AT 49S
BEGIN MILL AND OVERLAY
(MATCH EXISTING)

END APPROACH
50S STA. ~~8+20~~ mm 66.90
END MILL AND OVERLAY
(MATCH EXISTING)

BEGIN APPROACH
50N STA. ~~4+75~~ 3+00
BEGIN MILL AND OVERLAY
(MATCH EXISTING)

END APPROACH
50N STA. ~~8+75~~ 10+55
END MILL AND OVERLAY
(MATCH EXISTING)

COMBINATION UTILITY POLE

CURVE DATA - ℄ CONST. (50S)
Delta = 10°24'02.45"
Dc = 01°00'23.35'
R = 5692.65'
T = 516.11'
L = 1033.36'
E = 23.53'

℄ BRG. ABUT. 1 (EXP.)
50S STA. 4+83.50 (P.O.C.)
F.G. EL. ~~466.98~~ 467.02

℄ BRG. PIER 1 (EXP.)
50S STA. 5+48.86 (P.O.C.)
F.G. EL. 468.95 ~~.99~~

BEGIN BRIDGE
50S STA. 4+79.87 (P.O.C.)
F.G. EL. ~~466.87~~ .91

℄ BRG. PIER 2 (EXP.)
50S STA. 6+39.36 (P.O.C.)
F.G. EL. 471.58 ~~.72~~

℄ BRG. ABUT. 2 (FIXED)
50S STA. 7+02.86 (P.O.C.)
F.G. EL. 473.60

END BRIDGE
50S STA. 7+04.60 (P.O.C.)
F.G. EL. 473.65 ~~.69~~

I-89 SOUTHBOUND

MM 66.60

LIMIT OF EXISTING APPROACH SLAB (TYP.)

N75°30'11.9W
518.11'

25'-0" APPROACH SLAB (TYP.)

℄ CONST. (SEE NOTE 1)

FACE OF RAIL (TYP.)

16'-6" (TYP.)

2'-0" BRUSH CURB (TYP.)

EXISTING CURBLINE (TYP.)

BR 50S

EDGE OF PAVEMENT (TYP.)

NEW APPROACH RAIL (TYP.)

N85°54'13.6"W
518.11'

℄ CONST. P.C.
50S STA. 1+22.35
(N 78377.5629, E 61596.1410)
(NOT SHOWN)

NEW PIER CAP (TYP.)

℄ CONST. P.T.
50S STA. 11+55.71
(N 78544.2694, E 60577.7489)
(NOT SHOWN)

℄ CONST. P.C.
50N STA. 1+22.35
(N 78449.2068, E 61614.6653)
(NOT SHOWN)

EXISTING 96" CGMPP CULVERT WITH NEW CAAPP SLIP LINING COMPLETED IN 1998

EXISTING FASCIA (TYP.)

℄ CONST. P.I.
50S STA. 5+18.11 (BK)
50S STA. 7+62.80 (AH)
(N 78507.2590, E 61094.5310)

℄ BRG. PIER 2 (EXP.)
50N STA. 7+28.71 (P.O.C.)
F.G. EL. 479.50 ~~.60~~

℄ CONST. P.T.
50N STA. 11+69.15
(N 78618.0793, E 60583.0349)
(NOT SHOWN)

I-89 NORTHBOUND

BR 50N

℄ CONST. (SEE NOTE 1)

EXISTING ℄ STRIPE (TYP.)

FACE OF RAIL (TYP.)

N85°54'13.6"W
524.84'

MM 66.60

MM 66.70

BEGIN BRIDGE
50N STA. 5+64.09 (P.O.C.)
F.G. EL. 475.59 ~~.69~~

℄ BRG. ABUT. 1 (FIXED)
50N STA. 5+65.88 (P.O.C.)
F.G. EL. 475.63 ~~.73~~

CURVE DATA - ℄ CONST. (50N)
Delta = 10°24'02.45"
Dc = 00°59'36.86"
R = 5766.65'
T = 524.84'
L = 1046.80'
E = 23.83'

℄ BRG. PIER 1 (EXP.)
50N STA. 6+32.21 (P.O.C.)
F.G. EL. 477.20 ~~.30~~

EXISTING 30" RCP

℄ CONST. P.I.
50N STA. 7+28.84 (BK)
50N STA. 7+63.54 (AH)
(N 78530.5892, E 61065.3560)

U.S. ROUTE 2

END BRIDGE
50N STA. 8+01.96 (P.O.C.)
F.G. EL. 481.24 ~~.34~~

℄ BRG. ABUT. 2 (EXP.)
50N STA. 7+98.51 (P.O.C.)
F.G. EL. 481.16 ~~.26~~

EXISTING 6" CMP

LOAD RATING (TONS)

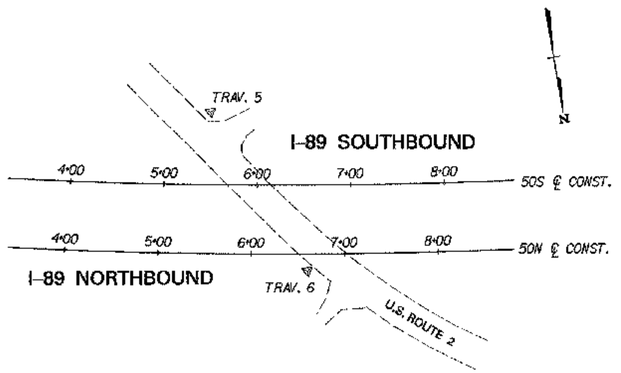
LOADING LEVELS (LOAD FACTOR)	BRIDGE NO.	TRUCK						
		H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A= 2.17; B= 1.00	50N/50S	*28/*28	*51/*51					
POSTED A= 1.55; B= 1.40	50N/50S	*40/*40	*72/*72	*96/*97		*72/*71	*74/*73	*88/*87
OPERATING A= 1.30; B= 1.67	50N/50S		*85/*86	*114/*114	*129/*127	*86/*84	*88/*87	

NOTE: RATINGS ARE BASED ON A STRAIGHT-LINE GIRDER ANALYSIS, DIVIDED BY 1.05 TO ACCOUNT FOR THE EFFECTS OF CURVATURE.

$$\text{STRENGTH RF} = \frac{\phi M_N - 1.3M_{DL}}{A \times M_{LL+I}} \qquad \text{*SERVICEABILITY RF} = B\left[\frac{0.95F_Y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67M_{LL+I}}\right]$$

PLAN
SCALE: 1"=20'

TABLE OF BRIDGE COORDINATES				
BRIDGE	CL CONST. @	STATION	NORTHING	EASTING
50N	BEGIN BRIDGE	5+84.09	78543.3058	61183.1758
	CL BRG. ABUT. 1	5+85.88	78543.6203	61181.4100
	CL BRG. PIER 1	6+32.21	78554.8653	61116.0405
	CL BRG. PIER 2	7+28.71	78569.8808	61020.7170
	CL BRG. ABUT. 2	7+98.51	78579.7462	60951.6182
	END BRIDGE	8+01.96	78580.2116	60948.2039
50S	BEGIN BRIDGE	4+79.87	78466.1358	61247.4208
	CL BRG. ABUT. 1	4+83.50	78466.8211	61243.8550
	CL BRG. PIER 1	5+48.86	78468.7690	61179.5987
	CL BRG. PIER 2	6+39.36	78484.0929	61090.4045
	CL BRG. ABUT. 2	7+02.86	78493.9977	61027.6820
	END BRIDGE	7+04.60	78494.2580	61025.9573



CONTROL POINT LOCATION MAP
N.T.S.
(SEE NOTE 2)

BR 50N&S SPECIFIC CONSTRUCTION NOTES:

1. THE PROPOSED CONSTRUCTION CENTERLINE FOR EACH BRIDGE WAS ESTABLISHED BASED ON BEST FIT BETWEEN EXISTING CURB LINES. IT DOES NOT EXACTLY MATCH THE ORIGINAL CONSTRUCTION CENTERLINE.
2. FOR CONTROL POINT TIE SKETCHES, SEE CONTROL POINT TIES (50N&S), BRIDGE SHEET C-12.
3. REPLACE PIER CAPS, SUPERSTRUCTURE STEEL, BEARINGS, DECK SLABS, APPROACH SLABS, BRIDGE RAIL AND APPROACH RAIL. RESET GUARD RAIL.
4. NEW SCUPPERS ARE REQUIRED ON BRIDGE 50S. FOR LOCATION OF NEW SCUPPERS, SEE FRAMING PLAN (50S), BRIDGE SHEET BR50-9.
5. CONSTRUCT NEW BACKWALLS AT EXPANSION ABUTMENTS AND NEW CURTAINWALLS AT FIXED ABUTMENTS. REBUILD ABUTMENT BRIDGE SEATS AND MODIFY WINGWALLS AS SHOWN IN THE PLANS.
6. REPAIR PIER COLUMNS.
7. REPAIR ABUTMENT DELAMINATED AND SPALLED AREAS.
8. RE-STRIPE BRIDGE AND APPROACH ROADWAY.

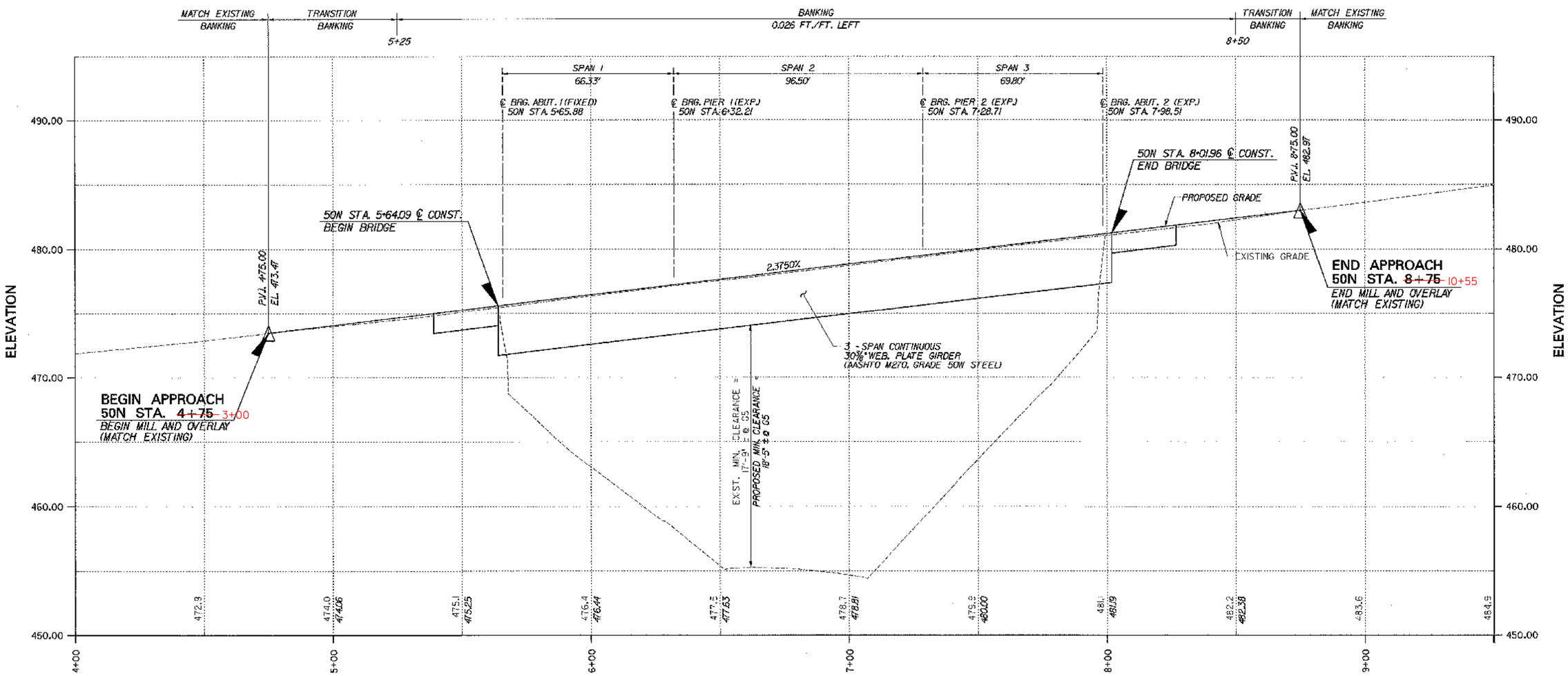
20 0 20
SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **50N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
GENERAL PLAN (50N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50gen_pl	Date 10/99
Bridge Sheet No. **BR50-1**	Sheet 85 of 307

TVGA ENGINEERING, SURVEYING, P.C.

RAISED BRIDGE 50N FINISH GRADE 1¼"



PROFILE – BR 50N

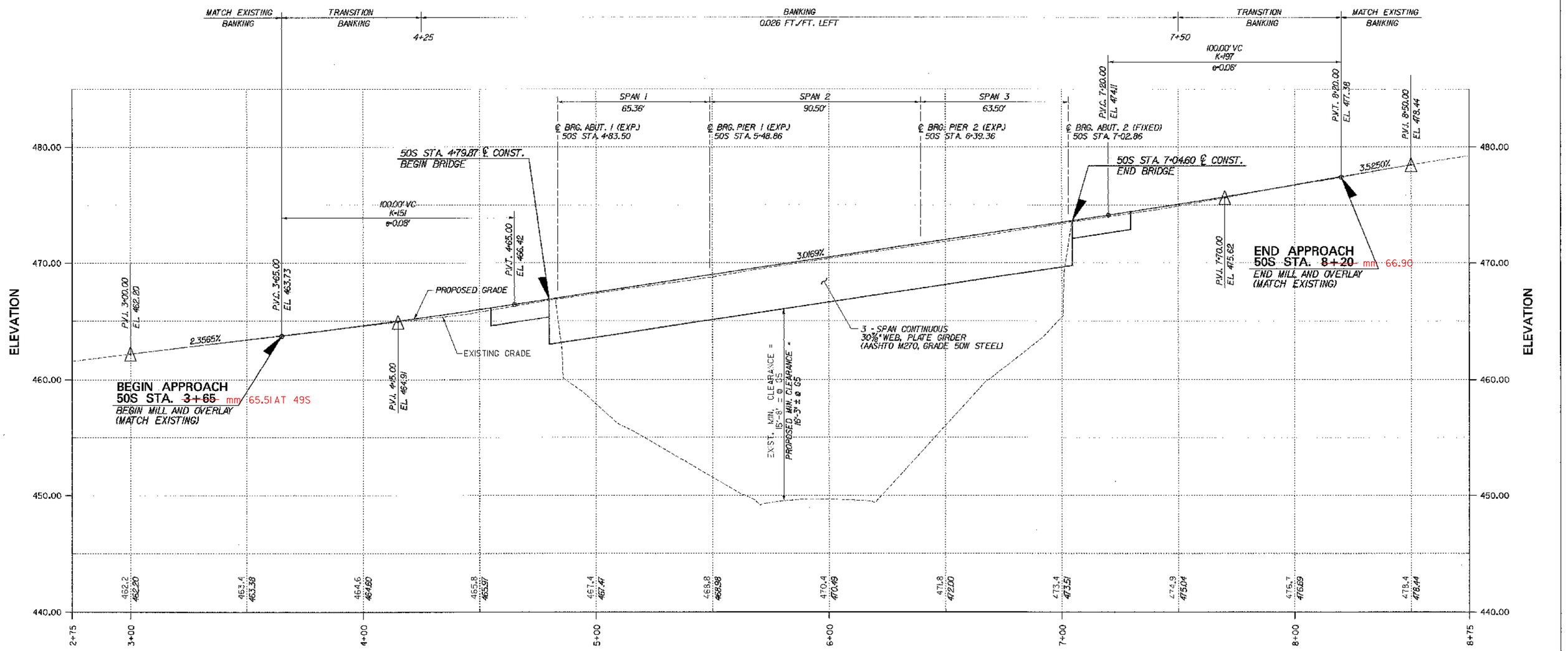
VERTICAL 0 4 8 12
HORIZONTAL 0 20 40 60
SCALE IN FEET

TVGA ENGINEERING, SURVEYING, P.C.

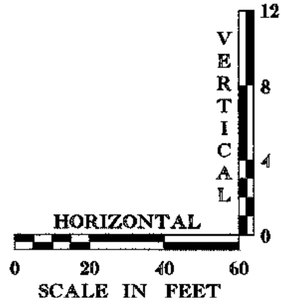
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 50N
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER U.S. ROUTE 2	
PROFILE (50N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50nprof	Date 10/99
Bridge Sheet No. BR50-2	Sheet 86 of 307

RAISED BRIDGE 50S FINISH GRADE ½"



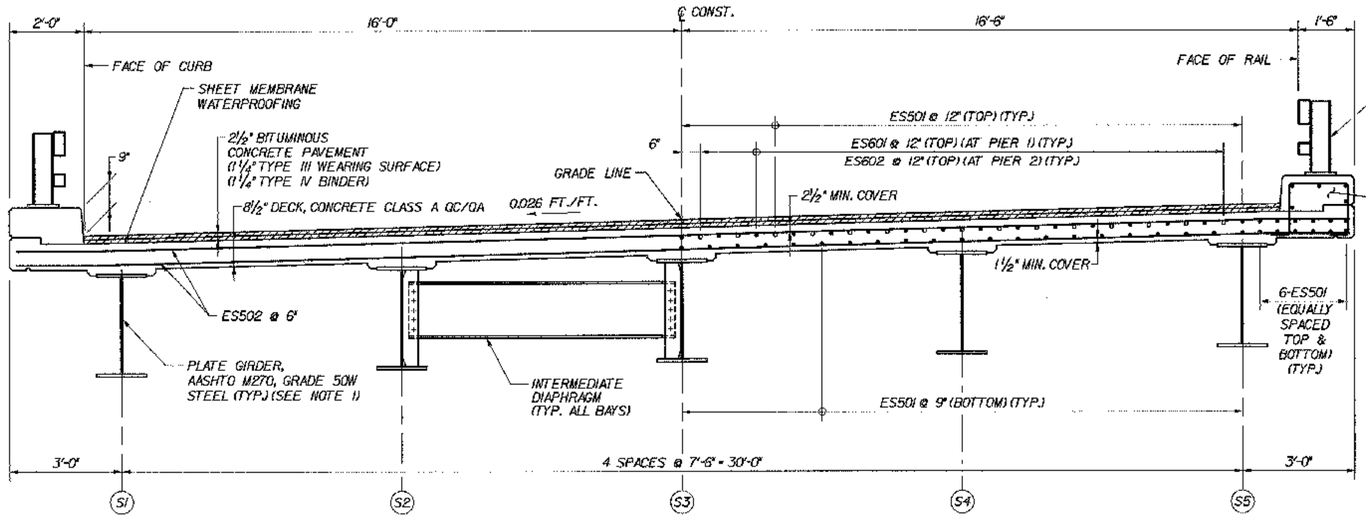
PROFILE – BR 50S



STATE OF VERMONT
AGENCY OF TRANSPORTATION

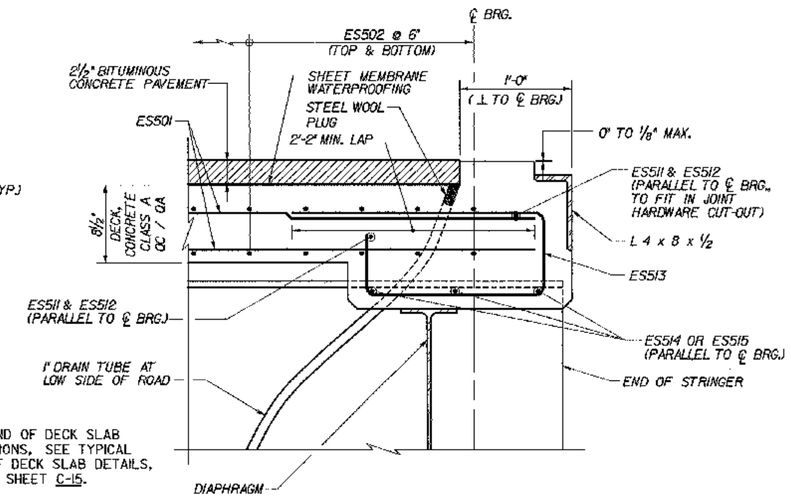
Town Of MIDDLESEX-BOLTON	Bridge No. 50S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER U.S. ROUTE 2	
PROFILE (50S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50sprof	Date 10/99
Bridge Sheet No. BR50-3	Sheet 87 of 307

TVGA ENGINEERING, SURVEYING, P.C.



TRANSVERSE SECTION

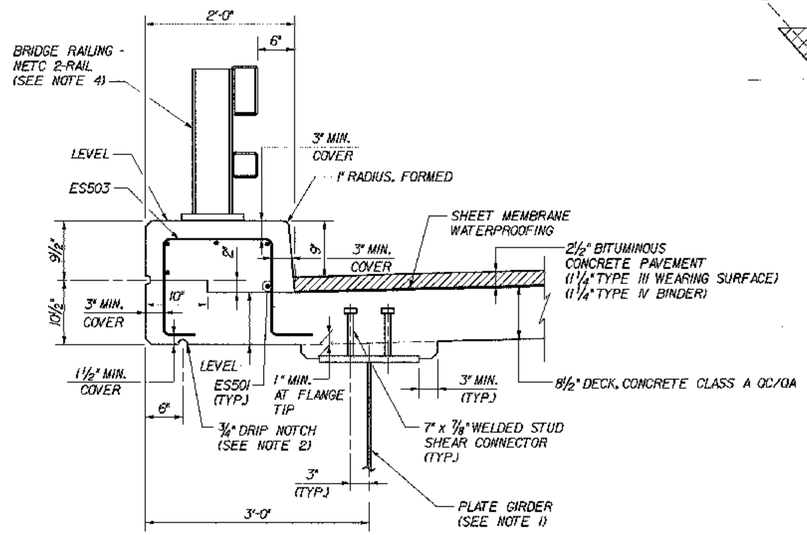
SCALE: ½" = 1'-0"



NOTE: FOR END OF DECK SLAB DIMENSIONS, SEE TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

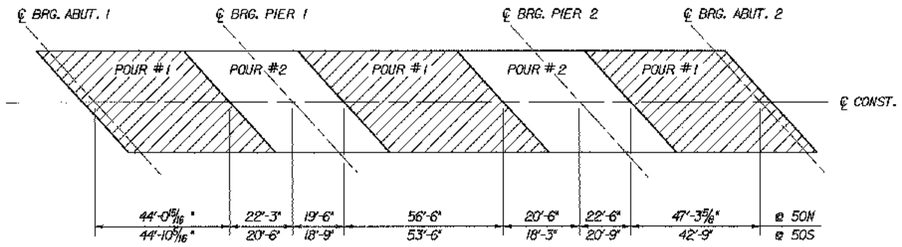
END OF DECK SLAB REINFORCEMENT DETAIL (EXP. END)

SCALE: 1½" = 1'-0"



FASCIA DETAIL

SCALE: 1"=1'-0"



DECK POUR SEQUENCE

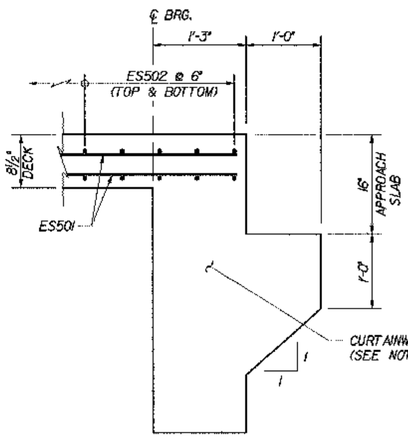
N.T.S.

BRIDGE 50N AND S WAS DONE IN A SINGLE POUR WITH NO CONSTRUCTION JOINTS.

DECK SLAB PLACEMENT NOTES

A. EACH CONCRETE DECK POUR SHALL BE PLACED CONTINUOUSLY WITHIN ONE EIGHT HOUR WORKING DAY. THERE SHALL BE A MINIMUM DELAY PERIOD OF 96 HOURS AFTER COMPLETION OF EACH POUR BEFORE BEGINNING ANOTHER POUR. INDIVIDUAL POUR NUMBERS AS SHOWN MAY BE COMBINED INTO A SINGLE POUR IF APPROVED BY THE VAOT STRUCTURES ENGINEER.

B. THE DECK CONCRETE SHALL BE RETARDED SUFFICIENTLY TO REMAIN PLASTIC UNTIL EACH POUR IS COMPLETE. THE QUANTITY OF RETARDANT SHALL BE APPROVED BY THE CONCRETE ENGINEER PRIOR TO PLACEMENT. ANY DEVIATIONS FROM THIS PROCEDURE MUST BE APPROVED BY THE VAOT STRUCTURES ENGINEER IN WRITING BEFORE THE POUR BEGINS.



END OF DECK SLAB REINFORCEMENT DETAIL (FIXED END)

SCALE: 1" = 1'-0"

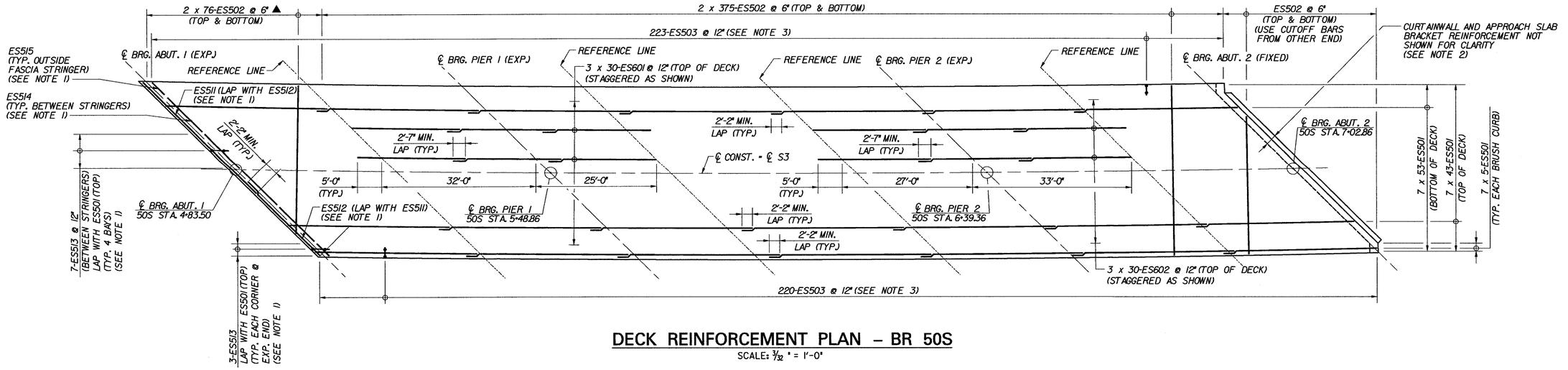
NOTES:

1. FOR PLATE GIRDER SIZES SEE STRINGER ELEVATION (50N&S), BRIDGE SHEET BR50-10.
2. END DRIP NOTCH 5 FEET BEFORE END OF SLAB AT "DOWNHILL" ABUTMENTS AT 45°.
3. FOR CURTAINWALL DETAILS AND REINFORCEMENT LAYOUT, SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
4. FOR DETAILS OF NETC BRIDGE RAIL AND APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

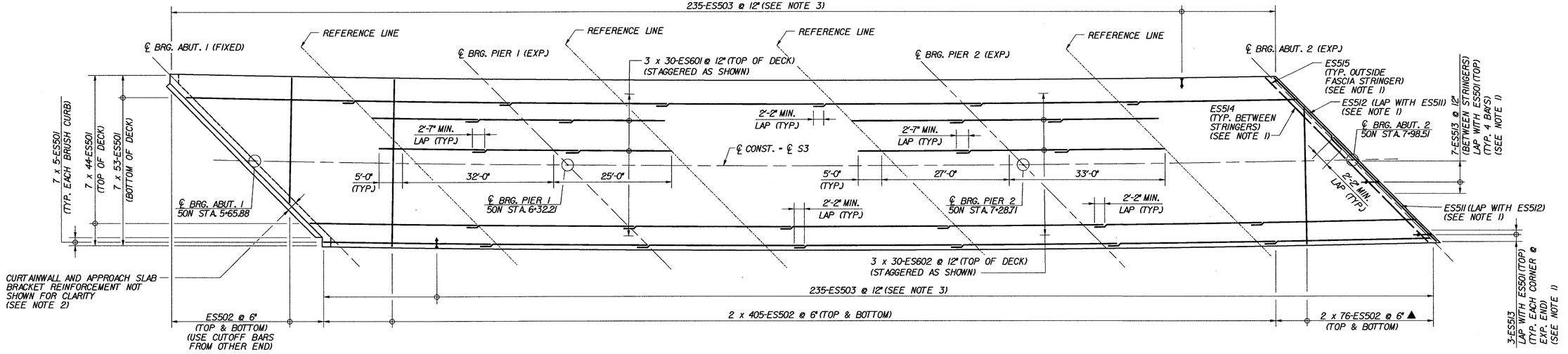
Town Of MIDDLESEX-BOLTON	Bridge No. 50N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
TRANSVERSE SECTION (50N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50tsect	Date 10/99
Bridge Sheet No. BR50-4	Sheet 88 of 307

TVGA ENGINEERING, SURVEYING, P.C.



DECK REINFORCEMENT PLAN – BR 50S

SCALE: 3/32 " = 1'-0"



DECK REINFORCEMENT PLAN – BR 50N

SCALE: 3/32 " = 1'-0"

KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

NOTES:

1. FOR END OF DECK SLAB DETAILS, SEE TRANSVERSE SECTION (50N&S), BRIDGE SHEET BR50-4.
2. FOR CURTAINWALL REINFORCEMENT, SEE TYPICAL CURTAINWALL DETAILS, BRIDGE SHEET C-42.
3. THE QUANTITY OF ES503 BARS SHOWN DOES NOT INCLUDE ADDITIONAL BARS REQUIRED BELOW THE BRIDGE RAIL POSTS. FOR DETAILS OF THE REQUIRED STIRRUP SPACING, SEE NETC 2-RAIL STANDARD SHEET BRI-97. FOR LOCATIONS OF THE BRIDGE RAIL POSTS, SEE CURB AND RAIL LAYOUT PLANS, BRIDGE SHEET BR50-7.

TVGA ENGINEERING, SURVEYING, P.C.

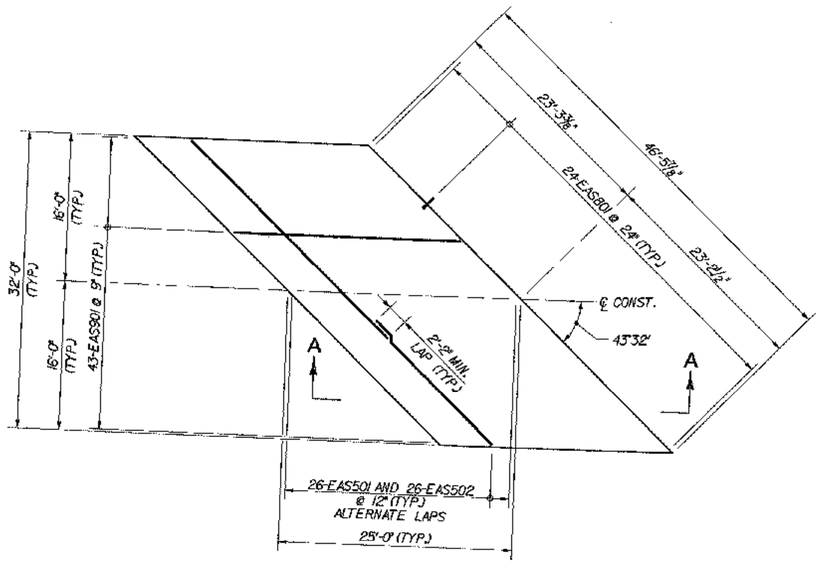
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **50N&S**
Highway No. I-89	Log Sta. / Surv. Sta.

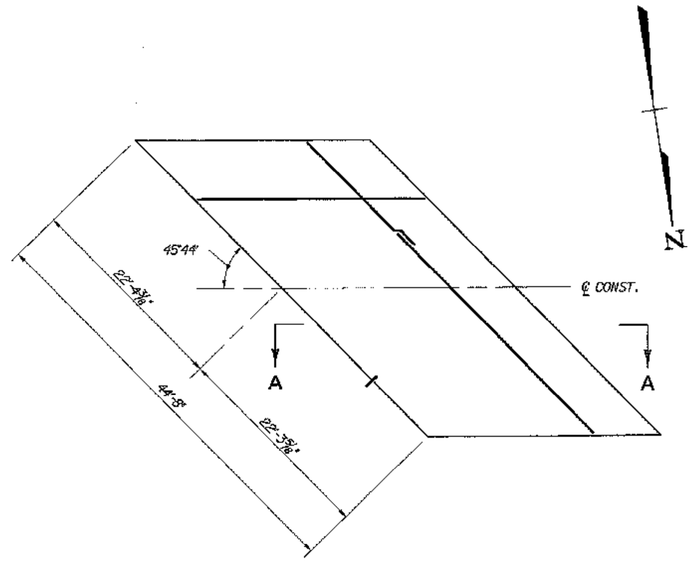
I-89 OVER U.S. ROUTE 2

DECK REINFORCEMENT PLANS (50N&S)

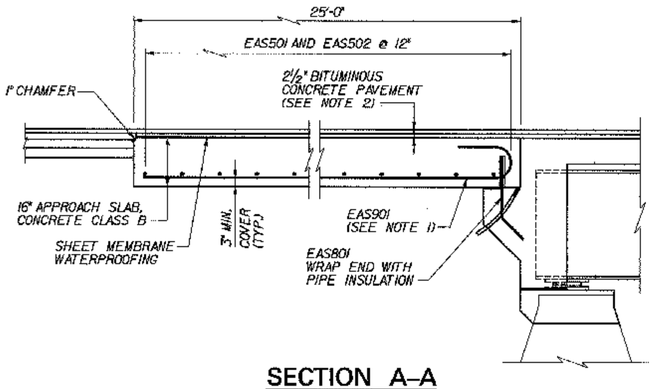
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50drp	Date 10/99
Bridge Sheet No. **BR50-5**	Sheet 89 of 307



50S ABUTMENT 1



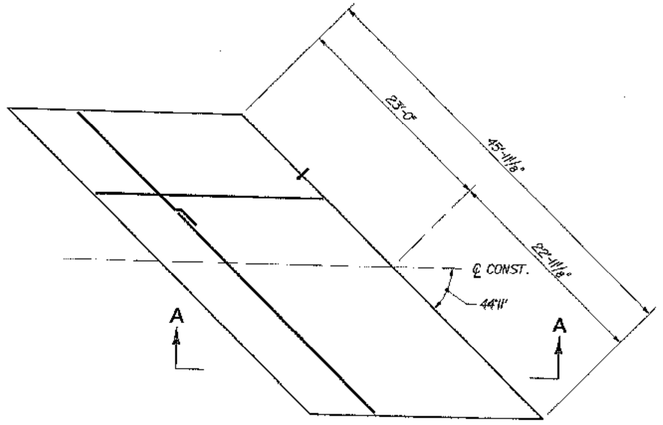
50S ABUTMENT 2



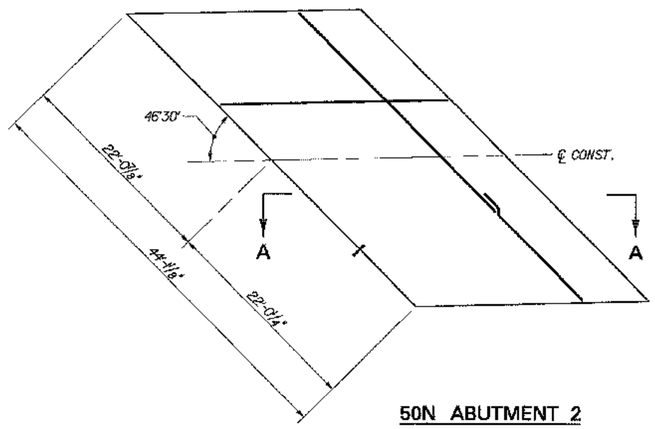
SECTION A-A

(APPROACH SLAB AT FIXED ABUT. SHOWN; SLAB AT EXPANSION ABUT. SIMILAR)

N.T.S.



50N ABUTMENT 1



50N ABUTMENT 2

RAISED FINISHED GRADE 1¼"

RAISED FINISHED GRADE ½"

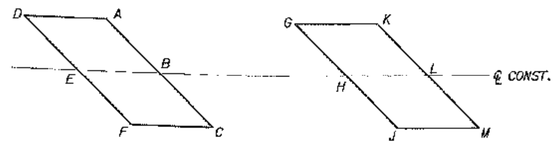
TOP OF APPROACH SLAB ELEVATIONS						
BR 50N			BR 50S			
LOCATION	STATION	ELEVATION	LOCATION	STATION	ELEVATION	
A	5+47.54	~~474.57~~ .67	A	4+62.93	~~465.73~~	465.77
B	5+84.09	~~475.38~~ .48	B	4+79.87	~~466.66~~	466.70
C	5+80.49	~~476.18~~ .28	C	4+96.66	~~467.56~~	467.62
D	5+22.40	~~473.97~~ .07	D	4+37.78	~~465.00~~	465.04
E	5+39.09	~~474.78~~ .88	E	4+54.87	~~465.91~~	465.95
F	5+55.63	~~475.59~~ .69	F	4+71.81	~~466.83~~	466.87
G	7+86.73	~~480.25~~ .35	G	6+88.96	~~472.55~~	472.59
H	8+01.96	~~481.03~~ .13	H	7+04.60	~~473.44~~	473.48
J	8+17.06	~~481.80~~ .90	J	7+20.13	~~474.33~~	474.38
K	8+11.86	~~480.85~~ .95	K	7+14.09	~~473.31~~	473.35
L	8+26.98	~~481.62~~ .72	L	7+29.60	~~474.20~~	474.25
M	8+41.94	~~482.39~~ .49	M	7+44.98	~~475.09~~	475.14

NOTES:

1. TIP HOOK END OF BAR AS REQUIRED TO ACHIEVE MINIMUM COVER.
2. FOR DETAILS OF APPROACH SLAB PAVEMENT AND TRANSITION TO EXISTING PAVEMENT, SEE DETAIL ON TYPICAL END OF DECK SLAB DETAILS, BRIDGE SHEET C-15.

APPROACH SLAB PLANS

SCALE: ⅛" = 1'-0"



ABUTMENT 1 ABUTMENT 2

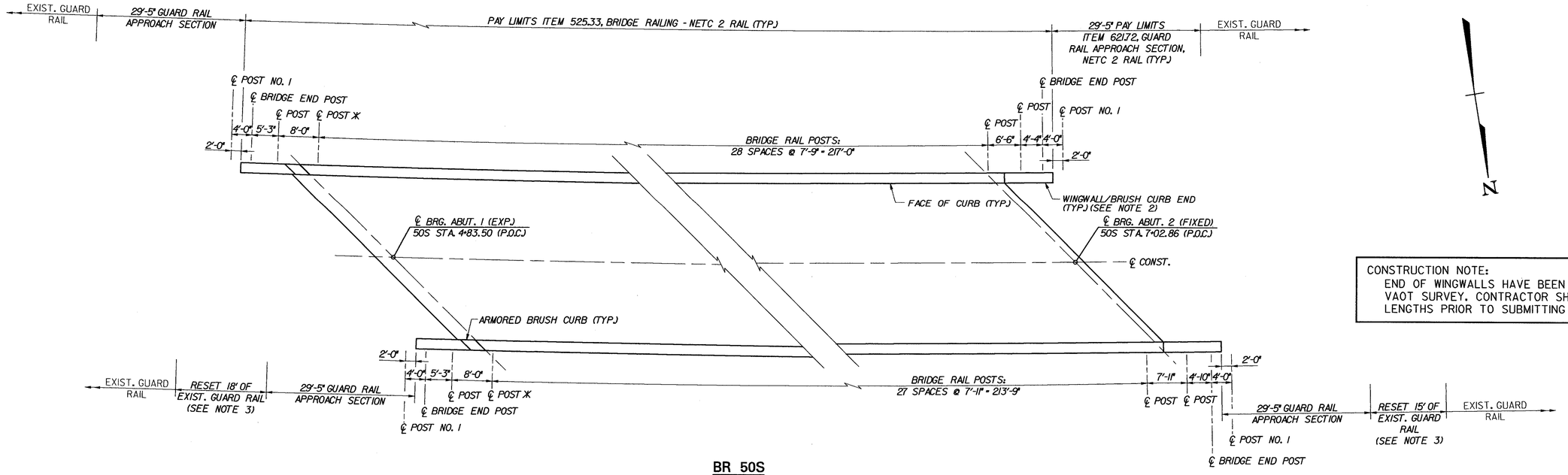
APPROACH SLAB ELEVATION KEY

N.T.S.

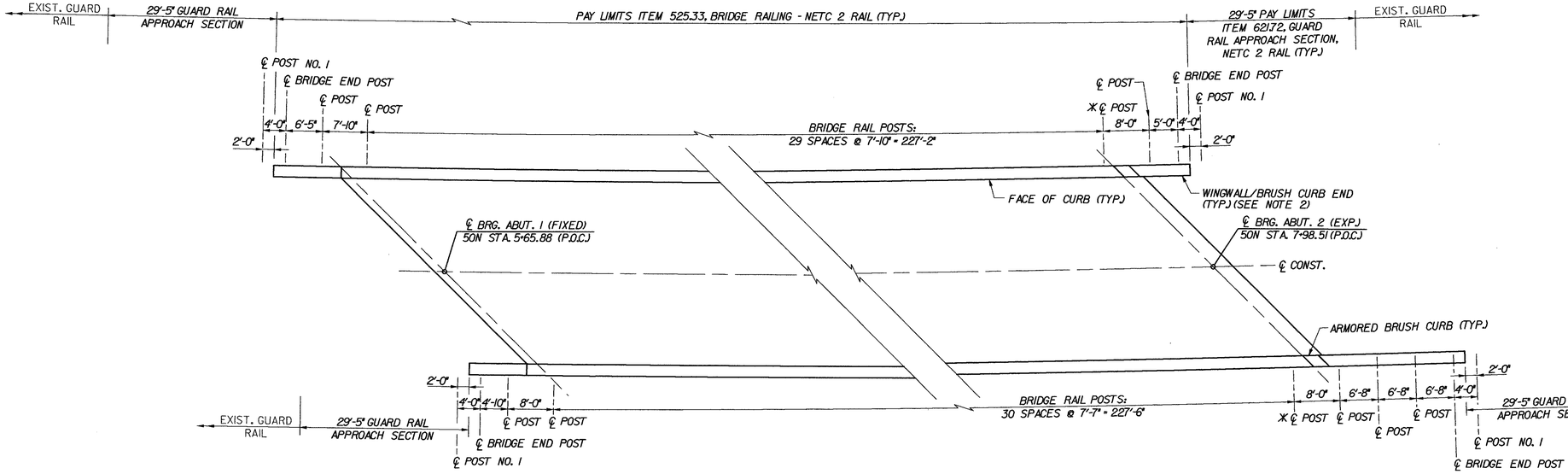
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **50N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
APPROACH SLAB DETAILS (50N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50apslab	Date 10/99
Bridge Sheet No. **BR50-6**	Sheet 90 of 307

TVGA ENGINEERING, SURVEYING, P.C.



BR 50S



BR 50N

RAILING LAYOUT

SCALE: 3/32 "=1'-0"

* RAIL EXPANSION JOINT SHALL BE LOCATED 2'-0" FROM ℄ OF INDICATED POST, ON BRIDGE EXPANSION JOINT SIDE OF POST.

CONSTRUCTION NOTE:
END OF WINGWALLS HAVE BEEN LOCATED APPROXIMATELY BY VAOT SURVEY. CONTRACTOR SHALL VERIFY REQUIRED RAIL LENGTHS PRIOR TO SUBMITTING SHOP DRAWINGS FOR APPROVAL.

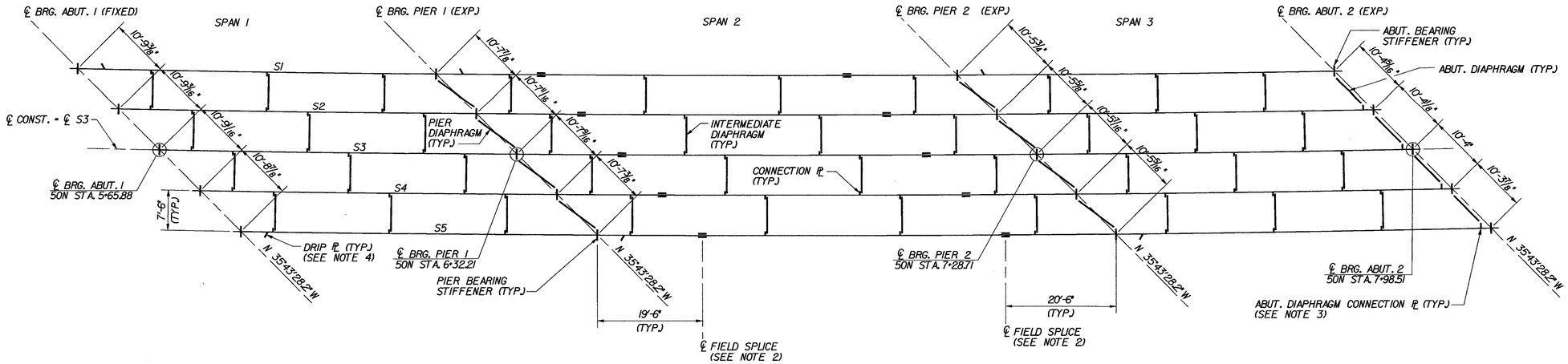
NOTES:

1. FOR NETC 2-RAIL BRIDGE RAILING DETAILS AND INFORMATION ABOUT THE NETC GUARD RAIL APPROACH SECTION, SEE STANDARD SHEETS BRI-97 AND BR3-97, AND GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B.
2. FOR BRUSH CURB END DETAIL, SEE TYPICAL WINGWALL DETAILS (1 OF 2), BRIDGE SHEET C-43.
3. ALL WORK REQUIRED TO RESET THE EXISTING GUARD RAIL SHALL BE PAID UNDER ITEM 621.75, "REMOVING AND RESET GUARD RAIL."
4. A QUANTITY OF 40'-0" OF ITEM 616.28 "CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B" SHALL BE PLACED AT THE END OF EACH WINGWALL. SEE GUARD RAIL APPROACH SECTION, NETC 2 RAIL, BRIDGE SHEETS C-46A AND C-46B FOR DETAILS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

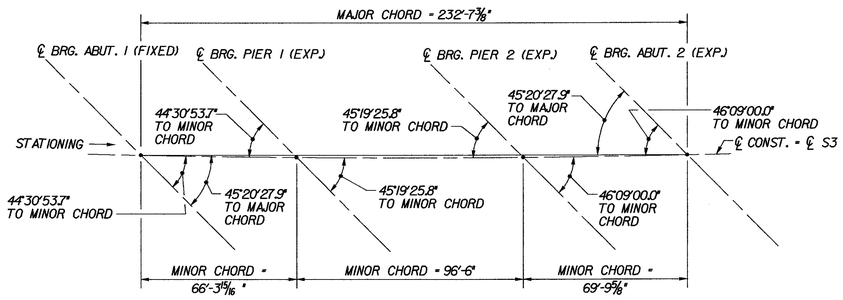
Town Of MIDDLESEX-BOLTON	Bridge No. **50N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER US ROUTE 2	
CURB AND RAIL LAYOUT PLANS (50N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50brrail	Date 10/99
Bridge Sheet No. **BR50-7**	Sheet 91 of 307

TVGA ENGINEERING, SURVEYING, P.C.



FRAMING PLAN – BR 50N

SCALE: 3/32 " = 1'-0"



LAYOUT DIAGRAM

N.T.S.

STRINGER NUMBER	STRINGER RADIUS	SIDE	SPAN 1 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL	SPAN 2 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL	SPAN 3 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL
S1	5751.65'	LEFT					66' - 6 1/8"						96' - 8 15/16"					69' - 11 5/8"
		RIGHT	14' - 0"	21' - 6"	21' - 6"	9' - 6 1/8"		14' - 0"	25' - 0"	25' - 0"	25' - 0"	7' - 8 15/16"		17' - 1 5/8"	20' - 0"	20' - 0"	12' - 10"	
S2	5759.15'	LEFT	6' - 3 3/16"	21' - 6"	21' - 6"	17' - 1 13/16"	66' - 5"	6' - 5 5/16"	25' - 0"	25' - 0"	25' - 0"	15' - 2 3/16"	96' - 7 1/2"	9' - 10 5/8"	20' - 0"	20' - 0"	20' - 0"	69' - 10 5/8"
		RIGHT	14' - 0"	21' - 6"	21' - 6"	9' - 5"		14' - 0"	25' - 0"	25' - 0"	25' - 0"	7' - 7 1/2"		17' - 0 3/8"	20' - 0"	20' - 0"	12' - 10 1/4"	
S3	5766.65'	LEFT	6' - 3 7/16"	21' - 6"	21' - 6"	17' - 0 1/2"	66' - 3 15/16"	6' - 5 9/16"	25' - 0"	25' - 0"	25' - 0"	15' - 0 7/16"	96' - 6"	9' - 9 5/8"	20' - 0"	20' - 0"	20' - 0"	69' - 9 5/8"
		RIGHT	14' - 0"	21' - 6"	21' - 6"	9' - 3 15/16"		14' - 0"	25' - 0"	25' - 0"	25' - 0"	7' - 6"		16' - 11 3/16"	20' - 0"	20' - 0"	12' - 10 7/16"	
S4	5774.15'	LEFT	6' - 3 11/16"	21' - 6"	21' - 6"	16' - 11 3/16"	66' - 2 7/8"	6' - 5 13/16"	25' - 0"	25' - 0"	25' - 0"	14' - 10 11/16"	96' - 4 1/2"	9' - 8 5/8"	20' - 0"	20' - 0"	20' - 0"	69' - 8 5/8"
		RIGHT	14' - 0"	21' - 6"	21' - 6"	9' - 2 7/8"		14' - 0"	25' - 0"	25' - 0"	25' - 0"	7' - 4 1/2"		16' - 10"	20' - 0"	20' - 0"	12' - 10 5/8"	
S5	5781.65'	LEFT	6' - 3 15/16"	21' - 6"	21' - 6"	16' - 9 7/8"	66' - 1 13/16"	6' - 6"	25' - 0"	25' - 0"	25' - 0"	14' - 9 1/16"	96' - 3 1/16"	9' - 7 5/8"	20' - 0"	20' - 0"	20' - 0"	69' - 7 5/8"
		RIGHT																

STRINGER LAYOUT TABLE

(SEE NOTE 3)

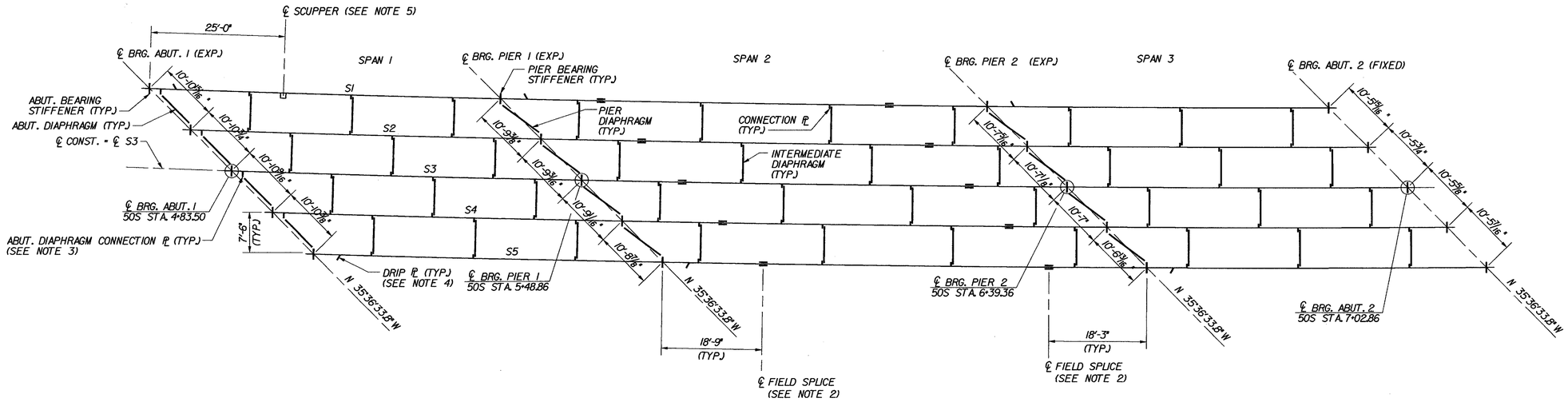
NOTES:

1. FOR PLATE GIRDER AND DIAPHRAGM DETAILS, SEE TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL GIRDER SPLICE DETAILS, BRIDGE SHEET C-20.
3. STRINGER LAYOUT DIMENSIONS BEGIN AND END AT ABUTMENT CENTERLINES OF BEARING. LOCATION OF ABUTMENT DIAPHRAGM CONNECTION PLATES NOT INCLUDED IN TABLE. THE CONTRACTOR SHALL PROVIDE THIS DIMENSION IN SHOP DRAWINGS IN ACCORDANCE WITH DETAILS SHOWN IN TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
4. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

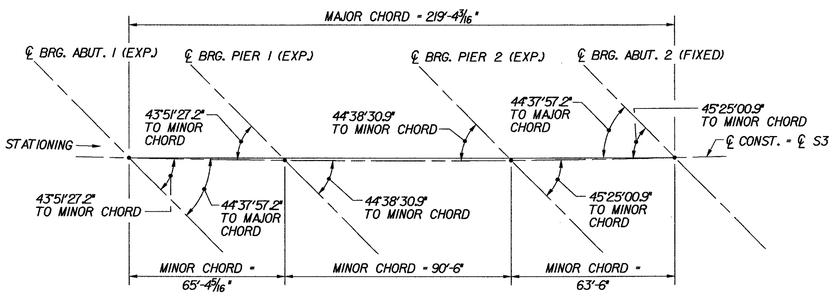
Town Of MIDDLESEX-BOLTON	Bridge No. **50N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER U.S. ROUTE 2	
FRAMING PLAN (50N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50nfp	Date 10/99
Bridge Sheet No. **BR50-8**	Sheet 92 of 307

TVGA ENGINEERING, SURVEYING, P.C.



FRAMING PLAN – BR 50S

SCALE: 3/32 " = 1'-0"



LAYOUT DIAGRAM

N.T.S.

NOTES:

1. FOR PLATE GIRDER AND DIAPHRAGM DETAILS, SEE TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL GIRDER SPLICE DETAILS, BRIDGE SHEET C-20.
3. STRINGER LAYOUT DIMENSIONS BEGIN AND END AT ABUTMENT CENTERLINES OF BEARING. LOCATION OF ABUTMENT DIAPHRAGM CONNECTION PLATES NOT INCLUDED IN TABLE. THE CONTRACTOR SHALL PROVIDE THIS DIMENSION IN SHOP DRAWINGS IN ACCORDANCE WITH DETAILS SHOWN IN TYPICAL PLATE GIRDER DETAILS, BRIDGE SHEETS C-17 AND C-18.
4. FOR DRIP PLATE DETAIL, SEE TYPICAL BRIDGE DETAILS, BRIDGE SHEET C-46.
5. FOR SCUPPER DETAILS, SEE TYPICAL SCUPPER DETAILS, BRIDGE SHEET C-39.

STRINGER NUMBER	STRINGER RADIUS	SIDE	SPAN 1 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL	SPAN 2 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING					TOTAL	SPAN 3 (ALONG ARC) BRG. STIFFENER / CONNECTION PL. SPACING				TOTAL
S1	5677.65'	LEFT					65' - 6 9/16"						90' - 8 15/16"					63' - 8"
		RIGHT	19' - 0"	19' - 0"	19' - 0"	8' - 6 9/16"		14' - 9"	23' - 0"	24' - 0"	23' - 0"	5' - 11 15/16"		15' - 6 1/4"	20' - 9"	20' - 9"	6' - 7 3/4"	
S2	5685.15'	LEFT	11' - 1 1/8"	19' - 0"	19' - 0"	16' - 4 5/16"	65' - 5 7/16"	7' - 0 1/16"	23' - 0"	24' - 0"	23' - 0"	13' - 7 3/8"	90' - 7 7/16"	8' - 1"	20' - 9"	20' - 9"	14' - 0"	63' - 7"
		RIGHT	19' - 0"	19' - 0"	19' - 0"	8' - 5 7/16"		14' - 9"	23' - 0"	24' - 0"	23' - 0"	5' - 10 7/16"		15' - 5"	20' - 9"	20' - 9"	6' - 8"	
S3	5692.65'	LEFT	11' - 1 3/8"	19' - 0"	19' - 0"	16' - 2 15/16"	65' - 4 5/16"	7' - 0 5/16"	23' - 0"	24' - 0"	23' - 0"	13' - 5 11/16"	90' - 6"	8' - 0"	20' - 9"	20' - 9"	14' - 0"	63' - 6"
		RIGHT	19' - 0"	19' - 0"	19' - 0"	8' - 4 5/16"		14' - 9"	23' - 0"	24' - 0"	23' - 0"	5' - 9"		14' - 8 1/4"	20' - 9"	20' - 9"	7' - 3 3/4"	
S4	5700.15'	LEFT	11' - 1 5/8"	19' - 0"	19' - 0"	16' - 1 9/16"	65' - 3 3/16"	7' - 0 9/16"	23' - 0"	24' - 0"	23' - 0"	13' - 4"	90' - 4 9/16"	7' - 11"	20' - 9"	20' - 9"	14' - 0"	63' - 5"
		RIGHT	19' - 0"	19' - 0"	19' - 0"	8' - 3 3/16"		14' - 9"	23' - 0"	24' - 0"	23' - 0"	5' - 7 9/16"		15' - 2 9/16"	20' - 9"	20' - 9"	6' - 8 7/16"	
S5	5707.65'	LEFT	11' - 1 7/8"	19' - 0"	19' - 0"	16' - 0 1/4"	65' - 2 1/8"	7' - 0 13/16"	23' - 0"	24' - 0"	23' - 0"	13' - 2 1/4"	90' - 3 1/16"	7' - 10 1/16"	20' - 9"	20' - 9"	14' - 0"	63' - 4 1/16"
		RIGHT																

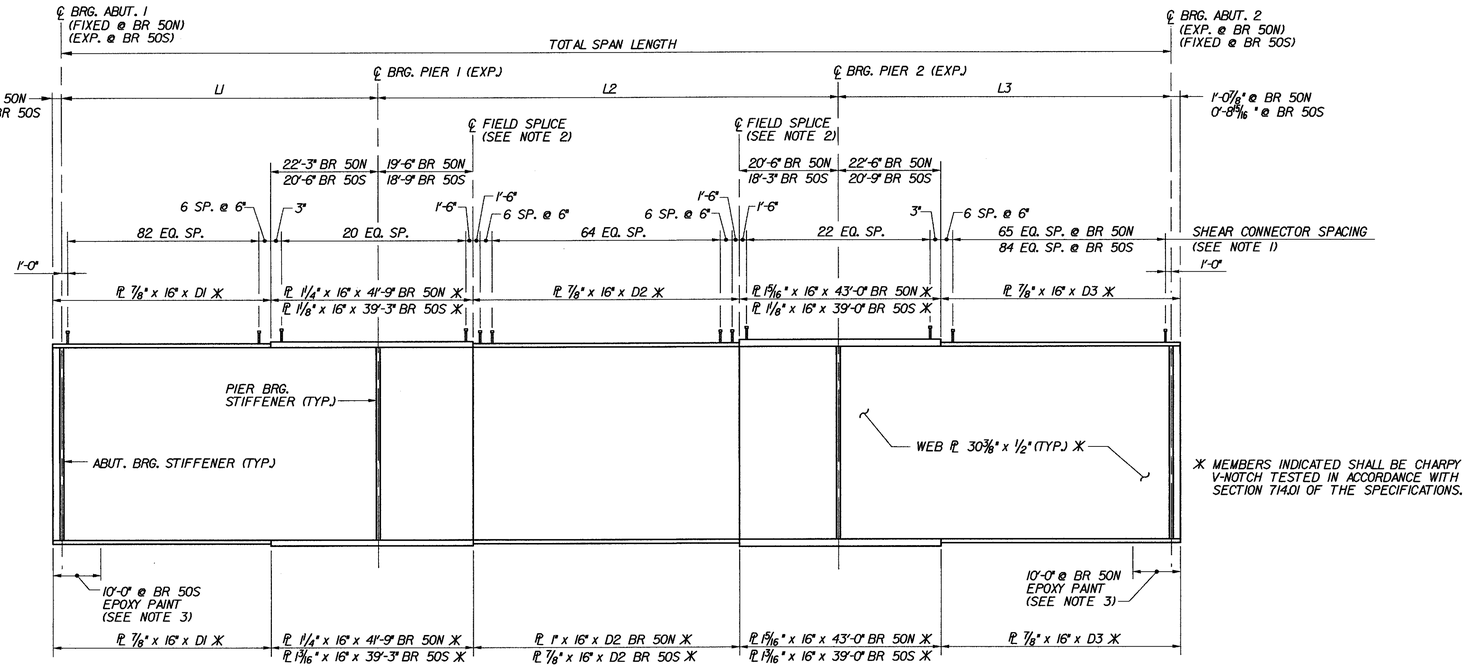
STRINGER LAYOUT TABLE

(SEE NOTE 3)

TVGA ENGINEERING, SURVEYING, P.C.

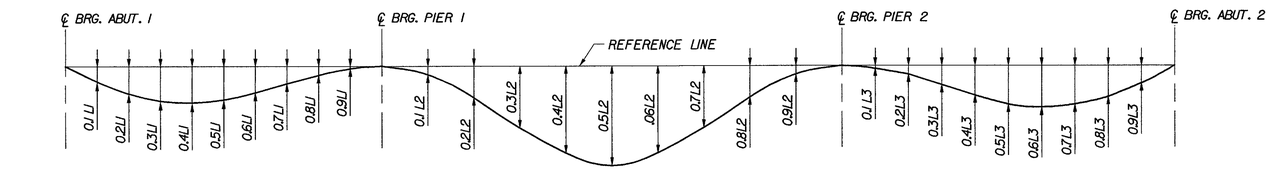
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 50S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER U.S. ROUTE 2	
FRAMING PLAN (50S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50sfp	Date 10/99
Bridge Sheet No. BR50-9	Sheet 93 of 307



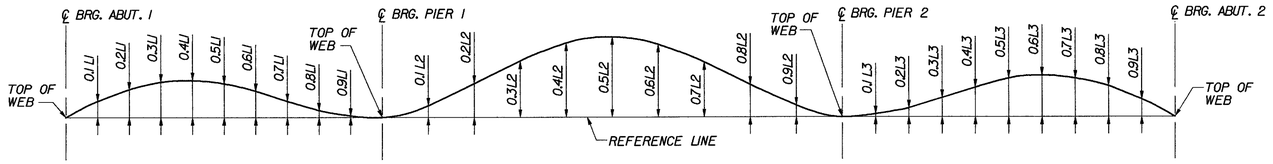
STRINGER ELEVATION (PLATE GIRDER)

N.T.S.



DEAD LOAD DEFLECTION DIAGRAM

N.T.S.



CAMBER DIAGRAM

N.T.S.

BR 50N					
		SPAN LENGTHS (ALONG ARC)			TOTAL
STRINGER	RADIUS	L1	L2	L3	SPAN LENGTH
S1	5751.65'	66' - 6 1/8"	96' - 8 15/16"	69' - 11 5/8"	233' - 2 11/16"
S2	5759.15'	66' - 5"	96' - 7 1/2"	69' - 10 5/8"	232' - 11 1/8"
S3	5766.65'	66' - 3 15/16"	96' - 6"	69' - 9 5/8"	232' - 7 9/16"
S4	5774.15'	66' - 2 7/8"	96' - 4 1/2"	69' - 8 5/8"	232' - 4"
S5	5781.65'	66' - 1 13/16"	96' - 3 1/16"	69' - 7 5/8"	232' - 0 1/2"
		SECTION LENGTHS (ALONG ARC)			
STRINGER		D1	D2	D3	
S1		45' - 0 1/8"	56' - 8 15/16"	48' - 6 1/2"	
S2		44' - 11"	56' - 7 1/2"	48' - 5 1/2"	
S3		44' - 9 15/16"	56' - 6"	48' - 4 1/2"	
S4		44' - 8 7/8"	56' - 4 1/2"	48' - 3 1/2"	
S5		44' - 7 13/16"	56' - 3 1/16"	48' - 2 1/2"	

BR 50S					
		SPAN LENGTHS (ALONG ARC)			TOTAL
STRINGER	RADIUS	L1	L2	L3	SPAN LENGTH
S1	5677.65'	65' - 6 9/16"	90' - 8 15/16"	63' - 8"	219' - 11 1/2"
S2	5685.15'	65' - 5 7/16"	90' - 7 7/16"	63' - 7"	219' - 7 7/8"
S3	5692.65'	65' - 4 5/16"	90' - 6"	63' - 6"	219' - 4 5/16"
S4	5700.15'	65' - 3 3/16"	90' - 4 9/16"	63' - 5"	219' - 0 3/4"
S5	5707.65'	65' - 2 1/8"	90' - 3 1/16"	63' - 4 1/16"	218' - 9 1/4"
		SECTION LENGTHS (ALONG ARC)			
STRINGER		D1	D2	D3	
S1		46' - 2 1/4"	53' - 8 15/16"	43' - 7 15/16"	
S2		46' - 1 1/8"	53' - 7 7/16"	43' - 6 15/16"	
S3		46' - 0"	53' - 6"	43' - 5 15/16"	
S4		45' - 10 7/8"	53' - 4 9/16"	43' - 4 15/16"	
S5		45' - 9 13/16"	53' - 3 1/16"	43' - 4"	

DL DEFLECTION																													
BRIDGE	CL ABUT. 1	0.1 L1	0.2 L1	0.3 L1	0.4 L1	0.5 L1	0.6 L1	0.7 L1	0.8 L1	0.9 L1	CL PIER 1	0.1 L2	0.2 L2	0.3 L2	0.4 L2	0.5 L2	0.6 L2	0.7 L2	0.8 L2	0.9 L2	CL PIER 2	0.1 L3	0.2 L3	0.3 L3	0.4 L3	0.5 L3	0.6 L3	0.7 L3	0.8 L3	0.9 L3	CL ABUT. 2
50N	0"	0 1/4"	0 7/16"	0 9/16"	0 9/16"	0 1/2"	0 3/8"	0 3/16"	0"	-0 1/16"	0"	0 3/8"	1"	1 9/16"	2"	2 1/8"	1 15/16"	1 1/2"	0 15/16"	0 3/8"	0"	0"	0 1/8"	0 5/16"	0 1/2"	0 11/16"	0 3/4"	0 11/16"	0 9/16"	0 5/16"	0"
50S	0"	0 1/4"	0 7/16"	0 9/16"	0 5/8"	0 9/16"	0 7/16"	0 1/4"	0 1/16"	0"	0"	0 5/16"	0 13/16"	1 5/16"	1 5/8"	1 3/4"	1 5/8"	1 5/16"	0 13/16"	0 5/16"	0"	-0 1/16"	0 1/16"	0 3/16"	0 5/16"	0 7/16"	0 1/2"	0 1/2"	0 3/8"	0 3/16"	0"

TOTAL CAMBER																													
BRIDGE	CL ABUT. 1	0.1 L1	0.2 L1	0.3 L1	0.4 L1	0.5 L1	0.6 L1	0.7 L1	0.8 L1	0.9 L1	CL PIER 1	0.1 L2	0.2 L2	0.3 L2	0.4 L2	0.5 L2	0.6 L2	0.7 L2	0.8 L2	0.9 L2	CL PIER 2	0.1 L3	0.2 L3	0.3 L3	0.4 L3	0.5 L3	0.6 L3	0.7 L3	0.8 L3	0.9 L3	CL ABUT. 2
50N	0"	0 11/16"	1 3/16"	1 1/2"	1 9/16"	1 7/16"	1 1/8"	0 11/16"	0 1/4"	0"	0"	0 1/2"	1 7/16"	2 3/8"	3 1/8"	3 3/8"	3 1/16"	2 5/16"	1 3/8"	0 1/2"	0"	0 1/16"	0 3/8"	0 13/16"	1 1/4"	1 5/8"	1 3/4"	1 5/8"	1 5/16"	0 3/4"	0"
50S	0"	0 11/16"	1 3/16"	1 1/2"	1 5/8"	1 1/2"	1 3/16"	0 3/4"	0 5/16"	0 1/16"	0"	0 3/8"	1 1/8"	2"	2 3/4"	3"	2 3/4"	2"	1 1/8"	0 3/8"	0"	0"	0 5/16"	0 11/16"	1 1/16"	1 3/8"	1 1/2"	1 7/16"	1 1/8"	0 5/8"	0"

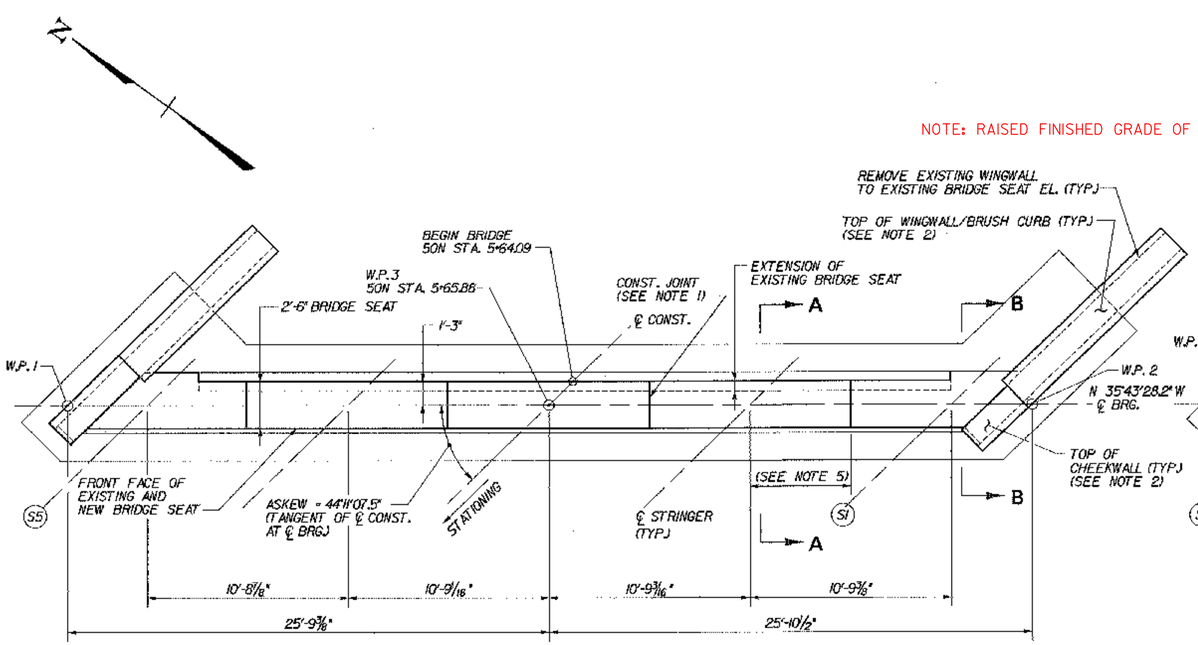
NOTES:

1. EACH ROW OF SHEAR CONNECTORS SHALL CONSIST OF 2 STUDS. FOR LATERAL SPACING, SEE TRANSVERSE SECTION (50N&S), BRIDGE SHEET BR50-4.
2. FOR FIELD SPLICE DETAILS, SEE TYPICAL GIRDER SPLICE DETAILS, BRIDGE SHEET C-20.
3. ALL STRUCTURAL STEEL WITHIN 10 FEET OF END OF STRINGER AT EXPANSION ENDS SHALL BE COATED WITH A PROTECTIVE PAINT SYSTEM, WITH THE FINAL COAT TO BE DARK BROWN (COLOR CHIP #20059) TO BLEND WITH THE WEATHERING STEEL. THE COST OF PAINTING SHALL BE PAID FOR UNDER ITEM 513.25, "STRUCTURAL PAINTING, SHOP APPLIED".

STATE OF VERMONT
AGENCY OF TRANSPORTATION

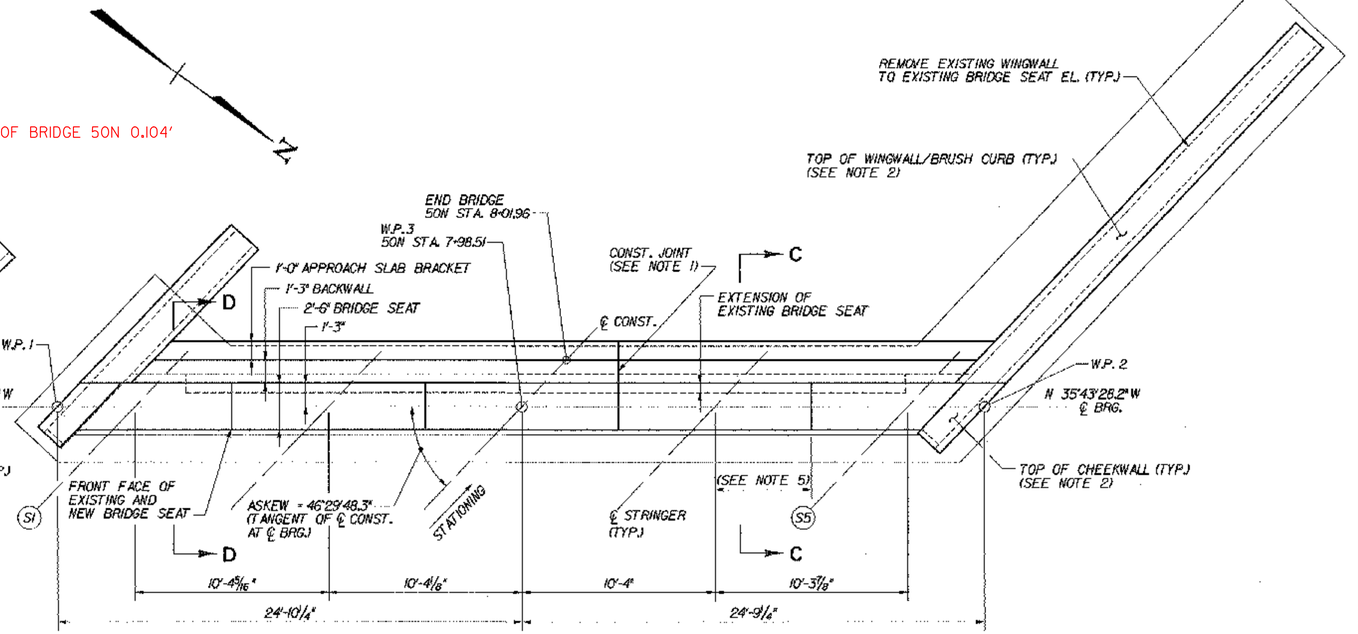
Town Of MIDDLESEX-BOLTON	Bridge No. **50N&S**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
STRINGER ELEVATION (50N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA ENGINEERING, SURVEYING, P.C.	TVGA CAD Drawing No. 50str_el Date 08/00
	Bridge Sheet No. **BR50-10** Sheet 94 of 307

NOTE: RAISED FINISHED GRADE OF BRIDGE 50N 0.104'



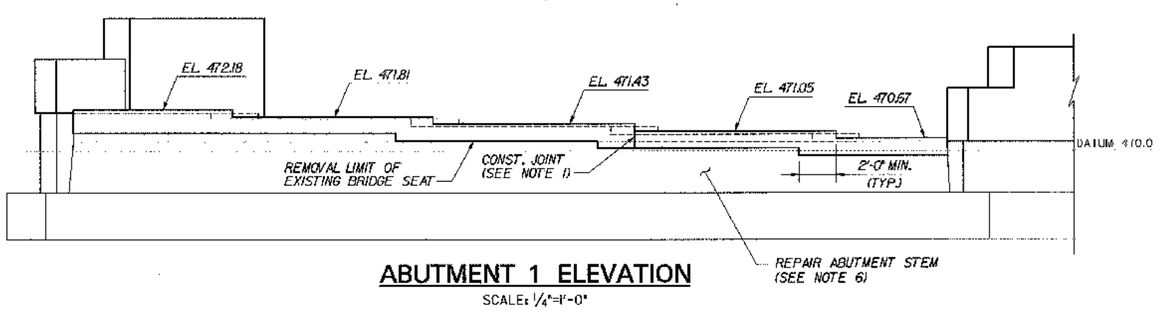
ABUTMENT 1 PLAN (FIXED)

SCALE: 1/4"=1'-0"



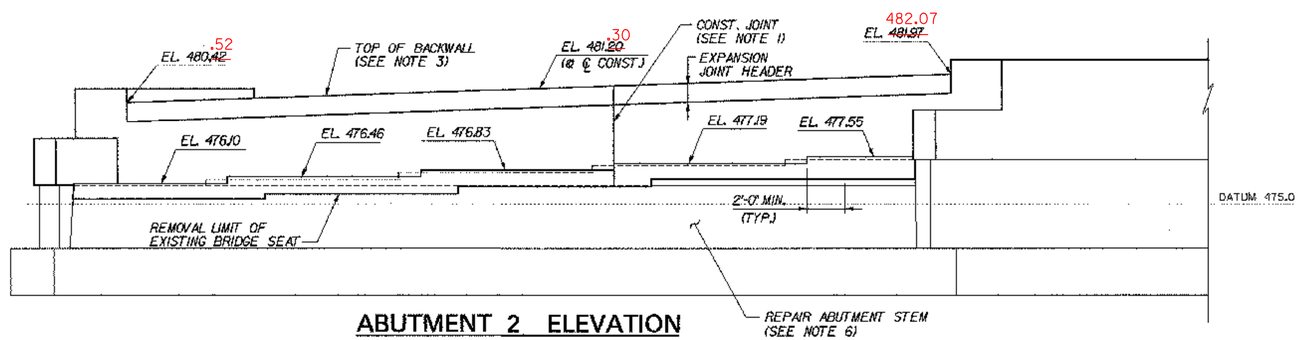
ABUTMENT 2 PLAN (EXP.)

SCALE: 1/4"=1'-0"



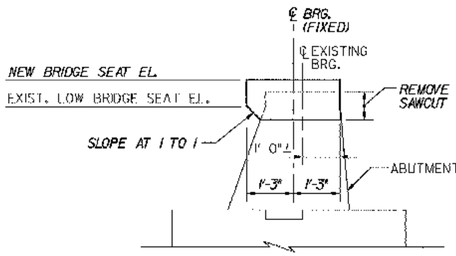
ABUTMENT 1 ELEVATION

SCALE: 1/4"=1'-0"



ABUTMENT 2 ELEVATION

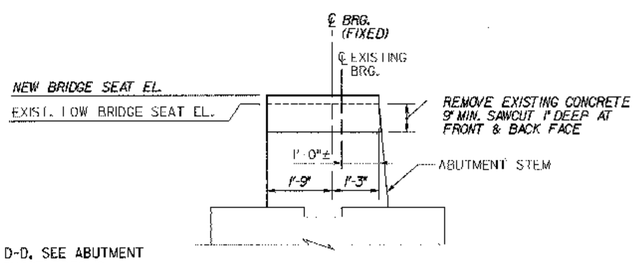
SCALE: 1/4"=1'-0"



SECTION A–A

SCALE: 1/2"=1'-0"

NOTE: FOR SECTIONS C-C AND D-D, SEE ABUTMENT MASONRY (50S), BRIDGE SHEET BR50-12.



SECTION B–B

SCALE: 1/2"=1'-0"

NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40, AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-13 THROUGH SC-16 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 50N
Highway No. I-89	Log Sta. / Surv. Sta.

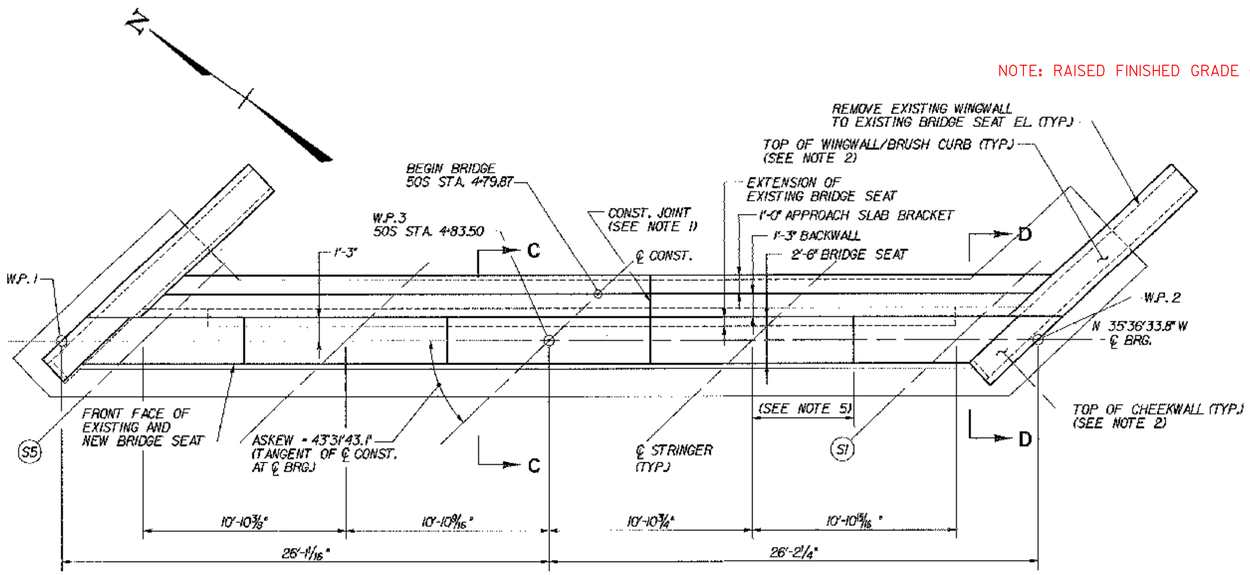
I-89 NB OVER U.S. ROUTE 2

ABUTMENT MASONRY (50N)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50abmas	Date 10/99
Bridge Sheet No. BR50-11	Sheet 95 of 307

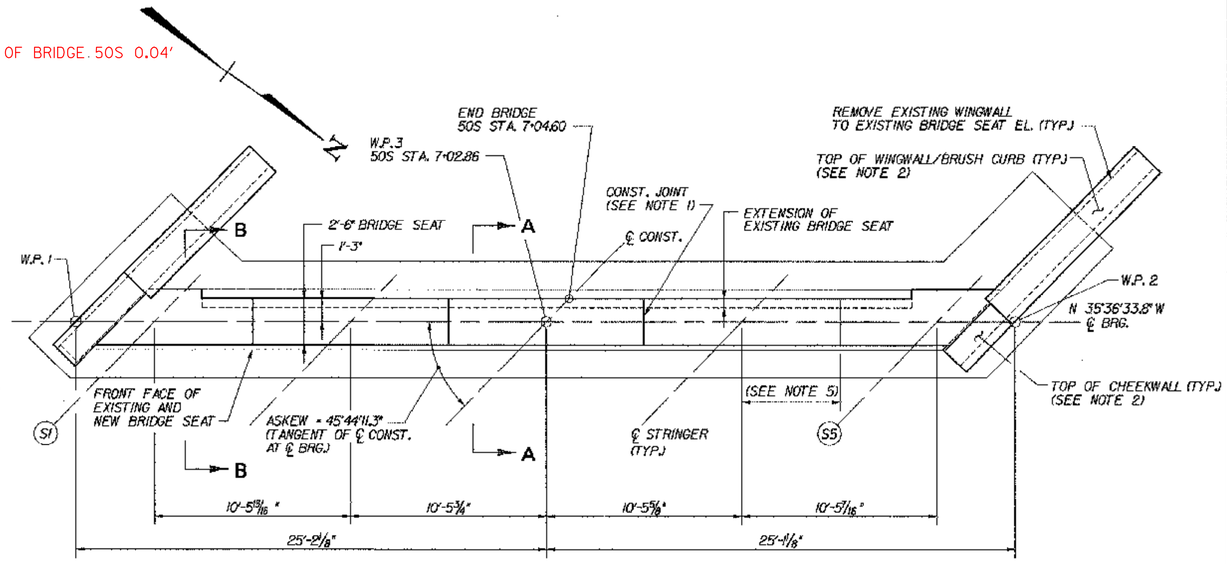
TVGA ENGINEERING, SURVEYING, P.C.

NOTE: RAISED FINISHED GRADE OF BRIDGE 50S 0.04'



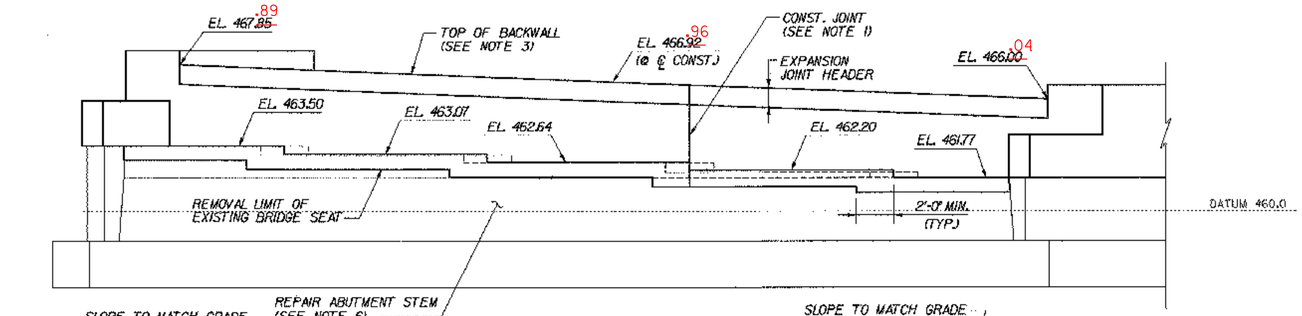
ABUTMENT 1 PLAN (EXP.)

SCALE: 1/4"=1'-0"



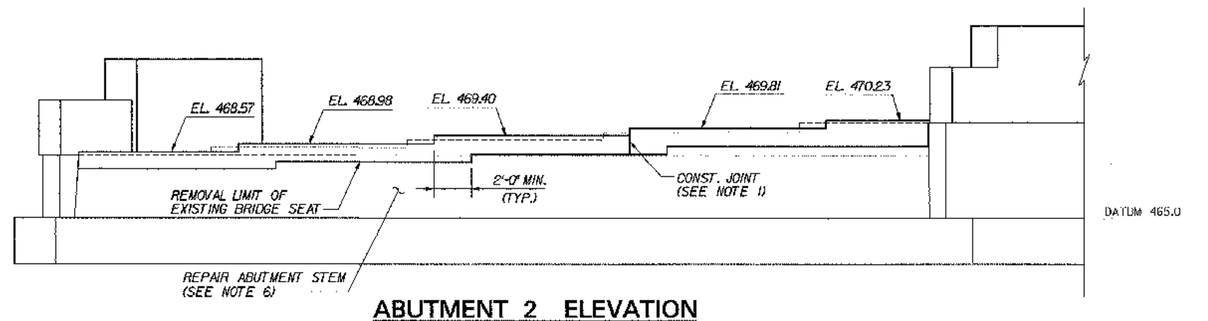
ABUTMENT 2 PLAN (FIXED)

SCALE: 1/4"=1'-0"



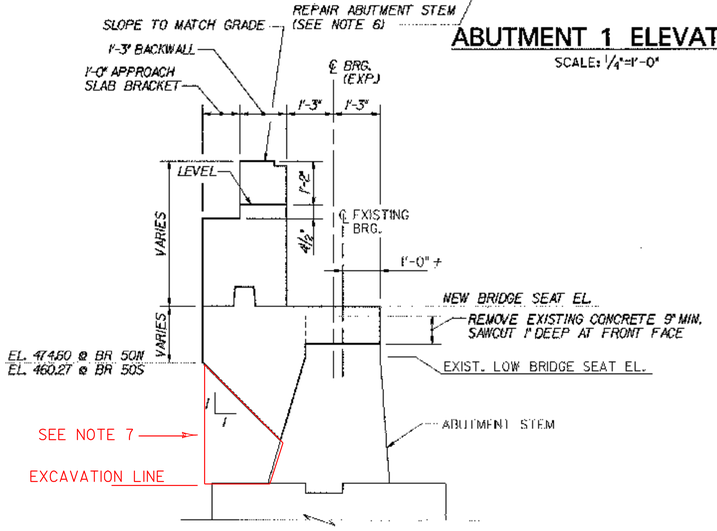
ABUTMENT 1 ELEVATION

SCALE: 1/4"=1'-0"



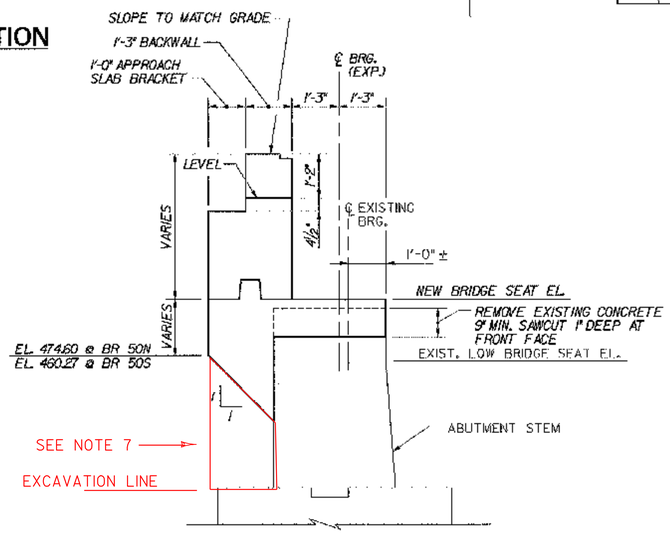
ABUTMENT 2 ELEVATION

SCALE: 1/4"=1'-0"



SECTION C-C

SCALE: 1/2"=1'-0"



SECTION D-D

SCALE: 1/2"=1'-0"

NOTE: FOR SECTIONS A-A AND B-B, SEE ABUTMENT MASONRY (50N), BRIDGE SHEET BR50-11.

7. APPLIES TO BRIDGE 50N AND S. THE CONTRACTOR FOR EASE OF FORMING FORMED THE BACK OF THE EXPANSION ABUTMENT STRAIGHT DOWN TO THE BOTTOM OF THE EXCAVATION. THEY INSTALLED EXTRA REBAR IN THE AREA. ALL MATERIALS AND LABOR WAS AT THE EXPENSE OF THE CONTRACTOR

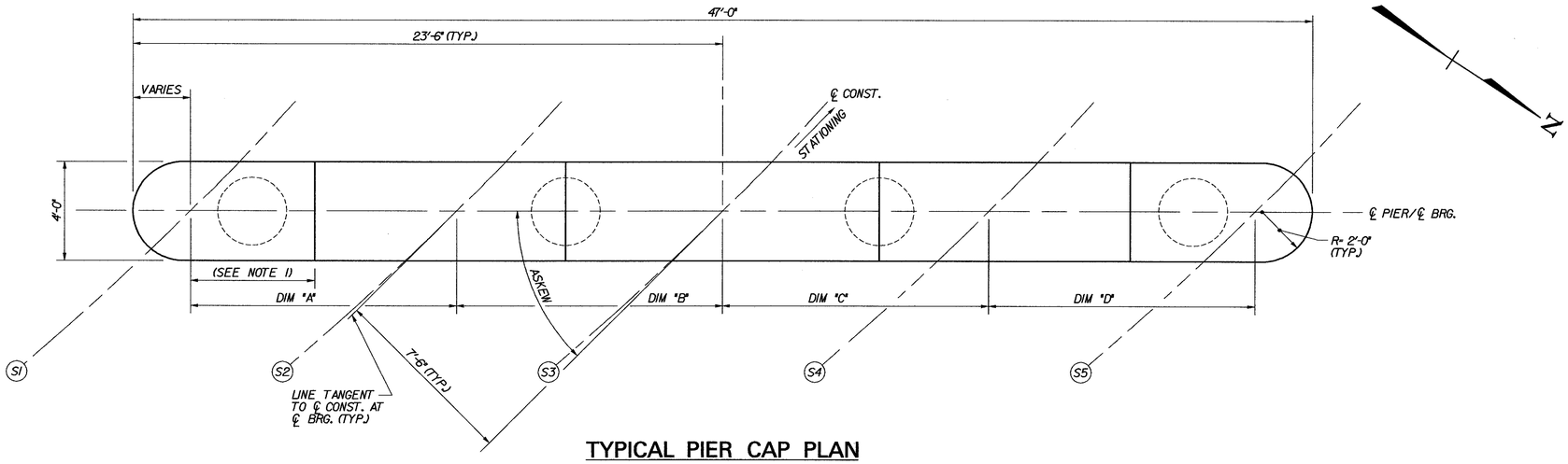
NOTES:

1. CONSTRUCTION JOINT LOCATED AT STEP IN BRIDGE SEAT. LOCATION SHALL BE REVISED AS DIRECTED BY THE RESIDENT ENGINEER AS REQUIRED TO MATCH ANY CONSTRUCTION JOINT IN THE EXISTING ABUTMENT STEM.
2. FOR WINGWALL AND CHEEKWALL DIMENSIONS, DETAILS AND ELEVATIONS, SEE TYPICAL WINGWALL DETAILS, BRIDGE SHEETS C-43 AND C-44.
3. BACKWALL ELEVATIONS SHOWN AT FRONT FACE OF BACKWALL.
4. FOR ABUTMENT REINFORCEMENT DETAILS, SEE TYPICAL EXPANSION ABUTMENT REINFORCEMENT, BRIDGE SHEET C-40, AND TYPICAL FIXED ABUTMENT REINFORCEMENT, BRIDGE SHEET C-41.
5. STEPS IN BRIDGE SEATS SHALL BE EQUIDISTANT BETWEEN STRINGERS.
6. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON ABUTMENT. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-13 THROUGH SC-16 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

TVGA ENGINEERING, SURVEYING, P.C.

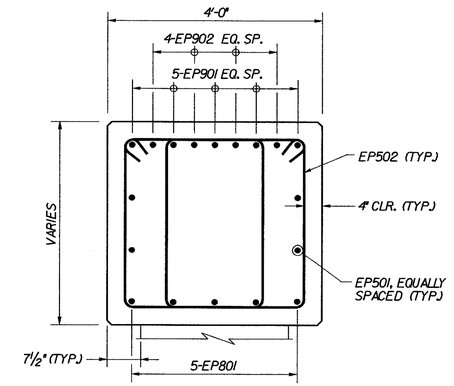
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 50S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER U.S. ROUTE 2	
ABUTMENT MASONRY (50S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50abmas	Date 10/99
Bridge Sheet No. BR50-12	Sheet 96 of 307



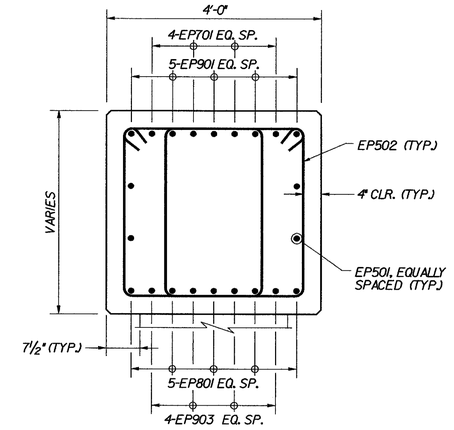
TYPICAL PIER CAP PLAN

SCALE: 3/8"=1'-0"



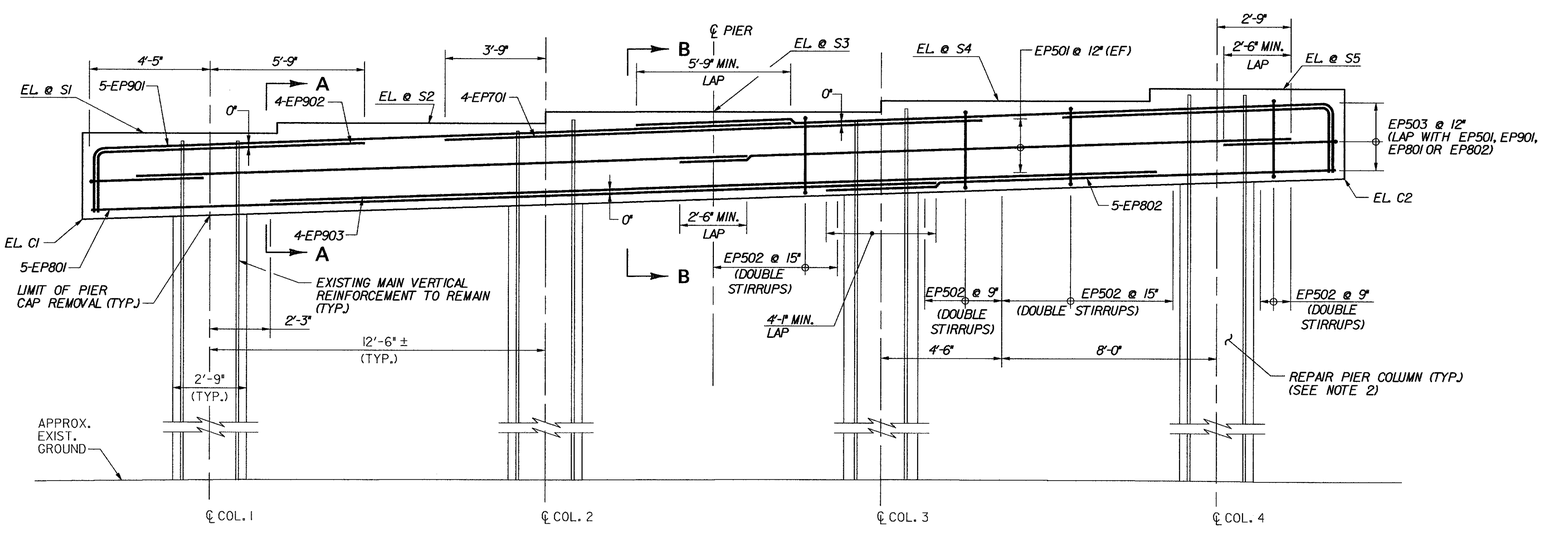
SECTION A–A

SCALE: 3/4"=1'-0"



SECTION B–B

SCALE: 3/4"=1'-0"



(REINFORCEMENT SYMMETRICAL ABOUT ℄ PIER EXCEPT EP801 AND EP802)

TYPICAL PIER ELEVATION

SCALE: 3/8"=1'-0"

BRIDGE	PIER	STA.	ASKEW ANGLE	CL BRG. DIRECTION	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	PIER SEAT ELEVATIONS					BOTTOM OF PIER CAP ELEVATIONS	
									S1	S2	S3	S4	S5	C1	C2
50N	1	6+32.21	44°50'40.0"	N 35°43'28.2" W	10'-7 7/8"	10'-7 11/16"	10'-7 9/16"	10'-7 3/8"	472.16	472.54	472.91	473.29	473.66	468.65	470.01
	2	7+28.71	45°48'11.7"	N 35°43'28.2" W	10'-5 3/4"	10'-5 5/8"	10'-5 7/16"	10'-5 5/16"	474.46	474.83	475.20	475.57	475.93	470.70	472.14
50S	1	5+48.86	44°11'11.3"	N 35°36'33.8" W	10'-9 3/8"	10'-9 3/16"	10'-9 1/16"	10'-8 7/8"	463.80	464.23	464.66	465.09	465.52	460.37	461.90
	2	6+39.36	45°05'50.5"	N 35°36'33.8" W	10'-7 5/16"	10'-7 1/8"	10'-7"	10'-6 13/16"	466.55	466.97	467.39	467.81	468.23	462.84	464.52

KEY

NF	NEAR FACE
FF	FAR FACE
EF	EACH FACE
▲	REINFORCEMENT TO BE CUT TO FIT IN THE FIELD

NOTES:

1. STEPS ON PIER CAP SEAT SHALL BE EQUIDISTANT BETWEEN STRINGERS.
2. REPAIR ALL EXISTING SPALLED AND DELAMINATED AREAS ON PIER. SEE EXISTING SUBSTRUCTURE CONDITION, BRIDGE SHEETS SC-13 THROUGH SC-16 FOR APPROXIMATE CONDITION OF EXISTING SUBSTRUCTURES. FOR CONCRETE REPAIR DETAILS, SEE SUBSTRUCTURE REPAIR DETAILS AND NOTES, BRIDGE SHEET C-45.

