

STATE OF VERMONT
AGENCY OF TRANSPORTATION

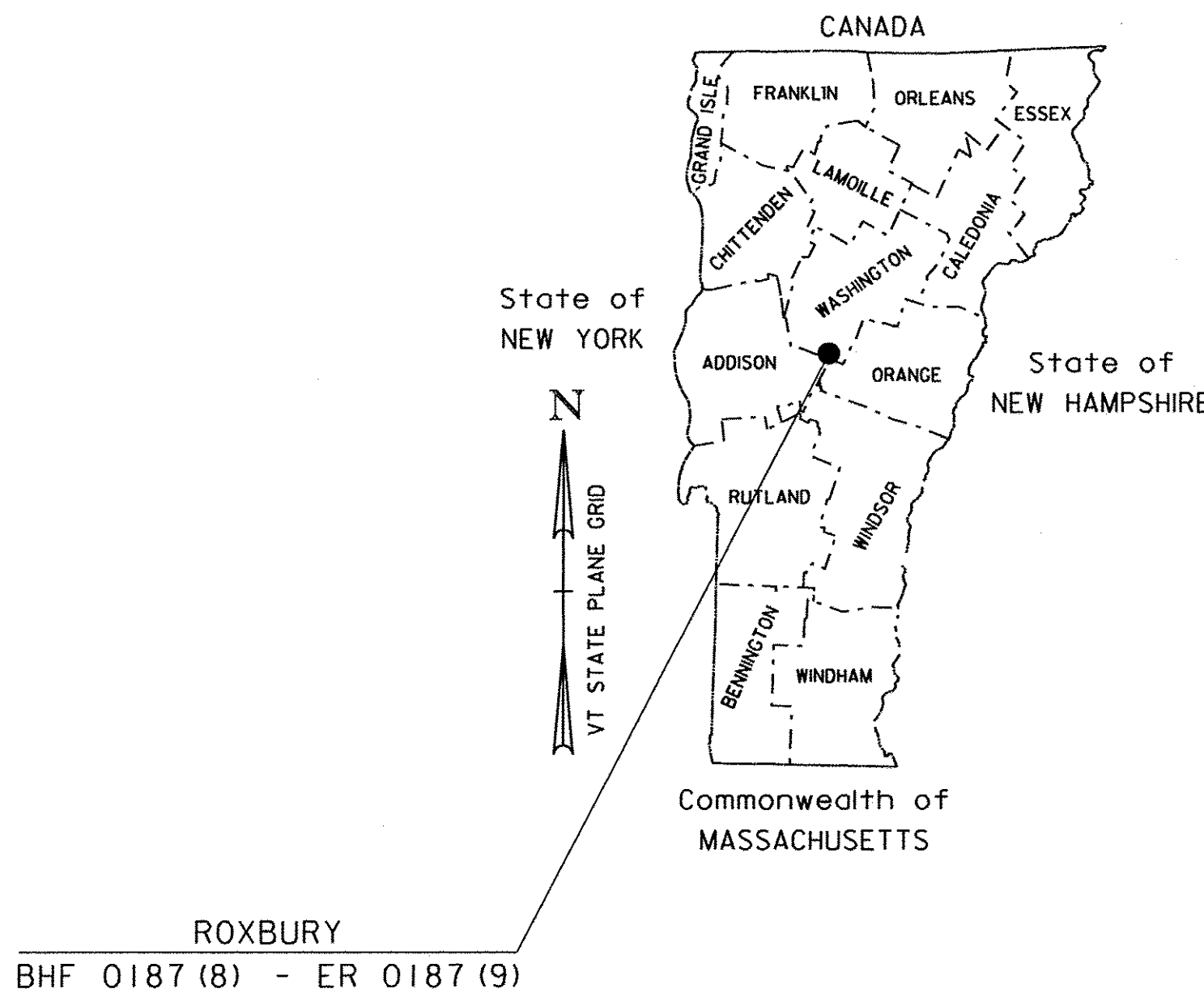


PROPOSED IMPROVEMENT
BRIDGE PROJECT

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'



ROXBURY
BHF 0187 (8) - ER 0187 (9)

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 Tom Mancini 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.

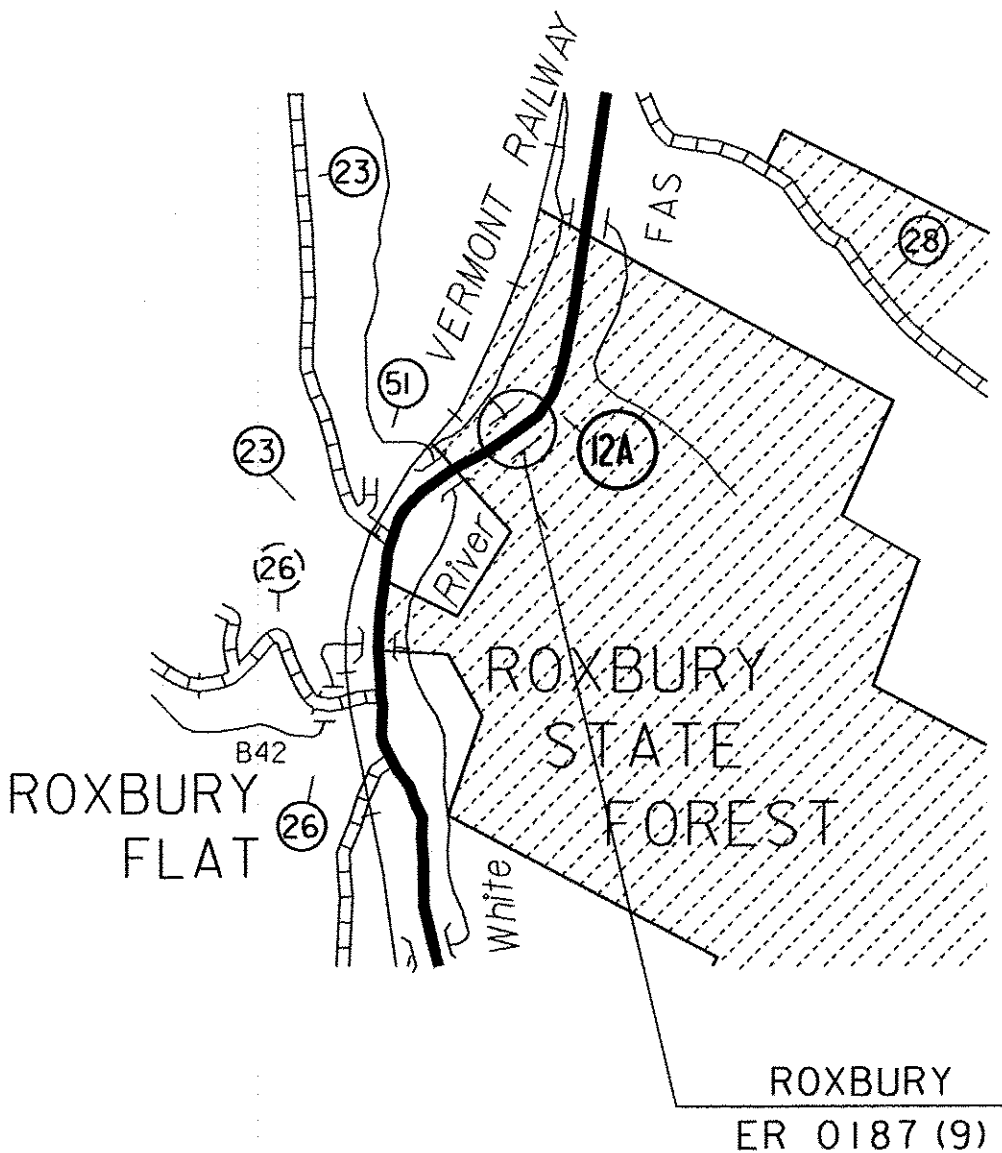
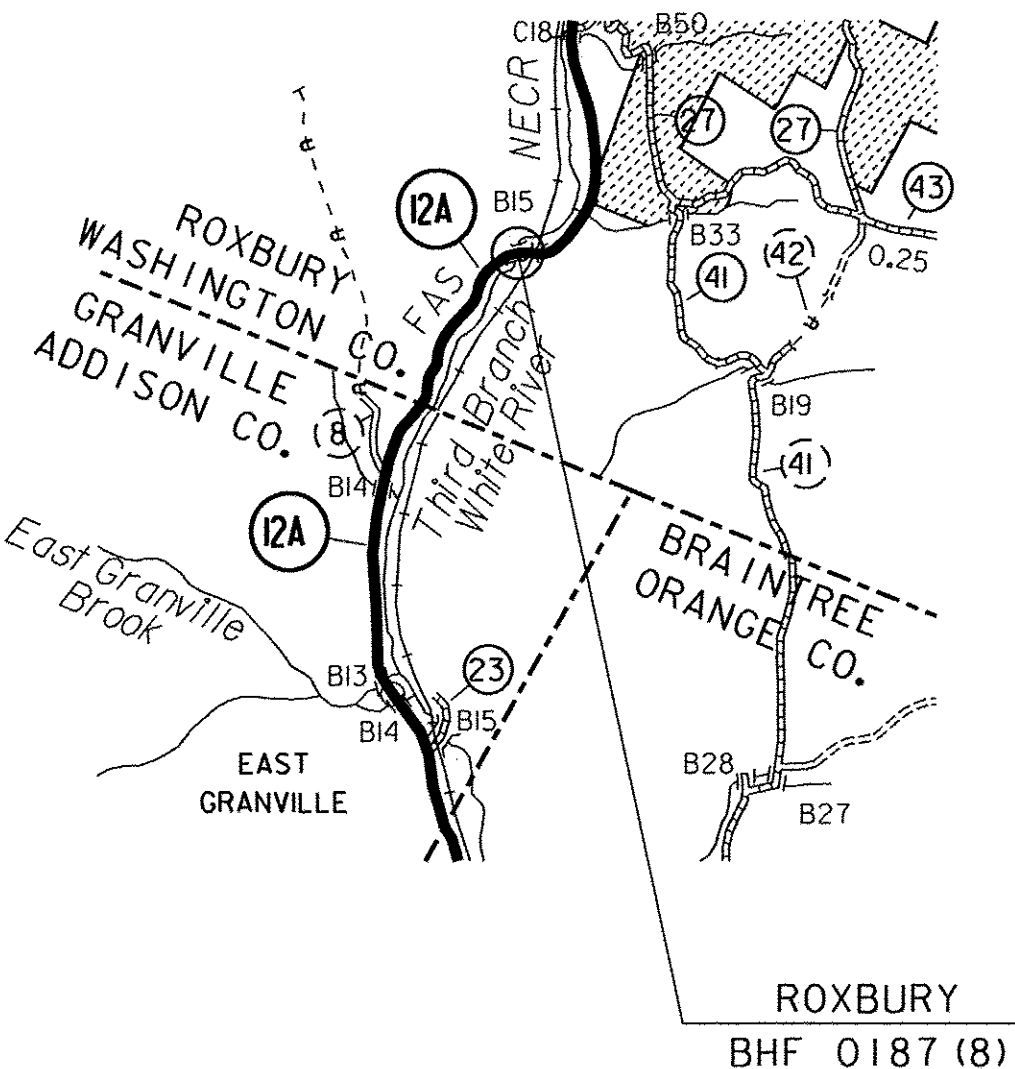
QUALITY ASSURANCE PROGRAM: LEVEL 2

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
HORIZONTAL SEE SHEET 6 AND 41



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.

DIRECTOR OF PROGRAM DEVELOPMENT

APPROVED John Stetson 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

PLOTTED 19-SEP-2011

COMPOSITE SHEETS

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

BRIDGE 22 QUANTITY SHEET

- 5. BRIDGE 22 QUANTITY SHEET

BHF 0187 (8) - BRIDGE 15

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

ER 0187 (9) - BRIDGE 22

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

STRUCTURES DETAILS LIST

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

STANDARDS LIST

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

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

STATE OF VERMONT AGENCY OF TRANSPORTATION												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					50		CY	SOLID ROCK EXCAVATION	203.16		307 TON		PERMANENT PAVEMENT	
											281	281		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 IN³)	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: s10e420excel.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.CHARBONNEAU				
																	QUANTITY SHEET #1				
																	SHEET 3 OF 54				

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

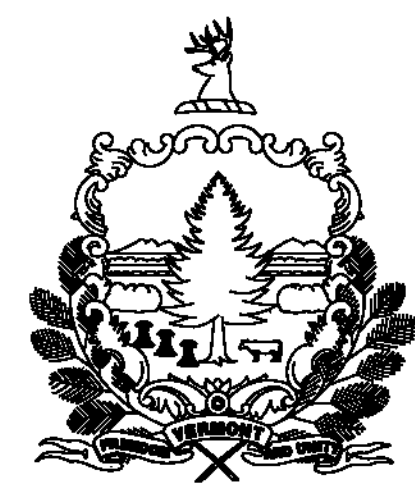
**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

QUANTITY SHEET 1

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

PROJECT NAME: ROXBURY	
PROJECT NUMBER: ER 0187(9)	
FILE NAME: s10c420excel.dgn	PLOT DATE: 09/21/2011
PROJECT LEADER: R.S.YOUNG	DRAWN BY: D.D.BEARD
DESIGNED BY: M.CHENETTE	CHECKED BY:
QUANTITY SHEET #1	SHEET 5 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

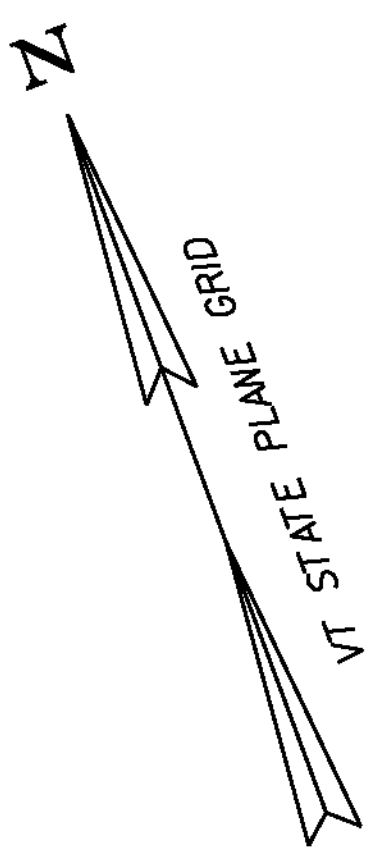
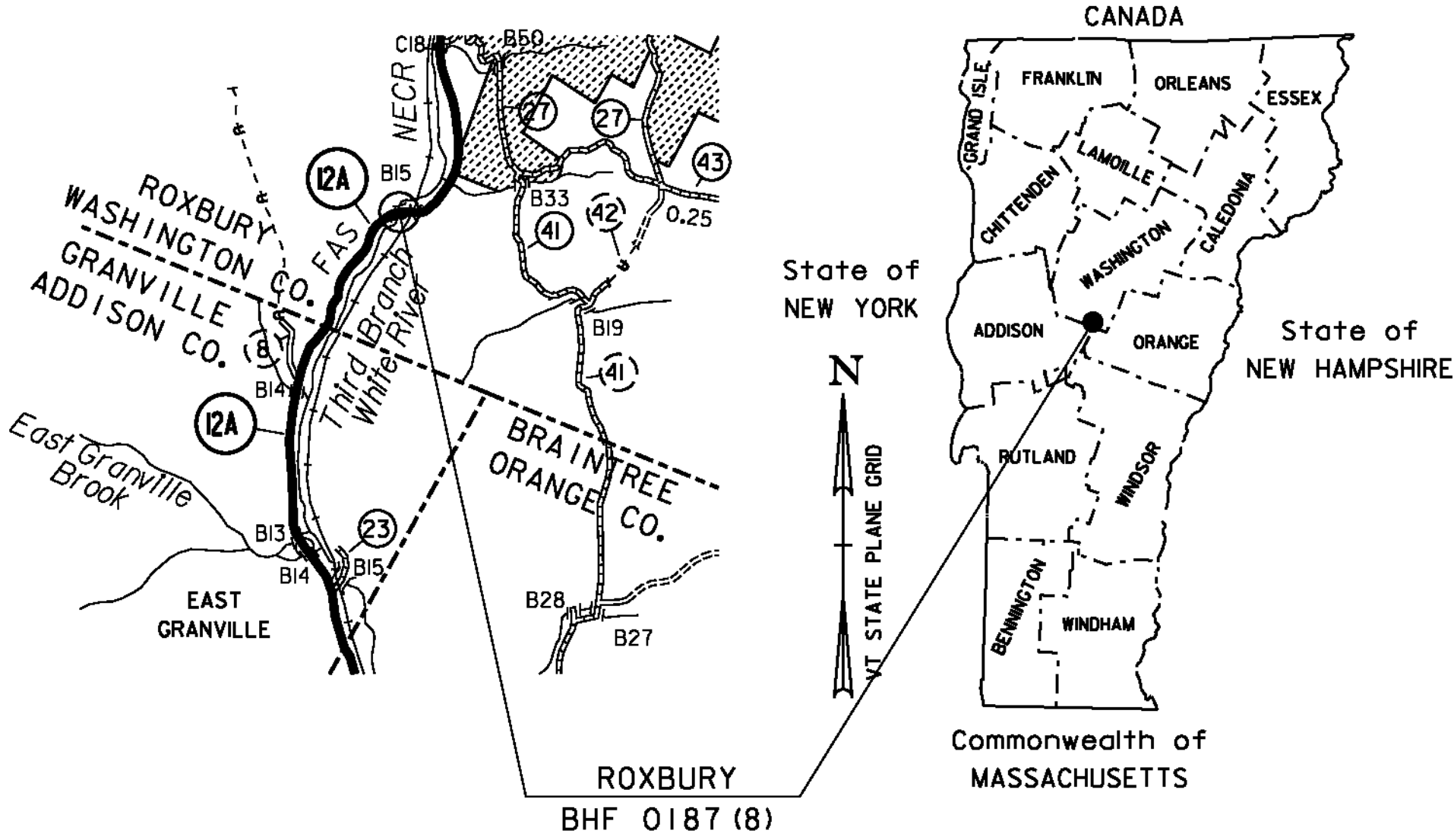
TOWN OF ROXBURY
COUNTY OF WASHINGTON

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

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

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

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



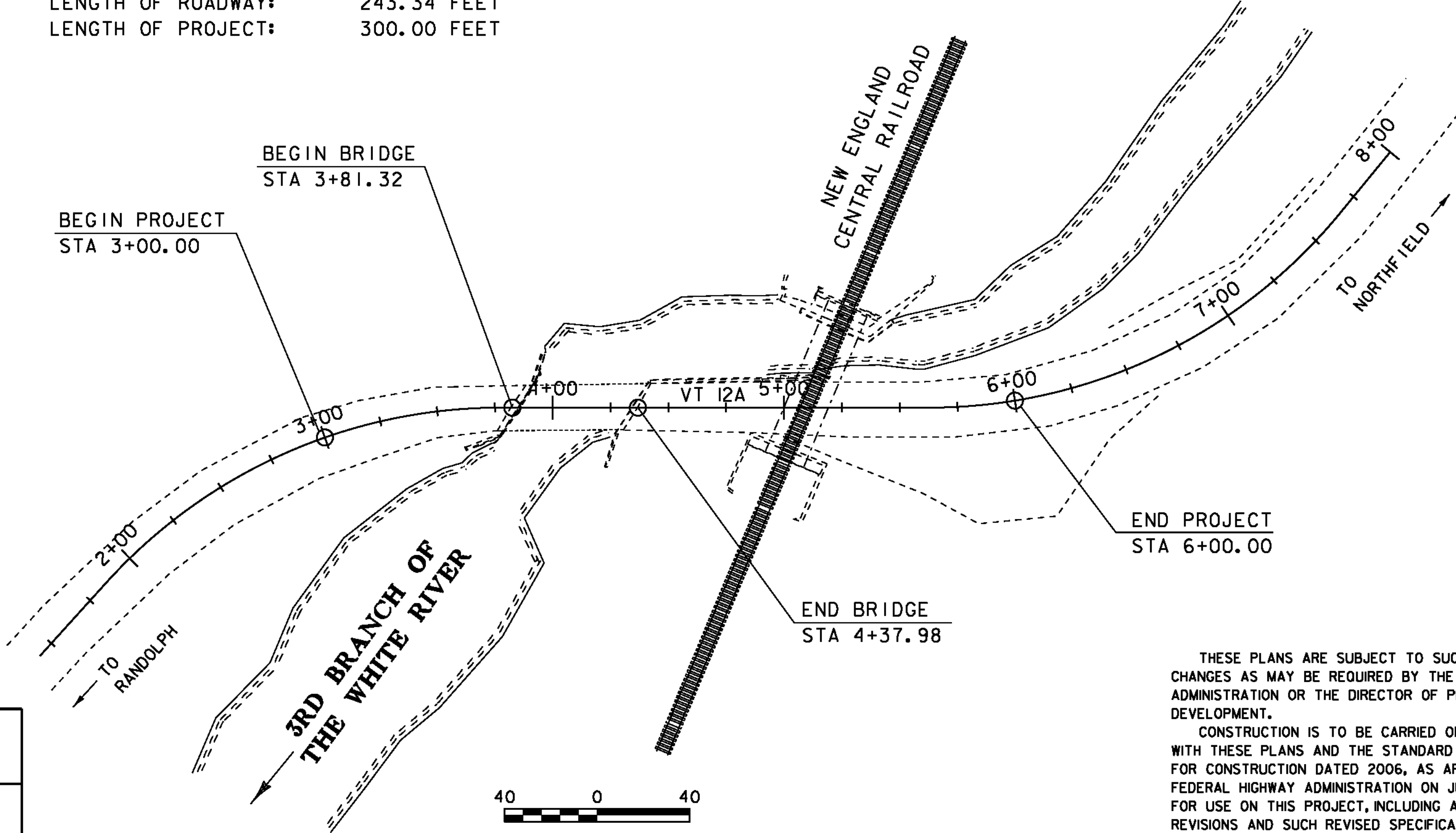
QUALITY ASSURANCE PROGRAM: LEVEL 2

CONVENTIONAL SYMBOLS

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

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

DATUM
VERTICAL NAVD88
HORIZONTAL NAD83 (96)



40 0 40
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.

PLOTTED 21-SEP-2011

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

Version 09.02.03

INDEX OF SHEETS

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 10 = 1400 cfs
Q 25 = 1900 cfs
Q 50 = 2400 cfs
Q 100 = 2900 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'
Q10 = 873.4'
Q25 = 876.0'
Q50 = 877.0'
Q100 = 878.3'
VELOCITY = 6.2 fps
10.5 fps
11.8 fps
13.1 fps
11.2 fps

LONG TERM STREAMBED CHANGES: None noted

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

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

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'
Q10 = 873.4'
Q25 = 876.0'
Q50 = 877.0'
Q100 = 878.3'
VELOCITY= 6.2 fps
10.5 fps
11.8 fps
13.1 fps
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
ORDINARY LOW WATER: <35 cfs
ORDINARY HIGH WATER: 320 cfs
DEPTH OR ELEVATION: 0.5'
2.0'

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

ADDITIONAL INFORMATION

1. BRIDGE CLOSED TO TRAFFIC

DESIGN VALUES

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

PROJECT NAME: ROXBURY

PROJECT NUMBER: BHF 0187(8)

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

PLOT DATE: 9/21/2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 7 OF 54

TRAFFIC DATA

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

GENERAL

- 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.
- ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
- 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.
- 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.
- PERMANENT STEEL SHEET PILING SHALL BE INSTALLED IN FRONT OF THE SUBFOOTING AT THE LOCATION SHOWN ON THE PLANS. PILING SHALL BE DRIVEN TO BEDROCK BUT NEED NOT EXCEED TEN FEET IN LENGTH. THE SHEET PILING SHALL HAVE A MINIMUM SECTION MODULUS OF 40 IN^3. SHEAR STUDS SHALL BE INSTALLED AS SHOWN IN THE PLANS. STUDS SHALL BE CONSIDERED INCIDENTAL TO THE STEEL SHEETING ITEM.
- DEWATERING SHALL BE INCLUDED IN ITEM 204.25, “STRUCTURE EXCAVATION”.

CONCRETE

- WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE BRIDGE.
- REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
SPACING: +/- 1 INCH
CLEARANCE: +/- 1/4 INCH
- PRECAST TOLERANCES:
HEIGHT/WIDTH: +/- 1/4 INCH
LENGTH: +/- 1/2 INCH
- 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”.
- CONCRETE FOR THE SUBFOOTING SHALL BE CONCRETE, HIGH PERFORMANCE CLASS B.

PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE

- REINFORCING STEEL SHALL BE EPOXY COATED PER SUBSECTION 713.07.
- HOLES ON ONE END OF THE DIAPHRAGMS LOCATED BETWEEN UNITS MAY BE FIELD DRILLED.
- EDGES OF THE PRECAST CONCRETE DECK SHALL BE FORMED STRAIGHT SO THAT A CONSISTENT GAP EXISTS BETWEEN ADJACENT UNITS.

SUBSTRUCTURE ON BEDROCK

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

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

PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: slOc420note.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: R. YOUNG
GENERAL NOTES	SHEET 8 OF 54

STATE OF VERMONT AGENCY OF TRANSPORTATION														QUANTITY SHEET 1									
SUMMARY OF ESTIMATED QUANTITIES														TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
											ROADWAY	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS	
											1			1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10					
											780			780		CY	COMMON EXCAVATION	203.15					
											50			50		CY	SOLID ROCK EXCAVATION	203.16					
											40			40		CY	TRENCH EXCAVATION OF EARTH	204.20					
											1			1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22					
											530	40		570		CY	STRUCTURE EXCAVATION	204.25					
											160	40		200		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30					
											470			470		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35					
											90			90		CY	AGGREGATE SURFACE COURSE	401.10					
											2.8	0.7		3.5		CWT	EMULSIFIED ASPHALT	404.65					
											1			1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50					
											119	14		133		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34					
											1100			1100		SF	PERMANENT STEEL SHEET PILING (MIN. SECTION MODULUS = 40 IN^3)	505.35					
											1380	1580		2960		LB	REINFORCING STEEL	507.15					
											140	80		220		LF	DRILLING AND GROUTING DOWELS	507.16					
											5470	5560		11030		LB	EPOXY COATED REINFORCING STEEL	507.17					
											10	3		13		GAL	WATER REPELLENT, SILANE	514.10					
												31		31		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10					
												140		140		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20					
												31		31		LF	JOINT SEALER, HOT POURED	524.11					
												1		1		EACH	REMOVAL OF STRUCTURE (1030 SF - EST.)	529.15					
												12		12		EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11					
											1			1		LS	PRECAST CONCRETE STRUCTURE (WINGWALL NO. 3)	540.10					
																	BEGIN OPTION AA						
											54			54		LF	24" CAAP .060 (2-2/3 X 1/2)	601.0225					
											54			54		LF	24" PCCSP .064 (2-2/3 X 1/2)	601.0425					
											54			54		LF	24" RCP CLASS III	601.0825					
											54			54		LF	24" CPEP(SL)	601.2620					
																	END OPTION AA						
											1			1		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25					
											1			1		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15					
											54			54		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20					
											96			96		LF	BOX BEAM GUARDRAIL	621.30					
											291			291		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80					
											100			100		HR	UNIFORMED TRAFFIC OFFICERS	630.10					
													1	1		LS	FIELD OFFICE, ENGINEERS	631.10					
													1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16					
													1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17					
													3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26					
											1			1		LS	MOBILIZATION/DEMOBILIZATION	635.11					
																				PROJECT NAME: ROXBURY			
																				PROJECT NUMBER: BHF 0187(8)			
																				FILE NAME: s10c420excel.dgn	PLOT DATE: 09/21/2011		
																				PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD		
																				DESIGNED BY: R.S.YOUNG	CHECKED BY: E.R.CHARBONNEAU		
																				QUANTITY SHEET #1	SHEET 9 OF 54		

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

[illegible]

**STATE OF VERMONT
AGENCY OF TRANSPORTATION**

BRIDGE QUANTITY SHEET 1

[illegible]

GPS CONTROL POINTS

HVCTRL #1

ROXRIM

NORTH = 559539.567
EAST = 1573126.562
ELEV. = 890.320

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

HVCTRL #2

ROXRIM AZ MK

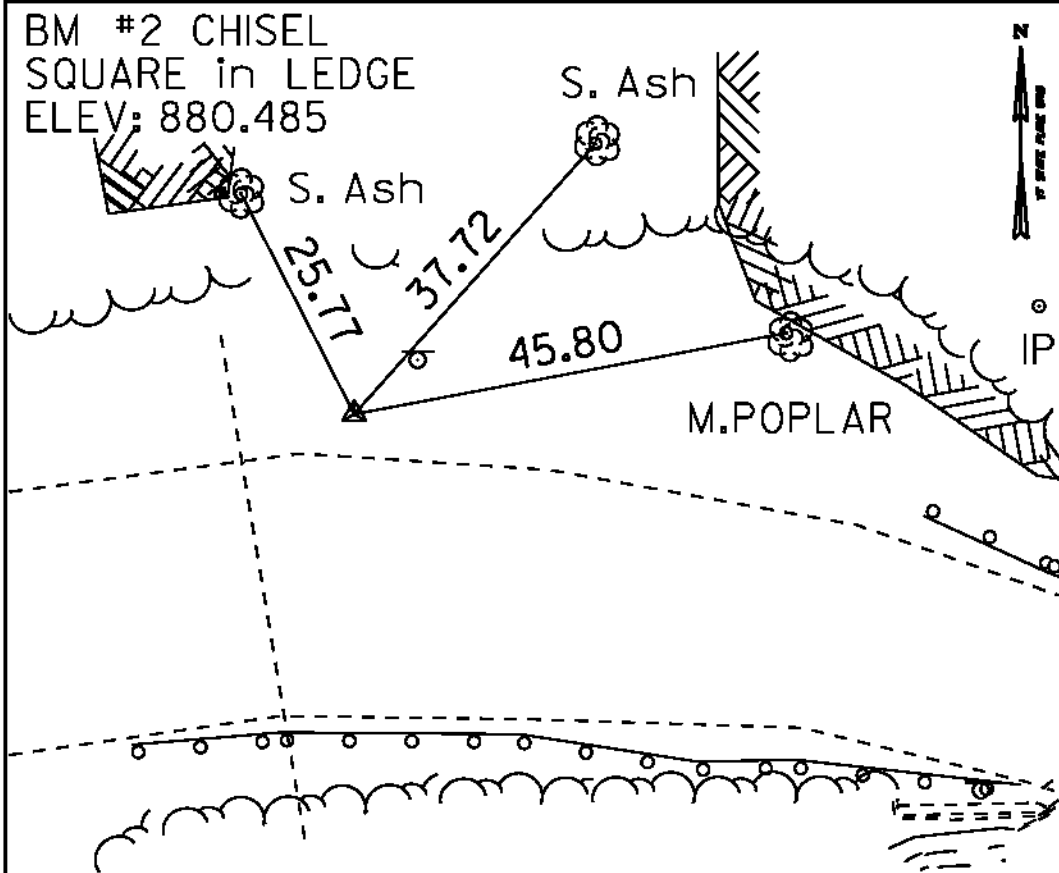
NORTH = 561370.541
EAST = 1574485.923
ELEV. = 875.294

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

TRAVERSE TIES

HVCTRL #3

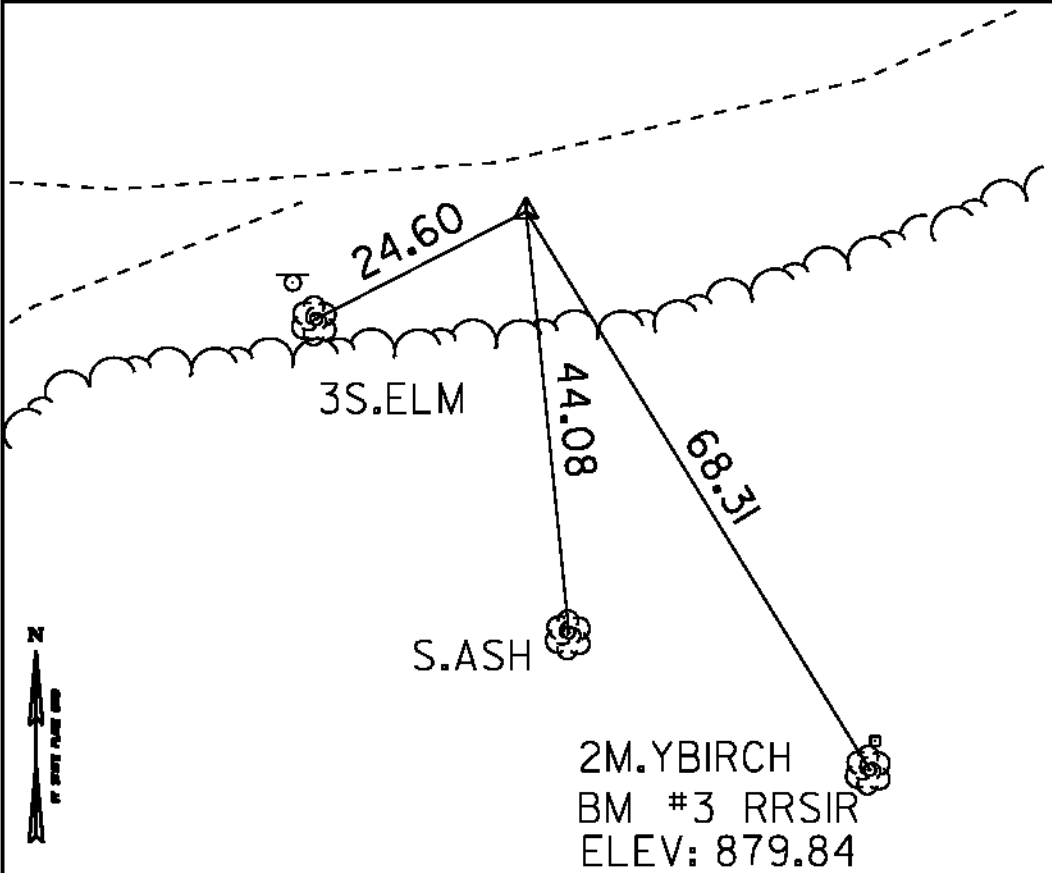
NORTH = 561687.033
EAST = 1575121.154
ELEV. = 879.342



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

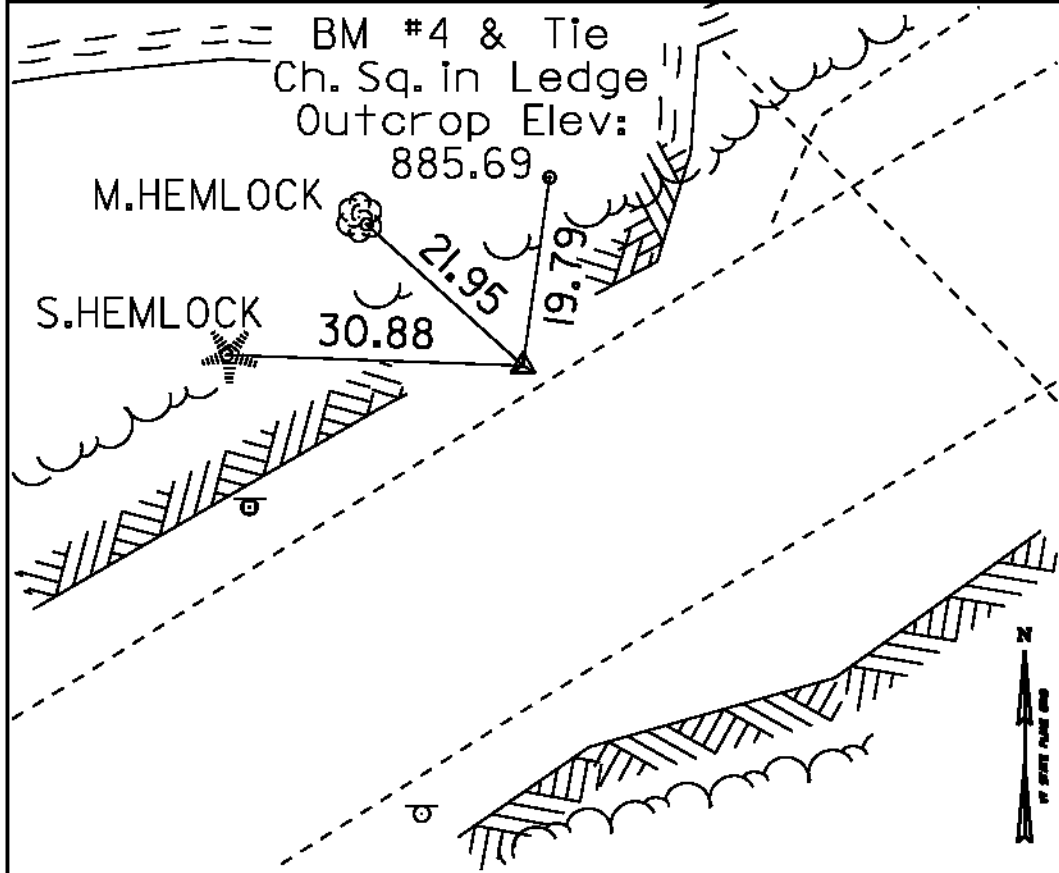
HVCTRL #4

NORTH = 561562.843
EAST = 1575491.445
ELEV. = 878.456



HVCTRL #5

NORTH = 561883.089
EAST = 1575968.541
ELEV. = 881.967



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

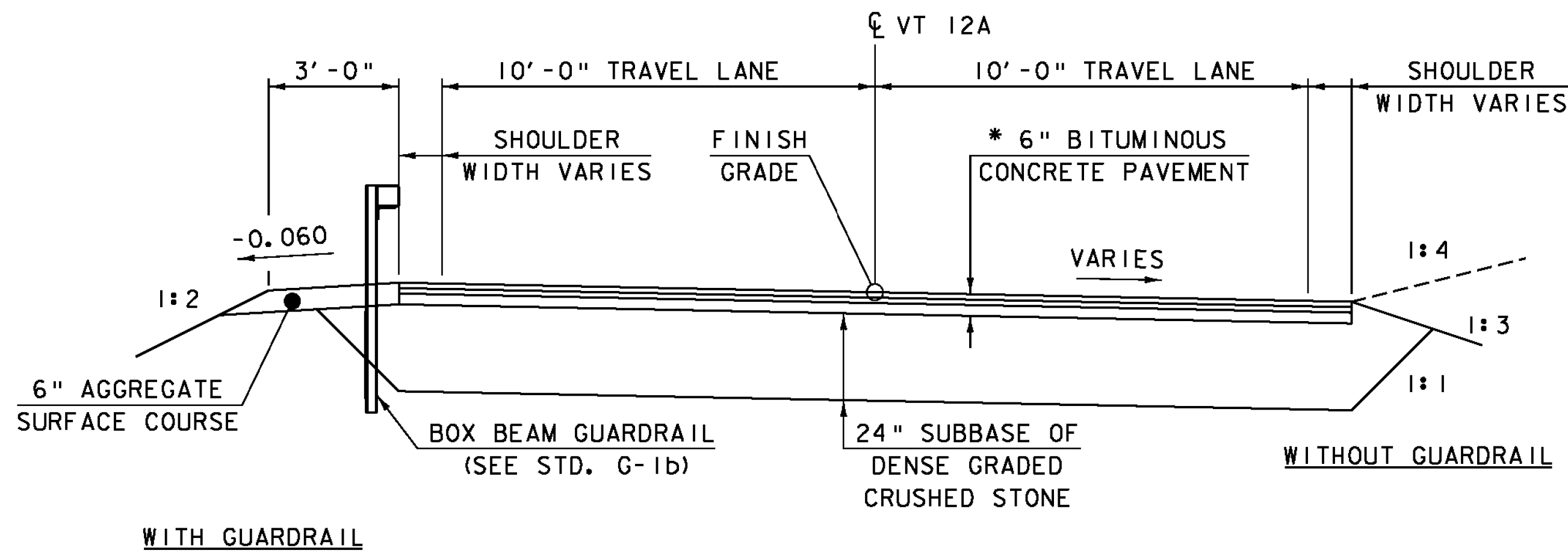
	STATION	NORTHING	EASTING
PT	7+65.87	561609.8318	1575567.3959
Radius: 230.00			
Delta: 50°°37'04.04" Left			
Degree of Curvature (Arc): 24°°54'40.35"			
Length: 203.19			
Tangent: 108.76			
Chord: 196.65			
Middle Ordinate: 22.08			
External: 24.42			
PT	7+65.87	561609.8318	1575567.3959
POE	8+00.00	561627.0486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

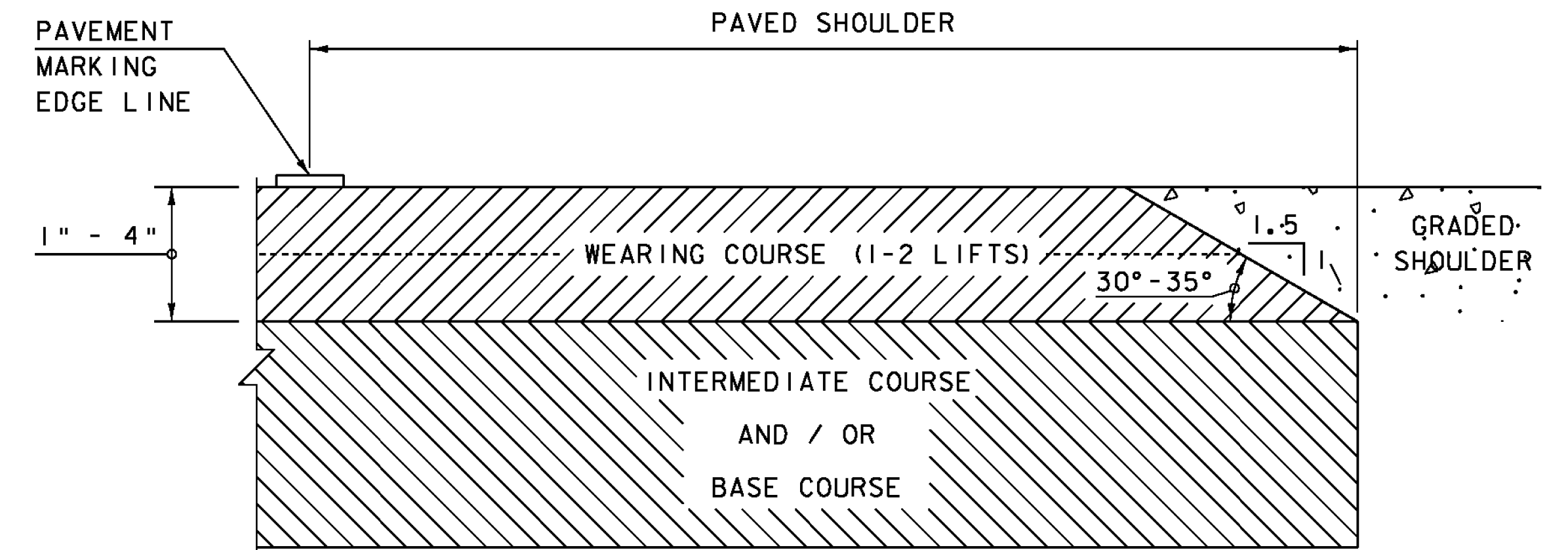
FILE NAME: survey\xl0c420+1.dgn
PROJECT LEADER: WILLIAMS
DESIGNED BY:
TIE SHEET

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



ROADWAY TYPICAL SECTION

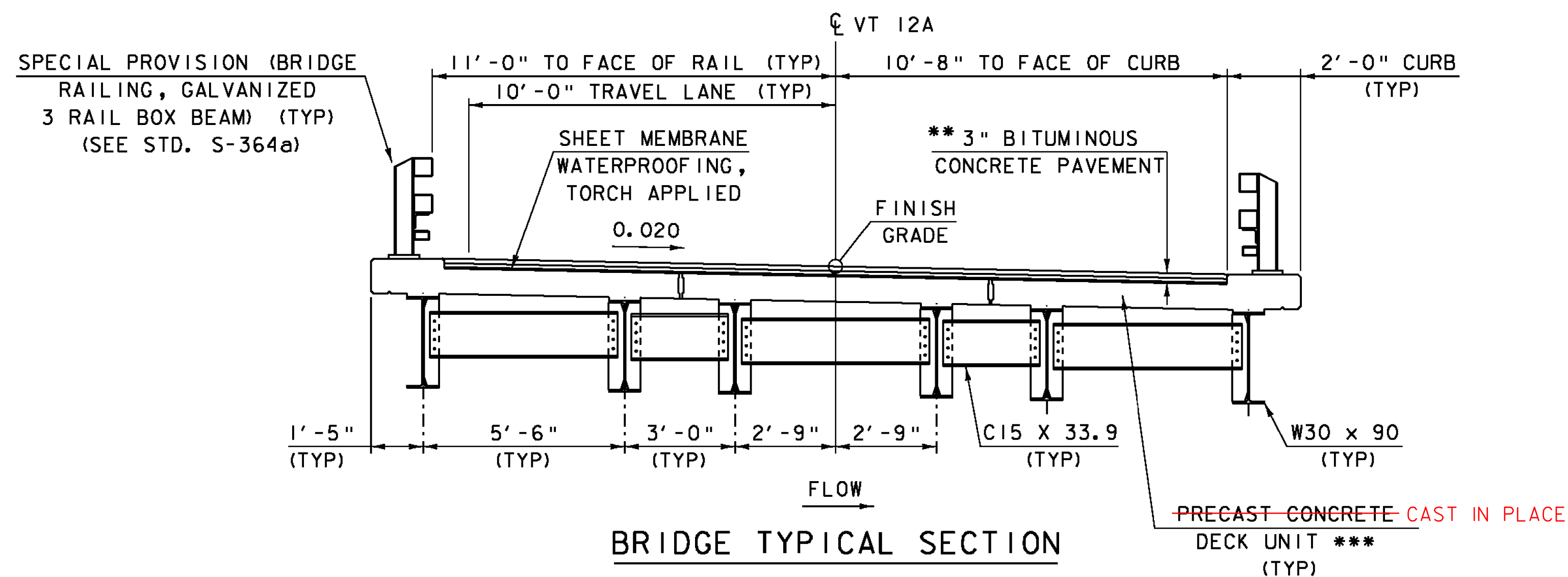
*2 LIFTS OF 1½" BITUM. CONC. PAVEMENT TYPE IIIS OVER
1 LIFT OF 3" BITUM. CONC. PAVEMENT TYPE IS OR IIS
PAID UNDER SPECIAL PROVISION (BITUMINOUS CONCRETE
PAVEMENT, SMALL QUANTITY).



SAFETY EDGE DETAIL

NOT TO SCALE

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



BRIDGE TYPICAL SECTION

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

MATERIAL TOLERANCES

(IF USED ON PROJECT)

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

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

FILE NAME: sl0c420+yp.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
PROJECT TYPICAL SECTIONS

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

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

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

CHANNEL LINE POE
STA 51+75.00

END BRIDGE
STA 4+37.98

BEGIN BRIDGE
STA 3+81.32

END APPROACH
BEGIN PROJECT
STA 3+00.00

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

PT
STA 3+77.45

CONSTRUCTION
LIMITS

CHANNEL LINE POB
STA 50+00.00

24" CPEP
STA 2+86.1 LT-RT

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

PC
STA 5+62.68

END PROJECT
BEGIN APPROACH
STA 6+00.00

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

POE
STA 8+00.00

PT
STA 7+65.87

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

24" CPEP
STA 6+86 RT-LT

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

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

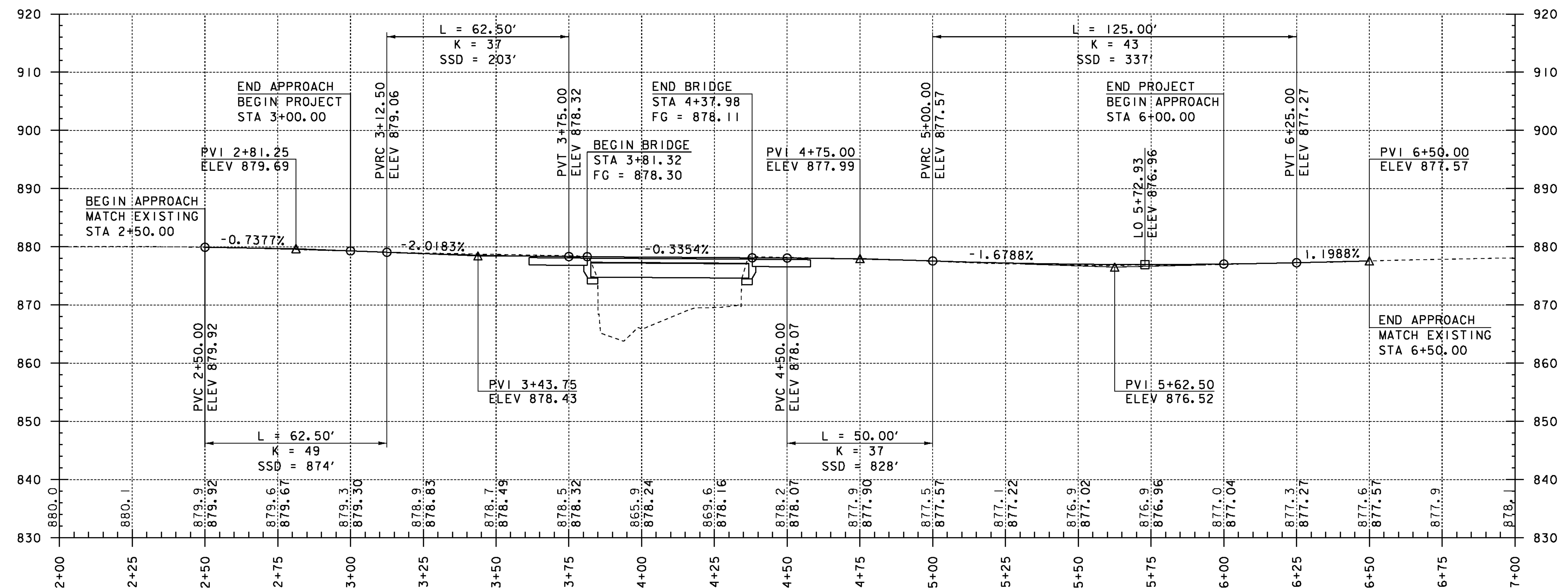
CONCRETE T-BEAMS
CONCRETE ABUTMENTS
OVERALL LENGTH = 54'
OVERALL WIDTH = 23.1'

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.

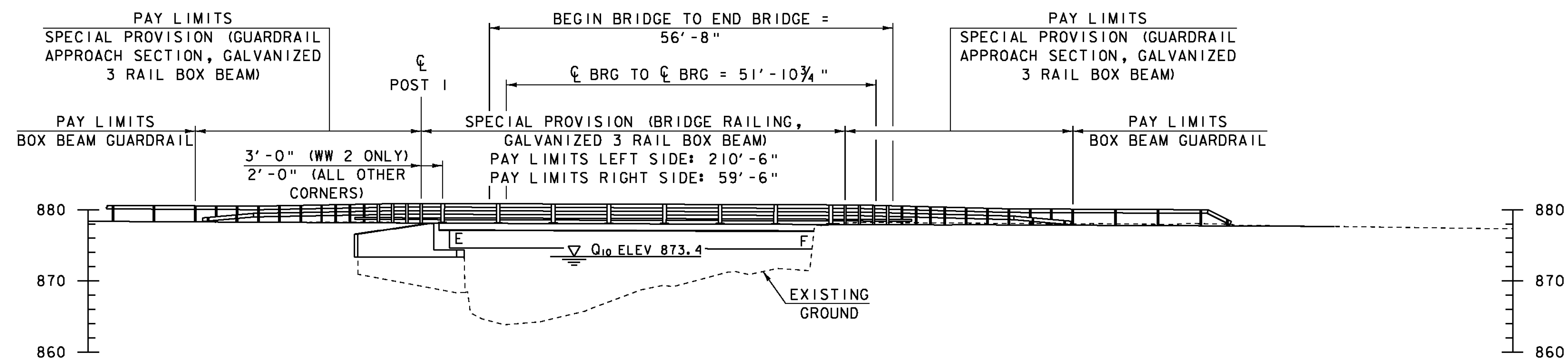
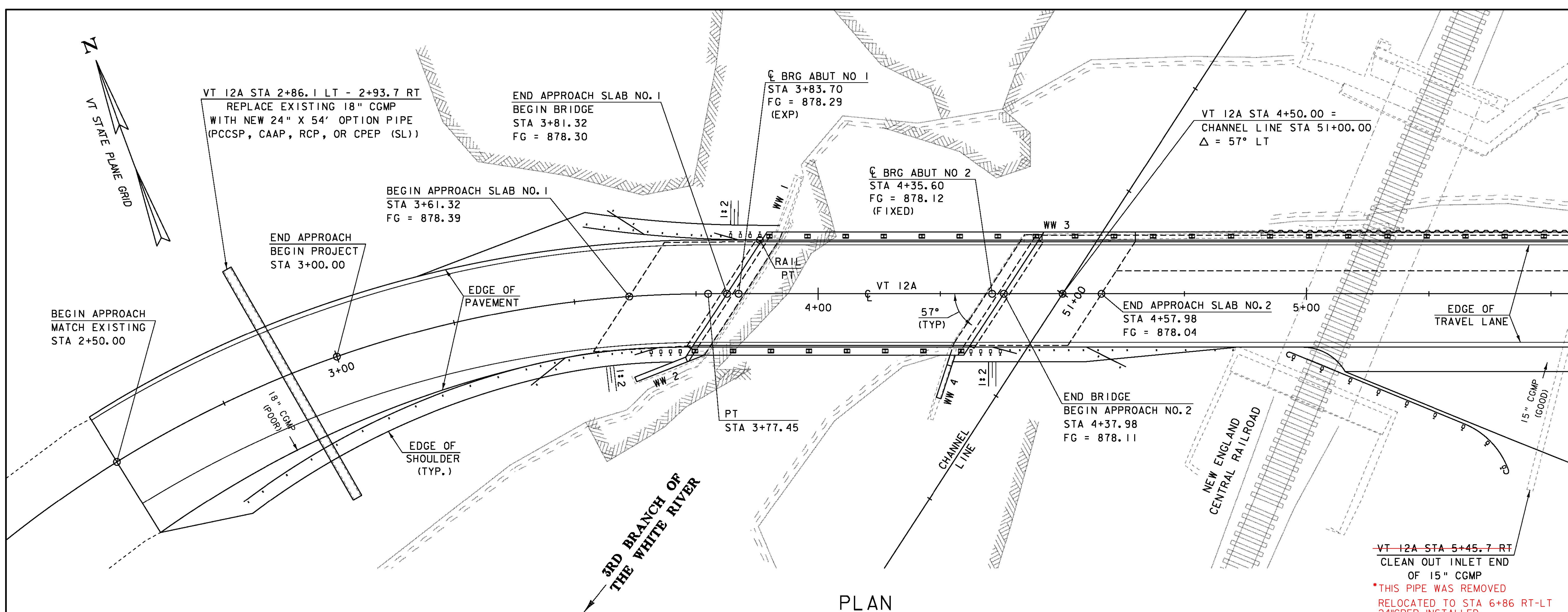
PROFILE ALONG VT 12A

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

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

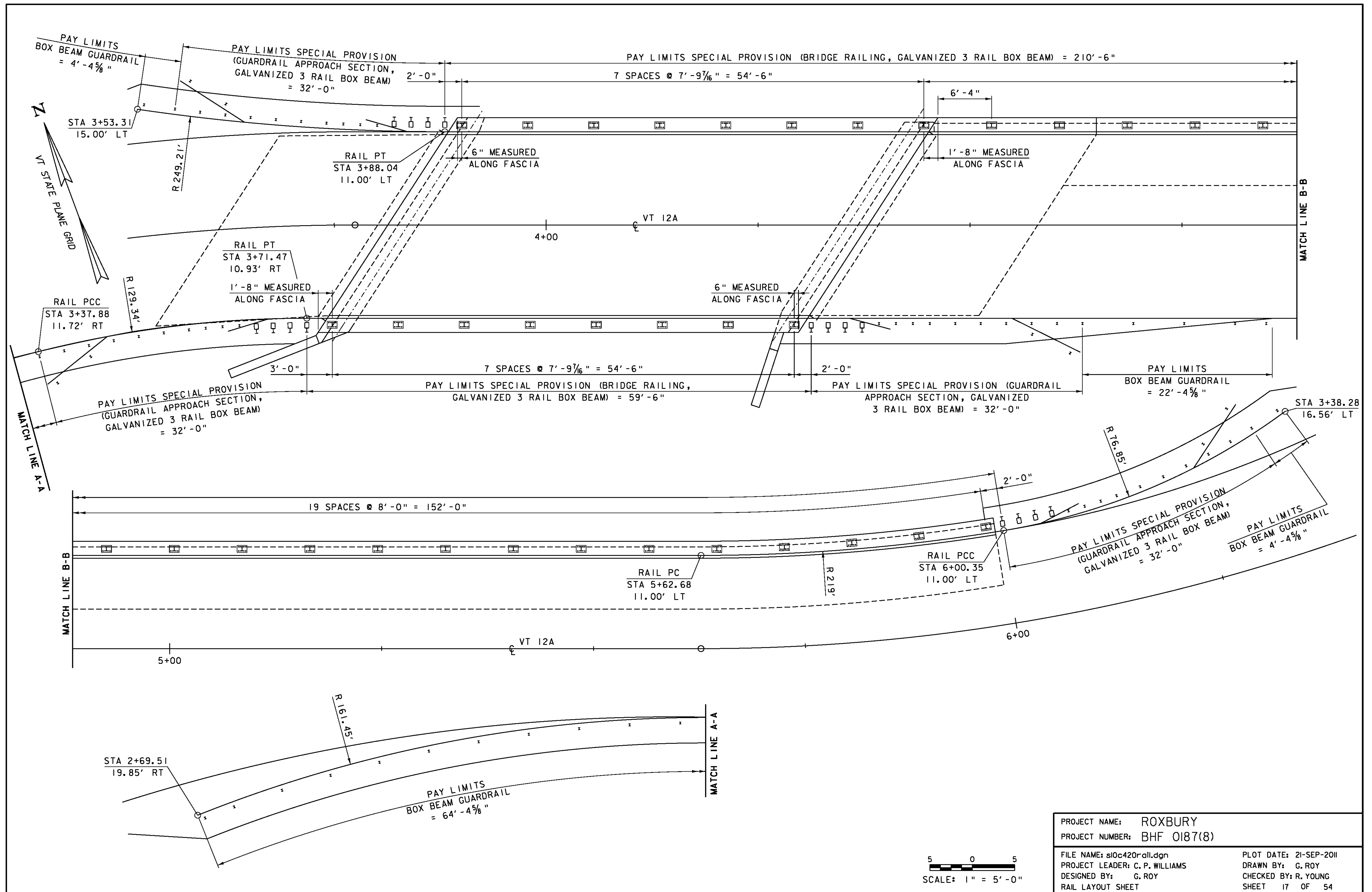
FILE NAME: sl0c420pro.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
VT 12A PROFILE

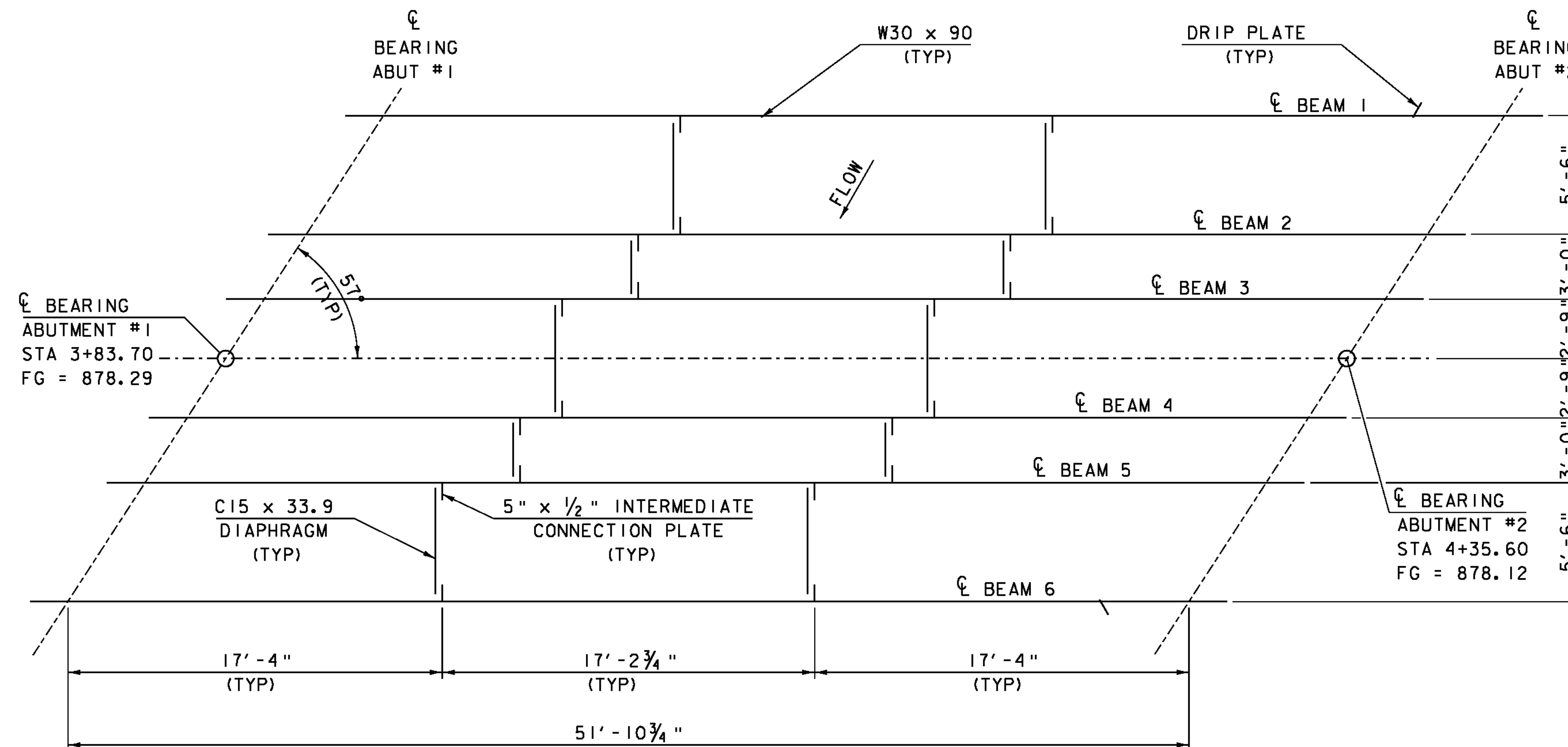
PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 15 OF 54



