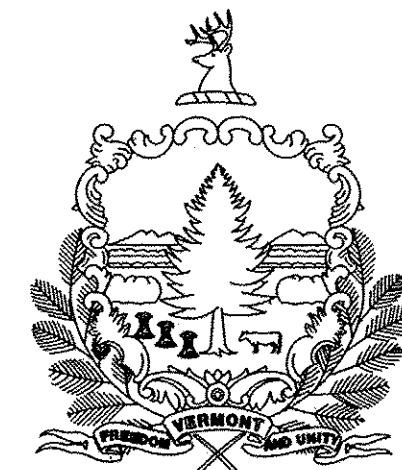


# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT BRIDGE PROJECT

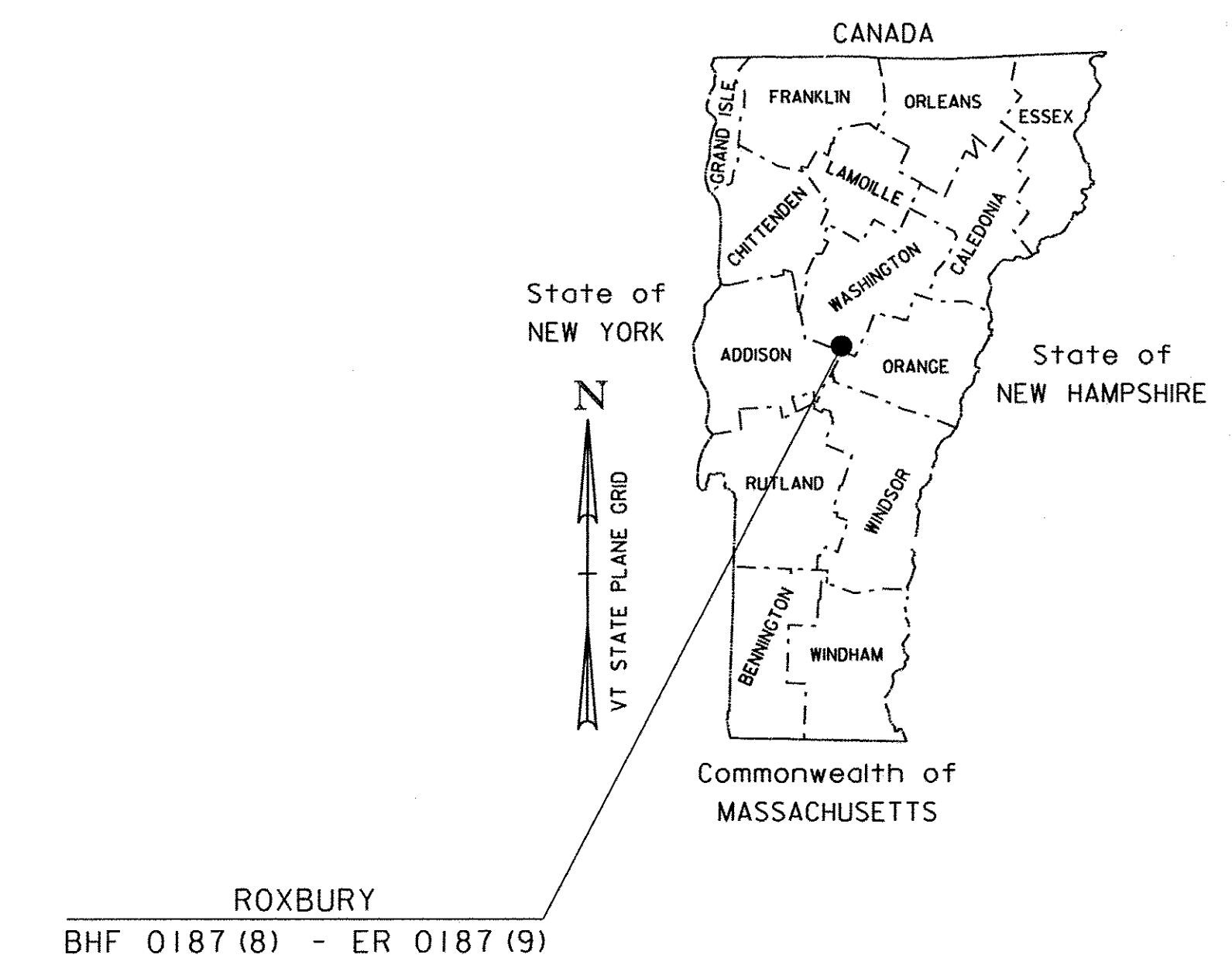
TOWN OF ROXBURY  
COUNTY OF WASHINGTON

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'



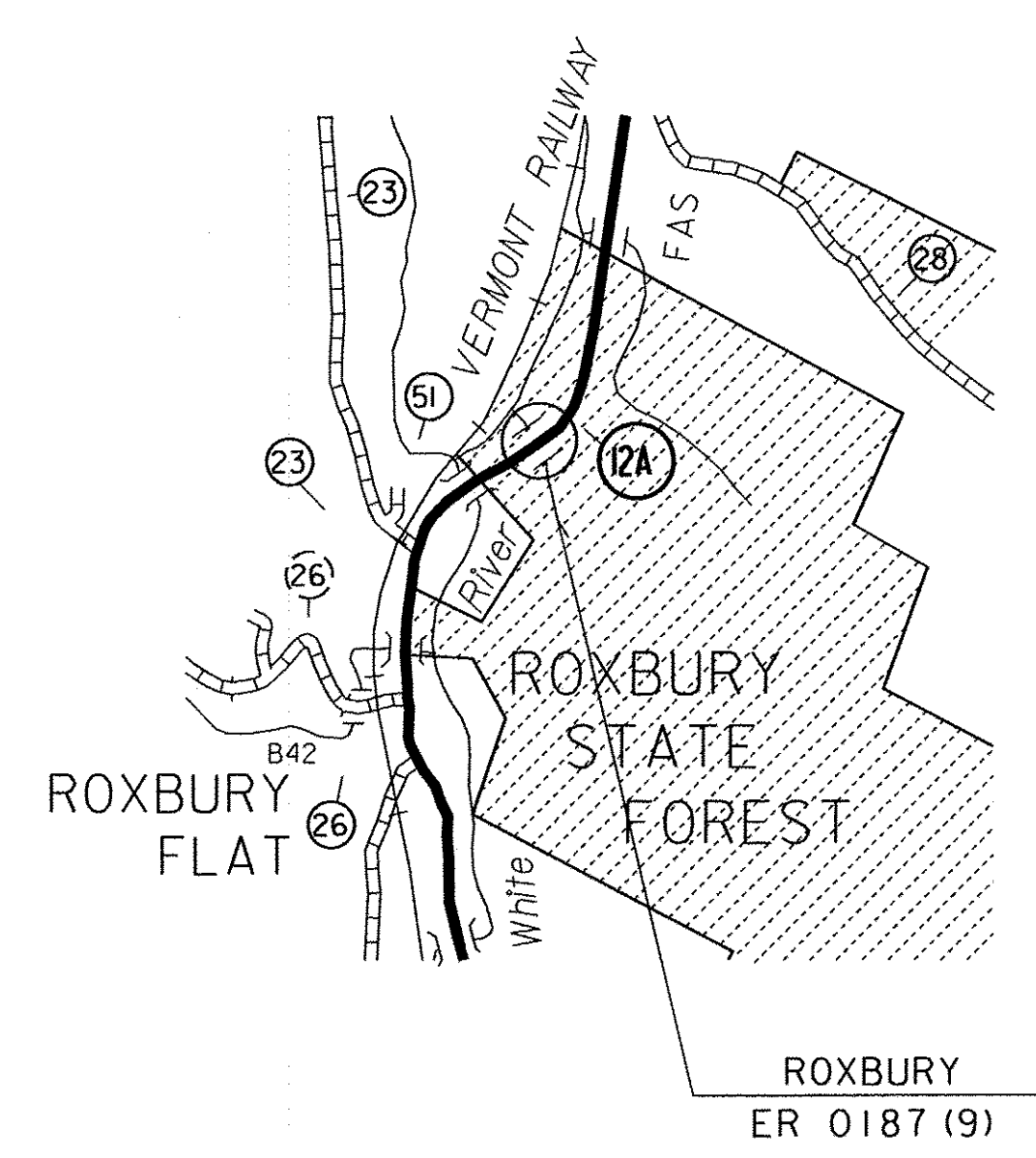
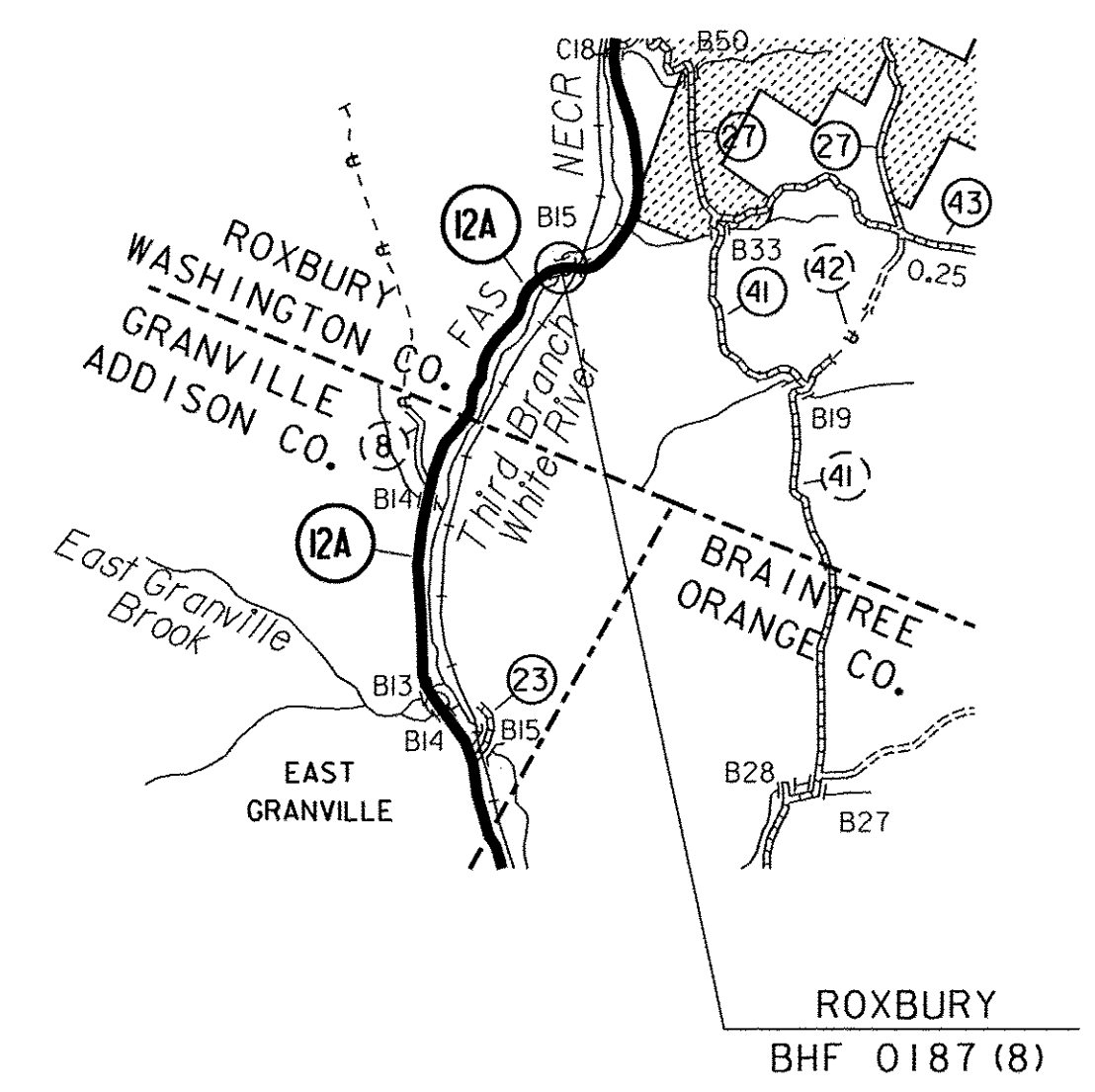
RECORD PLANS	
CONTRACTOR:	LUCK BROTHERS, INC. - PLATTSBURGH, NY
RESIDENT ENGINEER:	TOM MANCINI
CONSTRUCTION BEGAN:	OCTOBER 17, 2011
CONSTRUCTION COMPLETE:	AUGUST 6, 2012
RECORD PLANS BY:	TOM MANCINI & JENNA HYDE
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.	
BY	<i>Tom Mancini</i> 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.	

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	
TOP OF CUT	
TOE OF SLOPE	

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

DATUM  
VERTICAL    SEE SHEET 6 AND 41  
HORIZONTAL



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 <i>[Signature]</i>	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, MEDIUM)	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: I0c420//CompositeIndex.dgn PLOT DATE: 21-SEP-2011  
PROJECT LEADER: R.S.YOUNG DRAWN BY: D.D.BEARD  
DESIGNED BY: R.S.YOUNG CHECKED BY: -----  
COMPOSITE INDEX SHEET SHEET 2 OF 54

# QUANTITY SHEET 1

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
					1			1		2		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				PAVEMENT SUMMARY
					780			370		1150		CY	COMMON EXCAVATION	203.15				BRIDGE 15
					50				281	50		CY	SOLID ROCK EXCAVATION	203.16		307 TON		PERMANENT PAVEMENT
												CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27		44 TON		TEMPORARY PAVEMENT
					40					40		CY	TRENCH EXCAVATION OF EARTH	204.20		351 TON		TOTAL
					1				1	2		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				BRIDGE 22
					530	40			1246	1816		CY	STRUCTURE EXCAVATION	204.25		29 TON		TEMPORARY PAVEMENT
					160	40			535	735		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30		29 TON		TOTAL
								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 <sup>3</sup> )	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				

PROJECT NAME: ROXBURY COMPOSITE  
PROJECT NUMBER: BHF 0187(8)/ER0187(9)  
FILE NAME: s10c420excel.dgn PLOT DATE: 09/21/2011  
PROJECT LEADER: C.P.WILLIAMS DRAWN BY: D.D.BEARD  
DESIGNED BY: R.S.YOUNG CHECKED BY: E.R.CHARBONNE  
QUANTITY SHEET #1 SHEET 3 OF 54

# QUANTITY SHEET 2

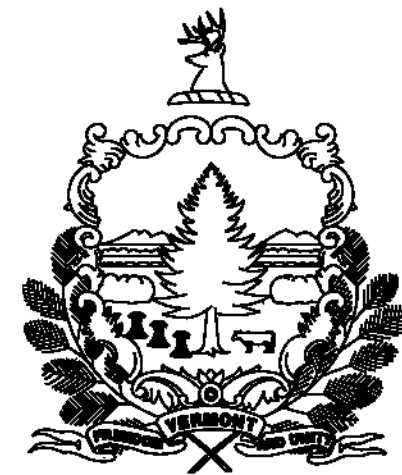
SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
					ROADWAY BR15	BRIDGE BR15	FULL C.E. ITEMS	ROADWAY BR22	BRIDGE BR22	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
					291			39		330		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
					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: s10c420excel.dgn	PLOT DATE: 09/21/2011
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: R.S.YOUNG	CHECKED BY: E.R.CHARBONNE
QUANTITY SHEET #2	SHEET 4 OF 54

# 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				

# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT BRIDGE PROJECT

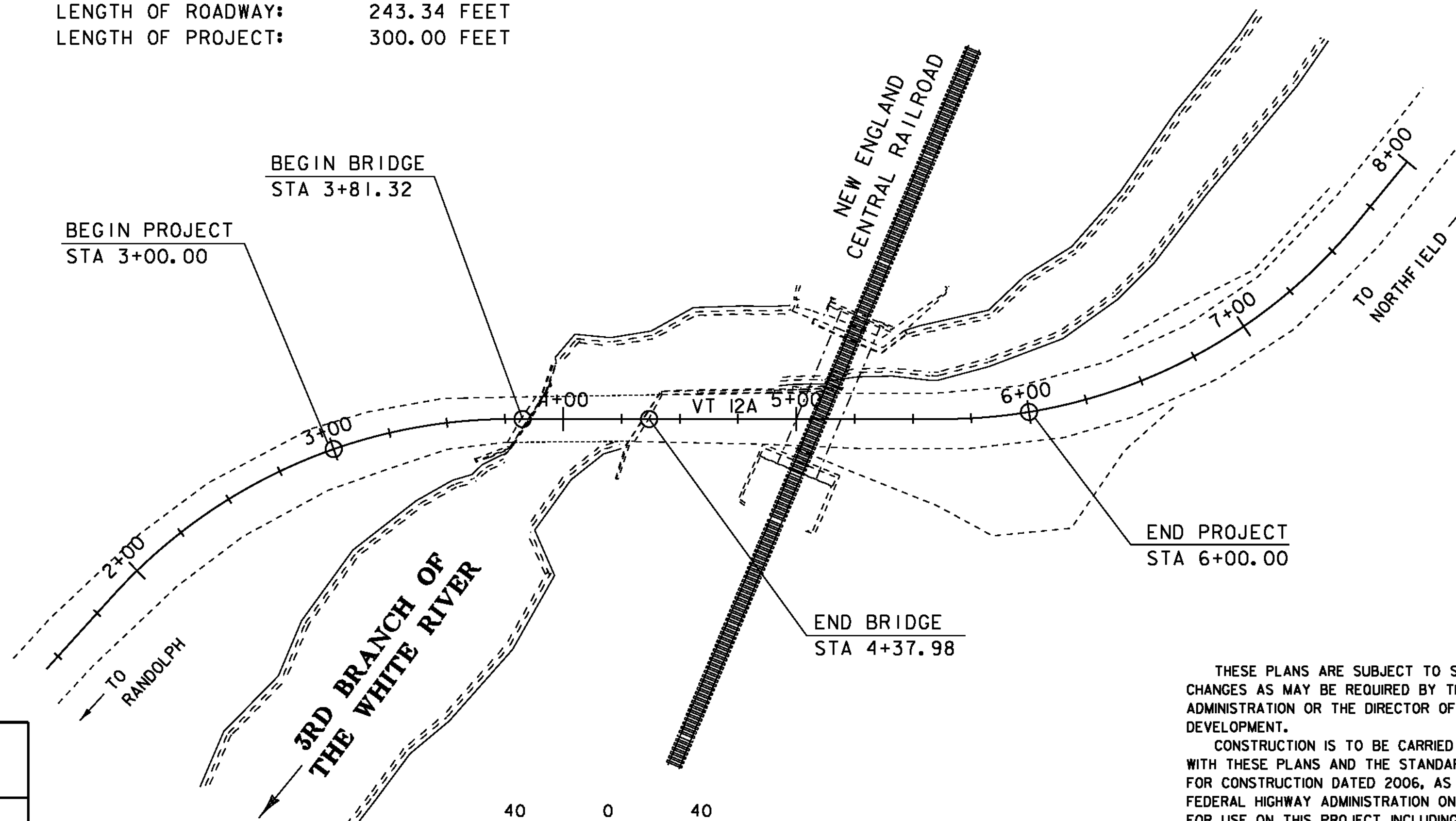
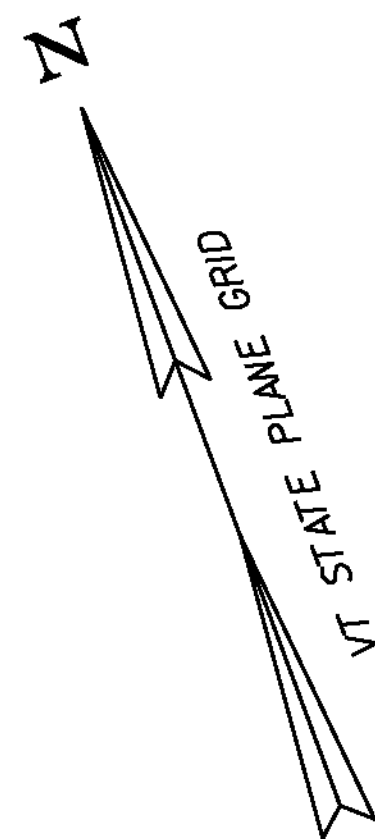
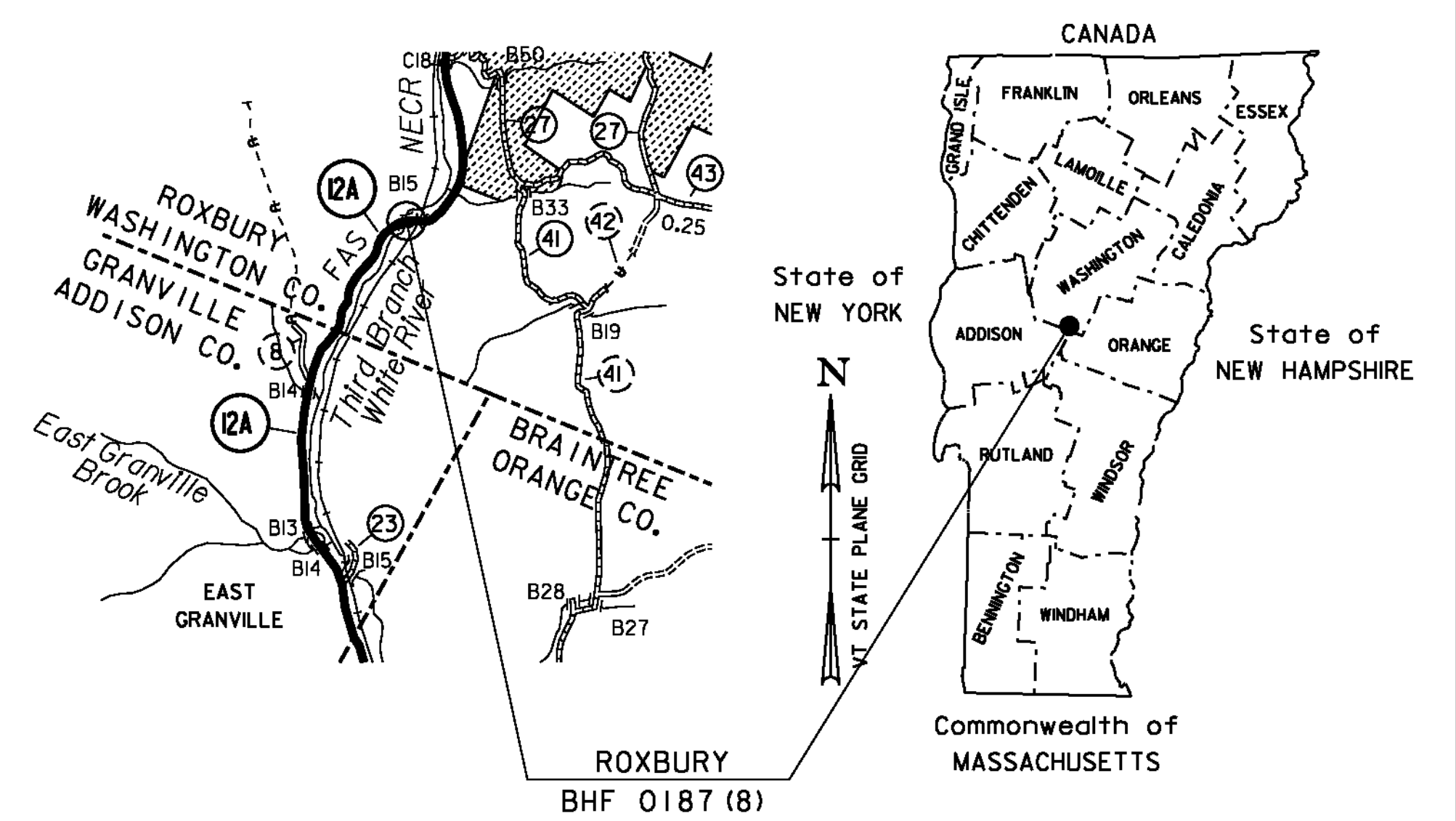
TOWN OF ROXBURY  
COUNTY OF WASHINGTON

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	
TOP OF CUT	
TOE OF SLOPE	

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

DATUM  
VERTICAL      NAVD88  
HORIZONTAL    NAD83 (96)

SCALE: 1" = 40'-0"

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.

PROJECT MANAGER : C.P. WILLIAMS  
PROJECT NAME : ROXBURY  
PROJECT NUMBER : BHF 0187 (8)  
SHEET 6 OF 54 SHEETS

PLOTTED 21-SEP-2011

# PRELIMINARY INFORMATION SHEET (BRIDGE)

**LRFD**

**INDEX OF SHEETS**

**FINAL HYDRAULIC REPORT**

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

**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

**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**

AVERAGE DAILY FLOW: 35 cfs DEPTH OR ELEVATION:  
 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

**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 bridge

**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	1.62	2.8	1.59	2.07	1.88	

COMMENTS:

**DESIGN VALUES**

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

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

FILE NAME: s10c420pi.dgn PLOT DATE: 9/21/2011  
 PROJECT LEADER: C. P. WILLIAMS DRAWN BY: G. ROY  
 DESIGNED BY: T. FILLBACH CHECKED BY: T. FILLBACH  
**PRELIMINARY INFORMATION SHEET** SHEET 7 OF 54

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT	
2012	470	55	57	4.5	35	20 year ESAL for flexible pavement from 2012 to 2032 : 109000
2032	500	55	57	7.2	55	40 year ESAL for flexible pavement from 2012 to 2052 : 258000
						Design Speed : 50 mph

**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<sup>3</sup>. 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: sl0c420note.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

# 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 <sup>3</sup> )	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		LS	FIELD OFFICE, ENGINEERS	631.10				
											1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
											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: s10c420excol.dgn PLOT DATE: 09/21/2011  
PROJECT LEADER: C.P.WILLIAMS DRAWN BY: D.D.BEARD  
DESIGNED BY: R.S.YOUNG CHECKED BY: E.R.CHARBONNE  
QUANTITY SHEET #1 SHEET 9 OF 54

# 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 QUANTITY)(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: s10c420excol.dgn PLOT DATE: 09/21/2011  
PROJECT LEADER: C.P.WILLIAMS DRAWN BY: D.D.BEARD  
DESIGNED BY: R.S.YOUNG CHECKED BY: E.R.CHARBONNE  
QUANTITY SHEET #2 SHEET 10 OF 54

# 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 PLOT DATE: 09/21/2011  
 PROJECT LEADER: C.P.WILLIAMS DRAWN BY: D.D.BEARD  
 DESIGNED BY: R.S.YOUNG CHECKED BY: E.R.CHARBONNE  
 BRIDGE QUANTITY SHEET #1 SHEET 11 OF 54

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 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 10.8 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.

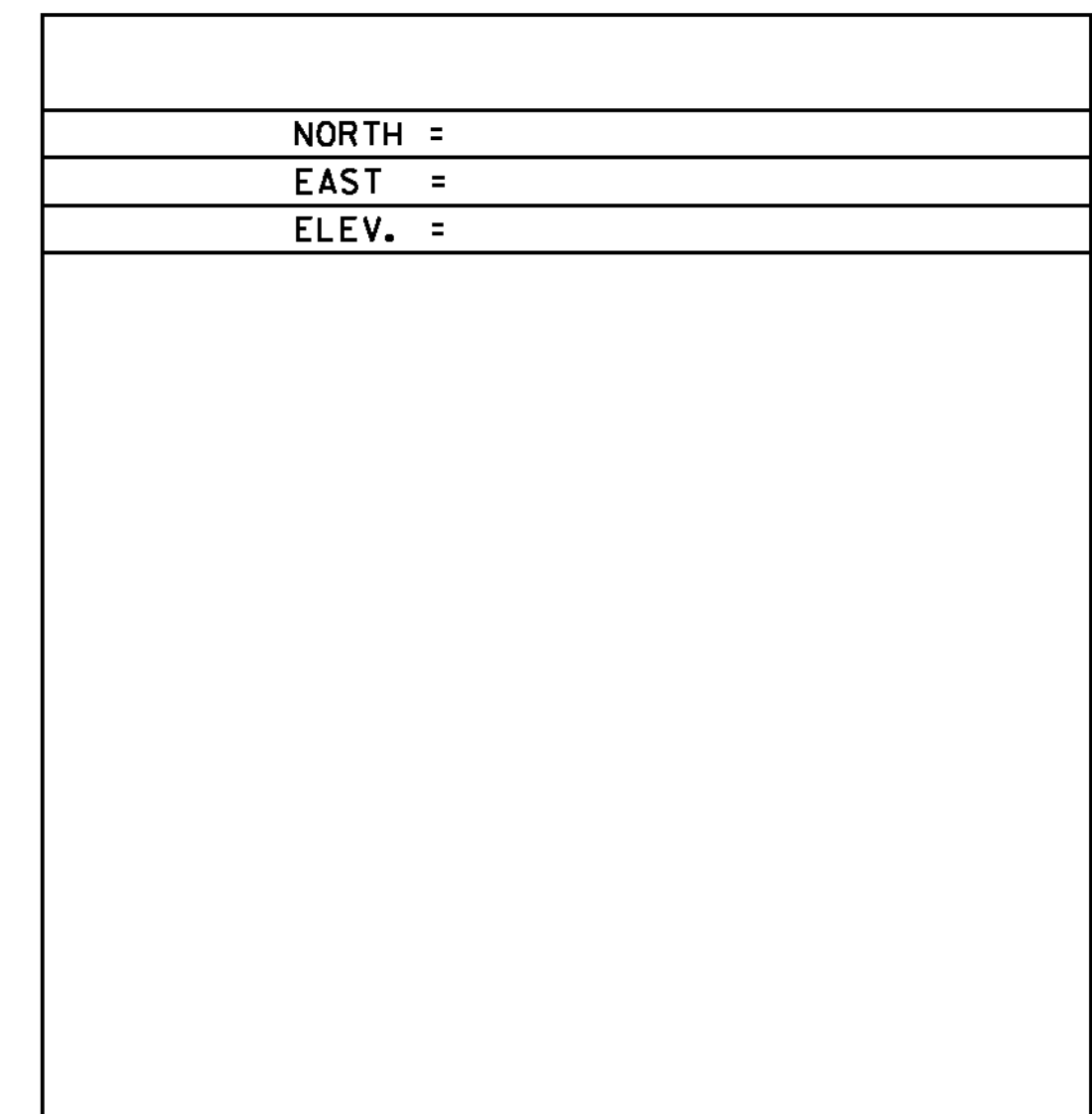
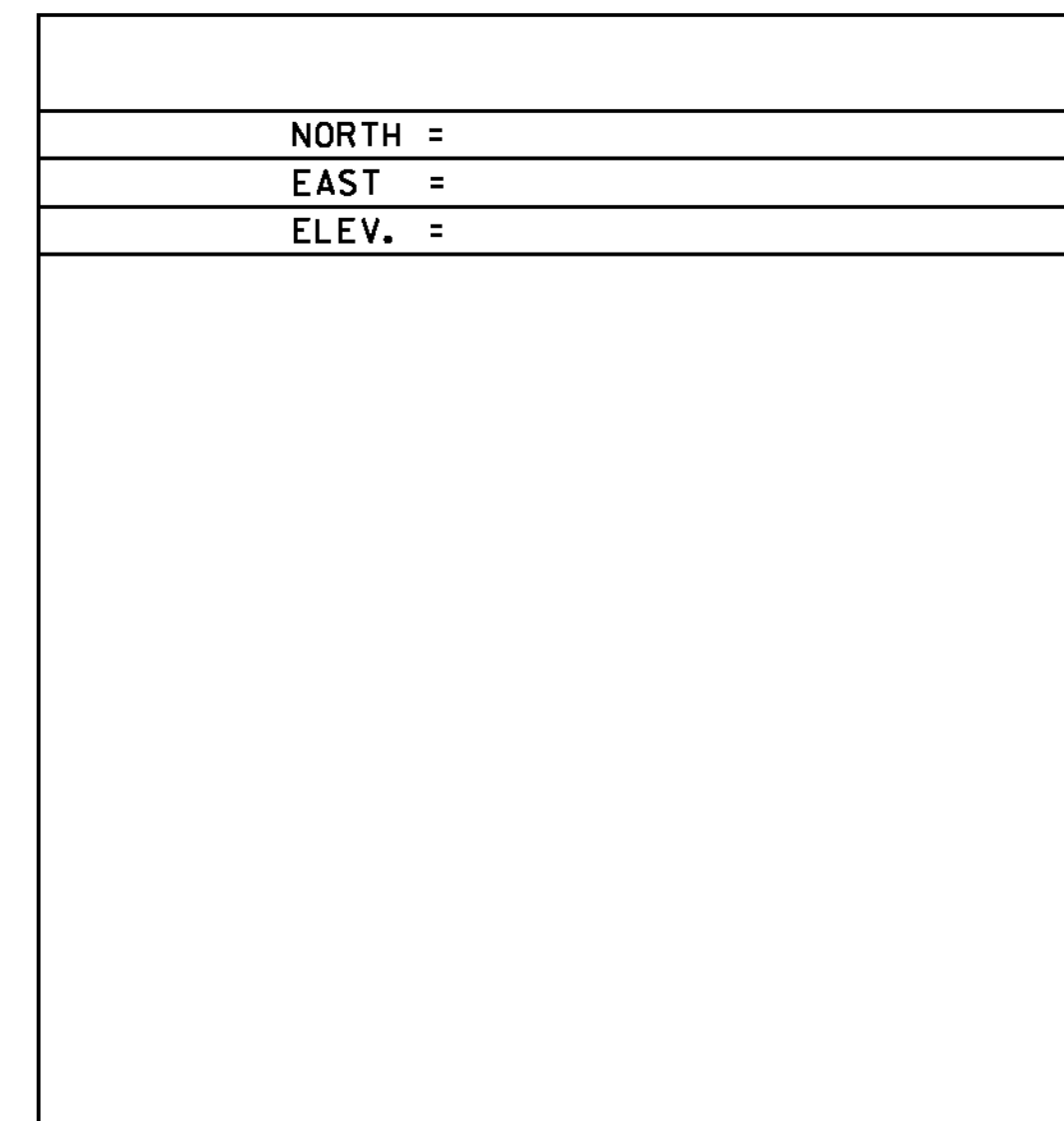
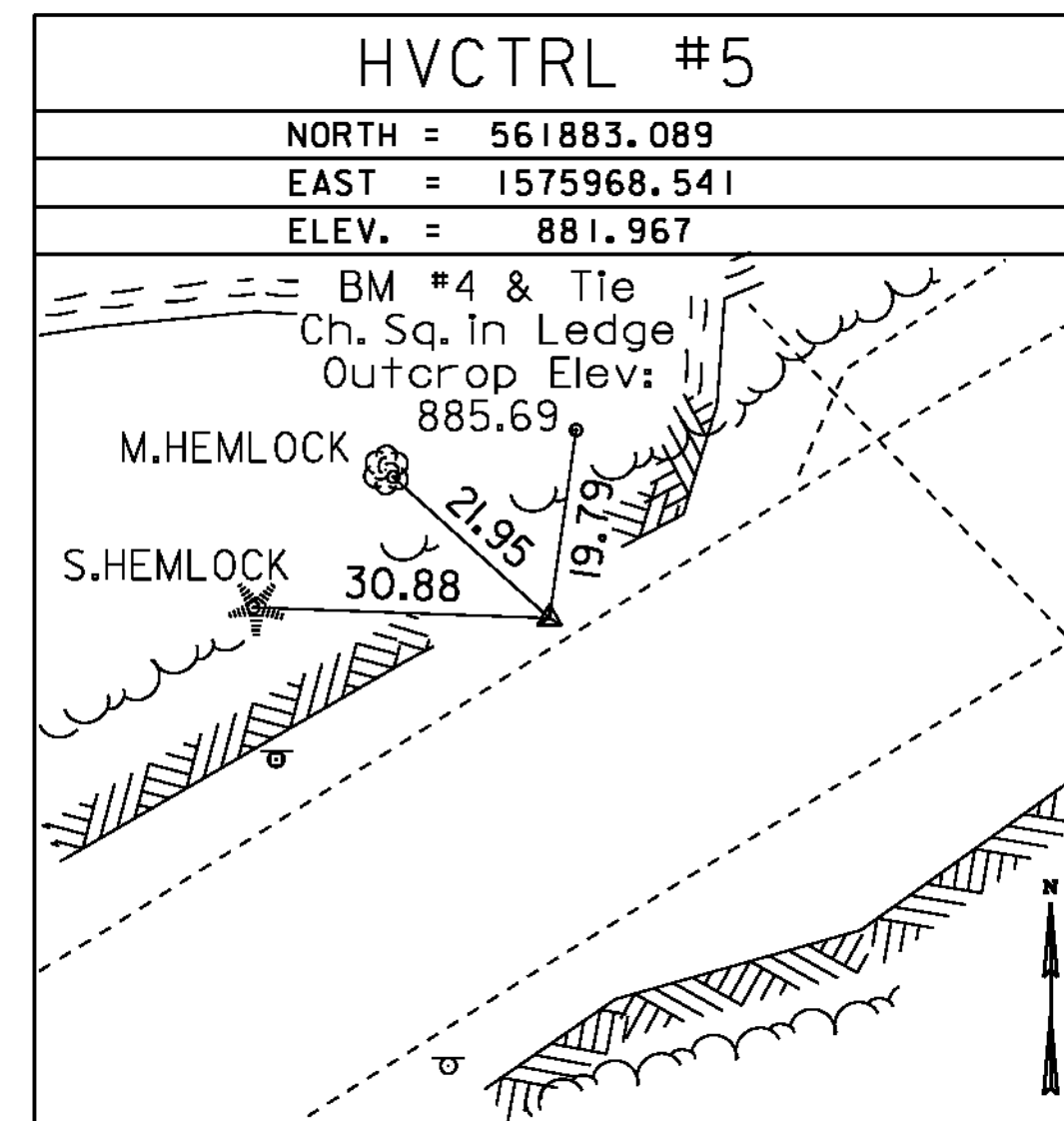
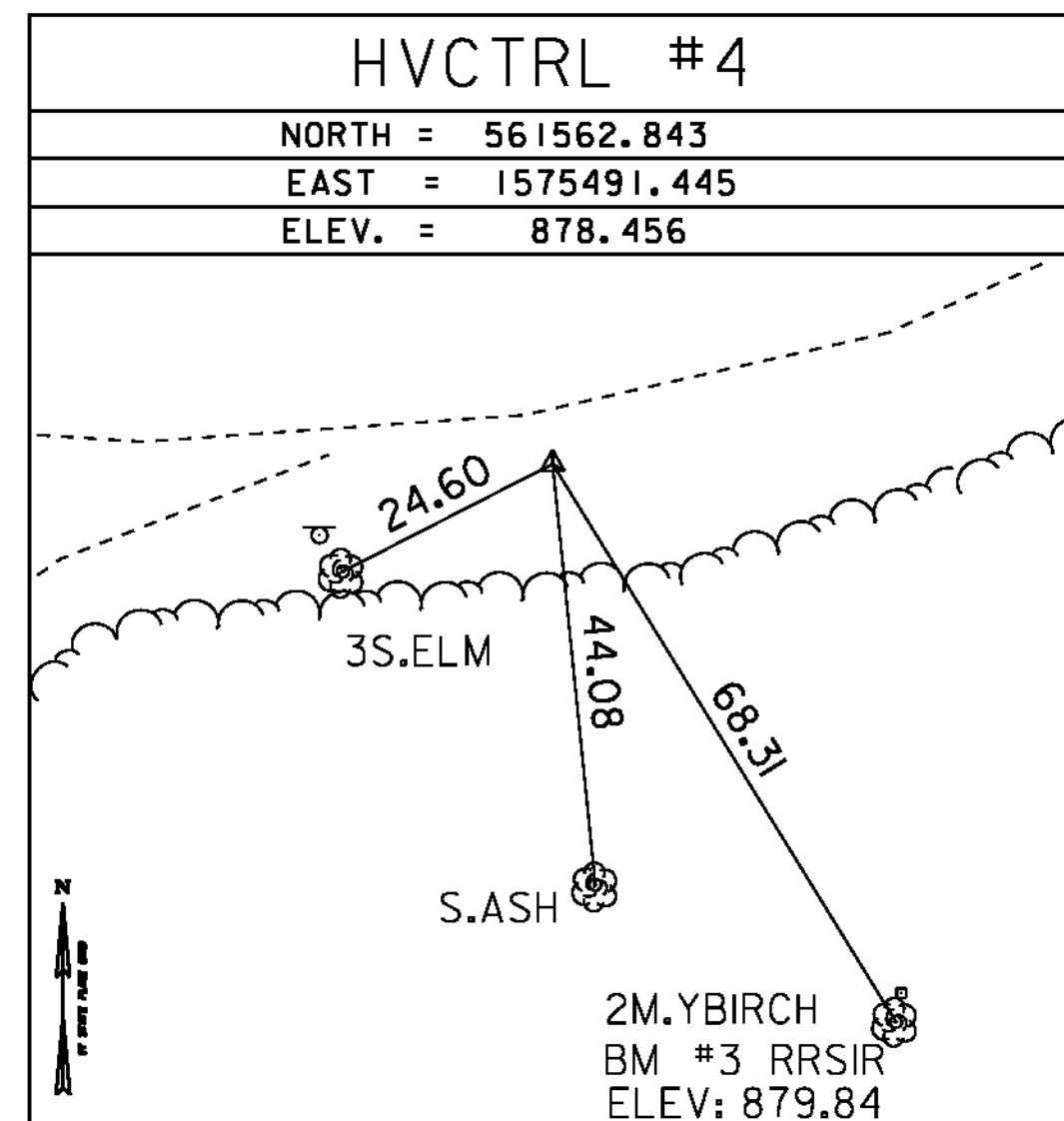
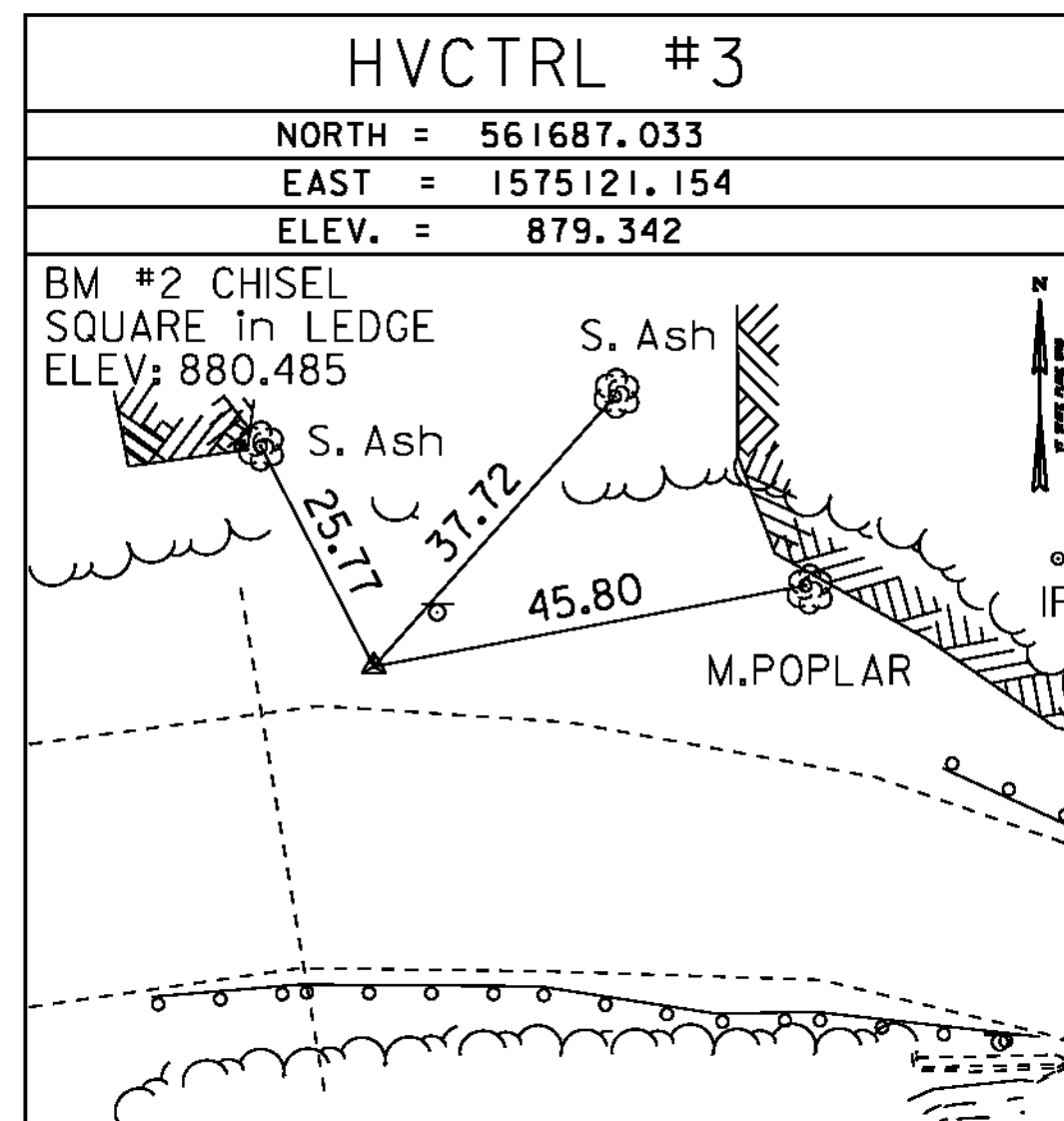
**HVCTRL #2**

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



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

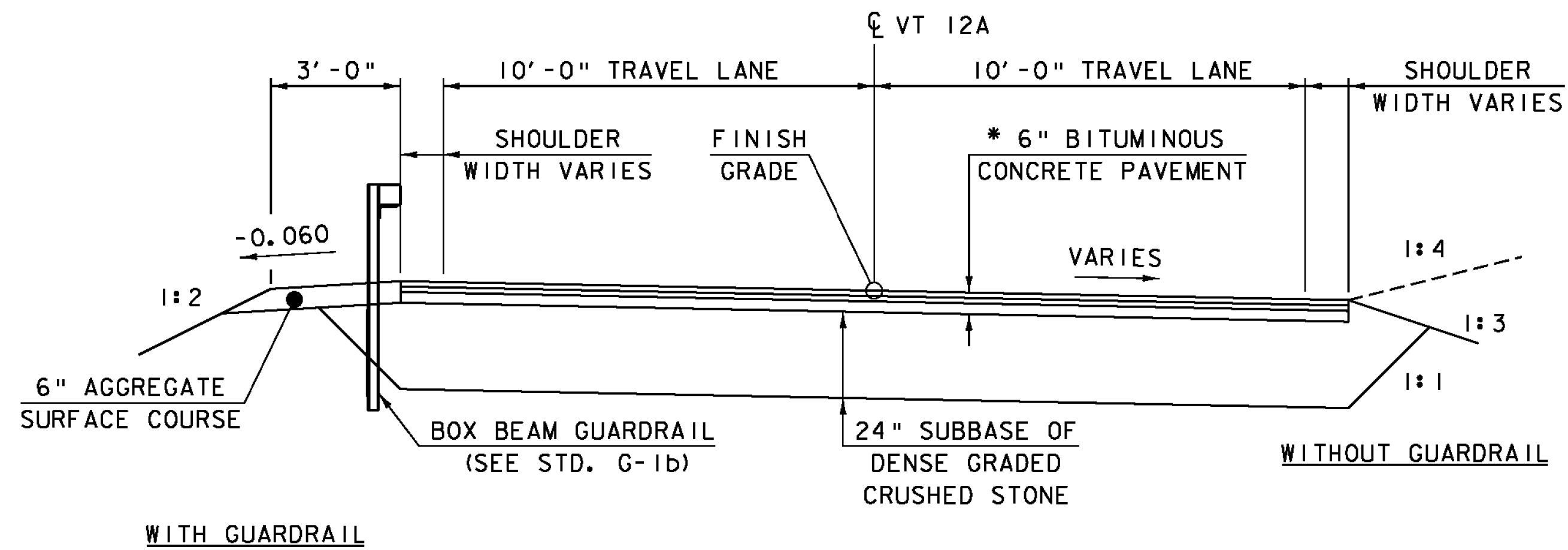
ALIGNMENT COORD

	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.

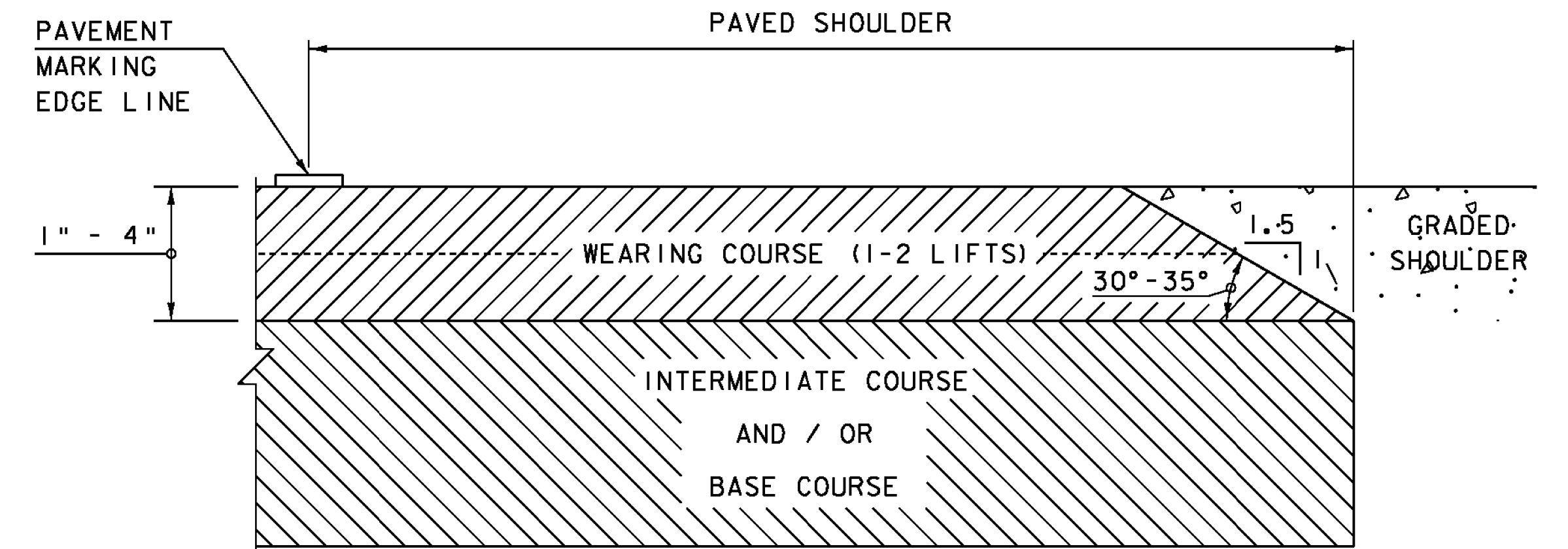
PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)
FILE NAME:	survey\10c4201.dgn
PROJECT LEADER:	WILLIAMS
DESIGNED BY:	
TIE SHEET	
PLOT DATE:	21-SEP-2011
DRAWN BY:	R. BULLOCK
CHECKED BY:	
SHEET	12 OF 54



WITH GUARDRAIL

### ROADWAY TYPICAL SECTION

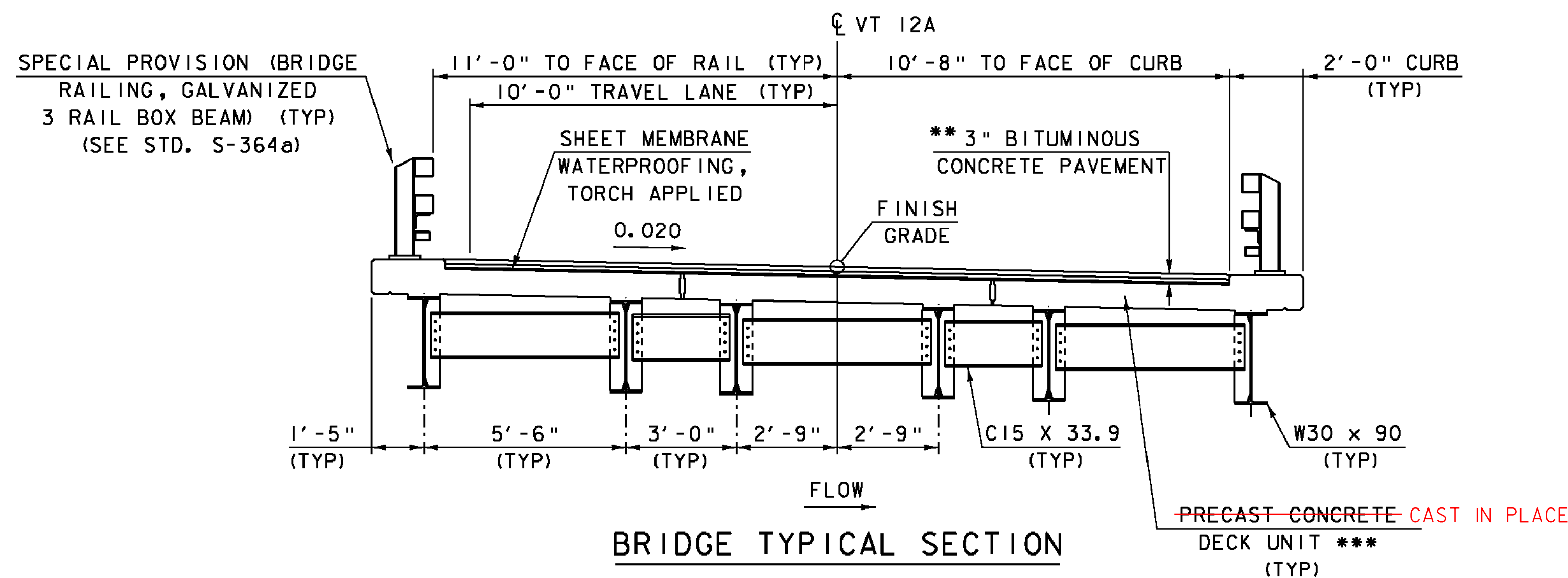
\*2 LIFTS OF 1½" BITUM. CONC. PAVEMENT TYPE IIIS OVER 1 LIFT OF 3" BITUM. CONC. PAVEMENT TYPE IS OR IIS PAID UNDER SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY).



### SAFETY EDGE DETAIL

NOT TO SCALE

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



### BRIDGE TYPICAL SECTION

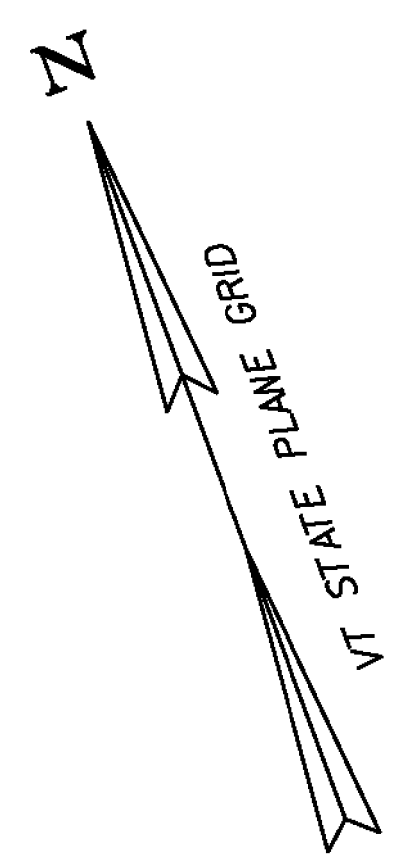
\*\* 2 LIFTS OF 1½" BITUM. CONC. PAVEMENT TYPE IIIS PAID UNDER SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY).  
 \*\*\* SEE PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE OF SECTION 900 OF THE SPECIAL PROVISIONS.

### 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	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420typ.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 13 OF 54
DESIGNED BY: G. ROY	
PROJECT TYPICAL SECTIONS	



**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  
 $\Delta = 57^\circ$  LT

BM NO. 2  
 CHISELED SQUARE  
 IN LEDGE  
 EL. 880.485

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

POB  
 STA 1+00.00

BEGIN BRIDGE  
 STA 3+81.32

END BRIDGE  
 STA 4+37.98

END APPROACH  
 BEGIN PROJECT  
 STA 3+00.00

CHANNEL LINE POE  
 STA 51+75.00

POE  
 STA 8+00.00

PT  
 STA 7+65.87

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

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

REMOVED  
 STEEL  
 GRIBBING

24" CPEP  
 STA 6+86 RT-LT

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

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

CONSTRUCTION  
 LIMITS

CHANNEL LINE POB  
 STA 50+00.00

END PROJECT  
 BEGIN APPROACH  
 STA 6+00.00

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

24" CPEP  
 STA 2+86.1LT-RT

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

**CURVE DATA NO. 1**  
 $\Delta = 47^\circ 49' 36''$   
 $D = 24^\circ 54' 40''$   
 $R = 230.00'$   
 $T = 101.99'$   
 $L = 191.99'$   
 $E = 21.60'$

**CURVE DATA NO. 2**  
 $\Delta = 50^\circ 37' 04''$   
 $D = 24^\circ 54' 40''$   
 $R = 230.00'$   
 $T = 108.76'$   
 $L = 203.19'$   
 $E = 24.42'$

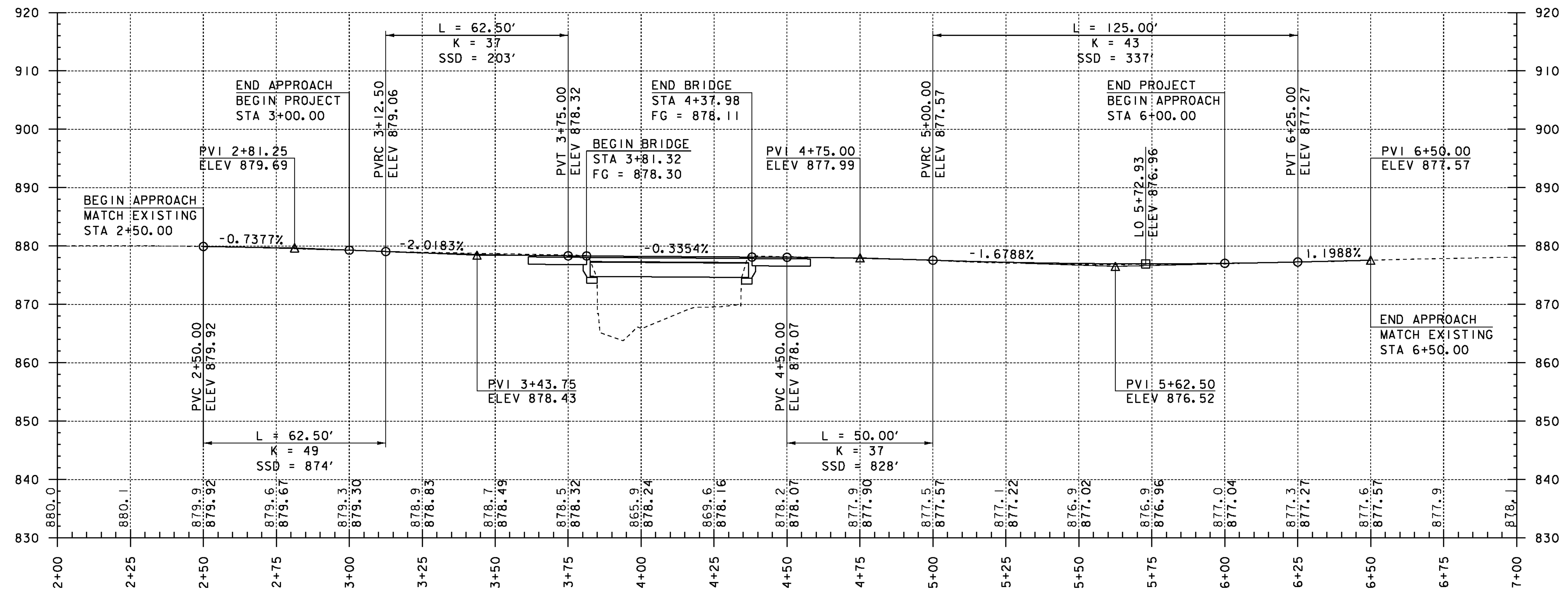
**EXISTING BRIDGE DATA**  
 CONCRETE T-BEAMS  
 CONCRETE ABUTMENTS  
 OVERALL LENGTH = 54'  
 OVERALL WIDTH = 23.1'

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

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

FILE NAME: sl0c420bdr.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.

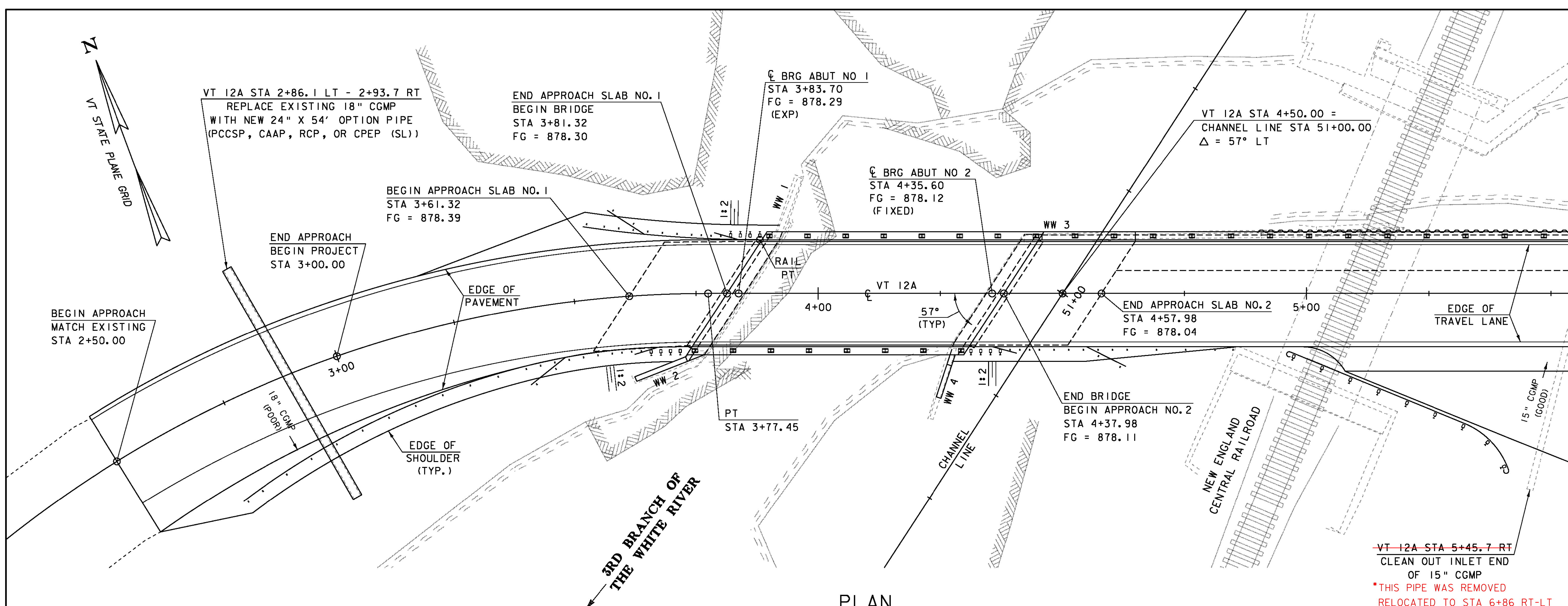
**PROFILE ALONG VT 12A**

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

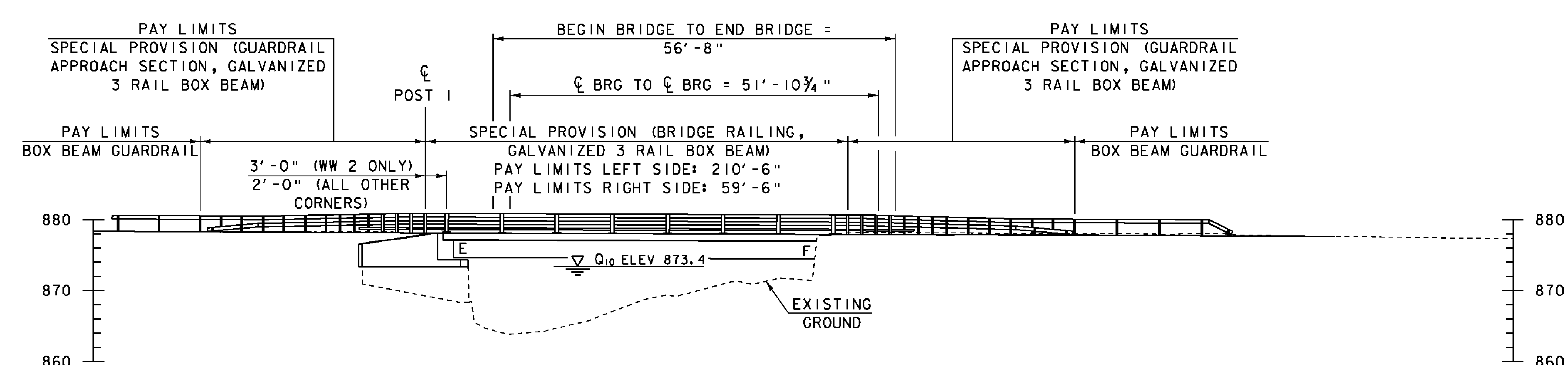
PROJECT NAME: ROXBURY  
 PROJECT NUMBER: BHF 0187(8)

FILE NAME: sl0c420pro.dgn  
 PROJECT LEADER: C. P. WILLIAMS  
 DESIGNED BY: G. ROY  
 VT 12A PROFILE

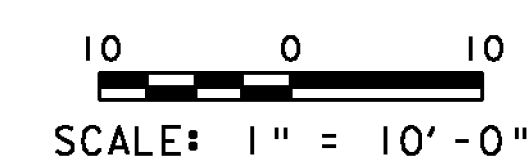
PLOT DATE: 21-SEP-2011  
 DRAWN BY: G. ROY  
 CHECKED BY: T. FILLBACH  
 SHEET 15 OF 54



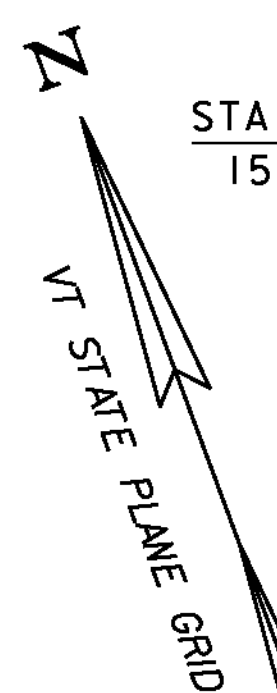
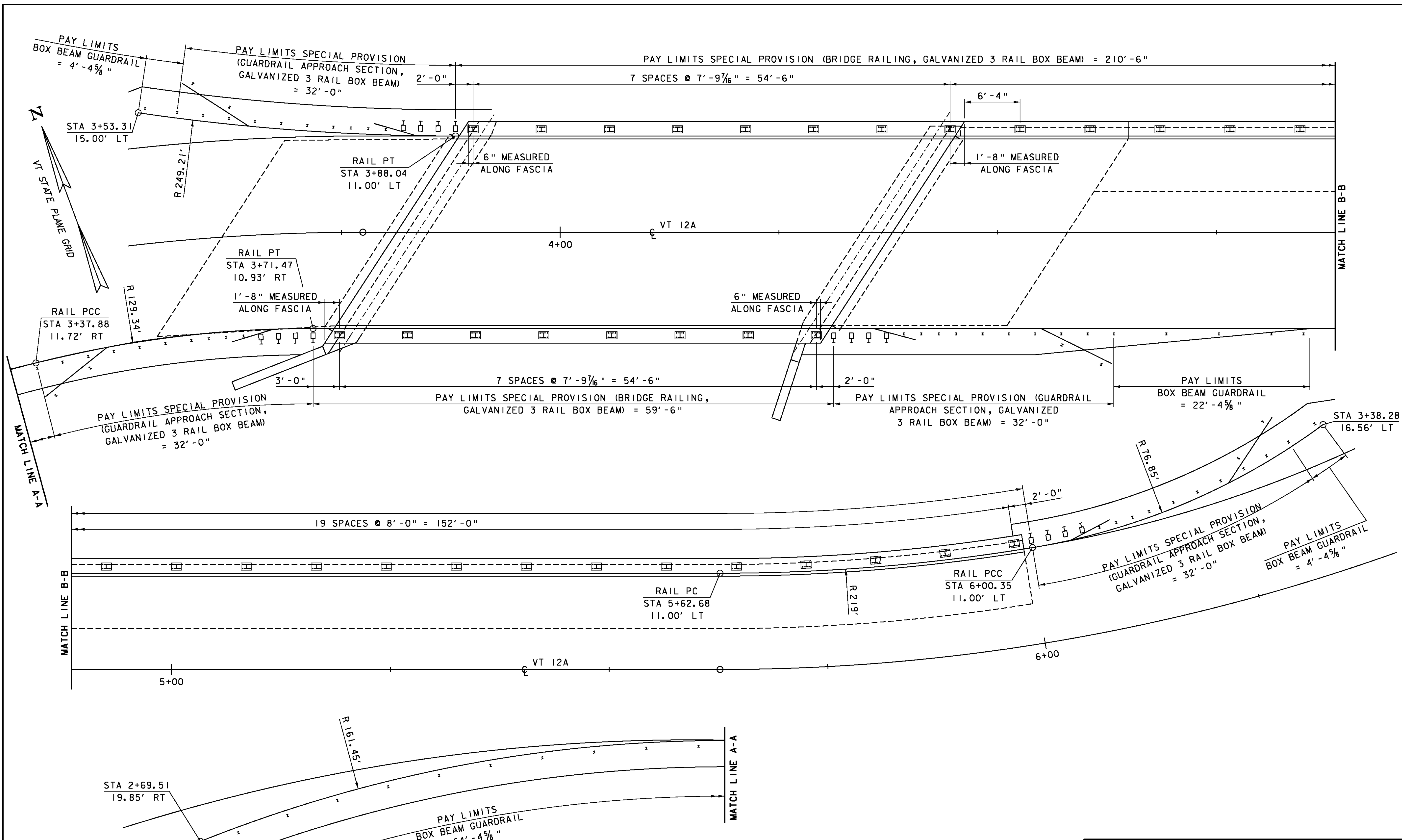
**PLAN**  
SCALE: 1" = 10'-0"



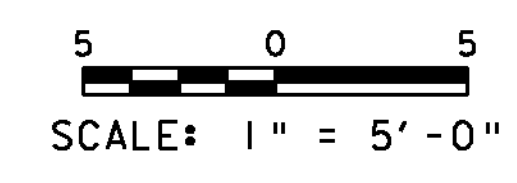
**ELEVATION**  
SCALE: 1" = 10'-0"

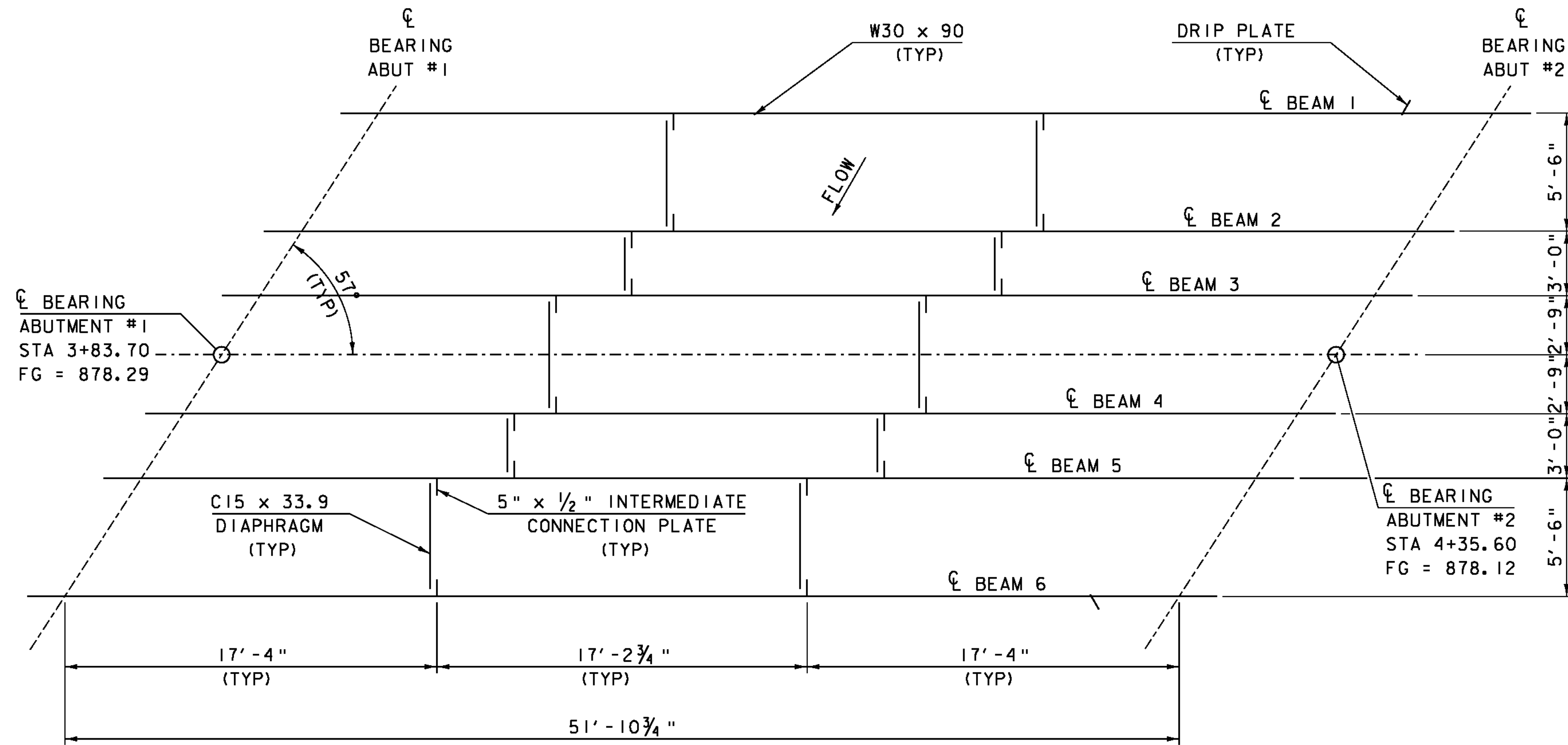


PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: s10c420pe.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 16 OF 54
DESIGNED BY: G. ROY	
PLAN AND ELEVATION	