TVGA ENGINEERING, SURVEYING, P.C.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

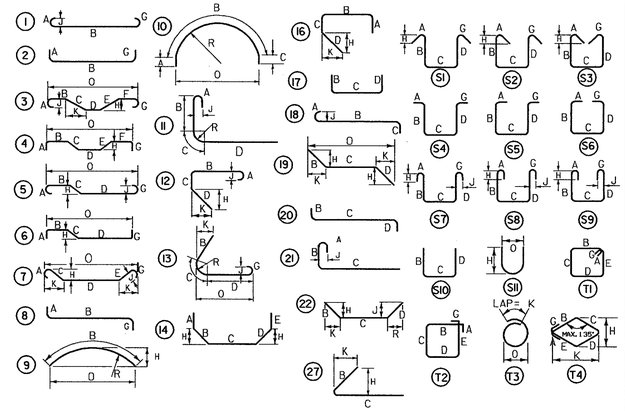
Town Of MIDDLESEX-BOLTON	Bridge No. 50N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	
PIER CAP MASONRY & REINF. (50N&S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50pmas	Date 10/99
Bridge Sheet No. BR50-13	Sheet 97 of 307

BRIDGE 50 NORTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (50N)																
✱	2	27	5	30' - 0"	E1AS501	STR.												
✱	3	27	5	18' - 5"	E1AS502	STR.												
	4	24	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	5	45	9	25' - 9"	E1AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	6	APPROACH SLAB 2 (50N)																
✱	7	27	5	30' - 0"	E2AS501	STR.												
✱	8	27	5	18' - 5"	E2AS502	STR.												
	9	24	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	10	45	9	25' - 9"	E2AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	11	SUPERSTRUCTURE (50N)																
	12	742	5	35' - 6"	ES501	STR.												
✱▲	13	983	5	35' - 6"	ES502	STR.												
	14	653	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
	15	2	5	31' - 0"	ES511	STR.												
✱	16	3	5	21' - 0"	ES512	STR.												
	17	34	5	6' - 0"	ES513	16	0' - 10"	2' - 2"	0' - 10"	2' - 2"				0' - 0"		2' - 2"		
	18	12	5	9' - 10"	ES514	STR.												
	19	6	5	3' - 7"	ES515	STR.												
✱	20	91	6	22' - 5"	ES601	STR.												
✱	21	91	6	23' - 5"	ES602	STR.												
	22	CURTAIN WALL (50N)																
▲	23	20	5	10' - 6"	ECW504	STR.												
✱	24	37	5	12' - 4"	ECW505	S5	2' - 2"	3' - 6"	1' - 2"	3' - 4"			2' - 2"					
	25	45	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
	26	8	5	3' - 11"	ECW507	19		2' - 2"	1' - 9"	0' - 0"								3' - 4"
✱	27	19	5	23' - 9"	ECW508	STR.												
	28	2	5	4' - 9"	ECW509	S5	1' - 3"	0' - 9"	1' - 0"	0' - 6"			1' - 3"					
✱	29	4	5	10' - 3"	ECW510	S5	2' - 2"	2' - 5"	1' - 2"	2' - 4"			2' - 2"					
	30	2	5	5' - 4"	ECW511	S5	1' - 3"	0' - 9"	1' - 8"	0' - 6"			1' - 3"					
	31	ABUTMENT 1 (50N)																
	32	45	5	4' - 7"	E1A501	21	0' - 7"	2' - 0"	2' - 0"									
	33	45	5	3' - 6"	E1A502	17		1' - 6"	2' - 0"	0' - 0"								
▲	34	25	5	13' - 3"	E1A503	STR.												
	35	11	5	11' - 3"	E1A512	STR.												
	36	11	5	10' - 3"	E1A513	STR.												
✱	37	12	5	7' - 6"	E1A514	STR.												
	38	10	5	4' - 1"	E1A515	17		1' - 6"	1' - 1"	1' - 6"								
✱	39	26	5	7' - 6"	E1A517	17		3' - 0"	1' - 6"	3' - 0"								
	40	25	5	4' - 3"	E1A518	17		1' - 6"	2' - 9"	0' - 0"								
✱	41	75	5	5' - 3"	E1A519	17		1' - 6"	3' - 9"	0' - 0"								
▲	42	10	5	11' - 3"	E1A520	STR.												
	43	ABUTMENT 2 (50N)																
	44	20	5	17' - 9"	E2A501	STR.												
	45	20	5	23' - 0"	E2A502	STR.												
	46	41	5	6' - 1"	E2A503	21	0' - 7"	4' - 4"	1' - 3"						0' - 5"			
▲	47	39	5	8' - 4"	E2A504	19		2' - 7"	5' - 9"	0' - 0"								7' - 7"
	48	41	5	3' - 6"	E2A505	STR.												
▲	49	41	5	6' - 1"	E2A506	S10		2' - 2"	1' - 10"	2' - 2"								
	50	41	5	5' - 6"	E2A507	17		2' - 4"	0' - 10"	2' - 4"								
▲	51	87	5	3' - 7"	E2A508	17		1' - 6"	2' - 1"	0' - 0"								
	52	1	5	7' - 10"	E2A509	19		2' - 1"	5' - 9"	0' - 0"								7' - 3"
	53	1	5	6' - 9"	E2A510	19		2' - 1"	4' - 8"	0' - 0"								6' - 2"
✱	54	19	5	9' - 9"	E2A511	STR.												
▲	55	22	5	26' - 3"	E2A512	STR.												
	56	6	5	7' - 6"	E2A513	STR.												
	57	6	5	6' - 0"	E2A514	STR.												
	58	9	5	4' - 7"	E2A515	17		1' - 9"	1' - 1"	1' - 9"								
	59	6	5	4' - 6"	E2A516	19		2' - 3"	2' - 3"	0' - 0"								3' - 10"
	60	37	5	7' - 6"	E2A517	17		3' - 0"	1' - 6"	3' - 0"								
	61	37	5	4' - 3"	E2A518	17		1' - 6"	2' - 9"	0' - 0"								
	62	110	5	5' - 3"	E2A519	17		1' - 6"	3' - 9"	0' - 0"								
✱▲	63	11	5	26' - 0"	E2A520	STR.												
	64	8	5	4' - 6"	E2A521	27		2' - 3"	2' - 3"	0' - 0"								
	65	18	5	8' - 0"	E2A522	STR.												
	66	15	5	12' - 9"	E2A524	STR.												
▲	67	10	5	8' - 6"	E2A525	STR.												
	68	PIER CAP 1 (50N)																
✱	69	9	5	22' - 9"	E1P501	STR.												
	70	72	5	11' - 1"	E1P502	T1	0' - 5 1/2"	2' - 7"	2' - 6"	2' - 7"	2' - 6"		0' - 5 1/2"					
✱	71	9	5	10' - 3"	E1P503	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
△	72	6	7	20' - 0"	E1P701	STR.												
✱	73	6	8	31' - 6"	E1P801	STR.												
✱	74	6	8	19' - 3"	E1P802	STR.												
✱	75	11	9	28' - 10"	E1P901	2	2' - 9"	26' - 1"										
	76	8	9	12' - 11"	E1P902	2	2' - 9"	10' - 2"										
✱	77	5	9	33' - 0"	E1P903	STR.												
	78	PIER CAP 2 (50N)																
✱	79	9	5	22' - 9"	E2P501	STR.												
	80	72	5	11' - 1"	E2P502	T1	0' - 5 1/2"	2' - 7"	2' - 6"	2' - 7"	2' - 6"		0' - 5 1/2"					
✱	81	9	5	10' - 3"	E2P503	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
△	82	6	7	20' - 0"	E2P701	STR.												
✱	83	6	8	31' - 6"	E2P801	STR.												
✱	84	6	8	19' - 3"	E2P802	STR.												
	85	10	9	28' - 10"	E2P901	2	2' - 9"	26' - 1"										
✱	86	9	9	12' - 11"	E2P902	2	2' - 9"	10' - 2"										
✱	87	5	9	33' - 0"	E2P903	STR.												
	88																	
	89																	
	90																	

BRIDGE 50 SOUTH

	ITEM	NO. OF PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	1	APPROACH SLAB 1 (50S)																
✱	2	27	5	30' - 0"	E1AS501	STR.												
✱	3	27	5	18' - 5"	E1AS502	STR.												
	4	24	8	2' - 6"	E1AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	5	45	9	25' - 9"	E1AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	6	APPROACH SLAB 2 (50S)																
✱	7	27	5	30' - 0"	E2AS501	STR.												
✱	8	27	5	18' - 5"	E2AS502	STR.												
	9	24	8	2' - 6"	E2AS801	19		0' - 10"	1' - 8"	0' - 0"								2' - 3"
△	10	45	9	25' - 9"	E2AS901	1	1' - 3"	24' - 6"					0' - 0"		1' - 0"			
	11	SUPERSTRUCTURE (50S)																
	12	742	5	34' - 0"	ES501	STR.												
▲	13	902	5	34' - 0"	ES502	STR.												
	14	614	5	4' - 11"	ES503	S5	0' - 6"	1' - 3"	1' - 5"	1' - 3"			0' - 6"					
✱	15	3	5	33' - 0"	ES511	STR.												
	16	2	5	21' - 6"	ES512	STR.												
	17	34	5	6' - 0"	ES513	16	0' - 10"	2' - 2"	0' - 10"	2' - 2"				0' - 0"		2' - 2"		
✱	18	13	5	10' - 4"	ES514	STR.												
	19	6	5	3' - 10"	ES515	STR.												
✱	20	91	6	22' - 5"	ES601	STR.												
✱	21	91	6	23' - 5"	ES602	STR.												
	22	CURTAIN WALL (50S)																
▲	23	20	5	10' - 4"	ECW504	STR.												
✱	24	37	5	12' - 7"	ECW505	S5	2' - 2"	3' - 8"	1' - 2"	3' - 5"			2' - 2"					
	25	45	5	2' - 11"	ECW506	1	0' - 7"	1' - 9"					0' - 7"					
	26	8	5	3' - 11"	ECW507	19		2' - 2"	1' - 9"	0' - 0"								3' - 4"
✱	27	19	5	23' - 9"	ECW508	STR.												
	28	2	5	4' - 9"	ECW509	S5	1' - 3"	0' - 9"	1' - 0"	0' - 6"			1' - 3"					
✱	29	3	5	10' - 5"	ECW510	S5	2' - 2"	2' - 7"	1' - 2"	2' - 4"			2' - 2"					
	30	2	5	5' - 4"	ECW511	S5	1' - 3"	0' - 9"	1' - 8"	0' - 6"			1' - 3"					
	31	ABUTMENT 1 (50S)																
	32	20	5	18' - 6"	E1A501	STR.												
	33	20	5	23' - 3"	E1A502	STR.												
	34	43	5	6' - 1"	E1A503	21	0' - 7"	4' - 4"	1' - 3"						0' - 5"			
▲	35	41	5	8' - 4"	E1A504	19		2' - 7"	5' - 9"	0' - 0"								7' - 7"
	36	43	5	3' - 6"	E1A505	STR.												
	37	43	5	6' - 6"	E1A506	S10		2' - 4"	1' - 10"	2' - 4"								
	38	43	5	5' - 6"	E1A507	17		2' - 4"	0' - 10"	2' - 4"								
▲	39	92	5	3' - 7"	E1A508	17		1' - 6"	2' - 1"	0' - 0"								
	40	1	5	6' - 9"	E1A509	19		2' - 1"	4' - 8"	0' - 0"								6' - 2"
✱	41	2	5	7' - 10"	E1A510	19		2' - 1"	5' - 9"	0' - 0"								7' - 3"
▲	42	18	5	10' - 6"	E1A511	STR.												
▲	43	22	5	11' - 6"	E1A512	STR.												
	44	6	5	7' - 3"	E1A513	STR.												
	45	6	5	5' - 9"	E1A514	STR.												
	46	10	5	4' - 7"	E1A515	17		1' - 9"	1' - 1"	1' - 9"								
	47	6	5	5' - 0"	E1A516	19		2' - 6"	2' - 6"	0' - 0"								4' - 3"
	48	22	5	8' - 0"	E1A517	17		3' - 3"	1' - 6"	3' - 3"								
	49	22	5	4' - 6"	E1A518	17		1' - 6"	3' - 0"	0' - 0"								
	50	68	5	5' - 6"	E1A519	17		1' - 6"	4' - 0"	0' - 0"								
▲	51	10	5	11' - 6"	E1A520	STR.												
	52	6	5	4' - 6"	E1A521	27		2' - 3"	2' - 3"	0' - 0"								
✱	53	19	5	8' - 9"	E1A522	STR.												
	54	15	5	13' - 6"	E1A524	STR.												
▲	55	10	5	8' - 6"	E1A525	STR.												
	56	ABUTMENT 2 (50S)																
	57	39	5	4' - 7"	E2A501	21	0' - 7"	2' - 0"	2' - 0"									
	58	39	5	3' - 6"	E2A502	17		1' - 6"	2' - 0"	0' - 0"								
✱▲	59	26	5	13' - 0"	E2A503	STR.												
	60	11	5	11' - 0"	E2A512	STR.												
	61	11	5	11' - 0"	E2A513	STR.												
	62	12	5	7' - 6"	E2A514	STR.												
	63	12	5	4' - 1"	E2A515	17		1' - 6"	1' - 1"	1' - 6"								
	64	24	5	8' - 0"	E2A517	17		3' - 3"	1' - 6"	3' - 3"								
	65	24	5	4' - 6"	E2A518	17		1' - 6"	3' - 0"	0' - 0"								
	66	72	5	5' - 6"	E2A519	17		1' - 6"	4' - 0"	0' - 0"								
✱▲	67	11	5	11' - 0"	E2A520	STR.												
	68	PIER CAP 1 (50S)																
✱	69	9	5	22' - 9"	E1P501	STR.												
	70	72	5	11' - 1"	E1P502	T1	0' - 5 1/2"	2' - 7"	2' - 6"	2' - 7"	2' - 6"		0' - 5 1/2"					
✱	71	9	5	10' - 3"	E1P503	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
△	72	6	7	20' - 0"	E1P701	STR.												
✱	73	6	8	31' - 6"	E1P801	STR.												
✱	74	6	8	19' - 3"	E1P802	STR.												
✱	75	11	9	28' - 10"	E1P901	2	2' - 9"	26' - 1"										
✱	76	9	9	12' - 11"	E1P902	2	2' - 9"	10' - 2"										
	77	4	9	33' - 0"	E1P903	STR.												
	78	PIER CAP 2 (50S)																
✱	79	9	5	22' - 9"	E2P501	STR.												
	80	72	5	11' - 1"	E2P502	T1	0' - 5 1/2"	2' - 7"	2' - 6"	2' - 7"	2' - 6"		0' - 5 1/2"					
✱	81	9	5	10' - 3"	E2P503	10		2' - 6"	5' - 3"	2' - 6"							1' - 8"	3' - 4"
△	82	6	7	20' - 0"	E2P701	STR.												
✱	83	6	8	31' - 6"	E2P801	STR.												
✱	84	6	8	19' - 3"	E2P802	STR.												
	85	10	9	28' - 10"	E2P901	2	2' - 9"	26' - 1"										
✱	86	9	9	12' - 11"	E2P902	2	2' - 9"	10' - 2"										
✱	87	5	9	33' - 0"	E2P903	STR.												
	88																	
	89																	
	90																	



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 615-91). 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 WHEN NECESSARY TO MAINTAIN CLEARANCES.
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.

LEGEND

▲ DENOTES BARS TO BE CUT IN THE FIELD.

✱ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.

△ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.

"E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT (POUNDS PER FOOT)	NOMINAL DIMENSIONS ROUND SECTION: DIAMETER (INCHES)	CROSS SECTIONAL AREA (SQ. INCHES)	PERIMETER (INCHES)
#3	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

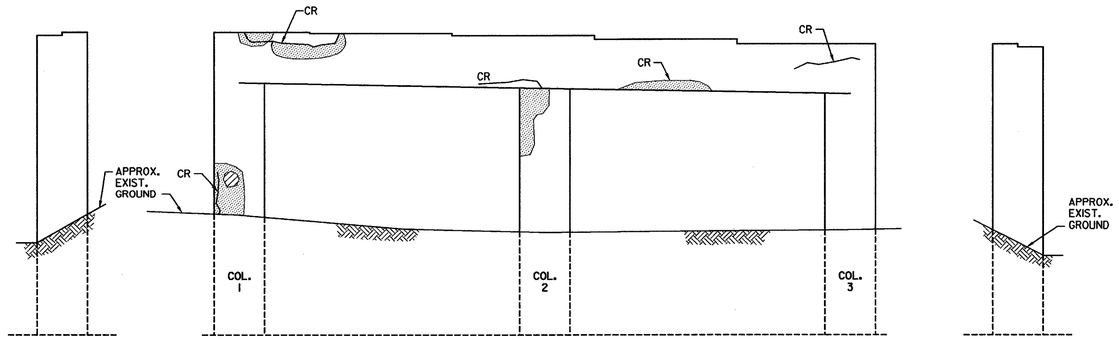
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 50N&S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 OVER U.S. ROUTE 2	

REINFORCING STEEL SCHEDULE (50N&S)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. reinf50	Date 10/99
Bridge Sheet No. BR50-14	Sheet 98 of 307

TVGA ENGINEERING, SURVEYING, P.C.



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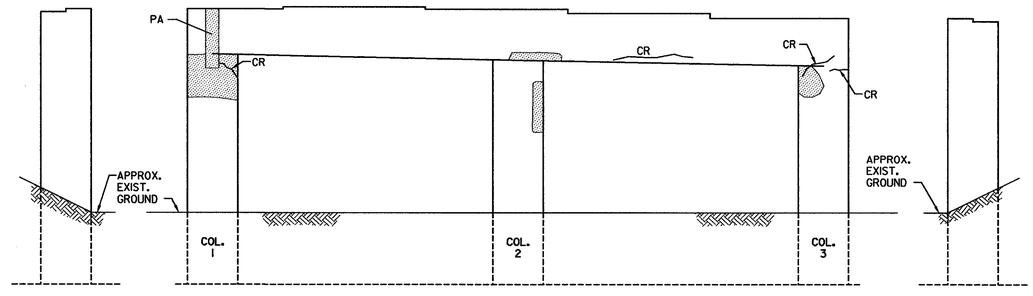
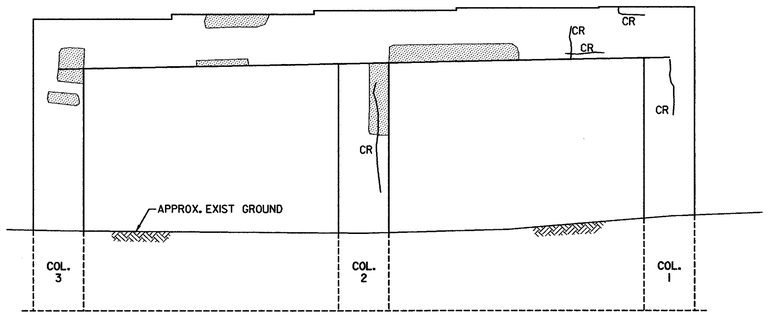


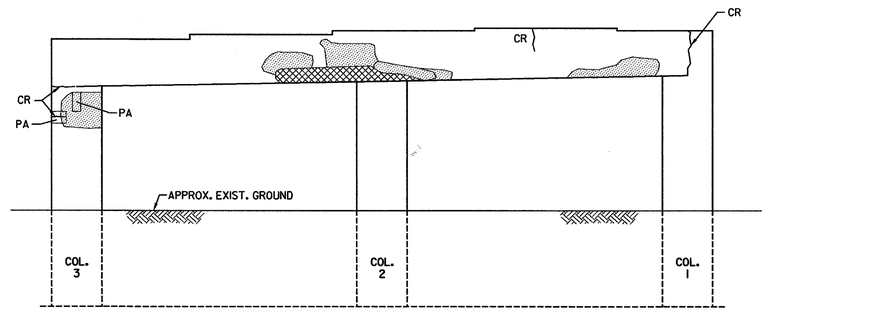
(PIER 1 SIDE)



(PIER 2 SIDE)

PIER 1 ELEVATIONS

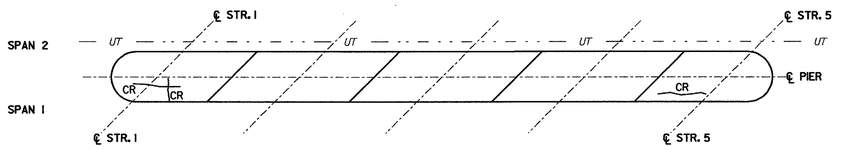
SCALE: 3/16"=1'-0"



(ABUT. 2 SIDE)

PIER 2 ELEVATIONS

SCALE: 3/16"=1'-0"



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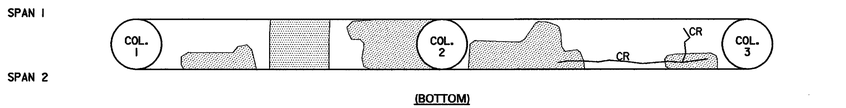
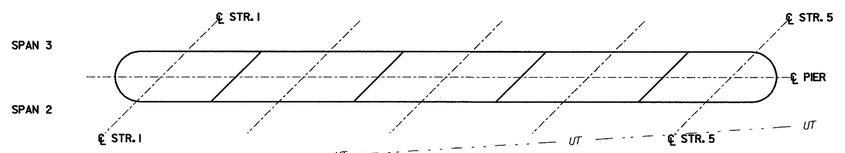


(BOTTOM)

PIER 1 CAP

SCALE: 3/16"=1'-0"



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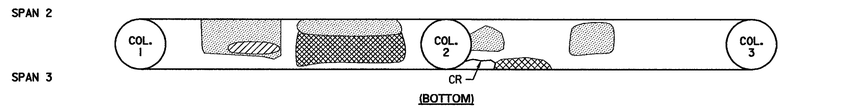


(BOTTOM)

PIER 2 CAP

SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

CRACK

DELAMINATED AREA

SPALLED AREA

DEEPLY SPALLED WITH EXPOSED REBAR

UNDERGROUND TELEPHONE — UT — ···

EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

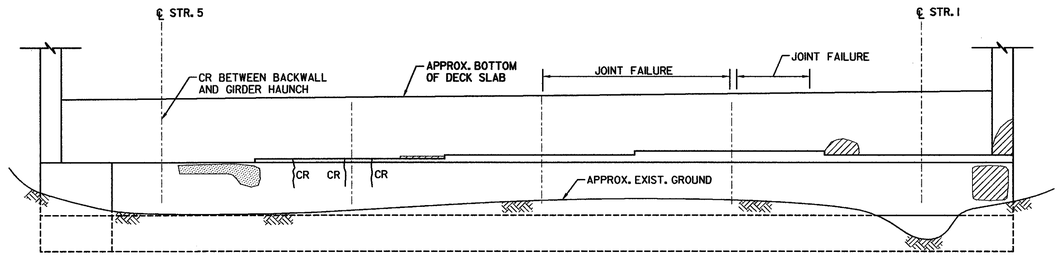
Town Of MIDDLESEX-BOLTON	Bridge No. **43N**
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 NB OVER U.S. ROUTE 2

EXIST. SUBSTR. CONDITION (43N) (1 OF 2)

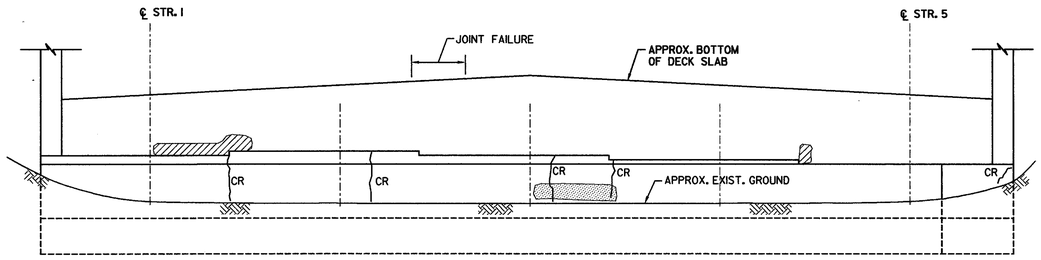
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43plers	Date 10/99
Bridge Sheet No. **SC-1**	Sheet 135 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT. 1 ELEVATION

SCALE: 1/4"=1'-0"



ABUT. 2 ELEVATION

SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

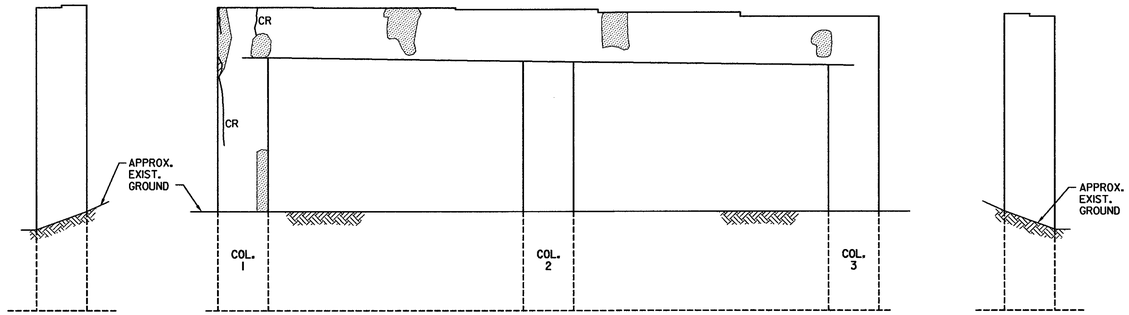
Town Of MIDDLESEX-BOLTON	Bridge No. **43N**
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 NB OVER U.S. ROUTE 2

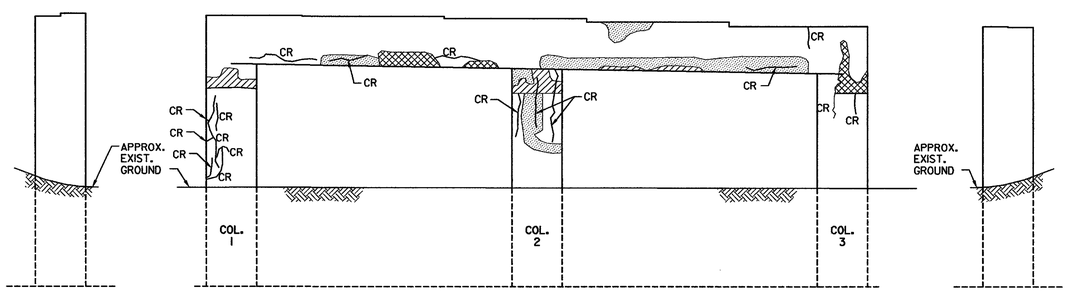
EXIST. SUBSTR. CONDITION (43N) (2 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43abut	Date 10/99
Bridge Sheet No. **SC-2**	Sheet 136 of 307

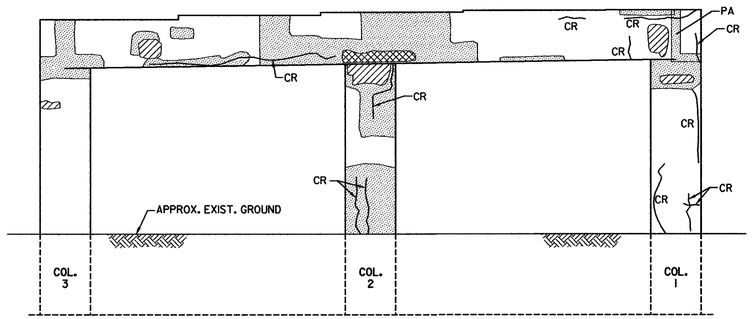
TVGA ENGINEERING, SURVEYING, P.C.



(ABUT. 1 SIDE)



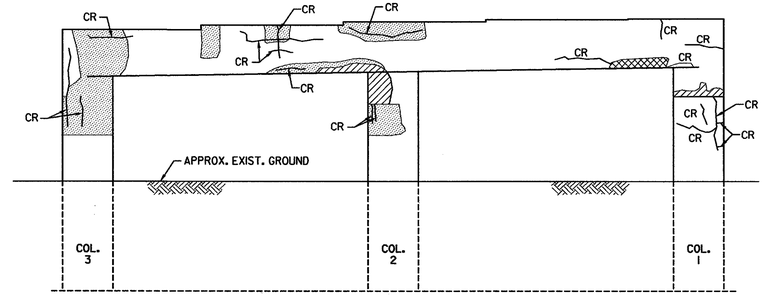
(PIER 1 SIDE)



(PIER 2 SIDE)

PIER 1 ELEVATIONS

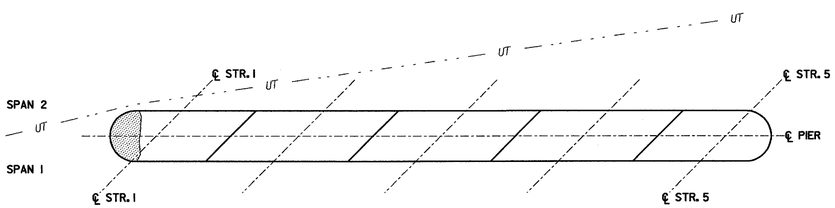
SCALE: 3/16"=1'-0"



(ABUT. 2 SIDE)

PIER 2 ELEVATIONS

SCALE: 3/16"=1'-0"



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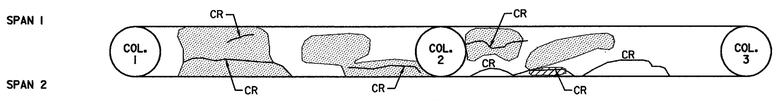
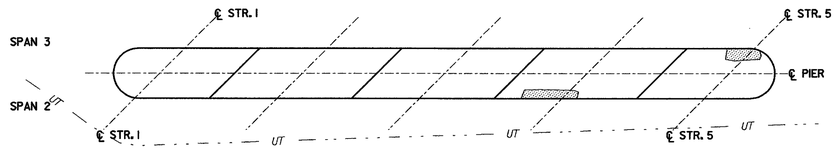


(BOTTOM)

PIER 1 CAP

SCALE: 3/16"=1'-0"



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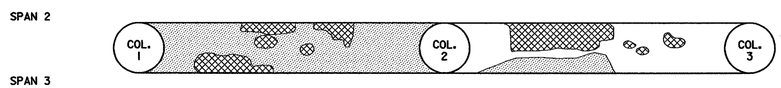


(BOTTOM)

PIER 2 CAP

SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- UNDERGROUND TELEPHONE — UT —
- EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

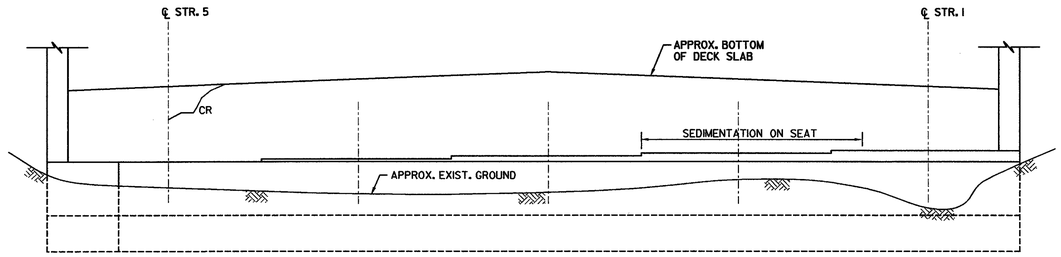
Town Of MIDDLESEX-BOLTON	Bridge No. 43S
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 SB OVER U.S. ROUTE 2

EXIST. SUBSTR. CONDITION (43S) (1 OF 2)

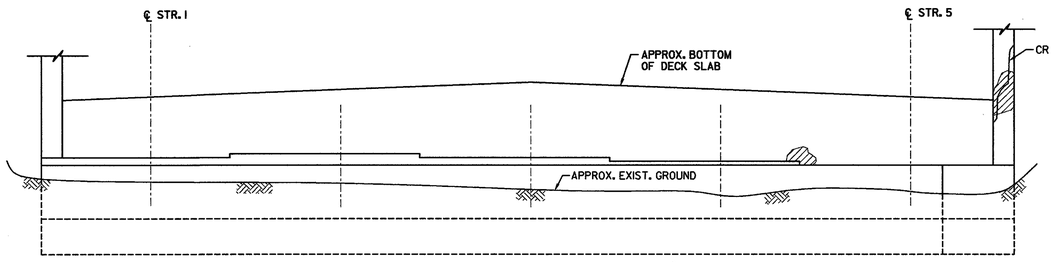
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43piers	Date 10/99
Bridge Sheet No. SC-3	Sheet 137 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT. 1 ELEVATION

SCALE: 1/4"=1'-0"



ABUT. 2 ELEVATION

SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

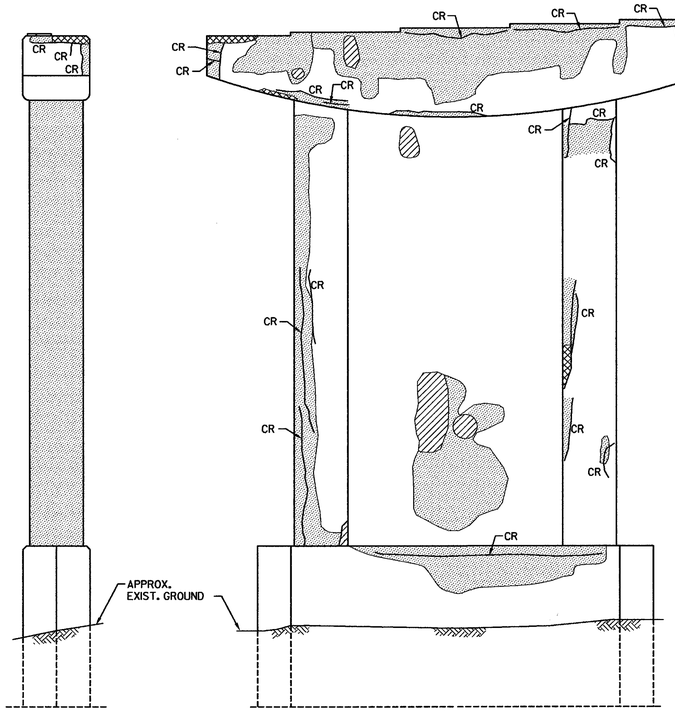
Town Of MIDDLESEX-BOLTON	Bridge No. 43S
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 SB OVER U.S. ROUTE 2

EXIST. SUBSTR. CONDITION (43S) (2 OF 2)

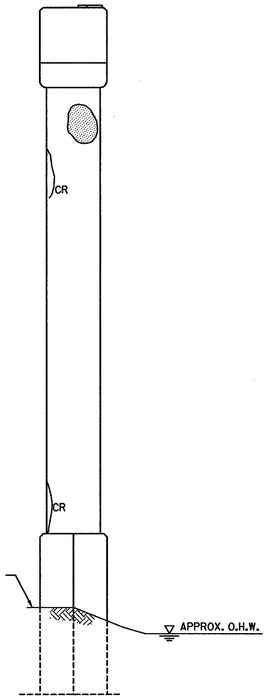
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 43abut	Date 10/99
Bridge Sheet No. SC-4	Sheet 138 of 307

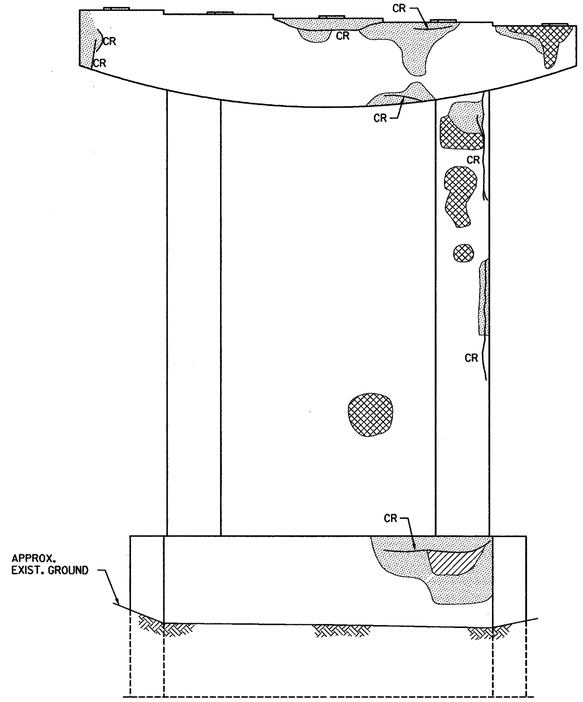
TVGA ENGINEERING, SURVEYING, P.C.



(ABUT. 1 SIDE)

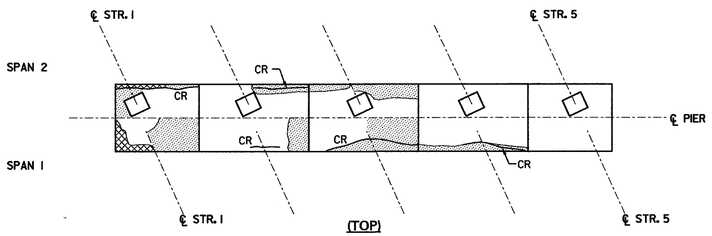
PIER 1 ELEVATION
SCALE: 3/16"=1'-0"





(PIER 2 SIDE)

PIER 1 ELEVATION
SCALE: 3/16"=1'-0"



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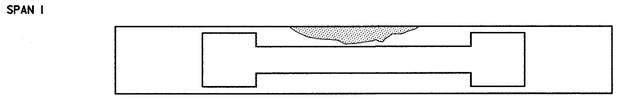
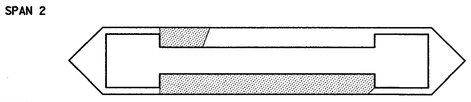


(BOTTOM)

PIER 1 PLAN
SCALE: 3/16"=1'-0"



(TOP)

PIER 1 BASE
SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

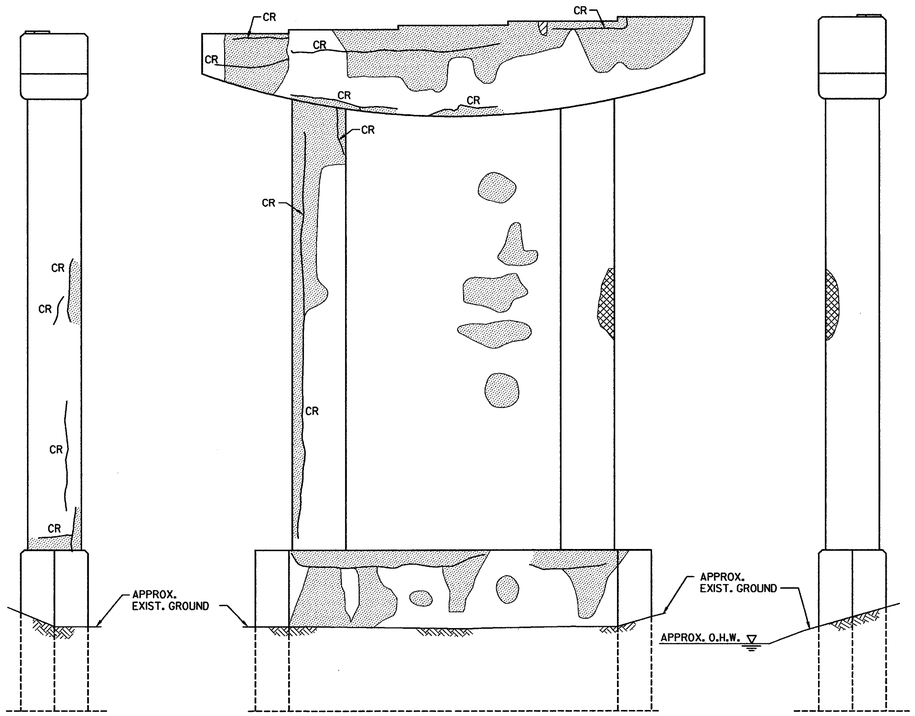
Town Of MIDDLESEX-BOLTON	Bridge No. **48N**
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 NB OVER LITTLE RIVER

EXIST. SUBSTR. CONDITION (48N) (1 OF 3)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48piers	Date 10/99
Bridge Sheet No. **SC-5**	Sheet 139 of 307

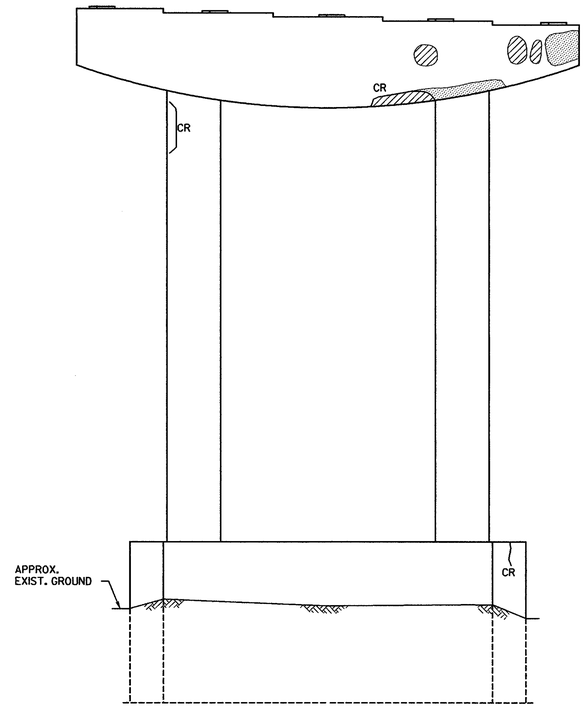
TVGA ENGINEERING, SURVEYING, P.C.



(PIER 1 SIDE)

PIER 2 ELEVATION

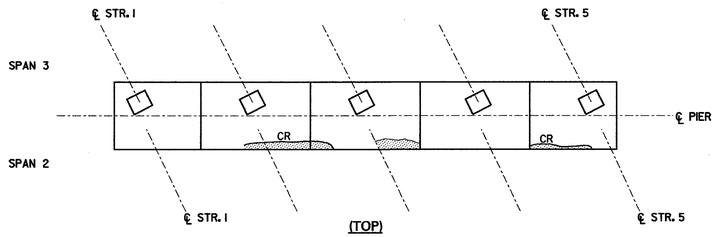
SCALE: 3/16"=1'-0"



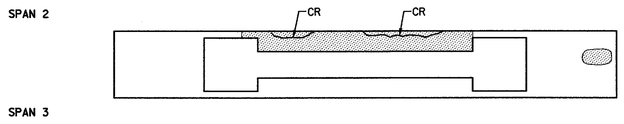
(ABUT. 2 SIDE)

PIER 2 ELEVATION

SCALE: 3/16"=1'-0"



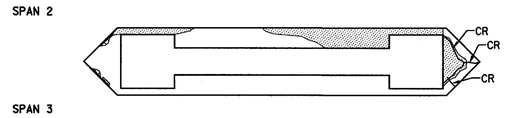
(TOP)



(BOTTOM)

PIER 2 PLAN

SCALE: 3/16"=1'-0"



(TOP)

PIER 2 BASE

SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

CRACK

DELAMINATED AREA

SPALLED AREA

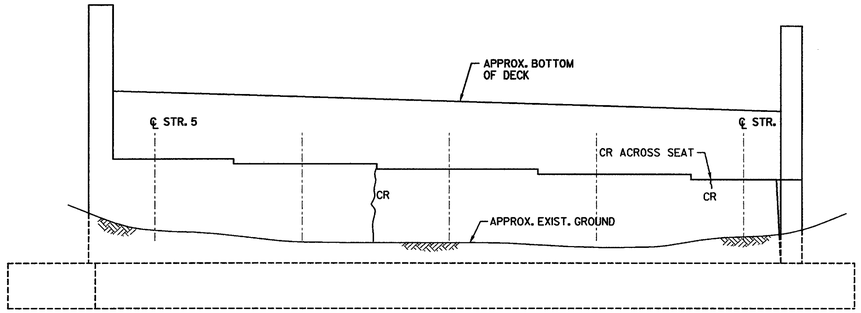
DEEPLY SPALLED WITH EXPOSED REBAR

EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

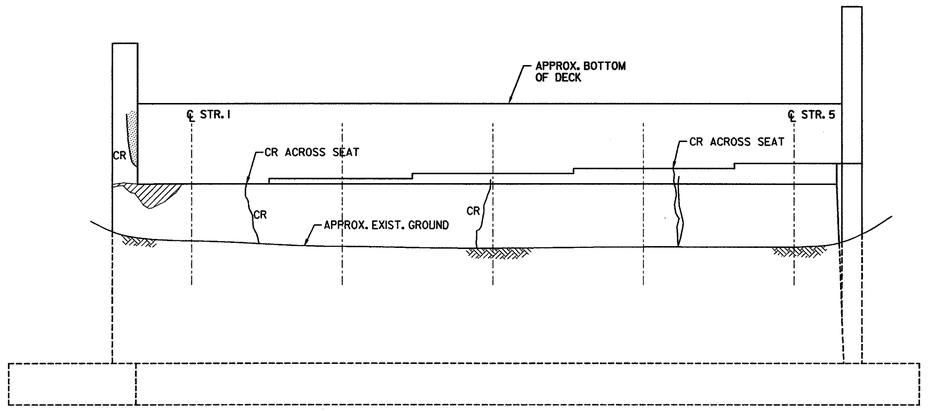
Town Of MIDDLESEX-BOLTON	Bridge No. **48N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER LITTLE RIVER	
EXIST. SUBSTR. CONDITION (48N) (2 OF 3)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48plers	Date 10/99
Bridge Sheet No. **SC-6**	Sheet 140 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT 1 ELEVATION

SCALE: 1/4"=1'-0"



ABUT 2 ELEVATION

SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

CRACK

DELAMINATED AREA

SPALLED AREA

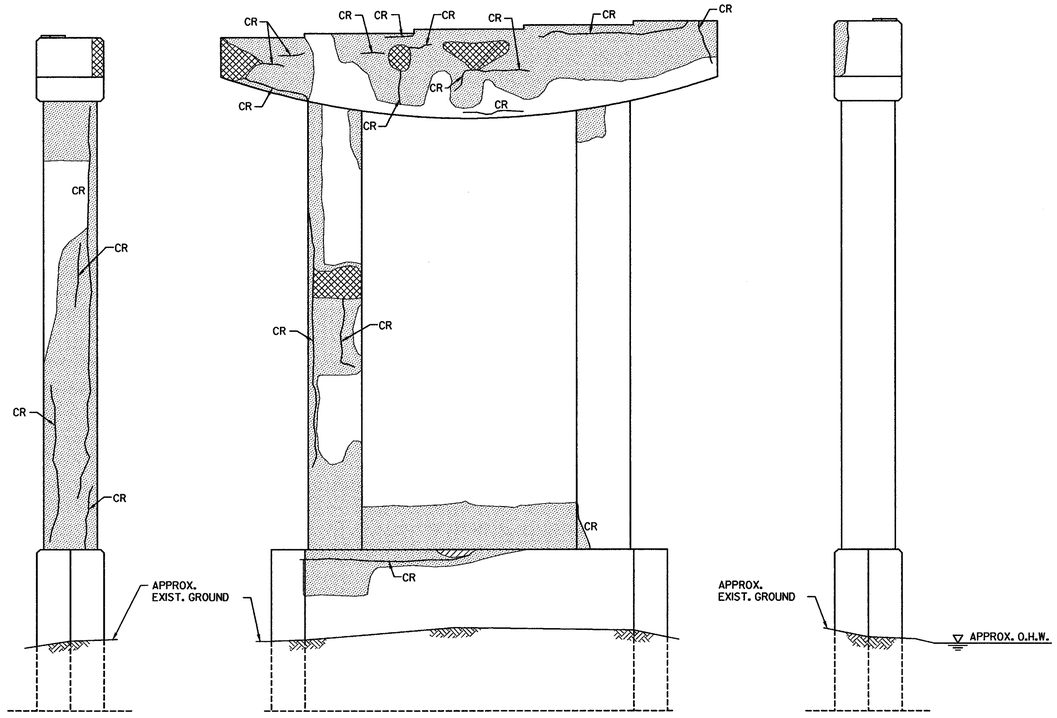
DEEPLY SPALLED WITH EXPOSED REBAR

EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER LITTLE RIVER	
EXIST. SUBSTR. CONDITION (48N) (3 OF 3)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48abut	Date 10/99
Bridge Sheet No. **SC-7**	Sheet 141 of 307

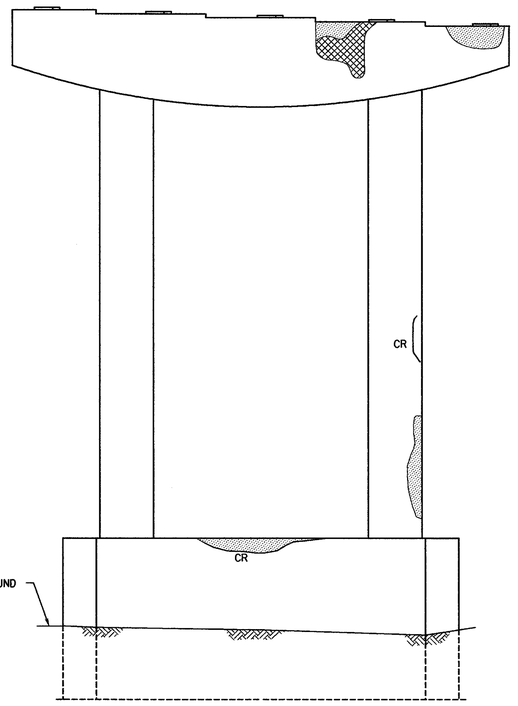
TVGA ENGINEERING, SURVEYING, P.C.



(ABUT. 1 SIDE)

PIER 1 ELEVATION

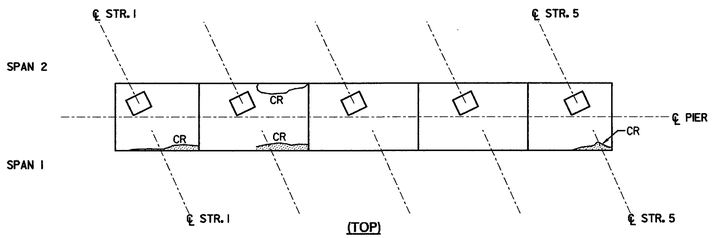
SCALE: 3/16"=1'-0"



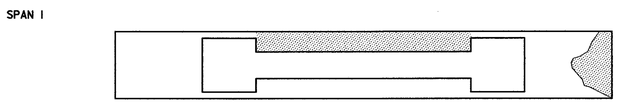
(PIER 2 SIDE)

PIER 1 ELEVATION

SCALE: 3/16"=1'-0"



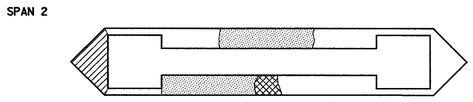
(TOP)



(BOTTOM)

PIER 1 CAP

SCALE: 3/16"=1'-0"



(TOP)

PIER 1 BASE

SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

CRACK

DELAMINATED AREA

SPALLED AREA

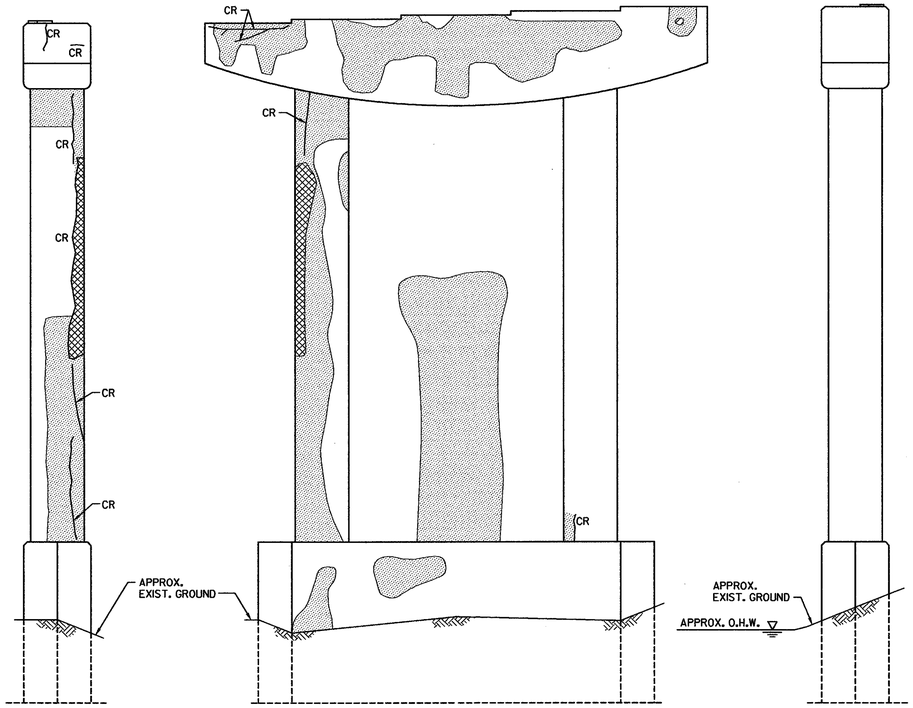
DEEPLY SPALLED WITH EXPOSED REBAR

EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 48S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER LITTLE RIVER	
EXIST. SUBSTR. CONDITION (48S) (1 OF 3)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48piers	Date 10/99
Bridge Sheet No. SC-8	Sheet 142 of 307

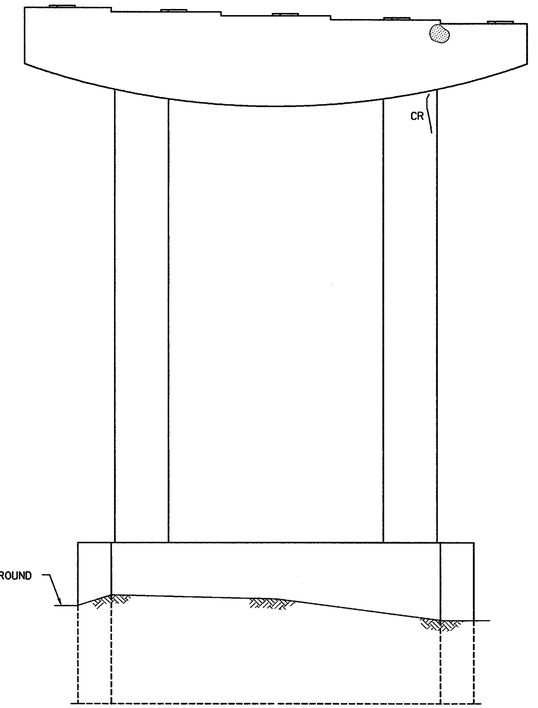
TVGA ENGINEERING, SURVEYING, P.C.



(PIER 1 SIDE)

PIER 2 ELEVATION

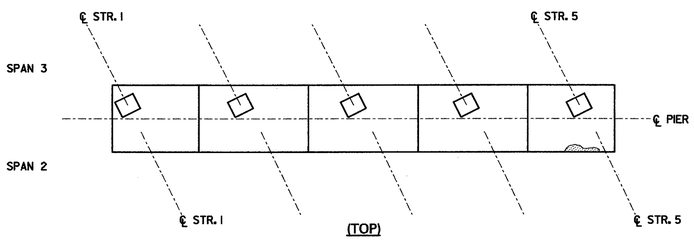
SCALE: 3/16"=1'-0"



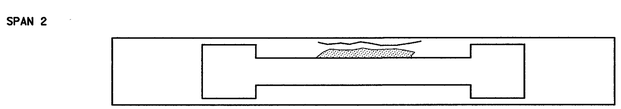
(ABUT. 2 SIDE)

PIER 2 ELEVATION

SCALE: 3/16"=1'-0"



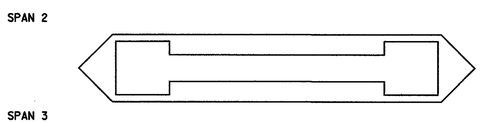
(TOP)



(BOTTOM)

PIER 2 PLAN

SCALE: 3/16"=1'-0"



(TOP)

PIER 2 BASE

SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

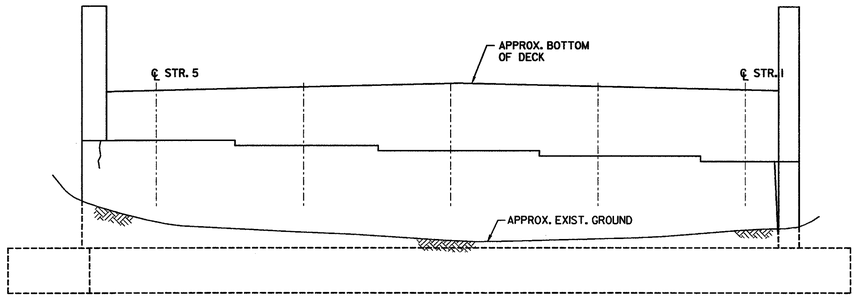
LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

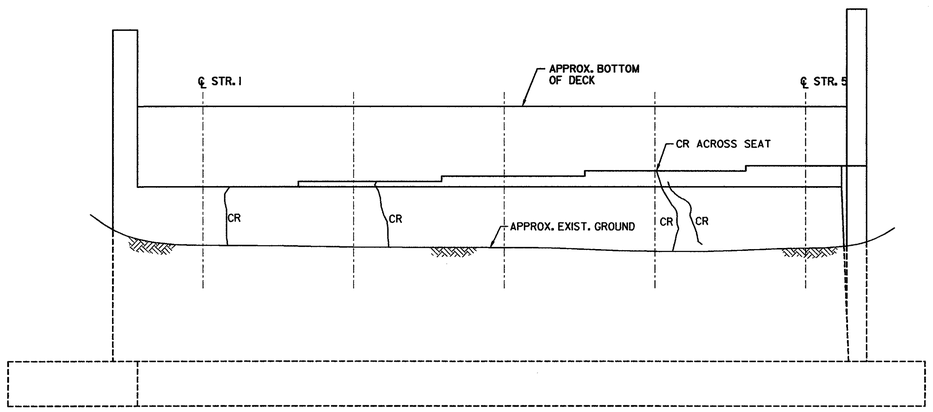
Town Of MIDDLESEX-BOLTON	Bridge No. 48S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER LITTLE RIVER	
EXIST. SUBSTR. CONDITION (48S) (2 OF 3)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48piers	Date 10/99
Bridge Sheet No. **SC-9**	Sheet 143 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT 1 ELEVATION

SCALE: 1/4"=1'-0"



ABUT 2 ELEVATION

SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

CRACK

DELAMINATED AREA

SPALLED AREA

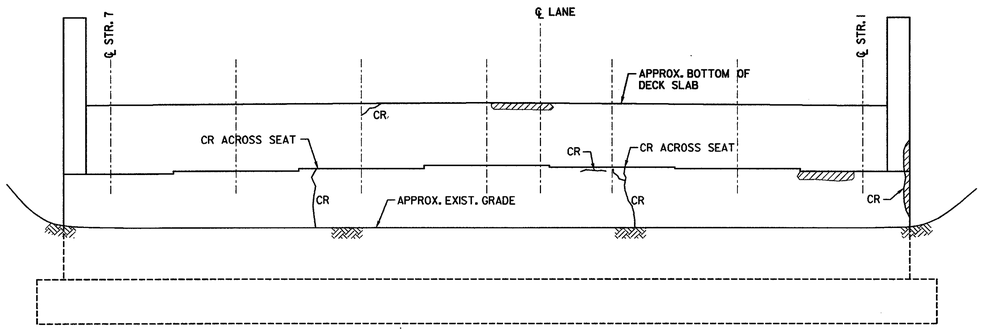
DEEPLY SPALLED WITH EXPOSED REBAR

EXISTING GROUND

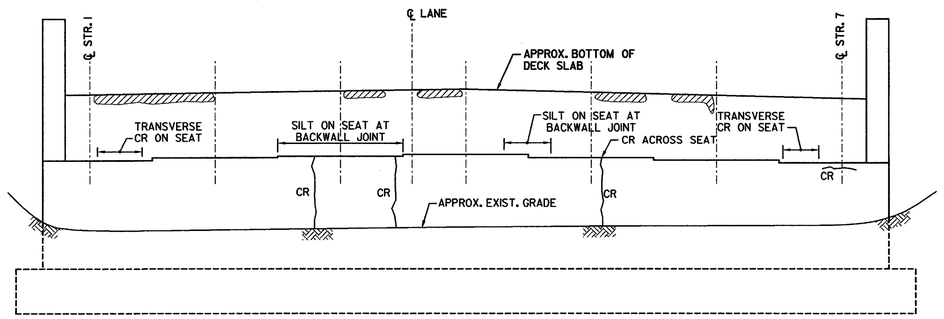
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 48S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER LITTLE RIVER	
EXIST. SUBSTR. CONDITION (48S) (3 OF 3)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 48abut	Date 10/99
Bridge Sheet No. SC-10	Sheet 144 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT. 1 ELEVATION
SCALE: 1/4"=1'-0"



ABUT. 2 ELEVATION
SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

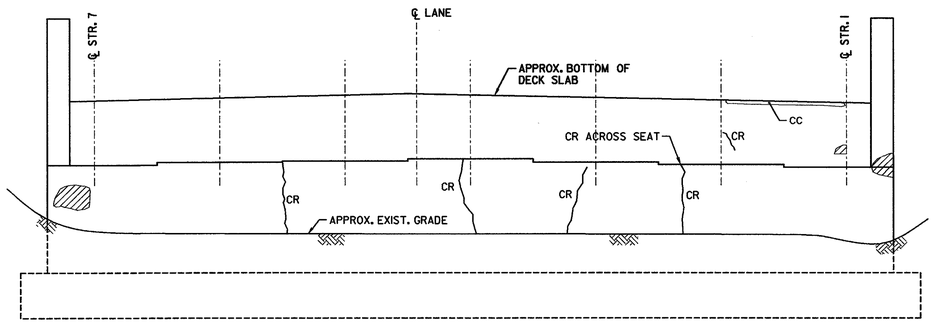
LEGEND

CRACK
DELAMINATED AREA
SPALLED AREA
DEEPLY SPALLED WITH EXPOSED REBAR

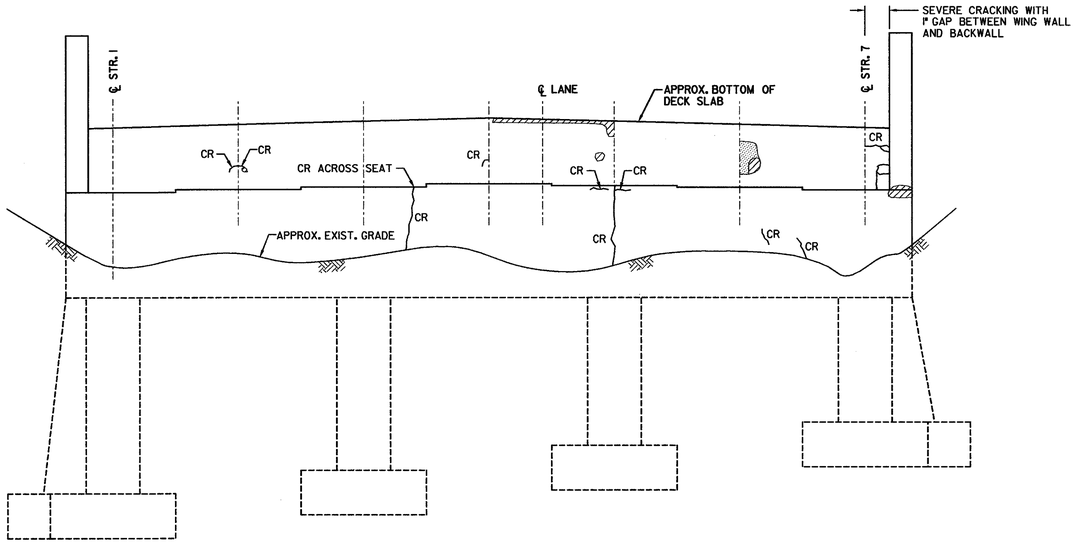
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **49N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER TH 7	
EXIST. SUBSTR. CONDITION (49N)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49abut	Date 10/99
Bridge Sheet No. **SC-11**	Sheet 145 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT. 1 ELEVATION
SCALE: 1/4"=1'-0"



ABUT. 2 ELEVATION
SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

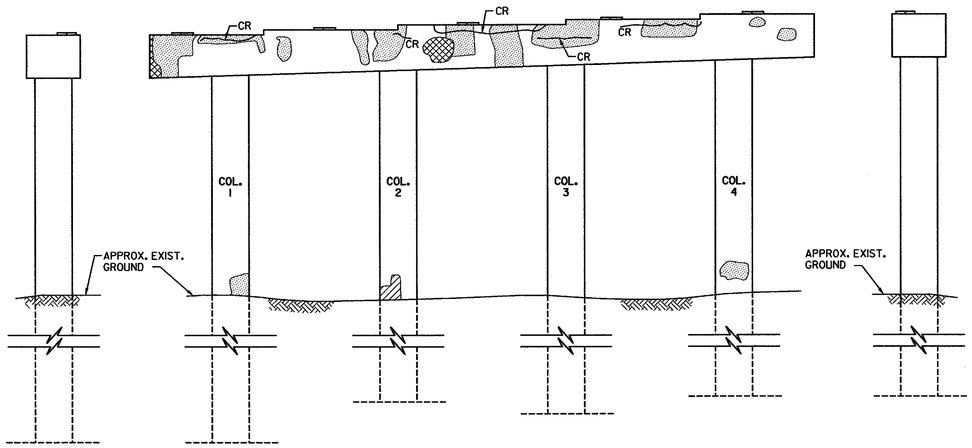
LEGEND

CRACK
DELAMINATED AREA
SPALLED AREA
DEEPLY SPALLED WITH EXPOSED REBAR

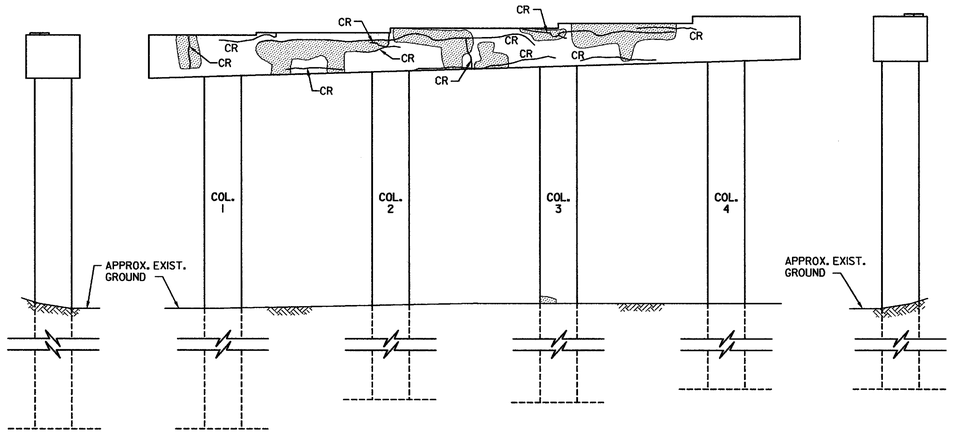
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 49S
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 SB OVER TH 7	
EXIST. SUBSTR. CONDITION (49S)	
Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 49abut	Date 10/99
Bridge Sheet No. **SC-12**	Sheet 146 of 307

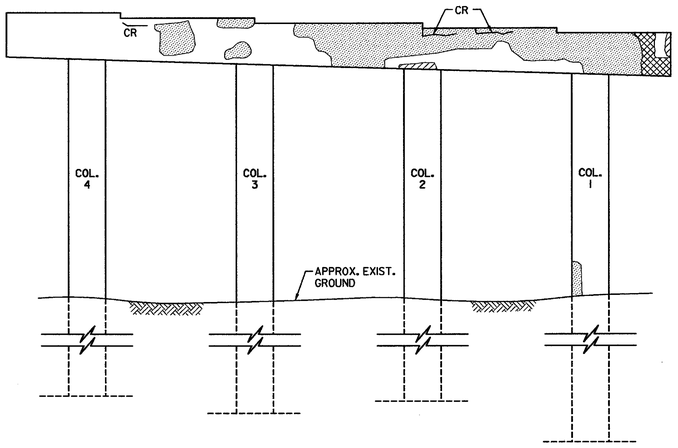
TVGA ENGINEERING, SURVEYING, P.C.



(ABUT. 1 SIDE)



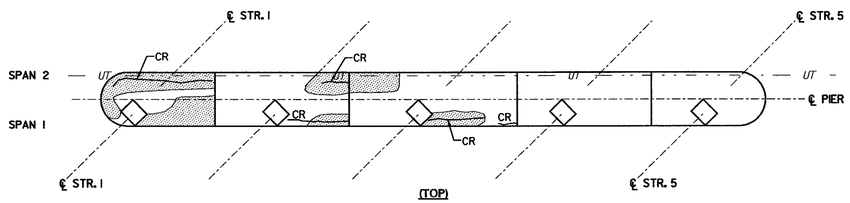
(PIER 1 SIDE)



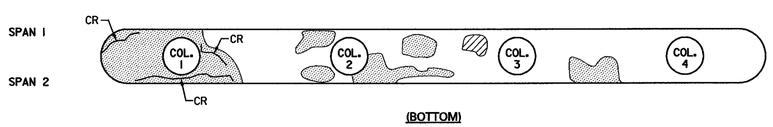
(PIER 2 SIDE)

PIER 1 ELEVATIONS

SCALE: 3/16"=1'-0"



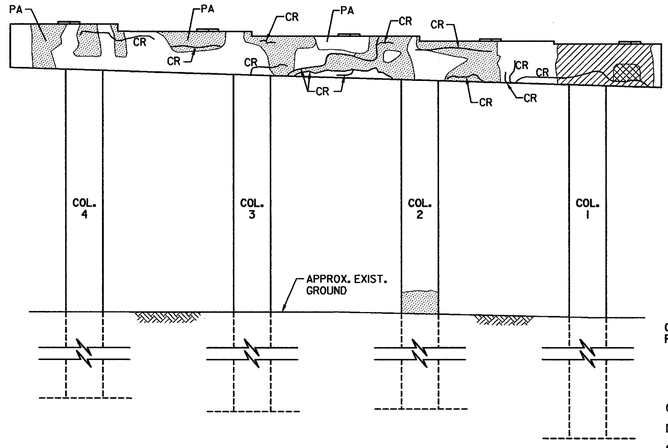
(TOP)



(BOTTOM)

PIER 1 CAP

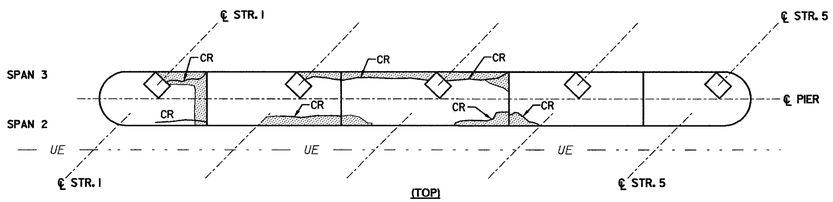
SCALE: 3/16"=1'-0"



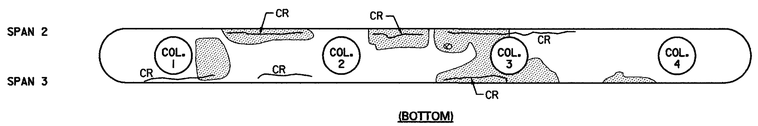
(ABUT. 2 SIDE)

PIER 2 ELEVATIONS

SCALE: 3/16"=1'-0"



(TOP)



(BOTTOM)

PIER 2 CAP

SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- UNDERGROUND TELEPHONE — UT —
- UNDERGROUND ELECTRIC — UE —
- EXISTING GROUND

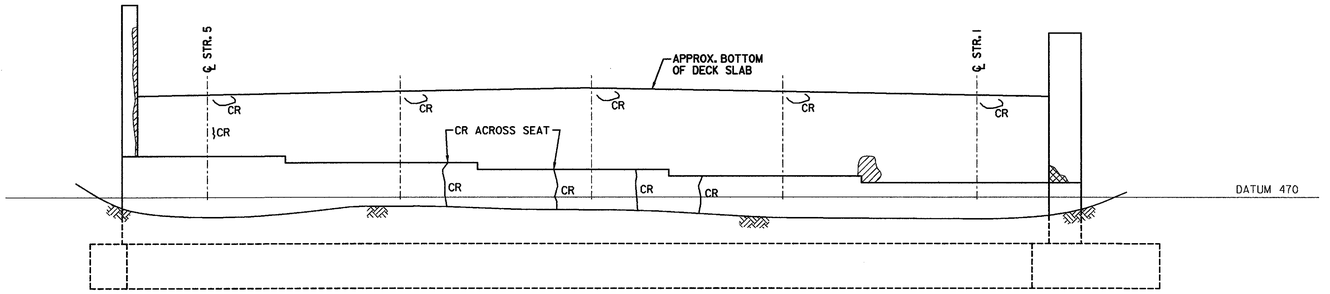
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **50N**
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 NB OVER U.S. ROUTE 2	

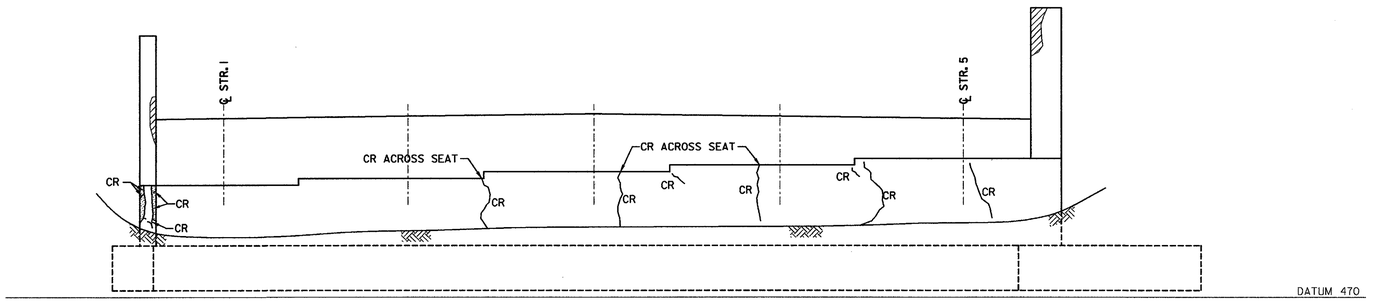
EXIST. SUBSTR. CONDITION (50N) (1 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50plers	Date 10/99
Bridge Sheet No. **SC-13**	Sheet 147 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT. 1 ELEVATION
SCALE: 1/4"=1'-0"



ABUT. 2 ELEVATION
SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

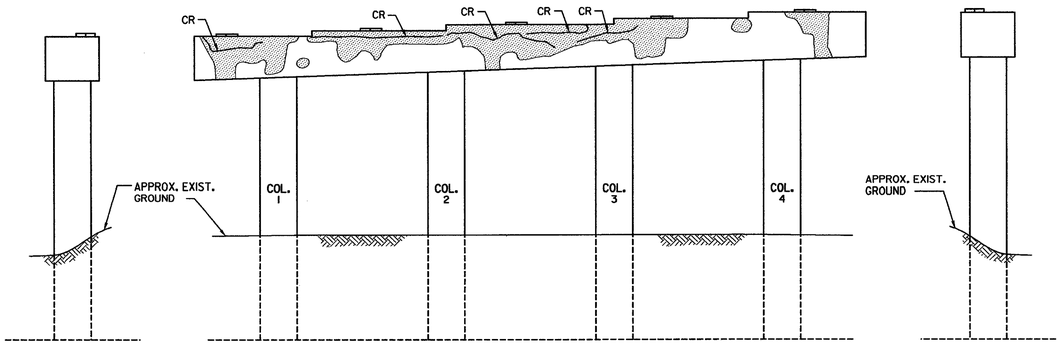
Town Of MIDDLESEX-BOLTON	Bridge No. **50N**
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 NB OVER U.S. ROUTE 2

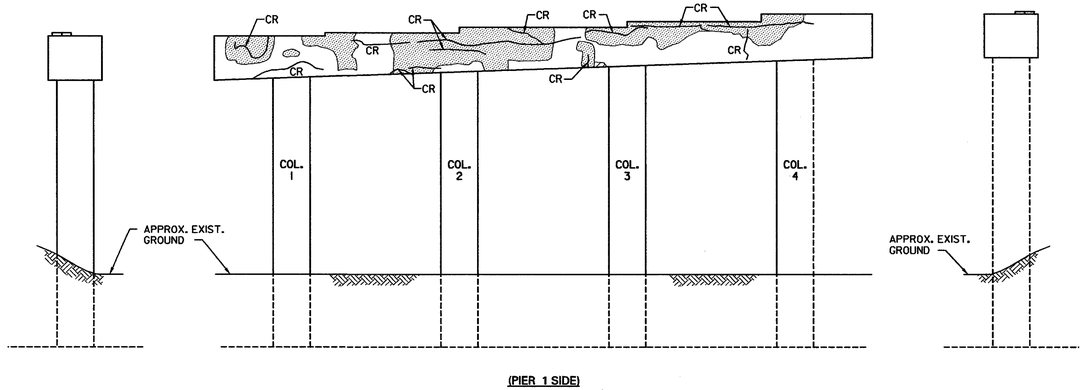
EXIST. SUBSTR. CONDITION (50N) (2 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50abut	Date 10/99
Bridge Sheet No. **SC-14**	Sheet 148 of 307

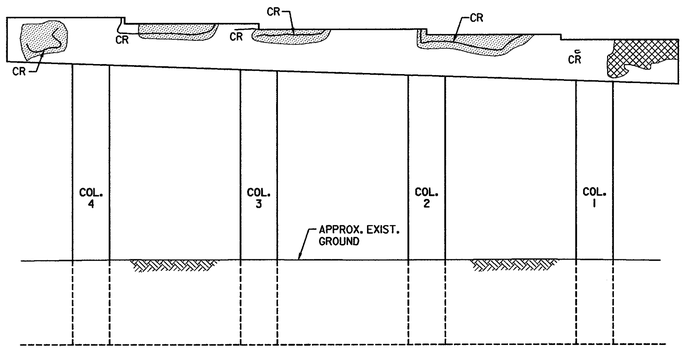
TVGA ENGINEERING, SURVEYING, P.C.



(ABUT. 1 SIDE)



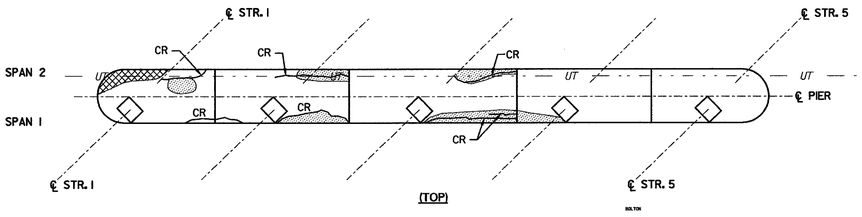
(PIER 1 SIDE)



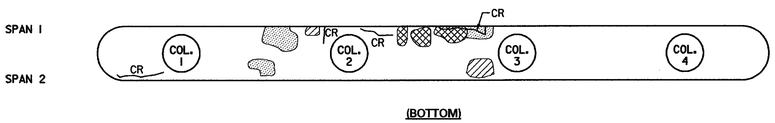
(PIER 2 SIDE)

PIER 1 ELEVATIONS

SCALE: 3/16"=1'-0"



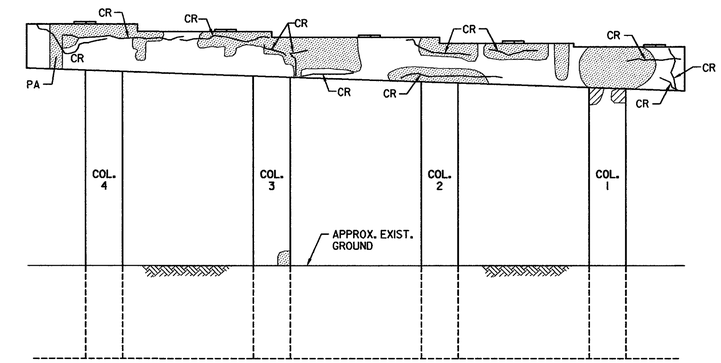
(TOP)



(BOTTOM)

PIER 1 CAP

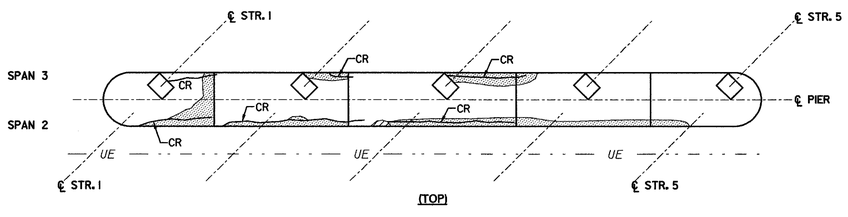
SCALE: 3/16"=1'-0"



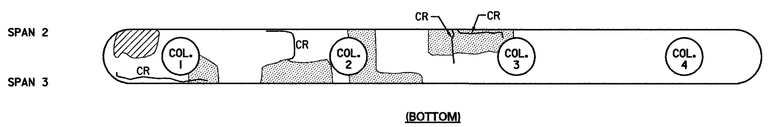
(ABUT. 2 SIDE)

PIER 2 ELEVATIONS

SCALE: 3/16"=1'-0"



(TOP)



(BOTTOM)

PIER 2 CAP

SCALE: 3/16"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

- CRACK
- DELAMINATED AREA
- SPALLED AREA
- DEEPLY SPALLED WITH EXPOSED REBAR
- UNDERGROUND TELEPHONE — UT —
- UNDERGROUND ELECTRIC — UE —
- EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

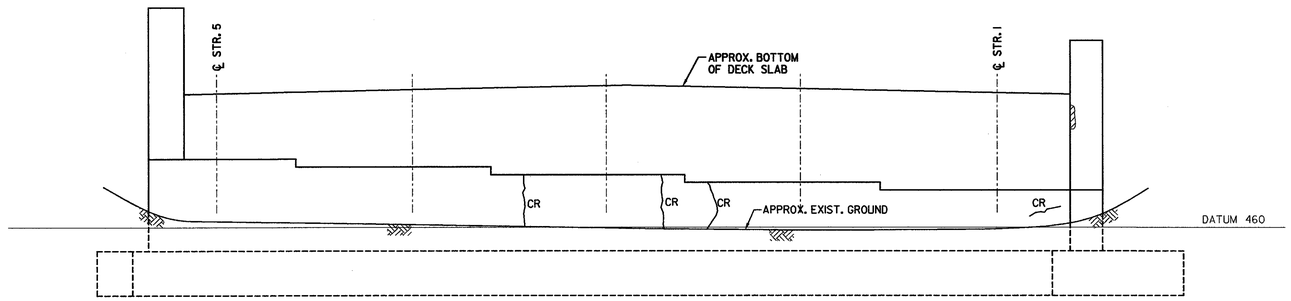
Town Of MIDDLESEX-BOLTON	Bridge No. 50S
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 SB OVER U.S. ROUTE 2

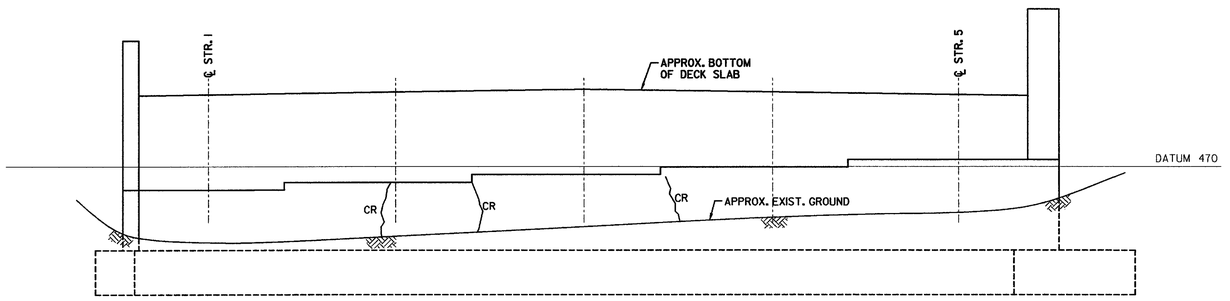
EXIST. SUBSTR. CONDITION (50S) (1 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By Date J.P. HALSTEAD 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50plers	Date 10/99
Bridge Sheet No. SC-15	Sheet 149 of 307

TVGA ENGINEERING, SURVEYING, P.C.



ABUT. 1 ELEVATION
SCALE: 1/4"=1'-0"



ABUT. 2 ELEVATION
SCALE: 1/4"=1'-0"

ABBREVIATIONS

CR	CRACK
PA	PREVIOUSLY PATCHED AREA

LEGEND

CRACK
DELAMINATED AREA
SPALLED AREA
DEEPLY SPALLED WITH EXPOSED REBAR
EXISTING GROUND

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **50S**
Highway No. I-89	Log Sta. / Surv. Sta.

I-89 SB OVER U.S. ROUTE 2

EXIST. SUBSTR. CONDITION (50S) (2 OF 2)

Designed By P.W. SZUSTAK	Drawn By R.A. BOTZENHART
Checked By J.P. HALSTEAD Date 10/99	Bridge Design Supervisor J.P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
TVGA CAD Drawing No. 50abut	Date 10/99
Bridge Sheet No. ***SC-16***	Sheet 150 of 307

TVGA ENGINEERING, SURVEYING, P.C.

TRAFFIC CONTROL NOTES

1. ALL TRAFFIC CONTROL DEVICES AND PLANS SHALL CONFORM TO THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) "GREEN BOOK", THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND VERMONT AGENCY OF TRANSPORTATION (VAOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION 1990. THE RESIDENT ENGINEER SHALL HAVE THE AUTHORITY TO ALTER ALL TRAFFIC CONTROL PLANS IN THE FIELD AS NECESSARY.

2. ~~THE CONTRACTOR IS NOTIFIED THAT AN EMERGENCY ACCESS GATE IS LOCATED AT APPROXIMATELY STATION 432+50 (MM 70.25) NORTHBOUND. THE CONTRACTOR SHALL NOT AT ANY TIME THROUGHOUT THE CONSTRUCTION PERIOD USE OR BLOCK THE EXISTING EMERGENCY ACCESS GATE. A NEW PERMANENT U-TURN IS TO BE CONSTRUCTED DIRECTLY ACROSS FROM THE EMERGENCY ACCESS PRIOR TO ANY CONSTRUCTION ACTIVITY. ONCE CONSTRUCTED, THE NEW U-TURN AND THE EMERGENCY ACCESS GATE SHALL NOT BE OBSTRUCTED AT ANY TIME. THE CONTRACTOR SHALL NOTIFY AND COORDINATE ALL CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE EMERGENCY ACCESS GATE AND U-TURN WITH ALL ASSOCIATED EMERGENCY SERVICES PRIOR TO ANY CONSTRUCTION ACTIVITY.~~

BRIDGE 5IN AND 5IS WERE NOT A PART OF THIS PROJECT

3. ~~THE NEW PERMANENT U-TURN SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD B-17. THE EXISTING SLOPES SHALL BE STRIPPED OF ALL EXISTING TOPSOIL PRIOR TO PLACEMENT OF ITEM 301.28 "SUBBASE OF CRUSHED GRAVEL (FINE GRADED)". SUBBASE OF CRUSHED GRAVEL SHALL BE PLACED TO A MINIMUM DEPTH OF 24 INCHES AND THE FINISH SURFACE SHALL BE 2 INCHES OF ITEM 406.25 "BITUMINOUS CONCRETE PAVEMENT". A NEW 18 INCH CPEP SHALL BE PLACED IN THE NEW U-TURN TO MAINTAIN POSITIVE DRAINAGE TO EXISTING DRAINAGE STRUCTURES. PAYMENT FOR THE NEW PIPE SHALL BE UNDER ITEM 601.0915 "18 INCH CPEP". ANY WORK NECESSARY TO REMOVE THE EXISTING TOPSOIL AND LOAM AND SEED THE FINISHED SLOPES SHALL BE CONSIDERED SUBSIDIARY TO ITEM 641.10 "TRAFFIC CONTROL". THE EXISTING U-TURN SIGNS SHALL BE REMOVED AND SALVAGED TO NEW POSTS IN THE NEW PERMANENT U-TURN. PAYMENT FOR THIS WORK SHALL BE UNDER ITEMS 675.50 "REMOVING SIGNS", 675.60 "ERECTING SALVAGED SIGNS", AND 675.35 "SQUARE STEEL SIGN POSTS", RESPECTIVELY.~~

4. TRAFFIC SHALL BE CONTROLLED AND MAINTAINED AT ALL TIMES THROUGHOUT ALL PHASES OF THIS PROJECT IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

5. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL FOR ALL SIDELINES WHICH WILL REQUIRE LANE CLOSURES ASSOCIATED WITH THIS PROJECT IN ACCORDANCE WITH APPLICABLE STANDARDS. THE CONTRACTOR SHALL DEVELOP A PLAN TO CONTROL TRAFFIC FOR EACH SIDELINE WHICH WILL REQUIRE A LANE CLOSURE AND SUBMIT THIS PLAN TO THE RESIDENT ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL RE-ESTABLISH TWO WAY TRAFFIC ON SIDELINE ROADS PRIOR TO LEAVING THE SITE ON A DAILY BASIS. LANE CLOSURES WILL NOT BE ALLOWED AT NIGHT OR ON WEEKENDS UNLESS APPROVED BY THE RESIDENT ENGINEER. ALL WORK ASSOCIATED WITH SIDELINE TRAFFIC CONTROL SHALL BE SUBSIDIARY TO ITEM 641.10, "TRAFFIC CONTROL".

6. TRAFFIC CONTROL MEASURES WILL NOT BE PERMITTED BETWEEN THE DATES OF NOVEMBER 15 AND APRIL 15 UNLESS OTHERWISE APPROVED BY THE RESIDENT ENGINEER. IN ADDITION, ONCE TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED, THE CONTRACTOR SHALL BEGIN ASSOCIATED BRIDGE WORK IMMEDIATELY AND PROCEED IN A TIMELY MANNER THROUGH COMPLETION IN ORDER TO MINIMIZE INCONVENIENCE TO THE TRAVELING PUBLIC.

7. THE CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLANS AND SCHEDULES FOR ALL WORK ASSOCIATED WITH THIS PROJECT TO THE RESIDENT ENGINEER FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITY.

8. THE NUMBER AND LOCATION OF REFLECTORIZED PLASTIC DRUMS, TYPE III BARRICADES AND DELINEATORS SHOWN ON THESE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS IN ACCORDANCE WITH THE APPLICABLE STANDARDS PRIOR TO PLACEMENT.

9. MILE MARKERS REFERENCED IN THE DRAWINGS SHALL NOT BE USED FOR LAYOUT PURPOSES; THEY ARE INTENDED FOR REFERENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL MILE MARKERS AND STATIONING NECESSARY TO DESIGN AND CONSTRUCT ALL TRAFFIC CONTROL RELATED ITEMS.

10. NO PRIVATE VEHICLES BELONGING TO THE CONTRACTOR'S EMPLOYEES SHALL BE PARKED ON THE INTERSTATE RIGHT-OF-WAY AND/OR THE TRAVELED WAY OF ANY PUBLIC THOROUGHFARE AT ANY TIME THROUGHOUT THE CONSTRUCTION PERIOD.

11. ANY CLEARING AND GRUBBING DEEMED NECESSARY TO CONSTRUCT CROSSOVERS SHALL BE SUBSIDIARY TO ITEM 635.10, "MOBILIZATION".

12. ALL EXISTING PAVEMENT MARKINGS IN CONFLICT WITH TEMPORARY PAVEMENT MARKINGS AS SHOWN IN THE STANDARD E-103, E-104 AND E-104A, SHALL BE COVERED WITH ITEM 646.86 "BLACK PAVEMENT MARKING MASKING TAPE." WHEN APPLIED, THE BLACK PAVEMENT MARKING MASKING TAPE SHALL BE CUT AT 100' INTERVALS TO PREVENT UNRAVELING.

13. TEMPORARY PAVEMENT MARKINGS ON THE CROSSOVERS IN THE MEDIAN SHALL BE PAID AS ITEMS 646.60 "TEMPORARY 4" WHITE LINE" AND 646.61 "TEMPORARY 4" YELLOW LINE". TEMPORARY PAVEMENT MARKINGS THROUGHOUT THE REST OF THE TRAFFIC CONTROL PACKAGE SHALL BE PAID AS ITEMS 646.40 "TEMPORARY 4" WHITE LINE (TAPE, TYPE II) AND 646.41 "TEMPORARY 4" YELLOW LINE (TAPE, TYPE II).

14. IN ACCORDANCE WITH STD E-103, ITEM 646.81 "RAISED PAVEMENT MARKERS, TYPE II" SHALL BE PLACED AT 20 FOOT INTERVALS.

15. PAYMENT FOR PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE UNDER ITEM 641.15 "PORTABLE CHANGEABLE MESSAGE SIGN" AND PAYMENT FOR FLASHING ARROW PANELS SHALL BE UNDER ITEM 641.16 "PORTABLE ARROW BOARD." PAYMENT FOR TRAFFIC CONTROL SIGNS, PLASTIC DRUMS, DELINEATORS, FLEXIBLE TUBULAR MARKERS, TYPE III BARRICADES AND TYPE III (MOD.) BARRICADES SHALL BE UNDER ITEM 641.10 "TRAFFIC CONTROL". PAYMENT SHALL INCLUDE ALL NECESSARY MAINTENANCE AND REPAIRS TO THESE TRAFFIC CONTROL DEVICES ON A DAILY BASIS. THE ENGINEER MAY ADD TRAFFIC CONTROL SIGNS AS NECESSARY. ADDITIONAL SIGNS, INCLUDING POSTS AND FOUNDATIONS, SHALL BE PAID FOR AS ITEM 675.20, "TRAFFIC SIGNS, TYPE A (MOD.)" IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

16. THE CONTRACTOR SHALL KEEP AN EXTRA PORTABLE CHANGEABLE MESSAGE BOARD AND A PORTABLE ARROW BOARD ON SITE TO BE USE AS A "BACK-UP" IN THE EVENT THAT A PORTABLE CHANGEABLE MESSAGE BOARD OR A PORTABLE ARROW BOARD IS RENDERED INOPERATIVE. PAYMENT FOR ADDITIONAL PORTABLE CHANGEABLE MESSAGE BOARD AND PORTABLE ARROW BOARD SHALL BE PAID FOR UNDER ITEMS 641.15 AND 641.16 RESPECTIVELY.

17. FOR CLARITY, NOT ALL EXISTING SIGNS ARE SHOWN ON THE PLANS. CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING SIGNS IN THE FIELD. PLACEMENT OF CONSTRUCTION SIGNS SHALL BE DIRECTED BY THE RESIDENT ENGINEER WHERE CONFLICTS WITH EXISTING SIGNS OCCUR.

18. THE CONTRACTOR SHALL COVER OR REMOVE ANY SIGNS THAT CONTRADICT TEMPORARY TRAFFIC CONTROL SIGNS. ALL SIGNS REMOVED OR COVERED BY THE CONTRACTOR SHALL BE REPLACED OR UNCOVERED BY THE CONTRACTOR WHEN THE TRAFFIC CONTROL PLAN IS DISASSEMBLED. A TEMPORARY OVERLAY "CLOSED" SIGN SHALL BE PLACED ON THE "REST AREA NEXT RIGHT" SIGN AT STA 876+50 NORTHBOUND AND STA 964+80 SOUTHBOUND DURING CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A SIGN DETAIL AND ATTACHMENT PROCEDURES TO THE RESIDENT ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. PAYMENT FOR REMOVAL AND REPLACEMENT, COVERING AND UNCOVERING OF SIGNS AND PLACEMENT AND REMOVAL OF TEMPORARY OVERLAYS SHALL BE SUBSIDIARY TO ITEM 641.10, "TRAFFIC CONTROL". ANY DAMAGE TO EXISTING SIGNS BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR WITH NO EXTRA COMPENSATION.

19. DURING BRIDGE REHABILITATION OPERATIONS, TRAVEL LANES UNDER THE BRIDGE SHALL BE PROTECTED BY ENCLOSING THE AREA BELOW THE DECK (WITHOUT REDUCING OVERHEAD CLEARANCE). THE CONTRACTOR SHALL SUBMIT DETAILS OF PROTECTIVE ENCLOSURES TO THE RESIDENT ENGINEER FOR APPROVAL. COSTS FOR PROVIDING PROTECTIVE ENCLOSURES SHALL BE PAID FOR UNDER ITEM 527.11 "TRAFFIC PROTECTION FOR BRIDGE PROJECT".

20. WHERE CROSSOVERS ARE TO BE PLACED, EXISTING SLOPES SHALL BE STRIPPED OF TOPSOIL AND BENCHED AS DIRECTED BY THE ENGINEER. FILL MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT AND SHALL BE FREE OF EXCESSIVE AMOUNTS OF MOISTURE, ORGANICS, AND SILTS. SUBBASE MATERIAL SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO PLACEMENT AND SHALL BE PLACED TO A MAXIMUM DEPTH OF 12 INCHES. PAVING OF CROSSOVER DETOURS SHALL BE PAID FOR AS ITEM 406.25, "BITUMINOUS PAVEMENT, TYPE III". THE PAVEMENT SHALL BE PLACED IN A SINGLE COURSE OF 2 INCHES OF DEPTH. THE COST OF ALL OTHER WORK REQUIRED FOR THE DESIGN, CONSTRUCTION AND REMOVAL OF CROSSOVERS SHALL BE SUBSIDIARY TO ITEM 641.10 "TRAFFIC CONTROL".

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MAINTAINING AND REMOVING TEMPORARY DRAINAGE STRUCTURES AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE TO EXISTING DRAINAGE STRUCTURES (IE: CATCH BASINS, CULVERTS) WHICH COULD BECOME BLOCKED FROM INSTALLATION OF THE CROSSOVERS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING DRAINAGE STRUCTURES AND SUBMIT A TEMPORARY DRAINAGE PLAN FOR EACH CROSS OVER TO THE RESIDENT ENGINEER FOR APPROVAL. PAYMENT FOR DEVELOPMENT OF THIS PLAN AND ALL CONSTRUCTION ACTIVITIES ASSOCIATED WITH TEMPORARY DRAINAGE SHALL BE CONSIDERED SUBSIDIARY TO ITEM 641.10, "TRAFFIC CONTROL".

NOTE: THIS PROJECT ORIGINALLY INCLUDED BRIDGES 5IN&S, WHICH HAVE BEEN SUBSEQUENTLY REMOVED TO FORM A NEW CONSTRUCTION CONTRACT FOR BRIDGES 43N&S, 48N&S, 49M&S, AND 50N&S ONLY. ANY REFERENCE IN THESE PLANS OR IN THE SPECIFICATIONS TO BRIDGES 5IN&S SHALL BE IGNORED.

DuBois & King, Inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. -
Highway No. I-89	Log Sta.
	Surv. Sta.

I-89 PHASE I & PHASE II CONSTRUCTION

TRAFFIC CONTROL NOTES

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\TRAFFICO.DGN	Date OCT 1999
Bridge Sheet No. TC-1A	Sheet 160 of 307

TRAFFIC CONTROL NOTES (CONT.)

22. THE CONTRACTOR WILL BE REQUIRED TO INSTALL, MAINTAIN AND REMOVE TEMPORARY EROSION CONTROL MEASURES TO PREVENT EROSION OF FILL MATERIAL ASSOCIATED WITH THE CROSSOVERS AND FOR AREAS WHICH ARE DISTURBED DURING CONSTRUCTION. THE CONTRACTOR SHALL DEVELOP A TEMPORARY EROSION CONTROL PLAN IN ACCORDANCE WITH STANDARDS T-1 AND T-2 AND SUBMIT IT TO THE RESIDENT ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. PAYMENT FOR TEMPORARY EROSION CONTROL MEASURES SHALL BE FOR AS ITEM 651.26 "HAY BALES FOR EROSION CONTROL" AND ITEM 649.51 "GEOTEXTILE FOR SILT FENCE".

23. WHERE CROSSOVERS TRAVERSE AN EXISTING U-TURN, THE CONTRACTOR SHALL MAINTAIN A SMOOTH TRANSITION THROUGHOUT THE CROSSOVER. ANY EXCAVATION OR FILL NECESSARY TO PROVIDE A SMOOTH TRANSITION DURING CONSTRUCTION AND RETURN THE U-TURN TO ORIGINAL CONDITION AS DIRECTED BY THE RESIDENT ENGINEER SHALL BE SUBSIDIARY TO ITEM 641.10 "TRAFFIC CONTROL".

