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SEE SHEET 2

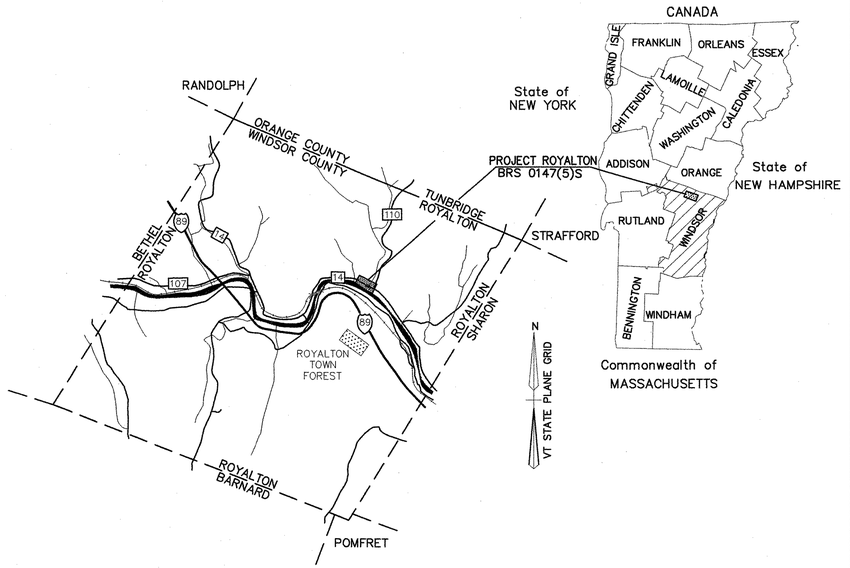
STATE OF VERMONT
AGENCY OF TRANSPORTATION

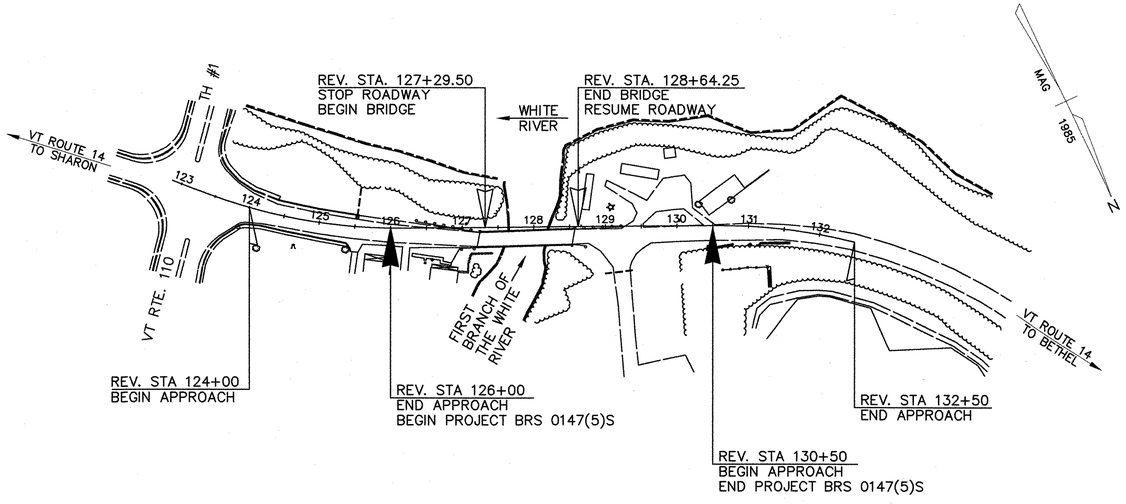
PROPOSED IMPROVEMENT
TOWN OF ROYALTON
COUNTY OF WINDSOR
VT ROUTE 14

BEGINNING AT A POINT IN THE TOWN OF ROYALTON, ON VT ROUTE 14 APPROXIMATELY 200' NORTH OF THE INTERSECTION OF VT ROUTE 110, AND EXTENDING NORTHWESTERLY ALONG VT ROUTE 14 FOR A DISTANCE OF 0.085 MILES.

LENGTH OF ROADWAY = 315.25 FEET = 0.060 MILES
LENGTH OF BRIDGE = 134.75 FEET = 0.026 MILES
LENGTH OF PROJECT = 450.00 FEET = 0.085 MILES

WORK TO BE PERFORMED UNDER THIS PROJECT CONSISTS OF THE REPLACEMENT OF EXISTING BRIDGE #21, ON VT ROUTE 14, INCLUDING ALL NECESSARY ROADWAY APPROACH WORK.





TRAFFIC DATA

FUNCTIONAL CLASSIFICATION
MAJOR COLLECTOR

2001 ADT = 4100
2021 ADT = 5600
2001 DHV = 570
2021 DHV = 850
D = 52%
2001 T = 3%
2021 T = 1%
V = 35 M.P.H.
2000–2020 18 KIP ESAL = 673,000
2000–2040 18 KIP ESAL = 1,524,000

CONVENTIONAL SIGNS

COUNTY LINE	
TOWN LINE	
LIMITS OF ACCESS	
POINT OF ACCESS	X
FENCE LINE	x x
STONE WALL	
TRAVELED WAY	
GUARDRAIL	
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 NGVD 1929
HORIZONTAL N/A

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROJECT DEVELOPMENT.

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.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR

APPROVED _____ DATE _____

DIRECTOR OF PROJECT DEVELOPMENT

APPROVED _____ DATE 7/20/04

PROJECT MANAGER : CRAIG KELLER

PROJECT NAME : ROYALTON
PROJECT NUMBER : BRS 0147(5)S

SHEET 1 OF 76 SHEETS

STATE OF VERMONT · JOHN A. REIM · No. 5523 · REGISTERED PROFESSIONAL ENGINEER

STATE OF VERMONT · LISA M. MARTIN · NO. 7852 · Structural I · LICENSED PROFESSIONAL ENGINEER

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E–154	WARNING SIGN DETAILS	8/8/95
E–160	FLANGED CHANNEL STEEL SIGN POST	5/20/99
E–163	TUBULAR STEEL SIGN POST	5/20/99
E–164	SQUARE STEEL SIGN POST	5/20/99
E–193	PAVEMENT MARKING DETAILS	8/18/95
G–1	STEEL BEAM GUARDRAIL (50MPH & OVER) HEAVEY DUTY STEEL BEAM GUARDRAIL STEEL BEAM MEDIAN BARRIER ANCHOR FOR STEEL BEAM GUARDRAIL	1/3/00
G–1D	STEEL BEAM GUARDRAIL (40MPH & LESS) HEAVEY DUTY STEEL BEAM GUARDRAIL TWISTED END TERMINAL ANCHOR FOR STEEL BEAM GUARDRAIL	1/3/00
G–18	PRECAST CONCRETE TEMPORARY TRAFFIC BARRIER	6/1/94
J–1	PROJECT AND BOUNDARY MARKERS	6/1/94

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

SURVEYED BY N/A DATE N/A
DRAWN BY TUS DATE 12/96
SQUAD LEADER JAW

DESIGN FILE NO. 91298

!PARM FILE
DATE PLOTTED
PROJ. NAME ROYALTON
PROJ. NO. BRS 0147(5)S
SHEET 2 OF 76 SHEETS

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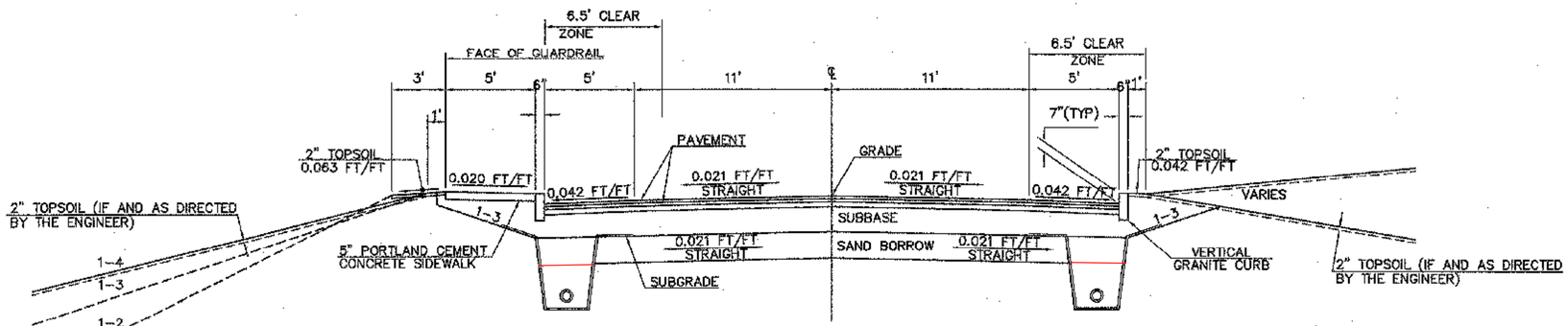
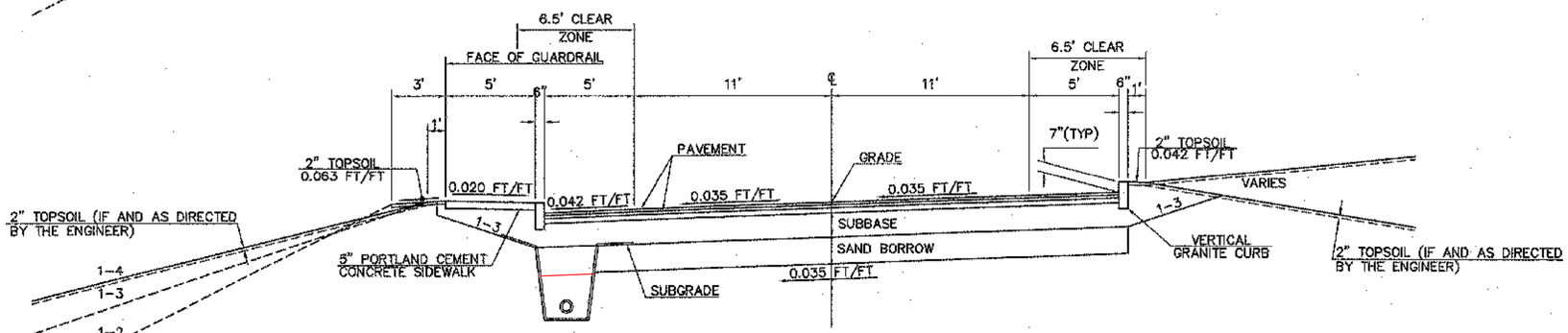
TYPICAL SECTIONS

MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH)	±1/4"
SUBBASE	±1/2"
SAND BORROW	±1"

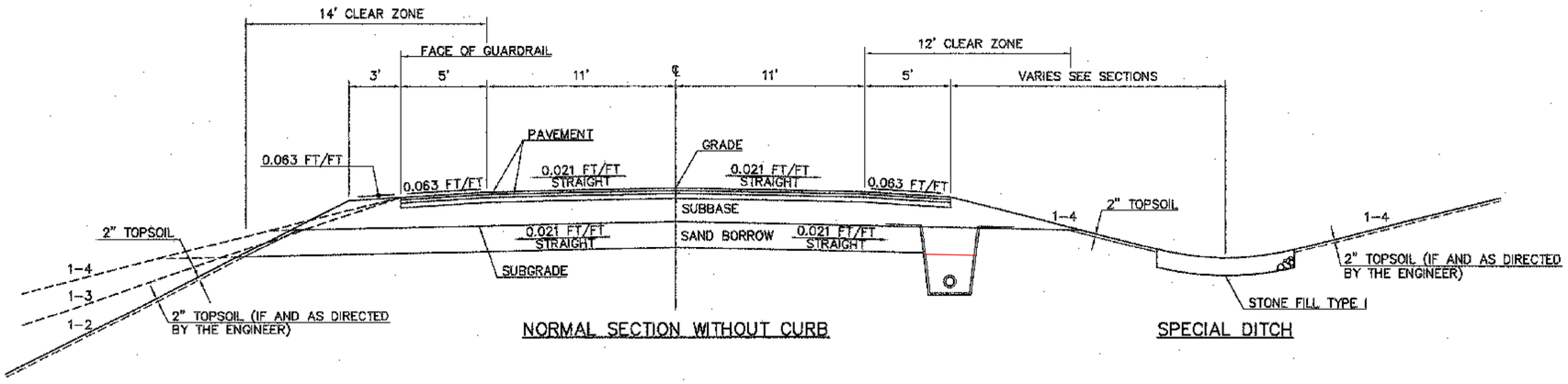
1-1/4" BITUMINOUS CONCRETE PAVEMENT (TYPE III)
1-3/4" BITUMINOUS CONCRETE PAVEMENT (TYPE II) } PG 58-34
2-1/2" BITUMINOUS CONCRETE PAVEMENT (TYPE I)
18" SUBBASE OF CRUSHED GRAVEL (COARSE GRADED)(MOD)
18" SAND BORROW



NORMAL SECTION WITH CURB



MAXIMUM BANKED SECTION: 0.035 FT/FT



NORMAL SECTION WITHOUT CURB

SPECIAL DITCH

SEEDING FORMULA
URBAN AREAS

% WT.	LBS./A.	NAME	PUR %	GERM %
42.5	34.0	CREEPING RED FESCUE	98	85
10.0	8.0	PERENNIAL RYE GRASS	95	90
42.5	34.0	KENTUCKY BLUE GRASS	85	85
5.0	4.0	ANNUAL RYE GRASS	95	85
100.00	80.0			

SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS WEED SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10 TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE OR AS DIRECTED BY THE ENGINEER.

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

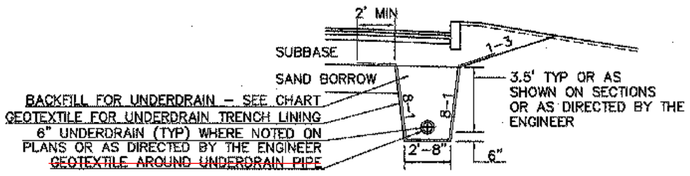
MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.

SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-6.

PAY LIMITS OF SAND BORROW: WHEN USED IN CONJUNCTION WITH UNDERDRAIN - SEE STANDARD SHEET D-2.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED ON ALL EXISTING PAVEMENT SURFACES, ON COLD PLANED SURFACES AND BETWEEN ALL COURSES OF PAVEMENT AT THE RATE OF 0.015 GAL/SY OR AS DIRECTED BY THE ENGINEER.

FOR SLOPES IN SOLID ROCK EXCAVATION AND DRILLING AND BLASTING OF SOLID ROCK SUBGRADE, SEE STANDARD SHEET A-62.



UNDERDRAIN DETAIL

BACKFILL FOR ITEM 605.10 "6" UNDERDRAIN" WILL MEET THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	PERCENT BY MASS PASSING THE SQUARE MESH SIEVES
1-1/2"	100
1"	95-100
1/2"	60-80
#4	40-55
#8	5-25
#50	0-12
#80	0-5

SURVEYED BY N/A DATE N/A
DRAWN BY TJS DATE 12/98
SQUAD LEADER JAW

DESIGN FILE NO. 91298

IFARM FILE
DATE PLOTTED
PROJ. NAME ROYALTON
PROJ. NO. BRS 0147(5)S
SHEET 3 OF 76 SHEETS

QUANTITY SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

APPROXIMATE SUMMARY OF QUANTITIES

					FULL E&C ITEMS	UTILITIES NON-FED & NON-STATE PARTIC.	NON-GOVT. PARTIC.	TRAINING	EROSION CONTROL	BRIDGE	ROADWAY	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NO.	ROUNDING
											1	1	LS	CLEARING AND GRUBBING (INCLUDING INDIVIDUAL	201.10	
														TREES AND STUMPS)		
											2	2	EA	DEMOLITION AND DISPOSAL OF BUILDING	202.10	0
														STA 128+75 LT – CONCRETE PAD		
														STA 130+50 LT – CONCRETE WALL AND SLAB		
											2300	2300	CY	COMMON EXCAVATION	203.15	18
											25	25	CY	SOLID ROCK EXCAVATION	203.16	EST
										2050		2050	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	53
											900	900	CY	SAND BORROW	203.31	25
											530	530	CY	GRANULAR BORROW	203.32	5
									15		550	565	CY	TRENCH EXCAVATION OF EARTH	204.20	10
											5	5	CY	TRENCH EXCAVATION OF ROCK	204.21	0
										474		474	CY	STRUCTURE EXCAVATION	204.25	5
										308	40	348	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	8
											350	350	SY	COLD PLANING – BIT. PAVEMENT	210.10	8
									80		1630	1710	CY	SUBBASE OF CRUSHED GRAVEL (COARSE GRADED)(MODIFIED)	301.25	6
											7	7	CY	AGGREGATE SURFACE COURSE	401.10	1
											6.00	6.00	CWT	EMULSIFIED ASPHALT	404.65	0.04
											1050	1050	TON	BITUMINOUS CONCRETE PAVEMENT (PG 58–34)	406.25	11
											25	25	CY	CONCRETE, CLASS B (FOR DROP INLETS)	501.25	2.48
										216		216	CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	3
										353		353	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	10
										1		1	LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10	
										1215		1215	LF	STEEL PILING (HP 12 x 53)	505.15	13
										273,000		273,000	LB	STRUCTURAL STEEL (PLATE GIRDER)	506.55	1077
										18,287	1825	20,112	LB	REINFORCING STEEL	507.15	162
										62,056		62,056	LB	EPOXY COATED REINFORCING STEEL	507.17	442
										1		1	LS	SHEAR CONNECTORS (1236 ~ 7/8" DIA. x 7" STUDS)	508.15	
										1		1	LS	STRUCTURAL PAINTING, SHOP APPLIED (8 TONS)	513.25	
										1		1	LS	SURFACE PREPARATION, SHOP (8 TONS)	513.40	
										13		13	GAL	WATER REPELLENT	514.10	
										41		41	LF	BRIDGE EXPANSION JOINT	516.10	
										630		630	SY	SHEET MEMBRANE WATERPROOFING (MODIFIED–TORCH APPLIED)	519.20	9
										134.21		134.21	LF	BRIDGE RAILING–2 RAIL ALUMINUM (R/H SIDE)	525.21	
										166.00		166.00	LF	BRIDGE RAILING–ALUMINUM/PEDESTRIAN (L/H SIDE)	525.23	
										1		1	LS	TWO–WAY TEMPORARY BRIDGE	528.11	
										1		1	EA	PARTIAL REMOVAL OF STRUCTURE	529.20	
										12		12	EA	BEARING DEVICE ASSEMBLY	531.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS				
		COMMON EXCAVATION				
1499	CY	MAINLINE				
602	CY	DRIVES				
181	CY	STONE FILL				
18	CY	ROUNDING				
2300	CY	TOTAL				
		TRENCH EXCAVATION OF EARTH				
328	CY	PROPOSED CULVERT & DROP INLET EXCAVATION				
102	CY	UNDERDRAIN EXCAVATION				
110	CY	WATERLINE EXCAVATION				
15	CY	TEMPORARY EROSION CONTROL				
10	CY	ROUNDING				
565	CY	TOTAL				
		SUBBASE OF CRUSHED GRAVEL (COARSE GRADED) (MODIFIED)				
1357	CY	MAINLINE				
261	CY	DRIVES				
6	CY	PATH TO CEMETERY STA 129+50 RT				
80	CY	TEMPORARY EROSION CONTROL				
6	CY	ROUNDING				
1710	CY	TOTAL				
		BITUMINOUS CONCRETE PAVEMENT (PG 58–34)				
			TYPE IV	TYPE III	TYPE II	TYPE I
305	TON	APPROACHES	–	84	101	120
343	TON	MAINLINE	–	78	109	156
105	TON	BRIDGE	52.5	52.5	–	–
84	TON	DRIVES	–	57	27	–
200	TON	DETOUR	–	200	–	–
1037	TON	SUBTOTAL	52.5	471.5	237	276
13	TON	ROUNDING				
1050	TON	TOTAL				

PROJECT NAME ROYALTON
PROJECT NUMBER BRS 0147(5)S

SHEET 4 OF 76 SHEETS

QUANTITY SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

APPROXIMATE SUMMARY OF QUANTITIES

					FULL E&C ITEMS	UTILITIES NON-FED & NON-STATE PARTIC.	NON-GOVT. PARTIC.	TRAINING	EROSION CONTROL	BRIDGE	ROADWAY	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NO.	ROUNDING
											52	52	LF	18" CSP 0.064 (2-2/3 X 1/2)	601.0015	0
											70	70	LF	24" CSP 0.064 (2-2/3 X 1/2)	601.0025	0
											3	3	EA	24" CSPES 0.064 (2-2/3 X 1/2)	601.6025	0
														********** BEGIN OPTION ITEMS **********		
											122	122	LF	18" CAAP 0.060 (2-2/3 X 1/2)	601.0215	0
											122	122	LF	18" PCCSP 0.064 (2-2/3 X 1/2)	601.0415	0
											84	84	LF	18" CAAP 0.060 (2-2/3 X 1/2)	601.0215	0
											84	84	LF	18" PCCSP 0.064 (2-2/3 X 1/2)	601.0415	0
											84	84	LF	18" RCP CLASS III	601.0815	0
											84	84	LF	18" CPEP(SL)	601.2615	0
														********** END OPTION ITEMS **********		
											7	7	EA	CAST IRON GRATE WITH FRAME, TYPE D	604.47	0
											400	400	LF	6" UNDERDRAIN	605.10	5
											70	70	LF	6" UNDERDRAIN CARRIER PIPE	605.20	8
											5	5	EA	UNDERDRAIN FLUSHING BASINS	605.95	0
											100	100	HR	ROADWAY PATROL MAINTENANCE	607.10	EST
											10	10	HR	BULLDOZER RENTAL, TYPE I	608.10	EST
											10	10	HR	POWER GRADER RENTAL	608.15	EST
											20	20	HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	EST
											20	20	HR	TRUCK RENTAL	608.37	EST
											400	400	MGAL	DUST CONTROL WITH WATER	609.10	EST
											3	3	TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	EST
									80			80	CY	STONE FILL, TYPE I	613.10	8
									70			70	CY	STONE FILL, TYPE I (MOD 1)	613.10	EST
									10			10	CY	STONE FILL, TYPE I (MOD 2)	613.10	EST
									30			30	CY	STONE FILL, TYPE II	613.11	0
										2110	460	2570	CY	STONE FILL, TYPE IV	613.13	25
											640	640	LF	VERTICAL GRANITE CURB	616.21	4
											260	260	SY	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH	618.10	4
											1.1	1.1	SY	DETECTABLE WARNING SURFACE	618.30	
											4	4	EA	BOUNDARY MARKERS	619.10	EST
											12	12	EA	YIELDING MARKER POSTS	619.17	1
											1	1	EA	REMOVING AND RESETTING PROPERTY MARKERS	619.20	0
											100	100	LF	SNOW FENCE (MOD. 1)	620.70	EST
									1400			1400	LF	SNOW FENCE (MOD. 2)	620.70	EST
											380	380	LF	STEEL BEAM GUARDRAIL	621.20	1
											2	2	EA	ENERGY ABSORPTION ATTENUATOR	621.56	0
											2	2	EA	ANCHOR FOR STEEL BEAM RAIL	621.60	0
											50	50	LF	ALUMINUM APPROACH RAILING (MOD. 1 - PED. RAIL)	621.74	0
											72.67	72.67	LF	ALUMINUM APPROACH RAILING (MOD. 2-2 RAIL ALUM.)	621.74	0
											645	645	LF	REMOVAL AND DISP. OF GUARDRAIL	621.80	8
											450	450	LF	TEMPORARY TRAFFIC BARRIER	621.90	EST
											90	90	LF	SLEEVES FOR UTILITIES (1-WATER)	625.10	0
						1						1	LS	DUCTS ON BRIDGE (5-TELEPHONE)(4" DIA)(1580 FEET)	625.16	0
											130	130	LF	SEAMLESS COPPER WATER TUBE (1")	629.23	0
											40	40	LF	SEAMLESS COPPER WATER TUBE (3/4")	629.23	2
											2	2	EA	EXTENSION SERVICE BOX AND CURB STOP	629.25	0
											10	10	LF	PIPE INSULATION	629.44	0
											200	200	HR	UNIFORMED TRAFFIC OFFICERS	630.10	EST
											400	400	HR	FLAGGERS	630.15	EST

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME ROYALTON
PROJECT NUMBER BRS 0147(5)S

QUANTITY SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

APPROXIMATE SUMMARY OF QUANTITIES

				LANDSCAPING	FULL E&C ITEMS	UTILITIES NON-FED & NON-STATE PARTIC.	NON-GOVT. PARTIC.	TRAINING	EROSION CONTROL	BRIDGE	ROADWAY	QUANTITIES GRAND TOTAL	UNIT	ITEMS	ITEM NO.	ROUNDING
					1							1	LS	FIELD OFFICE – ENGINEERS	631.10	
					1							1	LS	TESTING EQUIPMENT – CONCRETE	631.16	
					1							1	LS	TESTING EQUIPMENT – BITUMINOUS (MOD)	631.17	
					1							1	LS	TESTING EQUIPMENT – PROTECTIVE COATINGS	631.18	
					1							1	LU	FIELD OFFICE – TELEPHONE (NOT A BID ITEM)	631.25	
								1040				1040	HR	EMPLOYEE TRAINEESHIP	634.10	
											1	1	LS	MOBILIZATION	635.10	
											1	1	LS	TRAFFIC CONTROL	641.10	
											1600	1600	LF	DURABLE 4" WHITE LINE	646.40	0
											1600	1600	LF	DURABLE 4" YELLOW LINE	646.41	0
											3300	3300	LF	TEMPORARY 4" WHITE LINE	646.60	0
											3300	3300	LF	TEMPORARY 4" YELLOW LINE	646.61	0
											25	25	EA	LINE STRIPING TARGETS	646.76	5
											1140	1140	SF	REMOVAL OF EXISTING PAVEMENT MARKINGS	646.85	EST
									310	1760	490	2560	SY	GEOTEXTILE UNDER STONE FILL	649.31	16
									650			650	SY	GEOTEXTILE FOR SILT FENCE	649.51	EST
									200			200	SY	GEOTEXTILE FOR FILTER CURTAINS	649.61	EST
									80			80	LB	SEED	651.15	EST
									5			5	LB	SEED – WINTER RYE	651.17	EST
									450			450	LB	FERTILIZER	651.18	EST
				0.2					2			2.2	TON	AGRICULTURAL LIMESTONE	651.20	EST
				0.2					3			3.2	TON	HAY MULCH	651.25	EST
									30			30	EA	HAY BALES FOR EROSION CONTROL	651.26	EST
				40								40	CY	CEDAR BARK MULCH	651.27	0
											60	60	CY	TOPSOIL	651.35	2
									130	975		1105	SY	GRUBBING MATERIAL	651.40	12
									1			1	LS	EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.10	
									550			550	HR	MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.20	
									1			1	LU	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.30	
									1700			1700	SY	EROSION MATTING	654.10	11
				4								4	EA	DECIDUOUS TREES (Serviceberry)	656.30	
				5								5	EA	DECIDUOUS TREES (Green Ash)	656.30	
				61								61	EA	DECIDUOUS SHRUBS (Red Stem Dogwood)	656.35	
				40								40	EA	DECIDUOUS SHRUBS (Silky Dogwood)	656.35	
				36								36	EA	DECIDUOUS SHRUBS (Highbush Cranberry)	656.35	
				47								47	EA	DECIDUOUS SHRUBS (Arrowood)	656.35	
											171	171	SF	TRAFFIC SIGNS, TYPE A	675.20	0.99
														*** BEGIN OPTION ITEMS ***		
											350	350	LF	FLANGED CHANNEL SIGN POSTS	675.301	5
											350	350	LF	SQUARE TUBE SIGN POSTS AND ANCHOR	675.341	5
														*** END OPTION ITEMS ***		
											350	350	LB	TUBULAR STEEL SIGN POSTS	675.33	8
											3	3	EA	FOUNDATION FOR TUBULAR STEEL POSTS	675.43	0
											47	47	EA	REMOVING SIGNS	675.50	0
											2	2	EA	ERECTING SALVAGED SIGNS	675.60	0

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		TEMPORARY EROSION CONTROL
15	CY	TRENCH EXCAVATION OF EARTH
80	CY	SUBBASE OF CRUSHED GRAVEL (COARSE GRADED) (MOD)
10	CY	STONE FILL, TYPE I
70	SY	GEOTEXTILE FOR SILT FENCE
5	LB	SEED – WINTER RYE
1	TON	HAY MULCH
30	EA	HAY BALES FOR EROSION CONTROL
30	SY	EROSION MATTING
		TEMPORARY 4" WHITE LINE
800	LF	STA 124+50 TO 132+50 LT
800	LF	STA 124+50 TO 132+50 RT
1700	LF	DETOUR
0	LF	ROUNDING
3300	LF	TOTAL
		TEMPORARY 4" YELLOW LINE
1600	LF	STA 124+50 TO 132+50
1700	LF	DETOUR
0	LF	ROUNDING
3300	LF	TOTAL

PROJECT NAME ROYALTON
PROJECT NUMBER BRS 0147(5)S

BRIDGE QUANTITY SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION
STRUCTURES DIVISION

ITEM NO.	ITEM	UNIT	QUANTITY BREAKDOWN										TOTAL	FINAL
				SUPER-STRUCT.		ABUT. NO. 1		ABUT. NO. 2		APPR. SLAB NO. 1		APPR. SLAB NO. 2	CHANNEL			
203.27	UNCLASSIFIED CHANNEL EXCAVATION	CY				1090		960							2050	
204.25	STRUCTURE EXCAVATION	CY				279		195							474	
204.30	GRANULAR BACKFILL FOR STRUCTURES	CY				194		114							308	
406.25	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	TON		105											105	
501.33	CONCRETE, HIGH PERFORMANCE CLASS A	CY		210		4		2							216	
501.34	CONCRETE, HIGH PERFORMANCE CLASS B	CY				160		133		30		30			353	
504.10	FURNISHING EQUIPMENT FOR DRIVING PILING	LS				0.5		0.5							1	
505.15	STEEL PILING (HP 12 x 53)	LF				665		550							1215	
506.55	STRUCTURAL STEEL (PLATE GIRDER)	LB		273,000											273,000	
507.15	REINFORCING STEEL	LB				9,952		8,335							18,287	
507.17	EPOXY COATED REINFORCING STEEL	LB		54,094		729		189		3,511		3,533			62,056	
508.15	SHEAR CONNECTORS (1236 ~ 7/8" DIA. x 7" STUDS)	LS		1											1	
514.10	WATER REPELLENT	GAL		6		4		3							13	
516.10	BRIDGE EXPANSION JOINT	LF		41											41	
519.20	SHEET MEMBRANE WATERPROOFING (MOD TORCH APPLIED)	SY		480						75		75			630	
525.21	BRIDGE RAILING-2 RAIL ALUMINUM (R/H SIDE)	LF		134.21											134.21	
525.23	BRIDGE RAILING-ALUMINUM/PEDESTRIAN (L/H SIDE)	LF		166.00											166.00	
528.11	TWO-WAY TEMPORARY BRIDGE	LS		1											1	
529.20	PARTIAL REMOVAL OF STRUCTURE	EA		1											1	
531.10	BEARING DEVICE ASSEMBLY	EA		12											12	
613.13	STONE FILL, TYPE IV	CY				1120		980					10		2110	
625.16	DUCTS ON BRIDGE (5-TELEPHONE) (4" DIA) (1580 FEET)	LS		1											1	
649.31	GEOTEXTILE UNDER STONE FILL	SY				940		820							1760	
651.40	GRUBBING MATERIAL	SY				525		450							975	

BRIDGE AT STATION REV STA 127+29.50 TO REV STA 128+64.25
LOCATION VT RTE 14 OVER FIRST BRANCH OF THE WHITE RIVER

PREPARED BY: AS
CHECKED BY: CLW/LMM
CLD PROJECT MANAGER: LMM

PROJECT: ROYALTON
BR 21

PROJECT NO: BRS 0147(5) S
SHEET NO: 7 OF 76

902820NT (1=1) "Plot"

ITEM DETAIL AND DRAINAGE SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE STRUCTURES

STA.	STA.	POSITION	ASKEW	TYPE IN/OUT	COPPER TUBE LF	COPPER TUBE DIA	UTIL SLVS. LF	2" GATE VALVE EA	PIPE INSUL. FT	PIPE D IN	PIPE L FT	ALLOWABLE OPTIONS PCCSP TH	CAAP TH	RCP CL	CSP TH	CPEP	PCCSP FT TH	PIPE ELBOW NO--DIA	ES EA	CB	DEPTH DI	CONC CL B CY	REIN STEEL LBS	DI GRATE TYPE	CHAN ELEV	CRM CY	TR EXCAV EARTH CY	TR EXCAV ROCK CY	COMM EXC CY	UNC CHAN EXC CY	STRUC EXCAV CY	GRAN BKF STRUC CY	GRAN BORR CY	EROS MATT SY	STONE FILL CY	STONE FILL TYPE	MRKR POSTS LT	MRKR POSTS RT	REMARKS
125+53	125+56	LT		DI/SF						18	42	0.064	0.060								7.0	3.78	296	D			46	5				5			1	I	1		CONSTRUCT 3' X 6' STONE FILL PAD TYPE I @ OUTLET
127+00		RT		DI/DI						18	14	0.064	0.060	III		SL					5.5	2.80	239	D			17					1		47				1	EROSION MATTING @ INLET -- REV 128+30 TO 127+00
127+00		CL		DI/DI						18	30	0.064	0.060	III		SL					6.0	3.34	265	D			18					3							
127+00		LT		DI/SF						18	26	0.064	0.060								7.0	3.78	296	D			3												OUTLET ONTO CHANNEL BANK LINED WITH STONE FILL, TYPE IV
128+38	128+88	RT																									58								30	II			CONSTRUCT SPECIAL DITCH
128+95.5		CL		DI/DI						18	40	0.064	0.060	III		SL					6.0	3.34	265	D			19					5							
128+95.5	128+42	RT		DI/SF						18	54	0.064	0.060								7.0	3.78	296	D			38					5							OUTLET ONTO CHANNEL BANK LINED WITH STONE FILL, TYPE IV
129+48	131+60	RT																									65								60	I			CONSTRUCT SPECIAL DITCH
129+56	129+69	RT		ES/ES						~~24~~ 18	24				0.064				2													2						NEW END SECTIONS @ INLET & OUTLET
131+00		LT		DI/SF						18	52				0.064						3.0	1.70	150	D			32					7				1	I			CONSTRUCT 3' X 7' STONE FILL PAD TYPE I @ OUTLET
131+00	131+70	LT																																47					CONSTRUCT SPECIAL DITCH
10+55		CL		ES/SF						24	56				0.064				1								34					9					1	1	NEW END SECTION @ INLET

WATER SYSTEMS

129+13		RT						1																													1		CONNECT TO EXISTING WATER LINE
129+13		RT/LT			130	1"	90																				77												
129+13		RT							10																															INSULATE AS NECCESARY IN THE VICINITY OF THE 24" CULVERT @ STA 10+55 RT
129+13		LT						1																													1		CONNECT TO MOBILE HOME
129+13	129+30	LT			38	3/4"																					18												
129+13		RT/LT																									15												FOR EXPLORATORY EXCAVATION

GUARDRAIL ITEMS

125+75	126+87.5	LT																																					TERMINATE W/ 16' RADIUS PER STD G-1D
126+36	127+25	LT/RT																																					
126+87.5	127+12.5	LT																																					
127+05	127+20	RT																																					
127+25	127+29.79	RT																																					
128+53	128+72	RT																																					
128+57	129+22	RT/LT																																					
128+64	129+05	RT																																					
128+78.5	129+03.5	LT																																					
129+03.5	131+70	LT																																					TERMINATE W/ 16' RADIUS PER STD G-1D
TOTALS					130	1"				18	52				0.064																									
										18	84	0.064	0.060	III		SL																									
					38	3/4"				18	122	0.064	0.060																													
							90	2	10	24	70				0.064				3		22.52	1807	7-D			438	5				37		94	62	I	3	3			
																																			30	II				

GUARDRAIL ITEMS								
621.15 PLANK RAIL	621.20 STEEL BEAM GUARDRAIL	621.505 MANUFACTURED TERMINAL SECTION	621.60 ANCHOR FOR STEEL BEAM RAIL	621.74 ALUMINUM APPROACH RAILING (MOD 1)	621.74 ALUMINUM APPROACH RAILING (MOD 2)	621.80 REMOVAL AND DISPOSAL OF GUARDRAIL	621.81 REMOVAL AND DISPOSAL OF GUIDE POSTS
	112.5		1				
						89	
				25			
						15	
					21'-9"		
						19	
						64	
					50'-11"		
				25			
	266.5		1				

UNDERDRAIN

STA.	STA.	POSITION	TYPE	D	L	TR EXCAV EARTH	TR EXCAV ROCK	GRAN BKF	FB		MKR PST
125+75	127+00	LT	U	6	125	28			1		1
126+50	127+00	RT	U	6	50	11			1		1
128+95.5	129+05	RT	C	6	12	4					
129+05	130+25	RT	U	6	120	26			1		1
ESTIMATED UNDERDRAIN			U	6	100	22			2		2
			C	6	50	11					
TOTALS			U	6	395	102			5		5
			C	6	62						

PROJECT NAME ROYALTON
PROJECT NUMBER BRS 0147(5) S

EARTHWORKS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

V. C.	% GRADE	STATION	ELEVATION ON TANGENT	ELEVATION ON CURVES	CORR V. C.	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.	AREA	CU. YDS.
			BEGIN PROJECT											
		124+50					18							
						50		35						
		125+00					20				0			
						50		99				13		
		125+50					87				14			
						25		80				33	CUT	585
		125+75					86				57		FILL	411
						25		80				53	FFAC	1.15
		126+00					86				57		EXC	112
						50		133				181		
		126+50					58				139			
						0		0				0		
		126+50					58				75			
						49		104				102		
		126+99					57				37			
						21		54				29		
		127+20					81				37			
			BRIDGE											
		128+65					70				25			
						33		68				31		
		128+98					42				25			
						50		78				39		
		129+48					42				17			
						0		0				0	CUT	914
		129+48					42				32		FILL	303
						50		100				66	FFAC	1.15
		129+98					66				39		EXC	566
						50		146				101		
		130+48					92				70			
						51		211				66		
		130+99					131				0			
						26		126				0		
		131+25					131				0			
						24		99				0		
		131+49					91				0			
						51		86				0		
		132+00					0				0			
			END PROJECT											
		DRIVES						602				185	CUT	602
													FILL	185
													FFAC	1.15
													EXC	389
		STONE FILL	EXC.					181				0	CUT	181
													FILL	0
													FFAC	1.15
													EXC	181
CARRIED FORWARD														
COLUMN FOOTINGS								2282				899		

V. C.	% GRADE	STATION	ELEVATION ON TANGENT	ELEVATION ON CURVES	CORR V. C.	DIST	TOTAL EXCAVATION EARTH AND ROCK AREA	TOTAL EXCAVATION EARTH AND ROCK CU. YDS.	ROCK EXCAVATION AREA	ROCK EXCAVATION CU. YDS.	EMBANKMENT AREA	EMBANKMENT CU. YDS.	AREA	CU. YDS.
CARRIED FORWARD														
COLUMN FOOTINGS														

SUMMARY AND BALANCES

STATION	TO STATION	TOTAL EXCAV EARTH & ROCK	ROCK EXCAV CUBIC YARDS	EMBANKMENT CUBIC YARDS	EXCESSES CUT	EXCESSES FILL	ACCUMULATIVE EXCESSES CUT	ACCUMULATIVE EXCESSES FILL
124+50	127+20	585		411	112			
							112	
128+65	132+00	914		303	566			
							678	
MAINLINE	TOTAL	1499		714				
							678	
DRIVES		602		185	389			
							1067	
SUBTOTAL		2101		899				
							1067	
STONEFILL	EXCAV.	181		0	181			
							1248	
UNDERDRAIN EXCAV.		41		0	41			
PROJECT	TOTALS	2323		899			1289	

SUMMARY BY COLUMNS

SHEET NO.	COL. NO.	EXCAVATION TOTAL CY	EXCAVATION ROCK CY	EMBANKMENT CY		
TOTALS						

REMARKS

EARTH AND ROCK EXCAVATION	2282
SOLID ROCK EXCAVATION	–
EARTH EXCAVATION	2282
PLANIMETERED FILL	899
LESS FACTORED SOLID ROCK (1.30)	–
LESS DISPLACEMENT OF ANY LARGE STRUCTURES	–
NET PLANIMETERED FILL	899
FACTOR (0.15)	135
PLANIMETERED FILL INCLUDING FACTOR	1034
MATERIALS AVAILABLE FOR FILLS	–
EARTH EXCAVATION	2282
CHANNEL EXCAVATION	–
UNDERDRAIN EXCAVATION (60% OF TOTAL)	41
STRUCTURE EXCAVATION	–
TOTAL MATERIAL AVAILABLE FOR FILL	2323
TOTAL FILL INCLUDING FACTOR	1034
TOTAL MATERIAL FOR FILL	2323
BORROW	–
EXCESS EXCAVATION	1289

PROJECT NAME ROYALTON
PROJECT NUMBER BRS 0147(5)S

STATE OF VERMONT
AGENCY OF TRANSPORTATION
RIGHT OF WAY PLANS
DETAIL SHEET

TABLE OF PROJECT PROPERTY ACQUISITION

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS	TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS
1A	CRAWFORD, LILLIAN D.	13	REV. 124+50 RT. REV. 125+53 RT.	REV. 125+32 RT.			SLOPE (T) 205 SF± DRIVE (T)	WD	07-11-01	ROYALTON	67	6-8	16' GRAVEL MM 0235
1B		13,14	REV. 128+22 LT. REV. 128+22 LT. REV. 128+94 LT. REV. 128+89 LT. REV. 128+84 LT. REV. 129+50 LT. REV. 128+85 LT. REV. 130+31 LT. REV. 130+63 LT. REV. 131+00 LT. REV. 132+10 LT. REV. 129+00 LT. REV. 129+13 LT.	REV. 132+50 LT. REV. 129+05 LT. REV. 129+30 LT. REV. 132+15 LT. REV. 129+50 LT. REV. 130+93 LT. REV. 130+50 LT. REV. 131+20 LT. REV. 130+68 LT. REV. 130+65 LT.	3480 S.F.±		ALL R. T. & I. ALL R. T. & I. CONST. (T) 2900 SF± SLOPE (P) 845 SF± SLOPE (T) 1675 SF± DETOUR (T) 3375 SF± ALL R. T. & I. INSTALL (P) CULVERT DITCH (T) DRIVE (T) REMOVE & RESET (T) EASE. (T)	WD	07-11-01	RANDOLPH	67	6-8	TRAILER & APPURTENANCES WATERLINE EROSION CONTROL FENCE BARN CONC. WALL & SLAB GUY WIRE 16' PAVED MM 0251 TREE INSTALL WATERLINE
1C		13,14	REV. 128+16 RT.	REV. 132+50 LT.	0.25 A±		ALL R. T. & I.	WD	07-11-01	RANDOLPH	67	6-8	VT RTE. 14 HWY EASEMENT
1D		13	REV. 128+38 LT.	REV. 128+98 LT.	3925 S.F.±			WD	07-11-01	RANDOLPH	67	6-8	MITIGATION SITE
2	CRAWFORD, HERBERT C.	13	REV. 126+94 RT. REV. 127+05 RT. REV. 127+11 RT. REV. 127+11 RT. REV. 126+21 RT.	REV. 127+09 RT. REV. 127+50 RT. REV. 127+16 RT. REV. 127+46 RT.			SLOPE (T) 35 SF± CHANNEL (P) 545 SF± ALL R. T. & I. INSTALL (T) DRIVE (T)	WDOE	07-12-01	ROYALTON	67	1-3	STONEWALL EROSION CONTROL ELEMENTS 16' GRAVEL MM 0240

REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY
1	12,13	PARCEL NO. 3 CRAWFORD'S AUTOLAND. MOVE TAKE LINE 15' DOWN STA. CHANGE BEGINNING STA. OF CULVERT (P) FROM REV. 129+13 RT. TO REV. 128+99 RT. CHANGE ENDING STA. OF TAKE FROM 129+15 RT. TO 129+00 RT.; 3300 SF± CHANGE PLANS ACCORDINGLY. REMOVE DRIVE (T) AT STA. DRIVE 10+30 RT. PER C.O. 9002.	10-28-98	R.M.W.	L.W.B.
2	11,13	PARCEL NO. 2 CRAWFORD. CHANGE TITLE TO HERBERT C. CRAWFORD. PER C.O. 8999.	10-29-98	R.M.W.	L.W.B.
3	11,13	PARCEL NO. 1 CRAWFORD. CHANGE PARCEL 1C ENDING STA. ON DETAIL SHEET FROM REV. 132+00 LT. TO REV. 132+50 LT. CHANGE TAKE FLAG ON LAYOUT FROM REV. 128+24 LT. TO REV. 128+84 LT. PER C.O. 9008.	11-02-98	R.M.W.	L.W.B.
4	11	PARCEL NO. 1 CRAWFORD. ADD DRIVE (T) TO DETAIL SHEET FOR BEG. STA. 132+10 LT. PER C.O. 9026.	03-22-99	R.M.W.	L.W.B.
5	11	PARCEL NO. 1 CRAWFORD. CHANGE PARCEL 1A STA. REV. 123+53 RT. TO REV. 125+53 RT. PER C.O. 9070.	09-02-99	B.A.H.	R.B.J.
6	12	PARCEL NO. 7 HELICON. ADD NEW PARCEL NO. 7 THE HELICON GROUP, L.P. REMARKS UTILITY. PER C.O. 9071.	09-02-99	B.A.H.	L.W.B.
7	13	PARCEL NO. 1 CRAWFORD. ADD TOPO FOR A 24" MAPLE WHICH IS ALSO BENCH MARK NO. 2. ADD THE NOTE "SAVE DO NOT TRIM" TO THIS MAPLE. PER C.O. 9076.	10-11-99	M.J.R.	L.W.B.
8	1, 11,13	PARCEL NO. 1 CRAWFORD. MOVE BEGINNING R.O.W. PROJECT TO REV. 124+50 25' RT.; CHANGE LENGTH OF PROJECT TO 800.00' (0.151 MILES); CHANGE RUNNING DISTANCE ALONG EXISTING R.O.W. TO 313'. PER C.O. 9107	3-22-00	R.B.K.	R.P.D.

DR. (P)- DRAINAGE RIGHT
DIT. (P)- DITCHING RIGHT
CH. (P)- CHANNEL RT.
DRIVE (T)- DRIVE RIGHT
CUL. (P)- CULVERT RIGHT
[W]- WATER SOURCES

PRESENT R.O.W.
TAKING WITHOUT ACCESS
TAKING WITHOUT ACCESS ALONG PROPERTY LINE
TAKING WITH ACCESS
(P) PERMANENT EASEMENT
(T) TEMPORARY EASEMENT

LEGEND
CZ (P) CLEAR ZONE
CONST. (T) CONSTRUCTION EASEMENT
SR SR SLOPE RIGHTS
P L PROPERTY LINE
TOP OF CUT
TOE OF SLOPE

APPROVED: LAWRENCE BLISS DATE: 06-16-98
AGENT D, PLANS & TITLES

R.O.W. PLANS

ROYALTON
BRS 0147(5)S
R.O.W. SHEET 11 OF 14 SHEETS
SHEET 10a OF 76

ACCT. MRyan
\\vaot_cadd\filingcabinet$\78f232\RightOfWay\rf232d.dgn
DATE PLOTTED 05-SEP-2001
rf232dl.i

STATE OF VERMONT
AGENCY OF TRANSPORTATION
RIGHT OF WAY PLANS
DETAIL SHEET

TABLE OF PROJECT PROPERTY ACQUISITION

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS	TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS
3A	HERB CRAWFORD'S AUTOLAND, INC.	13	REV. 128+12 RT. REV. 128+10 RT. REV. 128+94 LT. REV. 128+99 RT. REV. 129+00 RT. REV. 129+23 RT. REV. 129+49 RT. REV. 129+54 RT. REV. 129+64 RT. REV. 129+52 RT. REV. 129+13 RT.	REV. 129+00 RT. REV. 129+83 RT. REV. 129+11 RT. REV. 129+49 RT. REV. 129+60 RT. REV. 129+70 RT. REV. 129+75 RT. REV. 129+80 RT.	3300 SF±		CONST. EASE. (T) 1740 SF± ALL R. T. & I. CULVERT (P) REMOVE & RESET (T) DRIVE (T) DIT. & DRAINAGE (P) CULVERT (P) DITCH (P) WALK (T) EASE. (T)	WD	07-11-01	ROYALTON	47	4-5	 WATER LINE SIGN 20.5' PAVED MM 0245 INSTALL WATER LINE
3B		13	REV. 128+12 RT.	REV. 129.75 RT.	4000 SF±		ALL R. T. & I.	WD	07-11-01	ROYALTON	47	4-5	VT RTE. 14 HWY EASEMENT
4	TOWN OF ROYALTON	13,14	REV. 129+75 RT. REV. 129+75 RT. REV. 129+78 RT. REV. 129+82 RT.	REV. 132+50 RT. REV. 130+20 RT. REV. 129+85 RT. REV. 130+35 RT	0.15 A±		ALL R. T. & I. SLOPE (T) 300 SF± WALK (T) CONST. EASE. (T) 305 SF±	QCD	01-11-00	ROYALTON	62	440	VT RTE. 14 HWY EASEMENT
5	C.V.P.S. CORP.												UTILITY
6	BELL ATLANTIC												UTILITY
7	THE HELICON GROUP, L.P.												UTILITY
REVISED	10-11-99												

REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY
9	11,13	PARCEL NO. 2 CRAWFORD. DELETE CLEAR & TRIM (P) FROM PARCEL ON DETAIL & LAYOUT SHEETS; ADD DRIVE(T) TO LAYOUT AND ADJUST DETAIL SHEET TO SHOW DRIVE RT.(T); CHANGE SLOPE (T) STATION FROM 127+01 RT. TO 126+94 RT.(CHANGE AREA TO 35 SF±); CHANGE CHANNEL (P) STATION FROM 127+07 TO 127+05 AND CHANGE AREA TO 545 SF±. PER C.O. 9108	3-22-00	R.B.K.	R.P.D.
10	11,13	PARCEL NO. 1A CRAWFORD. DELETE CLEAR & TRIM (P); ADD SLOPE (T) TO LAYOUT AND DETAIL SHEET WITH AREA OF 205 SF±. PER C.O. 9109.	3-22-00	R.B.K.	R.P.D.
11	11,13	PARCEL NO. 1 CRAWFORD. ADD PARCEL 1D; REV. 128+38 LT. ~ REV. 128+98 LT.; 3925 S.F.± MITIGATION SITE. REDUCE AREA IN PARCEL 1B FROM 0.17A± TO 3480 S.F.±. PER C.O. 9111.	4-04-00	M.J.R.	R.P.D.
		MYLAR REPRODUCIBLES TO STRUCTURES 6-12-01			

ACCT.MRyan
\\vaot_cadd\filingcabinet$\78f232\RightOfWay\rf232d.dgn
DATE PLOTTED 05-SEP-2001
rf232d2.i

DR.(P)- DRAINAGE RIGHT
DIT.(P)- DITCHING RIGHT
CH.(P)- CHANNEL RT.
DRIVE (T)- DRIVE RIGHT
CUL.(P)- CULVERT RIGHT
W- WATER SOURCES

PRESENT R.O.W.
TAKING WITHOUT ACCESS
TAKING WITHOUT ACCESS ALONG PROPERTY LINE
TAKING WITH ACCESS
(P) PERMANENT EASEMENT
(T) TEMPORARY EASEMENT

LEGEND
CZ (P) CLEAR ZONE
CONST.(T) CONSTRUCTION EASEMENT
SR SR SLOPE RIGHTS
P L PROPERTY LINE
TOP OF CUT
TOE OF SLOPE

APPROVED: LAWRENCE BLISS DATE: 06-16-98
AGENT D, PLANS & TITLES

R.O.W. PLANS

ROYALTON
BRS 0147(5)S
R.O.W. SHEET 12 OF 14 SHEETS
SHEET 106 OF 76

COLD PLANING BITUMINOUS CONCRETE PAVEMENT
REV 124+50 TO 125+00

STEEL BEAM GUARDRAIL
REV 126+12.5 – 126+87.5 LT
REV 129+03.5 – 130+00 LT

MODIFIED ECCENTRIC LOADER TERMINAL
REV 125+75 – 126+12.5 LT

ALUMINUM APPROACH RAIL (MOD 1)
REV 126+87.5 TO 127+12.5 LT
REV 128+78.5 TO 129+03.5 LT

ALUMINUM APPROACH RAIL (MOD 2)
REV 127+10 TO 127+30 RT
REV 128+64 TO 129+03 RT

ALUMINUM BRIDGE RAIL (MOD 1)
REV 127+12.5 TO 128+78.5 LT

ALUMINUM BRIDGE RAIL (MOD 2)
REV 127+30 TO 128+84 RT

REMOVAL AND DISPOSAL OF GUARDRAIL
REV 126+36 LT – 127+25 RT
REV 127+05 – 127+20 RT
REV 128+53 – 128+72 RT
REV 128+57 RT – 129+22 LT

5" PORTLAND CEMENT CONCRETE SIDEWALK
REV 123+90 – 127+30 LT
REV 124+50 – 125+45 RT
REV 128+65 – 129+50 LT

VERTICAL GRANITE CURB
REV 123+90 – 127+30 LT
REV 124+50 – 125+45 RT
REV 125+62 – 126+12 RT
REV 126+38 – 127+30 RT
REV 128+65 – 129+45 LT
REV 128+65 – 129+00 RT

CONSTRUCT DRIVE
REV 125+53 RT – 16'w SUBBASE MATERIAL W/ 2' PAVED APRON
REV 126+21 RT – 16'w SUBBASE MATERIAL W/ 2' PAVED APRON
REV 129+23 RT – 20.5'w PAVED

RELOCATE MAILBOX – SINGLE SUPPORT
REV 125+64 RT

GRANULAR BORROW
REV 126+80 – 127+30
REV 128+65 – 129+15

EXTRA DEPTH OF SUBBASE
REV 126+80 – 127+30
REV 128+65 – 129+15

DEMOLITION AND DISPOSAL OF BUILDING
REV 128+75 LT – MOBILE HOME

EROSION MATTING
REV 126+30 – 127+00 RT

CONSTRUCT SIDEWALK RAMP
REV 125+45 RT (TYPE 1)
REV 129+50 LT (TYPE 1)

CHANGING ELEV. OF DROP INLETS, CATCH BASINS OR MANHOLES – BY OTHERS
REV 128+80 RT – TMH

CONSTRUCT GRAVEL PATH
REV 129+50 – 129+86

SLEEVES FOR UTILITIES
REV 129+13

PIPE INSULATION
REV 129+13 RT

2" GATE VALVE
REV 129+13 RT
REV 129+13 LT

SEAMLESS COPPER WATER TUBE
REV 129+13 – 1"
REV 129+13 ~ 129+30 – 3/4"

REV STA 127+29.75
STOP ROADWAY
BEGIN BRIDGE

REV STA 128+64.50
END BRIDGE
RESUME ROADWAY

STATE OF VERMONT

SURV CURVE DATA
Δ = 23° 34' 30" LT
D = 05° 30' 00"
R = 1041.74
T = 217.39
L = 428.64
E = 22.44
BANK N/A

REV CURVE DATA
Δ = 15° 15' 25" LT
D = 08° 00' 00"
R = 716.20
T = 95.92
L = 190.71
E = 6.40
BANK 0.035 FT/FT

SURV CURVE DATA
Δ = 11° 10' 34" LT
D = 04° 00' 00"
R = 1432.39
T = 140.15
L = 279.40
E = 6.84
BANK N/A

SURV POC = 124+25.00 =
REV POC 124+25.00

SURV PCC = 125+55.59

REV PT = 126+15.71

SURV PT = 128+35.00

EXIST. 18" ACCOMP REMOVE

WHITE RIVER

MAG 1985

5' PAVED SIDEWALK

UGC

BRASS DISC

6" GRAN CURB (TYP.)

VT ROUTE 14
TO SHARON

124+00

125+00

126+00

127+00

128+00

129+00

DETOUR CONSTRUCTION LIMITS

GRAVEL DRIVE

CZ 1.5' CLEAR BEHIND CURB CZ

3 CABLE GR

OHW

SR (T)

PAVED SHOULDER

PAVED SIDEWALK

CRAWFORD, LILLIAN D.
1A

BM #2
2" MAPLE (SAVE)
DO NOT TRIM

24" BUTTER NUT
SAVE

DRIVE (T)

REV STA 123+90
BEGIN APPROACH

BEGIN R.O.W. PROJECT
BRS 0147(5)S REV. STA.124+50 25'RT.

VAOT BENCH MARK #2
SPIKE IN ROOT
24" MAPLE
ELEV. 486.89

REV PI 125+20.92
(N49°23'33"W) =
125+19.79
(N64°38'58"W)

CRAWFORD, HERBERT C.
2

2 1/2 STY HOUSE

DO NOT DISTURB

ALL R.T.&I.

CH (P)
INSTALL (T)

REV STA 126+00
END APPROACH
BEGIN PROJECT BRS 0147(5)S

SURV PI 126+95.74
(N56°34'30"W) =
126+94.85
(N67°45'04"W)

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES (P/L) ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

FISH HABITAT BOULDER CLUSTER

10'-15' (TYP.)

REV. 128+38
47' LT.

REV. 128+22
10' LT.

REV. 128+16
15' RT.

30' MIN.

REV. 128+98
136' LT.

1D

CRAWFORD, LILLIAN D.

DETOUR CONSTRUCTION LIMITS

MOBILE HOME

#1-1/1-4
RETAIN

CONST. (T)

REV. 128+86
47' LT.
ALL R.T.&I.

DETOUR (T)

REV. 128+84
25' LT.

OIL TANK
48'

ALL R.T.&I.

1B

SR (P)

SR (T)

(373')

14' CLEAR ZONE

(433')

1C

REV. 129+75
13' RT.

(273')

3B

REV. 128+98
38' RT.
77'

(266')

4

REV. 128+12
40' RT.
55'

REV. 127+58
41' RT.

3A

REV. 128+13
78' RT.

APPROX. PROPOSED UTILITY EASEMENT CONST. (T)

REV. 129+00
78' RT.

EASE (T)

SURV POT 129+25=
SURV DRIVE 10+00
ANGLE = 90.0° TO TANGENT

SNOW FENCE

TOWN OF ROYALTON

MATCH LINE SEE R.O.W. SHEET 14 OF 14 SHEETS

REV POT 128+50.24=
CHAN POT 5+12.53
ANGLE = 83°6'6" AHEAD LT

SURV POT 128+50=
SURV CHAN 5+00
ANGLE = 80.0° AHEAD LT

HERB CRAWFORD'S AUTOLAND, INC.

DRIVE (T) HERB CRAWFORD'S AUTOLAND, INC.

FIRST BRANCH OF THE WHITE RIVER

EXIST. 18" CMP REMOVE

OHW

S32°14'56"W

N22°14'56"E

PAVED DRIVE AUTO DEALER

GRAVEL DRIVE

FIELD

SF

EASE (T)

(1' HIGH)

CONST. WALL (T)

(1) REV 125+53 TO 125+56 LT
NEW 18" X 42' CAAP (0.060) OR PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D
CONSTRUCT 3' X 6' STONE FILL PAD, TYPE I, @ OUTLET

(2) REV 125+75 TO 127+00 LT
NEW 6" X 125' UNDERDRAIN
W/ FLUSHING BASIN @ REV 125+75 LT

(3) REV 126+50 TO 127+00 RT
NEW 6" X 50' UNDERDRAIN
W/ FLUSHING BASIN @ REV 126+50 RT

(4) REV 127+00 RT
NEW 18" X 14' CAAP (0.060) OR PCCSP (0.064) OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

(5) REV 127+00
NEW 18" X 30' CAAP (0.060) OR PCCSP (0.064) OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

(6) REV 127+00 LT
NEW 18" X 26' CAAP (0.060) OR PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

(7) REV 128+95.5
NEW 18" X 40' CAAP (0.060) OR PCCSP (0.064) OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

(8) REV 128+95.5 TO REV 128+42 RT
NEW 18" X 54' CAAP (0.060) OR PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

(9) REV 128+95.5 TO 129+05 RT
NEW 6" X 12' UNDERDRAIN CARRIER PIPE

(10) REV 129+05 TO 130+25 RT
NEW 6" X 120' UNDERDRAIN
W/ FLUSHING BASIN @ REV 130+25 RT

(11) SURV 10+55 DEALERSHIP DRIVE
NEW 24" X 56' CSP (0.064) W/ CSPES @ INLET
CONSTRUCT STONE LINED DITCH, TYPE I, @ INLET

(12) REV 129+48 TO 131+60 RT
CONSTRUCT SPECIAL DITCH
TYPE I STONE FILL

(15) REV 128+38 TO 128+88 RT
CONSTRUCT SPECIAL DITCH
TYPE II STONE FILL

(16) REV 129+56 TO 129+69 RT
NEW 24" X 14' CSP (0.064) W/ CSPES @ INLET & OUTLET

DOT HATCH INDICATES STONE FILL, TYPE IV

— —— OHW —— — APPROXIMATE AERIAL UTILITY RELOCATION ROUTING BY CENTRAL VERMONT PUBLIC SERVICE CORPORATION AND NEW ENGLAND TELEPHONE AND TELEGRAPH CO.

WATERLINE
THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER LINE IS UNDETERMINED. THROUGH EXPLORATORY TEST PITS, THE CONTRACTOR SHALL LOCATE THE EXISTING WATER LINE PRIOR TO CONSTRUCTION. EXPLORATION TEST PITS WILL BE PAID AS TRENCH EXCAVATION OF EARTH.

SEE R.O.W. SHEET 5 FOR EROSION CONTROL DETAILS

SCALE IN FEET
0 20 40

GENERAL PLAN

SURVEYED BY N/A DATE N/A
DRAWN BY TUS DATE 6/96
SQUAD LEADER JAW

DESIGN FILE NO. 91298

ROYALTON
BRS 0147(5)S

R.O.W. SHEET 11 OF 76 SHEETS

PLAN
NOTE BOOK
NO.
SURVEYED
DRAWN
ALIGNMENT CHECKED
RT. OF WAY CHECKED
BY
DATE

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PLAN
NOTE BOOK
NO.
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
BY
DATE

MATCH LINE SEE R.O.W. SHEET 13 OF 14 SHEETS

WHITE RIVER

GMP
25' R.O.W.

CRAWFORD,
LILLIAN D.

SURV DRIVE CURVE DATA
Δ = 97° 51' 10" LT
D = 63° 39' 43"
R = 90.00
T = 103.27
L = 153.71
E = 46.98
BANK N/A
PC = 20+46.30

SURV PI 21+49.56
(S05°55'31"W) =
20+96.74
(N88°04'32"E)

REV DRIVE CURVE DATA
Δ = 66° 34' 57" LT
D = 71° 37' 11"
R = 80.00
T = 52.53
L = 92.97
E = 15.71
BANK 0.040
PC = 50+40.00
PT = 51+32.97

REV PI 50+92.53
(S05°55'31"W) =
50+80.43
(S60°39'26"E)

REV PI 131+52.66
(N64°38'58"W) =
131+51.58
(N50°02'59"W)

SURV POC 132+10.00=
SURV DRIVE 19+99.63=
REV DRIVE 50+01.01
ANGLE = 60.0° TO TANGENT BACK

REV POC 132+09.06=
REV DRIVE 50+00
ANGLE = 58°57'48" TO TANGENT BACK

SURV PI 132+68.81
(N67°45'04"W) =
132+53.68
(N32°42'44"W)

MAG 1985

COLD PLANING BITUMINOUS CONCRETE PAVEMENT
REV 132+00 TO 132+50

CONSTRUCT DRIVE
REV 132+10 LT – 16'w PAVED

DEMOLITION AND DISPOSAL OF BUILDING
REV 130+50 LT – BARN, CONC. WALL & SLAB

EROSION MATTING
REV 130+90 – 131+70 LT

STEEL BEAM GUARDRAIL
REV 130+00 – 131+28.5 LT

MODIFIED ECCENTRIC LOADER TERMINAL
REV 131+28.5 – 131+66 LT

⑫ REV 129+48 TO 131+60 RT
CONSTRUCT SPECIAL DITCH
TYPE I STONE FILL

⑬ REV 131+00 LT
NEW 18" X 52' CSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D
CONSTRUCT 3'X7' STONE FILL PAD, TYPE I, @ OUTLET

⑭ REV 131+00 TO 131+70 LT
CONSTRUCT SPECIAL DITCH

END R.O.W. PROJECT
BRS 0147(5)S STA. REV. 132+50, 25'LT.

DETOUR
CONSTRUCTION
LIMITS

NEW #4

INSTALL (P)

CONST. (T)

DRIVE (T)

CONC. PAD

6" CONC. WALL

CUL. (T)

ALL R.T.& I.

SR (T)

(433')

SR (T) (373')

(273')

(266')

HORSE BARN

GRAVEL DRIVE

8" CLUMP ASH

12" ELM

14' CLEAR ZONE

CZ

#6/5

130

131+00

132+00

133+00

134+00

4 SIGN

OHW

UFOC

REMOVE

GUY POLE #5S

SR SFT

PIPE RAILING W/12" x 12" CONC. POSTS

GRAVEL PATH

8" CONC. WALL (3' HIGH)

CONC. STEPS

SURV PC = 130+27.65

REV PC = 130+54.24

REV POC 131+58.78=
SURV POC 131+60.21=
ANGLE BETWEEN BACK
TANGENTS= 1°1'00"

REV. 132+50
25' RT.

REV. 132+50
℄

REV PT = 132+50.00

SURV PT = 134+94.84

TOWN OF ROYALTON

CEMETERY

GRAV. DRIVE (CEMETERY)

HEADSTONE LINE

REV STA 130+50
END PROJECT BRS 0147(5)S
BEGIN APPROACH

REV STA 132+50
END APPROACH

REV CURVE DATA
Δ = 14° 40' 56" RT
D = 07° 30' 00"
R = 763.94
T = 98.42
L = 195.76
E = 6.31
BANK 0.035

SURV CURVE DATA
Δ = 35° 02' 20" RT
D = 07° 30' 00"
R = 763.94
T = 241.16
L = 467.19
E = 37.16
BANK N/A

VAOT BENCH MARK #3
SPIKE IN ROOT
30" SPRUCE
ELEV. 478.68

VT ROUTE 14
TO BETHEL

LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES (P/L) ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

SEE R.O.W. SHEET 6
FOR EROSION CONTROL
DETAILS

SCALE IN FEET
0 20 40

GENERAL PLAN

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TUS	DATE	6/96
SQUAD LEADER	JAW		

DESIGN FILE NO. 91298

ROYALTON
BRS 0147(5)S
R.O.W. SHEET 12 OF 76 SHEETS

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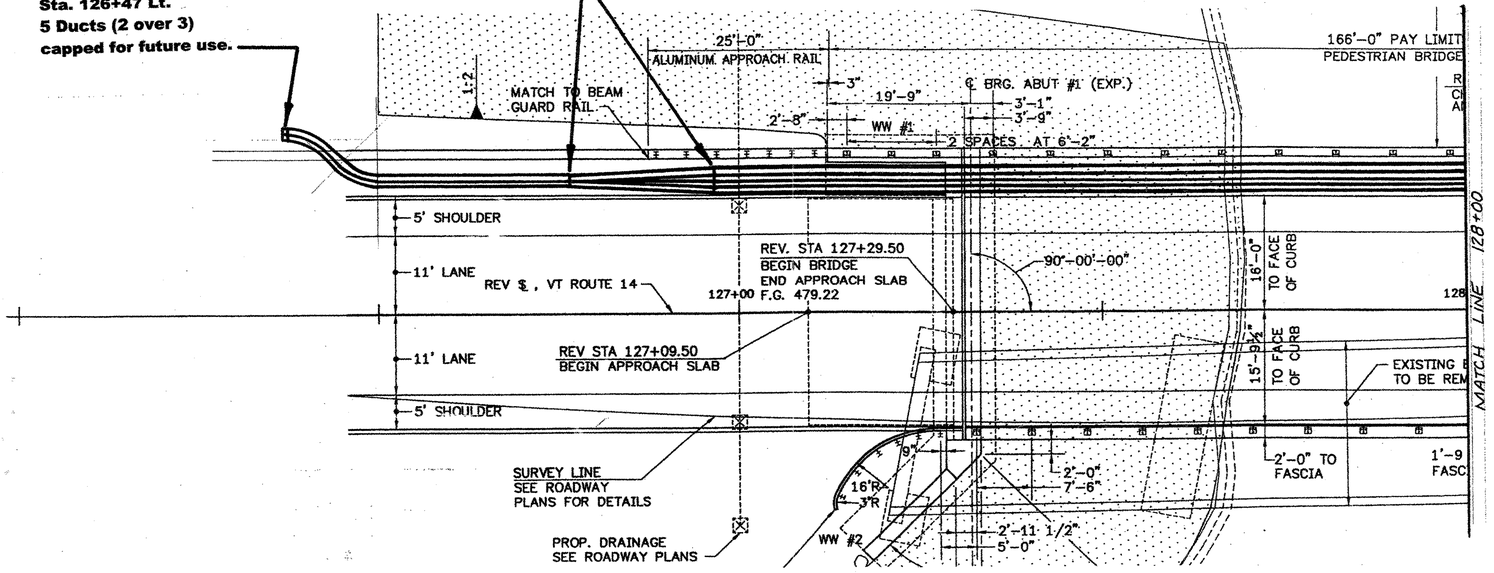
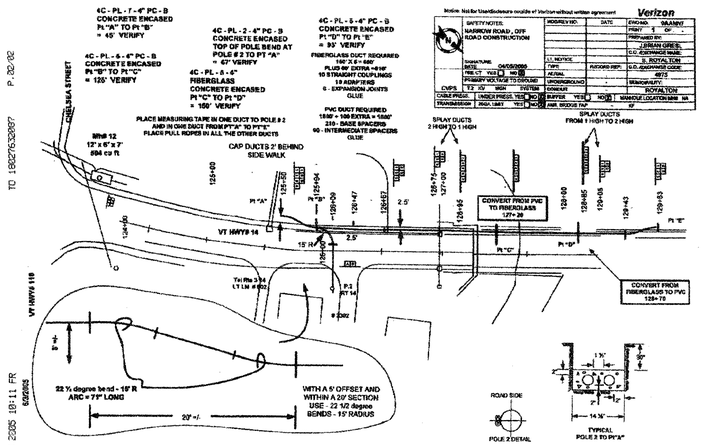
Sta. 126+75 – Sta. 126+95 Lt.
Transition from 2 over 3 to 5 Ducts (flat).

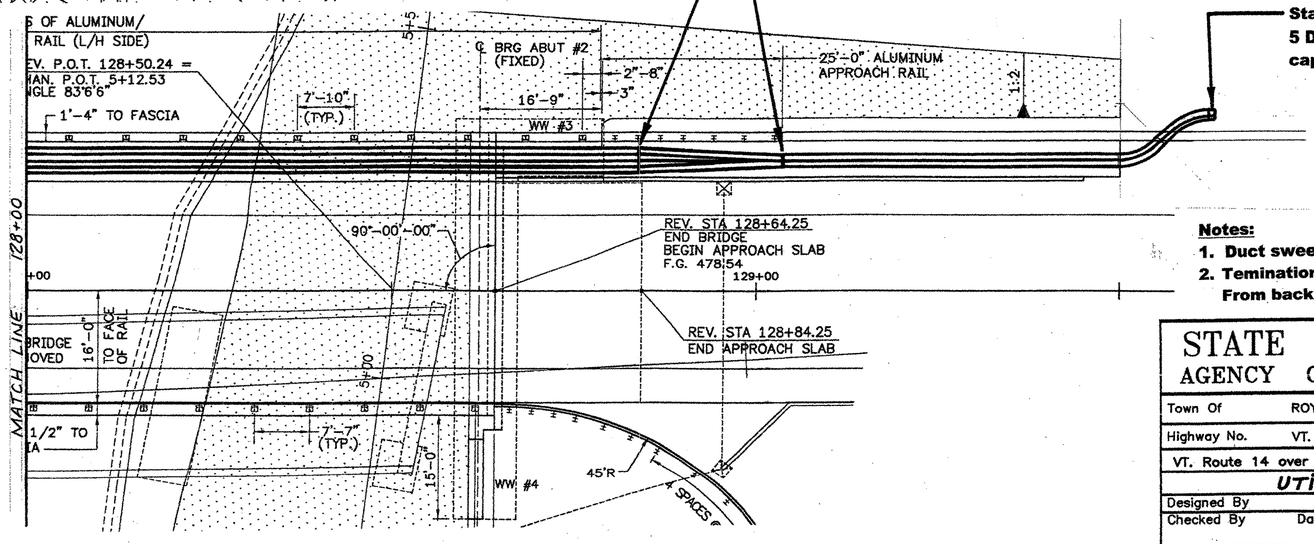
Sta. 126+47 Lt.
5 Ducts (2 over 3)
capped for future use.





Sta. 128+85 – 129+05 Lt.
Transition from 5 Ducts (flat)
To 2 over 3.

Sta. 129+63 Lt.
5 Ducts (2 over 3)
capped for future use.



Notes:

1. **Duct sweeps are approx. 8' radius.**
2. **Temination of ducts to be 2' minimum From back face of guardrail.**

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON	Bridge No. 21
	Log Sta.
Highway No. VT. ROUTE 14	Surv. Sta.

VT. Route 14 over the First Branch of the White River

UTILITY DETAILS

Designed By	Drawn By.
Checked By Date	Bridge Design Supervisor Date
PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 13 Of 76

F:\Proj90-94\91298 Royalton\Hwy\ACAD\91298IND 4-23-99 10:29:38 am EST
TO 18027632897 P.02/02
JUN 23 2000 10:11 FR
** TOTAL PAGE.02 **

COLD PLANING BITUMINOUS CONCRETE PAVEMENT
REV 124+50 TO 125+00

SNOW FENCE (MOD)
REV 129+35 – 130+25 RT
SNOW FENCE SHALL BE INSTALLED TO ALLOW PEDESTRIAN ACCESS TO THE GRAVEL PATH WHILE PROHIBITING ACCESS TO THE CONSTRUCTION AREA.

ONE COURSE CEMENT CONCRETE PAVEMENT (MOD) (TRUNCATED DOMES)
REV 129+42 LT

STEEL BEAM GUARDRAIL
REV 125+75 – 126+87.5 LT
REV 129+03.5 – 130+00 LT

ANCHOR FOR STEEL BEAM RAIL
REV 125~~+75~~ LT
+87

ALUMINUM APPROACH RAIL (MOD 1)
REV 126+87.5 TO 127+12.5 LT
REV 128+78.5 TO 129+03.5 LT

ALUMINUM APPROACH RAIL (MOD 2)
REV 127+25 TO 127+29.79 RT
REV 128+64 TO 129+05 RT

ALUMINUM BRIDGE RAIL (MOD 1)
REV 127+12.5 TO 128+78.5 LT

ALUMINUM BRIDGE RAIL (MOD 2)
REV 127+29.79 TO 128+64 RT

REMOVAL AND DISPOSAL OF GUARDRAIL
REV 126+36 LT – 127+25 RT
REV 127+05 – 127+20 RT
REV 128+53 – 128+72 RT
REV 128+57 RT – 129+22 LT

5" PORTLAND CEMENT CONCRETE SIDEWALK
REV ~~124+50~~ – ~~127+29~~ LT
124+57 REV ~~124+50~~ – ~~125+45~~ RT 125+42
128+65 REV ~~128+64~~ – ~~129+50~~ LT 129+45

VERTICAL GRANITE CURB
124+57 REV ~~124+50~~ – ~~127+29~~ LT 127+42
REV 124+50 – ~~125+45~~ RT 125+42
124+65 REV ~~125+62~~ – ~~126+12~~ RT 126+10
126+39 REV ~~126+34~~ – ~~127+29~~ RT 127+28
REV 128+64 – ~~129+45~~ LT 129+23
REV 128+64 – 129+00 RT

CONSTRUCT DRIVE
REV 125+53 RT – 18'w SUBBASE MATERIAL W/ 2' PAVED APRON
REV 126+21 RT – 27'w SUBBASE MATERIAL W/ 2' PAVED APRON
REV 129+23 RT – 20.5'w PAVED

REMOVING AND RESETTING PROPERTY MARKERS
126+97 – 36' RT

STONE FILL, TYPE IV W/ GEOTEXTILE UNDER STONE FILL
REV 126+50 LT – 127+70 RT
REV 128+13 RT – 129+50 LT

GRANULAR BORROW
REV 126+80 – 127+30
REV 128+65 – 129+15

EXTRA DEPTH OF SUBBASE
REV 126+80 – 127+30
REV 128+65 – 129+15

DEMOLITION AND DISPOSAL OF BUILDING
REV 128+75 LT – CONCRETE PAD

EROSION MATTING
REV 126+30 – 127+00 RT

CONSTRUCT SIDEWALK RAMP
~~REV 125+45 RT (TYPE 1)~~
REV 129+50 LT (TYPE 1)

CHANGING ELEV. OF DROP INLETS, CATCH BASINS OR MANHOLES – BY OTHERS
REV 128+80 RT – TMH

CONSTRUCT GRAVEL PATH
REV 129+50 – 129+85 RT

SLEEVES FOR UTILITIES
REV 129+13 – 54' RT TO 40' LT (1–WATER)

DUCTS ON BRIDGE
REV 127+10 TO 128+80 LT
(5 TELEPHONE, 4" DIA, 1580')

PIPE INSULATION
REV 129+30 LT

EXTENSION SERVICE BOX AND CURB STOP
REV 129+13, 90' RT (1")
REV 129+13, 39' LT (1")

SEAMLESS COPPER WATER TUBE
REV 129+13, 90' RT – 129+13, 39' LT (1")
REV 129+13, 39' LT ~ 129+30, 73' LT (3/4")

REV STA 124+50
BEGIN APPROACH

REV STA 126+00
END APPROACH
BEGIN PROJECT BRS 0147(5)S

REV STA 127+29.50
STOP ROADWAY
BEGIN BRIDGE

REV STA 128+64.25
END BRIDGE
RESUME ROADWAY

SURV CURVE DATA
Δ = 23° 34' 30" LT
D = 05° 30' 00"
R = 1041.74
T = 217.39
L = 428.64
E = 22.66
BANK N/A

REV CURVE DATA
Δ = 15° 15' 25" LT
D = 08° 00' 00"
R = 716.20
T = 96.82
L = 190.71
E = 6.40
BANK 0.035 FT/FT

SURV CURVE DATA
Δ = 11° 10' 34" LT
D = 04° 00' 00"
R = 1432.39
T = 140.15
L = 279.40
E = 6.84
BANK N/A

SURV POT = 124+25.00
REV POT = 124+25.00

SURV POT = 125+65.59

EXIST. 12" ACCESS REMOVE

REV PT = 126+15.71

SURV PT = 126+35.00

DETOUR CONSTRUCTION LIMITS

FISH HABITAT BOULDER CLUSTER

10'-15' (TYP.)

30' MIN.

APPROX. PROPOSED 50' PROTECTIVE EASEMENT

MATCH LINE

VT ROUTE 14 TO SHARON VT

CONC. WALK

GRASS DISC

6" GRAN. CURB (TYP.)

RAISED SIDEWALK

PAVED

OHW

24" STUMP

36" M

24" BUTTER NUT SAVE

GRAVEL DRIVE

SHRUBS

LAWN

CONCRETE WALK

EL LT POLE

GRAVEL OHW

3 CABLE GR

1.5' CLEAR BEHIND CURB

CONCRETE PAD

SHED

RIP-RAP

GUY

GUY WIRE

RETAIN

SIGN

MOBILE HOME

GRAVEL DRIVE

CONNECT NEW 3/4" COPPER SERVICE TO EXISTING MOBILE HOME. INSULATE AS NECESSARY.

14' CLEAR ZONE

12' CLEAR ZONE

REV POT 129+20.00
REV DRVE 9+91.41
ANGLE = 86° 01' 42" RT

REV PI 125+20.92
(N49°23'33"W) =
125+19.79
(N64°38'58"W)

SURV PI 126+95.74
(N56°34'30"W) =
126+94.85
(N67°45'04"W)

2 1/2 STY. HOUSE

WOODS

FIRST BRANCH OF THE WHITE RIVER

BRUSH/WOODS

EXIST. 18" CMP REMOVE

OHW

N22°14'56"E

RAISED DRIVE – AUTO DEALER

FIELD

APPROX. PROPOSED UTILITY EASEMENT

BROWN ACCESS

CUT EXISTING WATER SUPPLY PIPE AND INSTALL 1" CURB STOP.

REV POT 128+50.24
CHAN POT 5+12.53
ANGLE = 83°6'6" AHEAD LT

SURV POT 128+50
SURV CHAN 5+00
ANGLE = 80.0° AHEAD LT

SURV POT 129+25
SURV DRIVE 10+00
ANGLE = 90.0° TO TANGENT

SNOW FENCE (MOD)

VAOT BENCH MARK #2
SPIKE IN ROOT
24" MAPLE
ELEV. 486.89

① REV 125+53 TO 125+56 LT
NEW 18" X ~~42'~~ CAAP (0.050) OR 40'
PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D
CONSTRUCT 3' X 6' STONE FILL PAD, TYPE I, @ OUTLET

② REV 125~~+75~~ TO 127+00 LT 54
NEW 6" X ~~125'~~ UNDERDRAIN 145'
W/ FLUSHING BASIN @ REV 125+75 LT

③ REV 126~~+50~~ TO 127+00 RT 46
NEW 6" X ~~50'~~ UNDERDRAIN 54'
W/ FLUSHING BASIN @ REV 126+50 RT

④ REV 127+00 RT
NEW 18" X ~~14'~~ CAAP (0.050) OR PCCSP (0.064) 12'
OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

⑤ REV 127+00
NEW 18" X 30' CAAP (0.050) OR PCCSP (0.064)
OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

⑥ REV 127+00 LT
NEW 18" X 26' CAAP (0.050) OR
PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

⑦ REV 128+95.5
NEW 18" X 40' CAAP (0.050) OR PCCSP (0.064)
OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

⑧ REV 128+95.5 TO REV 128+42 RT
NEW 18" X 54' CAAP (0.050) OR
PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

⑨ REV 128+95.5 TO 129+05 RT
NEW 6" X ~~12'~~ UNDERDRAIN CARRIER PIPE 18'

⑩ REV 129+05 TO 130+25 RT
NEW 6" X 120' UNDERDRAIN
W/ FLUSHING BASIN @ REV 130+25 RT

⑪ SURV 10+55 DEALERSHIP DRIVE
NEW 24" X ~~56'~~ CSP (0.064) W/ CSPES @ INLET 60'
CONSTRUCT STONE LINED DITCH, TYPE I, @ INLET

⑫ REV 129+48 TO 131+60 RT
CONSTRUCT SPECIAL DITCH
TYPE I STONE FILL

⑮ REV 128+38 TO 128+88 RT
CONSTRUCT SPECIAL DITCH
TYPE II STONE FILL

⑯ REV 129+56 TO 129+69 RT
NEW 24" X 14' CSP (0.064) W/ CSPES @ INLET & OUTLET
18" X 16"

DOT HATCH INDICATES STONE FILL, TYPE IV

– – – OHW – – – APPROXIMATE AERIAL UTILITY RELOCATION ROUTING BY CENTRAL VERMONT PUBLIC SERVICE CORPORATION AND NEW ENGLAND TELEPHONE AND TELEGRAPH CO.

WATERLINE
THE LOCATION, SIZE AND MATERIAL OF THE EXISTING WATER LINE IS UNDETERMINED. THROUGH EXPLORATORY TEST PITS, THE CONTRACTOR SHALL LOCATE THE EXISTING WATER LINE PRIOR TO CONSTRUCTION. EXPLORATION TEST PITS WILL BE PAID AS TRENCH EXCAVATION OF EARTH.

SCALE IN FEET
0 20 40

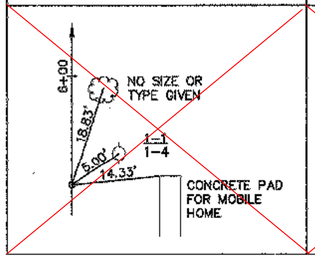
GENERAL PLAN

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TJS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET 24 OF 76 SHEETS			

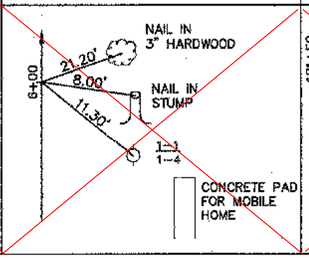
ST. OF WAY CHECKED
NO.

