STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

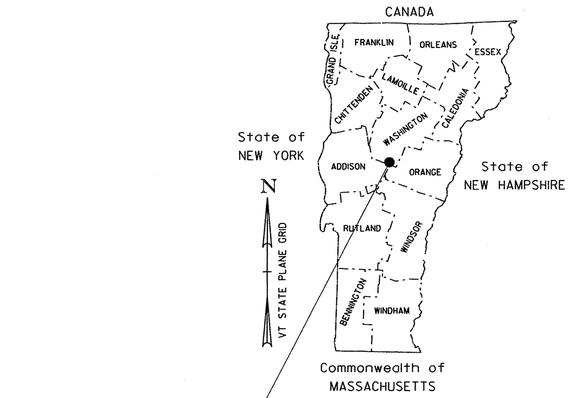
TOWN OF ROXBURY
COUNTY OF WASHINGTON

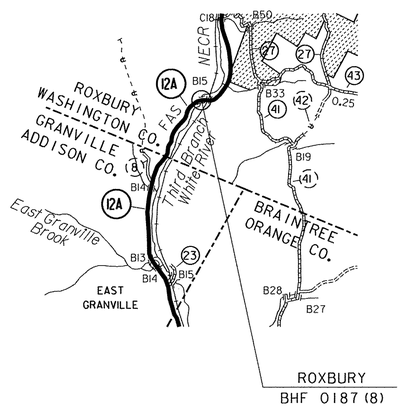
PROJECT LOCATION: ROUTE VT 12A BR 15 : .65 MILES NORTHEAST OF GRANVILLE/ROXBURY TOWN LINE
ROUTE VT 12A BR 22 : 3.27 MILES NORTHEAST OF GRANVILLE/ROXBURY TOWN LINE

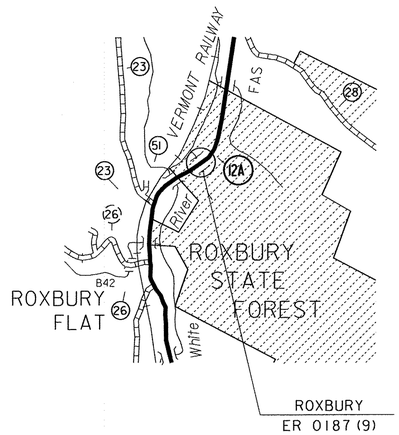
PROJECT DESCRIPTION: ROUTE VT 12A BR 15 : REPLACEMENT OF EXISTING BRIDGE SUPERSTRUCTURE, ROADWAY WORK, AND RETAINING WALL REPLACEMENT.
ROUTE VT 12A BR 22 : REPLACEMENT OF CULVERT WITH RELATED ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE : ROUTE VT 12A BR 15 : 56.66' ROUTE VT 12A BR 22 : 33.30'

TOTAL LENGTH OF STRUCTURES : 90'







QUALITY ASSURANCE PROGRAM: LEVEL 2

CONVENTIONAL SYMBOLS

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

SURVEYED BY : N/A
SURVEYED DATE : N/A

DATUM
VERTICAL
HORIZONTAL
SEE SHEET 6 AND 41

RECORD PLANS

CONTRACTOR:	LUCK BROTHERS, INC.- PLATTSBURGH, NY
RESIDENT ENGINEER:	TOM MANCINI
CONSTRUCTION BEGAN:	OCTOBER 17, 2011
CONSTRUCTION COMPLETE:	AUGUST 6, 2012
RECORD PLANS BY:	TOM MANCINI & JENNA HYDE

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

BY _____ RESIDENT ENGINEER

DATE 4/1/13

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

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

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

PLOTTED 19-SEP-2011

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE 9/9/11

PROJECT MANAGER : C.P. WILLIAMS

PROJECT NAME : ROXBURY
PROJECT NUMBER : BHF 0187(8) / ER 0187(9)

SHEET 1 OF 54 SHEETS

COMPOSITE SHEETS

1. COMPOSITE TITLE SHEET
2. COMPOSITE INDEX SHEET
3.-4. COMPOSITE QUANTITY SHEETS

BRIDGE 22 QUANTITY SHEET

5. BRIDGE 22 QUANTITY SHEET

BHF 0187(8) - BRIDGE 15

6. BRIDGE 15 TITLE SHEET
7. BRIDGE 15 PRELIMINARY INFORMATION SHEET
8. BRIDGE 15 GENERAL NOTES
9.-11. BRIDGE 15 QUANTITY SHEETS
12. BRIDGE 15 TIE SHEET
13. BRIDGE 15 PROJECT TYPICAL SECTIONS
14. BRIDGE 15 LAYOUT SHEET
15. BRIDGE 15 VT 12A PROFILE
16. BRIDGE 15 PLAN AND ELEVATION
17. BRIDGE 15 RAIL LAYOUT SHEET
18. BRIDGE 15 FRAMING DETAILS
19. BRIDGE 15 DECK STRUCTURAL DETAILS
20. BRIDGE 15 CURTAIN WALL DETAILS
21. BRIDGE 15 BEARING DETAILS
22. BRIDGE 15 APPROACH SLAB DETAILS
23. BRIDGE 15 ABUTMENT #1 PLAN & ELEVATION
24. BRIDGE 15 ABUTMENT #2 PLAN & ELEVATION
25. BRIDGE 15 WINGWALL #3 SECTIONS
26. BRIDGE 15 BASE SLAB LAYOUT & DETAILS
27. BRIDGE 15 REINFORCING STEEL SCHEDULE
28. BRIDGE 15 TRAFFIC SIGNS AND PAVEMENT MARKINGS
29. BRIDGE 15 TRAFFIC SIGN SUMMARY SHEET
30. BRIDGE 15 LOCAL TRAFFIC CONTROL LAYOUT
31. BRIDGE 15 BANKING DIAGRAM AND MATERIAL TRANSITION
32.-37. BRIDGE 15 VT 12A CROSS SECTIONS
38.-40. BRIDGE 15 CHANNEL LINE CROSS SECTIONS

ER 0187(9) - BRIDGE 22

41. BRIDGE 22 TITLE SHEET
42. BRIDGE 22 PROJECT NOTES
43. BRIDGE 22 TIE SHEET
44. BRIDGE 22 TYPICAL SECTIONS
45. BRIDGE 22 LAYOUT PLAN
46. BRIDGE 22 PLAN AND PROFILE
47. BRIDGE 22 PROFILE
48. BRIDGE 22 PRECAST CONCRETE STRUCTURE PLAN
49. BRIDGE 22 WINGWALL ELEVATIONS
50. BRIDGE 22 MISCELLANEOUS DETAILS
51.-52. BRIDGE 22 VT 12A CROSS SECTIONS
53.-54. BRIDGE 22 REFERENCE PLANS

STRUCTURES DETAILS LIST

SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	6/4/2010
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	5/7/2010
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	6/4/2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	5/2/2011

STANDARDS LIST

E-100	CONSTRUCTION APPROACH SIGNS	01-02-2004
E-100A	SIDE ROAD CONSTRUCTION - APPROACH SIGNS	01-02-2004
E-101	CONSTRUCTION SIGN DETAILS	05-30-2003
E-102	CONSTRUCTION SIGN DETAILS	06-30-2003
E-102A	CONSTRUCTION SIGN DETAILS	05-01-2004
E-106	TRAFFIC CONTROL-MISCELLANEOUS DETAILS	03-01-2004
E-107	DELINEATION, BARRICADES AND DETOURS OR CONSTRUCTION AREAS	06-30-2003
E-107A	BREAKAWAY BARRICADE DETAILS	06-08-2009
E-121	STANDARD SIGN PLACEMENT- CONVENTIONAL ROAD	08-08-1995
E-164	SQUARE STEEL SIGN POST	06-08-2009
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	01-03-2000
G-1B	BOX BEAM GUARD RAIL	06-01-1994
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	01-03-2000
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	08-09-2010
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	08-09-2010
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	08-09-2010
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	08-09-2010

PROJECT NAME: ROXBURY COMPOSITE
PROJECT NUMBER: BHF 0187(8) / ER 0187(9)

FILE NAME: 10c420//CompositeIndex.dgn
PROJECT LEADER: R.S.YOUNG
DESIGNED BY: R.S.YOUNG
COMPOSITE INDEX SHEET

PLOT DATE: 21-SEP-2011
DRAWN BY: D.D.BEARD
CHECKED BY: ------

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY BR15	BRIDGE BR15	FULL C.E. ITEMS	ROADWAY BR22	BRIDGE BR22	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1			1		2		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	
780			370		1150		CY	COMMON EXCAVATION	203.15	
50					50		CY	SOLID ROCK EXCAVATION	203.16	
				281	281		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
40					40		CY	TRENCH EXCAVATION OF EARTH	204.20	
1				1	2		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	
530	40			1246	1816		CY	STRUCTURE EXCAVATION	204.25	
160	40			535	735		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
			100		100		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	
470			596		1066		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
90					90		CY	AGGREGATE SURFACE COURSE	401.10	
2.8	0.7				3.5		CWT	EMULSIFIED ASPHALT	404.65	
1			1		2		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	
119	14				133		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	
1100					1100		SF	PERMANENT STEEL SHEET PILING (MIN. SECTION MODULUS = 40 IN^3)	505.35	
1380	1580				2960		LB	REINFORCING STEEL	507.15	
140	80				220		LF	DRILLING AND GROUTING DOWELS	507.16	
5470	5560				11030		LB	EPOXY COATED REINFORCING STEEL	507.17	
10	3				13		GAL	WATER REPELLENT, SILANE	514.10	
	31				31		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	
	140				140		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20	
	31				31		LF	JOINT SEALER, HOT POURED	524.11	
	1				1		EACH	REMOVAL OF STRUCTURE (1030 SF - EST.)	529.15	
				1	1		EACH	REMOVAL OF STRUCTURE (13' X 8' X 94' CGMPPA)	529.15	
	12				12		EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11	
				1	1		LS	PRECAST CONCRETE STRUCTURE (24' X 8' X 85' FRAME OR ARCH TYPE)	540.10	
1					1		LS	PRECAST CONCRETE STRUCTURE (WINGWALL NO. 3)	540.10	
								BEGIN OPTION AA		
54					54		LF	24" CAAP .060 (2-2/3 X 1/2)	601.0225	
54					54		LF	24" PCCSP .064 (2-2/3 X 1/2)	601.0425	
54					54		LF	24" RCP CLASS III	601.0825	
54					54		LF	24" CPEP(SL)	601.2620	
								END OPTION AA		
1					1		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	
1					1		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	
				52	52		CY	STONE FILL, TYPE II	613.11	
				87	87		CY	STONE FILL, TYPE IV	613.13	
54			250		304		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20	
96					96		LF	BOX BEAM GUARDRAIL	621.30	
			1		1		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		PAVEMENT SUMMARY
		BRIDGE 15
307	TON	PERMANENT PAVEMENT
44	TON	TEMPORARY PAVEMENT
351	TON	TOTAL
		BRIDGE 22
29	TON	TEMPORARY PAVEMENT
29	TON	TOTAL

PROJECT NAME: ROXBURY COMPOSITE
PROJECT NUMBER: BHF 0187(8)/ER0187(9)

FILE NAME: s10c420excel.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: R.S.YOUNG
QUANTITY SHEET #1

PLOT DATE: 09/21/2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.R.CHARBONNE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY BR15	BRIDGE BR15	FULL C.E. ITEMS	ROADWAY BR22	BRIDGE BR22	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						291			39		330		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
						100					100		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
									320		320		HR	FLAGGERS	630.15				
								1			1		LS	FIELD OFFICE, ENGINEERS	631.10				
								1			1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
								1			1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
								3000			3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
						1					1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
						800			310		1110		LF	4 INCH WHITE LINE	646.20				
						800			310		1110		LF	4 INCH YELLOW LINE	646.21				
										570	570		SY	GEOTEXTILE UNDER STONE FILL	649.31				
										91	91		SY	GRUBBING MATERIAL	651.40				
						20					20		CY	VEHICLE TRACKING PAD	653.35				
						18					18		SF	TRAFFIC SIGNS, TYPE A	675.20				
						70					70		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
						7					7		EACH	REMOVING SIGNS	675.50				
						1					1		EACH	ERECTING SALVAGED SIGNS	675.60				
						1			1		2		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
						52	42				94		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)	900.608				
										553	553		CY	SPECIAL PROVISION (STONE FILL, CHANNEL FLOW LINE)	900.608				
						4					4		EACH	SPECIAL PROVISION (GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM)	900.620				
							270				270		LF	SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM)	900.640				
										1	1		LS	SPECIAL PROVISION (PEDESTAL WALL)(ABUTMENT NO.1)	900.645				
										1	1		LS	SPECIAL PROVISION (PEDESTAL WALL)(ABUTMENT NO.2)	900.645				
										1	1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)	900.645				
									1		1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE)(ER 0187(9))	900.645				
						1					1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)(BHF 0187(8))	900.645				
						1					1		LU	SPECIAL PROVISION (INCENTIVE)(N.A.B.I.)(BRIDGE 15)	900.650				
									1		1		LU	SPECIAL PROVISION (INCENTIVE)(N.A.B.I.)(BRIDGE 22)	900.650				
						1			1		2		LU	SPECIAL PROVISION (MAINTENANCE OF RAILROAD TRAFFIC)(N.A.B.I.)	900.650				
						1			1		2		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
						1			1		2		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
							135				135		SY	SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)	900.675				
						351	41		29		421		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: ROXBURY COMPOSITE
PROJECT NUMBER: BHF 0187(8)/ER0187(9)

FILE NAME: s10c42bexcel.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: R.S.YOUNG
QUANTITY SHEET #2

PLOT DATE: 09/21/2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.R.CHARBONNE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

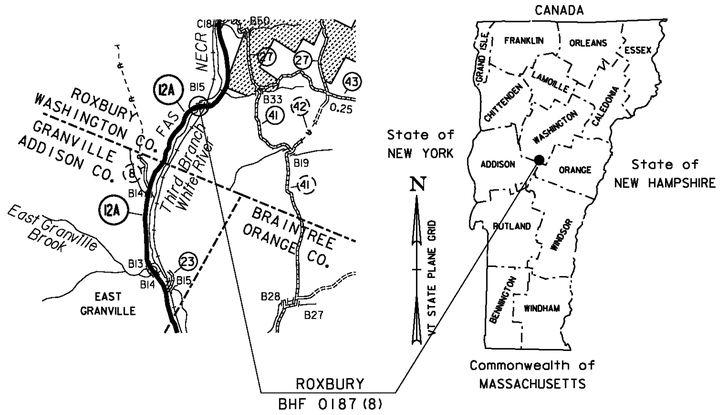
SUMMARY OF ESTIMATED QUANTITIES		TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	BRIDGE	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
1		1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
370		370		CY	COMMON EXCAVATION	203.15				
	281	281		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
	1	1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
	1246	1246		CY	STRUCTURE EXCAVATION	204.25				
	535	535		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
100		100		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10				
596		596		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
1		1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
	1	1		EACH	REMOVAL OF STRUCTURE (13' x 8' x 94' CGMPPA)	529.15				
	1	1		LS	PRECAST CONCRETE STRUCTURE (24' x 8' x 85' FRAME OR ARCH TYPE)	540.10				
	52	52		CY	STONE FILL, TYPE II	613.11				
	87	87		CY	STONE FILL, TYPE IV	613.13				
250		250		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20				
1		1		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
39		39		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
320		320		HR	FLAGGERS	630.15				
310		310		LF	4 INCH WHITE LINE	646.20				
310		310		LF	4 INCH YELLOW LINE	646.21				
	570	570		SY	GEOTEXTILE UNDER STONE FILL	649.31				
	91	91		SY	GRUBBING MATERIAL	651.40				
1		1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
	553	553		CY	SPECIAL PROVISION (STONE FILL, CHANNEL FLOW LINE)	900.608				
	1	1		LS	SPECIAL PROVISION (PEDESTAL WALL)(ABUTMENT NO. 1)	900.645				
	1	1		LS	SPECIAL PROVISION (PEDESTAL WALL)(ABUTMENT NO. 2)	900.645				
	1	1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)	900.645				
1		1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)(ER 0187(9))	900.645				
1		1		LU	SPECIAL PROVISION (INCENTIVE)(N.A.B.I.)(BRIDGE 22)	900.650				
1		1		LU	SPECIAL PROVISION (MAINTENANCE OF RAILROAD TRAFFIC)(N.A.B.I.)	900.650				
1		1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
1		1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
29		29		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

FILE NAME: s10c420excel.dgn
PROJECT LEADER: R.S.YOUNG
DESIGNED BY: M.CHENETTE
QUANTITY SHEET #1

PLOT DATE: 09/21/2011
DRAWN BY: D.D.BEARD
CHECKED BY:
SHEET 5 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

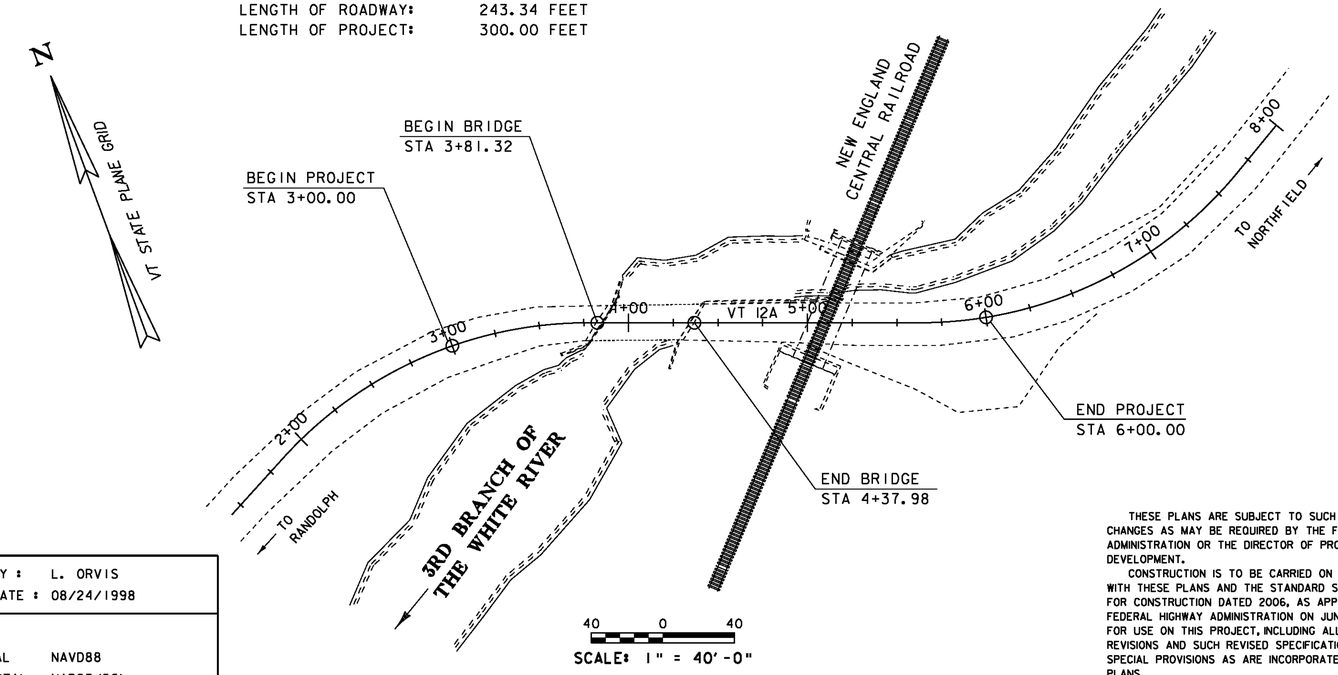
TOWN OF ROXBURY
COUNTY OF WASHINGTON

ROUTE NO : VT 12A, MAJOR COLLECTOR BRIDGE NO : 15

PROJECT LOCATION: BEGINNING AT A POINT ON VT 12A APPROXIMATELY 0.65 MILE NORTHERLY FROM THE GRANVILLE/ROXBURY TOWN LINE AND EXTENDING EASTERLY ALONG VT 12A FOR 300 FEET.

PROJECT DESCRIPTION: REPLACEMENT OF EXISTING BRIDGE SUPERSTRUCTURE ALONG WITH RELATED ROADWAY WORK, AND REPLACEMENT OF EXISTING RETAINING WALL.

LENGTH OF STRUCTURE: 56.66 FEET
LENGTH OF ROADWAY: 243.34 FEET
LENGTH OF PROJECT: 300.00 FEET



QUALITY ASSURANCE PROGRAM: LEVEL 2

CONVENTIONAL SYMBOLS

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

SURVEYED BY : L. ORVIS
SURVEYED DATE : 08/24/1998

DATUM
VERTICAL NAVD88
HORIZONTAL NAD83 (96)

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

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

PLOTTED 21-SEP-2011

PROJECT MANAGER : C.P. WILLIAMS

PROJECT NAME : ROXBURY
PROJECT NUMBER : BHF 0187(8)

SHEET 6 OF 54 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 09.02.03

LRFD

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS AND LIST OF STANDARDS.

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2012	470	55	57	4.5	35
2032	500	55	57	7.2	55

20 year ESAL for flexible pavement from 2012 to 2032 : 109000

40 year ESAL for flexible pavement from 2012 to 2052 : 258000

Design Speed : 50 mph

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: June 2011

DRAINAGE AREA : 13.1 sq. mi.
CHARACTER OF TERRAIN : Hilly, mostly forested, rural
STREAM CHARACTERISTICS : Perennial, meandering, locally braided
NATURE OF STREAMBED : Sand to small cobbles with some exposed ledge

PEAK FLOW DATA

Q 2.33 =	700 cfs	Q 50 =	2400 cfs
Q 10 =	1400 cfs	Q 100 =	2900 cfs
Q 25 =	1900 cfs	Q 500 =	4080 cfs

DATE OF FLOOD OF RECORD: Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 7.9 fps
ICE CONDITIONS : Mild
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
IF YES, DESCRIBE: Upstream RR bridge abutment and roadway constrict the channel approximately 100 feet above this bridge

WATERSHED STORAGE: <1%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span concrete T-beam bridge
YEAR BUILT: 1928
CLEAR SPAN(NORMAL TO STREAM): 37'
VERTICAL CLEARANCE ABOVE STREAMBED: 7.9'
WATERWAY OF FULL OPENING: 257 sq. ft.
DISPOSITION OF STRUCTURE: Replace superstructure
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Abut #1 on ledge, abut #2 unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	872.4'	VELOCITY =	6.2 fps
Q10 =	873.4'	"	10.5 fps
Q25 =	876.0'	"	11.8 fps
Q50 =	877.0'	"	13.1 fps
Q100 =	878.3'	"	11.2 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
FREQUENCY: Below the Q50
RELIEF ELEVATION: 877.0'
DISCHARGE OVER ROAD @Q100: 1440 cfs

UPSTREAM STRUCTURE

TOWN: Roxbury
DISTANCE: 100'
HIGHWAY # : NECR Bridge
STRUCTURE #: 39
CLEAR SPAN: 65'
CLEAR HEIGHT: 26'
YEAR BUILT: unknown
FULL WATERWAY: 316.6 sq. ft
STRUCTURE TYPE: Single span side girder birdge

DOWNSTREAM STRUCTURE

TOWN: Granville
DISTANCE: 10,990'
HIGHWAY # : NECR Bridge
STRUCTURE #: 38
CLEAR SPAN: 70'
CLEAR HEIGHT: 11.2'
YEAR BUILT: unknown
FULL WATERWAY: 764 sq. ft.
STRUCTURE TYPE: Single span side girder bridge

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR	4A STR	5A SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	N/A	1.24					
POSTING							
OPERATING	N/A	1.82	2.8	1.59	2.07	1.88	
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: Replace bridge deck and beams - no abutment or in stream work

CLEAR SPAN(NORMAL TO STREAM): 37'
VERTICAL CLEARANCE ABOVE STREAMBED: 7.9'
WATERWAY OF FULL OPENING: 257 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	872.4'	VELOCITY=	6.2 fps
Q10 =	873.4'	"	10.5 fps
Q25 =	876.0'	"	11.8 fps
Q50 =	877.0'	"	13.1 fps
Q100 =	878.3'	"	11.2 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
FREQUENCY: Below the Q50
RELIEF ELEVATION: 877.0'
DISCHARGE OVER ROAD @Q100: 1440 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 874.4'
VERTICAL CLEARANCE: @ Q10 = 1.0'; Water into the beams at Q25

SCOUR: Scour not calculated as project is only replacing superstructure

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

		DEPTH OR ELEVATION:
AVERAGE DAILY FLOW:	35 cfs	
ORDINARY LOW WATER:	<35 cfs	0.5'
ORDINARY HIGH WATER:	320 cfs	2.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: None required. Road closed.
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

1. BRIDGE CLOSED TO TRAFFIC

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_P:	0.0 INCH
3. DESIGN SPAN	L:	51.90 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	---
5. PRESTRESSING STRAND	f_y:	---
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	---
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y:	50 KSI
14. SOIL UNIT WEIGHT	γ:	0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	---
20. PILE YIELD STRENGTH ASTM A572	f_y:	---
21. PILE SIZE		---
22. EST. PILE LENGTH	L_p:	
23. PILE RESISTANCE FACTOR	ϕ:	---
24. LATERAL PILE DEFLECTION	Δ:	---
25. BASIC WIND SPEED	V_{3s}:	---
26. MINIMUM GROUND SNOW LOAD	p_g:	---
27. SEISMIC DATA PGA: ---	S_s:	---
	S_1:	---

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420pi.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: T. FILLBACH
PRELIMINARY INFORMATION SHEET

PLOT DATE: 9/21/2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AND ITS LATEST REVISIONS, THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2010, AND ITS LATEST REVISIONS, AND THE VTRANS STRUCTURES DESIGN MANUAL.

2. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.

3. ITEM 529.15 "REMOVAL OF STRUCTURE (1030 SF-EST)" SHALL BE USED FOR REMOVAL OF THE EXISTING BRIDGE SUPERSTRUCTURE AND PORTIONS OF THE ABUTMENTS AND WINGWALLS, INCLUDING THE EXISTING RETAINING WALL AS DETAILED IN THE PLANS.

4. 1 ½" OF TEMPORARY PAVEMENT SHALL BE PLACED ON TOP OF SUBBASE AND THE BRIDGE DECK PRIOR TO WINTER SHUT DOWN. THE PAVEMENT NEED NOT MEET THE MIX DESIGN SUBMITTAL AND PLANT INSPECTION REQUIREMENTS SET FORTH IN SECTION 406 OR 490. THE TEMPORARY PAVEMENT ON THE BRIDGE DECK SHALL BE REMOVED IN THE SPRING TO ALLOW FOR MEMBRANE AND FINAL PAVEMENT.

5. PERMANENT STEEL SHEET PILING SHALL BE INSTALLED IN FRONT OF THE SUBFOOTING AT THE LOCATION SHOWN ON THE PLANS. PILING SHALL BE DRIVEN TO BEDROCK BUT NEED NOT EXCEED TEN FEET IN LENGTH. THE SHEET PILING SHALL HAVE A MINIMUM SECTION MODULUS OF 40 IN^3. SHEAR STUDS SHALL BE INSTALLED AS SHOWN IN THE PLANS. STUDS SHALL BE CONSIDERED INCIDENTAL TO THE STEEL SHEETING ITEM.

6. DEWATERING SHALL BE INCLUDED IN ITEM 204.25, "STRUCTURE EXCAVATION".

CONCRETE

7. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE BRIDGE.

8. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
   SPACING: +/- 1 INCH
   CLEARANCE: +/- 1/4 INCH

9. PRECAST TOLERANCES:
   HEIGHT/WIDTH: +/- 1/4 INCH
   LENGTH: +/- 1/2 INCH

10. THE SURFACE OF THE BRIDGE SEATS UNDER THE BEARING DEVICES SHALL BE LEVEL. OTHER AREAS OF THE BRIDGE SEAT SHALL BE SLOPED 0.02%. THE ABUTMENT SEATS SHALL BE SLOPED FULL WIDTH TOWARD MIDSPAN AND THE ENTIRE BRIDGE SEAT SHALL BE GIVEN A MAGNESIUM FLOAT FINISH. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 501.34, "CONCRETE, HIGH PERFORMANCE CLASS B".

11. CONCRETE FOR THE SUBFOOTING SHALL BE CONCRETE, HIGH PERFORMANCE CLASS B.

PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE

12. REINFORCING STEEL SHALL BE EPOXY COATED PER SUBSECTION 713.07.

13. HOLES ON ONE END OF THE DIAPHRAGMS LOCATED BETWEEN UNITS MAY BE FIELD DRILLED.

14. EDGES OF THE PRECAST CONCRETE DECK SHALL BE FORMED STRAIGHT SO THAT A CONSISTENT GAP EXISTS BETWEEN ADJACENT UNITS.

SUBSTRUCTURE ON BEDROCK

15. FOOTINGS OR SUBFOOTINGS FOR SUBSTRUCTURES FOUNDED ON BEDROCK SHALL BE PLACED ON CLEAN COMPETENT ROCK. ALL LOOSE ROCK AND DEBRIS SHALL BE REMOVED.

16. ANY BEDROCK THAT NEEDS TO BE REMOVED SHALL BE PAID FOR WITH THE CORRESPONDING EXCAVATION ITEM INCLUDED IN THE CONTRACT. OVERBREAKAGE BEYOND THE AVERAGE MAXIMUM ALLOWANCE SPECIFIED IN SUBSECTION 204.09(B)(1) WILL BE AT THE CONTRACTOR'S EXPENSE.

17. DOWELS SHALL BE DRILLED AND GROUTED INTO BEDROCK WHEN SHOWN ON THE PLANS OR AS ORDERED BY THE ENGINEER. THE DOWELS SHALL HAVE A TWO FOOT MINIMUM EMBEDMENT IN THE BEDROCK AND SHALL EXTEND INTO THE FOOTING OR SUBFOOTING A MINIMUM OF EIGHTEEN INCHES, UNLESS NOTED OTHERWISE.

TRAFFIC CONTROL

18. AS PART OF THE 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE) ITEM, THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL. SEE SPECIAL PROVISIONS.

19. THE BRIDGE SHALL BE CLOSED TO TRAFFIC DURING CONSTRUCTION.

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)

FILE NAME: s10c420note.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: R. YOUNG
GENERAL NOTES	SHEET 8 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES			TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
1			1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
780			780		CY	COMMON EXCAVATION	203.15				
50			50		CY	SOLID ROCK EXCAVATION	203.16				
40			40		CY	TRENCH EXCAVATION OF EARTH	204.20				
1			1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
530	40		570		CY	STRUCTURE EXCAVATION	204.25				
160	40		200		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
470			470		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
90			90		CY	AGGREGATE SURFACE COURSE	401.10				
2.8	0.7		3.5		CWT	EMULSIFIED ASPHALT	404.65				
1			1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
119	14		133		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
1100			1100		SF	PERMANENT STEEL SHEET PILING (MIN. SECTION MODULUS = 40 IN^3)	505.35				
1380	1580		2960		LB	REINFORCING STEEL	507.15				
140	80		220		LF	DRILLING AND GROUTING DOWELS	507.16				
5470	5560		11030		LB	EPOXY COATED REINFORCING STEEL	507.17				
10	3		13		GAL	WATER REPELLENT, SILANE	514.10				
	31		31		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
	140		140		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20				
	31		31		LF	JOINT SEALER, HOT POURED	524.11				
	1		1		EACH	REMOVAL OF STRUCTURE (1030 SF - EST.)	529.15				
	12		12		EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11				
1			1		LS	PRECAST CONCRETE STRUCTURE (WINGWALL NO. 3)	540.10				
						BEGIN OPTION AA					
54			54		LF	24" CAAP .060 (2-2/3 X 1/2)	601.0225				
54			54		LF	24" PCCSP .064 (2-2/3 X 1/2)	601.0425				
54			54		LF	24" RCP CLASS III	601.0825				
54			54		LF	24" CPEP(SL)	601.2620				
						END OPTION AA					
1			1		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25				
1			1		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15				
54			54		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20				
96			96		LF	BOX BEAM GUARDRAIL	621.30				
291			291		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
100			100		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
		1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
		1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
		1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
		3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
1			1		LS	MOBILIZATION/DEMOBILIZATION	635.11				

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420excel.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: R.S.YOUNG
QUANTITY SHEET #1

PLOT DATE: 09/21/2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.R.CHARBONNE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES			TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
800			800		LF	4 INCH WHITE LINE	646.20				
800			800		LF	4 INCH YELLOW LINE	646.21				
20			20		CY	VEHICLE TRACKING PAD	653.35				
18			18		SF	TRAFFIC SIGNS, TYPE A	675.20				
70			70		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
7			7		EACH	REMOVING SIGNS	675.50				
1			1		EACH	ERECTING SALVAGED SIGNS	675.60				
1			1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
52	42		94		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)	900.608				
4			4		EACH	SPECIAL PROVISION (GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM)	900.620				
	270		270		LF	SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM)	900.640				
1			1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)(BHF 0187(8))	900.645				
1			1		LU	SPECIAL PROVISION (INCENTIVE)(N.A.B.I.)(BRIDGE NO. 15)	900.650				
1			1		LU	SPECIAL PROVISION (MAINTENANCE OF RAILROAD TRAFFIC)(N.A.B.I.)	900.650				
1			1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANITITY)(N.A.B.I.)	900.650				
1			1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
	135		135		SY	SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)	900.675				
351	41		392		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420excel.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: R.S.YOUNG
QUANTITY SHEET #2

PLOT DATE: 09/21/2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.R.CHARBONNE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE QUANTITY SHEET 1

SUMMARY OF BRIDGE QUANTITIES					TOTALS	DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
SUPER STRUCTURE	APPROACH SLAB NO.1	APPROACH SLAB NO.2	ABUTMENT NO.1	ABUTMENT NO.2	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
			20	20	40	CY	STRUCTURE EXCAVATION	204.25			
			20	20	40	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30			
0.3	0.2	0.2			0.7	CWT	EMULSIFIED ASPHALT	404.65			
			8	6	14	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34			
			870	710	1580	LB	REINFORCING STEEL	507.15			
			40	40	80	LF	DRILLING AND GROUTING DOWELS	507.16			
	2650	2910			5560	LB	EPOXY COATED REINFORCING STEEL	507.17			
1			1	1	3	GAL	WATER REPELLENT, SILANE	514.10			
31					31	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10			
140					140	SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20			
31					31	LF	JOINT SEALER, HOT POURED	524.11			
1					1	EACH	REMOVAL OF STRUCTURE (1030 SF - EST.)	529.15			
			6	6	12	EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11			
	21	21			42	CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)	900.608			
270					270	LF	SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM)	900.640			
135					135	SY	SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)	900.675			
23	9	9			41	TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680			

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420excel.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: R.S.YOUNG
BRIDGE QUANTITY SHEET #1

PLOT DATE: 09/21/2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.R.CHARBONNE

GPS CONTROL POINTS

HVCTRL #1

ROXRIM

NORTH = 559539.567
EAST = 1573126.562
ELEV. = 890.320

DESCRIBED BY VERMONT AGENCY OF TRANSPORTATION 1996 (DJM)
GENERAL LOCATION, ROXBURY, VT. ABOUT 9.5 MI (15.3 KM) SOUTHWEST OF 'NORTHFIELD, ABOUT 8.5 MI (13.7 KM) NORTH OF RANDOLPH, AND ABOUT 21 MI , (33.8 KM) EAST OF MIDDLEBURY. TO REACH FROM THE INTERSECTION OF VT ROUTES 12 AND 12A IN RANDOLPH VILLAGE GO NORTH ALONG VT ROUTE 12A FOR 10.4 MI (16.7 KM) TO THE MARK ON THE LEFT IN THE TOP OF THE NORTH END OF A MASSIVE LEDGE OUTCROP, JUST SOUTH OF AN OLD ROAD GRADE. IT IS 0.6 MI (1.0 KM) SOUTH ALONG VT ROUTE 12A FROM THE CENTRAL VERMONT RAILWAY BRIDGE OVER VT ROUTE 12A AND THE THIRD BRANCH OF THE WHITE RIVER. TO REACH FROM THE INTERSECTION OF VT ROUTES 12 AND 12A IN NORTHFIELD GO SOUTH ALONG VT ROUTE 12A FOR 10.8 MI (17.4 KM) TO THE MARK ON THE RIGHT. THE MARK IS 16.5 M (54.1 FT) WEST OF AND ABOUT 5 M, (16.4 FT) HIGHER THAN THE CENTERLINE OF VT ROUTE 12A. TH MARK IS 13.3 M (43.6-FT) NORTH OF POLE NO. 6/282, 10.7 M (35.1-FT) EAST OF THE EAST EDGE OF A QUARRY HOLE. 7.8 M (25.6 FT) EAST OF A 30-CM TRIPLE-TRUNK SPRUCE, AND 1.2 M (3.9 FT) EAST OF A FIBERGLASS WITNESS POST.

HVCTRL #2

ROXRIM AZ MK

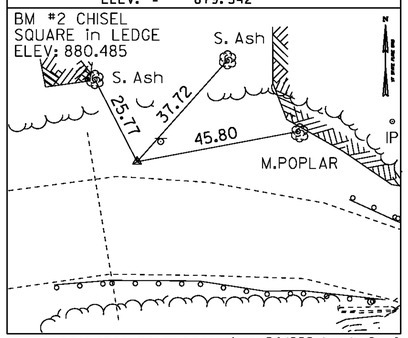
NORTH = 561370.541
EAST = 1574485.923
ELEV. = 875.294

DESCRIBED BY VERMONT AGENCY OF TRANSPORTATION 1996 (DJM)
GENERAL LOCATION, ROXBURY, VT. ABOUT 9 MI (14.5 KM) SOUTHWEST OF 'NORTHFIELD, ABOUT 9 MI (14.5 KM) NORTH OF RANDOLPH, AND ABOUT 21 MI, (33.8 KM) EAST OF MIDDLEBURY. TO REACH FROM THE INTERSECTION OF VT, ROUTES 12 AND 12A IN RANDOLPH VILLAGE GO NORTH ALONG VT ROUTE 12A FOR 10.8 MI (17.4 KM) TO THE MARK ON THE LEFT. IT IS 0.15 MI (0.24 KM) SOUTH ALONG VT ROUTE 12A FROM THE CENTRAL VERMONT RAILROAD BRIDGE OVER VT ROUTE 12A AND THE THIRD BRANCH OF THE WHITE RIVER. TO REACH FROM THE INTERSECTION OF VT ROUTES 12 AND 12A IN NORTHFIELD GO SOUTH ALONG VT ROUTE 12A FOR 10.3 MI (16.6 KM) TO THE MARK ON THE RIGHT. THE MARK IS 7.2 M (23.6 FT) NORTHWEST OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE CENTERLINE OF VT ROUTE 12. 15.6 M (51.2 FT) SOUTH OF POLE NO. 291, 24.7 M (81.0 FT) SOUTHWEST OF A YELLOW IRON PROPERTY PIPE WHICH PROJECTS ABOUT 0.8 M (2.6 FT) ABOVE GROUND SURFACE. THE MARK IS 57.0 M (187.0-FT) SOUTHWEST OF THE CENTERLINE OF GRAVEL DRIVE, AND 0.35-M (1.15-FT) SOUTHEAST OF A FIBERGLASS WITNESS POST. IT IS A CAST ALUMINUM DISK IN THE TOP OF A CAST ALUMINUM MONUMENT SET FLUSH WITH GROUND SURFACE.

TRAVERSE TIES

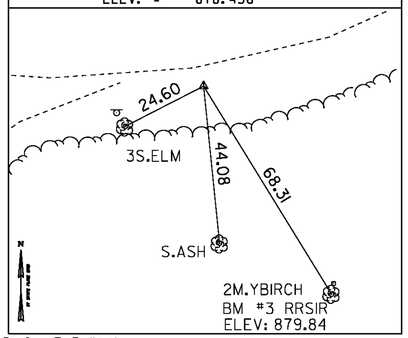
HVCTRL #3

NORTH = 561687.033
EAST = 1575121.154
ELEV. = 879.342



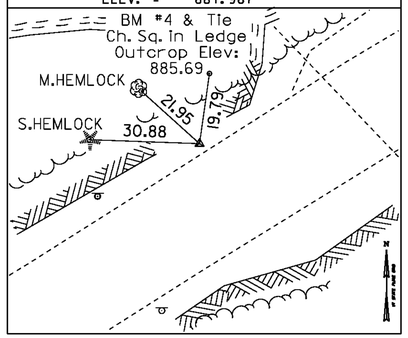
HVCTRL #4

NORTH = 561562.843
EAST = 1575491.445
ELEV. = 878.456



HVCTRL #5

NORTH = 561883.089
EAST = 1575968.541
ELEV. = 881.967



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

• MAIN TRAVERSE COMPLETED Aug. 24,1998 by L. Orvis P.C. & R. Bullock

ALIGNMENT COORD

	STATION	NORTHING	EASTING
POB	1+00.00	561605.9485	1574935.8958
PC	1+85.46	561645.4116	1575011.6966
Tangent Direction:	N 62°29'52.17" E		
Tangent Length:	85.46		
PI	2+87.44	561692.5071	1575102.1577
PT	3+77.45	561657.0833	1575197.7943
Radius:	230.00		
Delta:	47°49'36.42" Right		
Degree of Curvature(Arc):	24°54'40.35"		
Length:	191.99		
Tangent:	101.99		
Chord:	186.46		
Middle Ordinate:	19.74		
External:	21.60		
PT	3+77.45	561657.0833	1575197.7943
PC	5+62.68	561592.7464	1575371.4903
Tangent Direction:	S 69°40'31.41" E		
Tangent Length:	185.23		
PI	6+71.44	561554.9684	1575473.4828

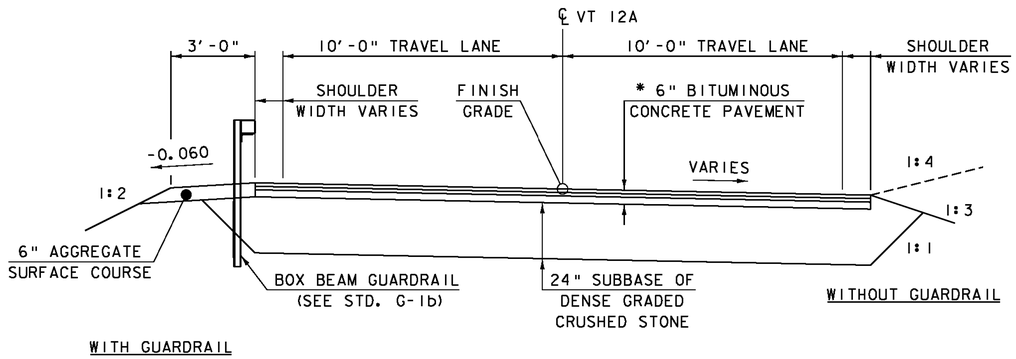
	STATION	NORTHING	EASTING
PT	7+65.87	561609.8318	1575567.3959
Radius:	230.00		
Delta:	50°°37'04.04" Left		
Degree of Curvature(Arc):	24°°54'40.35"		
Length:	203.19		
Tangent:	108.76		
Chord:	196.65		
Middle Ordinate:	22.08		
External:	24.42		
PT	7+65.87	561609.8318	1575567.3959
POE	8+00.00	561627.0486	1575596.8671
Tangent Direction:	N 59°42'24.55" E		
Tangent Length:	34.13		

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (96)
ADJUSTMENT Least Sq.

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

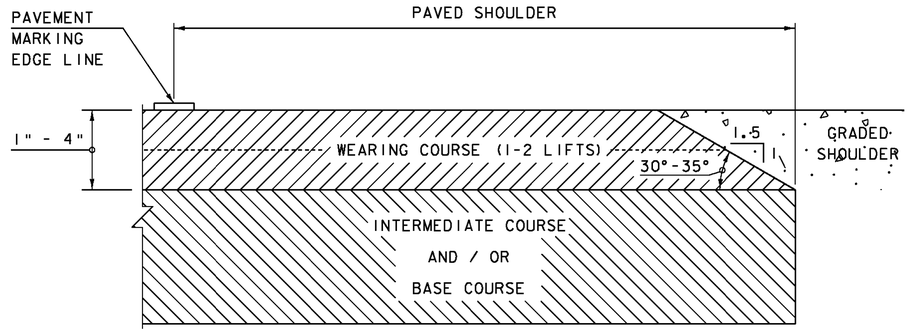
FILE NAME: survey\x10c420t1.dgn
PROJECT LEADER: WILLIAMS
DESIGNED BY:
TIE SHEET

PLOT DATE: 21-SEP-2011
DRAWN BY: R. BULLOCK
CHECKED BY:
SHEET 12 OF 54



ROADWAY TYPICAL SECTION

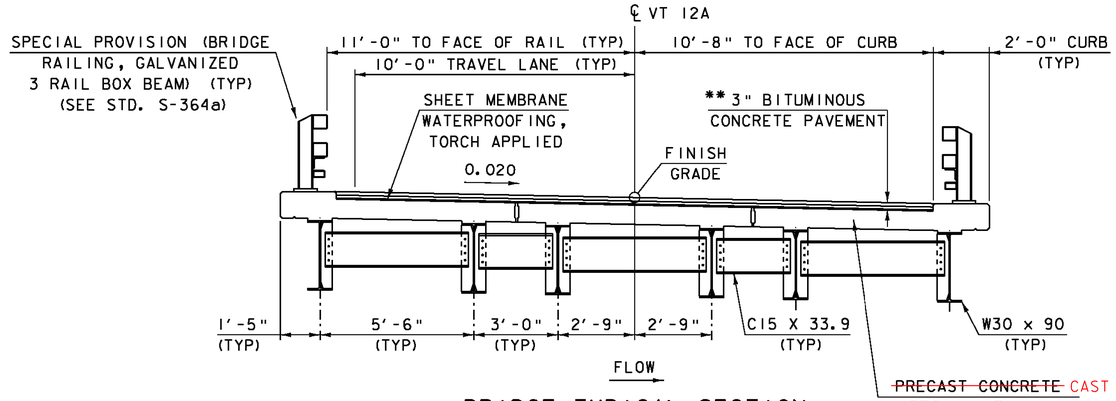
*2 LIFTS OF 1½" BITUM. CONC. PAVEMENT TYPE IIIS OVER 1 LIFT OF 3" BITUM. CONC. PAVEMENT TYPE IS OR IIS PAID UNDER SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY).



SAFETY EDGE DETAIL

NOT TO SCALE

NOTE: LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.