24. ALL GUARDRAIL, BRIDGE APPROACH RAIL OR BRIDGE RAIL THAT IS LAPPED IN THE OPPOSITE DIRECTION OF TRAVEL SHALL BE TEMPORARILY RESET TO PROVIDE LAPS IN THE DIRECTION OF TRAVEL. ANY WORK REQUIRED TO CHANGE DIRECTION OF THE LAPS DURING CONSTRUCTION AND RESTORE TO ORIGINAL CONDITION AFTER CONSTRUCTION OR RESET RAILING SHALL BE SUBSIDIARY TO ITEM 641.10 "TRAFFIC CONTROL".

25. WHERE END TERMINALS DO NOT MEET APPLICABLE STANDARDS FOR APPROACHING TRAFFIC WITHIN THE CROSSOVERS, THE EXISTING END TERMINALS WILL BE REMOVED AND A MANUFACTURED TERMINAL SECTION (MTS) SHALL BE INSTALLED AND PAID AS ITEM 621.505 "MANUFACTURED TERMINAL SECTION". UPON REMOVAL OF THE CROSSOVER, THE MANUFACTURED TERMINAL SECTION SHALL BE REMOVED, DELIVERED TO THE VAOT MIDDLESEX MAINTENANCE FACILITY AND THE ORIGINAL END TERMINAL INSTALLED. PAYMENT FOR REMOVAL OF THE MANUFACTURED TERMINAL SECTION AND INSTALLATION OF THE EXISTING ENDTERMINAL SHALL BE SUBSIDIARY TO ITEM 641.10 "TRAFFIC CONTROL".

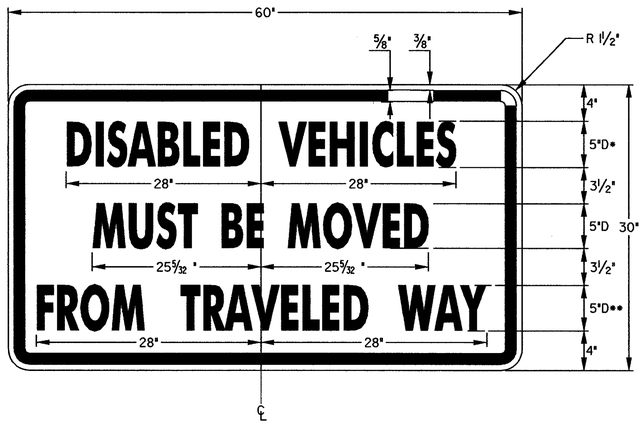
26. THE CONTRACTOR SHALL REPLACE ALL DELINEATOR POSTS, DELINEATORS, GUARDRAIL, APPROACH RAIL AND BRIDGE RAIL THAT IS DAMAGED OR DESTROYED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF THE CROSSOVERS AND RE-ESTABLISHMENT OF TURF AND VEGETATION ON ALL PORTIONS OF THE SITE THAT HAVE BEEN DISTURBED DURING CONSTRUCTION. ALL COSTS FOR THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO ITEM 641.10, "TRAFFIC CONTROL."

28. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE FOR ALL EXISTING DRAINAGE STRUCTURES AND SYSTEMS. NO STAGNATION OF OR EROSION FROM STORMWATER SHALL BE PERMITTED ON ACCOUNT OF TEMPORARILY CONSTRUCTED TRAFFIC CONTROL STRUCTURES OR DEVICES. PAYMENT FOR THIS WORK WILL BE CONSIDERED SUBSIDIARY TO ITEM 641.10, "TRAFFIC CONTROL."

29. THROUGHOUT THE BRIDGE 48, 49 AND 50 CROSSOVER TEMPORARY EMERGENCY REFUGES SHALL BE CONSTRUCTED FOR DISABLED VEHICLES TRAVELLING IN THE OPPOSING LANES OF THE HIGHWAY (I.E. NORTHBOUND TRAFFIC IN THE SOUTHBOUND BARREL). THE REFUGES SHALL HAVE 50:1 ENTRANCE AND EXIT TAPERS WITH A TANGENT SECTION 10 FEET WIDE AND 100 FEET IN LENGTH. THESE REFUGES SHALL BE CONSTRUCTED APPROXIMATELY EVERY ½ MILE THROUGHOUT THE CROSSOVER AS DIRECTED BY THE RESIDENT ENGINEER. THE SURFACE OF THE REFUGES SHALL BE SUBBASE OF CRUSHED GRAVEL. PAYMENT FOR ALL WORK NECESSARY TO CONSTRUCT AND REMOVE THE TEMPORARY EMERGENCY REFUGES SHALL BE SUBSIDIARY TO ITEM 641.10 "TRAFFIC CONTROL".

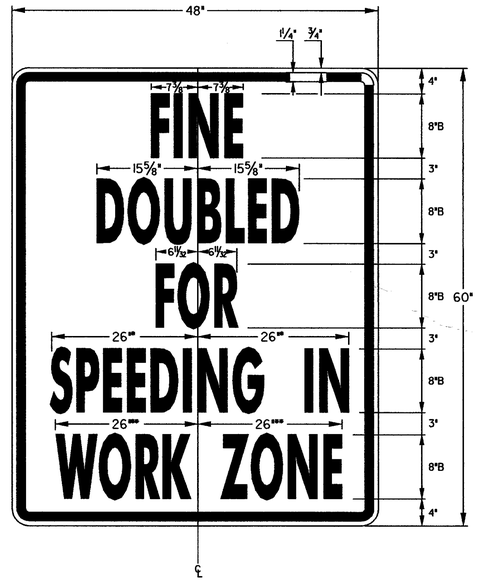
30. ALL EXISTING 65 MILE PER HOUR SPEED LIMIT SIGNS LOCATED WITHIN THE LIMITS OF THE TRAFFIC CONTROL SHOWN ON THESE SHEETS SHALL BE COVERED DURING CONSTRUCTION. PAYMENT FOR COVERING AND UNCOVERING OF SIGN SHALL BE SUBSIDIARY TO ITEM 641.10 "TRAFFIC CONTROL".



VC–838

* REDUCE SPACING BY 5%
** REDUCE SPACING BY 13%

COLORS: BLACK TEXT AND BORDER
WITH REFLECTORIZED ORANGE BACKGROUND



VR–355

EXPWY FWY 26"* REDUCE SPACING BY 12%
EXPWY FWY 26"** REDUCE SPACING BY 7.7%

COLORS: BLACK TEXT AND BORDER
WITH WHITE REFLECTORIZED BACKGROUND

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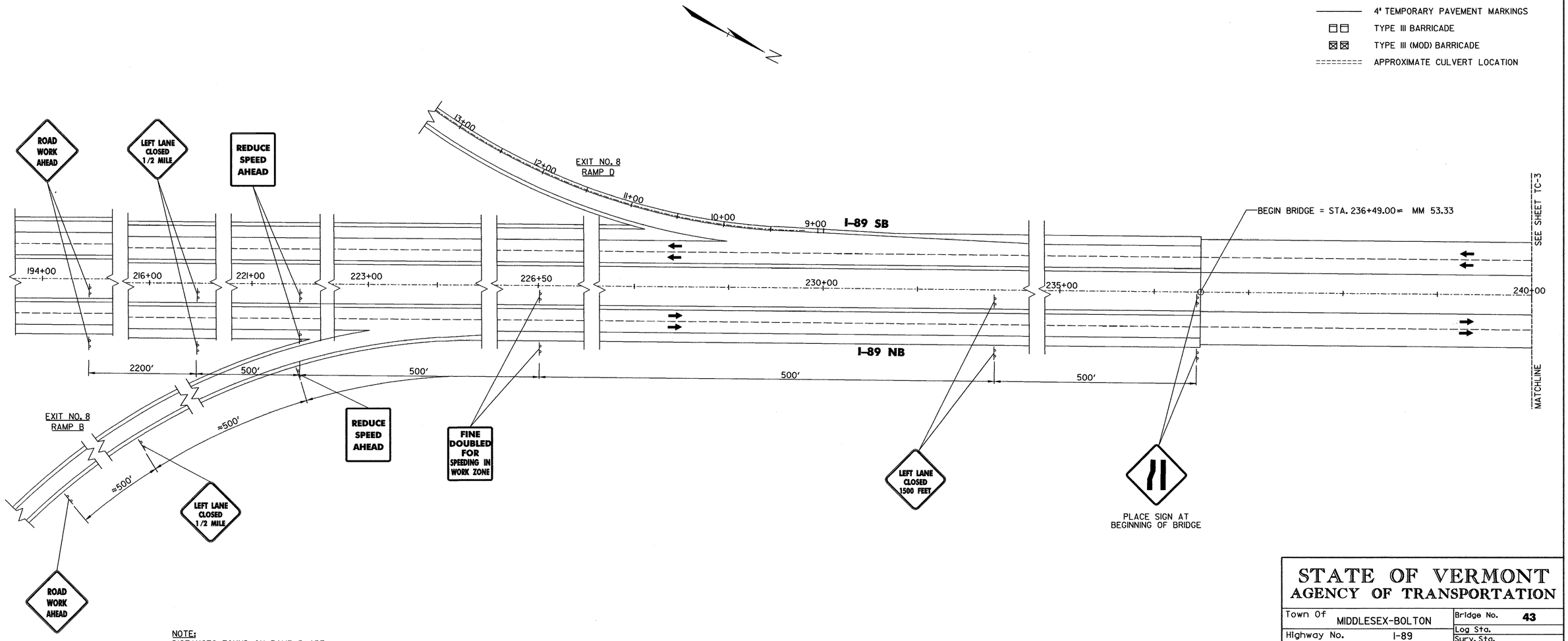
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. -
Highway No. I-89	Log Sta. / Surv. Sta.
I-89 PHASE I & PHASE II CONSTRUCTION	
TRAFFIC CONTROL NOTES	
Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\TRAFFICO.DGN	Date OCT 1999
Bridge Sheet No. TC-18	Sheet 161 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



NOTE:
DISTANCES FOUND ON RAMP B ARE APPROXIMATE. "ROAD WORK AHEAD" SIGN SHALL BE PLACED AT THE ENTRANCE TO RAMP B.

50 0 25 50 100 200
SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-2	Sheet 162 of 307

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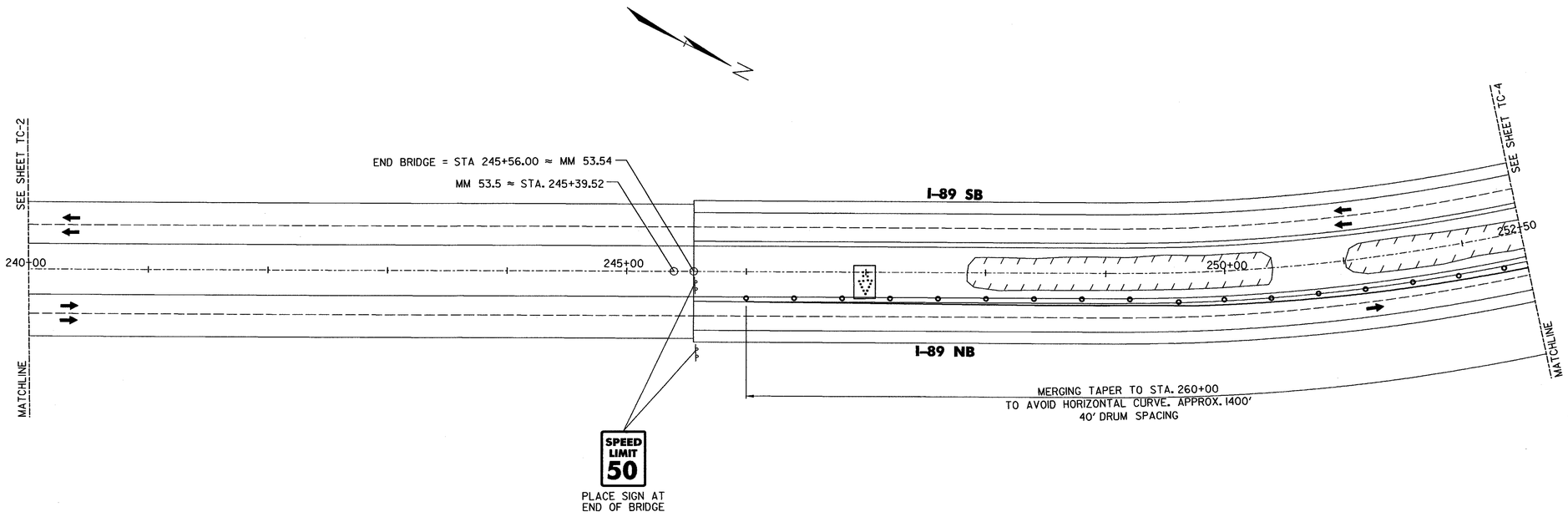
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



50 0 25 50 100 200
SCALE IN FEET

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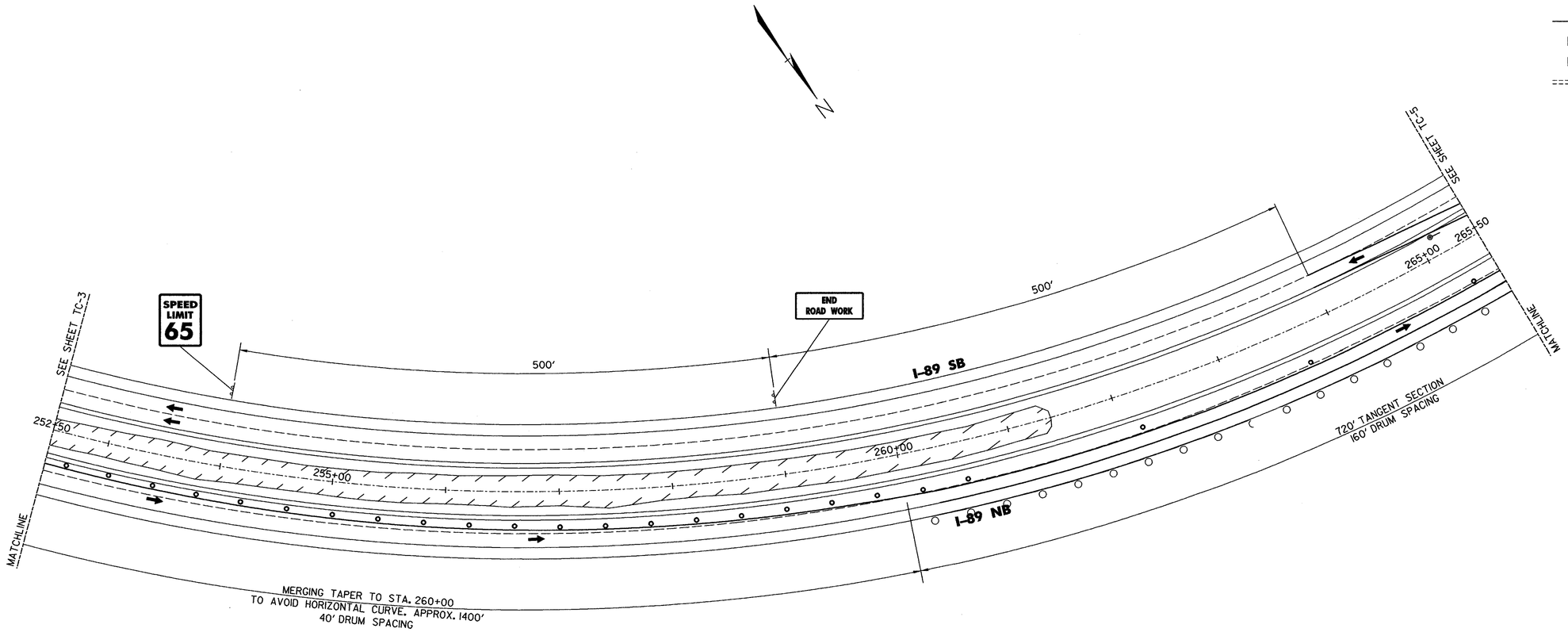
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER	
BRIDGE 43	
Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-3	Sheet 163 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



50 0 25 50 100 200

SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta.
	Surv. Sta.

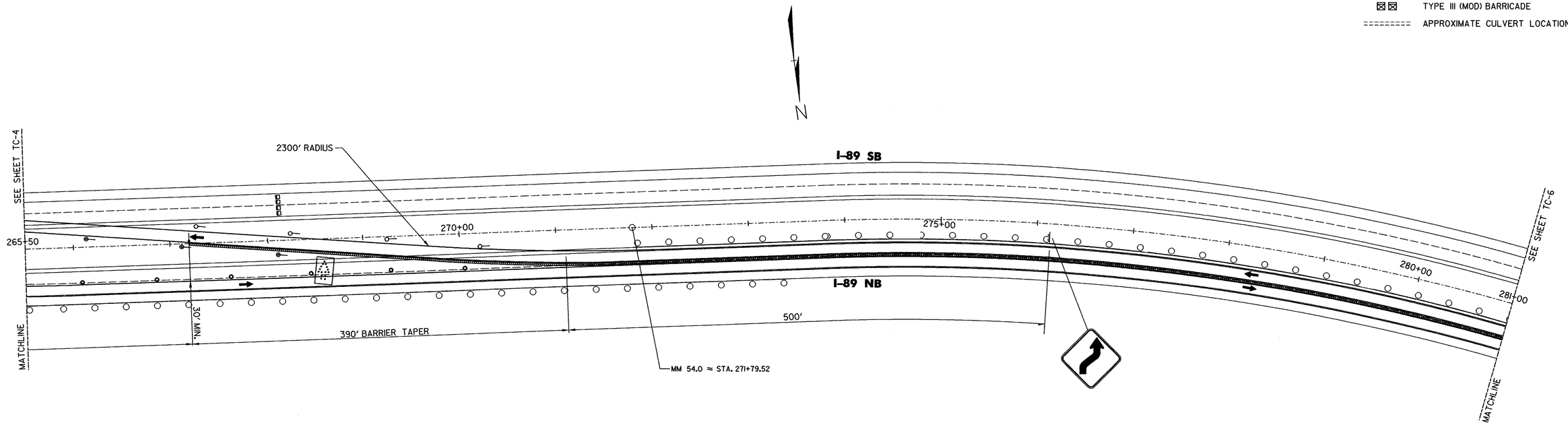
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-4	Sheet 164 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

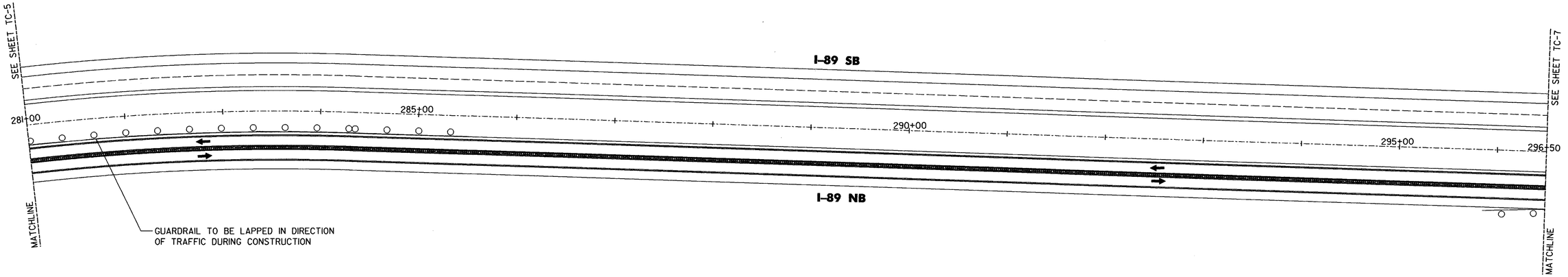
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By JJM.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-5	Sheet 165 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta.
	Surv. Sta.

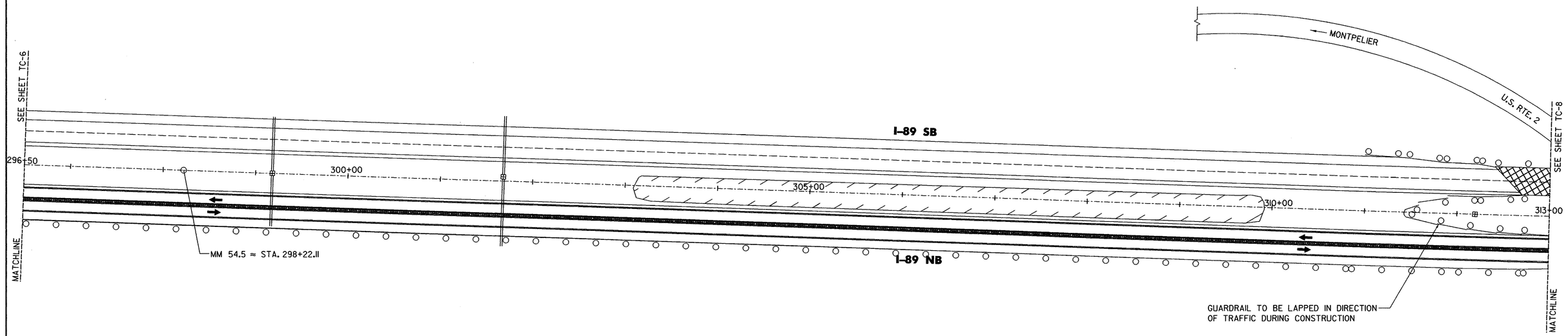
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-6	Sheet 166 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

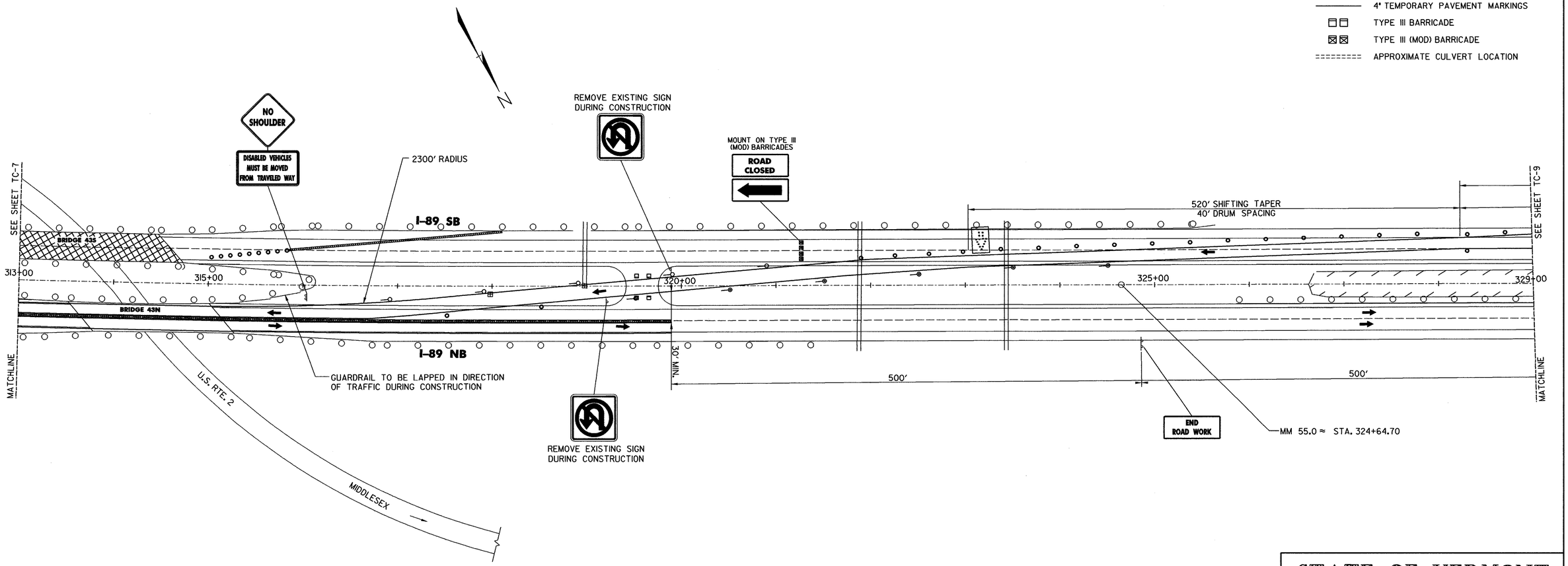
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-7	Sheet 167 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-8	Sheet 168 of 307

DuBois & King inc.
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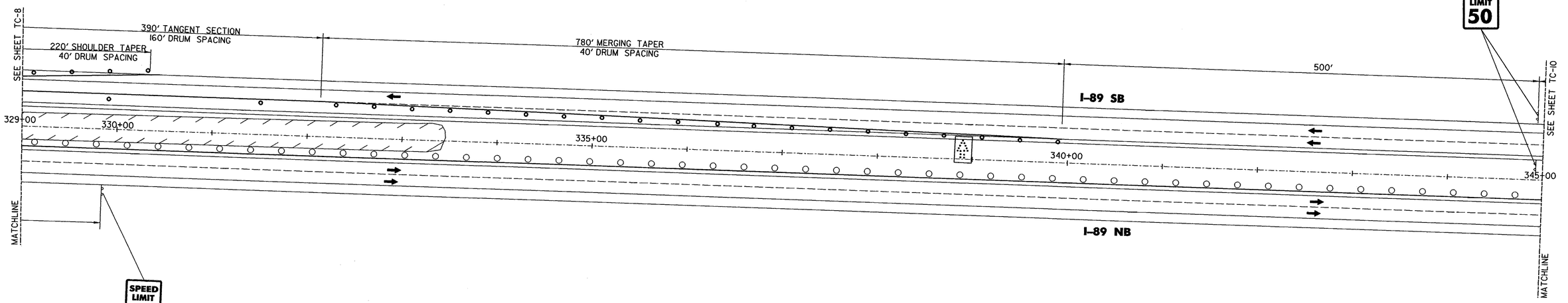
LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

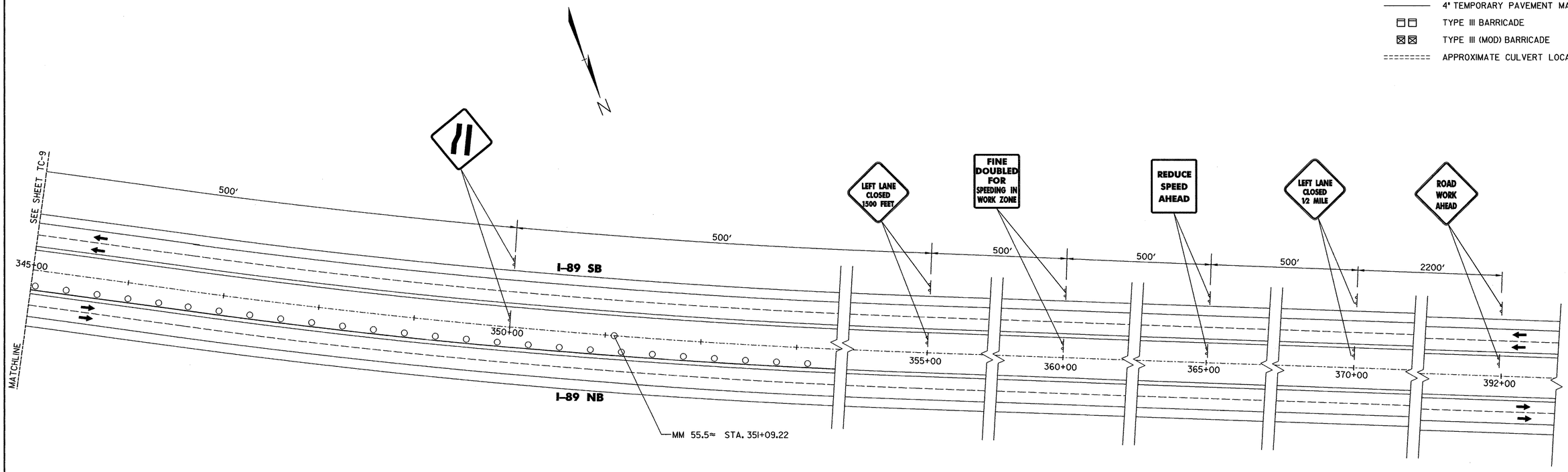
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-9	Sheet 169 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

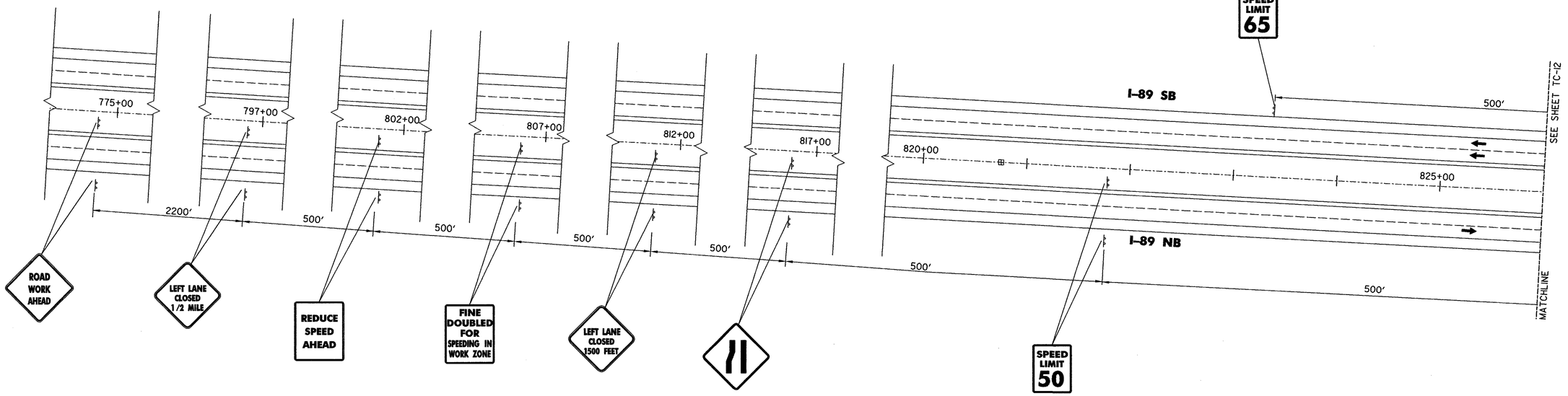
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-10	Sheet 170 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

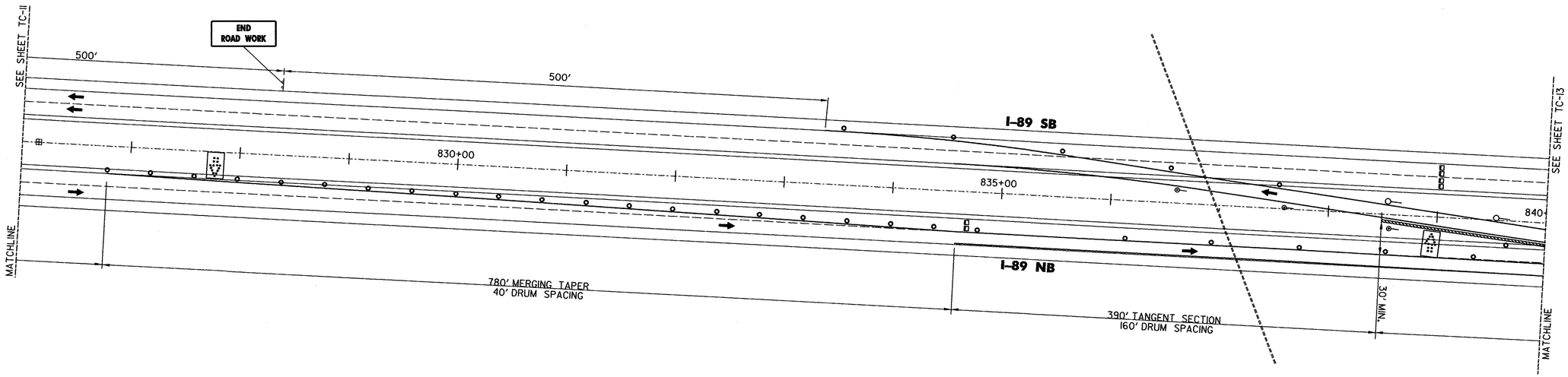
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-11	Sheet 171 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

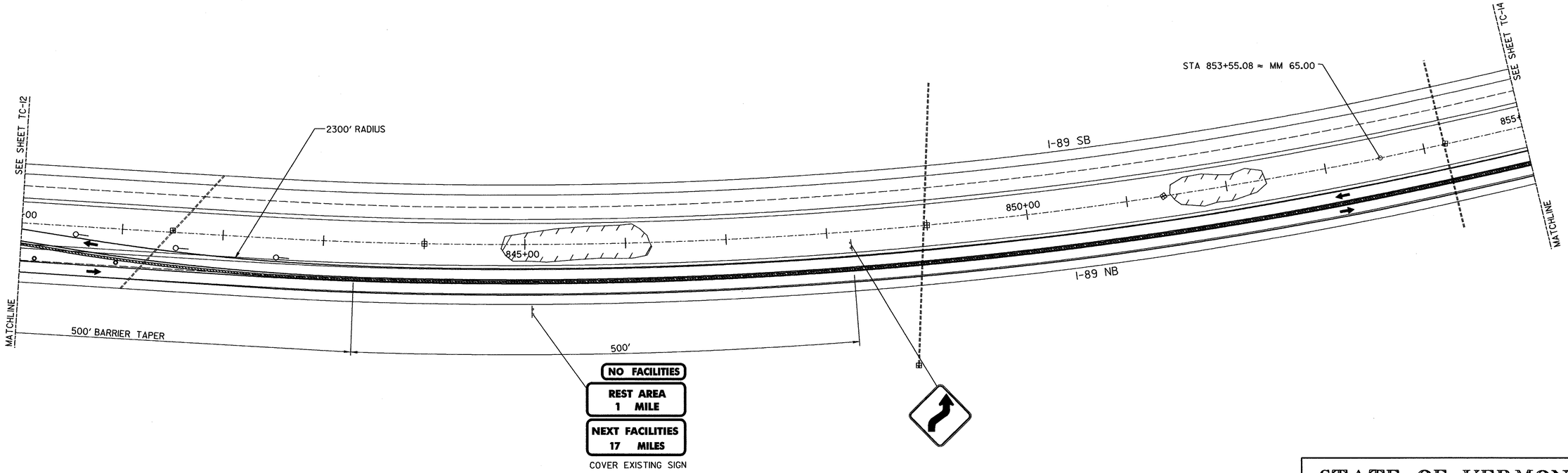
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-12	Sheet 172 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

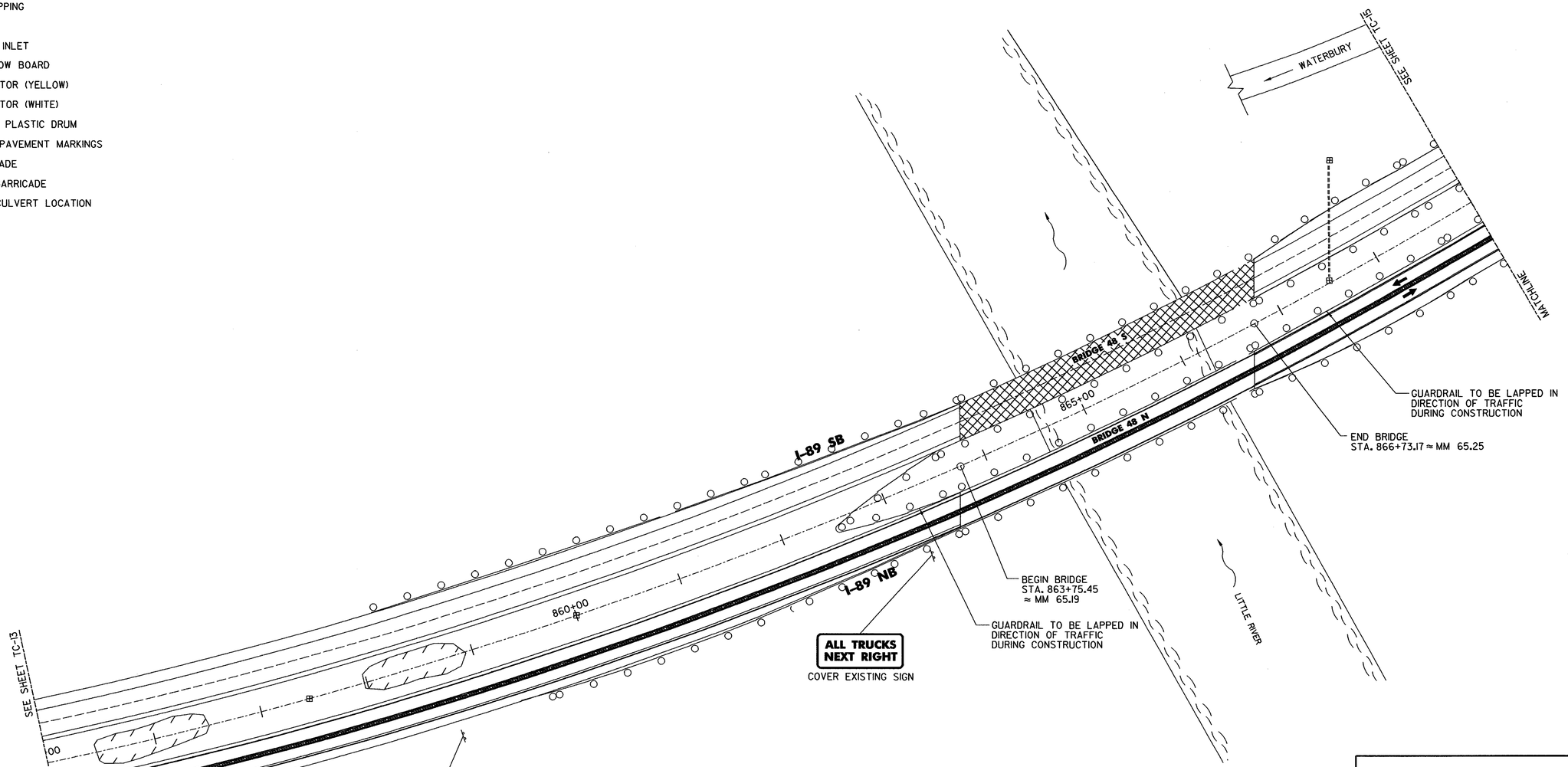
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-13	Sheet 173 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

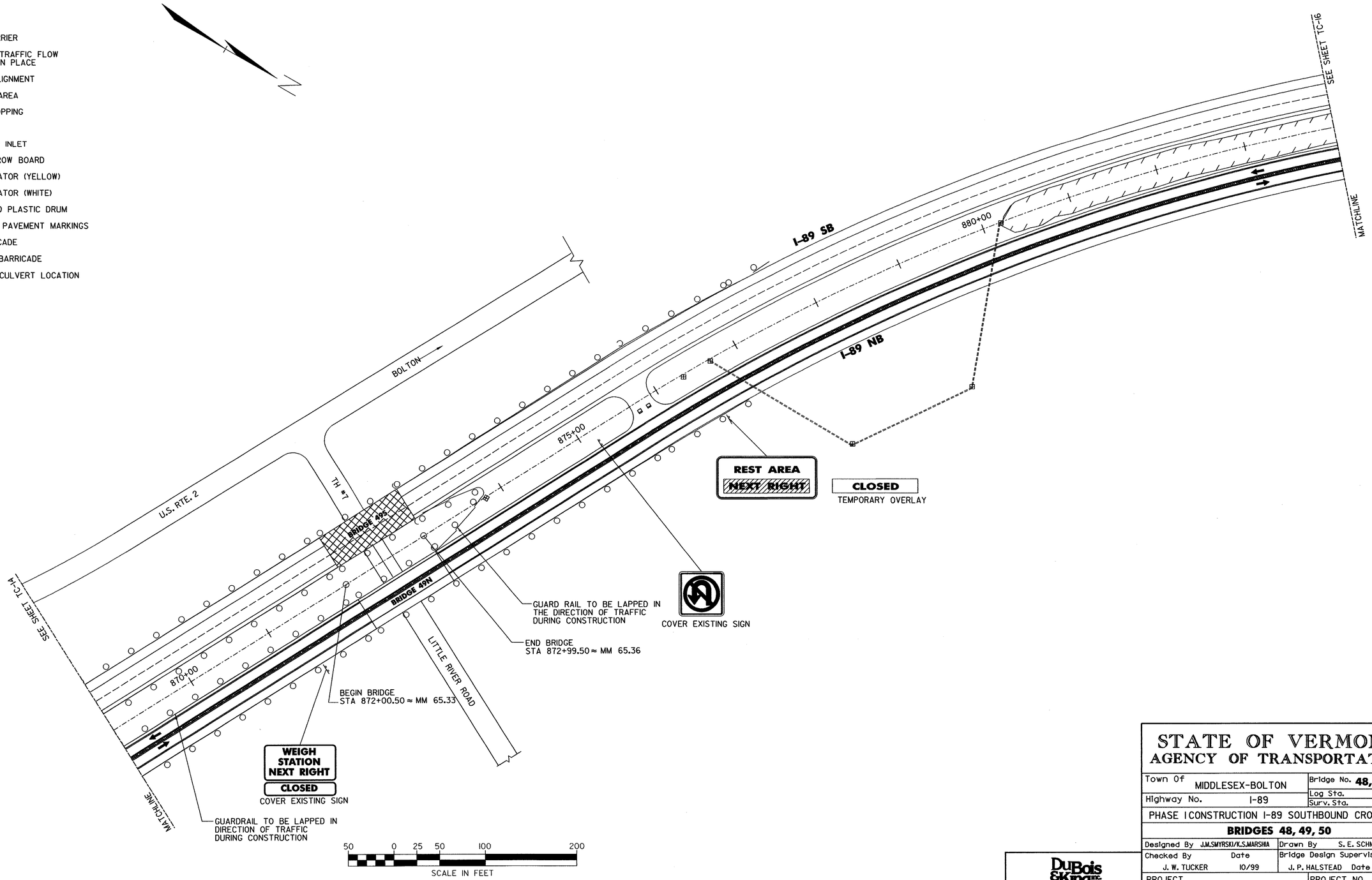
BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-14	Sheet 174 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



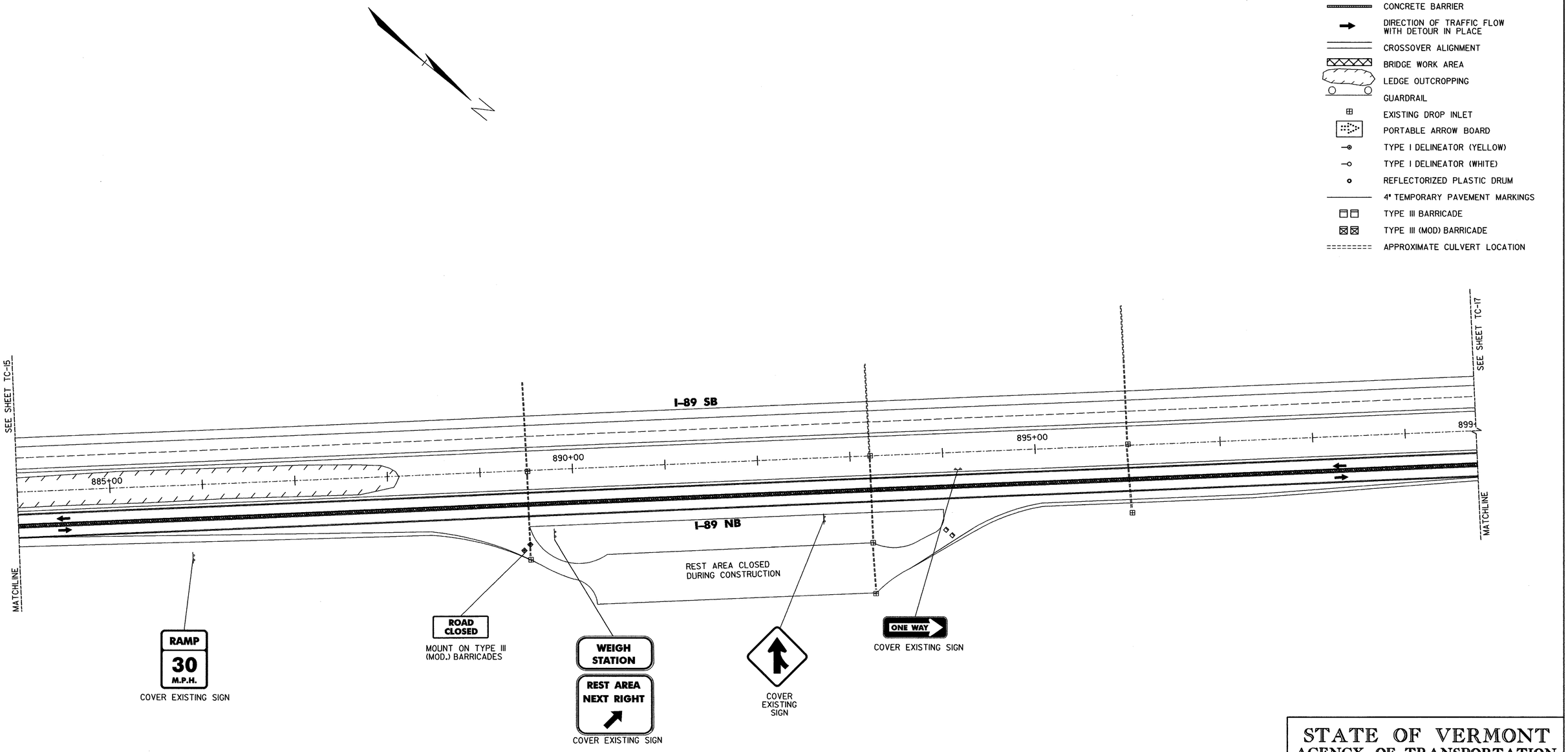
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER	
BRIDGES 48, 49, 50	
Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-15	Sheet 175 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

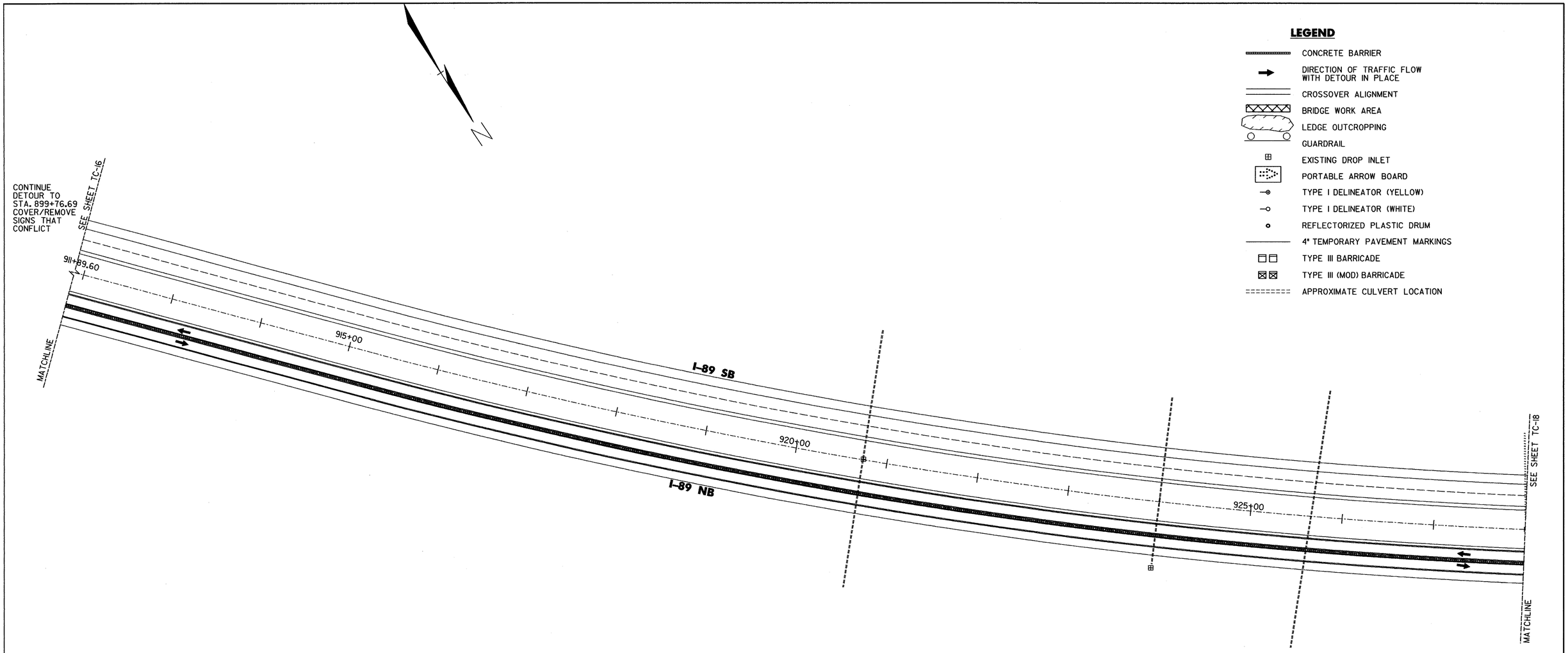
Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-16	Sheet 176 of 307

DuBois & King inc
engineering planning management development



LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

50 0 25 50 100 200
SCALE IN FEET

DuBois & King inc.
engineering planning management development

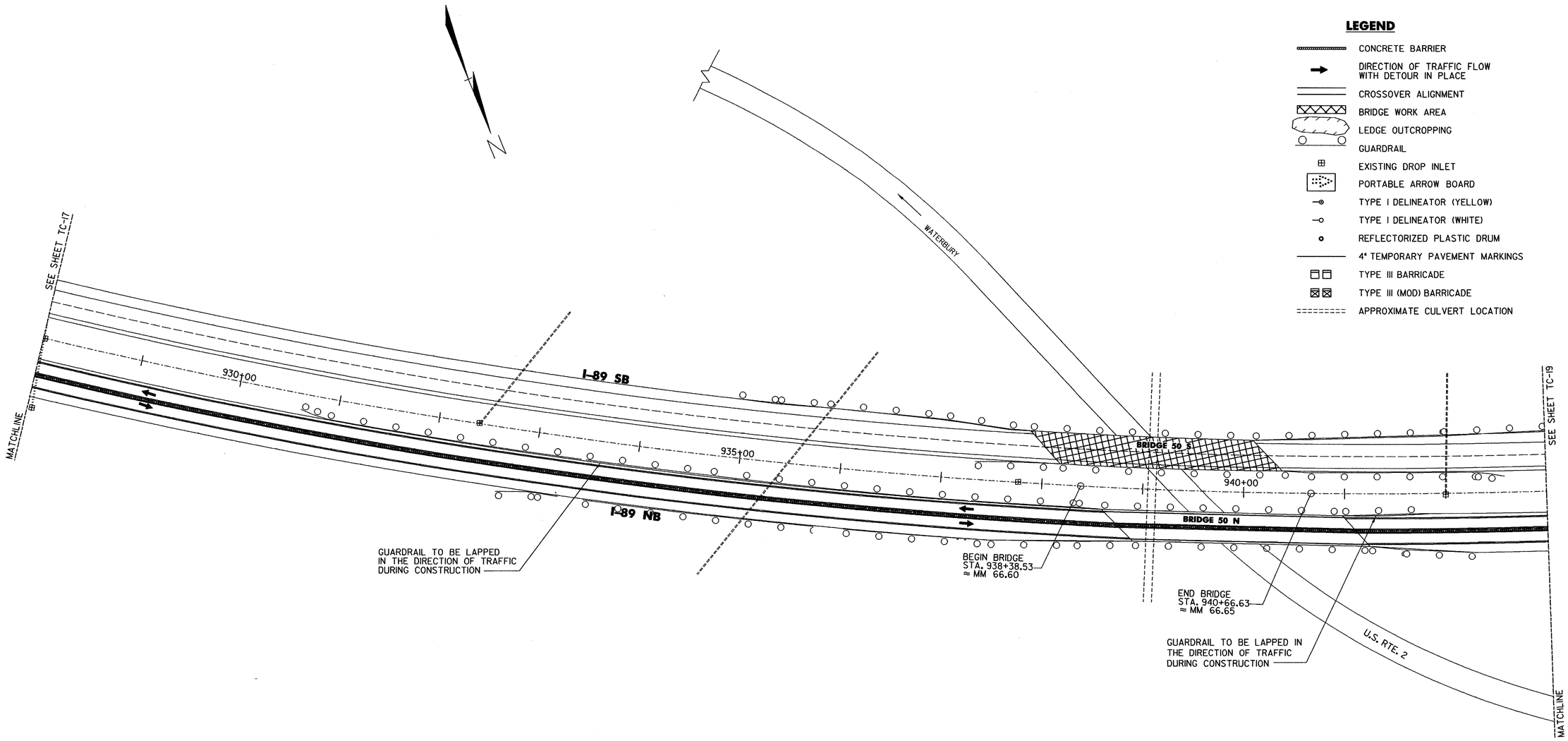
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-17	Sheet 177 of 307



LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

50 0 25 50 100 200
SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

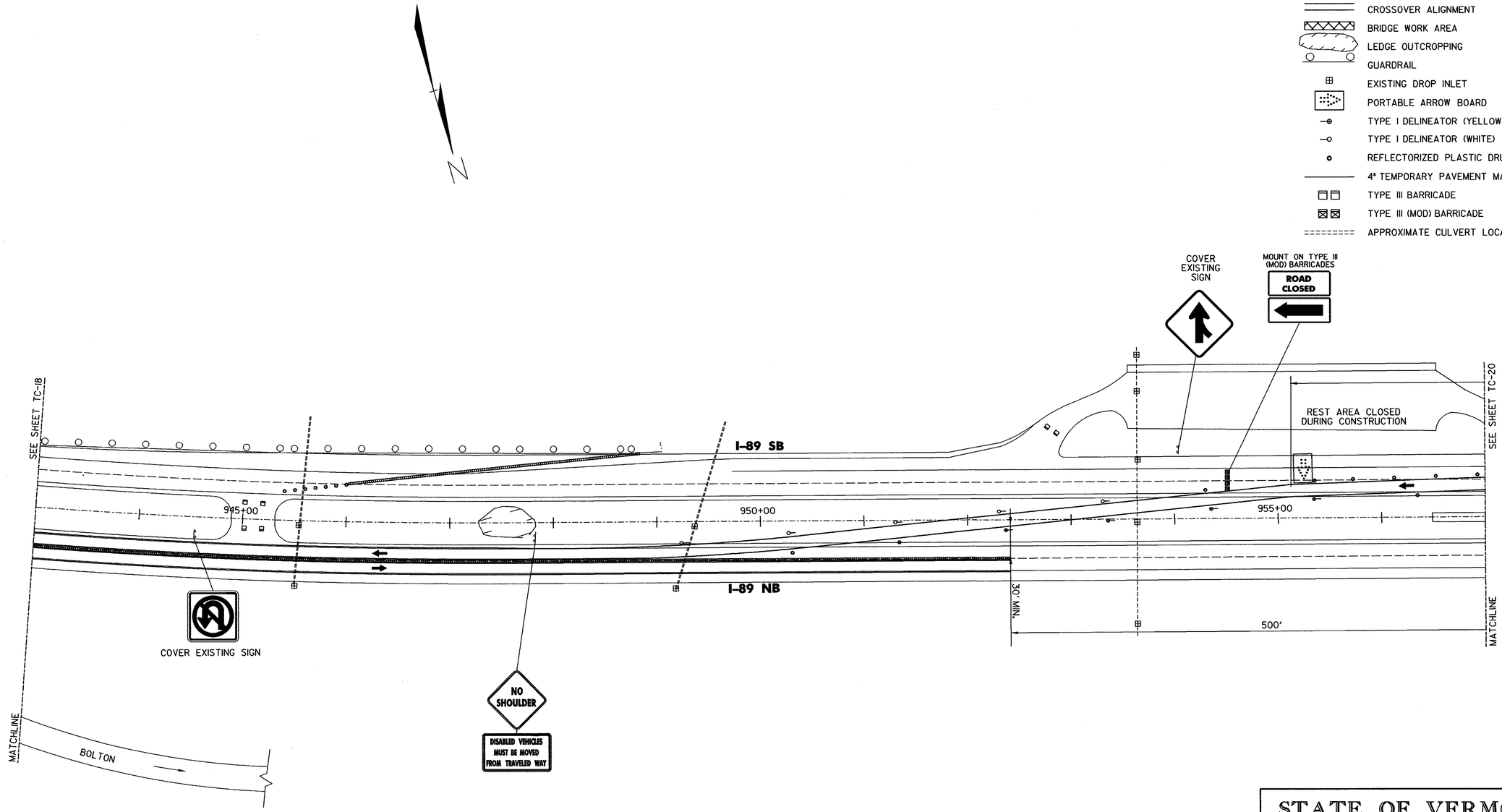
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-18	Sheet 178 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

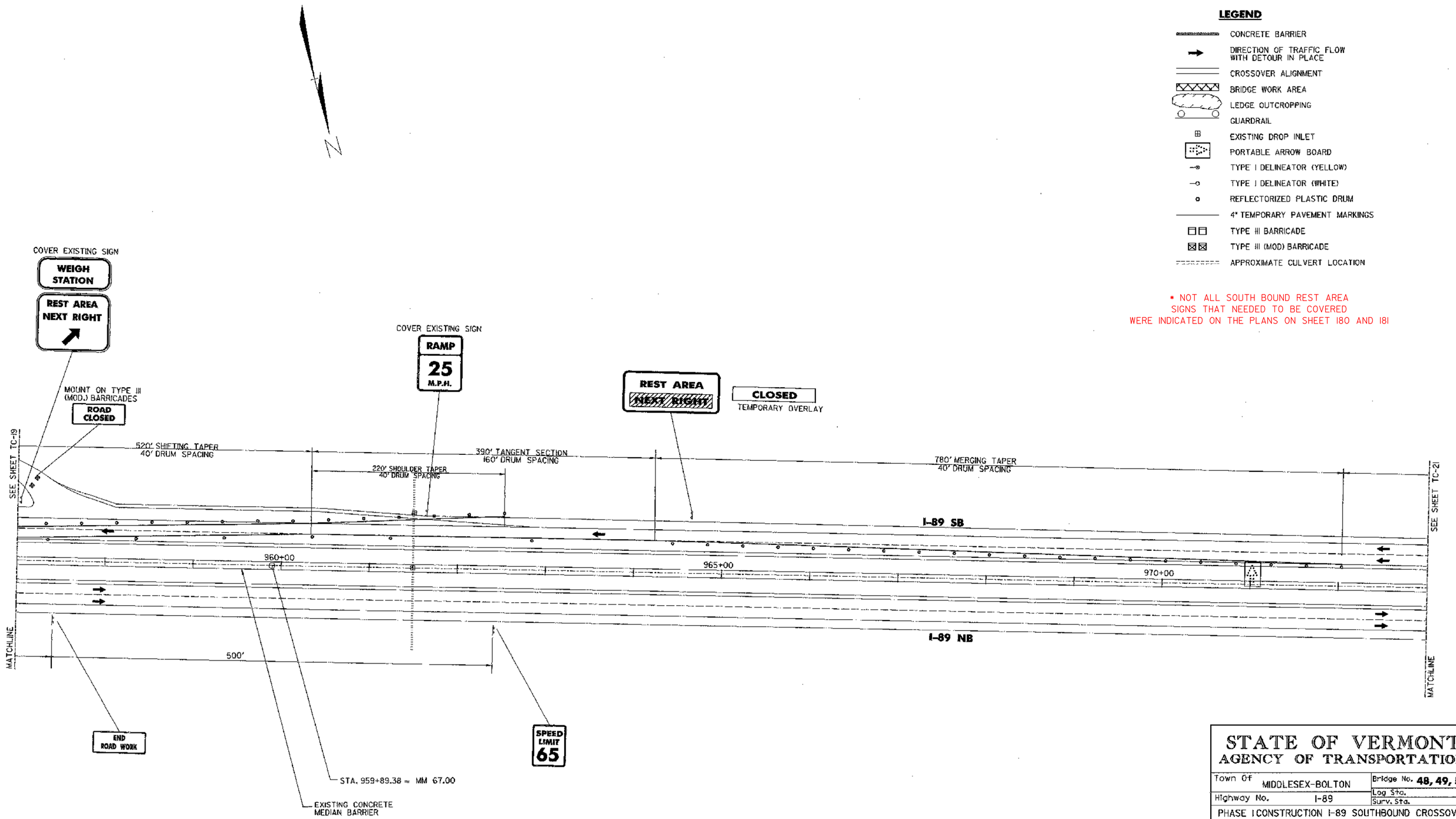
Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-19	Sheet 179 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

* NOT ALL SOUTH BOUND REST AREA SIGNS THAT NEEDED TO BE COVERED WERE INDICATED ON THE PLANS ON SHEET 180 AND 181



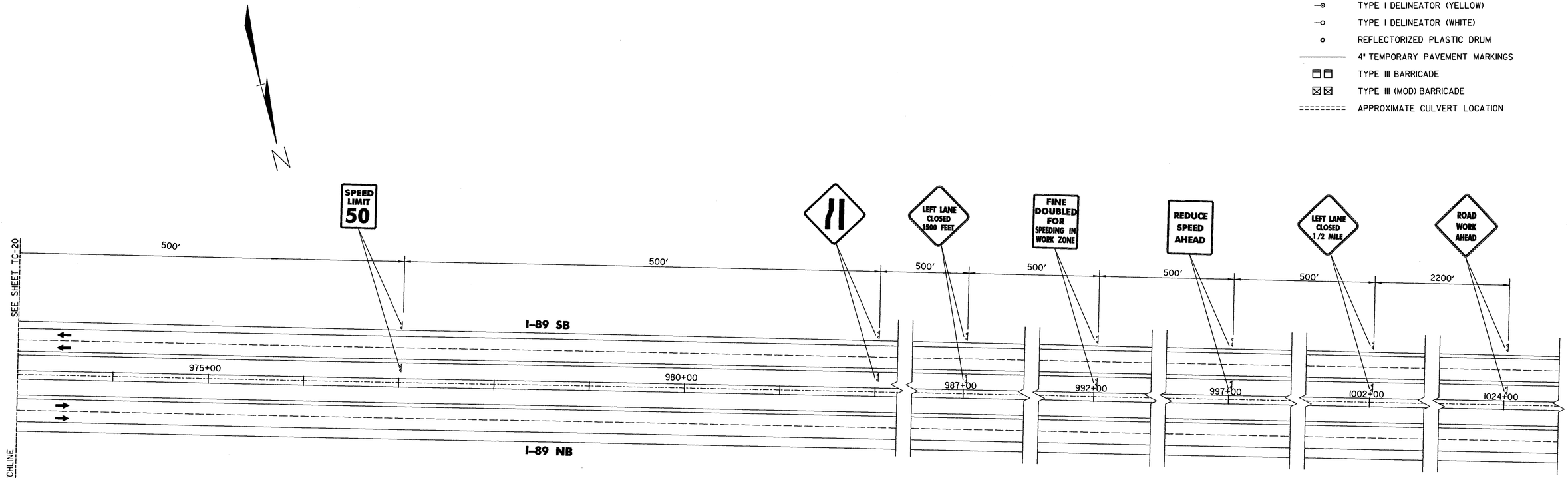
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
HIghway No. I-89	Log Sta. / Surv. Sta.
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER	
BRIDGES 48, 49, 50	
Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-20	Sheet 180 of307

DuBois & King inc. engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



50 0 25 50 100 200

SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

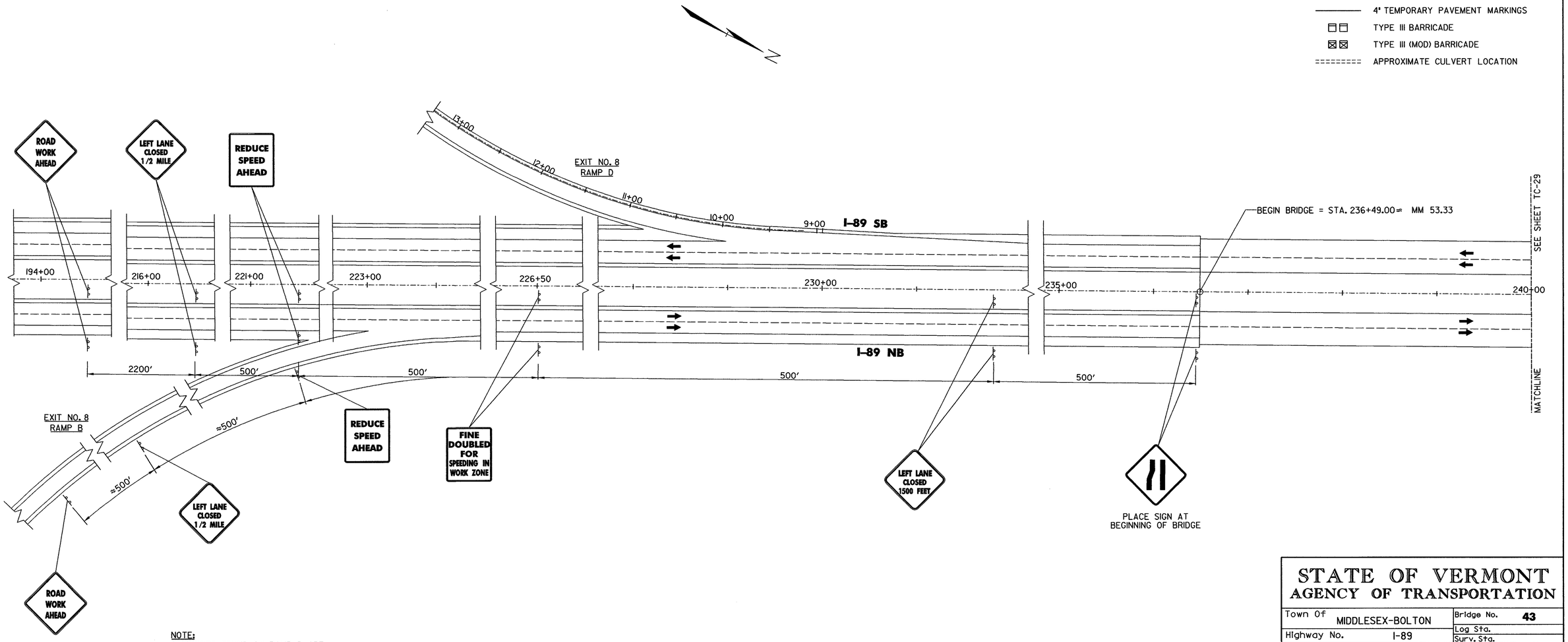
PHASE I CONSTRUCTION I-89 SOUTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-sb.dgn	Date OCT 1999
Bridge Sheet No. TC-21	Sheet 181 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



NOTE:
DISTANCES FOUND ON RAMP B ARE APPROXIMATE. "ROAD WORK AHEAD" SIGN SHALL BE PLACED AT THE ENTRANCE TO RAMP B.

50 0 25 50 100 200
SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

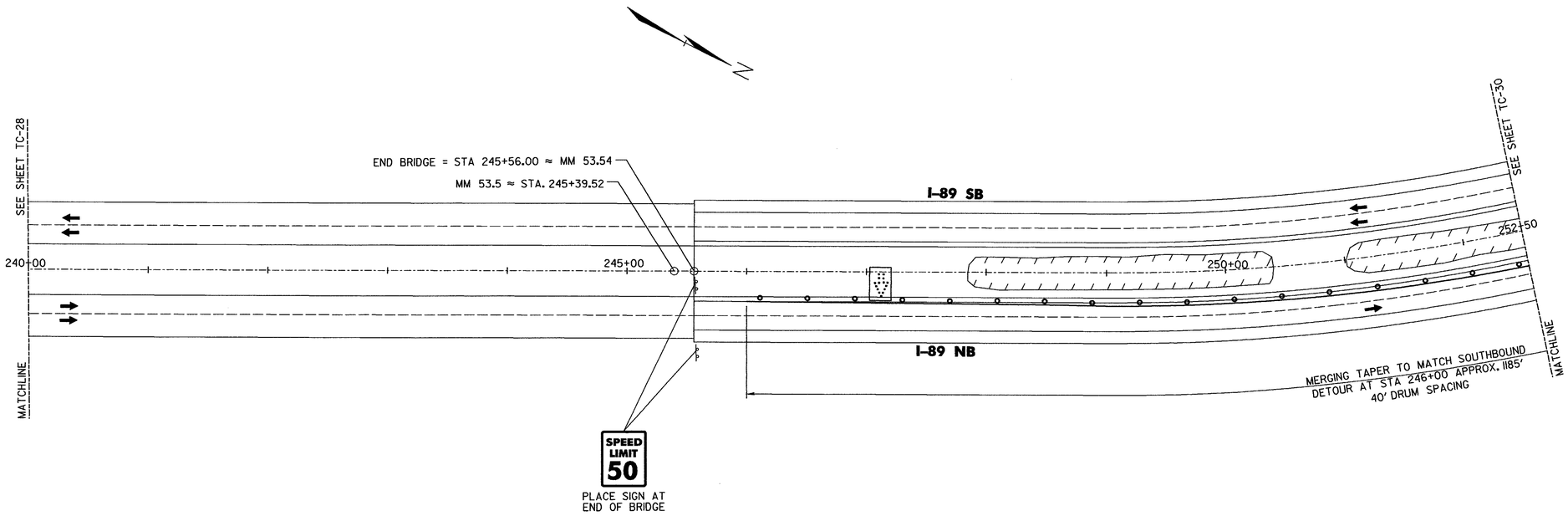
BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-28	Sheet 188 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGE 43

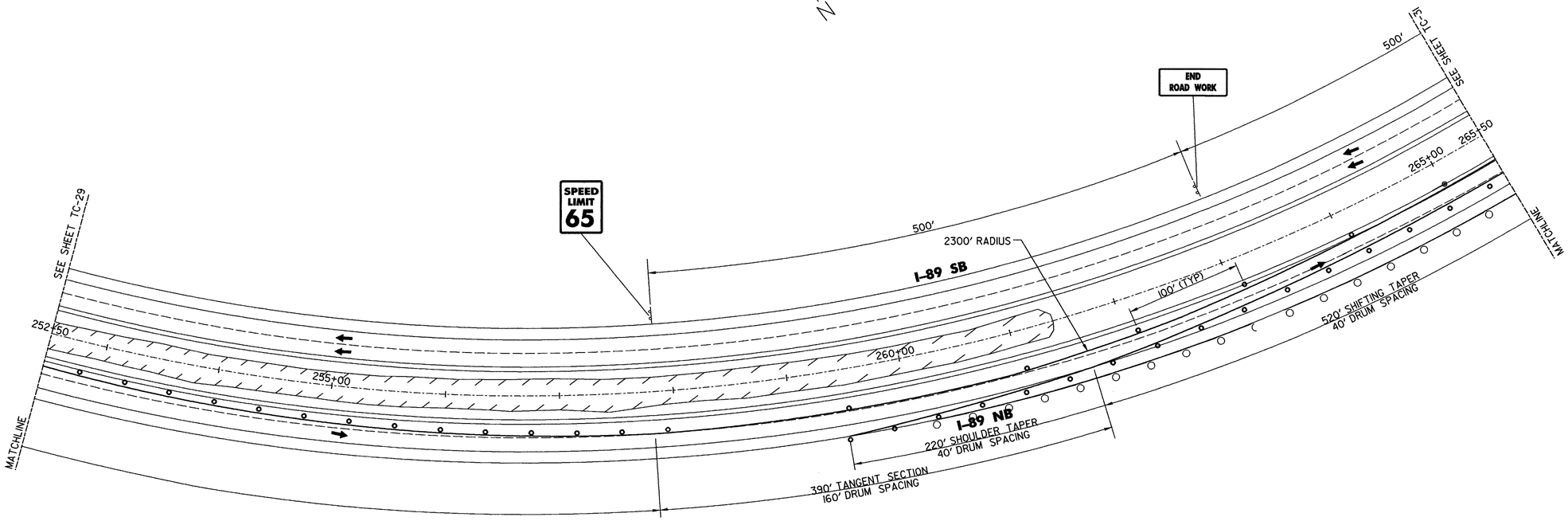
Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-29	Sheet 189 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

N



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

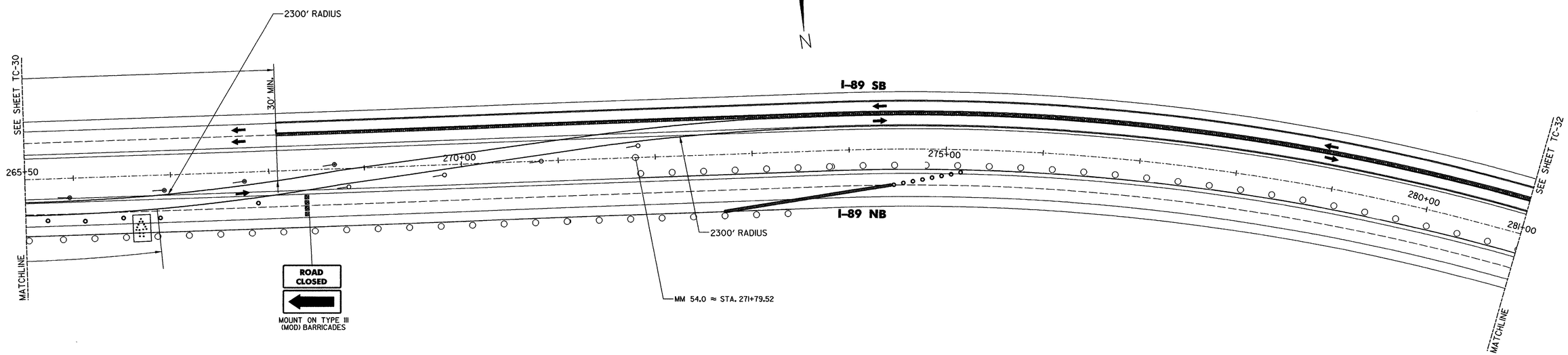
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-30	Sheet 190 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

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engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-31	Sheet 191 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

N

SEE SHEET TC-31

SEE SHEET TC-33

I-89 SB

281+00 285+00 290+00 295+00 296+50

I-89 NB

MATCHLINE

MATCHLINE

50 0 25 50 100 200

SCALE IN FEET

DuBois & King inc.

engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

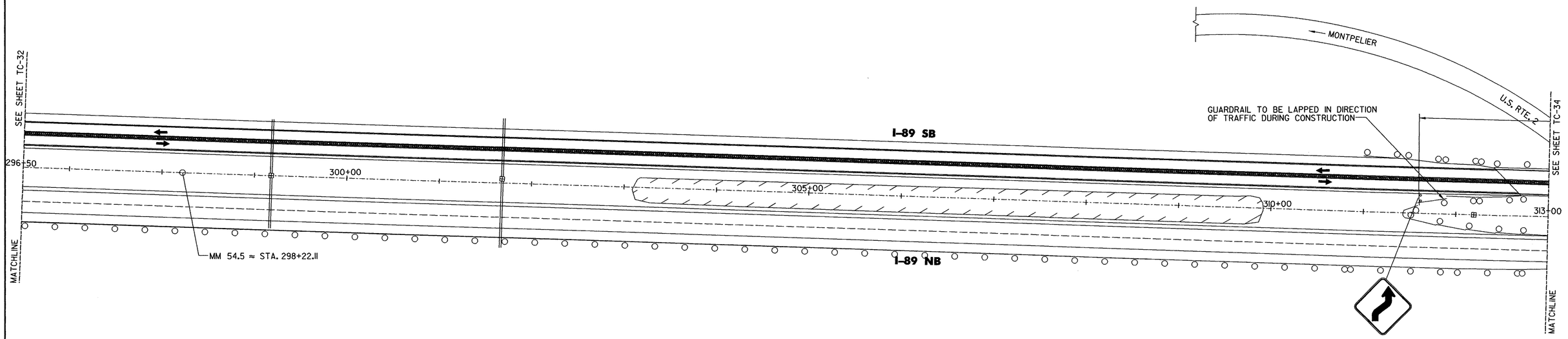
BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-32	Sheet 192 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

N



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SCALE IN FEET

DuBois & King INC.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

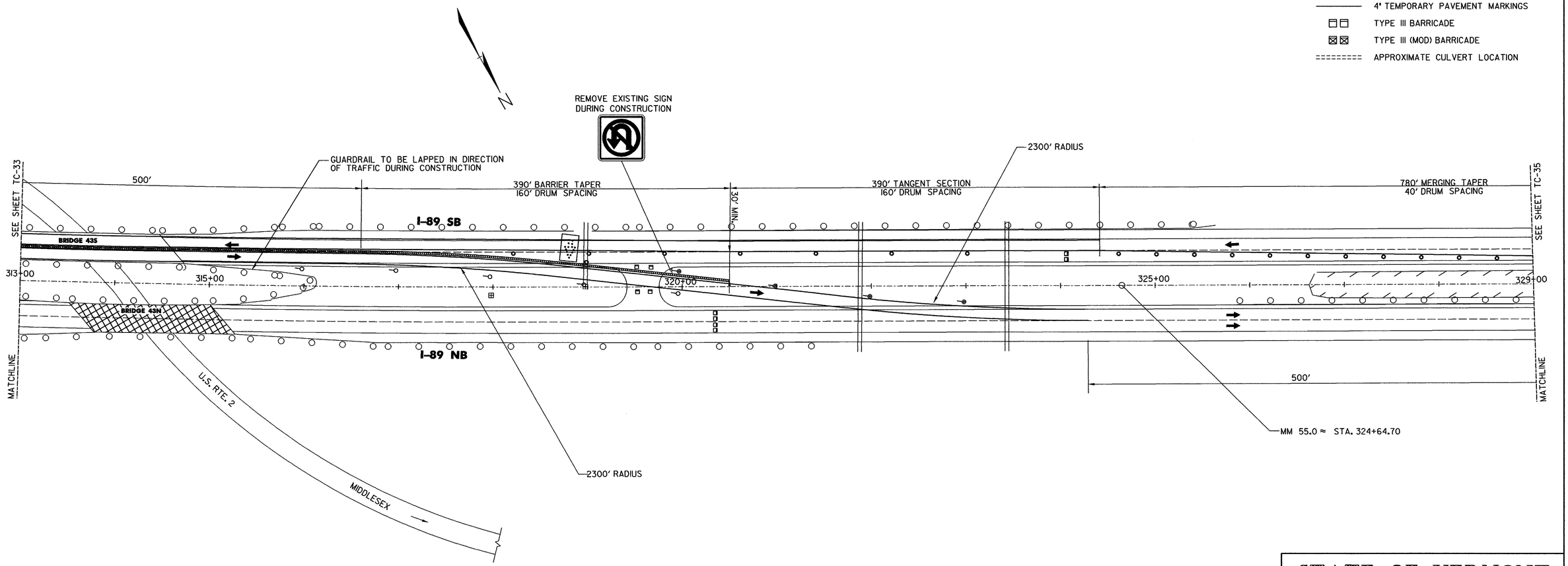
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-33	Sheet 193 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

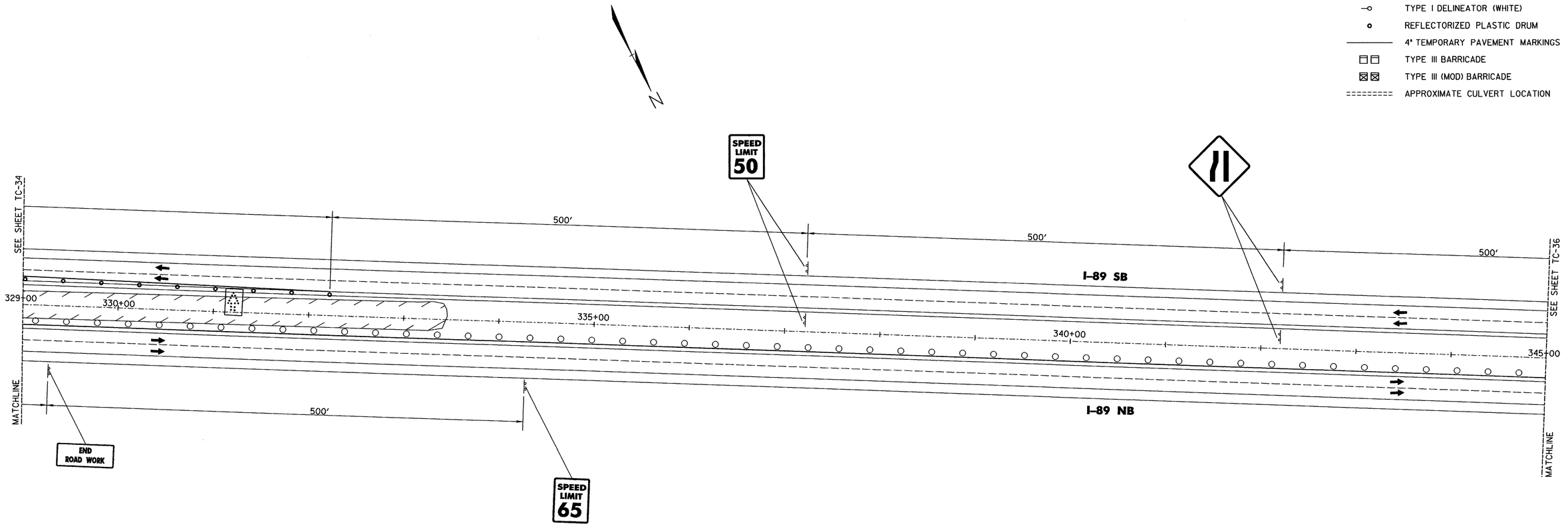
BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-34	Sheet 194 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

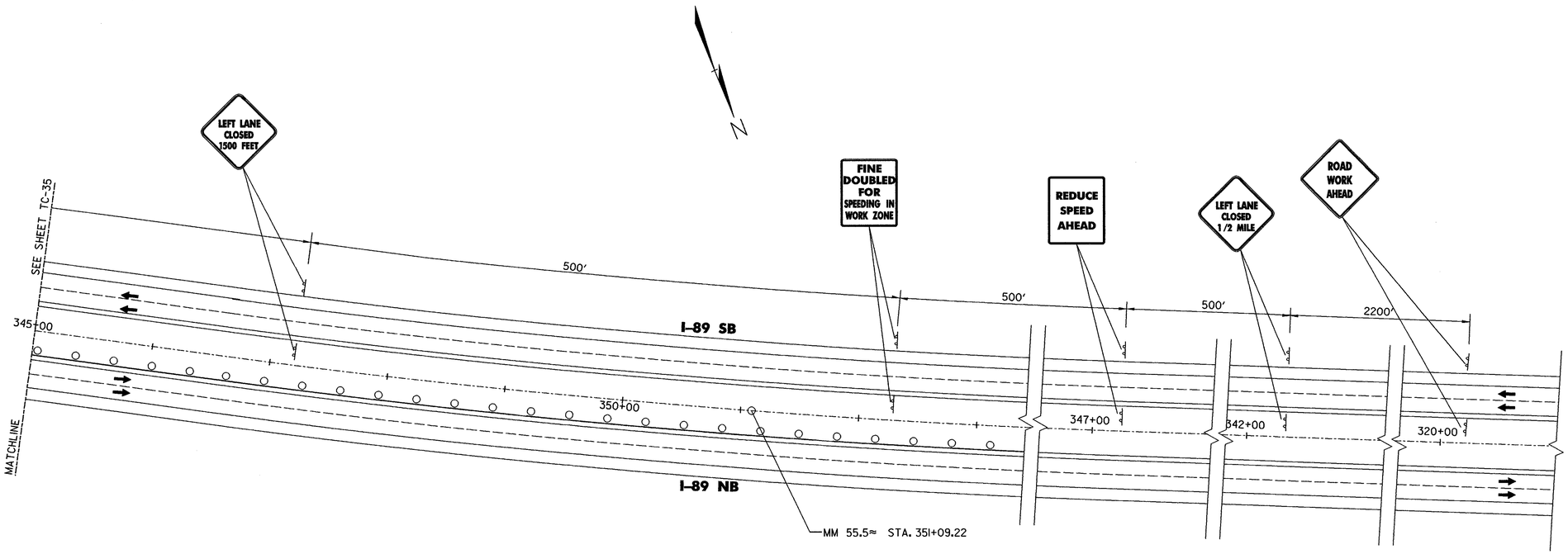
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-35	Sheet 195 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King INC.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 43
Highway No. I-89	Log Sta. / Surv. Sta.

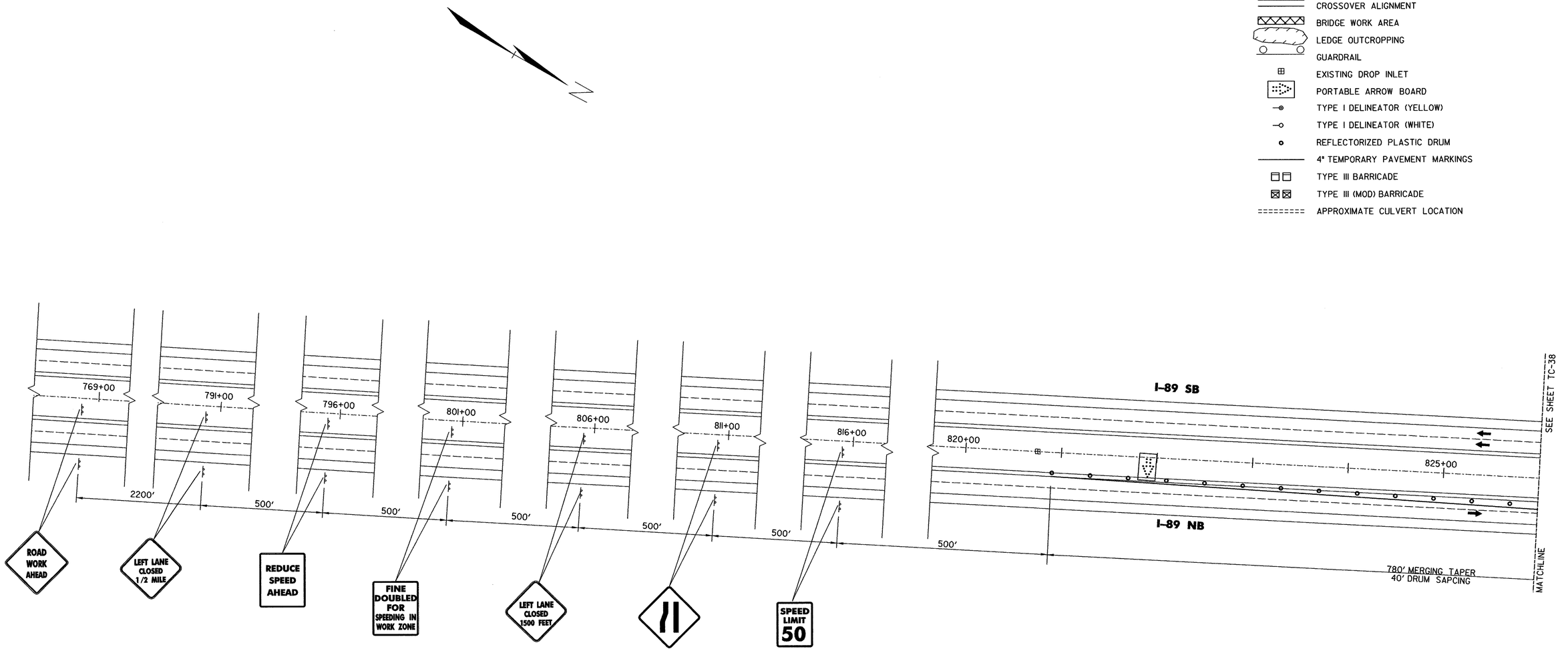
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGE 43

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\43-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-36	Sheet 196 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King INC.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

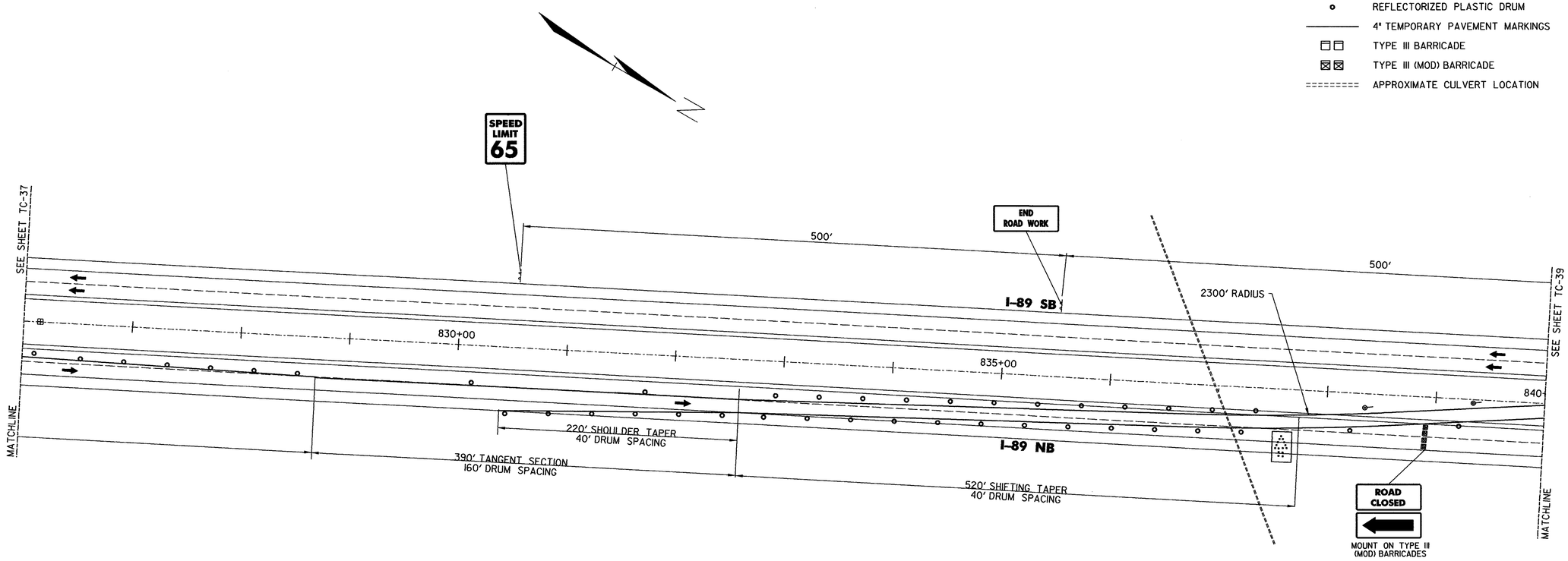
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-37	Sheet 197 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

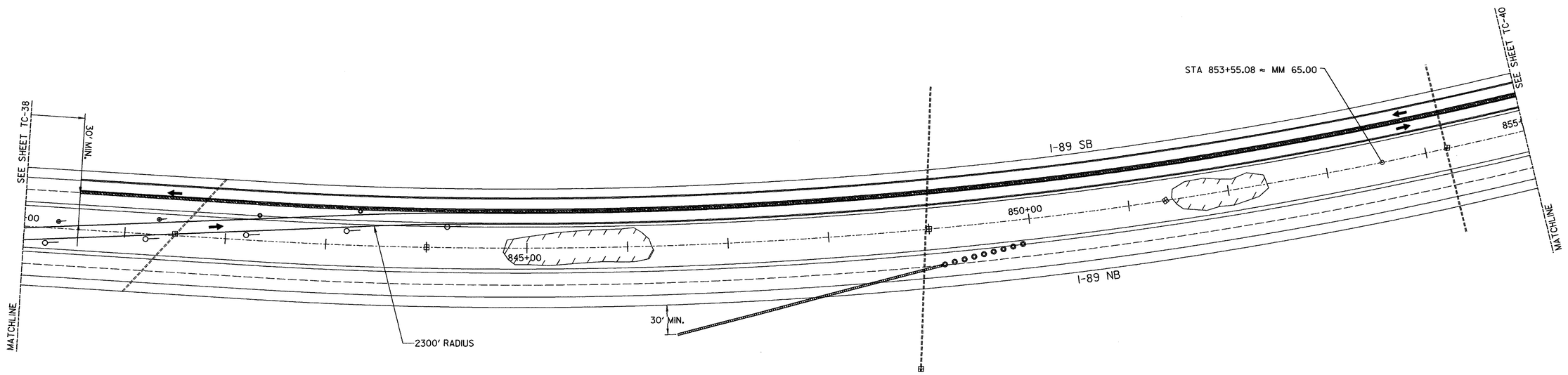
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-38	Sheet 198 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta.
	Surv. Sta.

