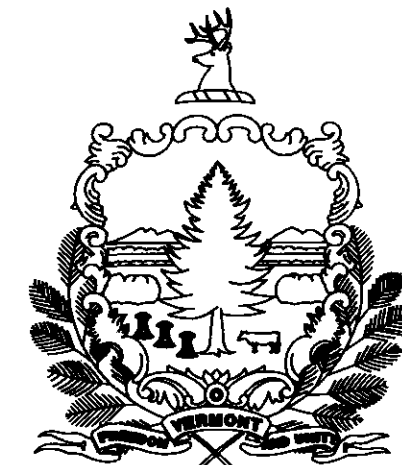


SEE INDEX OF SHEETS & LIST OF STANDARDS ON SHEET 2

STATE OF VERMONT AGENCY OF TRANSPORTATION

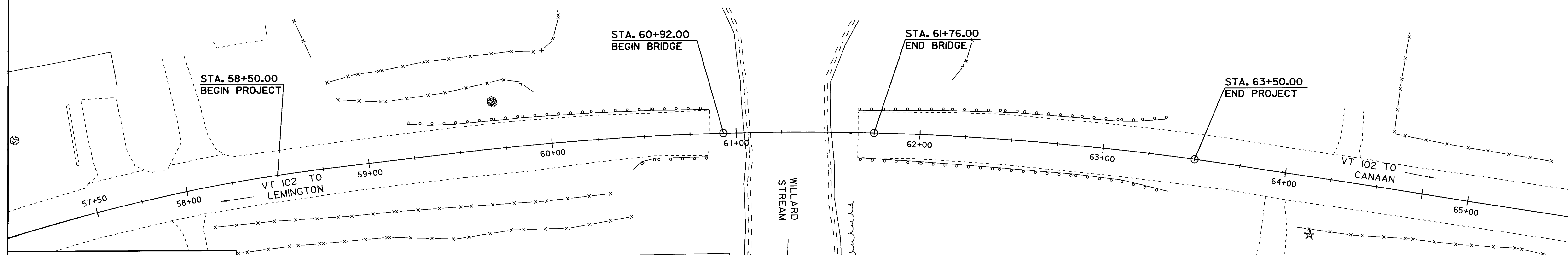
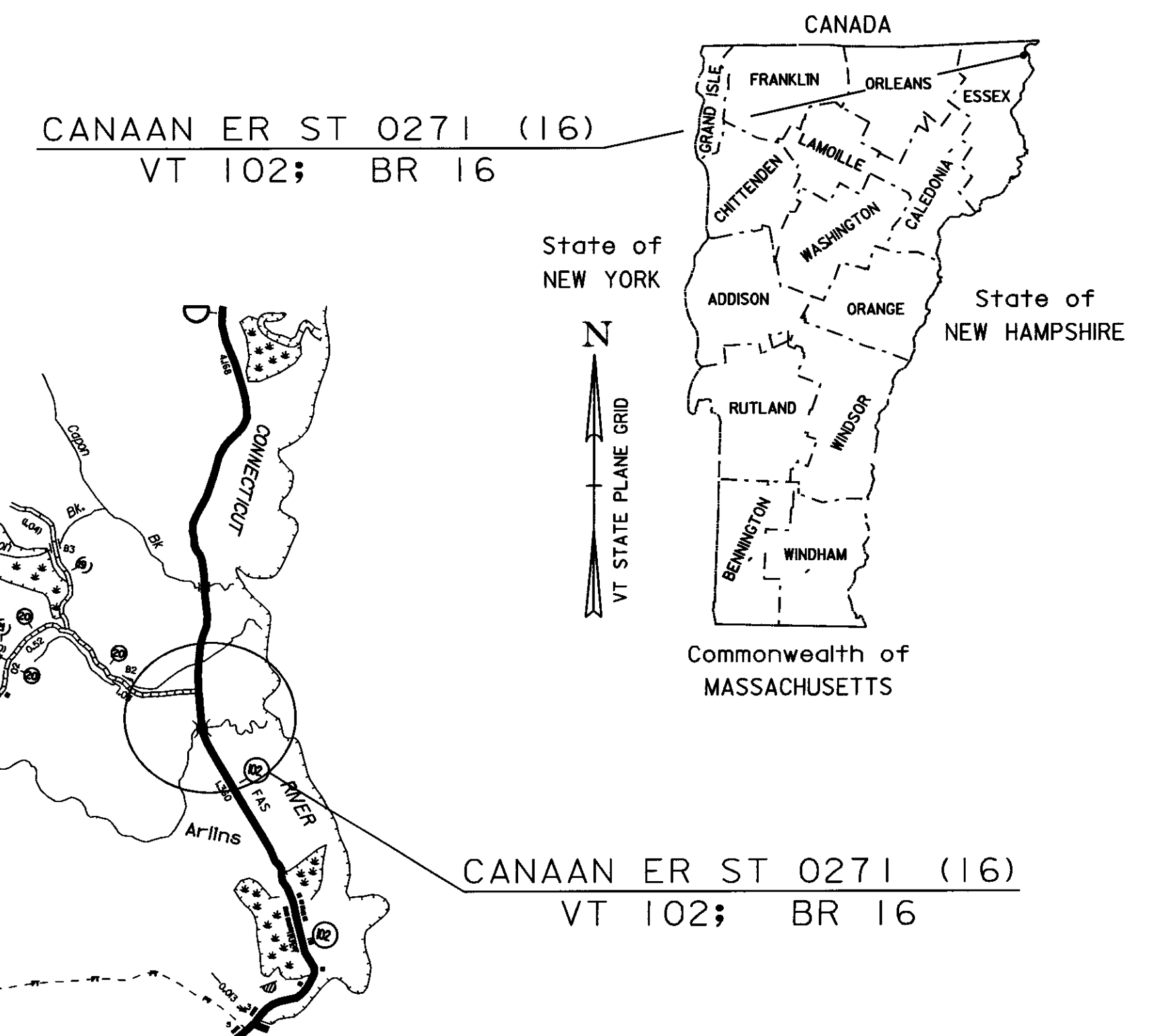


PROPOSED IMPROVEMENT BRIDGE PROJECT TOWN OF CANAAN COUNTY OF ESSEX VT.102 (MAJOR COLLECTOR) BRIDGE #16

PROJECT LOCATION : BEGINNING AT A POINT ON VT 102 APPROXIMATELY 2.0 MILES NORTH OF ITS JUNCTION WITH VT 26 AND PROCEEDING NORTHERLY APPROXIMATELY 0.1 MILES ALONG VT 102.

PROJECT DESCRIPTION : CONSTRUCT A NEW BRIDGE ON THE EXISTING ALIGNMENT, INCLUDING RELATED CHANNEL AND ROADWAY APPROACH WORK.

LENGTH OF STRUCTURE : 84 FEET.
LENGTH OF ROADWAY : 416 FEET.
LENGTH OF PROJECT : 500 FEET.



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 : R. GILMAN
SURVEYED DATE : OCT. 19, 2004

DATUM
VERTICAL : NAVD 88
HORIZONTAL : NAD 83 (96)

RECORD PLANS

CONTRACTOR WINTERSET, INC. - LYNDONVILLE, VT
RESIDENT ENGINEER DOUG BUMPS
CONSTRUCTION BEGAN OCTOBER 15, 2008
CONSTRUCTION COMPLETE AUGUST 3, 2009
RECORD PLANS BY DOUG BUMPS & C. PIERCE
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN
BY RESIDENT ENGINEER
DATE 6/15/10

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

SCALE 1" = 25'-0"
25 0 25

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 DATE 7-28-09

PROJECT MANAGER : M. EVANS-MONGEON

PROJECT NAME : CANAAN
PROJECT NUMBER : ER ST 0271 (16)

SHEET 1 OF 66 SHEETS

PRELIMINARY INFORMATION SHEET

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4. TYPICAL SECTIONS SHEET 2

5. QUANTITY SHEET 1

6. QUANTITY SHEET 2

7. BRIDGE QUANTITY SHEET 1

8-10. ROW SHEETS

11. SURVEYTIE SHEET

12. LAYOUT SHEET 1

13. LAYOUT SHEET 2

14. PROFILE SHEET #1

15. PROFILESHEET #2

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17. EXISTING CONDITIONS SITE PLAN 1

18. EXISTING CONDITIONS SITE PLAN 2

19. EROSION AND SEDIMENT CONTROL PLAN 1

20. EROSION AND SEDIMENT CONTROL PLAN 2

21. FINAL CONDITIONS SITE PLAN 1

22. FINAL CONDITIONS SITE PLAN 2

23. EROSION DETAIL SHEET 1

24. EROSION DETAIL SHEET 2

25. TEMPORARY DETOUR SHEET

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36. FRAMING PLAN

37. EXPANSION BEARING DETAIL

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41. APPROACH SLAB DETAILS

42-43. SUPERSTRUCTURE DETAILS

44. ABUTMENT #1 DETAILS

45. ABUTMENT #2 DETAILS

46. FOOTING REINFORCING PLANS

47. WING WALL DETAILS

48-49. NETC RAIL DETAILS

50. DRYHYDRANT DETAIL

51. REINFORCNG STEEL SCHEDULE

52-61. VT 102 CROSS SECTIONS

62. BANKING DIAGRAM AND MATERIAL TRANSITION

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E-100	CONSTRUCTION APPROACH SIGNS	1/2/2004
E-101	CONSTRUCTION SIGN DETAILS	5/30/2003
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E-102A	CONSTRUCTION SIGN DETAILS	5/01/2004
E-121	STANDARD SIGN PLACEMENT	8/8/1995
E-134	BRIDGE NUMBER PLAQUE	8/8/1995
E-160	FLANGED CHANNEL STEEL SIGN POST	5/20/1999
E-191	PAVEMENT MARKING DETAIL	2/1/1999
E-192	PAVEMENT MARKING DETAILS	10/12/2000
E-198	DELINEATORS AND MILEPOSTS	4/1/2005
G-1	HEAVY DUTY STEEL BEAM GUARDRAIL	1/3/2000
G-1D	HEAVY DUTY STEEL BEAM GUARDRAIL	1/3/2000

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: Nov. 2006

DRAINAGE AREA : 15.4 sq. mi.
CHARACTER OF TERRAIN : Hilly to Mountainous
STREAM CHARACTERISTICS : Meandering, alluvial channel with some eroding stream banks.
NATURE OF STREAMBED : Silt, sand, gravel and cobbles

PEAK FLOW DATA

Q 2.33 =	1,000 cfs	Q 50 =	2,160 cfs
Q 10 =	1,500 cfs	Q 100 =	2,500 cfs
Q 25 =	1,850 cfs	Q 500 =	3,340 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY: @ Q50 = 2.8 fps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: A concrete arch was damaged in a flood in 2004 and removed.
YEAR BUILT: Built in 1900. Widened in 1973.
CLEAR SPAN(NORMAL TO STREAM): 35'
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 250 sq. ft.
DISPOSITION OF STRUCTURE: It has been removed.
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	See note 1.	VELOCITY=	See note 1.
Q10 =	1015.7'	"	
Q25 =		"	
Q50 =	1017.6'	"	
Q100 =	1018.5'	"	

LONG TERM STREAMBED CHANGES: There is scour through the bridge area.
The stream is laterally unstable with areas of stream bank erosion.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 1021.7'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: N.A. - The stream divides DISTANCE:
HIGHWAY #: STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: N.A. - Confluence with Connecticut River DISTANCE: 4,000'
HIGHWAY #: STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE:

SERVICE II LOAD RATING

RATING FACTORS	LOAD FACTOR ANALYSIS						
	HL-93	3S2	6 AXLE	3 AXLE	4 AXLE	5 AXLE	
INVENTORY	1.14	2.07	1.34	1.92	1.71	1.8	
OPERATING	1.48	2.69	1.75	2.50	2.23	2.34	

COMMENTS: LOAD RATED AS A BARE DECK.

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2005	610	220	51	6	40
2025	790	240	51	10	80

20 year ESAL for flexible pavement from 2005 to 2025 : 320,000
40 year ESAL for flexible pavement from 2005 to 2045 : 787,000
Design Speed : 50 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam bridge.

CLEAR SPAN(NORMAL TO STREAM): 80'
VERTICAL CLEARANCE ABOVE STREAMBED: 11' maximum
WATERWAY OF FULL OPENING: 660 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1014.7'	VELOCITY=	2.7 fps
Q10 =	1015.5'	"	3.6 fps
Q25 =	1016.0'	"	4.0 fps
Q50 =	1016.5'	"	4.4 fps
Q100 =	1017.0'	"	4.7 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 1022.8'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1018.3
VERTICAL CLEARANCE: @ Q100 1.3'

SCOUR: Estimate 4' of contraction scour up to Q500, based on the fact that the scour hole under the bridge has been at least 4' deeper than when the project was surveyed.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 30 cfs DEPTH OR ELEVATION:
ORDINARY LOW WATER: 15 cfs Elevation 1011'
ORDINARY HIGH WATER: 150 cfs Elevation 1013'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Temporary bridge already in use. It will be moved to a new alignment.
CLEAR SPAN (NORMAL TO STREAM): 80'
VERTICAL CLEARANCE ABOVE STREAMBED: Minimum low beam elev. 1017.0'
WATERWAY AREA OF FULL OPENING: Approximately 500 sq. ft.

ADDITIONAL INFORMATION

Note 1 - There is not enough information available for the previous arch and pre-flood conditions to do an accurate hydraulic analysis of that structure. Information shown for the existing bridge is from records and the 1980 Flood Insurance Study. The new bridge has a larger span, so it will result in lower upstream water surface elevations and lower velocities than the previous arch.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO

2. DESIGN SPAN

3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL

ON LEDGE

4. ALLOWABLE LOAD FOR PILING

TYPE

ESTIMATED LENGTH

5. STRUCTURAL STEEL AASHTO GRADE

6. REINFORCNG STEEL GRADE

7. SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE)

CLASS A LOW CEMENT)

CONCRETE CLASS B (HPC-B)

8. SOIL UNIT WEIGHT

9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL
- HL-93

82 Feet centerline to centerline of bearing

2.5 ksf

not applicable

not applicable

50 (painted)

60

4000 psi

3500 psi

140 pcf Dry Unit wt.

2.5 ksf

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED?

IF YES, ON EXISTING STRUCTURE?

OR ON TEMPORARY BRIDGE?

ONE OR TWO-WAY TRAVEL?

2. TRAFFIC CONTROL SIGNALS REQUIRED?

3. ARE SIDEWALKS REQUIRED?

IF SO, ON WHAT SIDE?
- yes

not applicable

yes

two - way

no

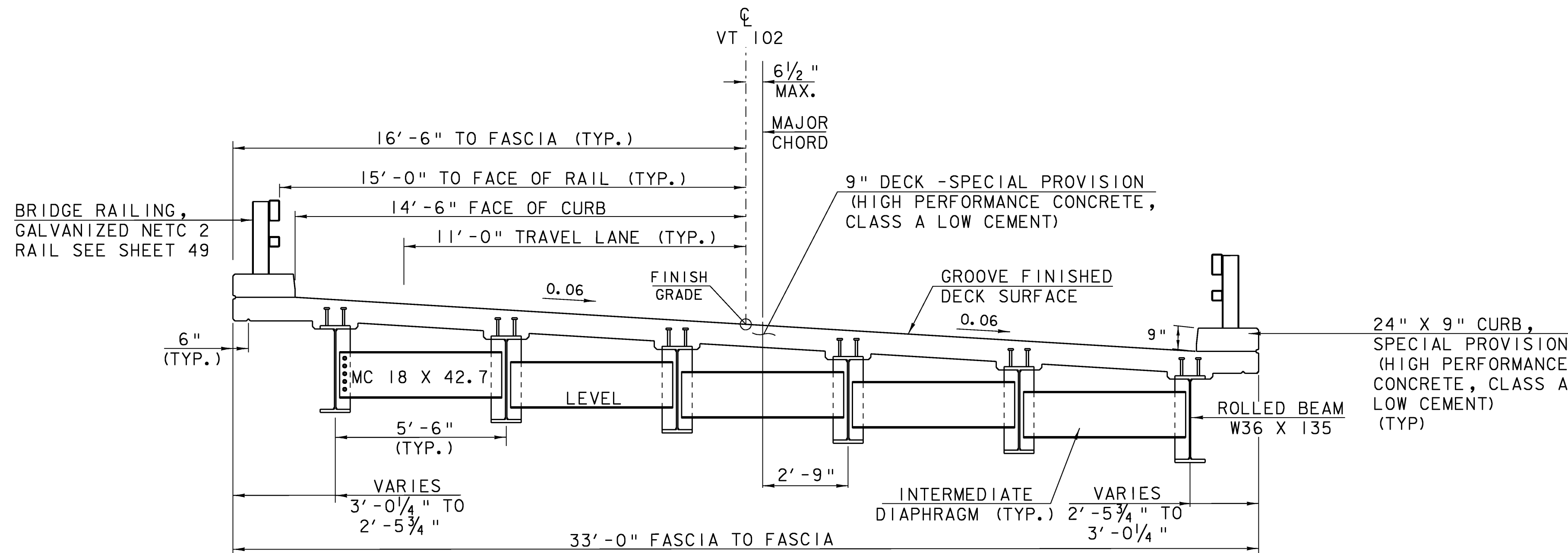
no

not applicable

PROJECT NAME: CANAAN

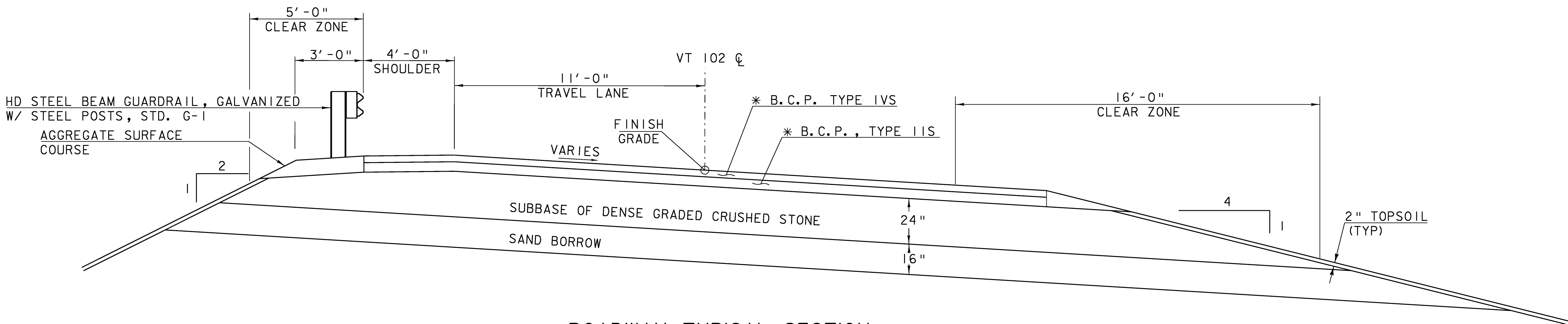
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: \04c098\04c098excel.xls PLOT DATE: 7/22/2008
PROJECT MANAGER: Evans-Mongeon DRAWN BY: L. DUQUETTE
DESIGNED BY: S. SCRIBNER CHECKED BY: S. SCRIBNER
PRELIMINARY INFORMATION SHEET SHEET 2 OF 66



BRIDGE TYPICAL

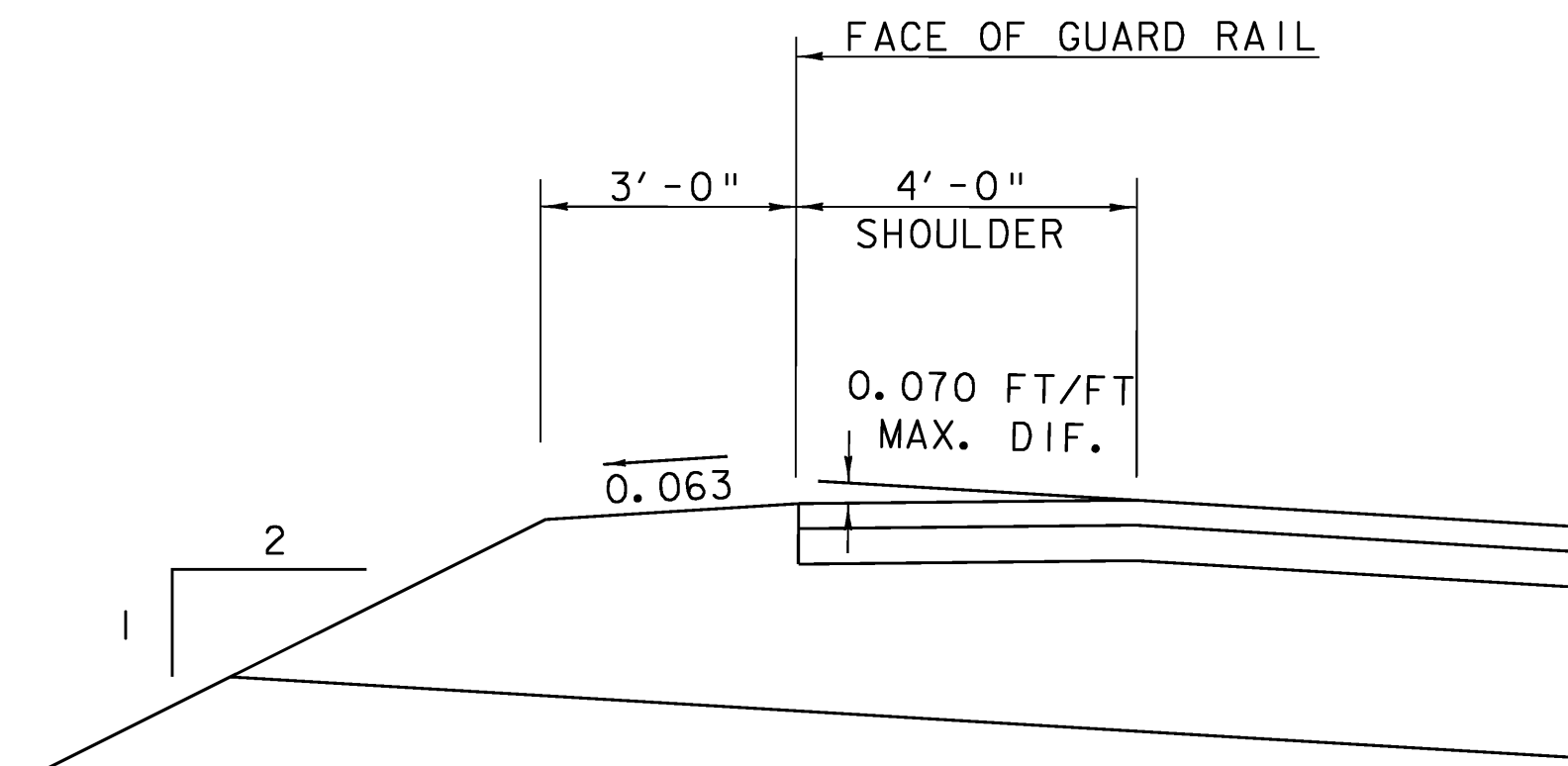
SCALE $\frac{3}{8}" = 1'-0"$



ROADWAY TYPICAL SECTION

SCALE $\frac{3}{8}" = 1'-0"$

* 2- 1 1/2" LIFTS OF TYPE IVS OVER
 2- 2 1/2" LIFTS OF TYPE IIS



DETAIL OF GUARD RAIL ON HIGH
 SIDE OF BANKED SECTION

SEEDING FORMULA RURAL AREAS

% WT.	LBS./A.	NAME	PUR %	GERM %
37.5	22.5	CREeping RED FESCUE	98	85
37.5	22.5	TALL FESCUE	95	90
5.0	3.0	RED TOP	95	90
15.0	9.0	BIRDSFOOT TREFOIL	98	85
5.0	3.0	ANNUAL RYEGRASS	95	85
100.0	60.0			

GENERAL NOTES

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

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

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

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

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

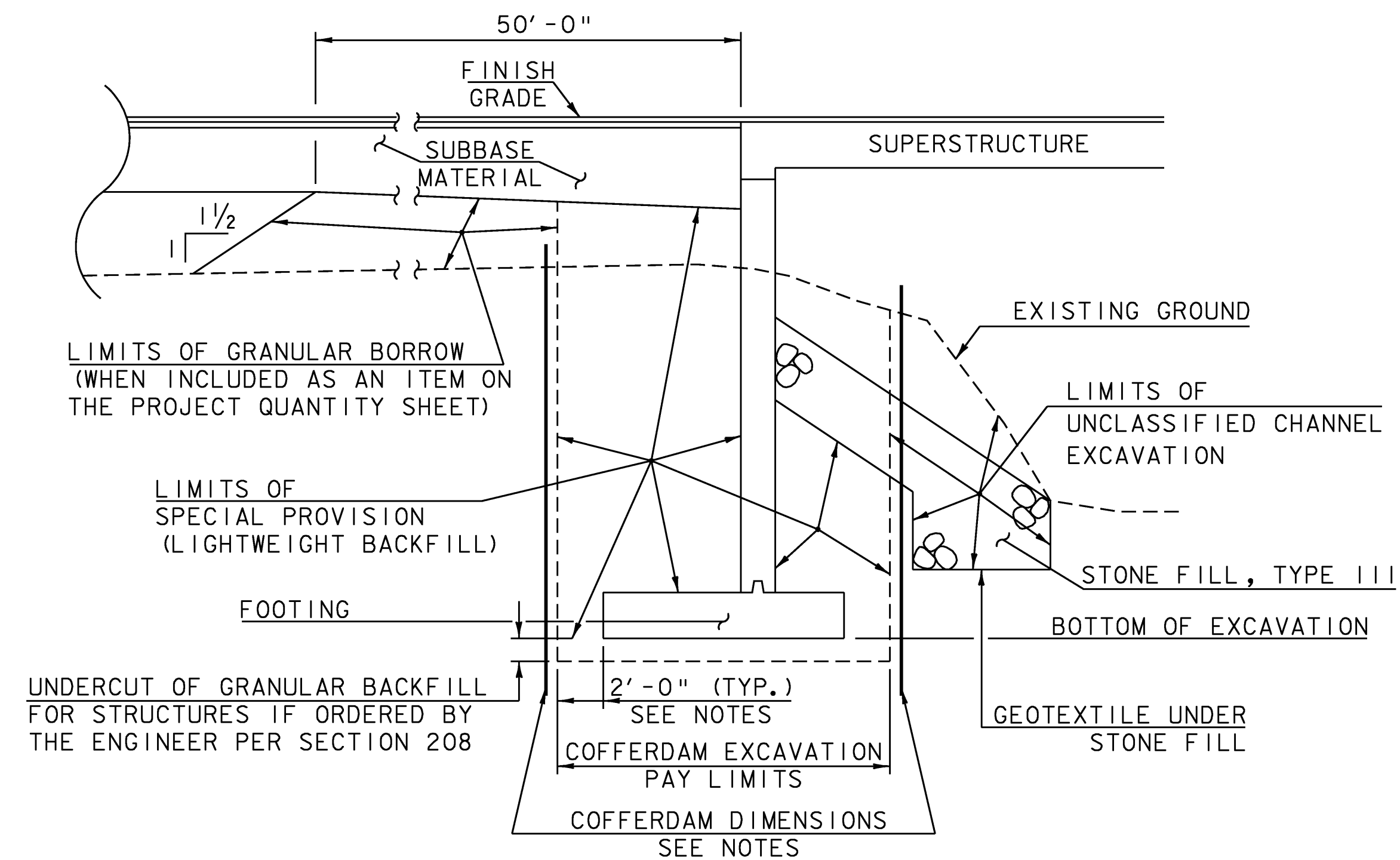
TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

EMULSIFIED FOR TACK COAT 0.025 GAL/SY

MATERIAL ITEM	TOLERANCE
PAVEMENT	$\pm \frac{1}{4}"$ TOTAL THICKNESS
AGGREGATE SURFACE COURSE	$\pm \frac{1}{2}"$
BASE COURSE	$\pm \frac{1}{2}"$
SUBBASE	$\pm 1"$
SAND BORROW	$\pm 1"$
GRANULAR BORROW	$\pm 1"$

TYPICAL SECTIONS SHEET (1)

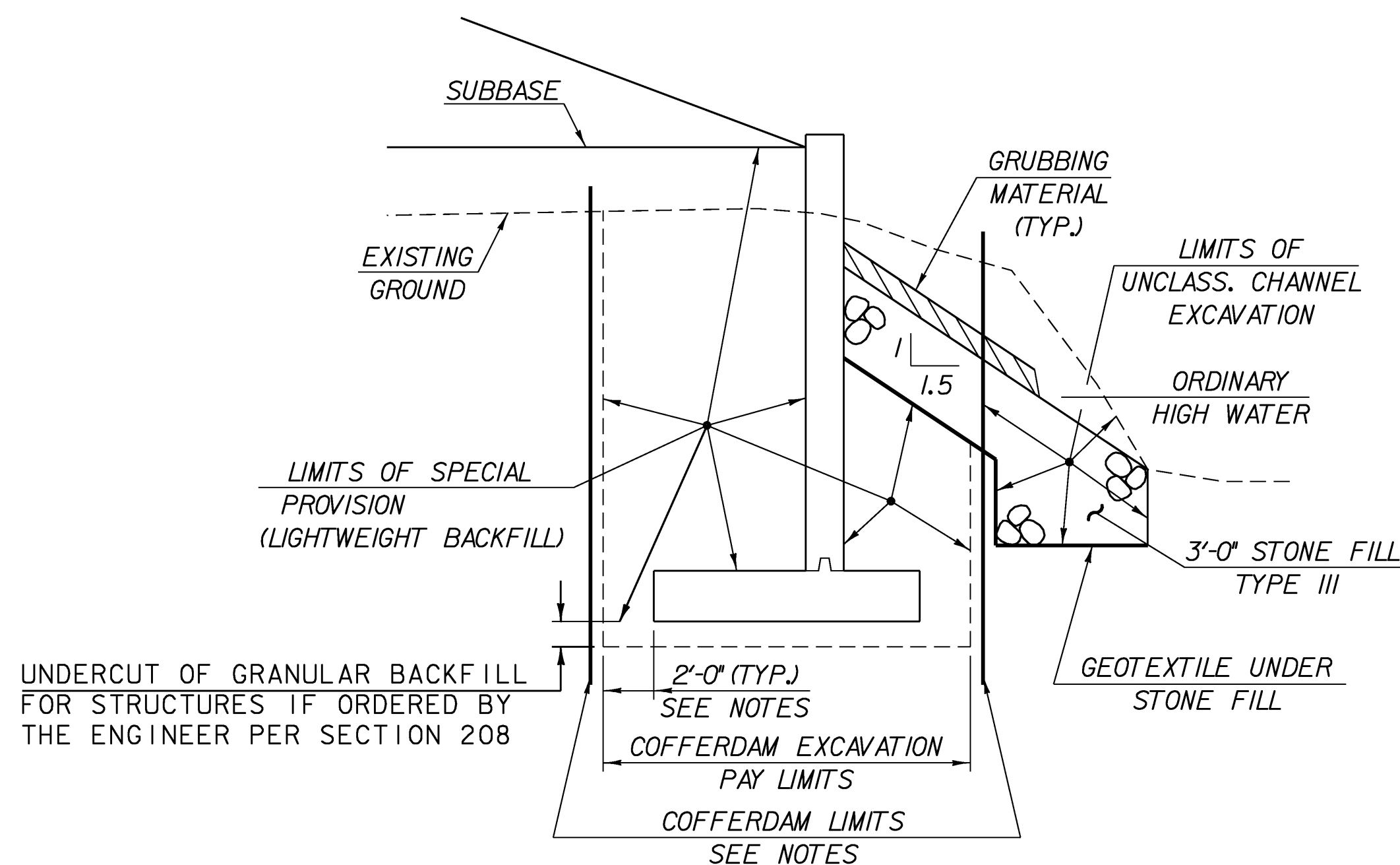
PROJECT NAME: Canaan	PLOT DATE: 18-AUG-2008
PROJECT NUMBER: ER ST 0271(16)	DRAWN BY: T. Husk
FILE NAME: Structures\X04c098typ.dgn	CHECKED BY: S. SCRIBNER
DESIGNED BY: S. Scribner	SHEET 3 OF 66



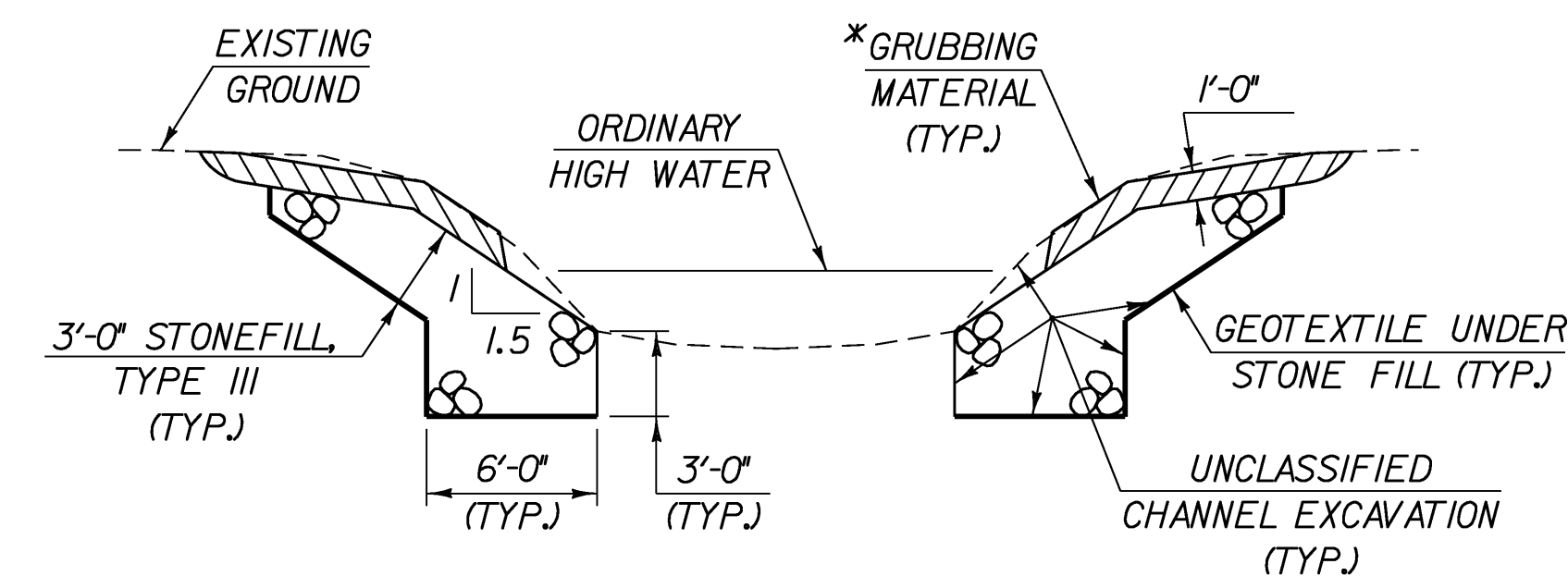
COFFERDAM AND EARTHWORK SECTION
(NOT TO SCALE)

COFFERDAM NOTES

1. COFFERDAM DIMENSIONS TO BE DETERMINED BY THE CONTRACTOR.
2. THE PAY LIMITS OF "COFFERDAM EXCAVATION, EARTH" SHALL BE 2'-0" OUTSIDE THE PERIMETER OF THE FOOTING AND FROM BOTTOM OF EXCAVATION UP TO THE EXISTING GROUND OR BOTTOM OF SUBBASE, WHICHEVER IS LOWER.
3. IF A COFFERDAM IS CONSTRUCTED WHICH IS LARGER THAN THE INDICATED COFFERDAM EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, INCLUDING THAT PORTION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE COFFERDAM PAY LIMITS, WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION. NO MEASUREMENT AND PAYMENT WILL BE MADE FOR COFFERDAM EXCAVATION, GRANULAR BACKFILL FOR STRUCTURES, AND SPECIAL PROVISION LIGHTWEIGHT BACKFILL OUTSIDE THE PAY LIMITS DEFINED IN NOTE 2.