PROJECT NAME:	ROXBURY	FILE NAME:	sl0c420rall.dgn	PLOT DATE:	21-SEP-2011
PROJECT NUMBER:	BHF 0187(8)	PROJECT LEADER:	C. P. WILLIAMS	DRAWN BY:	G. ROY
		DESIGNED BY:	G. ROY	CHECKED BY:	R. YOUNG
		RAIL LAYOUT SHEET		SHEET	17 OF 54



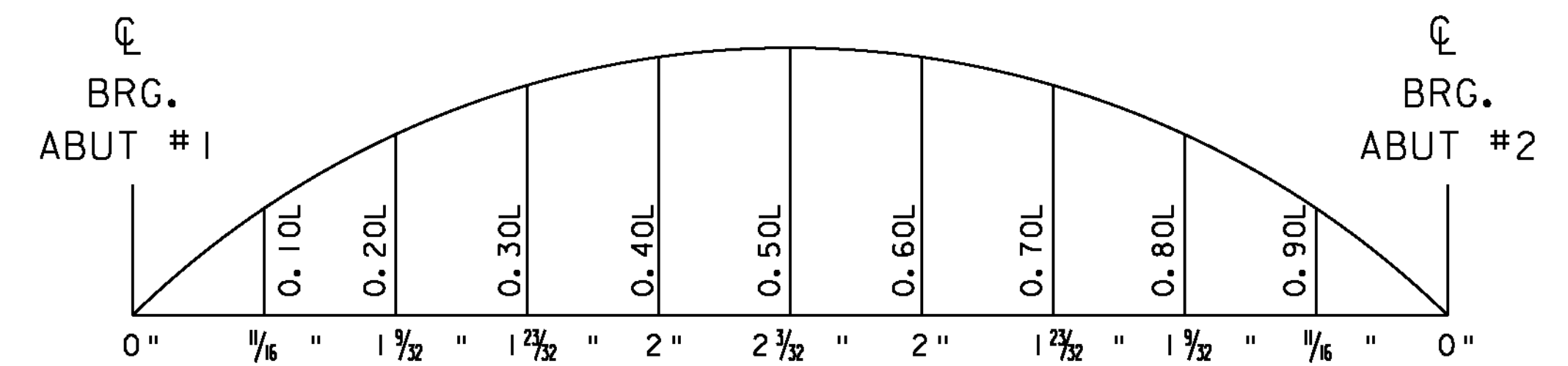


DECK FRAMING PLAN

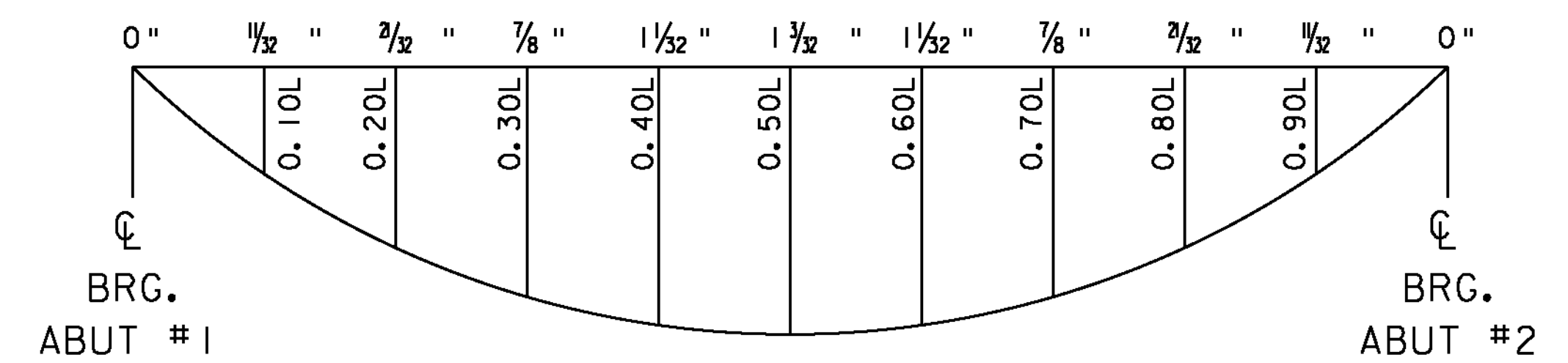


BEAM ELEVATION

(VERTICAL EXAGGERATED 5X)  
 NOTE: ALL STEEL MARKED "CVN" SHALL  
 BE CHARPY V-NOTCH TESTED



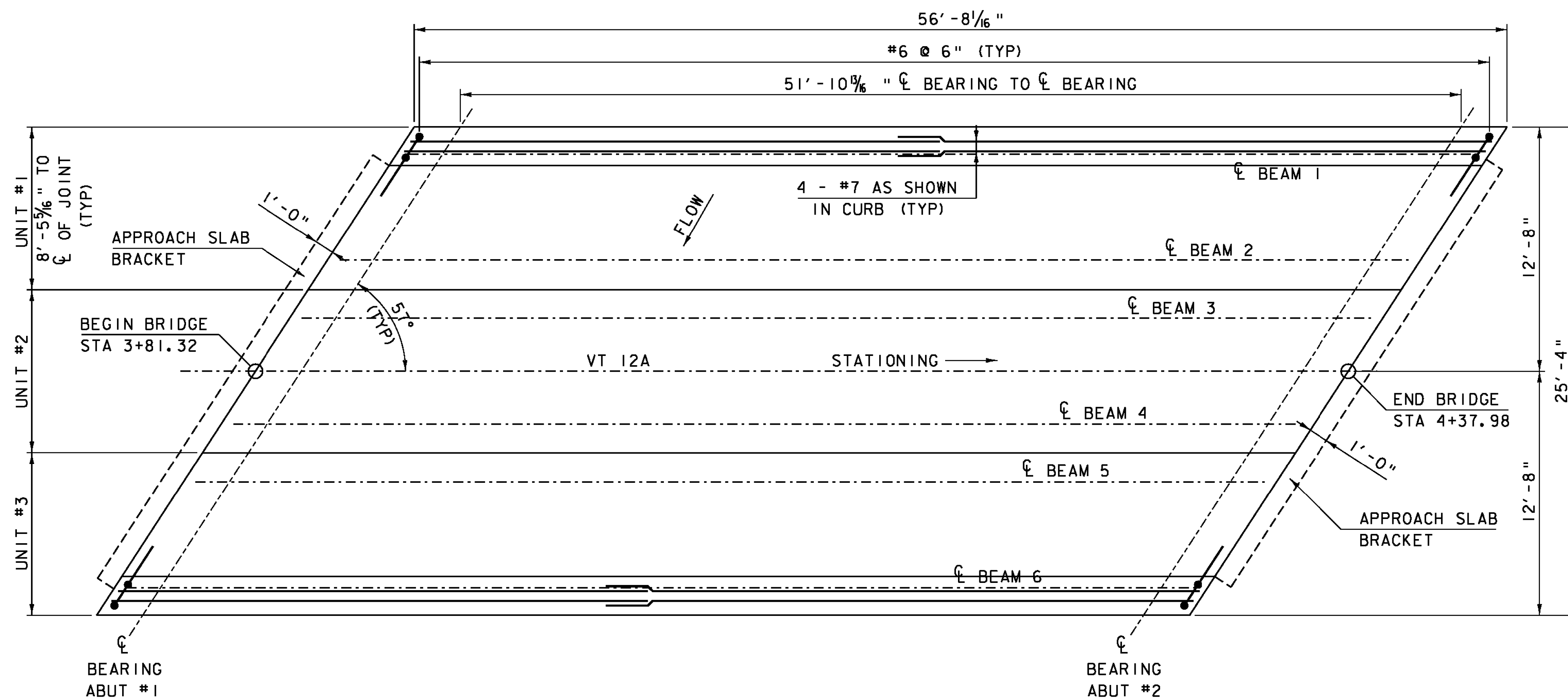
CAMBER DIAGRAM



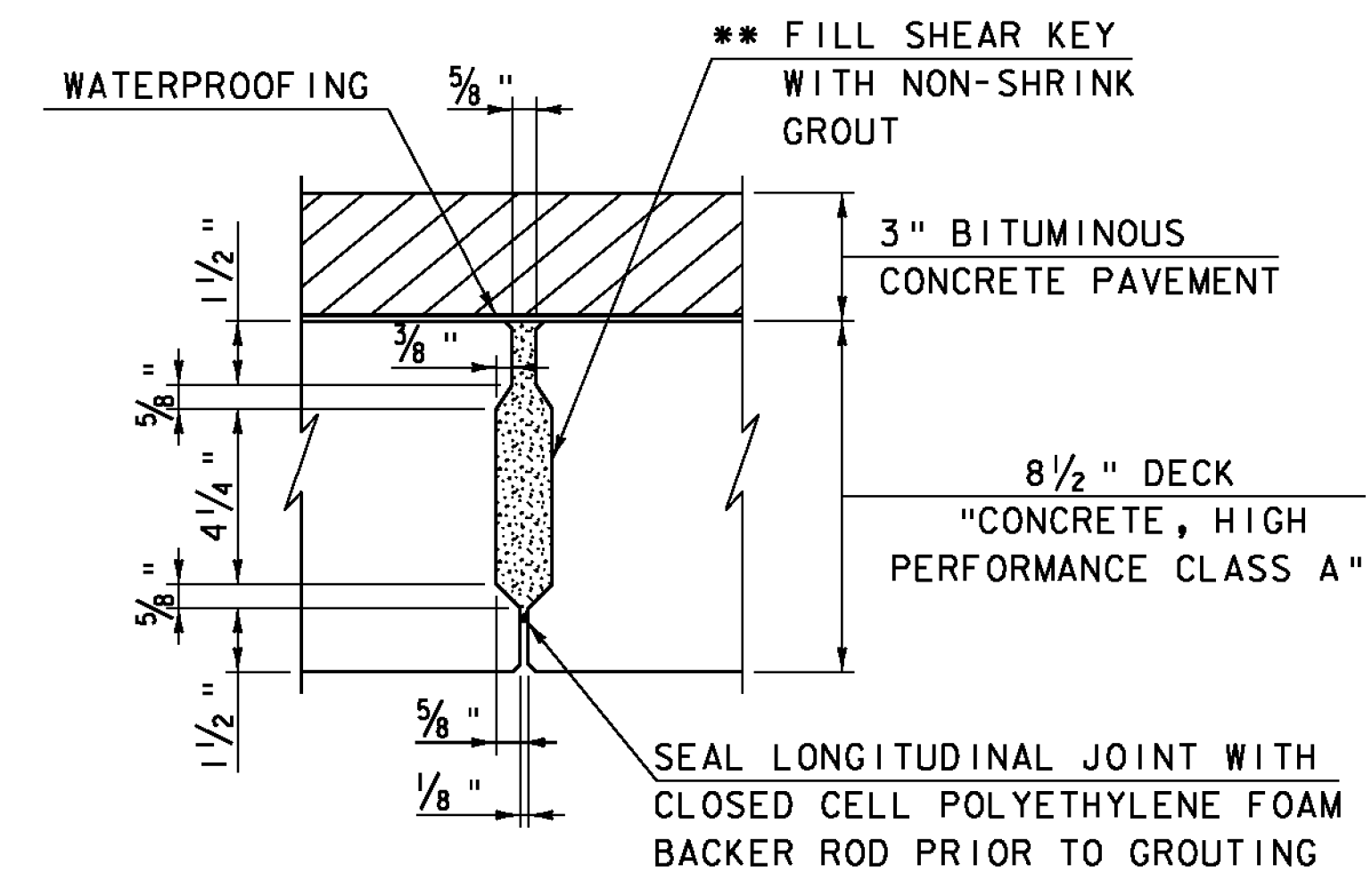
DEAD LOAD DEFLECTION DIAGRAM

DEFLECTION IS AFTER DEAD  
 LOADS HAVE BEEN APPLIED

PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: D.D.BEARD
FILE NAME: sl0c420sup.dgn	CHECKED BY: E.R.Charbonneau
PROJECT LEADER: C.P.WILLIAMS	SHEET 18 OF 54
DESIGNED BY: R.S.YOUNG	
FRAMING DETAILS	



**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)".

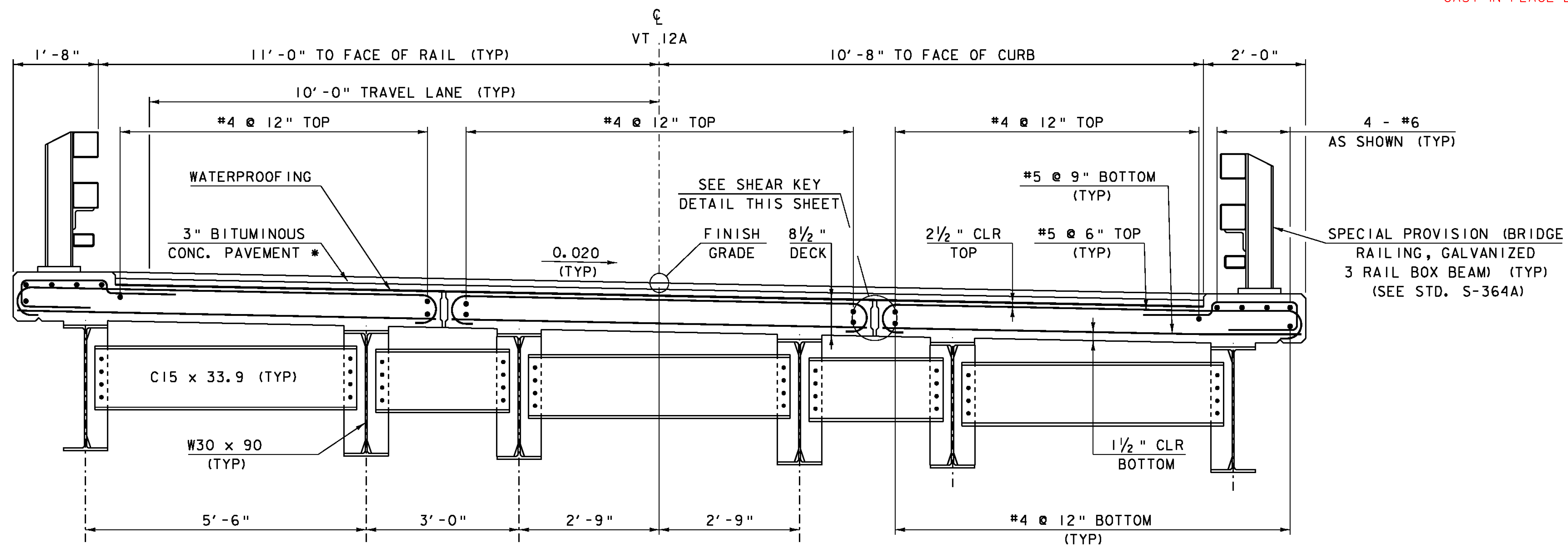
**SHEAR KEY**

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



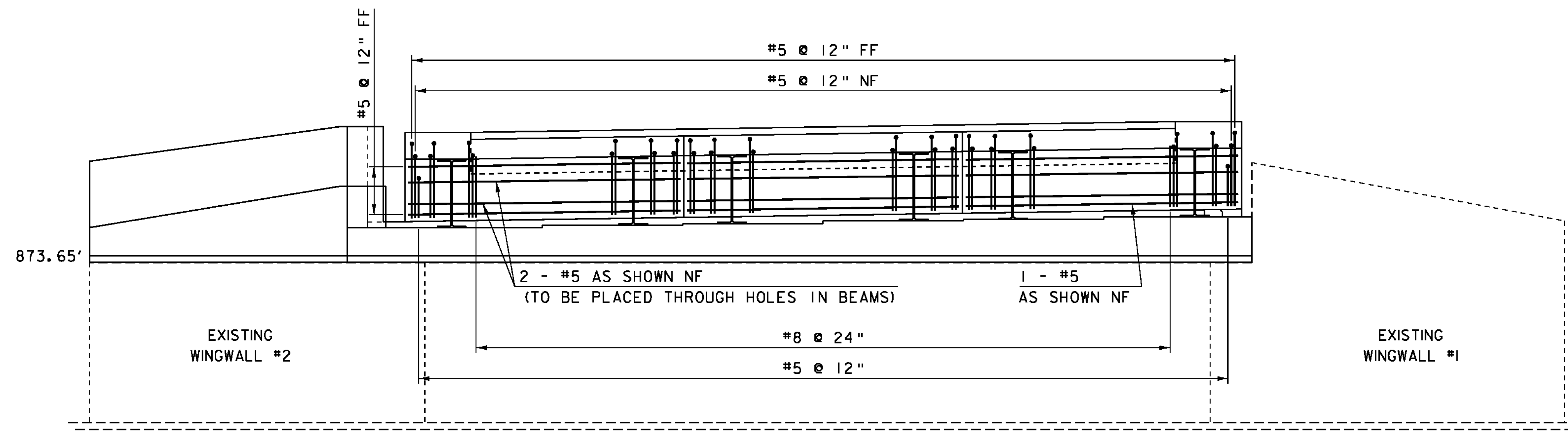
**TYPICAL BRIDGE SECTION**

**NOTE:**

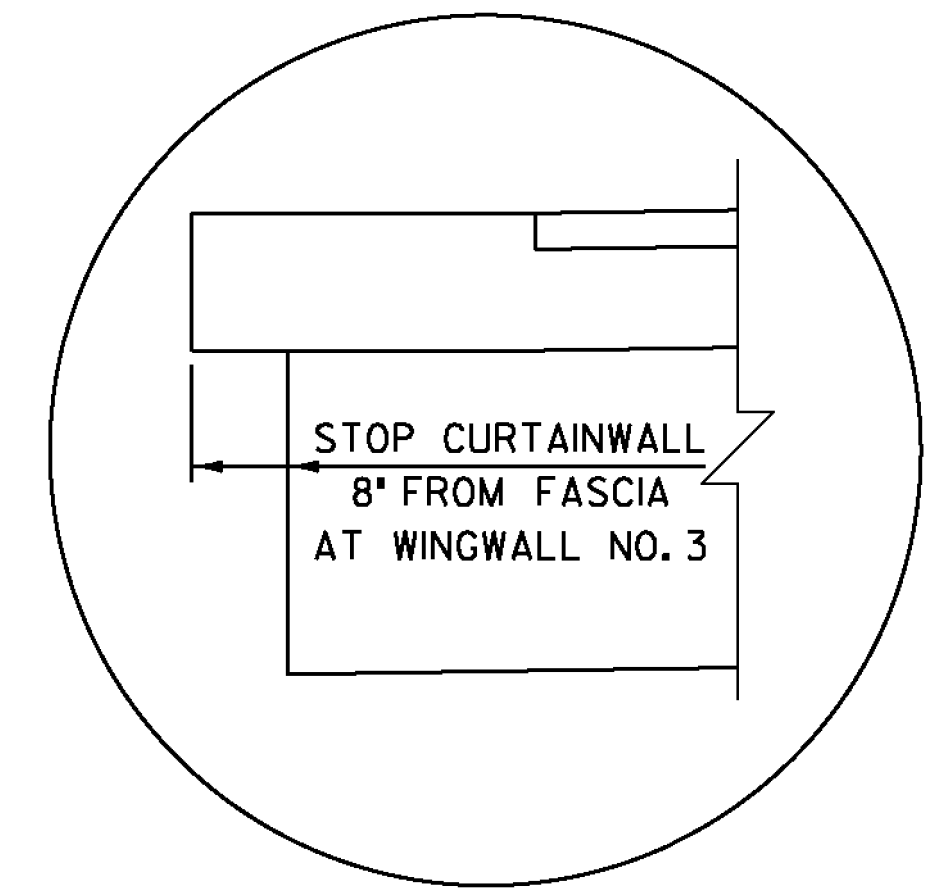
- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- ALL REBAR IN PRECAST SUPERSTRUCTURE SHALL BE EPOXY COATED

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

PROJECT NAME:	ROXBURY	PLOT DATE:	21-SEP-2011
PROJECT NUMBER:	BHF 0187(8)	DRAWN BY:	D.D.BEARD
FILE NAME:	sl0c420sup.dgn	CHECKED BY:	E.Charbonneau
PROJECT LEADER:	C.P.WILLIAMS	DESIGNED BY:	R.S.YOUNG
DECK STRUCTURAL DETAILS			SHEET 19 OF 54



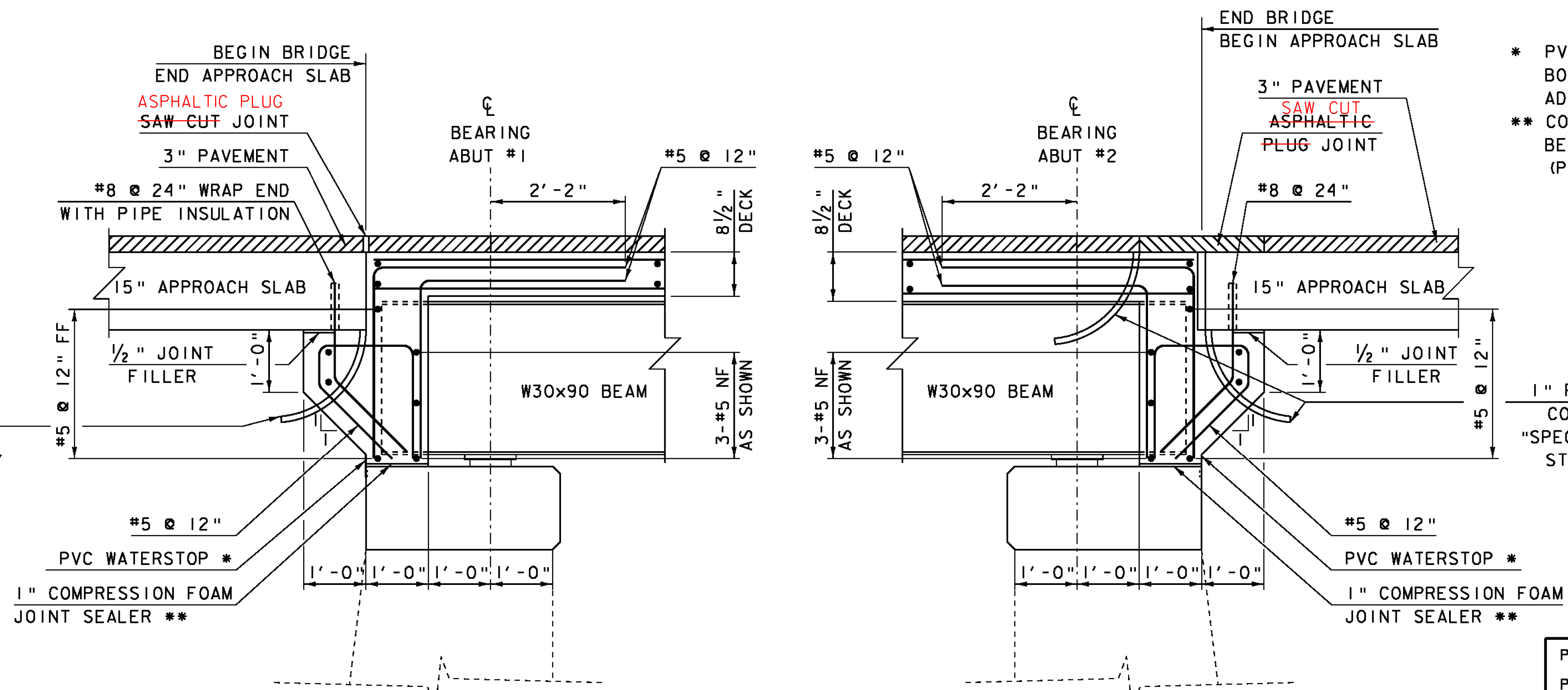
CURTAINWALL TYPICAL SECTION



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.



- \* 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)"

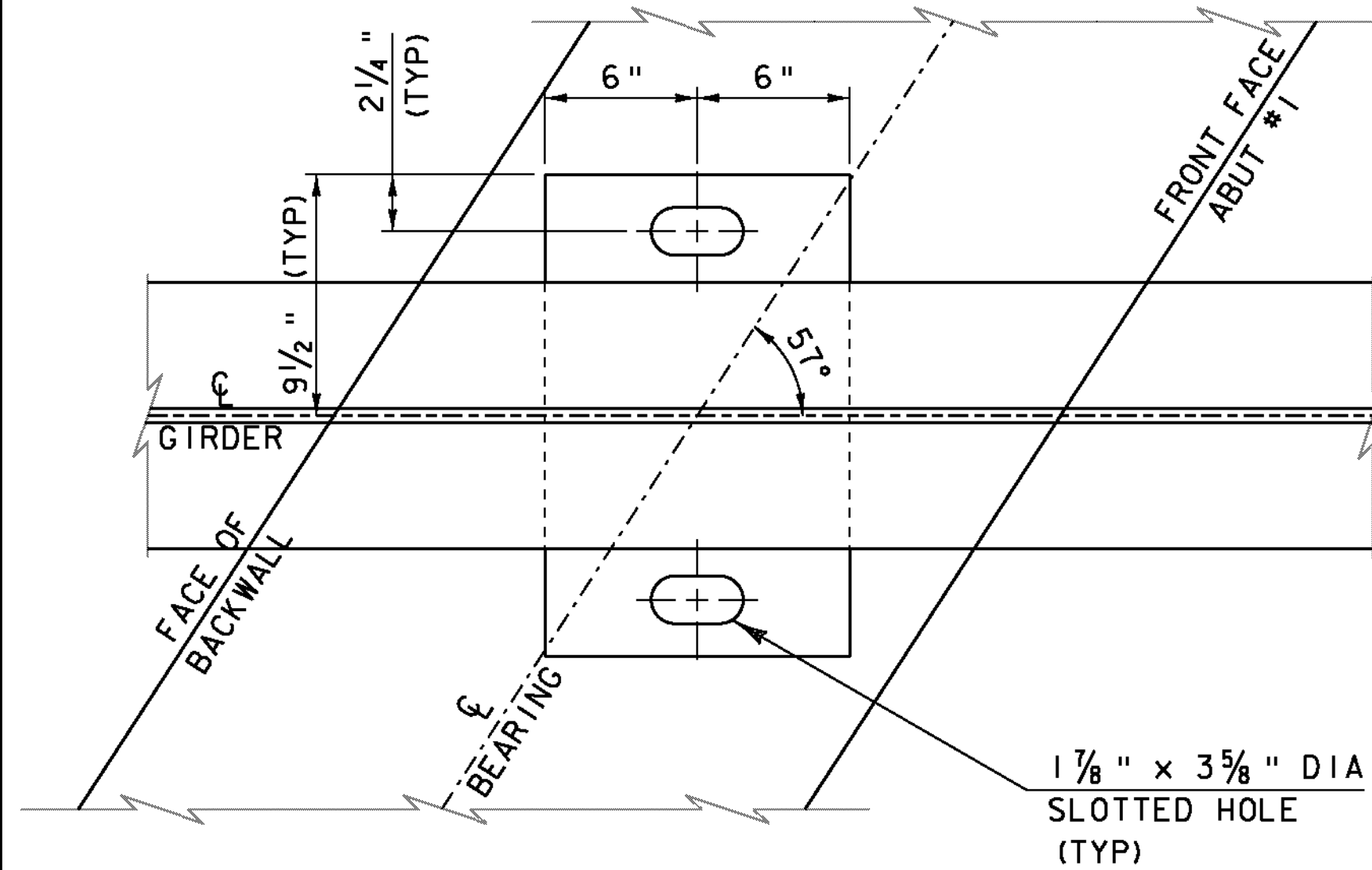
1" PLASTIC DRAINAGE TUBE ON THE LOW CORNER, INCLUDED IN ITEM 900.675 "SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)"

1" PLASTIC DRAINAGE TUBE ON THE LOW CORNER, INCLUDED IN ITEM 900.675 "SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)"

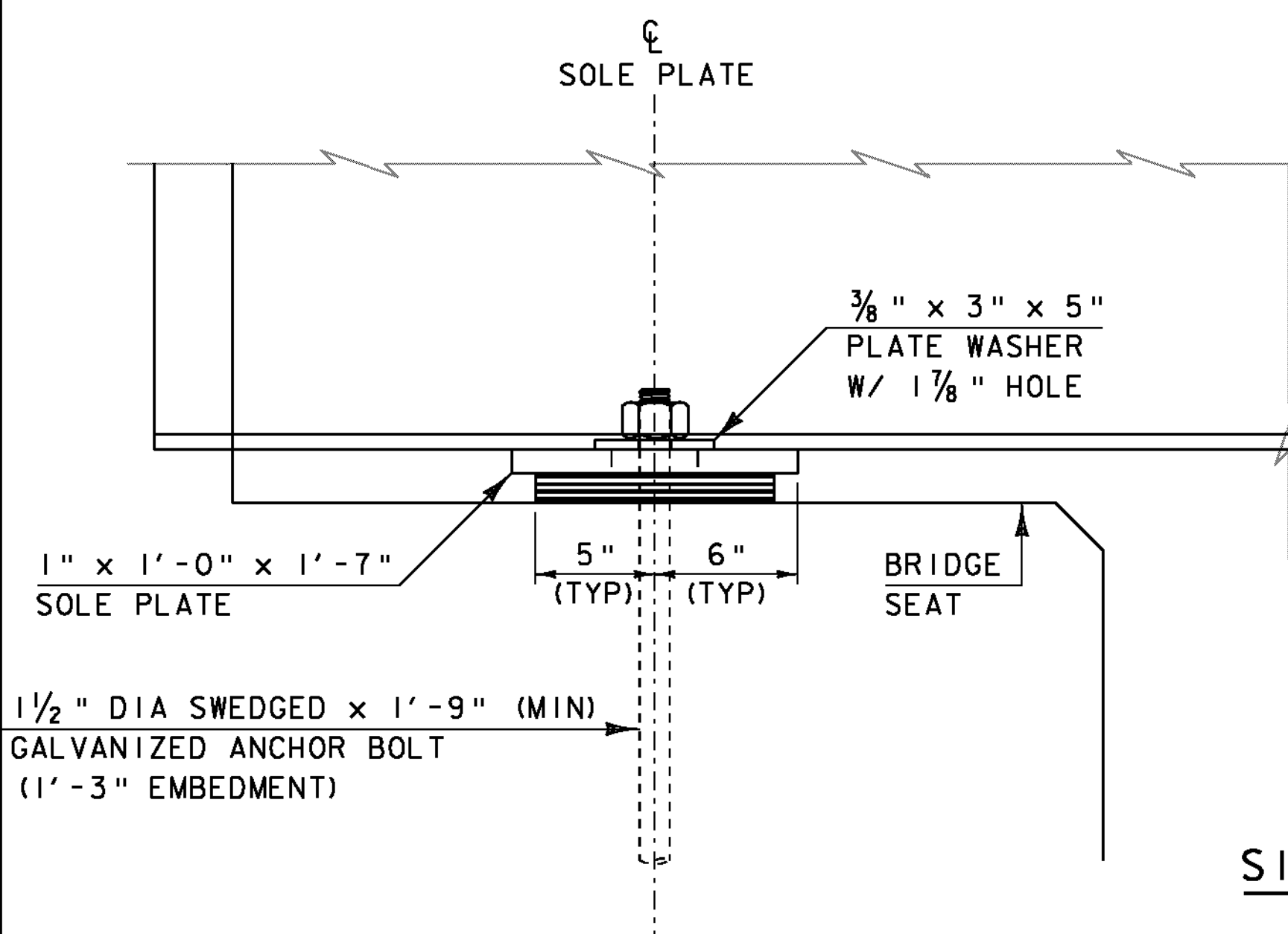
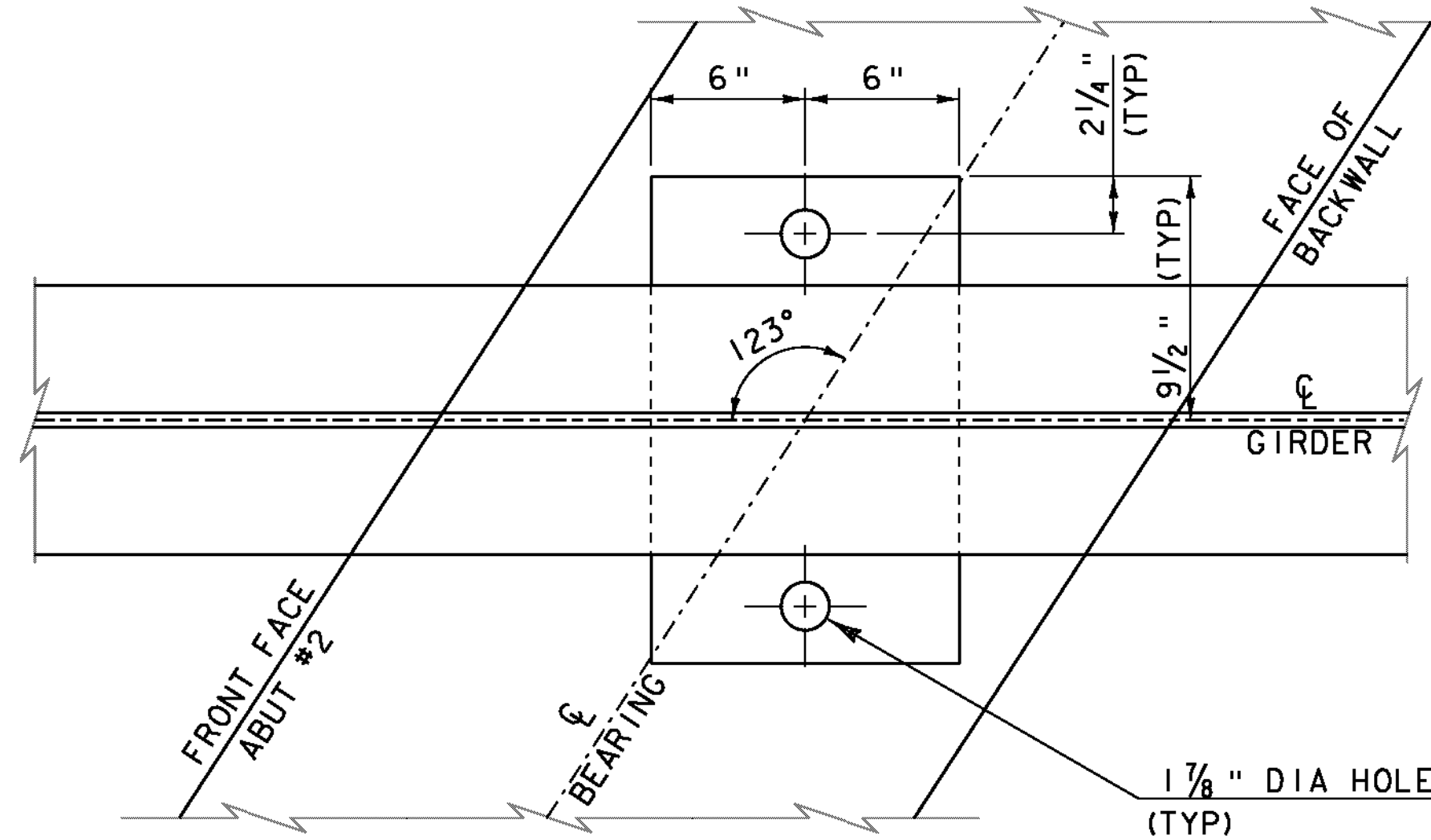
ABUTMENT #1 BRIDGE END SECTION

ABUTMENT #2 BRIDGE END SECTION

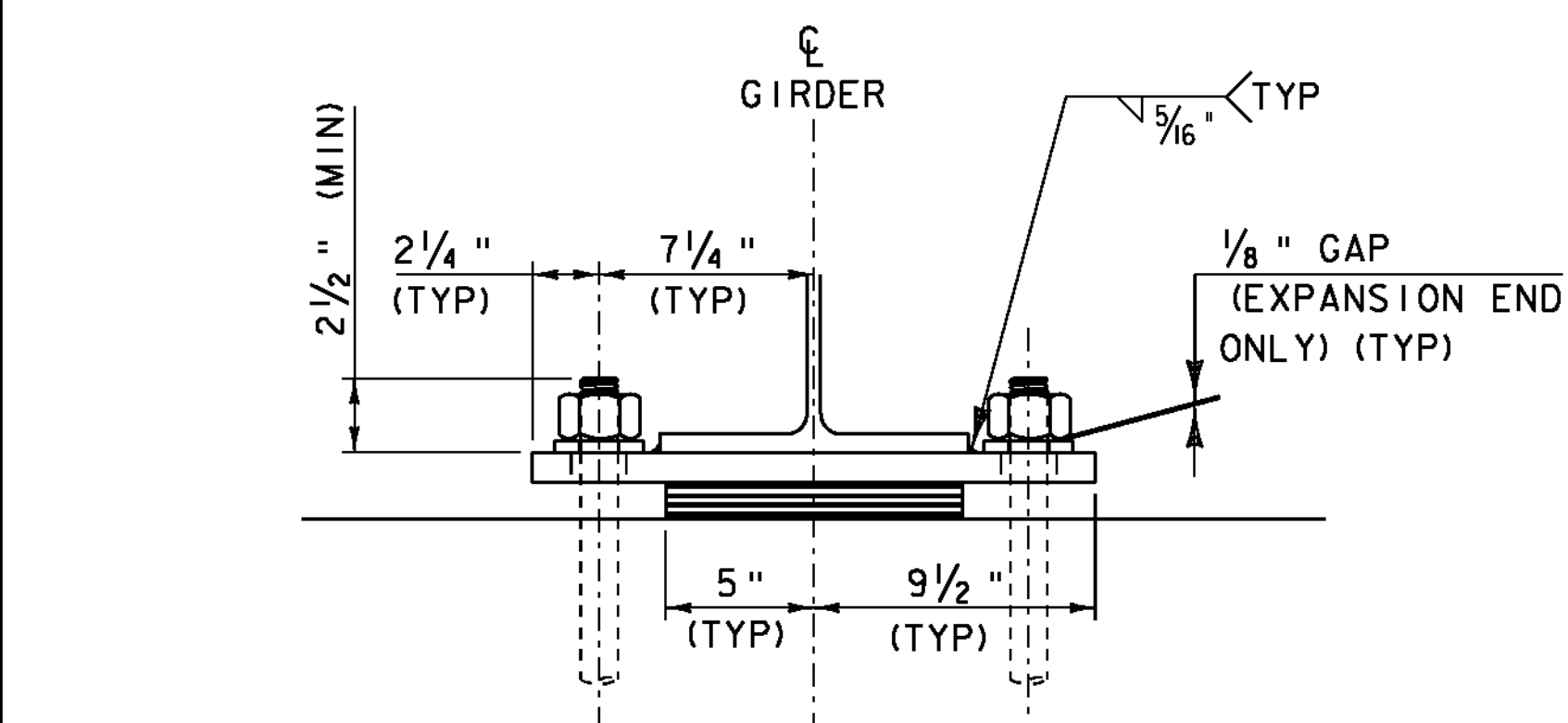
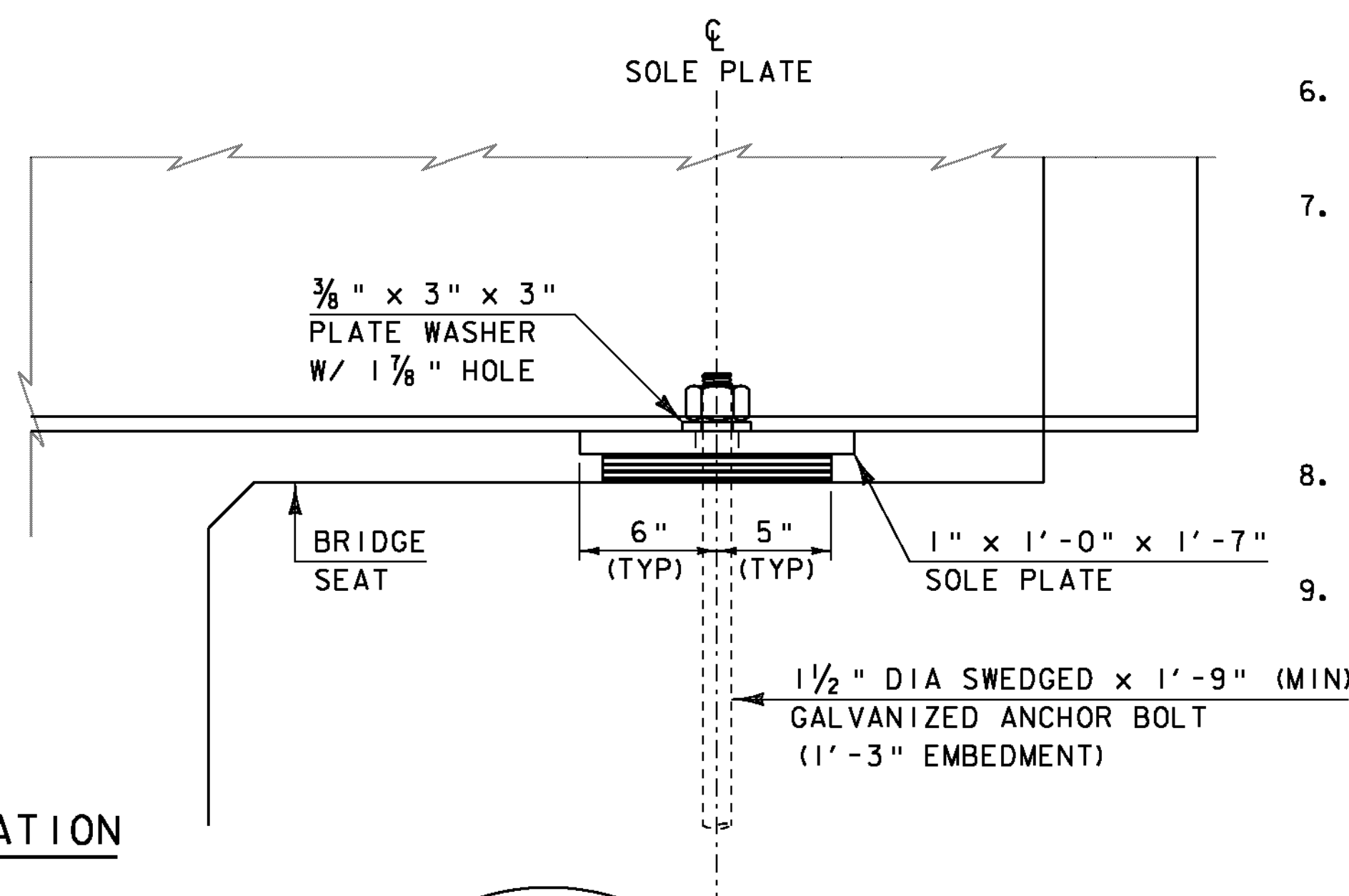
PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: D.D.BEARD
FILE NAME: sl0c420sup.dgn	CHECKED BY: E.R.Charbonneau
PROJECT LEADER: C.P.WILLIAMS	SHEET 20 OF 54
DESIGNED BY: E.R.Charbonneau	
CURTAINWALL DETAILS	



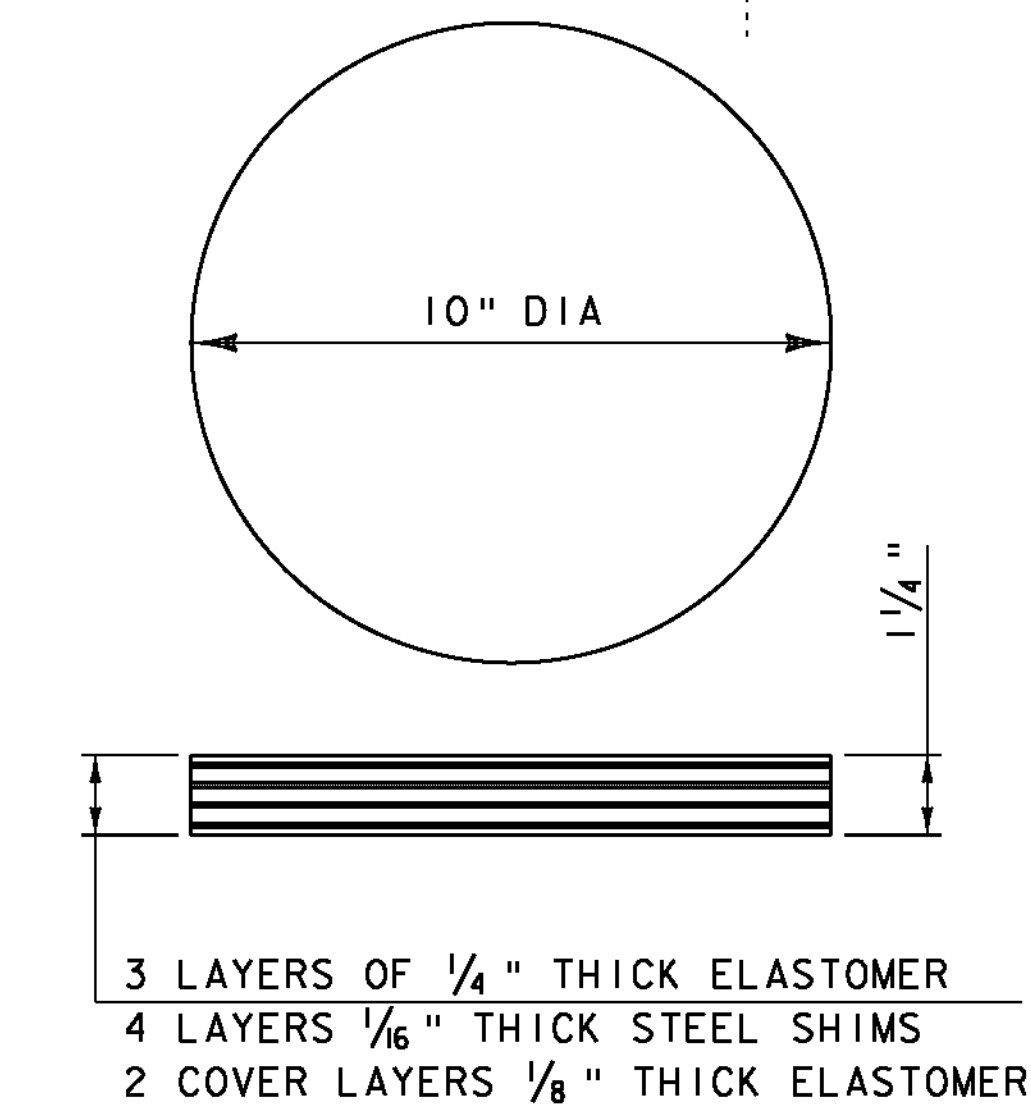
PLAN VIEW



SIDE ELEVATION



FRONT VIEW



ELASTOMERIC BEARING DETAIL  
NOT TO SCALE

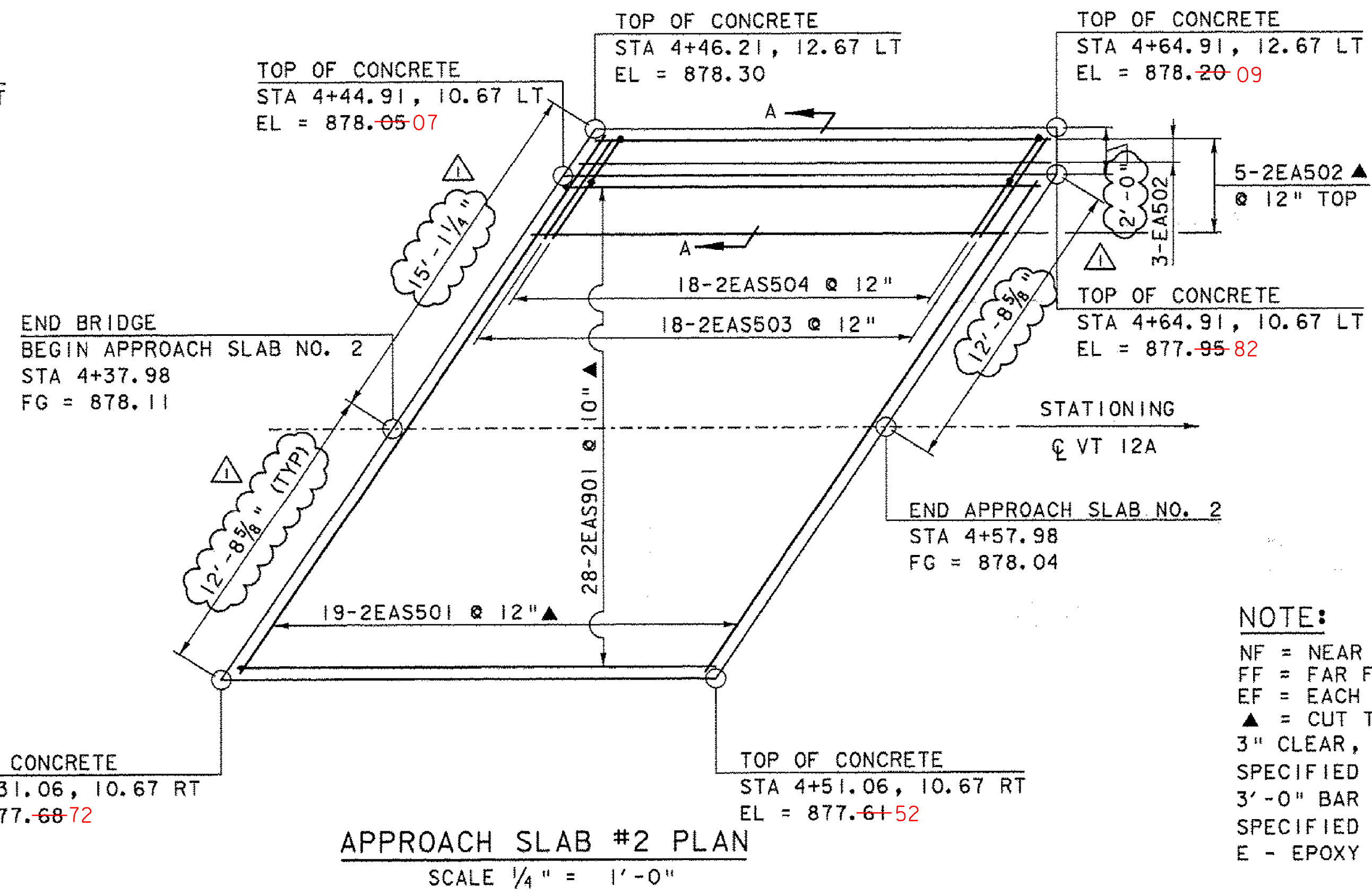
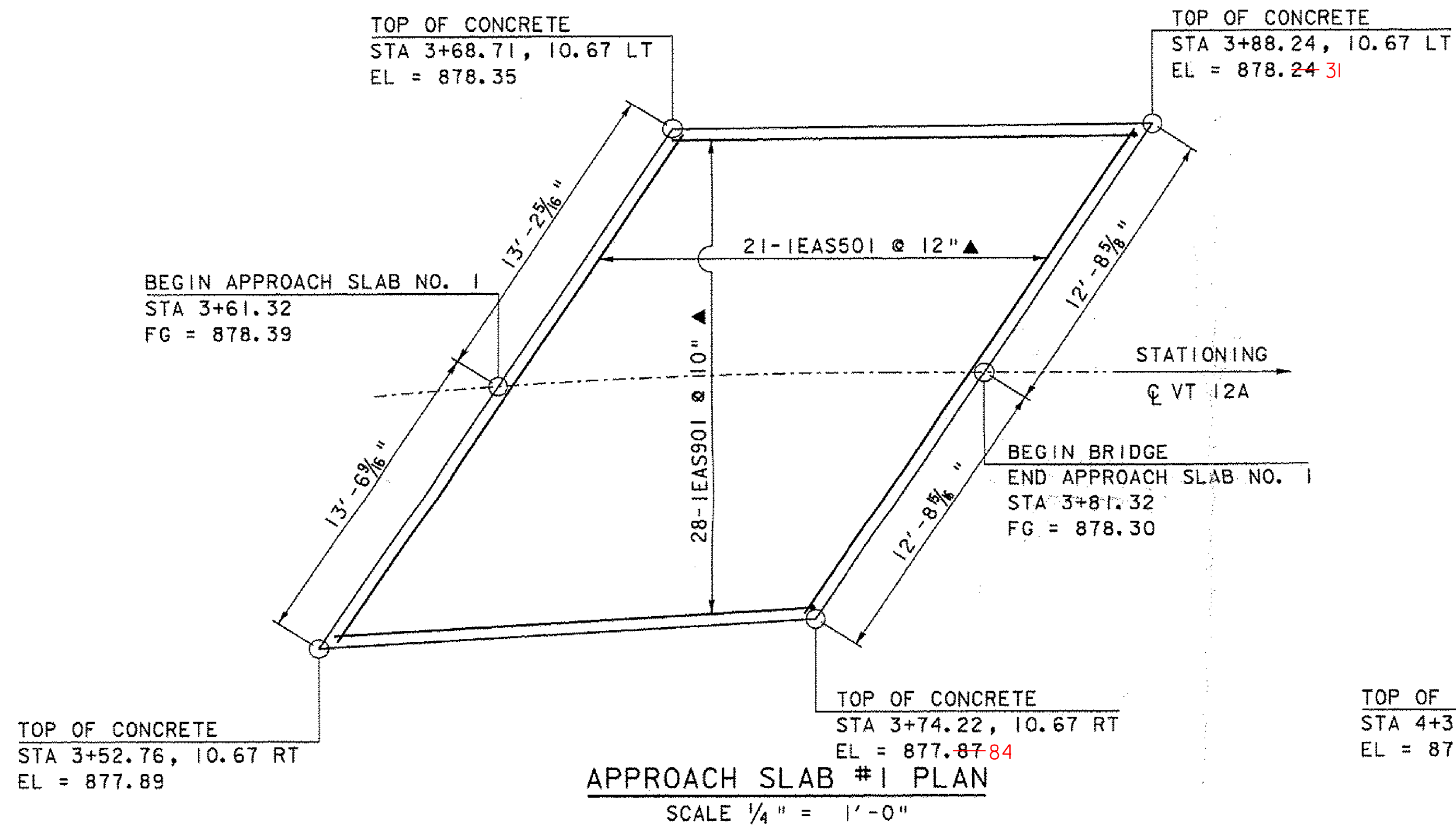
**BEARING NOTES**

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 OR 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 1/8" 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)

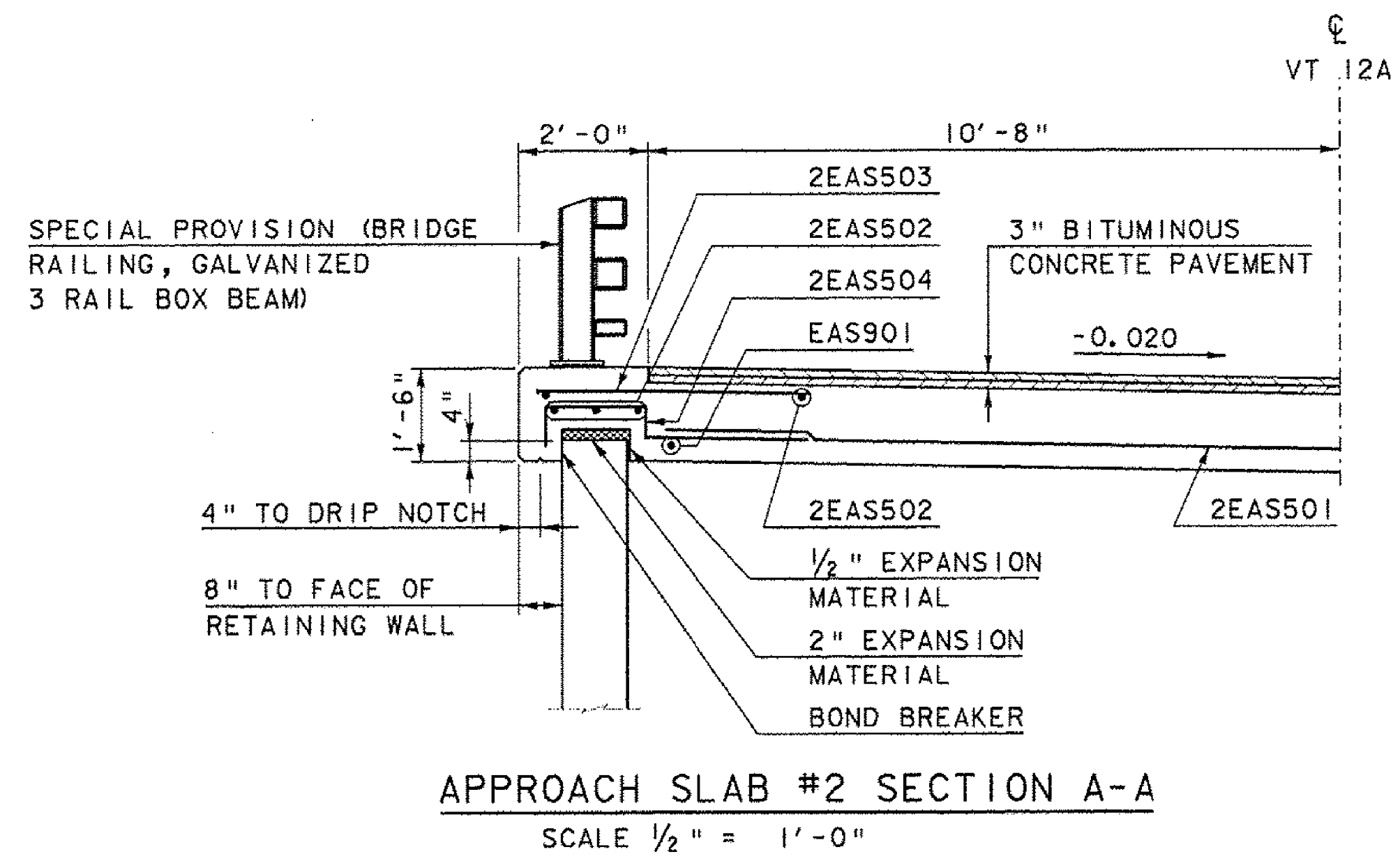
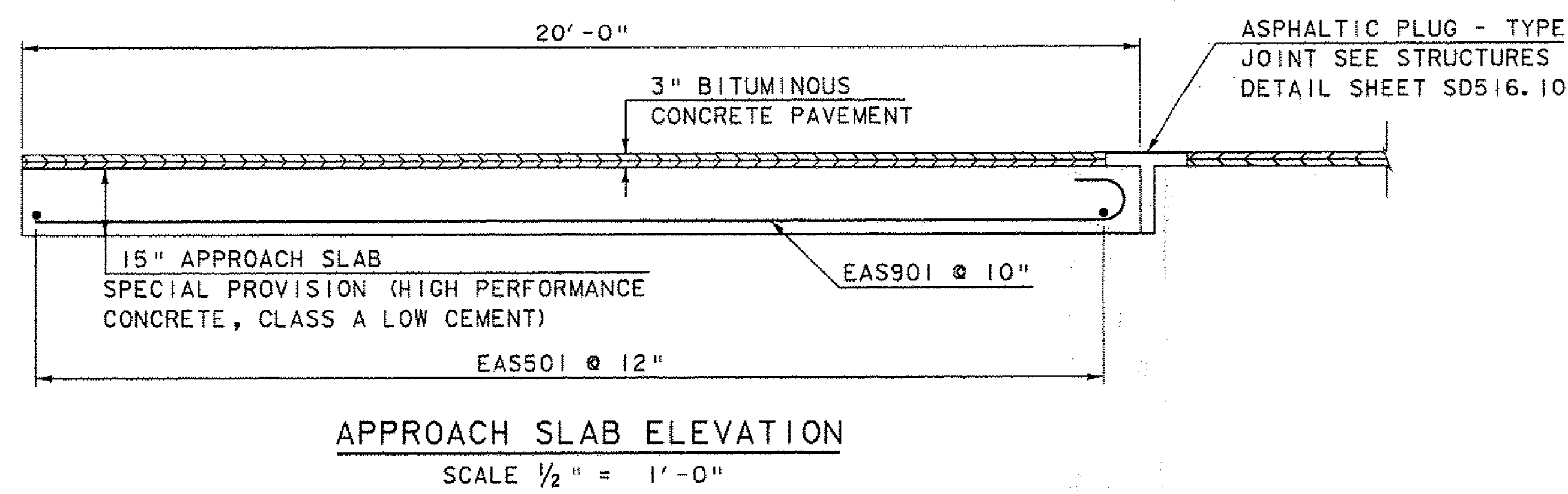
FILE NAME: sl0c420brg.dgn  
 PROJECT LEADER: C. WILLIAMS  
 DESIGNED BY: L. STONE  
 BEARING DETAILS

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



**NOTE:**

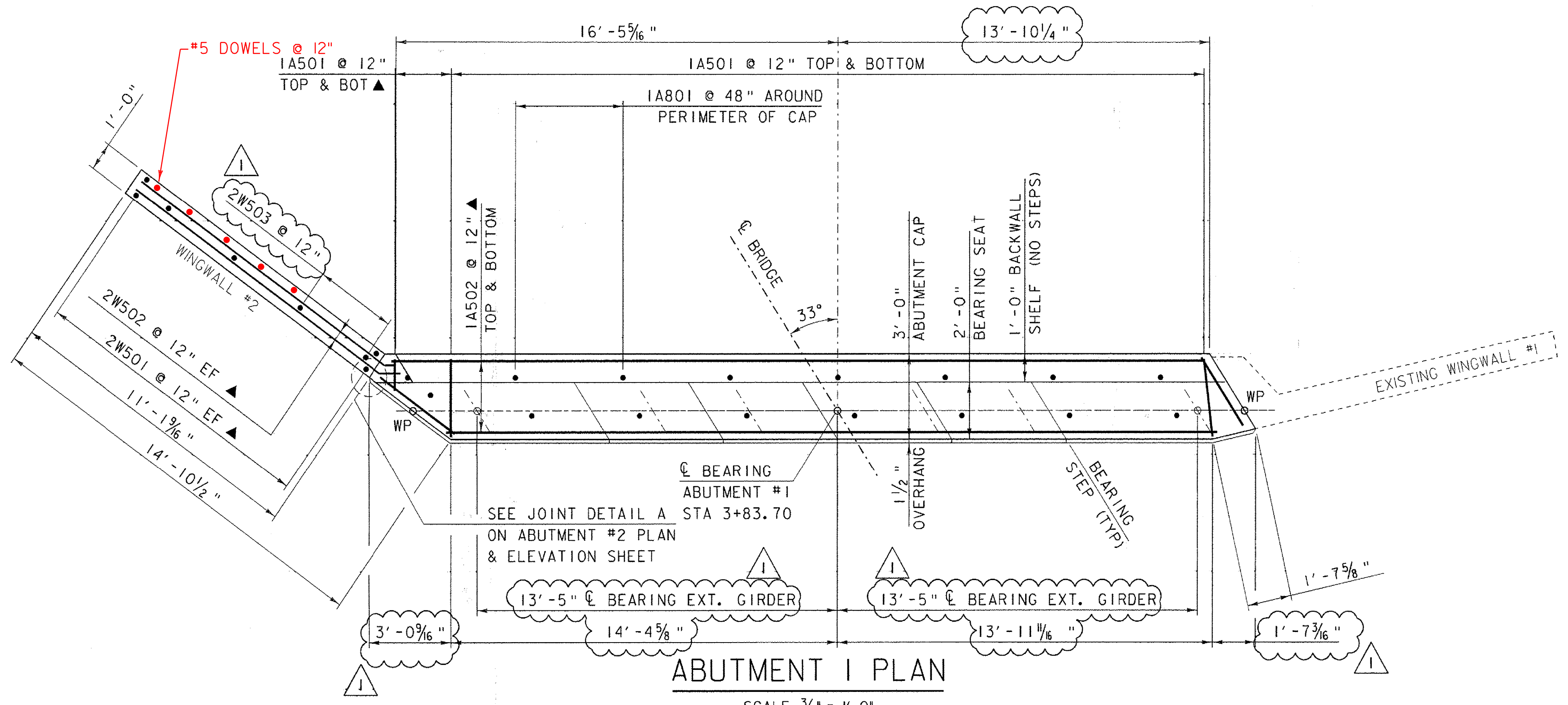
- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 3'-0" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- E - EPOXY



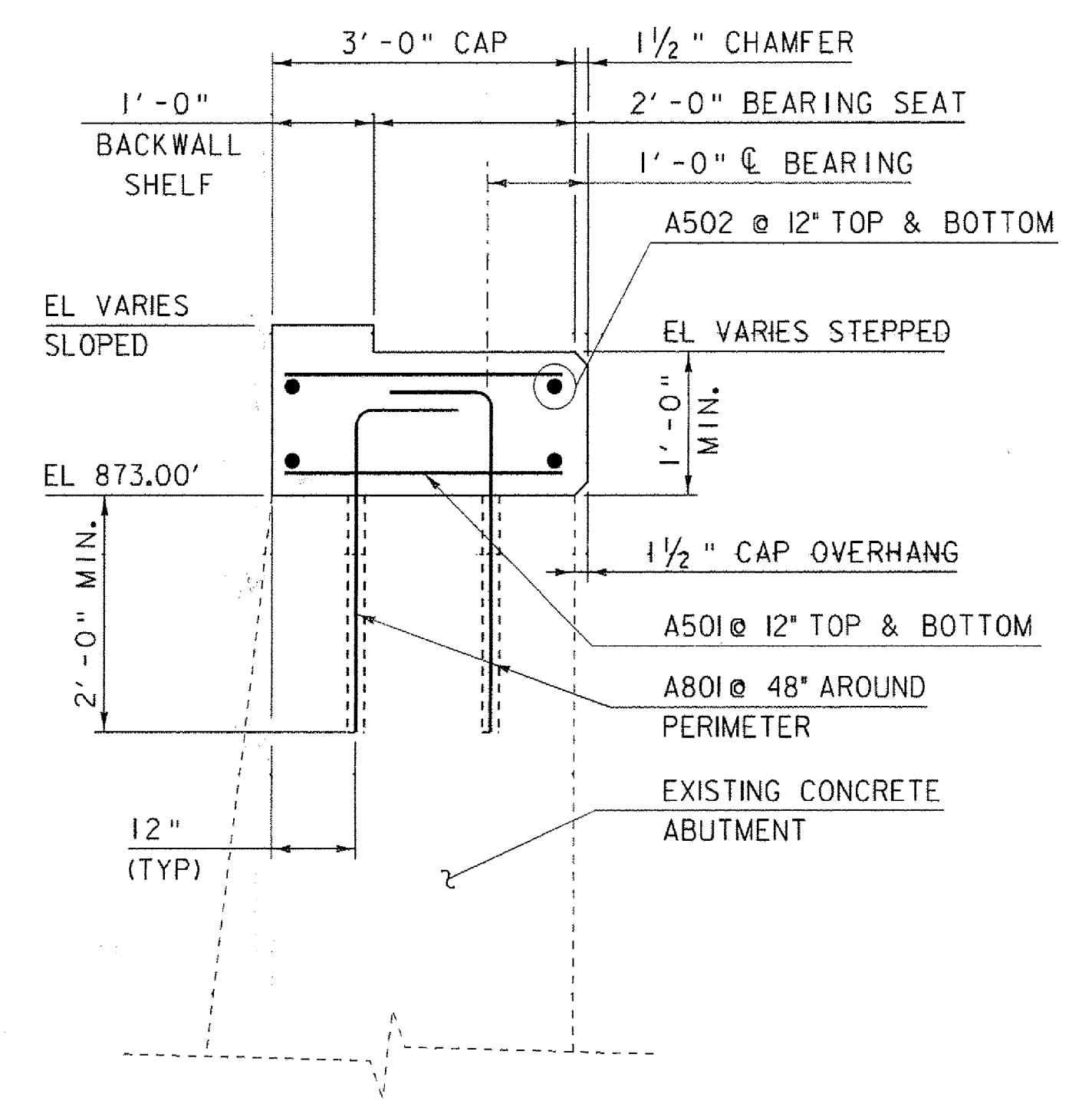
PROJECT NAME: ROXBURY  
 PROJECT NUMBER: BHF 0187(8)  
 FILE NAME: s10c420slab.dgn  
 PROJECT LEADER: C. WILLIAMS  
 DESIGNED BY: R. YOUNG  
 APPROACH SLAB DETAILS

PLOT DATE: 07-NOV-2011  
 DRAWN BY: J. SALVATORI  
 CHECKED BY: E. CHARBONNEAU  
 SHEET 17 OF 38 54

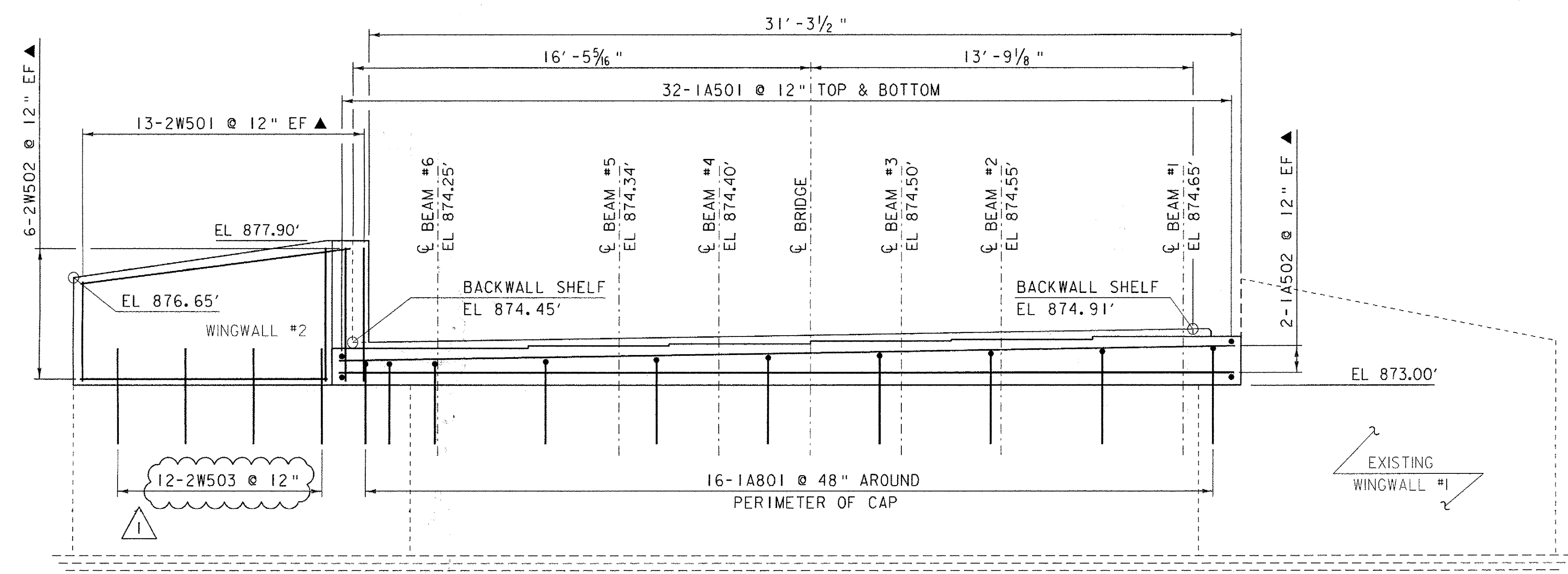
REVISION	DATE	DESCRIPTION	BY
△	11-7-2011	DIMENSION APPROACH SLAB WIDTH	MCL



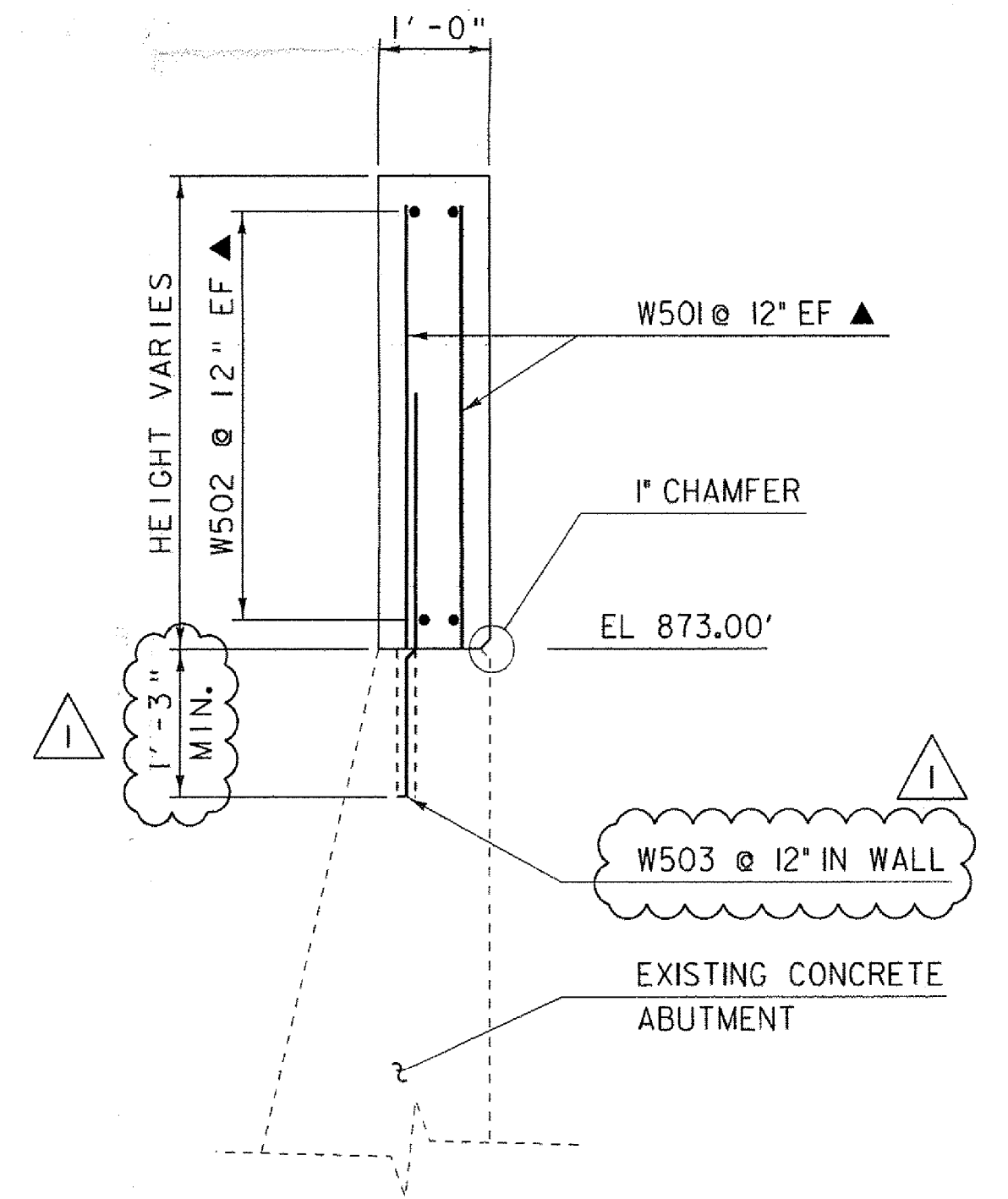
ABUTMENT I PLAN  
SCALE: 3/8" = 1'-0"