BRIDGE TYPICAL SECTION

**2 LIFTS OF 1½" BITUM. CONC. PAVEMENT TYPE IIIS PAID UNDER SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY).

***SEE PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE OF SECTION 900 OF THE SPECIAL PROVISIONS.

MATERIAL TOLERANCES

(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"
GRANULAR BORROW	+/- 1"

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420typ.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
PROJECT TYPICAL SECTIONS

PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 13 OF 54

N

VT STATE PLANE GRID

STEEL BEAM GUARDRAIL, GALVANIZED
VT 12A STA 4+96.0 - 5+41.4 RT

BOX BEAM GUARDRAIL
VT 12A STA 2+69.5 - 3+37.9 RT
VT 12A STA 3+53.3 - 3+57.3 LT
VT 12A STA 4+63.3 - 4+85.6 RT
VT 12A STA 6+33.8 - 6+38.3 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
VT 12A STA 2+74.2 - 3+73.4 RT
VT 12A STA 3+55.7 - 3+88.4 LT
VT 12A STA 4+30.1 - 4+68.9 RT
VT 12A STA 5+19.9 - 6+46.2 LT

SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM)
VT 12A STA 3+71.5 - 4+31.3 RT
VT 12A STA 3+88.0 - 6+00.4 LT

SPECIAL PROVISION (GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM)
VT 12A STA 3+37.9 - 3+71.5 RT
VT 12A STA 3+57.3 - 3+88.0 LT
VT 12A STA 4+31.3 - 4+63.3 RT
VT 12A STA 6+00.4 - 6+33.8 LT

PERMANENT STEEL SHEET PILING
VT 12A STA 4+90.0 - 6+00.0 LT

PRECAST CONCRETE STRUCTURE (WINGWALL NO.3)
VT 12A STA 4+64.91 - 5+99.30 LT

CONSTRUCT GRAVEL PULLOFF
VT 12A STA 5+07.9 - 6+41.7 RT

CONSTRUCT 5' PAVED APRON
VT 12A STA 4+99.2 - 6+50.0 RT

VT 12A STA 4+50.00 =
CHANNEL LINE STA 51+00.00
Δ = 57° LT

BM NO.2
CHISELED SQUARE
IN LEDGE
EL. 880.485

BEGIN BRIDGE
STA 3+81.32

TYPE II STONE FILL
STA 3+82 LT - STA 3+88 LT

END BRIDGE
STA 4+37.98

CHANNEL LINE POE
STA 51+75.00

END APPROACH
BEGIN PROJECT
STA 3+00.00

PI NO.1
STA 2+87.44 BK =
STA 2+75.46 AHD

BEGIN APPROACH
MATCH EXISTING
STA 2+50.00

PC
STA 1+85.46

PT
STA 3+77.45

CONSTRUCTION
LIMITS

CHANNEL LINE POB
STA 50+00.00

POB
STA 1+00.00

24" CPEP
STA 2=86.1LT-RT

TYPE II STONE FILL
STA 3+30 RT -
STA 3+65 RT

N 62°29'52" E

N 53°19'29" E

S 69°40'31" E

N 59°42'25" E

REMOVED
~~STEEL~~
~~CRIBBING~~

TYPE II STONE FILL
STA 5+66 LT -
STA 6+06 LT

EXISTING PIPE
REMOVED

PC
STA 5+62.68

GRAVEL
PULLOFF

END PROJECT
BEGIN APPROACH
STA 6+00.00

END APPROACH
MATCH EXISTING
STA ~~6+50.00~~
7+00.00

24" CPEP
STA 6+86 RT-LT

PI NO.2
STA 6+71.44 BK =
STA 6+57.11 AHD

POE
STA 8+00.00

PT
STA 7+65.87

BM NO.3
RR SPIKE IN ROOT
M. YELLOW BIRCH
EL. 879.84

NEW ENGLAND CENTRAL RAILROAD

EXISTING ROW

WOODS

TO RANDOLPH

TO NORTHFIELD

3RD BRANCH OF THE WHITE RIVER

S. ASH · M. POPLAR · S. ELM · M. YELLOW BIRCH

TRAV PT 3 · TRAV PT 4

VT 12A (PAVED)

8" CMP (POOR) · 15" CMP (GOOD) · 18" CPEP · 48" ACCMP

DITCH · STONE RIPRAP

CURVE DATA NO. 1
Δ = 47°49'36"
D = 24°54'40"
R = 230.00'
T = 101.99'
L = 191.99'
E = 21.60'

CURVE DATA NO. 2
Δ = 50°37'04"
D = 24°54'40"
R = 230.00'
T = 108.76'
L = 203.19'
E = 24.42'

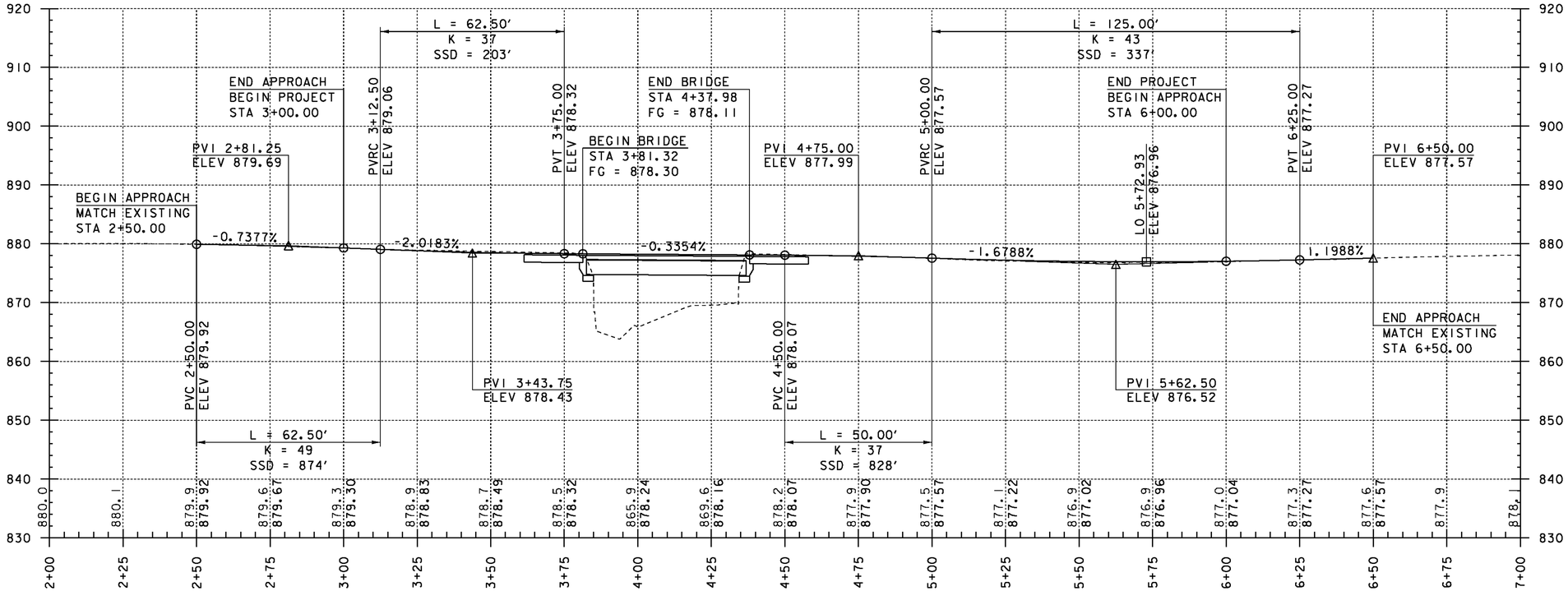
EXISTING BRIDGE DATA
CONCRETE T-BEAMS
CONCRETE ABUTMENTS
OVERALL LENGTH = 54'
OVERALL WIDTH = 23.1'

20 0 20
SCALE: 1" = 20'-0"

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420bdr.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: T. FILLBACH
LAYOUT SHEET

PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 14 OF 54



NOTE:

ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.

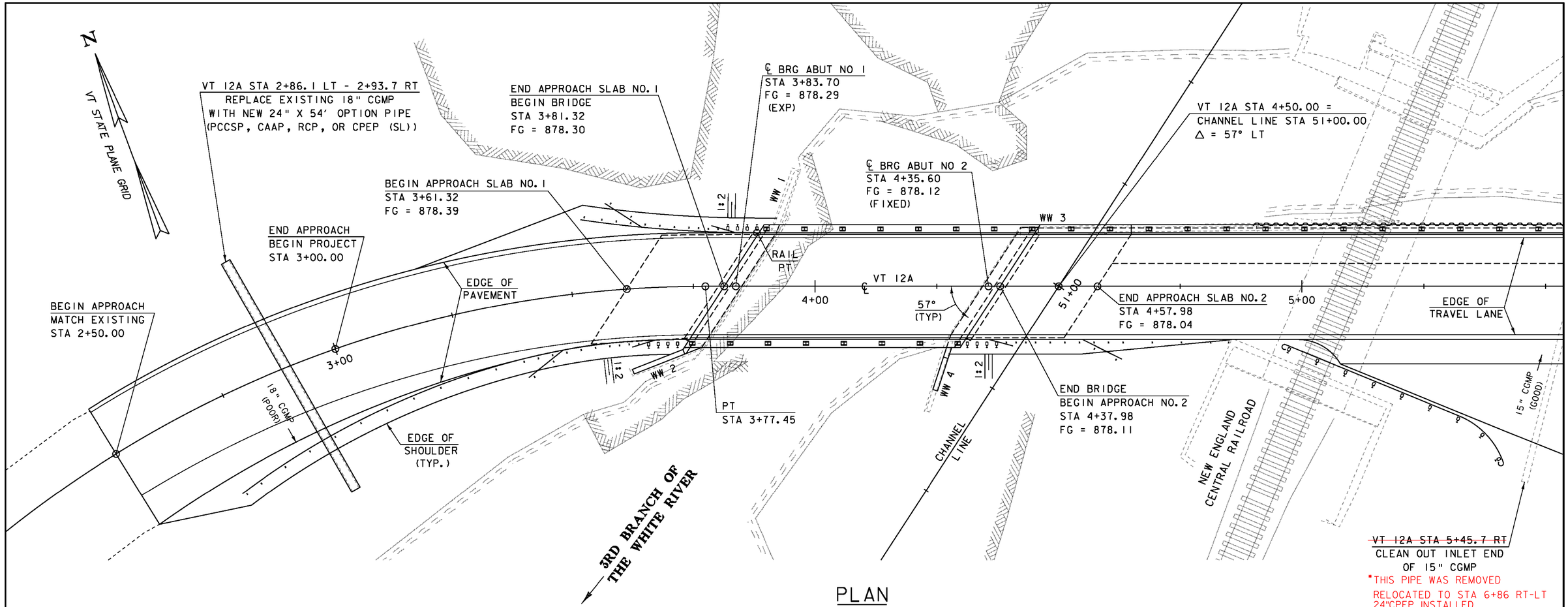
ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADES ALONG PROPOSED CENTERLINE.

PROFILE ALONG VT 12A

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 10'-0"

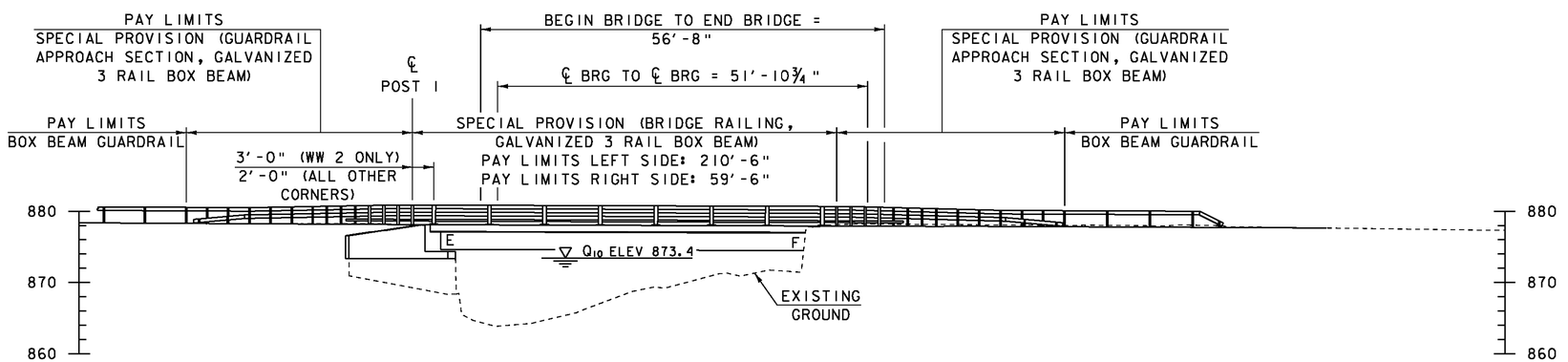
PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)

FILE NAME: s10c420pro.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
VT 12A PROFILE	SHEET 15 OF 54



PLAN

SCALE: 1" = 10'-0"



ELEVATION

SCALE: 1" = 10'-0"

10 0 10

SCALE: 1" = 10'-0"

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420pe.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
PLAN AND ELEVATION	SHEET 16 OF 54

PAY LIMITS
BOX BEAM GUARDRAIL
= 4'-4⅝"

PAY LIMITS SPECIAL PROVISION
(GUARDRAIL APPROACH SECTION,
GALVANIZED 3 RAIL BOX BEAM)
= 32'-0"

2'-0"

PAY LIMITS SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM) = 210'-6"

7 SPACES @ 7'-9⅞" = 54'-6"

6'-4"

N

STA 3+53.31
15.00' LT

R 249.21'

RAIL PT
STA 3+88.04
11.00' LT

6" MEASURED
ALONG FASCIA

1'-8" MEASURED
ALONG FASCIA

VT STATE PLANE GRID

℄ VT 12A

4+00

MATCH LINE B-B

RAIL PT
STA 3+71.47
10.93' RT

1'-8" MEASURED
ALONG FASCIA

6" MEASURED
ALONG FASCIA

R 129.34'

RAIL PCC
STA 3+37.88
11.72' RT

3'-0"

7 SPACES @ 7'-9⅞" = 54'-6"

2'-0"

PAY LIMITS
BOX BEAM GUARDRAIL
= 22'-4⅝"

PAY LIMITS SPECIAL PROVISION
(GUARDRAIL APPROACH SECTION,
GALVANIZED 3 RAIL BOX BEAM)
= 32'-0"

PAY LIMITS SPECIAL PROVISION (BRIDGE RAILING,
GALVANIZED 3 RAIL BOX BEAM) = 59'-6"

PAY LIMITS SPECIAL PROVISION (GUARDRAIL
APPROACH SECTION, GALVANIZED
3 RAIL BOX BEAM) = 32'-0"

MATCH LINE A-A

STA 3+38.28
16.56' LT

R 76.85'

2'-0"

PAY LIMITS SPECIAL PROVISION
(GUARDRAIL APPROACH SECTION,
GALVANIZED 3 RAIL BOX BEAM)
= 32'-0"

PAY LIMITS
BOX BEAM GUARDRAIL
= 4'-4⅝"

19 SPACES @ 8'-0" = 152'-0"

MATCH LINE B-B

RAIL PC
STA 5+62.68
11.00' LT

R 219'

RAIL PCC
STA 6+00.35
11.00' LT

℄ VT 12A

5+00

6+00

R 161.45'

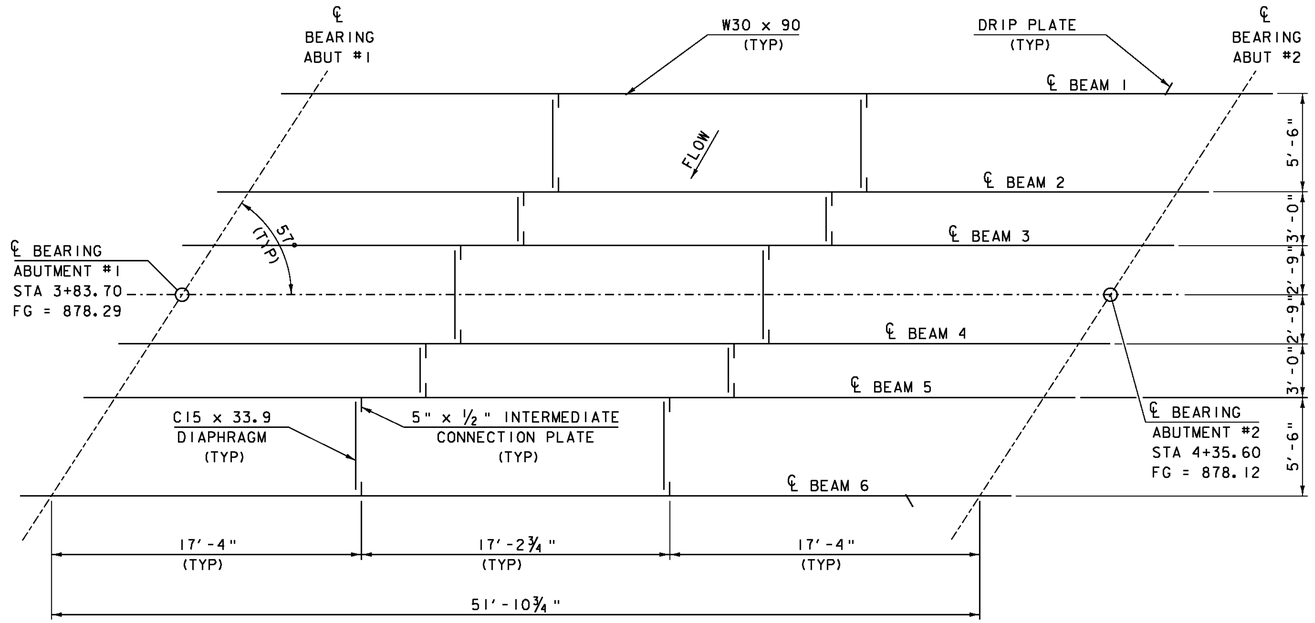
STA 2+69.51
19.85' RT

PAY LIMITS
BOX BEAM GUARDRAIL
= 64'-4⅝"

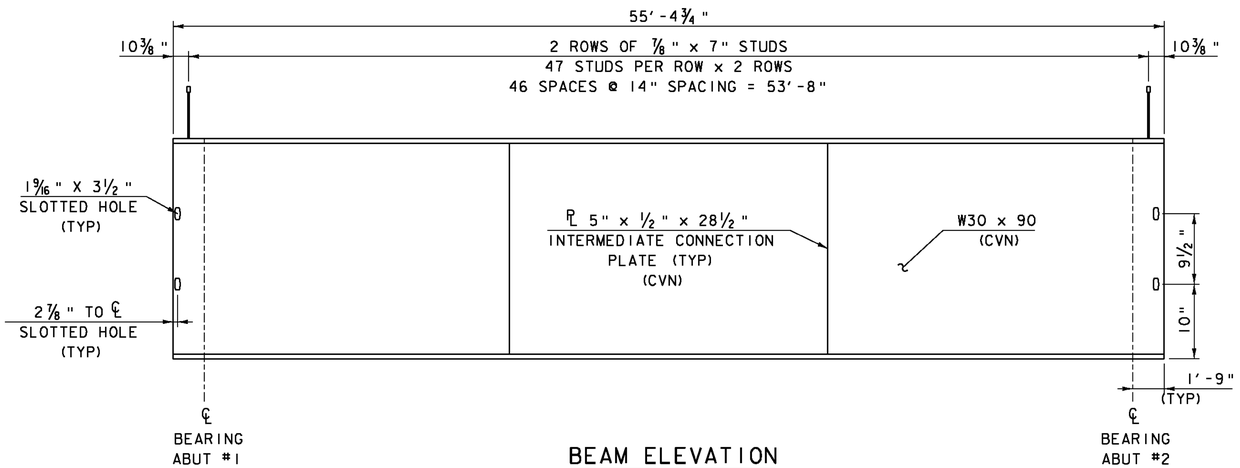
MATCH LINE A-A

5 0 5
SCALE: 1" = 5'-0"

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420rail.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: R. YOUNG
RAIL LAYOUT SHEET	SHEET 17 OF 54



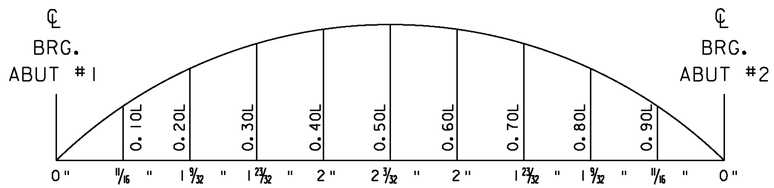
DECK FRAMING PLAN



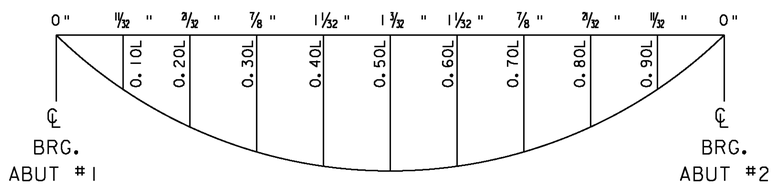
BEAM ELEVATION

(VERTICAL EXAGGERATED 5X)

NOTE: ALL STEEL MARKED "CVN" SHALL BE CHARPY V-NOTCH TESTED



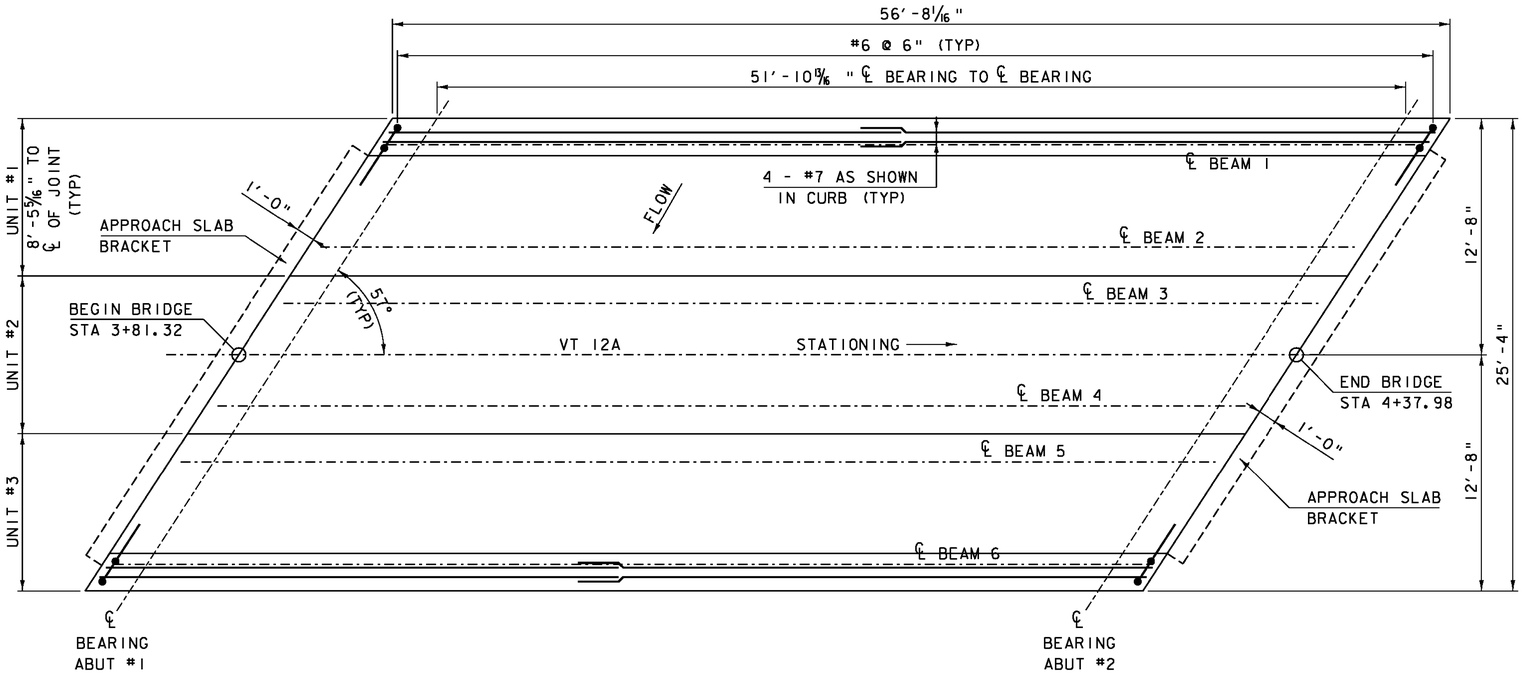
CAMBER DIAGRAM



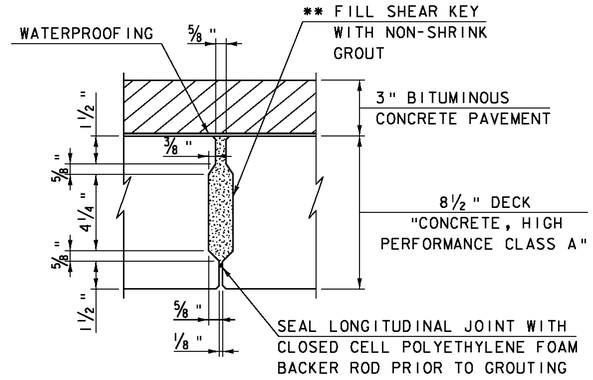
DEAD LOAD DEFLECTION DIAGRAM

DEFLECTION IS AFTER DEAD LOADS HAVE BEEN APPLIED

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420sup.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: R.S.YOUNG	CHECKED BY: E.R.Charbonneau
FRAMING DETAILS	SHEET 18 OF 54



DECK STRUCTURAL PLAN



** NON-SHRINK GROUT AND BACKER ROD SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM 900.675 "SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)".

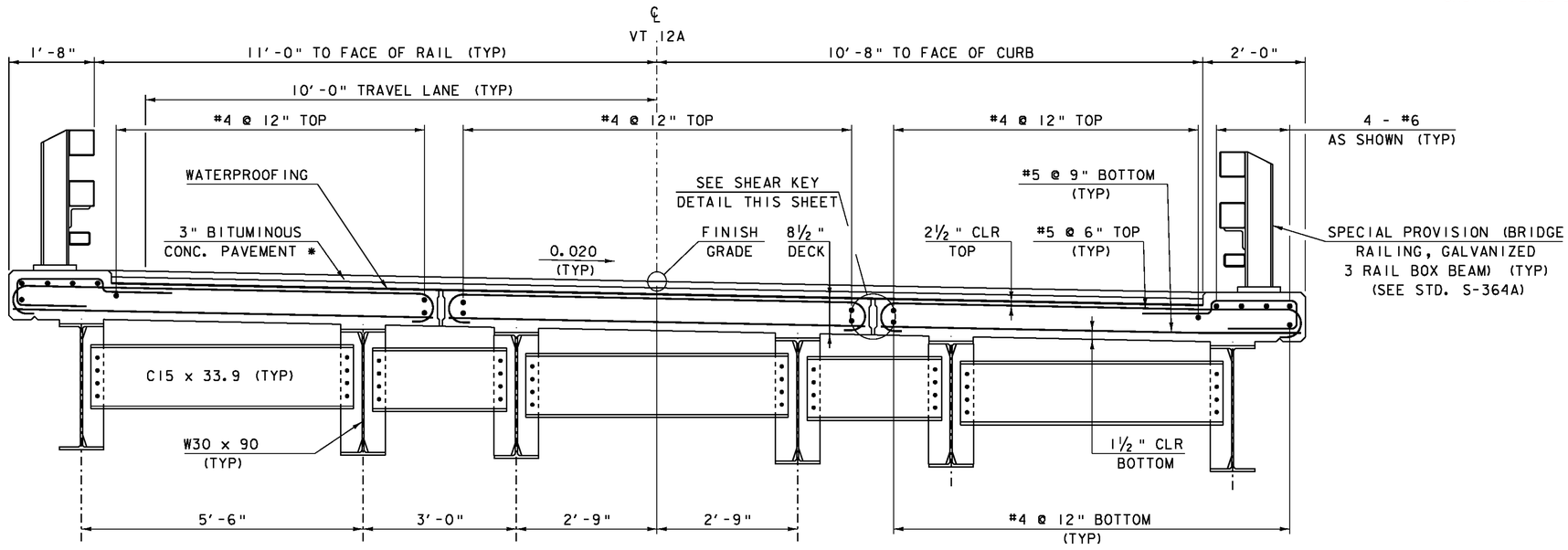
SHEAR KEY

NTS

NOTE

1. THE SLABS SHALL BE PLACED AT THE NOMINAL SPACING SHOWN ON THE PLANS WITH A 1/4" WIDE GAP BETWEEN THE SLABS. THE WIDTH OF THE GAP CAN VARY DUE TO TOLERANCES OF THE SLABS.
2. GROUT FOR THE SHEAR KEYS SHALL BE RODDED OR VIBRATED TO ENSURE THAT ALL VOIDS IN THE SHEAR KEYS ARE FILLED.

• CAST IN PLACE DECK



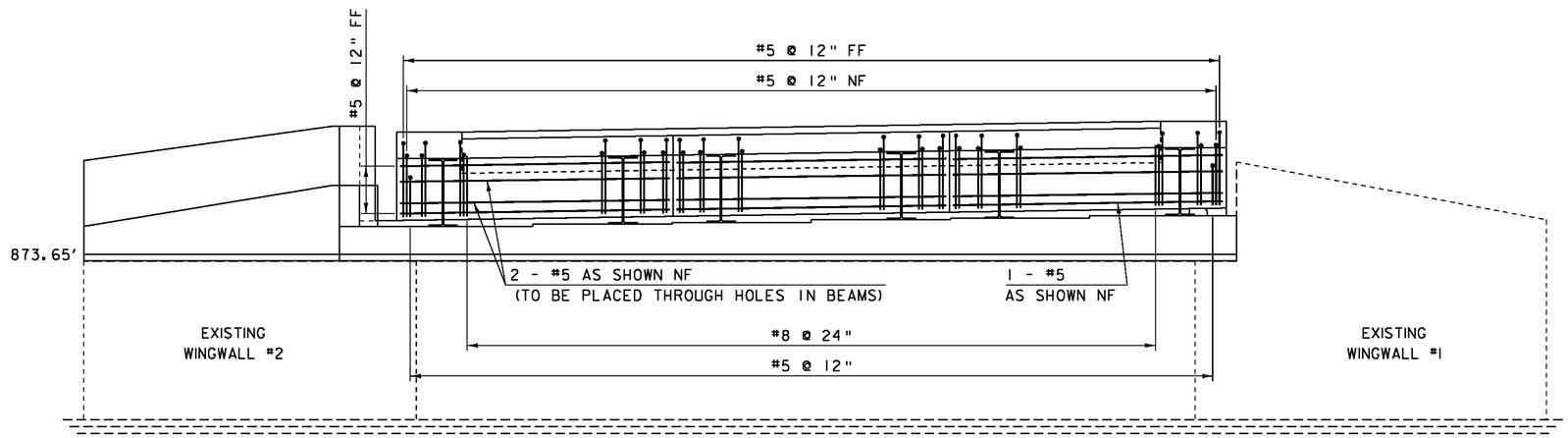
TYPICAL BRIDGE SECTION

* 1 1/2" TYPE IIIS OVER 1 1/2" TYPE IIIS

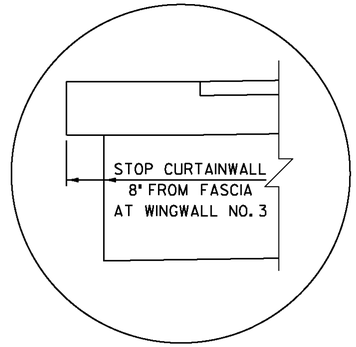
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.
ALL REBAR IN PRECAST SUPERSTRUCTURE SHALL BE EPOXY COATED

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420sup.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: R.S.YOUNG	CHECKED BY: E.Charbonneau
DECK STRUCTURAL DETAILS	SHEET 19 OF 54

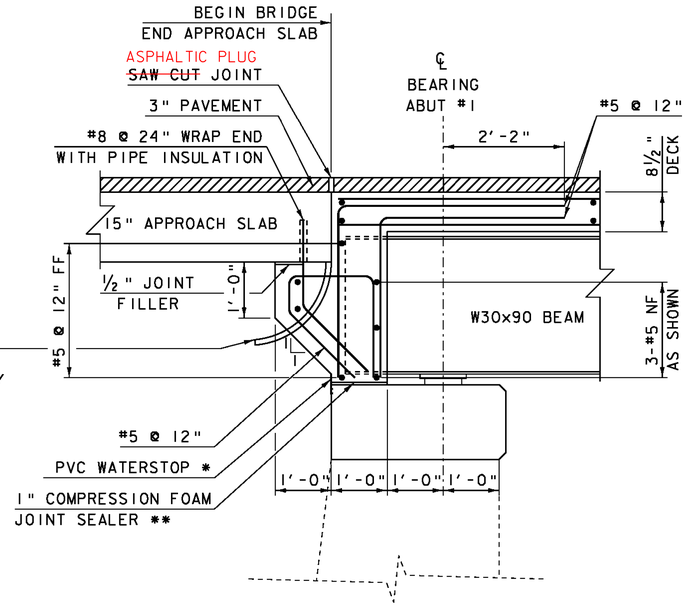


CURTAINWALL TYPICAL SECTION

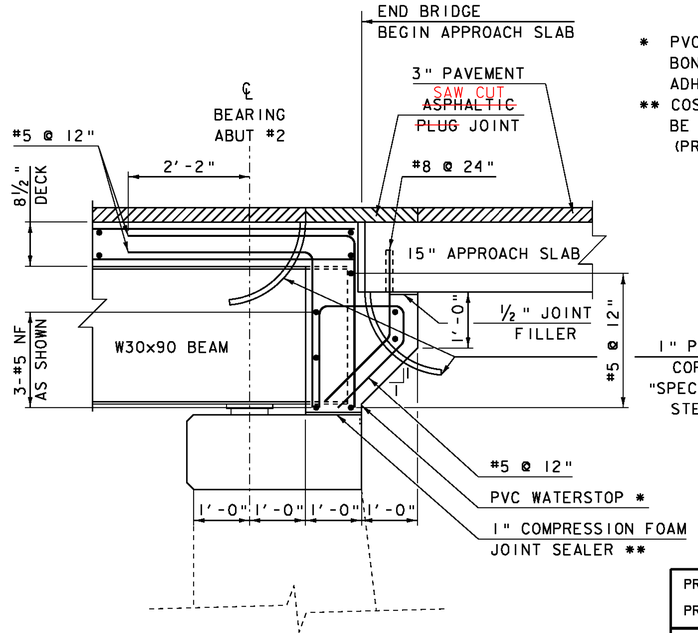


UNIT NO. 1 @ ABUTMENT NO. 2

NOTE:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.



ABUTMENT #1 BRIDGE END SECTION

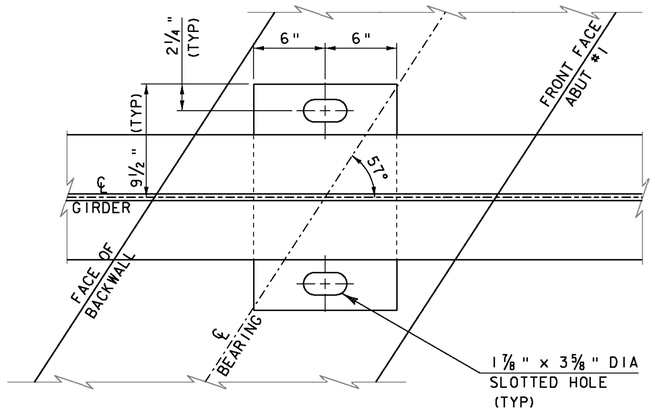


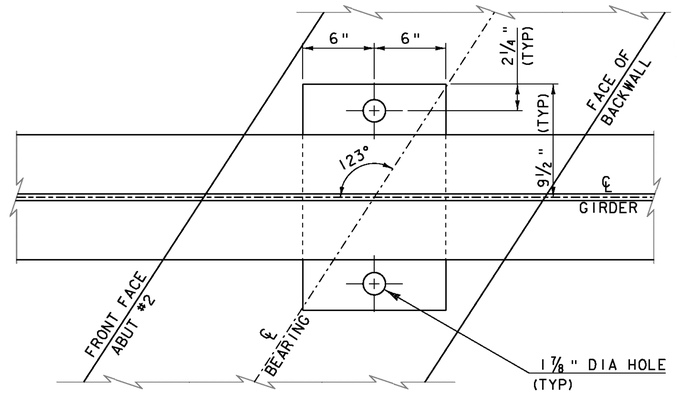
ABUTMENT #2 BRIDGE END SECTION

* PVC WATERSTOP SHALL HAVE TOP LEGS CLIPPED. BOND TO END OF PRESTRESSED UNITS WITH APPROVED ADHESIVE. WATERSTOP TO EXTEND ACROSS ALL UNITS.
** COST OF 1" COMPRESSION FOAM JOINT SEALER SHALL BE INCLUDED IN ITEM 900.675 "SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)"

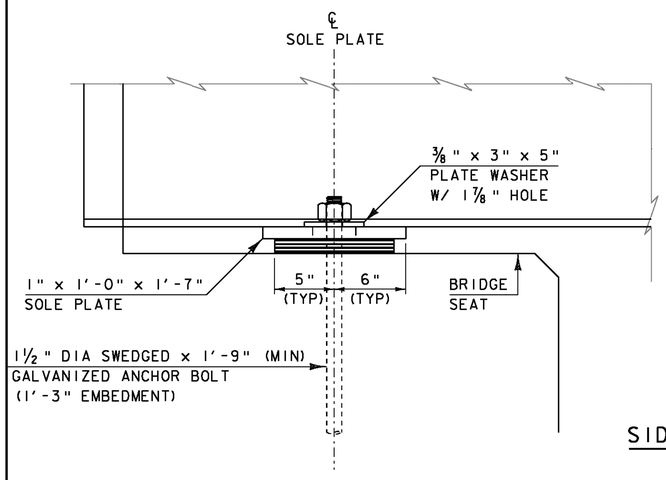
PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

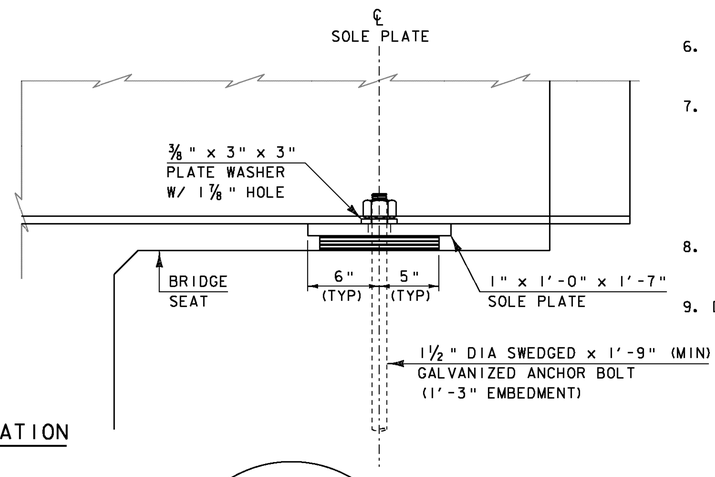
FILE NAME: s10c420sup.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: E.R.Charbonneau
CURTAINWALL DETAILS
PLOT DATE: 21-SEP-2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.R.Charbonneau
SHEET 20 OF 54



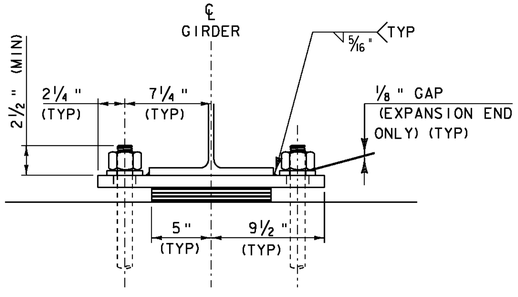


PLAN VIEW

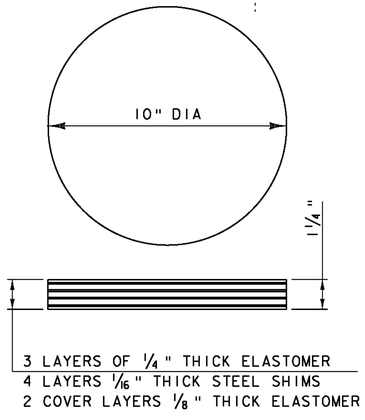




SIDE ELEVATION



FRONT VIEW



ELASTOMERIC BEARING DETAIL

NOT TO SCALE

BEARING NOTES

1. BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.11 "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD" AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF STANDARD SPECIFICATIONS SECTIONS 531 AND 731.

2. ALL BEARING DEVICES SHALL BE GALVANIZED OR METALIZED AS PER SUBSECTIONS 531.04 (B) AND 506.15 OF THE STANDARD SPECIFICATIONS. IF THE BEARINGS ARE METALIZED, THEY SHALL BE SEALED WITH AN APPROVED SEALER AS SPECIFIED IN SUBSECTION 506.15 (B) OF THE STANDARD SPECIFICATIONS. AREAS OF GALVANIZING OF METALIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE REPAIRED IN CONFORMANCE WITH SECTION 513.

3. PAYMENT FOR ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 531.11 "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD." ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER AASHTO M232M/M232.

4. ALL STEEL IN BEARING DEVICES SHALL BE AASHTO M270M/M270 GRADE 50, UNLESS NOTED OTHERWISE.

5. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL AASHTO M270M/ M270 GRADE 36. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.

6. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM OF ⅛" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.

7. ALTERNATE CONFIGURATIONS FOR BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE DESIGN LOADS AND CRITERIA SHOWN ON THIS SHEET. THE ALTERNATE SHALL MAINTAIN THE ANCHORAGE SYSTEM SHOWN AND SHALL BE DESIGNED PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 5TH EDITION AND ITS LATEST REVISIONS AND SHALL BE FABRICATED PER AASHTO LRFD CONSTRUCTION SPECIFICATIONS 2ND EDITION AND ITS LATEST REVISIONS.

8. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMMODATE AN ALTERNATIVE CONFIGURATION.

9. DESIGN CRITERIA:
   ROTATION = 0.014 RADIUS
   RDL = 20 K
   RLL = 60 K
   TRANSLATION = S = 1"
   TEMPERATURE RANGE = -30°F TO 120° F

   BEARINGS ARE DESIGNED AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 5TH EDITION, SECTION 14, METHOD A.

   ELASTOMER SHALL HAVE A SHEAR MODULUS BETWEEN 0.095 AND 0.130 KSI

   THE ELASTOMER SHALL MEET THE REQUIREMENTS OF LOW TEMPERATURE ZONE D, GRADE 4.

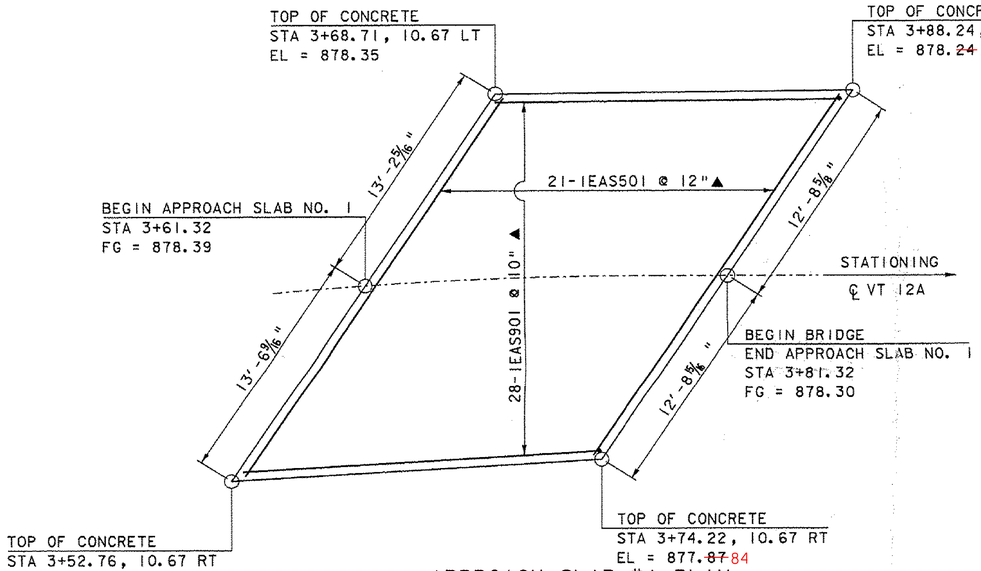
   NO FABRIC REINFORCEMENT WILL BE ALLOWED IN ELASTOMERIC PADS.

10. THE STEEL SOLE PLATES SHALL BE HOT BONDED TO THE REINFORCED ELASTOMERIC PAD DURING THE VULCANIZATION PROCESS. THE STEEL SURFACES TO BE BONDED TO THE PAD SHALL NOT BE METALIZED.

11. THE CONCRETE SURFACE UNDER THE BEARING DEVICE SHALL BE LEVEL.

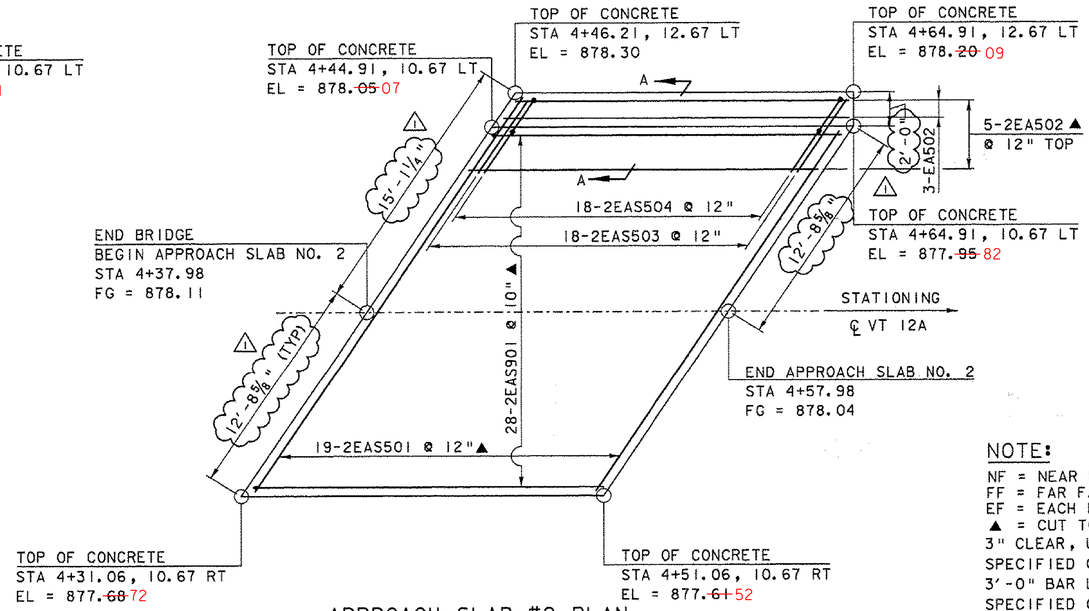
12. ALL REQUIRED FABRICATION OF BEARINGS WILL OCCUR BEFORE VULCANIZATION PROCESS.