SURVEY LINE TIES

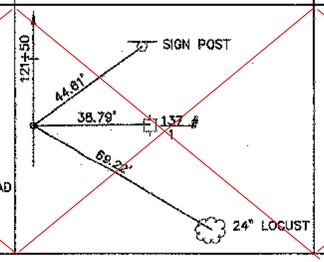
VT. ROUTE 14
SURV CHAN 5+85.48
NORTH = 10556.0617
EAST = 9270.3770



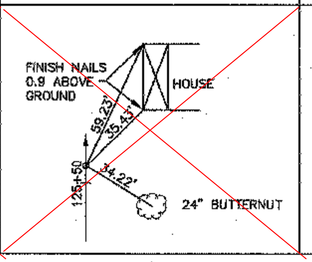
VT. ROUTE 14
SURV CHAN 6+00.00
NORTH = 10543.7816
EAST = 9262.6292



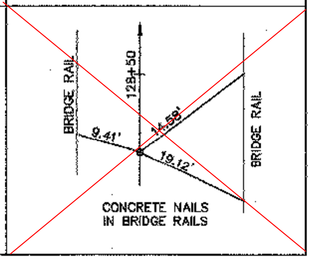
VT. ROUTE 14
SURV P.C. 121+26.96
NORTH = 10190.3414
EAST = 9876.3909



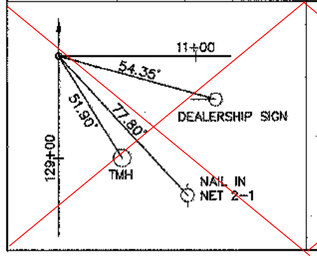
VT. ROUTE 14
SURV P.C.C. 125+55.59
NORTH = 10492.4136
EAST = 9576.5510



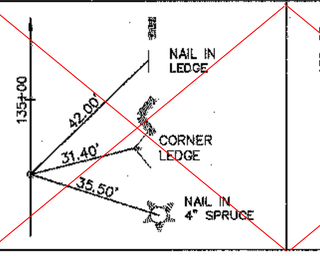
VT. ROUTE 14
SURV P.T. 128+35.00
NORTH = 10622.6760
EAST = 9329.8722



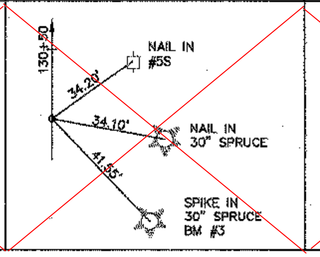
SURV POT 129+25 =
SURV DRIVE 10+00
NORTH = 10656.7527
EAST = 9246.5729



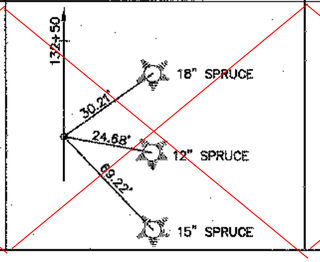
VT. ROUTE 14
SURV PT 134+94.84
NORTH = 10989.8385
EAST = 8798.0313



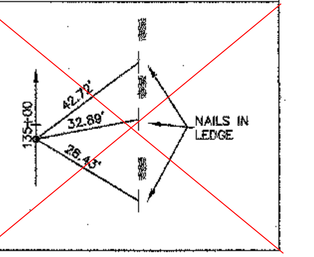
VT. ROUTE 14
SURV P.C. 130+27.65
NORTH = 10695.6223
EAST = 9151.5576

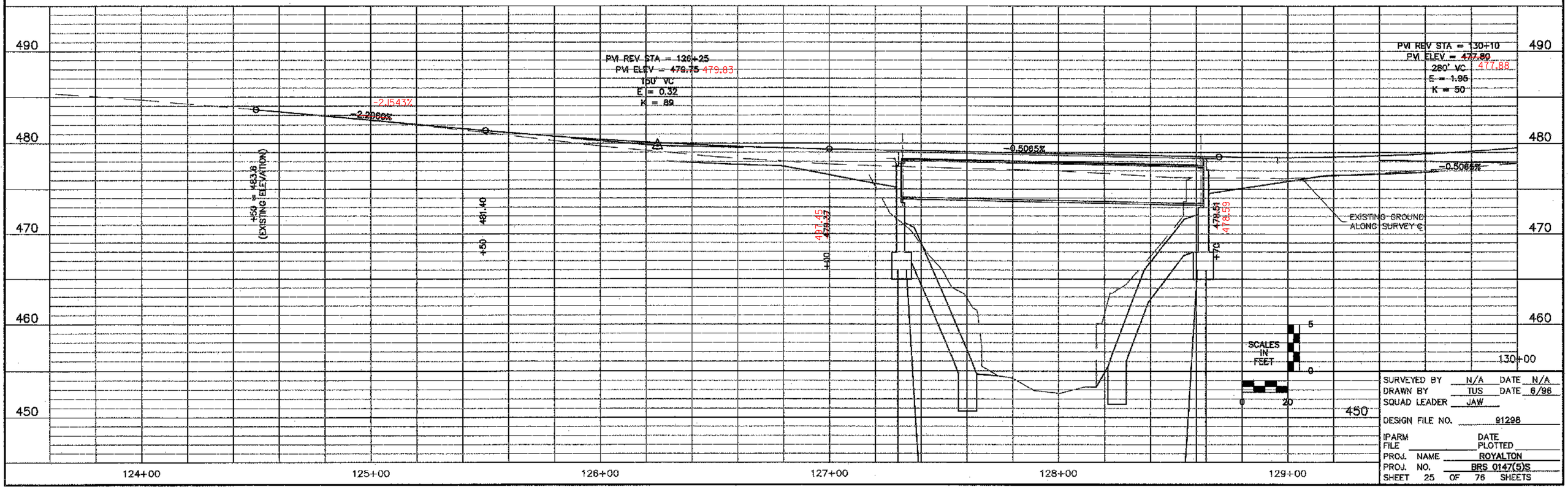


VT. ROUTE 14
SURV P.O.C. 132+00.00
NORTH = 10778.2430
EAST = 9000.7222

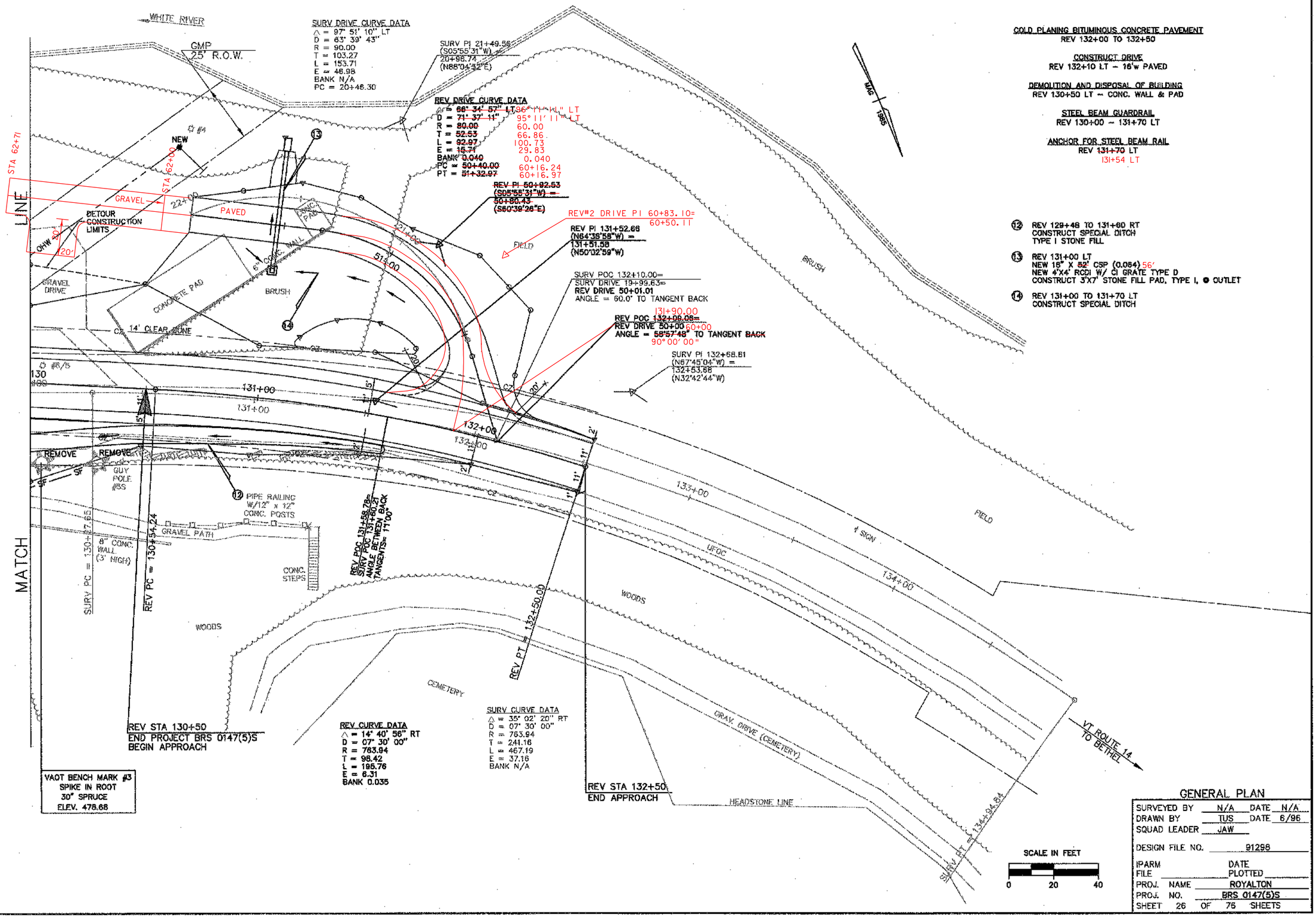


SURV P.T. 134+94.84
NORTH = 10989.8385
EAST = 8798.0313





SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TJS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET	25 OF 76 SHEETS		

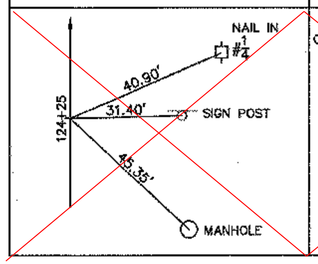
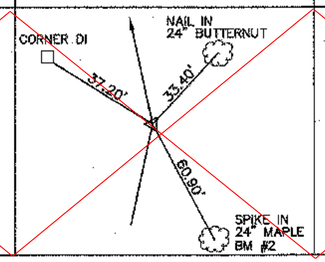
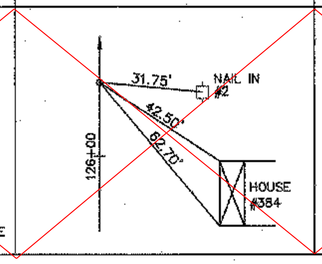
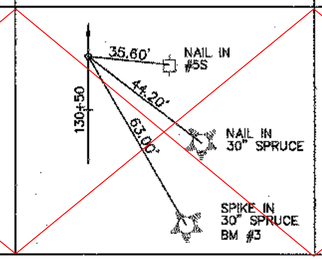
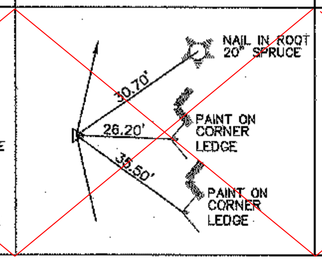
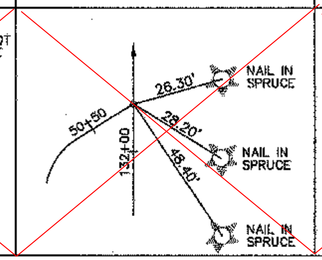
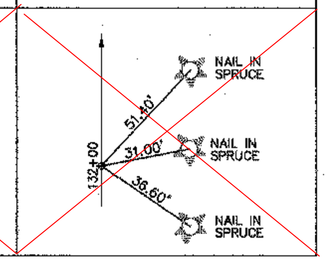


GENERAL PLAN

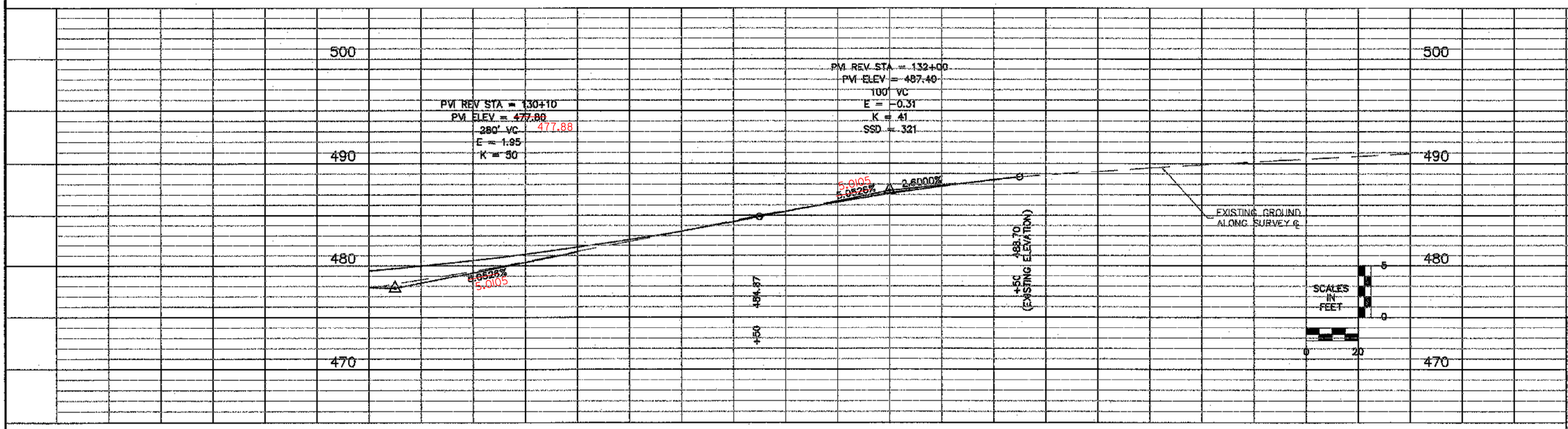
SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TJS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET 26 OF 76 SHEETS			

NO. | RT. OF WAY CHECKED

CONSTRUCTION LINE TIES

VT. ROUTE 14 REV 124+25 NORTH = 10413.8430 EAST = 9680.7561	VT. ROUTE 14 REV PI 125+20.92 NORTH = 10476.2770 EAST = 9607.9326	VT. ROUTE 14 REV PT 126+15.71 NORTH = 10517.3473 EAST = 9521.2462	VT. ROUTE 14 REV PC 130+54.24 NORTH = 10705.1056 EAST = 9124.9475	VT. ROUTE 14 REV PI 131+52.66 NORTH = 10747.2447 EAST = 9036.0051	REV POC 132.09.06 = REV DRIVE 50+00 NORTH = 10785.0670 EAST = 8992.6878	VT. ROUTE 14 REV PT 132+50.00 NORTH = 10810.5508 EAST = 8960.6473
						

NOT TO SCALE



SURVEYED BY N/A DATE N/A
DRAWN BY TJS DATE 6/96
SQUAD LEADER JAW

DESIGN FILE NO. 91298

IPARM FILE
DATE PLOTTED

PROJ. NAME ROYALTON
PROJ. NO. BRS 0147(5)S
SHEET 27 OF 76 SHEETS

INDEX OF SHEETS

SEE SHEET 2

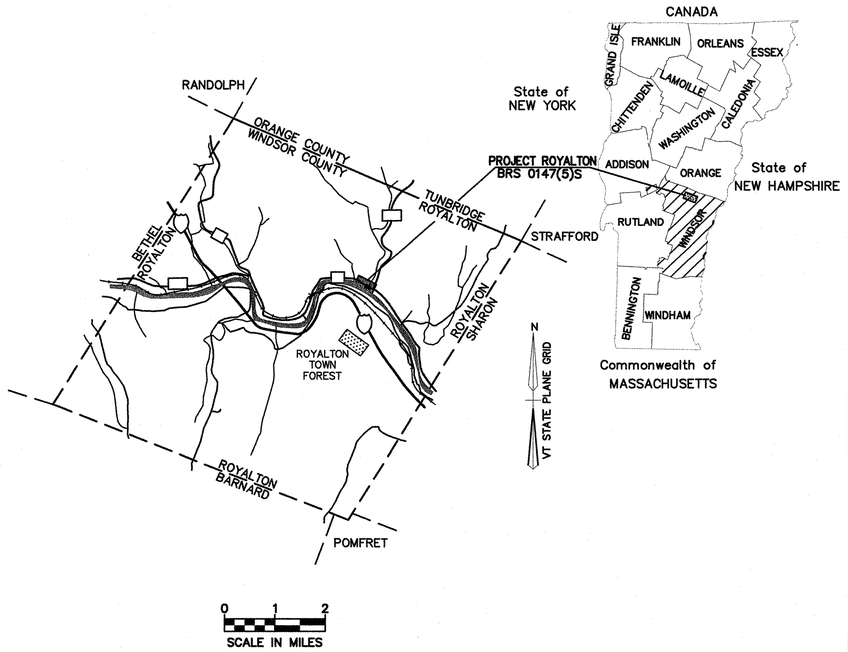
EROSION PREVENTION INDEX OF SHEETS

28A	TITLE SHEET
28B~28C	EROSION CONTROL NARRATIVE
28D	BLANK
28E~28F	EXISTING CONDITIONS SITE PLANS
28G~28H	EROSION PREVENTION & SEDIMENT CONTROL PLANS
28I~28J	FINAL CONDITIONS SITE PLANS
28K	RIPARIAN LANDSCAPE PLAN

EPSC-1	EROSION PREVENTION & SEDIMENT CONTROL DETAILS SILT FENCE
EPSC-2	EROSION PREVENTION & SEDIMENT CONTROL DETAILS CHECK DAMS
EPSC-3	EROSION PREVENTION & SEDIMENT CONTROL DETAILS DROP INLET PROTECTION
EPSC-4	EROSION PREVENTION & SEDIMENT CONTROL DETAILS CONSTRUCTION ENTRANCE
EPSC-5	EROSION PREVENTION & SEDIMENT CONTROL DETAILS DITCH AND SLOPE PROTECTION
EPSC-6	EROSION PREVENTION & SEDIMENT CONTROL DETAILS TURBIDITY CURTAIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
TOWN OF ROYALTON
COUNTY OF WINDSOR
VT ROUTE 14



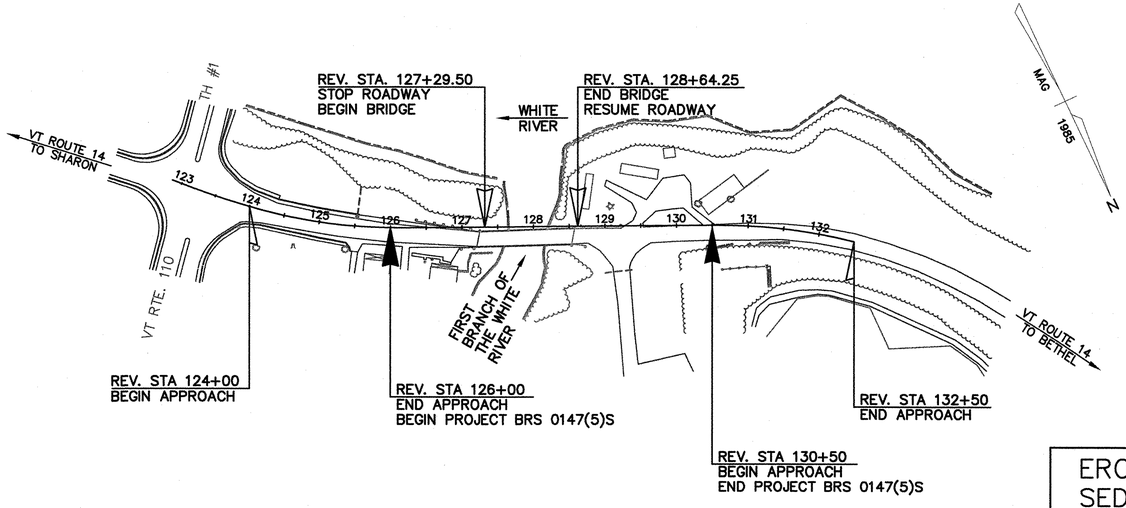
BEGINNING AT A POINT IN THE TOWN OF ROYALTON, ON VT ROUTE 14 APPROXIMATELY 200' NORTH OF THE INTERSECTION OF VT ROUTE 110, AND EXTENDING NORTHWESTERLY ALONG VT ROUTE 14 FOR A DISTANCE OF 0.085 MILES.

LENGTH OF ROADWAY = 315.25 FEET = 0.060 MILES
LENGTH OF BRIDGE = 134.75 FEET = 0.026 MILES
LENGTH OF PROJECT = 450.00 FEET = 0.085 MILES

WORK TO BE PERFORMED UNDER THIS PROJECT CONSISTS OF THE REPLACEMENT OF EXISTING BRIDGE #21, ON VT ROUTE 14, INCLUDING ALL NECESSARY ROADWAY APPROACH WORK.

FUNCTIONAL CLASSIFICATION
MAJOR COLLECTOR

2001 ADT = 4100
2021 ADT = 5600
2001 DHV = 570
2021 DHV = 850
D = 52%
2001 T = 3%
2021 T = 1%
V = 35 M.P.H.
2000–2020 18 KIP ESAL = 673,000
2000–2040 18 KIP ESAL = 1,524,000



CONVENTIONAL SIGNS

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

DATUM

VERTICAL NGVD 1929
HORIZONTAL N/A

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROJECT DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JANUARY 4, 2001 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

EROSION PREVENTION & SEDIMENT CONTROL PLANS

CONSULTING ENGINEERS
540 Commercial Street • Manchester, NH 03101
(603) 668-8223 • Fax: (603) 668-8802
cld@cldengineers.com • www.cldengineers.com
Maine • New Hampshire • Vermont
Inc.

DIRECTOR OF PROJECT DEVELOPMENT
APPROVED _____ DATE _____

PROJECT MANAGER: C. KELLER
PROJECT NAME: ROYALTON
PROJECT NUMBER: BRS 0147(5)S
SHEET 28A OF 76 SHEETS

F:\Proj90-94\91298 Royalton\Hwy2\ACAD\from str\91298COV.dwg 05/30/01 06:08:46 PM EDT

DESCRIPTION OF PROJECT

THIS PROJECT INVOLVES RECONSTRUCTION OF BRIDGE #21 OVER THE FIRST BRANCH OF THE WHITE RIVER ON VERMONT ROUTE #14 IN THE TOWN OF ROYALTON. THE FIRST BRANCH OF THE WHITE RIVER IS CHARACTERIZED AS A SMALL (BUT FLASHY) RIVER IN MOUNTAINOUS TERRAIN WITH MEDIUM RELIEF WITH A STREAMBED OF SHALLOW SANDS AND SILTS WITH SOME GRAVEL OVER BEDROCK. IT HAS A DRAINAGE AREA OF 103 SQUARE MILES.

FEATURES OF CONCERN WITH RESPECT TO EROSION CONTROL INCLUDE: STEEP EMBANKMENTS IMMEDIATELY ADJACENT TO THE PROJECT; THE CONFLUENCE OF THE FIRST BRANCH AND THE WHITE RIVER IS APPROXIMATELY 50' FROM THE DOWNSTREAM FACE OF THE PROPOSED STRUCTURE; A NEW SINGLE SPAN BRIDGE WILL BE CONSTRUCTED ON EXISTING ALIGNMENT; TRAFFIC WILL BE MAINTAINED ON A TWO-WAY TEMPORARY BRIDGE TO BE LOCATED DOWNSTREAM OF THE EXISTING BRIDGE. TOTAL ROADWAY APPROACH WORK, INCLUDING BOTH APPROACHES, IS APPROXIMATELY 800 FEET.

THE CONSTRUCTION LIMITS ARE WITHIN 10' OF TWO BUILDINGS AND CALL FOR THE REMOVAL OF TWO CONCRETE FOUNDATIONS / SLABS WITHIN THE PROJECT LIMITS. THE PROJECT DOES NOT IMPACT ANY WETLANDS. NO THREATENED OR ENDANGERED SPECIES, OR HISTORIC RESOURCES HAVE BEEN IDENTIFIED IN THE PROJECT AREA. THE SITE IS LOCATED JUST NORTH OF THE INTERSECTIONS IF VERMONT ROUTES 110 AND 14.

IT IS ANTICIPATED THAT THE PROJECT WILL LAST ONE CONSTRUCTION SEASON.

TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW AND STAGING AREAS): 1.70 AC.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS
THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION, WITH MODERATE TO STEEP SLOPES OF LAWN, VARIOUS GRASSES, BRUSH, DECIDUOUS AND CONIFEROUS TREES. THE TOPOGRAPHY RUNS GENERALLY UP TO THE EAST AND DOWN TO THE WEST. RUNOFF GENERALLY LEAVES THE SITE AS OVERLAND FLOW. THE DRAINAGE WAY IN THE NORTHEAST QUADRANT IS WELL DEFINED AND ESTABLISHED. WATER ENTERING THE SITE WILL BE PRIMARILY LIMITED TO THAT WHICH IS CONVEYED ALONG ROADWAY DITCHES AT GRADES BETWEEN 2 % TO 6% ALONG THE EAST SIDE OF THE PROJECT AND IS CONVEYED ALONG ROADWAY DITCHES.

DRAINAGE, WATERWAYS, BODIES OF WATER
THE FIRST BRANCH OF THE WHITE RIVER IS CHARACTERIZED AS A SMALL (BUT FLASHY) RIVER IN MOUNTAINOUS TERRAIN WITH MEDIUM RELIEF WITH A STREAMBED OF SHALLOW SANDS AND SILTS WITH SOME GRAVEL OVER BEDROCK. IT HAS A DRAINAGE AREA OF 103 SQUARE MILES. THE CONFLUENCE OF THE FIRST BRANCH AND THE WHITE RIVER IS APPROXIMATELY 50' FROM THE DOWNSTREAM FACE OF THE PROPOSED STRUCTURE. NO WETLANDS WERE IDENTIFIED WITHIN THE PROJECT AREA.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES
SOUTHEAST QUADRANT: CHARACTERIZED BY THREE RESIDENCES AND ASSOCIATED LAWN. THE GRADE GENERALLY SLOPES UP FROM THE ROADWAY AT A MODERATE SLOPE.
SOUTHWEST QUADRANT: CHARACTERIZED BY GRASS AND BRUSH SLOPING DOWN TO THE WHITE RIVER.
NORTHEAST QUADRANT: REV. 128+50 ~ 129+75 IS CHARACTERIZED BY GRASS AND BRUSH BISECTED BY A PAVED DRIVE LEADING TO AN AUTOMOBILE DEALERSHIP WHICH IS SET WELL BACK FROM ROUTE 14. THE TERRAIN BETWEEN REV. 129+75 ~ 132+50 SLOPES STEEPLY UPWARD AND IS VEGETATED WITH A PINE FOREST. A CEMETERY EXISTS AT THE TOP OF THE SLOPE.
NORTHWEST QUADRANT: THE LAND SLOPES DOWN AWAY FROM THE ROADWAY AT MODERATE TO STEEP SLOPES TOWARD A LAWN, A MOBILE HOME AND EVENTUALLY TO THE WHITE RIVER. TWO FOUNDATIONS / CONCRETE SLABS WILL BE REMOVED AS PART OF THE PROJECT. BETWEEN REV. 130+50 ~ 132+50 THE VEGETATION TRANSITIONS FROM LAWN TO BRUSH AND FIELD.
OVERHEAD UTILITIES FOLLOW ALONG ROUTE 14, ACROSS THE NORTHWEST QUADRANT AND THE WHITE RIVER. THE UTILITY POLES WILL NEED TO BE RELOCATED PRIOR TO THE CONSTRUCTION OF THE PROJECT.

VEGETATION
THE VEGETATION SURROUNDING THE PROJECT SITE CONSISTS OF A COMBINATION OF LAWN, GRASS, FIELD, BRUSH AND PINE FORESTED AREAS. THERE ARE NO AGRICULTURAL FIELDS NEAR THE PROJECT LIMITS. IMPACTS TO VEGETATION WILL BE LIMITED TO THAT WHICH ARE EFFECTED BY THE CONSTRUCTION OF THE NEW BRIDGE ON THE EXISTING ALIGNMENT AND CONSTRUCTION OF THE DETOUR. FOLLOWING THE CONSTRUCTION OF THE NEW BRIDGE, THE SLOPES WILL BE STABILIZED WITH SEED, EROSION MATTING AND STONE FILL (WITH AND WITHOUT GRUBBING MATERIAL). VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

SOILS
A DETAILED DESCRIPTION OF THE SOIL TYPES EXPECTED TO BE ENCOUNTERED IN THE PROJECT AREA IS INCLUDED IN THE PROJECT PLAN SHEET TITLED "EXISTING CONDITIONS SITE PLAN".

SOIL NAME	DEPTH	ERODIBILITY
URBAN LAND-WINDSOR-AGAWAM	0"-60"	NOT HIGHLY ERODIBLE
PODUNK FINE SANDY LOAM	0"-60"	NOT HIGHLY ERODIBLE
AGAWAM FINE SANDY LOAM	0"-60"	NOT HIGHLY ERODIBLE

MUCH OF THE PROJECT IS CONSIDERED TO BE "IN A FILL TYPICAL." MEANING THE ROADWAY IS HIGHER THAN THE SURROUNDING MEAN GROUND ELEVATION. DUE TO ENGINEERING REQUIREMENTS FOR SELECTIVE FILL MATERIAL DEPTHS, MUCH OF THIS FILL MATERIAL WILL NEED TO BE BROUGHT IN FROM AN OUTSIDE SOURCE. SINCE WE DO NOT KNOW WHERE THIS SOURCE PIT WILL BE, WE CANNOT PROVIDE ITS ERODABILITY PROPERTIES.

SENSITIVE RESOURCE AREAS
NO "THREATENED & ENDANGERED SPECIES", HISTORIC, ARCHAEOLOGICAL OR WETLAND HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS. THE FIRST BRANCH OF THE WHITE RIVER AND THE WHITE RIVER ARE THE ONLY IDENTIFIED RESOURCES.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES
DISTURBANCE OF SOILS NEAR NATURAL OR MAN-MADE WATERWAYS CONSISTS OF THAT WHICH IS NECESSARY TO CONSTRUCT TWO NEW CONCRETE ABUTMENTS AND A TEMPORARY DETOUR. STABILIZATION OF DISTURBANCES TO STREAM BANKS WILL BE ACCOMPLISHED WITH STONE FILL. GRUBBING MATERIAL OR EARTH FILL WILL BE PLACED ON MOST STONE FILL SLOPES TO HELP REESTABLISH VEGETATION ON THE SLOPES.

DESCRIPTION OF SLOPES
THE EXISTING AND PROPOSED SHAPE OF THE PROJECT AREA CAN BE SEEN BY LOOKING AT THE EXISTING AND FINAL CONDITIONS SITE PLANS WHERE THE SLOPE INDICATORS ARE SHOWN. THE ARROWS ASSOCIATED WITH THE SLOPE INDICATORS POINT DOWN THE SLOPE.

EXISTING SLOPES
THE PROJECT IS LOCATED ON AN AREA WITH VARIABLE SLOPES. GENERALLY SPEAKING, THE PROJECT IMPACTS SLOPES RANGING FROM FLAT TO STEEP CUT TO FILL SLOPES.

SOUTHEAST QUADRANT: THE GRADE GENERALLY SLOPES GRADUALLY UP FROM THE ROADWAY.
SOUTHWEST QUADRANT: SLOPES DOWN TO THE WHITE RIVER, STEEPLY IMMEDIATELY ADJACENT TO THE RIVER.
NORTHEAST QUADRANT: REV. 128+50 ~ 129+75 IS CHARACTERIZED BY A GENTLY UPWARD SLOPING AREA BISECTED BY A PAVED DRIVE LEADING TO AN AUTOMOBILE DEALERSHIP WHICH IS SET WELL BACK FROM ROUTE 14. THE TERRAIN BETWEEN REV. 129+75 ~ 132+50 SLOPES STEEPLY UPWARD. THERE IS A SMALL DITCH AT THE BASE OF THE SLOPE.
NORTHWEST QUADRANT: THE LAND SLOPES DOWN AWAY FROM THE ROADWAY AT MODERATE TO STEEP SLOPES TOWARD A LAWN AND EVENTUALLY TO THE WHITE RIVER. THE SLOPE BECOMES STEEP IMMEDIATELY ADJACENT TO THE WHITE RIVER.

PROPOSED SLOPES
THE GRADE OF ROUTE 14 WILL BE RAISED APPROXIMATELY TWO FEET IN THE VICINITY OF THE BRIDGE. A SIDEWALK WILL BE CONSTRUCTED ALONG THE WEST SIDE FROM THE BEGINNING OF THE PROJECT TO A POINT JUST NORTH OF THE BRIDGE. AS A RESULT, THE PROPOSED SLOPES WILL BE STEEPER OR SPILL BEYOND THE TOE OF THE EXISTING SLOPES.

SOUTHEAST QUADRANT: THE SLOPES IN THIS AREA WILL BE SIMILAR TO THOSE THAT EXIST TODAY. A SIDEWALK WILL BE RECONSTRUCTED FROM THE BEGINNING OF THE PROJECT TO REV. 125+50. FILL SLOPES WILL BE CONSTRUCTED TO REV. 126+75. A SHALLOW DITCH WILL BE CONSTRUCTED WITH A DROP INLET WILL BE CONSTRUCTED TO REV. 127+25. A SHORT RUN OF ALUMINUM RAIL WILL BE PLACED PRIOR TO THE BRIDGE.
SOUTHWEST QUADRANT: THE EXISTING SIDEWALK WILL BE EXTENDED ACROSS THE BRIDGE. 1-4 SLOPES WILL BE CONSTRUCTED TO REV. 126+00. TO REV. 127+00, THE SLOPES WILL TRANSITION TO 1-2 WITH STONE FILL, TYPE IV TO PROTECT AGAINST EROSION FROM THE WHITE RIVER AND WILL REQUIRE GUARDRAIL. GUARDRAIL WILL BE PLACED FROM REV. 125+75 TO THE BRIDGE.
NORTHEAST QUADRANT: THE SLOPES IN THIS AREA ARE GENERALLY FLAT AND RESEMBLE THOSE THAT EXIST TODAY. NO SIGNIFICANT FILL OR CUT IS PROPOSED. THE PROPOSED DITCH WILL BE LINED WITH STONE FILL, TYPE I TO GUARD AGAINST EROSION.
NORTHWEST QUADRANT: 1-2 SLOPES WITH STONE FILL, TO PROTECT AGAINST EROSION FROM THE WHITE RIVER, ARE PROPOSED FROM THE BRIDGE TO REV. 129+50. GUARDRAIL WILL BE PLACED TO REV. 131+70. THE SLOPES WILL TRANSITION FROM 1-2 TO 1-4 BETWEEN REV. 129+50 ~ 130+50. 1-4 SLOPES ARE MAINTAINED TO THE END OF THE PROJECT. THE EXISTING DRIVEWAYS AT REV. 129+50 AND 130+50 ARE PROPOSED TO BE CLOSED DUE TO THE INCREASE IN ROADWAY GRADE, STEEP SLOPES AND THE NEED TO PLACE GUARDRAIL. A NEW DRIVE IS PROPOSED AT REV. 132+00. THE DRIVE WRAPS AROUND TO THE SOUTH TO CONNECT BACK TO THE PROPERTY.
THE SLOPES ALONG THE CHANNEL BANKS ARE LINED WITH HEAVY STONE AND ARE AT 1-1.5 (67 %).

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

THE EROSION CONTROL PLANS ARE INTENDED AS A GUIDE FOR PREVENTING SOIL EROSION AND CONTROLLING SEDIMENT. THE WORK OUTLINED IN THIS NARRATIVE CONSISTS OF APPLYING MEASURES THROUGHOUT THE DURATION OF THE PROJECT TO CONTROL EROSION AND MINIMIZES THE SEDIMENTATION OF THE RECEIVING WATERS.

AN ALTERNATE TEMPORARY EROSION CONTROL PLAN MAY BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE AGENCY OF TRANSPORTATION.

THE CONTRACTOR WILL USE OTHER TEMPORARY OR PERMANENT EROSION CONTROL DEVICES AS NECESSITATED BY THE SEQUENCE OF CONSTRUCTION AND AS DIRECTED BY THE RESIDENT ENGINEER. SEE SECTION 105.23 OF THE 2001 VERMONT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

THE CONTRACTOR SHALL COORDINATE THE INSTALLATION, USE, AND REMOVAL OF EROSION PREVENTION AND SEDIMENT CONTROL MEASURES WITH CONSTRUCTION ACTIVITIES TO ASSURE ECONOMICAL, EFFECTIVE, AND CONTINUOUS EROSION PREVENTION AND SEDIMENT CONTROL. THE CONTRACTOR SHALL EMPLOY TEMPORARY STABILIZATION PRACTICES IN INCREMENTAL STAGES AS CONSTRUCTION ACTIVITIES PROCEED.

THE RESIDENT ENGINEER MAY DIRECT THE INSTALLATION OF CERTAIN EROSION CONTROL MEASURES IN ORDER TO FORESTALL OF MITIGATE POTENTIAL OR EXISTING EROSION PROBLEMS, OR TO RESPOND TO STORM EVENTS OR DAMAGE BY CONSTRUCTION OPERATIONS.

THE CONTRACTOR SHALL INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AS SEQUENCED ON THE EROSION CONTROL PLAN SHEETS, OR AS DIRECTED BY THE RESIDENT ENGINEER. THE TYPE, SIZE, AND LOCATION OF ANY EROSION CONTROL DEVICE SHALL NOT BE CHANGED UNLESS PRIOR APPROVAL IS OBTAINED FROM THE RESIDENT ENGINEER. ANY APPROVED CHANGES SHALL BE NOTED ON THE EROSION CONTROL PLANS AND DISCUSSED IN THE WEEKLY REPORT. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES DAILY AND AFTER EACH RAINFALL EVENT. THE CONTRACTOR SHALL REPAIR ALL DAMAGED EROSION CONTROL MEASURES IMMEDIATELY. ALL EROSION CONTROL MEASURES THAT TRAP SEDIMENT, SUCH AS SEDIMENT BASINS AND SILT FENCES, SHALL BE CLEANED OUT WHEN THEIR CAPACITY REACHES 50 %.

THE RESIDENT ENGINEER'S APPROVAL SHOULD BE OBTAINED PRIOR TO INSTALLING ANY EROSION CONTROLS NOT SPECIFIED IN THE EROSION CONTROL PLANS. HOWEVER, IN EMERGENCY SITUATIONS WHERE THE RESIDENT ENGINEER IN NOT IMMEDIATELY AVAILABLE, THE CONTRACTOR SHOULD REPAIR OR INSTALL THE EROSION CONTROLS AS HE/SHE DEEMS NECESSARY AND REPORT THE INCIDENT TO THE RESIDENT ENGINEER AS SOON AS PRACTICAL.

THE CONTRACTOR SHALL CONTROL ALL SEDIMENT-LADEN RUNOFF GENERATED WITHIN THE PROJECT SITE. CLEAN RUNOFF FORM OUTSIDE THE PROJECT SITE SHALL BE ROUTED THROUGH THE PROJECT SITE USING DIVERSION BERMS, DIVERSION CHANNELS, AND TEMPORARY OR PERMANENT CULVERTS.

CONSTRUCTION EQUIPMENT WILL NOT BE ALLOWED TO OPERATE ON THE DOWNHILL SIDE OF THE PERIMETER CONTROL MEASURES.

CONSTRUCTION EQUIPMENT WILL NOT BE ALLOWED TO CROSS A FLOWING STREAM, OR DISTURB THE EXISTING STREAM BANKS, UNLESS AUTHORIZED BY THE RESIDENT ENGINEER.

ALL IN-STREAM CONSTRUCTION MUST TAKE PLACE IN A DRY CHANNEL BETWEEN JUNE 1ST AND OCTOBER 1ST.

IN GENERAL, PRESERVE EXISTING VEGETATION, SHRUBS, AND TREES WHENEVER POSSIBLE.

SILT FENCE SHALL BE PLACED AT THE TOES OF ALL FILL SLOPES AND SHALL BE CONSTRUCTED SO THAT FLOWS CANNOT BYPASS THE ENDS. AREAS DIRECTLY BELOW (DOWNHILL) OF THE SILT FENCES MUST BE UN-DISTURBED AND VEGETATED.

STRAW MATTING WILL BE INSTALLED AS SOON AS PRACTICAL ON ALL TEMPORARY DETOUR CUT & FILL SLOPES AND PERMANENT CUT & FILL SLOPES.

AS CONSTRUCTION PROGRESSES, IMPLEMENTATION OF ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY THE ON-SITE COORDINATOR AND AS APPROVED BY THE RESIDENT ENGINEER.

THE PROJECT COMPLETION DATE HAS BEEN SET FOR OCTOBER 15TH TO ENSURE ALL FINAL EROSION CONTROL MEASURES FOR THE ESTABLISHMENT OF PERMANENT VEGETATION WILL TAKE PLACE DURING THE GROWING SEASON. THEREFORE, WINTER STABILIZATION METHODS WILL NOT BE SHOWN ON THE PLANS OR DESCRIBED IN THE NARRATIVE.

INFORMATION REQUIRED BY THE CONTRACTOR

MUCH OF THE INFORMATION CONTROL INFORMATION SHOWN ON THE EROSION CONTROL PLANS AND DESCRIBED IN THIS NARRATIVE IS GENERAL IN NATURE. MORE SITE SPECIFIC INFORMATION IS NOT YET AVAILABLE AS A CONTRACTOR HAS NOT YET BEEN SELECTED. THE FOLLOWING LIST OUTLINES SOME OF THE SPECIFIC INFORMATION THAT IS NOT INCLUDED IN THE EROSION CONTROL PLANS AND DESCRIBED IN THIS NARRATIVE;

LOCATION OF WASTE, BORROW AND STAGING AREAS, MATERIAL STOCKPILES, REFUELING AND MAINTENANCE AREAS AND CONCRETE TRUCK WASHOUT LOCATION (ATTACH MAP IF NECESSARY).

DISCUSSION AND ADDITIONAL DETAILS NEEDED FOR PROTECTION AND STABILIZATION OF ABOVE.

PROPOSED MODIFICATIONS AS / IF REQUIRED TO THESE EROSION PREVENTION AND SEDIMENT CONTROL PLANS.

PROPOSED DATES ASSOCIATED WITH JOB MILESTONES AS INDICATED ON THE SEQUENCE CONSISTENT WITH PROJECT CPM SCHEDULE.

NARRATIVE (RE: TEMPORARY SEEDING AND MULCHING / STABILIZATION)

NAME, ADDRESS, PHONE NUMBER AND BASIC QUALIFICATIONS OF "ON-SITE COORDINATOR".

EROSION CONTROL NARRATIVE

SURVEYED BY N/A DATE N/A
DRAWN BY TUS DATE 6/96
SQUAD LEADER JAW

DESIGN FILE NO. 91298

IPARM FILE ____ DATE PLOTTED ____
PROJ. NAME ROYALTON
PROJ. NO. BRS 0147(5)S
SHEET 28B OF 76 SHEETS

MAINTENANCE PLAN FOR EROSION PREVENTION AND SEDIMENT CONTROLS

THE FOLLOWING MAINTENANCE SCHEDULE WILL BE FOLLOWED THROUGHOUT THE DURATION OF THE PROJECT.

1. AN ASSIGNED INDIVIDUAL WHO IS NOT PERMANENTLY ASSOCIATED WITH THE DAY-TO-DAY OPERATIONS OF THE PROJECT SHALL DO MONITORING OF THE CONSTRUCTION SITE. THE INSPECTOR WILL BE FAMILIAR WITH THIS PLAN AND WITH EROSION & SEDIMENT CONTROL PROCEDURES AND WITH ROAD AND BRIDGE CONSTRUCTION TECHNIQUES. SITE INSPECTIONS WILL BE PERFORMED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS, AND AFTER EACH RAIN EVENT OF MORE THAN ½" (13MM) IN A TWENTY FOUR HOUR PERIOD.

2. A COPY OF THE MONITORING REPORT PREPARED BY THE SITE REVIEWER SHALL BE GIVEN TO THE RESIDENT ENGINEER AFTER EACH SITE VISIT. THE REPORT WILL BE A WRITTEN REPORT STATING THE DATE OF THE REVIEW, A DESCRIPTION OF THE EROSION PREVENTION AND SEDIMENT CONTROL MEASURES REVIEWED. ALSO INCLUDED WILL BE THE EFFECTIVENESS OF THE EROSION PREVENTION / CONTROL MEASURES, ANY DEFICIENCIES, AND CORRECTIVE ACTIONS TO BE UNDERTAKEN.

3. THE PLAN PREPARER WILL BE AVAILABLE FOR ON-SITE CONSULTATIONS WITH THE RESIDENT ENGINEER WITHIN TWENTY FOUR HOURS OF THE REQUEST.

4. ALL SILT FENCES AND STONE CHECK DAMS WILL BE INSPECTED EACH SITE VISIT BY THE DESIGNATED INSPECTOR, AS DESCRIBED BELOW;

A. THESE CONTROLS WILL BE MAINTAINED IN GOOD CONDITION. ANY SILT FENCE OF STONE CHECK DAM THAT IS INEFFECTIVE WILL BE REPAIRED OR REPLACED IMMEDIATELY.
B. SEDIMENT DEPOSITS WILL BE REMOVED WHEN THEY REACH ONE-HALF THE HEIGHT OF THE SEDIMENT CONTROL DEVICE.
C. ALL SEDIMENTS REMOVED WILL BE DEPOSITED IN AN UPLAND PORTION OF THE PROJECT SITE, OR DISPOSED OFF-SITE IN THE DESIGNATED PROJECT WASTE SITE.

5. ALL SLOPES WILL BE CHECKED EACH SITE VISIT AND ANY ERODED AREAS WILL BE IMMEDIATELY REPAIRED. TEMPORARY STABILIZATION METHODS WILL BE USED AS NECESSARY UNTIL FINAL STABILIZATION MEASURES ARE IN PLACE.

6. BOTH TEMPORARY & PERMANENT SEEDING & MULCHING WILL BE CHECKED EACH SITE VISIT FOR VEGETATIVE GROWTH. ANY AREAS REQUIRING RE-VEGETATION WILL BE REPAIRED IMMEDIATELY.

7. DRAINAGE STRUCTURES WILL BE CLEANED AS NECESSARY TO REMOVE ANY SEDIMENT BUILDUP IN THE SUMP OF THE STRUCTURES OR AT THE INLET OF THE STRUCTURE.

A. ANY INLET CONTROL FOUND TO BE INEFFECTIVE WILL BE REPLACED AS NECESSARY AND WILL BE DONE IMMEDIATELY.
B. ALL SEDIMENTS REMOVED WILL BE DEPOSITED IN AN UPLAND PORTION OF THE PROJECT SITE, OR DISPOSED OFF-SITE IN THE DESIGNATED PROJECT WASTE SITE.

8. TEMPORARY CONSTRUCTION ACCESSES WILL BE MONITORED EACH SITE VISIT.

A. ANY CONTROL FOUND TO BE INEFFECTIVE WILL BE PROMPTLY REPLACED.

9. ALL TEMPORARY EROSION CONTROL DEVICES WILL STAY IN PLACE UNTIL FINAL GRASS GROWTH HAS BEEN ESTABLISHED AND COMPLETE STABILIZATION OF THE AREAS HAS OCCURRED.

10. ONCE STABILIZATION HAS OCCURRED, ALL TEMPORARY EROSION CONTROL MEASURES WILL BE REMOVED AND ALL DISTURBED AREAS WILL BE STABILIZED WITH STRAW MATTING AND/OR SEED & MULCH.

SPECIFIC GUIDELINES

PERIMETER EROSION CONTROLS
PRIOR TO ANY CONSTRUCTION ACTIVITIES, THE PROJECT DEMARCATION FENCING SHALL BE PLACED ALONG THE PERIMETER OF THE PROJECT AS SHOWN ON THE EROSION CONTROL PLANS. THE INSTALLATION OF THE DEMARCATION FENCING WILL BE PERFORMED SUCH THAT NO VEGETATION ON THE OUTSIDE OF THE FENCING IS DISTURBED.

PRIOR TO ANY CONSTRUCTION OR STAGING, THE CONTRACTOR WILL INSTALL STABILIZED CONSTRUCTION ENTRANCES LEADING TO STAGING AREAS AND THE PROJECT SITE TO PREVENT THE TRACKING OF SILTS AND SEDIMENTS OFFSITE. COARSE STONE FILL OVER FILTER FABRIC SHOULD BE UTILIZED WHERE AN ALREADY ESTABLISHED STABLE ENTRANCE DOES NOT EXIST. THE CRUSHED STONE PRODUCT USED FOR THE CONSTRUCTION OF THE STABILIZED CONSTRUCTION ENTRANCES SHALL BE MONITORED FOR SEDIMENT ACCUMULATION AND REPLACED AS NECESSARY AS DIRECTED BY THE RESIDENT ENGINEER. STABILIZED CONSTRUCTION ENTRANCES SHALL ALSO BE ESTABLISHED AND MAINTAINED AT ALL OFFSITE WASTE AND BORROW AREAS. THE MINIMUM SIZE OF A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 14 FEET WIDE BY 50 FEET LONG.

AFTER THE CLEARING OF TREES AND SHRUBS, BUT PRIOR TO ANY GRUBBING AND EXCAVATION, CONSTRUCT PERIMETER CONTROLS TO ENSURE THAT ANY DISTURBED SEDIMENT DOES NOT LEAVE THE SITE. SEDIMENT TRAPS/BASINS, WHERE WATER HAS BEEN ADEQUATELY TREATED, MAY BE DIRECTED TO NEARBY UNDISTURBED STREAMS OR SWALES.

INSTALL PERIMETER SILT FENCE IN AREAS OF PROPOSED WORK AS SHOWN ON THE PLANS PRIOR TO GRUBBING AND FILLING ACTIVITIES. IN AREAS OF HIGH EXPOSURE, IT MAY BE NECESSARY TO DOUBLE UP PROTECTION WITH ADDITIONAL SILT FENCING OR PLACEMENT OF HAY BALES BEHIND THE SILT FENCING. IN AREAS OF EXPOSED LEDGE, STONE CHECK DAMS WILL BE UTILIZED.

DURING GRUBBING OPERATIONS, STONE CHECK DAM BARRIERS SHALL BE INSTALLED AT ANY OBVIOUS CONCENTRATED FLOW DISCHARGE POINTS, OR AS DIRECTED BY THE RESIDENT ENGINEER.

ALL AREAS OF EXPOSED SOILS AFTER THE GRUBBING ACTIVITY SHALL BE TEMPORARILY STABILIZED WITH MULCHING & SEEDING, EROSION MATTING, OR STRAW MATTING AS SOON AS PRACTICABLE AND BEFORE ANY PREDICTED RAINFALL EVENT. THESE TEMPORARY EROSION CONTROL MEASURES CAN BE PLACED IN ANY COMBINATION IN AREAS OF POTENTIAL EROSION AS DEEMED NECESSARY BY THE RESIDENT ENGINEER.

AFTER PERIMETER CONTROLS ARE IN PLACE, AND PRIOR TO GRADING OPERATIONS, CONSTRUCT TEMPORARY ONSITE SEDIMENT TRAPS WHERE NECESSARY. GRADE DISTURBED AREAS TO DRAIN TOWARDS SEDIMENT TRAP WHERE POSSIBLE.

ALL MATERIAL STOCKPILES, INCLUDING BUT NOT LIMITED TO, GRUBBING MATERIAL, SAND BORROW, EARTH BORROW, GRANULAR BORROW, TOPSOIL, SUBBASE, AND ANY EXCAVATED WASTE PILES SHALL BE MULCHED AND SHALL ALSO HAVE SILT FENCE INSTALLED AROUND THE BASE OF THE STOCKPILE.

ANY OFF-SITE AREAS WHERE BORROW OR EXCAVATED MATERIALS WILL BE STOCKPILED WILL HAVE A DOUBLE INSTALLATIONS OF SILT FENCE AROUND THE BASE OF EACH STOCKPILE. WASTE DISPOSAL SITES WILL ALSO HAVE A DOUBLE INSTALLATION OF SILT FENCE AROUND THE BASE OF EACH STOCKPILE, AND IMMEDIATELY AFTER FINAL GRADING, SHALL BE SEEDED AND MULCHED. REMOVAL OF THE SILT FENCES AROUND THE WASTE AREAS SHALL BE PERFORMED ONLY AFTER APPROVAL BY THE RESIDENT ENGINEER.

TEMPORARY DETOUR EROSION CONTROLS
ON PARTIALLY COMPLETED FILL & CUT SLOPES, ALL EXPOSED SOILS WILL BE STABILIZED WITH STRAW MATTING AT THE END OF EACH WORKING DAY. ONCE THE DETOUR FILL SLOPES ARE COMPLETED, THE ENTIRE DETOUR, INCLUDING ALL FILL AND CUT SLOPES (EXCEPT THE PAVED SURFACES), SHALL BE ENTIRELY COVERED WITH STRAW MATTING. TO PREVENT WATER FROM BECOMING CONCENTRATED ALONG THE TEMPORARY SHEETING, THE SHEETING WILL BE CUT TO ALLOW RUNOFF TO FLOW FREELY OVER THE SHEETING. STONE FILL MAY NEED TO BE PLACED AT THE BASE OF THE SHEETING TO ENSURE EROSION DOES NOT OCCUR. NO ROADWAY RUNOFF WILL BE ALLOWED TO BE CHANNELED DIRECTLY INTO THE FIRST BRANCH OR THE WHITE RIVER WITHOUT BEING TREATED FOR SEDIMENT.

BRIDGE EROSION CONTROLS
NEW SLOPES STEEPER THAN 50% (1-2 SLOPE) WILL BE CONSTRUCTED WITH STONE FILL FOR SLOPE STABILIZATION AS THE EMBANKMENT CONSTRUCTION PROGRESSES.

THE NEW SUBSTRUCTURES WILL BE CONSTRUCTED IN THE DRY. ALL WATER PUMPED FROM SUBSTRUCTURE AND OTHER EXCAVATION AREAS WILL BE PUMPED TO EITHER A DIRT BAG SILT CONTAINMENT DEVICE, A HAY BALE FABRIC LINED SEDIMENT SETTLEMENT STRUCTURE, OR AN EXCAVATED SEDIMENT BASIN. THE FIRST PUMPING OF THE EXCAVATIONS WILL CONTAIN THE GREATEST VOLUME OF WATER WITH THE HIGHEST SEDIMENT LOAD. IT MAY BE NECESSARY TO CONSTRUCT ADDITIONAL SETTLING STRUCTURES, OR TO CONTROL THE RATE OF DRAWDOWN OF THE EXCAVATIONS.

AFTER COMPLETION OF THE SUBSTRUCTURES, ALL COLLECTED SEDIMENTS SHOULD BE REMOVED FROM THE SETTLING STRUCTURES AND THE GROUND SHAPED TO ITS FINAL GRADE AND SLOPE. DISPOSE OF THE COLLECTED SEDIMENTS IN AN UPLAND PORTION OF THE PROJECT, OR IN A MANNER APPROVED BY THE RESIDENT ENGINEER THAT WILL NOT RESULT IN SEDIMENTS OR POLLUTANTS ENTERING THE STREAM.

ROADWAY EROSION CONTROLS
NEW DRAINAGE CULVERTS THAT ARE BEING CONSTRUCTED IN THE SAME LOCATION AS EXISTING CULVERTS SHALL BE ISOLATED FROM THE NEW WORK BY MEANS OF DAMMING AND PUMPING INTO A SETTLING BASIN, OR BY INSTALLING A TEMPORARY PIPE OF SUFFICIENT SIZE TO HANDLE EXPECTED FLOWS.

STONE FILL FOR CHANNEL AND SLOPE STABILIZATION AT THE OUTLET ENDS OF CULVERTS IS TO BE PLACED PRIOR TO INSTALLATION OF THE CULVERTS. ALL WORK ON NEW CULVERTS SHOULD PROCEED FROM THE OUTLET TOWARDS THE INLET. SILT FENCE AND/OR CRUSHED STONE CHECK DAMS ARE TO BE INSTALLED ON UNDISTURBED GROUND AND DOWNSTREAM OF THE STONE FILL PADS AT OUTLETS. STONE FILL FOR DITCH STABILIZATION SHALL BE PLACED DURING THE SAME WORKING DAY THAT THE DITCH EXCAVATION WAS PERFORMED, UNLESS DIRECTED OTHERWISE BY THE RESIDENT ENGINEER.

ON ANY PARTIALLY COMPLETED PERMANENT CUT AND FILL SLOPES, ALL EXPOSED SOILS WILL BE STABILIZED WITH STRAW MATTING OR SEEDED AND MULCHED. IN AREAS OF CONCENTRATED RUNOFF ABOVE NEWLY CONSTRUCTED FILL SLOPES, FLEXIBLE SLOPE PIPES OR OTHER APPROVED DIVERSION METHODS WILL BE USED TO TRANSPORT RUNOFF DOWN THE FILL SLOPES TO SEDIMENT TRAPS OR SETTLING BASINS.

ANY NEW FILL SLOPES THAT ARE DESIGNED WITH STONE FILL BLANKETS FOR SLOPE STABILIZATION SHALL BE CONSTRUCTED WITH THE STONE FILL BEING PLACED AS THE FILL SLOPE EMBANKMENT CONSTRUCTION PROGRESSES.

THE SUBBASE MATERIAL SHOULD BE PLACED AS SOON AS THE SUBGRADE HAS REACHED ITS FINAL GRADE AND SLOPE. THE TEMPORARY TRAVELING SURFACE WILL BE GRADED TO PROMOTE SHEET FLOW OFF THE SURFACE ONTO SLOPES, OR FLOWS WILL BE DIRECTED TO COLLECTION AREAS AND SHALL BE TRANSPORTED DOWN THE FILL SLOPES TO SEDIMENT TRAPS OR SETTLING BASINS.

ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED FOLLOWING FINAL GRADING ACTIVITIES. ALL AREAS THAT ARE GRADED OUTSIDE OF THE GROWING SEASON SHALL BE TREATED WITH SLOPE STABILIZATION UNTIL SEEDING & MULCHING CAN BE PERFORMED.

DETOUR REMOVAL & FINAL EROSION CONTROLS
REMOVE TEMPORARY DETOUR FILL MATERIAL TO ORIGINAL GROUND.

ON ANY PARTIALLY REMOVED TEMPORARY FILL SLOPES, ALL EXPOSED SOIL WILL BE STABILIZED AT THE END OF EACH WORK DAY.

AS THE TEMPORARY DETOUR FILLS ARE REMOVED, ALL EXPOSED SOIL SURFACES WILL BE STABILIZED WITH STRAW MATTING AND/OR SEED & MULCH.

THE CHANNEL STONE FILL SLOPES WILL BE COMPLETED, AND GRUBBING MATERIAL WILL BE APPLIED TO STONE FILLED AREAS AROUND EACH ABUTMENT. THE GRUBBING MATERIAL SHALL NOT BE PLACED BENEATH THE NEW STRUCTURE OR BELOW THE ORDINARY HIGH WATER ELEVATION. REFER TO THE HYDRAULICS INFORMATION ON THE PRELIMINARY INFORMATION SHEET.

THE NEWLY PLACED GRUBBING MATERIAL SHALL BE STABILIZED WITH STRAW MATTING AND/OR SEED & MULCH AS DIRECTED BY THE RESIDENT ENGINEER.

REMOVAL OF SILT FENCE SHALL COMMENCE ONLY AFTER ALL UPSLOPE AREAS ARE STABILIZED AND WELL ESTABLISHED, AND THE RESIDENT ENGINEERS HAS APPROVED THE REMOVAL.

REMOVAL OF PERIMETER SILT FENCES AND SEDIMENT TRAPS ONLY AFTER ANY TOE-OF-FILL DITCHES HAVE STABILIZED AND VEGETATION IS WELL ESTABLISHED.

REMOVE ALL REMAINING TEMPORARY EROSION CONTROL MEASURES, REGRADE ANY AREAS IF NECESSARY, TREAT ALL REGRADED AREAS WITH STRAW MATTING AND/OR MULCH & SEED, AND ESTABLISHMENT OF ANY FINAL EROSION CONTROL DEVICES AS DEEMED NECESSARY BY THE RESIDENT ENGINEER.

SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE		REQUIRED SURFACE AREA		LENGTH / WIDTH 2:1			
Q(gpm)	Q(M3/s)	(ft2)	(m2)	L (ft)	W (ft)	L (m)	W (m)
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9

EROSION CONTROL NARRATIVE

SURVEYED BY N/A DATE N/A
DRAWN BY TUS DATE 6/96
SQUAD LEADER JAW

DESIGN FILE NO. 91298

IPARM FILE DATE PLOTTED
PROJ. NAME ROYALTON
PROJ. NO. BRS 0147(5)S
SHEET 28C OF 76 SHEETS

PLAN	BY	DATE
SURVEYED		
PLOTTED		
NOTE BOOK ALIGNMENT CHECKED		
NO. FT. OF WAY CHECKED		

SOIL INFORMATION
URBAN LAND–WINDSOR–AGAWAM COMPLEX,
0 TO 8 PERCENT SLOPES
HYDROLOGICAL SOIL GROUP NOT RATED
DEPTH TO BEDROCK N/A
DEPTH TO WATER TABLE, N/A
NOT HIGHLY ERODIBLE SOIL

SOIL INFORMATION
PODUNK FINE SANDY LOAM,
0 TO 3 PERCENT SLOPES, OCCASIONALLY FLOODED
HYDROLOGICAL SOIL GROUP B
DEPTH TO BEDROCK 60'
DEPTH TO WATER TABLE, 1.5' – 3'
NOT HIGHLY ERODIBLE SOIL

SOIL INFORMATION
URBAN LAND–WINDSOR–AGAWAM COMPLEX,
0 TO 8 PERCENT SLOPES
HYDROLOGICAL SOIL GROUP NOT RATED
DEPTH TO BEDROCK N/A
DEPTH TO WATER TABLE, N/A
NOT HIGHLY ERODIBLE SOIL

SOIL INFORMATION
AGAWAM FINE SANDY LOAM,
0 TO 3 PERCENT SLOPES
HYDROLOGICAL SOIL GROUP B
DEPTH TO BEDROCK 60'
DEPTH TO WATER TABLE, 6'
NOT HIGHLY ERODIBLE SOIL

WHITE RIVER
RIPARIAN BUFFER
EXISTING OUTFALL: A MIX OF VEGETATION, SOILS & ROCKS IN AN EXISTING SLIGHTLY EDODED CHANNEL ON A STEEP GRADE
SURV PCC = 125+55.59
EXIST. 18" ACCMP
UGC
TMH
VT ROUTE 14 TO SHARON
CONC. WALK
BRASS DISC
6" GRAN. CURB (Typ.)
GRASS
BRUSH
124+00
125+00
126+00
127+00
128+00
129+00
130
D.I.
OVERGROWN BRIDGE ACCESS
GUY WIRE
3 CABLE GR
2 CABLE GR
SHEET PILING
LMH
PAVED SIDEWALK
PAVED
#1 4
24" STUMP
36" M
24" BUTTER NUT
SHRUBS
FLAT
UP
GRAVEL DRIVE
CONCRETE WALK
LT POLE
WELL
GRAVEL
LAWN
CONC. WALL
2 1/2 SWF HOUSE
WOODS
SOILS CLASSIFICATION BOUNDARY
MAG 1985
N
SOILS CLASSIFICATION BOUNDARY
BRUSH
LINE
RIPARIAN BUFFER
LAWN
MOBILE HOME
SURV PT = 128+35.00
6+00
#1–1/1–4
CONCRETE PAD
FLAT
GRAVEL DRIVE
6" PINE
#602/1
5+00
RIP–RAP
GUY #6 P.2–1 6
GUY
SIGN
TMH
UFOC MKR
EXISTING OUTFALL: DENSE VEGETATION IN A STABLE STONE LINED CHANNEL ON A STEEP GRADE
FIRST BRANCH OF THE WHITE RIVER
BRUSH/WOODS
OVERGROWN RIVER ACCESS
EXISTING OUTFALL: STABLE STONE LINED CHANNEL ON A MODERATE TO STEEP GRADE
EXIST. 18" CMP
4+00
S32°14'56"W
RIPARIAN BUFFER
PAVED DRIVE – AUTO DEALER
FIELD
GRAVEL DRIVE
N22°14'56"E
10+00
11+00
12+
GRAVEL PATH
8" CONC. WALL (3' HIGH)
MATCH
SCALE IN FEET
0 20 40

EXISTING CONDITIONS SITE PLAN 1

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TUS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET	28E	OF	76 SHEETS

PLAN	BY	DATE
SURVEYED		
PLOTTED		
NOTE BOOK	ALIGNMENT CHECKED	
NO.	ST. OF WAY CHECKED	

WHITE RIVER

MAG 1985

N

LINE

MATCH

#4

#6/5

#5S

FLAT

1-2

1-3

1-4

1-5

1-6

1-10

22+00

CONC. PAD

6" CONC. WALL

CONCRETE PAD

GRAVEL DRIVE

BRUSH

21+00

FIELD

RIPARIAN BUFFER

1-00

131+00

132+00

133+00

134+00

GUY POLE

PIPE RAILING W/12" x 12" CONC. POSTS

GRAVEL PATH

8" CONC. WALL (3' HIGH)

CONC. STEPS

SURV PC = 130+27.65

WOODS

CEMETERY

UFOC

4 SIGN

GRAV. DRIVE (CEMETERY)

HEADSTONE LINE

SURV PT = 134+94.84

VT ROUTE 14 TO BETHEL

SOILS CLASSIFICATION BOUNDARY

SOIL INFORMATION
AGAWAM FINE SANDY LOAM,
0 TO 3 PERCENT SLOPES
HYDROLOGICAL SOIL GROUP B
DEPTH TO BEDROCK 60'
DEPTH TO WATER TABLE, 6'
NOT HIGHLY ERODIBLE SOIL

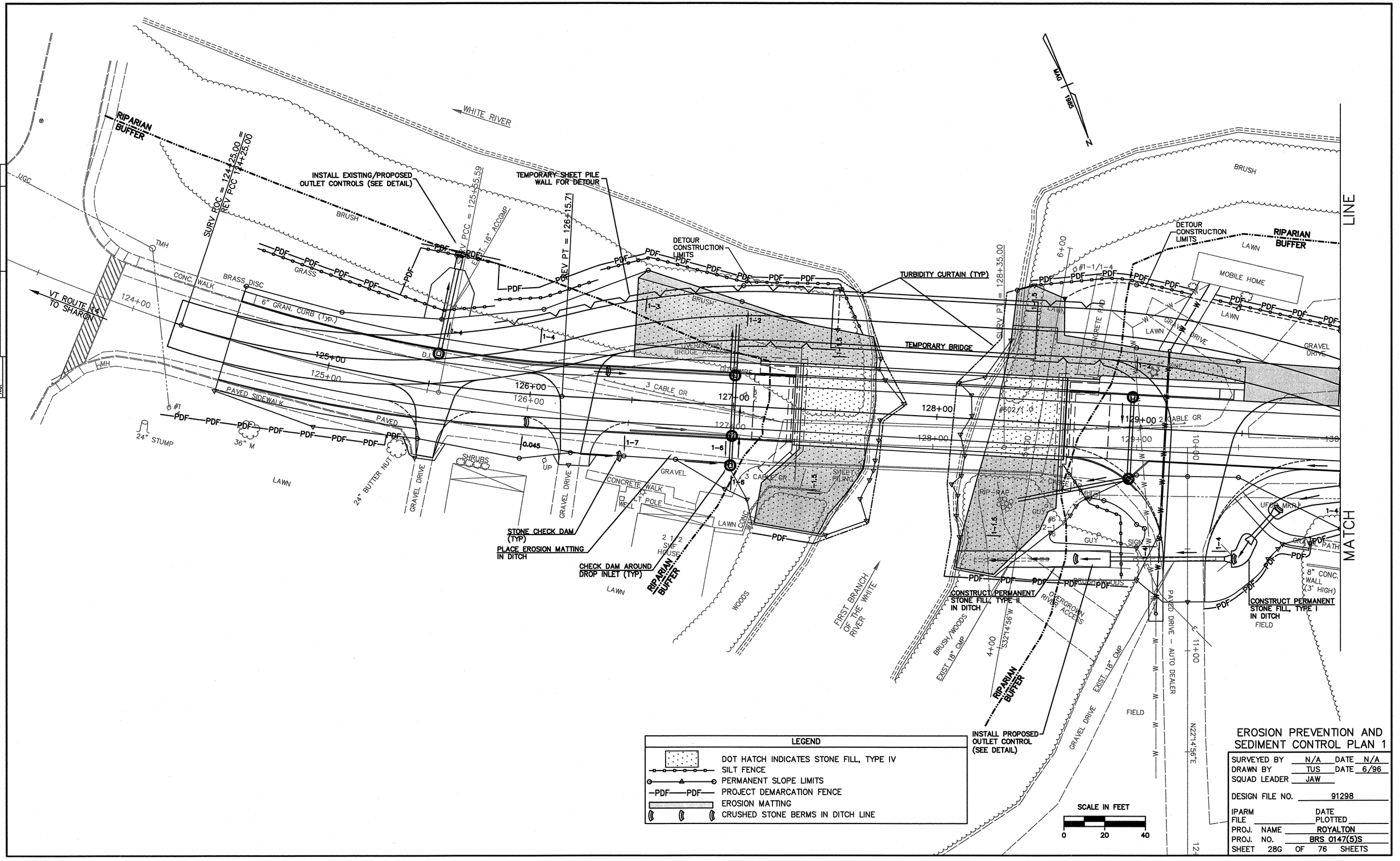
SOIL INFORMATION
AGAWAM FINE SANDY LOAM,
3 TO 8 PERCENT SLOPES
HYDROLOGICAL SOIL GROUP B
DEPTH TO BEDROCK 60'
DEPTH TO WATER TABLE, 6'
POTENTIALLY HIGHLY ERODIBLE SOIL

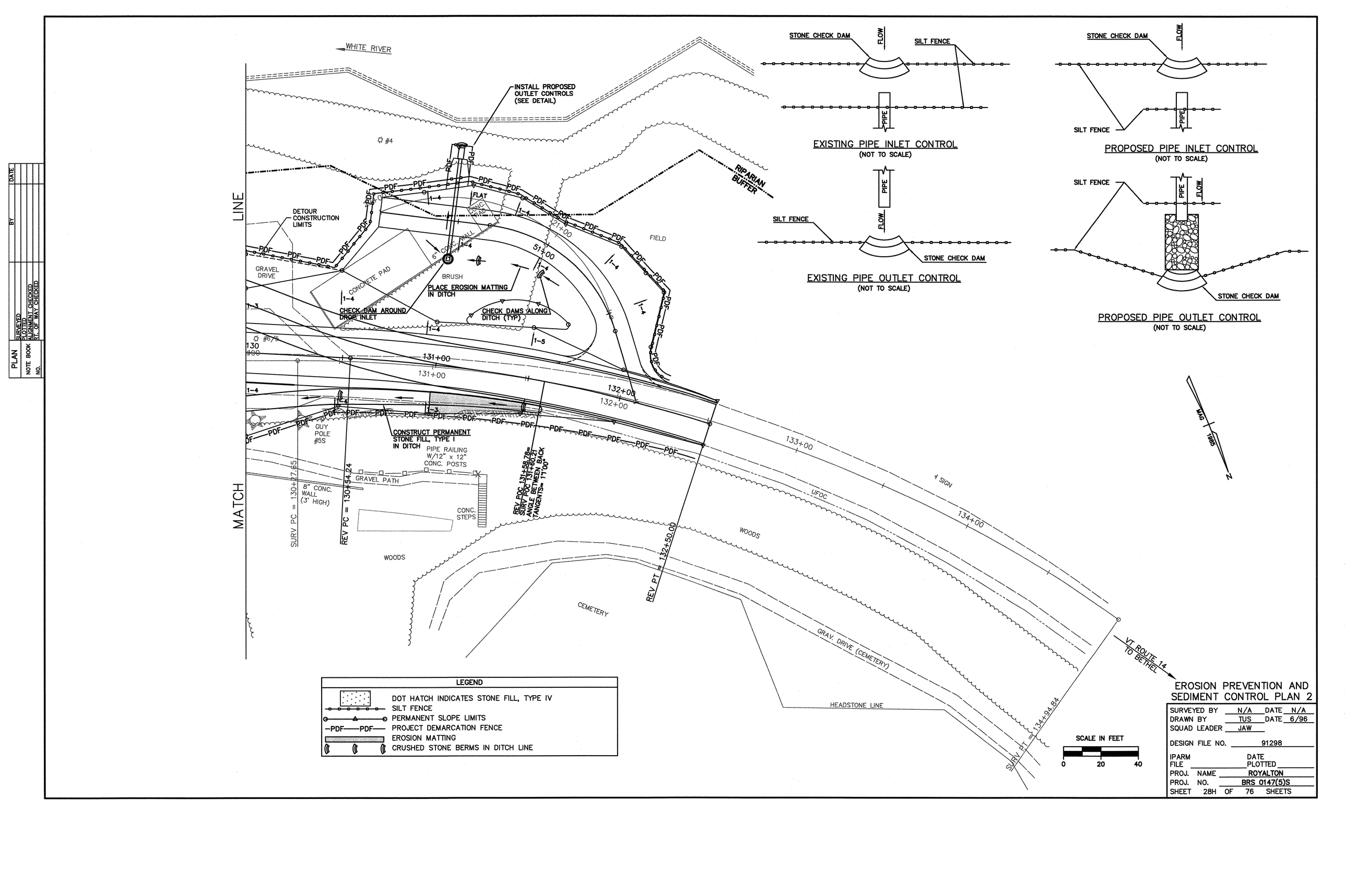
SCALE IN FEET

0 20 40

EXISTING CONDITIONS SITE PLAN 2

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TUS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET	28F	OF	76 SHEETS


WHITE RIVER
RIPARIAN BUFFER
INSTALL EXISTING/PROPOSED OUTLET CONTROLS (SEE DETAIL)
TEMPORARY SHEET PILE WALL FOR DETOUR
DETOUR CONSTRUCTION LIMITS
TURBIDITY CURTAIN (TYP)
TEMPORARY BRIDGE
SURV ROC = 124+25.00 = REV POC = 124+25.00
SURV POC = 125+55.59
EXIST. 18" ACCOMP
REV PT = 126+15.71
SURV PT = 128+35.00
VT ROUTE 14 TO SHARON
CONC. WALK
BRASS DISC
6" GRAN. CURB (TYP.)
PAVED SIDEWALK
PAVED
LAWN
GRASS
BRUSH
TMH
L-MH
24" STUMP
36" M
24" BUTTER NUT
SHRUBS
GRAVEL DRIVE
CONCRETE WALK
T POLE
WELL
SHED
RIVERCROWN BRIDGE ACCESS
GUARDRAIL
3 CABLE GR
SHEET PILING
RIP-RAP
CONCRETE PAD
MOBILE HOME
GRAVEL DRIVE
CONCRETE PAD
GUY
SIGN
UTILITY MKR
GRAVEL PATH
8" CONC. WALL (3' HIGH)
FIELD
PAVED DRIVE - AUTO DEALER
STONE CHECK DAM (TYP)
PLACE EROSION MATTING IN DITCH
CHECK DAM AROUND DROP INLET (TYP)
CONSTRUCT PERMANENT STONE FILL, TYPE II IN DITCH
CONSTRUCT PERMANENT STONE FILL, TYPE I IN DITCH
INSTALL PROPOSED OUTLET CONTROL (SEE DETAIL)
RIPARIAN BUFFER
WOODS
FIRST BRANCH OF THE WHITE RIVER
BRUSH/WOODS
EXIST. 18" CMP
S32°14'56"W
N22°14'56"E
4+00
6+00
10+00
11+00
124+00
125+00
126+00
127+00
128+00
129+00
130
MATCH LINE
MAG 1985
N
LEGEND
DOT HATCH INDICATES STONE FILL, TYPE IV
SILT FENCE
PERMANENT SLOPE LIMITS
PROJECT DEMARCATION FENCE
EROSION MATTING
CRUSHED STONE BERMS IN DITCH LINE
SCALE IN FEET
0
20
40
EROSION PREVENTION AND SEDIMENT CONTROL PLAN 1
SURVEYED BY N/A DATE N/A
DRAWN BY TUS DATE 6/96
SQUAD LEADER JAW
DESIGN FILE NO. 91298
IPARM FILE
DATE PLOTTED
PROJ. NAME ROYALTON
PROJ. NO. BRS 0147(5)S
SHEET 28G OF 76 SHEETS
PLAN
NOTE BOOK
NO.
SURVEYED
ALIGNMENT CHECKED
R/W CHECKED
BY
DATE



STONE CHECK DAM
FLOW
SILT FENCE
PIPE

EXISTING PIPE INLET CONTROL
(NOT TO SCALE)

PROPOSED PIPE INLET CONTROL
(NOT TO SCALE)

EXISTING PIPE OUTLET CONTROL
(NOT TO SCALE)

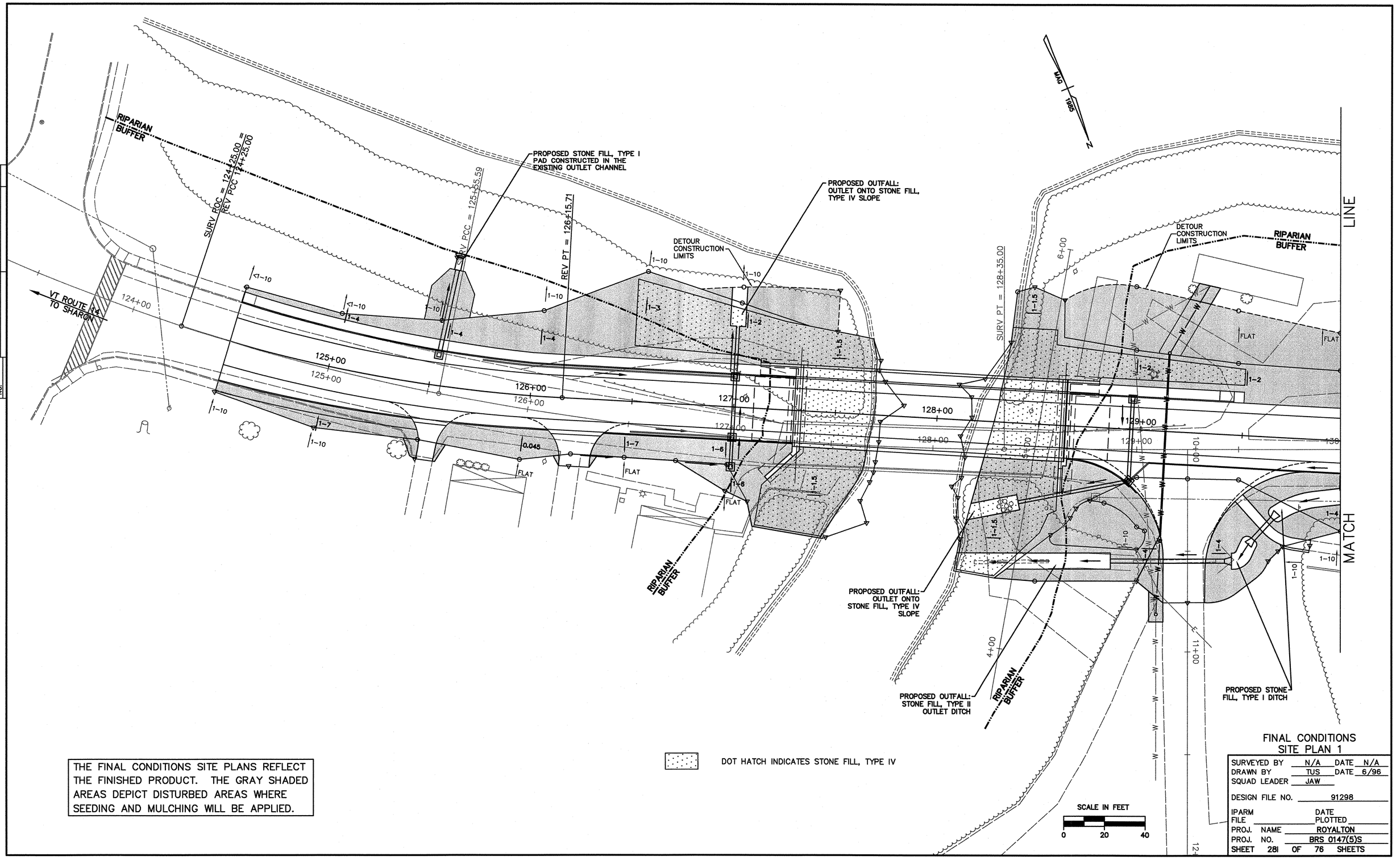
PROPOSED PIPE OUTLET CONTROL
(NOT TO SCALE)

LEGEND	
	DOT HATCH INDICATES STONE FILL, TYPE IV
	SILT FENCE
	PERMANENT SLOPE LIMITS
—PDF—PDF—	PROJECT DEMARCATION FENCE
	EROSION MATTING
	CRUSHED STONE BERMS IN DITCH LINE

EROSION PREVENTION AND SEDIMENT CONTROL PLAN 2

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TJS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET	28H OF 76 SHEETS		

PLAN	BY	DATE
NOTE BOOK		
NO.		
SURVEYED		
DRAWN		
ALIGNMENT CHECKED		
RT. OF WAY CHECKED		



DOT HATCH INDICATES STONE FILL, TYPE IV

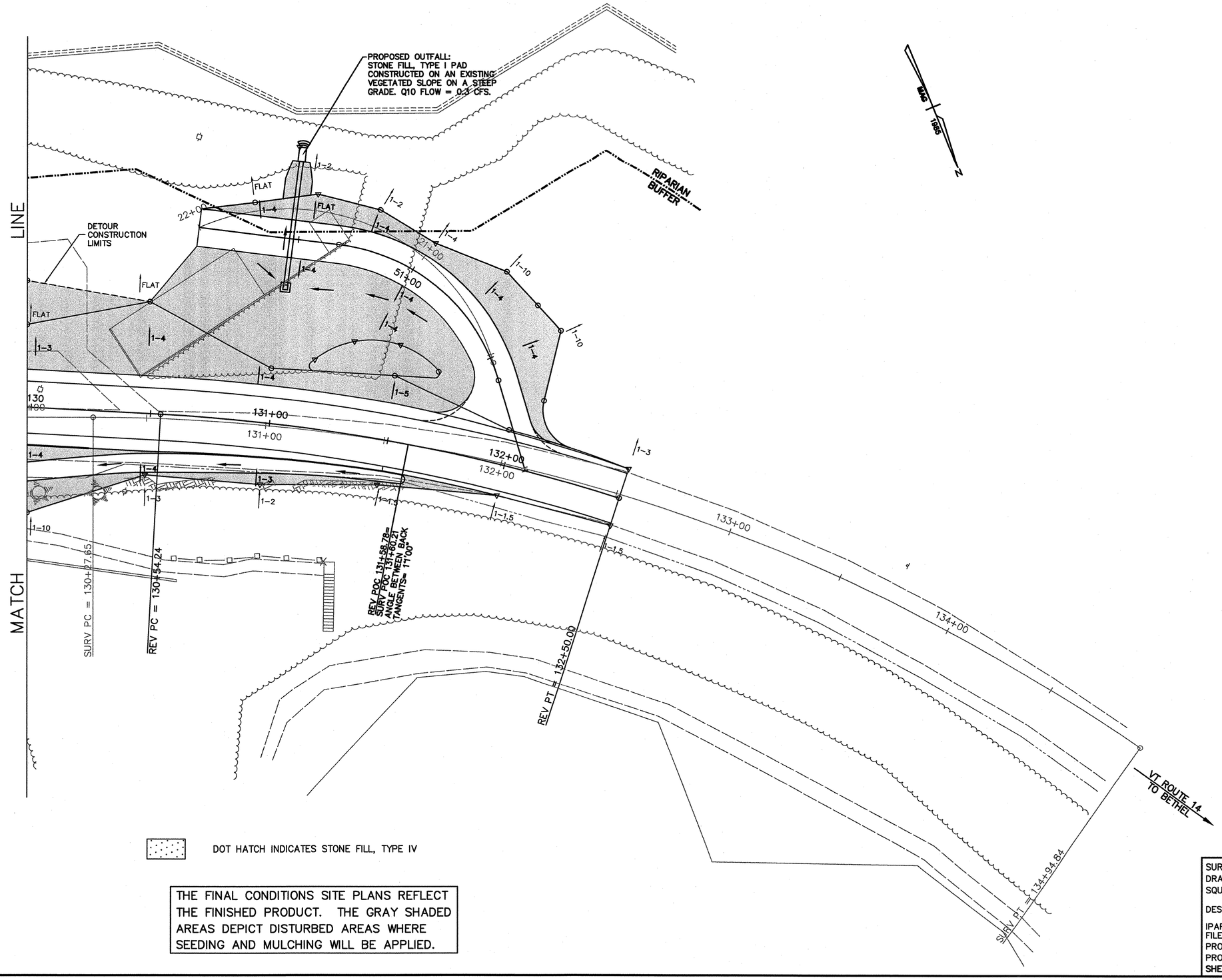
THE FINAL CONDITIONS SITE PLANS REFLECT THE FINISHED PRODUCT. THE GRAY SHADED AREAS DEPICT DISTURBED AREAS WHERE SEEDING AND MULCHING WILL BE APPLIED.

SCALE IN FEET
0 20 40

FINAL CONDITIONS SITE PLAN 1

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TJS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET 281 OF 76 SHEETS			

PLAN	BY	DATE
SURVEYED		
NOTE BOOK	ALIGNMENT CHECKED	
NO.	RT. OF WAY CHECKED	



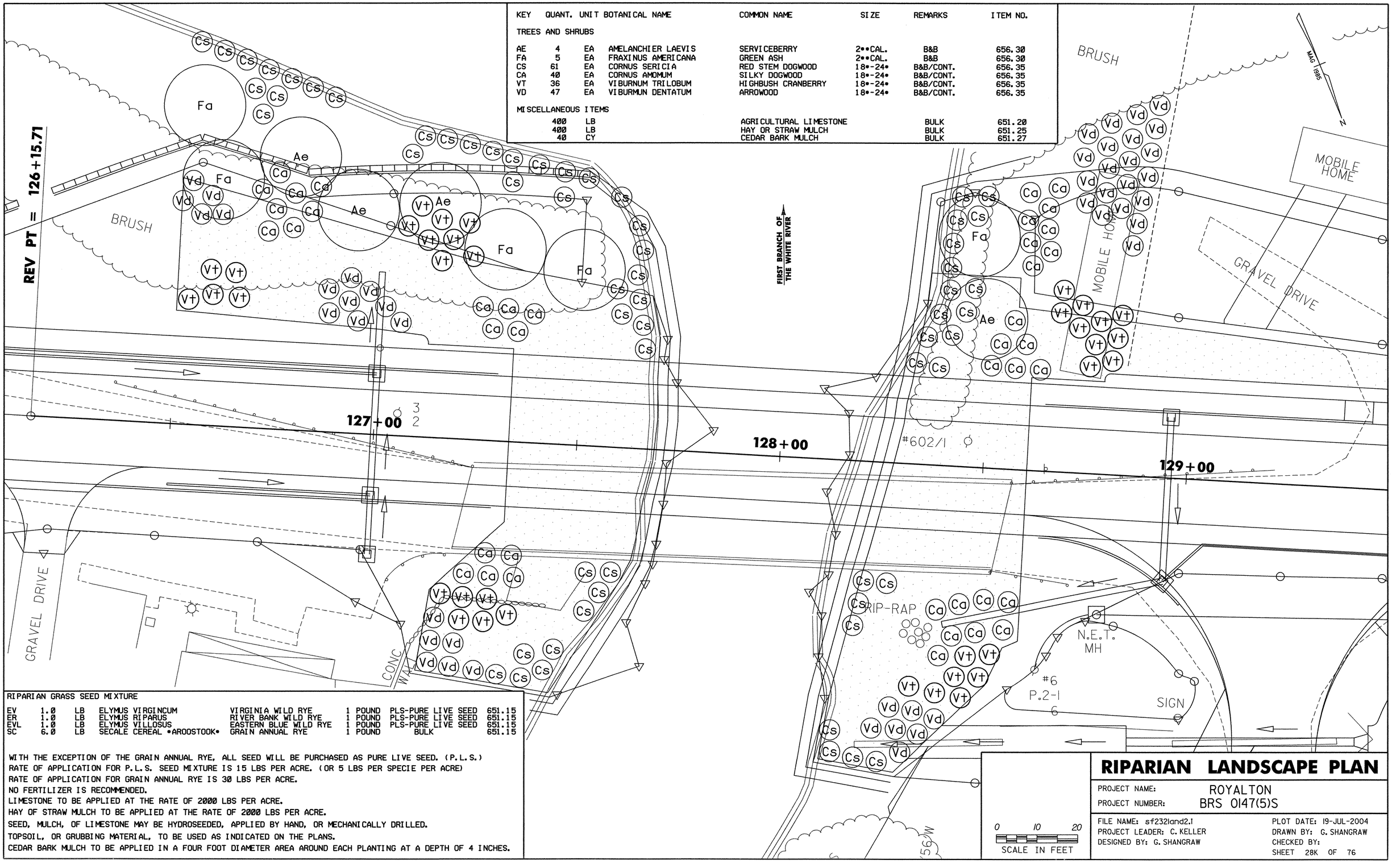
DOT HATCH INDICATES STONE FILL, TYPE IV

THE FINAL CONDITIONS SITE PLANS REFLECT THE FINISHED PRODUCT. THE GRAY SHADED AREAS DEPICT DISTURBED AREAS WHERE SEEDING AND MULCHING WILL BE APPLIED.

PLAN NOTE BOOK NO.	SURVEYED ALIGNMENT CHECKED RT. OF WAY CHECKED	BY	DATE

FINAL CONDITIONS
SITE PLAN 2

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TUS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET	28J OF 76 SHEETS		



KEY	QUANT.	UNIT	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	ITEM NO.
TREES AND SHRUBS							
AE	4	EA	AMELANCHIER LAEVIS	SERVICEBERRY	2••CAL.	B&B	656.30
FA	5	EA	FRAXINUS AMERICANA	GREEN ASH	2••CAL.	B&B	656.30
CS	61	EA	CORNUS SERICIA	RED STEM DOGWOOD	18•-24•	B&B/CONT.	656.35
CA	40	EA	CORNUS AMOMUM	SILKY DOGWOOD	18•-24•	B&B/CONT.	656.35
VT	36	EA	VIBURNUM TRILOBUM	HIGHBUSH CRANBERRY	18•-24•	B&B/CONT.	656.35
VD	47	EA	VIBURMUN DENTATUM	ARROWOOD	18•-24•	B&B/CONT.	656.35
MISCELLANEOUS ITEMS							
	400	LB		AGRICULTURAL LIMESTONE		BULK	651.20
	400	LB		HAY OR STRAW MULCH		BULK	651.25
	40	CY		CEDAR BARK MULCH		BULK	651.27

RIPARIAN GRASS SEED MIXTURE

EV	1.0	LB	ELYMUS VIRGINCUM	VIRGINIA WILD RYE	1 POUND	PLS-PURE LIVE SEED	651.15
ER	1.0	LB	ELYMUS RIPARUS	RIVER BANK WILD RYE	1 POUND	PLS-PURE LIVE SEED	651.15
EVL	1.0	LB	ELYMUS VILLOSUS	EASTERN BLUE WILD RYE	1 POUND	PLS-PURE LIVE SEED	651.15
SC	6.0	LB	SECALE CEREAL •AROOSTOOK•	GRAIN ANNUAL RYE	1 POUND	BULK	651.15

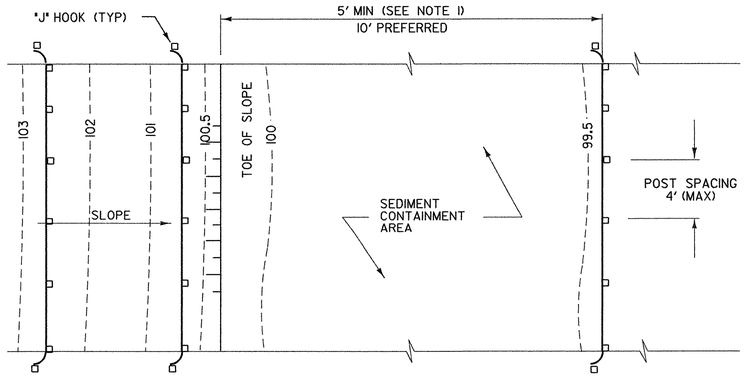
WITH THE EXCEPTION OF THE GRAIN ANNUAL RYE, ALL SEED WILL BE PURCHASED AS PURE LIVE SEED. (P.L.S.)
RATE OF APPLICATION FOR P.L.S. SEED MIXTURE IS 15 LBS PER ACRE. (OR 5 LBS PER SPECIE PER ACRE)
RATE OF APPLICATION FOR GRAIN ANNUAL RYE IS 30 LBS PER ACRE.
NO FERTILIZER IS RECOMMENDED.
LIMESTONE TO BE APPLIED AT THE RATE OF 2000 LBS PER ACRE.
HAY OF STRAW MULCH TO BE APPLIED AT THE RATE OF 2000 LBS PER ACRE.
SEED, MULCH, OF LIMESTONE MAY BE HYDROSEEDED, APPLIED BY HAND, OR MECHANICALLY DRILLED.
TOPSOIL, OR GRUBBING MATERIAL, TO BE USED AS INDICATED ON THE PLANS.
CEDAR BARK MULCH TO BE APPLIED IN A FOUR FOOT DIAMETER AREA AROUND EACH PLANTING AT A DEPTH OF 4 INCHES.

0 10 20
SCALE IN FEET

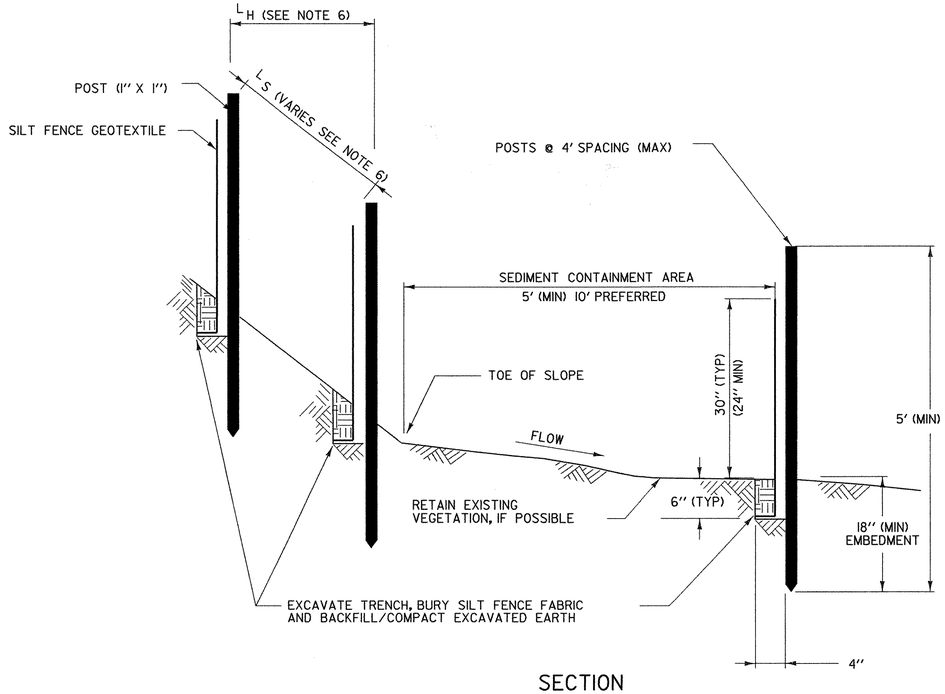
RIPARIAN LANDSCAPE PLAN

PROJECT NAME: ROYALTON
PROJECT NUMBER: BRS 0147(5)S

FILE NAME: sf232land2.1
PROJECT LEADER: C. KELLER
DESIGNED BY: G. SHANGRAW
PLOT DATE: 19-JUL-2004
DRAWN BY: G. SHANGRAW
CHECKED BY:
SHEET 28K OF 76



PLAN



SECTION

SILT FENCE - TEMPORARY

SILT FENCE

APPLICATION NOTES:

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

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

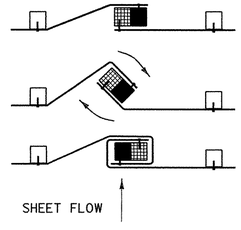
C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

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

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

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



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

SPLICING DETAIL

REVISIONS AND CORRECTIONS

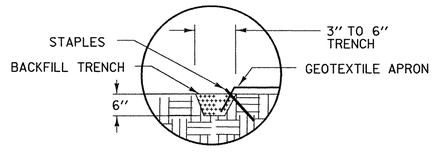
MAY 18, 2004 N. GARBACIK

EROSION PREVENTION & SEDIMENT CONTROL DETAILS SILT FENCE

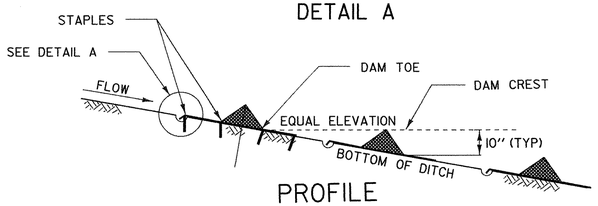
VERMONT AGENCY OF TRANSPORTATION

DETAIL

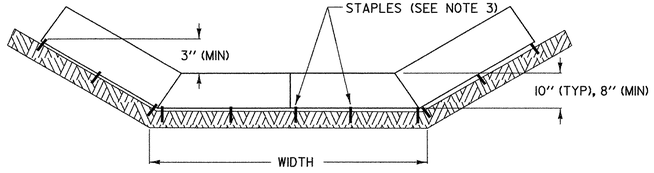
EPSC-1



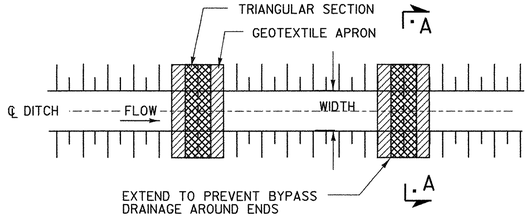
DETAIL A



PROFILE



SECTION A-A

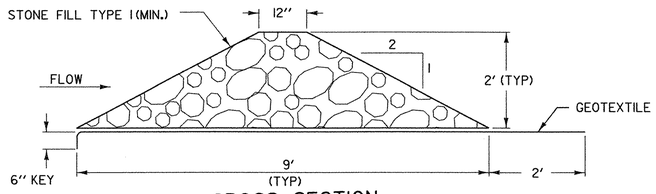


PLAN

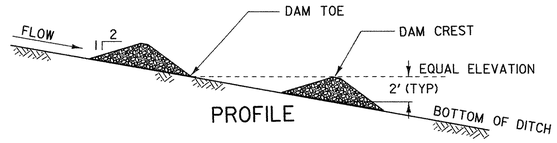
CHECK DAM - TEMPORARY (PREFABRICATED)

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

** BASED ON 10" TYPICAL HEIGHT



CROSS SECTION



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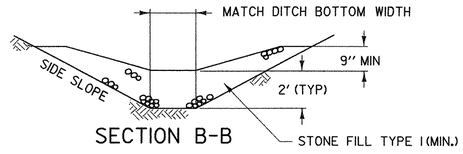
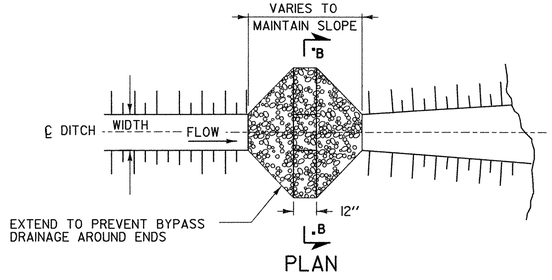


SECTION B-B



PLAN

CHECK DAM - TEMPORARY (STONE)

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

** BASED ON 2' TYPICAL HEIGHT

CHECK DAMS

APPLICATION NOTES:

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

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

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

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

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

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

GENERAL NOTES:

1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.

2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.

3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL 'A' OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.

4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.

7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.