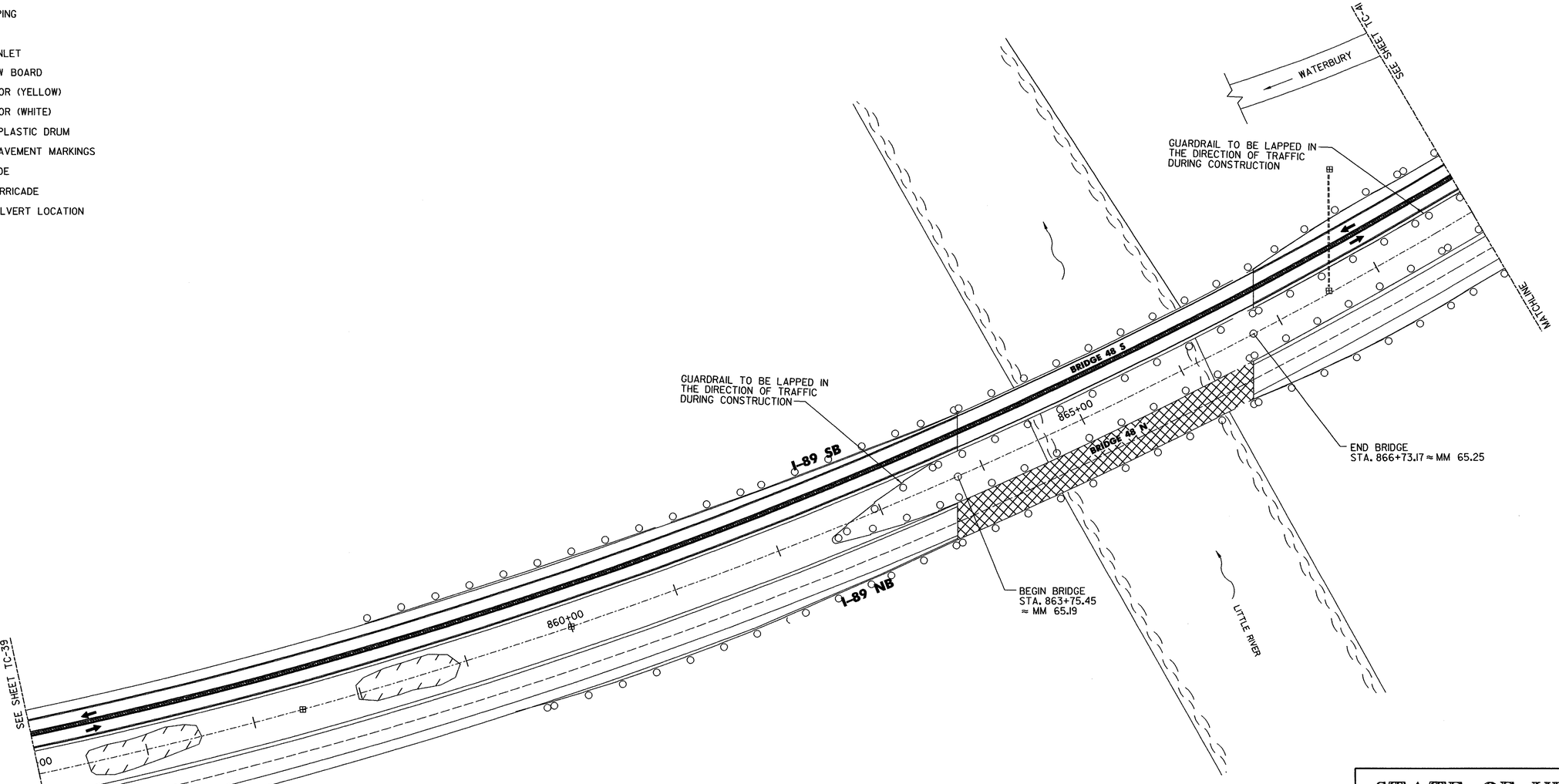
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-39	Sheet 199 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



50 0 25 50 100 200
SCALE IN FEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

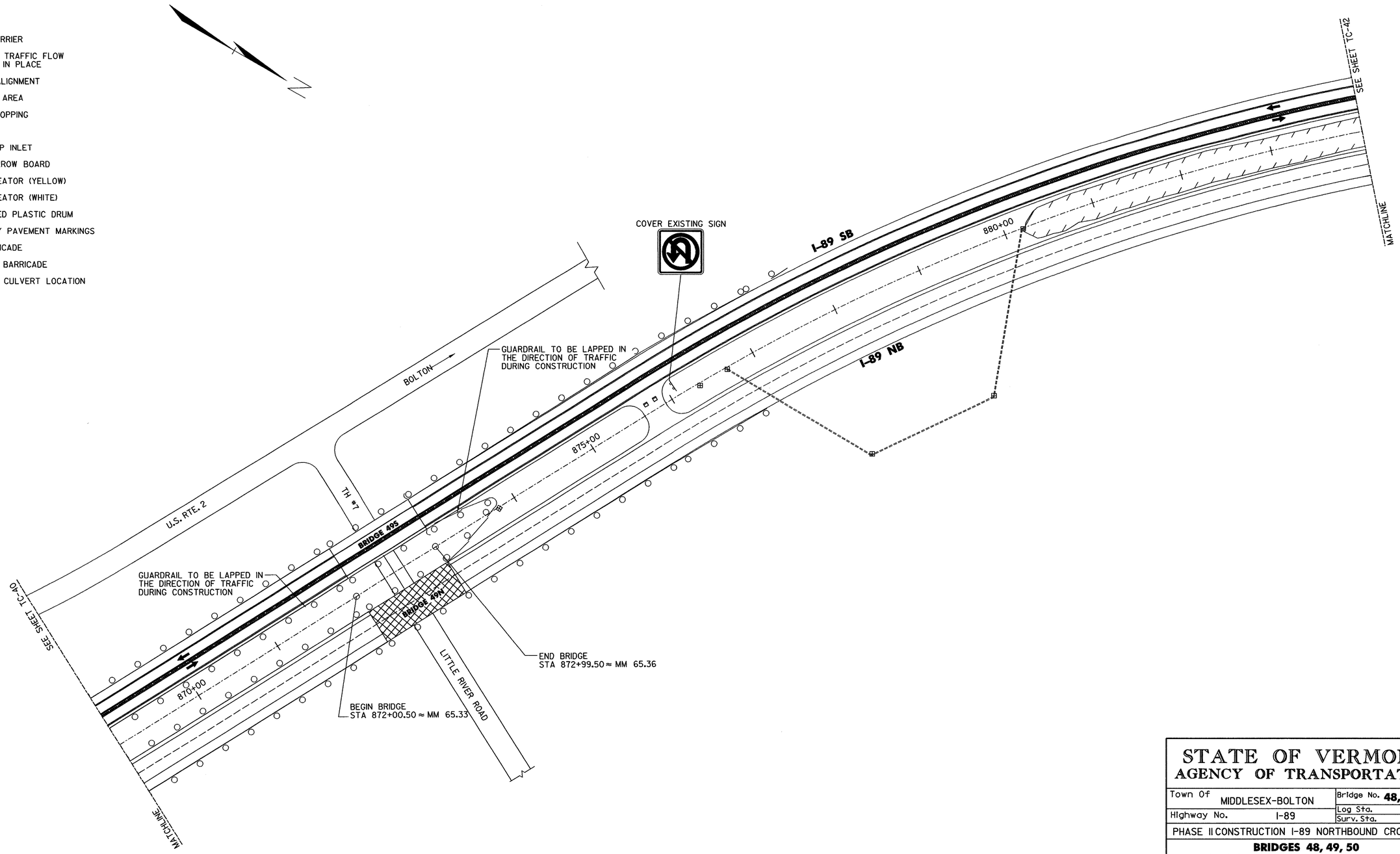
BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-40	Sheet 200 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

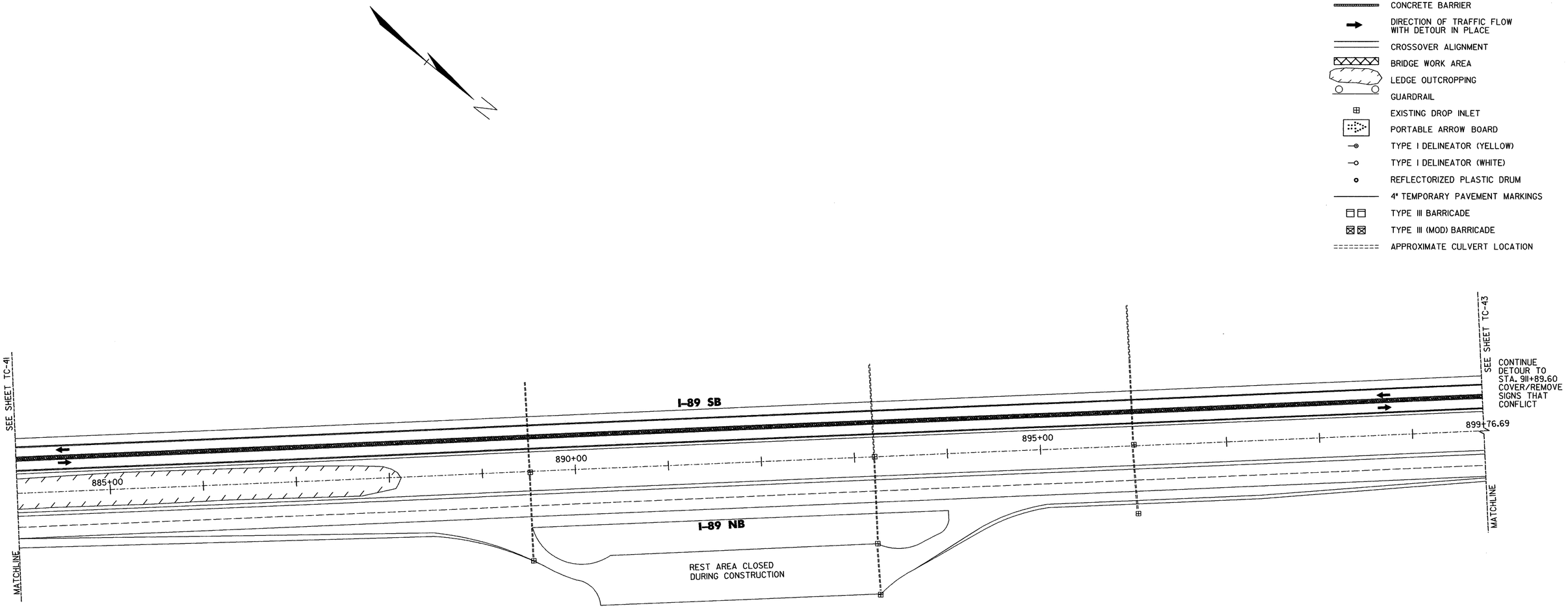
BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-41	Sheet 201 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



50 0 25 50 100 200

SCALE IN FEET

DuBois & King inc.

engineering planning management development

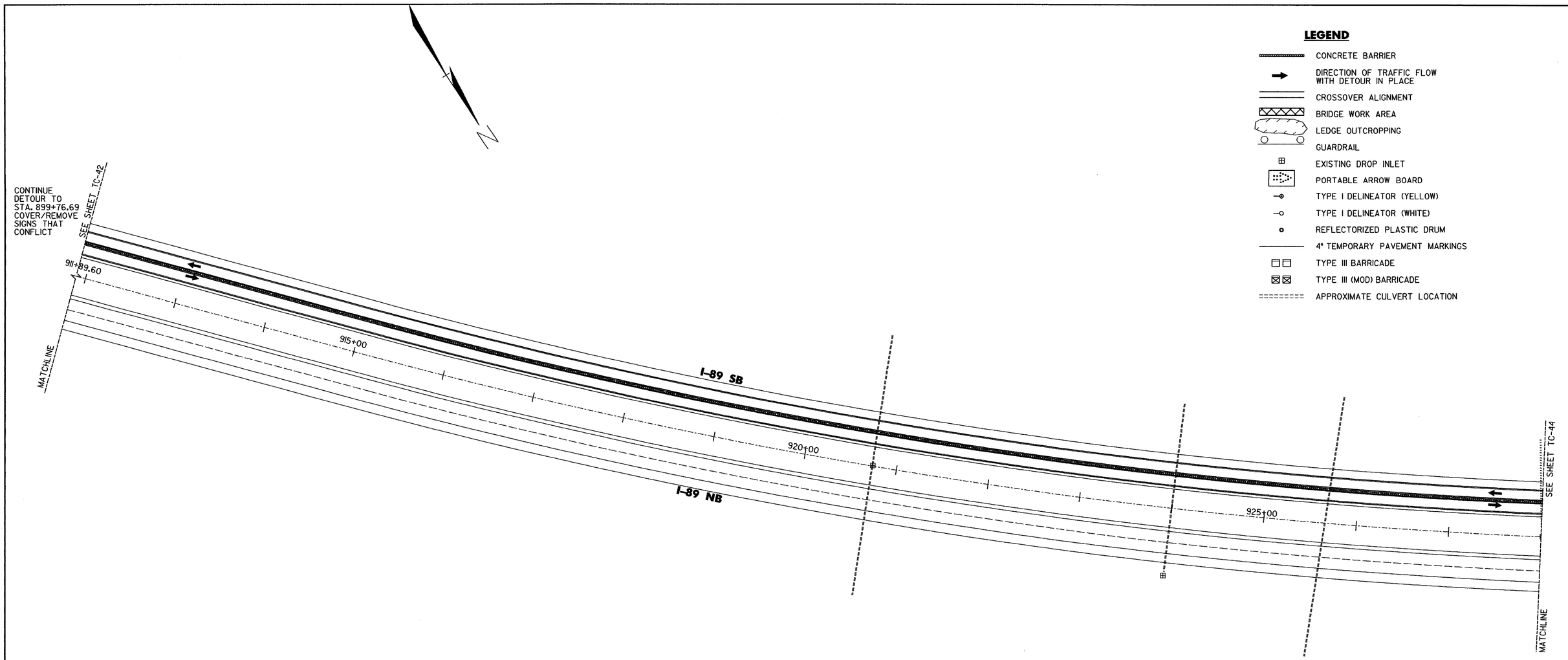
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-42	Sheet 202 of 307



LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

50 0 25 50 100 200
SCALE IN FEET

DuBois & King inc.
engineering planning management development

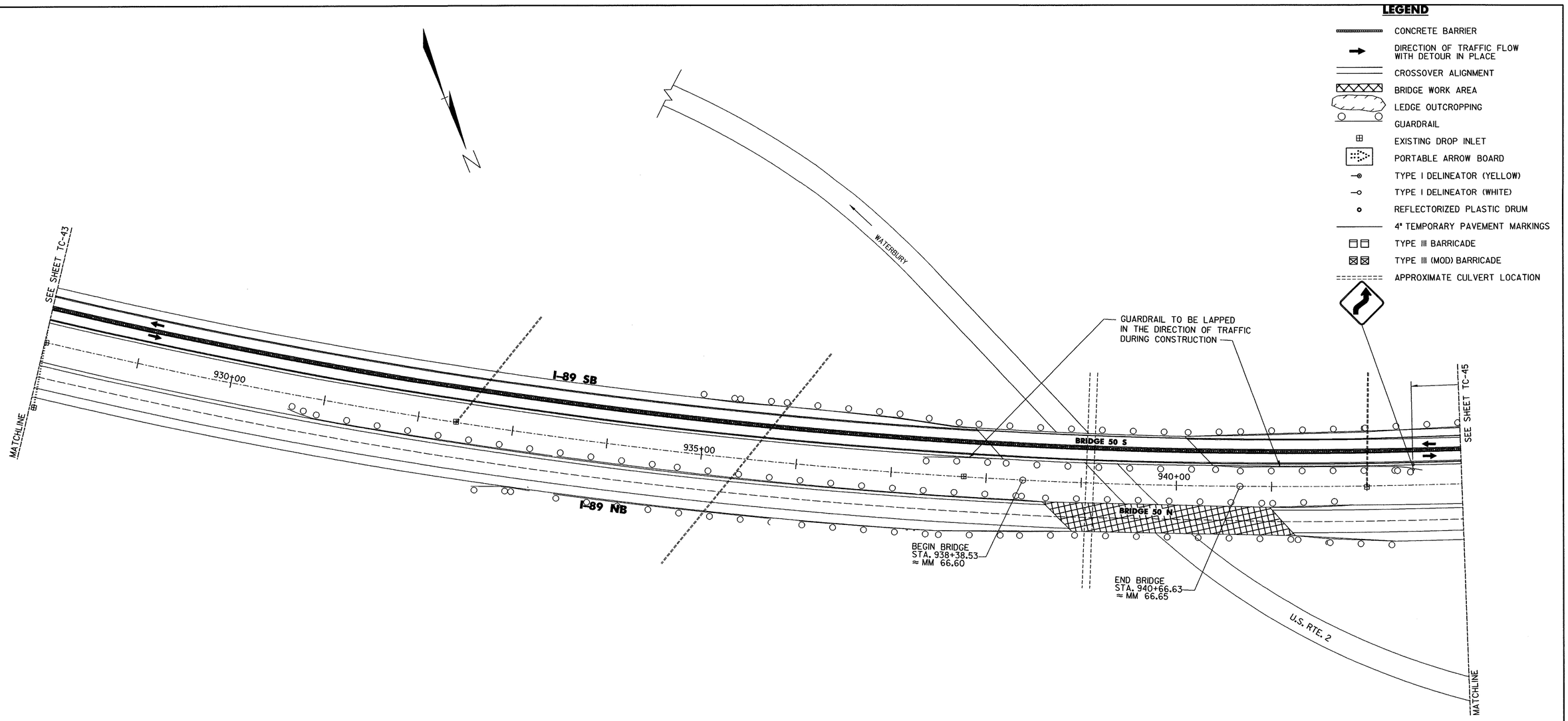
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-43	Sheet 203 of 307



STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta.
	Surv. Sta.

PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

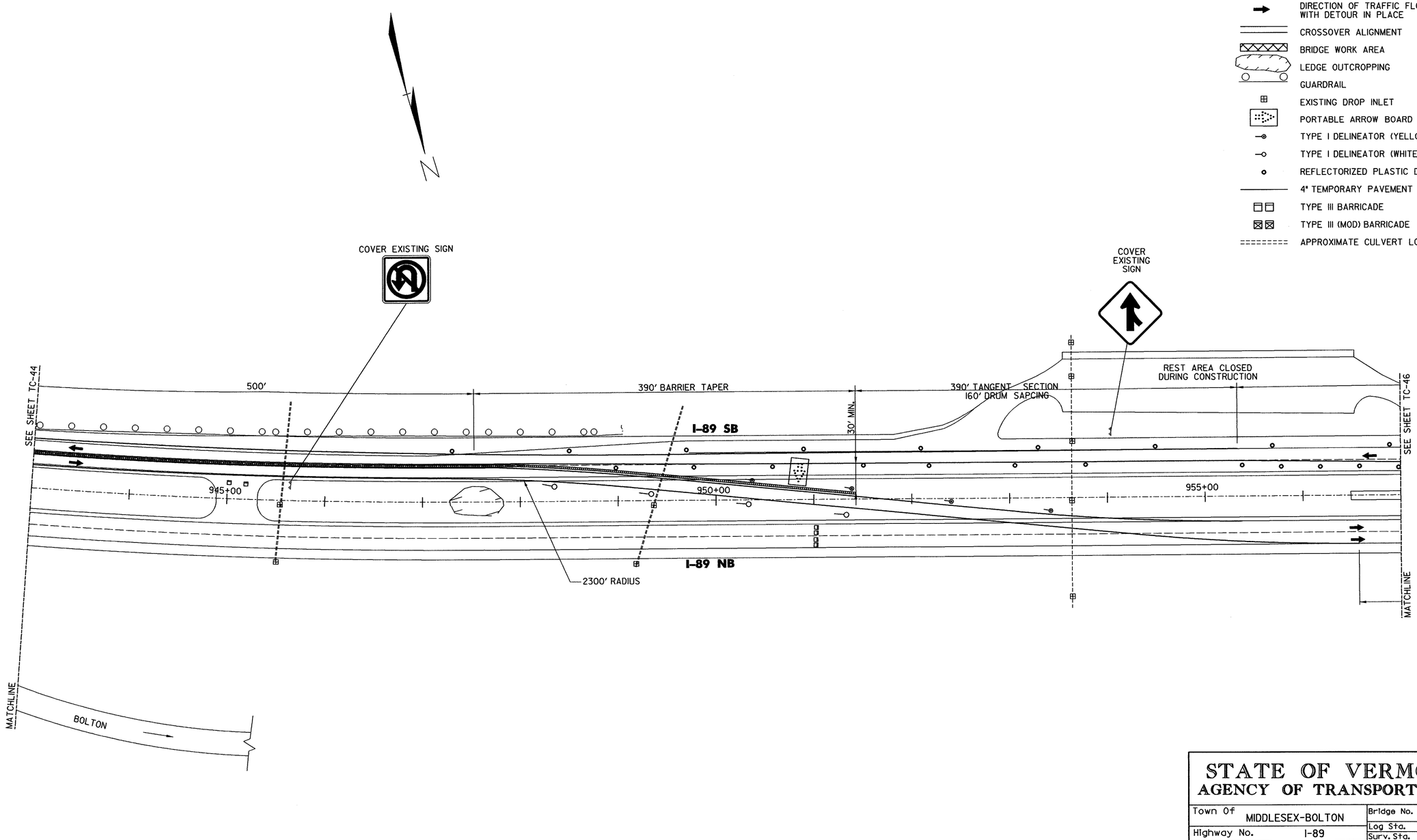
BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-44	Sheet 204 of 307

DuBois & King inc.
engineering planning management development

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



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SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER	
BRIDGES 48, 49, 50	
Designed By J.M.SMYRSKI/K.S.MARSHA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-45	Sheet 205 of 307

N

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION

* NOT ALL SOUTH BOUND REST AREA SIGNS THAT NEEDED TO BE COVERED WERE INDICATED ON THE PLANS ON SHEETS 206 AND 207.

COVER EXISTING SIGN

WEIGH STATION

REST AREA NEXT RIGHT

MOUNT ON TYPE III (MOD.) BARRICADES

ROAD CLOSED

INSTALL DRUMS FROM STA. 947+30 TO STA. 962+89 TO BLOCK REST AREA

780' MERGING TAPER
40' DRUM SPACING

COVER EXISTING SIGN

RAMP 25 M.P.H.

REST AREA NEXT RIGHT

CLOSED
TEMPORARY OVERLAY

SPEED LIMIT 50

SEE SHEET TC-45

500'

500'

I-89 SB

960+00

965+00

970+00

I-89 NB

MATCHLINE

500'

500'

END ROAD WORK

SPEED LIMIT 65

SEE SHEET TC-47

MATCHLINE

STA. 959+89.38 ≈ MM 67.00

EXISTING CONCRETE MEDIAN BARRIER

50 0 25 50 100 200
SCALE IN FEET

DuBois & King inc.
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of MIDDLESEX-BOLTON	Bridge No. 48, 49, 50
Highway No. I-89	Log Sta. / Surv. Sta.

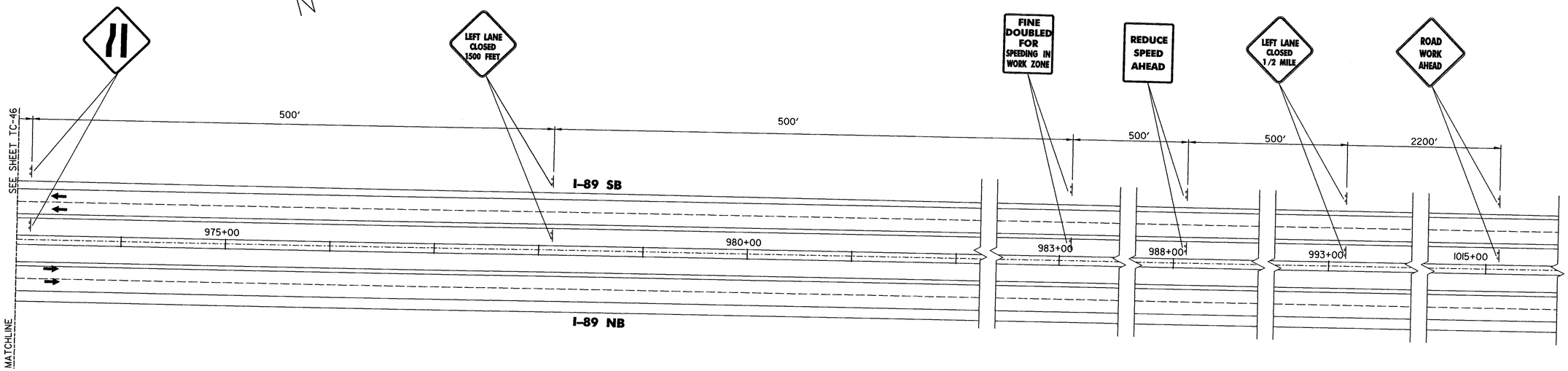
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-46	Sheet 206 of 307

LEGEND

- CONCRETE BARRIER
- DIRECTION OF TRAFFIC FLOW WITH DETOUR IN PLACE
- CROSSOVER ALIGNMENT
- BRIDGE WORK AREA
- LEDGE OUTCROPPING
- GUARDRAIL
- EXISTING DROP INLET
- PORTABLE ARROW BOARD
- TYPE I DELINEATOR (YELLOW)
- TYPE I DELINEATOR (WHITE)
- REFLECTORIZED PLASTIC DRUM
- 4" TEMPORARY PAVEMENT MARKINGS
- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- APPROXIMATE CULVERT LOCATION



50 0 25 50 100 200
SCALE IN FEET

DuBois & King inc
engineering planning management development

STATE OF VERMONT
AGENCY OF TRANSPORTATION

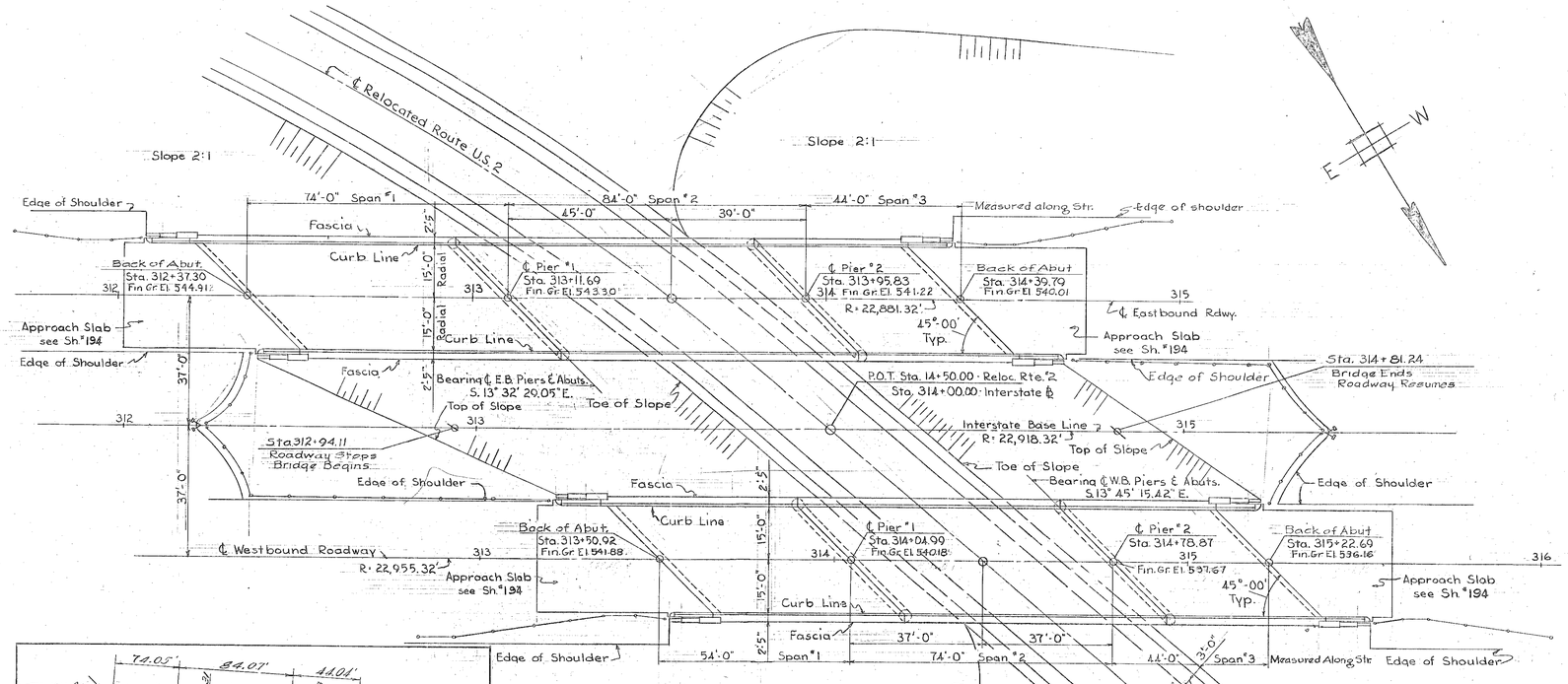
Town Of MIDDLESEX-BOLTON	Bridge No. **48, 49, 50**
Highway No. I-89	Log Sta. / Surv. Sta.

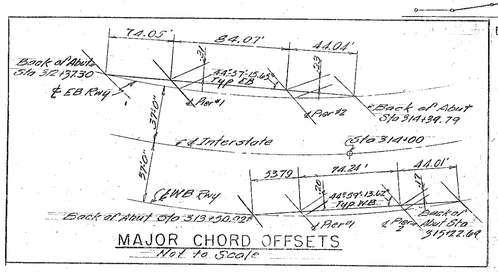
PHASE II CONSTRUCTION I-89 NORTHBOUND CROSSOVER

BRIDGES 48, 49, 50

Designed By J.M.SMYRSKI/K.S.MARSHIA	Drawn By S. E. SCHMITT
Checked By J. W. TUCKER Date 10/99	Bridge Design Supervisor J. P. HALSTEAD Date 10/99
PROJECT MIDDLESEX-BOLTON	PROJECT NO. IM-089-2(26)
Drawing No. ...\48-49-50-nb.dgn	Date OCT 1999
Bridge Sheet No. TC-47	Sheet 207 of 307

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
	VERMONT	I 089-2(26)	136	800

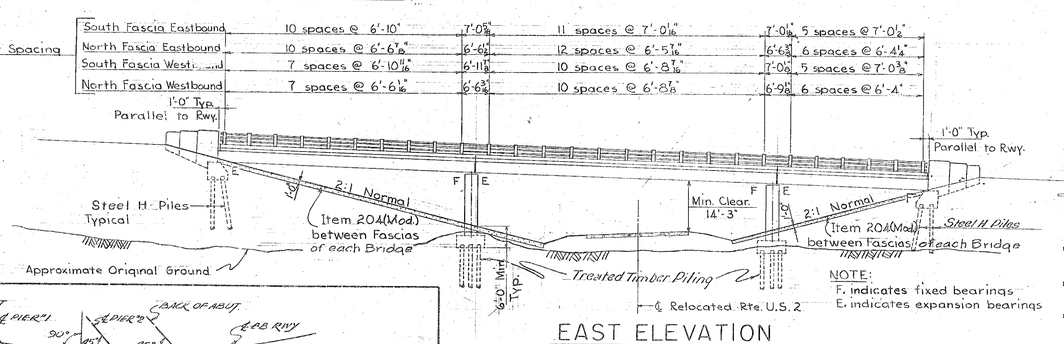




MAJOR CHORD OFFSETS
Not to Scale

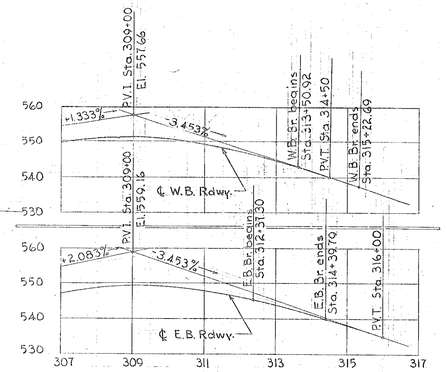
PLAN
Scale: 1" = 20'

Post Spacing	South Fascia Eastbound	10 spaces @ 6'-10"	7'-0⅝"	11 spaces @ 7'-0⅛"	7'-0⅛" 5 spaces @ 7'-0⅛"
	North Fascia Eastbound	10 spaces @ 6'-6⅞"	6'-6½"	12 spaces @ 6'-5⅞"	6'-6⅜" 6 spaces @ 6'-4⅞"
	South Fascia Westbound	7 spaces @ 6'-10⅛"	6'-11⅜"	10 spaces @ 6'-8⅞"	7'-0⅜" 5 spaces @ 7'-0⅜"
	North Fascia Westbound	7 spaces @ 6'-6⅛"	6'-6⅜"	10 spaces @ 6'-8⅜"	6'-9⅝" 6 spaces @ 6'-4"

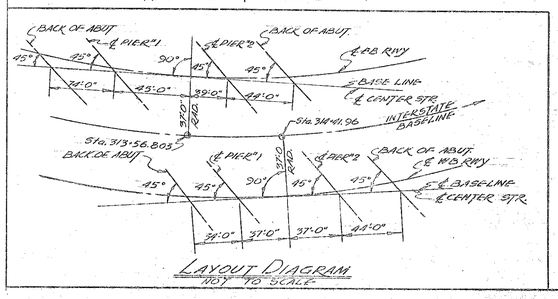


EAST ELEVATION
Scale 1" = 20'-0"

NOTE:
F. indicates fixed bearings
E. indicates expansion bearings



PROFILES
Scales: Hor. - 1" = 200'
Vert. - 1" = 20'



LAYOUT DIAGRAM
NOT TO SCALE

ESTIMATE OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QUANTITY EASTBOUND NEAT	EASTBOUND ROUND	WESTBOUND NEAT	WESTBOUND ROUND
107	STRUCTURE EXCAVATION	C.Y.	70	78	108	120
204	SUB-BASE OF CRUSHED ROCK (MOD)	C.Y.	195	205	156	164
361B	BIT. CONCRETE PAV'T. (incl. Approach Slab)	Mod. Ton	101	117	90	104
401B	CLASS "B" CONC. (MOD) (incl. Approach Slab)	C.Y.	626	657	595	624
402	REINFORCING STEEL (incl. Approach Slab)	LB.	99,190	—	92,721	—
403	SPIRAL REINFORCEMENT (6300LBS)	L.S.	—	1	—	
404A	STRUCTURAL STEEL	LB	242,513	247,900	164,831	168,200
502B	TREATED TIMBER PILING	L.F.	3040	—	2800	—
556C	GRANITE BRIDGE CURB (incl. Approach Slab)	L.F.	447	—	387	—
572	BRIDGE RAILING	L.F.	391	—	330	—
407	ASPHALTIC ASBESTOS COATING	S.Y.	100	—	104	—
504	STEEL PILING (10 BP 42)	L.F.	1875	—	2550	—
501	Furnishing Equip. for Driving Piles	L.S.	—	1	—	
596	Preparing Existing Pav. for New Wearing Surf.	S.Y.		2700		2700

GENERAL NOTES

1. All materials and construction shall conform to the State of Vermont Dept. of Highways, Standard Specifications for Road and Bridge Construction dated Jan. 1956 and the AASHO Std. Specifications dated 1953, Designed for H20-S16-44 loading modified for National System of Interstate Highways applied in accordance with the provisions of the AASHO Standard Specifications, Art. 3.2.8.
2. All beams shall be rolled to a true circular camber, full length, and the middle ordinate to be as shown on contract plans.
3. Final coat of field paint shall be black unless otherwise directed by the Engineer.
4. All stations referred to Interstate Base Line between the two Roadways.
5. All dimensions given are measured horizontally or vertically unless noted.
6. All reinforcing to have a clear cover of 3" unless noted.
7. All exposed edges of concrete shall be chamfered 1"x1" unless noted.
8. Borings indicated on the drawings have been made for design purposes only and are not warranted to show actual subsurface conditions.
9. Elevation Datum Sea Level based on Bench Line U.S.C.G.S. Survey Level Line Vermont 25 (Second Order).
10. Where piles are driven in fill, the material shall be such as to have no stones large enough to interfere with the driving of piles.
11. Cross slope of approach slab to conform with cross slope of roadway.
12. Piles shall not be spliced without the written approval of the engineer.
13. The top surfaces of all piers and abutments shall be sloped ¼" per foot from the back edge of abutments or the centerline of piers except for bearing pads projecting 1" or more above the general area, which surfaces shall be level. These sloping surfaces shall be coated with asphaltic asbestos coating, ½" thick as per Item 407 of Specifications, and rounded up against the pads.
14. Where rock is encountered, no footings shall be poured until all blasting in the adjacent area has been completed.
15. All bearing elevations, of abutments and piers, have been lowered 1½" to compensate for excessive camber rolled in beams at the mill.

LIST OF DRAWINGS

REFERENCE DRAWINGS

IM 089-2(26)
This sheet for information only
BR 43 N & S

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the towns of
BERLIN - MONTPELIER - MIDDLESEX

OVERPASS STA. 314+00 STRUCTURE #4

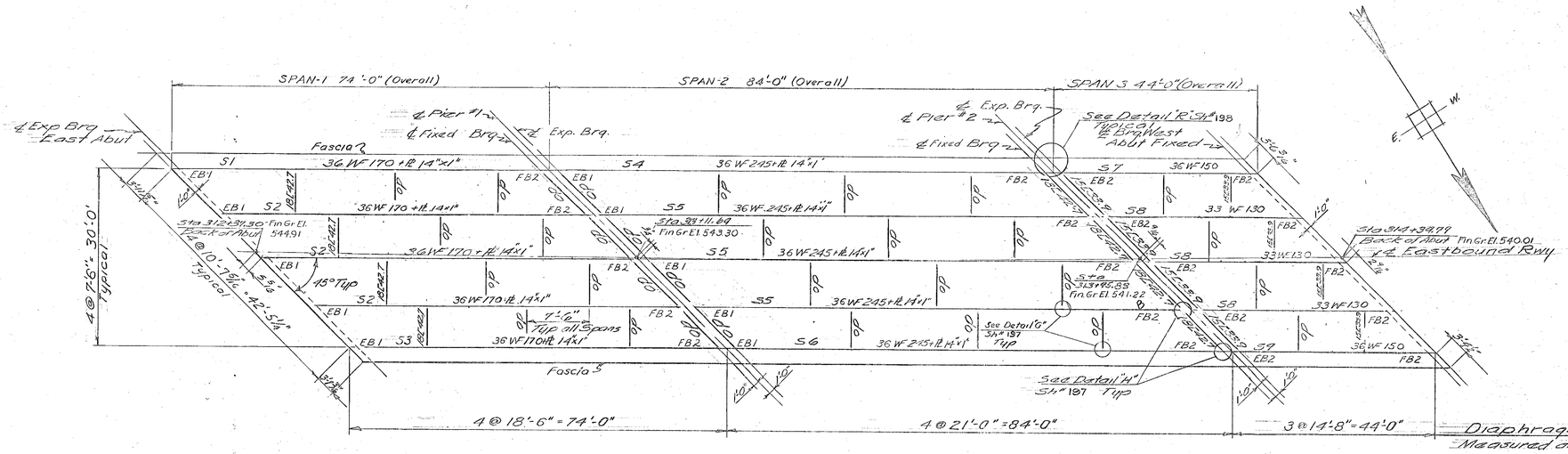
GENERAL PLAN & ELEVATION

BOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD PARK, N. J.

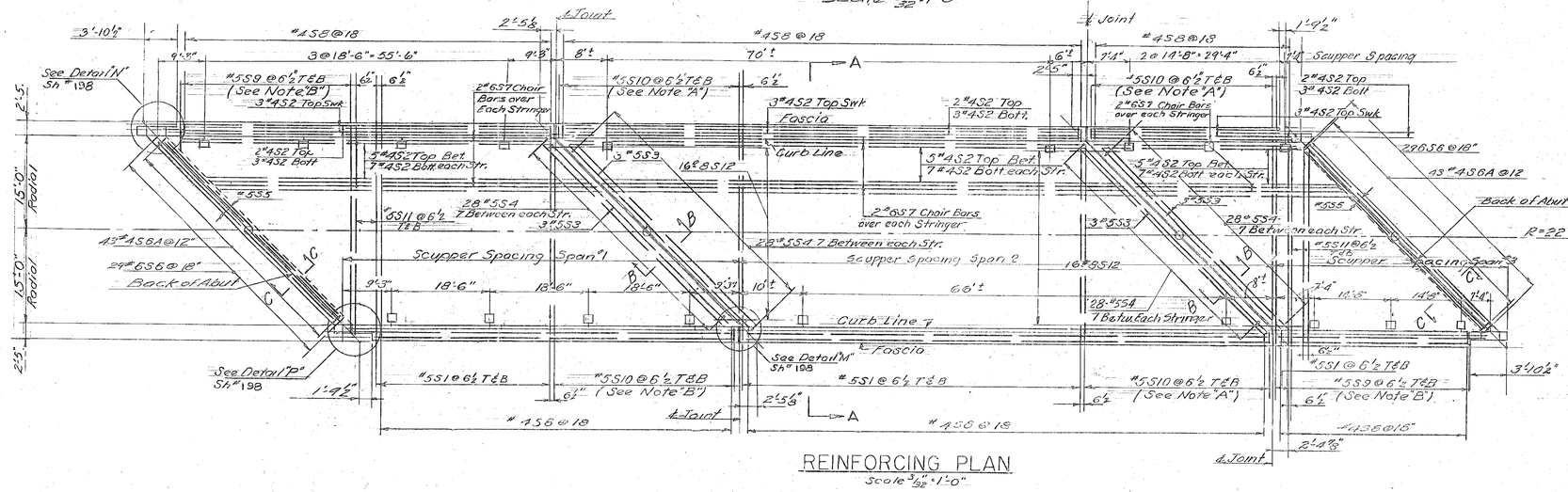
SURVEYED BY YT	CHECKED BY M.G.C.	COMP. AS SHOWN
DRAWN BY A.B.	IN CHARGE K.J.	DATE AUG. 1957

PROJECT NO. I 89-2-(3) | SHEET 215 OF 307

FED. ROAD DIV. NO.	STATE FEDERAL PROJECT NUMBER	TOTAL SHEETS
	VERMONT [illegible]	137 800



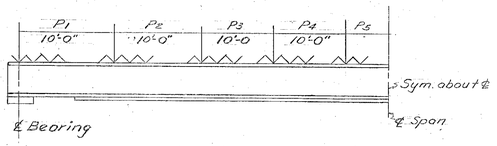
FRAMING PLAN
Scale 3/32" = 1'-0"



REINFORCING PLAN
Scale 3/32" = 1'-0"

STRINGER SCHEDULE

STRINGER MARK	NO. REQD	DIST CC BEARINGS	LENGTH of BEAM	LENGTH BOTTOM COVER PL	D.L. Δ	CAMBER	SPIRALS P1	P2	P3	P4	P5
S1	1	71'-2"	73'-3"	51'-9"	1½"	2¾"	4"	5½"	8	—	13"
S2	3	71'-2"	72'-3"	51'-9"	1½"	2¾"	4"	5½"	8	—	13"
S3	1	71'-2"	73'-3"	51'-9"	1½"	2¾"	4"	5½"	8	—	13"
S4	1	81'-2"	83'-10"	51'-10"	2¼"	3½"	4"	5"	7"	10"	16"
S5	3	81'-2"	82'-8"	51'-10"	2¼"	3½"	4"	5"	7"	10"	16"
S6	1	81'-2"	83'-10"	51'-10"	2¼"	3½"	4"	5"	7"	10"	16"
S7	1	41'-2"	43'-3"	—	⅜"	⅜"	5"	8	—	—	8"
S8	3	41'-2"	42'-8"	—	⅜"	1"	5"	8	—	—	8"
S9	1	41'-2"	43'-3"	—	⅜"	⅜"	5"	8	—	—	8"



SPIRAL PITCH

NOTE A - S10 Bars vary from 2'-3" to 32'-3" in 6½" increments (8 of each size req'd)
NOTE B - S9 Bars vary from 3'-9" to 32'-2" in 6½" increments (4 of each size req'd)

ESTIMATE of QUANTITIES

ITEM	DESCRIPTION	UNIT	NEAT	ROUND
401B	Class B Concrete (Mod.)	CY	222	233
402	Reinforcing Steel	LB	42,223	42,269
403	Spiral Reinforcement (3350 LB)	LO	—	—
404A	Structural Steel	LB	242,543	247,100
561B	Bit. Concrete Part	T	75	87
556C	Granite Bridge Curb	LF	407	—
572	Bridge Railing	LF	391	—

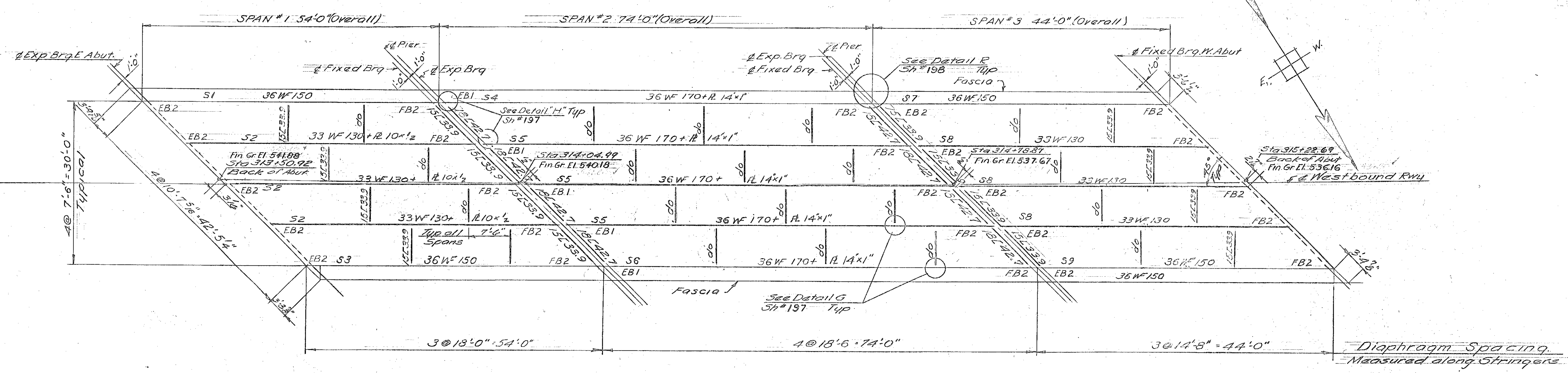
NOTE:
1. For General Notes see Sh# 136
2. For Bearing Devices see Detail 'E' Sh# 197
3. For Cover Plates see Detail 'A' Sh# 197
4. For Scuppers see Detail 'B' Sh# 197
5. For Spiral Welds see Detail 'L' Sh# 197
6. For Curb see Detail 'S' Sh# 198
7. For Section 'A-A' see Sh# 198
8. For Section 'B-B' see Sh# 198
9. For Section 'C-C' see Sh# 198
10. For Bridge Railing see Details 'S' & 'T' Sh# 198
11. Scupper Spacing may be changed in field by the Engineer
12. For Alternate Bridge Railings See Sh# 199

IM 089-2(26)
This sheet for information only
BR 43 N & S

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the towns of BERLIN - MONTPELIER - MIDDLESEX
OVERPASS STA. 314+00 STRUCT. #4
EASTBOUND FRAMING & REINFORCING PLAN

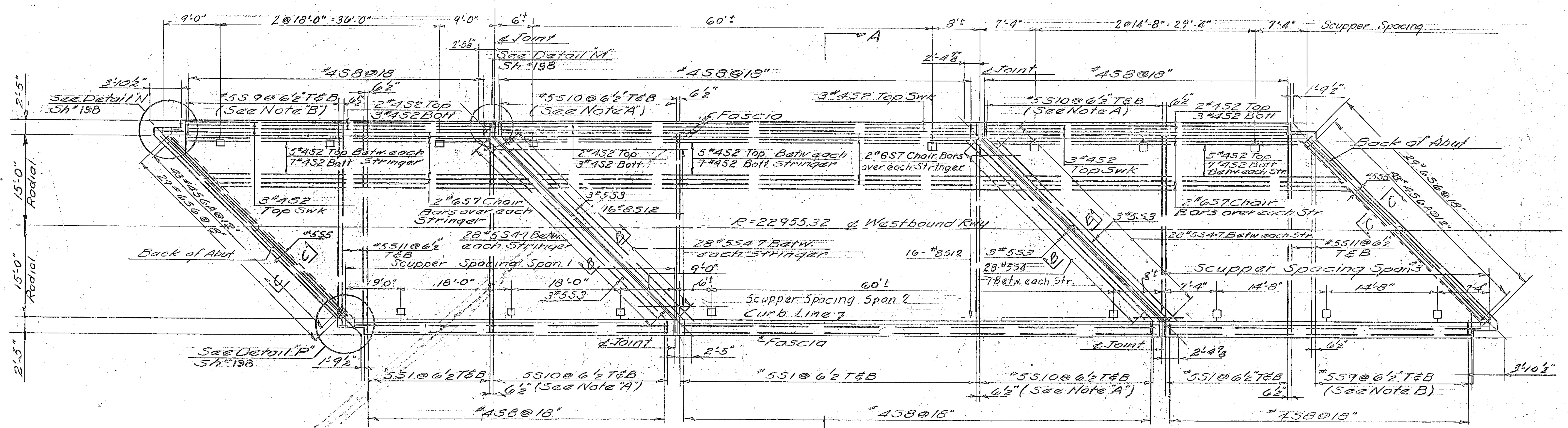
MOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD PARK, N.J.

SURVEYED BY VT. | DRAWN BY RAB | CHECKED BY AJL | IN CHARGE MA | SCALE AS SHOWN | DATE AUG. 1967
PROJECT NO. I 89-2-(3) | SHEET 216 OF 307



FRAMING PLAN

Scale 3/32" = 1'-0"

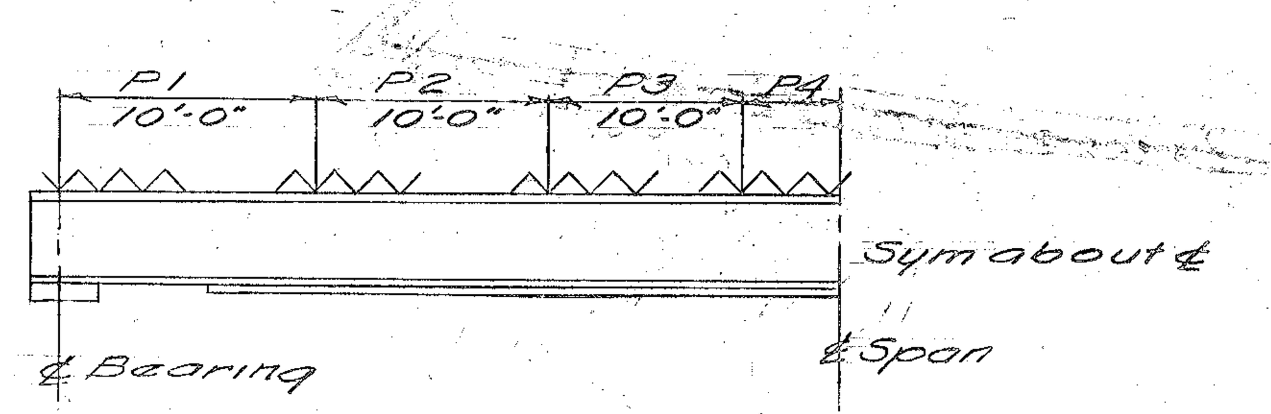


REINFORCING PLAN

Scale 3/32" = 1'-0"

NOTE:

1. For General Notes see Sh # 136
2. For Bearing Devices and Anchor Bolts see Detail "E" Sh # 197
3. For Cover Plates see Detail "A" Sh # 197
4. For Scuppers see Detail "B" Sh # 197
5. For Spiral Welds see Detail "L" Sh # 197
6. For Curbs see Details "S" Sh # 198
7. For Section "AA" see Sh # 198
8. For Section "BB" see Sh # 198
9. For Section "CC" see Sh # 198
10. For Bridge Railing see Details "S" & T Sh # 198
11. Scupper Spacing may be changed in the field by the Engineer.
12. For Alternate Bridge Railing See Sh. # 199



SPIRAL PITCH

STRINGER SCHEDULE

Stringer Mark	No. Reqd	Dist. C-C Bearings	Length of Beam	Length of Bottom Cover Pl	D.L. Δ	CAMBER	Spiral Pitch P1	P2	P3	P4
S1	1	51'-2"	53'-3"	—	3/4"	1 1/4"	4 1/2	6 1/2"	11 1/2"	—
S2	3	51'-2"	52'-8"	29'-3"	3/4"	1 1/4"	4 1/2	6 1/2"	11 1/2	—
S3	1	51'-2"	53'-3"	—	3/4"	1 1/4"	4 1/2	6 1/2"	11 1/2	—
S4	1	71'-2"	73'-10	51'-9	1 1/2"	2 5/8"	4"	5 1/2"	8"	13"
S5	3	71'-2"	72'-8"	51'-9	1 1/2"	2 5/8"	4"	5 1/2"	8"	13"
S6	1	71'-2"	73'-10"	51'-9	1 1/2"	2 5/8"	4"	5 1/2"	8"	13"
S7	1	41'-2"	43'-3	—	3/8"	1"	5	8	8"	—
S8	3	41'-2"	42'-8	—	3/8"	1 1/4"	5	8	8"	—
S9	1	41'-2"	43'-3	—	3/8"	1"	5	8	8"	—

NOTE:

A. S10 bars vary from 2'-3" to 32'-0" in 6 1/2" increments (8 of each size reqd.)
B. S9 bars vary from 3'-9" to 32'-0" in 6 1/2" increments (4 of each size reqd)

IM 089-2(26)
This sheet for information only
BR 43 N & S

ESTIMATE OF QUANTITIES

ITEM	DESCRIPTION	UNIT	NEAT	ROUND
401-B	Class B Concrete (Mod)	CY	190	199
402	Reinforcing Steel	LB	36,486	36,555
403	Spiral Reinforcement (2920 LB)	LS	—	—
404A	Structural Steel	LB	164,831	168,200
361B	Bit Concrete Pavement	T	64	74
556C	Granite Bridge curb	LF	347	—
572	Bridge Railing	LB	330	—

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the towns of BERLIN - MONTPELIER - MIDDLESEX

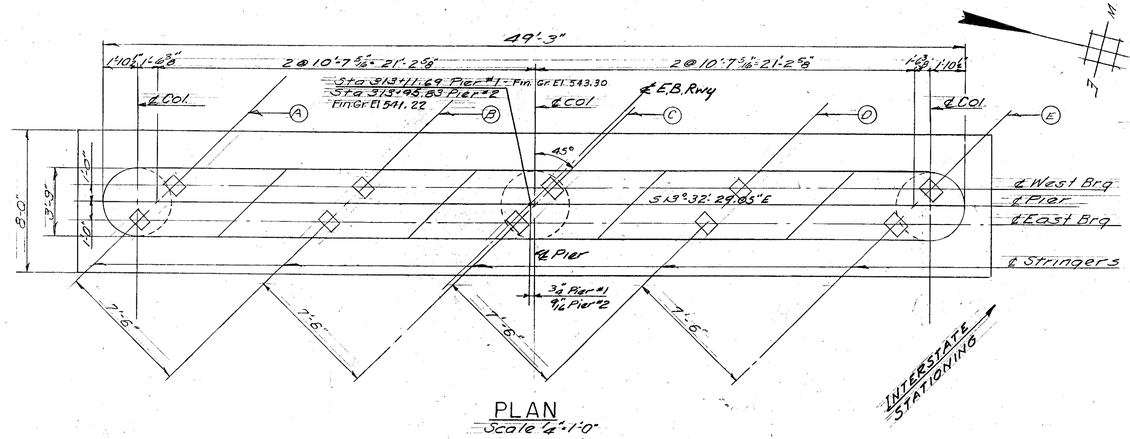
OVERPASS - STA 314+00 - STRUCT. # 4

WESTBOUND FRAMING & REINFORCING PLAN

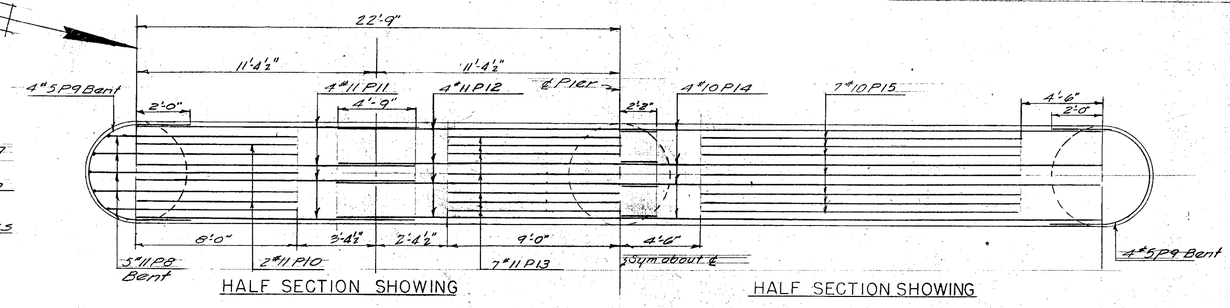
BOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD PARK, N.J.

SURVEYED BY YT | CHECKED BY A.J.I. | SCALE AS SHOWN
DRAWN BY RAB | IN CHARGE Ka | DATE AUG. 1957
PROJECT NO. I 89-2-(3) | SHEET 217 OF 307

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
	VERMONT	IM 089-2(26)	139	800

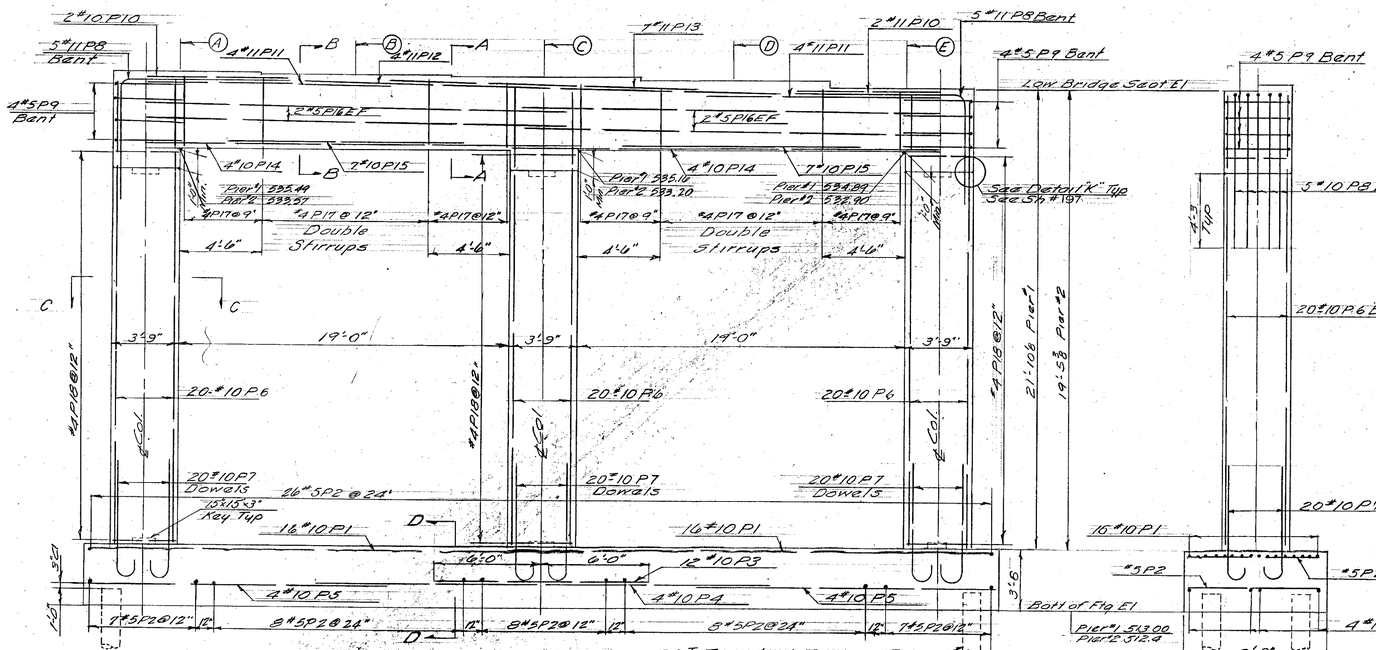


PLAN
Scale 1/4"=1'-0"



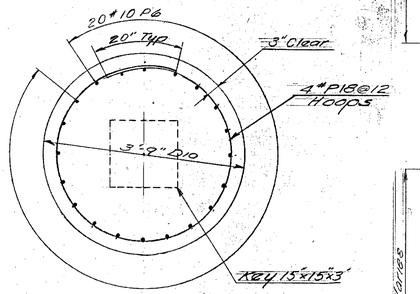
HALF SECTION SHOWING
TOP REINFORCING

HALF SECTION SHOWING
BOTTOM REINFORCING

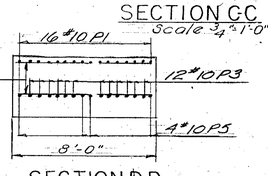


ELEVATION
Scale 1/4"=1'-0"

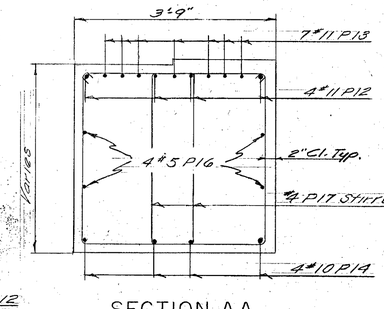
END ELEVATION
Scale 1/4"=1'-0"



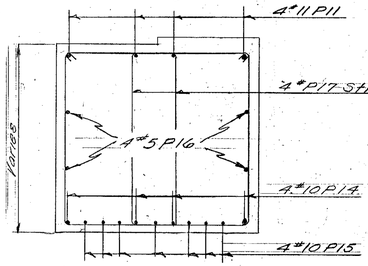
SECTION GC
Scale 3/4"=1'-0"



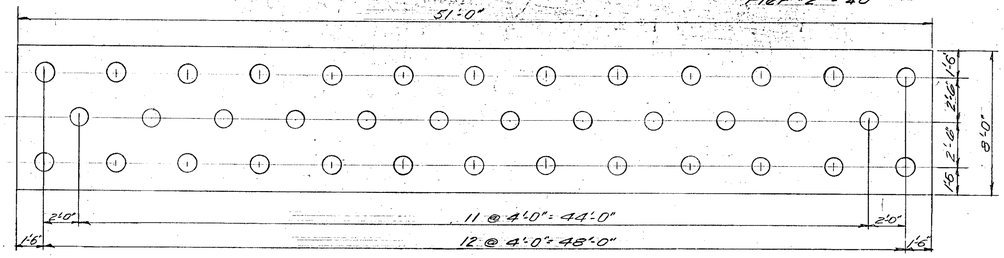
SECTION DD
Scale 1/4"=1'-0"



SECTION AA
Scale 3/4"=1'-0"



SECTION BB
Scale 3/4"=1'-0"



PILE PLAN
Scale 1/4"=1'-0"

BEARING ELEVATIONS

EB	BEARING	A	B	C	D	E
PIER #1	EAST	539.22	539.19	539.06	538.84	538.52
	WEST	539.04	539.01	538.88	538.66	538.34
PIER #2	EAST	537.20	537.14	536.99	536.74	536.40
	WEST	537.13	537.08	536.93	536.68	536.34

FUNGI

ITEM	Pier #1	Pier #2
107	1/2	3

				NEAT	ROUND
107	Structure Exc. Pier #1	CY	19	21	
107	Structure Exc. Pier #2	CY	19	21	

				NEAT	ROUND
107	Asphaltic Asbestos Coating #1	SY	22		
407	" " " #2	SY	22		
401B	Class "B" Conc. (Mod) Pier #1	CY	100	105	
401B	" " " Pier #2	CY	98	103	
502B	Treated Timber Piles Pier #1	LF	1520		
502B	" " " Pier #2	LF	1520		
402	Reinf. Steel Pier #1	LB	19405	14,627	
402	" " " Pier #2	LB	18963	18,981	

IM 089-2(26)
This sheet for information only
BR 43 N & S

NOTE:
1. For General Notes see Sh. #136
2. For Bearing Devices and Anchor Bolts see Detail "E" Sh. #197
3. For Pile Shoes see Detail "F" Sh. #197
4. Reinforcing in top of pier cap shall be spaced to pass Anchor Bolts maintaining minimum spacing requirements.

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the towns of
BERLIN - MONTPELIER - MIDDLESEX

OVERPASS STA. 314+00 STRUCTURE #4

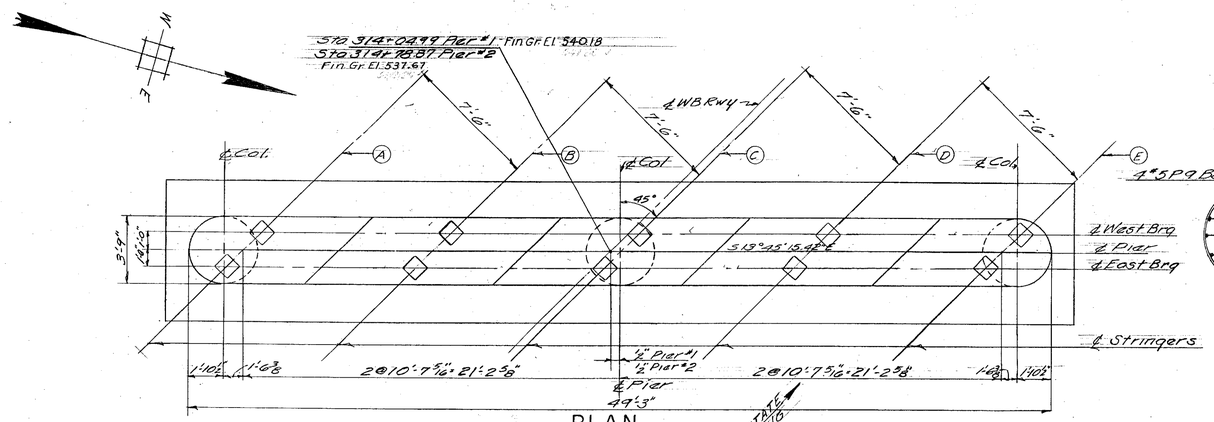
EASTBOUND PIER DETAILS

ROSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD PARK, N. J.

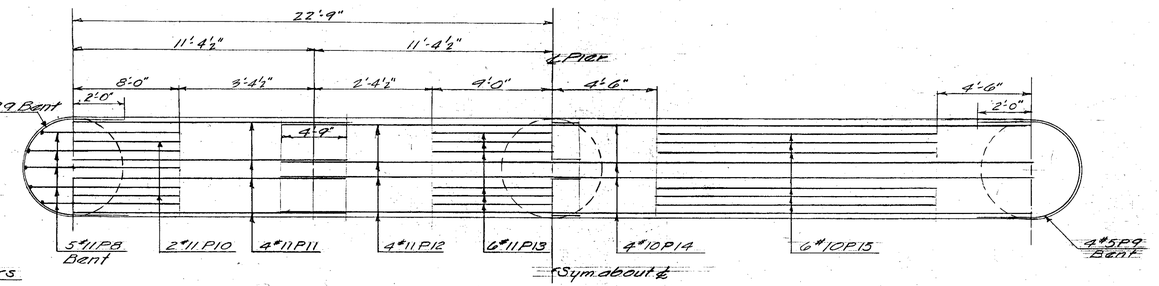
SURVEYED BY VT	CHECKED BY A.J.I.	SCALE AS SHOWN
DRAWN BY RAB	IN CHARGE RA	DATE AUG., 1957

PROJECT NO. I 89-2-(3) | SHEET 218 OF 307

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
	VERMONT	I 089-2(3)	140	800

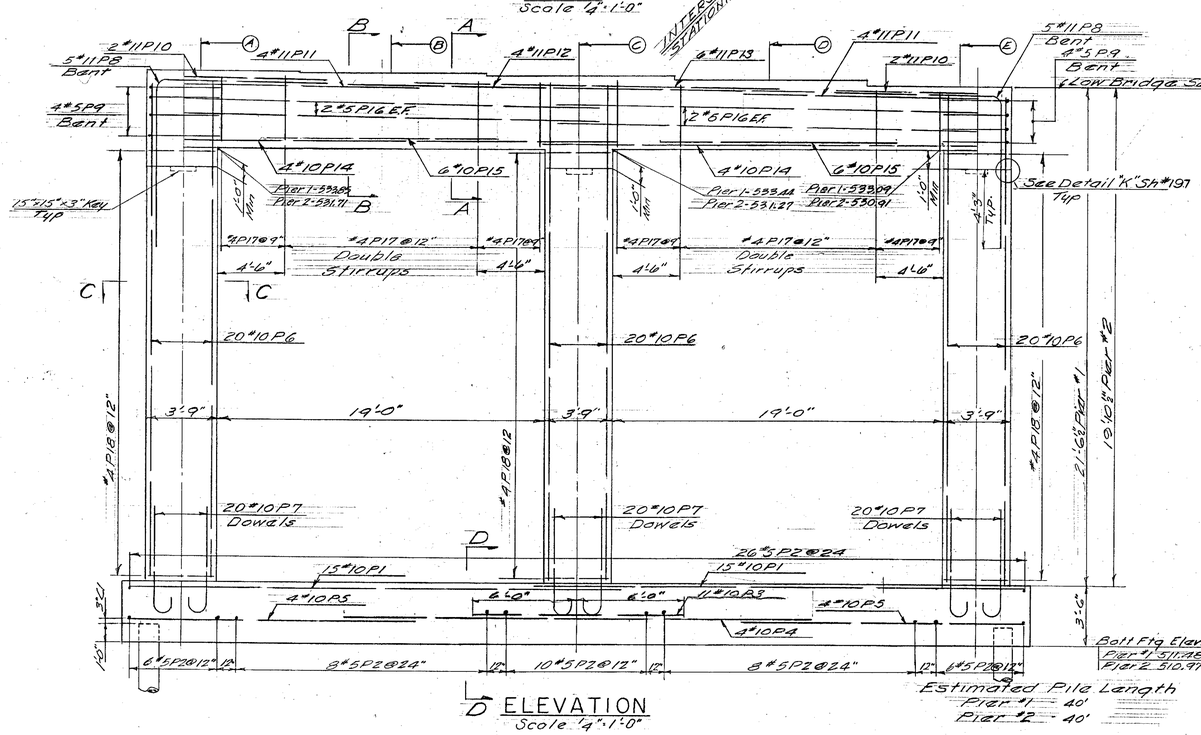


PLAN
Scale 1/4"=1'-0"

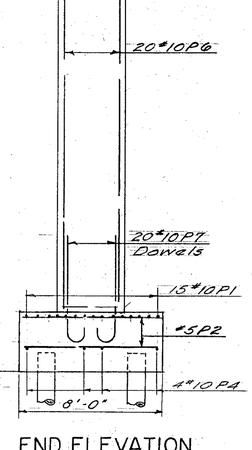


HALF SECTION SHOWING
TOP REINFORCING

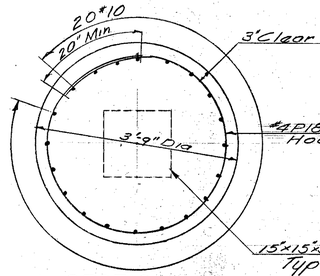
HALF SECTION SHOWING
BOTTOM REINFORCING



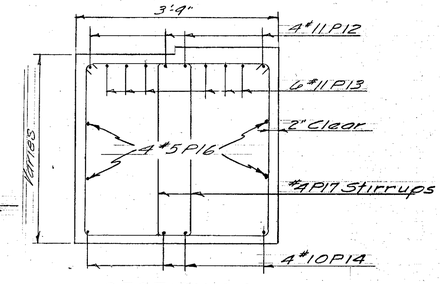
D ELEVATION
Scale 1/4"=1'-0"



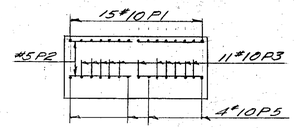
END ELEVATION
Scale 1/4"=1'-0"



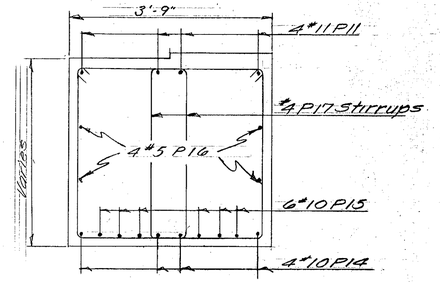
SECTION CC
Scale 3/4"=1'-0"



SECTION AA
Scale 3/4"=1'-0"

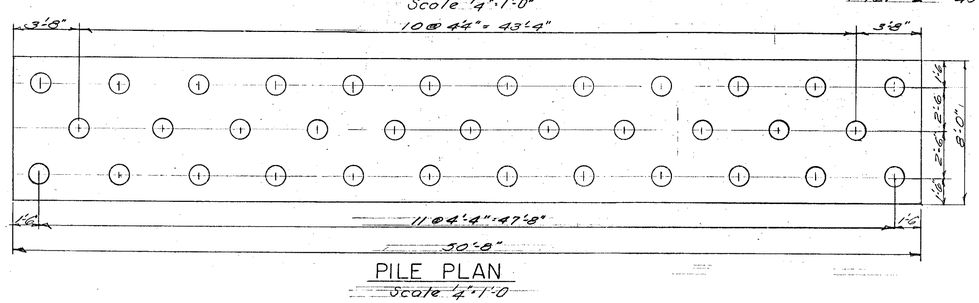


SECTION D-D
Scale 1/4"=1'-0"



SECTION BB
Scale 3/4"=1'-0"

NOTES
1. For General notes see Sh #136
2. For Bearing Devices and Anchor Bolts see Detail "E" Sh #197
3. For Pile Shoes see Detail "F" Sh #197
4. Reinforcing in top of Pier Cap shall be spaced to pass anchor bolts, maintaining minimum spacing requirements



PILE PLAN
Scale 1/4"=1'-0"

BEARING ELEVATIONS

W.B.	BEARING	A	B	C	D	E
PIER #1	EAST	537.64	537.56	537.39	537.11	536.75
	WEST	537.42	537.33	537.16	536.88	536.52
PIER #2	EAST	535.35	535.26	535.07	534.78	534.41
	WEST	535.28	535.19	535.00	534.71	534.34

			NEAT	ROUND
107	Structure Exc. Pier #1	CY	38	42
107	Structure Exc. Pier #2	CY	38	42

			NEAT	ROUND
407	Asphaltic Asbestos Coating #1	SY	22	
407	" " " " #2	SY	22	
401B	Class "B" Conc. (Modified) #1	CY	100	105
401B	" " " " #2	CY	99	104
502B	Treated Timber Piles #1	LF	1400	
502B	" " " #2	LF	1400	
402	Reinf. Steel #1	LB	19070	19,101
402	" " " #2	LB	18600	18,636

IM 089-2(26)
This sheet for information only
BR 43 N & S

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the towns of
BERLIN - MONTPELIER - MIDDLESEX

OVERPASS STA. 314+00 STRUCTURE #4

WEST BOUND PIER DETAILS

BOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD, PARK N.J.

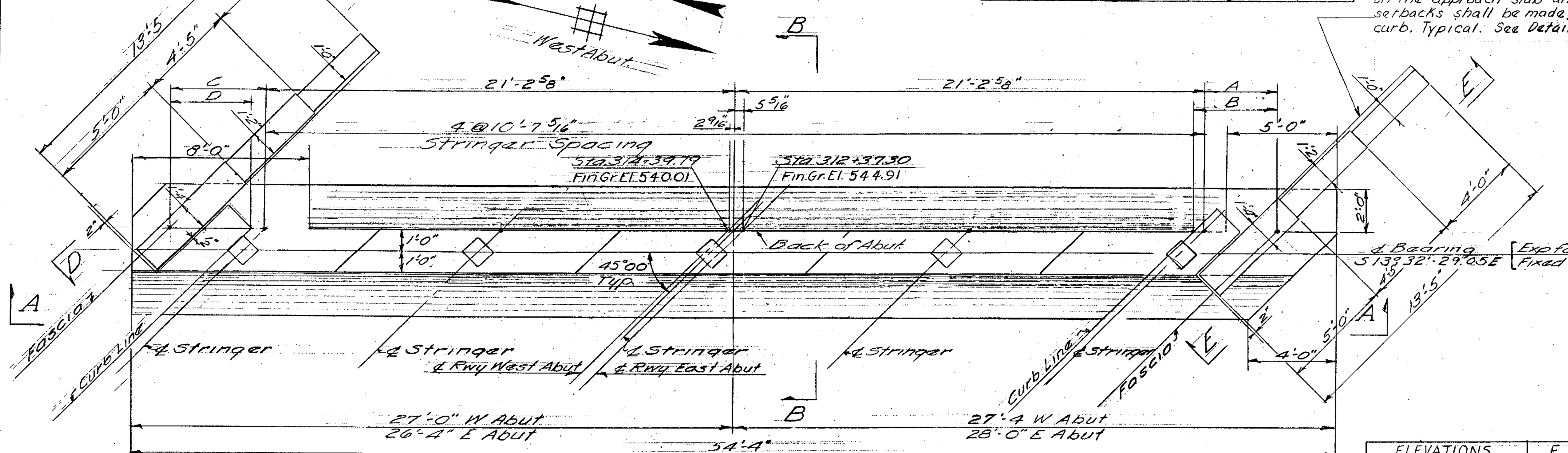
SURVEYED BY VT	CHECKED BY M.J.C.	SCALE AS SHOWN
DRAWN BY RAB	IN CHARGE R.J.	DATE AUG. 1957

PROJECT NO. I 89-2-(3) | SHEET 219 OF 307

FED. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
	VERMONT	I 89-2 ( )	141	800

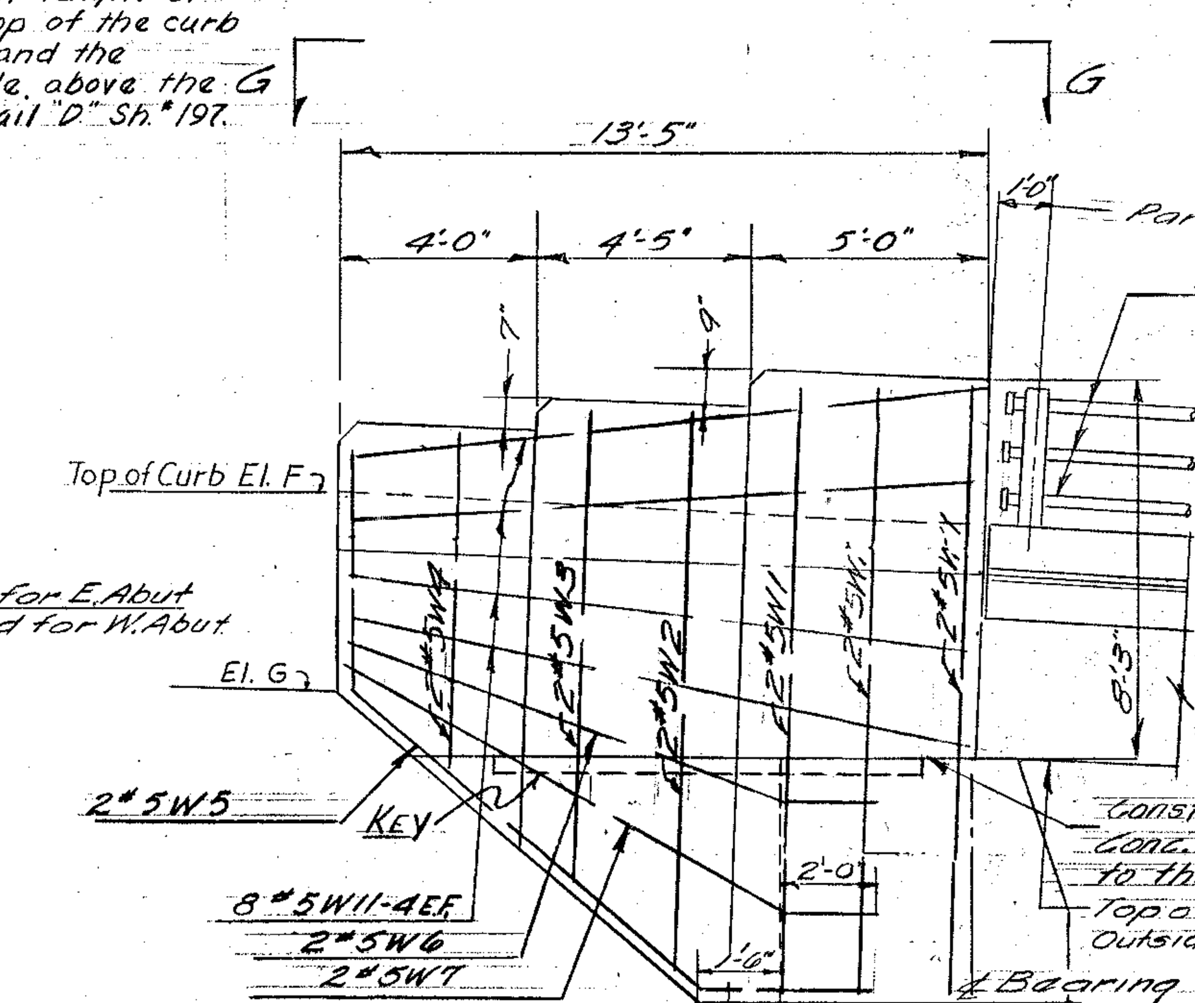
Eastbound	A	B	C	D
East Abut	3'-11 15/16"	3'-5 1/4"	3'-1 3/16"	3'-5 3/16"
West Abut	3'-4 1/2"	3'-4 5/8"	3'-6 3/16"	3'-7 7/8"

The inside face of the pylon shall be straight for the full length of the pylon up to the top of the curb on the approach slab and the setbacks shall be made above the curb. Typical. See Detail "D" Sh.# 197.

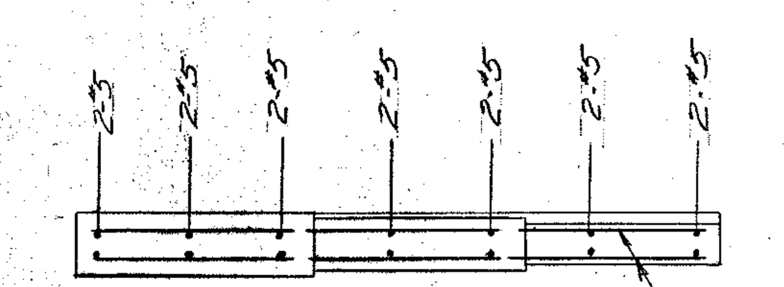


PLAN
Scale 1/4"=1'-0"

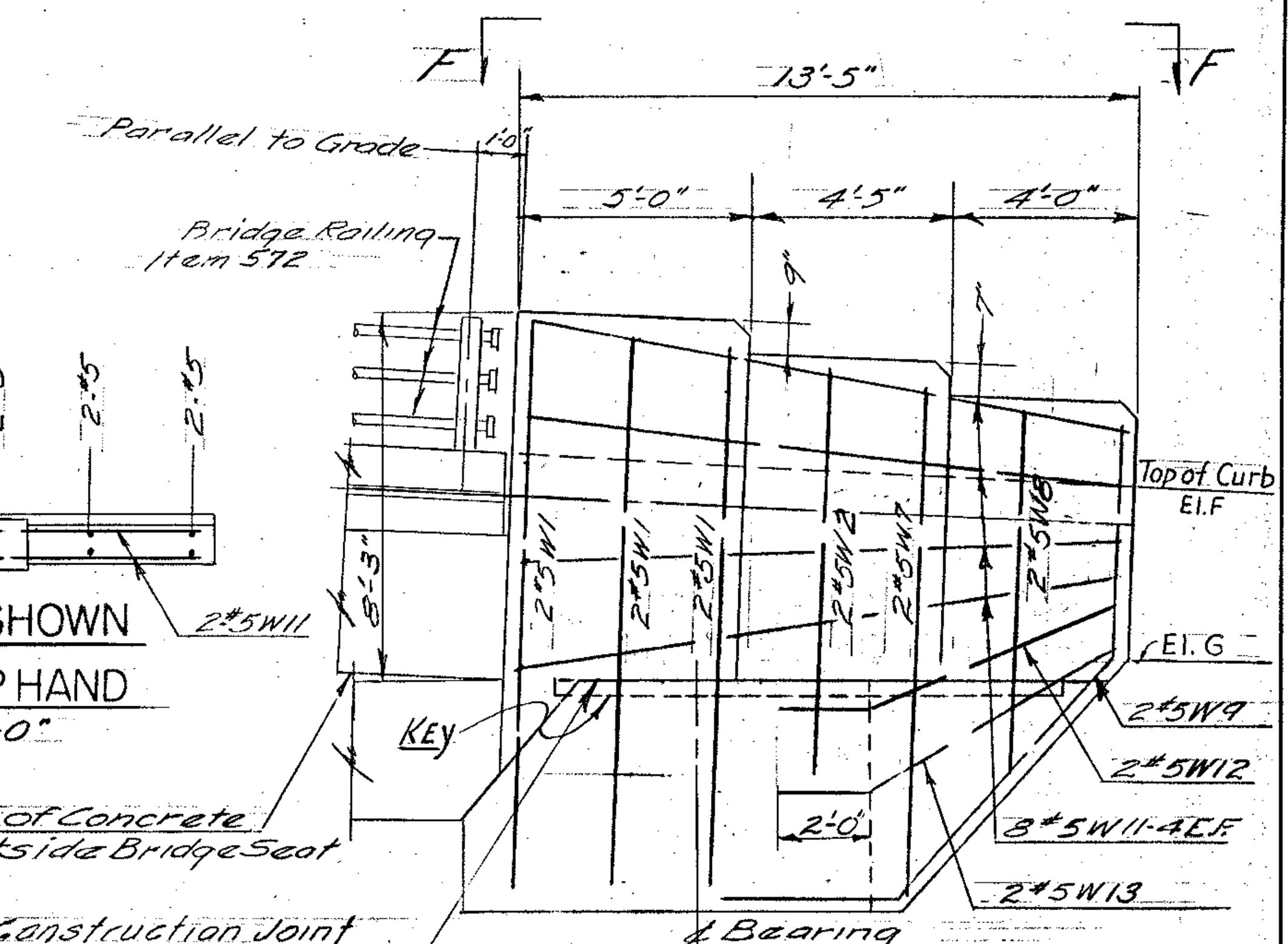
ELEVATIONS		F	G
East Abut.	Southside	546.00	542.00
East Abut.	Northside	545.44	541.44
West Abut.	Southside	540.82	536.82
West Abut.	Northside	539.97	535.97



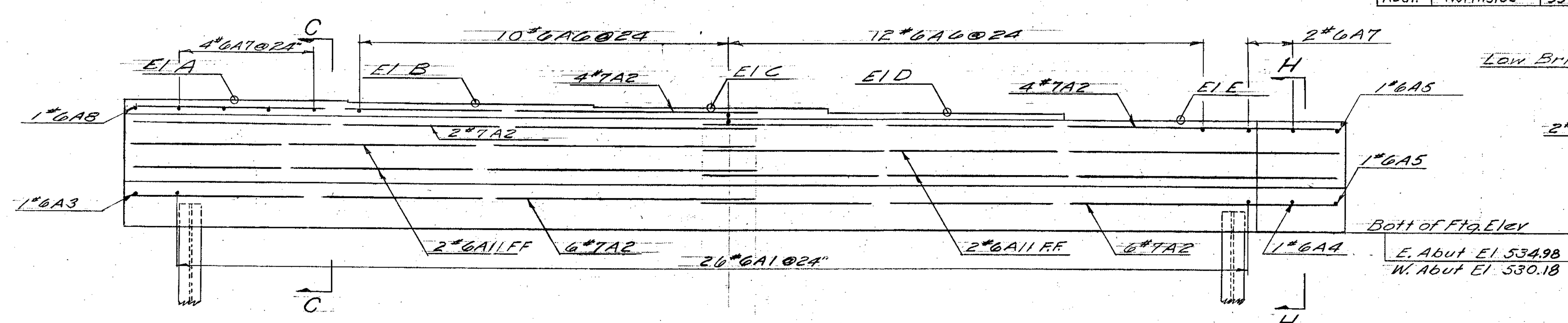
ELEVATION D-D
TYPICAL EAST ABUTMENT
Scale 1/4"=1'-0"



PLAN FF AS SHOWN
PLAN G G OPP HAND
Scale 1/4"=1'-0"

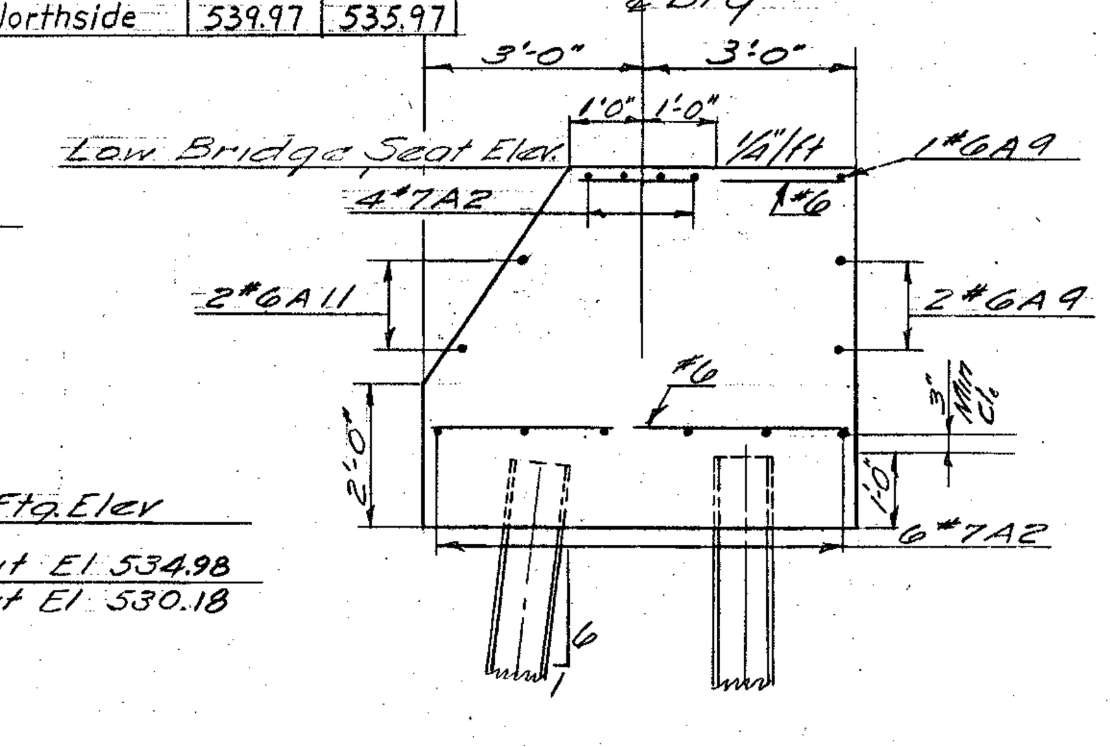


ELEVATION-E E
TYPICAL WEST ABUTMENT
Scale 1/4"=1'-0"

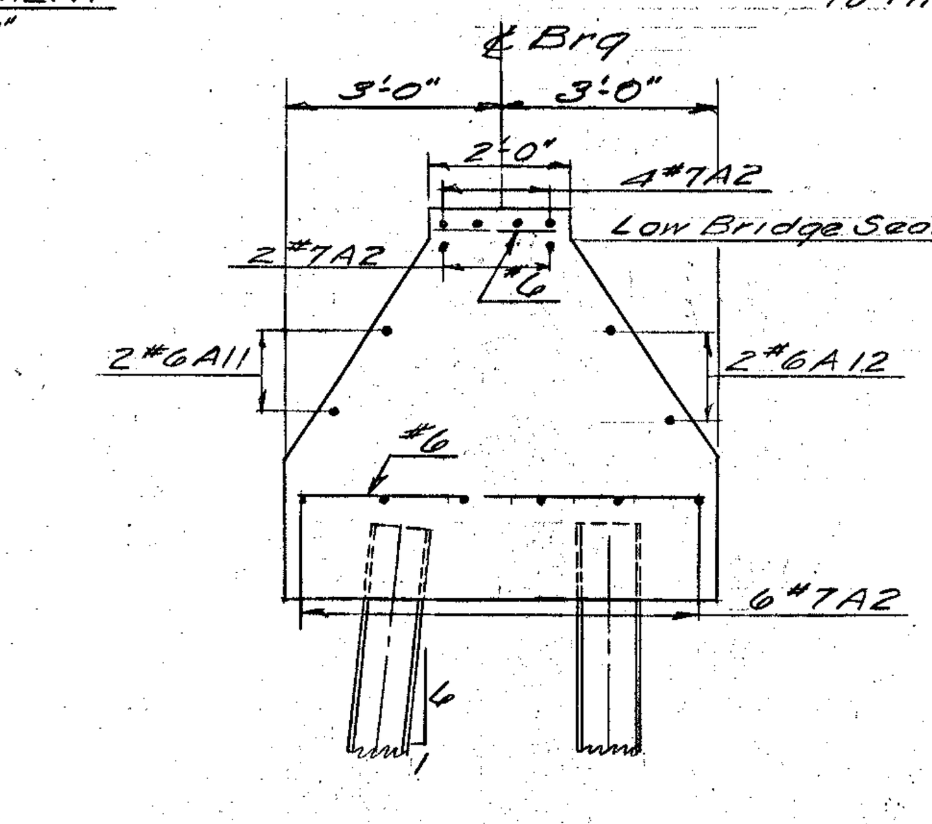


ELEVATION AA
WEST ABUT.- AS SHOWN
EAST ABUT - OPP HAND
Scale 1/4"=1'-0"

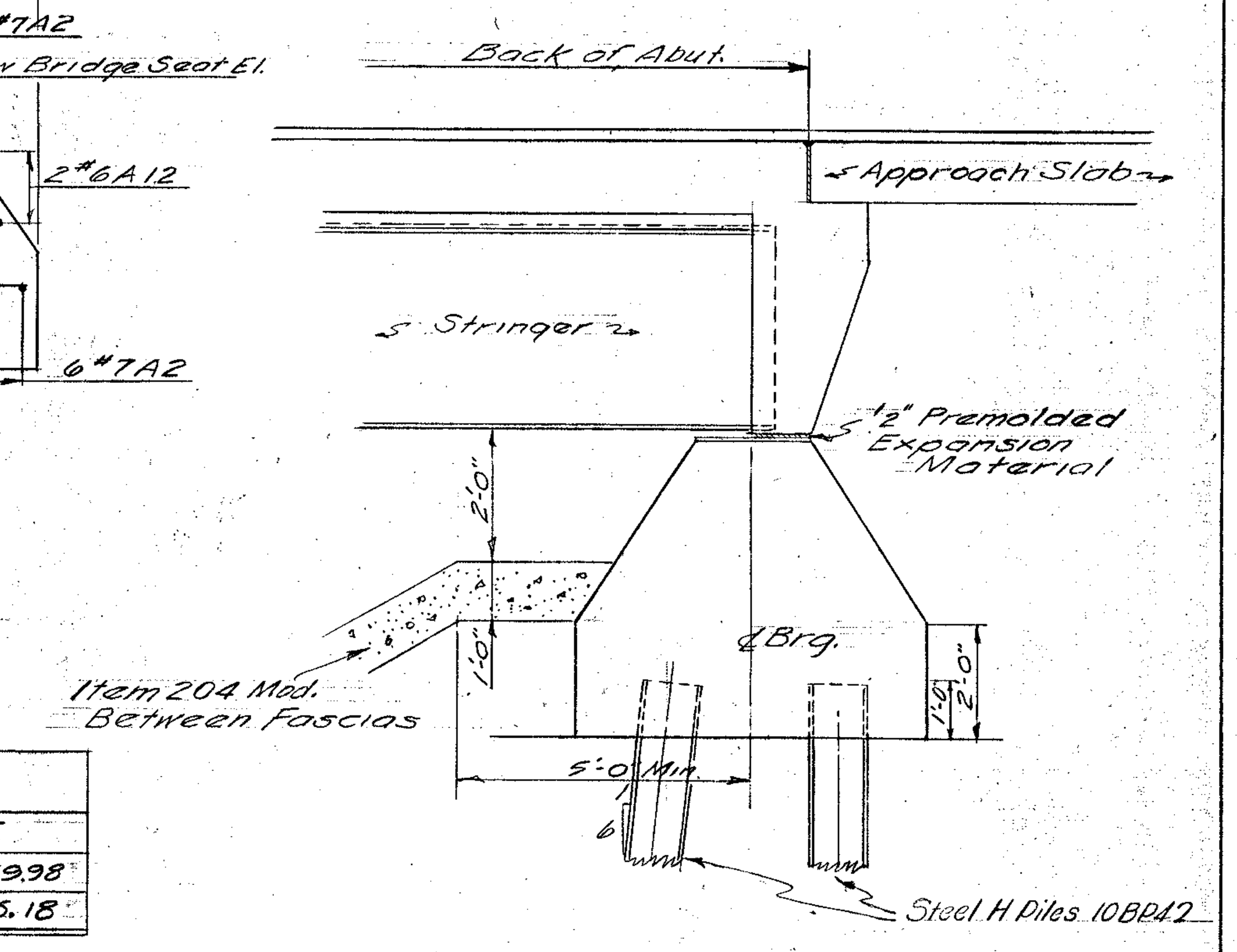
Estimated Pile Length
East Abut 35'
West Abut 90'



SECTION-H H
Scale 3/8"=1'-0"

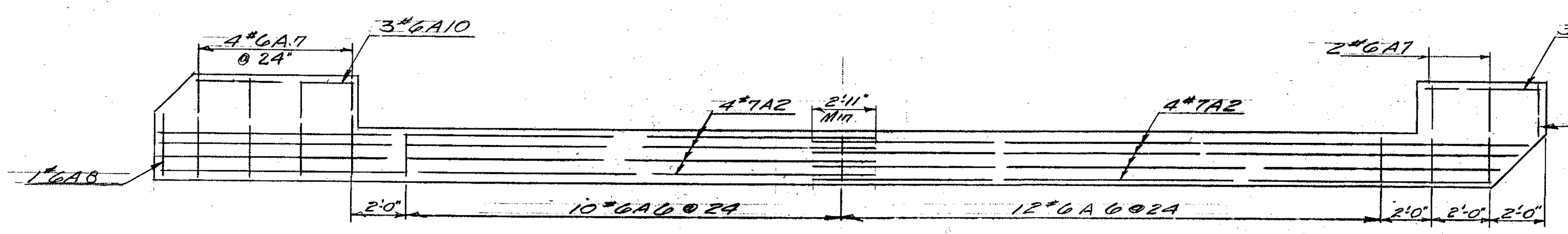


SECTION-C C
Scale 3/8"=1'-0"

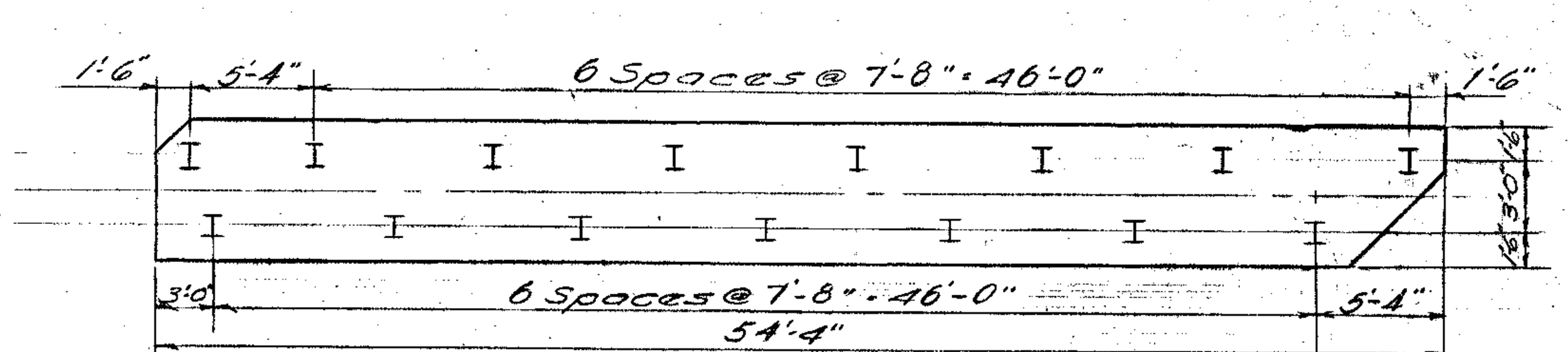


SECTION BB
Scale 3/8"=1'-0"

BEARING ELEVATIONS					
EAST BOUND	A	B	C	D	E
EAST ABUT	540.60	540.59	540.58	540.28	539.98
WEST ABUT	536.05	535.96	535.80	535.54	535.18

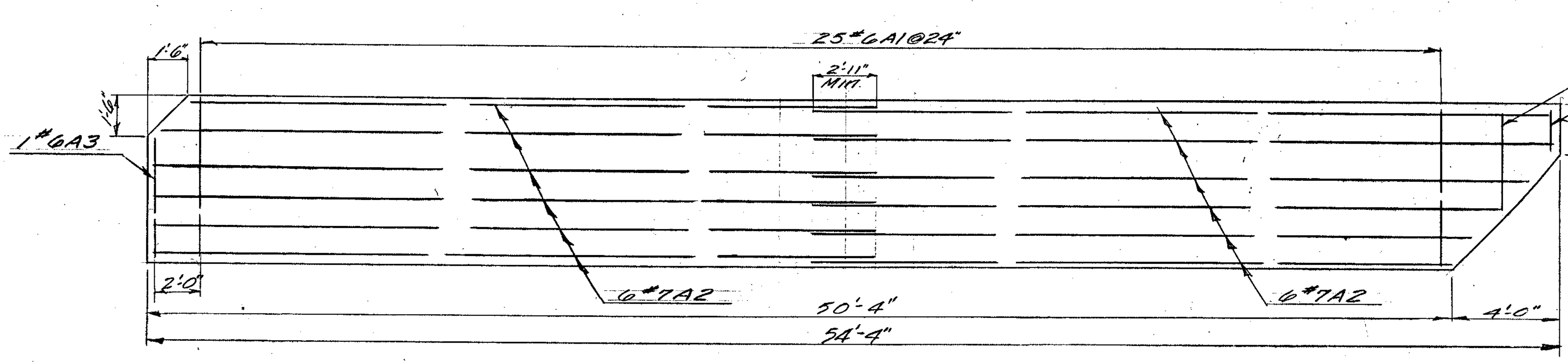


TOP REINFORCING PLAN
Scale 1/4"=1'-0"



PILE PLAN - EAST & WEST ABUT.
Scale 1/8"=1'-0"

NOTES:
1. For General Notes see Sh.# 136
2. For Bearing Devices and Anchor Bolts see Detail "E" Sh.# 197
4. For Bridge Marker see Detail "W" Sh.# 198
5. Reinforcing in top of Abutment shall be spaced to pass anchor bolts maintaing minimum spacing requirements
3. Steel H Piles to be driven to a minimum Bearing capacity of 35 tons & to Elevation directed by the Engineer



BOTTOM REINFORCING PLAN
Scale 1/4"=1'-0"

IM 089-2(26)
This sheet for information only
BR 43 N & S

			Neat	Round
107	Structure Excavation West Abut	CY	16	18
107	Structure Excavation East Abut	CY	16	18
204	Sub Base Crushed Rock (Mod) - West Abut.	CY	70	74
204	" " " East Abut	CY	125	131

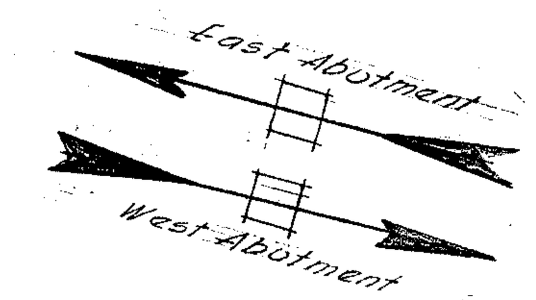
			Neat	Round
407	Asphaltic Asbestos Coating E. Abut	SY	28	——
"	" " " W. Abut	SY	28	——
402	Reinforcing Steel E. Abut	LB	2566	2569
	W. Abut	LB	2523	2526
4018	Class B Concrete (Mod) E. Abut.	CY	61	64
"	" " " W. Abut	CY	61	64
504	Steel Piling 10BP42 E. Abut.	LF	525	——
504	" " " W. Abut.	LF	1350	——

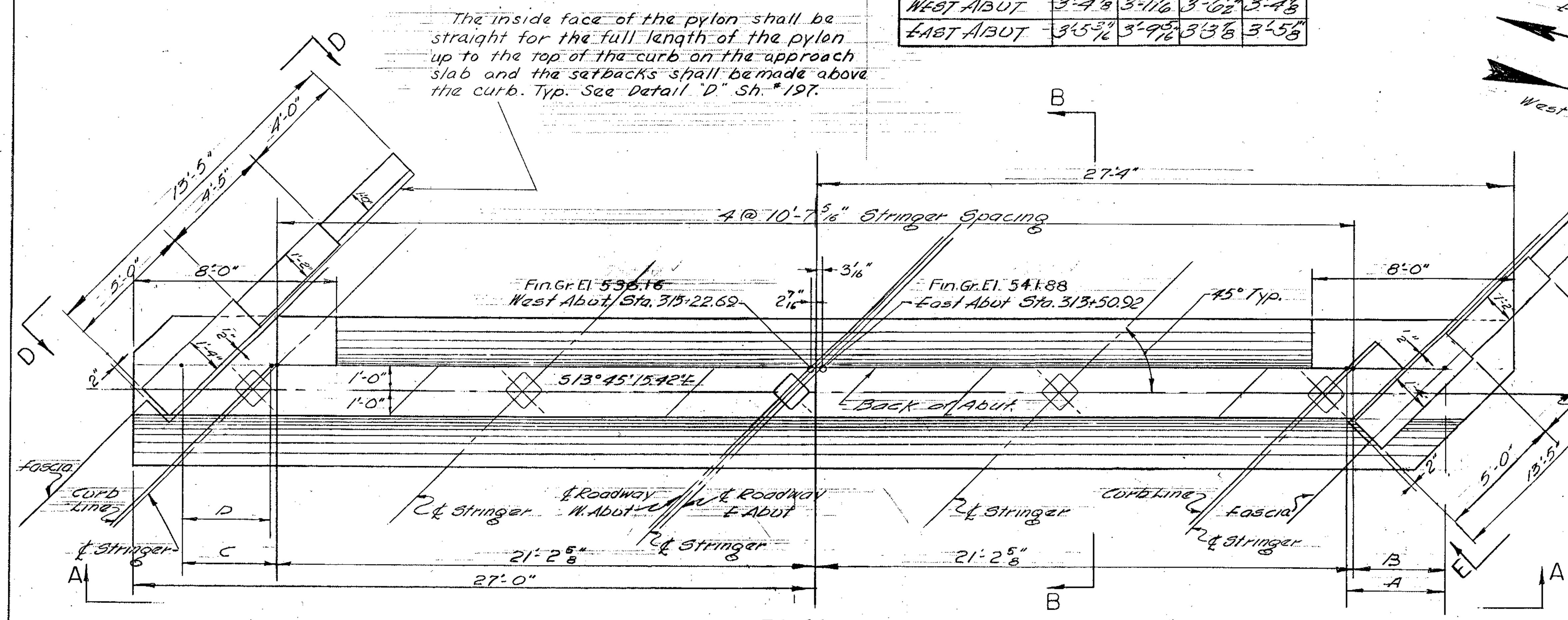
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the towns of BERLIN - MONTPELIER - MIDDLESEX
OVERPASS STA 314+00 STRUCTURE #4
EASTBOUND ABUTMENT DETAILS
BOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD PARK, N.J.
SURVEYED BY VT. DRAWN BY RB | CHECKED BY MGC IN CHARGE KA | SCALE AS SHOWN DATE AUG. 1957
PROJECT NO. I 89-2 (3) SHEET 220 OF 307

Cont. 4

PRO. ROAD DIV. No.	STATE	FEDERAL PROJECT No.	SHEET	TOTAL SHEETS
	VERMONT		142	800

WESTBOUND	A	B	C	D
WEST ABUT	3'-4 7/8"	3'-11 7/16"	3'-6 1/2"	3'-4 7/8
EAST ABUT	3'-5 3/16"	3'-9 5/16"	3'-3 7/8	3'-5 5/8"