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420brg.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. WILLIAMS	DRAWN BY: J. SALVATORI
DESIGNED BY: L. STONE	CHECKED BY: E. CHARBONNEAU
BEARING DETAILS	SHEET 21 OF 54



APPROACH SLAB #1 PLAN

SCALE ¼" = 1'-0"

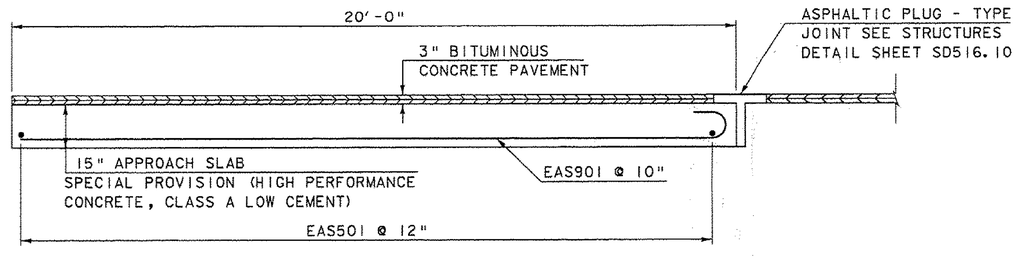


APPROACH SLAB #2 PLAN

SCALE ¼" = 1'-0"

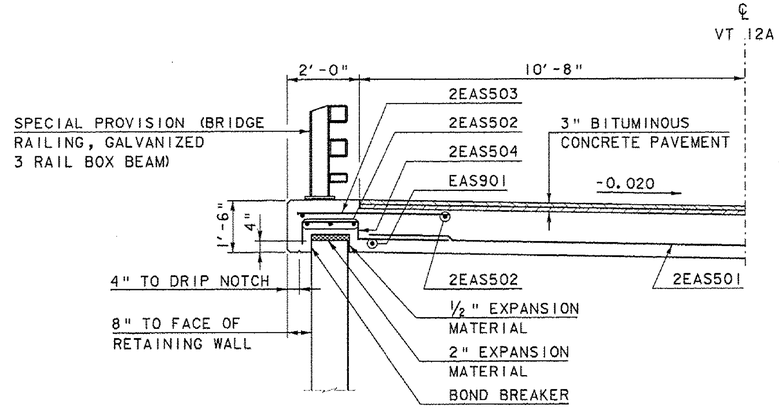
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3'-0" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.
E - EPOXY



APPROACH SLAB ELEVATION

SCALE ½" = 1'-0"



APPROACH SLAB #2 SECTION A-A

SCALE ½" = 1'-0"

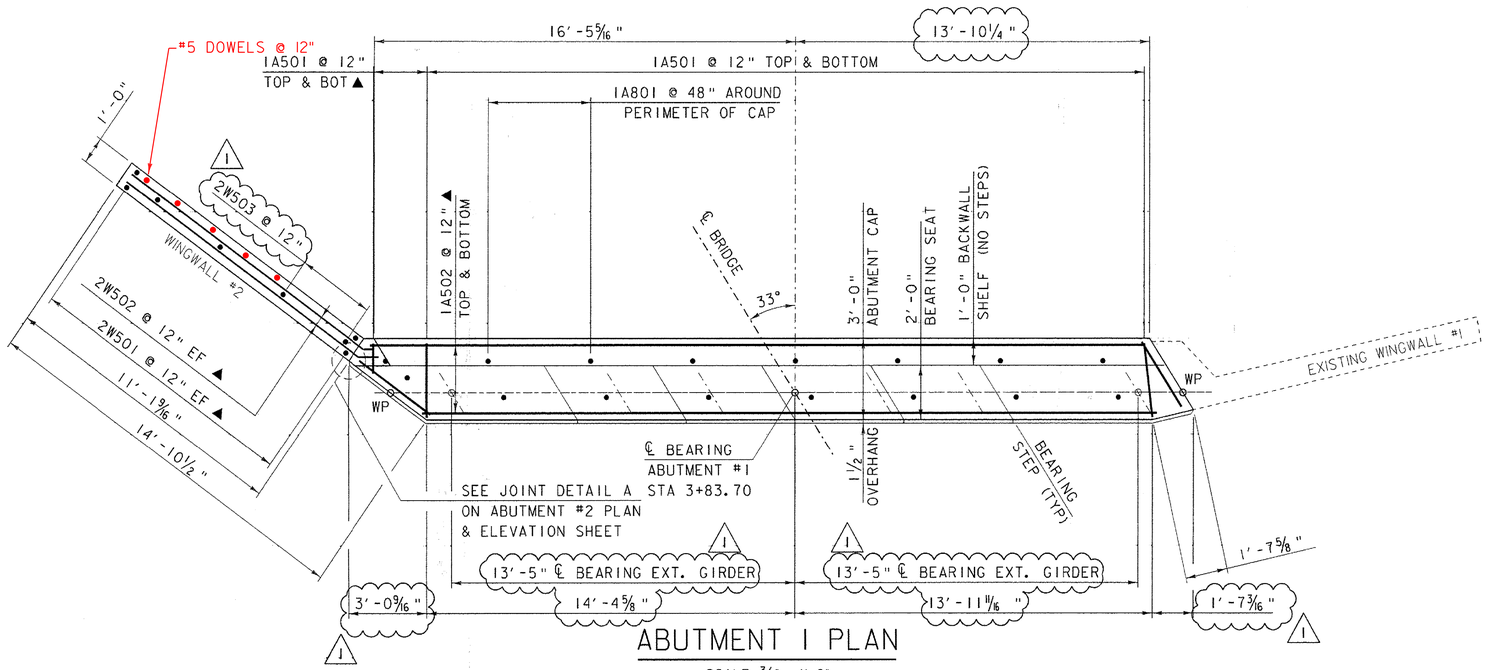
REVISION	DATE	DESCIPTION	BY
1	11-7-2011	DIMENSION APPROACH SLAB WIDTH	MCL

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420slab2.dgn
PROJECT LEADER: C. WILLIAMS
DESIGNED BY: R. YOUNG
APPROACH SLAB DETAILS

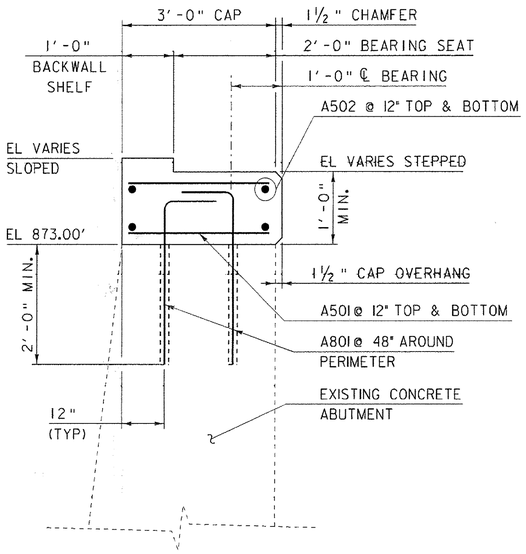
PLOT DATE: 07-NOV-2011
DRAWN BY: J. SALVATORI
CHECKED BY: E. CHARBONNEAU
SHEET 47 OF 38 54

22R



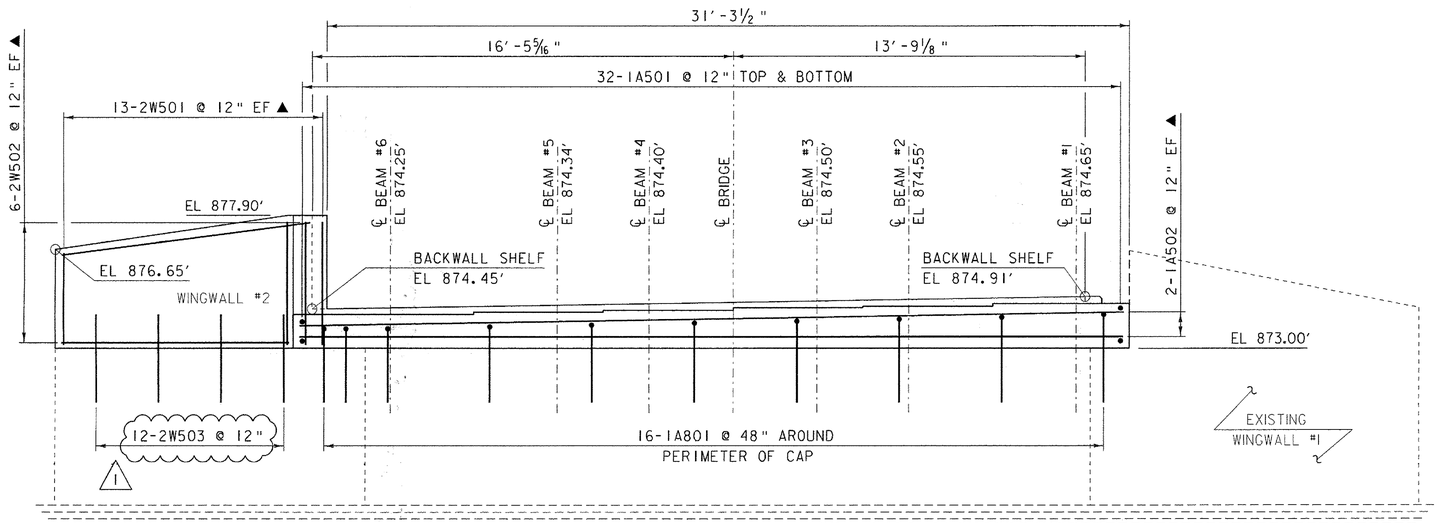
ABUTMENT 1 PLAN

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



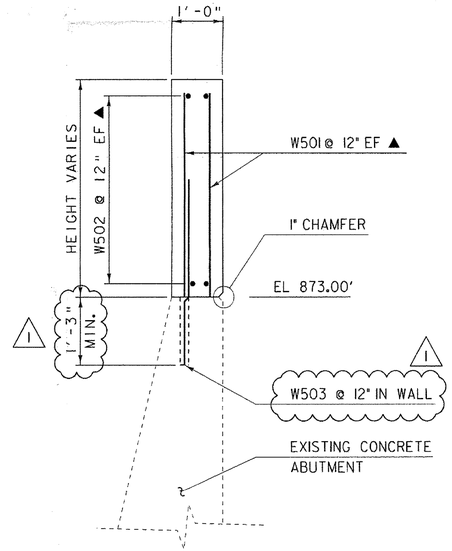
ABUTMENT TYPICAL SECTION

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



ABUTMENT 1 ELEVATION

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



WINGWALL NOS. 2 & 4 TYPICAL SECTION

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

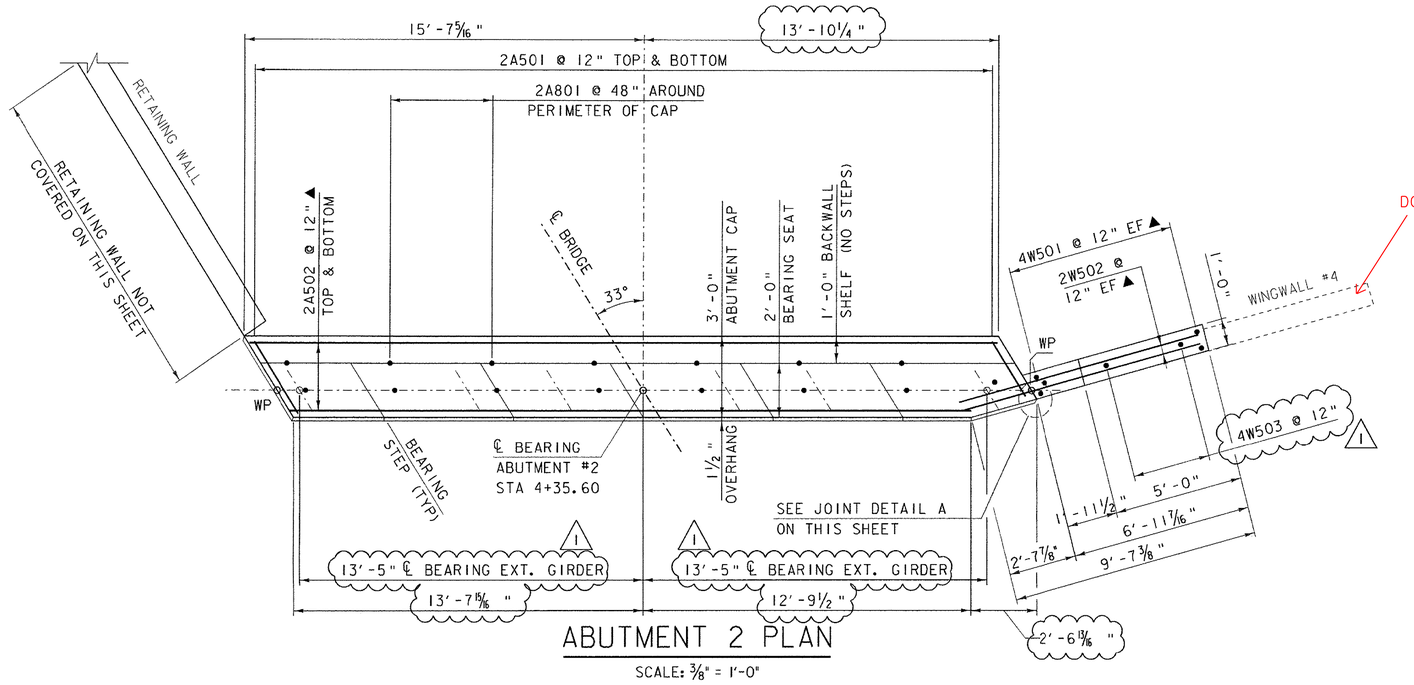
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

REVISION	DATE	DESCIPTION	BY
1	11-7-2011	WW REBAR REV. AND DIMENSION CL EXTERIOR BEAM BEARING LOCATION	MCL

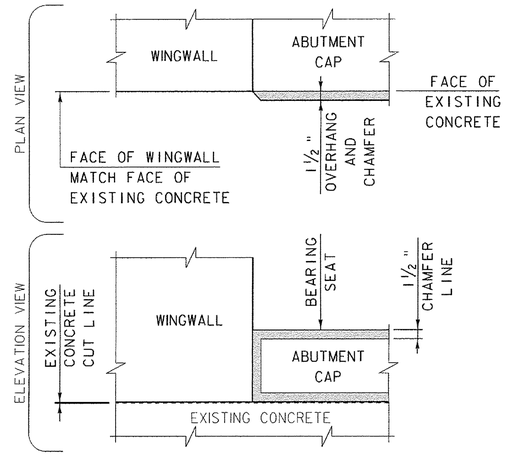
PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187 (8)	
FILE NAME: s10c420sub.dgn	PLOT DATE: 07-NOV-2011
PROJECT LEADER: C.P. WILLIAMS	DRAWN BY: M. LONGSTREET
DESIGNED BY: R.S. YOUNG	CHECKED BY: E.R.CHARBONNEAU
ABUTMENT #1 PLAN & ELEVATION	SHEET 23R 18 OF 35

23R 54



ABUTMENT 2 PLAN

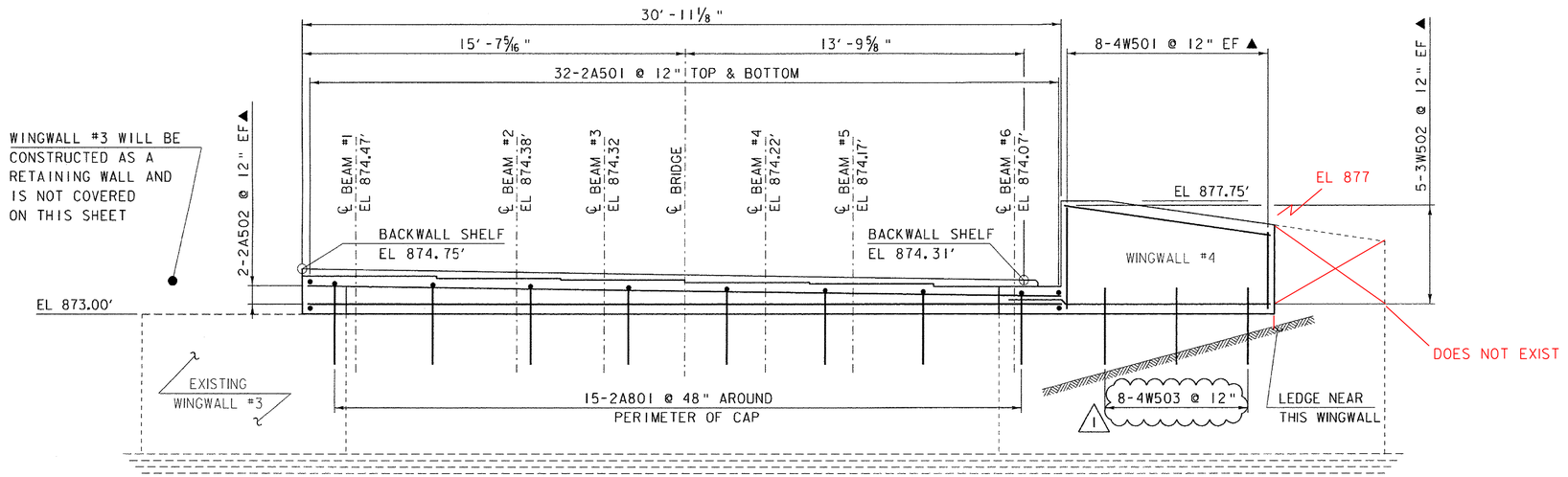
SCALE: 3/8" = 1'-0"



JOINT DETAIL A

SCALE: 1" = 1'-0"

TYPICAL WINGWALL TO ABUTMENT CAP JOINT DETAIL AT ABUTMENT FACE.



ABUTMENT 2 ELEVATION

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

NOTE:

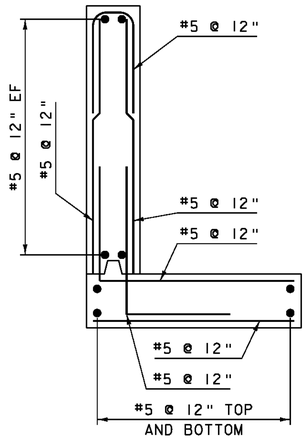
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

REVISION	DATE	DESCIPTION	BY
1	11-7-2011	WW REBAR REV. AND DIMENSION CL EXTERIOR BEAM BEARING LOCATION	MCL

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187 (8)

FILE NAME: s10c420sub.dgn
PROJECT LEADER: C.P. WILLIAMS
DESIGNED BY: R.S. YOUNG
ABUTMENT #2 PLAN & ELEVATION

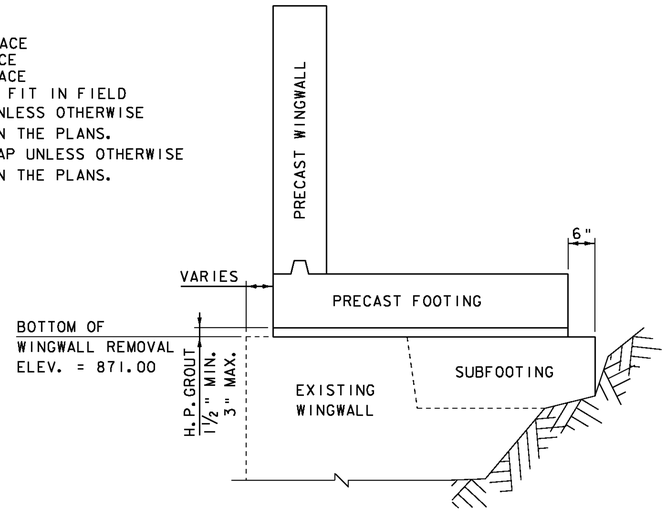
PLOT DATE: 07-NOV-2011
DRAWN BY: M. LONGSTREET
CHECKED BY: E.R. CHARBONNEAU
SHEET 19 OF ~~35~~ 24R



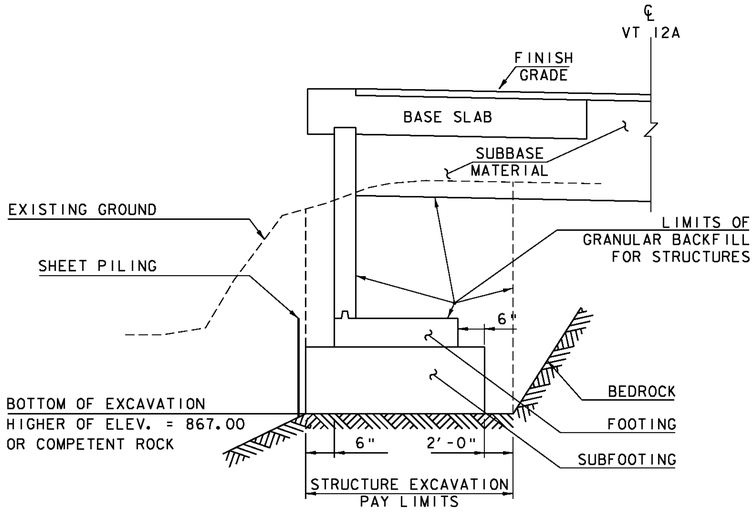
WINGWALL #3 TYPICAL REBAR

NOTE:

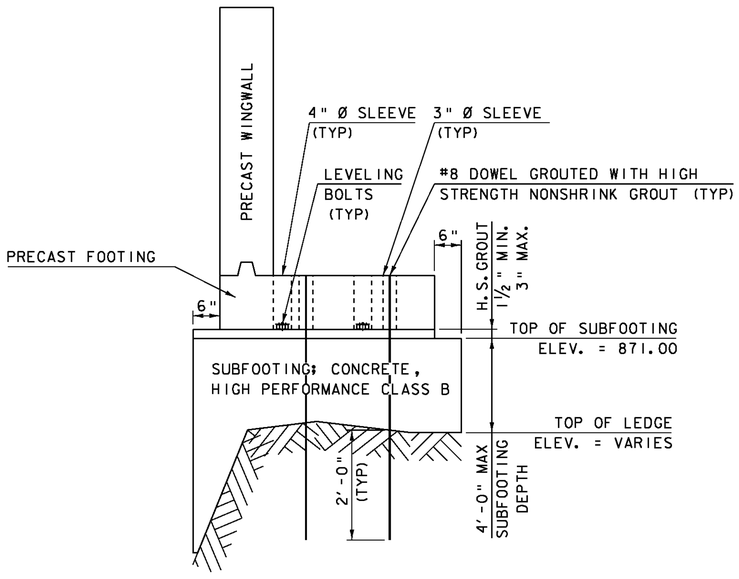
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.



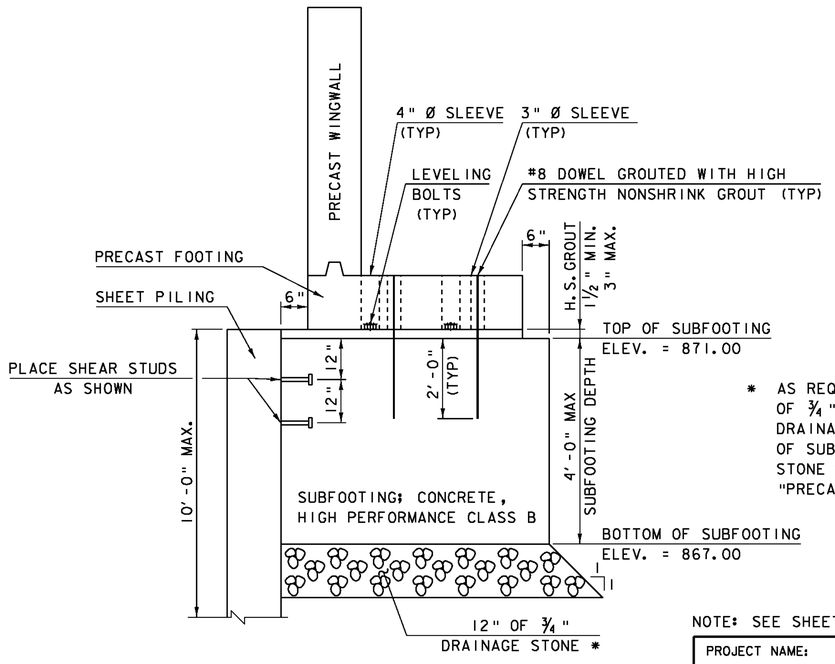
WINGWALL #3 TYPICAL SECTION
OVER EXISTING WINGWALL



WINGWALL #3 EXCAVATION SECTION



WINGWALL #3 TYPICAL SECTION
PLACED OVER BEDROCK



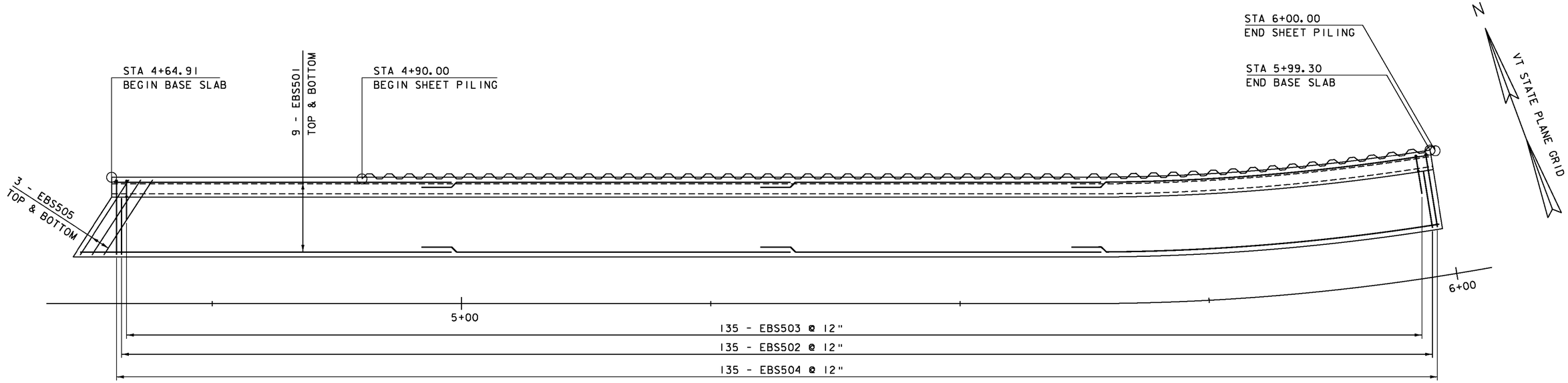
WINGWALL #3 TYPICAL SECTION
OVER NEW SUBFOOTING

* AS REQUIRED BY THE ENGINEER. PLACE 12" OF ¾" DRAINAGE STONE UNDER THE SUBFOOTING. DRAINAGE STONE SHALL MEET THE REQUIREMENTS OF SUBSECTION 704.16. PAYMENT FOR DRAINAGE STONE SHALL BE INCLUDED UNDER ITEM 540.10 "PRECAST CONCRETE STRUCTURE (WINGWALL NO.3).

NOTE: SEE SHEET 26 FOR TOP OF WINGWALL ELEVATIONS.

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)

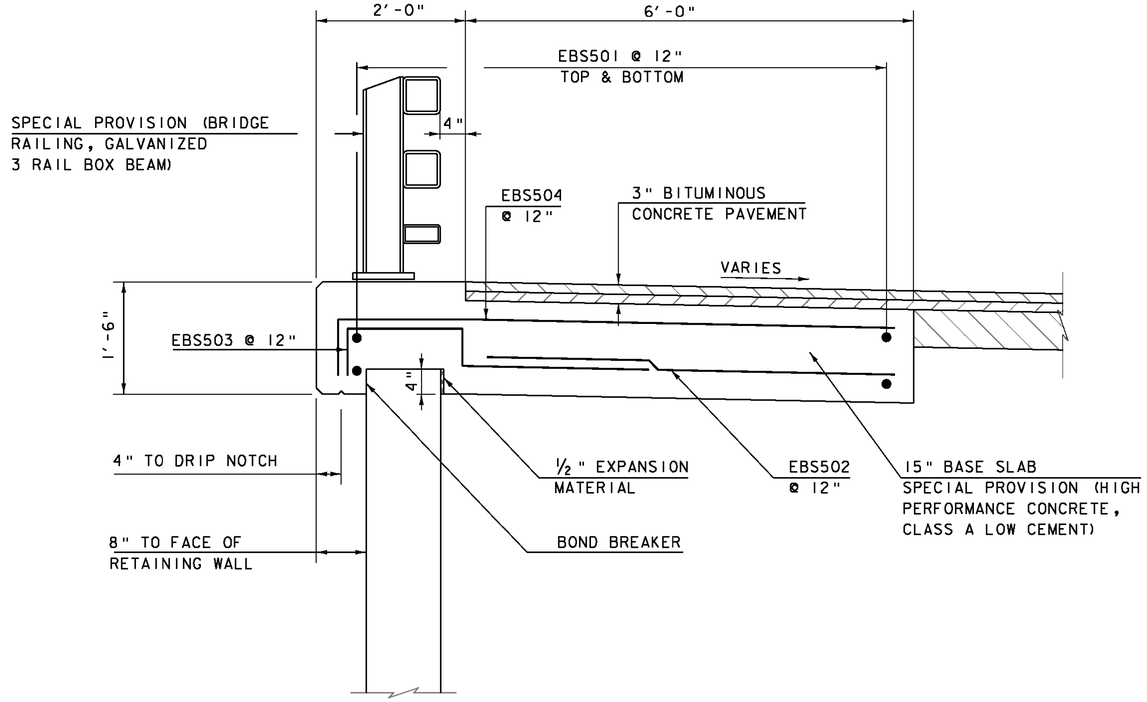
FILE NAME: s10c420sup.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: R.S.YOUNG	CHECKED BY: E.R.Charbonneau
WINGWALL #3 SECTIONS	SHEET 25 OF 54



BASE SLAB LAYOUT

SCALE 1" = 5'-0"

5 0 5



BASE SLAB TYPICAL

SCALE 1" = 1'-0"

1 9 6 3 0 1 2

	RETAINING WALL		BASE SLAB	
STATION	ELEVATION	OFFSET	ELEVATION	OFFSET
4+64.91	877.04	12.00 LT	878.~~20~~09	12.67 LT
4+75.00	876.89	12.00 LT	877.09~~878.06~~	12.67 LT
5+00.00	876.43	12.00 LT	877.59	12.67 LT
5+25.00	875.94	12.00 LT	877.10	12.67 LT
5+50.00	875.60	12.00 LT	876.~~76~~78	12.67 LT
5+75.00	875.41	12.00 LT	876.~~58~~61	12.67 LT
5+99.30	875.35	12.00 LT	876.~~52~~55	12.67 LT

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420ret.dgn
PROJECT LEADER: C. WILLIAMS
DESIGNED BY: R. YOUNG
BASE SLAB LAYOUT & DETAILS

PLOT DATE: 21-SEP-2011
DRAWN BY: J. SALVATORI
CHECKED BY: E. CHARBONNEAU
SHEET 26 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION

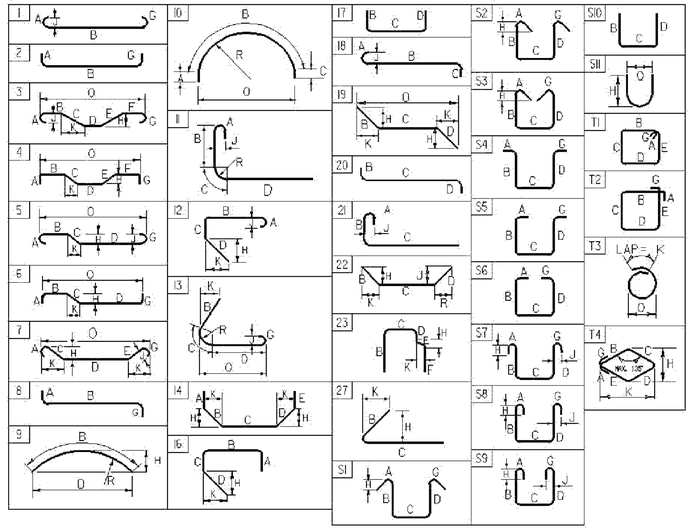
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	ABUTMENT #1																
▲	64	5	2'- 6"	1A501	STR	2'- 6"											
✳ ▲	7	5	30'- 0"	1A502	STR	30'- 0"											
	16	8	3'- 9"	1A801	17		1'- 0"	2'- 9"									
	WINGWALL #1																
				NO BARS													
	WINGWALL #2																
▲	26	5	4'- 8"	2W501	STR	4'- 8"											
	12	5	12'- 3"	2W502	22		1'- 0"	11'- 3"					0'- 7"	---	0'- 10"	---	
✳	5	8	3'- 0"	2W801	STR	3'- 0"											
	ABUTMENT #2																
▲	64	5	2'- 6"	2A501	STR	2'- 6"											
▲	6	5	28'- 11"	2A502	STR	28'- 11"											
	15	8	3'- 9"	2A801	17		1'- 0"	2'- 9"									
	WINGWALL #3																
				NO BARS													
	WINGWALL #4																
▲	16	5	4'- 6"	4W501	STR	4'- 6"											
✳ ▲	11	5	9'- 7"	4W502	STR	9'- 7"											
	3	8	3'- 0"	4W801	STR	3'- 0"											
	APPROACH SLAB #1																
✳ ▲	22	5	26'- 3"	1EAS501	STR	26'- 3"											
✳	29	9	20'- 9"	1EAS901	1	1'- 3"	19'- 6"					---		1'- 0"			
	APPROACH SLAB #2																
	19	5	24'- 11"	2EAS501	STR	24'- 11"											
▲	8	5	19'- 6"	2EAS502	STR	19'- 6"											
✳	19	5	5'- 0"	2EAS503	STR	5'- 0"											
	18	5	5'- 5"	2EAS504	S5	---	0'- 5"	1'- 7"	0'- 5"			3'- 0"					
✳	29	9	20'- 9"	2EAS901	1	1'- 3"	19'- 6"					---		1'- 0"			
	BASE SLAB																
	72	5	36'- 0"	EBS501	STR	36'- 0"											
✳	136	5	5'- 6"	EBS502	STR	5'- 6"											
	6	5	9'- 0"	EBS504	STR	9'- 0"											
	135	5	5'- 5"	EBS503	S5	---	0'- 9"	1'- 9"	0'- 9"			2'- 2"					
	135	5	8'- 3"	EBS504	2	0'- 9"	7'- 6"										
✳	71	8	7'- 3"	BS801	STR	7'- 3"											

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O

~ NOTES ~

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



ASTM STANDARD REINFORCING BARS

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

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187 (8)

FILE NAME: s10c420forms.dgn
PROJECT MANAGER: C.P. WILLIAMS
DESIGNED BY: R. YOUNG
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: 9/19/2011
DRAWN BY: M. LONGSTREET
CHECKED BY: R. YOUNG
SHEET 27 OF 54

N

VT STATE PLANE GRID

4 INCH WHITE LINE
STA 2+50.0 - 6+50.0 LT
STA 2+50.0 - 6+50.0 RT

4 INCH YELLOW LINE
STA 2+50.0 - 6+50.0 CL (DOUBLE)

TRAFFIC SIGNS, TYPE A
STA 3+69.6 RT
STA 3+79.9 LT
STA 4+32.9 RT
STA 5+34.6 LT

REMOVING SIGNS
STA 3+14.7 RT (2)
STA 3+69.9 RT (1)
STA 3+79.9 LT (1)
STA 4+57.2 RT (1)
STA 7+03.9 LT (2)

ERECTING SALVAGED SIGNS
STA 4+98.2 RT (1)

STA 3+79.9 LT

3+87 LT
STA ~~3+79.9 LT~~

STA 3+04.9 LT

STA 3+14.7 RT

STA 0+72.8 RT

STA 3+69.6 RT

STA ~~3+69.6 RT~~ 3+72 RT

STA ~~4+32.9 RT~~ 4+32 RT
MOUNTED ON BACK OF 13'-0 SIGN

STA 4+57.2 RT

STA ~~4+98.2 RT~~ 4+32 RT

6+92 LT
STA ~~5+34.6 LT~~
TWO POSTS

6+20 LT
STA ~~6+34.0 LT~~

STA 7+03.9 LT

STA 6+58.6 RT

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00
50+00 51+00 51+75

3RD BRANCH OF THE WHITE RIVER

LEGEND

	EXISTING SIGNS
	NEW OR SALVAGED SIGNS
RET	RETAIN
R	REMOVE
N	NEW
R&S	REMOVE & SALVAGE
S	SALVAGE

20 0 20
SCALE: 1" = 20'-0"

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420bdr.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: T. FILLBACH
TRAFFIC SIGNS AND PAVEMENT MARKINGS

PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 28 OF 54

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	2.0	2.5	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0	4.0	4.0 MOD	TUBULAR STEEL Ø (in) FOUND-ATION	3.0	3.5	4.0	5.0	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN REQUIRED	REMARKS	SIGN DETAIL DETAIL IN SHS	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS																											
~~3+69.6 RT~~ 3+72 RT		1	12	36	3.00						1					X 11'		X																OM3-R	X		
~~3+79.9 LT~~ 3+87 LT		1	12	36	3.00						1					X 11'		X																OM3-L	X		
~~4+32.9 RT~~ 4+32 RT		1	12	36	3.00						1	ON SALVAGED POSTS				~~X~~		~~X~~																OM3-L	X		
6+20 LT		1	12	36	3.00						1					X 11'		X																				
~~4+98.2 RT~~ 4+32 RT	13-0"						X				~~1~~ 2					14.25' ~~X~~ 14.25'		~~X~~																				
~~5+34.6 LT~~ 6+92 LT	13-0"	1	36	36	9.00						~~1~~ 2					14.25' X 14.50'		X																WI2-2	X		

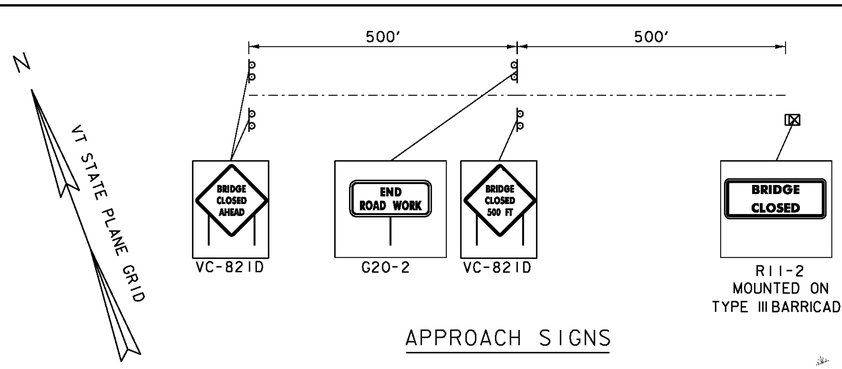
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND VTRANS "SIGN POST DESIGN GUIDELINE."
SHS = STANDARD HIGHWAY SIGNS

												FT	FT	FT	FT	FT 70.0	FT		EA	LB	LB	LB		LB	LB	LB	LB										
TOTALS	SF ~~18.00~~ 21.00	SF	EA. 1	SF		FT			FT ~~70.0~~ 90.25						LB		EA.	LB				EA.	EA.	LB													

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420tss.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: G. ROY
TRAFFIC SIGN SUMMARY SHEET

PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: R. YOUNG
SHEET 29 OF 54



APPROACH SIGNS

N

VT STATE PLANE GRID

LEGEND

- TYPE III BARRICADE
- TYPE III (MOD) BARRICADE
- TEMPORARY TRAFFIC BARRIER

1+00
2+00
3+00
4+00
5+00
5L+00
5L+75
50+00
6+00
7+00
8+00

3RD BRANCH OF THE WHITE RIVER

NOTES:

1. AS PART OF THE 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE) ITEM, THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PER SUBSECTION 105.03. SEE SPECIAL PROVISIONS.

2. ALL ITEMS REQUIRED TO IMPLEMENT THE CONTRACTOR'S TRAFFIC CONTROL PLAN WILL BE INCLUDED IN THE BID PRICE FOR ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

3. FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WILL NOT BE PAID DIRECTLY BUT WILL BE INCLUDED IN THE BID PRICE FOR THE ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

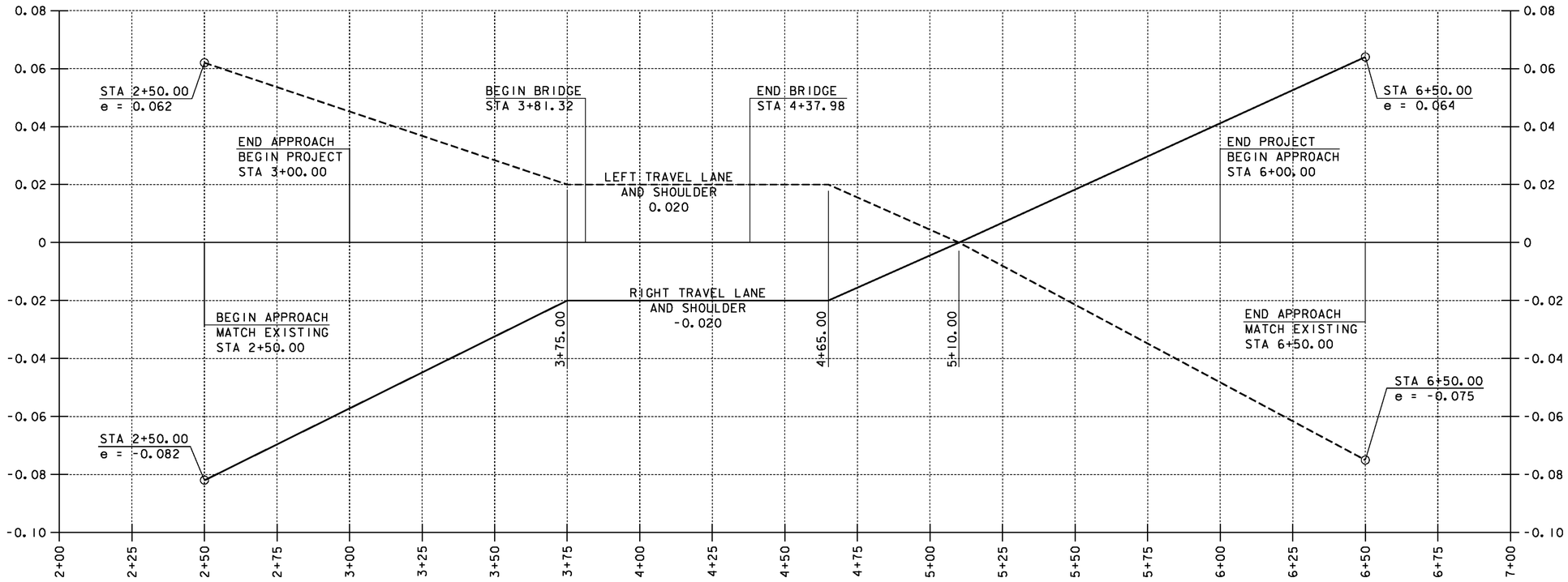
20 0 20

SCALE: 1" = 20'-0"

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

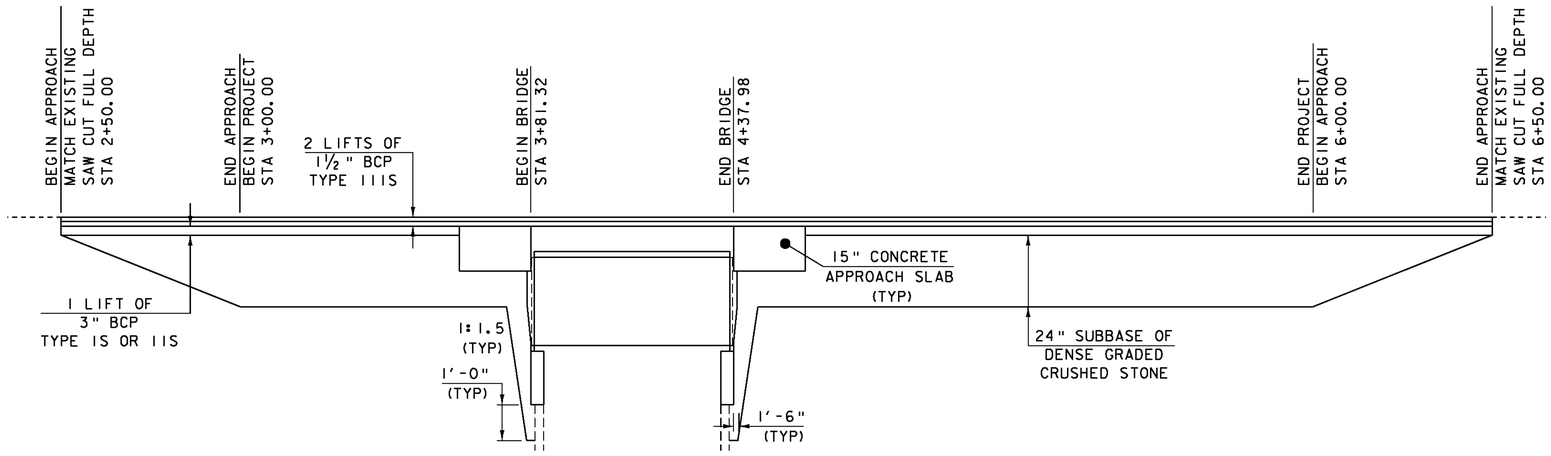
FILE NAME: s10c420local_trf.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: J. SALVATORI
LOCAL TRAFFIC CONTROL LAYOUT

PLOT DATE: 21-SEP-2011
DRAWN BY: J. SALVATORI
CHECKED BY: R. YOUNG
SHEET 30 OF 54



VT 12A BANKING DIAGRAM

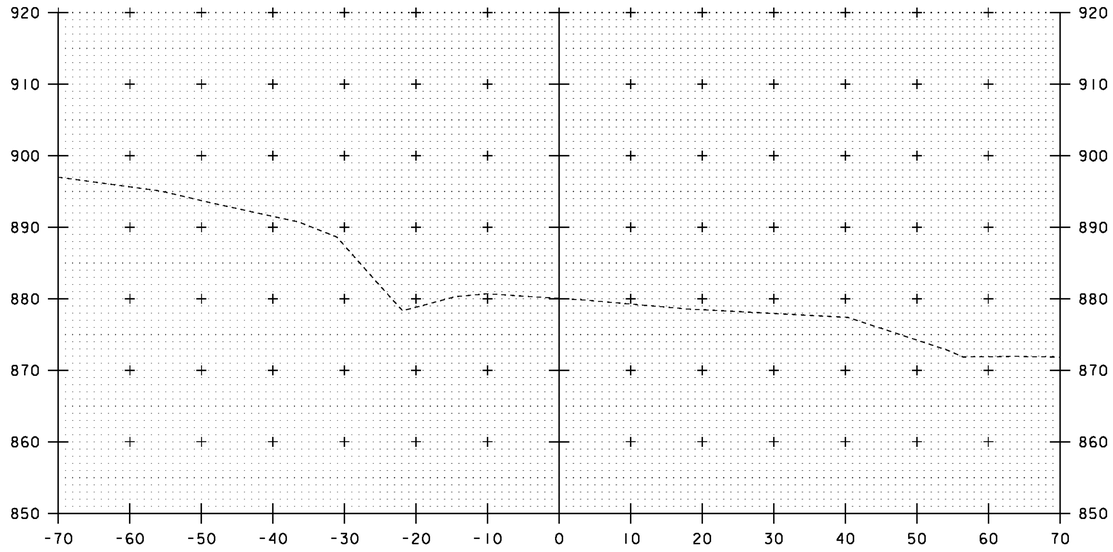
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.02'/'



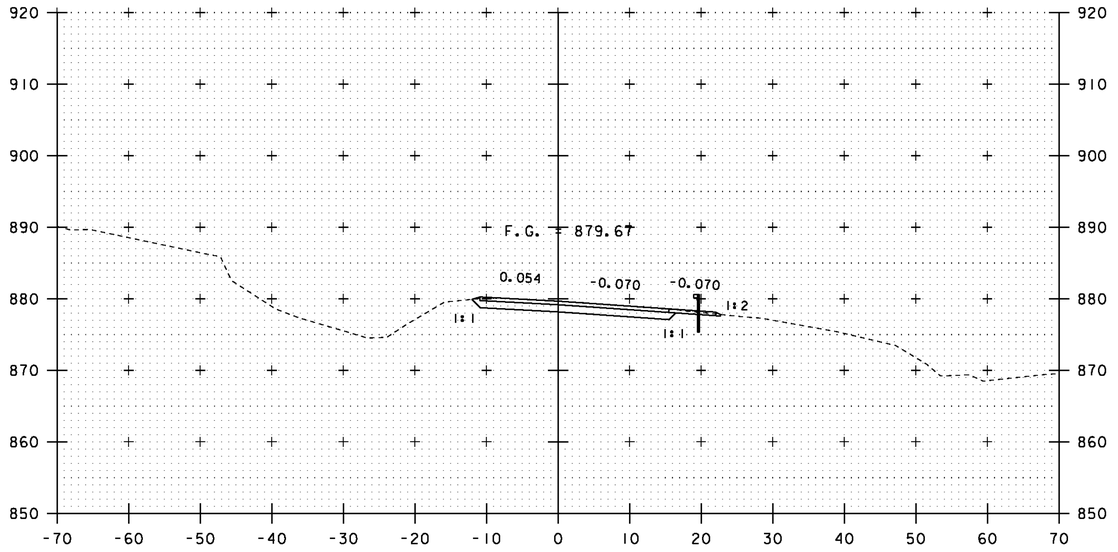
VT 12A MATERIAL TRANSITION DETAIL

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 2'-0"