ABUTMENT TYPICAL SECTION  
SCALE: 3/4" = 1'-0"



ABUTMENT I ELEVATION  
SCALE: 3/8" = 1'-0"

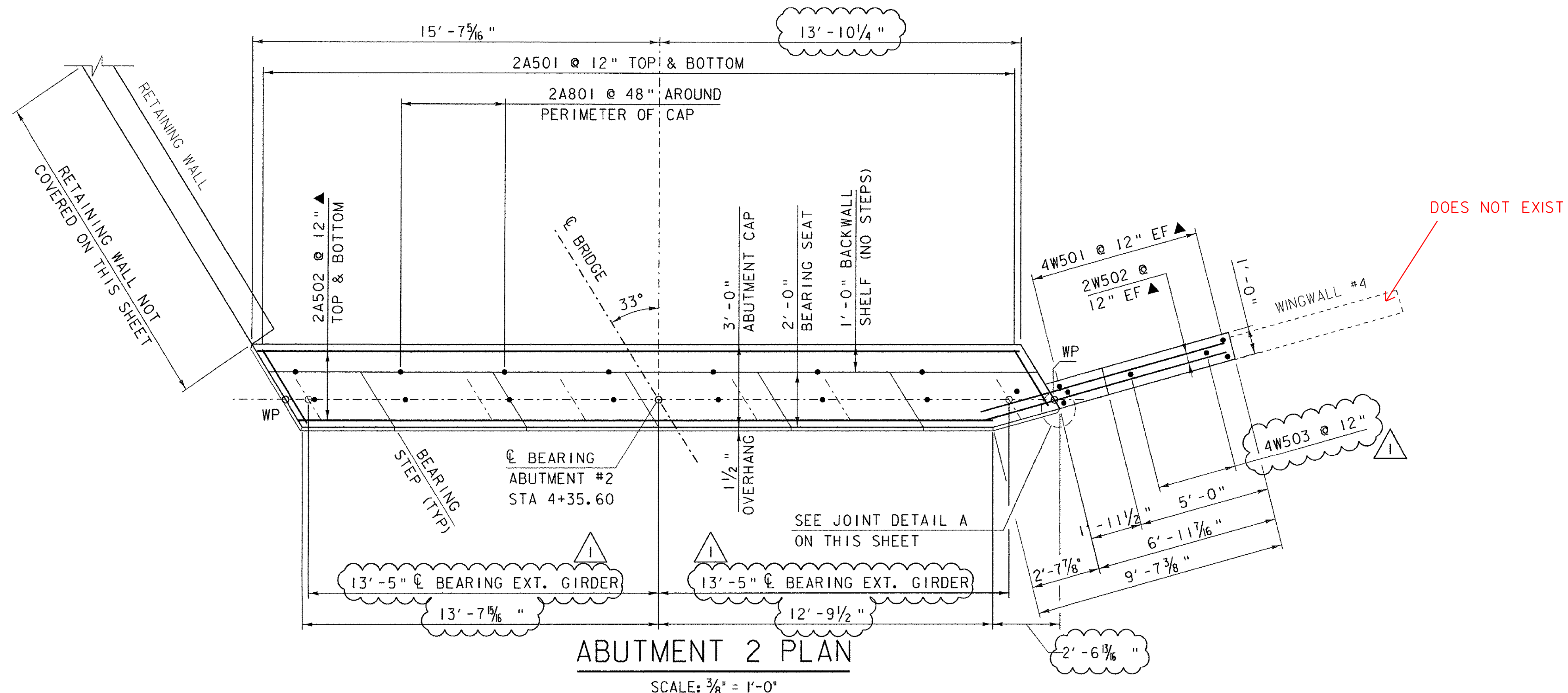


WINGWALL NOS. 2 & 4 TYPICAL SECTION  
SCALE: 3/4" = 1'-0"

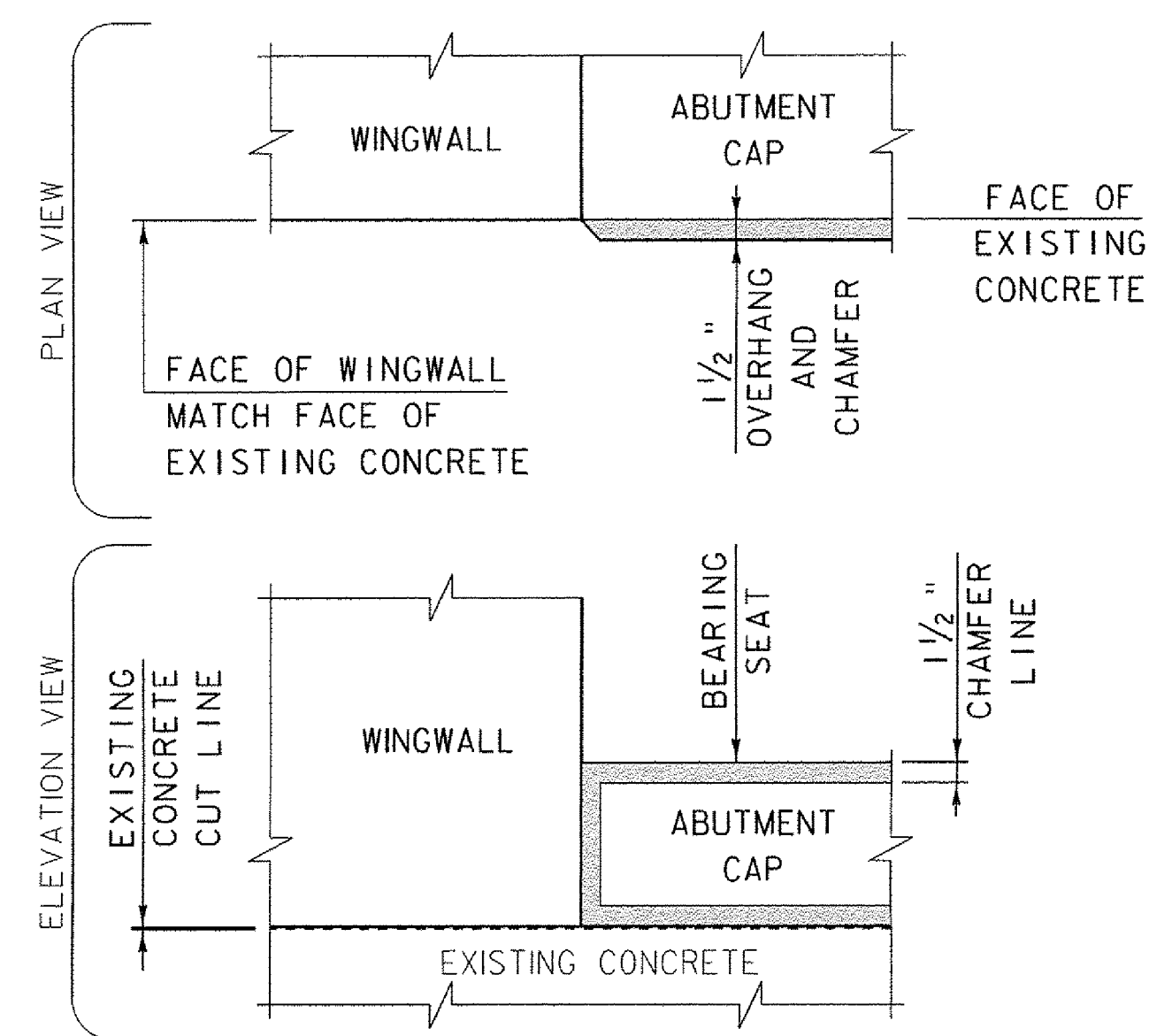
**NOTE:**  
 NF = NEAR FACE  
 FF = FAR FACE  
 EF = EACH FACE  
 ▲ = CUT TO FIT IN FIELD  
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

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

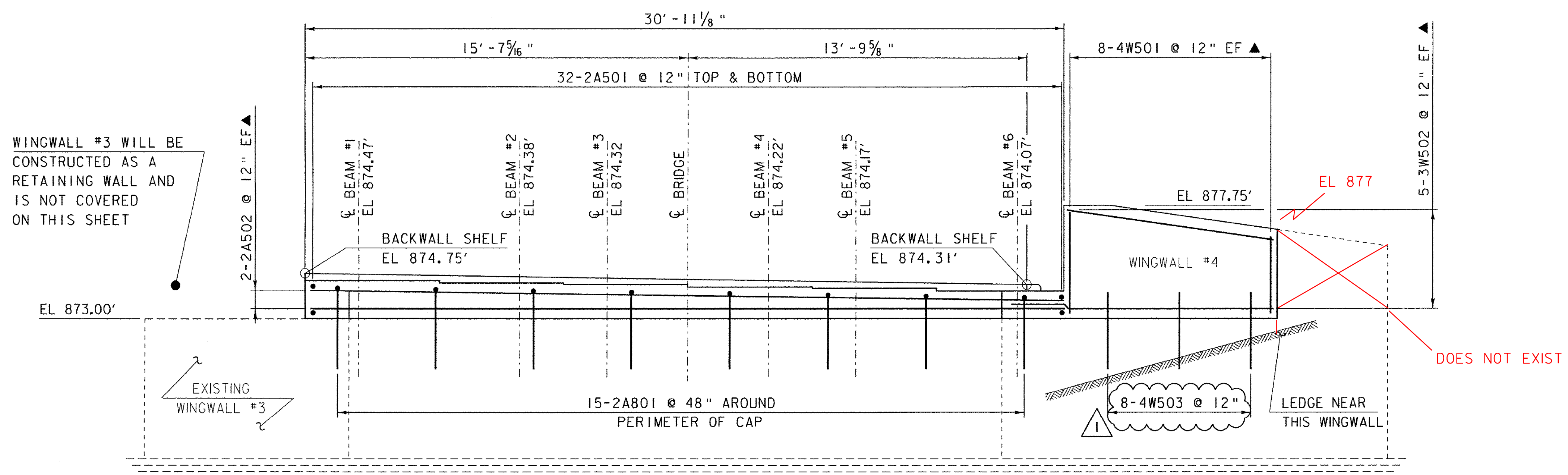
PROJECT NAME: ROXBURY	PLOT DATE: 07-NOV-2011
PROJECT NUMBER: BHF 0187 (8)	DRAWN BY: M. LONGSTREET
FILE NAME: st0c420sub.dgn	CHECKED BY: E.R.CHARBONNEAU
DESIGNED BY: R.S. YOUNG	SHEET 23A OF 35
ABUTMENT #1 PLAN & ELEVATION	



**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.



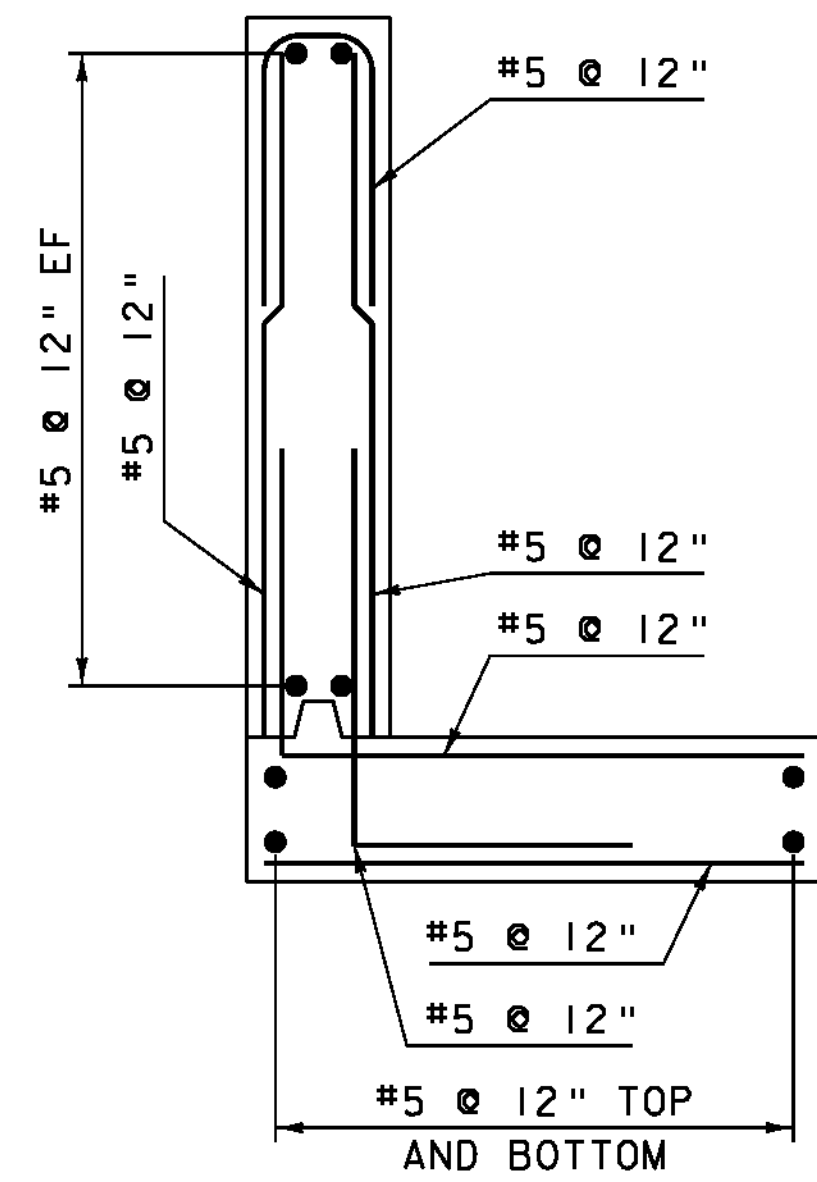
**ABUTMENT 2 ELEVATION**  
SCALE: 3/8" = 1'-0"

WINGWALL #3 WILL BE CONSTRUCTED AS A RETAINING WALL AND IS NOT COVERED ON THIS SHEET

**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.

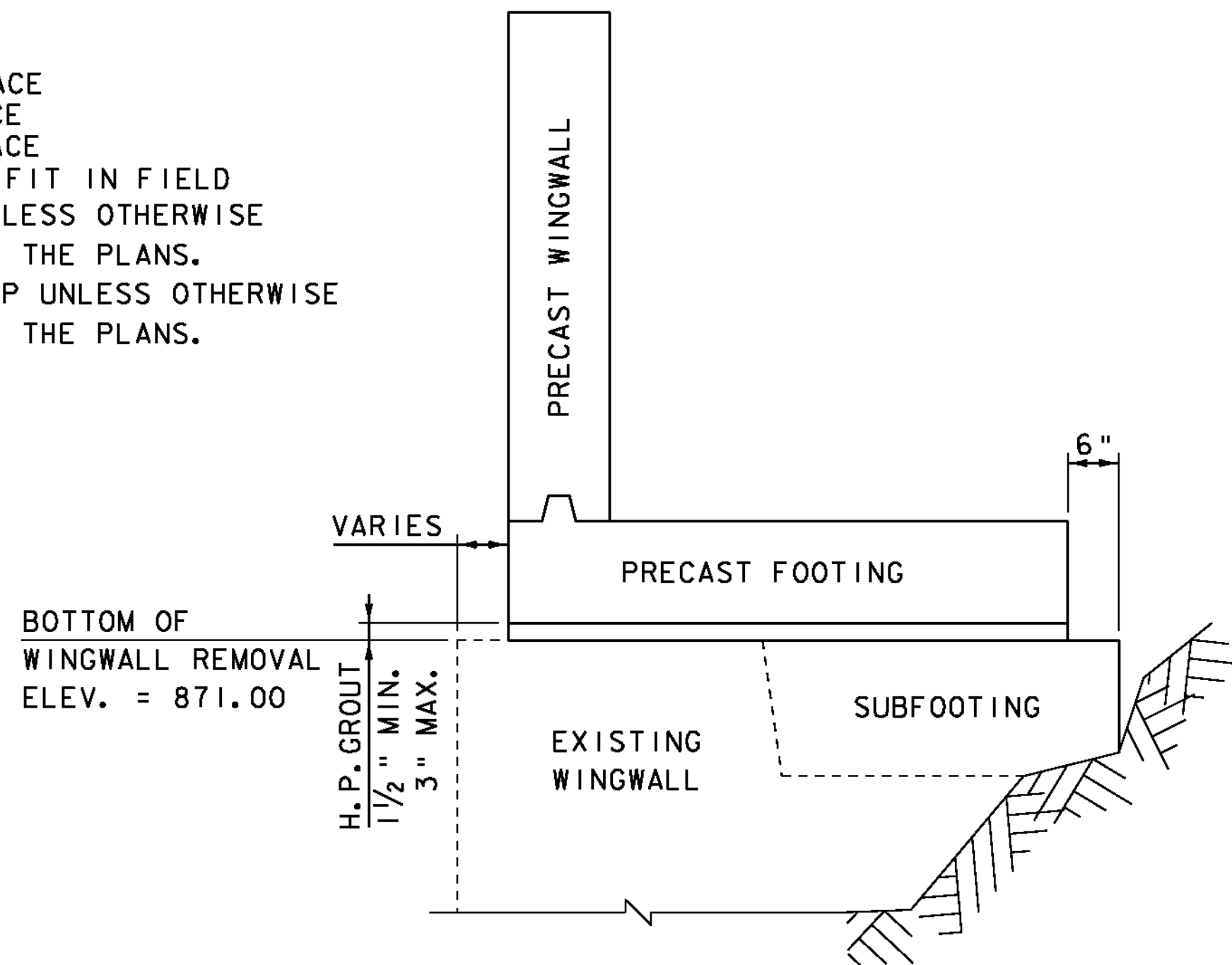
REVISION	DATE	DESCRIPTION	BY
1	11-7-2011	WW REBAR REV. AND DIMENSION CL EXTERIOR BEAM BEARING LOCATION	MCL

PROJECT NAME: ROXBURY	PLOT DATE: 07-NOV-2011
PROJECT NUMBER: BHF 0187 (8)	DRAWN BY: M. LONGSTREET
FILE NAME: sl0c420sub.dgn	CHECKED BY: E.R. CHARBONNEAU
PROJECT LEADER: C.P. WILLIAMS	SHEET 18 OF 35
DESIGNED BY: R.S. YOUNG	
ABUTMENT #2 PLAN & ELEVATION	

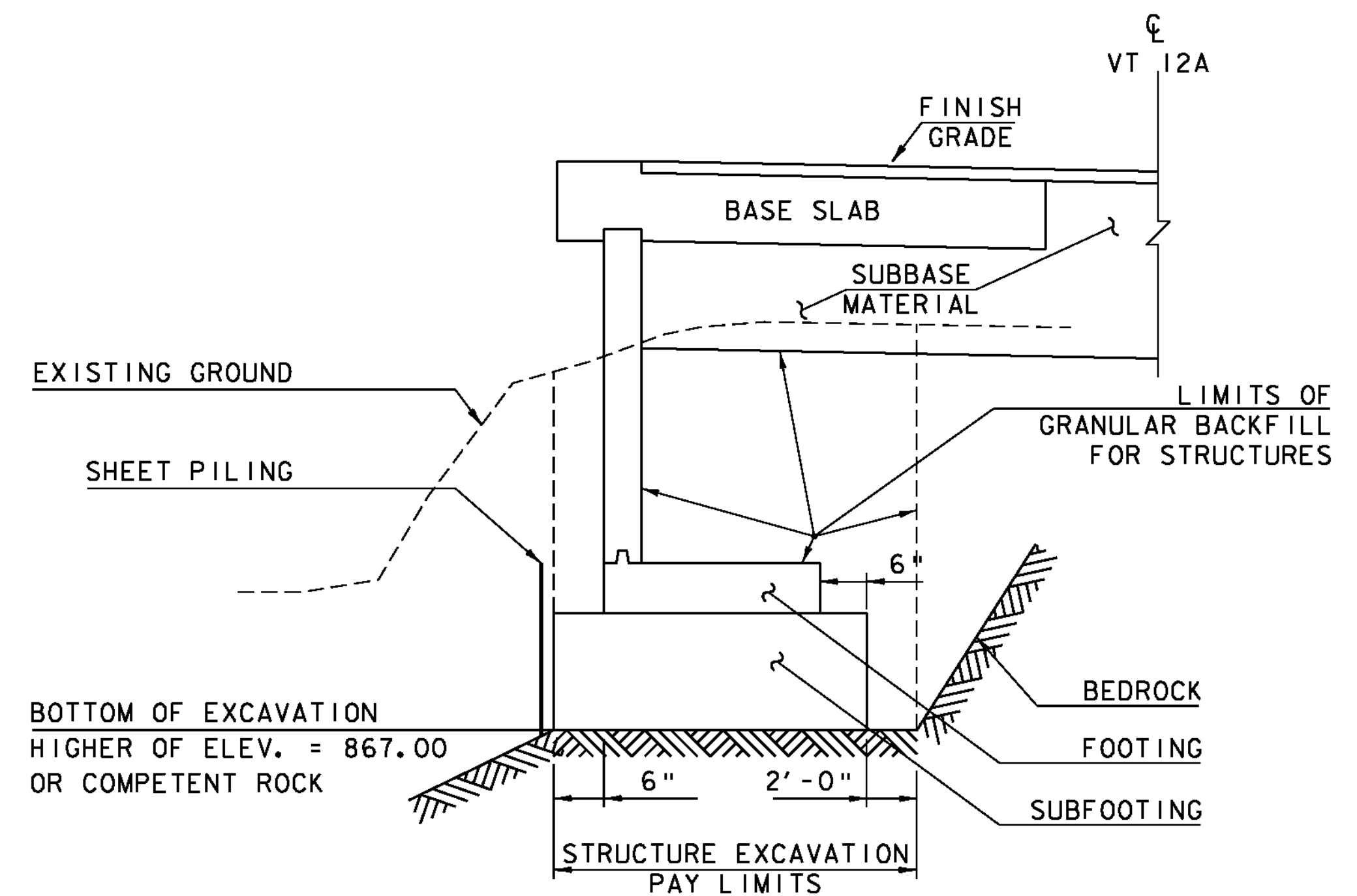


**NOTE:**  
 NF = NEAR FACE  
 FF = FAR FACE  
 EF = EACH FACE  
 ▲ = CUT TO FIT IN FIELD  
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

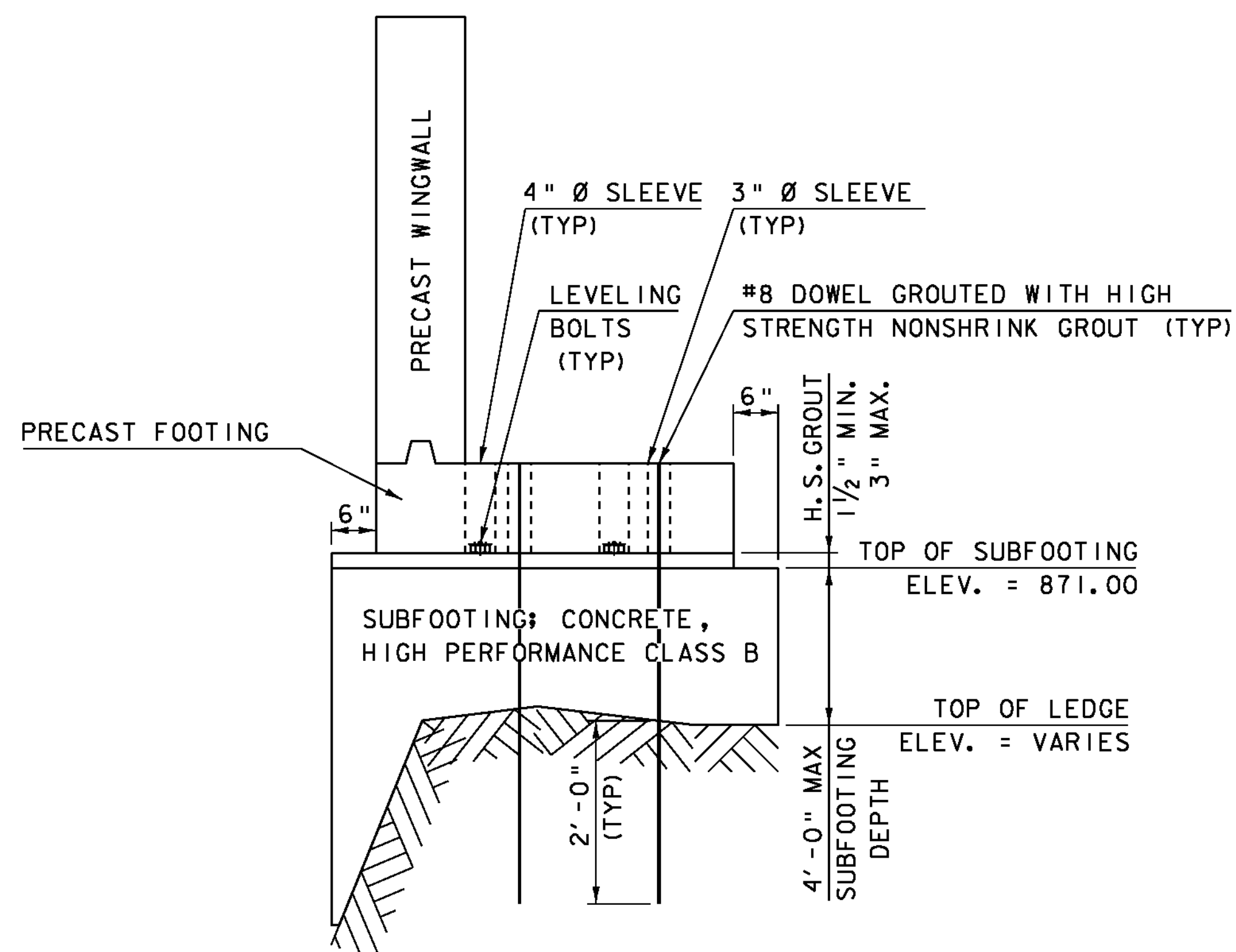
**WINGWALL #3 TYPICAL REBAR**



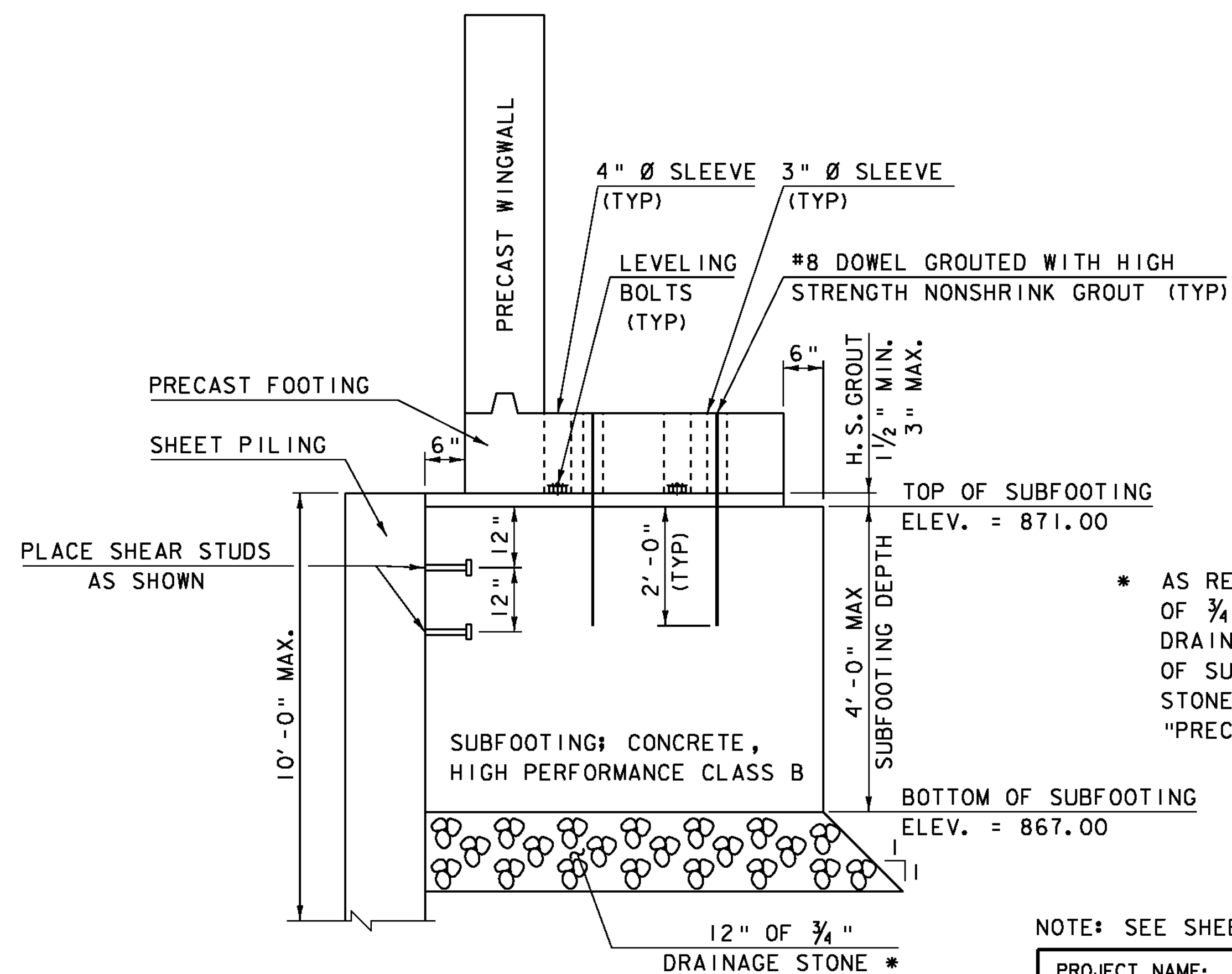
**WINGWALL #3 TYPICAL SECTION OVER EXISTING WINGWALL**



**WINGWALL #3 EXCAVATION SECTION**



**WINGWALL #3 TYPICAL SECTION PLACED OVER BEDROCK**

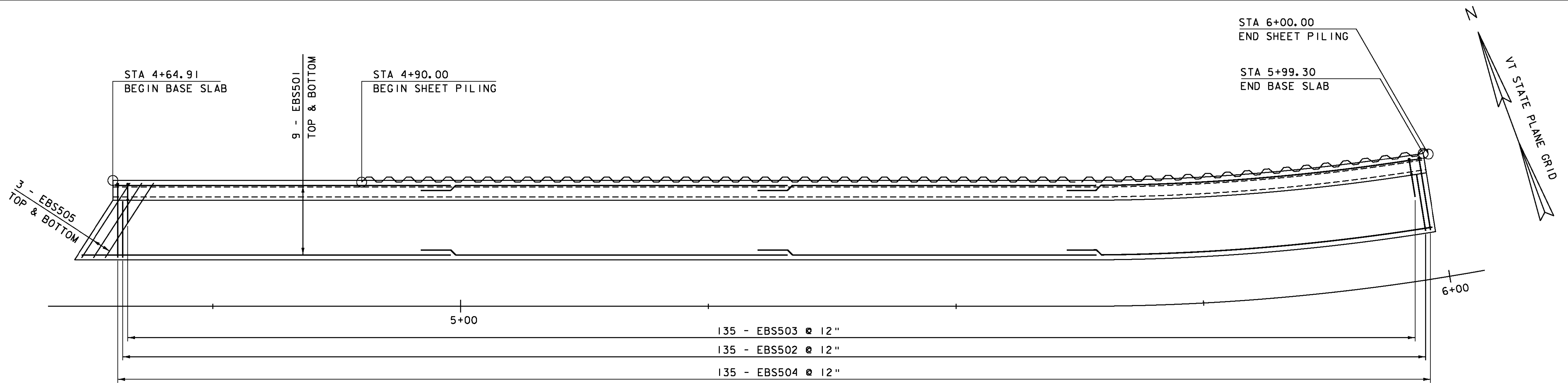


**WINGWALL #3 TYPICAL SECTION OVER NEW SUBFOOTING**

\* AS REQUIRED BY THE ENGINEER, PLACE 12" OF 3/4" 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)".

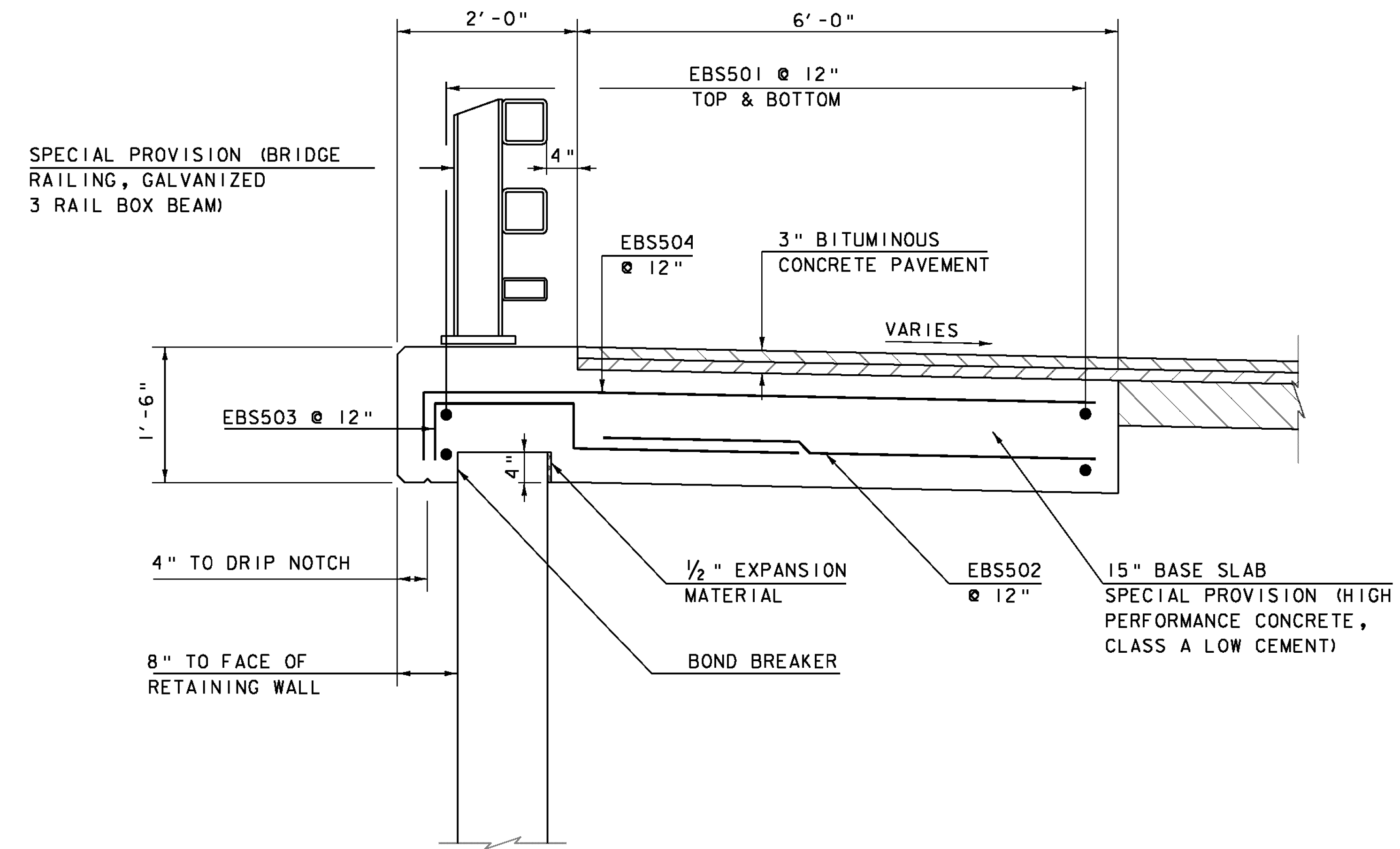
NOTE: SEE SHEET 26 FOR TOP OF WINGWALL ELEVATIONS.

PROJECT NAME:	ROXBURY	PLOT DATE:	21-SEP-2011
PROJECT NUMBER:	BHF 0187(8)	DRAWN BY:	D.D.BEARD
FILE NAME:	sl0c420sup.dgn	DESIGNED BY:	R.S.YOUNG
PROJECT LEADER:	C.P.WILLIAMS	CHECKED BY:	E.R.Charbonneau
WINGWALL #3 SECTIONS		SHEET 25 OF 54	



**BASE SLAB LAYOUT**

SCALE 1" = 5'-0"



**BASE SLAB TYPICAL**

SCALE 1" = 1'-0"

STATION	RETAINING WALL		BASE SLAB	
	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

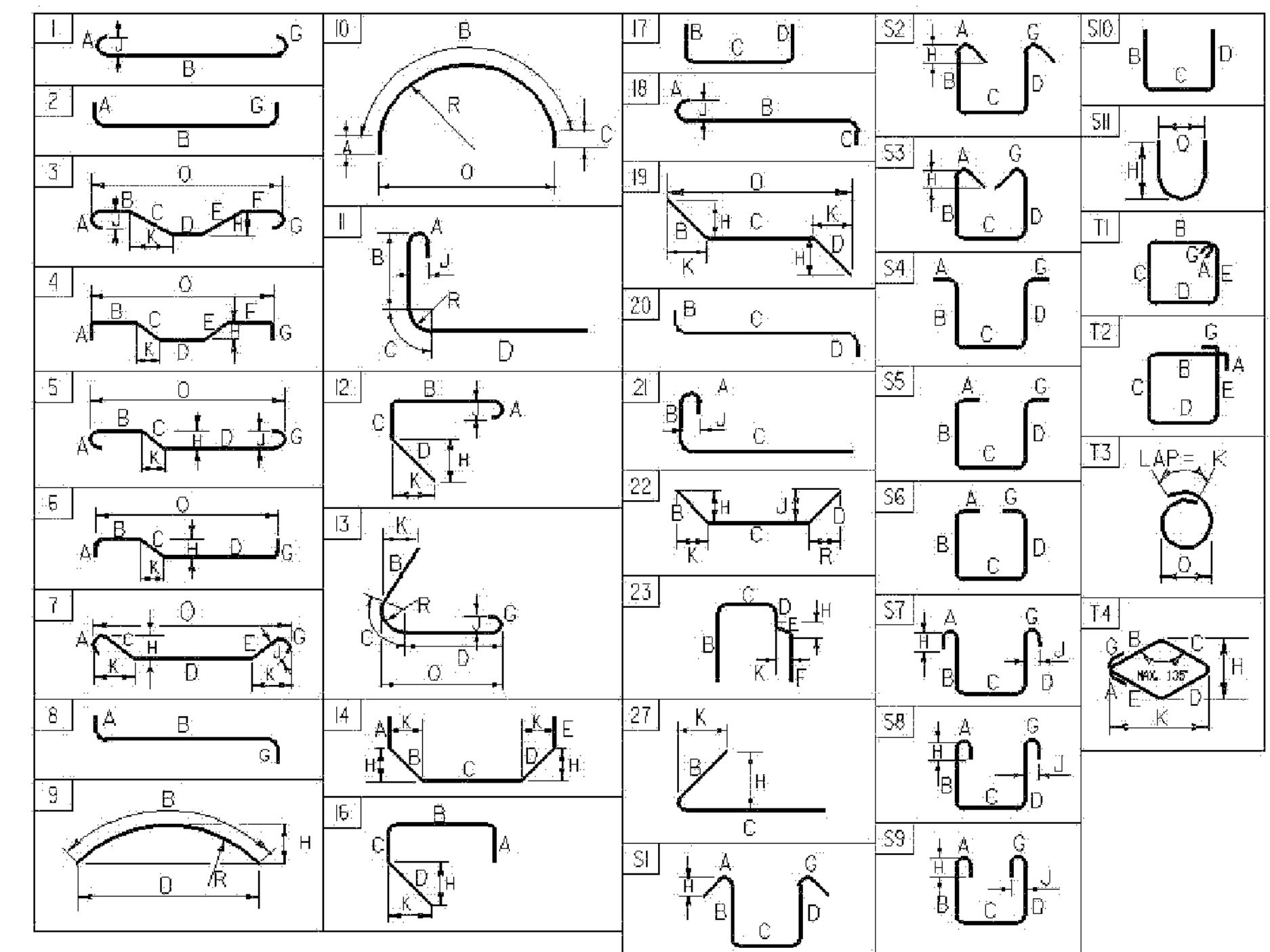
STATE OF VERMONT  
AGENCY OF TRANSPORTATION

# REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
<b>ABUTMENT #1</b>																																			
▲	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"																												
<b>WINGWALL #1</b>																																			
NO BARS																																			
<b>WINGWALL #2</b>																																			
▲	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"																													
<b>ABUTMENT #2</b>																																			
▲	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"																												
<b>WINGWALL #3</b>																																			
NO BARS																																			
<b>WINGWALL #4</b>																																			
▲	16	5	4'-6"	4W501	STR	4'-6"																													
*▲	11	5	9'-7"	4W502	STR	9'-7"																													
	3	8	3'-0"	4W801	STR	3'-0"																													
<b>APPROACH SLAB #1</b>																																			
*▲	22	5	26'-3"	1EAS01	STR	26'-3"																													
*▲	29	9	20'-9"	1EAS901	1	1'-3"	19'-6"						---		1'-0"																				
<b>APPROACH SLAB #2</b>																																			
	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"																				
<b>BASE SLAB</b>																																			
	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"																													

~ NOTES ~

- 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-S). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
- 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".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- \* DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
- △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
- E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

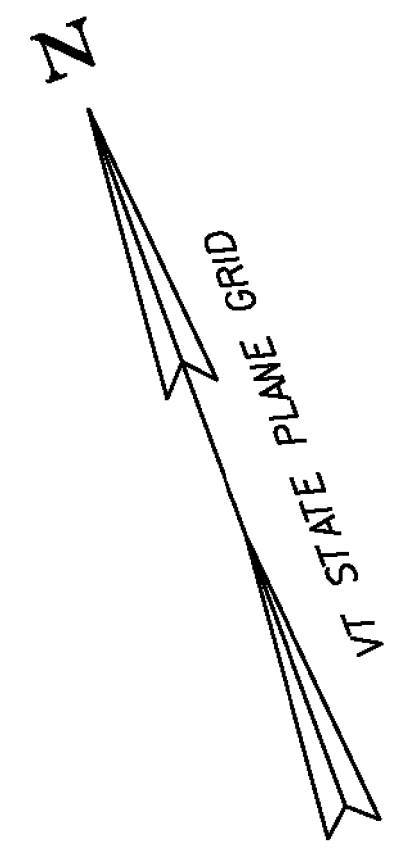


ASTM STANDARD  
REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES <sup>2</sup>	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 PLOT DATE: 9/19/2011  
PROJECT MANAGER: C.P. WILLIAMS DRAWN BY: M. LONGSTREET  
DESIGNED BY: R. YOUNG CHECKED BY: R. YOUNG  
REINFORCING STEEL SCHEDULE SHEET #1 SHEET 27 OF 54



**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

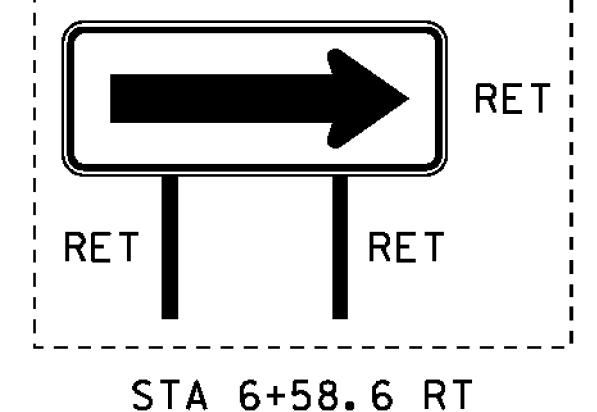
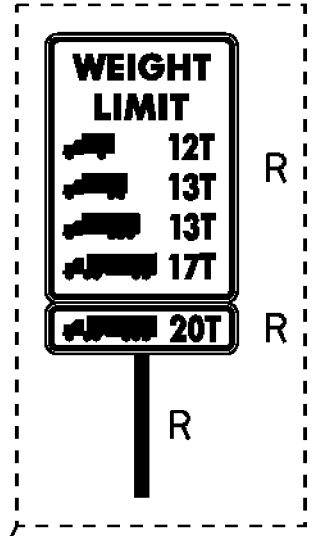
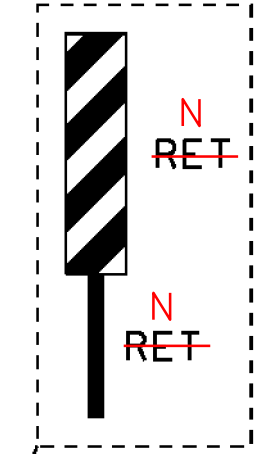
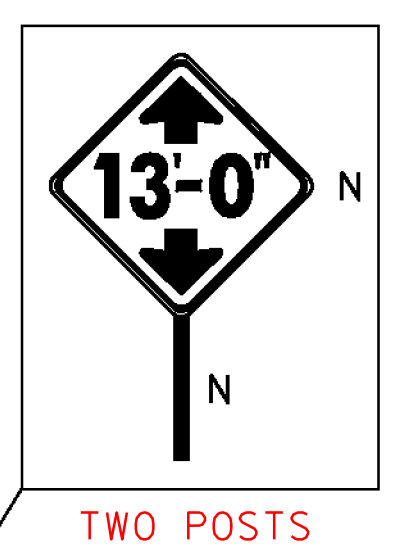
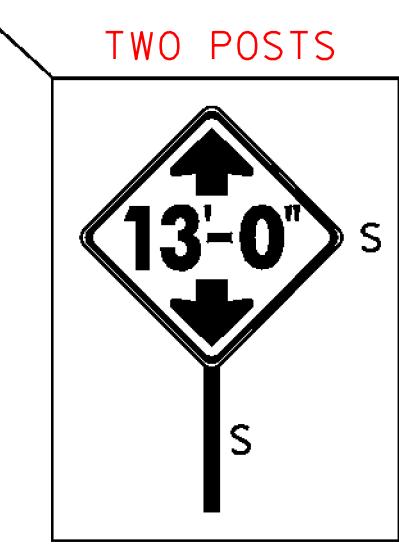
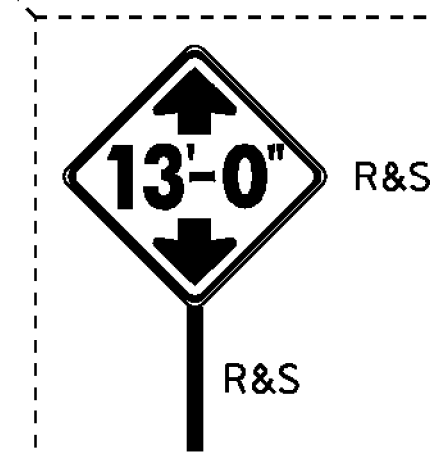
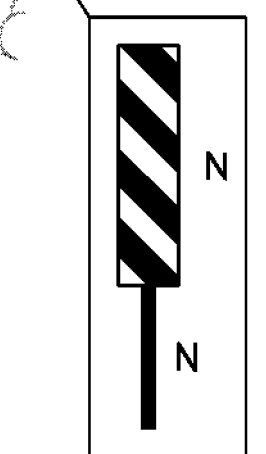
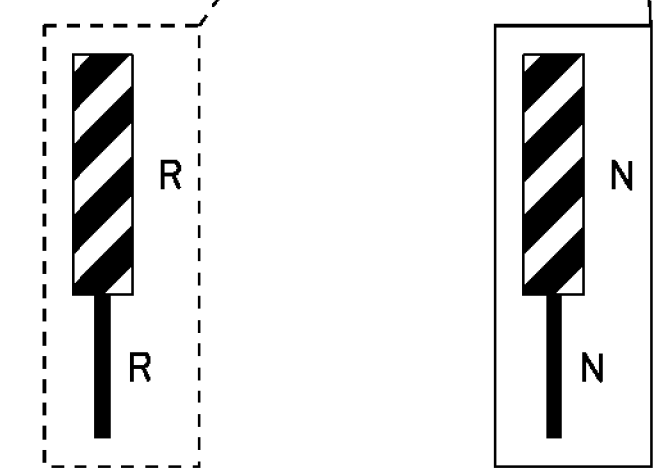
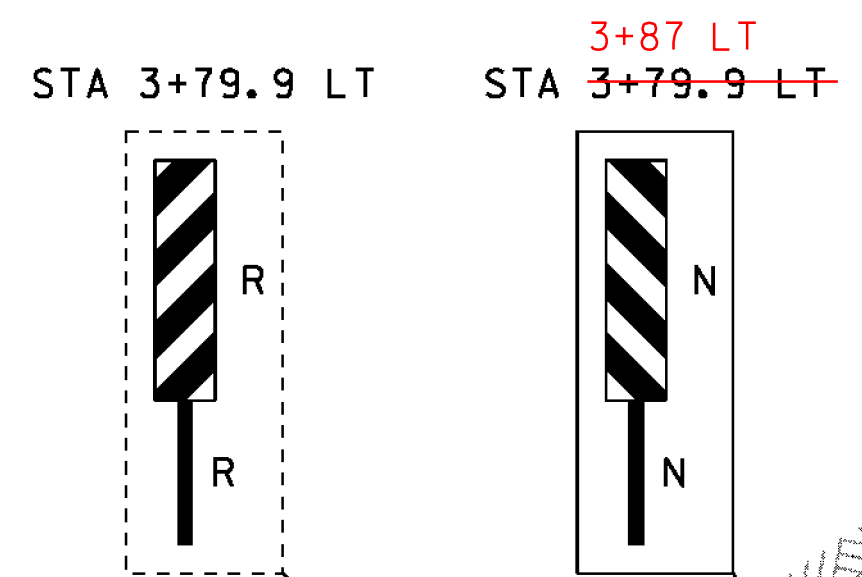
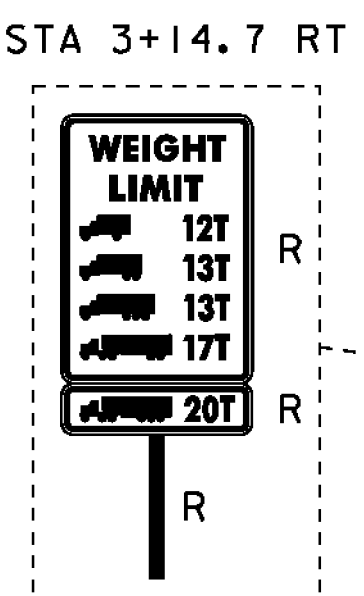
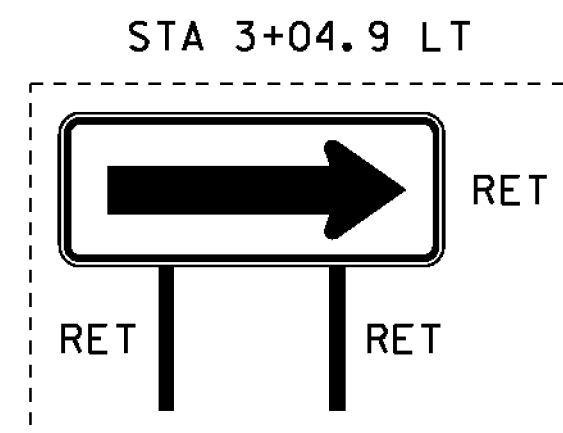
**REMOVING SIGNS**  
 STA 3+14.7 RT (2)  
 STA 3+69.9 RT (1)  
 STA 3+79.9 LT (1)  
 STA 4+57.2 RT (1)  
 STA 7+03.9 LT (2)

**ERECTING SALVAGED SIGNS**  
 STA 4+98.2 RT (1)

6+92 LT  
 STA 5+34.6 LT

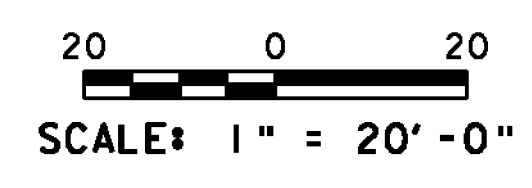
6+20 LT  
 STA 6+34.0 LT

7+03.9 LT  
 STA 7+03.9 LT



**LEGEND**

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

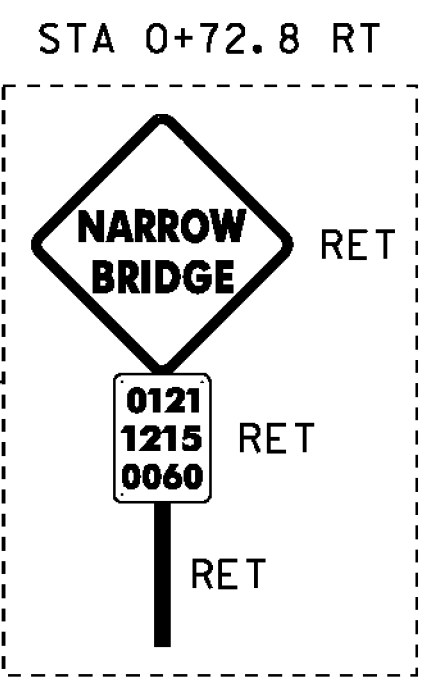


PROJECT NAME: ROXBURY  
 PROJECT NUMBER: BHF 0187(8)

FILE NAME: sl0c420bdr.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

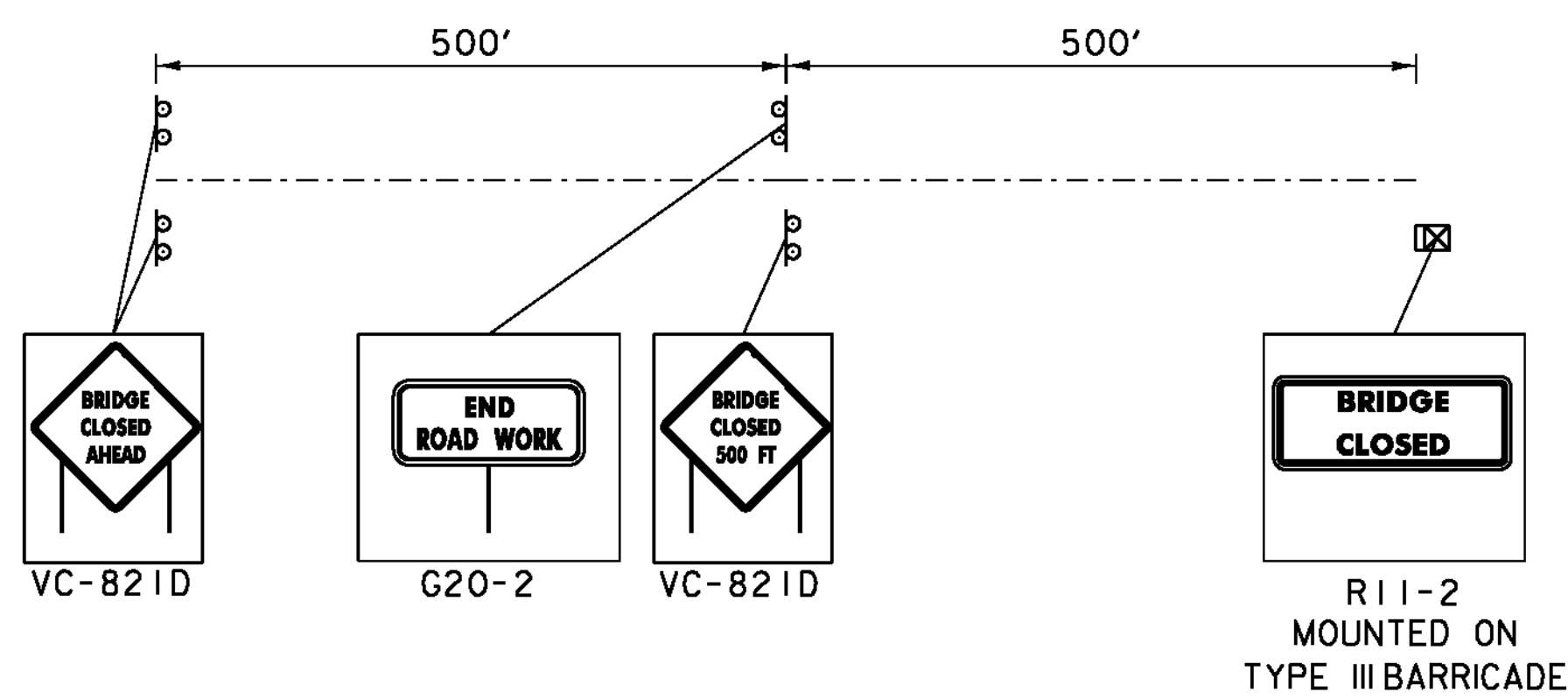
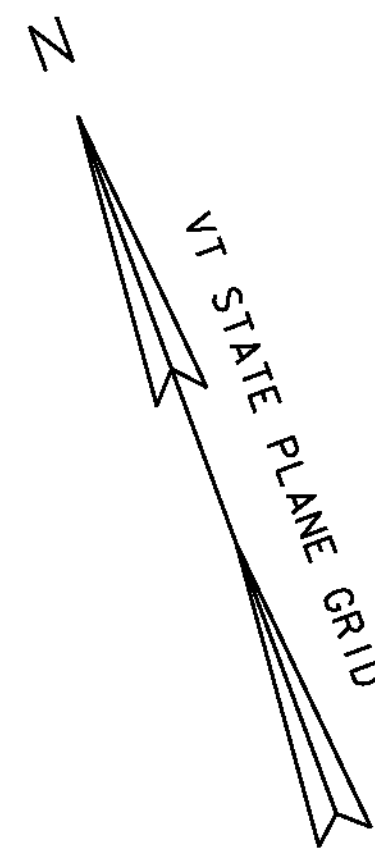
3RD BRANCH OF THE WHITE RIVER



STA 3+69.6 RT

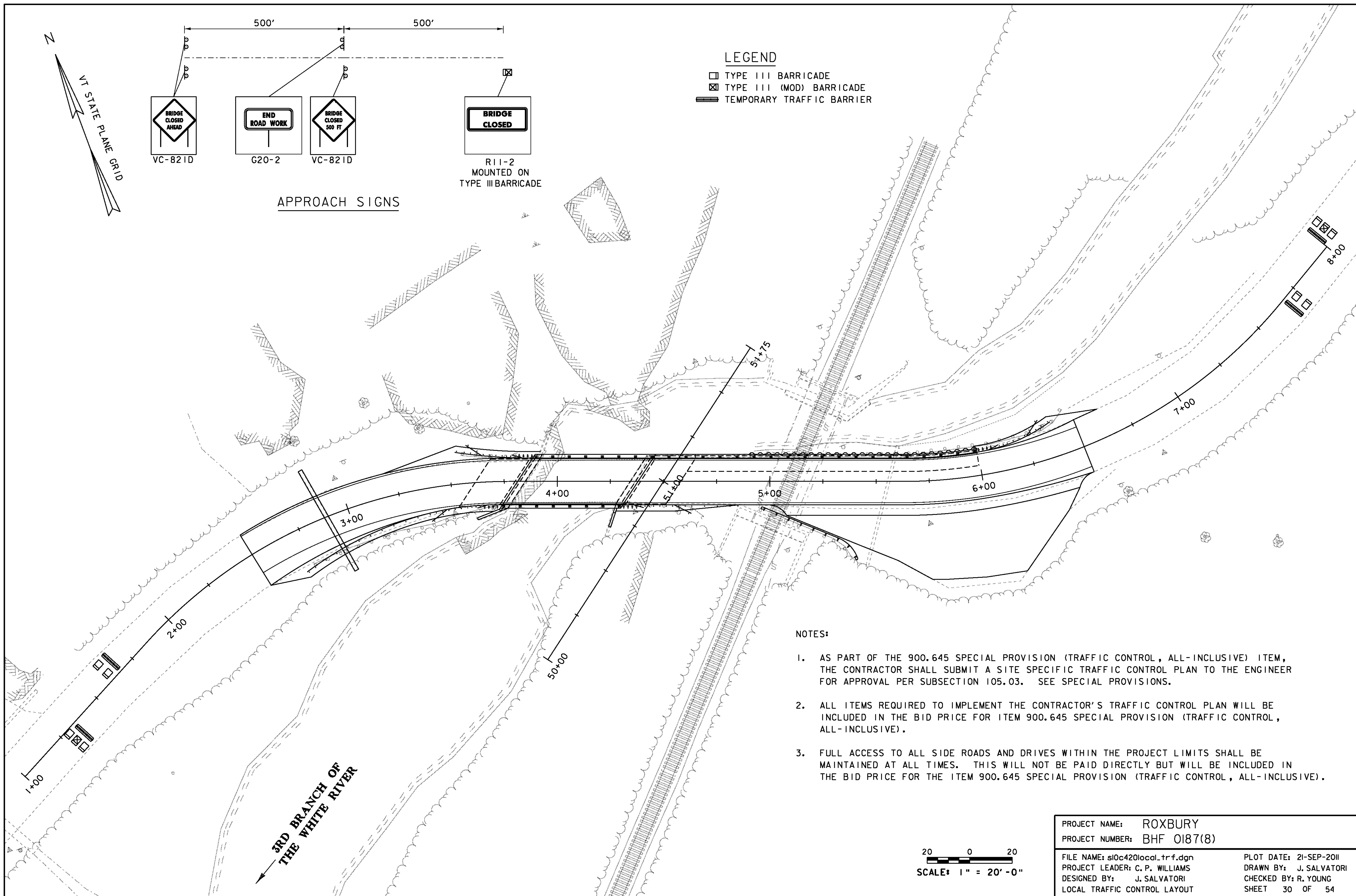
STA 3+69.6 RT  
 3+72 RT





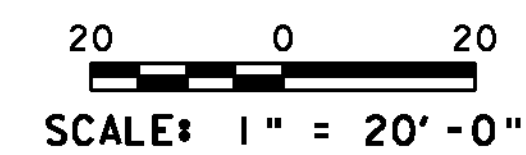
APPROACH SIGNS

- LEGEND**
- TYPE III BARRICADE
  - ⊠ TYPE III (MOD) BARRICADE
  - ▬ TEMPORARY TRAFFIC BARRIER

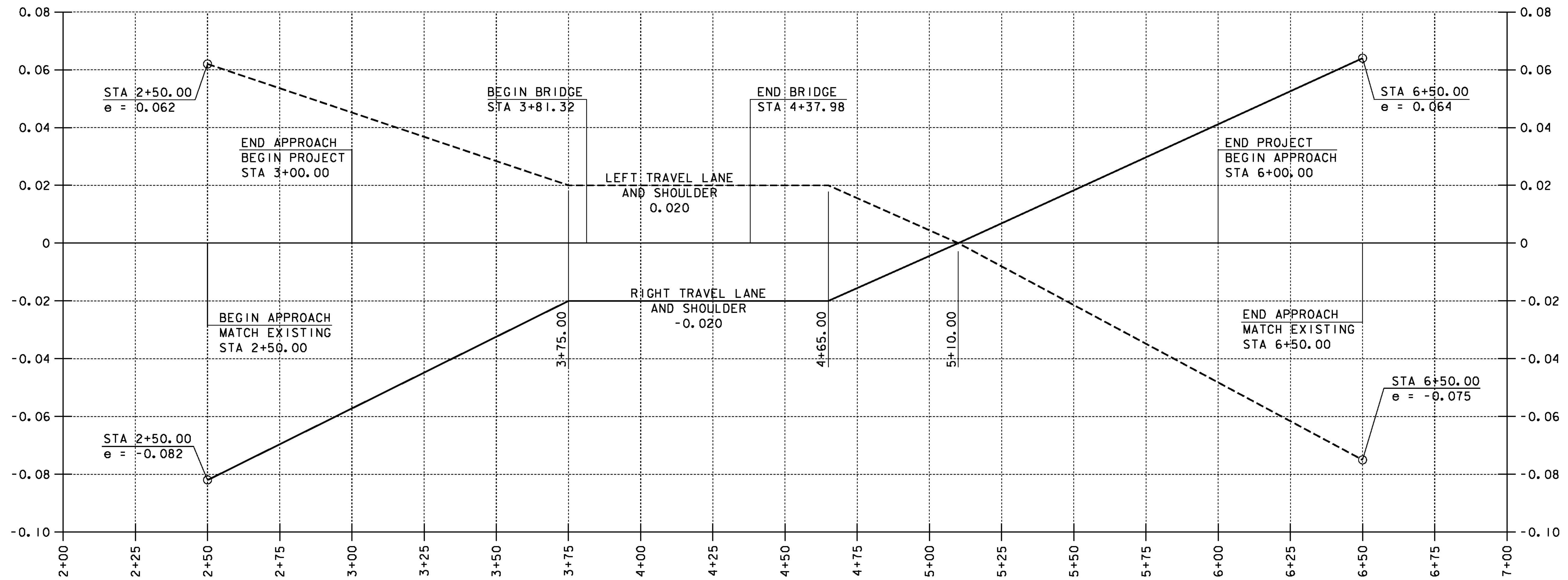


**NOTES:**

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).