8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

REVISIONS AND CORRECTIONS

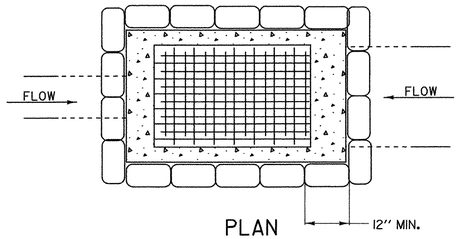
MAY 18, 2004 N. GARBACIK

EROSION PREVENTION & SEDIMENT CONTROL DETAILS CHECK DAMS

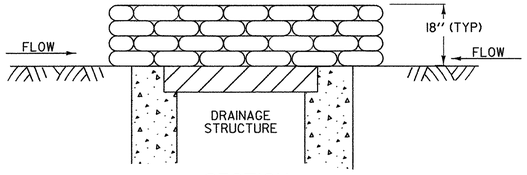
VERMONT AGENCY OF TRANSPORTATION

DETAIL

EPSC-2

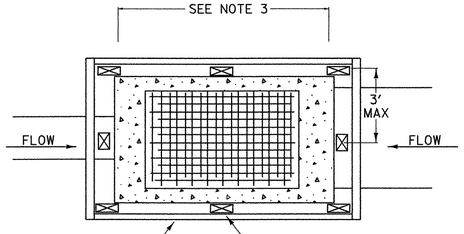


PLAN

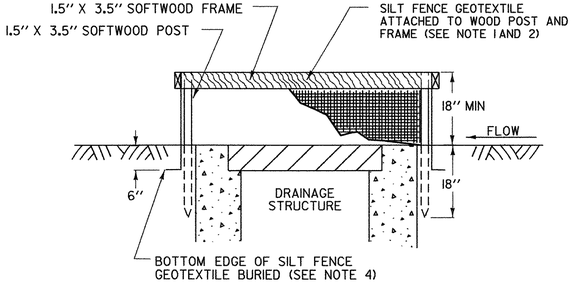


SECTION

GRAVEL BAG DROP INLET PROTECTION

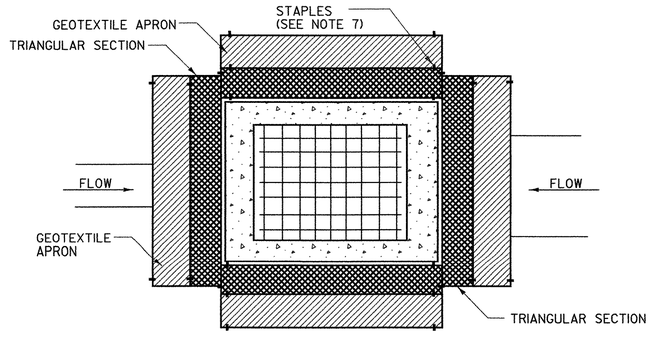


PLAN

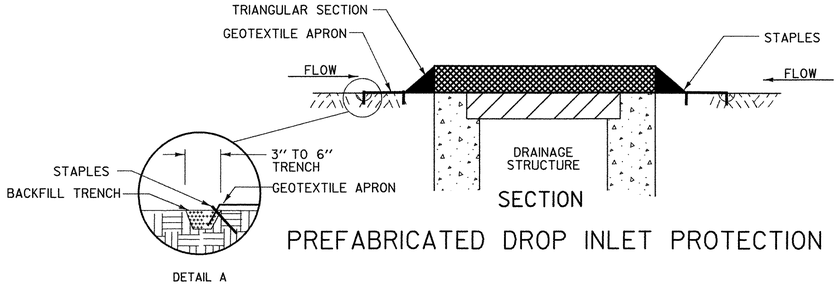


SECTION

SILT FENCE DROP INLET PROTECTION



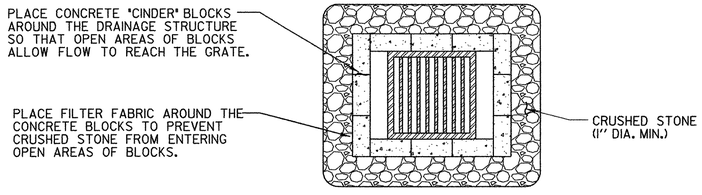
PLAN



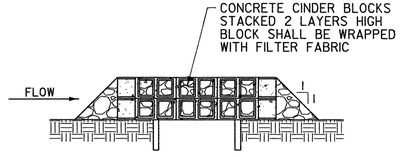
SECTION

DETAIL A

PREFABRICATED DROP INLET PROTECTION



PLAN



SECTION

ROCK BARRIER DROP INLET PROTECTION TEMPORARY PAVED AREAS

DROP INLET PROTECTION

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF DRAINAGE STRUCTURE INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM BY PONDING WATER WHICH ALLOWS SEDIMENT TO FALL OUT OF SUSPENSION.

B. THESE EXAMPLES OF DROP INLET PROTECTION ARE NOT INTENDED FOR USE ON GRADES. ON GRADE THEY MAY CAUSE WATER TO BYPASS THE STRUCTURE, CREATING ADDITIONAL EROSION OR FLOODING.

C. POSSIBLE MODIFICATIONS FOR USE ON GRADE INCLUDE ADDING A BERM DOWNSTREAM OF THE INLET TO CREATE PONDING. CHECK DAMS MAY ALSO BE USED UPSTREAM OF THE INLET TO SLOW VELOCITIES.

D. PREFABRICATED DROP INLET PROTECTION SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

1. THE TOP OF THE INLET PROTECTION SHALL BE SET AT THE MAXIMUM DESIRED WATER LEVEL, BASED ON FIELD LOCATION AND CONDITIONS.

2. SILT FENCE GEOTEXTILE SHALL BE A SINGLE CONTINUOUS PIECE TO ELIMINATE JOINTS.

3. SPACE SILT FENCE POSTS EVENLY AROUND INLET WITH A MAXIMUM SPACING OF 3 FEET. DRIVE POSTS A MINIMUM OF 18 INCHES INTO GROUND. WIRE MESH MAY BE REQUIRED BEHIND GEOTEXTILE TO PROVIDE SUPPORT.

4. SILT FENCE GEOTEXTILE SHALL BE EMBEDDED A MINIMUM OF 6 INCHES AND BACKFILLED. GEOTEXTILE SHALL BE SECURELY FASTENED TO POSTS AND FRAME.

5. GRAVEL BAGS SHALL BE FILLED WITH CLEAN STONE, RATHER THAN SAND, TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM IF BAGS ARE DAMAGED DURING USE.

6. GRAVEL BAGS SHALL BE INDIVIDUALLY TIED, DOUBLE BAGGED AND INVERSELY INSERTED. GRAVEL BAGS SHALL LAP THE JOINTS BETWEEN THE BAGS IN THE LAYER BELOW.

7. SECURE THE ENDS OF THE APRON FOR THE PREFABRICATED DRAINAGE STRUCTURE INLET PROTECTION WITH STAPLES AS DETAILED IN THE PLAN VIEW OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.

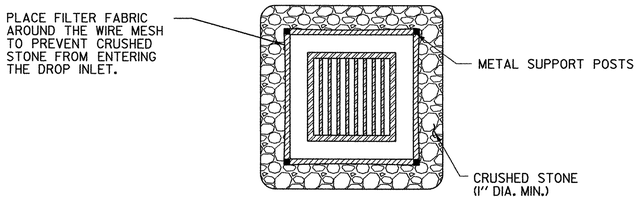
8. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

9. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED, SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

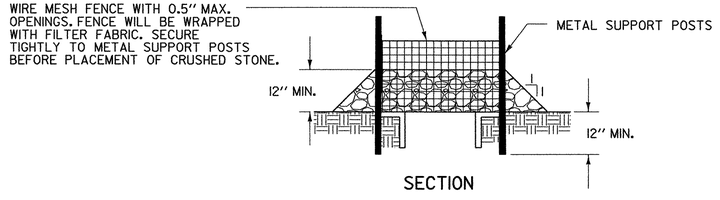
10. PAYMENT OF INLET PROTECTION SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.

11. PAYMENT FOR MONITORING INLET PROTECTION SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

12. PAYMENT FOR MAINTAINING INLET PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



PLAN



SECTION

ROCK BARRIER INLET PROTECTION TEMPORARY UNPAVED AREAS

REVISIONS AND CORRECTIONS

MAY 18, 2004 N. GARBACIK

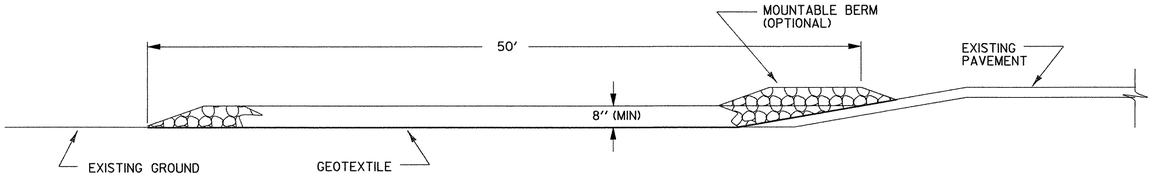
EROSION PREVENTION & SEDIMENT CONTROL DETAILS DROP INLET PROTECTION

VERMONT AGENCY OF TRANSPORTATION

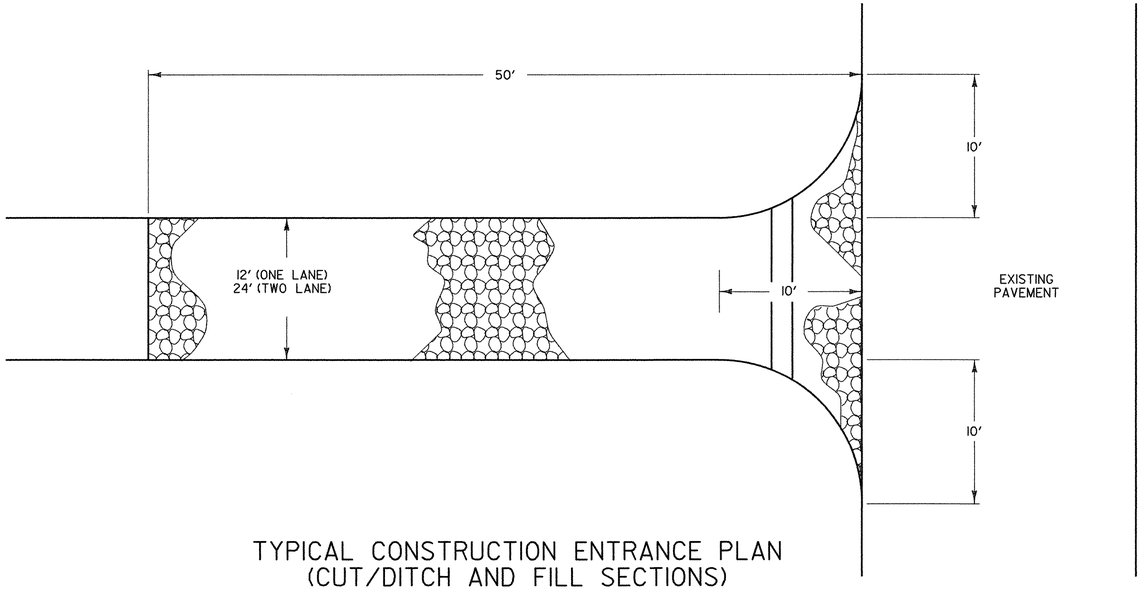
DETAIL

EPSC-3

STABILIZED CONSTRUCTION ENTRANCE



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



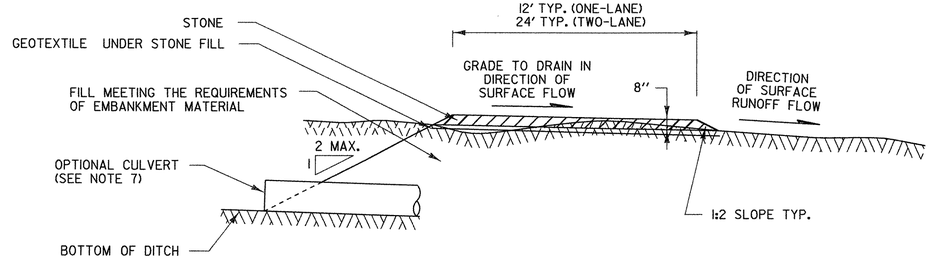
TYPICAL CONSTRUCTION ENTRANCE PLAN
(CUT/DITCH AND FILL SECTIONS)

APPLICATION NOTES:

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

GENERAL NOTES:

1. STONE SIZE - USE CLEAN STONE WITH GRADATION BETWEEN 2 INCHES AND 4 INCHES .
2. LENGTH - 50 FEET (MIN)
3. THICKNESS - 18 INCHES (MIN)
4. WIDTH - 12 FEET (MIN)
5. GEOTEXTILE UNDER STONE WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN WASHING OF VEHICLE IS NECESSARY, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. AT THE TIME OF REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
12. PAYMENT OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
13. PAYMENT FOR MONITORING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
14. PAYMENT FOR MAINTAINING THE CONSTRUCTION ENTRANCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



TYPICAL CONSTRUCTION ENTRANCE SECTION

REVISIONS AND CORRECTIONS

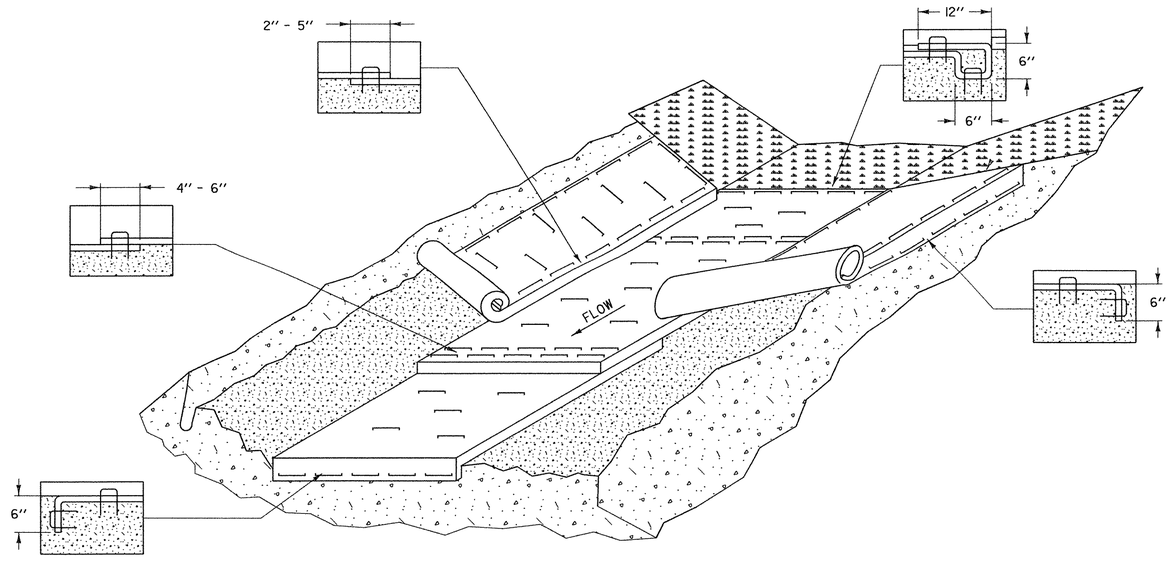
MAY 18, 2004 N. GARBACIK

EROSION PREVENTION & SEDIMENT CONTROL DETAILS CONSTRUCTION ENTRANCE

VERMONT AGENCY OF TRANSPORTATION

DETAIL

EPSC-4



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

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

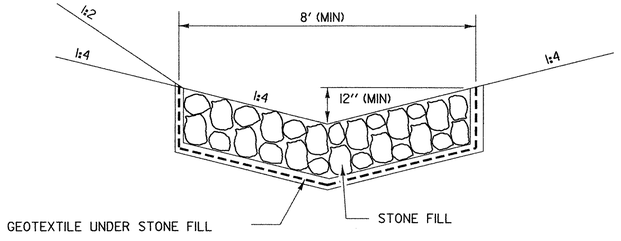
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

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

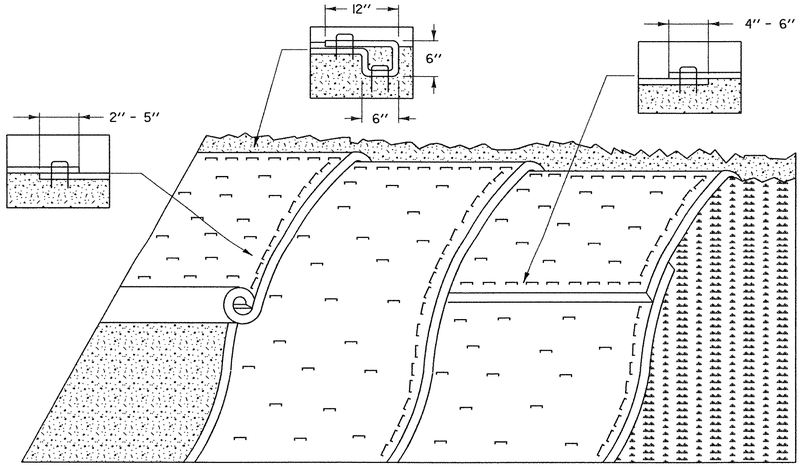
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	1 FT
TYPE II	2 FT

GENERAL NOTES:

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



TEMPORARY
STONE LINED
DITCH



EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

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

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

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

GENERAL NOTES:

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

REVISIONS AND CORRECTIONS

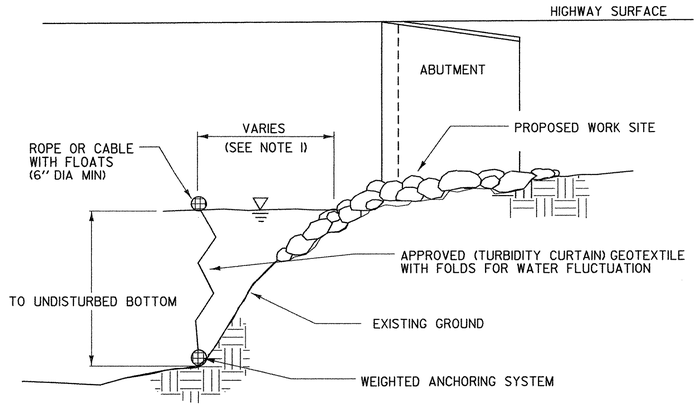
MAY 18, 2004 N. GARBACIK

EROSION PREVENTION & SEDIMENT CONTROL DETAILS DITCH & SLOPE PROTECTION

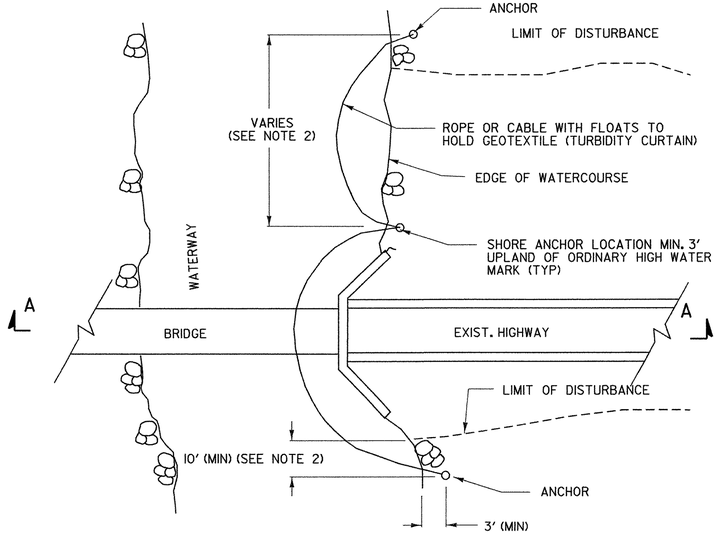
VERMONT AGENCY OF TRANSPORTATION

DETAIL

EPSC-5



SECTION A-A



PLAN

TURBIDITY CURTAIN - TEMPORARY

TURBIDITY CURTAIN

APPLICATION NOTES:

A. THE PURPOSE OF A TURBIDITY CURTAIN IS TO SEPARATE WORK AREAS IN OR ADJACENT TO WATERS, TO PREVENT SEDIMENT FROM ENTERING THE WATERS.

B. TURBIDITY CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FT/SEC.

C. TURBIDITY CURTAIN SHALL NOT BE PLACED AT THE OUTLET OF A CULVERT OR DITCH UNLESS THE VELOCITY DOES NOT EXCEED 1.5 FT/SEC.

D. THE DETAIL DEPICTS WORK AT A BRIDGE LOCATION, BUT TURBIDITY CURTAIN MAY BE APPLIED AT OTHER LOCATIONS.

GENERAL NOTES:

1. THE TURBIDITY CURTAIN SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.
2. THE TURBIDITY CURTAIN SHALL BE A MAXIMUM OF 100 FEET LONG BETWEEN ANCHORS. LAST SECTION SHALL TERMINATE A MINIMUM OF 10 FEET BEYOND THE LIMIT OF DISTURBANCE.
3. THE CONTRACTOR SHALL MONITOR THE TURBIDITY CURTAIN, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE TURBIDITY CURTAIN.
4. THE TURBIDITY CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.
5. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE THAT ALLOWS THE CURTAIN TO CONFORM TO THE CONTOUR ON THE BOTTOM OF THE WATERWAY.
6. PAYMENT FOR INSTALLATION AND REMOVAL OF THE TURBIDITY CURTAIN SHALL BE MADE UNDER THE GEOTEXTILE FOR FILTER CURTAIN ITEM.
7. PAYMENT FOR MONITORING TURBIDITY CURTAIN SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
8. PAYMENT FOR MAINTAINING TURBIDITY CURTAIN SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

REVISIONS AND CORRECTIONS

MAY 18, 2004 N. GARBACIK

EROSION PREVENTION & SEDIMENT CONTROL DETAILS TURBIDITY CURTAIN

VERMONT AGENCY OF TRANSPORTATION

DETAIL

EPSC-6

PAVEMENT MARKINGS

DURABLE 4" DOUBLE YELLOW LINE
REV 124+50 TO 132+50 (CENTERLINE)

DURABLE 4" WHITE LINE
REV 124+50 TO 132+50 LT
REV 124+50 TO 132+50 RT

REMOVING SIGNS
47 EACH

TEMPORARY 4" DOUBLE YELLOW LINE
REV 124+50 TO 132+50 (CENTERLINE)

TEMPORARY 4" WHITE LINE
REV 124+50 TO 132+50 LT
REV 124+50 TO 132+50 RT

REV 123+85 LT
LEGAL LOAD UNIT 34,000 POUNDS
SPEED LIMIT 25
RETAIN (2)

STA 120+16 LT
SHARON 5
NEW

STA 123+89 LT
NEW (2)

REV 123+85 LT
SOUTH VERMONT 14
NORTH VERMONT 14
NEW (6)

STA 123+70 LT
CHELSEA ST
RETAIN
REMOVE AND SALVAGE

STA 123+89 LT
REMOVE

REV 123+85 LT
SOUTH 14
NORTH 14
REMOVE (6)

REV 125+08 LT
NORTH VERMONT 110
SOUTH VERMONT 14
NEW (6)

STA 123+00 LT
CHELSEA ST
SALVAGED (1)

REV 124+33 LT
NORTH 110
SOUTH 14
REMOVE (6)

REV 126+17 LT
SHARON 5
TUNBRIDGE 6
SOUTH ROYALTON
NEW (3)

REV 125+42 LT
SHARON 5
TUNBRIDGE 6
SOUTH ROYALTON
REMOVE (3)

REV 127+10 LT
REMOVE

REV 128+57 LT
REMOVE

REV 128+75 LT
BRIDGE 21 VT 14
NEW

REV 129+00 LT
AHEAD
NEW (2)

REV 131+17 LT
JCT VERMONT 110
NEW (2)

REV 131+17 LT
JCT 110
REMOVE (2)

SURV P.O.C. 124+25.00
REV PCC 124+25.00

SURV PT = 121+68.86

SURV PCC = 125+38.59

REV PT = 126+15.71

SURV PT = 128+38.00

REV PC = 130+64.24

REV PT = 130+50.00

REV P.O.C. 131+58.78=
SURV P.O.C. 131+60.21
ANGLE BETWEEN BACK
TANGENTS= 1°00'00"

SURV PT = 134+94.84

NEW
BETHEL 7
REV 130+78 RT

REMOVE (1)
STA 110+83 RT

REMOVE (3)
JCT VERMONT 110
0140 1416 0222
STA 116+83 RT

STA 122+16 LT
SOUTH 14
REMOVE (2)

STA 122+16 LT
SOUTH VERMONT 14
NEW (2)

REMOVE (2)
NORTH 14
STA 124+14 RT

NEW (2)
NORTH VERMONT 14
STA 124+14 RT

REMOVE (2)
SPEED LIMIT 35
0140 1416 0240
REV 127+14 RT

REMOVE
REV 127+21 RT

REMOVE
REV 128+53 RT

NEW (2)
AHEAD
STA 110+83 RT

NEW (3)
JCT VERMONT 110
0140 1416 0222
STA 116+83 RT

REMOVE (3)
BETHEL 7
SOUTH ROYALTON
TUNBRIDGE 6
STA 118+48 RT

NEW (3)
BETHEL 7
SOUTH ROYALTON
TUNBRIDGE 6
STA 118+48 RT

REV 120+88 RT
NORTH 14
NORTH VERMONT 110
REMOVE (6)

REV 120+88 RT
NORTH VERMONT 14
NORTH VERMONT 110
NEW (6)

REMOVE
TD
STA 123+81 RT

NEW (2)
STA 123+81 RT

NEW (3)
SPEED LIMIT 35
BRIDGE 21 VT 14
0140 1416 0240
REV 127+20 RT

STA 129+41 RT
PVT CRAWFORD AUTO LN
REMOVE & SALVAGE

STA 129+41 RT
PVT CRAWFORD AUTO LN
SALVAGED

STA 137+80 LT
HIDDEN DRIVE LEFT
R
0140 1416 0262
R
REMOVE (2)

STA 138+15 LT
HIDDEN DRIVE LEFT
TRUCKS ENTERING
NEW (2)

STA 137+80 LT
0140 1416 0262
NEW

LEGEND
DSWL – DURABLE SOLID WHITE LINE
DDYL – DURABLE DOUBLE YELLOW LINE
R – REMOVE
R&S – REMOVE & SALVAGE
S – SALVAGED
N – NEW

SCALE IN FEET
0 25 50 100

TRAFFIC SIGN & PAVEMENT MARKING SHEET

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TJS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET	31 OF 76 SHEETS		

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 lb/ft 2.16	2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 lb/ft 1.7	4.0 MOD lb/ft 1.7	TUBULAR STEEL Ø (in) FOUNDATION	3.0 lb/ft 7.6	3.5 lb/ft 9.0	4.0 lb/ft 10.8	5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																									
STA 110+83 RT		1	30"	30"	6.25						1			X			X	X															W11-2 FLORESCENT YELLOW GREEN SHEETING		E-152
	AHEAD	1	24"	10"	1.67																											W16-9P FLORESCENT YELLOW GREEN SHEETING		
STA 116+83 RT	JCT	1	21"	15"	2.19						1			X			X	X															M2-1		E-136B
	VERMONT 110	1	30"	24"	5.00																											M1-5B		E-136B
	0140 1416 0222	1	6"	8"	0.33																													E-138
STA 118+48 RT	BETHEL 7	3	72"	10"	15.00						2			X			X	X															D1-1A		E-123
	SOUTH ROYALTON																															D1-1		E-123
	TUNBRIDGE 6																															D1-1A		E-123
STA 120+16 LT	SHARON 5	1	72"	10"	5.00						2			X			X	X															D2-1		E-123
STA 120+88 RT	NORTH NORTH	2	24"	12"	4.00						1												X	X							X	M3-1 M3-1		E-136B
	VERMONT 14 VERMONT 110	1 1	24" 30"	24" 24"	4.00 5.00																											M1-5A M1-5B		E-136B
		2	21"	15"	4.38																											M6-3 M6-1R		E-136B
												FT	FT	FT 105	FT	FT	FT 105		EA	LB	LB	LB		LB 114	LB	LB	LB							
TOTALS			SF 52.82	SF	EA.	SF						FT 105			FT 105					LB			EA. 1	LB 114				EA.	EA.	LB					

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE."

PROJECT:	PROJECT NO. :
ROYALTON	BRS 0147(5)S

DESIGN FILE NAME: 91298SGN.dwg
IPARM FILE NAME:
SURVEYED BY: CLD
SQUAD LEADER: KEB
PLOT DATE:
SURVEY DATE:
DRAWN BY: TJS
SHEET: 32-A OF 76

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 lb/ft 2.16	2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 lb/ft 1.7	4.0 MOD lb/ft 1.7	TUBULAR STEEL Ø (in) FOUND-ATION	3.0 lb/ft 7.6	3.5 lb/ft 9.0	4.0 lb/ft 10.8	5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																									
STA 122+16 LT	SOUTH	1	24"	12"	2.00						1			X			X	X																M3-3		E-136B
	VERMONT 14	1	24"	24"	4.00																													M1-5A		E-136B
STA 123+00 LT	CHELSEA ST	1					1																										SALVAGED SIGN TO BE INSTALLED USING TOP MOUNTING BRACKET, MOUNTED PERPENDICULAR TO TOP OF POST FOR THE EXISTING STOP SIGN		
STA 123+81 RT		1	30"	30"	6.25						1			X			X	X																W11-2 FLORESCENT YELLOW AND GREEN SHEETING		E-152
		1	24"	12"	2.00																												W16-7 FLORESCENT YELLOW AND GREEN SHEETING	32-D	
REV 123+85 LT	SOUTH NORTH	2	24"	12"	4.00						1												X	X								X	M3-3 M3-1		E-136B
	VERMONT 14 VERMONT 14	1 1	24" 24"	24" 24"	4.00 4.00																												M1-5A M1-5A		E-136B
		2	21"	15"	4.38																												M6-1L M6-1R		E-136B
STA 123+89 LT		1	30"	30"	6.25						1			X			X	X																W11-2 FLORESCENT YELLOW AND GREEN SHEETING		E-152
		1	24"	12"	2.00																												W16-7 FLORESCENT YELLOW AND GREEN SHEETING	32-D	
STA 124+14 RT	NORTH	1	24"	12"	2.00						1			X			X	X																M3-1		E-136B
	VERMONT 14	1	24"	24"	4.00																													M1-5A		E-136B
												FT	FT	FT 60	FT	FT	FT 60		EA	LB	LB	LB		LB 114.0	LB	LB	LB								
TOTALS					SF 44.88	SF	EA. 1	SF				FT 60			FT 60					LB			EA. 1	LB 114.0				EA.	EA.	LB					

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE."

PROJECT: ROYALTON
PROJECT NO. : BRS 0147(5)S
DESIGN FILE NAME: 91298SGN.dwg
IPARM FILE NAME:
SURVEYED BY: CLD
SQUAD LEADER: KEB
PLOT DATE:
SURVEY DATE:
DRAWN BY: TUS
SHEET: 32-B OF 76

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 lb/ft 2.16	2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 lb/ft 1.7	4.0 MOD lb/ft 1.7	TUBULAR STEEL Ø (in) FOUND-ATION	3.0 lb/ft 7.6	3.5 lb/ft 9.0	4.0 lb/ft 10.8	5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN REQUIRED FRAMED	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																									
REV 125+08 LT	NORTH SOUTH	2	24"	12"	4.00						1												X	X								X	M3-1 M3-3		E-136B
	VERMONT 110 VERMONT 14	1 1	30" 24"	24" 24"	5.00 4.00																												M1-5B M1-5A		E-136B
		2	21"	15"	4.38																												M6-1L M6-3		E-136B
REV 126+17 LT	SHARON 5	3	72"	10"	15.00						2			X			X	X															D1-1A		E-123
	TUNBRIDGE 6																																D1-1A		E-123
	SOUTH ROYALTON																																D1-1		E-123
REV 127+20 RT	SPEED LIMIT 35	1	24"	30"	6.00						1			X			X	X															R2-1		E-142
	BRIDGE 21 VT 14	1	6"	8"	0.33																												VD-701		E-134
	0140 1416 0240	1	6"	8"	0.33																														E-138
REV 128+75 LT	BRIDGE 21 VT 14	1	6"	8"	0.33						1			X			X	X															VD-701		E-134
STA 129+00 LT		1	30"	30"	6.25						1			X			X	X															W11-2 FLORESCENT YELLOW GREEN SHEETING		E-152
	AHEAD	1	24"	10"	1.67																												W16-9P FLORESCENT YELLOW GREEN SHEETING		
												FT	FT	FT 75	FT	FT	FT 75		EA	LB	LB	LB		LB 114.0	LB	LB	LB								
TOTALS			SF 47.29	SF	EA.	SF						FT 75			FT 75					LB			EA. 1	LB 114.0				EA.	EA.	LB					

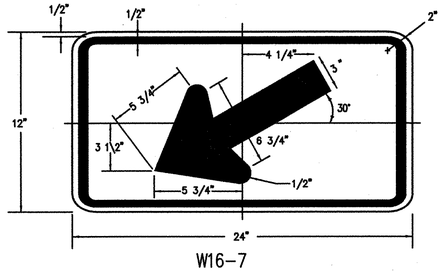
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE."

PROJECT: ROYALTON
PROJECT NO. : BRS 0147(5)S
DESIGN FILE NAME: 91298SGN.dwg
IPARM FILE NAME:
SURVEYED BY: CLD
SQUAD LEADER: KEB
PLOT DATE:
SURVEY DATE:
DRAWN BY: TJS
SHEET: 32-C OF 76

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 lb/ft 2.16	2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 lb/ft 1.7	4.0 MOD lb/ft 1.7	TUBULAR STEEL Ø (in) FOUNDATION	3.0 lb/ft 7.6	3.5 lb/ft 9.0	4.0 lb/ft 10.8	5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN REQUIRED FRAMED	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																									
REV 129+41 RT	CRAWFORD AUTO LN	1					1				1			X			X	X																SALVAGED SIGN TO BE INSTALLED USING TOP MOUNTING BRACKET		E-123
REV 130+78 RT	BETHEL 7	1	72"	10"	5.00						2			X			X	X																D2-1		E-123
REV 131+17 LT	JCT	1	21"	15"	2.19						1			X			X	X																M2-1		E-136B
	VERMONT 110	1	30"	24"	5.00																													M1-5B		E-136B
STA 137+80 LT	0140 1416 0262	1	6"	8"	0.33						1			X			X	X																		E-138
STA 138+15 LT	HIDDEN DRIVE LEFT	1	30"	30"	6.25						2			X			X	X																VW-133		E-154
	TRUCKS ENTERING	1	30"	30"	6.25																													VW-202		E-154
												FT	FT	FT 105	FT	FT	FT 105		EA	LB	LB	LB		LB	LB	LB	LB								
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE."	TOTALS		SF 25.02	SF	EA. 1	SF						FT 105			FT 105					LB			EA.	LB				EA.	EA.	LB					



W16-7

COLORS

FLUORESCENT YELLOW-GREEN BACKGROUND COLOR WITH A BLACK LEGEND AND BORDER.

MATERIALS

THE SIGN BASE MATERIALS USED FOR WARNING SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED:

	12" X 9" 18" X 18"	24" X 12" 24" X 18" 24" X 24" 24" X 30" 30" X 30"	36" X 36"	48" X 48"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"	0.125"
HIGH DENSITY OVERLAID PLYWOOD	1/2"	1/2"	5/8"	5/8"

THE REFLECTIVE MATERIAL SHALL BE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN. ASTM TYPE III REFLECTIVE SHEETING SHALL BE USED FOR THE SIGN BACKGROUND. FLOURESCENT YELLOW-GREEN BACKGROUND SHALL BE ASTM TYPE VIII SHEETING. THE TEXT AND BORDER MAY BE LETTERING FILM OR SILK SCREENED.

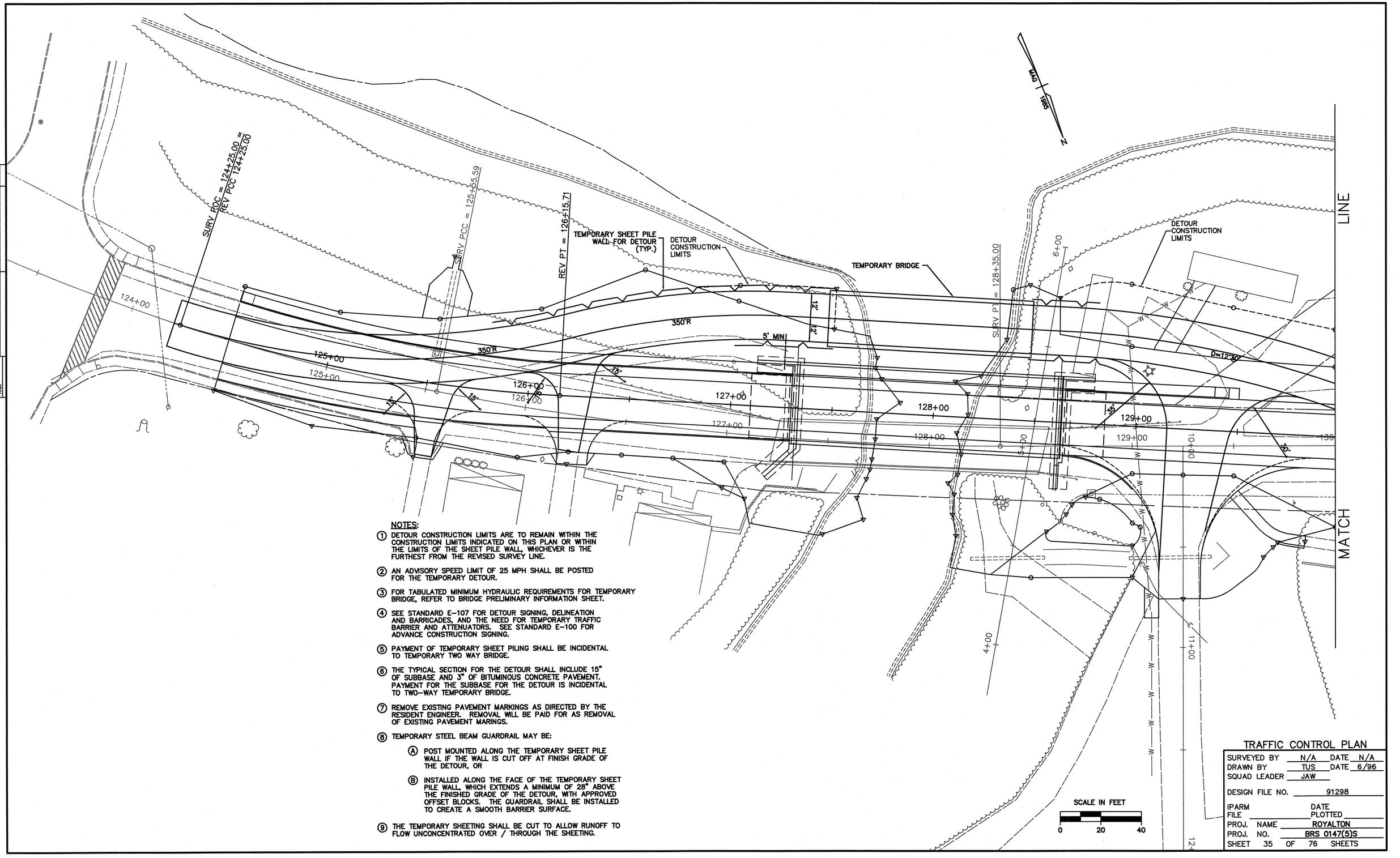
TEXT DESIGN

LETTERS, DIGITS, SYMBOLS, SPACINGS AND TEXT DIMENSIONS SHALL CONFORM TO THE LATEST VERSION OF FHWA'S "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS". DETAILS SHALL CONFORM WITH THOSE DESCRIBED IN THE PUBLICATION " STANDARD HIGHWAY SIGNS" AS SPECIFIED IN THE MUTCD.

SPECIFICATIONS

WARNING SIGNS SHALL MEET THE VERMONT STANDARD SPECIFICATIONS FOR "TRAFFIC SIGNS" AS DESCRIBED IN THE VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT: ROYALTON
PROJECT NO. : BRS 0147(5)S
DESIGN FILE NAME: 91298SGN.dwg
IPARM FILE NAME:
SURVEYED BY: CLD
SQUAD LEADER: KEB
PLOT DATE:
SURVEY DATE:
DRAWN BY: TJS
SHEET: 32-D OF 76



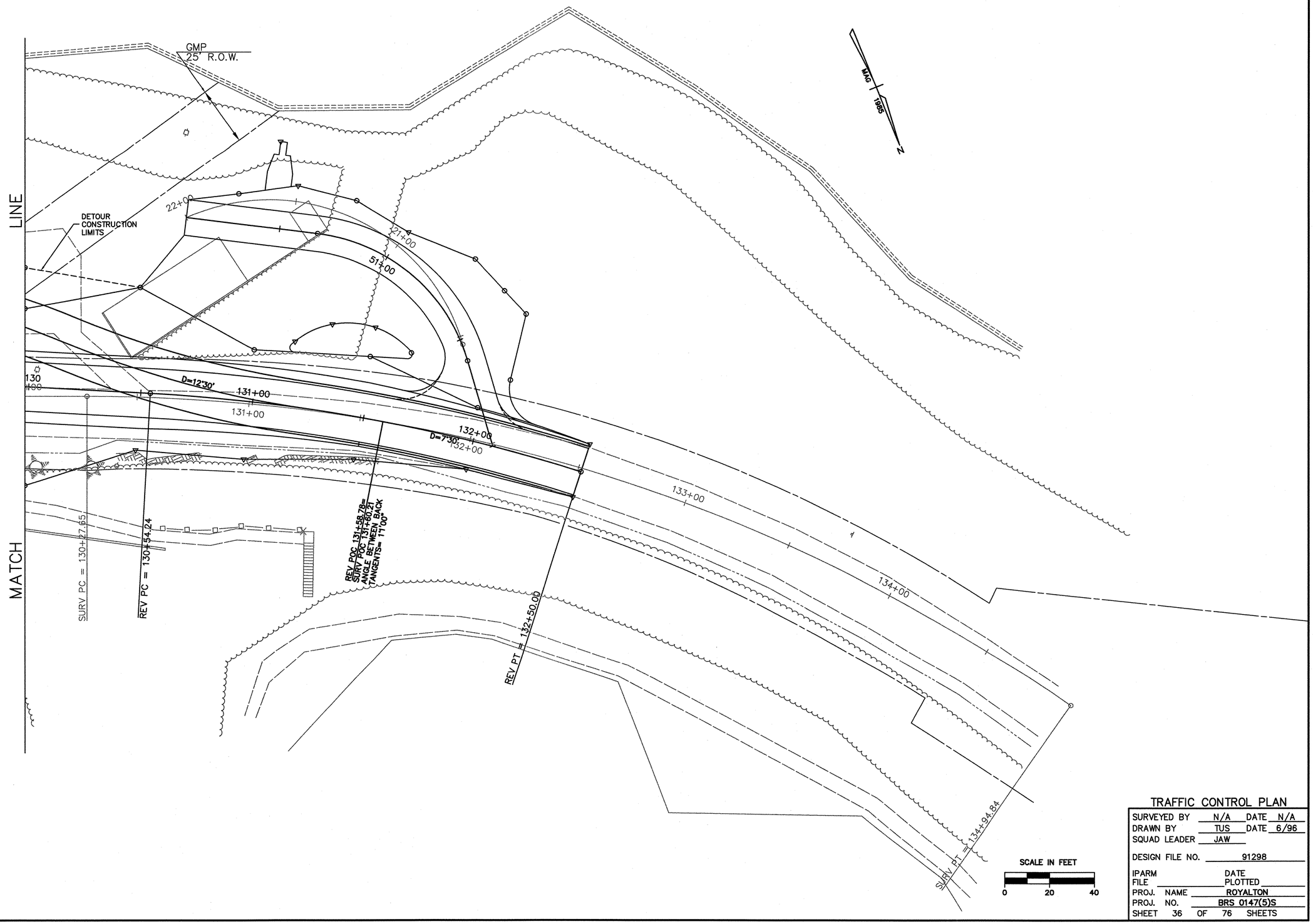
NOTES:

1. DETOUR CONSTRUCTION LIMITS ARE TO REMAIN WITHIN THE CONSTRUCTION LIMITS INDICATED ON THIS PLAN OR WITHIN THE LIMITS OF THE SHEET PILE WALL, WHICHEVER IS THE FURTHEST FROM THE REVISED SURVEY LINE.
2. AN ADVISORY SPEED LIMIT OF 25 MPH SHALL BE POSTED FOR THE TEMPORARY DETOUR.
3. FOR TABULATED MINIMUM HYDRAULIC REQUIREMENTS FOR TEMPORARY BRIDGE, REFER TO BRIDGE PRELIMINARY INFORMATION SHEET.
4. SEE STANDARD E-107 FOR DETOUR SIGNING, DELINEATION AND BARRICADES, AND THE NEED FOR TEMPORARY TRAFFIC BARRIER AND ATTENUATORS. SEE STANDARD E-100 FOR ADVANCE CONSTRUCTION SIGNING.
5. PAYMENT OF TEMPORARY SHEET PILING SHALL BE INCIDENTAL TO TEMPORARY TWO WAY BRIDGE.
6. THE TYPICAL SECTION FOR THE DETOUR SHALL INCLUDE 15" OF SUBBASE AND 3" OF BITUMINOUS CONCRETE PAVEMENT. PAYMENT FOR THE SUBBASE FOR THE DETOUR IS INCIDENTAL TO TWO-WAY TEMPORARY BRIDGE.
7. REMOVE EXISTING PAVEMENT MARKINGS AS DIRECTED BY THE RESIDENT ENGINEER. REMOVAL WILL BE PAID FOR AS REMOVAL OF EXISTING PAVEMENT MARINGS.
8. TEMPORARY STEEL BEAM GUARDRAIL MAY BE:
   - (A) POST MOUNTED ALONG THE TEMPORARY SHEET PILE WALL IF THE WALL IS CUT OFF AT FINISH GRADE OF THE DETOUR, OR
   - (B) INSTALLED ALONG THE FACE OF THE TEMPORARY SHEET PILE WALL, WHICH EXTENDS A MINIMUM OF 28" ABOVE THE FINISHED GRADE OF THE DETOUR, WITH APPROVED OFFSET BLOCKS. THE GUARDRAIL SHALL BE INSTALLED TO CREATE A SMOOTH BARRIER SURFACE.
9. THE TEMPORARY SHEETING SHALL BE CUT TO ALLOW RUNOFF TO FLOW UNCONCENTRATED OVER / THROUGH THE SHEETING.

PLAN	BY	DATE
SURVEYED		
DRAWN		
NOTE BOOK ALIGNMENT CHECKED		
NO. RT. OF WAY CHECKED		

TRAFFIC CONTROL PLAN

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TJS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET	35 OF 76 SHEETS		



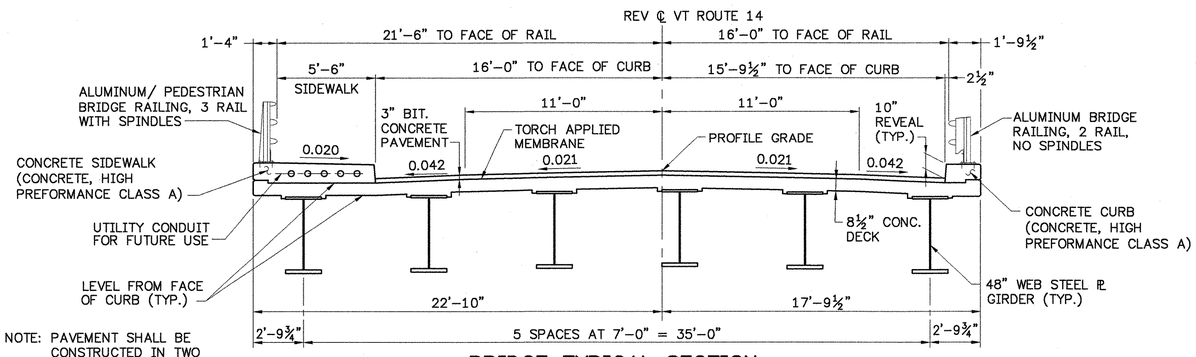
PLAN	BY	DATE
NOTE BOOK	SURVEYED	
NO.	ALIGNMENT CHECKED	
	RT. OF WAY CHECKED	

SCALE IN FEET

0 20 40

TRAFFIC CONTROL PLAN

SURVEYED BY	N/A	DATE	N/A
DRAWN BY	TUS	DATE	6/96
SQUAD LEADER	JAW		
DESIGN FILE NO.	91298		
IPARM FILE		DATE PLOTTED	
PROJ. NAME	ROYALTON		
PROJ. NO.	BRS 0147(5)S		
SHEET 36 OF 76 SHEETS			



NOTE: PAVEMENT SHALL BE CONSTRUCTED IN TWO LIFTS: 1½" TYPE III OVER 1½" TYPE IV

BRIDGE TYPICAL SECTION

SCALE: ¼"=1'-0"

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION, 2001 STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, AND ITS LATEST REVISIONS, AND THE 1996 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, AND ITS LATEST REVISIONS.
2. DESIGN IS BY THE ALLOWABLE STRESS DESIGN METHOD FOR HS25-44 LOADING WITH NO ALLOWANCE FOR FUTURE PAVING. LOAD RATING WAS PERFORMED USING THE LOAD FACTOR METHOD.
3. ALL STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC).
4. ALL FIELD CONNECTIONS SHALL BE MADE WITH, 7/8" DIAMETER, TYPE III BOLTS MEETING THE REQUIREMENTS OF AASHTO M164 (ASTM A325) HOLES SHALL BE 15/16" DIAMETER. CONNECTIONS NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.
5. ALL WELDING SHALL CONFORM WITH THE PROVISIONS OF SUBSECTION 506.10 OF THE 2001 STANDARD SPECIFICATIONS.
6. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF BEAMS SHALL BE TAKEN AS DIRECTED BY THE ENGINEER FOR USE IN DETERMINING FINAL GRADE.
7. ANY HOLES IN FASCIA BEAMS OR FASCIA GIRDER WEBS NOT OTHERWISE FILLED SHALL BE FILLED WITH ASTM, A-325 BOLTS. SEE STANDARD SPECIFICATION SECTION 506.19 OF THE 2001 STANDARD SPECIFICATIONS.
8. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".
9. MINIMUM COVER FOR REINFORCING STEEL SHALL BE TWO (2) INCHES ALONG BACK FACES OF WALLS AGAINST EARTH, AND THREE (3) INCHES ELSEWHERE. FOR BRIDGE DECK: 2 1/2" MIN. COVER FOR TOP REINFORCING, AND 1 1/2" MIN. COVER FOR BOTTOM REINFORCING.
10. REINFORCING PLACEMENT TOLERANCES SHALL BE:
    SPACING +- 1"
    CLEARANCE +- 1/4"
11. DECK, SIDEWALK AND CURB CONCRETE SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS A." ALL OTHER CONCRETE SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS B."
12. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" BY 1".
13. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL. OTHER BRIDGE SEAT AREAS SHALL BE SLOPED 1/2" PER FOOT. ABUTMENT SEATS SHALL BE SLOPED FULL WIDTH TOWARD CENTER SPAN. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE SMOOTH STEEL TROWEL FINISHED.
14. THE DECK SHALL BE PLACED IN ONE CONTINUOUS OPERATION WITH A MAXIMUM DURATION OF EIGHT HOURS. IF CIRCUMSTANCES BEYOND THE CONTRACTOR'S CONTROL PREVENT THIS FROM BEING ACCOMPLISHED, A NEAT (DAMMED) CONSTRUCTION JOINT SHALL BE USED. A NINETY-SIX HOUR DELAY BETWEEN PLACEMENTS SHALL BE OBSERVED.
15. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF DECK BETWEEN DRIP NOTCHES.
16. THE FOLLOWING TABLE OF ALLOWABLE STRESSES AND WEIGHTS APPLY TO THESE PLANS FOR DESIGN PURPOSES:

HIGH PERFORMANCE CONCRETE (CLASS A):	f'c fc	= =	4000 PSI 1600 PSI
HIGH PERFORMANCE CONCRETE (CLASS B):	f'c fc	= =	3500 PSI 1400 PSI
STRUCTURAL STEEL: M270 - Grade 50W	Fa=Fb Fv	= =	27,000 PSI 17,000 PSI
REINFORCING STEEL: Grade 60	fs f's	= =	24,000 PSI 20,000 PSI
SOIL: UNIT WEIGHT		=	140 PCF
PILES: M270- GRADE 36	σ_a	=	9000 PSI

17. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES F.
18. TRAFFIC SHALL BE ALLOWED ON THE NEW BRIDGE ONLY AFTER THE SPECIFIED CURE PERIOD HAS EXPIRED AND DESIGN STRENGTH HAS BEEN ATTAINED.
19. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
20. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT. ANY UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.
21. IN STREAM CONSTRUCTION SHALL BE PERFORMED BETWEEN JUNE 1 AND OCTOBER 1, UNLESS THE CONTRACTOR OBTAINS PERMISSION FROM THE AGENCY OF NATURAL RESOURCES TO DO THE WORK OUTSIDE OF THAT TIME FRAME.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND SPACING OF FACIA OVERHANG BRACKETS; HOWEVER, SPACING SHALL NOT EXCEED FOUR (4) FEET.
23. TEN CUBIC YARDS OF STONE FILL TYPE IV HAS BEEN INCLUDED IN THE PROJECT FOR CONSTRUCTION OF A FISH HABITAT BOULDER CLUSTER. THIS CLUSTER SHALL BE LOCATED IN A HIGH VELOCITY PORTION OF THE STREAM A MINIMUM OF 30 FEET DOWNSTREAM OF THE NEW BRIDGE. FINAL LOCATION OF BOULDERS TO BE AS DIRECTED BY THE ENGINEER, BASED ON THE RECOMMENDATIONS OF THE DISTRICT FISHERIES BIOLOGIST AND/OR THE AGENCY OF NATURAL RESOURCES STREAM ALTERATION ENGINEER. CLUSTER SHALL CONSIST OF THREE BOULDERS, EACH 5 FOOT TO 6 FOOT IN DIAMETER, SPACED AT 10 FEET TO 15 FEET AND BURIED 1/3 DIAMETER BELOW STREAMBED.
24. ALL NEW PERMANENT FILL SLOPES WITHIN 50 FT OF THE TOP OF BANK OF THE WHITE RIVER SHALL BE REVEGETATED WITH BOTH GRUBBING MATERIAL AND PLANTING OF NATIVE RIPARIAN TREE AND BRUSH SPECIES. SEE SHEET 30.
25. PARTIAL REMOVAL OF STRUCTURE SHALL INCLUDE COMPLETE REMOVAL OF EXISTING SUPERSTRUCTURE AND REMOVAL OF THE EXISTING SUBSTRUCTURE TO THE LIMITS SHOWN ON THE CHANNEL SECTIONS AND IN ACCORDANCE WITH SECTION 529 OF THE 2001 STANDARD SPECIFICATIONS. EXCAVATION AND BACKFILL FOR REMOVAL OF EXISTING ABUTMENT COLUMNS AT ABUTMENT NO. 1 AND WINGWALL NO. 2 ARE INCLUDED IN PAY ITEMS 204.25 STRUCTURAL EXCAVATION AND 204.30 GRANULAR BACKFILL FOR STRUCTURES.
26. ALL PILES SHALL BE ASTM A36 HP12x53 BEARING PILES DRIVEN TO REFUSAL ON BEDROCK. DESIGN LOADING IS 140 KIPS PER PILE.
27. ALL PILES SHALL BE FURNISHED WITH A REINFORCED PILE TIP OF PREFABRICATED CAST STEEL MEETING THE REQUIREMENTS OF ASTM A-27. SEE STANDARD SPECIFICATION SECTION 505.04.
28. FILL IN AREAS THROUGH WHICH PILES ARE TO BE DRIVEN SHALL HAVE A MAXIMUM STONE SIZE OF NINE (9) INCHES.

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REVISIONS		
NO.	DESCRIPTION	BY & DATE

HYDRAULIC DATA

DRAINAGE AREA 103 SQ.MI.
CHARACTER OF TERRAIN MOUNTAINOUS, MODERATE RELIEF
CHARACTER AND TYPE OF STREAM SMALL PERENNIAL BUT FLASHY
NATURE OF STREAMBED SHALLOW SANDS AND SILTS AND SOME GRAVEL OVER BEDROCK
Q 2.33 3200 CFS Q 50 11000 CFS
Q 10 6800 CFS Q 100 15000 CFS
Q 25 9100 CFS Q 500 22000 CFS
DATE OF FLOOD OF RECORD 1927 WATER SURFACE ELEVATION * ESTIMATED DISCHARGE *
NATURAL STREAM VELOCITY @ Q 10 = 6.9 fps (approach section) ICE CONDITIONS MODERATE DEBRIS MODERATE
DOES THE STREAM REACH MAX. HIGHWATER ELEVATION RAPIDLY? YES IS ORDINARY RISE RAPID ? YES
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? YES
IF YES, DESCRIBE: CONFLUENCE WITH THE WHITE RIVER APPROXIMATELY 50 FT FROM DOWNSTREAM FACE OF PROPOSED STRUCTURE
WATERSHED STORAGE 2% HEADWATERS ____ UNIFORM THROUGHOUT WATERSHED X IMMEDIATELY ABOVE SITE ____

EXISTING STRUCTURE

1. STRUCTURE TYPE: 3-SPAN REINFORCED CONCRETE T-BEAM YEAR BUILT: 1928
2. SPAN NORMAL TO STREAM: 32'-56'-32'
3. VERTICAL CLEARANCE ABOVE STREAMBED: 18.2' +/-
4. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM): 1410 SF
5. DISPOSITION OF STRUCTURE: SUPERSTRUCTURE AND PORTIONS OF SUBSTRUCTURE TO BE REMOVED
6. TYPE OF SUBSTRUCTURE FOUNDATION MATERIAL: SPREAD FOOTINGS ON SANDY SILT AND/OR LEDGE
7. WATER SURFACE ELEVATION @ Q 2.33 462.6 @APPROACH AREA VELOCITY= 7.6 fps
   Q 10 466.6 (466.9) = 10.2 fps (9.7 fps)
   Q 25 468.4 = 11.2 fps
   Q 50 469.6 (473.2) = 11.9 fps (9.1 fps)
   Q 100 476.0 (477.0) = 12.6 fps (10.7 fps)
8. LONG TERM STREAM BED CHANGES: NARROW FLOOD PLAIN; ALLUVIAL
9. IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: **
10. RELIEF ELEVATION: ** DISCHARGE OVER ROAD @Q100:
11. UPSTREAM STRUCTURE: TH 12 STR. NO. 27 DISTANCE 1.5 MILES
    SPAN : 180' CLEAR HEIGHT: 10'
12. DOWNSTREAM STRUCTURE: N/A STR. NO. N/A DISTANCE
    SPAN : N/A CLEAR HEIGHT:

PROPOSED STRUCTURE

STRUCTURE GEOMETRY:
1. STRUCTURE TYPE REINFORCED CONCRETE SLAB OVER STEEL PLATE GIRDER
2. CLEAR SPAN LENGTH(S) NORMAL TO STREAM: 128.3'
3. VERTICAL CLEARANCE ABOVE STREAMBED: 18.8'
4. ARE PROVISIONS TO BE MADE FOR PUBLIC UTILITIES? YES, CONDUIT IN SIDEWALK FOR FUTURE USE

HYDRAULIC DATA:
1. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM): 1700 SF
2. WATER SURFACE ELEVATION @ Q 2.33 462.4 @APPROACH AREA VELOCITY= 5.6 fps
   Q 10 466.2 (466.5) = 7.6 fps (7.3 fps)
   Q 25 467.9 = 8.7 fps
   Q 50 469.1 (471.9) = 9.4 fps (7.3 fps)
   Q 100 471.1 (476.0) = 10.8 fps (8.9 fps)
3. IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: N/A
4. RELIEF ELEVATION: N/A DISCHARGE OVER ROAD @Q100: N/A
5. AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 472.8' (LIMITED BY LOW STEEL)
6. VERTICAL CLEARANCE @Q100: 1.70 FT (NO CLEARANCE)
7. SCOUR: PRESENCE OF BEDROCK LIMITS TOTAL SCOUR TO 10 FEET
8. REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE IV

ALLOWABLE STRESSES:
1. DESIGN LIVE LOAD AASHTO HS25
2. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ---- ON LEDGE ----
3. ALLOWABLE LOAD FOR PILING 140 KIPS TYPE HP 12x53 ESTIMATED LENGTH 21'±
4. ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO M 270 GR50W TENSION 27 KSI
5. ALLOWABLE STRESS FOR REINFORCING STEEL GRADE 60 TENSION 24000 PSI COMPRESSION 20000 PSI
6. ALLOWABLE STRESS FOR HIGH PERFORMANCE CONCRETE CLASS A f'c 4000 PSI fc 1400 PSI
   HIGH PERFORMANCE CONCRETE CLASS B f'c 3500 PSI fc 1400 PSI

TRAFFIC MAINTENANCE:
1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE ____ OR ON TEMPORARY BRIDGE X
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY TWO WAY TRAFFIC CONTROL SIGNALS REQUIRED NO
   MINIMUM CLEAR SPAN 95' MINIMUM CLEAR HEIGHT 14*** (EL. 468) MINIMUM WATERWAY AREA 1000 SF
   ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? ____

PERMIT INFORMATION
AVERAGE DAILY FLOW: 212 cfs ORDINARY LOW WATER : 95 cfs DEPTH: 2 ft. (EL. 456)
NOTES: ORDINARY HIGH WATER : 1373 cfs DEPTH: 6 ft. (EL. 460)

FOR WATER SURFACE ELEVATION AND VELOCITY DATA, THE FIRST NUMBER SHOWN IS THE LOW FLOW ON THE WHITE RIVER CASE. THE SECOND NUMBER (IN PARENTHESES) IS FOR THE HIGH FLOW ON THE WHITE RIVER CASE.

ADDITIONAL DESIGN CONSIDERATIONS

* WATER SURFACE ELEVATION FOR FLOOD OF RECORD IS UNKNOWN. PLANS FOR EXISTING BRIDGE INDICATE A "HIGH WATER ELEVATION" OF APPROXIMATELY 471, WHICH PROBABLY REPRESENTS THE 1925 FLOOD (LESSER EVENT THAN THE 1927 FLOOD.)

** FOR HIGH FLOW ON THE WHITE RIVER CASE (COINCIDENT FLOODS), OVERTOPPING OCCURS OF THE EXISTING STRUCTURE FOR THE 100 YEAR EVENT. THE WATER SURFACE ELEVATION IS 477.04 WITH 74 SF OF ROADWAY WEIR FLOW AT A MAXIMUM DEPTH OF 10 INCHES.

*** CONFLUENCE WITH WHITE RIVER IS IMMEDIATELY DOWNSTREAM OF BRIDGE.

LOAD RATING (TONS) (LOAD FACTOR)

RATING LEVEL	TRUCK						
	H	HS	352	6 AXLE	3A. STR.	4A. STR.	5A.SEMI
INVENTORY	31	56					
POSTED	44	79	139		87	121	133
OPERATING		94	165	182	104	145	

STENGTH: $RF = \frac{\phi M_n - 1.3M_{DL}}{A \times M_{LL} + I}$

SERVICEABILITY: $RF = \frac{.95F_y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{AL}\frac{S_{LL+I}}{S_{AL}}}{1.6M_{LL+I}}$

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
		Log Sta.	
Highway No.	VT. Route 14	Surv. Sta.	

VT. Route 14 over the First Branch of the White River

PRELIMINARY INFORMATION

Designed By	AS	Drawn By.	G. F. BONIN
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00

PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 37 Of 76

91298PI (1=1) 91298

SOIL CLASSIFICATION

AASHTO

A1	GRAVEL AND SAND
A3	FINE SAND
A2	SILTY OR CLAYEY GRAVEL AND SAND
A4	SILTY SOIL – LOW COMPRESSIBILITY
A5	SILTY SOIL – HIGHLY COMPRESSIBLE
A6	CLAYEY SOIL – LOW COMPRESSIBILITY
A7	CLAYEY SOIL – HIGHLY COMPRESSIBLE

UNIFIED SOIL SYSTEM

GW/GP	CLEAN GRAVELS (FEW FINES)
GM/GC	GRAVELS (APPRECIABLE FINES)
SW/SP	CLEAN SANDS (FEW FINES)
SM/SC	SAND (APPRECIABLE FINES)
ML/CL	LOW PLASTIC SILTS & CLAYS
OL	LOW PLASTIC ORGANIC SILT
MH/CH	HIGH PLASTIC SILTS & CLAYS
OH	HIGH PLASTIC ORGANIC SILT
Pt	HIGHLY ORGANIC SOILS

MOISTURE

DESCRIPTIVE TERM	OBSERVED IN FIELD	% ± BY ANALYSIS
DRY	NO VISIBLE WATER	<10
MOIST	DAMP	10 – 20
MOIST TO WET	MOIST TO WET	21 – 50
WET	VISIBLE WATER	51 – 70
SATURATED		>70

ROCK QUALITY DESIGNATION

R.Q.D.	ROCK DESCRIPTION
<.25	VERY POOR
.25 TO .50	POOR
.51 TO .75	FAIR
.76 TO .90	GOOD
>.90	EXCELLENT

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	VERY SOFT
250 – 500	SOFT
500 – 1000	MED. STIFF
1000 – 2000	STIFF
2000 – 4000	VERY STIFF
>4000	HARD

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

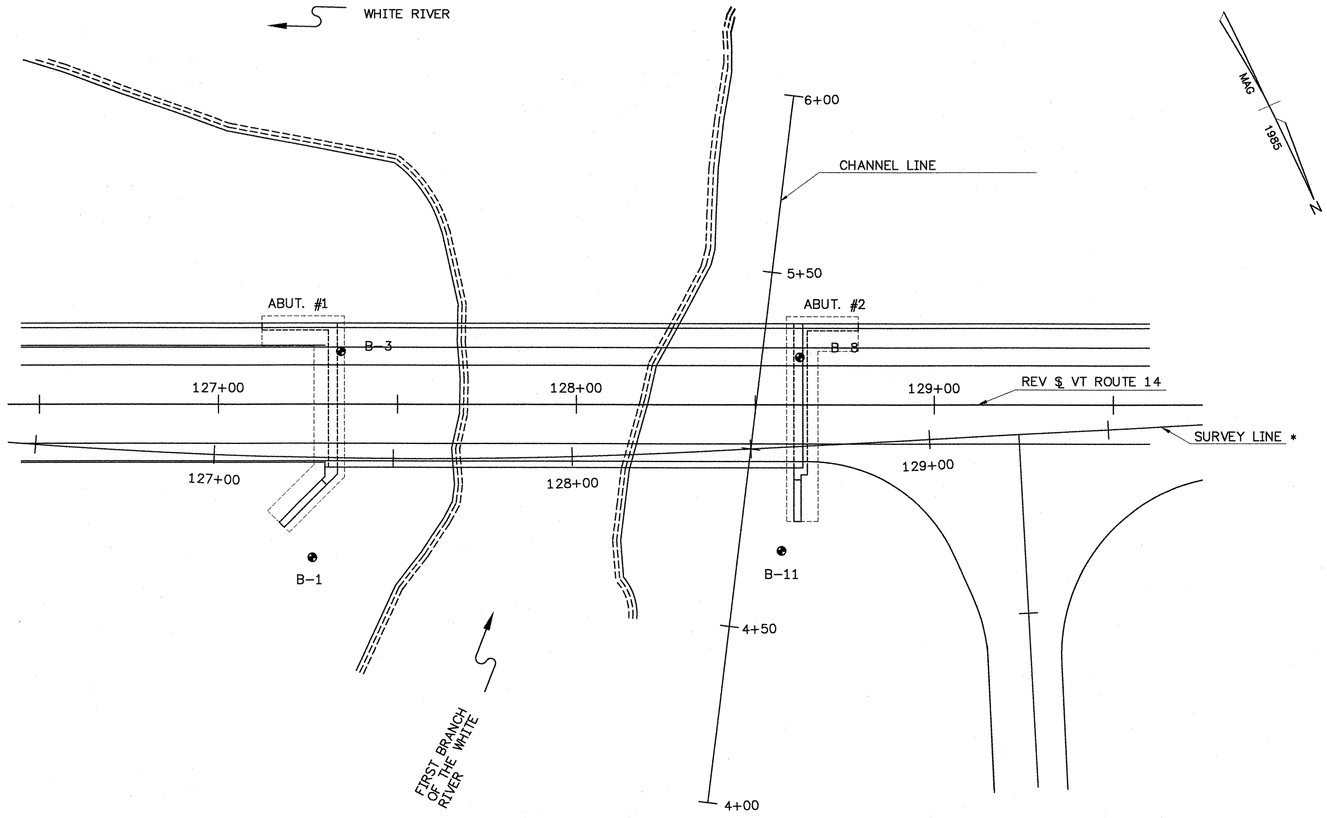
DENSITY (GRANULAR SOILS) N	DESCRIPTIVE TERM	CONSISTENCY (COHESIVE SOILS) N	DESCRIPTIVE TERM
<5	VERY LOOSE	<2	VERY SOFT
5–10	LOOSE	2–4	SOFT
11–24	MED. DENSE	5–8	MED. STIFF
25–50	DENSE	9–15	STIFF
>50	VERY DENSE	16–30	VERY STIFF
		31–60	HARD
		>60	VERY HARD

COMMONLY USED SYMBOLS

▼	WATER ELEVATION
⊕	STANDARD PENETRATION BORING
⊕	AUGER BORING
O	ROD SOUNDING
S	SAMPLE
N	STANDARD PENETRATION TEST BLOW COUNT PER FOOT FOR: 2" O.D. SAMPLER 1 3/8" I.D. SAMPLER HAMMER WEIGHT OF 140 LBS. HAMMER FALL OF 30"
VS	FIELD VANE SHEAR TEST
US	UNDISTURBED SOIL SAMPLE
B	BLAST
DC	DIAMOND CORE
MD	MUD DRILL
WA	WASH AHEAD
HSA	HOLLOW STEM AUGER
AX	CORE SIZE 1 1/8"
BX	CORE SIZE 1 5/8"
NX	CORE SIZE 2 1/8"
M	DOUBLE TUBE CORE BARREL USED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
NP	NON PLASTIC
w	MOISTURE CONTENT (DRY WGT. BASIS)
D	DRY
M	MOIST
MTW	MOIST TO WET
W	WET
Sat	SATURATED
Bo	BOULDER
Gr	GRAVEL
Sa	SAND
Si	SILT
Cl	CLAY
HP	HARDPAN
Le	LEDGE
NLTD	NO LEDGE TO DEPTH
CNPF	CANNOT PENETRATE FURTHER
TLOB	TO LEDGE OR BOULDER
NR	NO RECOVERY
REC.	RECOVERY
%REC.	PERCENT RECOVERY
RQD	ROCK QUALITY DESIGNATION
CBR	CALIFORNIA BEARING RATIO
<	LESS THAN
>	GREATER THAN

COLOR

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gr	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

BORING LOCATION PLAN

SCALE: 1" = 20'

BORING LOCATIONS		
BORING NO.	STATION	OFFSET
B–1	127+28	28' RT.
B–3	127+35	30' LT.
B–8	128+65	25' LT.
B–11	128+57	29' RT.
* STATIONS REFER TO SURVEY LINE.		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) – Rock in its native location of indefinite thickness.

BOULDER – A rock fragment with an average dimension > 12 inches.

COBBLE – Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL – Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND – Particles of rock < 0.0787" (#10 sieve) and > 0.0029"(#200 sieve).

SILT – Soil < 0.0029"(#200 sieve), non or slightly plastic and exhibits no strength when air–dried.

CLAY – Fine grained soil, exhibits plasticity when moist and considerable strength when air–dried.

VARVED – Alternate layers of silt and clay.

HARDPAN – Extremely dense soil, cemented layer, not softened when wet.

MUCK – Soft organic soil (containing > 10% organic material).

MOISTURE CONTENT – Weight of water divided by dry weight of soil.

FLOWING SAND – Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE – Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP – Inclination of bed with a horizontal plane.

GENERAL NOTES

1. The subsurface explorations shown herein were made between 1/29/93 and 2/22/93 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
5. Terminology used on the Boring Logs to Describe the Hardness, Degree of Hardness, Degree of Weathering, and Spacing of Fractures, Joints and other discontinuities in the Bedrock is defined in the AASHTO Manual of Subsurface Investigating, 1988.

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON	Bridge No. 21
	Log Sta.
Highway No. VT. Route 14	Surv. Sta.

Vt. Route 14 over the First Branch of The White River

BORING INFORMATION SHEET

Designed By AS	Drawn By. GFB
Checked By CLW/LMM Date 11/00	Bridge Design Supervisor LMM Date 11/00
PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 38 Of 76

91298BOR (1=240)

Royalton BRS 0147(5)S
BORING NO. B-1

ELEV. 465.00
ABUT #1
Bot. of Footing
ELEV. 462.04

18' ESTIMATED PILE PENETRATION

DEPTH	BLOWS ON CASING	STANDARD PENETRATION	SAMPLE NUMBER	MOISTURE	COLOR	LABORATORY CLASSIFICATION OF SOIL
		R		M	BRN	A-2-4 GrSa Rec. 0.4
10						Boulder
		44		MTW	BRN	A-1-b SaGr
						Top of bedrock @17.5
						Run 1: BXMDC 17.5-22.5 Rec. 5.0
						Run: 2 BXMDC 22.5-27.5 Rec. 5.0
						See Geologist report
						Hole stopped @27.5 in bedrock
						Core consists of siliceous limestone. The rock is moderately hard, unweathered and competent.

RUN	REC	RQD
1	100%	55%
2	100%	100%

Royalton BRS 0147(5)
BORING NO. B-3

ELEV. 466.22
ELEV. 465.00
ABUT #1
Bottom of Footing

24' ESTIMATE PILE PENETRATION

DEPTH	BLOWS ON CASING	STANDARD PENETRATION	SAMPLE NUMBER	MOISTURE	COLOR	LABORATORY CLASSIFICATION OF SOIL
		8		M	BRN	A-2-4 Sa W=25.3 Rec. 0.9
		5		MTW	BRN	A-2-4 Sa W=37.7 Rec. 1.2
		6		MTW	BRN	A-2-4 Sa W=33.6 Rec. 0.9
		11		W	BRN	A-1-b GrSa W=26.7 Rec. 0.7
		15				No Rec.
		24		W	BRN	A-1-b GrSa W=12.6 Rec. 0.6
		24		W	BRN	A-1-b GrSa W=13.5 Rec. 1.0
		66		W	BRN	A-1-b SaGr W=21.5 Rec. 1.2
		43		W	BRN	A-1-b SaGr W=10.8 Rec. 0.9
		39		W	BRN	A-4 SaSi W=20.2 Rec. 0.9
						Top of bedrock @22.3
						Run 1: BXMDC 22.3-27.3 Rec. 5.0
						Run 2: BXMDC 27.3-32.3 Rec. 5.0
						Hole stopped @32.3 in bedrock See Geologist Report
						Core consists of quartz - biotite phyllite with garnet porphyroblasts. The core is moderately hard, unweathered and competent.

RUN	REC	RQD
1	100%	90%
2	100%	84%

Royalton BRS 0147(5)S
BORING NO. B-8

ELEV. 468.93
ELEV. 465.00
ABUT #2
Bottom of Footing

18' ESTIMATED PILE PENETRATION

DEPTH	BLOWS ON CASING	STANDARD PENETRATION	SAMPLE NUMBER	MOISTURE	COLOR	LABORATORY CLASSIFICATION OF SOIL
		4		MTW	BRN	A-4 SaSi W=44.3 Rec. 1.6
		8		MTW	BRN	A-4 SiSa W=31.6 Rec. 1.5
		23		W	BRN	A-1-b GrSa W=39.8 Rec. 0.8
						Top of bedrock @21.5
						Run 1: BXMDC 21.5-26.5 Rec. 4.8
						Run 2: BXMDC 26.5-31.5 Rec. 5.0
						See Geologist report
						Hole stopped @ 31.5 in bedrock
						Core consists of interbedded quartz-biotite phyllite and siliceous limestone. The rock is moderately hard, unweathered and competent.

RUN	REC	RQD
1	96%	48%
2	100%	84%

Royalton BRS 0147(5)S
BORING NO. B-11

ELEV. 473.72
ELEV. 465.00
ABUT #2
Bottom of Footing

24' ESTIMATED PILE PENETRATION

DEPTH	BLOWS ON CASING	STANDARD PENETRATION	SAMPLE NUMBER	MOISTURE	COLOR	LABORATORY CLASSIFICATION OF SOIL
		14				No Rec.
		26		MTW	BRN	Rec. 0.1 -Silt
		7		MTW	BRN	Rec. 0.2 Silt w/ sand.
		3		MTW	BRN	A-2-4 SiSa W=30.1 Rec. 0.8
		5		MTW	BRN	A-4 SaGrSi W=49.6 Rec. 0.7
		6		MTW	BRN	A-4 SaSi W=34.6 Rec. 1.0
		11				A-4 SiSa W=33.0
		4		W	BRN	A-2-4 SiSa W=32.0 Rec. 0.9
		32		W	BRN	A-2-4 SiGrSa W=25.5 Rec. 0.7
		23		W	BRN	A-4 SiSa W=25.1 Rec. 1.0
		18		W	BRN	A-4 SaSi W=26.4 Rec. 0.9
		12		W	BRN	A-4 SaSi W=31.1 Rec. 0.4
						Boulders 26.5-31.5'
						Top of bedrock @32.0
						Run 1: BXMDC 32.0-37.0 Rec. 5.0
						Run 2: BXMDC 37.0-42.0 Rec. 5.0
						See Geologist Report
						Hole stopped at 42' in bedrock.

RUN	REC	RQD
1	100%	96%
2	100%	33%

Core consists of quartz - biotite phyllite. The rock is moderately soft, unweathered and competent in a confined state.

Run #2 intersects a 6 inch thick shear zone where rock is incompetent

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON	Bridge No. 21
	Log Sta.
Highway No. VT. Route 14	Surv. Sta.

Vt. Route 14 over the First Branch of The White River

BORING LOGS

Designed By EMS	Drawn By ACF
Checked By Date	Bridge Design Supervisor Date

PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 39 Of 76

Costello, Lomasney & de Napoli, Inc.
Consulting Engineers
540 Commercial Street
Manchester, NH 03101
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91298LOG 1=1

ALUMINUM APPROACH RAILING	
LOCATION	PAY LENGTH
WW 1	25'-0"
WW 2	21'-9"
WW 3	25'-0"
WW 4	50'-11"

WHITE RIVER

10' to 15' (Typ.)

FISH HABITAT BOULDER CLUSTER

30' MIN. CLEAR

166'-0" PAY LIMITS OF ALUMINUM/ PEDESTRIAN BRIDGE RAIL (L/H SIDE)

REV. P.O.T. 128+50.24 = CHAN. P.O.T. 5+12.53 ANGLE 83°6'6"

S 32°-14'-56" W

MAG 1985

25'-0" ALUMINUM APPROACH RAIL

MATCH TO BEAM GUARD RAIL

℄ BRG. ABUT #1 (EXP.)

2'-8" 3" 19'-9" 3'-1" 3'-9"

WW #1

2 SPACES AT 6'-2"

1'-4" TO FASCIA

7'-10" (TYP.)

℄ BRG ABUT #2 (FIXED)

2'-6" 3" 16'-9"

WW #3

25'-0" ALUMINUM APPROACH RAIL

MATCH TO BEAM GUARD RAIL

1:2

5'-6" SIDEWALK

5' SHOULDER

11' LANE

REV ℄, VT ROUTE 14

11' LANE

5' SHOULDER

5'-6" SIDEWALK TO FACE OF RAIL

REV. STA 127+29.50
BEGIN BRIDGE
END APPROACH SLAB
127+00 F.G. 479.22

REV STA 127+09.50
BEGIN APPROACH SLAB

90°-00'-00"

16'-0" TO FACE OF CURB

15' 9½" TO FACE OF CURB

128+00

EXISTING BRIDGE TO BE REMOVED

16'-0" TO FACE OF RAIL

90°-00'-00"

REV. STA 128+64.25
END BRIDGE
BEGIN APPROACH SLAB
F.G. 478.54

129+00

REV. STA 128+64.25
END APPROACH SLAB

SURVEY LINE
SEE ROADWAY PLANS FOR DETAILS

PROP. DRAINAGE
SEE ROADWAY PLANS

BARRIER RAIL END CAPS

EXISTING STONE WALL

9" 16'R 3'R 2'-0" 7'-6" 2'-11 1/2" 5'-0" 45°-00'-00"

WW #2

2'-0" TO FASCIA

1'-9 1/2" TO FASCIA

7'-7" (TYP.)

15'-0"

50' 45°R

WW #4 ON LAYOUTS

4 SPACES @ 6'-3"

2'-8" 3"

4'R 2'

134'-2 1/2"

21'-0"

UNDERDRAIN
SEE ROADWAY PLANS

BARRIER RAIL END CAPS

FIRST BRANCH OF THE WHITE RIVER

CHANNEL LINE

DRIVE CULVERT
SEE ROADWAY PLANS

PLAN
SCALE: 1"=10'

— INDICATES STONE FILL, TYPE IV

(MOD) — INDICATES 2 RAIL MODIFIED FROM 3 RAIL STANDARDS.

REV. STA 127+32.00
℄ BRG. ABUT #1 (EXP.)
F.G. 479.21

REV. STA 128+62.00
℄ BRG. ABUT #2 (FIXED)
F.G. 478.55

ALUMINUM APPROACH RAIL TAPER (MOD) (TYP)

134'-2 1/2" PAY LIMITS OF ALUMINUM BRIDGE RAIL (2 RAIL)(R/H SIDE)

130'-0"

ALUMINUM APPROACH RAIL TAPER (MOD)(TYP.)

ALUMINUM APPROACH RAILING (MOD)

3"

-0.5065%

EL 480
480
470
460
450
EL 440

APPROXIMATE EXISTING GROUND

Q_{100} *SEE NOTE A

EL 465.00

* SEE NOTE B

18.8'± CLEAR

4' STONE FILL, TYPE IV

SUBBASE MATERIAL

EL 465.00

TYPICAL EARTHWORK 50' FROM ABUT. (SEE SHEET 56)

GEOTEXTILE UNDER STONE FILL (TYP.)

8' (TYP.)

APPROX. LEDGE

APPROX. LOCATION OF EXISTING PIER TO BE CUT OFF 1' BELOW FINISH GRADE (TYP.)

APPROX. LEDGE

ELEVATION
SCALE: 1"=10'

* NOTES:

A. 100 YEAR WATER SURFACE ELEVATION (WSPRO APPROACH SECTION)
WHITE RIVER LOW (NON-COINCIDENTAL FLOODING): 471.1
WHITE RIVER HIGH (COINCIDENTAL FLOODING): 476.0

B. PLACE 3 FISH HABITAT BOULDERS (5'-0" TO 6'-0" IN DIAMETER), BURY 1/3 OF BOULDER BELOW STREAMBED GRADE. SEE NOTE 24 ON SHEET 37.

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

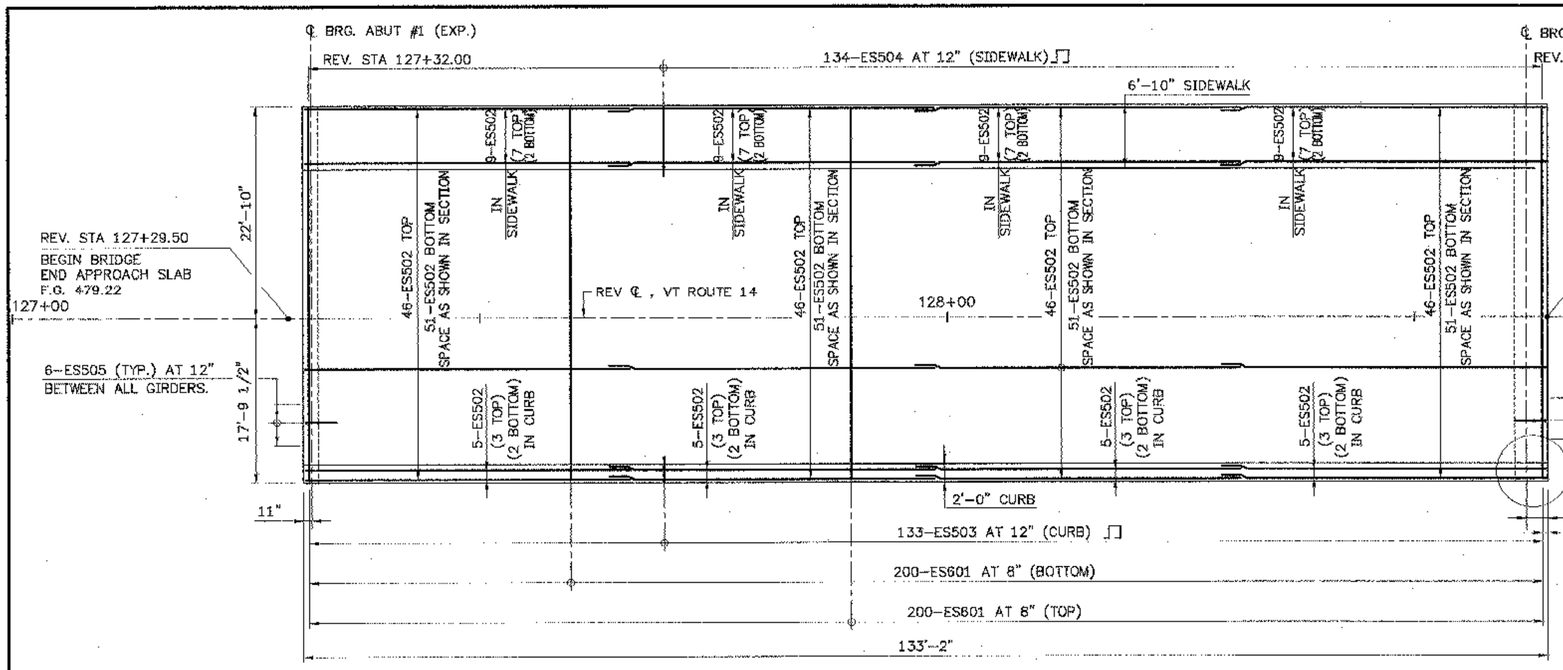
VT. Route 14 over the First Branch of the White River

PLAN AND ELEVATION

Designed By	AS	Drawn By	GFB
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00

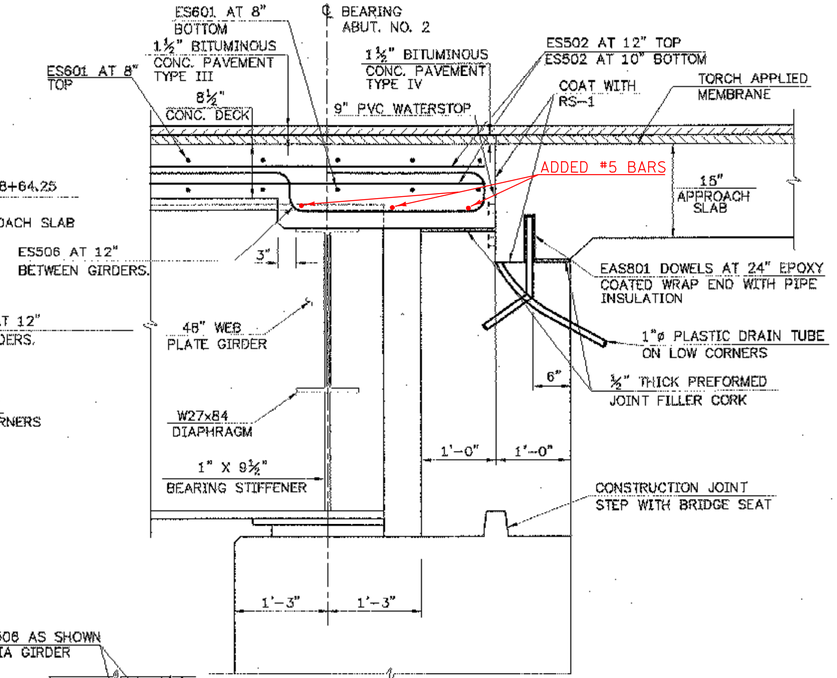
PROJECT	PROJECT NO.
ROYALTON	BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 40 Of 76

3129005E (1=10)



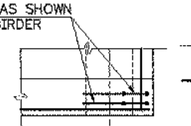
DECK REINFORCING PLAN

SCALE: 1/8"=1'–0"



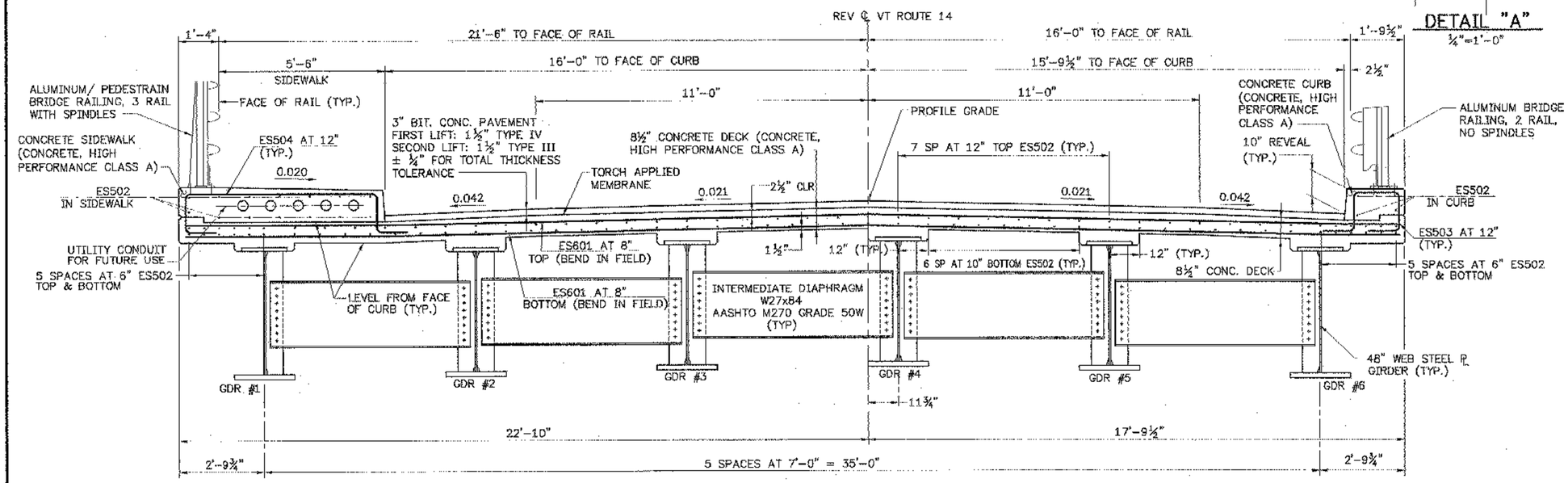
FIXED END DETAIL AT ABUTMENT NO. 2

SCALE: 1"=1'–0"



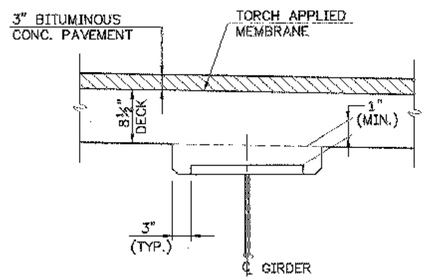
DETAIL "A"

½"=1'–0"



BRIDGE TYPICAL SECTION

SCALE: 1/2"=1'–0"



GIRDER HAUNCH DETAIL

SCALE: 1"=1'–0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
		Log Sta.	
Highway No.	VT. ROUTE 14	Surv. Sta.	

VT. Route 14 over the First Branch of the White River

DECK DETAILS

Designed By	AS	Drawn By.	SEN
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00
PROJECT	ROYALTON	PROJECT NO.	BRS 0147(5) S
I.G.C. Info.			
Bridge Sheet No.		Sheet 41 Of 76	

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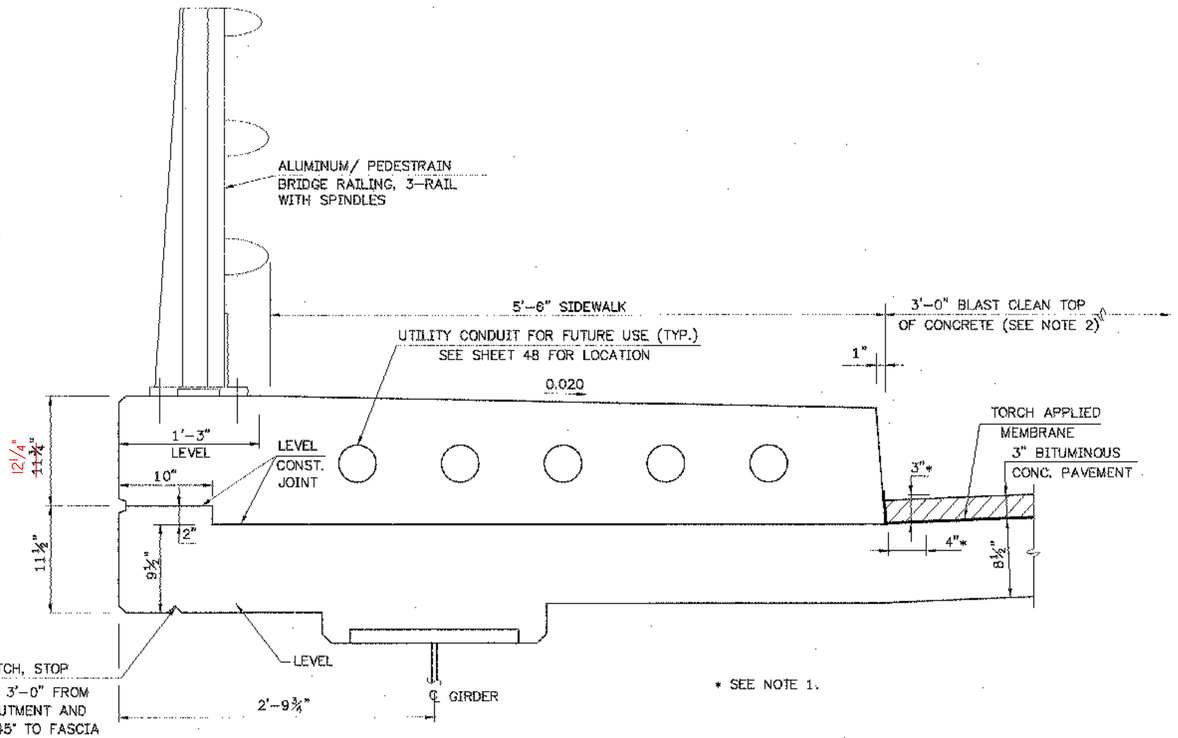
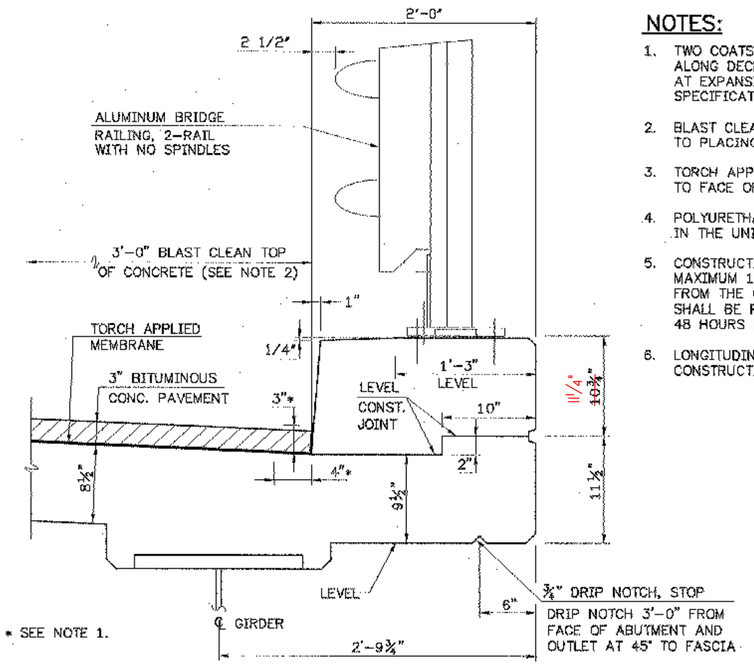


SIDEWALK CURB SECTION – LEFT FASCIA

SCALE: 1½"=1'-0"

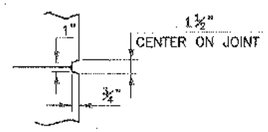


2'-0 CURB SECTION – RIGHT FASCIA

SCALE: 1½"=1'-0"

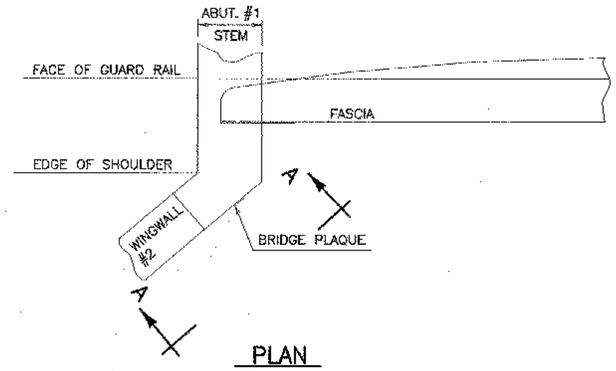
NOTES:

1. TWO COATS OF POLYURETHENE MEMBRANE SHALL BE PLACED 4" WIDE ALONG DECK, 3" UP FACE OF CURB AND ALONG CONCRETE SHOULDER AT EXPANSION JOINTS. SEE SPEC. 519.05(B) OF THE 2001 STANDARD SPECIFICATIONS.
2. BLAST CLEAN 3'-0" FROM FACE OF CURB AND 3" UP CURB FACE PRIOR TO PLACING MEMBRANE.
3. TORCH APPLIED MEMBRANE SHALL EXTEND FROM FACE OF CURB TO FACE OF CURB.
4. POLYURETHANE MEMBRANE AND BLAST CLEANING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR TORCH APPLIED MEMBRANE.
5. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS 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 PLACEMENTS.
6. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.