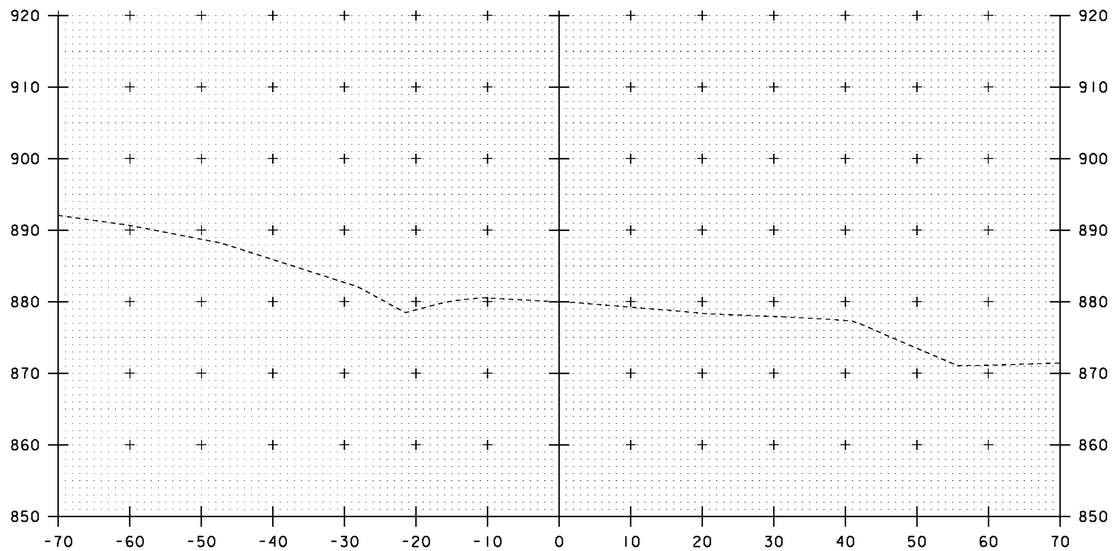
PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420pro.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
BANKING DIAGRAM AND MATERIAL TRANSITION	SHEET 31 OF 54



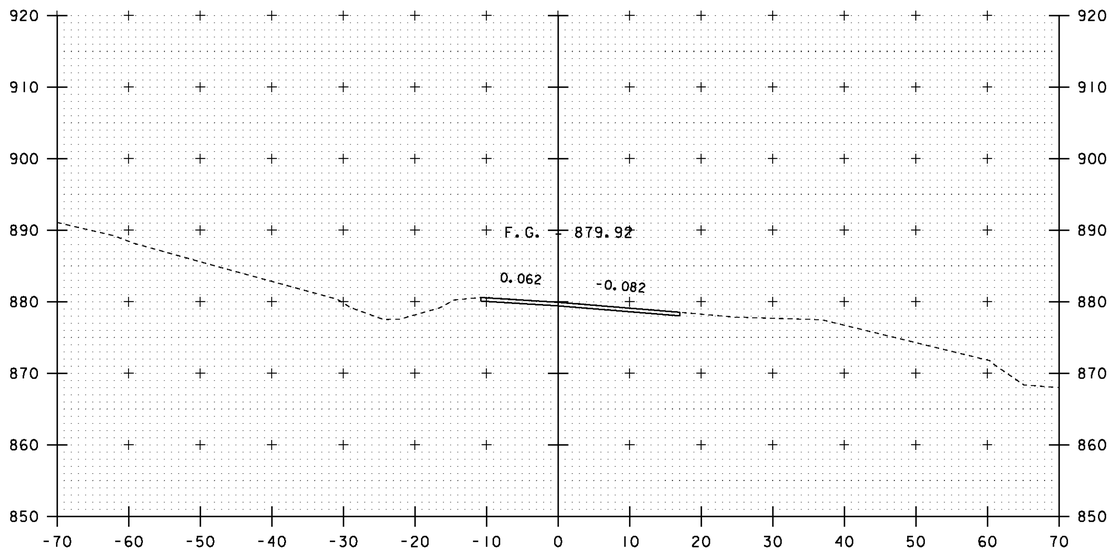
2+25



2+75



2+00



2+50

BEGIN APPROACH
MATCH EXISTING
STA 2+50.00

10 0 10

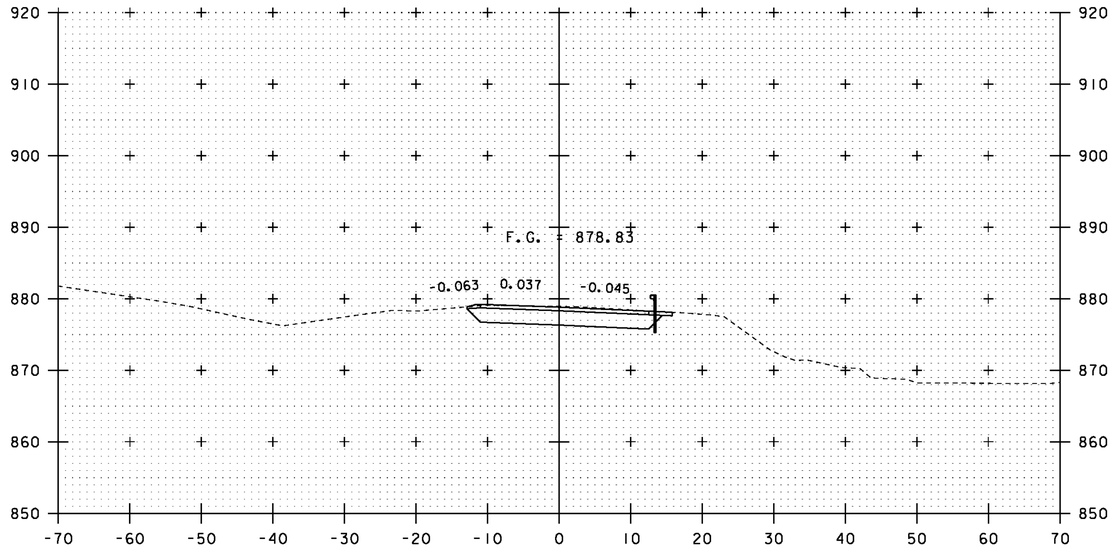
SCALE: 1" = 10'-0"

STA. 2+00 TO STA. 2+75

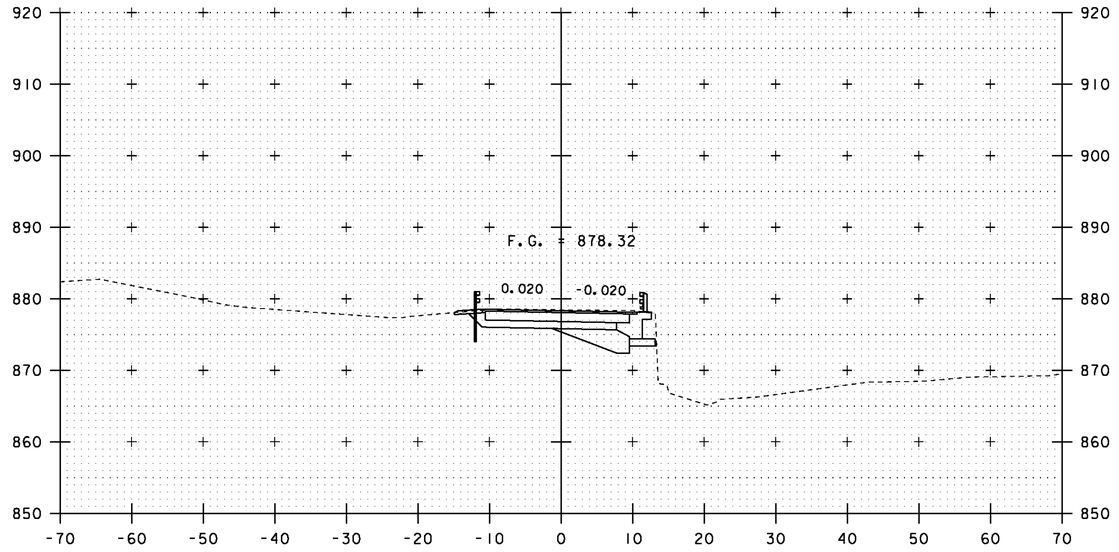
PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
VT 12A CROSS SECTIONS (1)

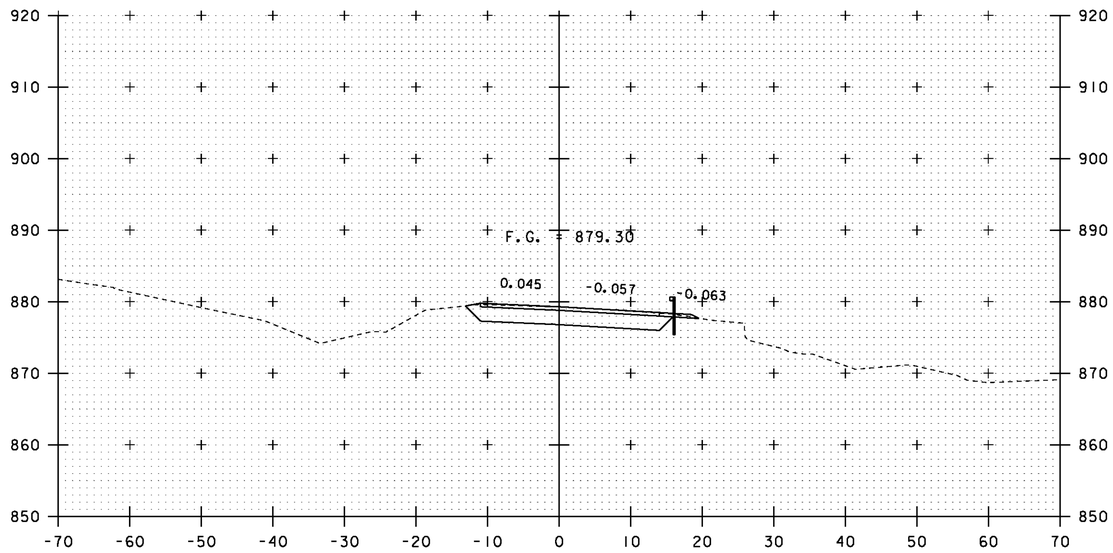
PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 32 OF 54



3+25



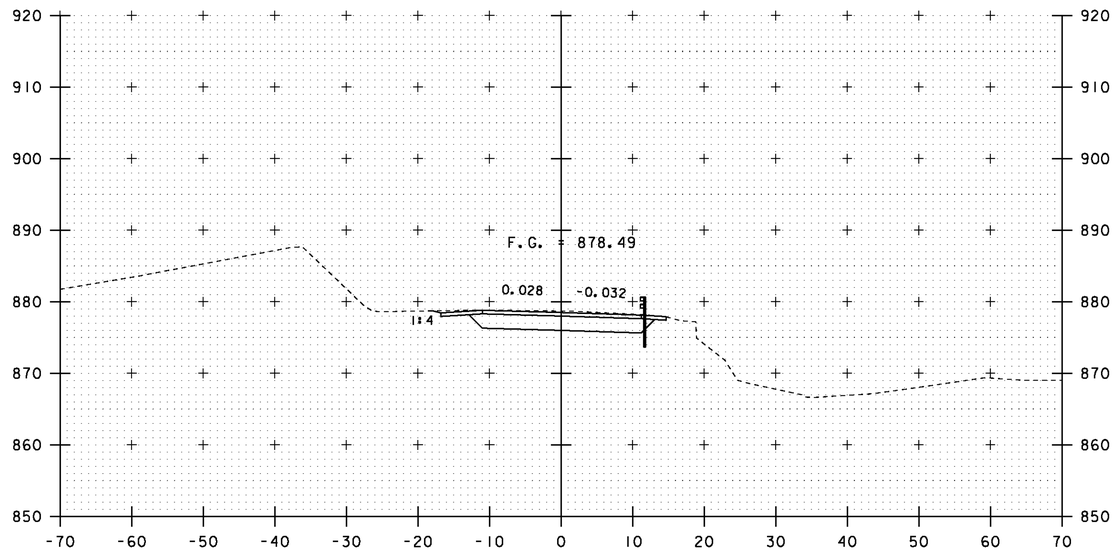
3+75



SEE SHEET 37 FOR NEW OPTION PIPE SECTION AT STA 2+89.2.

3+00

END APPROACH
BEGIN PROJECT
STA 3+00.00



3+50

10 0 10

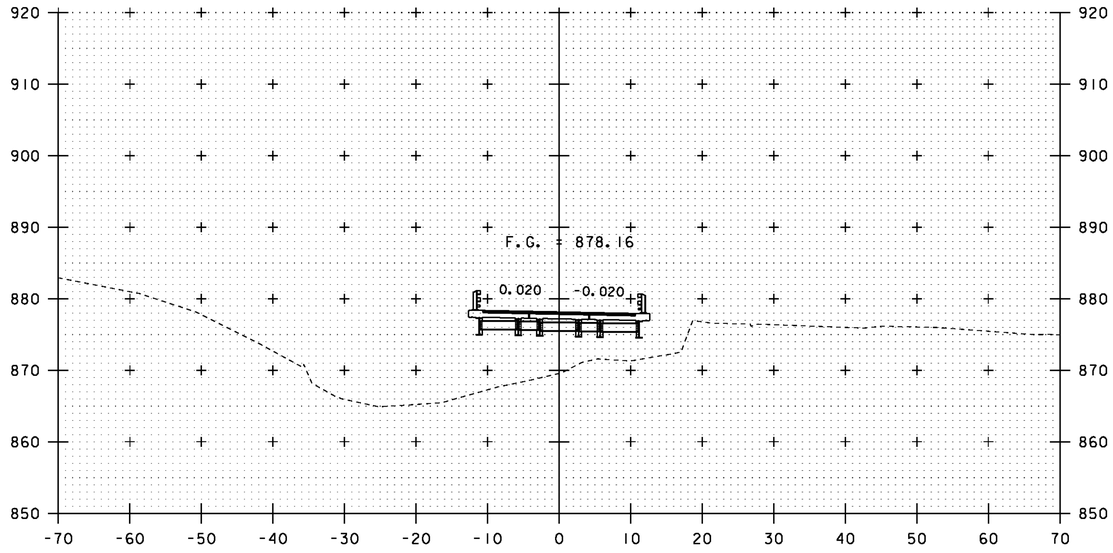
SCALE: 1" = 10'-0"

STA. 3+00 TO STA. 3+75

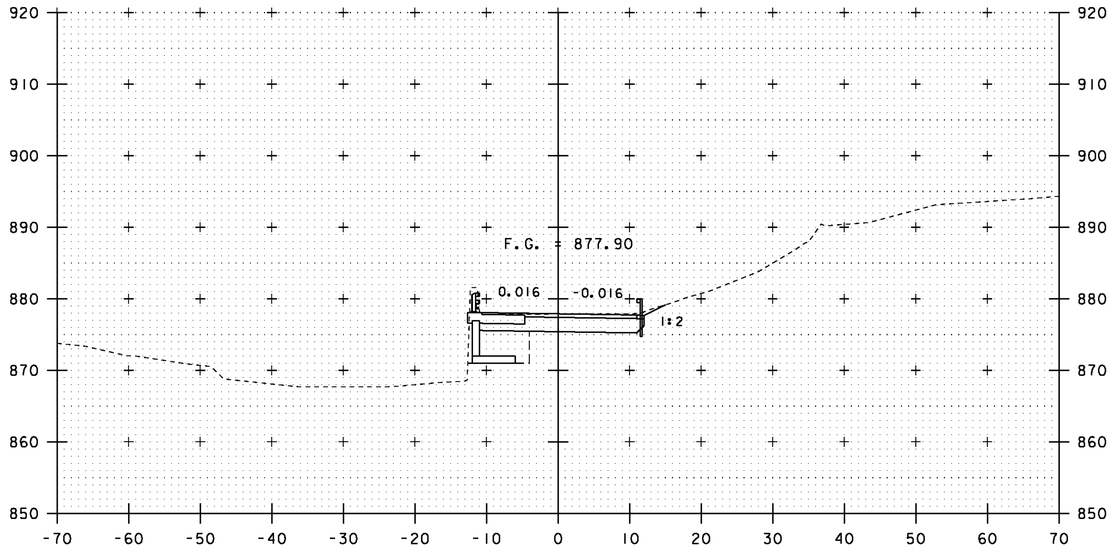
PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
VT 12A CROSS SECTIONS (2)

PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 33 OF 54

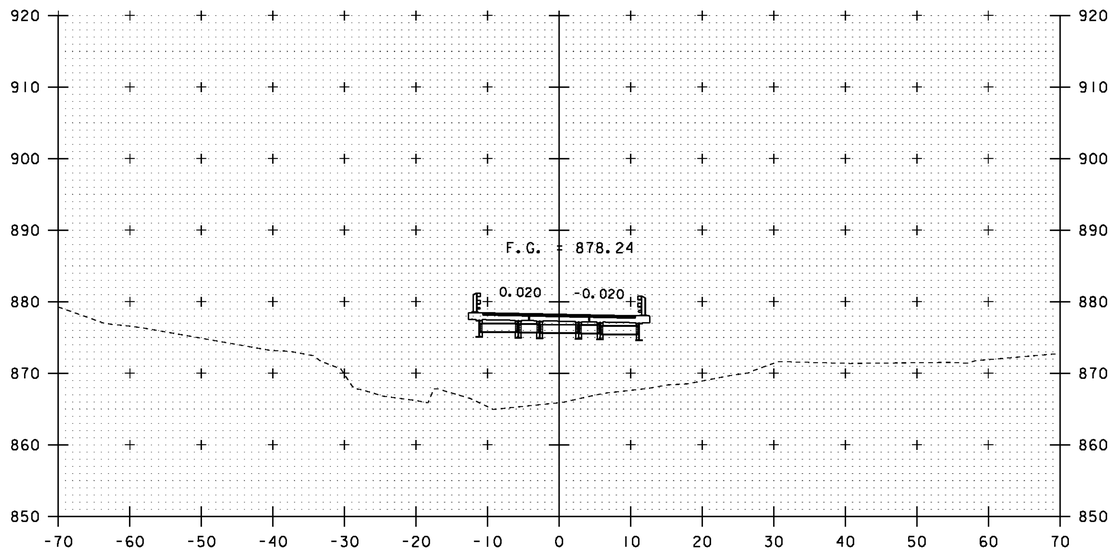


4+25



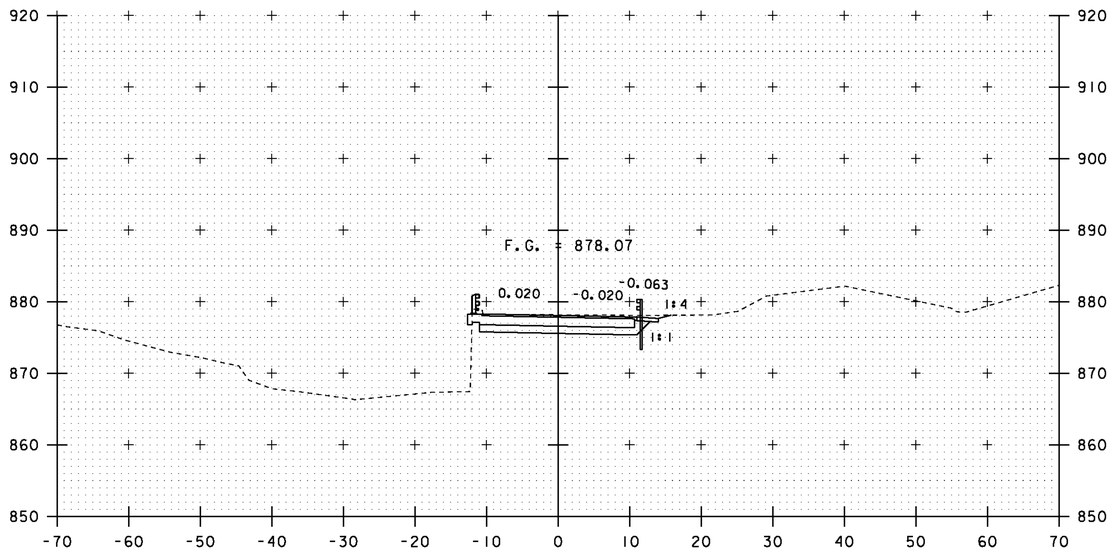
BEGIN PRECAST CONCRETE STRUCTURE (WINGWALL NO. 3)
STA 4+64.91 LT

4+75



BEGIN BRIDGE
STA 3+81.32

4+00



END BRIDGE
STA 4+37.98

4+50

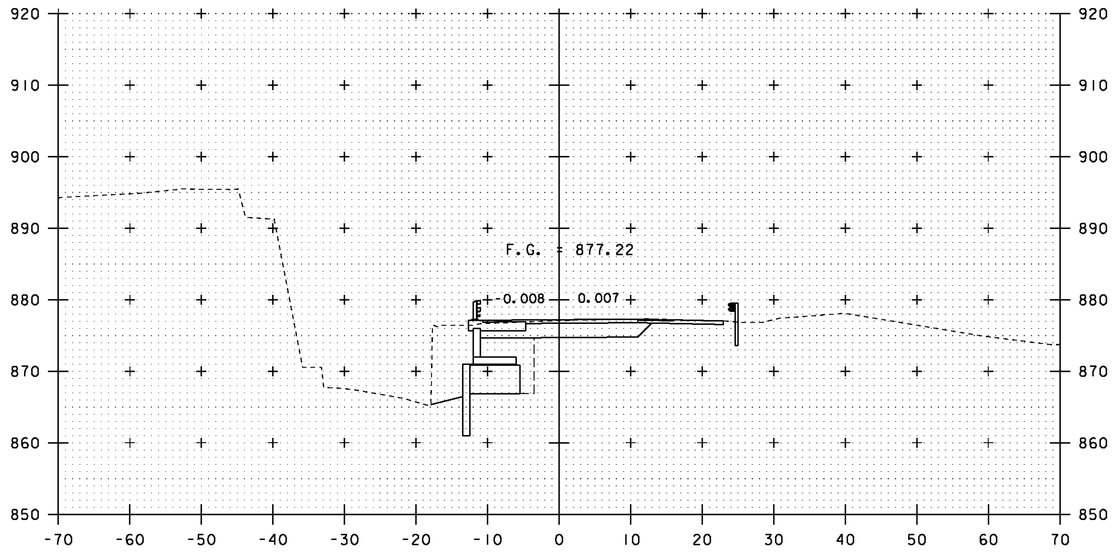
10 0 10
SCALE: 1" = 10'-0"

STA. 4+00 TO STA. 4+75

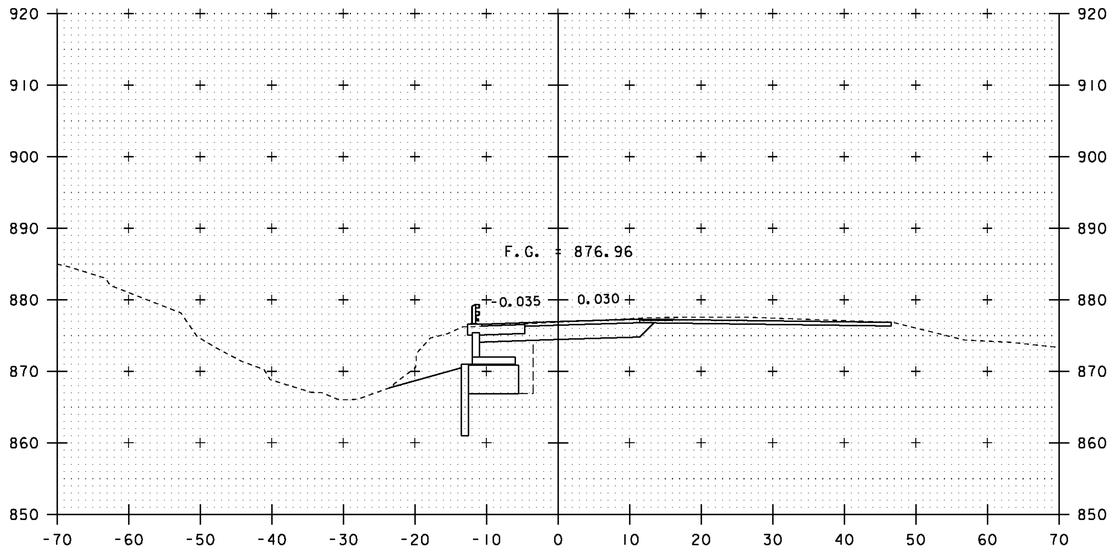
PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
VT 12A CROSS SECTIONS (3)

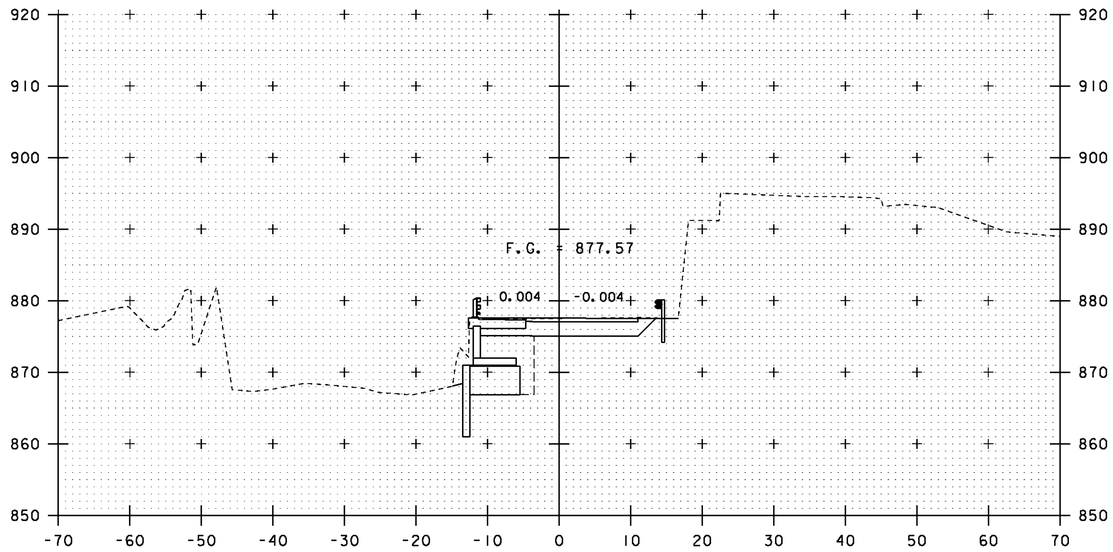
PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 34 OF 54



5+25

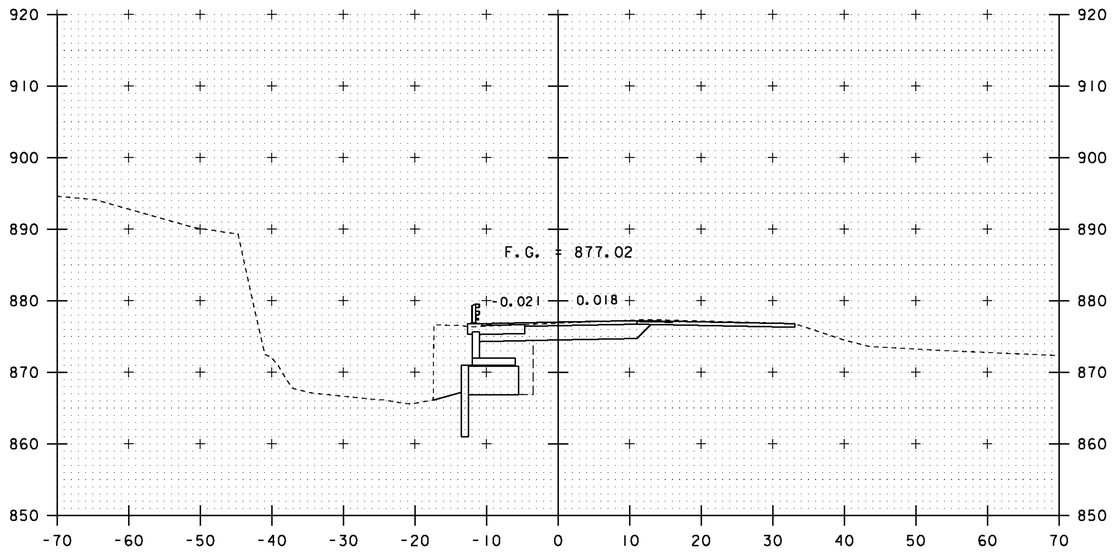


5+75



BEGIN PERMANENT STEEL SHEET PILING
STA 4+90.0 LT

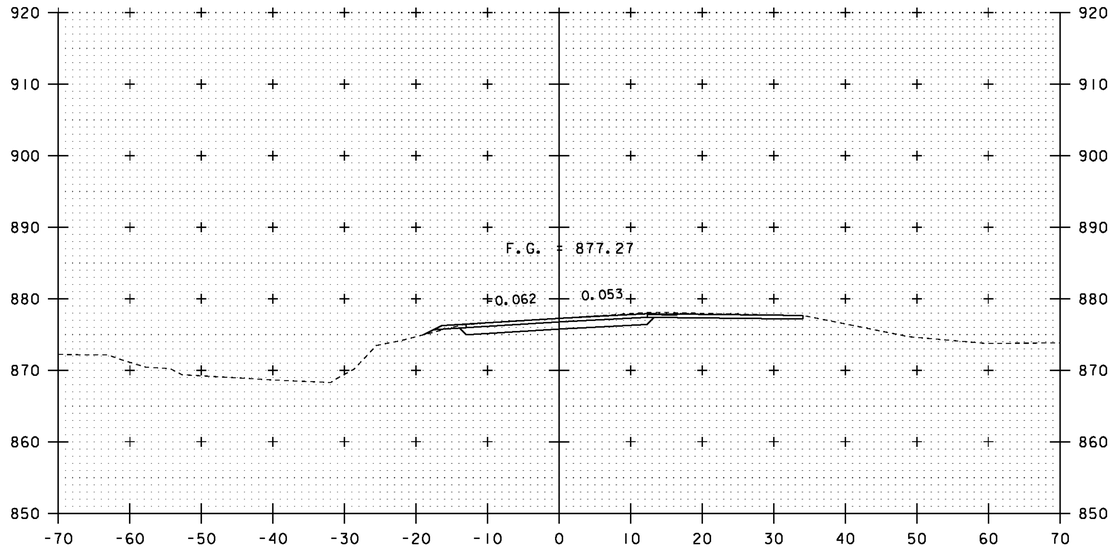
5+00



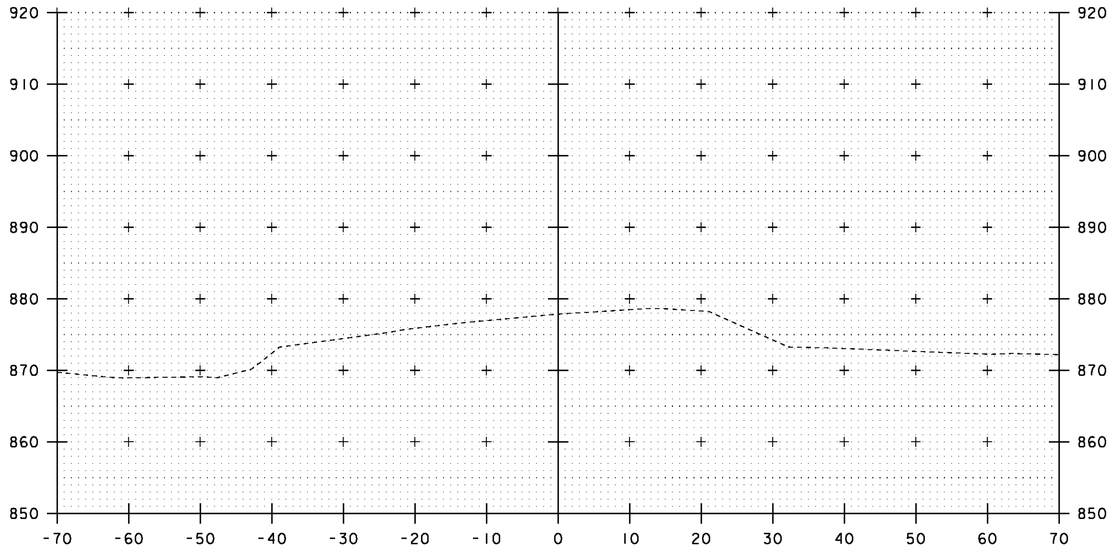
5+50

STA. 5+00 TO STA. 5+75

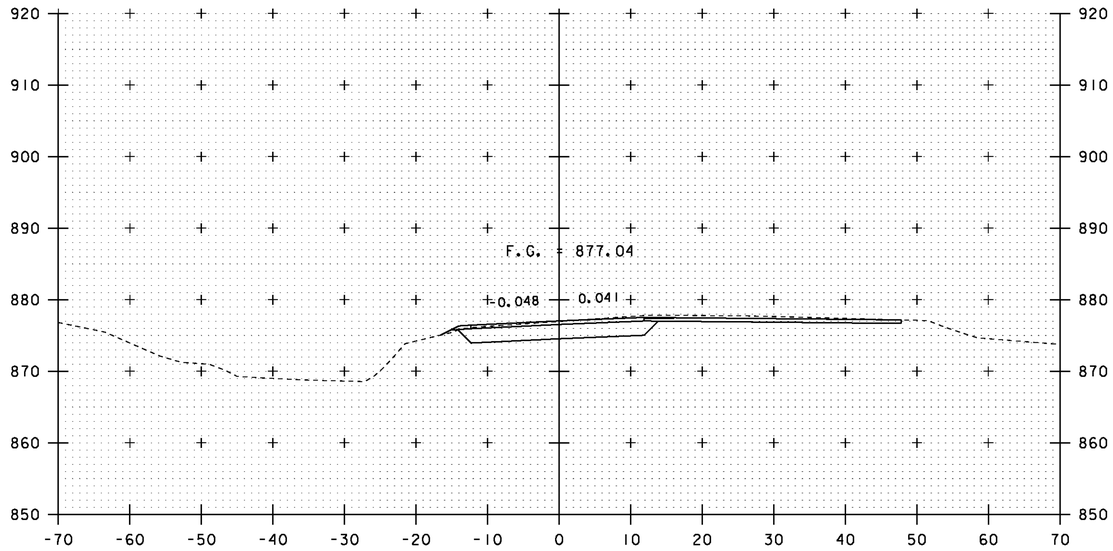
PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420xsl.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
VT 12A CROSS SECTIONS (4)	SHEET 35 OF 54



6+25



6+75

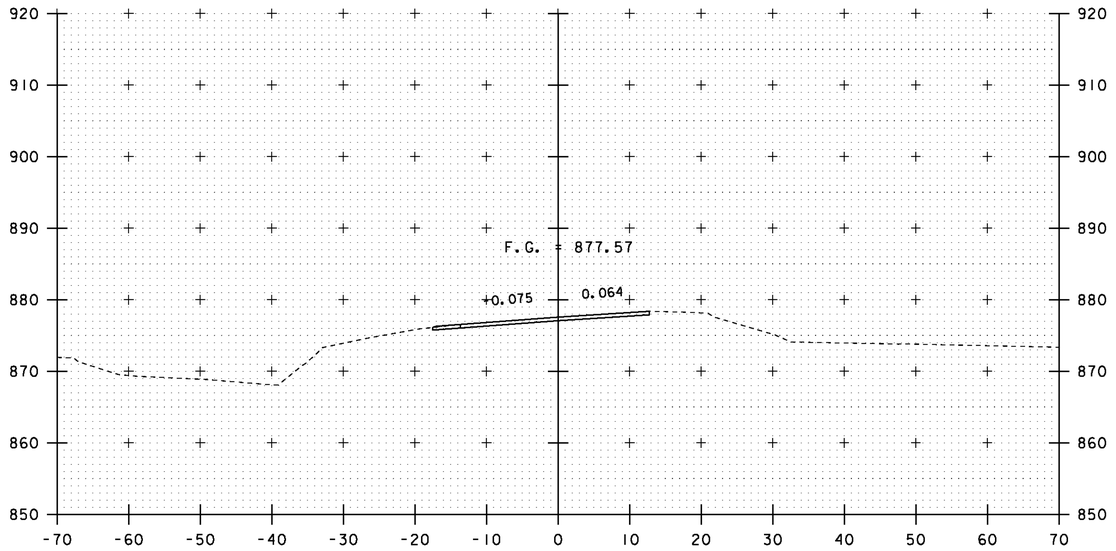


END PRECAST CONCRETE STRUCTURE (WINGWALL NO. 3)
STA 5+99.30 LT

END PERMANENT STEEL SHEET PILING
STA 6+00.0 LT

6+00

END PROJECT
BEGIN APPROACH
STA 6+00.00



6+50

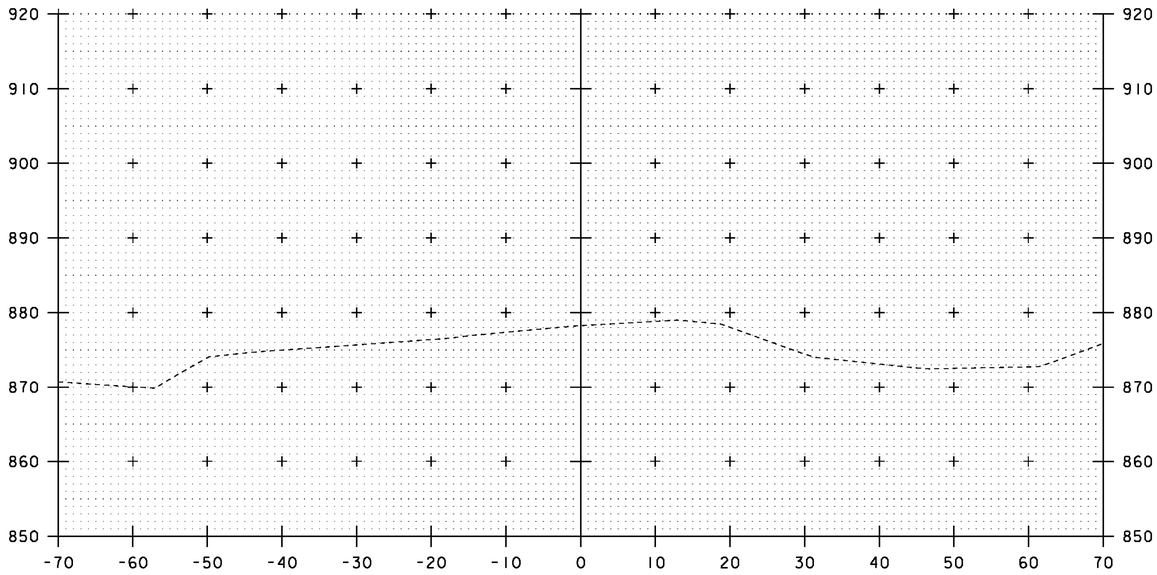
END APPROACH
MATCH EXISTING
STA 6+50.00

STA. 6+00 TO STA. 6+75

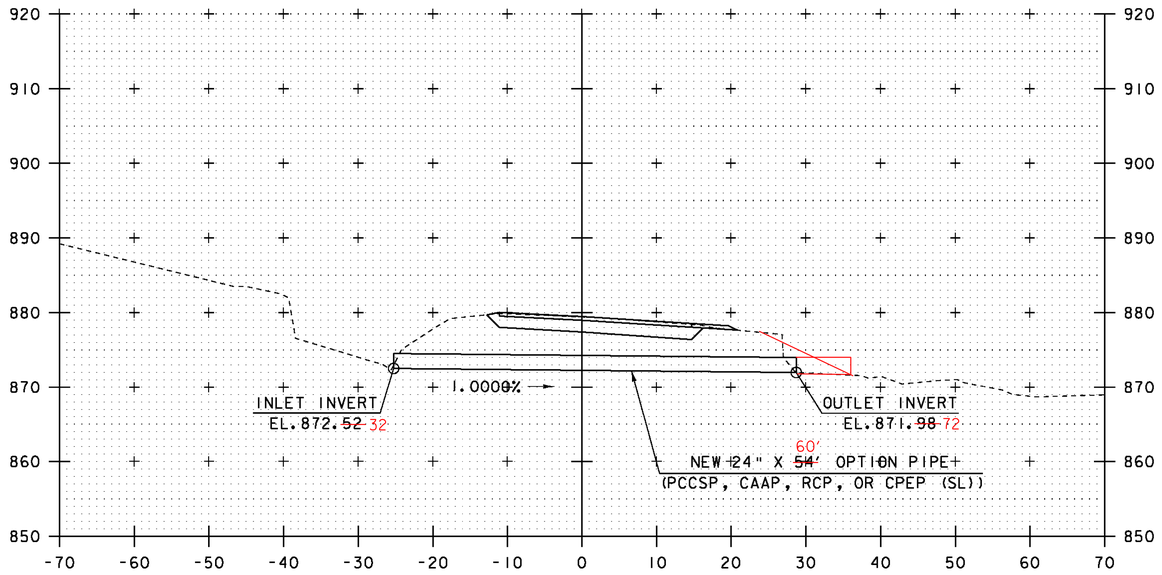
PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
VT 12A CROSS SECTIONS (5)

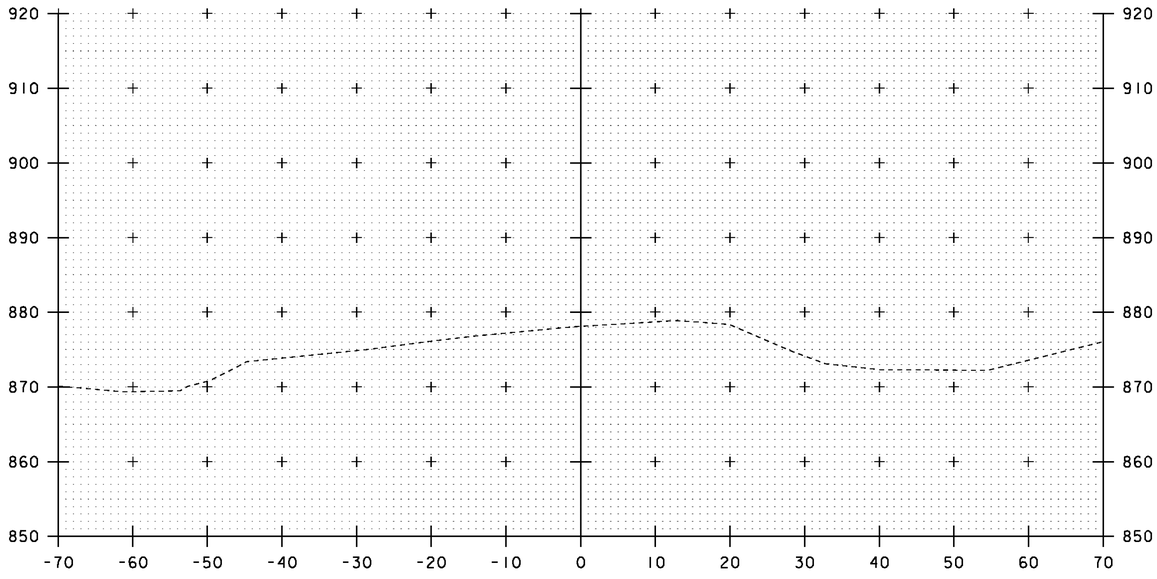
PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 36 OF 54



7+25



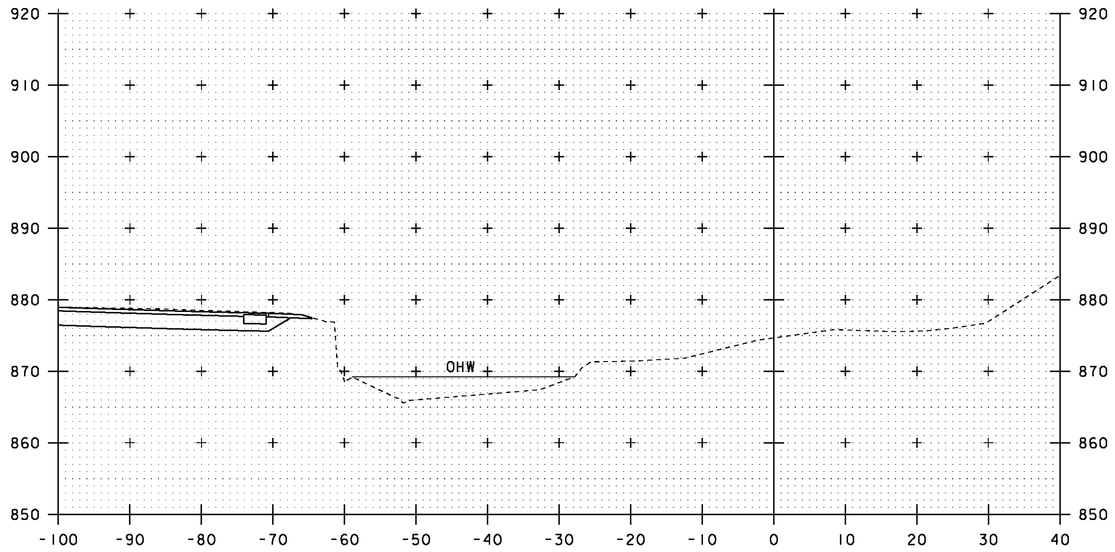
2+89.2, SKEW 7°48' LT



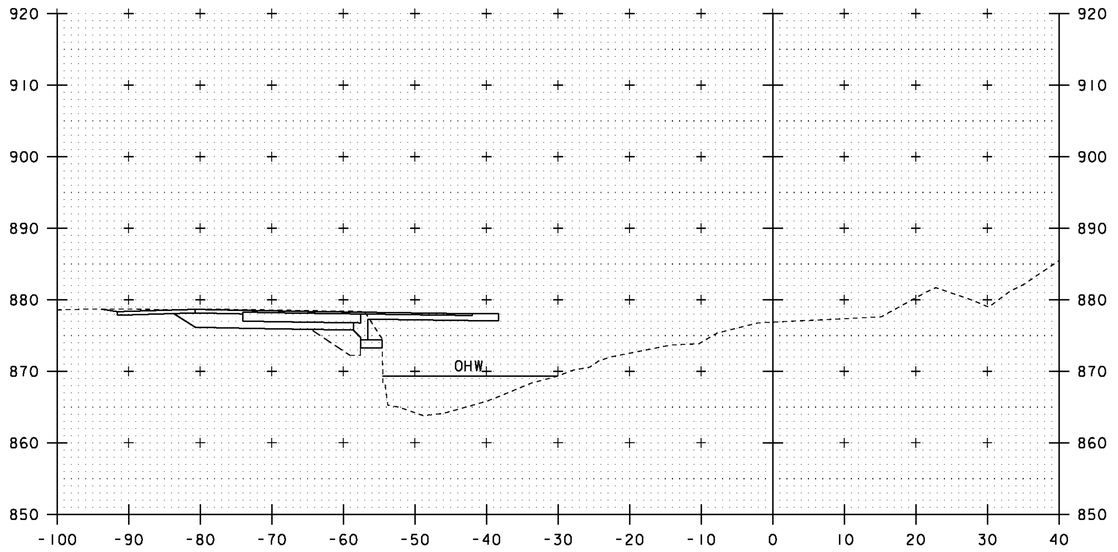
7+00

STA. 7+00 TO STA. 7+25

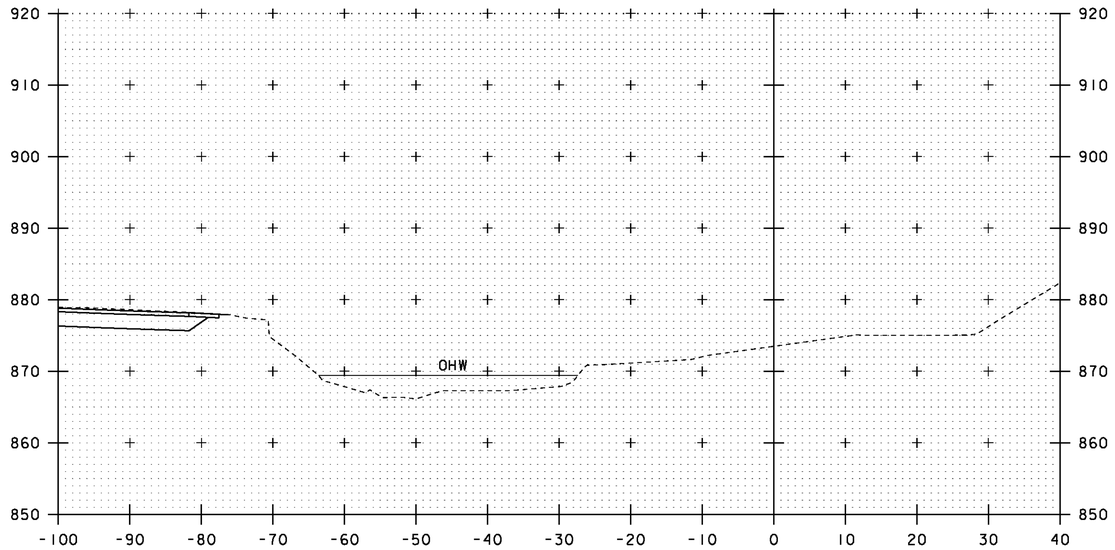
PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME: s10c420xsl.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
VT 12A CROSS SECTIONS (6)	SHEET 37 OF 54