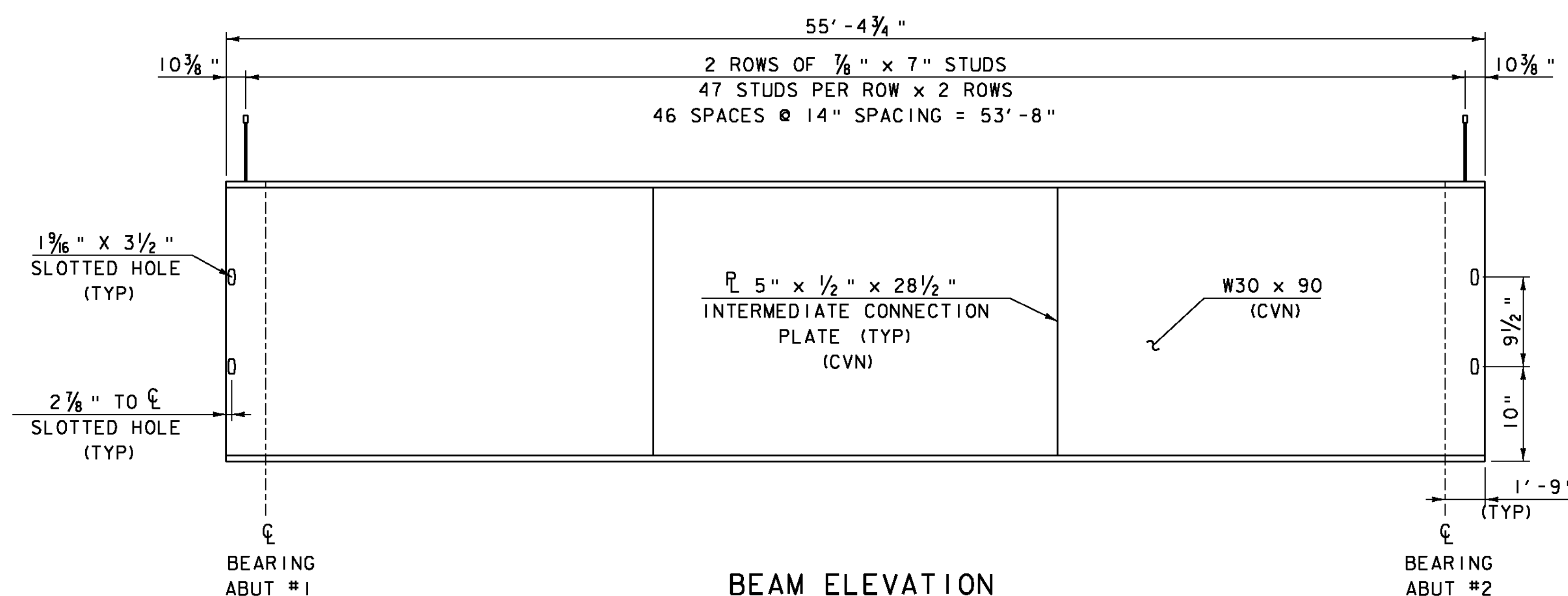
10 0 10
SCALE: 1" = 10'-0"

PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420pe.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 16 OF 54
DESIGNED BY: G. ROY	
PLAN AND ELEVATION	



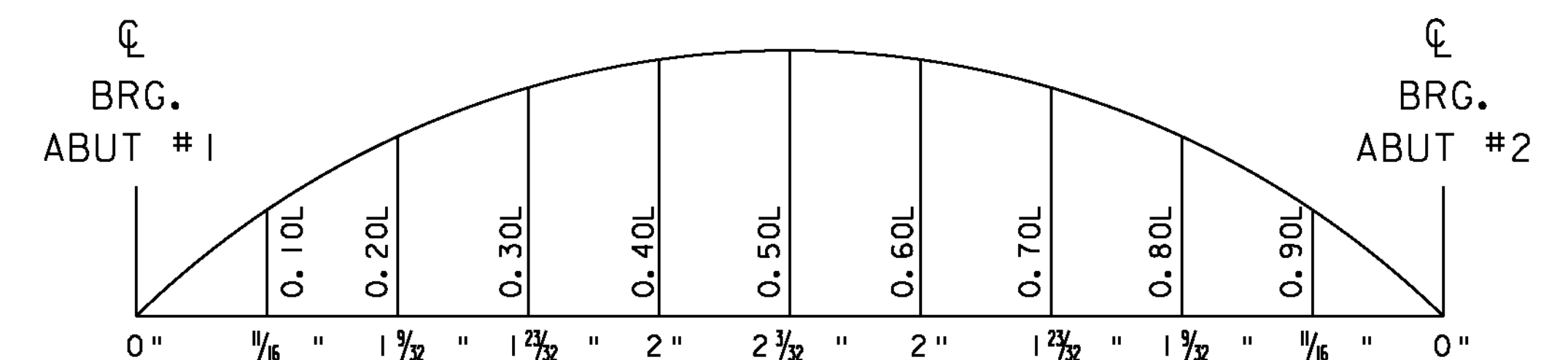


DECK FRAMING PLAN

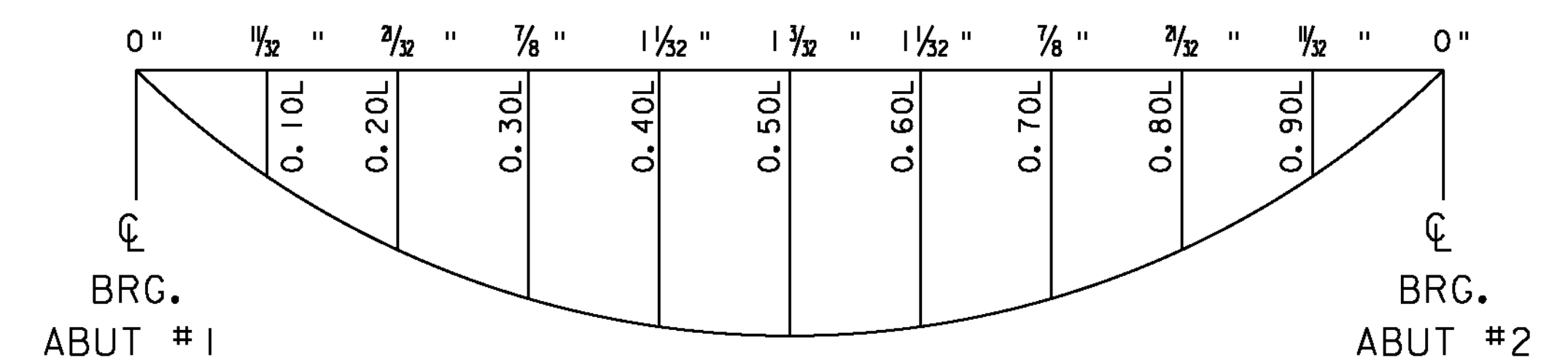


BEAM ELEVATION

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



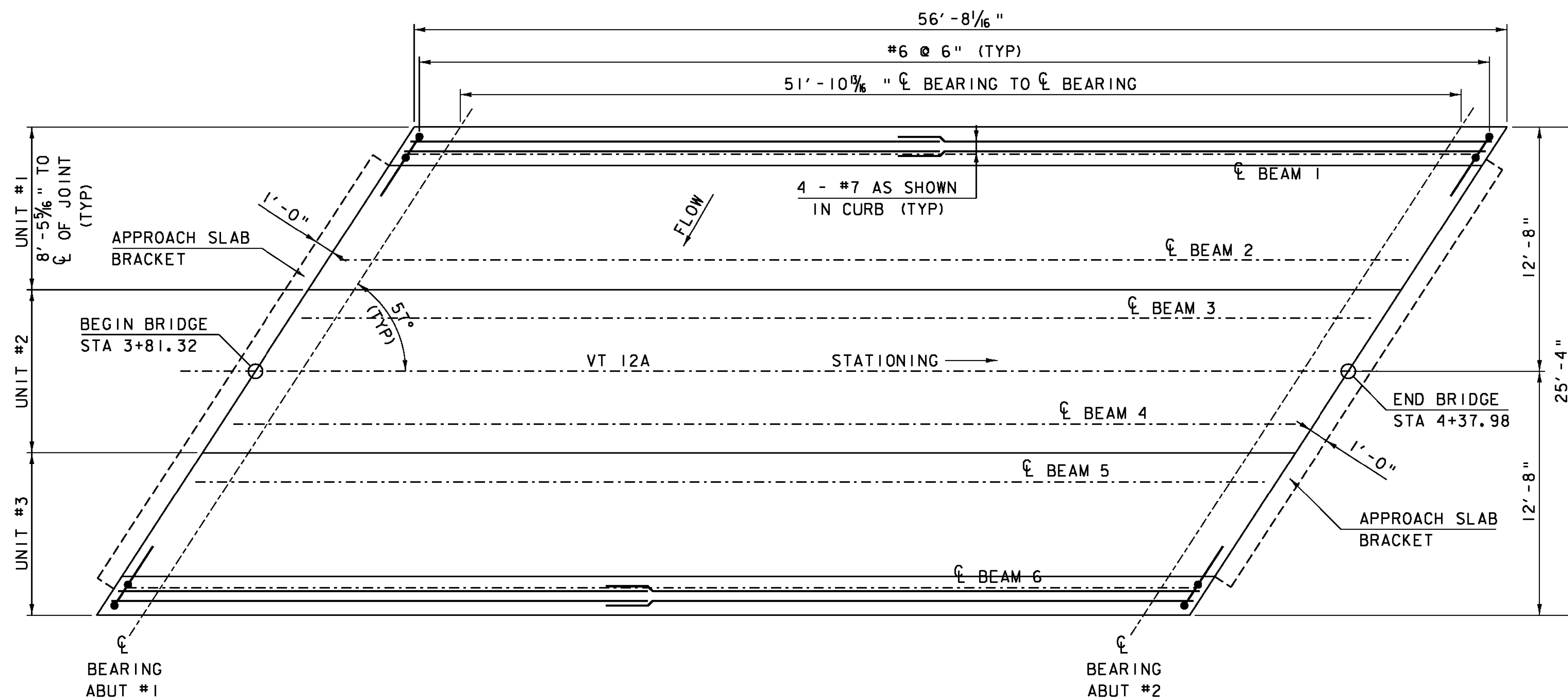
CAMBER DIAGRAM



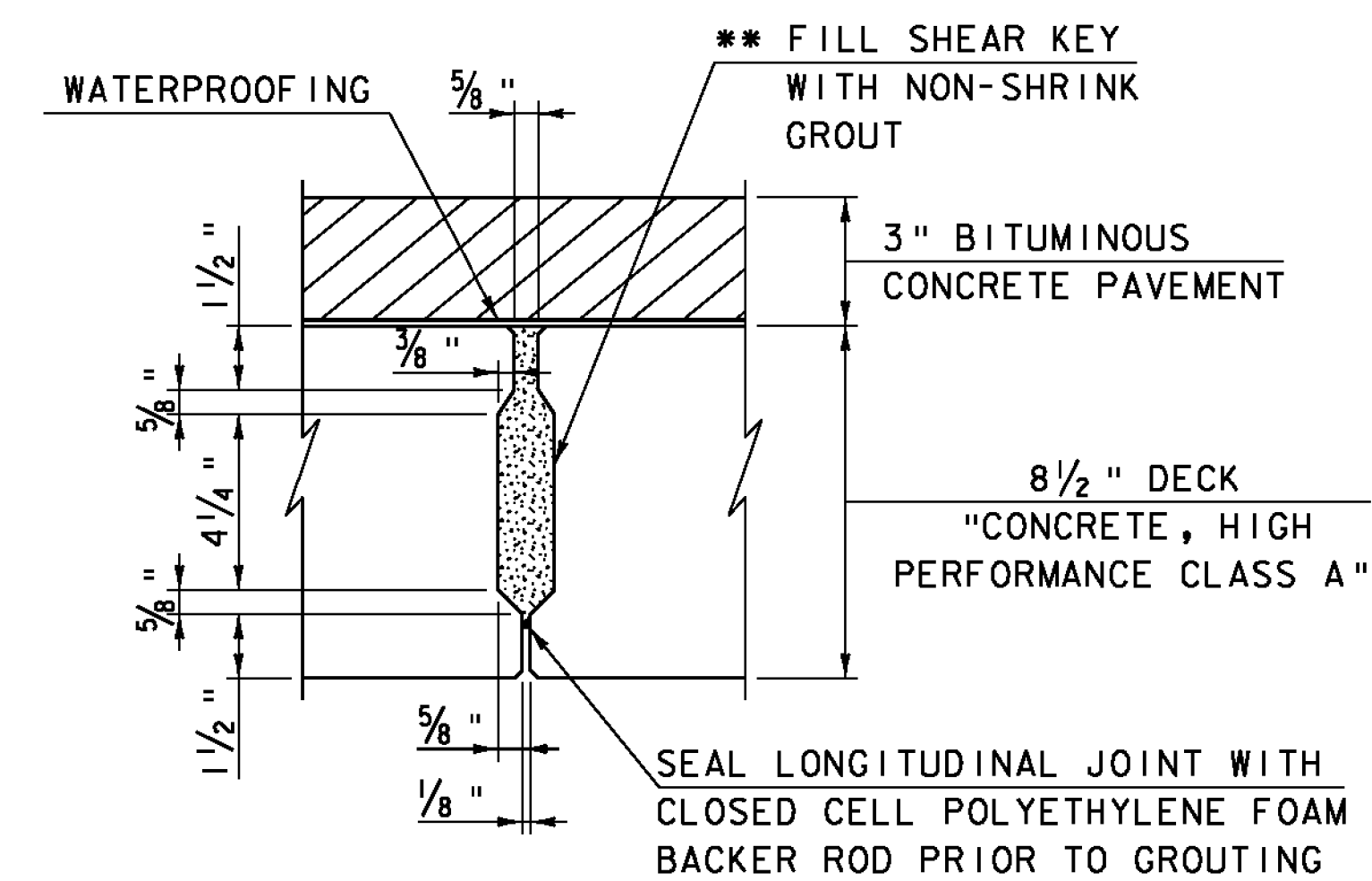
DEAD LOAD DEFLECTION DIAGRAM

DEFLECTION IS AFTER DEAD
LOADS HAVE BEEN APPLIED

PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: slOc420sup.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: R.S.YOUNG	CHECKED BY: E.R.Charbonneau
FRAMING DETAILS	SHEET 18 OF 54



DECK STRUCTURAL PLAN

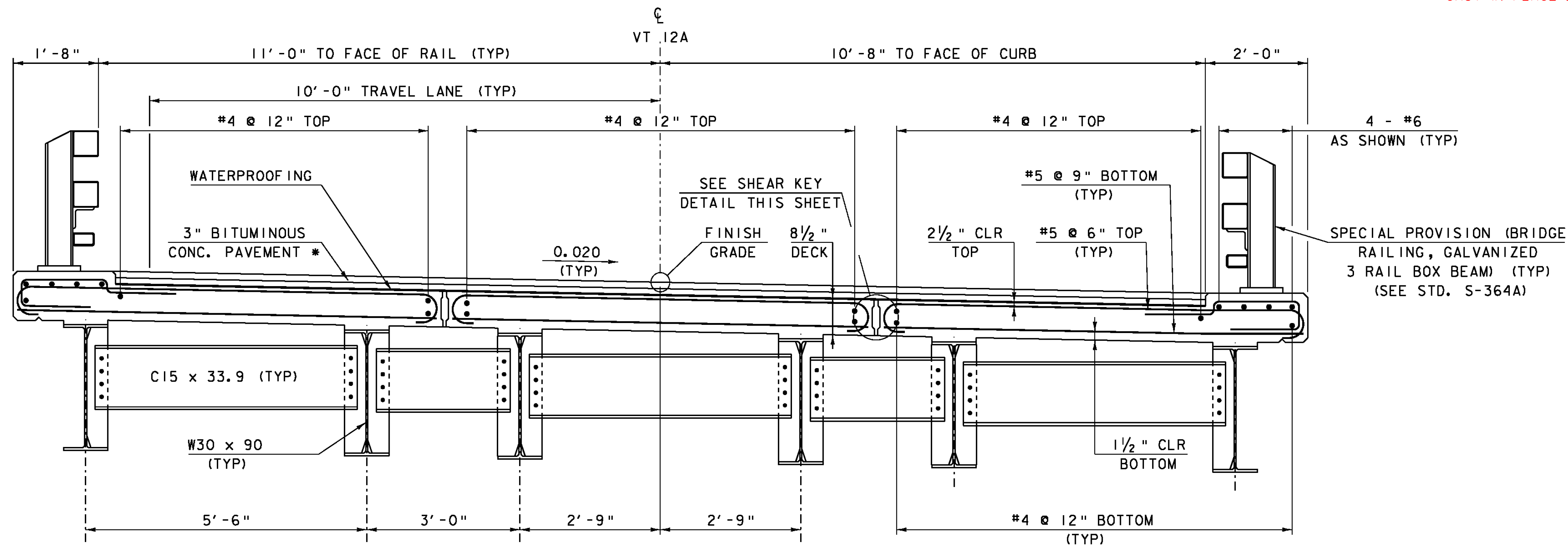


** NON-SHRINK GROUT AND BACKER ROD SHALL BE CONSIDERED INCIDENTAL TO PAY ITEM 900.675 "SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE)".

SHEAR KEY
NTS

- NOTE
1. THE SLABS SHALL BE PLACED AT THE NOMINAL SPACING SHOWN ON THE PLANS WITH A $\frac{1}{4}$ " 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

* $\frac{1}{2}$ " TYPE IIIS OVER
 $\frac{1}{2}$ " TYPE IIIS

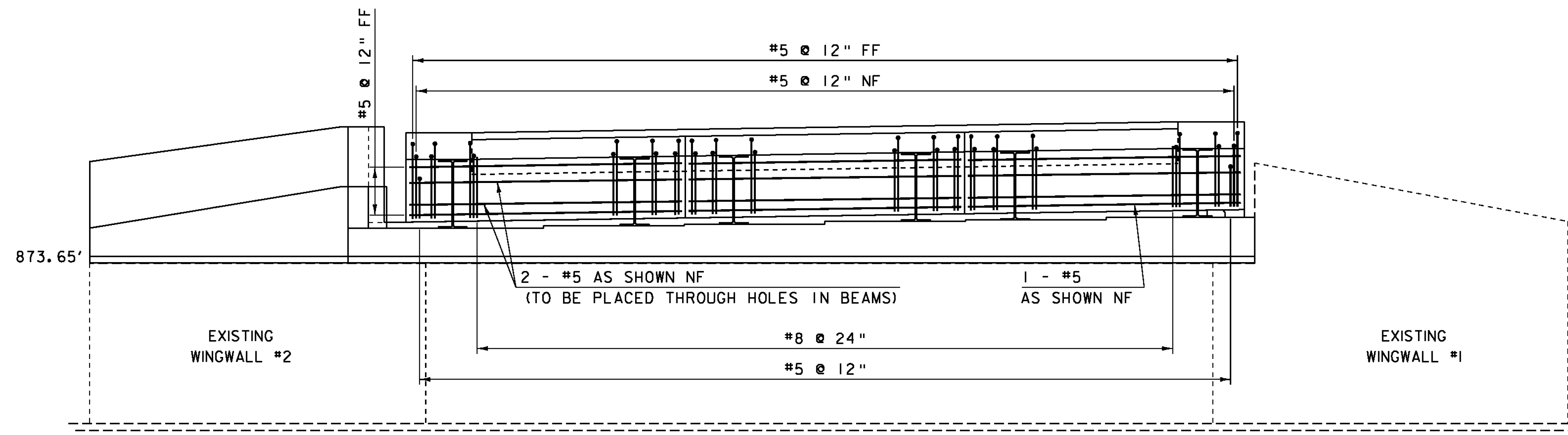
NOTE:

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

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

FILE NAME: sl0c420sup.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: R.S.YOUNG
DECK STRUCTURAL DETAILS

PLOT DATE: 21-SEP-2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.Charbonneau
SHEET 19 OF 54

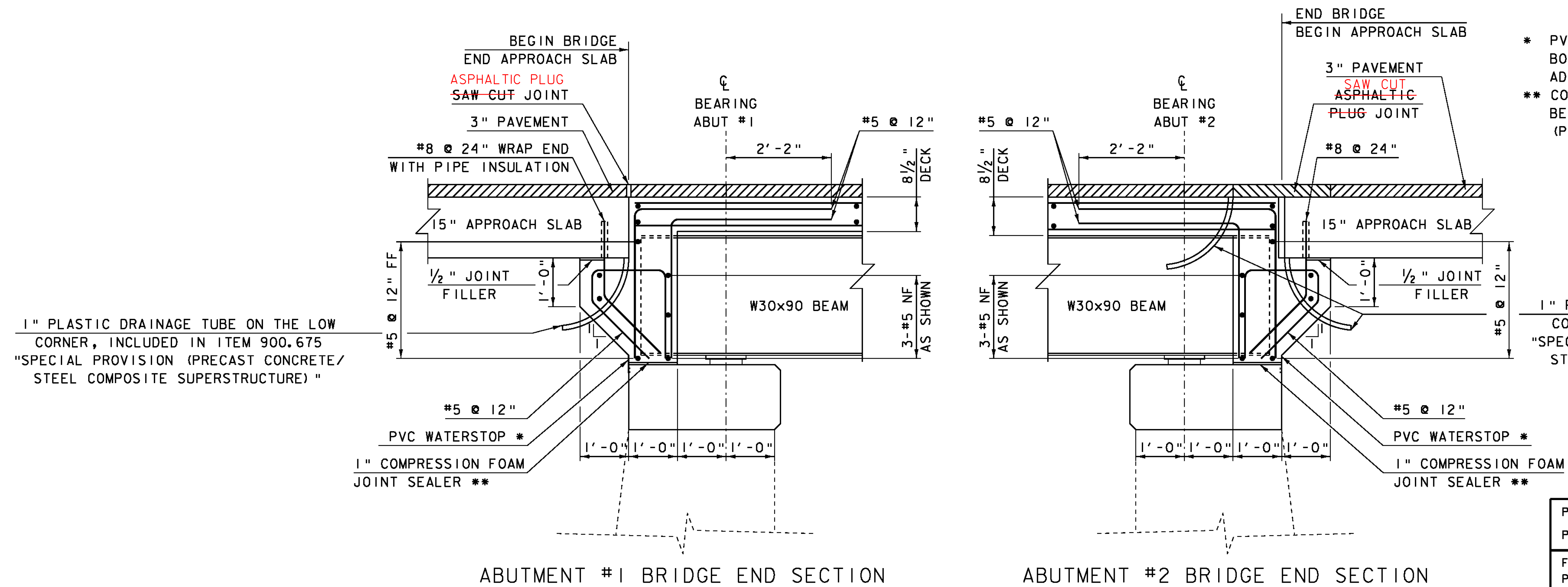


CURTAINWALL TYPICAL SECTION

UNIT NO.1 @ ABUTMENT NO.2

NOTE:

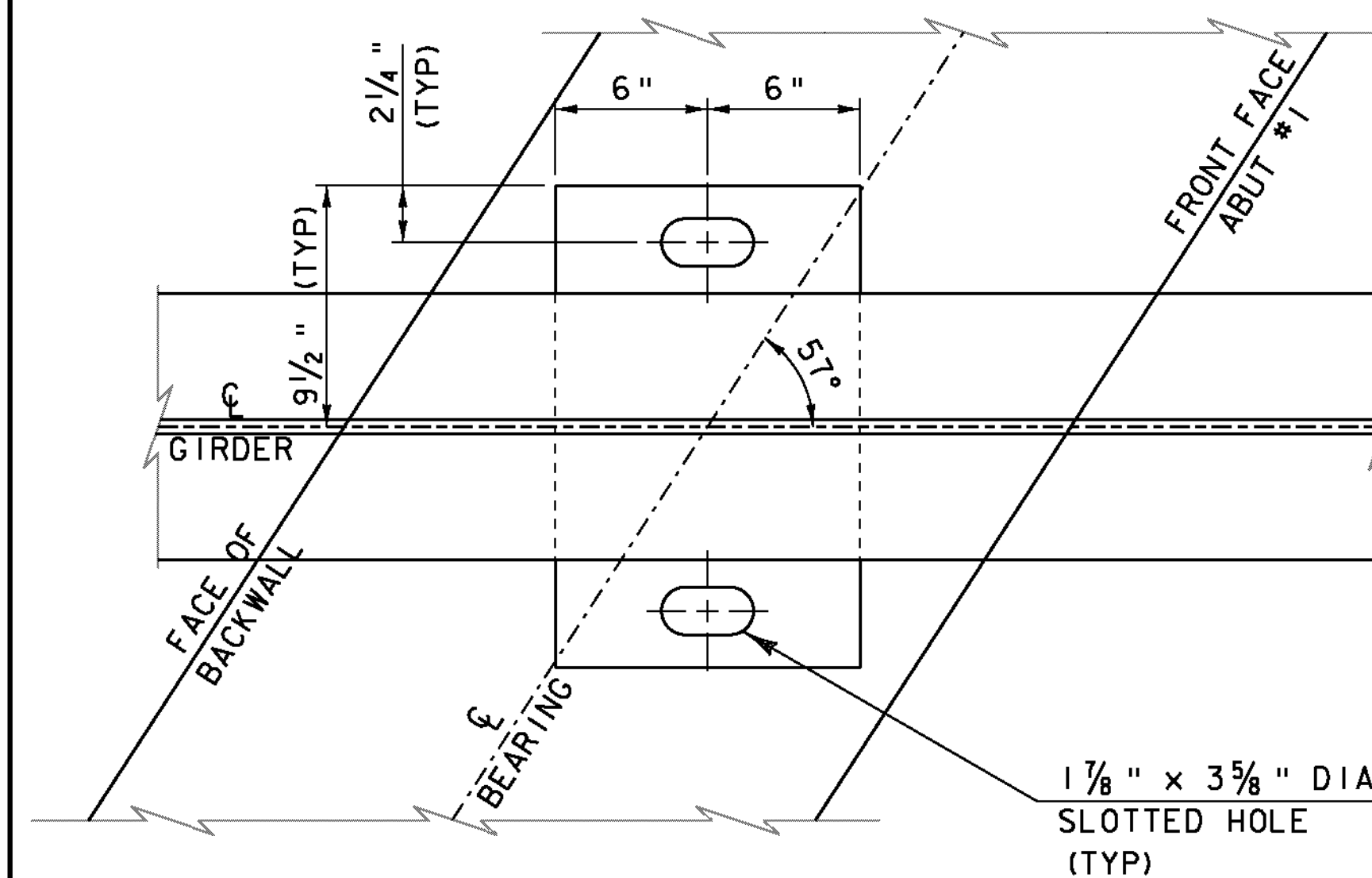
NF = NEAR FACE
 FF = FAR FACE
 EF = EACH FACE
 ▲ = CUT TO FIT IN FIELD
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.



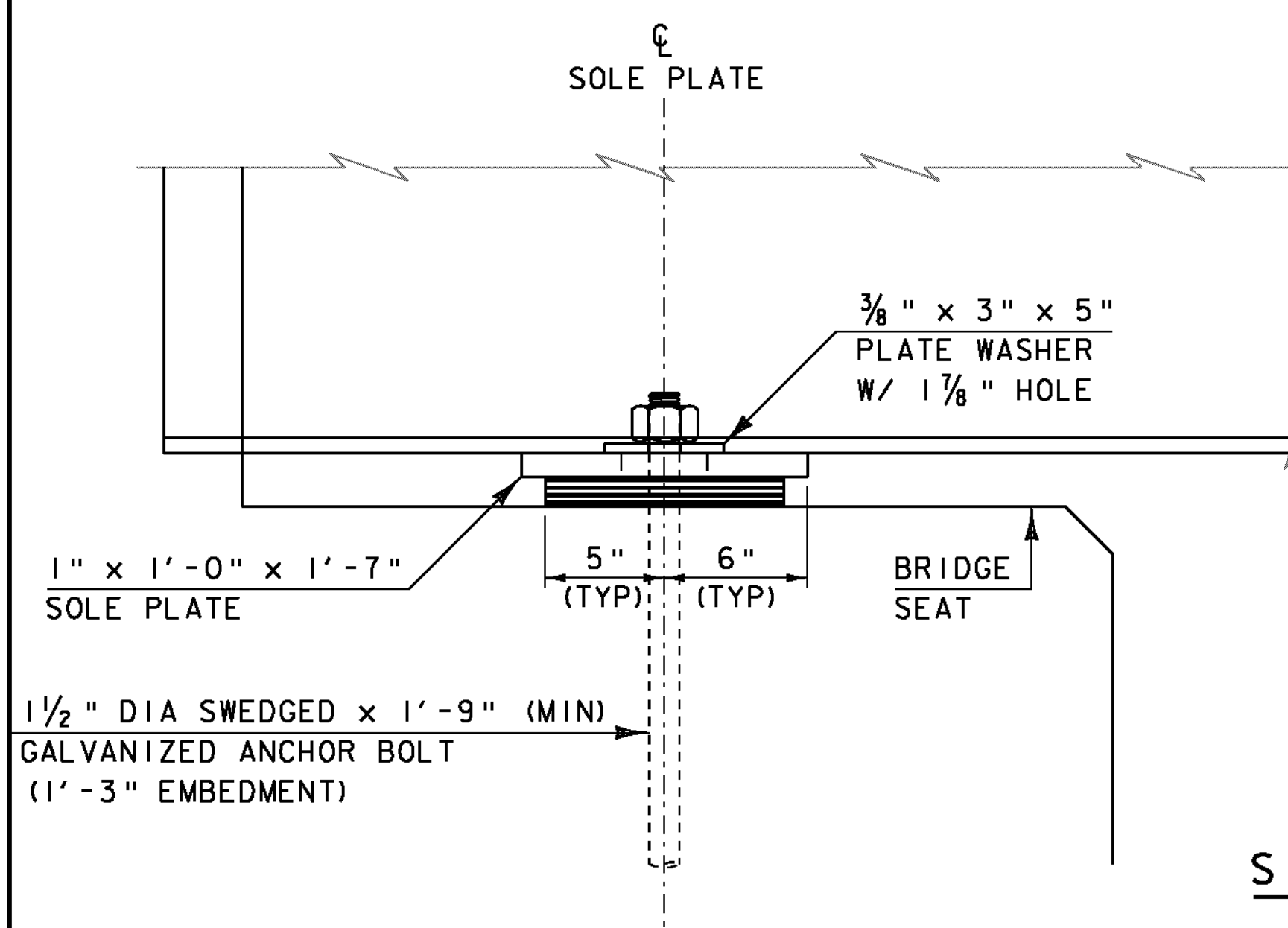
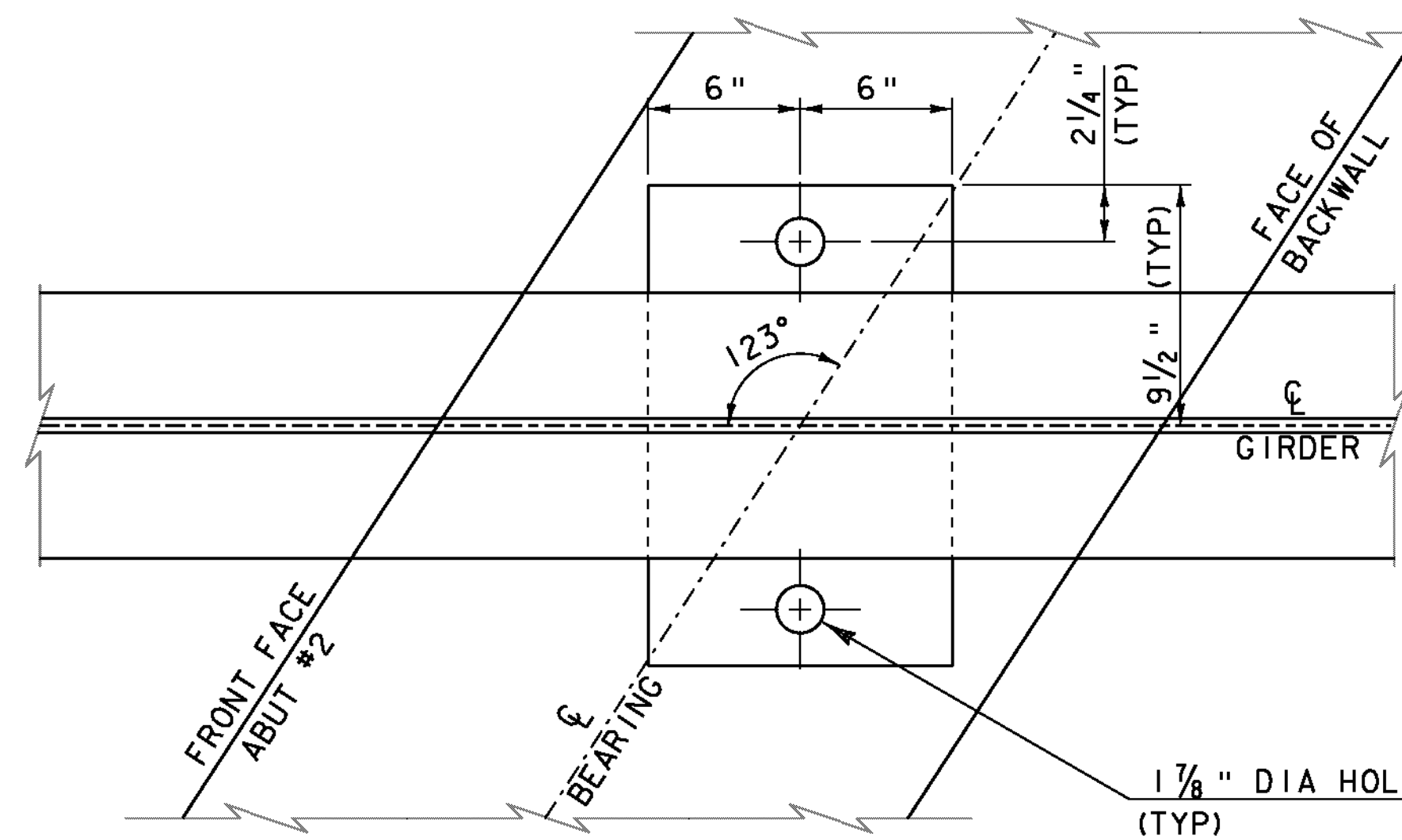
- * PVC WATERSTOP SHALL HAVE TOP LEGS CLIPPED. BOND TO END OF PRESTRESSED UNITS WITH APPROVED ADHESIVE. WATERSTOP TO EXTEND ACROSS ALL UNITS.
- ** COST OF 1" COMPRESSION FOAM JOINT SEALER SHALL BE INCLUDED IN ITEM 900.675 "SPECIAL PROVISION (PRECAST CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE) "

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

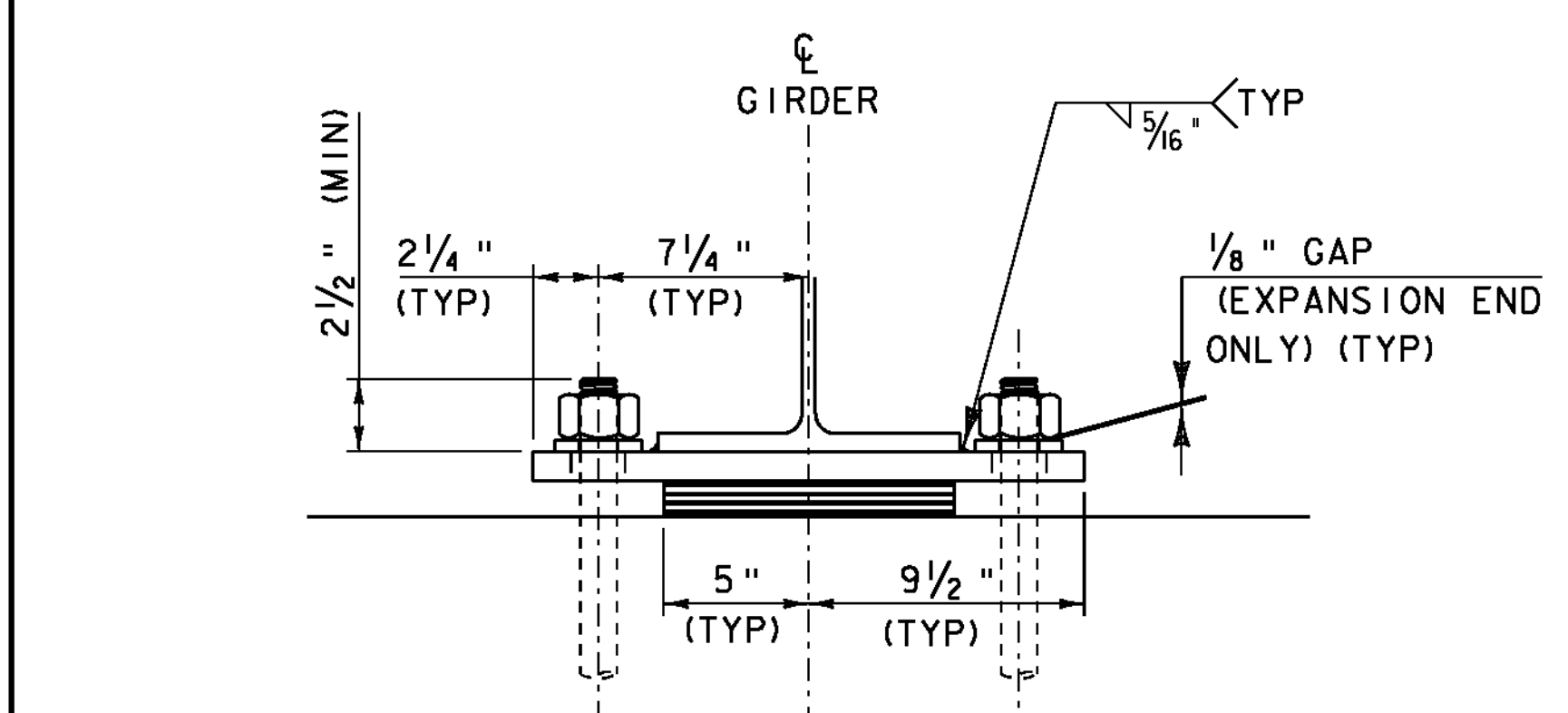
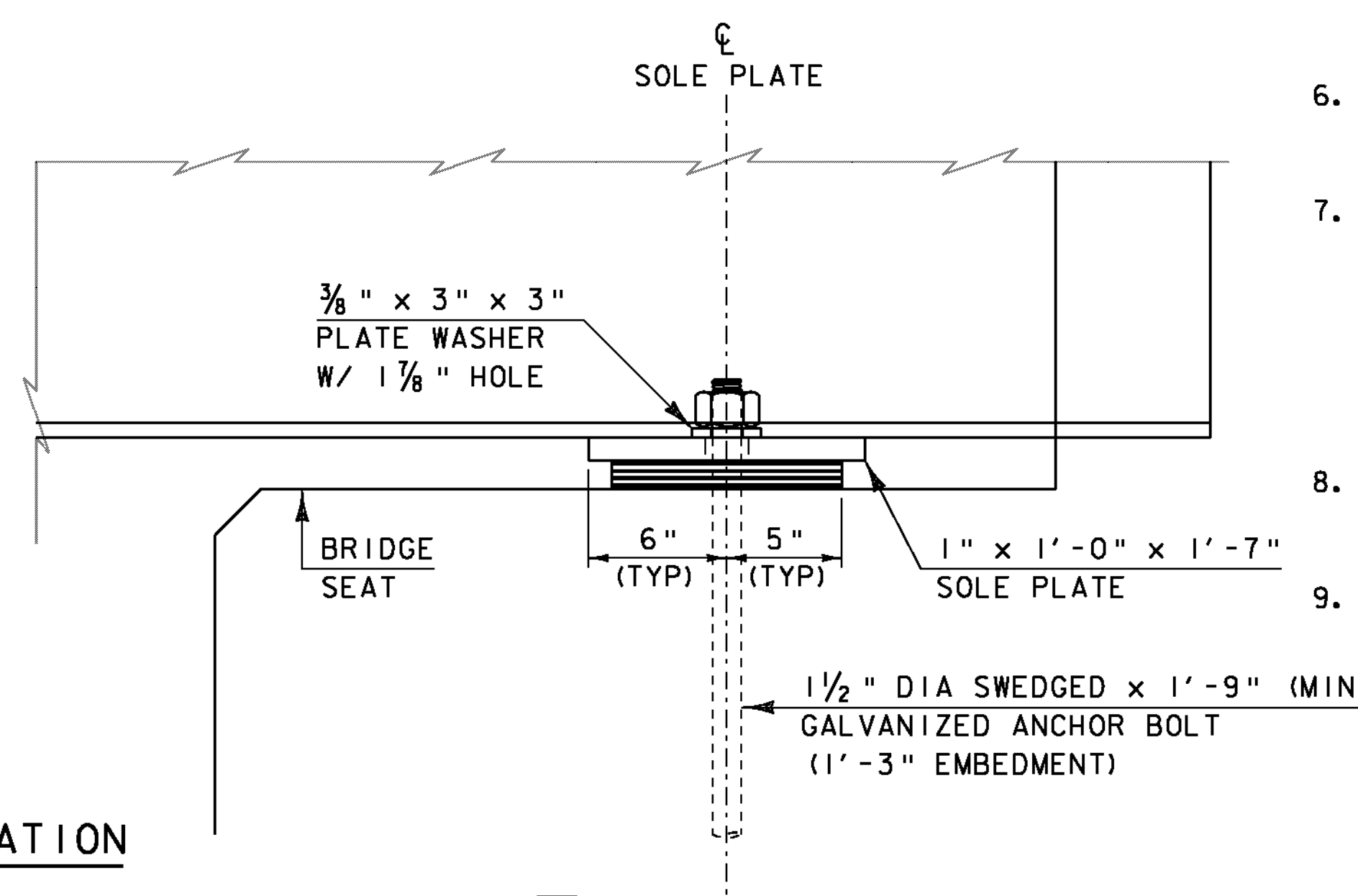
PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: sl0c420sup.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: E.R.Charbonneau	CHECKED BY: E.R.Charbonneau
CURTAINWALL DETAILS	SHEET 20 OF 54



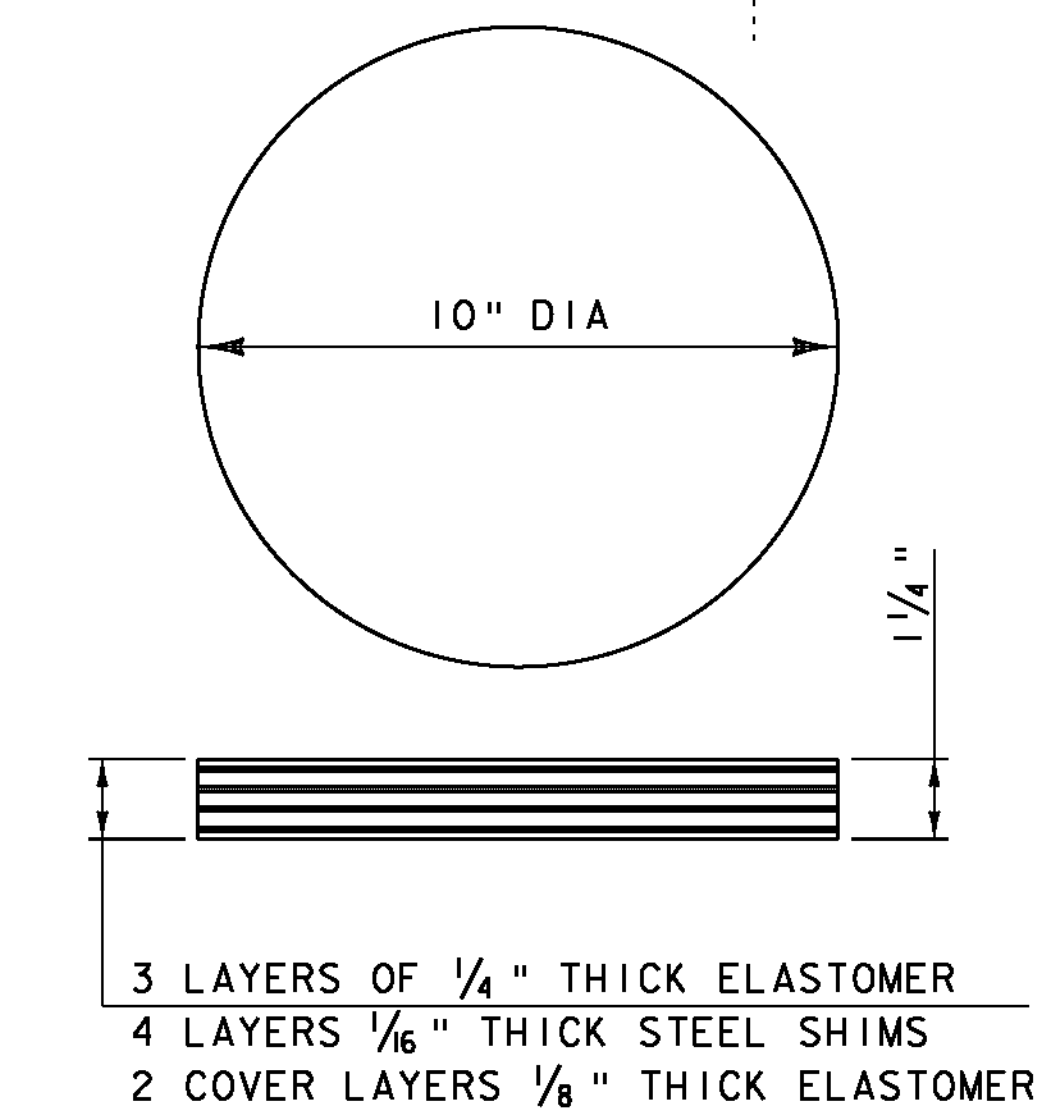
PLAN VIEW



SIDE ELEVATION



FRONT VIEW



ELASTOMERIC BEARING DETAIL
NOT TO SCALE

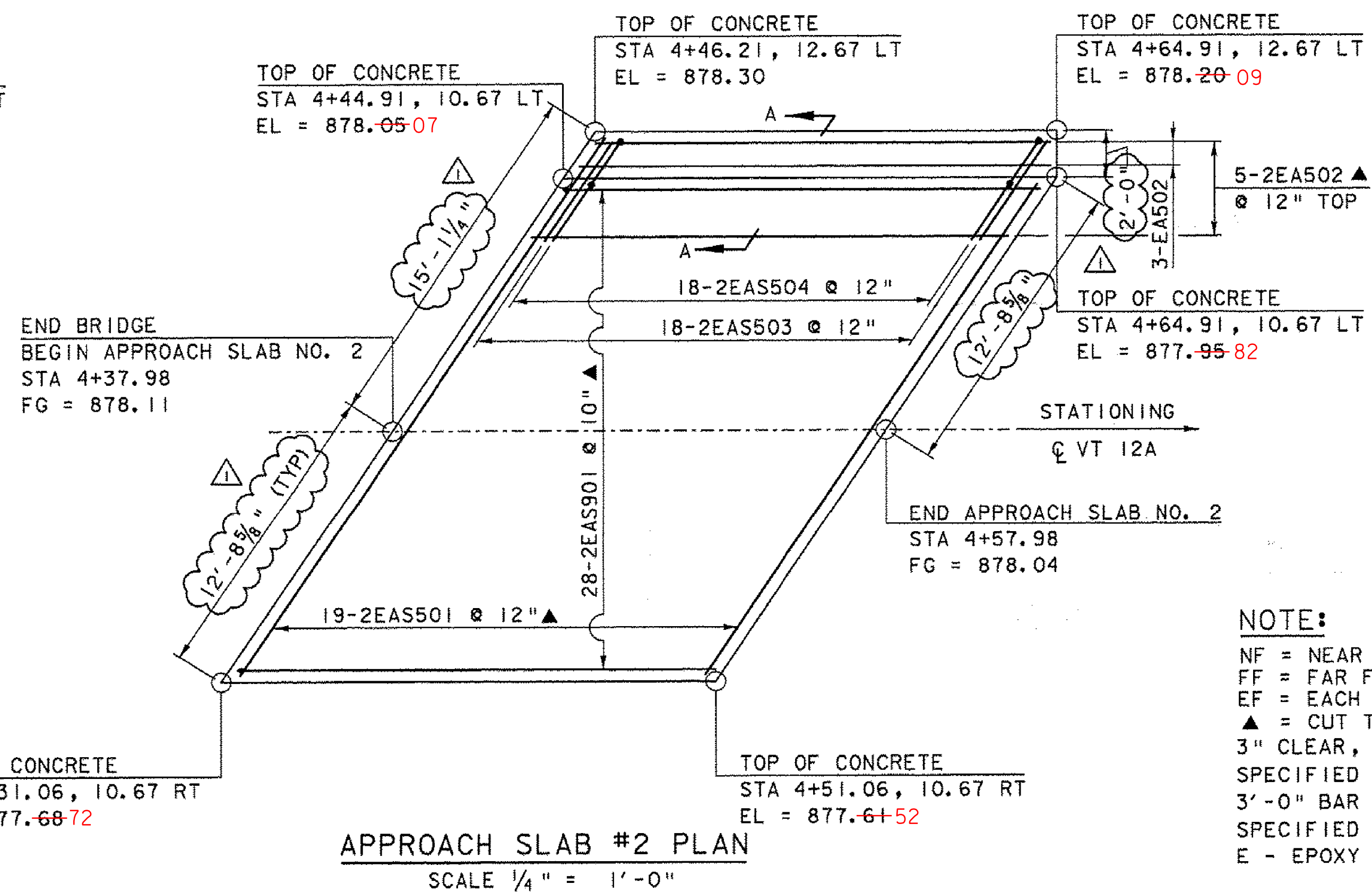
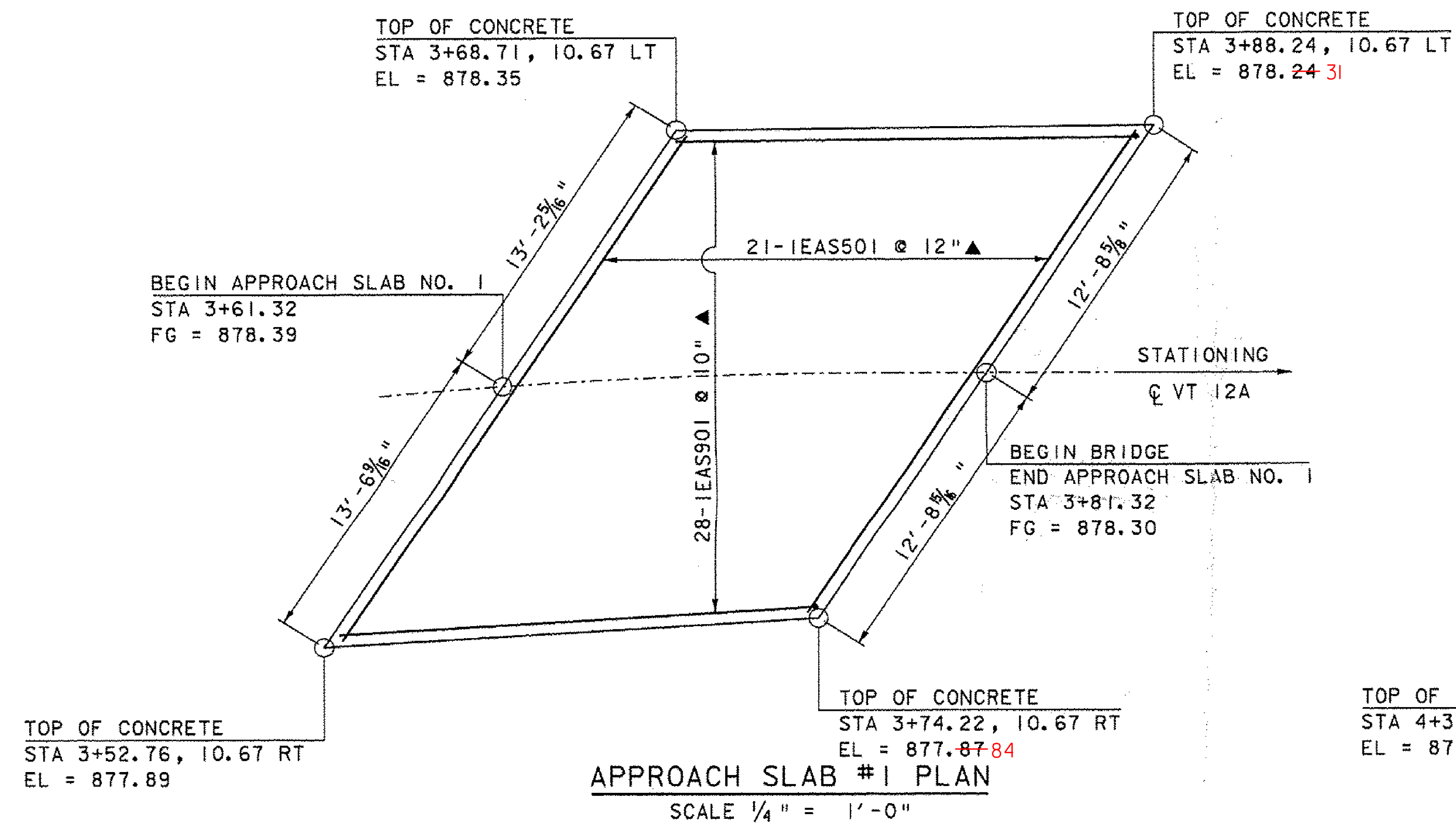
BEARING NOTES

1. BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.11 "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD" AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF STANDARD SPECIFICATIONS SECTIONS 531 AND 731.
 2. ALL BEARING DEVICES SHALL BE GALVANIZED OR METALIZED AS PER SUBSECTIONS 531.04 (B) AND 506.15 OF THE STANDARD SPECIFICATIONS. IF THE BEARINGS ARE METALIZED, THEY SHALL BE SEALED WITH AN APPROVED SEALER AS SPECIFIED IN SUBSECTION 506.15 (B) OF THE STANDARD SPECIFICATIONS. AREAS OF GALVANIZING OF METALIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE REPAIRED IN CONFORMANCE WITH SECTION 513.
 3. PAYMENT FOR ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 531.11 "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD." ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER AASHTO M232M/M232.
 4. ALL STEEL IN BEARING DEVICES SHALL BE AASHTO M270M/M270 GRADE 50, UNLESS NOTED OTHERWISE.
 5. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL AASHTO M270M/M270 GRADE 36. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.
 6. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM OF 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)

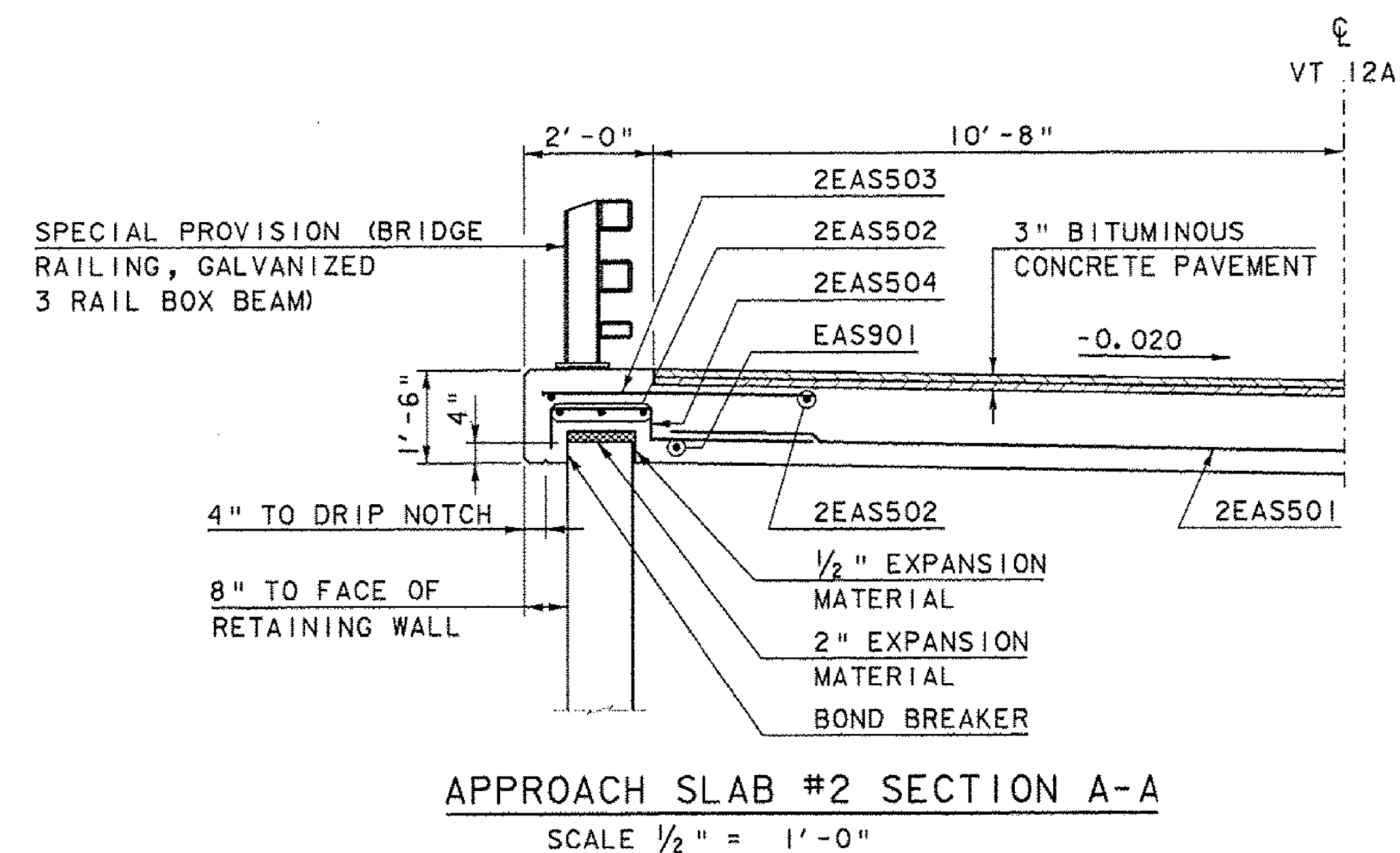
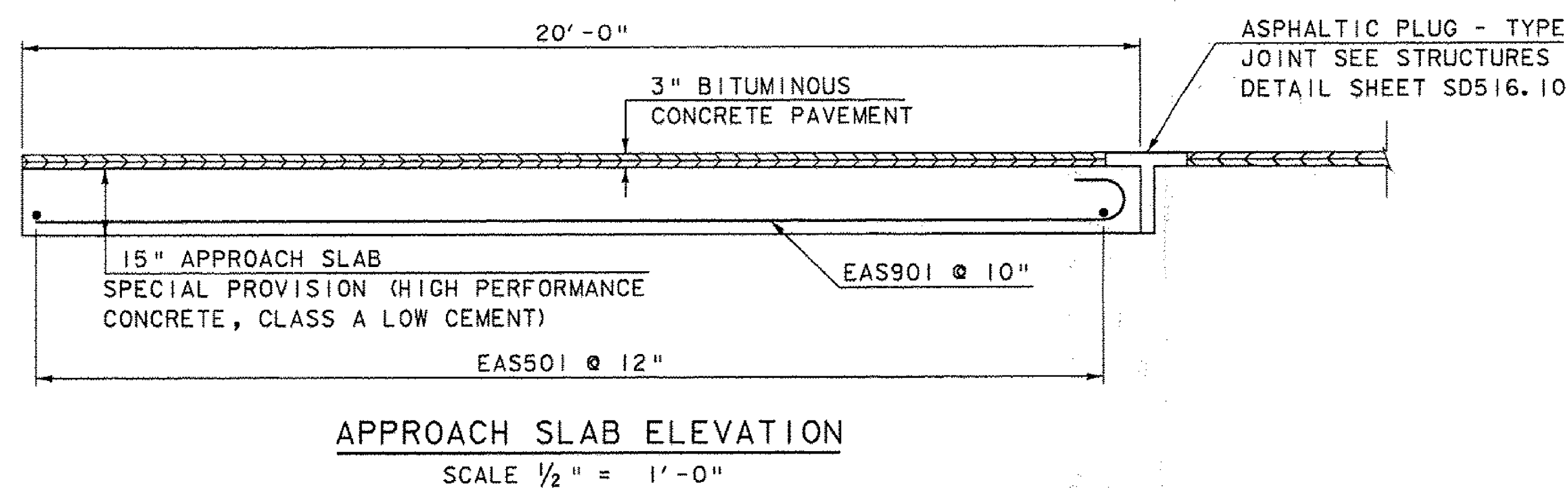
FILE NAME: slOc420brg.dgn
PROJECT LEADER: C. WILLIAMS
DESIGNED BY: L. STONE
BEARING DETAILS