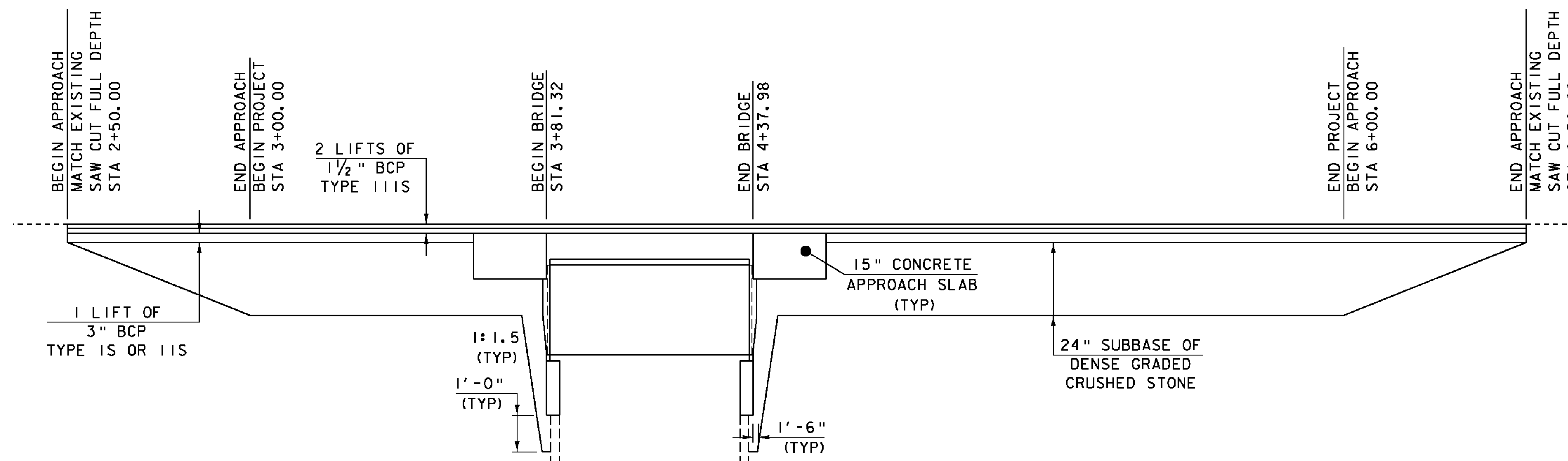


PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: J. SALVATORI
FILE NAME: sl0c420local.tr f.dgn	CHECKED BY: R. YOUNG
PROJECT LEADER: C. P. WILLIAMS	SHEET 30 OF 54
DESIGNED BY: J. SALVATORI	
LOCAL TRAFFIC CONTROL LAYOUT	



**VT 12A BANKING DIAGRAM**

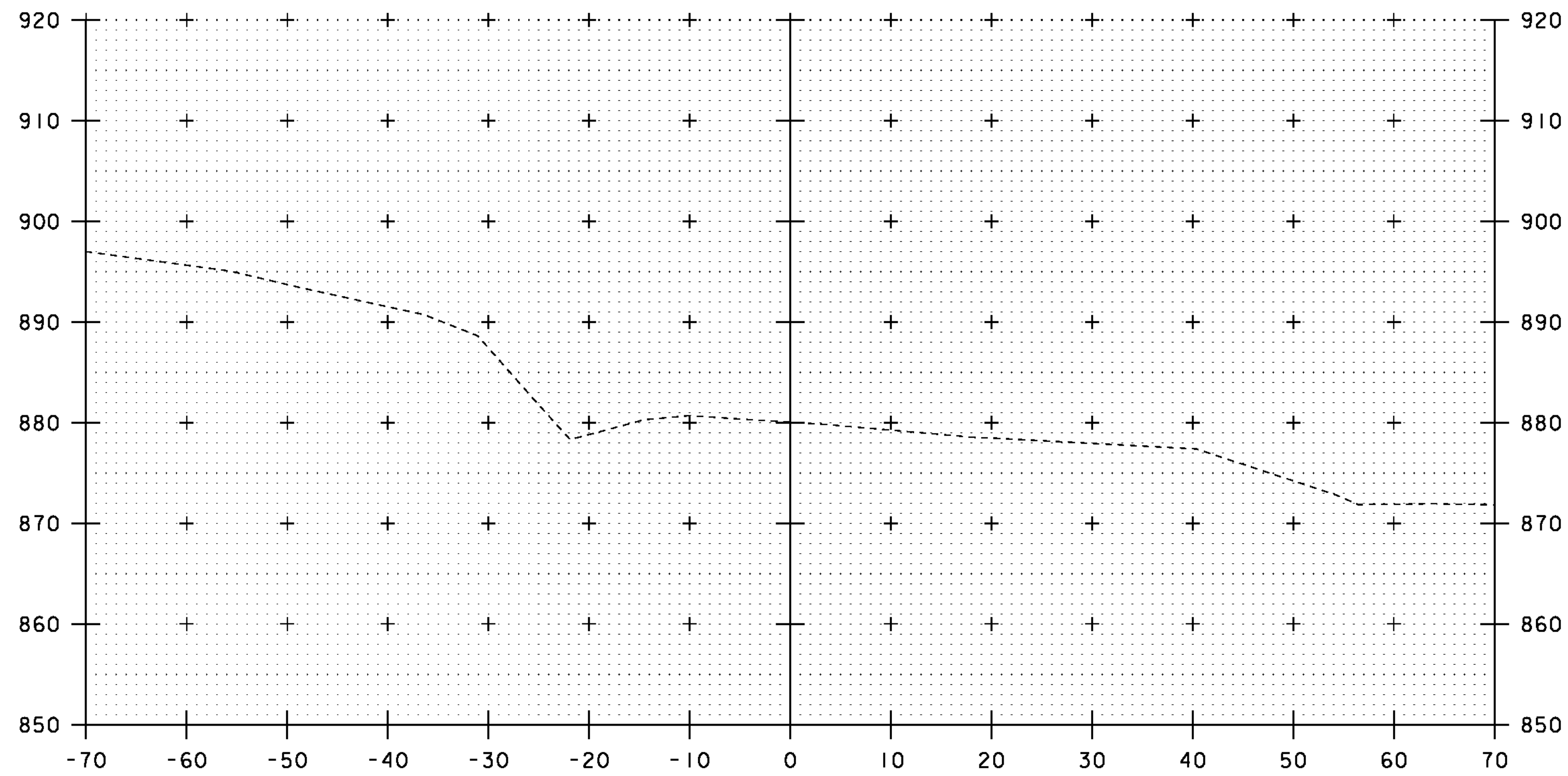
HORIZONTAL SCALE: 1" = 20'-0"  
 VERTICAL SCALE: 1" = 0.02' /"



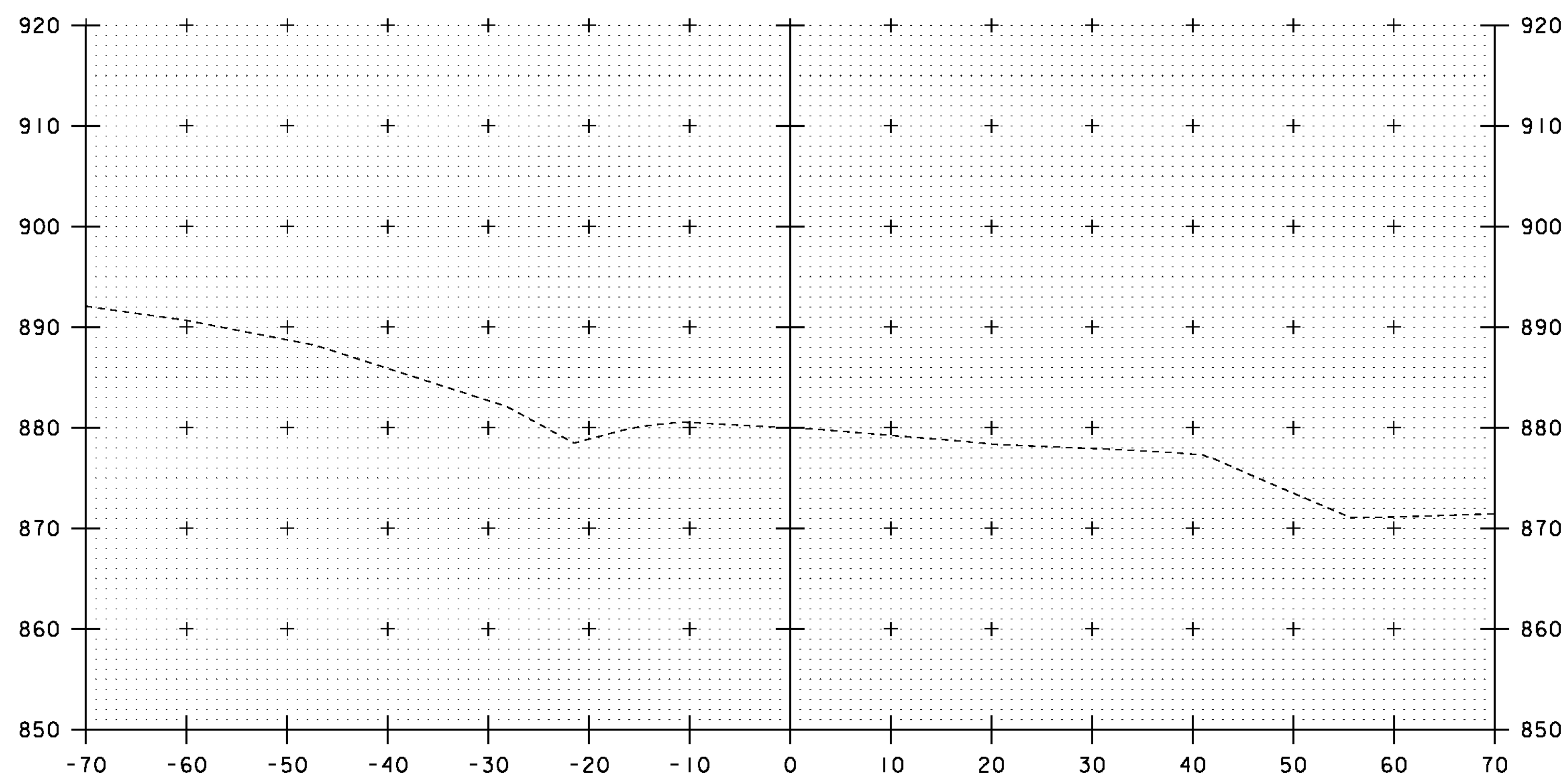
**VT 12A MATERIAL TRANSITION DETAIL**

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

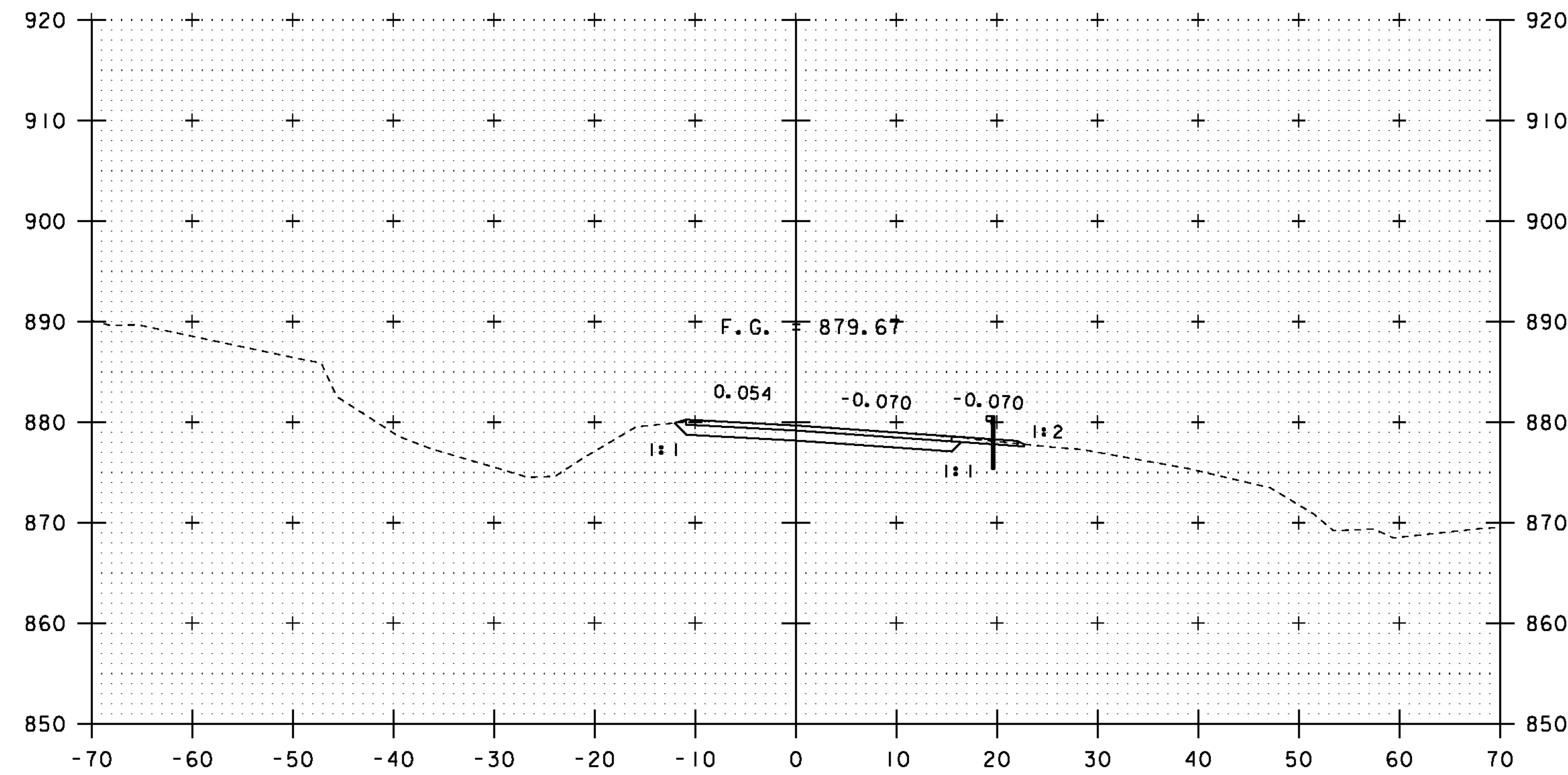
PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420pro.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	BANKING DIAGRAM AND MATERIAL TRANSITION SHEET 31 OF 54
DESIGNED BY: G. ROY	



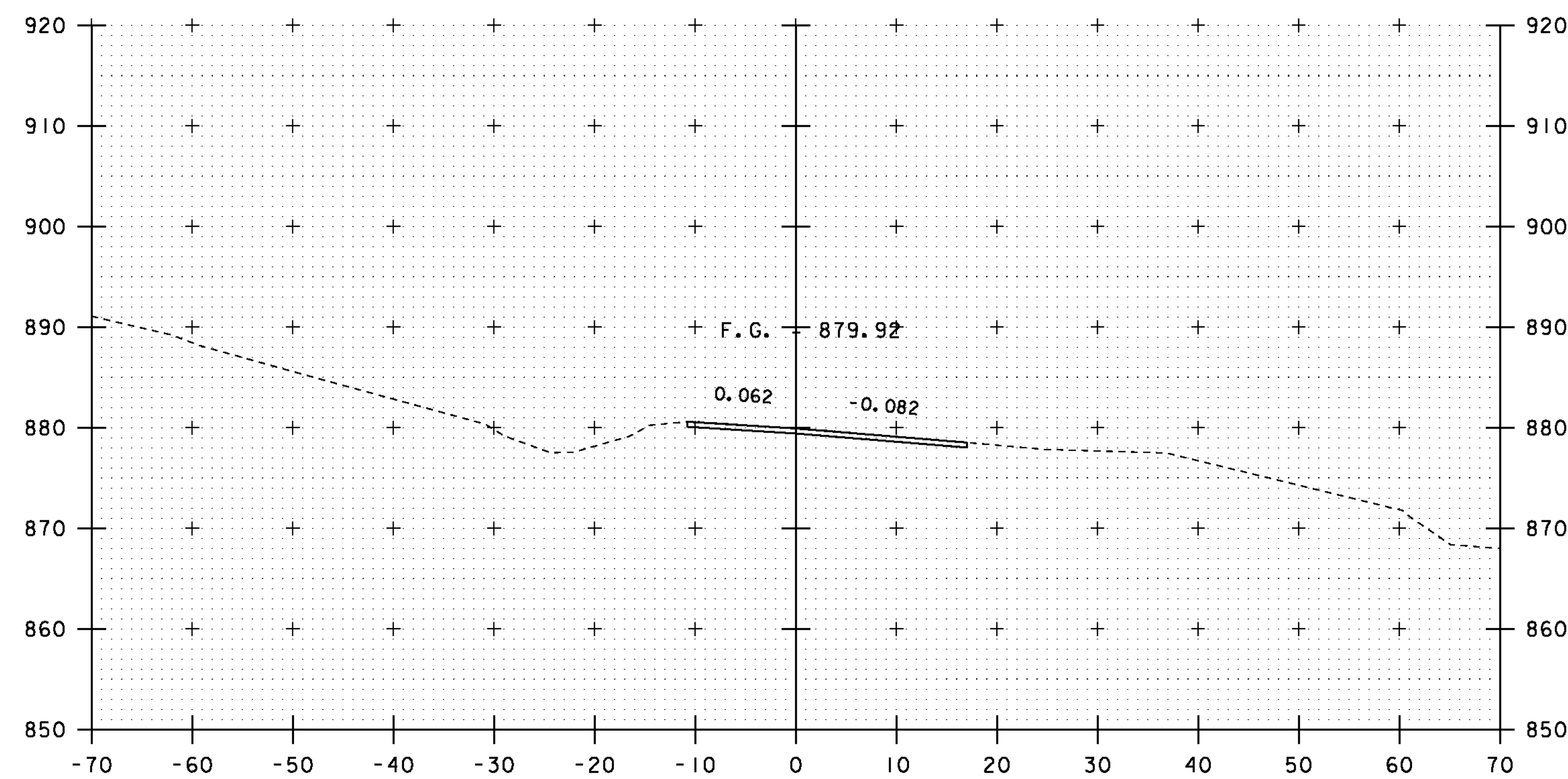
2+25



2+00



2+75



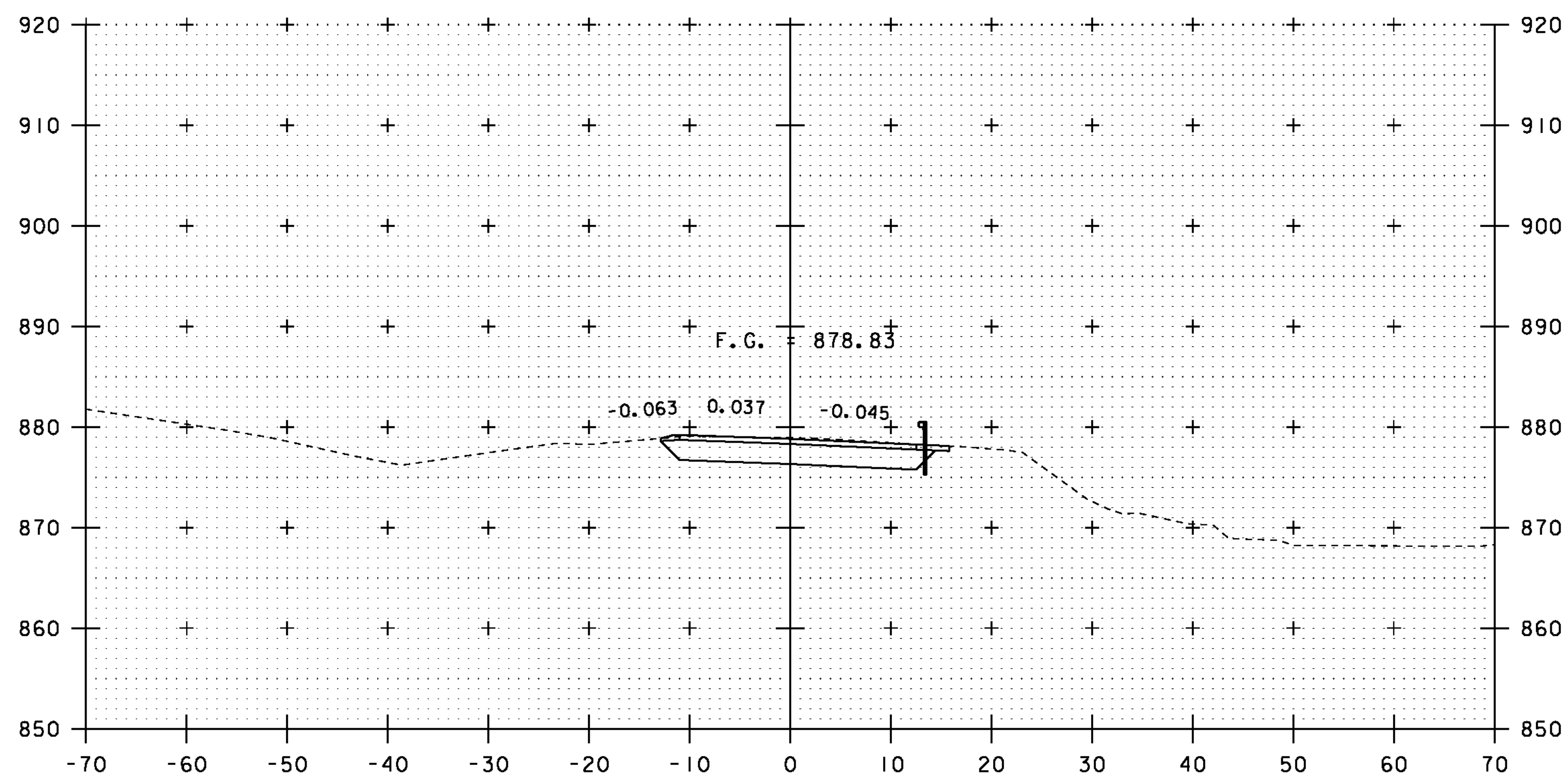
2+50

BEGIN APPROACH  
MATCH EXISTING  
STA 2+50.00

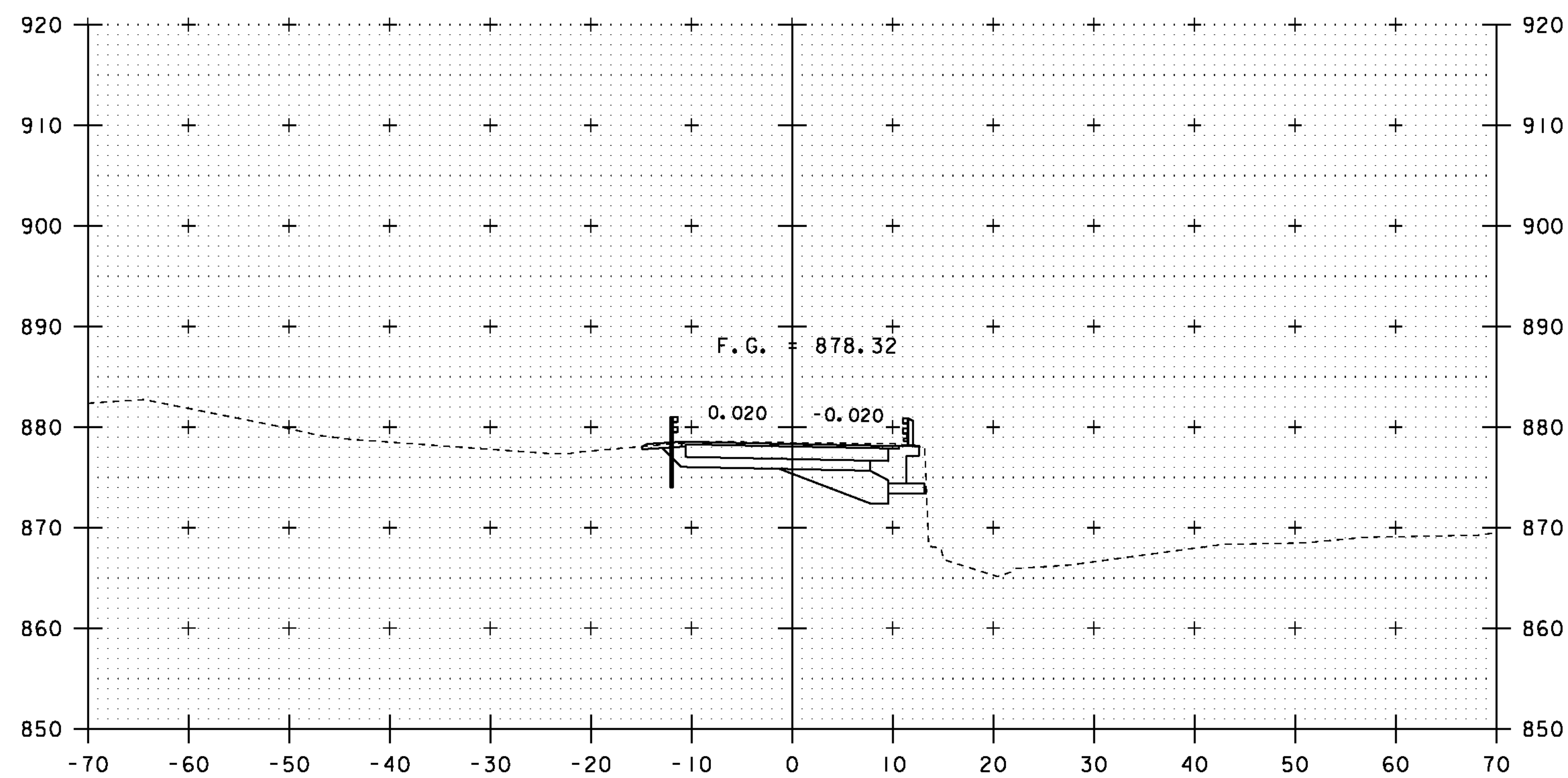


STA. 2+00 TO STA. 2+75

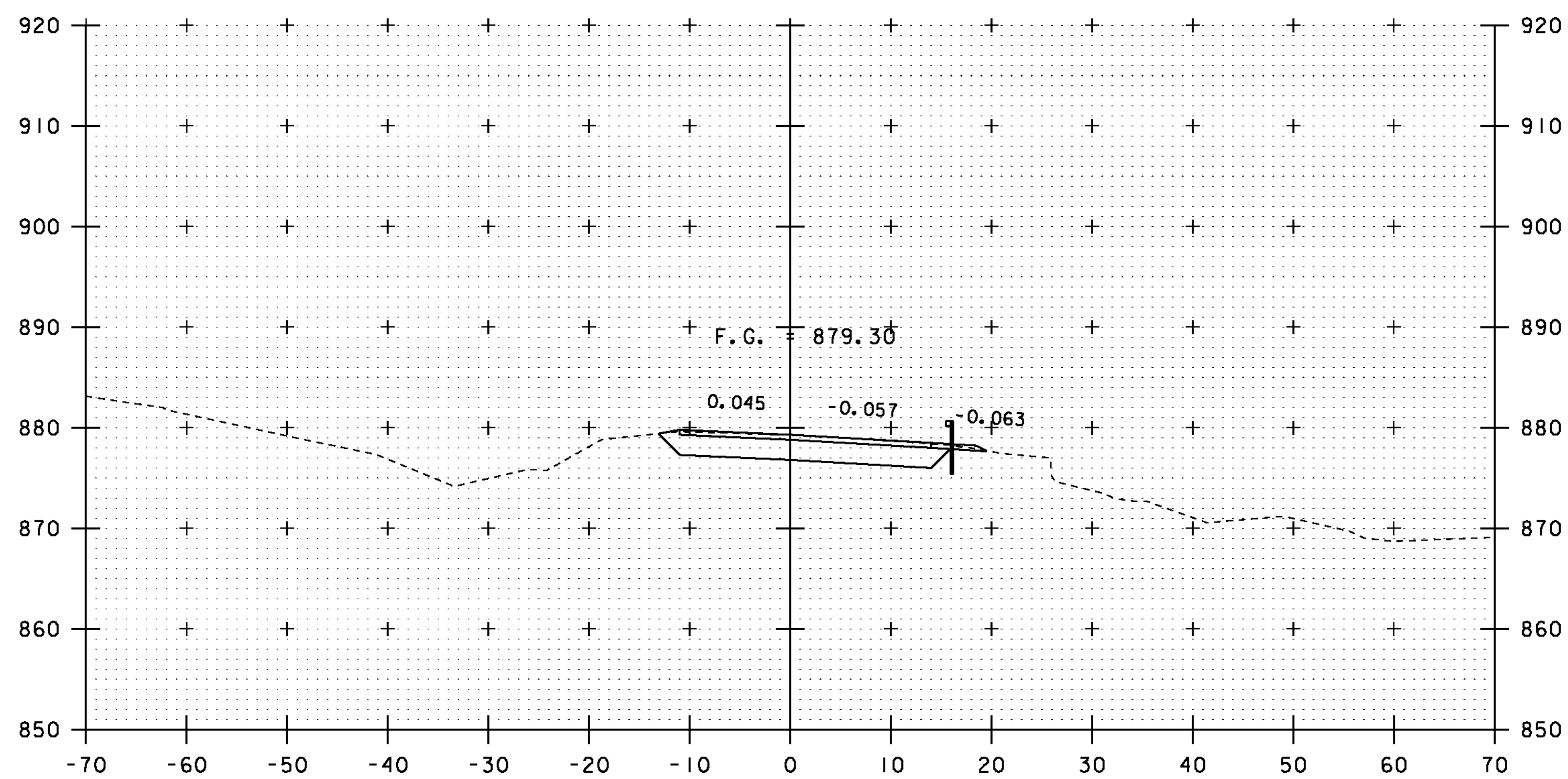
PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420xsl.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 32 OF 54
DESIGNED BY: G. ROY	
VT 12A CROSS SECTIONS (1)	



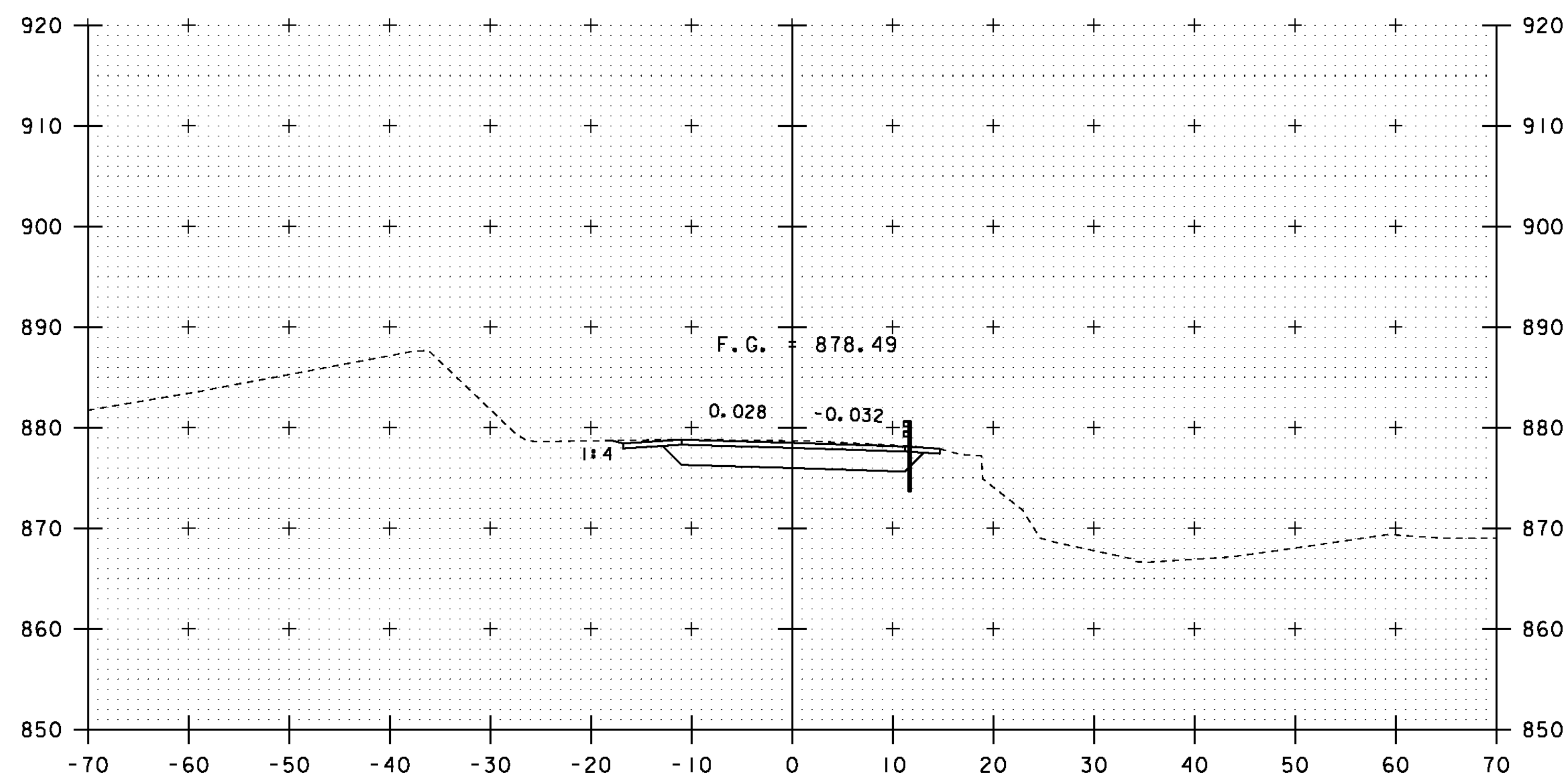
3+25



3+75



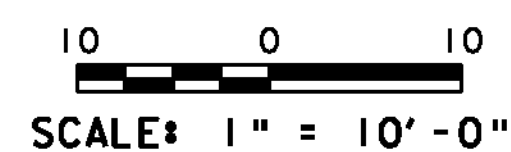
3+00



3+50

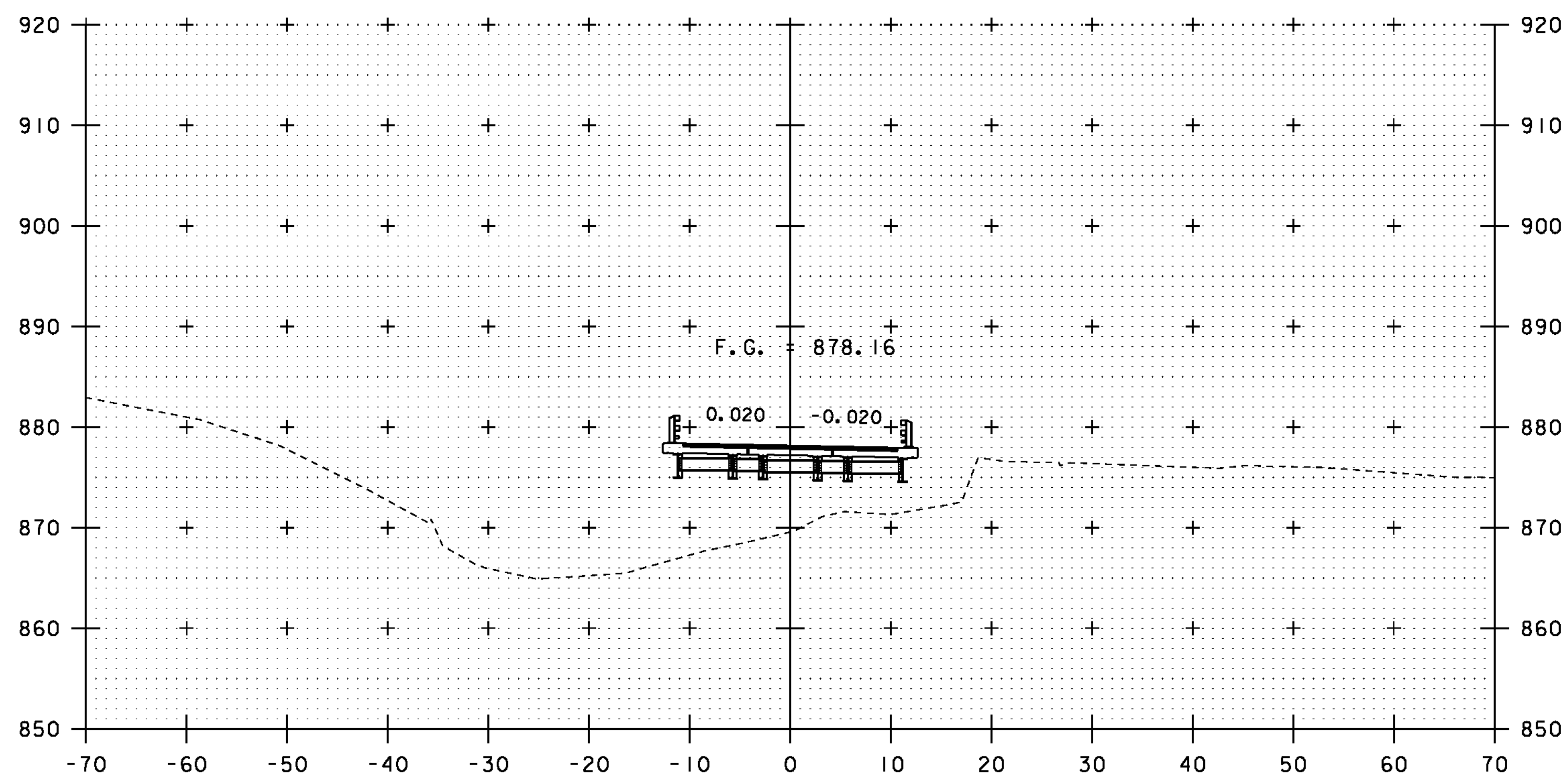
SEE SHEET 37 FOR NEW OPTION PIPE SECTION AT STA 2+89.2.

END APPROACH  
BEGIN PROJECT  
STA 3+00.00

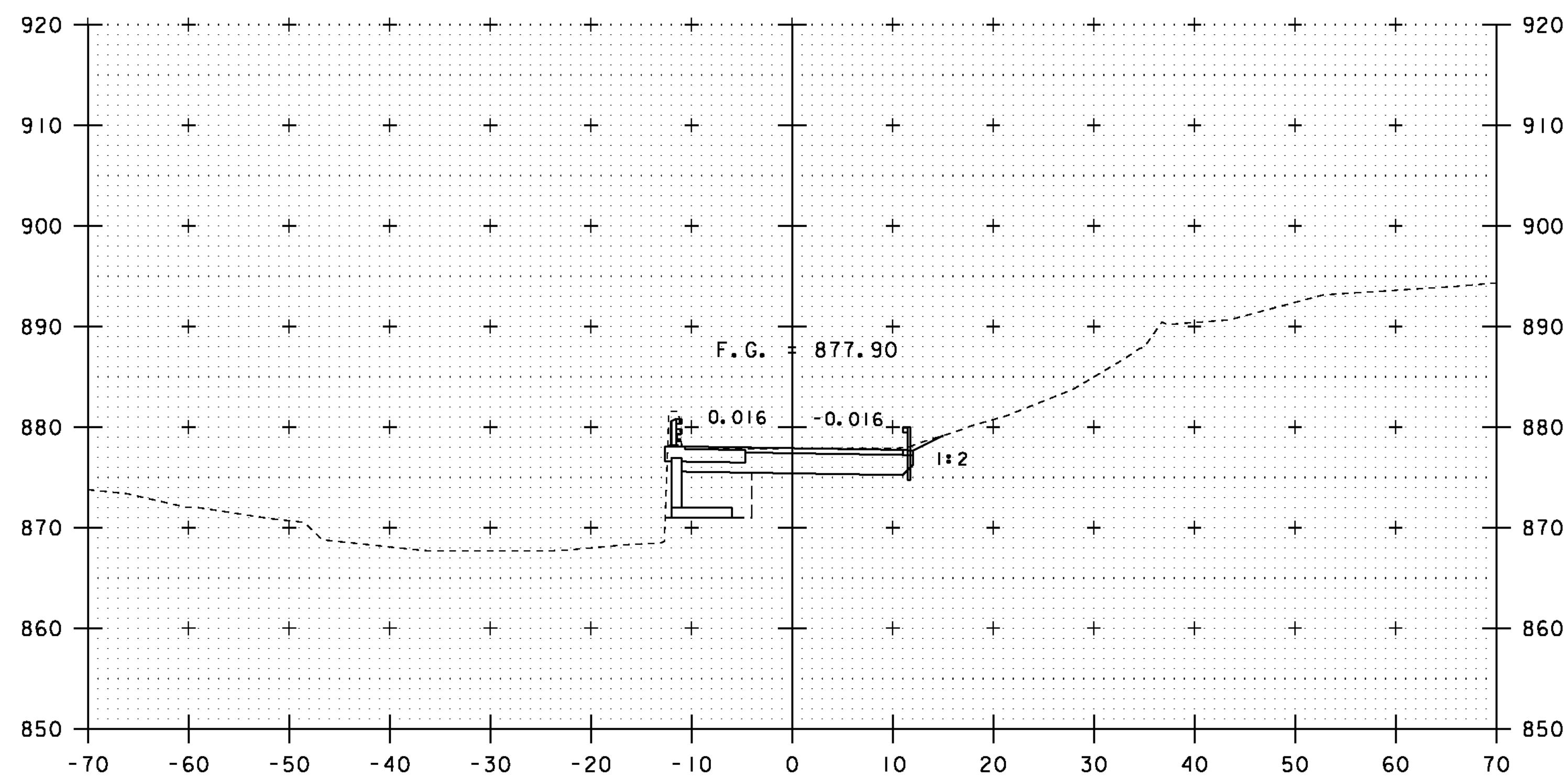


STA. 3+00 TO STA. 3+75

PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420xsl.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 33 OF 54
DESIGNED BY: G. ROY	
VT I2A CROSS SECTIONS (2)	

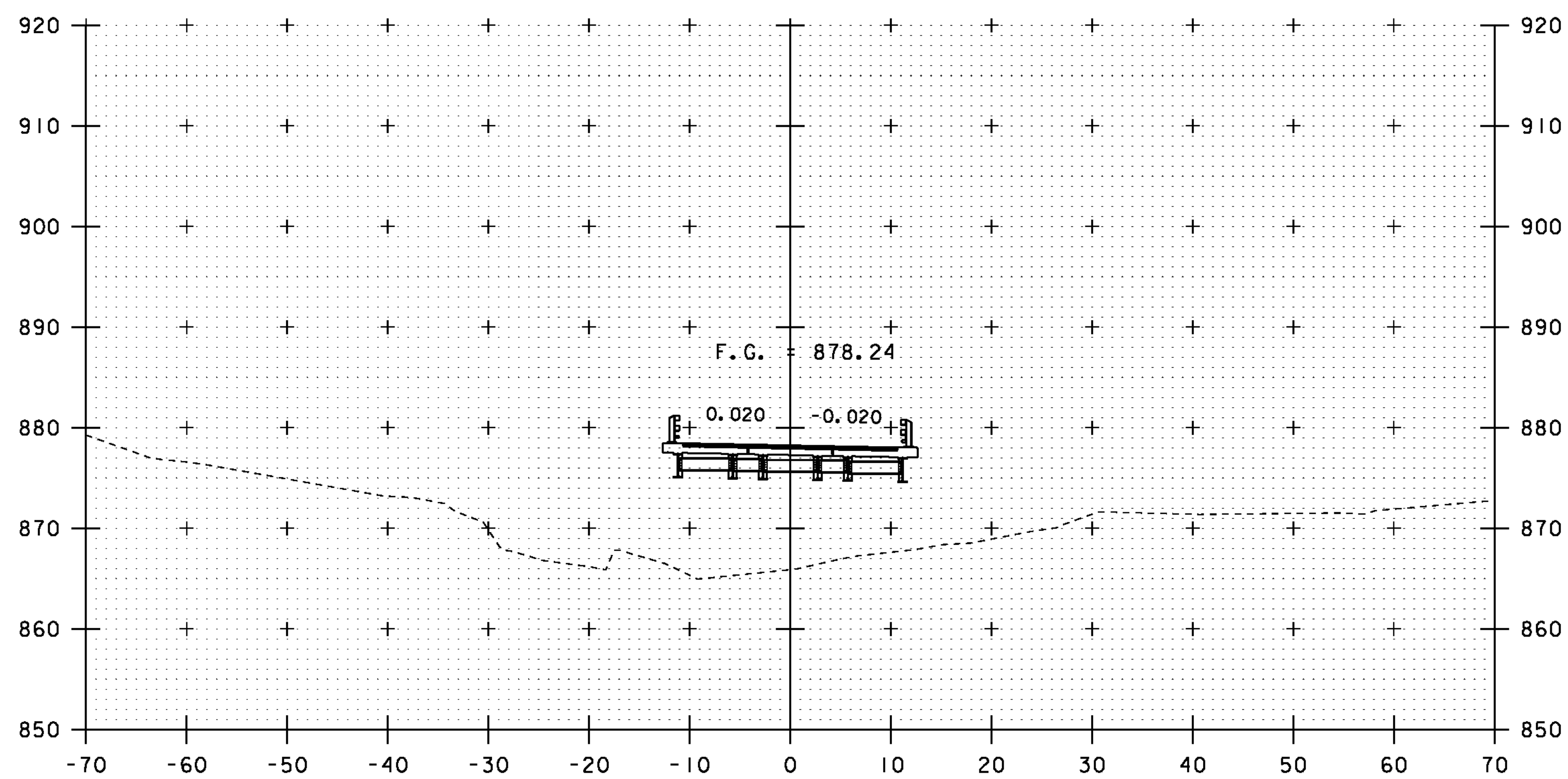


4+25



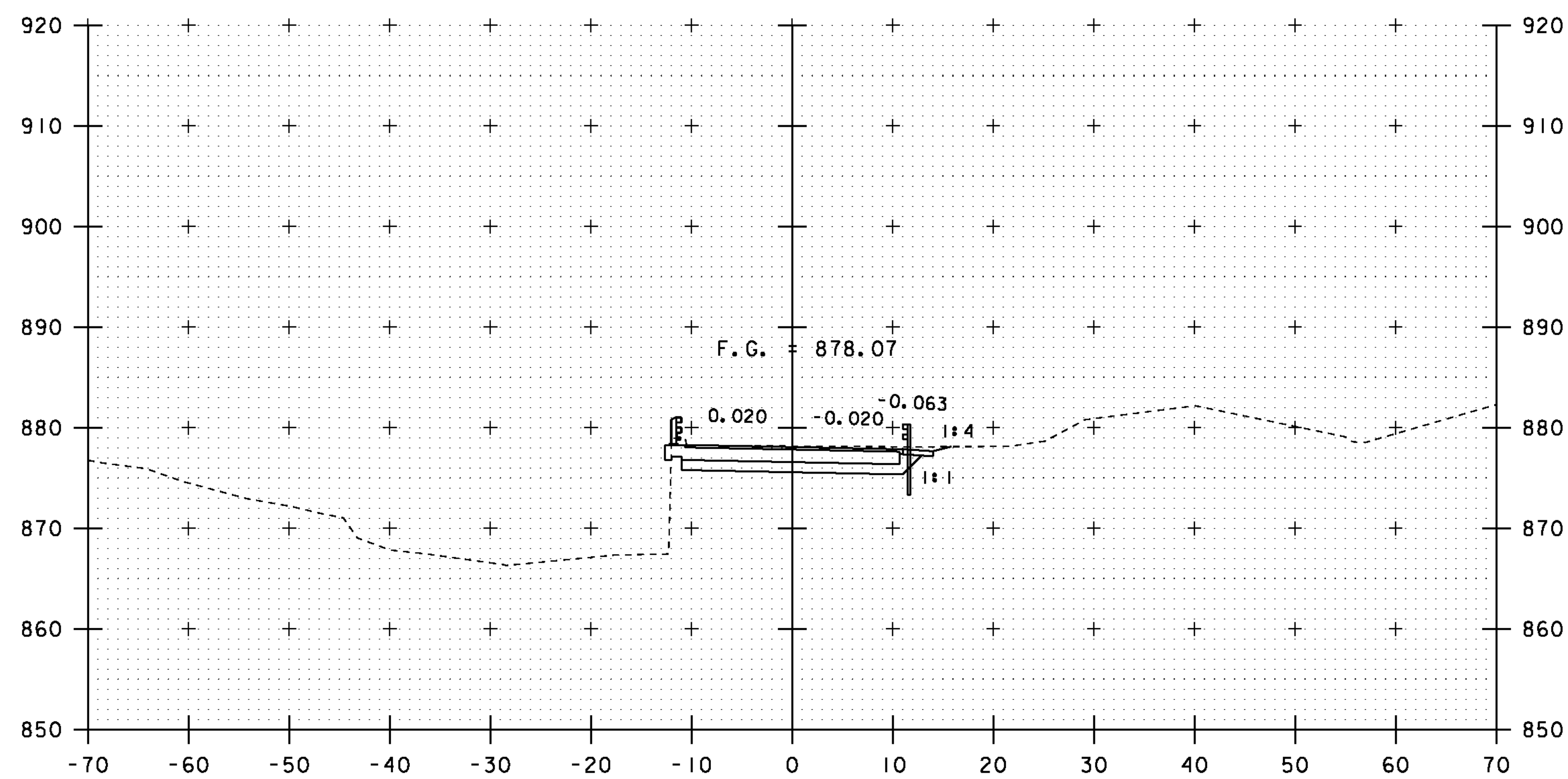
BEGIN PRECAST CONCRETE STRUCTURE (WINGWALL NO. 3)  
STA 4+64.91 LT

4+75



4+00

BEGIN BRIDGE  
STA 3+81.32



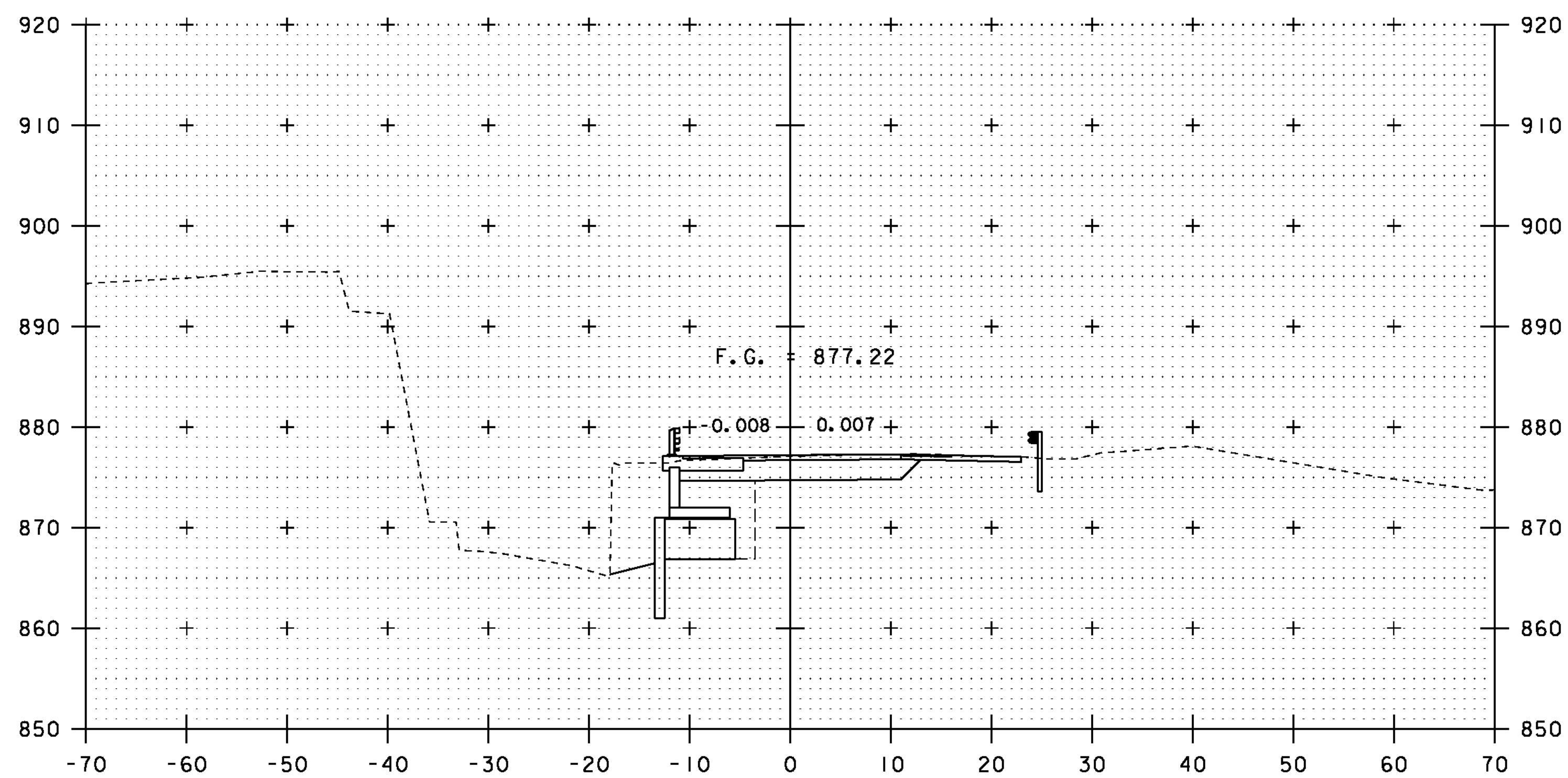
END BRIDGE  
STA 4+37.98

4+50

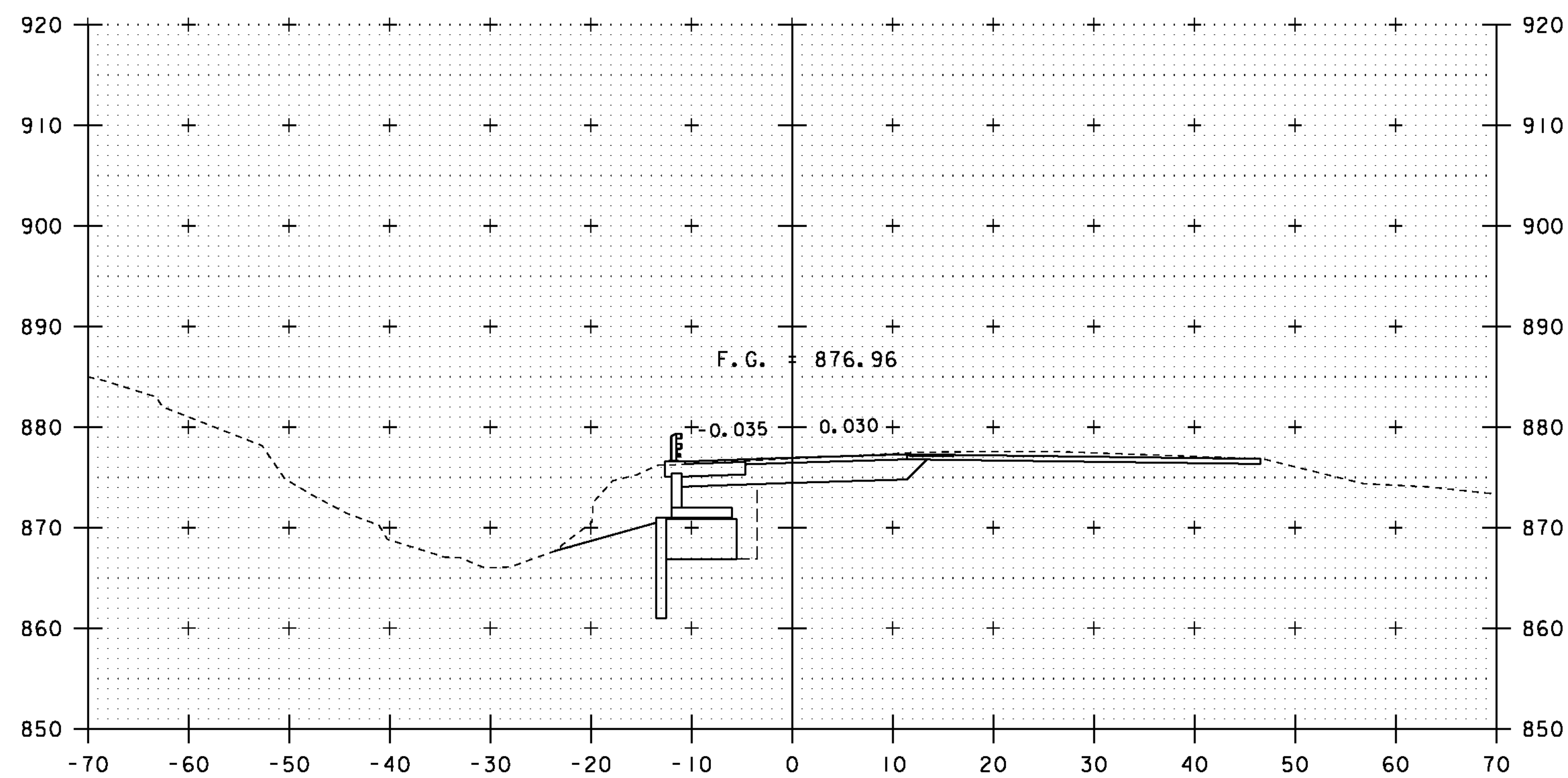


STA. 4+00 TO STA. 4+75

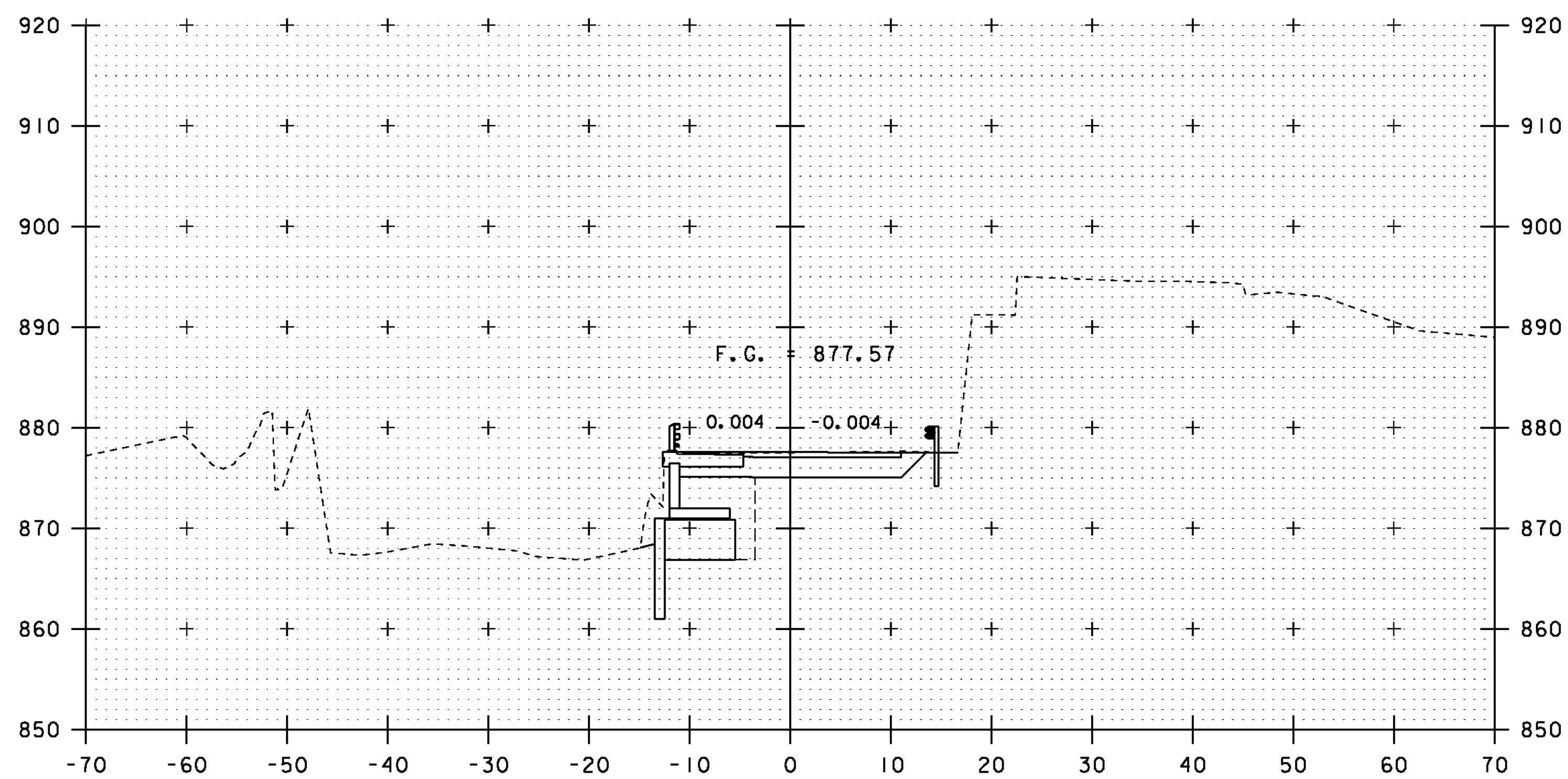
PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420xsl.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 34 OF 54
DESIGNED BY: G. ROY	VT 12A CROSS SECTIONS (3)



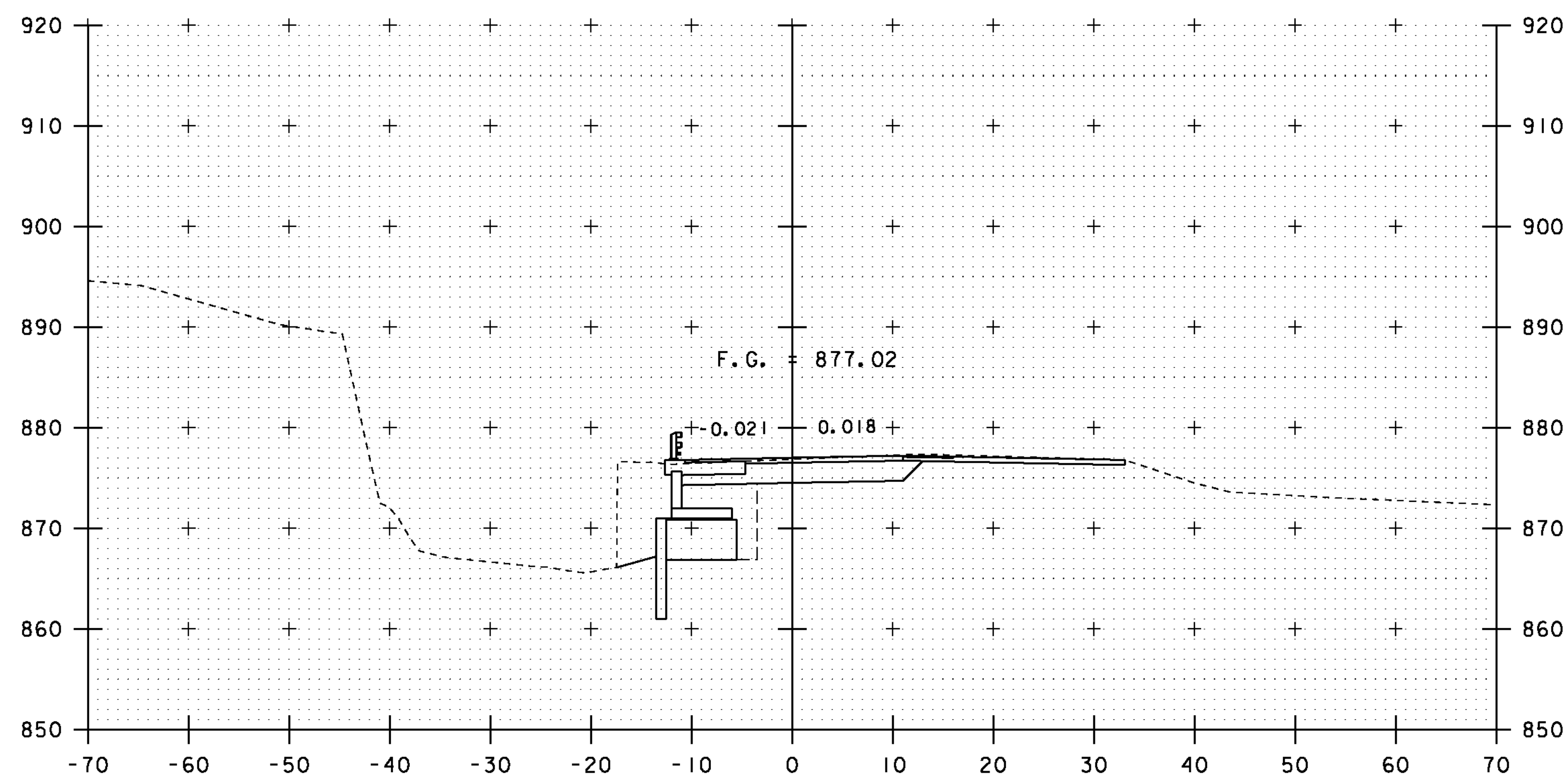
5+25



5+75



5+00

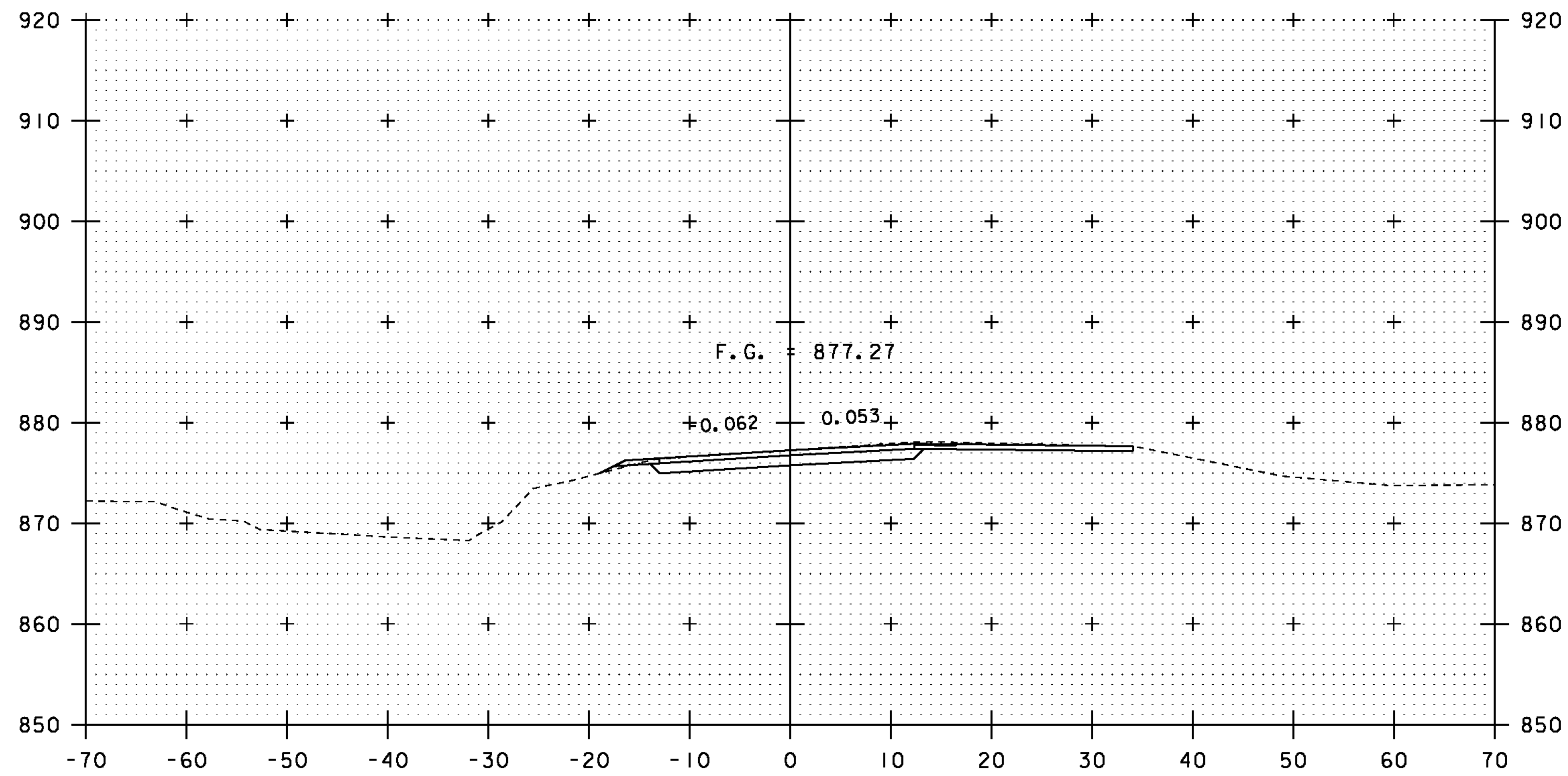


5+50

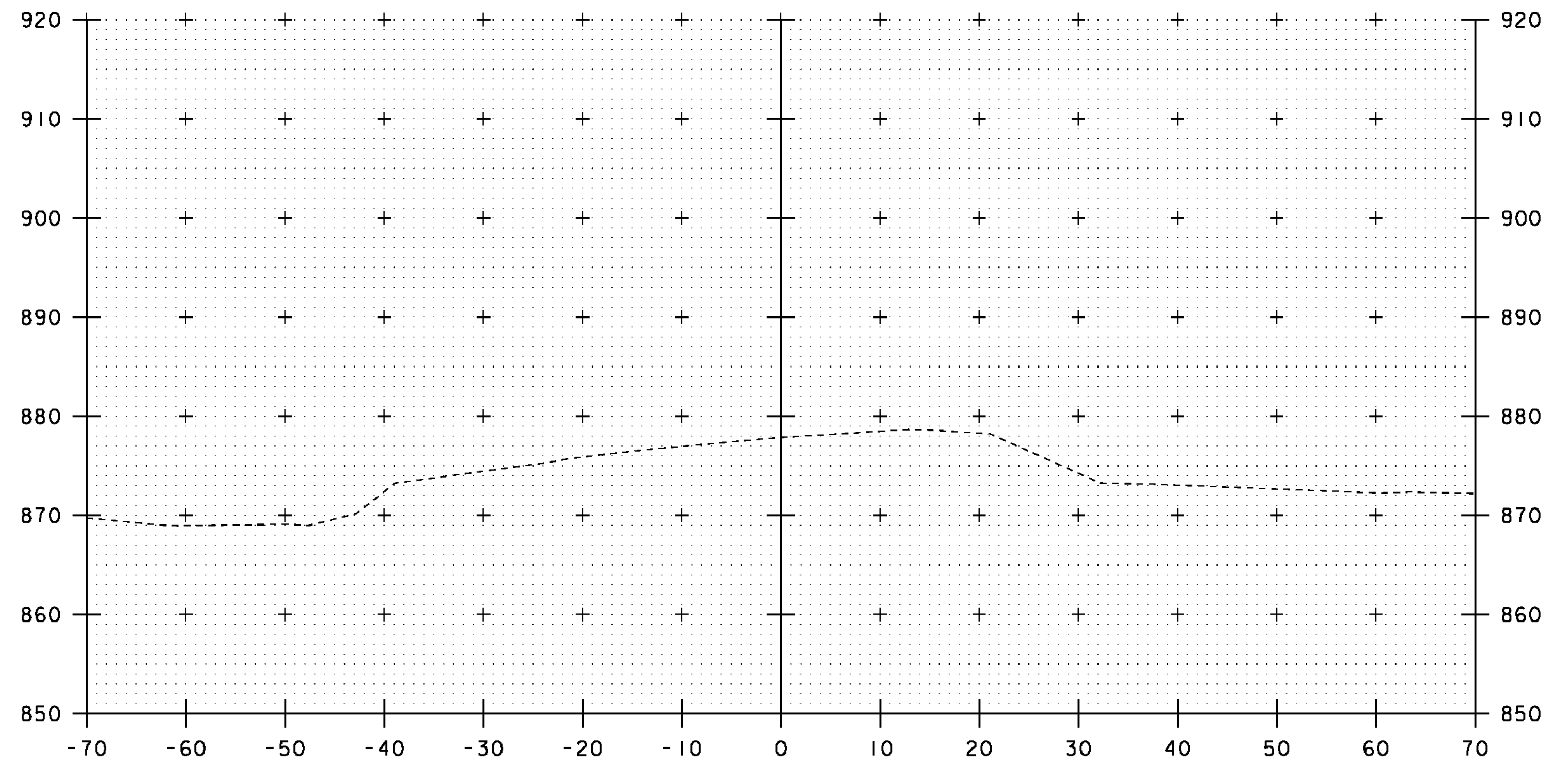
BEGIN PERMANENT STEEL SHEET PILING  
STA 4+90.0 LT

PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420xsl.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 35 OF 54
DESIGNED BY: G. ROY	
VT I2A CROSS SECTIONS (4)	

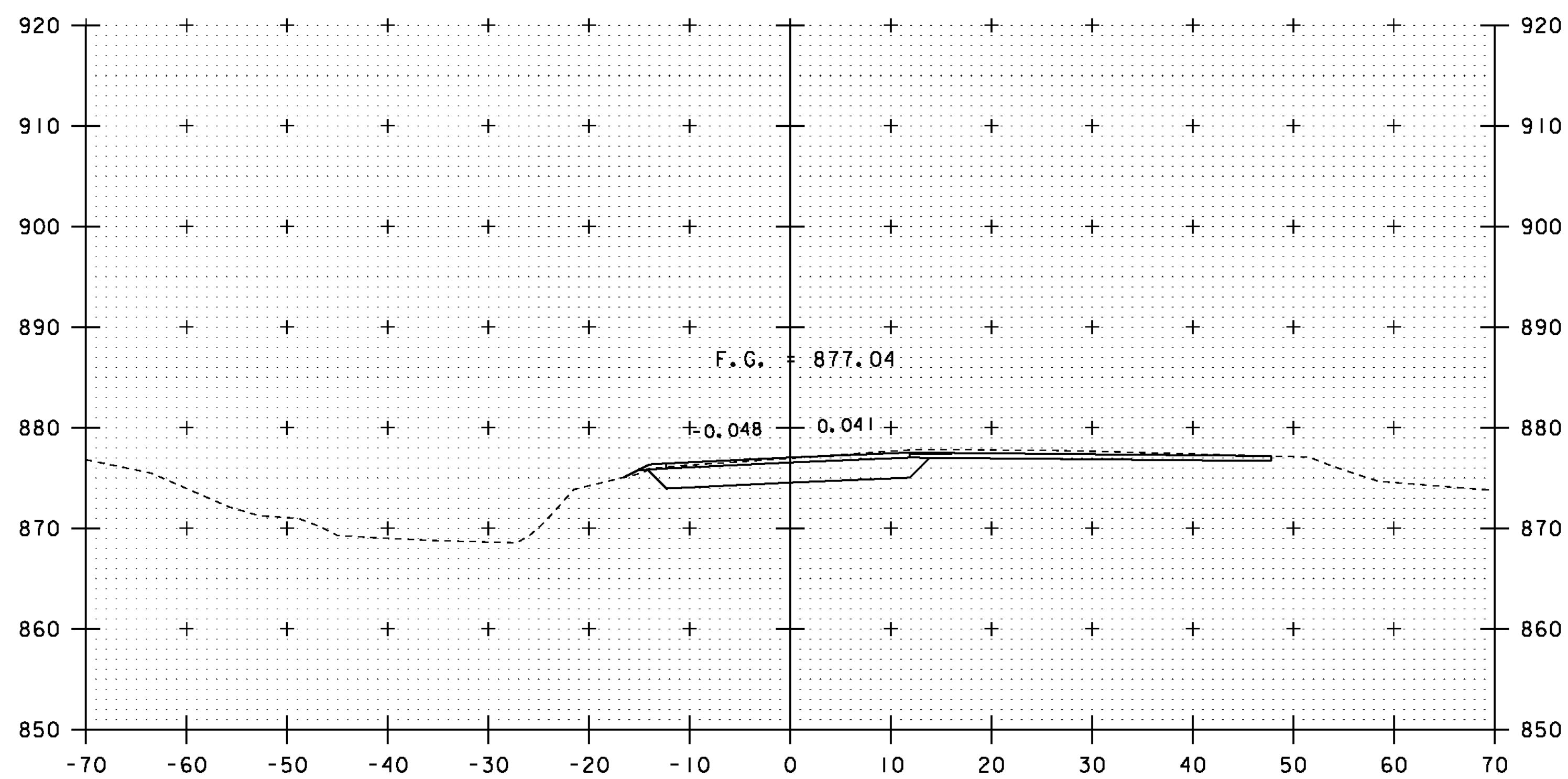
STA. 5+00 TO STA. 5+75



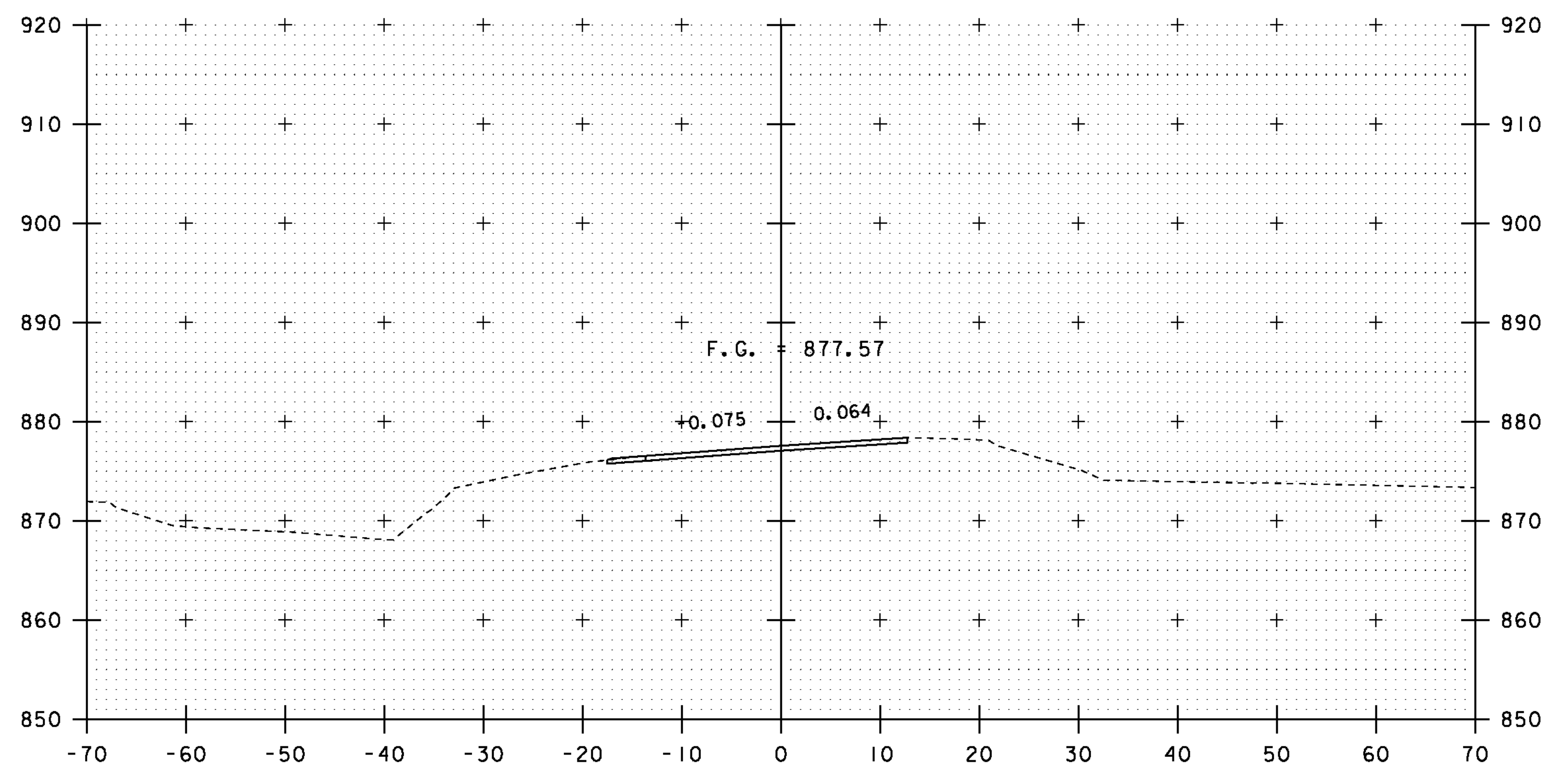
6+25



6+75



6+00



6+50

END PRECAST CONCRETE STRUCTURE (WINGWALL NO. 3)  
STA 5+99.30 LT  
END PERMANENT STEEL SHEET PILING  
STA 6+00.0 LT

END PROJECT  
BEGIN APPROACH  
STA 6+00.00

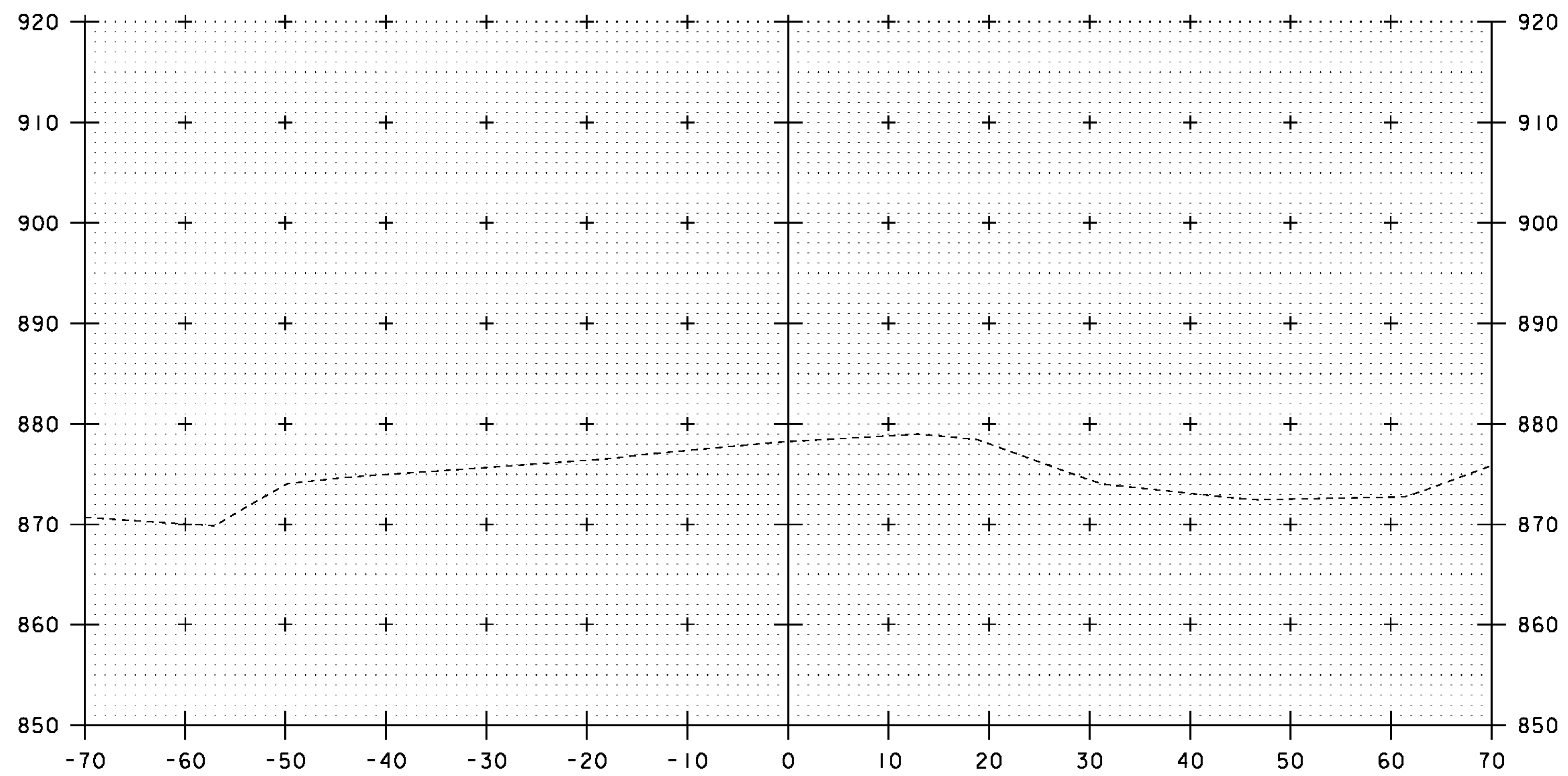
END APPROACH  
MATCH EXISTING  
STA 6+50.00