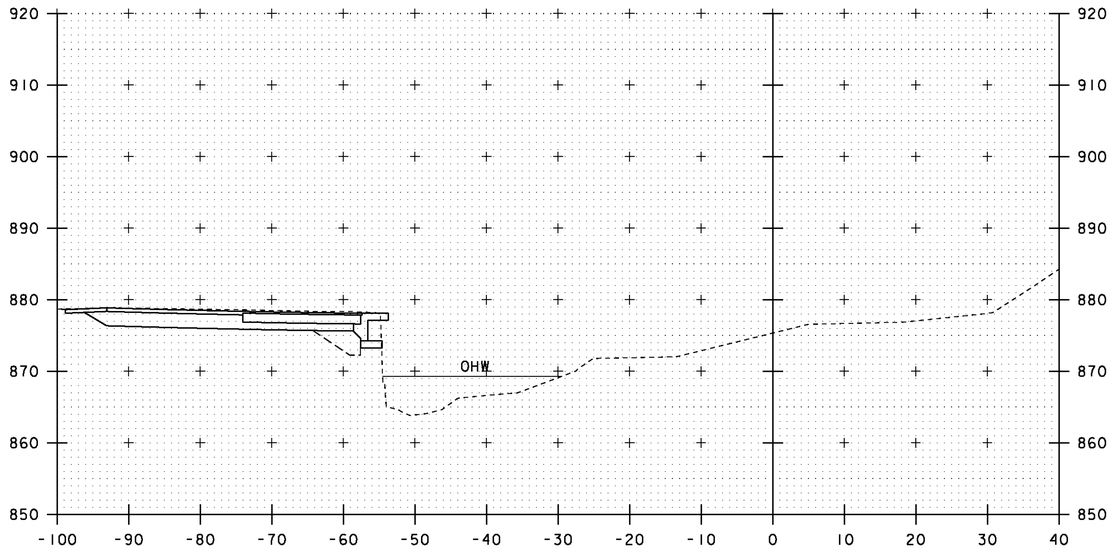
50+40



50+60



50+30



50+50

10 0 10

SCALE: 1" = 10'-0"

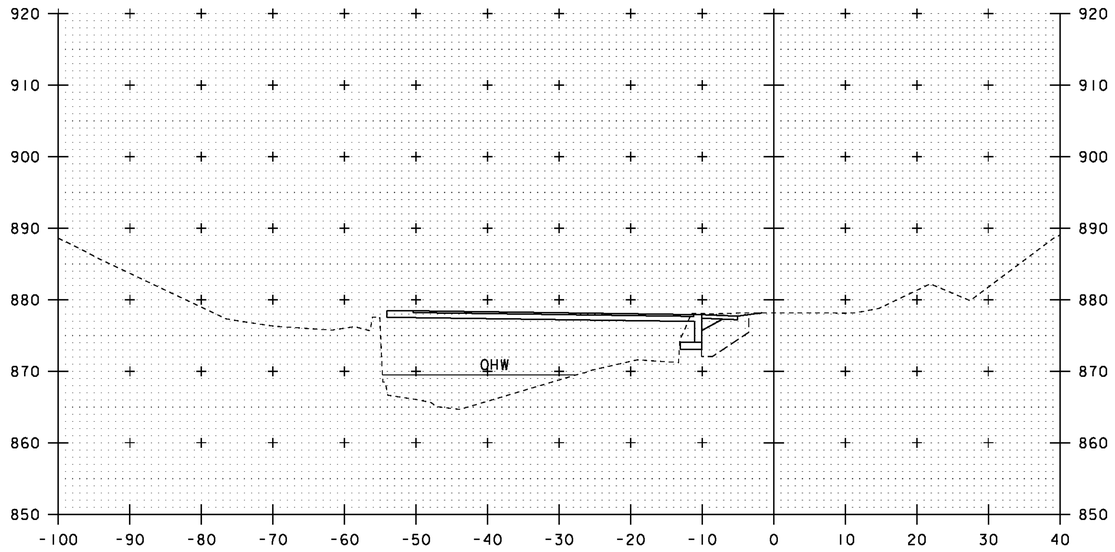
STA. 50+30 TO STA. 50+60

PROJECT NAME: ROXBURY

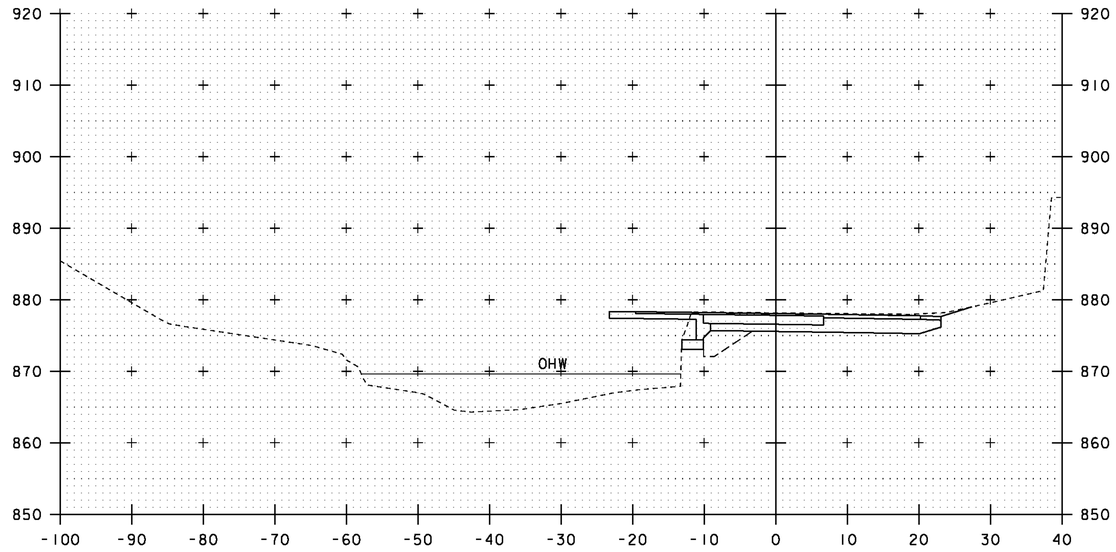
PROJECT NUMBER: BHF 0187(8)

FILE NAME: s10c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
CHANNEL LINE CROSS SECTIONS (1)

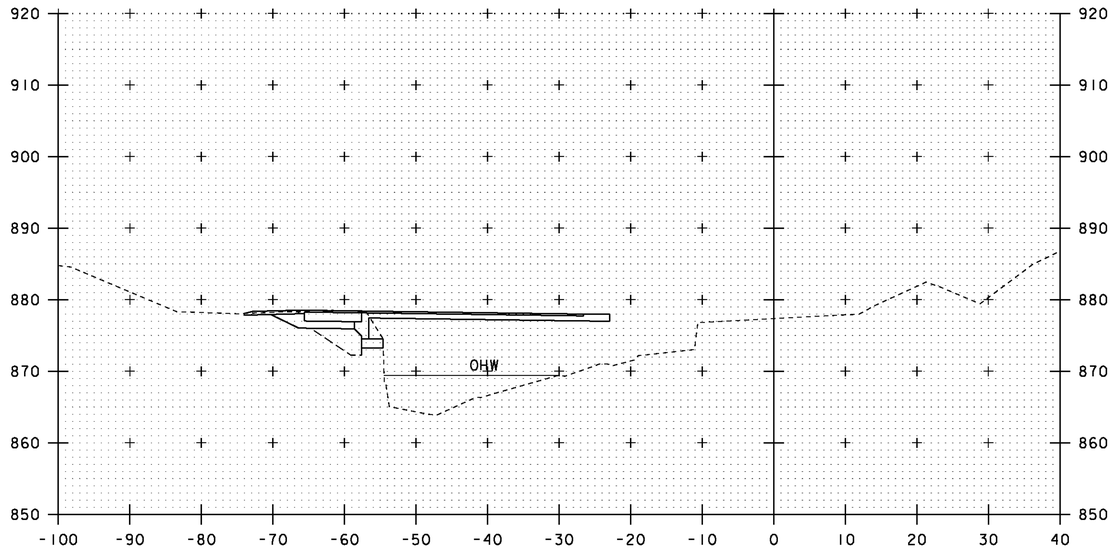
PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 38 OF 54



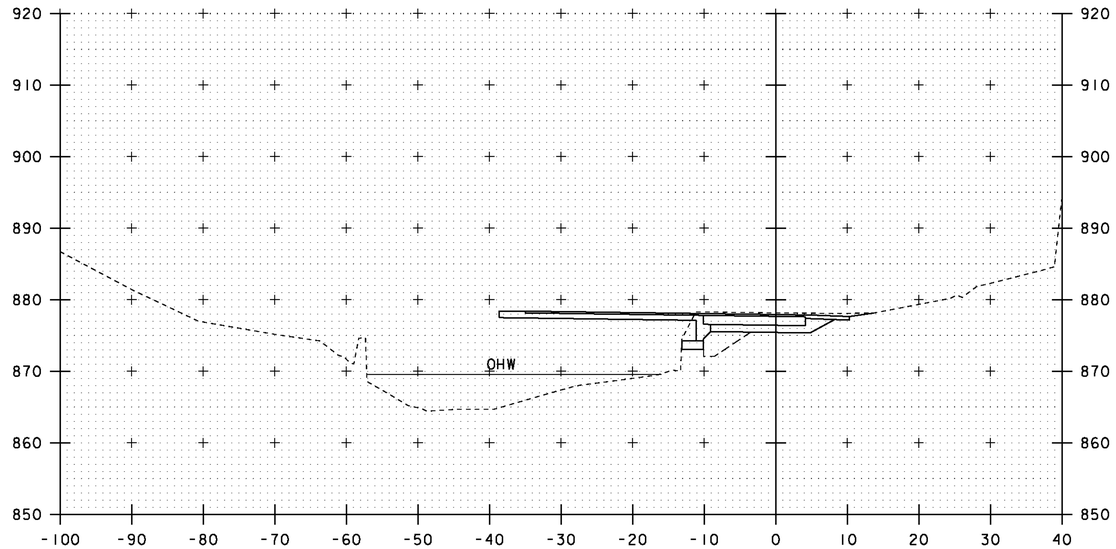
50+80



51+00



50+70



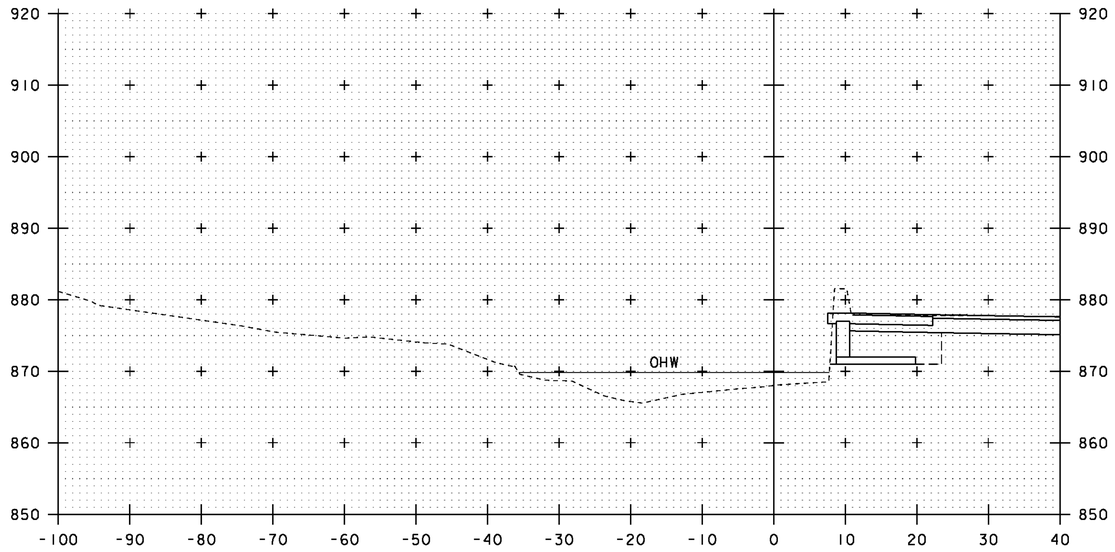
50+90

10 0 10

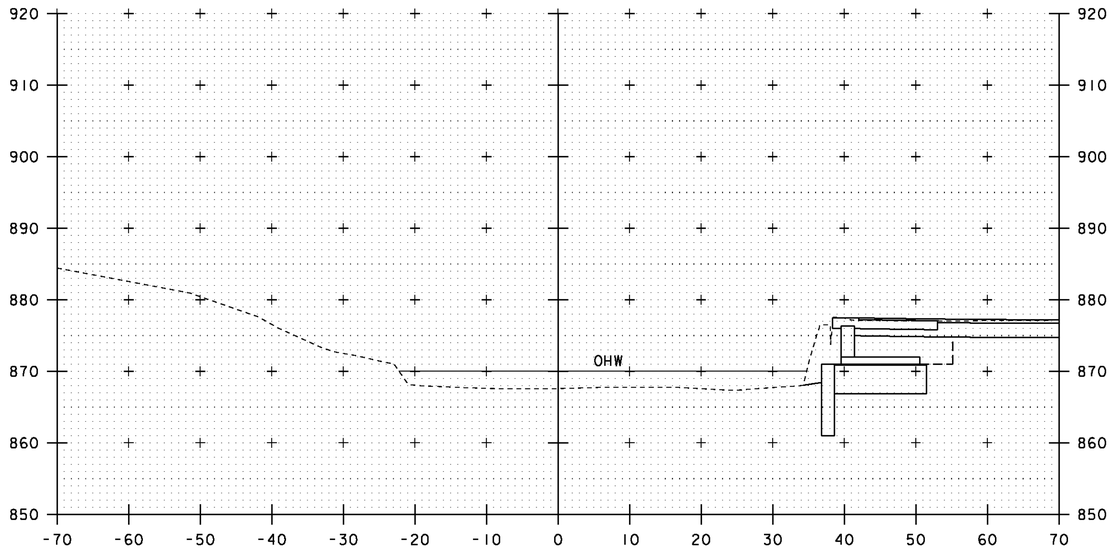
SCALE: 1" = 10'-0"

STA. 50+70 TO STA. 51+00

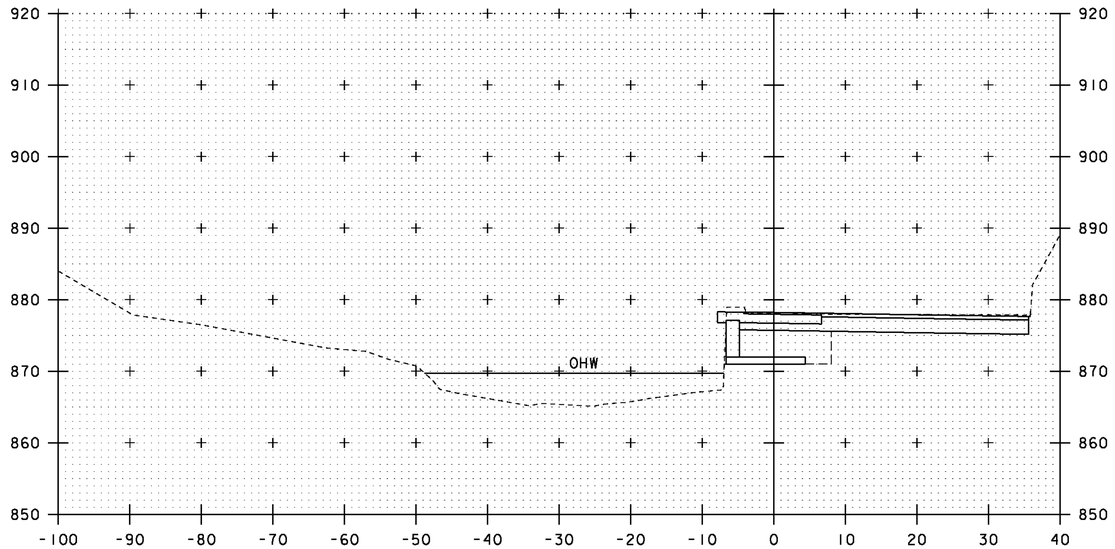
PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: s10c420xsl.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
CHANNEL LINE CROSS SECTIONS (2)	SHEET 39 OF 54



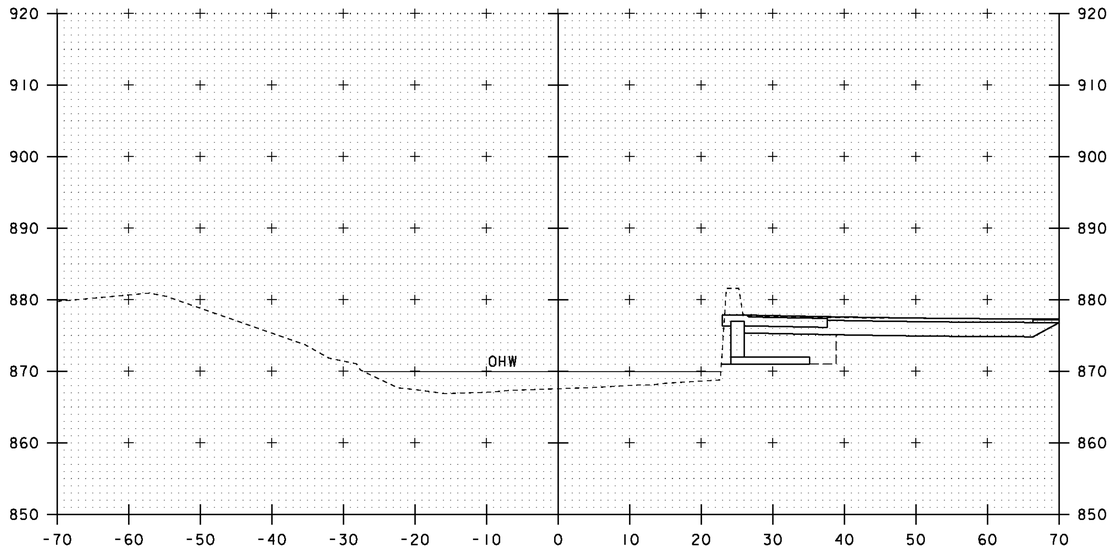
51+20



51+40



51+10



51+30

10 0 10

SCALE: 1" = 10'-0"

STA. 51+10 TO STA. 51+40

PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

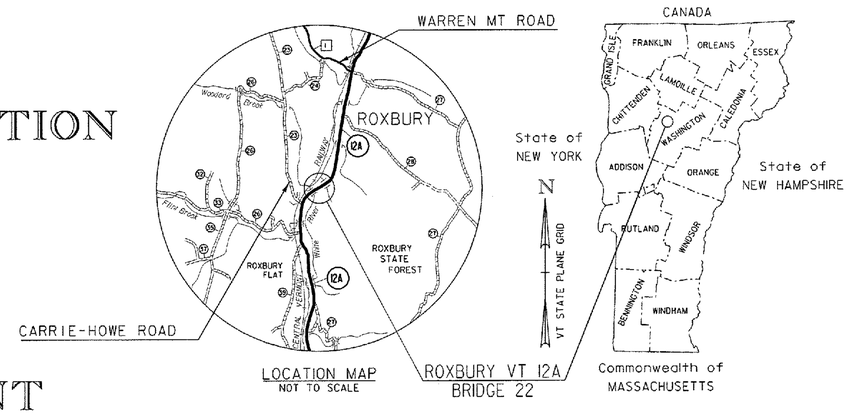
FILE NAME: s10c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
CHANNEL LINE CROSS SECTIONS (3)

PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 40 OF 54

INDEX OF SHEETS:
SEE SHEET 2

VAOT STANDARD SHEETS
SEE SHEET 2

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF ROXBURY
COUNTY OF WASHINGTON
BRIDGE NO. 22 ON VERMONT 12A

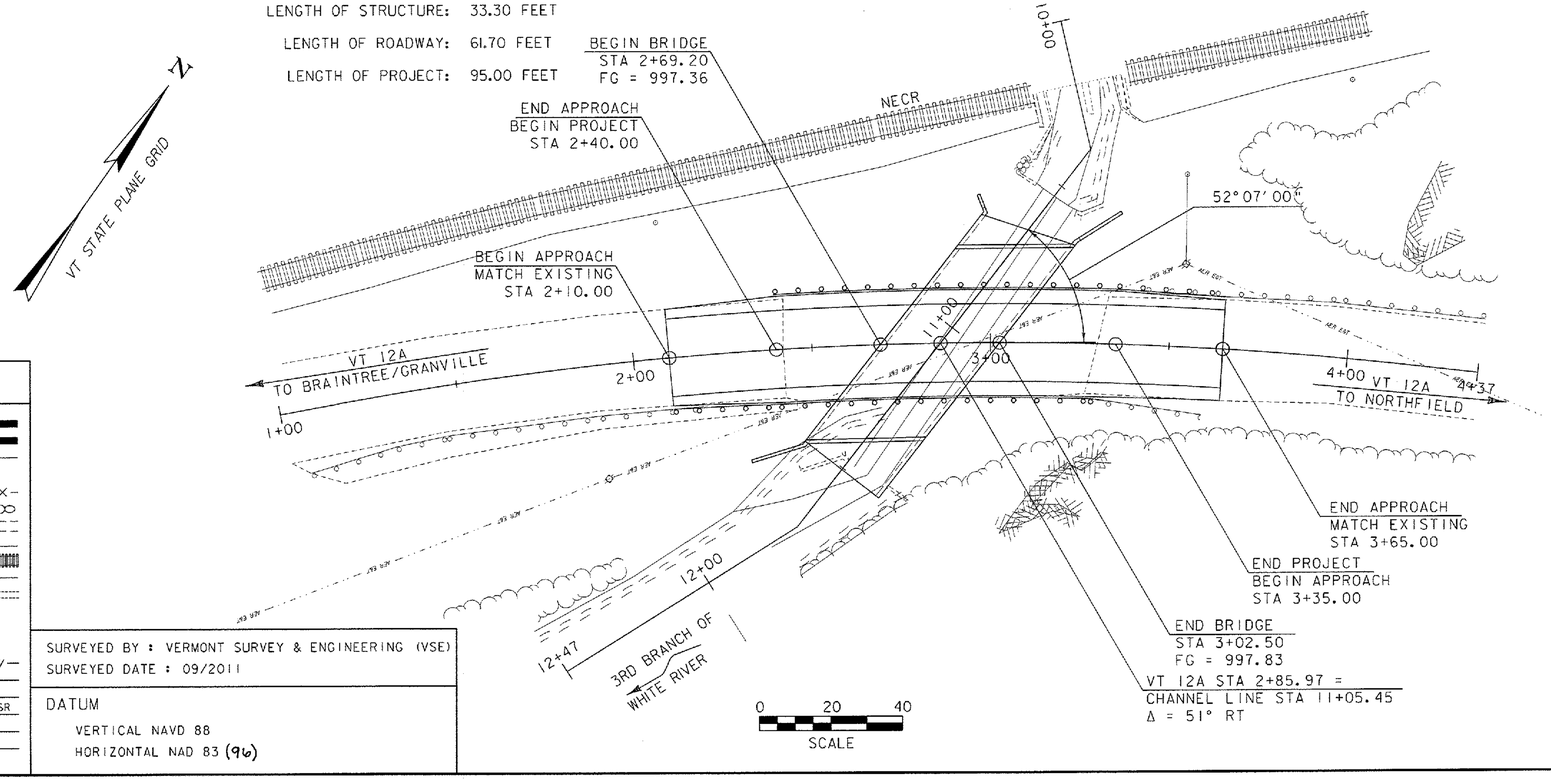
PROJECT LOCATION: BEGINNING AT A POINT ON VT RTE. 12A APPROXIMATELY 3.27 MILES NORTHERLY FROM THE GRANVILLE/ROXBURY TOWN LINE AND EXTENDING NORTHERLY ALONG VT RTE. 12A FOR 95.00 FEET.

PROJECT DESCRIPTION: REPLACEMENT OF EXISTING CORRUGATED STEEL CULVERT WITH A PRECAST CONCRETE STRUCTURE ALONG WITH RELATED ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE: 33.30 FEET

LENGTH OF ROADWAY: 61.70 FEET

LENGTH OF PROJECT: 95.00 FEET



QUALITY ASSURANCE PROGRAM: LEVEL 2

CONVENTIONAL SYMBOLS

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

SURVEYED BY : VERMONT SURVEY & ENGINEERING (VSE)
SURVEYED DATE : 09/2011

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (96)

STATE OF VERMONT
GEORGE A. DOGUE JR. NO. 9150
REGISTERED PROFESSIONAL ENGINEER
3/9/11

Stantec
Stantec Consulting Services Inc.
55 Green Mountain Drive
South Burlington VT U.S.A. 05403
Tel. 802.864.0223
Fax. 802.864.0165
www.stantec.com

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

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

PROJECT MANAGER : ROB YOUNG

PROJECT NAME : ROXBURY
PROJECT NUMBER : ER 0187 (9)

SHEET 41 OF 54 SHEETS

PROJECT NOTES

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION, 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ITS LATEST REVISIONS AND THE 2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND ITS LATEST REVISIONS.

2. ALL PRECAUTIONS SHALL BE TAKEN TO PREVENT SILTATION OR POLLUTION INTO THE STREAM. REFER TO STANDARD SPECIFICATIONS, SECTION 105. ALL WATER PUMPED FROM EXCAVATION AREA SHALL BE CLARIFIED PRIOR TO BEING ALLOWED TO MIX WITH THE STREAM FLOW. STATE WATER QUALITY STANDARDS SHALL BE MAINTAINED AT ALL TIMES.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STAGING SCHEME. ALL WORK MUST BE DONE IN THE DRY AND ALL NEW STRUCTURE SECTIONS AND BED MATERIAL SHALL BE COMPLETELY INSTALLED BEFORE THE STREAM IS ALLOWED TO FLOW THROUGH THEM. A TEMPORARY STREAM DIVERSION SYSTEM IS NECESSARY TO CARRY THE STREAM DURING CONSTRUCTION. THE CONTRACTOR SHALL PREPARE AND SUBMIT A TEMPORARY STREAM DIVERSION PLAN TO CARRY THE STREAM DURING CONSTRUCTION. THE PLAN SHALL DEPICT MEASURES PROPOSED TO PREVENT EROSION AND SEDIMENTATION AND MAINTAIN STREAM WATER QUALITY. THE COST OF STREAM DIVERSION, INCLUDING ANY TEMPORARY PIPING OR DE WATERING, SHALL BE PAID FOR UNDER ITEM 900.645 SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).

4. THE FOLLOWING SHALL BE PAID FOR UNDER ITEM 529.15, REMOVAL OF STRUCTURE: REMOVAL AND DISPOSAL OF THE EXISTING METAL CULVERT INCLUDING UPSTREAM AND DOWNSTREAM CONCRETE HEADWALLS.

5. CONTRACTOR SHALL STOCKPILE THE EXISTING PLATES AND CONCRETE BARRIER ON SITE, IN A CONVENIENT LOCATION FOR PICK UP BY OTHERS.

PRECAST CONCRETE STRUCTURE

1. DESIGN OF THE PRECAST CONCRETE STRUCTURE COMPONENTS SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) AND ITS LATEST INTERIM'S, THE VTRANS STRUCTURES DESIGN MANUAL, AND THE DESIGN CRITERIA INDICATED ON THE PLANS. PAYMENT WILL BE MADE UNDER THE LUMP SUM PRICE BID FOR ITEM 540.10, "PRECAST CONCRETE STRUCTURE".

2. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS FOR THE PRECAST STRUCTURE AND ALL ASSOCIATED DETAILS FOR THE APPROVAL OF THE STRUCTURES ENGINEER IN ACCORDANCE WITH SUBSECTION 105.03 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, WITH THE EXCEPTION OF REVIEW TIME. SEE SPECIAL PROVISIONS.

3. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT FOR THE INTERIOR OF THE NEW STRUCTURE.

4. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1".

TRAFFIC CONTROL

1. AS PART OF THE 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE) ITEM, THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL. SEE SPECIAL PROVISIONS.

2. THE BRIDGE SHALL BE CLOSED TO TRAFFIC DURING CONSTRUCTION.

PAVEMENT NOTES

1. 1½" OF TEMPORARY PAVEMENT SHALL BE PLACED ON TOP OF SUBBASE PRIOR TO WINTER SHUT DOWN. THE PAVEMENT NEED NOT MEET THE MIX DESIGN SUBMITTAL AND PLANT INSPECTION REQUIREMENTS SET FORTH IN SECTIONS 406 OR 490.

2. FINAL PAVEMENT SHALL BE PLACED BY OTHERS UNDER SEPARATE CONTRACT.

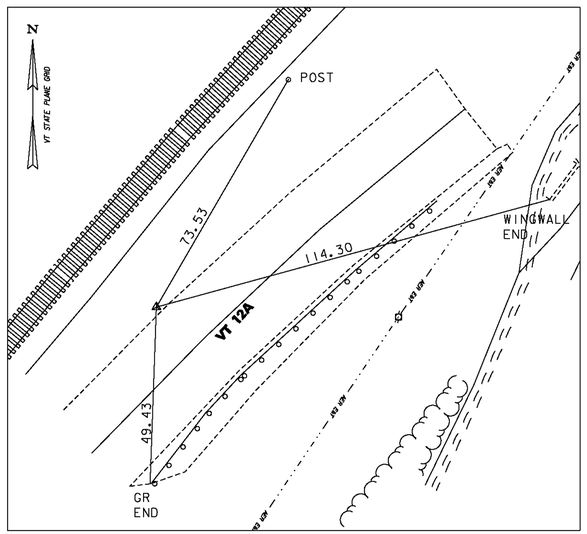
Stantec

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	ER 0187(9)
FILE NAME: ...\plotfiles\notes_index.dgn	PLOT DATE: 9/22/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
INDEX OF SHEETS, VAOT STDS. & PROJ. NOTES	SHEET 42 OF 54

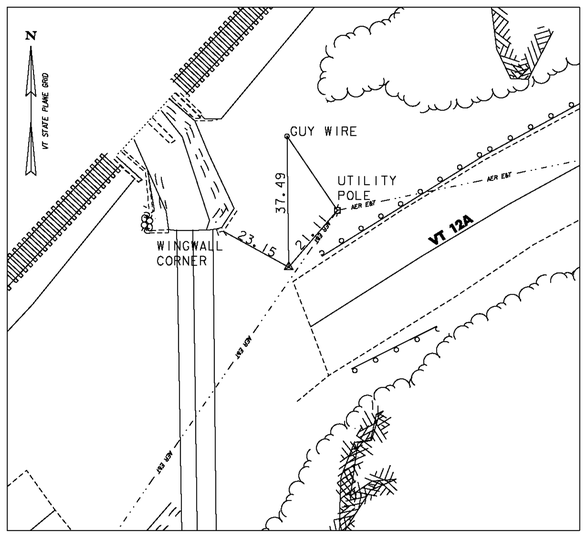
GPS CONTROL POINTS

TRAVERSE TIES

CONTROL POINT #1



CONTROL POINT #2



CONTROL POINTS					
POINT	NORTHING	EASTING	STATION	OFFSET	ELEVATION
1	574071.21'	1576271.32'	1+41.42	15.93' LT	996.54'
2	574194.48'	1576422.89'	3+33.89	17.27' LT	998.98'

ALIGNMENT DATA

VERMONT 12A

	STATION	NORTHING	EASTING
POB	1+00.00	574030.3883	1576253.2640
PC	1+16.68	574042.3200	1576264.9240
	Tangent Direction:		N 44°20'24.10" E
	Tangent Length:		16.68
PC	1+16.68	574042.3200	1576264.9240
PI	2+65.50	574148.7520	1576368.9318
CC		573343.4049	1576980.1286
PT	4+12.14	574220.2873	1576499.4236
	Radius:		1000.00
	Delta:		16°55'42.65" Right
	Degree of Curvature(Arc):		5°43'46.48"
	Length:		295.46
	Tangent:		148.81
	Chord:		294.38
	Middle Ordinate:		10.89
	External:		11.01
PT	4+12.14	574220.2873	1576499.4236
POE	4+36.76	574232.1209	1576521.0099
	Tangent Direction:		N 61°16'06.75" E
	Tangent Length:		24.62

CHANNEL FLOW LINE

	STATION	NORTHING	EASTING
POB	10+00.00	574245.9278	1576368.7157
PI	10+36.83	574221.3756	1576396.1654
	Tangent Direction:		S 48°11'21.34" E
	Tangent Length:		36.83
PI	10+36.83	574221.3756	1576396.1654
PI	11+70.79	574087.5645	1576389.7923
	Tangent Direction:		S 2°43'36.44" W
	Tangent Length:		133.96
PI	11+70.79	574087.5645	1576389.7923
PO	12+46.80	574017.4729	1576360.3920
	Tangent Direction:		S 22°45'21.15" W
	Tangent Length:		76.01

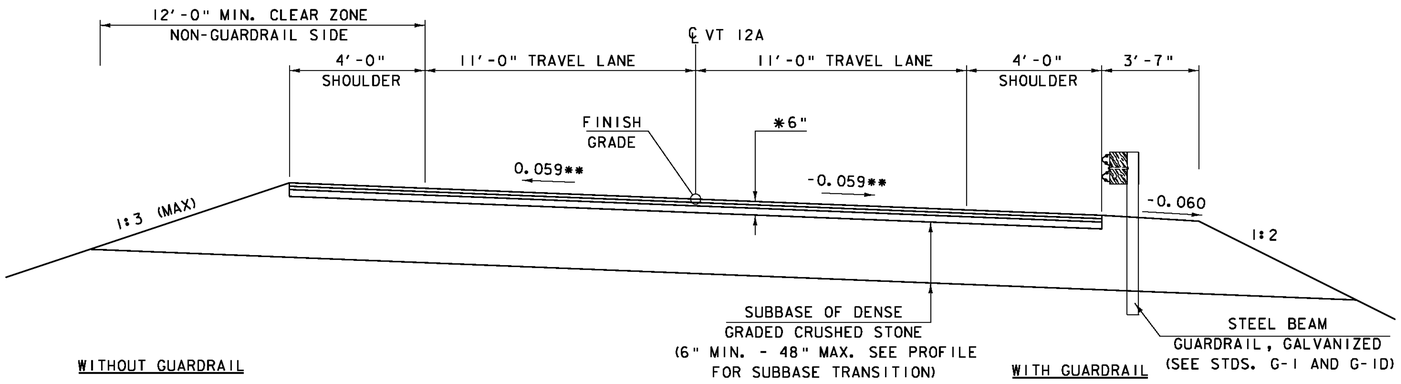
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (1996)
ADJUSTMENT	none

Stantec

PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

FILE NAME: ...\drawing\plotfiles\tie.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: M. CHENETTE
TIE SHEET

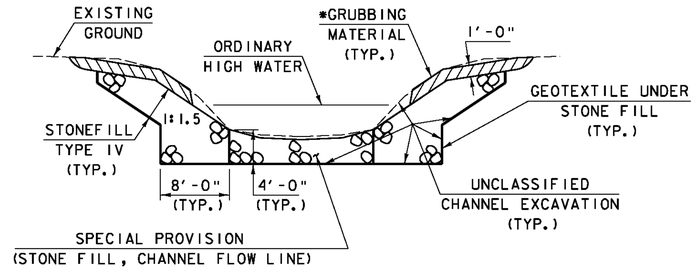
PLOT DATE: 9/21/2011
DRAWN BY: JTS/ISM
CHECKED BY: G. BOGUE
SHEET 43 OF 54



* SEE PAVEMENT NOTE ON SHEET 42.
** MATCH EXISTING CROSS SLOPE ON APPROACHES

VT 12A ROADWAY TYPICAL SECTION

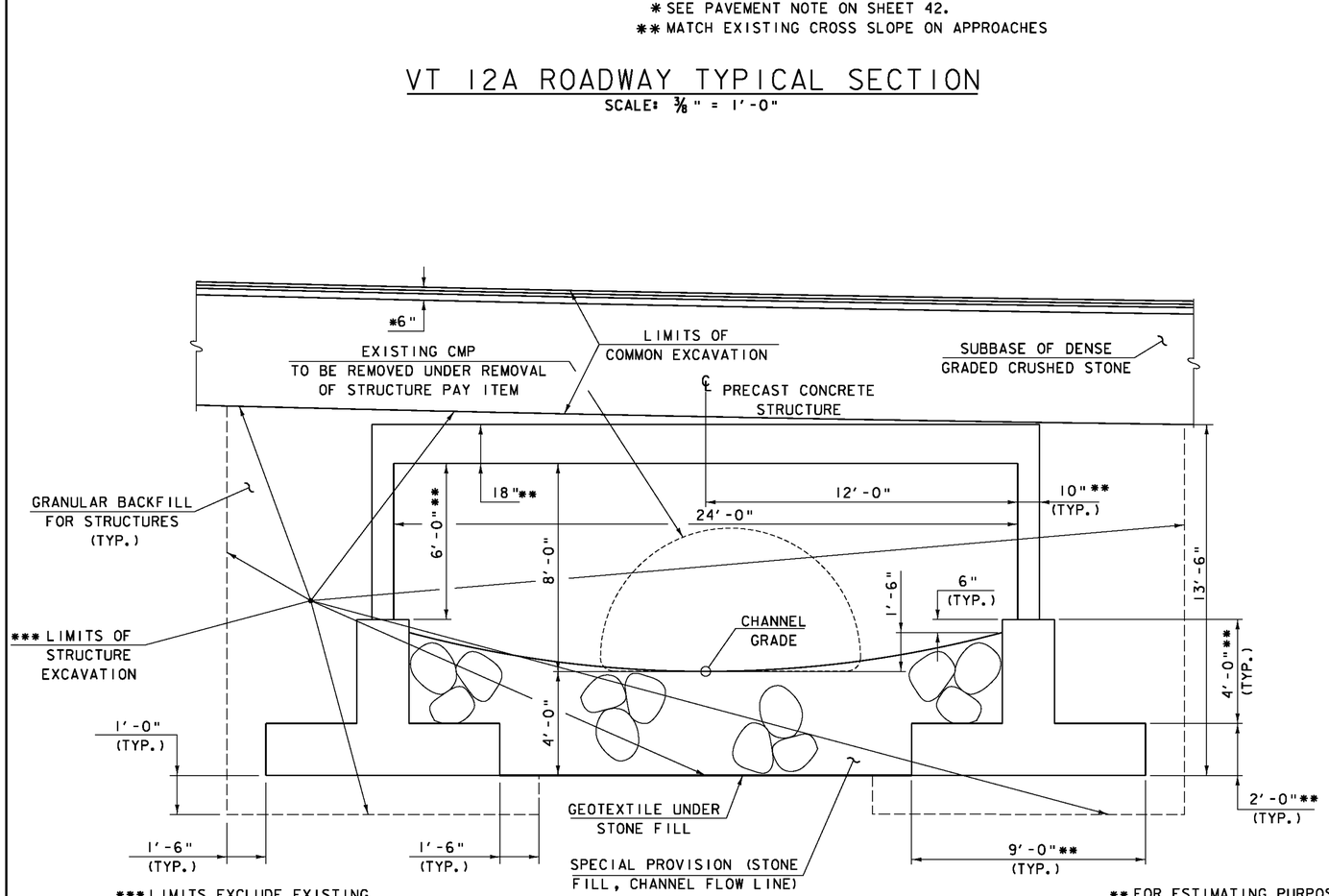
SCALE: 3/8" = 1'-0"



CHANNEL TYPICAL SECTION

NOT TO SCALE

* GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

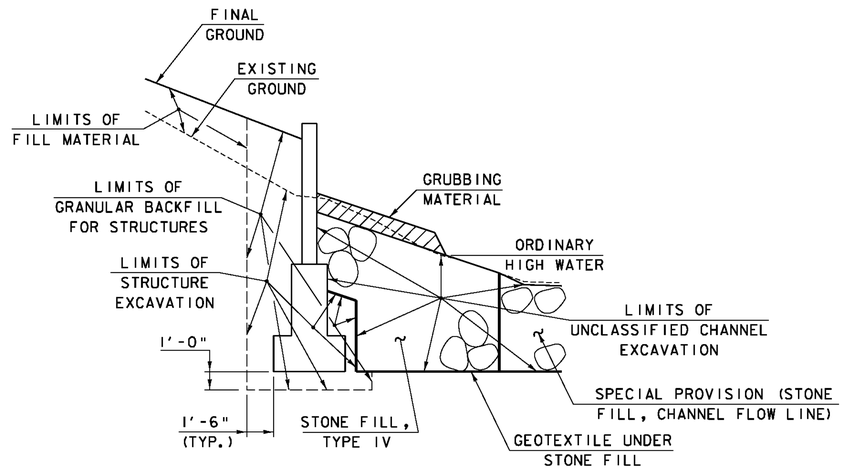


*** LIMITS EXCLUDE EXISTING CMP AND AREA INSIDE EXISTING CMP.

** FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR.

PRECAST CONCRETE STRUCTURE TYPICAL SECTION

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



WINGWALL EXCAVATION AND FILL DETAIL

NOT TO SCALE

MATERIAL TOLERANCES

(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"
GRANULAR BORROW	+/- 1"

0 1 2 3 4 5
SCALE: 3/8" = 1'-0"

Stantec

PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

FILE NAME: ...\drawing\plotfiles\typ.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: M. CHENETTE
TYPICAL SECTIONS

PLOT DATE: 9/21/2011
DRAWN BY: J. SOTER
CHECKED BY: G. BOGUE
SHEET 44 OF 54

VT STATE PLANE GRID

STEEL BEAM GUARDRAIL, GALVANIZED

VT 12A STA 2+40.0 - 3+65.0 LT (CONNECT TO EXISTING GR @ 3+65 LT)
VT 12A STA 2+10.0 - 3+35.0 RT (CONNECT TO EXISTING GR @ 2+10 & 3+33 rT)

ANCHOR FOR STEEL BEAM RAIL

VT 12A STA 2+40.0 LT

REMOVAL AND DISPOSAL OF GUARDRAIL

VT 12A STA 2+10.0 - 2+19.0 RT
VT 12A STA 3+35.0 - 3+65.0 LT

4 INCH WHITE LINE

VT 12A STA 2+10.0 - 3+65.0, 11' LT
VT 12A STA 2+10.0 - 3+65.0, 11' RT

4 INCH YELLOW LINE

VT 12A STA 2+10.0 - 3+65.0 ℄

SPECIAL PROVISION (STONE FILL, CHANNEL FLOW LINE)

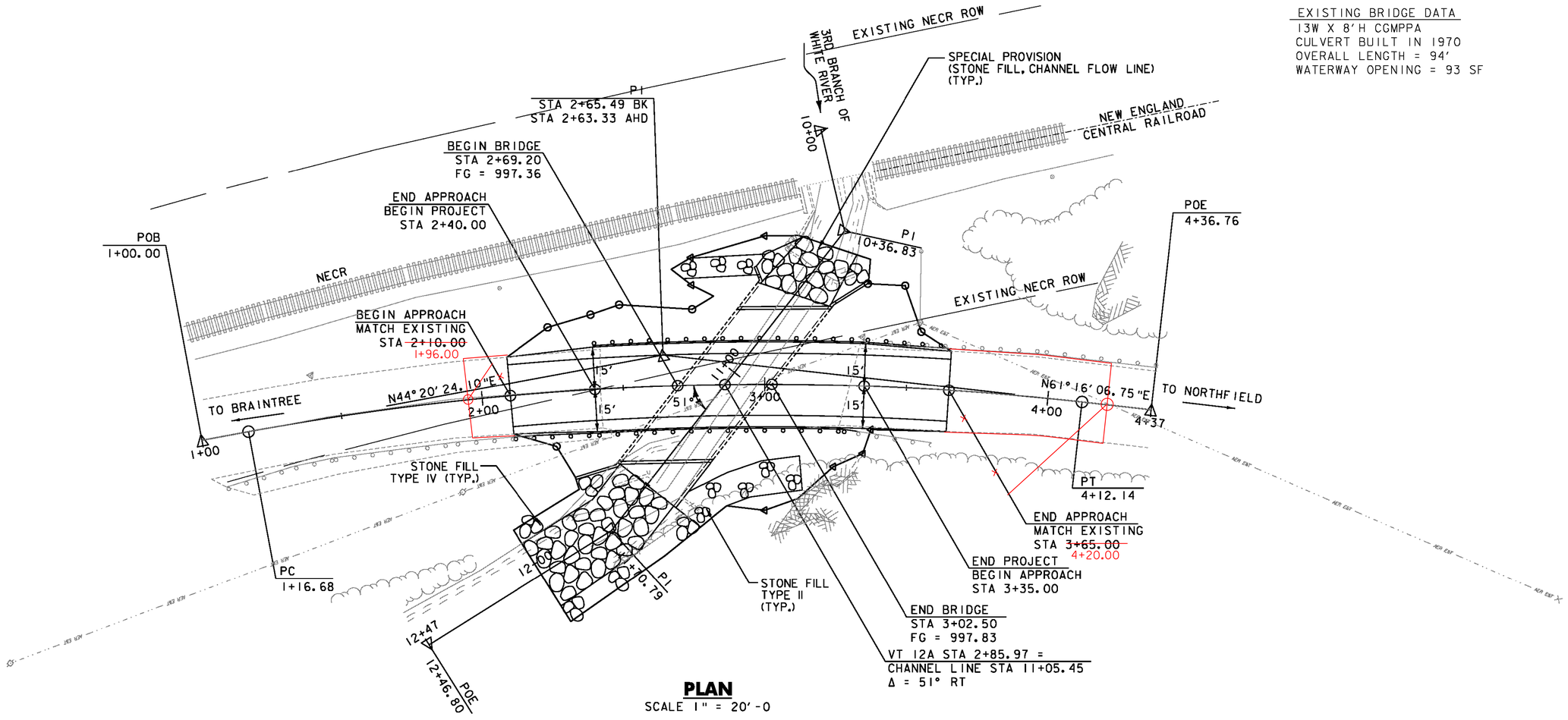
CHANNEL LINE STA ~~10+65.29~~ - ~~11+50.44~~
10+60.25 11+50.00