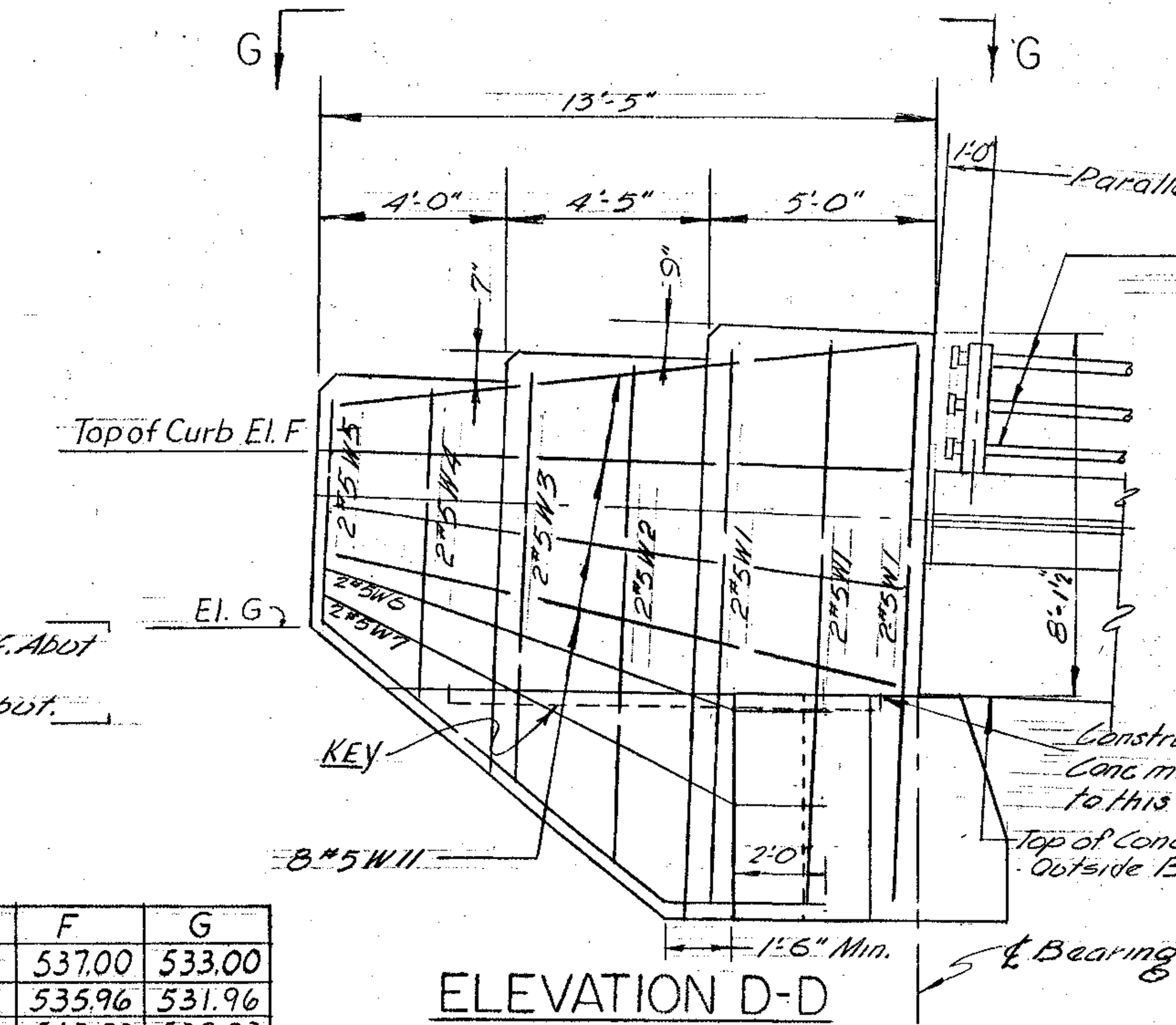




PLAN

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

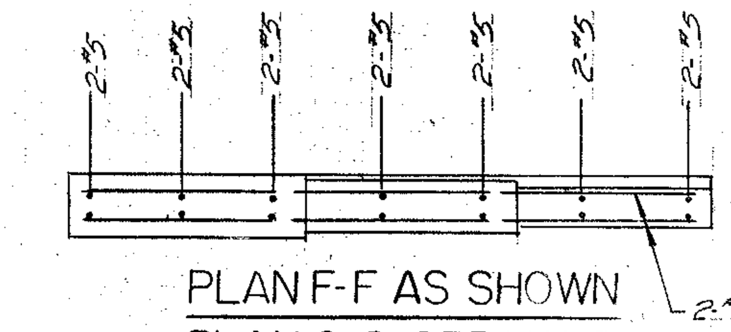
ELEVATIONS		F	G
West	Southside	537.00	533.00
Abut.	Northside	535.96	531.96
East	Southside	543.23	539.23
Abut.	Northside	542.34	538.34



ELEVATION D-D

TYPICAL EAST ABUTMENT

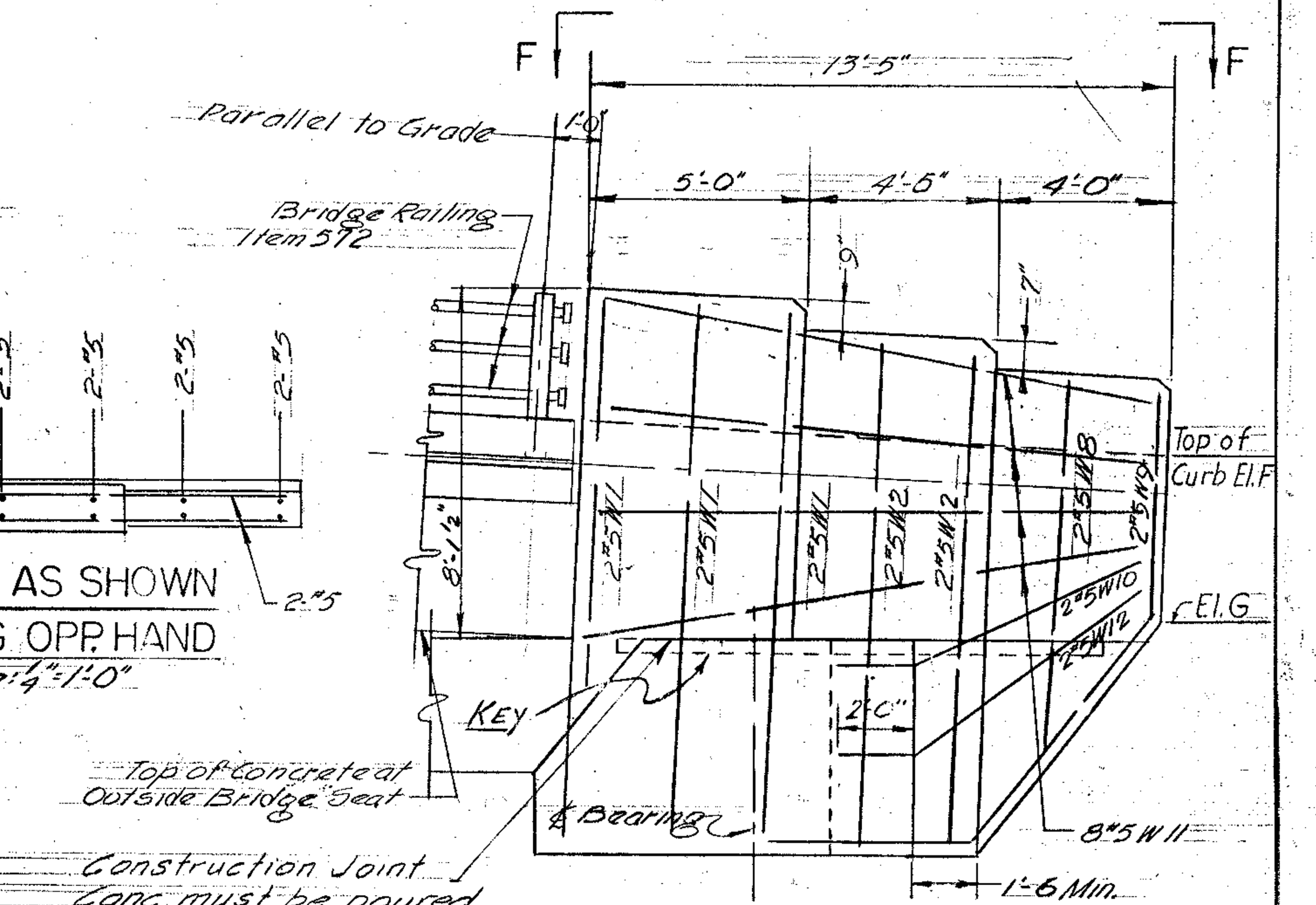
Scale: 1/4"=1'-0"



PLAN F-F AS SHOWN

PLAN G-G OPP. HAND

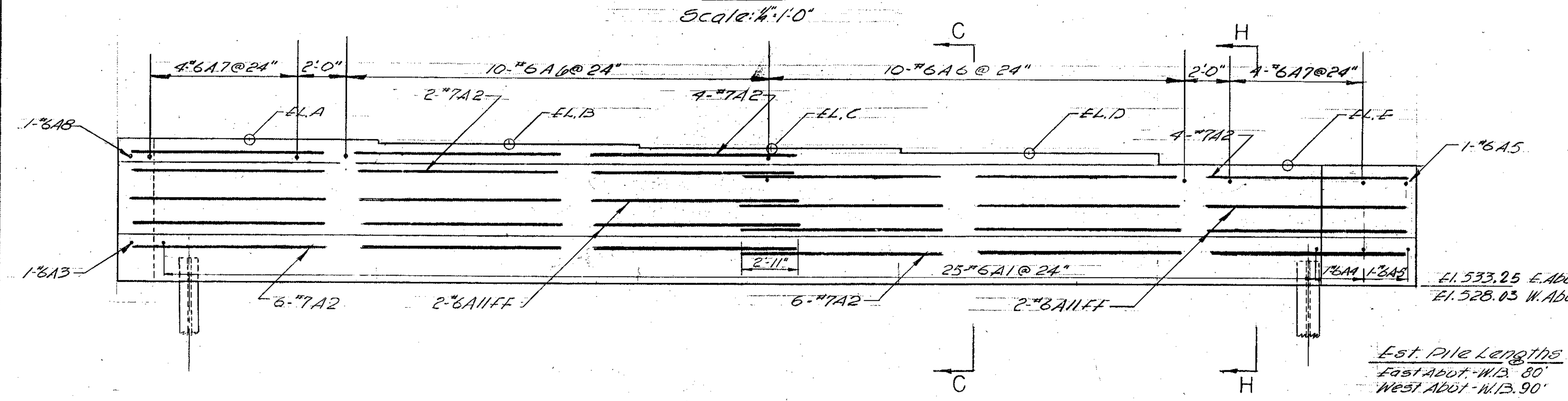
Scale: 1/4"=1'-0"



ELEVATION E-E

TYPICAL WEST ABUTMENT

Scale: 1/4"=1'-0"

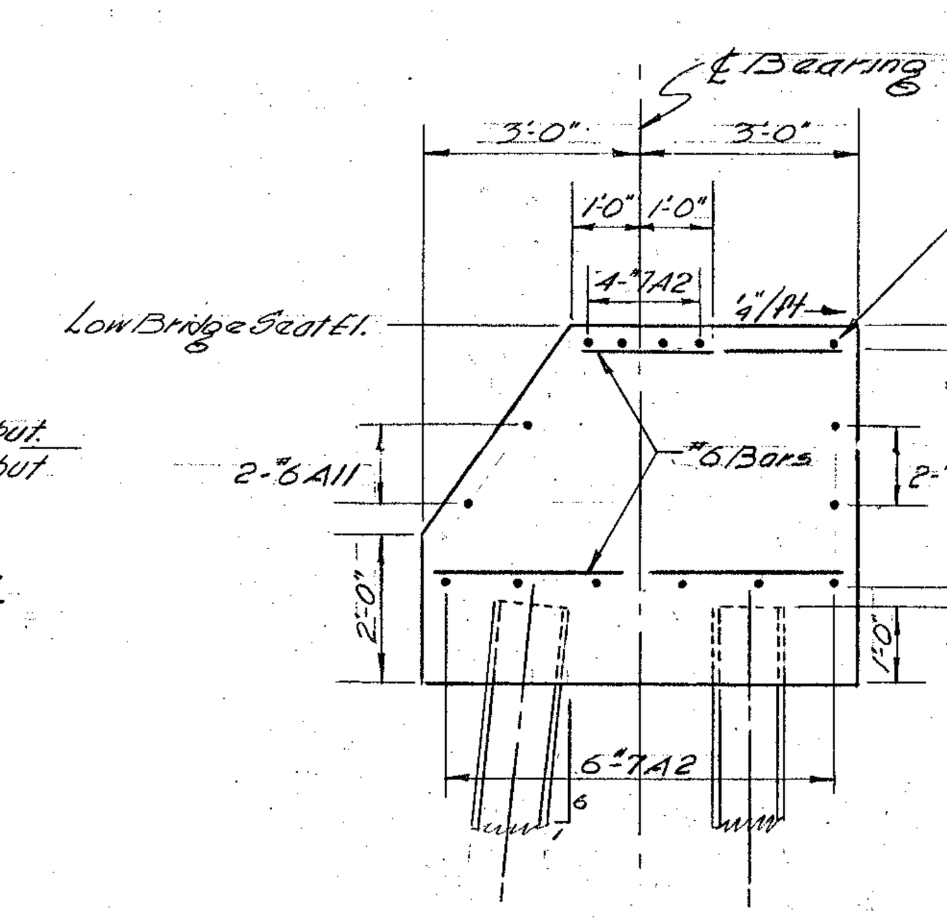


ELEVATION A-A

WEST ABUTMENT AS SHOWN

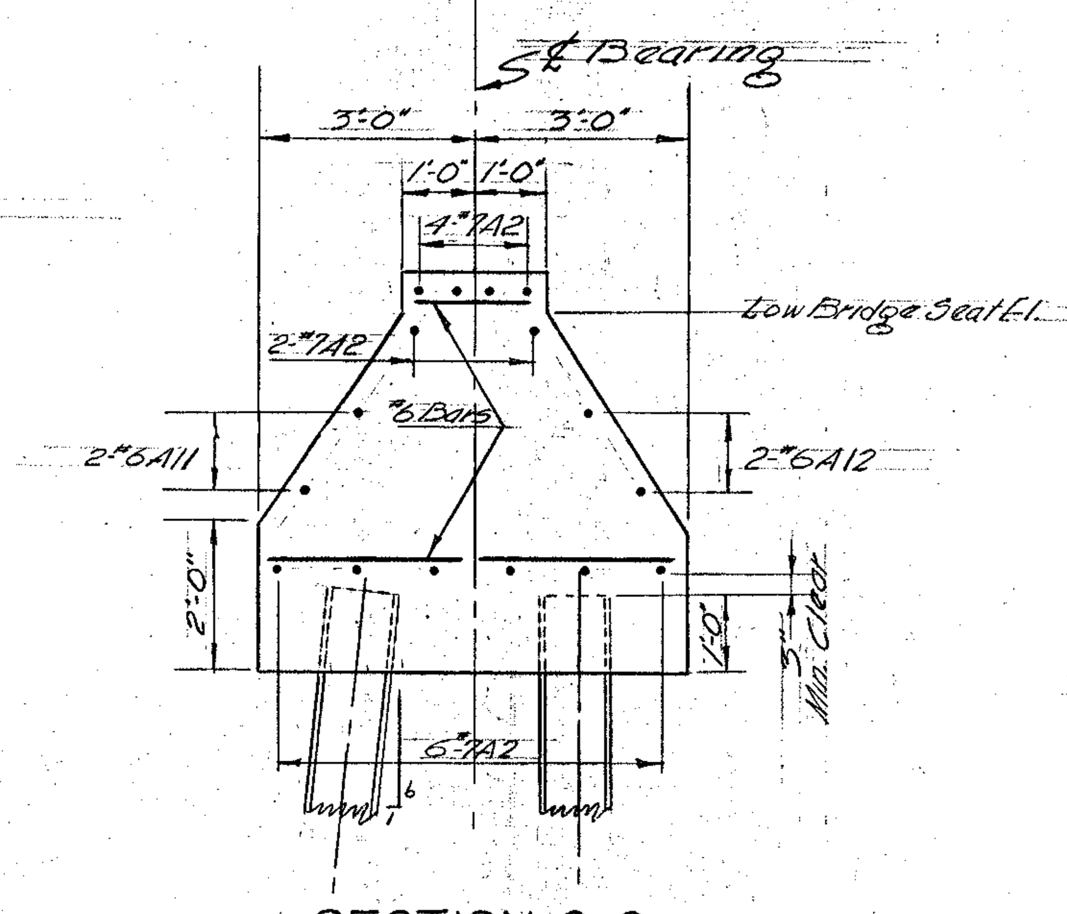
EAST ABUTMENT OPP. HAND

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



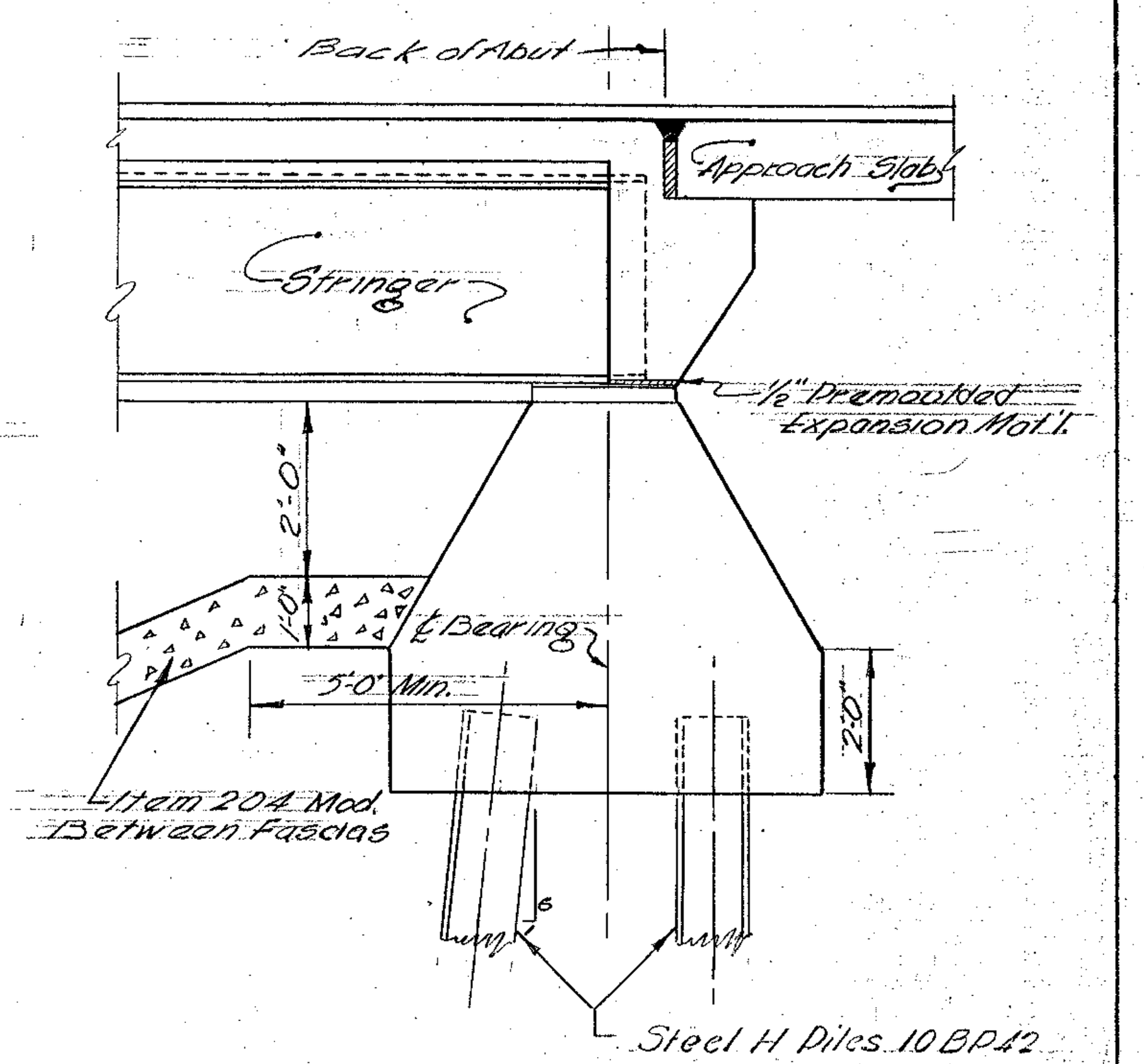
SECTION H-H

Scale: 3/8"=1'-0"



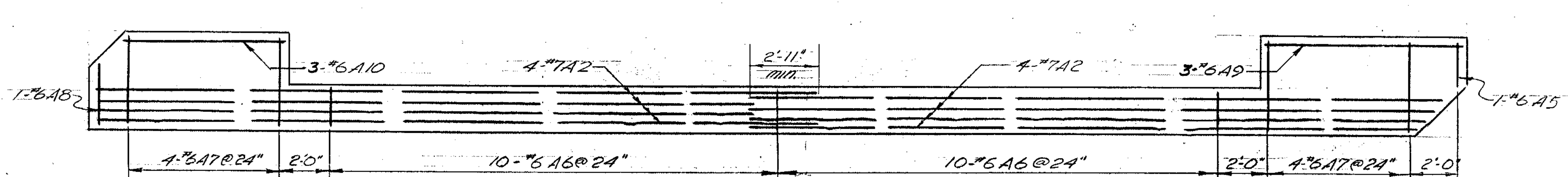
SECTION C-C

Scale: 3/8"=1'-0"



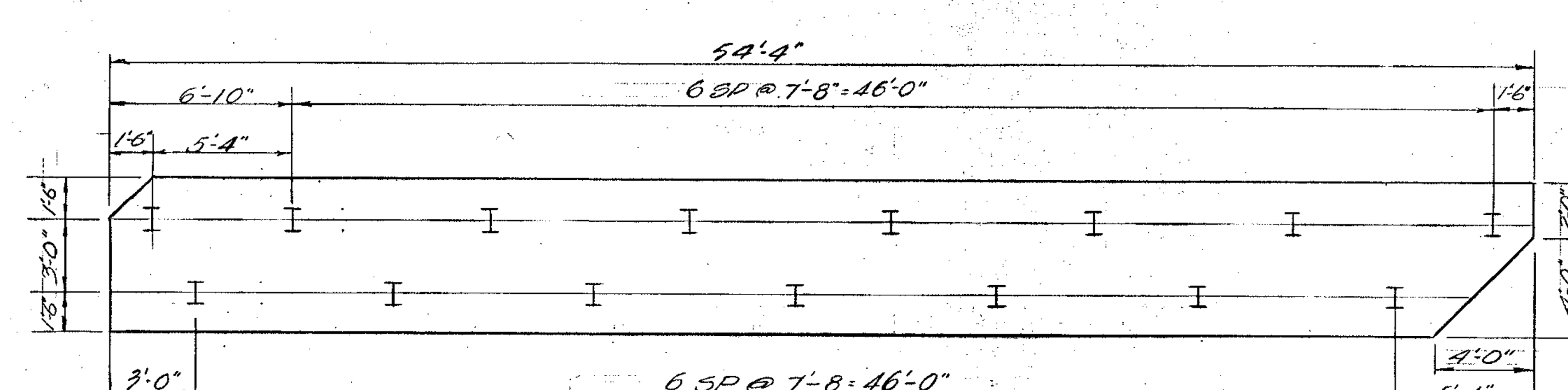
SECTION B-B

Scale: 3/8"=1'-0"



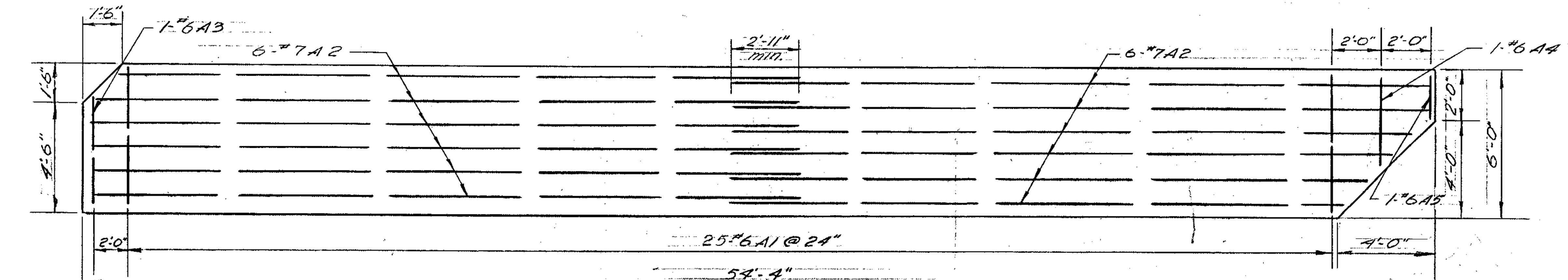
TOP REINFORCING PLAN

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



PILE PLAN

Scale: 3/16"=1'-0"



BOTTOM REINFORCING PLAN

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

— BEARING ELEVATIONS —					
WESTBOUND	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E
EAST ABUTMENT	539.09	539.02	538.86	538.60	538.25
WEST ABUTMENT	533.98	533.88	533.50	533.41	533.03

			NEAT	ROUND
107	Structural Excavation E Abut	CY	16	18
107	Structural Excavation W Abut	CY	16	18
204	Sub-Base of Crushed Rock (Mod.) E. Abut.	CY	86	90
"	" " " " W. Abut	CY	70	74
407	Asphaltic Asbestos Coat. W & E Abuts	SY	60	—
402	Reinforcing Steel W Abut	L.B.	2647	2652
"	" " E Abut	LB	2608	2613
401B	Class B Concrete (Mod.) E. Abut	CY	61	64
"	" " " " W. Abut	CY	61	64
504	Steel Piling 10BP42 E. Abut	LF	1200	—
504	" " " W. Abut	LF	1350	—

NOTE:

1. For General Notes See Sh. #136
2. For Bearing Devices & Anchor Bolts See Detail E Sh. #197

4. For Bridge Marker See Detail W Sh. #198
5. Reinforcing in top of Abutment shall be spaced to pass Anchor Bolts maintaining minimum spacing requirements.
3. Steel H Piles to be driven to a Minimum Bearing capacity of 35 tons & to Elevation directed by the Engineer.

IM 089-2(26)
This sheet for information only
BR 43 N & S

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the towns of
BERLIN - MONTPELIER - MIDDLESEX

OVERPASS STA. 314+00 STRUCTURE #4

WESTBOUND ABUTMENT DETAILS

BOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD PARK, N.J.

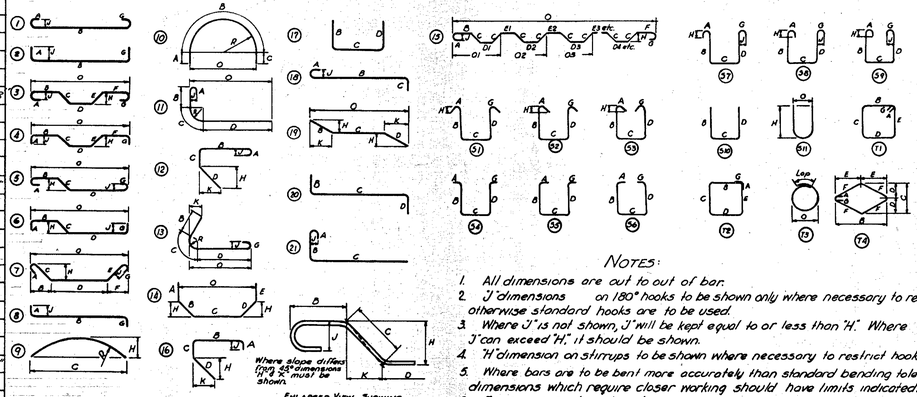
SURVEYED BY VT	CHECKED BY M.J.C.	SCALE AS SHOWN
DRAWN BY D.R.F.	IN CHARGE K.A.	DATE AUG. 1957
PROJECT NO. I 89-2-(3)	SHEET	221 OF 307

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
				SPAN #1 WESTBOUND													
1	114	#5	32'-6"	151	Str.												
2	128	#4	27'-9"	152	Str.												
3	6	#5	22'-1"	153	Str.												
4	29*	#5	4'-2"	154	17		2'-6"	8"	1'-0"								
5	16	#5	24'-2"	155	Str.												
6	29	#6	3'-0"	156	1	8"	1'-8"					8"		6"			
7	43	#4	6'-6"	156A	52	4½"	2'-6"	9"	2'-6"			4½"	2½"				
8	20	#6	28'-0"	157	Str.												
9	70	#4	4'-10"	158	53	4'-2"	1'-4"	1'-5"	1'-4"			4½"	2½"				
10	2 @ eq	#5	3'-9"	159	Str.												
11			32'-0" to 320'-0"	@ 6½	Increments	Total 106 Bars											
12	2 @ eq	#5	2'-3"	1510	Str.												
13			32'-0" to 320'-0"	@ 6½	Increments	Total 112 Bars											
14	12	#5	33'-6"	1511	Str.												
15	17*	#8	4'-0"	1512	Str.			(SMOOTH)									
16																	
17				SPAN #2 WESTBOUND													
18	164	#5	34'-6"	251	Str.												
19	128	#4	37'-9"	252	Str.												
20	12	#5	22'-1"	253	Str.												
21	56	#5	4'-2"	254	17		2'-6"	8"	1'-0"								
22	20	#6	38'-0"	257	Str.												
23	100	#4	4'-10"	258	53	4½"	1'-4"	1'-5"	1'-4"			4½"	2½"				
24	4 @ eq	#5	2'-3"	2510	Str.												
25			32'-0" to 320'-0"	@ 6½	Increments	Total 224 Bars											
26	16	#8	4'-0"	2512	Str.			(SMOOTH)									
27																	
28				SPAN #3 WESTBOUND													
29	37	#5	34'-6"	351	Str.												
30	129*	#4	22'-9"	352	Str.												
31	6	#5	22'-1"	353	Str.												
32	28	#5	4'-2"	354	17		2'-6"	8"	1'-0"								
33	16	#5	24'-2"	355	Str.												
34	29	#6	3'-0"	356	1	8"	1'-8"					8"		6"			
35	43	#4	6'-6"	356A	52	4½"	2'-6"	9"	2'-6"			4½"	2½"				
36	2.1*	#6	23'-0"	357	Str.												
37	56	#4	4'-10"	358	53	4½"	1'-4"	1'-5"	1'-4"			4½"	2½"				
38	2 @ eq	#5	3'-9"	359	Str.												
39			32'-0" to 320'-0"	@ 6½	Increments	Total 104 Bars											
40	2 @ eq	#5	2'-3"	3510	Str.												
41			32'-0" to 320'-0"	@ 6½	Increments	Total 112 Bars											
42	12	#5	33'-6"	3511	Str.												
43																	
44				SPAN #1 EASTBOUND													
45	146	#5	34'-6"	151	Str.												
46	128	#4	37'-9"	152	Str.												
47	6	#5	22'-1"	153	Str.												
48	28	#5	4'-2"	154	17		2'-6"	8"	1'-0"								
49	16	#5	24'-2"	155	Str.												
50	29	#6	3'-0"	156	1	8"	1'-8"					8"		6"			
51	43	#4	6'-6"	156A	52	4½	2'-6"	9"	2'-6"			4½"	2½"				
52	20	#6	38'-0"	157	Str.												
53	97	#4	4'-10"	158	53	4½"	1'-4"	1'-5"	1'-4"			4½"	2½"				
54	2 @ eq	#5	3'-9"	159	Str.												
55			32'-0" to 320'-0"	@ 6½	Increments	Total 106 Bars											
56	2 @ eq	#5	2'-3"	1510	Str.												
57			32'-0" to 320'-0"	@ 6½	Increments	Total 112 Bars											
58	12	#5	33'-6"	1511	Str.												
59	16	#8	4'-0"	1512	Str.	(SMOOTH)											
60																	
61				SPAN #2 EASTBOUND													
62	200	#5	34'-6"	251	Str.												
63	128	#4	42'-9"	252	Str.												
64	12	#5	22'-1"	253	Str.												
65	56	#5	4'-2"	254	17		2'-6"	8"	1'-0"								
66	20	#6	43'-0"	257	Str.												
67	112	#4	4'-10"	258	53	4½"	1'-4"	1'-5"	1'-4"			4½"	2½"				
68	4 @ eq	#5	2'-3"	2510	Str.												
69			32'-0" to 320'-0"	@ 6½	Increments	Total 224 Bars											
70	16	#8	4'-0"	2512	Str.	(SMOOTH)											
71																	
72				SPAN #3 EASTBOUND													
73				Same as Span 3 Westbound													
74																	
75				PIER #1 WESTBOUND													
76	30	#10	27'-2"	P1	Str.												
77	64	#5	7'-6"	P2	Str.												
78	12*	#10	12'-0"	P3	Str.												
79	4	#10	26'-0"	P4	Str.												
80	8	#10	16'-7"	P5	Str.												
81	60	#10	21'-2"	P6	Str.												

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
82	60	#10	8'-2"	P7	1	1'-5	6'-9"										
83	10	#11	17'-4"	P8	11	0	8'-0"	2'-4"	7'-0"							1'-6"	8'-6"
84	8	#5	8'-9"	P9	10	2'-0"	4'-9"	2'-0"								1'-6"	3'-0"
85	5*	#11	8'-0"	P10	Str.												
86	8	#11	13'-11"	P11	Str.												
87	4	#11	27'-10"	P12	Str.												
88	6	#11	18'-0"	P13	Str.												
89	8	#10	24'-11"	P14	Str.												
90	12	#10	13'-9"	P15	Str.												
91	8	#5	23'-10"	P16	Str.												
92	93*	#4	10'-5"	P17	T1	4½"	1'-10"	3'-0"	1'-10"	3'-0"		4½"					
93	59	#4	11'-11"	P18	T3											1'-7½"	3'-3"
94																	
95				PIER #2 WESTBOUND													
96				Same as Pier #1 Westbound Except as Noted													
97	60	#10	19'-6"	P6	Str.												
98	54	#4	11'-11"	P18	T3											1'-7½"	3'-3"
99																	
100				PIER #1 EASTBOUND													
101	32	#10	27'-5"	P1	Str.												
102	65*	#5	7'-6"	P2	Str.												
103	12	#10	12'-0"	P3	Str.												
104	4	#10	26'-0"	P4	Str.												
105	8	#10	16'-11"	P5	Str.												
106	60	#10	21'-6"	P6	Str.												
107	60	#10	8'-2"	P7	1	1'-5"	6'-9"										
108	10	#11	17'-4"	P8	11	0	8'-0"	2'-4"	7'-0"							1'-6"	8'-6"
109	8	#5	8'-9"	P9	10	2'-0"	4'-9"	2'-0"								1'-6"	3'-0"
110	4	#11	8'-0"	P10	Str.												
111	8	#11	13'-11"	P11	Str.												
112	4	#11	27'-10"	P12	Str.												
113	7	#11	18'-0"	P13	Str.												
114	8	#10	24'-11"	P14	Str.												
115	14	#10	13'-9"	P15	Str.												
116	8	#5	23'-10"	P16	Str.												
117	92	#4	10'-5"	P17	T1	4½"	1'-10"	3'-0"	1'-10"	3'-0"		4½"					
118	59	#4	11'-11"	P18	T3											1'-7½"	3'-3"
119																	
120				PIER #2 EASTBOUND													
121				Same as Pier #1 Eastbound Except as Noted													
122	60	#10	19'-6"	P6	Str.												
123	54	#4	11'-11"	P18	T3											1'-7½"	3'-3"
124																	
125				EAST ABUTMENT WESTBOUND													
126	25	#6	5'-6"	A1	Str.												
127	23*	#9	28'-5"	A2	Str.												
128	2*	#6	4'-3"	A3	Str.												
129	1	#6	3'-9"	A4	Str.												
130	2	#6	1'-9"	A5	Str.												
131	20	#6	1'-6"	A6	Str.												
132	8	#6	3'-6"	A7	Str.												
133	1	#6	2'-3"	A8	Str.												
134	3	#6	7'-0"	A9	Str.												
135	3	#6	6'-3"	A10	Str.												
136	4	#6	26'-11"	A11	Str.												
137	4	#6	20'-5"	A12	Str.												
138	12	#5	12'-3"	W1	Str.												
139	4	#5	11'-3"	W2	Str.												
140	4	#5	10'-0"	W3	Str.												
140	4	#5	7'-11"	W4	Str.												
141	4	#5	18'-10"	W5	14	6'-4"	9'-0"	3'-6"	0	0			4'-10"				
142	4	#5	11'-6"	W6	14	0	9'-6"	2'-0"	0	0			2'-11"				
143	4	#5	12'-0"	W7	14	0	10'-0"	2'-0"	0	0			3'-9"				
144	16	#5	13'-0"	W11	Str.												
145				WEST ABUTMENT WESTBOUND													
146				A1 Thru A12 Same as East Abutment WB													
147	12	#5	12'-3"	W1	Str.												
148	8	#5	11'-6"	W2	Str.												
149	4	#5	9'-4"	W8	Str.												
150	4	#5	15'-11"	W9	14	6'-11"	5'-6"	3'-6"	0	0			3'-6"				
151	4	#5	7'-8"	W10	14	0	5'-8"	2'-0"	0	0			1'-6"				
152	16	#5	13'-0"	W11	Str.												
153	4	#5	8'-0"	W12	14	0	6'-0"	2'-0"	0	0			2'-6"				
154																	
155				EAST ABUTMENT EASTBOUND													
156	25	#6	5'-6"	A1	Str.												
157	22	#9	28'-5"	A2	Str.												
158	1	#6	4'-3"	A3	Str.												
159	1	#6	3'-9"	A4	Str.												
160	2	#6	1'-9"	A5	Str.												
161	22	#6	1'-6"	A6	Str.												
162	6	#6	3'-6"	A7	Str.												

FED. ROAD DIV. No.	STATE	FEDERAL PROJECT No.	SHEET	TOTAL SHEETS
	VERMONT	2002-R(1)	143	800

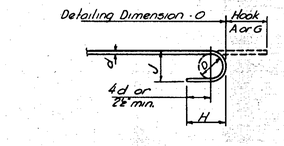
TYPICAL BAR BENDS



NOTES:

1. All dimensions are out to out of bar.
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size otherwise standard hooks are to be used.
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H.' Where J can exceed 'H,' it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163	1	#6	8'-3"	A8	Str.												
164	3	#6	4'-6"	A9	Str.												
165	3	#6	6'-3"	A10	Str.												
166	4	#6	26'-11"	A11	Str.												
167	4	#6	21'-11"	A12	Str.												
168	12	#5	12'-3"	W1	Str.												
169	4	#5	11'-3"	W2	Str.												
170	4	#5	10'-0"	W3	Str.												
171	4	#5	7'-4"	W4	Str.												
172	4	#5	18'-6"	W5	14	5'-6"	9'-6"	3'-6"	0	0			6'-2"				
173	4	#5	11'-6"	W6	14	0	9'-6"	2'-0"	0	0			3'-3"				
174	4	#5	12'-3"	W7	14	0	10'-3"	2'-0"	0	0			5'-0"				
175	16	#5	13'-0"	W11	Str.												
176				WEST ABUTMENT EASTBOUND													
177				A1 Thru A12 Same as East Abutment EB.													
178	12	#5	12'-3"	W1	Str.												
179	4	#5	9'-0"	W2	Str.												
180	4	#5	11'-6"	W7	Str.												
181	4	#5	7'-11"	W8	Str.												
182	4	#5	16'-1"	W9	14	5'-4"	7'-3"	3'-6"	0	0			5'-4"				
183	16	#5	13'-0"	W11	Str.												
184	4	#5	8'-0"	W12	14	0	6'-0"	2'-0"	0	0			2'-3"				
188	4	#9	9'-6"	W12	14	0	6'-6"	2'-0"	0	0			3'-1"				
186																	
187																	
188																	
189																	
190																	



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present (Numbers)
¼"	#2
⅜"	#3
½"	#4
⅝"	#5
¾"	#6
⅞"	#7
1"	#8
1⅛"	#9
1¼"	#10
1⅜"	#11

* Denotes one bar added for testing.

8. Bar reinforcement metal shall conform to the requirements of the Standard Specifications for new Billet-Steel Concrete Reinforcement Bars (Intermediate Grade) Serial Designation AASHO, M31-48 or its latest revision. All bars shall be deformed to conform with A.S.T.M. Specifications A305-49.

ESTIMATED QUANTITIES - (NEAT)

FINAL	Location	Pounds
11,665 ✓	SPAN #1 WB	11665
15,106 ✓	SPAN #2 WB	15285
9,893 ✓	SPAN #3 WB	9536
15,484 ✓	SPAN #1 EB	15484
17,024 ✓	SPAN #2 EB	17203
9,893 ✓	SPAN #3 EB	9536
19,065 ✓	PIER #1 WB	19070
18,595 ✓	PIER #2 WB	18600
19,605 ✓	PIER #1 EB	19605
19,220 ✓	PIER #2 EB	18963
2,679 ✓	EAST ABUT WB	2647
2,640 ✓	WEST ABUT WB	2608
2,593 ✓	EAST ABUT EB	2606
2,553 ✓	WEST ABUT EB	2523
192,934 ✓	TOTAL	165,291

IM 089-2(26)
This sheet for information only

BR 43 N & S

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the towns of BERLIN - MONTPELIER - MIDDLESEX

OVERPASS STA 314+00 STRUCT. #4

BAR SCHEDULE

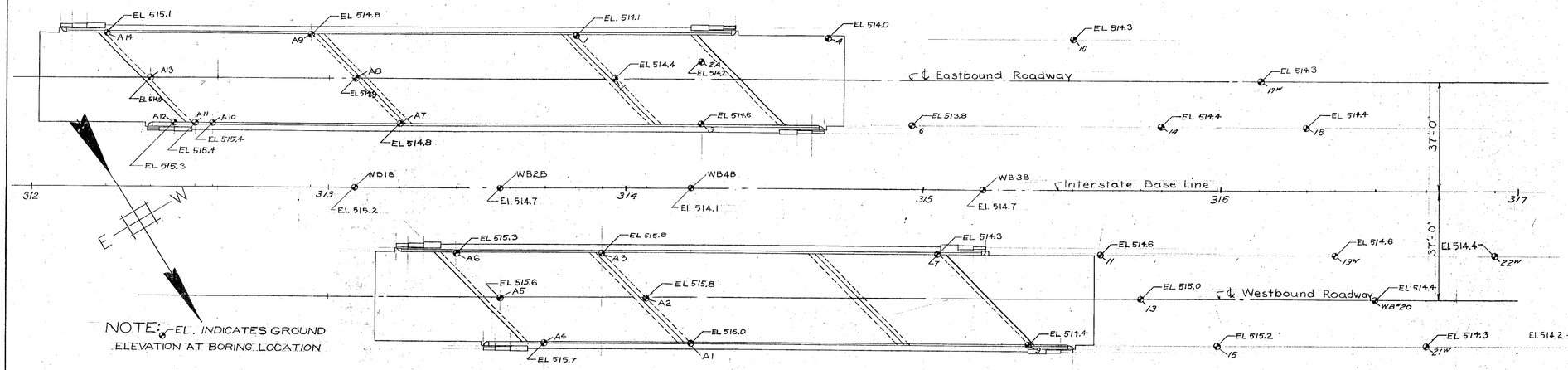
BOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
RIDGEFIELD PARK, N.J.

SURVEYED BY	CHECKED BY	SCALE
DRAWN BY PKB	IN CHARGE K.A.	DATE AUG. 1957

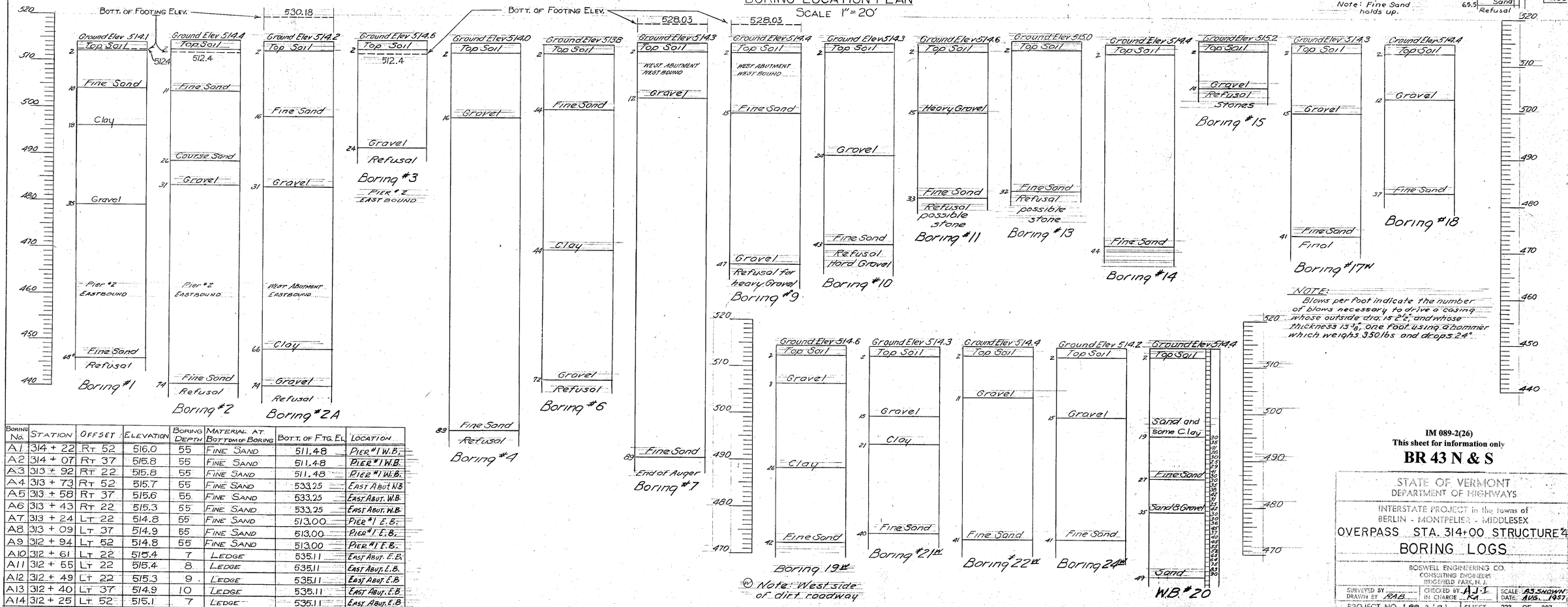
PROJECT NO. I 89-1(3)4 | SHEET 222 OF 307

PRINTED BY STAULINO-MOSS CO., BOSTON, MASS., RE-ORDER NO. D-822

FED. ROAD DIV. No.	STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
	VERMONT	I 902-2(1)	144	800



BORING LOCATION PLAN
SCALE 1" = 20'



NOTE:
Blows per foot indicate the number of blows necessary to drive a casing whose outside dia. is 2'2", and whose thickness is 3/8", one foot using a hammer which weighs 350 lbs and drops 24".

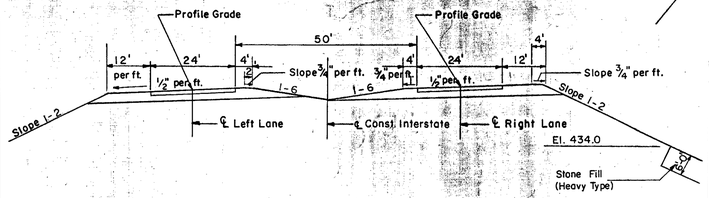
Boring No.	Station	Offset	Elevation	Boring Depth	Material at Bottom of Boring	Bott. of Ftg. El.	Location
A1	314 + 22	Rt 52	516.0	55	Fine Sand	511.48	Pier #1 W.B.
A2	314 + 07	Rt 37	515.8	55	Fine Sand	511.48	Pier #1 W.B.
A3	313 + 92	Rt 22	515.8	55	Fine Sand	511.48	Pier #1 W.B.
A4	313 + 73	Rt 52	515.7	55	Fine Sand	533.25	East Abut N.B.
A5	313 + 58	Rt 37	515.6	55	Fine Sand	533.25	East Abut. W.B.
A6	313 + 43	Rt 22	515.3	55	Fine Sand	533.25	East Abut. W.B.
A7	313 + 24	Lt 22	514.8	55	Fine Sand	513.00	Pier #1 E.B.
A8	313 + 09	Lt 37	514.9	55	Fine Sand	513.00	Pier #1 E.B.
A9	312 + 94	Lt 52	514.8	55	Fine Sand	513.00	Pier #1 E.B.
A10	312 + 61	Lt 22	515.4	7	Ledge	535.11	East Abut. E.B.
A11	312 + 55	Lt 22	515.4	8	Ledge	535.11	East Abut. E.B.
A12	312 + 49	Lt 22	515.3	9	Ledge	535.11	East Abut. E.B.
A13	312 + 40	Lt 37	514.9	10	Ledge	535.11	East Abut. E.B.
A14	312 + 25	Lt 52	515.1	7	Ledge	535.11	East Abut. E.B.

IM 089-2(26)
This sheet for information only
BR 43 N & S

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the Towns of
BERLIN - MONTPELIER - MIDDLESEX
OVERPASS STA. 314+00 STRUCTURE 4
BORING LOGS
BOSWELL ENGINEERING CO.
CONSULTING ENGINEERS
SPRINGFIELD PARK, N.J.

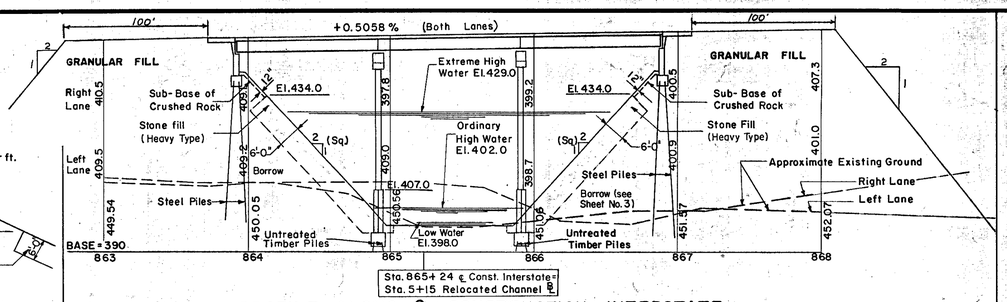
SURVEYED BY		CHECKED BY A.J.L.	SCALE AS SHOWN
DRAWN BY RAB		IN CHARGE K.A.	DATE AUG. 1957

PROJECT NO. I 89-2-(3) | SHEET 223 OF 307



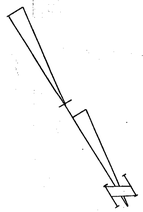
NEW HIGHWAY SECT. STA. 863+00 TO STA. 868+00

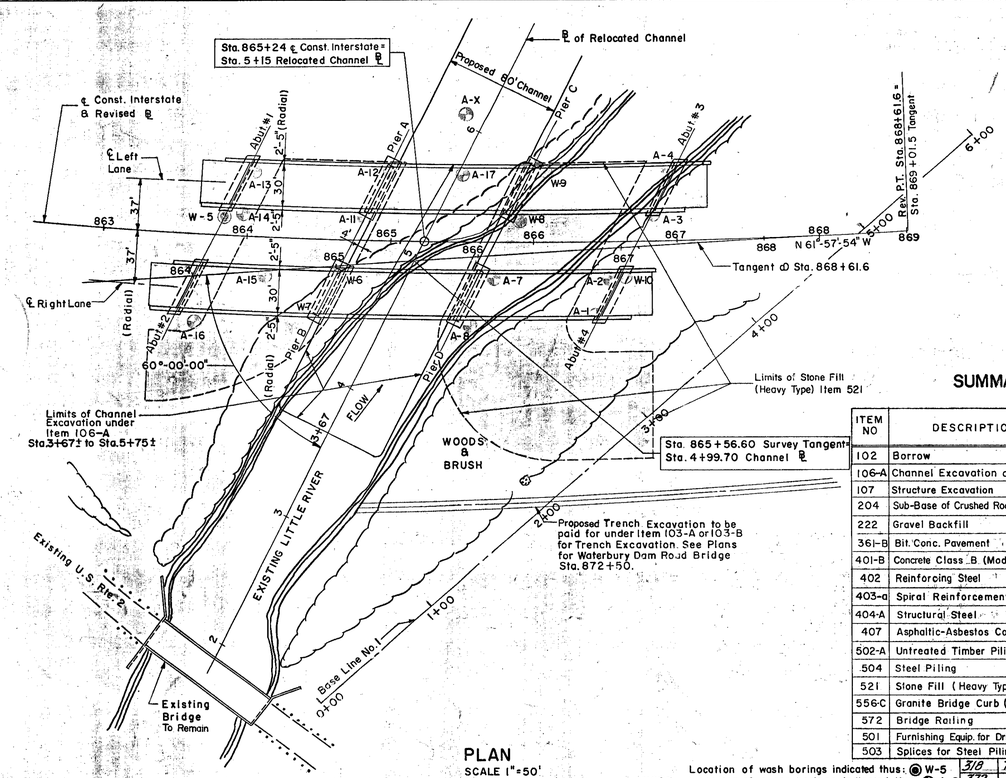
SCALE 1" = 20'



PROFILE ALONG ℄ CONSTRUCTION INTERSTATE

SCALE Hor. 1" = 50'
Vert. 1" = 20'





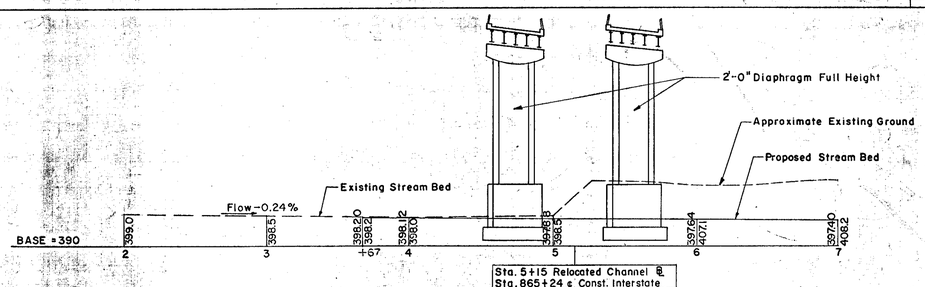
PLAN

SCALE 1" = 50'

Location of wash borings indicated thus: ◉ W-5
NOTE - Location of auger borings indicated thus ✪ A-6

SUMMARY OF QUANTITIES

ITEM NO	DESCRIPTION	UNIT	NET	OVER-RUN	TOTAL	FINAL
102	Borrow	C.Y.	16,000 ✓	~~1,600~~ =	~~17,600~~ =	16,000 ✓
106-A	Channel Excavation of Earth	C.Y.	~~5,000~~ =	~~500~~ =	~~5,500~~ =	3,668 ✓
107	Structure Excavation	C.Y.	~~620~~ =	~~60~~ =	~~680~~ =	334 ✓
204	Sub-Base of Crushed Rock (Mod.)	C.Y.	~~122~~ =	~~18~~ =	~~140~~ =	181 ✓
222	Gravel Backfill	C.Y.	~~182~~ =	~~48~~ =	~~230~~ =	166 ✓
361-B	Bit. Conc. Pavement	TONS	~~265~~ =	~~40~~ =	~~305~~ =	328 ✓
401-B	Concrete Class B (Mod.)	C.Y.	~~2112~~ =	~~105~~ =	~~2217~~ =	2,173 ✓
402	Reinforcing Steel	L.B.S.	~~249173~~	–	~~249173~~ =	248,690 ✓
403-a	Spiral Reinforcement (5,300 LB)	L.S.	1 ✓	–	1 ✓	1 ✓
404-A	Structural Steel	L.B.S.	~~136,500~~	-22,370 =	~~159,230~~ =	131,753 ✓
407	Asphaltic-Asbestos Coating	S.Y.	~~115~~ =	–	~~115~~ =	112 ✓
502-A	Untreated Timber Piling	L.F.	~~10080~~	–	~~10080~~ =	9,692 ✓
504	Steel Piling	L.F.	~~4760~~ =	–	~~4760~~ =	3,516 ✓
521	Stone Fill (Heavy Type)	C.Y.	~~9945~~ =	~~1485~~ =	~~11,430~~ =	7,835 ✓
556-C	Granite Bridge Curb (Type I)	L.F.	1307 ✓	–	1307 ✓	1,307 ✓
572	Bridge Railing	L.F.	1169 ✓	–	1169 ✓	1,169 ✓
501	Furnishing Equip. for Driving Piles		Required			13 L.S. ✓
503	Splices for Steel Piling	Each	~~14~~ =		~~14~~ =	1 ✓
318	Tar Emulsion for Bridge Floors	gal.	0			763 ✓
372	Joint Sealer, Hot Poured Elastic Type	L.F.	0			266 ✓



PROFILE OF PROPOSED STREAM CHANNEL

Hor. 1" = 50'
SCALE:
Vert. 1" = 20'

HIGHWAY NO 1-89	NAME OF HIGHWAY Interstate	B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
STRUCTURE NO. 15	COUNTY Washington TOWN Waterbury	1	VT.	1-89-2(7)	79	220
PROJECT NO 1-89-2(7)	LOCATION Sta. 865+24					

EXISTING STRUCTURE

1. RATED LOADING OF EXISTING STRUCTURE
2. TYPE OF EXISTING STRUCTURE
3. UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE
4. WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE — COST OF REMOVAL
5. SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE
6. SHOULD NEW TEMPORARY STRUCTURE BE BUILT
7. ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE — WATERWAY TO ORDINARY H.W.
8. EXTREME HIGH WATER AT EXISTING STRUCTURE
9. SPAN OF EXISTING BRIDGE UPSTREAM — WATERWAY TO EXTREME H.W.
   SPAN OF EXISTING BRIDGE DOWNSTREAM — WATERWAY TO EXTREME H.W.
10. TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS
11. DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE
12. IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED
13. ADDITIONAL WATERWAY AREA PROVIDED

NEW STRUCTURE

1. RECOMMENDED TYPE OF STRUCTURE 3 Span Composite Steel Stringer Bridge
2. RECOMMENDED CLEAR SPAN OR SPANS
   MEASURED PARALLEL TO ℄ NEW HIGHWAY 97'-97'-97'
   MEASURED AT RIGHT ANGLES TO ℄ STREAM
3. ARE THERE OBJECTIONS TO A PIER IN THE STREAM ANSWER YES OR NO No
4. ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE 402.0
5. EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE 429.0 SOURCE OF INFORMATION
6. IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE Yes
7. DOES STREAM REACH ITS MAXIMUM HIGHWATER ELEVATION RAPIDLY No IS ORDINARY RISE RAPID
8. LOW WATER ELEVATION AT NEW STRUCTURE 398.0
9. DRAINAGE AREA IN ACRES ABOVE STRUCTURE 70,000 CHARACTER OF TERRAIN Mountainous
10. IS STREAM EVER DRY
11. VELOCITY OF STREAM AT HIGH WATER STAGE 2.6 f.p.s. ESTIMATED DISCHARGE 12,000 c.f.s.
12. AREA FULL OPENING — AREA BELOW ORDINARY H.W. 450 s.f.
13. CHARACTER OF SCOUR — DRIFT Medium ICE Medium
14. ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE
15. VERTICAL CLEARANCE ABOVE FLOOD ELEVATION
16. ARE SIDEWALKS REQUIRED, IF SO ON WHAT SIDE No BOTH SIDES
17. RECOMMENDED TYPE OF PAVEMENT 2" Bituminous Conc. Pavement
18. TRAFFIC TO BE MAINTAINED UNDER ITEM NO. None ONE OR TWO WAYS PROBABLE COST
19. PROBABLE COST OF CLEARING AND GRUBBING STREAM CHANNEL AT STRUCTURE SITE
20. SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES
21. ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS — SHOULD PILES BE USED — EST. LGTH.

FOUNDATION INFORMATION

OBTAINED FOR DESIGN PURPOSES ONLY, THE STATE ASSUMES NO RESPONSIBILITY WHATSOEVER FOR THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN. BOULDERS MAY BE ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION. For Boring Logs, See Sheet 2

GENERAL NOTES

DESIGN SPECIFICATIONS
AASHO 1957 Edition, and as modified by Vermont Dept. of Highways.

LIVE LOAD:
H20-S16-44 and Military Loading

DESIGN STRESSES
Structural Steel fs = 18,000 p.s.i
Reinforcing Steel fs = 20,000 p.s.i
Concrete fc = 1,200 f'c = 3,000 p.s.i.

SUPERSTRUCTURE:
Separate structure for each lane
30' Roadway, 1'-6" SafetyWalks, as per SCB-30-56
3 Simple spans, rolled beams, composite designs as per SCB-30-56 (3@97'-0")
Aluminum bridge railing, or galvanized bridge railing, and granite bridge curb as per SB-56-57.(182)
Bearings and diaphram connections as per SB-20-56 (as mod.)
Approach Slabs as per SB-AS-30° Skew-57.

SUBSTRUCTURE:
Piers: Square columns spaced 20'-0" ac.
2'-0" Diaphram Wall as shown, continuous footings.
Stub abutments.

FOUNDATIONS:
Abutments - Steel Piles
Piers - Untreated Timber Piles

IM 089-2(26)
This sheet for information only

BR 48 N & S

CONTRACT NO. 1

LIST OF SHEETS

SHEET NO.	DESCRIPTION
79	GENERAL PLAN
80	BORING LOGS
81	PLAN AND ELEVATION
82	ABUTMENTS NO. 1 AND NO. 2
83	ABUTMENTS NO. 3 AND NO. 4
84	WINGWALLS
85	APPROACH SLABS
86	PIERS A AND B
87	PIERS C AND D
88	STRUCTURAL STEEL PLAN
89	STRUCTURAL DETAILS
90	REINFORCING SCHEDULE
91	REINFORCING SCHEDULE
28 — 29	HIGHWAY'S PLAN & PROFILE
144 — 148	INTERSTATE CROSS SECTION
207 — 220	CHANNEL CROSS SECTION
78	SB-22-58
73 — 74	SB-56-57 (182)
75	SB-AS-30° Skew-57
77	SB-20-56
69 — 70	SCB-30-56 (182)

GENERAL PLAN

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

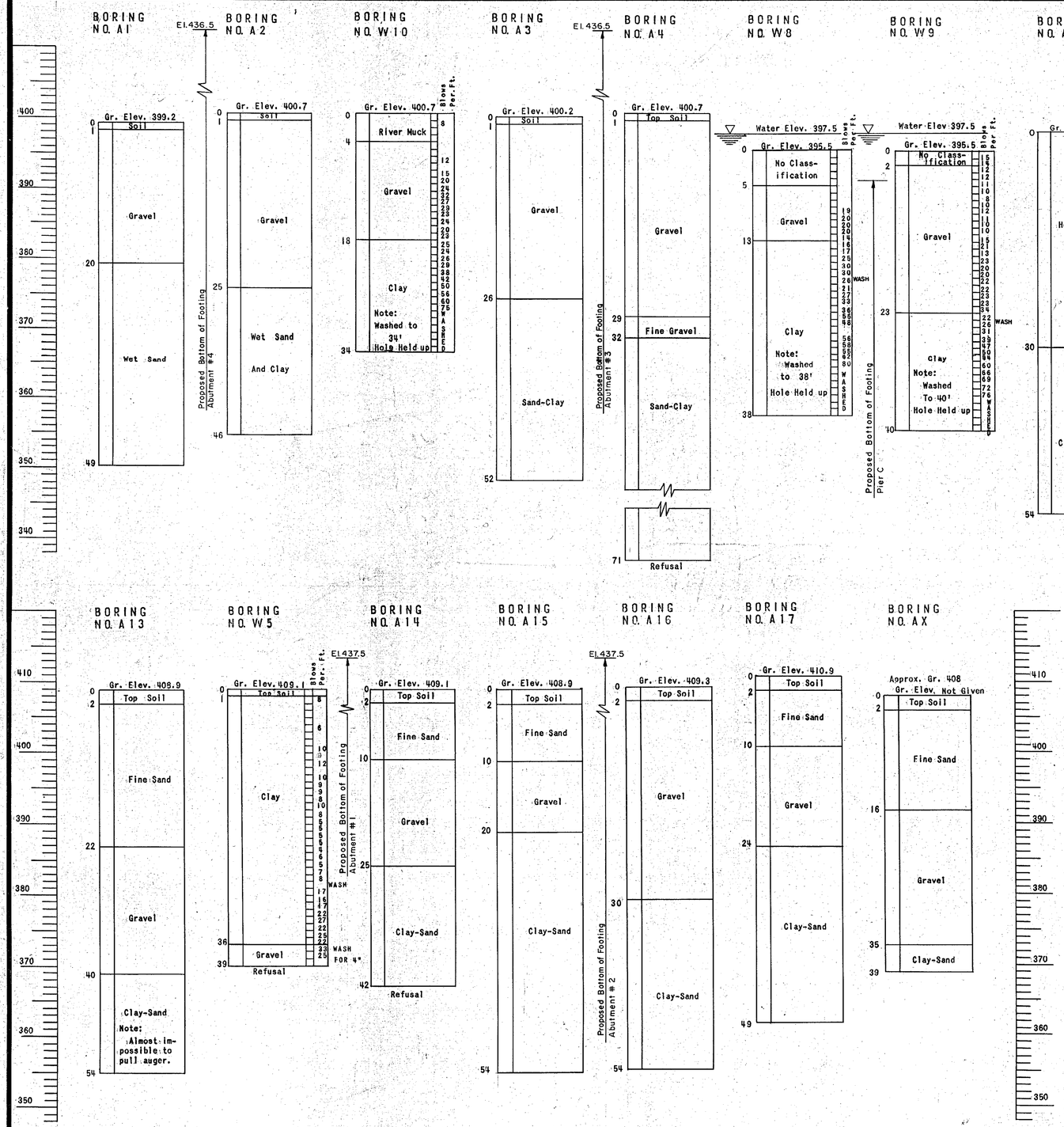
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 865+24
OVER
LITTLE RIVER STA. 5+15

APPROVED BY Wm. A. Henderson DATE 12-16-58

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	CHECKED BY B.K.&J.B.	SCALE AS NOTED
DRAWN BY J.K.	IN CHARGE J.V.B.	DATE 8-20-57

PROJECT NO. 1-89-2(7) SHEET 224 OF 307



B. R. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	1-89-2(7)	80	220

BORING LOG

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

Note: Auger borings prefixed with letter "A"
Wash borings prefixed with letter "W"
For wash borings:
Weight of hammer = 350#
Drop of hammer = 24"
Diameter of Casing = $2\frac{1}{2}$"
Thickness of Casing = $\frac{3}{8}$"

For Location of Borings, See Sheet 1

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

BORING LOG

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 865 + 24
OVER
LITTLE RIVER STA. 5 + 15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASS.

SURVEYED BY: DRAWN BY: R.J.F.	CHECKED BY: S.K.B & J.B. IN CHARGE: J.V.B.	SCALE: AS SHOWN DATE: 8-20-57

PROJECT NO. I-89-2(7) SHEET 225 OF 307

B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	61	426

CURVE DATA
Δ = 35°-04'-00" Lt.
D = 1°-20'-00"
R = 4297.28'
T = 1357.7'
L = 2630.0'
E = 209.4'
Bank ½" Per Ft.

Channel Stationing

298'-3"
98'-3 7/16"
99'-4 15/16"
98'-4"

℄ Bearing Abutment No. 1
℄ Pier A
℄ Relocated Channel
℄ Pier C
℄ Bearing Abutment No. 3
Measured along ℄ Left Lane

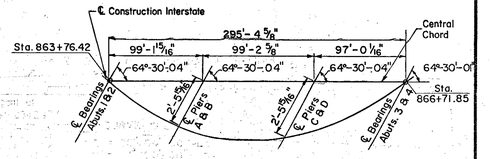
Begin Bridge Sta. 863+91.59 Finished Grade El. 450.01
Scupper
Face of Coping
Face of Curb
Sta. 865+92.11 Fin. Grade 451.03
℄ Left Lane
End of Bridge Sta. 866+92.41 Finished Grade El. 451.53
Proposed 80' Channel
Sta. 864+91.81 Fin. Grade 450.51
For Details of Expansion Joints over Piers and at Abutments, see Standard Sheet No. SB-22-58.
Sta. 865+24 ℄ Const. Interstate = Sta. 5+15 Relocated Channel ℄
64°-30'-04" (Tg Tangent)
℄ Construction Interstate & Revised ℄
Tangent at Sta. 865+24
Sta. 863+76.42
Sta. 864+74.53
Sta. 865+73.75
Sta. 866+71.85
99'-1 15/16"
49'-7 5/16"
49'-7 5/16"
97'-0 1/16"
64°-30'-04"
5+00
30'-0" Radial
37'-0" Radial
15'-0"
34'-10"
2'-5"
40'-4 4/16"
40'-9 11/16"
41'-3 7/16"
41'-9"
2'-9 3/4"
3 3/16"
2'-9 5/8"

Begin Bridge Sta. 863+59.31 Finished Grade El. 449.84
Sta. 865+55.74 Fin. Grade 450.84
Sta. 864+57.57 Fin. Grade 450.34
40'-8 13/16"
41'-2 3/16"
41'-7 7/8"
Face of Coping
Face of Curb
℄ Right Lane
End of Bridge Sta. 866+53.93 Finished Grade El. 451.34
℄ Bearing Abutment No. 2
℄ Pier B
1" Cork or Premoulded Expansion Material (Typical at all Piers)
℄ Pier D
℄ Bearing Abutment No. 4
½" Expansion Material (Typical at all End Posts)
97'-11 5/16"
99'-0 1/4"
97'-10 15/16"
297'-1"
Measured along ℄ Right Lane

PLAN

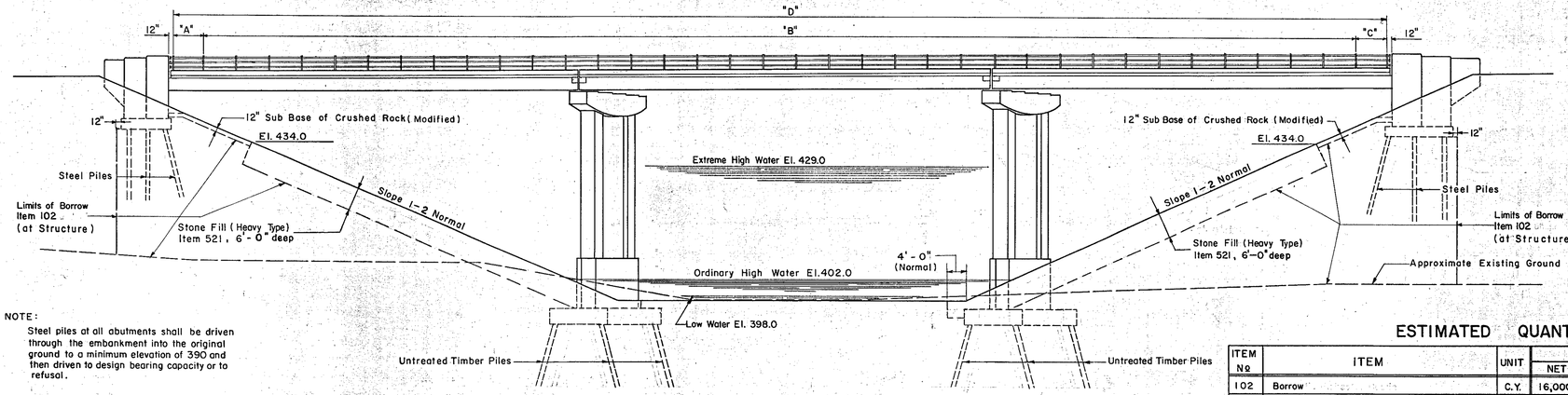
Scale: 1/16" = 1'-0"

Note: All stationing refers to ℄ Construction Interstate



CHORD LAYOUT

Not To Scale



NOTE:
Steel piles at all abutments shall be driven through the embankment into the original ground to a minimum elevation of 390 and then driven to design bearing capacity or to refusal.

NORTHERLY ELEVATION
SOUTHERLY ELEVATION (SIMILAR)

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

		A	B	C	D
Left Lane	South	6'-9 11/16"	39 @ 7'-1 ½" = 277'-10½"	6'-9 11/16"	291'-5 7/8"
	North	6'-11 1/4"	39 @ 7'-1 ¼" = 277'-0 3/4"	6'-11 1/8"	290'-11 1/8"
Right Lane	South	7'-0 7/16"	39 @ 7'-1" = 276'-3"	7'-0 3/16"	290'-4"
	North	6'-9 3/8"	39 @ 7'-1" = 276'-3"	6'-9 3/8"	289'-9 3/4"

RAILING POST SPACING SCHEDULE

Note: 1. All dimensions are horizontal dimensions.
2. Railing Posts to be set normal to grade, Omit set screw at upgrade end of panel over Pier Expansion Joints.
3. For Bridge Marker, see Std. Sheet SB-20-56 (Detail A)
4. For Scupper Layout See Framing Plan, Sheet No. 10

ESTIMATED QUANTITIES

ITEM No	ITEM	UNIT	NET	OVER-RUN	TOTAL	FINAL
102	Borrow	C.Y.	16,000 ✓	~~1600~~	~~17,600~~	16,000
521	Stone Fill (Heavy Type)	C.Y.	~~9945~~	~~1485~~	~~11,430~~	7835
556-C	Granite Bridge Curb (Type I)	L.F.	1307 ✓		1307 ✓	1307
572	Bridge Railing	L.F.	1169 ✓		1169 ✓	1169

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

PLAN AND ELEVATION

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

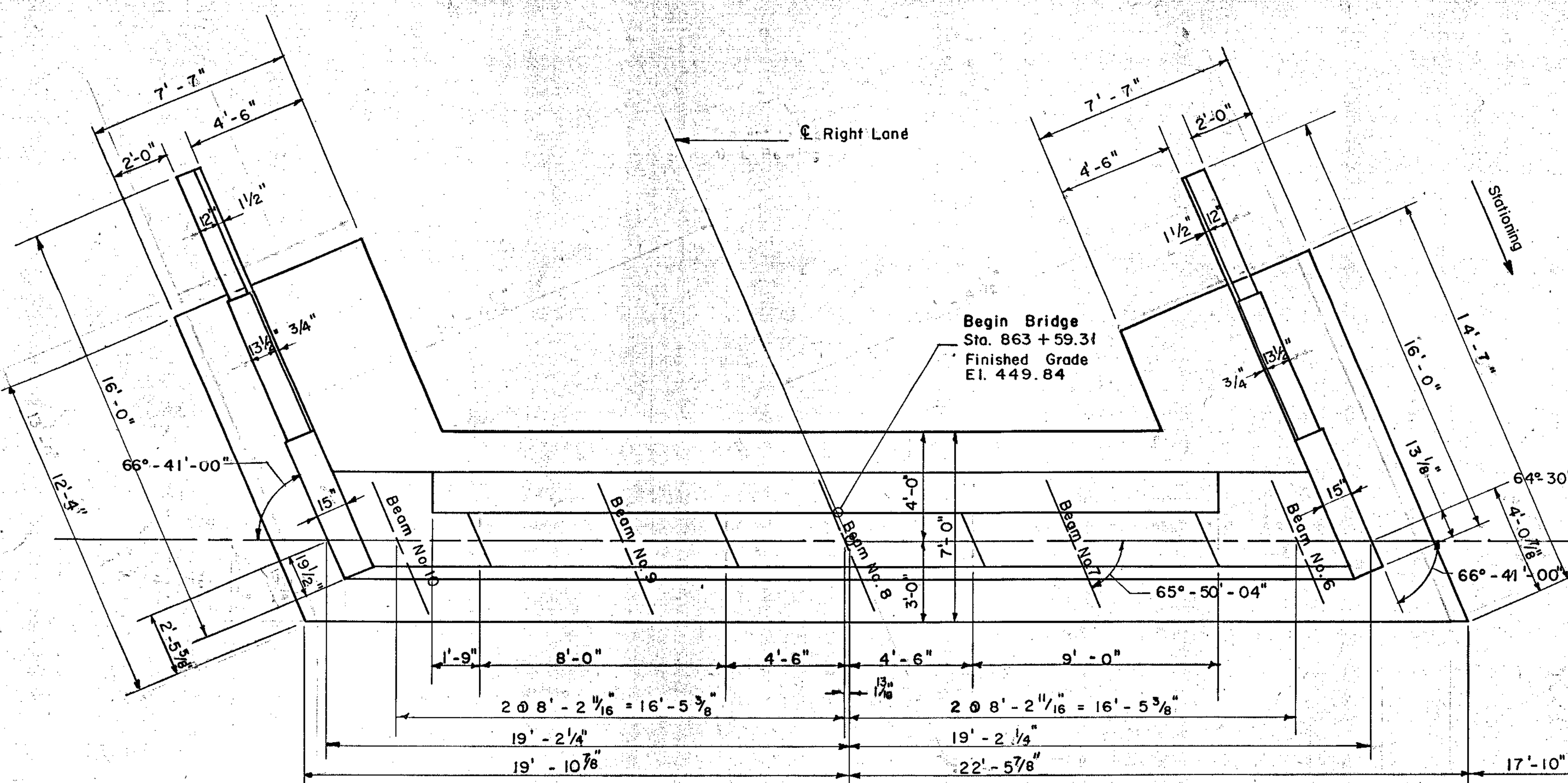
INTERSTATE STA. 865 + 24
OVER
LITTLE RIVER STA. 5 + 15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY:	CHECKED BY: B.K. & J.B.	SCALE: AS NOTED
DRAWN BY: R.E.M. J.R.W.	IN CHARGE: J.V.B.	DATE: 6-20-57

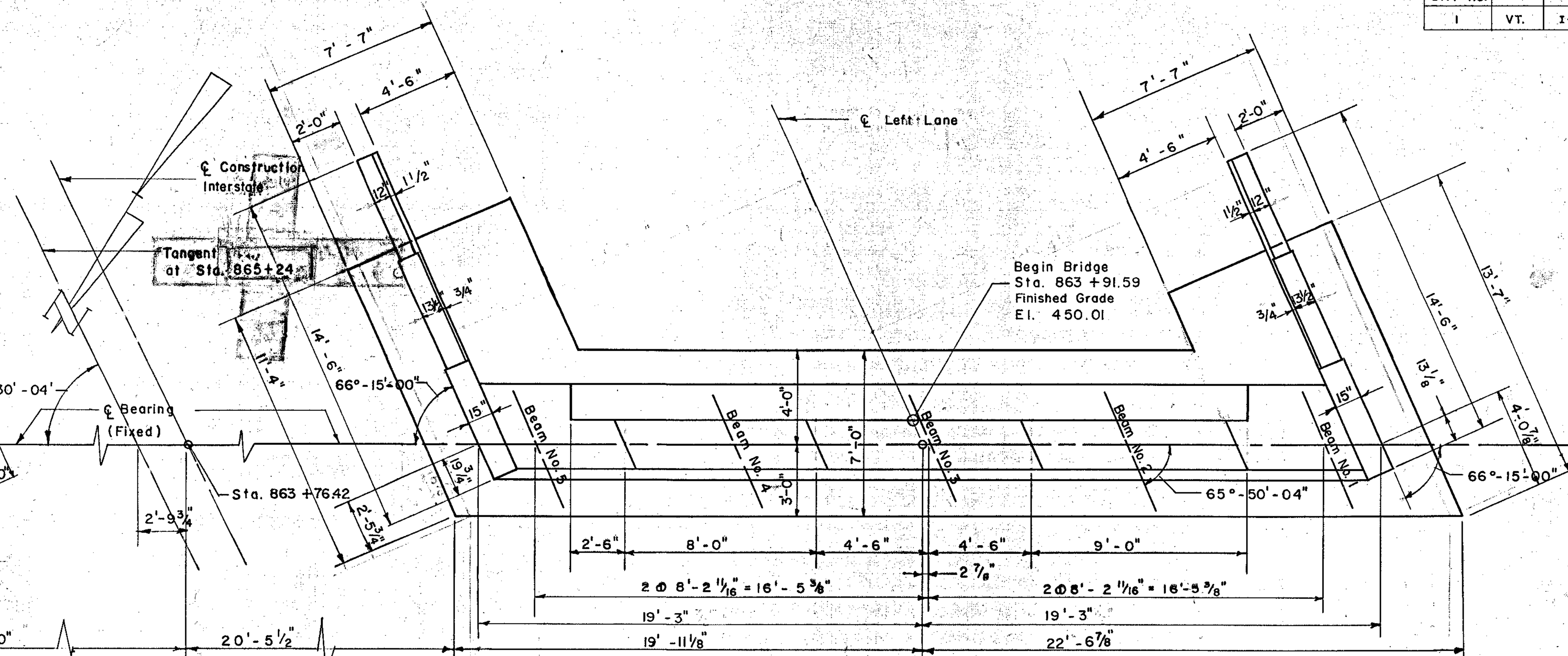
PROJECT NO. I-89-2(7) SHEET 226 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	82	220



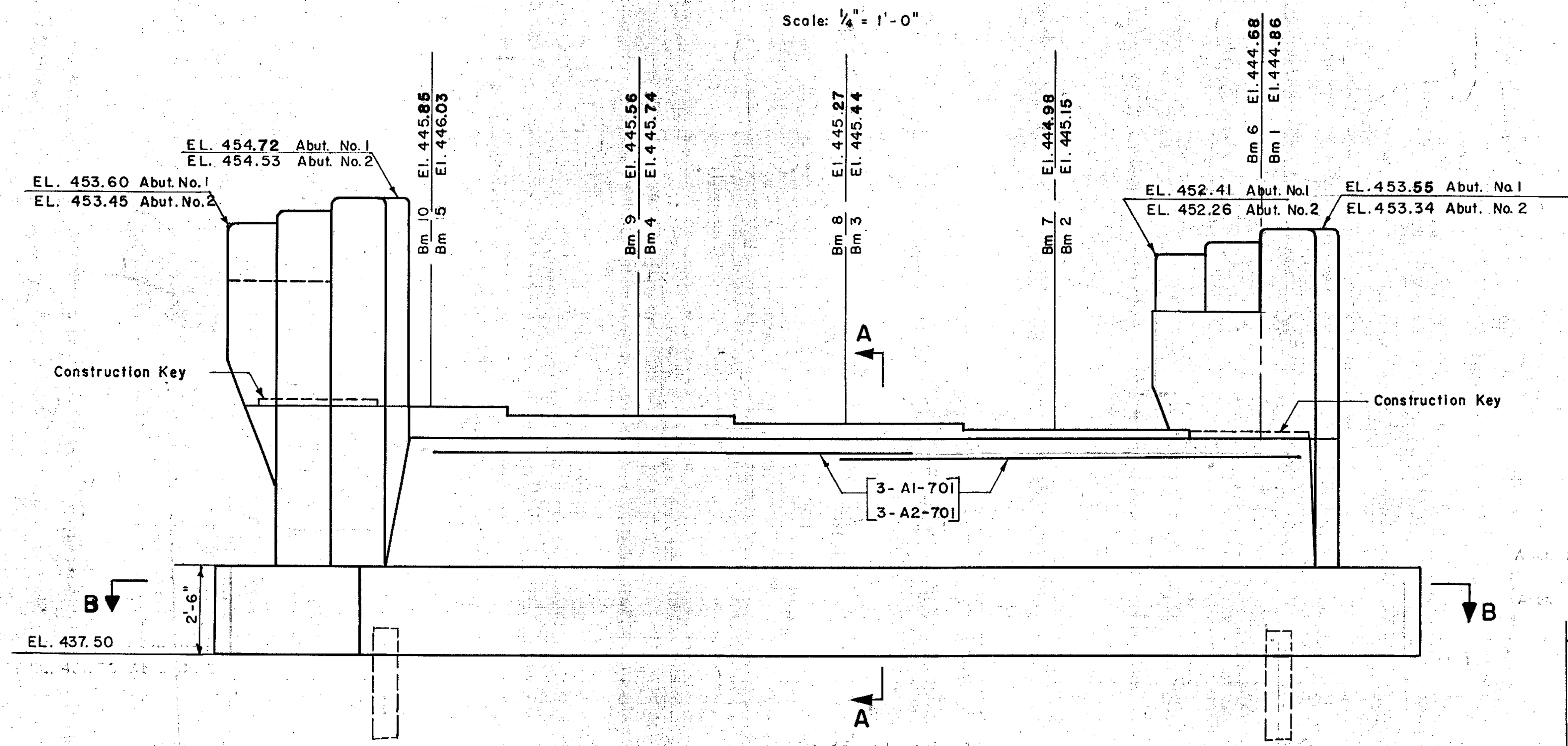
ABUTMENT NO. 2

Scale: 1/4" = 1'-0"



ABUTMENT NO. 1

Scale: 1/4" = 1'-0"

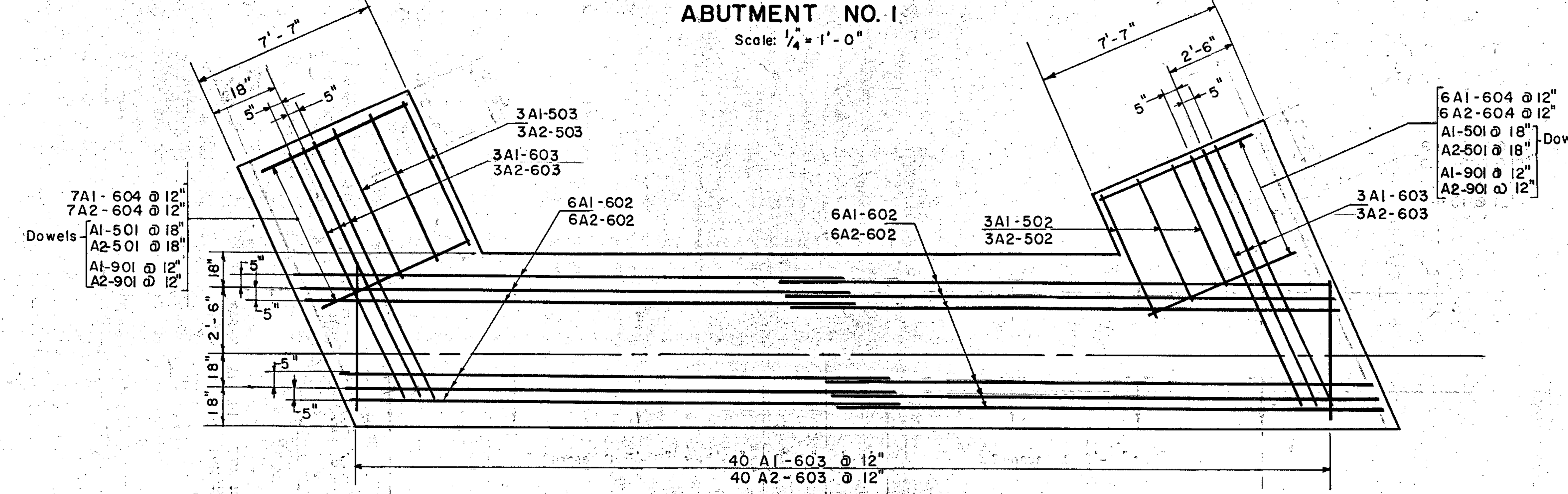


ELEVATION ABUTMENT NO. 2

ELEVATION ABUTMENT NO. 1 (SIMILAR EXCEPT AS NOTED)

Scale: 1/4" = 1'-0"

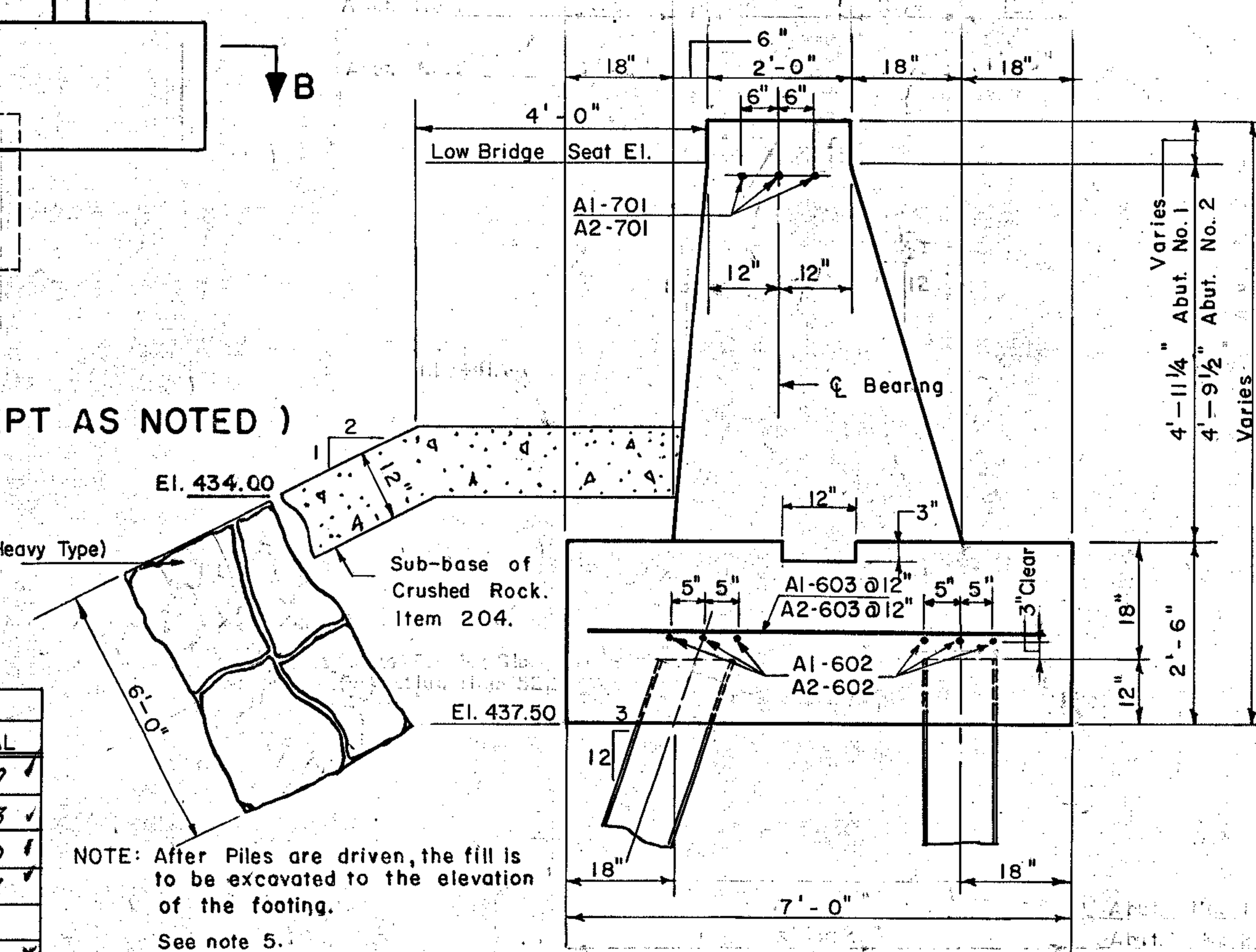
NOTE: See Sheet No. 6 For Wingwall Section
Bars in Abutment No. 1 to be marked A1
Bars in Abutment No. 2 to be marked A2



SECTION B-B

SCALE: 1/4" = 1'-0"

NOTE: See Sheet No. 6 For Dowels in Wingwall Footings

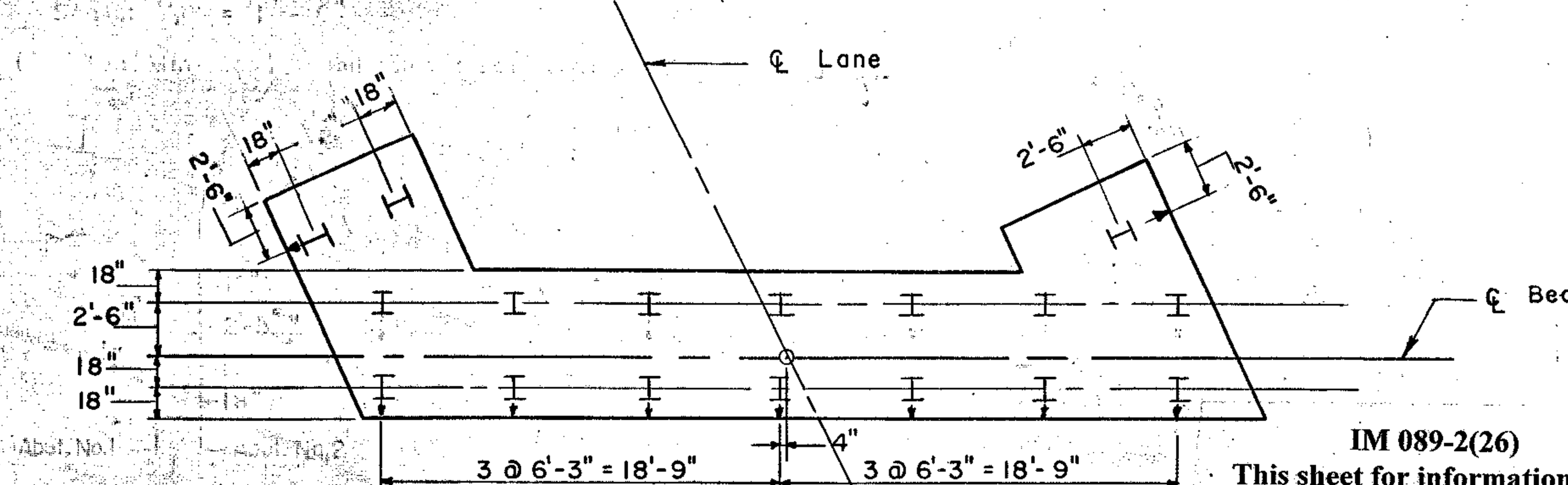


NOTE: After Piles are driven, the fill is to be excavated to the elevation of the footing.
See note 5.

SECTION A-A

Scale: 1/2" = 1'-0"

Note: See Sheet No. 6 for Limits of Gravel Backfill



PILE PLAN ABUTMENT NO. 1 & NO. 2

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

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	ABUTMENT NO. 1				ABUTMENT NO. 2			
			NET	OVER-RUN	TOTAL	FINAL	NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	~~19~~	~~2~~	~~21~~	18	19 ✓	~~2~~	~~21~~	19
204	Sub-base of Crushed Rock (Mod)	C.Y.	~~32~~	~~5~~	~~37~~	52	~~32~~	~~5~~	~~37~~	53
222	Gravel Backfill	C.Y.	~~37~~	~~10~~	~~47~~	30	~~37~~	~~10~~	~~47~~	30
401-B	Concrete Class B (Mod.)	C.Y.	~~70~~	~~4~~	~~74~~	72	~~73~~	~~4~~	~~77~~	74
402	Reinforcing Steel	LBS	See Reinforcing Steel Schedule Sheet No. 12							
407	Asphaltic-Asbestos Coating	S.Y.	8 ✓	~~0~~	8 ✓	8	8 ✓	~~0~~	8 ✓	8
504	Steel Piling	L.F.	~~1190~~		~~1190~~	858	~~1190~~		~~1190~~	886

NOTES:
1. Steel Piles to be 10BP42. 35 Ton Design Load. Indicated thus Vertical I, Battered I.
2. For Estimating purposes, the Length of Steel Piles is assumed to be 70'.
3. Slope all bridge seats 1/4" per ft.
4. Entire exposed surface of the Bridge Seat to be covered with 1/2" Asphaltic-Asbestos coating after superstructure is in place.
5. Prior to driving the piles, rock-free fill shall be placed under the abutment area to approximately the level of the pile cutoff elevation, and with a surface area at least (2) two feet outside the abutment.
6. A layer of Sub Base of Crushed Rock (Mod.) item 204, one (1) foot thick shall be placed 21 feet in front of the Abutments. The edges of the area to be in line with the outside of the end posts and parallel to the centerline of the roadway.
7. Stone Fill (Heavy Type) Item 521 shall be placed 96 feet in front of the Abutments to the limits shown on the Plan of Sheet No. 1.

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

ABUTMENTS NO. 1 AND NO. 2

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of
WATERBURY

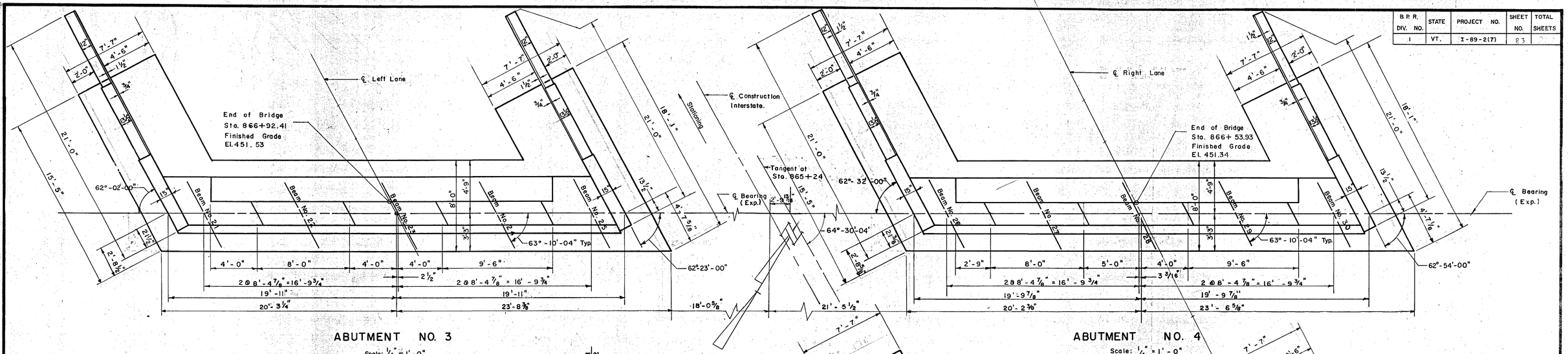
INTERSTATE STA. 865+24
OVER
LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY DRAWN BY B.S.S.	CHECKED BY B.K. & J.B. IN CHARGE J.V.B.	SCALE AS NOTED DATE 8-20-57

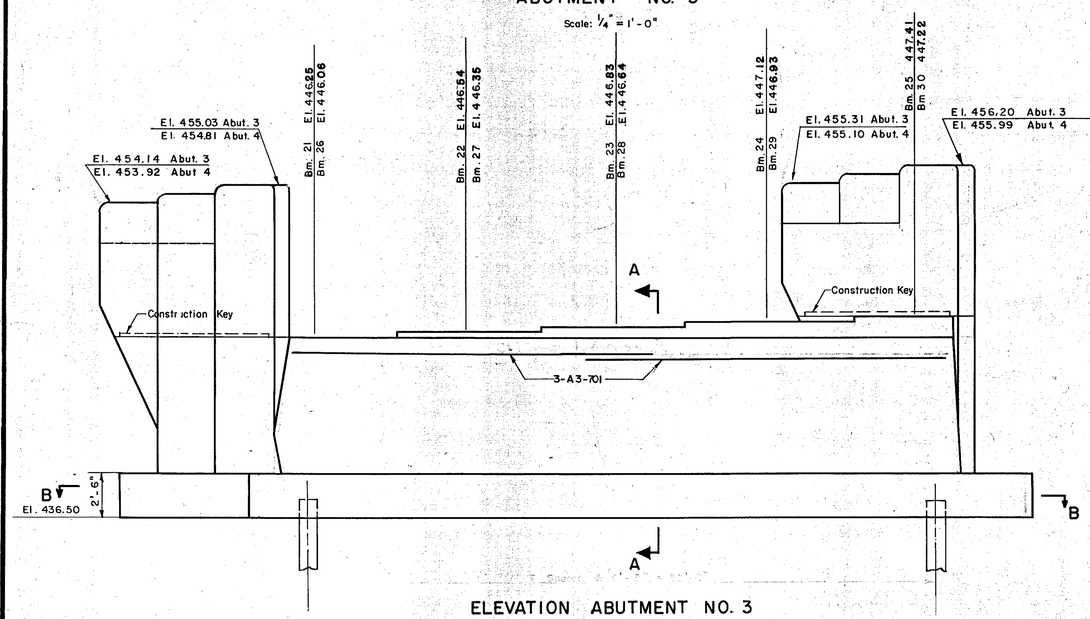
PROJECT NO. I-89-2(7) SHEET 227 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	83	



ABUTMENT NO. 3

Scale: 1/4" = 1'-0"



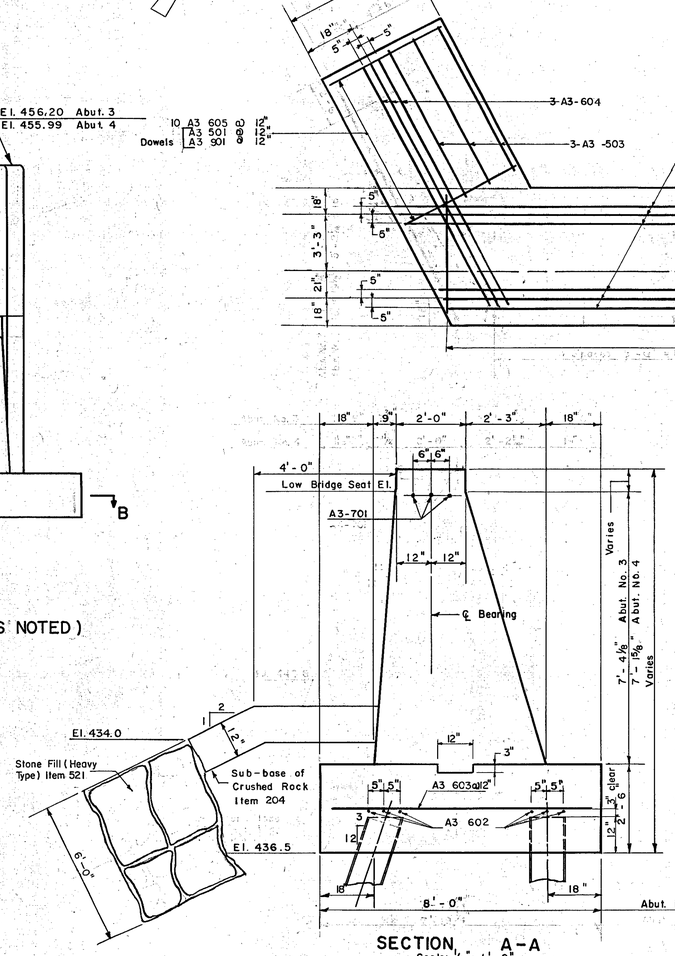
ELEVATION ABUTMENT NO. 3
ELEVATION ABUTMENT NO. 4 (SIMILAR, EXCEPT AS NOTED)

Scale: 1/4" = 1'-0"

Note: See Sheet No. 6 for Wingwall Section.