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

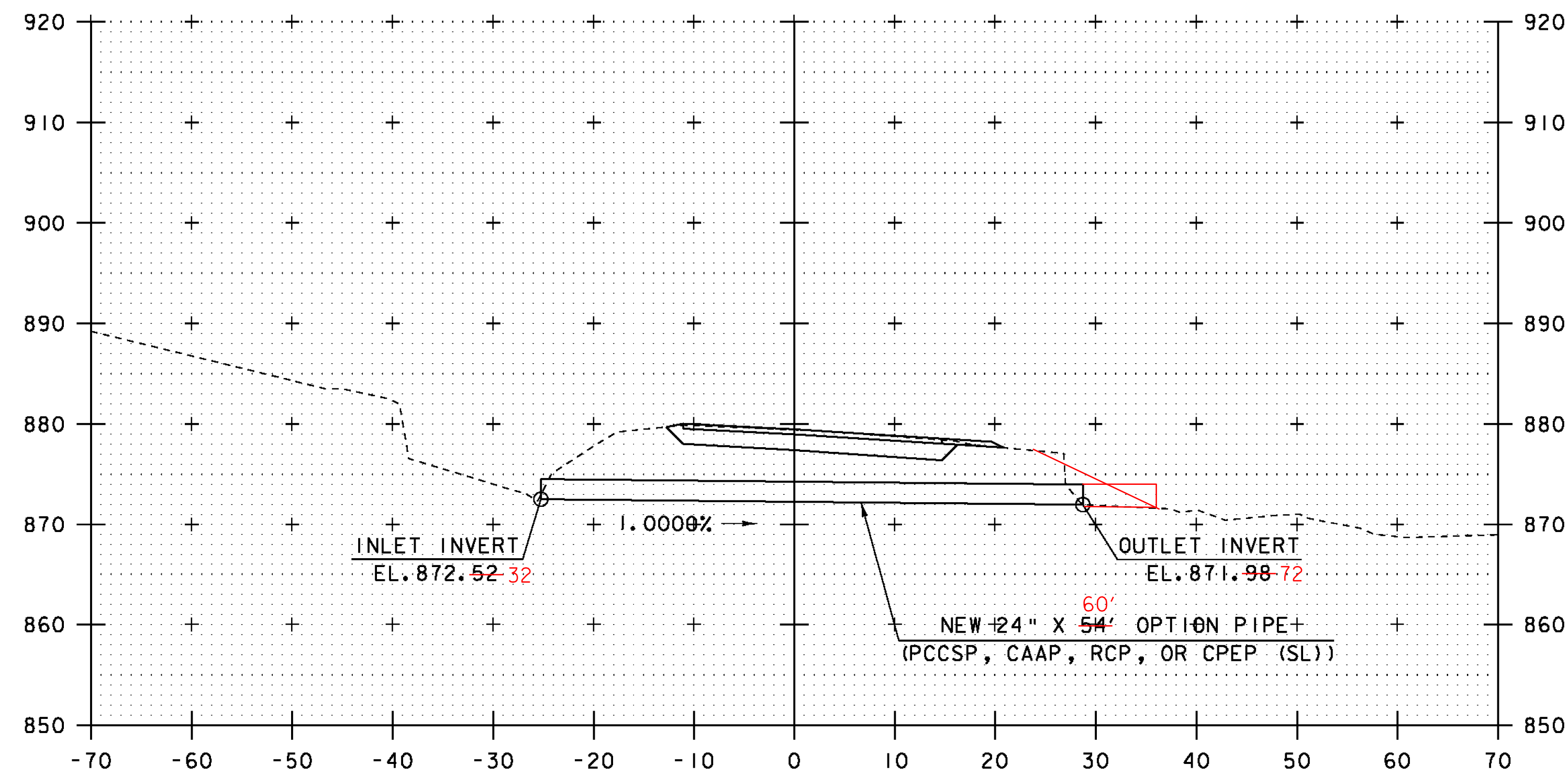
FILE NAME: sl0c420xsl.dgn  
PROJECT LEADER: C. P. WILLIAMS  
DESIGNED BY: G. ROY  
VT I2A CROSS SECTIONS (5)

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

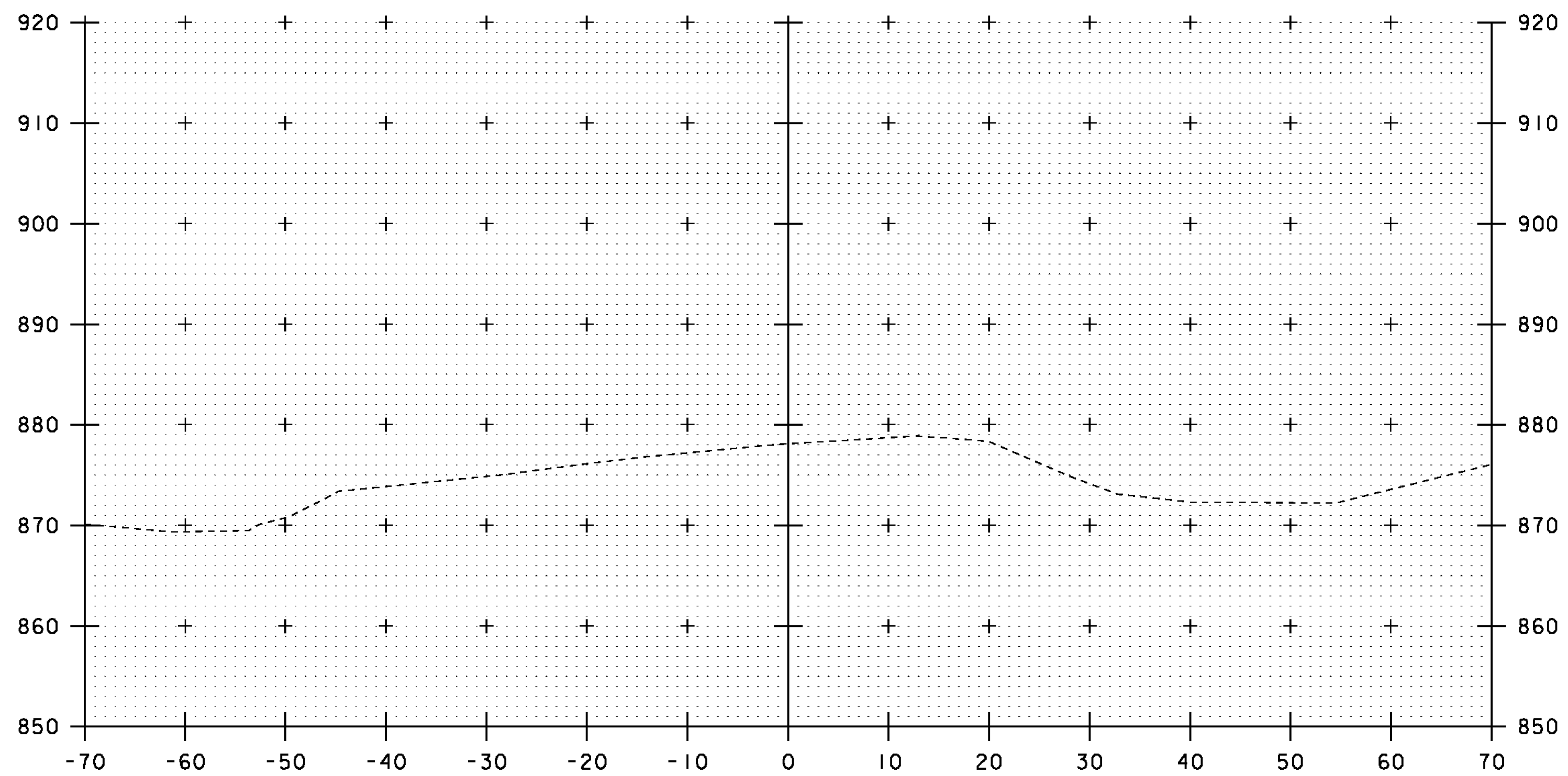
STA. 6+00 TO STA. 6+75



7+25



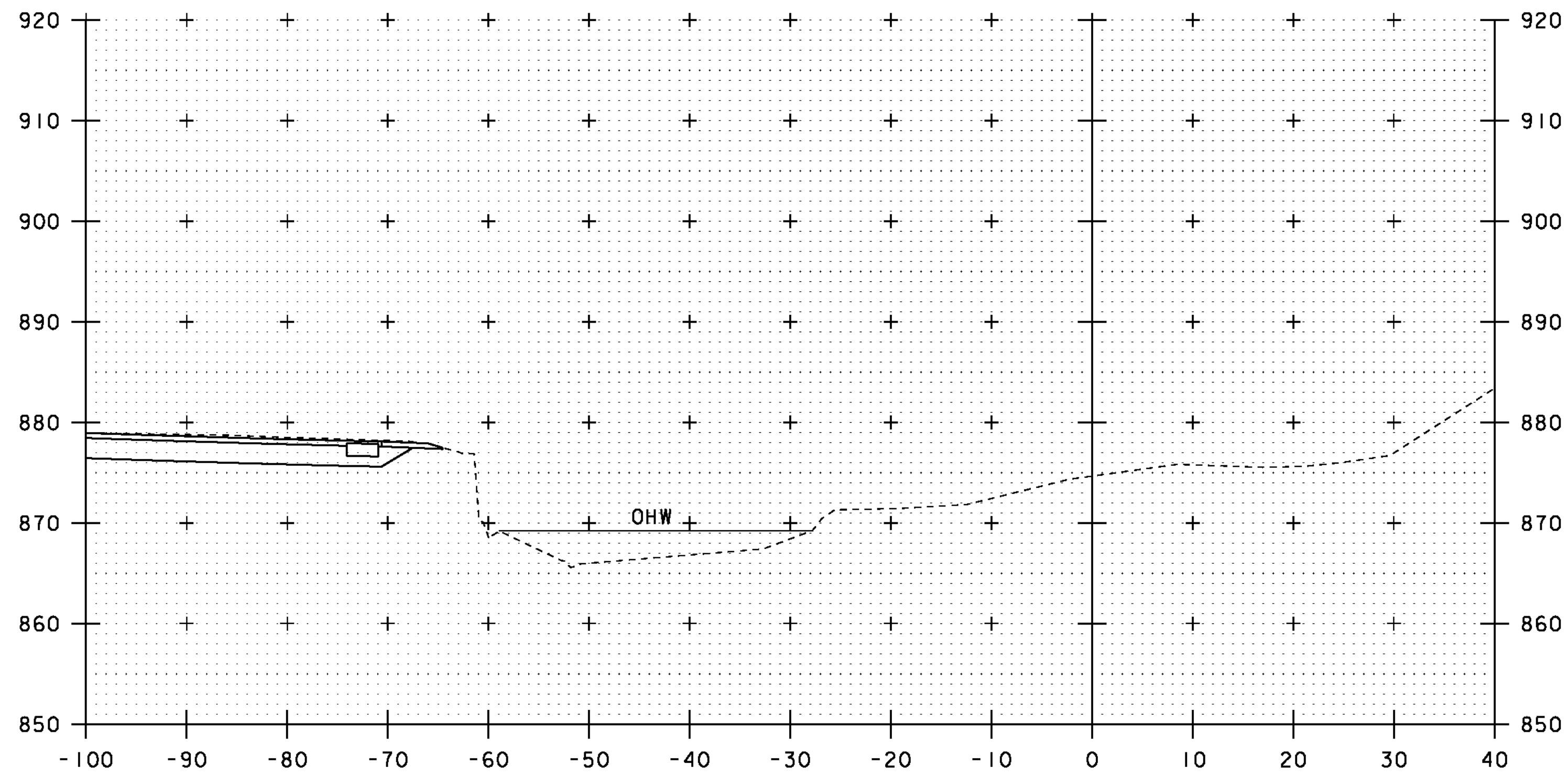
2+89.2, SKEW 7° 48' LT



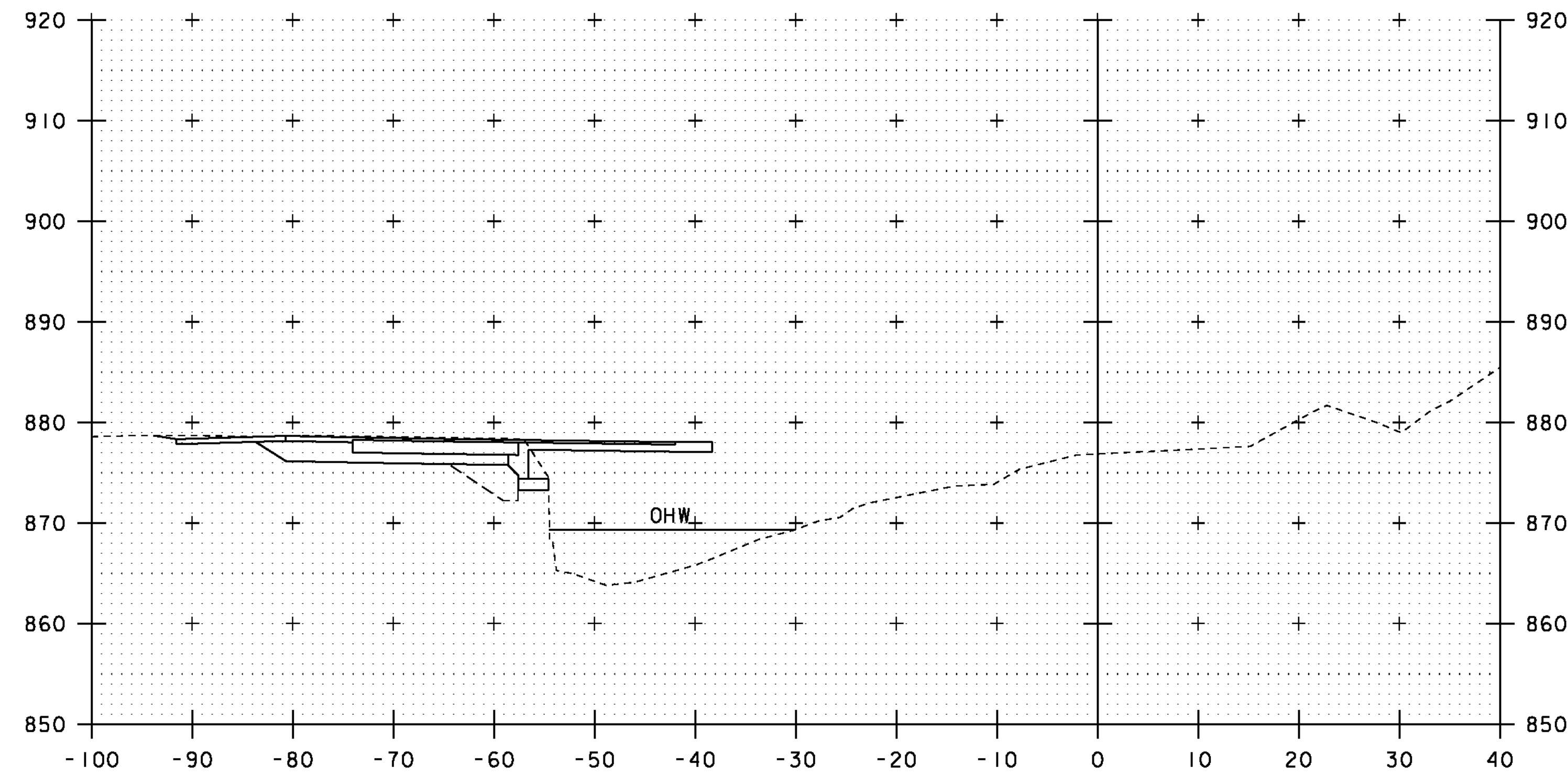
7+00

STA. 7+00 TO STA. 7+25

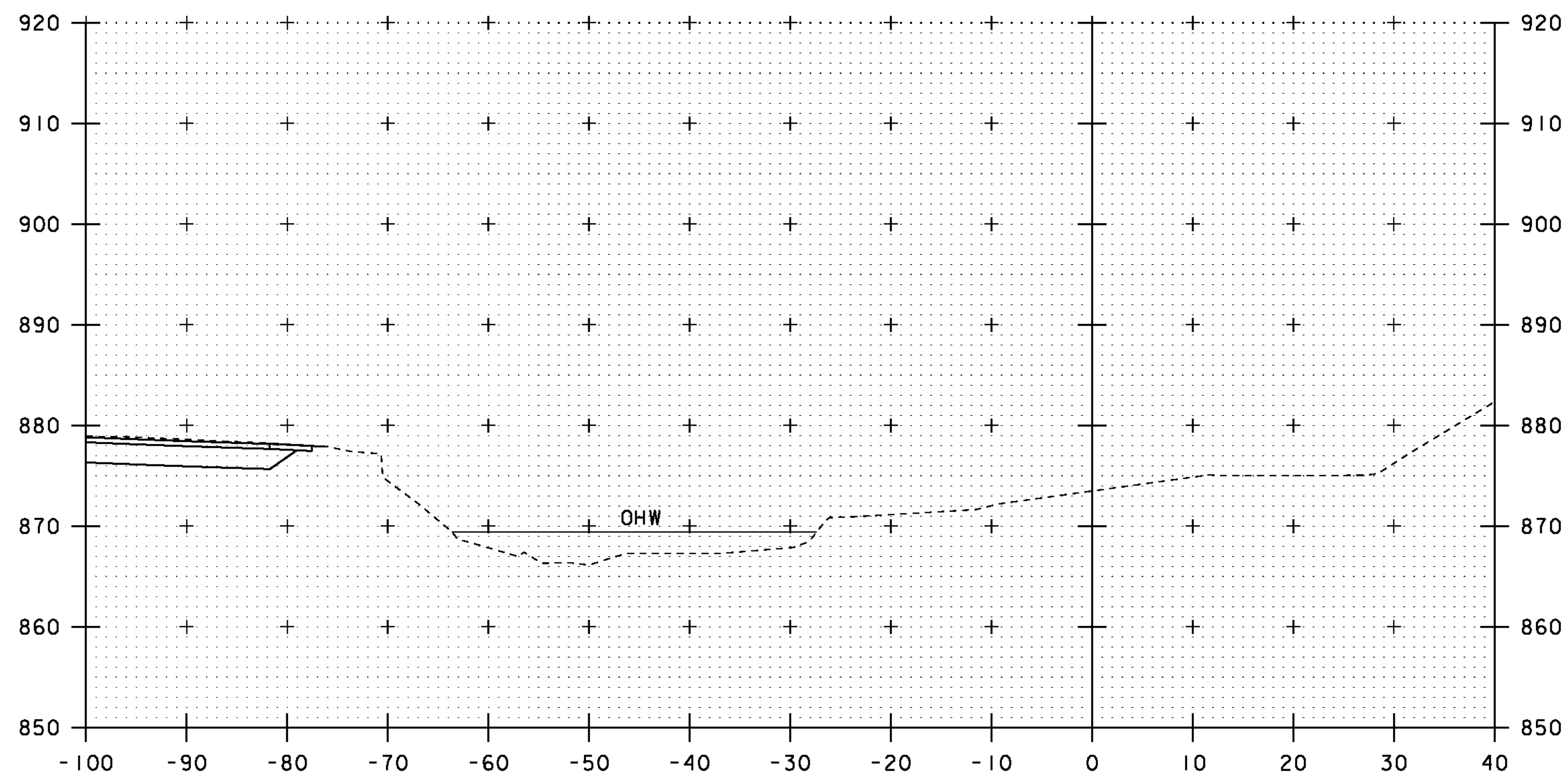
PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: sl0c420xsl.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
VT 12A CROSS SECTIONS (6)	SHEET 37 OF 54



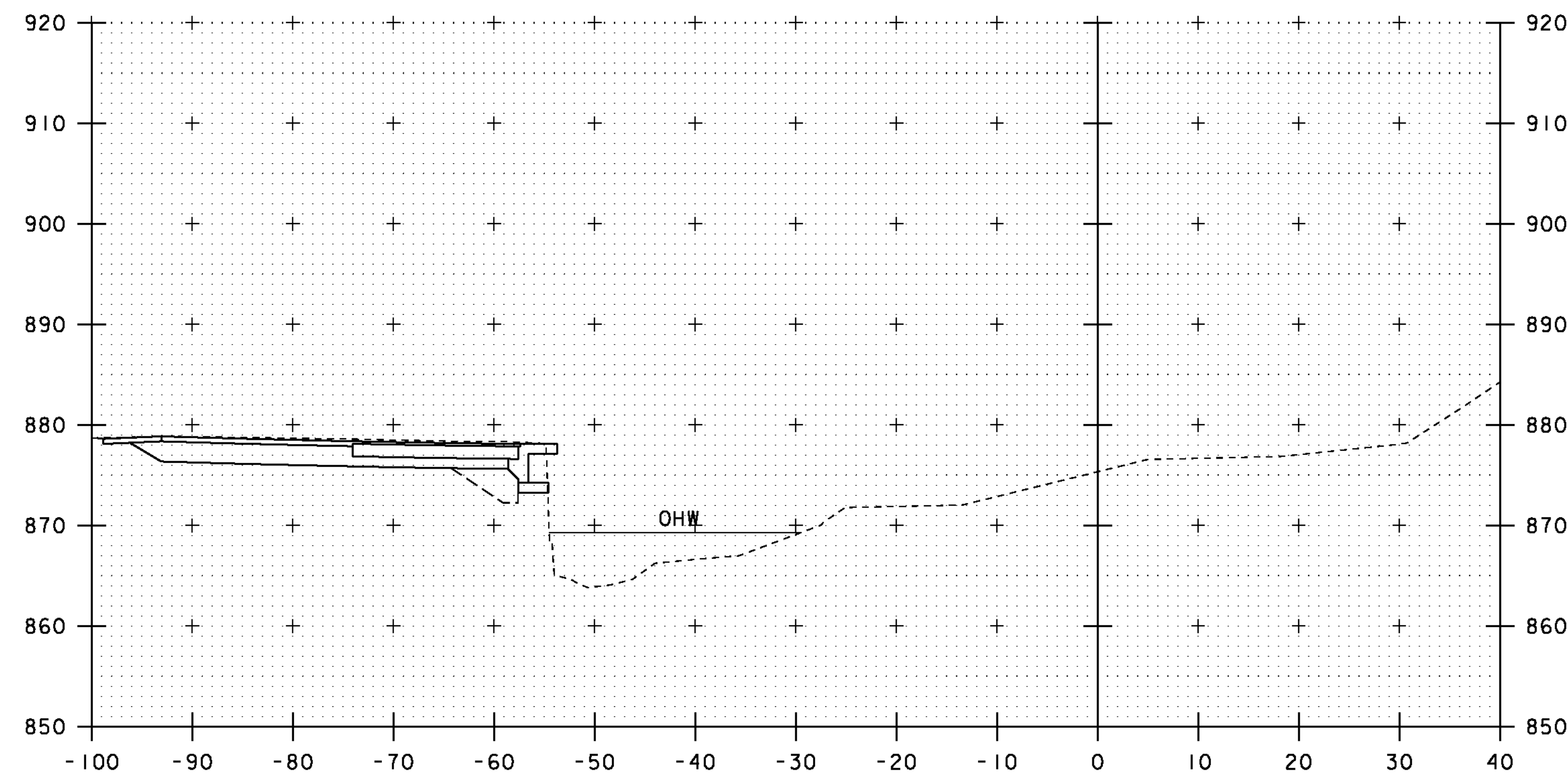
50+40



50+60



50+30



50+50



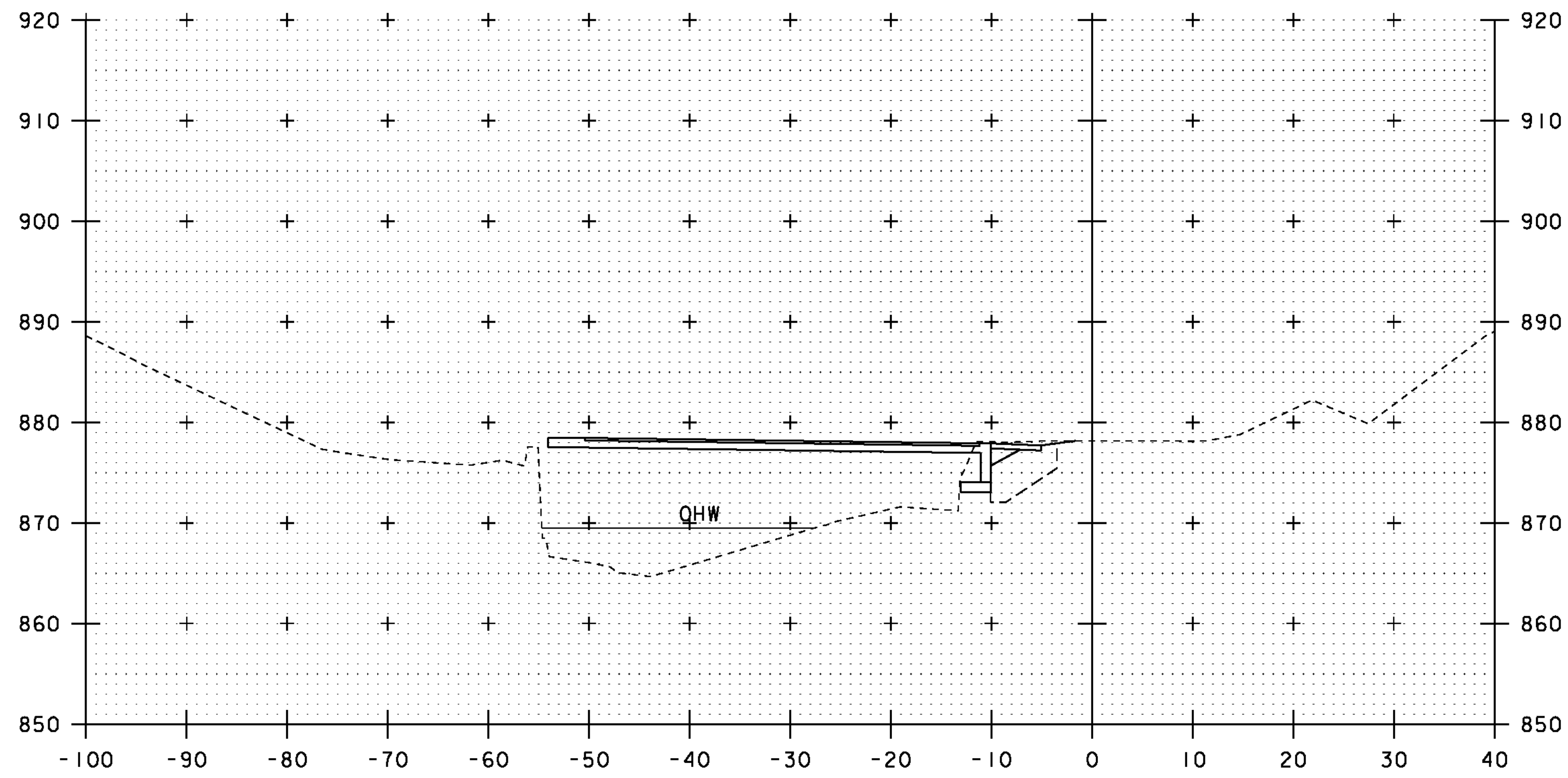
SCALE: 1" = 10'-0"

STA. 50+30 TO STA. 50+60

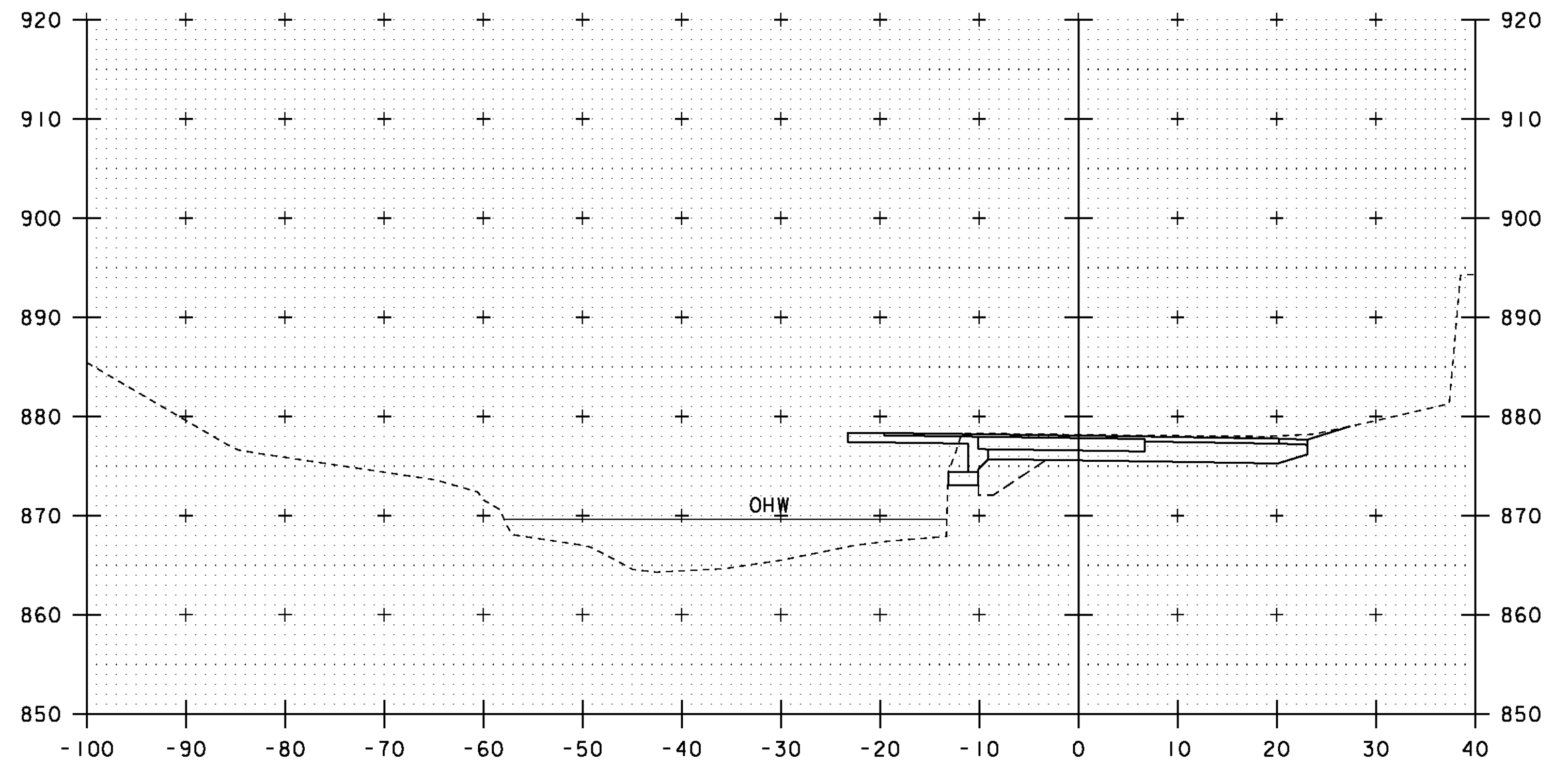
PROJECT NAME: ROXBURY  
PROJECT NUMBER: BHF 0187(8)

FILE NAME: sl0c420xsl.dgn  
PROJECT LEADER: C. P. WILLIAMS  
DESIGNED BY: G. ROY  
CHANNEL LINE CROSS SECTIONS (1)

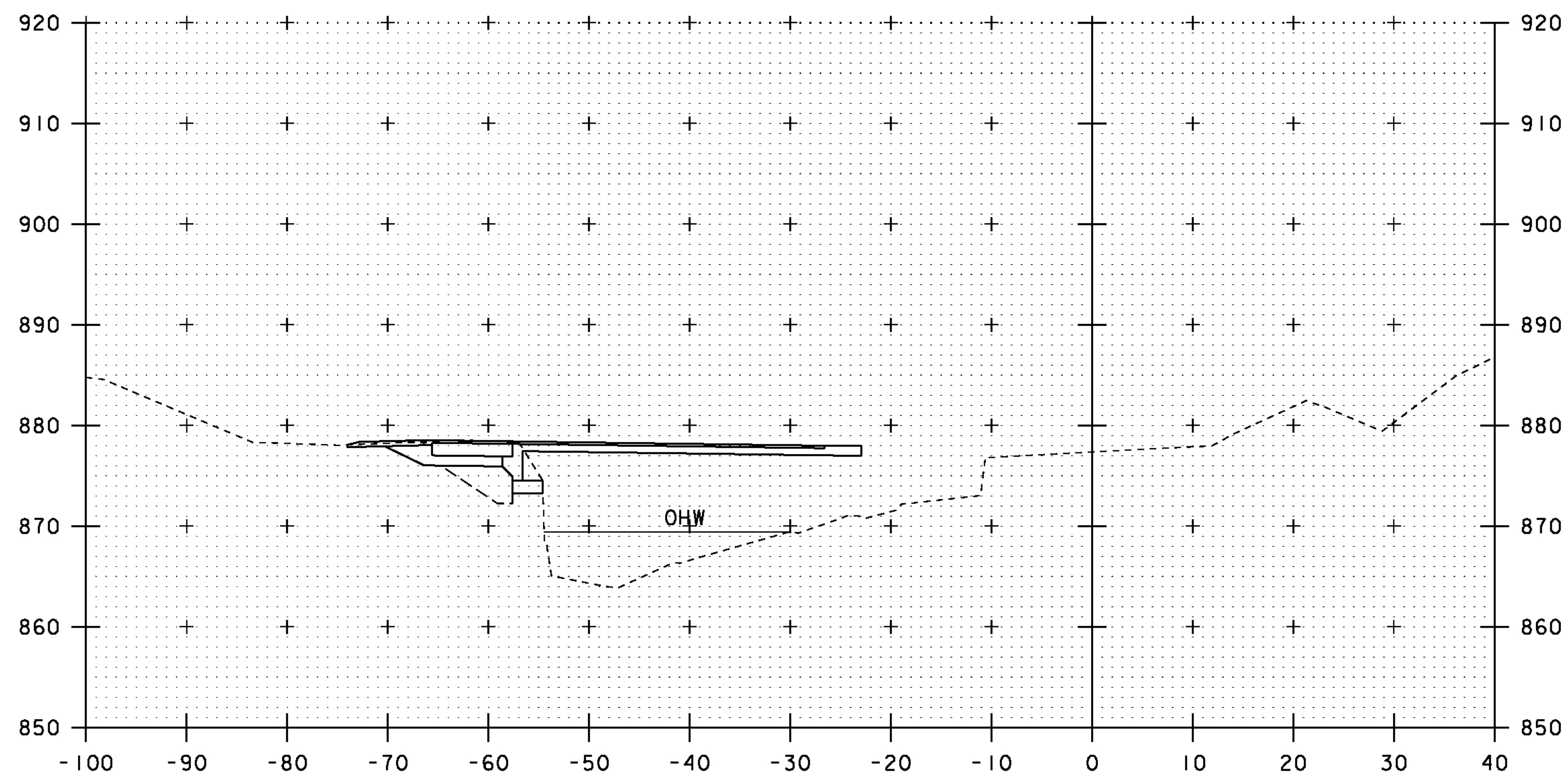
PLOT DATE: 21-SEP-2011  
DRAWN BY: G. ROY  
CHECKED BY: T. FILLBACH  
SHEET 38 OF 54



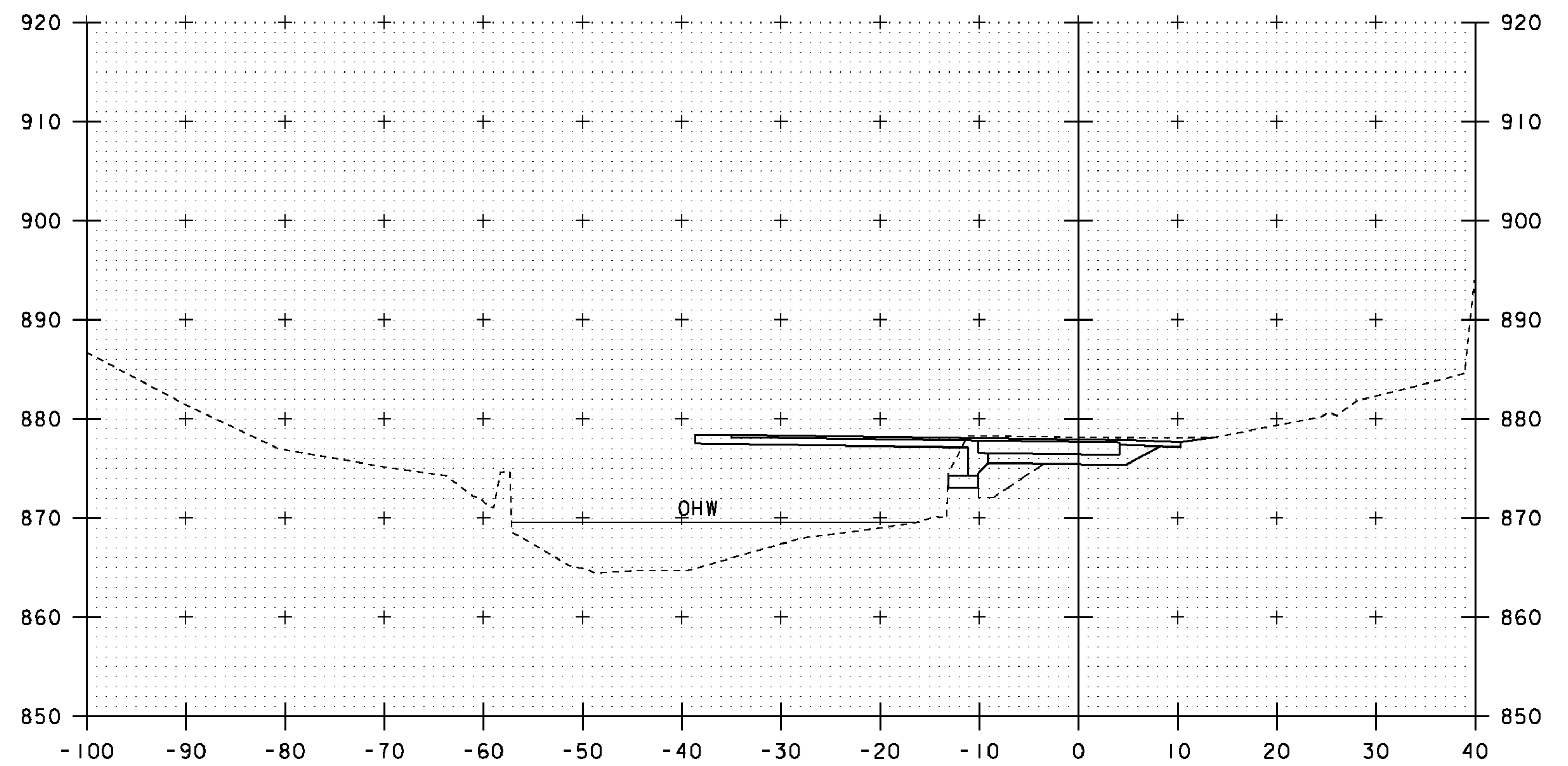
50+80



51+00



50+70



50+90

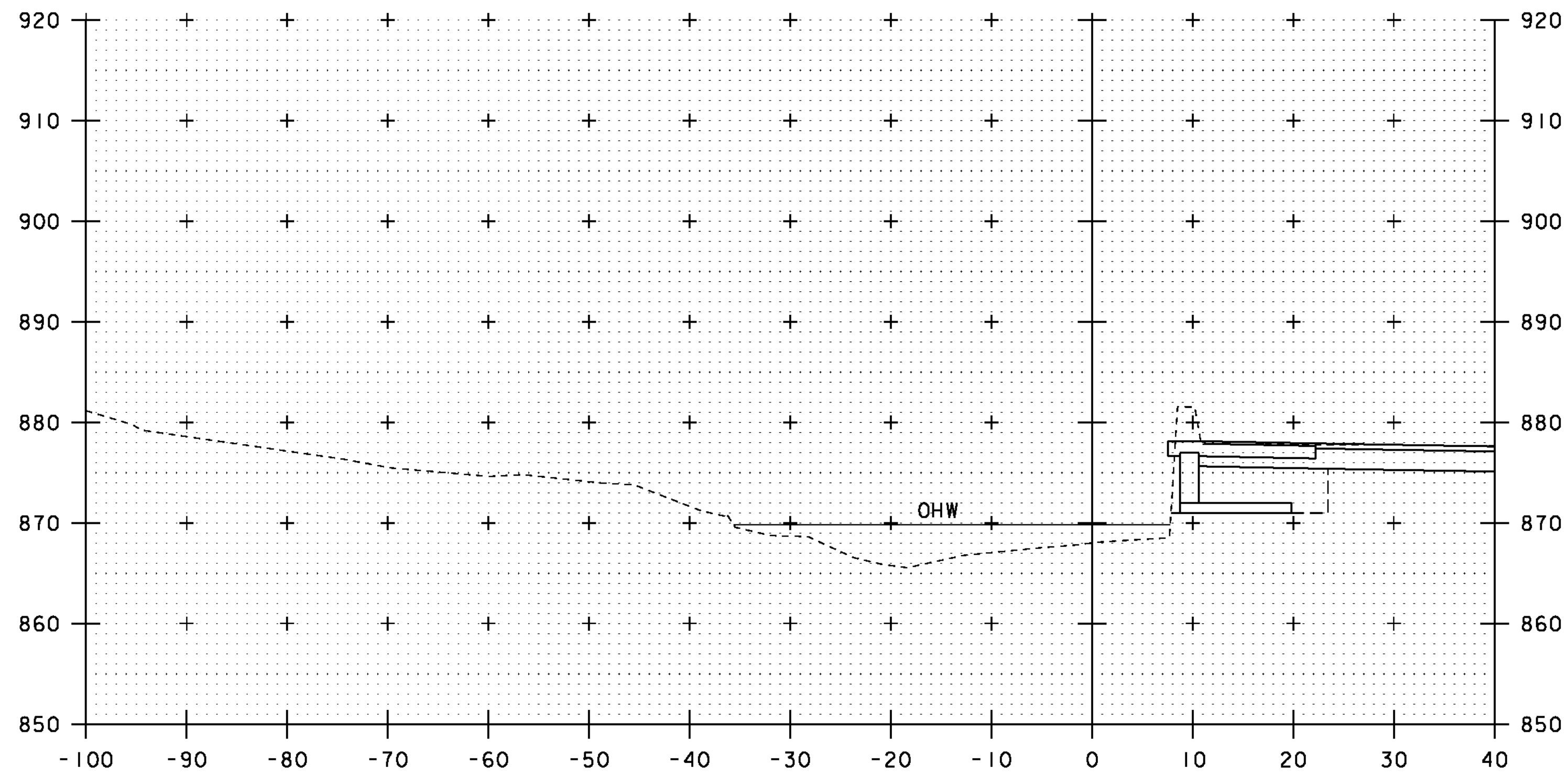
10 0 10  
 SCALE: 1" = 10'-0"

STA. 50+70 TO STA. 51+00

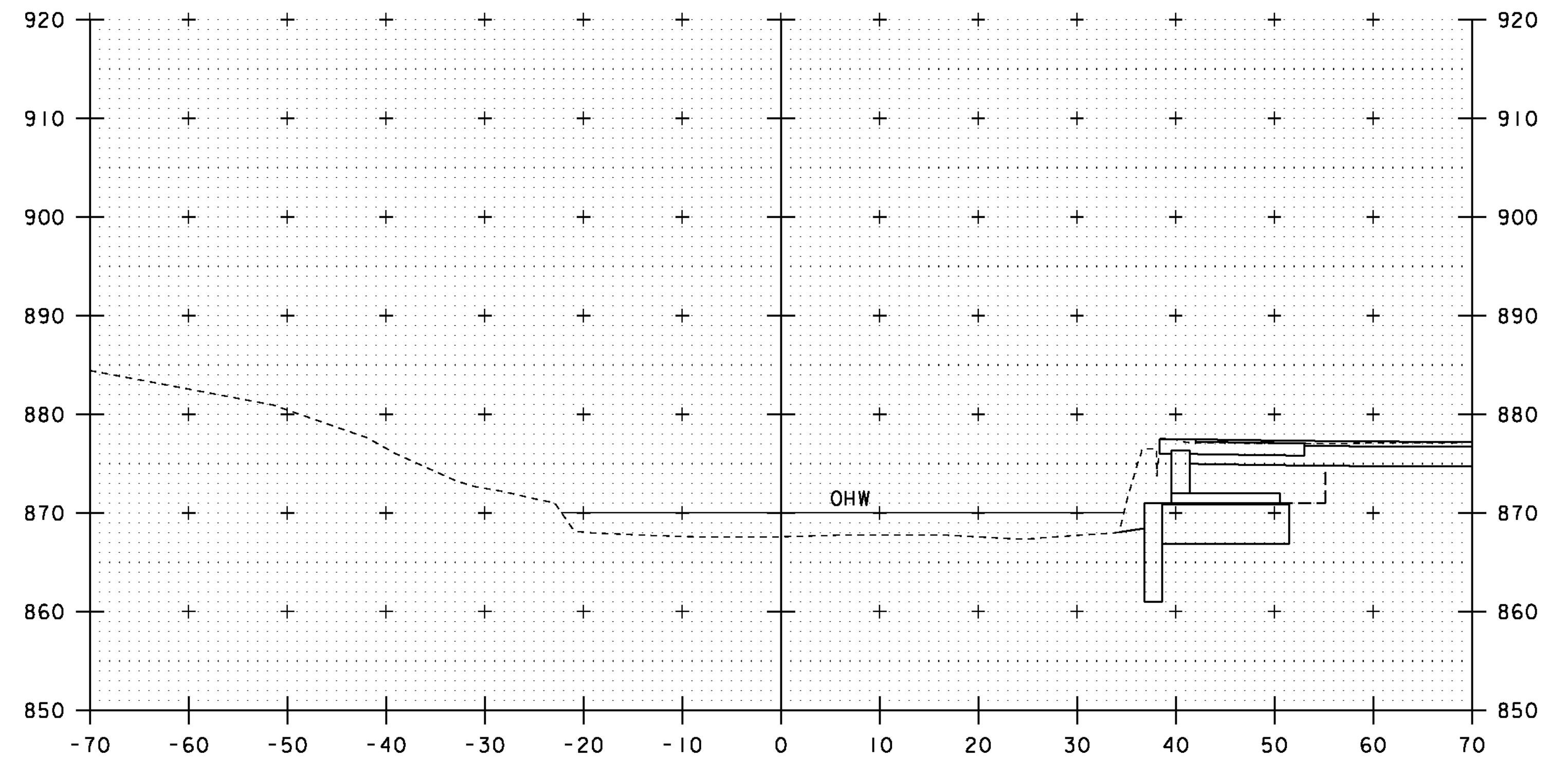
PROJECT NAME: ROXBURY  
 PROJECT NUMBER: BHF 0187(8)

FILE NAME: sl0c420xsl.dgn  
 PROJECT LEADER: C. P. WILLIAMS  
 DESIGNED BY: G. ROY  
 CHANNEL LINE CROSS SECTIONS (2)

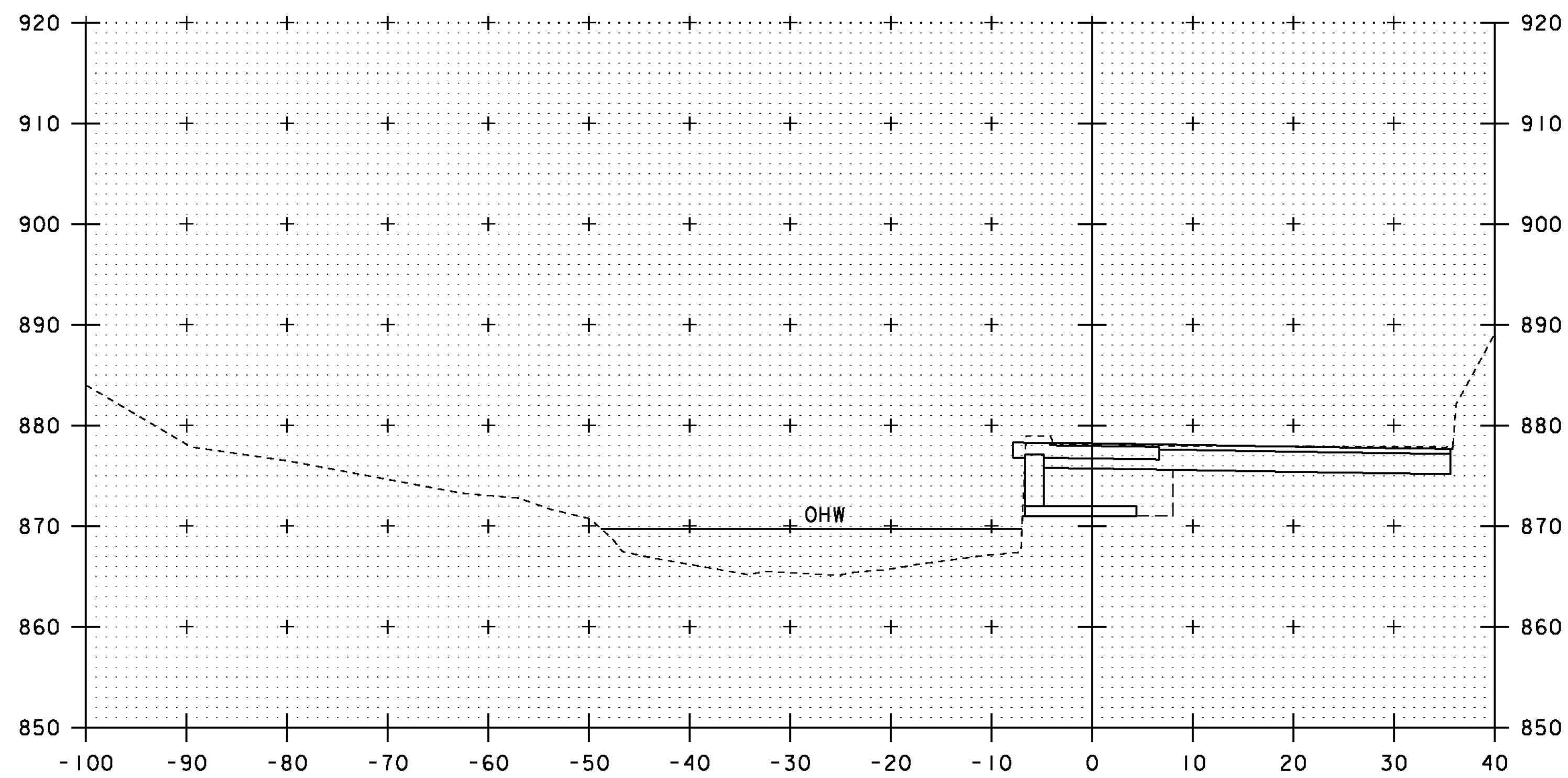
PLOT DATE: 21-SEP-2011  
 DRAWN BY: G. ROY  
 CHECKED BY: T. FILLBACH  
 SHEET 39 OF 54



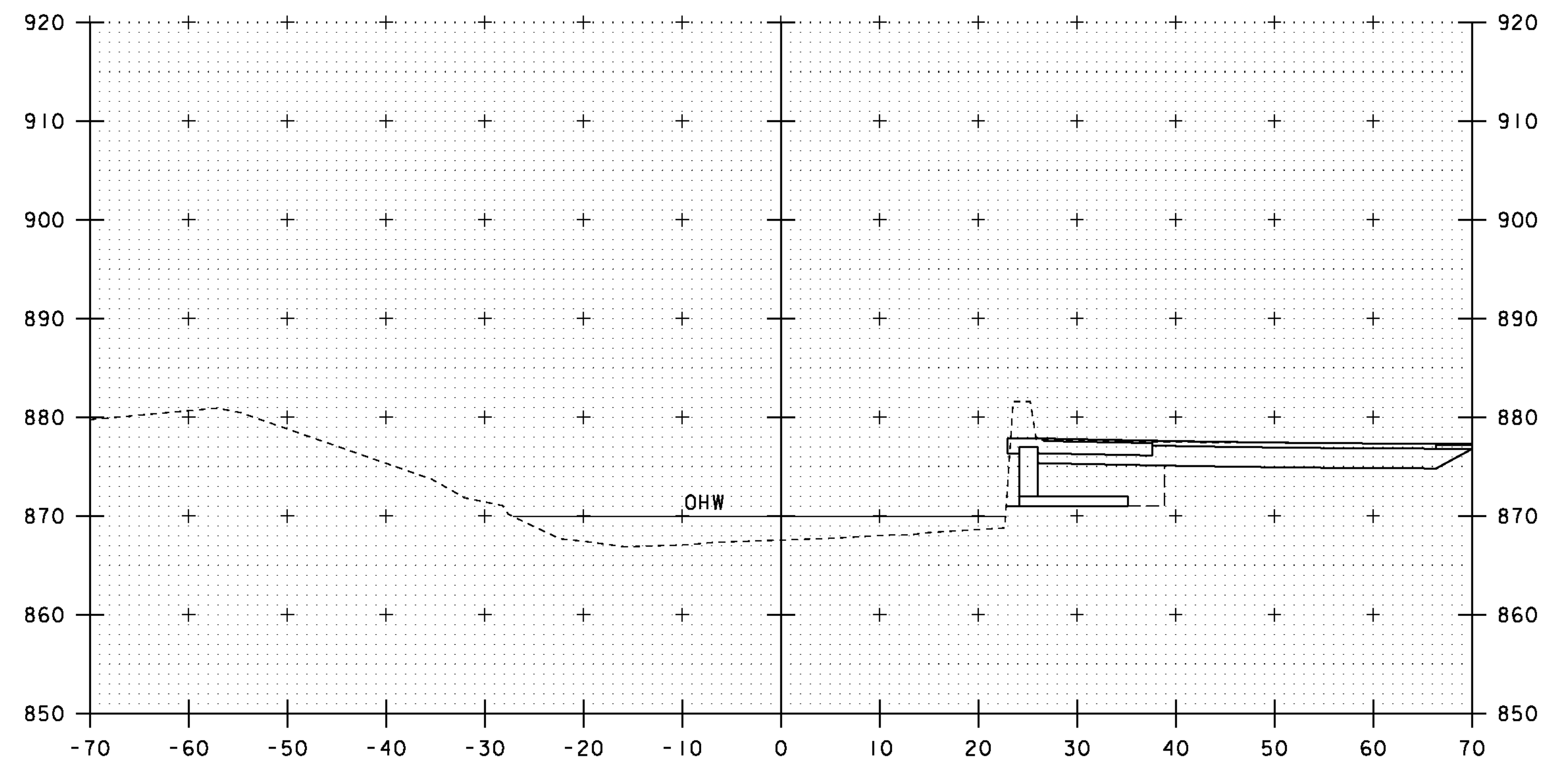
51+20



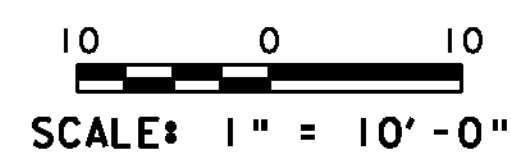
51+40



51+10



51+30



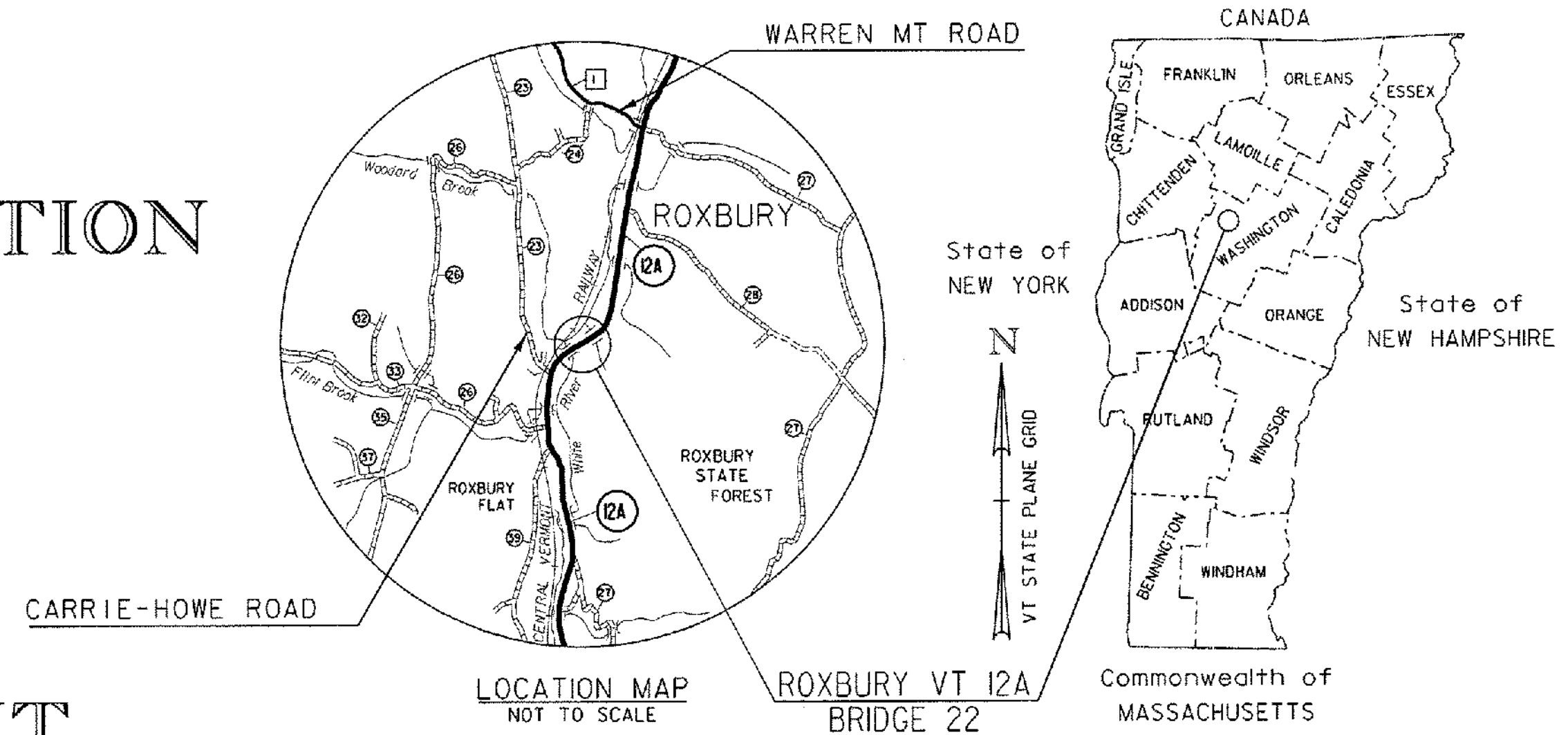
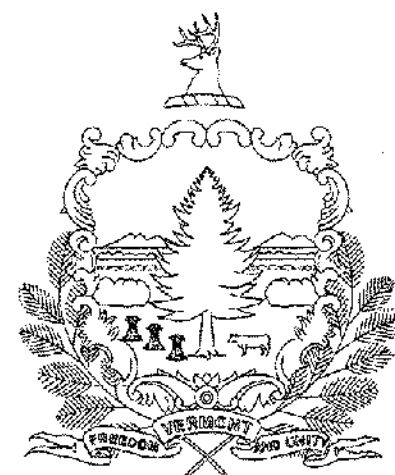
STA. 51+10 TO STA. 51+40

PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420xsl.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 40 OF 54
DESIGNED BY: G. ROY	
CHANNEL LINE CROSS SECTIONS (3)	

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

BEGIN BRIDGE  
STA 2+69.20  
FG = 997.36

END APPROACH  
BEGIN PROJECT  
STA 2+40.00

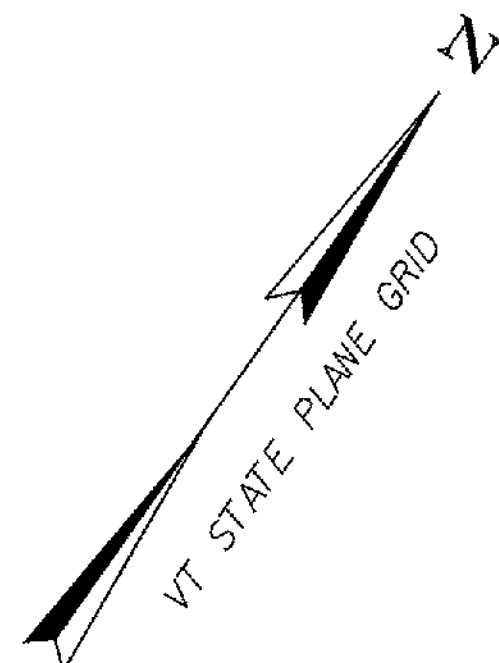
BEGIN APPROACH  
MATCH EXISTING  
STA 2+10.00

END APPROACH  
MATCH EXISTING  
STA 3+65.00

END PROJECT  
BEGIN APPROACH  
STA 3+35.00

END BRIDGE  
STA 3+02.50  
FG = 997.83

VT 12A STA 2+85.97 =  
CHANNEL LINE STA 11+05.45  
 $\Delta = 51^\circ \text{ RT}$



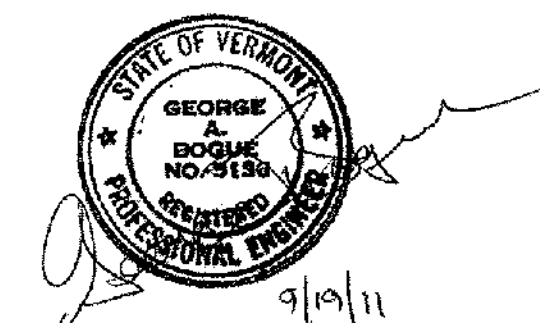
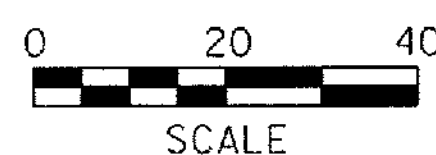
QUALITY ASSURANCE PROGRAM: LEVEL 2

### 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	
TOP OF CUT	
TOE OF SLOPE	

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

DATUM  
VERTICAL NAVD 88  
HORIZONTAL NAD 83 (96)



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.



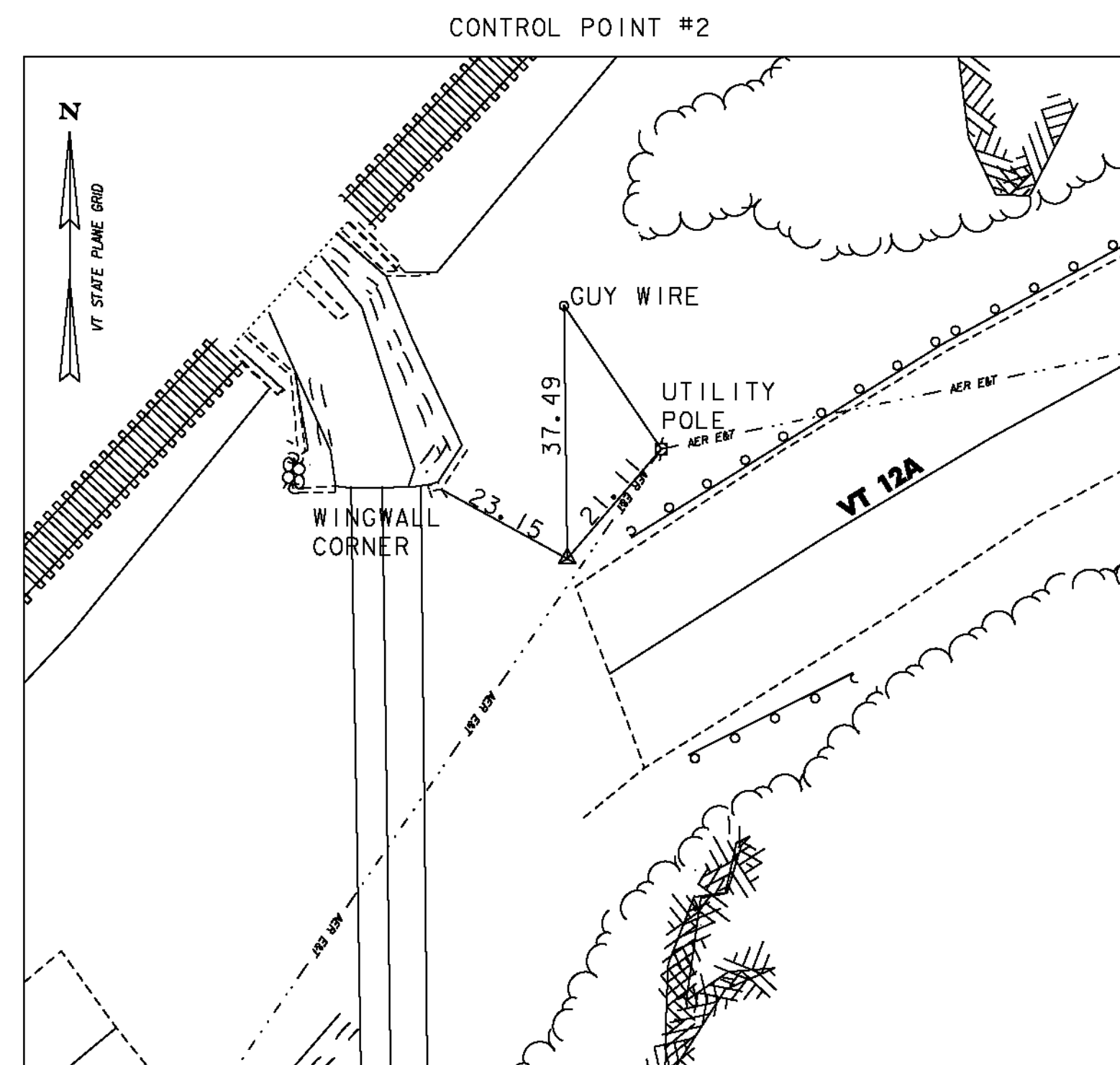
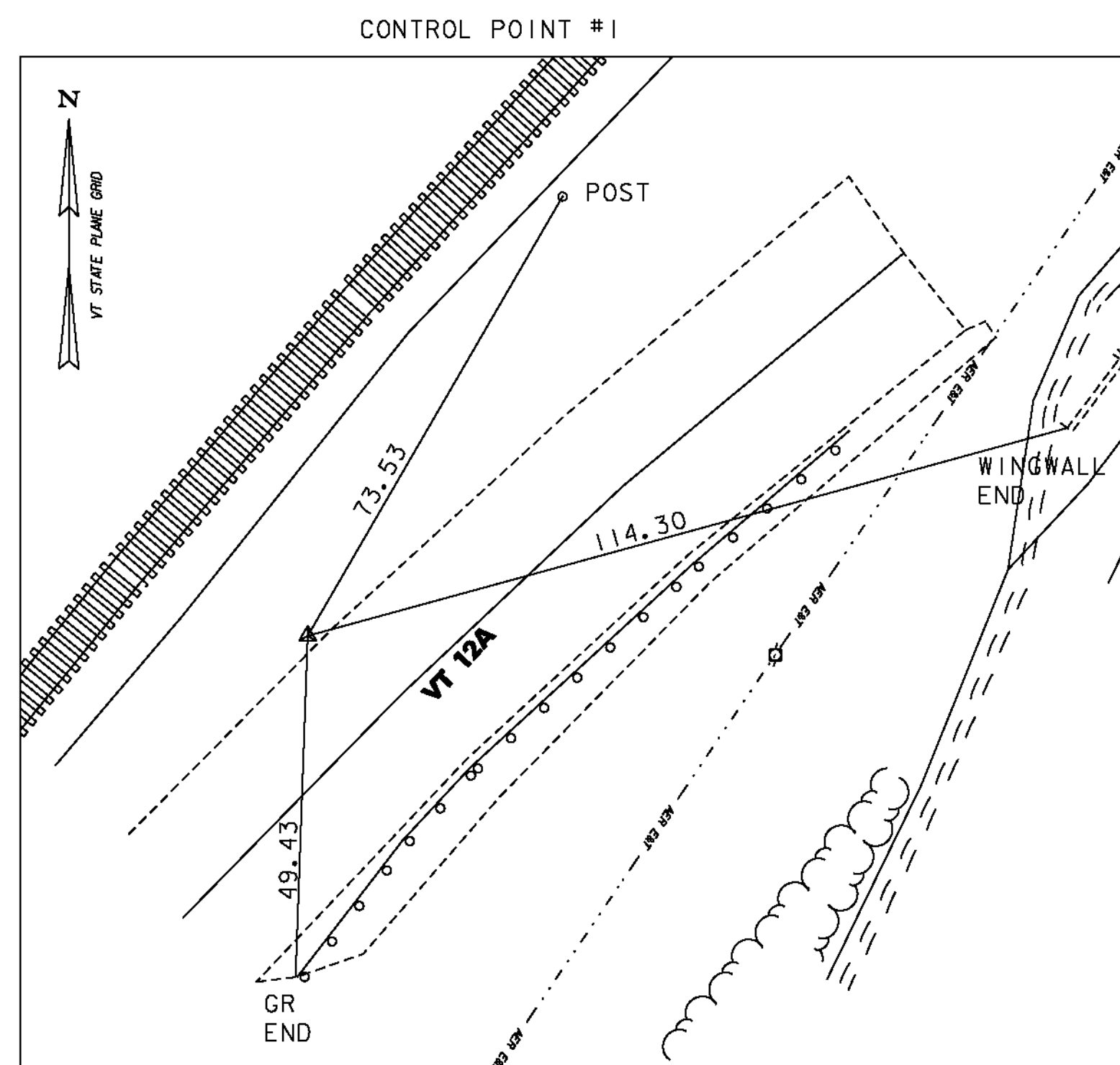
PROJECT NAME: ROXBURY  
PROJECT NUMBER: ER 0187(9)

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

ALIGNMENT DATA



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'

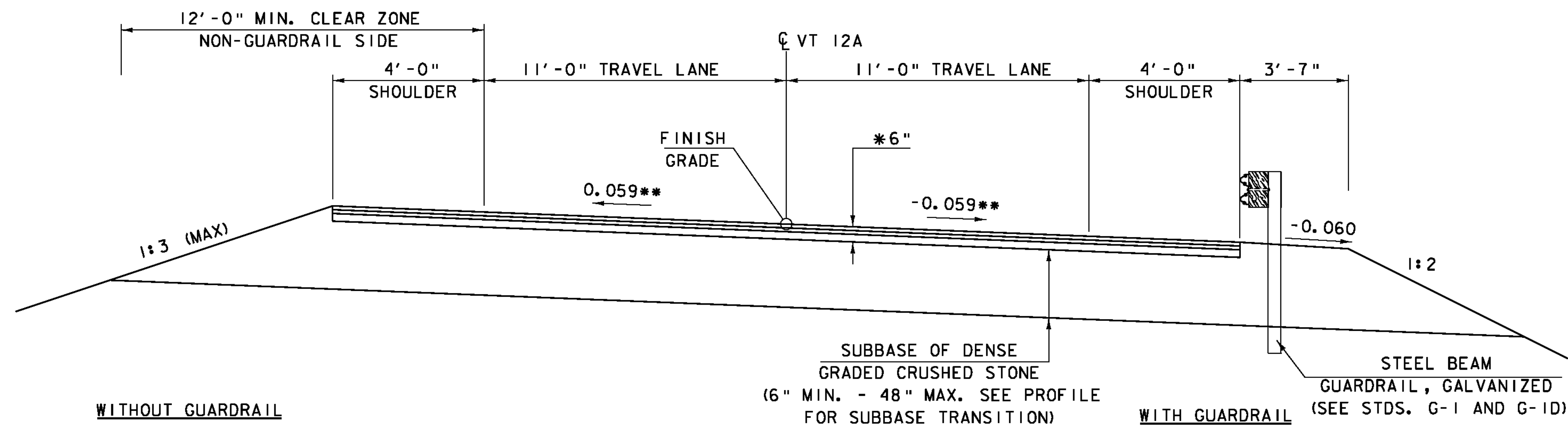
VERMONT 12A			
	STATION	NORTHING	EASTING
POB	1+00.00	574030.3883	1576253.2640
PC	1+16.68	574042.3200	1576264.9240
Tangent Direction: N 44°20'24.10" E			
Tangent Length: 16.68			
PC	1+16.68	574042.3200	1576264.9240
PI	2+65.50	574148.7520	1576368.9318
CC	573343.4049	1576980.1286	
PT	4+12.14	574220.2873	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

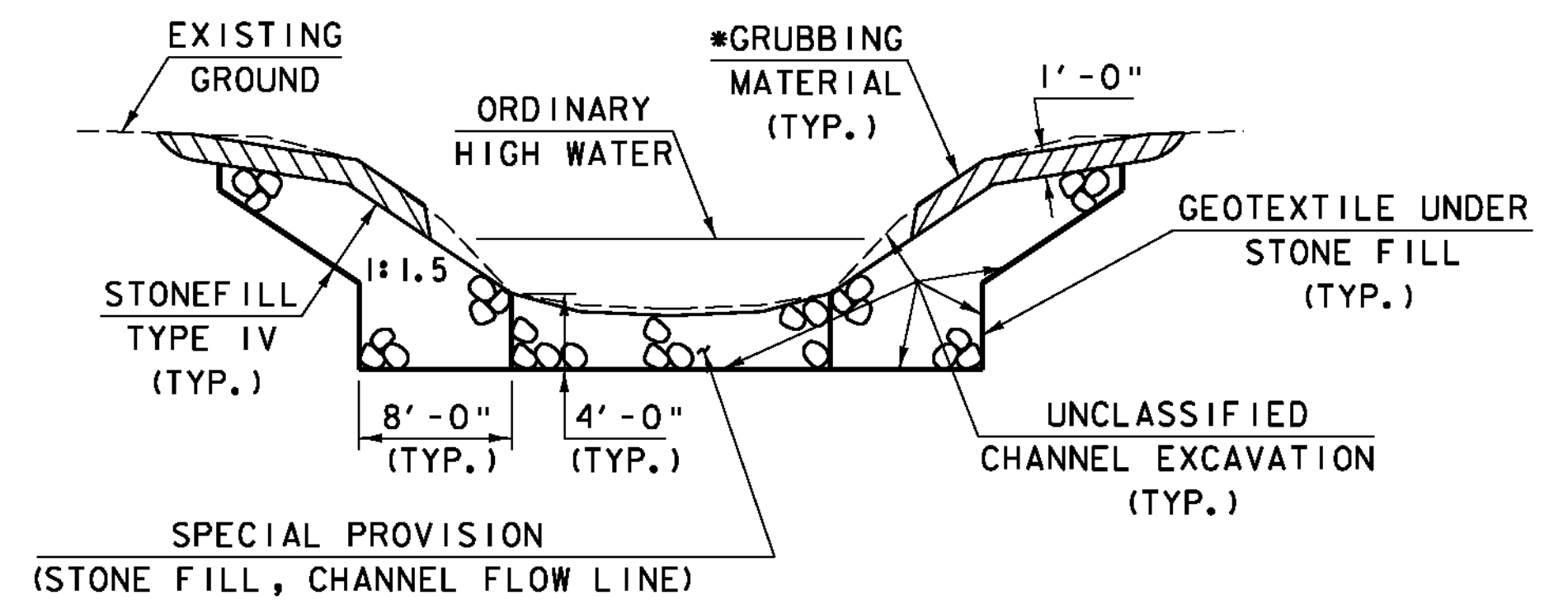


PROJECT NAME: ROXBURY  
 PROJECT NUMBER: ER 0187(9)  
 FILE NAME: ...drawing\plotfiles\tie.dgn PLOT DATE: 9/21/2011  
 PROJECT LEADER: G. BOGUE DRAWN BY: JTS/ISM  
 DESIGNED BY: M. CHENETTE CHECKED BY: G. BOGUE  
**TIE SHEET** SHEET 43 OF 54



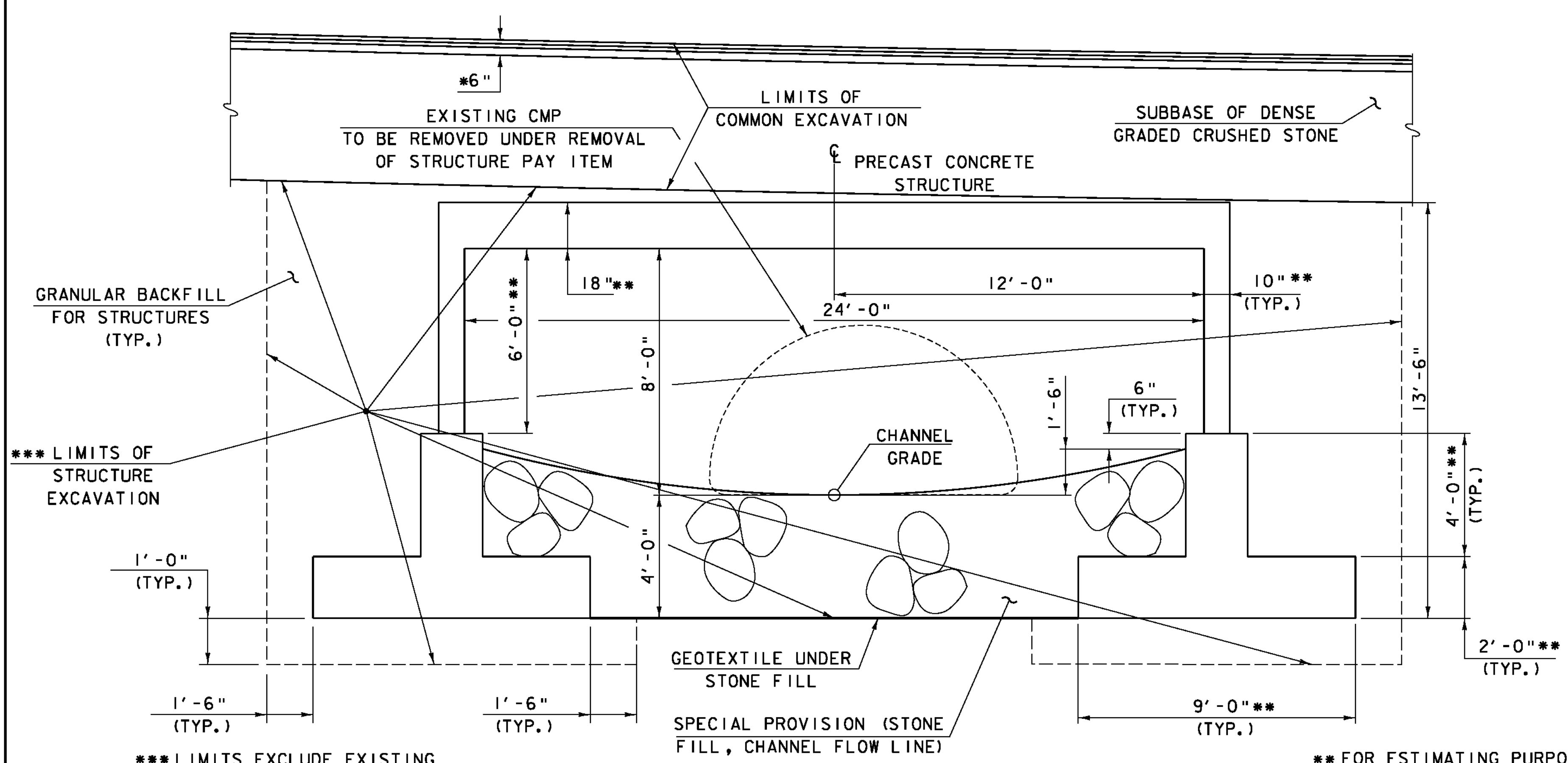
\* SEE PAVEMENT NOTE ON SHEET 42.  
 \*\* MATCH EXISTING CROSS SLOPE ON APPROACHES

**VT 12A ROADWAY TYPICAL SECTION**  
 SCALE: 3/8" = 1'-0"



**CHANNEL TYPICAL SECTION**  
 NOT TO SCALE

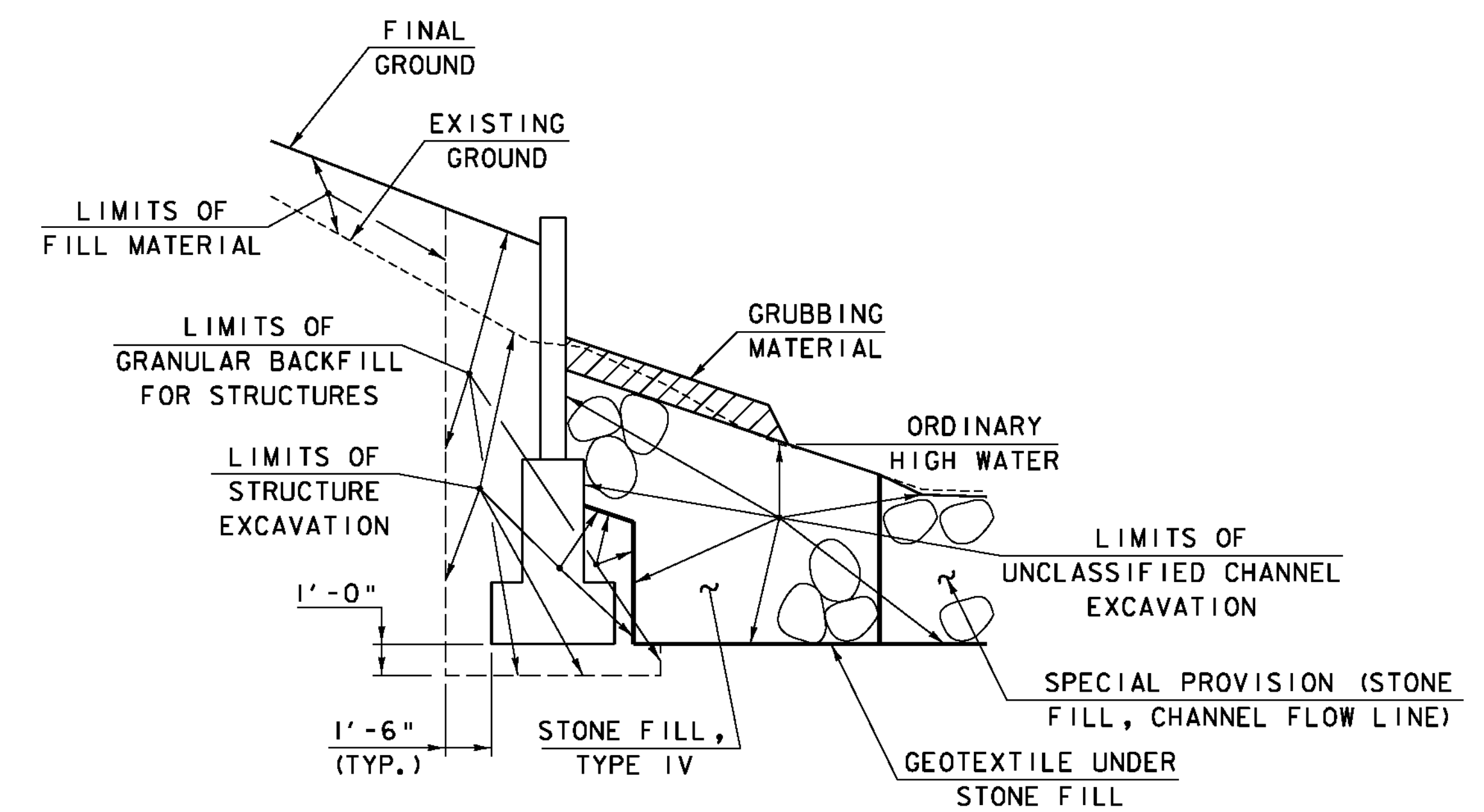
\* GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.