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

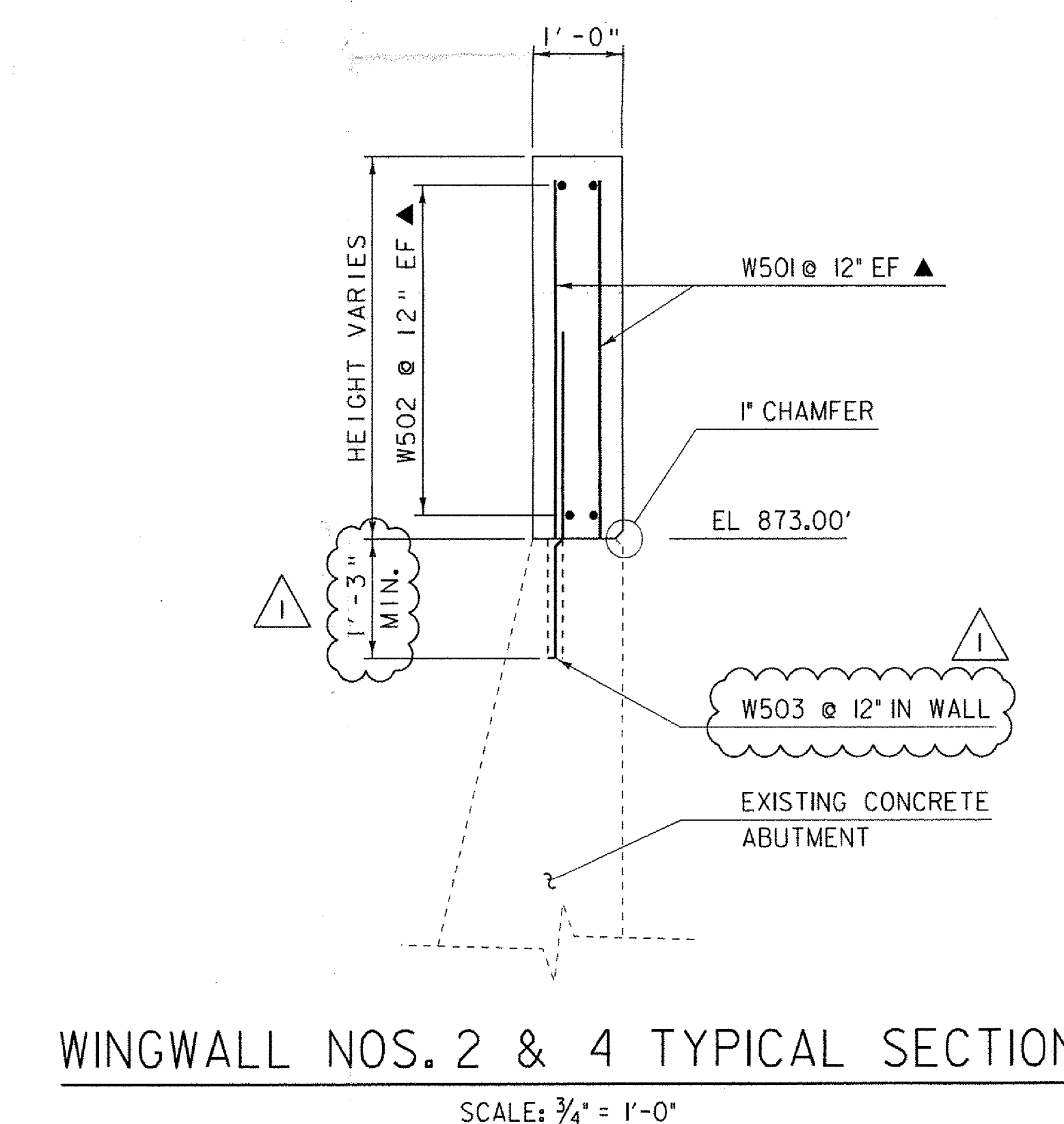
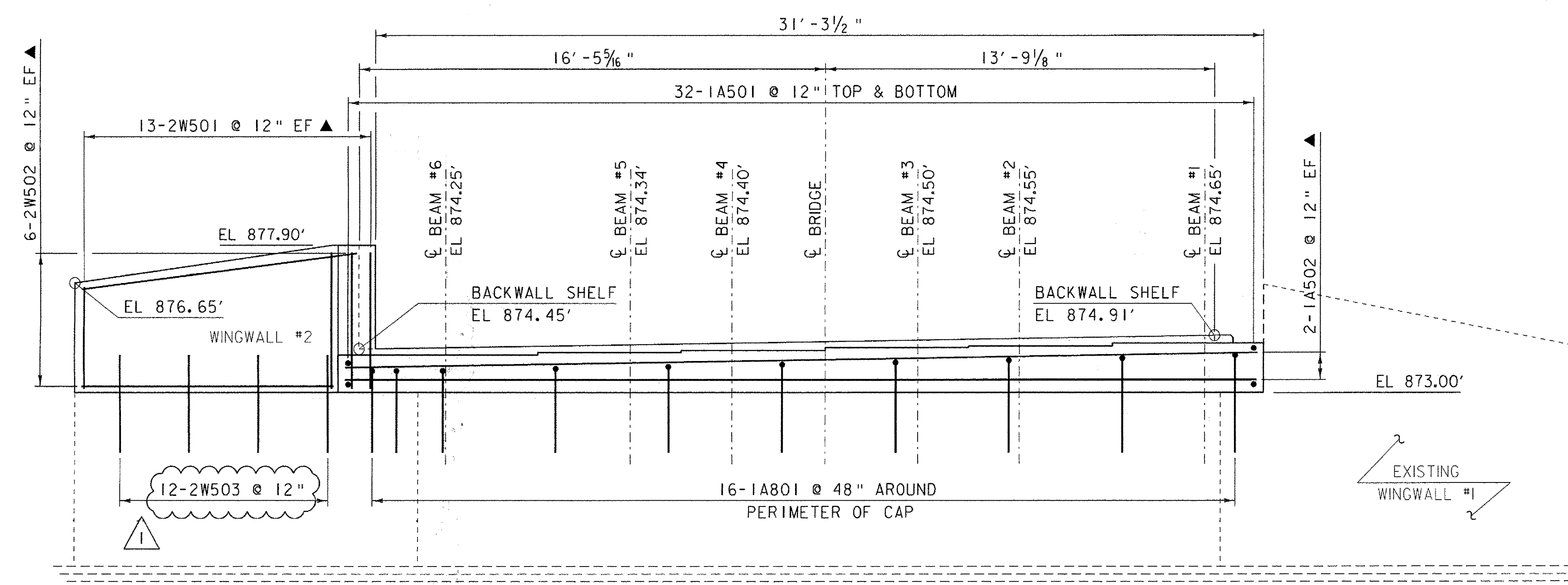
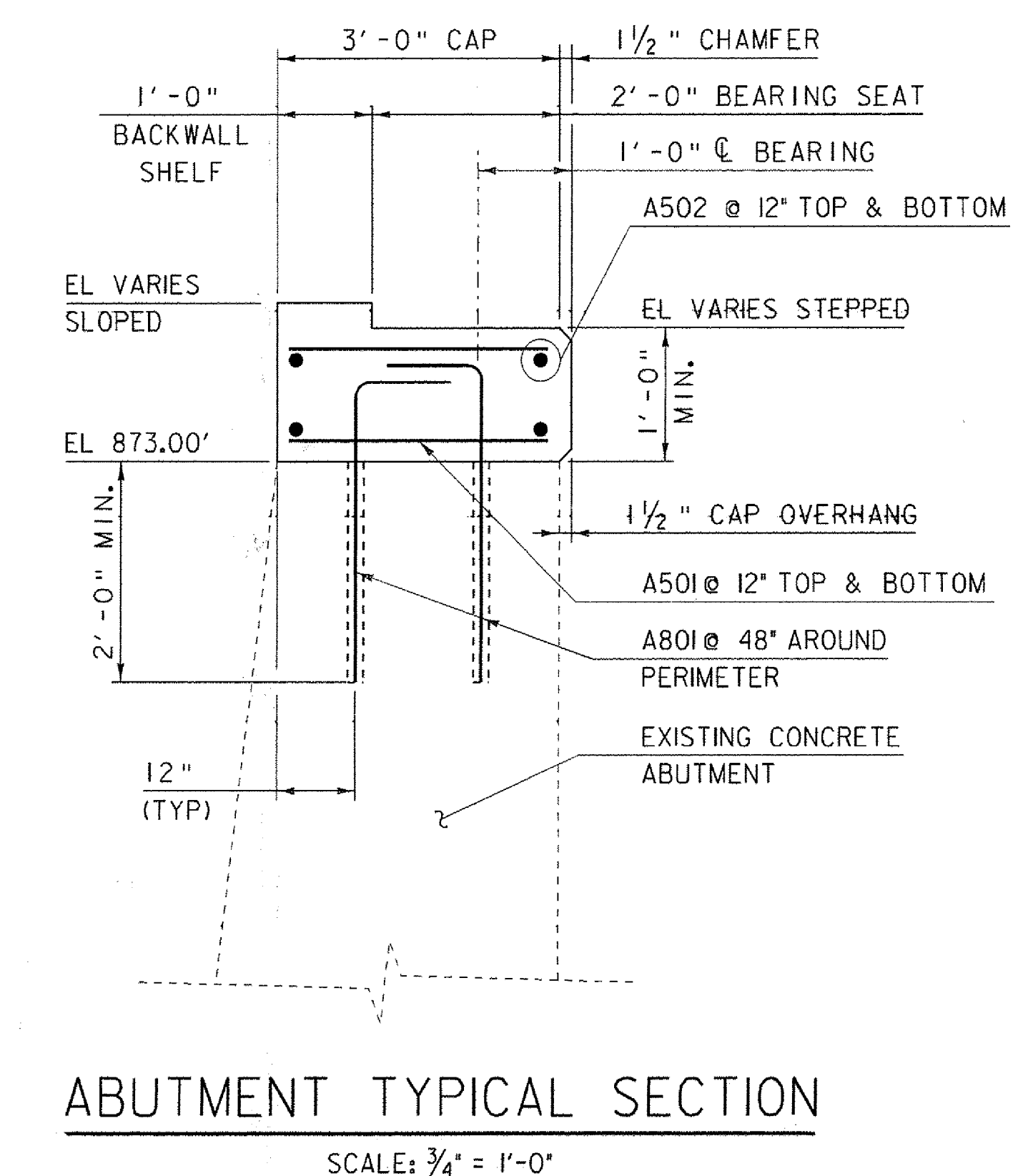
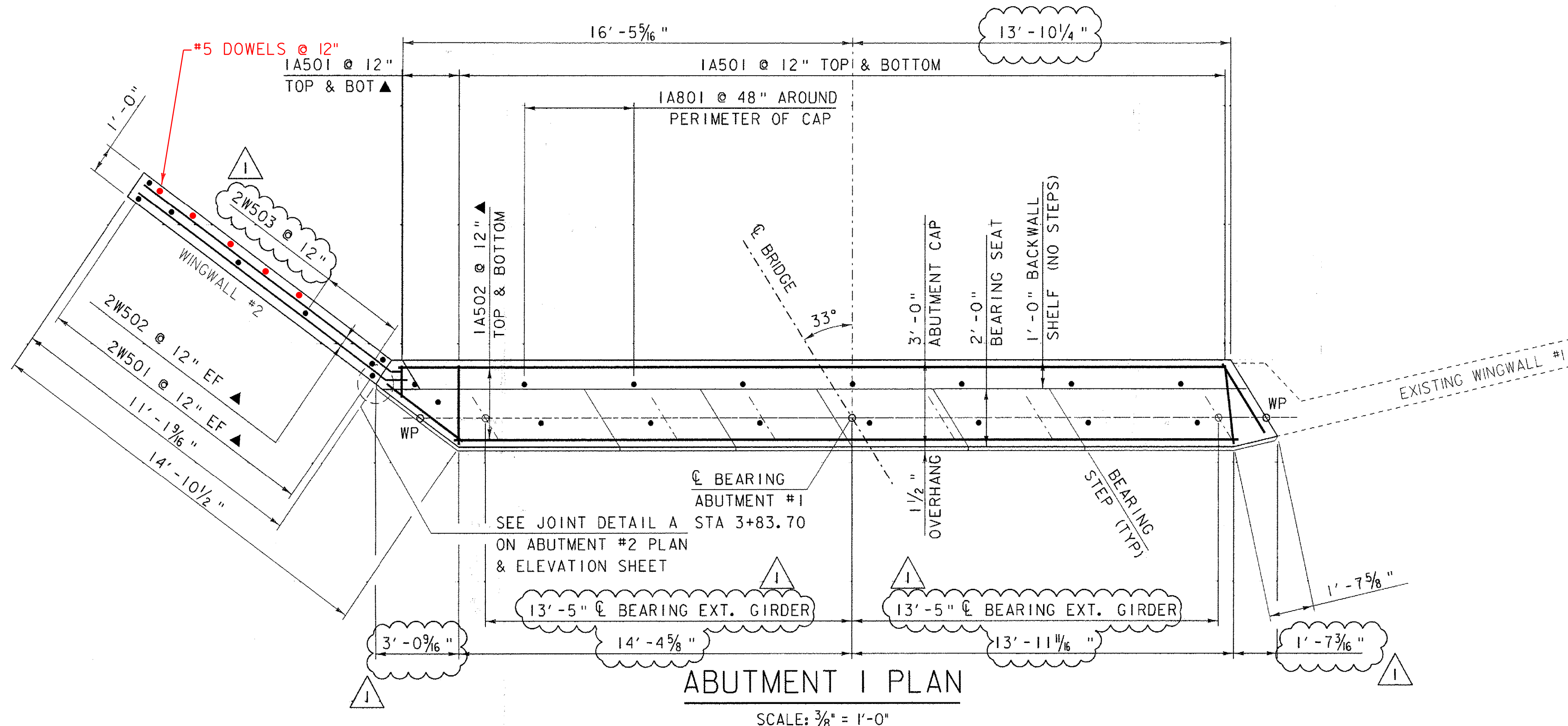


PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: sl0c420slab>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
1	11-7-2011	DIMENSION APPROACH SLAB WIDTH	MCL

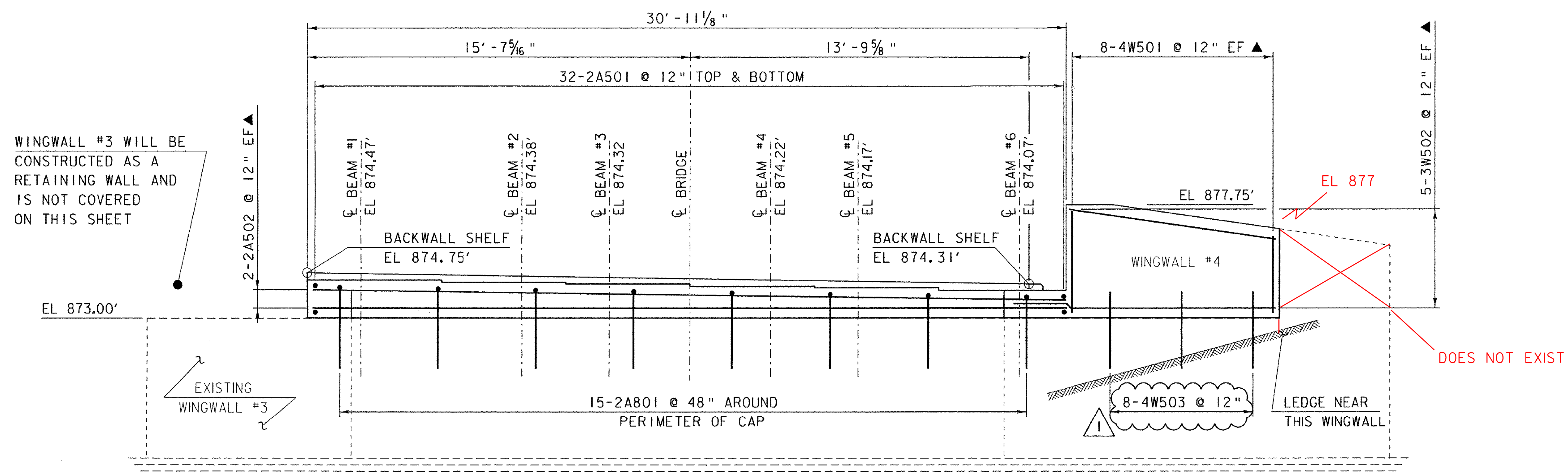
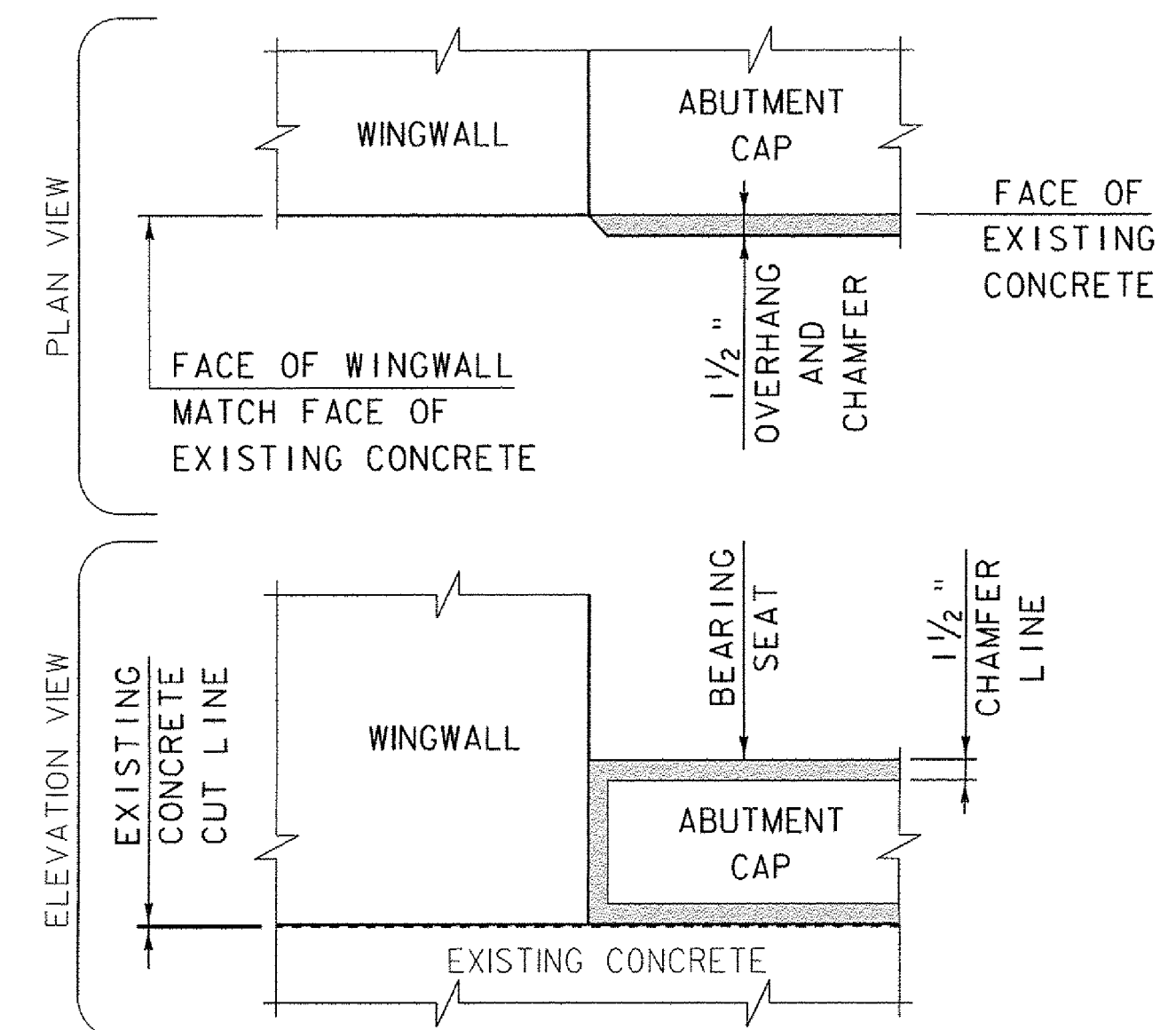
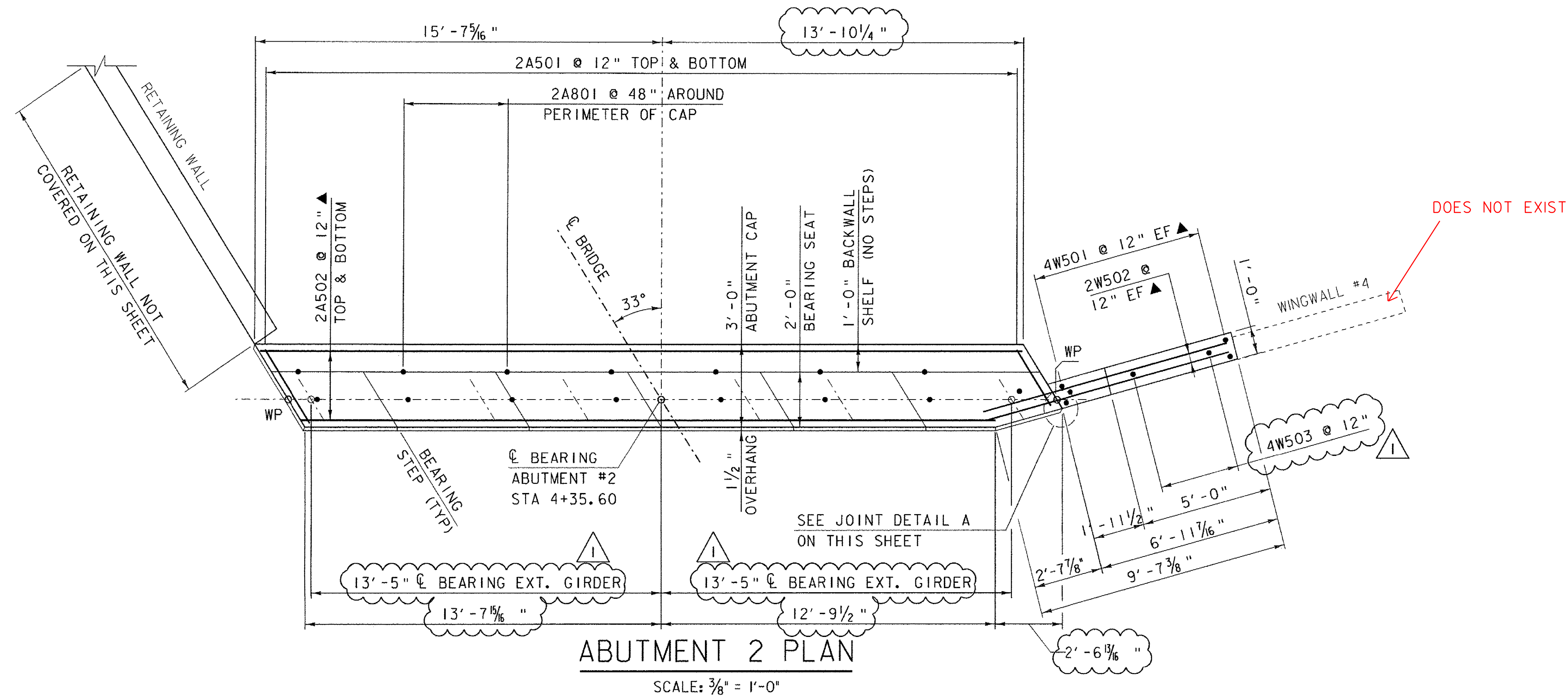


NOTE:
 NF = NEAR FACE
 FF = FAR FACE
 EF = EACH FACE
 ▲ = CUT TO FIT IN FIELD
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

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

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

PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187 (8)	
FILE NAME: st0c420sub.dgn	PLOT DATE: 07-NOV-2011
PROJECT LEADER: C.P. WILLIAMS	DRAWN BY: M. LONGSTREET
DESIGNED BY: R.S. YOUNG	CHECKED BY: E.R. CHARBONNEAU
ABUTMENT #1 PLAN & ELEVATION	
SHEET 238 OF 35	



NOTE:

NF = NEAR FACE

FF = FAR FACE

EF = EACH FACE

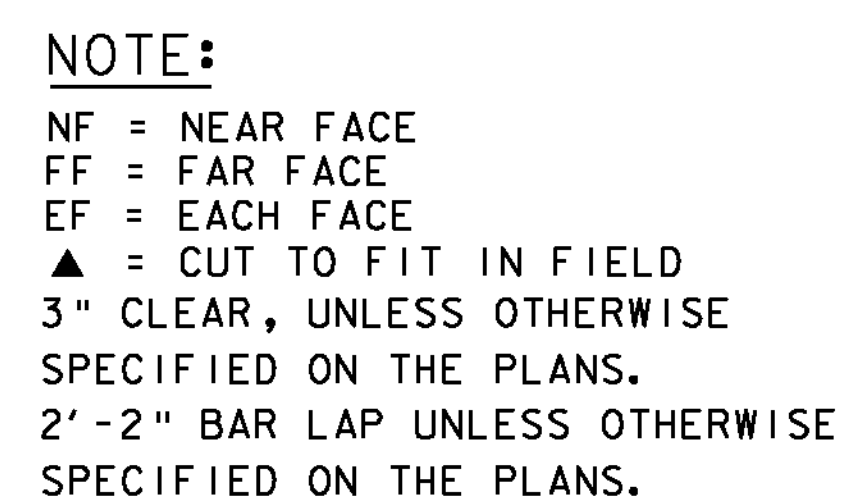
▲ = CUT TO FIT IN FIELD

3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

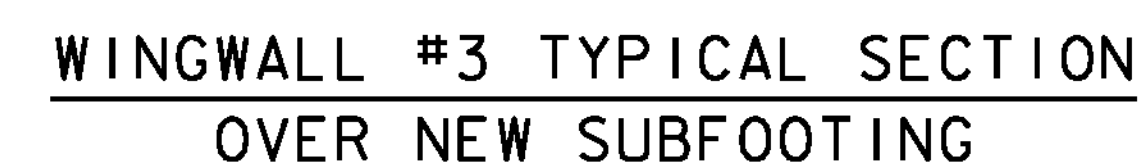
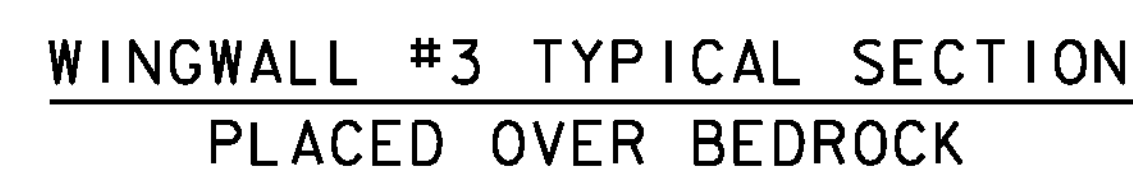
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

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 24R OF 35
DESIGNED BY: R.S. YOUNG	
ABUTMENT #2 PLAN & ELEVATION	



WINGWALL #3 TYPICAL REBAR



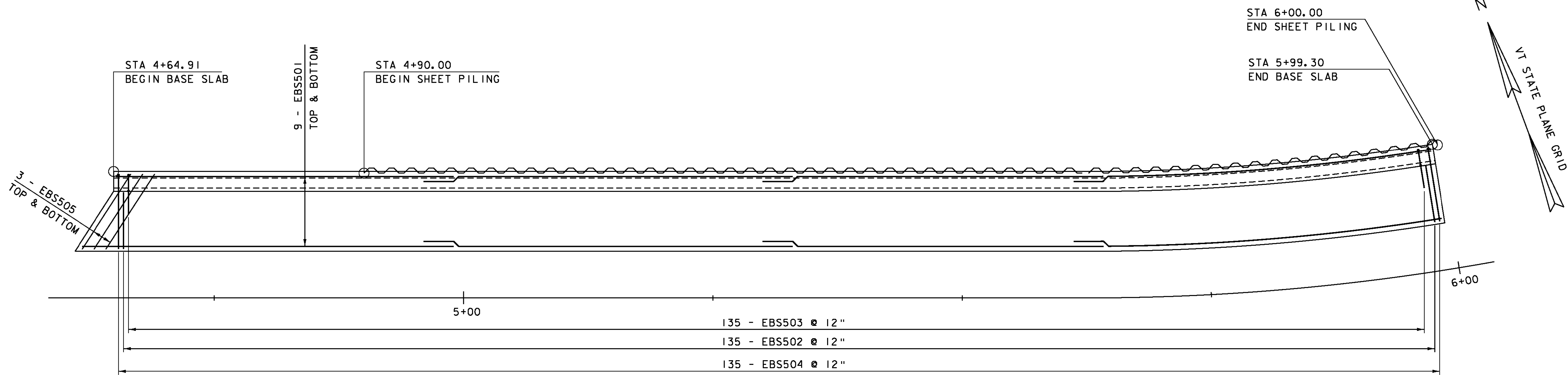
* AS REQUIRED BY THE ENGINEER. PLACE 12" OF ¾" DRAINAGE STONE UNDER THE SUBFOOTING. DRAINAGE STONE SHALL MEET THE REQUIREMENTS OF SUBSECTION 704.16. PAYMENT FOR DRAINAGE STONE SHALL BE INCLUDED UNDER ITEM 540.10 "PRECAST CONCRETE STRUCTURE (WINGWALL NO.3).

NOTE: SEE SHEET 26 FOR TOP OF WINGWALL ELEVATIONS.

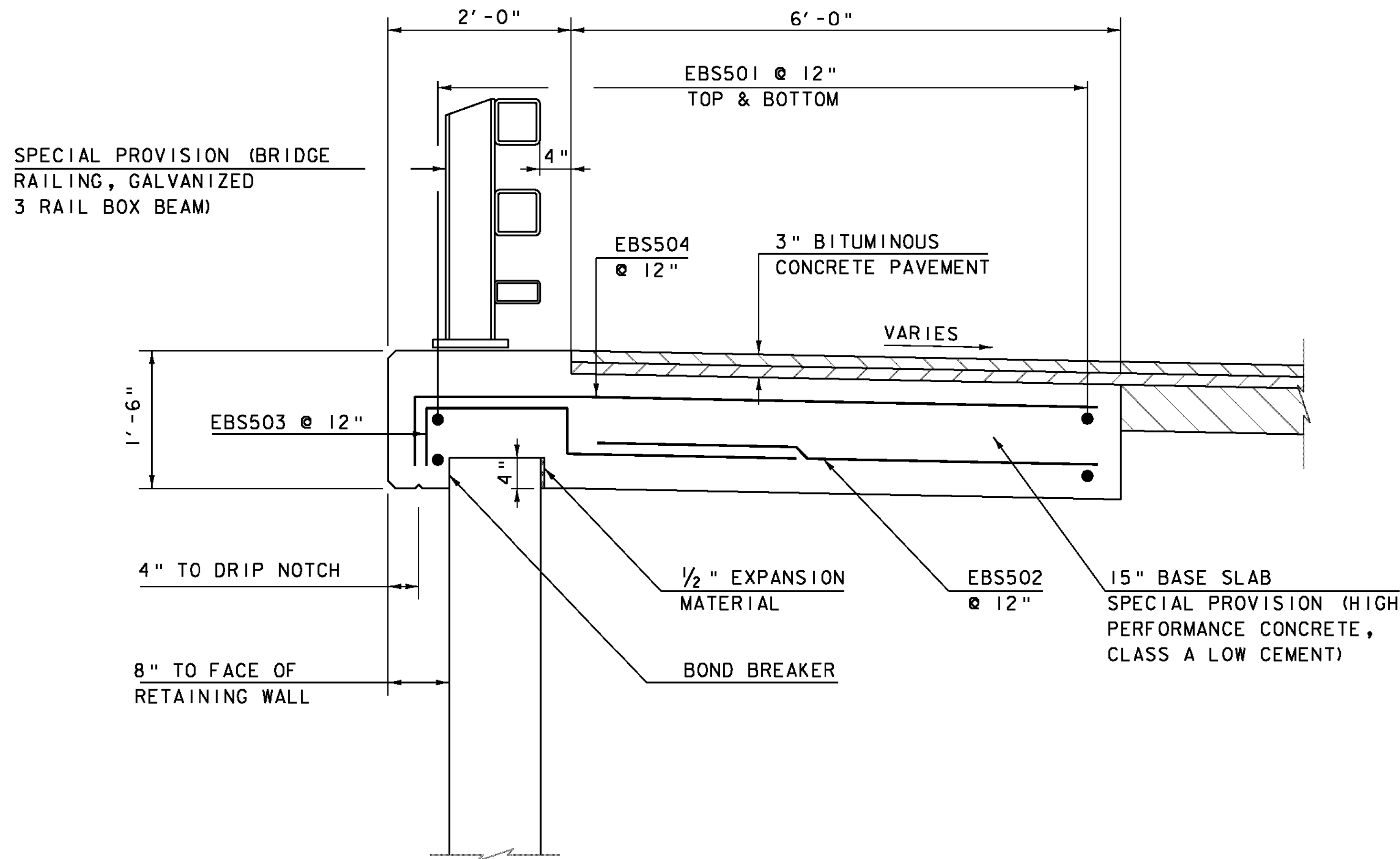
PROJECT NAME:	ROXBURY
PROJECT NUMBER:	BHF 0187(8)

FILE NAME: sl0c420sup.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: R.S.YOUNG
WINGWALL #3 SECTIONS

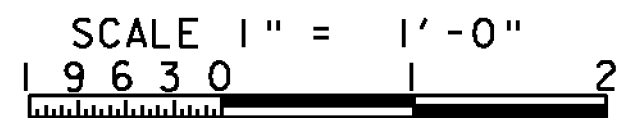
PLOT DATE: 21-SEP-2011
DRAWN BY: D.D.BEARD
CHECKED BY: E.R.Charbonneau
SHEET 25 OF 54



BASE SLAB LAYOUT



BASE SLAB TYPICAL



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	877.09-06	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: sl0c420ret.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																															
ABUTMENT #1																																																																		
▲	64	5	2'- 6"	1A501	STR	2'- 6"																																																												
* ▲	7	5	30'- 0"	1A502	STR	30'- 0"																																																												
	16	8	3'- 9"	1A801	17		1'- 0"	2'- 9"																																																										
WINGWALL #1																																																																		
				NO BARS																																																														
WINGWALL #2																																																																		
▲	26	5	4'- 8"	2W501	STR	4'- 8"																																																												
	12	5	12'- 3"	2W502	22		1'- 0"	11'- 3"					0'- 7"	---	0'- 10"	---																																																		
*	5	8	3'- 0"	2W801	STR	3'- 0"																																																												
ABUTMENT #2																																																																		
▲	64	5	2'- 6"	2A501	STR	2'- 6"																																																												
▲	6	5	28'- 11"	2A502	STR	28'- 11"																																																												
	15	8	3'- 9"	2A801	17		1'- 0"	2'- 9"																																																										
WINGWALL #3																																																																		
				NO BARS																																																														
WINGWALL #4																																																																		
▲	16	5	4'- 6"	4W501	STR	4'- 6"																																																												
* ▲	11	5	9'- 7"	4W502	STR	9'- 7"																																																												
	3	8	3'- 0"	4W801	STR	3'- 0"																																																												
APPROACH SLAB #1																																																																		
* ▲	22	5	26'- 3"	1EAS501	STR	26'- 3"																																																												
*	29	9	20'- 9"	1EAS901	1	1'- 3"	19'- 6"						---		1'- 0"																																																			
APPROACH SLAB #2																																																																		
	19	5	24'- 11"	2EAS501	STR	24'- 11"																																																												
▲	8	5	19'- 6"	2EAS502	STR	19'- 6"																																																												
*	19	5	5'- 0"	2EAS503	STR	5'- 0"																																																												
	18	5	5'- 5"	2EAS504	S5	---	0'- 5"	1'- 7"	0'- 5"				3'- 0"																																																					
*	29	9	20'- 9"	2EAS901	1	1'- 3"	19'- 6"						---		1'- 0"																																																			
BASE SLAB																																																																		
	72	5	36'- 0"	EBS501	STR	36'- 0"																																																												
*	136	5	5'- 6"	EBS502	STR	5'- 6"																																																												
	6	5	9'- 0"	EBS504	STR	9'- 0"																																																												
	135	5	5'- 5"	EBS503	S5	---	0'- 9"	1'- 9"	0'- 9"				2'- 2"																																																					
	135	5	8'- 3"	EBS504	2	0'- 9"	7'- 6"																																																											
*	71	8	7'- 3"	BS801	STR	7'- 3"																																																												

- ~ NOTES ~
1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTMA 615-S). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.

2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".

3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.

4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.

5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.

6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.

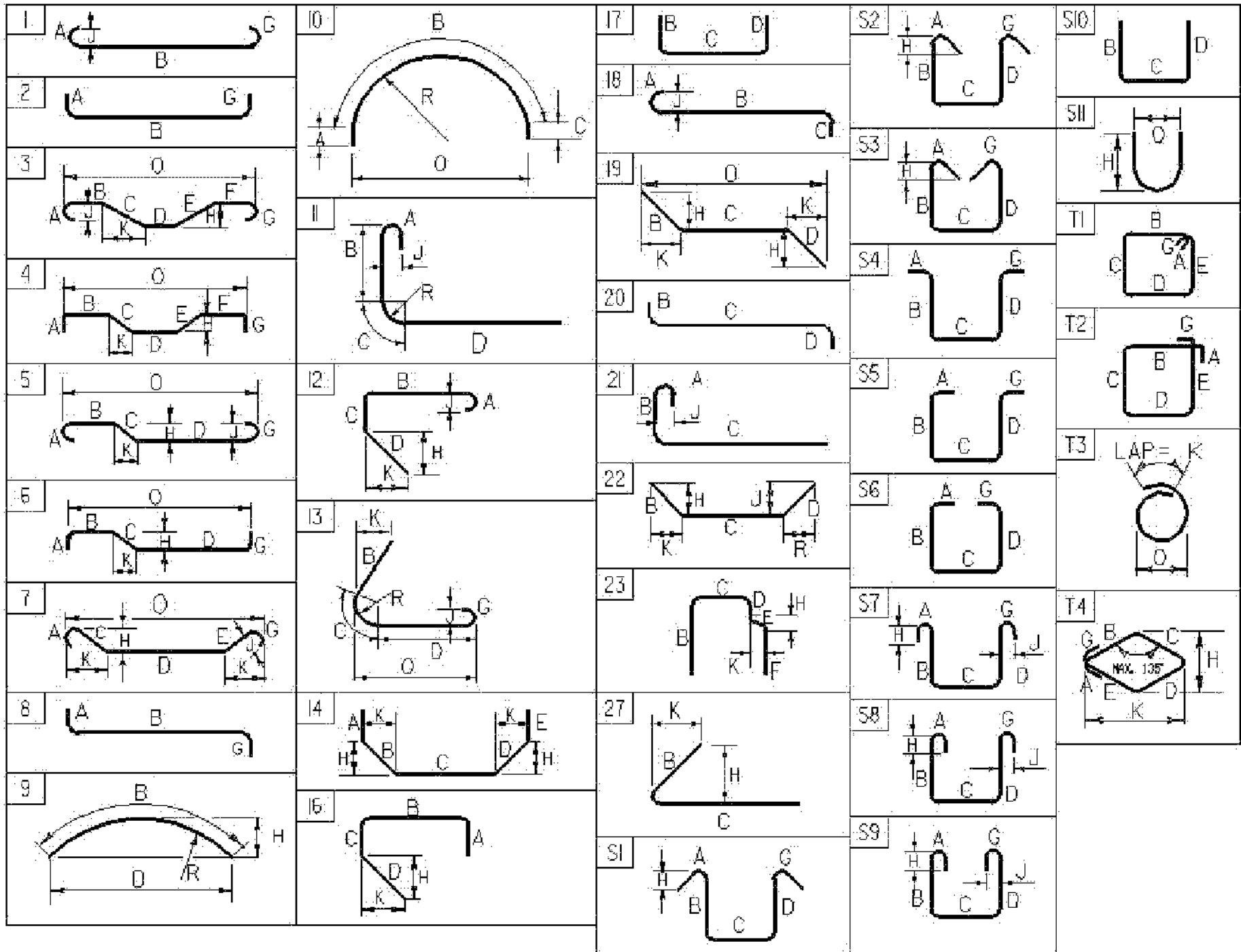
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.

8. ▲ DENOTES BARS TO BE CUT IN FIELD.

9. * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.

10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.

11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



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

PROJECT NAME: ROXBURY

PROJECT NUMBER: BHF 0187 (8)

FILE NAME: s10c420forms.dgn

PROJECT MANAGER: C.P. WILLIAMS

DESIGNED BY: R. YOUNG

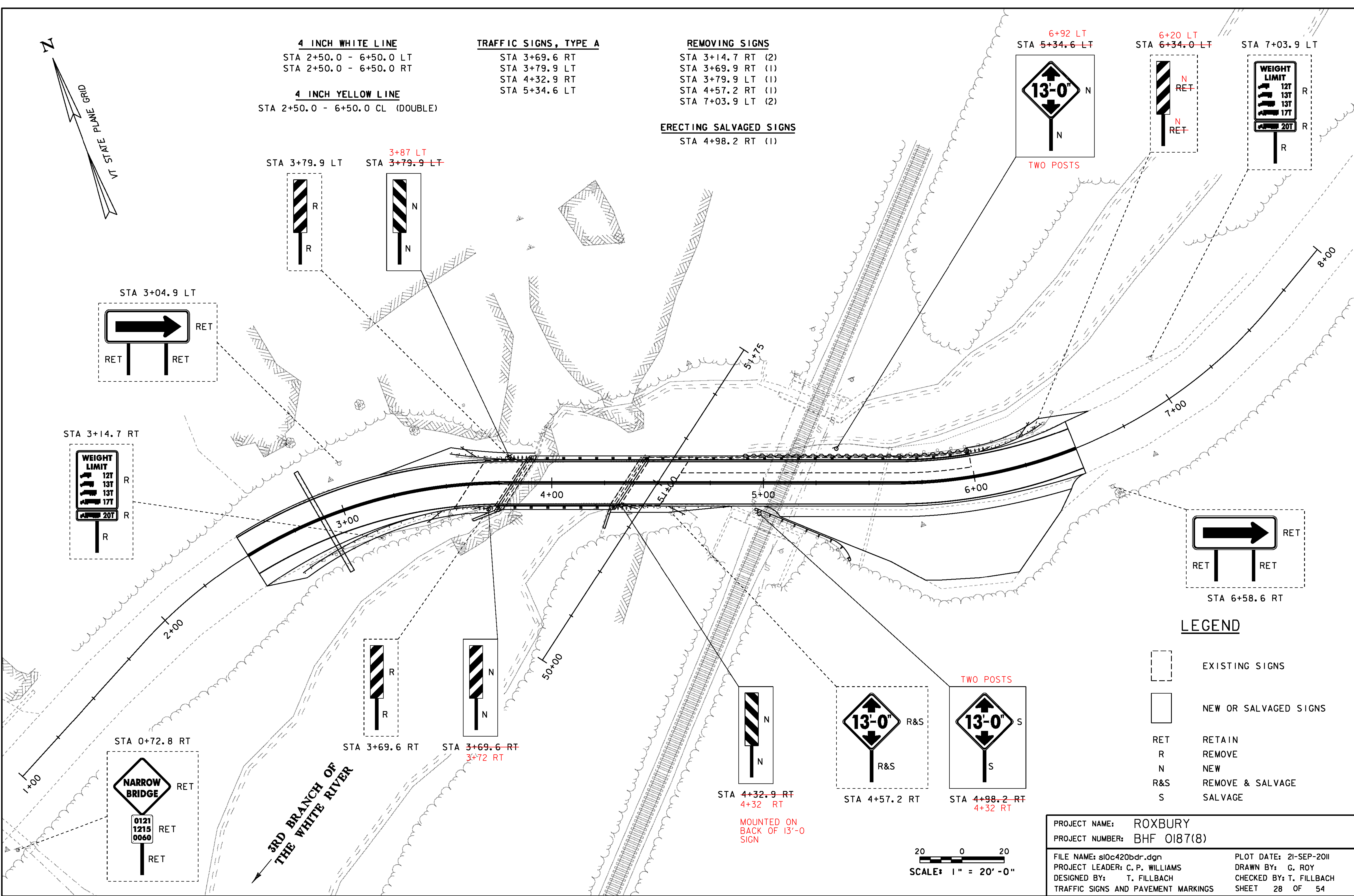
PLOT DATE: 9/19/2011

DRAWN BY: M. LONGSTREE1

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

STA 7+03.9 LT

STA 3+04.9 LT

STA 3+14.7 RT

STA 0+72.8 RT

STA 3+69.6 RT

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

STA 4+57.2 RT

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

STA 6+58.6 RT

LEGEND

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

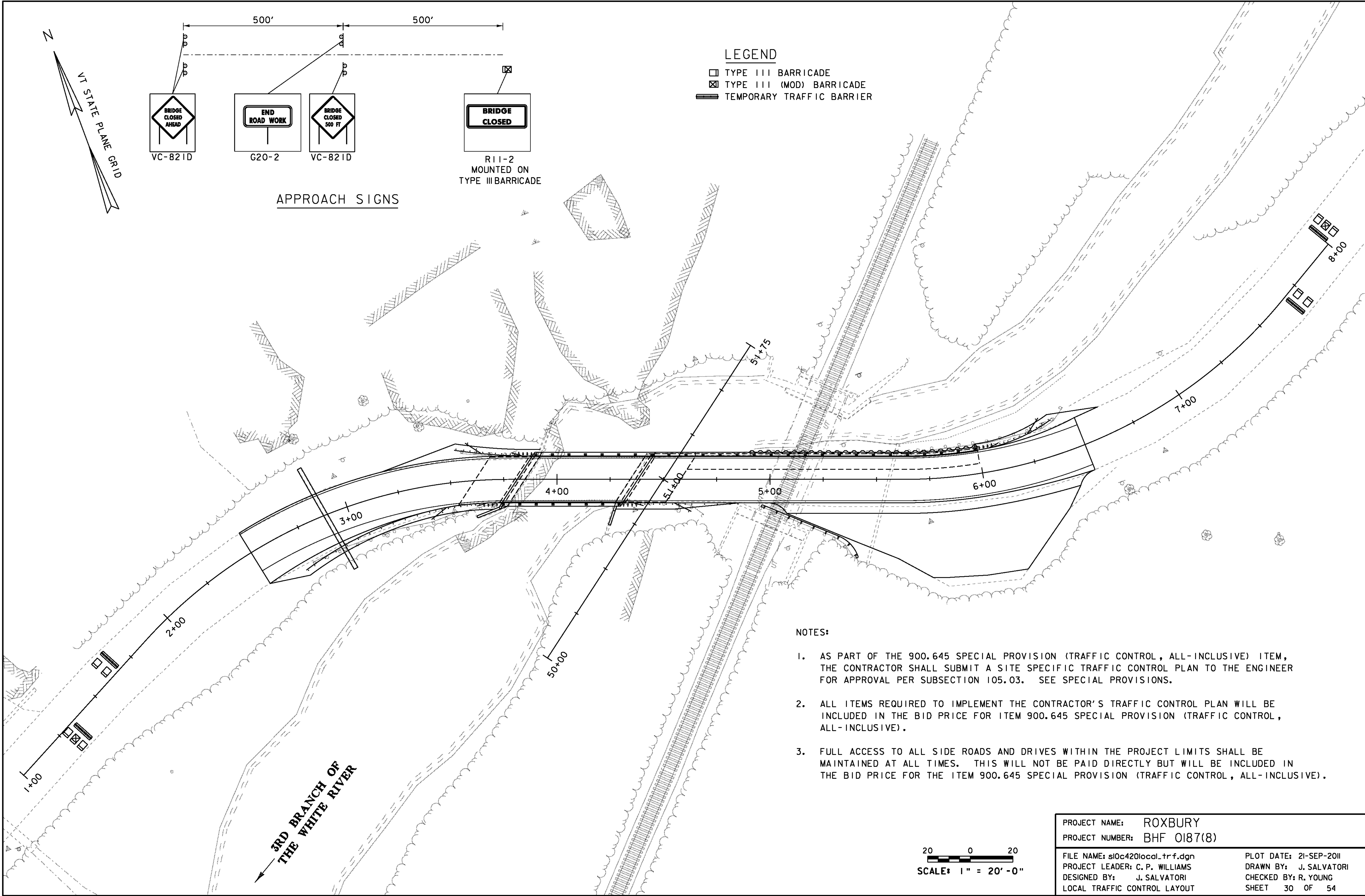
PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

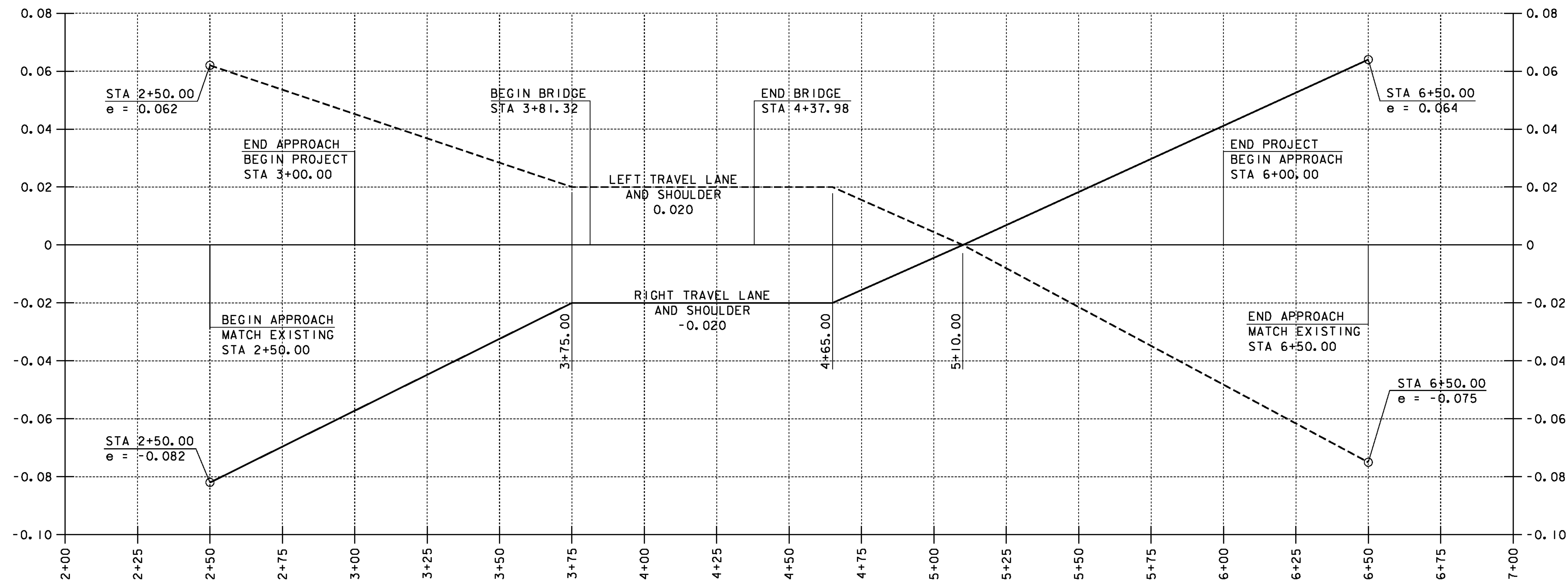
FILE NAME: sl0c420bdr.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: T. FILLBACH
TRAFFIC SIGNS AND PAVEMENT MARKINGS
PLOT DATE: 21-SEP-2011
DRAWN BY: G. ROY
CHECKED BY: T. FILLBACH
SHEET 28 OF 54

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

TRAFFIC SIGN SUMMARY SHEET

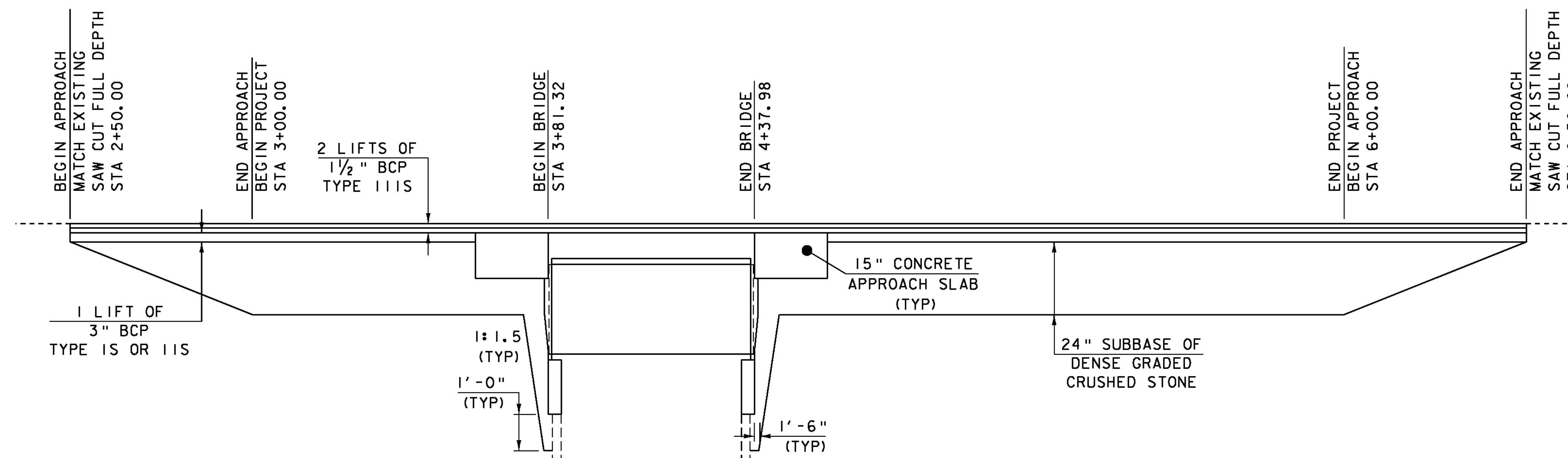
PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: si0c420+ss.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: R. YOUNG
TRAFFIC SIGN SUMMARY SHEET	SHEET 29 OF 54





VT 12A BANKING DIAGRAM

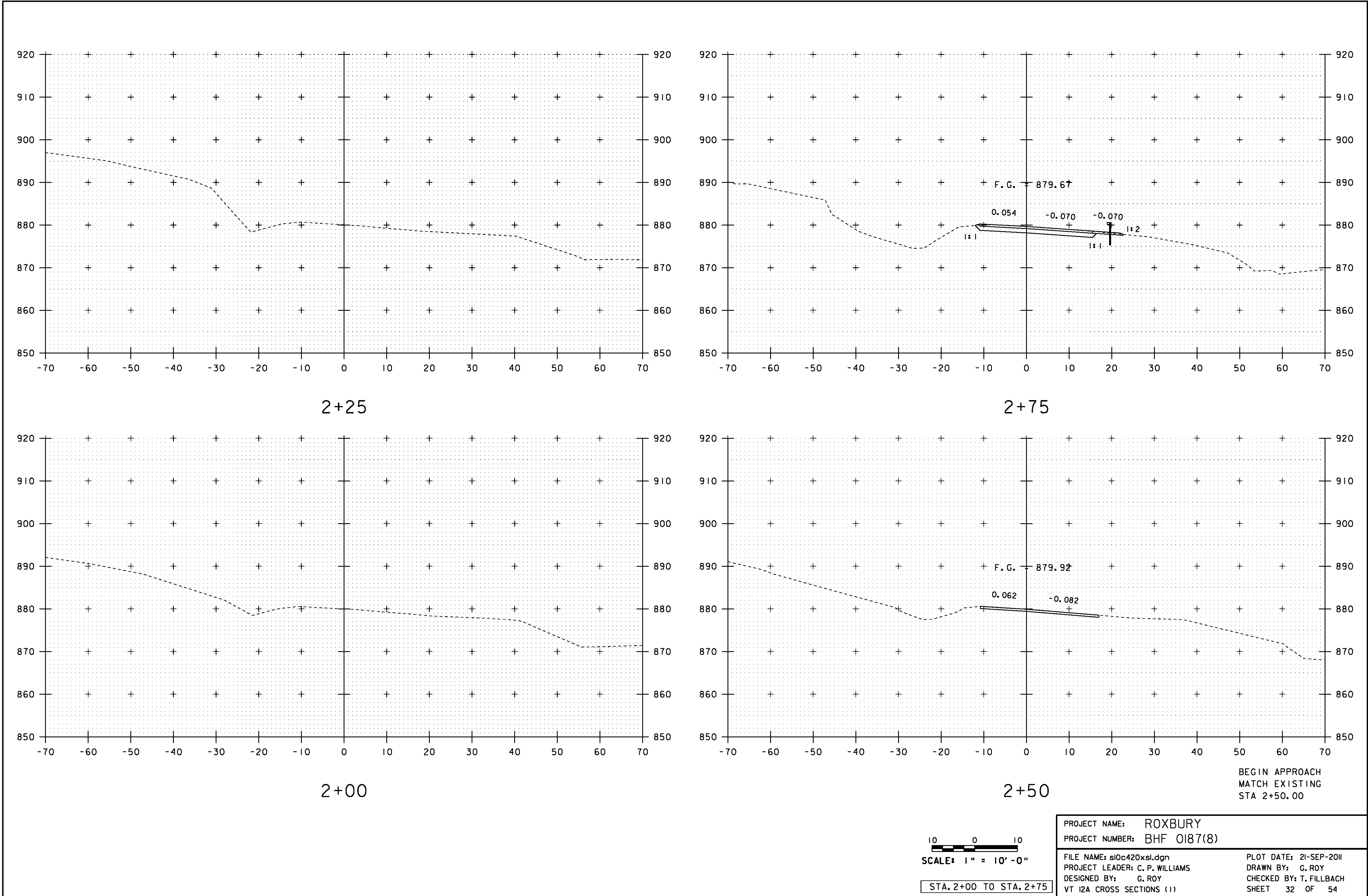
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.02' /"

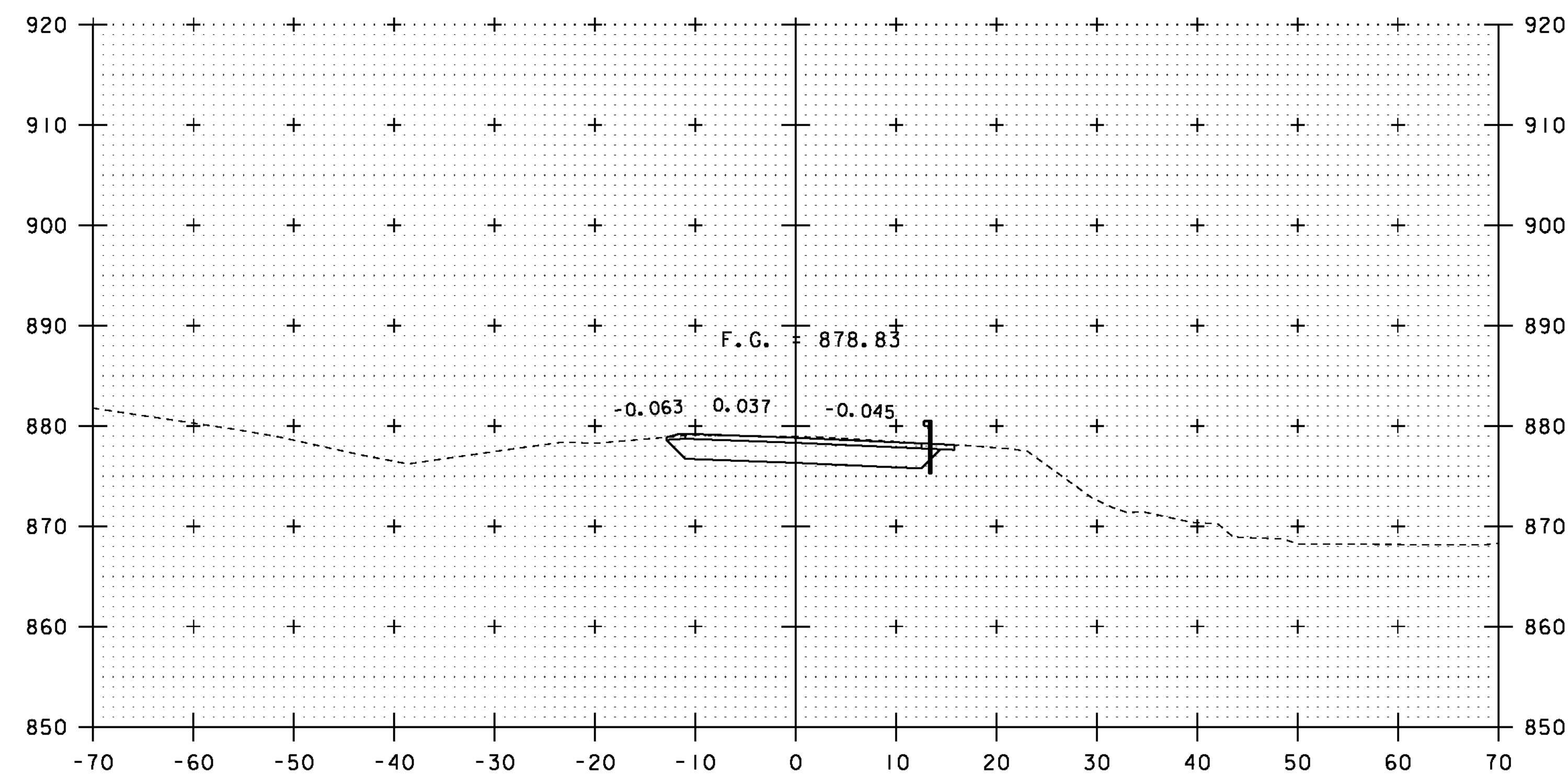


VT 12A MATERIAL TRANSITION DETAIL

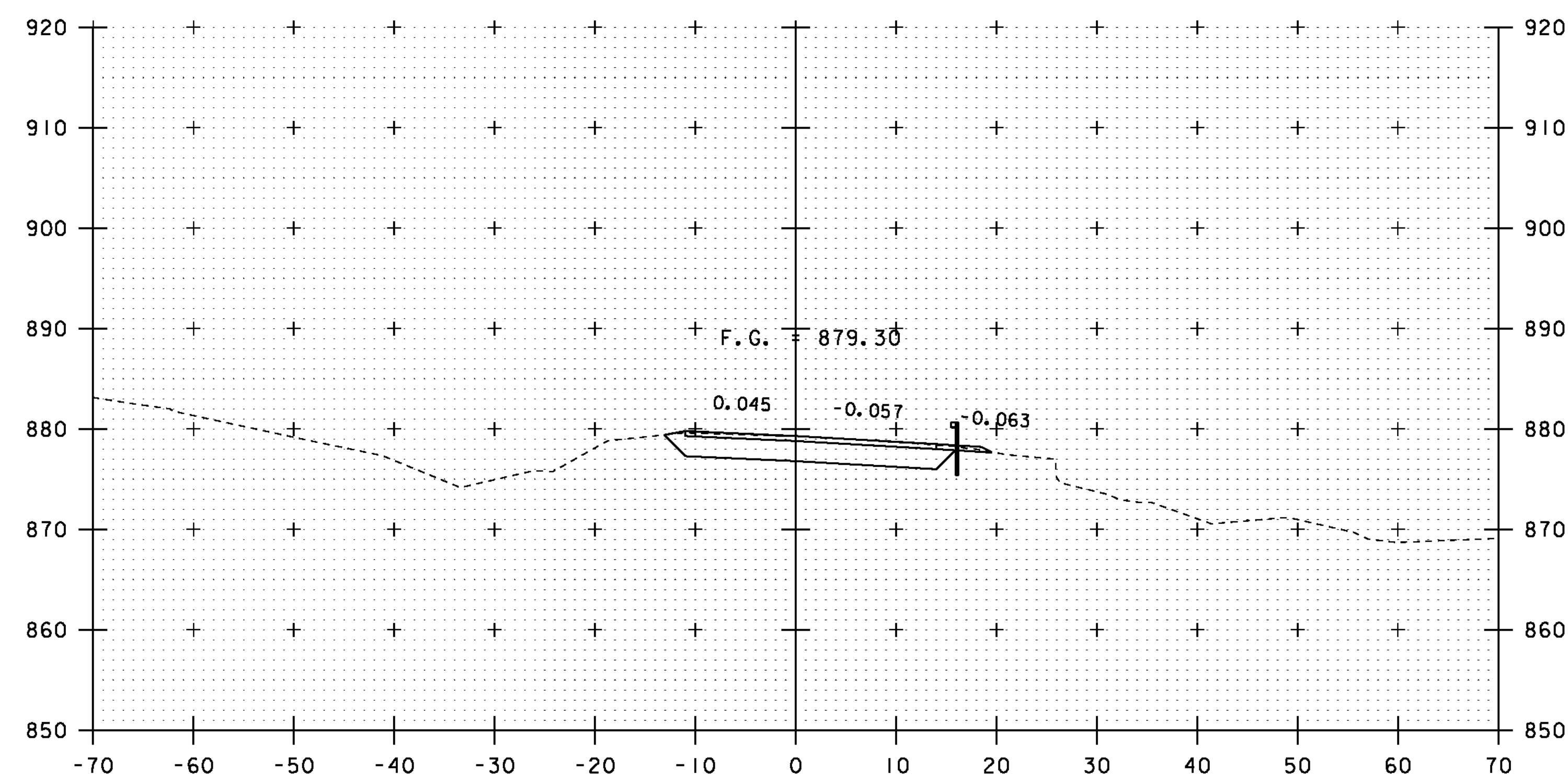
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 2'-0"