TYPICAL WINGWALL SECTION
(NOT TO SCALE)



TYPICAL CHANNEL SECTION
(NOT TO SCALE)

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

TYPICAL SECTIONS SHEET (2)

PROJECT NAME:	Canaan
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	Structures\X04c098typ.dgn
PROJECT LEADER:	M. Evans-Mongeon
DESIGNED BY:	S. Scribner
CHECKED BY:	S. Scribner
PLOT DATE:	18-AUG-2008
DRAWN BY:	T. Husk
SHEET	4 OF 66

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES													TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						Roadway	Erosion Control	Bridge		Full C&E	Alternate ZA	Alternate ZB	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						1							1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				EARTH WORKS SUMMARY
						2320							2320		CY	COMMON EXCAVATION	203.15			410 CY	FILL REQUIRED
								930					930		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				FILL AVAILABLE
						950							950		CY	SAND BORROW	203.31		2320 CY		COMMON EXCAVATION: 2320 x 1.0
						50							50		CY	TRENCH EXCAVATION OF EARTH	204.20		558 CY		UNCLASSIFIED CHANNEL EXCAVATION: 930 x 0.6
								95					95		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30		50 CY		TRENCH EXCAVATION EARTH: 50 x 1.0
								2500					2500		CY	COFFERDAM EXCAVATION, EARTH	208.30		625 CY		COFFERDAM EXCAVATION EARTH: 2500 x 0.25
								1					1		LS	COFFERDAM (STA. 60+93)	208.40		3553 CY		SUBTOTAL
								1					1		LS	COFFERDAM (STA. 61+75)	208.40		7 CY		ROUNDING
						560							560		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10		3560 CY		TOTAL
						1560							1560		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
						70							70		CY	AGGREGATE SURFACE COURSE	401.10				
						5							5		CWT	EMULSIFIED ASPHALT	404.65				
								390					390		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
								85070					85070		LB	STRUCTURAL STEEL, ROLLED BEAM	506.50				
								53980					53980		LB	REINFORCING STEEL	507.15				
								27573					27573		LB	EPOXY COATED REINFORCING STEEL	507.17				
								1					1		LS	SHEAR CONNECTORS (996 - 7/8" X 7")	508.15				
								1					1		LS	STRUCTURAL PAINTING, SHOP APPLIED (39.1 TONS)	513.25				
								1					1		LS	SURFACE PREPARATION, SHOP (39.1 TONS)	513.40				
								30					30		GAL	WATER REPELLENT, SILANE	514.10				
								30					30		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
								90					90		LF	JOINT SEALER, HOT POURED	524.11				
								204					204		LF	BRIDGE RAILING, GALVANIZED NETC 2 RAIL	525.33				
																BEGIN ALTERNATE ZA					
											1		1		LS	MAINTENANCE OF STRUCTURES AND APPROACHES	527.10				
											1		1		LS	TWO-WAY TEMPORARY BRIDGE (2080 SF - EST)	528.11				
											1		1		EACH	REMOVAL OF STRUCTURE (200 SF - EST)	529.15				
											1		1		LS	TRAFFIC CONTROL	641.10				
																END ALTERNATE ZA					
																BEGIN ALTERNATE ZB					
												1	1		EACH	PARTIAL REMOVAL OF STRUCTURE	529.20				
												1	1		LS	TRAFFIC CONTROL	641.10				
												1	1		LS	SPECIAL PROVISION (RELOCATE AND REMOVE EXISTING TEMPORARY BRIDGE)	900.645				
																END ALTERNATE ZB					
								12					12		EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11				
						1							1		MGAL	DUST CONTROL WITH WATER	609.10				
								703					703		CY	STONE FILL, TYPE III	613.12				
						615							615		LF	REMOVAL OF EXISTING FENCE	620.55				
						390							390		LF	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21				

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES													TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						Roadway	Erosion Control	Bridge		Full C&E	Alternate ZA	Alternate ZB	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						4							4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
						4							4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED NETC 2 RAIL	621.72				
						400							400		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
						40							40		LF	TEMPORARY TRAFFIC BARRIER	621.90				
						150							150		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				
										1			1		LU	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.25				
						1							1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
						1540							1540		LF	4 INCH WHITE LINE	646.20				
						1540							1540		LF	4 INCH YELLOW LINE	646.21				
								840					840		SY	GEOTEXTILE UNDER STONE FILL	649.31				
							245						245		SY	GEOTEXTILE FOR SILT FENCE	649.51				
							120						120		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515				
							130						130		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61				
							50						50		LB	SEED	651.15				
							200						200		LB	FERTILIZER	651.18				
							2						2		TON	AGRICULTURAL LIMESTONE	651.20				
							3						3		TON	HAYMULCH	651.25				
						105							105		CY	TOPSOIL	651.35				
								400					400		SY	GRUBBING MATERIAL	651.40				
							1						1		LS	EPSC PLAN	652.10				
							150						150		HR	MONITORING EPSC PLAN	652.20				
							1						1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
							1000						1000		SY	TEMPORARY EROSION MATTING	653.20				
							16						16		CY	VEHICLE TRACKING PAD	653.35				
							748						748		LF	BARRIER FENCE	653.50				
							752						752		LF	PROJECT DEMARCATION FENCE	653.55				
						1							1		SF	TRAFFIC SIGNS, TYPE A	675.20				
						16							16		LF	FLANGED CHANNEL SIGN POST	675.301				
						4							4		EACH	DELINEATOR WITH STEEL POST	676.10				
								150					150		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT) (FPQ)	900.608				
								1360					1360		CY	SPECIAL PROVISION (LIGHTWEIGHT BACKFILL)	900.608				
						1							1		LS	SPECIAL PROVISION (DRYHYDRANT)	900.645				
						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				
								420					420		SY	SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)	900.675				
						840							840		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

BRIDGE QUANTITY SHEET 1

[illegible]

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

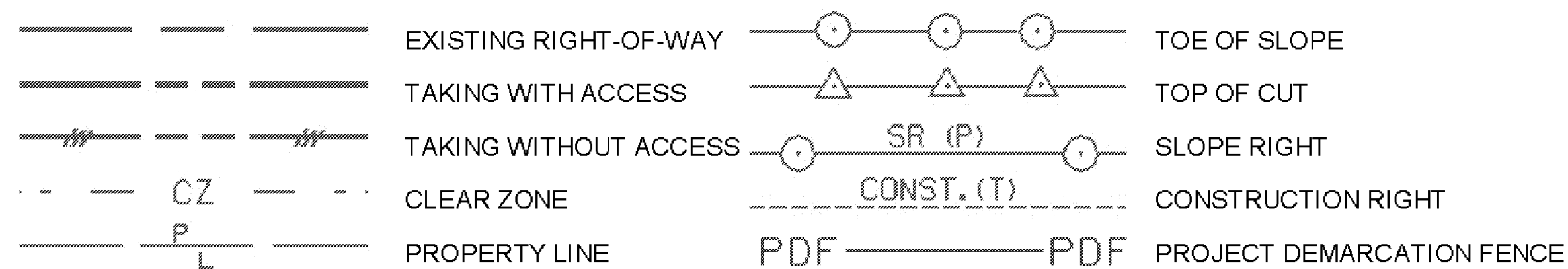
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TABLE OF REVISIONS

[illegible]

PLOT DATE 07/22/08

PLAN LEGEND



EC	-EROSION CONTROL
(P)	-PERMANENT
(T)	-TEMPORARY
DR.	-DRAINAGE RIGHT
DIT.	-DITCHING RIGHT
CH.	-CHANNEL RIGHT
DRIVE	-DRIVE RIGHT
CUL.	-CULVERT RIGHT
C&T	-CLEARING & TRIMMING RIGHT
SR	-SLOPE RIGHT
UE	-UTILITY EASEMENT

APPROVED: HARRY PETROVS DATE: 10-25-07
CHIEF, PLANS & TITLES

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: RC098DET.XLS
PROJECT LEADER: EVANS-MONGEON
DESIGNED BY:
R.O.W. DETAIL SHEET #1

PLOT DATE:
DRAWN BY: MR
CHECKED BY: BF
SHEET 8 OF 66

SPECIAL PROVISION (DRY HYDRANT)

STA. 61+34.00 - 62+04.92 LT

DELINEATOR WITH STEEL POST (TYPE I)

STA. 59+84 LT (GREEN)
STA. 59+81 RT (BLUE)

REMOVAL AND DISPOSAL OF GUARDRAIL

STA. 60+43.09 - 60+84.28 RT
STA. 59+22.82 - 60+85.48 LT
STA. 61+50.29 - 63+37.35 RT
STA. 61+49.41 - 62+25.00 LT

HEAVY DUTY STEEL BEAM GUARDRAIL, GALVANIZED

STA. 59+69.40 - 60+58.90 LT
STA. 59+61.67 - 60+57.17 RT
STA. 62+09.73 - 62+25.00 LT
STA. 62+10.04 - 62+25.00 RT

ANCHORS FOR HEAVY DUTY STEEL BEAM GUARDRAIL

STA. 59+78.90 LT
STA. 59+75.00 RT

REMOVAL OF EXISTING FENCE

STA. 58+50 - STA. 61+00 RT
STA. 59+00 - STA. 60+00 LT
STA. 62+15 - STA. 62+20 LT

CONSTRUCT DRIVE

STA. 57+58 LT, 19' - GRAVEL
STA. 58+11 LT, 14' - GRAVEL
STA. 57+97 RT, 12' - GRAVEL

4" WHITE LINE

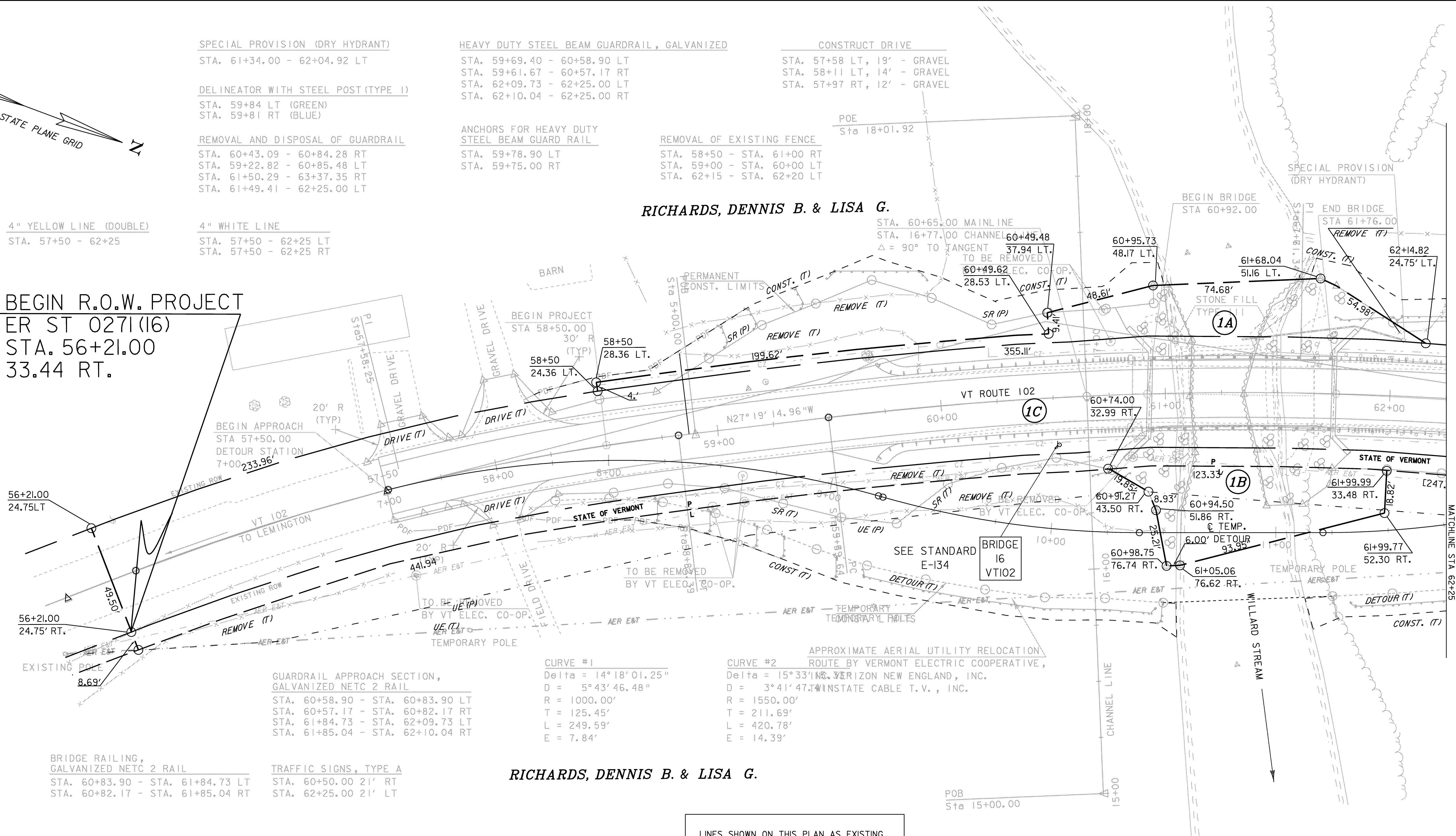
STA. 57+50 - 62+25 LT
STA. 57+50 - 62+25 RT

4" YELLOW LINE (DOUBLE)

STA. 57+50 - 62+25

RICHARDS, DENNIS B. & LISA G.

BEGIN R.O.W. PROJECT
ER ST 0271(I6)
STA. 56+21.00
33.44 RT.



RICHARDS, DENNIS B. & LISA G.

BRIDGE RAILING,
GALVANIZED NETC 2 RAIL

STA. 60+83.90 - STA. 61+84.73 LT
STA. 60+82.17 - STA. 61+85.04 RT

TRAFFIC SIGNS, TYPE A

STA. 60+50.00 21' RT
STA. 62+25.00 21' LT

PREVIOUS BRIDGE DATA

SINGLE SPAN OPEN BOTTOM CONCRETE ARCH - DESTROYED IN 2004 FLOOD
CLEAR SPAN (NORMAL TO STREAM): 31 FEET MIN.
OVERALL LENGTH: 34.5 FEET BACK TO BACK OF ABUTMENTS
VERTICAL CLEARANCE: 7 FEET
BRIDGE WIDTH: +/- 34.5 FEET FACE OF RAIL TO FACE OF RAIL

CURRENT STRUCTURE

WIDTH: 24
LENGTH: 80

SCALE 1" = 20'-0"
0 20

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

ROW LAYOUT SHEET #1

PROJECT NAME: Canaan
PROJECT NUMBER: ER ST 0271(I6)

FILE NAME: 04c098\struc\04c098bdr
PROJECT LEADER: M. Evans-Mongeon
DESIGNED BY: S. Scribner
ROW SHEET 14 OF 15

PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 9 OF 66

GPS CONTROL POINTS

HVCTRL #1

DESIGNATION

"VT/NH BRM 78"

** N = 892289.6500
E = 1892838.4500
ELEV. = 1021.0900

GENERAL LOCATION, CANAAN, VT. OWNERSHIP, BILL JOHNSON, 3603 VT ROUTE 102, CANAAN, VT 05903. TO REACH FROM THE INTERSECTION OF VT ROUTES 114, 102, AND 253 GO SOUTHWEST ALONG VT ROUTE 102 FOR 4.3 MI TO THE INTERSECTION OF A FIELD DRIVE LEFT, JUST NORTH OF HOUSE NO 2566. PARK VEHICLE AND WALK EAST ALONG THE FIELD DRIVE FOR ABOUT 120 M TO THE SITE OF THE MARK AT THE SOUTH EDGE OF A LARGE FIELD. THE MARK IS A 12.5 CM DIAMETER UNITED STATES SUPREME COURT REFERENCE MARK DISK SET IN THE TOP OF A 30 CM SQUARE GRANITE MONUMENT WHICH PROJECTS 50 CM ABOVE GROUND SURFACE. IT IS 19.2 M WEST NORTHWEST OF A 30 CM ELM, 23.9 M EAST OF A 25 CM WHITE BIRCH, 7.4 M NORTH NORTHWEST OF THE TOP OF A SMALL BANK, 38.0 M SOUTHEAST OF A CLUMP OF FOUR 15 CM BIRCHES, AND 0.3 M NORTH OF A FIBERGLASS WITNESS POST.

HVCTRL #2

DESIGNATION

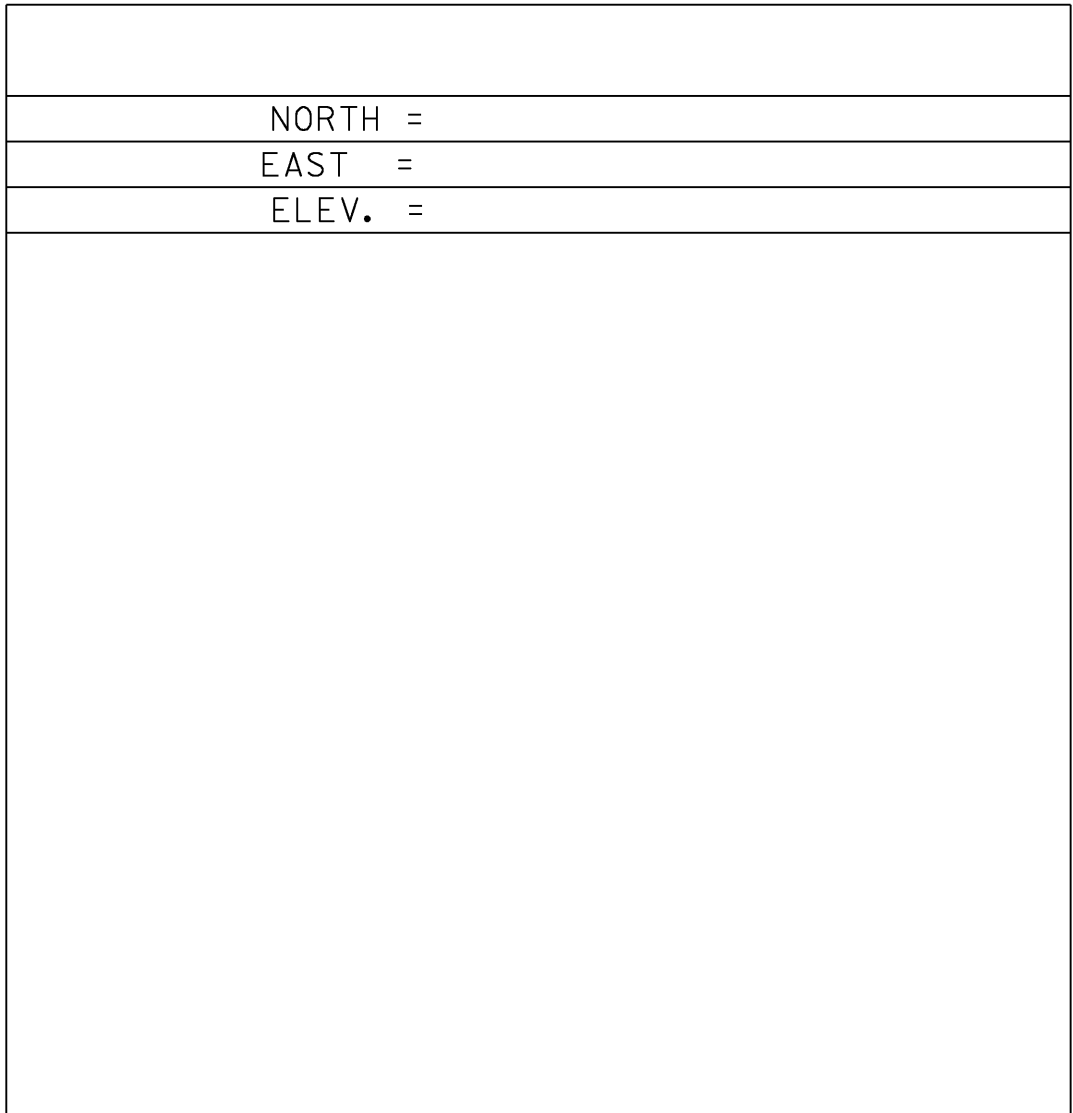
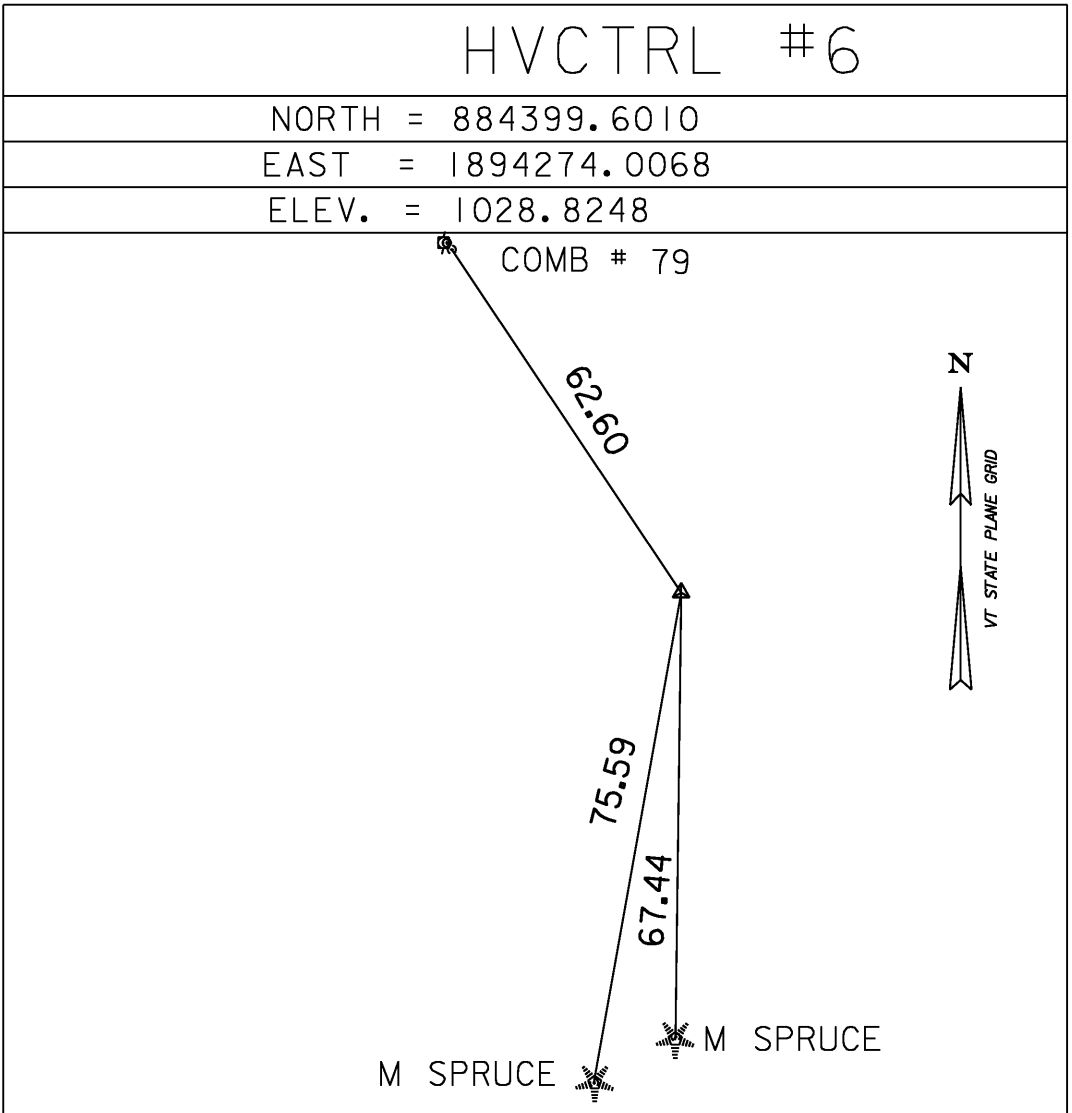
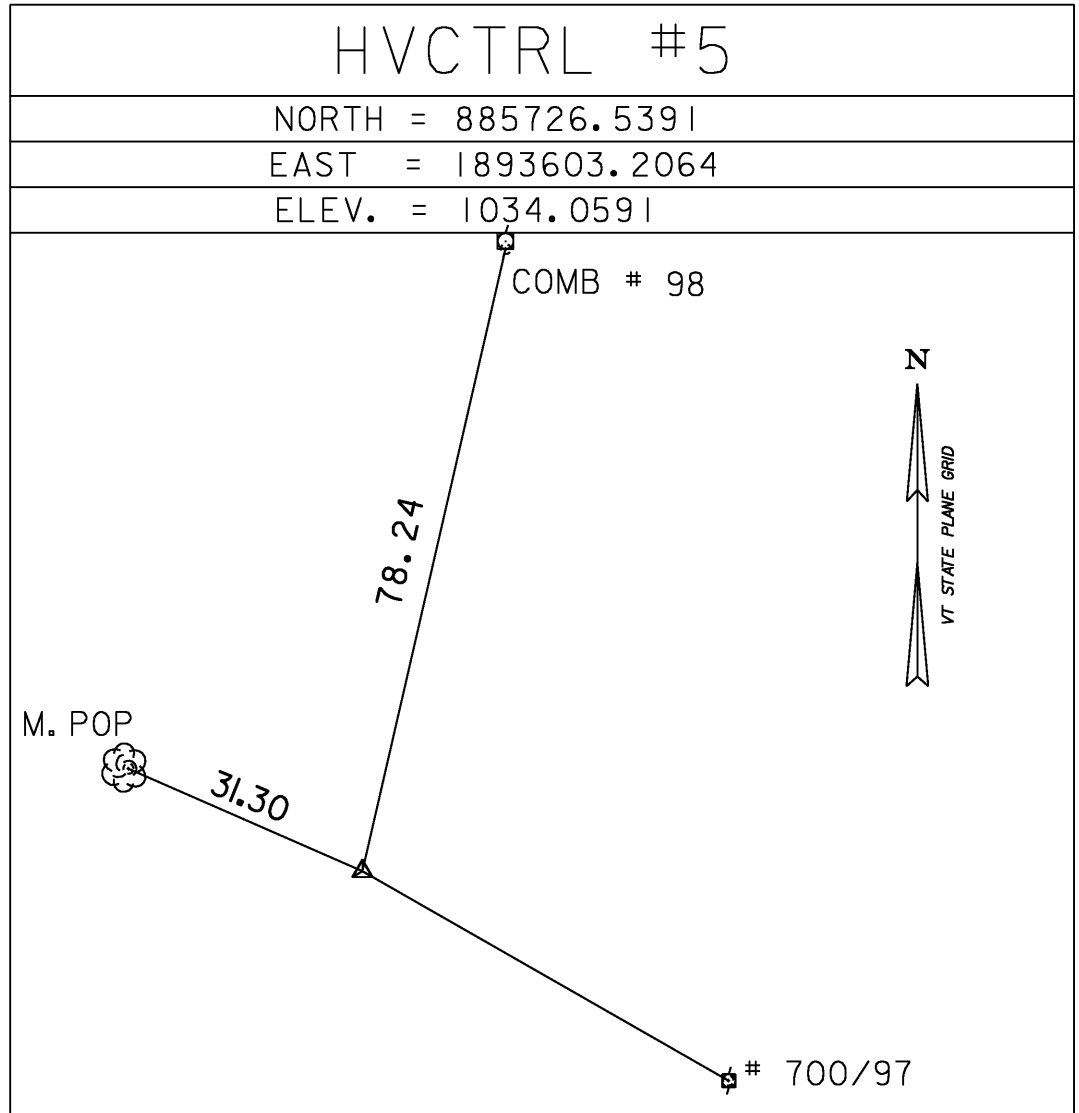
"VT/NH BRM 77"

** N = 890752.1900
E = 1893251.0900
ELEV. = 1022.7000

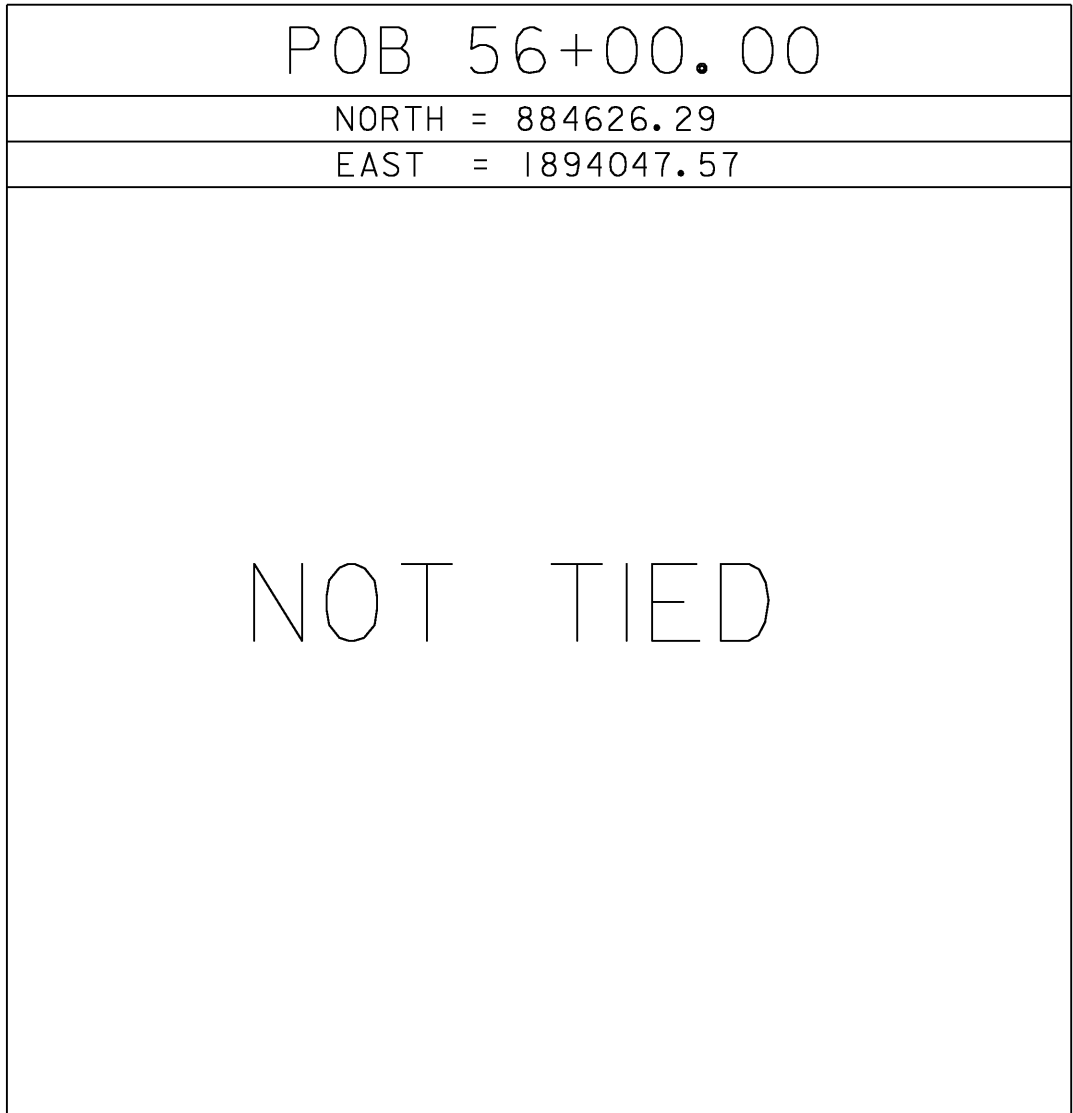
GENERAL LOCATION, CANAAN, VT. OWNERSHIP, BILL JOHNSON, 3603 VT ROUTE 102, CANAAN, VT 05903. TO REACH FROM THE INTERSECTION OF VT ROUTES 114, 102, AND 253 GO SOUTHWEST ALONG VT ROUTE 102 FOR 4.6 MI TO A LARGE WHITE FARM HOUSE ON THE RIGHT AND AN L-SHAPED BARN ON THE LEFT. PARK VEHICLE AND WALK EAST FOR ABOUT 150 M TO THE SITE OF THE MARK AT THE NORTH EDGE OF A LARGE FIELD. THE MARK IS A 12.5 CM DIAMETER UNITED STATES SUPREME COURT REFERENCE MARK DISK SET IN THE TOP OF A 30 CM SQUARE GRANITE MONUMENT WHICH PROJECTS 40 CM ABOVE GROUND SURFACE. IT IS ABOUT ON AN EAST BEARING WITH THE HOUSE. IT IS ABOUT 95 M EAST SOUTHEAST OF THE SOUTHEAST CORNER OF A FALLING DOWN BARN ELL, 18.0 M SOUTH OF THE NORTH EDGE OF A STEEP EMBANKMENT, AND 0.3 M SOUTHEAST OF A FIBERGLASS WITNESS POST.

* DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT

TRAVERSE TIES

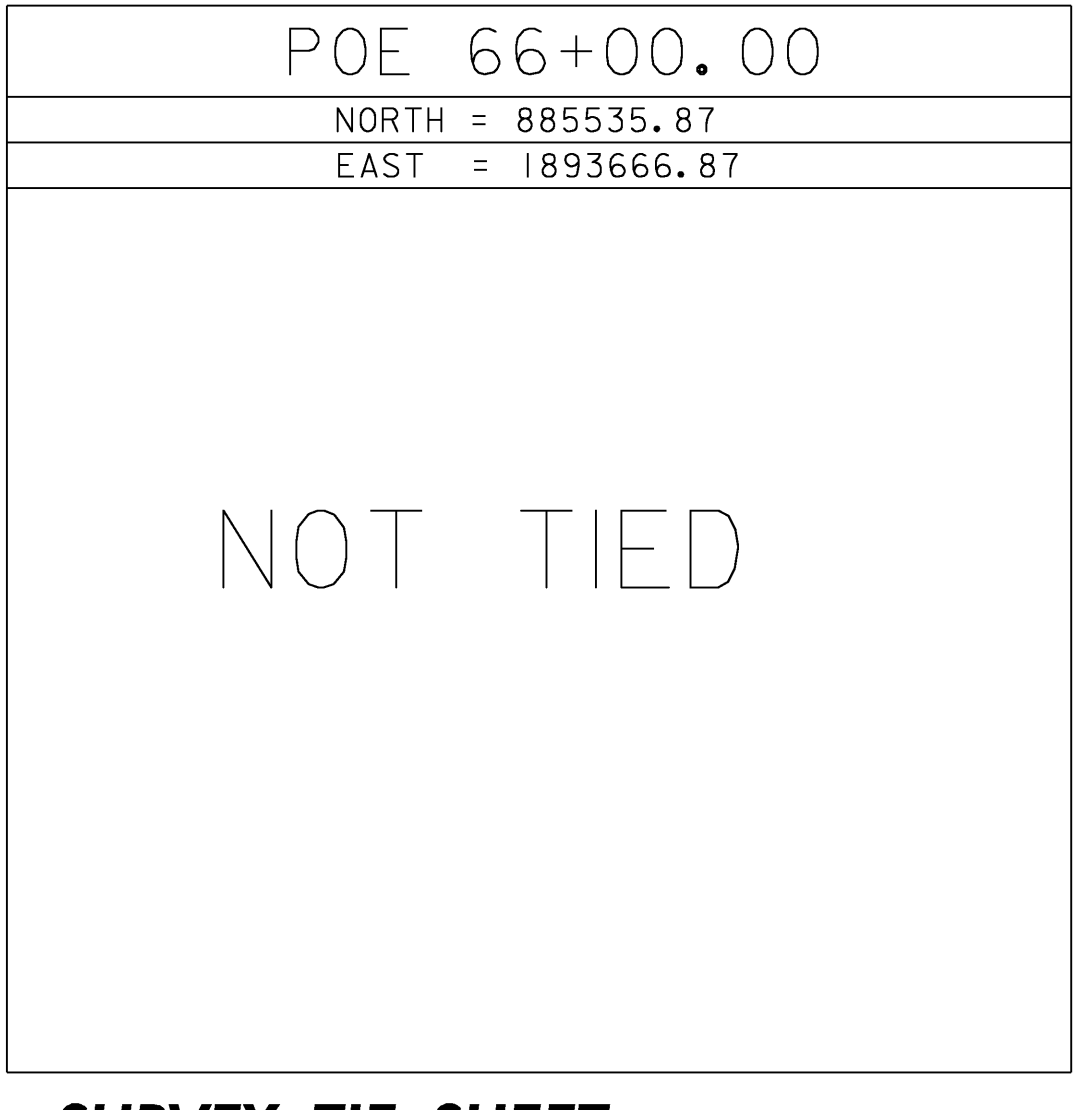
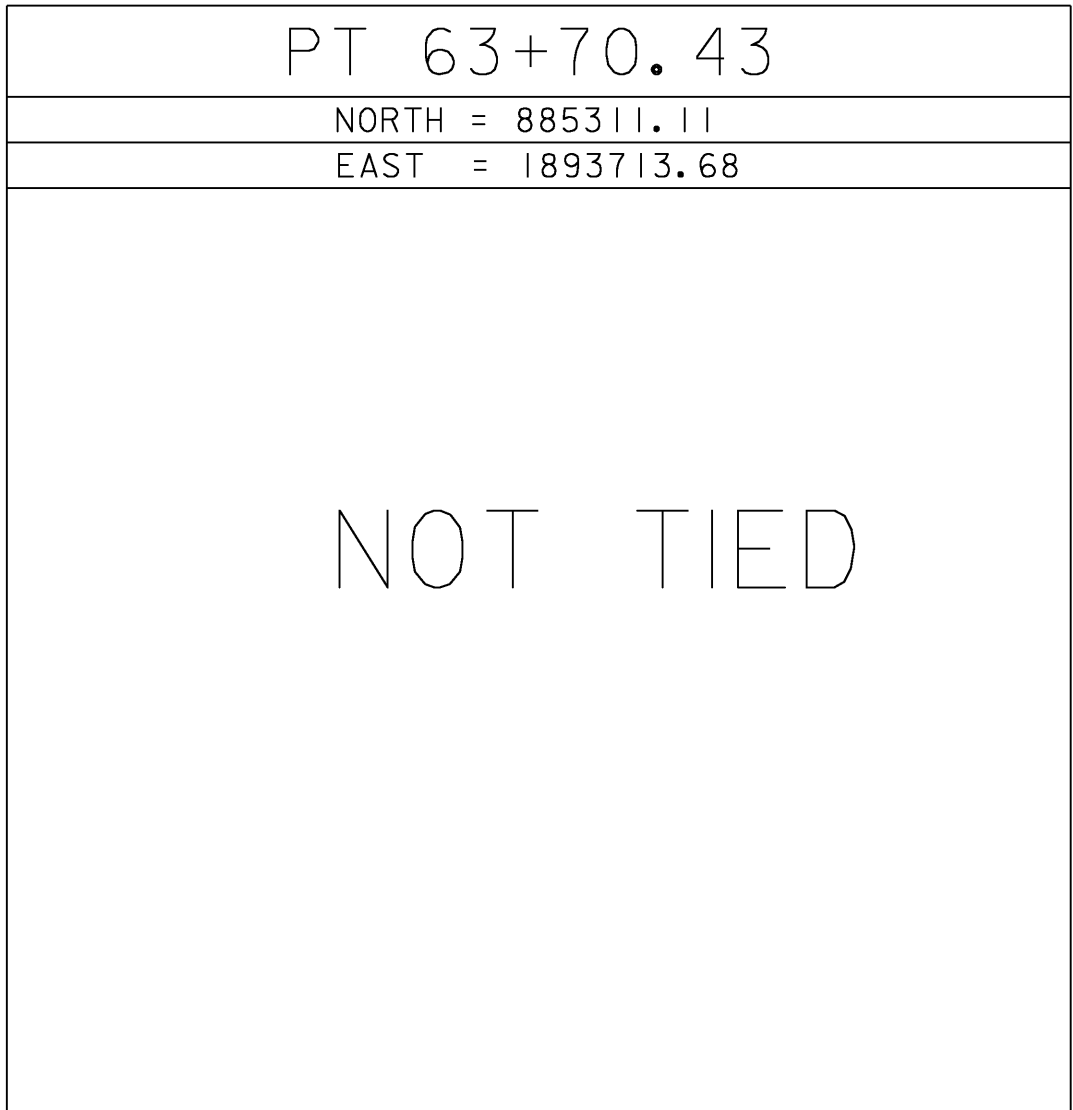
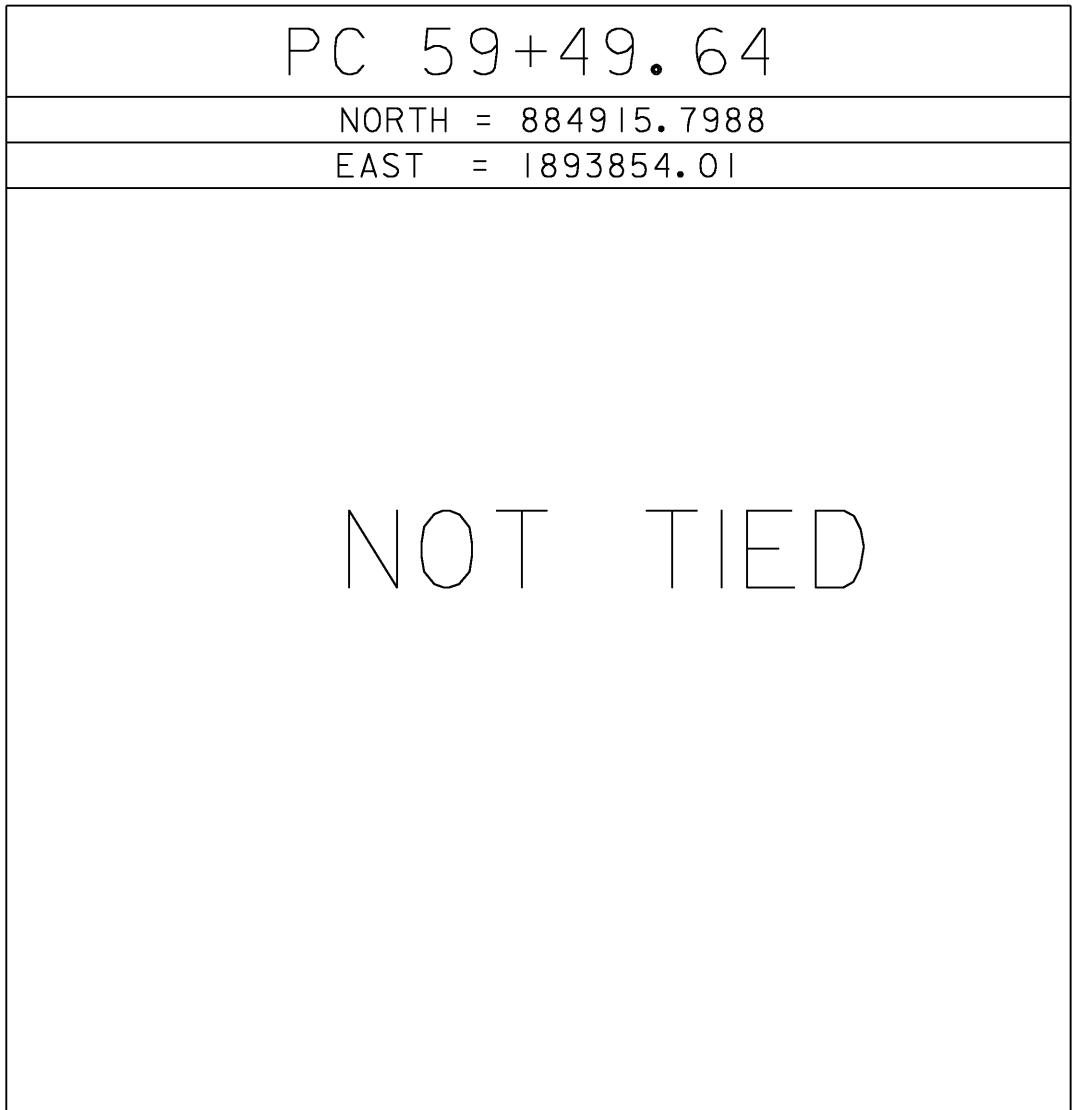
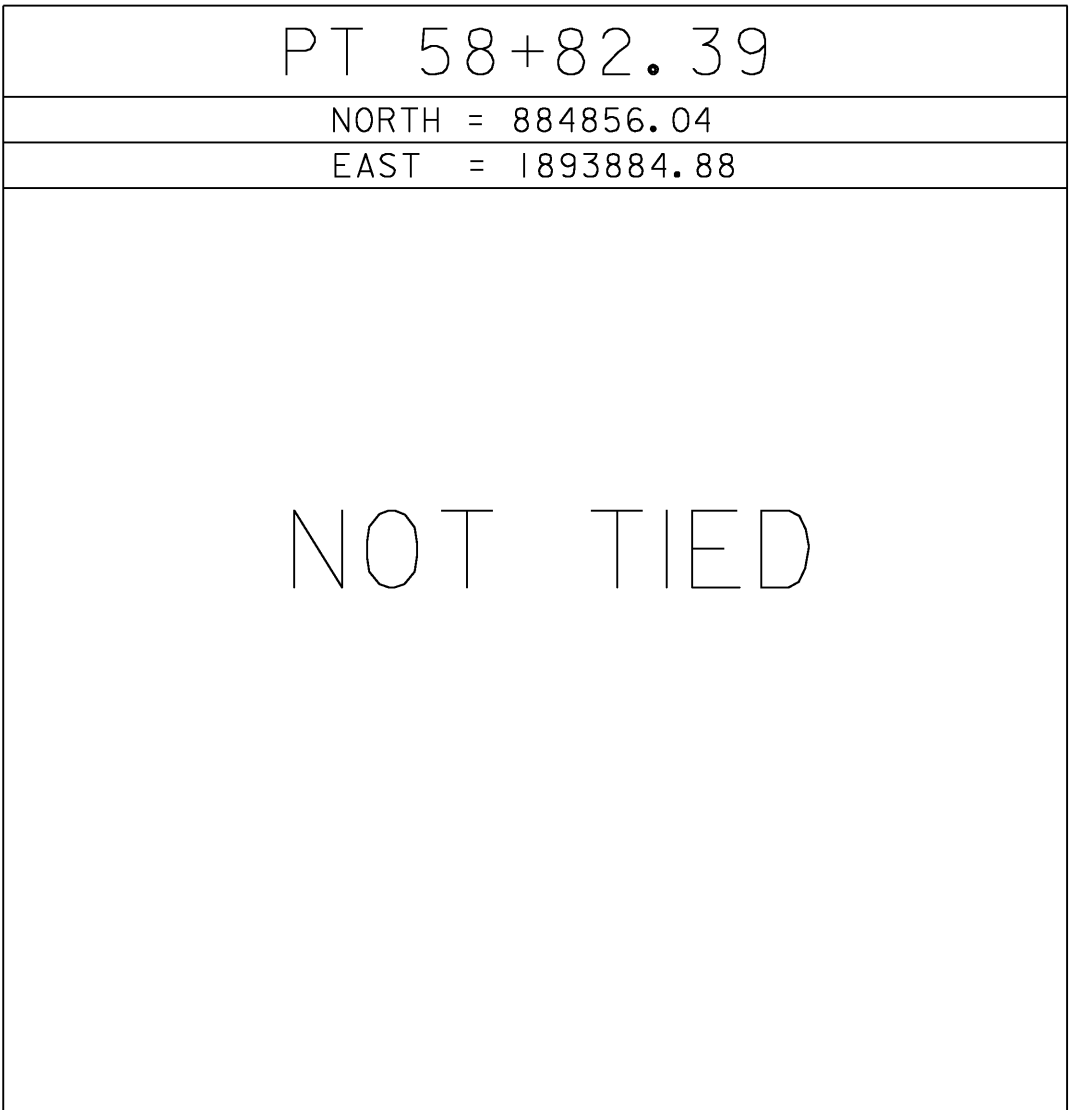
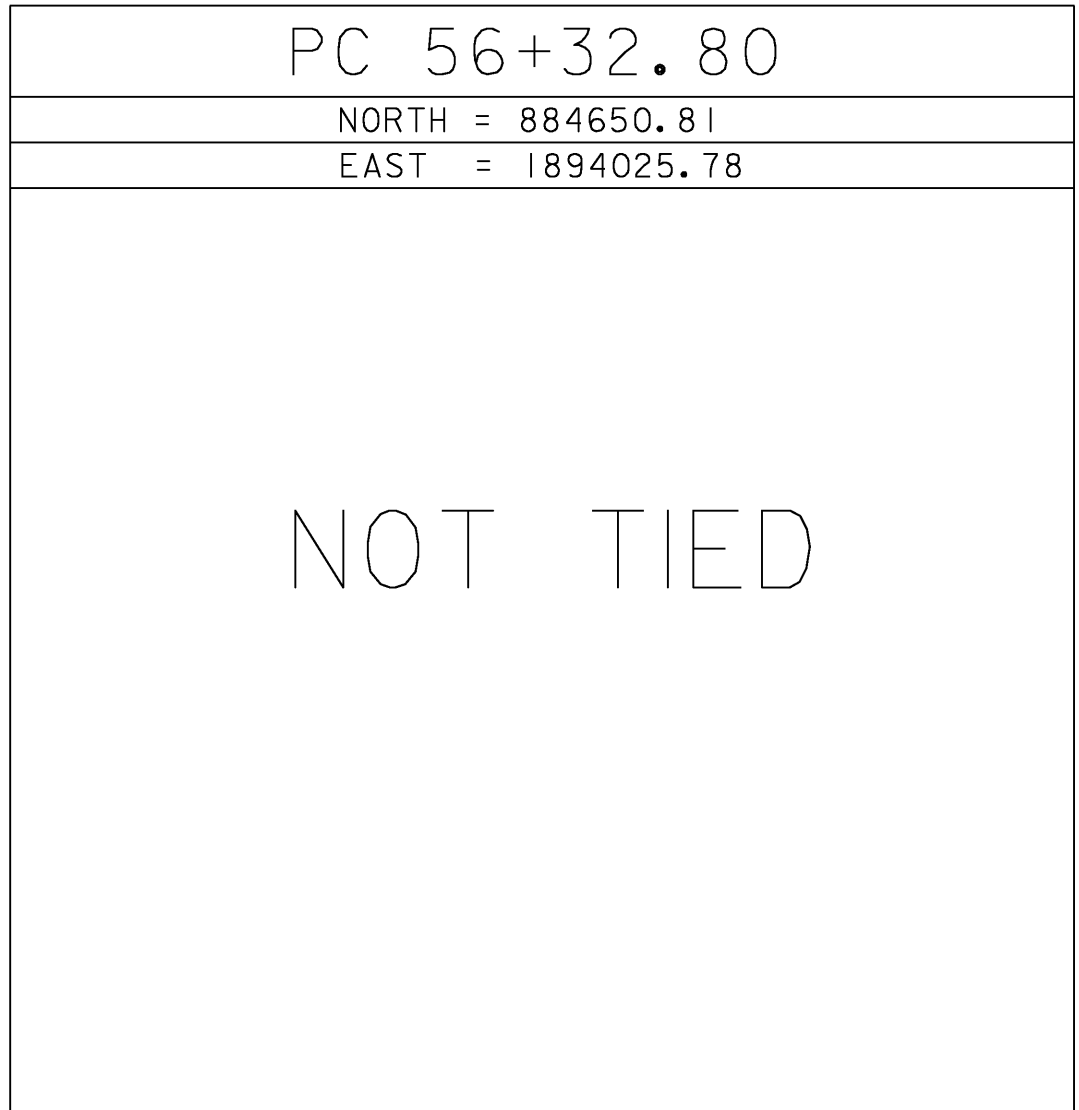


ALIGNMENT TIES



* MAIN TRAVERSE COMPLETED: AUGUST 11, 2004 BY R.GILMAN PC, P.WINTERS

ALIGNMENT TIES



* Alignment as of 12/7/06

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83(96)
ADJUSTMENT	COMPASS

SURVEY TIE SHEET

PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 027(16)
FILE NAME:	04c098\struc\x04c098ti.dgn
PROJECT LEADER:	M. EVANS-MONGEON
DESIGNED BY:	S. SCRIBNER
PLOT DATE:	18-AUG-2008
DRAWN BY:	J.HULETT
CHECKED BY:	P.HODGE
SHEET 11	OF 66

SPECIAL PROVISION (DRY HYDRANT)

STA. 61+34.00 - 62+04.92 LT

DELINEATOR WITH STEEL POST (TYPE I)

STA. 59+84 LT (GREEN)
STA. 59+81 RT (BLUE)

REMOVAL AND DISPOSAL OF GUARDRAIL

STA. 60+43.09 - 60+84.28 RT
STA. 59+22.82 - 60+85.48 LT
STA. 61+50.29 - 63+37.35 RT
STA. 61+49.41 - 62+25.00 LT

HEAVY DUTY STEEL BEAM GUARDRAIL, GALVANIZED

STA. 59+69.40 - 60+58.90 LT
STA. 59+61.67 - 60+57.17 RT
STA. 62+09.73 - 62+25.00 LT
STA. 62+10.04 - 62+25.00 RT

ANCHORS FOR HEAVY DUTY STEEL BEAM GUARD RAIL

STA. 59+78.90 LT
STA. 59+75.00 RT

CONSTRUCT DRIVE

STA. 57+58 LT, 19' - GRAVEL
STA. 58+11 LT, 14' - GRAVEL
STA. 57+97 RT, 12' - GRAVEL

REMOVAL OF EXISTING FENCE

STA. 58+50 - STA. 61+00 RT
STA. 59+00 - STA. 60+00 LT
STA. 62+15 - STA. 62+20 LT

4" WHITE LINE

STA. 57+50 - 62+25 LT
STA. 57+50 - 62+25 RT

4" YELLOW LINE (DOUBLE)

STA. 57+50 - 62+25

GUARDRAIL APPROACH SECTION, GALVANIZED NETC 2 RAIL

STA. 60+58.90 - STA. 60+83.90 LT
STA. 60+57.17 - STA. 60+82.17 RT
STA. 61+84.73 - STA. 62+09.73 LT
STA. 61+85.04 - STA. 62+10.04 RT

TRAFFIC SIGNS, TYPE A

STA. 60+50.00 21' RT
STA. 62+25.00 21' LT

BRIDGE RAILING, GALVANIZED NETC 2 RAIL

STA. 60+83.90 - STA. 61+84.73 LT
STA. 60+82.17 - STA. 61+85.04 RT

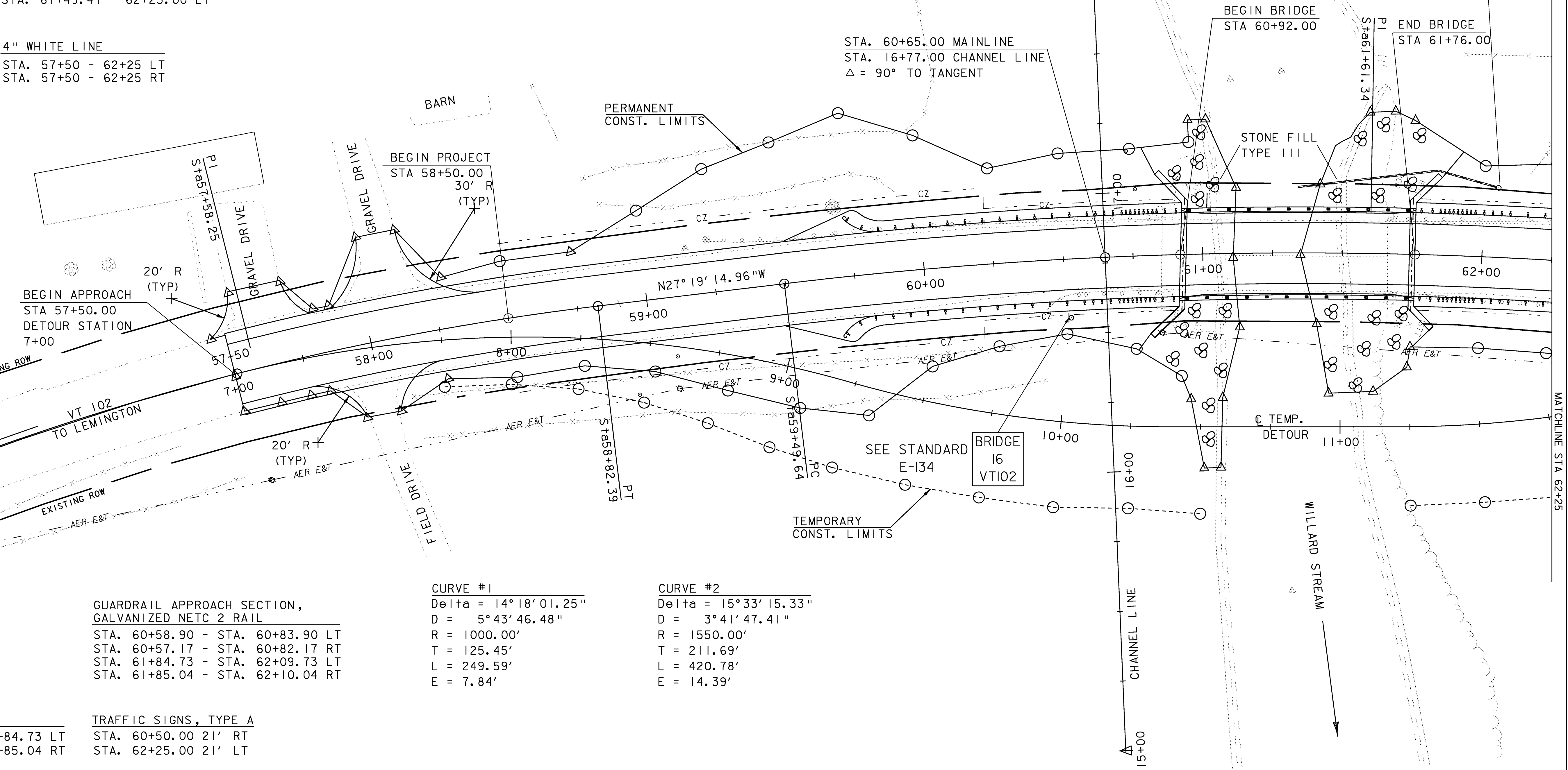
PREVIOUS BRIDGE DATA

SINGLE SPAN OPEN BOTTOM CONCRETE ARCH - DESTROYED IN 2004 FLOOD
CLEAR SPAN (NORMAL TO STREAM): 31 FEET MIN.
OVERALL LENGTH: 34.5 FEET BACK TO BACK OF ABUTMENTS
VERTICAL CLEARANCE: 7 FEET
BRIDGE WIDTH: +/- 34.5 FEET FACE OF RAIL TO FACE OF RAIL

CURRENT STRUCTURE

WIDTH: 24
LENGTH: 80

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

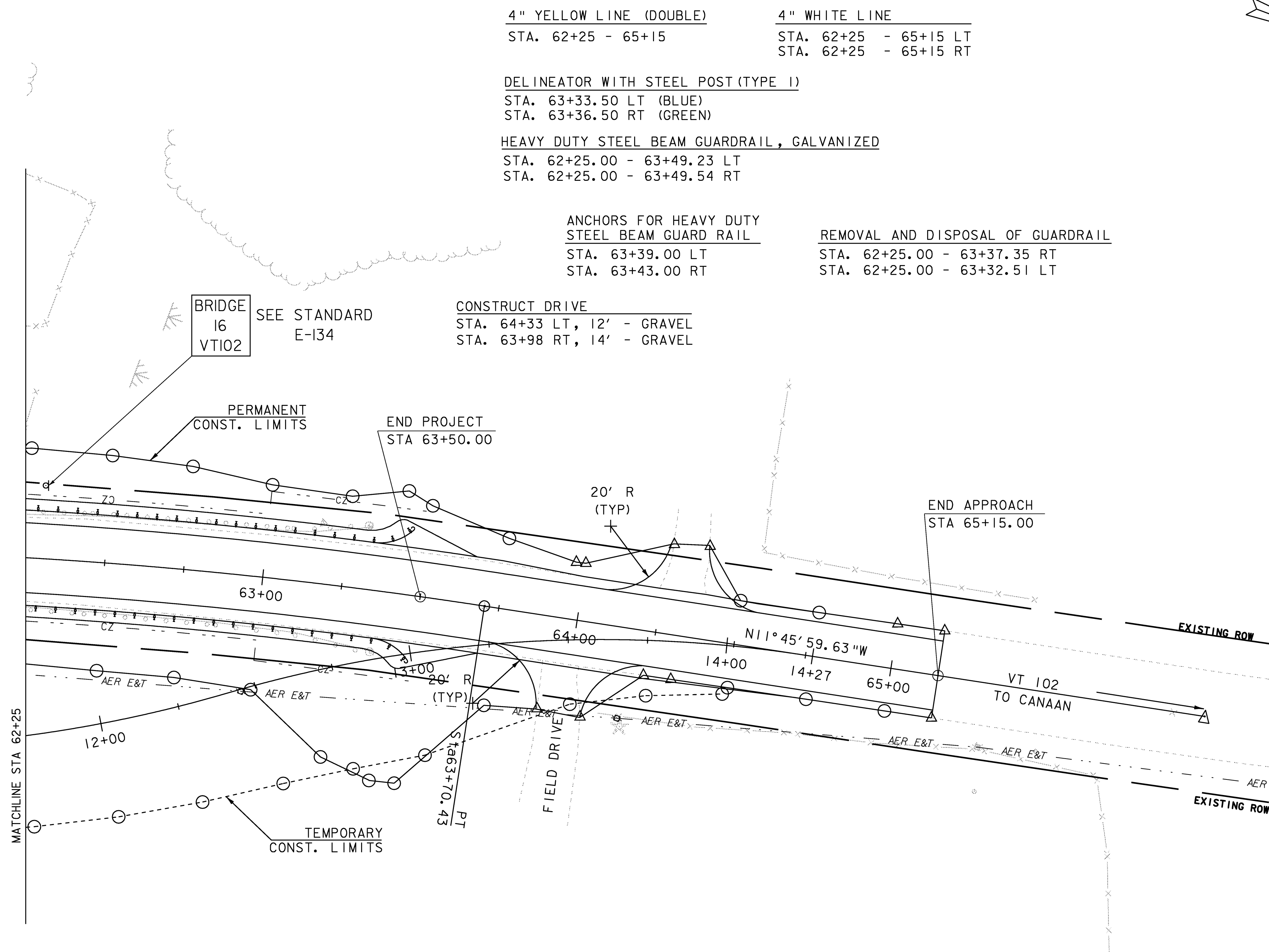


LAYOUT SHEET #1

PROJECT NAME: Canaan
PROJECT NUMBER: ER ST 027(116)

FILE NAME: 04c098\struc\04c098bdr
PROJECT LEADER: M. Evans-Mongeon
DESIGNED BY: S. Scribner

PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 12 OF 66



LAYOUT SHEET #2

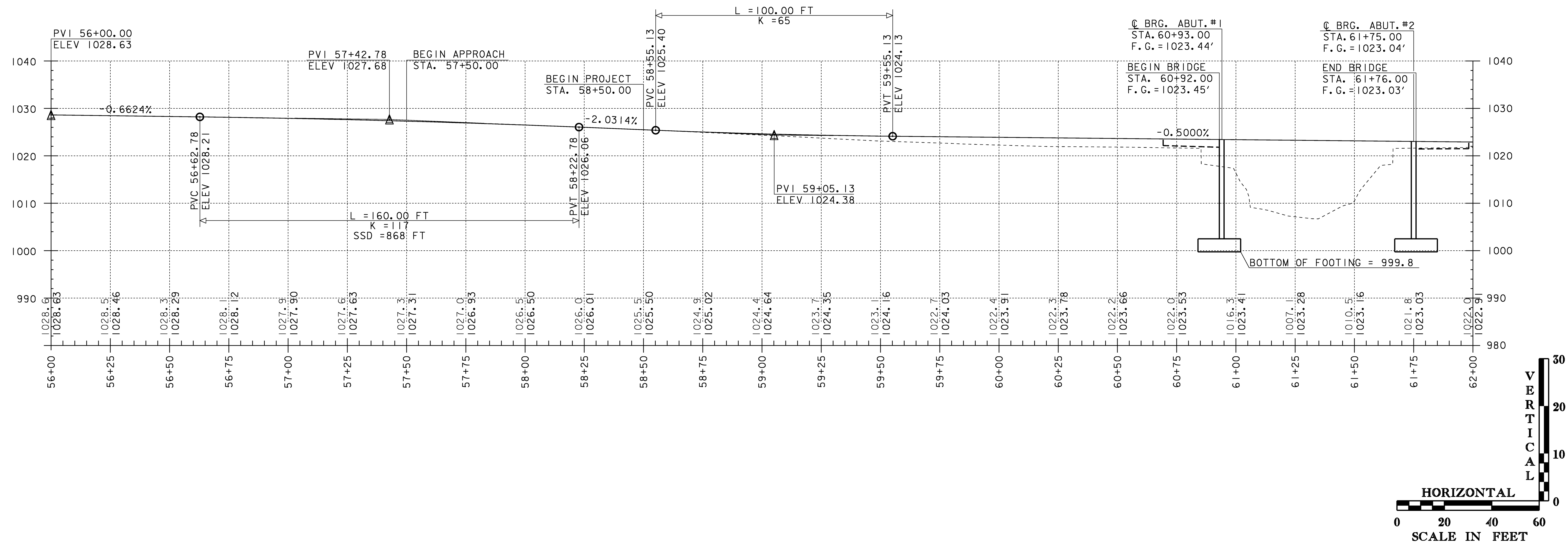
PROJECT NAME: Canaan
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: 04c098\struc\04c098bdr
PROJECT LEADER: M. Evans-Mongeon
DESIGNED BY: S. SCRIBNER

PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 13 OF 66

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

PROFILE ALONG CENTERLINE VT 102

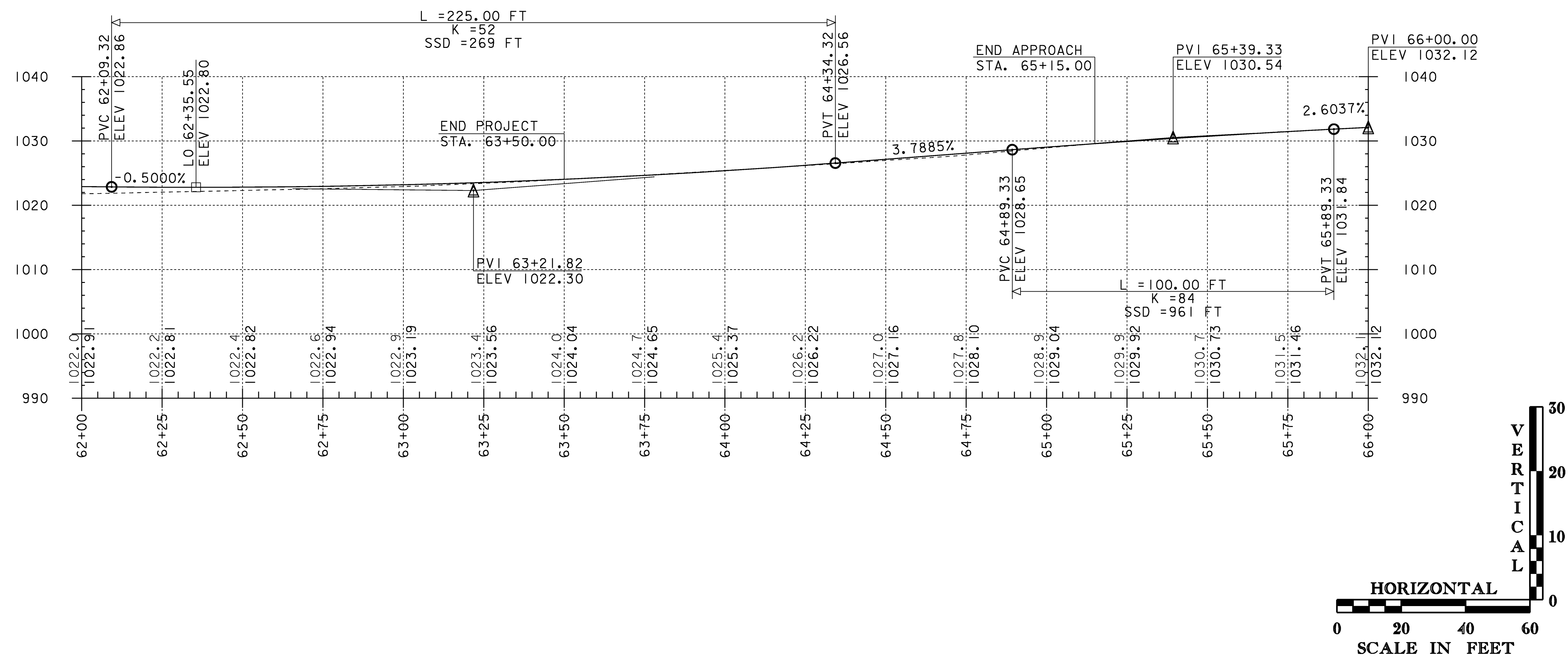


NOTE: ELEVATIONS SHOWN TO THE TENTH ARE EXISTING GROUND
ELEVATIONS SHOWN TO THE HUNDREDTH ARE FINISH GRADE

PROFILE SHEET #1

PROJECT NAME: Canaan	
PROJECT NUMBER: ER ST 027(116)	
FILE NAME: Structures\04c098xs.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: T. Husk
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER.
x04c098pfl1	SHEET 14 OF 66

PROFILE ALONG CENTERLINE VT 102



PROFILE SHEET #2

PROJECT NAME: Canaan
PROJECT NUMBER: ER ST 027(16)

FILE NAME: Structures\04c098xs.dgn
PROJECT LEADER: M. Evans-Mongeon
DESIGNED BY: S. Scribner
PLOT DATE: 18-AUG-2008
DRAWN BY: T. Husk
CHECKED BY: S. SCRIBNER.
SHEET 15 OF 66

NOTE: ELEVATIONS SHOWN TO THE TENTH ARE EXISTING GROUND
ELEVATIONS SHOWN TO THE HUNDREDTH ARE FINISH GRADE

EROSION CONTROL NARRATIVE

DESCRIPTION OF PROJECT

This project involves the reconstruction of a bridge over the Willard Stream. The project is on VT 102, a paved, Major Collector, in the town of Canaan. A new two lane, single span, steel beam bridge will be constructed at the location of the existing bridge while traffic is maintained on the temporary bridge during construction. Following completion of the new bridge, the temporary bridge and abutments will be removed. The bridge spans the Willard Stream approximately 1/2 of a mile upstream of its confluence with the Connecticut River. This portion of the brook and its flood plain are located outside of the Connecticut River flood plain. Total roadway approach work, including both approaches, is approximately 680 feet. The limits of construction do not approach any buildings or other structures. Wetlands have been identified in the project area.

The land outside of the state right of way is privately owned.

It is anticipated this project will last two construction seasons.

Total disturbed area (excluding waste, borrow and staging areas):
is .510 ha (1.26 ac.)

SITE INVENTORY & ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS:

The property surrounding the project site consists of well established vegetation with moderate sloping banks. The surrounding area consists of terraces and plains with hay cover with defined drainage ways. Due to the nature of the surrounding terrain, runoff water entering the project site will be primarily limited to that which is conveyed along roadway embankment, and that which follows VT 102 along the .5% grade at the beginning of the project limits. The current roadway ditches are not well defined and are not lined with stone.

DRAINAGE, WATERWAYS, BODIES OF WATER:

The Willard Stream is located in the project area. There are wetlands within the project area. The Willard Stream is classified as a sinuous river. At normal water levels, it is a slow velocity river. The river bed is shallow to deep with a sandy silt bottom. Around the bridge abutments there are sandy silt beaches, at ordinary high water these beaches are submerged. The contributing drainage area is 15.42 square miles.

The portion of the wetland and buffer zone in the area of proposed impact, lies within a wet meadow, agricultural field, and swamp wetland. The wetland is located adjacent to the Willard Stream and receives water from the Willard Stream in flood events. The wetland provides the function of flood storage.