CURVE DATA VT 12A

Δ = 16°55'42.65" RT.
D = 5°43'46.48"
R = 1000.00'
T = 148.81'
L = 295.46'
E = 11.01'
MAX. BANK = 0.059

EXISTING BRIDGE DATA

13W X 8'H CGMPPA
CULVERT BUILT IN 1970
OVERALL LENGTH = 94'
WATERWAY OPENING = 93 SF



PLAN
SCALE 1" = 20'-0

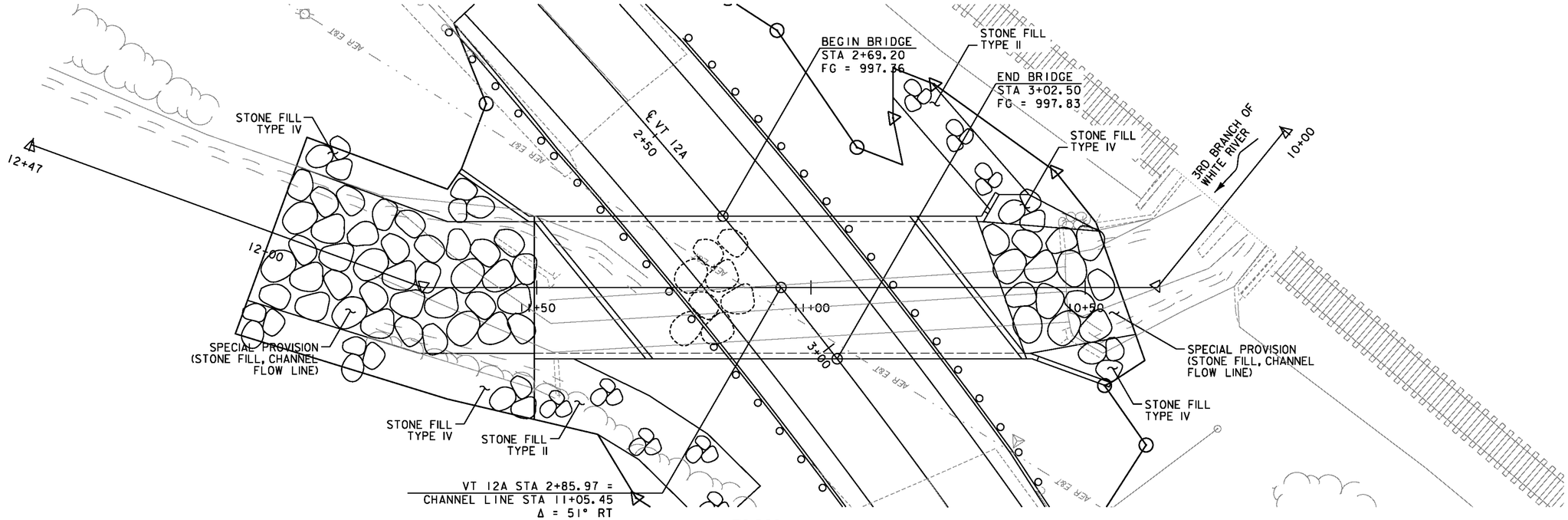
NOTE: AERIAL UTILITY LINES HAVE BEEN RELOCATED, CONTRACTOR SHALL CONFIRM IN FILED

0 20 40
SCALE

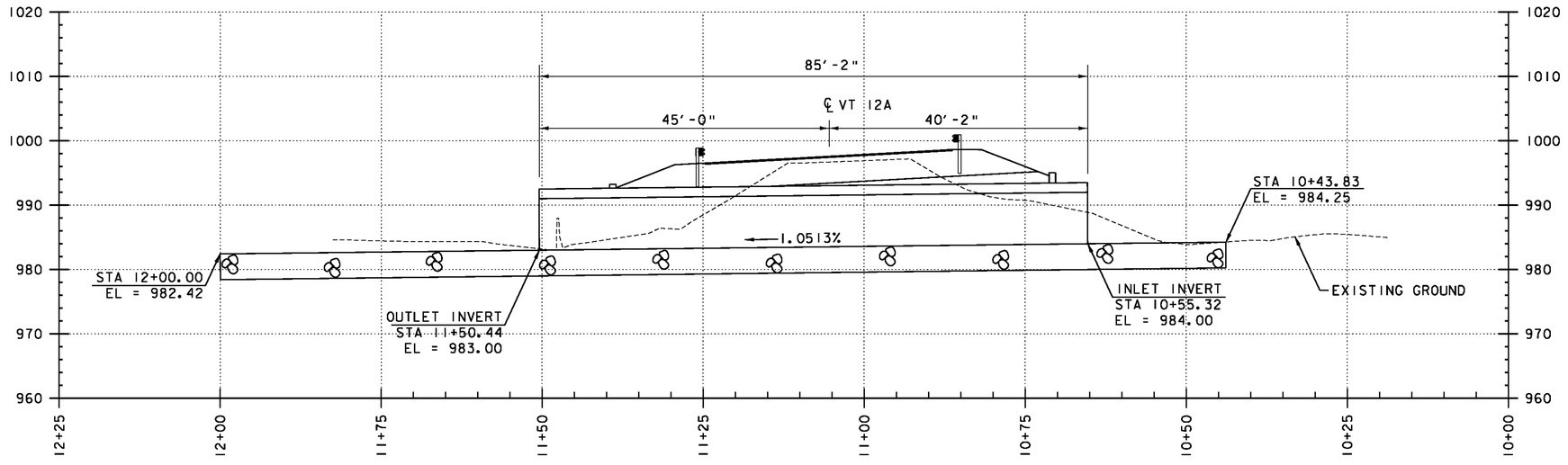
Stantec

PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

FILE NAME: ...\drawing\plotfiles\Layout.dgr PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE DRAWN BY: JTS/ISM
DESIGNED BY: M. CHENETTE CHECKED BY: G. BOGUE
LAYOUT PLAN SHEET 45 OF 54



PLAN
SCALE 1" = 10'-0

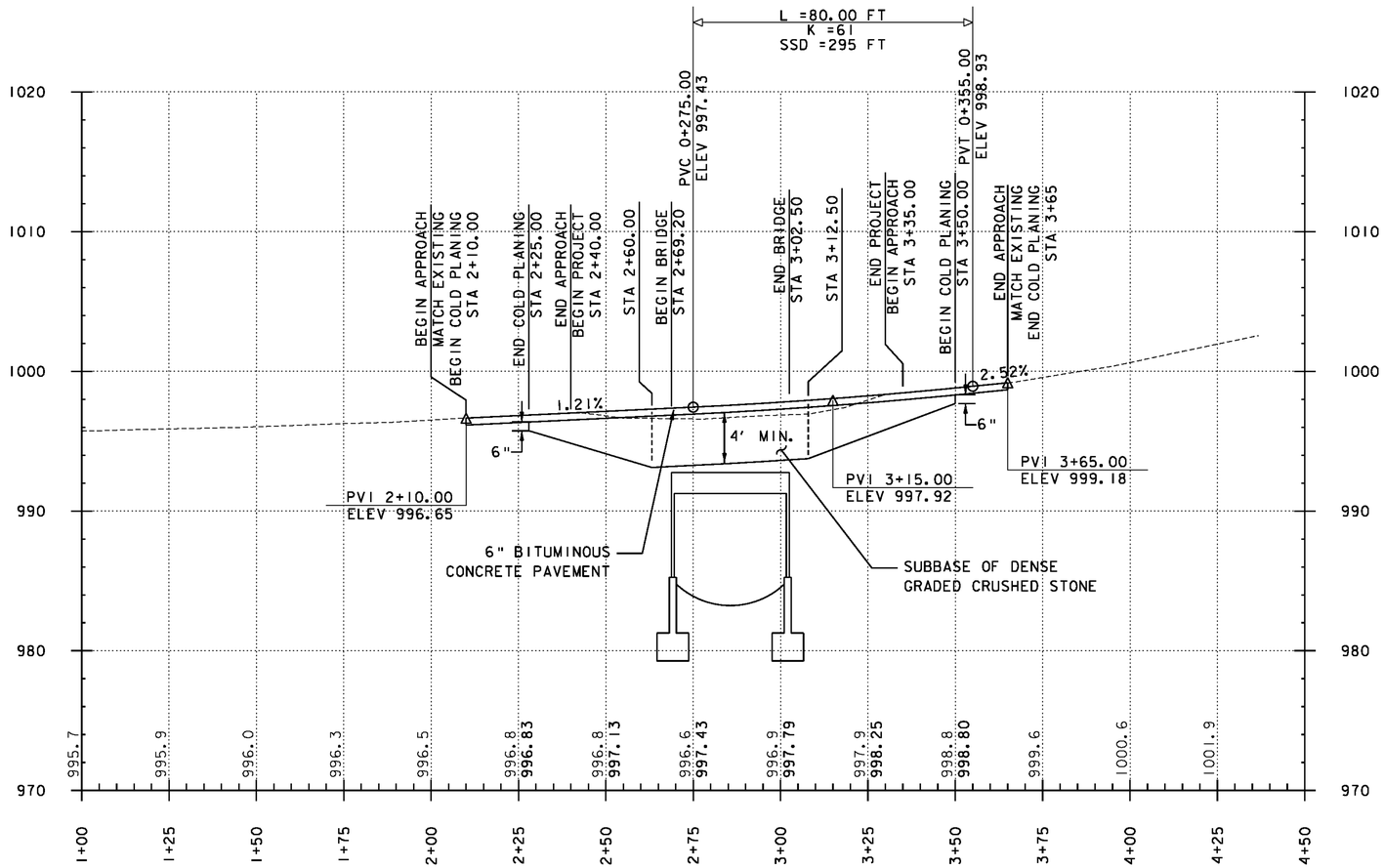


PROFILE ALONG CHANNEL LINE
SCALE 1" = 10'-0

0 10 20
SCALE

Stantec

PROJECT NAME: ROXBURY	
PROJECT NUMBER: ER 0187(9)	
FILE NAME: ...\plotfiles\Plan-Profile.dgn	PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: JTS/ISM
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
PLAN AND PROFILE	SHEET 46 OF 54



NOTE:

ELEVATION SHOWN TO THE NEAREST TENTHS ARE
EXISTING GROUND ALONG PROPOSED CENTERLINE.

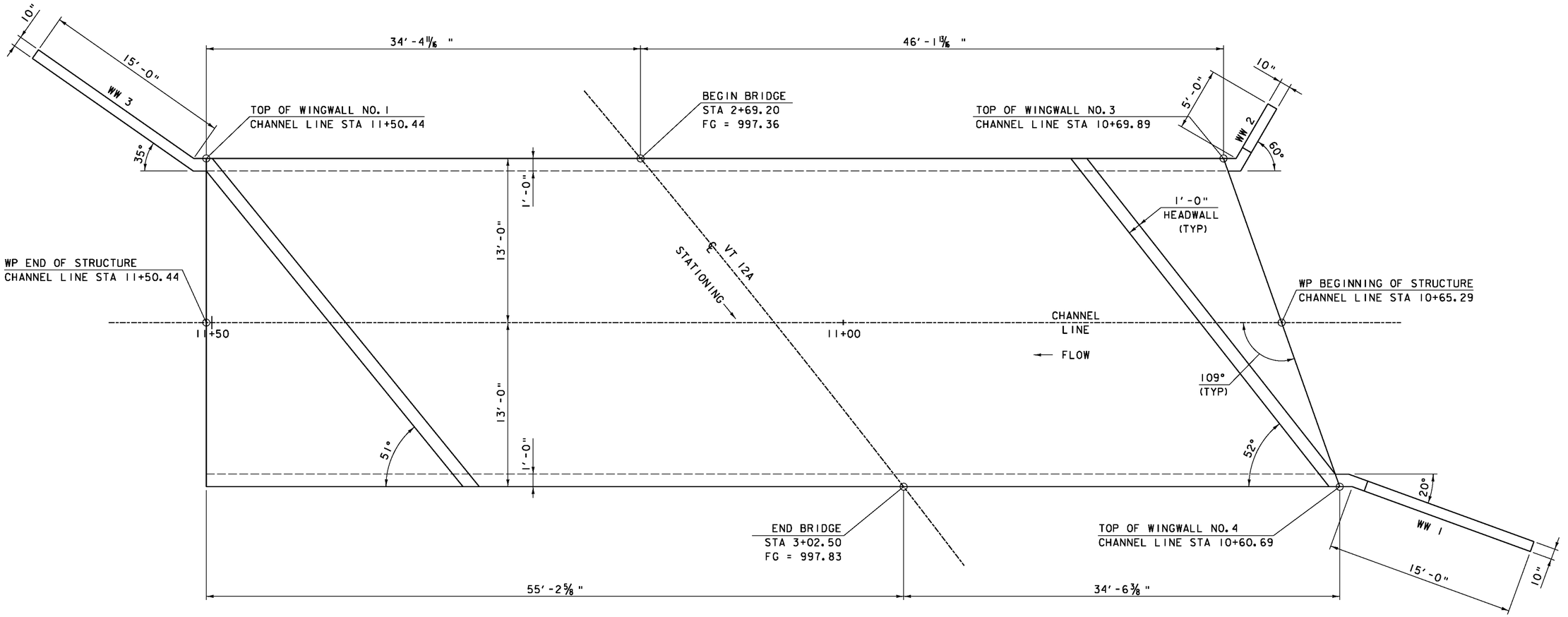
ELEVATIONS SHOWN TO THE NEAREST HUNDREDTHS ARE
FINISH GRADE ALONG PROPOSED CENTERLINE.

PROFILE ALONG VT 12A

SCALE 0 20 40 — 10 5 0

Stantec

PROJECT NAME: ROXBURY	
PROJECT NUMBER: ER 0187(9)	
FILE NAME: ...\drawing\plotfiles\pro.dgn	PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: JTS/ISM
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
PROFILE	SHEET 47 OF 54



PRECAST CONCRETE STRUCTURE PLAN

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

WP OF STRUCTURE	NORTHING	EASTING
CHANNEL LINE STA 11+50.44	574107.89	1576390.76
CHANNEL LINE STA 10+65.29	574192.95	1576394.81

1 0 1 2 3 4 5 6

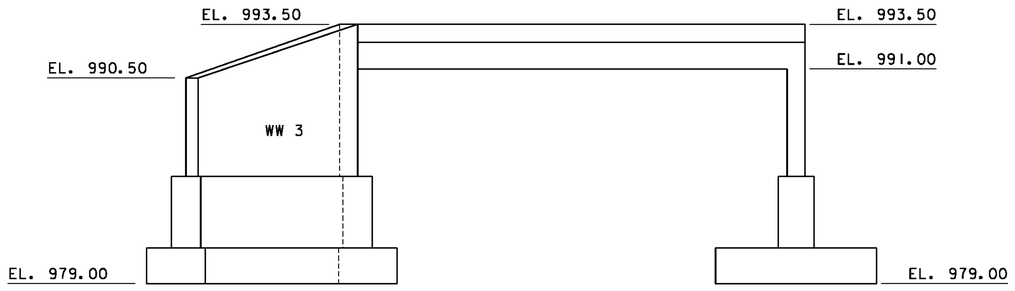
SCALE: 1/4 " = 1'-0"

Stantec

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	ER 0187(9)
FILE NAME: ...\drawing\struct_plan_dets.dgn	PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
PRECAST CONCRETE STRUCTURE PLAN	SHEET 48 OF 54

INLET ELEVATION

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



OUTLET ELEVATION

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

FOUNDATION NOTES:

1. FOUNDATIONS SHALL BE DESIGNED USING A NOMINAL BEARING RESISTANCE OF 11 ksf AND A FACTORED BEARING RESISTANCE OF 5 ksf WITH A 34 DEGREE FRICTION ANGLE.

2. THE COEFFICIENT OF FRICTION FOR SLIDING SHALL BE:
   PRECAST FOOTINGS.....0.35
   CAST-IN-PLACE FOOTINGS....0.40

3. IF LOOSE OR SOFT SOILS ARE ENCOUNTERED, THE EXISTING MATERIALS SHALL BE UNDERCUT 12" AND A GEOTEXTILE MEETING THE REQUIREMENTS OF SECTION 649 FOR GEOTEXTILE FOR ROAD BED SEPARATOR, SHALL BE PLACED ON THE EXCAVATED SURFACE AND BACKFILLED WITH ITEM 204.3, GRANULAR BACKFILL FOR STRUCTURES.

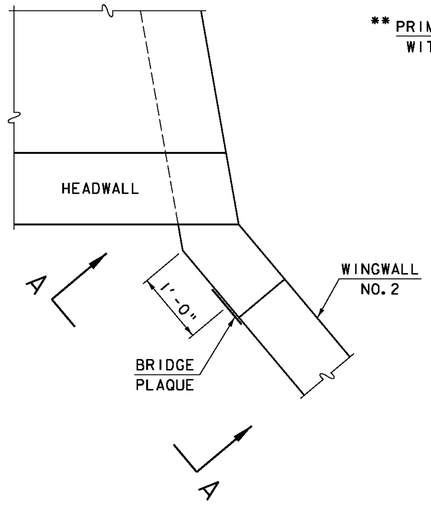
0 1 2 3 4 5 6

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

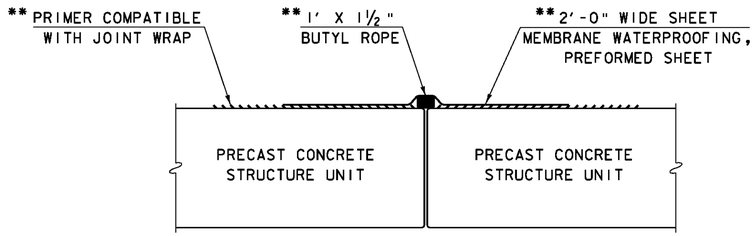
Stantec

PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

FILE NAME: ...\drawing\struct_plan_dets.dgn PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE CHECKED BY: G. BOGUE
WINGWALL ELEVATIONS SHEET 49 OF 54



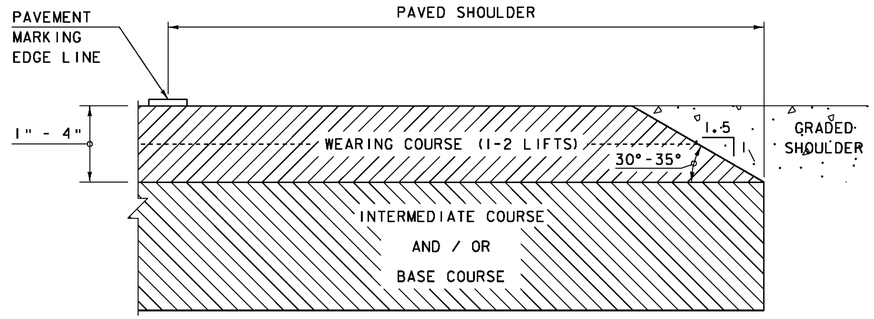
PLAN



BUTT JOINT SEALING DETAIL

NOT TO SCALE

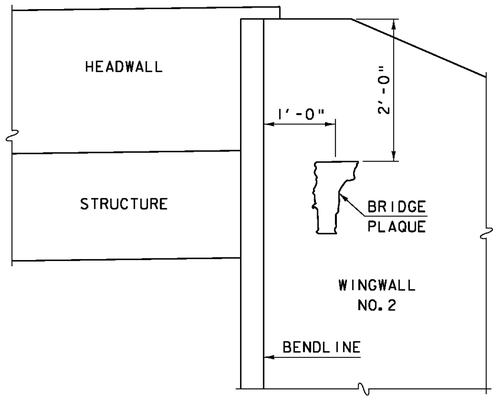
** MEMBRANE WATERPROOFING SHALL BE APPLIED AT EACH ARCH JOINT (TOP AND SIDES). MEMBRANE SHALL BE CENTERED ON THE JOINT AND COVER THE FULL WIDTH OF THE TOP AND FULL HEIGHT OF THE SIDES. THE SIDES SHALL BE COVERED FIRST AND THE TOP WILL FOLLOW. ANY OVERLAPPING OF MEMBRANE SHALL BE DONE IN A SHINGLE TYPE STYLE TO SHED WATER AND SHALL OVERLAP A MINIMUM OF ONE FOOT. PAYMENT FOR MEMBRANE WATERPROOFING SHALL BE INCIDENTAL TO ITEM 540.10 "PRECAST CONCRETE STRUCTURE".



SAFETY EDGE DETAIL

NOT TO SCALE

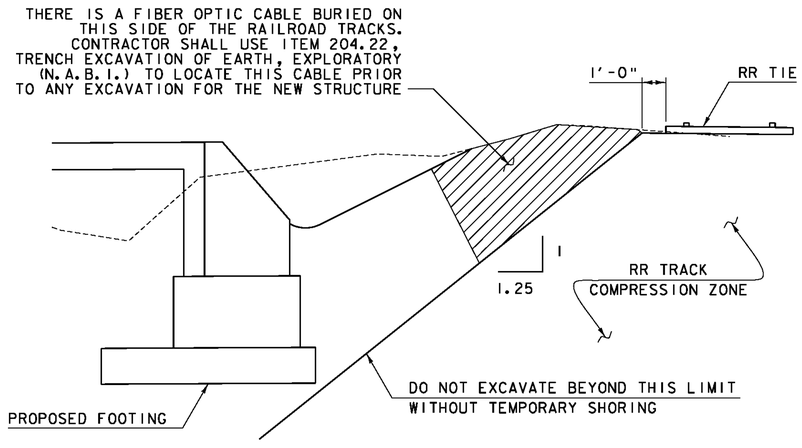
NOTE: LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.



VIEW "A-A"

LOCATE BRIDGE PLAQUE

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR ON WINGWALL NO. 2 AS SHOWN OR AS DIRECTED BY THE ENGINEER.

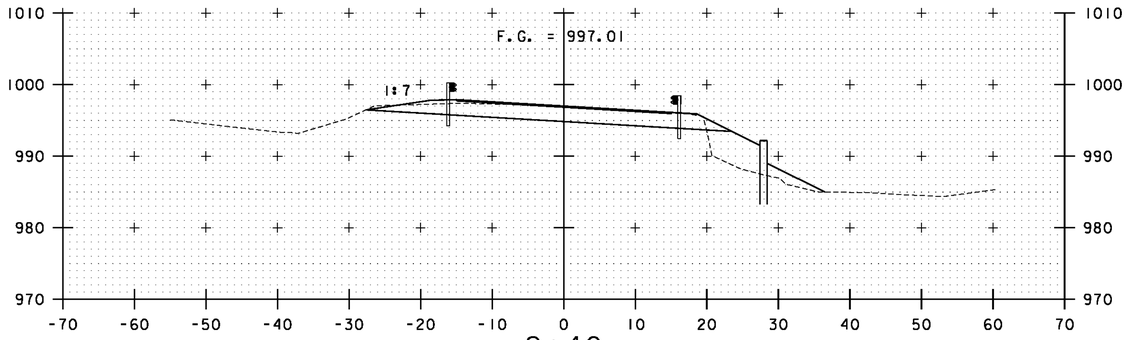


RAILROAD TRACK EXCAVATION LIMIT DETAIL

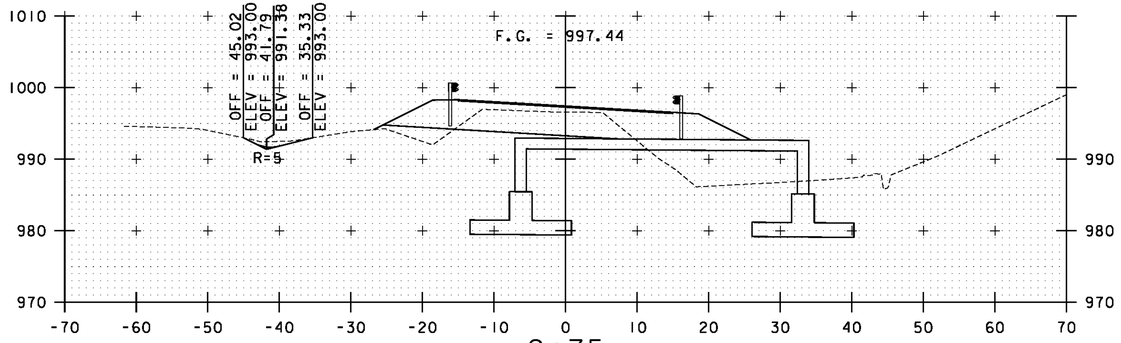
NOT TO SCALE

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	ER 0187(9)
FILE NAME: ...\drawing\struct_plan_dets.dgn	PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
MISCELLANEOUS DETAILS	SHEET 50 OF 54

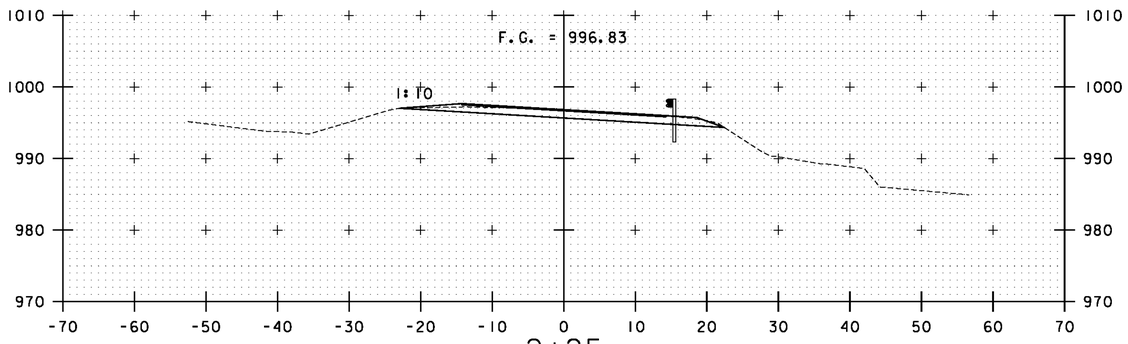
Stantec



2+40
END APPROACH
BEGIN PROJECT



2+75



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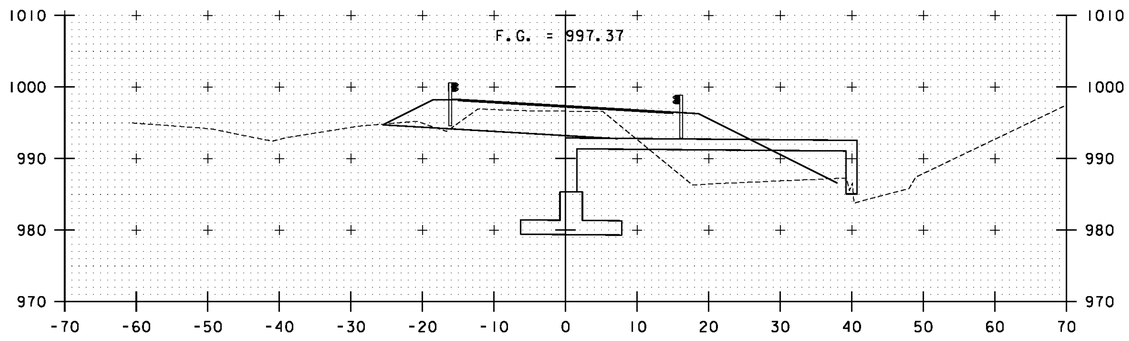
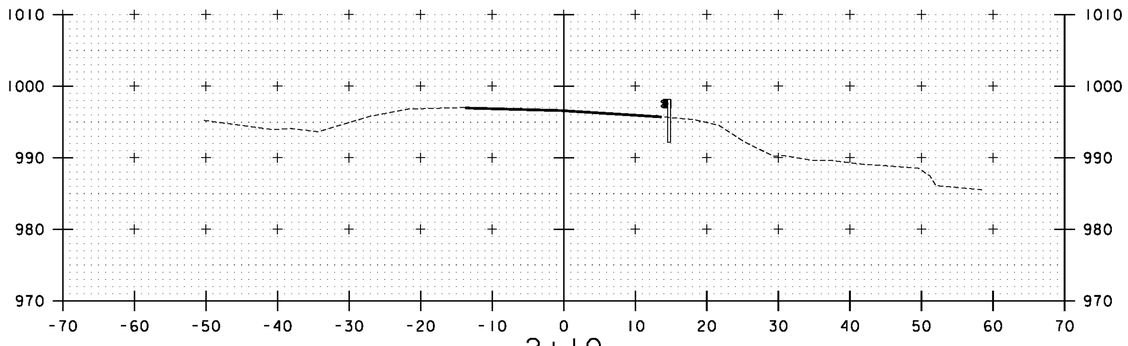
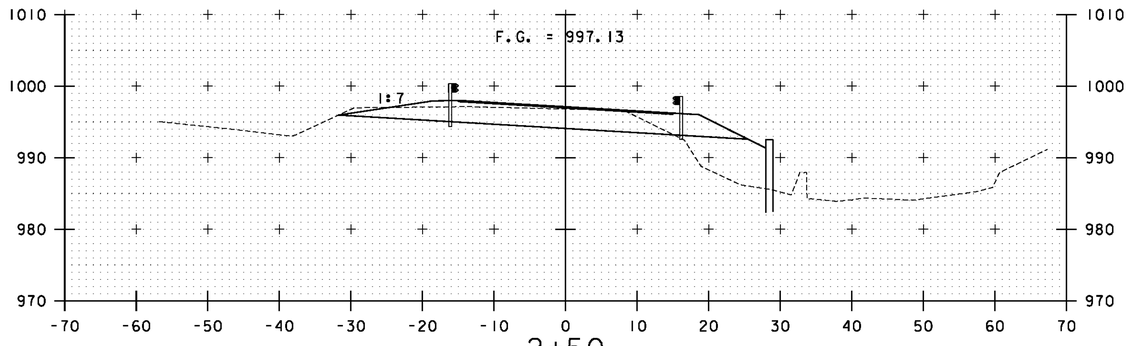
END COLD PLANE



2+69.20



2+10
BEGIN APPROACH
MATCH EXISTING

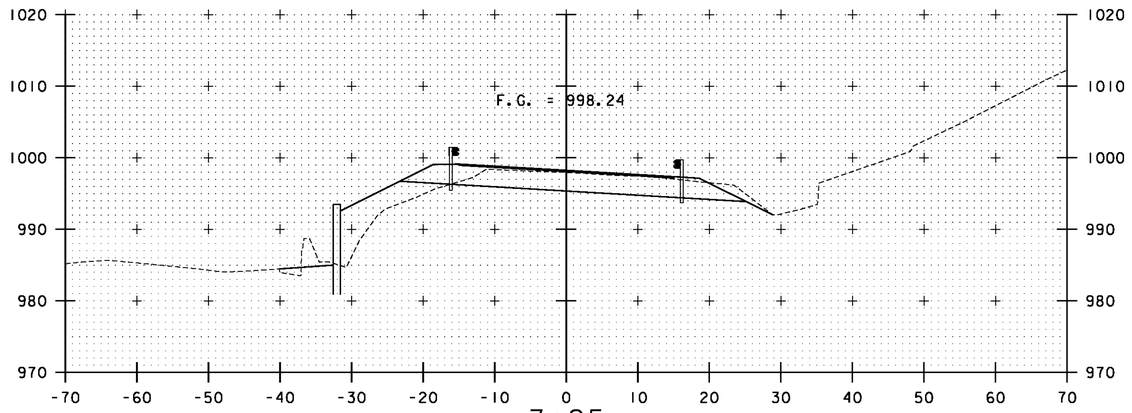


2+50

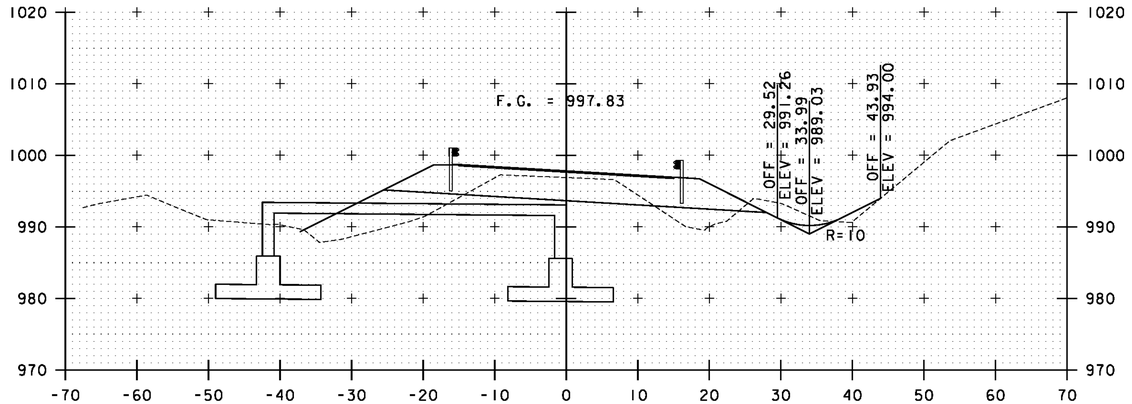
Stantec

PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

FILE NAME: ...\plotfiles\Cross Sections.dgn PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE DRAWN BY: JTS/ISM
DESIGNED BY: M. CHENETTE CHECKED BY: G. BOGUE
VT 12A CROSS SECTIONS 1 SHEET 51 OF 54



3+25



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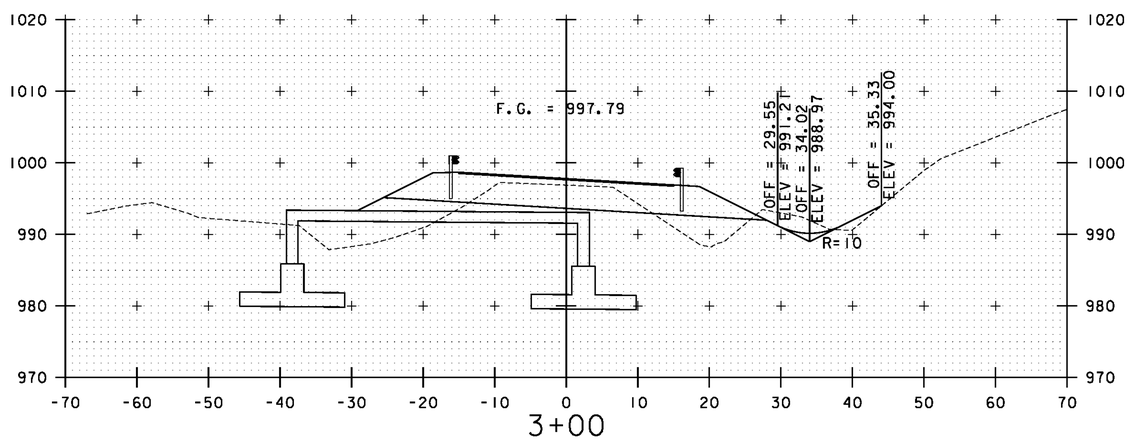
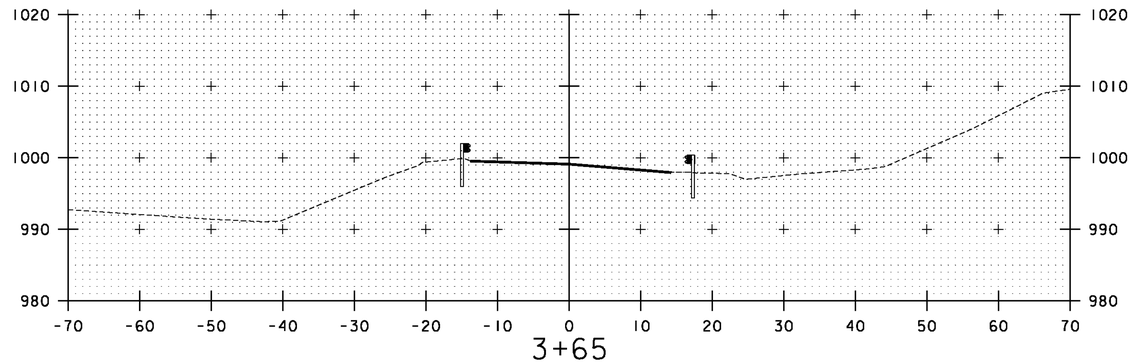


3+00



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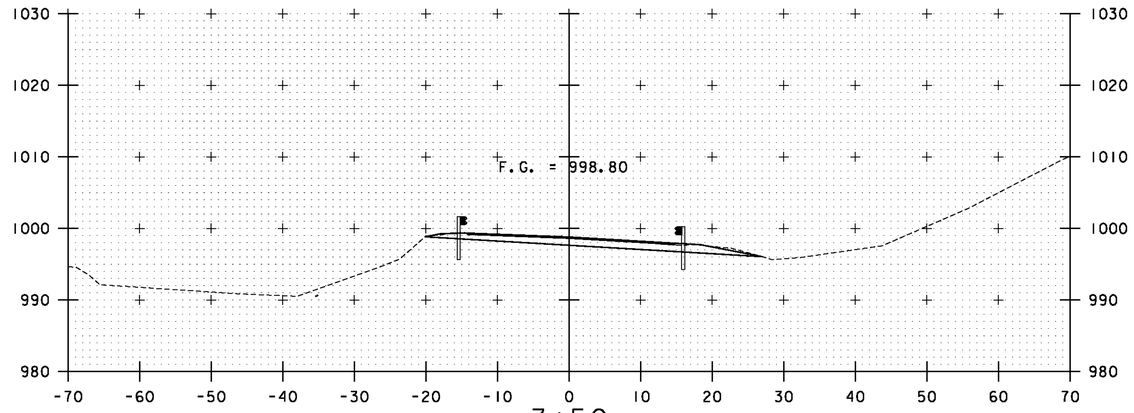
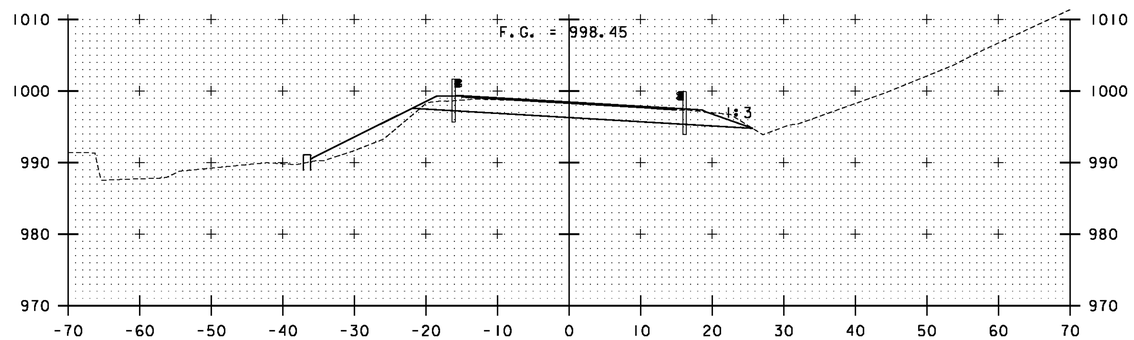
MATCH EXISTING



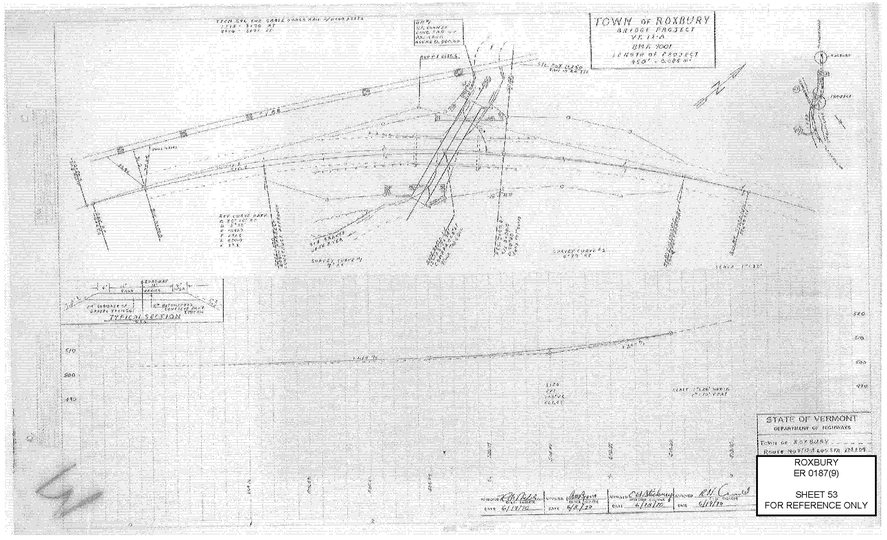
3+50
BEGIN COLD PLANE

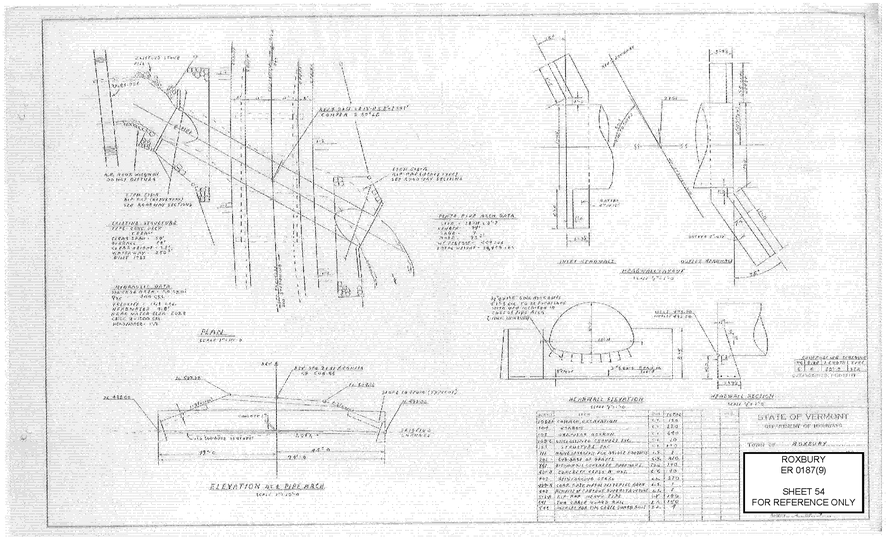


3+35
END PROJECT
BEGIN APPROACH

Stantec

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	ER 0187(9)
FILE NAME: ...\plotfiles\Cross Sections.dgn	PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: JTS/ISM
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
VT 12A CROSS SECTIONS 2	SHEET 52 OF 54


TOWN OF ROXBURY
BRIDGE PROJECT
VT. 12 O
BRK 7001
LENGTH OF PROJECT
450' - 5.086 MI.
TYPICAL SECTION
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
TOWN OF ROXBURY
ROUTE NO 12
ROXBURY
ER 0187(9)
SHEET 53
FOR REFERENCE ONLY


PLAN
ELEVATION AT C. PIPE ARCH
HEADWALL ELEVATION
HEADWALL SECTION
INLET HEADWALL
OUTLET HEADWALL
STATE OF VERMONT
AGENCY OF TRANSPORTATION
TOWN OF ROXBURY
ROXBURY
ER 0187(9)
SHEET 54
FOR REFERENCE ONLY

L.B.Foster Co.

Foster Precise

3 Farm Lane • Georgetown • MA • 01833 • Ph:(978) 352-2591 • Fax:(978) 352-2182

Letter Of Transmittal

Project Number: 3590
Project Name: VT AOT BHF 0187(8) & 0187(9)

LOT No.: 1
Date: 10/13/11 11:25 AM

To:
Jeff Luck
Luck Brothers, Inc.
73 Trade Road
Plattsburgh, NY 12901
Ph: (518) 561-4321
Fax: (518) 561-8462

CC: None

Subject: Full Set For Approval

We are sending you the following 10 page(s) via e-Mail

Please return the following by: 10/27/2011

☑Shop Drawings ☐Contract Drawings ☐Miscellaneous Other:

Purpose of Transmittal: For Approval

Items:

Copies	Date	Rev #	Description
1	10/13/2011	0	GENERAL NOTES
Sheets: GN1			
1	10/13/2011	0	ERECTION DRAWING
Sheets: E1			
1	10/13/2011	0	SHOP DRAWINGS
Sheets: 1, 2, 3, 4, 5, 6, 7			
1	10/13/2011	0	PARTS DRAWINGS
Sheets: X1			

Remarks:

Please submit for approval

Respectfully,

Robert E. Small Ext.21

FOSTER PRECISE

SD Ireland

NPCA CERTIFIED PLANT

Attention: Ted Luck
Company: Luck Brothers Inc
Address: 73 Trade Road
City, ST Zip: Plattsburgh, NY
Phone: (518) 561-4321 Fax: (518) 561-8462

Date: 10-13-11
Job Name: Roxbury
Job Location: Roxbury, VT
Job Number: 12269
Regarding: Precast Submission

We are sending:

- [ ] Quote
- [ ] Specifications
- [X] Shop drawings
- [ ] Prints
- [ ] Plans
- [ ] Copy of Letter
- [ ] Change Order
- [X] Calculations

Copy to: _____

Copies	Date	No.	Description
1	10/13/11		PDF of Drawing Submittals for Rigid Frame Sheets# 1-3
1	10/13/11		PDF of Design Calculations, Cover page and Pages# 1-27

These items are submitted as checked below:

- [X] For approval
- [ ] For your use
- [ ] As requested
- [ ] For review and comment
- [ ] For bids due: _____
- [ ] Approved as submitted
- [ ] Approved as noted
- [ ] Returned for corrections
- [ ] Resubmit _____ copies for approval
- [ ] Submit _____ copies for distribution
- [ ] Return _____ corrected prints
- [ ] Prints returned after loan to Griswold
- [ ] _____

Remarks
Drawing and calculations for lifting and handling will be separate

Thank you,

By: Travis Brousseau (SD Ireland representative) 10/13/11 (Date)

SD Ireland Concrete

Customer Approval:

The undersigned has reviewed the above referenced item(s) and is returning it/them to SD Ireland with the following approval.

- Approved
- Approved as noted
- Approved as noted (resubmit for record)
- Revise and resubmit

By: _____ (Signature) _____ (Date)

_____ (Please print)

Company: _____

Please note that revisions may affect price and lead time

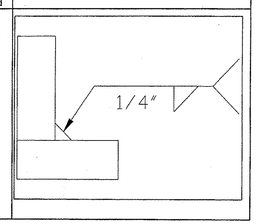
Kindly notify us at once if enclosures are not as noted. Thank you.

WELDING PROCEDURE SPECIFICATION

Material Specification	A709 TO A500 GR B
Welding Process	FCAW
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.20 - 95
Filler Metal Classification	E71T-1H8 E71T-9H8 LINCOLN ULTRACORE
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE ELECTRODE POSITIVE
Welding Progression	STRINGER
Root Treatment	CLEAN AS PER SECTION 603 OF THE NYSSCM
Preheat and Interpass Temperature	PREHEAT AS PER TABLEL 708 OF THE NYSSCM
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE.

Pass no.	Electrode size	Welding Current Amperes	Volts	Travel speed	Joint detail
1	1/16	300	26	14	
Variable	LIMITS	270 TO 330	24 TO 28	12.6 TO 15.4	



Vtrans Received CK'D BY JWC

OCT 18 2011

Resubmit BY APPROVED DATE 10/19/11

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 3009
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 10/18/2011

Form III-2

Form III-2-Sample Welding Procedure Specification

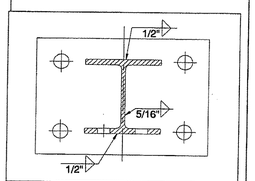
WELDING PROCEDURE SPECIFICATION

Material Specification	A572 GRD. 50 /A992-06a
Welding Process	FCAW
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.20
Filler Metal Classification	E70 LINCOLN OUTERSHEILD
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50 CFM (45 TO 63 CFM)
Single or Multiple Pass	SINGLE
Single or Multiple Arc	N/A
Welding Current	DC
Polarity	DCEP
Welding Progression	STRINGER
Root Treatment	CLEAN AS PER SECTION 603 OF THE NYSSCM
Preheat and Interpass Temperature	PREHEAT AS PER TABLEL 708 OF THE NYSSCM
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE.