PROJECT NAME: ROXBURY	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	





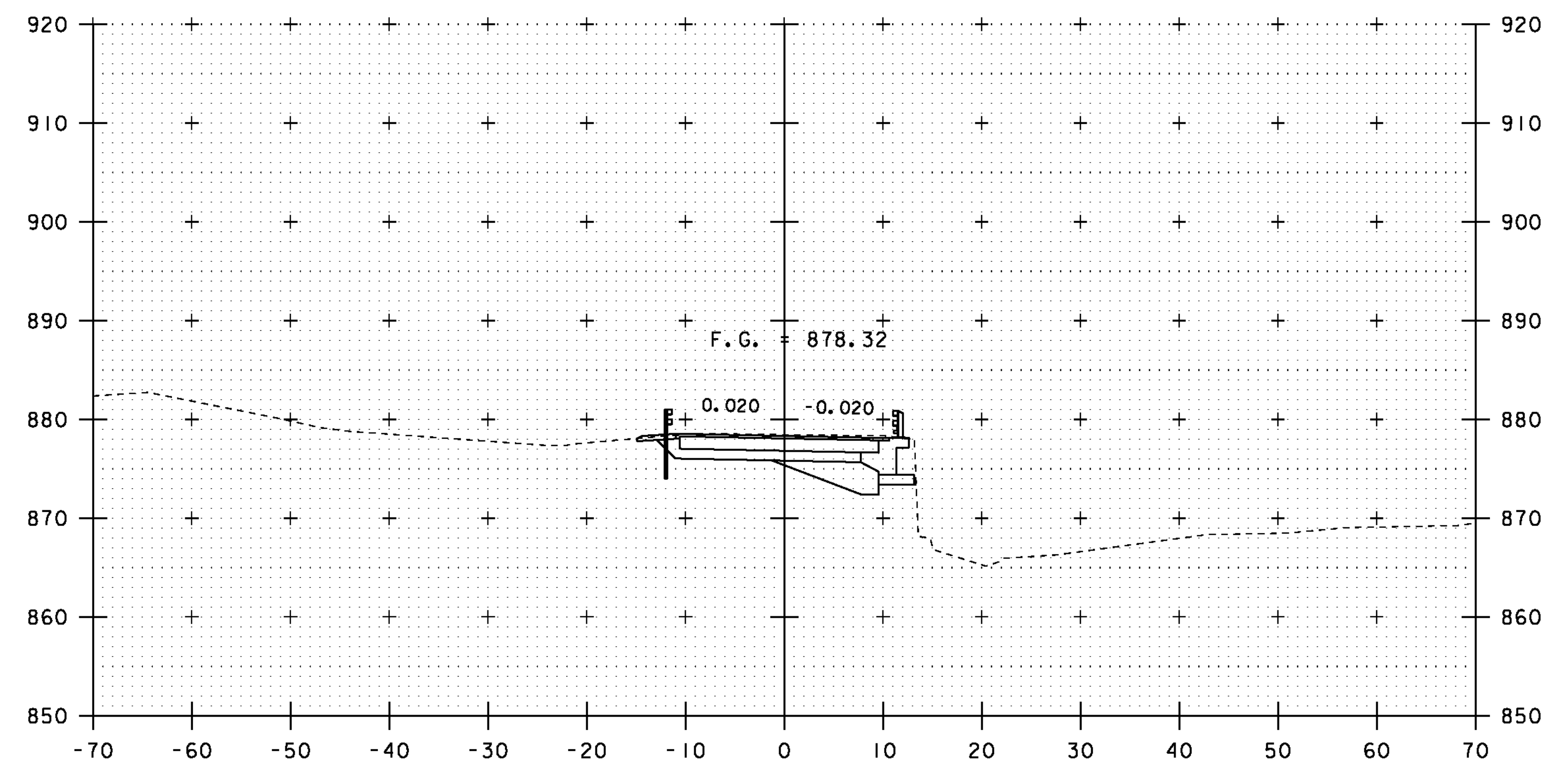
3+25



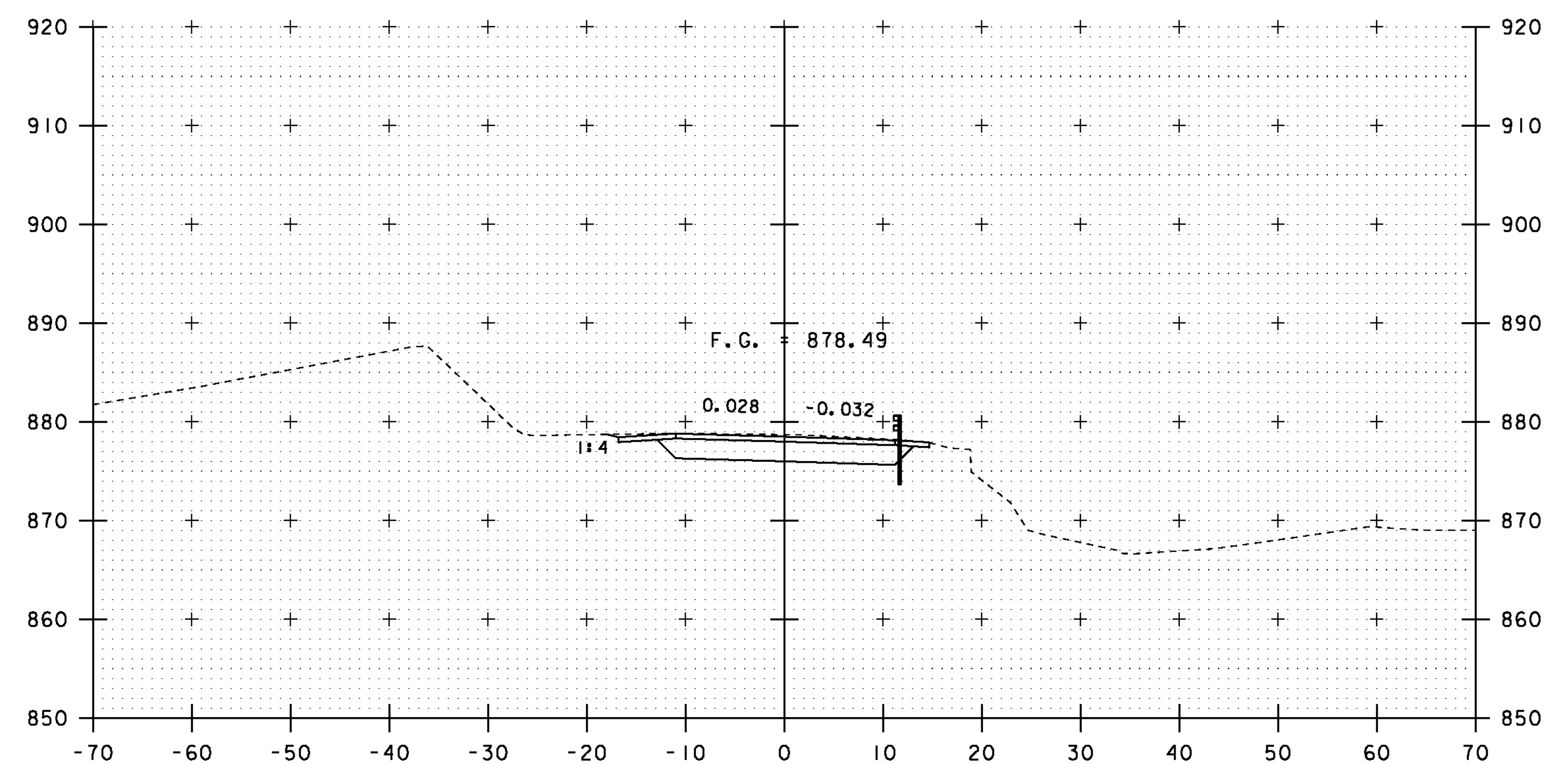
SEE SHEET 37 FOR NEW OPTION PIPE
SECTION AT STA 2+89.2.

3+00

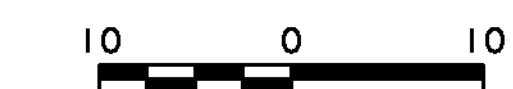
END APPROACH
BEGIN PROJECT
STA 3+00.00



3+75



3+50



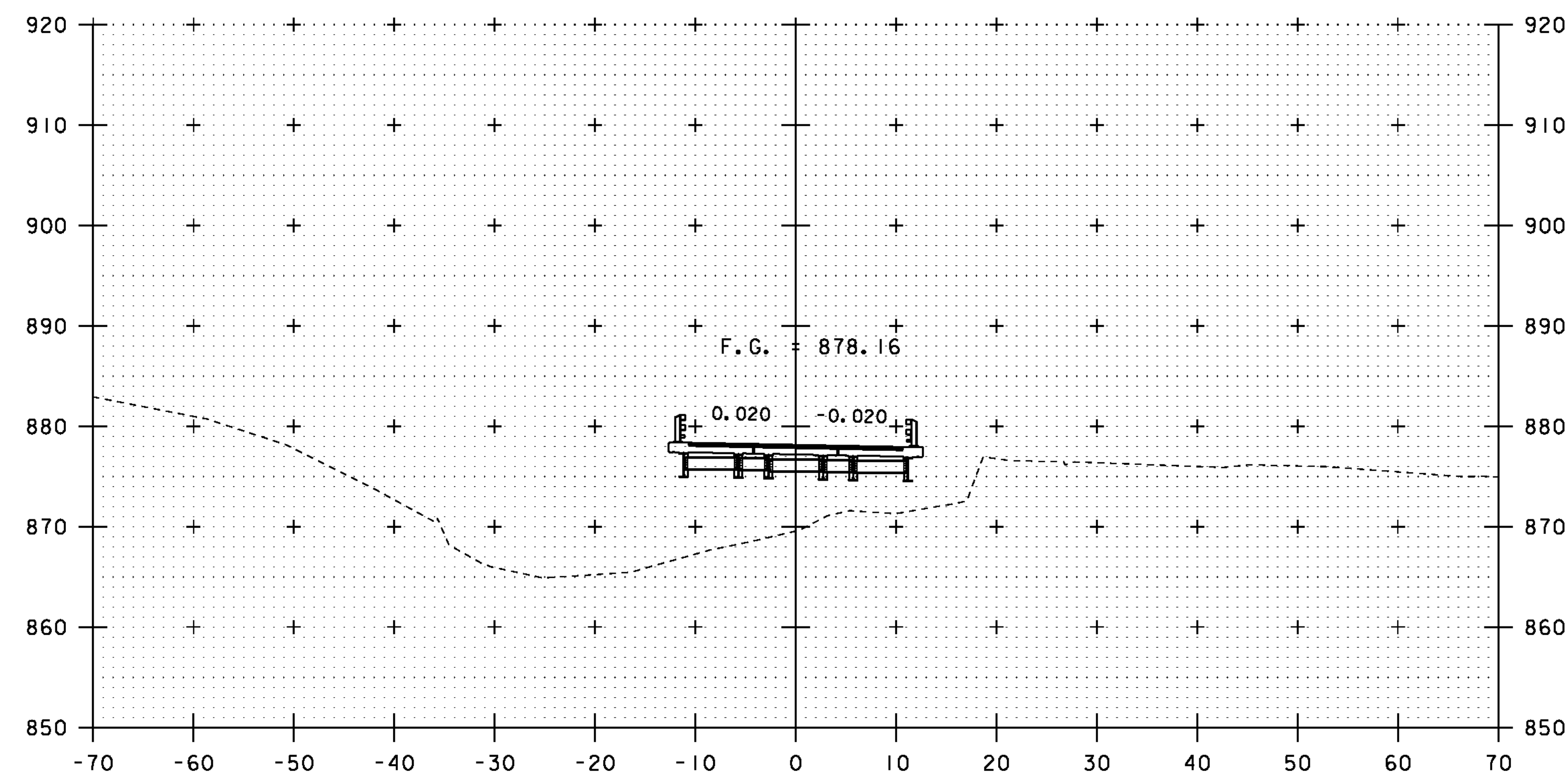
SCALE: 1" = 10'-0"

STA. 3+00 TO STA. 3+75

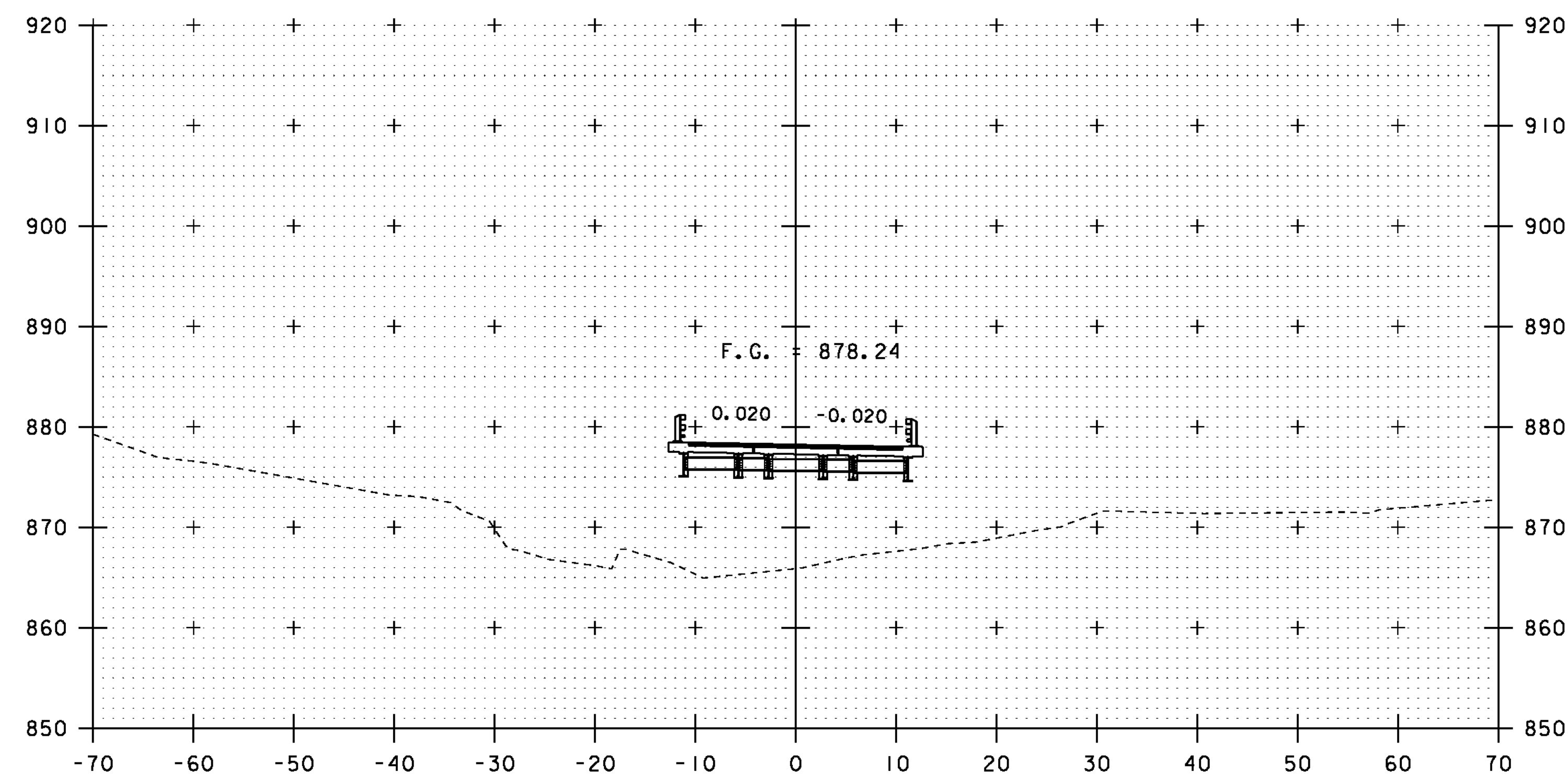
PROJECT NAME: ROXBURY
PROJECT NUMBER: BHF 0187(8)

FILE NAME: sl0c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
VT 12A CROSS SECTIONS (2)

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

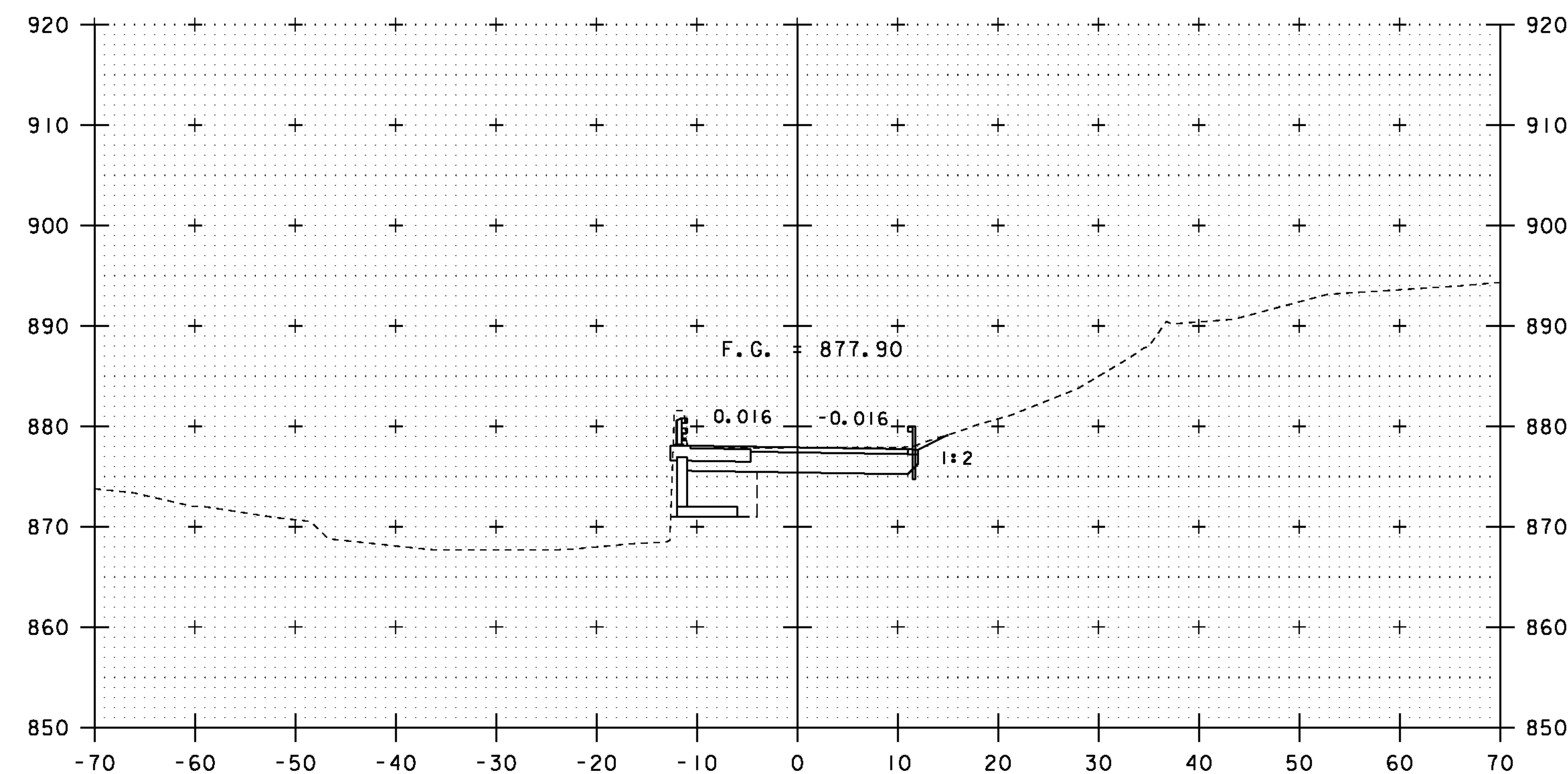


4+25



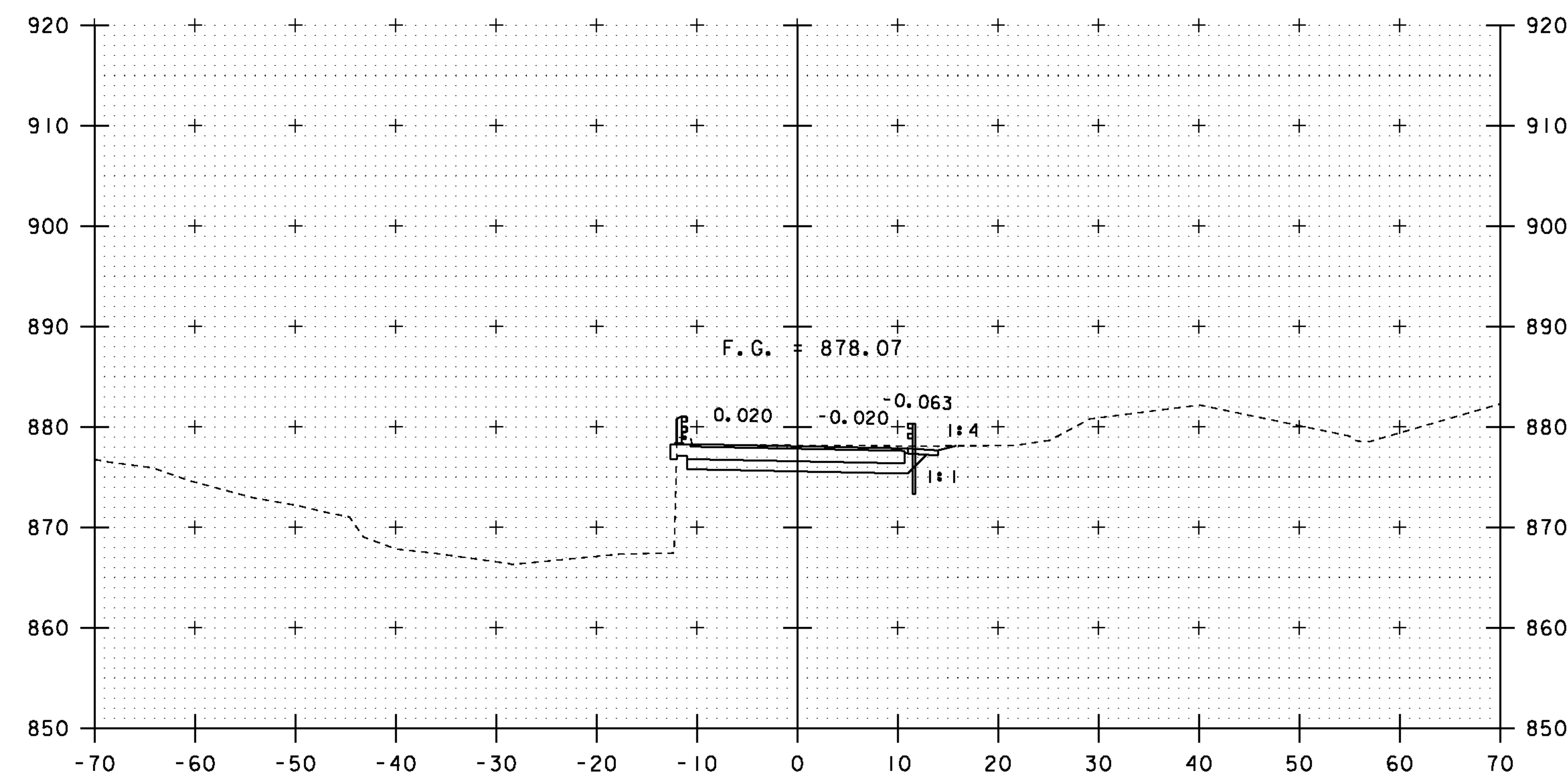
4+00

BEGIN BRIDGE
STA 3+81.32



4+75

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



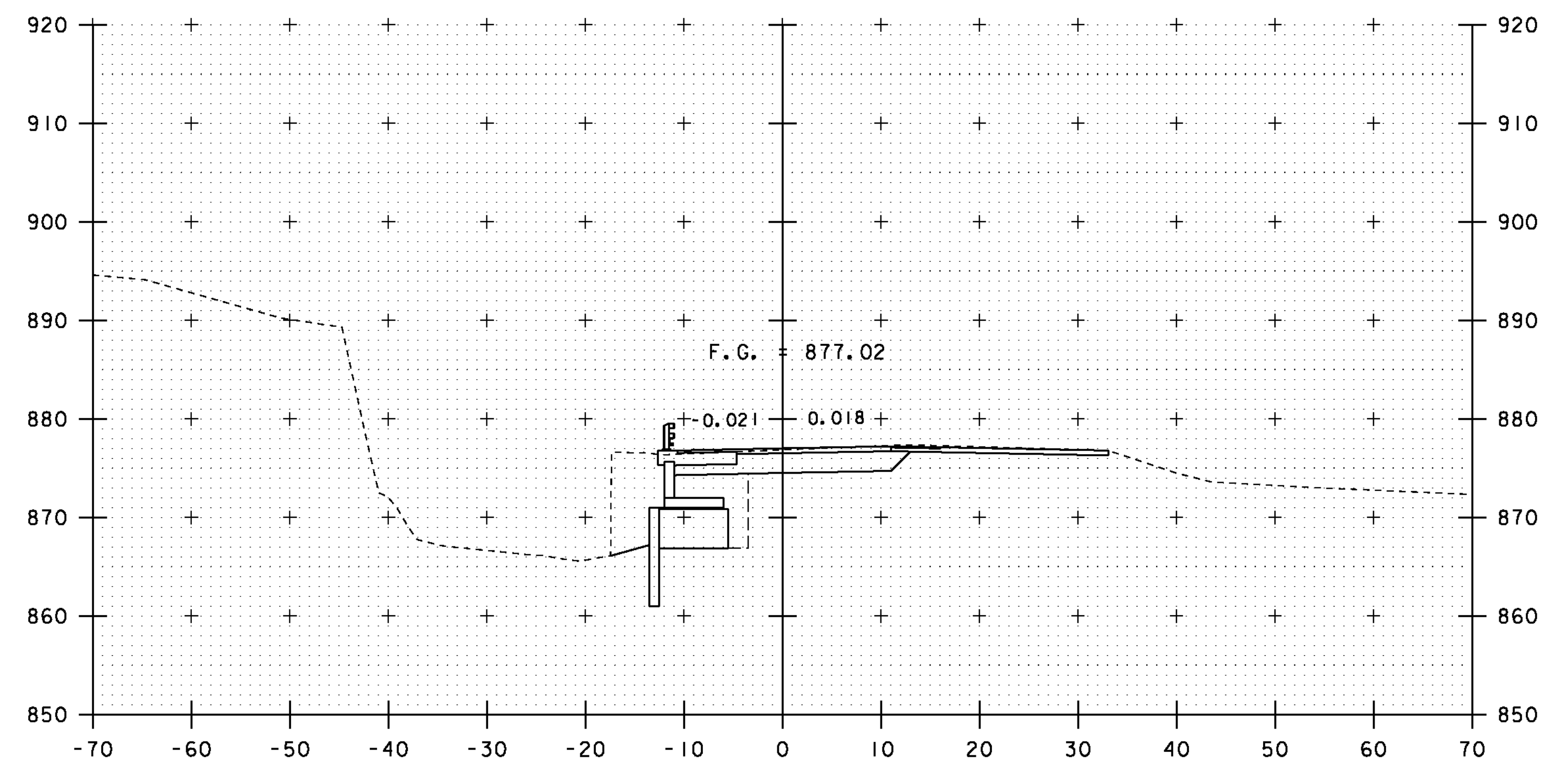
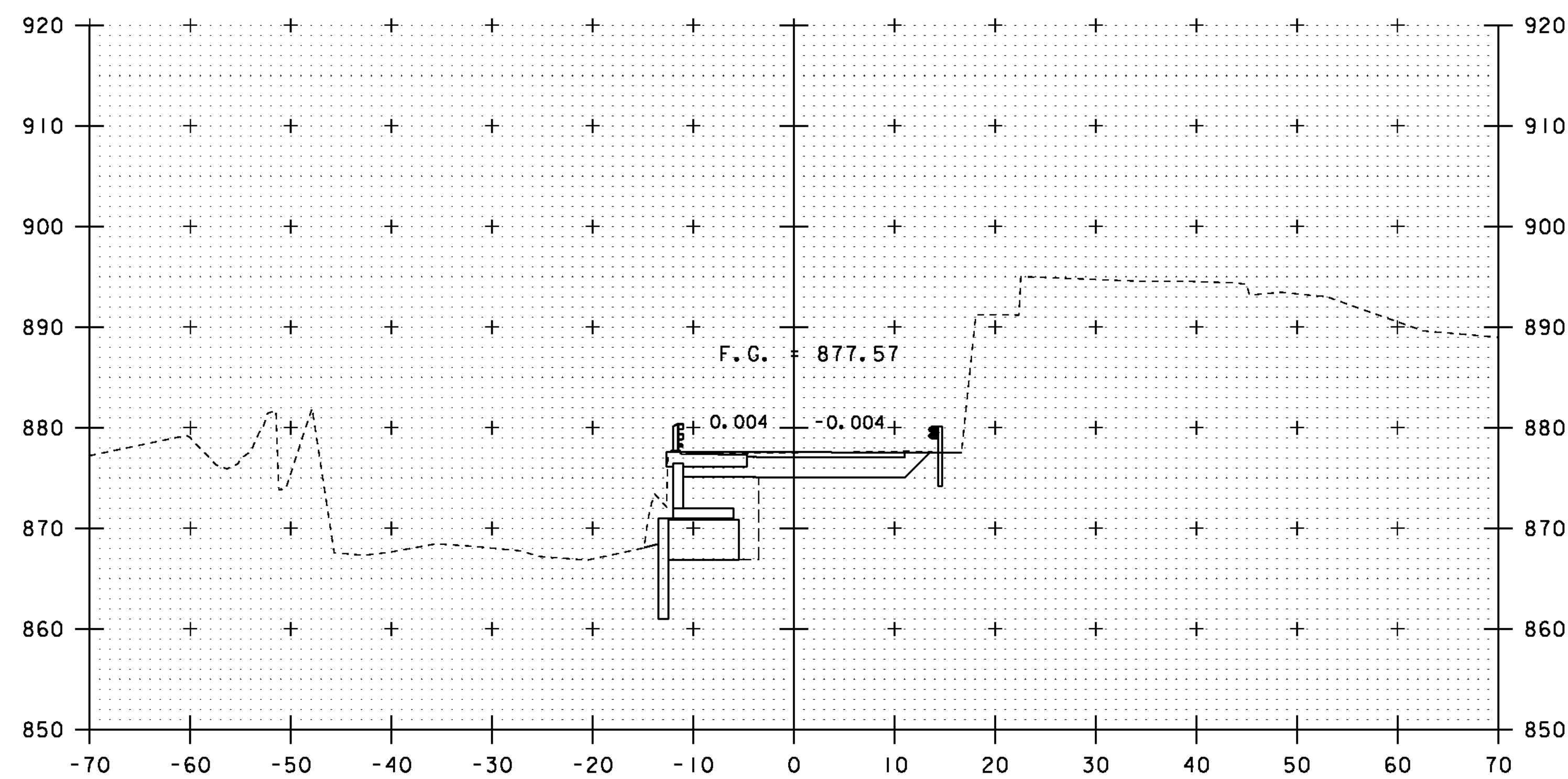
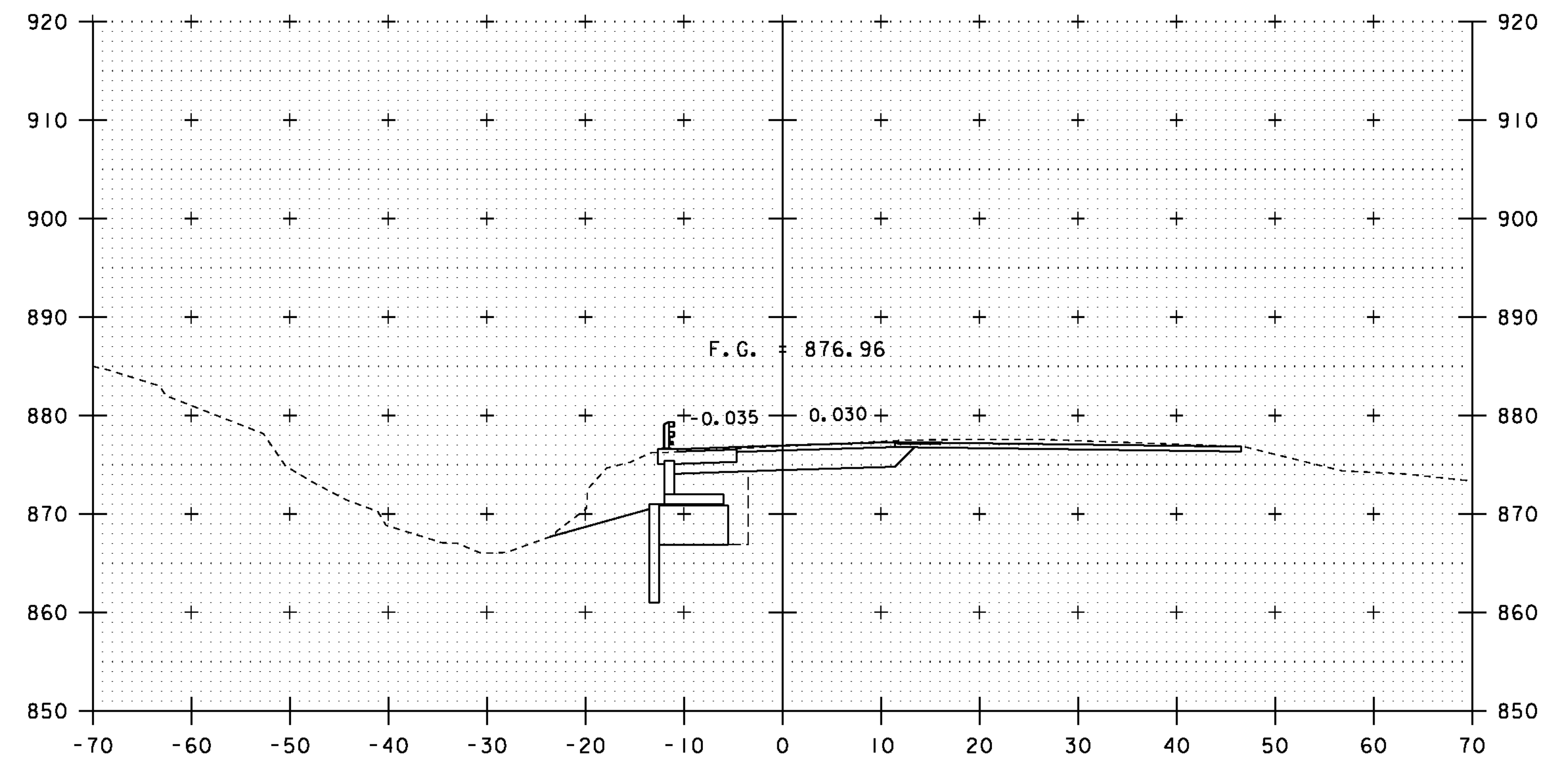
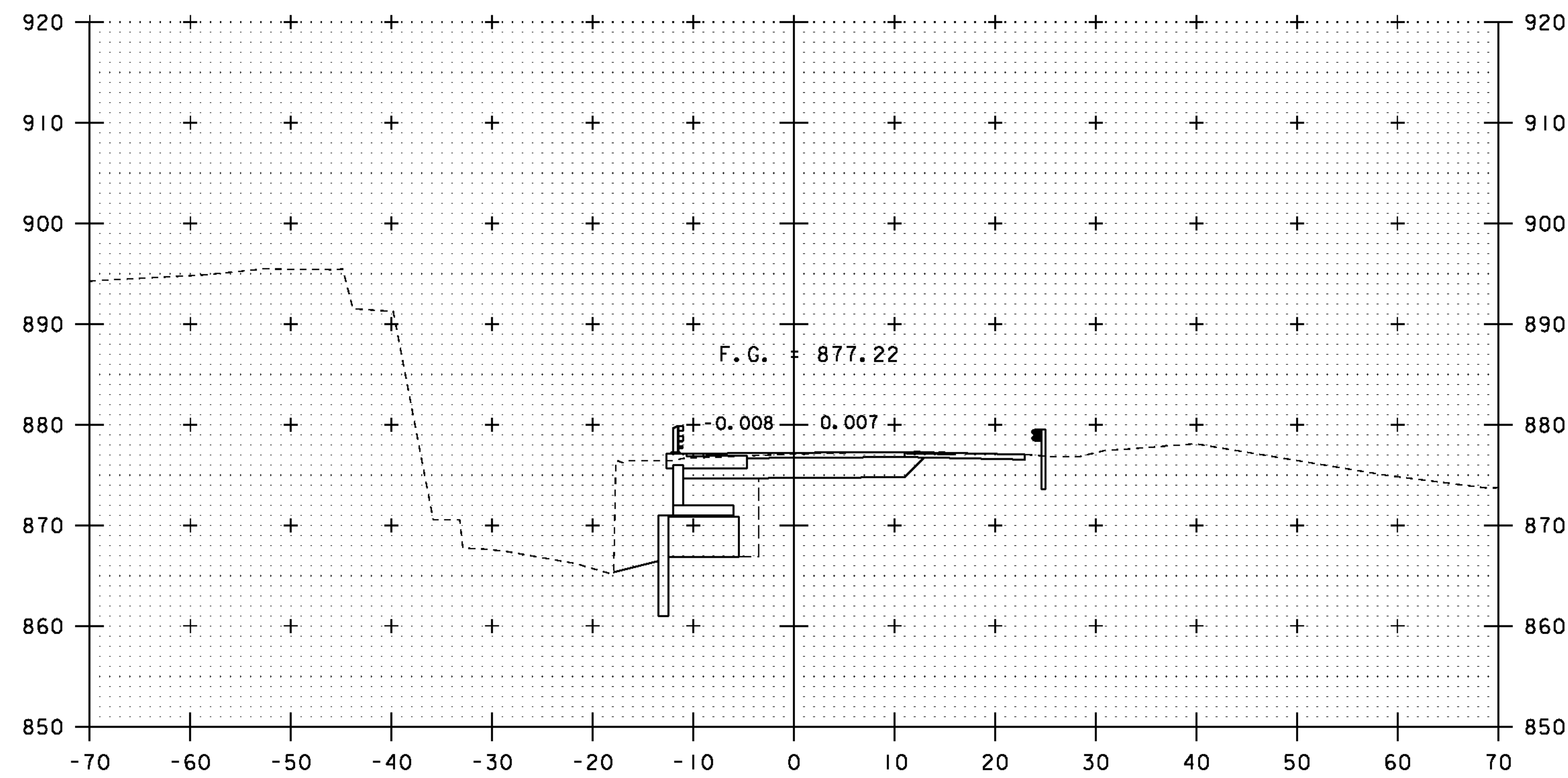
4+50

END BRIDGE
STA 4+37.98



STA. 4+00 TO STA. 4+75

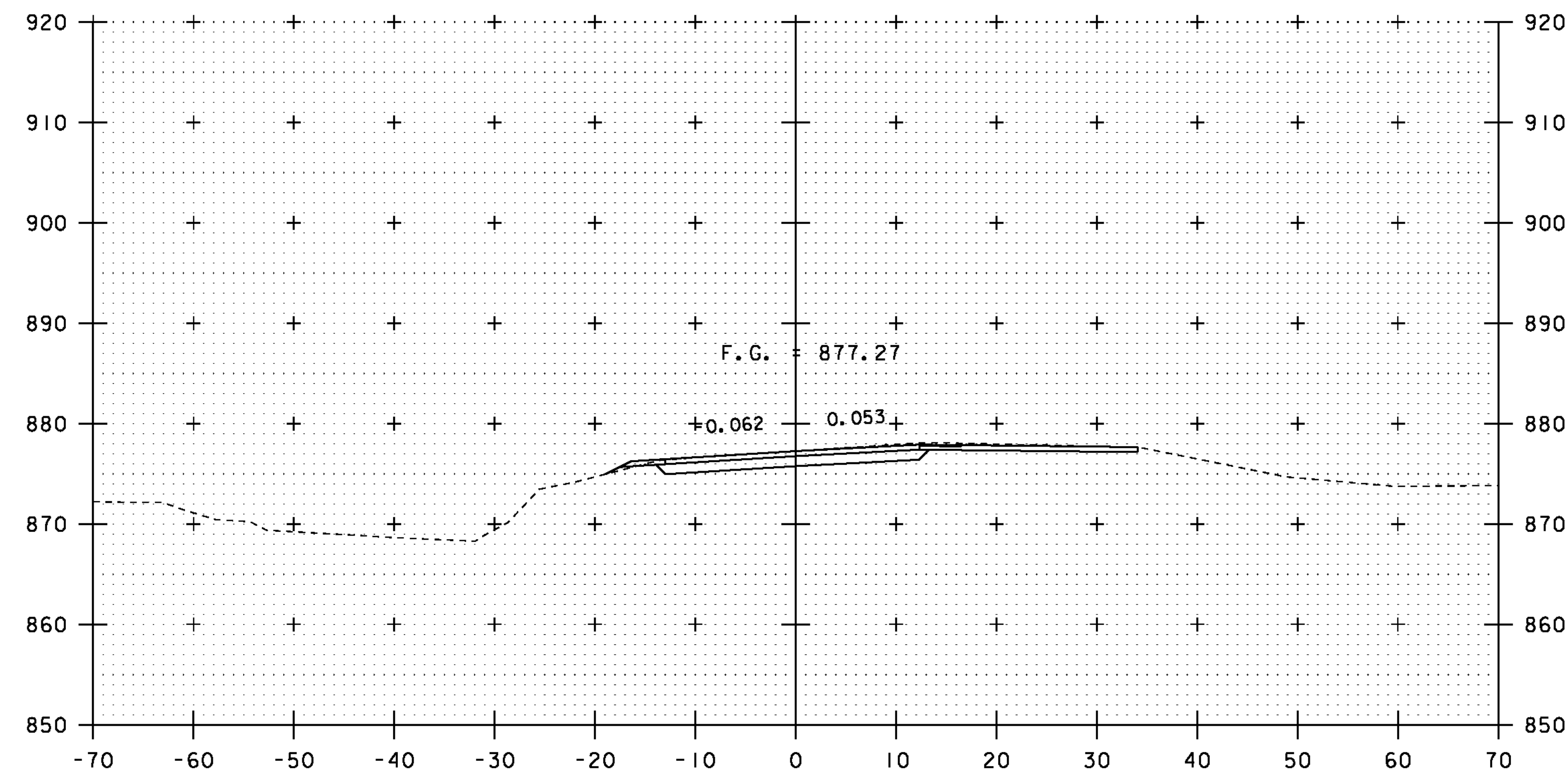
PROJECT NAME: ROXBURY	PLOT DATE: 21-SEP-2011
PROJECT NUMBER: BHF 0187(8)	DRAWN BY: G. ROY
FILE NAME: sl0c420xsl.dgn	CHECKED BY: T. FILLBACH
PROJECT LEADER: C. P. WILLIAMS	SHEET 34 OF 54
DESIGNED BY: G. ROY	
VT 12A CROSS SECTIONS (3)	



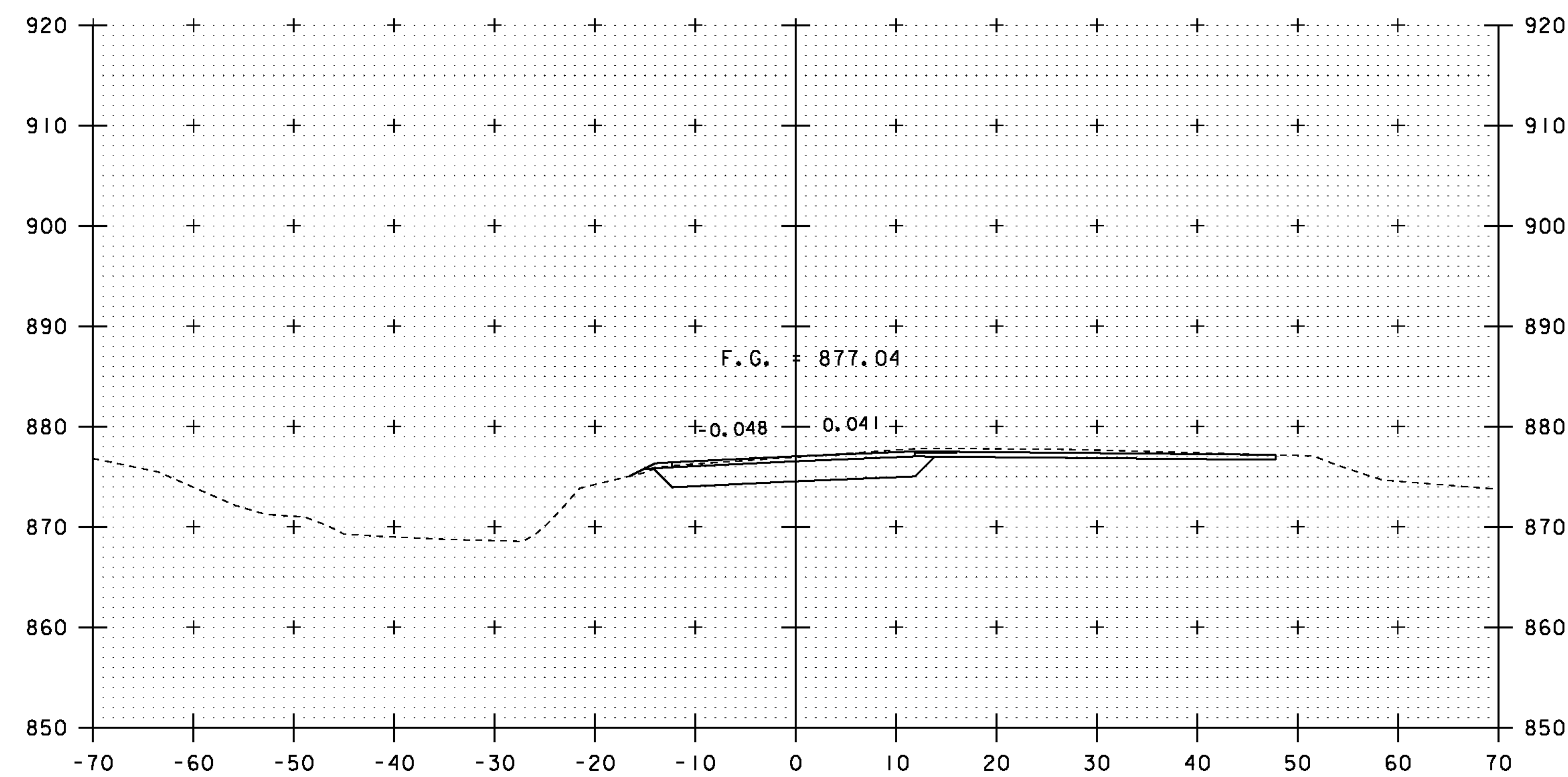
BEGIN PERMANENT STEEL SHEET PILING
STA 4+90.0 LT

STA. 5+00 TO STA. 5+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	35 OF 54
DESIGNED BY:	G. ROY		
VT 12A CROSS SECTIONS (4)			



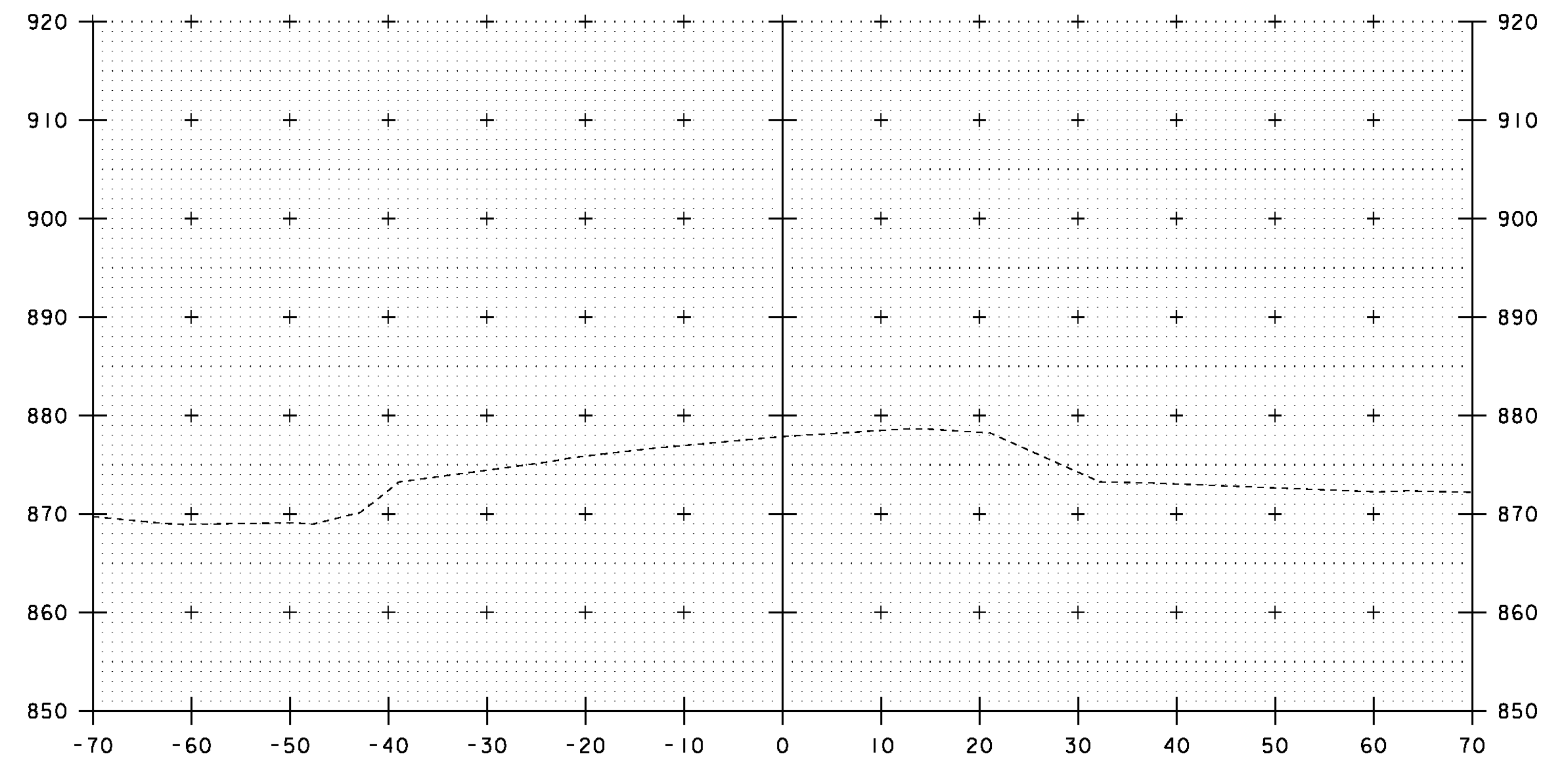
6+25



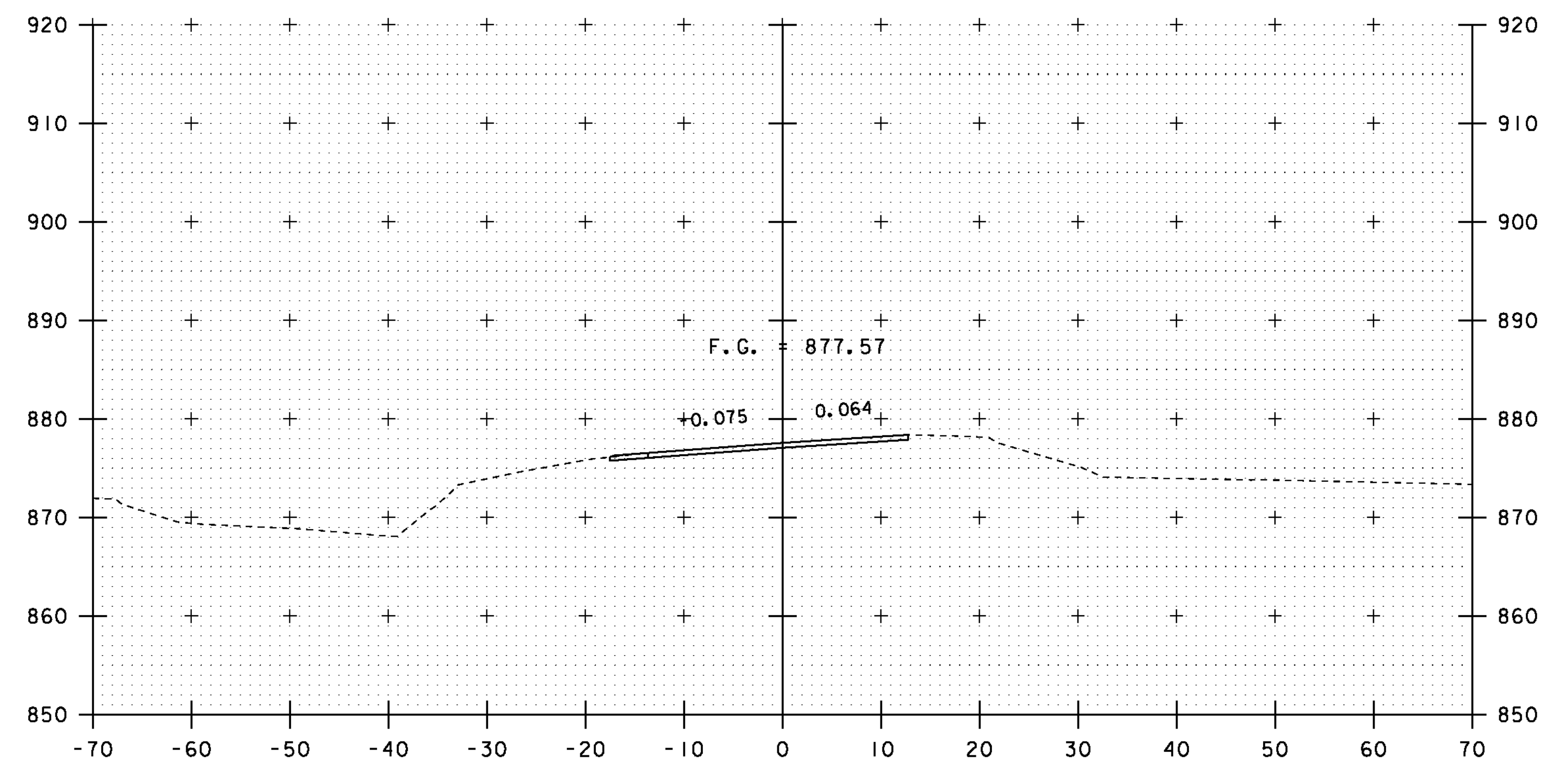
6+00

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



6+75



6+50

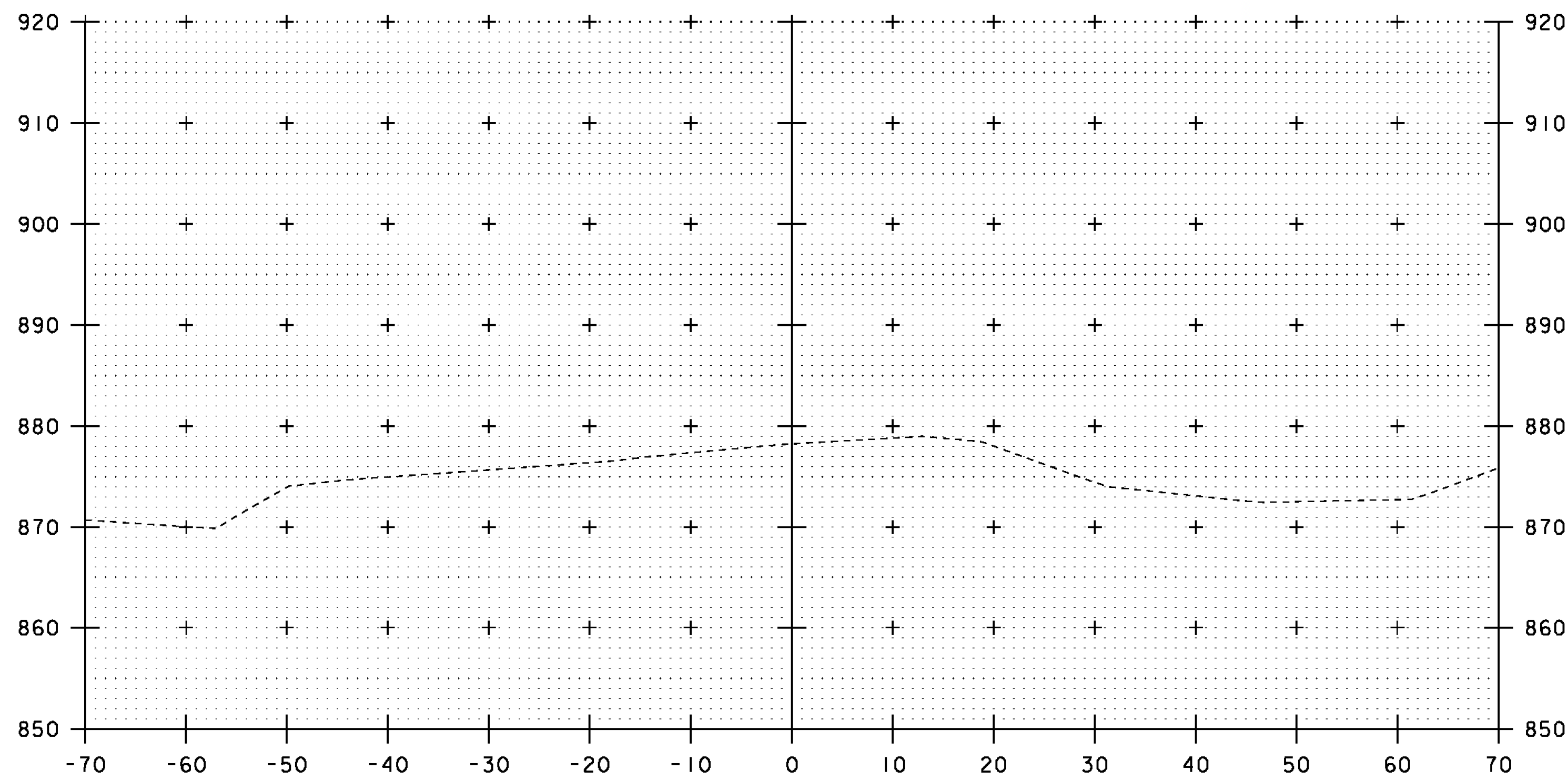
END APPROACH
MATCH EXISTING
STA 6+50.00

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

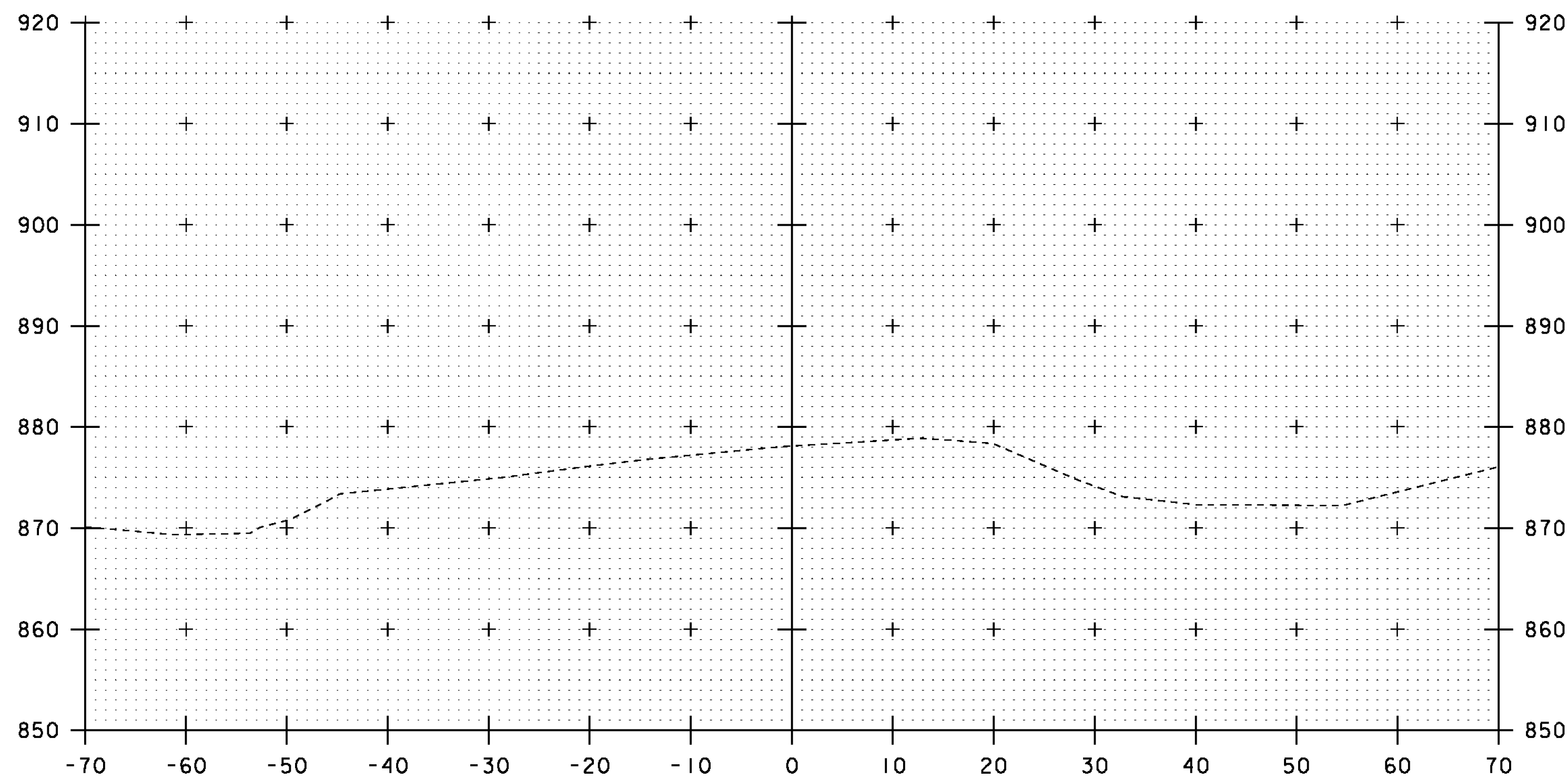
FILE NAME: sl0c420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
VT 12A CROSS SECTIONS (5)