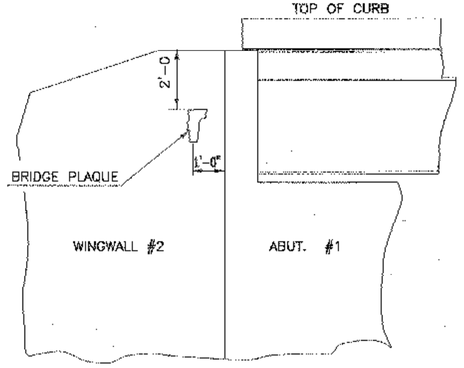
SCORE MARK DETAIL

NOT TO SCALE



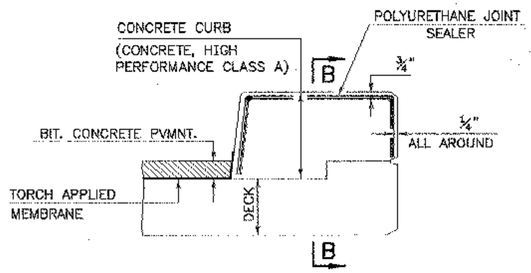
PLAN

NOT TO SCALE



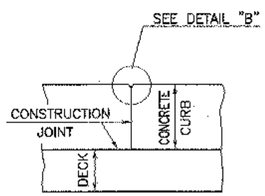
VIEW "A-A"

NOT TO SCALE



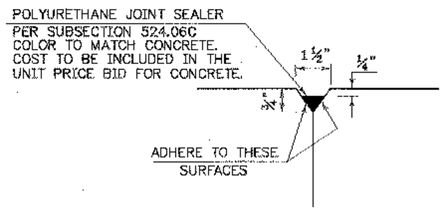
TYPICAL SECTION THROUGH CONCRETE CURB CONSTRUCTION JOINT

NOT TO SCALE



SECTION B-B

NOT TO SCALE



DETAIL "B"

NOT TO SCALE

LOCATE BRIDGE PLAQUE

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER. (DETAILS ABOVE ARE NOT MEANT TO BE SITE SPECIFIC)

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	
		Log Sta.	
Highway No.	VT RTE 14	Surv. Sta.	

VT RTE 14 OVER FIRST BRANCH OF THE WHITE RIVER

CURB DETAILS

Designed By	A.S.	Drawn By.	S.E.Newman
Checked By	Date	CLD Project Manager	
CLW/LMM	11/00	LMM	Date 11/00
PROJECT	ROYALTON	PROJECT NO.	BRS 0147(5) S
I.G.C. Info.			
Bridge Sheet No.		Sheet 42 Of 76	

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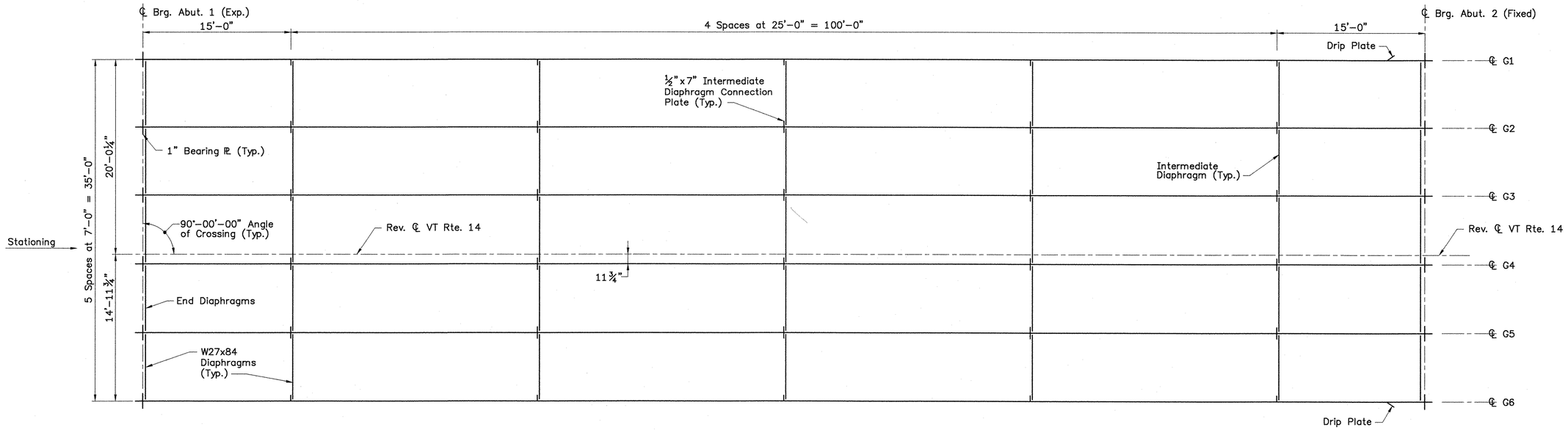
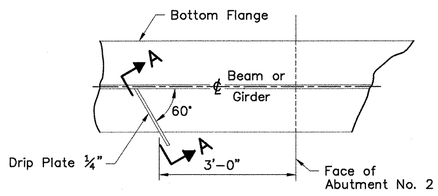
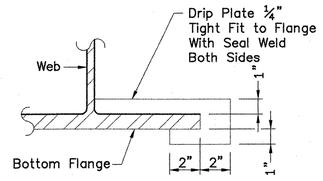


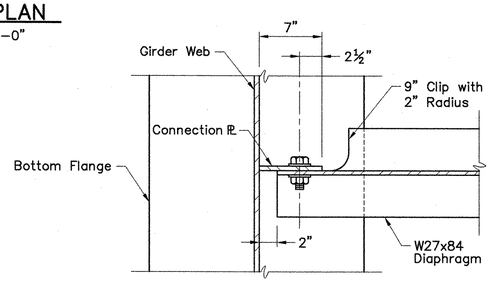
FRAMING PLAN
Scale: 3/16"=1'–0"



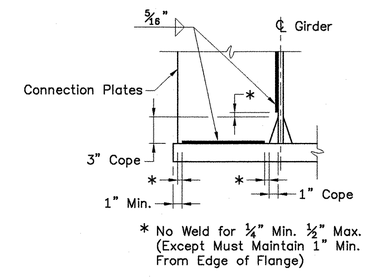
PLAN DRIP PLATE
N.T.S.



SECTION A–A
N.T.S.

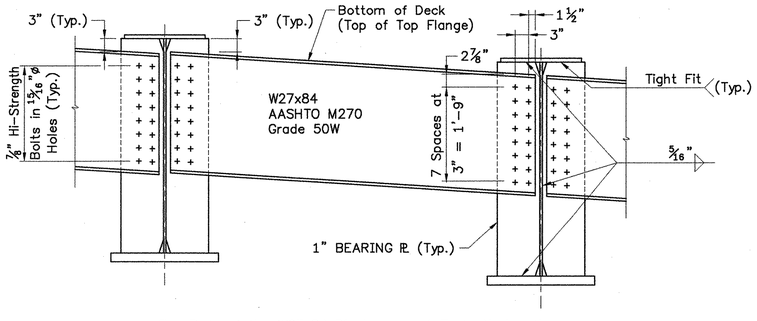


SECTION B–B
Scale: 1½"=1'–0"



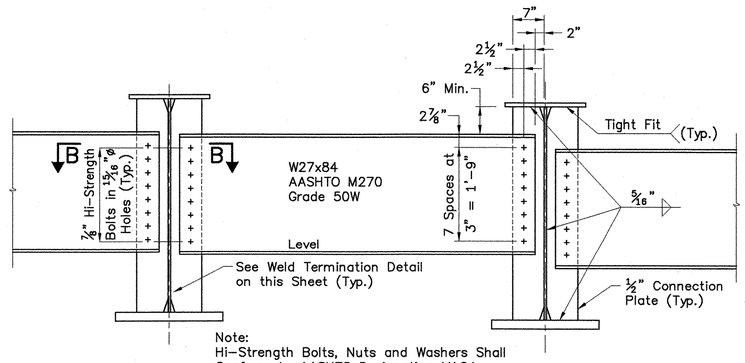
* No Weld for ¼" Min. ½" Max. (Except Must Maintain 1" Min. From Edge of Flange)

WELD TERMINATION AND COPING DETAILS
Scale: 1½"=1'–0"



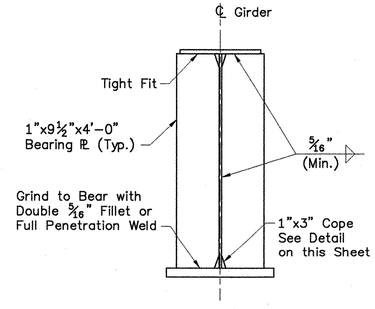
The Ends of the W27x84 Diaphragms at Each Abutment are to be Cut to be Vertical in the Erected Position.

TYPICAL DIAPHRAGM DETAILS AT ABUTMENTS
Scale: ¾"=1'–0"



Note:
Hi–Strength Bolts, Nuts and Washers Shall Conform to AASHTO Designation M164.

TYPICAL INTERMEDIATE DIAPHRAGM
Scale: ¾"=1'–0"



TYPICAL BEARING STIFFENERS AT ABUTMENTS
Scale: ¾"=1'–0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

VT. Route 14 over the First Branch of the White River

FRAMING PLAN

Designed By	AS	Drawn By.	SEN
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00

PROJECT ROYALTON	**PROJECT NO.** BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 43 Of 76

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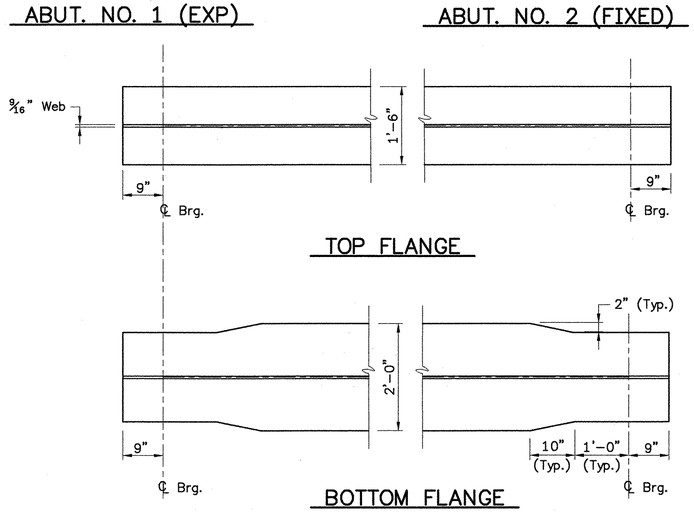
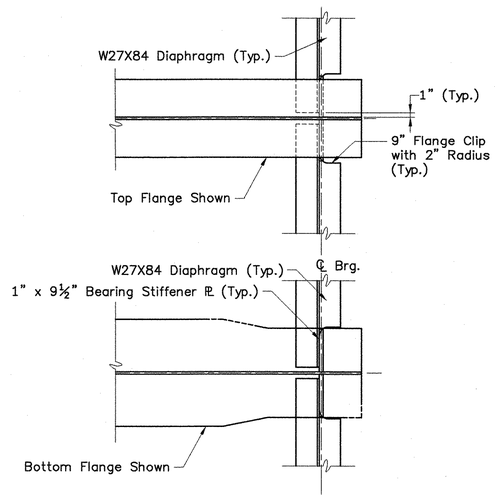


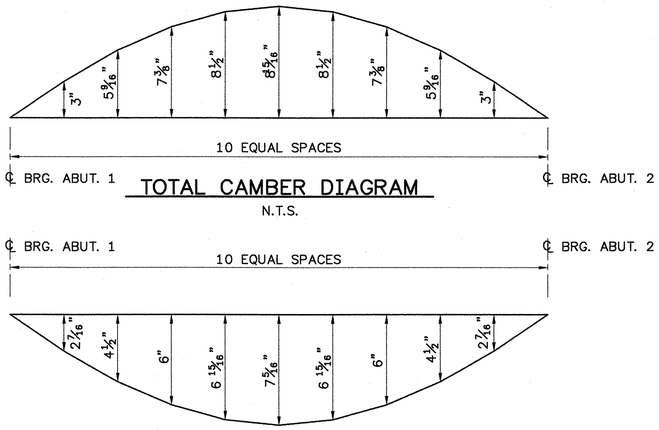
FLANGE TRIM DETAIL

Scale: ¾"=1'-0"



TYPICAL ABUTMENT DIAPHRAGM CONNECTION DETAILS

Scale: ¾"=1'-0"



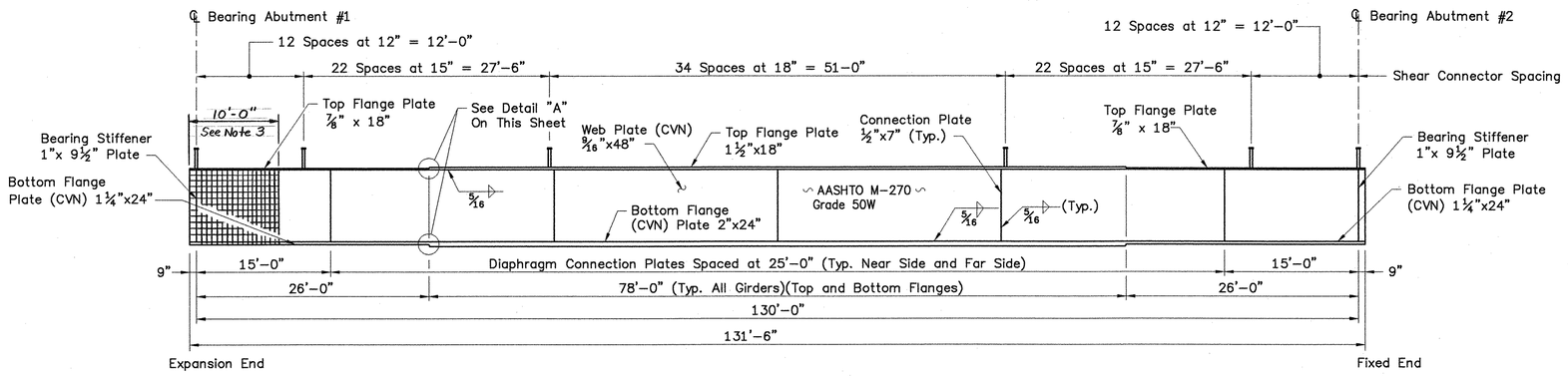
TOTAL CAMBER DIAGRAM

N.T.S.

DEAD LOAD DEFLECTION

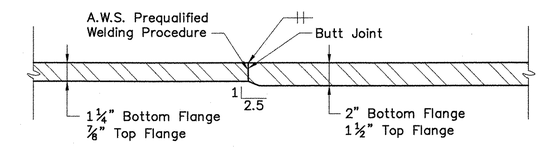
N.T.S.

NOTE:
EACH GIRDER SHALL BE CAMBERED A TOTAL OF 8 15/16".
TOTAL DEAD LOAD DEFLECTION HAS BEEN CALCULATED TO BE 7 5/16"".
THE DESIGN RESIDUAL POSITIVE CAMBER FOR THIS PROJECT IS 1 5/8".



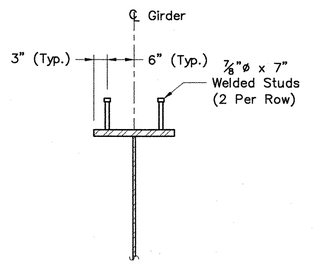
TYPICAL GIRDER ELEVATION

Horizontal Scale: ⅛"=1'-0"
Vertical Scale: ¼"=1'-0"



DETAIL A – FLANGE SPLICE

Scale: 3"=1'-0"



SHEAR CONNECTOR DETAIL

Scale: ¾"=1'-0"

FABRICATION NOTES:

1. AT THE CONTRACTOR'S OPTION, THE TOP AND/OR BOTTOM FLANGE TRANSITIONS MAY BE OMITTED, WITH THE THICKER PLATE EXTENDED TO GIRDER ENDS. IF THE CONTRACTOR SO OPTS, HE SHALL MAKE ALL NECESSARY MODIFICATIONS IN THE WORK, INCLUDING BUT NOT LIMITED TO BEARING SEAT ELEVATIONS, GIRDER CAMBER, BRIDGE SHOES, ETC. PAYMENT SHALL BE BASED ON GIRDER WEIGHT AS IF THE FLANGE TRANSITIONS WERE PROVIDED (I.E., NO INCREASE IN PAY WEIGHT).
2. THE CHARPY V-NOTCH TEST SHALL BE REQUIRED FOR ALL PLATES LABELED WITH CVN. SEE STANDARD SPECIFICATION 714 OF THE 2001 STANDARD SPECIFICATIONS.
3. THE EXPANSION ENDS OF THE GIRDERS AND THE ABUTMENT CROSSFRAMES WILL BE PAINTED AND GREASED. SEE SUPPLEMENTAL SPECIFICATION 513 AND THE DETAILS ON THIS SHEET.

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

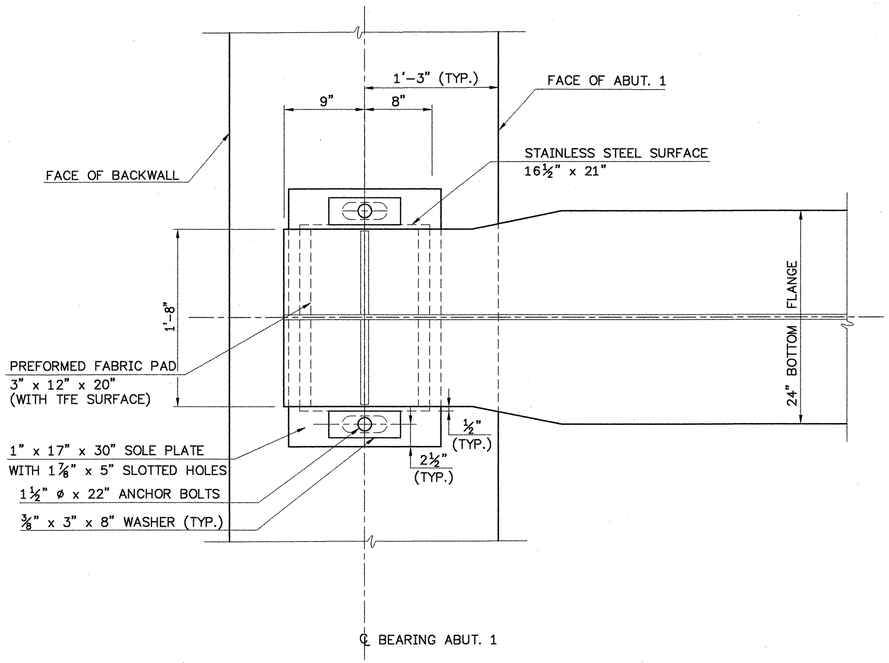
Town Of ROYALTON	Bridge No. 21
Highway No. VT. ROUTE 14	Log Sta. / Surv. Sta.

VT. Route 14 over the First Branch of the White River

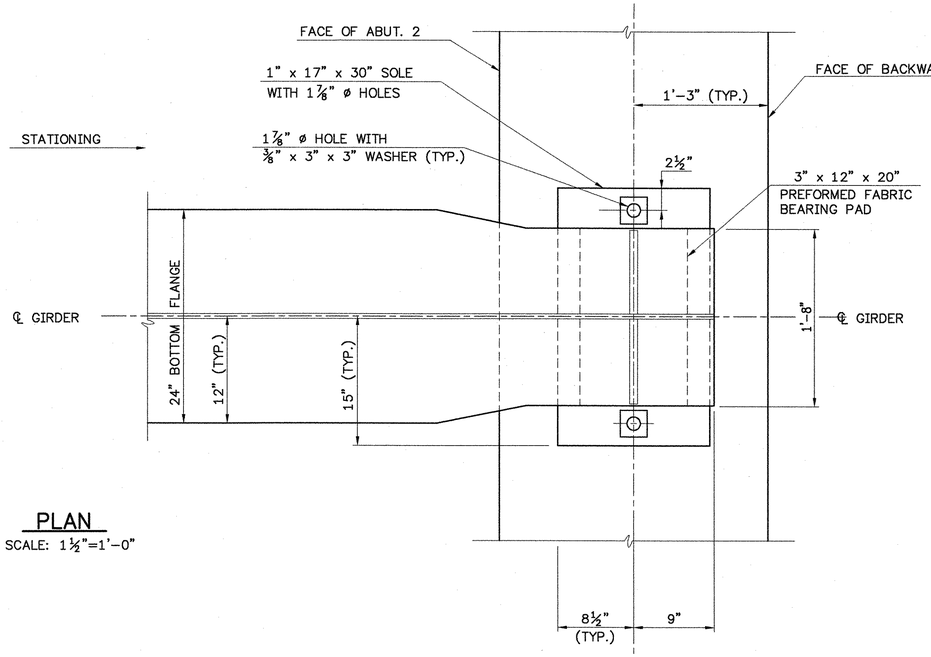
GIRDER ELEVATION & DETAILS

Designed By AS	Drawn By. SEN
Checked By CLW/LMM	Date 11/00
Bridge Design Supervisor LMM	Date 11/00
PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 44 Of 76

91298GDR (1=1)

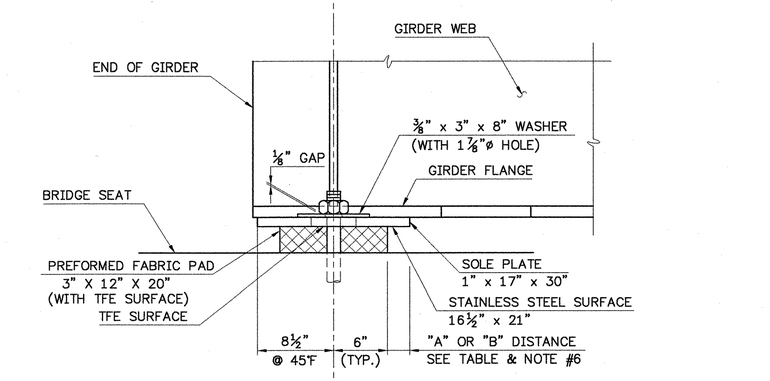


PLAN
SCALE: 1½"=1'-0"

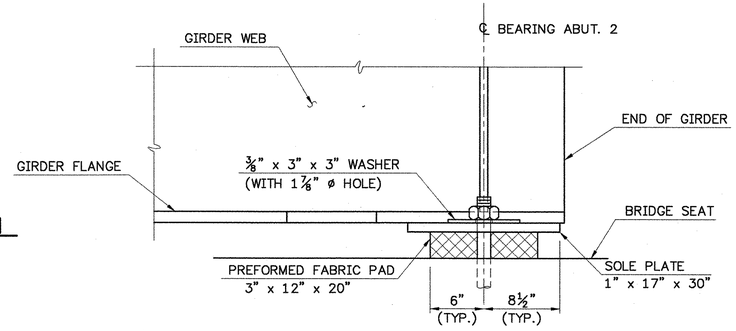


BEARING NOTES:

1. BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 AND 731 OF THE 2001 STANDARD SPECIFICATIONS. BEARINGS SHALL BE PREFORMED FABRIC BEARING.
2. BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.10 "BEARING DEVICE ASSEMBLY".
3. SHOP DRAWINGS CONFORMING TO SUBSECTION 531.03 OF THE 2001 STANDARD SPECIFICATIONS SHALL BE SUBMITTED TO INCLUDE WELDING AND BONDING PROCEDURES.
4. FABRICATION DRAWINGS SHALL IDENTIFY THE NUMBER OF LAYERS OF VULCANIZED SHEETS AND CORRESPONDING SHEET THICKNESS TO BE USED FOR FABRICATING THE BEARING PAD AND SHALL INCLUDE DETAILED PROCEDURES FOR BONDING THESE SHEETS TOGETHER.
5. THE CONCRETE SURFACE UNDER THE BEARING DEVICE SHALL BE LEVEL.
6. "A" DISTANCE IS THE FINAL SETTING FOR THE BEARING AFTER THE CONCRETE SLAB, CURB, PAVEMENT AND BRIDGE RAIL ARE PLACED. "B" DISTANCE IS LISTED FOR SETTING THE BEARING AFTER THE STRUCTURAL STEEL IS ERECTED AND BEFORE THE CONCRETE DECK IS POURED. THE DIFFERENCE IS THE THEORETICAL ELONGATION OF THE BOTTOM FLANGE DUE TO THE DEAD LOAD DEFLECTION. THE FINAL "A" DISTANCE, AS SHOWN IN THE TABLE, MUST BE ATTAINED WITHIN ⅛".
7. DESIGN CRITERIA:
   A. AVERAGE BEARING PRESSURE = 800 PSI
   B. MINIMUM ALLOWABLE DESIGN ROTATION = 0.015 RADIANS
   C. HORIZONTAL CAPACITY SHALL BE A MINIMUM OF 10% OF THE VERTICAL DESIGN LOAD (WITHOUT IMPACT).
   D. DESIGN LOAD PER BEARING = 169 KIPS (DEAD LOAD PLUS LIVE LOAD WITHOUT IMPACT).
8. ALL STEEL IN BEARING DEVICES (EXCEPT STAINLESS) SHALL BE AASHTO M270 GRADE 36.
9. ANCHOR BOLTS SHALL HAVE A MINIMUM OF 15" EMBEDMENT INTO THE CONCRETE AND SHALL CONFORM TO SUBSECTION 714.08 OF THE 2001 STANDARD SPECIFICATIONS.
10. ALL BEARING DEVICES SHALL BE GALVANIZED OR METALIZED AS PER SUBSECTIONS 531.04(b) AND 506.15 OF THE 2001 STANDARD SPECIFICATIONS AS MODIFIED BY THE GENERAL SPECIAL PROVISIONS FOR ALL PROJECTS. AREAS OF GALVANIZING OR METALIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE REPAIRED PER SUPPLEMENT SPECIFICATION SUBSECT 513.06(f).
11. ALL THE ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. ALL WASHERS SHALL BE ⅜" PLATE (MINIMUM). PAYMENT FOR ANCHOR BOLTS, NUTS AND WASHERS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 531.10 "BEARING DEVICE ASSEMBLY".

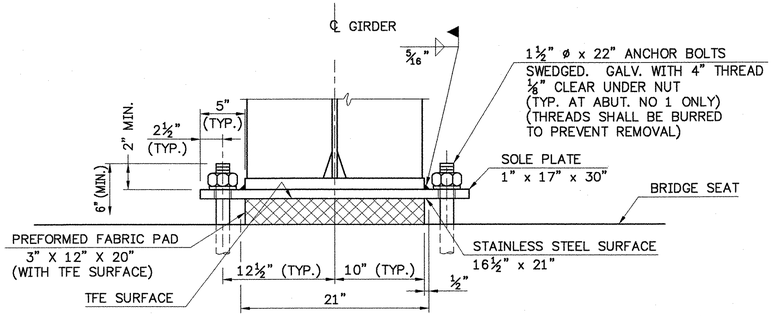


SIDE ELEVATION
SCALE: 1½"=1'-0"



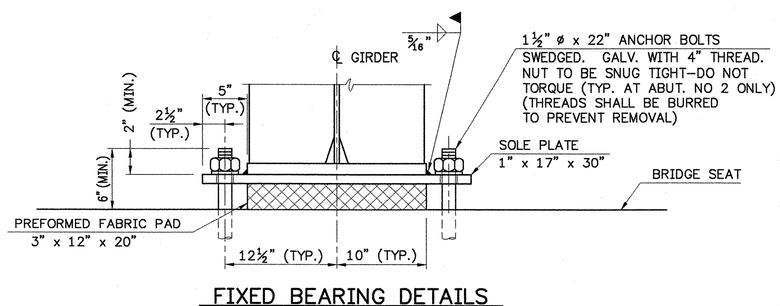
BEARING SETTING DIMENSIONS

TEMP	"A" DIST.	"B" DIST.
0°F	2 15/16"	3 9/16"
15°F	2 13/16"	3 7/16"
30°F	2 5/8"	3 1/4"
45°F	2 1/2"	3 1/8"
60°F	2 3/8"	2 15/16"
75°F	2 3/16"	2 13/16"
90°F	2 1/16"	2 11/16"
105°F	1 7/8"	2 1/2"



EXPANSION BEARING DETAILS

FRONT VIEW
SCALE: 1½"=1'-0"



FIXED BEARING DETAILS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON		Bridge No. 21
		Log Sta.
Highway No. VT. ROUTE 14		Surv. Sta.

VT. Route 14 over the White River

BEARING DETAILS

Designed By VES	Drawn By. VES
Checked By CLW/LMM	Date 11/00
	Bridge Design Supervisor LMM Date 11/00
PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 45 Of 76

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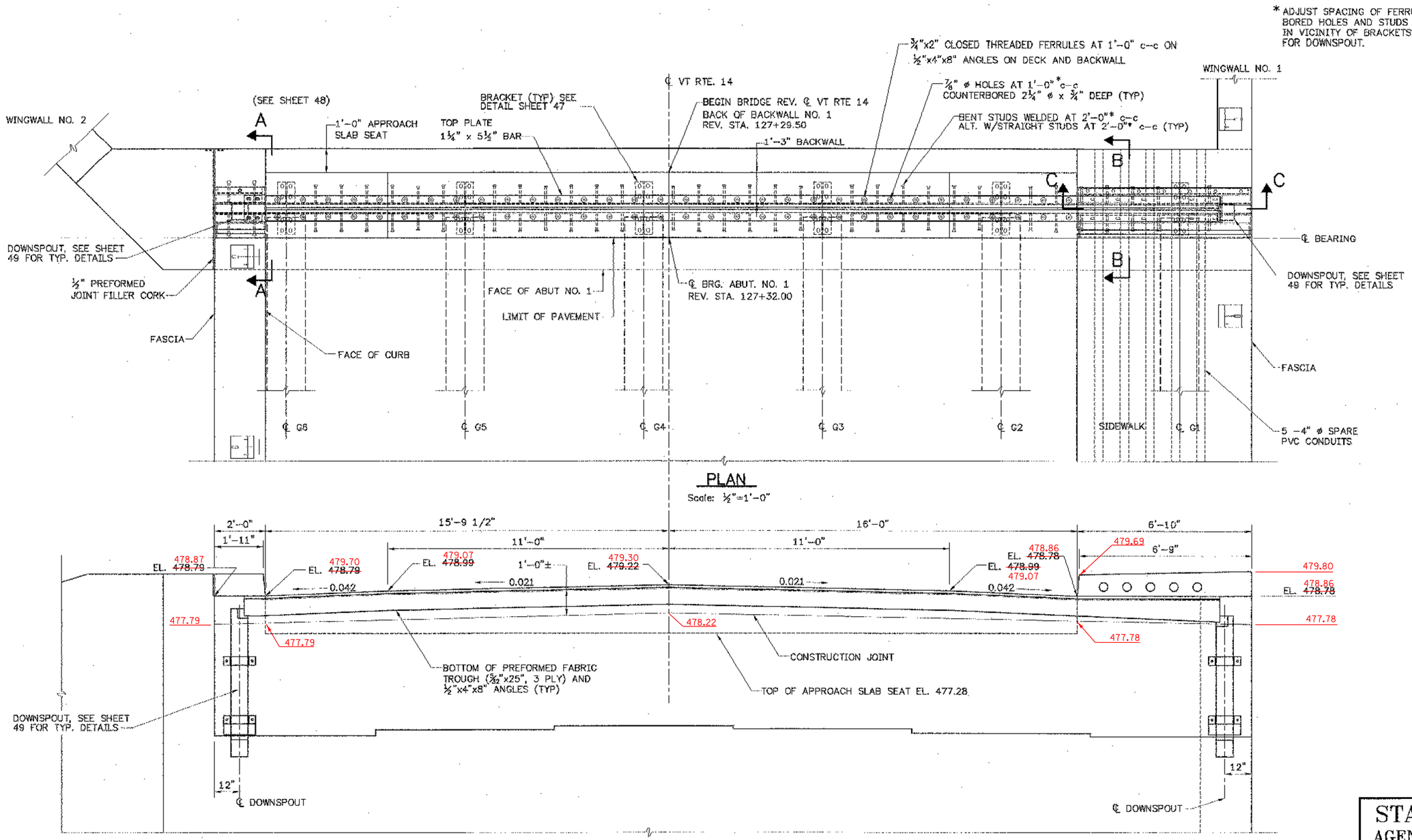

ELEVATION ABUT NO 1

(THROUGH ℄ JOINT, LOOKING AT BACKWALL)
Scale: ½"=1'-0"

SEE BRIDGE SHEETS 47, 48 FOR EXPANSION JOINT DETAILS AND SECTIONS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

VT. Route 14 over the White River

EXPANSION JOINT PLAN AND ELEVATION

Designed By	AS	Drawn By	KBG
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00

PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 46 Of 82

CLD
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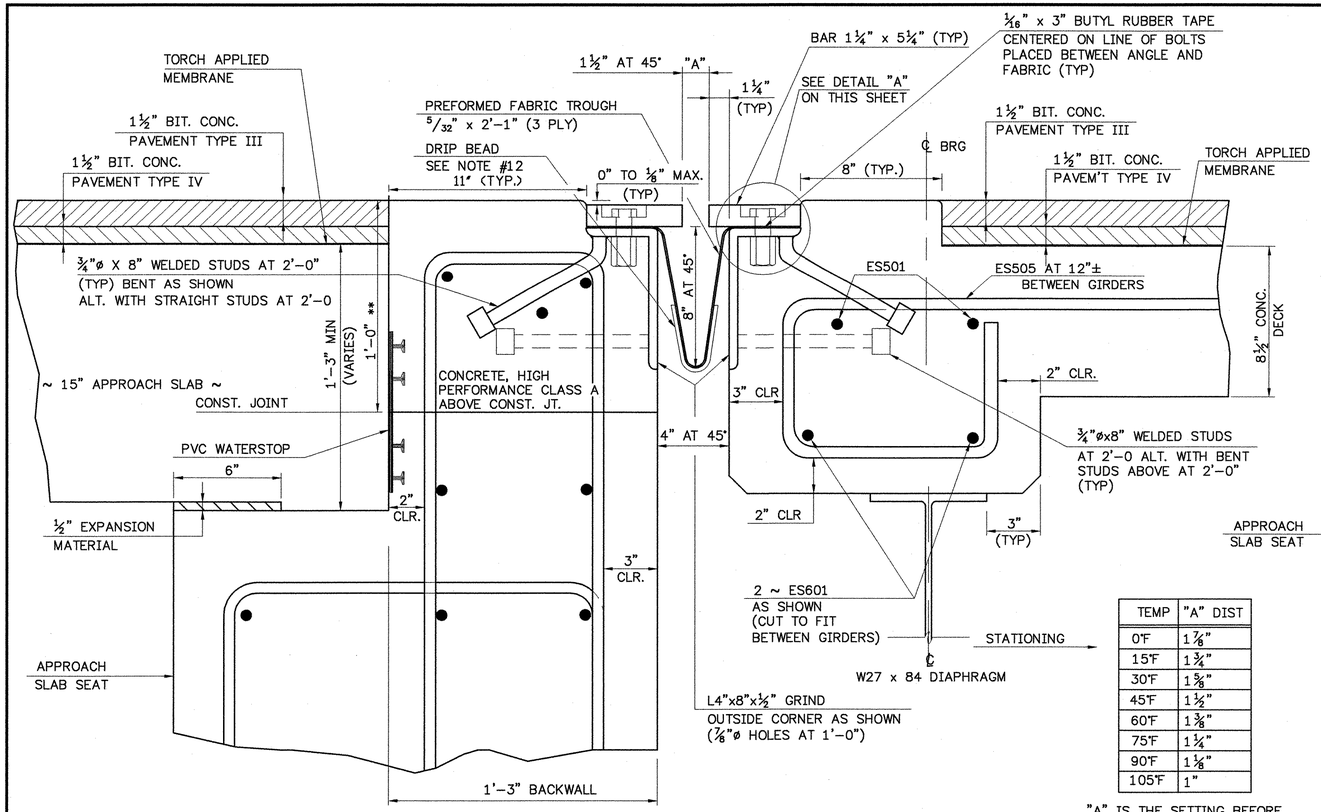
3129SEXS (1=1)

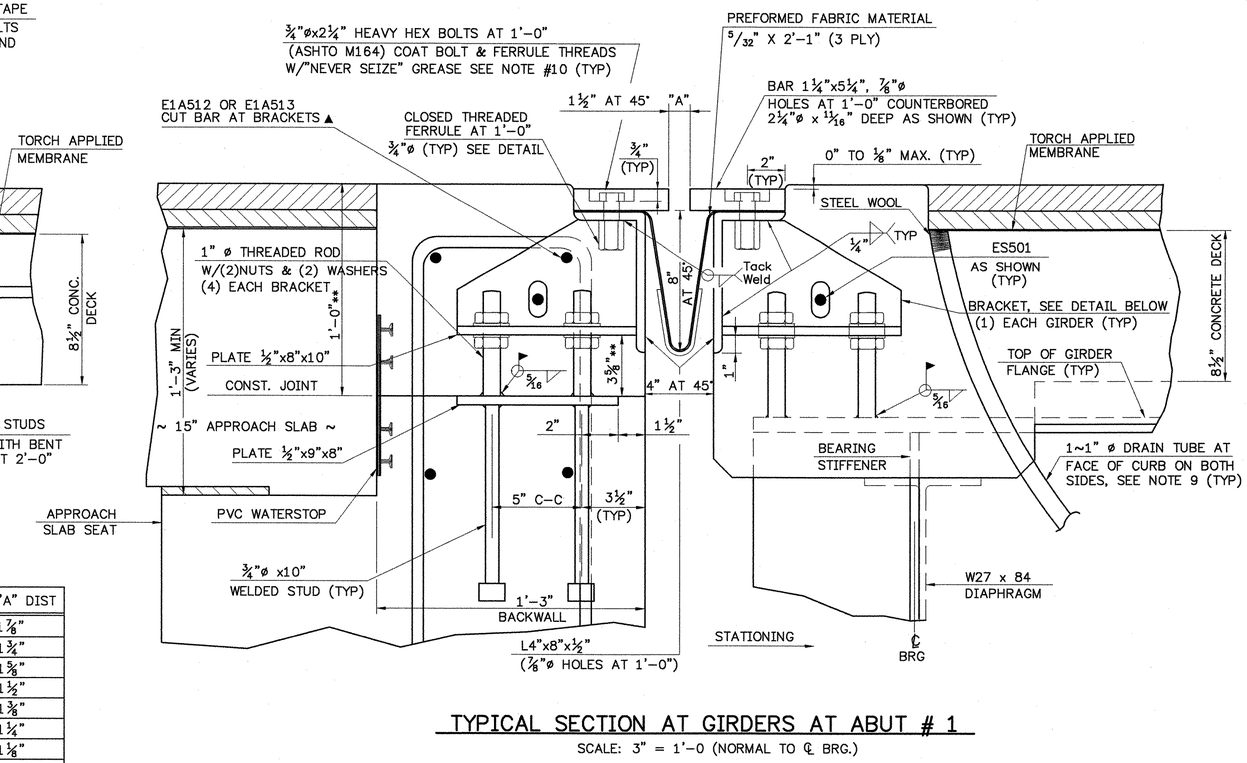


TEMP	"A" DIST
0°F	1⅞"
15°F	1¾"
30°F	1⅝"
45°F	1½"
60°F	1⅜"
75°F	1¼"
90°F	1⅛"
105°F	1"

"A" IS THE SETTING BEFORE DEAD LOADS ARE PLACED

TYPICAL SECTION BETWEEN GIRDERS AT ABUT #1

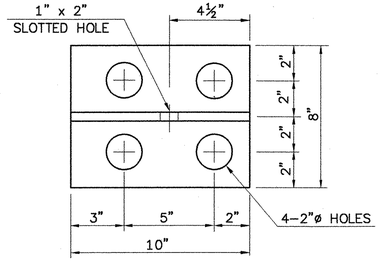
SCALE: 3" = 1'-0 (NORMAL TO ℄ BRG.)



TYPICAL SECTION AT GIRDERS AT ABUT # 1

SCALE: 3" = 1'-0 (NORMAL TO ℄ BRG.)

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 2001 STANDARD SPECIFICATIONS.
3. BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATION M-198, TYPE II.
4. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF BRIDGE DECK CONCRETE.
5. ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36 GALVANIZED OR METALIZED AS PER SUBSECTION 506.15 (a) OR (b) OF THE 2001 STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED. THREADED RODS SHALL BE AASHTO M223 (ASTM A572), GRADE 50. NUTS AND WASHERS AASHTO M164 (ASTM A325).
6. THE ITEM "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.
7. THE 4" x 8" x ½" ANGLES SHALL BE FURNISHED AS ONE CONTINUOUS PIECE. THE 1¼" x 5¼" BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
8. COAT CONCRETE CONTACT SURFACES WITH AN EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02 OF THE 2001 STANDARD SPECIFICATIONS. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 516.10 "BRIDGE EXPANSION JOINT".
9. A 1" DIAMETER PLASTIC DRAIN TUBE (PER STD. SPEC. 740.06) SHALL BE INSTALLED AS SHOWN AT THE FACE OF CURB ON BOTH SIDES. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO EXTEND BELOW THE BOTTOM OF THE ADJACENT GIRDER. THE DRAIN TUBES SHALL BE FASTENED TO THE GIRDERS USING A METHOD APPROVED BY THE ENGINEER.
10. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER (PER STD. SPEC. 707.06). PAYMENT FOR THE WORK SHALL BE SUBSIDIARY TO ITEM 516.10.
11. PAYMENT FOR WATERSTOP SHALL BE SUBSIDIARY TO CONCRETE PAY ITEM.
12. A DRIP BEAD OF ¼" 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.
13. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
14. THE EXPANSION JOINT SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.



BRACKET PLAN

SCALE: 3" = 1'-0

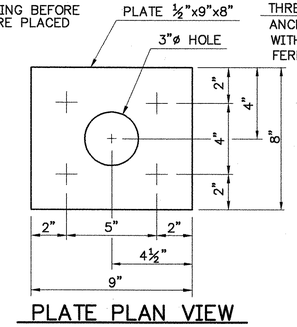
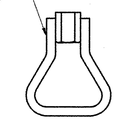


PLATE PLAN VIEW

SCALE: 3" = 1'-0

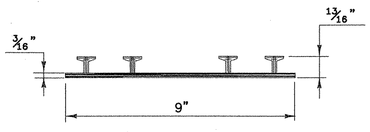


ANCHOR FERRULE DETAIL

SCALE: 3" = 1'-0

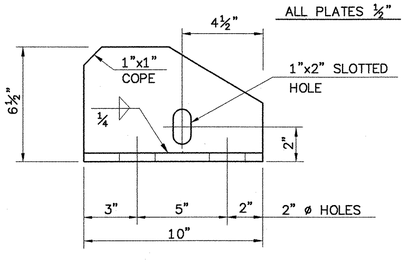
NOTE:
THREADED CONCRETE ANCHORS MAY BE SUB-STITUTED FOR CLOSED THREADED FERRULE

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



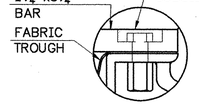
P. V. C. WATERSTOP FOR CONSTRUCTION JOINTS

THE COSTS FOR P. V. C. WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.



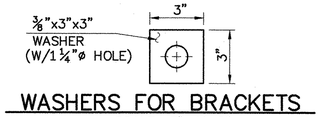
BRACKET ELEVATION

SCALE: 3" = 1'-0



DETAIL "A"

SCALE: 3"=1'-0"



WASHERS FOR BRACKETS

SCALE: 3"=1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON	Bridge No. 21
Highway No. VT RTE 14	Log Sta.
	Surv. Sta.

VT RTE 12A OVER 3RD BRANCH OF THE WHITE RIVER

EXPANSION JOINT DETAILS (10F 2)

Designed By AS	Drawn By. VAOT/KBG
Modified & Checked By Date CLW/LMM 11/00	CLD Project Manager LMM Date 1/00
PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info. Translated To AutoCAD	
Bridge Sheet No.	Sheet 47 Of 76

CLD
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Manchester, NH 03101
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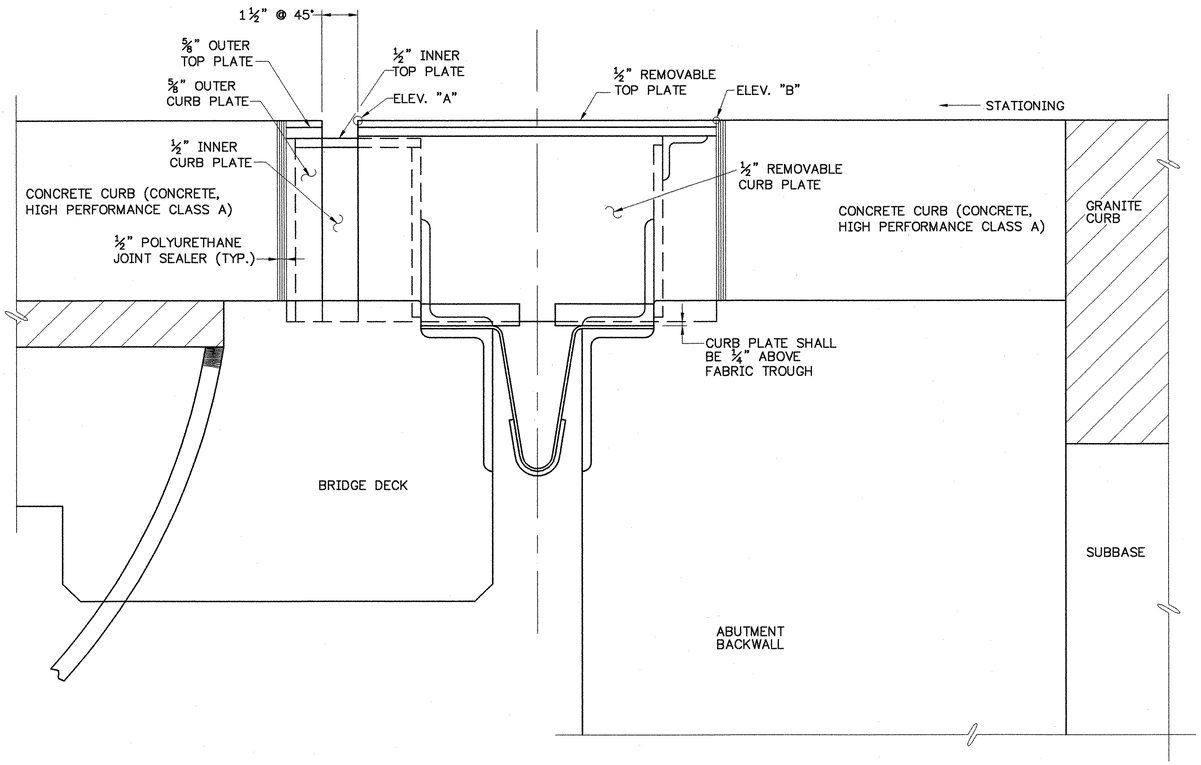
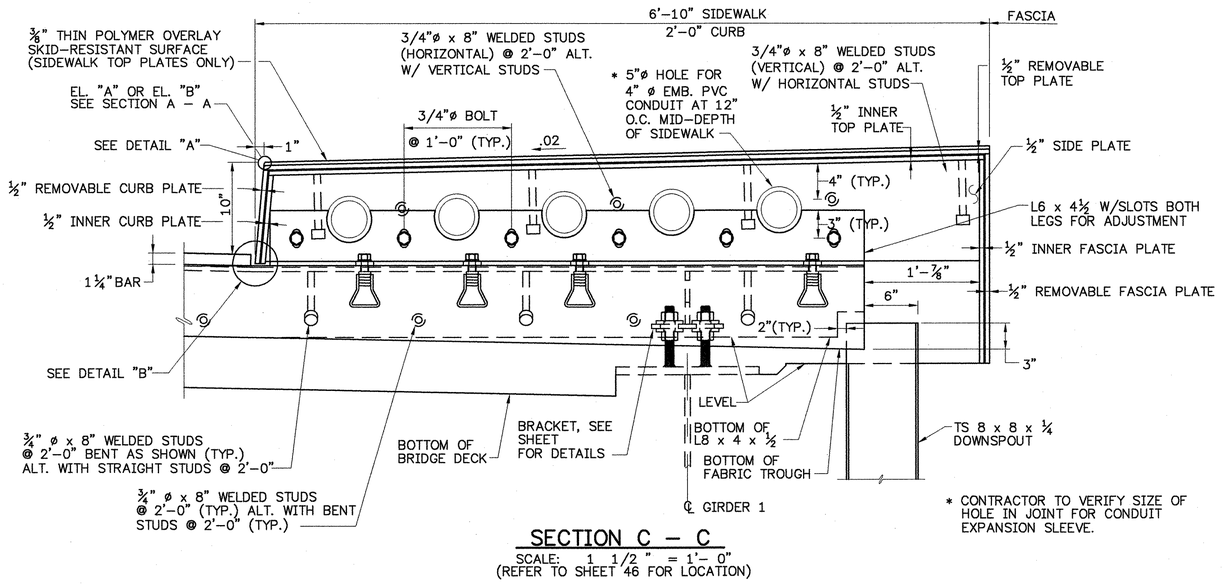
91298EXJ.dwg (1=4)(plot)



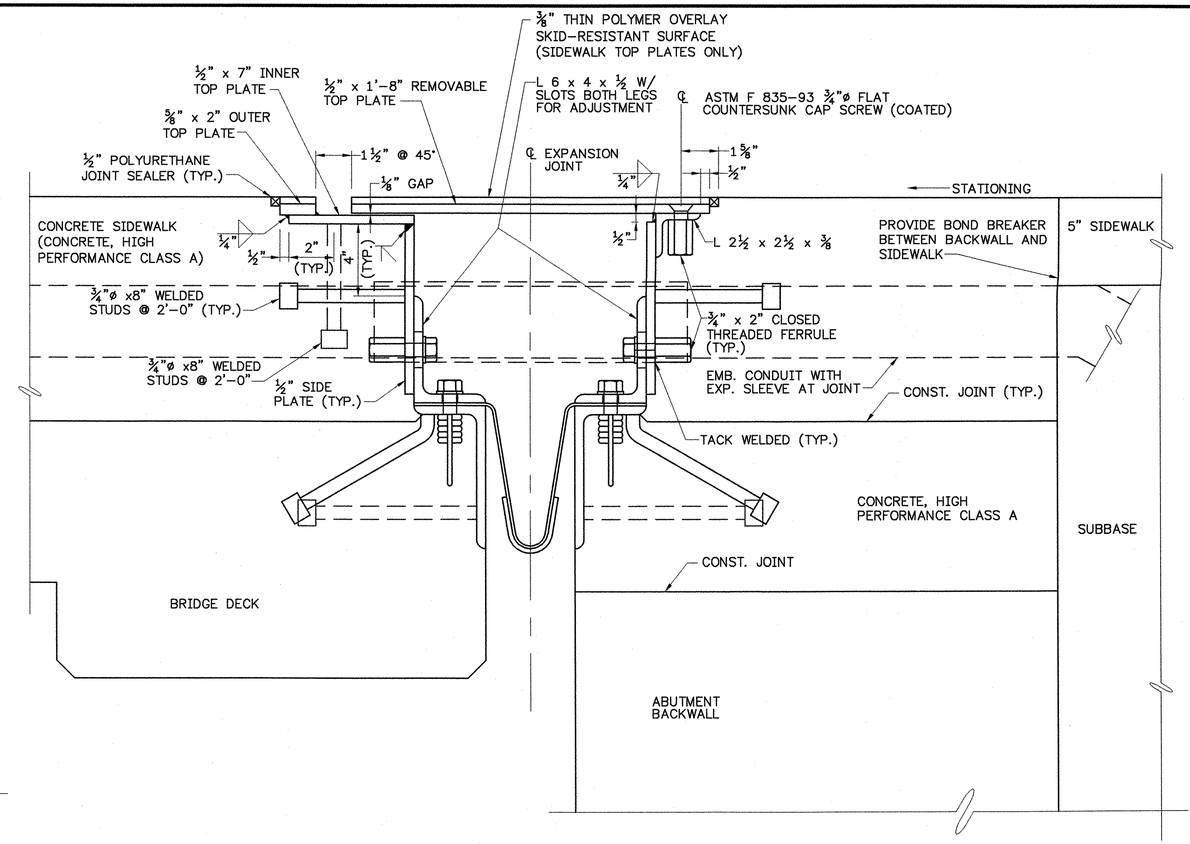
SECTION A – A

SCALE: 3" = 1'– 0"
(REFER TO SHEET 46 FOR LOCATION)



SECTION C – C

SCALE: 1 1/2 " = 1'– 0"
(REFER TO SHEET 46 FOR LOCATION)

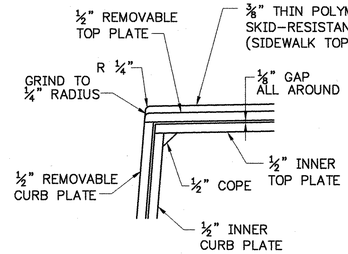


SECTION B – B

SCALE: 3" = 1'– 0"
(REFER TO SHEET 46 FOR LOCATION)

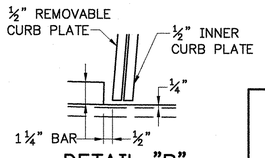
SIDEWALK ELEVATION TABLE		
ABUTMENT	"A"	"B"
NO. 1	479.60	479.61

CURB ELEVATION TABLE		
ABUTMENT	"A"	"B"
NO. 1	479.61	479.62



DETAIL "A"

SCALE: 3" = 1'– 0"



DETAIL "B"

SCALE: 3" = 1'– 0"

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

VT. ROUTE 14 OVER THE WHITE RIVER

EXPANSION JOINT DETAILS (2 OF 2)

Designed By	VAOT/LMM	Drawn By.	VAOT/KBG
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00

PROJECT: ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 48 Of 76

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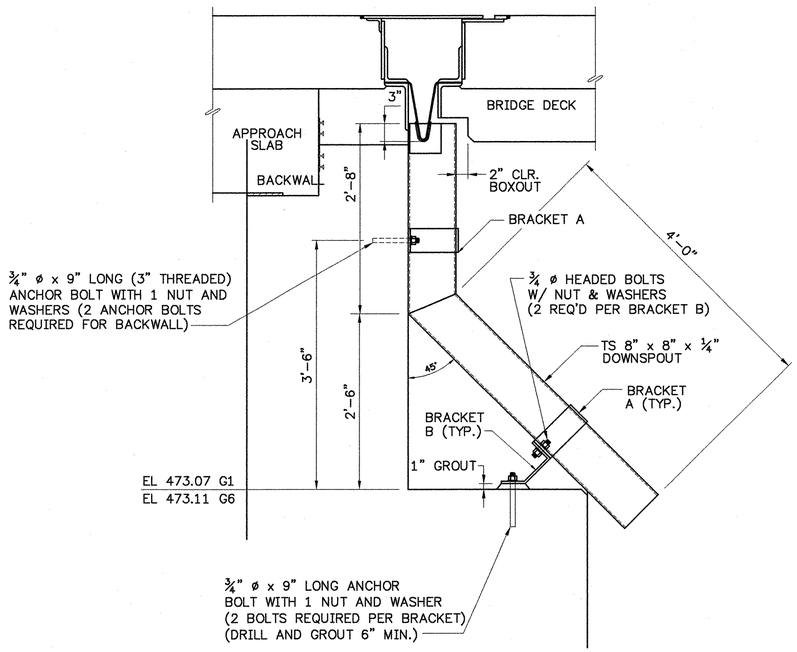
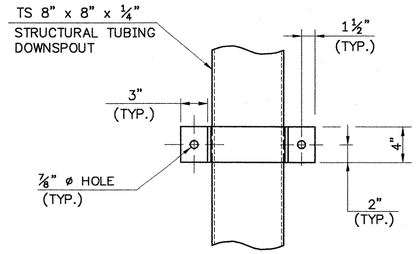


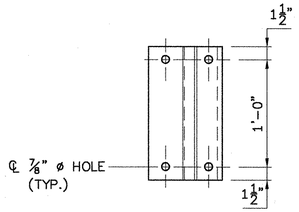
TYPICAL DOWNSPOUT DETAIL

SCALE: 1" = 1'– 0"
(REFER TO SHEET 46 FOR LOCATION)



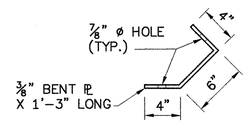
ELEVATION VIEW OF BRACKET A

SCALE: 1½" = 1'– 0"



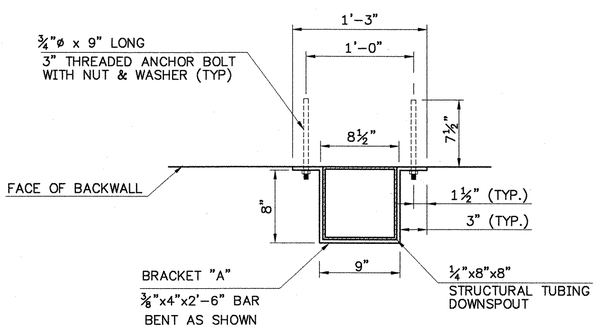
PLAN VIEW OF BRACKET "B"

SCALE: 1½" = 1'– 0"



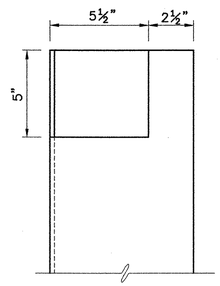
BRACKET B DETAIL

SCALE: 1½" = 1'– 0"



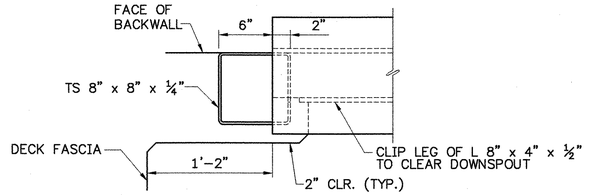
DETAILS FOR ATTACHING DOWNSPOUT TO BACKWALL

SCALE: 1½" = 1'– 0"



DOWNSPOUT CUTOUT FOR TROUGH

SCALE: 3" = 1'– 0"



BOTTOM OF DECK TO BE BOXED OUT AS SHOWN TO ALLOW DOWNSPOUT TO COME UP UNDERNEATH THE DRAIN TROUGH DECK REINFORCING STEEL TO BE CUT AS REQUIRED TO MAINTAIN 3" CLEARANCE FROM BOXOUT

PLAN VIEW OF DECK BOXOUT FOR DOWNSPOUT

SCALE: 1½" = 1'– 0"

DOWNSPOUT NOTES:

1. HOLLOW STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A–500 OR ASTM A–501.
2. ALL BARS SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED.
3. DOWNSPOUT SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A–123 AFTER FABRICATION.
4. ALL DOWNSPOUT BOLTS AND RELATED HARDWARE SHALL BE ASTM A–307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A–153 (AASHTO M232).
5. ANY PLACE WHERE THE GALVANIZING HAS BEEN REMOVED FROM THE DOWNSPOUT OR BRACKET EITHER BY CUTTING, BURNING, WELDING, PLACING, OR ANY OTHER MEANS, SHALL BE REPAIRED PER ASTM A780.
6. DOWNSPOUT SHALL BE PAID FOR UNDER THE ITEM 506.55 "STRUCTURAL STEEL (PLATE GIRDER)".

91298_DNSPTDTL.dwg

STATE OF VERMONT
AGENCY OF TRANSPORTATION

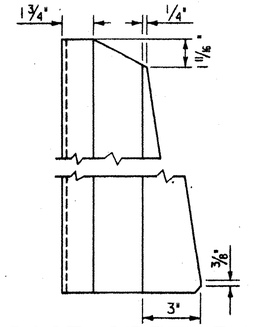
Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

VT. Route 14 over the White River

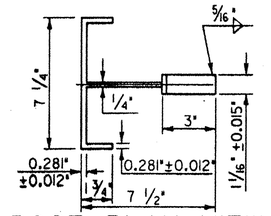
DOWNSPOUT DETAILS

Designed By	AS	Drawn By.	KBG
Checked By CLW/LMM	Date 11/00	Bridge Design Supervisor LMM	Date 11/00
PROJECT ROYALTON		PROJECT NO. BRS 0147(5) S	
I.G.C. Info.			
Bridge Sheet No.		Sheet 49 Of 76	

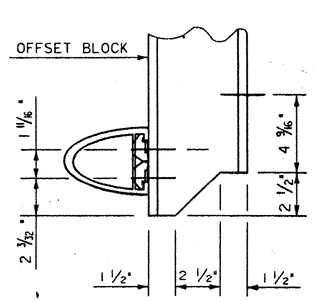
CLD Costello Lomasney & de Napoli, Inc.
Consulting Engineers
540 Commercial Street
Manchester, NH 03101
(603)668-8223 FAX(603)668-8802



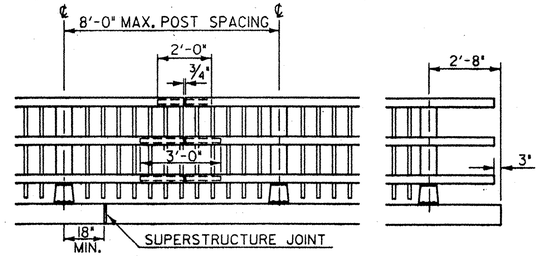
POST SIDE VIEW



POST PLAN VIEW

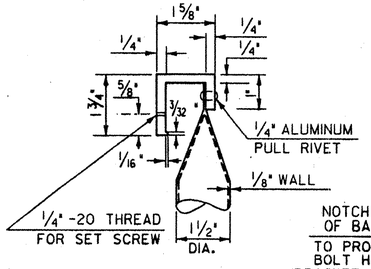


COPING DETAIL

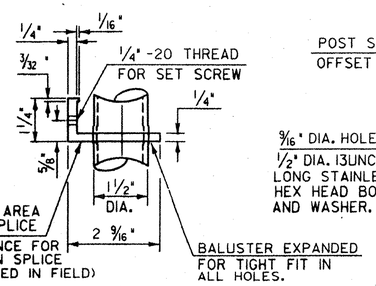


FRONT ELEVATION OF THREE RAIL WITH SPINDLES

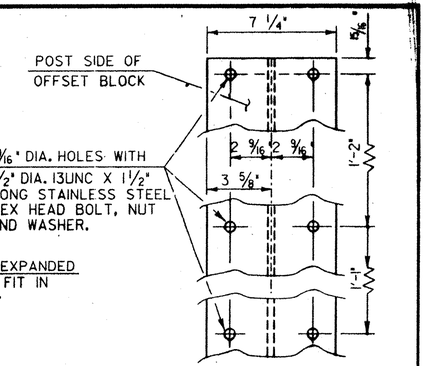
NOTE : RAIL POSTS ARE TO BE SET NORMAL TO GRADE UNLESS OTHERWISE DESIGNATED ON BRIDGE PLANS. ALL DIMENSIONS ARE TYPICAL UNLESS OTHERWISE DESIGNATED ON BRIDGE PLANS.



DETAIL A



DETAIL B



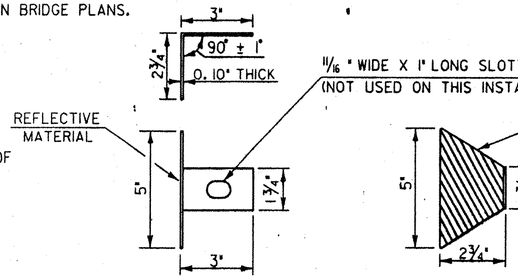
OFFSET BLOCK CONNECTION

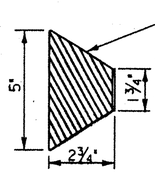
THIS REFLECTORIZED ALUMINUM DELINEATOR IS TO BE ERECTED EVERY 30 FEET (OR CLOSEST POST) WITH 2 NO. 8 X 3/4" SELF-TAPPING SCREWS.

DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052-H32.

REFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVER'S LEFT AND SILVER ON THEIR RIGHT.

PAYMENT SHALL BE SUBSIDIARY TO ALL OTHER ITEMS.



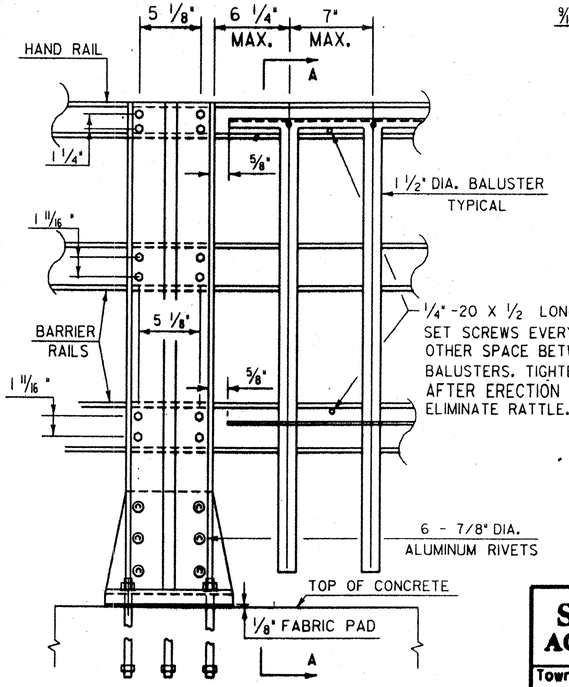


REFLECTOR DETAILS

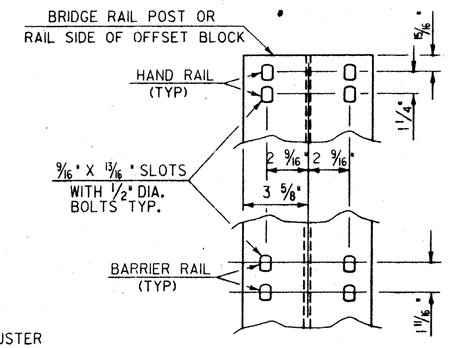
ALLOWABLE STRESSES:

RAILING : 21,000 PSI TENSION
22,000 PSI COMPRESSION

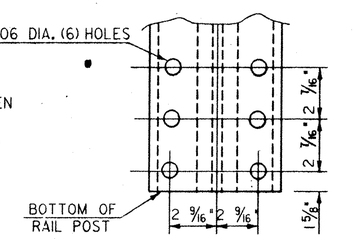
POSTS : 17,000 PSI TENSION
19,000 PSI COMPRESSION



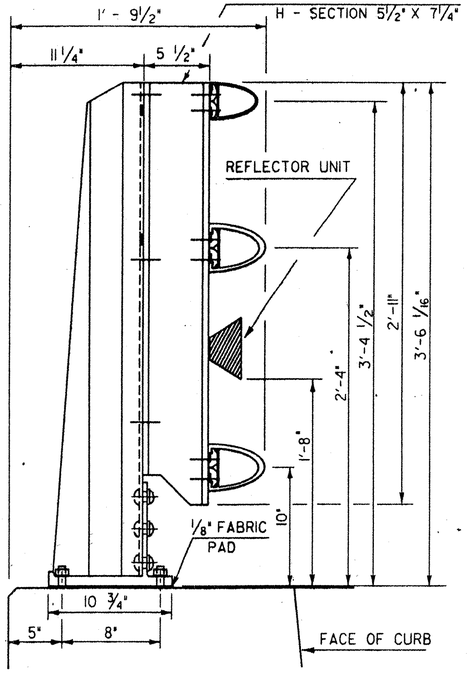
OUTSIDE ELEVATION OF THREE RAIL POST & SPINDLES



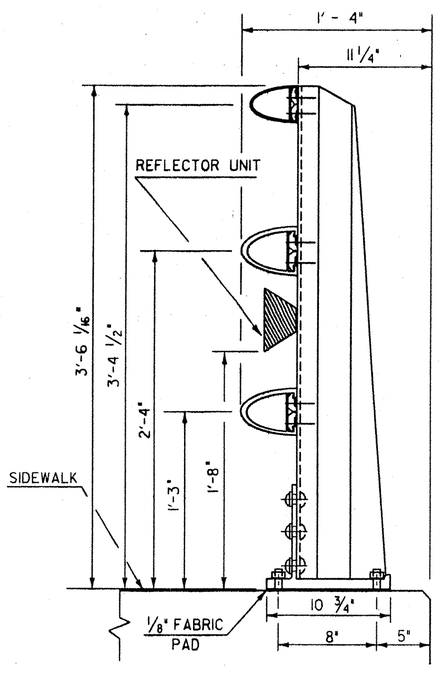
RAIL CONNECTION



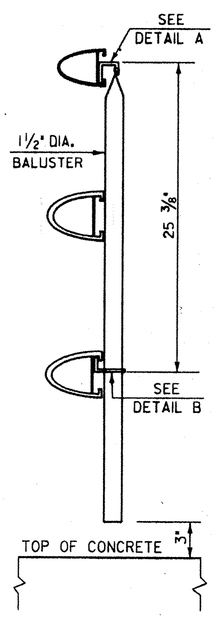
POST BASE BOLT HOLE DETAILS



SIDE ELEVATION OF THREE RAIL TO BE USED ON CURB SIDE



SIDE ELEVATION OF THREE RAIL TO BE USED ON SIDEWALK SIDE



SECTION AA

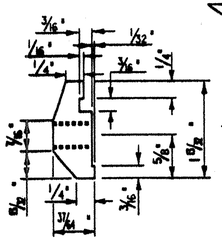
RAIL POST DETAILS ON SUPERSTRUCTURE

DETAILS OF SPINDLES FOR ALUMINUM RAILING

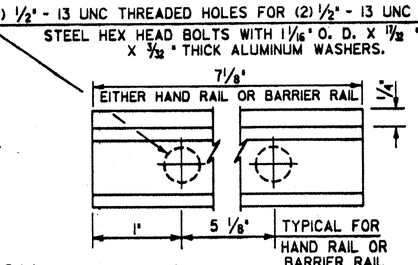
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON	Bridge No. 21
Highway No. VT. ROUTE 14	Log. Sta. / Surv. Sta.
VT. ROUTE 14 OVER THE WHITE RIVER	
ALUMINUM BRIDGE RAILING DETAILS	
Designed By	Drawn By
Checked By Date	Bridge Design Supervisor Date
PROJECT ROYALTON	PROJECT NO. BRS 0147(5)S
L.G.C. Info. ZHI:[30,50]SBR191.DGN	IPARM:SBR191SHI
Bridge Sheet No.	Sheet 50 of 76

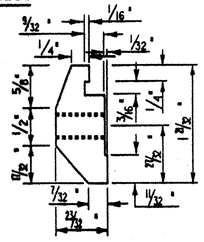
02-04-93



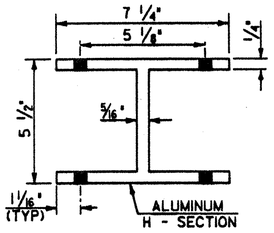
POST CONNECTION HAND RAIL SECTION



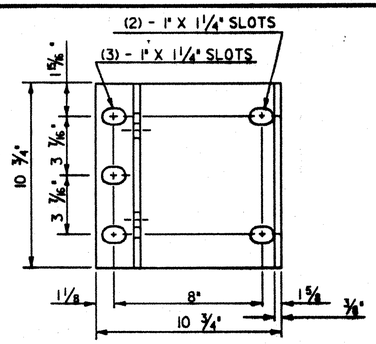
POST CONNECTION ELEVATION



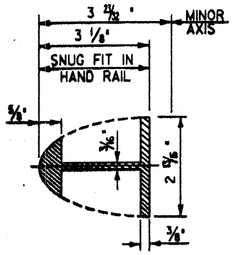
POST CONNECTION BARRIER RAIL SECTION



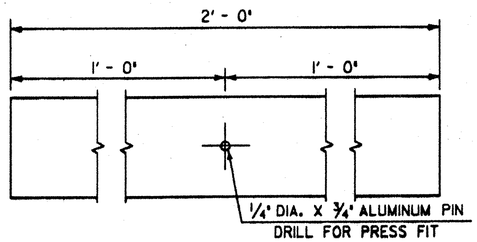
PLAN VIEW OF OFFSET BLOCK (TO BE USED ON SUPERSTRUCTURE ON CURB SIDE)



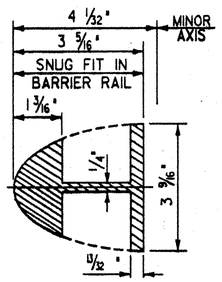
POST BASE PLAN



HAND RAIL SPLICE SECTION

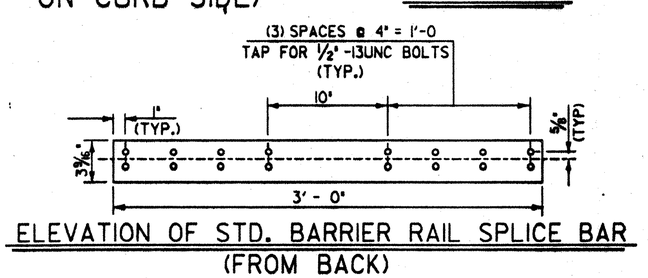


ELEVATION OF HAND RAIL SPLICE BAR

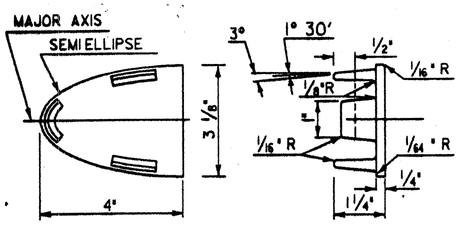


BARRIER RAIL SPLICE SECTION

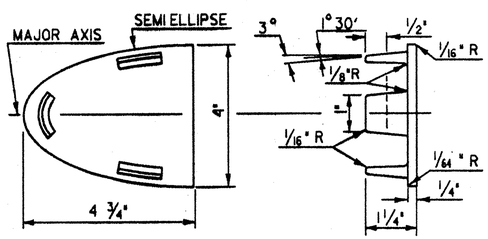
(SEE SHEET 45 FOR ELEVATION OF BARRIER RAIL SPLICE BAR)



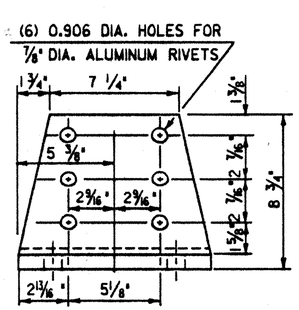
ELEVATION OF STD. BARRIER RAIL SPLICE BAR (FROM BACK)



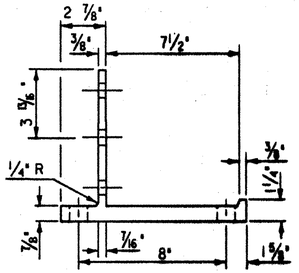
HAND RAIL END CAP



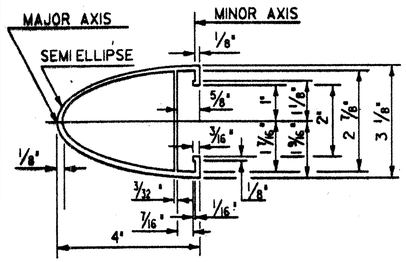
BARRIER RAIL END CAP



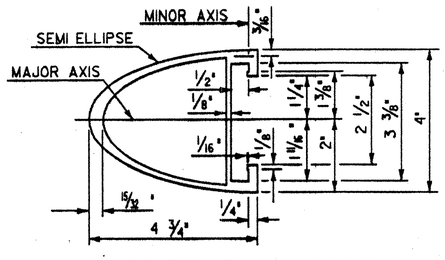
POST BASE FRONT ELEVATION



POST BASE SECTION

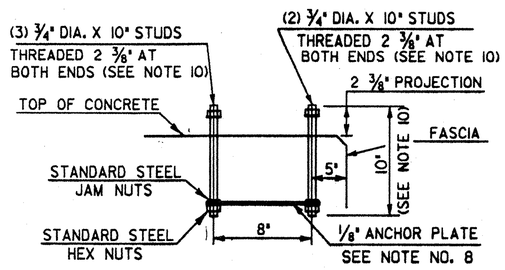


HAND RAIL SECTION

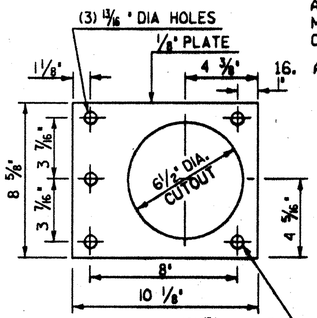


BARRIER RAIL SECTION

(SEE SHEET 45 FOR ELEVATION OF BARRIER RAIL)



POST ANCHOR ASSEMBLY



ANCHOR PLATE

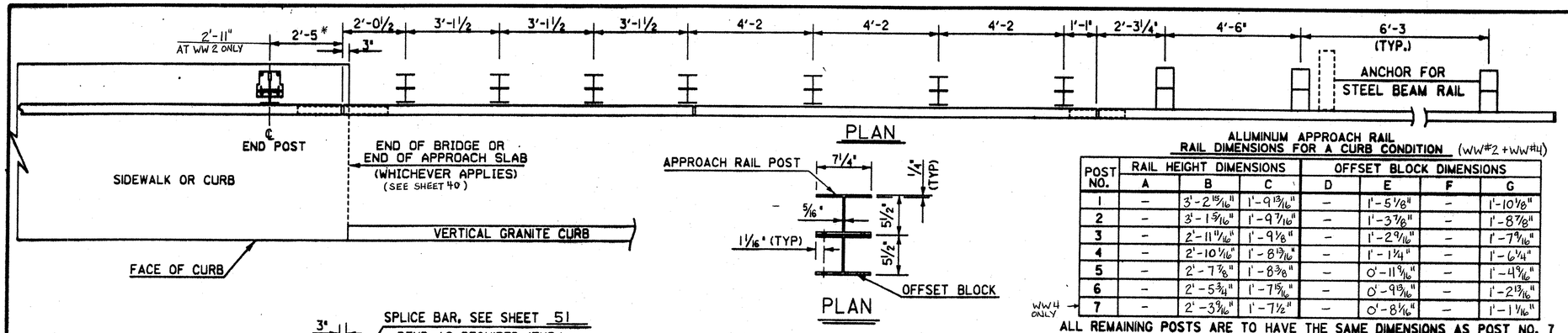
NOTES

1. ANCHOR BOLTS, WASHERS AND HEAVY HEX NUTS MAY BE ANY OF THE FOLLOWING:
   - A. ASTM A449 GALVANIZED, OR
   - B. AASHTO M164 (ASTM A325) GALVANIZED
   - C. BOLTS AND WASHERS OF STAINLESS STEEL ATSM A276, TYPE 304 (MINIMUM ULTIMATE STRENGTH OF 100,000 PSI) WITH STAINLESS STEEL NUTS OF ASTM A194, GRADE 8NA.
2. ALUMINUM POSTS, POST BASES, SPLICE BARS, CONNECTION BARS, RAILS AND BALUSTER FRAMES SHALL CONFORM TO ASTM B221 ALLOY 6061-T6 OR ALLOY 6351-T5. MINIMUM ALLOWABLE STRESS F_y = 35,000 PSI.
3. ALUMINUM BALUSTER TUBES SHALL CONFORM TO ASTM B210 ALLOY 6061-T5 OR 6063-T5.
4. ALUMINUM RAIL END CAPS SHALL CONFORM TO ASTM B26 ALLOY 356-T6.
5. THE POST, RAIL, AND OFFSET BLOCK CONNECTION BOLTS SHALL BE EITHER ASTM A193 OR ASTM A320. EITHER ONE SHALL BE CLASS 1, B8 GRADE AISI 304 WITH AN ULTIMATE TENSILE STRENGTH OF 75,000 PSI. NUTS FOR EITHER OF THE ABOVE BOLTS SHALL BE ASTM A194, GRADE 8, STAINLESS STEEL WITH AN ULTIMATE TENSILE STRENGTH OF 75,000 PSI.
6. SET SCREWS FOR ATTACHING BALUSTERS TO RAILING SHALL BE ASTM F880, TYPE 303 MATERIAL.
7. RIVETS SHALL BE COLD DRIVEN HIGH BUTTON HEAD "CONE POINT", CONFORMING TO ASTM B316 ALLOY 6061-T6.
8. THE ANCHOR PLATE FOR THE POST ANCHOR ASSEMBLY SHALL BE ASTM A36 STRUCTURAL STEEL.
9. WELDING SHALL CONFORM TO THE REQUIREMENTS OF SUBSECTION 506.10 USING THE GMAW-INERT GAS PROCESS AND AWS ER 5356 ELECTRODE WIRE.
10. UNLESS OTHERWISE SPECIFIED, ANCHOR BOLTS SHALL BE CAST INTO THE CONCRETE AS DETAILED.
11. WHENEVER FEASIBLE BARRIER RAIL AND HAND RAIL SECTIONS, SHALL BE FULL LENGTH SECTIONS (40' ±) AND WHEN POSSIBLE SHALL BE ATTACHED TO THREE POSTS. RAILS SHALL BE SPLICED AT EACH DECK JOINT AND INTERMITTENTLY AS REQUIRED. SPLICES SHALL OCCUR WITHIN THE SAME PANEL.
12. ENDS OF RAILS SHALL BE CUT SQUARE AND GROUND FREE OF BURRS OR RAGGED EDGES. EXPOSED ENDS SHALL BE CAPPED.
13. THE CONCRETE CONTACT SURFACE AT THE POST BASE SHALL BE BUSH HAMMERED AND/OR SHIMMED AS REQUIRED FOR PROPER POST ALIGNMENT. POST HEIGHT ADJUSTMENTS LESS THAN 1/4" SHALL BE WITH 1/16" AND 1/8" SHIMS. CORRECTIONS EXCEEDING 1/4" SHALL BE WITH EPOXY MORTAR CONFORMING WITH SECTION 530. FABRIC BEARING PADS AND ANY REQUIRED SHIMS OR EPOXY MORTAR ARE SUBSIDIARY TO THE UNIT PRICE BID FOR THE RAILING.
14. SHIMS AND 1/8" FABRIC BEARING PADS SHALL BE 10 3/4" SQUARE WITH SLOTTED HOLES SIZED AND LOCATED THE SAME AS THE POST BASE DETAIL. FABRIC BEARING PADS SHALL CONFORM TO SUBSECTION 731.01 OR 731.02, SHIM MATERIAL SHALL BE ASTM B 209 ALLOY 1100-0.
15. EXTRUDED SECTIONS ARE DETAILED TO COMPLY WITH CURRENT AASHTO-AGC-ARTBA STANDARDS. MINOR VARIATIONS OF THE DETAILS SHOWN MAY BE CONSIDERED PROVIDING THEY DO NOT REDUCE THE STRENGTH CAPACITY OF THE RAIL SYSTEM.
16. ALUMINUM WASHERS SHALL BE ASTM B209 ALLOY ACLAD 2024-T4.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON	Bridge No. 21
Highway No. VT. ROUTE 14	Log Sta. / Surv. Sta.
VT. ROUTE 14 OVER THE WHITE RIVER	
ALUMINUM BRIDGE RAILING DETAILS	
Designed By	Drawn By
Checked By Date	Bridge Design Supervisor Date
PROJECT ROYALTON	PROJECT NO. BRS 0147(5)S
I.D.C. Info. ZHIL30150ISBRI9I.DGN	PRF.SBRI9ISHT
Bridge Sheet No.	Sheet 51 of 76

02-04-95



PLAN

PLAN

ALUMINUM APPROACH RAIL
RAIL DIMENSIONS FOR A CURB CONDITION (WW#2 + WW#4)

POST NO.	RAIL HEIGHT DIMENSIONS A	B	C	OFFSET BLOCK DIMENSIONS D	E	F	G
1	–	3'-2 15/16"	1'-9 13/16"	–	1'-5 1/8"	–	1'-10 1/8"
2	–	3'-1 5/16"	1'-9 7/16"	–	1'-3 7/8"	–	1'-8 7/8"
3	–	2'-11 11/16"	1'-9 1/8"	–	1'-2 9/16"	–	1'-7 9/16"
4	–	2'-10 1/16"	1'-8 13/16"	–	1'-1 1/4"	–	1'-6 1/4"
5	–	2'-7 7/8"	1'-8 3/8"	–	0'-11 9/16"	–	1'-4 9/16"
6	–	2'-5 3/4"	1'-7 15/16"	–	0'-9 3/16"	–	1'-2 13/16"
7	–	2'-3 9/16"	1'-7½"	–	0'-8 1/16"	–	1'-1 1/16"

WW#4 ONLY →

ALL REMAINING POSTS ARE TO HAVE THE SAME DIMENSIONS AS POST NO. 7

NOTE: FOR WW#2, POST 1 USES TOP OF PAVEMENT FOR REFERENCE. POST #6 USES FINISH GRADE FOR REFERENCE LINE.

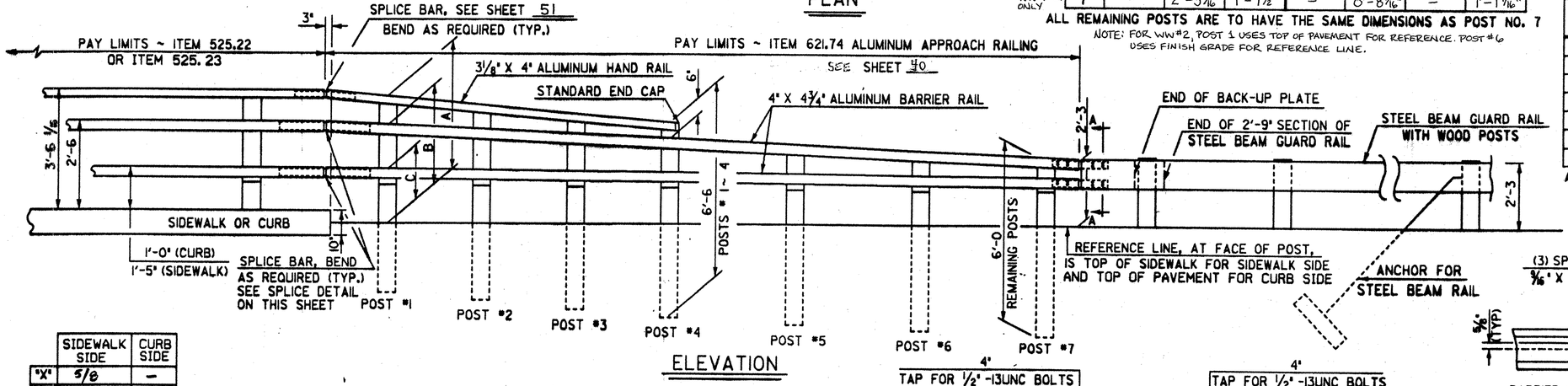
NOTES

1. POST 1 THROUGH 7 SHALL BE EXTRUDED ALUMINUM.
2. ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 36 GALVANIZED AFTER FABRICATION.
3. ALL ITEMS NOT OTHERWISE INDICATED SHALL MEET THE SPECIFICATION REQUIREMENTS OF THE STANDARD SHEETS ON WHICH THEY ARE DETAILED.
4. SEE STANDARD G-1 FOR STEEL BEAM GUARD RAIL DETAILS. SEE SHEETS 50 AND 51 FOR ALUMINUM BRIDGE RAILING DETAILS.
5. THE COST OF ALL MATERIALS AND LABOR FOR THE SPLICE BETWEEN THE ALUMINUM APPROACH RAILING AND THE STEEL BEAM GUARD RAIL SHALL BE SUBSIDIARY TO ITEM 621.74, ALUMINUM APPROACH RAILING.
6. DETAILS ARE SHOWN FOR TRANSITION TO A 3 RAIL ALUMINUM BRIDGE RAILING.
7. DIMENSIONS SHOWN ARE FROM A REFERENCE LINE AT THE FACE OF POST FOR A NORMAL CROWNED SECTION. APPROPRIATE CORRECTIONS SHALL BE MADE FOR CROSS SLOPES OTHER THAN A NORMAL SECTION.