\*\*\* 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)

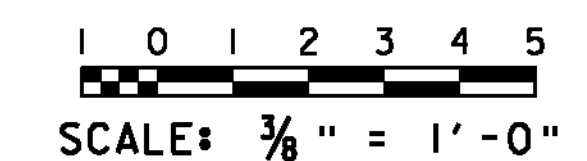
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"
GRANULAR BORROW	+/- 1"

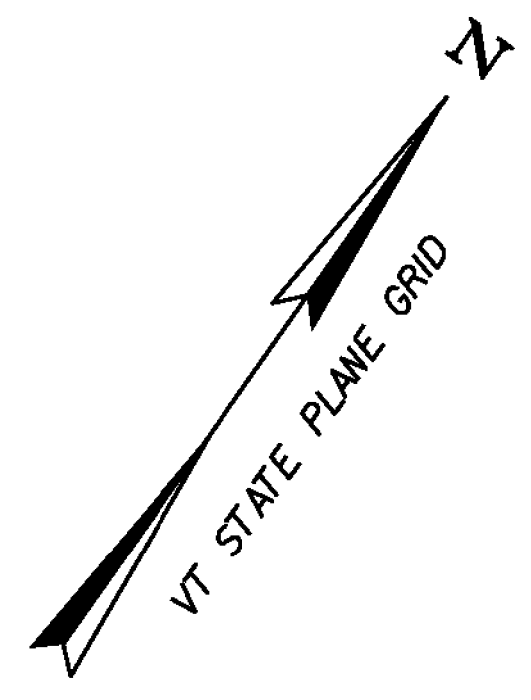
PROJECT NAME: ROXBURY  
 PROJECT NUMBER: ER 0187(9)

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

PLOT DATE: 9/21/2011  
 DRAWN BY: J. SOTER  
 CHECKED BY: G. BOGUE

**TYPICAL SECTIONS**  
 SHEET 44 OF 54





**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

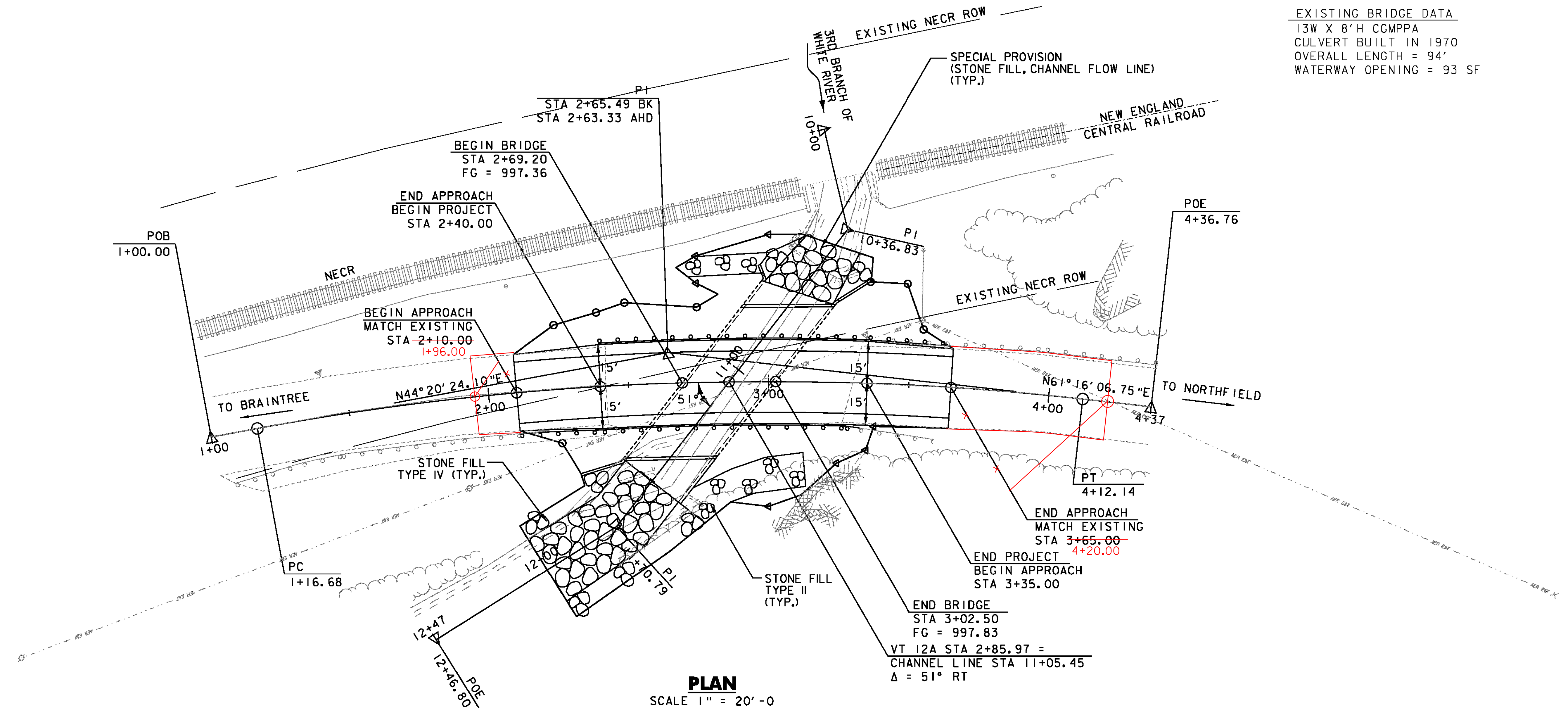
**4 INCH WHITE LINE**  
 VT 12A STA 2+10.0 - 3+65.0, 11' LT  
 VT 12A STA 2+10.0 - 3+65.0, 11' RT

**4 INCH YELLOW LINE**  
 VT 12A STA 2+10.0 - 3+65.0 C

**CURVE DATA VT 12A**  
 $\Delta = 16^\circ 55' 42.65''$  RT.  
 $D = 5^\circ 43' 46.48''$   
 $R = 1000.00'$   
 $T = 148.81'$   
 $L = 295.46'$   
 $E = 11.01'$   
 MAX. BANK = 0.059

**SPECIAL PROVISION (STONE FILL, CHANNEL FLOW LINE)**  
 CHANNEL LINE STA ~~10+65.29~~ - ~~11+50.44~~  
 10+60.25 11+50.00

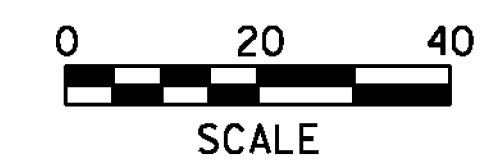
**EXISTING BRIDGE DATA**  
 13W X 8'H CMPPA  
 CULVERT BUILT IN 1970  
 OVERALL LENGTH = 94'  
 WATERWAY OPENING = 93 SF

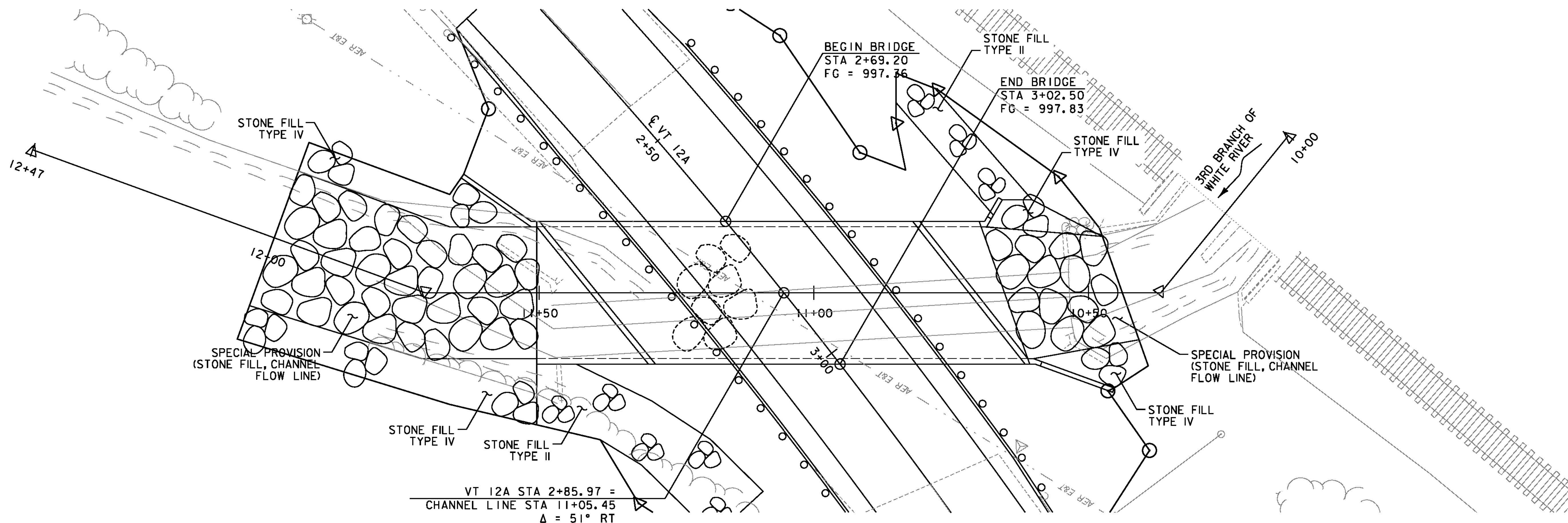


**PLAN**  
 SCALE 1" = 20' - 0

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

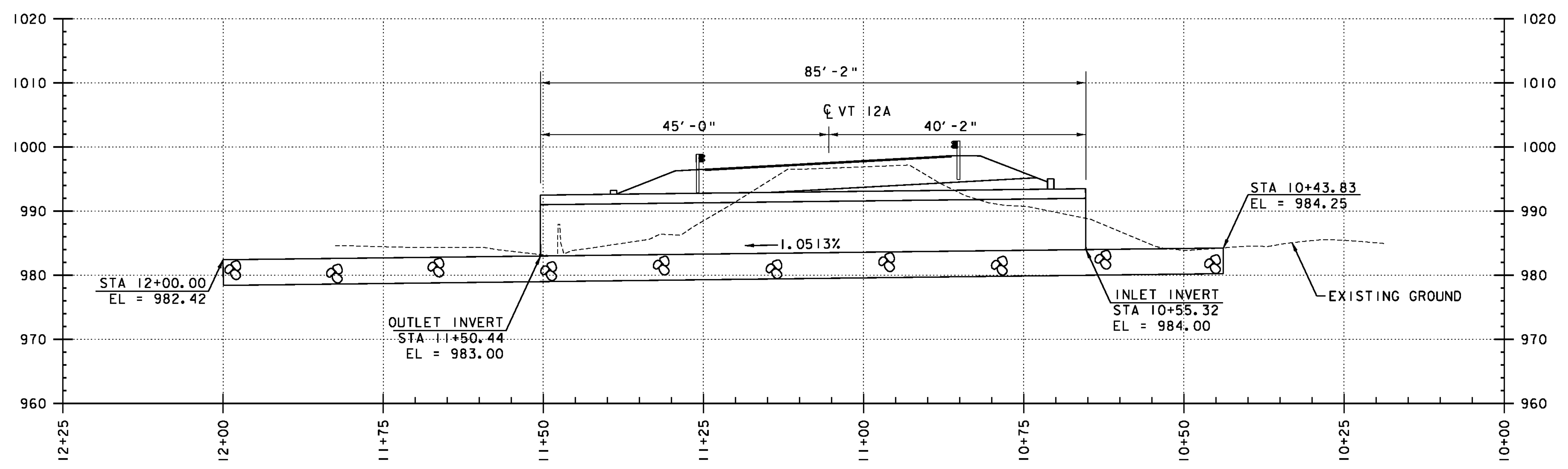
PROJECT NAME:	ROXBURY
PROJECT NUMBER:	ER 0187(9)
FILE NAME:	...drawing\plot files\Layout.dgn
PLOT DATE:	9/21/2011
PROJECT LEADER:	G. BOGUE
DRAWN BY:	JTS/ISM
DESIGNED BY:	M. CHENETTE
CHECKED BY:	G. BOGUE
<b>LAYOUT PLAN</b>	SHEET 45 OF 54



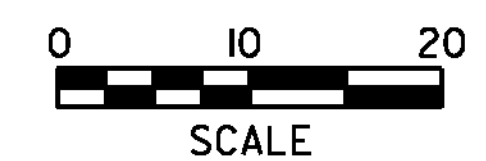


VT 12A STA 2+85.97 =  
CHANNEL LINE STA 11+05.45  
Δ = 51° RT

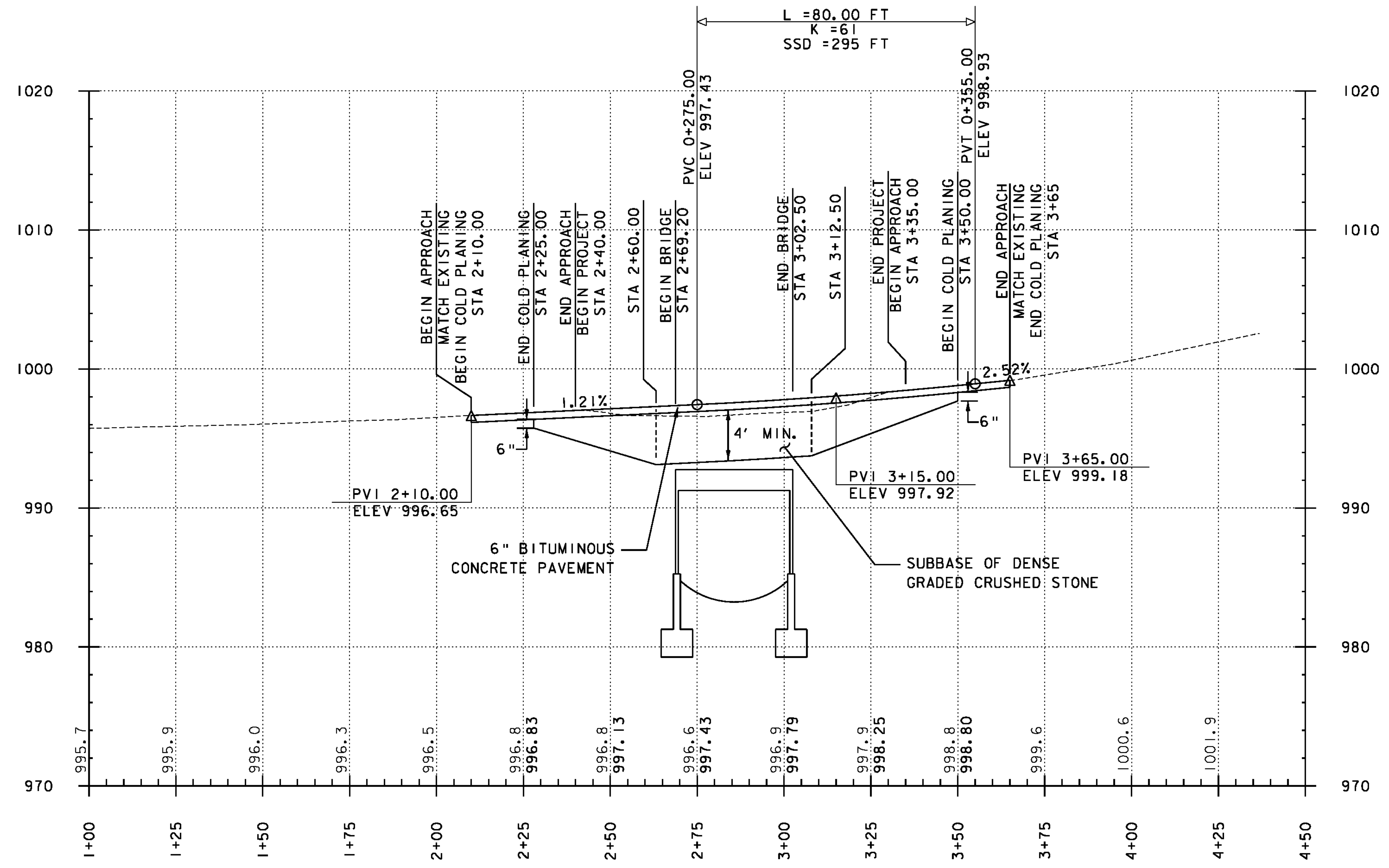
**PLAN**  
SCALE 1" = 10'-0"



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

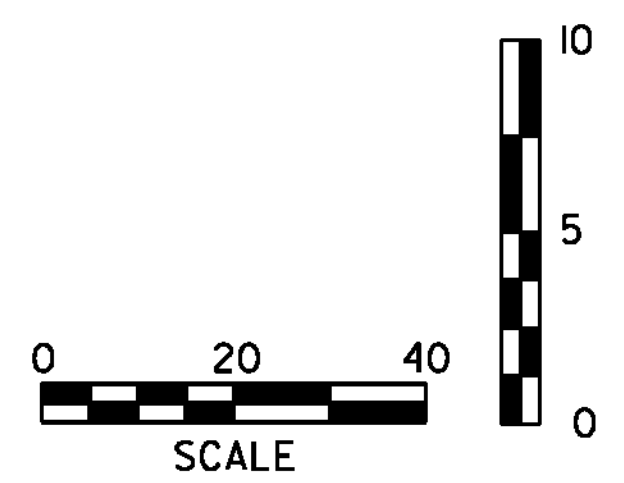


PROJECT NAME:	ROXBURY	PLOT DATE:	9/21/2011
PROJECT NUMBER:	ER 0187(9)	DRAWN BY:	JTS/ISM
FILE NAME:	...plotfiles\Plan-Profile.dgn	CHECKED BY:	G. BOGUE
PROJECT LEADER:	G. BOGUE	SHEET	46 OF 54
DESIGNED BY:	M. CHENETTE	<b>PLAN AND PROFILE</b>	

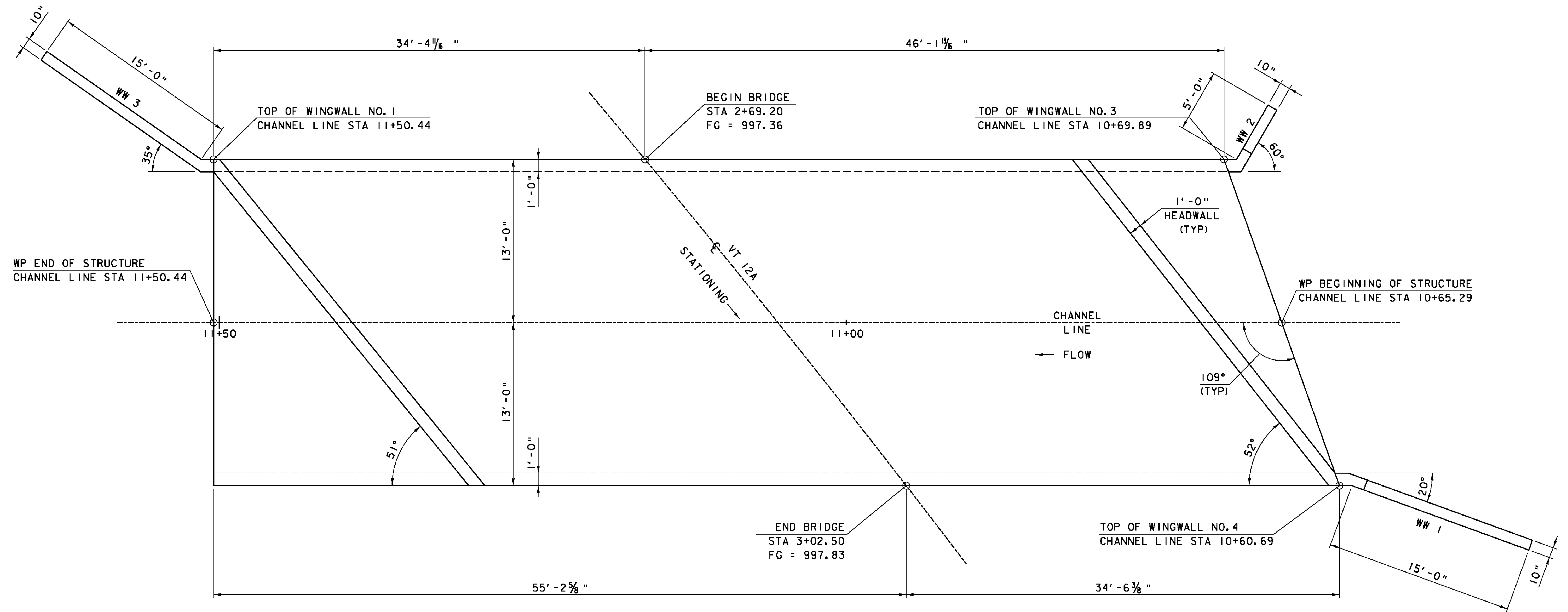


NOTE:  
 ELEVATION SHOWN TO THE NEAREST TENTHS ARE  
 EXISTING GROUND ALONG PROPOSED CENTERLINE.  
 ELEVATIONS SHOWN TO THE NEAREST HUNDREDTHS ARE  
 FINISH GRADE ALONG PROPOSED CENTERLINE.

**PROFILE ALONG VT 12A**



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

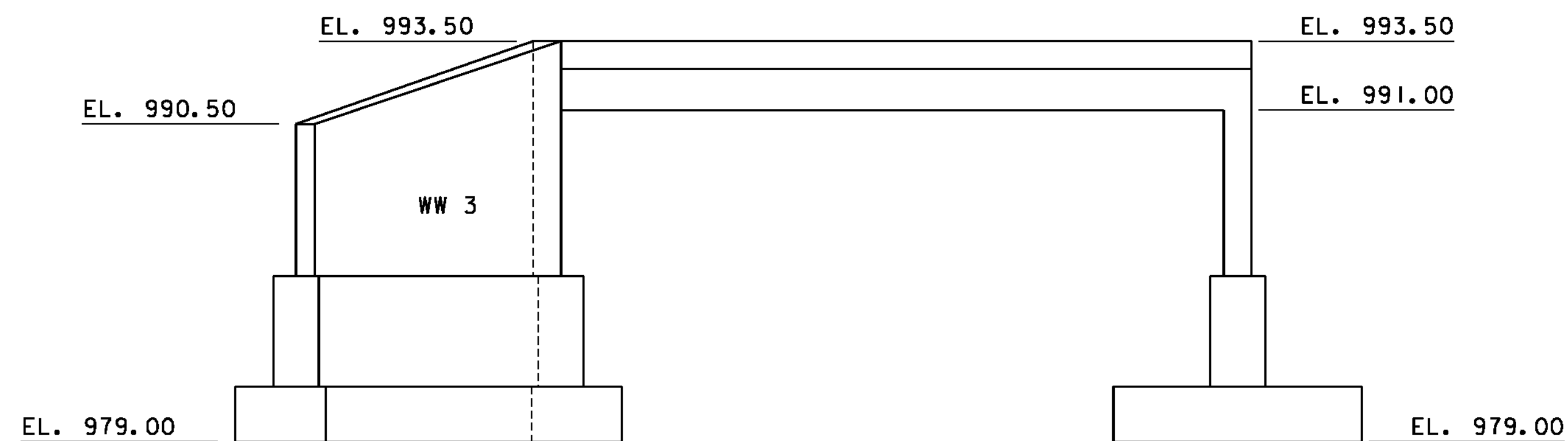


PROJECT NAME: ROXBURY	PLOT DATE: 9/21/2011
PROJECT NUMBER: ER 0187(9)	DRAWN BY: J. SOTER
FILE NAME: ...drawing\struct_plan_dets.dgn	CHECKED BY: G. BOGUE
PROJECT LEADER: G. BOGUE	SHEET 48 OF 54
DESIGNED BY: M. CHENETTE	
<b>PRECAST CONCRETE STRUCTURE PLAN</b>	



**INLET ELEVATION**

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



**OUTLET ELEVATION**

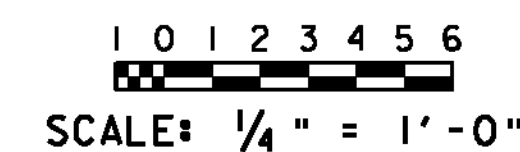
SCALE: 1/4" = 1'-0"

**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.

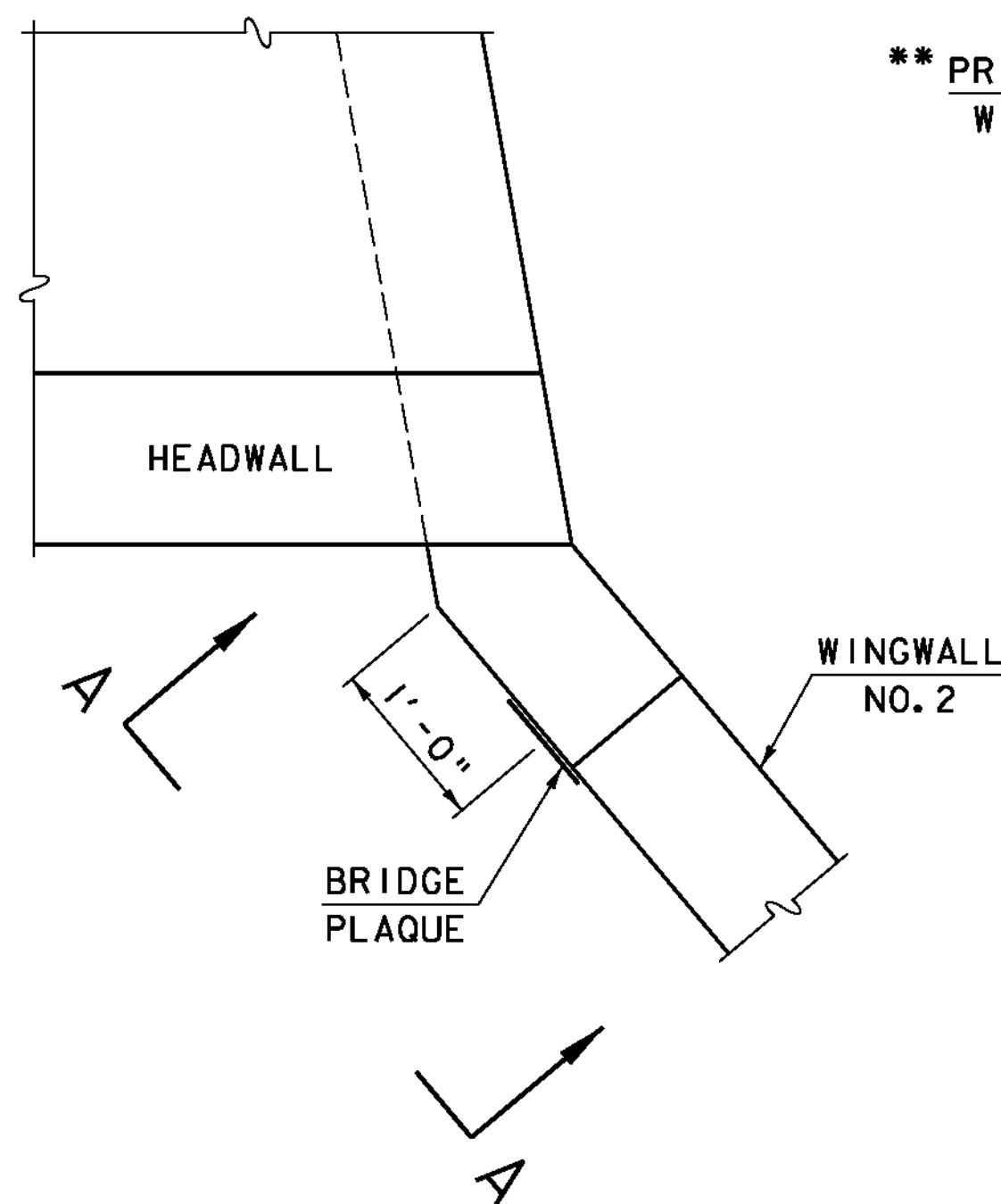
PROJECT NAME: ROXBURY  
 PROJECT NUMBER: ER 0187(9)

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

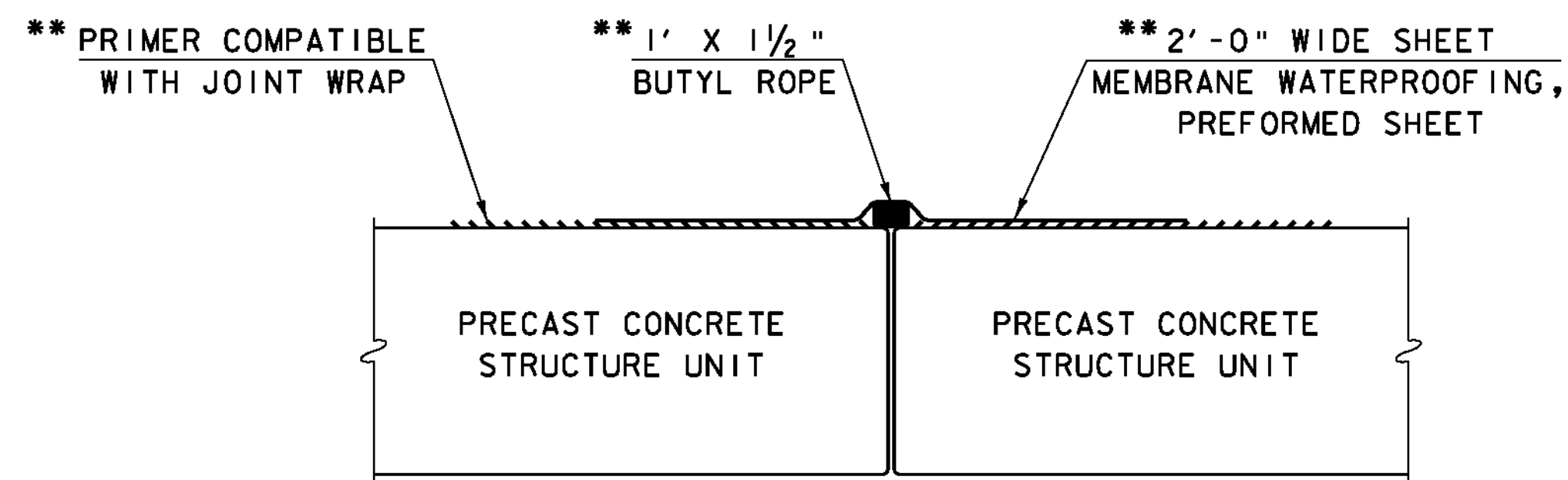


SCALE: 1/4" = 1'-0"





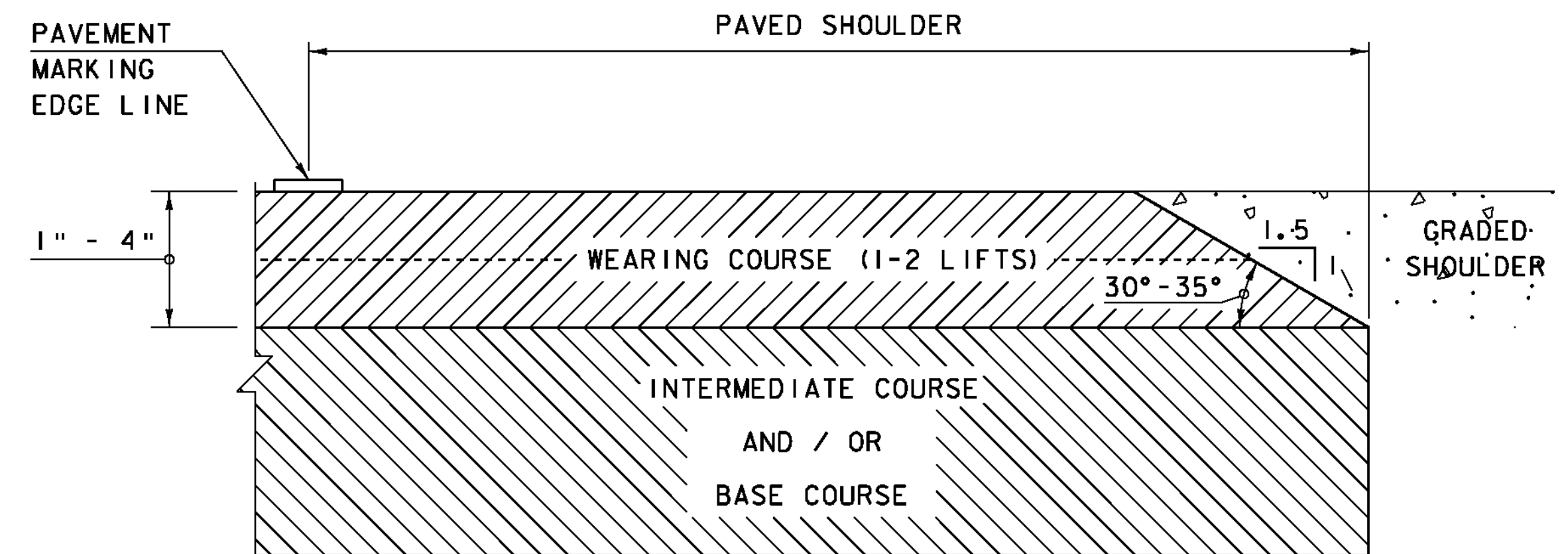
PLAN



BUTT JOINT SEALING DETAIL

NOT TO SCALE

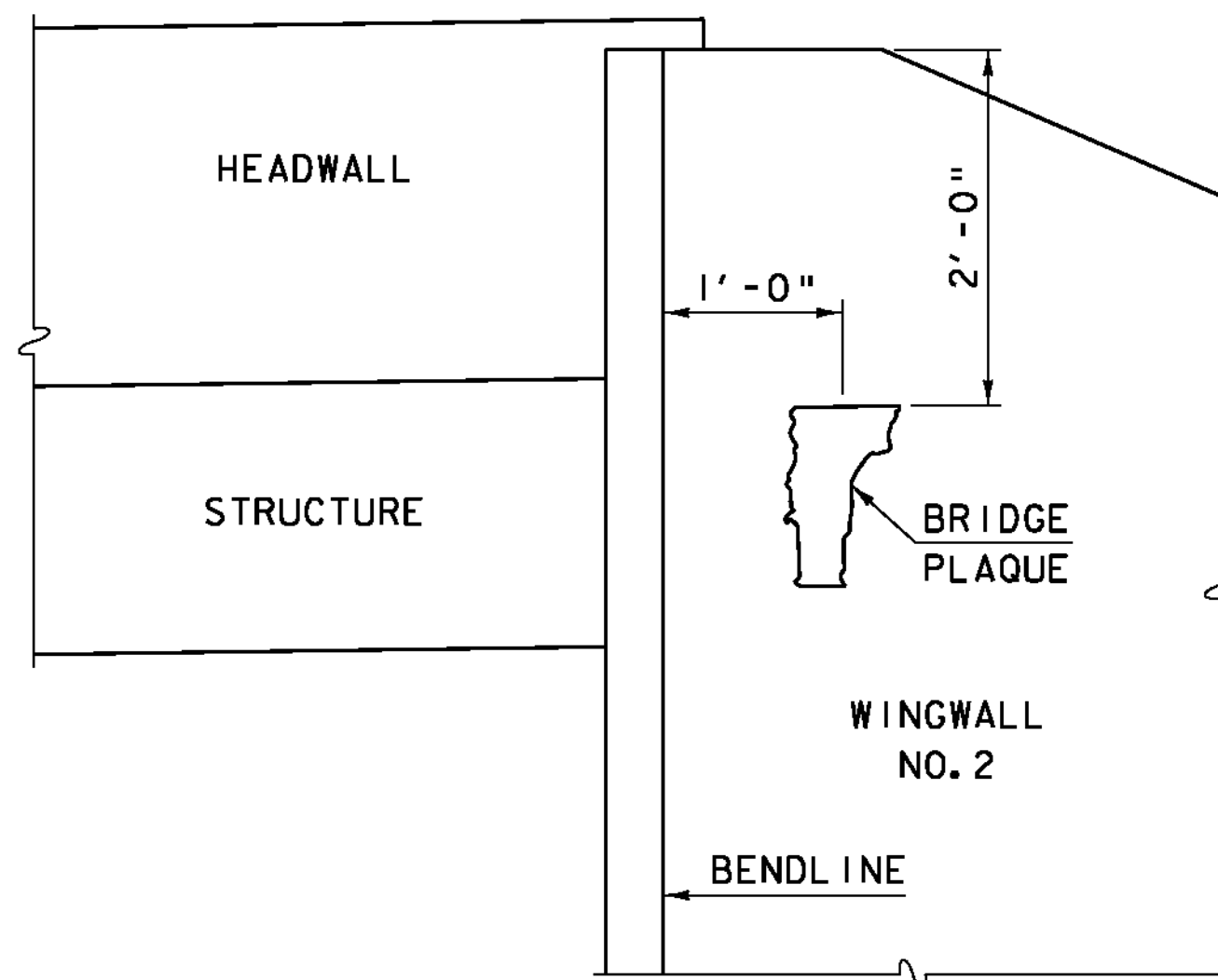
\*\* MEMBRANE WATERPROOFING SHALL BE APPLIED AT EACH ARCH JOINT (TOP AND SIDES). MEMBRANE SHALL BE CENTERED ON THE JOINT AND COVER THE FULL WIDTH OF THE TOP AND FULL HEIGHT OF THE SIDES. THE SIDES SHALL BE COVERED FIRST AND THE TOP WILL FOLLOW. ANY OVERLAPPING OF MEMBRANE SHALL BE DONE IN A SHINGLE TYPE 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

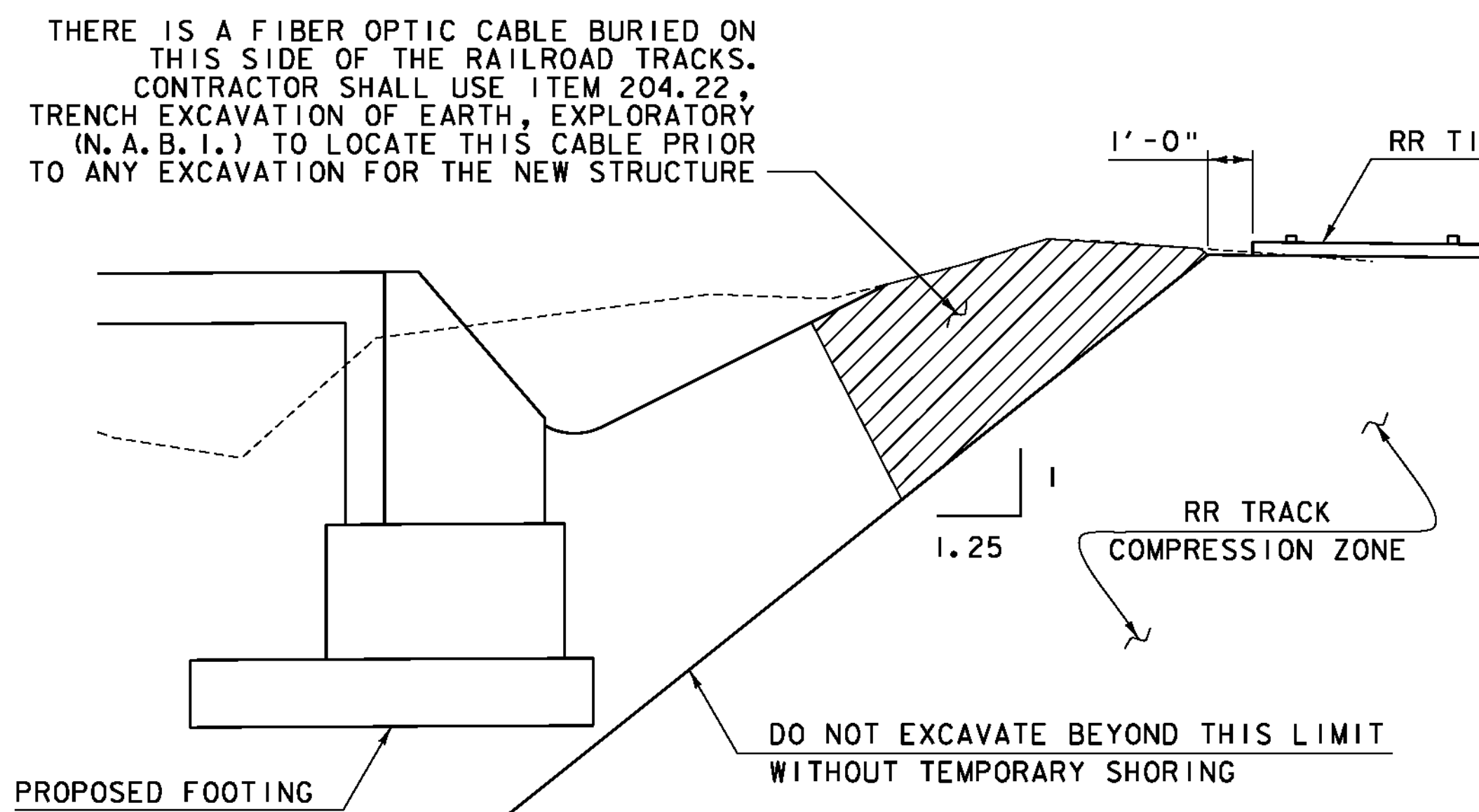
NOTE: LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.



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.



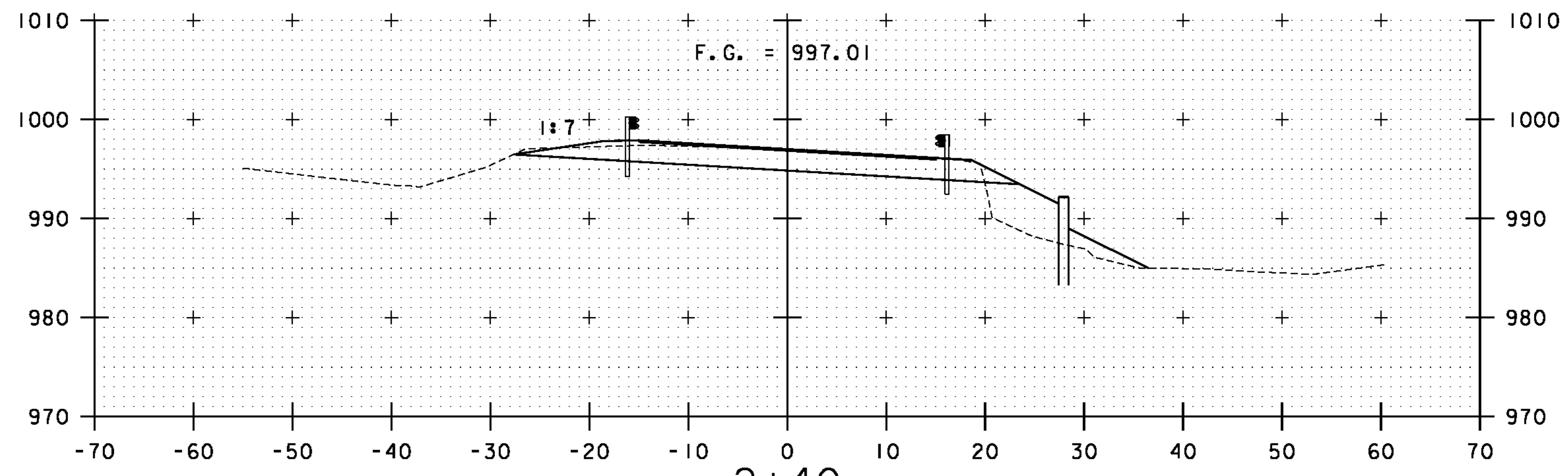
RAILROAD TRACK EXCAVATION LIMIT DETAIL

NOT TO SCALE

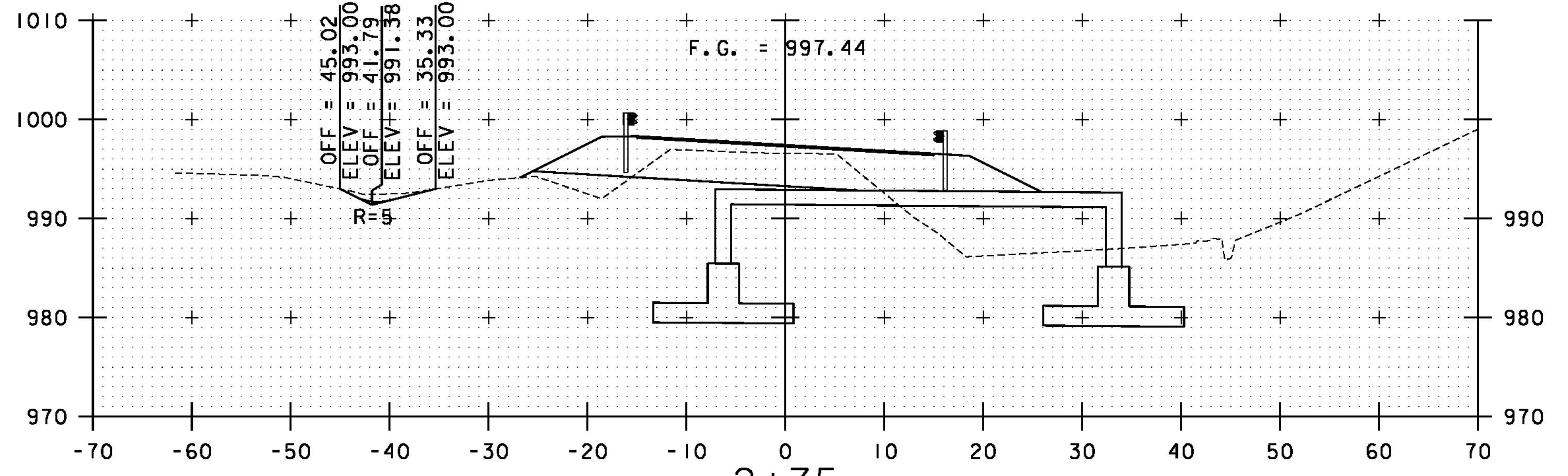


PROJECT NAME: ROXBURY  
PROJECT NUMBER: ER 0187(9)

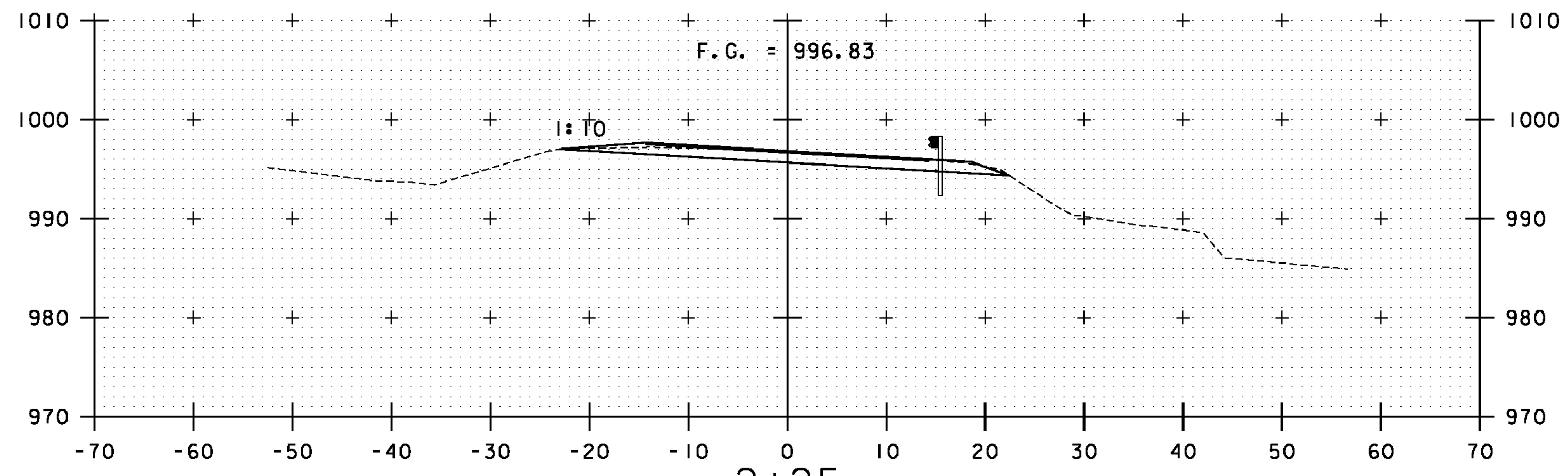
FILE NAME: ...drawing\struct\_plan\_dets.dgn PLOT DATE: 9/21/2011  
PROJECT LEADER: G. BOGUE DRAWN BY: J. SOTER  
DESIGNED BY: M. CHENETTE CHECKED BY: G. BOGUE  
MISCELLANEOUS DETAILS SHEET 50 OF 54



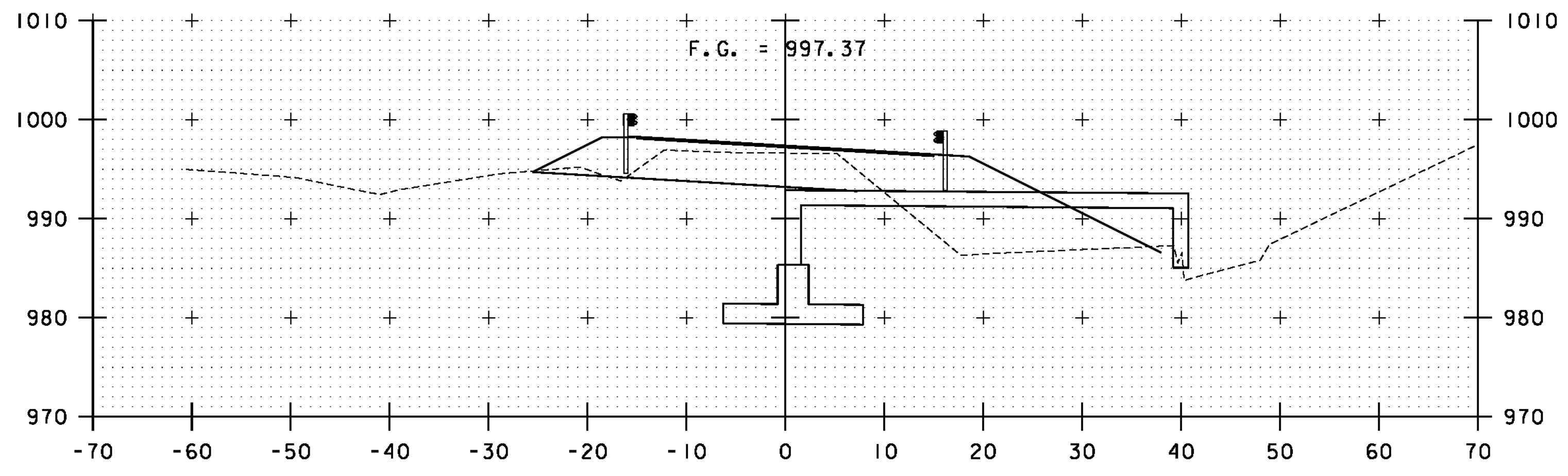
2+40  
END APPROACH  
BEGIN PROJECT



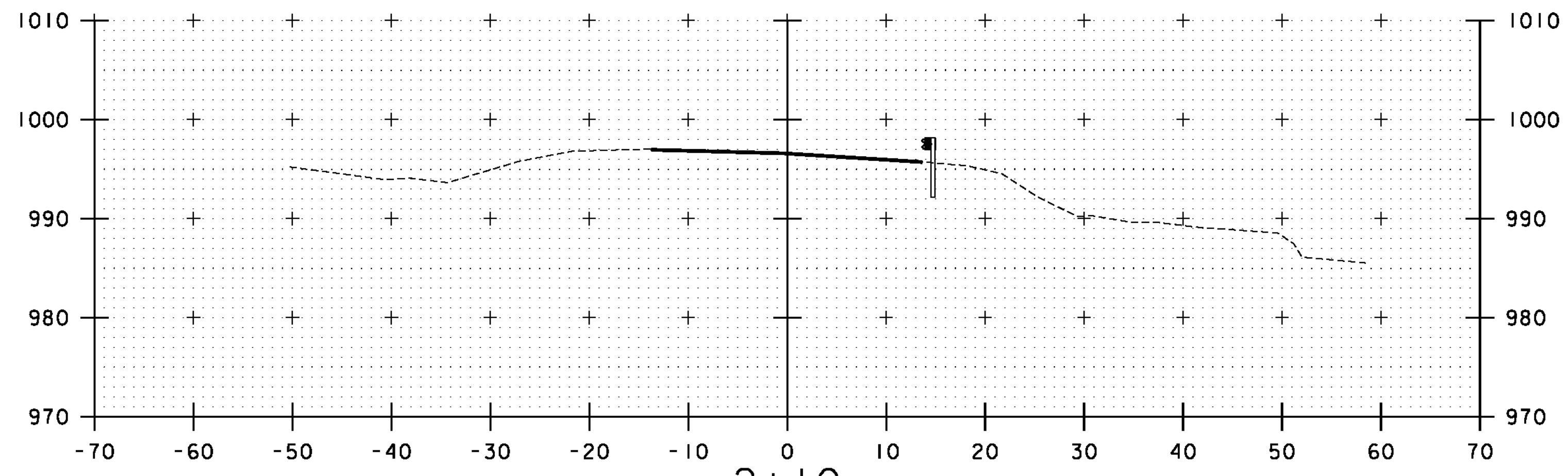
2+75



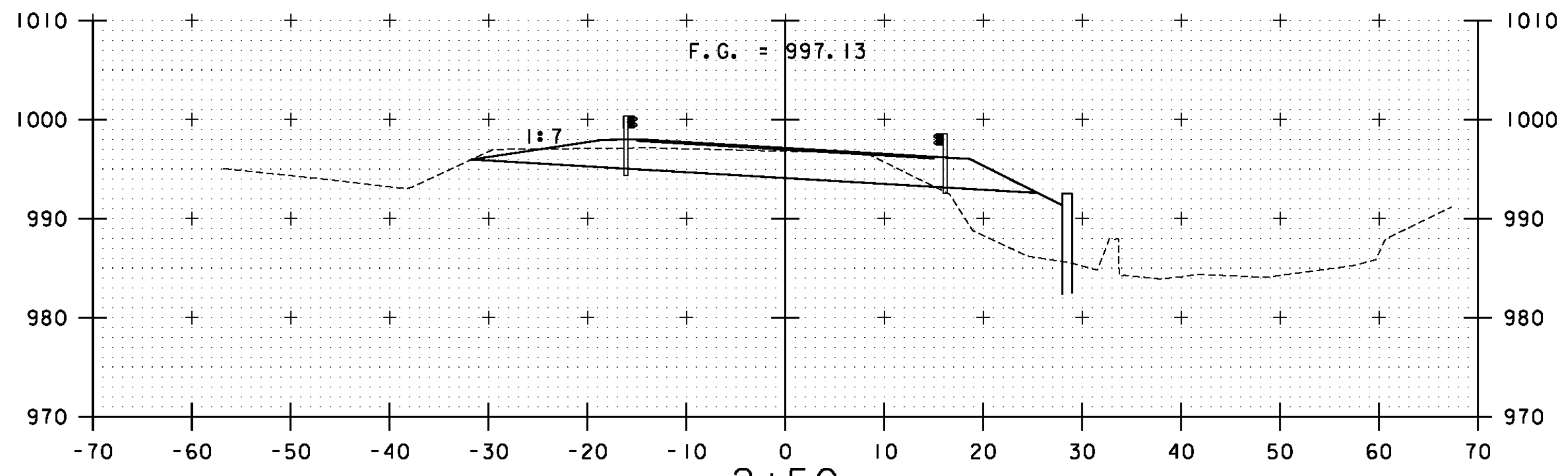
2+25  
END COLD PLANE



2+69.20



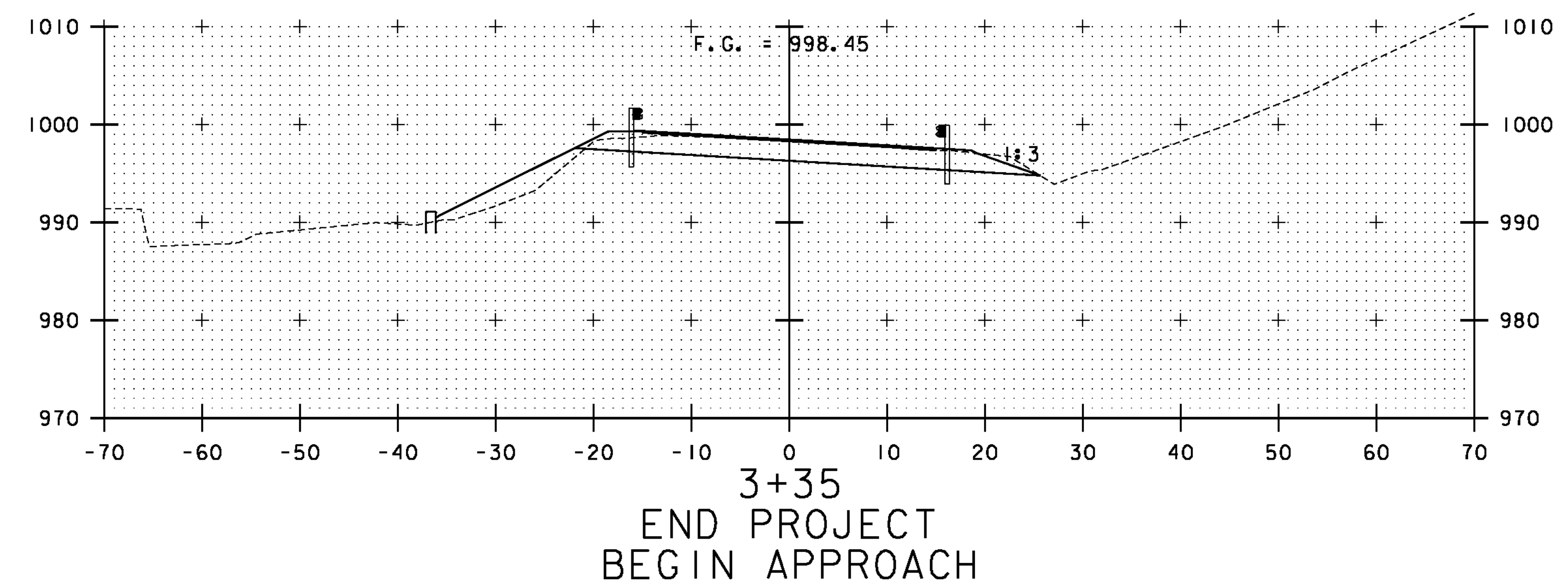
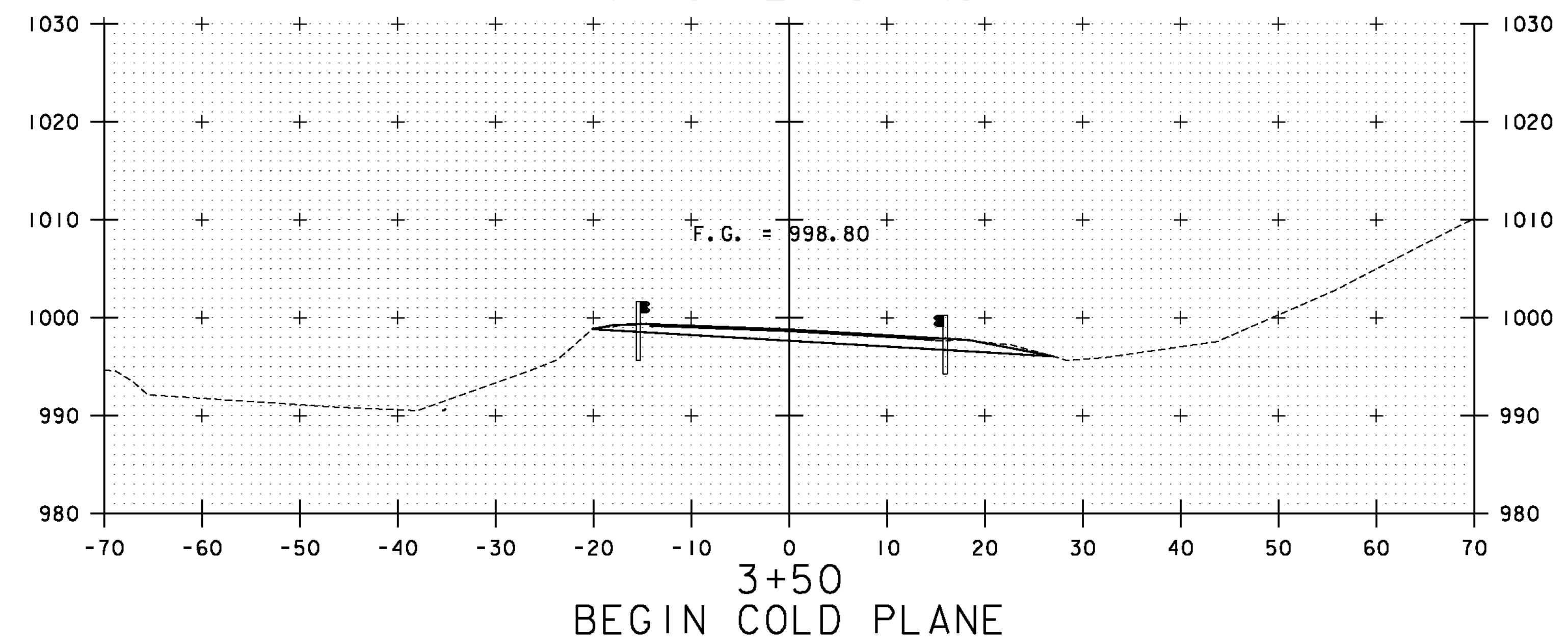
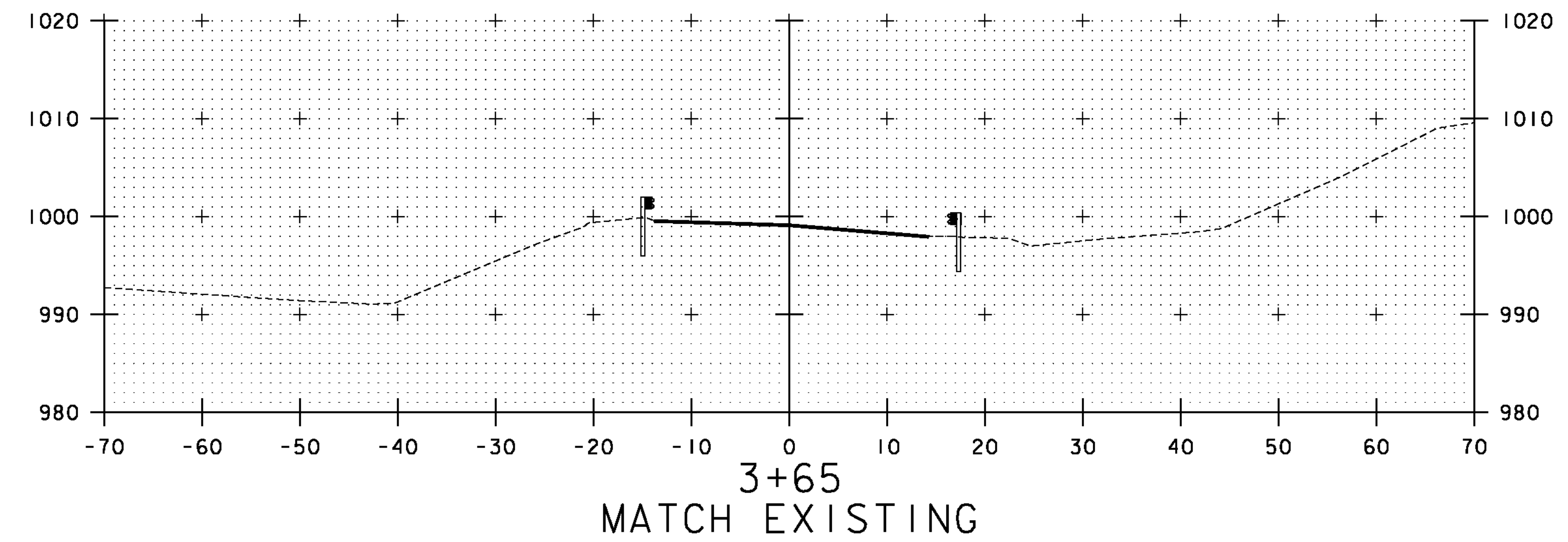
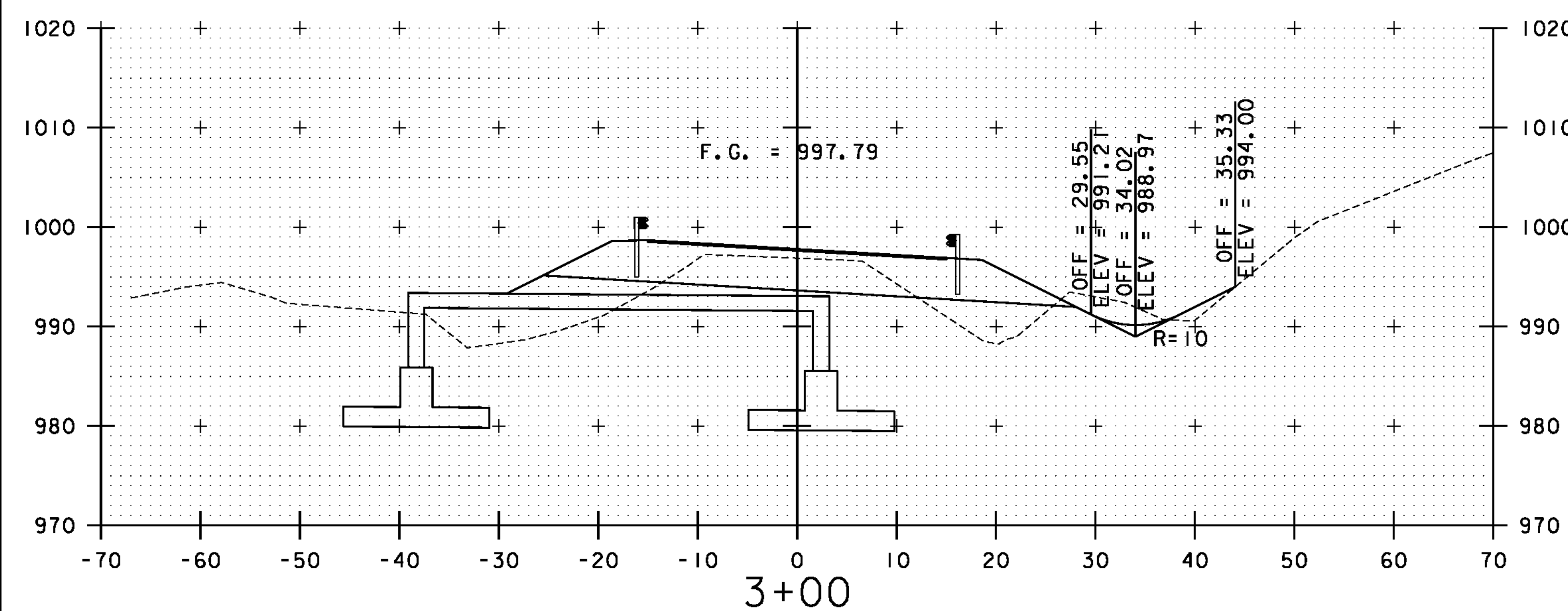
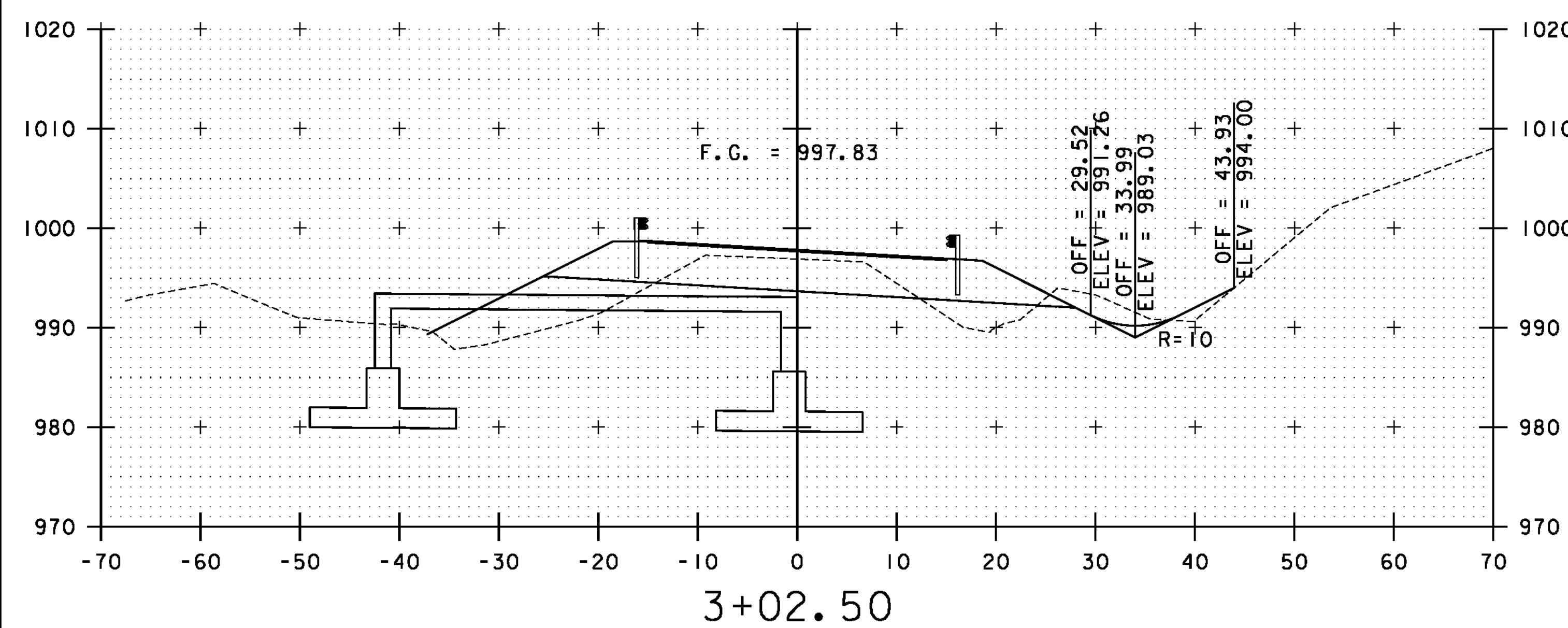
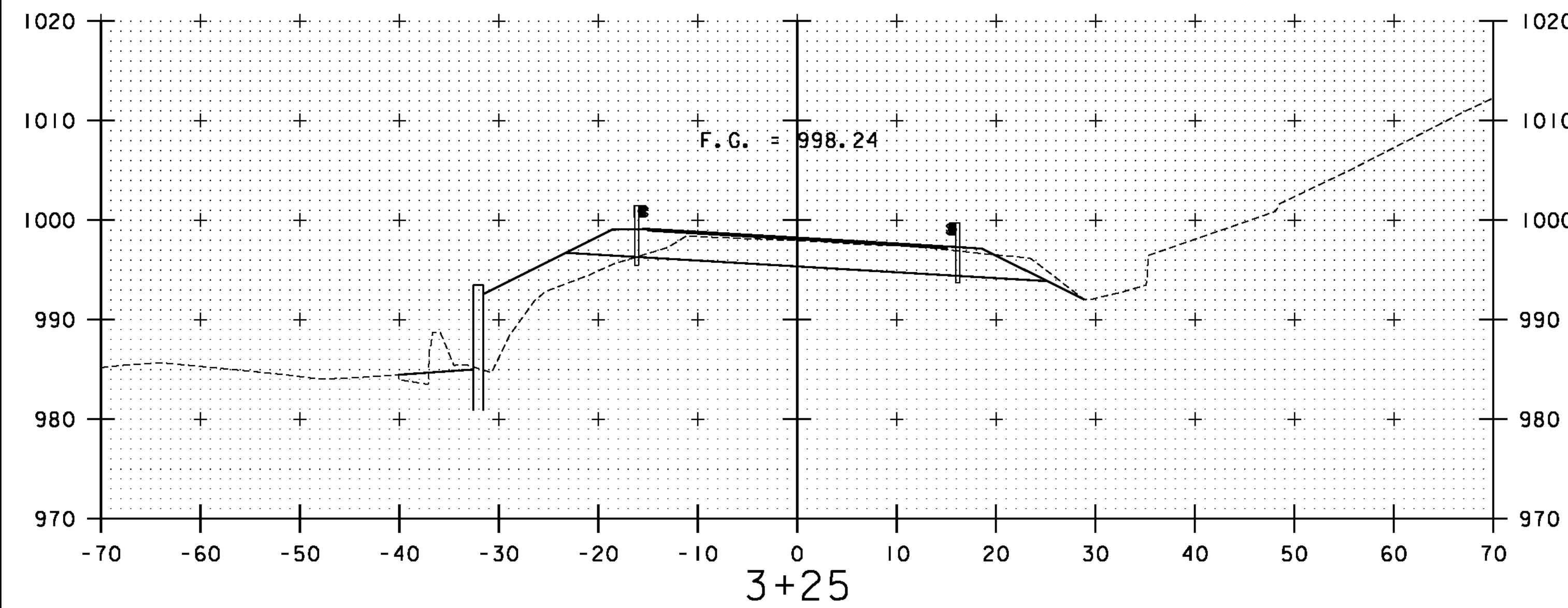
2+10  
BEGIN APPROACH  
MATCH EXISTING