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

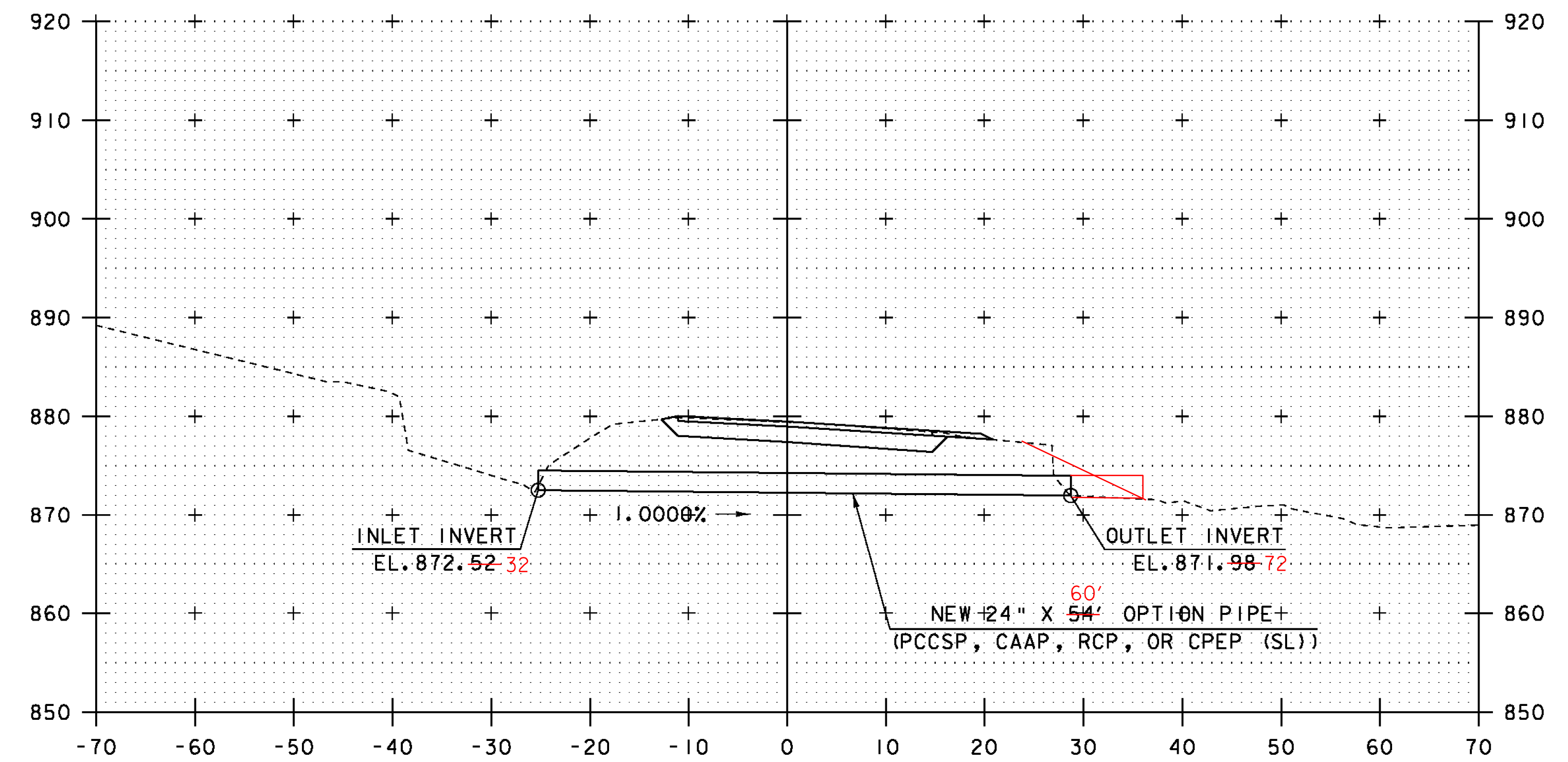
STA. 6+00 TO STA. 6+75



7+25



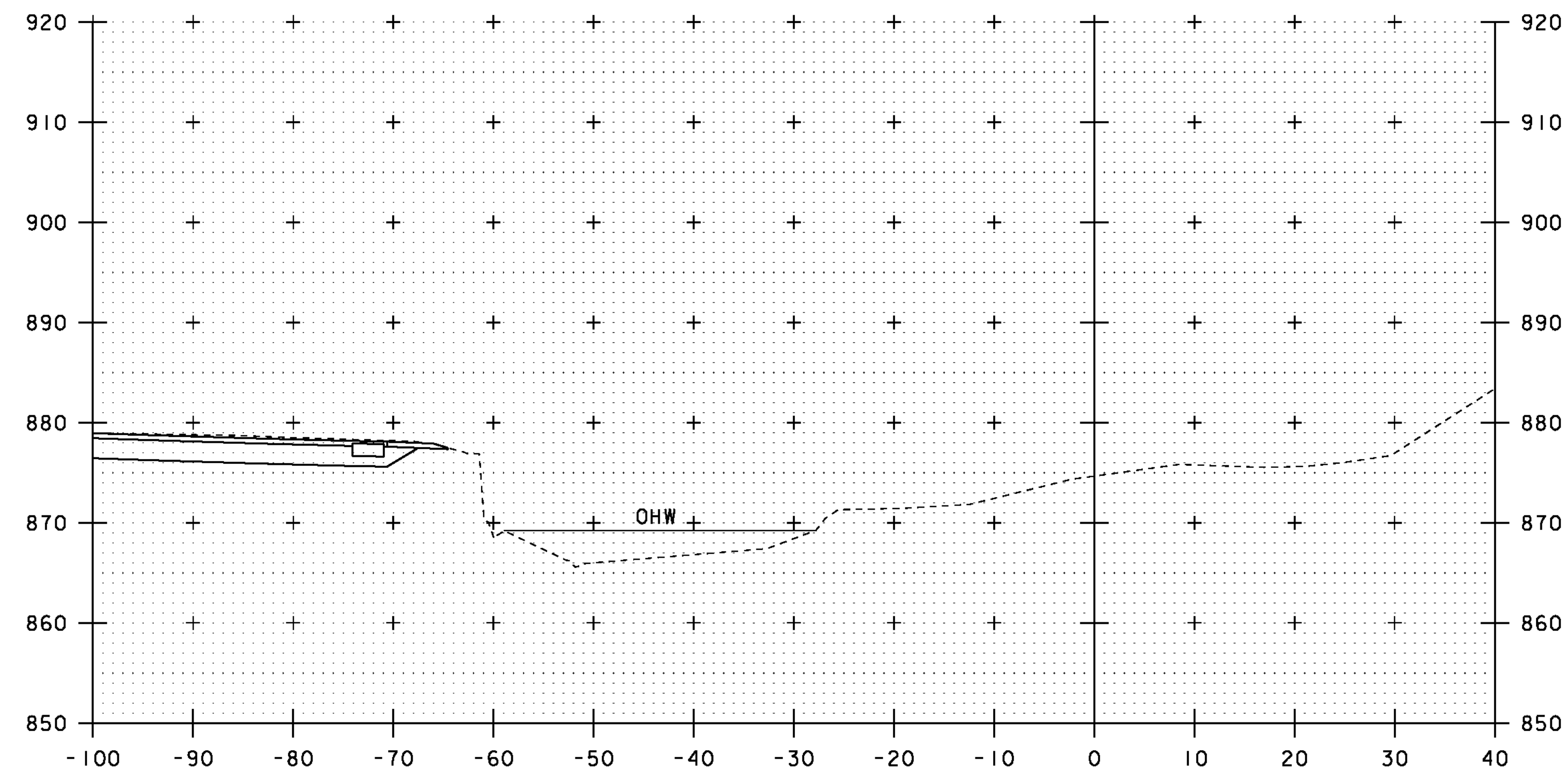
7+00



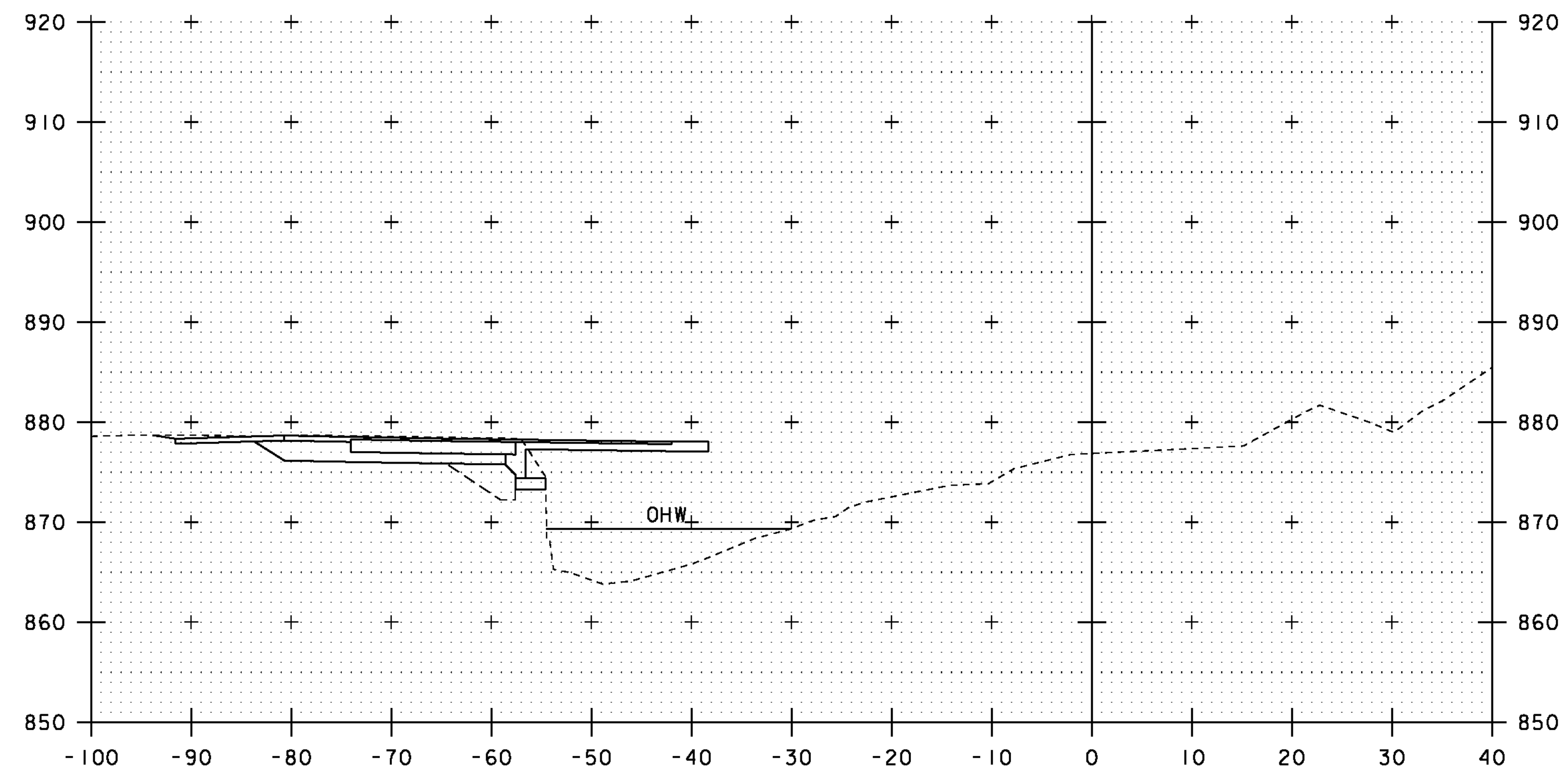
2+89.2 , SKEW 7° 48' LT

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 I2A CROSS SECTIONS (6)	SHEET 37 OF 54

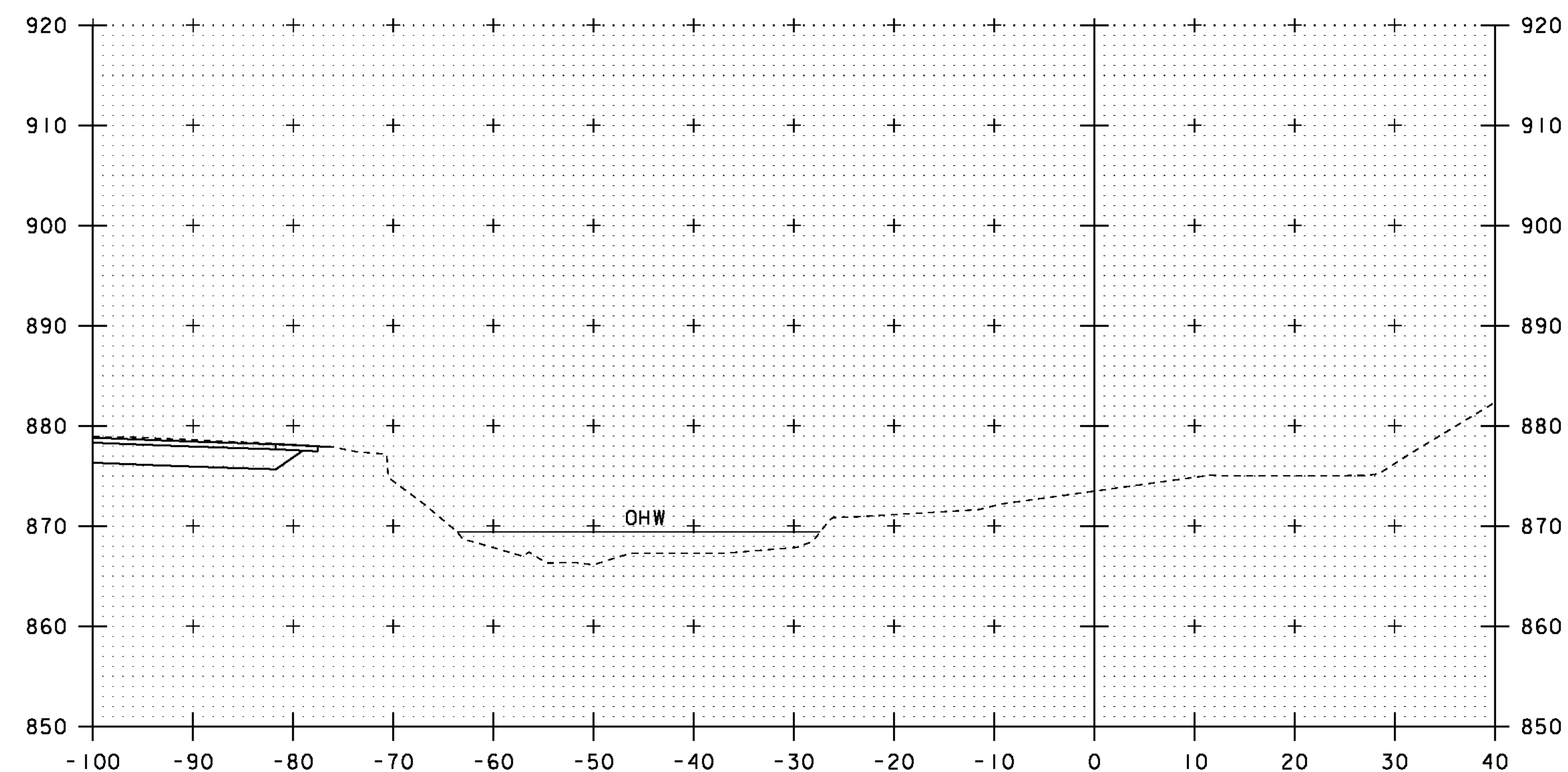
STA. 7+00 TO STA. 7+25



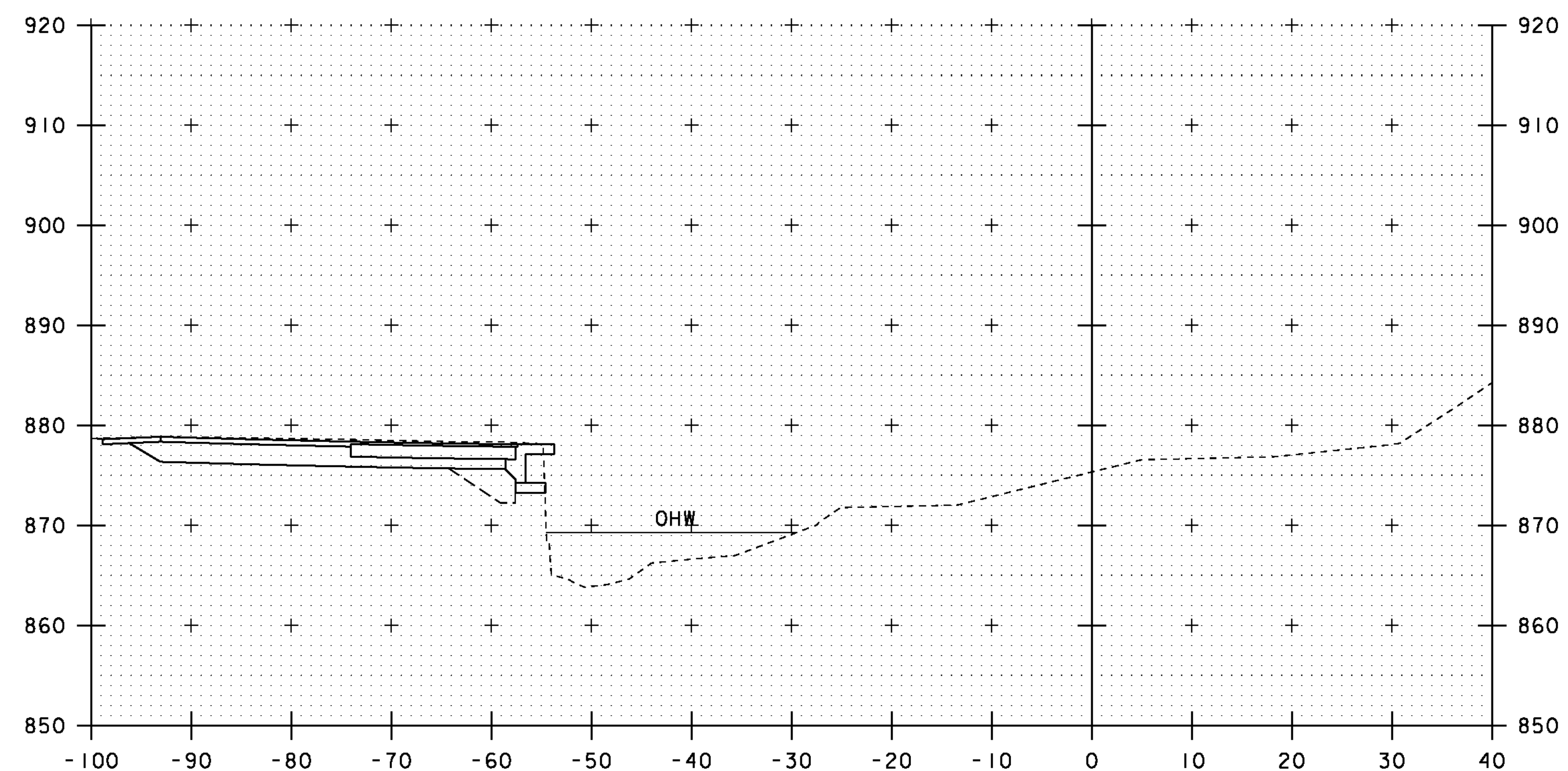
50+40



50+60



50+30

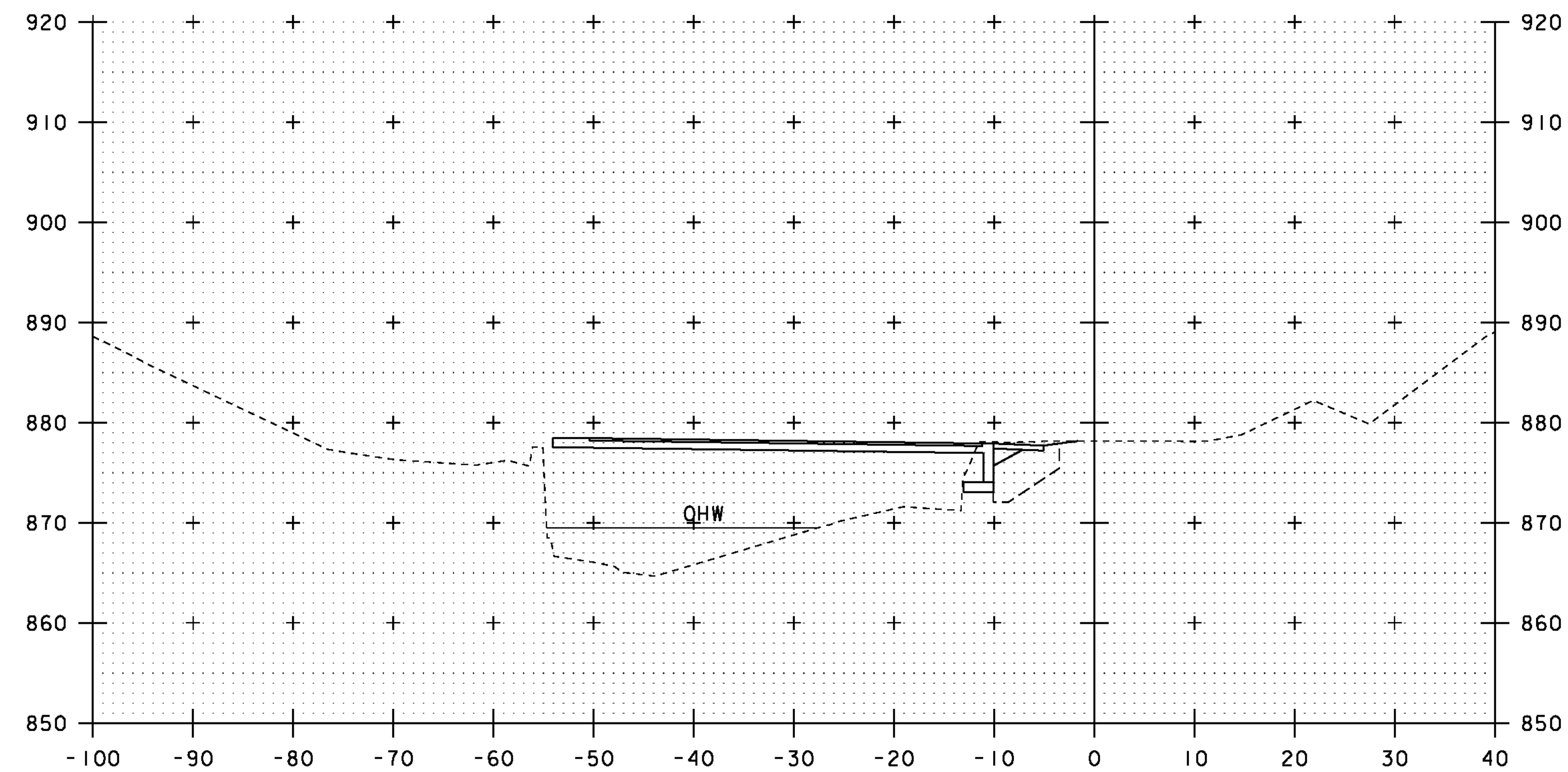


50+50

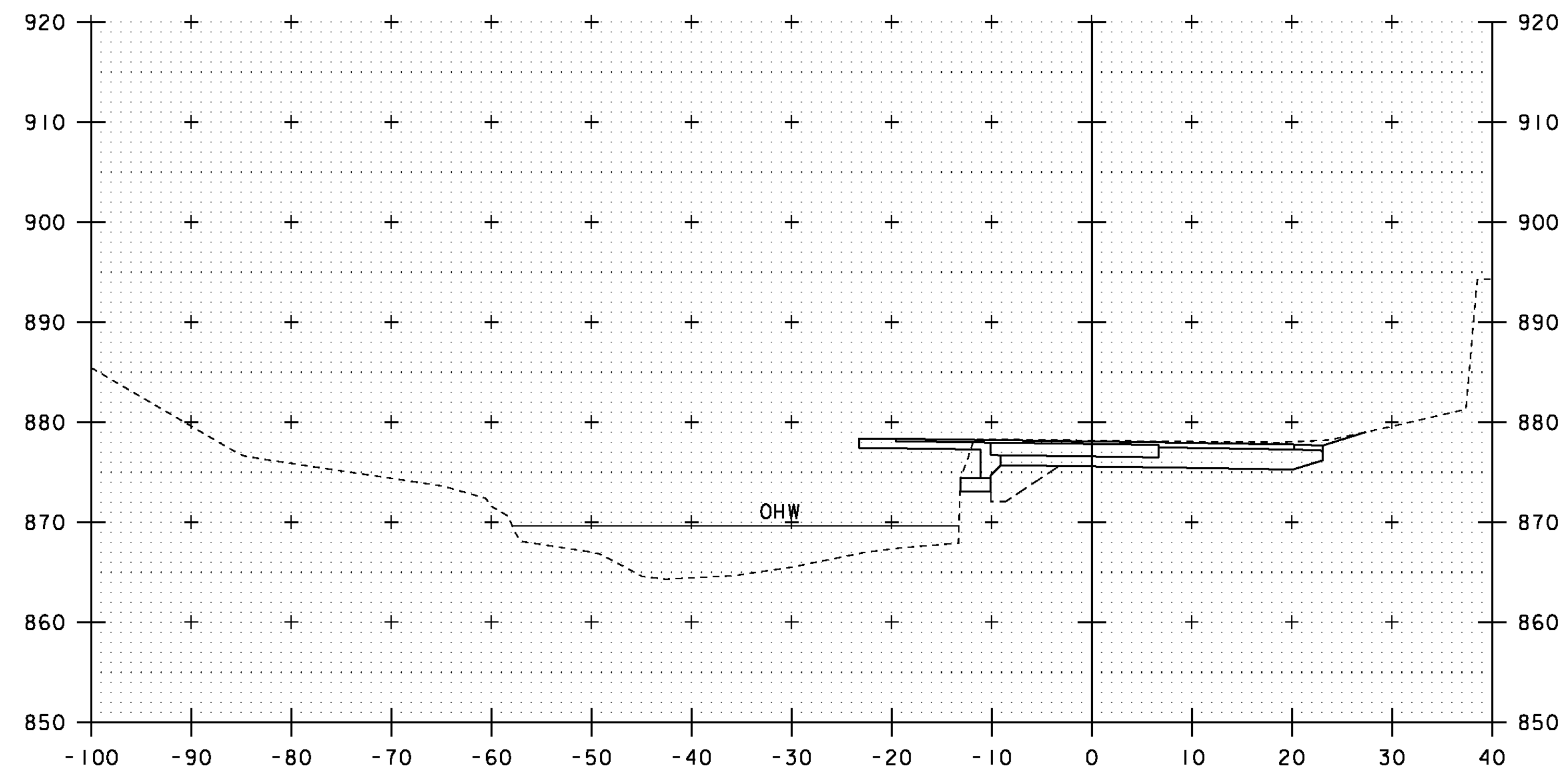
10 0 10
SCALE: 1" = 10'-0"

STA. 50+30 TO STA. 50+60

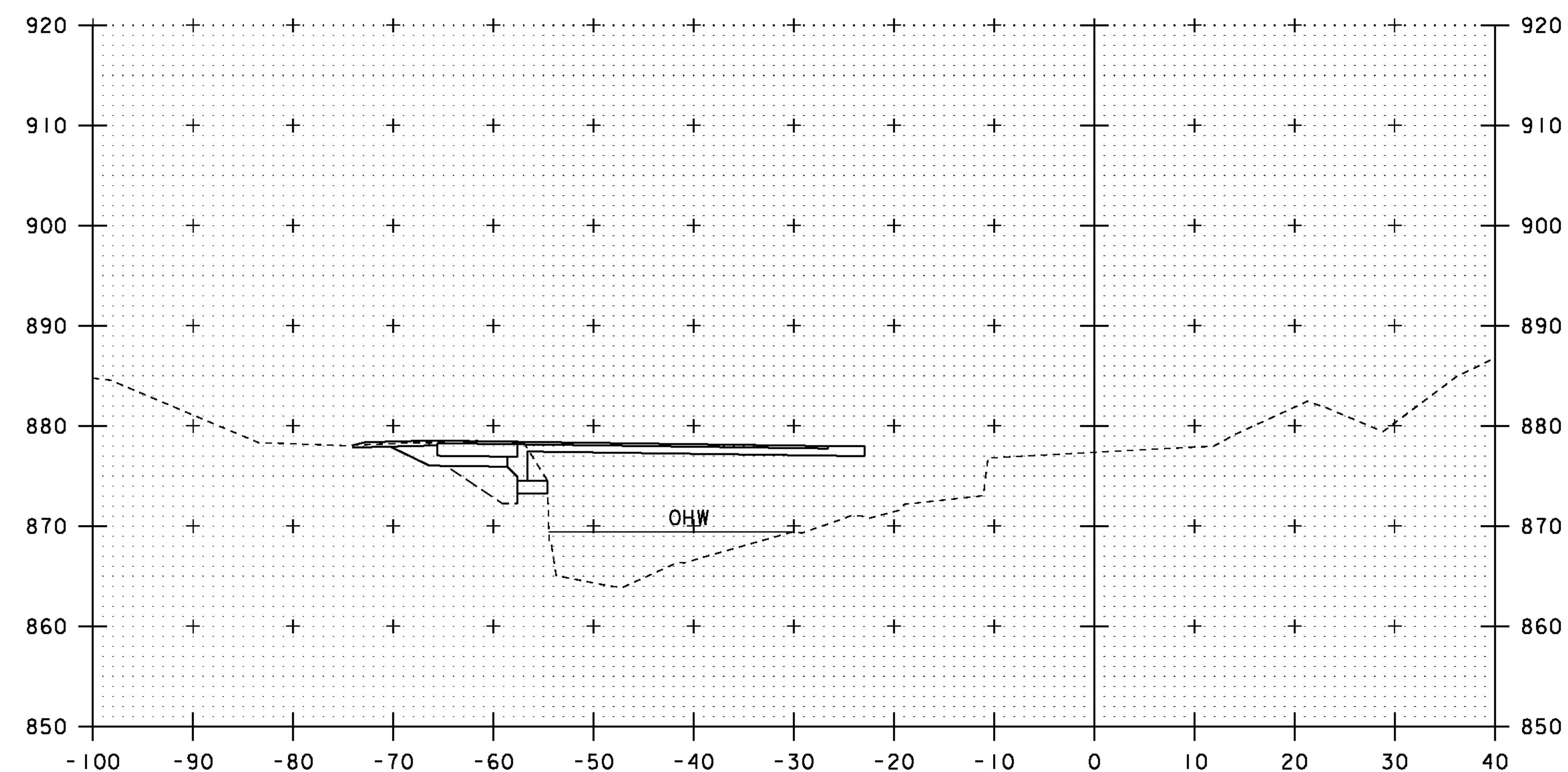
PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: slOc420xsl.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
CHANNEL LINE CROSS SECTIONS (1)	SHEET 38 OF 54



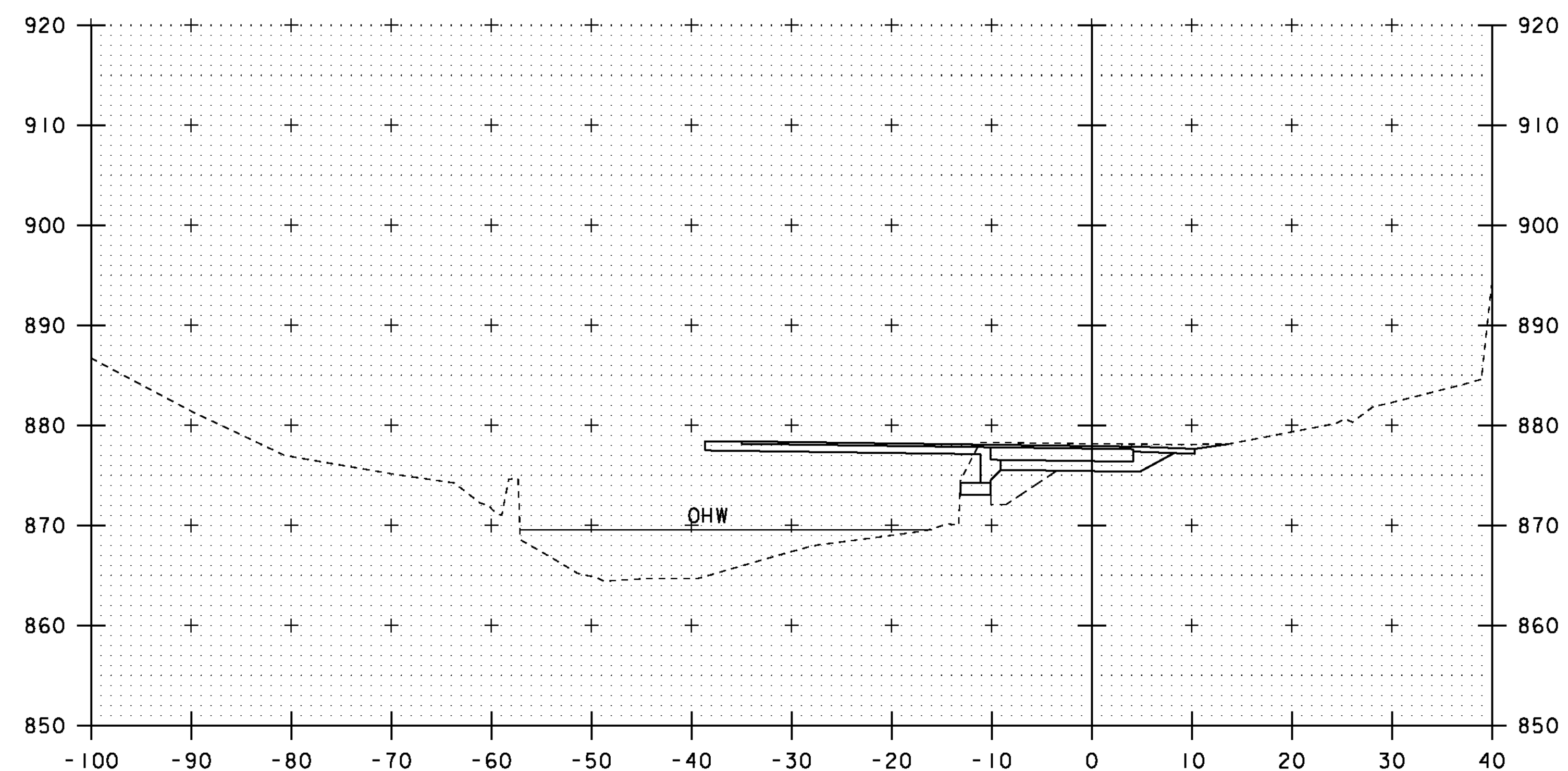
50+80



51+00



50+70

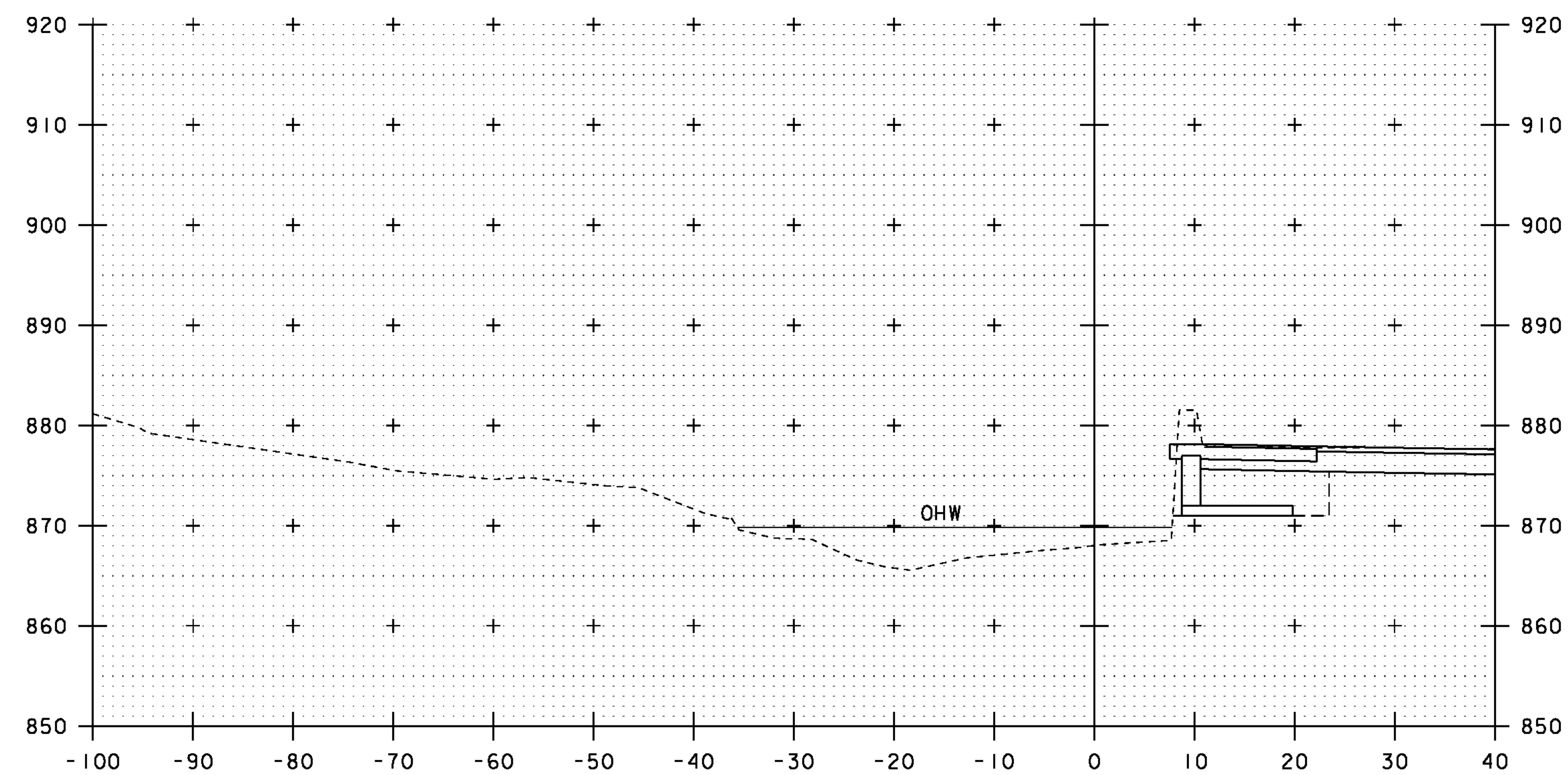


50+90

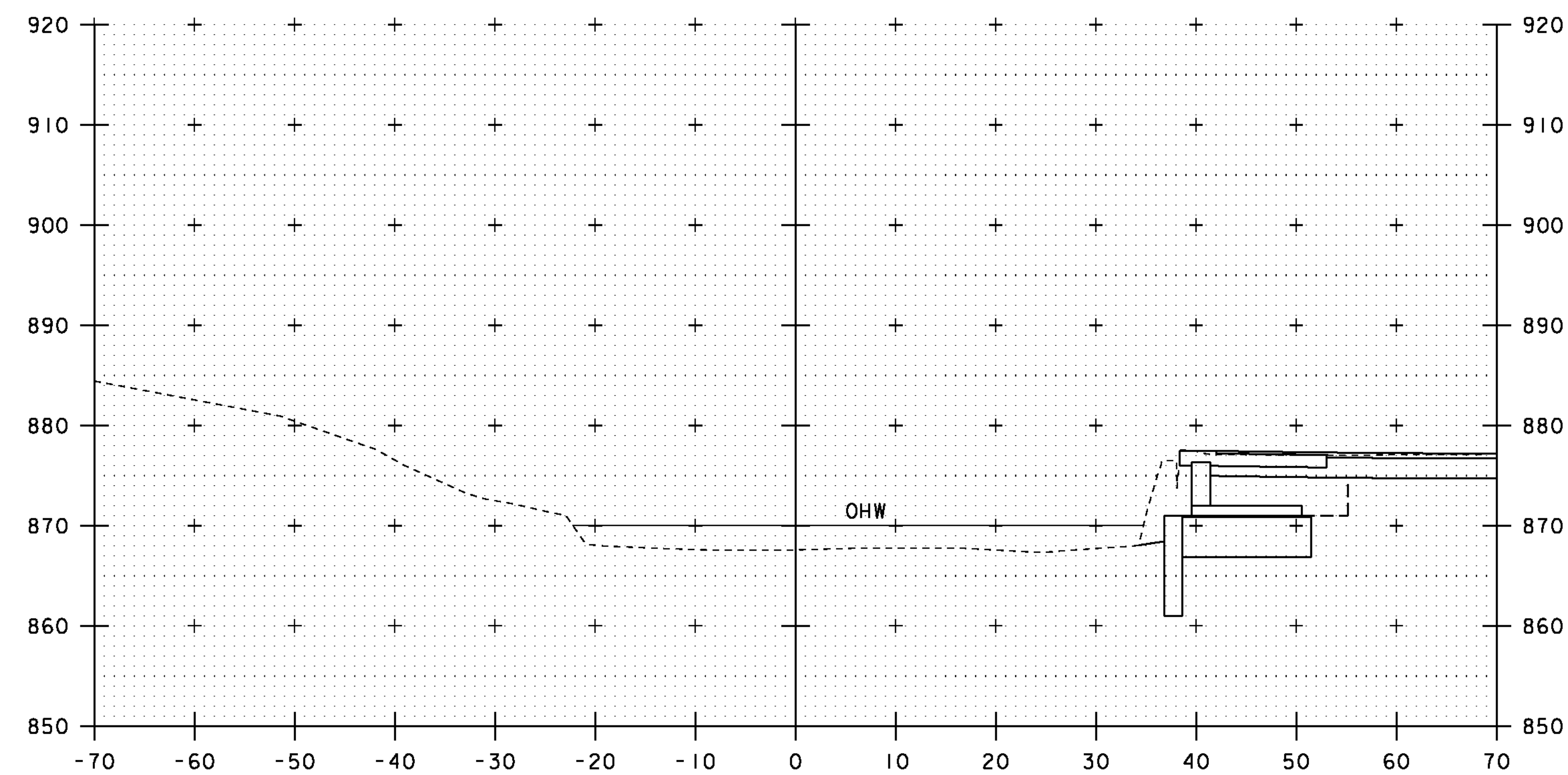


STA. 50+70 TO STA. 51+00

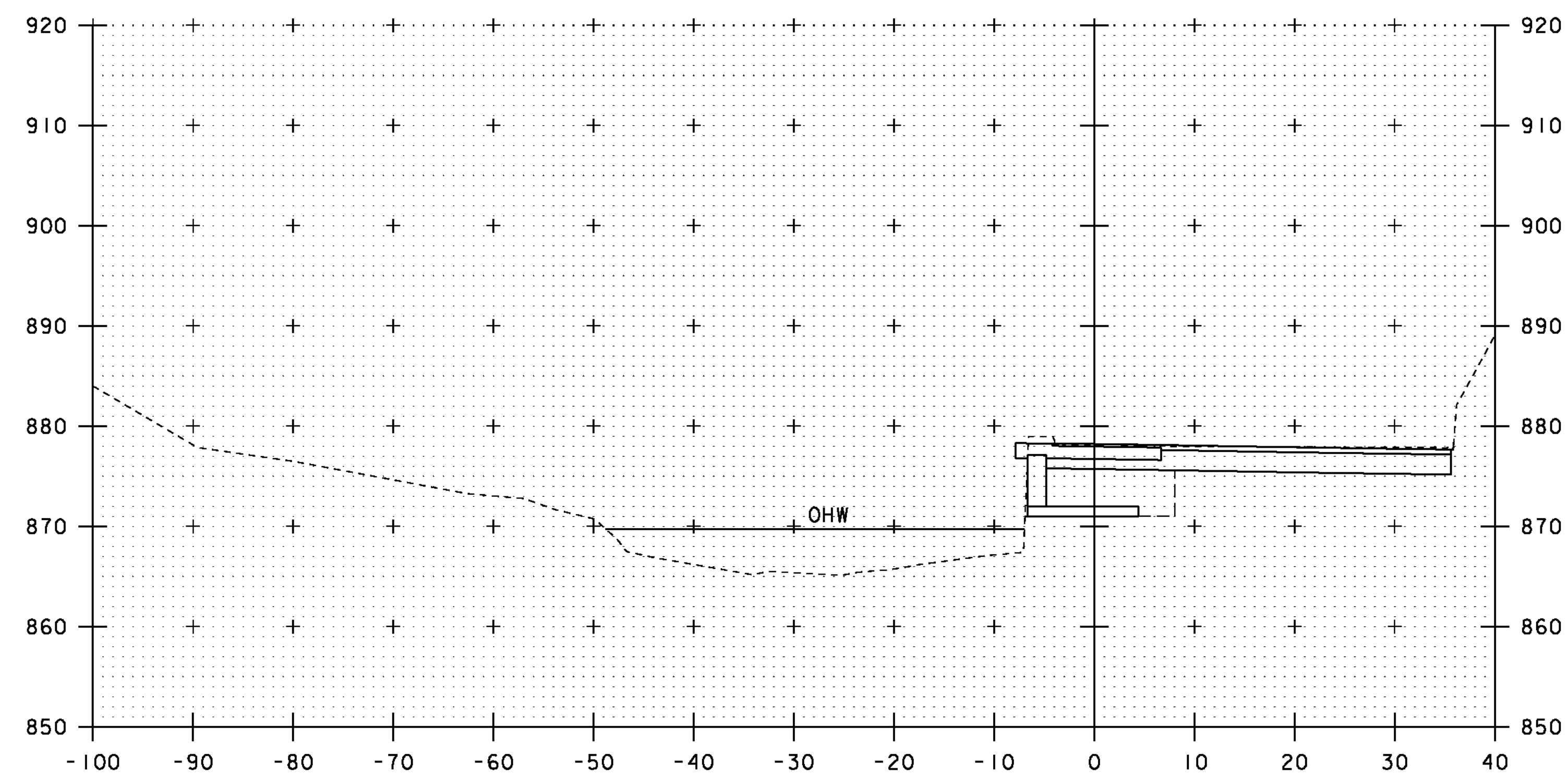
PROJECT NAME: ROXBURY	
PROJECT NUMBER: BHF 0187(8)	
FILE NAME: slOc420xsl.dgn	PLOT DATE: 21-SEP-2011
PROJECT LEADER: C. P. WILLIAMS	DRAWN BY: G. ROY
DESIGNED BY: G. ROY	CHECKED BY: T. FILLBACH
CHANNEL LINE CROSS SECTIONS (2)	SHEET 39 OF 54



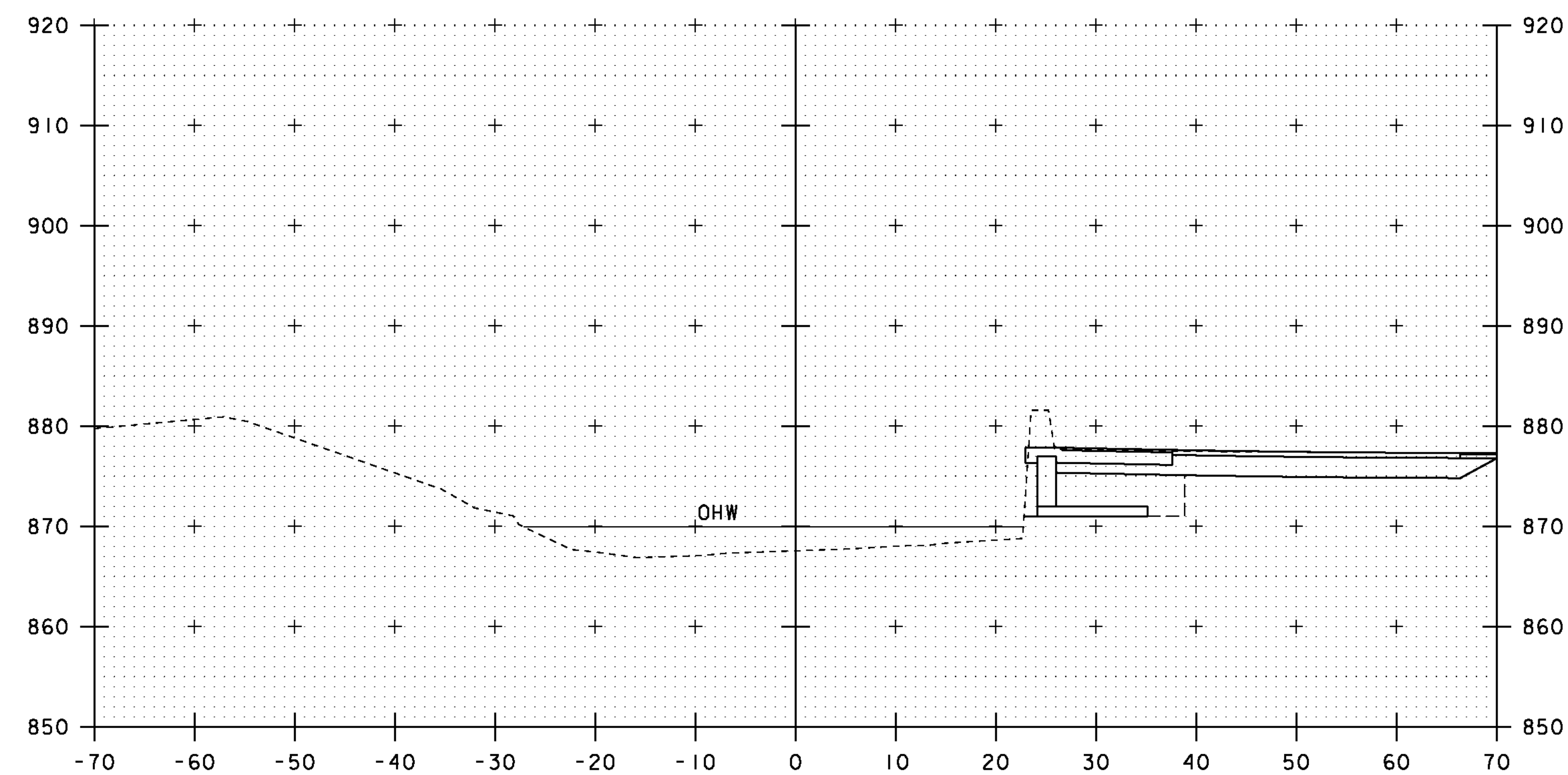
51+20



51+40



51+10



51+30

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

STA. 51+10 TO STA. 51+40

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

FILE NAME: slOc420xsl.dgn
PROJECT LEADER: C. P. WILLIAMS
DESIGNED BY: G. ROY
CHANNEL LINE CROSS SECTIONS (3)

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

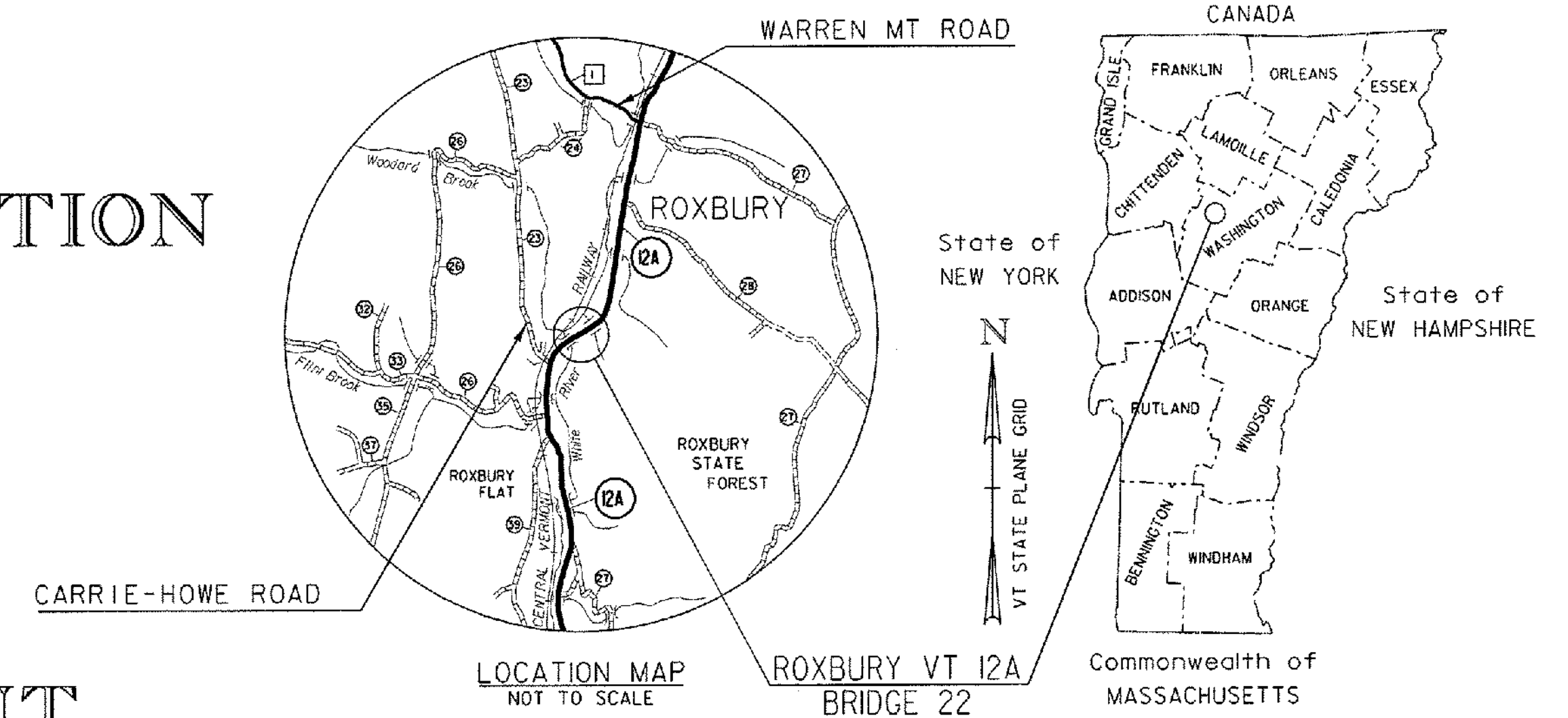
INDEX OF SHEETS:
SEE SHEET 2

VAOT STANDARD SHEETS
SEE SHEET 2

STATE OF VERMONT AGENCY OF TRANSPORTATION



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



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

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

LENGTH OF STRUCTURE: 33.30 FEET

LENGTH OF ROADWAY: 61.70 FEET
LENGTH OF PROJECT: 95.00 FEET

BEGIN BRIDGE
STA 2+69.20
FG = 997.36

END APPROACH
BEGIN PROJECT
STA 2+40.00

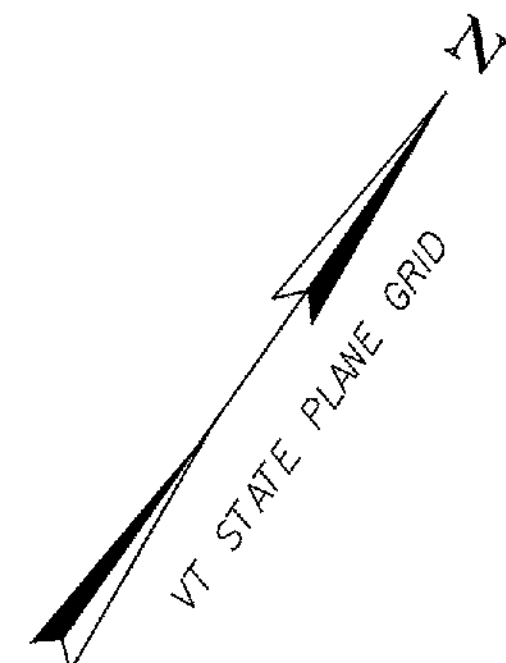
BEGIN APPROACH
MATCH EXISTING
STA 2+10.00

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
 $\Delta = 51^\circ$ RT



QUALITY ASSURANCE PROGRAM: LEVEL 2

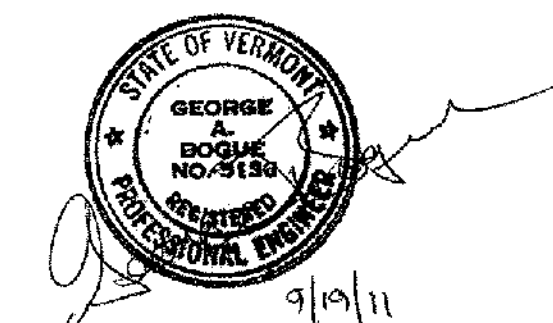
CONVENTIONAL SYMBOLS

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)

0 20 40
SCALE



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

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

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

PROJECT MANAGER : ROB YOUNG

PROJECT NAME : ROXBURY

PROJECT NUMBER : ER 0187 (9)

SHEET 41 OF 54 SHEETS

PROJECT NOTES

GENERAL

- 1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION, 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ITS LATEST REVISIONS AND THE 2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND ITS LATEST REVISIONS.
- 2. ALL PRECAUTIONS SHALL BE TAKEN TO PREVENT SILTATION OR POLLUTION INTO THE STREAM. REFER TO STANDARD SPECIFICATIONS, SECTION 105. ALL WATER PUMPED FROM EXCAVATION AREA SHALL BE CLARIFIED PRIOR TO BEING ALLOWED TO MIX WITH THE STREAM FLOW. STATE WATER QUALITY STANDARDS SHALL BE MAINTAINED AT ALL TIMES.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STAGING SCHEME. ALL WORK MUST BE DONE IN THE DRY AND ALL NEW STRUCTURE SECTIONS AND BED MATERIAL SHALL BE COMPLETELY INSTALLED BEFORE THE STREAM IS ALLOWED TO FLOW THROUGH THEM. A TEMPORARY STREAM DIVERSION SYSTEM IS NECESSARY TO CARRY THE STREAM DURING CONSTRUCTION. THE CONTRACTOR SHALL PREPARE AND SUBMIT A TEMPORARY STREAM DIVERSION PLAN TO CARRY THE STREAM DURING CONSTRUCTION. THE PLAN SHALL DEPICT MEASURES PROPOSED TO PREVENT EROSION AND SEDIMENTATION AND MAINTAIN STREAM WATER QUALITY. THE COST OF STREAM DIVERSION, INCLUDING ANY TEMPORARY PIPING OR DE WATERING, SHALL BE PAID FOR UNDER ITEM 900.645 SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).
- 4. THE FOLLOWING SHALL BE PAID FOR UNDER ITEM 529.15, REMOVAL OF STRUCTURE: REMOVAL AND DISPOSAL OF THE EXISTING METAL CULVERT INCLUDING UPSTREAM AND DOWNSTREAM CONCRETE HEADWALLS.
- 5. CONTRACTOR SHALL STOCKPILE THE EXISTING PLATES AND CONCRETE BARRIER ON SITE, IN A CONVENIENT LOCATION FOR PICK UP BY OTHERS.