The proposed project does impact this function because it minimizes permanent construction in the wetland. The only construction that will occur in the wetland is for the temporary bypass that will be completely removed at the end of the project. Before placement of temporary fill for the detour, geotextile will be placed on original grade to facilitate restoration of pre-existing grade and preservation of plant roots and seeds. After removal of the temporary bridge and approaches, the area will be planted with appropriate native species.

The wetlands occur in the floodplain of a medium size stream. Wetlands vegetation is fairly dense and likely to stabilize soil during flood events. The wetlands provide this function. The wetlands can readily be observed from the bridge by passing motorists.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is level terraces and plains at the base of a mountain side. The site lies within the Connecticut River valley and most structures within the vicinity of the site are residential or agricultural and none lie in the limits of the project. VT 102 runs perpendicular to Willard Stream which is contained by moderately sloping stream banks along each side as it meanders through a level plain before entering the Connecticut River. Overhead utility service follows along VT 102 and will be required to be relocated.

VEGETATION:

A mix of hardwood and softwood trees of all sizes exist along VT 102. Fields and agricultural crops exist in the vicinity of the project. Impacts to vegetation will be limited to that which are effected by the construction of the new bridge and temporary bridge on existing alignment. Some small 6 inch to 12 inch trees, both softwood and hardwood, may have to be removed.

The buffer zone consists of the fill placed for the existing road embankment. The buffer is typically vegetated with field grass

Following construction of the new bridge, the temporary bridge and roadway

approaches will be removed, the slopes stabilized with stone fill and vegetation reestablished with standard seed and mulch practices.

SOILS:

The Soil Conservation Service has mapped the soils throughout Essex County. The soil types identified for this are Rumney Very Fine Sandy Loam(0%-2% slope). This soil type is described as "...very deep to bedrock and well drained. Permeability is moderate or moderately rapid in the solum, and rapid or very rapid in the substratum." These soils formed in flood plains. Another soil type is Colton-Duxbury Complex(8%-15%). This soil type is described as "...very deep to bedrock and excessively drained. Permeability is moderately rapid to very rapid in the solum, and very rapid in the substratum." These soils formed in terraces and plains. The last soil found on this project is Croghan Loamy Fine Sand(3%-8%). This soil type is described as "...very deep to bedrock and poorly drained. Permeability is moderately rapid or rapid in the surface layer, and rapid or very rapid in the subsoil and stratum."

The listed Soil Erodibility Coefficient (K-value) for Rumney Very Fine Sandy Loam ranges from 0.20 to 0.37, Colton-Duxbury Complex ranges from 0.10 to 0.49, and Croghan Loamy Fine Sand is 0.17.

Generally, K-values indicate the following: 0.0 - 0.23 = low erodibility; 0.24 - 0.36 = moderate erodibility; 0.37 and higher = higher erodibility

Soils are saturated during at least part of the growing season. Because this wetland is located within the floodplain of the Willard stream, it is capable of being inundated by many feet of water. However, in most years inundation does not occur in the project area.

SENSITIVE RESOURCE AREAS:

No 'Threatened & Endangered Species' have been identified within the project limits and there will be no adverse effect to Historic or Archaeological features. Willard Stream is the only identified resource. There are wetlands in the vicinity of the project.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:

Disturbance of soils near natural or man-made waterways consists of that which is necessary to construct two new concrete bridge abutments and applicable roadway approaches as well as the removal of the existing temporary bridge. Stabilization of disturbances to stream banks will be accomplished with Stone Fill, Type III.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

Temporary erosion prevention measures to be utilized include:

Project Demarcation Fence denoted -PDF- and Barrier Fence denoted -BF- on the plans, to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding, mulching and biodegradable erosion control matting, or an equivalent product, will be utilized on all slopes steeper than 3:1 that are not lined with stone fill.

These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be exposed for several days prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes.

Before placement of temporary fill for the detour, geotextile will be placed on original grade to facilitate restoration of pre-existing grade and preservation of plant roots and seeds. All disturbed area will be top soiled, fertilized, seeded, and mulched. The construction area will be protected by erosion and sedimentation controls until disturbed areas are stabilized.

Geotextile placed under the temporary bridge approaches shall be Road Bed Separator in accordance with section 649 and will be paid incidental to the temporary bridge item in the contract.

Temporary measures to control sediment transport include:

Silt fence will be installed and maintained as indicated in "erosion & sediment control plan". The contractor may need to adjust locations as indicated on the plans to better suit their construction needs. Proposed and or alternate silt fence locations will prevent sediment transport to down gradient areas. Each line of silt fence will be placed along the contour with ends turned slightly uphill to create a ponding effect should water try to run along the fencing and around the ends. The maximum slope length between separate runs of silt fence is 100 feet. Silt fence shall be installed prior to any upslope earthwork.

Filter curtains will be installed and maintained as indicated in "erosion &

sediment control plan". The contractor may need to adjust locations as indicated on the plans to better suit their construction needs. Proposed and or alternate filter curtain locations will prevent sediment transport to the Willard stream. Filter curtain shall be installed prior to any in stream construction.

Measures such as silt fence and sand bags shall be checked regularly for accumulation of sediment. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an approved area such that they will not be subject to erosion.

Stabilized construction entrances to the project site, staging areas, as well as to waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12 feet X 50 feet. All surface water flowing to or diverted towards a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipes smaller than 6 inches diameter shall be used. See typical detail on 'Erosion and Sediment Control Plan' sheet for materials and construction method to be utilized when constructing a stabilized entrance.

Temporary sediment settling basins may or may not be utilized on this project. If a settling basin is to be used for dewatering a cofferdam, it should be sized based upon the pumping rate and target particle size to be settled out for the project site. The following sizing criteria is based upon a target particle size of .01 millimeters and is provided as general guidance on sheet 18.

PERMANENT EROSION CONTROL MEASURES

Several permanent erosion control measures will be utilized:

Stone lining of the stream banks with Stone Fill, Type III as specified by Vtrans Hydraulics personnel is specified. This stone will protect from stream bank erosion during design storm events.

Grass, or other suitable ground cover will be established outside of the roadway limits where stone lining has been determined. Specifically at the toes of slopes and any other disturbed area.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of receiving waters. The measures include stabilization and structural practices, storm water controls and other pollution prevention controls.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed by the Engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2006.

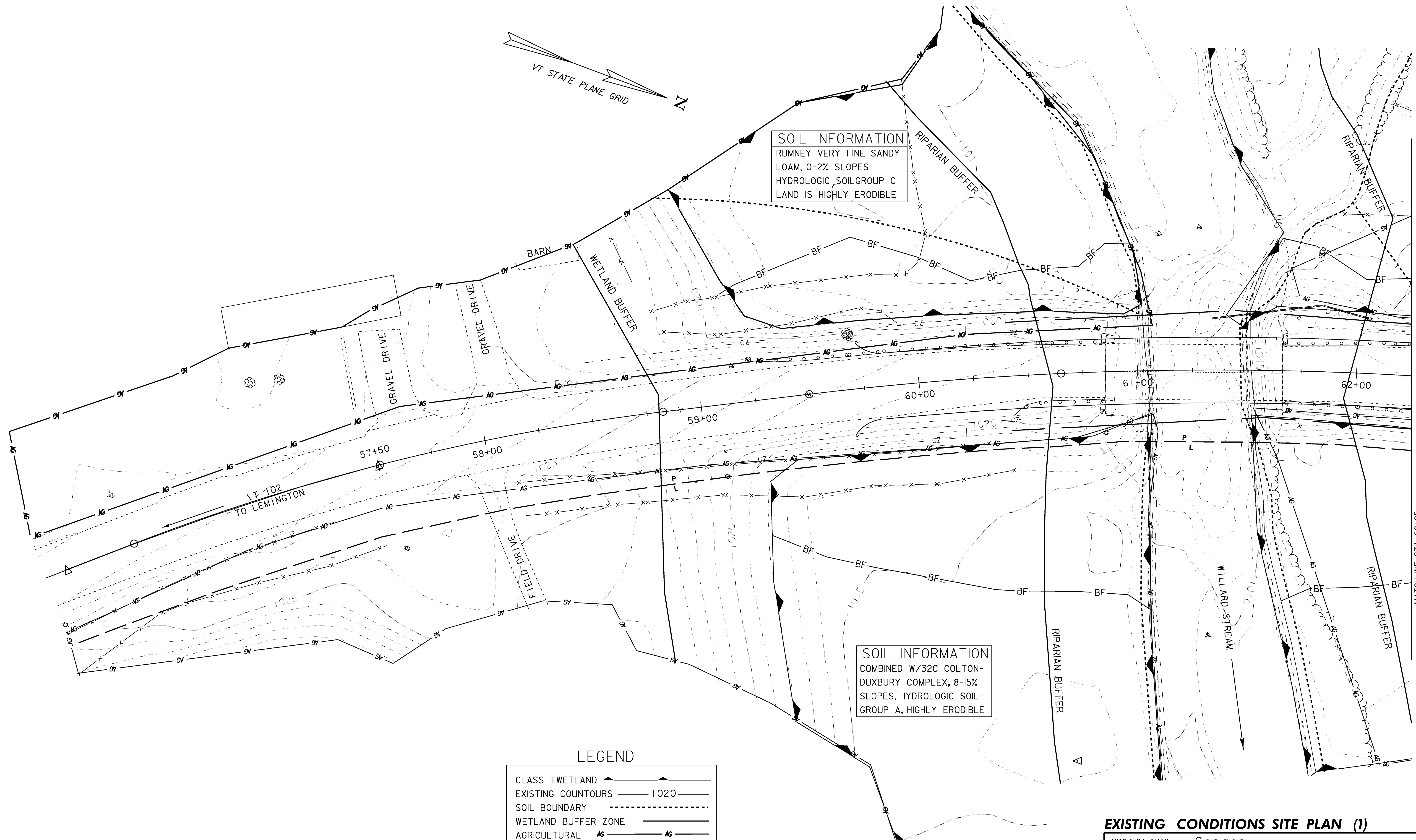
Install all erosion prevention and sediment control measures as shown in the Erosion Prevention and Sediment Control Plan or as directed by the Resident Engineer. Do not modify the type, size or location of any control or practice without approval of the Resident Engineer. Any changes shall be noted on the plans, in the weekly inspection report, and reported to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Repair measures promptly once damage is discovered.

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Temporary vegetation shall be established if the area is to be without construction activity for a period of 14 days. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds.

Maintaining vegetated buffers along stream banks, wetlands or other sensitive areas is a crucial erosion and sediment control measure that should be utilized wherever possible.

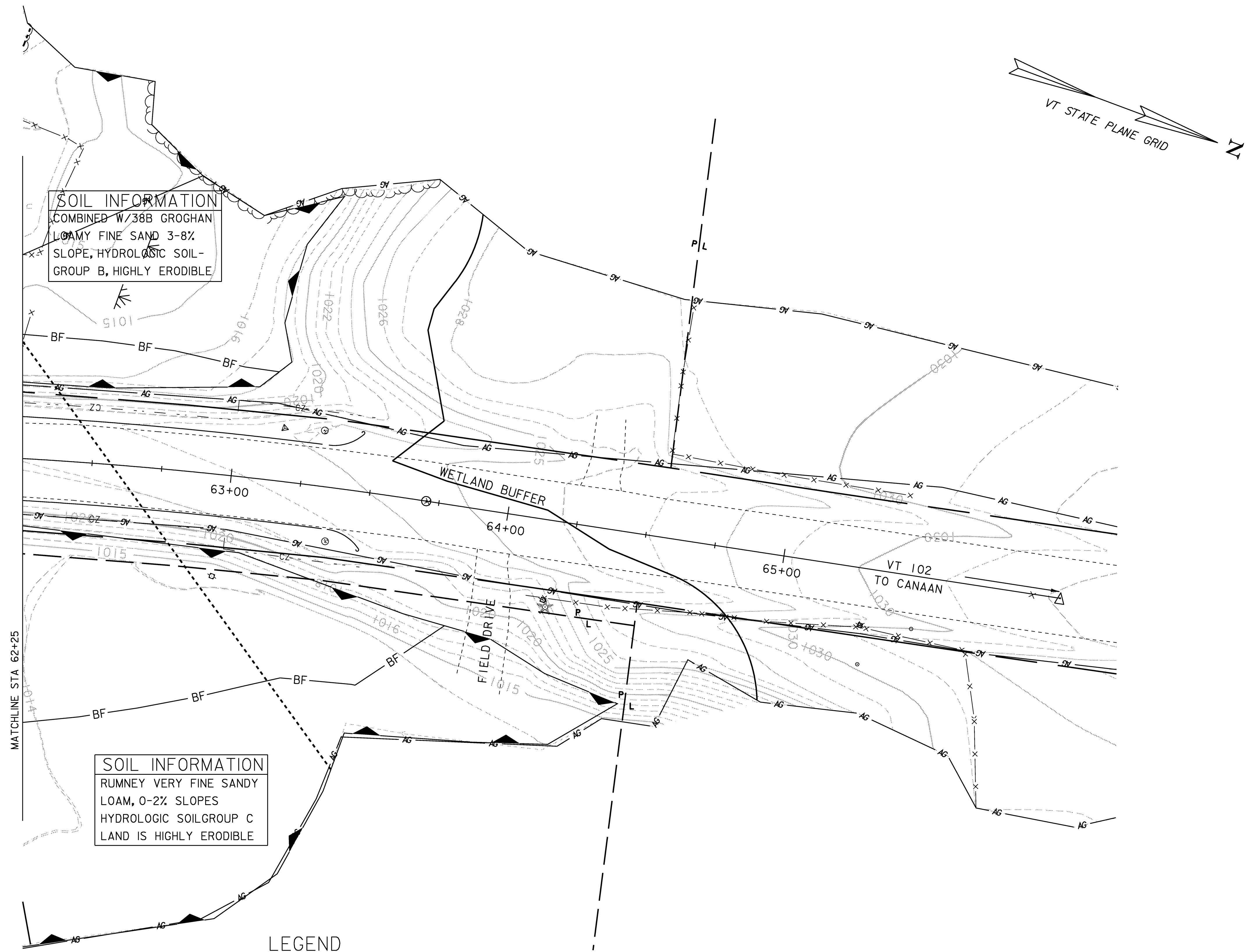
Control only sediment-laden runoff generated by the project site. Collect and route clean offsite runoff around or through the project site using diversion berms, diversion channels, culverts and/or temporary pipes. Do not allow construction equipment to operate on the down slope side of perimeter control measures.

PROJECT NAME:	CANAAN	
PROJECT NUMBER:	ER ST 0271 (16)	
FILE NAME:	M:\structures\504c098ecn.dgn	PLOT DATE: 8/18/2008
PROJECT LEADER:	M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY:	S.S. SCRIBNER	CHECKED BY: G. ROKES
EROSION CONTROL NARRATIVE		SHEET 16 OF 66

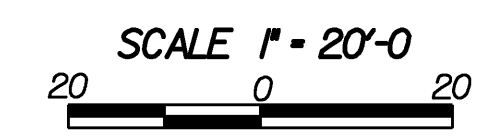


EXISTING CONDITIONS SITE PLAN (1)

PROJECT NAME:	Canaan	PLOT DATE:	18-AUG-2008
PROJECT NUMBER:	ER ST 0271(16)	DRAWN BY:	T. Husk
FILE NAME:	Structures\04c098erobdr.d	CHECKED BY:	S. Scribner
PROJECT LEADER:	M. Evans-Mongeon	SHEET 17	OF 66
DESIGNED BY:	S. Scribner		
	x04c098erol1		



LEGEND	
CLASS II WETLAND	
EXISTING COUNTOURS	
SOIL BOUNDARY	
WETLAND BUFFER ZONE	
AGRICULTURAL	

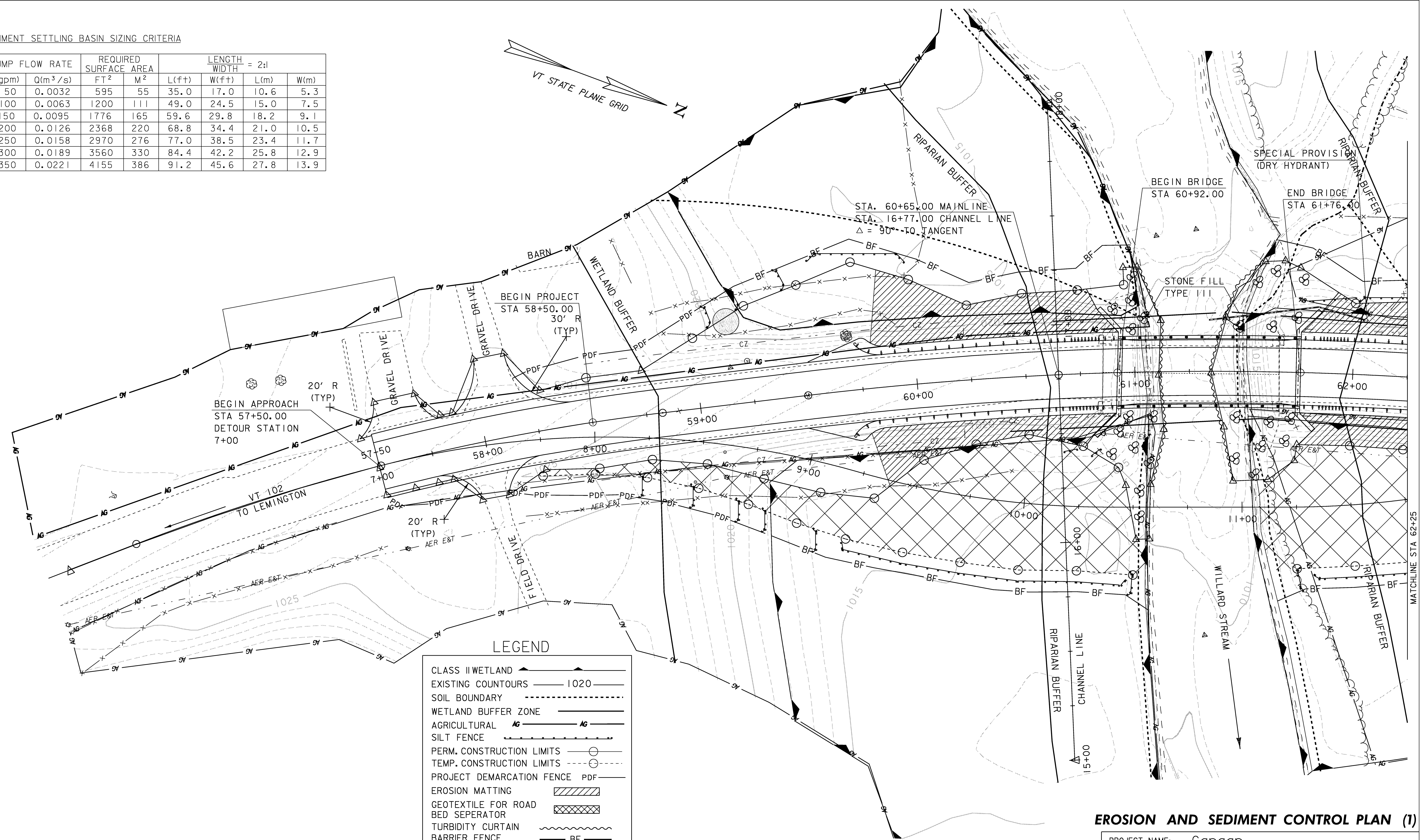


EXISTING CONDITIONS SITE PLAN (2)

PROJECT NAME:	Canaan
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	Structures\X04c098erobdr.d
PROJECT LEADER:	M. Evans-Mongeon
DESIGNED BY:	S. Scribner
FILE NAME:	X04c098erol.1
PLOT DATE:	18-AUG-2008
DRAWN BY:	T. Husk
CHECKED BY:	S. SCRIBNER
SHEET	18 OF 66

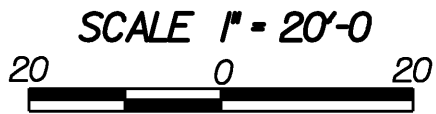
SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE		REQUIRED SURFACE AREA		LENGTH = 2xL			
Q(gpm)	Q(m ³ /s)	FT ²	M ²	L(ft)	W(ft)	L(m)	W(m)
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9



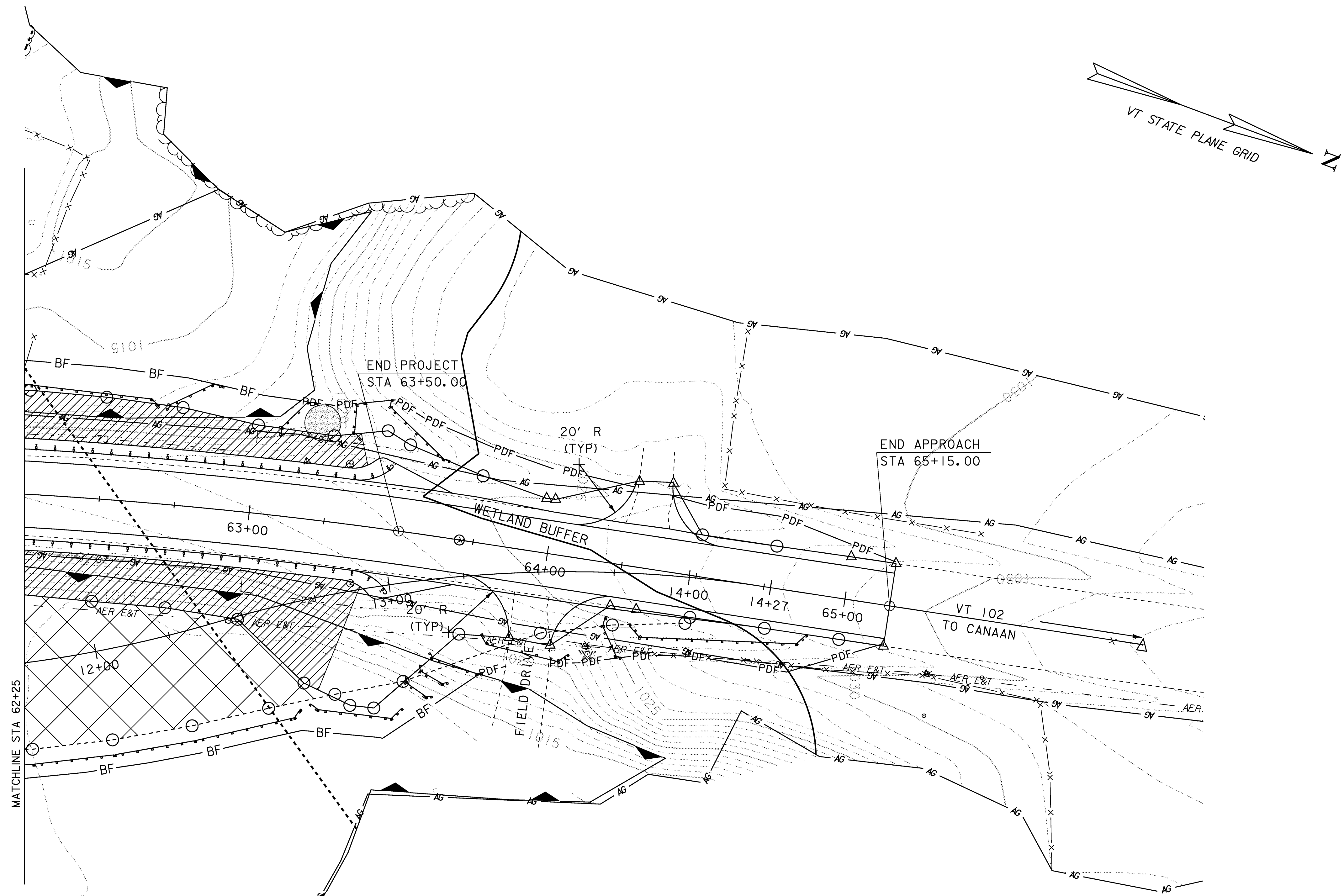
LEGEND

- CLASS II WETLAND
- EXISTING COUNTOURS 1020
- SOIL BOUNDARY
- WETLAND BUFFER ZONE
- AGRICULTURAL AG
- SILT FENCE
- PERM. CONSTRUCTION LIMITS
- TEMP. CONSTRUCTION LIMITS
- PROJECT DEMARCATION FENCE PDF
- EROSION MATTING
- GEOTEXTILE FOR ROAD BED SEPERATOR
- TURBIDITY CURTAIN
- BARRIER FENCE BF
- PROPOSED SEDIMENT DEWATERING LOCATION



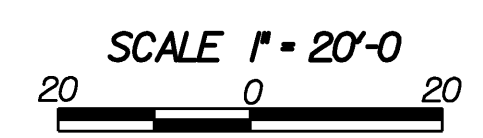
EROSION AND SEDIMENT CONTROL PLAN (1)

PROJECT NAME:	Canaan	FILE NAME:	Structures\04c098erobdr.d	PLOT DATE:	18-AUG-2008
PROJECT NUMBER:	ER ST 0271(16)	PROJECT LEADER:	M. Evans-Mongeon	DRAWN BY:	T. Husk
		DESIGNED BY:	S. Scribner	CHECKED BY:	S. SCRIBNER
			04c098erol1	SHEET 19	OF 66



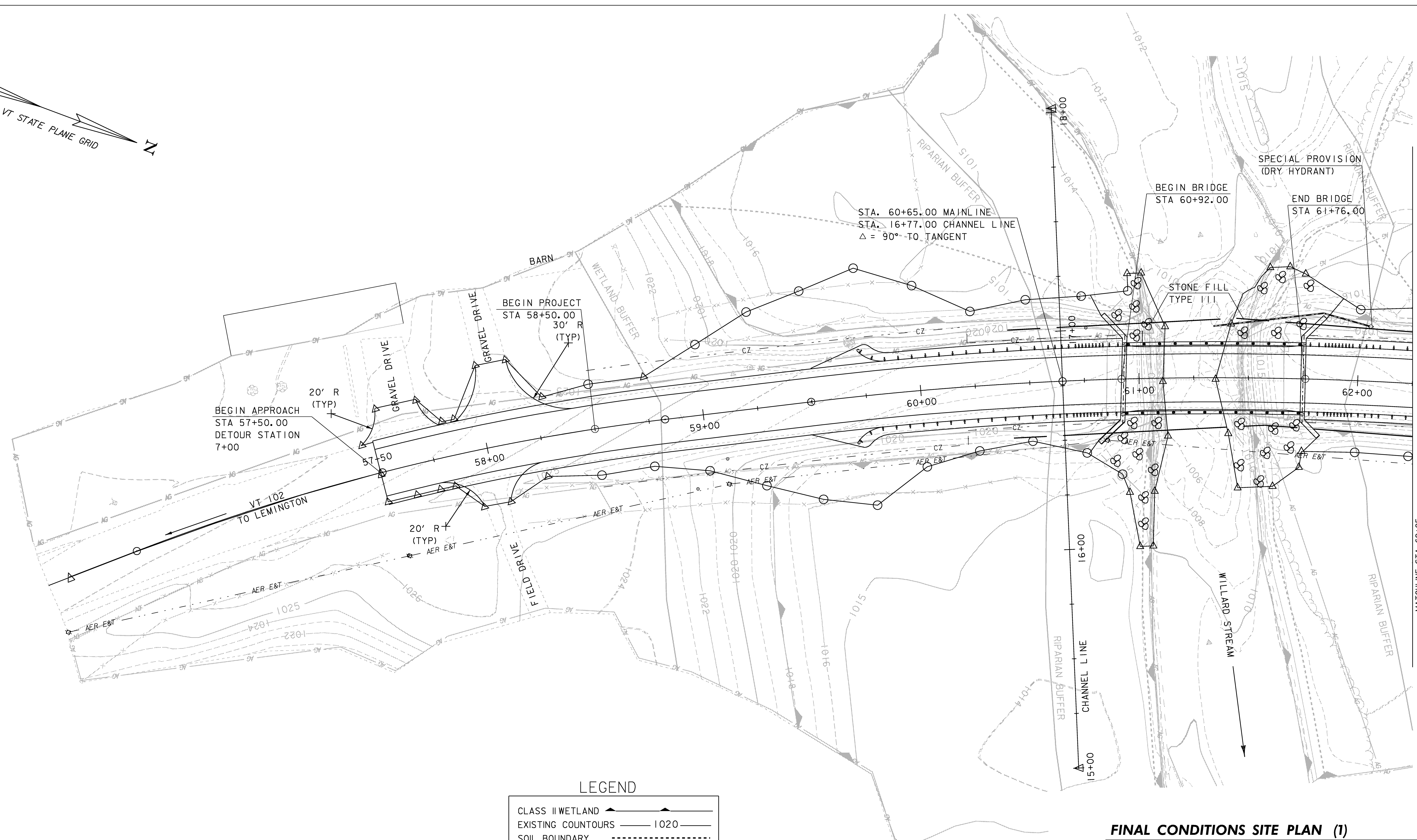
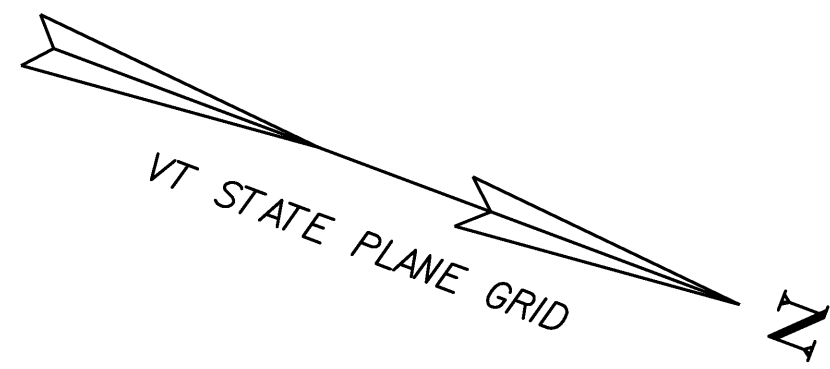
LEGEND

CLASS II WETLAND	
EXISTING COUNTOURS	
SOIL BOUNDARY	
WETLAND BUFFER ZONE	
AGRICULTURAL	
SILT FENCE	
PERM. CONSTRUCTION LIMITS	
TEMP. CONSTRUCTION LIMITS	
PROJECT DEMARCATION FENCE	
EROSION MATTING	
GEOTEXTILE FOR ROAD BED SEPERATOR	
BARRIER FENCE	
PROPOSED SEDIMENT DEWATERING LOCATION	



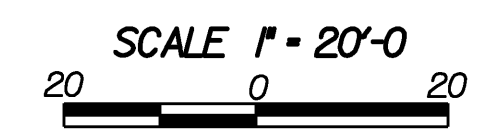
EROSION AND SEDIMENT CONTROL PLAN (2)

PROJECT NAME:	Canaan
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	Structures\X04c098ero4.1
PROJECT LEADER:	M. Evans-Mongeon
DESIGNED BY:	S. Scribner
PLOT DATE:	18-AUG-2008
DRAWN BY:	T. Husk
CHECKED BY:	S. SCRIBNER
SHEET	20
OF	66



LEGEND

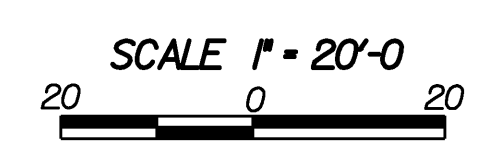
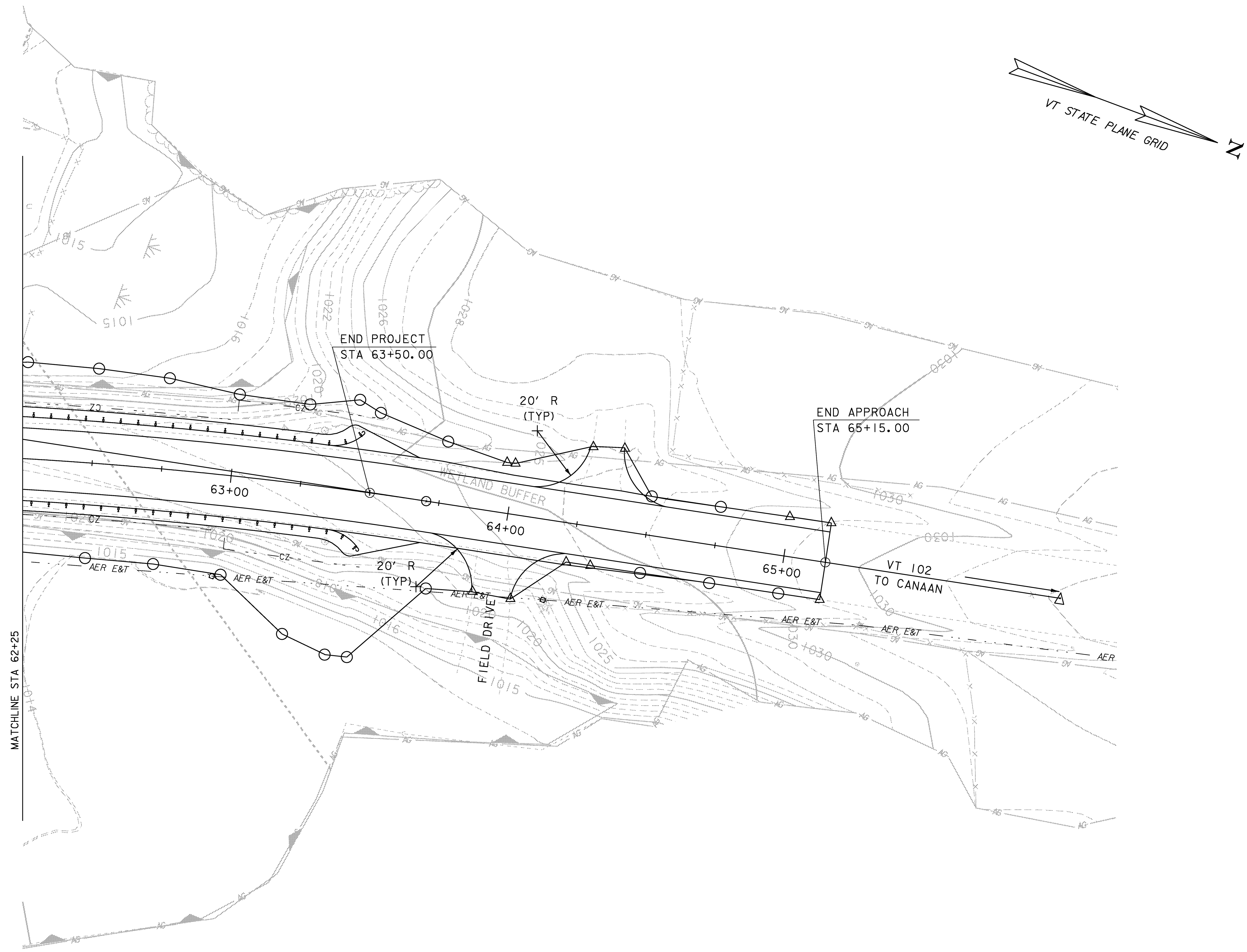
CLASS II WETLAND	
EXISTING CONTOURS	
SOIL BOUNDARY	
WETLAND BUFFER ZONE	
AGRICULTURAL	



FINAL CONDITIONS SITE PLAN (1)

PROJECT NAME:	Canaan
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	Structures\04c098erobdr.d
PROJECT LEADER:	M. Evans-Mongeon
DESIGNED BY:	S. Scribner
PLOT DATE:	18-AUG-2008
DRAWN BY:	T. Husk
CHECKED BY:	S. Scribner
SHEET	21
OF	66

CONTOURS SHOWN ARE EXISTING CONTOURS,
SEE CROSS SECTIONS FOR PROPOSED CONTOURS.