Pass no.	Electrode size	Welding Current Amperes	Volts	Travel speed
1	3/32	390	27	12
Variable	LIMITS	351 TO 429	25 TO 29	11 TO 13

Joint detail



V Trans Received OCT 18 2011 CK'D _____ ENG'D BY _____

Resubmit _____ APPROVED BY _____ DATE 10/19/11

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 3008
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 10/18/2011

LB FOSTER CO Precise Structural Products

Welding Procedure Specification

3590-01

Material Spec. **ASTM A709 G36, G50 & G50W**

Welding Process(es) **SMAW**

Position of Welding **1F, 2F, 3F, 4F**

Manual ☒ Machine ☐ Semi-Automatic ☐ Automatic ☐

Filler Metal Specification **AWS A5.1**

Filler Metal Classification **E7018**

Flux **N/A**

Shielding Gas **N/A** Gas Flow Rate **N/A**

Single or Multiple Pass **Single**

Single or Multiple Arc **SINGLE**

Welding Current **REVERSE**

Polarity: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

Welding Progression Up ☐ Down ☐

Root Treatment **CLEAN AS TO REMOVE CONTAMINANTS**

Preheat Temperature **N/A** Interpass Temperature **N/A**

Postheat Treatment **N/A**

Heat Input Min **N/A** Max **N/A**

WELDING PROCEDURE

Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other
ALL	3/32	120-150			
ALL	1/8	140-180			
ALL	5/32	160-210			
ALL	3/16	190-250			

VTRANS
RECEIVED
OK'D BY _____ OK'D BY JWC
OCT 13 2011
RESUBMIT _____ APPROVED ✓
BY _____ DATE 10/14/11

Joint Detail

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. **1 TACK WELD** Contractor _____

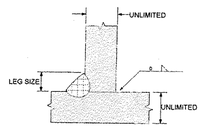
Revision No. _____ Authorized By **WALTER J. BORKOWSKI** Date **10/13/1911**

LB FOSTER CO Precise Structural Products

Welding Procedure Specification

3590-01

Joint Detail



MEMO

THIS PROCEDURE APPLIES TO TACK WELDING ONLY.

TACK LEG SIZE SHALL BE 1/8" OR 3/16".

LB FOSTER CO Precise Structural Products

Welding Procedure Specification

3560-02

Material Spec: **ASTM A709 G36, G50 & G50W** **AASHTO M270 G36, G50 & G50W**

Welding Process(es) **SAW**

Position of Welding **1F & 2F**

Manual ☐ Machine ☐ Semi-Automatic ☒ Automatic ☐

Filler Metal Specification **AWS A5.23**

Filler Metal Classification **F7A2-ENi1K-Ni1-H8**

Flux **LINCOLN 860**

Shielding Gas **N/A** Gas Flow Rate **N/A**

Single or Multiple Pass **BOTH**

Single or Multiple Arc **SINGLE**

Welding Current **REVERSE**

Polarity: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

Welding Progression Up ☐ Down ☐

Root Treatment **CLEAN AS TO REMOVE CONTAMINANTS**

Preheat Temperature ***** SEE PAGE 2** Interpass Temperature ***** SEE PAGE 2**

Postheat Treatment **N/A**

Heat Input Min **48.55 KILOJOULES/IN** Max **76.29 KILOJOULES/IN**

WELDING PROCEDURE

Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other	Joint Detail
All	5/64	330-350	33-35	10-11		

TRANS.
RECEIVED
CK'D BY_____ OK'D BY JWC
OCT 13 2011
RESUBMIT_____ APPROVED ✓
BY DATE 10/13/11

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. **001 - FILLET WELD** Contractor

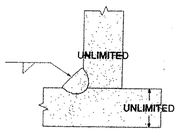
Revision No. Authorized By **WALTER J. BORKOWSKI** Date **10/13/2011**

LB FOSTER CO Precise Structural Products

Welding Procedure Specification

3560-02

Joint Detail



MEMO

*** MINIMUM PREHEAT AND INTERPASS TEMPERATURE SHALL BE AS FOLLOWS: TO 3/4" INCL 50 DEG F, OVER 3/4" TO 1-1/2" INCL 70 DEG F, OVER 1-1/2" TO 2-1/2" INCL 150 DEG F, OVER 2-1/2" 225 DEG F.

LEG DIMENSION SHALL BE 1/4", 5/16", 3/8.

PROCEDURE QUALIFICATION RECORD NUMBER SAW-01-2007

SOUTH RAILING FACING SOUTH

TYPICAL SECTION

TYPICAL ELEVATION

VIEW A-A

No mention of washer plate size. Nut projection should be 1/2" min.

BILL OF MATERIAL-SOUTH RAIL

QTY	DESCRIPTION	ASTM DESIGNATION
8	THREE RAIL POST @ 2'-9" DA	A572 Gr. 50
1	3" X 5" X 1/4" RAIL @ 29'-11 1/2"	A500 Gr. B
1	3" X 5" X 1/4" RAIL @ 29'-2"	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 31'-11 1/2"	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 31'-2"	A500 Gr. B
1	2-1/8" X 4-1/4" FIX. SPL. BAR @ 2'-3"	A572 Gr. 50
2	5" X 5" X 5/16" FIX. TUBE SPLICE @ 2'-3"	A500 Gr. B, A36
8	3/8" X 10" X 14" ANCHOR PLATES	A36
32	@ 1" X 15" ANCHOR STUDS	A449 Gr. 1
96	@ 1" HEAVY HEX NUTS & FLAT WASHERS	A563 & F436
32	@ 7/8" X 8" ROUND HEAD BOLT, NUT, SQ. WASHER, L.W.	A449, A563, ASME B18.21.1
8	@ 3/4" X 8" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563, F436, & ASME B18.21.1
16	@ 3/4" X 2-3/4" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563, F436, & ASME B18.21.1
8	@ 3/4" X 7-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
4	@ 3/4" X 4-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
8	@ 5/8" X 1-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
8	L5" X 5" X 5/8" RAILING ANGLE @ 5'-6 3/8"	A36
8	DELINEATORS	ALUMINUM, B-209 ALLOY

@ 15" x 10" x 1/2" ANCHOR PLATES
@ 5" x 4" FIX PLATES @ 2'-2"
A36
A572 Gr 50

ITEM #: 900.640 GEN CONTR: F.R. Lafayette

SHEET 1 OF 3

RECEIVED
OCT 13 2011
BY

CK'D BY [illegible] OK'D BY EEP
APPROVED:
RESUBMIT APPROVED As Noted
DATE 10/18/2011

BRIDGE RAIL DETAILS SHEET

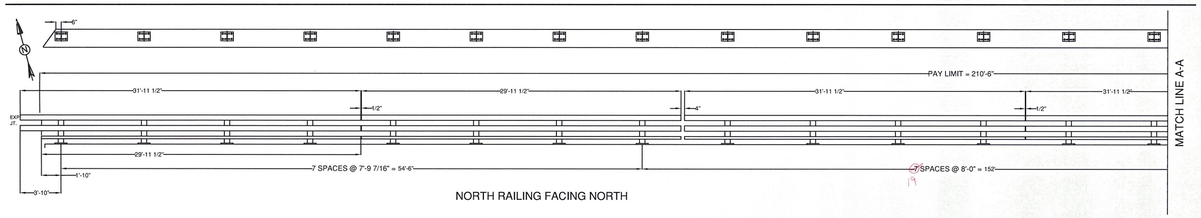
ROUTE 12A, BR 15 & BR 22
TOWN OF ROXBURY, WASHINGTON COUNTY, VT

R	NO.	DATE	DESCRIPTION	BY
℄				
V				

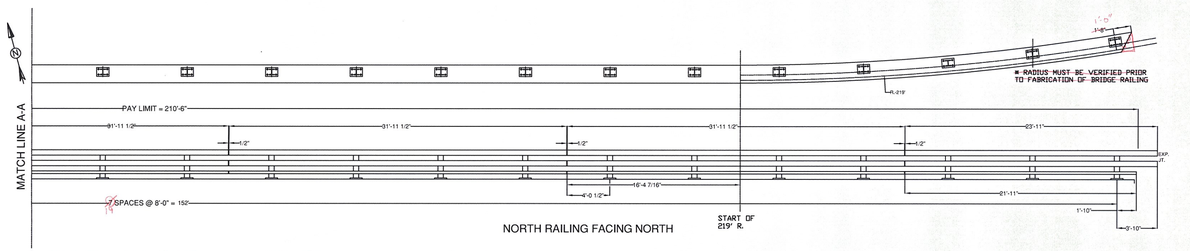
R	NO.	DATE	DESCRIPTION	BY
℄				
V				

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

DRAWN	E.P.	10/11/11
CHECKED	D.L.	10/11/11
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	FR Lafayette EM11-220	

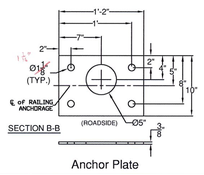


NORTH RAILING FACING NORTH



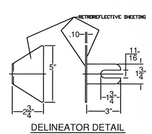
NORTH RAILING FACING NORTH

BILL OF MATERIAL--NORTH RAIL		
QTY	DESCRIPTION	ASTM DESIGNATION
27	THREE RAIL POST @ 29" DA	A572 Gr. 50
2	3" X 5" X 1/4" RAIL @ 29'-11 1/2"	A500 Gr. B
3	3" X 5" X 1/4" RAIL @ 31'-11 1/2"	A500 Gr. B
1	3" X 5" X 1/4" RAIL @ 31'-11 1/2" W/ PARTIAL 219' R.	A500 Gr. B
1	3" X 5" X 1/4" RAIL @ 21'-11" W/ 219' R.	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 29'-11 1/2"	A500 Gr. B
8	6" X 6" X 3/16" RAIL @ 31'-11 1/2"	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 31'-11 1/2" W/ PARTIAL 219' R.	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 23'-11" W/ 219' R.	A500 Gr. B
5	2-1/8" X 4-1/4" FIX. SPLICE BAR @ 2'-3"	A572 Gr. 50
1	2-1/8" X 4-1/4" EXP. SPLICE BAR @ 3'	A572 Gr. 50
10	5" X 5" X 5/16" FIX. SPLICE TUBE @ 2'-3"	A572 Gr. 50
2	5" X 5" X 5/16" EXP. SPLICE TUBE @ 3'	A500 Gr. B, A36
27	3/8" X 10" X 14" ANCHOR PLATES	A36
108	@ 1" X 15" ANCHOR STUDS	A449 Gr. 1
324	@ 1" HEAVY HEX NUTS & FLAT WASHERS	A563 & F436
108	@ 7/8" X 8" ROUND HEAD BOLT, NUT, SQ. WASHER, L.W.	A449, A563, ASME B18.2.1
27	@ 3/4" X 8" HEX BOLT, NUT, CD F.W., & L.W.	A325, A563, F436, & ASME B18.2.1
54	@ 3/4" X 2-3/4" HEX BOLT, NUT, CD F.W., & L.W.	A325, A563, F436, & ASME B18.2.1
48	@ 3/4" X 7-1/2" HEX BOLT, NUT, & CD F.W.	A325, A563, & F436
24	@ 3/4" X 4-1/2" HEX BOLT, NUT, & CD F.W.	A325, A563, & F436
27	@ 5/8" X 1-1/2" HEX BOLT, NUT, & CD F.W.	A325, A563, & F436
27	1.5" X 5" X 5/8" RAILING ANGLE	A36
27	DELINEATORS	ALUMINUM, B-209 ALLOY



SECTION B-B

Anchor Plate



DELINEATOR DETAIL

GENERAL NOTES:

1) ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 525 OF THE STANDARD SPECIFICATIONS.
2) PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
3) BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
4)RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUBSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4"@ 68°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPATURES. TEMPERATURES
5)RETROREFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 750.09 AND SHALL BE A .063" ALUMINUM BACKING WHITE OR YELLOW REFLECTOR. WHITE IS TO BE INSTALLED ON THE DRIVERS RIGHT. FOR ONE WAY BRIDGES , YELLOW IS TO BE INSTALLED ON THE DRIVERS LEFT.
6) PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
7) THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.

RECEIVED
OCT 13 2011

ITEM #: 900.640 GEN CONTR: F.R. Lafayette

APPROVED BY:
CK'D BY JLZ O'K'D BY GFR
RESUBMIT ____ APPROVED As Noted
BY RSH DATE 10/19/2011

SHEET 2 OF 3

BRIDGE RAIL DETAILS SHEET
ROUTE 12A, BR 15 & BR 22
TOWN OF ROXBURY, WASHINGTON COUNTY, VT

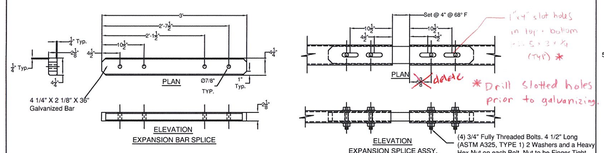
R	NO.	DATE	DESCRIPTION	BY
E				
V				

R	NO.	DATE	DESCRIPTION	BY
E				
V				

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail:dlong@elderlee.com
Tel:315-789-6670 Fax:315-789-6815

DRAWN	E.P.	10/1/11
CHECKED	D.L.	10/1/11
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	FR Lafayette EM11 220	

SPLICE BAR - EXPANSION

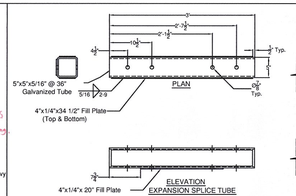


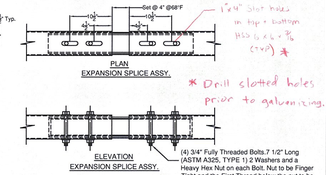
1"x4" slot holes in top + bottom HSS 5 x 5 x 5/16 (typ) *

* Drill slotted holes prior to galvanizing.

(4) 3/4" Fully Threaded Bolts. 4 1/2" Long (ASTM A325, TYPE 1) 2 Washers and a Heavy Hex Nut on each Bolt. Nut to be Finger Tight and the First Thread below the nut to be damaged A.O.B.E.. 4 Bolts at Each Splice.

SPLICE TUBE - EXPANSION



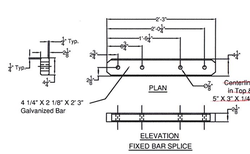


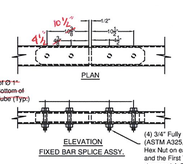
1"x4" slot holes in top + bottom HSS 5 x 5 x 5/16 (typ) *

* Drill slotted holes prior to galvanizing.

(4) 3/4" Fully Threaded Bolts.7 1/2" Long (ASTM A325, TYPE 1) 2 Washers and a Heavy Hex Nut on each Bolt. Nut to be Finger Tight and the First Thread below the nut to be damaged A.O.B.E.. 4 Bolts at Each Splice.

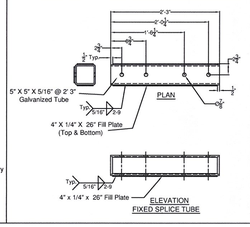
SPLICE BAR - FIXED

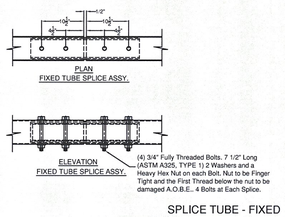




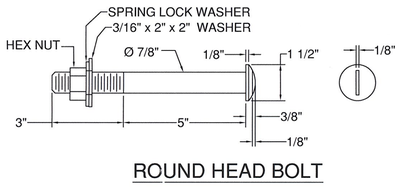
(4) 3/4" Fully Threaded Bolts. 4 1/2" Long (ASTM A325, TYPE 1) 2 Washers and a Heavy Hex Nut on each Bolt. Nut to be Finger Tight and the First Thread below the nut to be damaged A.O.B.E.. 4 Bolts at Each Splice.

SPLICE TUBE - FIXED

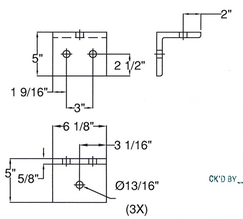




(4) 3/4" Fully Threaded Bolts. 7 1/2" Long (ASTM A325, TYPE 1) 2 Washers and a Heavy Hex Nut on each Bolt. Nut to be Finger Tight and the First Thread below the nut to be damaged A.O.B.E.. 4 Bolts at Each Splice.



ROUND HEAD BOLT



5" x 5" x 5/8" RAILING ANGLE

ITEM #: 900.640 GEN CONTR: F.R. Lafayette

SHEET 3 OF 3

RECEIVED
OCT 13 2011

CK'D BY TJ CK'D BY ESO

RESUBMIT APPROVED As Noted

BY PSY DATE 10/13/2011

BRIDGE RAIL DETAILS SHEET

ROUTE 12A, BR 15 & BR 22

TOWN OF ROXBURY, WASHINGTON COUNTY, VT

R E V	NO.	DATE	DESCRIPTION	BY

R E V	NO.	DATE	DESCRIPTION	BY

ELDERLEE, INC.
OAK'S CORNERS, NEW YORK 14518
E-Mail:dlong@elderlee.com
Tel:315-789-6670 Fax:315-789-6815

DRAWN	E.P.	10/11/11
CHECKED	D.L.	10/11/11
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	FR Lafayette EM11-220	

GENERAL NOTES:

1. PAD AND MATERIALS SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, DATED 2006 AND THE LATEST REVISIONS, INCLUDING SUPPLEMENTARY SPECIFICATIONS, CONTRACT PLANS, AND THE SPECIAL PROVISIONS. GENERAL SHOP PRACTICES, STRUCTURAL FABRICATION, WELDING AND ASSEMBLY SHALL BE GOVERNED BY ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

2. THESE SHOP DRAWINGS ARE PREPARED IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS. THE D.S. BROWN COMPANY DOES NOT ACCEPT LIABILITY FOR THE DESIGN OF THE PRODUCTS DETAILED IN THESE SHOP DRAWINGS.

3. THE D.S. BROWN COMPANY TO SUPPLY ONLY THE PARTS SHOWN ON THESE DRAWINGS.

4. ALL STEEL SHALL BE PRODUCED IN THE UNITED STATES OF AMERICA.

5. ALL CORNERS AND EDGES OF STEEL PLATES SHALL BE GROUND TO A 1/16" RADIUS.

6. THE BEARINGS SHALL BE SUBJECTED TO RANDOM IN-HOUSE ELASTOMER TESTING AND IN-HOUSE PROOF LOAD TESTING IN ACCORDANCE WITH AASHTO DIVISION I, SECTION 14 METHOD "A" AND AASHTO DIVISION II, SECTION 18.

7. ALL SPECIFIED STEEL TO BE GALVANIZED SHALL BE IN ACCORDANCE WITH ASTM A123 SPECIFICATIONS. REPAIR OF DAMAGED HOT DIPPED GALVANIZING PER ASTM A780.

8. WELDING PROCEDURES SHALL BE ESTABLISHED BY THE CONTRACTOR TO RESTRICT THE TEMPERATURE TO A MAXIMUM OF 93°C (200°F) FOR SURFACES IN CONTACT WITH THE ELASTOMER. TEMPERATURES SHALL BE DETERMINED BY TEMPERATURE INDICATING WAX PENCILS OR OTHER SUITABLE MEANS.

9. BEARING SHALL BE MARKED WITH BEARING LOCATION. ALL MARKS SHALL BE PERMANENT AND SHALL BE VISIBLE AFTER THE BEARING IS INSTALLED.

10. DS BROWN MAY SUBSTITUTE M270 (709) GR. 50W FOR M270 (709) GR. 50 DUE TO AVAILABILITY AT NO ADDITIONAL COST TO THE OWNER OR CONTRACTOR.

TOLERANCE TABLE	
DESCRIPTION (ELASTOMER)	TOLERANCE
ELASTOMERIC BEARING DESIGN THICKNESS ≤ 1.250"	+ 1/8", -0
ELASTOMERIC BEARING PLAN ≤ 36"	+ 1/4", -0
ELASTOMERIC BEARING PLAN > 36"	+ 1/2", -0
ELASTOMERIC COVER TOP & BOTTOM	+ 1/8", -0
ELASTOMERIC COVER SIDES	+ 1/8", -0
THICKNESS OF INDIVIDUAL LAYERS OF ELASTOMER LAMINATED BEARINGS	
ONLY! AT ANY POINT WITHIN THE BEARING	± 1/8"
VARIATION FROM A PLANE PARALLEL TO THE THEORETICAL SURFACE	
(AS DETERMINED BY MEASUREMENTS AT THE EDGE OF THE BEARING)	
TOP	± 0.005 rad
SIDES	± 1/4"
POSITION OF EXPOSED CONNECTION MEMBERS	± 1/8"
EDGE COVER OF EMBEDDED LAMINATES OF CONNECTION MEMBERS	+ 1/8", -0
SIZE OF HOLES, SLOTS, OR INSERTS	± 1/16"
POSITION OF HOLES, SLOTS, OR INSERTS	± 1/16"
STEEL PLATE PLAN DIMENSIONS	± 1/16"
STEEL PLATE THICKNESS	± 1/16"
HOLE OR SLOTS LOCATION	± 1/16"
SIZE OF HOLES & SLOTS	± 1/16"
STEEL PLATE BEVELED SLOPE	± 0.002 RAD
STEEL PLATE SURFACE FLATNESS	CLASS A

FLATNESS TOLERANCE	
CLASS	X NOM. DIM.
A	0.001
B	0.002
C	0.005

STRUCTURES COPY

RECEIVED
CK'D BY ___ OK'D BY ___
OCT 12 2011
RESUBMIT ___ APPROVED ✓
BY RSH DATE 10/13/2011

REV.	DESCRIPTION	DATE	DET.	CHK.

D.S. BROWN
THE D.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3361
FAX: 419.257.3332
WWW.DSBROWN.COM

	ITEM	QUANTITY
LOCATION — ROUTE VT 12A BRIDGE AS MILES NE OF GRANVILLE/ROXBURY TOWN LINE	–	–
BRIDGE — 15	–	–
PROJECT NO. — BHF 0187(8)	–	–
PROJECT NAME — ROXBURY	–	–
—	–	–
DESIGNER — VT DOT	–	–
CUSTOMER — LUCK BROS, INC.	–	–
	–	–
	–	–

DESCRIPTION: GENERAL NOTES WASHINGTON CO., VT

SCALE: N.T.S.	DRAWN BY: GA	DESIGNED BY: ANK	DATE: 10/5/11	REV: –
PROJECT NUMBER: 34574	DRAWING NO: 1104	REVISION: 1	SHEET: GN1	

MK	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	REV
1A	6	ELASTOMERIC BEARING				-
1d1	6	(1.250" Ø Ø10.000")	NATURAL RUBBER		SH=5 DUROS@ 6 SHEAR MODULUS BEARING PER AASHTO M 251	A
1c2	AZ 7	14 GA. X Ø8.750"	A607 GR 36		PLATE	A
1g1	6	1.000" X 19.000"	M270 GR 50 OR 50W (A709)	13.000"	M111-HDG (A123)	-
1B	12	SHEDGE ROD				-
1b1	12	Ø1.500" X 21.000" SHEDGED ROD	M314 GR 36 (F1554)		2" THREADED (1" SHEDGE) M232-HDT (DIES)	A
1C	12	HEAVY HEX NUT				-
1c1	12	Ø1.500" HEX NUT	M291-DH OR M332-2H (A563 OR A194)		M232-HDG (AASS), DRY USE & EVE	-
1D	12	WASHER PLATE				-
1d1	12	0.375" X 3.000"	M183 (A36)	5.000"	1.875"Ø HOLE @ CTR, M111-HDG (A123)	-
					10/10/11 2:14:53 PM	

PLAN VIEW
ELASTOMERIC BEARING
(6) REQ'D @ ABUT. 1

SECTION 'A-A'

ANCHOR ROD DETAIL

DETAIL 'A'

LOAD TABLE	
LIVE LOAD (KIPS)	60.0
DEAD LOAD (KIPS)	20.0

SEE SHT. GN1 FOR GENERAL NOTES.

REV	DESCRIPTION	DATE	DET	CKD.
⚠	REV. BRG. HEIGHT FROM 1.25 TO 2.25, BRG. MATERIAL, & ANCHOR ROD	10/10/11	DA	ANK

RECEIVED
CK'D BY DK CK'D BY DSS
OCT 12 2011
RESUBMIT ____ APPROVED ✓
BY RSY DATE 10/13/2011

D.S. BROWN
THE D.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.3322
WWW.DSBROWN.COM

LOCATION —	ROUTE VT 12A BRIDGE .55 MILES NE OF GRANVILLE/ROXBURY TOWN LINE
BRIDGE —	15
PROJECT NO. —	BHF 0197(8)
PROJECT NAME —	ROXBURY
—	—
DESIGNER —	VT DOT
CUSTOMER —	LUCK BROS, INC.

ITEM	QUANTITY
34574-1104-1	6 OF 6
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DESCRIPTION: VERSIFLEX LEASTOMERIC BEARING
WASHINGTON CO., VT

SCALE	DRAWN BY	CHECKED BY	
N.T.S.	DA	ANK	10/6/11
PROJECT NO.	DRAWING NO.	REVISION	SHEET
34574	1104	1	01

PLAN VIEW
ELASTOMERIC BEARING
(6) REQ'D @ ABUT. 2

SECTION 'A-A'

ANCHOR ROD DETAIL

DETAIL 'A'

LOAD TABLE	
LIVE LOAD (KIPS)	60.0
DEAD LOAD (KIPS)	20.0

MK	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	REV
2A	6	ELASTOMERIC BEARING				-
2d	6	2.250" Ø @10.000"	NATURAL RUBBER		50+/-5 DUROMETER A, SHEAR MODULUS BETWEEN 94 & 107 PSI	A
2d1	42	14 GA. X 89.750"	A1011 GR 36		PLAIN	A
2d2	6	1.000" X 19.000"	M270 GR. 50 OR 50W (A709)	12.000"	M111-HDG (A123)	-
2B	12	SMOKE ROD				-
2b1	12	Ø1.500" X 21.000" SMOKED ROD	M314 GR 36 (F1554)		3.5" THREADS (4" SMOKE) M332-HDG (A153)	A
2C	12	HEAVY HEX NUT				-
2c1	12	Ø1.500" HEX NUT	M291-DH OR M291-2H (A563 OR A194)		M332-HDG (A153), DRY LUBE & RVE	-
2D	12	WASHER PLATE				-
2d1	12	0.375" X 3.000"	M183 (A36)	3.000"	0.875"ø HOLE @ CTR, M111-HDG (A123)	-
					10/10/11 2:14:53 PM	

SEE SHT. GN1 FOR GENERAL NOTES.

REV.	DESCRIPTION	DATE	DES.	CHD.
⚠	REV. BRG. HEIGHT FROM 1.25 TO 2.25, BRG. MATERIAL, & ANCHOR ROD	10/10/11	DA	ANK

RECEIVED
CK'D BY ____ OK'D BY ____
OCT 12 2011
RESUBMIT ____ APPROVED ✓
BY RSK DATE 10/13/2011

THE G.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3551
FAX: 419.257.3332
WWW.GSBROWN.COM

LOCATION —	ROUTE VT 12A BRIDGE #3 44.23 MI. NE OF GRANVILLE/ROXBURY TOWN LINE
BRIDGE —	15
PROJECT NO. —	BHF 0187(8)
PROJECT NAME —	ROXBURY
—	—
DESIGNER —	VT DOT
CUSTOMER —	LUCK BROS, INC.

ITEM	QUANTITY
34574-1104-2	6 OF 6
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DESIGNATION: VERSIFLEX LEASTOMERIC BEARING WASHINGTON CO., VT

SCALE	DESIGN	DRAWN	DATE
N.T.S.	DA	ANK	10/6/11

PROJECT NO.	DRAWING NO.	REVISION	SHEET
34574	1104	1	02

Mancini, Tom

From: Ted Luck [tluck@luckbros.com]
Sent: Thursday, October 13, 2011 2:01 PM
To: Young, Rob
Cc: Jeff ; Mike Collin; Mancini, Tom
Subject: ROXBURY RIGID FRAME STRUCTURE
Attachments: Transmittal - Rigid Frame #1.pdf; #11269 Rigid Frame_EV Stamp Dwgs.pdf; 2011-10-12 Roxbury Submittal-Calculations.pdf

Rob,

Attached are shop drawings for the rigid frame structure and calculations. Handling, shipping, and erection drawings to follow.

Ted Luck, President
Luck Brothers Inc
73 Trade Road
Plattsburgh, NY 12901
518-561-4321

LB Foster
3 Farm Lane
Georgetown, MA 01833
Phone: 978-352-2591
Fax: 978-352-2182

BOLT NTS ATTACHED

***** SHIPPING TICKET *****

SHIPPING DATE: 11/18/2011 - 7 AM

PAGE 1

PROJECT: VT AOT - BHF 0187(8)

JOB: 3590 - Rel #1

CONTRACT # 3590

CUST. PO # Signed Proposal

SHIP VIA: Our Truck

TRACKING # 1

SHIP TO: Luck Brothers, Inc.
VT 12A
Roxbury, VT
ATTN: Ted Luck
JOB PHONE: 518.561.4321

BILL TO:

PAI 967

COMPLETE SHIPMENT: [ ]

PARTIAL SHIPMENT: [X]

REMARKS: INSPECTION BY VT AOT

****

#	PIECE MARK	QTY.	TYPE	DESCRIPTION	LENGTH	WT. ONE MEMBER	WT. ALL SHIPPED
1)	E1FB1	97	BOLT	7/8" Dia.	0'- 2	0.93	90.31
2)	1B1	1	W	30 x 90	55'- 5	5029.08	5029.08
3)	2B1	1	W	30 x 90	55'- 5	5067.78	5067.78
4)	3B1	1	W	30 x 90	55'- 5	5067.78	5067.78
5)	4B1	1	W	30 x 90	55'- 5	5067.78	5067.78
6)	5B1	1	W	30 x 90	55'- 5	5067.78	5067.78
7)	6B1	1	W	30 x 90	55'- 5	5029.08	5029.08
8)	7D1	10	C	15 x 33.9	4'- 1 1/2	139.84	1398.38

****

LB Foster — SHIPPING TICKET PAGE 2

JOB: 3590 - Rel #1 — CONTRACT: 3590

PROJECT: VT AOT - BHF 0187(8) — DATE: 11/18/2011

REMARKS: INSPECTION BY VT AOT

****

NUMBER OF MAIN MEMBERS SHIPPED: 113 TOTAL WEIGHT SHIPPED: 31817.97 LBS.

TOTAL SURFACE AREA OF ALL ITEMS SHIPPED: 2915.58 SQ. FT.

YOUR SIGNATURE BELOW INDICATES THAT YOU HAVE CHECKED THAT ALL MATERIALS LISTED ON ALL PAGES OF THIS SHIPPING TICKET HAVE BEEN RECEIVED IN THE PROPER QUANTITIES AND ARE IN GOOD CONDITION.

SHORTAGES OR DAMAGES MUST BE FULLY DOCUMENTED. TO BE CONSIDERED AS VALID PROOF FOR A CLAIM, ANY SUCH NOTATIONS MUST BE SIGNED BY BOTH THE RECEIVER AND DRIVER.

RECEIVED BY (SIGNATURE): _____ DATE: _____

PRINT NAME NEATLY: _____ COMPANY: _____

DRIVER TIME IN: _____ DRIVER TIME OUT: _____

PAI 967

Shipper _____ Date _____

Shipping Insp. _____ Date _____

Final Q.C. _____ Date _____

HAYDON BOLTS, INC.
1181 UNITY ST.
PHILADELPHIA, PA 19124-3104

Phone: 215-537-8700
Fax: 215-537-5569
E-Mail: sales@haydonbolts.com

ROTATIONAL CAPACITY TEST RESULTS

FOSTER PRECISE
% ACCOUNTS PAYABLE DEPT
3 FARM LANE
GEORGETOWN, MA 01833

PO 197786
Project
SO No K80214
Invoice No

Test No RC0000720 **Test Date** 10/31/11

		Manufacturer	Lot No
Bolt	7/8(9)X 2" A325-3 BOLT	SLSB LLC.	517904
Nut	7/8(9) HVY HEX NUT A563-DH3	UNYTITE INC.	TB841
Washer	7/8 F436 TYPE 3 WASHER	PRESTIGE STAMPING INC.	C3732
Washer 2			

	Actual Installation Tension	Torque FT/LB At Installation Tension	Max. Torque FT/LB At Installation Tension <= .25	Final Rotation Degrees	Tension At Final Rotation LBS.	Final Status	HD Galv. Avg. Thick. Or Mech. Galv. Avg. Thick.
Test 1	39,876	497	712	242	53,174	Passed	
Test 2	39,717	513	712	241	50,289	Passed	

We certify that these tests where conducted in accordance with AASHTO-M164-05 (A325) and M253-05 (A490) and the latest revision of supplementary requirements of FHA standards.

SIGN Richard Hewitt

This certificate is advisory only and is not a warranty. This material is warranted as set forth in the Manufacturer's Standard Warranty.

Cert Summary Page HAYDON BOLTS, INC.

FOSTER PRECISE

Customer PO 197786

Invoice No. D1101350 ***Invoice Date*** 10/31/11 ***Sales Order*** K80214

Cert No	Inv Line No	Item No	Quantity	Lot No	Heat	Assembly No	PO
53788	10000	CERTS	1	K80214	RO CAP		Z03064
	Description:	MATERIAL CERTIFICATIONS			Supplier:	HAYDON BOLTS INC.	
51128	120000	AQA087200	97	517904	CR 405900		Z05140
	Description:	7/8(9)X 2" A325-3 BOLT			Supplier:	SLSB LLC.	
52803	130000	VDH3087	97	TB841	M666329		Z07283
	Description:	7/8(9) HVY HEX NUT A563-DH3			Supplier:	UNYTITE INC.	
51210	140000	WRW087	97	C3732	A25898		Z07086
	Description:	7/8 F436 TYPE 3 WASHER			Supplier:	PRESTIGE STAMPING INC.	

HAYDON BOLTS, INC.

FOSTER PRECISE

Customer PO 197786

Invoice No. D1101350 Invoice Date 10/31/11 Sales Order K80214

Cert No	Inv Line No	Item No	Quantity	Lot No	Heat	Assembly No	Haydon PO
53788	10000	CERTS	1	K80214	RO CAP		Z03064

HAYDON BOLTS, INC.

FOSTER PRECISE

Customer PO 197786

Invoice No. D1101350 Invoice Date 10/31/11 Sales Order K80214

Cert No	Inv Line No	Item No	Quantity	Lot No	Heat	Assembly No	Haydon PO
51128	120000	AQA087200	97	517904	CR 405900		Z05140

LAKE ERIE PRODUCTS
CUSTOM ENGINEERED FASTENERS
A TriMas Company

TEST REPORT

13001 ATHENS AVENUE
CLEVELAND, OHIO 44107
T. 216.521.1800
F. 216.228.4520

3281 WEST COUNTY ROAD O NS
FRANKFORT, INDIANA 46041-6966
T. 765.654.0477
F. 765.654.0857

Date: 05-02-06

Certification: 148556*1*1

Cust PO: SL11497

Lot Nbr: 517904

Quantity: 7587 Pieces
Mfg Date: 05-02-06

St. Louis Screw & Bolt
PO Box 470037
6900 North Broadway
ST. LOUIS, MO 63147

PART INFORMATION

Part Number: AQA087200
Description: 7/8-9 X 2 A325-3
Finish: PLAIN
THREAD TO HEAD

Head marking: A325 TYPE 3- BAR 1 DOT SL

RAW MATERIAL ANALYSIS

Steel Heat Nbr: CR405900
Steel Supplier: Charter Steel

Steel Grade: A325 TYPE 3 CLASS

C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Sn
0.3600	0.9800	0.0160	0.0120	0.2400	0.3300	0.5100	0.0100	0.3200	0.0090
V	Al	N	B						
0.0010	0.0240	0.0080	0.0001						

MECHANICAL PROPERTIES

Wedge Angle: 0

Test Performed	High	Low	Average	Samples
Superficial R30N	52.0	48.0	49.4	8
Core Hardness, HRC	31.0	28.0	29.4	8

Certification test results include those reported by the following laboratories:
Charter Steel, A2LA, 10-31-07
Lake Erie Products - Fkft Lab, A2LA 0122.02, 05-31-06

Applicable Standards, Specifications, and Sampling Schemes:

THE FOLLOWING STATEMENTS APPLY TO:
ASTM A-325-04b, TYPE 1 and TYPE 3 BOLTS
ASTM A-490-04a, TYPE 1 and TYPE 3 BOLTS
Test Methods are in accordance with ASTM F606-05.
Thread Fit and Dimensional Properties are compliant to ASTM B18.2.6.
These bolts passed inspection for surface discontinuities, per ASTM F788.
These bolts were not produced from heats in which Bismuth, Selenium, Tellurium, or Lead was intentionally added.
These bolts were not exposed to Mercury or any other metal alloy that is liquid at ambient temp during processing or while in our possession.
Material is of U.S. origin, and was melted and manufactured in the U.S.A.

THE FOLLOWING STATEMENTS APPLY TO:

We certify: The product furnished by Lake Erie Products was manufactured, sampled, tested, and inspected in accordance with the standards and specifications listed above and with Lake Erie Products Quality Manual in effect as of the date of manufacture. The above data accurately represents values provided by Lake Erie Products suppliers and/or values generated in one of Lake Erie Products A2LA accredited laboratories. Statistical process control data is on file.

This test report relates only to the sample tested above. This document may only be reproduced unaltered and may not be used for any purpose other than the purpose of certifying the same or lesser quantity of the product specified herein. Reproduction, alteration or use of this document for any other purpose is prohibited. Except as expressly provided in this certification, Lake Erie Products makes no (and disclaims all representations, warranties and guarantees whatsoever, whether express, implied or statutory including, without limitation, any warranty of merchantability or fitness for a particular purpose.

Lake Erie Products
Gerald E. Simons
Quality Manager

CERT #0122-01 / #0122-02
"MECHANICAL FIELD OF TESTING"

LAKE ERIE PRODUCTS
CUSTOM ENGINEERED FASTENERS
A TriMas Company

TEST REPORT

13001 ATHENS AVENUE
CLEVELAND, OHIO 44107
T. 216.521.1800
F. 216.228.4520

9281 WEST COUNTY ROAD O NS
FRANKFORT, INDIANA 46041-6966
T. 765.654.0477
F. 765.654.0857

Date: 05-02-06

Certification: 148556*1*1

Cust PO: SL11497

Lot Nbr: 517904

Quantity: 7587 Pieces
Mfg Date: 05-02-06

ASTM A-490-04a, TYPE 1 and TYPE 3 BOLTS
THE FOLLOWING STATEMENTS DO NOT APPLY TO:
ASTM A-325-04b, TYPE 1 and TYPE 3 BOLTS
These bolts passed magnetic particle inspection for longitudinal discontinuities and transverse cracks, per ASTM A490-04a, E709, and E1444 Test Methods.
These bolts passed carburization and decarburization tests, per SAE J121.

The listed standards, specifications, and sampling schemes are of the revision in effect on the date of manufacture unless noted otherwise. Only those standards specifically noted under "test methods" or "additional test methods" are included on LE's scope of laboratory accreditation.

DEVIATIONS FROM THE TEST METHODS

None

This lot has been found to conform to the requirements of the above standards and specifications

Original Mill Certification Attached
Certification Mailed to this address:
6900 NORTH BROADWAY, PO BOX 470037
ST. LOUIS, MO 63147, Attn: Katie Yost

We certify: The product furnished by Lake Erie Products was manufactured, sampled, tested, and inspected in accordance with the standards and specifications listed above and with Lake Erie Products Quality Manual in effect as of the date of manufacture. The above data accurately represents values provided by Lake Erie Products suppliers and/or values generated in one of Lake Erie Products A2LA accredited laboratories. Statistical process control data is on file.

This test report relates only to the samples tested above. This document may only be reproduced unaltered and may not be used for any purpose other than the purpose of providing to the customer/user of the product identified herein. Reproduction, alteration or use of this document for any other purpose is prohibited. Except as expressly provided by the certification, Lake Erie Products disclaim to it and disclaims all representations, warranties and guarantees whatsoever, whether express, implied or statutory including, without limitation, any warranty of merchantability or fitness for a particular purpose.

Lake Erie Products
Donald E. Stevens
Quality Manager

CERT #0122-01 / #0122-02
"MECHANICAL FIELD OF TESTING"

LOAD

CHARTER STEEL

CHARTER STEEL

A Division of
Charter Manufacturing Company, Inc.

1658 Cold Springs Road
Saukville, Wisconsin 53080
(262) 268-2400
1-800-437-8789
FAX (262) 268-2570

CHARTER STEEL TEST REPORT
Reverse Has Text And Codes

Lake Erie Products
3595 West State Road 28
Frankfort,IN 46041-6708
Attn: John Shambora

Cust. P.O.	44826
Cust Part#	G336082/A325CORTEN
Charter Sales Order	207268
Heat #	405900
Ship Lot #	333677
Grade#	A325 M SK FG RHQ
Process	HR
Finish Size	1-9/32

I hereby certify that the material described herein has been manufactured in accordance with the specifications and standards listed below and on the reverse side, and that it satisfies those requirements.

Test Results of Heat Lot# 405900

LAB CODE: 7388											
Chemistry Wt%	C	MN	P	S	SI	NI	CR	MO	CU	SN	V
	0.36	0.98	0.016	0.012	0.240	0.33	0.51	0.01	0.32	0.009	0.001
	AL	N	B	TI	NB						
	0.024	0.0080	0.0001	0.001	0.002						

Jominy (HRC)												
	JOM01	JOM02	JOM03	JOM04	JOM05	JOM06	JOM07	JOM08	JOM09	JOM10	JOM11	JOM12
	56	53	51	49	44	41	37	35	33	31	29	29
	JOM13	JOM14	JOM15	JOM16	JOM18	JOM20	JOM22	JOM24	JOM26	JOM28	JOM30	JOM32
	29	27	27	28	28	26	25	24	24	23	21	21

JOMINY SAMPLE TYPE ENGLISH = B **JOMINY LAB = 0358-01** **DI = 2.67**
CHEM. DEVIATION EXT.-GREEN = N/R

Test Results of Rolling Lot # 333677

	# of Tests	Min Value	Max Value	Mean Value	
ROCKWELL B (HRBW)	1	93	93	93	RB LAB = 0358-02
ROCKWELL C (HRC)	0	0	0	0	RC LAB = N/R
ROD SIZE (Inches)	4	1.277	1.285	1.281	ASTA29 = Y
ROD OUT OF ROUND (Inches)	1	0.008	0.008	0.008	

NUM DECARB = 1 **FREE FERRITE DECARB = 0.000** **AVE DECARB = 0.004**
QC DEVIATION EXT.-GREEN = N/R

Test Results of Processing Lot #

Specifications: Meets customer specifications with any applicable Charter Steel exceptions for the following customer documents:
Customer Document = LE 1.1 **Revision = 7** **Dated = 12-FEB-2004**

Additional Comments: **FINE GRAIN; TEST NOT REQUIRED IF ALUMINUM .020% OR GREATER.**
MEETS REQUIREMENTS OF A325 TYPE 3, CLASS A.

Charter Steel
Saukville, WI, USA
Fax number: (765) 659-7164 Rem: Load1,Mail0,Fax1

ACCREDITED

Tim Leahy
Manager of Quality Assurance
03/30/2006

The following statements are applicable to the material described on the front of this Test Report:

1. Except as noted, the steel supplied for this order was melted, rolled and processed in the United States.
2. Mercury was not used during the manufacture of this product; nor was the steel contaminated with mercury during processing.
3. Unless directed by the customer, there are no welds in any of the coils produced for this order.
4. The laboratory that generated the analytical or test results can be identified by the following key:

Certificate Number	Lab Code	Laboratory		Address
0358-01	7388	**CSMD**	Charter Steel Melting Division	1658 Cold Springs Road, Saukville, WI 53080
0358-02	8171	**CSRD/ CSPD**	Charter Steel Rolling/ Processing Division	1658 Cold Springs Road, Saukville, WI 53080
0358-03	123633	**P4**	Charter Steel Ohio Processing Division	6255 US Highway 23, Risingsun, OH 43457
0358-04	125544	**CSC**	Charter Steel Cleveland	4300 E. 49th St., Cuyahoga Heights, OH 44125-1004
"	"	--	Subcontracted test performed by laboratory not in Charter Steel system	

5. When run by a Charter Steel laboratory, the following tests were performed according to the latest revisions of the specifications listed below, as noted in the Charter Steel Laboratory Quality Manual:

Test	Possible Laboratory	Specification
Chemistry Analysis	CSMD	ASTM E415; ASTM E1019
Macroetch	CSMD	ASTM E381
Hardenability (Jominy)	CSMD	ASTM A255; JIS G0561
Grain Size	CSMD	ASTM E112
Tensile Test	CSRD/CSPD, P4, CSC	ASTM E8; ASTM A370
Rockwell Hardness	CSRD/CSPD, P4, CSC	ASTM E18; ASTM A370
Microstructure (spheroidization)	CSRD/CSPD, P4	ASTM A892
Cleanliness	CSRD/CSPD, CSC	ASTM E45

Charter Steel has been accredited to perform all of the above tests by the American Association for Laboratory Accreditation (A2LA). These accreditations expire 01/31/07.

All other test results associated with a Charter Steel laboratory that appear on the front of this report, if any, were performed according to documented procedures developed by Charter Steel and are not accredited by A2LA.

6. The test results on the front of this report are the true values measured on the samples taken from the production lot. They do not apply to any other sample.
7. This test report cannot be reproduced or distributed except in full without the written permission of Charter Steel. The primary customer whose name and address appear on the front of this form may reproduce this test report, subject to the following restrictions:
   - It may be distributed only to their customers
   - Both sides of all pages must be reproduced in full
8. This certification is given subject to the terms and conditions of sale provided in Charter Steel's acknowledgment (designated by our Purchase Order number) to the customer's purchase order. Both Purchase Order numbers appear on the front page of this Report.
9. Where the customer has provided a specification, the results on the front of this test report conform to that specification unless otherwise noted on this test report.

A2LA ACCREDITED

HAYDON BOLTS, INC.

FOSTER PRECISE

Customer PO 197786

Invoice No. D1101350 Invoice Date 10/31/11 Sales Order K80214

Cert No	Inv Line No	Item No	Quantity	Lot No	Heat	Assembly No	Haydon PO
52803	130000	VDH3087	97	TB841	M666329		Z07283

INSPECTION CERTIFICATE

Customer	Specification	Size	Lot No.	Date
	ASTM A-563 GRADE DH3 HEAVY HEX NUT	7/8- 9 UNC	T8841	Aug. 23,'11

UNYTITE, INC.
One Unytite Drive
Peru, Illinois 61354
815-224-2221 — FAX# 815-224-3434

Mechanical properties tested in accordance to ASTM F606/F606M, ASTM A370, ASTM E18

Chemical Composition (%)

Mill Maker	Material Size	Heat No.	Spec.	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	
				0.20 0.53	-	MIN. 0.40	MAX. 0.048	MAX. 0.058	MIN. 0.20	MIN. 0.20	MIN. 0.45	-	-
DEREDAU AMER CORTEN X													
ISTEEL (NO		M666329		0.21	0.22	1.03	0.015	0.022	0.23	0.35	0.56	0.02	-

Mechanical Property Inspection

Item	Proof Load	Cone stripping	Hardness	After Heat Treatment Hardness	Absorbed Energy	Heat Treatment
Spec.	80,850 lbf	- kN·kgf·lbf	24 -38 HrC	HrB-HB	J-kgfm-ftlbf	T:MIN. 800 F
Results	n 5 Results GOOD	n - Results -	27.3 27.1 27.2 27.3 27.3 27.2	5 Piece Average After Heat Treament Hardness Treatment After 24 Hr.X °F(°C)		Q: FORGING Q (W.Q.) T:1175 F/45M. (W.C.) Q: Quenching T: Tempering ST: Solution Treatment

OFFICIAL SEAL
JEAN ZIMMERMAN
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES 10/18/13

8/24/11

Shape & Dimension Inspection	ANSI B18.2.2 GOOD
Thread Precision Inspection	ANSI B1.1 CLASS 2B GOOD
Appearance Inspection	GOOD

Remarks:

" DH3 U "

Production Quantity
76,050 pcs.

Material used for the nut was melted and manufactured in the USA. The nut was manufactured in the USA to the above specification.

We hereby certify that the material described has been manufactured and inspected satisfactorily with the requirement of the above specification.