PRECAST CONCRETE STRUCTURE

- 1. DESIGN OF THE PRECAST CONCRETE STRUCTURE COMPONENTS SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) AND ITS LATEST INTERIM'S, THE VTRANS STRUCTURES DESIGN MANUAL, AND THE DESIGN CRITERIA INDICATED ON THE PLANS. PAYMENT WILL BE MADE UNDER THE LUMP SUM PRICE BID FOR ITEM 540.10, "PRECAST CONCRETE STRUCTURE".
- 2. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS FOR THE PRECAST STRUCTURE AND ALL ASSOCIATED DETAILS FOR THE APPROVAL OF THE STRUCTURES ENGINEER IN ACCORDANCE WITH SUBSECTION 105.03 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, WITH THE EXCEPTION OF REVIEW TIME. SEE SPECIAL PROVISIONS.
- 3. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT FOR THE INTERIOR OF THE NEW STRUCTURE.
- 4. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1".

TRAFFIC CONTROL

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

PAVEMENT NOTES

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

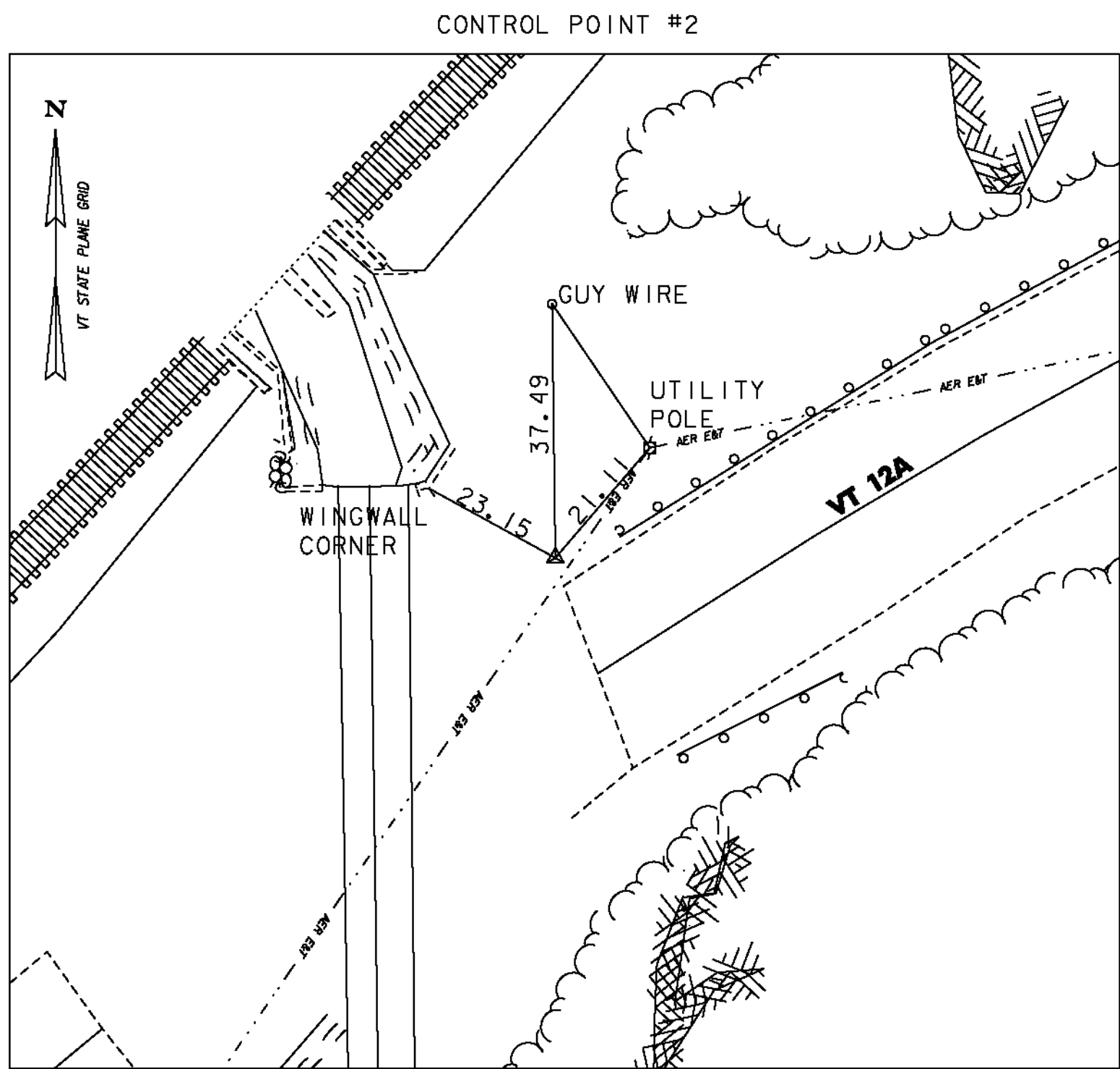
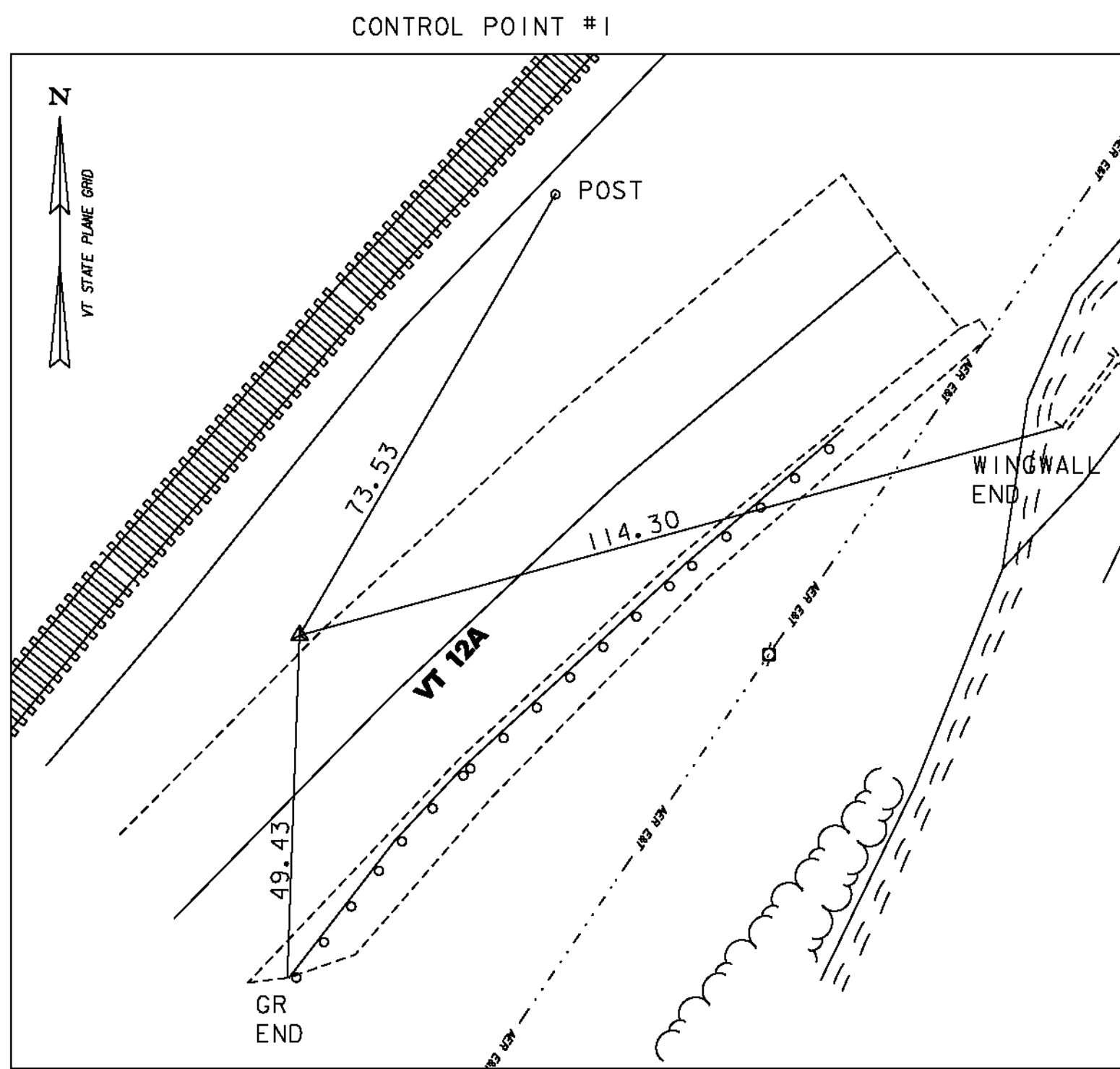


PROJECT NAME: ROXBURY	
PROJECT NUMBER: ER 0187(9)	
FILE NAME: ...\\plotfiles\\notes_index.dgn	PLOT DATE: 9/22/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
INDEX OF SHEETS, VAOT STDS. & PROJ. NOTES SHEET 42 OF 54	

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'

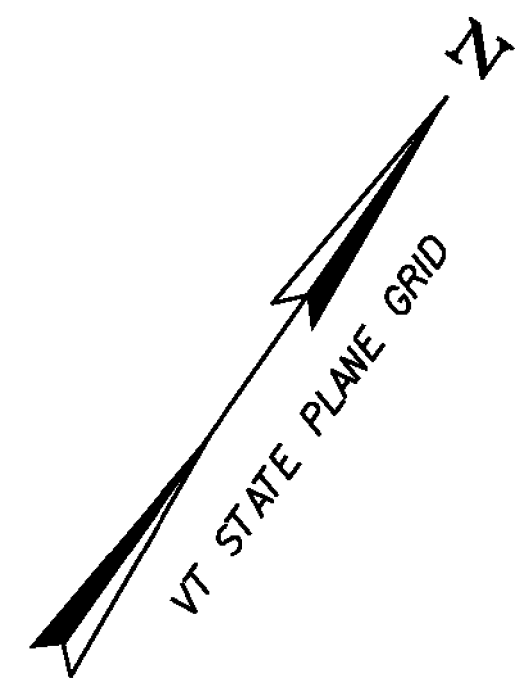
VERMONT 12A			
POB	STATION	NORTHING	EASTING
PC	1+00.00	574030.3883	1576253.2640
	1+16.68	574042.3200	1576264.9240
Tangent Direction: N 44°20' 24.10" E			
Tangent Length: 16.68			
PC	1+16.68	574042.3200	1576264.9240
PI	2+65.50	574148.7520	1576368.9318
CC		573343.4049	1576980.1286
PT	4+12.14	574220.2873	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			
POB	STATION	NORTHING	EASTING
PI	10+00.00	574245.9278	1576368.7157
	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
PROJECT LEADER: G. BOGUE
DESIGNED BY: M. CHENETTE
TIE SHEET
PLOT DATE: 9/21/2011
DRAWN BY: JTS/ISM
CHECKED BY: G. BOGUE
SHEET 43 OF 54



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 CL

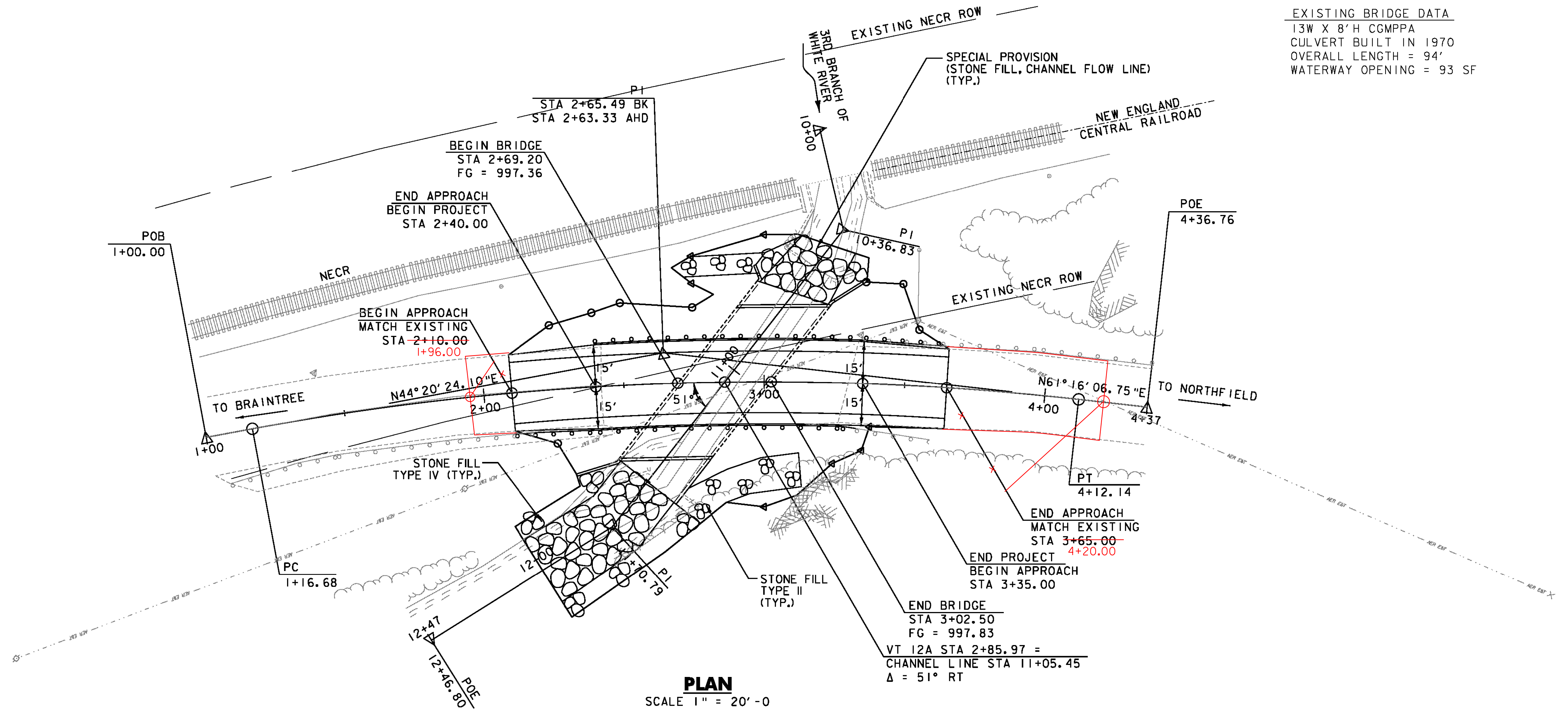
SPECIAL PROVISION (STONE FILL, CHANNEL FLOW LINE)

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

CURVE DATA VT 12A

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

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

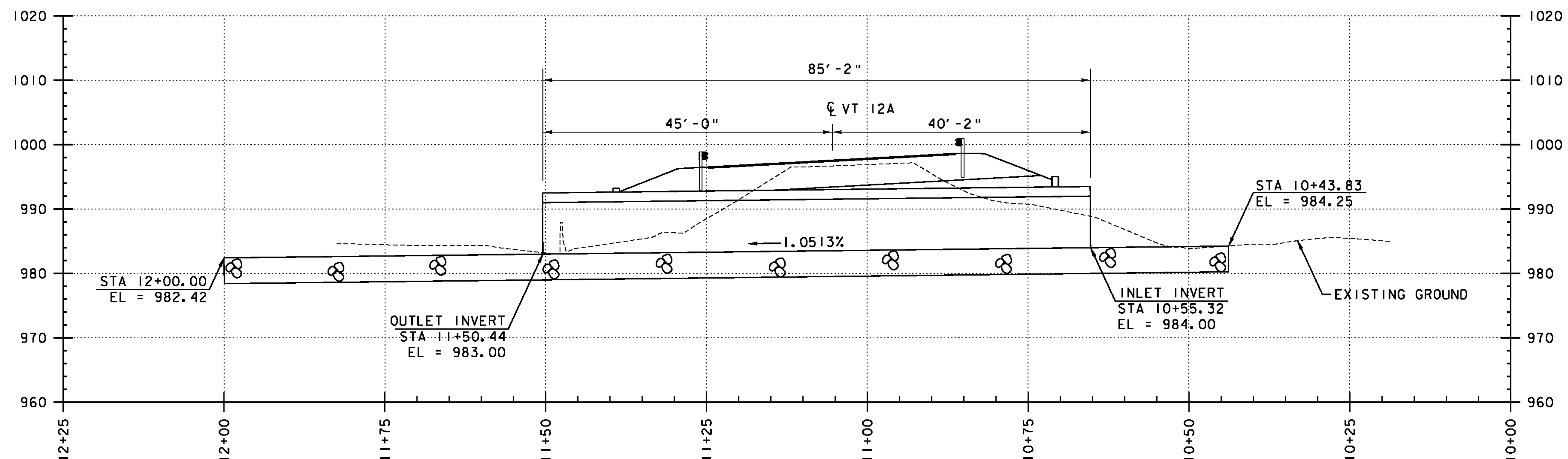
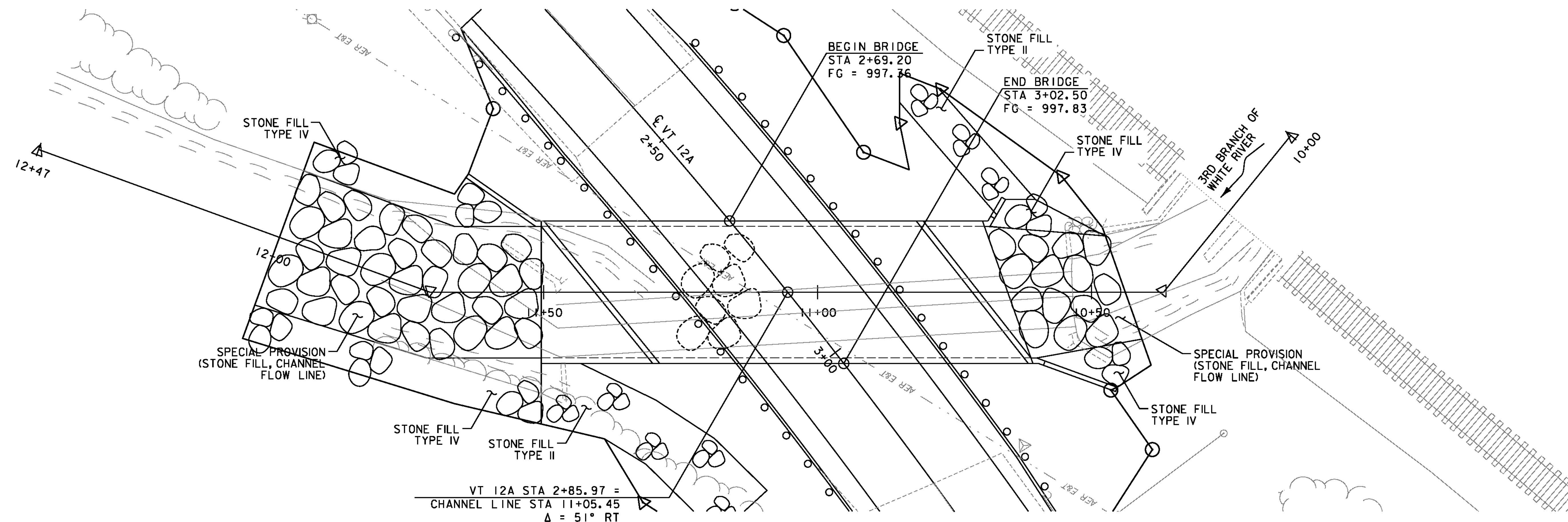


NOTE: AERIAL UTILITY LINES HAVE BEEN RELOCATED,
CONTRACTOR SHALL CONFIRM IN FILED

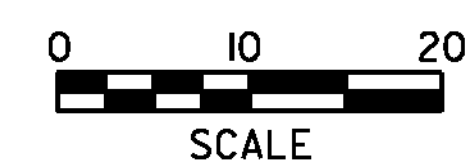
PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

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

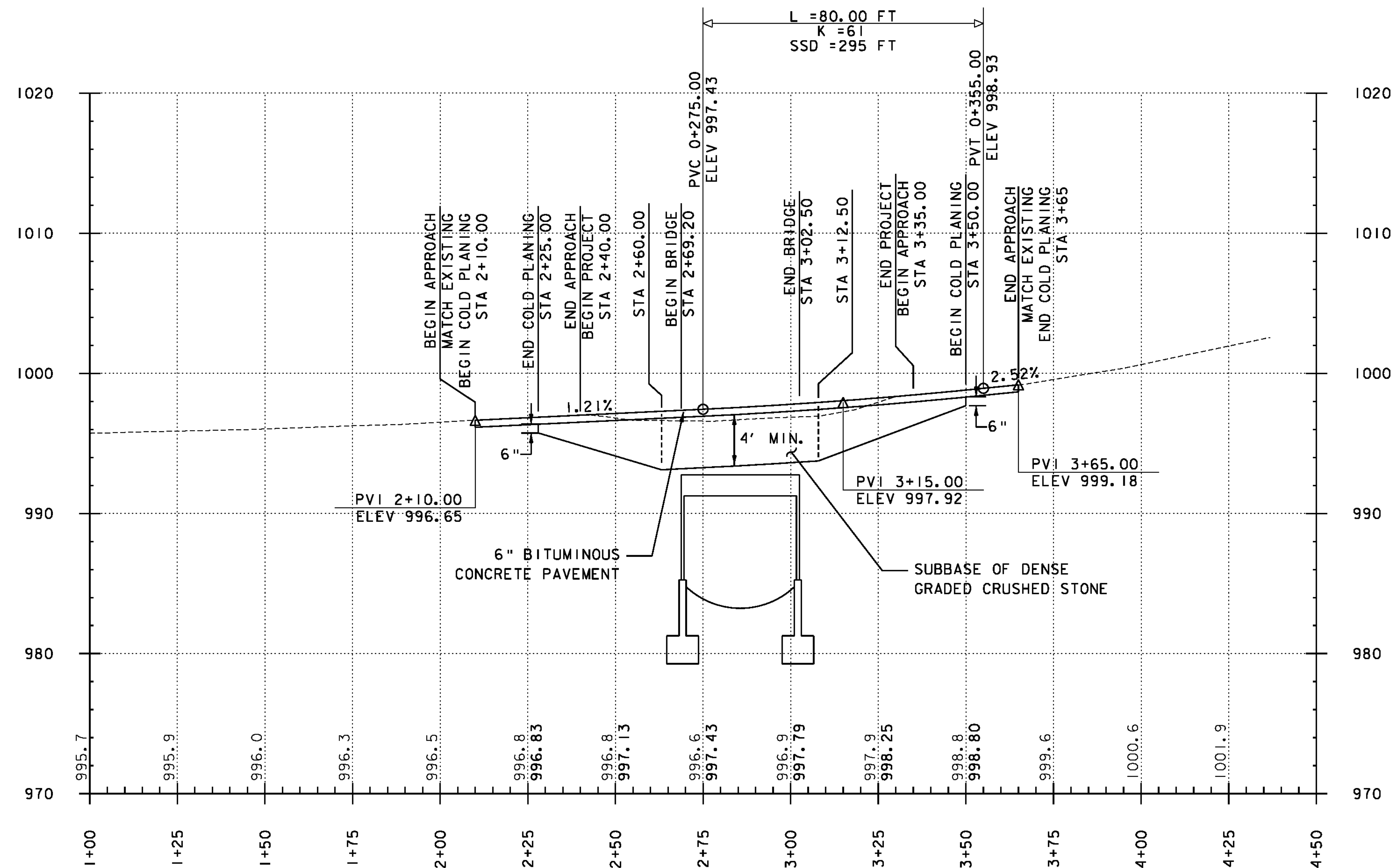




PROFILE ALONG CHANNEL LINE
SCALE 1" = 10'-0"



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

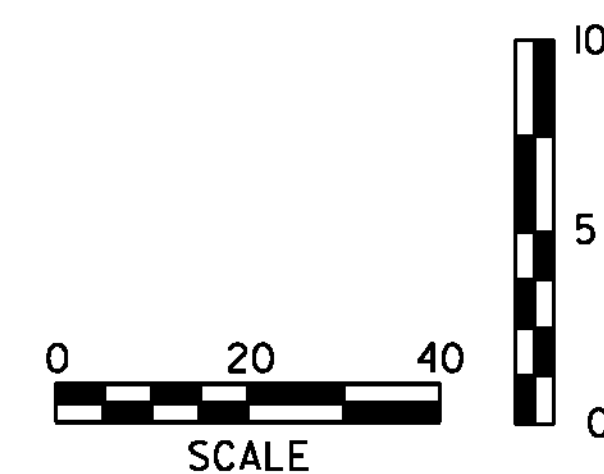


NOTE:

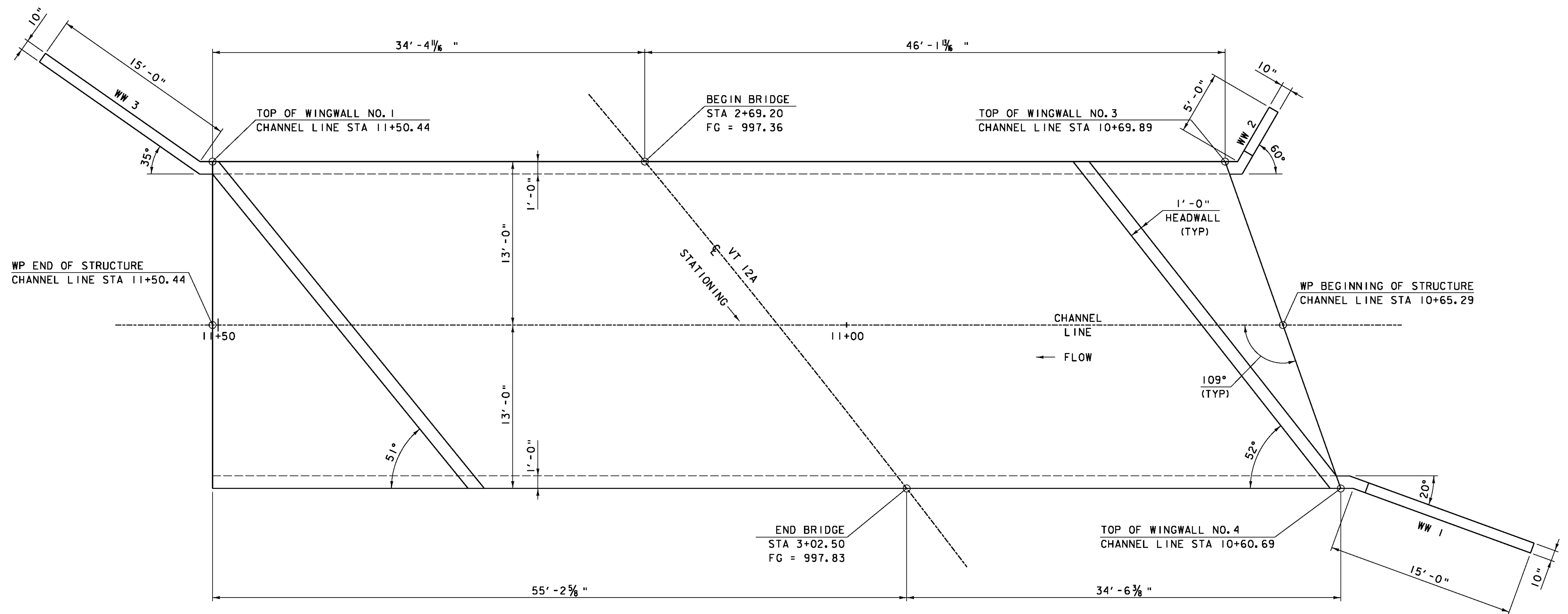
ELEVATION SHOWN TO THE NEAREST TENTHS ARE
EXISTING GROUND ALONG PROPOSED CENTERLINE.

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

PROFILE ALONG VT 12A



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



PRECAST CONCRETE STRUCTURE PLAN

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

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

1 0 1 2 3 4 5 6
SCALE: 1/4" = 1'-0"

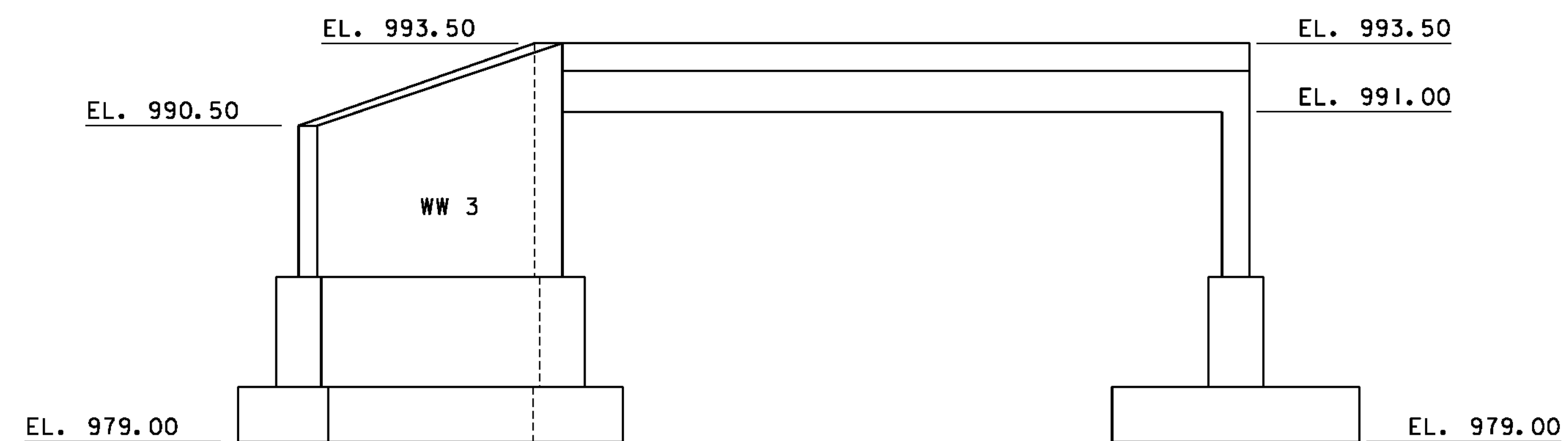


PROJECT NAME:	ROXBURY
PROJECT NUMBER:	ER 0187(9)
FILE NAME: ...drawing\struct_plan.dgn	PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
PRECAST CONCRETE STRUCTURE PLAN	SHEET 48 OF 54



INLET ELEVATION

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



OUTLET ELEVATION

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

FOUNDATION NOTES:

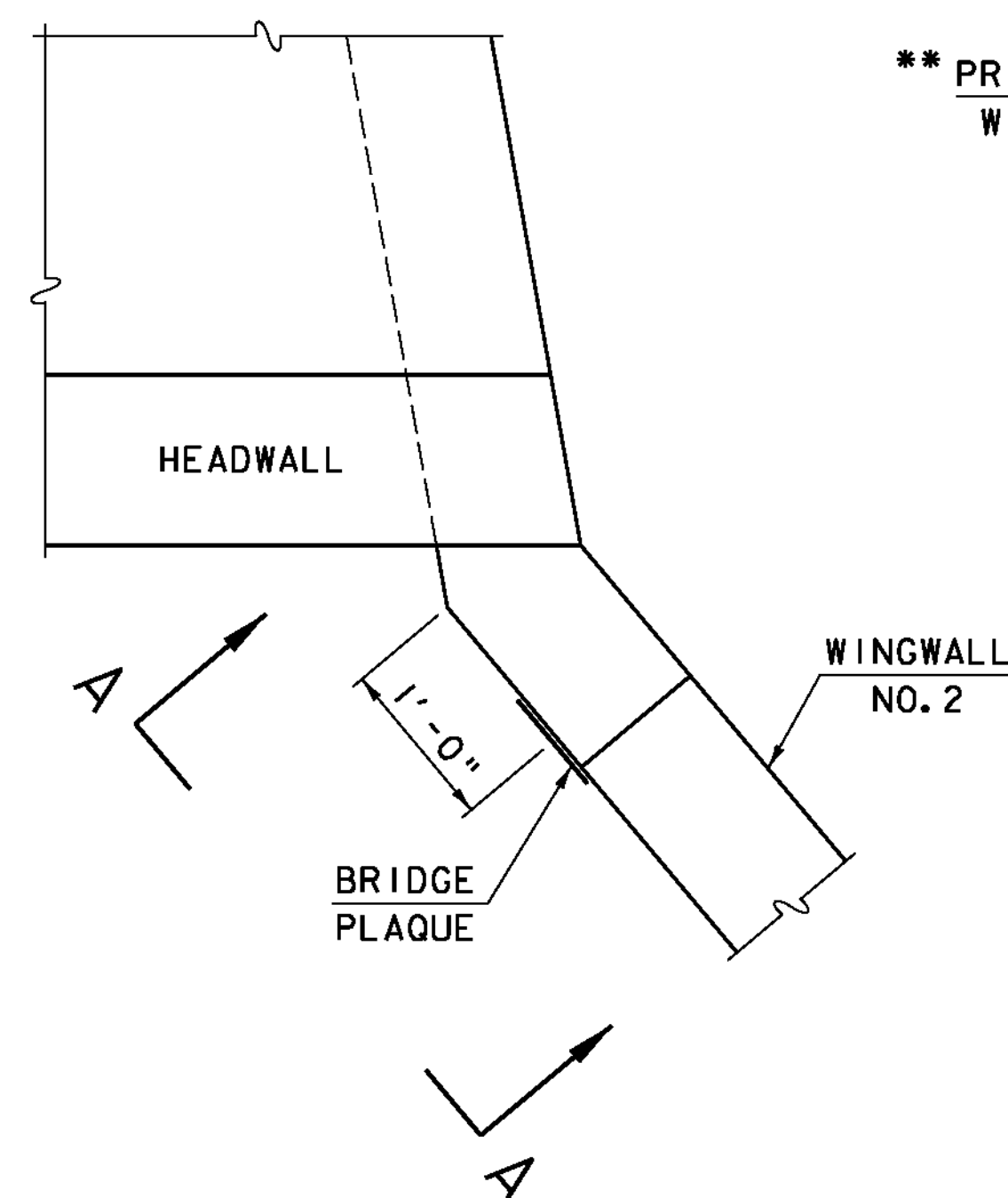
1. FOUNDATIONS SHALL BE DESIGNED USING A NOMINAL BEARING RESISTANCE OF 11 ksf AND A FACTORED BEARING RESISTANCE OF 5 ksf WITH A 34 DEGREE FRICTION ANGLE.
2. THE COEFFICIENT OF FRICTION FOR SLIDING SHALL BE:
PRECAST FOOTINGS.....0.35
CAST-IN-PLACE FOOTINGS....0.40
3. IF LOOSE OR SOFT SOILS ARE ENCOUNTERED, THE EXISTING MATERIALS SHALL BE UNDERCUT 12" AND A GEOTEXTILE MEETING THE REQUIREMENTS OF SECTION 649 FOR GEOTEXTILE FOR ROAD BED SEPARATOR, SHALL BE PLACED ON THE EXCAVATED SURFACE AND BACKFILLED WITH ITEM 204.3, GRANULAR BACKFILL FOR STRUCTURES.

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

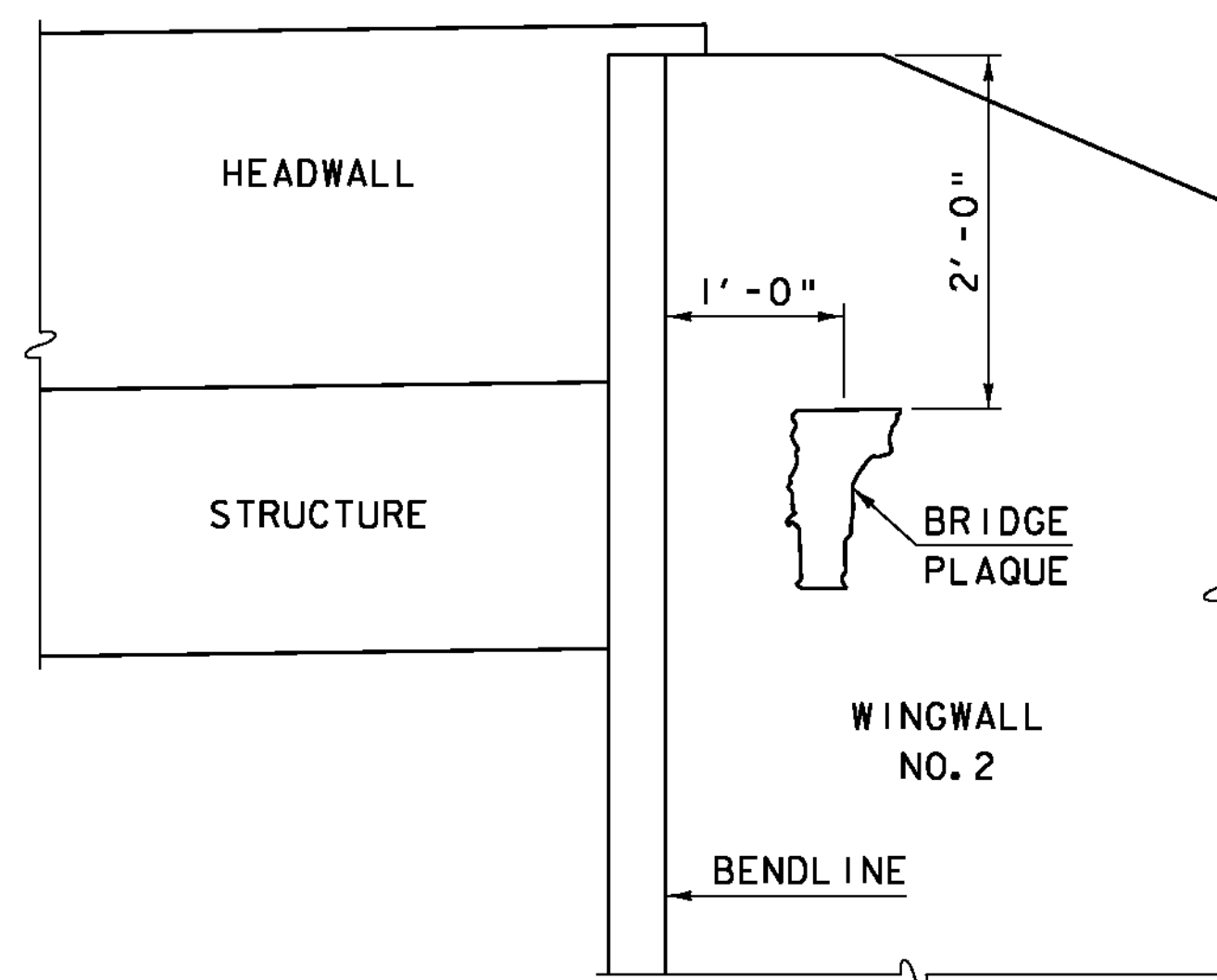
FILE NAME: ...drawing\struct_plan_dets.dgn PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE CHECKED BY: G. BOGUE
WINGWALL ELEVATIONS SHEET 49 OF 54

1 0 1 2 3 4 5 6
SCALE: 1/4" = 1'-0"





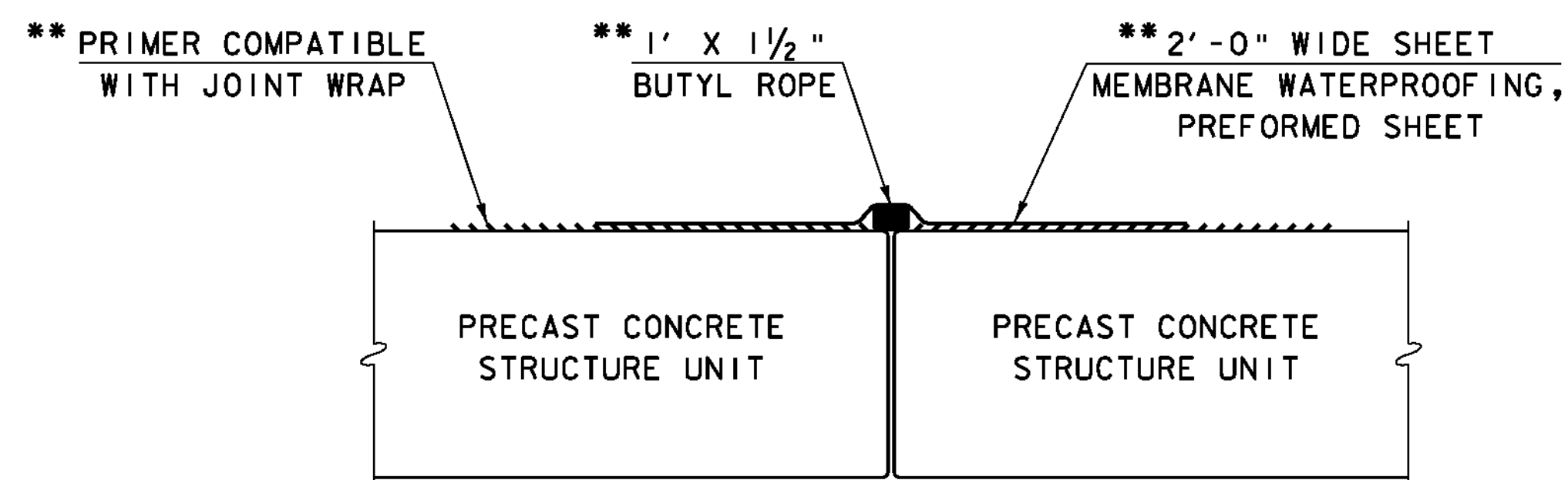
PLAN



VIEW "A-A"

LOCATE BRIDGE PLAQUE

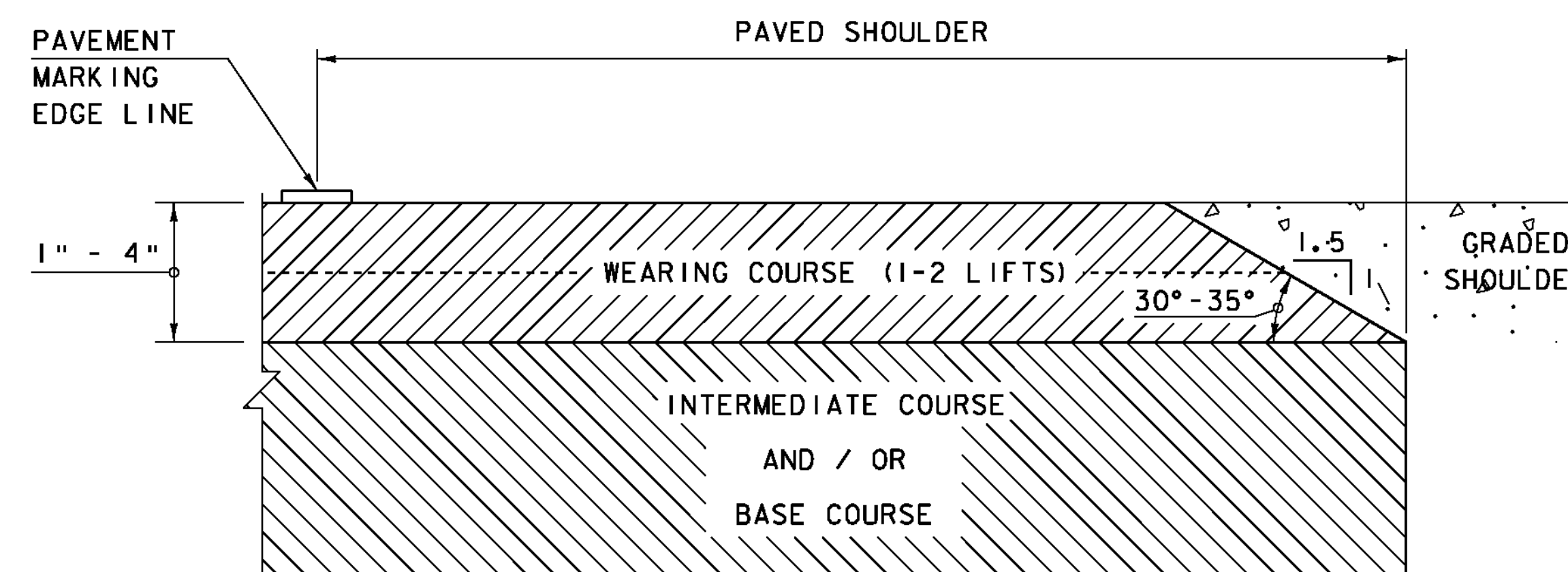
THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR ON WINGWALL NO. 2 AS SHOWN OR AS DIRECTED BY THE ENGINEER.



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".

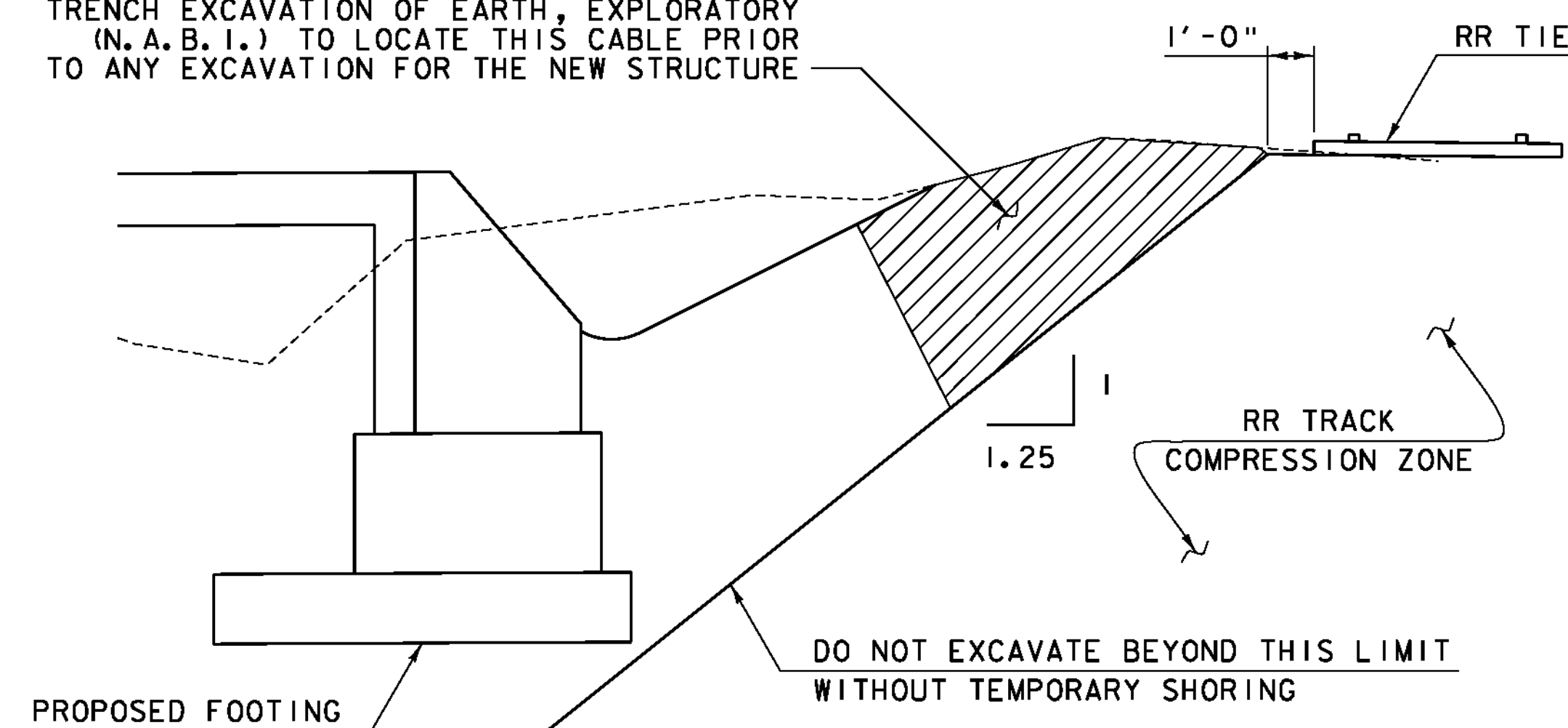


SAFETY EDGE DETAIL

NOT TO SCALE

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

THERE IS A FIBER OPTIC CABLE BURIED ON THIS SIDE OF THE RAILROAD TRACKS. CONTRACTOR SHALL USE ITEM 204.22, TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.) TO LOCATE THIS CABLE PRIOR TO ANY EXCAVATION FOR THE NEW STRUCTURE



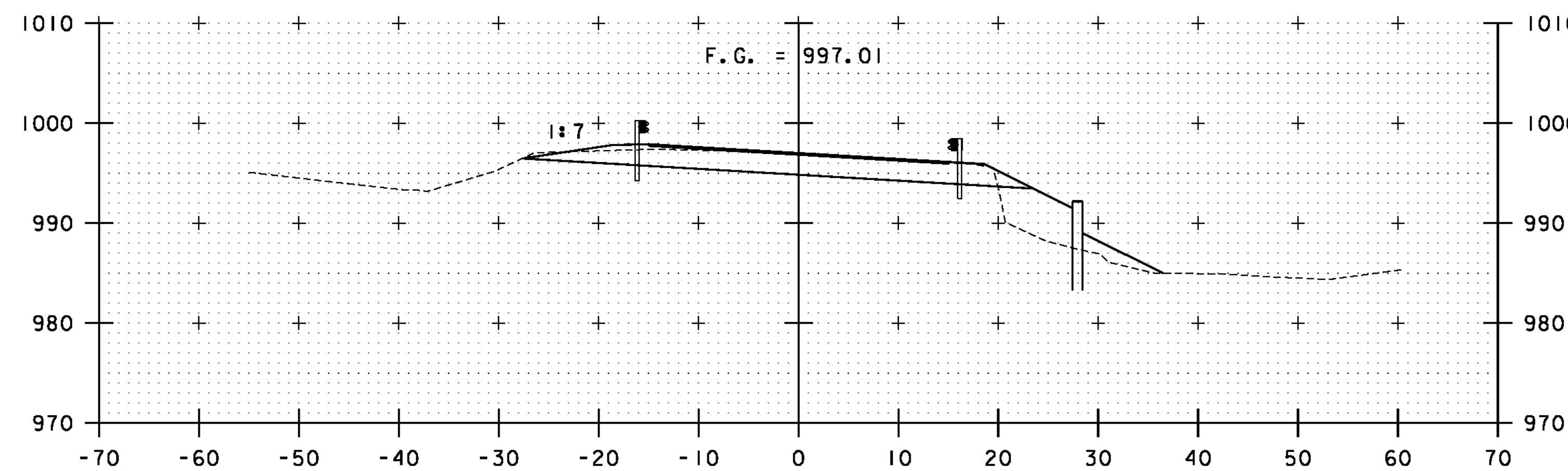
RAILROAD TRACK EXCAVATION LIMIT DETAIL

NOT TO SCALE

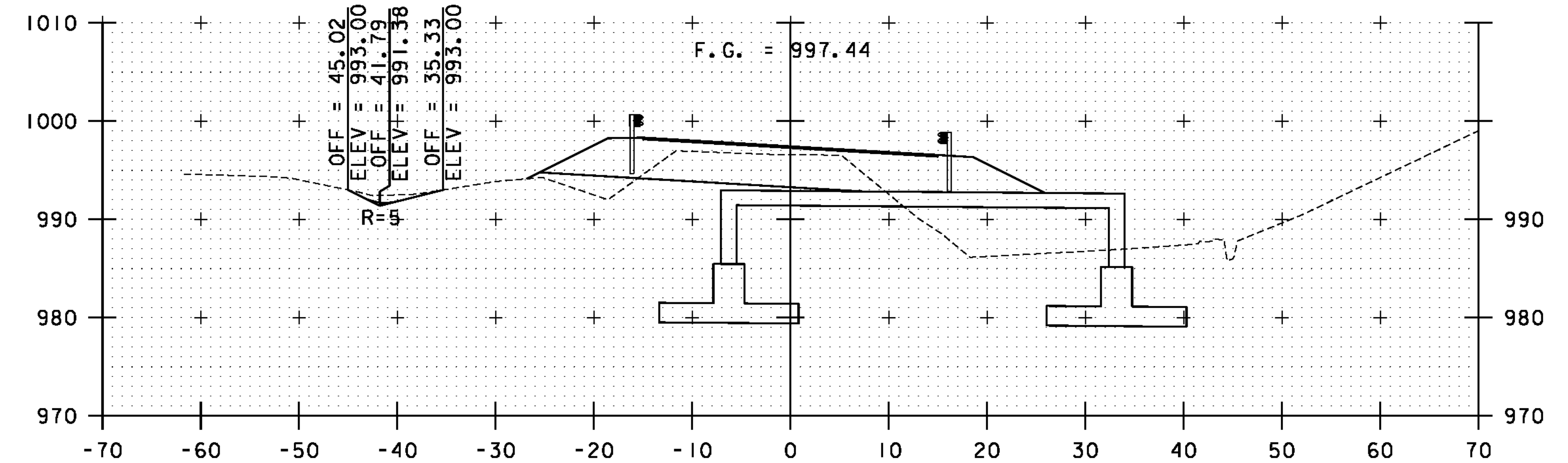


PROJECT NAME: ROXBURY
PROJECT NUMBER: ER 0187(9)

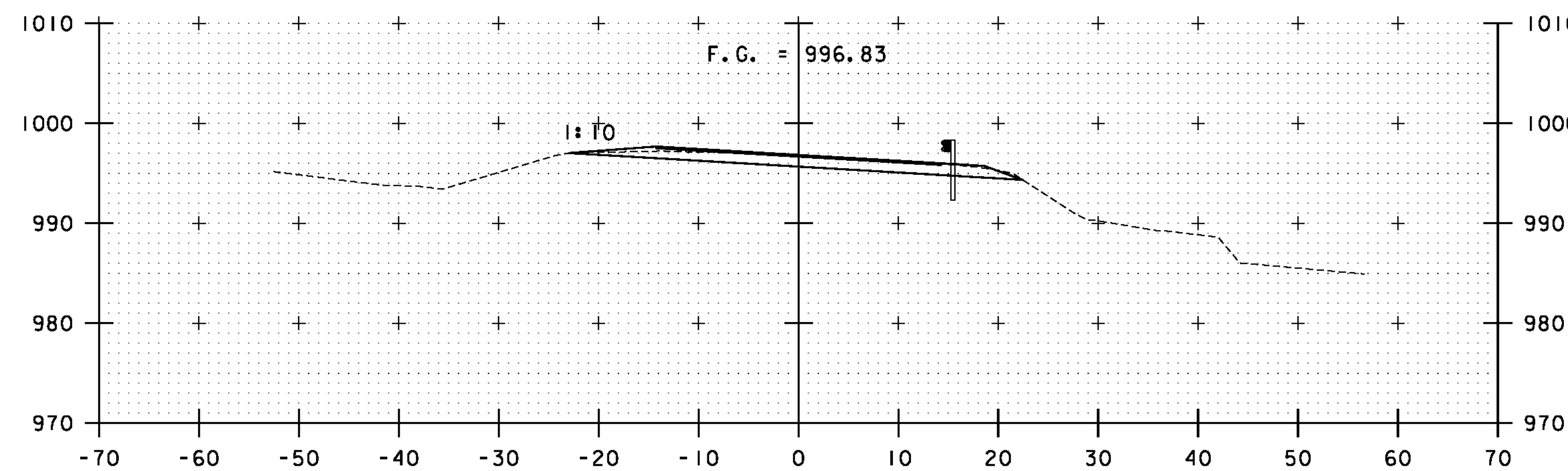
FILE NAME: ...drawing\struct_plan_details.dgn PLOT DATE: 9/21/2011
PROJECT LEADER: G. BOGUE DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE CHECKED BY: G. BOGUE
MISCELLANEOUS DETAILS SHEET 50 OF 54