ESTIMATED QUANTITIES

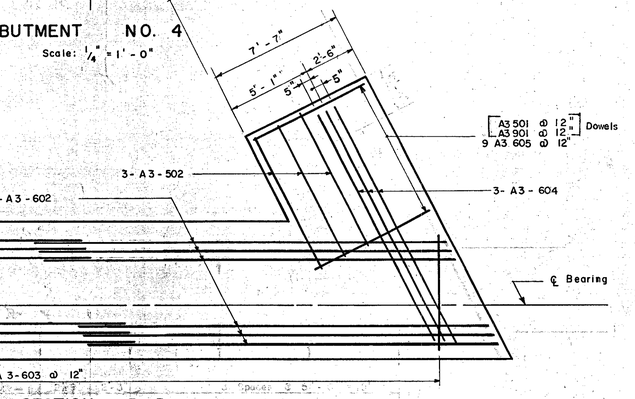
ITEM NO.	DESCRIPTION	UNIT	ABUTMENT NO. 3 NET	OVER-RUN	TOTAL	FINAL	ABUTMENT NO. 4 NET	OVER-RUN	TOTAL	FINAL
107	Structural Excavation	C.Y.	23 ✓	~~2~~	~~25~~	23 ✓	23 ✓	~~2~~	~~25~~	23 ✓
204	Sub-base of Crushed Rock (Mod.)	C.Y.	~~29~~	~~4~~	~~33~~	38 ✓	~~29~~	~~4~~	~~33~~	38 ✓
212	Gravel Backfill	C.Y.	~~55~~	~~14~~	~~69~~	48 ✓	~~53~~	~~14~~	~~67~~	47 ✓
402-B	Concrete, Class "B" (Mod.)	C.Y.	~~107~~	~~5~~	~~112~~	109 ✓	~~104~~	~~5~~	~~109~~	107 ✓
412	Reinforcing Steel	LBS	See Reinforcing Schedule, Sheet No. 12							
407	Asphaltic-Asbestos Coating	SY.	8 ✓	~~0~~	8 ✓	8 ✓	8 ✓	~~0~~	8 ✓	8 ✓
504	Steel Piling	LF.	~~190~~		~~190~~	859 ✓	~~190~~		~~190~~	913 ✓



SECTION A-A

Scale: 1/2" = 1'-0"

Note: See Sheet No. 6 for Limits of Gravel Backfill.



SECTION B-B

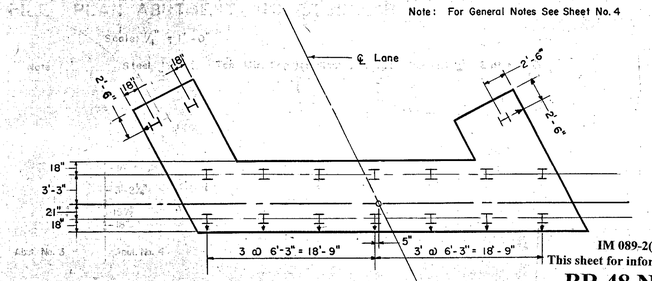
Scale: 1/4" = 1'-0"

Note: See Sheet No. 6 for dowels in Wingwall Section.

ABUTMENT NO. 4

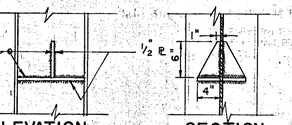
Scale: 1/4" = 1'-0"

Note: For General Notes See Sheet No. 4



PILE PLAN ABUTMENT NO. 4
PILE PLAN ABUTMENT NO. 3 (SIMILAR, EXCEPT AS NOTED)

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



Abut. No. 3 DETAIL OF CORE STOPPER FOR PILING

Scale: 1" = 1'-0"

Note: Core Stoppers to be used if so designated by the Engineer at the time of driving the piling.

Payment for Core Stoppers, if used, shall be included under Item No. 504, "Steel Piling."

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

ABUTMENTS NO. 3 AND NO. 4

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

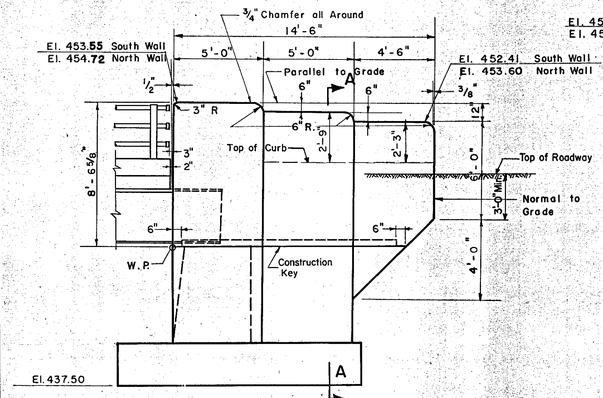
INTERSTATE STA. 865+24
OVER
LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	DRAWN BY B.S.S.	CHECKED BY B.K.&J.B.	IN CHARGE J.V.B.	SCALE AS NOTED	DATE 8-20-57

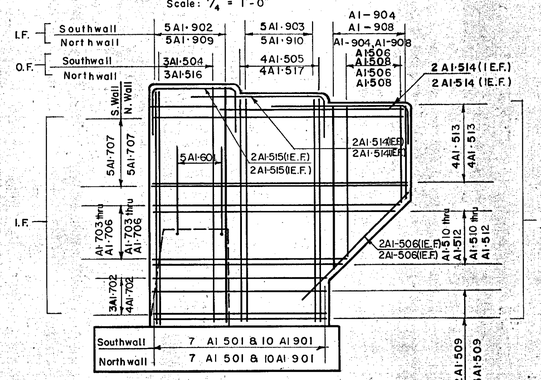
PROJECT NO. I-89-2(7) SHEET 228 OF 307

B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
I	VT.	I-89-2(7)	84	

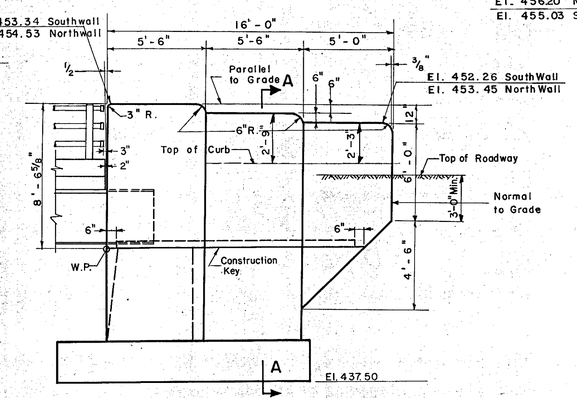


ABUTMENT NO. 1 SOUTHWALL
ABUTMENT NO. 1 NORTHWALL (SIMILAR)

Scale: 1/4" = 1'-0"

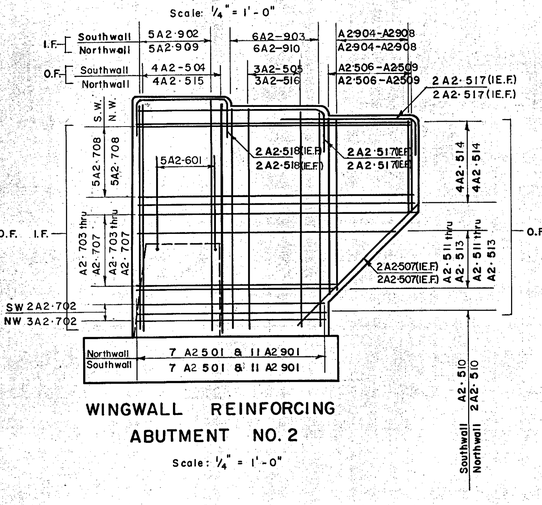


WINGWALL REINFORCING
ABUTMENT NO. 1
Scale: 1/4" = 1'-0"

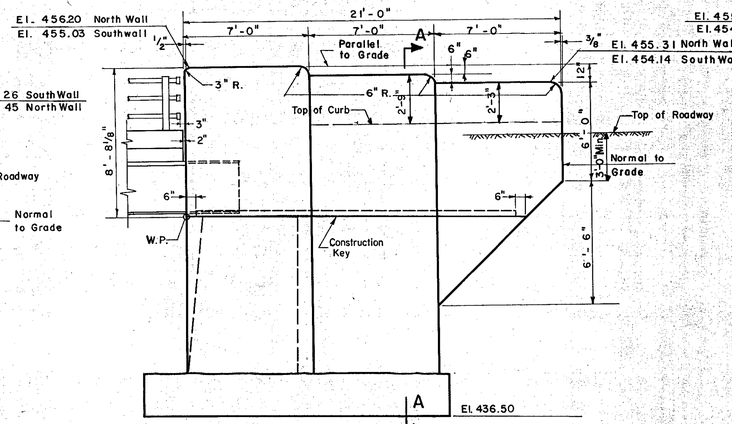


ABUTMENT NO. 2 SOUTHWALL
ABUTMENT NO. 2 NORTHWALL (SIMILAR)

Scale: 1/4" = 1'-0"

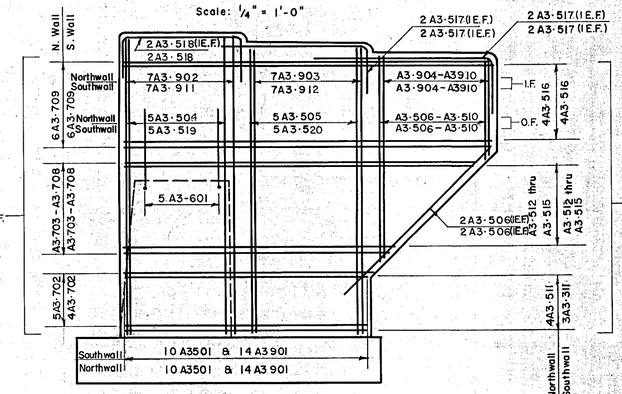


WINGWALL REINFORCING
ABUTMENT NO. 2
Scale: 1/4" = 1'-0"



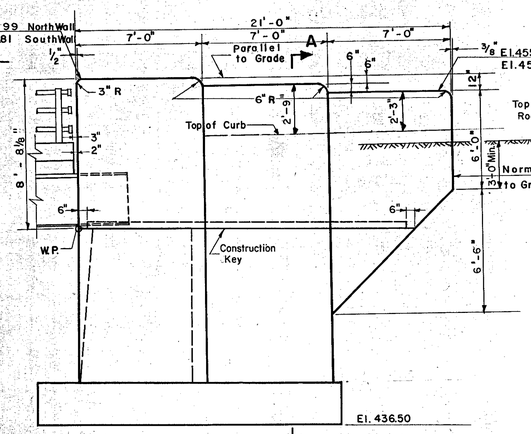
ABUTMENT NO. 3 NORTHWALL
ABUTMENT NO. 3 SOUTHWALL (SIMILAR)

Scale: 1/4" = 1'-0"



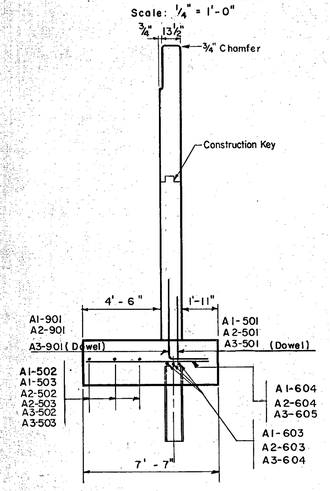
WINGWALL REINFORCING
ABUTMENTS NO. 3 & NO. 4
Scale: 1/4" = 1'-0"

NOTE: Reinforcement indicated is for Abutment No. 3, Abutment No. 4 similar except prefixed A4



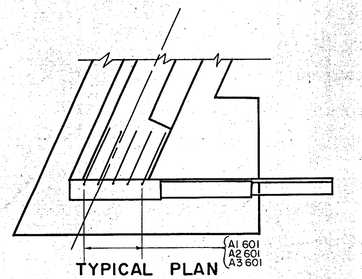
ABUTMENT NO. 4 NORTHWALL
ABUTMENT NO. 4 SOUTHWALL (SIMILAR)

Scale: 1/4" = 1'-0"



SECTION A-A

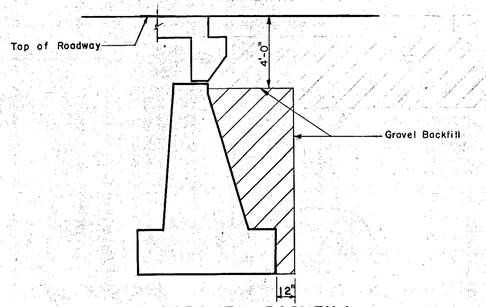
Scale: 1/4" = 1'-0"



TYPICAL PLAN

WINGWALL REINFORCING

Scale: 1/4" = 1'-0"



LIMITS OF GRAVEL BACKFILL

Scale: 1/4" = 1'-0"

FOR PILE SPLICE DETAIL SEE STANDARD SHEET S8-20-56

PILE SPLICE DETAILS

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

WINGWALLS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of
WATERBURY

INTERSTATE STA. 865+24
OVER
LITTLE RIVER STA. 5+15

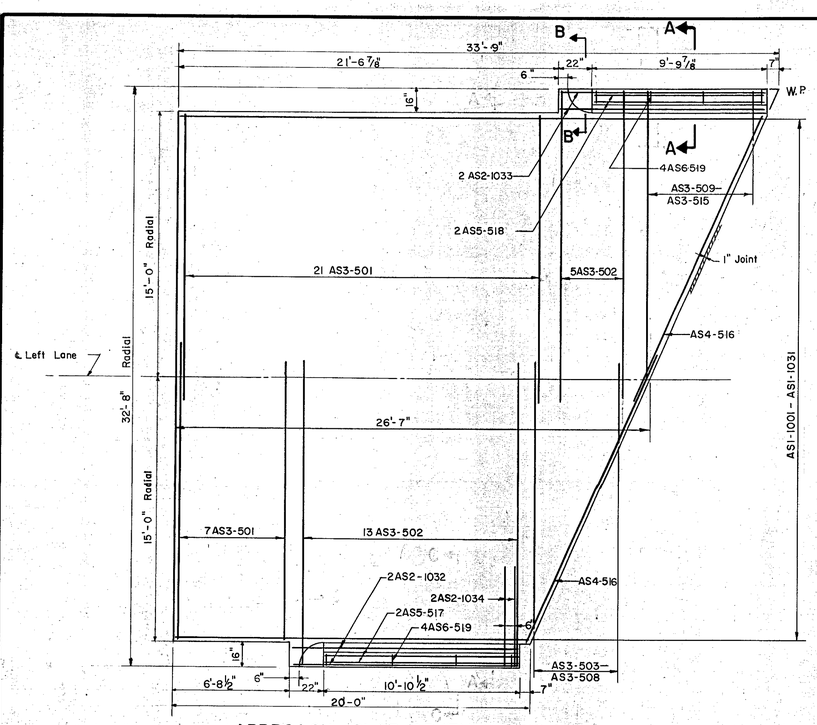
THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	DRAWN BY B.S.S.	CHECKED BY B.K. & J.B.	IN CHARGE J.V.B.	SCALE AS SHOWN	DATE 8-20-57

PROJECT NO. I-89-2(7) SHEET 229 OF 307

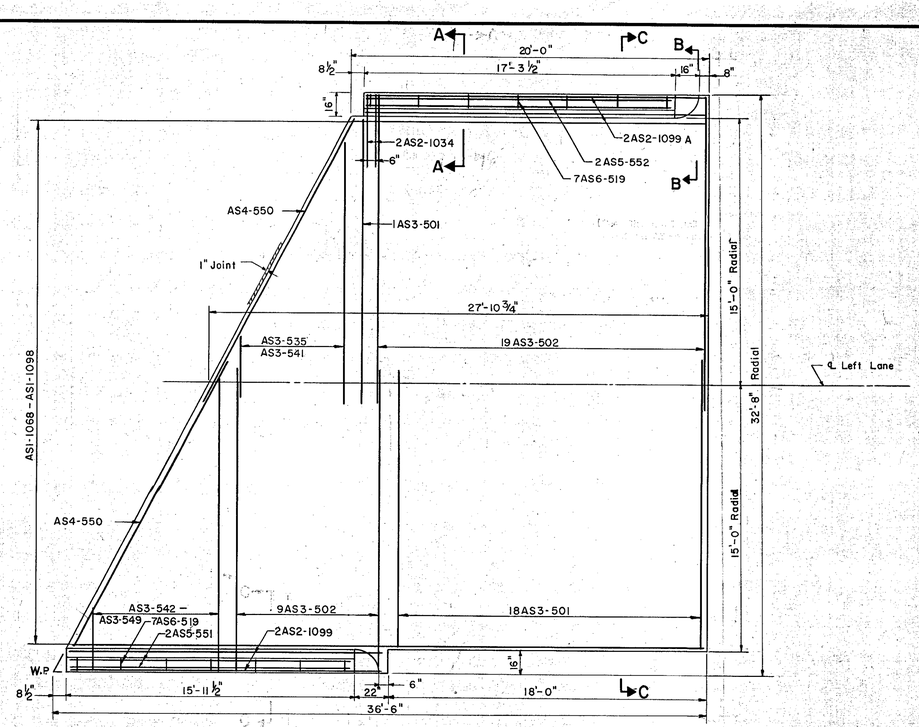
B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
I	VT.	I-89-2(7)	65	307

ITEM NO.	DESCRIPTION	UNIT	APPROACH SLABS			
			NET	OVERRUN	TOTAL	FINAL
361-B	Bit. Conc. Pavement	Ton	=41=	=6=	=47=	51 ✓
401-B	Concrete, Class 'B' (Mod.)	CY	137 ✓	=7=	144	137 ✓
402	Reinforcing Steel	LBS	See Reinforcing Steel Schedule			
556-C	Granite Bridge Curb (Type I)	L.F.	See General Plan & Elevation Sheet No. 3			



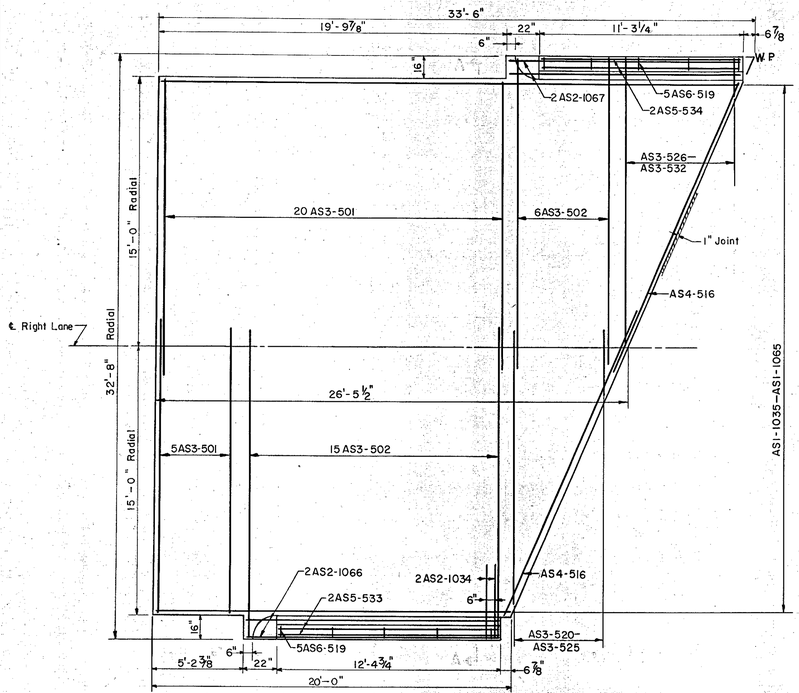
APPROACH SLAB ABUTMENT NO.1

Scale: 1/4" = 1'-0"



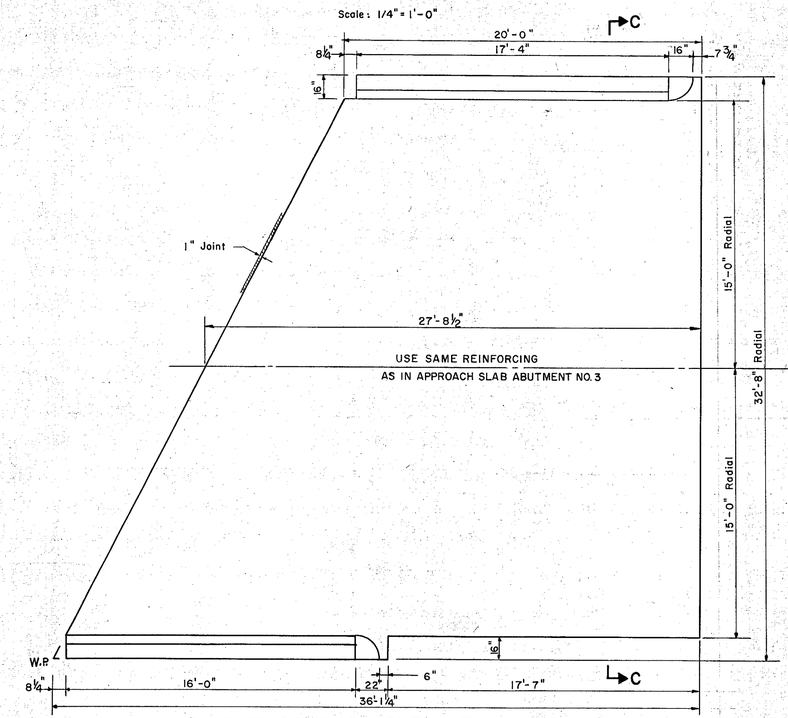
APPROACH SLAB ABUTMENT NO.3

Scale: 1/4" = 1'-0"



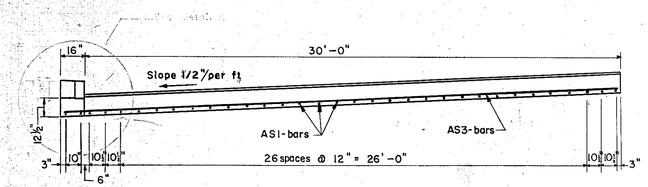
APPROACH SLAB ABUTMENT NO. 2

Scale: 1/4" = 1'-0"



APPROACH SLAB ABUTMENT NO. 4

Scale: 1/4" = 1'-0"



SECTION C-C

Scale: 1/4" = 1'-0"

NOTE: For Sections A-A & B-B See Standard Detail Sheet SB-AS-30° Skew-57.

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

APPROACH SLABS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 865+24

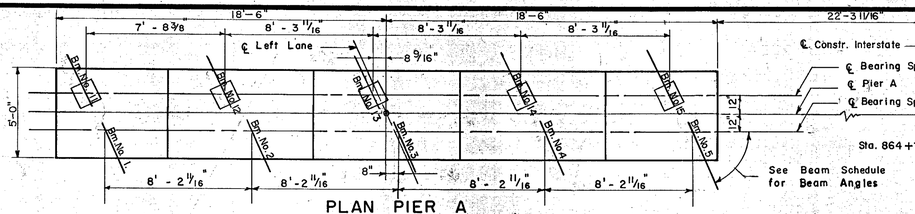
OVER

LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS.

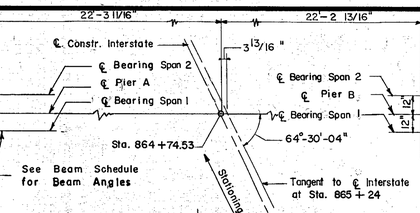
SURVEYED BY	CHECKED BY B.K. & J.B.	SCALE AS SHOWN
DRAWN BY J.K.	IN CHARGE J.V.B.	DATE 8-20-57
PROJECT NO. I-89-2(7)	SHEET 230 OF 307	

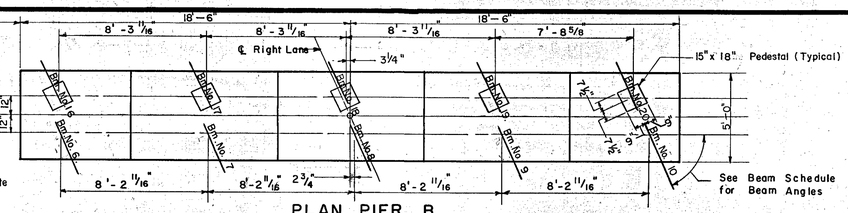
B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	8a	



PLAN PIER A

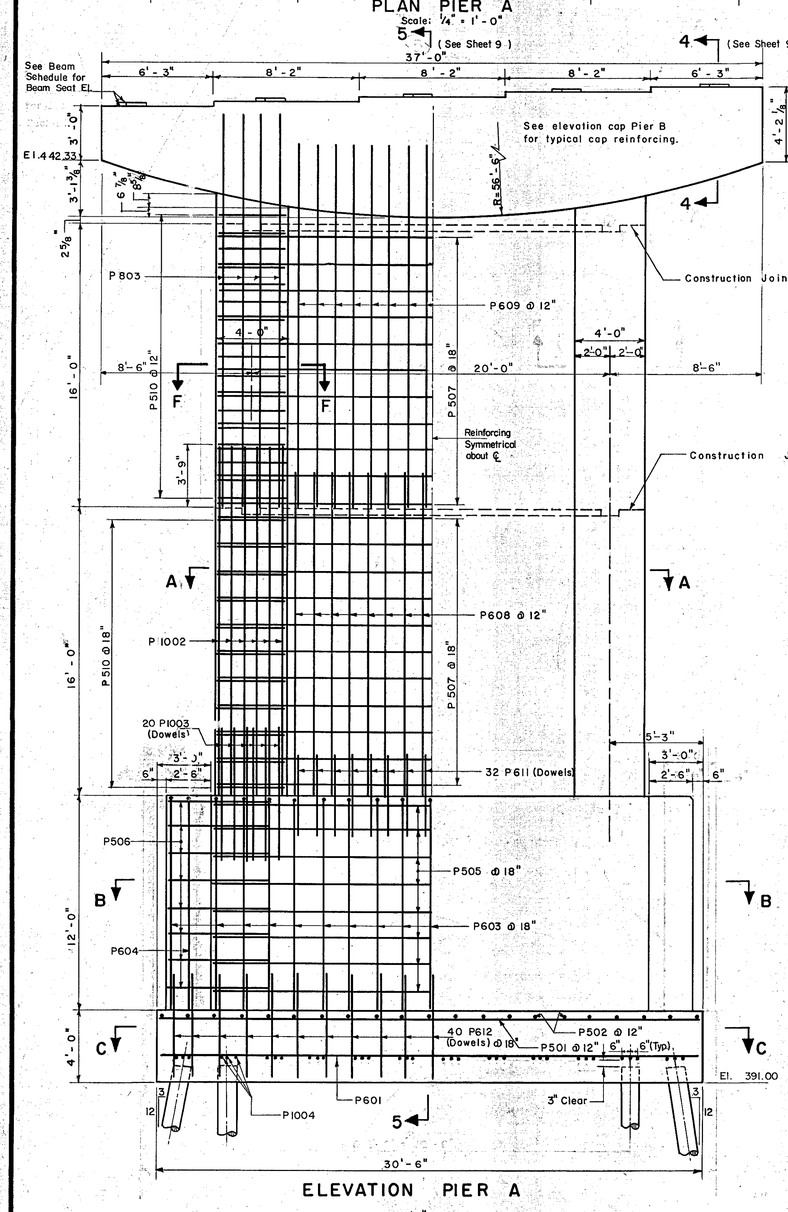
Scale: 1/4" = 1'-0"





PLAN PIER B

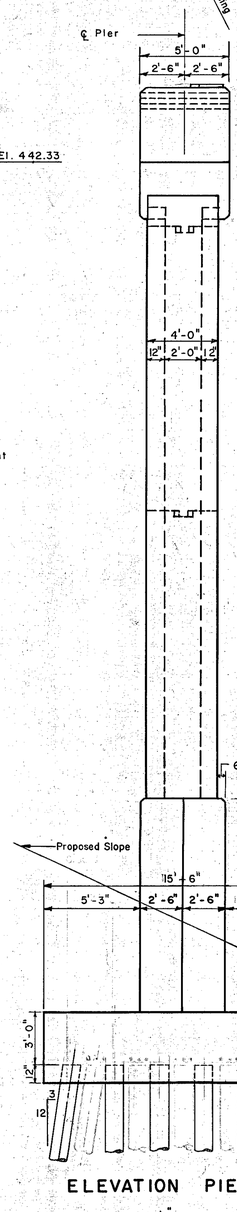
Scale: 1/4" = 1'-0"



ELEVATION PIER A

Scale: 1/4" = 1'-0"

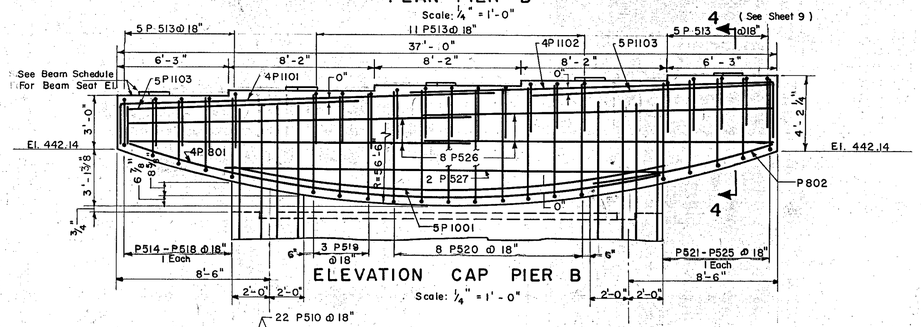
Note: See Sheet No. 9 for Pile Plan & Numbered sections
All reinforcing cover to be 2", except as otherwise noted.



ELEVATION PIER A

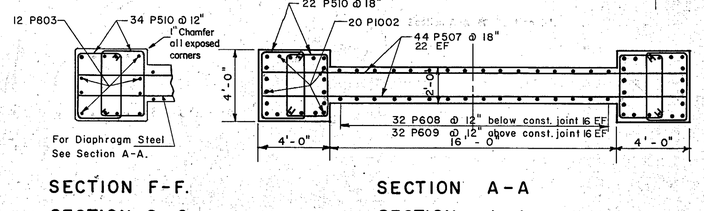
Scale: 1/4" = 1'-0"

Untreated Timber Piles, 20 Ton Capacity



ELEVATION CAP PIER B

Scale: 1/4" = 1'-0"



SECTION F-F.

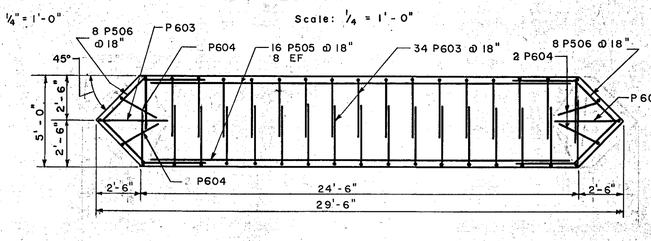
SECTION 6-6.

Scale: 1/4"=1'-0"

SECTION A-A

SECTION 1-1

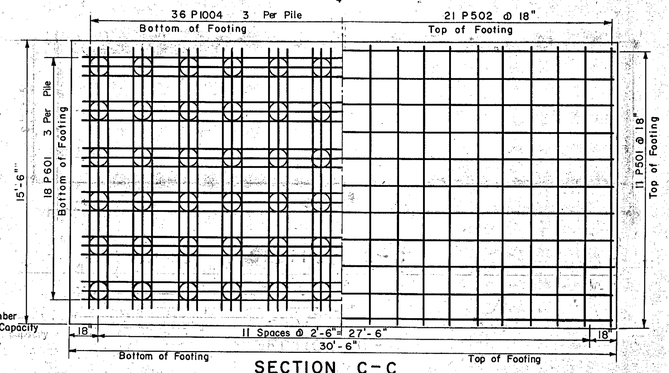
Scale: 1/4" = 1'-0"



SECTION B-B

SECTION 2-2

Scale: 1/4" = 1'-0"



SECTION C-C

SECTION 3-3

Scale: 1/4"=1'-0"

BEAM SCHEDULE

PIER A		
Beam No.	Beam Seat El.	Beam Angle
1	445.24	65°-50'-04"
2	445.53	65°-50'-04"
3	445.82	65°-50'-04"
4	446.11	65°-50'-04"
5	446.41	65°-50'-04"
11	445.38	63°-50'-03"
12	445.66	64°-30'-04"
13	445.95	64°-30'-04"
14	446.24	64°-30'-04"
15	446.54	64°-30'-04"

PIER B		
Beam No.	Beam Seat El.	Beam Angle
6	445.05	65°-50'-04"
7	445.34	65°-50'-04"
8	445.64	65°-50'-04"
9	445.93	65°-50'-04"
10	446.22	65°-50'-04"
16	445.18	64°-30'-04"
17	445.48	64°-30'-04"
18	445.77	64°-30'-04"
19	446.06	64°-30'-04"
20	446.35	65°-10'-03"

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	PIER A NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C Y	~~134~~	~~13~~	~~147~~	63 ✓
401-B	Concrete Class B (Mod.)	C Y	247	~~12~~	~~259~~	247 ✓
402	Reinforcing Steel	LBS	See Reinforcing Steel Schedule			
407	Asphaltic - Asbestos Coating	SY	~~21~~	-	~~21~~	20 ✓
502-A	Untreated Timber Piling	L F	~~2520~~		~~2520~~	2219 ✓

ITEM NO.	DESCRIPTION	UNIT	PIER B NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C Y	~~134~~	~~13~~	~~147~~	63 ✓
401-B	Concrete Class B (Mod.)	C Y	~~247~~	~~12~~	~~259~~	246 ✓
402	Reinforcing Steel	LBS	See Reinforcing Steel Schedule			
407	Asphaltic - Asbestos Coating	SY	20 ✓	-	20 ✓	20 ✓
502-A	Untreated Timber Piling	L F	~~2520~~		~~2520~~	2328 ✓

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

PIERS A AND B

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 865+24

OVER

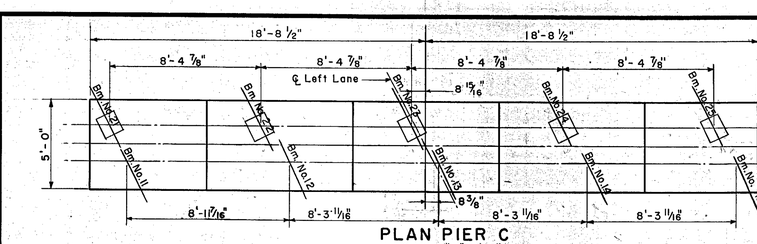
LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

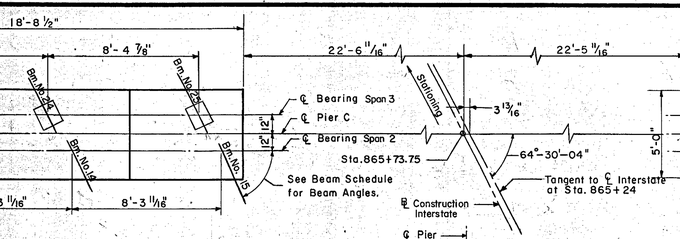
SURVEYED BY	CHECKED BY B.K.& J.B.	SCALE AS NOTED
DRAWN BY B.S.S. J.R.W.	IN CHARGE J.V.B.	DATE 8-20-57

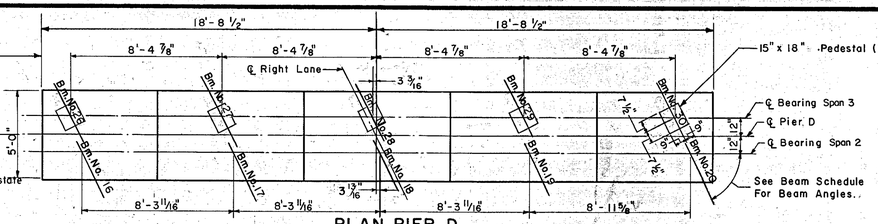
PROJECT NO. I-89-2(7) SHEET 231 OF 307

B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	57	



PLAN PIER C
Scale: 1/4" = 1'-0"



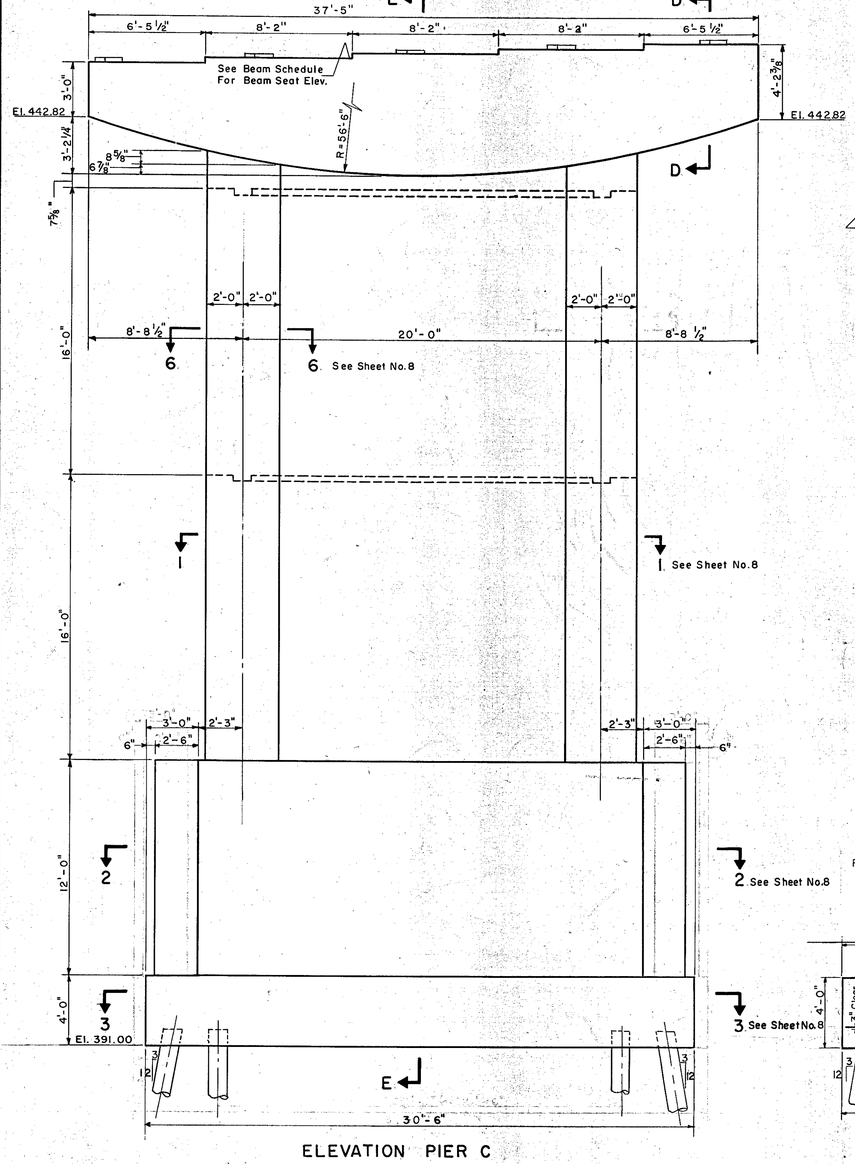


PLAN PIER D
Scale: 1/4" = 1'-0"

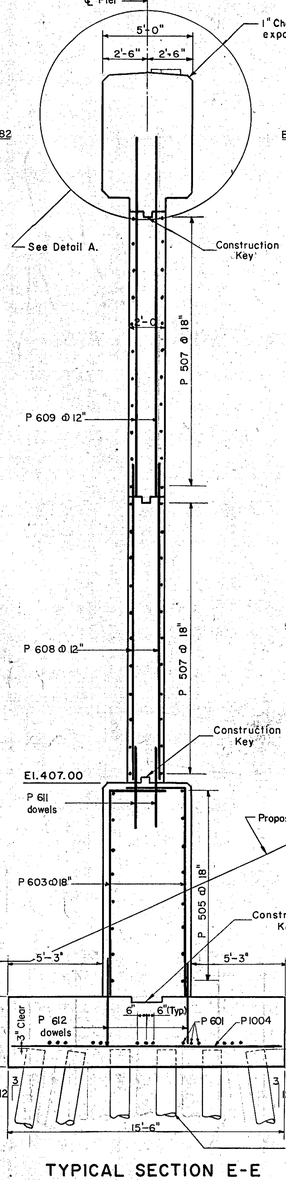
BEAM SCHEDULE

PIER C		
Beam No.	Beam Seat. Elev.	Beam Angle
11	445.73	63°-50'-03"
12	446.03	64°-30'-04"
13	446.33	64°-30'-04"
14	446.62	64°-30'-04"
15	446.91	64°-30'-04"
21	445.87	63°-10'-04"
22	446.16	63°-10'-04"
23	446.46	63°-10'-04"
24	446.75	63°-10'-04"
25	447.04	63°-10'-04"

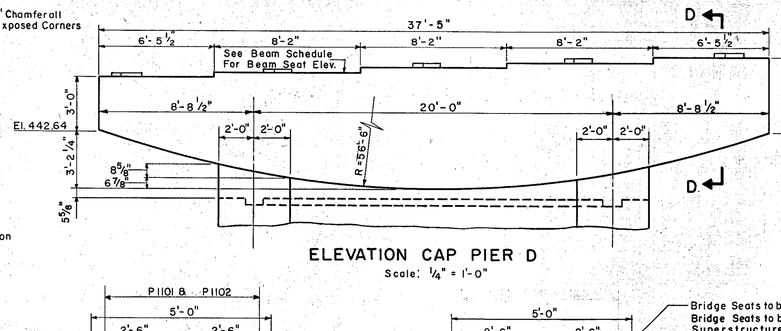
PIER D		
Beam No.	Beam Seat Elev.	Beam Angle
16	445.55	64°-30'-04"
17	445.85	64°-30'-04"
18	446.14	64°-30'-04"
19	446.43	64°-30'-04"
20	446.72	65°-10'-03"
26	445.69	63°-10'-04"
27	445.98	63°-10'-04"
28	446.27	63°-10'-04"
29	446.56	63°-10'-04"
30	446.85	63°-10'-04"



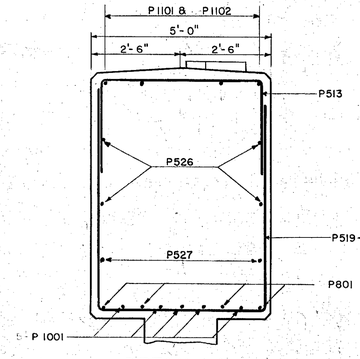
ELEVATION PIER C
Scale: 1/4" = 1'-0"



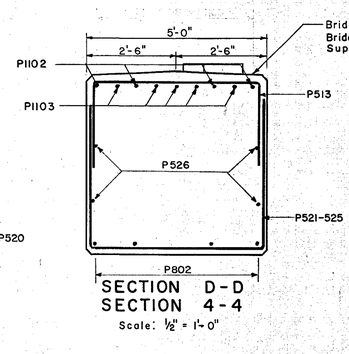
TYPICAL SECTION E-E
TYPICAL SECTION 5-5
Scale: 1/4" = 1'-0"



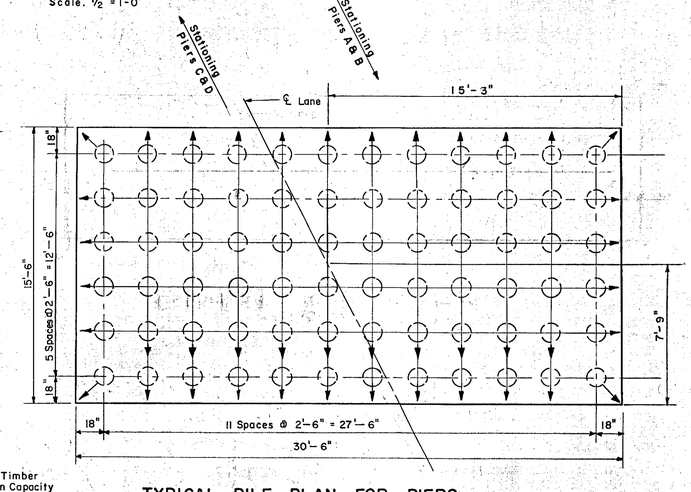
ELEVATION CAP PIER D
Scale: 1/4" = 1'-0"



DETAIL A
Scale: 1/2" = 1'-0"



SECTION D-D
SECTION 4-4
Scale: 1/2" = 1'-0"



TYPICAL PILE PLAN FOR PIERS
Scale: 1/4" = 1'-0"

Note: For estimating purposes, the length of Untreated Timber Piles is assumed to be 35'.
Batter indicated thus, Vertical ○ Battered ♀ 20 T Design Load

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	PIER C NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	=134=	=13=	=147=	60
401-B	Concrete, Class B (Mod.)	C.Y.	=249=	=12=	=261=	252
402	Reinforcing Steel	LBS.	See Reinforcing Steel Schedule			
407	Asphaltic-Asbestos Coating	S.Y.	=21=	-	=21=	20
502A	Untreated Timber Piling	L.F.	=2520=		=2520=	2531
222	Gravel Backfill	c.y.	0		0	11

ITEM NO.	DESCRIPTION	UNIT	PIER D NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	=134=	=13=	=147=	63
401-B	Concrete, Class B (Mod.)	C.Y.	248	=12=	=260=	249
402	Reinforcing Steel	LBS.	See Reinforcing Steel Schedule			
407	Asphaltic-Asbestos Coating	S.Y.	=21=	-	=21=	20
502A	Untreated Timber Piling	L.F.	=2520=		=2520=	2611

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

PIERS C AND D

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

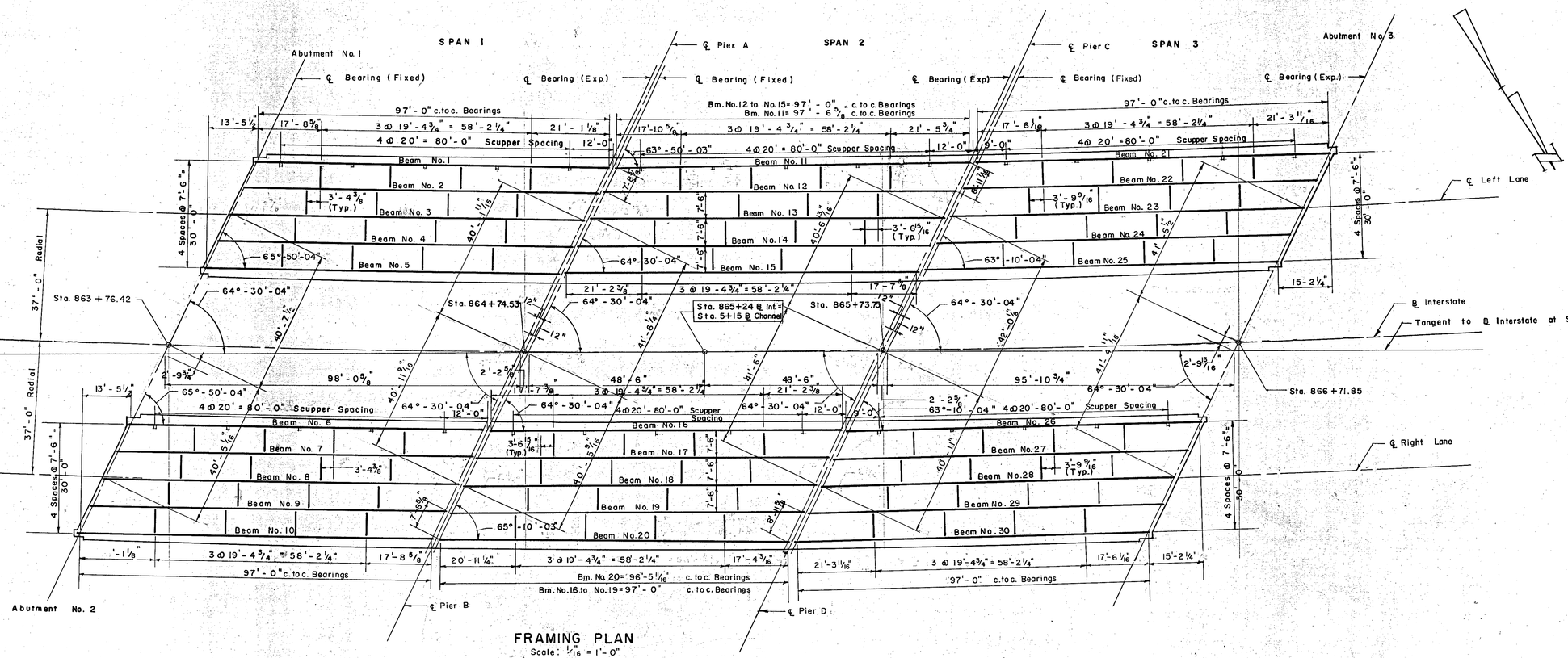
INTERSTATE STA. 865+24
OVER
LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY:	CHECKED BY: B.K.B.J.B	SCALE: AS SHOWN
DRAWN BY: R.E.M. J.R.W	IN CHARGE: J.V.B	DATE: 8-20-57

PROJECT NO. I-89-2(7) SHEET 232 OF 307

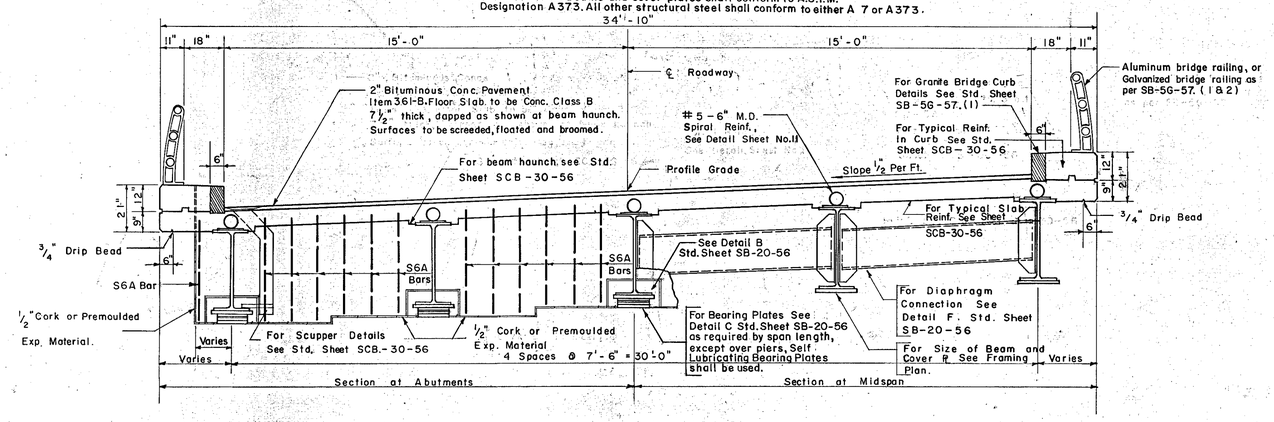
B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)		



FRAMING PLAN

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

NOTES:
1. All beams 36 WF 300 with 18" x 15/16 x 66'-9" long ℝ bottom and 12" x 1/2" x 63'-6" long ℝ top. All diaphragms to be 18 I 42.7.
2. All beams shall be rolled to true circular camber with the middle ordinate as shown on Sheet No. 11.
3. Cut flanges @ ℄ bearings as per Standard Sheet No. SB-22-58.
4. See sheet No. 11 for cover plate details.
5. All dimensions are horizontal distances.
6. The steel for all beams and cover plates shall conform to A.S.T.M. Designation A373. All other structural steel shall conform to either A 7 or A373.



TYPICAL CROSS SECTION

Scale: 3/8" = 1'-0

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

STRUCTURAL STEEL PLAN

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 865+24
OVER
LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASS.

SURVEYED BY	DRAWN BY B.S.S.	CHECKED BY B.K.B.J.B.	IN CHARGE J.V.B.	SCALE AS NOTED	DATE 8-20-57

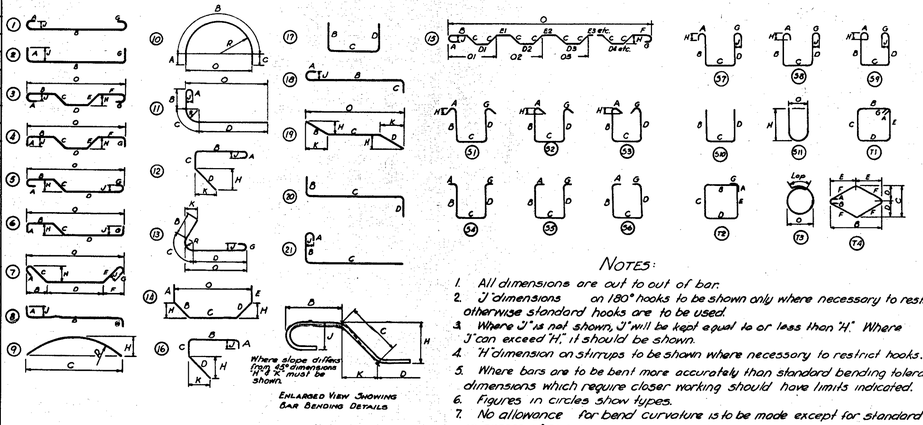
PROJECT NO. I-89-2(7) SHEET 233 OF 307

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
			ABUTMENT NO. 1														
1	#15	#5	4'-2"	A1-501	STR.												
2	3		5'-6"	A1-502													
3	3		7'-0"	A1-503													
4	3		13'-3"	A1-504													
5	4		12'-9"	A1-505													
6	6		8'-8"	A1-506													
7	2		7'-3"	A1-507													
8	2		5'-10"	A1-508													
9	5		9'-8"	A1-509													
10	2		10'-7"	A1-510													
11	2		12'-4"	A1-511													
12	2		13'-11"	A1-512													
13	8		14'-2"	A1-513	STR.												
14	8		9'-8"	A1-514	17		2'-8"	7'-0"									
15	4		10'-0"	A1-515	17		2'-8"	4'-8"	2'-8"								
16	3		14'-5"	A1-516	STR.												
17	4	#5	13'-11"	A1-517	STR.												
18	10	#6	8'-0"	A1-601	17		3'-0"	5'-0"									
19	12		22'-0"	A1-602	STR.												
20	*47		11'-6"	A1-603	STR.												
21	13	#6	7'-1"	A1-604	STR.												
22	6	#7	21'-3"	A1-701	1	0'-10"	20'-5"							0'-7"			
23	*8		9'-8"	A1-702	STR.												
24	2		10'-10"	A1-703													
25			11'-11"	A1-704													
26			13'-0"	A1-705													
27	2		13'-11"	A1-706													
28	10	#7	14'-2"	A1-707	STR.												
29	20	#9	7'-9"	A1-901	17		2'-9"	5'-0"									
30	5		13'-3"	A1-902	STR.												
31	5		12'-9"	A1-903													
32	2		9'-3"	A1-904													
33			8'-5"	A1-905													
34			7'-6"	A1-906													
35	2		6'-7"	A1-907													
36	*3		5'-3"	A1-908													
37	5		14'-5"	A1-909													
38	5	#9	13'-11"	A1-910	STR.												
39																	
40																	
41			ABUTMENT NO. 2.														
42	14	#5	4'-2"	A2-501	STR.												
43	3		6'-6"	A2-502													
44	3		8'-0"	A2-503													
45	4		13'-0"	A2-504													
46	3		12'-6"	A2-505													
47	2		10'-0"	A2-506													
48	6		8'-8"	A2-507													
49	2		7'-4"	A2-508													
50	2		6'-0"	A2-509													
51	3		10'-8"	A2-510													
52	2		11'-7"	A2-511													
53	2		13'-4"	A2-512													
54	2		15'-0"	A2-513													
55	8		15'-8"	A2-514													
56	4		14'-3"	A2-515													
57	3		13'-9"	A2-516	STR.												
58	8		10'-2"	A2-517	17		2'-8"	7'-6"									
59	4	#5	10'-6"	A2-518	17		2'-8"	5'-2"	2'-8"								
60	10	#6	8'-0"	A2-601	17		3'-0"	5'-0"									
61	12		22'-4"	A2-602	STR.												
62	46		11'-6"	A2-603	STR.												
63	13	#6	7'-1"	A2-604	STR.												
64	6	#7	21'-3"	A2-701	1	0'-10"	20'-5"							0'-7"			
65	5		10'-8"	A2-702	STR.												
66	2		11'-5"	A2-703													
67			12'-7"	A2-704													
68			13'-8"	A2-705													
69			14'-10"	A2-706													
70	2		15'-4"	A2-707													
71	10	#7	15'-8"	A2-708	STR.												
72	22	#9	7'-9"	A2-901	17		2'-9"	5'-0"									
73	5		13'-0"	A2-902	STR.												
74	6		12'-6"	A2-903													
75	2		9'-7"	A2-904													
76			8'-8"	A2-905													
77			7'-9"	A2-906													
78			6'-10"	A2-907													
79	2		5'-11"	A2-908													
80	5		14'-2"	A2-909													
81	6	#9	13'-8"	A2-910	STR.												

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
82			PIER "A"														
83	11	#5	30'-0"	P-501	STR.												
84	21	#5	15'-0"	P-502	STR.												
85	36	#6	15'-2"	P-603	17		3'-4"	11'-10"									
86	4	#6	14'-1"	P-604	17		2'-3"	11'-10"									
87	16	#5	24'-2"	P-505	STR.												
88	16	#5	10'-8"	P-506	14	2'-1"	3'-3"		3'-3"	2'-1"			2'-4"				4'-6"
89	44	#5	23'-6"	P-507	STR.												
90	32	#6	18'-6"	P-608	STR.												
91	32	#6	20'-4"	P-609	STR.												
92	112	#5	13'-8"	P-510	T1	0'-9"	2'-5"	3'-8"	2'-5"	3'-8"		0'-9"					
93	32	#6	5'-0"	P-611	STR.												
94	40	#6	6'-3"	P-612	STR.												
95	21	#5	9'-8"	P-513	17		2'-6"	4'-8"	2'-6"								
96	1		10'-0"	P-514			2'-8"		2'-8"								
97			11'-0"	P-515			3'-2"		3'-2"								
98			11'-10"	P-516			3'-7"		3'-7"								
99			12'-8"	P-517			4'-0"		4'-0"								
100	1		14'-0"	P-518			4'-8"		4'-8"								
101	3		15'-8"	P-519			5'-6"		5'-6"								
102	8		17'-0"	P-520			6'-2"		6'-2"								
103	1		15'-4"	P-521			5'-4"		5'-4"								
104			15'-0"	P-522			5'-2"		5'-2"								
105			14'-0"	P-523			4'-8"		4'-8"								
106			13'-4"	P-524			4'-4"		4'-4"								
107	1		12'-8"	P-525	17		4'-0"	4'-8"	4'-0"								
108	8		19'-9"	P-526	STR.												
109	2	#5	24'-0"	P-527													
110	18	#6	30'-2"	P-601													
111	24	#8	22'-0"	P-803	STR.												
112	4	#8	31'-0"	P-801	9			30'-1"					2'-0"			56'-3"	
113	*5	#8	10'-6"	P-802	9			10'-6"					0'-3"			56'-3"	
114	36	#10	15'-0"	P-1004	STR.												
115	40	#10	20'-2"	P-1002	STR.												
116	*41	#10	8'-4"	P-1003	STR.												
117	5	#10	24'-3"	P-1001	9			24'-0"					1'-4"			56'-3"	
118	4	#11	23'-6"	P-1101	17		2'-8"	20'-10"									
119	4	#11	24'-9"	P-1102	17		3'-11"	20'-10"									
120	*11	#11	13'-0"	P-1103	STR.												
121																	
122																	
123			PIER "B"														
124			Same Reinforcing as in Pier "A"														
125																	
126																	
127			PIER "C"														
128			Same Reinforcing as in Pier "A"														
129																	
130																	
131			PIER "D"														
132			Same Reinforcing as in Pier "A"														
133																	
134																	
135			ABUTMENT NO. 3														
136	20	#5	4'-2"	A3-501	STR.												
137	3		6'-0"	A3-502													
138	3		10'-1"	A3-503													
139	5		16'-9"	A3-504													
140	5		16'-3"	A3-505													
141	6		11'-2"	A3-506													
142	2		9'-10"	A3-507													
143			8'-5"	A3-508													
144	2		7'-0"	A3-509													
145	7		5'-7"	A3-510													
146	2		13'-8"	A3-511													
147			15'-1"	A3-512													
148			16'-8"	A3-513													
149	2		18'-3"	A3-514													
150	8		19'-11"	A3-515													
151	8		20'-8"	A3-516	STR.												
152	4		11'-8"	A3-517	17		2'-8"	9'-0"									
153	5		12'-0"	A3-518	17		2'-8"	6'-8"	2'-8"								
154	5	#5	15'-7"	A3-519	STR.												
155	10	#6	15'-1"	A3-520	STR.												
156	12		8'-0"	A3-601	17		3'-0"	5'-0"									
157	40		23'-0"	A3-602	STR.												
158	6		7'-5"	A3-603													
159	19	#6	15'-6"	A3-604													
160	6	#7	7'-1"	A3-605	STR.												
161	9	#7	21'-10"	A3-701	1	0'-10"	21'-0"						0'-7"				
162	2	#7	13'-8"	A3-702	STR.												
			15'-1"	A3-703	STR.												

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	90	

TYPICAL BAR BENDS



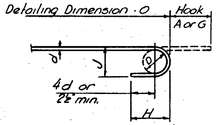
ENLARGED VIEW SHOWING BAR BENDING DETAILS

NOTES:

1. All dimensions are out to out of bar.
2. "J" dimensions on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where "J" is not shown, "J" will be kept equal to or less than "H." Where "J" can exceed "H," it should be shown.
4. "H" dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163	2	#7	16'-2"	A3-704	STR.												
164			17'-3"	A3-705													
165			18'-3"	A3-706													
166			19'-4"	A3-707													
167	2		20'-6"	A3-708													
168	12	#7	20'-8"	A3-709	STR.												
169	28	#9	7'-9"	A3-901	17		2'-9"	5'-0"									
170	7		16'-9"	A3-902	STR.												
171	7		16'-3"	A3-903													
172	2		11'-7"	A3-904													
173			10'-7"	A3-905													
174			9'-8"	A3-906													
175			8'-9"	A3-907													
176			7'-10"	A3-908													
177			6'-11"	A3-909													
178	2		6'-0"	A3-910													
179	7		15'-7"	A3-911													
180	7	#9	15'-1"	A3-912	STR.												
181																	
182																	
183			ABUTMENT NO. 4														
184			Same Reinforcing as in Abutment No. 3. except prefixed A4														
185																	
186																	
187																	
188																	
189																	
190																	

Detailing Dimension - O



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present (Numbers)
1/4" ϕ	#2
3/8" ϕ	#3
1/2" ϕ	#4
5/8" ϕ	#5
3/4" ϕ	#6
7/8" ϕ	#7
1" ϕ	#8
1" □	#9
1 1/8" □	#10
1 1/4" □	#11

IM 089-2(26)

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BR 48 N & S

8. Bar reinforcement metal shall conform to the requirements of the Standard Specifications for new Billet-Steel Concrete Reinforcement Bars (Intermediate Grade) Serial Designation A.A.S.H.O. M31-48 or its latest revision. All bars shall be deformed to conform with A.S.T.M. Specifications A305-49.

* Denotes one additional bar for testing purposes.

ESTIMATED QUANTITIES

FINAL	Location	Pounds
4,850 ✓	Abutment No. 1	=4503=
5,043 ✓	Abutment No. 2	=4696=
6,639 ✓	Abutment No. 3	=6584=
6,639 ✓	Abutment No. 4	=6584=
20,337 ✓	Pier "A"	=21150=
20,337 ✓	Pier "B"	=21030=
20,337 ✓	Pier "C"	=21030=
20,337 ✓	Pier "D"	=21030=
104,499 ✓	Total	=106,607=

CONTRACT NO. 1

REINFORCING SCHEDULE

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 865+24

OVER

LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	DRAWN BY R.E.M.	CHECKED BY J.B.B.B.K.	IN CHARGE J.V.B.	SCALE NONE	DATE 8-20-57

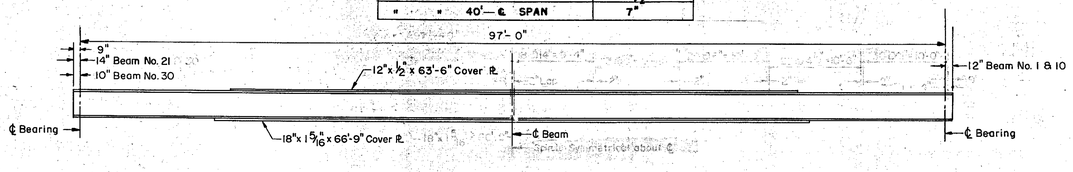
PROJECT NO. I-89-2(7) SHEET 234 OF 307

PRINTED BY SPAULDING-MOSS CO., BOSTON, MASS., RE-ORDER NO. D-552

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)		

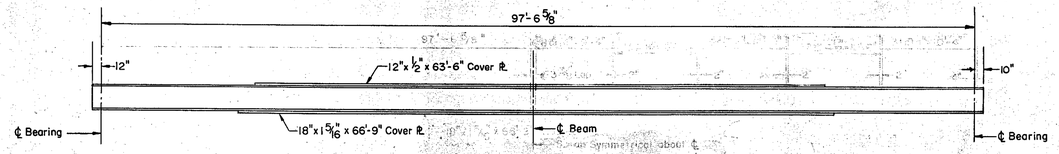
SPIRAL SCHEDULE

SPIRAL PITCH	0'—10' FROM BRNG.	DOUBLE @ 5½"
" "	10'—20' OR ℄ SPAN	DOUBLE @ 6½"
" "	20'—30' OR ℄ SPAN	4½"
" "	30'—40' OR ℄ SPAN	5½"
" "	40'—℄ SPAN	7"



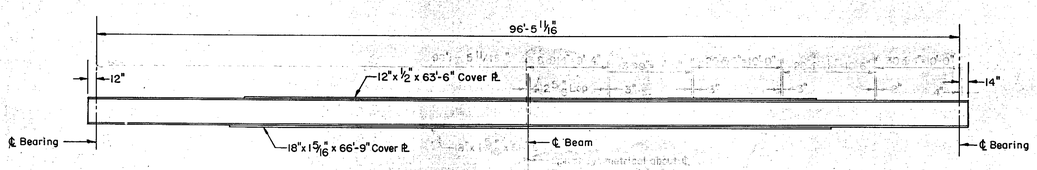
ELEVATION BEAMS 1 THRU 10, 12 THRU 19, & 21 THRU 30

No Scale



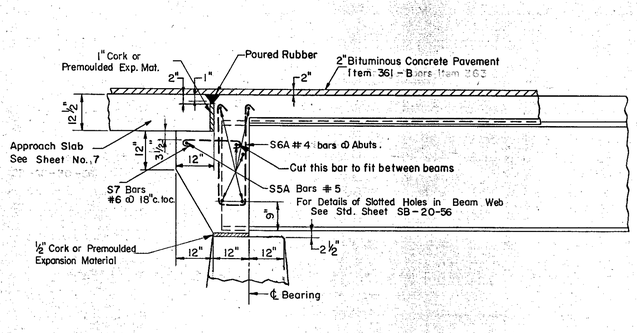
ELEVATION BEAM NO. 11

No Scale

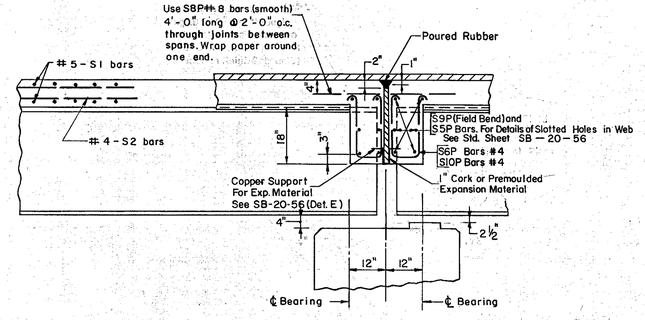


ELEVATION BEAM NO. 20

No Scale



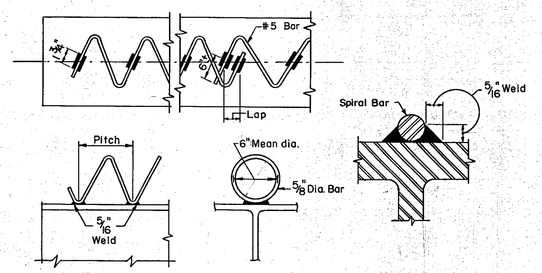
ELEVATION AT ABUTMENTS



ELEVATION AT PIERS

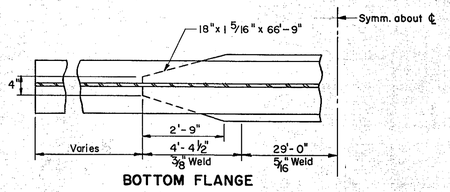
TYPICAL ELEVATIONS OF BEAMS (SQUARE)

Scale: ½" = 1'-0"

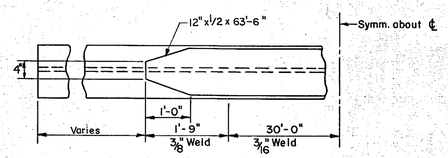


SPIRAL WELDING DETAILS

No Scale



BOTTOM FLANGE

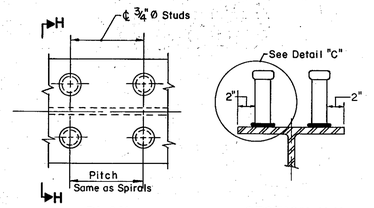


TOP FLANGE

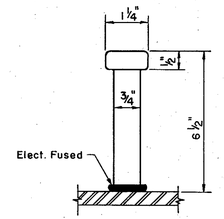
DETAILS OF COVER PLATES

No Scale

NOTE: WHERE A DOUBLE SPIRAL IS CALLED FOR IN THE SCHEDULE (4) FOUR 6 1/2" LONG STUDS ARE REQUIRED PER PITCH.



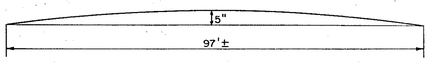
PLAN SECTION H-H



DETAIL "C"

ALTERNATE SHEAR CONNECTOR

No Scale



CAMBER DIAGRAM (ALL BEAMS)

No Scale

IM 089-2(26)
This sheet for information only
BR 48 N & S

CONTRACT NO. 1

STRUCTURAL DETAILS

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	NET	OVER-RUN	TOTAL	FINAL
361-B	Bituminous Concrete Pavement	Tons	~~224~~	~~34~~	~~258~~	277
401-B	Concrete Class B (Mod.)	C.Y.	~~630~~	~~32~~	~~662~~	681
402	Reinforcing Steel		See Reinforcing Steel Schedule			
403-a	Spiral Reinforcement (15,300 LB.)	L.S.	1		1	1
404-A	Structural Steel	Lbs.	~~136,500~~	22,730	~~159,230~~	131,753

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 865 + 24

OVER

LITTLE RIVER STA. 5 + 15

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

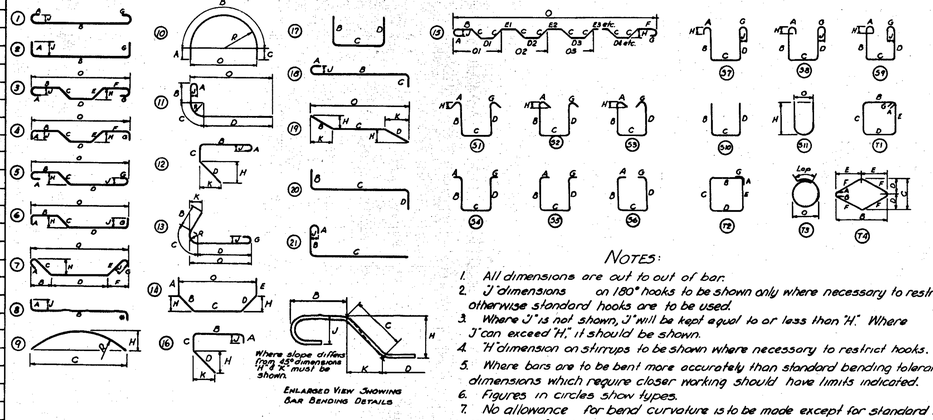
SURVEYED BY	CHECKED BY B.K.B.J.B.	SCALE AS NOTED
DRAWN BY H.C.	IN CHARGE J.V.B.	DATE 8-20-57

PROJECT NO. I-89-2(7) SHEET 234 OF 307

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
		SPAN No. 1 LEFT LANE (RIGHT LANE – SIMILAR)															
1	366	#5	34'-4"	S1-501	STR												
2	*193	#4	34'-3"	S2-401	STR												
3	#31	#6	34'-6"	S3-601	STR												
4	130	#4	4'-10"	S4-404	S3	0'-4½"	1'-4"	1'-5"	1'-4"			0'-4½"	0'-2½"				
5	8	#5	35'-0"	S5A-502	STR												
6	6	#5	32'-6"	S5P-503	STR												
7	26	#4	7'-2"	S6A-402	S2	0'-4½"	2'-10"	0'-9"	2'-10"			0'-4½"	0'-2½"				
8	24	#4	4'-10"	S6P-403	S2	0'-4½"	1'-8"	0'-9"	1'-8"			0'-4½"	0'-2½"				
9	24	#6	3'-0"	S7-602	1	0'-8"	1'-8"	0'-8"						0'-6"			
10	12	#5	3'-3"	S9P-506	Str.												
11	4	#4	4'-11"	S10P-405	S2	0'-4½"	1'-8"	0'-10"	1'-8"			0'-4½"	0'-2½"				
12		SPAN NO.2 LEFT LANE (RIGHT LANE – SIMILAR)															
13	366	#5	34'-4"	S1-501	STR												
14	192	#4	34'-3"	S2-401	STR												
15	30	#6	34'-6"	S3-601	STR												
16	132	#4	4'-10"	S4-404	S3	0'-4½"	1'-4"	1'-5"	1'-4"			0'-4½"	0'-2½"				
17	12	#5	33'-0"	S5P-504	STR												
18	48	#4	4'-10"	S6P-403	S2	0'-4½"	1'-8"	0'-9"	1'-8"			0'-4½"	0'-2½"				
19	24	#5	3'-3"	S9P-506	Str.												
20	8	#4	4'-11"	S10P-405	S2	0'-4½"	1'-8"	0'-10"	1'-8"			0'-4½"	0'-2½"				
21		SPAN NO.3 LEFT LANE (RIGHT LANE – SIMILAR)															
22	366	#5	34'-4"	S1-501	STR												
23	192	#4	34'-3"	S2-401	STR												
24	30	#6	34'-6"	S3-601	STR												
25	130	#4	4'-10"	S4-404	S3	0'-4½"	1'-4"	1'-5"	1'-4"			0'-4½"	0'-2½"				
26	8	#5	36'-5"	S5A-505	STR												
27	6	#5	33'-0"	S5P-504	STR												
28	30	#4	7'-2"	S6A-402	S2	0'-4½"	2'-10"	0'-9"	2'-10"			0'-4½"	0'-2½"				
29	24	#4	4'-10"	S6P-403	S2	0'-4½"	1'-8"	0'-9"	1'-8"			0'-4½"	0'-2½"				
30	25	#6	3'-0"	S7-602	1	0'-8"	1'-8"	0'-8"						0'-6"			
31	12	#5	3'-3"	S9P-506	Str.												
32	4	#4	4'-11"	S10P-405	S2	0'-4½"	1'-8"	0'-10"	1'-8"			0'-4½"	0'-2½"				
33		APPROACH SLAB – ABUTMENT NO. 1															
34	1	#10	21'-6"	AS1-1035	1	0'-11"	19'-8"					0'-11"		0'-8"			
35			21'-10"	AS1-1002			20'-0"										
36			22'-3"	AS1-1003			20'-5"										
37			22'-8"	AS1-1004			20'-10"										
38			23'-2"	AS1-1005			21'-4"										
39			23'-7"	AS1-1006			21'-9"										
40			24'-1"	AS1-1007			22'-3"										
41			24'-6"	AS1-1008			22'-8"										
42			24'-11"	AS1-1009			23'-1"										
43			25'-5"	AS1-1010			23'-7"										
44			25'-10"	AS1-1011			24'-0"										
45			26'-4"	AS1-1012			24'-6"										
46			26'-9"	AS1-1013			24'-11"										
47			27'-2"	AS1-1014			25'-4"										
48			27'-8"	AS1-1015			25'-10"										
49			28'-1"	AS1-1016			26'-3"										
50			28'-6"	AS1-1017			26'-8"										
51			29'-0"	AS1-1018			27'-2"										
52			29'-5"	AS1-1019			27'-7"										
53			29'-11"	AS1-1020			28'-1"										
54			30'-4"	AS1-1021			28'-6"										
55			30'-9"	AS1-1022			28'-11"										
56			31'-3"	AS1-1023			29'-5"										
57			31'-8"	AS1-1024			29'-10"										
58			32'-2"	AS1-1025			30'-4"										
59			32'-7"	AS1-1026			30'-9"										
60			33'-0"	AS1-1027			31'-2"										
61			33'-6"	AS1-1028			31'-8"										
62			33'-11"	AS1-1029			32'-1"										
63			34'-4"	AS1-1030			32'-6"										
64	1		34'-8"	AS1-1031			32-10"										
65	2		14'-2"	AS2-1032			12'-4"										
66	2		13'-2"	AS2-1033	1	0'-11"	11'-4"					0'-11"		0'-8"			
67	*3	#10	5'-0"	AS2-1034	STR.												
68	28	#5	15'-10"	AS3-501													
69	18		17'-1"	AS3-502													
70	1		15'-3"	AS3-503													
71			13'-0"	AS3-504													
72			10'-9"	AS3-505													
73			8'-6"	AS3-506													
74			6'-3"	AS3-507													
75			4'-0"	AS3-508													
76			16'-6"	AS3-509													
77			14'-2"	AS3-510													
78			11'-10"	AS3-511													
79			9'-6"	AS3-512													
80			7'-2"	AS3-513													
81	1	#5	4'-10"	AS3-514	STR.												
82	1	#5	2'-6"	AS3-515	STR.												
83	2		17'-5"	AS4-516													
84	2		10'-6"	AS5-517													
85	2		9'-6"	AS5-518	STR.												
86	8	#5	4'-4"	AS6-519	S3	0'-5"	1'-6"	0'-6"	1'-6"			0'-5"	0'-2¾"				
87																	
88																	
89		APPROACH SLAB – ABUTMENT NO. 2															
90	1	#10	21'-6"	AS1-1035	1	0'-11"	19'-8"					0'-11",		0'-8"			
91			21'-10"	AS1-1036			20'-0"										
92			22'-3"	AS1-1037			20'-5"										
93			22'-8"	AS1-1038			20'-10"										
94			23'-1"	AS1-1039			21'-3"										
95			23'-7"	AS1-1040			21'-9"										
96			24'-0"	AS1-1041			22'-2"										
97			24'-5"	AS1-1042			22'-7"										
98			24'-10"	AS1-1043			23'-0"										
99			25'-4"	AS1-1044			23'-6"										
100			25'-9"	AS1-1045			23'-11"										
101			26'-2"	AS1-1046			24'-4"										
102			26'-7"	AS1-1047			24'-9"										
103			27'-0"	AS1-1048			25'-2"										
104			27'-6"	AS1-1049			25'-8"										
105			27'-11"	AS1-1050			26'-1"										
106			28'-4"	AS1-1051			26'-6"										
107			28'-11"	AS1-1052			26'-11"										
108			29'-2"	AS1-1053			27'-4"										
109			29'-8"	AS1-1054			27'-10"										
110			30'-1"	AS1-1055			28'-3"										
111			30'-6"	AS1-1056			28'-8"										
112			31'-0"	AS1-1057			29'-2"										
113			31'-5"	AS1-1058			29'-7"										
114			31'-10"	AS1-1059			30'-0"										
115			32'-3"	AS1-1060			30'-5"										
116			32'-8"	AS1-1061			30'-10"										
117			33'-2"	AS1-1062			31'-4"										
118			33'-7"	AS1-1063			31'-9"										
119			34'-0"	AS1-1064			32'-2"										
120	1		34'-4"	AS1-1065	1	0'-11"	32'-6"					0'-11"		0'-8"			
121	2		5'-0"	AS2-1034	STR.												
122	2		1'-8"	AS2-1066	1	0'-11"	13'-10"					0'-11"		0'-8"			
123	2	#10	14'-8"	AS2-1067	1	0'-11"	12'-10"					0'-11"		0'-8"			
124	25	#5	15'-10"	AS3-501	STR.												
125	21		17'-1"	AS3-502													
126	1		15'-3"	AS3-520													
127			12'-11"	AS3-521													
128			10'-6"	AS3-522													
129			8'-2"	AS3-523													
130	1		5'-10"	AS3-524													
131	*2		3'-6"	AS3-525													
132	1		16'-0"	AS3-526													
133			13'-8"	AS3-527													
134			11'-4"	AS3-528													
135			9'-0"	AS3-529													
136			6'-8"	AS3-530													
137			4'-4"	AS3-531													
138	1		2'-0"	AS3-532													
139	2		17'-5"	AS4-516													
140	2		12'-0"	AS5-533													
141	10	#5	11'-0"	AS5-534	STR.												
142			4'-4"	AS6-519	S3	0'-5"	1'-6"	0'-6"	1'-6"			0'-5"	0'-2¾"				
143																	
144		APPROACH SLAB – ABUTMENT NO. 3 (NO. 4 SIMILAR)															
145	1	#10	36'-10"	AS1-1068	1	0'-11"	35'-6"					0'-11"		0'-8"			
146			36'-4"	AS1-1069			34'-6"										
147			35'-11"	AS1-1070			34'-1"										
148			35'-5"	AS1-1071			33'-7"										
149			34'-11"	AS1-1072			33'-1"										
150			34'-5"	AS1-1073			32'-7"										
151			33'-10"	AS1-1074			32'-0"										
152			33'-4"	AS1-1075			31'-6"										
153			32'-10"	AS1-1076			31'-0"										
154			32'-3"	AS1-1077			30'-5"										
155			31'-9"	AS1-1078			29'-11"										
156			31'-3"	AS1-1079			29'-5"										
157			30'-9"	AS1-1080			28'-11"										
158			30'-3"	AS1-1081			28'-5"										
159			29'-8"	AS1-1082			27'-10"										
160			29'-2"	AS1-1083			27'-4"										
161			28'-8"	AS1-1084			26'-10"										
162	J	#10	28'-2"	AS1-1085	1	0'-11"	26'-4"					0'-11"		0'-8"			
163	1	#10	27'-7"	AS1-1086	1	0'-11"	25'-9"					0'-11"		0'-8"			
164			27'-1"	AS1-1087			25'-3"										
165			26'-7"	AS1-1088			24'9"										
166			26'-1"	AS1-1089			24'-3"										
167			25'-6"	AS1-1090			23'-8"										
168			25'-0"	AS1-1091			23'-2"										
169			24'-6"	AS1-1092			22'-8"										
170			24'-0"	AS1-1093			22'-2"										
171			23'-5"	AS1-1094			21'-7"										
172			22'-11"	AS1-1095			21'-1"										
173			22'-5"	AS1-1096			20'-7"										
174			22'-0"	AS1-1097			20'-2"										
175	1		21'-6"	AS1-1098	1	0'-11"	19'-8"					0'-11"		0'-8"			
176	2		5'-0"	AS2-1034	STR.												
177	2		19'-4"	AS2-1099	1	0'-11"	17'-6"					0'-11"		0'-8"			
178	2	#10	20'-8"	AS2-1099A	1	0'-11"	18'-10"					0'-11"		0'-8"			
179	19	#5	15'-10"	AS3-501	STR.												
180	28		17'-1"	AS3-502													
181	1		3'-9"	AS3-535													
182			5'-7"	AS3-536													
183			7'-6"	AS3-537													
184			9'-4"	AS3-538													
185			11'-3"	AS3-539													
186			13'-1"	AS3-540													
187			15'-0"	AS3-541													
188			3'-6"	AS3-542													
189			5'-8"	AS3-543													
190			7'-4"	AS3-544													
191			9'-2"	AS3-545													
192			11'-1"	AS3-546													
193			13'-0"	AS3-547													
194			14'-10"	AS3-548													
195	1		16'-9"	AS3-549													
196	2		18'-0"	AS4-550													
197	2		15'-8"	AS5-551													
198	2		16'-11"	AS5-552	STR.												
199	14	#5	4'-4"	AS6-519	S3	0'-5"	1'-6"	0'-6"	1'-6"			0'-5"	0'-2¾"				
200	*69	#8	4'-0"	S8P-801	STR.	17 Bars Over Each Pier											

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)		

TYPICAL BAR BENDS

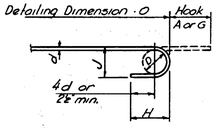


ENLARGED VIEW SHOWING BAR BENDING DETAILS

NOTES:

1. All dimensions are out to out of bar.
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H'. Where 'J' can exceed 'H', it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.
8. Bar reinforcement metal shall conform to the requirements of the Standard Specifications for new Billet-Steel Concrete Reinforcement Bars (Intermediate Grade) Serial Designation A.A.S.H.O. M31-48 or its latest revision. All bars shall be deformed to conform with A.S.T.M. Specifications A305-49.

Detailing Dimension - O — Hook A or G



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present (Numbers)
1/4" ø	#2
3/8" ø	#3
1/2" ø	#4
5/8" ø	#5
3/4" ø	#6
7/8" ø	#7
1" ø	#8
1 1/8" ø	#9
1 1/4" ø	#10
1 3/8" ø	#11

IM 089-2(26)

This sheet for information only

BR 48 N & S

* Denotes one additional bar for testing purposes

CONTRACT NO. 1

ESTIMATED QUANTITIES

FINAL	Location	Pounds
40,814	Span No. 1 (L & R Lane)	=40699=
40,312	Span No. 2 (L & R Lane)	=40204=
40,744	Span No. 3 (L & R Lane)	=40688=
5,074	Approach Slab No. 1	=5080=
4,947	Approach Slab No. 2	=5069=
6,150	Approach Slab No. 3	=5413=
6,150	Approach Slab No. 4	=5413=
144,191	TOTAL	=142566=

REINFORCING SCHEDULE

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

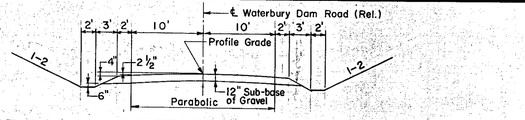
INTERSTATE STA. 865+24
OVER
LITTLE RIVER STA. 5+15

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASS.

SURVEYED BY
DRAWN BY J.B.B.B.K.
CHECKED BY J.B.B.B.K. SCALE NONE
IN CHARGE J.V.B. DATE 6-20-57

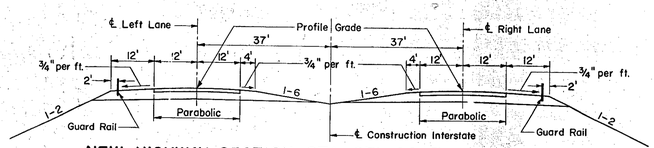
PROJECT NO. I-89-2(7) SHEET 236 OF 307

PRINTED BY STAFFORD-MOSS CO., BOSTON, MASS. RE-ORDER NO. B-157



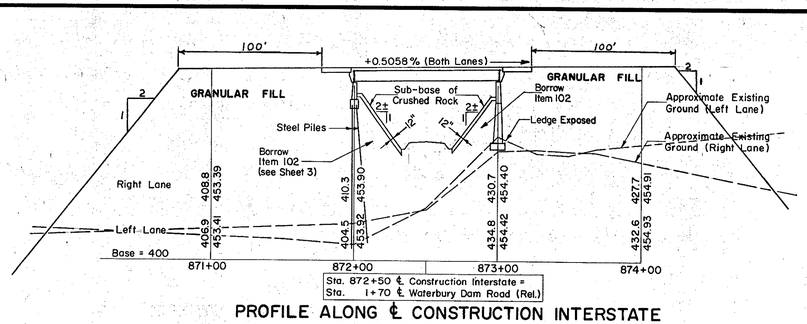
SECTION AT BRIDGE WATERBURY DAM ROAD (RELOCATED)

Scale: 1" = 10'



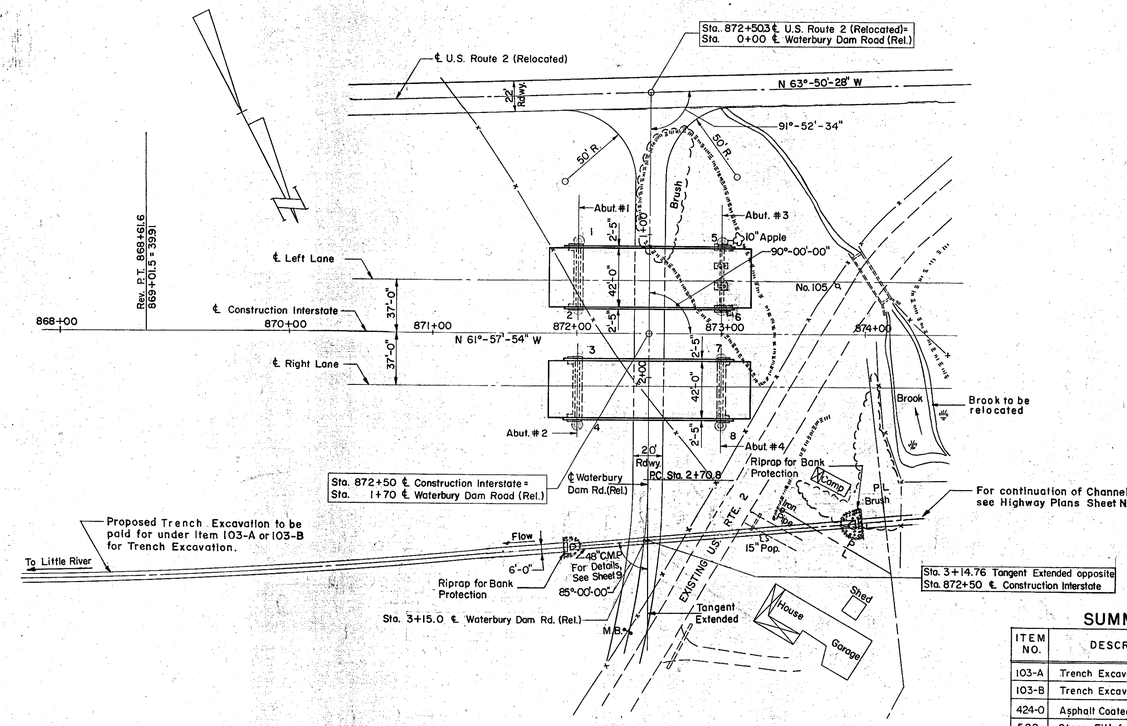
NEW HIGHWAY SECTION STA. 871+00 TO STA. 874+00

Scale: 1" = 20'



PROFILE ALONG ℄ CONSTRUCTION INTERSTATE

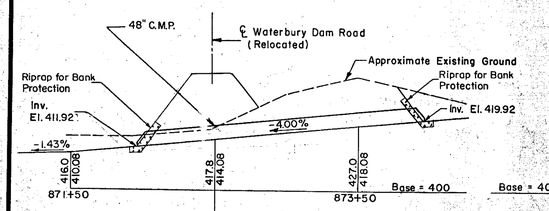
Scale: Hor. 1" = 50'
Vert. 1" = 20'



PLAN

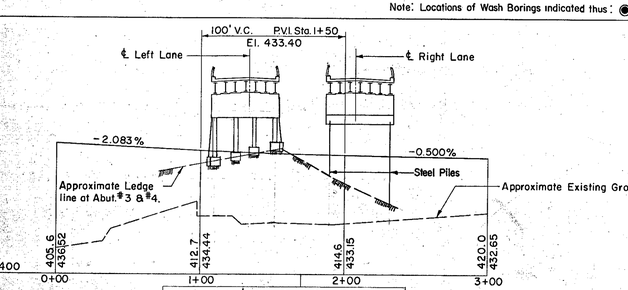
Scale: 1" = 50'

Note: Locations of Wash Borings indicated thus: ◉ 2.



PROFILE OF PROPOSED CHANNEL

Scale: Hor. 1" = 50'
Vert. 1" = 20'



PROFILE OF PROPOSED WATERBURY DAM ROAD (RELOCATED)

Scale: Hor. 1" = 50'
Vert. 1" = 20'

SUMMARY OF QUANTITIES FOR PIPE

ITEM NO.	DESCRIPTION	UNIT	NET	OVER-RUN	TOTAL	FINAL
103-A	Trench Excavation of Earth	C.Y.	1910	190	2100	
103-B	Trench Excavation of Rock	C.Y.	73	7	80	
424-0	Asphalt Coated Corr. Galv. Metal Pipe	L.F.	200	–	200	
522	Stone Fill for Slope Protection	C.Y.	20	3	23	
526	Riprap for Bank Protection (Mod.)	C.Y.	46	6	52	

SUMMARY OF QUANTITIES FOR BRIDGE

ITEM NO.	DESCRIPTION	UNIT	NET	OVER-RUN	TOTAL	FINAL
102	Borrow	C.Y.	10,500	~~1,050~~	~~11,550~~	10,500
107	Structure Excavation	C.Y.	~~113~~	~~11~~	~~124~~	131 ✓
204	Sub-base of Crushed Rock (Mod.)	C.Y.	~~264~~	~~40~~	~~304~~	240 ✓
222	Gravel Backfill	C.Y.	130	~~35~~	~~165~~	130 ✓
361-B	Bit. Conc. Pavement	TONS	~~146~~	~~22~~	~~168~~	181 ✓
401-B	Concrete Class B (Mod.)	C.Y.	~~705~~	~~40~~	~~745~~	845 ✓
402	Reinforcing Steel	LBS.	101,280	–	101,280	101,280
403-c	Spiral Reinforcement (5,100 LBS)	L.S.	1 ✓	–	1 ✓	1 ✓
404-A	Structural Steel	LBS.	~~522,484~~	~~40,590~~	~~540,074~~	526,310 ✓
407	Asphaltic-Asbestos Coating	S.Y.	~~20~~	–	~~20~~	40 ✓
504	Steel Piling	L.F.	~~3000~~	–	~~3000~~	3,308 ✓
556-C	Granite Bridge Curb (Type I)	L.F.	500 ✓	–	500 ✓	500 ✓
572	Bridge Railing (Sup. Agc. 11-3-60)	L.F.	378 ✓	–	378 ✓	378 ✓
501	Furnishing Equipment for Driving Piles	Required				1/3 L.S.
503	Splices for Steel Piling	Each	~~14~~		~~14~~	1 ✓
318	Tar Emulsion for Bridge Floors (Sup. Agc. 6-7-61)					454 gal ✓
512	Joint Sealer Hot Poured Elastic Type (Sup. Agc. 6-22-61)					108 L.F. ✓
	Epoxy Resin Sealer for Concrete Joints (Sup. Agc. 8-22-61 Non-Govt.)					305 L.F.

HIGHWAY NO. I-89 NAME OF HIGHWAY Interstate
STRUCTURE NO. 17 COUNTY Washington TOWN Waterbury
PROJECT NO. I-89-2(7) LOCATION Sta. 872+50

B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)		

EXISTING STRUCTURE

1. RATED LOADING OF EXISTING STRUCTURE
2. TYPE OF EXISTING STRUCTURE Under Existing Route 2 6.3'x 5' Concrete Box Bridge
3. UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE
4. WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE COST OF REMOVAL
5. SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE
6. SHOULD NEW TEMPORARY STRUCTURE BE BUILT
7. ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE 428.0 WATERWAY TO ORDINARY H.W.
8. EXTREME HIGH WATER AT EXISTING STRUCTURE 429.0
9. SPAN OF EXISTING BRIDGE UPSTREAM 6.3 WATERWAY TO EXTREME H.W.
   SPAN OF EXISTING BRIDGE DOWNSTREAM WATERWAY TO EXTREME H.W.
10. TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS
11. DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE
12. IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED
13. ADDITIONAL WATERWAY AREA PROVIDED

NEW STRUCTURE

1. RECOMMENDED TYPE OF STRUCTURE 1 Span Composite Steel Stringer Bridge & 1-48" C.M.P.
2. RECOMMENDED CLEAR SPAN OR SPANS 97' (Both Lanes)
   MEASURED PARALLEL TO ℄ NEW HIGHWAY
   MEASURED AT RIGHT ANGLES TO ℄ STREAM
3. ARE THERE OBJECTIONS TO A PIER IN THE STREAM ANSWER YES OR NO
4. ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE 415.0
5. EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE 429.0 SOURCE OF INFORMATION
6. IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE
7. DOES STREAM REACH ITS MAXIMUM HIGHWATER ELEVATION RAPIDLY Yes IS ORDINARY RISE RAPID Yes
8. LOW WATER ELEVATION AT NEW STRUCTURE 414.0
9. DRAINAGE AREA IN ACRES ABOVE STRUCTURE 77 CHARACTER OF TERRAIN Mountainous
10. IS STREAM EVER DRY Yes
11. VELOCITY OF STREAM AT HIGH WATER STAGE Varies 7 to 18 f.p.s. ESTIMATED DISCHARGE
12. AREA FULL OPENING AREA BELOW ORDINARY H.W.
13. CHARACTER OF SCOUR DRIFT ICE
14. ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICAL STORAGE
15. VERTICAL CLEARANCE ABOVE FLOOD ELEVATION
16. ARE SIDEWALKS REQUIRED IF SO ON WHAT SIDE BOTH SIDES
17. RECOMMENDED TYPE OF PAVEMENT Bituminous Concrete Pavement
18. TRAFFIC TO BE MAINTAINED UNDER ITEM NO. ONE OR TWO WAYS PROBABLE COST
19. PROBABLE COST OF CLEARING AND GRUBBING STREAM CHANNEL AT STRUCTURE SITE
20. SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES
21. ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS SHOULD PILES BE USED EST. LGTH.

FOUNDATION INFORMATION

OBTAINED FOR DESIGN PURPOSES ONLY, AND THE STATE ASSUMES NO RESPONSIBILITY WHATSOEVER FOR THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN. BOULDERS MAY BE ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION. FOR BORING LOGS, SEE SHEET NO. 2.