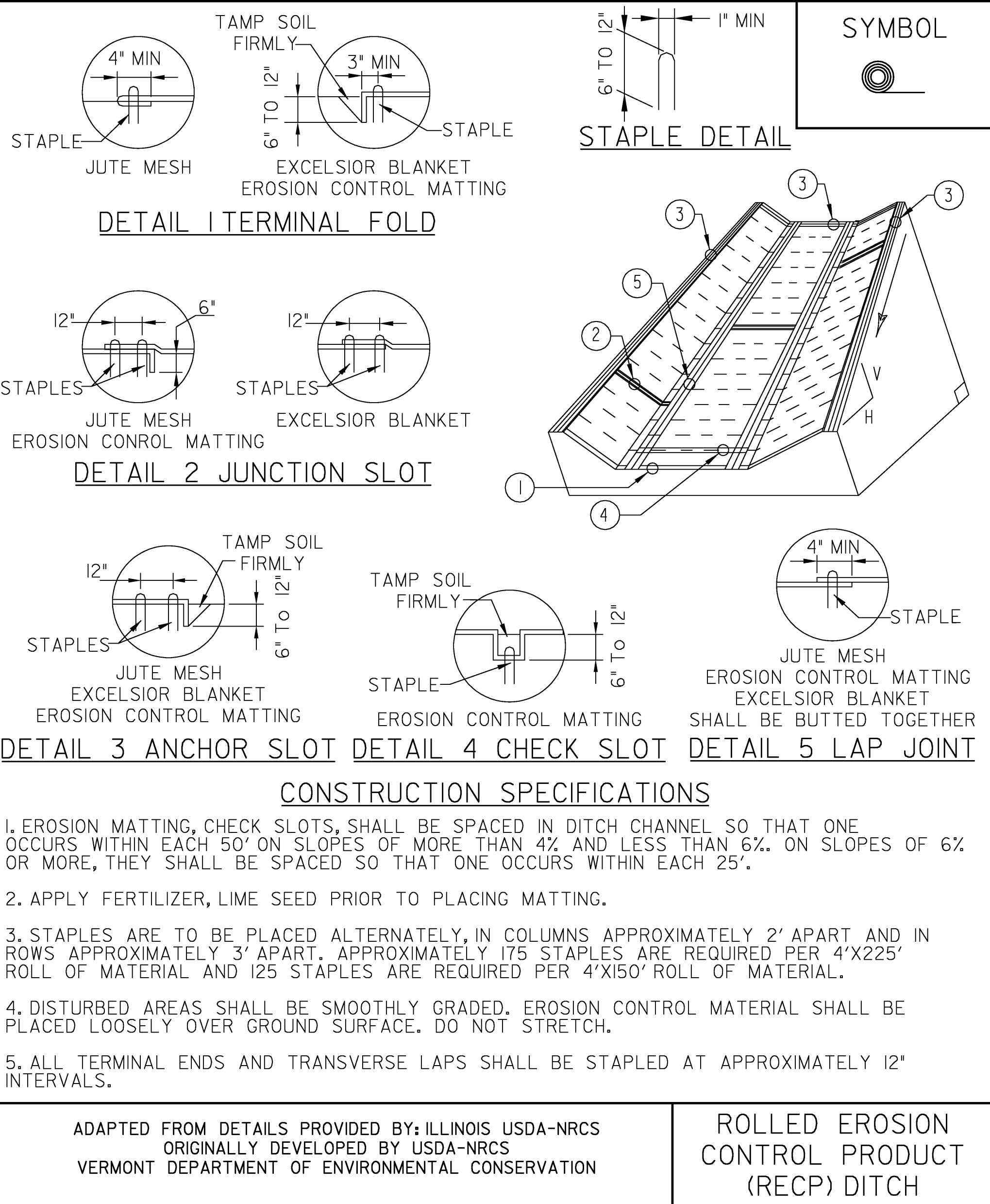


LEGEND	
CLASS II WETLAND	
EXISTING COUNTOURS	
SOIL BOUNDARY	
WETLAND BUFFER ZONE	
AGRICULTURAL	

CONTOURS SHOWN ARE EXISTING CONTOURS,
SEE CROSS SECTIONS FOR PROPOSED CONTOURS.

FINAL CONDITIONS SITE PLAN (2)

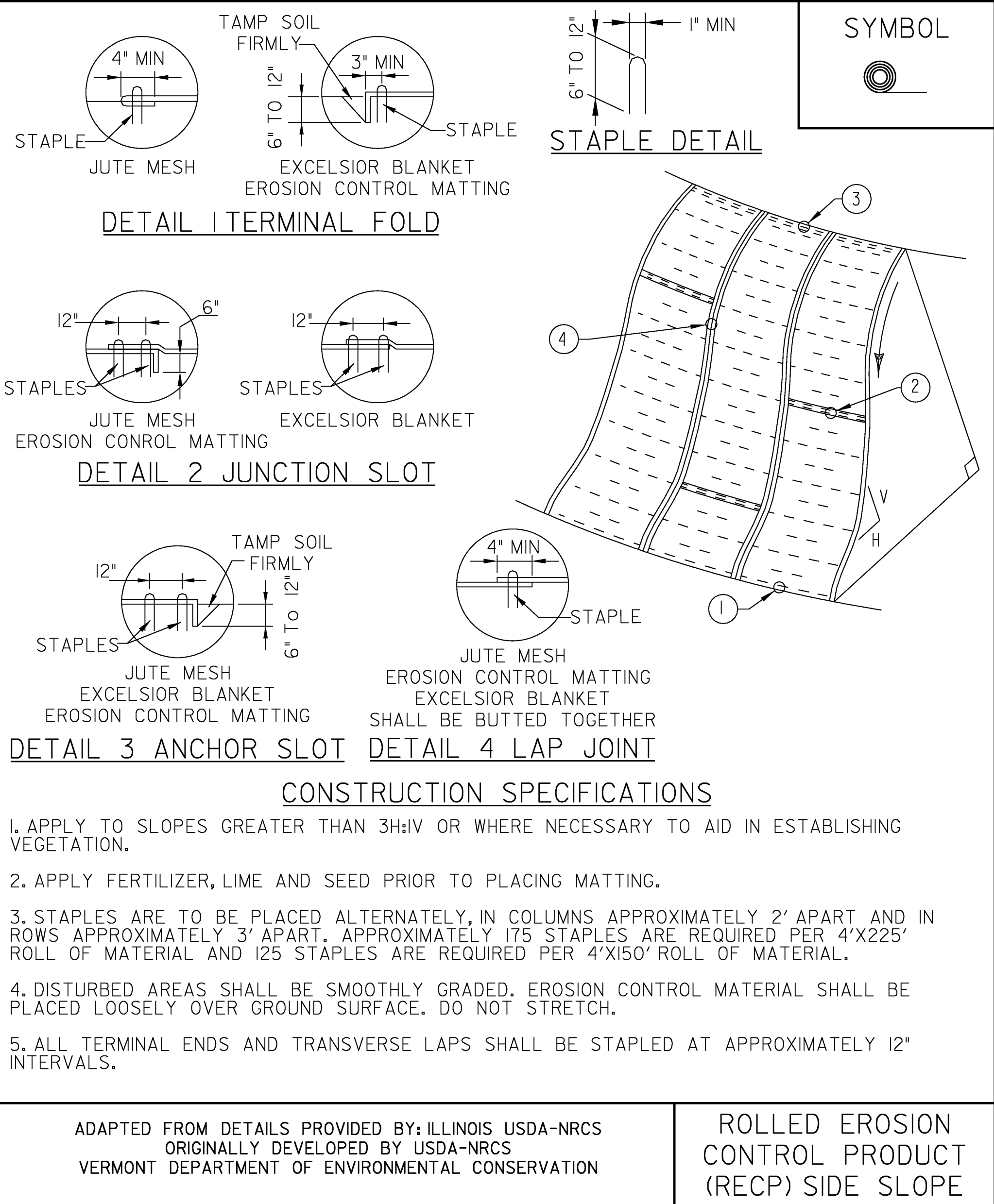
PROJECT NAME:	Canaan
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	Structures\X04c098erobdr.d
PROJECT LEADER:	M. Evans-Mongeon
DESIGNED BY:	S. Scribner
x04c098ero6.1	
PLOT DATE:	18-AUG-2008
DRAWN BY:	T. Husk
CHECKED BY:	S. SCRIBNER
SHEET	22 OF 66



NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL ~2006~" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.20 TEMPORARY EROSION MATTING OR
~~653.21 PERMANENT EROSION MATTING~~

REVISIONS		
MARCH 8, 2007	JMF	
APRIL 16, 2007	WHF	



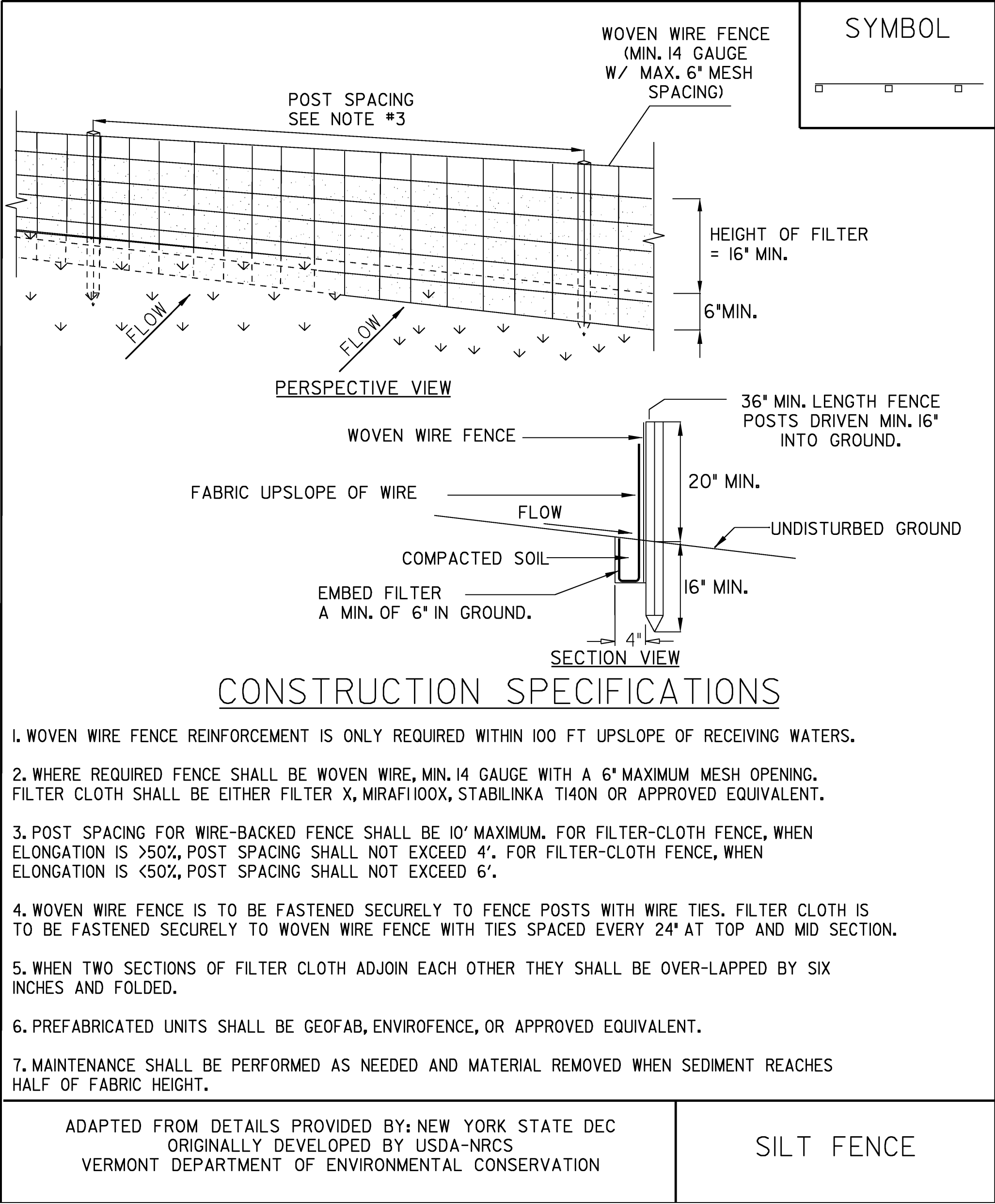
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL ~2006~" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.20 TEMPORARY EROSION MATTING OR
~~653.21 PERMANENT EROSION MATTING~~

NEW		
APRIL 16, 2007	WHF	
REVISIONS		

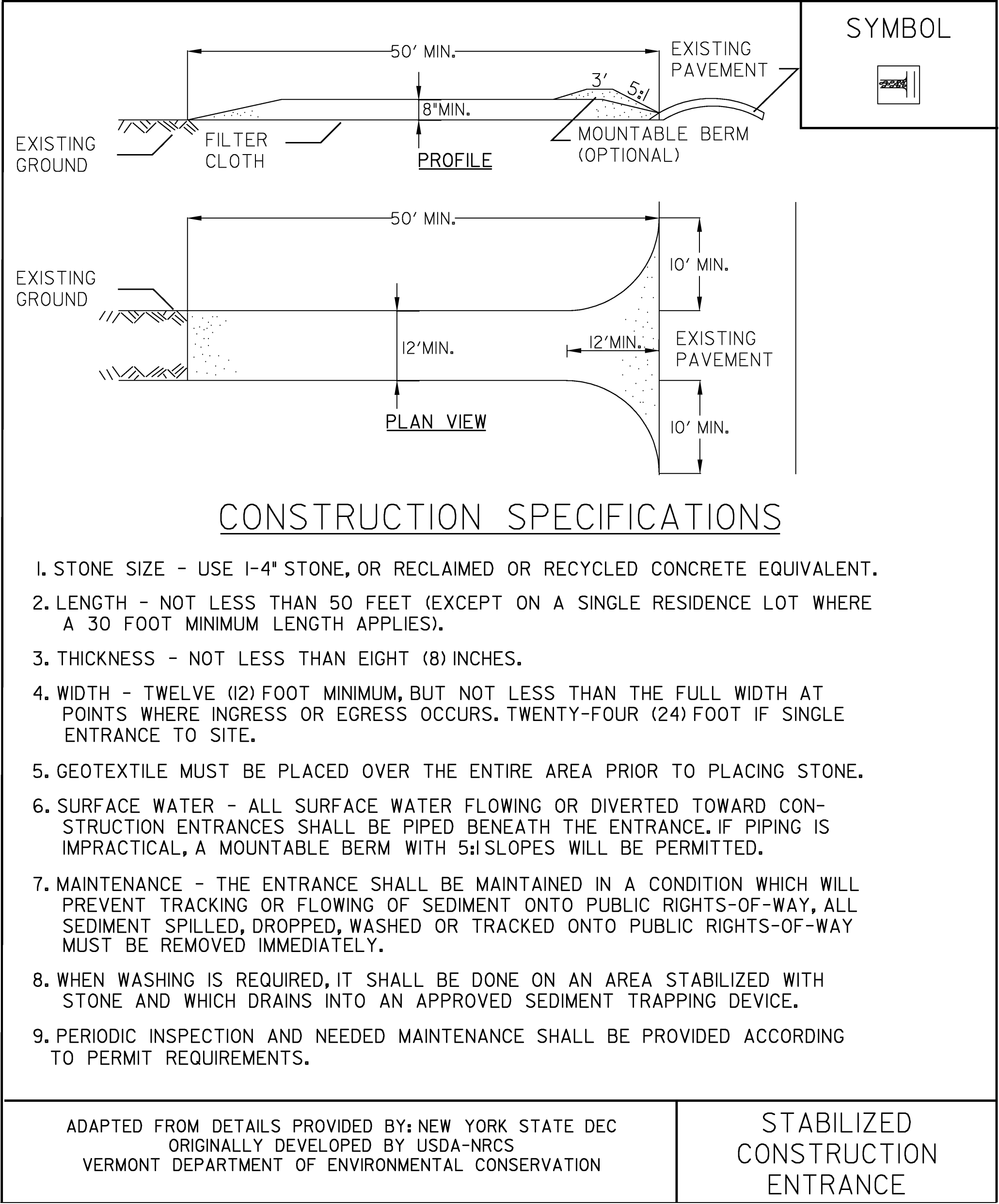
EROSION DETAIL SHEET 1

PROJECT NAME: Canaan	
PROJECT NUMBER: ER ST 0271(I6)	
FILE NAME: Structures*c098ero.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: T. Husk
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER
x04c098ero8.1	SHEET 23 OF 66



NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
STANDARD SPECIFICATION 649.51 GEOTEXTILE FOR SILT FENCE OR
SPECIAL PROVISION 900.675 (GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED)



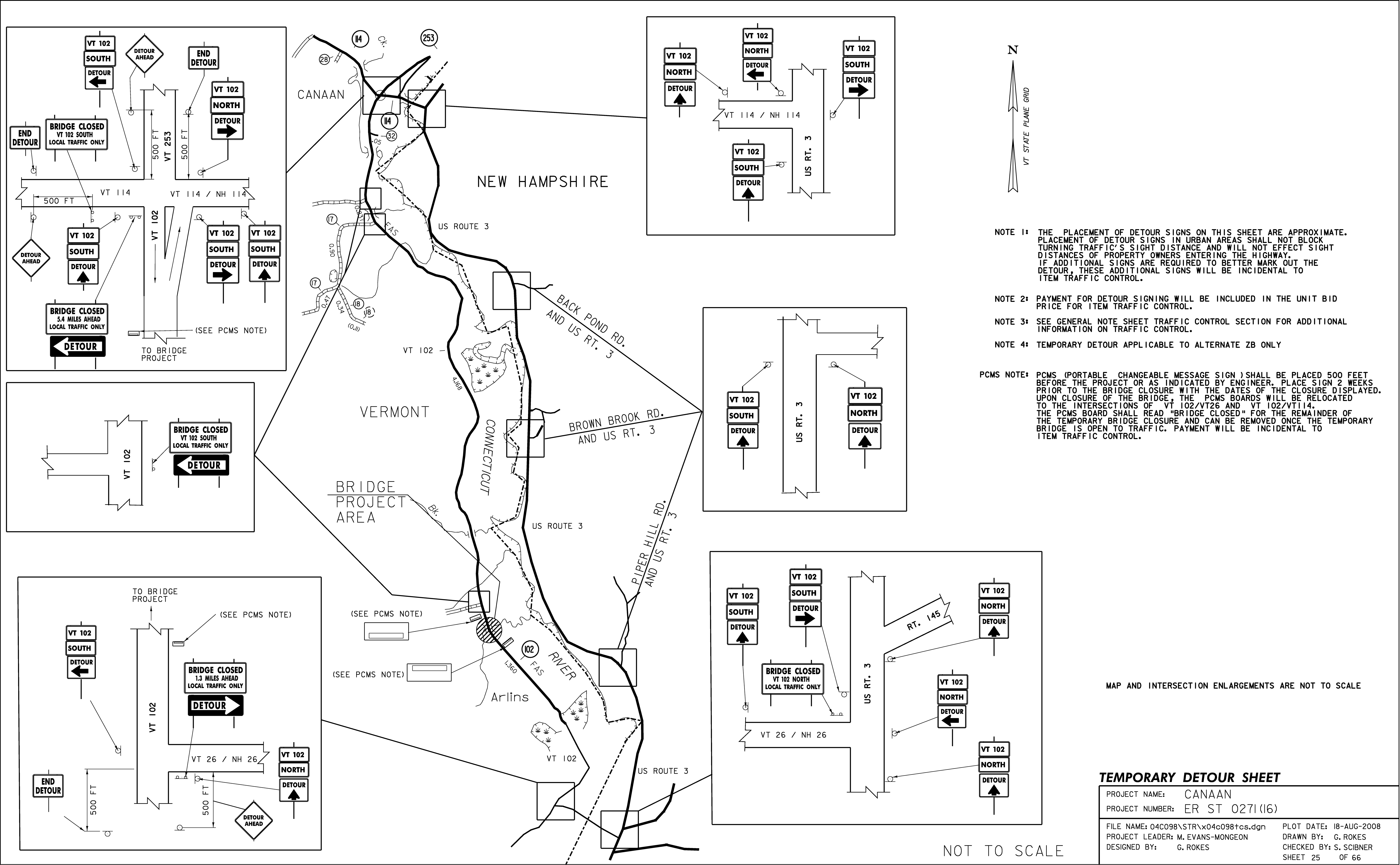
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS ITEM SHALL BE PAID FOR UNDER ITEM
653.35 VEHICLE TRACKING PAD

REVISIONS
FEBRUARY 9, 2007 WHF
MARCH 8, 2007 JMF

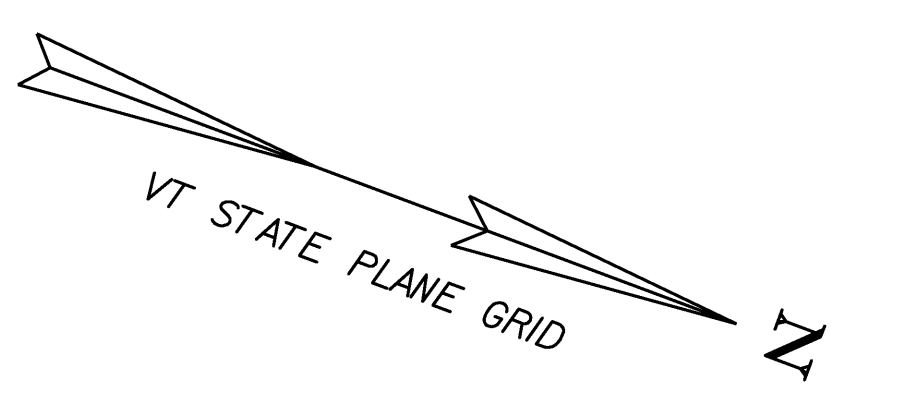
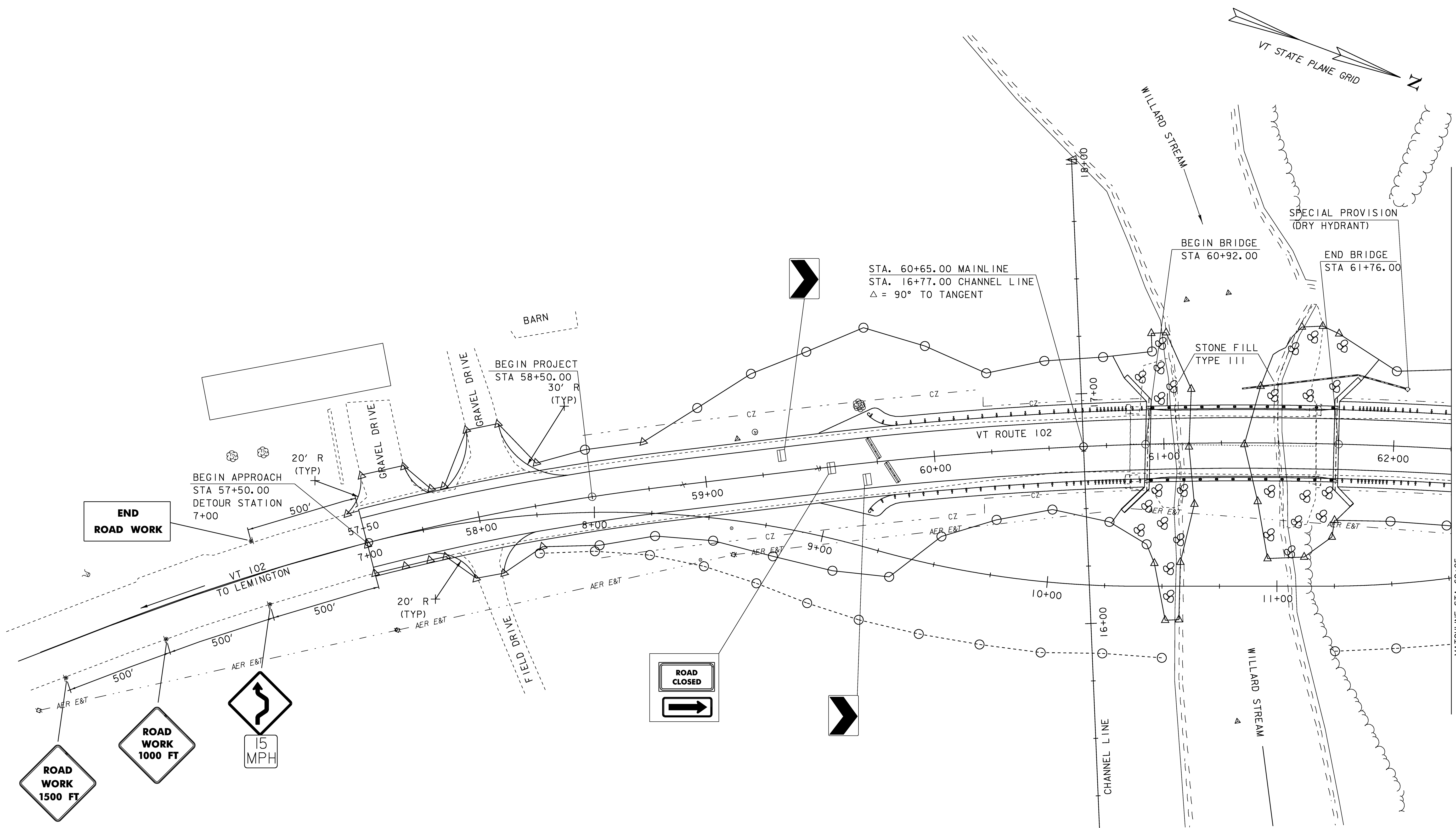
EROSION DETAIL SHEET 2

PROJECT NAME:	Canaan
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	Structures*c098ero.dgn
PROJECT LEADER:	M. Evans-Mongeon
DESIGNED BY:	S. Scribner
x04c098ero9.1	
PLOT DATE:	18-AUG-2008
DRAWN BY:	T. Husk
CHECKED BY:	S. SCRIBNER
SHEET 24	OF 66



TEMPORARY DETOUR SHEET

PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	04C098\STR\X04C098+cs.dgn
PROJECT LEADER:	M. EVANS-MONGEON
DESIGNED BY:	G. ROKES
PLOT DATE:	18-AUG-2008
DRAWN BY:	G. ROKES
CHECKED BY:	S. SCIBNER
SHEET	25 OF 66



**END
ROAD WORK**

BEGIN APPROACH
STA 57+50.00
DETOUR STATION
7+00

BEGIN PROJECT
STA 58+50.00
30' R
(TYP)

STA. 60+65.00 MAINLINE
STA. 16+77.00 CHANNEL LINE
 $\Delta = 90^\circ$ TO TANGENT

BEGIN BRIDGE
STA 60+92.00

END BRIDGE
STA 61+76.00

STONE FILL
TYPE III

VT ROUTE 102

WILLARD STREAM

CHANNEL LINE

MATCHLINE STA 62+25

**ROAD
WORK
1500 FT**

**ROAD
WORK
1000 FT**

**15
MPH**

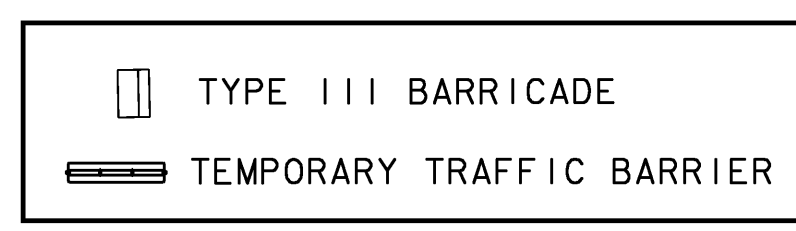
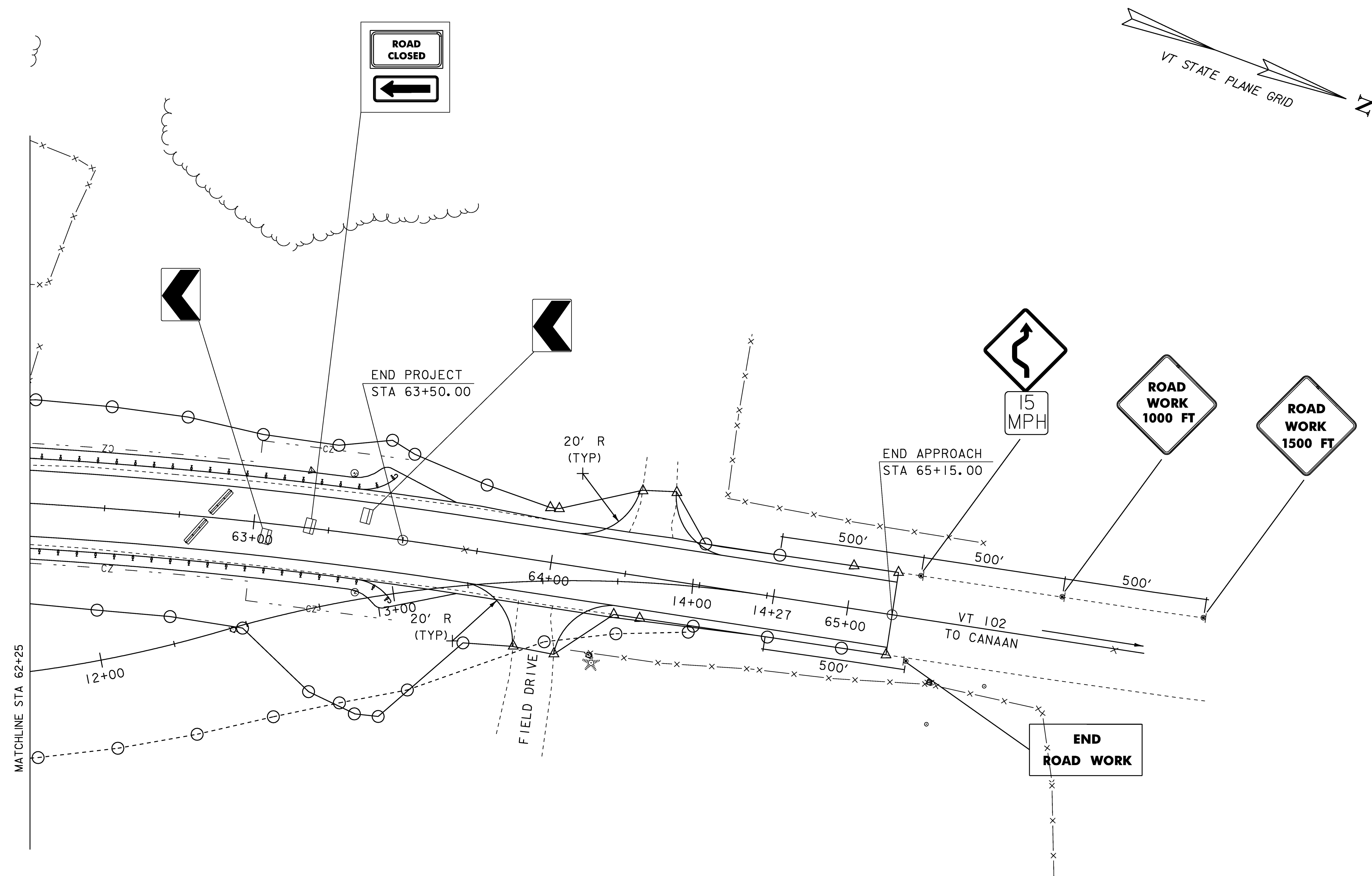
**ROAD
CLOSED**

TYPE III BARRICADE
TEMPORARY TRAFFIC BARRIER

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

TRAFFIC CONTROL SHEET #1

PROJECT NAME: Canaan	
PROJECT NUMBER: ER ST 0271(16)	
FILE NAME: Structures/04c098+cs.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: T. Husk
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER
x04c098+cs.l	SHEET 26 OF 66



SCALE 1" = 20'-0"

TRAFFIC CONTROL SHEET #2

PROJECT NAME: Canaan	
PROJECT NUMBER: ER ST 0271(16)	
FILE NAME: Structures/04c098+cs.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: T. Husk
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER
x04c098+cs2.1	SHEET 27 OF 66

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

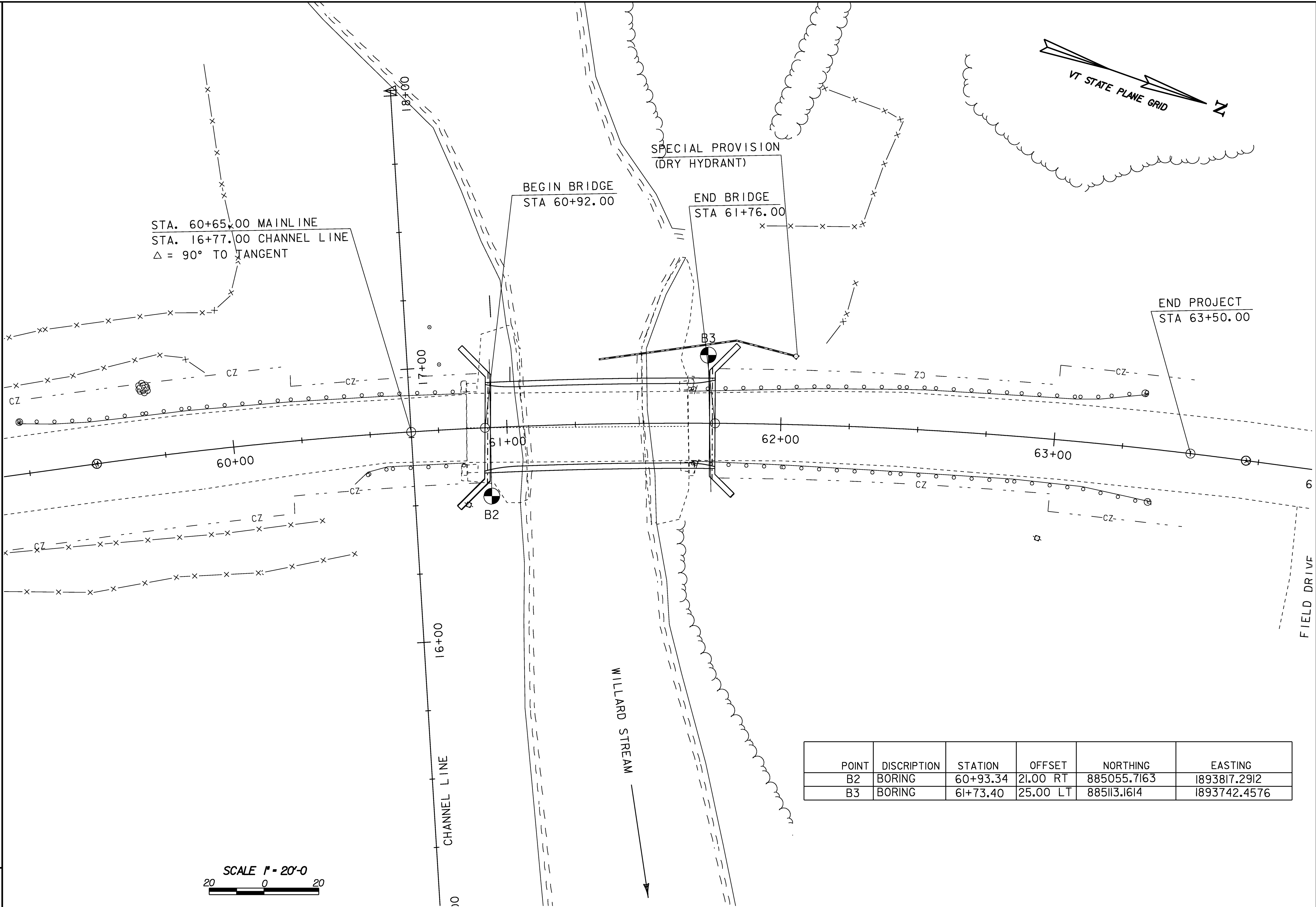
CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
○	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 3/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
SI	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	To Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N 100)

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



POINT	DISCRPTION	STATION	OFFSET	NORTHING	EASTING
B2	BORING	60+93.34	21.00 RT	885055.7163	1893817.2912
B3	BORING	61+73.40	25.00 LT	885113.1614	1893742.4576

DEFINITIONS (AASHTO)

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

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

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

GRAVEL - Rounded particles of rock < 3" and > 0.075" (#10 sieve).

SAND - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).

SILT - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

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

VARVED - Alternate layers of silt and clay.

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

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

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

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

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

DIP - Inclination of bed with a horizontal plane.