ALUMINUM APPROACH RAIL
RAIL DIMENSIONS FOR A SIDEWALK CONDITION (WW#1 + WW#3)

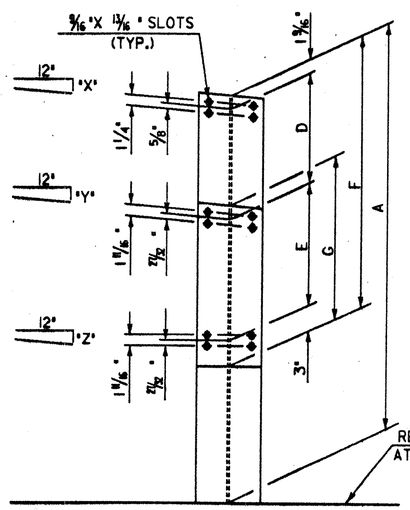
POST NO.	RAIL HEIGHT DIMENSIONS A	B	C	OFFSET BLOCK DIMENSIONS D	E	F	G
1	3'-4 3/4"	2'-5 3/4"	1'-5 3/16"	0'-11 7/16"	1'-0 9/16"	2'-4 9/16"	–
2	3'-2 1/16"	2'-5 3/8"	1'-5 1/2"	0'-9 3/4"	0'-11 7/8"	2'-2 3/16"	–
3	3'-0 1/16"	2'-5"	1'-5 13/16"	0'-8 1/8"	0'-11 3/16"	1'-11 7/8"	–
4	2'-10 5/8"	2'-4 5/8"	1'-6 1/16"	0'-6 7/16"	0'-10 7/16"	1'-9 9/16"	–
5	–	2'-4 1/8"	1'-6½"	–	0'-9 5/8"	–	1'-2 5/8"
6	–	2'-3 3/8"	1'-6 7/16"	–	0'-8 3/4"	–	1'-1 3/4"
7	–	2'-3 1/8"	1'-7 1/4"	–	0'-7 7/8"	–	1'-0 7/8"

ALL REMAINING POSTS TO HAVE THE SAME DIMENSIONS AS POST NO. 7

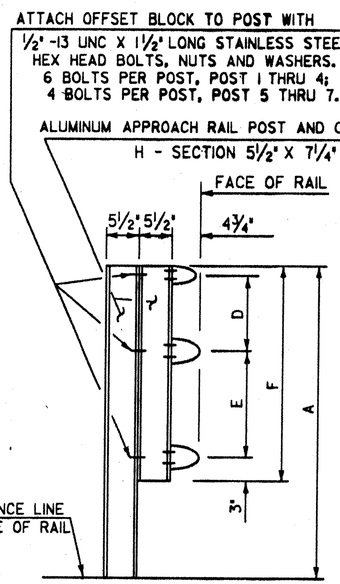


ELEVATION

	SIDEWALK SIDE	CURB SIDE
"X"	5/8	–
"Y"	1/16	1/2
"Z"	1/8	1/8

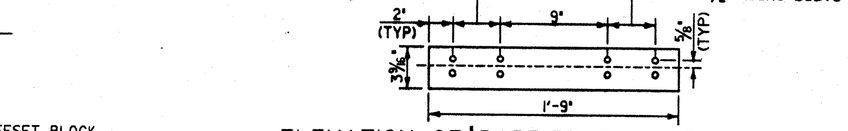


FRONT ELEVATION

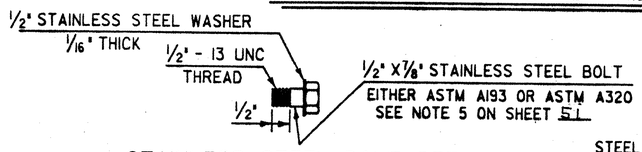


SIDE ELEVATION

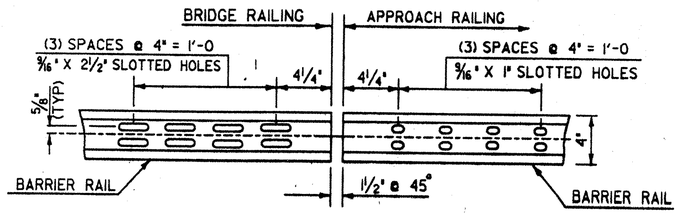
APPROACH RAIL DETAILS



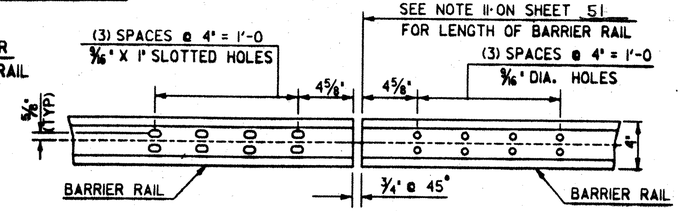
ELEVATION OF BARRIER RAIL SPLICE BAR TO BE USED AT TRANSITION BETWEEN APPROACH RAIL & GUARD RAIL (FROM BACK)



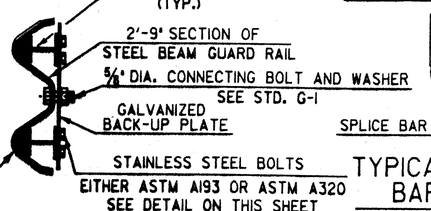
STAINLESS STEEL BOLT DETAILS

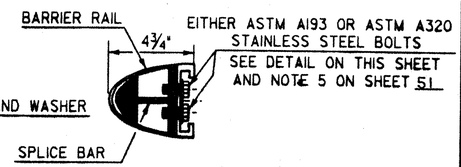


ELEVATION OF BARRIER RAIL (FROM BACK)



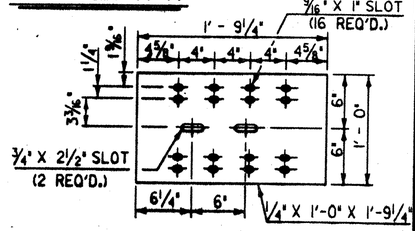
ELEVATION OF BARRIER RAIL (FROM BACK) AT ALL INTERMEDIATE RAIL SPLICES





TYPICAL SECTION THROUGH BARRIER RAIL SPLICE

SECTION A-A

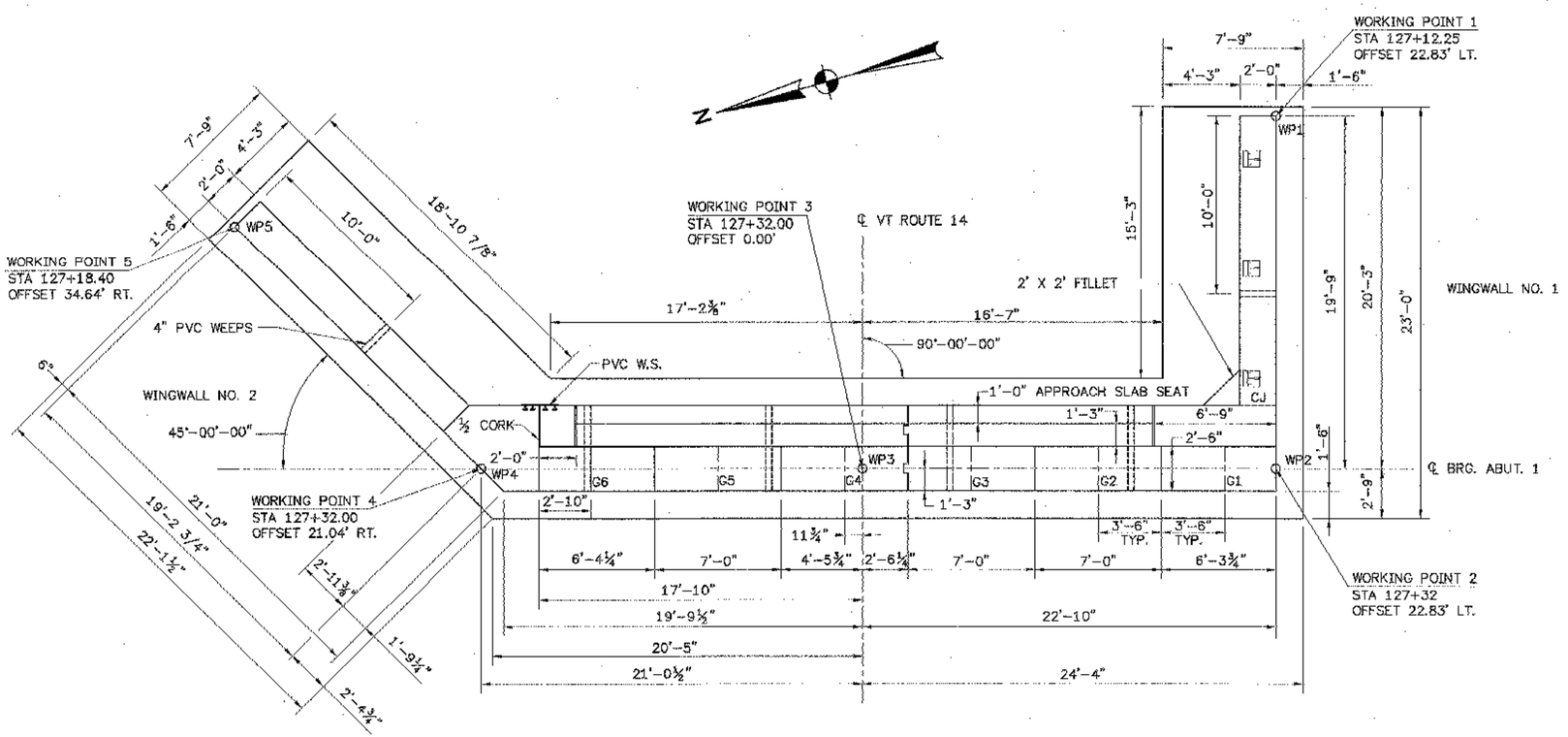


BACK-UP PLATE DETAILS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

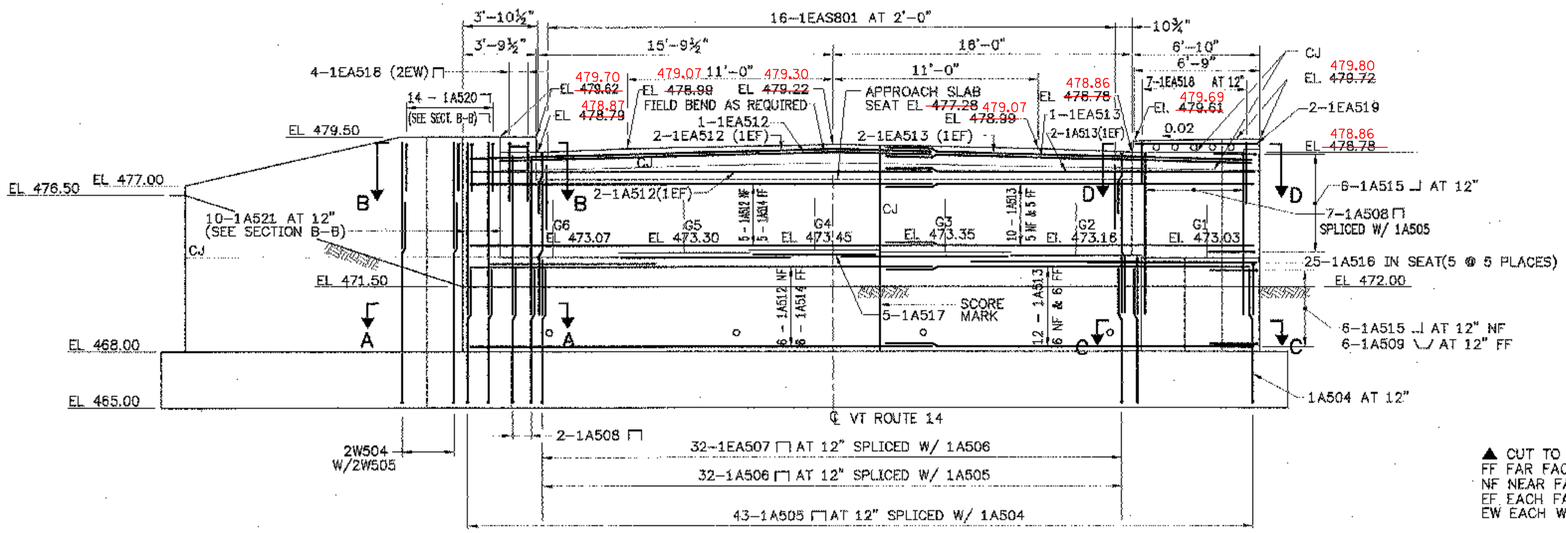
Town Of ROYALTON	Bridge No. 21
Highway No. VT. RTE 14	Log Sta. / Surv. Sta.
VT. RTE. 14 OVER THE WHITE RIVER	
ALUMINUM APPROACH RAILING DETAILS	
Designed By / Checked By / Date	Drawn By / Bridge Design Supervisor / Date
PROJECT ROYALTON	PROJECT NO. BRS 0147(5)S
L.G.C. Info. ZHILL30,150JSBR191.DGN	PRF:SBR191SHJ
Bridge Sheet No.	Sheet 52 of 76

02-04-93



ABUTMENT NO.1 PLAN (EXP.)

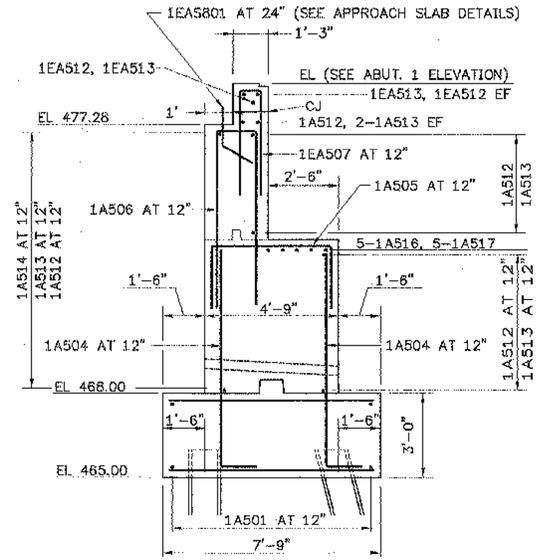
Scale: ¼"=1'-0"



ABUTMENT NO.1 ELEVATION (EXP.)

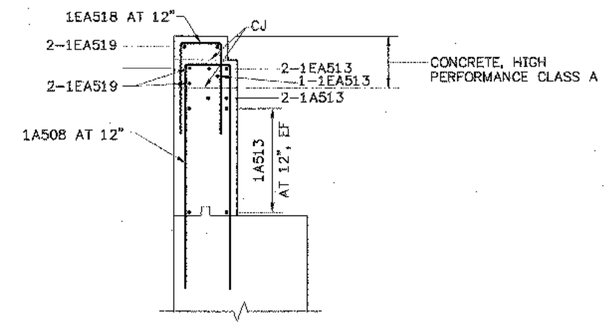
Scale: ¼"=1'-0"

▲ CUT TO FIT IN FIELD
FF FAR FACE
NF NEAR FACE
EF EACH FACE
EW EACH WAY



TYPICAL ABUTMENT NO.1 SECTION (EXP.)

Scale: ¼"=1'-0"



TYPICAL ABUTMENT NO.1 AT SIDEWALK

Scale: ⅜"=1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

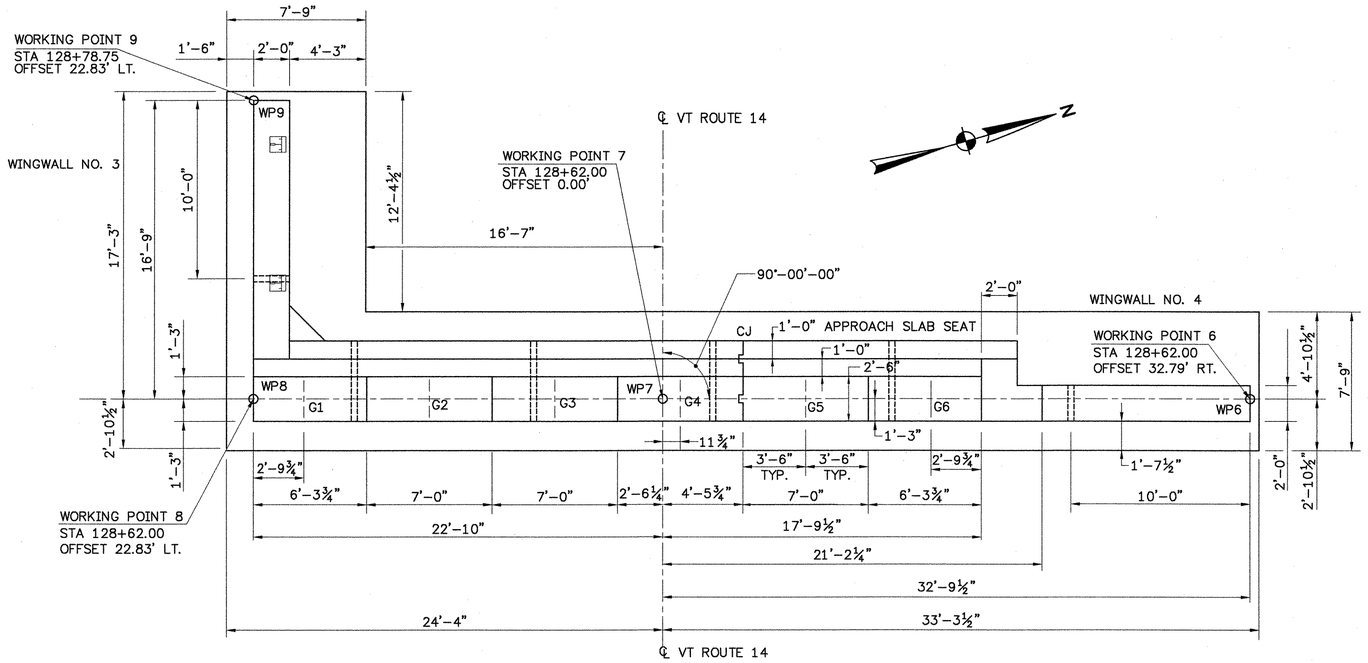
VT. Route 14 over the White River

ABUTMENT NO. 1 DETAILS

Designed By	VES	Drawn By.	VES/PHL
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00

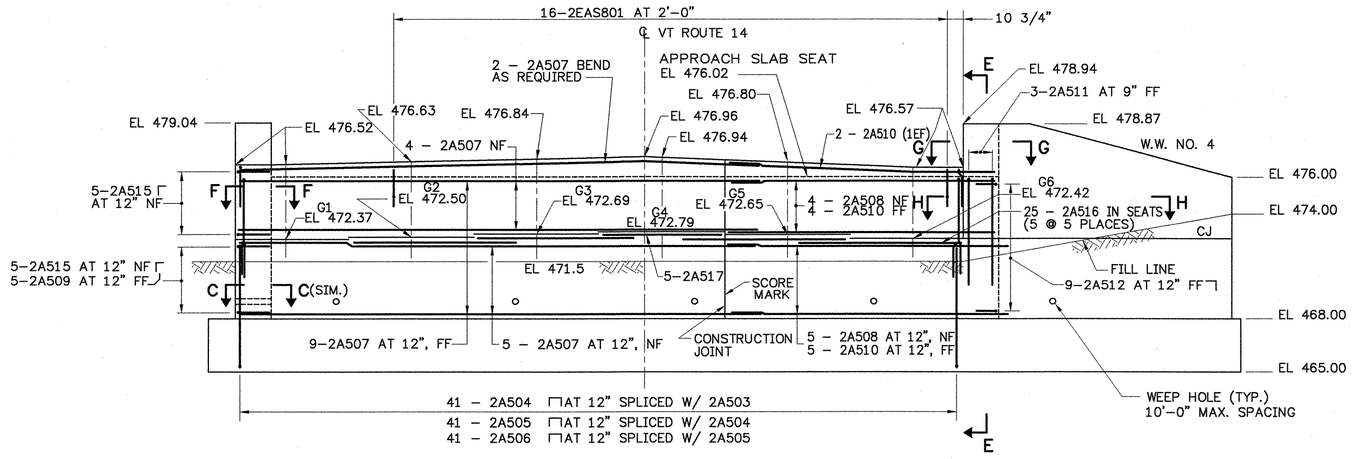
CLD Consulting Engineers, 540 Commercial Street, Manchester, NH 03101

PROJECT	PROJECT NO.
ROYALTON	BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 53 Of 76



ABUTMENT NO.2 PLAN (FIXED)

Scale: ¼"=1'-0"

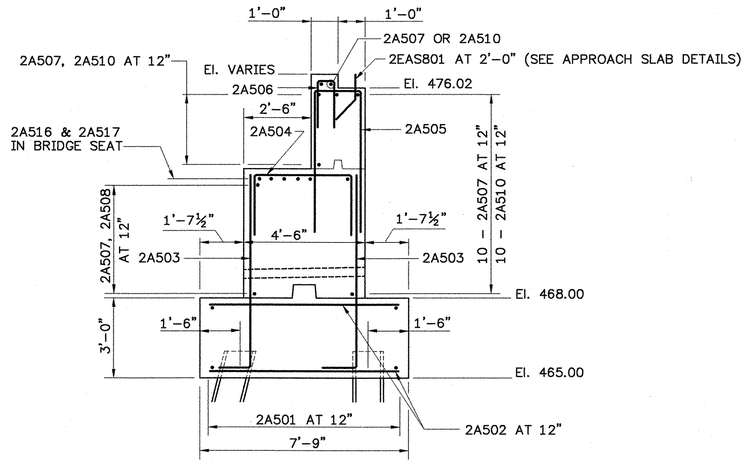


ABUTMENT NO.2 ELEVATION (FIXED)

Scale: ¼"=1'-0"

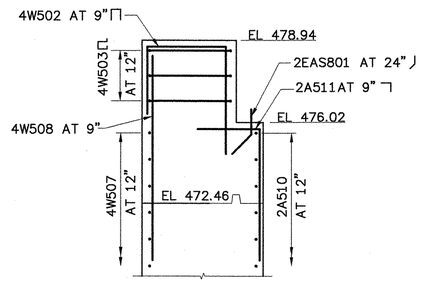
▲ CUT TO FIT IN FIELD
FF FAR FACE
NF NEAR FACE
EF EACH FACE
EW EACH WAY

FOR SECTIONS SEE BRIDGE SHEET 56



TYPICAL ABUTMENT NO.2 SECTION (FIXED)

Scale: ⅜"=1'-0"



SECTION E–E

SCALE: ⅜"=1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

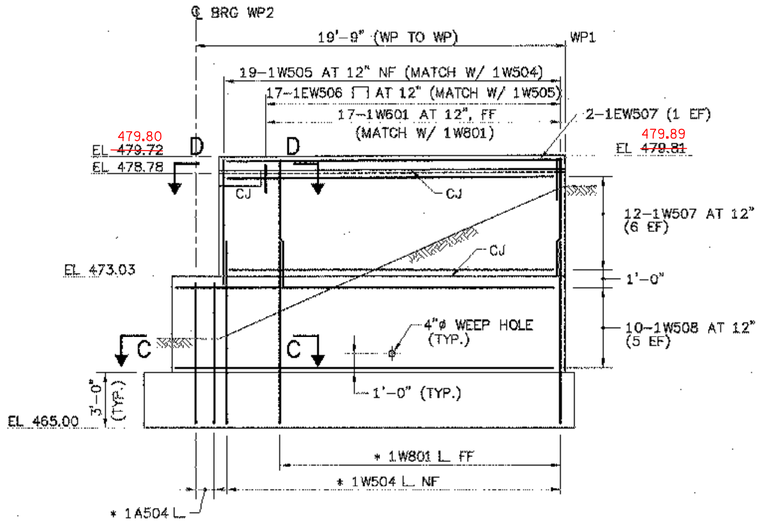
VT. Route 14 over the White River

ABUTMENT NO. 2 DETAILS

Designed By	VES	Drawn By.	VES/PHL
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00
PROJECT	ROYALTON	PROJECT NO.	BRS 0147(5) S
I.G.C. Info.			
Bridge Sheet No.		Sheet 54 Of 76	

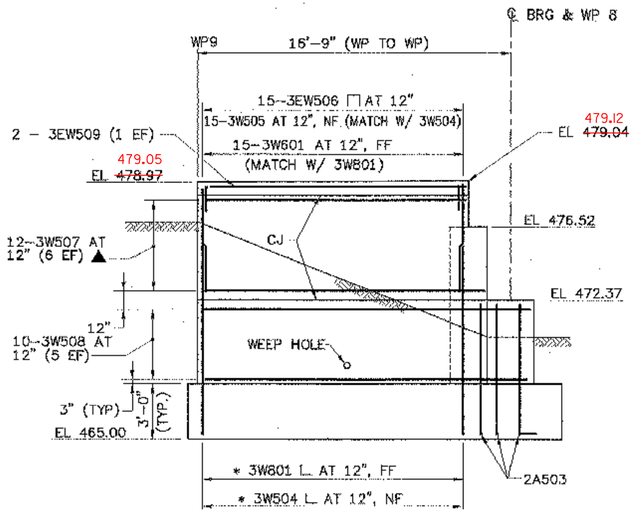
Costello, Lamarsney & de Napoli, Inc.
Consulting Engineers
540 Commercial Street
Manchester, NH 03101
(603)668–8223 FAX(603)668–8802

DRAWING NAME (1=?)



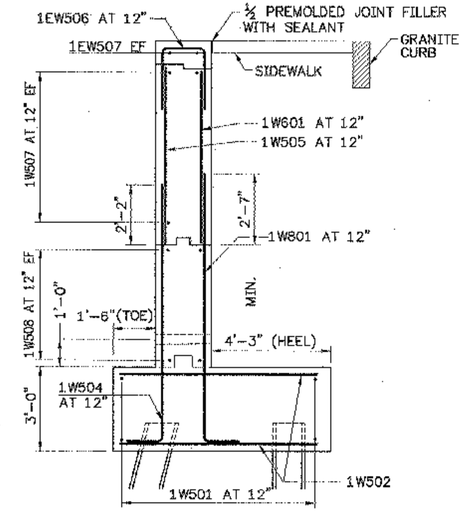
WINGWALL NO. 1 ELEVATION

SCALE: ¼" = 1'-0"



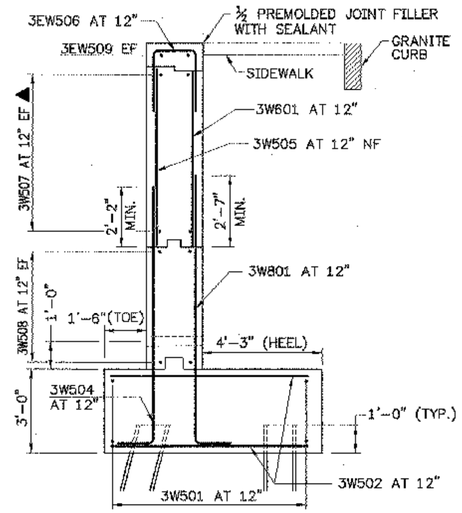
WINGWALL NO. 3 ELEVATION

SCALE: ¼" = 1'-0"



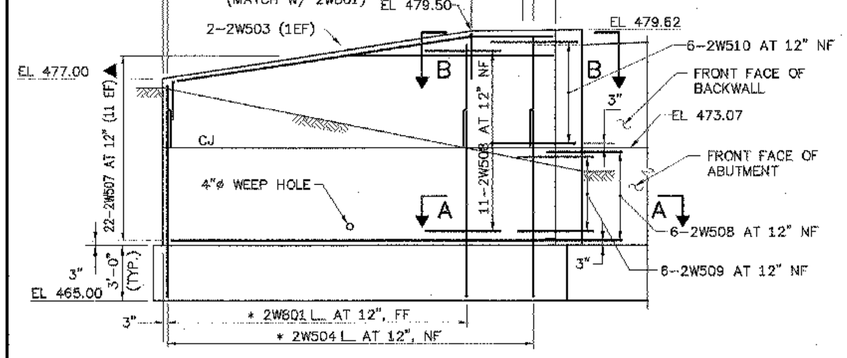
TYPICAL SECTION–WINGWALL NO.1

SCALE: ⅜" = 1'-0"



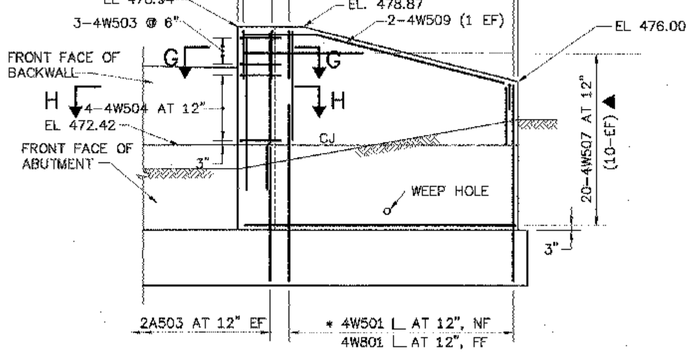
TYPICAL SECTION–WINGWALL NO 3

SCALE: ⅜" = 1'-0"



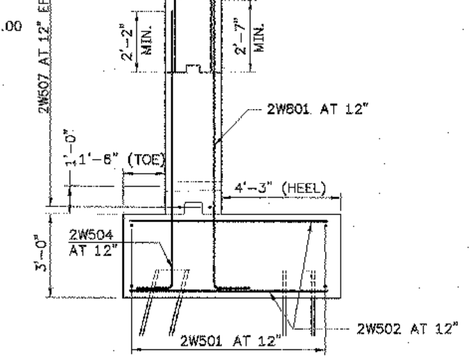
WINGWALL NO. 2 ELEVATION

SCALE: ¼" = 1'-0"



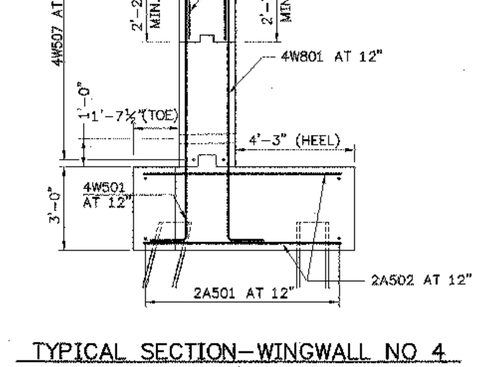
WINGWALL NO. 4 ELEVATION

SCALE: ¼" = 1'-0"



TYPICAL SECTION–WINGWALL NO 2

SCALE: ⅜" = 1'-0"



TYPICAL SECTION–WINGWALL NO 4

SCALE: ⅜" = 1'-0"

* SEE FOOTING REINFORCEMENT PLAN

▲ CUT TO FIT IN FIELD
FF FAR FACE
NF NEAR FACE
EF EACH FACE
EW EACH WAY

CLD Clarkeling Lemaymey & de Napoli, Inc.
Consulting Engineers
540 Commercial Street
Manchester, NH 03101
(603)668-8223 FAX(603)668-8002

STATE OF VERMONT
AGENCY OF TRANSPORTATION

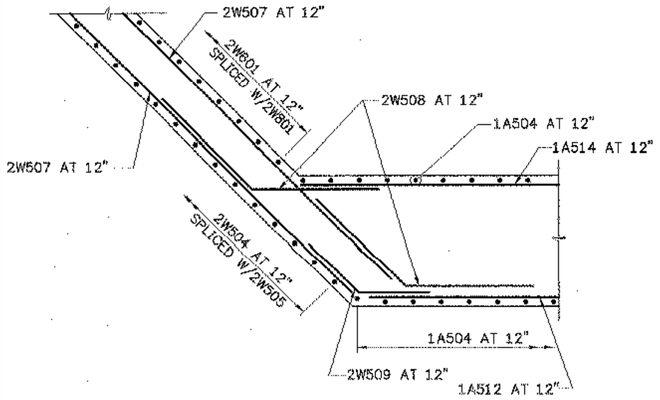
Town Of	ROYALTON	Bridge No.	21
		Log Sta.	
Highway No.	VT. ROUTE 14	Surv. Sta.	

VT. ROUTE 14 OVER THE WHITE RIVER

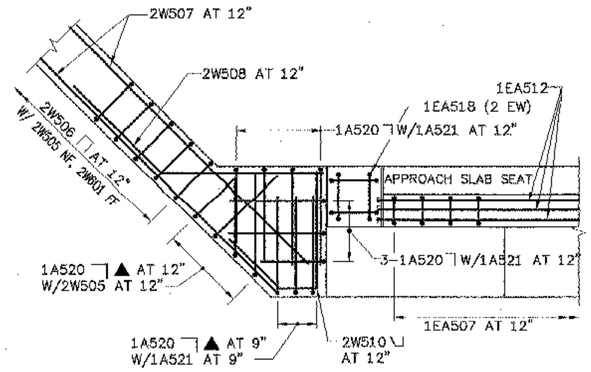
WINGWALL ELEVATIONS & SECTIONS

Designed By	AS	Drawn By.	KBG/PHL
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00

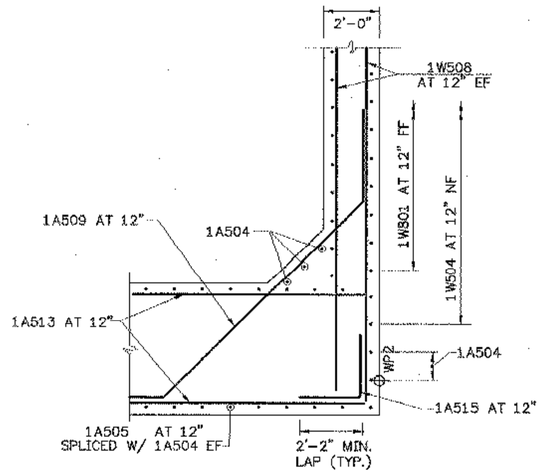
PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 55 Of 76



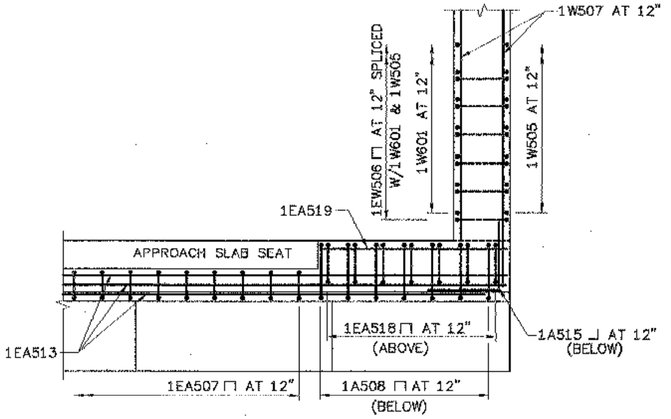
SECTION A–A
(BELOW BEAM SEAT)
(ABUTMENT NO. 1, WINGWALL NO. 2)
SCALE: ⅜"=1'–0"



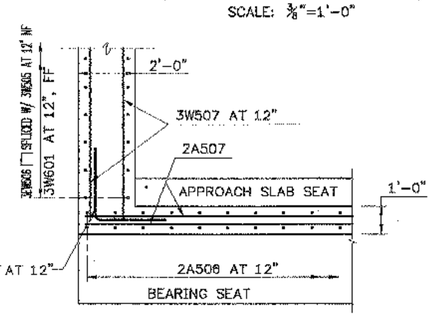
SECTION B–B
(ABOVE BEAM SEAT)
(ABUTMENT NO. 1, WINGWALL NO. 2)
SCALE: ⅜"=1'–0"



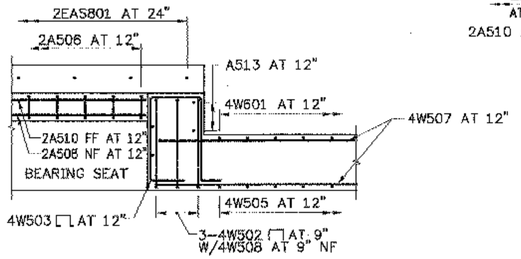
SECTION C–C
(ABUTMENT NO. 1, WINGWALL NO. 1)
(ABUTMENT NO. 2, WINGWALL NO. 3 OPPOSITE HAND)
SCALE: ⅜"=1'–0"



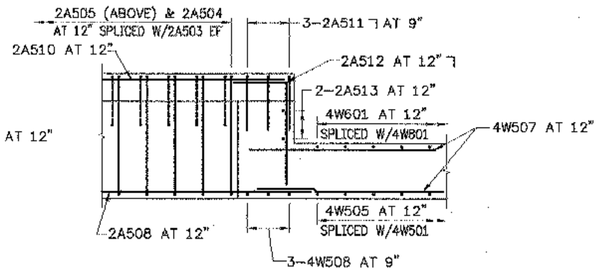
SECTION D–D
SECTION THROUGH BACKWALL AT SIDEWALK
SCALE: ⅜"=1'–0"



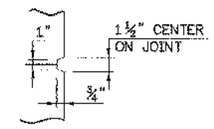
SECTION F–F
SCALE: ⅜"=1'–0"



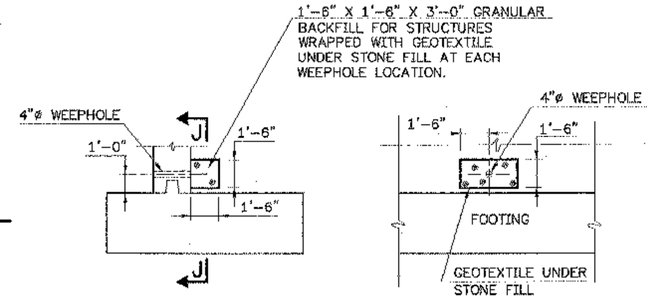
SECTION G–G
(ABUTMENT NO. 2, WINGWALL NO. 4)
SCALE: ⅜"=1'–0"



SECTION H–H
(ABUTMENT NO. 2, WINGWALL NO. 4)
SCALE: ⅜"=1'–0"



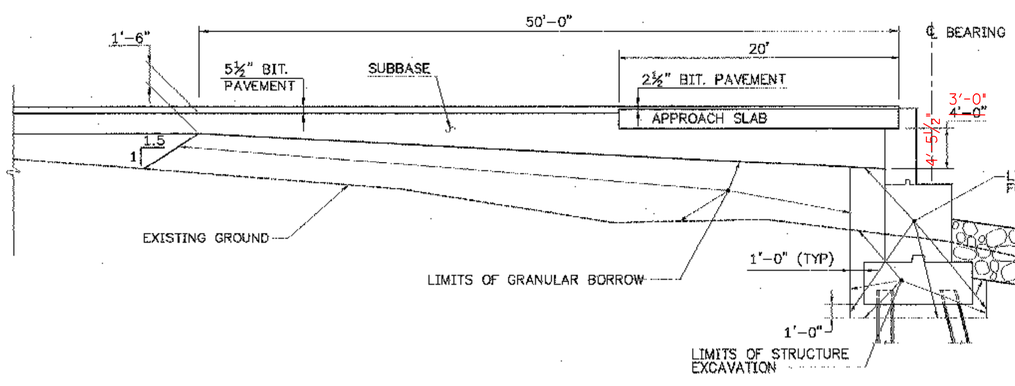
SCORE MARK DETAIL
N.T.S.



TYPICAL WEEPHOLE DETAIL
SCALE: ½" = 1'–0"

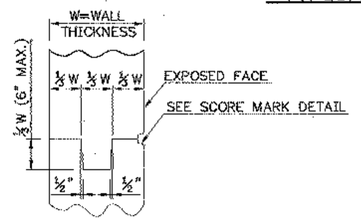
SECTION J–J
SCALE: ½" = 1'–0"

*NOTE: THIS WILL BE PAID FOR UNDER THE ITEMS "GRANULAR BACKFILL FOR STRUCTURES" AND "GEOTEXTILE UNDER STONE FILL".



TYPICAL EARTHWORK AT ABUTMENTS
SCALE: 3/16" =1'–0"

▲ CUT TO FIT IN FIELD
FF FAR FACE
NF NEAR FACE
EF EACH FACE
EW EACH WAY



TYPICAL CONCRETE CONSTRUCTION JOINT
N.T.S.

NOTE:
WHERE "CONSTRUCTION JOINT" IS DESIGNATED ON THE DRAWINGS, PROVIDE A CONSTRUCTION JOINT AND SCORE MARK. WHERE "SCORE MARK" IS DESIGNATED ON THE DRAWINGS, PROVIDE A SCORE MARK WITHOUT CONSTRUCTION JOINT, FOR RUSTICATION ONLY.

Costello Lemaymy & de Navil, Inc.
Consulting Engineers
540 Commercial Street
Manchester, NH 03101
(603)668–8223 FAX(603)668–8602

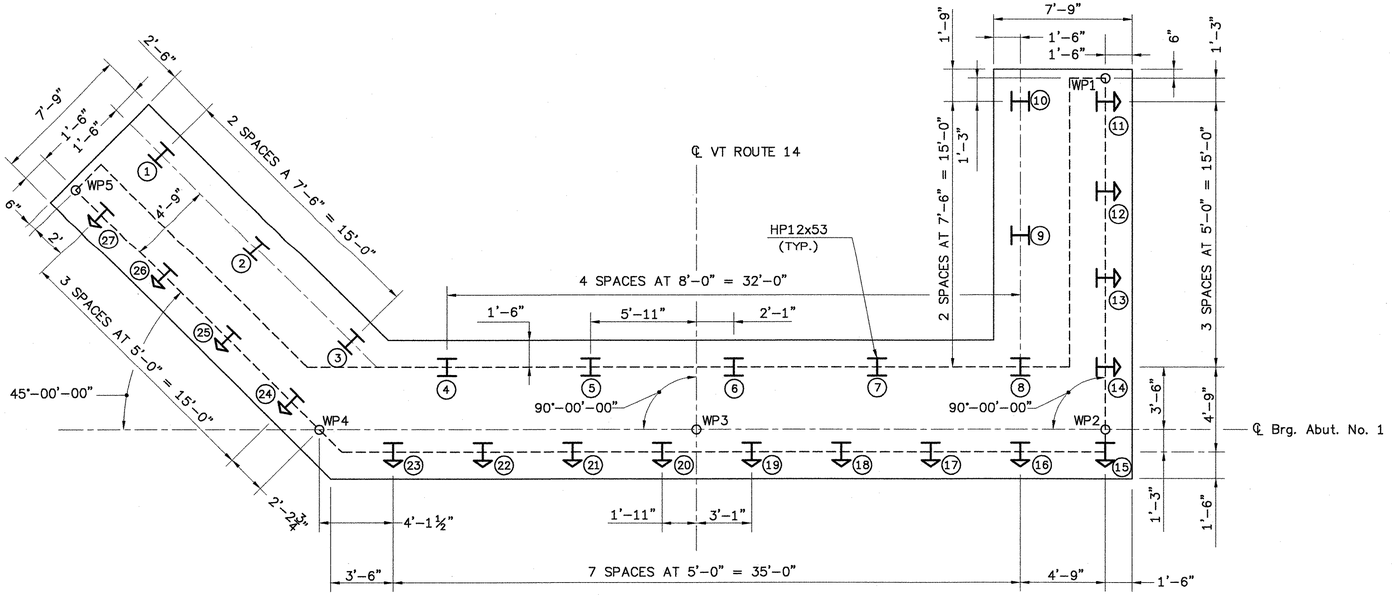
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
Highway No.	VT. ROUTE 14	Log Sta.	
		Surv. Sta.	

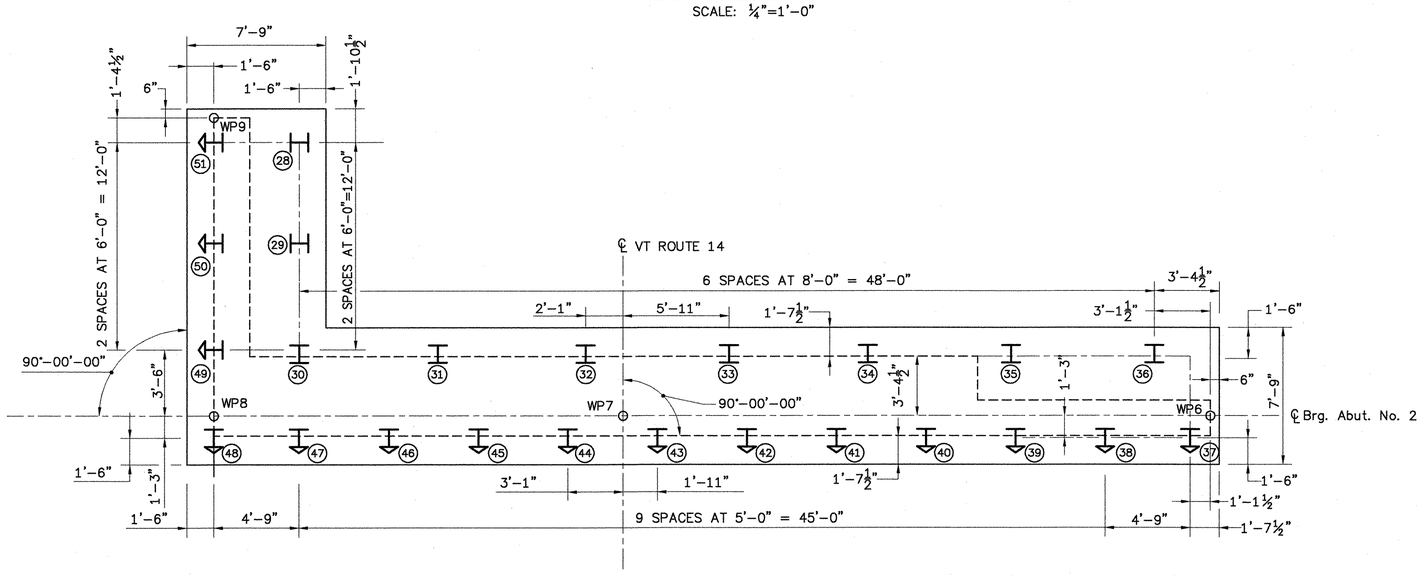
VT. ROUTE 14 OVER THE WHITE RIVER
SUBSTRUCTURE DETAIL

Designed By	AS	Drawn By	KBG/PHL
Checked By CLW/LMM	Date 11/00	Bridge Design Supervisor LMM	Date 11/00
PROJECT ROYALTON		PROJECT NO. BRS 0147(5) S	
I.G.C. Info.			
Bridge Sheet No.		Sheet 56 Of 76	

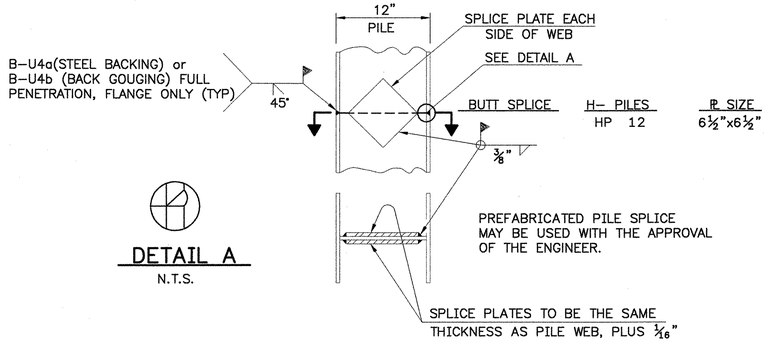
21295R\S.dwg



H-PILE LAYOUT
ABUTMENT NO. 1
SCALE: ¼"=1'-0"



H-PILE LAYOUT
ABUTMENT NO. 2
SCALE: ¼"=1'-0"



DETAIL A
N.T.S.

DETAIL OF PILE SPLICE
N.T.S.

PILE NOTES:

1. PILES UNDER 20 FEET SHALL NOT BE SPLICED.
2. PILE CUTOFF ELEVATION 466.00
3. SEE SHEET 37 FOR GENERAL PILE NOTES.

I INDICATES VERTICAL HP12x53 PILE DRIVEN TO ALLOWABLE LOAD PER PILE 140 KIPS.

I INDICATES PILE BATTERED 2 ON 12

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of ROYALTON	Bridge No. 21
	Log Sta.
Highway No. Vt. Route 14	Surv. Sta.

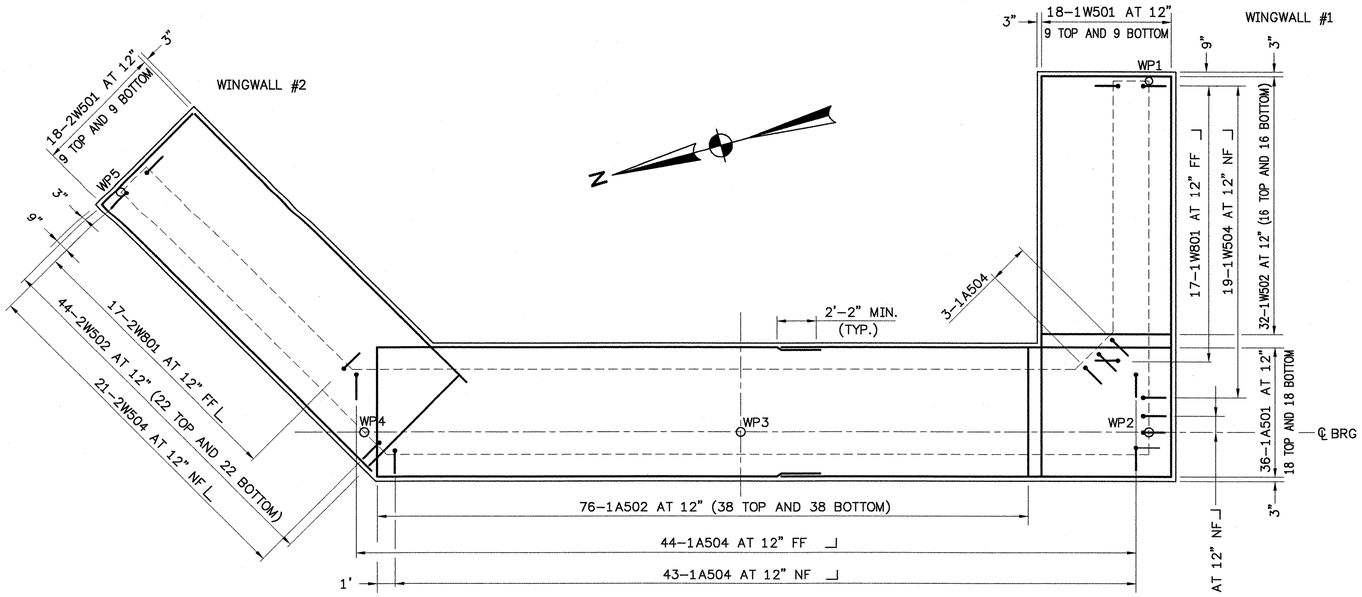
Vt. Route 14 over the White River

PILE LAYOUT

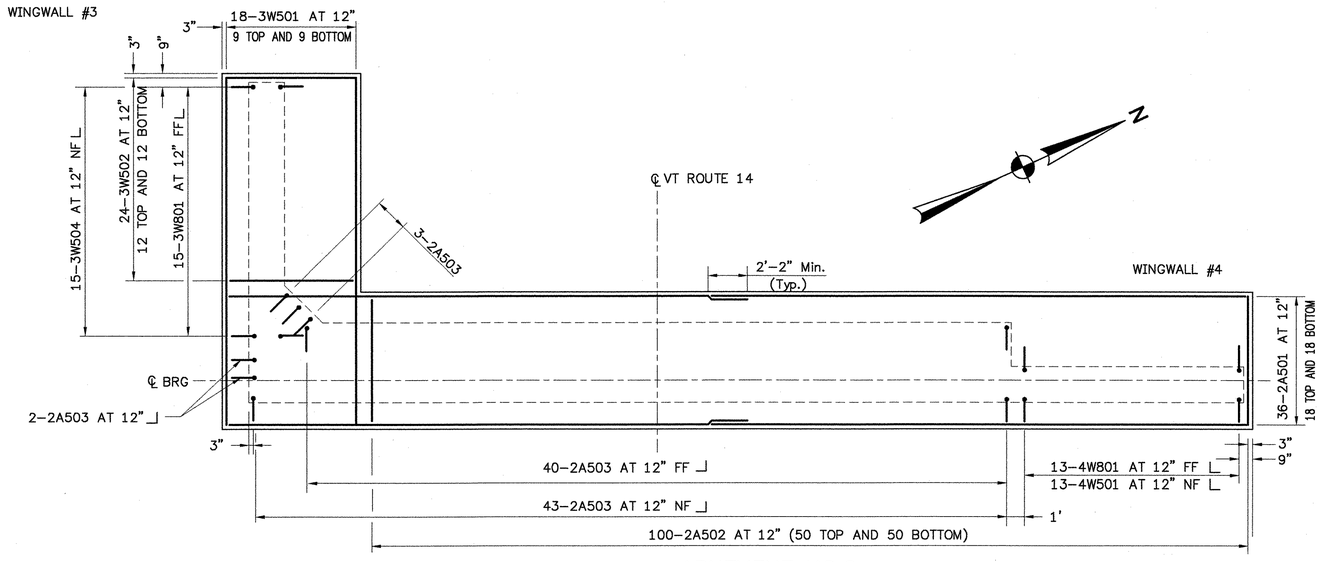
Designed By AS	Drawn By. VES
Checked By CLW/LMM — Date 11/00	Bridge Design Supervisor LMM — Date 11/00
PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 57 Of 76

CLD
Costello Lamarsney & de Napoli, Inc.
Consulting Engineers
540 Commercial Street
Manchester, NH 03101
(603)668-8223 FAX(603)668-8802

F:\Proj\90-94\91298 Royalton\BRIDGE\Drawings\91298PIL



ABUTMENT NO.1
FOOTING REINFORCEMENT PLAN
SCALE ¼" = 1'-0"



ABUTMENT NO.2
FOOTING REINFORCEMENT PLAN
SCALE ¼" = 1'-0"

NOTE: REINFORCEMENT TO BE PLACED EACH SIDE OF PILES, WITH 12" MAX. REINF. SPACING BETWEEN PILES

▲ CUT TO FIT IN FIELD
FF FAR FACE
NF NEAR FACE
EF EACH FACE
EW EACH WAY

STATE OF VERMONT
AGENCY OF TRANSPORTATION

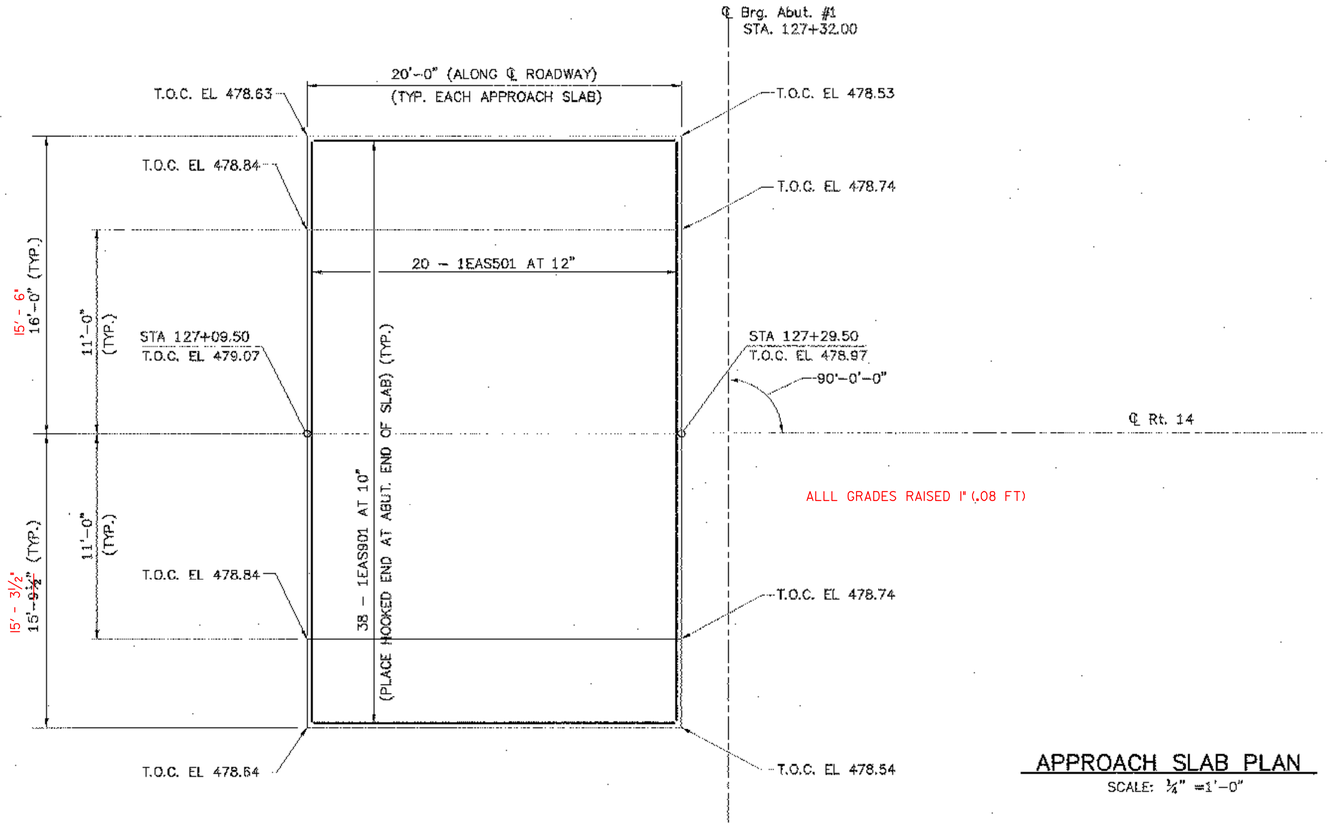
Town Of	ROYALTON	Bridge No.	21
		Log Sta.	
Highway No.	VT. ROUTE 14	Surv. Sta.	

VT. Route 14 over the White River

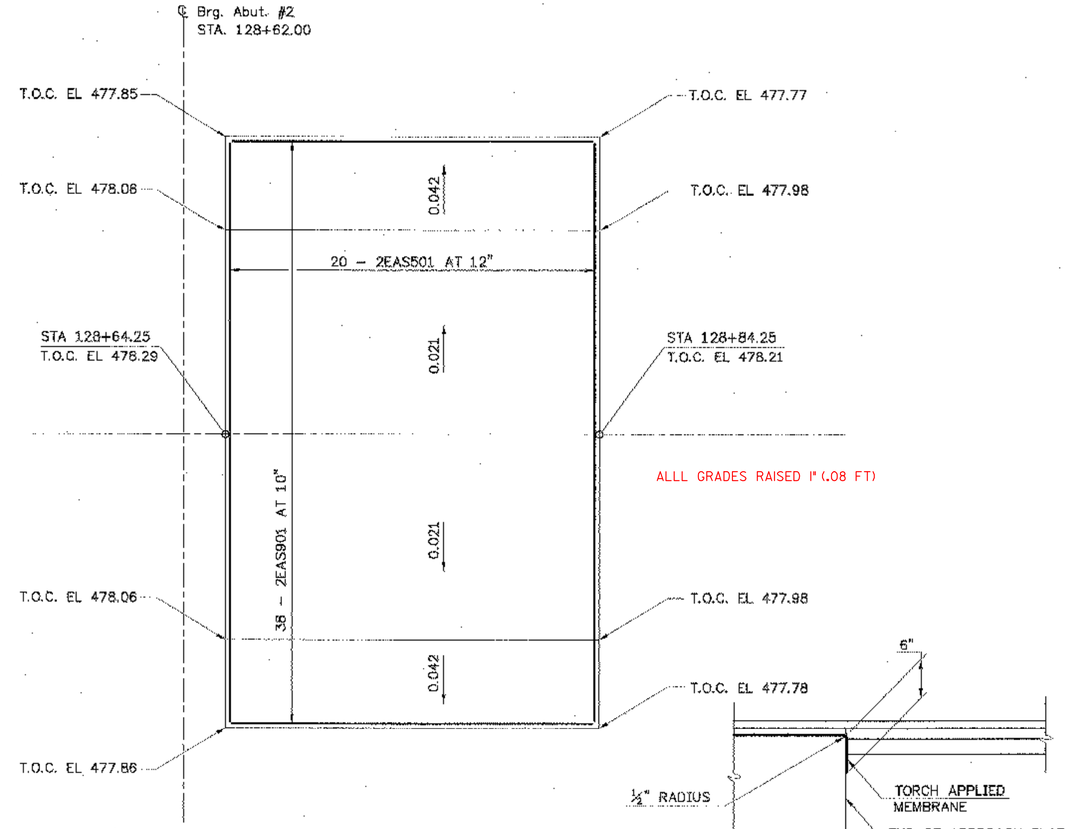
FOOTING REINFORCING PLAN

Designed By	AS	Drawn By.	VES/KBG
Checked By	Date	Bridge Design Supervisor	
CLW/LMM	11/00	LMM	Date 11/00
PROJECT	ROYALTON	PROJECT NO.	BRS 0147(5) S
I.G.C. Info.			
Bridge Sheet No.		Sheet 58	Of 76

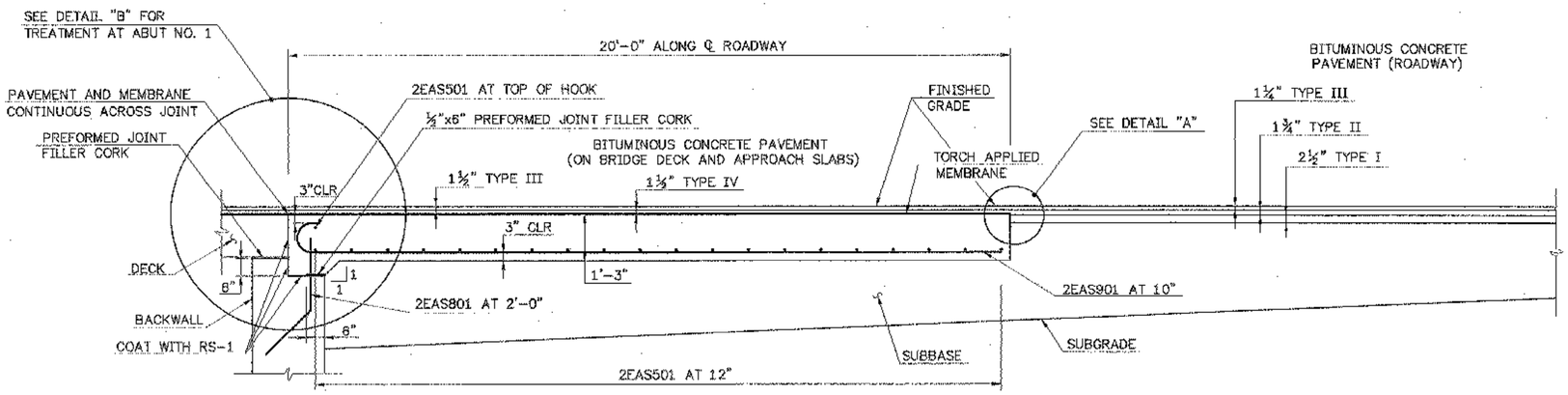
CLD Costello, Lamarsney & de Napoli, Inc.
Consulting Engineers
540 Commercial Street
Manchester, NH 03101
(603)668-8223 FAX(603)668-8802



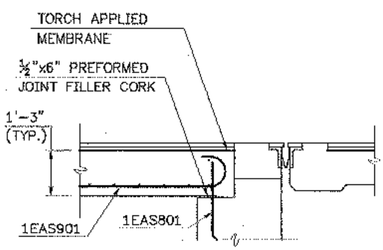
APPROACH SLAB PLAN
SCALE: ¼" =1'-0"



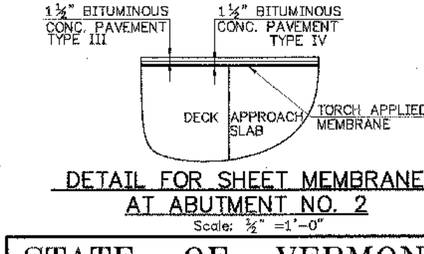
DETAIL "A"
SCALE: 1" =1'-0"



APPROACH SLAB DETAIL
(ABUTMENT 2 SHOWN)
SCALE: ½" =1'-0"



DETAIL "B" AT ABUTMENT NO 1
SCALE: ½" = 1'-0"



DETAIL FOR SHEET MEMBRANE AT ABUTMENT NO. 2
Scale: ½" =1'-0"

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	ROYALTON	Bridge No.	21
		Log Sta.	
Highway No.	VT RTE 14	Surv. Sta.	

VT RTE 14 OVER THE WHITE RIVER

APPROACH SLAB DETAILS

Designed By	VES	Drawn By.	VES/PHL
Checked By	Date	CLD Project Manager	
CLW/LMM	11/00	LMM	Date 11/00

PROJECT ROYALTON	PROJECT NO. BRS 0147(5) S
I.G.C. Info.	
Bridge Sheet No.	Sheet 59 Of 76

CLD Consulting Engineers
Castella, Lamoureux & de Napoli, Inc.
Consulting Engineers
148 Commercial Street
Manchester, NH 03101
(603)668-8223 FAX(603)668-6802

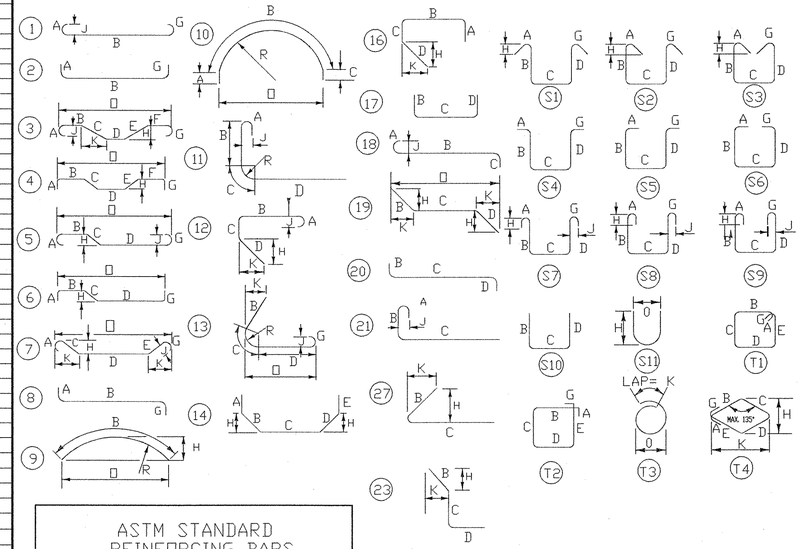
91299app (=dijalot)

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	D
			DECK														
	444	5	34–9	ES502	STR												
	133	5	6–2	ES503	S5	1–0	1–4	1–6	1–4			1–0					
	133	5	11–0	ES504	S5	1–0	1–4	6–4	1–4			1–0					
	34	5	4–3	ES505	S5	2–2	0–6	1–2	0–5								
	34	5	7–9	ES506	S5	2–2	0–6	2–5	0–6			2–2					
	400	6	40–0	ES601	STR	*											
			APPROACH SLAB NO. 1														
	21	5	31–3	1EAS501	STR	*											
	16	8	3–8	1EAS801	19		1–8	2–0					1–2		1–2		
	38	9	20–8	1EAS901	1	1–3	19–5							0–9			
			APPROACH SLAB NO. 2														
	21	5	31–3	2EAS501	STR												
	16	8	4–2	2EAS801	19		1–8	2–6					1–2		1–2		
	38	9	20–8	2EAS901	1	1–3	19–5	*						0–9			
			ABUTMENT NO. 1														
	36	5	23–3	1A501	STR												
	76	5	7–3	1A502	STR												
	92	5	8–11	1A504	17		1–4	7–7									
	43	5	9–7	1A505	17		2–8	4–3	2–8								
	32	5	15–1	1A506	17		6–8	1–9	6–8								
	10	5	17–9	1A508	17	*	8–0	1–9	8–0								
	6	5	16–0	1A509	14		2–2	11–8	2–2				1–6				
	13	5	24–2	1A512	STR												
	24	5	20–1	1A513	STR												
	11	5	26–3	1A514	STR												
	12	5	5–0	1A515	17		2–6	2–6									
	25	5	9–0	1A516	STR												
	5	5	6–6	1A517	STR												
	14	5	6–0	1A520	17		3–6	2–6									
	10	5	10–0	1A521	STR												
	32	5	8–5	1EA507	17		3–10	0–9	3–10								
	3	5	24–2	1EA512	STR												
	3	5	20–1	1EA513	STR												
	11	5	7–9	1EA518	17		3–2	1–5	3–2								
	4	5	6–3	1EA519	STR												
			WINGWALL NO. 1														
	18	5	22–6	1W501	STR												
	32	5	7–3	1W502	STR												
	19	5	11–5	1W504	17		1–3	10–2									
	19	5	5–7	1W505	STR												
	12	5	18–0	1W507	STR												
	10	5	20–6	1W508	STR												
	17	6	5–7	1W601	STR												
	17	8	11–9	1W801	17		1–3	10–6									
	17	5	7–10	1EW506	17		3–2	1–6	3–2								
	3	5	18–0	1EW507	STR	*											
			WINGWALL NO. 2														
	18	5	21–6	2W501	STR												
	44	5	7–3	2W502	STR												
	2	5	20–7	2W503	19		4–5	16–3					0–8				
	21	5	11–5	2W504	17		1–3	10–2									
	17	5	6–3	2W505	STR	▲											
	17	5	6–2	2W506	17		2–4	1–6	2–4								
	22	5	20–6	2W507	STR	▲											
	17	5	9–0	2W508	14		4–6	4–6					3–2				
	7	5	5–0	2W509	14		2–6	2–6					1–9				
	6	5	8–2	2W510	16		4–3	1–5	2–6				1–9		1–9		
	17	6	6–3	2W601	STR	▲											
	17	8	11–9	2W801	17	*	1–3	10–6									

ITEM	NO. PIECES	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	D
			ABUTMENT NO. 2														
	36	5	29–9	2A501	STR												
	100	5	7–3	2A502	STR												
	88	5	8–2	2A503	17		1–4	6–10									
	41	5	9–4	2A504	17		2–8	4–0	2–8								
	41	5	13–2	2A505	17		5–10	1–6	5–10								
	41	5	6–10	2A506	17		3–2	0–6	3–2								
	20	5	29–4	2A507	STR												
	10	5	15–8	2A508	STR	*											
	5	5	15–8	2A509	14		2–2	11–3	2–2								1–6⅜
	11	5	15–0	2A510	STR												
	3	5	8–0	2A511	17		2–3	5–9									
	9	5	6–0	2A512	17		2–6	3–6									
	2	5	13–0	2A513	STR												
	10	5	5–0	2A515	17		2–6	2–6									
	25	5	9–2	2A516	STR												
	5	5	6–6	2A517	STR												
			WINGWALL NO. 3														
	18	5	19–6	3W501	STR												
	24	5	7–3	3W502	STR												
	16	5	10–9	3W504	17		1–3	9–6									
	15	5	5–6	3W505	STR												
	15	5	7–10	3EW506	17		3–2	1–6	3–2								
	12	5	15–0	3W507	STR	▲											
	10	5	17–6	3W508	STR												
	2	5	14–0	3EW509	STR												
	15	6	5–6	3W601	STR	*											
	15	8	11–2	3W801	17		1–3	9–11									
			WINGWALL NO. 4														
	13	5	10–9	4W501	17		1–3	9–6									
	3	5	9–6	4W502	17		2–6	3–0	4–0								
	3	5	10–0	4W503	S5	1–3	3–0	1–6	3–0			1–3					
	4	5	6–6	4W504	17		2–6	4–0									
	13	5	6–2	4W505	STR	▲											
	13	5	6–2	4W506	17		2–4	1–6	2–4								
	20	5	14–6	4W507	STR	▲											
	4	5	8–8	4EW508	STR	*											
	2	5	14–10	4W509	19		3–1	11–9									0–9
	13	6	6–2	4W601	STR												
	13	8	11–1	4W801	17		9–10	1–3									1–2	1–10

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–S1). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. * ASTERISKS DENOTE EXTRA BARS ADDED FOR TESTING PURPOSES. (NUMBER OF ASTERISKS = NUMBER OF EXTRA BARS.)
10. "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	.376	.375	.11	1.178
#4	.668	.500	.20	1.571
#5	1.043	.625	.31	1.963
#6	1.502	.750	.44	2.356
#7	2.044	.875	.60	2.749
#8	2.670	1.000	.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 ROYALTON	Bridge No. 6
Highway No. VT RTE 12A	Log Sta. / Surv. Sta.
VT RTE 12A OVER THE 3RD BRANCH OF THE WHITE RIVER	
REINFORCING STEEL SCHEDULE	
Designed By L.M.M.	Drawn By P.H.L.
Checked By Date	CLD Project Manager
PROJECT ROYALTON	PROJECT NO. BRS 0187 (6)
I.G.C. Info.	
Bridge Sheet No. BR 123	Sheet 60 of 76

91298sch.dwg (1=12)

② REV. 125+75 TO 127+00 LT
NEW 6" X 125' UNDERDRAIN
W/ FLUSHING BASIN @ REV. 125+75 LT

⑪ REV. 125+53 TO 125+56 LT
NEW 18" X 42' CAAP (0.080) OR
PCCSP (0.064)
NEW 4'X4' RCDI W/ DI GRATE, TYPE D
CONSTRUCT 3' X 6' STONE FILL PAD, TYPE I
@ OUTLET

BANKING TRANSITION

SCALE
50 FEET

PLAN TRANSITION

SCALE
IN FEET

SECTION A-A
DRIVE DETAIL
STA. 125+50

APPROACH SIDEWALK & CURB
CONSTRUCTION DETAIL

DEPTH TRANSITION

SCALE
IN FEET

REV. ① 124+50 TO 125+99.67

FROM STA.	124+50	TO STA.	125+00
PROJECT NAME	ROYALTON		MAIN
NO.	BRS 014Y(53)		PLOTTED 04/13/66
SURVEYED BY	DEVILLY		DEC. '65
SHEET 51	OF 76	SHEETS	

SCALE 10 FEET

⑥ REV 127+00 LT
NEW 18" X 28' CAAP (0.060) OR PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

④ REV 127+00 RT
NEW 18" X 14' CAAP (0.060) OR PCCSP (0.064) OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

⑤ REV 127+00
NEW 18" X 30' CAAP (0.060) OR PCCSP (0.064) OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

③ REV 126+50 TO 127+00 RT
NEW 6" X 50' UNDERDRAIN
W/ FLUSHING BASIN @ REV. 126+50 RT

REV. ℄ 126+23.84 TO 126+99.38

FROM STA.	126 +00	TO STA.	127+00
PROJECT NAME	ROYALTON		MAIN
NO.	BRS 0147(5)S		PLOTTED 04/09/86
SURVEYED BY	DEVAUX		DEC. 1985
SHEET 62 OF 76 SHEETS			

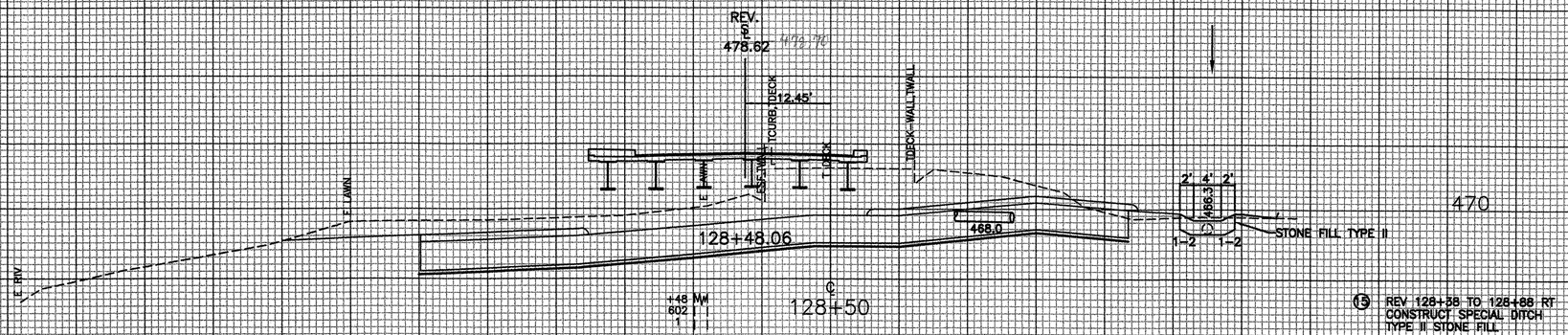
SCALE 10 FEET

FINAL SURVEY	DATE
NOTEBOOK	BY
NO.	SURVEYED
	PLOTTED
	TYPE RATE
	AREAS
	AREAS CHECKED

ORIGINAL SURVEY	DATE
NOTEBOOK	BY
NO.	SURVEYED
	PLOTTED
	TYPE RATE
	AREAS
	AREAS CHECKED

128+64.25 End Bridge Begin App. Slab

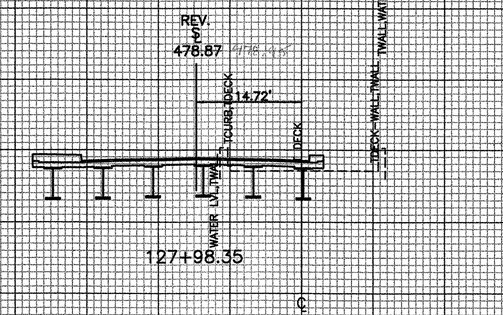
FINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TRIPLICATE		
	AREAS		
	AREAS CHECKED		



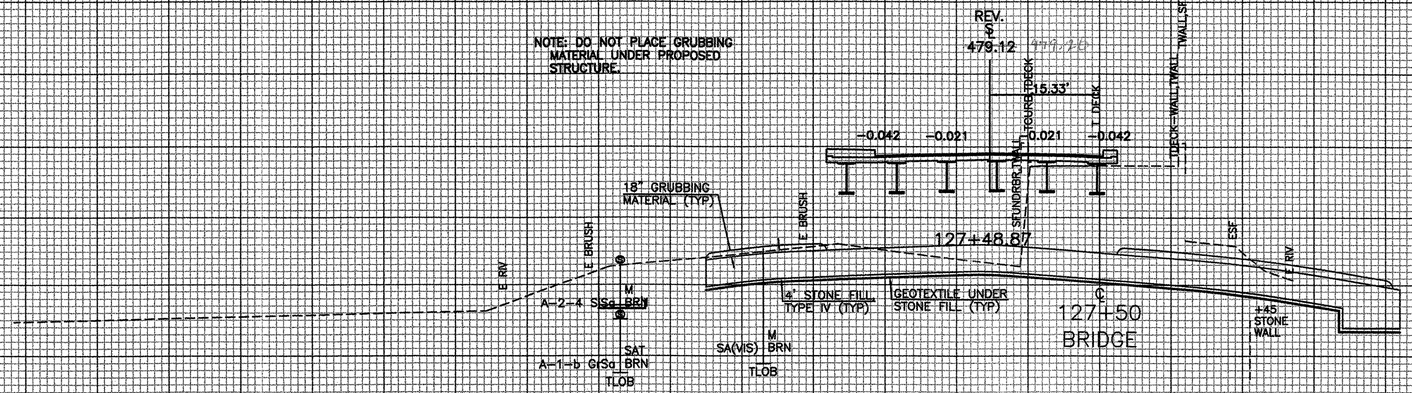
+48 WW 602

128+50

(15) REV 128+38 TO 128+88 RT
CONSTRUCT SPECIAL DITCH
TYPE II STONE FILL



128+00



127+50

BRIDGE

REV. 5 127+48.87 TO 128+48.06

FROM STA.	127 +50	TO STA.	128+50
PROJECT NAME	ROYALTON		MAIN
NO.	BRS 0147(5)S		PLOTTED 04/09/86
SURVEYED BY	DEVAUX		DEC. 1985
SHEET 63	OF 76	SHEETS	

SCALE 10 FEET

ORIGINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TRIPLICATE		
	AREAS		
	AREAS CHECKED		

127+29.5 Begin Bridge
End Approach Slab

FINAL SURVEY — SURVEYED / PLOTTED / DRAWN / AREAS / AREAS CHECKED — BY — DATE — NOTEBOOK NO.

ORIGINAL SURVEY — SURVEYED / PLOTTED / DRAWN / AREAS / AREAS CHECKED — BY — DATE — NOTEBOOK NO.

130+75 Begin / East Underdrain FB

+36 FOUNDATION
+34 8" ASH
+05 6 5
REV. 479.49 4.33'
-0.063 -0.021 -0.021 -0.063
1-3 1-4 1-4
DR DR-EP DL PVMT DL PVMT
476.6
TREE LINE
FOOT PATH
BCWALL-TCWALL (CWALL-BCWALL)
FIBER OPTIC CABLE
A-4 SaSi BRN
STONE FILL, TYPE I
129+98.28
+84 START 8' CONC. WALL
E. BRUSH
E. RW
+79 MOBIL HOME
+27.5 MOBIL HOME
130+00
470

⑫ REV 129+48 TO 131+60 RT
CONSTRUCT SPECIAL DITCH
TYPE I STONE FILL

End Sidewalk 129+57
REV. 478.72 7.04'
-0.063 -0.021 -0.021 -0.062
DR-EP DL PVMT PRO-EDR DR
1-2 1-4
473.7 FIELD
B B
TEMPLATE PERPENDICULAR TO EDGE OF PAVEMENT
FIBER OPTIC CABLE
STONE FILL TYPE I
PAVEMENT CrSt
M GrSiSa(VIS) BRN SaSi(VIS) M (BRN) NLTD BORING @ STA 129+40 20' RT
470
E. MBL HOME
LAWN
E. DR
E. BRUSH
130+00
STA 129+50, LT END STONE FILL, TYPE IV
A-4 SaSi BRN
129+48.21
+11 2" CEDAR
3" AGGREGATE SURFACE COURSE
8" SUBBASE MATERIAL
1-4
STONE FILL TYPE I
SECTION B-B PATH DETAIL STA 129+50
STONE FILL TYPE I
129+50
129125 SF 48 R' Geotextile 21 LF

⑯ REV 129+56 TO 129+69 RT
NEW 24" X 14' CSP (0.064) W/ CSPES @ INLET & OUTLET

REV. 478.52 8.39'
-0.021 -0.053
-0.030
20' ROUNDING
FIBER OPTIC CABLE
129+23.17
129+25
1-1/4" BITUMINOUS CONCRETE PAVEMENT, TYPE III
1-3/4" BITUMINOUS CONCRETE PAVEMENT, TYPE II
18" SUBBASE MATERIAL
1-4 1-3
129+50 129+25 129+00 128+50
SECTION A-A DRIVE DETAIL STA 129+25
NOTE: SEE SHEET NO. 68 FOR ADDITIONAL DRIVE DETAILS
470

12910 SF 68 R' Geotextile 25 LF

REV. 476.45 9.74'
-0.042 -0.021 -0.021 -0.042
DR-EP DL PVMT PRO-EDR DR
FLEV. 476 TOP OF STONE FILL (TYP)
18" EARTH BORROW OR EXCAVATED MAT'L (TYP)
1-2 1-2
473.7 FIELD
NET MANHOLE AT STA128+77
471.55 471.15 470.70
128+98.14
8' TYP
4' STONE FILL TYPE IV, (TYP)
GRANULAR BORROW
GEOTEXTILE UNDER STONE FILL (TYP)
129+00
Water Line @ Sta 129+13
Drainage Systems @ Sta 128+85.5
470

⑧ REV 128+95.5 TO REV 128+42 RT
NEW 18" X 54' CAAP (0.060) OR PCCSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

⑨ REV 128+95.5 TO 129+05 RT
NEW 6" X 12' UNDERDRAIN CARRIER PIPE

⑩ REV 129+05 TO 130+25 RT
NEW 6" X 120' UNDERDRAIN
W/ FLUSHING BASIN @ REV 130+25 RT

⑦ REV 128+95.5
NEW 18" X 40' CAAP (0.060) OR PCCSP (0.064)
OR CPEP (SL) OR RCP (CL III)
NEW 4'X4' RCDI W/ CI GRATE TYPE D

GUARDRAIL TRANSITION
3' 3' 5' CONCRETE SIDEWALK
E. RW
E. BRUSH
E. LAWN
LAWN
129+50

REV. $ 128+98.14 TO 129+98.28

FROM STA.	129 +00	TO STA.	130+00
PROJECT NAME	ROYALTON	MAIN	
NO.	BRS 0147(5)S	PLOTTED	04/09/86
SURVEYED BY	DEVAUX		DEC. 1985
SHEET 64 OF 76 SHEETS			

SCALE 10 FEET

128+78 End Bridge Quantities (SF & Geotextile)
Begin Roadway Quantities

FINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
	TRAVERSE		
NOTEBOOK	AREAS		
NO.	AREAS CHECKED		

-0.021 -0.021 -0.006 PC 130+54.24 +0.020 PT 132+50.00

LT SIDE

REV ⑬

RT SIDE, LT SIDE RT SIDE RT SIDE

LT SHOULDER

RT SHLDR, LT SHLDR RT SHOULDER

-0.021 -0.021 -0.035 -0.035 -0.054

129+00 +50 130+00 +50 131+00 +50 132+00 +50 133+00

SCALE

0.050 FT/FT

50 FEET

BANKING TRANSITION

⑬ REV 131+00 LT
NEW 18" X 52' CSP (0.064)
NEW 4'X4' RCDI W/ CI GRATE TYPE D
CONSTRUCT 3'X7' STONE FILL PAD, TYPE I, @ OUTLET

⑭ REV 131+00 TO 131+70 LT
CONSTRUCT SPECIAL DITCH

+25
END 6"
CONC. WALL

475.9 78.25'

REV. ⑬
482.54

1.05' LT

E. BRUSH

-0.050 +0.020 -0.035 -0.063

CL PVMT

E.P. E.P.

481.4

1-4 1-4

L.E. LE

E. WDS-LE

FT. PATH

L.E FT PATH

WDS

A-4 SaSiM (BRN)

A-4 SaSiM (BRN)

A-2-4 GrSiSa M (BRN)
SiSa(VIS) M (BRN)
NLTD

FIBER OPTIC CABLE

130+98.52

480

+66
END 8"
CONC. WALL

1-4 1-4 1-4

RETWALL/CWALL
F.B.C. WALL

473.0

469.20 470.20

E. RW BRUSH

STONE FILL, TYPE I

131+00

+76.5
12" ELM

MM +66
4

REV. ⑭
480.77

1.94' LT

-0.063 +0.005 -0.035 -0.083

BWALL/TWALL BWALL/TWALL

F. BLDG

CL PVMT

E.P. 479.4

1-4 1-4 1-4

L.E. LE

E. WDS-LE

FT. PATH

FT. PATH

BCWALL/TCWALL BCWALL

L. WDS

E. YARD

BRUSH

E. RW

STONE FILL, TYPE I

FIBER OPTIC CABLE

130+48.42

NOTE: DELINEATION OF LEDGE IS APPROXIMATE. DELINEATIONS ARE BASED ON LIMITED FIELD TESTING.

BORING INFORMATION
@ 130+50, 18' RT
@PAVEMENT GrSt
A-2-4 SiSa M (BRN)
TLOB

470

+36
FOUNDATION

130+50

MM 142
GUY POLE
5S

ORIGINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
	TRAVERSE		
NOTEBOOK	AREAS		
NO.	AREAS CHECKED		

REV. ⑬ 130+48.42 TO 130+98.52

FROM STA. 130 +50 TO STA. 131+00
PROJECT NAME ROYALTON MAIN
NO. BRS 0147(5)S PLOTTED 04/09/86
SURVEYED BY DEVAUX DEC. 1985
SHEET 65 OF 76 SHEETS

SCALE 10 FEET

ORIGINAL SURVEY	NO.	BY	DATE
SURVEYED			
PLOTTED			
DRAWN			
AREAS			
NOTEBOOK			
AREAS CHECKED			

FINAL SURVEY	NO.	BY	DATE
SURVEYED			
PLOTTED			
DRAWN			
AREAS			
NOTEBOOK			
AREAS CHECKED			

62+00 61+75 61+50 61+25 61+00 60+75 60+50 60+25 60+00

PVI 2 61+70 ELEV. 474.00

PVI 60+55 ELEV. 485.50

-16.00% -2.00% +3.00%

480

20' ROUNDING

-0.030

-0.100

A A

B B

2" BIT. CONCRETE PAVEMENT, TYPE III
12" SUBBASE MATERIAL

8' 8'

-0.040 +0.040

1-4 1-4

EXISTING FROM DRIVE SECTIONS

SECTION A-A
DRIVE DETAIL
STA 132+10

(NOTE: MAINTAIN 1-6 SIDESLOPES FROM DRIVE WITHIN CLEAR ZONE)

℄ 132+10
DRIVE LEFT

480

20' ROUNDING

470

B B

REV.
487.04

0.69' RT

-0.050 +0.020 -0.054

℄ PVMT

E P 486.3

E WDS

FIBER OPTIC CABLE

NOTE: SEE SHEET NO. 69 FOR ADDITIONAL DRIVE DETAILS

A-4 SaSi M BRN

A-2-4 GrSiSa M BRN
SaSi(VIS) LM (BRN)
NLTD

131+98.56

℄ 132+00

480

132+00

WDS

E WDS-E CEMETERY

132+50 131+50 131+00 130+50

PLAN TRANSITION

SCALE IN FEET 20

20

7.83'

3'

131+50

TEMPLATE DRAWN ON SKEW

REV.
484.80

0.18' LT

-0.050 +0.020 -0.035 -0.063

℄ PVMT

E P 483.9

BLE LE

T LE-E WDS

EXPOSED LEDGE

1-5

1-4

2-2

STONE FILL, TYPE I

FIBER OPTIC CABLE

BORING INFORMATION
@ 131+50, 14' RT
PAVEMENT CrSi
A-2-4 GrSiSaLM (BRN)
TLOB

131+48.57

℄ 131+50

480

BRUSH

REV.

GUARDRAIL TRANSITION

REV. @ 131+48.57 TO 131+98.56

FROM STA.	131+50	TO	STA.	132+00	
PROJECT NAME	ROYALTON		MAIN		
NO.	BRS 0147(5)S		PLOTTED	04/09/86	
SURVEYED BY	DEVAUX			DEC. 1985	
SHEET 66	OF 76	SHEETS			

SCALE 10 FEET

FINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TEMPLATE		
	TRACED		
	AREAS CHECKED		

E RW

E BRUSH

BRUSH

WDS

133+00

E P

CL PVMT

E P

FIBER OPTIC CABLE

E WDS

E WDS-E CEMETERY

480

AREA TO BE COLD PLANED

EXISTING PAVEMENT ±

EXISTING SUBBASE ±

DEPTH TRANSITION

SCALE IN FEET

1

10

25

132+00

134+50

ORIGINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TEMPLATE		
	TRACED		
	AREAS CHECKED		

BRUSH

REV. ℄ 488.66

1.56' RT

488.0

E P

E P

E WDS

E WDS-E CEMETERY

SCAVEMENT

FIBER OPTIC CABLE

M

A-2-4 SiSd BRN NLTD

132+48.49

℄

132+50

480

1-1/4" BCP TYPE III

1-3/4" BCP TYPE II

2-1/2" BCP TYPE I

10" Subbase

6" Base

12" Subbase

18" SUBBASE OF CRUSHED GRAVEL, COARSE GRADED (MODIFIED)

18" SAND BORROW

+25

131+50

131+00

REV. ℄ 132+48.49

FROM STA.	132 +50	TO	STA.	133+00	
PROJECT NAME	ROYALTON		MAIN		
NO.	BRS 0147(5)S		PLOTTED	04/09/86	
SURVEYED BY	DEVAUX		DEC. 1985		
SHEET 67	OF	76	SHEETS		

SCALE 10 FEET

NOTEBOOK | TEMPLATE AREAS | PLANS CHECKED | NO.

11+50

11+00

10+55

10+50

470

470

470

EXISTING GROUND ALONG DRIVE, TYP.

F. DRIVE LOT

F. DRIVE LOT

F. DRIVE

F. FIELD

F. FIELD

F. FIELD

F. BRUSH

F. BRUSH

F. DRIVE

F. DRIVE

F. DRIVE

F. FIELD

F. FIELD

F. FIELD

F. BRUSH

F. BRUSH

F1-4

F1-4

F1-4

F1-4

472.4

471.35

STONE FILL TYPE II

STONE FILL TYPE I

(1) SURV. G455 DEALERSHIP DRIVE
NEW 24"W X 38"H RCSP (0.064) W/ CSPES @ INLET
CONSTRUCT STONE LINED DITCH, TYPE I, @ INLET

64' BIT. CONC. PVT. TYPE III
32' BIT. CONC. PVT. TYPE III
OF SUBBASE MATERIAL

FROM SHEET 64

FROM STA.	10+18	TO STA.	11+55		
PROJECT NAME	ROYALTON	SIDE	LINE		
PROJECT NO.	BRS-0147(5)S	PLOTTED	04/08/86		
SURVEYED BY	DEVAUX	DEC. 1985			
SHEET 88 OF 96 SHEETS					

SCALE - 10 FEET

NOTEBOOK | SIGHT LINE | AREAS | PAVE. CHORD | NO.