2+50

PROJECT NAME:	ROXBURY
PROJECT NUMBER:	ER 0187(9)
FILE NAME: ...	plotfiles\Cross Sections.dgn
PROJECT LEADER:	G. BOGUE
DESIGNED BY:	M. CHENETTE
VT 12A CROSS SECTIONS 1	
DRAWN BY:	JTS/ISM
CHECKED BY:	G. BOGUE
SHEET	51 OF 54

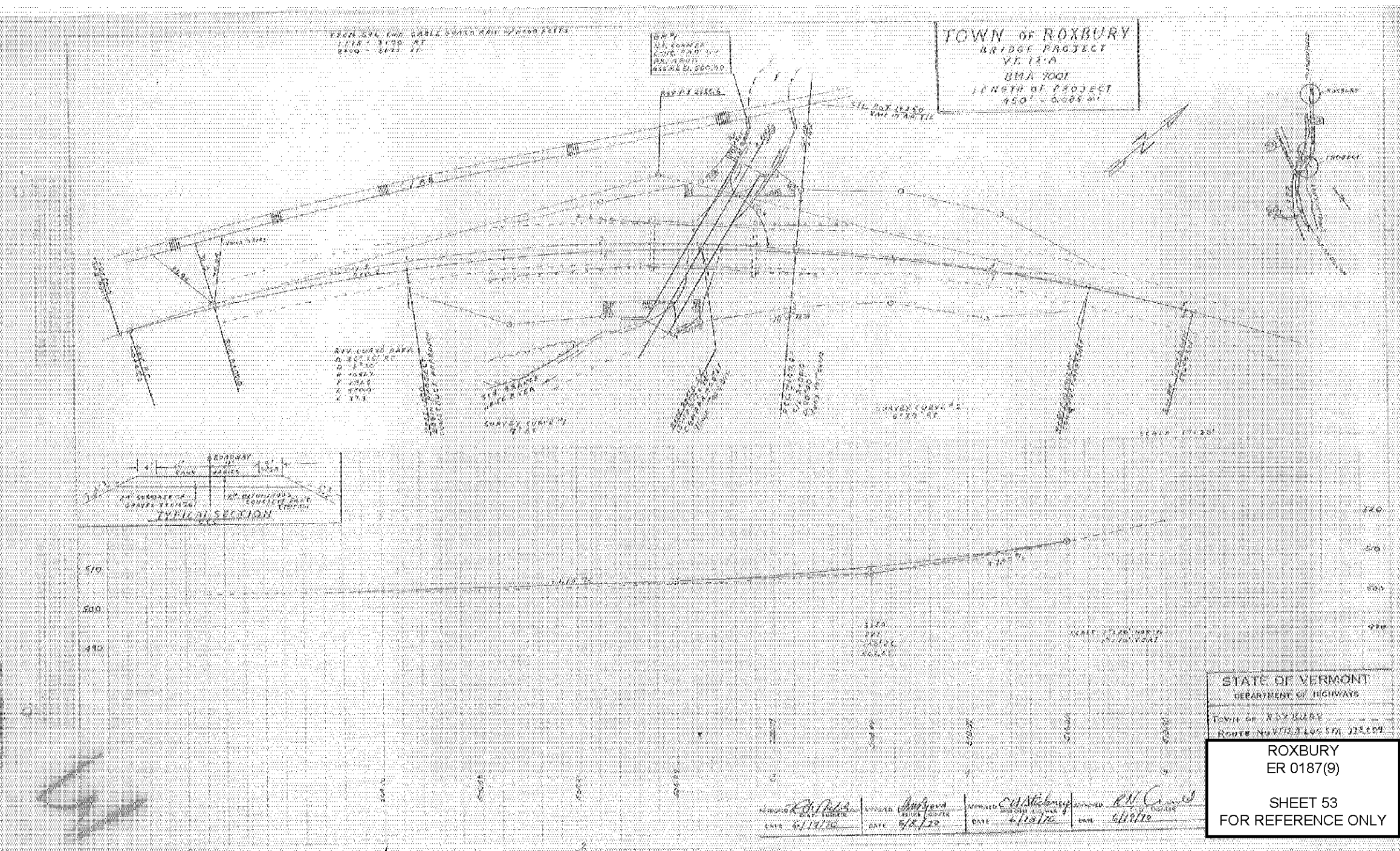


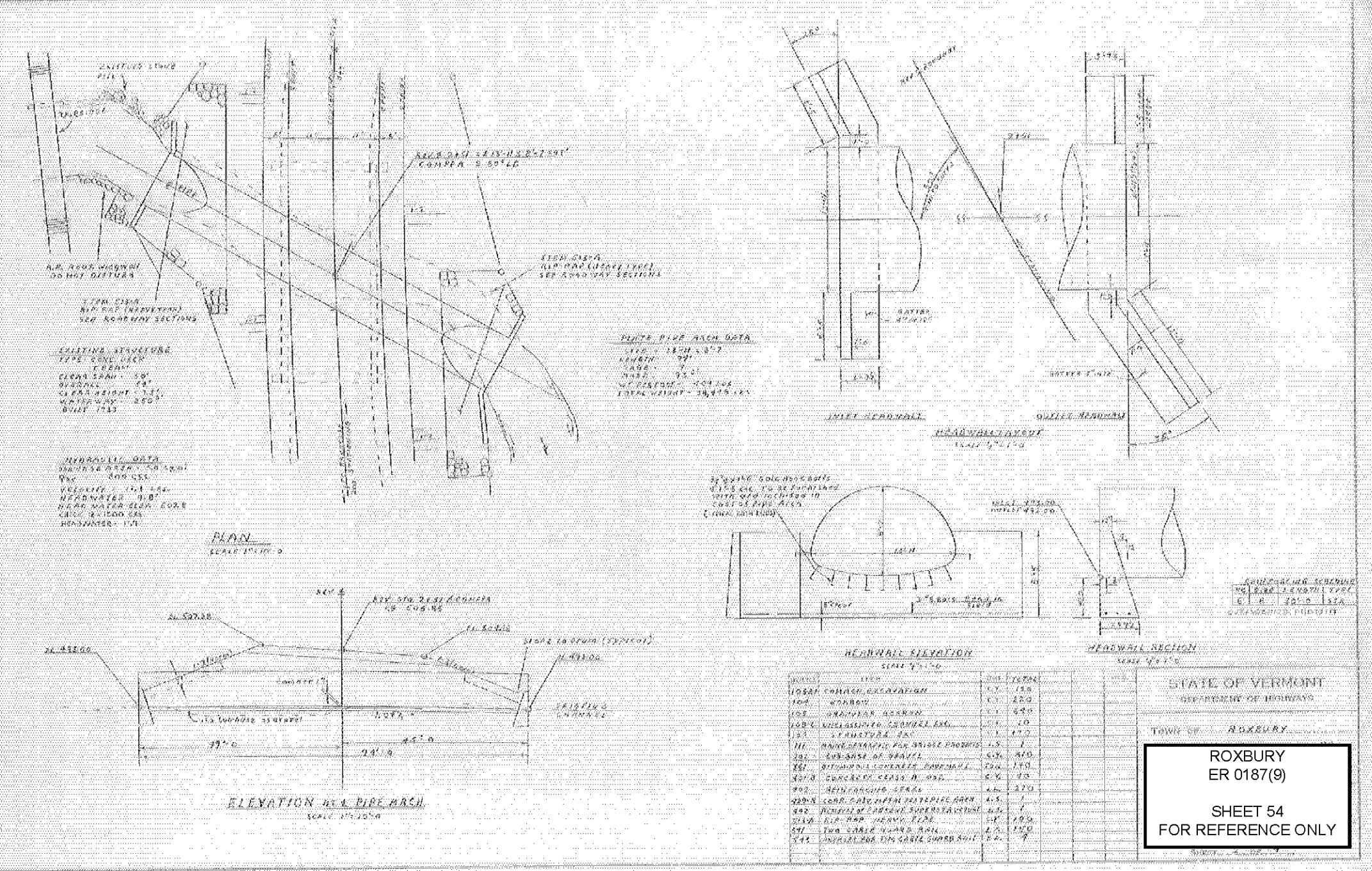


PROJECT NAME: ROXBURY  
PROJECT NUMBER: ER 0187(9)

FILE NAME: ...plots\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







NO.	DESCRIPTION	AMOUNT	TOTAL
1	...	...	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...
6	...	...	...
7	...	...	...
8	...	...	...
9	...	...	...
10	...	...	...
11	...	...	...
12	...	...	...
13	...	...	...
14	...	...	...
15	...	...	...
16	...	...	...
17	...	...	...
18	...	...	...
19	...	...	...
20	...	...	...
21	...	...	...
22	...	...	...
23	...	...	...
24	...	...	...
25	...	...	...
26	...	...	...
27	...	...	...
28	...	...	...
29	...	...	...
30	...	...	...
31	...	...	...
32	...	...	...
33	...	...	...
34	...	...	...
35	...	...	...
36	...	...	...
37	...	...	...
38	...	...	...
39	...	...	...
40	...	...	...
41	...	...	...
42	...	...	...
43	...	...	...
44	...	...	...
45	...	...	...
46	...	...	...
47	...	...	...
48	...	...	...
49	...	...	...
50	...	...	...
51	...	...	...
52	...	...	...
53	...	...	...
54	...	...	...
55	...	...	...
56	...	...	...
57	...	...	...
58	...	...	...
59	...	...	...
60	...	...	...
61	...	...	...
62	...	...	...
63	...	...	...
64	...	...	...
65	...	...	...
66	...	...	...
67	...	...	...
68	...	...	...
69	...	...	...
70	...	...	...
71	...	...	...
72	...	...	...
73	...	...	...
74	...	...	...
75	...	...	...
76	...	...	...
77	...	...	...
78	...	...	...
79	...	...	...
80	...	...	...
81	...	...	...
82	...	...	...
83	...	...	...
84	...	...	...
85	...	...	...
86	...	...	...
87	...	...	...
88	...	...	...
89	...	...	...
90	...	...	...
91	...	...	...
92	...	...	...
93	...	...	...
94	...	...	...
95	...	...	...
96	...	...	...
97	...	...	...
98	...	...	...
99	...	...	...
100	...	...	...

STATE OF VERMONT  
 DEPARTMENT OF HIGHWAYS  
 ROAD NO. 100  
 ROXBURY  
 ER 0187(9)  
 SHEET 54  
 FOR REFERENCE ONLY

**L.B.Foster Co.**  
Foster Precise

**Letter Of Transmittal**

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

Project Number: 3590      LOT No.: 1  
Project Name: VT AOT BHF 0187(8) & 0187(9)      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



Attention: Ted Luck Date: 10-13-11  
 Company: Luck Brothers Inc Job Name: Roxbury  
 Address: 73 Trade Road Job Location: Roxbury, VT  
 City, ST Zip: Plattsburgh, NY Job Number: 12269  
 Phone: (518) 561-4321 Fax: (518) 561-8462 Regarding: Precast Submission

We are sending:  Quote  Specifications  Plans  Copy of Letter  Change Order  Calculations

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:

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

Remarks  
 Drawing and calculations for lifting and handling will be separate  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Thank you,  
 \_\_\_\_\_

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: Travis Brousseau 10/13/11  
 (SD Ireland representative) (Date) (Please print)  
 SD Ireland Concrete

By: \_\_\_\_\_ (Signature) \_\_\_\_\_ (Date)  
 Company: \_\_\_\_\_  
 Please note that revisions may affect price and lead time

**WELDING PROCEDURE SPECIFICATION**

Material Specification A709 TO A500 GR B  
 Welding Process FCAW  
 Manual or Machine SEMI-AUTOMATIC  
 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 TABLE 708 OF THE NYSSCM  
 Postheat Temperature NONE  
 Heat Input Min Max

**WELDING PROCEDURE**

Pass no.	Electrode size	Welding Current		Travel speed	Joint detail
		Amperes	Volts		
1	1/16	300	26	14	
Variable	LIMITS	270	24	12.6	
		330	28	15.4	
V Trans Received by <u>JUC</u> OCT 8 2011 Approved by <u>[Signature]</u> DATE <u>10/18/11</u>					

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 Contractor Elderlee, Inc.  
 Revision No. \_\_\_\_\_ Authorized By RANDY SCOTT  
 Date 10/18/2011

**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  
 Single or Multiple Pass SINGLE (45 TO 63 CFM)  
 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 TABLE 708 OF THE NYSSCM  
 Postheat Temperature NONE  
 Heat Input Min Max

**WELDING PROCEDURE**

Pass no.	Electrode size	Welding Current		Travel speed	Joint detail
		Amperes	Volts		
1	3/32	350	27	12	
Variable	LIMITS	351 TO 429	25 TO 29	11 TO 13	

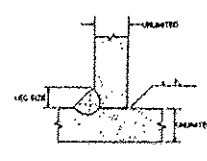
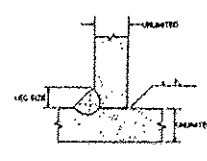
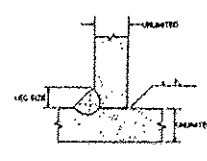
V Trans Received by JAC  
 OCT 18 2011  
 Re-submit BY [Signature] APPROVED BY [Signature] DATE 10/18/11

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

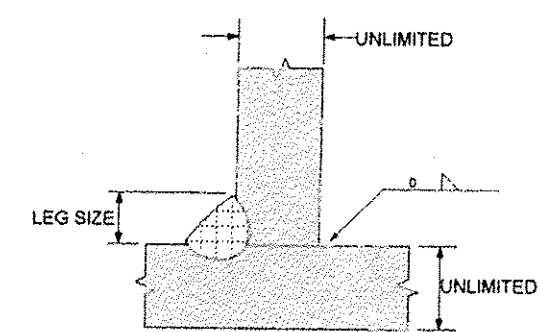
Procedure No. 3008 Contractor Elderlee, Inc.  
 Revision No. \_\_\_\_\_ Authorized By RANDY SCOTT  
 Date 10/18/2011

**LB FOSTER CO Precise Structural Products**  
**Welding Procedure Specification**

Page 1 of 2  
 3590-01

Material Spec. <u>ASTM A709 G35, G50 &amp; G50W</u>																																	
Welding Process(es) <u>SMAW</u>																																	
Position of Welding <u>1F, 2F, 3F, 4F</u>																																	
Manual <input checked="" type="checkbox"/> Machine <input type="checkbox"/> Semi-Automatic <input type="checkbox"/> Automatic <input type="checkbox"/>																																	
Filler Metal Specification <u>AWS A5.1</u>																																	
Filler Metal Classification <u>E7018</u>																																	
Flux <u>N/A</u>																																	
Shielding Gas <u>N/A</u> Gas Flow Rate <u>N/A</u>																																	
Single or Multiple Pass <u>Single</u>																																	
Single or Multiple Arc <u>SINGLE</u>																																	
Welding Current <u>REVERSE</u>																																	
Polarity: AC <input type="checkbox"/> DCEP <input checked="" type="checkbox"/> DCEN <input type="checkbox"/> Pulsed <input type="checkbox"/>																																	
Welding Progression Up <input type="checkbox"/> Down <input type="checkbox"/>																																	
Root Treatment <u>CLEAN AS TO REMOVE CONTAMINANTS</u>																																	
Preheat Temperature <u>N/A</u> Interpass Temperature <u>N/A</u>																																	
Postheat Treatment <u>N/A</u>																																	
Heat Input Min <u>N/A</u> Max <u>N/A</u>																																	
<b>WELDING PROCEDURE</b>																																	
<table border="1"> <thead> <tr> <th>Pass No.</th> <th>Electrode Size</th> <th>Amperes</th> <th>Volts</th> <th>Travel Speed</th> <th>Other</th> <th>Joint Detail</th> </tr> </thead> <tbody> <tr> <td>ALL</td> <td>3/32</td> <td>120-150</td> <td></td> <td></td> <td></td> <td rowspan="4" style="text-align: center; vertical-align: middle;">  </td> </tr> <tr> <td>ALL</td> <td>1/8</td> <td>140-180</td> <td></td> <td></td> <td></td> </tr> <tr> <td>ALL</td> <td>5/32</td> <td>160-210</td> <td></td> <td></td> <td></td> </tr> <tr> <td>ALL</td> <td>3/16</td> <td>190-250</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other	Joint Detail	ALL	3/32	120-150					ALL	1/8	140-180				ALL	5/32	160-210				ALL	3/16	190-250				
Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other	Joint Detail																											
ALL	3/32	120-150																															
ALL	1/8	140-180																															
ALL	5/32	160-210																															
ALL	3/16	190-250																															
CK'D BY _____ OK'D BY <u>JWC</u> OCT 13 2011 RESUBMIT _____ APPROVED <input checked="" type="checkbox"/> BY _____ DATE <u>10/14/11</u>																																	
This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.																																	
Procedure No. <u>1 TACK WELD</u> Contractor _____																																	
Revision No. _____ Authorized By <u>WALTER J. BORKOWSKI</u> Date <u>10/13/1911</u>																																	

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**

Page 1 of 2  
 3560-02

Material Spec: ASTM A709 G36, G50 & G60W AASHTO M270 G36, G50 & G60W

Welding Process(es) SAW

Position of Welding 1F & 2F

Manual  Machine  Semi-Automatic  Automatic

Filler Metal Specification AWS A5.23

Filler Metal Classification F7A2-EN1K-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

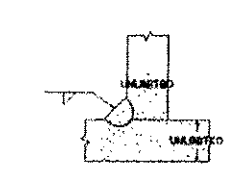
Welding Progression Up  Down

Root Treatment CLEAN AS TO REMOVE CONTAMINANTS

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

Postheat Treatment N/A

Heat Input Min 48.65 KILOJouLES/IN Max 76.29 KILOJouLES/IN

WELDING PROCEDURE						Joint Detail
Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other	
All	5/64	330-350	33-35	10-11		
<p>TRANS RECEIVED</p> <p>OK'D BY <u>JWC</u> DATE <u>OCT 13 2011</u></p> <p>RESUBMIT <input type="checkbox"/> APPROVED <input checked="" type="checkbox"/></p> <p>BY <u>[Signature]</u> DATE <u>10/13/11</u></p>						

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

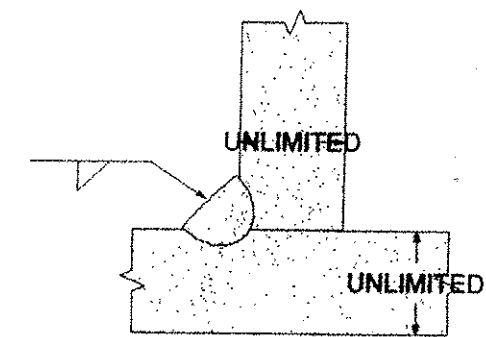
Procedure No. 001 - FILLET WELD Contractor \_\_\_\_\_

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

LB FOSTER CO Precise Structural Products  
Welding Procedure Specification

Page 2 of 2  
3560-02

Joint Detail

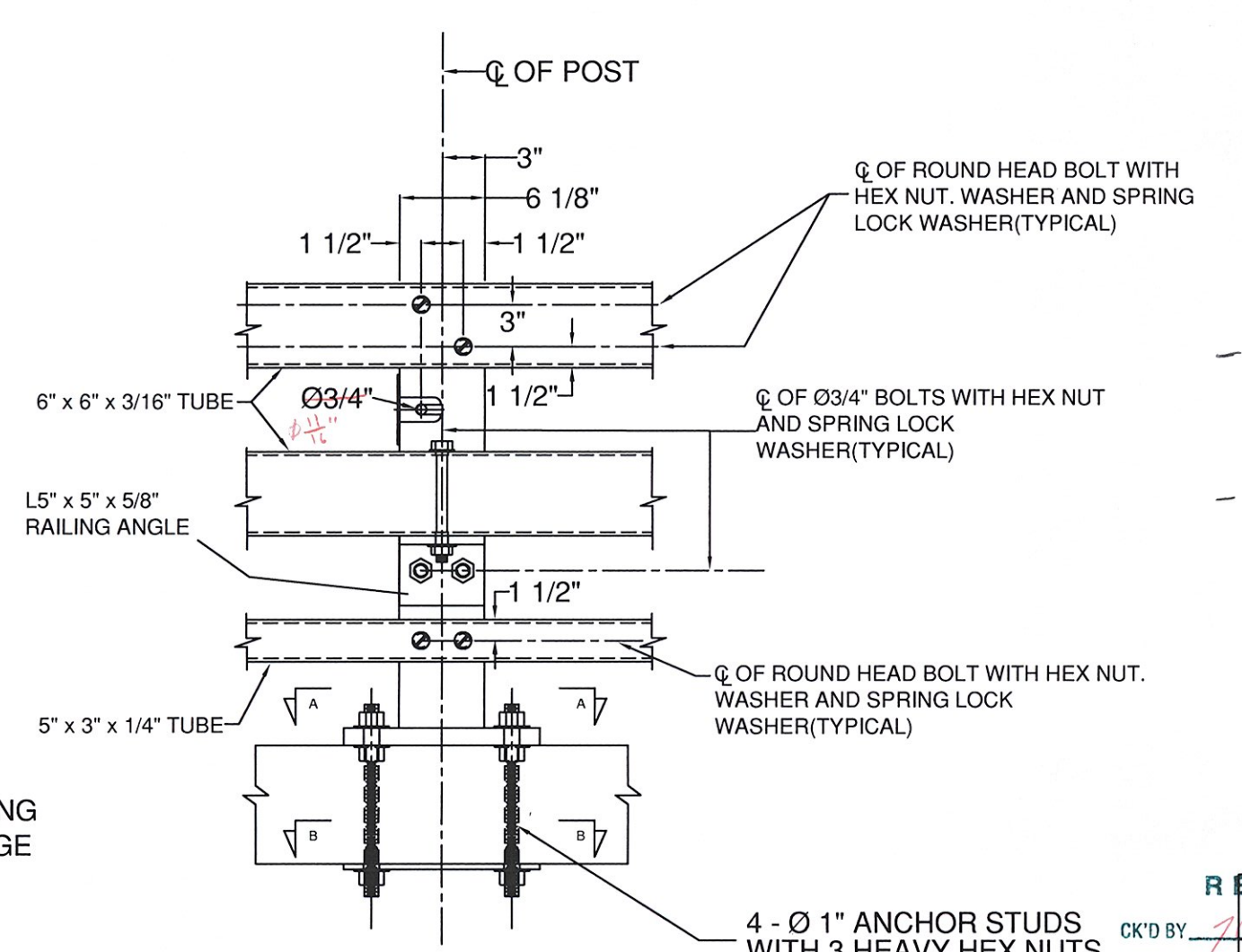
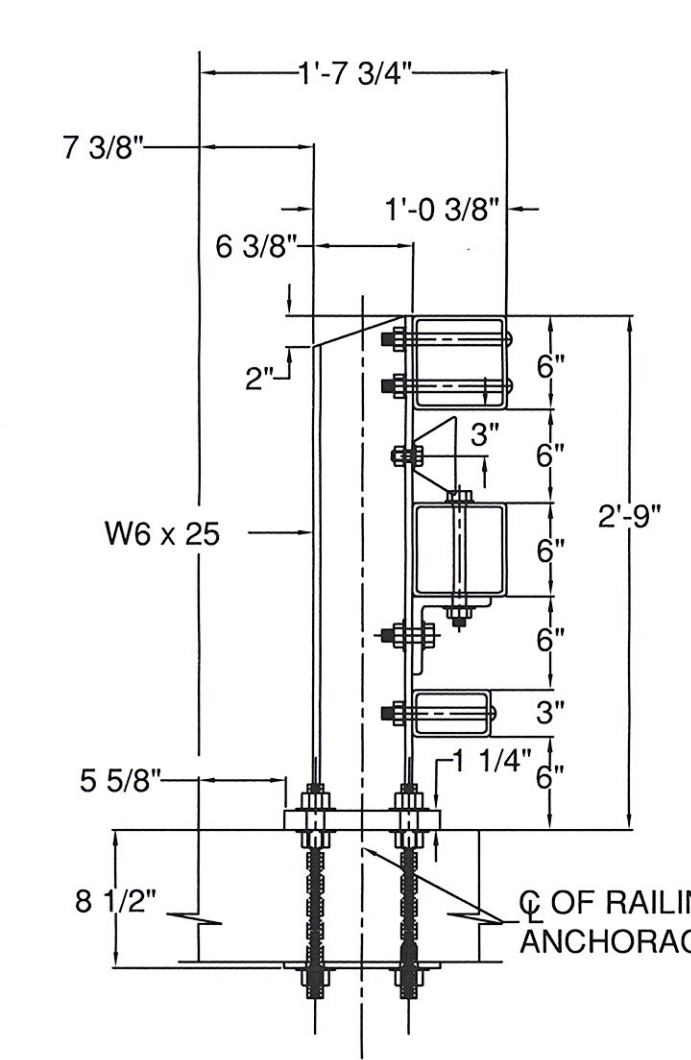
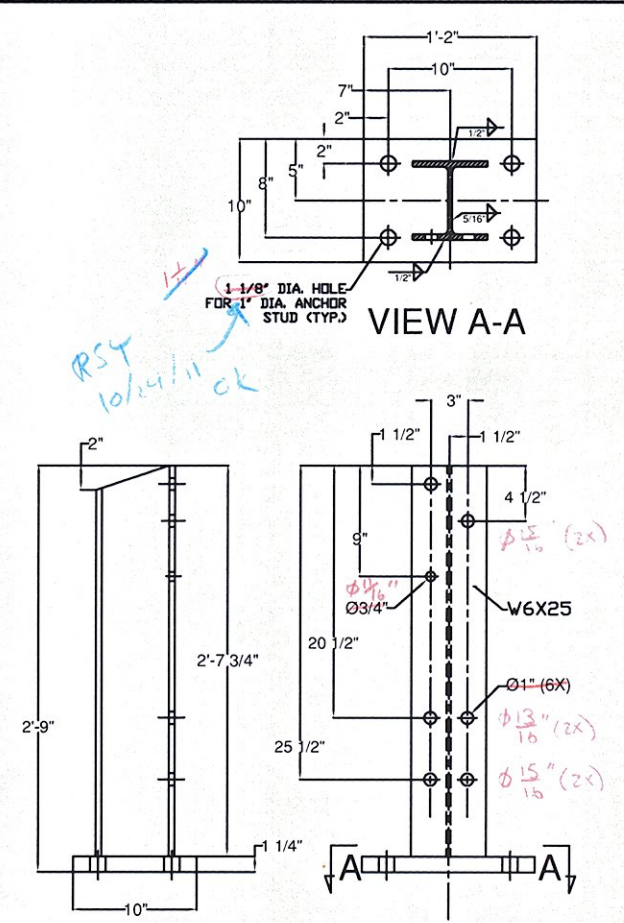
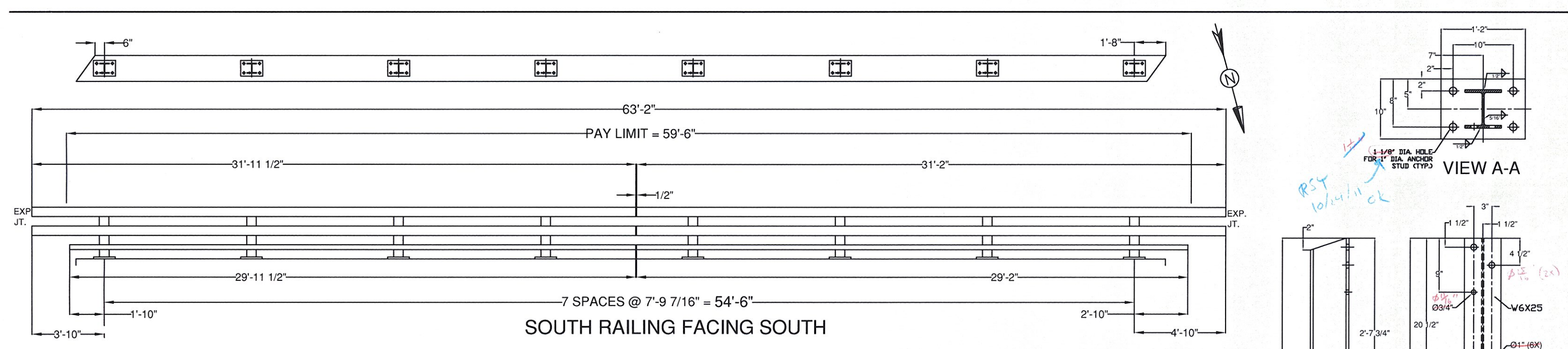


MEMO

\*\*\* 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



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	3/4" X 10" X 1/4" 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, SR. WASHER, L.W.	A449, A563, ASME B18.211
8	3/4" X 8" HEX BOLT, NUT, & L.W.	A325, A563, F436, & ASME B18.211
16	3/4" X 2-3/4" HEX BOLT, NUT, & L.W.	A325, A563, F436, & ASME B18.211
8	3/4" X 7-1/2" HEX BOLT, NUT, & L.W.	A325, A563, & F436
4	3/4" X 4-1/2" HEX BOLT, NUT, & L.W.	A325, A563, & F436
8	5/8" X 1-1/2" HEX BOLT, NUT, & L.W.	A325, A563, & F436
8	L5" X 5" X 5/8" RAILING ANGLE @ 2'-6"	A36
8	DELINEATORS	ALUMINUM, B-209 ALLOY

8 1/2" X 10" SR. RAIL PLATES @ 2'-2"  
6 1/2" X 11" FIX. RAIL PLATES @ 2'-2"  
A572 Gr. 50

ITEM #: 900.640 GEN CONTR: F.R. Lafayette SHEET 1 OF 3

RECEIVED BY: *[Signature]* OK'D BY: *[Signature]*

OCT 13 2011

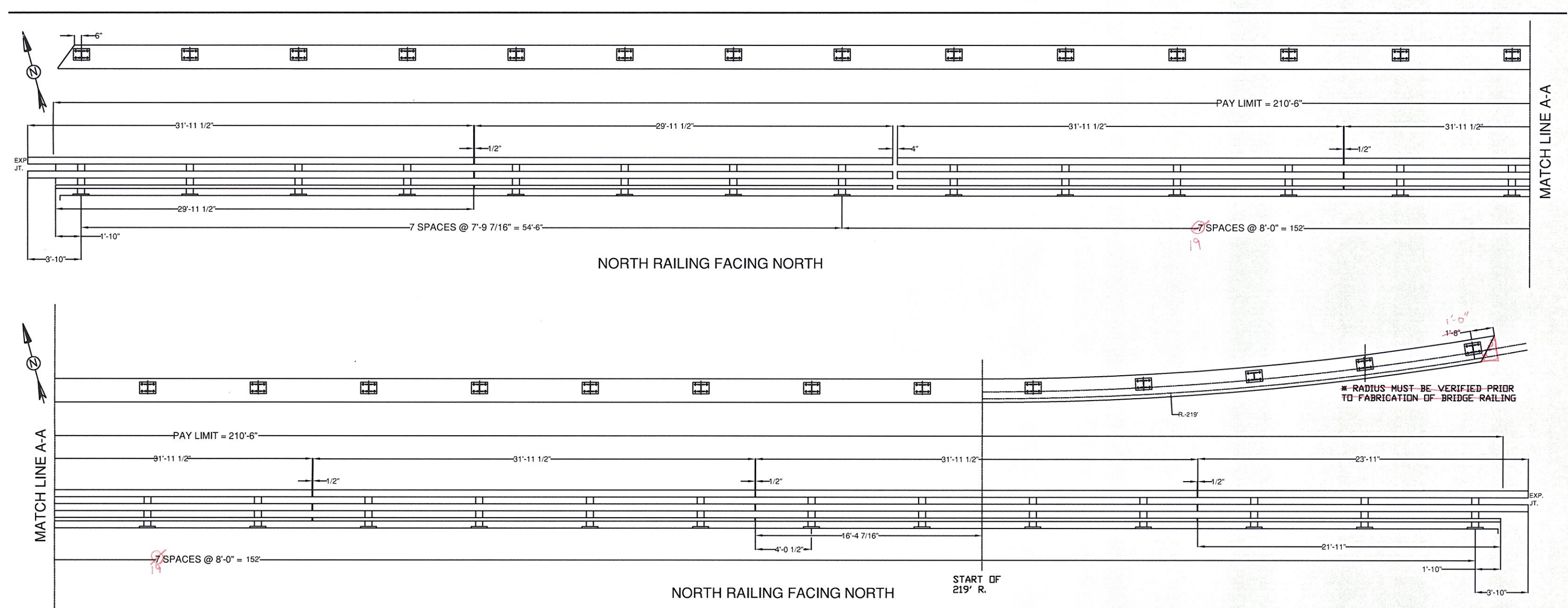
APPROVED: *[Signature]*

ELDERLEE, INC.  
OAKS CORNERS, NEW YORK 14878  
P-Mail: elderlee@elderlee.com  
TEL: 315-789-8870 FAX: 315-789-8815

BRIDGE RAIL DETAILS SHEET  
ROUTE 12A, BR 18 & BR 22  
TOWN OF ROXBURY, WASHINGTON COUNTY, VT

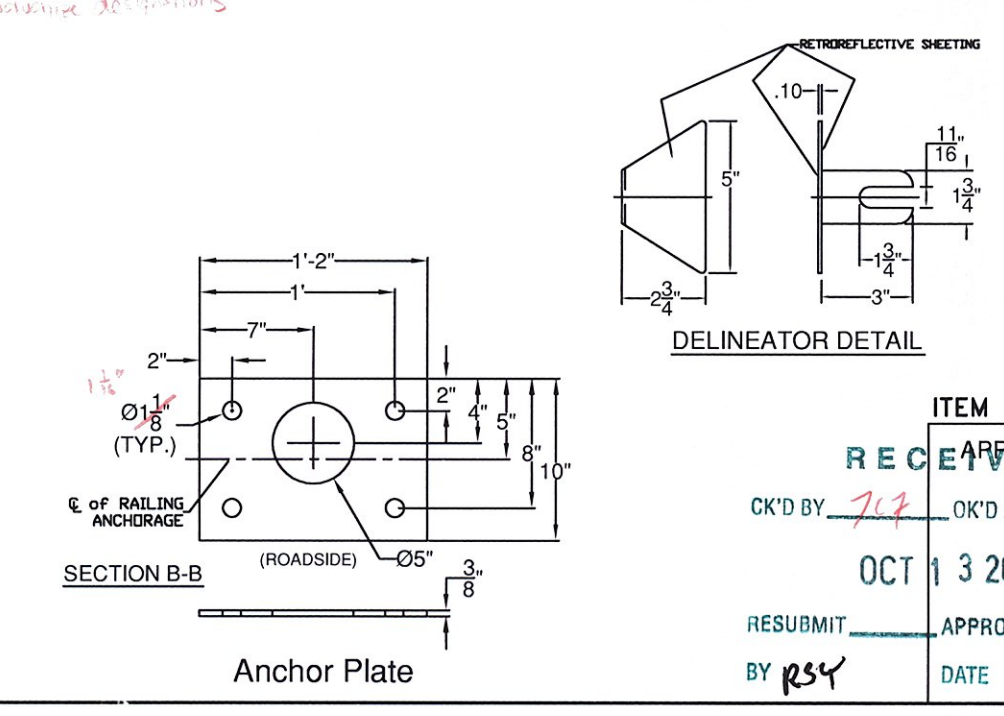
R. NO.	DATE	DESCRIPTION	BY	R. NO.	DATE	DESCRIPTION	BY

DRAWN: 101111  
CHECKED: 101111  
APPROVED: 101111  
SCALE: SCHEMATIC  
DRAWING NO. FT Lafayette EM11220



**BILL OF MATERIAL-NORTH RAIL**

QTY	DESCRIPTION	ASTM DESIGNATION
27	THREE RAIL POST @ 29" DIA	A572 Gr. 50
2	2" 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 @ 23"-11 1/2" 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
1	6" X 6" X 3/16" RAIL @ 23"-11 1/2" W/ 219' R.	A500 Gr. B
3	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 1/4" 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, SO. WASHER, L.W.	A449, A563, ASME B1B2.1
27	3/4" X 8" HEX BOLT, NUT, (D) F.W. & L.W.	A325, A563, F436, & ASME B1B2.1
54	3/4" X 2-3/4" HEX BOLT, NUT, (D) F.W. & L.W.	A325, A563, F436, & ASME B1B2.1
48	3/4" X 1-1/2" HEX BOLT, NUT, & (D) F.W.	A325, A563, & F436
24	3/4" X 4-1/2" HEX BOLT, NUT, & (D) F.W.	A325, A563, & F436
24	3/4" X 4-1/2" HEX BOLT, NUT, & (D) F.W.	A325, A563, & F436
27	1/2" X 5" X 5/8" RAILING ANGLE @ 6x	A36
27	1/2" X 5" X 5/8" RAILING ANGLE @ 6x	ALUMINUM, B-209 ALLOY



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 ENOUGH 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" @ 60°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
- 5) SUPERREFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 702.08 AND SHALL BE A .007 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 FOR, IF ONE IS USED.

ITEM #: 900.640 GEN CONTR: F.R. Lafayette SHEET 2 OF 3

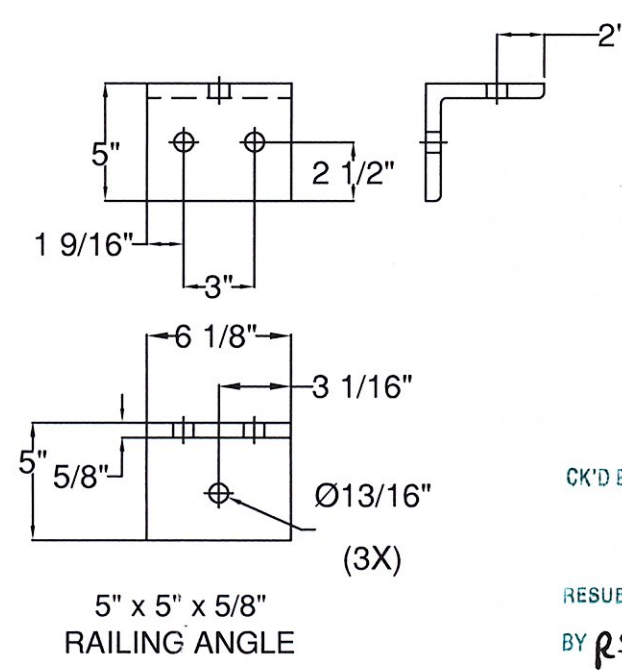
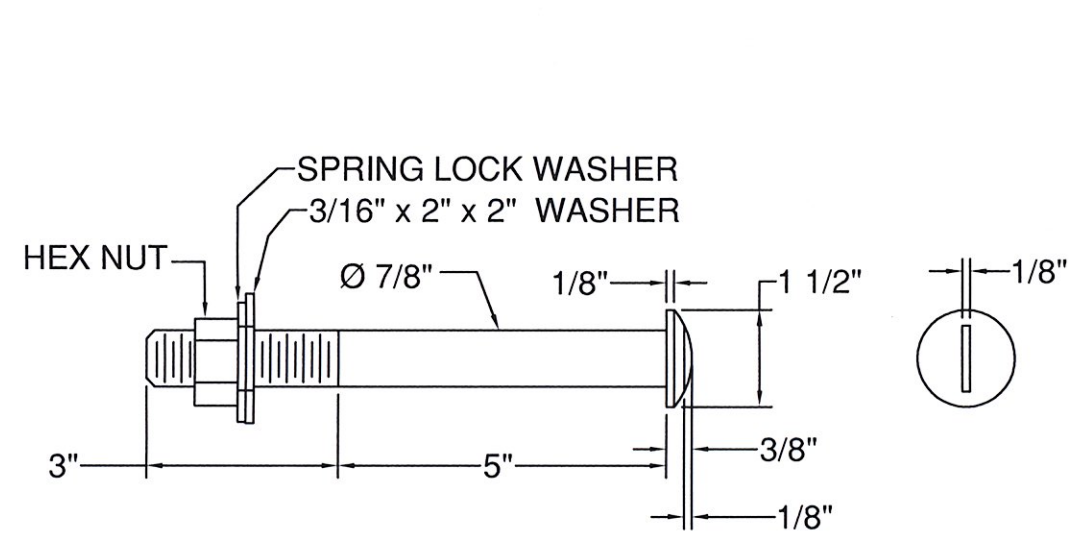
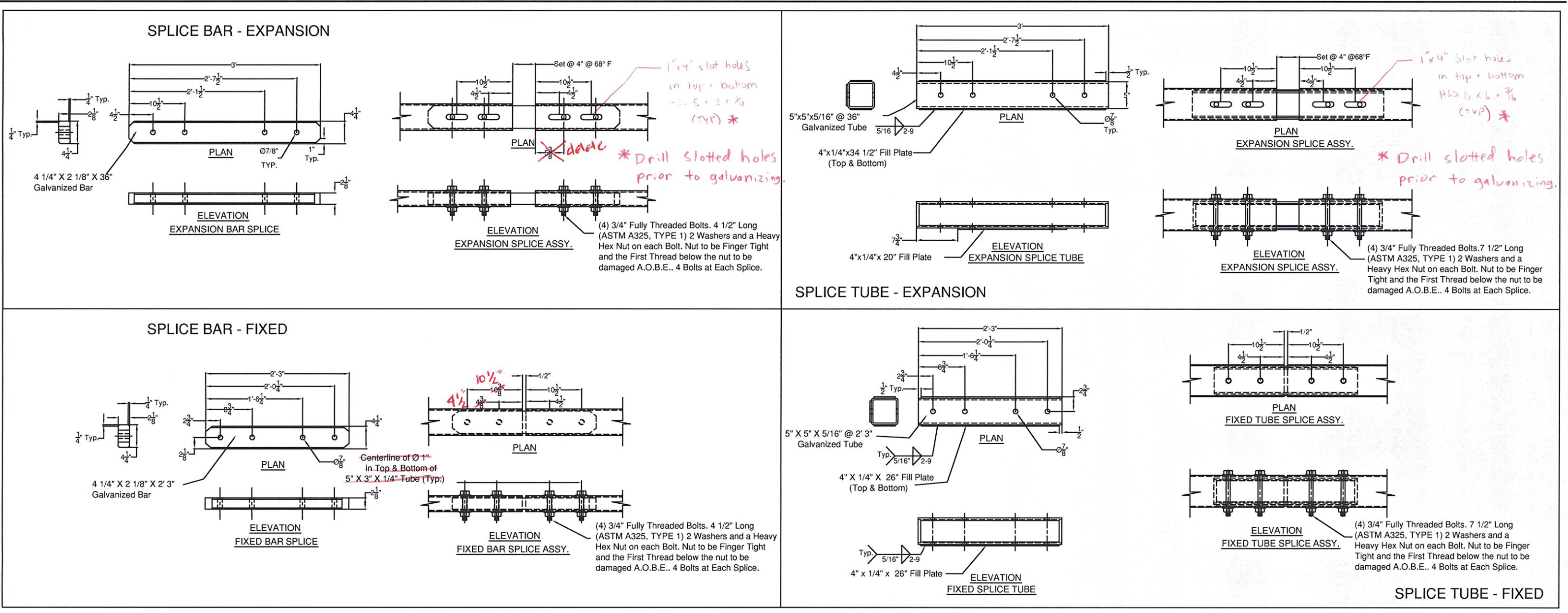
RECEIVED BY: [Signature] OCT 3 2011

APPROVED BY: [Signature] DATE: 10/18/2011

**ELDERLEE, INC.**  
 OAKS CORNERS, NEW YORK 14618  
 8-Mile @ Long Point Rd, NY  
 Tel: 315-788-8870 Fax: 315-788-8816

R. NO.	DATE	DESCRIPTION	BY	R. INCL.	DATE	DESCRIPTION	BY

DRAWN	CHECKED	E.P.
		10/11/11
APPROVED	SCALE	SCHEMATIC
		10/11/11
DRAWING NO.	SCALE	DRAWING NO.
		F.R. Lafayette EM1 222



ITEM #: 900.640 GEN CONTR: F.R. Lafayette SHEET 3 OF 3

RECEIVED BY: *ERC* OK'D BY: *ERC*

OCT 13 2011

RESUBMIT: *As Noted* APPROVED: *As Noted*

BY: *RSY* DATE: 10/19/2011

**ELDERLEE, INC.**  
 OAKS CORNERS, NEW YORK 14519  
 3-Mid-Range@elderlee.com  
 TEL: 315-789-6870 Fax: 315-789-6816

R NO.	DATE	DESCRIPTION	BY	R NO.	DATE	DESCRIPTION	BY

DRAWN: E.P. 10/11/11  
 CHECKED: D.L. 10/11/11  
 APPROVED: *As Noted*  
 SCALE: SCHEMATIC  
 DRAWING NO. FR Lafayette EM11222

**GENERAL NOTES:**

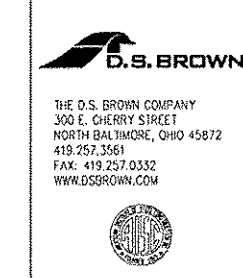
1. PAD AND MATERIALS SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, DATED 2008 AND THE LATEST REVISIONS, INCLUDING SUPPLEMENTARY SPECIFICATIONS, CONTRACT PLANS, AND THE SPECIAL PROVISIONS. GENERAL SHOP PRACTICES, STRUCTURAL FABRICATION, WELDING AND ASSEMBLY SHALL BE GOVERNED BY AHS/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 GROUNDED 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 I, 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 A768.
8. WELDING PROCEDURES SHALL BE ESTABLISHED BY THE CONTRACTOR TO RESTRICT THE TEMPERATURE TO A MAXIMUM OF 830° (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) OR 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 SECTION THICKNESS ± 1.00"	+ 1/16", -0
ELASTOMERIC BEARING PLAN ± 3/16"	+ 1/16", -0
ELASTOMERIC BEARING PLAN ± 3/16"	+ 1/16", -0
ELASTOMERIC COVER TOP ± 3/16"	+ 1/16", -0
ELASTOMERIC COVER SIDES	+ 1/16", -0
THICKNESS OF INDIVIDUAL LAYERS OF ELASTOMER (LAMINATE BEARINGS)	
ONLY AT ANY POINT WITHIN THE BEARING	± 1/8"
PARALLELISM 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	± 1/16"
EDGE CORNER OF EMBEDDED LAMINATES OF CONNECTION MEMBERS	+ 1/16", -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 SLOT LOCATION	± 1/16"
SIZE OF HOLES & SLOTS	± 1/16"
STEEL PLATE BEVELED SLOPE	± 0.005 S/D
STEEL PLATE SURFACE FINISHNESS	CLASS B

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

STRUCTURES  
COPY

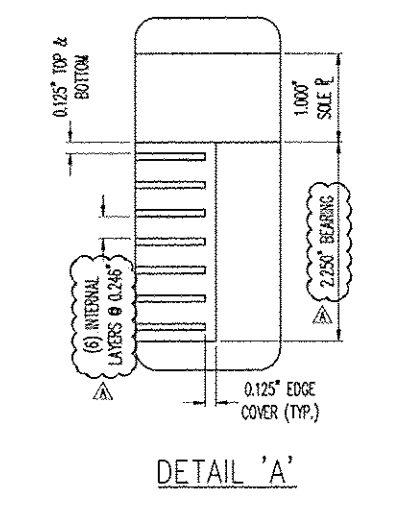
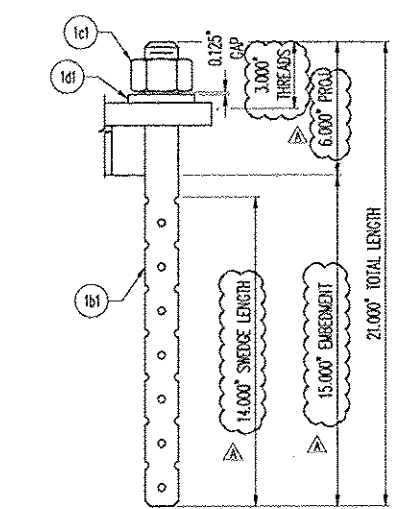
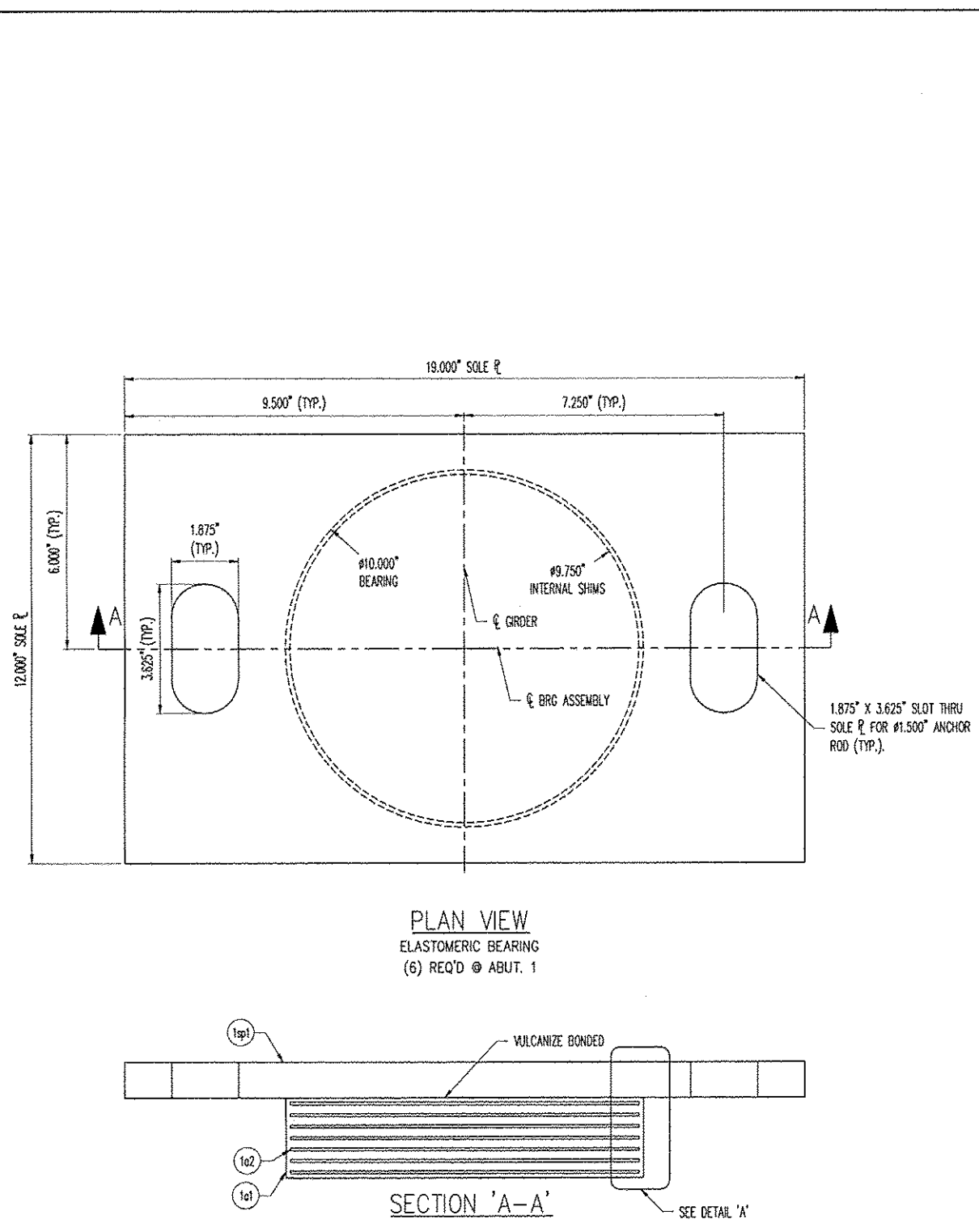
RECEIVED  
OCT 12 2011  
RESUBMIT APPROVED  
DATE 10/13/2011



REV	DESCRIPTION	DATE	BY	CHK'D
1	LOCATION - BAYE #1 ON BRIDGE 66 WILES RD OF SHAWL/ROBERTY TOWN USE			
	BRIDGE - 15			
	PROJECT NO. - BRF 08252A			
	PROJECT NAME - ROBERTY			
	DESIGNER - VT DOT			
	CUSTOMER - LUCK BROS. INC.			

GENERAL NOTES  
WASHINGTON CO., VT

34574 1104 10/26/11 1 001



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

NO.	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS
1A	6	ELASTOMERIC BEARING			
1a1	6	7.25" DIA. BOLLARD	NATURAL RUBBER		50-7.5" DIA. BOLLARD
1a2	6	1/2" DIA. X 18.75" LONG			WOODS BOLLARD 5/8" X 12" DIA. PLAN
1a3	6	1.875" X 3.625" HOLE THRU			W/1/2" DIA. HOLE
1B	12	ANCHOR ROD	A307 OR A308 (A193)	12.000"	
1B1	12	1/2" DIA. X 21.000" OPENED ROD	A307 OR A308 (A193)		Y. TENSILE STRENGTH
1C	12	WASHER PLATE	A307 (A193)	5.000"	1.875" HOLE W/ 1/2" DIA. HOLE
1c1	12	1/2" DIA. X 1.875" HOLE THRU			W/1/2" DIA. HOLE
1c2	12	1/2" DIA. X 1.875" HOLE THRU			W/1/2" DIA. HOLE
1D	12	LOCK NUT	A307 (A193)		
1d1	12	1/2" DIA. X 1.875" HOLE THRU			W/1/2" DIA. HOLE
1E	12	LOCK WASHER	A307 (A193)		
1e1	12	1/2" DIA. X 1.875" HOLE THRU			W/1/2" DIA. HOLE

SEE SH. 011 FOR GENERAL NOTES.

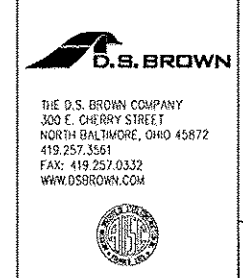
NO.	DESCRIPTION	DATE	BY	CHK'D BY
1	REV. BIDD. HEIGHT FROM 1.25 TO 2.25, BIDD. MATERIAL, & ANCHOR ROD	10/7/2011	BA	ANK
2	REV. BIDD. HEIGHT FROM 1.25 TO 2.25, BIDD. MATERIAL, & ANCHOR ROD	10/7/2011	BA	ANK

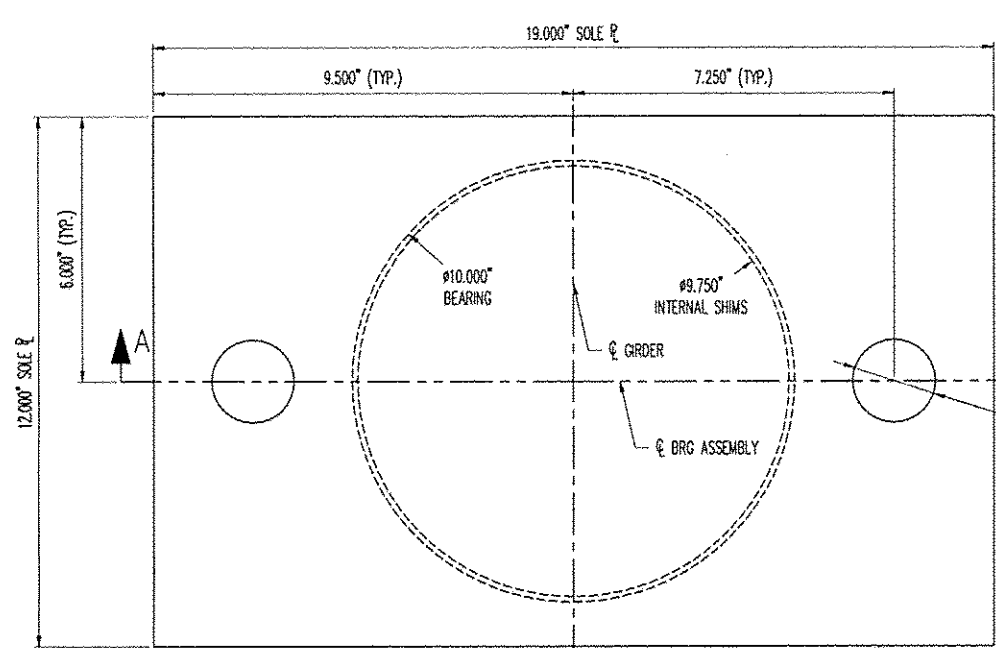
LOCATION --- BIDE #1 ON BRIDGE AT MILE 16.9 GRANVILLE/ROCKY HOLLOW  
 BRIDGE --- 15  
 PROJECT NO. --- SHF 0827(8)  
 PROJECT NAME --- ROADWAY  
 DESIGNER --- VTI DOT  
 CUSTOMER --- LUCK BROS. INC.

NO.	DESCRIPTION	DATE	BY	CHK'D BY
1	VERSIFLEX ELASTOMERIC BEARING	10/9/11	BA	ANK
2	WASHINGTON CO., VT	10/9/11	BA	ANK

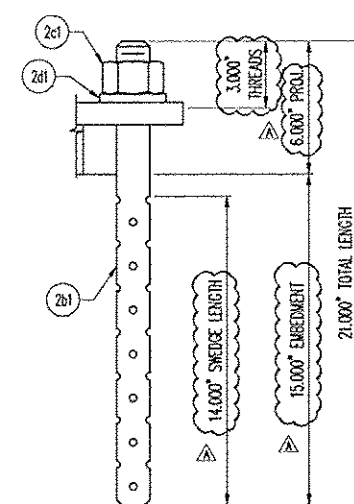
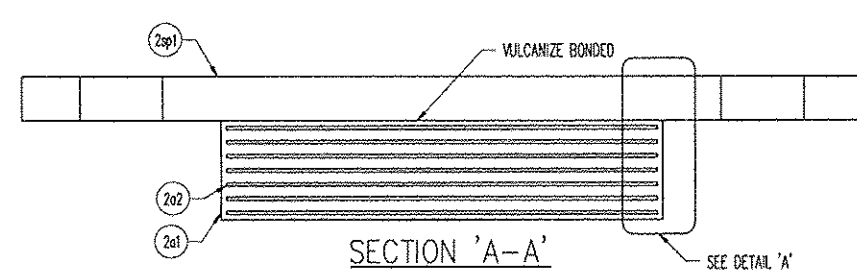
REV. 34574 1104 1 01

RECEIVED  
 OCT 12 2011  
 RESUBMIT BY RSY DATE 10/13/2011  
 APPROVED BY [Signature]

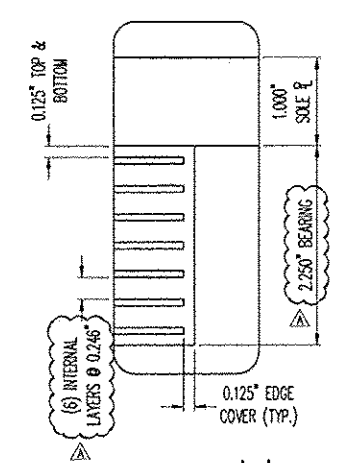




PLAN VIEW  
ELASTOMERIC BEARING  
(6) REQ'D @ ABUT. 2



ANCHOR ROD DETAIL



DETAIL 'A'

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

NO.	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS
2A	6	ELASTOMERIC BEARING			
2a1	6	1.5\"/>			
2a2	6	1/4\"/>			
2a3	6	1.00\"/>			
2B	12	ANCHOR ROD			
2b1	12	Ø1.500\"/>			
2C	12	HEAVY HEX NUT			
2c1	12	Ø1.500\"/>			
2D	12	WASHER PLATE			
2d1	12	Ø1.50\"/>			

SEE SH1, QNT FOR GENERAL NOTES.

REV.	DESCRIPTION	DATE	BY	CHK'D BY
1	REV. BRG. HEIGHT FROM 1.25 TO 2.25, BRG. MATERIAL, & ANCHOR ROD	10/10/19	DA	ANK

ITEM	QUANTITY
34074-1104-2	6 OF 6

LOCATION	BRIDGE	PROJECT NO.	DESIGNER	CUSTOMER
Part of Ch. Bridge at West of Orwell, Rte 100 W.	15	017 (017A)	VT DOT	LUCK BROS. INC.

VERSIFLEX LEASTOMERIC BEARING	N.T.S.	DA	ANK	10/16/19
WASHINGTON, CO., VT	34574	1104	1	02

RECEIVED  
OCT 12 2019  
APPROVED  
DATE 10/13/2019



**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.

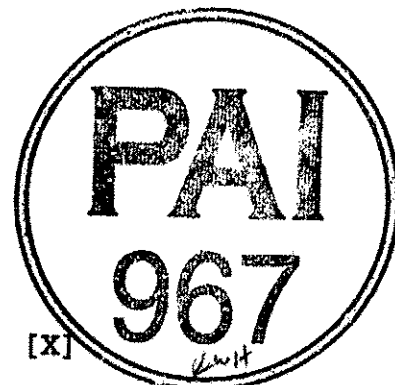
Ted Luck, President  
Luck Brothers Inc  
73 Trade Road  
Plattsburgh, NY 12901  
518-561-4321

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

BOLT NUTS  
 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. BILL TO:  
 VT 12A  
 Roxbury, VT  
 ATTN: Ted Luck  
 JOB PHONE: 518.561.4321  
 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: \_\_\_\_\_



Shipper [Signature] Date \_\_\_\_\_  
Shipping Insp. [Signature] Date \_\_\_\_\_  
Final Q.C. [Signature] Date \_\_\_\_\_

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

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

Page 1

**ROTATIONAL CAPACITY TEST RESULTS**

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

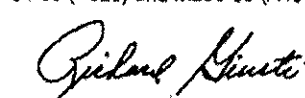
PO 197786  
 Project  
 SO No K80214  
 Invoice No

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					

Test	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 were conducted in accordance with AASHTO-M164-05 (A325) and M253-05 (A490) and the latest revision of supplementary requirements of FHA standards.

SIGN



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      Supplier: HAYDON BOLTS INC.      Z03064  
Description: MATERIAL CERTIFICATIONS  
51128      120000      AQA087200      97      517904      CR 405900      Supplier: HAYDON BOLTS INC.      Z05140  
Description: 7/8(9)X 2" A325-3 BOLT      Supplier: SLSB LLC.  
52803      130000      VDH3087      97      TB841      M666329      Supplier: UNYTITE INC.      Z07283  
Description: 7/8(9) HVY HEX NUT A563-DH3      Supplier: UNYTITE INC.  
51210      140000      WRW087      97      C3732      A25698      Supplier: PRESTIGE STAMPING INC.      Z07086  
Description: 7/8 F436 TYPE 3 WASHER

HAYDON BOLTS, INC.

FOSTER PRECISE

Invoice No. D1101350

Customer PO 197786

Invoice Date 10/31/11

Quantity 1

Lot No K80214

Heat RO CAP

Assembly No

Haydon PO

Z03064

Customer PO 197786

Invoice Date 10/31/11

Quantity 1

Lot No K80214

Heat RO CAP

Assembly No

Haydon PO

Z03064

Customer PO 197786

Invoice Date 10/31/11

Quantity 1

Lot No K80214

Heat RO CAP

Assembly No

Haydon PO

Z03064

HAYDON BOLTS, INC.

FOSTER PRECISE

Invoice No. D1101350  
Cert No Inv Line No Item No

51128 120000 AQA087200

Customer PO 197786

Invoice Date 10/31/11

Quantity Lot No

97 517904

Sales Order K80214

Heat CR 405900

Assembly No

Haydon PO  
Z05140



TEST REPORT

13001 ATHENS AVENUE  
CLEVELAND, OHIO 44107  
T. 216.521.1800  
F. 216.228.4220

3281 WEST COUNTY ROAD ONE  
764-NORTH INDIANA 46041-0766  
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 Number: AQA087200  
Description: 7/8-9 X 2 A325-3  
Finish: PLAIN  
THREAD TO HEAD

RAW MATERIAL ANALYSIS

Steel Heat Nbr: CR405900	Steel Grade: A325 TYPE 3 CLASS								
Steel Supplier: Charter Steel									
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	High	Low	Average	Samples
Test Performed	52.0	48.0	49.4	8
Superficial R30N				
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 - Pkft 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:  
Page: 1 of 2

MECHANICAL FIELD OF TESTING

Lake Erie Products  
Gerald E. Simone  
Quality Manager



TEST REPORT

13001 ATHENS AVENUE  
CLEVELAND, OHIO 44107  
T. 216.521.1800  
F. 216.528.4550

3281 WEST COUNTY ROAD ONE  
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 LB'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 and neither Lake Erie Products nor any of its subsidiaries or affiliates are responsible for the accuracy of the data shown on this report.

Lake Erie Products  
Gerald E. Simpson  
Quality Manager



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



- 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	CSR/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. 49 <sup>th</sup> 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	CSR/CSPD, P4, CSC	ASTM E8; ASTM A370
Rockwell Hardness	CSR/CSPD, P4, CSC	ASTM E18; ASTM A370
Microstructure (spheroidization)	CSR/CSPD, P4	ASTM A892
Cleanliness	CSR/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.



HAYDON BOLTS, INC.