Chief of Quality Assurance Section

GERDAU AMERISTEEL

ST PAUL STEEL MILL
1678 RED ROCK ROAD
ST PAUL, MN 55119 USA
(651) 731-5600

Chemical and Physical Test Report
MADE IN UNITED STATES

M-097975

SHIP TO	INVOICE TO	SHIP DATE
UNYTITE INC 1 UNYTITE DRIVE PERU, IL 61354	UNYTITE INC 1 UNYTITE DRIVE PERU, IL 61354	07/05/11 CUST. ACCOUNT NO 70000042

PRODUCED IN: ST PAUL

SHAPE + SIZE	GRADE	SPECIFICATION	SALES ORDER	CUST P.O. NUMBER
#1 160SQ	A663M1	A563-07a Gr DH(DH3 Chem Only	1005674-05	P003586-06

HEAT I.D.	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Nb	Sn
M666329	.23	1.03	.015	.023	.22	.23	.35	.56	.021	.055	.001	.010

Customer Requirements SOURCE: GA-STP CASTING: STRAND CAST
Comment: melted and MFG in the USA
mell shop heat M111575, melt dtd 5/12/2011, roll lot M666329 roll dtd 5/16/2011

CUST ITEM NUMBER: BA563M15C1.1250

DEBRA L. KARIESCH
Notary Public-Minnesota
My Commission Expires Jan 31, 2016

Customer Notes

NO WELD REPAIR/MENT PERFORMED. STEEL NOT EXPOSED TO MERCURY.
This material, including the billets, was melted and manufactured in the United States of America

Bhaskar Yelamanchili
Quality Director
Gerdau Ameristeel

THE ABOVE FIGURES ARE CERTIFIED CHEMICAL AND PHYSICAL TEST RECORDS AS CONTAINED IN THE PERMANENT RECORDS OF COMPANY.

Metallurgical Services Manager
ST PAUL STEEL MILL

Seller warrants that all material furnished shall comply with specifications subject to standard published manufacturing variations. NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARE MADE BY THE SELLER, AND SPECIFICALLY EXCLUDED ARE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
In no event shall seller be liable for indirect, consequential or punitive damages arising out of or related to the materials furnished by seller.
Any claim for damages for materials that do not conform to specifications must be made from buyer to seller immediately after delivery of same in order to allow the seller the opportunity to inspect the material in question.

HAYDON BOLTS, INC.

FOSTER PRECISE

Customer PO 197786

Invoice No. D1101350 Invoice Date 10/31/11 Sales Order K80214

Cert No	Inv Line No	Item No	Quantity	Lot No	Heat	Assembly No	Haydon PO
51210	140000	WRW087	97	C3732	A25898		Z07086

Prestige Stamping, Inc.

23513 Groesbeck Highway
Warren, Michigan 48089
(586)773-2700 * Fax (586)773-2298
www.PrestigeStamping.com

PRODUCT CERTIFICATION

CERTIFICATION NUMBER

86216

THIS IS TO CERTIFY THE PRODUCT STATED BELOW WAS FABRICATED AND PROCESSED TO THE ORDER AS INDICATED AND CONFORMS TO THE APPLICABLE SPECIFICATIONS AND STANDARDS.

Customer: HAYDON BOLTS INC
ACCTS PAYABLE DEPT
1181 UNITY ST
PHILADELPHIA, PA 19124-3196

Customer Part:	7/8"F436 TYPE 3	Steel Supplier:	MID STATE INDUSTRIES
Prestige Part:	P1700CH00	Grade:	SAE CF436 TYPE3 STEEL
Part Name:	7/8"F436 TYPE 3	Lot:	C3732
Purchase Order:	Z07086-1	Heat:	A25898
Shipment BOL:	B146747	Carbon:	.40 (.33 - .6)
Shipment ID:	A0155441	Manganese:	.71 (.6 - 1.2)
Quantity:	35000	Phosphorous:	.012 (.04 Max.)
Manufacturers Marking:	"P"	Sulfur:	.001 (.05 Max.)
		Silicon:	.18 (.15 - .35)

SPECIFICATIONS	TEST RESULTS
HARDNESS: TEST METHOD: ASTM E18	HARDNESS:
HRC 38 - 45	HRC 40 - 42
ASTMF-606	

Chemistry is as reported from raw material certification and does not fall under Prestige Stamping's accreditation.
This product was produced under an ISO/TS 16949 Quality Assurance System.
ISO/TS 16949 Certification No: 0062933.
Material was melted and manufactured in the U.S.A.
This product was manufactured in Warren, Michigan U.S.A.
This product conforms to all requirements for washers as produced according to A.S.T.M. F-436.
Sampling Plan per P.S.I W.I # 5.4.18.015.
The test results only apply to the items tested.
This test report must not be reproduced except in full without prior written approval.
Materials used to manufacture these products are mercury, asbestos and radio activity free.

FRANK SCHUBERT
Quality Assurance Manager

C3732

Mid-State Industries, LLC
908 Bob King Drive P.O. Box 68 Office: 217-268-3900
Arcola, IL 61910 Fax: 217-268-3906

Material Certification of Analysis

Customer: Prestige Stamping Inc
23513 Groesbeck Highway
Warren, Michigan 48090

Date: Feb 15, 2011

Description: .136 x 5.035 x coil

Part#: P1700CH00 **Mid-State Coil #:** R22555 **Master Coil#:** 828590

Material chemical weight percent composition:

The chemical analysis hereby reported was supplied by the producing mill and provided certification is maintained in the records of the corporation.

Heat #: A25898 **Grade:** F436 **PO:** 18274

Carbon: 0.40 **Manganese:** .71

Phosphorus: 0.012 **Sulfur:** 0.001

Silicon: 0.180 **Aluminum:** 0.039

Rockwell: 82

Melted & MFG in USA

RECEIVED
FEB 16 2011
Time 6:00AM

C3732

ADVANCE SHIP NOTICE

1504640

ArcelorMittal Riverdale Inc.

ArcelorMittal

REV.	DATE SHIPPED
0	11/15/2010

BILL OF LADING	CARRIER	CAR/TRAILER NBR	ARRIVAL DATE
D1504640	MITTAL RIVERDALE	CSP - 32	
FREIGHT PAYMENT	NET WEIGHT		TARE WEIGHT
Prepaid	183390 LBS		

SHIP TO (000870-003)

MID-STATE INDUSTRIES, LLC
C/O NACME STEEL PROCESSING
429 WEST 127TH ST.
CHICAGO, IL 60628

ATTENTION: **Rod S**

OUR ORDER: 488957 YOUR P.O.: MRl000-046/2 FOB: FOB Mill
ALT P.O. :

001 HB1365120-01 183390 LBS / 4 Coils
YOUR PART NBR: HS98640
0.1360 Min -0.0000/ +0.0100 X 51.2000 + 1.5000 MN(IN)
ID 30.0/30.0 OD 67.7/70.7 (IN)
Hot Band Prime Alloy MID-STATE 8640 MOD
C R/A

BND USE: WEATHERING UKXP MELTED / MFG. IN U.S.A.

HRS 11GA 8640 R-DALE
8640A RIVERDALE GRADE-WEATHERING
ALL SHIPMENTS MUST BE MARKED EXTERNALLY WITH PO# WITH
PACKING LIST ENCLOSED SHOWING PT# AND PO# OTHERWISE MATERIAL
WILL BE RETURNED AT SHIPPERS EXPENSE
1 OD AND 3 ID EQUALLY SPACED 1-1/4" BANDS
ALL LOADS MUST TARP COMPLETELY

LOT NBR	W.O. #	QUANTITY UM
A25898		183390 LBS / 4 Coils

- - - - - - - - - - - - - - - C E R T I F I C A T I O N - - - - - - - - - - - - - - -

TEST CLASS	LOT NBR	- - - - - - - - - - P R O P E R T I E S - - - - - - - - - -						
Chemical:	A25898	C	Mn	P	S	Si	Cu	Ni
		0.4000	0.7100	0.0120	0.0010	0.1800	0.3400	0.2900
		Cr	Mo	Sn	Al	V	Cb	N
		0.4900	0.0100	0.0020	0.0390	0.0050	0.0000	0.0046
		B	Zr	Ti	Sb	Ca	O	
		0.0003	0.0010	0.0030	0.0000	0.0020		

- - - - - - - - - - - - - - - - - - D E T A I L - - - - - - - - - - - - - - - - - -

TAG NBR	W.O. #	LOT NBR	GAUGE(IN)	WIDTH(IN)	QUANTITY UM	WEIGHT UM
828590	A22555	A25898	0.1360	51.2000	44750 LBS	44750. LBS
828591	A22556	A25898	0.1360	51.2000	45930 LBS	45950. LBS
828592	A22557	A25898	0.1360	51.2000	45930 LBS	45930. LBS
828593	A22558	A25898	0.1360	51.2000	46860 LBS	46860. LBS

GENERAL NOTES

SPECIFICATIONS

ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006, AND ITS LATEST REVISIONS AND STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION, DATED 2002 AND ITS LATEST REVISIONS.

ALL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT STRUCTURAL WELDING CODE ANSI/AASHTO/AWS D1.5 AND THR PROVISIONS OF SUBSECTION 506.10

MATERIAL SPECIFICATIONS

ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GR 50W (U.D.N.).

ALL BOLTS FOR THIS PROJECT SHALL BE HIGH STRENGTH HEX HEAD BOLTS AND CONFORM TO ASTM A325 TYPE 3
NUTS ARE A563-DH3 AND WASHERS F436-3

⚠

The complete bolt, washer and nut configuration needs to be tested and certified as a unit per subsection 714.05 of the Standard Specifications for Construction.

FABRICATION

CVN- INDICATES CHARPY V-NOTCH TESTED FOR ZONE 2, IN ACCORDANCE WITH SUBSECTION 714.01 OF THE STANDARD SPECIFICATIONS.

MAIN LOAD CARRYING MEMBERS ARE ALL STRINGER BEAMS.

THE BOTTOM FLANGE OF STEEL BEAMS AT BEARING AREAS SHALL BE SHOP STRAIGHTENED AS NECESSARY TO PROVIDE UNIFORM CONTACT BETWEEN THE BEAM FLANGE & THE BEARING AT THE BRIDGE SEAT.

ERECTION NOTES

ALL CONNECTION ARE BEING MADE WITH HIGH STRENGTH BOLTS NOTED ABOVE WITH ONE (1) HARDENED WASHER (ASTM F436 TYPE 3) TO BE PLACED UNDER THE TURNED ELEMENT.

SHIPPING MARK NUMBER WILL BE LOCATED AS SHOWN ON ERECTION PLANS.

CLEANING

ALL STEEL SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP10 BLAST CLEANING

PAINT

NO PAINT

RECEIVED
CK'D BY_____ OK'D BY RSY
OCT 17 2011
RESUBMIT_____ APPROVED ✓
BY DATE 10/18/2011

REV.NO	DATE	REVISION
⚠1		
⚠2		
⚠3	10.17.11	APPROVER COMMENTS

GENERAL NOTES
TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR – BRIDGE 15

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2251

OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
JC 10/07/11	JC 10/10/11				3590	GN1

FIELD BOLT SUMMARY						NOTE: 4% ADDITIONAL BOLTS ADDED + 3 FOR TESTING
LINE	No. OF BOLTS/DIAM		TYPE	BOLT LENGTH	ACTUAL COUNT	REMARKS
1	87	$\frac{7}{8}$"	A325 TYPE 3	2"	80	w / 1 FLAT WASHER
2	–	–	–	–	–	–
3	–	–	–	–	–	–
4	–	–	–	–	–	–

FRAMING PLAN

ELEVATION VIEW

SECTION A-A

SECTION B-B

RECEIVED
OCT 17 2011

OK'D BY _____ OK'D BY RSV
RESUBMIT _____ APPROVED ✓
BY _____ DATE 10/18/2011

SHOP NOTES
HOLES: 15/16"ø LCN
BOLTS: PER GN1
PAINT: NO PAINT
WELDS: N.A.
MATERIAL: M270 GR.50W

NO.	DATE	REVISION
1	10.17.11	ELEVATION CHANGES

ERECTION DRAWING

TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR - BRIDGE 15

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2581

OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

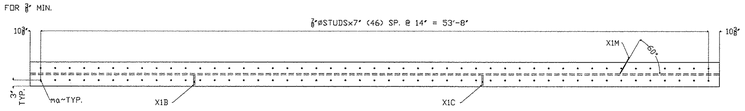
DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
KC 10/07/11	MJ 10/18/11				3590	E1

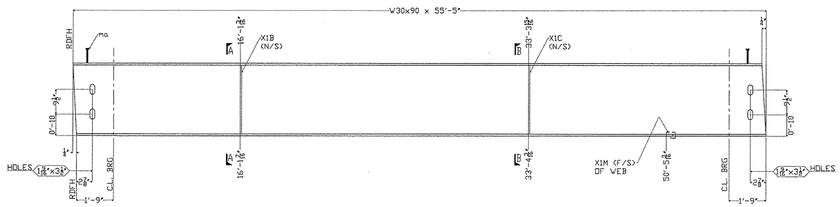
TYP. DIAPHRAGM STIFFENER WELD DETAIL

CAMBER DETAIL

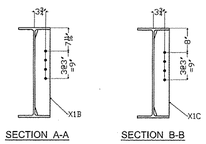
SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	1B1			W30x90	55'-5	CVN		
		1	X1B	PL¾x5	2'-4⅞	CVN		
		1	X1C	PL¾x5	2'-4⅞	CVN		
		1	X1M	PL¾x2⅜	0'-7¾			
		94	no.	⅞ø STUD	0'-7			

* NO WELD FOR ⅜" MIN. OR ⅝" MAX.



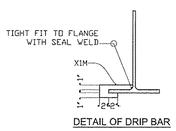


ONE ~ GIRDER DETAIL ~ 1B1



SECTION A-A

SECTION B-B



DETAIL OF DRIP BAR

SHOP NOTES
HOLES: 15/16"ø UON
BOLTS: PER GN1
PAINT: NO PAINT
WELDS: N.A.
MATERIAL: M270 GR50W

RECEIVED
OK'D BY_____ OK'D BY RSY
OCT 17 2011
RESUBMIT_____ APPROVED
BY DATE 10/19/2011

NO.	REVISING DATE	REVISION
1		-
2		-
3		-

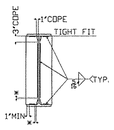
GIRDER DETAIL

TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR – BRIDGE 15

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2251

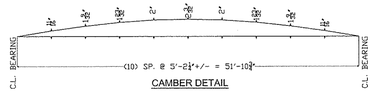
OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS

DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
KC 10/07/11	WL 10/18/11				3590	1



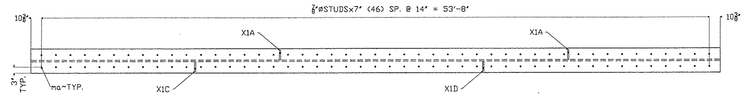
TYP. DIAPHRAGM STIFFENER WELD DETAIL

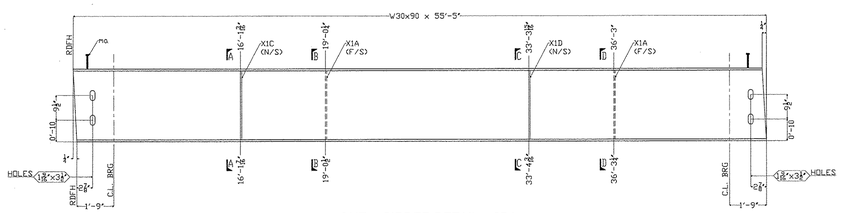
* NO WELD FOR ⅜" MIN. OR ½" MAX.



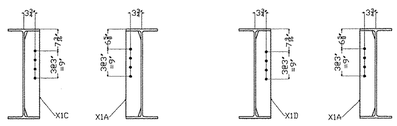
CAMBER DETAIL

SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	2B1			W30x90	55'-5	CVN		
		2	X1A	PL ¾x5	2'-4⅛	CVN		
		1	X1C	PL ¾x5	2'-4⅛	CVN		
		1	X1D	PL ¾x5	2'-4⅛	CVN		
		94	na	⅞ø STUD	0'-7			





ONE ~ GIRDER DETAIL ~ 2B1



RECEIVED
OCT 17 2011
BY

CK'D BY _____ OK'D BY KSY
RESUBMIT _____ APPROVED ✓
DATE 10/18/2011

REV.NO.	DATE	REVISION
3		--
2		--
1		--

GIRDER DETAIL

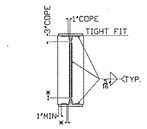
TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR ~ BRIDGE 15

SHOP NOTES
HOLES: 15/16"ø UON
BOLTS: PER GN1
PAINT: NO PAINT
WELDS: N.A.
MATERIAL: M270 GR.50W

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2511

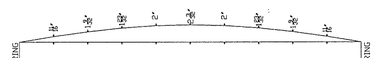
OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
EC 10/07/11	RL 10/10/11				3590	2

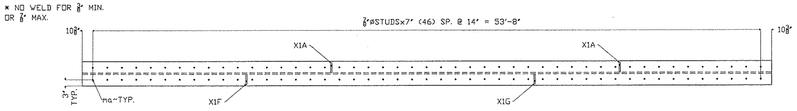


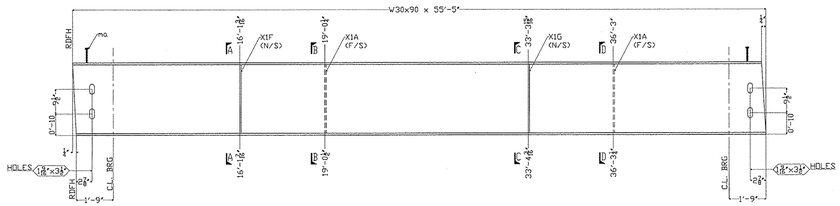
TYP. DIAPHRAGM STIFFENER
WELD DETAIL

× NO WELD FOR ⅜" MIN.
OR ⅝" MAX.

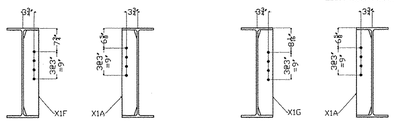


CAMBER DETAIL





ONE ~ GIRDER DETAIL ~ 3B1



SECTION A-A SECTION B-B SECTION C-C SECTION D-D

SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	3B1			W30x90	55'-5	CVN		
		2	X1A	PL ⅝x5	2'-4⅛	CVN		
		1	X1F	PL ⅝x5	2'-4⅛	CVN		
		1	X1G	PL ⅝x5	2'-4⅛	CVN		
		94	ma	⅞ø STUD	0'-7			

RECEIVED
OK'D BY _____ OK'D BY RSY
OCT 17 2011
RESUBMIT _____ APPROVED ✓
BY DATE 10/18/2011

SHOP NOTES
HOLES: 15/16"ø UON
BOLTS: PER GN1
PAINT: NO PAINT
WELDS: N/A
MATERIAL: M270 GR50W

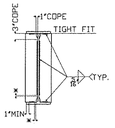
REV.NO	DATE	REVISION
1		
2		
3		
A		–

GIRDER DETAIL
TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR – BRIDGE 15

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2691

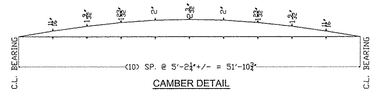
OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DET.	CONTRACT NO.	SHEET NO.
KE 10/07/11	WL 10/18/11				3590	3

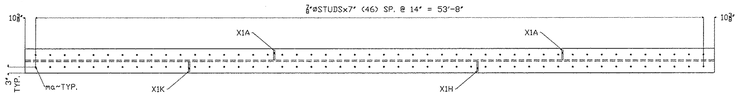


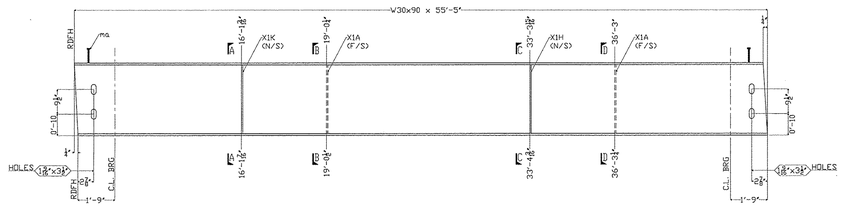
TYP. DIAPHRAGM STIFFENER WELD DETAIL

× NO WELD FOR ⅜" MIN. OR ⅝" MAX.

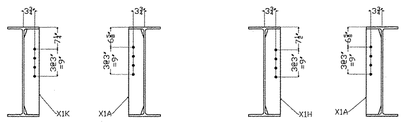


CAMBER DETAIL





ONE ~ GIRDER DETAIL ~ 4B1



SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	4B1			W30x90	55'-5	CVN		
		2	X1A	PL ⅝x5	2'-4⅜	CVN		
		1	X1H	PL ⅝x5	2'-4⅜	CVN		
		1	X1K	PL ⅝x5	2'-4⅜	CVN		
		94	ma	⅞ø STUD	0'-7			

RECEIVED
OK'D BY _____ OK'D BY RSG
OCT 17 2011
RESUBMIT _____ APPROVED ✓
BY _____ DATE 10/18/2011

REV.NO	DATE	REVISION
1		–
2		–
3		–

GIRDER DETAIL

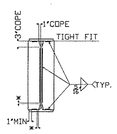
TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR – BRIDGE 15

SHOP NOTES
HOLES: 15/16"ø UON
BOLTS: PER GN1
PAINT: NO PAINT
WELDS: NA
MATERIAL: M270 GR50W

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2091

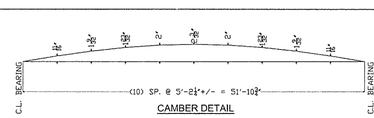
OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
MS 10/07/11	RL 10/10/11				3590	4

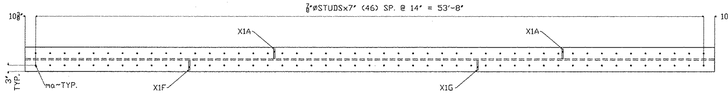


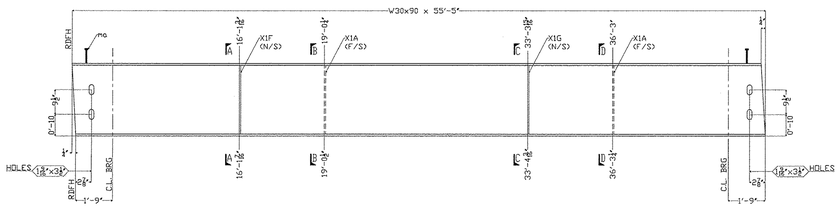
TYP. DIAPHRAGM STIFFENER
WELD DETAIL

× NO WELD FOR ⅜" MIN.
OR ⅝" MAX.

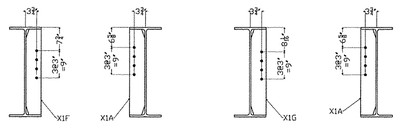


CAMBER DETAIL





ONE ~ GIRDER DETAIL ~ 5B1



SECTION A-A SECTION B-B SECTION C-C SECTION D-D

SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	5B1			W30x90	55'-5	CVN		
		2	X1A	PL⅜x5	2'-4⅜	CVN		
		1	X1F	PL⅜x5	2'-4⅜	CVN		
		1	X1G	PL⅜x5	2'-4⅜	CVN		
		94	na	⅞" STUD	0'-7			

RECEIVED
OK'D BY _____ OK'D BY RSY
OCT 17 2011
RESUBMIT _____ APPROVED ✓
BY DATE 10/18/2011

SHOP NOTES
HOLES: 15/16"ø UON
BOLTS: PER GN
PAINT: NO PAINT
WELDS: N.A.
MATERIAL: M270 GR.50W

REV.NO	DATE	REVISION
1		-
2		-
3		-

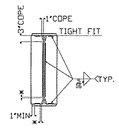
GIRDER DETAIL

TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR - BRIDGE 15

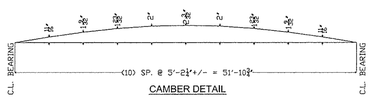
PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2291

OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
KC 10/03/11	MJ 10/16/11				3590	5



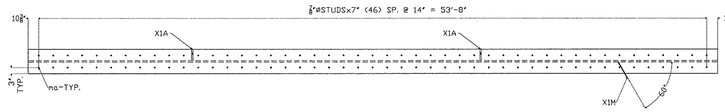
TYP. DIAPHRAGM STIFFENER WELD DETAIL

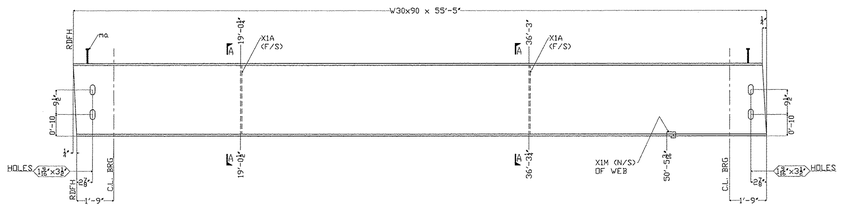


CAMBER DETAIL

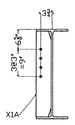
SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	6B1			W30x90	55'-5	CVN		
		2	X1A	PL⅝x5	2'-4⅛	CVN		
		1	X1M	PL½x2⅜	0'-7½	CVN		
		94	no.	⅞ø STUD	0'-7			

× NO WELD FOR ⅜" MIN. OR ⅝" MAX.

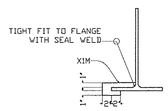




ONE ~ GIRDER DETAIL ~ 6B1



SECTION A-A



DETAIL OF DRIP BAR

RECEIVED
OK'D BY _____ OK'D BY 1254
OCT 17 2011
RESUBMIT _____ APPROVED ✓
BY DATE 10/18/2011

NO.	DATE	REVISION
3		-
2		-
1		-

GIRDER DETAIL

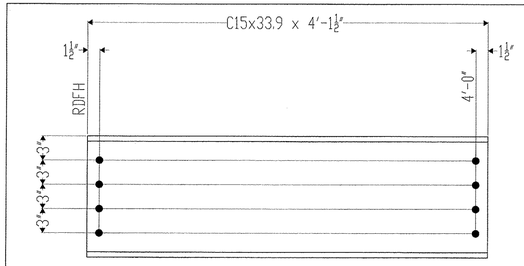
TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR ~ BRIDGE 15

SHOP NOTES
HOLES: 15/16"ø UON
BOLTS: PER ON1
PAINT: NO PAINT
WELDS: N.A.
MATERIAL: M270 GR50W

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2251

OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
KE 10/07/11	TK 10/16/11				3590	6



10 ~ DIAPHRAGMS ~ 7B1

SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
10	7D1			C15x33.9	4'-1½	-		

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BY

CK'D BY _____ OK'D BY RSY
RESUBMIT _____ APPROVED ✓
DATE 10/18/2011

REV.NO	DATE	REVISION
1		
2		
3	-	-

DIAPHRAGM DETAIL

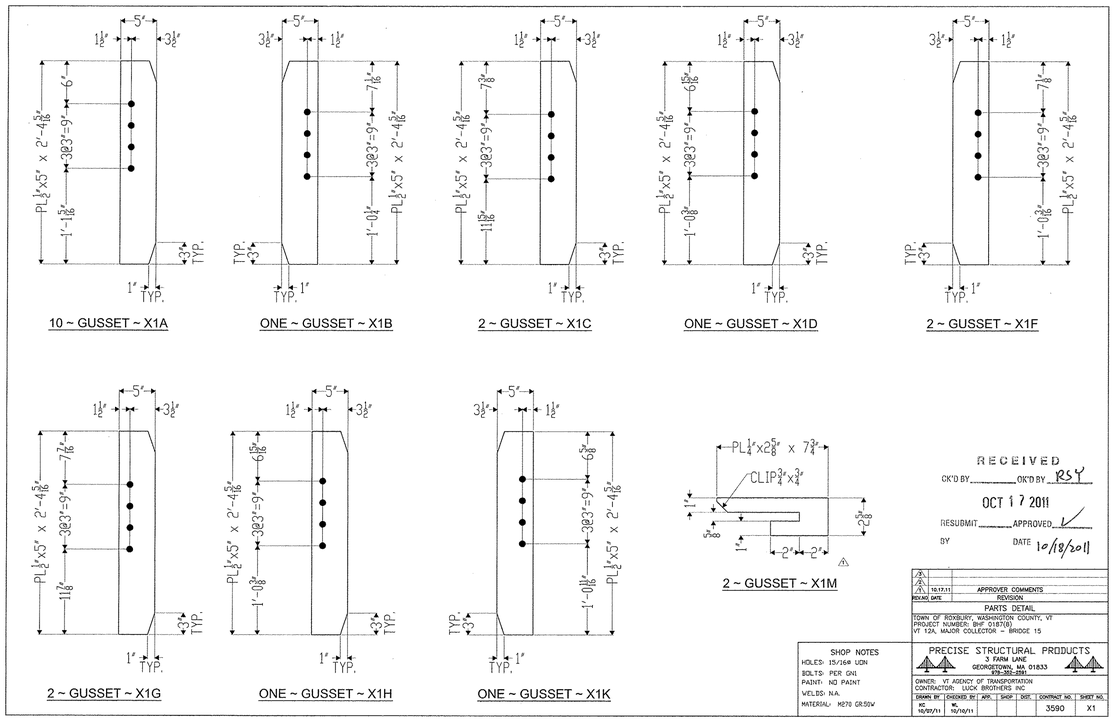
TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR – BRIDGE 15

SHOP NOTES
HOLES- 15/16"ø UON
BOLTS- PER GN1
PAINT- NO PAINT
WELDS- N.A.
MATERIAL- M270 GR50W

PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2951

OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DES.	CONTRACT NO.	SHEET NO.
RC 10/07/11	WL 10/18/11				3590	7



10 ~ GUSSET ~ X1A

ONE ~ GUSSET ~ X1B

2 ~ GUSSET ~ X1C

ONE ~ GUSSET ~ X1D

2 ~ GUSSET ~ X1F

2 ~ GUSSET ~ X1G

ONE ~ GUSSET ~ X1H

ONE ~ GUSSET ~ X1K

2 ~ GUSSET ~ X1M

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OCT 17 2011
RESUBMIT_____ APPROVED ✓
BY DATE 10/18/2011

NO./MK. DATE	REVISION
1. 10.17.11	APPROVER COMMENTS
2.	
3.	

PARTS DETAIL

TOWN OF ROXBURY, WASHINGTON COUNTY, VT
PROJECT NUMBER: BHF 0187(8)
VT 12A, MAJOR COLLECTOR ~ BRIDGE 15

SHOP NOTES
HOLES: 15/16ø LCN
BOLTS: PER GN1
PAINT: NO PAINT
WELDS: N.A.
MATERIAL: M270 GR50W

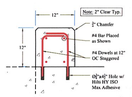
PRECISE STRUCTURAL PRODUCTS
3 FARM LANE
GEORGETOWN, MA 01833
978-352-2581

OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

DRAWN BY	CHECKED BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET NO.
KC 10/07/11	MJ 10/18/11				3590	X1

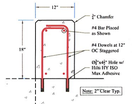
Table of Units				
Name	Qty	Length	Vol (CY)	Wt (lbs)**
RF-1	1	7'-11½"	15.43	61,710
RF-2	8	7'-11½"	15.20	60,790
RF-3	1	7'-11½"	12.51	50,050
RF-4	1	7'-11½"	12.59	50,370
WW-1	1	10'-7½"	7.98	31,900
WW-2	1	6'-2½"	2.77	11,085
WW-3	1	16'-4½"	7.98	31,915
FT-1	1	14'-6½"	9.84	39,380
FT-2	1	11'-5½"	7.47	29,890
FT-3	1	15'-3½"	10.04	40,150
FT-4	1	16'-0"	11.68	46,725
FT-5	8	16'-0"	12.25	48,990
FT-6	1	15'-0"	7.22	28,890
FT-7	1	12'-0"	5.78	23,111

*Headwalls Not Included (By Others) ** May Vary



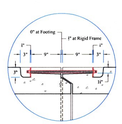
HW-1 Section

Cast In Place by Contractor



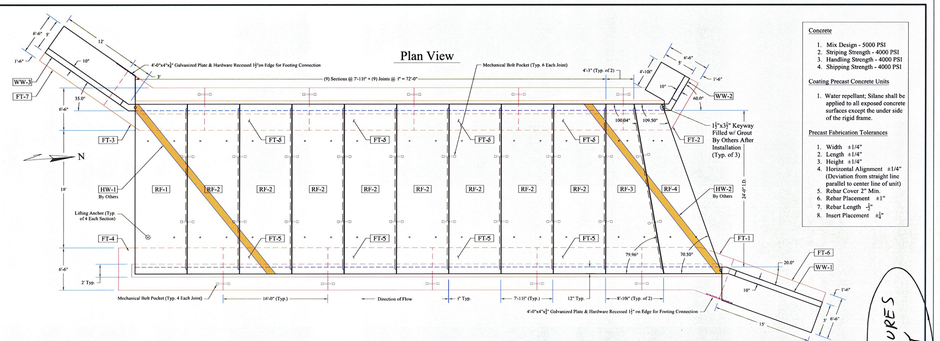
HW-2 Section

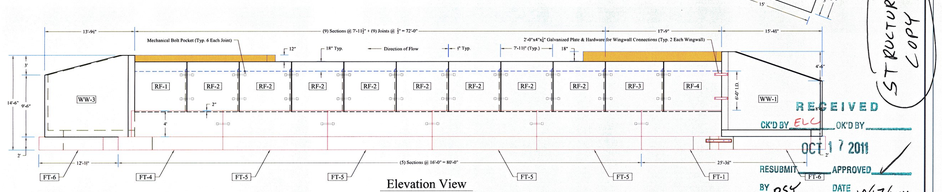
Cast In Place by Contractor

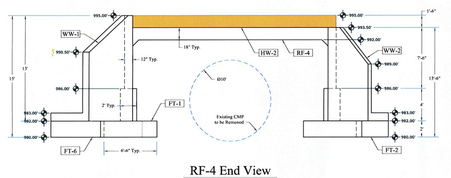


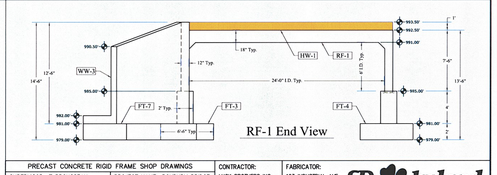
CONTRACTORS VTSPEC:

Typical Bolt Pocket Sect. Rigid Frame & Footing









Concrete

1. Mix Design - 5000 PSI
2. Striping Strength - 4000 PSI
3. Handling Strength - 4000 PSI
4. Shipping Strength - 4000 PSI

Coating Precast Concrete Units

1. Water repellant; Silane shall be applied to all exposed concrete surfaces except the under side of the rigid frame.

Precast Fabrication Tolerances

1. Width ±1/4"
2. Length ±1/4"
3. Height ±1/4"
4. Horizontal Alignment ±1/4" (Deviation from straight line parallel to center line of unit)
5. Rebar Cover 2" Min.
6. Rebar Placement ±1"
7. Rebar Length $-\frac{1}{2}$"
8. Insert Placement $\pm\frac{1}{4}$"

STRUCTURES COPY

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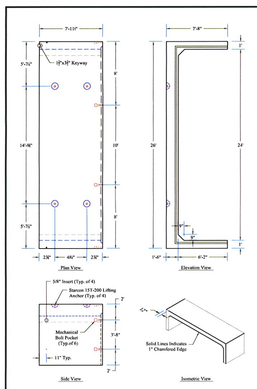
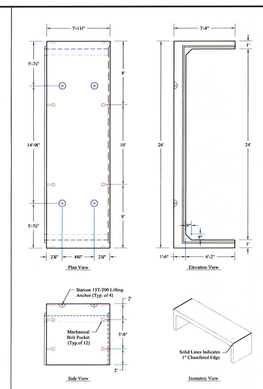
OK'D BY ELC OK'D BY
RESUBMIT APPROVED
BY PSY DATE 10/17/2011

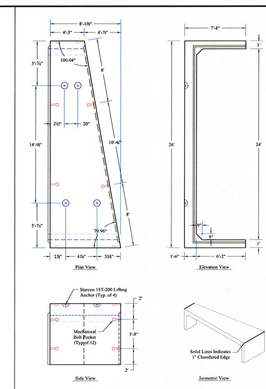
PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS		CONTRACTOR:	FABRICATOR:
SUPERVISOR: T BROUSSEAU	PROJECT NAME: ROXBURY BRIDGE	LUCK BROTHERS INC. PLATTSBURGH, NY 12901 Ph: (518) 561-4321	193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0220 SD Ireland Precast Division
DETAILER: C. DUPLANTIS	PROJECT NUMBER: ER 0187 (9)		
CHECKER: T. BROUSSEAU	LOCATION: ROXBURY, VT		
ENGINEER: ENGINEERING VENTURES	BRIDGE: #22 ON ROUTE 12A	10/17/11	LAYOUT PLAN, SIDE ELEVATION & END ELEVATIONS | 1 OF 3



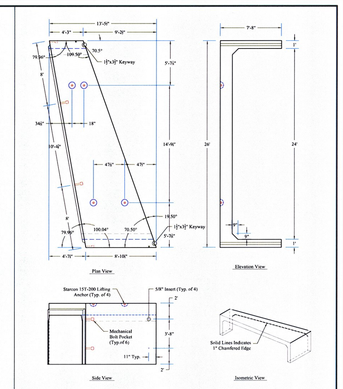
RF-1 Rigid Frame Details



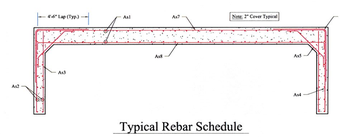
RF-2 Rigid Frame Details



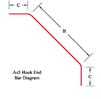
RF-3 Rigid Frame Details



RF-4 Rigid Frame Details



Typical Rebar Schedule



As5 Hook End Bar Diagram

Mark	Size	Vert Spacing	Length	Type	B	C
As1	#5	12"	7'-5"	Straight	910°	
As2	#5	12"	7'-5"	Straight	910°	
As3	#5	18"	7'-4"	Straight	88°	
As4	#7	6"	7'-4"	Straight	88°	
As5	#5	18"	7'-8"	Hook End	442°	12"
As6	#7	6"	9'-0"	L-Bar	54°	54"
As7	#5	12"	27'-4"	Straight	300°	
As8	#6	5"	27'-8"	Hook End	300°	12"

Notes:

1. Design is in accordance w/ ASTM C1433 and AASHTO LRFD Bridge Design Specifications.
2. Design Live Load = AASHTO HL-93
3. Concrete Strength = 5,000 psi Min
4. Reinforcing Steel - ASTM A615, Grade 60
5. Materials and Manufacturing shall Conform to ASTM C1433.
6. Bar Spacing 12" or Greater Tied at Every Intersection.
7. All 'H' Dimensions are Horizontal All 'C' Dimensions are Vertical (Except Where Shown Otherwise)

CONTRACTORS VT/SPEC:

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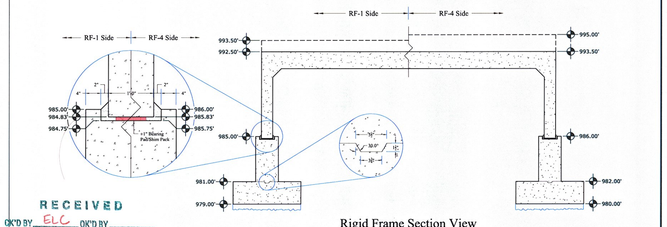
BY RSK DATE 10/17/2011



Rigid Frame Section View

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS		CONTRACTOR:	FABRICATOR:
SUPERVISOR: T. BROUSSEAU	PROJECT NAME: ROXBURY BRIDGE	LUCK BROTHERS INC. PLATTSBURGH, NY 12901 Ph: (518) 561-4321	193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201
DETAILER: C. DUPLANTIS	PROJECT NUMBER: ER 0187 (9)		
CHECKER: T. BROUSSEAU	LOCATION: ROXBURY, VT		
ENGINEER: ENGINEERING VENTURES	BRIDGE: #22 ON ROUTE 12A	10/17/11	RIGID FRAME PIECES 1-4, TYP. SECTION & REBAR | 2 OF 3

SD Ireland Precast Division

WW-1 Wing Wall Details

WW-2 Wing Wall Details

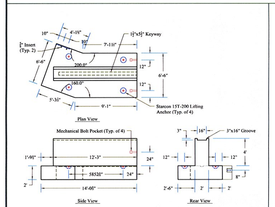
WW-3 Wing Wall Details

Typical Wing Wall Rebar

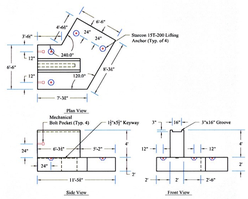
Wing Wall - Rigid Frame Key Way

Note: Plastic Insert (IN-063) from PA Insert Co.

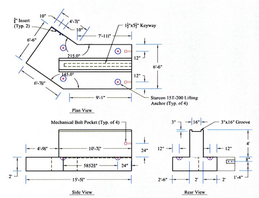
Mark	Size	Max Spacing	Length	Type	B	C
Bs1	#4	18"	Varies	Straight		
Bs2	#4	18"	Varies	Straight		
Bs3	#7	10"	Varies	Straight		
Bs4	#7	10"	8'-0"	Dowel	30"	46"
Bs5	#7	10"	7'-10"	Dowel	30"	38"
Bs6	#5	12"	Varies	Straight		
Cs1	#5	12"	5'-8"	U-Bar	20"	24"
Cs2	#5	12"	9'-4"	Dowel	30"	48"
Cs3	#5	12"	9'-4"	Dowel	44"	48"
Cs4	#5	12"	Varies	Straight		
Cs5	#5	18"	Varies	Straight		
Ds1	#5	18"	6'-2"	Straight	74"	
Ds2	#5	18"	11'-8"	Straight	140"	



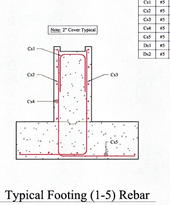
FT-1 Footing Details



FT-2 Footing Details



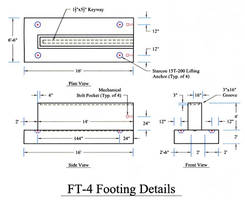
FT-3 Footing Details



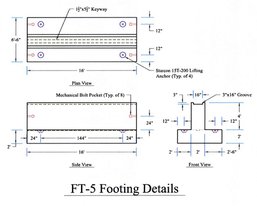
Typical Footing (1-5) Rebar

Notes:

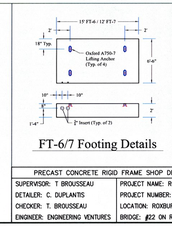
1. Design is in accordance w/ ASTM C1433 and AASHTO LRFD Bridge Design Specifications.
2. Design Live Load = AASHTO HL-93
3. Concrete Strength = 5,000 psi Min
4. Reinforing Steel - ASTM A615, Grade 60
5. Materials and Manufacturing shall confirm to ASTM C1433
6. All "H" Dimensions are Horizontal All "C" Dimensions are Vertical



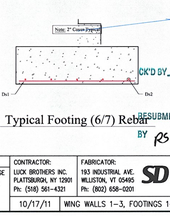
FT-4 Footing Details



FT-5 Footing Details



FT-6/7 Footing Details



Typical Footing (6/7) Rebar

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DATE 10/17/2011

CONTRACTORS VTSPE:

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS		CONTRACTOR: LUCK BROTHERS INC. PLATTSBURGH, NY 12901 Ph: (518) 561-4321	FABRICATOR: 163 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0220 SD Ireland Precast Division
SUPERVISOR: T. BROUSSEAU	PROJECT NAME: ROXBURY BRIDGE		
DETAILER: C. DUPLANTIS	PROJECT NUMBER: ER 0187 (9)		
CHECKER: T. BROUSSEAU	LOCATION: ROXBURY, VT		
ENGINEER: ENGINEERING VENTURES	BRIDGE: #22 ON ROUTE 12A	10/17/11	WING WALLS 1-3, FOOTINGS 1-6 & REBAR DETAILS | 3 OF 3

Concrete

1. Mix Design - 5000 PSI
2. Striping Strength - 4000 PSI
3. Handling Strength - 4000 PSI
4. Shipping Strength - 4000 PSI

Coating Precast Concrete Units

1. Water repellant; Silane shall be applied to all outside face of Wing Walls only.

Precast Fabrication Tolerances

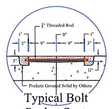
1. Width ±1/4"
2. Length ±1/4"
3. Height ±1/4"
4. Horizontal Alignment ±1/4" (Deviation from straight line parallel to center line of unit)

*Wing Wall Dimensions are from Contract Drawings Sheet 25 of 54

5. Rebar Placement ±1" per Conversation w/ R. Young
6. Rebar Length -1/2"

Table of Units

Name	Qty	Length	Vol (CY)	Wt (lbs)*
WW-1	1	8'-10½"	2.94	11,760
WW-2	1	13'-6"	4.44	17,750
WW-3	1	13'-6"	4.36	17,425
WW-4	1	13'-6"	4.24	16,950
WW-5	1	13'-6"	4.11	16,445
WW-6	1	13'-6"	3.98	15,920
WW-7	1	13'-6"	3.86	15,460
WW-8	1	13'-6"	3.77	15,075
WW-9	1	13'-6"	3.69	14,770
WW-10	1	7'-02½"	1.89	7,550
WW-11	1	7'-02½"	1.88	7,500
WW-12	1	7'-02½"	1.87	7,470
WW-13	1	7'-02½"	1.86	7,450
WW-14	1	7'-02½"	1.86	7,430
				* May Vary



Typical Bolt Pocket Sect.

CONTRACTORS YTSPC:

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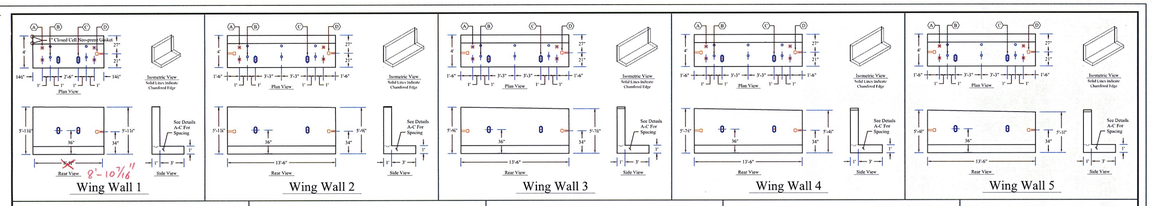
BY RSY DATE 10/25/2011

PRECAST CONCRETE WING WALL SHOP DRAWINGS		CONTRACTOR:	FABRICATOR:		
SUPERVISOR: T. BROUSSEAU	PROJECT NAME: ROXBURY BRIDGE	LUCK BROTHERS INC.	193 INDUSTRIAL AVE.	SD Ireland Precast Division	
DETAILER: C. DUPLANTIS	PROJECT NUMBER: BHF 0187 (8)	PLATTSBURGH, NY 12901	WILLISTON, VT 05495		
CHECKER: T. BROUSSEAU	LOCATION: ROXBURY, VT	Fx: (518) 561-4321	Ph: (802) 658-0201		
ENGINEER: ENGINEERING VENTURES	BRIDGE: #5 ON ROUTE 12A	10/24/11	LAYOUT PLAN, ELEVATION & NOTES/SCHEDULE		1 OF 2



Mark	Size	Max Spacing	Length	Type	B	C
As1	#5	12"	Varies	Straight		
As2	#5	12"	4'-10"	U-Bar	26"	6"
As3	#5	12"	Varies	Straight		
As4	#5	12"	5'-1"	Dowel	35"	26"
As5	#5	12"	5'-11"	Dowel	42"	29"
As6	#5	12"	Varies	Straight		
As7	#5	12"	3'-6"	Straight	42"	

Notes:
1. Design is in accordance w/ ASTM C1433 and AASHTO LRFD Bridge Design Specs
2. Design Live Load = AASHTO HL-93
3. Concrete Strength = 5,000 psi Min
4. Reinforcing Steel = ASTM A615, Grade 60
5. Materials & Manufacturing conform to ASTM C1433