REV.
463.96
3.80' LT
8"
-0.040 +0.040
1:4 1:4
480
50+99.75 ℄
21+00

REV.
463.96
3.80' LT
8"
-0.040 +0.040
1:4 1:4
2 "BIT. CONC. PVT. TYPE II "
12" SUBBASE MATERIAL
FROM SHEET 66
480
50+75.27 ℄
20+75

REV.
456.07
0.73' LT
8"
-0.040 +0.040
1:4 1:4
480
50+51.39 ℄
20+50

REV.
455.58
13.3'
8"
+0.030
480
50+26.38 ℄
20+25

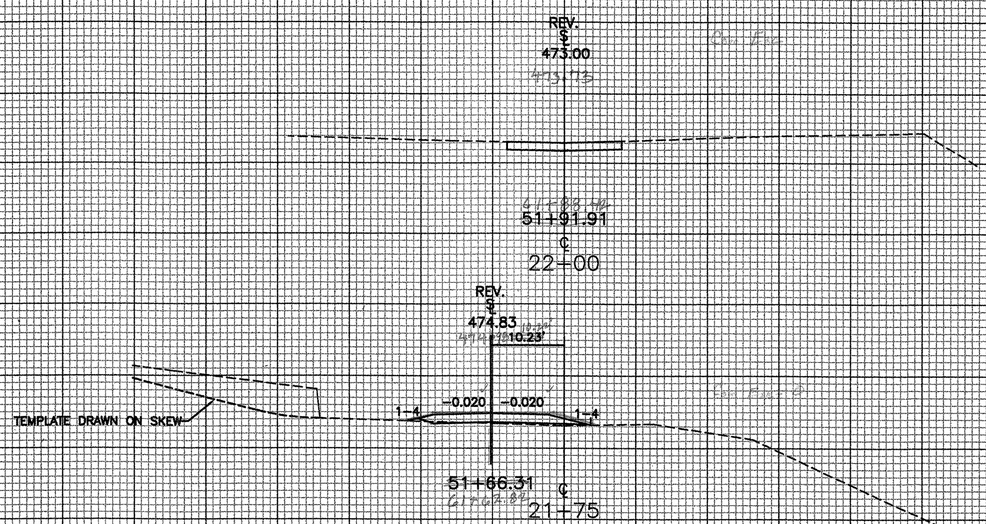
REV.
480
50+00 ℄
20+00

REV. 50+00 TO 50+99.75

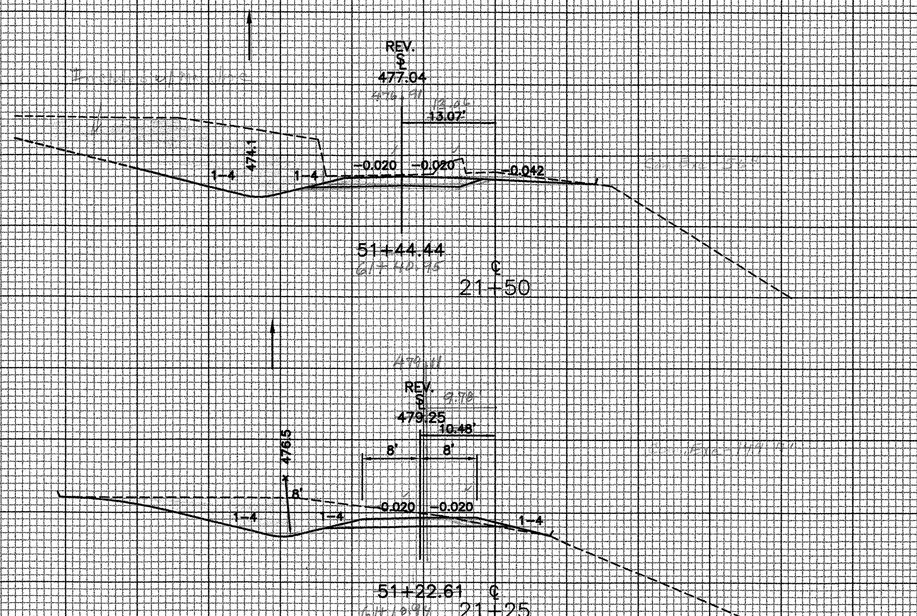
FROM STA. 20+00 TO STA. 21+00
PROJECT NAME ROYALTON DRIVE
NO. IRRS 0147(5)S PLOTTED 07/93
SURVEYED BY CLD JULY 1993
SCALE 10 FEET
SHEET 69 OF 78 SHEETS

0.5x1.55=1.8"

FINAL SURVEY		BY	DATE
NO.	NOTEBOOK		
	SURVEYED		
	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		



SEE MAINLINE SECTION 131+00 FOR DRIVE CULVERT



ORIGINAL SURVEY		BY	DATE
NO.	NOTEBOOK		
	SURVEYED		
	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

SCALE 10 FEET

REV. ℄ 51+22.61 TO 51+91.91

FROM STA.	21+25	TO STA.	22+00		
PROJECT NAME	ROYALTON		DRIVE		
NO.	BRS 0147(5)S		PLOTTED	04/09/86	
SURVEYED BY	DEVAUX		DEC. 1985		
SHEET 70	OF 76	SHEETS			

FINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

ORIGINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

140 120 100 80 65 40 20

HOUSE, SILL
E. WDS
E. WDS
E. RW
EXIST. GROUND (7/93) (TYP.)
EXIST. GROUND (12/85) (TYP.)
E. RW
E. BRUSH
FIELD
460
Canal Exc = 190
Sta 4+35
4+25

HOUSE, SILL
E. WDS
E. WDS
E. RW
E. RW
FLD-BRSH
460
4+00

LAWN
E. WDS
E. WDS
E. RW
E. RW
E. BRUSH
E. FIELD
3+75

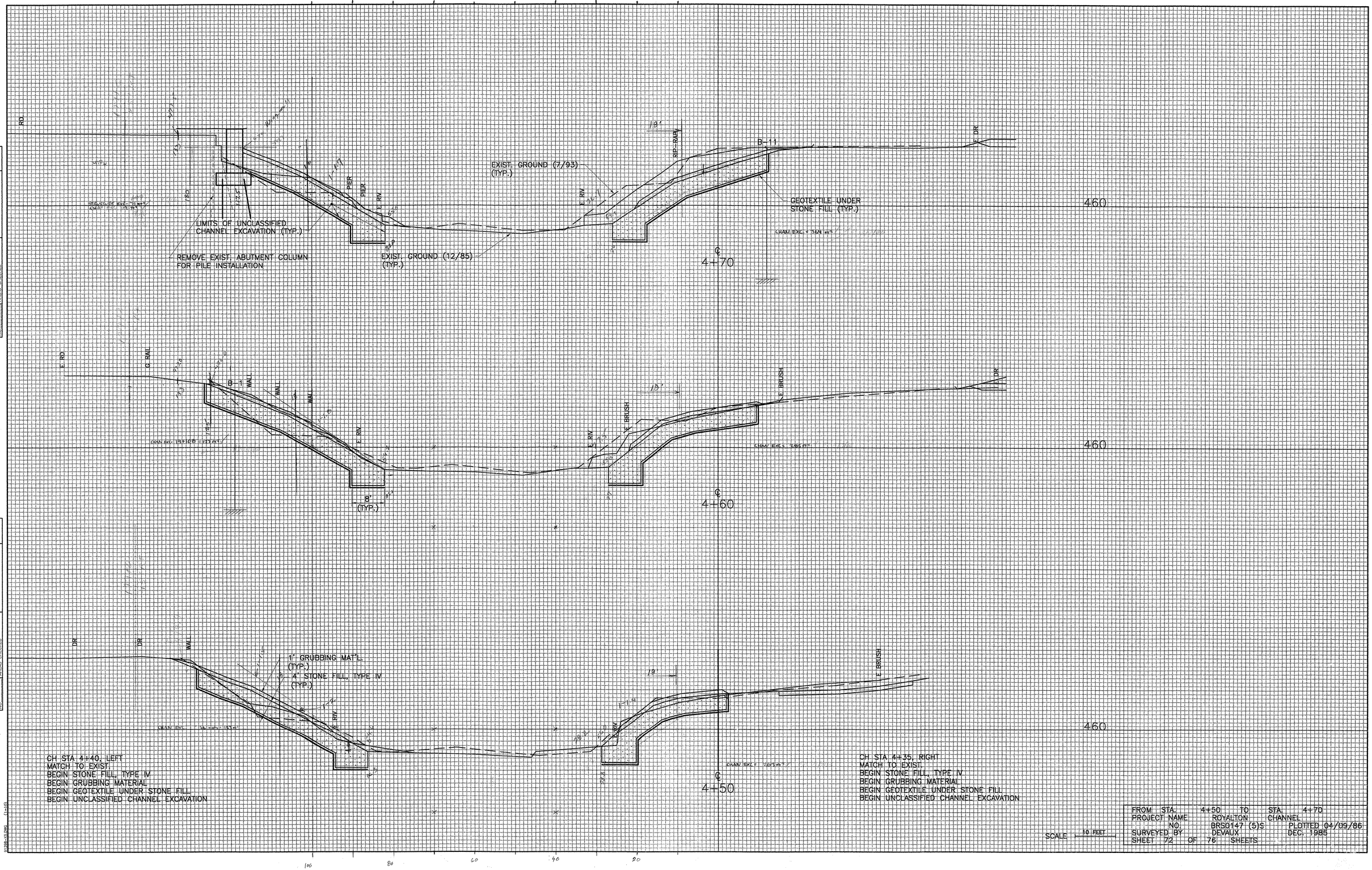
Stone Fill
Key 4.0+9.33/2 x 8 = 53.33 C.Y./L.F.
Slope 10 x 4.80 = 48 C.Y./L.F.
10/1.33
Fabric 8'+4.5'+12' = 24.5'/L.F.
470

SCALE 10 FEET

FROM STA.	3+75	TO	STA.	4+25	
PROJECT NAME	ROYALTON		CHANNEL		
NO.	BRS0147 (5)S		PLOTTED	04/09/86	
SURVEYED BY	DEVAUX		DEC. 1985		
SHEET 71 OF 76 SHEETS					

1"=10'
12568-53099

FINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
	TEMPLATE		
NOTEBOOK	TIES		
NO.	AREAS CHECKED		



ORIGINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
	TEMPLATE		
NOTEBOOK	TIES		
NO.	AREAS CHECKED		

SCALE 10 FEET

FROM STA.	4+50	TO STA.	4+70		
PROJECT NAME		ROYALTON CHANNEL			
NO.		BRS0147 (5)S		PLOTTED	04/09/86
SURVEYED BY		DEVAUX			DEC. 1985
SHEET	72	OF	76	SHEETS	

FINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
TEMPLATE		
AREAS		
NOTEBOOK		
AREAS CHECKED		
NO.		

PROPOSED STRUCTURE

EXISTING STRUCTURE

STRUCTURE EXC = 54 yd³
CHAN EXC = 4+34=106 yd³

TYPE IV STONE FILL

REMOVE EXIST. ABUTMENT COLUMN FOR PILE INSTALLATION

REMOVE EXIST. PIER TO 1' BELOW FINISH GRADE (TYP.)

℄ 4+90

REMOVE EXIST. ABUTMENT COLUMN TO 1' BELOW FINISH GRADE

STRUCTURE EXC = 90 yd³
CHAN EXC = 38 yd³

E. DR

470

END BR SEAT, BOT DECK, RD

ABUT

REMOVE EXIST. ABUTMENT CROSS BEAM

STRUCTURE EXC = 134 yd³
CHAN EXC = 338+45=961 yd³

LIMITS OF UNCLASSIFIED CHANNEL EXCAVATION (TYP.)

REMOVE EXIST. PIER TO 1' BELOW FINISH GRADE

EXIST. GROUND (12/85) (TYP.)

4' STONE FILL TYPE IV (TYP.)

1' GRUBBING MAT'L (TYP.)

EXIST. GROUND (7/93) (TYP.)

FIBER OPTIC CABLE

NET MANHOLE

℄ 4+80

STRUCTURE EXC = 90 yd³
CHAN EXC = 42 yd³

GEOTEXTILE UNDER STONE FILL (TYP.)

470

BR SEAT, BOT DECK

ABUT

REMOVE EXIST. ABUTMENT CROSS BEAM

REMOVE EXIST. PIER TO 1' BELOW FINISH GRADE

4+74 BEGIN EXISTING PIER

B. PIER EROT PIER ERO

BRUSH

FIELD

℄ 4+75

8' (TYP.)

470

ORIGINAL SURVEY	BY	DATE
SURVEYED		
PLOTTED		
TEMPLATE		
AREAS		
NOTEBOOK		
AREAS CHECKED		
NO.		

FROM STA. 4+75 TO STA. 4+90
PROJECT NAME ROYALTON CHANNEL
NO. BRS0147 (5)S PLOTTED 04/09/86
SURVEYED BY DEVAUX DEC. 1985
SHEET 73 OF 76 SHEETS

SCALE 10 FEET

9120B-xSDWG (1x10)

FINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

1" GRUBBING MAT'L. (TYP.)
4" STONE FILL, TYPE V (TYP.)

EXIST. GROUND (7/93) (TYP.)

EXIST. GROUND (12/85) (TYP.)

STRUCTURE EXC.= 51 m³
CHAN. EXC.= 79

STRUCTURE EXC.= 75 m³
CHAN. EXC.= 665 m³

5+20

470

B-3

STRUCTURE EXC.= 114 m³
CHAN. EXC.= 96 m³

LIMITS OF UNCLASSIFIED CHANNEL EXCAVATION (TYP.)

STRUCTURE EXC.= 91 m³
CHAN. EXC.= 515 m³

5+10

REMOVE EXIST. ABUTMENT COLUMN TO 1' BELOW NEW FOOTING

GEOTEXTILE UNDER STONE FILL (TYP.)

8" (TYP.)

470

NOTE: DO NOT PLACE GRUBBING MATERIAL BENEATH PROPOSED SUPERSTRUCTURE

ORIGINAL SURVEY		BY	DATE
NOTEBOOK	SURVEYED		
NO.	PLOTTED		
	TEMPLATE		
	AREAS		
	AREAS CHECKED		

STRUCTURE EXC.= 51 m³
CHAN. EXC.= 85 m³

EXISTING STRUCTURE

REMOVE EXIST. PIER TO 1' BELOW FINISH GRADE

5+00

REMOVE EXIST. ABUTMENT CROSS BEAM

STRUCTURE EXC.= 93 m³
CHAN. EXC.= 320 m³

470

Utility End Existing Pier

FROM STA.	5+00 TO STA. 5+20
PROJECT NAME	ROYALTON CHANNEL
NO.	BRS0147 (5)S PLOTTED 04/09/86
SURVEYED BY	DEVAUX DEC. 1985
SHEET 74 OF 76 SHEETS	

SCALE 10 FEET

470 455 15
x1.5 = 22.5

CH STA 5+55, LEFT
MATCH TO EXIST.
END STONE FILL, TYPE IV
END GRUBBING MATERIAL
END GEOTEXTILE UNDER STONE FILL
END UNCLASSIFIED CHANNEL EXCAVATION

EXIST. GROUND (7/93) (TYP.)

EXIST. GROUND (12/85) (TYP.)

E WDS

E RIV

E BRUSH

LAWN

E MBL HOME

GRUBBING MATERIAL → 0 ← EARTH BORROW OR EXCAVATION MATERIAL

LIMITS OF UNCLASSIFIED CHANNEL EXCAVATION (TYP.)

CHAN EXC = 788 ft²

℄ 5+50

460

450

EARTH BORROW OR EXCAVATION MATERIAL → 0 ← GRUBBING MATERIAL

GEOTEXTILE UNDER STONE FILL (TYP.)

CHAN EXC = 1081 ft²

℄ 5+30

8' (TYP.)

STRUCTURE EXC = 51 ft²
CHAN EXC = 333 ft²

AREAD = 118 ft²

470

450

EARTH BORROW OR EXCAVATION MATERIAL → 0 ← GRUBBING MATERIAL

SEE ROADWAY SECTIONS FOR CONTINUATION

E WDS

E RIV

WATER LVL

E LAWN

EMBANKMENT

CHANNEL EXCAVATION 165 ft²

℄ 5+25

B-B

470

CH STA 5+60, RIGHT
MATCH TO EXIST.
END STONE FILL, TYPE IV
END GRUBBING MATERIAL
END GEOTEXTILE UNDER STONE FILL
END UNCLASSIFIED CHANNEL EXCAVATION

NOTE: DO NOT PLACE GRUBBING MATERIAL BENEATH PROPOSED SUPERSTRUCTURE

SCALE 10 FEET

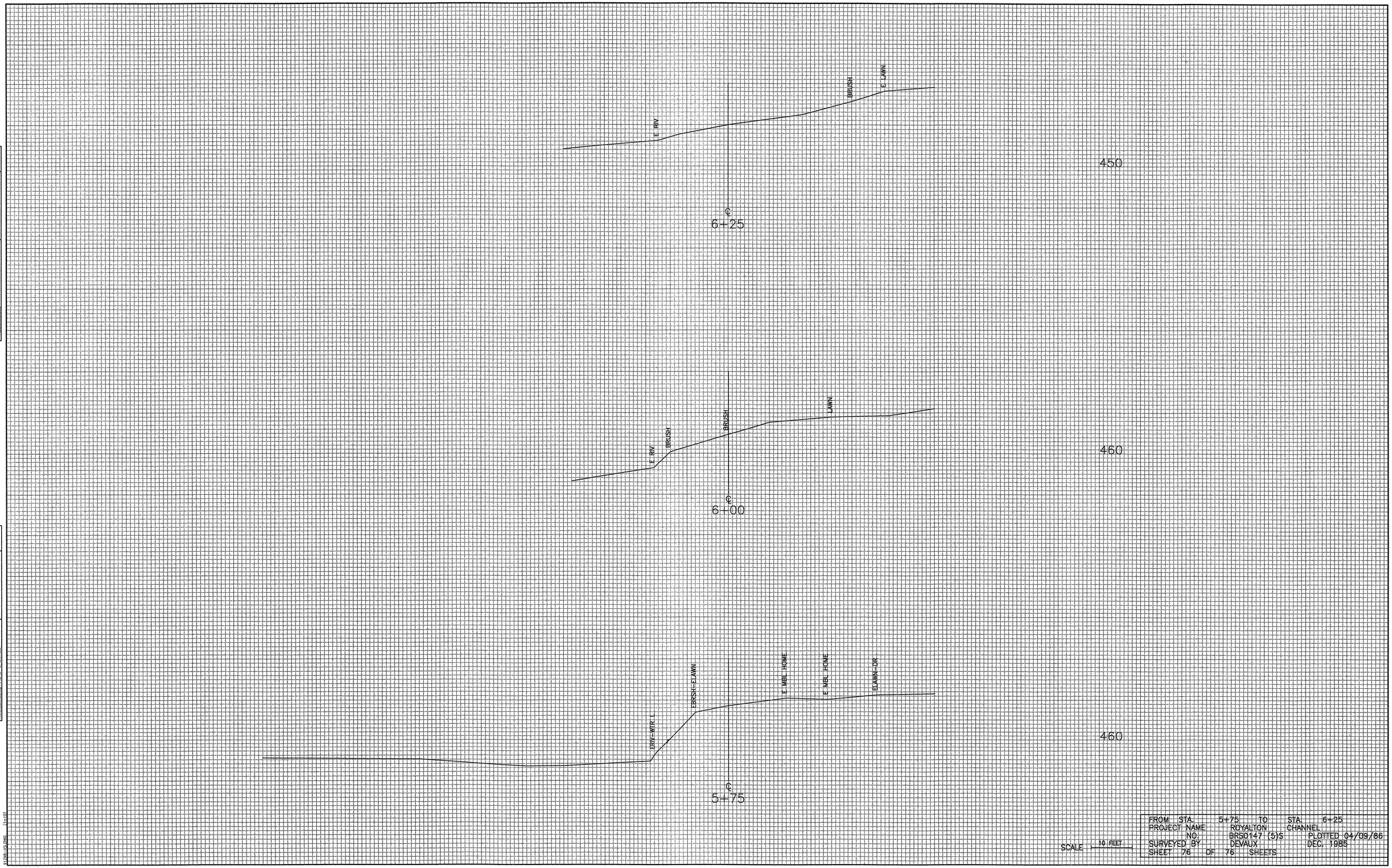
FROM STA. 5+25 TO STA. 5+50
PROJECT NAME ROYALTON CHANNEL
NO. BRSG147 (5)S PLOTTED 04/09/86
SURVEYED BY DEVAUX DEC. 1985
SHEET 75 OF 76 SHEETS

FINAL SURVEY — NOTEBOOK — NO. — SURFACED / PLOTTED / TEMPLATE / AREAS / AREAS CHECKED — BY — DATE

ORIGINAL SURVEY — NOTEBOOK — NO. — SURFACED / PLOTTED / TEMPLATE / AREAS / AREAS CHECKED — BY — DATE

X1288-25.DWG (1=10)

FINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
NOTEBOOK	TEMPLATE		
	MARKS		
NO.	AREAS CHECKED		

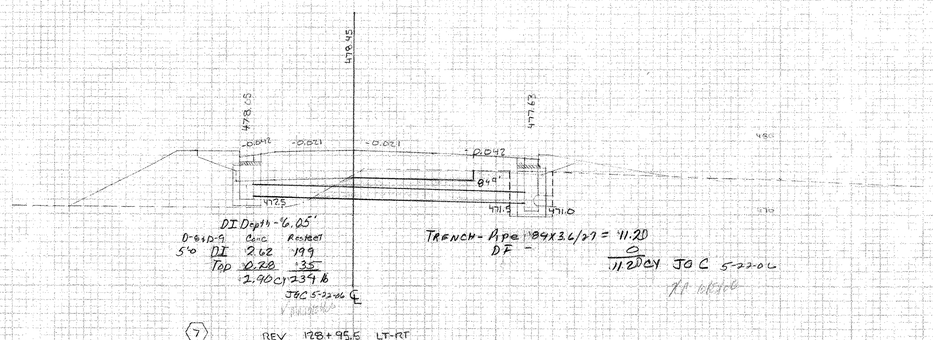


ORIGINAL SURVEY	SURVEYED	BY	DATE
	PLOTTED		
NOTEBOOK	TEMPLATE		
	MARKS		
NO.	AREAS CHECKED		

SCALE 10 FEET

FROM STA.	5+75	TO	STA.	6+25	
PROJECT NAME		ROYALTON	CHANNEL		
NO.		BRS0147 (5)S		PLOTTED	04/09/86
SURVEYED BY		DEVAUX		DEC. 1985	
SHEET 76	OF	76	SHEETS		

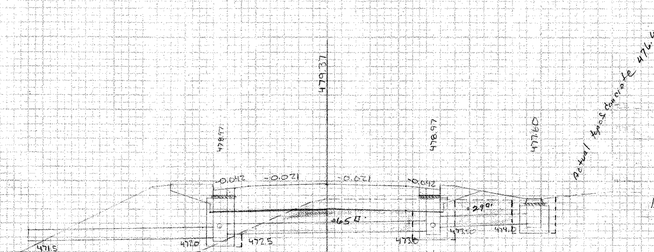
(1=10)
01268-03.DWG



DI Depth = 6.05'
D-94D-9 Conc Resist
5'0 DI 2.62 199
Top 0.28 135
2.90 CY 234 lb
JGC 5-22-06

TRENCH - Area 1.89 X 3.6/27 = 11.20
DF -
11.20 CY JGC 5-22-06

7 REV 128+95.5 LT-RT
NEW 18" X 38' PCCSP



DI Depth = 4.1'
D = 6 "d"
Conc - 2.11 CY
Resist - 199 lb

DI Depth = 6.47
D=6 Conc 18-9 Resist
5.5' DI 2.84 207
Tops 0.28 35
3.12 CY 242 lb JGC 9-14-05

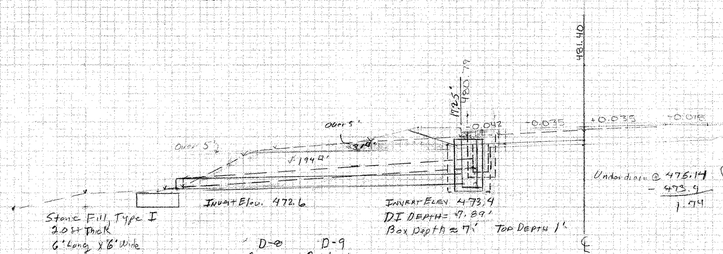
TE - Pipe: 22.9° X 3.6/27 = 3.07
DI: 6 X 6 X 4.8/27 = 6.40
10.27 CY JGC

TE Pipe - 46.8° X 13.6/27 = 18.67
DI - 6 X 6 X 4.1/27 = 5.47
24.14 CY JGC 9-14-05

5 REV 127+00
NEW 18" X 32' PCCSP JGC 9-14-05

6 REV 127+00 LT
NEW 18" X 26' PCCSP
TRENCH EARTH
DI (6') 0.5 X 6 X 6.5/27 X 2 = 7.22 CY
PIPE 0 CY

4 REV 127+00 RT
NEW 18" X 12' PCCSP



Stone Fill Type I
2.0 FT Thick
6' Long X 16' Wide

	D-90 Concrete	D-9 Resteel
9.0' DI	3.51	261
Tops	0.29	35
	3.79 CY	296 lb

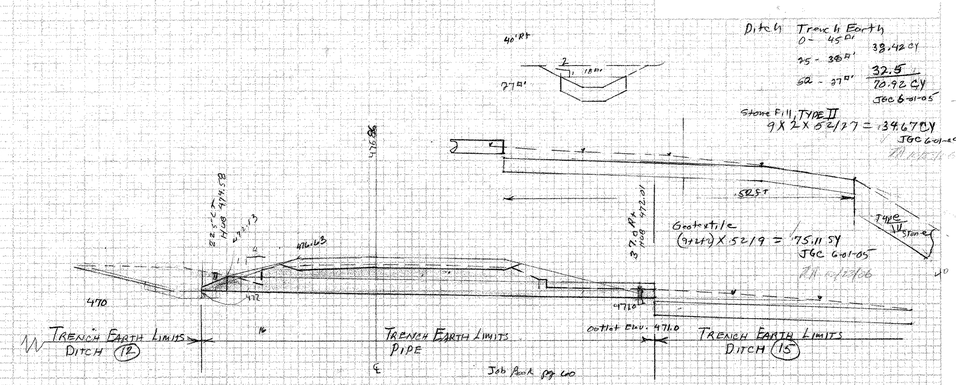
JGC 9-14-05

T.E - Pipe: 194 X 3.6 X 1/27 = 25.87 over 5' 3.1 X 3.6 X 0.5 X 1/27 = 2.07
DI: 6 X 6 X 6.5/27 = 8.67 6 X 6 X 5.1 X 0.5 X 1/27 = 7.0
Stone Fill: 6 X 6 X 2.1/27 = 2.67 3.07
37.21 + 3.07 = 40.28 CY 5-22-06

Stone Fill 6'16' X 2.0/27 = 7.67 CY

Geotextile for Stone Fill
10' X 15' X 1.9 = 46.67 SY
Field Meas. JGC 6-13-05

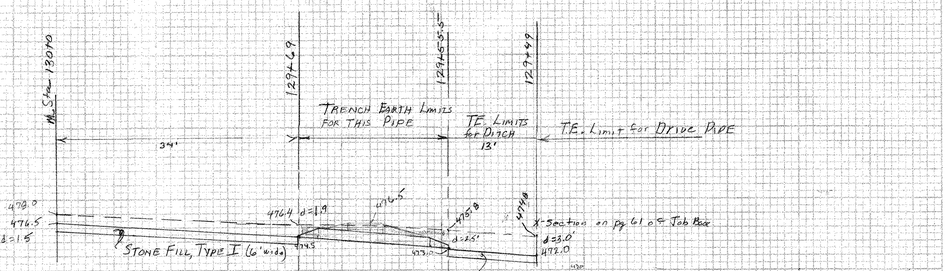
1 REV 125+50 LT
NEW 18" X 40' PCCSP



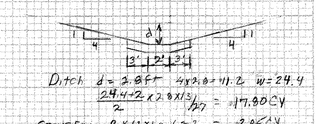
Ditch Trench Earth
0 - 45° 38.42 CY
35 - 38° 32.5
52 - 27° 70.92 CY
JGC 6-01-05

Stone Fill, Type II
9 X 2 X 52/27 = 34.67 CY
JGC 6-01-05

11 SURV 10+55 LT-RT
NEW 24" X 58' CSP
60'
TRENCH EARTH:
PIPE 18.1 SY X 3.6/27 = 27.54 CY JGC 5-30-06

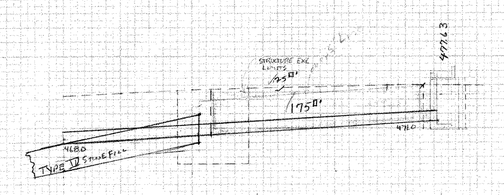


Ditch = 1.7 4 X 1.7 = 6.8 w = 15.6
15.6+2 / 2 X 1.7 X 3.4 X 1/27 = 18.84
Stone - 6 X 1 X 3.4/27 = 7.54
26.40 CY
JGC 5-30-06



Ditch d = 3.8 FT 4 X 3.8 = 11.2 w = 24.4
24.4+2 / 2 X 2.8 X 1.5 / 27 = 17.80 CY
Stone Fill B X 13 X 1.0 / 27 = 3.85 CY
21.65 CY
JGC 5-30-06

16 REV 129+55.63 RT - 129+69.27 RT (Path Pipe)
NEW 18" X 16' CSP
TRENCH EARTH 3.6 4.80 CY JGC 5-30-06
PIPE 16.5 FT X 3.6/27 = 6.72 CY



DI Depth = 7.13
D-94D-9 Conc Steel
DI (6') 3.06 330
Tops 0.28 35
3.34 CY 365 lb JGC 5-22-06

8 REV 128+95.5 RT - 128+42.39 RT
NEW 18" X 54' PCCSP

TRENCH EARTH
PIPE - 175 X 3.6 X 1/27 = 23.33
over 5' 175 X 3.6 X 3.5 X 1/27 = 1.67
DI - 6 X 6 X 6.75 X 1/27 = 13.33
over 5' 6 X 6 X 1.75 X 1/27 = 0.03
37.36 CY
JGC

ROYALTON
AC BRS 0147(5)S
DRAWING SHEET #1

Trench Excavation For Water Line To Trailer

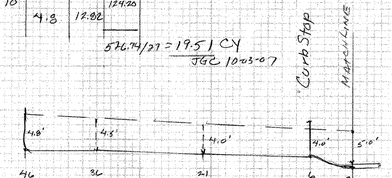
Job Book Pg 112 8-31-05

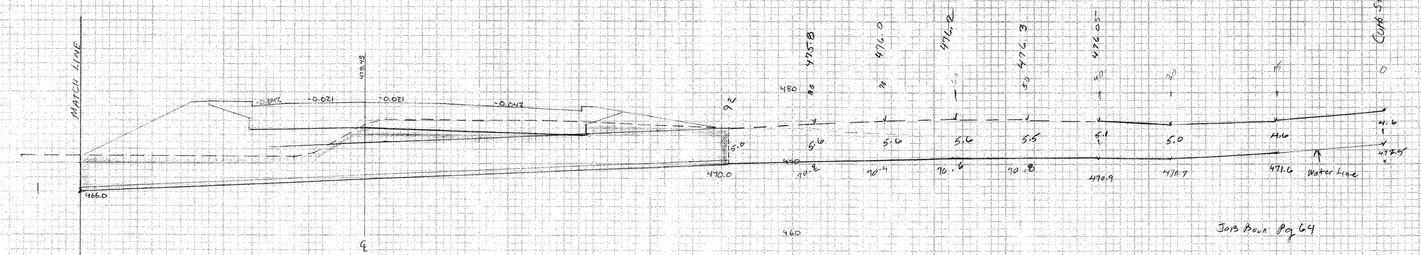
Trench Width = 2.67'

Sta	Dist	Depth	Area	Vol
0		5.0	13.35	
	6			72.09
6		4.0	10.68	
	15			160.20
21		4.0	10.68	
	15			170.25
36		4.5	12.02	
	10			124.20
46		4.8	12.82	

576.74/27 = 19.51 CY

JGC 10-03-07





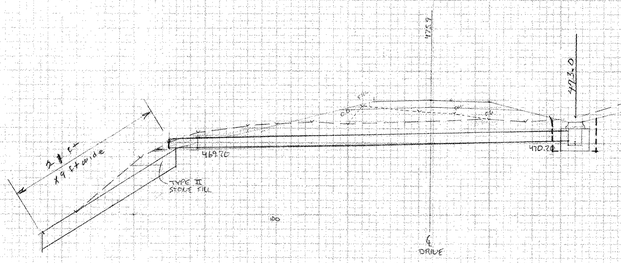
Job Book Pg 64

REV 129+13, 40' LT = 51' RT

SLEEVE FOR UTILITIES

TRENCH EARTH: 497 sq ft x 78 ft = 51.19 cy

JGC



DI Depth = 3.35+

D-6 Concrete = 1.83 CY } See Pg 33, Drainage Book

Steel = 155 lb } for computations. JGC

6" pipe cast w/ DI

T.E.- Pipe 158.6' x 3.6/27 = 21.07

DI - 6x6x4.2/27 = 5.60

Stone Fill 57.2' x 9/27 = 19.0

45.67 ± Y

JGC 6-23-05

Stone Fill, Type II 2' thick

7 x 9 x 2 / 27 = 14.0 CY JGC 6-23-05

Geotextile Fabric

11 x 15' x 1/9 = 18.33 SY JGC 6-23-05

Field Meas. by JGC

13 REV 131+00 LT

NEW 18" x ~~22'~~ 56' CSP

Trench Width is 2'-8"

STA	Dist	Depth	Area	Vol (CF)	Over 5' Area	Over 5' Vol (CF)
0		4.6	12.28			
	15			184.20		
15		4.6	12.28			
	15			192.22		
30		5.0	13.35		0	
	10			134.85		1.35
40		5.1	13.62		0.27	
	10			141.50		8.05
50		5.5	14.68		1.39	
	10			148.15		14.70
60		5.6	14.95		1.60	
	10			149.50		16.0
70		5.6	14.95		1.60	
	10			149.50		16.0
80		5.6	14.95		1.60	
	12			169.80		9.6
92		5.0	13.35		0.0	

1769.72 / 27 = 47.032 Y

1.22

Over 5' 48.25 CY JGC 10-03-07

65.76 ± / 27 = 2.43 / 2 = 1.22

ROYALTON
AC BRS 0147(5)S

DRAINAGE SHEET #2

FINAL
SURVEY

DATA ENTRY
DATA BOOK
AS-BUILT

ORIGINAL SURVEY
FIELD BOOK
PAGE
DATE
BY

Sta 197+64.73 16'RT
= Beg. n Radius Ord

477.80
478.14

478.53
478.42

Bad Bridge
13+64.25

Sta 197+64.73 16'RT
= Beg. n Radius Ord

477.80
477.54
477.27
477.00
476.92
476.79
476.76
476.70
476.76
476.74
476.83
477.16
11+50

+07.41
+15
+20
+30
+40
10+00
10+53.20
+60
10+61.79
+70
+80
+90
11+50

477.71
476.59
476.49
476.49
476.53

477.80
477.60
477.40
477.20

478.53
478.42

Bad Bridge
13+64.25

Face of Rail @ 479.5'

DRIVE 104.53' @ 30.00% AT
END RADIUS OF 45.01'

DRIVE 104.53' @ 30.00% AT
END RADIUS OF 182.01'

14'x16' CONCRETE

10'x13'

SCALE: 1:10

ROYALTON
AC BRS 0147(6)S

CRAWFORD DRIVE SHEET

PLATE 1 - LONGITUDINAL SECTION - VILLAGE

039

State of Vermont
Agency of Transportation
National Life Building
Drawer 33
Montpelier, VT
05633-5001

VTrans *Working to Get You There*

Cosmec, Inc.
70 South Street, P.O. Box 390
Walpole, MA 02081

DATE: January 20, 2005

Project Name: **Royalton, Vermont**
Project Number: **BRF 0147(5)S**

The following preformed fabric pad bearing drawing, for the above-referenced bridge project (General Contractor – Beck & Bellucci, Inc.), has been reviewed and is being returned herewith:

1. **Preformed Fabric Pad Bearings, Drawing Number 4348, dated 12/28/04**

Is approved except "as noted" [X]

Additionally, the Welding and Bonding Procedures have been approved and are being returned as well.

Sincerely,

Craig Keller
Structures Project Manager

attachments
cc: [x] Resident Engineer, Jack Couture w/attachments
[x] Contractor, Beck & Bellucci, Inc. w/attachments
[x] CLD Consulting Engineers (Concord, NH), John Byatt w/attachments
[x] Shop Inspector, Jeff Clark w/attachments
[x] Construction Section – letter only
[x] Materials & Research Section (C&IA Unit) – letter only
[x] Central Files
[x] Project File

080

V1 A.O.T.
Project No BRS 0147693
Town of Royalton

Cosmec Inc.
Welding Procedure Specification

WPS No. **GTAW F1 - REV. 7** Date **4/10/00** By **David Lang II** Type Manual ☒ Machine ☐
Authorized By **William Burhoe** Date **4/11/00** Revision **7** Semi-Auto ☐ Auto ☐
Welding Process(es) **GTAW** Prequalified ☐
Supporting PQR(s) **98-101WB-F**

JOINT
Type **Lap Joint**
Backing Yes ☐ No ☒ Single Weld ☒ Double Weld ☐
Backing Material **N/A**
Root Opening **N/A** Root Face Dimension **N/A**
Groove Angle **N/A** Radius (J-U)
Back Gouge Yes ☐ No ☒
Method **N/A**

Joint Detail

Welding Process	ASU Reinforcement	Weld Thickness: Groove (Nominal)	Weld Thickness: Fillet (Nominal)	Groove Thickness: Calculation: Root Opening	Groove Thickness: Calculation: Included Angle	Groove Thickness: Calculation: Joint Efficiency	Number Passes Groove	Note
GTAW		Minimum	Min. T/No.	Min.	± °	± °	#	

BASE METALS
Material Spec. **ASTM A240** to **ASTM A709**
Type or Grade **304** to **50W**
Thickness: Groove (in) -
Fillet (in) -
Diameter (Pipe, in) -

FILLER METALS
AWS Specification **A5.9** **Harris-Welco**
AWS Classification **ER309L**

SHIELDING
Flux **N/A**
Electrode-Flux (Class) **N/A**
Gas **Argon**
Composition **100%**
Flow Rate **45 CFH**
Gas Cup Size **3/8(6)**

PREHEAT
Preheat Temp., Min. **100**
Thickness Up to 3/4" Temperature **100**
Over 3/4" to 1-1/2" **100**
Over 1-1/2" to 2-1/2" **150**
Over 2-1/2" **225**
Interpass Temp., Min. Max.

POSITION
Position of Groove Fillet **Flat**
Vertical Progression: ☐ Up ☐ Down

ELECTRICAL CHARACTERISTICS
Transfer Mode (GMAW):
Short-Circuiting ☐ Globular ☐ Spray ☐
Current: AC ☐ DCEP ☐ DCEN ☒ Pulsed ☐
Other
Tungsten Electrode (GTAW):
Size **3/32** Type **EWTH2**

TECHNIQUE
Stringer or Weave Bead **Stringer**
Multi-pass or Single Pass (per side) **Single**
Number of Electrodes **1**
Electrode Spacing: Longitudinal **N/A**
Lateral **N/A**
Angle **N/A**
Contact Tube to Work Distance **3/8**
Peening **Not Allowed**
Interpass Cleaning **N/A**

POSTWELD HEAT TREATMENT PWHT Required ☐
Temp. Time

WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps or WFS	Volts	Travel Speed	Other Notes
1	GTAW	ER309L	3/32	DCEN	150	23	6 11/16	

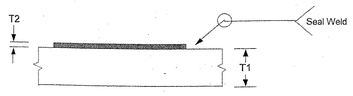
081

Cosmec Inc.
Welding Procedure Specification

GTAW F1 - REV. 7

Joint Detail

Seal Weld Stainless Steel



Welding Process	Joint Designation	BM Thickness (U=unlimited) T1	BM Thickness (U=unlimited) T2	Groove Preparation: Root Opening	Groove Preparation: Tolerances: As Detailed (see 3.13.1)	Groove Preparation: Tolerances: As Fit Up (see 3.13.1)	Permitted Welding Positions	Notes
GTAW		1/2 to U	16 Ga. - 10 Ga.	R=0	± 0	± 0	2F	

MEMO

CODE: AWS D1.6

V.A.O.T.
RECEIVED
REVIEW BY _____ OKAY JWC
JAN 11 2005
PROGRAM _____ APPROVED ✓
BY _____ DATE 01-19-05

082

BECK & BELLUCCI

VT A.O.T.

PROJECT NO. BRS 0147(5)S

TOWN OF ROYALTON

COSMEC SO 60194

EMS-QC-110

V.A.O.T.
RECEIVED
CK'D BY _____ DIC'D BY JWC

JAN 11 2005

RESUBMIT _____ APPROVED ✓
BY _____ DATE 01-19-05

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

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

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

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

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

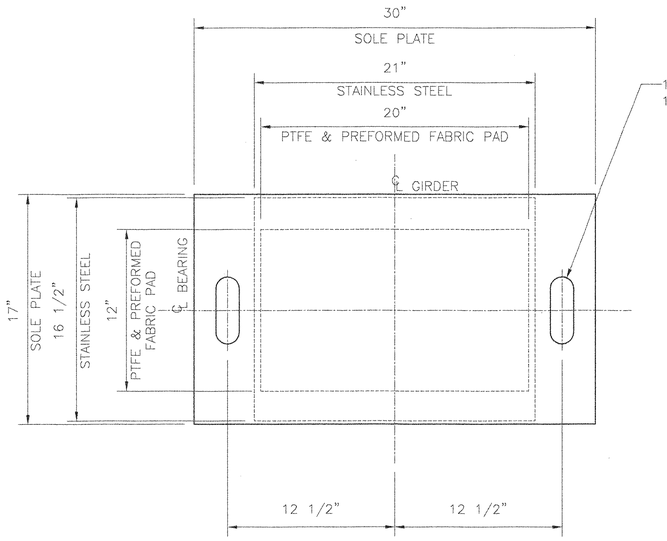
The PTFE and substrate mating surfaces shall be clean and dry with final degreasing performed within 30 minutes of bonding. Adhesive shall consist of a two-part epoxy adhesive system conforming to Military Specification MMM-A-134

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

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

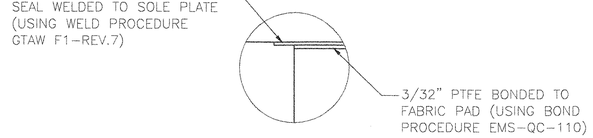
The PTFE shall be carefully trimmed to the same size as the substrate after bond curing and all bonds shall be visually inspected for bond retention.

083

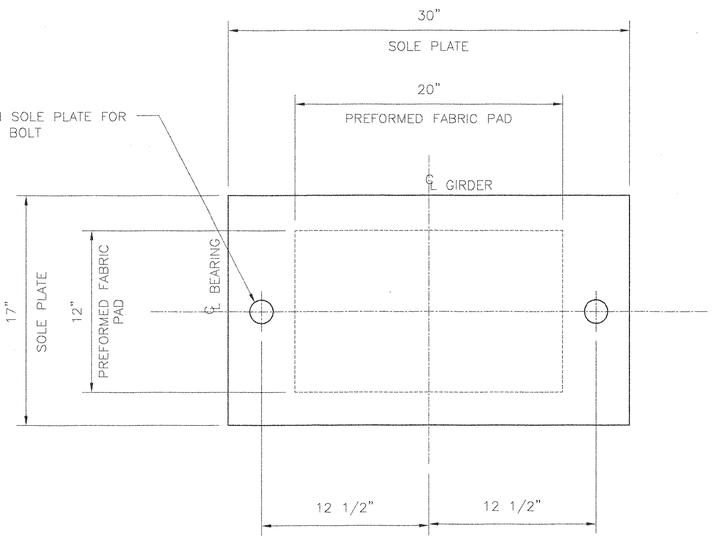


1 7/8"ø x 5" SLOTTED HOLES FOR 1 1/2"ø ANCHOR BOLTS

PLAN VIEW
EXPANSION BEARING
LOCATION: ABUTMENT 1
QUANTITY: 6



DETAIL A
N.T.S.



1 7/8"ø HOLE IN SOLE PLATE FOR 1 1/2"ø ANCHOR BOLT

PLAN VIEW
FIXED BEARING
LOCATION: ABUTMENT 2
QUANTITY: 6

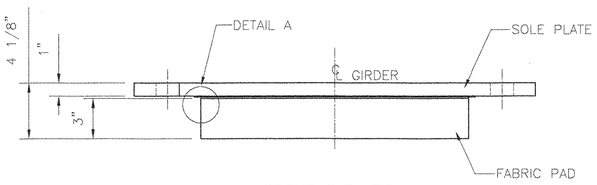
SHOP DRAWING REVIEW
REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT
- [X] PROVIDE AS SUBMITTED
- [ ] PROVIDE AS CORRECTED
- [ ] REVISE AND RESUBMIT
- [ ] REJECTED - SEE REMARKS
- [ ] SUBMITTAL NOT REQUIRED - RETURNED WITHOUT REVIEW

THIS REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION, CORRECTIONS OR COMMENTS SHOWN AND/OR NOTED ARE SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR: DETERMINING THE ACCURACY AND COMPLETENESS OF DETAILS, SUCH AS DIMENSIONS AND QUANTITIES; SUBSTANTIATING INSTRUCTIONS FOR INSTALLATION OR PERFORMANCE OF EQUIPMENT OR SYSTEMS; THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, INCLUDING SAFETY PRECAUTIONS AND PROCEDURES; AND THE SELECTION OF FABRICATION PROCESSES. ENGINEER'S APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. FURTHER, ENGINEER'S REVIEW OF CONTRACTOR'S SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR OF ITS OBLIGATIONS UNDER THE CONTRACT DOCUMENTS WITH RESPECT TO THE PREPARATION AND/OR APPROVAL OF SUCH SUBMITTALS.

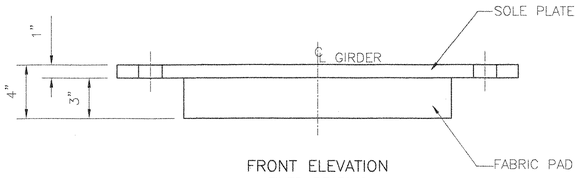
SLD CONSULTING ENGINEERS, INC.
410 COMMERCIAL STREET
MANCHESTER, NEW HAMPSHIRE

BY: JH DATE: 1-7-05

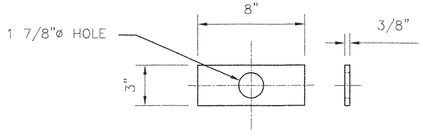
VTrans
RECEIVED
CK'D BY JWC CK'D BY
JAN 11 2005
RESUBMIT APPROVED AS NOTED
BY DATE 1/20/05 GW



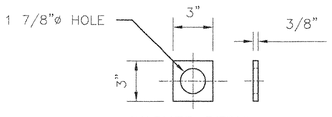
FRONT ELEVATION
EXPANSION BEARING
LOCATION: ABUTMENT 1



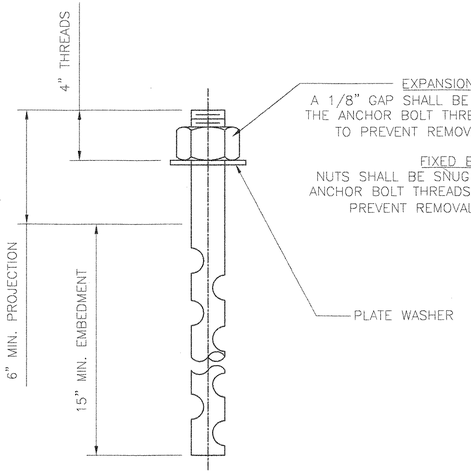
FRONT ELEVATION
FIXED BEARING
LOCATION: ABUTMENT 2



WASHER DETAIL
EXPANSION BEARING ONLY
GALVANIZED
QUANTITY: 12



WASHER DETAIL
FIXED BEARING ONLY
GALVANIZED
QUANTITY: 12



ANCHOR BOLT DETAIL
N.T.S.

1 1/2"ø x 22" LONG F1554 GRADE 55 SWEDGED ANCHOR BOLT WITH 4" OF THREADS ONE END W/ ONE HEAVY HEX NUT ALL GALVANIZED

MATERIAL:
STEEL- AASHTO M270 (ASTM A709) GRADE 36 ZINC METALIZED
STAINLESS STEEL- ASTM A240 TYPE 304 MIRROR FINISH OF LESS THAN 10 MICRO INCHES RMS
PTFE- ASTM D1457
FABRIC PAD- AASHTO 18.4.9.1
ANCHOR BOLTS ASTM F1554 GRADE 55 GALVANIZED

NOTES:
1. LOCATION OF FABRICATION: 70 SOUTH ST. WALPOLE, MA 02081
2. COSMEC REPRESENTATIVE: MR. MATT McANDREWS (508)668-6600
3. ALL EDGES OF STEEL SHALL HAVE A 1/16" MINIMUM RADIUS

REV.		BY	DATE	CK'D	DATE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE NO. 21
PROJECT NO. BRS D147(5)S
V.T. ROUTE 14 OVER THE WHITE RIVER
TOWN OF ROYALTON

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

SCALE: 3/16"=1"	DRAWN BY: MK	CHECKED BY: RC
DATE:	DATE: 12/15/04	DATE: 12/28/04

PREFORMED FABRIC PAD BEARINGS

CUSTOMER	S.O. NUMBER	DRAWING NUMBER	REV.
BECK & BELLUCCI	60194	4348	

~~080~~ 084

Casco Bay Steel Structures, Inc.
75 Spring Hill Road
Saco, Maine 04072
Phone: (207) 282-7360 **Fax: (207) 282-1179**

May 3, 2005

To: Vermont Agency of Transportation
National Life Building, Drawer 33
Structures Division
Montpelier, VT 05633

Attn: Roger Whitcomb

Subject: Extended Weights

Project: Royalton, VT BRS-0147(5)S

Roger,

Enclosed are the extended weights for Royalton, Vt.
Please call with any questions.

Thank You,

Wendy Tait
President

VTrans - PDD
MAY - 6 2005
Structures Design
Section

Casco Bay Steel Structures, Inc. May 9, 2005
75 Spring Hill Road
Saco, Maine 04072
Phone: (207) 282-7360 **Fax: (207) 282-1179**

EXTENDED WEIGHTS FOR ROYALTON, VERMONT BRS 0147(5)S

Girder 1G1			
1		41,080	41,080 ✓
Girder 1G2			
1		41,315	41,315 ✓
Girder 2G3			
1		41,315	41,315 ✓
Girder 2G4			
1		41,315	41,315 ✓
Girder 3G5			
1		41,315	41,315 ✓
Girder 3G6			
1		41,080	41,080 ✓
Int. Diaphragms			
25	4D1	556	13,900 (13955)
End Diaphragms			
1	4D2	563	563 (566)
1	4D3	562	562 (564)
1	4D4	560	560 (563)
1	4D5	559	559 (562)
1	4D6	559	559 (561)
1	4D7	563	563 (566)
1	4D8	562	562 (564)
1	4D9	560	560 (563)
1	4D10	559	559 (562)
1	4D11	559	559 (561)
			19,506 (19587)

Total Wt: 266,962 (267,007) diff + 45 lbs

BILL OF MATERIAL

JOB NO. | DRAWING NO. 1 | REV

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		1G1	1		GIRDER				41080	
1	E		1	wa	PL $\frac{9}{16}$×48 ✓	68 ✓	$6\frac{9}{16}$ ✓	68.547 (M270-50WT2) (H2-3)		6297.77
1	G		1	wb	PL $\frac{9}{16}$×48 ✓	63 ✓	$0\frac{9}{16}$ ✓	63.047 (M270-50WT2) (H2-3)		5792.44
1	L		1	ta	PL $\frac{7}{8}$×18 ✓	26 ✓	$9\frac{1}{2}$ ✓	26.792		1435.95
1	J		1	tb	PL $1\frac{1}{2}$×18 ✓	78	0 ✓	78.000		7166.25
1	L		1	tc	PL $\frac{7}{8}$×18 ✓	26	$9\frac{1}{2}$ ✓	26.792		1435.95
1	C		1	ba	PL $1\frac{1}{4}$×24 ✓	26	$8\frac{1}{2}$ ✓	26.708 (M270-50WT2) (H2-3)		2689.67 *
1	A		1	bb	PL 2×24 ✓	78	0 ✓	78.000 (M270-50WT2) (H2-3)		12740.25
1	C		1	bc	PL $1\frac{1}{4}$×24 ✓	26	$8\frac{1}{2}$ ✓	26.708 (M270-50WT2) (H2-3)		2689.67 *
					* Shown without bottom flange clip Difference is 36.186 lbs/each (2 = 73.72 lbs)					
2	B		2	x1a	PL 1×$9\frac{1}{2}$ ✓	4	0 ✓	MIE		258.61
2	B		2	x1b	PL 1×$9\frac{1}{2}$ ✓	4	0 ✓	MIE		258.61
2	C		5	x1c	PL $\frac{1}{2}$×7 ✓	4	0 ✓			238.20
2	D		1	x1n	PL $\frac{1}{4}$×$3\frac{1}{4}$	1	$3\frac{5}{8}$	1.302		3.60
										41006.97
										73.72 *
		1G2	1		GIRDER				41315	41080.69
1	E		1	wa	PL $\frac{9}{16}$×48	68	$6\frac{9}{16}$	(M270-50WT2) (H2-3)		6297.77
1	G		1	wb	PL $\frac{9}{16}$×48	63	$0\frac{9}{16}$	(M270-50WT2) (H2-3)		5792.44
1	L		1	ta	PL $\frac{7}{8}$×18	26	$9\frac{1}{2}$			1435.95
1	J		1	tb	PL $1\frac{1}{2}$×18	78	0			7166.25
1	L		1	tc	PL $\frac{7}{8}$×18	26	$9\frac{1}{2}$			1435.95
1	C		1	ba	PL $1\frac{1}{4}$×24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67
1	A		1	bb	PL 2×24	78	0	(M270-50WT2) (H2-3)		12740.25
1	C		1	bc	PL $1\frac{1}{4}$×24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67
2	B		4	x1b	PL 1×$9\frac{1}{2}$ ✓	4	0 ✓	MIE		517.22
2	C		5	x1c	PL $\frac{1}{2}$×7	4	0			238.20
2	C		5	x1f	PL $\frac{1}{2}$×7	4	0			238.20
										41241.57
										73.72 *
										41315.29

BILL OF MATERIAL

HBM INFO		SHIP				LENGTH					
PAGE	LINE	MARK	QTY	MARK	MATERIAL	FT	INCHES	REMARKS	WT	PROCUREMENT NOTES	
		2G3	1		GIRDER				41315		
1	E		1	wa	PL $\frac{9}{16}$x48	68	$6\frac{9}{16}$	(M270-50WT2) (H2-3)		6297.77	
1	G		1	wb	PL $\frac{9}{16}$x48	63	$0\frac{9}{16}$	(M270-50WT2) (H2-3)		5792.44	
1	L		1	ta	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95	
1	J		1	tb	PL $1\frac{1}{2}$x18	78	0			7166.25	
1	L		1	tc	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95	
1	C		1	ba	PL $1\frac{1}{4}$x24	26	$3\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *	
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		12740.25	
1	C		1	bc	PL $1\frac{1}{4}$x24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *	
2	B		4	x1b	PL 1x$9\frac{1}{2}$	4	0	MIE		517.22	
2	C		5	x1c	PL $\frac{1}{2}$x7	4	0			238.20	
2	C		5	x1k	PL $\frac{1}{2}$x7	4	0			238.20	
		2G4	1		GIRDER				41315	41241.57 78.72 *	
										41315.29	
1	E		1	wa	PL $\frac{9}{16}$x48	68	$6\frac{9}{16}$	(M270-50WT2) (H2-3)		6297.77	
1	G		1	wb	PL $\frac{9}{16}$x48	63	$0\frac{9}{16}$	(M270-50WT2) (H2-3)		5792.44	
1	L		1	ta	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95	
1	J		1	tb	PL $1\frac{1}{2}$x18	78	0			7166.25	
1	L		1	tc	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95	
1	C		1	ba	PL $1\frac{1}{4}$x24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *	
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		12740.25	
1	C		1	bc	PL $1\frac{1}{4}$x24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *	
2	B		4	x1b	PL 1x$9\frac{1}{2}$	4	0	MIE		517.22	
2	C		5	x1d	PL $\frac{1}{2}$x7	4	0			238.20	
2	C		5	x1g	PL $\frac{1}{2}$x7	4	0			238.20	
										41241.57 78.72 *	
										41315.29	

JOB NO.

DRAWING NO. 2

REV.

BILL OF MATERIAL

JOB NO.	DRAWING NO.	REV.
	3	

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		3G5	1		GIRDER				41315	
1	E		1	wa	PL $\frac{9}{16}$x48	68	$6\frac{9}{16}$	(M270-50WT2) (H2-3)		6297.77
1	G		1	wb	PL $\frac{9}{16}$x48	63	$0\frac{9}{16}$	(M270-50WT2) (H2-3)		5792.99
1	L		1	ta	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95
1	J		1	tb	PL $1\frac{1}{2}$x18	78	0			7166.25
1	L		1	tc	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95
1	C		1	ba	PL $1\frac{1}{4}$x24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		12740.25
1	C		1	bc	PL $1\frac{1}{4}$x24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *
2	B		4	x1b	PL 1x$9\frac{1}{2}$	4	0	MIE		517.22
2	C		5	x1c	PL $\frac{1}{2}$x7	4	0			238.20
2	C		5	x1m	PL $\frac{1}{2}$x7	4	0			238.20
		3G6	1		GIRDER				41080	41241.57 / 73.72 * / 41315.29
1	E		1	wa	PL $\frac{9}{16}$x48	68	$6\frac{9}{16}$	(M270-50WT2) (H2-3)		6297.77
1	G		1	wb	PL $\frac{9}{16}$x48	63	$0\frac{9}{16}$	(M270-50WT2) (H2-3)		5792.99
1	L		1	ta	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95
1	J		1	tb	PL $1\frac{1}{2}$x18	78	0			7166.25
1	L		1	tc	PL $\frac{7}{8}$x18	26	$9\frac{1}{2}$			1435.95
1	C		1	ba	PL $1\frac{1}{4}$x24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		12740.25
1	C		1	bc	PL $1\frac{1}{4}$x24	26	$8\frac{1}{2}$	(M270-50WT2) (H2-3)		2689.67 *
2	B		2	x1a	PL 1x$9\frac{1}{2}$	4	0	MIE		258.61
2	B		2	x1b	PL 1x$9\frac{1}{2}$	4	0	MIE		258.61
2	C		5	x1c	PL $\frac{1}{2}$x7	4	0			238.20
2	D		1	x1p	PL $\frac{1}{4}$x$3\frac{1}{4}$	1	$3\frac{5}{8}$			3.60
										41006.97 / 73.72 * / 41080.69

401

TIGHT FIT

250

1

TIGHT FIT

401

BILL OF MATERIAL

JOB NO. | DRAWING NO. 4 | REV.

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
					INT DIAPHRAGMS					13955
2	K	4D1	25		W 27x84 (24.8)	6	7 3/8	6.615 25 x	556	13,900
					END DIAPHRAGMS					
2	J	4D2	1		W 27x84 (24.8)	6	8 7/16	6.703	563	563 566
2	J	4D3	1		W 27x84	6	8 1/4	6.688	562	562 569
2	J	4D4	1		W 27x84	6	8	6.667	560	560 563
2	J	4D5	1		W 27x84	6	7 7/8	6.656	559	559 562
2	J	4D6	1		W 27x84	6	7 13/16	6.651	559	559 561
2	J	4D7	1		W 27x84	6	8 7/16	6.703	563	563 566
2	J	4D8	1		W 27x84	6	8 1/4	6.688	562	562 569
2	J	4D9	1		W 27x84	6	8	6.667	560	560 563
2	J	4D10	1		W 27x84	6	7 7/8	6.656	559	559 562
2	J	4D11	1		W 27x84	6	7 13/16	6.651	559	559 561
										300 5632
										19 506

Total 19587

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

1). ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001 WITH LATEST REVISIONS.

DESIGN SPECIFICATIONS

1). AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (A.A.S.H.T.O) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1996 EDITION WITH LATEST REVISIONS.

MATERIAL SPECIFICATIONS

1). UNLESS NOTED, ALL STEEL TO BE AASHTO M270 GRADE 50W (ASTM A709-50W).

2). HIGH STRENGTH BOLTS: AASHTO M164 (ASTM A325 TYPE 3) (7/8") DIA.

3). GIRDER WEB & BOTTOM FLANGES SHALL BE CHARPY V NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS. DRAWINGS SHALL CALL OUT "H2-3" FOR EACH APPLICABLE ITEM IN THE BILLS OF MATERIAL.

FABRICATION

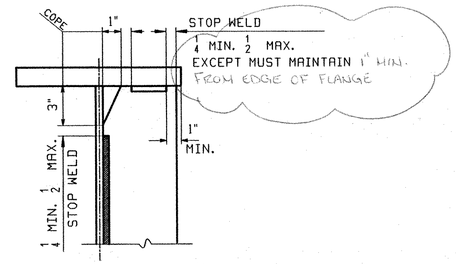
1). ALL HOLES SHALL BE PUNCHED OR DRILLED FULL SIZE (UN).
2). STUDS ARE FURNISHED AND FIELD APPLIED BY OTHERS.

WELDING

1). THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5-02 BRIDGE WELDING CODE AND IN ADDITION TO SPECIFICATIONS SHOWN ABOVE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2). WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESSES. ALL WELDS ARE CONTINUOUS U.N.

3). NON DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.



DETAIL "WS1"

CLEANING:

1). ALL STEEL SHALL BE BLAST CLEANED AS PER SSPC SP-10 PER SPEC. 506.14(a)

PAINTING

1). THE EXPANSION END OF THE GIRDERS & ABUT 1 CROSSFRAMES SHALL BE PAINTED AND GREASED PER SUPPLEMENTAL SPECIFICATION 513. SEE SKETCH "P1"

APPROVED SYSTEM →

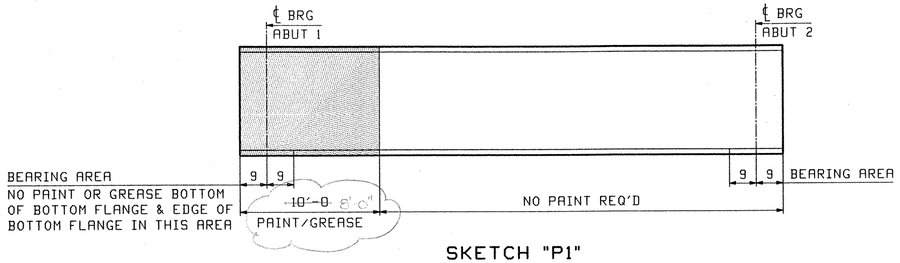
			Dry Film Thickness (in MILS) MIN.	MAX.
3.) CARBOLINE COMPANY (OZ)	P	Carboline 859 ZR epoxy primer (organic)	3.0	6.0
	I	Carboline 888 epoxy	3.0	10.0
	T	Carboline 133 HB aliphatic polyurethane	3.0	5.0

FIELD CONNECTIONS

1). ALL FIELD CONNECTIONS SHALL BE MADE WITH (7/8") DIAMETER HIGH STRENGTH A-325 BOLTS, INSTALLED PER SECTION 506.19(c).

2). BOLTS SHALL HAVE HEAVY HEX NUT, HEX HEAD, & ONE FLAT WASHER EACH (WASHER TO BE PLACED UNDER TURNED ELEMENT).

3). PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWINGS.



SKETCH "P1"

NOTE TO ENGINEER:
THESE NOTES ARE NOT INTENDED TO BE ALL INCLUSIVE AND COMPLIANCE WITH RELEVANT SPECIFICATIONS REMAIN UNCHANGED.

OUT FOR APPROVAL	11-4-04									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:

SURFACE PREP. & PAINT:

SHOP DRAWING REVIEW
REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT

☐ PROVIDE AS SUBMITTED
☒ PROVIDE AS CORRECTED
☐ REVISE AND RESUBMIT
☐ REJECTED - SEE REMARKS
☐ SUBMITTAL NOT REQUIRED - RETURNED WITHOUT REVIEW

THIS REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION, CORRECTIONS OR COMMENTS SHOWN AND/OR NOTED ARE SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR: DETERMINING THE ACCURACY AND COMPLETENESS OF DETAILS, SUCH AS DIMENSIONS AND QUANTITIES; SUBSTANTIATING INSTRUCTIONS FOR INSTALLATION OR PERFORMANCE OF EQUIPMENT OR SYSTEMS; THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, INCLUDING SAFETY PRECAUTIONS AND PROCEDURES; AND THE SELECTION OF FABRICATION PROCESSES. ENGINEER'S APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. FURTHER, ENGINEER'S REVIEW OF CONTRACTOR'S SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR OF ITS OBLIGATIONS UNDER THE CONTRACT DOCUMENTS WITH RESPECT TO THE PREPARATION AND/OR APPROVAL OF SUCH SUBMITTALS

TSC CONSULTING ENGINEERS, INC.
COMMERCIAL STREET
ROCHESTER, NEW HAMPSHIRE

BY: JH DATE: 11-19-04

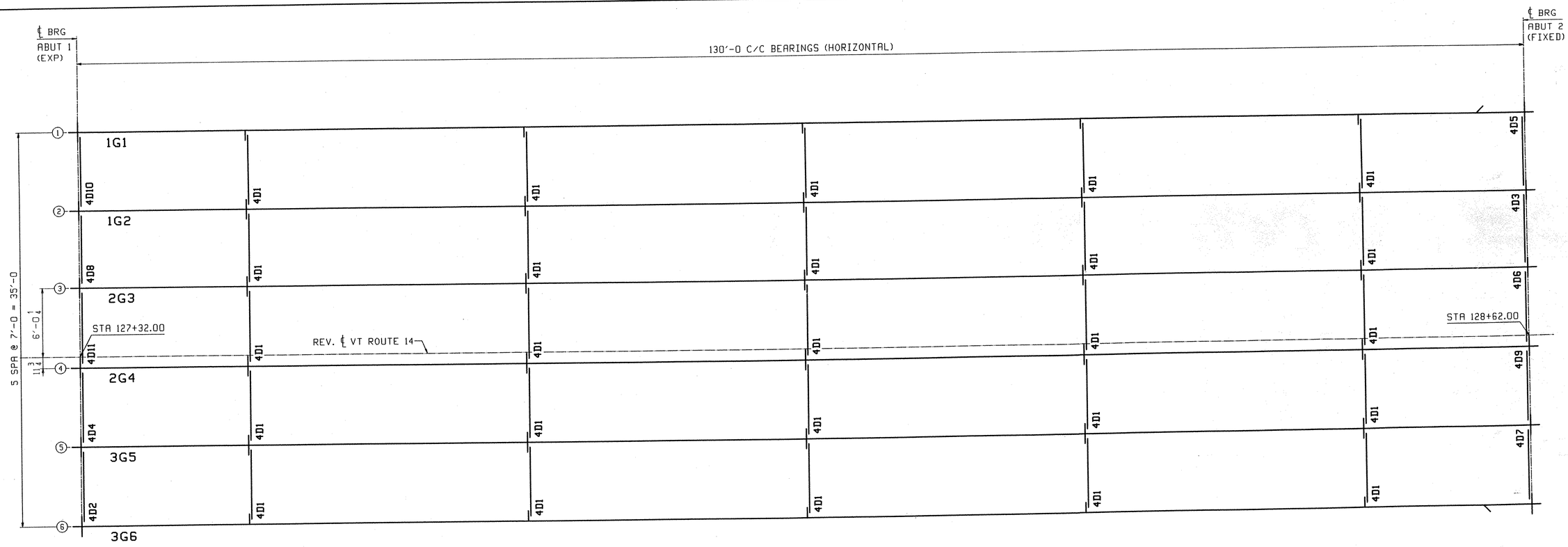
RECEIVED
CK'D BY: JTJC CK'D BY:
NOV 12 2004
RESUBMIT: APPROVED:
BY DATE 12/13/2004

DESCRIPTION: GENERAL NOTES		DRAWN BY	DATE
JOB: VT ROUTE 14 BRIDGE OVER WHITE RIVER		JTB	10/12
ROYALTON, VERMONT		CHKD BY	
COUNTY OF WINDSOR		TJB	10/28
TENSOR 2515 CONTRACTOR: BECK & BELLUCCI, INC.		APPROV BY	
		SUPERVISOR	W. J. GATTI
PROJ NO. BRS-0147(5)S		Q.A.	
CUSTOMER: VERMONT DOT			

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
250	GN1
	REV. △

JTB Fri Oct 29 11:34:02 EST 2004 /users/jobs/2515/GN1.dwg



N

FRAMING PLAN

FIELD BOLT LIST							A325 Type 3 BOLTS							
LINE	NO REQ'D.	BOLT DIAM.	BOLT LEN.	BOLTS /CONN.	# OF CONN.	GRIP	THICKNESS OF PCS. CONNECTED						WASH CODE	PIECES CONNECTED AND REMARKS
1														**INTERMEDIATE DIAPHRAGM**
2	400	7/8	2 1/4	8	50	15/16	7/16	1/2					1	DIAPHRAGM WEB TO CONNECTION PLATE
3														
4														**END DIAPHRAGM**
5	320	7/8	2 3/4	16	20	1 7/16	7/16	1					1	DIAPHRAGM WEB TO BEARING STIFFENER

WASHER CODES

1: 1 Hard Flat Washer

FIELD BOLT SUMMARY	2% ADDED, MIN. 2 EXTRA					
LINE	NO. OF BOLTS	BOLT DIAM.	TYPE	BOLT LEN	ACTUAL COUNT	REMARKS
1	408	7/8	A325 Type 3	2 1/4	400	
2	326	7/8	A325 Type 3	2 3/4	320	
3						
4	734	Hard Flat Washers for 7/8 ø BOLT				
5						
6						
7						

RECEIVED
CK'D BY JTJC CK'D BY
NOV 1 2 2004
RESUBMIT APPROVED
BY DATE 12/13/2004

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	11-4-04									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:

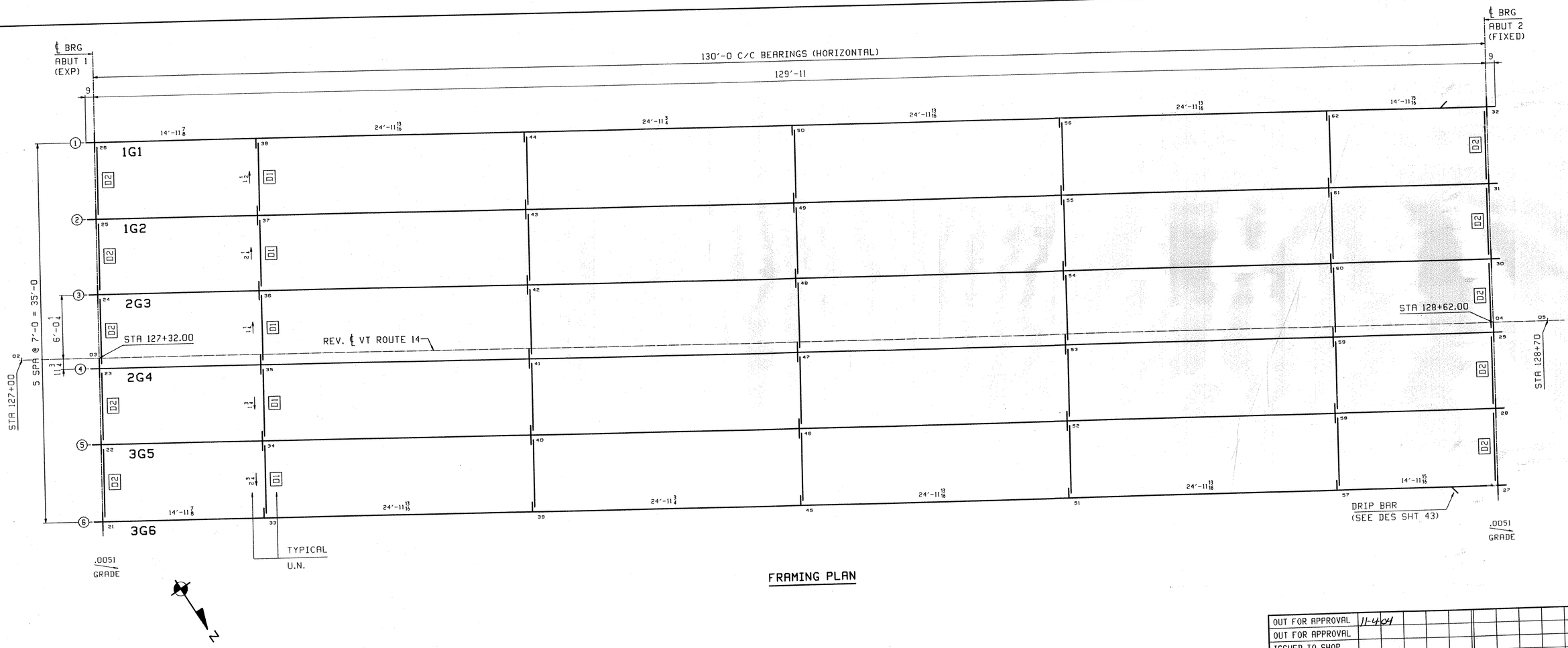
SURFACE PREP. & PAINT:

DESCRIPTION:	FRAMING PLAN	DRAWN BY	DATE
JOB:	VT ROUTE 14 BRIDGE OVER WHITE RIVER	JTB	10/12
	ROYALTON, VERMONT	CHKD BY	
	COUNTY OF WINDSOR	TJB	10/2
TENSOR 2515	CONTRACTOR: BECK & BELLUCCI, INC.	APPROV BY	
PROJ NO.	BRS-0147(5)S	SUPERVISOR	W. J. GA
CUSTOMER:	VERMONT DOT	Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
250	E 1
	REV.

JTB Tue Oct 12 08:08:58 EDT 2004 /users/jtb/2515/E1.e Rev0



FRAMING PLAN

**** NOTE ****
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DWG IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION.

RECEIVED
CK'D BY JWC CK'D BY
NOV 12 2004
RESUBMIT APPROVED
BY DATE 12/13/2004

NOTES
1. LONGITUDINAL DIMENSIONS ARE SLOPING ALONG BOTTOM OF GIRDER WITH CORRECTIONS MADE FOR GRADE & DL CAMBER (UN).
2. TRANSVERSE DIMENSIONS ARE IN A HORIZONTAL PLANE (UN).
3. ARROW POINTS TOWARD LOW END OF MEMBER.
4. ENDS OF GIRDERS AND BEARING STIFFENERS ARE VERTICAL AFTER DL ROTATION.
5. CROSSFRAME STIFFENERS ARE NORMAL TO GRADE.
6. BOTTOM POINT NUMBERS = TOP POINT NUMBERS + 100
7. FOR LAYOUTS SEE DRAWING TD1.

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASH
	OUT FOR APPROVAL	11-4-04									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL: | ELECTRODES: | HOLES: | SHOP BOLTS:

SURFACE PREP. & PRINT:

DESCRIPTION: CALCULATION PLAN
JOB: VT ROUTE 14 BRIDGE OVER WHITE RIVER
ROYALTON, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: BECK & BELLUCCI, INC.
PROJ NO. BRS-0147(5)S
CUSTOMER: VERMONT DOT

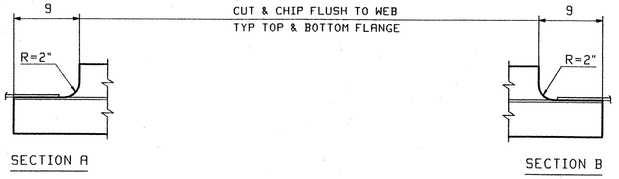
DRAWN BY JTB 10/8
CHKD BY TJB 10/8
APPROV BY
SUPERVISOR W. J.
Q.A.

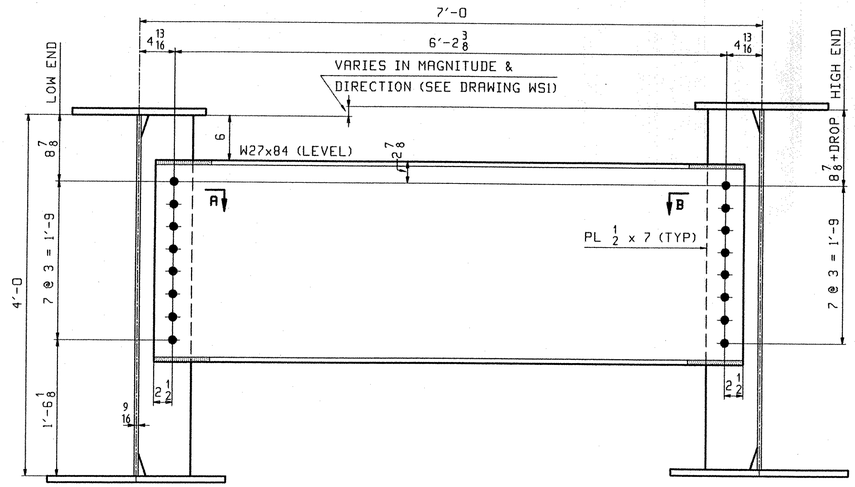
TENSOR 2515

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 250 DRG. W
REV.

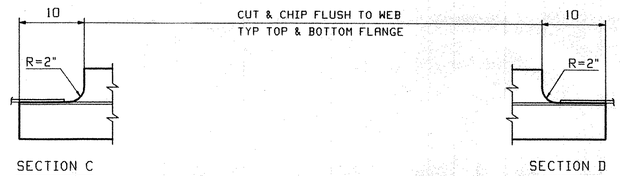
JTB Fri Oct 8 18:03:27 CDT 2004 /users/jobs/2515/dgn: Rev0

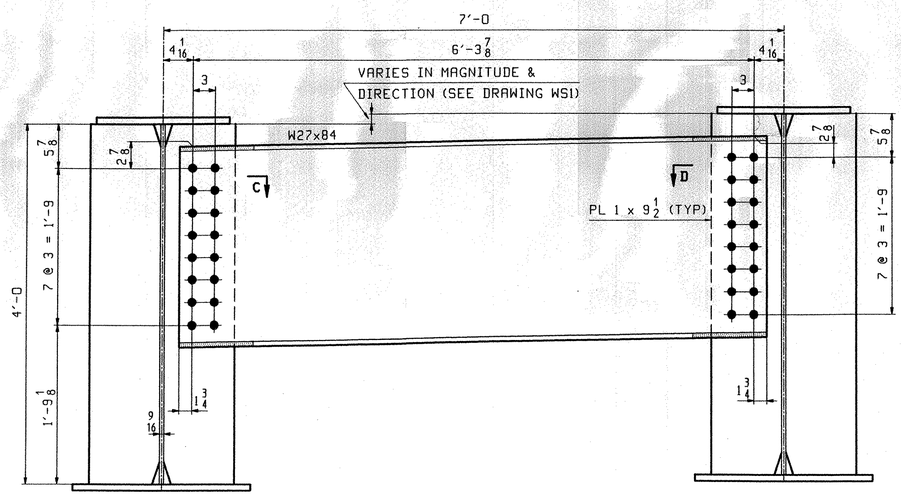




DIAPHRAGM TYPE D1

LOOKING DOWNSTATION





END DIAPHRAGM TYPE D2

LOOKING TOWARDS BACKWALL

RECEIVED
CK'D BY JWS CK'D BY
NOV 12 2004
RESUBMIT APPROVED (FSE)
BY DATE 12/13/2004

**** NOTE ****
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION AND CONNECTION SPACING. THIS DWG IS SUBMITTED FOR INFORMATION ONLY & IS NOT INTENDED FOR SHOP FABRICATION. DETRIL DWGS WILL SHOW ALL WELDING AND DIMENSIONS REQ'D FOR FABRICATION.

NOTES:

1. MATERIAL SHALL BE ASTM M2570 GRADE 50W.
2. ALL BOLTS SHALL BE 7/8"ø A325 TYPE 3 HSB IN 15/16"ø HOLES.

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	11/4/04									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270-50W		15/16"ø	7/8"ø A325-3

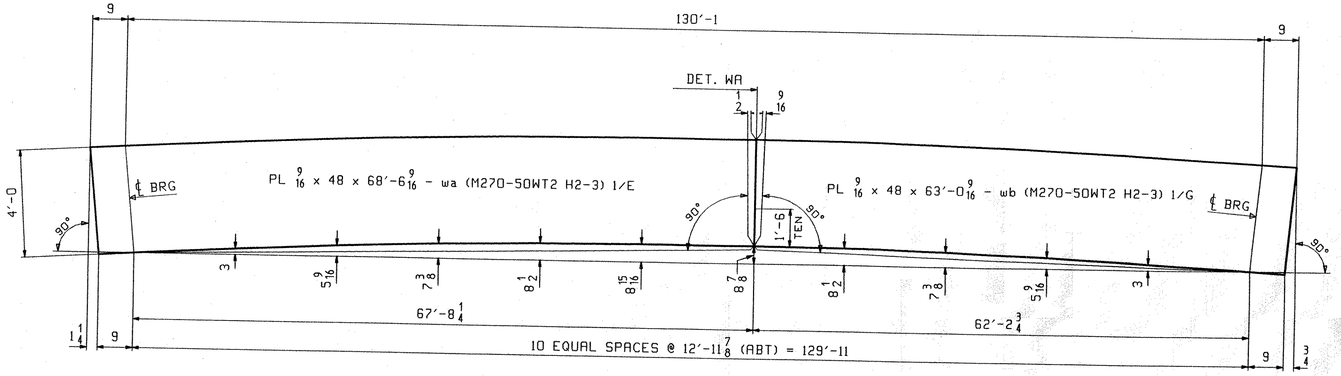
SURFACE PREP. & PAINT:
SEE DRAWING GN1

DESCRIPTION:	DIAPHRAGM LAYOUT	DRAWN BY	DATE
JOB:	VT ROUTE 14 BRIDGE OVER WHITE RIVER	JTB	10/1
	ROYALTON, VERMONT	CHKD BY	
	COUNTY OF WINDSOR	TJB	10/2
TENSOR 2515	CONTRACTOR: BECK & BELLUCCI, INC.	APPROV BY	
		SUPERVISOR	W. J. GI
PROJ NO.	BRS-0147(5)S	Q.A.	
CUSTOMER:	VERMONT DOT		

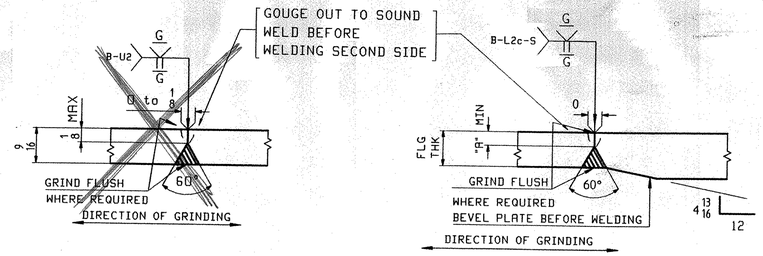
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO
250	TD1
	REV. △

TJB Tue Nov 2 10:24:18 EST 2004 /users/jobs/2515/TD1.DWG Rev0



CAMBER DIAGRAM FOR 1G1 THRU 3G6

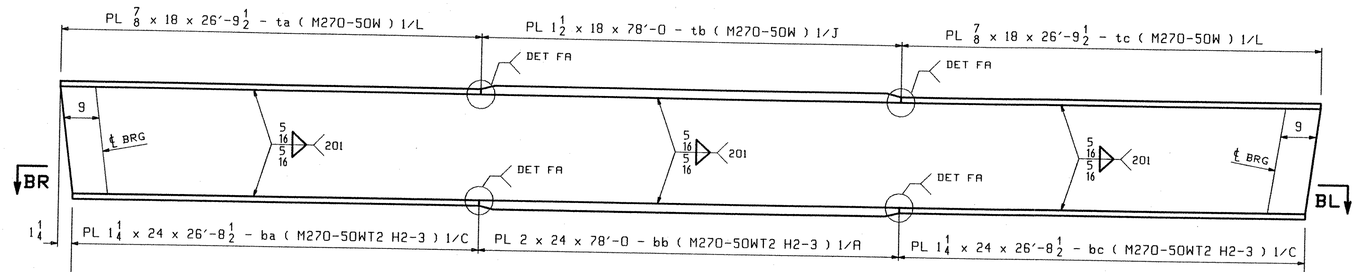


WEB PLATE SPLICE DETAIL "WA"

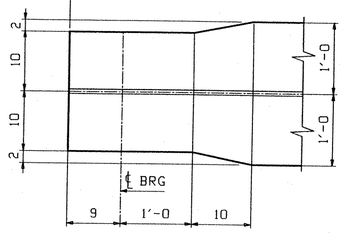
Use B-L2c-S Joint Detail
or B-L1a-S Joint Detail

FLANGE PLATE SPLICE DETAIL "FA"

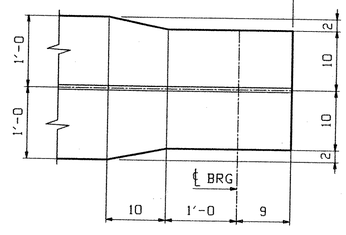
FLG THK	"A"
7/8	1/4
1 1/4	3/8



FLANGE DIAGRAM FOR 1G1 THRU 3G6



SECTION BR



SECTION BL

RECEIVED
CK'D BY JWC OK'D BY
NOV 1 2 2004
RESUBMIT APPROVED
BY DATE 11/13/2004

NOTES:

1. FOR GENERAL NOTES AND WELD DETAILS SEE DWG GN1.
2. H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST AT H FREQ. FOR ZONE 2

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	11-4-04									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:

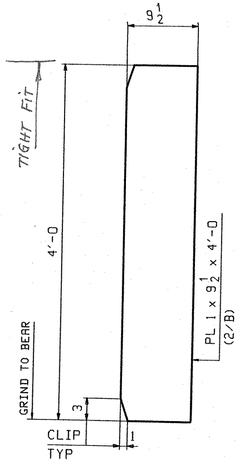
SURFACE PREP. & PAINT:

DESCRIPTION:	CAMBER DIAGRAMS	DRAWN BY	DATE
JOB:	VT ROUTE 14 BRIDGE OVER WHITE RIVER	JTB	10/08
	ROYALTON, VERMONT	CHKD BY	
	COUNTY OF WINDSOR	TJB	10/28
TENSOR 2515	CONTRACTOR: BECK & BELLUCCI, INC.	APPROV BY	
		SUPERVISOR	W. J. GATTI
PROJ NO.	BRS-0147(5)S	Q.A.	
CUSTOMER:	VERMONT DOT		

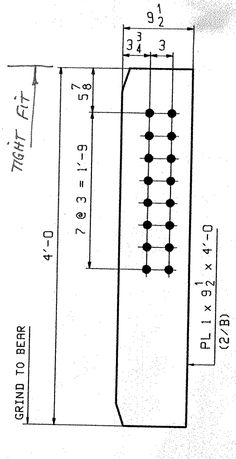
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
250	C1
	REV. △

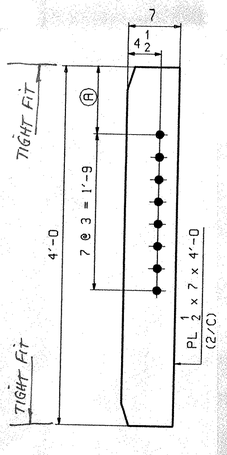
JTB Tue Oct 12 12:25:58 EDT 2004 /users/jmk/2515/C1.1 Rev0



4 ~ x1a
BRG STIFF
FASCIA SIDE

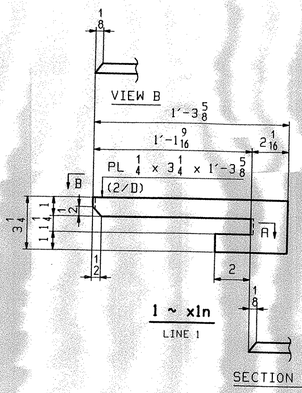


20 ~ x1b
BRG STIFF



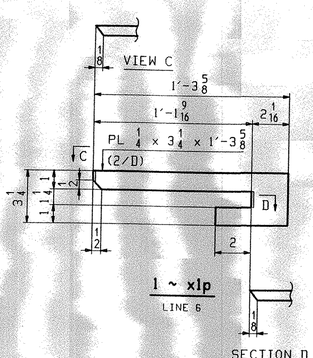
MARK "A"
CONN PL

MARK "A"	QTY	Ⓐ	
x1c	25	8 7/8	LOW END
x1d	5	10 1/8	DROP - 1 1/4
x1f	5	10 3/8	DROP - 1 1/2
x1g	5	10 5/8	DROP - 1 3/4
x1k	5	11 1/8	DROP - 2 1/4
x1m	5	11 5/8	DROP - 2 3/4



1 ~ x1n
LINE 1

SECTION A



1 ~ x1p
LINE 6

SECTION D

NOTES:
ALL MATERIAL SHALL BE M270-50W.
ALL BOLT HOLES SHALL BE 15/16"Ø FOR 7/8"Ø HSB.
FOR GENERAL NOTES SEE SHEET GN1.

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	11/4/04									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270-50W		15/16"Ø	7/8"Ø A325-3

SURFACE PREP. & PAINT:
SEE DRAWING GN1

RECEIVED
CK'D BY JWK OK'D BY
NOV 1 2 2004
RESUBMIT APPROVED
BY DATE 12/13/2004

DESCRIPTION: GIRDER STANDARDS
JOB: VT ROUTE 14 BRIDGE OVER WHITE RIVER
ROYALTON, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: BECK & BELLUCCI, INC.
PROJ NO. BRS-0147(5)S
CUSTOMER: VERMONT DOT

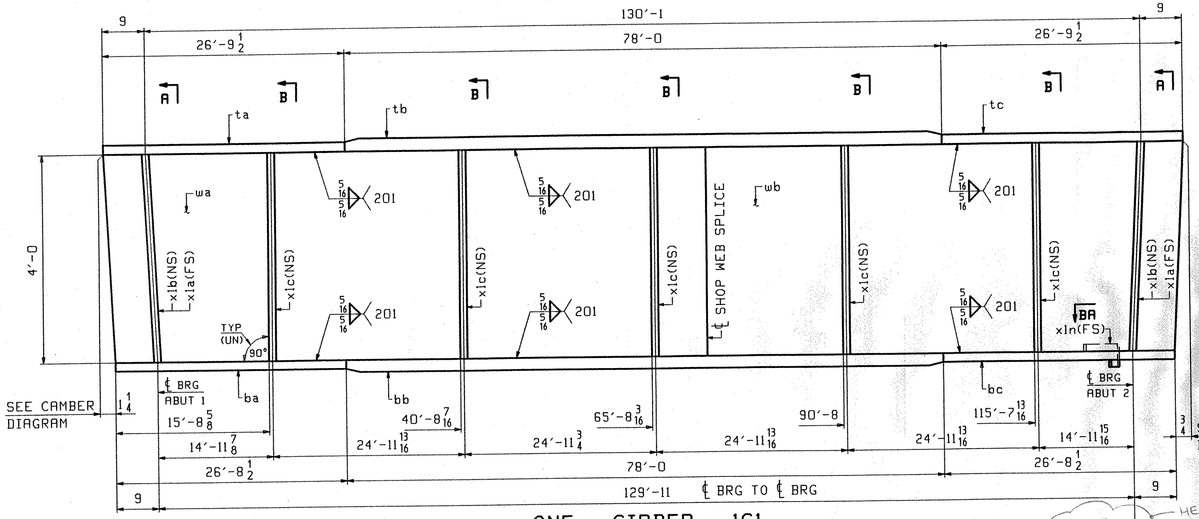
DRAWN BY	DATE
JTB	10/12
CHKD BY	
TJB	10/28
APPROV BY	
SUPERVISOR	W. J. GATTI
Q.A.	

TENSOR 2515

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

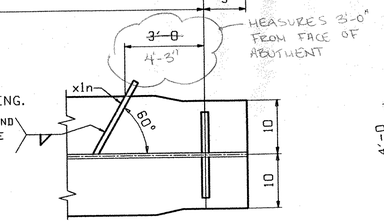
JOB NO.	DRG. NO.
250	X1
	REV. △

JTB Fri Oct 29 11:41:59 EDT 2004 /users/jobs/2515/x1.dwg

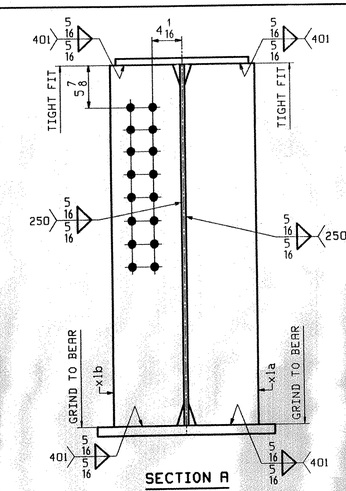


ONE - GIRDER - 1G1

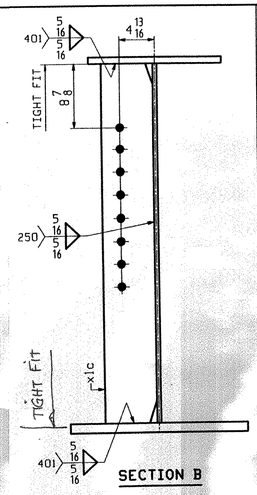
FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.