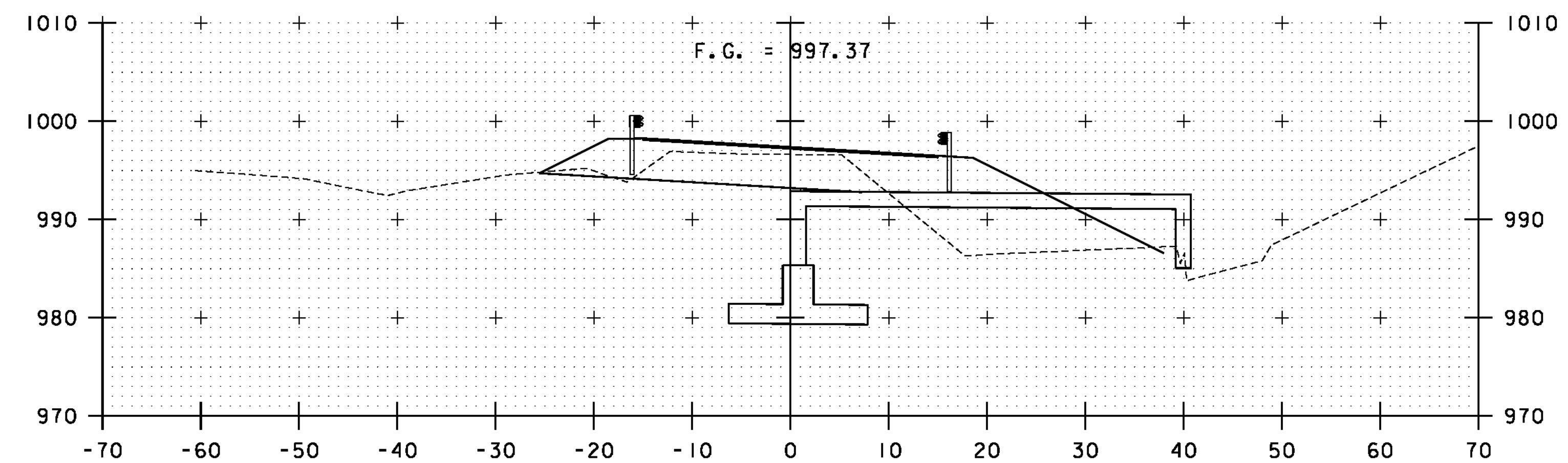
2+40
END APPROACH
BEGIN PROJECT



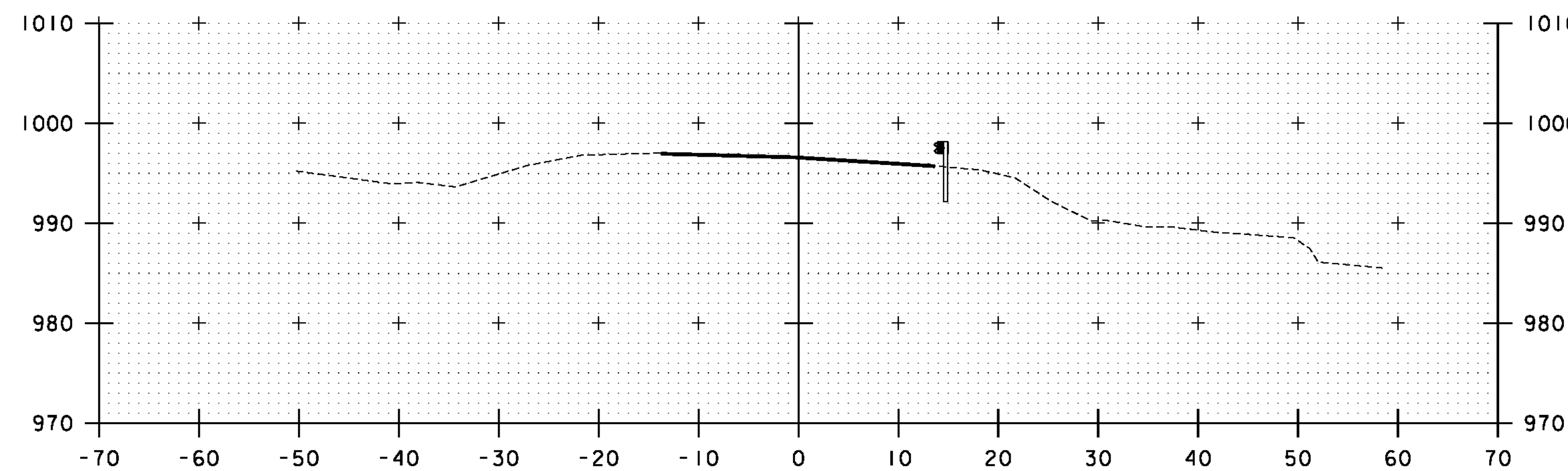
2+75



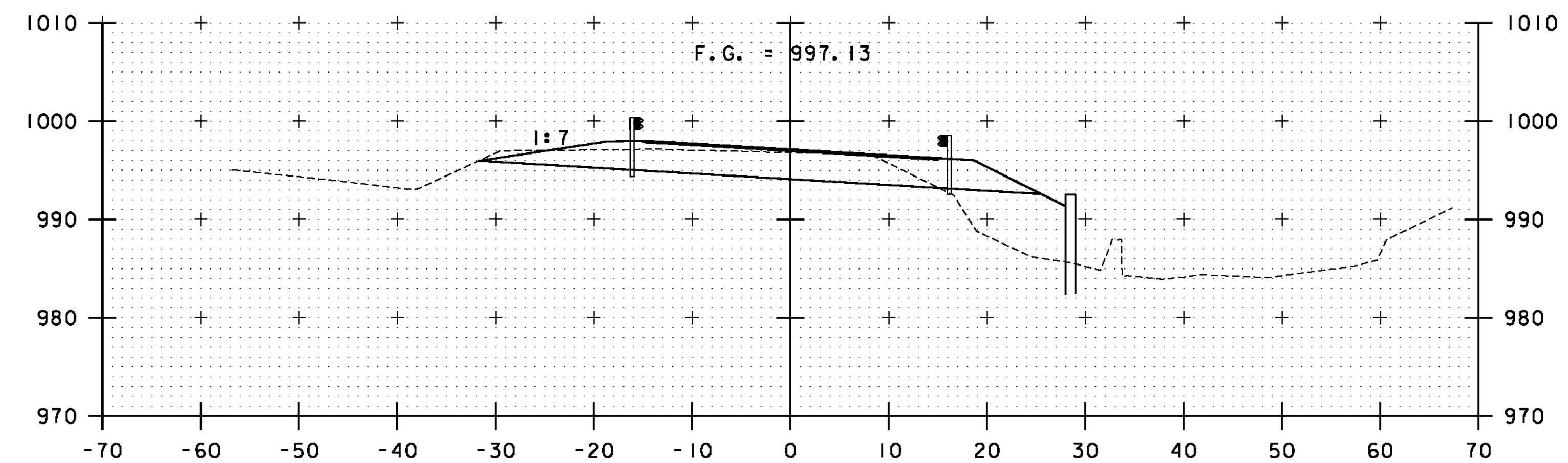
2+25
END COLD PLANE



2+69.20



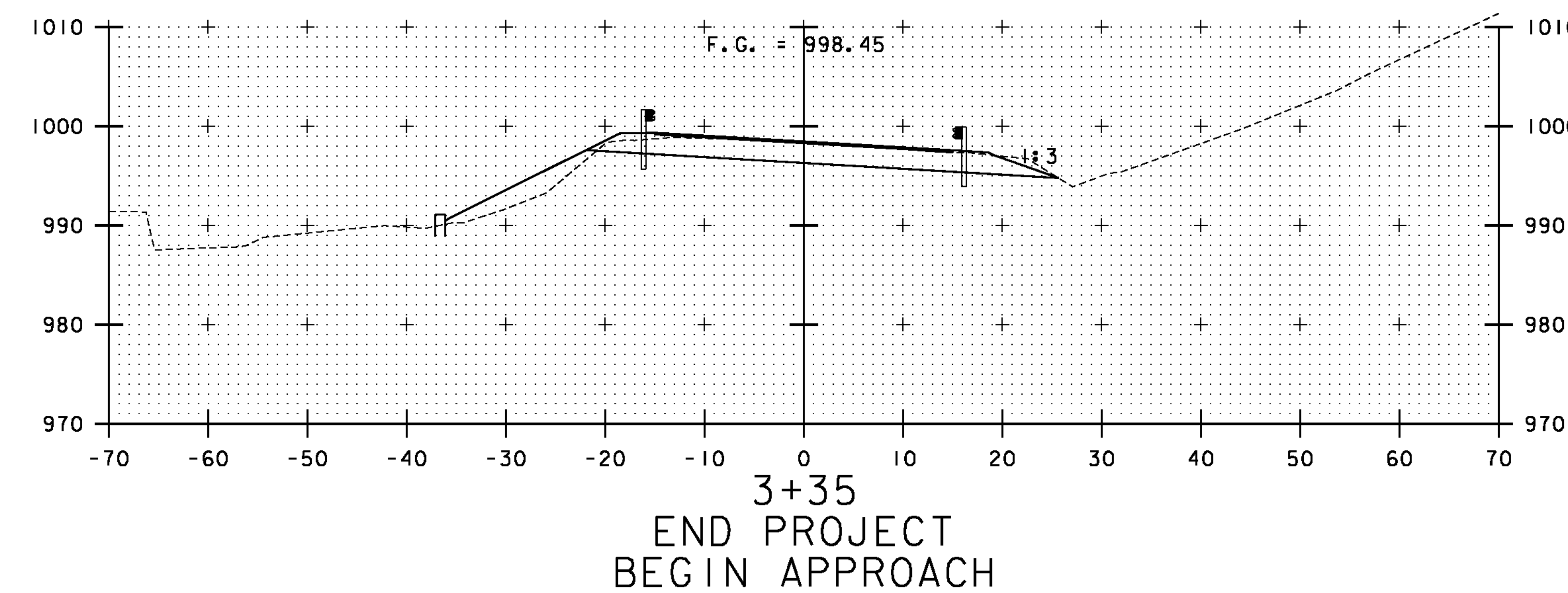
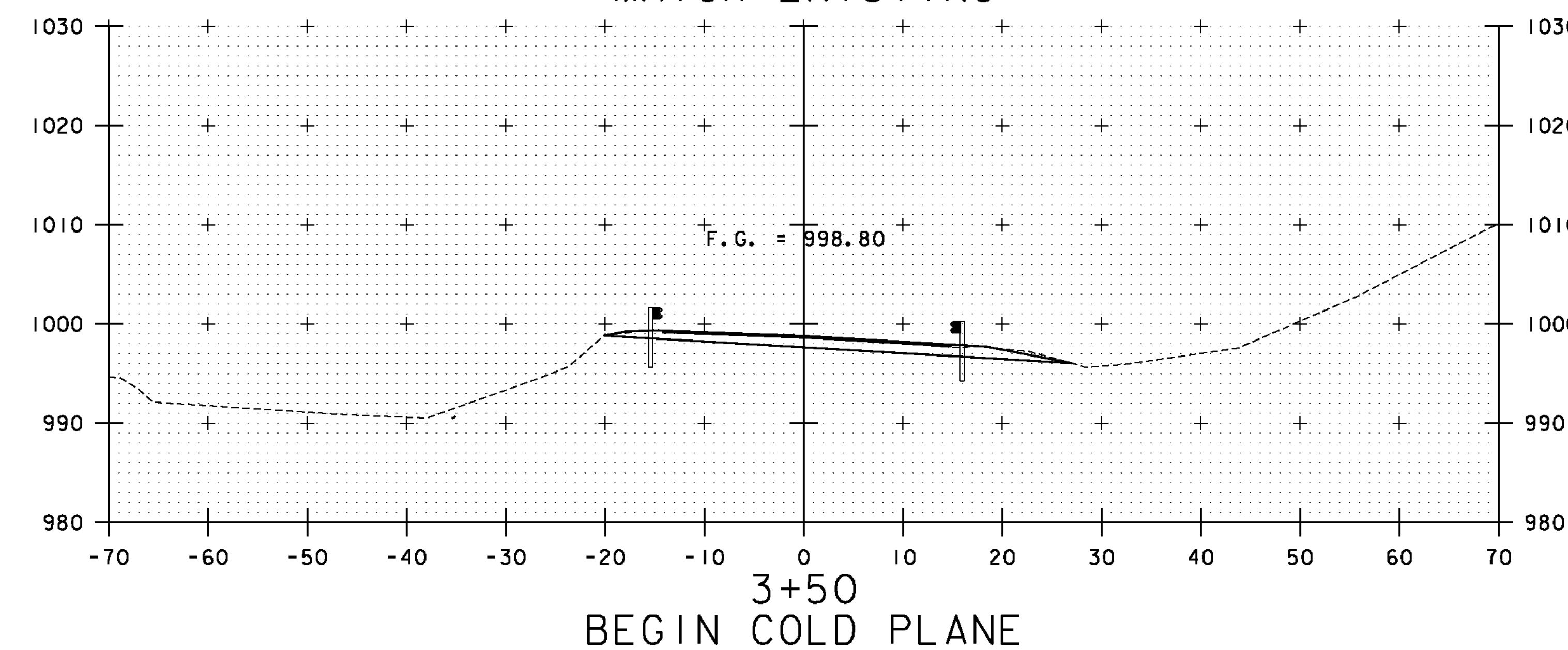
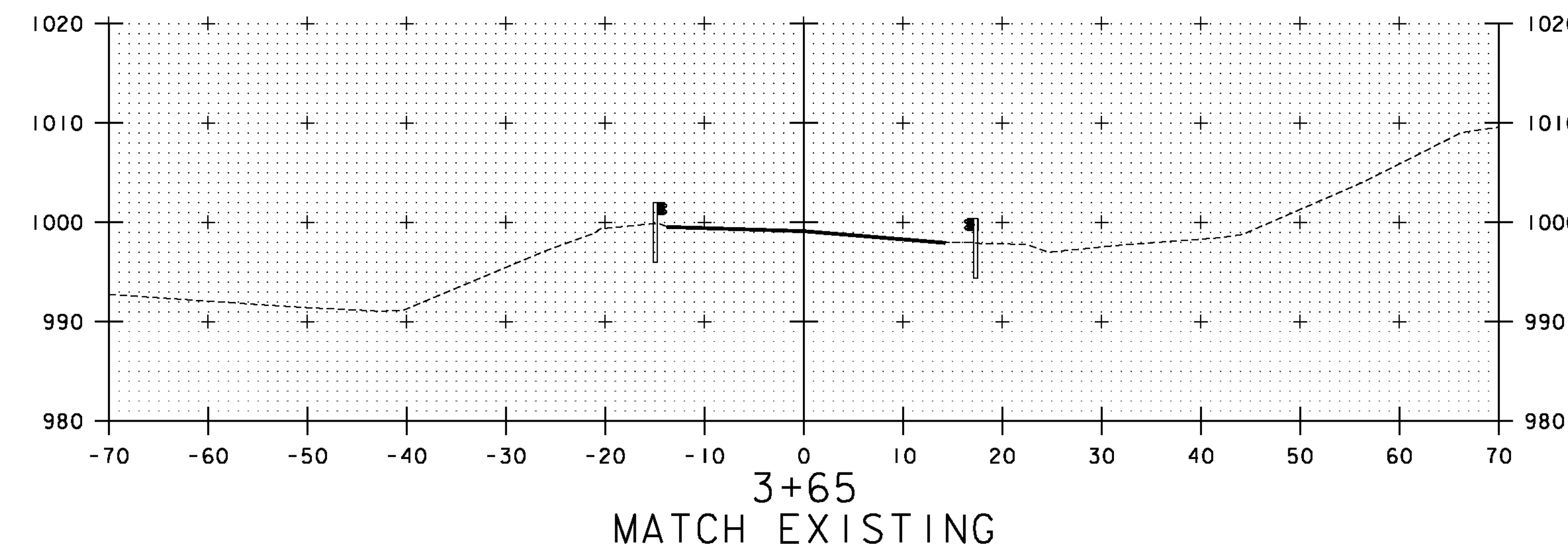
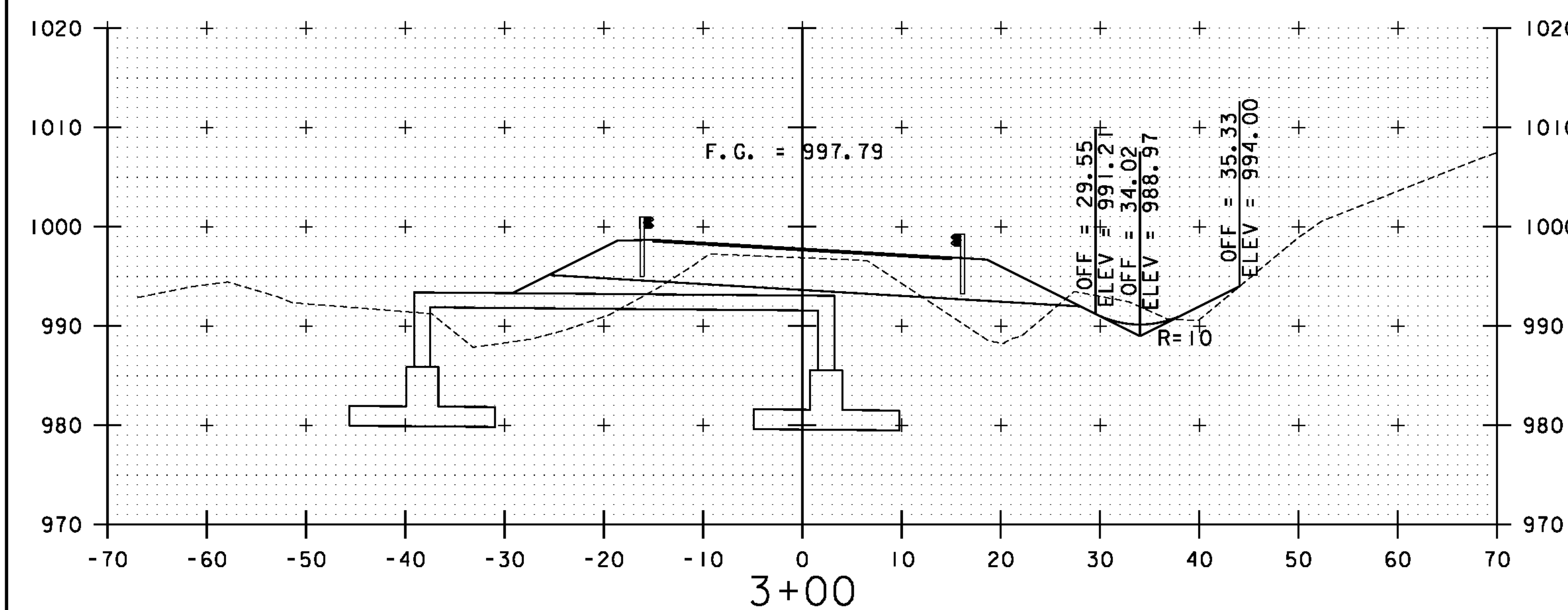
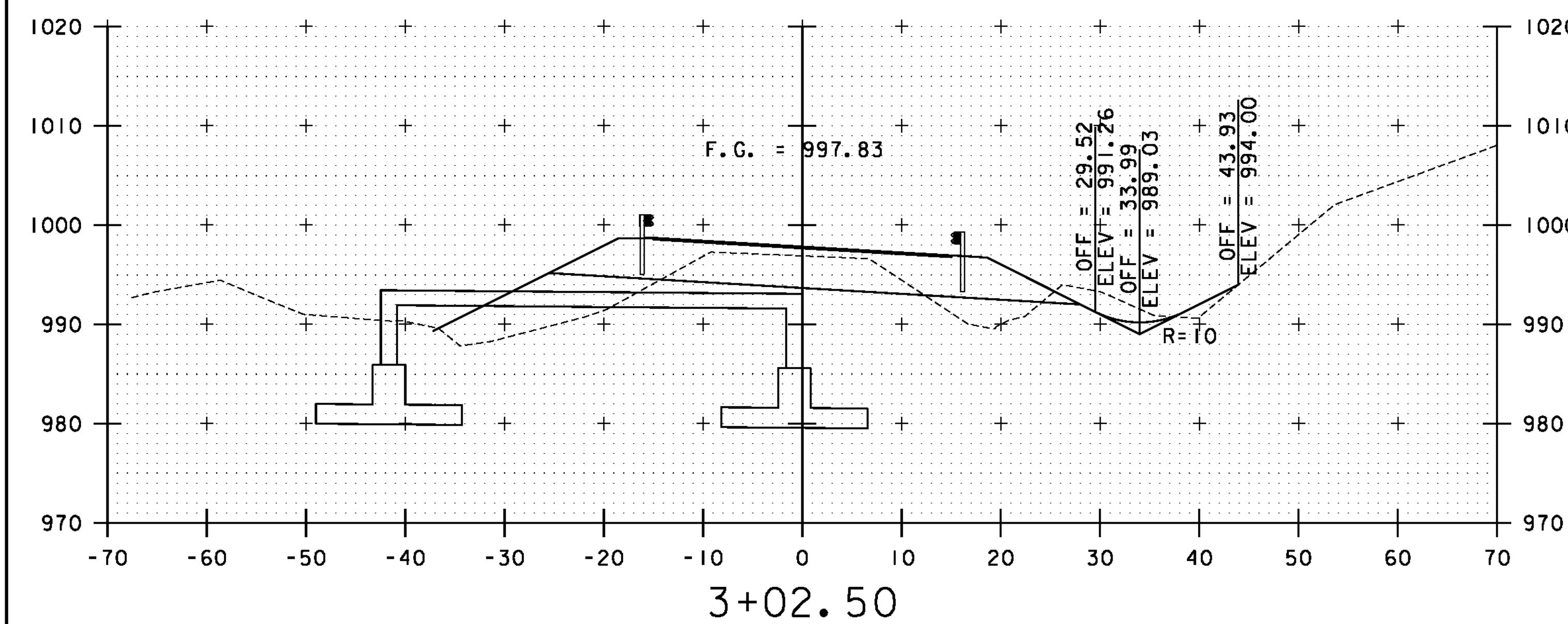
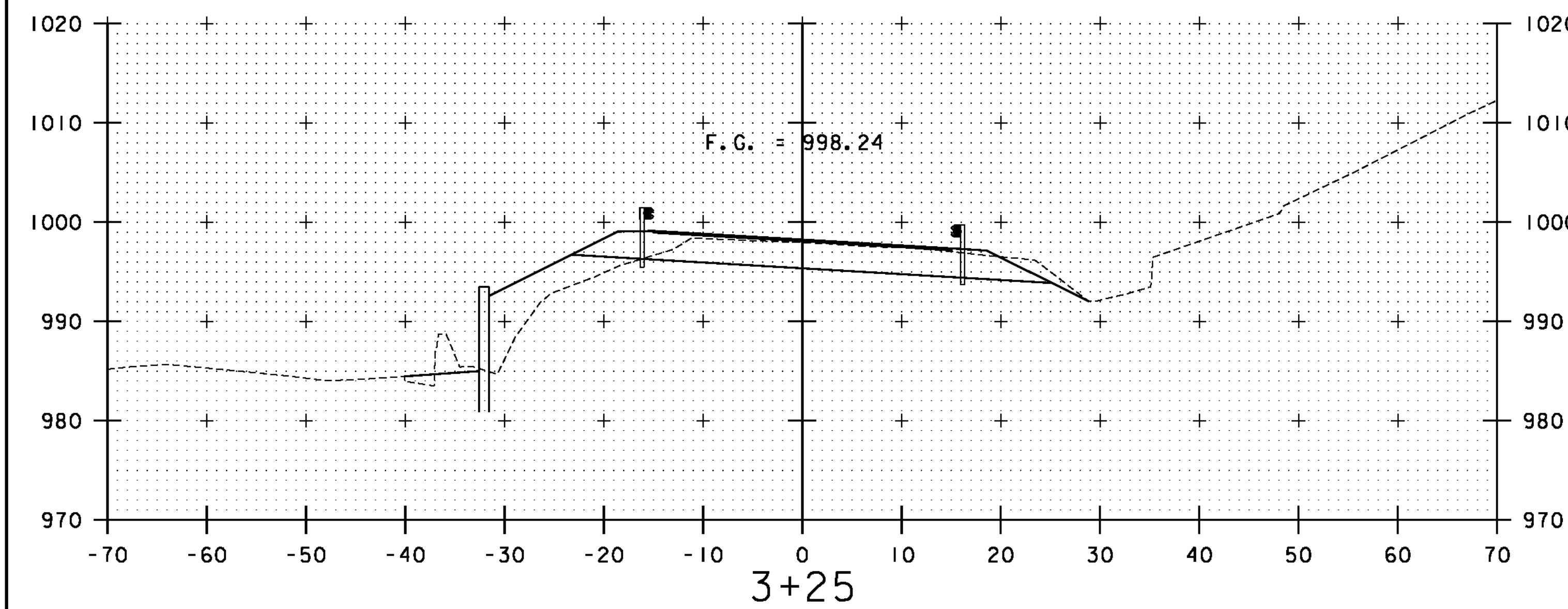
2+10
BEGIN APPROACH
MATCH EXISTING



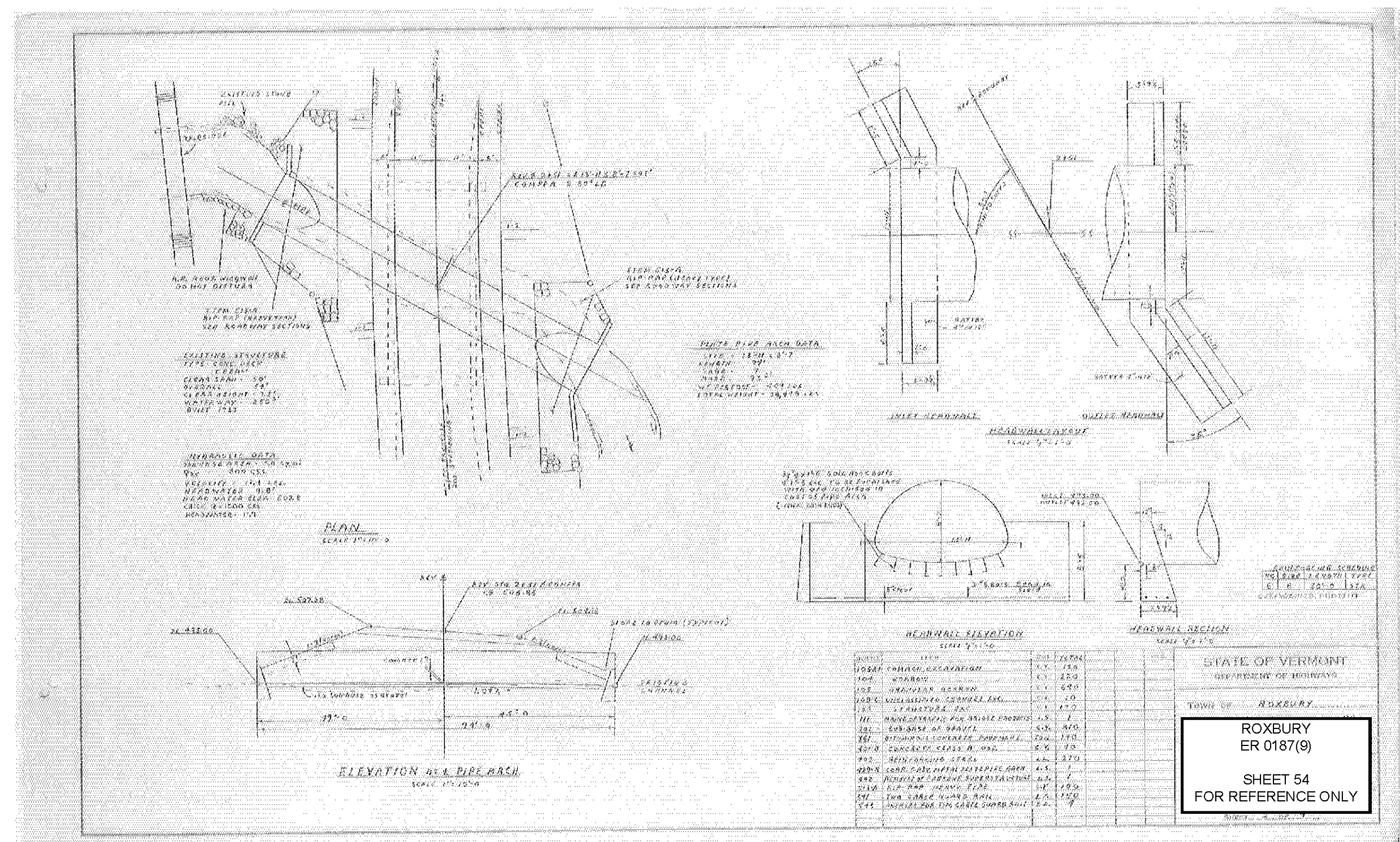
2+50



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	
PLOT DATE:	9/21/2011
DRAWN BY:	JTS/ISM
CHECKED BY:	G. BOGUE
SHEET	51 OF 54



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 2	
DATE:	9/21/2011
DRAWN BY:	JTS/ISM
CHECKED BY:	G. BOGUE
SHEET	52 OF 54



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

Company: Luck Brothers Inc

Address: 73 Trade Road

City, ST Zip: Plattsburgh, NY

Phone: (518) 561-4321

Date: 10-13-11

Job Name: Roxbury

Job Location: Roxbury, VT

Job Number: 12269

Regarding: Precast Submission

We are sending:

☐ Quote

☐ Specifications

☒ Shop drawings

☐ Prints

☐ Plans

☐ Copy of Letter

☐ Change Order

☒ Calculations

Copy to:

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

These items are submitted as checked below:

☒ 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,

By: Travis Brousseau

(SD Ireland representative)

10/13/11

(Date)

(Please print)

SD Ireland Concrete

Company:

Please note that revisions may affect price and lead time

Customer Approval:

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

Approved

Approved as noted

Approved as noted (resubmit for record)

Revise and resubmit

By: _____

(Signature)

(Date)

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

WELDING PROCEDURE SPECIFICATION

Material Specification

A709 TO A500 GR B

Welding Process

FCAW

Manual or Machine

SEMAUTOMATIC

Position of Welding

FLAT

Filler Metal Specification

A5.20 - 95

Filler Metal Classification

E71T-1H8 E71T-9H8 LINCOLN ULTRACORE

Flux

N/A

Shielding Gas

CO 2

Dew Point

-40DEG F

Flow Rate

50CFH

Single or Multiple Pass

SINGLE

Single or Multiple Arc

SINGLE

Welding Current

DC

Polarity

REVERSE ELECTRODE POSITIVE

Welding Progression

STRINGER

Root Treatment

CLEAN AS PER SECTION 603 OF THE NYSSCM

Preheat and Interpass Temperature

PREHEAT AS PER 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	
		TO	TO	TO	
		330	28	15.4	
Trans Received OK'd BY OCT 18 2011 Submitter APPROVED BY DATE 10/19/11					

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

Procedure No.

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
1	3/32	Amperes	Volts	12	
Variable	LIMITS	351 TO 429	25 TO 29	11 TO 13	

Vtrans
Received
OK'd BY

OCT 18 2011

Re-submit
BY

APPROVED
DATE

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

Elderies, Inc.

Revision No.

Authorized By

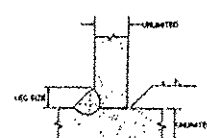
RANDY SCOTT

Date

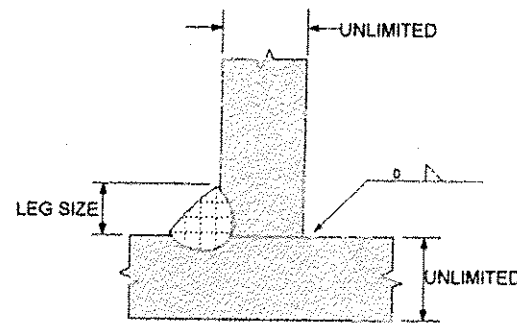
10/18/2011

LB FOSTER CO Precise Structural Products
Welding Procedure Specification

Page 1 of 2
3590-01

Material Spec. <u>ASTM A709 G36, G50 & G50W</u>	
Welding Process(es) <u>SMAW</u>	
Position of Welding <u>1F, 2F, 3F, 4F</u>	
Manual ☒ Machine ☐ Semi-Automatic ☐ Automatic ☐	
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 ☐ DCEP ☒ DCEN ☐ Pulsed ☐	
Welding Progression Up ☐ Down ☐	
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>	
WELDING PROCEDURE	
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	
OK'D BY _____ OK'D BY <u>JWC</u>	
OCT 13 2011	
RESUBMIT _____ APPROVED <u>✓</u>	
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

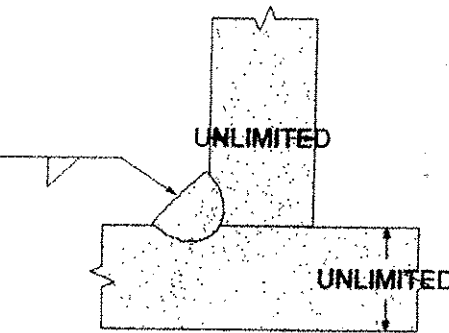
THIS PROCEDURE APPLIES TO TACK WELDING ONLY.
TACK LEG SIZE SHALL BE 1/8" OR 3/16".

LB FOSTER CO Precise Structural Products
Welding Procedure Specification

Page 1 of 2
3560-02

Material Spec: <u>ASTM A709 G36, G50 & G60W</u>		<u>AASHTO M270 G36, G50 & G60W</u>				
Welding Process(es) <u>SAW</u>						
Position of Welding <u>1F & 2F</u>						
Manual ☐ Machine ☐ Semi-Automatic ☒ Automatic ☐						
Filler Metal Specification <u>AWS A5.23</u>						
Filler Metal Classification <u>F7A2-ENi1K-Ni1-H8</u>						
Flux <u>LINCOLN 860</u>						
Shielding Gas <u>N/A</u>		Gas Flow Rate <u>N/A</u>				
Single or Multiple Pass <u>BOTH</u>						
Single or Multiple Arc <u>SINGLE</u>						
Welding Current <u>REVERSE</u>						
Polarity: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐						
Welding Progression Up ☐ Down ☐						
Root Treatment <u>CLEAN AS TO REMOVE CONTAMINANTS</u>						
Preheat Temperature <u>*** SEE PAGE 2</u>		Interpass Temperature <u>*** SEE PAGE 2</u>				
Postheat Treatment <u>N/A</u>						
Heat Input Min <u>48.55 KILOJOULES/IN</u> Max <u>75.29 KILOJOULES/IN</u>						
WELDING PROCEDURE						
Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other	Joint Detail
All	5/64	330-350	33-35	10-11		
TRANS RECEIVED OK'D BY <u>JWC</u> OCT 13 2011 RESUBMIT <u>✓</u> BY <u>DATE 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>001 - FILLET WELD</u> Contractor _____						
Revision No. _____ Authorized By <u>WALTER J. BORKOWSKI</u> Date <u>10/13/2011</u>						

Joint Detail

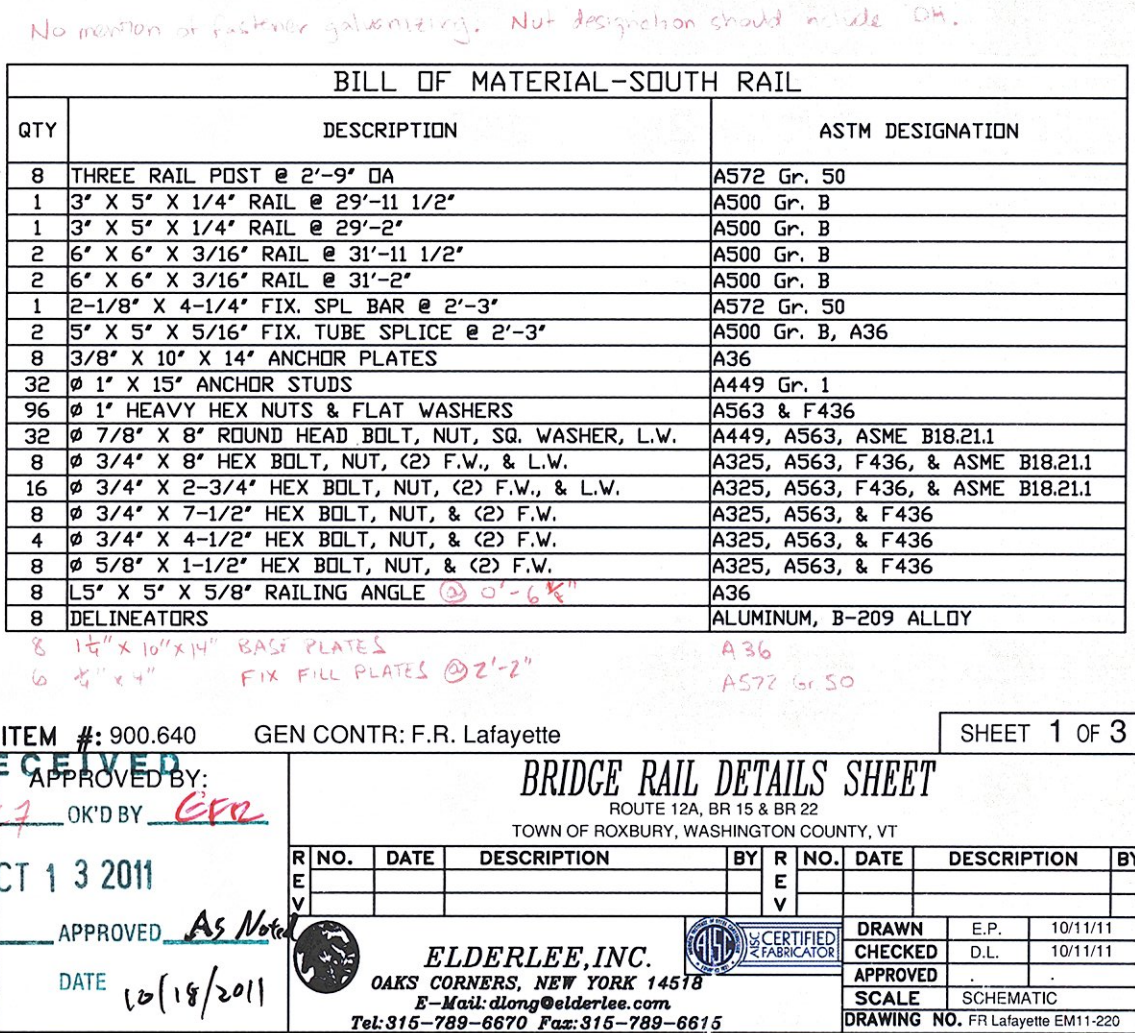


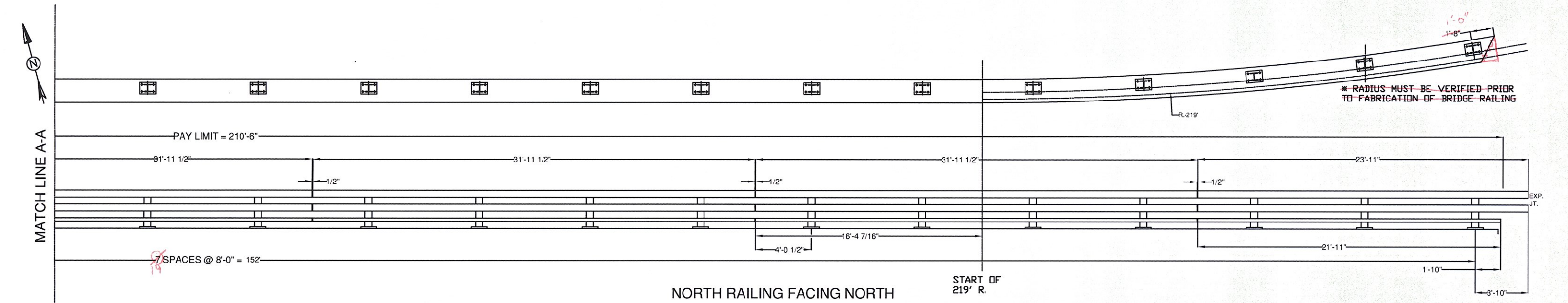
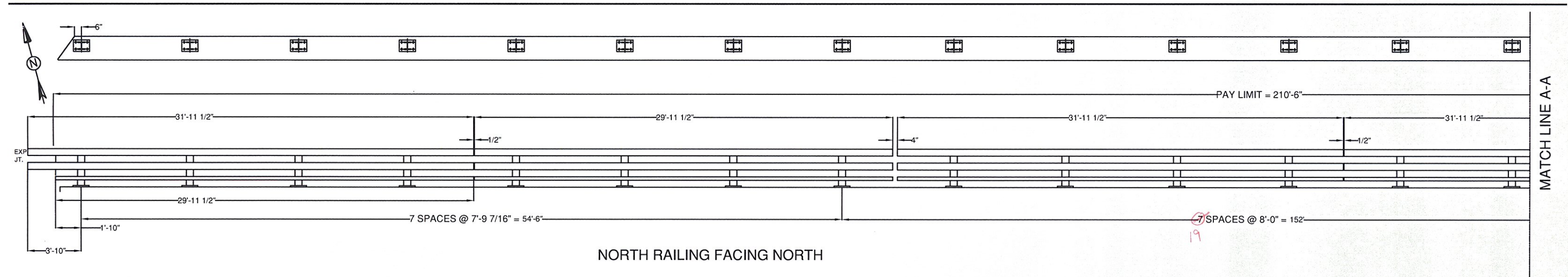
MEMO

*** 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.

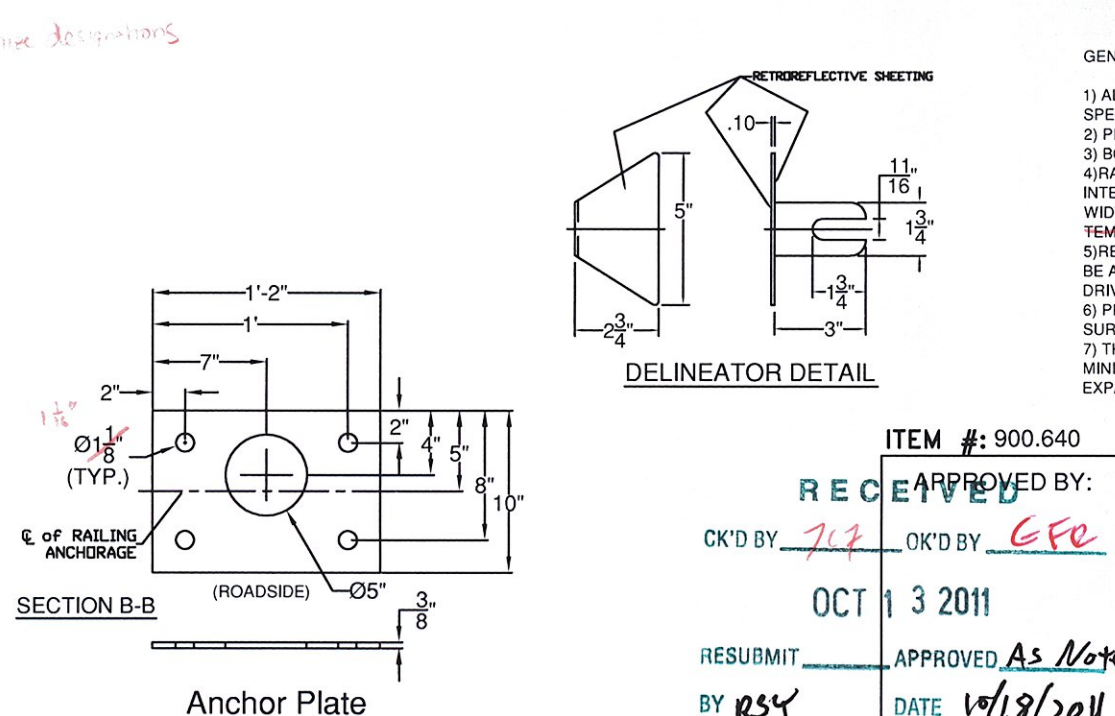
LEG DIMENSION SHALL BE 1/4", 5/16", 3/8.

PROCEDURE QUALIFICATION RECORD NUMBER SAW-01-2007





BILL OF MATERIAL-NORTH RAIL		
QTY	DESCRIPTION	ASTM DESIGNATION
27	THREE RAIL POST @ 29' OA	A572 Gr. 50
2	3" X 5" X 1/4" RAIL @ 29'-11 1/2"	A500 Gr. B
3	3" X 5" X 1/4" RAIL @ 31'-11 1/2"	A500 Gr. B
1	3" X 5" X 1/4" RAIL @ 21'-11 1/2" W/ PARTIAL 219' R.	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 29'-11 1/2"	A500 Gr. B
8	6" X 6" X 3/16" RAIL @ 31'-11 1/2"	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 31'-11 1/2" W/ PARTIAL 219' R.	A500 Gr. B
2	6" X 6" X 3/16" RAIL @ 23'-11" W/ 219' R.	A500 Gr. B
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.V.	A449, A563, ASME B18.2.1
27	3/4" X 8" HEX BOLT, NUT, (2) F.W. & L.V.	A325, A563, F436, & ASME B18.2.1
54	3/4" X 2-3/4" HEX BOLT, NUT, (2) F.W. & L.V.	A325, A563, F436, & ASME B18.2.1
48	3/4" X 1-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
24	3/4" X 4-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
27	5/8" X 1-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
27	1/2" X 5" X 5/8" RAILING ANGLE @ 6'x	A36
27	DELINATORS	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 SNUG TIGHT (APPROXIMATELY 100 FT-LB).
- 4) RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUBSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4" @ 68°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
- 5) RETROREFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 720.08 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 FOUR, IF ONE IS USED.

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

RECEIVED BY: *7/17* OK'D BY: *GFE*

OCT 3 2011

RESUBMIT APPROVED *AS NOTED* BY *RSY* DATE *10/18/2011*

BRIDGE RAIL DETAILS SHEET

ROUTE 12A, BR 15 & BR 22

TOWN OF ROXBURY, WASHINGTON COUNTY, VT

R. NO.	DATE	DESCRIPTION	BY	R. NO.	DATE	DESCRIPTION	BY
1				2			

ELDERLEE, INC.

OAKS CORNERS, NEW YORK 14518

8-Mile-long@elderlee.com

Tel: 315-788-8870 Fax: 315-788-8816

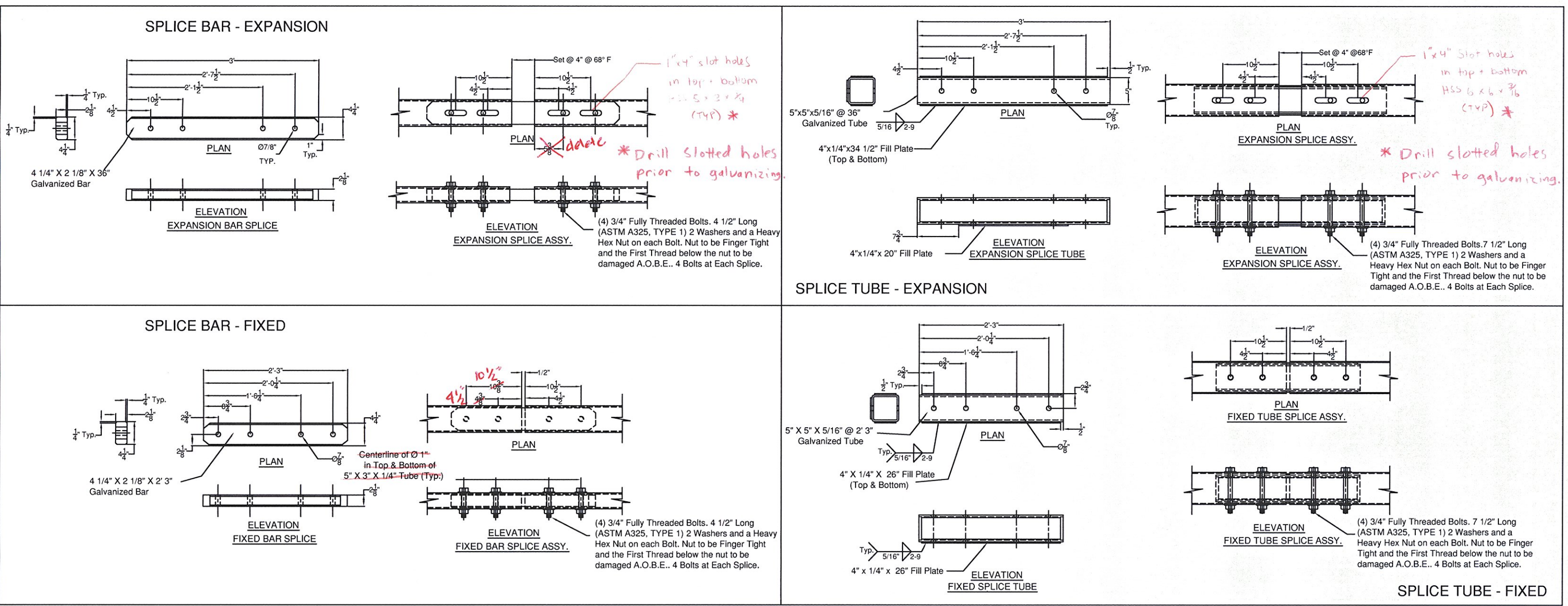
DRAWN E.P. 10/1/11

CHECKED D.L. 10/1/11

APPROVED A36

SCALE SCHEMATIC

DRAWING NO. FR Lafayette EM1 223



GENERAL NOTES:

1. PAD AND MATERIALS SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, DATED 2005 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 AWS/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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

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

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

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

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

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

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

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

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

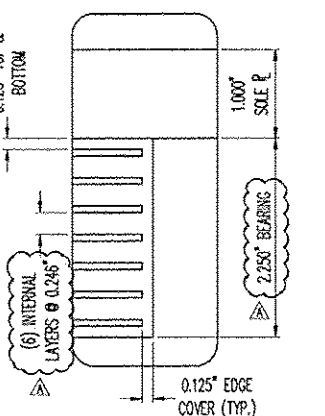
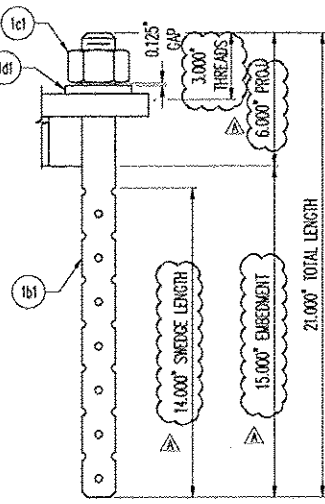
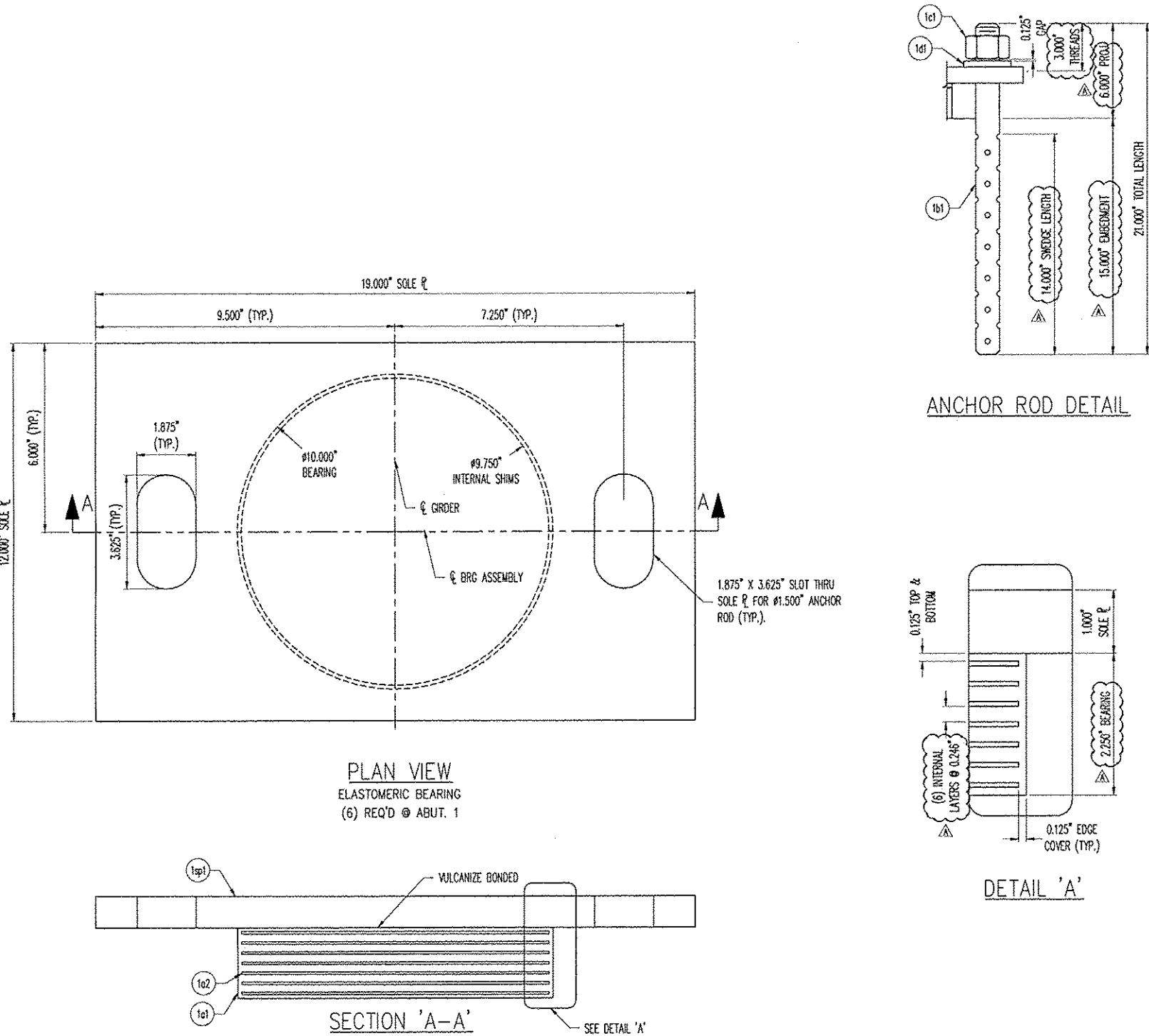
TOLERANCE TABLE	
DESCRIPTION (ELASTOMER)	TOLERANCE
ELECTRIFIC BEARING RESIN THICKNESS $\pm 1.50\mu$	$\pm 1.0\mu$ - 0
ELECTRIFIC BEARING PLAN $\pm 30^\circ$	$\pm 1.0^\circ$ - 0
ELECTRIFIC BEARING PLAN $\pm 1.50^\circ$	$\pm 1.0^\circ$ - 0
ELECTRIFIC COVER TOP & BOTTOM	$\pm 1.0^\circ$ - 0
ELECTRIFIC COVER SIDES	$\pm 1.0^\circ$ - 0
INDICATORS OF INDIVIDUAL LAYERS OF ELASTOMER LAMINATED SPRINGS	
WELD AT POINT BETWEEN THE SPRING	$\pm 1.0^\circ$
VARIATION FROM A PLANE PARALLEL TO THE THEORETICAL SURFACE	
AS DETERMINED BY MEASUREMENTS AT THE EDGE OF THE BEARING	
TOP	± 0.005 rad
SIDES	$\pm 1.0^\circ$
POSITION OF EXPRESSED CONNECTION MEMBERS	
EDGE EDGES OF EXPRESSED LAMINATES OF CONNECTION MEMBERS	$\pm 1.0^\circ$ - 0
TOP OF VERTICAL STUDS, OR INVERT	$\pm 1.0^\circ$ - 0
POSITION OF HORIZONTAL STUDS OR NAILS	$\pm 1.0^\circ$ - 0
STEEL PLATE PLAIN DISPOSITIONS	
TOP OF PLATE THICKNESS	$\pm 1.0^\circ$
WEDGE OF STUDS VERTICAL	$\pm 1.0^\circ$
TOP OF VERTICAL STUDS	$\pm 1.0^\circ$
STEEL PLATE REVEALED SURF	± 0.005 rad
PLATE SURF	0.005

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

STRUCTURES
COPY

RECEIVED
CK'D BY 77 OK'D BY 100
OCT 12 2011
RESUBMIT _____ APPROVED ☒
BY RSY DATE 10/13/2011

[illegible]



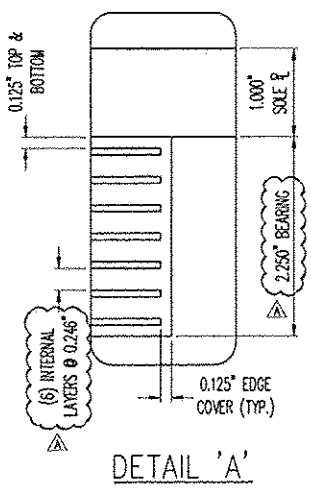
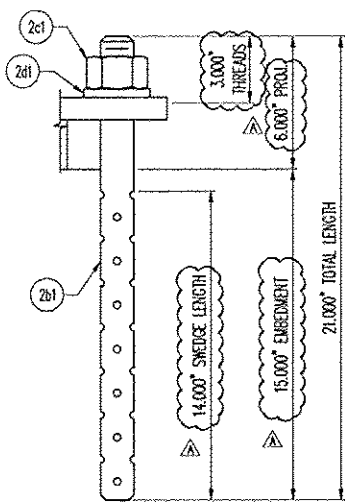
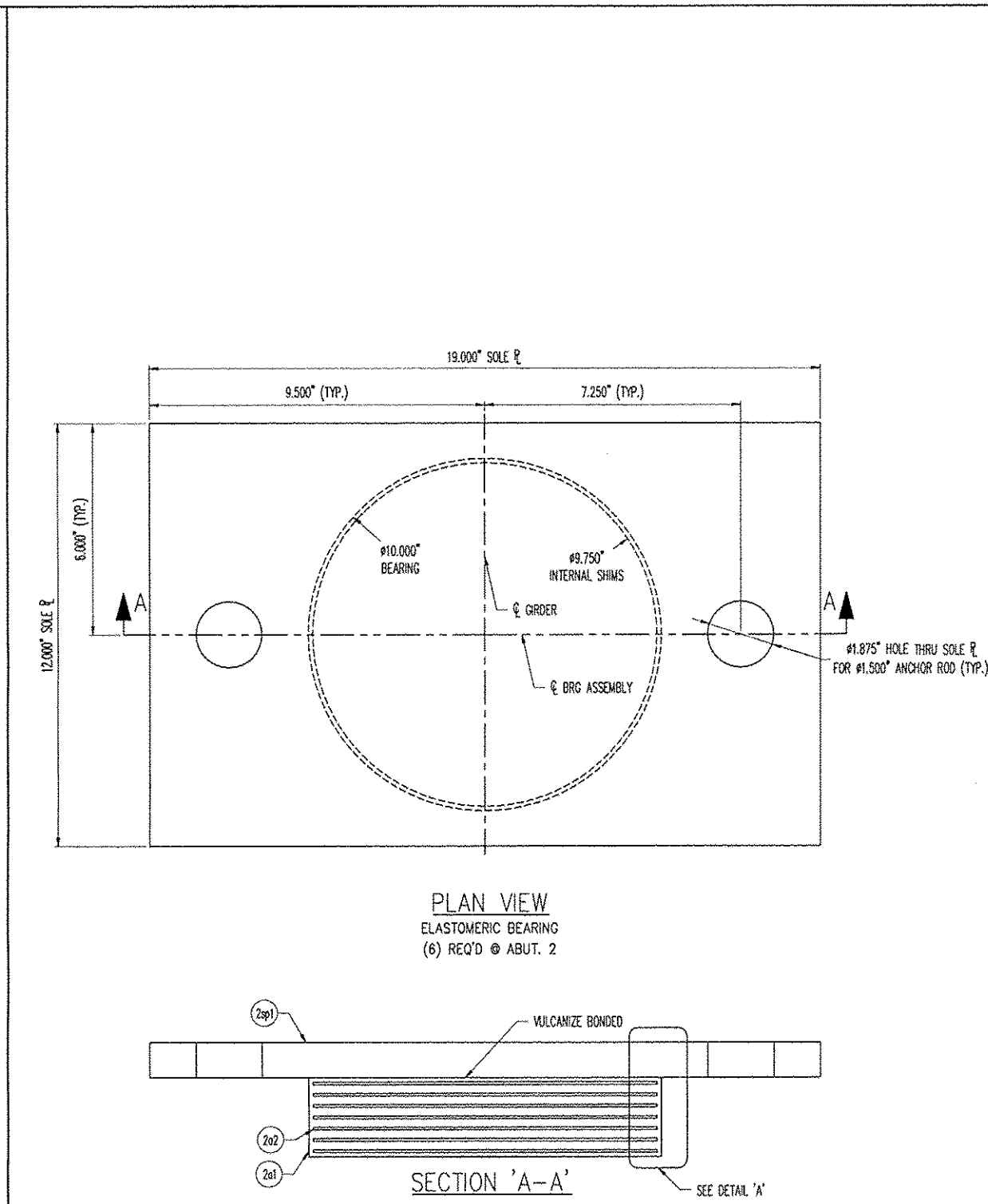
LOAD TABLE	
LIVE LOAD (KIPS)	60.0
DEAD LOAD (KIPS)	20.0

NO.	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	REV.
1A	6	ELASTOMERIC BEARING			50% 1-5 LAYER & 20% 6-10 LAYER	-
1a1	6	1.250\"/>	NATURAL RUBBER		MODULUS BETWEEN 14 & 17 PSI	A
1a2	6	14 GA. X 48.750\"/>	ASTM A1011	OR 36	PLAN	A
1a3	6	1.000\"/>	A193 OR 304 OR 316 (A193)	12.000\"	WITH-HOOD (A193)	-
1B	12	SHEARER ROD			3\"/>	-
1B1	12	0.500\"/>	A304 OR 316 (A193)		WITH-HOOD (A193)	A
1C	12	HEX NUT				-
1c1	12	0.500\"/>	A193 OR 304 OR 316 (A193)		WITH-HOOD (A193)	-
1D	12	WASHER PLATE				-
1d1	12	0.125\"/>	A304 (A193)	5.000\"	WITH-HOOD (A193)	-

REV. BRD. HEIGHT FROM 1.25 TO 2.25, BRD. MATERIAL, & ANCHOR ROD		DATE	BY	CHKD.
1	DESCRIPTION	10/7/11	DA	ANK
2	LOCATION — BRIDGE — 15	10/7/11	DA	ANK
3	PROJECT NO. — SHF 087(8)	10/7/11	DA	ANK
4	PROJECT NAME — ROXBURY	10/7/11	DA	ANK
5	CUSTOMER — VT DOT	10/7/11	DA	ANK
6	CUSTOMER — LUCK BROS. INC.	10/7/11	DA	ANK
7	VERSIFLEX ELASTOMERIC BEARING	10/7/11	DA	ANK
8	WASHINGTON CO., VT	10/7/11	DA	ANK

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

D.B. BROWN
305 E. CHERRY STREET
NORTH DAVENPORT, IOWA 52801
PH 563-321-1111
FAX 563-321-1112
WWW.DBBROWN.COM



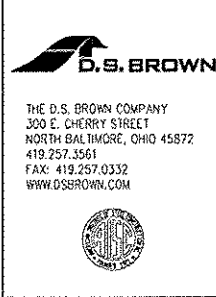
LOAD TABLE	
LIVE LOAD (KIPS)	60.0
DEAD LOAD (KIPS)	20.0

NO.	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	REV
2A	6	ELASTOMERIC BEARING			500 / 5 LBS. (250 LB. EACH)	-
2B	6	2.250" X 10.000"	NATURAL RUBBER		500 / 5 LBS. (250 LB. EACH)	A
2C	6	14 GA. X 10.000"	WIRE ROPE		WIRE ROPE (WIRE)	A
2D	6	1.000" X 10.000"	WIRE ROPE (WIRE)	12.000"	WIRE ROPE (WIRE)	A
2E	12	SWAGE ROD	MSH OR SI (F1554)		1.5" THICKNESS (1.5" THICKNESS)	A
2F	12	HEAVY HEX NUT	MSH OR SI (F1554)		MSH OR SI (F1554)	A
2G	12	HEAVY HEX WASH	MSH OR SI (F1554)		MSH OR SI (F1554)	A
2H	12	WASHER PLATE	MSH (A5)	1.000"	1.875" HOLE Ø COR. WITH HOLE Ø 1.875"	A

SEE SH. QNT FOR GENERAL NOTES.

REV. NO.	REV. DESCRIPTION	DATE	BY	CHK'D
1	REV. BEG. HEIGHT FROM 1.25 TO 2.25. BRG. MATERIAL & ANCHOR ROD	10/10/19	DA	ANK
2	REV. DESCRIPTION	10/10/19	DA	ANK
3	LOCATION — ROUTE 47 (2A) BRIDGE, 0.5 MILES NE OF GRANVILLE, VERMONT TOWN LINE	10/10/19	DA	ANK
4	BRIDGE — 15	10/10/19	DA	ANK
5	PROJECT NO. — 34574-1104-2	10/10/19	DA	ANK
6	PROJECT NAME — ROXBURY	10/10/19	DA	ANK
7	DESIGNER — VT DOT	10/10/19	DA	ANK
8	CUSTOMER — LUCK BROS. INC.	10/10/19	DA	ANK
9	VERSIFLEX LEASTOMERIC BEARING	10/10/19	DA	ANK
10	WASHINGTON CO., VT	10/10/19	DA	ANK

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



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.
VT 12A
Roxbury, VT

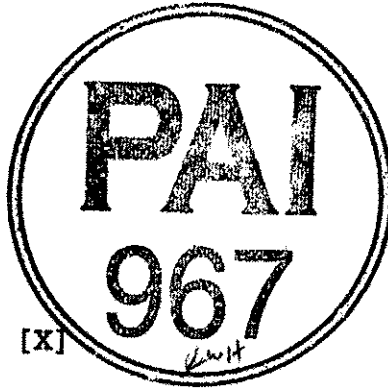
BILL TO:

ATTN: Ted Luck

JOB PHONE: 518.561.4321

COMPLETE SHIPMENT: []

PARTIAL SHIPMENT: [X]

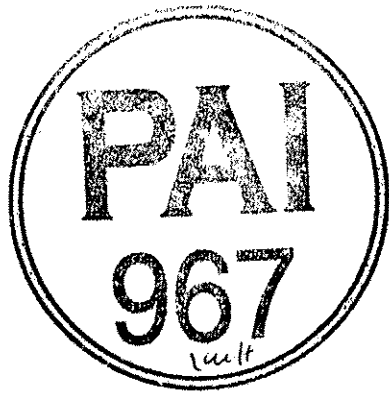


REMARKS: INSPECTION BY VT AOT

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 _____ Date _____
Shipping Insp. _____ Date _____
Final Q.C. _____ Date _____

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

ROTATIONAL CAPACITY TEST RESULTS

PO	197786
Project	
SO No	K80214
Invoice No	

Part No	RC0000720	Test Date	10/31/11	Manufacturer	Lot No		
Bolt	7/8(X)X 2" A325-3 BOLT			SLSB LLC.	517904		
Nut	7/8(X) HVY HEX NUT A563-DH3			UNYTTITE INC.	TB841		
Washer	7/8 F436 TYPE 3 WASHER			PRESTIGE STAMPING INC.	C3732		
Washer 2							
	Actual Installation Tension	Torque FT/LB At Installation Tension	Max. Torque FT/LB At Installation Tension <= 25	Final Rotation Degrees	Tension At Final Rotation LBS	Final Status	HD Galv. Avg. Thick. Or Mech. Galv. Avg. Thick.
Test 1	39,876	497	712	242	53,174	Passed	
Test 2	39,717	513	712	241	50,289	Passed	

HAYDON BOLTS, INC.

FOSTER PRECISE

Invoice No. D1101350

Cert No 53788 Inv Line No 10000 Item No CERTS

Invoice Date 10/31/11

Quantity 1 Lot No K80214

Customer PO 197786

Sales Order K80214

Heat

RO CAP

Assembly No

Haydon PO

Z03064

HAYDON BOLTS, INC.