GENERAL NOTES

- The subsurface explorations shown herein were made between 10/30/04 and 12/03/04 by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	CANAAN	Bridge No.	16
Highway No.	VT 102	Log Sta.	
		Surv. Sta.	
BORING INFORMATION SHEET			
Designed By	S. SCRIBNER	Drawn By	T. HUSK
Checked By	S. SCRIBNER	Bridge Design Supervisor	
PROJECT	CANAAN	PROJECT NO.	ER ST 0271(16)
I.G.C. Info.			
Bridge Sheet No.		Sheet	28 of 66

BOTTOM OF FOOTING
 ELEVATION = 999.80

 Working to Get You There Vermont Agency of Transportation				STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION				BORING NUMBER: B-2 SHEET 1 of 2 DATE STARTED: 11/01/04 DATE COMPLETED: 11/09/04			
PROJECT NAME: CANAAN SITE NAME: BR-16 STATION: 60+93.34 OFFSET: 21.00						PROJECT NUMBER: ST 0271(16) SITE NUMBER: VT-102 GROUND ELEVATION: 1017.0 ft GROUNDWATER DEPTH: 8.0 ft 11/09/04					
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL						BORING RIG: LARGE SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY: CAA					
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)		
10		A-1-b, GrSa, brn, Moist, Rec. = 0.4 ft	10	17.3	31.5	48.7	19.8				
		No Recovery, 2.0 ft - 4.0 ft	5								
		A-1-b, SaGr, brn, Moist, Rec. = 0.5 ft	5	12.6	45.3	43.1	11.6				
		A-1-b, SaGr, brn, Moist, Rec. = 0.4 ft	10	13.9	46.6	39.6	13.8				
		A-1-a, SaGr, brn, Moist, Rec. = 0.8 ft	7	14.9	51.7	37.7	10.6				
		A-1-a, SaGr, brn, Moist, Rec. = 0.7 ft	6	12.2	60.7	29.7	9.6				
		A-4, SaSi, Dk/gry, Moist, Rec. = 1.1 ft	7	21.8	0.2	37.6	62.2				
		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft	4	22.0	0.0	8.9	91.1				
		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft	3	26.5	0.0	4.8	95.2				
		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft	2	27.9	0.0	6.7	93.3				
20		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft	2	25.4	0.0	4.9	95.1				
30		A-4, Si, Dk/gry, Moist, Rec. = 1.2 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.2 ft	2	24.7	0.0	3.7	96.3				
40		A-4, Si, Dk/gry, Moist, Rec. = 1.0 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.0 ft	3	26.3	0.0	5.0	95.0				
50		A-4, Si, Dk/gry, Moist, Rec. = 1.1 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.1 ft	2	23.5	0.0	7.0	93.0				
60		A-4, Si, Dk/gry, Moist, Rec. = 1.2 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.2 ft	2	26.5	0.0	3.9	96.1				
70		A-4, Si, Dk/gry, Moist, Rec. = 1.0 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.0 ft	WH	29.5	0.0	2.1	97.9				
80		A-4, Si, Dk/gry, Moist, Rec. = 1.1 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.1 ft	WH	27.4	0.0	1.8	98.2				
90		A-4, Si, Dk/gry, Moist, Rec. = 0.8 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 0.8 ft	2	28.4	0.0	1.8	98.2				
100		A-4, Si, Dk/gry, Moist, Rec. = 0.9 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 0.9 ft	WH	28.4	0.0	1.4	98.6				
110		A-4, Si, Dk/gry, Moist, Rec. = 1.4 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.4 ft	WH	28.3	0.0	1.2	98.8	24	3		
120		A-4, Si, Dk/gry, Moist, Rec. = 1.3 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.3 ft	WH	29.2	0.0	1.4	98.6	25	3		
130		A-4, Si, Dk/gry, Moist, Rec. = 1.4 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 1.4 ft	WH	28.2	0.0	1.0	99.0	25	2		
140		84.0 ft, No sample, Still in same material, Will continue in 10 ft. intervals until material changes.									
		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft	WH	28.4	0.0	1.9	98.1	25	3		
150		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft									
		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft	WH	27.9	0.0	1.9	98.1	25	4		
160		No Recovery, 105.0 ft - 107.0 ft									
		No Recovery, 105.0 ft - 107.0 ft	9								

LOG OF BORING CANAAN ST0271(16).GPJ VT AOT.GBT 8/8/05

LOG OF BORING CANAAN ST0271(16).dgn VT AOT.GBT 8/8/05

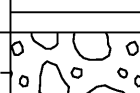
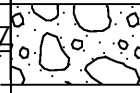
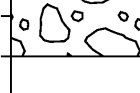
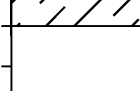
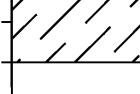
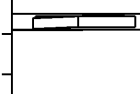
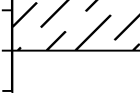
 STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION				BORING NUMBER: B-2 SHEET 2 of 2 DATE STARTED: 11/01/04 DATE COMPLETED: 11/09/04					
PROJECT NAME: CANAAN SITE NAME: BR-16 STATION: 60+93.34 OFFSET: 21.00				PROJECT NUMBER: ST 0271(16) SITE NUMBER: VT-102 GROUND ELEVATION: 1017.0 ft GROUNDWATER DEPTH: 8.0 ft 11/09/04					
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL				BORING RIG: LARGE SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY: CAA					
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
		A-4, SaSi, Dk/gry, Moist, Rec. = 1.9 ft	9	19.7	0.0	28.6	71.4		
		112.0 ft, Drillers noted pocket of sandy material that changed back to silt between 110 ft. and 120 ft.							
120		A-4, Si, Dk/gry, Moist, Rec. = 1.8 ft, Encountered flowing water.	WH	29.5	0.0	1.0	99.0	27	4
130		Visual Class: A-4, Si, Dk/gry, Moist, Rec. = 1.9 ft, 130.0 ft - 132.0 ft	WH	29.2					
140		Visual Class: A-4, Si, Dk/gry, Moist, Rec. = 1.6 ft, 140.0 ft - 142.0 ft	WH	30.5					
150		A-4, Si, Dk/gry, Moist, Rec. = 1.5 ft	WH	30.3	0.0	1.5	98.5	26	3
160		Visual Class: A-4, Si, Dk/gry, Moist, Rec. = 1.5 ft, 160.0 ft - 162.0 ft	WH	31.3					
170		A-4, CiSi, Dk/gry, Moist, Rec. = 1.8 ft	WH	31.3	0.0	0.5	99.5	30	7
180		180.0 ft - 182.0 ft, No Sample, Advanced casing.							
190		190.0 ft - 192.0 ft, No Sample, Advanced casing.							
200		A-4, Si, Dk/gry, Moist, Rec. = 1.9 ft	WH	30.0	0.0	1.6	98.4	27	3
		Hole stopped @ 202.0 ft							
210		DRILLER'S NOTES: Encountered flowing water at 120.0 feet.							

LOG OF BORING CANAAN ST0271(16).dgn VT AOT.GBT 8/8/05

BORING LOG SHEET 1

PROJECT NAME: Canaan	
PROJECT NUMBER: ER ST 0271(16)	
FILE NAME: Structures\04c098ero.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: T. Husk
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER
x04c098bsl.l	SHEET 29 OF 66

BOTTOM OF FOOTING
 ELEVATION = 999.80

 VTrans Working to Get You There Vermont Agency of Transportation				STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION				BORING NUMBER: B-3 SHEET 1 of 2 DATE STARTED: 11/30/04 DATE COMPLETED: 12/03/04			
PROJECT NAME: CANAAN SITE NAME: BR-16 STATION: 61+73.40 OFFSET: -25.00						PROJECT NUMBER: ST 0271(16) SITE NUMBER: VT-102 GROUND ELEVATION: 1020.72 ft GROUNDWATER DEPTH: 11.16 ft 12/03/04					
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL						BORING RIG: LAG TRACK RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY: CAA					
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)		
5		BXDC, Cleaned out casing., 4.5 ft - 5.0 ft A-1-a, SaGr, brn, Moist, Rec. = 0.3 ft	4	12.0	53.2	39.7	7.1				
10		A-1-b, GrSa, brn, Moist, Rec. = 1.0 ft	15	13.8	40.7	46.7	12.6				
15		A-1-a, SaGr, gry, Moist, Rec. = 0.5 ft 17.0 ft, Little gray silt at bottom of sampler.	8	13.2	57.7	27.6	14.7				
20		A-4, Si, Dk/gry, Moist, Rec. = 2.0 ft	2	26.9	0.0	3.2	96.8	24	4		
25		VS = 717/68 psf, 26.5 ft - 26.9 ft									
30		A-4, Si, Dk/gry, Moist, Rec. = 1.5 ft	2	29.2	0.0	3.3	96.7				
35		VS = 845/166 psf, 36.5 ft - 36.9 ft									
40		A-4, Si, Dk/gry, Moist, Rec. = 1.5 ft	4	27.8	0.0	1.1	98.9				
45		VS = 936/174 psf, 46.5 ft - 46.9 ft									

LOG OF BORING CANAAN ST0271(16).GPJ VT-A01.GDT 8/6/05

LOG OF BORING CANAAN ST0271(16).gpl VT A01.GDT 8/8/05

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

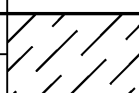
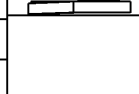
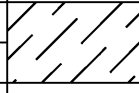
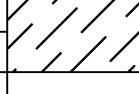
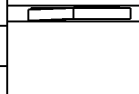
BORING NUMBER: B-3
SHEET 2 of 2
DATE STARTED: 11/30/04
DATE COMPLETED: 12/03/04

PROJECT NAME: CANAAN
SITE NAME: BR-16
STATION: 61+73.40
OFFSET: -25.00

PROJECT NUMBER: ST 0271(16)
SITE NUMBER: VT-102
GROUND ELEVATION: 1020.72 ft
GROUNDWATER DEPTH: 11.16 ft 12/03/04

BORING CREW
CREW CHIEF: TALLMAN
DRILLER: TALLMAN
LOGGER: RUSSELL

BORING RIG: LAG TRACK RIG
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: CAA

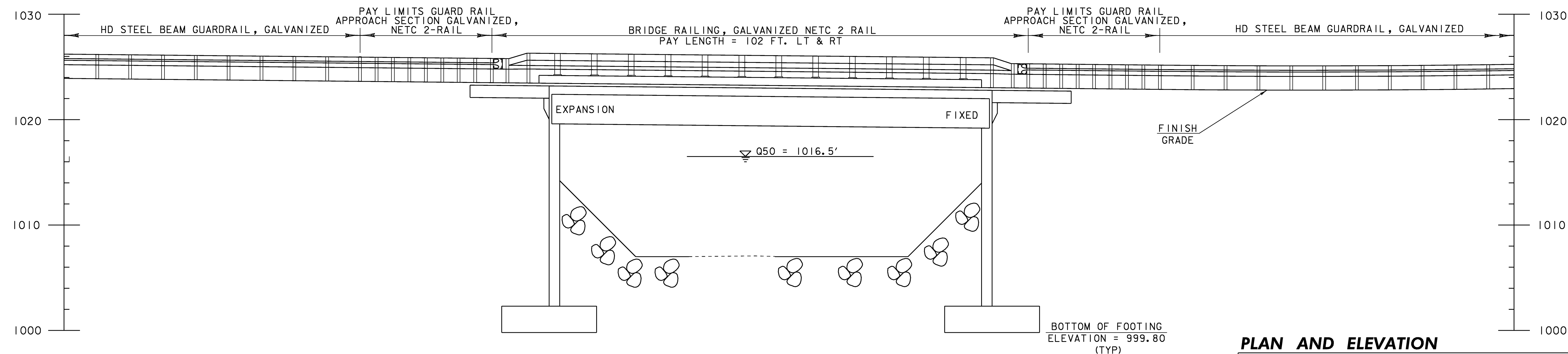
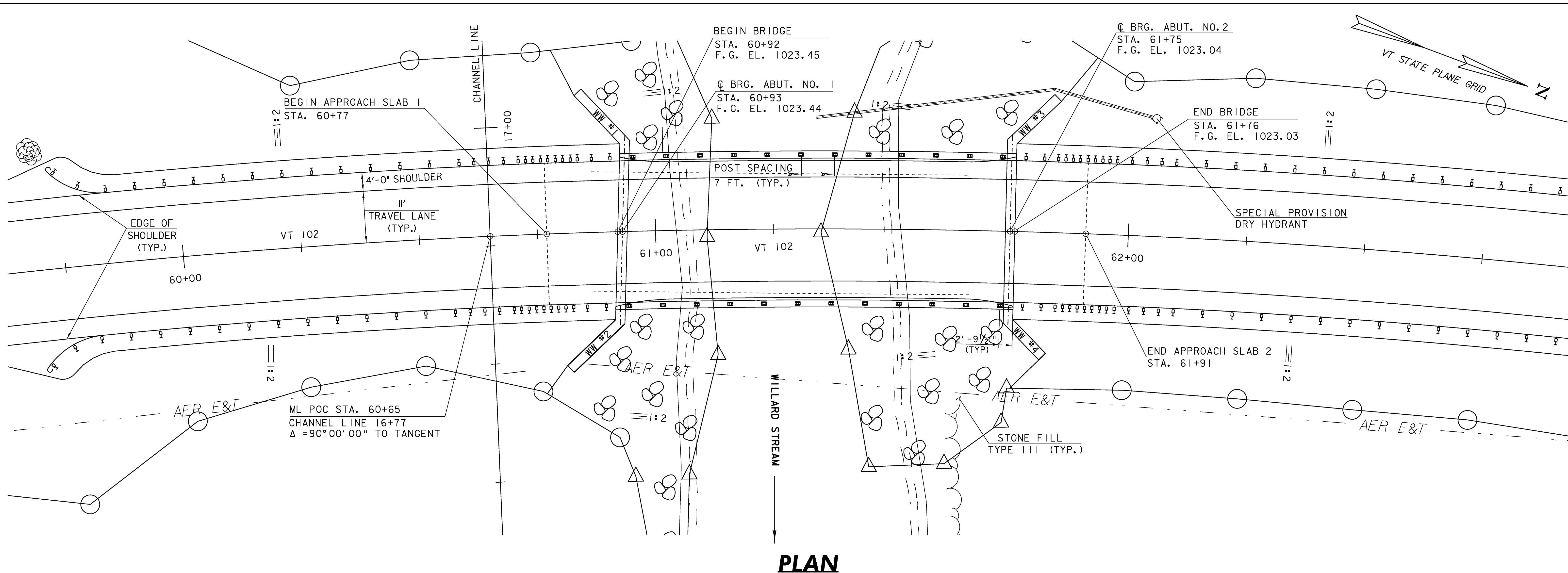
DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
55		A-4, Si, Dk/gry, Moist, Rec. = 1.4 ft	3	25.9	0.0	2.5	97.5		
		VS = 905/151 psf, 56.5 ft - 56.9 ft							
60		A-4, Si, Dk/gry, MTW, Rec. = 1.7 ft	2	29.5	0.0	0.6	99.4	24	3
65		VS = 1071/211 psf, 66.5 ft - 66.9 ft							
70		A-4, Si, Dk/gry, MTW, Rec. = 1.8 ft	4	27.7	0.0	0.4	99.6		
75		VS = 1011/196 psf, 76.5 ft - 76.9 ft Hole stopped @ 76.9 ft							
80		DRILLER'S NOTES: 1. Vane used was 2.5 inches x 5.0 inches. 2. Vane Shear = Initial/Remold.							
85									
90									
95									

LOG OF BORING CANAAN ST0271(16).GFI VT ADT-G01 8/8/05

LOG OF BORING CANAAN ST0271(16).gpl VT A01.GDT 8/8/05

BORING LOG SHEET 2

PROJECT NAME: Canaan	
PROJECT NUMBER: ER ST 0271(16)	
FILE NAME: Structures\04c098ero.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: T. Husk
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER
x04c098bs2.1	SHEET 30 OF 66



ELEVATION

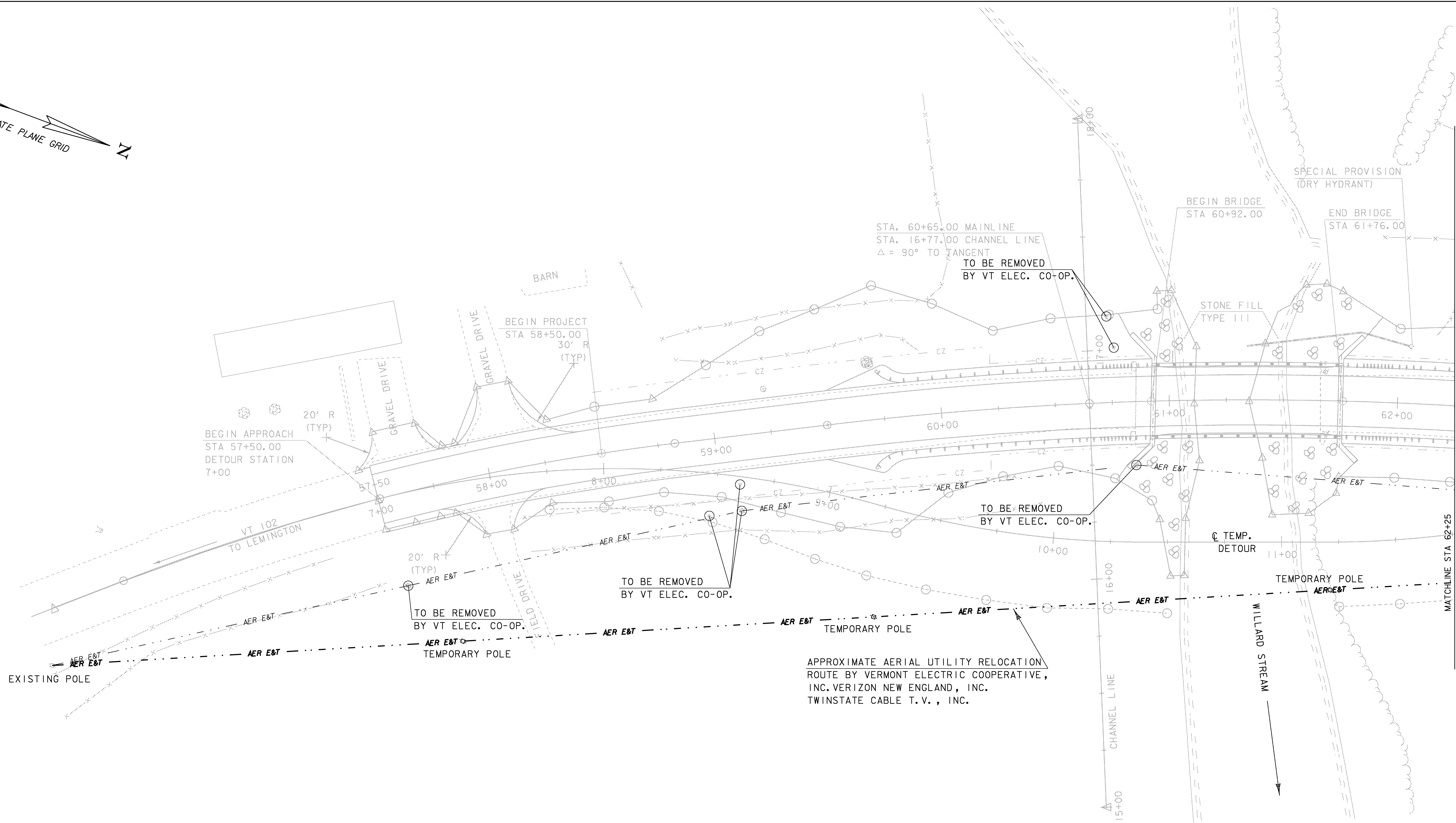
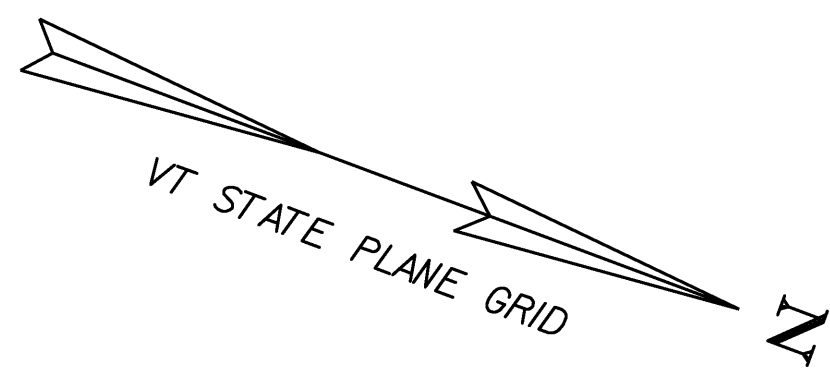
SCALE 1" = 10'-0"

PLAN AND ELEVATION

PROJECT NAME: Canaan
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: Structures\04c098pe.dgn
PROJECT LEADER: M. Evans-Mongeon
DESIGNED BY: S. Scribner
x04c098pe.i

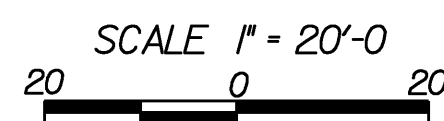
PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 31 OF 66

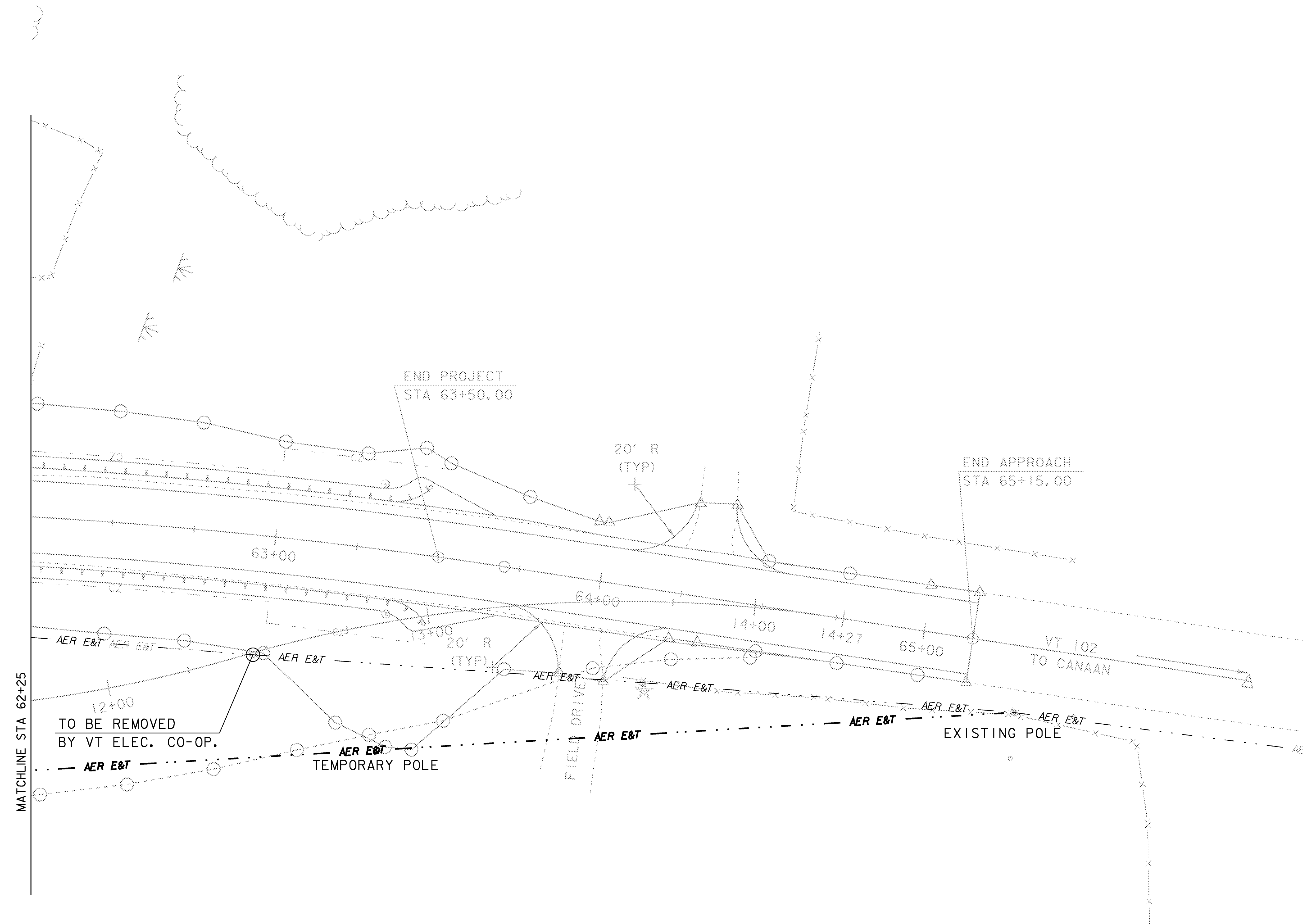
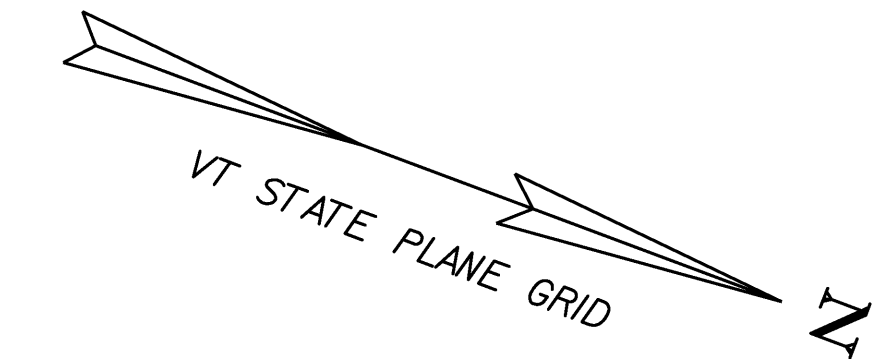


APPROXIMATE AERIAL UTILITY RELOCATION
ROUTE BY VERMONT ELECTRIC COOPERATIVE,
INC. VERIZON NEW ENGLAND, INC.
TWINSTATE CABLE T.V., INC.

UTILITIES SHEET #1

PROJECT NAME: Canaan	
PROJECT NUMBER: ER ST 027(16)	
FILE NAME: 04c098\struc\04c098b	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: L. DUQUETTE
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER
x04c098\out\1	SHEET 32 OF 66





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

UTILITIES SHEET #2

PROJECT NAME: Canaan
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: 04c098\str\s04c098ut11bdr	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: L. DUQUETTE
DESIGNED BY: S. Scribner	CHECKED BY: S. SCRIBNER
x04c0981ou12.1	SHEET 33 OF 66

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FOURTH EDITION, DATED 2007, AND ITS LATEST REVISIONS.
2. BRIDGE IS DESIGNED FOR HL-93 LIVE LOAD WITH AN ALLOWANCE FOR FUTURE PAVEMENT.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, IN PARTICULAR THE DISCHARGE OF RAW CONCRETE INTO WILLARD STREAM, AS DIRECTED BY THE RESIDENT ENGINEER AND STANDARD SPECIFICATIONS SECTION 105.
4. FOR INFORMATION REGARDING UTILITIES, SEE THE SPECIAL PROVISIONS.
5. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE

TRAFFIC CONTROL

6. THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL TEMPORARY ON AND OFF-PROJECT SIGNS AND BARRICADES AS DIRECTED BY THE RESIDENT ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 641.10, “TRAFFIC CONTROL.”
7. FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES.

TEMPORARY BRIDGE

8. DURING CONSTRUCTION, TRAFFIC SHALL BE MAINTAINED ON A TWO-WAY TEMPORARY BRIDGE CONSTRUCTED DOWNSTREAM OF THE EXISTING STRUCTURE. THE CONTRACTOR HAS THE OPTION OF EITHER RELOCATING THE EXISTING TEMPORARY BRIDGE OR INSTALLING A SEPARATE TEMPORARY BRIDGE TO MAINTAIN TRAFFIC. BID ALTERNATIVES HAVE BEEN INCLUDED IN THE PROPOSAL FOR THIS PURPOSE. CONSTRUCTION AND MAINTENANCE OF THE TEMPORARY BRIDGE AND ITS APPROACHES SHALL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION “RELOCATE AND REMOVE EXISTING TEMPORARY BRIDGE”, OR ITEM 528.11, TWO-WAY TEMPORARY BRIDGE. THE APPROACHES TO THE TEMPORARY BRIDGE SHALL BE PAVED WITH 2 INCHES OF PAVEMENT.

ALTERNATE ZA

DURING CONSTRUCTION OF THE TEMPORARY BRIDGE ON THE TEMPORARY ALIGNMENT THE CONTRACTOR SHALL MAINTAIN TRAFFIC ON THE TEMPORARY MABEY CURRENTLY IN PLACE. NO ROAD CLOSURE WILL BE ALLOWED UNDER THIS ALTERNATE. DISASSEMBLY OF THE MABEY WILL TAKE PLACE AFTER THE CONTRACTORS TEMPORARY STRUCTURE IS IN PLACE AND TRAFFIC IS ON THE TEMPORARY STRUCTURE.

CONTRACT ITEM 529.15 SHALL INCLUDE THE REMOVAL AND SALVAGE OF THE EXISTING TEMPORARY BRIDGE AND REMOVAL OF THE EXISTING BRIDGE SUBSTRUCTURES NOT REMOVED UNDER CONTRACT ITEMS 203.27 OR 208.30.

ALTERNATE ZB

VT 102 WILL BE CLOSED FOR A MAXIMUM DURATION OF TWO WEEKS WHILE THE EXISTING TEMPORARY BRIDGE IS RELOCATED TO THE TEMPORARY ALIGNMENT. A TEMPORARY DETOUR ROUTE IS SHOWN ON THE TRAFFIC CONTROL SHEET AND WILL BE PAID FOR UNDER ITEM 641.10, “TRAFFIC CONTROL”.

THE CONTRACTOR SHALL NOTIFY THE TOWN A MINIMUM OF TWO (2) WEEKS PRIOR TO CLOSING THE ROAD. THE CONTRACTOR WILL ALSO NOTIFY DISTRICT 9 DTA DALE PERRON @ (802-334-7934) A MINIMUM OF TWO WEEKS PRIOR. AS WELL AS NH DISTRICT ENGINEER @ (603-788-4641).

WHEN CONSTRUCTION OF THE NEW BRIDGE IS COMPLETE, THE TEMPORARY MABEY BRIDGE WILL BE REMOVED, DISASSEMBLED, CLEANED, SORTED, BUNDLED, AND TRANSPORTED TO THE MENDON STATE GARAGE. PAYMENT FOR THIS WORK WILL BE MADE UNDER ITEM 900.645 SPECIAL PROVISION “RELOCATE AND REMOVE EXISTING TEMPORARY BRIDGE”. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

CONTRACT ITEM 529.20 SHALL INCLUDE THE REMOVAL OF THE EXISTING BRIDGE SUBSTRUCTURES OTHERWISE NOT REMOVED UNDER CONTRACT ITEMS 203.27 OR 208.30.

EARTHWORK AND RELATED ITEMS

9. THE FOLLOWING TABLE OF ALLOWABLE STRESSES AND WEIGHTS APPLY TO THESE PLANS FOR DESIGN PURPOSES:

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT) f’c = 4000 PSI fc=1600PSI

HIGH PERFORMANCE CONCRETE, CLASS B f’c = 3500 PSI fc = 1400 PSI

REINFORCING STEEL: Ft = 24,000 GRADE 60

SOIL: UNIT WEIGHT 140 PCF

SPECIAL PROVISION(LIGHTWEIGHT BACKFILL): UNIT WEIGHT 48 PCF

10. TEMPORARY CONSTRUCTION FILLS WITHIN THE WATERCOURSE FOR ANY PURPOSE SHALL CONSIST OF CLEAN STONE FILL ONLY. NO OTHER FILLING IN THE STREAM SHALL OCCUR WITHOUT THE APPROVAL OF THE STREAM ALTERATION ENGINEER.
11. THE CONTRACTOR’S ATTENTION IS DIRECTED TO SUBSECTION 306.06 REGARDING THE COMPACTION OF SUBBASE MATERIAL FOR THIS PROJECT.
12. COFFERDAMS ARE REQUIRED FOR THE CONSTRUCTION OF THE NEW SUBSTRUCTURE UNITS. PAYMENT FOR COFFERDAM EXCAVATION WILL BE MADE ONLY FOR SUCH EXCAVATION WITHIN THE LIMITS SHOWN ON THE PLANS.
13. THE “STONE FILL, TYPE III” UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW STEEL GIRDERS ARE SET.
14. A VEHICLE TRACKING PAD SHALL BE USED FOR EROSION CONTROL AT THE DISCRETION OF THE RESIDENT ENGINEER. PAYMENT FOR MATERIAL AND PLACEMENT SHALL BE MADE UNDER ITEM 653.35 VEHICLE TRACKING PAD.
15. THE HEIGHT OF FILL BEHIND ABUTMENTS WILL BE LIMITED TO THE BRIDGE SEAT ELEVATION UNTIL THE DECK HAS BEEN POURED AND THE CURING PERIOD IS UP.
16. DRY HYDRANT AND ALL NEEDED MATERIALS WILL BE PAID UNDER 900.645 SPECIAL PROVISION (DRY HYDRANT) DETAILS ARE SHOWN ON SHEET 50. CONTRACTOR SHALL NOTIFY VERN CRAWFORD @ (802-266-8277) A MINIMUM OF ONE WEEK PRIOR TO INSTALLATION OF THE DRY HYDRANT.
17. AFTER DECK HAS BEEN POURED AND CURED BEAMS AT ABUTMENT 1 WILL BE JACKED UP TO ALLOW THE ELASTOMERIC BEARINGS TO RETURN TO THEIR ORIGINAL POSITION BEFORE WELDING THE SOLE PLATES TO THE BOTTOM FLANGE. FINAL POSITION OF THE VERTICAL BEARING FACES WILL BE STRAIGHT. PAYMENT FOR THIS WORK WILL BE INCIDENTAL TO BEARING ITEM. NO BEARING WILL BE JACKED MORE THAN ½” FROM ITS ORIGINAL POSITION.

STRUCTURAL STEEL

18. UNLESS OTHERWISE NOTED, ALL NEW STRUCTURAL STEEL SHALL CONFORM TO AASHTO M 270M/M 270 GRADE 50 AND SHALL BE PAID FOR UNDER ITEM 506.50, “STRUCTURAL STEEL ROLLED BEAM”, COLOR CHIP NO. 20059, BROWN.
19. STRUCTURAL STEEL MEMBERS DESIGNATED “CVN” IN THE PLANS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SUBSECTION 714.01 OF THE STANDARD SPECIFICATIONS.
20. ALL FIELD CONNECTIONS SHALL BE MADE USING 7/8 INCH BOLTS IN 15/16 INCH HOLES PER SECTION 506. ANY CONNECTIONS NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.
21. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF THE BEAMS SHALL BE TAKEN AS DIRECTED BY THE RESIDENT ENGINEER FOR USE IN DETERMINING FINISHED GRADES.
22. FLEMING BRACKETS OR SIMILAR FALSEWORK SHALL BE SPACED AS REQUIRED BY DESIGN, BUT SHALL BE LIMITED TO A MAXIMUM SPACING OF 4 FEET. THE DESIGN OF FALSEWORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
23. ANY BOLT HOLES IN THE WEBS OF FASCIA BEAMS NOT OTHERWISE FILLED SHALL BE FILLED WITH BUTTON HEAD OR HEX HEAD BOLTS. THE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19 OF THE STANDARD SPECIFICATIONS.
24. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.

CONCRETE

25. SUBSTRUCTURE CONCRETE SHALL BE HIGH PERFORMANCE CLASS B AND SHALL BE PAID FOR UNDER ITEM 501.34, “CONCRETE, HIGH PERFORMANCE CLASS B”. ITEM 900.608 “SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)” SHALL BE USED TO PAY FOR THE DECK, THE CURBS, AND THE APPROACH SLABS.