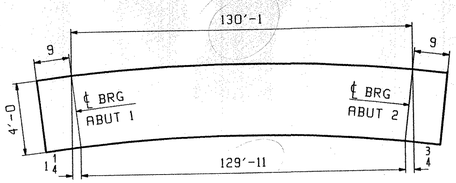
SECTION BA



SECTION A



SECTION B

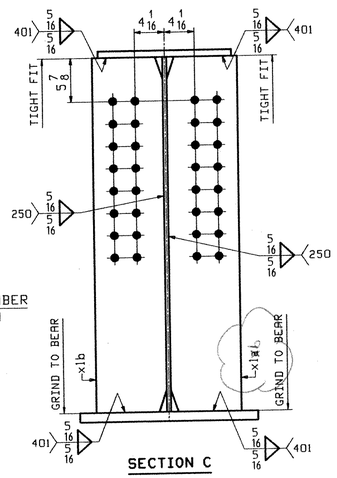


ORIENTATION DIAGRAM ~ 1G1 & 1G2

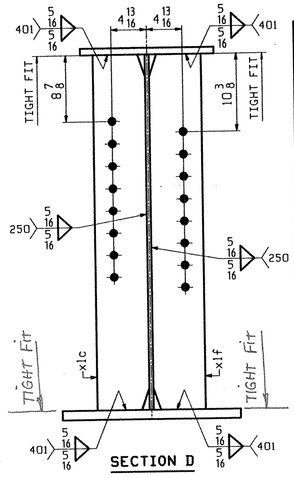
SEE DRAWING C1

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
					BILL OF MATERIAL			JOB NO.	DRAWING NO. 1	REV.
		1G1	1		GIRDER				41080	
1	E		1	wa	PL 9/16x48	68	6 9/16	(M270-50WT2) (H2-3)		
1	G		1	wb	PL 9/16x48	63	0 9/16	(M270-50WT2) (H2-3)		
1	L		1	ta	PL 7/8x18	26	9 1/2			
1	J		1	tb	PL 1 1/2x18	78	0			
1	L		1	tc	PL 7/8x18	26	9 1/2			
1	C		1	ba	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		
1	C		1	bc	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
2	B		2	x1a	PL 1x9 1/2	4	0	MIE		
2	B		2	x1b	PL 1x9 1/2	4	0	MIE		
2	C		5	x1c	PL 1/2x7	4	0			
2	D		1	x1n	PL 1/4x3 1/4	1	3 5/8			
		1G2	1		GIRDER				41315	
1	E		1	wa	PL 9/16x48	68	6 9/16	(M270-50WT2) (H2-3)		
1	G		1	wb	PL 9/16x48	63	0 9/16	(M270-50WT2) (H2-3)		
1	L		1	ta	PL 7/8x18	26	9 1/2			
1	J		1	tb	PL 1 1/2x18	78	0			
1	L		1	tc	PL 7/8x18	26	9 1/2			
1	C		1	ba	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		
1	C		1	bc	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
2	B		4	x1b	PL 1x9 1/2	4	0	MIE		
2	C		5	x1c	PL 1/2x7	4	0			
2	C		5	x1f	PL 1/2x7	4	0			

RECEIVED
CK'D BY JTJK CK'D BY
NOV 1 2 2004
RESUBMIT APPROVED
BY DATE 12/13/2004



SECTION C



SECTION D

ONE - GIRDER - 1G2

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

OUT FOR APPROVAL (1-4-05)									
OUT FOR APPROVAL									
ISSUED TO SHOP									
FIELD & OFFICE									

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270-50W		15/16"Ø	

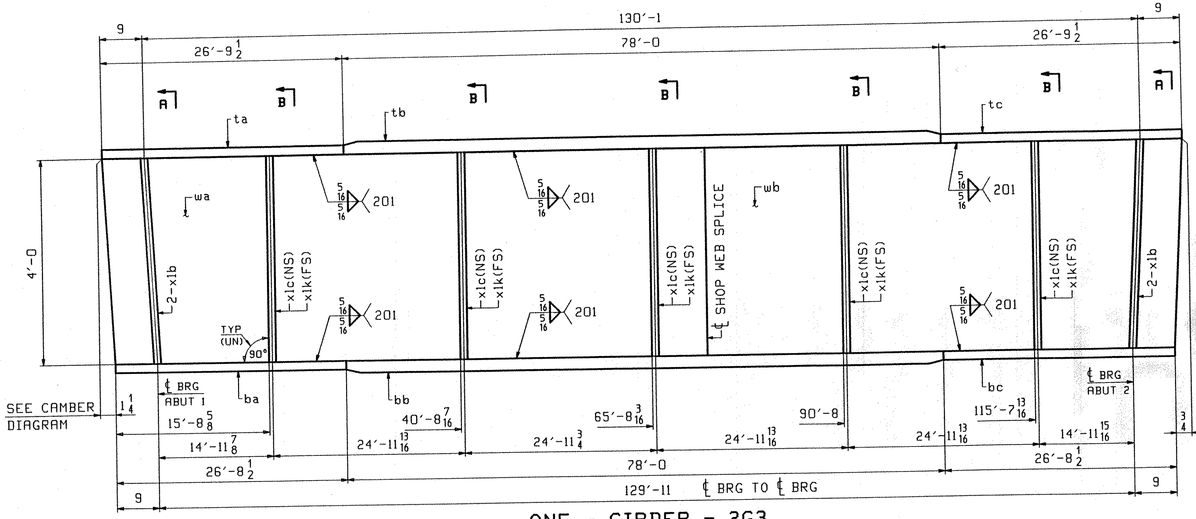
SURFACE PREP. & PAINT:
SEE DRAWING GN1

DESCRIPTION: GIRDERS - 1G1 & 1G2		DRAWN BY	DATE
JOB: VT ROUTE 14 BRIDGE OVER WHITE RIVER		JTB	10/12
ROYALTON, VERMONT		CHKD BY	
COUNTY OF WINDSOR		TJB	10/28
CONTRACTOR: BECK & BELLUCCI, INC.	TENSOR 2515	APPROV BY	
PROJ NO. BRS-0147(5)S		SUPERVISOR	W. J. GAY
CUSTOMER: VERMONT DOT		Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

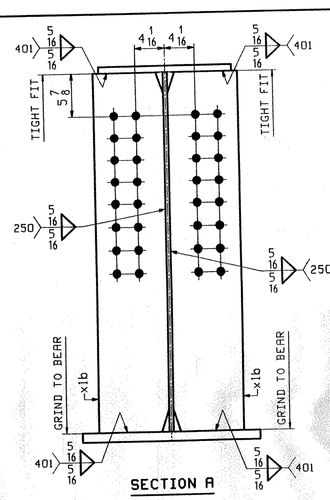
JOB NO.	DRG. NO.
250	1
	REV.

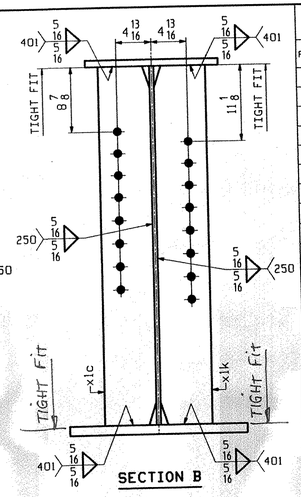
JTB Fri Oct 29 11:45:03 EDT 2004 c:\work\jobs\2515\1 Rev=0

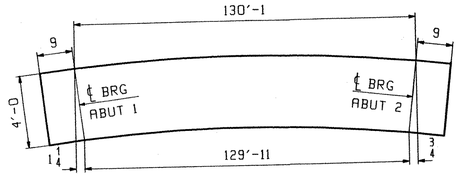


ONE - GIRDER - 2G3

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.







ORIENTATION DIAGRAM ~ 2G3 & 2G4
SEE DRAWING C1

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		2G3	1		GIRDER				41315	
1	E		1	wa	PL 9/16x48	68	6 9/16	(M270-50WT2) (H2-3)		
1	G		1	wb	PL 9/16x48	63	0 9/16	(M270-50WT2) (H2-3)		
1	L		1	ta	PL 7/8x18	26	9 1/2			
1	J		1	tb	PL 1 1/2x18	78	0			
1	L		1	tc	PL 7/8x18	26	9 1/2			
1	C		1	ba	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		
1	C		1	bc	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
2	B		4	x1b	PL 1x9 1/2	4	0	MIE		
2	C		5	x1c	PL 1/2x7	4	0			
2	C		5	x1k	PL 1/2x7	4	0			
		2G4	1		GIRDER				41315	
1	E		1	wa	PL 9/16x48	68	6 9/16	(M270-50WT2) (H2-3)		
1	G		1	wb	PL 9/16x48	63	0 9/16	(M270-50WT2) (H2-3)		
1	L		1	ta	PL 7/8x18	26	9 1/2			
1	J		1	tb	PL 1 1/2x18	78	0			
1	L		1	tc	PL 7/8x18	26	9 1/2			
1	C		1	ba	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		
1	C		1	bc	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
2	B		4	x1b	PL 1x9 1/2	4	0	MIE		
2	C		5	x1d	PL 1/2x7	4	0			
2	C		5	x1g	PL 1/2x7	4	0			

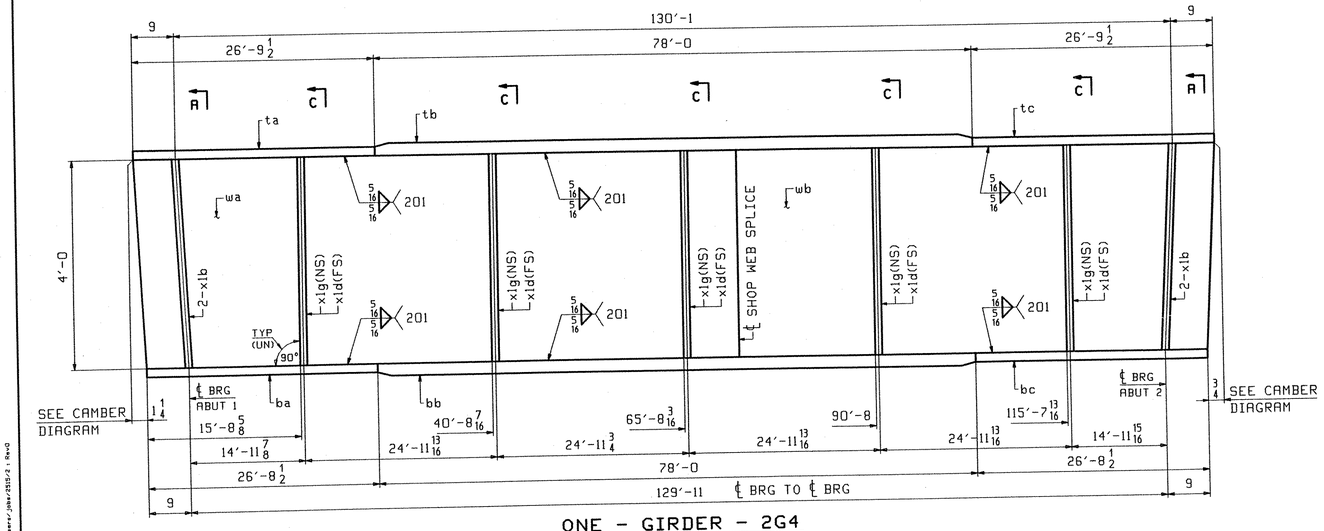
BILL OF MATERIAL

JOB NO.

DRAWING NO. 2

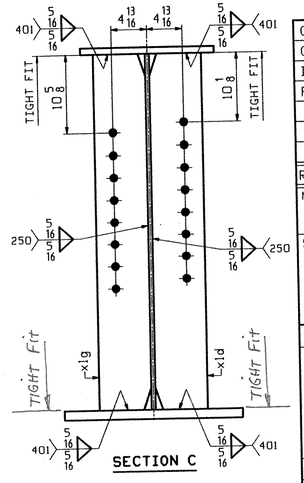
REV.

RECEIVED
CK'D BY JWC CK'D BY
NOV 12 2004
RESUBMIT APPROVED
BY DATE 12/13/2004



ONE - GIRDER - 2G4

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.



OUT FOR APPROVAL	11-4-04					
OUT FOR APPROVAL						
ISSUED TO SHOP						
FIELD & OFFICE						

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270-50W		15/16" ø	

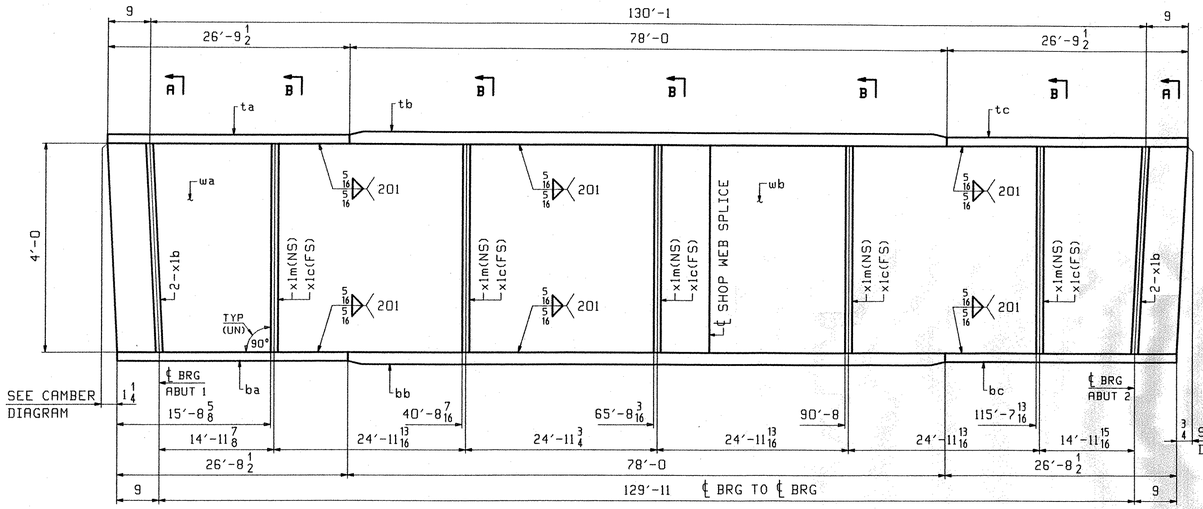
SURFACE PREP. & PAINT:
SEE DRAWING GN1

DESCRIPTION:	GIRDERS - 2G3 & 2G4	DRAWN BY	DATE
JOB:	VT ROUTE 14 BRIDGE OVER WHITE RIVER	JTB	10/12
	ROYALTON, VERMONT	CHKD BY	
	COUNTY OF WINDSOR	TJB	10/28
TENSOR 2515	CONTRACTOR: BECK & BELLUCCI, INC.	APPROV BY	
		SUPERVISOR	W. J. GA
PROJ NO.	BRS-0147(5)S	Q.A.	
CUSTOMER:	VERMONT DOT		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

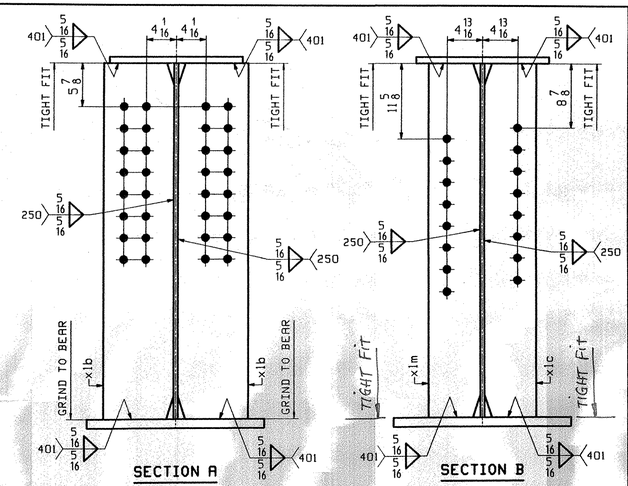
JOB NO.	DRG. NO.
250	2
	REV.

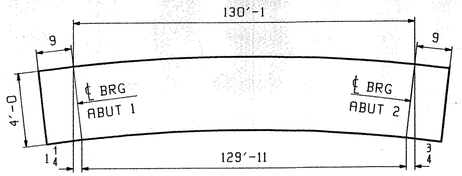
JTB Fri Oct 29 11:45:28 EDT 2004 /users/jobs/2515/2 - Rev0



ONE - GIRDER - 3G5

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

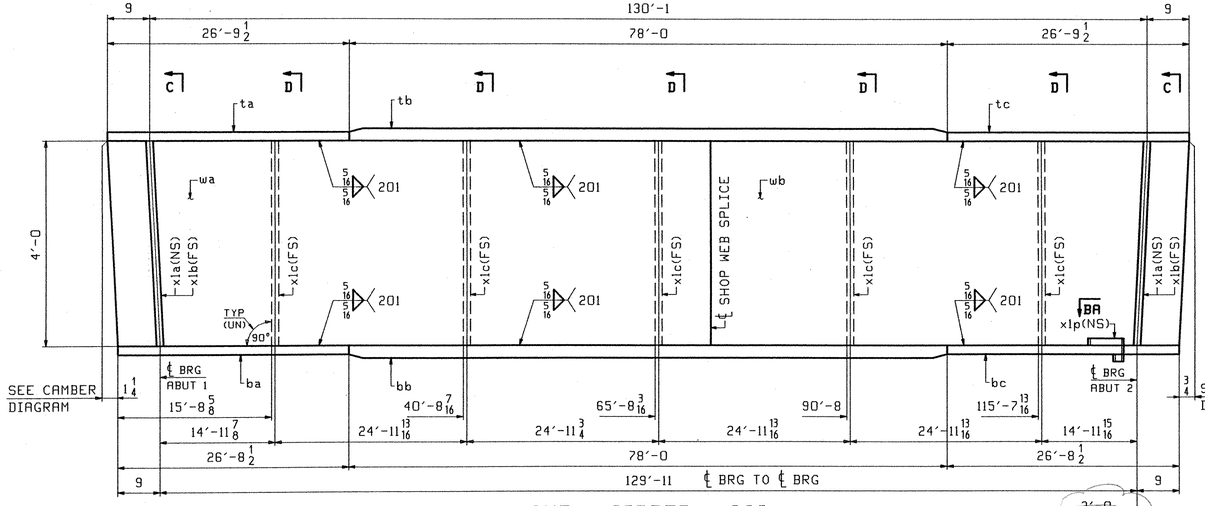




ORIENTATION DIAGRAM ~ 3G5 & 3G6
SEE DRAWING C1

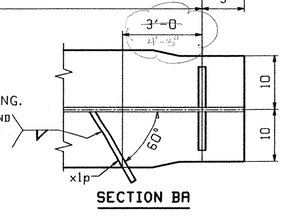
ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
									3	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		3G5	1		GIRDER				41315	
1	E		1	wa	PL 9/16x48	68	6 9/16	(M270-50WT2) (H2-3)		
1	G		1	wb	PL 9/16x48	63	0 9/16	(M270-50WT2) (H2-3)		
1	L		1	ta	PL 7/8x18	26	9 1/2			
1	J		1	tb	PL 1 1/2x18	78	0			
1	L		1	tc	PL 7/8x18	26	9 1/2			
1	C		1	ba	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		
1	C		1	bc	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
2	B		4	x1b	PL 1x9 1/2	4	0	MIE		
2	C		5	x1c	PL 1/2x7	4	0			
2	C		5	x1m	PL 1/2x7	4	0			
		3G6	1		GIRDER				41080	
1	E		1	wa	PL 9/16x48	68	6 9/16	(M270-50WT2) (H2-3)		
1	G		1	wb	PL 9/16x48	63	0 9/16	(M270-50WT2) (H2-3)		
1	L		1	ta	PL 7/8x18	26	9 1/2			
1	J		1	tb	PL 1 1/2x18	78	0			
1	L		1	tc	PL 7/8x18	26	9 1/2			
1	C		1	ba	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
1	A		1	bb	PL 2x24	78	0	(M270-50WT2) (H2-3)		
1	C		1	bc	PL 1 1/4x24	26	8 1/2	(M270-50WT2) (H2-3)		
2	B		2	x1a	PL 1x9 1/2	4	0	MIE		
2	B		2	x1b	PL 1x9 1/2	4	0	MIE		
2	C		5	x1c	PL 1/2x7	4	0			
2	D		1	x1p	PL 1/4x3 1/4	1	3 5/8			

RECEIVED
CK'D BY JWC CK'D BY
NOV 1 2 2004
RESUBMIT APPROVED
BY DATE 12/13/2004

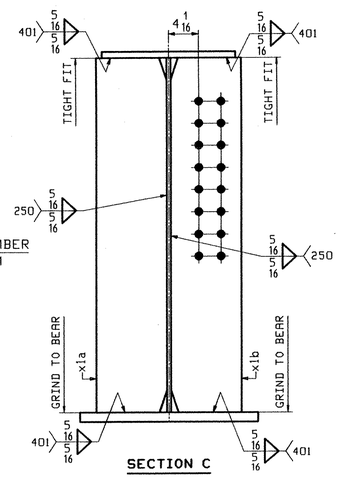


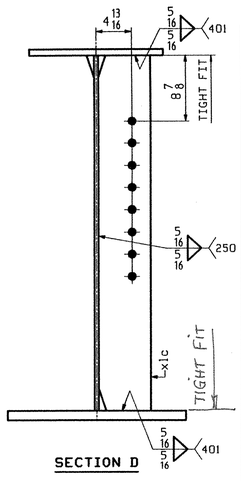
ONE - GIRDER - 3G6

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
H2-3 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.



SECTION BA





OUT FOR APPROVAL	11-4-04									
OUT FOR APPROVAL										
ISSUED TO SHOP										
FIELD & OFFICE										
REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL:	ELECTRODES:	HOLES:	SHOP BOLTS:
M270-50W		15/16" ø	

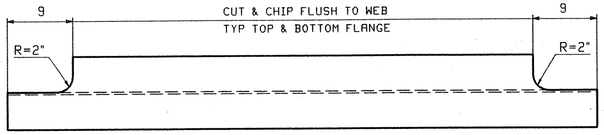
SURFACE PREP. & PAINT:
SEE DRAWING GN1

DESCRIPTION:	GIRDERS - 3G5 & 3G6	DRAWN BY	DATE
JOB:	VT ROUTE 14 BRIDGE OVER WHITE RIVER	JTB	10/12
	ROYALTON, VERMONT	CHKD BY	
	COUNTY OF WINDSOR	TJB	10/28
TENSOR 2515	CONTRACTOR: BECK & BELLUCCI, INC.	APPROV BY	
PROJ NO.	BRS-0147(5)S	SUPERVISOR	W. J. GATTI
CUSTOMER:	VERMONT DOT	Q.A.	

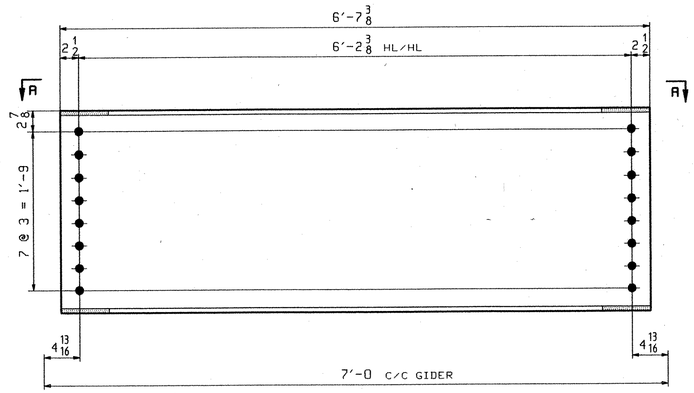
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
250	3
	REV. 1

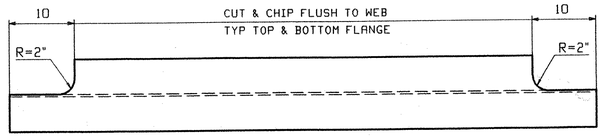
JTB Fri Oct 29 11:46:21 EDT 2004 c:\work\jobs\2515\3-1.dwg



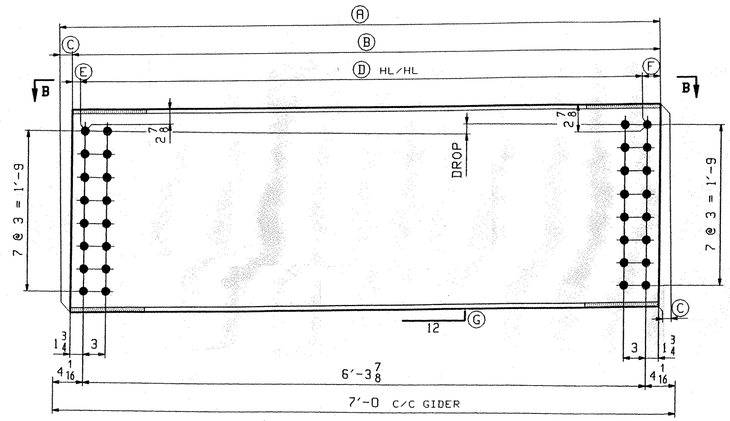
VIEW A-A



25 ~ DIAPHRAGM ~ 4D1

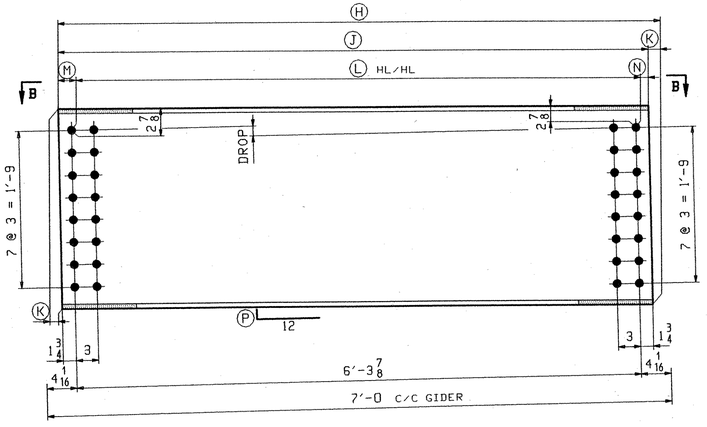


VIEW B-B



END DIAPHRAGM ~ MARK "A"

MARK "A"	QTY	DROP	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ
A1, G5-G6 * 4D2	1	2 3/4	6'-8 7/16	6'-7 7/16	1	6'-3 15/16	1 5/8	1 7/8	7/16
A2, G2-G3 4D3	1	2 1/4	6'-8 1/4	6'-7 7/16	13/16	6'-3 15/16	1 11/16	1 13/16	3/8
A1, G4-G5 * 4D4	1	1 3/4	6'-8	6'-7 3/8	5/8	6'-3 7/8	1 11/16	1 13/16	1/4
A2, G1-G2 4D5	1	1 1/2	6'-7 7/8	6'-7 3/8	1/2	6'-3 7/8	1 11/16	1 13/16	1/4
A2, G3-G4 4D6	1	1 1/4	6'-7 13/16	6'-7 3/8	7/16	6'-3 7/8	1 11/16	1 13/16	3/16



END DIAPHRAGM ~ MARK "B"

MARK "B"	QTY	DROP	Ⓗ	Ⓙ	Ⓚ	Ⓛ	Ⓜ	Ⓝ	Ⓟ
A2, G5-G6 4D7	1	2 3/4	6'-8 7/16	6'-7 7/16	1	6'-3 15/16	1 7/8	1 5/8	7/16
A1, G2-G3 * 4D8	1	2 1/4	6'-8 1/4	6'-7 7/16	13/16	6'-3 15/16	1 13/16	1 11/16	3/8
A2, G4-G5 4D9	1	1 3/4	6'-8	6'-7 3/8	5/8	6'-3 7/8	1 13/16	1 11/16	1/4
A1, G1-G2 * 4D10	1	1 1/2	6'-7 7/8	6'-7 3/8	1/2	6'-3 7/8	1 13/16	1 11/16	1/4
A1, G3-G4 * 4D11	1	1 1/4	6'-7 13/16	6'-7 3/8	7/16	6'-3 7/8	1 13/16	1 11/16	3/16

BILL OF MATERIAL

ABM INFO PAGE	ABM INFO LINE	SHIP MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
					INT DIAPHRAGMS					
2	K	4D1	25		W 27x84	6	7 3/8		556	
					END DIAPHRAGMS					
2	J	4D2	1		W 27x84	6	8 7/16		563	
2	J	4D3	1		W 27x84	6	8 1/4		562	
2	J	4D4	1		W 27x84	6	8		560	
2	J	4D5	1		W 27x84	6	7 7/8		559	
2	J	4D6	1		W 27x84	6	7 13/16		559	
2	J	4D7	1		W 27x84	6	8 7/16		563	
2	J	4D8	1		W 27x84	6	8 1/4		562	
2	J	4D9	1		W 27x84	6	8		560	
2	J	4D10	1		W 27x84	6	7 7/8		559	
2	J	4D11	1		W 27x84	6	7 13/16		559	

JOB NO. | DRAWING NO. 4 | REV.

OUT FOR APPROVAL	11-4-04								
OUT FOR APPROVAL									
ISSUED TO SHOP									
FIELD & OFFICE									

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER

MATERIAL: M270-50W
ELECTRODES:
HOLES: 15/16"ø
SHOP BOLTS: 7/8"ø A325-3

SURFACE PREP. & PAINT:

* END DIAPHRAGMS 4D2, 4D4, 4D8, 4D10 & 4D11 SHALL BE PAINTED AND GREASED PER SUPPLEMENTAL SPECIFICATION 513. SEE DRAWING GN1.

RECEIVED
CK'D BY JTJC CK'D BY
NOV 12 2004
RESUBMIT APPROVED
BY DATE 12/13/2004

DESCRIPTION: DIAPHRAGMS
JOB: VT ROUTE 14 BRIDGE OVER WHITE RIVER
ROYALTON, VERMONT
COUNTY OF WINDSOR
CONTRACTOR: BECK & BELLUCCI, INC.
PROJ NO. BRS-0147(5)S
CUSTOMER: VERMONT DOT

DRAWN BY JTB DATE 10/12
CHK'D BY TJB 10/28
APPROV BY
SUPERVISOR W. J. GAITO
Q.A.

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 250 | DRG. NO. 4 | REV.

JTB Fri Oct 29 11:49:20 EDT 2004 /users/jobs/2515-1.dwg

State of Vermont
Agency of Transportation
National Life Building
Drawer 33
Montpelier, VT
05633-5001

VTrans Working to Get You There

Casco Bay Steel Structures, Inc.
75 Spring Hill Road
Saco, Maine 04072

DATE: March 22, 2005

Project Name: **Royalton, Vermont**
Project Number: **BRF 0147(5)S**

The following shop drawing detail sheets, for the above-referenced bridge project (General Contractor – Beck & Bellucci, Inc.), have been approved and are being returned herewith:

1. Expansion Joint Abutment No. 1, J1, dated 01-19-05;
2. **Expansion Joint Abutment No. 1, J1A, dated 01-19-05; and**
3. **Downspouts, Abutment No. 1, M1, dated 01-19-05.**

Are approved except "As Noted" [X] ***shown as bold text above***

Additionally, the Welding Procedures, have been approved "As Noted" and been returned as well.

Sincerely,

Craig Keller

Craig Keller
Structures Project Manager

attachments
cc: [x] Resident Engineer, Jack Couture w/attachments
[x] Contractor, Beck & Bellucci, Inc. w/attachments
[x] CLD Consulting Engineers (Concord, NH), John Byatt w/attachments
[x] Shop Inspector, Jeff Clark w/attachments
[x] Construction Section – letter only
[x] Materials & Research Section (C&IA Unit) – letter only
[x] Central Files
[x] Project File

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709-Gr36-50-50W (250-345-345W)
Welding process Shield Metal Arc welding (SMAW)
Manual or machine Manual
Position of welding Flat (1G) Horizontal (2G)
Filler metal specification AWS/AWS A5.1 - A5.5
Filler metal classification E7018 - B018 H4 - 7028

Flux N.A.
Shielding gas N.A. Flow rate N.A.
Single or multiple pass Single and multiple
Single or multiple arc Single
Welding current AC / DC
Polarity Straight / Reverse
Welding progression
Root treatment To AWS specification
Preheat and interpass temperature To 3/4"(19) 50°(10) 3/4"(19) To 1½"(38) 150°(65)
Postheat temperature N.A.
Heat Input Min N.A. Max N.A.

RECEIVED
MAR 08 2005

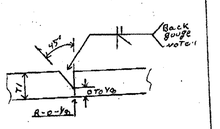
OK'D BY TJWC
OK'D BY
RESUBMIT APPROVED
BY DATE 3-7-05

Proj: # BRS-0147 (S.S.)
Rayatron VT
CBSS-250

WELDING PROCEDURE (METRIC)

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
AS REQ	7018 1/8 (3.2)	70-170	22-26	AS REQ
	5/32 (3.9)	120 TO 225	22-26	
	8018 1/8 (3.2)	90-160	22-26	
	5/32 (3.9)	120-225	22-26	
	7028 5/32 (3.9)	190-290	22-26	

Joint detail B-U4b AWS D1.5



T1: UNLIMITED, NOTE-Gouge Flush AS REQ.

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 402
Revision no.
Form III-2

Contractor Casco Bay Steel
Authorized By Paul Y. Goodale
Date 10-16-01

AWS QC 1 PAUL Y. GOODALE CWI

Casco Bay Steel Structures, Inc.
5 Industry Road
South Portland, Maine 04106
one: (207) 772-2533 Fax: (207) 772-0580

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709-Gr 36-50-50W (250-345-345W)
Welding process Shielded Metal Arc Welding (SMAW)
Manual or machine Manual
Position of welding Flat (1F), Horizontal (2F)
Filler metal specification AWS/AWS A5.1 - A5.5
Filler metal classification E7018 - B018 C1/G3 - 70A8
Flux NA
Shielding gas NA Flow rate NA
Single or multiple pass Single and multiple
Single or multiple arc Single
Welding current AC/DC
Polarity Straight / Reverse
Welding progression
Root treatment Meet AWS specification
Preheat and interpass temperature To 3/4(19) 50°(10°) 3/4(19) To 1 1/4(38) 70°(30°) 1 1/2(38) To 2 1/2(63.5) 150°(65°) over 2 1/2(63.5) 225°(110°)
Postheat temperature NA
Heat Input Min NA Max NA

VAOT
RECEIVED
MAR 08 2005
BY JWC
REQUIRED APPROVED
BY DATE 3-17-05

Proj #BRS-0147(55)S
Rayalton VT
CBSS-250

(metric)

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed	AWS D1.5 Joint details		
	7018				1F		
	1/8 (3.2)	70-190	22-26				
AS	5/32 (3.97)	120-225	22-26	AS			
	3/16 (4.8)	170-300	24-27				
REQ.	8018			REQ	3/16 To 3/8 (5 To 10)	3/8 To 1/2 (10 To 13)	1/2 To 5/8 (13 To 16)
	1/8 (3.2)	90-160	22-26				
	5/32 (3.97)	120-225	22-26		2F		
	3/16 (4.8)	180-290	24-27				
	70A8						
	5/32 (3.97)	170-270	22-26		3/16 To 5/16 (5 To 8)	3/8 (10)	7/16 To 5/8 (11 To 16)
	3/16 (4.8)	210-330	24-27				

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable AWS codes or contract specifications

Procedure no. 401
Revision no.
Form III-2

Contractor Casco Bay Steel
Authorized By Paul E. Hoodale
Date 3/2/00

Casco Bay Steel Structures, Inc.
5 Industry Road
South Portland, Maine 04106
Phone: (207) 772-2533 Fax: (207) 772-0580

WELDING PROCEDURE SPECIFICATION

Material specification A36-A572-A588 (ASTM 709 Gr 36-50-50W
Welding process Flux Cored Arc welding (FCAW)
Manual or machine Semi-Auto
Position of welding Flat - 1G
Filler metal specification AWS A5.20
Filler metal classification E71T-1
Flux NA
Shielding gas 75% AR 25% CO^2 Flow rate 40 ES
Single or multiple pass Both Electrode STICK OUT 3/4 ± 1/4
Single or multiple arc Single
Welding current Direct current
Polarity Reverse Electrode positive
Welding progression See Detail
Root treatment W side Side #1 - backgouge side #2 - grind - then weld
Preheat and interpass temperature To 3/4"-50° (19 mm-10°) 3/4 To 1 1/2"-70° (19 To 38-20°)
Postheat temperature NA
Heat Input Min NA Max NA

Proj: #BAS-0147(4)S
Rockland VT
CBSS-250

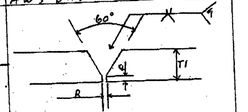
WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	1/16	280 ±28	25 ±1.7	11 ±1.1
	1.6	280 ±28	25 ±1.7	280 ±28

VA DOT RECEIVED MAR 08 2005

OK'D BY JCC OK'D BY
RESUBMIT APPROVED
BY DATE 3-17-05

AWS D1.5 Joint detail BU2-F



T1 - UNLIMITED
R - 0 To 1/8 / 0 To 3.2 mm
1 - Grind as required

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 104
Revision no.
Form III-2

AWS - QC1
Paul E. Goodale
BS100201
C.W.I.

Contractor Casco Bay Steel
Authorized By Paul E. Goodale
Date 2/24/99

Casco Bay Steel Structures, Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM A709/A709M-Grade 36(A50) 50(345) 50W(345W)
Welding process Flux Cored Arc welding (FCAW)
Manual or machine Semi Auto
Position of welding Flat (1F) Horizontal (2F)
Filler metal specification AWS A5.20
Filler metal classification E71T-1
Flux N/A
Shielding gas 75% AR 25% CO2 Flow rate 40CFH ES
Single or multiple pass Single and multiple - Electrode Extension 5/8"-1" (15.87-25.4)
Single or multiple arc Single
Welding current DC
Polarity Reverse
Welding progression
Root treatment To meet AWS specification
Preheat and interpass temperature To 3/4 (19): 50°(10)-3/4 (19) To 1 1/4 (38): 70°(20)-1 (38) To 2 1/2 (63) 150°(65) over 2 1/2 (63) = 225°(110)
Postheat temperature N/A
Heat Input Min N/A Max N/A

Proj #BAS-0147(S)S
Rutland VT
CLASS-250

WELDING PROCEDURE

(METRIC)

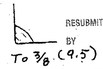
Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	1/16	205 247.5 To 302.5	28.8 26.8 To 30.8	11.6 10.4 To 12.8
		(METRIC)		
	1.6	205 247.5 To 302.5	28.8 26.8 To 30.8	294.6 264.2 To 325.12

Joint detail AWS D1.5 Fillet

1F

To 1/2 (12.7)

2F



To 3/8 (9.5)

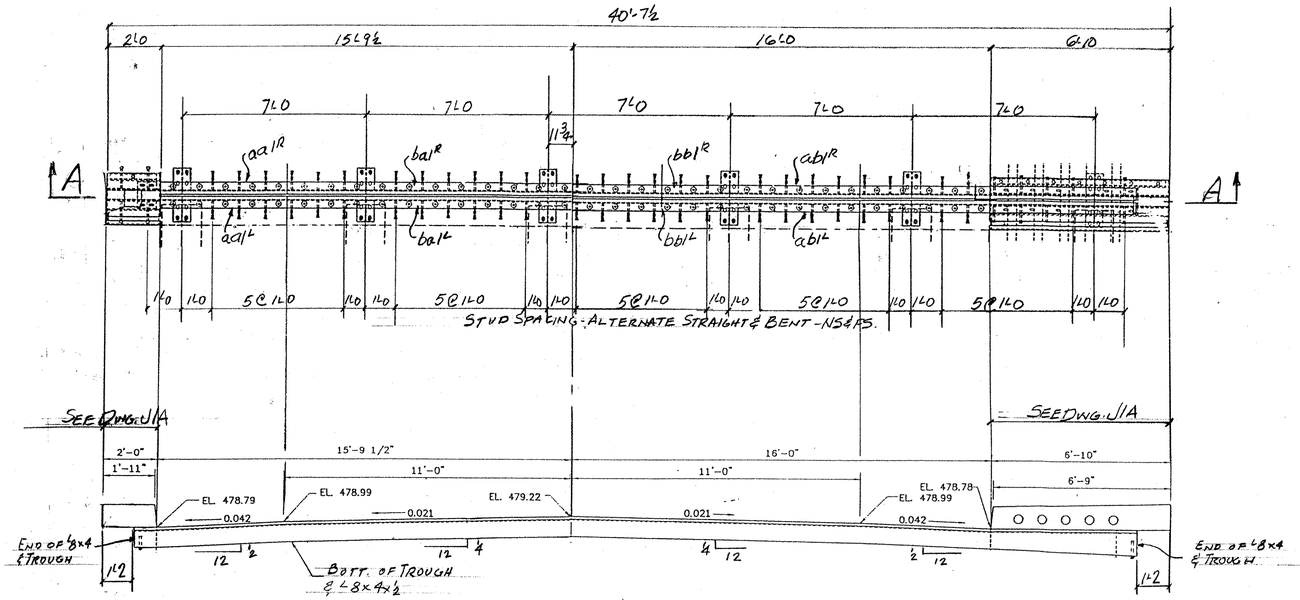
VA OT RECEIVED
MAR 08 2005

CK'D BY _____ CK'D BY JWC
RESUBMIT _____ APPROVED ✓
BY _____ DATE 3-17-05

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

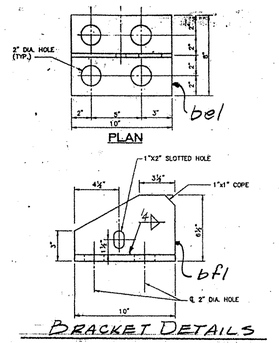
Procedure no. 101
Revision no. _____
Form III-2

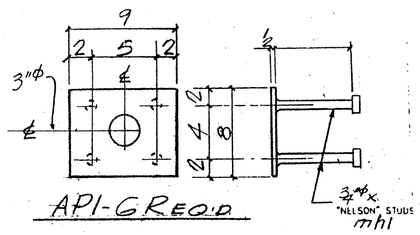
Contractor Casco Bay Steel
Authorized By Pat Goodale
Date 3/23/00

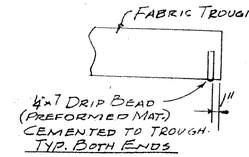


A-A

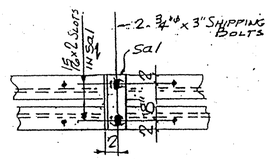
EJ1 - ONE REQ'D (@ ABUT. No. 1)

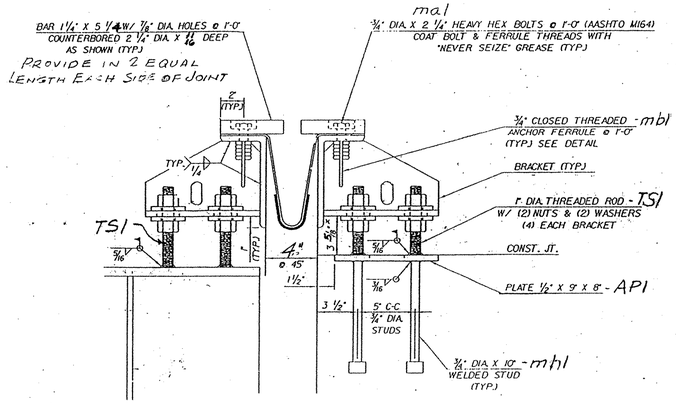


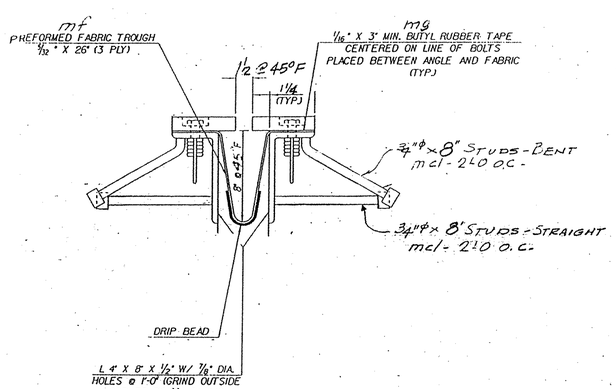


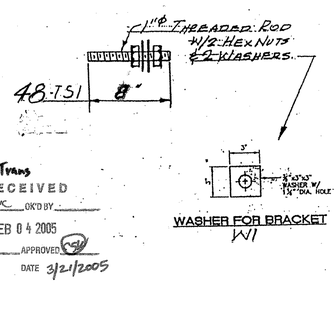


WORK THIS DWG. w/ DWG J1A









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CK'D BY JWC CK'D BY
FEB 04 2005
RESUBMIT APPROVED
BY DATE 3/21/2005

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

SHOP DRAWING REVIEW
REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT
☐ CHANGE AS SUBMITTED
☒ PROVIDE AS CORRECTED
☐ REVISE AND RESUBMIT
☐ REJECTED - SEE REMARKS
☐ EXCEPTION NOT REQUIRED - RESUBMIT WITHOUT REVIEW
THIS REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION, CORRECTIONS OR COMMENTS SHOWN AND/OR NOTED ARE SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR: DETERMINING THE ACCURACY AND COMPLETENESS OF DETAILS, SUCH AS DIMENSIONS AND QUANTITIES; SUBSTANTIATING INSTRUCTIONS FOR INSTALLATION OR PERFORMANCE OF EQUIPMENT OR SYSTEMS; THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, INCLUDING SAFETY PRECAUTIONS AND PROCEDURES; AND THE SELECTION OF FABRICATION PROPERTIES. ENGINEER'S APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. FURTHER, ENGINEER'S REVIEW OF CONTRACTOR SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR OF ITS OBLIGATIONS UNDER THE CONTRACT IN CONNECTION WITH RESPECT TO THE PREPARATION AND/OR APPROVAL OF SUCH SUBMITTALS.
CLD CONSULTING ENGINEERS, INC.
540 COMMERCIAL STREET
MANCHESTER, NEW HAMPSHIRE
BY: JH DATE: 2-14-05

ABM INFO

SHOP BILL

JOB NO. 250 DRG. NO. J1

PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	EXP. JOINT	40	7½		EJ1		—
		2	L 8 x 4 x ½	16	7½	aa1			
		2	DO	21	8	ab1			
		2	BAR 5"x1/4"	15	9½	ba1			
		2	DO	16	0	bb1			
		12	PL ½ x 8		10	be1			
		12	PL ½ x 6		10	bf1			
		64	¾"ø H.S. BOLTS		2¼	ma1			
		76	⅜"ø CLOSED THREADED ANC. FERRULES			mb1			
		76	¾"ø ANC. STUDS		8	mc1			
		1	PREFORMED FABRIC ½"x26"x3 PLY	40	0	mf1		3 PLY PER SUPPLY MFR. OR SIM. M 198 TYPE B	
		2	BUTYL RUBBER TAPE 1/16 x 3"	40	0	mg1			
		7	L 4 x 4 x ½	1	0	sa1			
		14	¾"ø H.S. BOLTS		3	SHOP			
	6		PL ½ x 8		9		API	NPS GALV.	
	24		¾"ø ANC. STUDS		10	mh1			
	48		1"ø THREADED ROD		8		TS1		
		96	1"ø HEX NUTS			SHOP			
		96	BAR 3 x ⅜		3	W1			
		1	PL ½ x 20	6	9	sp1		"SLIP NOT" FINISH	
		2	PL ½ x 10½	1	8	sp1a			
		1	PL ½ x 20	1	10¾	sp1b			
		1	PL ⅜ x 2	6	9	sp2		"SLIP NOT" FINISH	
		2	PL 5/8 x 2		10⅝	sp2a			
		1	DO	1	10⅝	sp2b			
		1	PL ½ x 7	6	7¾	sp3			
		2	DO		9⅞	sp3a			
		1	DO	1	10⅛	sp3b			
		1	PL ½ x 13	6	9	sp4			
		1	PL ½ x 13	6	7¾	sp5			
		2	L 6 x 4 x ½	5	5	a1			
		1	L 2½ x 2½ x ⅜	6	7	a2			
		1	PL ½ x 20	1	11	cp1			
		1	DO	1	9¾	cp1b			
		1	PL 5/8 x 2	1	11	cp2			
		1	DO	1	9¾	cp2b			
		1	PL ½ x 7	1	9¾	cp3			
		1	DO	1	9⅞	cp3b			
		1	PL ½ x 10½	1	11	cp4			
		1	PL ½ x 10½	1	9¾	cp5			
		2	L 4 x 4 x ½		9½	a3			
		1	L 2½ x 2½ x ⅜	1	9	a4			
		16	¾"ø H.S. BOLTS		2¼	ma1			
		28	⅜"ø CLOSED THREADED ANC. FERRULES			mb1			
		28	¾"ø ANC. STUDS		8	mc1			
		10	⅜"ø COUNTERSUNK CAP SCREWS		2	MK1		ASTM A325-93	
		12	¾"ø H.S. BOLTS		3	mm1			

PAY ITEM: 516.10

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	1-19	WS								
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. BRS-0147(5)S STATE PROJECT NO. 21
MATERIAL AASHTO M270-GR36 ELECTRODES: E80 PROC HOLES: AS NOTED SHOP BOLTS: ¾"ø
SURFACE PREP. & PAINT: MIC4-GALV.
GALV. AFTER FAB (ASTM-A123) HARDWARE (ASTM A153)

DESCRIPTION: EXP. JOINT - ABUT. No. 1
JOB: VT. RT. 14 OVER FIRST BRANCH OF WHITE RIVER RANDOLPH, VT.
CUSTOMER: BECK & BELLUCCI

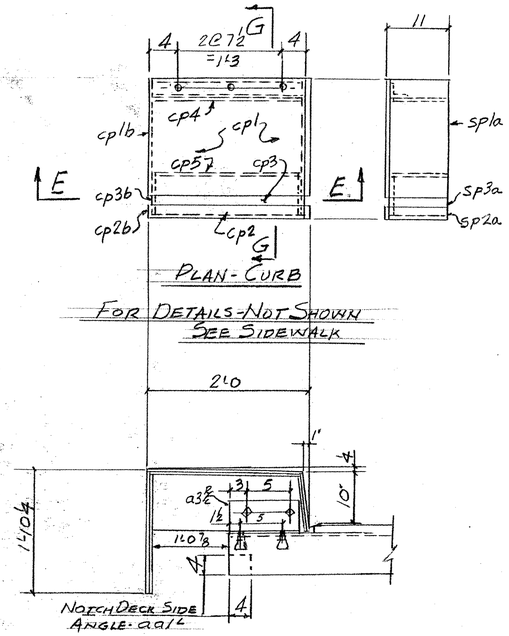
DRAWN BY	DATE
JPF	1-05
CHKD BY	
EJ	
APPROV BY	
Q.A.	

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO.	DRG. NO.
250	J1
	REV. △

1" = 1'-0

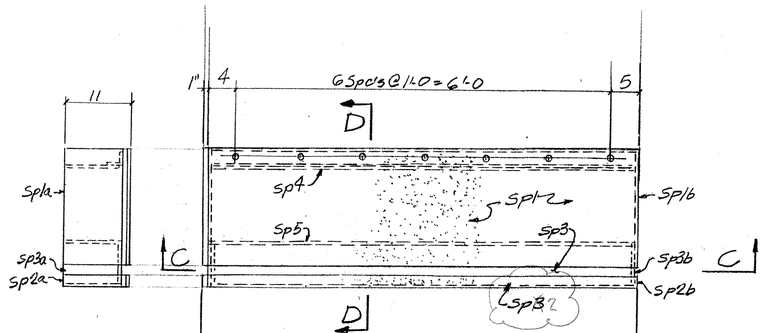
JOB NO. 250 | DRG. NO. J1A



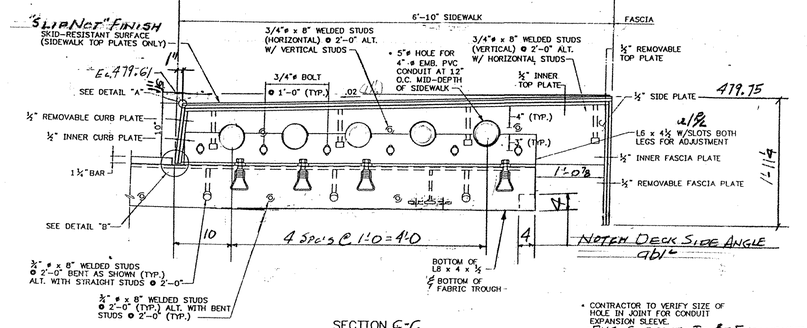
PLAN - CURB

FOR DETAILS - NOT SHOWN SEE SIDEWALK

SECTION - E-E

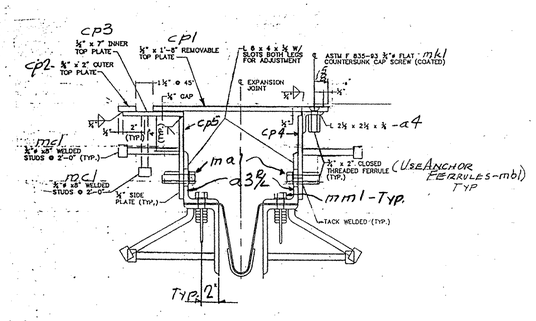


PLAN - SIDEWALK

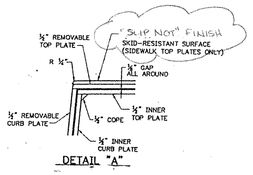


SECTION C-C

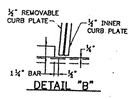
* CONTRACTOR TO VERIFY SIZE OF HOLE IN JOINT FOR CONDUIT EXPANSION SLEEVE. PVC SLEEVE TO BE FURNISHED BY CONTRACTOR



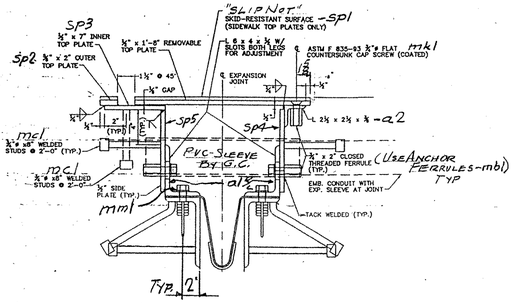
G-G



DETAIL "A"



DETAIL "B"



D-D

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CK'D BY JWC OK'D BY
FEB 04 2005
RESUBMIT APPROVED "AS NOTED"
BY DATE 3/21/2005

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	1-19	05								
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. BRS-0147(5)S STATE PROJECT NO. 21

MATERIAL: AASHTO M270-GR36 | ELECTRODES: PER PROC | HOLES: AS NOTED | SHOP BOLTS: ¾"ø

SURFACE PREP. & PAINT: M164-GALV.

GALV. AFTER FAB (ASTM-A123)
HARDWARE (ASTM-A153)

DESCRIPTION: EXP. JOINT - ABUT. NO. 1

JOB:

VT. RT. 14 OVER FIRST BRANCH OF WHITE RIVER
ROYALTON, VT.

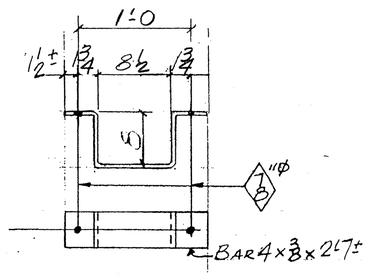
CUSTOMER: BECK & BELLUCCI

	DRAWN BY	DATE
	JPF	1-05
CHK'D BY	EJ	
APPROV BY		
Q.A.		

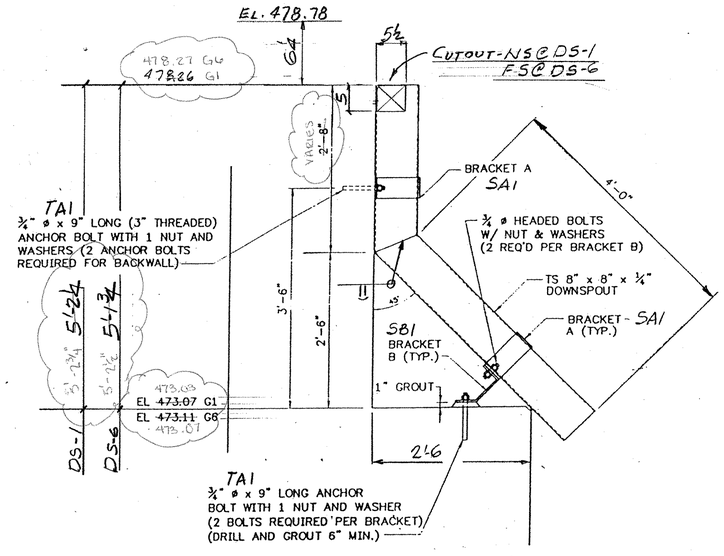
CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 250 | DRG. NO. J1A | REV. △

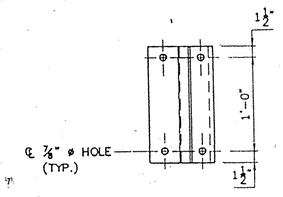
1" = 1'-0"



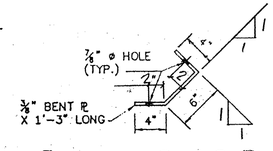
SA1-4-REQ'D



ONE - DS-1 (@ GIRDER G1)
ONE - DS-6 (@ GIRDER G6)



PLAN VIEW OF BRACKET - SB1



BRACKET SB1-2-REQ'D.

ABM INFO		SHOP BILL						JOB NO. 250	DRG. NO. M1
PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	TS 8 x 8 x ¼	7	0±		DS-1	A500 or A501	
		1	Do	7	0±		DS-6	Do	
		4	BAR 4 x ⅜	2	7±		SA1	BEND	
		2	PL ⅜ x 14	1	3		SB1	BEND.	
		8	¾"ø THR'D ROD		9		TA1		
		8	¾"ø HEX NUTS						
		8	¾"ø WASHERS						
		4	¾"ø H.S. BOLTS		2			W/ NUT & WASH.	

PAY ITEM 506.55

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	1-19-05									
	OUT FOR APPROVAL										
	ISSUED TO SHOP										
	FIELD & OFFICE										

PROJECT NO. BRS-0147(5)S STATE PROJECT NO. 21

MATERIAL: AASHTO M270-GR36 | ELECTRODES: PER PROC. | HOLES: AS NOTED | SHOP BOLTS: ¾"ø

SURFACE PREP. & PAINT: M164-GALV.

GALV. AFTER FAB (ASTM-A123
HARDWARE (ASTM-A153

DESCRIPTION: DOWNSPOUTS - ABUT. NO. 1

JOB: VT. RT. 14 OVER FIRST BRANCH OF WHITE RIVER ROYALTON, VT.

CUSTOMER: BECK & BELLUCCI

	DRAWN BY	DATE
	JPF	1-05
CHK'D BY	EJ.	
APPROV BY		
Q.A.		

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

JOB NO. 250 | DRG. NO. M1 | REV. △

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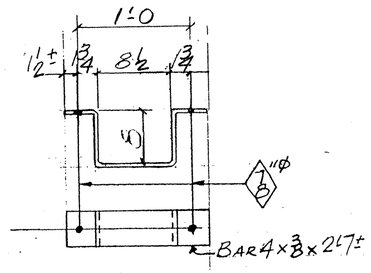
CK'D BY JWC OK'D BY
FEB 04 2005
RESUBMIT APPROVED AS NOTED
BY DATE 3/21/2005

Keller, Craig

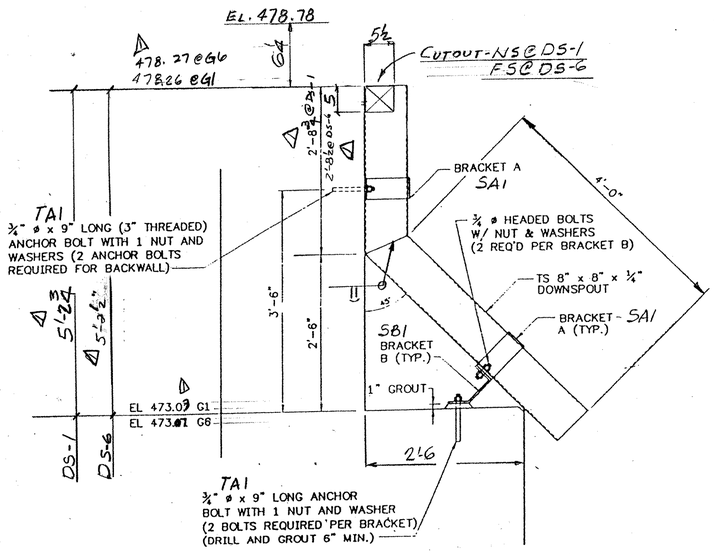
From: Keller, Craig
Sent: Thursday, April 14, 2005 1:51 PM
To: Couture, Jacques
Subject: Royalton - RE: Resubmission of Casco Bay shop drawings J1A and M1

Hi Jack,
Talked with Casco Bay and it was decided we would throw out the new sheets since they were previously approved "as noted." Please pass this along to Dale Sackett. Thanks.
Craig

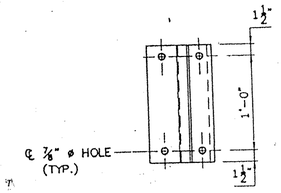
Craig S. Keller, PE
Project Manager
Vermont Agency of Transportation
Program Development Division - Structures Design Section
Drawer 33 - National Life Building
Montpelier, VT 05633-5001
Telephone (802) 828-3877
Fax (802) 828-3566
mailto:craig.keller@state.vt.us



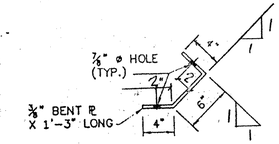
SA1-4-REQ'D



ONE - DS-1 (@ GIRDER G1)
ONE - DS-6 (@ GIRDER G6)



PLAN VIEW OF BRACKET-SB1



BRACKET SB1-2-REQ'D.

ABM INFO		SHOP BILL						JOB NO. 250	DRG. NO. M1
PAGE	LINE	NO.	DESCRIPTION	FT	IN	ASSEM. MARK	SHIPPING MARK	REMARKS	WEIGHT
		1	TS 8x8x¼	7	0±		DS-1	A500 GrA50	
		1	Do	7	0±		DS-6	Do	
		4	BAR 4 x ⅜	2	7±		SA1	BEND	
		2	℞ ⅜ x 14	1	3		SB1	BEND.	
		8	¾"ø THR'D ROD		9		TA1		
		8	¾"ø HEX NUTS						
		8	¾"ø WASHERS						
		4	¾"ø H.S. BOLTS		2			W/NUT & WASH.	

PAY ITEM 506.55

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	1-19-05									
	OUT FOR APPROVAL	4-6-05									
	ISSUED TO SHOP										
	FIELD & OFFICE										
1	APPROVAL COMMENTS	4/28/05									

PROJECT NO. BRS-0147(5)S STATE PROJECT NO. 21

MATERIAL: AASHTO M270-GR36 | ELECTRODES: PER FABR. | HOLES: AS NOTED | SHOP BOLTS: ~~A325~~ M164-GALV.

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123
HARDWARE (ASTM-A153

DESCRIPTION: DOWNSPOUTS - ABUT. NO. 1

JOB:

VT. RT. 14 OVER FIRST BRANCH
OF WHITE RIVER
ROYALTON, VT.

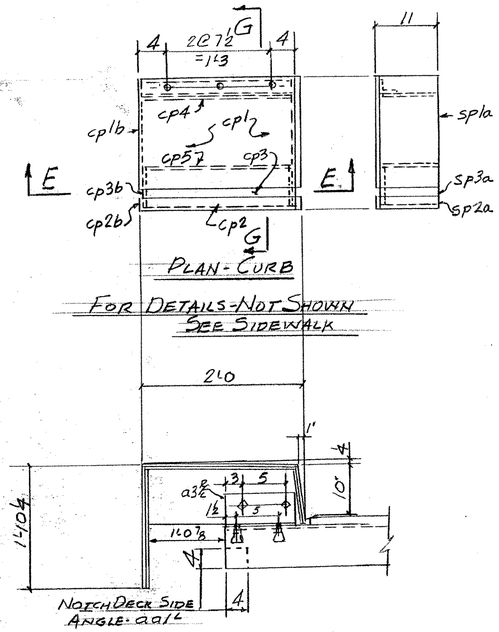
CUSTOMER: BECK & BELLUCCI

	DRAWN BY	DATE
	JPF	1-05
CHKD BY	EJ.	
APPROV BY		
Q.A.		

JOB NO.	DRG. NO.
~~250~~	M1
	REV. 1

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

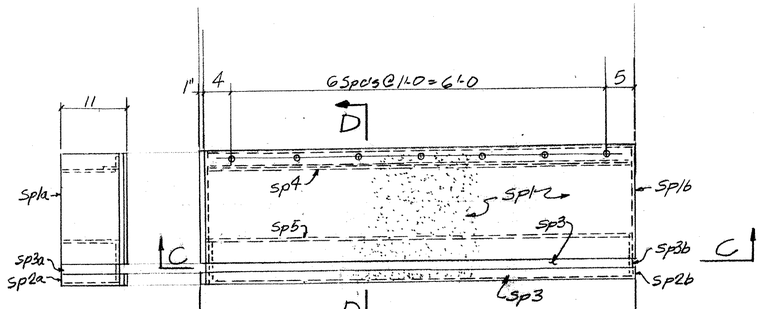
JOB NO. 250 | DRG. NO. J1A



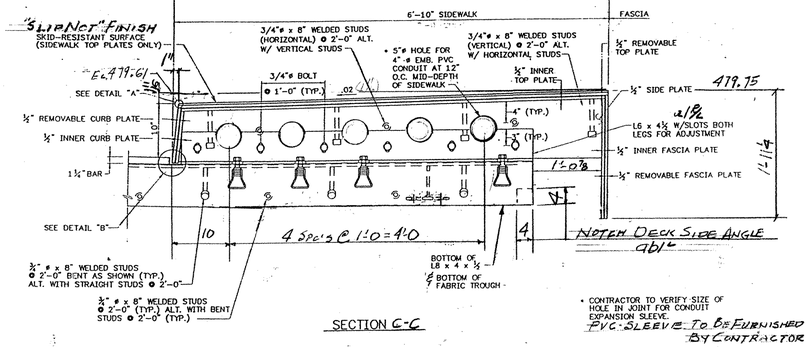
PLAN - CURB

FOR DETAILS - NOT SHOWN SEE SIDEWALK

SECTION - E - E

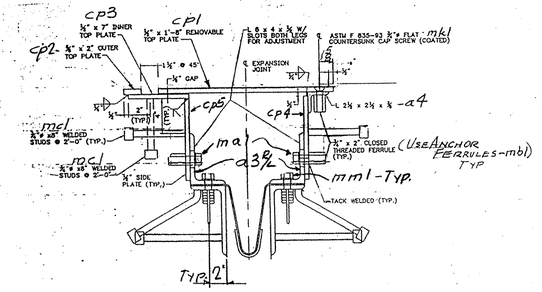


PLAN: SIDEWALK

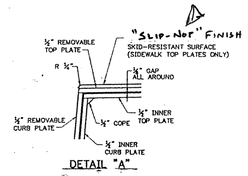


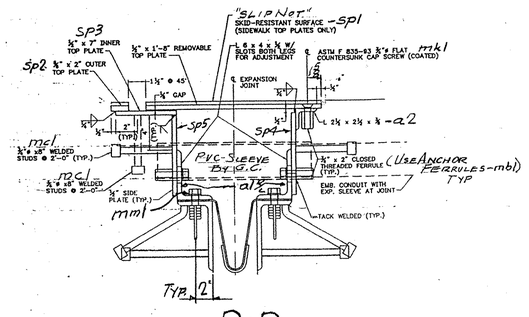
SECTION C-C

• CONTRACTOR TO VERIFY SIZE OF HOLE IN JOINT FOR CONDUIT EXPANSION SLEEVE. PVC SLEEVE TO BE FURNISHED BY CONTRACTOR



G - G





D - D

REV.	REMARKS	DATE	DWN	CHK	APP	Q.A.	NO.	DIA.	LGT	TYPE	WASHER
	OUT FOR APPROVAL	1-19-05									
	OUT FOR APPROVAL	4-6-05									
	ISSUED TO SHOP										
	FIELD & OFFICE										
1	ARSENAL COMMENTS	3/28/05									

PROJECT NO. BRS-0147(5)S STATE PROJECT NO. 21

MATERIAL: AASHTO M270-GR36 | ELECTRODES: PER PROC | HOLES: AS NOTED | SHOP BOLTS: ¾"ø M164-GALV.

SURFACE PREP. & PAINT: GALV. AFTER FAB (ASTM-A123) HARDWARE (ASTM-A153)

DESCRIPTION: EXP. JOINT - ABUT. No. 1

JOB: VT. RT. 14 OVER FIRST BRANCH OF WHITE RIVER ROYALTON, VT.

CUSTOMER: BECK & BELLUCCI

DRAWN BY	DATE
J.P.F	1-05
CHKD BY	
E.J	
APPROV BY	
Q.A.	
JOB NO.	DRG. NO.
250	J1A
	REV. 1

CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

1" = 1'-0"

Foster
Fabricated Products

L.B. Foster Company
1016 Greentree Rd.
Pittsburgh, PA 15220
Phone: (412) 928-3455
Fax: (412) 928-3514
tpace@lbfosterco.com

To:	Dale Sackett Beck & Bellucci, Inc.	From:	Tim Pace
Fax:	(603) 934-7044	Pages:	3 (Including Cover Page)
Date:	11/02/2004		
Subject:	Town of Royalton, Aluminum Bridge Rail, BRS 0147(5)S		

Aluminum Welding Procedure # AL103 for your approval.

Please advise if this is acceptable.

Best Regards

Timothy Pace

L.B. FOSTER CO.
R.D.#2 BOX C
BEDFORD INDUSTRIAL PARK
BEDFORD, PA. 15522

130/ APPENDIX E

WELDING PROCEDURE SPECIFICATION (WPS) AL-103

Cleaning
Initial cleaning oxide: STAINLESS STEEL WIRE BRUSH
Initial cleaning oil and dirt: SAME
Interpass cleaning:

Post Weld Heat Treatment
Original temper: N/A
Final temper: N/A
Temperature: N/A
Time: N/A
Quench: N/A

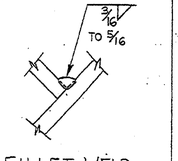
WELD SIZE	Pass no.	Welding process	Amps	Volts	Travel speed
3/16	1	GMAW	160	23	25IPM
1/4	1	GMAW	180	24	19IPM
5/16	2	GMAW	175	24	21IPM

Process(es)
Process: GMAW Type: SPRAY TRANSFER
Process: Type:
Electrode (GTAW):

Technique
Stringer or weave bead: STRINGER
Orifice or gas cup size: 5/8" DIAMETER
Oscillation: NO
Contact tube to work distance: 1/2"
Single pass or multipass: SINGLE OR MULTIPLE
Tungsten extension: N/A per side
Method of backgouging: N/A
Other:

V.A.O.T.
RECEIVED
OK'D BY: OK'D BY: JWC
NOV 0 1 2004
RESUBMIT: APPROVED: ✓
BY DATE 12-9-04

AL-103



FILLET WELD

Sketch of welding sequence

Form E(a)

VERMONT AGENCY OF TRAN.
L.B. FOSTER JOB AR0170
PROJECT - Town of Royalton

WELDING PROCEDURE SPECIFICATION (WPS)

Welding procedure specification no. AL-100 Date 10-30-90 Approved _____

Revisions _____ Date _____ Approved _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

Supporting PQR Numbers: AL-100 _____ _____ _____

_____ _____ _____ _____

Joints

Groove Design Sketch

Backing

Type: _____

Permanent _____

Removed no _____

Other _____

_____

_____

Filler metal

F-No. 22 AWS No. A5.10-80 Class _____

Size of electrode .035"

Type of electrode ER 5356

Other _____

_____

_____

Shielding gas

Shielding gas(es) ARGON

Percent composition 100%

Flow rate 35 cfh

Other _____

_____

_____

_____

Position

Position FLAT

Welding progression _____

Other _____

_____

_____

Base Metals

Group no. 3 Thickness 1/8" MIN.

Alloy and temper 6061-T6 OR 6063-T6

Preheat

Preheat temperature N/A

Interpass temperature N/A

Foster
Fabricated Products

L.B. Foster Company
1015 Greentree Rd.
Pittsburgh, PA 15220
Phone: (412) 928-3455
Fax: (412) 928-3514
tpace@lbfosterco.com

To:	Dale Sackett Beck & Bellucci, Inc.	From:	Tim Pace
Fax:	(603) 934-7044	Pages:	3 (Including Cover Page)
Date:	11/02/2004		
Subject:	Town of Royalton, Aluminum Bridge Rail, BRS 0147(5)S		

Aluminum Welding Procedure # AL103 for your approval.

Please advise if this is acceptable.

Best Regards

Timothy Pace

L.B. FOSTER CO.
R.D.#2 BOX C
130/APPENDIX E BEDFORD INDUSTRIAL PARK
BEDFORD, PA. 15522

WELDING PROCEDURE SPECIFICATION (WPS) AL-103

Cleaning
Initial cleaning oxide: STAINLESS STEEL WIRE BRUSH
Initial cleaning oil and dirt: SAME
Interpass cleaning: _____

Post Weld Heat Treatment
Original temper: N/A
Final temper: N/A
Temperature: N/A
Time: N/A
Quench: N/A

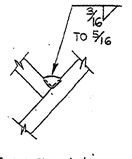
WELD SIZE	Pass no.	Welding process	Amps	Volts	Travel speed
3/16	1	GMAW	160	23	25 IPM
1/4	1	GMAW	180	24	19 IPM
5/16	2	GMAW	175	24	21 IPM

Process(es)
Process: GMAW Type: SPRAY TRANSFER
Process: _____ Type: _____
Electrode (GTAW): _____

Technique
Stringer or weave bead: STRINGER
Orifice or gas cup size: 5/8" DIAMETER
Oscillation: NO
Contact tube to work distance: 1/2"
Single pass or multipass: SINGLE OR MULTIPLE per side
Tungsten extension: N/A
Method of backgouging: N/A
Other: _____

V.A.O.T.
RECEIVED
OK'D BY _____ OK'D BY JWC
NOV 0 1 2004
RESUBMIT _____ APPROVED ✓
BY _____ DATE 12-9-04

AL-103



FILLET WELD

Sketch of welding sequence

Form E(a)

VERMONT AGENCY OF TRAN.
L.B. FOSTER JOB AR0170
PROJECT - Town of Royalton

WELDING PROCEDURE SPECIFICATION (WPS)

Welding procedure specification no. AL-100 Date 10-30-90 Approved

Revisions Date Approved

Supporting PQR Numbers AL-100

Joints

Groove Design Sketch

Backing

Type

Permanent

Removed

Other

Base Metals

Group no. 3 Thickness 1/8" MIN.

Alloy and temper 6061-T6 OR 6063-T6

Filler metal

F-No. 22 AWS No. A5.10-80 Class

Size of electrode .035"

Type of electrode ER 5356

Other

Shielding gas

Shielding gas(es) ARGON

Percent composition 100%

Flow rate 35 cfh

Other

Position

Position FLAT

Welding progression

Other

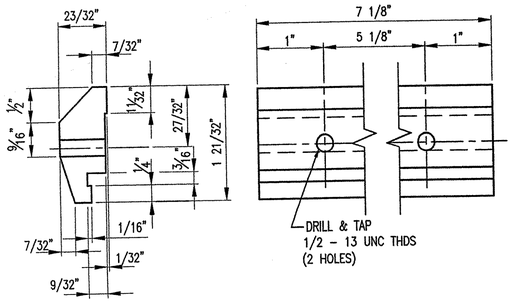
Preheat

Preheat temperature N/A

Interpass temperature N/A

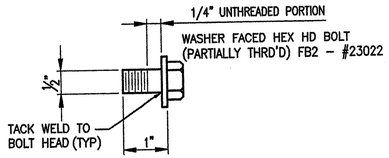
Form E(a) (cont'd)

'OR PATH DIRECTORY - E:\B1 (R0)\RL SDWG\-MODEL PLT - E:\B1 (R0)\SL SDWG\-MODEL PLT - 12/26/04 7:14:22 AM

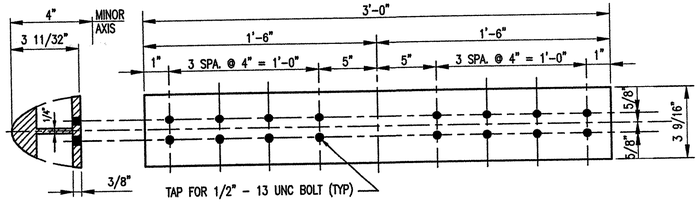


88 ~ REQ'D CLAMP BAR CB-03-A #19447
(BARRIER RAIL)

44 ~ REQ'D CLAMP BAR CB-01-B #28596
(HANDRAIL)



SPLICE BOLT DETAILS



8 ~ REQ'D SPLICE SLEEVES SS-03 #19501
(BARRIER RAIL)

GENERAL NOTES

ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001 AND ITS LATEST REVISIONS.

DESCRIPTION	ASTM	ALLOY/GR.	REMARKS
RAILS, POSTS, BASES, SPLICES, CLAMP BARS, PINS, & BALUSTER FRAMES	B221	6061-T6 OR 6351-T5	MIN. YIELD STRENGTH Fy = 35,000 psi.
BALUSTERS	B221	6061 OR 6351	T4 - USED FOR SUPERIOR EXPANDING QUALITIES
RIVETS	B316	6061-T6	BUTTON HD., CONE PT.
SET SCREWS FOR BALUSTERS	F880	TYPE 303	
STAINLESS STEEL BOLTS	A193	GRADE B8	
ANCHOR RODS	A449		GALV. A153
STEEL HEX. NUTS	A563	GRADE DH	GALV. A153
STEEL WASHERS	F436		GALV. A153
ANCHOR PLATES	A569		COMMERCIAL QUALITY (PLAIN)
ALUMINUM WASHERS	B209	2024-T4	ALCLAD
PREFORMED PADS			SECTION 731.01 OR 731.02
ELECTRODES FOR WELDING		AWS A5.10 ER5356	

POSTS TO BE NORMAL TO GRADE AND RAILS SHALL BE PARALLEL TO GRADE.
RAILS TO BE ATTACHED TO A MINIMUM OF THREE POSTS WHEN POSSIBLE.

ALL RAILS AND WELDS TO BE FREE FROM ALL BURRS AND ROUGH EDGES. ENDS OF TUBE SECTIONS SHALL BE SAWED OR MILLED. GRIND ALL CUT EDGES SMOOTH.

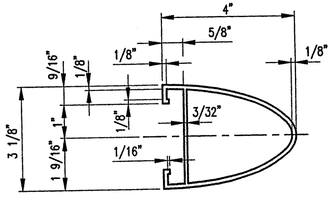
ALL THREADS TO BE UNC CLASS 2A/2B.

ALL EXTRUSION TOLERANCES NOT SHOWN SHALL BE IN ACCORDANCE WITH ASTM B221.

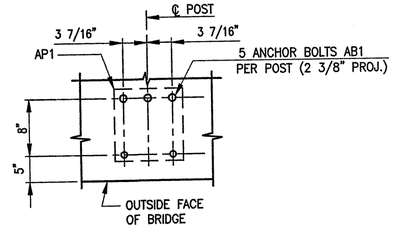
IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN THE ROOT DIAMETER OF THREADS

THE SPLICE BAR SHALL BE ATTACHED TO THE RAIL ELEMENT AS FOLLOWS:
THE RAIL SPLICE AT THE BRIDGE EXPANSION JOINT SHALL BE FASTENED ON BOTH SIDES OF THE RAIL SPLICE USING THE PARTIALLY THREADED BOLTS, WITH THE WASHER FACED BOLT, TIGHTENED SECURELY TO THE END OF THREADS, AND LEAVING A 1/8" GAP, THIS ALLOWS EXPANSION ON BOTH SIDES OF THE JOINT.

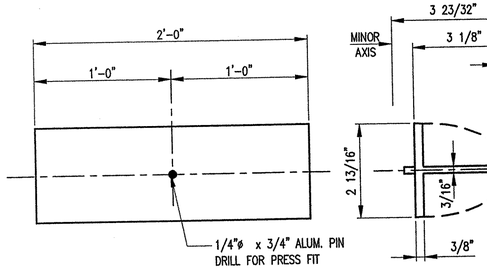
ALL NUTS SHALL COMPLY WITH AMERICAN HEXAGON ANSI SPECIFICATIONS B18.2



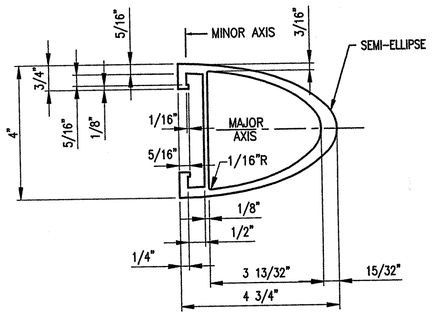
TYPICAL SECTION
(HANDRAIL)



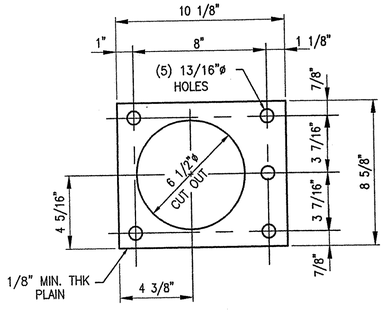
TYPICAL ANCHOR BOLT SETTING



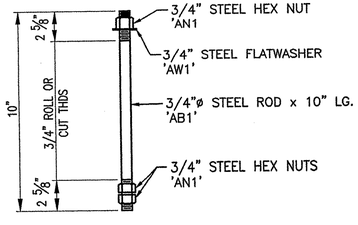
4 ~ REQ'D SPLICE SLEEVES SS-23
(HANDRAIL)



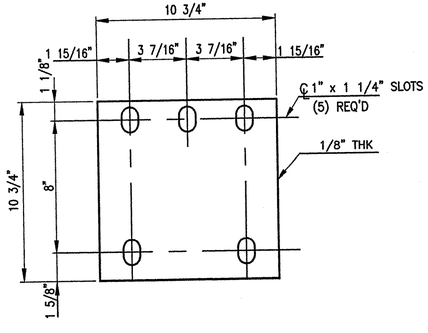
TYPICAL SECTION
(BARRIER RAIL)



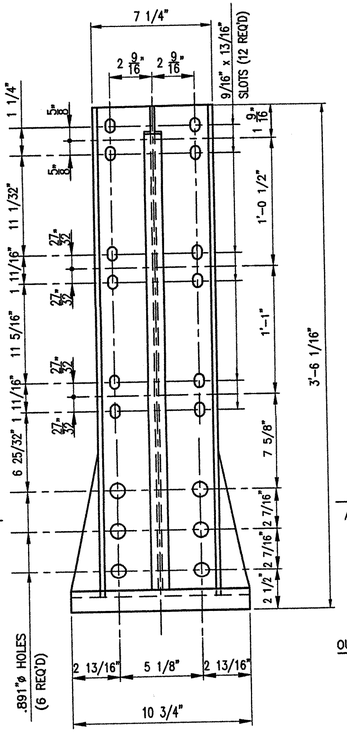
22 ~ REQ'D ANCHOR PLATE AP1 #14520

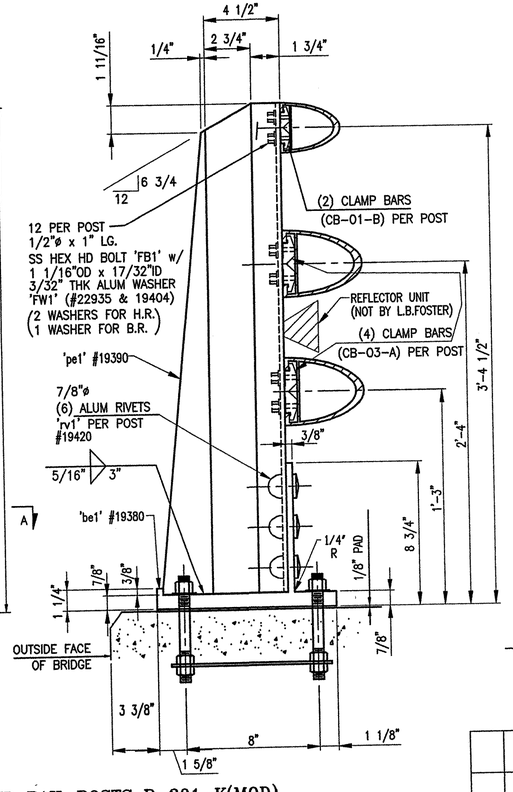


110 ~ REQ'D ANCHOR BOLTS AB1

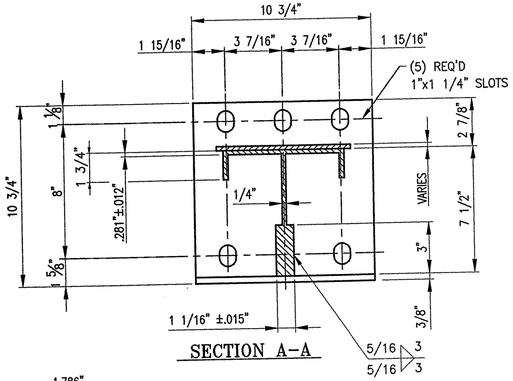


22 ~ REQ'D FABRIC PADS 'EP1' #19220

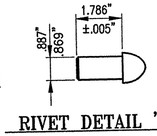




22 ~ REQ'D FABRICATED RAIL POSTS P-301-K(MOD)
(SIDEWALK)



SECTION A-A



RIVET DETAIL 'rv1'

VTrans RECEIVED
OK'D BY ____ OK'D BY ____
JAN 12 2005
RESUBMIT ____ APPROVED ____
BY ____ DATE 2/4/05

BRIDGE No. 21
PROJECT No. BRS 0147(5)S ITEM No: 525.23

APPROVED: ____ REC'D APPROVAL ____ DRAWING ____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
3-LINE SEMI-ELLIP. ALUM. BRIDGE RAIL FOR VT RTE 14
OVER THE WHITE RIVER - GENERAL NOTES AND TYP DETAILS

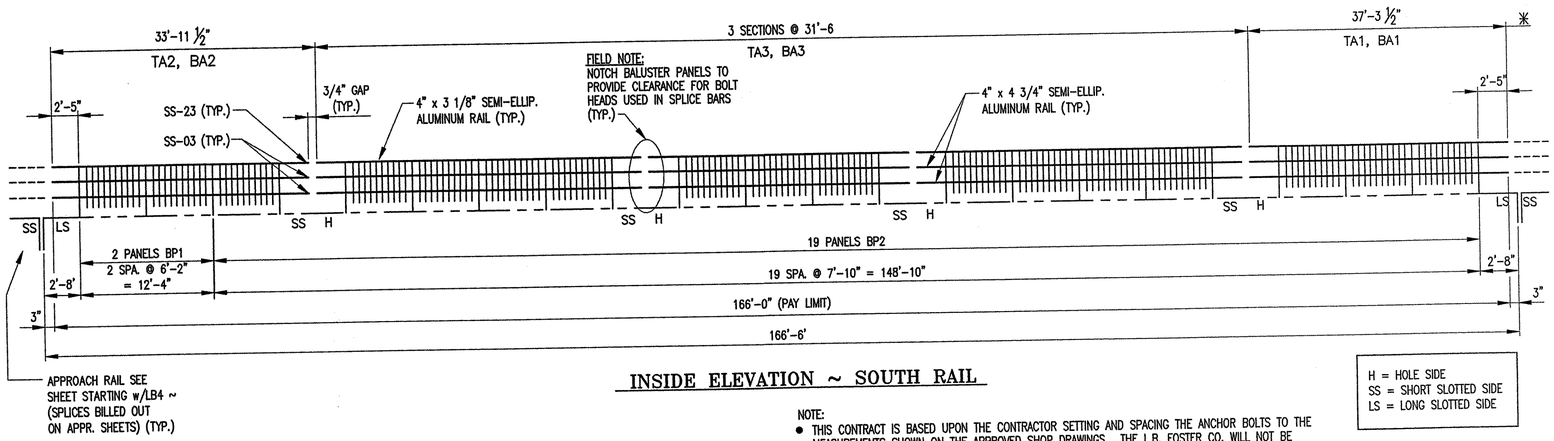
MADE CMS DATE 09/29/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB1 REV. No.

REV.	DESCRIPTION	BY	DATE

'OR PATH DIRECTORY - E LB2 (R0)[SDWK]-MODEL PLT - E LB2 (R0)[SDWK]-MODEL PLT - 12/28/04 7:13:08 AM

BILL OF MATERIAL

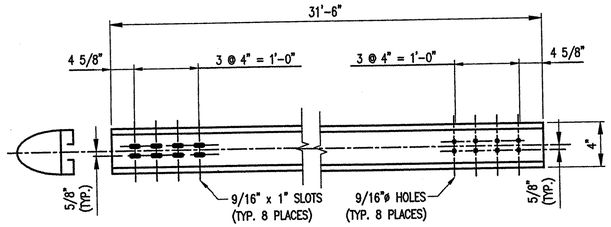
Mark	Total Quan.	Desc.	Th./Dia in.	Width in	Width in	Length Ft.	Length In.	Remarks
								Sidewalk Side
P-301-K(MOD)	22	POST Consisting of:				3	5 3/16	Modified
pe1	22	EXTRUDED POST STEM		10 3/4			10 3/4	
be1	22	EXTRUDED POST BASE						
rv1	132	RIVET	7/8				2 3/8	Button Hd, Cone pt., Cold Driven
CB-03-A	88	CLAMP BAR					7 1/8	@ Barrier Rail
FB1	176	BOLT, HEX HD.	1/2				1	
FW1	176	WASHER	3/32	1 1/16	17/32			
CB-01-B	44	CLAMP BAR					7 1/8	@ Handrail
FB1	88	BOLT, HEX HD.	1/2				1	
FW1	88	WASHER	3/32	1 1/16	17/32			
AB1	110	ANCHOR ROD	3/4				10	Roll or Cut Threads
AN1	330	NUT, HEX	3/4					
AW1	110	WASHER	1/8	2	13/16			
AP1	22	ANCHOR PLATE	1/8	8 5/8			10 1/8	See Notes - LB1
EP1	22	PAD, ELASTOMERIC	1/8	10 3/4			10 3/4	
SS23	4	SPLICE SLEEVE EXTRUSION				2	0	
sp	4	PIN	1/4				3/4	Press Fit
SS-03	8	SPLICE SLEEVE EXTRUSION				3	0	
FB2	128	BOLT, HEX WASHER FACED, PRTL. THRD	1/2				1	Partial Thd., Washer-faced bolt or tack weld washer to bolt.
TA1	1	RAIL - 3 1/8" x 4"		3 1/8	4	37	3 1/2	See LB2
TA2	1	RAIL - 3 1/8" x 4"		3 1/8	4	33	11 1/2	See LB2
TA3	3	RAIL - 3 1/8" x 4"		3 1/8	4	31	6	See LB2
BA1	2	RAIL - 4" x 4 3/4"		4	4 3/4	37	3 1/2	See LB2
BA2	2	RAIL - 4" x 4 3/4"		4	4 3/4	33	11 1/2	See LB2
BA3	6	RAIL - 4" x 4 3/4"		4	4 3/4	31	6	See LB2
BP1	2	BALUSTER PANEL ASSEMBLY				5	5 1/2	See LB3
tb1	2	TOP RAIL EXTRUSION				5	5 1/2	
bb1	2	BOTTOM RAIL EXTRUSION				5	5 1/2	
b1	18	BALUSTER	1/8	1 1/2		3	2	3'-1 3/4" Finished lgth after Crimping 1~End
br1	18	PULL MANDREL BLIND RIVET	1/4					
SS1	10	STNL. STL. SET SCREW	1/4				1/2	
BP2	19	BALUSTER PANEL ASSEMBLY				7	1 1/2	See LB3
tb2	19	TOP RAIL EXTRUSION				7	1 1/2	
bb2	19	BOTTOM RAIL EXTRUSION				7	1 1/2	
b1	228	BALUSTER	1/8	1 1/2		3	2	3'-1 3/4" Finished lgth after Crimping 1~End
br1	228	PULL MANDREL BLIND RIVET	1/4					
SS1	114	STNL. STL. SET SCREW	1/4				1/2	



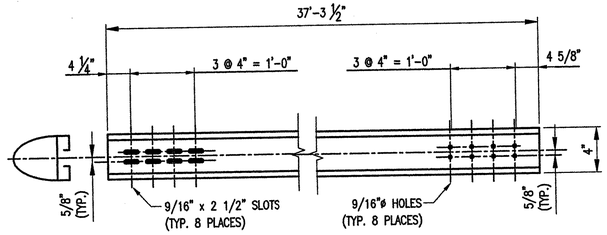
INSIDE ELEVATION ~ SOUTH RAIL

H = HOLE SIDE
SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE

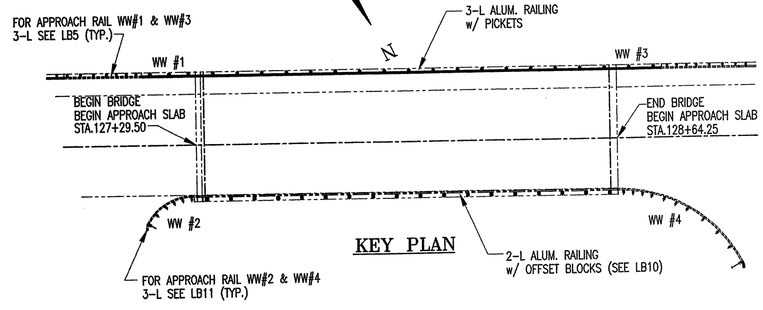
NOTE:
- THIS CONTRACT IS BASED UPON THE CONTRACTOR SETTING AND SPACING THE ANCHOR BOLTS TO THE MEASUREMENTS SHOWN ON THE APPROVED SHOP DRAWINGS. THE L.B. FOSTER CO. WILL NOT BE RESPONSIBLE FOR WORK NECESSITATED BY ANY OTHER SETTING AND SPACING.
- THIS DRAWING IS NOT TO SCALE.
- FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING LB1.
- LENGTH OF RAILING ON THIS SHEET IS 166 LF PAY LENGTH.
- POST SPACING IS MEASURED HORIZONTALLY.
- SPLICE GAP AT SLEEVE = 3/4" TYP.
- ✳ RAIL LENGTHS DO NOT INCLUDE GAPS.
- COMPENSATION FOR VERTICAL CURVE IS NOT NECESSARY.
- FOR BALUSTER DETAILS SEE DRAWING LB3.



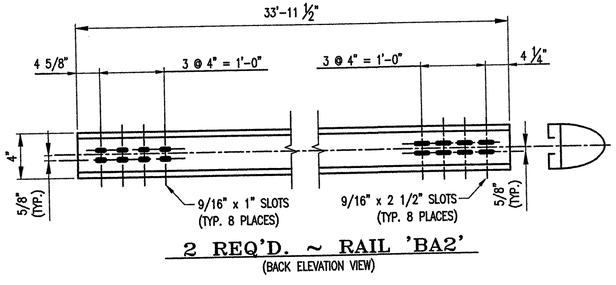
6 REQ'D. ~ RAIL 'BA3'
(BACK ELEVATION VIEW)



2 REQ'D. ~ RAIL 'BA1'
(BACK ELEVATION VIEW)



KEY PLAN



2 REQ'D. ~ RAIL 'BA2'
(BACK ELEVATION VIEW)

VTrans RECEIVED
CK'D BY Graw CK'D BY
JAN 12 2005
RESUBMIT APPROVED
BY DATE

BRIDGE No. 21
PROJECT No. BRS 0147(5)S ITEM No: 525.23

APPROVED: REC'D APPROVAL DRAWING

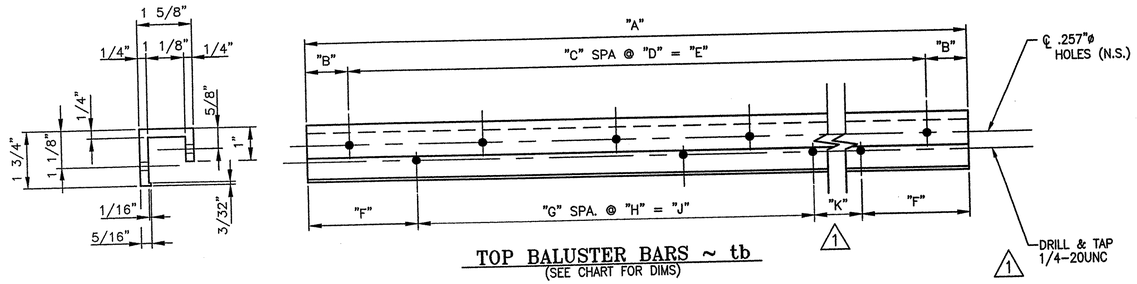
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
3-LINE SEMI-ELLIP. ALUM. BRIDGE RAIL FOR VT RTE 14
OVER WHITE RIVER ~ ELEV., KEY PLAN & BILL OF MAT'L.