GENERAL NOTES

DESIGN SPECIFICATIONS:

AASHO 1957 Edition and as modified by Vermont Dept. of Highways

LIVE LOAD:

H20 - S16 - 44 and Military Loading

DESIGN STRESSES:

Structural Steel fs = 18,000 p.s.i.
Reinforcing Steel fs = 20,000 p.s.i.
Concrete fc = 1,200 p.s.i. f'c = 3,000 p.s.i.

CLEARANCE:

Horizontal: as shown on drawings.
Vertical: 15'-5"

SUPERSTRUCTURE:

Separate structure for each lane.
42' Roadway, 1'-6" Safety Walks, as per SCB-42-56
1 Simple span, rolled beams, composite design, as per SCB-42-56 (97' Span)
Aluminum bridge railing, or galvanized bridge railing, and granite bridge curb as per SB-56-57 (1 & 2).

Bearing and diaphragm connections as per SB-20-56.
Approach slabs as per SB-AS-Square-57.

SUBSTRUCTURE:

Stub abutments

FOUNDATIONS:

Stub abutments # 1, 2 & 4 Steel Piles.
Open abutment # 3 Footing to ledge.

LIST OF SHEETS

IM 089-2(26)
This sheet for information only
BR 49 N & S
CONTRACT NO. 1

SHEET NO.	DESCRIPTION
101	GENERAL PLAN
102	BORINGS
103	PLAN AND ELEVATION
104	ABUTMENTS, NO.1, 2, & 4
105	ABUTMENT, NO. 3
106	APPROACH SLABS
107	STRUCTURAL STEEL PLAN & DETAILS
108	REINFORCING SCHEDULE
109	48" PIPE PLAN, ELEV. & LONG. SEC.
30	HIGHWAY'S PLANS & PROFILES
154	INTERSTATE CROSS SECTIONS
205 - 206	WATERBURY DAM RD. CROSS SEC.
71 - 72	SCB-42-56 (1 & 2)
73 74	SB-56-57 (1 & 2)
77	SB-20-56
78	SB-22-58
75	SB-AS-Square-57

GENERAL PLAN

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE Sta. 872+50
OVER
WATERBURY DAM RD. (REL.) Sta. 1+70

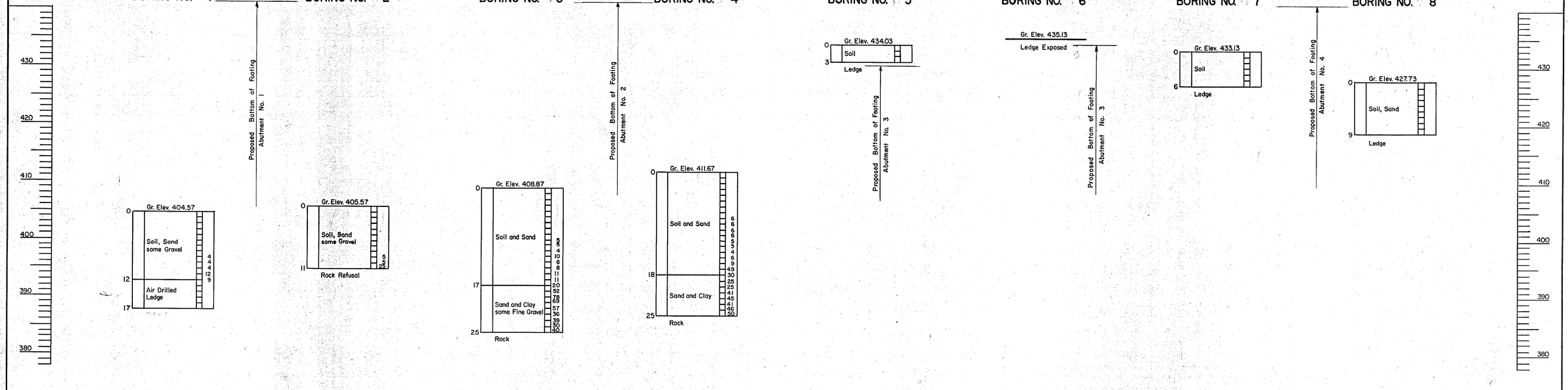
APPROVED BY Wm. A. Henderson DATE 12-16-58

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY		CHECKED BY G.B. & D.S	SCALE AS NOTED
DRAWN BY	A.L.	IN CHARGE J.V.B.	DATE 6-19-58

PROJECT NO. I-89-2(7) SHEET 237 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)		



BORING LOGS

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

Notes: 1. For Borings No. 1 thru No. 4:
Weight of Hammer = 350 #
Drop of Hammer = 24"
Diameter of Casing = 2 1/2"
Thickness of Casing = 3/8"

2. For Locations of Borings, see Sheet No. 1.

IM 089-2(26)
This sheet for information only
BR 49 N & S

CONTRACT NO. 1

BORINGS

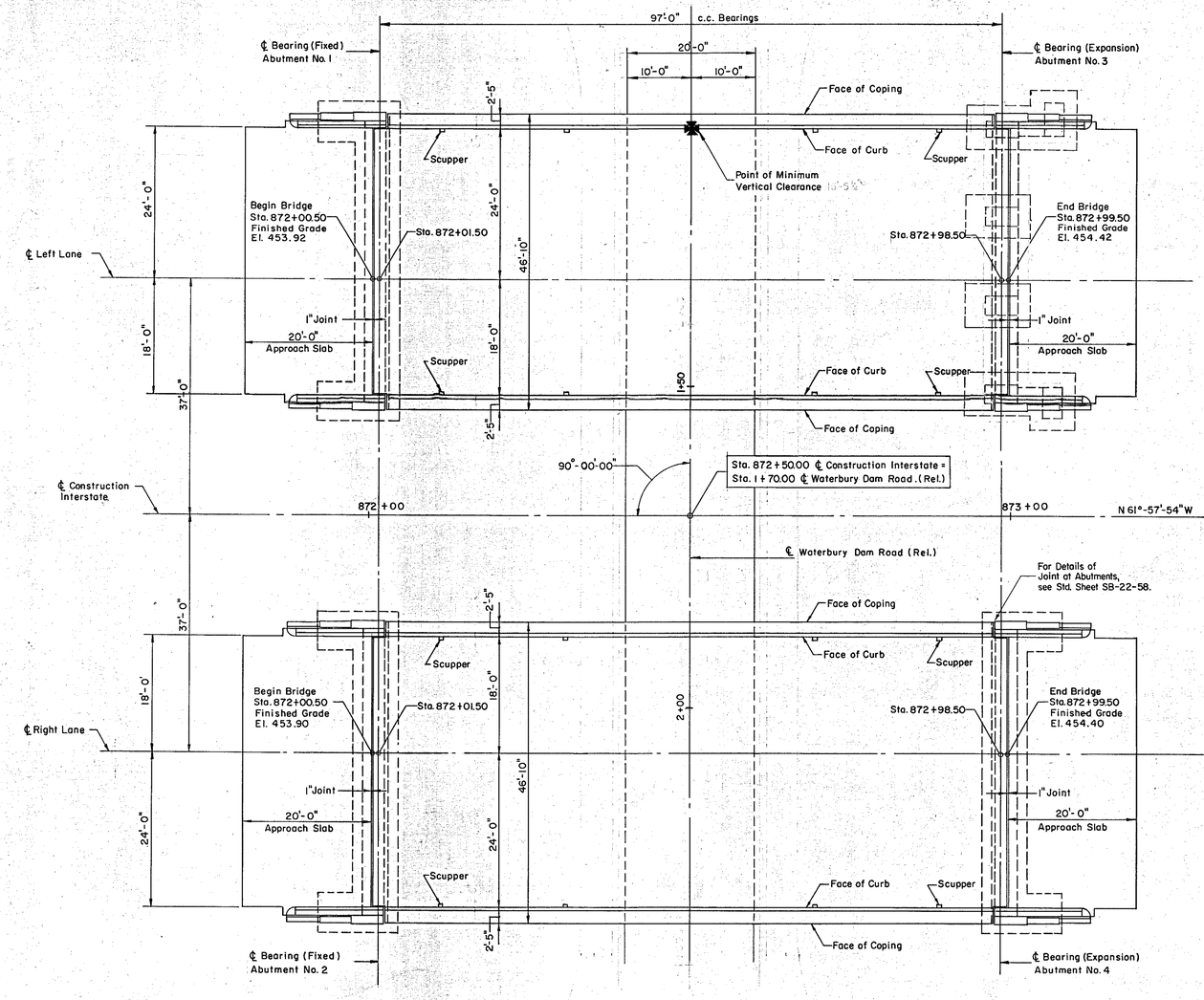
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 872+50
OVER
WATERBURY DAM RD. (RELOC.) STA. 1+70

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY:	CHECKED BY: G.B.	SCALE: AS NOTED
DRAWN BY: S.A.L.	IN CHARGE: J.V.B.	DATE: 6-19-58

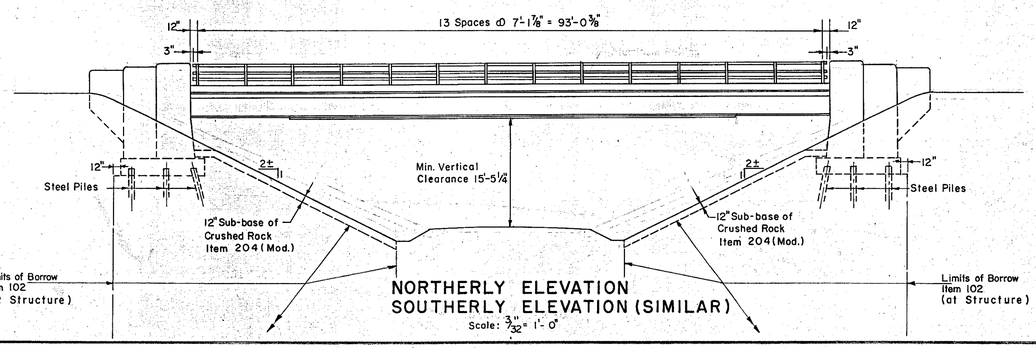
PROJECT NO. I-89-2 (7) | SHEET 238 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2 (7)		



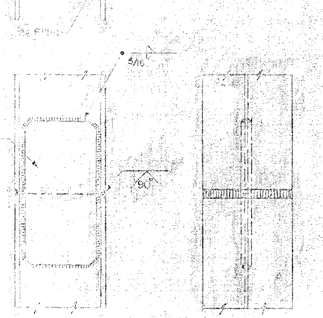
PLAN

Scale: $\frac{3}{32}$" = 1'-0"



NORTHERLY ELEVATION
SOUTHERLY ELEVATION (SIMILAR)

Scale: $\frac{3}{32}$" = 1'-0"



RAILS

Scale: 1½" = 1'-0"

Notes:
1. Railing Posts to be set normal to grade.
2. For Scupper layout see Framing Plan Sheet No. 7
3. All dimensions are horizontal dimensions.
4. For Bridge Marker see Dwg. SB-20-56 (Detail "A")

FOR PILE SPLICE DETAIL SEE STANDARD SHEET SB-20-56

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	NET	OVER-RUN	TOTAL	FINAL
102	Borrow	C.Y.	10,500 ✓	~~+1,050~~	~~+11,550~~	10,500 ✓
556-C	Granite Bridge Curb (Type 1)	L.F.	500 ✓	—	500 ✓	500 ✓
572	Bridge Railing	L.F.	378 ✓	—	378 ✓	378

IM 089-2(26)
This sheet for information only
BR 49 N & S

CONTRACT NO. 1

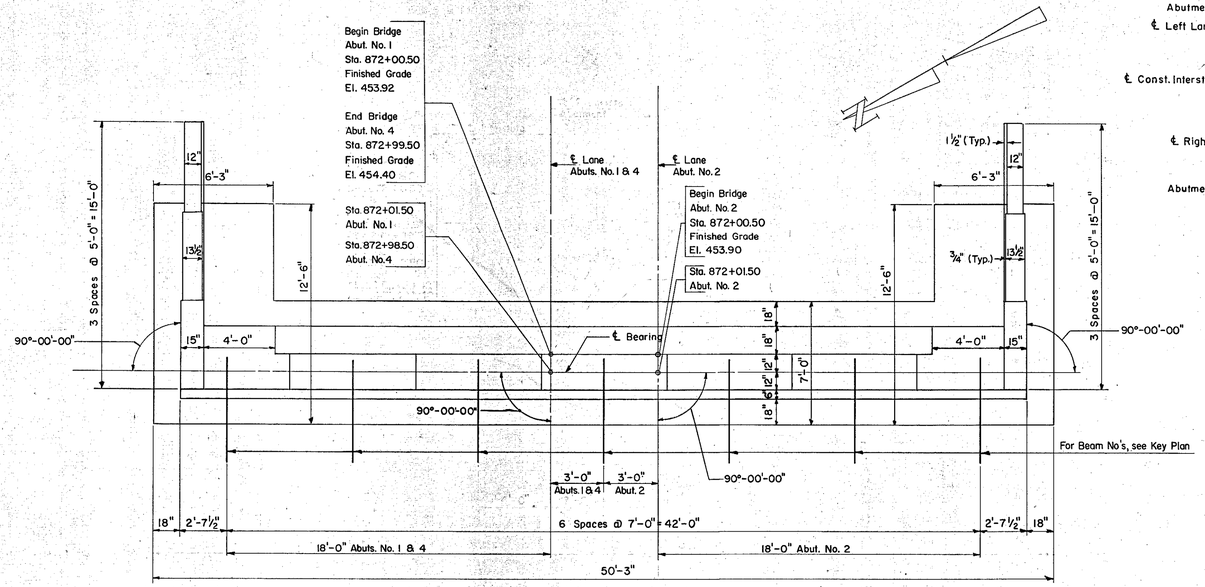
PLAN AND ELEVATION
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 872+50
OVER
WATERBURY DAM RD. (REL.) STA. 1+70

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

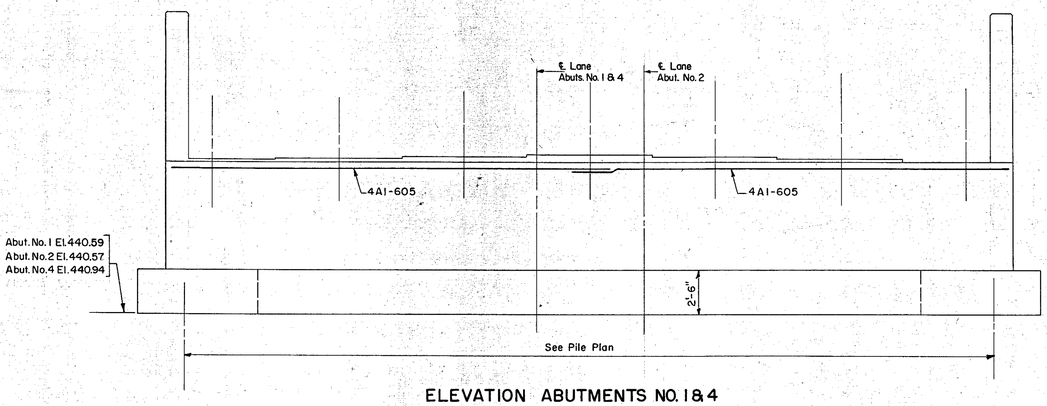
SURVEYED BY: DRAWN BY H.B.C.	CHECKED BY G.B. & D.S. IN CHARGE J.V.B.	SCALE: AS NOTED DATE 6-19-58

PROJECT NO. I-89-2(7) | SHEET 239 OF 307

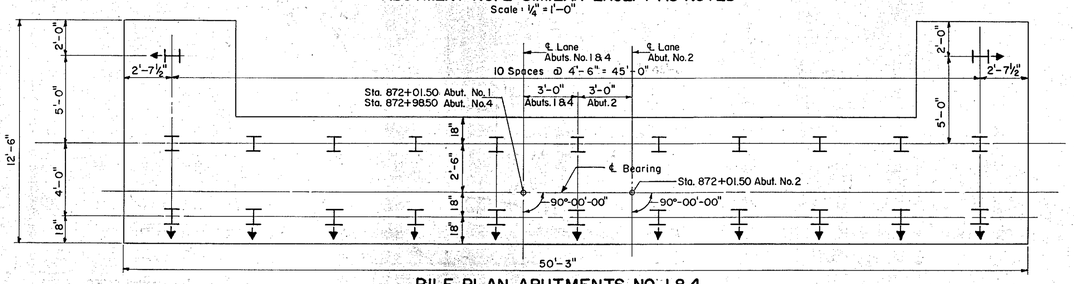
B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
I	VT.	I-89-2(7)	10	



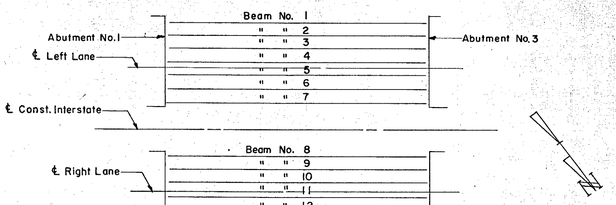
PLAN ABUTMENTS NO. 1 & 4
ABUTMENT NO. 2 SIMILAR EXCEPT AS NOTED
Scale: 1/4" = 1'-0"



ELEVATION ABUTMENTS NO. 1 & 4
ABUTMENT NO. 2 SIMILAR EXCEPT AS NOTED
Scale: 1/4" = 1'-0"



PILE PLAN ABUTMENTS NO. 1 & 4
ABUTMENT NO. 2 SIMILAR EXCEPT AS NOTED
Scale: 1/4" = 1'-0"

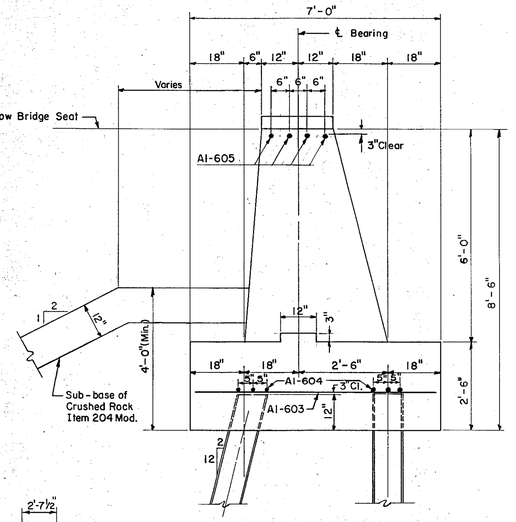


KEY PLAN

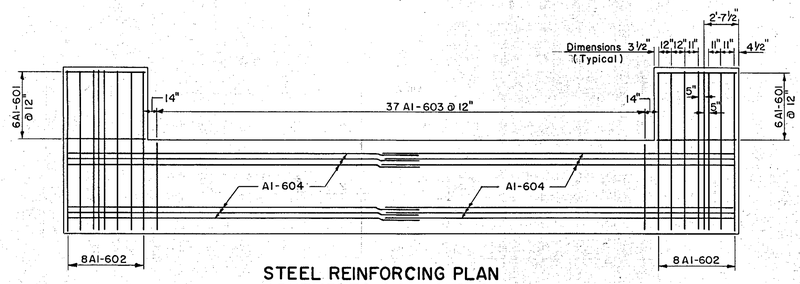
MASONRY SHELF ELEVATIONS

ABUTMENT NO. 1		ABUTMENT NO. 3	
Beam No.	Elev.	Beam No.	Elev.
1.	448.98	1	449.35
2	449.13	2	449.50
3	449.27	3	449.64
4	449.35	4	449.72
5	449.34	5	449.71
6	449.26	6	449.63
7	449.11	7	449.48

ABUTMENT NO. 2		ABUTMENT NO. 4	
Beam No.	Elev.	Beam No.	Elev.
8	449.09	8	449.46
9	449.24	9	449.61
10	449.32	10	449.69
11	449.33	11	449.70
12	449.25	12	449.62
13	449.11	13	449.48
14	448.96	14	449.33



TYPICAL SECTION ABUTMENTS 1,2 & 4
Scale: 1/2" = 1'-0"



STEEL REINFORCING PLAN
ABUTMENTS 1, 2 AND 4

Note: Reinforcing in Abutments 2 and 4 to be prefixed A2 and A4 respectively.

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	ABUTMENT NO. 1 NET	OVER-RUN	TOTAL	FINAL	ABUTMENT NO. 2 NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	21 ✓	~~-2-~~	~~-23-~~	21 ✓	21 ✓	~~-2-~~	~~-23-~~	21 ✓
204	Sub-base of Crushed Rock (Mod.)	C.Y.	~~-66-~~	~~-10-~~	~~-76-~~	60 ✓	~~-66-~~	~~-10-~~	~~-76-~~	60 ✓
222	Gravel Backfill	C.Y.	37 ✓	~~-10-~~	~~-47-~~	37 ✓	37 ✓	~~-10-~~	~~-47-~~	37 ✓
401-B	Concrete Class "B" (Mod.)	C.Y.	87 ✓	~~-4-~~	~~-91-~~	87 ✓	87 ✓	~~-4-~~	~~-91-~~	87 ✓
402	Reinforcing Steel	Lbs.	See Reinforcing Schedule Sheet No. 8							
407	Asphaltic-Asbestos Coating	S.Y.	~~-5-~~	—	~~-5-~~	10 ✓	~~-5-~~	—	~~-5-~~	10 ✓
504	Steel Piling	L.F.	~~-1152-~~	—	~~-1152-~~	1232 ✓	~~-1368-~~	—	~~-1368-~~	1600 ✓

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	ABUTMENT NO. 3 NET	OVER-RUN	TOTAL	FINAL	ABUTMENT NO. 4 NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	~~-50-~~	~~-5-~~	~~-55-~~	68 ✓	21 ✓	~~-2-~~	~~-23-~~	21 ✓
204	Sub-base of Crushed Rock (Mod.)	C.Y.	~~-66-~~	~~-10-~~	~~-76-~~	60 ✓	~~-66-~~	~~-10-~~	~~-76-~~	60 ✓
222	Gravel Backfill	C.Y.	19 ✓	~~-5-~~	~~-24-~~	19 ✓	37 ✓	~~-10-~~	~~-47-~~	37 ✓
401-B	Concrete Class B (Mod.)	C.Y.	~~-118-~~	~~-6-~~	~~-124-~~	134 ✓	87 ✓	~~-4-~~	~~-91-~~	87 ✓
402	Reinforcing Steel	Lbs.	See Reinforcing Schedule Sheet No. 8							
407	Asphaltic-Asbestos Coating	S.Y.	~~-5-~~	—	~~-5-~~	10 ✓	~~-5-~~	—	~~-5-~~	10 ✓
504	Steel Piling	L.F.					~~-480-~~	—	~~-480-~~	676 ✓

TYPICAL SECTION ABUTMENTS 1,2 & 4
Scale: 1/2" = 1'-0"

Note:
1. Beam seat elevations are to top of concrete.
2. For Typical Elevation of Wing walls, see Sheet No. 6
3. Steel piles to be 10 BP-42, 35 Ton design Load Vertical piles indicated thus I. Battered piles indicated thus I.
4. For Limits of Gravel Backfill see Sheet No. 6
5. Prior to driving piles, rock free fill shall be placed, under the abutment to approximately the pile cut-off elevation and with a surface area at least 2 (two) feet outside the abutment area. After the piles are driven the fill shall be excavated to the elevation of the bottom of footing.
6. Slope area between bridge seats 1/4" per ft. Entire exposed surface of the Bridge Seat to be covered with 1/2" Asphaltic-Asbestos Coating after superstructure is in place.
7. A layer of Sub-Base of Crushed Rock (Mod.) Item 204, one (1) foot thick, 38 feet long shall be placed on the slope of all abutments. The edges of this area to be in line with the outside of the end posts and parallel to the centerline of roadway.
8. For estimating purposes the length of steel piles is assumed to be 48' for Abutment No. 1, 52' for Abutment No. 2 and 20' (average) for Abutment No. 4.
9. All piles shall be driven thru the fill, into the original ground and to refusal.

IM 089-2(26)
This sheet for information only
BR 49 N & S

CONTRACT NO. 1

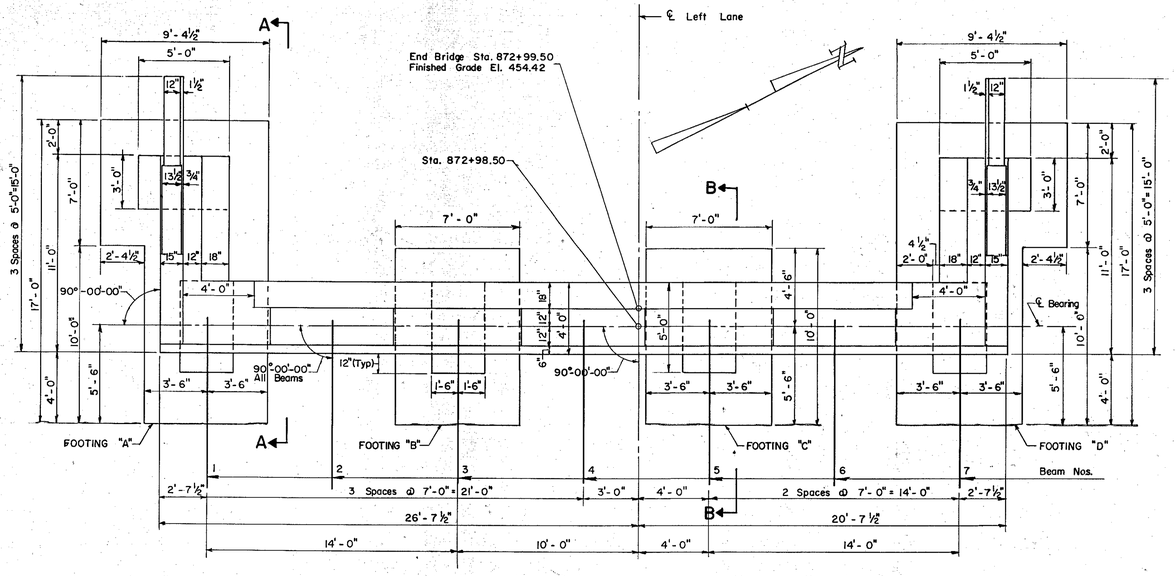
ABUTMENTS NO. 1, 2 AND 4
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 872+50
OVER
WATERBURY DAM RD. (REL.) STA. 1+70

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

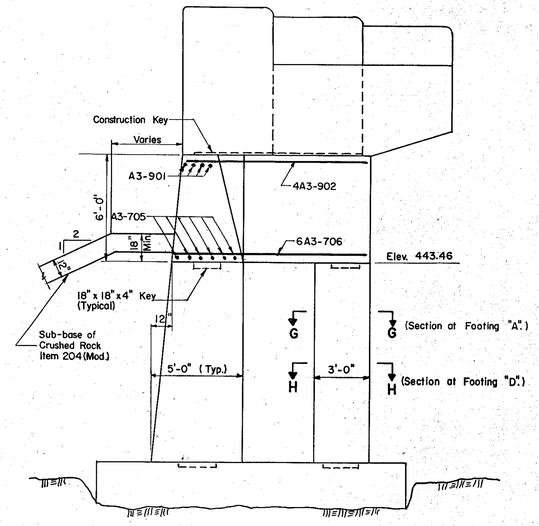
SURVEYED BY: DRAWN BY A.R.C.	CHECKED BY G.B. & D.S. IN CHARGE J.V.B.	SCALE AS NOTED DATE 6-19-58
PROJECT NO. I-89-2(7)	SHEET 240 OF 307	

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
I	VT.	I-89-2(7)	105	220



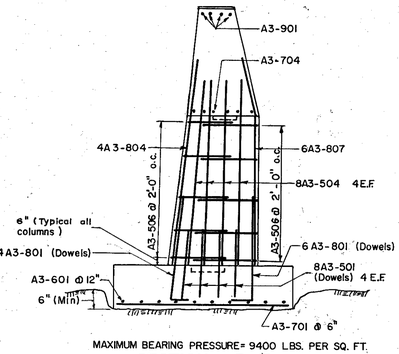
PLAN ABUTMENT NO. 3

Scale: ¼" = 1'-0"



SECTION A-A

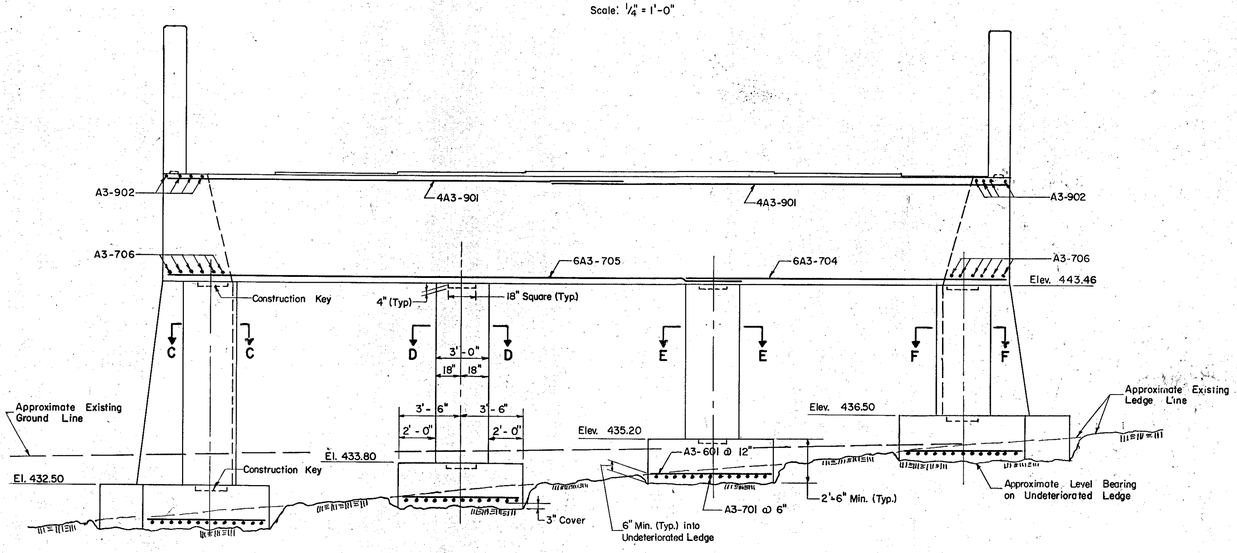
Scale: ¼" = 1'-0"



MAXIMUM BEARING PRESSURE= 9400 LBS. PER SQ. FT.

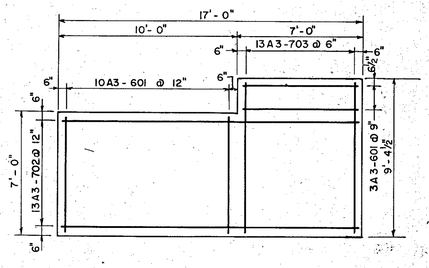
SECTION B-B

Scale: ¼" = 1'-0"



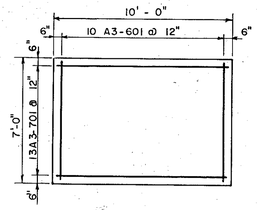
ELEVATION ABUTMENT NO. 3

Scale: ¼" = 1'-0"



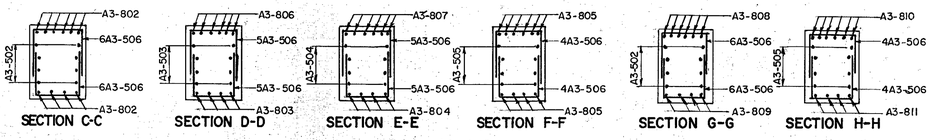
REINFORCING PLAN - FOOTINGS "A" & "D"

Scale: ¼" = 1'-0"

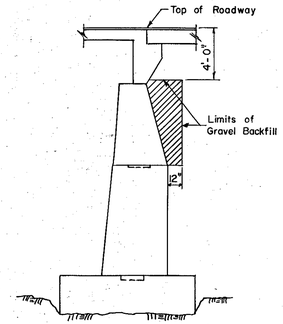


REINFORCING PLAN - FOOTINGS "B" & "C"

Scale: ¼" = 1'-0"



Scale: ¼" = 1'-0"



LIMITS OF GRAVEL BACKFILL AT ABUTMENT NO. 3

Not to Scale

Notes:
1. For Masonry Shelf Elevations see Sheet No. 4.
2. For Estimated Quantities see Sheet No. 4.
3. For Wingwall Reinforcing and Details see Sheet No. 6.
4. Reinforcing Cover to be 2" except as noted.
5. See Notes 1, 6 & 7, Sheet No. 4.

IM 089-2(26)
This sheet for information only
BR 49 N & S

CONTRACT NO. 1

ABUTMENT NO. 3

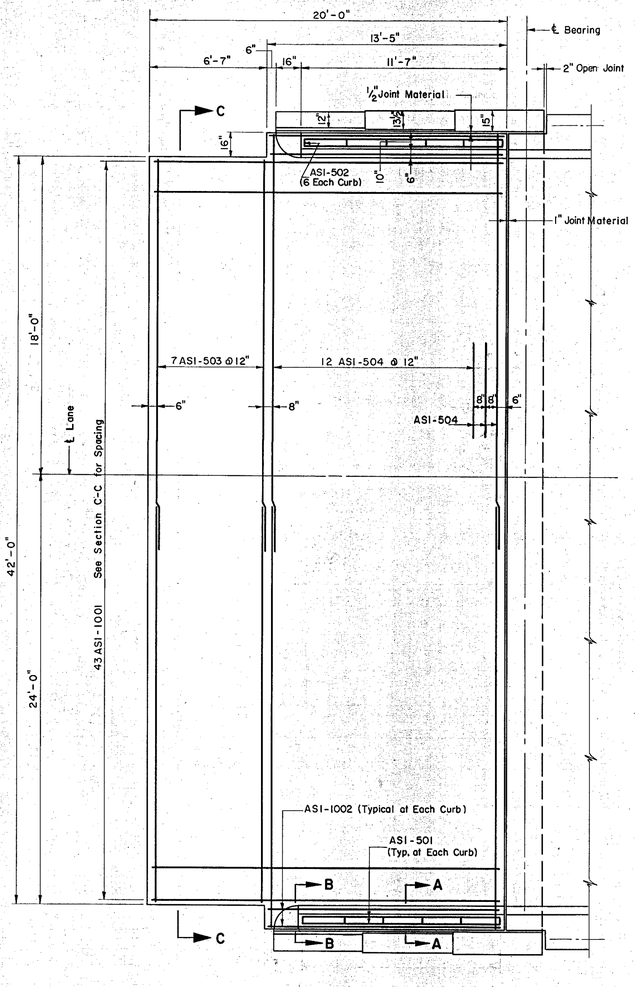
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY
INTERSTATE STA. 872+50
OVER
WATERBURY DAM RD. (REL.) STA. 1+70

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY:	CHECKED BY: G.B.	SCALE: AS NOTED
DRAWN BY: R.E.M.	IN CHARGE: J.V.B.	DATE: 6-19-58
PROJECT NO. I-89-2(7)	SHEET 241 OF 307	

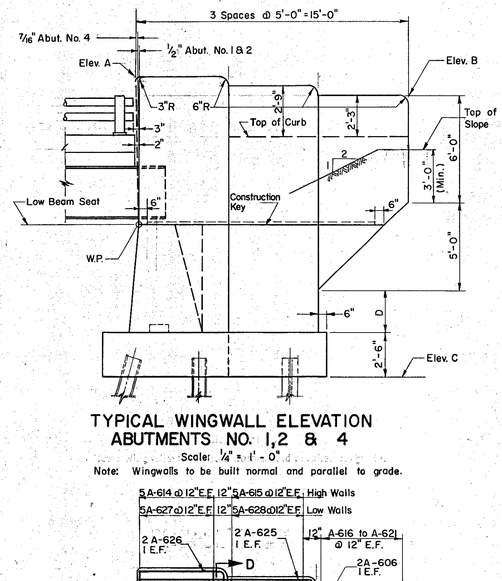
B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	206	



TYPICAL APPROACH SLAB

Scale: ¼" = 1'-0"

Note: For Sections A-A & B-B
See Std. Sheet SB-AS-Sq.57



TYPICAL WINGWALL ELEVATION
ABUTMENTS NO. 1, 2 & 4

Scale: ¼" = 1'-0"

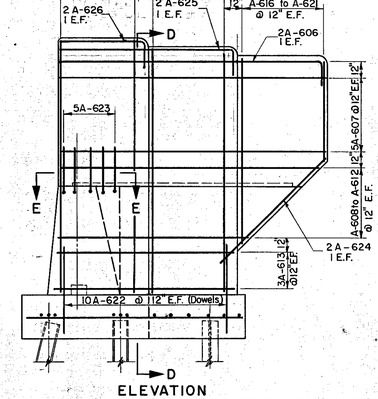
Note: Wingwalls to be built normal and parallel to grade.

Abutment No. 1	Elev. A	Elev. B	Elev. C	D
South Wingwall	457.63	456.55	440.59	2'-5½"
North Wingwall	457.75	456.67	440.59	2'-7"

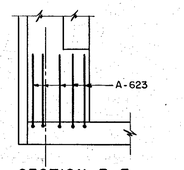
Abutment No. 2	Elev. A	Elev. B	Elev. C	D
South Wingwall	457.73	456.65	440.57	2'-7"
North Wingwall	457.61	456.53	440.57	2'-5½"

Abutment No. 3	Elev. A	Elev. B
South Wingwall	458.11	457.19
North Wingwall	458.23	457.31

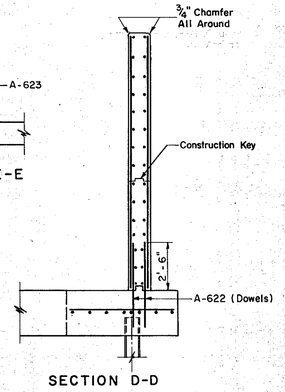
Abutment No. 4	Elev. A	Elev. B	Elev. C	D
South Wingwall	458.21	457.29	440.94	2'-10⅛"
North Wingwall	458.09	457.17	440.94	2'-8⅜"



ELEVATION



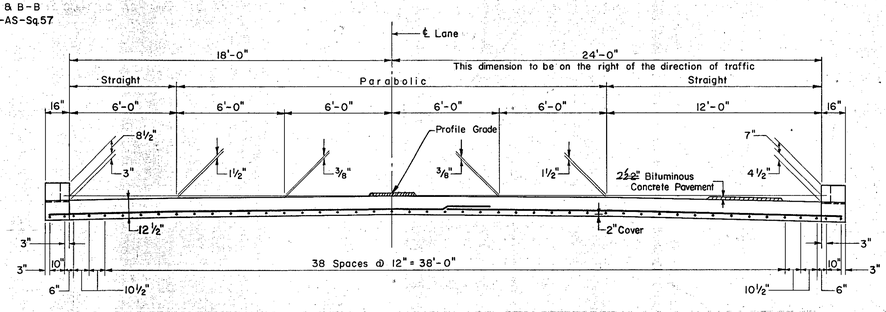
SECTION E-E



SECTION D-D

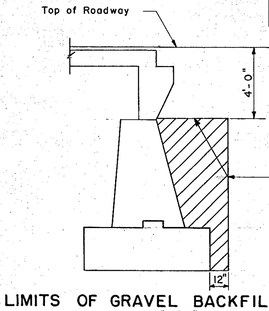
TYPICAL WINGWALL REINFORCING
ABUTMENTS NO. 1, 2 & 4

Scale: ¼" = 1'-0"



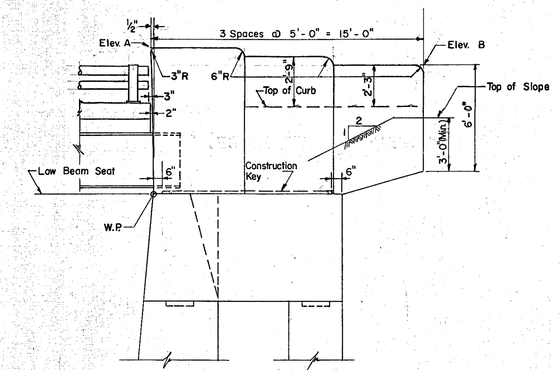
SECTION C-C

Scale: ¼" = 1'-0"



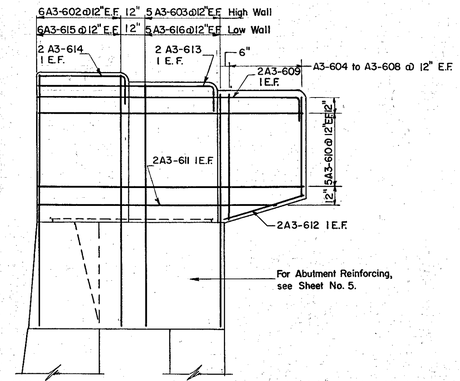
LIMITS OF GRAVEL BACKFILL ABUTMENTS 1, 2 & 4

Scale: ¼" = 1'-0"



WINGWALL ELEVATION AT ABUTMENT NO. 3

Scale: ¼" = 1'-0"



WINGWALL REINFORCING AT ABUTMENT NO. 3

Scale: ¼" = 1'-0"

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	APPROACH SLABS NET	OVER-RUN	TOTAL	FINAL
361-B	Bituminous Concrete Pavement (Left Lane)	Tons	~~21~~	~~3~~	~~24~~	See Total
401-B	Concrete Class B (Mod.) (Left Lane)	C.Y.	68 ✓	~~4~~	~~72~~	68 ✓
361-B	Bituminous Concrete Pavement (Right Lane)	Tons	~~21~~	~~3~~	~~24~~	See Total
401-B	Concrete Class B (Mod.) (Right Lane)	C.Y.	68 ✓	~~4~~	~~72~~	68 ✓
402	Reinforcing Steel	Lbs.	See Reinforcing Schedule Sh. No. 8			
556-C	Granite Bridge Curb (Type 1)	L.F.	See Sheet No. 3			

IM 089-2(26)
This sheet for information only
BR 49 N & S

Note: All cover to be 2" unless otherwise noted.

CONTRACT NO. 1

APPROACH SLABS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

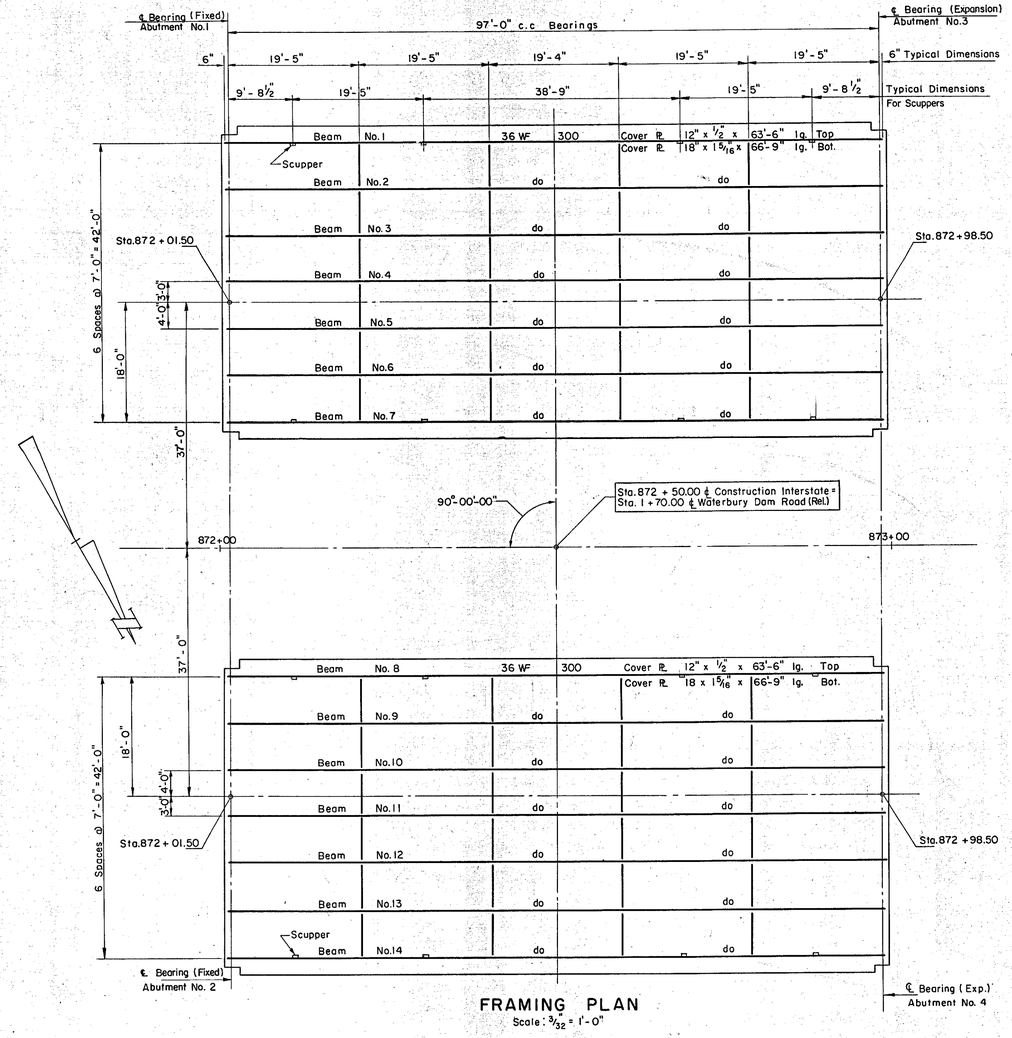
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 872+50
OVER
WATERBURY DAM RD. (REL.) STA. 1+70

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	CHECKED BY G.B. & D.S.	SCALE AS NOTED
DRAWN BY A.L.	IN CHARGE J.V.B	DATE 6-19-58

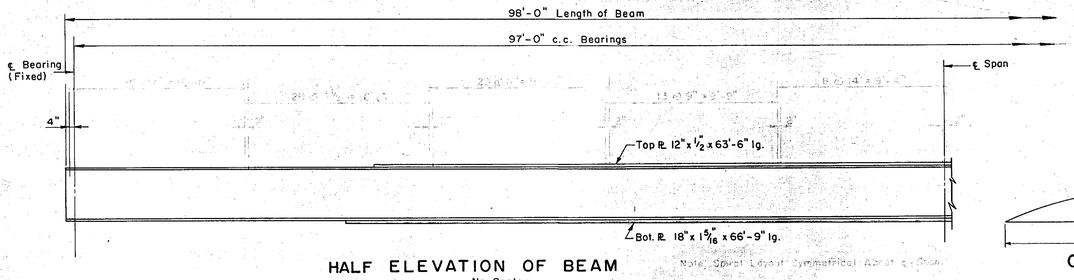
PROJECT NO. I-89-2(7) | SHEET 242 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	10	



FRAMING PLAN

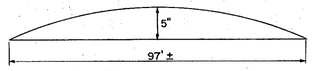
Scale: 3/32" = 1'-0"



HALF ELEVATION OF BEAM

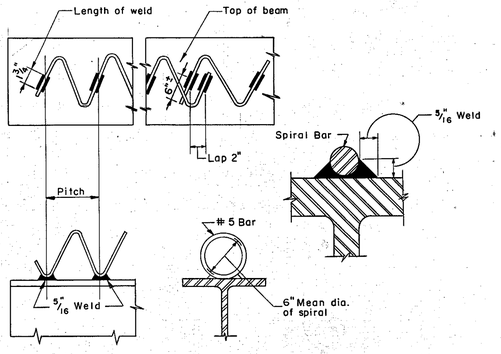
No Scale

Note: Spiral Layout Symmetrical About ℄ Span



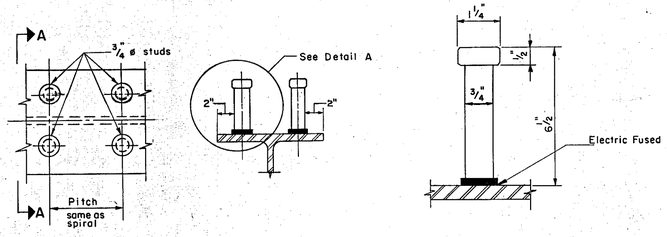
CAMBER DIAGRAM

No Scale



SPIRAL WELDING DETAILS

No Scale



PLAN SECTION A-A DETAIL A

NOTE: WHERE A DOUBLE SPIRAL IS CALLED FOR IN THE SCHEDULE, (4) FOUR 6 1/2" LONG STUDS ARE REQUIRED PER PITCH.

ALTERNATE SHEAR CONNECTOR

No Scale

ESTIMATED QUANTITIES

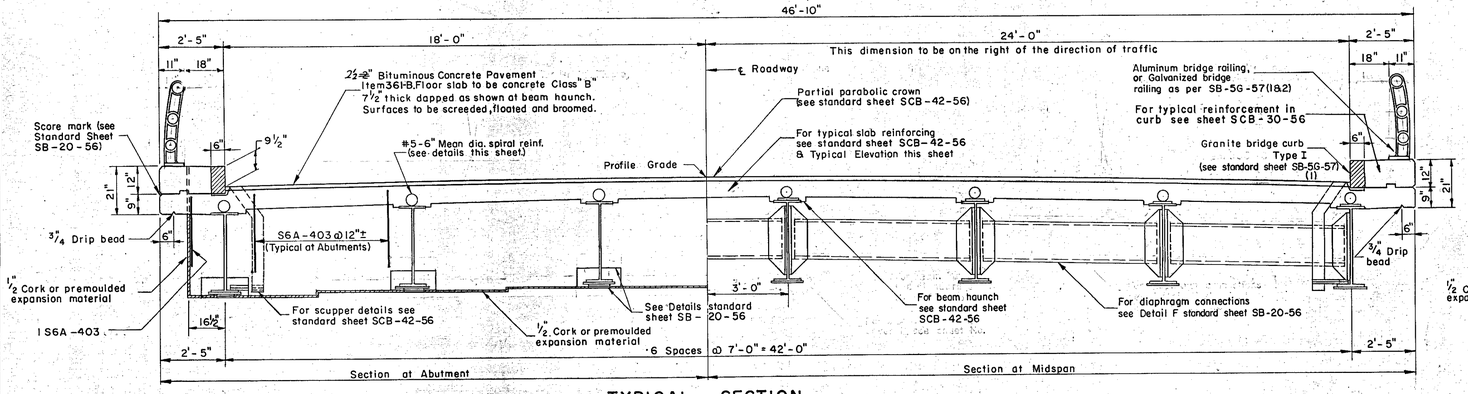
ITEM NO.	DESCRIPTION	UNIT	RIGHT LANE NET	RIGHT LANE OVER-RUN	RIGHT LANE TOTAL	RIGHT LANE FINAL	LEFT LANE NET	LEFT LANE OVER-RUN	LEFT LANE TOTAL	LEFT LANE FINAL
361-B	Bit. Conc. Pavement	Tons	~~52~~	~~8~~	~~60~~	See Total ✓	~~52~~	~~8~~	~~60~~	See Total ✓
401-B	Concrete Class B (Mod.)	C.Y.	~~145~~	~~7~~	~~152~~	157 ✓	~~145~~	~~7~~	~~152~~	157 ✓
402	Reinforcing Steel	Lbs.	See Reinforcing Steel Schedule Sheet No. 8							
403-c	Spiral Reinforcement (5,100 LBS.)	L.S.	1 ✓		1 ✓	1 ✓	1 ✓		1 ✓	1 ✓
404-A	Structural Steel	Lbs.	~~264,742~~	~~5295~~	~~270,037~~	263,155 ✓	~~264,742~~	~~5295~~	~~270,037~~	263,155 ✓

NOTES:

1. All dimensions are horizontal dimensions
2. All diaphragms shall be 18 C 42.7
3. All beams shall be rolled to true circular camber with the middle ordinate as shown on this sheet.
4. The steel for all beams and cover plates shall conform to A.S.T.M. Designation A 373. All other structural steel shall conform to either A 7 or A 373.

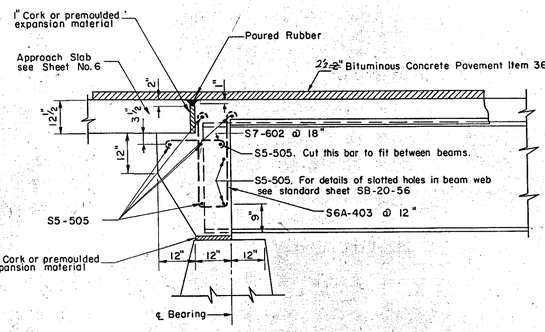
SPIRAL SCHEDULE

SPIRAL PITCH	0-10' FROM BRNG	DOUBLE @ 5 1/2"
" "	10-20' OR ℄ SPAN	DOUBLE @ 6 1/2"
" "	20-30' OR ℄ SPAN	4 1/2"
" "	30-40' OR ℄ SPAN	5 1/2"
" "	40'-℄ SPAN	7"



TYPICAL SECTION

Scale: 3/8" = 1'-0"



ELEVATION AT ABUTMENT (SQUARE)

Scale: 1/2" = 1'-0"

IM 089-2(26)
This sheet for information only
BR 49 N & S

CONTRACT NO. 1

STRUCTURAL STEEL PLAN AND DETAILS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA.872 + 50
OVER
WATERBURY DAM RD. (REL.) STA.1 + 70

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY		CHECKED BY G.B. & D.S.	SCALE AS NOTED
DRAWN BY V.C.S.	IN CHARGE J.V.B.	DATE 6-19-58	

PROJECT NO. I-89-2(7) SHT 243 OF 307

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
			ABUTMENT NO.1														
1																	
2	12	#6	5'- 9"	A1-601	Str												
3	16	↓	12'- 0"	A1-602	↓												
4	37		6'- 6"	A1-603													
5	12		26'- 2"	A1-604	↓												
6	8		24'- 9"	A1-605	Str												
7	4		15'-10"	A1-606	2	1'-2"	14'-8"										
8	20		14'- 8"	A1-607	Str												
9	4		14'- 5"	A1-608	↓												
10	↓		13'- 5"	A1-609													
11			12'- 5"	A1-610													
12	↓		11'- 5"	A1-611													
13	4		10'- 5"	A1-612													
14	12		9'-10"	A1-613													
15	10		14'- 4"	A1-614													
16	10		13'-10"	A1-615													
17	4		10'- 6"	A1-616													
18	↓		9'- 6"	A1-617													
19			8'- 6"	A1-618													
20			7'- 6"	A1-619													
21	↓		6'- 6"	A1-620													
22	4		5'- 6"	A1-621	↓												
23	*41		4'- 6"	A1-622	Str												
24	10		6'- 0"	A1-623	17		3'-0"	3'-0"									
25	4		8'- 0"	A1-624	Str												
26	4		10'- 10"	A1-625	2	1'-2"	9'-8"										
27	4		5'- 10"	A1-626	2	1'-2"	4'-8"										
28	10	↓	14'- 2"	A1-627	Str.												
29	10	#6	13'- 8"	A1-628	Str.												
30			ABUTMENT NO.2														
31																	
32			Same Reinforcing as in Abutment No. 1 except														
33			bars to be prefixed "A2". (Less test bar)														
34																	
35																	
36																	
37																	
38			ABUTMENT NO.4														
39																	
40	12	#6	5'- 9"	A4-601	Str												
41	16	↓	12'- 0"	A4-602	↓												
42	37		6'- 6"	A4-603													
43	12		26'- 2"	A4-604	↓												
44	8		24'- 9"	A4-605	Str												
45	4		15'-10"	A4-606	2	1'-2"	14'-8"										
46	20		14'- 8"	A4-607	Str												
47	4		14'- 5"	A4-608	↓												
48	↓		13'- 5"	A4-609													
49			12'- 5"	A4-610													
50	↓		11'- 5"	A4-611													
51	4		10'- 5"	A4-612													
52	12		9'-10"	A4-613													
53	10		14'- 4"	A4-614													
54	10		13'-10"	A4-615													
55	4		10'- 6"	A4-616													
56	↓		9'- 6"	A4-617													
57			8'- 6"	A4-618													
58			7'- 6"	A4-619													
59	↓		6'- 6"	A4-620													
60	4		5'- 6"	A4-621	↓												
61	40		4'- 6"	A4-622	Str												
62	10		6'- 0"	A4-623	17		3'-0"	3'-0"									
63	4		8'- 0"	A4-624	Str												
64	4		10'- 10"	A4-625	2	1'-2"	9'-8"										
65	4		5'-10"	A4-626	2	1'-2"	4'-8"										
66	10	↓	14'- 2"	A4-627	Str.												
67	10	#6	13'- 8"	A4-628	Str.												
68																	
69																	
70																	
71																	
72																	
73																	
74																	
75																	
76																	
77																	
78																	
79																	
80																	
81																	

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
82			APPROACH SLAB NO.1														
83																	
84	* 5	#5	11'- 2"	AS1-501	Str												
85	12	#5	4'- 4"	AS1-502	S3	0'- 5"	1'-6"	0'-6"	1'-6"			0'-5"	0'-2⅜"				
86	14	#5	21'- 9"	AS1-503	Str												
87	28	#5	23'- 1"	AS1-504	Str												
88	43	#10	21'- 4"	AS1-1001	1	0'-11"	19'-6"					0'-11"		0'-8"			
89	* 5	#10	14'- 9"	AS1-1002	1	0'-11"	12'-4½"					0'-11"		0'-8"			
90																	
91																	
92																	
93																	
94			APPROACH SLABS NO. 2, 3 & 4														
95																	
96			Same Reinforcing as in Approach Slab No. 1 except bars to be														
97			prefixed "AS2", "AS3" & "AS4" Respectively. (Less test bars)														
98																	
99																	
100																	
101																	
102			DECK SPAN (LEFT LANE)														
103																	
104	183	#5	17'- 3"	S1-A-501	Str												
105	183	#5	31'- 3"	S1-B-502	Str												
106	183	#5	20'- 9"	S1-C-503	Str												
107	183	#5	27'- 8"	S1-D-504	Str												
108	252	#4	34'- 3"	S2-401	Str												
109	* 43	#6	34'- 6"	S3-601	Str												
110	128	#4	4'-10"	S4-402	S3	0'-4½"	1'-4"	1'-5"	1'-4"			0'-4½"	0'-2½"				
111	32	#5	23'- 3"	S5-505	Str												
112	* 77	#4	7'- 2"	S6A-403	S2	0'-4½"	2'-10"	0'-9"	2'-10"			0'-4½"	0'-2½"				
113	62	#6	3'- 0"	S7-602	1	0'-8"	1'-8"					0'-8"		0'-6"			
114																	
115																	
116																	
117																	
118			DECK SPAN (RIGHT LANE)														
119																	
120			Same Reinforcing as Left Lane (Less test bars)														
121																	
122																	
123																	
124																	
125			ABUTMENT NO. 3														
126																	
127	* 49	#5	4'- 2"	A3-501	Str.												
128	16	↓	13'- 4"	A3-502	↓												
129	8		11'- 0"	A3-503													
130	8		10'- 8"	A3-504	↓												
131	16	↓	9'- 4"	A3-505	Str.												
132	60	#5	9'- 6"	A3-506	S-10		3'- 5"	2'- 8"	3'-5"								
133	66	#6	6'- 6"	A3-601	Str.												
134	12	↓	14'- 4"	A3-602	↓												
135	10		13'-10"	A3-603													
136	4		6'-10"	A3-604													
137	↓		6'- 6"	A3-605													
138			6'- 2"	A3-606													
139			5'-10"	A3-607	↓												
140	↓		5'- 6"	A3-608	Str.												
140	4		15'-10"	A3-609	2	1'- 2"	14'- 8"										
141	20		14'- 8"	A3-610	Str.												
142	4		13'- 0"	A3-611	↓												
143	4	#6	5'- 0"	A3-612													
144	* 27	#7	9'- 6"	A3-701													
145	26	↓	16'- 6"	A3-702													
146	26		8'- 10"	A3-703													
147	6		17'- 10"	A3-704	↓												
148	6		31'- 10"	A3- 705													
149	12	#7	10'- 6"	A3-706	Str.												
150	* 61	#8	6'- 6"	A3-801	2	1'-0"	5'- 6"										
151	10	↓	14'- 7"	A3-802	Str.												
152	4		13'- 3"	A3-803	↓												
153	4		11'- 10"	A3-804													
154	10		10'- 7"	A3- 805	Str												
155	6		13'- 0"	A3-806	19		3'- 4"	9'-8"				0'-10"		3'-3"			
156	6		11'- 7"	A3-807	↓		3'-4"	8'-3"				0'-10"		3'-3"			
157	6		14'- 4"	A3-808			3'- 4"	11'-0"				0'-10"		3'- 3"			
158	4		14'- 4"	A3-809	↓		3'- 4"	11'- 0"				0'- 4"		3'- 3"			
159	6	↓	10'- 4"	A3-810			3'- 4"	7'- 0"				0'-10"		3'- 3"			
160	4	#8	10'- 4"	A3- 811	19		3'- 4"	7'- 0"				0'- 7"		3'- 2"			
161	8	#9	25'- 6"	A3-901	Str.												
162	* 9	#9	10'- 0"	A3-902	Str.												

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163	4	#6	10'-10"	A3-613	2	1'-2"	9'-8"										
164	4	↓	5'-10"	A3-614	2	1'-2"	4'-8"										
165	12	↓	14'- 2"	A3-615	Str.												
166	10	#6	13'- 8"	A3-616	Str.												
167																	
168																	
169																	
170																	
171																	
172																	
173																	
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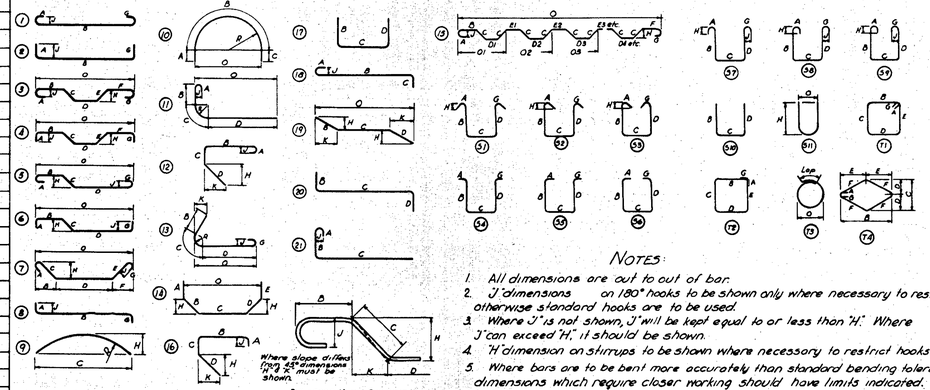
188																	
189																	
190																	

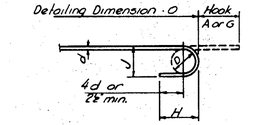
B.P.R. DIV NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	108	220

TYPICAL BAR BENDS



NOTES:

1. All dimensions are out to out of bar.
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H.' Where 'J' can exceed 'H,' it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.
8. Bar reinforcement metal shall conform to the requirements of the Standard Specifications for new Billet-Steel Concrete Reinforcement Bars (Intermediate Grade) Serial Designation A.A.S.H.O. M31-48 or its latest revision. All bars shall be deformed to conform with A.S.T.M. Specifications A 305-49.
9. * Denotes one additional bar for testing purposes.



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size — Present (Numbers)

Equivalent Size	Present (Numbers)
1/4" ϕ	#2
3/8" ϕ	#3
1/2" ϕ	#4
5/8" ϕ	#5
3/4" ϕ	#6
7/8" ϕ	#7
1" ϕ	#8
1" □	#9
1 1/8" ϕ	#10
1 1/8" □	#11

IM 089-2(26)
This sheet for information only
BR 49 N & S

ESTIMATED QUANTITIES

	Location	Pounds
FINAL 4,252	ABUT. NO. 1	~~4,253~~
	ABUT. NO. 2	4,246 ✓✓
10,655	ABUT. NO. 3	~~10,676~~
4,246	ABUT. NO. 4	~~4,225~~
5,369	APP. SLAB NO. 1	~~5,368~~
	APP. SLAB NO. 2	5,293 ✓✓
	APP. SLAB NO. 3	5,293 ✓✓
	APP. SLAB NO. 4	5,293 ✓✓
	DECK SPAN LT. LANE	28,345 ✓✓
	DECK SPAN RT. LANE	28,288 ✓✓
	TOTAL	101,280 ✓✓

CONTRACT NO. 1

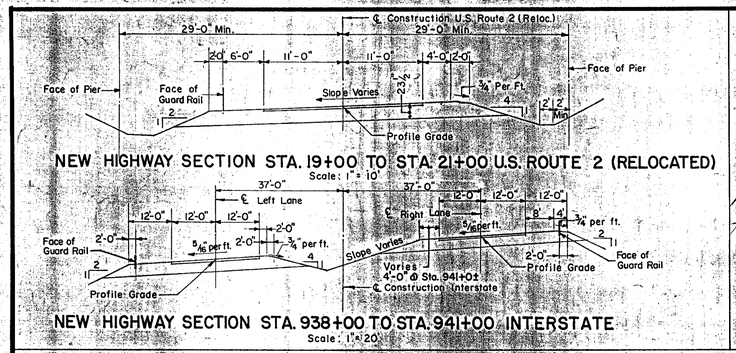
REINFORCING SCHEDULE
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY
INTERSTATE STA. 872+50
WATERBURY DAM RD.(REL.) STA. 1+70

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	CHECKED BY	SCALE
DRAWN BY B.L.O.	IN CHARGE J.V.B.	DATE 6 - 19 - 58

PROJECT NO. I-89-2(7) SHEET 244 OF 307

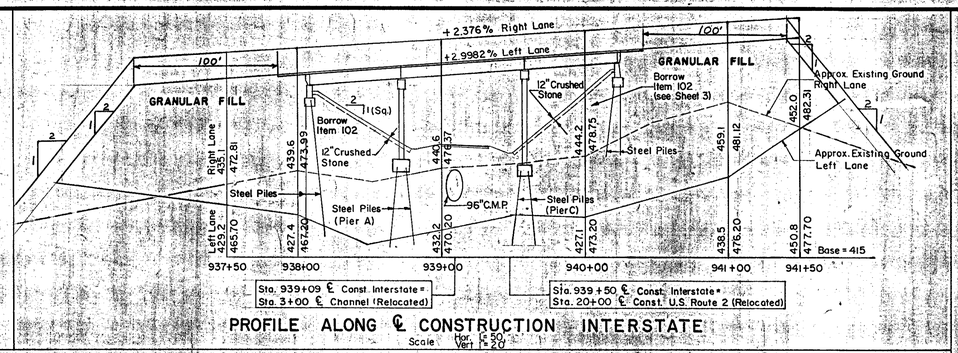


NEW HIGHWAY SECTION STA. 19+00 TO STA 21+00 U.S. ROUTE 2 (RELOCATED)

Scale: 1" = 10'

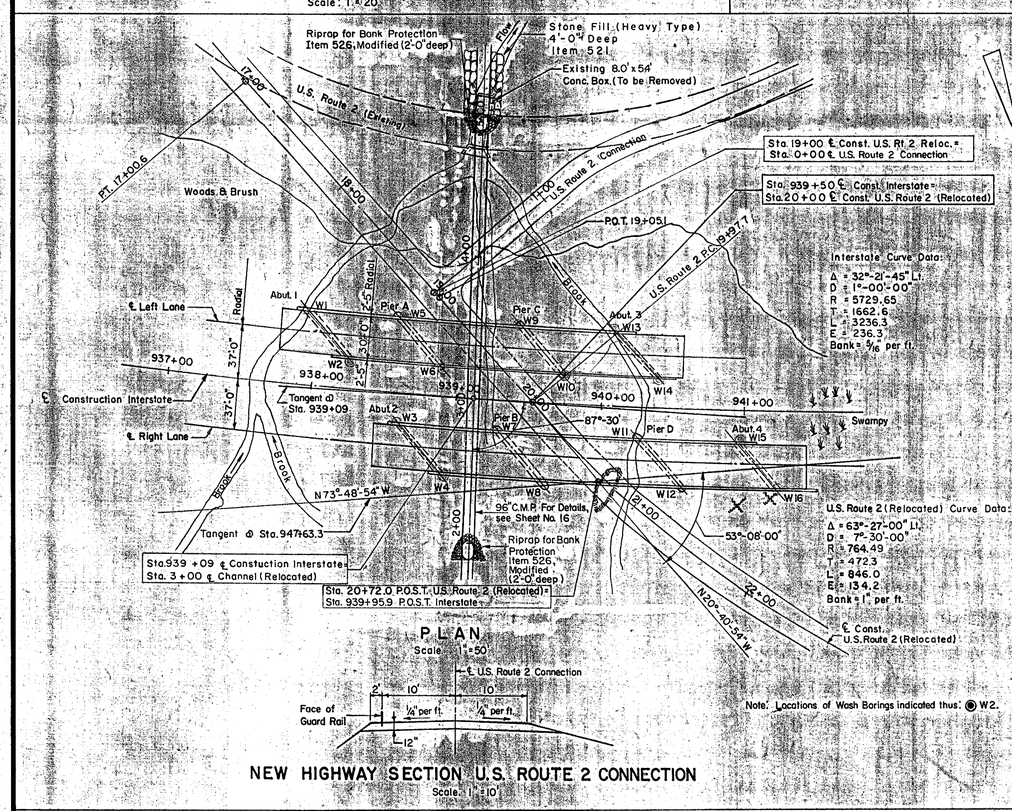
NEW HIGHWAY SECTION STA. 938+00 TO STA. 941+00 INTERSTATE

Scale: 1" = 20'



PROFILE ALONG ℄ CONSTRUCTION INTERSTATE

Scale Hor. 1" = 50' Vert 1" = 20'

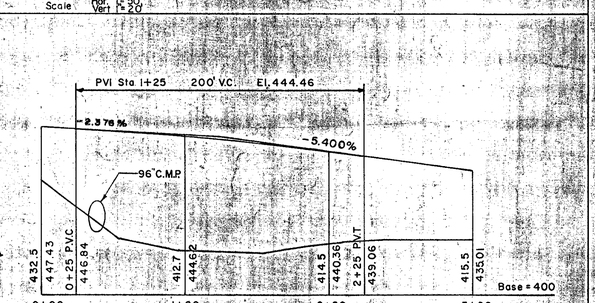


PLAN

Scale 1" = 50'

NEW HIGHWAY SECTION U.S. ROUTE 2 CONNECTION

Scale 1" = 10'



PROFILE ALONG ℄ U.S. ROUTE 2 CONNECTION

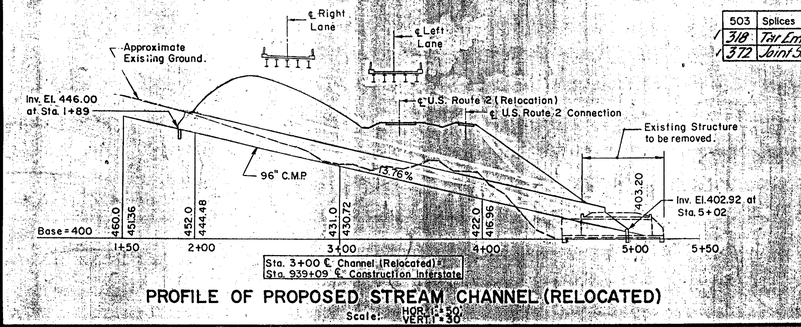
Scale: Hor. 1" = 50' Vert. 1" = 20'

SUMMARY OF QUANTITIES FOR PIPE

ITEM NO.	DESCRIPTION	UNIT	NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	787	79	866	
222	Gravel Backfill	C.Y.	1950	507	2457	
401-B	Concrete Class B (Mod.)	C.Y.	6	–	6	
402	Reinforcing Steel	LBS.	512	–	512	
429-A	Corrugated Galv. Metal Plate Pipe	L.S.	1	–	1	
526	Riprap for Bank Protection (Mod.)	C.Y.	94	14	108	
521	Stone Fill (Heavy Type)	C.Y.	610	90	700	

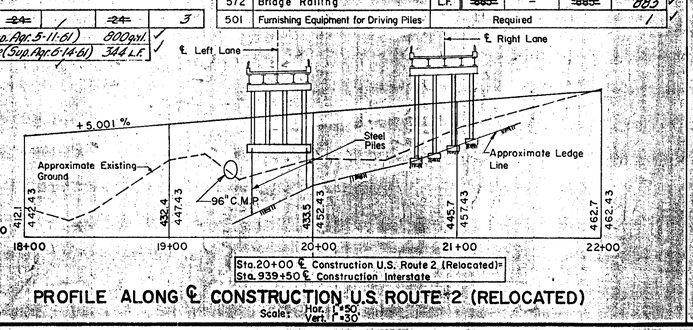
SUMMARY OF QUANTITIES FOR BRIDGE

ITEM NO.	DESCRIPTION	UNIT	NET	OVER-RUN	TOTAL	FINAL
102	Borrow	C.Y.	~~21,000~~	~~2100~~	~~23,100~~	21,435 ✓
107	Structure Excavation	C.Y.	~~327~~	~~35~~	~~362~~	600 ✓
204	Sub-Base of Crushed Rock (Mod.) UNDER STRUCTURE	C.Y.	~~390~~	~~60~~	~~450~~	472 ✓
222	Gravel Backfill	C.Y.	123 ✓	~~34~~	~~157~~	123 ✓
361-B	Bit. Conc. Pavement (Mod)	TONS	229 ✓	~~33~~	~~262~~	229 ✓
401-B	Concrete Class B (Mod.)	C.Y.	~~1341~~	~~68~~	~~1409~~	1,366 ✓
402	Reinforcing Steel	LBS.	~~225,108~~	–	~~225,108~~	238,887 ✓
403-d	Spiral Reinforcement (13,300 LB)	L.S.	1 ✓	–	1 ✓	1 ✓
404-A	Structural Steel	LBS.	~~571,844~~	~~11,436~~	~~583,280~~	575,518 ✓
407	Asphaltic-Asbestos Coating	S.Y.	113 ✓	–	113 ✓	113 ✓
504	Steel Piling	L.F.	~~4508~~	–	~~4508~~	4,634 ✓
556-C	Granite Bridge Curb (Type I)	L.F.	1004 ✓	–	1004 ✓	~~1004~~ 1,004 ✓
572	Bridge Railing	L.F.	~~885~~	–	~~885~~	883 ✓
501	Furnishing Equipment for Driving Piles	Required				1 ✓
503	Splices for Steel Piling	Each	~~24~~	/	~~24~~	3
318	Tar Emulsion for Bridge Floors (Sup. Spec. 5-11-61)					800 gal. ✓
372	Joint Sealer, Hot Poured Elastic Type (Sup. Spec. 6-14-61)					344 L.F. ✓



PROFILE OF PROPOSED STREAM CHANNEL (RELOCATED)

Scale: HOR. 1" = 50' VERT. 1" = 30'



PROFILE ALONG ℄ CONSTRUCTION U.S. ROUTE 2 (RELOCATED)

Scale: Hor. 1" = 50' Vert. 1" = 30'

HIGHWAY NO. I-89	NAME OF HIGHWAY Interstate	B.P.R. DIV. NO. 1	STATE VT.	PROJECT NO. I-89-2(7)	SHEET NO. 109	TOTAL SHEETS 296
STRUCTURE NO. 18	COUNTY Washington	TOWN Waterbury				
PROJECT NO. I-89-2(7)	LOCATION Sta. 939+50					

EXISTING STRUCTURE

1. RATED LOADING OF EXISTING STRUCTURE
2. TYPE OF EXISTING STRUCTURE 8' x 5.4' Box Culvert
3. UNDERCLEARANCE. ELEVATION OF EXISTING STRUCTURE
4. WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE Remove COST OF REMOVAL
5. SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE
6. SHOULD NEW TEMPORARY STRUCTURE BE BUILT
7. ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE WATERWAY TO ORDINARY H.W.
8. EXTREME HIGH WATER AT EXISTING STRUCTURE 429.0
9. SPAN OF EXISTING BRIDGE UPSTREAM WATERWAY TO EXTREME H.W.
   SPAN OF EXISTING BRIDGE DOWNSTREAM WATERWAY TO EXTREME H.W.
10. TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS
11. DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE
12. IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED
13. ADDITIONAL WATERWAY AREA PROVIDED

NEW STRUCTURE

1. RECOMMENDED TYPE OF STRUCTURE 3 Span Composite Steel Stringer Bridge and 96" C.M.P.
2. RECOMMENDED CLEAR SPAN OR SPANS 63±-87±-61± Left Lane 64±-94±-68± Right Lane
   MEASURED PARALLEL TO ℄ NEW HIGHWAY
   MEASURED AT RIGHT ANGLES TO ℄ STREAM
3. ARE THERE OBJECTIONS TO A PIER IN THE STREAM ANSWER YES OR NO NO
4. ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE 406.2
5. EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE 429.0 SOURCE OF INFORMATION
6. IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE Yes
7. DOES STREAM REACH ITS MAXIMUM HIGHWATER ELEVATION RAPIDLY Yes IS ORDINARY RISE RAPID Yes
8. LOW WATER ELEVATION AT NEW STRUCTURE 401.7
9. DRAINAGE AREA IN ACRES ABOVE STRUCTURE 202.0 CHARACTER OF TERRAIN Mountainous
10. IS STREAM EVER DRY NO
11. VELOCITY OF STREAM AT HIGH WATER STAGE 538 ESTIMATED DISCHARGE 232 cfs
12. AREA FULL OPENING 43.2 AREA BELOW ORDINARY H.W. 24
13. CHARACTER OF SCOUR DRIFT ICE.
14. ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE
15. VERTICAL CLEARANCE ABOVE FLOOD ELEVATION
16. ARE SIDEWALKS REQUIRED, IF SO ON WHAT SIDE BOTH SIDES
17. RECOMMENDED TYPE OF PAVEMENT 2" Bituminous Concrete Pavement
18. TRAFFIC TO BE MAINTAINED UNDER ITEM NO. ONE OR TWO WAYS PROBABLE COST
19. PROBABLE COST OF CLEARING AND GRUBBING STREAM CHANNEL AT STRUCTURE SITE
20. SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES
21. ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS SHOULD PILES BE USED EST. LGTH

FOUNDATION INFORMATION

OBTAINED FOR DESIGN PURPOSES ONLY, THE STATE ASSUMES NO RESPONSIBILITY WHATSOEVER FOR THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN. BOULDERS MAY BE ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION. FOR BORING LOGS SEE SHEET NO.2

GENERAL NOTES

DESIGN SPECIFICATION:
AASHO 1957 Edition and as modified by Vermont Dept. of Highways.

LIVE LOAD:
H20-S16-44 and Military Loading

DESIGN STRESSES:
Structural Steel fs = 18,000 p.s.i.
Reinforcing Steel fs = 20,000 p.s.i.
Concrete fc = 1,200 p.s.i. f'c = 3,000 p.s.i.

CLEARANCE:
Horizontal: as shown on drawings
Vertical: 15'-11½"

SUPERSTRUCTURE:
Separate structure for each lane.
30' Roadway, 1'-6" Safety Walk, as per SCB-30-56
3 Simple span, rolled beams, composite design, as per SCB-30-56. (63±-87±-61± Left Lane) (64±-94±68± Right Lane)
Aluminum bridge railing or galvanized bridge railing, and granite bridge curb as per SB-5G-57(1 & 2).

Bearings and diaphragm connections as per SB-20-56
Approach Slabs as per SB-AS-45° Skew-57.

SUBSTRUCTURE
Open piers, round columns spaced 12'-6" o.c.
Stub Abutments
FOUNDATION
Stub abutment: Steel piles.
Piers: Piers A & C, steel piles
Piers B & D, individual footings to ledge

LIST OF SHEETS

IM 089-2(26)
This sheet for information only

SHEET NO.	DESCRIPTION
109	GENERAL PLAN
110	BORINGS
111	PLAN AND ELEVATION
112	ABUTMENTS NO. 1 AND 2
113	ABUTMENTS NO. 3 AND 4
114	ABUTMENT FOOTING REINFORCING PLANS
115	WINGWALLS
116	PIERS A AND C
117	PIERS B AND D
118	APPROACH SLABS
119	STRUCTURAL STEEL PLAN
120	STRUCTURAL DETAILS
121-123	REINFORCING SCHEDULE
124	96" PIPE PLAN, ELEV. & SEC.
37-38	HIGHWAY'S PLANS & PROFILES
142-143	INTERSTATE CROSS SECTION
285-286	U.S. RTE. 2 (REL.) CROSS SEC.
101-102	SCB-30-56 (1 & 2)
103-104	SB-5G-57 (1 & 2)
106	SB-20-56
108	SB-22-58
105	SB-AS-45°Skew-57

BR 50 N & S

CONTRACT NO. 2

GENERAL PLAN

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

APPROVED BY Wm. A. Henderson DATE 12-16-58

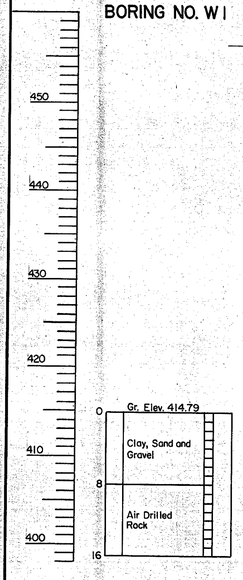
THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	CHECKED BY D.S. & J.B.	SCALE AS NOTED
DRAWN BY F.P.D.	IN CHARGE J.V.B.	DATE 6-19-58

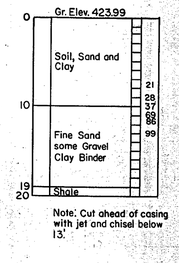
PROJECT NO. I-89-2(7) SHEET 245 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	110	296

BORING NO. W 1

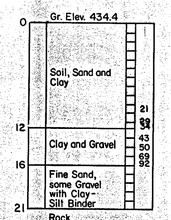


BORING NO. W 2



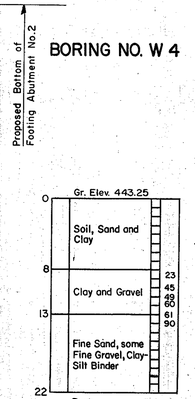
Note: Cut ahead of casing with jet and chisel below 13'.

BORING NO. W 3



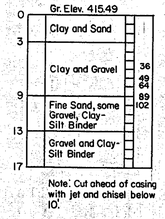
Note: Cut ahead of casing with jet and chisel below 16'.

BORING NO. W 4



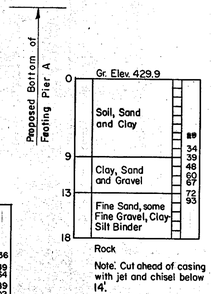
Note: Cut ahead of casing with jet and chisel below 14'.

BORING NO. W 5



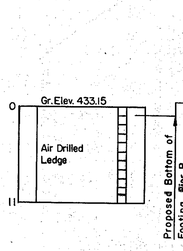
Note: Cut ahead of casing with jet and chisel below 10'.

BORING NO. W 6

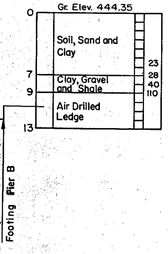


Note: Cut ahead of casing with jet and chisel below 14'.

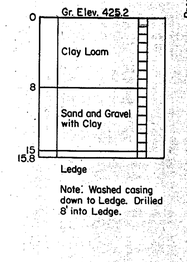
BORING NO. W 7



BORING NO. W 8

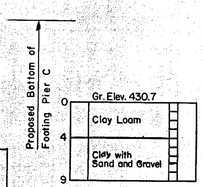


BORING NO. W 9



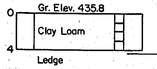
Note: Washed casing down to Ledge. Drilled 8' into Ledge.

BORING NO. W 10



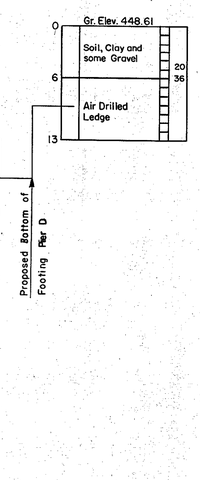
Note: Washed casing down to Ledge. Drilled 6' into Ledge.

BORING NO. W 11

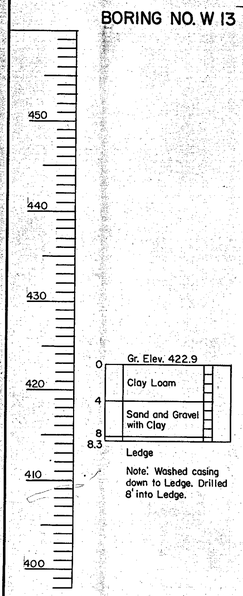


Note: Washed casing down to Ledge. Drilled 4' into Ledge.

BORING NO. W 12

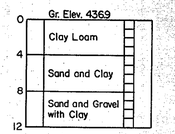


BORING NO. W 13



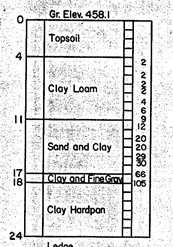
Note: Washed casing down to Ledge. Drilled 8' into Ledge.

BORING NO. W 14



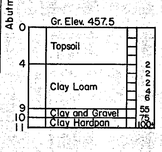
Note: Washed casing down to Ledge. Drilled 6' into Ledge.

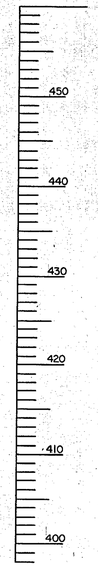
BORING NO. W 15



Note: Washed ahead of casing from 18' to 24'. Drilled 4' into Ledge.

BORING NO. W 16





BORING LOGS

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

Note:
1. For all borings
   Weight of hammer = 350#
   Drop of hammer = 24"
   Diameter of casing = 2 1/2"
   Thickness of casing 3/8"
2. For Location of borings see Sheet No. 109
3. All Borings are Wash Borings

IM 089-2(26)
This sheet for information only

BR 50 N & S

CONTRACT NO. 2

BORINGS

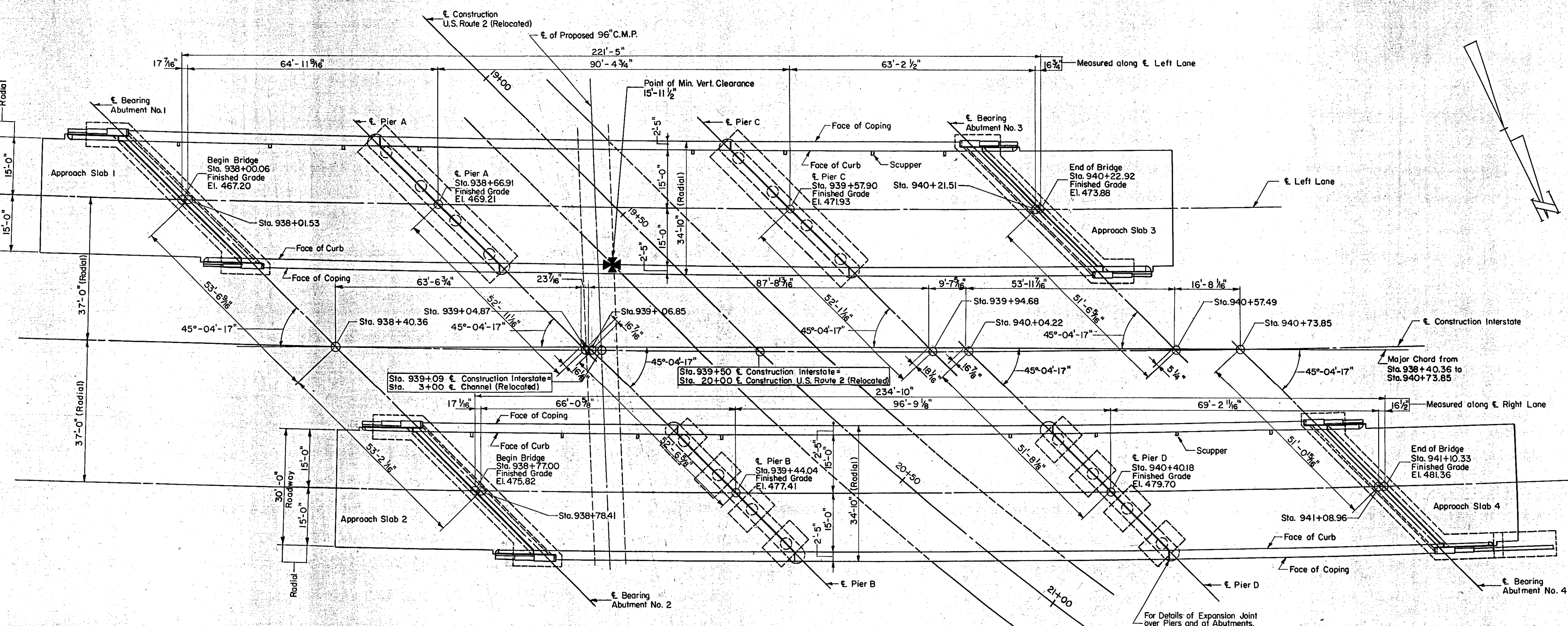
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY:	CHECKED BY: G.B.	SCALE: AS NOTED
DRAWN BY: S.A.L.	IN CHARGE: J.V.B.	DATE: 6 - 19 - 58

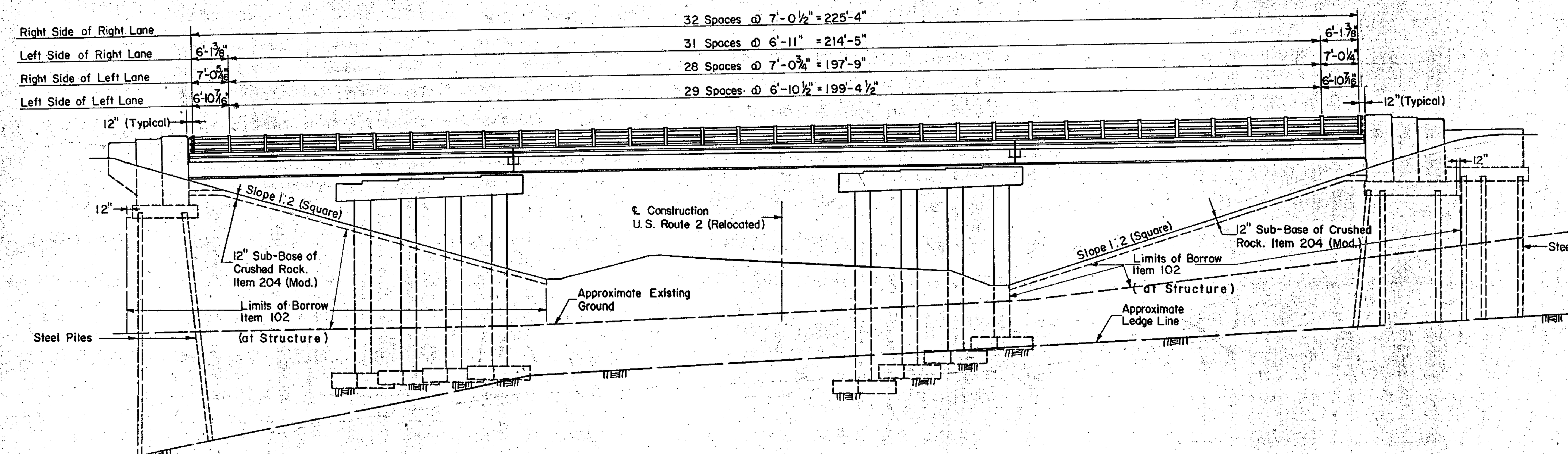
PROJECT NO. I-89-2 (7) | SHEET | 246 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	111	296



PLAN

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



NORTHERLY ELEVATION

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

Notes:

1. Railing Posts to be set normal to Grade.
2. Omit set screws at upgrade end of railing panels at Expansion Joints over Piers.
3. All stations refer to ℄ Construction Interstate.
4. All dimensions are horizontal dimensions.
5. For Scupper layout, see Framing Plan Sheet No. 119
6. For details of railing see Std. Sheet SB-5G-57.
7. For Bridge Marker, see Std. Sheet SB-20-56 (Detail A).