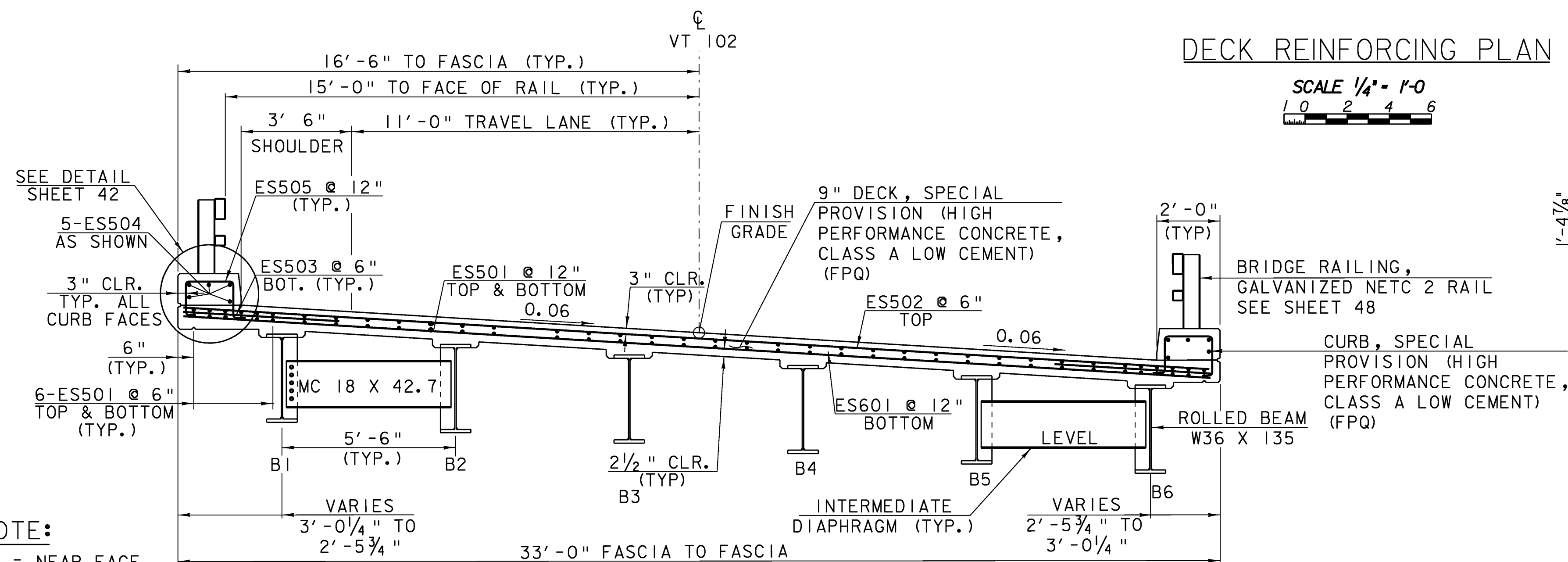
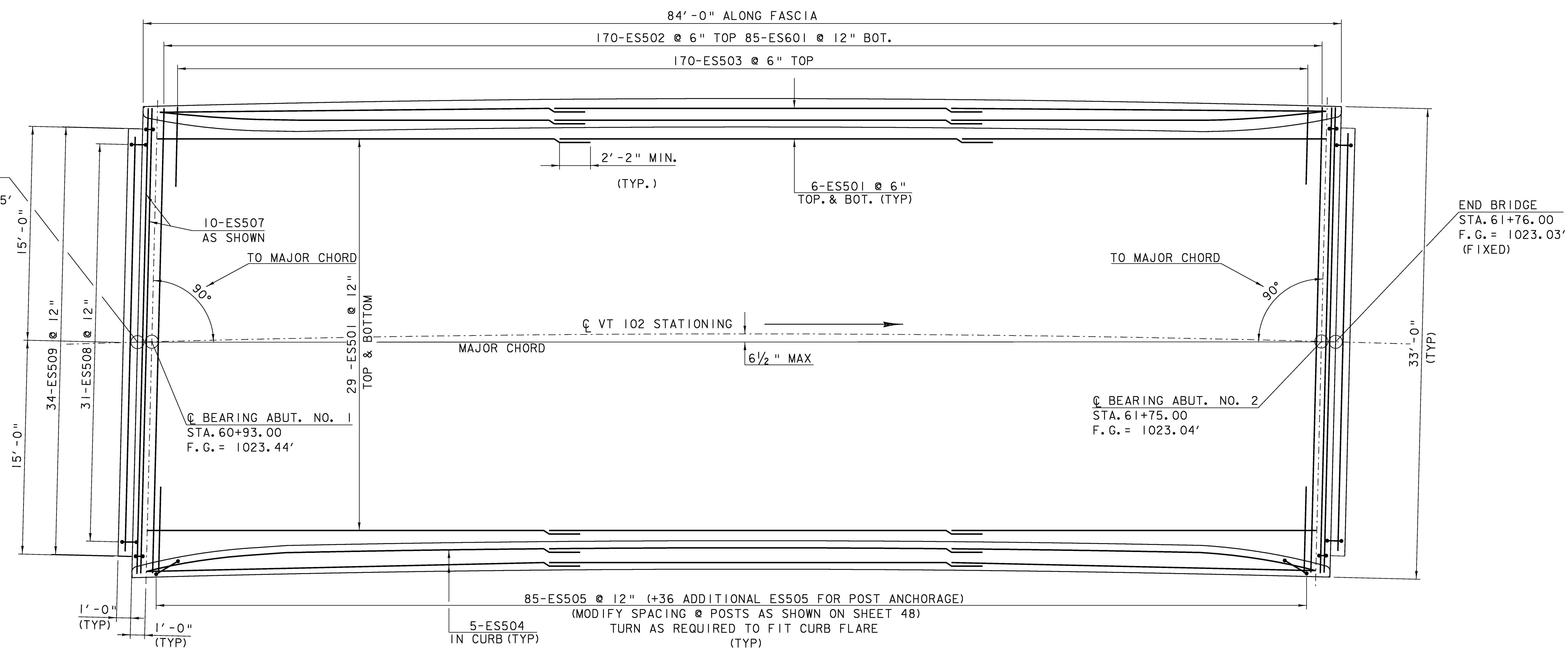
26. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL. ALL OTHER AREAS OF BRIDGE SEATS SHALL BE SLOPED 1/2 INCH PER FOOT. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE GIVEN A FLOAT FINISH.
27. CONCRETE PORTIONS OF ABUTMENTS AND WINGWALLS ABOVE ADJACENT BRIDGE SEAT ELEVATIONS SHALL NOT BE PLACED UNTIL FINISH GRADES HAVE BEEN DETERMINED BY THE RESIDENT ENGINEER.
28. THE DECK IS TO BE POURED IN ONE CONTINUOUS POUR WITH A MAXIMUM DURATION OF EIGHT HOURS. IF CIRCUMSTANCES BEYOND THE CONTRACTOR’S CONTROL PREVENT THIS FROM BEING ACCOMPLISHED, A TRANSVERSE CONSTRUCTION JOINT SHALL BE USED BETWEEN ADJACENT POURS. A MINIMUM 96 HOUR DELAY BETWEEN ADJACENT POURS SHALL BE OBSERVED.
29. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH X 1 INCH.
30. WATER REPELLENT, SILANE, SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.
31. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS SHOWN IN THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.
32. THE DECK AND APPROACH SLABS WILL HAVE A LONGITUDINAL GROOVED FINISH. THIS WORK WILL BE PAID FOR UNDER ITEM 900.675 “SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)”
33. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT. UPWARD KEYS SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.
34. ALL DECK, CURB, CURTAINWALL, AND APPROACH SLAB REINFORCING STEEL SHALL BE EPOXY COATED AND PAID FOR UNDER ITEM 507.17, "EPOXY COATED REINFORCING STEEL". CUTTING AND REPAIRING DAMAGED AREAS OF COATED REINFORCING STEEL SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 507.04 OF THE STANDARD SPECIFICATIONS.
35. MINIMUM COVER FOR REINFORCING STEEL SHALL BE AS INDICATED IN THE PLANS.
36. PVC WATERSTOPS TO BE USED ON ALL VERTICAL AND HORIZONTAL CONSTRUCTION JOINTS AND THE BOTTOM OF THE CURTAIN WALL AS SHOWN IN PLANS. PAYMENT WILL BE MADE INCIDENTAL TO THE ADJACENT CONCRETE.
37. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:

SPACING: +/- 1 INCH

CLEARANCE: +/- 1/4 INCH

GENERAL NOTES

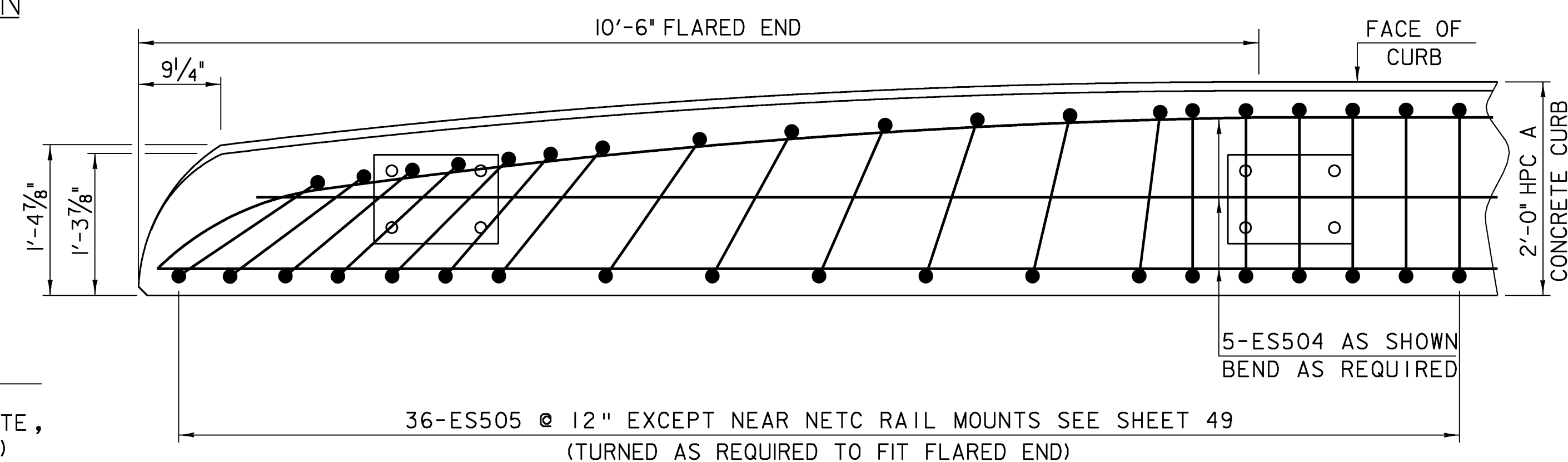
PROJECT NAME: CANAAN	
PROJECT NUMBER: ER ST 0271 (I6)	
FILE NAME: structures\x04c098exoel.dg	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. ENANS-MONGEON	DRAWN BY: L. DUQUETTE
DESIGNED BY: S. SCRIBNER	CHECKED BY: S. SCRIBNER
	SHEET 34 OF 66



DECK REINFORCING PLAN

SCALE 1/4" = 1'-0"

1 0 2 4 6



PLAN VIEW CURB END

NTS

DECK REINFORCING PLAN

PROJECT NAME: CANAAN

PROJECT NUMBER: ER ST 0271(I6)

FILE NAME: 04c098/struc./s04c098sup

PROJECT LEADER: M. EVANS-MONGEON

DESIGNED BY: S. SCRIBNER

PLOT DATE: 18-AUG-2008

DRAWN BY: L. DUQUETTE

CHECKED BY: S. SCRIBNER

SHEET 35 OF 66

NOTE:

NF = NEAR FACE

FF = FAR FACE

EF = EACH FACE

▲ = CUT TO FIT IN FIELD

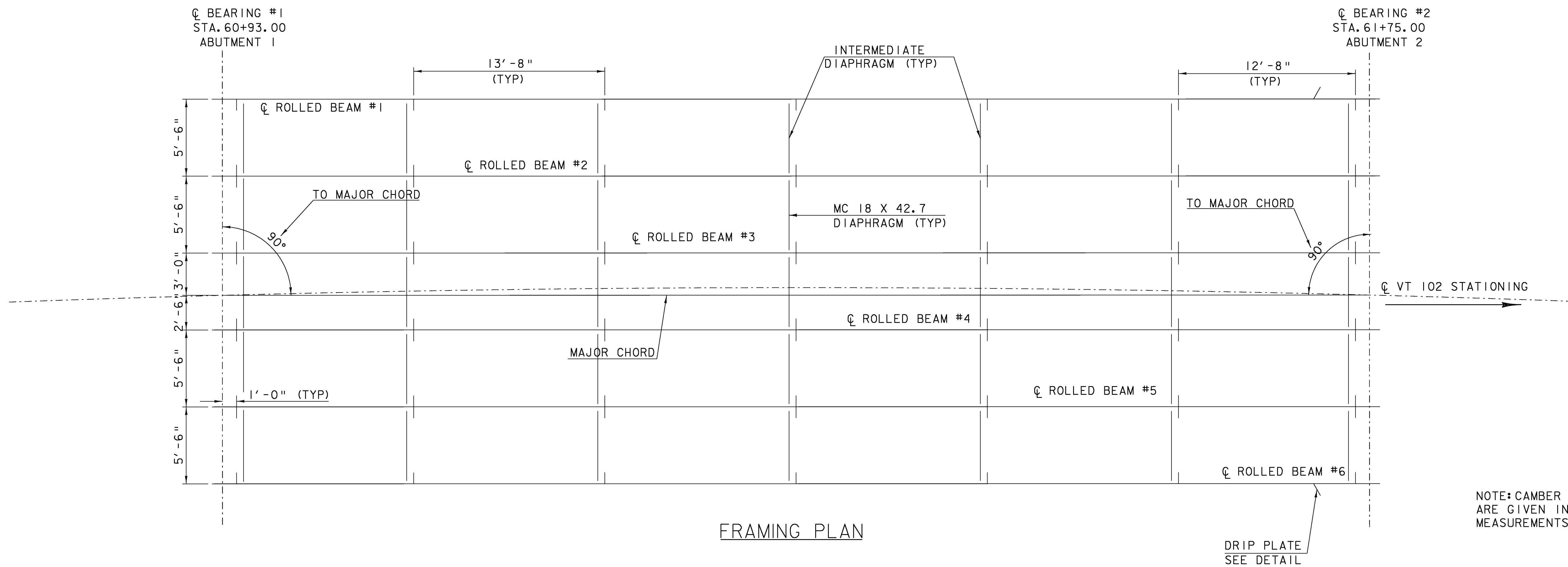
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

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

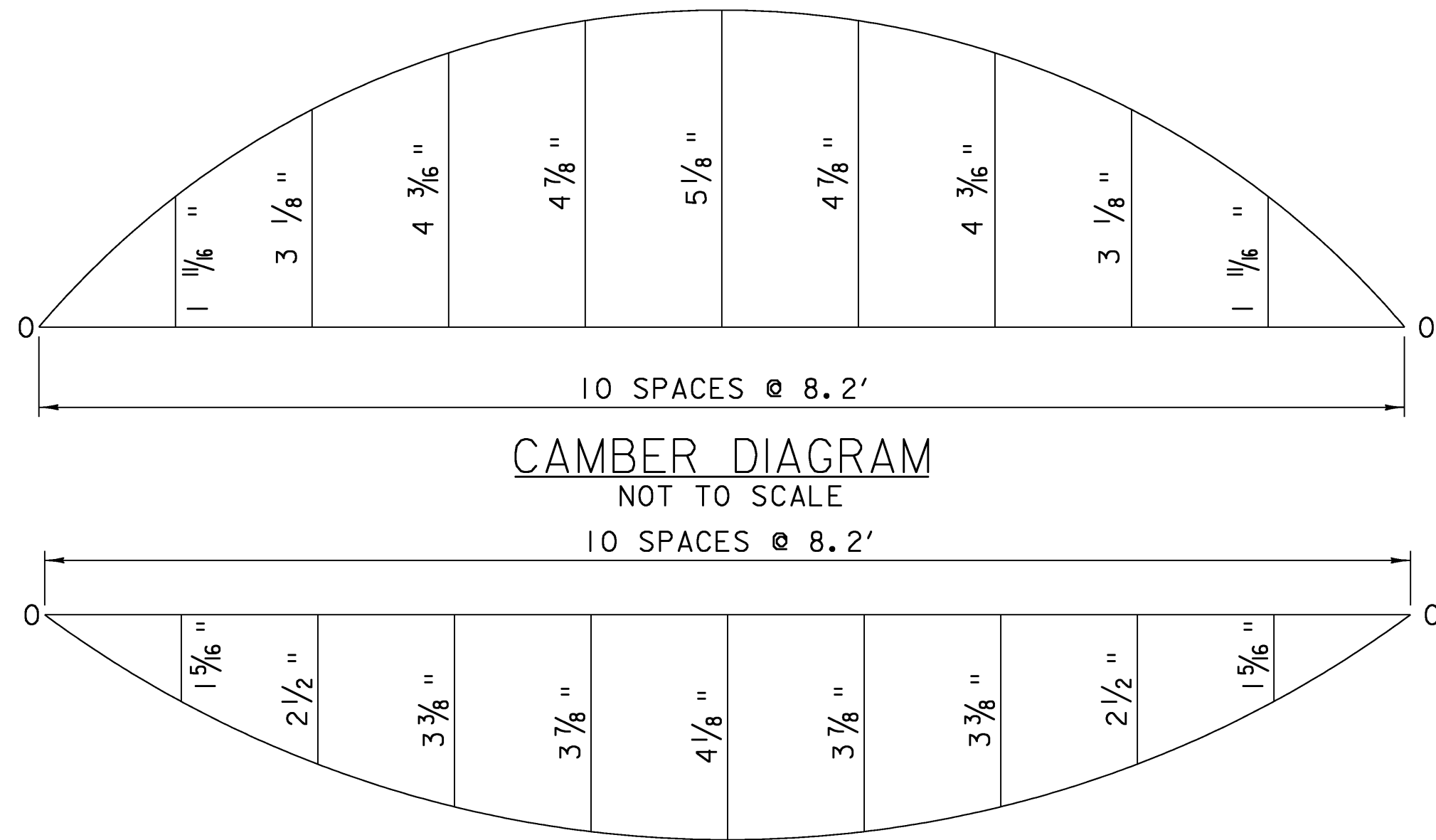
BRIDGE TYPICAL

SCALE 3/8" = 1'-0"

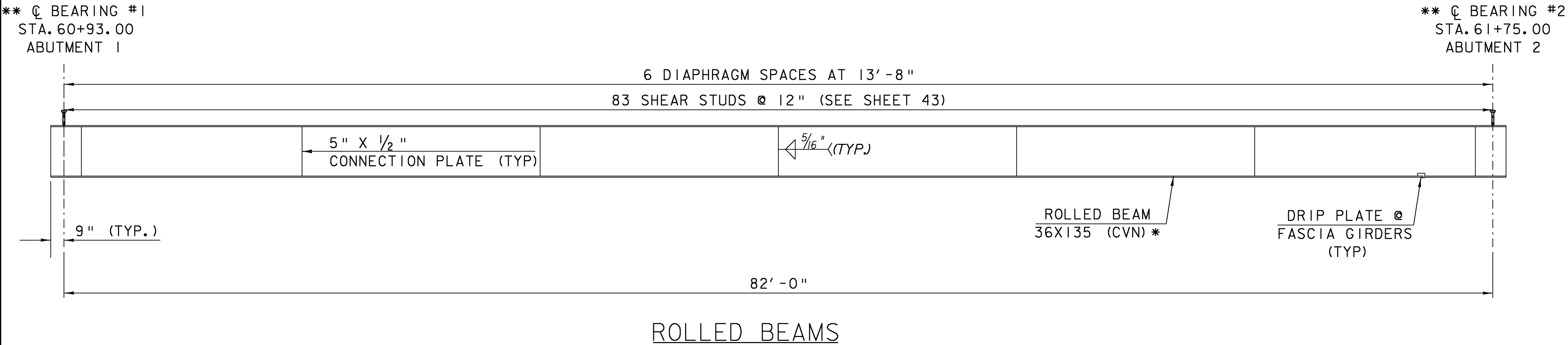
1 0 1 2 3 4



FRAMING PLAN



DEAD LOAD DEFLECTION DIAGRAM
NOT TO SCALE



* CVN - SHALL MEET CHARPY V-NOTCH REQUIREMENTS FOR MAIN MEMBERS AS INDICATED IN SECTION 714 OF THE STANDARD SPECIFICATIONS

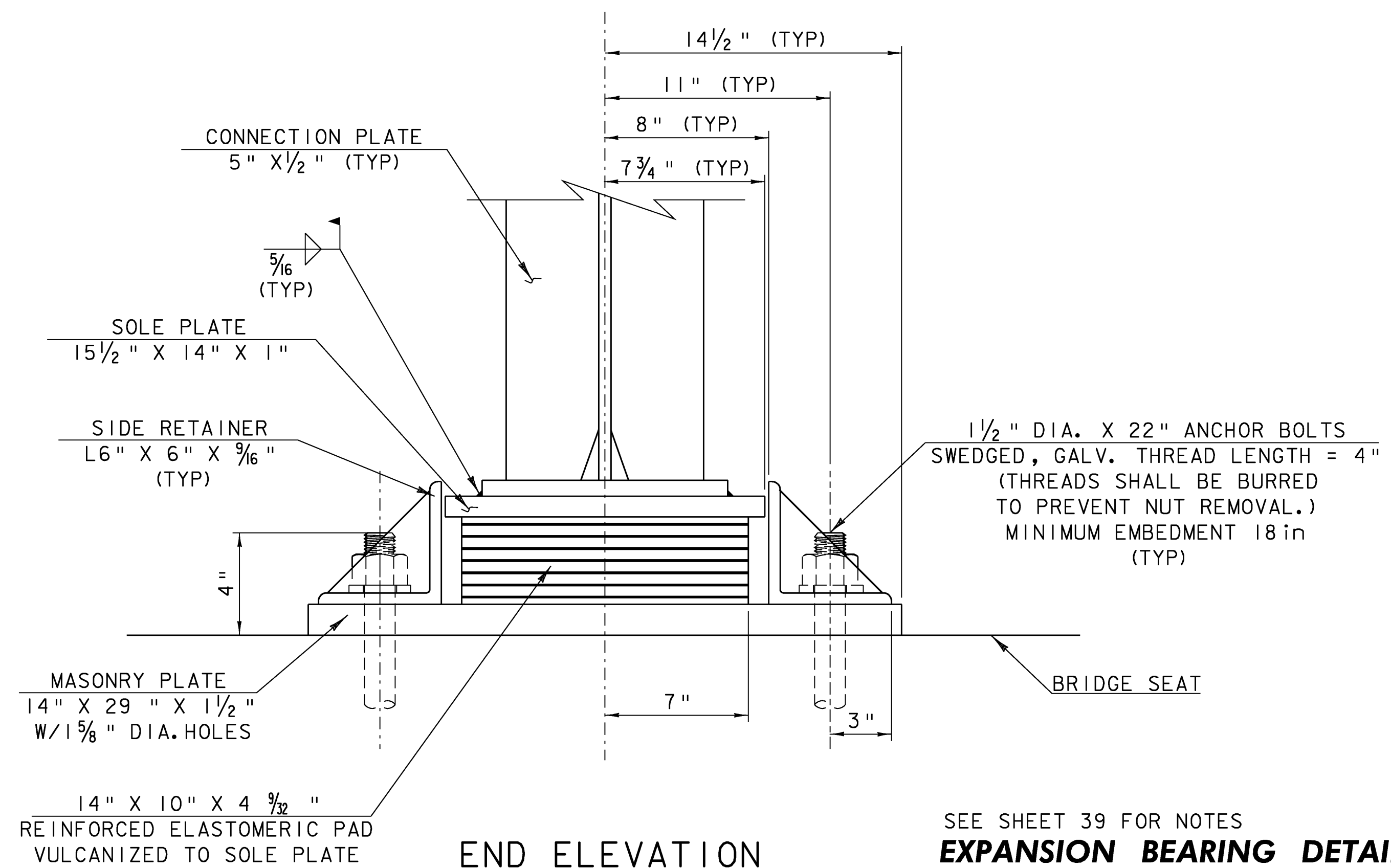
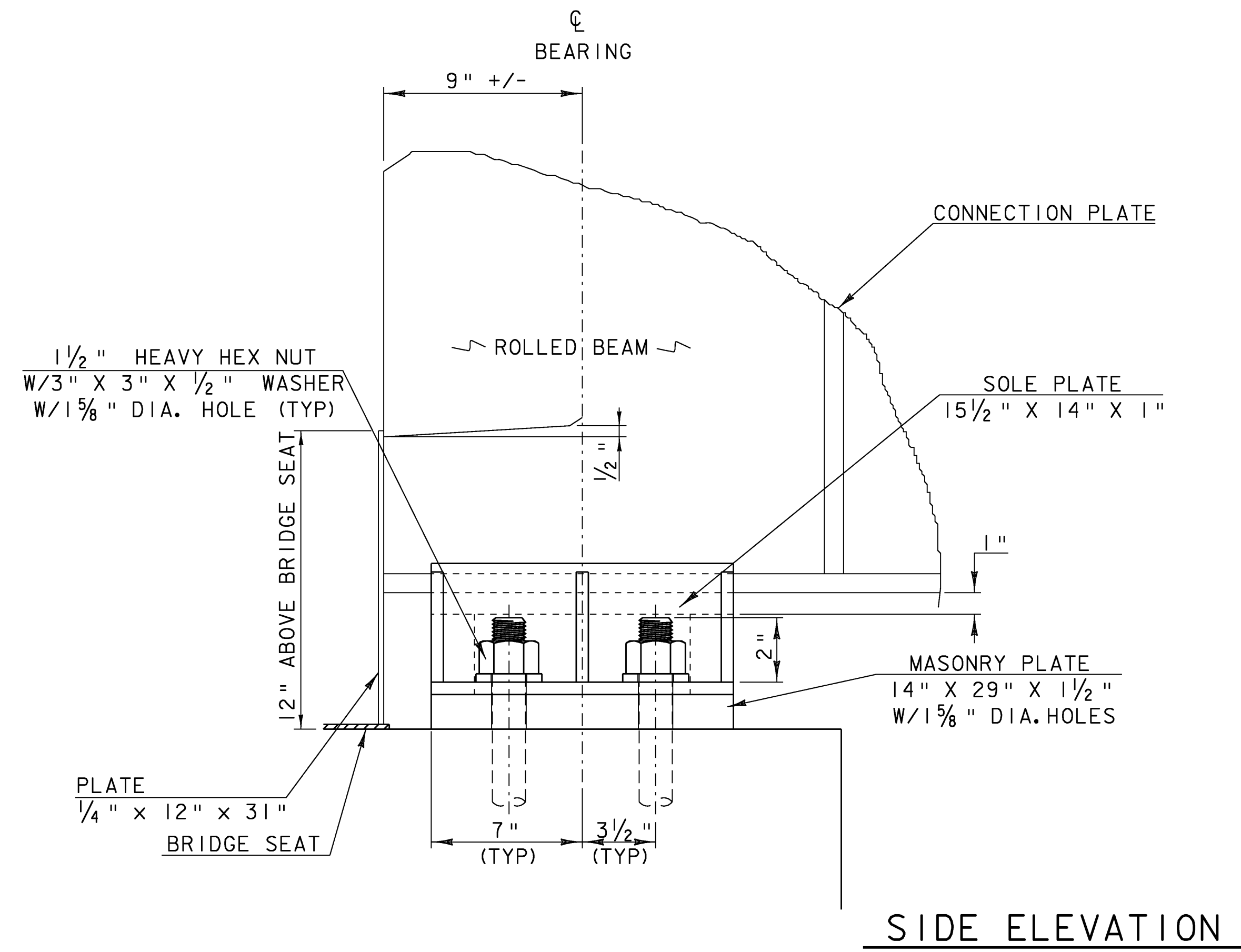
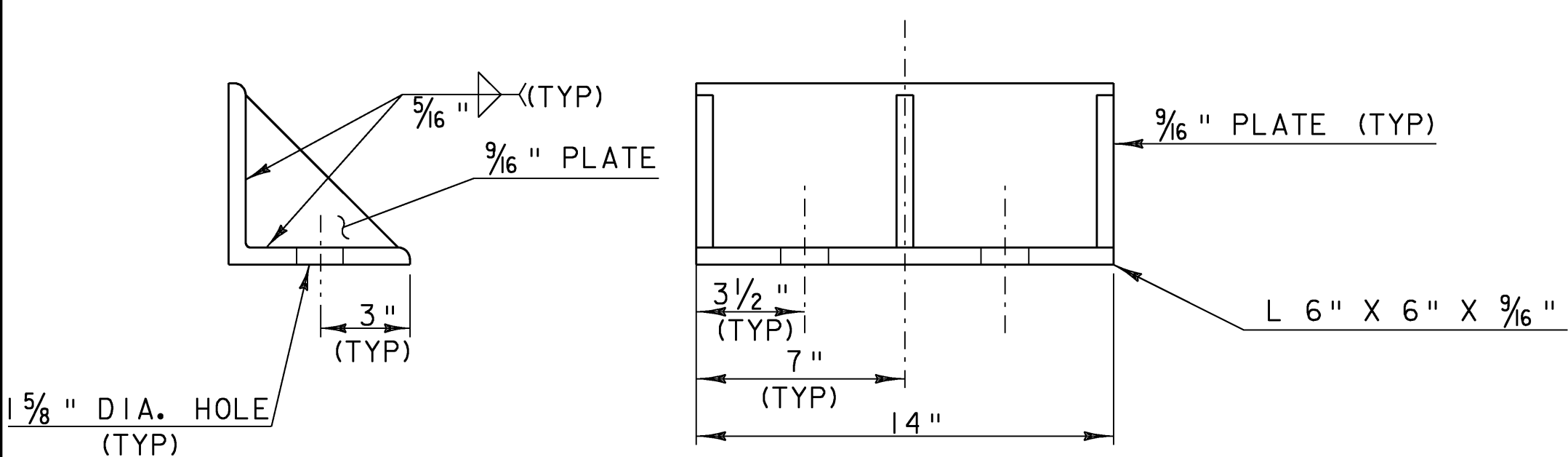
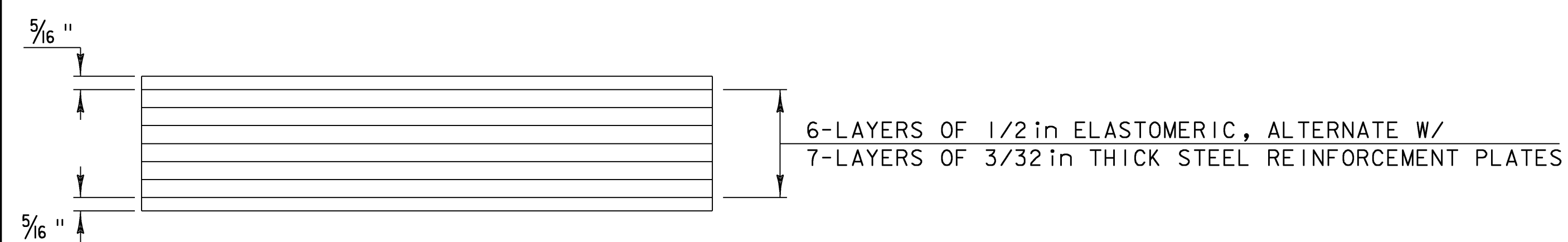
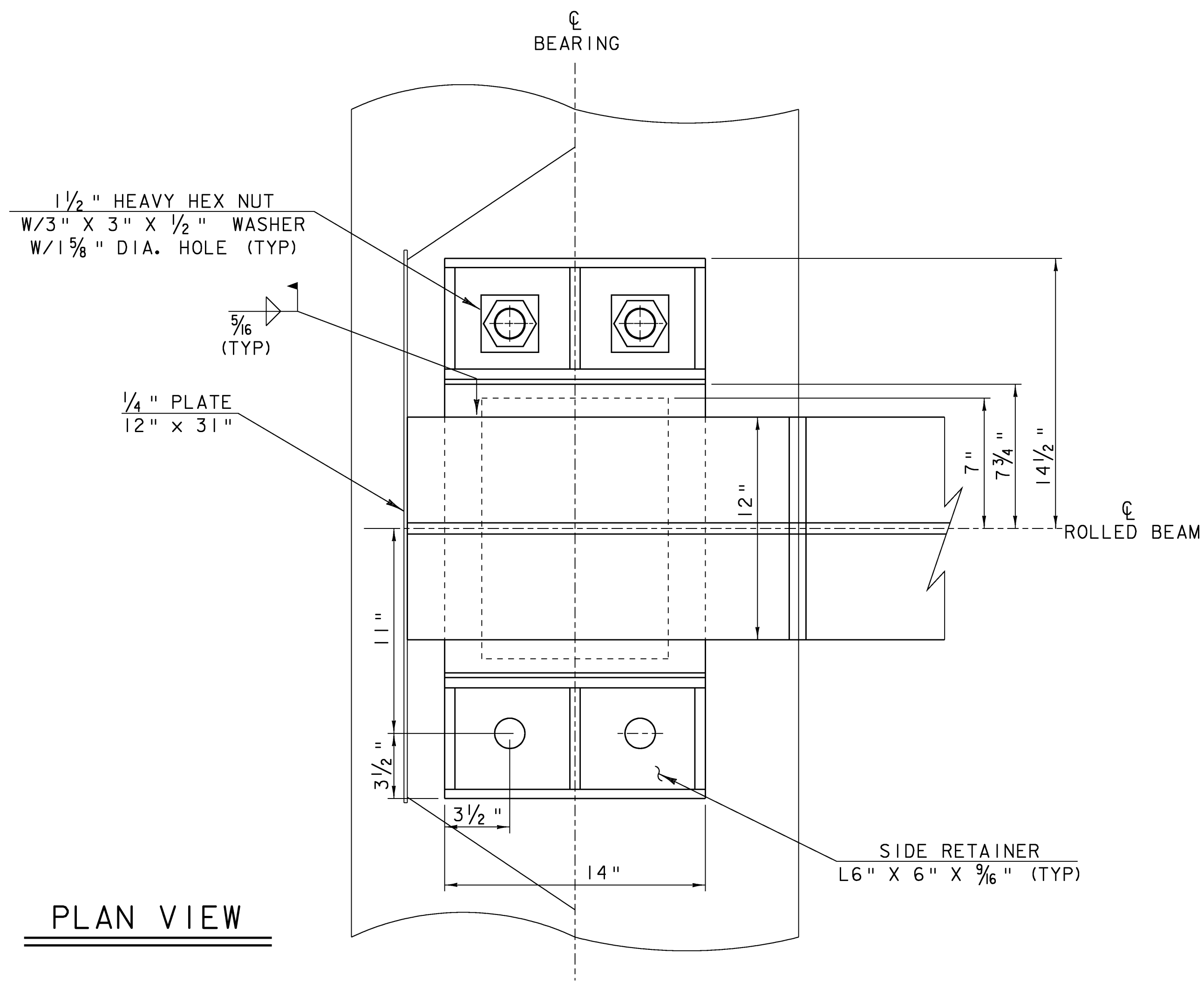
** HOLES FOR TRANSVERSE ABUTMENT REINFORCING STEEL NOT SHOWN. SEE SHEET 40

SEE SHEET 42 FOR DETAILS

SCALE 1/4" = 1'-0"

FRAMING PLAN

PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	04c098/struc./s04c098sup
PROJECT LEADER:	M. EVANS-MONGEON
DESIGNED BY:	S.SCRIBNER
PLOT DATE:	18-AUG-2008
DRAWN BY:	L. DUQUETTE
CHECKED BY:	S. SCRIBNER
SHEET	36 OF 66



SEE SHEET 39 FOR NOTES

EXPANSION BEARING DETAIL

PROJECT NAME: CANAAN

PROJECT NUMBER: ER ST 0271(I6)