FOSTER PRECISE

Invoice No. D1101350  
Cert No Inv Line No Item No  
52803 130000 VDH3087

Customer PO 197786

Invoice Date 10/31/11  
Quantity Lot No Heat  
97 TB841 M666329

Sales Order K80214  
Assembly No  
Haydon PO  
Z07283

INSPECTION CERTIFICATE

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

Customer	Specification	Size	Lot No.	Date
ASTM A-563 GRADE D13 HEAVY HEX NUT	7/8 - 9 UNC	7B841	AUG. 27, '11	

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

Chemical Composition (%)											
Mill Make	Material Size	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Shape & Dimension Inspection
BERDUT NMBR COPPER		0.24	0.24	0.40	0.014	0.014	0.23	0.35	0.54	0.04	ANSI B18.2.2 GOOD
ISTREZ (NO)	H666329	0.22	0.22	1.03	0.014	0.014	0.23	0.35	0.54	0.04	Thread Precision Inspection ANSI B1.1 CLASS "B" GOOD
Mechanical Property Inspection											
Item	Proof Load	Core Stripping	Hardness	Hardness After Heat Treatment	Hardness After 24 H2O, 1°C	Absorbed Energy	Heat Treatment				
Spec	80,000 lb		24-38 HRC	H8-H10 5 Pieces Average After Heat Treatment	H8-H10 5 Pieces Average After Heat Treatment	1-1/2 in-lb	T: MIN. 800 F				
Results	n	n	27.3 27.1 27.2 27.3 27.3				Q: ROBBING Q (W.Q.) T: 1:175 F/15M (W.C.) Q: Quenching T: Tempering ST: Solution Treatment				
Results	GOOD						Production Quantity 76,050 pcs.				
Remarks: * DR3 U *											

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

*[Signature]*

**GERDAU AMERISTEEL**  
ST PAUL STEEL MILL  
ST PAUL, MN 55119 USA  
(651) 731-5600

SHIP TO UNTYTE INC 1 UNTYTE DRIVE PERU, IL 61354		INVOICE TO UNTYTE INC 1 UNTYTE DRIVE PERU, IL 61354		SHIP DATE 07/2011		CUST. ACCOUNT NO 7000062	
PRODUCED IN: ST PAUL		GRADE SPECIFICATION A572-50 A572-50		COIL OR SHEET COIL		CUTS PER NUMBER 10000000	
HEAT NO.	C	Mn	P	S	Si	Al	Other
10000000	29	1.23	0.015	0.02	0.2	0.01	0.005
Description: A572-50 GA STP CASTING STRAND CAST		CO	NI	CU	AS	SE	OTHER
Comment: melted and MCA		29	35	36	204	205	201
Workshop heat M11515, made at 07/20/11, at M M866329 coil cut 07/02/2011		CUST. ITEM NUMBER: 00000000000000000000		CUST. ITEM WEIGHT: 00000000000000000000		CUST. ITEM LENGTH: 00000000000000000000	

**Customer Notes**  
NO WELD REPAIRMENT PERFORMED. STEEL NOT EXPOSED TO MERCURY.  
The above figures are certified chemical and physical test records as contained in the permanent records of company.  
Shakir Yilmaz  
Quality Director

*Debra L. Kariesch*  
**DEBRA L. KARIESCH**  
Head - Test Services Manager  
ST PAUL STEEL MILL

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

We warrant that all material furnished shall comply with specifications subject to standard published manufacturing practices. NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARE MADE BY THE COMPANY. In no event shall either party be liable for contract, consequential or punitive damages. 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 opportunity to inspect the material in question.

HAYDON BOLTS, INC.

FOSTER, PRECISE

Invoice No. D1101350  
Cert No Inv Line No Item No  
51210 140000 WPRV087

Customer PO 197786

Sales Order K80214

Invoice Date 10/31/11  
Quantity Lot No  
97 C3732

Heat  
A25898

Assembly No

Haydon PO  
Z07086

Prestige  
Stamping  
Inc.

23513 Crossbuck Highway  
Warren, Michigan 48087  
(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 UNTTY ST PHILADELPHIA, PA 19124-3196	
Customer Part: 7/8"X436 TYPE 3 Prestige Part: E1700CH00 Part Name: 7/8"X436 TYPE 3 Purchase Order: 207086-1 Shipment BOI: E145947 Shipment ID: A0155441 Quantity: 35000 Manufacturers Marking: "P"	Steel Supplier: MID STATE INDUSTRIES Grade: SAE CF436 TYPE3 STEEL Lot: C3732 Heat: A25898 Carbon: .40 (.33 - .46) Manganese: .71 (.6 - 1.2) Phosphorous: .012 (.04 Max.) Sulfur: .001 (.05 Max.) Silicon: .18 (.15 - .35)
<b>SPECIFICATIONS</b> HARDNESS: TEST METHOD: ASTM E18 HRC 38 - 45 ASTMF-606	<b>TEST RESULTS</b> HARDNESS: HRC 40 - 42
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: 0082933. Material was melted and manufactured in the U.S.A. This product was manufactured in Warren, Michigan U.S.A. The 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. # S-4-10.016. 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                      Date: Feb 15, 2011  
23212 Grossbeck Highway  
Warren, Michigan 48090

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  
1504840

ArcelorMittal Riverdale Inc.

ArcelorMittal

REV. 0 DATE SHIPPED 11/16/2010

BILL OF LADING 01504840	CARRIER MITTAL RIVERDALE	CAR/TRAILER NBR CSP-32	ARRIVAL DATE
FREIGHT PAYMENT Prepaid	NET WEIGHT 183390 LBS	TARE WEIGHT	

SHIP TO (000870-001)  
MID-STATE INDUSTRIES, LLC  
C/O NACME STEEL PROCESSING  
429 WEST 127TH ST.  
CHICAGO, IL 60628

ATTENTION: Rod S

OUR ORDER: 488987 YOUR P.O.: M21000-046/2 FOB: FOB Mill  
ALC P.O.: 1

001 HB1365120-01 183390 LBS / 4 Coils  
YOUR PART NBR: B698640  
0.1350 Min -0.0000/ +0.0100 X 51.2000 + 1.5000 MH(IN)  
ID 30.0/30.0 OD 67.7/70.7 (IN)  
Hot Band Prime Alloy MID-STATE 8640 MOD  
C R/A

END USE: WEATHERING UEXP MELTED/MFG. IN U.S.A.  
MNS 110A 8640 R-DALB  
8640A RIVERDALE GRADE-WEATHERING  
ALL SHIPMENTS MUST BE MARKED EXTERNALLY WITH PO# WITH  
PACKING LIST ENCLOSED SHOWING PO# AND PO# OTHERWISE MATERIAL  
WILL BE RETURNED AT SHIPPER'S 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

TEST CLASS	LOT NBR	C E R T I F I C A T I O N P R O P E R T I E S									
Chemical:	A25898	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Al
		0.4000	0.7100	0.0150	0.0010	0.1800	0.3400	0.2900			
		Cr	Mo	Si	Al						
		0.4900	0.0100	0.0200	0.0390	0.0050	0.0000	0.0046			
		N	Se	Ti	Sn	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
A25898	A25898	A25898	0.1350	51.2000	44750 LBS	44750 LBS
B28591	A25898	A25898	0.1350	51.2000	45950 LBS	45950 LBS
B28592	A25898	A25898	0.1350	51.2000	45830 LBS	45830 LBS
B28593	A25898	A25898	0.1350	51.2000	45860 LBS	45860 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 2008 AND ITS LATEST REVISIONS.

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

### MATERIAL SPECIFICATIONS

ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M270 GR 50W (A36).

ALL BOLTS FOR THIS PROJECT SHALL BE HIGH STRENGTH HEX HEAD BOLTS AND CONFORM TO ASTM A325 TYPE 3  
NUTS ARE A563-D43 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 CHAMFY V-NOTCH TESTED FOR ZINC 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 SHD<sup>2</sup> 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

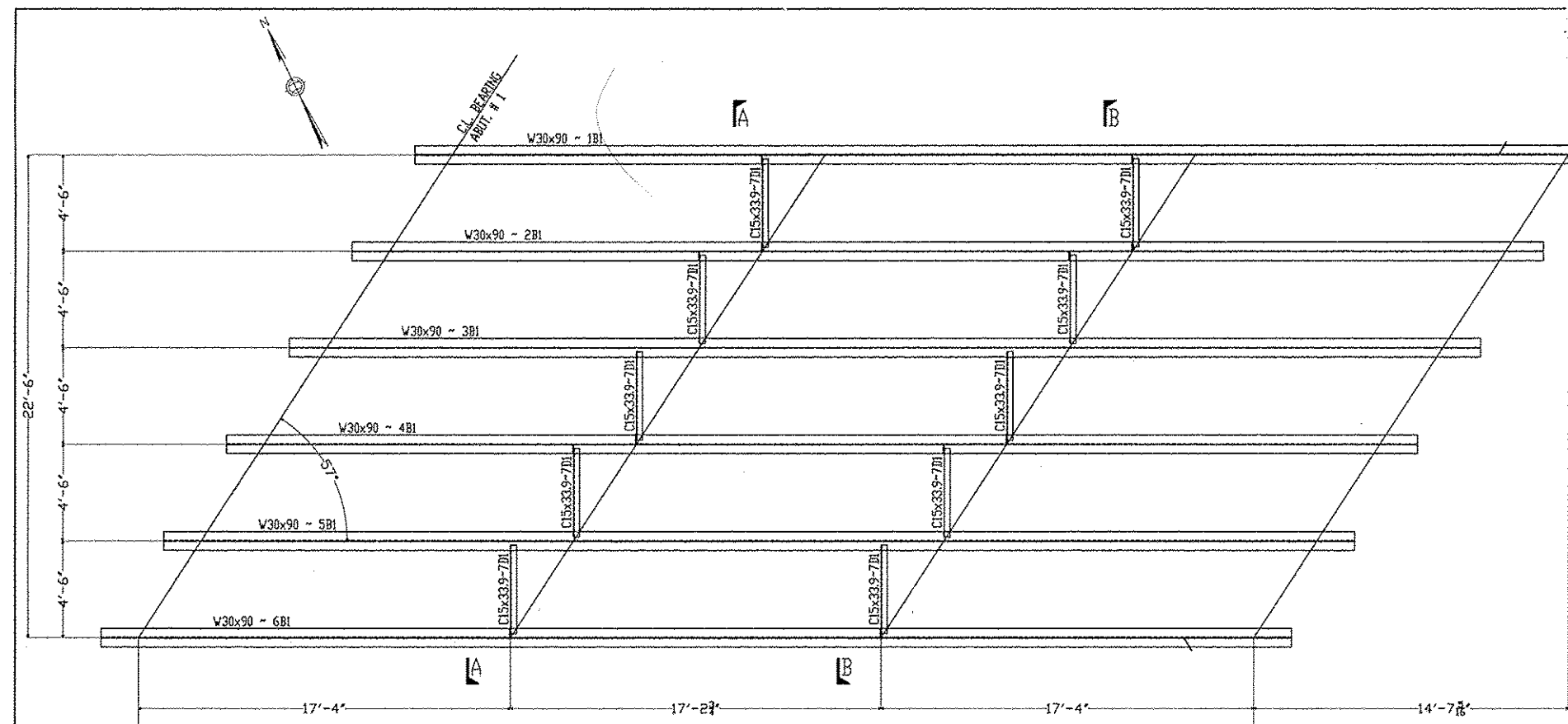
ALL STEEL SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP10 BLAST CLEANING

### PAINT

NO PAINT

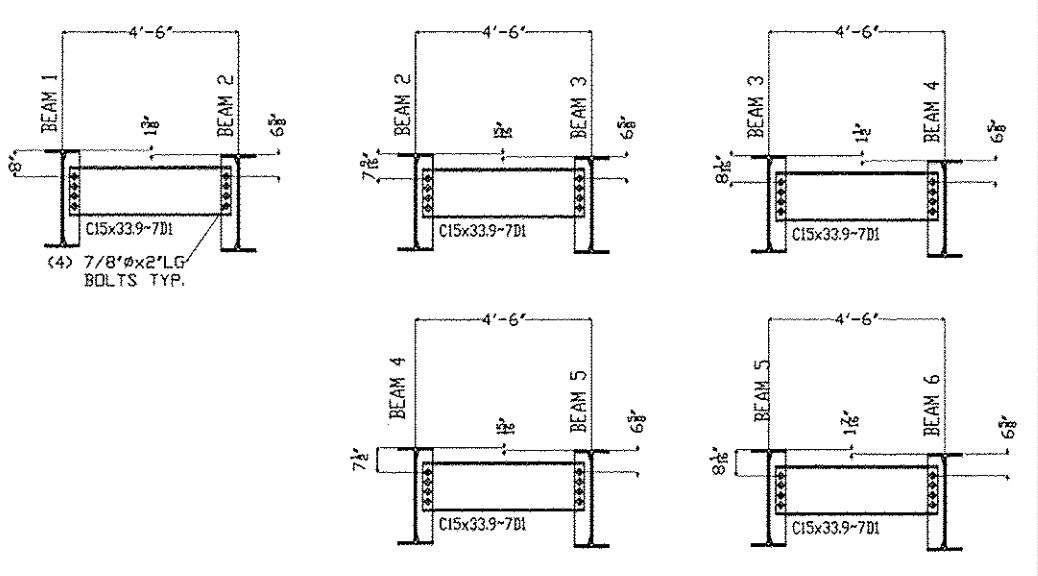
RECEIVED  
OK'D BY RSY  
OCT 17 2011  
RESUBMIT APPROVED ✓  
BY DATE 10/18/2011

1	10/17/11	APPROVER COMMENTS
2		REVISION
GENERAL NOTES		
TOWN OF ROXBURY, WASHINGTON COUNTY, VT PROJECT NUMBER: BHP 018710 VT 12A, MAJOR COLLECTOR - BRIDGE 15		
		
OWNER: VT AGENCY OF TRANSPORTATION CONTRACTOR: LUCK BROTHERS INC		
DATE	ISSUED BY	APP.   DESG.   CORRIG. NO.   SHEET NO.
10/18/11	RSY	3550   GN1

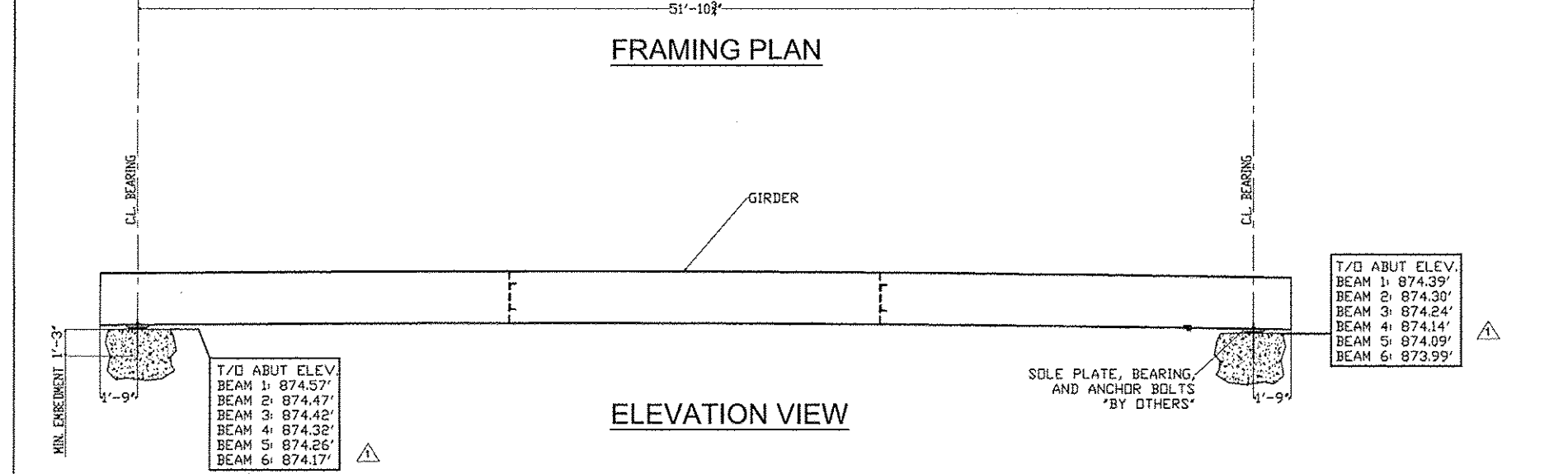


FRAMING PLAN

FIELD BOLT SUMMARY					NOTE: 4% ADDITIONAL BOLTS ADDED + 3 FOR TESTING
LINE NO.	QTY	TYPE	BOLT LENGTH	ACTUAL COUNT	REMARKS
1	87	A325 TYPE 3	2"	80	+ 7 FLAT WASHER
2	1				
3	1				
4	1				

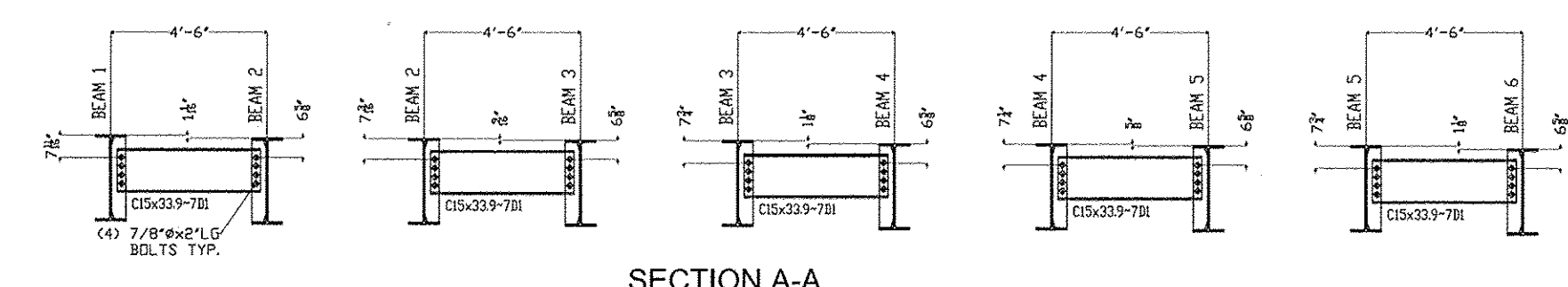


SECTION B-B



ELEVATION VIEW

RECEIVED  
 OK'D BY \_\_\_\_\_ OK'D BY RSC  
 OCT 17 2011  
 RESUBMIT \_\_\_\_\_ APPROVED \_\_\_\_\_  
 BY \_\_\_\_\_ DATE 10/18/2011



SECTION A-A

SHOP NOTES

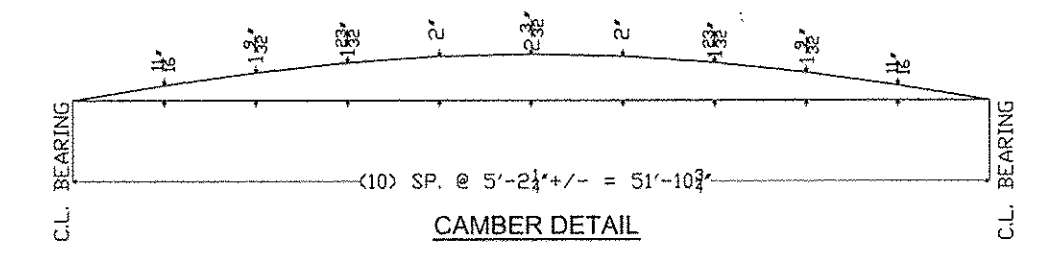
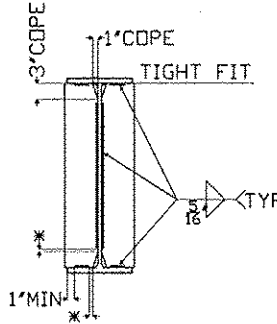
- HOLE: 15/16" UNF
- BOLTS: PER GRI
- PAINT: HD PAINT
- WELDS: N/A
- MATERIAL: A572 GR.50V

PRECISE STRUCTURAL PRODUCTS  
 3 FARM LANE  
 GEORGETOWN, MA 01833  
 (978) 862-2991

OWNER: VT AGENCY OF TRANSPORTATION  
 CONTRACTOR: LOCK BROTHERS INC.  
 DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 NO. 1626/1111 SHEET NO. 3550 OF 3550



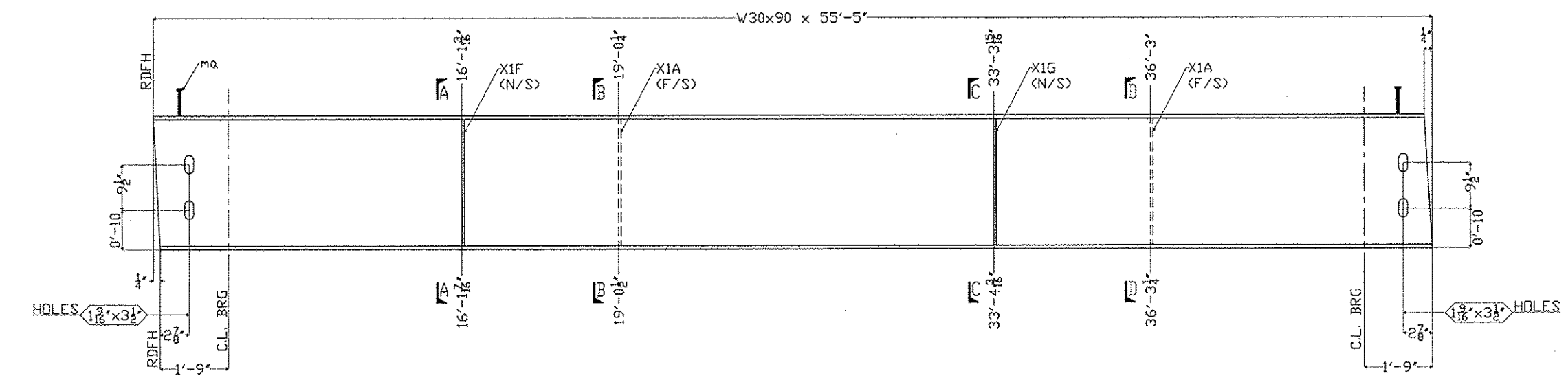
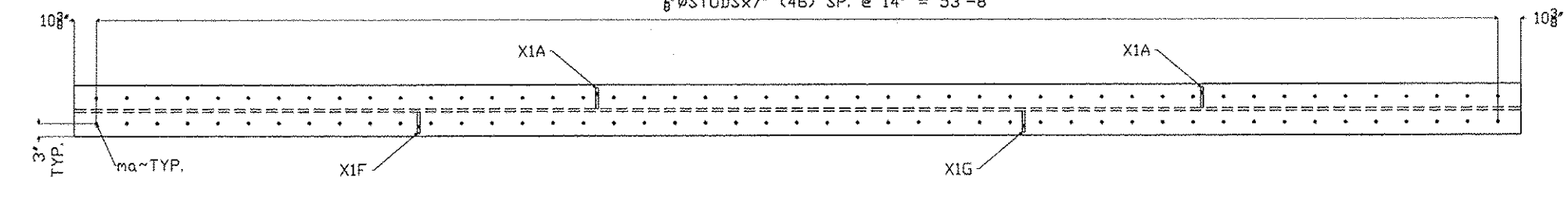




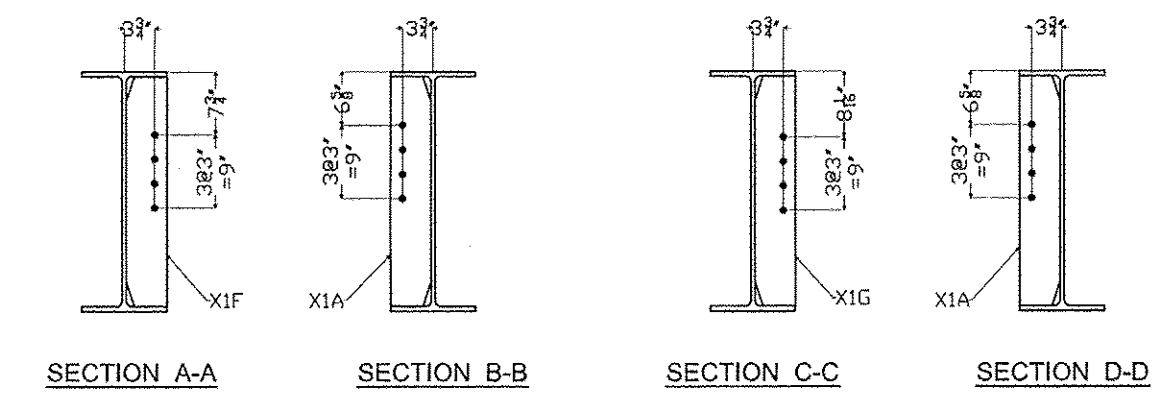
SHIPPER		BILL OF MATERIAL							
NO.	MARK	NO.	MARK	SIZE	LENGTH	QTY	REMARKS	ITEM	WEIGHT
1	3B1			W30x90	55'-5"		CVN		
		2	XIA	PL 1/2x5	2'-4 1/2"		CVN		
		1	XIF	PL 1/2x5	2'-4 1/2"		CVN		
		1	XIG	PL 1/2x5	2'-4 1/2"		CVN		
		94	no	7/8\"/>					

TYP. DIAPHRAGM STIFFENER WELD DETAIL

\* NO WELD FOR 3/8\"/>

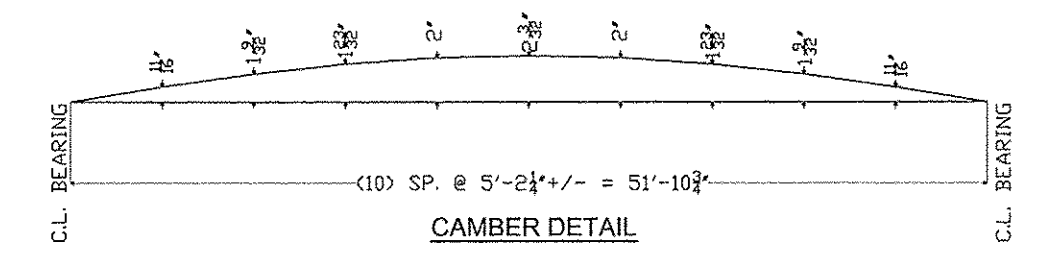
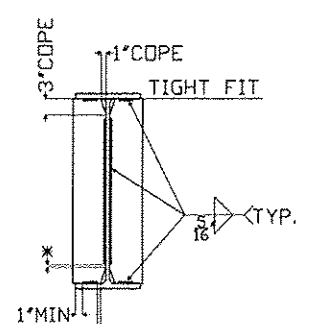


RECEIVED  
 OK'D BY \_\_\_\_\_ OK'D BY RSY  
 OCT 17 2011  
 RESUBMIT \_\_\_\_\_ APPROVED ✓  
 BY \_\_\_\_\_ DATE 10/18/2011

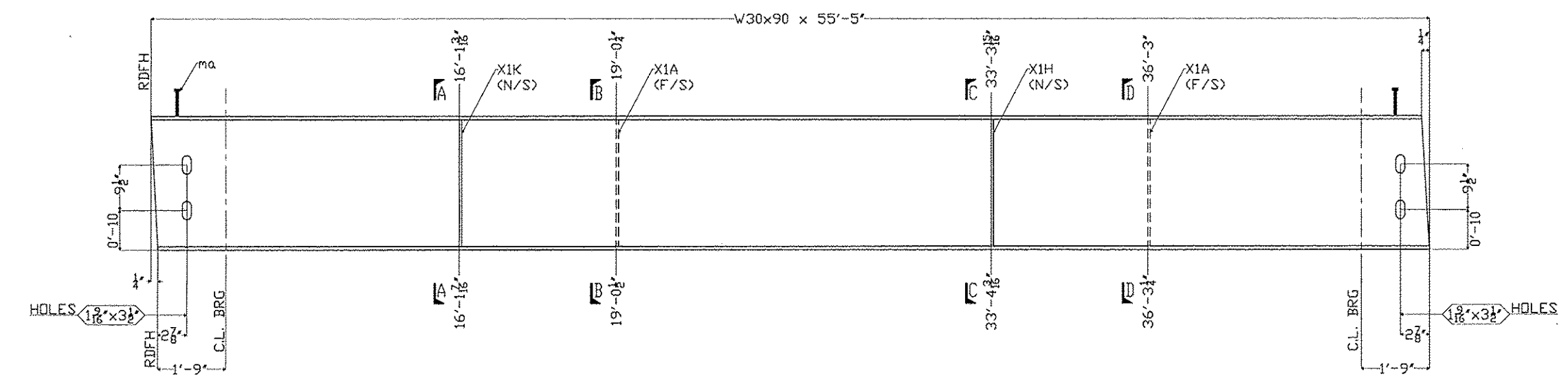
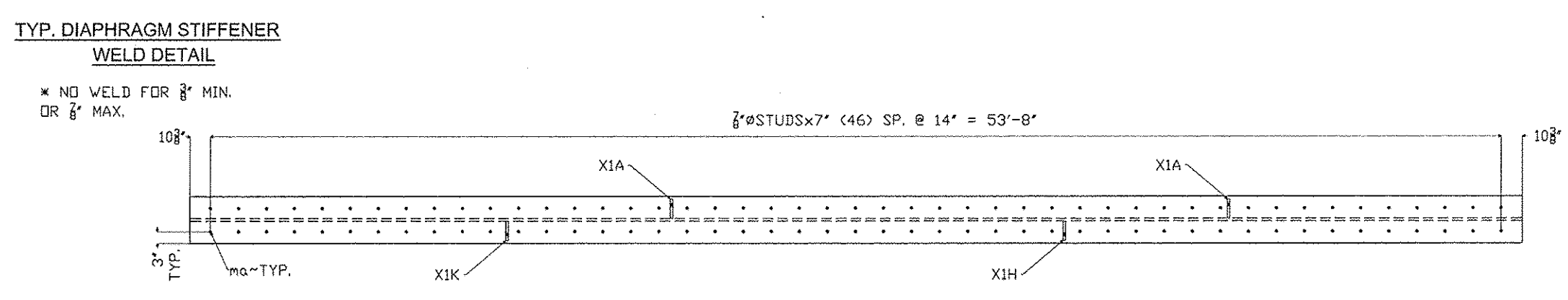


SHOP NOTES  
 HOLES: 15/16\"/>

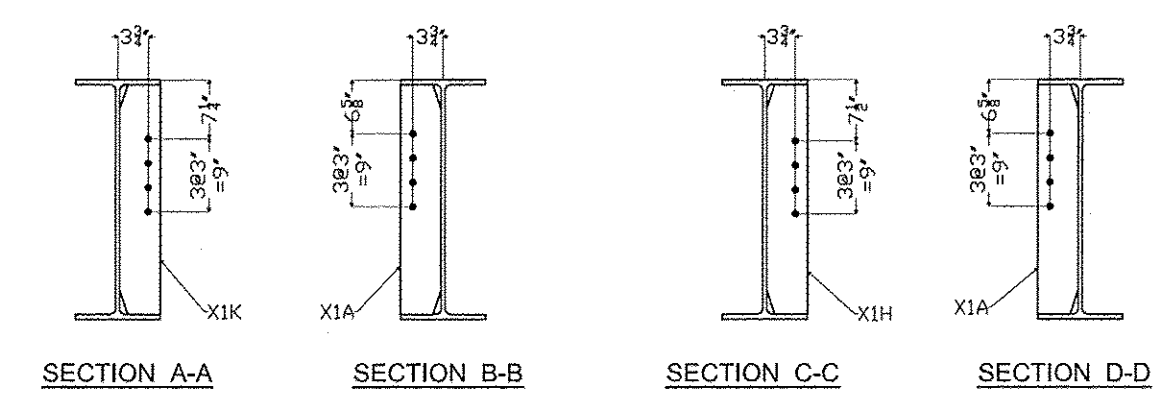
PRECISE STRUCTURAL PRODUCTS  
 3 PARK LANE  
 GEORGETOWN, MA 01833  
 PHONE: 978-851-1100  
 OWNER: VT AGENCY OF TRANSPORTATION  
 CONTRACTOR: LUCK BROTHERS INC  
 DRAWN BY: [REDACTED] REV. [REDACTED] SHEET [REDACTED] CONTRACT NO. [REDACTED] SHEET NO. [REDACTED]



SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	REV	WEIGHT
1	4B1	2	XIA	1/2\"/>				

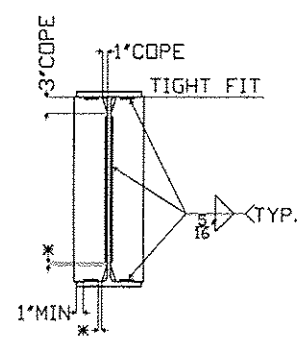


RECEIVED  
 OK'D BY \_\_\_\_\_ OK'D BY RSY  
 OCT 17 2011  
 RESUBMIT \_\_\_\_\_ APPROVED \_\_\_\_\_  
 BY \_\_\_\_\_ DATE 10/18/2011



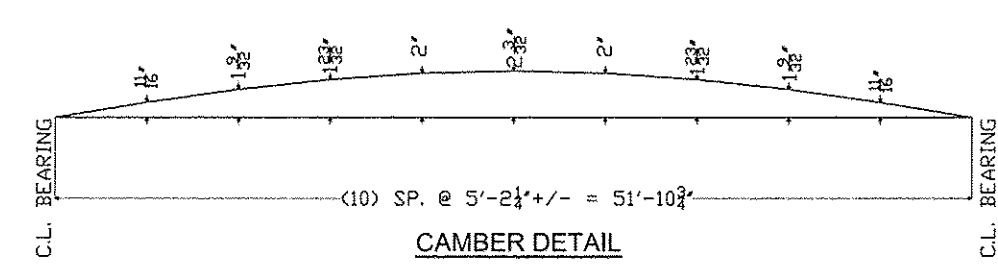
SHOP NOTES  
 HOLES: 15/16\"/>

PRECISE STRUCTURAL PRODUCTS  
 3 FARM LANE  
 GEORGETOWN, MA 01833  
 (978) 382-2299  
 OWNER: VT AGENCY OF TRANSPORTATION  
 CONTRACTOR: LUCK BROTHERS INC  
 DRAWN BY: ENGINEER: JET: JET: DATE: 10/18/11 SHEET NO: 4



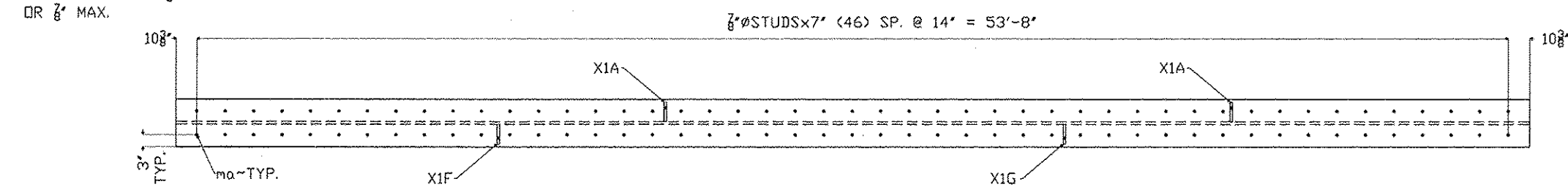
TYP. DIAPHRAGM STIFFENER  
WELD DETAIL

x NO WELD FOR 1/2" MIN.  
OR 3/4" MAX.



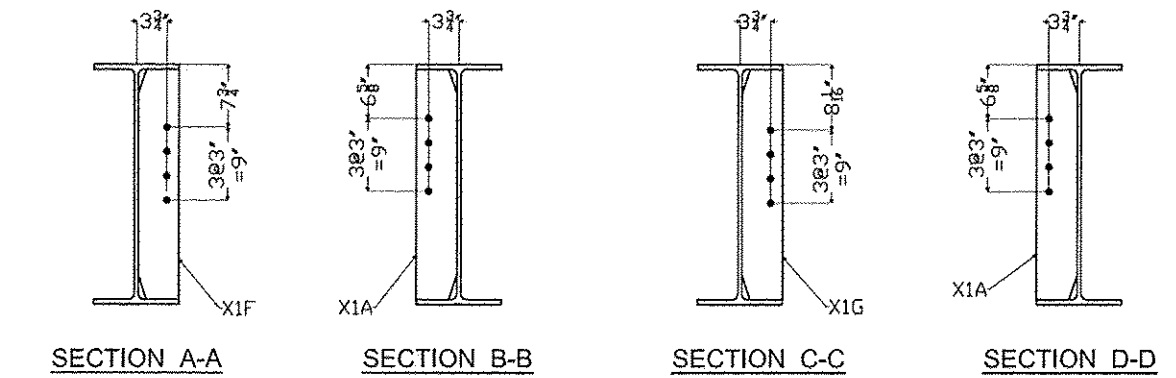
CAMBER DETAIL

SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	5B1			V30x90	55'-5"	CVN		
		2	X1A	PL 1/2"x8"	2'-4 1/2"	CVN		
		1	X1F	PL 1/2"x8"	2'-4 1/2"	CVN		
		1	X1G	PL 1/2"x8"	2'-4 1/2"	CVN		
		94	no	3/8" STUD	0'-7"			



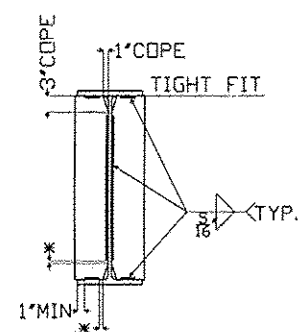
ONE - GIRDER DETAIL - 5B1

RECEIVED  
OK'D BY \_\_\_\_\_ OK'D BY RSY  
OCT 17 2011  
RESUBMIT \_\_\_\_\_ APPROVED   
BY \_\_\_\_\_ DATE 10/18/2011



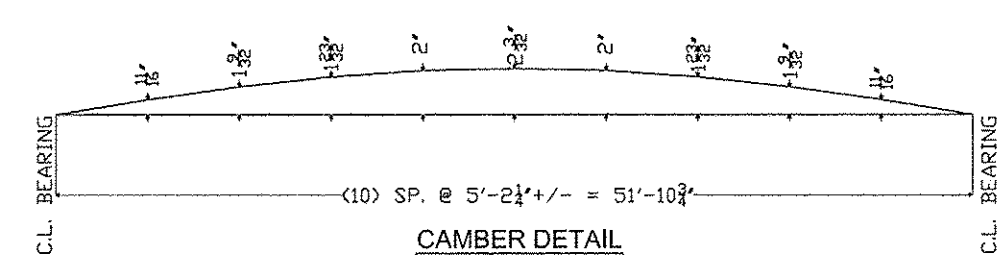
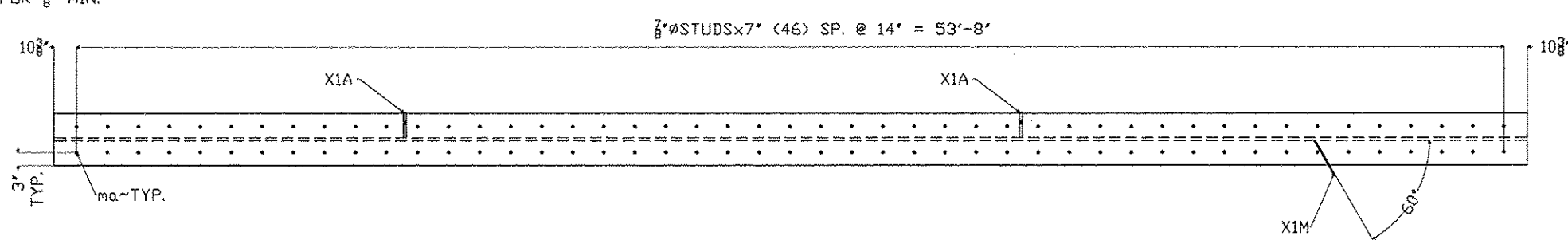
SHOP NOTES  
HOLES: 15/16" DIA  
BOLTS: PER GRI  
PAINT: NO PAINT  
WELDS: N.A.  
MATERIAL: A572 GR.50

PRECISE STRUCTURAL PRODUCTS	
3 FARM LANE GEORGETOWN, MA 01833 PHONE: 978-852-2591	
OWNER: VT AGENCY OF TRANSPORTATION CONTRACTOR: LUCK BROTHERS INC	
DATE: 10/11/11	BY: [Signature]
NO: 10/11/11	REV: 1
DATE: 10/18/2011	BY: [Signature]
NO: 3500	SHEET NO: 5

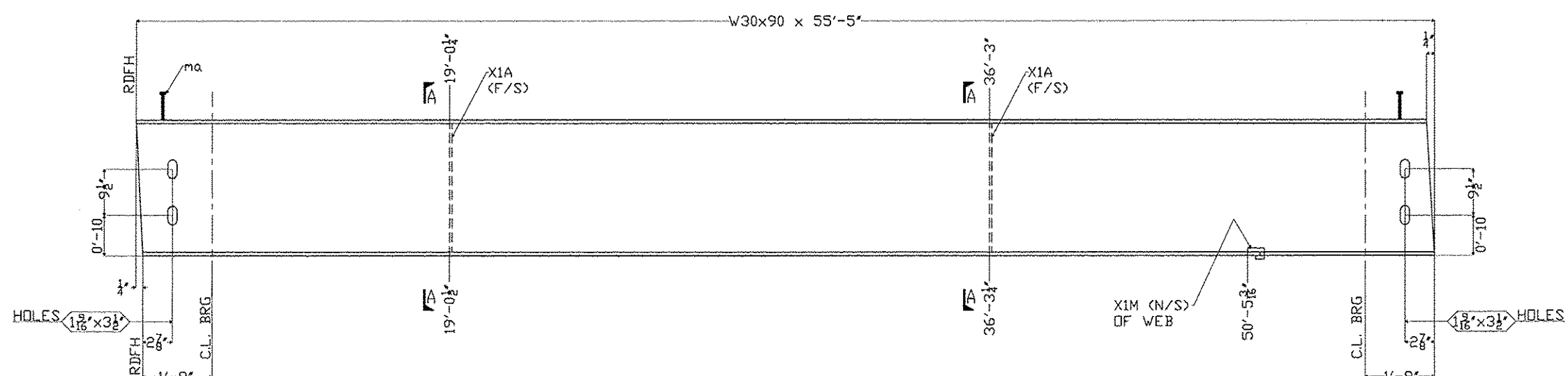


TYP. DIAPHRAGM STIFFENER  
WELD DETAIL

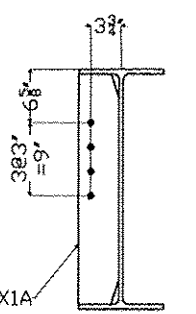
\* NO WELD FOR 2" MIN.  
OR 2" MAX.



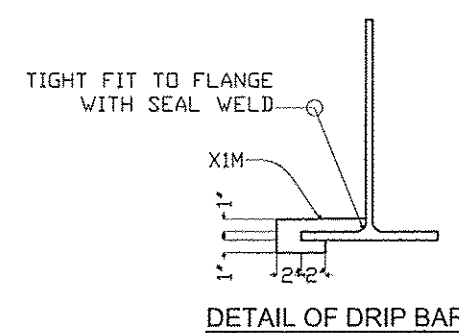
SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	FORMS	ITEM	WEIGHT
1	6B1			W30x90	55'-5"	CVN		
		2	XIA	PL 1/2x3	2'-48"	CVN		
		1	XIM	PL 1/2x2	0'-72"	CVN		
		94	na	3/8\"/>				



ONE ~ GIRDER DETAIL ~ 6B1



SECTION A-A



DETAIL OF DRIP BAR

RECEIVED  
 CK'D BY \_\_\_\_\_ OK'D BY RESY  
 OCT 17 2011  
 RESUBMIT \_\_\_\_\_ APPROVED \_\_\_\_\_  
 BY \_\_\_\_\_ DATE 10/18/2011

SHOP NOTES  
 HOLES: 15/16" UDN  
 BOLTS: PER ENG  
 PAINT: HD PAINT  
 WELDS: N/A  
 MATERIAL: A270 GR50V

NO.	DATE	REVISION

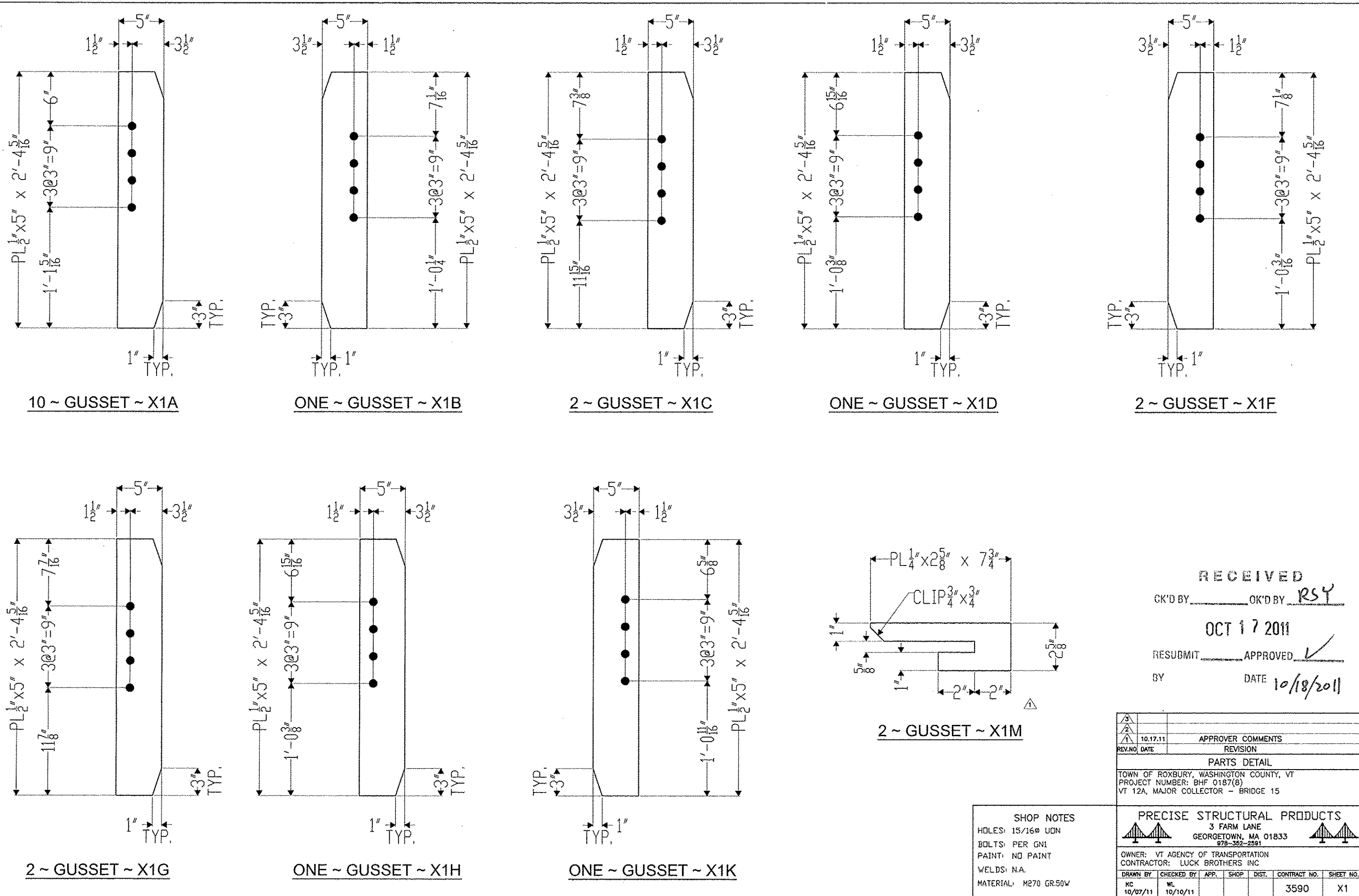
GIRDER DETAIL  
 TOWN OF ROXBURY, WASHINGTON COUNTY, VT  
 PROJECT NUMBER: BHP 0187(8)  
 VT 12A MAJOR COLLECTOR - BRIDGE 15

PRECISE STRUCTURAL PRODUCTS  
 3 PARK LANE  
 GEORGETOWN, MA 01833  
 (978) 891-3991

OWNER: VT AGENCY OF TRANSPORTATION  
 CONTRACTOR: LUCK BROTHERS INC

NO.	DATE	REV.	ISS.	DATE	CONTRACT NO.	SHEET NO.
1	10/18/11				3500	6





SHOP NOTES  
 HOLES: 15/16" UNF  
 BOLTS: PER GHI  
 PAINT: AC PAINT  
 WELDS: N/A  
 MATERIAL: A572 GR50

RECEIVED  
 OK'D BY: RSY  
 OCT 17 2011  
 RESUBMIT:  APPROVED:   
 BY: \_\_\_\_\_ DATE: 10/18/2011

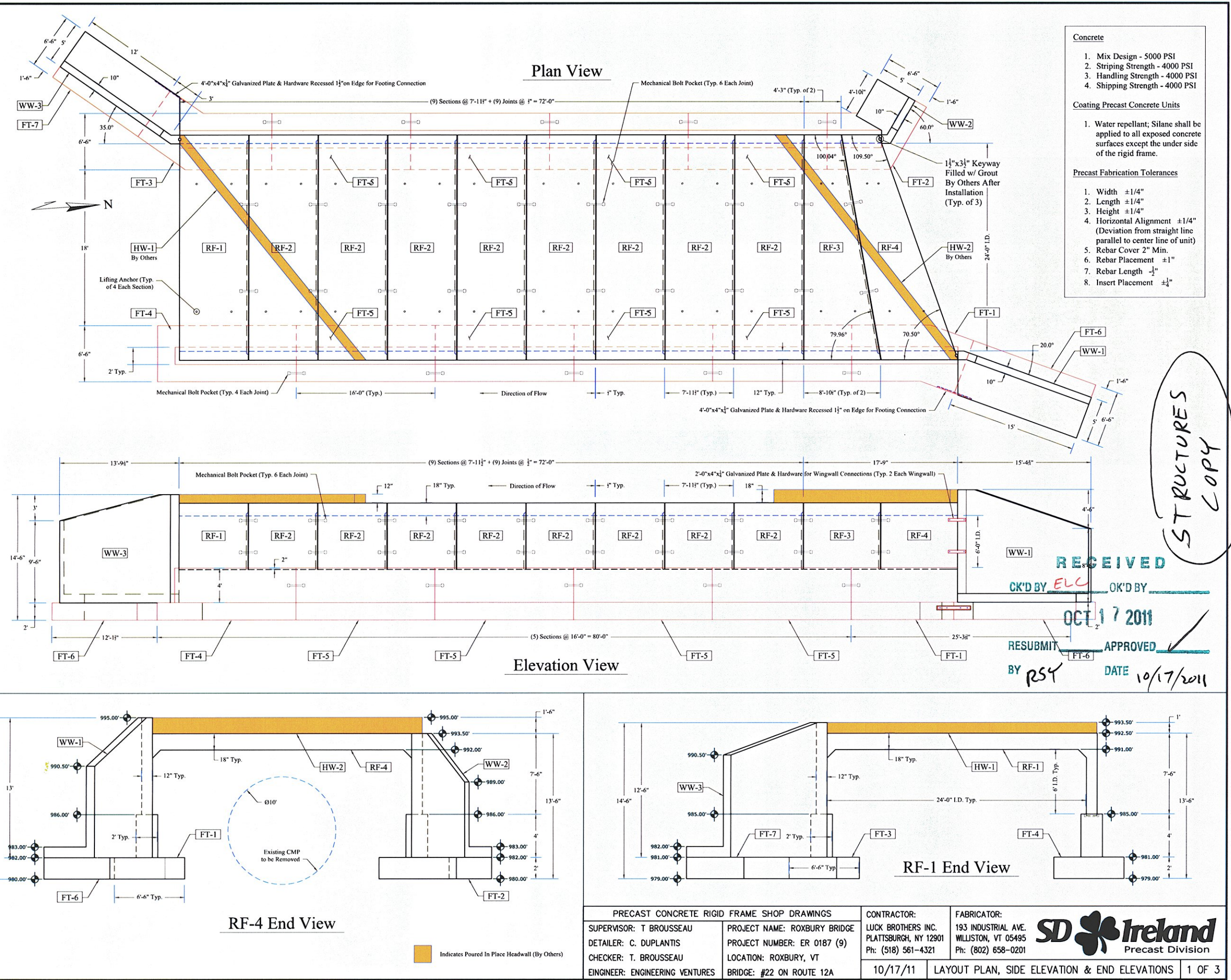
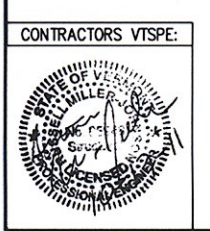
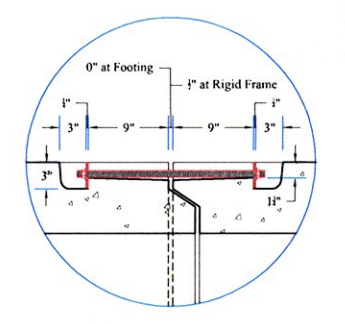
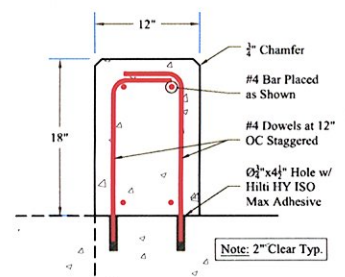
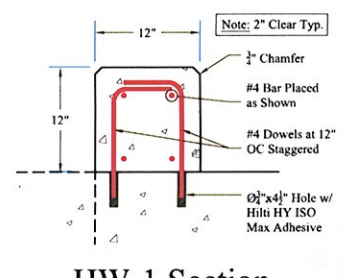
NO.	DATE	APPROVER COMMENTS	REVISION
1	10/17/11		

PARTS DETAIL  
 TOWN OF ROSELAND, WASHINGTON COUNTY, VT  
 PROJECT NUMBER: BHP 0187(10)  
 VT 12A, MAJOR COLLECTOR - BRIDGE 15

PRECISE STRUCTURAL PRODUCTS 3 FARM LANE GEORGETOWN, MA 01833 938-382-8911	
OWNER: VT AGENCY OF TRANSPORTATION	
CONTRACTOR: LUCK BROTHERS INC	
DRAWN BY: _____ CHECKED BY: _____	
DATE: 10/18/11	
NO. 3590	SHEET NO. X1

Name	Qty	Length	Vol (CY)	Wt (lbs)**
RF-1	1	7'-11"	15.63	61,710
RF-2	8	7'-11"	15.20	60,790
RF-3	1	7'-11"	12.51	50,050
RF-4	1	7'-11"	12.59	50,370
WW-1	1	16'-2"	7.98	31,900
WW-2	1	6'-2"	2.77	11,085
WW-3	1	16'-2"	7.98	31,915
FT-1	1	18'-0"	9.84	39,380
FT-2	1	11'-5"	7.47	29,890
FT-3	1	19'-5"	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) \*\* See V&E

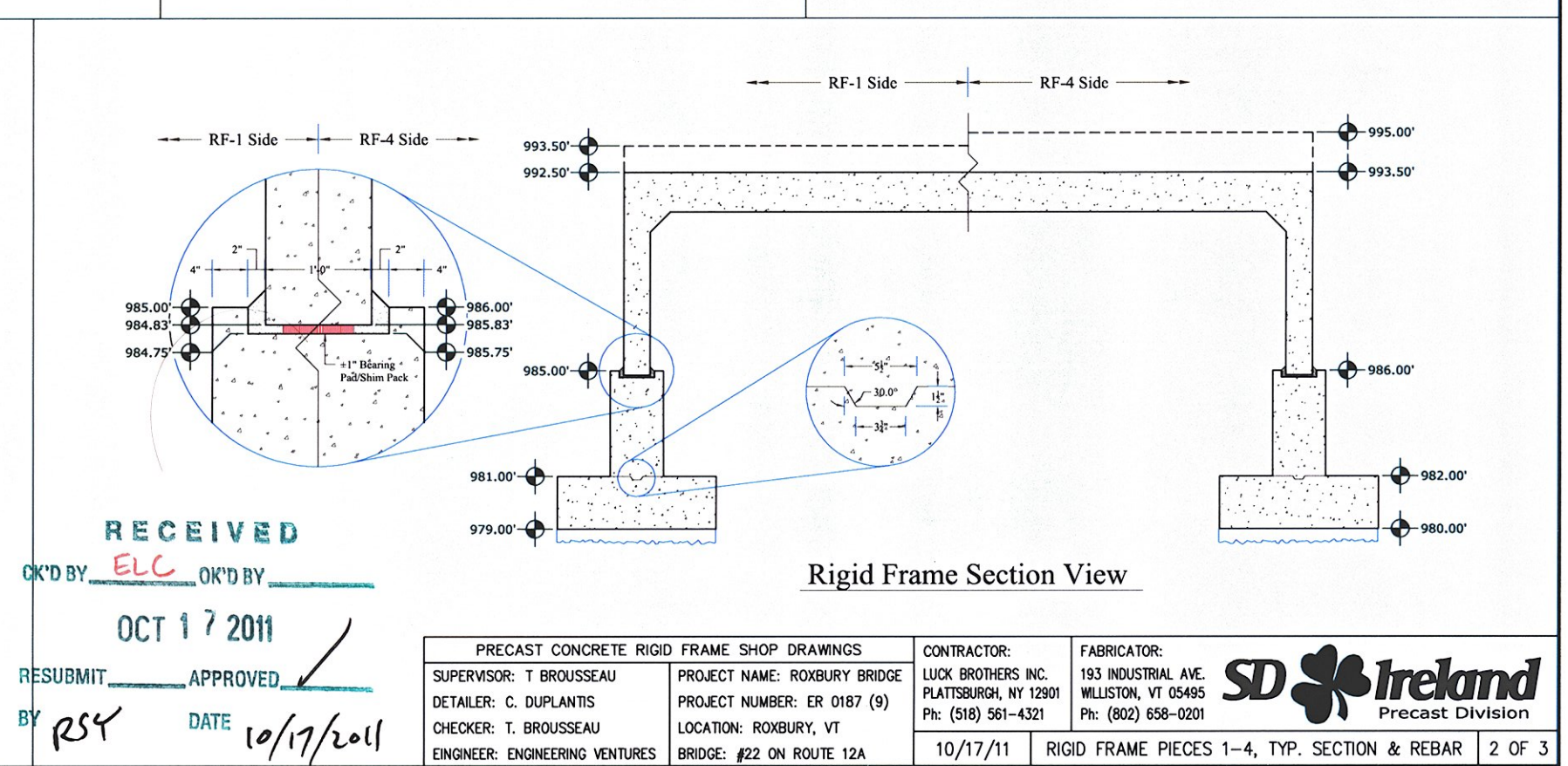
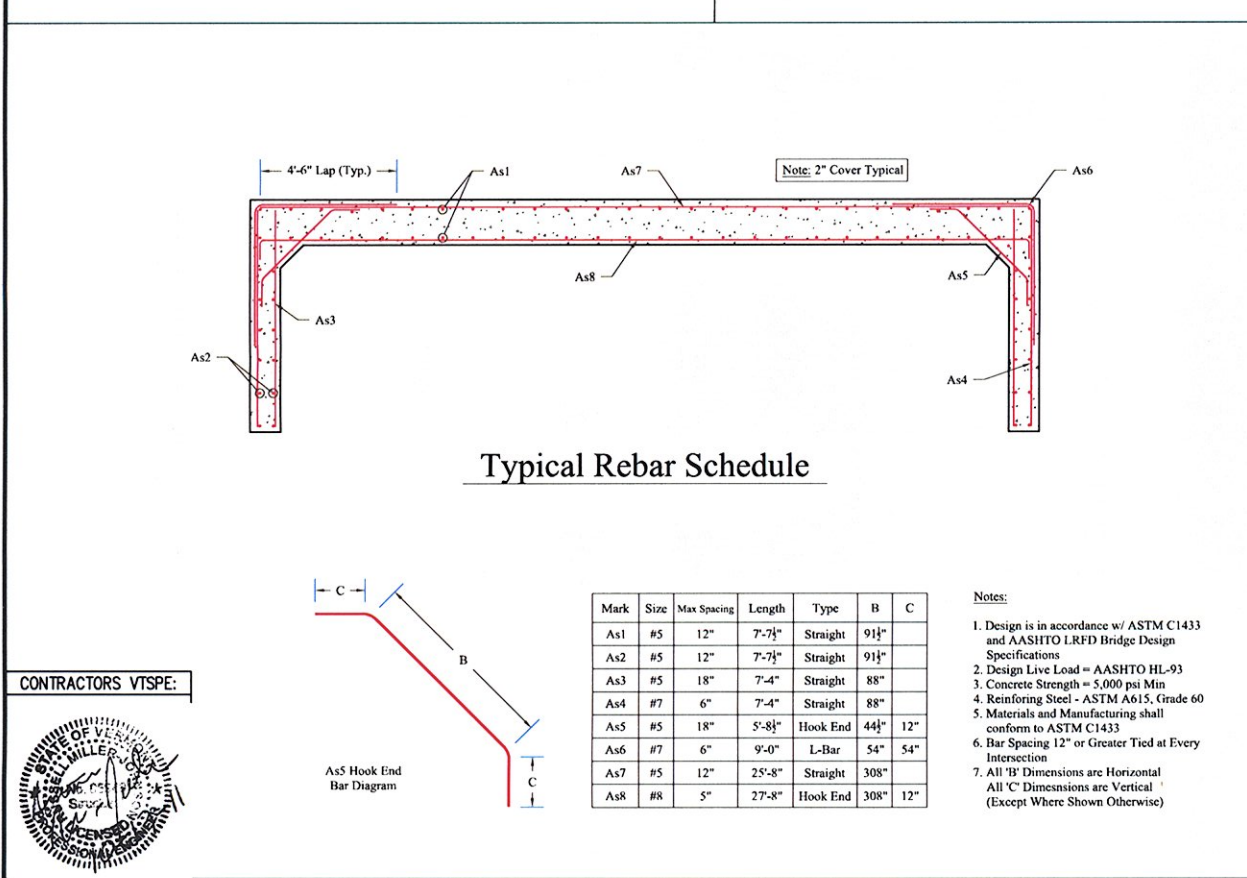
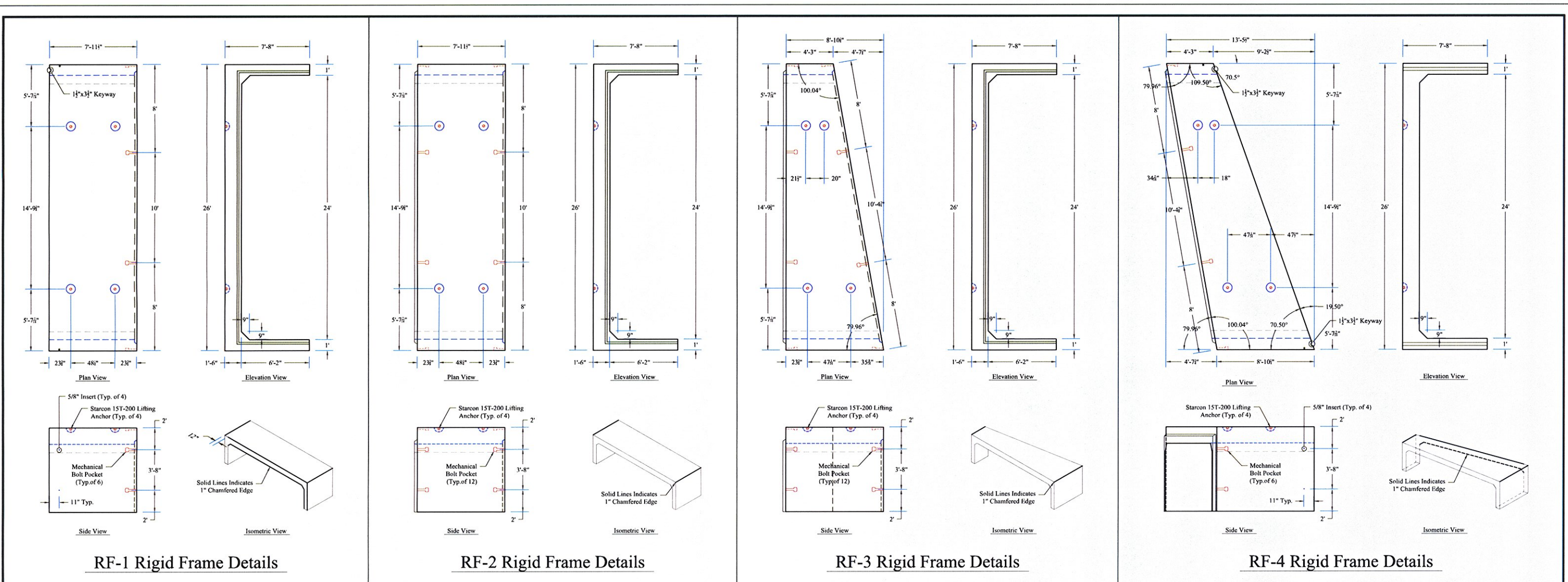


- Concrete
- Mix Design - 5000 PSI
  - Shipping Strength - 4000 PSI
  - Handling Strength - 4000 PSI
  - Slipping Strength - 4000 PSI
- Coating Precast Concrete Units
- Water repellent. Silane shall be applied to all exposed concrete surfaces except the under side of the rigid frame.
- Precast Fabrication Tolerances
- Width  $\pm 1/4"$
  - Length  $\pm 1/4"$
  - Height  $\pm 1/4"$
  - Horizontal Alignment  $\pm 1/4"$
  - Elevation from straight line (parallel to center line of unit)
  - Rebar Cover  $\pm 2"$  Min.
  - Rebar Length  $\pm 1"$
  - Insert Placement  $\pm 1"$

RECEIVED  
OK'D BY ELC  
OCT 17 2011

RESUBMIT BY PSC  
APPROVED DATE 10/17/2011

STRUCTURES COPY



**WW-1 Wing Wall Details**

**WW-2 Wing Wall Details**

**WW-3 Wing Wall Details**

**Typical Wing Wall Rebar**

Mark	Size	Qty	Length	Type	B	C
BA1	#4	18"	Vertical	Straight		
BA2	#4	18"	Vertical	Straight		
BA3	#7	10"	Vertical	Straight		
BA4	#7	10"	Vertical	Straight		
BA5	#7	10"	Vertical	Straight		
BA6	#5	12"	Vertical	Straight		
CA1	#5	12"	Horizontal	Straight		
CA2	#5	12"	Horizontal	Straight		
CA3	#5	12"	Horizontal	Straight		
CA4	#5	12"	Horizontal	Straight		
CA5	#5	12"	Horizontal	Straight		
CA6	#5	12"	Horizontal	Straight		
CA7	#5	12"	Horizontal	Straight		
CA8	#5	12"	Horizontal	Straight		
CA9	#5	12"	Horizontal	Straight		
CA10	#5	12"	Horizontal	Straight		
CA11	#5	12"	Horizontal	Straight		
CA12	#5	12"	Horizontal	Straight		
CA13	#5	12"	Horizontal	Straight		
CA14	#5	12"	Horizontal	Straight		
CA15	#5	12"	Horizontal	Straight		
CA16	#5	12"	Horizontal	Straight		
CA17	#5	12"	Horizontal	Straight		
CA18	#5	12"	Horizontal	Straight		
CA19	#5	12"	Horizontal	Straight		
CA20	#5	12"	Horizontal	Straight		

**Wing Wall - Rigid Frame Key Way**

**FT-1 Footing Details**

**FT-2 Footing Details**

**FT-3 Footing Details**

**Typical Footing (1-5) Rebar**

**FT-4 Footing Details**

**FT-5 Footing Details**

**FT-6/7 Footing Details**

**Typical Footing (6/7) Rebar**

**CONTRACTORS VISEP**

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS

SUPERVISOR: T. BROUSSEAU      PROJECT NAME: ROXBURY BRIDGE

DETAILER: C. DUPONTES      PROJECT NUMBER: CR 0187 (S)

CHECKER: T. BROUSSEAU      LOCATION: ROXBURY, VT

ENGINEER: ENGINEERING VENTURES      BRIDGE: #22 ON ROUTE 12A

CONTRACTOR: LUKK BROTHERS INC.      163 INDUSTRIAL AVE.      WILSTON, VT 05495

FABRICATOR: SD Ireland      Precast Division

10/17/11      WING WALLS 1-3, FOOTINGS 1-6 & REBAR DETAILS 3 OF 3

**RECEIVED**

OK'D BY: ELC      OK'D BY: [Signature]

OCT 17 2011

RESUBMIT      APPROVED

BY: [Signature]      DATE: 10/17/2011

**Concrete**

1. Min Design - 5000 PSI
2. Slipping Strength - 4000 PSI
3. Handling Strength - 4000 PSI
4. Shipping Strength - 4000 PSI

**Coating Precast Concrete Units**

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

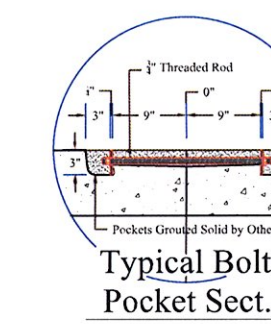
**Precast Fabrication Tolerances**

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

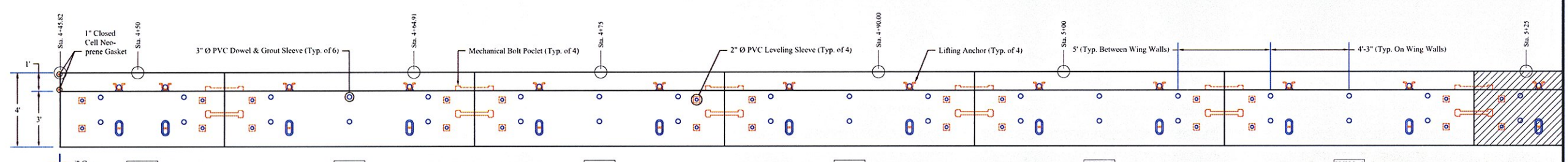
\*Wing Wall Dimensions are from Contract Drawing Sheet 23 of 54 & of Conversation w/ R. Young  
 5. Rebar Placement  $\pm 1/2"$   
 6. Rebar Length  $\pm 1/4"$

**Table of Units**

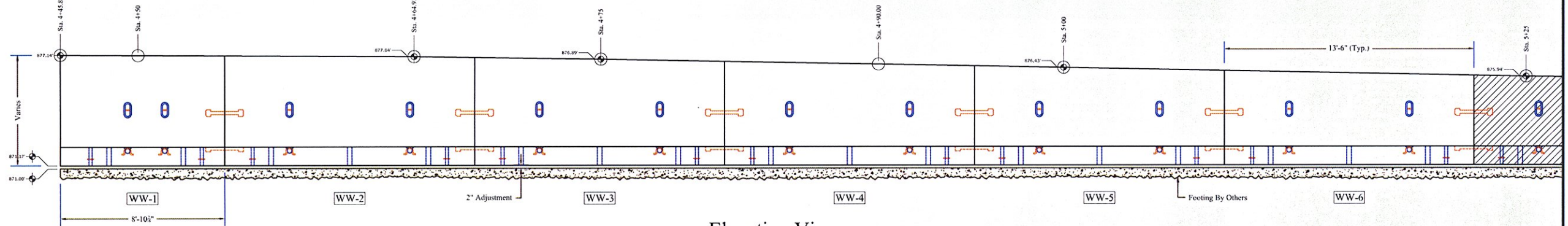
Name	Qty	Length	Vol (CY)	Wt (lbs)
WW-1	1	8'-10 1/2"	2.94	11,760
WW-2	1	13'-0"	4.44	17,750
WW-3	1	13'-0"	4.36	17,425
WW-4	1	13'-0"	4.24	16,950
WW-5	1	13'-0"	4.11	16,445
WW-6	1	13'-0"	3.98	15,920
WW-7	1	13'-0"	3.86	15,460
WW-8	1	13'-0"	3.77	15,075
WW-9	1	13'-0"	3.69	14,730
WW-10	1	7'-0 1/2"	1.89	7,530
WW-11	1	7'-0 1/2"	1.88	7,500
WW-12	1	7'-0 1/2"	1.87	7,470
WW-13	1	7'-0 1/2"	1.86	7,450
WW-14	1	7'-0 1/2"	1.86	7,430



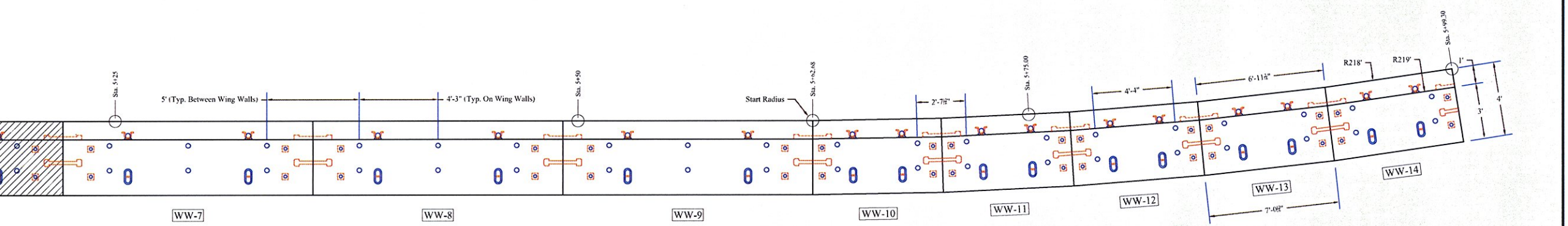
CONTRACTORS VISPE



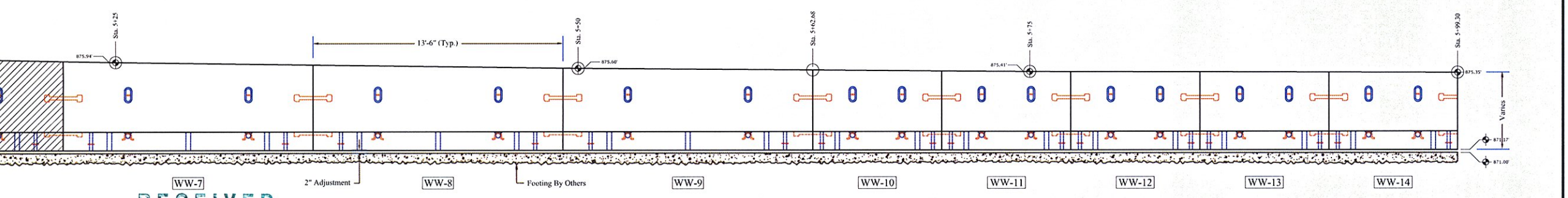
Plan View



Elevation View



Plan View



Elevation View

RECEIVED  
 OK'D BY *RSC*

OCT 24 2011  
 RESUBMIT \_\_\_\_\_ APPROVED *As Noted*  
 BY *RSC* DATE 10/25/2011

PRECAST CONCRETE WING WALL SHOP DRAWINGS	CONTRACTOR: LUK BROTHERS INC.	FABRICATOR: SD Ireland
SUPERVISOR: T BROUSSEAU	PROJECT NAME: ROXBURY BRIDGE	183 INDUSTRIAL AVE. WILSTON, VT 05495
DETAILER: C. DUPLANTIS	PROJECT NUMBER: BHF 0187 (8)	TEL: (802) 561-4321 FAX: (802) 568-9201
CHECKER: T. BROUSSEAU	LOCATION: ROXBURY, VT	PRECAST DIVISION
ENGINEER: ENGINEERING VENTURES	BRIDGE: #15 ON ROUTE 12A	10/24/11 LAYOUT PLAN, ELEVATION & NOTES/SCHEDULE 1 OF 2