Invoice No. D1101350		Customer PO 197786	
Cert No	Inv Line No	Item No	Inv Line No
51128	120000	AQA087200	
Invoice Date 10/31/11		Sales Order K80214	
Quantity 97		Lot No 517904	
		Heat CR 405900	
		Assembly No	
		Haydon PO Z05140	

LAKE ERIE
PRODUCTS

CUSTOM ENGINEERED FASTENERS

Date: 05-02-06

Certification: 148556*1*1

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

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

3281 WEST COUNTY ROAD ONE
FRANKFORT, INDIANA 46041-6766
T. 765.654.0477
F. 765.654.0857

TEST REPORT

Cust PO: SL11497

Lot Nbr: 517904

Quantity: 7587 Pieces

Mfg Date: 05-02-06

Part Number: AQA087200

Description: 7/8-9 X 2 A325-3

Finish: PLAIN

THREAD TO HEAD

Part INFORMATION

Head marking: A325 TYPE 3- BAR 1 DOT SL

Steel Heat Nbr: CR405900

Steel Supplier: Charter Steel

Steel Grade: A325 TYPE 3 CLASS

RAW MATERIAL ANALYSIS

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	B	N						
0.0010	0.0240	0.0080	0.0001						

MECHANICAL PROPERTIES

Wedge Angle: 0				
Test Performed	High	Low	Average	Samples
Superficial R30N	52.0	48.0	49.4	8
Core Hardness, HRC	31.0	28.0	29.4	8

Certification test results include those reported by the following laboratories:
Charter Steel, A2LA, 10-31-07
Lake Erie Products - 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 F789.
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

LAKE ERIE
PRODUCTS

10001
Gerald E. Simone
Quality Manager

5/15/06

0

CERT #0122-01 / #0122-02

MECHANICAL FIELD OF TESTING



TEST REPORT

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

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

Date: 05-02-06
Certification: 148556*1*1

Cust PO: SL11497
Lot Nbr: 517904
Quantity: 7587 Pieces
Mfg Date: 05-02-06

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
EL444 Test Methods.
These bolts passed carburization and decarburization tests, per SAE J121.
=====

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

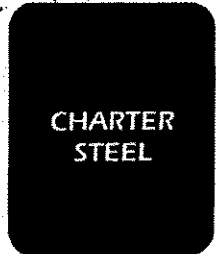
DEVIATIONS FROM THE TEST METHODS

None

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

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





CHARTER
STEEL

A Division of
Charter Manufacturing Company, Inc.

CHARTER STEEL TEST REPORT
Reverse Has Text And Codes

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

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

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

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

LAB CODE: 7388											
Chemistry	C	MN	P	S	SI	NI	CR	MO	CU	SN	V
WT%	0.36	0.98	0.016	0.012	0.240	0.33	0.51	0.01	0.32	0.009	0.001

AL N B TI NB											
0.024 0.0080 0.0001 0.001 0.002											
Jominy (HRC)	JOM01	JOM02	JOM03	JOM04	JOM05	JOM06	JOM07	JOM08	JOM09	JOM10	JOM11
56	53	51	49	44	41	37	35	33	31	29	29
JOM13 JOM14 JOM15 JOM16 JOM18 JOM20 JOM22 JOM24 JOM26 JOM28 JOM30 JOM32											
29 27 27 28 28 26 25 24 24 23 21 21											

JOMINY SAMPLE TYPE ENGLISH = B JOMINY LAB = 0358-01 DI = 2.67

CHEM. DEVIATION EXT.-GREEN = N/R

Test Results of Rolling Lot # 333677			
# of Tests	Min Value	Max Value	Mean Value
ROCKWELL B (HRBW)	1	53	53
ROCKWELL C (HRC)	0	0	0
ROD SIZE (Inches)	4	1.277	1.285
ROD OUT OF ROUND (Inches)	1	0.008	0.008
RB LAB = 0358-02			
RC LAB = N/R			
ASTA29 = Y			

NUM DECARB = 1 FREE FERRITE DECARB = 0.000 AVE DECARB = 0.004

QC DEVIATION EXT.-GREEN = N/R

Test Results of Processing Lot #	
Specifications:	Meets customer specifications with any applicable Charter Steel exceptions for the following customer documents: Customer Document = LE 1.1 Revision = 7 Dated = 12-FEB-2004
Additional Comments:	FINE GRAIN; TEST NOT REQUIRED IF ALUMINUM .020% OR GREATER. MEETS REQUIREMENTS OF A325 TYPE 3, CLASS A.



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

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

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

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

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

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

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



HAYDON BOLTS, INC.

FOSTER PRECISE

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

Customer PO 197786
Sales Order K80214
Heat M666329

Assembly No
Haydon PO
Z07283

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

INSPECTION CERTIFICATE

Customer

ASTM A-563
GRADE DH3
HEAVY HEX NUT

Specification

ASTM A-563
GRADE DH3
HEAVY HEX NUT

Size

7/8" - 9 UNC

Lot No.

7B841

Date

AUG. 23, '11

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

Mechanical properties tested in accordance to ASTM F606/F606M, ASTM A307, ASTM E18

Chemical Composition

(%)

	C	Si	Mn	P	S	Cu	Ni	Cr	Mo
MIN.	0.24	0.14	0.044	0.014	0.02	0.23	0.35	0.54	0.02
MAX.	0.24	0.14	0.044	0.014	0.02	0.23	0.35	0.54	0.02

Mechanical Property Inspection

Heat Treatment

Item	Proof Load	Core stripping	Hardness	After Heat Treatment	Hardness	Absorbed Energy	Heat Treatment
Spec. 80,850 lb	24 -38	-	HRC	H8-H8	5 Piece Average After Heat Treatment	1-1/4 in-lb	T: MIN. 800 F
n	n	n	27.3 27.2 27.2 27.3	n	n	n	Q: ROBBING Q (W.Q.) T: 1175 F/45M (W.C.) Q: Quenching T: Tempering ST: Solution Treatment
Results	Results	Results	27.2	Hardness Treatment After 24 H.O.X. 117C	n	n	n
GOOD	-	-	-	-	-	-	-

Shape & Dimension

Inspection

ANSI B18.2.2
GOOD

Thread Precision

Inspection

ANSI B1.1
CLASS 2B
GOOD

Appearance

Inspection

GOOD

Remarks

* DH3 U *

Production Quantity 76,050 pcs.

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

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

Chief of Quality Assurance Section

HAYDON BOLTS, INC.

FOSTER PRECISE

Invoice No. D1101350
Cert No Inv Line No Item No
51210 140000 WRW087

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

Customer PO 197786
Sales Order K80214
Heat
A25898

Assembly No

Haydon PO
Z07086



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
1151 UNITY ST
PHILADELPHIA, PA 19124-3196

Customer Part: 7/8" P436 TYPE 3 Steel Supplier: MID STATE INDUSTRIES
Prestige Part: E1700CH00 Grade: SAE CP436 TYPE3 STEEL
Part Name: 7/8" P436 TYPE 3 Lot: C3732
Purchase Order: 207086-1 Heat: A25898
Shipment BOL: E145747 Carbon: .40 (.33 - .46)
Shipment ID: A0155441 Manganese: .71 (.6 - 1.2)
Quantity: 35000 Phosphorous: .012 (.04 Max.)
Manufacturers Marking: "P" Sulfur: .001 (.05 Max.)
Silicon: .18 (.15 - .35)

SPECIFICATIONS

HARDNESS: TEST METHOD: ASTM E18
HRC 38 - 45
ASTMF-606

TEST RESULTS

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.
This product conforms to all requirements for washers as produced according to A.S.T.M. F-436.
Sampling Plan per P.S.I. W.I. # S-4-15.015.
The test results only apply to the items tested.
This test report must not be reproduced except in full without prior written approval.
Materials used to manufacture these products are mercury, asbestos and radio activity free.

FRANK SCHUBERT
Quality Assurance Manager

C3732

Mid-State Industries, LLC

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

Material Certification of Analysis

Customer: Prestige Stamping Inc Date: Feb 15, 2011
23212 Groesbeck 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

1504640

ArcelorMittal

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

ATTENTION: Rod S

END USE: WEATHERING UEXP MELTED/MFG. IN U.S.A.

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

-----CERTIFICATION-----

DETAIL						
TAG NBR	N.O. #	LOT NBR	GAUGE(IN)	WIDTH(IN)	QUANTITY UM	WEIGHT UM
828590	A22556	A25898	0.1360	51.2000	44750 LBS	44750. LBS
828591	A22556	A25898	0.1360	51.2000	45950 LBS	45950. LBS
828592	A22557	A25898	0.1360	51.2000	45830 LBS	45830. LBS
828593	R22558	A25898	0.1360	51.2000	46860 LBS	46860. LBS

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

ALL BOLTS FOR THIS PROJECT SHALL BE HIGH STRENGTH HEX HEAD BOLTS AND CONFORM
ASTM A325 TYPE 2

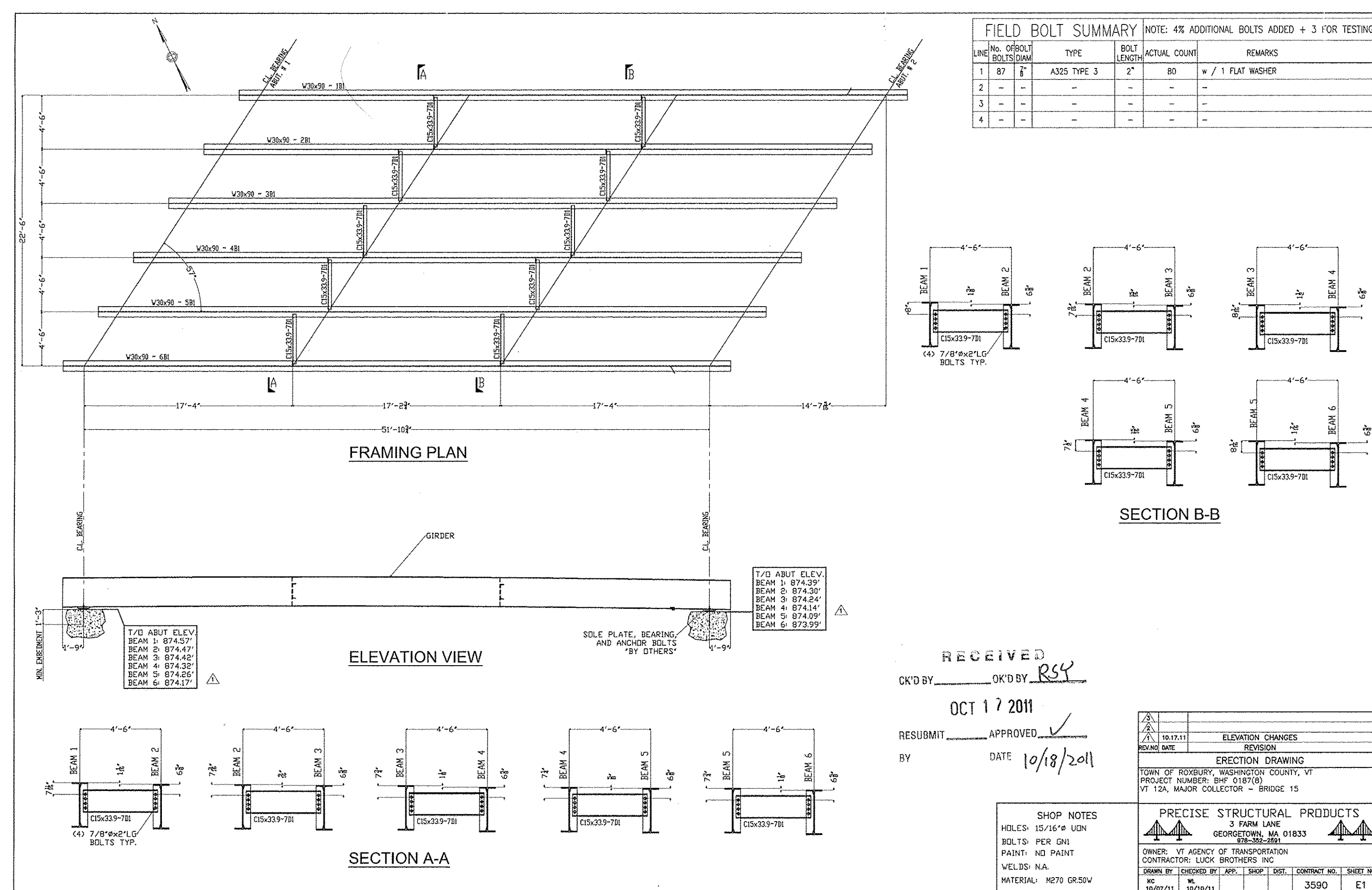
The complete bolt, washer and nut configuration needs to be tested and certified as a unit per subsection 714.05 of the Standard Specifications for Construction.

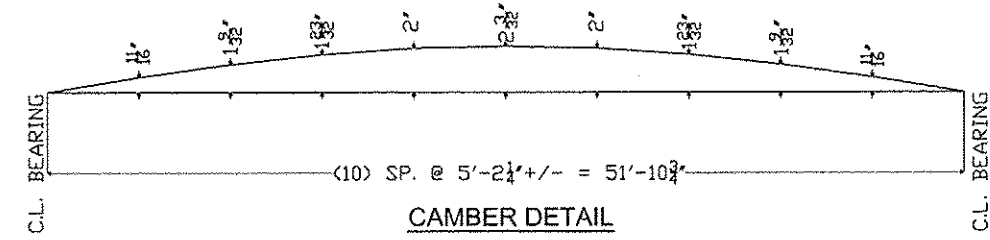
MAIN LOAD CARRYING MEMBERS ARE ALL STRINGER BEAMS.

THE BOTTOM FLANGE OF STEEL BEAMS AT BEARING AREA

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

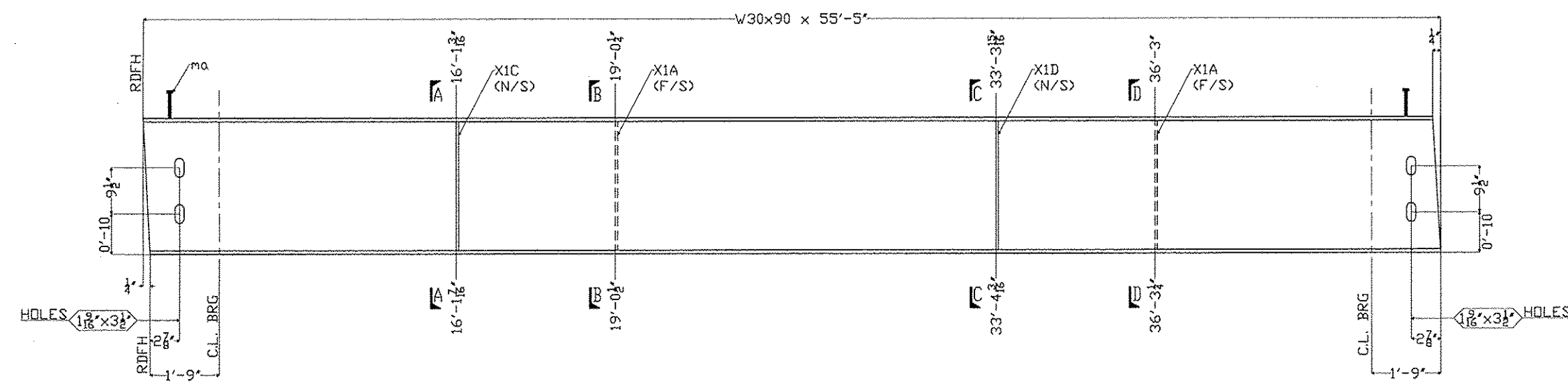
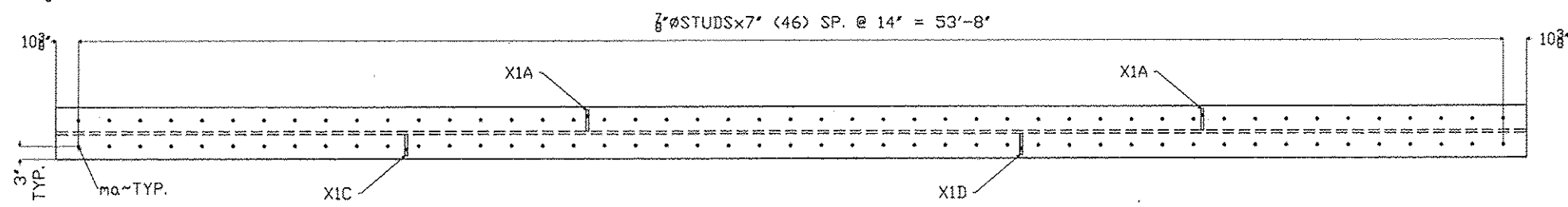
																																																																																																																																																																																															
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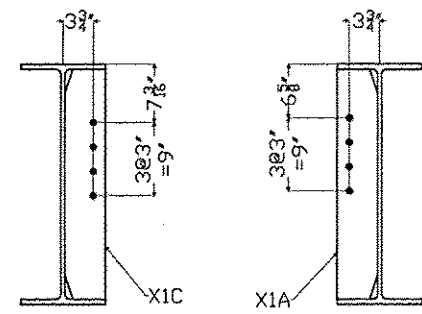


TYP. DIAPHRAGM STIFFENER
WELD DETAIL

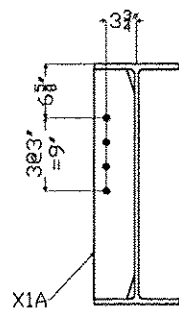
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OR $\frac{7}{8}$ " MAX.



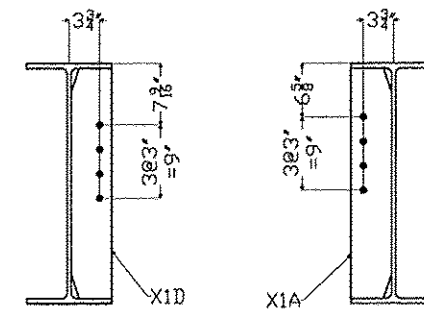
ONE ~ GIRDER DETAIL ~ 2B1



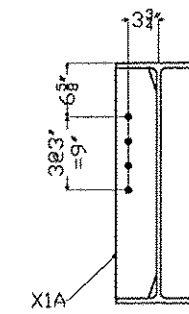
SECTION A-A



SECTION B-E



SECTION C-C

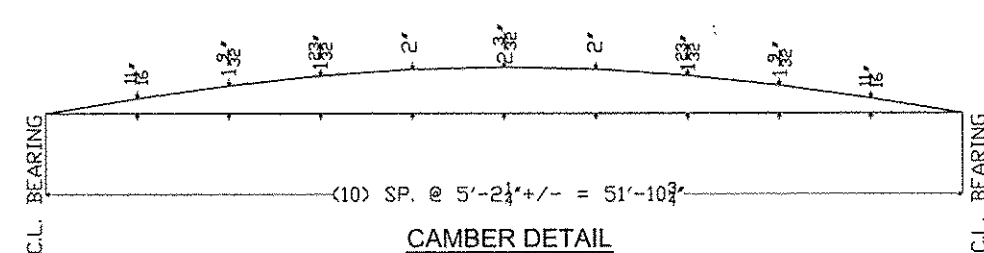


SECTION D-D

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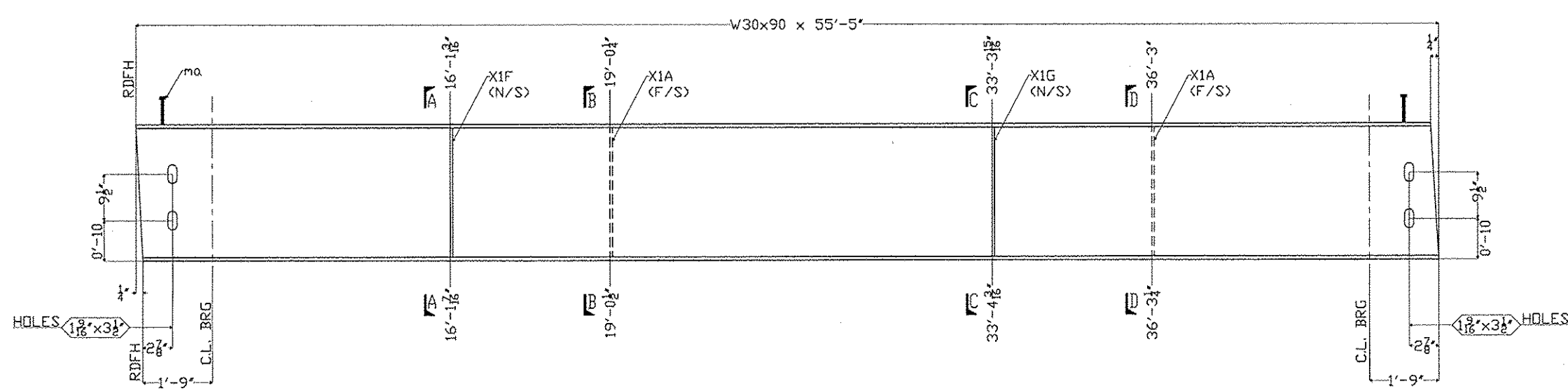
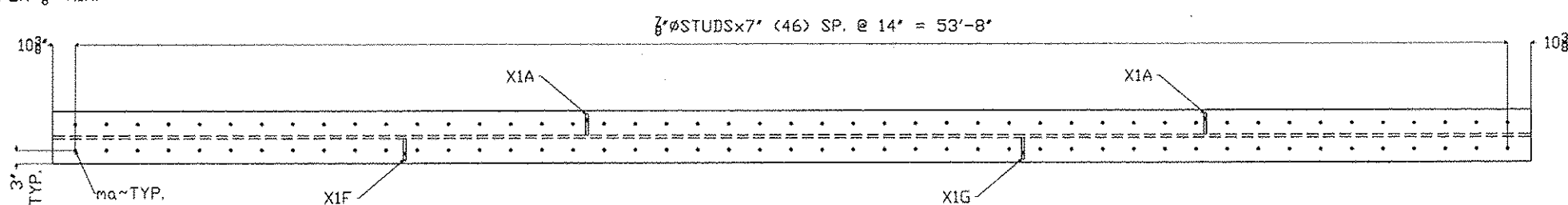
RECEIVED
CK'D BY _____ OK'D BY RSY
OCT 17 2011
RESUBMIT _____ APPROVED ✓
BY _____ DATE 10/19/2011

					
REVISION DATE		REVISION			
GIRDER DETAIL					
TOWN OF ROXBURY, HAMPSHIRE COUNTY, VT					
PROJECT NUMBER: BHF 0187(8)					
VT 124, MAJOR COLLECTOR - BRIDGE 15					
PRECISE STRUCTURAL PRODUCTS					
3 FARM LANE					
GEORGETOWN, MA 01833					
978-252-2591					
					
OWNER: VT AGENCY OF TRANSPORTATION					
CONTRACTOR: LUCK, BROTHERS INC					
DESIGNED BY	CHECKED BY	APPR.	SHOP	DIST.	SHEET NO.
KC	MC				
10/27/11	10/10/11				
				3590	2

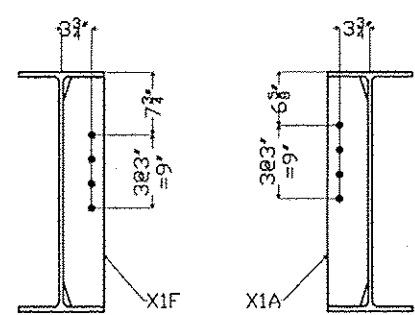
CAMBER DETAIL

TYP. DIAPHRAGM STIFFENER
WELD DETAIL

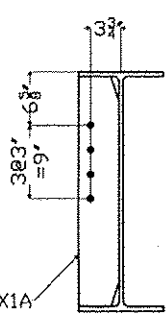
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OR $\frac{7}{8}$ " MAX.



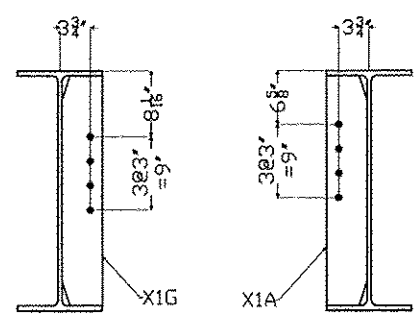
ONE ~ GIRDER DETAIL ~ 3B1



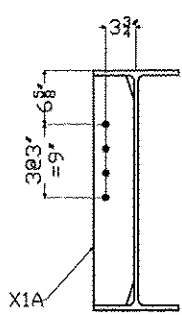
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

SHIPPER		BILL OF MATERIAL					ITEM	QTY
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS		
I	3BI			W/30"x90"	55'-5"	CVN		
		2	XIA	PL 4"x6"	2'-6"	CVN		
		1	XIF	PL 4"x6"	2'-6"	CVN		
		1	XIG	PL 4"x6"	2'-6"	CVN		
		94	no	3/8" STUB	0'-7"			

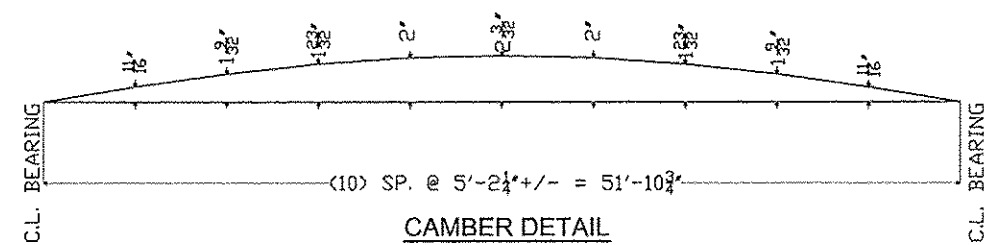
RECEIVED
CK'D BY _____ OK'D BY RSY

OCT 17 2011

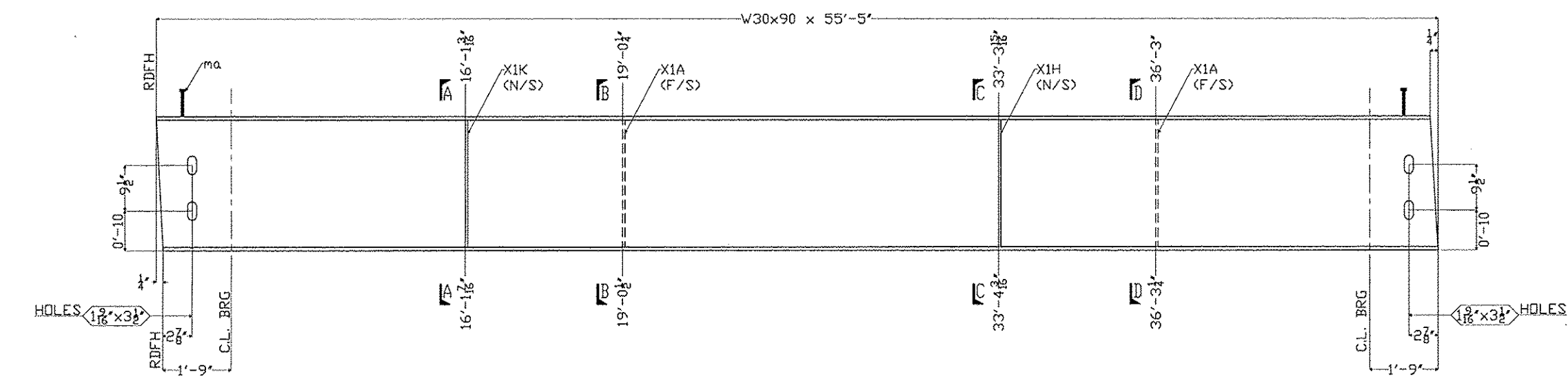
RESUBMIT APPROVED ✓

BY _____ DATE 10/18/201

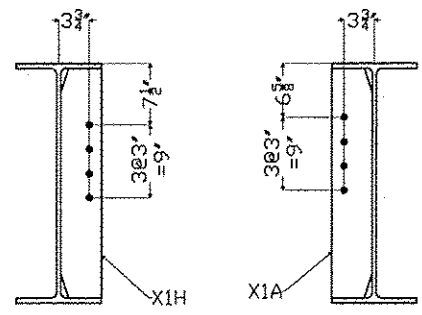
							
REV NO		DATE		REVISION			
GIRDER DETAIL							
TOWN OF ROXBURY, WASHINGTON COUNTY, VT							
PROJECT NUMBER: BHF 0187(S)							
VT 12A, MAJOR COLLECTOR - BRIDGE 15							
PRECISE STRUCTURAL PRODUCTS							
		3 FARM LANE GEORGETOWN, VT 05733 878-332-2681					
OWNER: VT AGENCY OF TRANSPORTATION							
CONTRACTOR: LUCK BROTHERS INC							
DESIGN BY	CHECKED BY	APPV.	SHOP	DET.	CONTRACT NO.	SHEET NO.	
10/07/11	KL	10/10/11			3590	3	



* NO WELD FOR 3' MIN
OR 2' MAX.



ONE ~ GIRDER DETAIL ~ 4B1

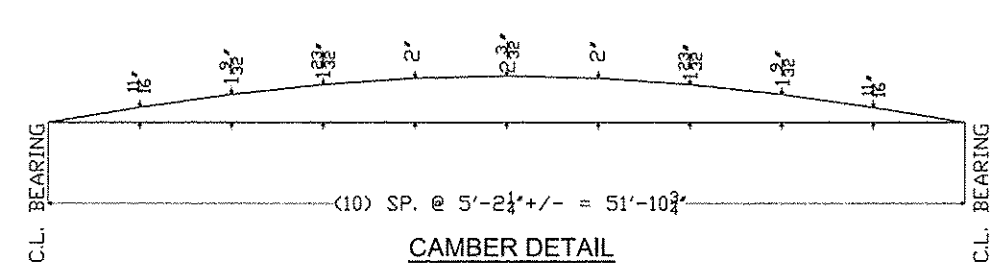


SECTION D-D

SHIPPER		BILL OF MATERIAL						
NO.	MARK	NO.	MARK	SIZE	LENGTH	REMARKS	ITEM	WEIGHT
1	431			W30x90	55'-5"	CVN		
		2	XIA	FL4x5	2'-4 1/2"	CVN		
		1	XIH	FL4x5	2'-4 1/2"	CVN		
		1	XIK	FL4x5	2'-4 1/2"	CVN		
		94	no	2" STUD	0'-7"			

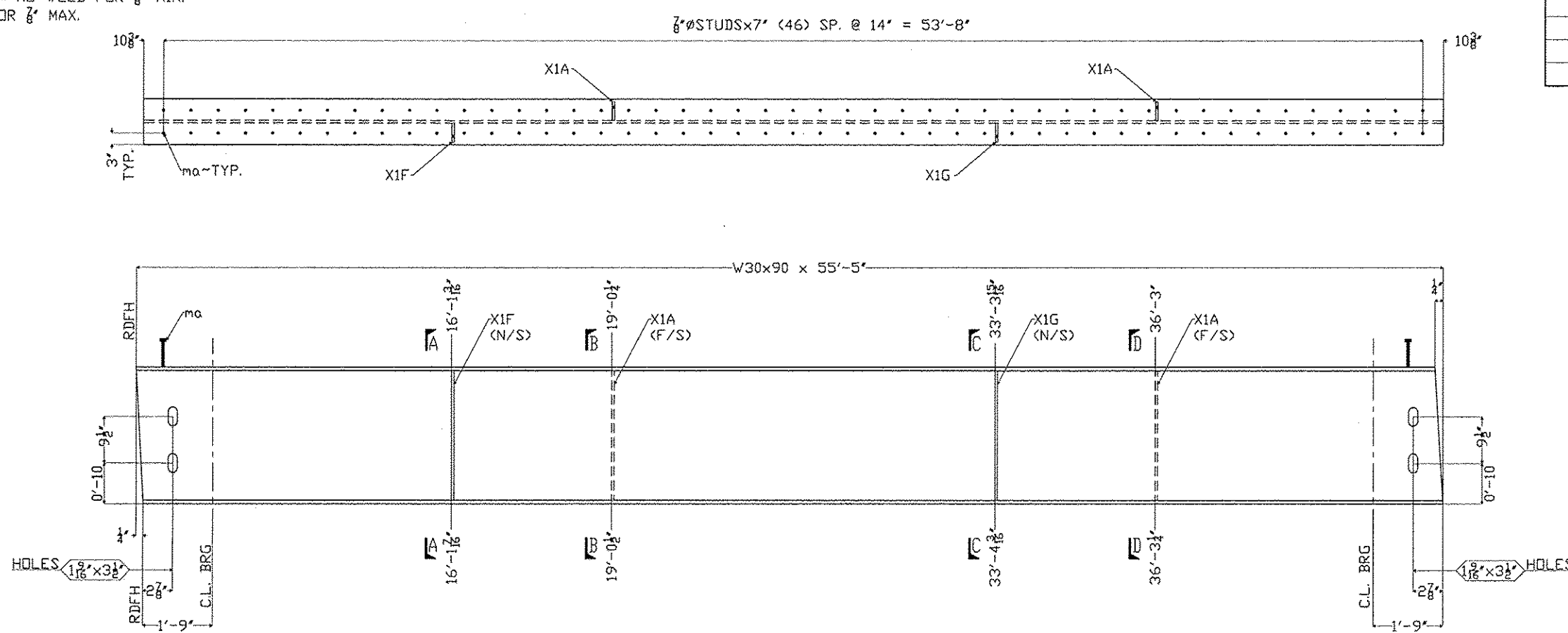
RECEIVED
OK'D BY _____ OK'D BY RSY
OCT 17 2011
RESUBMIT _____ APPROVED ☒
BY _____ DATE 10/18/2011

									
REV. NO.		DATE		=		REVISION			
GIRDER DETAIL									
TOWN OF ROXBURY, WASHINGTON COUNTY, VT									
PROJECT NUMBER: BH# 0187(8)									
VT 12A, MAJOR COLLECTOR - BRIDGE 15									
PRECISE STRUCTURAL PRODUCTS									
		3 FARM LAKE GEORGETOWN, MA 01833 978-252-2591							
OWNER: VT AGENCY OF TRANSPORTATION									
CONTRACTOR: LUCK BROTHERS INC									
DRAWN BY	CHECKED BY	APP.	SEAL	DATE	CONTRACT NO.	SHEET NO.			
10/07/11	WE	10/10/11			3590	4			

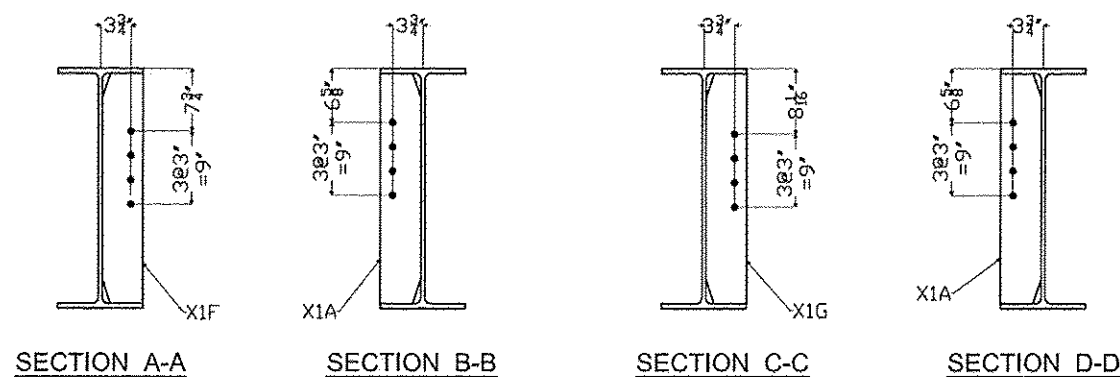


TYP. DIAPHRAGM STIFFENER
WELD DETAIL

* NO WELD FOR 3' MIN.
OR 2' MAX.

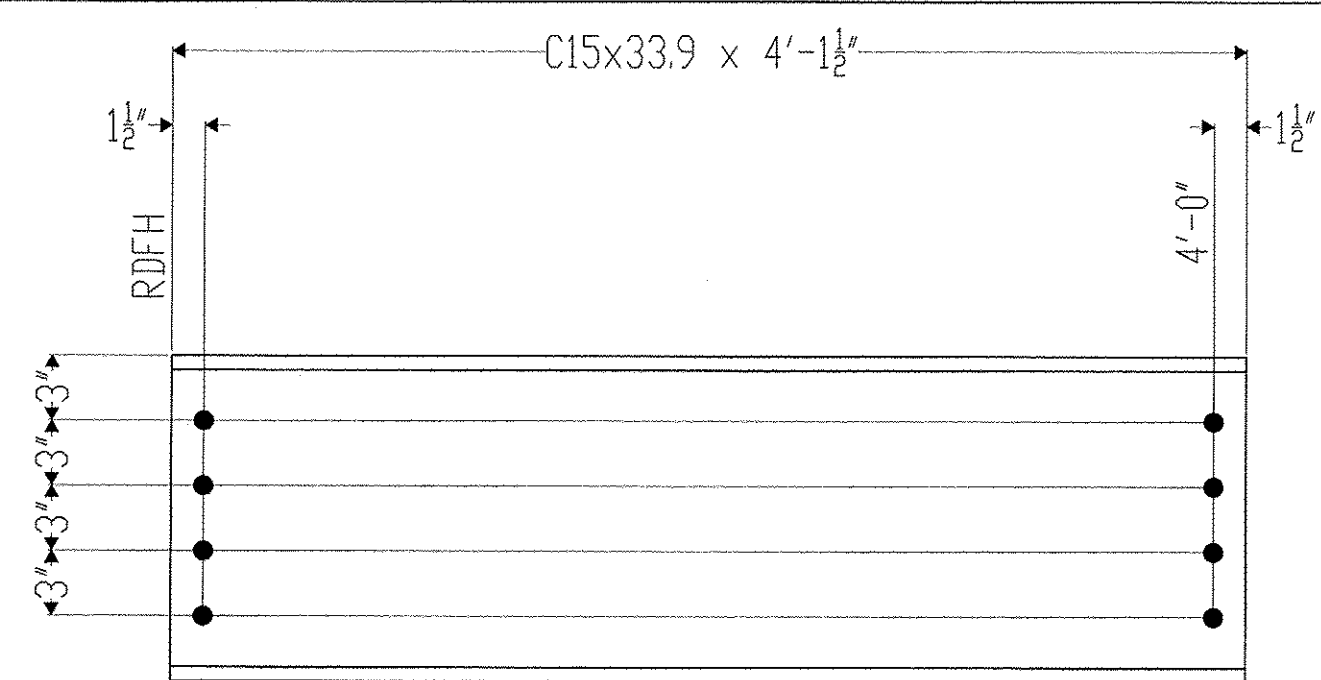


ONE ~ GIRDER DETAIL ~ 5B1

[illegible]

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

									
REV. NO.		DATE		REVISION					
GIRDER DETAIL									
TOWN OF ROXBURY, WASHINGTON COUNTY, VT									
PROJECT NUMBER: BHF 0187(8)									
VT 12A, MAJOR COLLECTOR - BRIDGE 15									
PRECISE STRUCTURAL PRODUCTS									
		3 FARM LANE GEORGETOWN, NH 01833 (703-352-2581)							
OWNER: VT AGENCY OF TRANSPORTATION									
CONTRACTOR: LUCK BROTHERS INC									
DRAWN BY 10/07/11	CHECKED BY 10/08/11	APP.	SHOP	DIST.	CONTRACT NO. 3590		SHEET NO. 5		



10 ~ DIAPHRAGMS ~ 7B1

RECEIVED

CK'D BY _____ OK'D BY RSY

OCT 17 2011

RESUBMIT ☐ APPROVED ☒

BY _____ DATE 10/18/2011

[illegible][illegible]

DATE	REVISION
DIAPHRAGM DETAIL	

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

PRECISE STRUCTURAL PRODUCTS

3 FARM LANE
GEORGETOWN, MA 01833

OWNER: VT AGENCY OF TRANSPORTATION
CONTRACTOR: LUCK BROTHERS INC

WH	CHKD BY	APP.	SHOP	DIST.	CONTRACT NO.	SHEET
	WL				3500	7

07/11	10/10/11				3350	7
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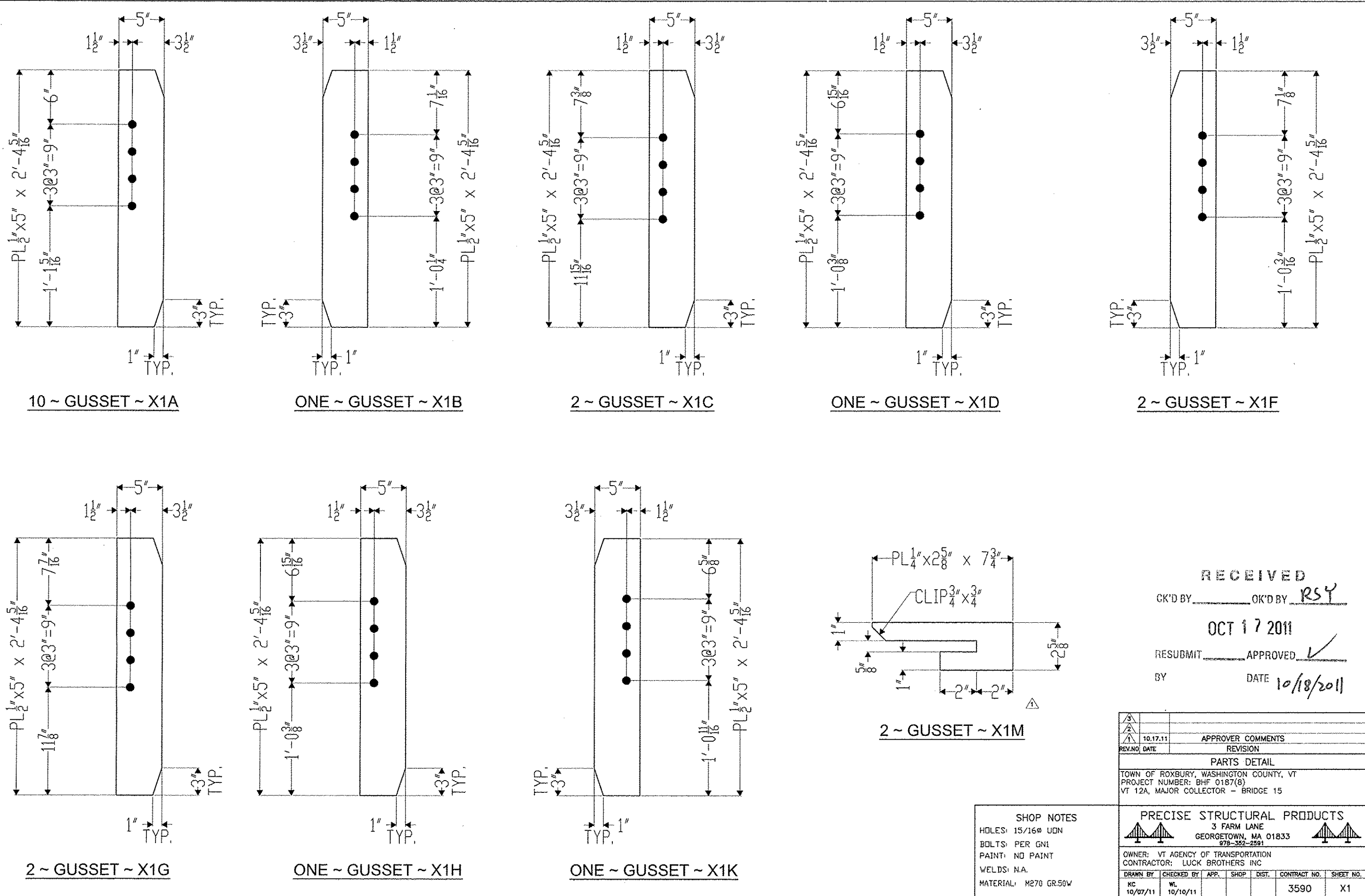
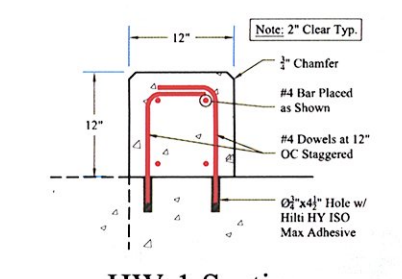
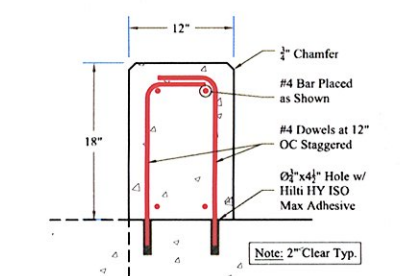


Table of Units				
Name	Qty	Length	Vol (CY)	Wt (lbs)**
RF-1	1	7'-11 1/2"	15.43	65,710
RF-2	8	7'-11 1/2"	15.20	66,790
RF-3	1	7'-11 1/2"	12.51	50,050
RF-4	1	7'-11 1/2"	12.59	50,370
WW-1	1	16'-3 1/2"	7.98	31,900
WW-2	1	6'-2 1/2"	2.77	11,085
WW-3	1	16'-4 1/2"	7.98	31,915
FT-1	1	14'-4 1/2"	9.84	39,360
FT-2	1	11'-5 1/2"	7.47	29,890
FT-3	1	15'-5 1/2"	10.04	40,150
FT-4	1	16'-0"	11.68	46,725
FT-5	8	16'-0"	12.25	48,990
FT-6	1	15'-0"	7.22	28,890
FT-7	1	12'-0"	5.78	23,111

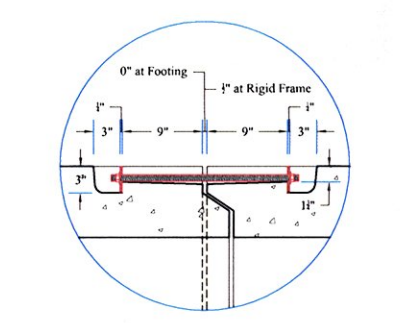
* Headwalls Not Included (By Others) ** May Vary



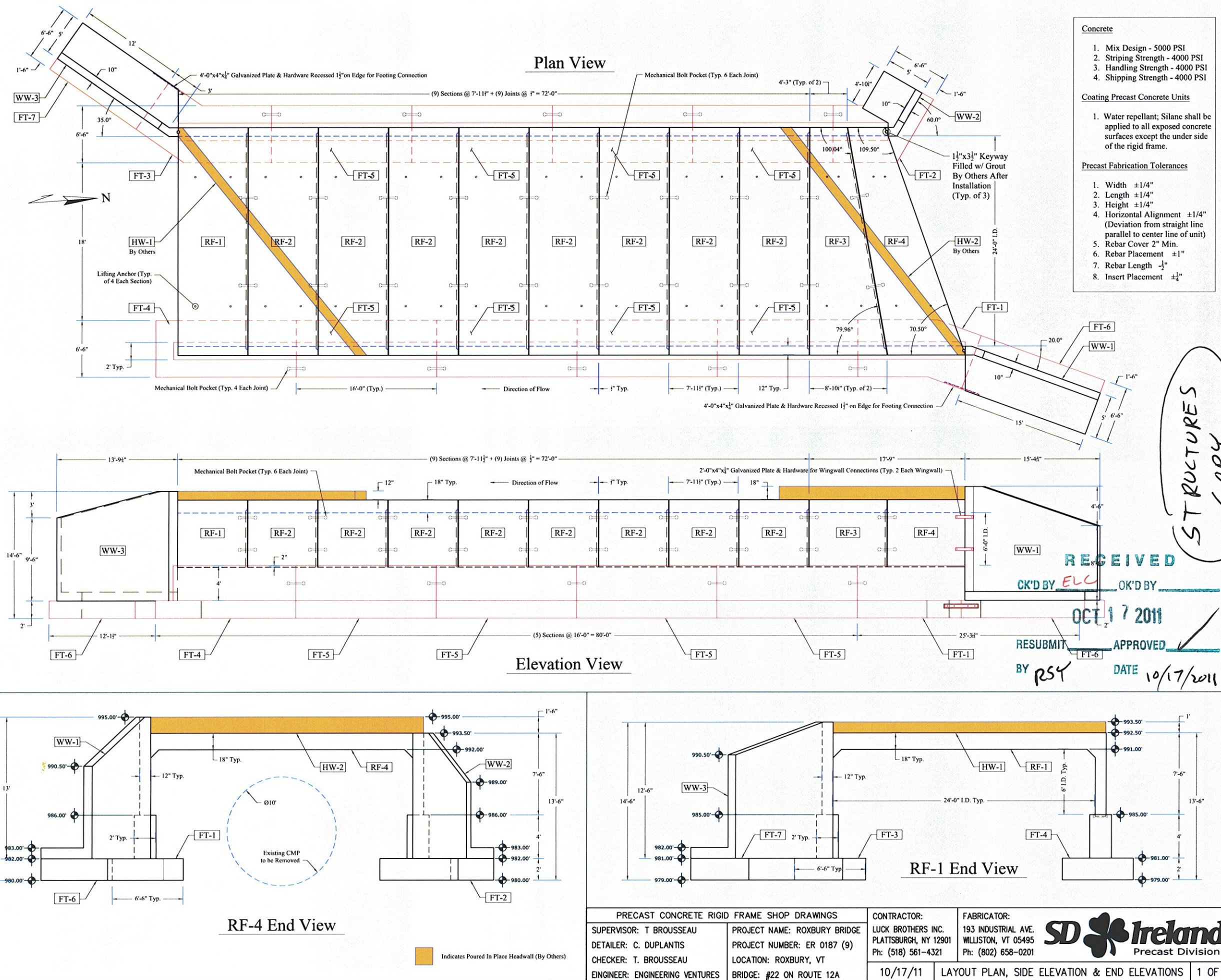
HW-1 Section

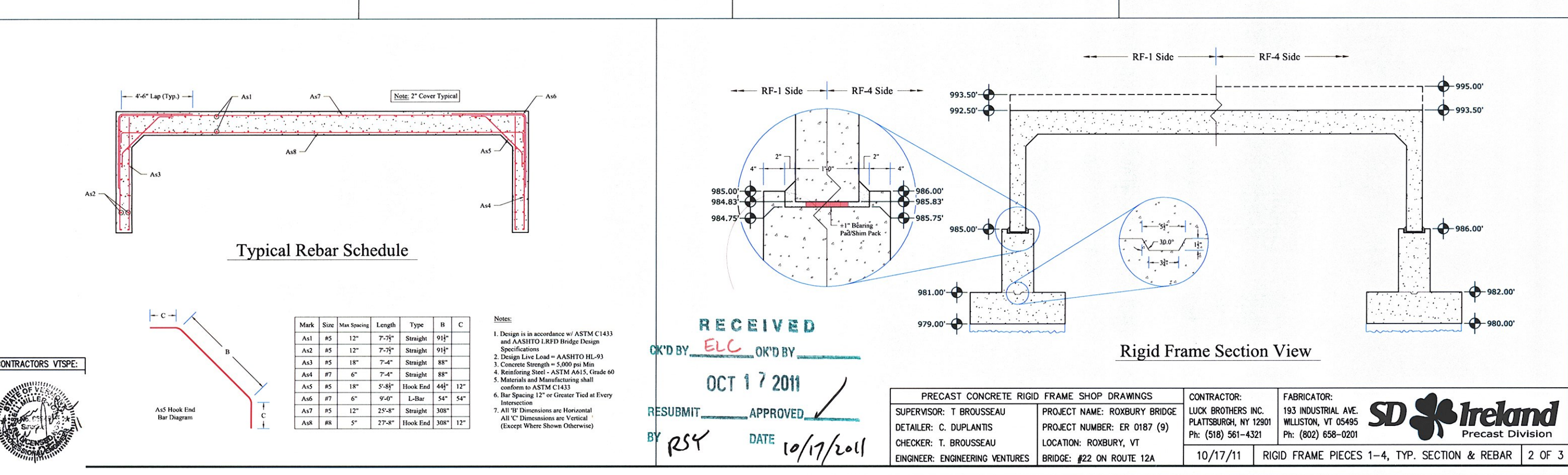


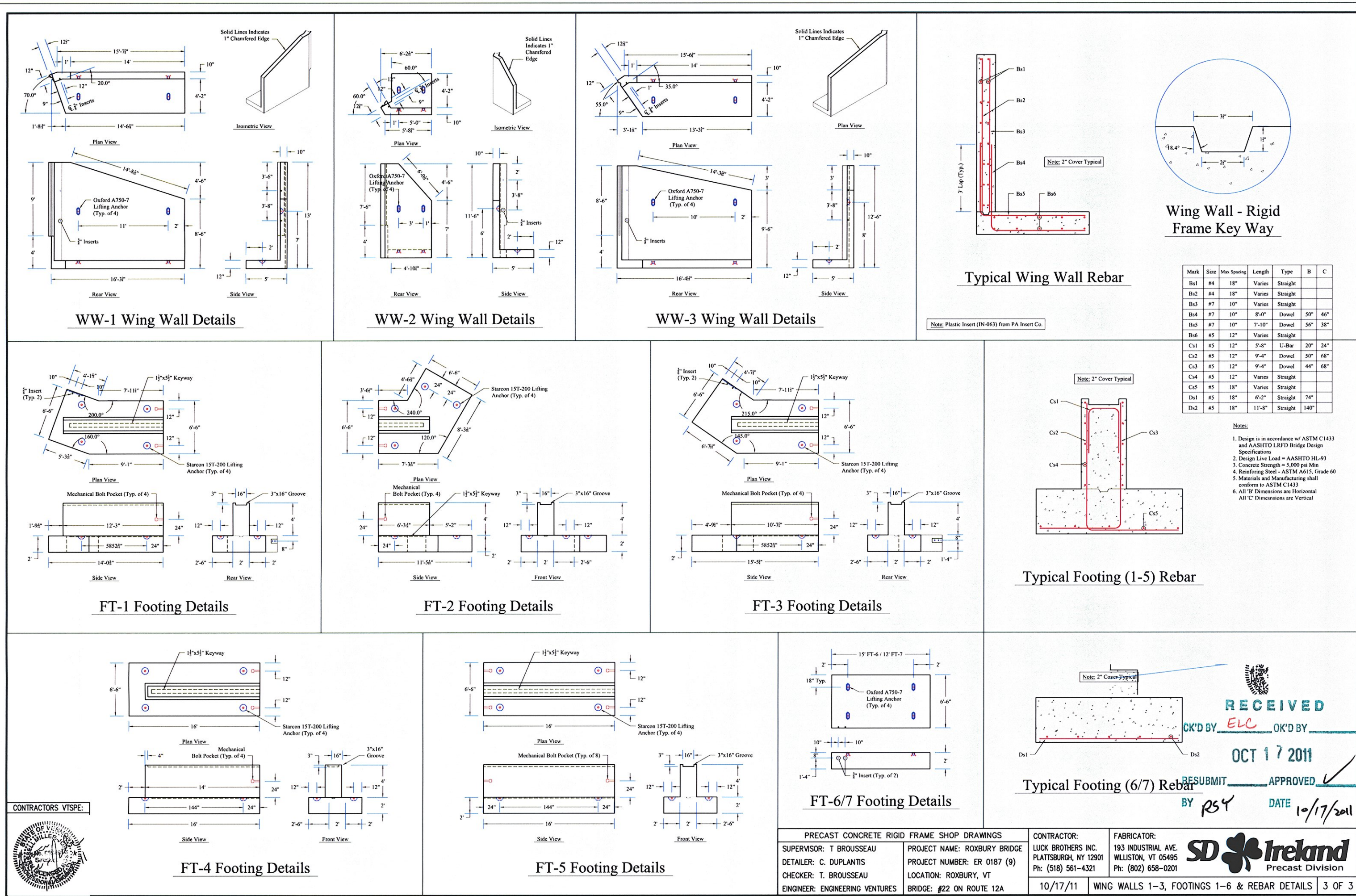
HW-2 Section



CONTRACTOR'S TYPE:
Typical Bolt
Pocket Sect.
Rigid Frame
& Footing







Concrete

1. Min. Design - 4000 PSI
2. Striping 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

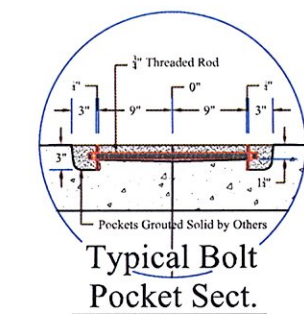
1. Width $\pm 1/4"$
2. Length $\pm 1/4"$
3. Height $\pm 1/4"$
4. Horizontal Alignment $\pm 1/4"$
(Deviation from straight line parallel to center line of unit)

*Wing Wall Dimensions are from Center Drawings Sheet 13 of 54 & w/ Conversation w/ R. Young
5. Rebar Placement $\pm 1"$
6. Rebar Length $\pm 1/4"$

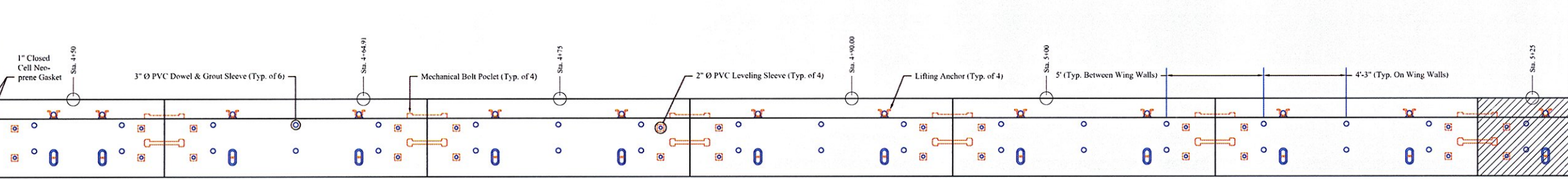
Table of Units

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	16,959
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	15,400
WW-8	1	13'-0"	3.77	15,075
WW-9	1	13'-0"	3.69	14,770
WW-10	1	7'-0 1/2"	1.89	7,550
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

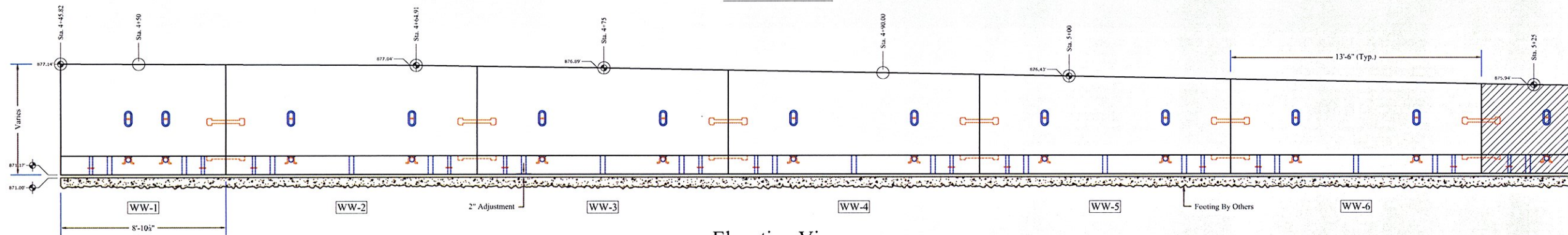
* May Vary



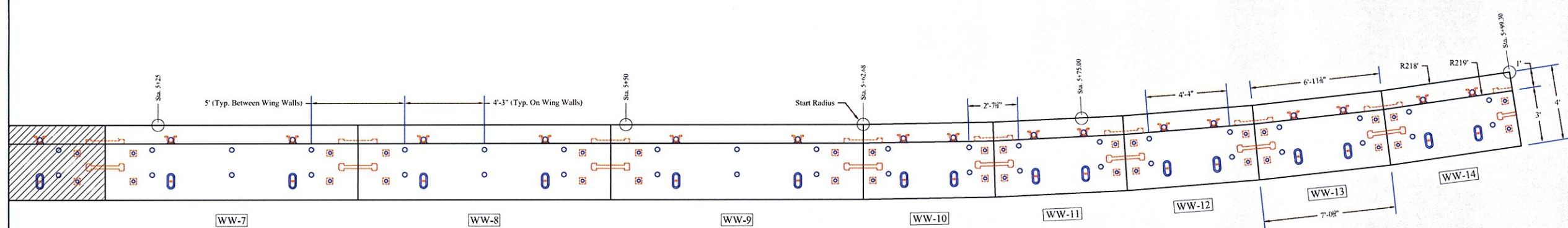
CONTRACTORS VISIT



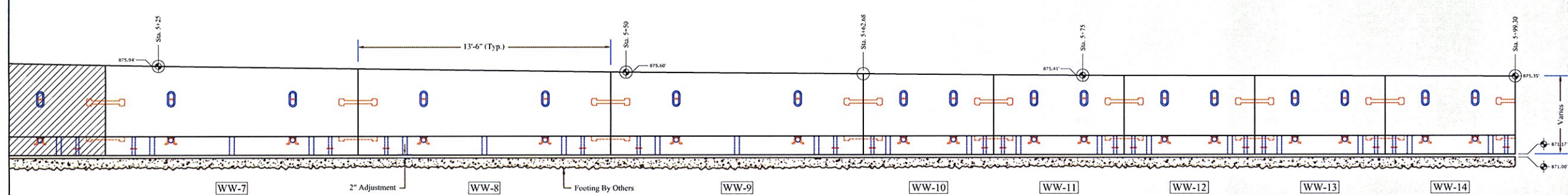
Plan View



Elevation View



Plan View



Elevation View

RECEIVED

OK'D BY *CFA* OK'D BY *RSY*

OCT 24 2011

RESUBMIT *APPROVED* *As Noted*

BY *RSY* DATE *10/25/2011*

PRECAST CONCRETE WING WALL SHOP DRAWINGS
SUPERVISOR: T. BROUSSEAU
DETAILER: C. DUPLANTIS
CHECKER: T. BROUSSEAU
ENGINEER: ENGINEERING VENTURES

PROJECT NAME: ROXBURY BRIDGE
PROJECT NUMBER: BHF 0187 (8)
LOCATION: ROXBURY, VT
BRIDGE: #15 ON ROUTE 12A

CONTRACTOR:
LUCK BROTHERS INC.
PLATTSBURGH, NY 12601
Ph: (518) 581-4321

FABRICATOR:
183 INDUSTRIAL AVE.
MILLISTON, VT 05495
Ph: (802) 558-0201

10/24/11 LAYOUT PLAN, ELEVATION & NOTES/SCHEDULE 1 OF 2

SD *Ireland*
Precast Division