IM 089-2(26)

This sheet for information only

BR 50 N & S

CONTRACT NO. 2

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	SUPERSTRUCTURE NET	OVER-RUN	TOTAL	FINAL
102	Borrow	C.Y.	~~21,000~~	~~2100~~	~~23,100~~	21,435 ✓
556-C	Granite Bridge Curb (Type I)	L.F.	1004 ✓	-	1004 ✓	1,004 ✓
572	Bridge Railing	L.F.	~~885~~	-	~~885~~	883 ✓

PLAN AND ELEVATION

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of
WATERBURY

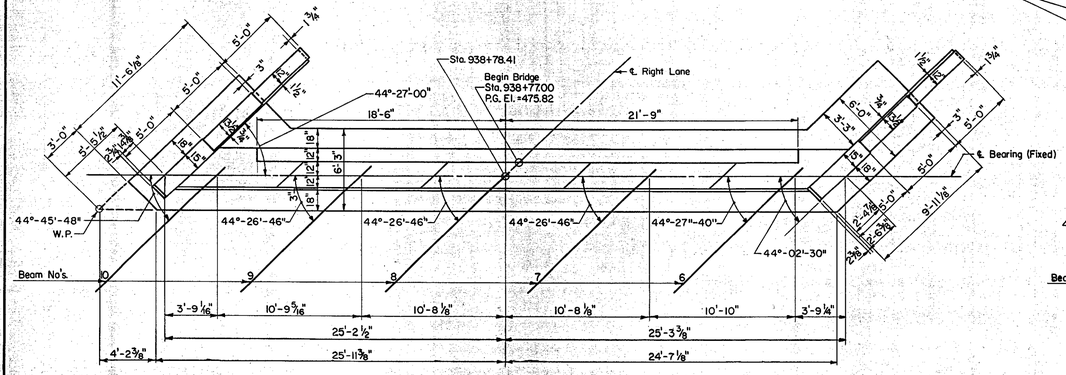
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY: DRAWN BY: S.A.L.	CHECKED BY: J.B. & D.S. IN CHARGE: J.V.B.	SCALE: AS NOTED DATE: 6-19-58

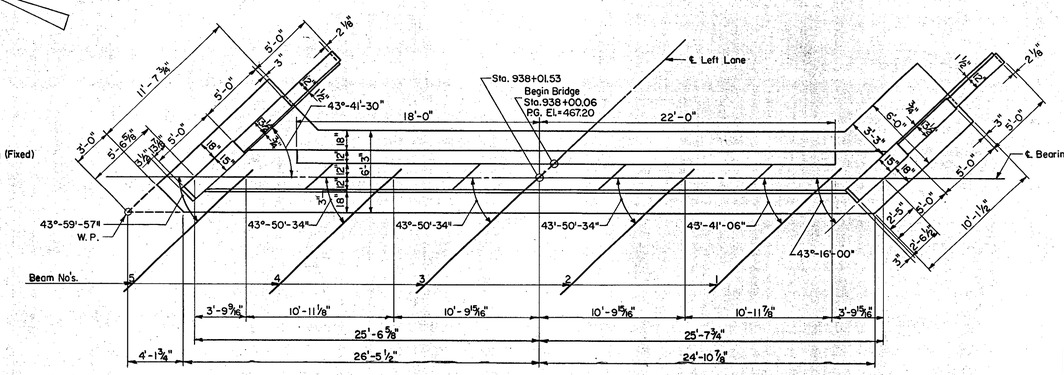
PROJECT NO. I-89-2(7) SHEET 247 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	112	295



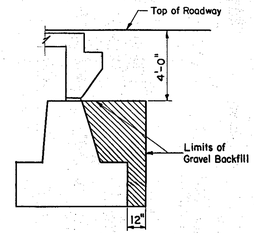
PLAN ABUTMENT NO. 2

Scale: 3/16" = 1'-0"



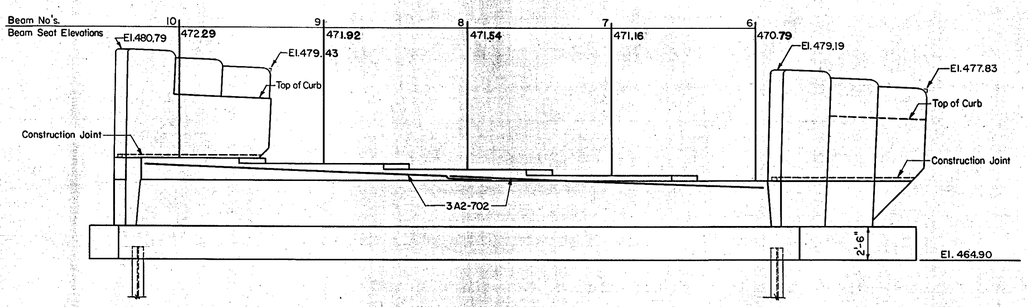
PLAN ABUTMENT NO. 1

Scale: 3/16" = 1'-0"



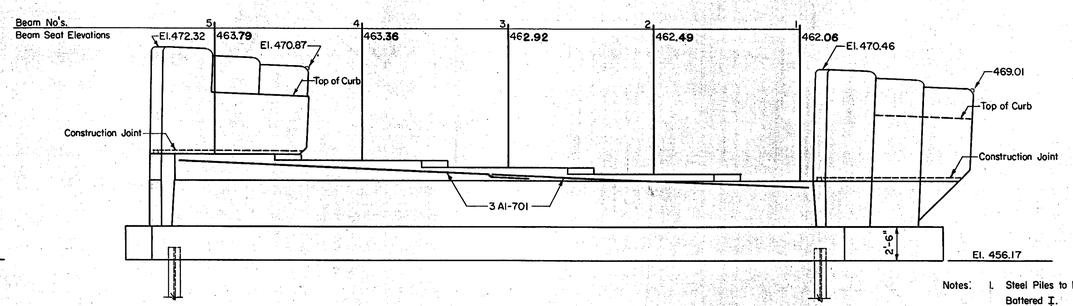
LIMITS OF GRAVEL BACKFILL

Scale: 1/4" = 1'-0"



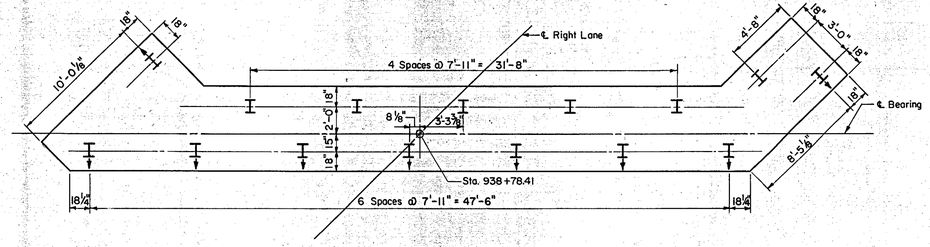
ELEVATION ABUTMENT NO. 2

Scale: 3/16" = 1'-0"



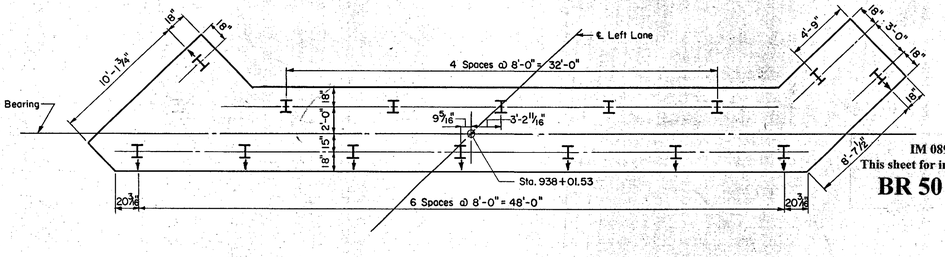
ELEVATION ABUTMENT NO. 1

Scale: 3/16" = 1'-0"



PILE PLAN ABUTMENT NO. 2

Scale: 3/16" = 1'-0"



PILE PLAN ABUTMENT NO. 1

Scale: 3/16" = 1'-0"

Notes:

1. Steel Piles to be 10BP42, 35 Ton Design Load. Indicated thus: Vertical I, Battered I.
2. For Estimating Purposes, the average length of steel piles is assumed to be 52' Abut. No. 1, 49' Abut. No. 2, 44' Abut No. 3, and 31' Abut. No. 4.
3. Slope all Bridge Seats 1/4" per ft. between Bearing ℄'s.
4. Entire exposed surface of the Bridge Seat to be covered with 1/2" Asphaltic-Asbestos coating after superstructure is in place.
5. Prior to driving the piles, rock free fill shall be placed under the Abutment area to approximately the level of the pile cut-off elevation and with a surface area at least two (2) feet outside the Abutment. After piles are driven, the fill is to be excavated to the elevation of the bottom of footing.
6. All beam seat elevations shown are to top of concrete.
7. A layer of Sub-Base of Crushed Rock, Item 204 (Mod.), one (1) foot thick shall be placed 73'± along slope Abut. No. 1 & 2, 70'± along slope Abut. No. 3 and 79'± along slope Abut. No. 4. The edges of the area to be in line with the end posts and parallel to the ℄ of the Roadway.
8. For Footing Reinforcing, see Sheet No. 114
9. For Wingwall details and typical Abutment Sections, see Sheet No. 115

IM 089-2(26)
This sheet for information only

CONTRACT NO. 2

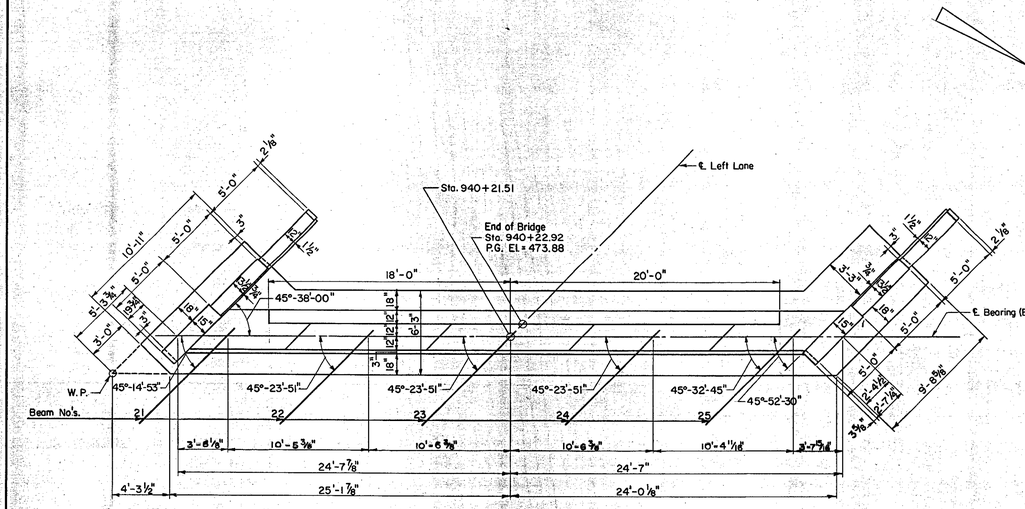
BR 50 N & S ABUTMENTS NO. 1 AND NO. 2

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

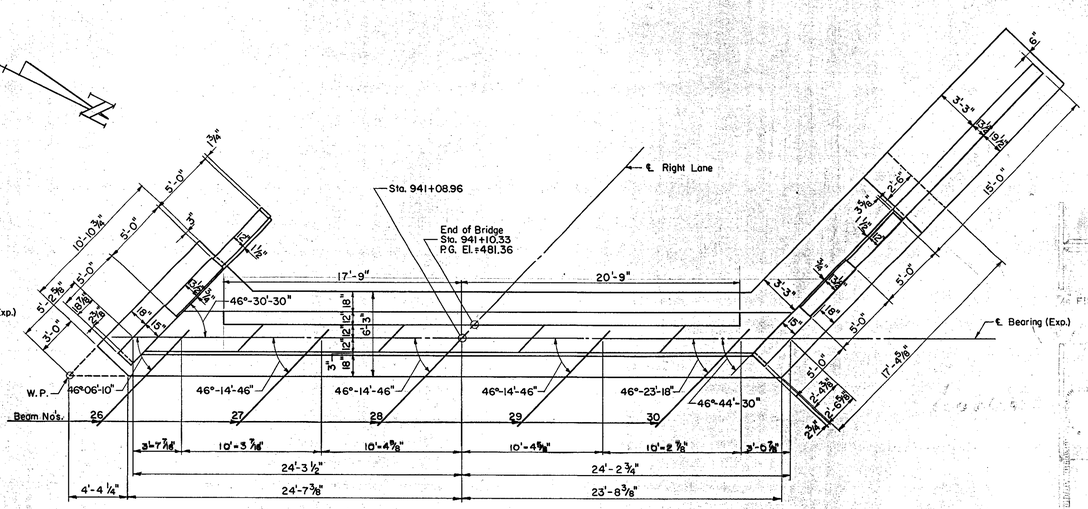
THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY: DRAWN BY: S.A.L.	CHECKED BY: J.B. & D.S. IN CHARGE: J.V.B.	SCALE: AS NOTED DATE: 6-19-59
PROJECT NO. I-89-2(7)	SHEET 248 OF 307	

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2 (7)	113	296

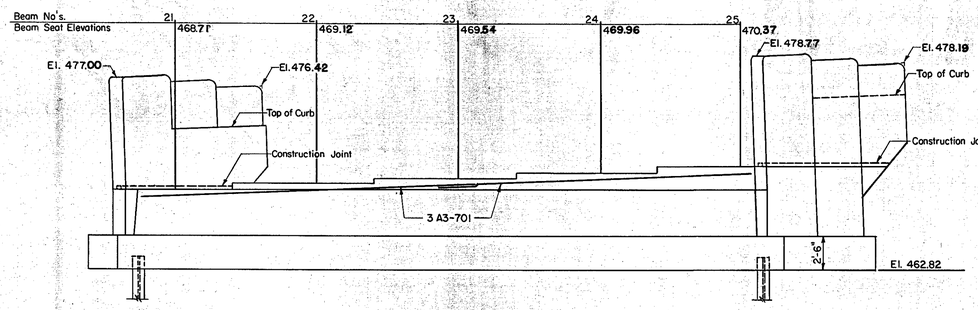


PLAN ABUTMENT NO. 3
Scale: 3/16" = 1'-0"

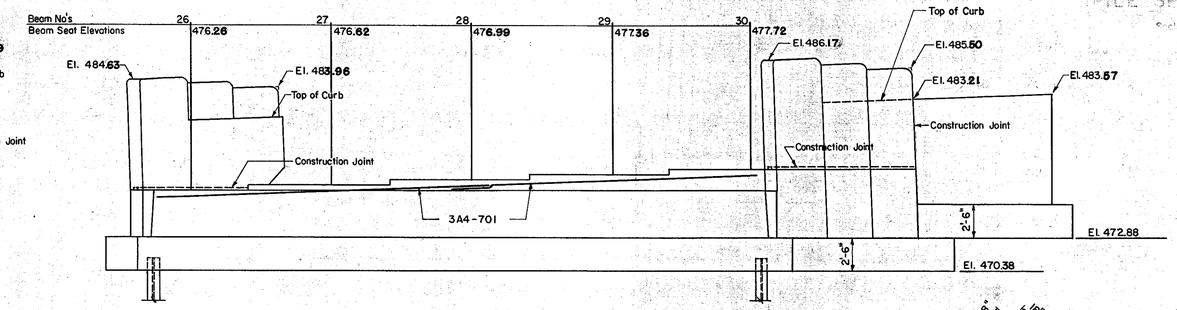


PLAN ABUTMENT NO. 4
Scale: 3/16" = 1'-0"

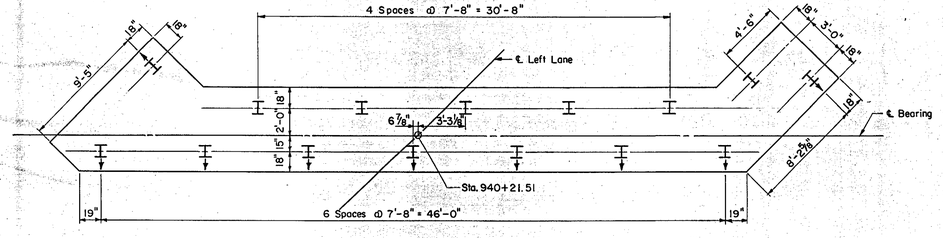
FOR PILE SPLICE DETAIL SEE STANDARD SHEET SB-20-56



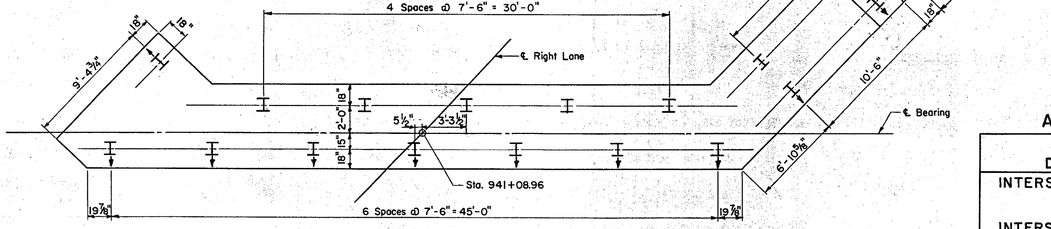
ELEVATION ABUTMENT NO. 3
Scale: 3/16" = 1'-0"



ELEVATION ABUTMENT NO. 4
Scale: 3/16" = 1'-0"



PILE PLAN ABUTMENT NO. 3
Scale: 3/16" = 1'-0"



PILE PLAN ABUTMENT NO. 4
Scale: 3/16" = 1'-0"

PILE SPLICE DETAILS

Note: See Sheet 113 for General Notes.

IM 089-2(26)

This sheet for information only

BR 50 N & S

CONTRACT NO. 2

ABUTMENTS NO. 3 AND NO. 4

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 939+50

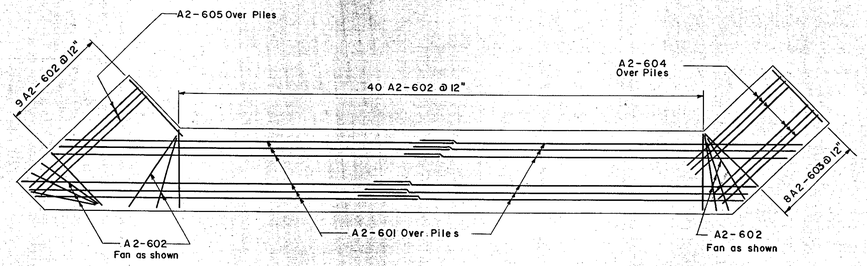
OVER

U.S. ROUTE 2 (RELOC.) STA. 20+00

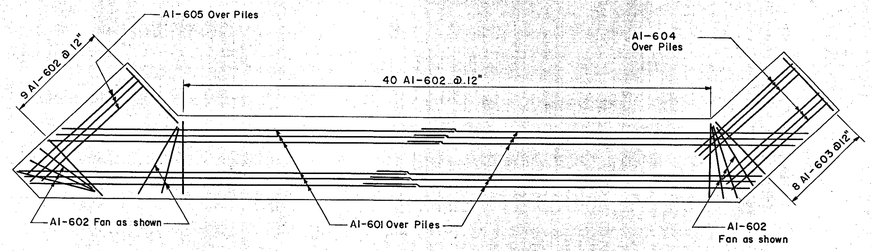
THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY: DRAWN BY: S.A.L.	CHECKED BY: J.B.S. & D.S. IN CHARGE: J.V.B.	SCALE: AS NOTED DATE 6-19-58
PROJECT NO. I-89-2(7)	SHEET 249 OF 307	

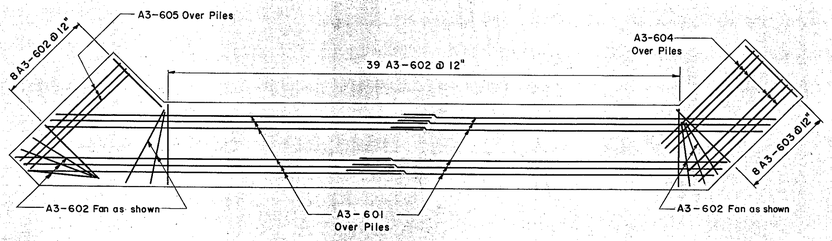
B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2 (7)		26



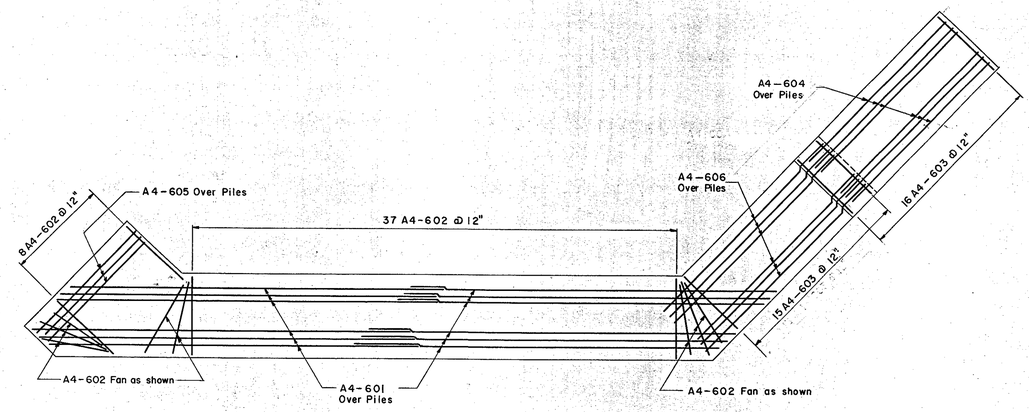
FOOTING REINFORCING PLAN ABUTMENT NO. 2
Scale: 3/16" = 1'-0"



FOOTING REINFORCING PLAN ABUTMENT NO. 1
Scale: 3/16" = 1'-0"



FOOTING REINFORCING PLAN ABUTMENT NO. 3
Scale: 3/16" = 1'-0"



FOOTING REINFORCING PLAN ABUTMENT NO. 4
Scale: 3/16" = 1'-0"

Note:
1. For section of Abutment footings see Sheet No. 115
2. For details of Abutments and Pile Plans see Sheets No. 112 & 113

IM 089-2(26)
This sheet for information only
BR 50 N & S

CONTRACT NO. 2

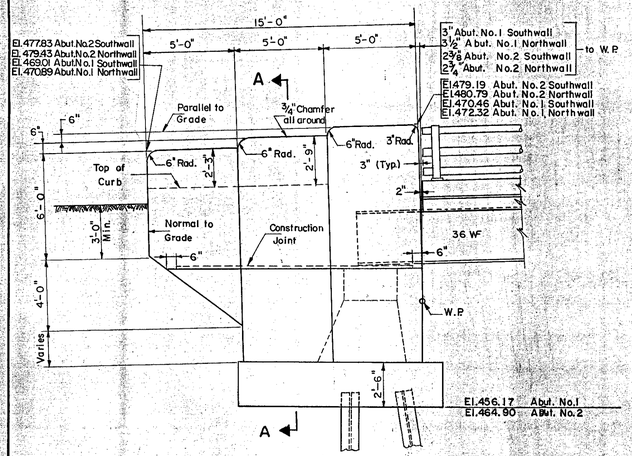
ABUTMENT FOOTING REINFORCING PLANS
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	CHECKED BY D.S. & J.B.	SCALE AS NOTED
DRAWN BY A.R.C.	IN CHARGE J.V.B.	DATE 6-19-58

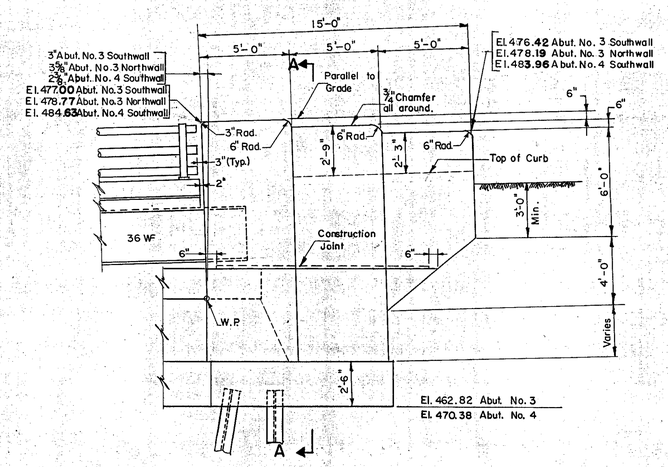
PROJECT NO. I-89-2 (7) | SHEET 250 OF 307

B. P. R. DIV. NO.	STATE	PROJECT NO	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	125	2??



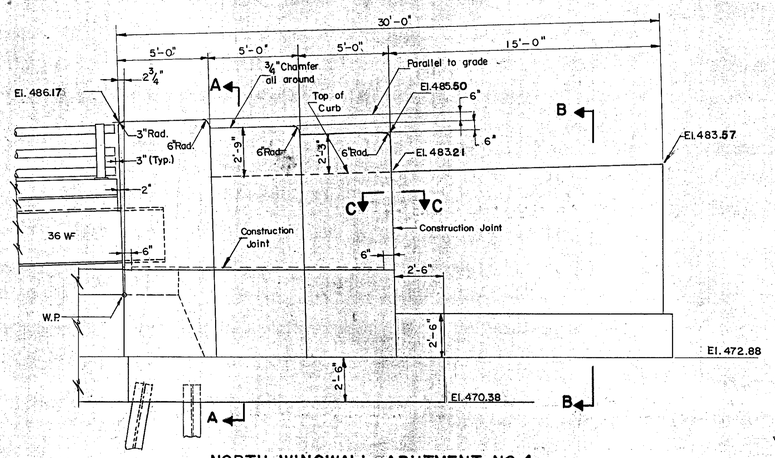
WINGWALLS ABUTMENT NO. 1 AND NO. 2

Scale: 1/4" = 1'-0"



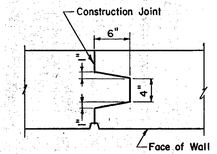
WINGWALLS ABUTMENT NO. 3 AND SOUTH WINGWALL ABUTMENT NO. 4

Scale: 1/4" = 1'-0"



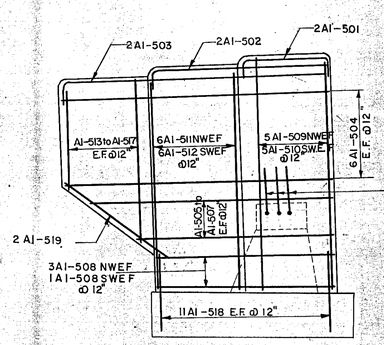
NORTH WINGWALL ABUTMENT NO. 4

Scale: 1/4" = 1'-0"



SECTION C-C

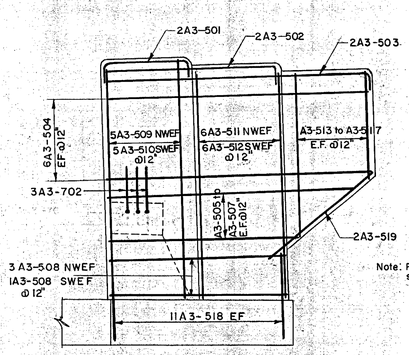
Scale: 1" = 1'-0"



Note: Reinforcing in Abutment No. 2 Wingwalls similar except bars shall be prefixed A2.

TYPICAL WINGWALL REINFORCING ABUTMENT NO. 1

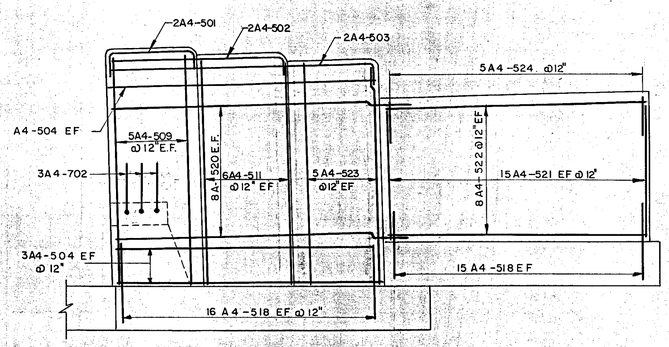
Scale: 1/4" = 1'-0"



Note: Reinforcing in Abutment No.4 Southwall similar except bars shall be prefixed A4.

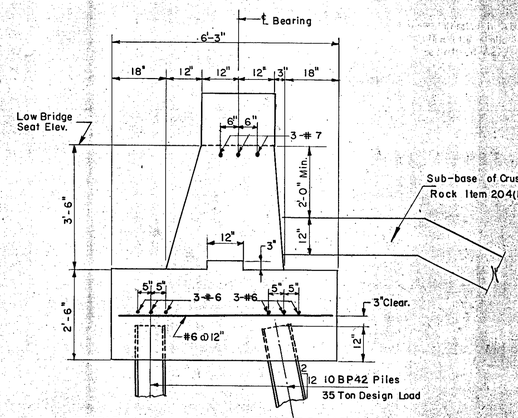
TYPICAL WINGWALL REINFORCING ABUTMENT NO. 3

Scale: 1/4" = 1'-0"



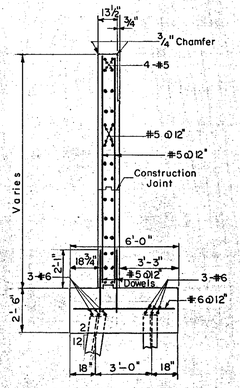
NORTH WINGWALL ABUTMENT NO. 4 REINFORCING

Scale: 1/4" = 1'-0"



TYPICAL ABUTMENT SECTION

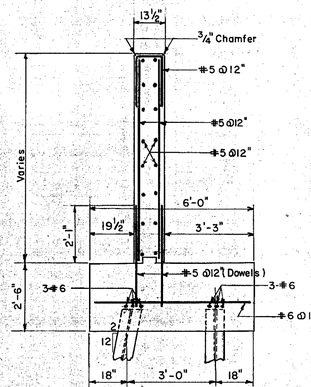
Scale: 1/2" = 1'-0"



SECTION A-A

Note: All cover to be 2" Clear

Scale: 1/4" = 1'-0"



SECTION B-B

Note: All cover to be 2" clear.

Scale: 3/8" = 1'-0"

ITEM	DESCRIPTION	UNIT	ABUTMENT NO.1 NET	OVER-RUN	TOTAL	FINAL	ABUTMENT NO.2 NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	19 ✓	~~-0-~~	~~-21-~~	19✓	19 ✓	~~-2-~~	~~-21-~~	19✓
204	Sub-Base of Crushed Rock (Mod.)	C.Y.	~~-98-~~	~~-15-~~	~~-113-~~	120	~~-98-~~	~~-15-~~	~~-113-~~	117
222	Gravel Backfill	C.Y.	30 ✓	~~-6-~~	~~-36-~~	30	27 ✓	~~-8-~~	~~-35-~~	27
401-B	Concrete Class B (Mod)	C.Y.	70 ✓	~~-4-~~	~~-74-~~	70	~~-71-~~	~~-4-~~	~~-75-~~	68
402	Reinforcing Steel	LBS.	See Reinforcing Schedule Sheet 13							
407	Asphaltic-Asbestos Coating	S.Y.	6 ✓	-	6 ✓	6	6 ✓	-	6 ✓	6
504	Steel Piling	L.F.	~~-780-~~	-	~~-780-~~	742	~~-735-~~	-	~~-735-~~	731

ITEM	DESCRIPTION	UNIT	ABUTMENT NO.3 NET	OVER-RUN	TOTAL	FINAL	ABUTMENT NO4 NET	OVER-RUN	TOTAL	FINAL
107	Structure Excavation	C.Y.	19 ✓	~~-2-~~	~~-21-~~	19✓	25 ✓	~~-3-~~	~~-28-~~	25✓
204	Sub-Base of Crushed Rock(Mod)	C.Y.	~~-90-~~	~~-15-~~	~~-105-~~	112	~~-104-~~	~~-15-~~	~~-119-~~	123
222	Gravel Backfill	C.Y.	30 ✓	~~-8-~~	~~-38-~~	30	36 ✓	~~-10-~~	~~-46-~~	36
401-B	Concrete Class B (Mod)	C.Y.	~~-70-~~	~~-4-~~	~~-74-~~	67	85 ✓	~~-5-~~	~~-90-~~	85
402	Reinforcing Steel	LBS	See Reinforcing Schedule Sheet 13							
407	Asphaltic-Asbestos Coating	S.Y.	6 ✓	-	6 ✓	6	6 ✓	-	6 ✓	6
504	Steel Piling	L.F.	~~-660-~~	-	~~-660-~~	692	~~-713-~~	-	~~-713-~~	739

IM 089-2(26)
This sheet for information only
BR 50 N & S

CONTRACT NO. 2

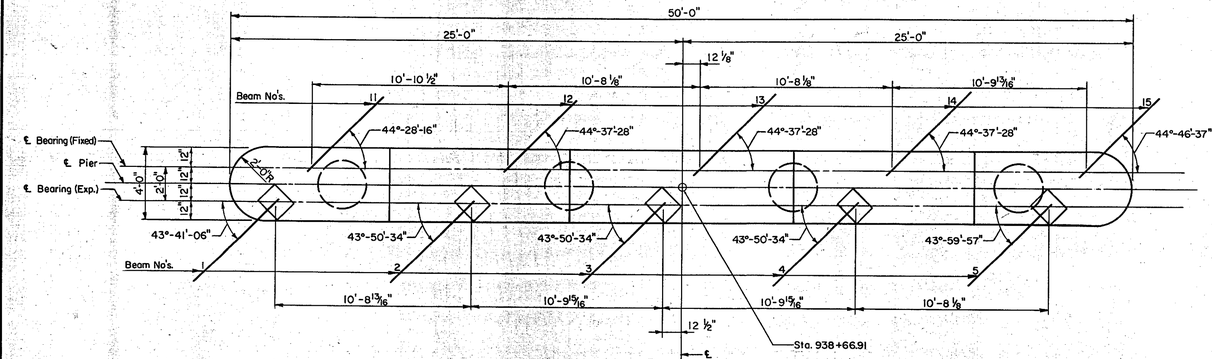
WINGWALLS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE OVER STA. 939+50
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

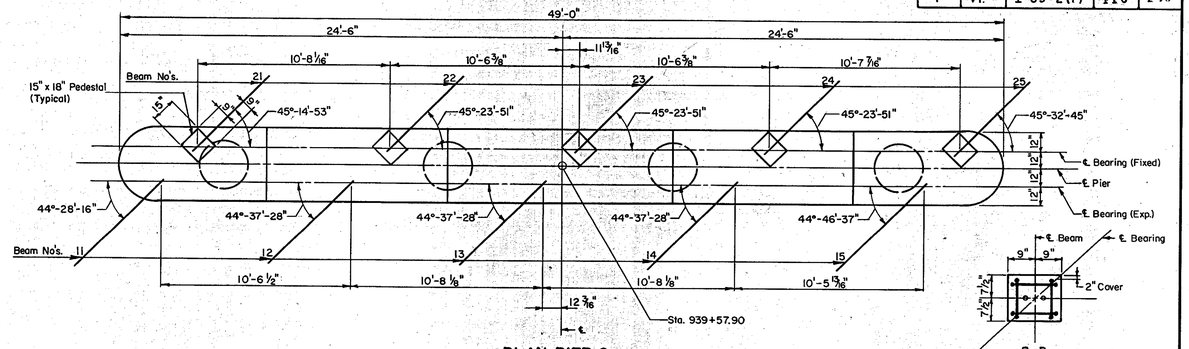
SURVEYED BY DRAWN BY D.A.T.	CHECKED BY D.S.B.J.B. IN CHARGE J.V.B.	SCALE AS NOTED DATE 6-19-58
PROJECT NO. I-89-2(7)	SHEET 251 OF 307	

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	116	296



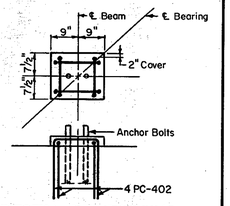
PLAN PIER A

Scale: 1/4" = 1'-0"



PLAN PIER C

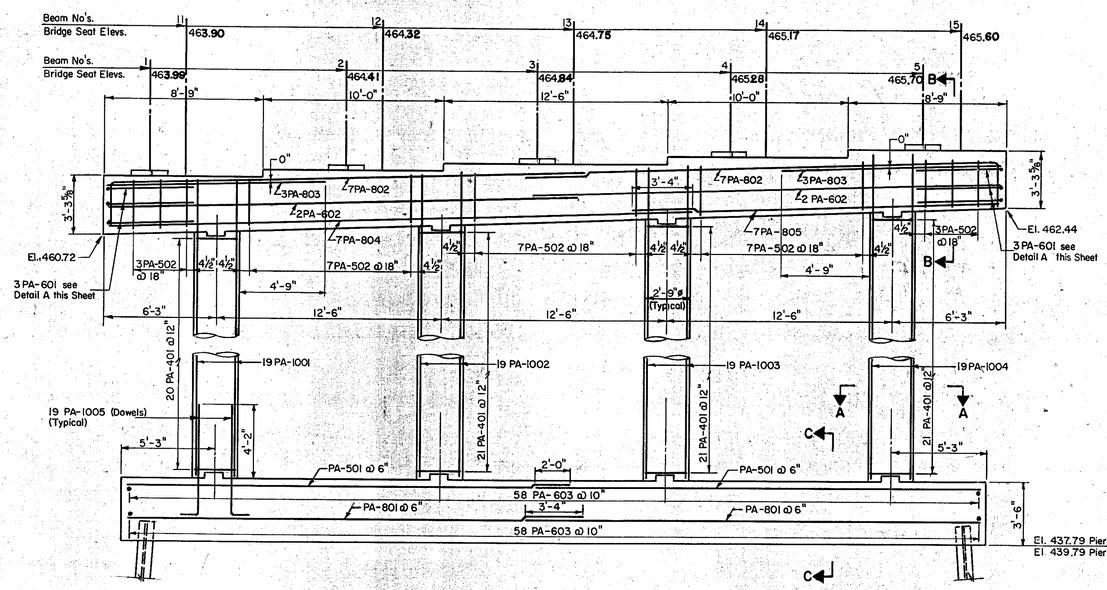
Scale: 1/4" = 1'-0"



PEDESTAL REINFORCING

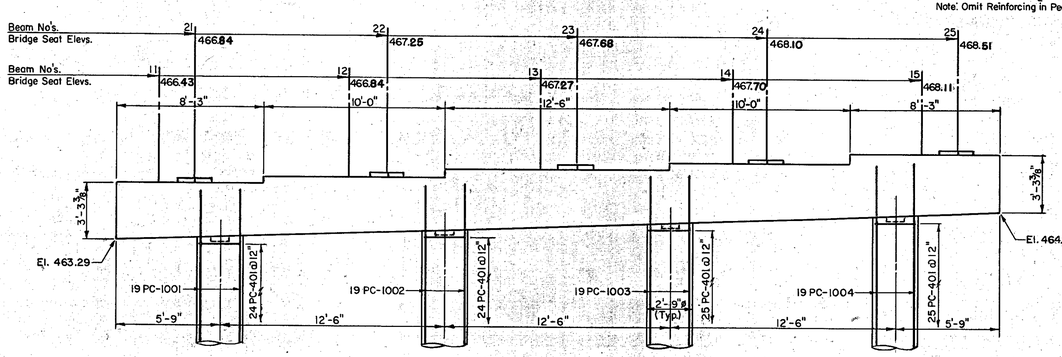
Scale: 1/2" = 1'-0"

Note: Omit Reinforcing in Pedestals less than 3."



ELEVATION PIER A

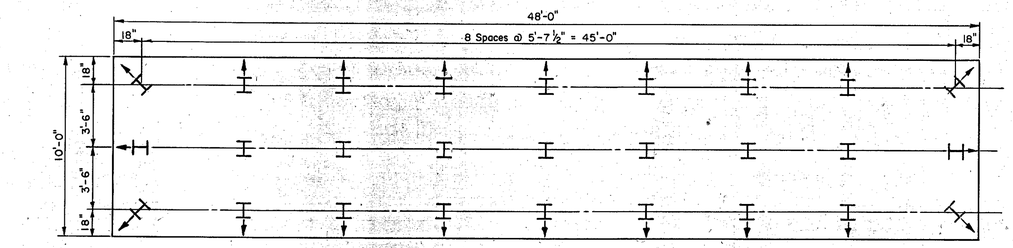
Scale: 1/4" = 1'-0"



ELEVATION PIER C

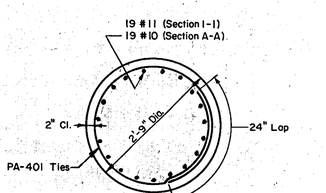
Scale: 1/4" = 1'-0"

Note: Reinforcing for Beam and Footing of Pier C similar to Pier A except bars to be prefixed PC.



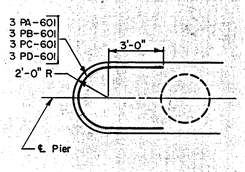
PILE PLAN

Scale: 1/4" = 1'-0"



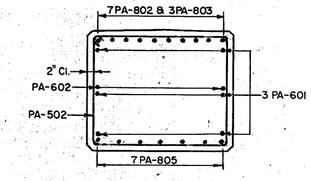
SECTION A-A
SECTION I-I SIMILAR EXCEPT AS NOTED

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



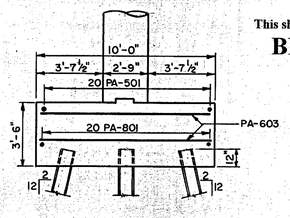
DETAIL A

Scale: 1/4" = 1'-0"



SECTION B-B

Scale: 1/2" = 1'-0"



SECTION C-C

Scale: 1/4" = 1'-0"

Notes:

1. All piles 10 BP 42, 35 ton design load, indicated thus: I Vertical, ⫿ Battered.
2. For estimating purposes, Pier piles are assumed to be 34' (Average) long Pier A, and 26' (Average) long Pier C.
3. Prior to driving the piles, rock free fill shall be placed under the Pier area to approximately the level of the pile cut off elevation and with a surface area at least two (2) feet just outside the pier footings. After the piles have been driven, the fill is to be excavated to the elevations of the footings.
4. All exposed corners to have 1" Chamfer.
5. For location of Section I-I, see Sheet No. 117
6. Area between bridge seats to be sloped 1/4" per foot from ℄ Pier. Bridge Seats to be covered with 1/2" Asphaltic-Asbestos coating after superstructure is in place.

IM 089-2(26)
This sheet for information only
BR 50 N & S

CONTRACT NO. 2

PIERS A AND C

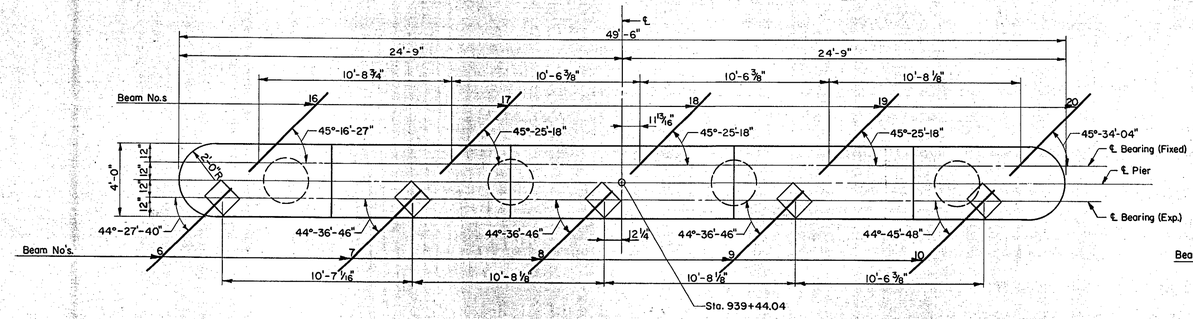
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

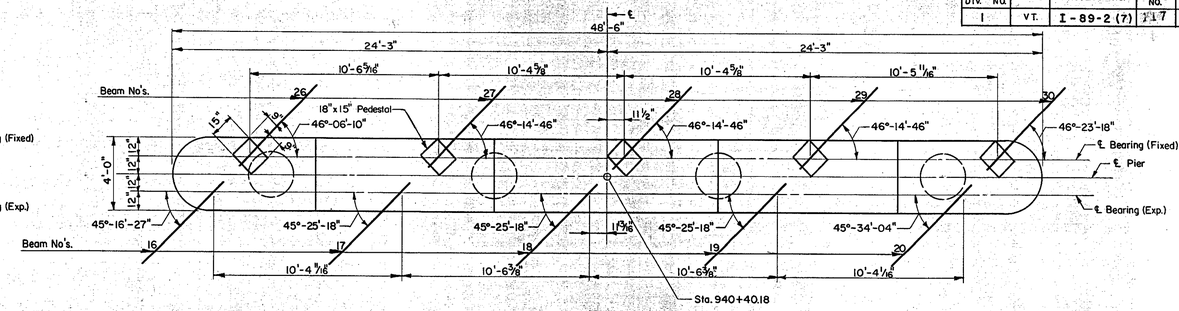
SURVEYED BY:	CHECKED BY: D.S.& J.B.	SCALE: AS NOTED
DRAWN BY: S.A.L.	IN CHARGE J.V.B.	DATE: 6-19-58

PROJECT NO. I-89-2(7) SHEET 252 OF 307

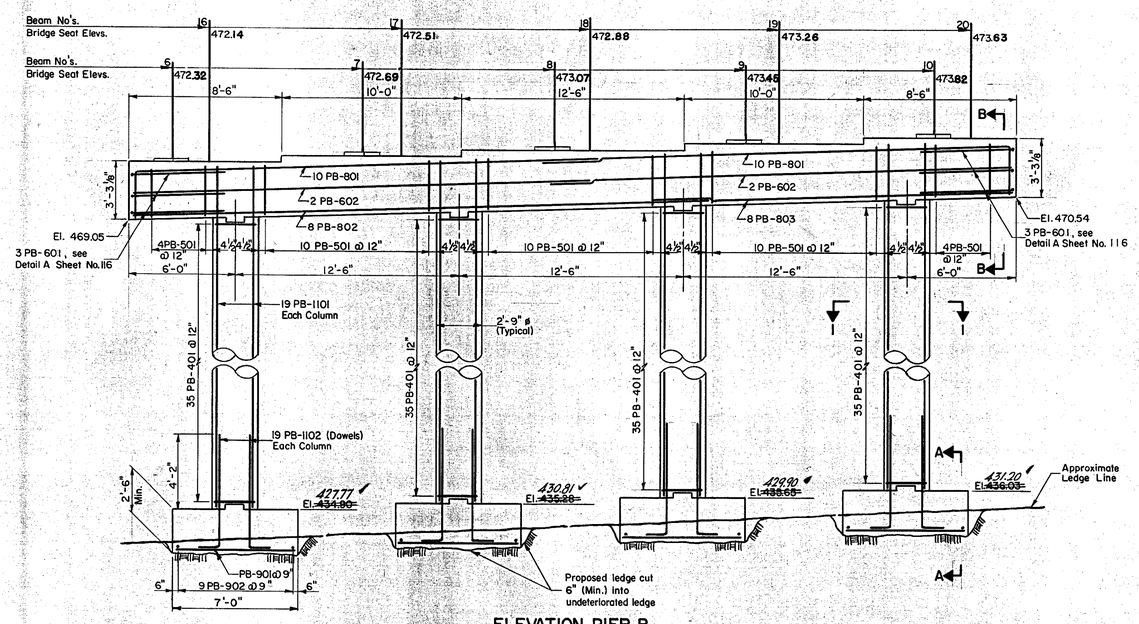
B. P. R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
I	V.T.	I-89-2(7)	117	295



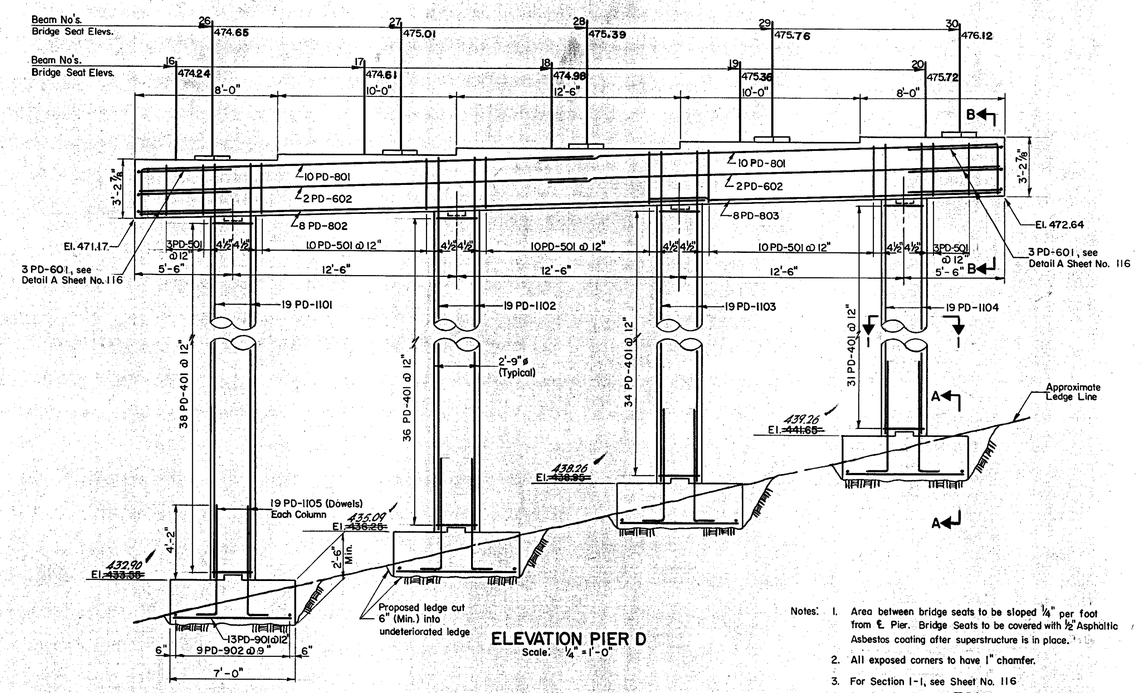
PLAN PIER B
Scale: 1/4" = 1'-0"



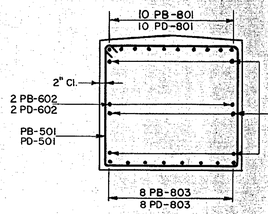
PLAN PIER D
Scale: 1/4" = 1'-0"



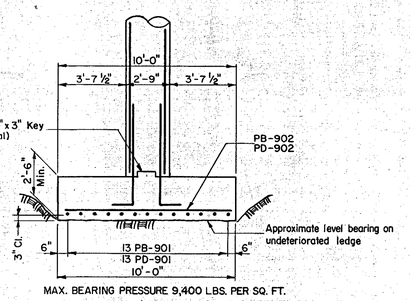
ELEVATION PIER B
Scale: 1/4" = 1'-0"



ELEVATION PIER D
Scale: 1/4" = 1'-0"



SECTION B-B
Scale: 1/2" = 1'-0"



MAX. BEARING PRESSURE 9,400 LBS. PER SQ. FT.

SECTION A-A
Scale: 1/4" = 1'-0"

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	PIER A NET	PIER A OVER-RUN	PIER A TOTAL	PIER A FINAL	PIER C NET	PIER C OVER-RUN	PIER C TOTAL	PIER C FINAL
107	Structure Excavation	C.Y.	23 ✓	~~-3-~~	~~26~~	23 ✓	23 ✓	~~-3-~~	~~26~~	23 ✓
401-B	Concrete Class B (Mod.)	C.Y.	104 ✓	~~-5-~~	~~109~~	104 ✓	104 ✓	~~-5-~~	~~109~~	104 ✓
402	Reinforcing Steel	LBS.	See Reinforcing Steel Schedule Sheet No. 122							
407	Asphaltic-Asbestos Coating	S.Y.	23 ✓	-	23 ✓	23 ✓	22 ✓	-	22 ✓	22 ✓
504	Steel Piling	L.F.	~~918~~	-	~~918~~	959	~~702~~	-	~~702~~	771 ✓

ITEM NO.	DESCRIPTION	UNIT	PIER B NET	PIER B OVER-RUN	PIER B TOTAL	PIER B FINAL	PIER D NET	PIER D OVER-RUN	PIER D TOTAL	PIER D FINAL
107	Structure Excavation	C.Y.	~~89~~	~~-9-~~	~~98~~	326	~~110~~	~~-11-~~	~~121~~	146 ✓
401-B	Concrete Class B (Mod.)	C.Y.	~~80~~	~~-4-~~	~~84~~	102 ✓	~~78~~	~~-4-~~	~~83~~	86 ✓
402	Reinforcing Steel	LBS.	See Reinforcing Steel Schedule Sheet No. 122							
407	Asphaltic-Asbestos Coating	S.Y.	22 ✓	-	22 ✓	22 ✓	22 ✓	-	22 ✓	22 ✓

Notes:
1. Area between bridge seats to be sloped 1/4" per foot from ℄ Pier. Bridge Seats to be covered with 1/2" Asphaltic Asbestos coating after superstructure is in place.
2. All exposed corners to have 1" chamfer.
3. For Section 1-1, see Sheet No. 116

IM 089-2(26)
This sheet for information only
BR 50 N & S
CONTRACT NO. 9

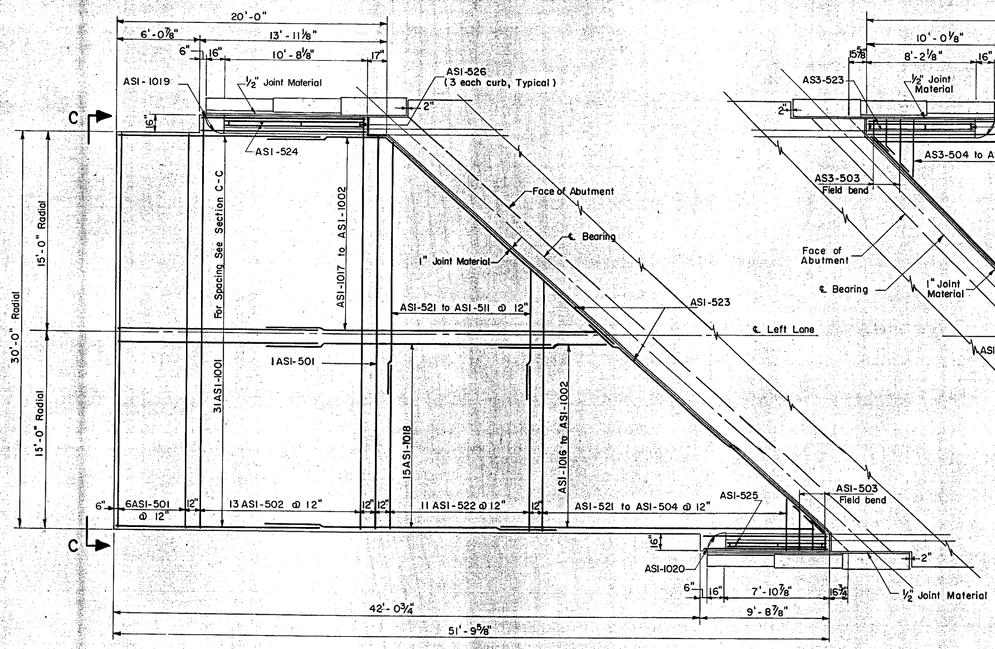
PIERS B AND D
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY:	CHECKED BY: D.S. & J.B.	SCALE: AS NOTED
DRAWN BY: S.A.L.	IN CHARGE: J.V.B.	DATE: 6-19-58

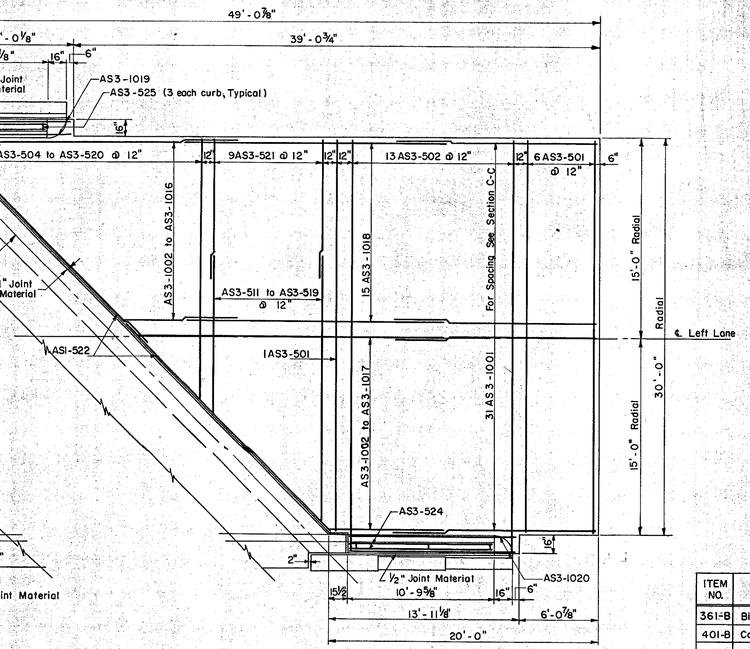
PROJECT NO. I-89-2(7) SHEET 253 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
I	VT.	I-89-2(7)	115	296



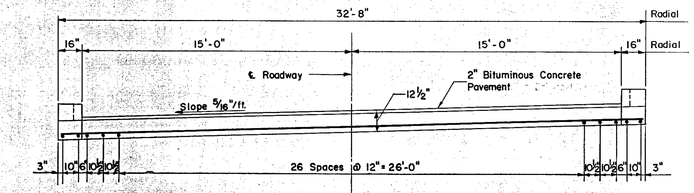
APPROACH SLAB ABUTMENT NO. 1

Scale: 3/16"=1'-0"



APPROACH SLAB ABUTMENT NO. 3

Scale: 3/16"=1'-0"



SECTION C-C

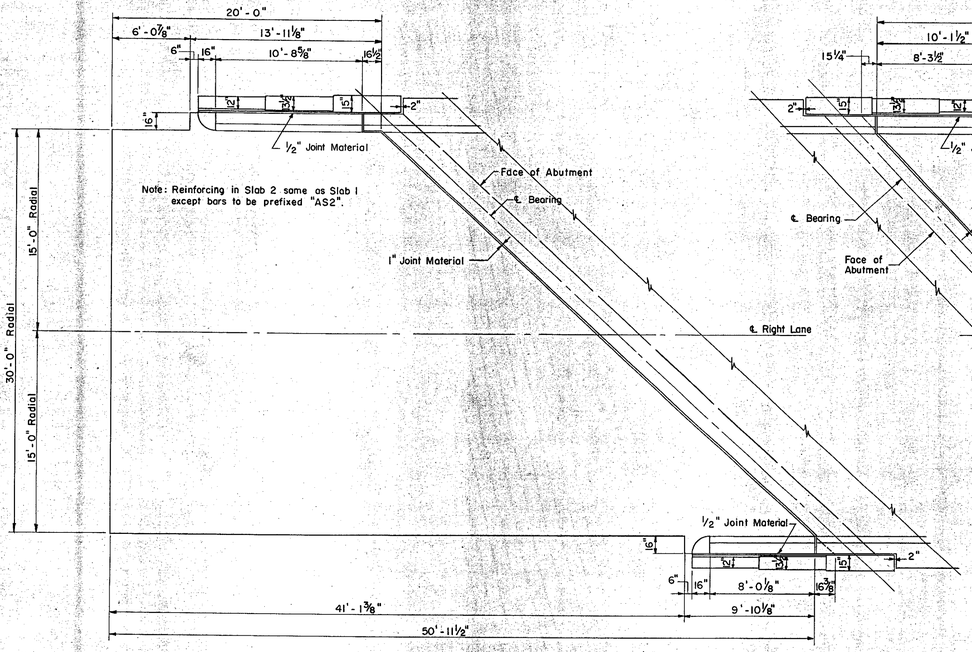
Scale: ¼"=1'-0"

Note: For Sections A-A and B-B See Standard Sheet SB-AS 45° Skew 57

ESTIMATED QUANTITIES

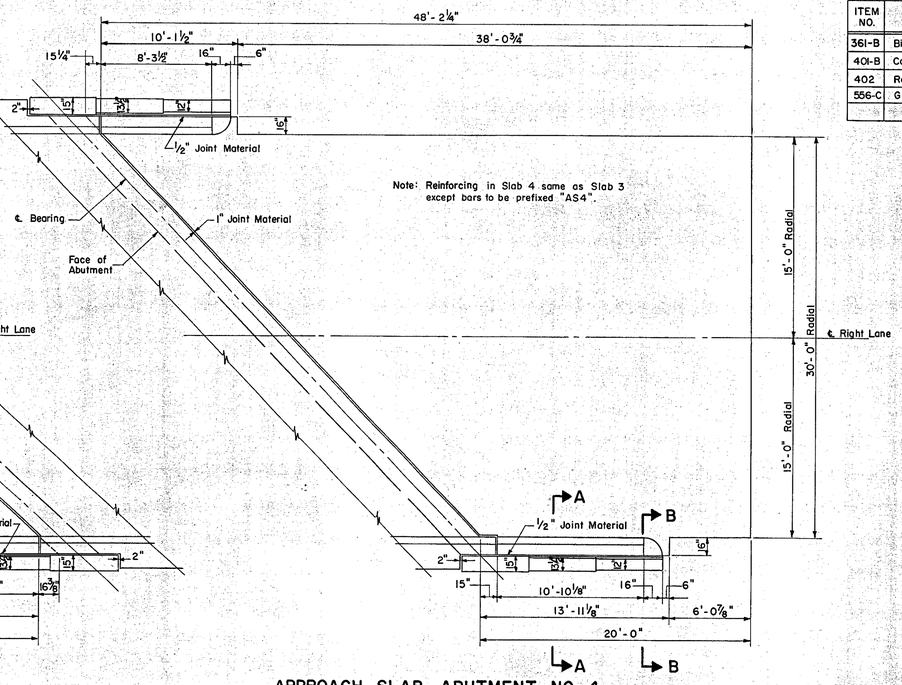
ITEM NO.	DESCRIPTION	UNIT	APPROACH SLAB NO. 1 NET	OVER-RUN	TOTAL	FINAL	APPROACH SLAB NO. 2 NET	OVER-RUN	TOTAL	FINAL
361-B	Bituminous Concrete Pavement	TONS	14 ✓	~~-2-~~	~~-16-~~	14	14 ✓	~~-2-~~	~~-16-~~	14
401-B	Concrete Class B (Mod.)	C.Y.	43 ✓	~~-2-~~	~~-45-~~	43	43 ✓	~~-2-~~	~~-45-~~	43
402	Reinforcing Steel	LBS.	See Reinforcing Steel Schedule Sheet No. 123							
556-C	Granite Bridge Curb (Type I)	L.F.	See Sheet No. 3							

ITEM NO.	DESCRIPTION	UNIT	APPROACH SLAB NO. 3 NET	OVER-RUN	TOTAL	FINAL	APPROACH SLAB NO. 4 NET	OVER-RUN	TOTAL	FINAL
361-B	Bituminous Concrete Pavement	TONS	13 ✓	~~-2-~~	~~-15-~~	13	13 ✓	~~-2-~~	~~-15-~~	13
401-B	Concrete Class B (Mod.)	C.Y.	~~-41-~~	~~-2-~~	~~-43-~~	42	41 ✓	~~-2-~~	~~-43-~~	41
402	Reinforcing Steel	LBS.	See Reinforcing Steel Schedule Sheet No. 123							
556-C	Granite Bridge Curb (Type I)	L.F.	See Sheet No. 3							



APPROACH SLAB ABUTMENT NO. 2

Scale: 3/16"=1'-0"



APPROACH SLAB ABUTMENT NO. 4

Scale: 3/16"=1'-0"

IM 089-2(26)
This sheet for information only
BR 50 N & S

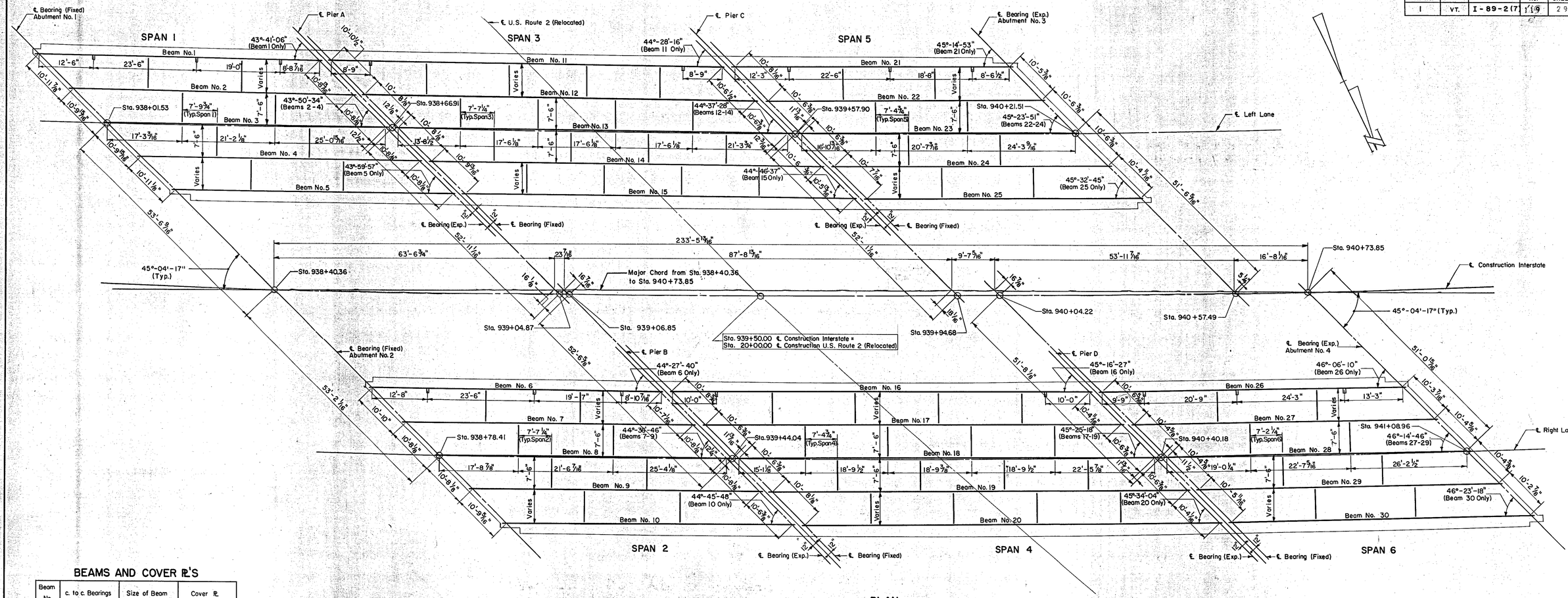
CONTRACT NO. 2

APPROACH SLABS
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY DRAWN BY: S.A.L.	CHECKED BY: J.B. & D.S. IN CHARGE: J.V.B.	SCALE: AS NOTED DATE: 6-19-58
PROJECT NO. I-89-2(7)	SHEET	254 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	119	296



PLAN

Scale $\frac{3}{32}$" = 1'-0"

Note:
1. All dimensions are horizontal dimensions.
2. All beams shall be rolled to true circular camber with the middle ordinate as shown on Sheet No. 120
3. For Steel Details, see Sheet No. 120
4. Cut flanges at L Bearing as per Standard Sheet No. SB-22-58.
5. All diaphragms shall be 18 E 42.7. For details, see Standard Sheet No. SB-20-56.
6. The steel for all beams and cover plates shall conform to A.S.T.M. Designation A 373. All other structural steel shall conform to either A 7 or A 373.

BEAMS AND COVER PL'S

Beam No.	c. to c. Bearings	Size of Beam	Cover Pl. (Bottom)
1	63'-8 7/16"	36 WF 150	10" x 7/8" x 39'-6"
2,3,4	63'-6 1/4"	do	do
5	63'-4 1/8"	do	do
6	64'-9 9/16"	do	do
7,8,9	64'-7 7/16"	do	do
10	64'-5 3/8"	do	do
11	87'-9 7/16"	36 WF 300	14" x 1" x 52'-8"
12,13,14	87'-6 5/8"	do	do
15	87'-3 3/4"	do	do
16	94'-2 1/4"	do	18" x 1" x 59'-8"
17,18,19	93'-11 3/8"	do	do
20	93'-8 9/16"	do	do
21	61'-11 1/2"	36 WF 150	10" x 7/8" x 39'-6"
22,23,24	61'-9 9/16"	do	do
25	61'-7 11/16"	do	do
26	68'-0"	36 WF 160	13" x 7/8" x 46'-3"
27,28,29	67'-10 1/16"	do	do
30	67'-8 1/8"	do	do

IM 089-2(26)
This sheet for information only
BR 50 N & S

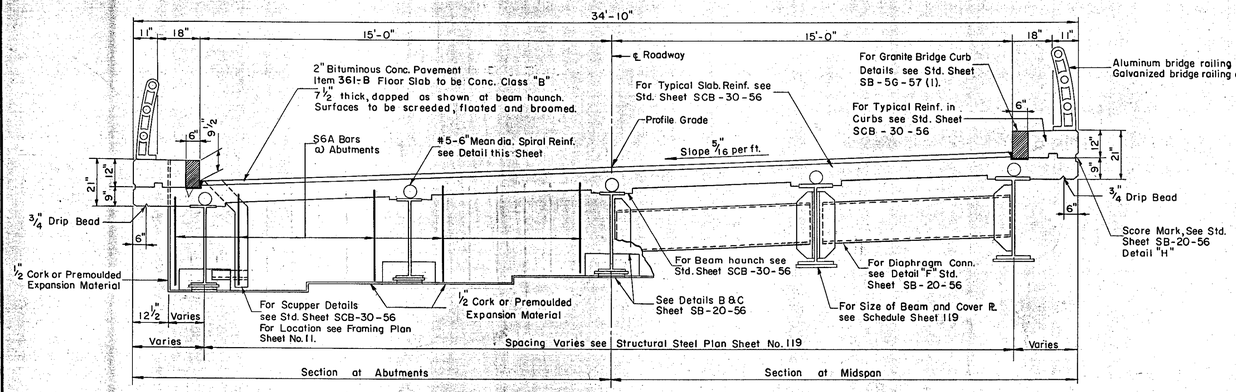
CONTRACT NO. 2

STRUCTURAL STEEL PLAN
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA 939+50
OVER
U.S. ROUTE 2 (RELOC) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY: DRAWN BY: S.A.L.	CHECKED BY: J.B. & D.S. IN CHARGE: J.V.B.	SCALE: AS NOTED DATE: 6-19-58
PROJECT NO. I-89-2(7)	SHEET 255 OF 307	

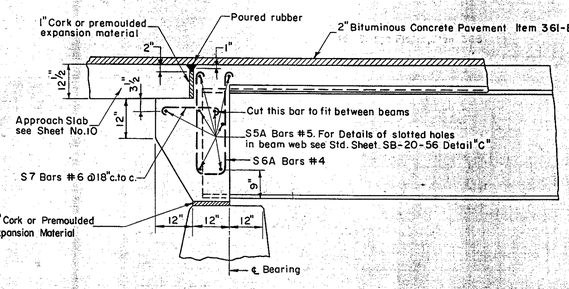
B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
I	VT.	I-89-2(7)	120	296



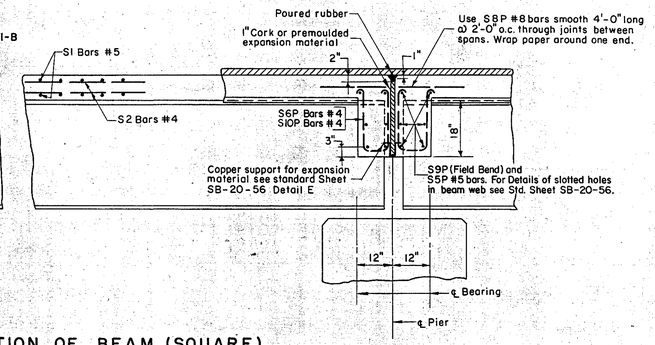
TYPICAL CROSS SECTION

Scale: 3/8" = 1'-0"

BEAM SCHEDULE					SPIRAL SCHEDULE				
BEAM NO.	A	B	C	D	LENGTH OF SPAN	64'	69'	94'	99'
1	9"	14 3/8"	63'-8 7/16"	65'-7 15/16"	SPIRAL PITCH: 0'-10' FROM BRNG.	DOUBLE @ 5"	DOUBLE @ 5"	DOUBLE @ 5 1/2"	DOUBLE @ 5 1/2"
2,3,4	do	9"	63'-6 1/4"	65'-0 1/4"	" " 10'-20' OR ℄ SPAN	DOUBLE @ 6 1/2"	DOUBLE @ 6 1/2"	DOUBLE @ 6 1/2"	DOUBLE @ 6 1/2"
5	do	14 1/4"	63'-4 1/8"	65'-3 3/8"	" " 20'-30' OR ℄ SPAN	5"	4 1/2"	4"	4 1/2"
6	do	14 1/8"	64'-9 9/16"	66'-8 11/16"	" " 30'-40' OR ℄ SPAN	7 1/2"	7"	5 1/2"	5 1/2"
7,8,9	do	9"	64'-7 7/16"	66'-1 7/16"	" " 40' ℄ SPAN	——	——	7"	7"
10	do	14"	64'-5 3/8"	66'-4 3/8"	do	do	do	do	do
11	14 1/8"	14 1/8"	87'-9 7/16"	90'-1 7/16"					
12,13,14	9"	9"	87'-6 5/8"	89'-0 5/8"	do	do	do	do	do
15	14"	14"	87'-3 3/4"	89'-7 3/4"					
16	13 7/8"	13 7/8"	94'-2 1/4"	96'-6"	do	do	do	do	do
17,18,19	9"	9"	93'-11 3/8"	95'-5 3/8"					
20	13 13/16"	13 13/16"	93'-8 9/16"	96'-0 3/16"	do	do	do	do	do
21	13 7/8"	9"	61'-11 1/2"	63'-10 3/8"					
22,23,24	9"	do	61'-9 9/16"	63'-3 9/16"	do	do	do	do	do
25	13 13/16"	do	61'-7 11/16"	63'-6 1/2"					
26	13 5/8"	do	68'-0"	69'-10 5/8"	do	do	do	do	do
27,28,29	9"	do	67'-10 1/16"	69'-4 1/16"					
30	13 9/16"	do	67'-8 1/8"	69'-6 11/16"	do	do	do	do	do



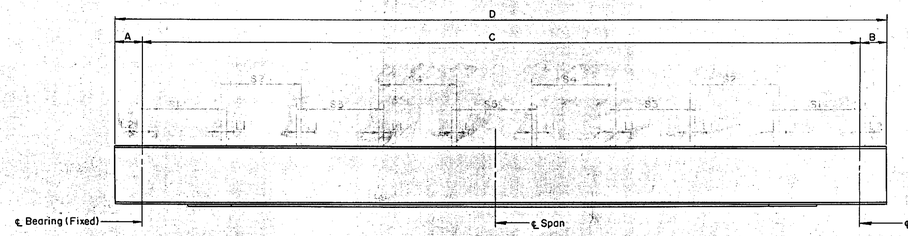
ELEVATION AT ABUTMENTS



ELEVATION AT PIERS

TYPICAL ELEVATION OF BEAM (SQUARE)

Scale: 1/2" = 1'-0"

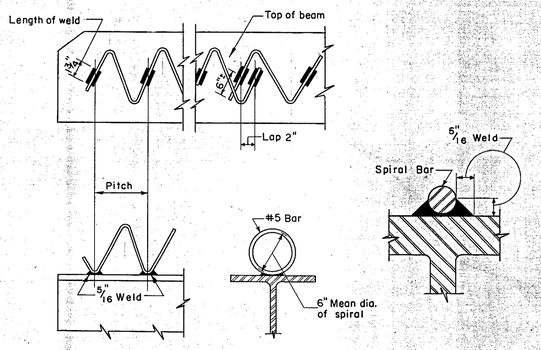


ELEVATION OF BEAMS

No Scale

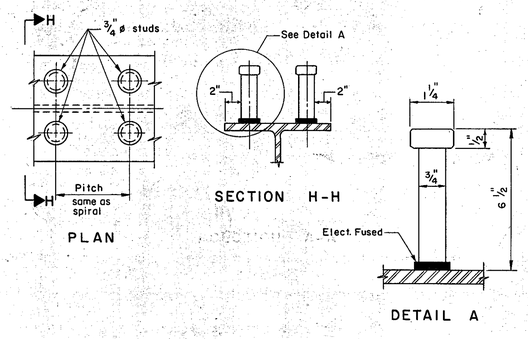
Notes: 1. For Beam Size and Cover R. Size see Framing Plan Sheet No. 119
2. For Cover R. Details see Std. Sheet SCB-30-56 (1).
3. Cut Flanges @ ℄ Bearings as per Std. Sheet SB-22-58.

NOTE: WHERE A DOUBLE SPIRAL IS CALLED FOR IN THE SCHEDULE (4) FOUR 6 1/2" LONG STUDS ARE REQUIRED PER PITCH.



SPIRAL WELDING DETAILS

No Scale



PLAN

DETAIL A

ALTERNATE SHEAR CONNECTOR

No Scale

Beam	L	d
1-10	64'-0"±	2 1/4"
11-15	87'-6"±	4"
16-20	94'-0"±	4 5/8"
21-25	61'-9"±	2"
26-30	67'-10"±	2½"

CAMBER DIAGRAM

No Scale

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	SUPERSTRUCTURE NET	OVER-RUN	TOTAL	FINAL
361-B	Bit. Conc. Pavement	TONS	175 ✓	~~25~~	~~200~~	175 ✓
401-B	Concrete Class B (Mod.)	C.Y.	~~510~~	~~25~~	~~535~~	511 ✓
402	Reinforcing Steel	Lbs.	See Reinforcing Schedule Sht. 121			
403-d	Spiral Reinforcement (15,300 LB.)	L.S.	1 ✓	-	1 ✓	1 ✓
404-A	Structural Steel	Lbs.	~~571,844~~	~~11,436~~	~~583,280~~	575,518 ✓

IM 089-2(26)
This sheet for information only
BR 50 N & S

CONTRACT NO. 2

STRUCTURAL DETAILS
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	CHECKED BY J.B.B.D.S.	SCALE AS NOTED
DRAWN BY V.C.S.	IN CHARGE J.V.B.	DATE 6-19-58

PROJECT NO. I-89-2( ) SHEET 256 OF 307

B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	171	295

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
			ABUTMENT NO. 1														
1	4	5	6'-8"	A1-501	17		1'-0"	4'-8"	1'-0"								
2	4		10'-8"	A1-502	17		1'-0"	9'-8"									
3	4		15'-8"	A1-503	17		1'-0"	14'-8"									
4	24		14'-8"	A1-504	Str.												
5	4		13'-5"	A1-505													
6	4		12'-2"	A1-506													
7	4		10'-11"	A1-507													
8	8		9'-8"	A1-508													
9	10		13'-1"	A1-509													
10	10		11'-4"	A1-510													
11	12		12'-5"	A1-511													
12	12		10'-8"	A1-512													
13	4		8'-10"	A1-513													
14			8'-0"	A1-514													
15			7'-2"	A1-515													
16	4		6'-5"	A1-516													
17	* 5		5'-8"	A1-517													
18	44		4'-0"	A1-518													
19	4	5	6'-4"	A1-519													
20	12	6	28'-9"	A1-601													
21	* 58		5'-9"	A1-602													
22	8		5'-6"	A1-603													
23	6		10'-0"	A1-604													
24	3	6	11'-0"	A1-605													
25	6	7	25'-0"	A1-701	Str.												
26	* 7	7	6'-0"	A1-702	17		3'-0"	3'-0"									
27																	
28																	
29																	
30			ABUTMENT NO. 2														
31			Same Reinforcing as in Abutment No. 1 Except														
32			bars to be marked, A2.				(Less Test Bars)										
33																	
34																	
35																	
36																	
37																	
38			ABUTMENT NO. 3														
39	4	5	6'-8"	A3-501	17		1'-0"	4'-8"	1'-0"								
40	4		10'-8"	A3-502	17		1'-0"	9'-8"									
41	4		15'-8"	A3-503	17		1'-0"	14'-8"									
42	24		14'-8"	A3-504	Str.												
43	4		13'-5"	A3-505													
44	4		12'-2"	A3-506													
45	4		10'-11"	A3-507													
46	8		9'-8"	A3-508													
47	10		13'-3"	A3-509													
48	10		11'-7"	A3-510													
49	12		12'-8"	A3-511													
50	12		11'-1"	A3-512													
51	4		8'-10"	A3-513													
52			8'-0"	A3-514													
53			7'-2"	A3-515													
54			6'-5"	A3-516													
55	4		5'-8"	A3-517													
56	44		4'-0"	A3-518													
57	4	5	6'-4"	A3-519													
58	12	6	27'-9"	A3-601													
59	55		5'-9"	A3-602													
60	8		5'-6"	A3-603													
61	6		10'-0"	A3-604													
62	3	6	10'-5"	A3-605													
63	6	7	24'-3"	A3-701	Str.												
64	6	7	6'-0"	A3-702	17		3'-0"	3'-0"									
65																	
66																	
67			ABUTMENT NO. 4														
68	4	5	6'-8"	A4-501	17		1'-0"	4'-8"	1'-0"								
69	4		10'-8"	A4-502	17		1'-0"	9'-8"									
70	4		15'-8"	A4-503	17		1'-0"	14'-8"									
71	20		14'-8"	A4-504	Str.												
72	2		13'-5"	A4-505													
73	2		12'-2"	A4-506													
74	2		10'-11"	A4-507													
75	2		9'-8"	A4-508													
76	10		13'-1"	A4-509													
77	10		11'-7"	A4-510													
78	12		12'-8"	A4-511													
79	12		11'-1"	A4-512													
80	2		8'-10"	A4-513													
81	2	5	8'-0"	A4-514	Str.												
82	2	5	7'-2"	A4-515	Str.												
83	2		6'-5"	A4-516													
84	2		5'-8"	A4-517													
85	62		4'-0"	A4-518													
86	2		6'-4"	A4-519													
87	16		16'-11"	A4-520													
88	30		7'-8"	A4-521													
89	16		14'-7 7/8"	A4-522													
90	10		12'-2"	A4-523	Str.												
91	15	5	21'-11"	A4-524	S10		2'-1"	0'-9"	2'-1"								
92	12	6	27'-4 5/8"	A4-601	Str.												
93	53		5'-9"	A4-602													
94	31		5'-6"	A4-603													
95	6		15'-0"	A4-604													
96	3		10'-4"	A4-605													
97	6	6	17'-0"	A4-606													
98	6	7	24'-0"	A4-701	Str.												
99	6	7	6'-0"	A1-702	17		3'-0"	3'-0"									
100																	
101																	
102																	
103																	
104																	
105			DECK SPAN NO. 1 (LEFT LANE)														
106	250	5	34'-4"	S1-501	Str.												
107	128	4	34'-3"	S2-401	Str.												
108	20	6	34'-6"	S3-601	Str.												
109	90	4	41'-10"	S4-402	S3	0'-4 1/2"	1'-4"	1'-5"	1'-4"			0'-4 1/2"	0'-2 1/2"				
110	16	5	24'-5"	S5A-502	Str.												
111	12	5	22'-5"	S5P-503	Str.												
112	38	4	7'-0"	S6A-403	S2	0'-4 1/2"	2'-9"	0'-9"	2'-9"			0'-4 1/2"	0'-2 1/2"				
113	36	4	41'-10"	S6P-404	S2	0'-4 1/2"	1'-8"	0'-9"	1'-8"			0'-4 1/2"	0'-2 1/2"				
114	32	6	3'-0"	S7-602	1	0'-8"	1'-8"					0'-8"		0'-6"			
115	* 17	8	41'-0"	S8P-801	Str. (Smooth)												
116	12	5	31'-3"	S9P-504	Str.												
117	* 5	4	5'-2"	S10P405	S2	0'-4 1/2"	1'-8"	1'-1"	1'-8"			0'-4 1/2"	0'-2 1/2"				
118																	
119			DECK SPAN NO. 2 (RIGHT LANE)														
120	250	5	34'-4"	S1-501	Str.												
121	128	4	34'-8"	S2-406	Str.												
122	20	6	34'-11"	S3-603	Str.												
123	92	4	41'-10"	S4-402	S3	0'-4 1/2"	1'-4"	1'-5"	1'-4"			0'-4 1/2"	0'-2 1/2"				
124	16	5	24'-5"	S5A-502	Str.												
125	12	5	22'-5"	S5P-503	Str.												
126	38	4	7'-0"	S6A-403	S2	0'-4 1/2"	2'-9"	0'-9"	2'-9"			0'-4 1/2"	0'-2 1/2"				
127	36	4	41'-10"	S6P-404	S2	0'-4 1/2"	1'-8"	0'-9"	1'-8"			0'-4 1/2"	0'-2 1/2"				
128	32	6	3'-0"	S7-602	1	0'-8"	1'-8"					0'-8"		0'-6"			
129	16	8	41'-0"	S8P-801	Str. (Smooth)												
130	12	5	31'-3"	S9P-504	Str.												
131	4	4	5'-2"	S10P-405	S2	0'-4 1/2"	1'-8"	1'-1"	1'-8"			0'-4 1/2"	0'-2 1/2"				
132																	
133			DECK SPAN NO. 3 (LEFT LANE)														
134	338	5	34'-4"	S1-501	Str.												
135	192	4	31'-7"	S2-407	Str.												
136	30	6	32'-1"	S3-604	Str.												
137	124	4	41'-10"	S4-402	S3	0'-4 1/2"	1'-4"	1'-5"	1'-4"			0'-4 1/2"	0'-2 1/2"				
138	24	5	22'-5"	S5P-503	Str.												
139	72	4	41'-10"	S6P-404	S2	0'-4 1/2"	1'-8"	0'-9"	1'-8"			0'-4 1/2"	0'-2 1/2"				
140	16	8	41'-0"	S8P-801	Str. (Smooth)												
141	24	5	31'-3"	S9P-504	Str.												
142	8	4	5'-2"	S10P-405	S2	0'-4 1/2"	1'-8"	1'-1"	1'-8"			0'-4 1/2"	0'-2 1/2"				
143			DECK SPAN NO. 4 (RIGHT LANE)														
144	360	5	34'-4"	S1-501	Str.												
145	192	4	33'-6"	S2-408	Str.												
146	30	6	33'-9"	S3-605	Str.												
147	134	4	41'-10"	S4-402	S3	0'-4 1/2"	1'-4"	1'-5"	1'-4"			0'-4 1/2"	0'-2 1/2"				
148	24	5	22'-5"	S5P-503	Str.												
149	72	4	41'-10"	S6P-404	S2	0'-4 1/2"	1'-8"	0'-9"	1'-8"			0'-4 1/2"	0'-2 1/2"				
150	16	8	41'-0"	S8P-801	Str. (Smooth)												
151	24	5	31'-3"	S9P-504	Str.												
152	8	4	5'-2"	S10P-405	S2	0'-4 1/2"	1'-8"	1'-1"	1'-8"			0'-4 1/2"	0'-2 1/2"				
153																	
154			DECK SPAN NO. 5 (LEFT LANE)														
155	240	5	34'-4"	S1-501	Str.												
156	128	4	33'-4"	S2-409	Str.												
157	20	6	33'-7"	S3-606	Str.												
158	88	4	41'-10"	S4-402	S3	0'-4 1/2"	1'-4"	1'-5"	1'-4"			0'-4 1/2"	0'-2 1/2"				
159	8	5	23'-9"	S5A-505	Str.												
160	12	5	22'-0"	S5P-506	Str.												
161	38	4	7'-0"	S6A-403	S2	0'-4 1/2"	2'-9"	0'-9"	2'-9"			0'-4 1/2"	0'-2 1/2"				
162	36	4	41'-10"	S6P-404	S2	0'-4 1/2"	1'-8"	0'-9"	1'-8"			0'-4 1/2"	0'-2 1/2"				
163	32	6	3'-0"	S7-602	1	0'-8"	1'-8"					0'-8"		0'-6"			
164	12	5	31'-3"	S9P-504	Str.												
165	4	4	5'-2"	S10P405	S2	0'-4 1/2"	1'-8"	1'-1"	1'-8"			0'-4 1/2"	0'-2 1/2"				
166																	
167			DECK SPAN NO. 6 (RIGHT LANE)														
168	262	5	34'-4"	S1-501	Str.												
169	128	4	35'-11"	S2-410	Str.												
170	20	6	36'-2"	S3-607	Str.												
171	96	4	41'-10"	S4-402	S3	0'-4 1/2"	1'-4"	1'-5"	1'-4"			0'-4 1/2"	0'-2 1/2"				
172	8	5	23'-5"	S5A-506	Str.												
173	12	5	21'-8"	S5P-507	Str.												
174	36	4	41'-10"	S6P-404	S2	0'-4 1/2"	1'-8"	0'-9"	1'-8"			0'-4 1/2"	0'-2 1/2"				
175	32	6	3'-0"	S7-602	1	0'-8"	1'-8"					0'-8"		0'-6"			
176	12	5	31'-3"	S9P-504	Str.												
177	4	4	5'-2"	S10P405	S2	0'-4 1/2"	1'-8"	1'-1"	1'-8"			0'-4 1/2"	0'-2 1/2"				
178																	
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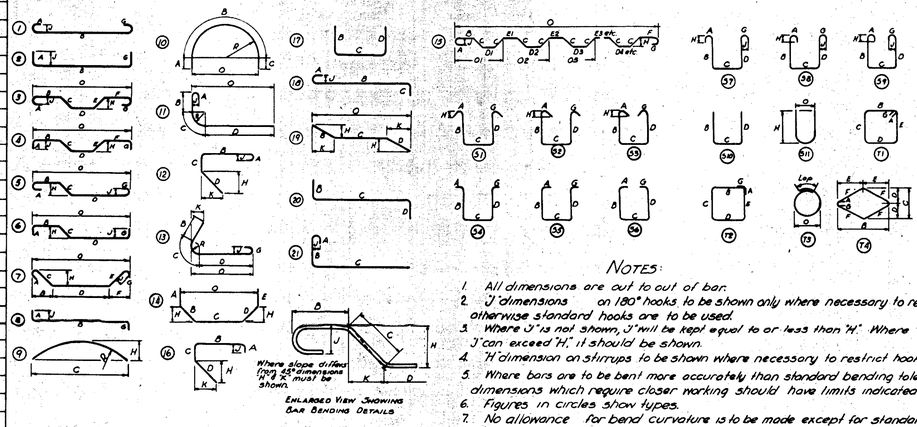
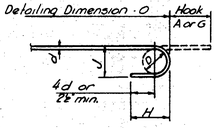
TYPICAL BAR BENDS



NOTES:

1. All dimensions are out to out of bar.
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H.' Where J can exceed 'H,' it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Detailing Dimension · O



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present (Numbers)
1/4" ϕ	#2
3/8" ϕ	#3
1/2" ϕ	#4
5/8" ϕ	#5
3/4" ϕ	#6
7/8" ϕ	#7
1" ϕ	#8
1 1/8" □	#9
1 1/4" □	#10
1 1/4" □	#11

IM 089-2(26)
This sheet for information only
BR 50 N & S

8. Bar reinforcement metal shall conform to the requirements of the Standard Specifications for new Billet-Steel Concrete Reinforcement Bars (Intermediate Grade) Serial Designation A.A.S.H.O. M31-48 or its latest revision. All bars shall be deformed to conform with A.S.T.M. Specifications A 305-49.

* Denotes one additional bar for testing purposes.

ESTIMATED QUANTITIES

FINAL	Location	Pounds
3,266 ✓	ABUTMENT NO. 1	=3265=
3,239 ✓	ABUTMENT NO. 2	=3238=
3,204 ✓	ABUTMENT NO. 3	3204✓
4,414 ✓	ABUTMENT NO. 4	=3608=
14,391 ✓	DECK SPAN NO. 1	=14573=
14,443 ✓	DECK SPAN NO. 2	=14614=
18,900 ✓	DECK SPAN NO. 3	=18074=
20,043 ✓	DECK SPAN NO. 4	=20215=
13,987 ✓	DECK SPAN NO. 5	=13703=
14,917 ✓	DECK SPAN NO. 6	=14954=
110804 ✓	Total	=110,448=

CONTRACT NO. 2

REINFORCING SCHEDULE
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
Designed by
U.S. ROUTE 2 (RELOC) STA. 20+00
THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON Checked by MASSACHUSETTS

SURVEYED BY		CHECKED BY D.S. & J.B.	SCALE AS NOTED
DRAWN BY J.H.		IN CHARGE J.V.B.	DATE 6-19-58

PROJECT NO. I-89-2(7) SHEET 257 OF 307

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
				PIER "A"													
1	* 84	4	9'-7"	PA-401	T3											2'-5"	
2	40	5	24'-9"	PA-501	Str.												
3	27	5	13'-4"	PA-502	T1	0'-2"	3'-8"	2'-10"	3'-8"	2'-10"		0'-2"					
4	6	6	11'-9"	PA-601	10	3'-0"	5'-9"	3'-0"								1'-10"	3'-8"
5	4	6	26'-1"	PA-602	Str.												
6	116	6	9'-8"	PA-603	Str.												
7	40	8	25'-6"	PA-801	Str.												
8	14		29'-5"	PA-802	20		2'-11"	26'-6"									
9	6		12'-2"	PA-803	Str.												
10	7		32'-11"	PA-804													
11	7	8	20'-5"	PA-805													
12	19	10	22'-6"	PA-1001													
13			22'-11"	PA-1002													
14			23'-4"	PA-1003													
15	19		23'-9"	PA-1004	Str.												
16	* 17	10	7'-8"	PA-1005	20		1'-0"	6'-8"									
17																	
18																	
19																	
20				PIER "B"													
21	140	4	9'-7"	PB-401	T3											2'-5"	
22	38	5	13'-4"	PB-501	T1	0'-2"	3'-8"	2'-10"	3'-8"	2'-10"		0'-2"					
23	6	6	11'-9"	PB-601	10	3'-0"	5'-9"	3'-0"								1'-10"	3'-8"
24	4	6	25'-10"	PB-602	Str.												
25	20	8	29'-2"	PB-801	20		2'-11"	26'-3"									
26	8	8	32'-8"	PB-802	Str.												
27	8	8	20'-2"	PB-803													
28	* 53	9	6'-6"	PB-901													
29	36	9	9'-6"	PB-902													
30	76	11	37'-3"	PB-1101	Str.												
31	* 77	11	7'-5"	PB-1102	20		1'-0"	6'-5"									
32																	
33																	
34																	
35				PIER "C"													
36	86	4	9'-7"	PC-401	T3											2'-5"	
37	20	4	5'-11"	PC-402	S10		2'-6"	0'-11"	2'-6"								
38	40	5	24'-9"	PC-501	Str.												
39	25	5	13'-4"	PC-502	T1	0'-2"	3'-8"	2'-10"	3'-8"	2'-10"		0'-2"					
40	6	6	11'-9"	PC-601	10	3'-0"	5'-9"	3'-0"								1'-10"	3'-8"
41	4	6	25'-7"	PC-602	Str.												
42	116	6	9'-8"	PC-603	Str.												
43	40	8	25'-6"	PC-801	Str.												
44	14		28'-11"	PC-802	20		2'-11"	26'-0"									
45	* 7		11'-8"	PC-803	Str.												
46	7		32'-3"	PC-804													
47	7	8	19'-9"	PC-805													
48	19	10	23'-0"	PC-1001													
49			23'-5"	PC-1002													
50			23'-10"	PC-1003													
51	19		24'-4"	PC-1004	Str.												
52	76	10	7'-8"	PC-1005	20		1'-0"	6'-8"									
53																	
54																	
55																	
56				PIER "D"													
57	139	4	9'-7"	PD-401	T3											2'-5"	
58	20	4	5'-11"	PD-402	S10		2'-6"	0'-11"	2'-6"								
59	36	5	13'-4"	PD-501	T1	0'-2"	3'-8"	2'-10"	3'-8"	2'-10"		0'-2"					
60	6	6	11'-9"	PD-601	10	3'-0"	5'-9"	3'-0"								1'-10"	3'-8"
61	4	6	25'-4"	PD-602	Str.												
62	20	8	28'-8"	PD-801	20		2'-11"	25'-9"									
63	8	8	32'-2"	PD-802	Str.												
64	8	8	19'-8"	PD-803													
65	52	9	6'-6"	PD-901													
66	36	9	9'-6"	PD-902													
67	19	11	40'-7"	PD-1101													
68			38'-3"	PD-1102													
69			35'-11"	PD-1103													
70	19		33'-11"	PD-1104	Str.												
71	76	11	7'-5"	PD-1105	20		1'-0"	6'-5"									
72																	
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78																	
79																	
80																	
81																	

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
82																	
83																	
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85																	
86																	
87																	
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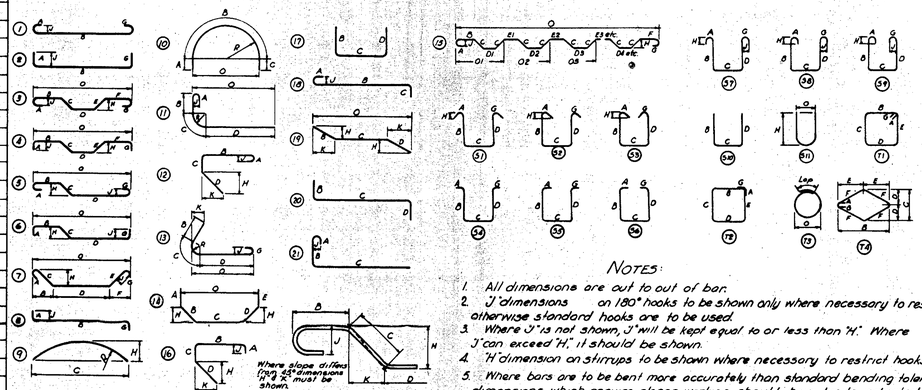
B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	122	296

TYPICAL BAR BENDS



NOTES:

1. All dimensions are out to out of bar.
2. "J" dimensions on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where "J" is not shown, "J" will be kept equal to or less than "H." Where "J" can exceed "H," it should be shown.
4. "H" dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163																	
164																	
165																	
166																	
167																	
168																	
169																	
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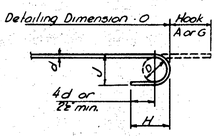

STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present (Numbers)
1/4"ϕ	#2
3/8"ϕ	#3
1/2"ϕ	#4
5/8"ϕ	#5
3/4"ϕ	#6
7/8"ϕ	#7
1"ϕ	#8
1"□	#9
1 1/8"□	#10
1 1/4"□	#11

IM 089-2(26)
This sheet for information only
BR 50 N & S

8. Bar reinforcement metal shall conform to the requirements of the Standard Specifications for new Billet-Steel Concrete Reinforcement Bars (Intermediate Grade) Serial Designation A.A.S.H.O. M31-48 or its latest revision. All bars shall be deformed to conform with A.S.T.M. Specifications A 305-49.

ESTIMATED QUANTITIES

FINAL	Location	Pounds
19,022	PIER A	~~17,031~~
30,209	PIER B	~~24,781~~
19,198	PIER C	~~19,186~~
26,710	PIER D	~~24,680~~
95,145	Total	~~85,680~~

CONTRACT NO. 2

REINFORCING SCHEDULE
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WATERBURY
INTERSTATE STA. 939+50
OVER
U.S. ROUTE 2 (RELOC.) STA. 20+00

THE CLARKESON ENGINEERING CO., INC
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY: DRAWN BY: S.A.L. | CHECKED BY: IN CHARGE: | SCALE: DATE: 6 - 19 - 58

PROJECT NO. I-89-2(7) | SHEET 258 OF 307

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
			APPROACH SLAB NO. 1														
1	7	5	29'-8"	AS1-501	Str.												
2	13	↓	31'-0"	AS1-502	↓												
3	3		4'-0"	AS1-503													
4	1		4'-1"	AS1-504													
5	↓		5'-1"	AS1-505													
6			6'-0"	AS1-506													
7			7'-0"	AS1-507													
8			7'-11"	AS1-508													
9	↓		8'-11"	AS1-509													
10	1		9'-10"	AS1-510													
11	2		9'-5"	AS1-511													
12	↓		10'-5"	AS1-512													
13			11'-4"	AS1-513													
14			12'-4"	AS1-514													
15			13'-3"	AS1-515													
16			14'-3"	AS1-516													
17			15'-2"	AS1-517													
18			16'-2"	AS1-518													
19			17'-1"	AS1-519													
20	↓		18'-1"	AS1-520													
21	2		19'-0"	AS1-521													
22	11		12'-6"	AS1-522													
23	2		22'-10"	AS1-523													
24	2		10'-4"	AS1-524	↓												
25	2	↓	7'-6"	AS1-525	Str.												
26	6	5	4'-4"	AS1-526	S3	0'-5"	1'-6"	0'-6"	1'-6"			0'-5"	0'-28"				
27	31	10	16'-0"	AS1-1001	1	0'-11"	15'-1"					None		0'-8"			
28	2	↓	9'-9"	AS1-1002	↓	↓	8'-10"					↓		↓			
29	↓		10'-10"	AS1-1003			9'-11"										
30			11'-11"	AS1-1004			11'-0"										
31			13'-0"	AS1-1005			12'-1"										
32			14'-1"	AS1-1006			13'-2"										
33			15'-2"	AS1-1007			14'-3"										
34			16'-3"	AS1-1008			15'-4"										
35			17'-4"	AS1-1009			16'-5"										
36			18'-5"	AS1-1010			17'-6"										
37			19'-6"	AS1-1011			18'-7"										
38			20'-7"	AS1-1012			19'-8"										
39			21'-8"	AS1-1013			20'-9"										
40			22'-9"	AS1-1014	↓		21'-10"										
41	↓	1	23'-10"	AS1-1015	1	0'-11"	22'-11"					None	0'-8"				
42	2		24'-11"	AS1-1016	↓	0'-11"	24'-0"					↓	↓	↓			
43	1		26'-0"	AS1-1017	Str.	0'-11"	25'-1"					None	0'-8"	0'-8"			
44	15		21'-3"	AS1-1018	Str.							None	0'-8"				
45	2	↓	14'-0"	AS1-1019	1	0'-11"	12'-2"					0'-11"	↓	0'-8"			
46	2	10	11'-2"	AS1-1020	1	0'-11"	9'-4"					0'-11"	↓	0'-8"			
47																	
48																	
49			APPROACH SLAB NO. 2														
50																	
51			Same Reinforcing as Slab 1 except bars to be prefixed "AS 2"														
52																	
53																	
54																	
55			APPROACH SLAB NO. 3														
56																	
57	7	5	29'-8"	AS3-501	Str.												
58	13	↓	31'-0"	AS3-502	↓												
59	3		4'-0"	AS3-503													
60	1		4'-8"	AS3-504													
61	↓		5'-9"	AS3-505													
62			6'-9"	AS3-506													
63			7'-10"	AS3-507													
64			8'-10"	AS3-508													
65	↓		9'-11"	AS3-509													
66	1		10'-11"	AS3-510													
67	2		10'-8"	AS3-511													
68	↓		11'-9"	AS3-512													
69			12'-9"	AS3-513													
70			13'-10"	AS3-514													
71			14'-10"	AS3-515													
72			15'-11"	AS3-516													
73			16'-11"	AS3-517													
74	↓		18'-0"	AS3-518													
75	2		19'-0"	AS3-519													
76	1		20'-1"	AS3-520													
77	9		12'-5"	AS3-521													
78	2		21'-9"	AS3-522													
79	2		7'-11"	AS3-523	↓												
80	2	↓	10'-6"	AS3-524	Str.												
81	6	5	4'-4"	AS3-525	S3	0'-5"	1'-6"	0'-6"	1'-6"			0'-5"	0'-28"				
82			APPROACH SLAB NO. 3 (CONT.)														
83	31	10	16'-0"	AS3-1001	1	0'-11"	15'-1"					None		0'-8"			
84	2	↓	9'-9"	AS3-1002	↓	↓	8'-10"					↓		↓			
85	↓		10'-9"	AS3-1003			9'-10"										
86			11'-8"	AS3-1004			10'-9"										
87			12'-8"	AS3-1005			11'-9"										
88			13'-7"	AS3-1006			12'-8"										
89			14'-7"	AS3-1007			13'-8"										
90			15'-6"	AS3-1008			14'-7"										
91			16'-6"	AS3-1009			15'-7"										
92			17'-5"	AS3-1010			16'-6"										
93			18'-5"	AS3-1011			17'-6"										
94			19'-4"	AS3-1012			18'-5"										
95			20'-4"	AS3-1013			19'-5"										
96			21'-3"	AS3-1014			20'-4"										
97	↓		22'-3"	AS3-1015			21'-4"										
98	2		23'-2"	AS3-1016	↓		22'-3"					↓		↓			
99	1		24'-2"	AS3-1017	1	0'-11"	23'-3"					None		0'-8"			
100	15		19'-9"	AS3-1018	Str.												
101	2	↓	11'-6"	AS3-1019	1	0'-11"	9'-8"					0'-11"		0'-8"			
102	2	10	14'-1"	AS3-1020	1	0'-11"	12'-3"					0'-11"		0'-8"			
103																	
104																	
105																	
106			APPROACH SLAB NO. 4														
107																	
108			Same Reinforcing as Slab No. 3 except bars to be prefixed "AS4"														
109																	
110																	
111																	
112			96" CMP TOE WALL														
113																	
114	16	4	4'-11"	TW-401	Str.												
115	8	↓	31'-8"	TW-402	↓												
116	4	↓	5'-6"	TW-403	↓												
117	6	4	15'-8"	TW-404	Str.												
118																	
119																	
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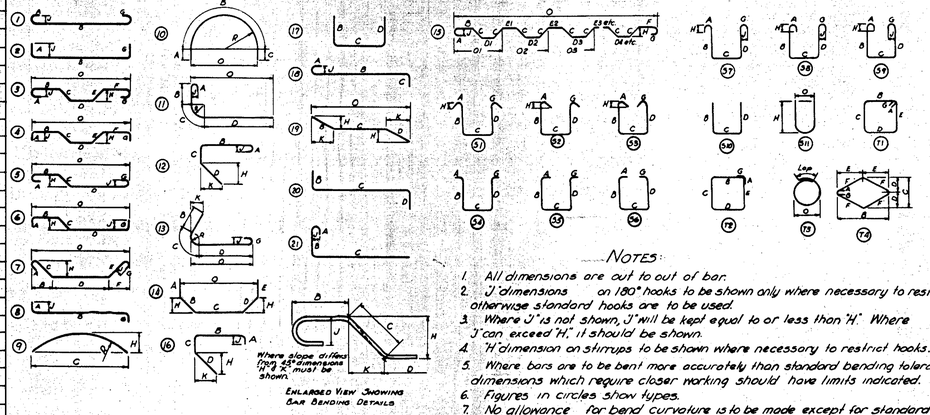
B.P.R. DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
1	VT.	I-89-2(7)	123	295

TYPICAL BAR BENDS



NOTES

1. All dimensions are out to out of bar.
2. 'J' dimensions on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where 'J' is not shown, 'J' will be kept equal to or less than 'H.' Where J can exceed 'H,' it should be shown.
4. 'H' dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook & radii in excess of same.

Item	No. Pieces	Size	Length	Mark	Type	A	B	C	D	E	F	G	H	J	K	R	O
163																	
164																	
165																	
166																	
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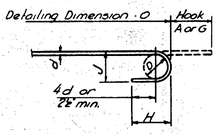
Detailing Dimension - O — Hook A or G



STANDARD HOOK DETAIL

BAR SIZES

Equivalent Size	Present (Numbers)
1/4" ϕ	#2
3/8" ϕ	#3
1/2" ϕ	#4
5/8" ϕ	#5
3/4" ϕ	#6
7/8" ϕ	#7
1" ϕ	#8
1" □	#9
1 1/8" □	#10
1 1/4" □	#11

IM 089-2(26)
This sheet for information only
BR 50 N & S

8. Bar reinforcement metal shall conform to the requirements of the Standard Specifications for new Billet-Steel Concrete Reinforcement Bars (Intermediate Grade) Serial Designation A.A.S.H.O. M31-48 or its latest revision. All bars shall be deformed to conform with A.S.T.M. Specifications A305-49.

* Denotes one additional bar for testing purposes.

ESTIMATED QUANTITIES

CONTRACT NO. 2

FINAL	Location	Pounds
7,354	APPROACH SLAB NO. 1	~~7396~~
7,354	APPROACH SLAB NO. 2	~~7396~~
7,095	APPROACH SLAB NO. 3	~~7094~~
7,095	APPROACH SLAB NO. 4	~~7094~~
28,898	TOTAL	~~28,980~~
	96 CMP TOE WALLS	512

REINFORCING SCHEDULE
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

INTERSTATE PROJECT in the town of WATERBURY

INTERSTATE STA. 939+50 OVER

U.S. ROUTE 2 (RELOC) STA. 20+00

THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS

SURVEYED BY	CHECKED BY	SCALE
DRAWN BY J.H.	IN CHARGE J.V.B.	DATE 6-19-58

PROJECT NO. I-89-2(7) SHEET 259 OF 307

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