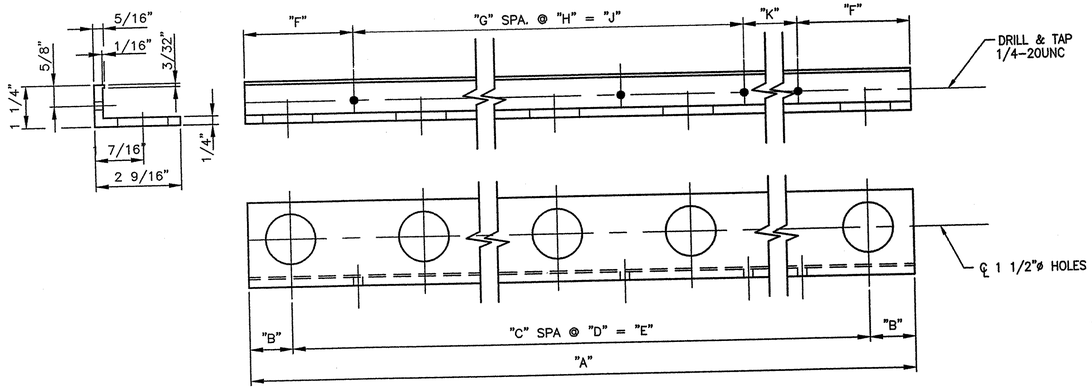
MADE CMS DATE 09/29/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB2 REV. No.

REV.	DESCRIPTION	BY	DATE

OR PATH DIRECTORY - E L89 (R1)(BALUSTER)-MODEL PLT - E L89 (R1)(BALUSTER)-MODEL PLT - 12/28/04 7:12:27 AM

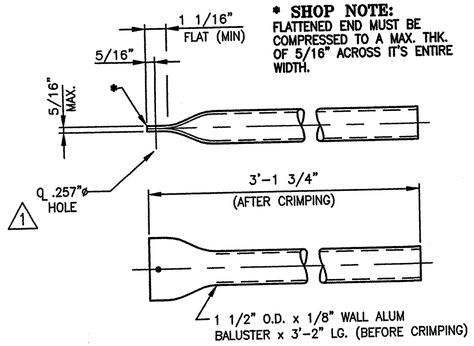


TOP BALUSTER BARS ~ tb
(SEE CHART FOR DIMS)



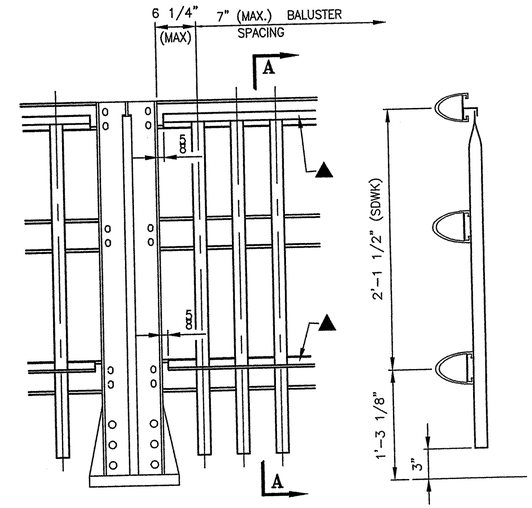
BOTTOM BALUSTER BARS ~ bb
(SEE CHART FOR DIMS)

MARK	QTY	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	PANEL ASSY.
tb1 / bb1	2	5'–5 1/2"	4 3/4"	8	7"	4'–8"	8 1/4"	3	1'–2"	3'–6"	7"	BP1
tb2 / bb2	19	7'–1 1/2"	4 1/4"	11	7"	6'–5"	7 3/4"	5	1'–2"	5'–10"	–	BP2



*** SHOP NOTE:**
FLATTENED END MUST BE COMPRESSED TO A MAX. THK. OF 5/16" ACROSS IT'S ENTIRE WIDTH.

246 ~ REQ'D BALUSTERS 'b1'
#19451

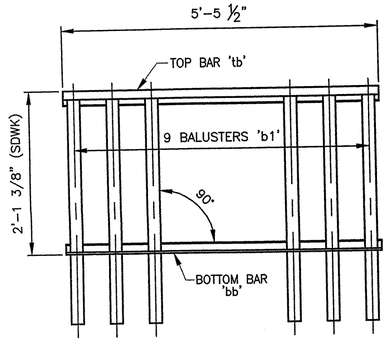


TYPICAL ELEVATION

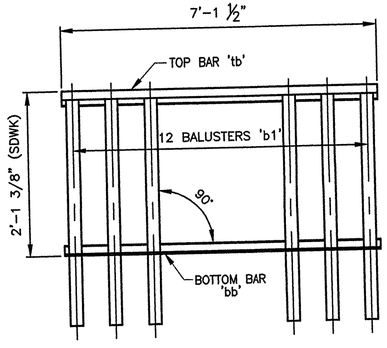
▲ 1/4"–20UNC S.S. SOCKET SET SCREW x 1/2" – 'SS1' (#22079) EVERY OTHER SPACE BETWEEN BALUSTERS IF POSSIBLE

SECTION A–A

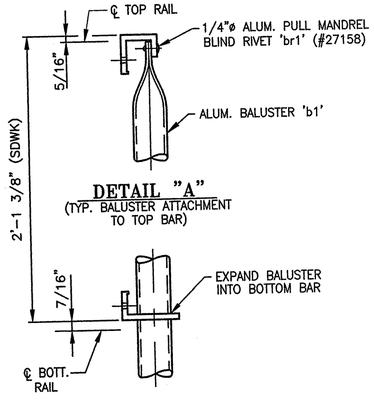
FIELD NOTE:
NOTCH BALUSTER PANELS TO PROVIDE CLEARANCE FOR BOLT HEADS USED IN SPLICE BARS (TYP.)



2 REQ'D. ~ BALUSTER PANEL ASSEMBLY 'BP1'



19 REQ'D ~ BALUSTER PANEL ASSEMBLY 'BP2'



DETAIL "A"
(TYP. BALUSTER ATTACHMENT TO TOP BAR)

DETAIL "B"
(TYP. BALUSTER ATTACHMENT TO BOTTOM BAR)

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BY DATE

NOTE: FOR GEN. NOTES AND TYP. DETAILS SEE DWG LB1
FOR RAILING ELEVATION SEE DWG LB2

BRIDGE No. 21
PROJECT No. BRS 0147(5)S
ITEM No: 525.23

APPROVED: REC'D APPROVAL
DRAWING

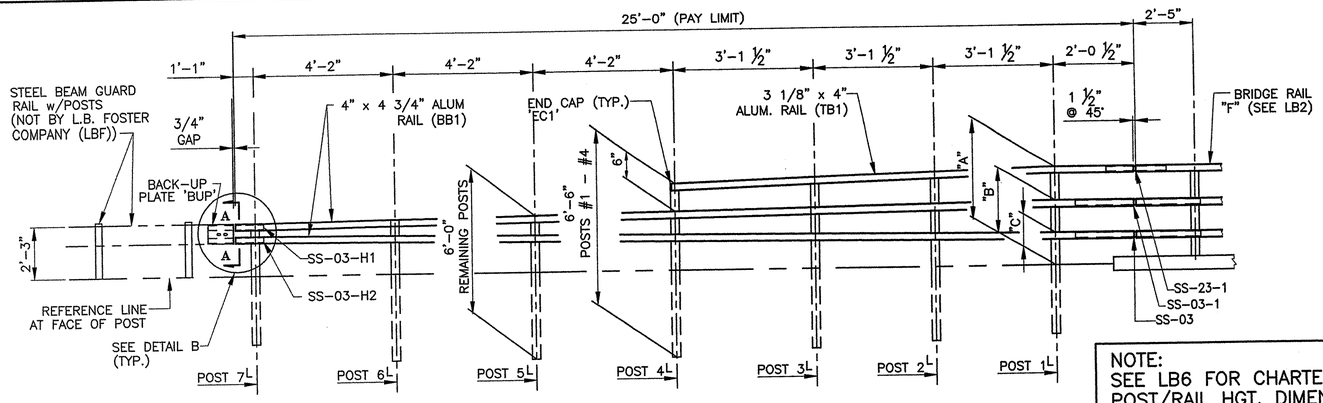
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE RAILING FOR VT RTE 14 OVER WHITE RIVER
3–LINE ALUM BRIDGE RAIL ~ BALUSTER PANEL DETAILS

MADE CMS DATE 09/29/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB3 REV. No. ONE

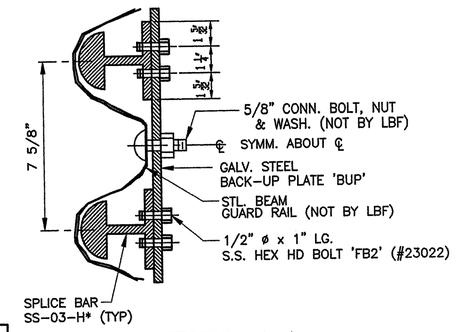
REV.	DESCRIPTION	BY	DATE
1	REVISED PER APPROVER COMMENTS	CMS	12 21 01

ITOR PATH DIRECTORY - E LB4 (SL APPROACH)-MODEL PLT - E LB4 (SL APPROACH)-MODEL PLT - 12/28/04 9:11:51 AM



NOTE:
SEE LB6 FOR CHARTED POST/RAIL HGT. DIMENSIONS

INSIDE SIDEWALK 'WW#1' ELEVATION
(SE APPROACH)



SECTION A-A

GENERAL NOTES

ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001.

DESCRIPTION	ASTM	ALLOY/GR.	REMARKS
RAILS, POSTS, SPLICES, PINS, CLAMP BARS & OFFSET BLOCKS	B221	6061-T6 OR 6351-T5	MIN. YIELD STRENGTH Fy = 35,000 psi.
HEX HEAD BOLTS	A193	GR. B8	
ALUMINUM WASHERS	B209	2024-T4	ALCLAD
STN. STL. NUTS	A194	GR 8	TENSILE STRENGTH 75,000 PSI
END CAPS	B26	356-F	DRIVE TYPE
BACKUP PLATE	M270	GR 36	GALV. PER A153
ELECTRODES FOR WELDING	AWS A5.10	ER5356	

POSTS TO BE NORMAL TO GRADE AND RAILS SHALL BE PARALLEL TO GRADE.
RAILS TO BE ATTACHED TO A MINIMUM OF THREE POSTS WHEN POSSIBLE.

ALL RAILS AND WELDS TO BE FREE FROM ALL BURRS AND ROUGH EDGES. ENDS OF TUBE SECTIONS SHALL BE SAWED OR MILLED. GRIND ALL CUT EDGES SMOOTH.

ALL THREADS TO BE UNC CLASS 2A/2B.

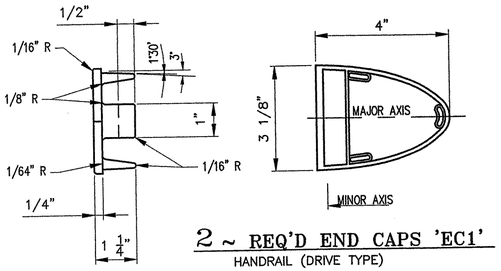
ALL EXTRUSION TOLERANCES NOT SHOWN SHALL BE IN ACCORDANCE WITH ASTM B221.

IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN THE ROOT DIAMETER OF THREADS

THE SPLICE BAR SHALL BE ATTACHED TO THE RAIL ELEMENT AS FOLLOWS:
THE RAIL SPLICE AT THE BRIDGE EXPANSION JOINT SHALL BE FASTENED ON BOTH SIDES OF THE RAIL SPLICE USING THE PARTIALLY THREADED BOLTS, WITH THE WASHER FACED BOLT, TIGHTENED SECURELY TO THE END OF THREADS, AND LEAVING A 1/8" GAP, THIS ALLOWS EXPANSION ON BOTH SIDES OF THE JOINT.

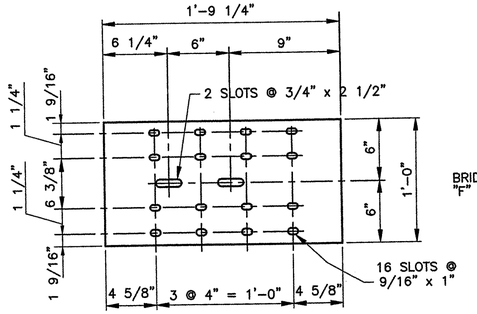
ALL NUTS SHALL COMPLY WITH AMERICAN HEXAGON ANSI SPECIFICATIONS B18.2

VTrans
RECEIVED
OK'D BY Gwen OK'D BY _____
JAN 12 2005
RESUBMIT _____ APPROVED _____
DATE

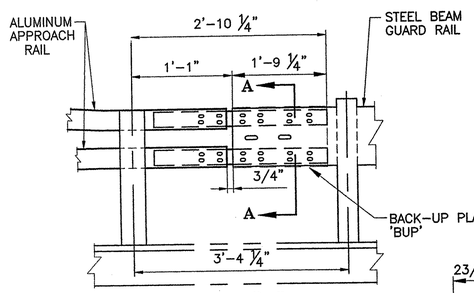


2 ~ REQ'D END CAPS 'EC1'
HANDRAIL (DRIVE TYPE)

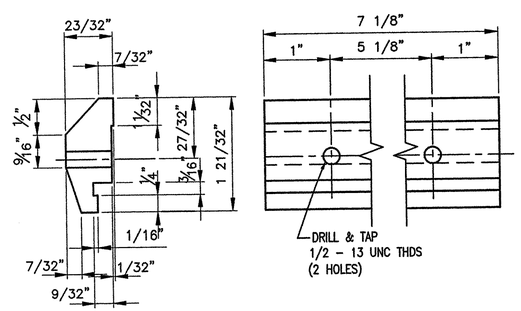
NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 25'-0" LF PAY LENGTH.
- SEE LB6 FOR BILL OF MATERIAL.



2 REQ'D. ~ BACK-UP PLATE 'BUP'
(1/4" THK. PLATE ~ A36 - GALV.)

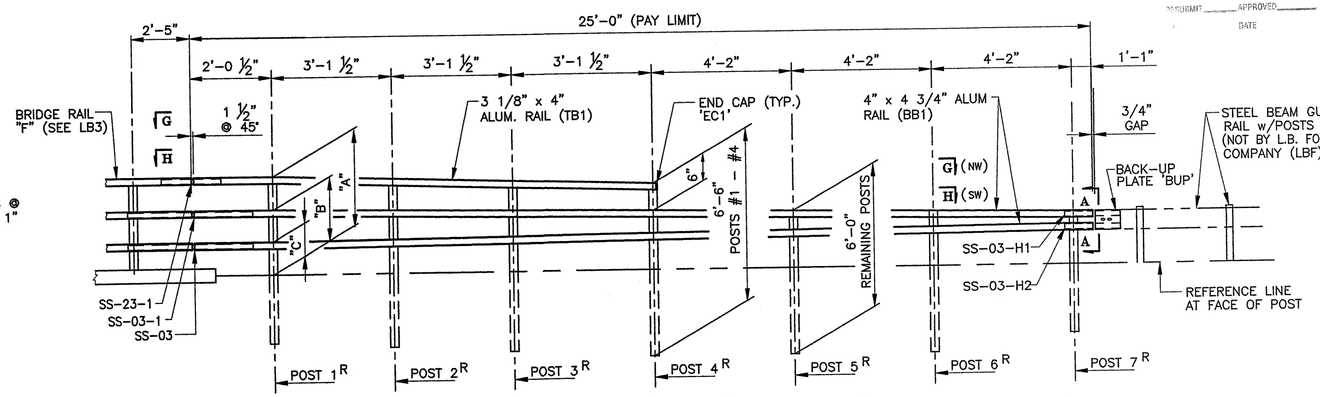


DETAIL "B"

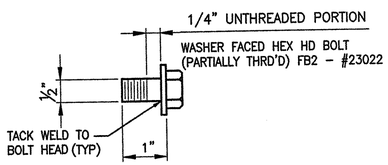


56 ~ REQ'D CLAMP BAR CB-03-A
(BARRIER RAIL - 4 PER POST)
(#19447)

16 ~ REQ'D CLAMP BAR CB-01-B
(HANDRAIL - 2 PER POST)
(#28596)



INSIDE SIDEWALK 'WW#3' ELEVATION
(SW APPROACH)



SPLICE BOLT DETAILS

REV.	DESCRIPTION	BY	DATE

BRIDGE No. 21
PROJ. No: BRS 0147(5)S
ITEM No: 525.23

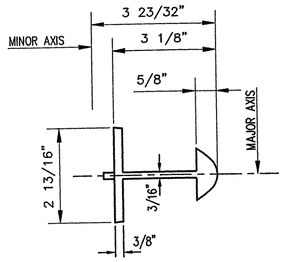
APPROVED: _____
REC'D APPROVAL _____
DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

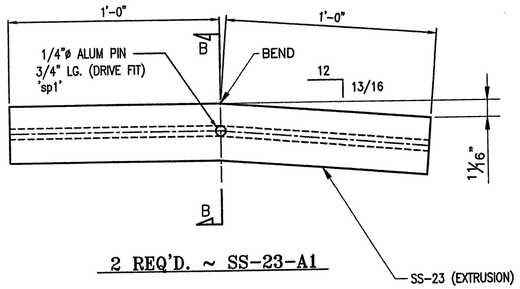
FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE APPROACH RAILING FOR VT RTE 14 OVER WHITE RIVER
GENERAL NOTES, ELEVATIONS AND TYPICAL DETAILS

MADE CMS DATE 10/01/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB4 REV. No.

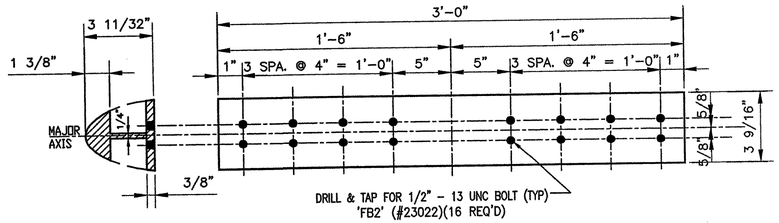
TOR PATH DIRECTORY - E LB5 (SL APPROACH)-MODEL PLT - E LB5 (SL APPROACH)-MODEL PLT - 12/28/04 7:19:33 AM



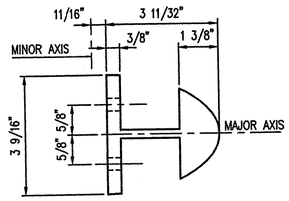
SECTION B–B



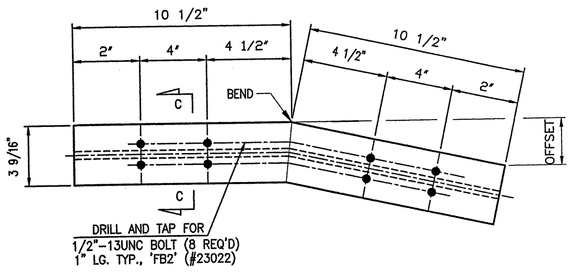
2 REQ'D. ~ SS-23-A1

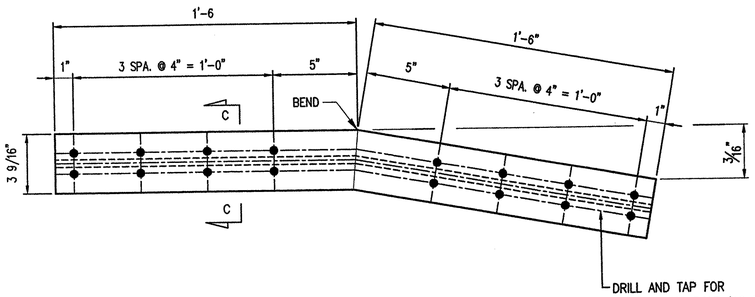


2 ~ REQ'D SPLICE SLEEVES SS-03
#19501



SECTION C–C





2 ~ REQ'D SPLICE SLEEVES SS-03-1

BARRIER RAIL SPLICES			
MK.	LOC.	QTY.	OFFSET
SS-03-H1	SW & SE	2	1/8"
SS-03-H2	SW & SE	2	0"

VTrans
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OK'D BY Grau OK'D BY _____
JAN 12 2005
RESUBMIT _____ APPROVED _____
BY DATE

REV.	DESCRIPTION	BY	DATE

BRIDGE No. 21
PROJ. No: BRS 0147(5)S ITEM No: 525.23

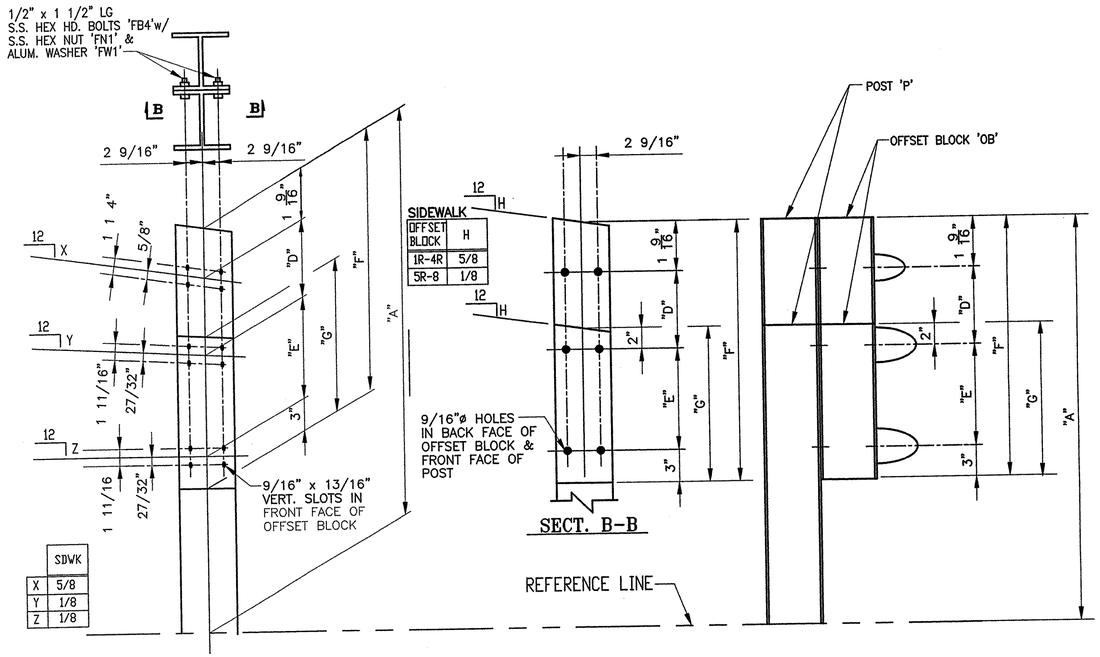
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

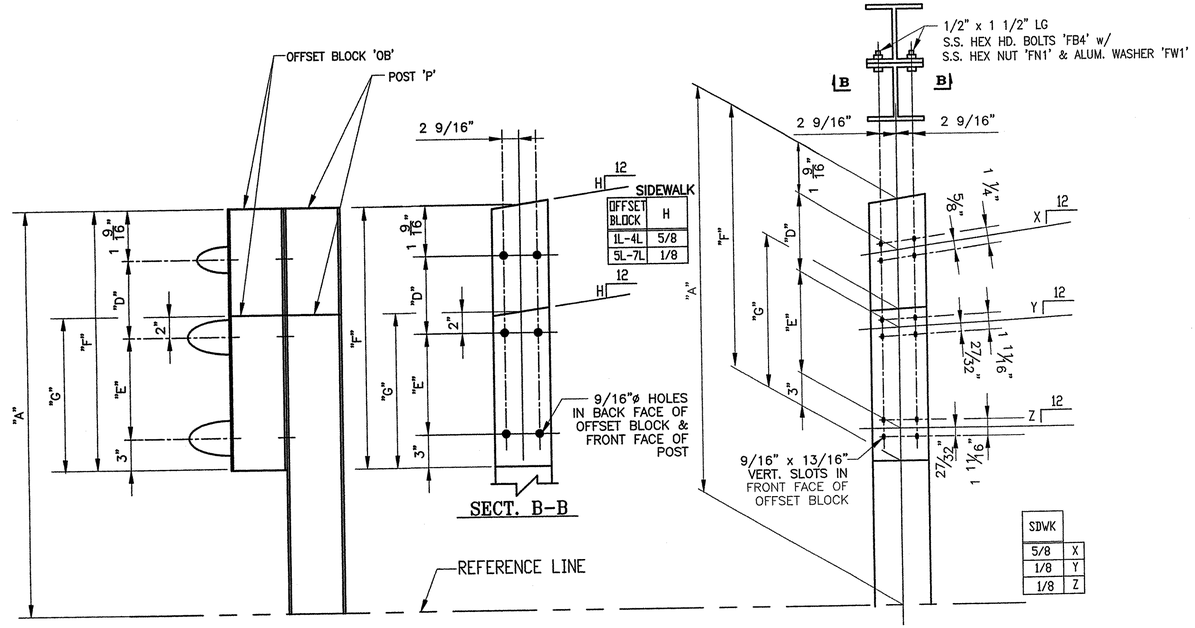
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE APPROACH RAILING FOR VT RTE 14 OVER WHITE RIVER
MISCELLANEOUS DETAILS

MADE CMS DATE 10/04/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB5 REV. No.

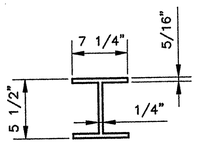
'DR PATH DIRECTORY - E LB6 (SL APPROACH)-MODEL PLT - E LB6 (SL APPROACH)-MODEL PLT - 12/28/04 7:20:14 AM





SIDEWALK SIDE (SW)

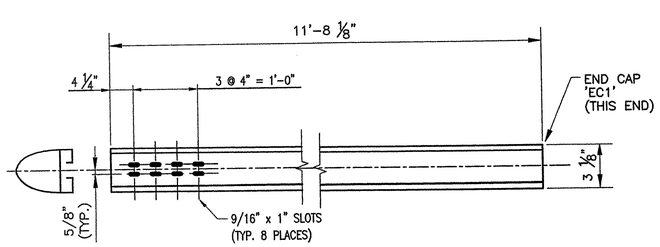
RAIL HEIGHT DIMENSIONS					OFFSET BLOCK DIMENSIONS				
POST No.	QTY.	A	B	C	OFFSET BLOCK No.	D	E	F	G
1^R	1	3'–4 3/4"	2'–5 3/4"	1'–5 3/16"	$OB1^R$	11 7/16"	1'–0 9/16"	2'–4 9/16"	—
2^R	1	3'–2 11/16"	2'–5 3/8"	1'–5 1/2"	$OB2^R$	9 3/4"	11 7/8"	2'–2 3/16"	—
3^R	1	3'–0 11/16"	2'–5"	1'–5 13/16"	$OB3^R$	8 1/8"	11 3/16"	1'–11 7/8"	—
4^R	1	2'–10 5/8"	2'–4 5/8"	1'–6 1/16"	$OB4^R$	6 7/16"	10 9/16"	1'–9 9/16"	—
5^R	1	—	2'–4 1/8"	1'–6 1/2"	$OB5^R$	—	9 5/8"	—	1'–2 5/8"
6^R	1	—	2'–3 5/8"	1'–6 7/16"	$OB6^R$	—	8 3/4"	—	1'–1 3/4"
7^R	1	—	2'–3 1/8"	1'–7 1/4"	$OB7^R$	—	7 7/8"	—	1'–0 7/8"



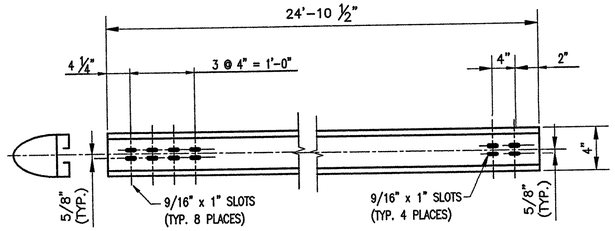
TYP. SECT. POST & OFFSET BLOCK

SIDEWALK SIDE (SE)

RAIL HEIGHT DIMENSIONS					OFFSET BLOCK DIMENSIONS				
POST No.	QTY.	A	B	C	OFFSET BLOCK No.	D	E	F	G
1^L	1	3'–4 3/4"	2'–5 3/4"	1'–5 3/16"	$OB1^L$	11 7/16"	1'–0 9/16"	2'–4 9/16"	—
2^L	1	3'–2 11/16"	2'–5 3/8"	1'–5 1/2"	$OB2^L$	9 3/4"	11 7/8"	2'–2 3/16"	—
3^L	1	3'–0 11/16"	2'–5"	1'–5 13/16"	$OB3^L$	8 1/8"	11 3/16"	1'–11 7/8"	—
4^L	1	2'–10 5/8"	2'–4 5/8"	1'–6 1/16"	$OB4^L$	6 7/16"	10 9/16"	1'–9 9/16"	—
5^L	1	—	2'–4 1/8"	1'–6 1/2"	$OB5^L$	—	9 5/8"	—	1'–2 5/8"
6^L	1	—	2'–3 5/8"	1'–6 7/16"	$OB6^L$	—	8 3/4"	—	1'–1 3/4"
7^L	1	—	2'–3 1/8"	1'–7 1/4"	$OB7^L$	—	7 7/8"	—	1'–0 7/8"



2 REQ'D. ~ RAIL 'TB1'
(BACK ELEVATION VIEW)



4 REQ'D. ~ RAIL 'BB1'
(BACK ELEVATION VIEW)

VTrans
RECEIVED
CK'D BY Grew OK'D BY
JAN 12 2005
RESUBMIT APPROVED
BY DATE

REV.	DESCRIPTION	BY	DATE

BRIDGE No. 21
PROJ. No: BRS 0147(5)S
ITEM No. 8215725.23

APPROVED: REC'D APPROVAL DRAWING

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE APPROACH RAILING FOR VT RTE 14 OVER WHITE RIVER
POST DETAILS & RAIL DETAILS

MADE CMS DATE 10/04/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB6 REV. No.

OR PATH DIRECTORY - E:\B7 (R0)\SLAPPROACH BOM)-MO - E:\B7 (R0)\SL APPROACH BOM)-MODEL PLT - 12/28/04 7:20:49 AM

BILL OF MATERIAL

Mark	Total Quan.	Desc.	Th./Dia in.	Width in	Width in	Length Ft.	Length In.	Remarks
P1R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P1L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P2R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P2L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P3R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P3L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P4R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P4L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB4, LB6
P5R	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB4, LB6
P5L	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB4, LB6
P6R	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB4, LB6
P6L	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB4, LB6
P7R	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB4, LB6
P7L	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB4, LB6
OB1R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	2	4 9/16	See LB6
FB4	6	BOLT, HEX HD.	1/2				1 1/2	
FW1	6	WASHER	3/32	1 1/16	17/32			
FN1	6	HEX NUT	1/2					
OB1L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	2	4 9/16	See LB6
FB4	6	BOLT, HEX HD.	1/2				1 1/2	
FW1	6	WASHER	3/32	1 1/16	17/32			
FN1	6	HEX NUT	1/2					
OB2R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	2	2 3/16	See LB6
FB4	6	BOLT, HEX HD.	1/2				1 1/2	
FW1	6	WASHER	3/32	1 1/16	17/32			
FN1	6	HEX NUT	1/2					
OB2L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	2	2 3/16	See LB6
FB4	6	BOLT, HEX HD.	1/2				1 1/2	
FW1	6	WASHER	3/32	1 1/16	17/32			
FN1	6	HEX NUT	1/2					
OB3R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	11 7/8	See LB6
FB4	6	BOLT, HEX HD.	1/2				1 1/2	
FW1	6	WASHER	3/32	1 1/16	17/32			
FN1	6	HEX NUT	1/2					
OB4R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	9 9/16	See LB6
FB4	6	BOLT, HEX HD.	1/2				1 1/2	
FW1	6	WASHER	3/32	1 1/16	17/32			
FN1	6	HEX NUT	1/2					
OB4L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	9 9/16	See LB6
FB4	6	BOLT, HEX HD.	1/2				1 1/2	
FW1	6	WASHER	3/32	1 1/16	17/32			
FN1	6	HEX NUT	1/2					
OB5R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	2 5/8	See LB6
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					

Mark	Total Quan.	Desc.	Th./Dia in.	Width in	Width in	Length Ft.	Length In.	Remarks
OB5L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	2 5/8	See LB6
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB6R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	1 3/4	See LB6
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB6L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	1 3/4	See LB6
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB7R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	7/8	See LB6
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB7L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	7/8	See LB6
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
CB-03-A	56	CLAMP BAR					7 1/8	@ Barrier Railing
FB1	112	BOLT, HEX HD.	1/2				1	
FW1	112	WASHER	3/32	1 1/16	17/32			
CB-01-B	16	CLAMP BAR					7 1/8	@ Handrail
FB1	32	BOLT, HEX HD.	1/2				1	
FW1	32	WASHER	3/32	1 1/16	17/32			
SS-03	2	SPLICE SLEEVE				3	0	See LB5
SS03	2	SPLICE EXTR.				3	0	
FB2	32	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
SS-03-1	2	BENT SPLICE SLEEVE				3	0	Bent - See LB5
SS03	2	SPLICE EXTR.				3	0	
FB2	32	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
SS-23-1	2	BENT SPLICE				2	0	See LB5
SS-23	2	SPLICE EXTRUSION				2		
sp1	2	PIN	1/4				3/4	
SS-03-H1	2	BENT SPLICE SLEEVE				1	9	See LB5
FB2	16	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
SS-03-H2	2	BENT SPLICE SLEEVE				1	9	See LB5
FB2	16	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
EC1	2	END CAP		3 1/8	4			See LB4
BUP	2	BACKUP PLATE	1/4	12		1	9 1/4	See LB4
TB1	2	RAIL - 3 1/8" x 4 3/4"		3 1/8	4	11	8 1/8	See LB6
BB1	4	RAIL - 4" x 4 3/4"		4	4 3/4	24	10 1/2	See LB6

VTrans
RECEIVED
CK'D BY Grav CK'D BY
JAN 12 2005
RESUBMIT APPROVED
BY DATE

REV.	DESCRIPTION	BY	DATE

BRIDGE No. 21
PROJECT No. BRS 0147(5)S ITEM No: 525.23

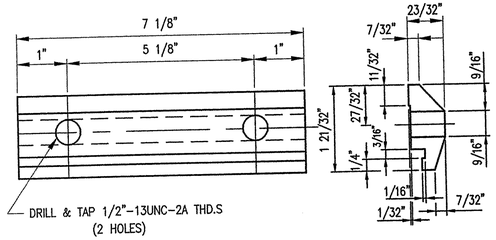
APPROVED: REC'D APPROVAL
DRAWING

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

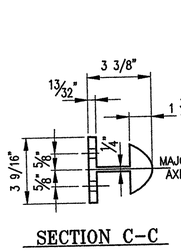
FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
3-LINE SEMI-ELLIP. ALUM. APPROACH RAIL FOR VT RTE 14
OVER WHITE RIVER ~ BILL OF MATERIAL

MADE CMS DATE 10/04/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB7 REV. No.

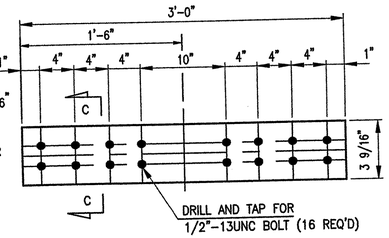
3R PATH DIRECTORY - E LB8 (R1)(2L)-MODEL PLT - E LB8 (R1)(2L)-MODEL PLT - 12/28/04 7:22:00 AM



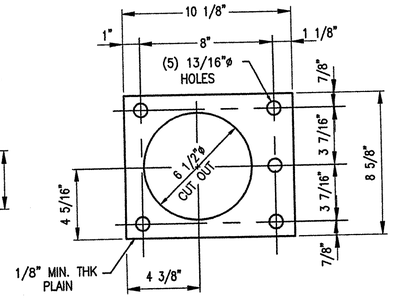
72 ~ REQ'D CLAMP BARS CB-03-A
#19447



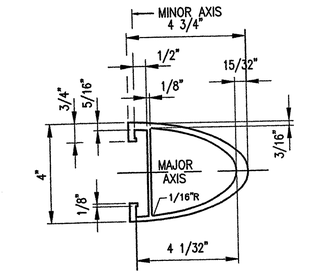
SECTION C-C



6 ~ REQ'D SPLICES SS-03
#19501



18 ~ REQ'D ANCHOR PLATE AP1
#14520



TYPICAL SECTION THRU RAIL

GENERAL NOTES

ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001 AND ITS LATEST REVISIONS.

DESCRIPTION	ASTM	ALLOY/GR.	REMARKS
RAILS, POSTS, BASES, SPLICES, CLAMP BARS, PINS, & BALUSTER FRAMES	B221	6061-T6 OR 6351-T5	MIN. YIELD STRENGTH Fy = 35,000 psi.
RIVETS	B316	6061-T6	BUTTON HD., CONE PT.
SET SCREWS FOR BALUSTERS	F880	TYPE 303	
STAINLESS STEEL BOLTS	A193	GRADE B8	
ANCHOR RODS	A449		GALV. A153
STNL. STEEL HEX NUTS	A194	GRADE 8	TENSILE STRENGTH OF 75,000 PSI
STEEL HEX. NUTS	A563	GRADE DH	GALV. A153
STEEL WASHERS	F436		GALV. A153
ANCHOR PLATES	A569		COMMERCIAL QUALITY (PLAIN)
ALUMINUM WASHERS	B209	2024-T4	ALCLAD
PREFORMED PADS			SECTION 731.01 OR 731.02
ELECTRODES FOR WELDING		AWS A5.10 ER5356	

POSTS TO BE NORMAL TO GRADE AND RAILS SHALL BE PARALLEL TO GRADE.
RAILS TO BE ATTACHED TO A MINIMUM OF THREE POSTS WHEN POSSIBLE.

ALL RAILS AND WELDS TO BE FREE FROM ALL BURRS AND ROUGH EDGES. ENDS OF TUBE SECTIONS SHALL BE SAWED OR MILLED. GRIND ALL CUT EDGES SMOOTH.

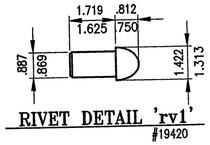
ALL THREADS TO BE UNC CLASS 2A/2B.

ALL EXTRUSION TOLERANCES NOT SHOWN SHALL BE IN ACCORDANCE WITH ASTM B221.

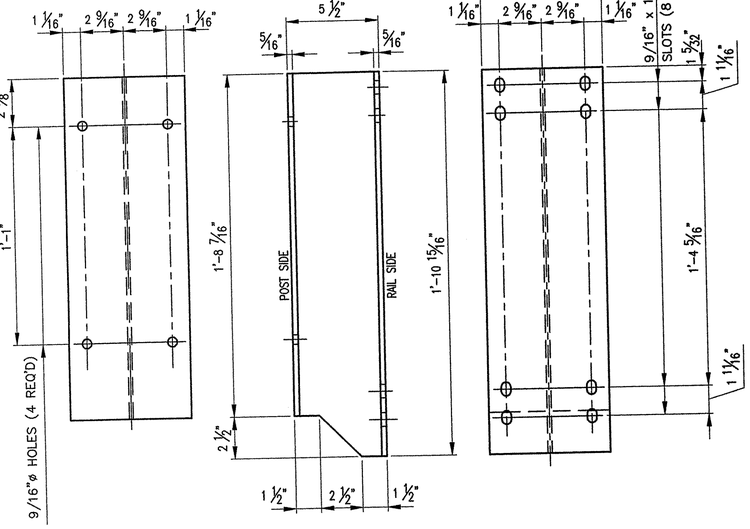
IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN THE ROOT DIAMETER OF THREADS

THE SPLICE BAR SHALL BE ATTACHED TO THE RAIL ELEMENT AS FOLLOWS:
THE RAIL SPLICE AT THE BRIDGE EXPANSION JOINT SHALL BE FASTENED ON BOTH SIDES OF THE RAIL SPLICE USING THE PARTIALLY THREADED BOLTS, WITH THE WASHER FACED BOLT, TIGHTENED SECURELY TO THE END OF THREADS, AND LEAVING A 1/8" GAP, THIS ALLOWS EXPANSION ON BOTH SIDES OF THE JOINT.

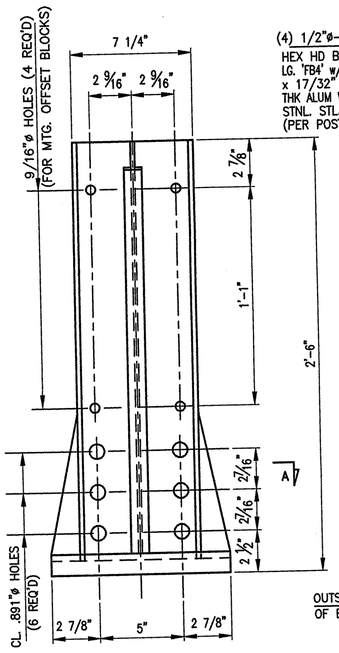
ALL NUTS SHALL COMPLY WITH AMERICAN HEXAGON ANSI SPECIFICATIONS B18.2

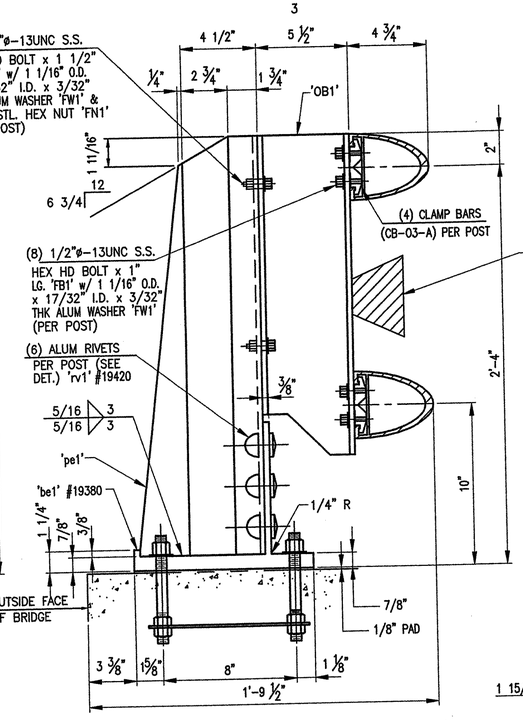


RIVET DETAIL 'rv1'
#19420

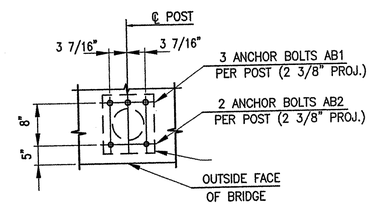


18 ~ REQ'D OFFSET BLOCK '0B1'

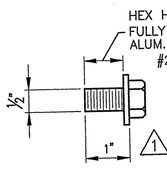


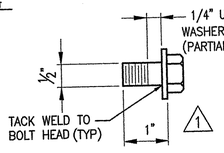


18 ~ REQ'D FABRICATED RAIL POSTS P1 (BRUSH CURB)

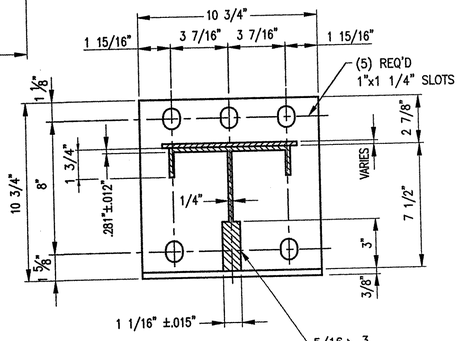


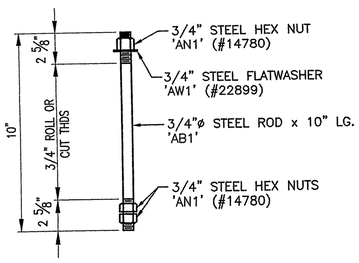
TYPICAL ANCHOR BOLT SETTING



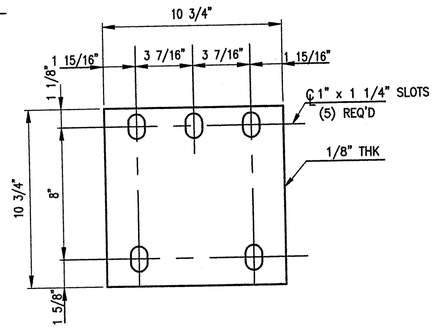


SPLICE BOLT DETAILS

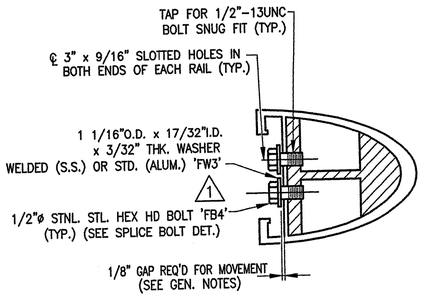




90 ~ REQ'D ANCHOR BOLTS AB1



18 ~ REQ'D ELASTOMERIC PADS 'EP1'
#19220



BRIDGE RAIL AND SPLICE BAR - ASSEMBLY DETAIL

VTrans
RECEIVED
CK'D BY Grew CK'D BY
JAN 12 2005
RESUBMIT APPROVED
BY DATE

BRIDGE No. 21
PROJECT No. BRS 0147(5)S ITEM No: 525.23

APPROVED: REC'D APPROVAL
DRAWING

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
3-LINE SEMI-ELLIP. ALUM. BRIDGE RAIL FOR VT RTE 14
OVER THE WHITE RIVER - GENERAL NOTES AND TYP DETAILS

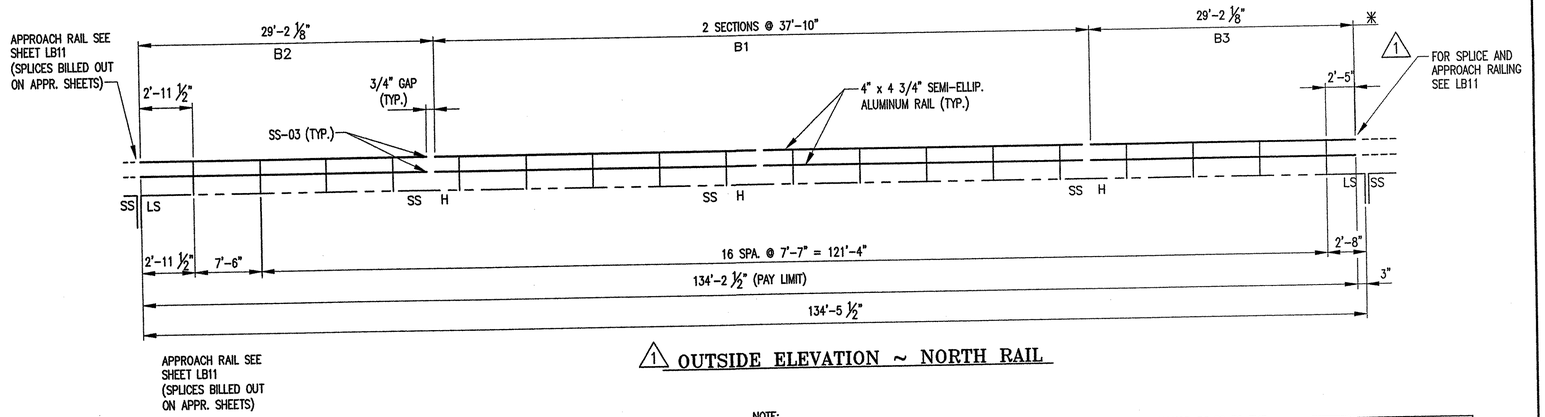
MADE CMS DATE 10/06/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB8 REV. No. ONE

REV.	DESCRIPTION	BY	DATE
1	REVISED PER APPROVER COMMENTS	CMS	12 21 04

OR PATH DIRECTORY - E LB9 (R1)-MODEL PLT - E LB9 (R1)-MODEL PLT - 12/28/04 7:26:04 AM

BILL OF MATERIAL

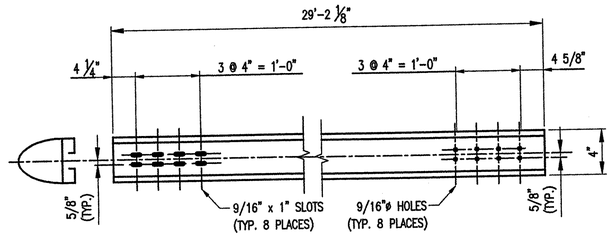
Mark	Total Quan.	Desc.	Th./Dia in.	Width in	Width in	Length Ft.	Length In.	Remarks
P1	18	**POST Consisting of:**						Curbside
pe1	18	EXTRUDED POST STEM				2	5 1/8	
be1	18	EXTRUDED POST BASE		10 3/4			10 3/4	
rv1	108	RIVET	7/8				2 3/8	Button Hd, Cone pt., Cold Driven
OB	18	**OFFSET BLOCK H-SECTION**		7 1/4	5 1/2	1	10 15/16	@ Barrier Rail
FB4	72	**BOLT, HEX HD.**	1/2				1 1/2	
FW1	72	**WASHER**	3/32	1 1/16	17/32			
FN1	72	**HEX NUT**	1/2					
CB-03-A	72	**CLAMP BAR**					7 1/8	@ Barrier Rail
FB1	144	**BOLT, HEX HD.**	1/2				1	
FW1	144	**WASHER**	3/32	1 1/16	17/32			
AB1	90	**ANCHOR ROD**	3/4				10	Roll or Cut Threads
AN1	270	**NUT, HEX**	3/4					
AW1	90	**WASHER**	1/8	2	13/16			
AP1	18	ANCHOR PLATE	1/8	8 5/8			10 1/8	See Notes - LB9
EP1	18	**PAD, ELASTOMERIC**	1/8	10 3/4			10 3/4	
SS-03	6	**SPLICE SLEEVE EXTRUSION**				3	0	
FB2	96	**BOLT, HEX WASHER FACED, PRTL. THRD**	1/2				1	Partial Thd., Washer-faced bolt or tack weld washer to bolt.
B1	4	**RAIL - 4" x 4 3/4"**		4	4 3/4	37	10	See LB8 for Slot Pattern
B2	2	**RAIL - 4" x 4 3/4"**		4	4 3/4	29	2 1/8	See LB8 for Slot Pattern
B3	2	**RAIL - 4" x 4 3/4"**		4	4 3/4	29	2 1/8	See LB8 for Slot Pattern



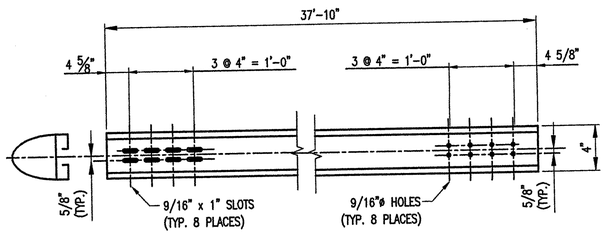
1 OUTSIDE ELEVATION ~ NORTH RAIL

NOTE:
- THIS CONTRACT IS BASED UPON THE CONTRACTOR SETTING AND SPACING THE ANCHOR BOLTS TO THE MEASUREMENTS SHOWN ON THE APPROVED SHOP DRAWINGS. THE L.B. FOSTER CO. WILL NOT BE RESPONSIBLE FOR WORK NECESSITATED BY ANY OTHER SETTING AND SPACING.
- THIS DRAWING IS NOT TO SCALE.
- FOR GENERAL NOTES AND TYPICAL DETAILS SEE DRAWING LB1.
- LENGTH OF RAILING ON THIS SHEET IS 134.21 LF PAY LENGTH.
- POST SPACING IS MEASURED HORIZONTALLY.
- SPLICE GAP AT SLEEVE = 3/4" TYP. U.N.
- ✱ RAIL LENGTHS DO NOT INCLUDE GAPS.
- COMPENSATION FOR VERTICAL CURVE IS NOT NECESSARY.

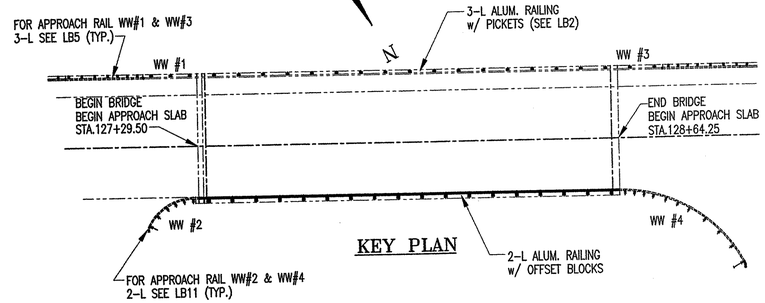
H = HOLE SIDE
SS = SHORT SLOTTED SIDE
LS = LONG SLOTTED SIDE



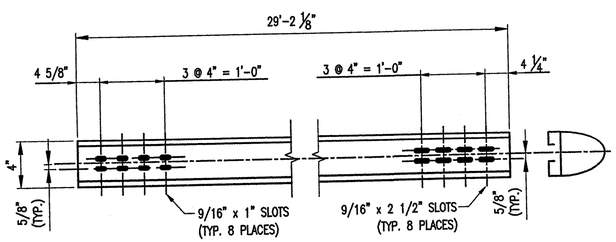
2 REQ'D. ~ RAIL 'B3'
(BACK ELEVATION VIEW)



4 REQ'D. ~ RAIL 'B1'
(BACK ELEVATION VIEW)



KEY PLAN



2 REQ'D. ~ RAIL 'B2'
(BACK ELEVATION VIEW)

VTrans
RECEIVED
OK'D BY Grew OK'D BY
JAN 12 2005
RESUBMIT APPROVED
BY DATE

REV.	DESCRIPTION	BY	DATE
1	REVISED PER APPROVER COMMENTS	CMS	12 28 04

BRIDGE No. 21
PROJ. No: BRS 0147(5)S ITEM No: 525.21

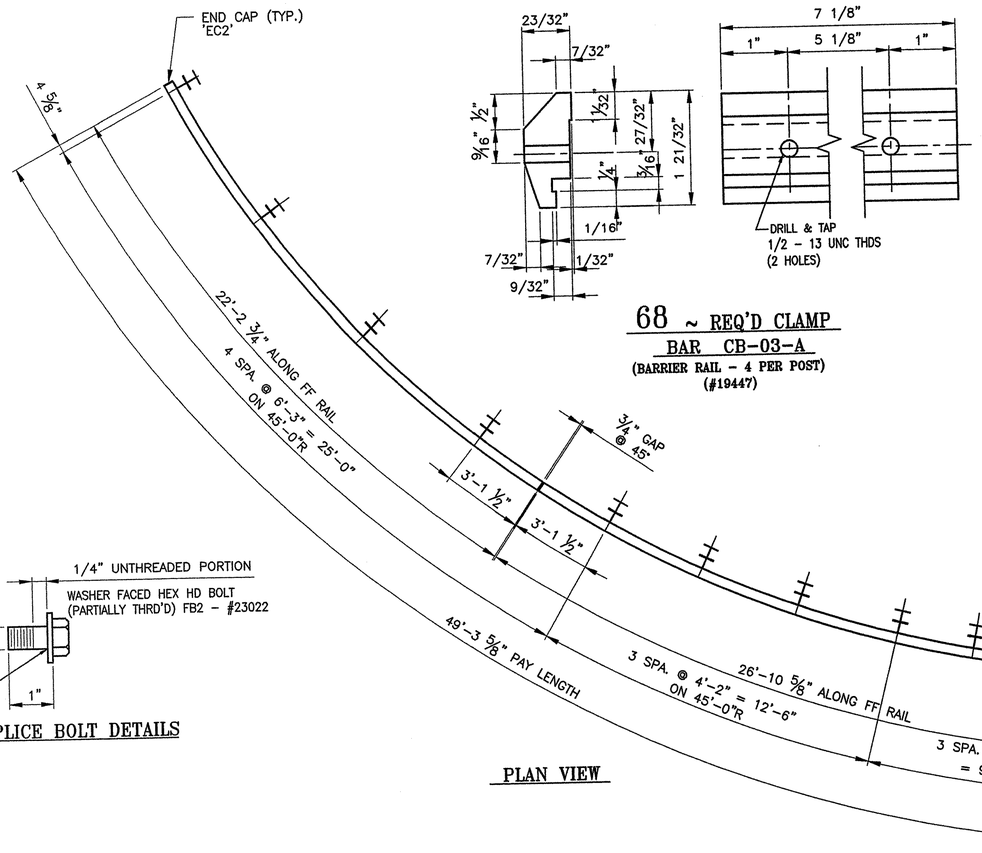
APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
STATE OF VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
2-L SEMI-ELLIP ALUM BRIDGE RAILING FOR VT RTE 14 OVER WHITE RIVER - ELEV., KEY PLAN & BILL OF MATERIAL

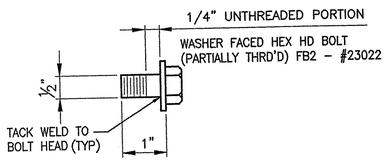
MADE CMS DATE 10/04/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB9 REV. No. ONE

DR PATH DIRECTORY - E LB10 (R1)\2L APPROACH\-MODEL - E LB10 (R1)\2L APPROACH\-MODEL PLT - 12/28/04 7:28:51 AM



PLAN VIEW

68 ~ REQ'D CLAMP BAR CB-03-A
(BARRIER RAIL - 4 PER POST)
(#19447)



SPLICE BOLT DETAILS

GENERAL NOTES

ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001.

DESCRIPTION	ASTM	ALLOY/GR.	REMARKS
RAILS, POSTS, SPLICES, PINS, CLAMP BARS & OFFSET BLOCKS	B221	6061-T6 OR 6351-T5	MIN. YIELD STRENGTH Fy = 35,000 psi.
HEX HEAD BOLTS	A193	GR. B8	
ALUMINUM WASHERS	B209	2024-T4	ALCLAD
STN. STL. NUTS	A194	GR 8	TENSILE STRENGTH 75,000 PSI
END CAPS	B26	356-F	DRIVE TYPE
BACKUP PLATE	M270	GR 36	GALV. PER A153
ELECTRODES FOR WELDING	AWS A5.10	ER5356	

POSTS TO BE NORMAL TO GRADE AND RAILS SHALL BE PARALLEL TO GRADE. RAILS TO BE ATTACHED TO A MINIMUM OF THREE POSTS WHEN POSSIBLE.

ALL RAILS AND WELDS TO BE FREE FROM ALL BURRS AND ROUGH EDGES. ENDS OF TUBE SECTIONS SHALL BE SAWED OR MILLED. GRIND ALL CUT EDGES SMOOTH.

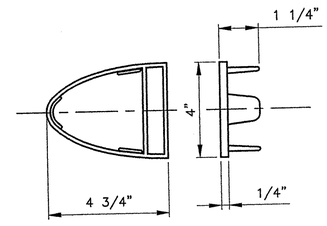
ALL THREADS TO BE UNC CLASS 2A/2B.

ALL EXTRUSION TOLERANCES NOT SHOWN SHALL BE IN ACCORDANCE WITH ASTM B221.

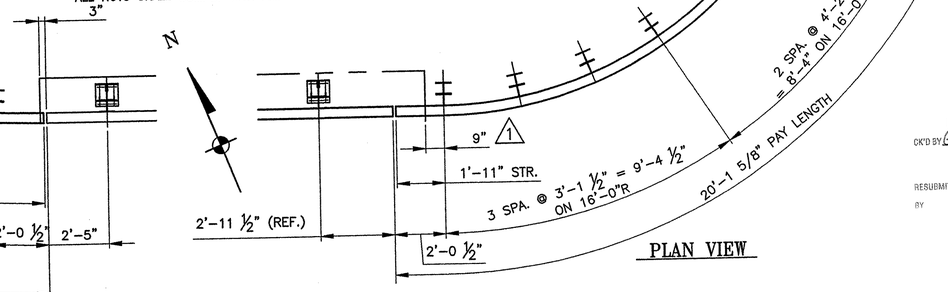
IF CUT THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN NOMINAL DIAMETER. IF ROLLED THREADS ARE USED, BOLT DIAMETER SHALL NOT BE LESS THAN THE ROOT DIAMETER OF THREADS

THE SPLICE BAR SHALL BE ATTACHED TO THE RAIL ELEMENT AS FOLLOWS:
THE RAIL SPLICE AT THE BRIDGE EXPANSION JOINT SHALL BE FASTENED ON BOTH SIDES OF THE RAIL SPLICE USING THE PARTIALLY THREADED BOLTS, WITH THE WASHER FACED BOLT, TIGHTENED SECURELY TO THE END OF THREADS, AND LEAVING A 1/8" GAP, THIS ALLOWS EXPANSION ON BOTH SIDES OF THE JOINT.

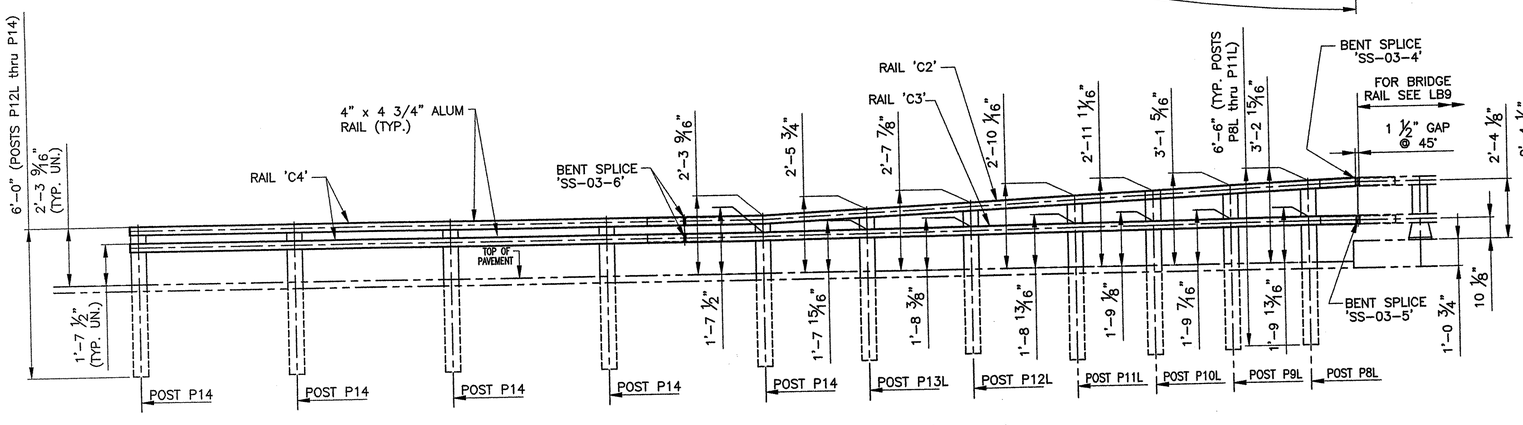
ALL NUTS SHALL COMPLY WITH AMERICAN HEXAGON ANSI SPECIFICATIONS B18.2



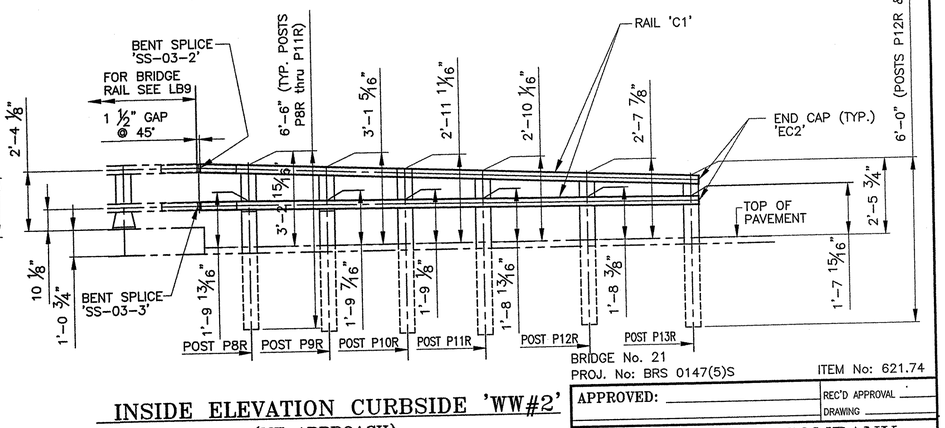
4 ~ REQ'D. ALUM END CAPS EC2
#19345



PLAN VIEW



INSIDE ELEVATION CURBSIDE 'WW#4'
(NE APPROACH)



INSIDE ELEVATION CURBSIDE 'WW#2'
(NE APPROACH)

NOTE:
- RAIL LENGTHS DO NOT INCLUDE END CAPS AND/OR GAPS.
- LENGTH OF APPROACH RAILING ON THIS SHEET IS 70'-0" LF PAY LENGTH.
- SEE LB15 FOR BILL OF MATERIAL.

REV.	DESCRIPTION	BY	DATE
1	REVISED PER APPROVER COMMENTS	CMS	12 28 04

VTrans RECEIVED
CK'D BY Grew OK'D BY
JAN 12 2005
RESUBMIT APPROVED
BY DATE

APPROVED: REC'D APPROVAL DRAWING

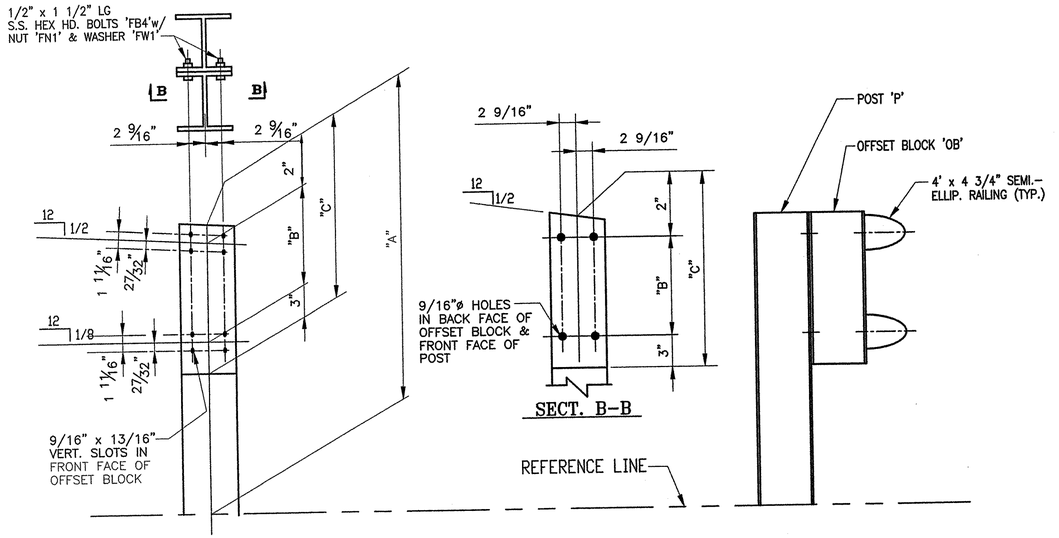
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE APPROACH RAILING FOR VT RTE 14 OVER WHITE RIVER
GENERAL NOTES, ELEVATIONS AND TYPICAL DETAILS

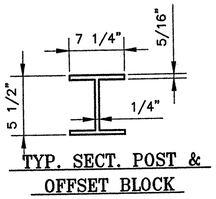
MADE CMS DATE 10/08/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB10 REV. No. ONE

BRIDGE No. 21
PROJ. No: BRS 0147(5)S ITEM No: 621.74

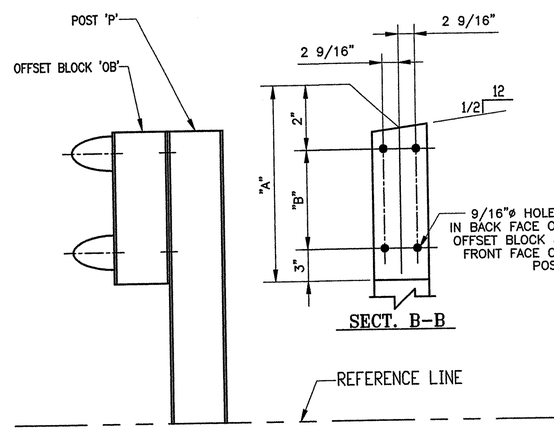
'OR PATH DIRECTORY - E LB11 (POST DETAILS)-MODEL PL - E LB11 (POST DETAILS)-MODEL PLT - 12/28/04 7:29:34 AM



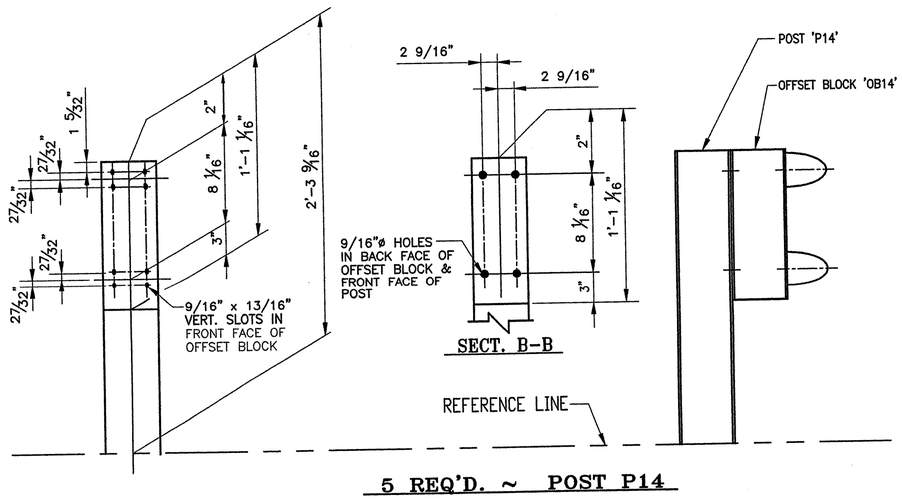
CURB SIDE (NW)					
RAIL HEIGHT DIMENSIONS			OFFSET BLOCK DIMENSIONS		
POST No.	QTY.	A	OFFSET BLOCK No.	B	C
P8^{R}	1	3'-2 15/16"	OB8^{R}	1'-5 1/8"	1'-10 1/8"
P9^{R}	1	3'-1 5/16"	OB9^{R}	1'-3 7/8"	1'-8 7/8"
P10^{R}	1	2'-11 11/16"	OB10^{R}	1'-2 9/16"	1'-7 9/16"
P11^{R}	1	2'-10 1/16"	OB11^{R}	1'-1 1/4"	1'-6 1/4"
P12^{R}	1	2'-7 7/8"	OB12^{R}	11 9/16"	1'-4 9/16"
P13^{R}	1	2'-5 3/4"	OB13^{R}	9 13/16"	1'-2 13/16"



TYP. SECT. POST &
OFFSET BLOCK



CURB SIDE (NW)					
RAIL HEIGHT DIMENSIONS			OFFSET BLOCK DIMENSIONS		
POST No.	QTY.	A	OFFSET BLOCK No.	B	C
P8^{L}	1	3'-2 15/16"	OB8^{L}	1'-5 1/8"	1'-10 1/8"
P9^{L}	1	3'-1 5/16"	OB9^{L}	1'-3 7/8"	1'-8 7/8"
P10^{L}	1	2'-11 11/16"	OB10^{L}	1'-2 9/16"	1'-7 9/16"
P11^{L}	1	2'-10 1/16"	OB11^{L}	1'-1 1/4"	1'-6 1/4"
P12^{L}	1	2'-7 7/8"	OB12^{L}	11 9/16"	1'-4 9/16"
P13^{L}	1	2'-5 3/4"	OB13^{L}	9 13/16"	1'-2 13/16"



5 REQ'D. ~ POST P14

VTrans
RECEIVED
OK'D BY Gmw OK'D BY
JAN 12 2005
RESUBMIT APPROVED
BY DATE

BRIDGE No. 21
PROJ. No: BRS 0147(5)S ITEM No: 621.74

APPROVED: REC'D APPROVAL
DRAWING

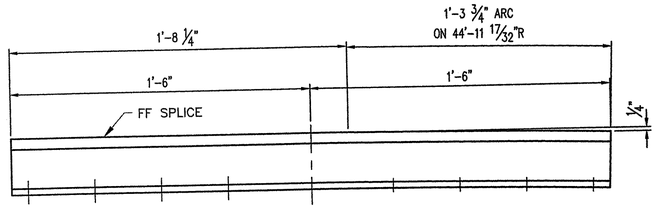
L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE APPROACH RAILING FOR VT RTE 14 OVER WHITE RIVER
POST DETAILS & OFFSET BLOCK DETAILS

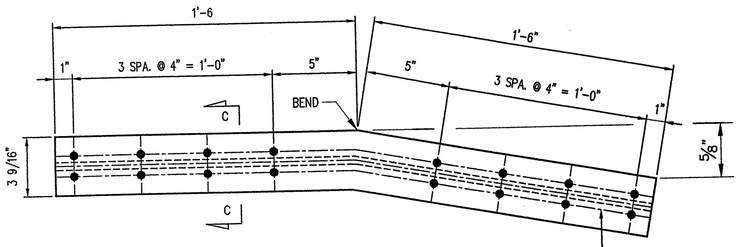
MADE CMS DATE 10/08/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB11 REV. No.

REV.	DESCRIPTION	BY	DATE

OR PATH DIRECTORY - E LB12 (SPLICE DETAILS)-MODEL - E LB12 (SPLICE DETAILS)-MODEL.PLT - 12/28/04 7:30:22 AM

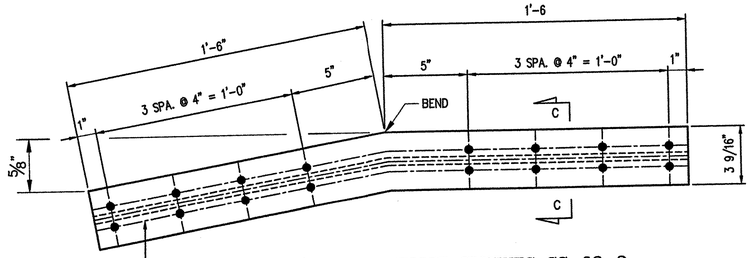


PLAN VIEW



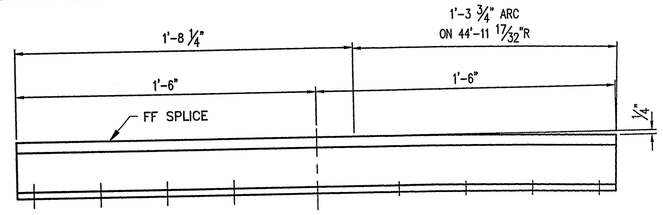
ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-4

DRILL AND TAP FOR
1/2"-13UNC BOLT (16 REQ'D)
'FB2' (#23022)

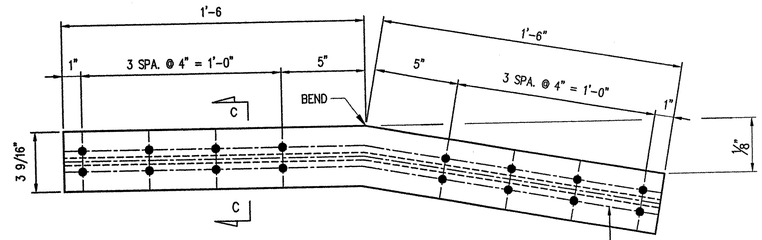


ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-2

DRILL AND TAP FOR
1/2"-13UNC BOLT (16 REQ'D)
'FB2' (#23022)

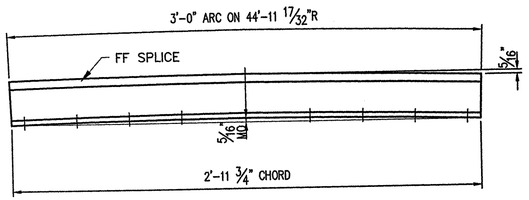


PLAN VIEW

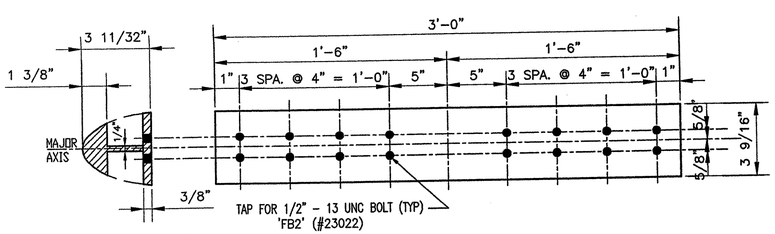


ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-5

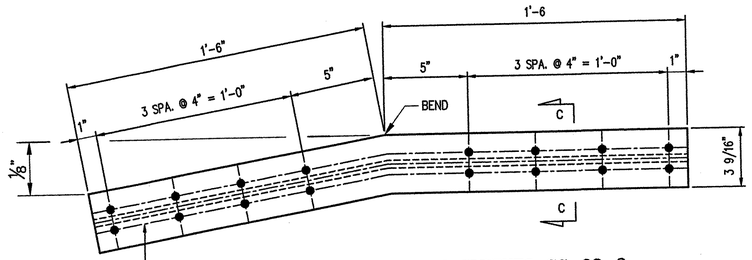
DRILL AND TAP FOR
1/2"-13UNC BOLT (16 REQ'D)
'FB2' (#23022)



PLAN VIEW

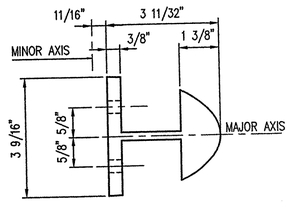


2 ~ REQ'D BENT SPLICE SLEEVES SS-03-6



ONE ~ REQ'D BENT SPLICE SLEEVES SS-03-3

DRILL AND TAP FOR
1/2"-13UNC BOLT (16 REQ'D)
'FB2' (#23022)



SECTION C-C

VTrans
RECEIVED
OK'D BY Grew OK'D BY
JAN 1 2 2005
RESUBMIT APPROVED
BY DATE

REV.	DESCRIPTION	BY	DATE

BRIDGE No. 21
PROJ. No: BRS 0147(5)S ITEM No: 621.74

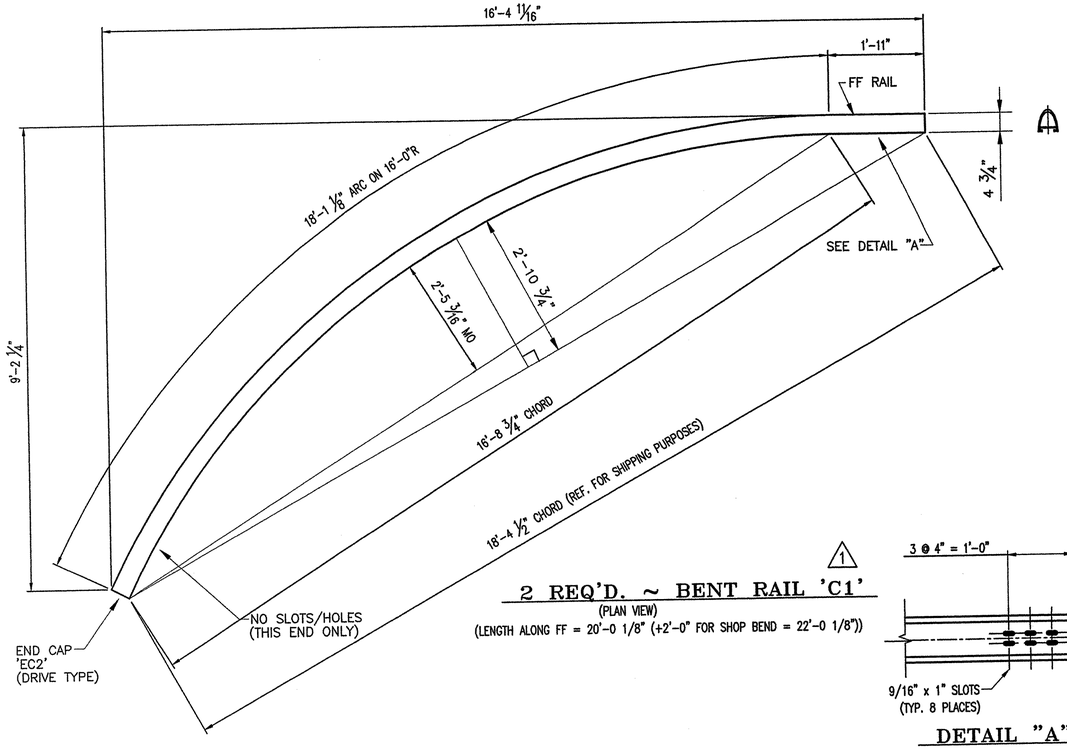
APPROVED: REC'D APPROVAL DRAWING

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE APPROACH RAILING FOR VT RTE 14 OVER WHITE RIVER
SPLICE DETAILS

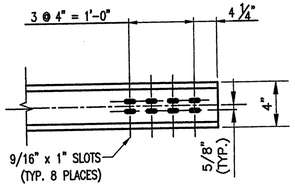
MADE CMS DATE 10/08/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB12 REV. No.

'DR PATH DIRECTORY - E:\LB13 (R1)\RAIL DETAILS\-MODE - E:\LB13 (R1)\RAIL DETAILS\-MODEL PLT - 12/28/04 8:24:24 AM



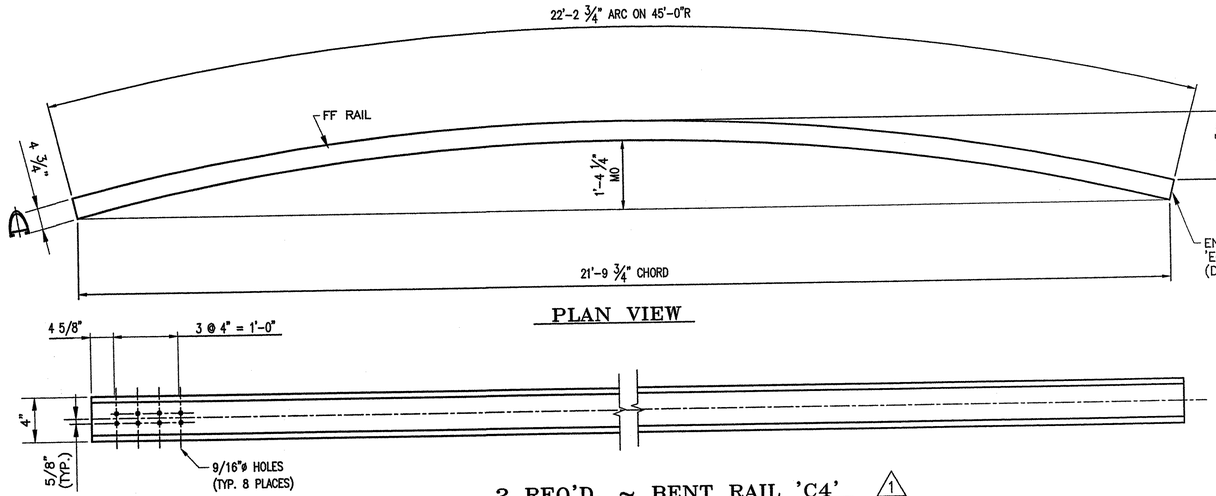
2 REQ'D. ~ BENT RAIL 'C1' 1

(PLAN VIEW)
(LENGTH ALONG FF = 20'-0 1/8" (+2'-0" FOR SHOP BEND = 22'-0 1/8"))



DETAIL "A"

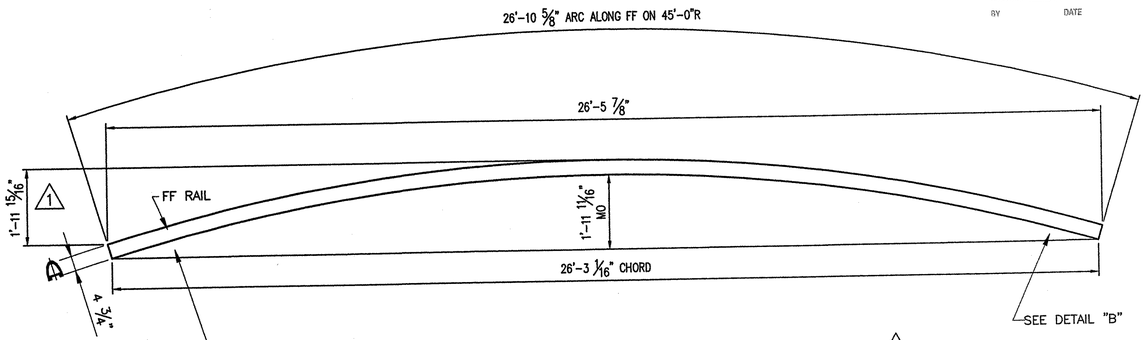
(BACK ELEVATION VIEW)



PLAN VIEW

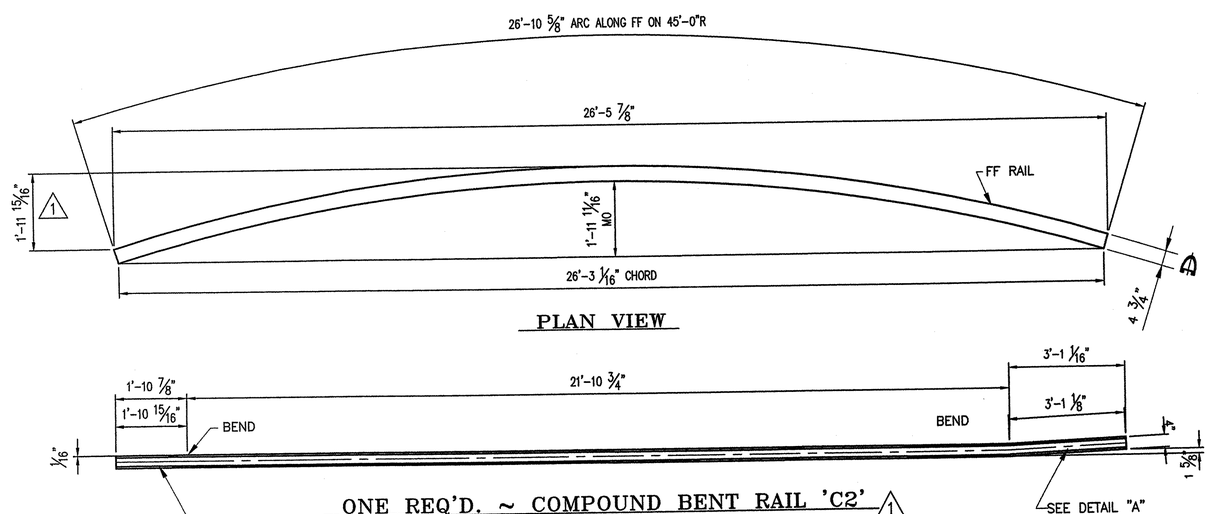
2 REQ'D. ~ BENT RAIL 'C4' 1

(BACK ELEVATION VIEW)
(LENGTH ALONG FF = 22'-2 3/4" (+4'-0" FOR SHOP BEND = 26'-2 3/4"))



ONE REQ'D. ~ BENT RAIL 'C3' 1

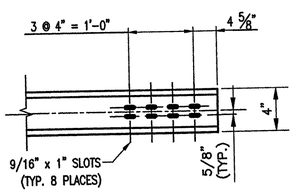
(PLAN VIEW)
(LENGTH ALONG FF = 26'-10 5/8" (+4'-0" FOR SHOP BEND = 30'-10 5/8"))



PLAN VIEW

ONE REQ'D. ~ COMPOUND BENT RAIL 'C2' 1

(BACK ELEVATION VIEW)
(LENGTH ALONG FF = 26'-10 5/8" (+4'-0" FOR SHOP BEND = 30'-10 5/8"))



DETAIL "B"

(BACK ELEVATION VIEW)

V'Trans
RECEIVED
CK'D BY Grew CK'D BY _____
JAN 1 2 2005
RESUBMIT _____ APPROVED _____
BY DATE

REV.	DESCRIPTION	BY	DATE
1	REVISED PER APPROVER COMMENTS	CMS	12 28 04

BRIDGE No. 21
PROJ. No: BRS 0147(5)S ITEM No: 621.74

APPROVED: _____ REC'D APPROVAL _____ DRAWING _____

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
BRIDGE APPROACH RAILING FOR VT RTE 14 OVER WHITE RIVER
RAIL DETAILS

MADE CMS DATE 10/08/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB13 REV. No. ONE

TOR PATH DIRECTORY - E LB14 (R1) BOM-MODEL PLT - E LB14 (R1) BOM-MODEL PLT - 12/28/04 8:01:29 AM

BILL OF MATERIAL

Mark	Total Quan.	Desc.	Th./Dia in.	Width in	Width in	Length Ft.	Length In.	Remarks
P8R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P8L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P9R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P9L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P10R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P10L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P11R	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P11L	1	POST - H BEAM		5 1/2	7 1/4	6	6	See LB11
P12R	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB11
P12L	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB11
P13R	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB11
P13L	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB11
P14	1	POST - H BEAM		5 1/2	7 1/4	6	0	See LB11
OB8R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	10 1/8	
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB8L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	10 1/8	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB9R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	8 7/8	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB9L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	8 7/8	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB10R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	7 9/16	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB10L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	7 9/16	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB10L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	7 9/16	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB11R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	6 1/4	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB11L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	6 1/4	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB12R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	4 9/16	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB12L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	4 9/16	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB13R	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	2 13/16	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB13L	1	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	2 13/16	See LB11
FB4	4	BOLT, HEX HD.	1/2				1 1/2	
FW1	4	WASHER	3/32	1 1/16	17/32			
FN1	4	HEX NUT	1/2					
OB14	5	OFFSET BLOCK - H BEAM		5 1/2	7 1/4	1	1 1/16	See LB11
FB4	20	BOLT, HEX HD.	1/2				1 1/2	
FW1	20	WASHER	3/32	1 1/16	17/32			
FN1	20	HEX NUT	1/2					
CB-03-A	68	CLAMP BAR					7 1/8	@ Barrier Railing
FB1	136	BOLT, HEX HD.	1/2				1	
FW1	136	WASHER	3/32	1 1/16	17/32			
SS-03-2	1	SPLICE SLEEVE				3	0	See LB12
SS03	1	SPLICE EXTR.				3	0	
FB2	16	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
SS-03-3	1	BENT SPLICE SLEEVE				3	0	Bent - See LB12
SS03	1	SPLICE EXTR.				3	0	
FB2	16	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
SS-03-4	1	BENT SPLICE SLEEVE				3	0	Bent - See LB12
SS03	1	SPLICE EXTR.				3	0	
FB2	16	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
SS-03-5	1	BENT SPLICE SLEEVE				3	0	Bent - See LB12
SS03	1	SPLICE EXTR.				3	0	
FB2	16	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt
SS-03-6	2	BENT SPLICE SLEEVE				3	0	Bent - See LB12
SS03	2	SPLICE EXTR.				3	0	
FB2	32	BOLT, HEX WASHER FACED, PRTL THRD.	1/2				1	Partial Thd.- Washer-faced bolt or tack weld washer to bolt

Mark	Total Quan.	Desc.	Th./Dia in.	Width in	Width in	Length Ft.	Length In.	Remarks
EC2	4	END CAP		4	4 3/4			See LB10
C1	2	BENT RAIL				20	0 1/8	Finished lgth Along FF =
c1	2	RAIL - 4" x 4 3/4"		4	4 3/4	22	0 1/8	See LB13(+2'-0" for Shop Bending)
C2	1	COMPOUND BENT RAIL				26	10 5/8	Finished lgth Along FF =
c2	1	RAIL - 4" x 4 3/4"		4	4 3/4	30	10 5/8	See LB13 (+4'-0" for Shop Bending)
C3	1	BENT RAIL				26	10 5/8	Finished lgth Along FF =
c3	1	RAIL - 4" x 4 3/4"		4	4 3/4	30	10 5/8	See LB13 (+4'-0" for Shop Bending)
C4	2	BENT RAIL				22	2 3/4	Finished lgth Along FF =
c4	2	RAIL - 4" x 4 3/4"		4	4 3/4	26	2 3/4	See LB13 (+4'-0" for Shop Bending)

VTrans
RECEIVED
CK'D BY Graw CK'D BY
JAN 1 2 2005
RESUBMIT APPROVED
BY DATE

REV.	DESCRIPTION	BY	DATE
1	REVISED PER APPROVER COMMENTS	CMS	12 28 04

BRIDGE No. 21
PROJ. No: BRS 0147(5)S ITEM No: 621.74

APPROVED: REC'D APPROVAL DRAWING

L.B. FOSTER COMPANY
1016 GREENTREE ROAD
PITTSBURGH, PENNSYLVANIA 15220

FOR: BECK & BELLUCCI, INCORPORATED
STATE OF VERMONT AGENCY OF TRANSPORTATION
TOWN OF ROYALTON, COUNTY OF WINDSOR
2-L SEMI-ELLIP ALUM BRIDGE APPROACH RAILING FOR VT
RTE 14 OVER WHITE RIVER - BILL OF MATERIAL

MADE CMS DATE 10/08/04 JOB No. AR0170 CUST. No.
CHECK AW DATE 10/21/04 DRAWING LB14 (LAST) REV. No. ONE