FILE NAME: 04c098/struc./s04c098sup

PROJECT LEADER: M. EVANS-MONGEON

DESIGNED BY: S. SCRIBNER

PLOT DATE: 18-AUG-2008

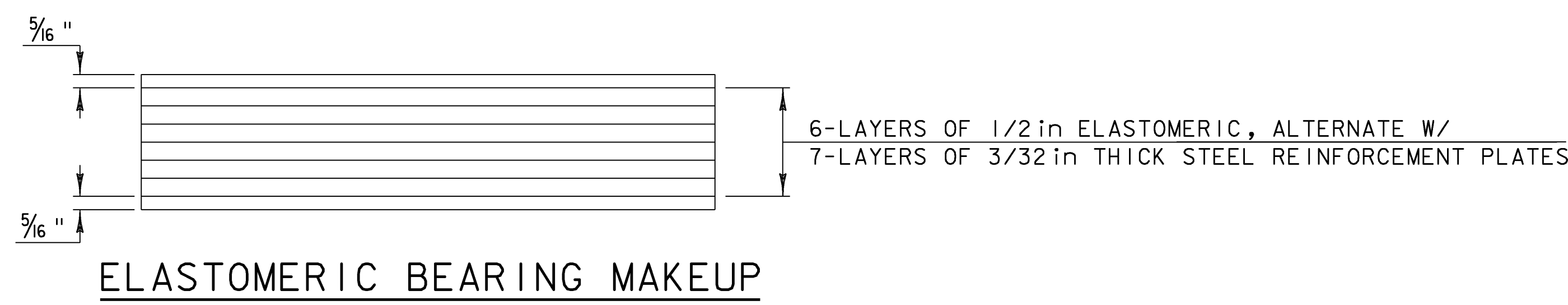
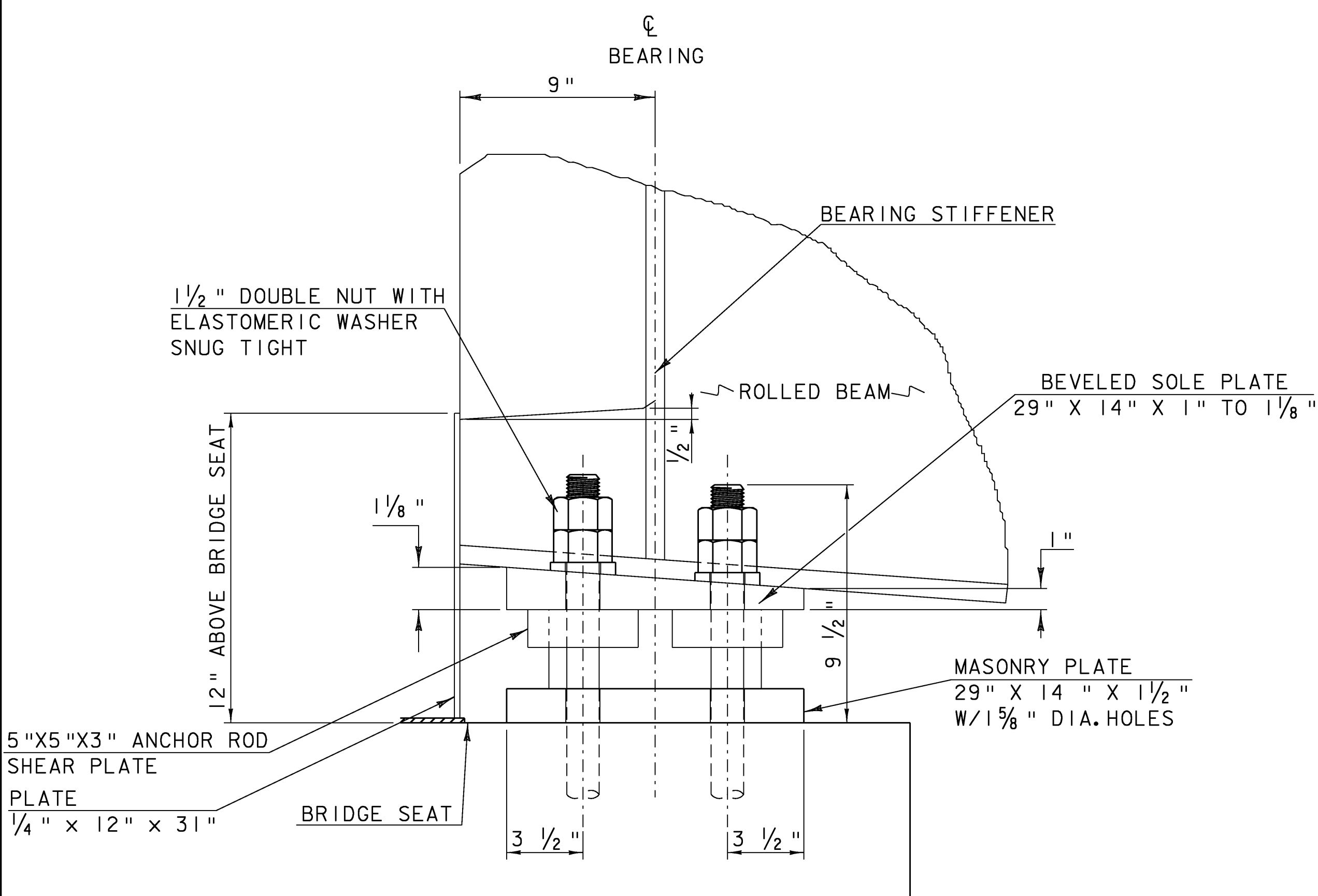
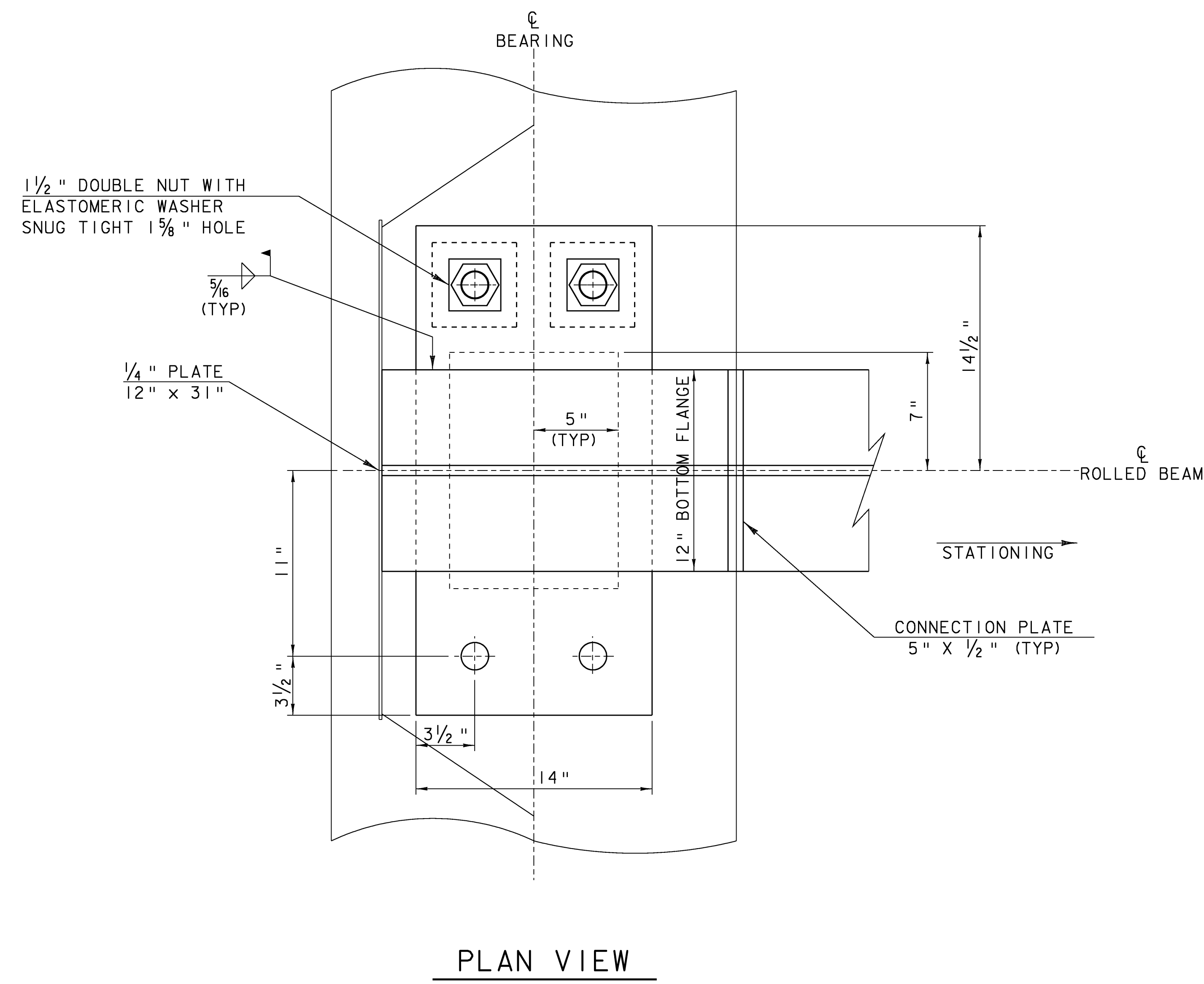
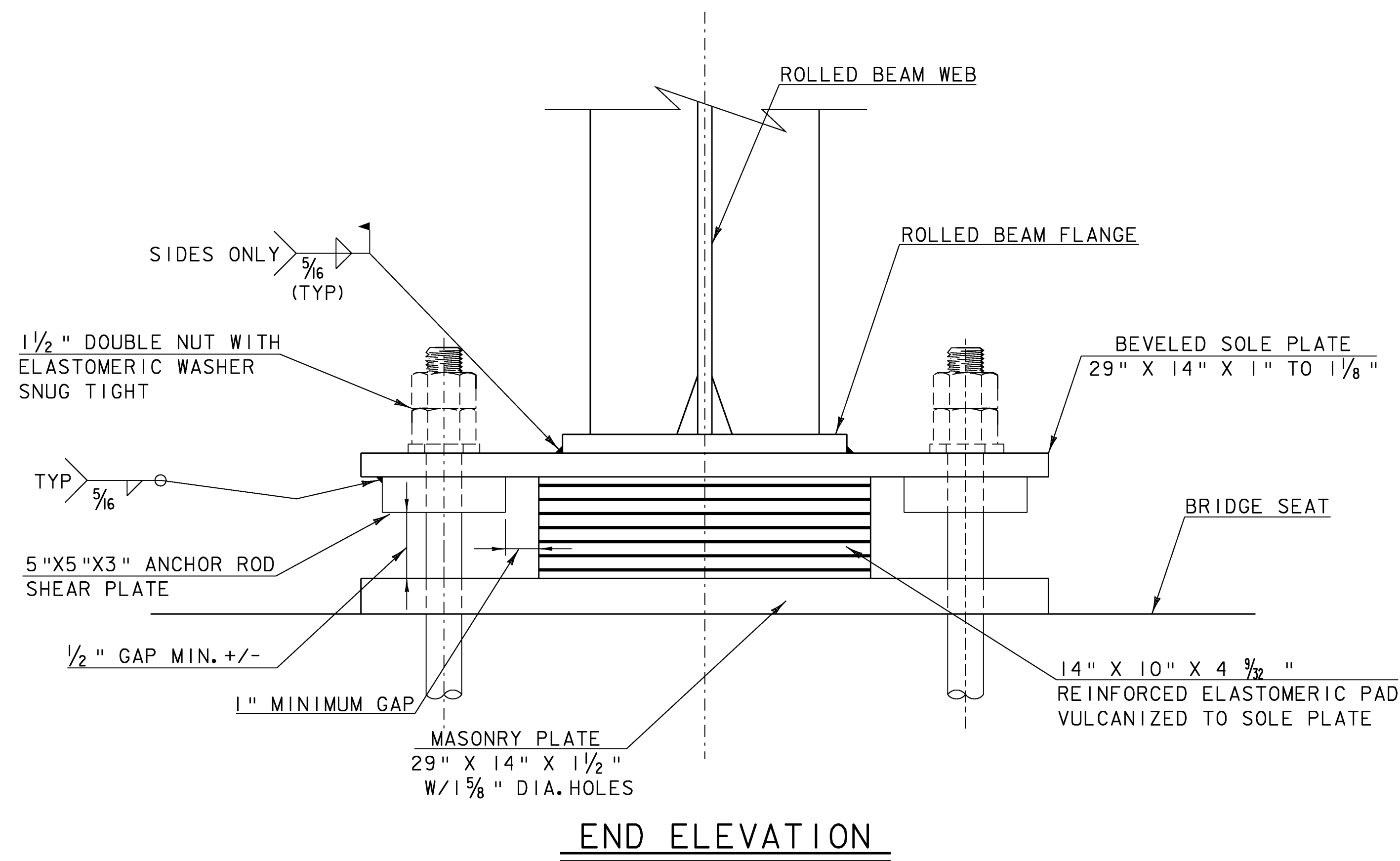
DRAWN BY: L. DUQUETTE

CHECKED BY: S. SCRIBNER

SHEET 37 OF 66

ABUT. I EXPANSION BEARING DETAILS

NOT TO SCALE



SEE SHEET 39 FOR NOTES

FIXED BEARING DETAIL

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(I6)

FILE NAME: 04c098/struc./s04c098sup
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S. SCRIBNER

PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 38 OF 66

Abut. 2 FIXED BEARING DETAILS

NOT TO SCALE

BEARING NOTES

1. EXPANSION BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.11 "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD" AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 AND 731.
2. THE FIELD WELD CONNECTING THE BOTTOM FLANGE WITH THE BEARING DEVICE SHALL BE MADE WITH E7018 RODS. AREAS OF METALIZING DAMAGED BY WELDING AND/OR HANDLING SHALL BE REPAIRED BY METALIZING IN ACCORDANCE WITH ASTM A 760.
3. ALL STEEL COMPONENTS SHALL BE METALIZED AS PER SECTION 531.04 (b) AND 506.15. AFTER THE BEARINGS ARE METALIZED, THEY SHALL BE SEALED WITH AN APPROVED SEALANT AS SPECIFIED IN SUBSECTION 506.15 (b). ALL WASHERS SHALL BE 1/2" PLATE MINIMUM. PAYMENT FOR ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD." ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER AASHTO M 232.
4. ALL STEEL IN BEARING DEVICES SHALL BE AASHTO M 270 GRADE 50 UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL ASTM A36. 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 THE 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 2007 EDITION AND ITS LATEST REVISIONS.
8. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMMODATE AN ALTERNATIVE CONFIGURATION. THE CONCRETE SURFACES UNDER THE BEARING DEVICES SHALL BE LEVEL.

9. DESIGN CRITERIA:

A. MASONRY PLATE TO CONCRETE DESIGN PRESSURE = 800 PSI

B. DESIGN ROTATION = 0.011 RAD

C. HORIZONTAL CAPACITY SHALL BE MINIMUM OF 20% VERTICAL LOAD IN ANY RESTRAINED DIRECTION.

D. DESIGN LOAD PER BEARING

RDL = 43.8 kips

RLL = 58.2 kips

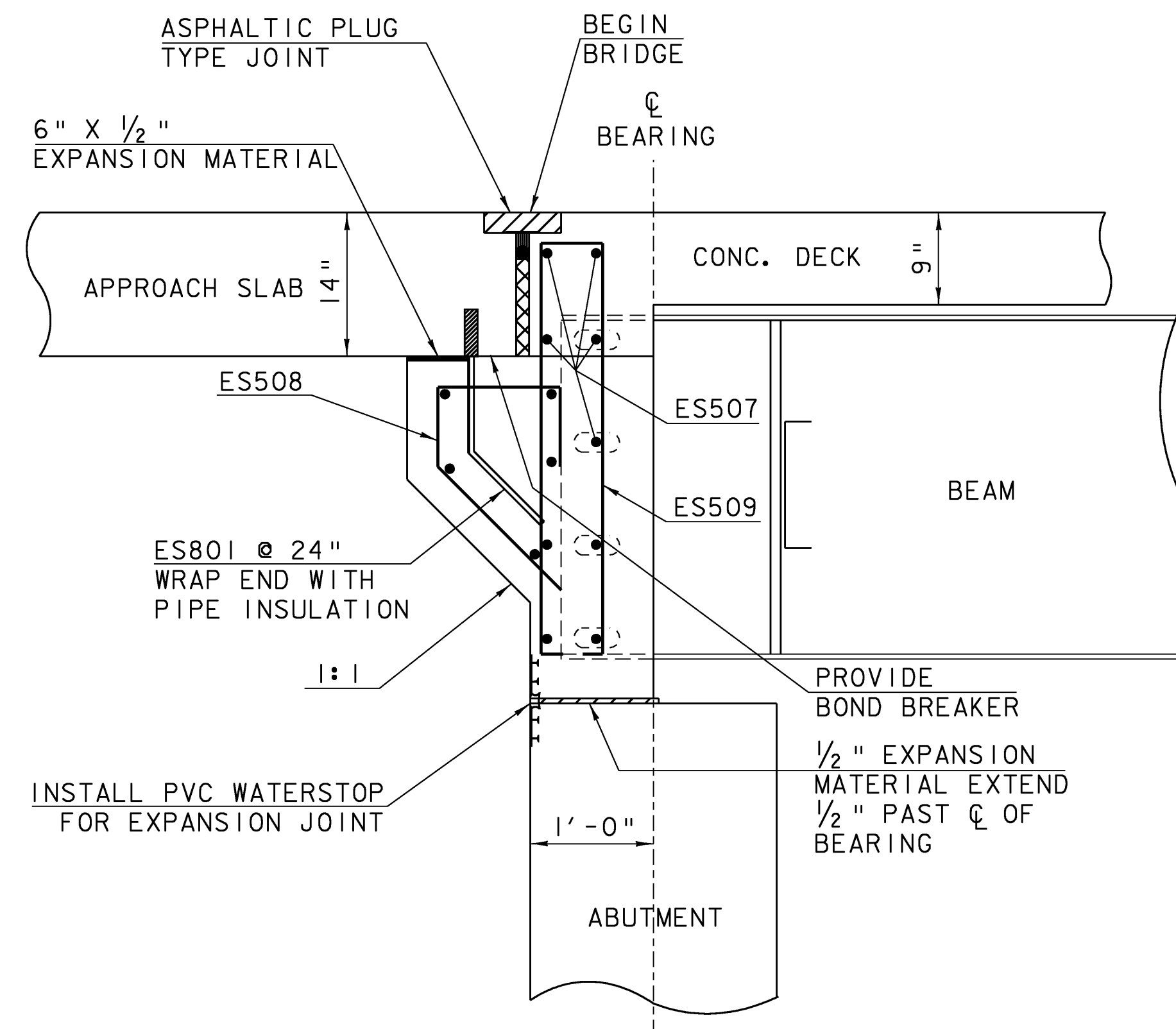
E. TEMPERATURE RANGE = -15° TO 105° F

F. ELASTOMER SHALL HAVE NOMINAL HARDNESS OF 60 ON SHORE ‘A’ SCALE. ELASTOMER SHALL HAVE A SHEAR MODULUS BETWEEN 0.13KSI AND 0.20 KSI THE RAW ELASTOMER SHALL BE VIRGIN NEOPRENE CLASSIFIED AS LOW TEMPERATURE GRADE 4 AS DEFINED IN TABLE 18.2.3.1-1 OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

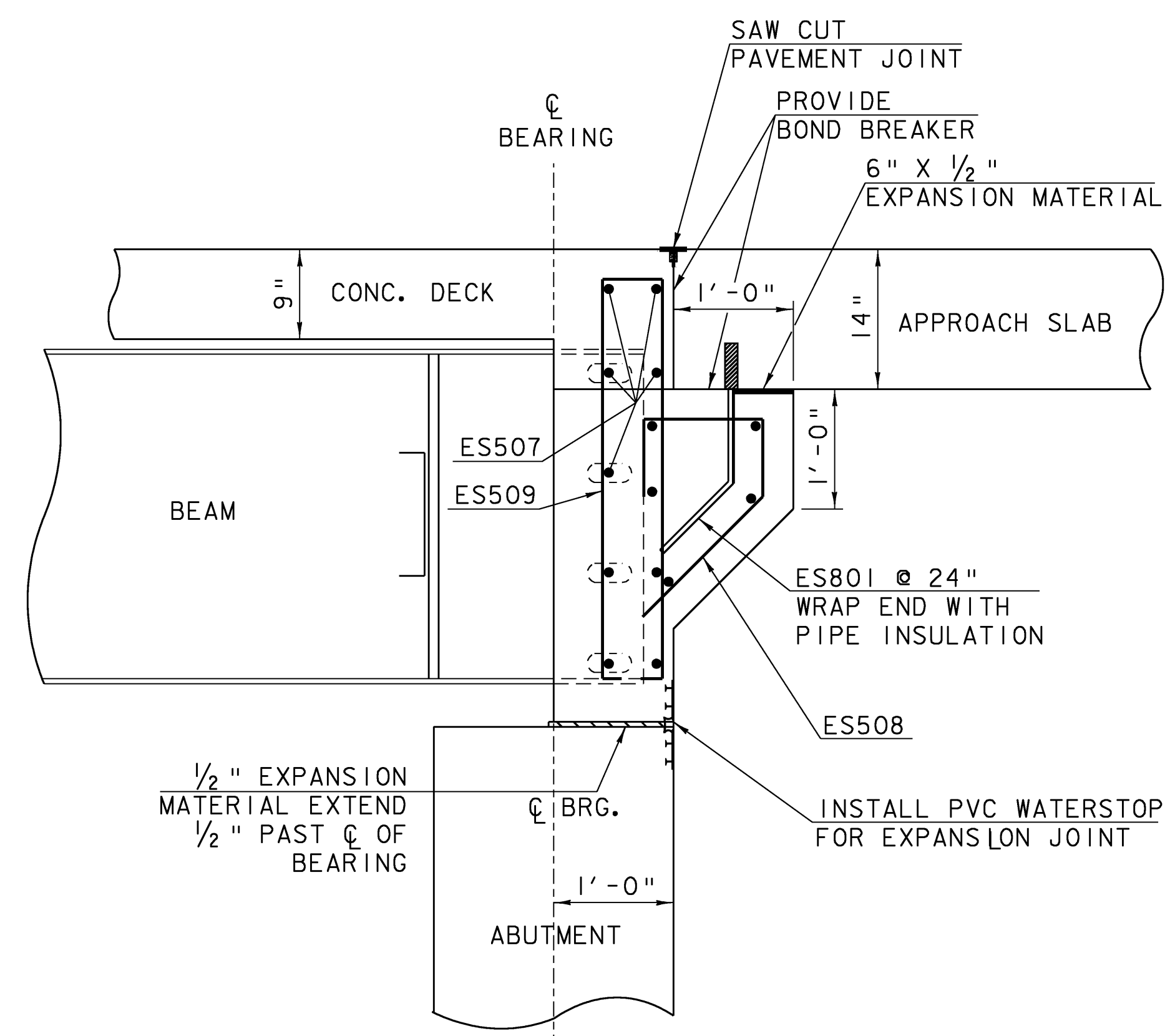
G. NO FABRIC REINFORCEMENT WILL BE ALLOWED IN ELASTOMERIC PADS
10. THE STEEL SOLE PLATES AND MASONRY PLATES SHALL BE HOT BONDED TO THE REINFORCED ELASTOMERIC PAD DURING THE VULCANIZATION PROCESS. THE STEEL SURFACES TO BE BONDED TO THE PAD SHALL NOT BE METALIZED.

BEARING NOTES

PROJECT NAME: CANAAN	
PROJECT NUMBER: ER ST 0271(16)	
FILE NAME: 04c098/struc./s04c098sup	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. EVANS-MONGEON	DRAWN BY: L. DUQUETTE
DESIGNED BY: S.SCRIBNER	CHECKED BY: S. SCRIBNER
	SHEET 39 OF 66



BRIDGE EXPANSION END DETAIL
ABUTMENT #1



BRIDGE FIXED END DETAIL
ABUTMENT #2

NOTE:
PAYMENT FOR FURNISHING AND INSTALLING EXPANSION MATERIAL,
PIPE INSULATION, BOND BREAKER, AND PVC WATERSTOP WILL BE
MADE INCIDENTAL TO THE PAY ITEM FOR ADJACENT CONCRETE.

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.

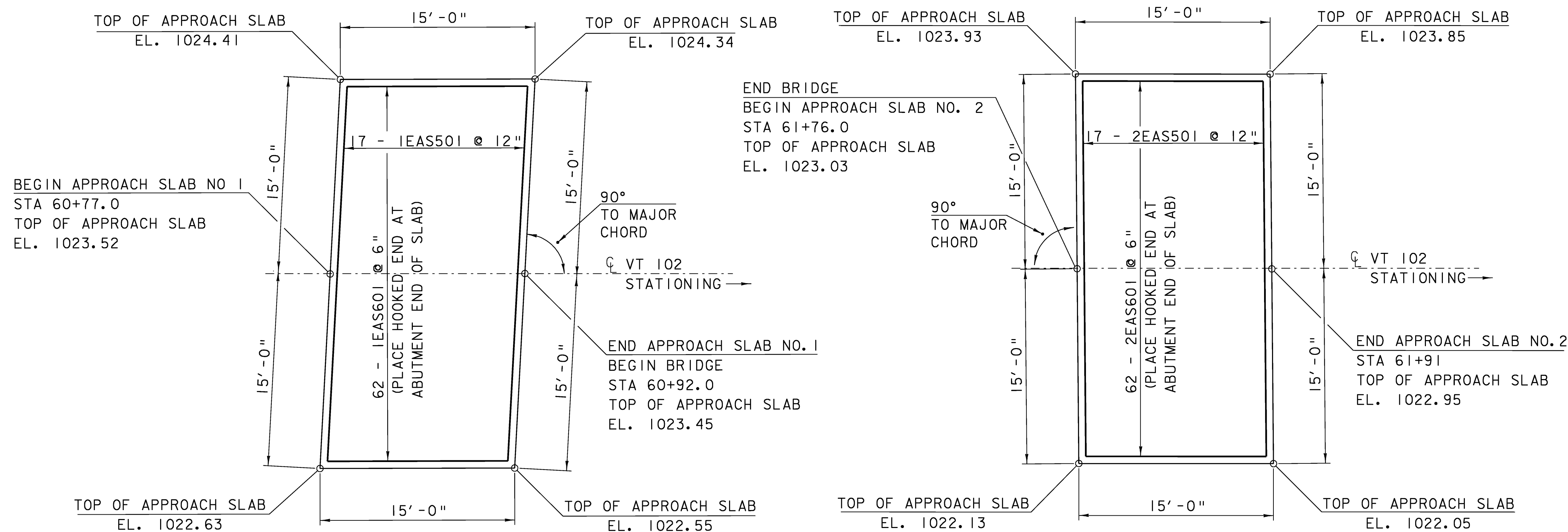
BRIDGE END DETAILS

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: 04c098/struc./s04c098sup
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S. SCRIBNER

PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 40 OF 66

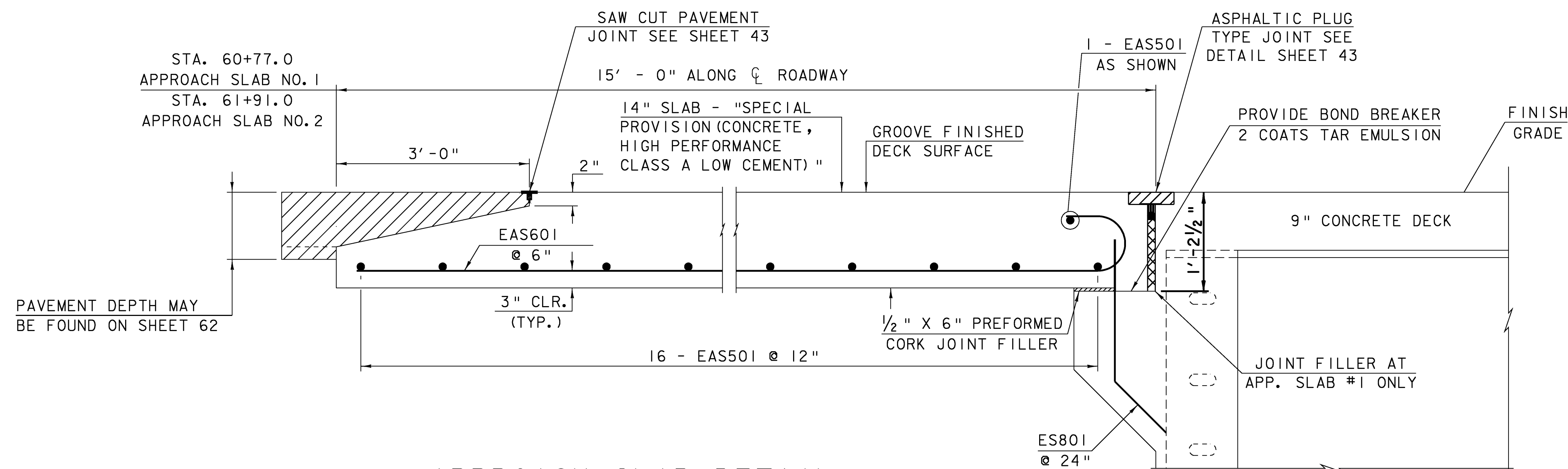
SCALE 1" = 1'-0"
1 9 6 3 0 1 2



APPROACH SLAB PLAN

SCALE $\frac{3}{16}" = 1'-0"$
1 0 2 4 6 8

NOTE:
PAYMENT FOR FURNISHING AND INSTALLING BOND BREAKER AND JOINT FILLER WILL BE MADE INCIDENTAL TO THE PAY ITEM FOR ADJACENT CONCRETE.



APPROACH SLAB DETAIL

APPROACH SLAB 1 SHOWN
APPROACH SLAB 2 SIMILAR

NOTE:

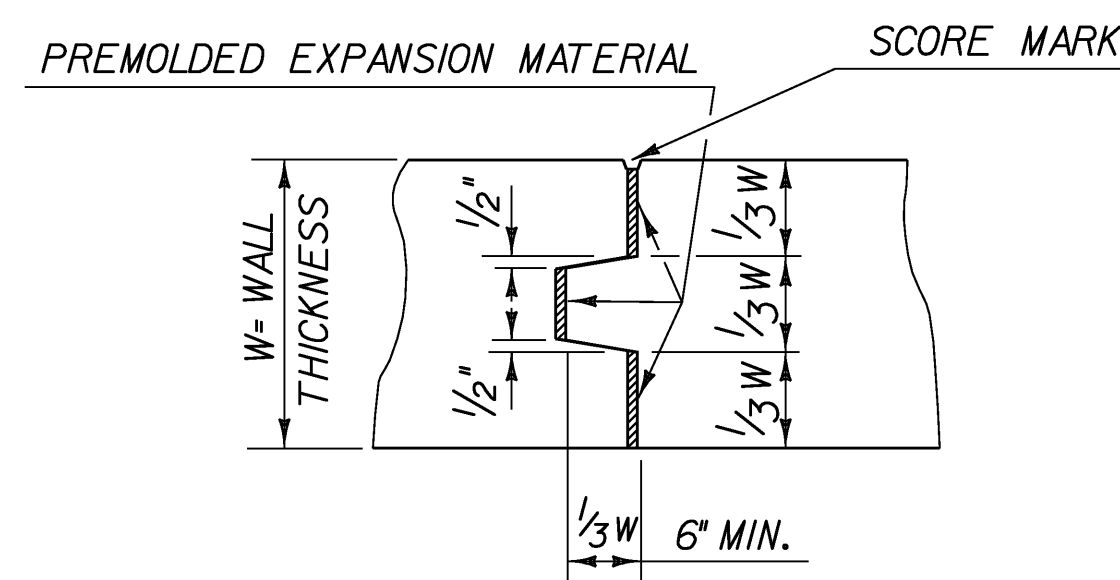
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

APPROACH SLAB DETAILS

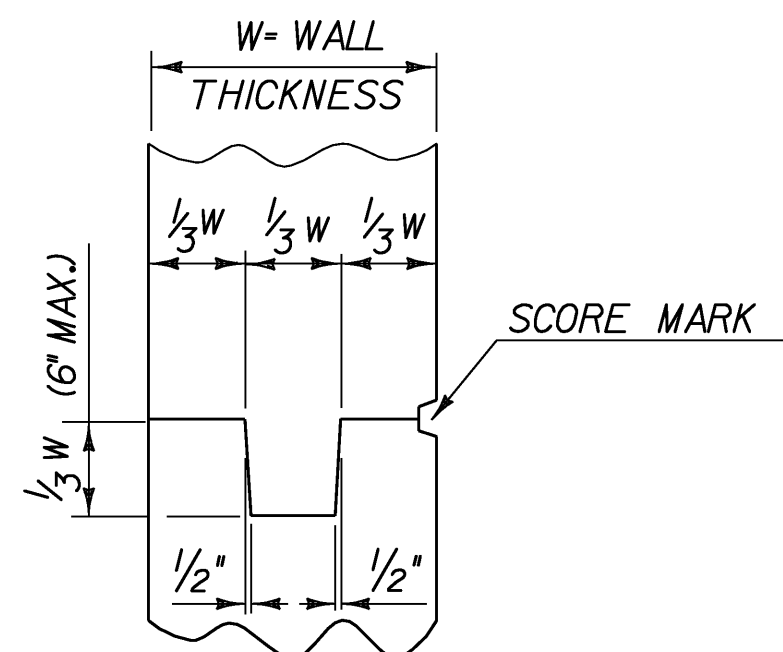
PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(I6)

FILE NAME: 04c098/struc./s04c098sup
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S. SCRIBNER

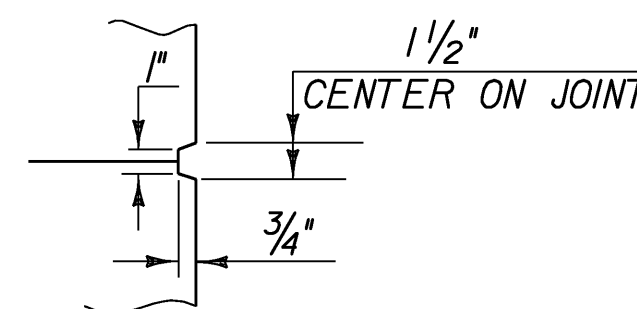
PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 41 OF 66



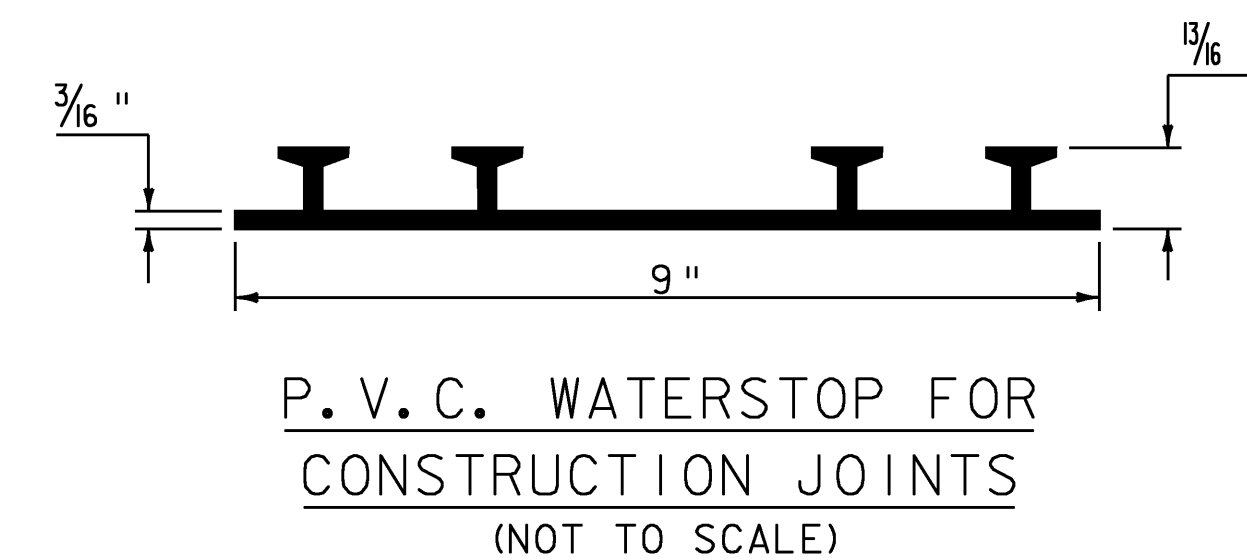
TYPICAL CONCRETE EXPANSION JOINT



TYPICAL CONCRETE CONSTRUCTION JOINT

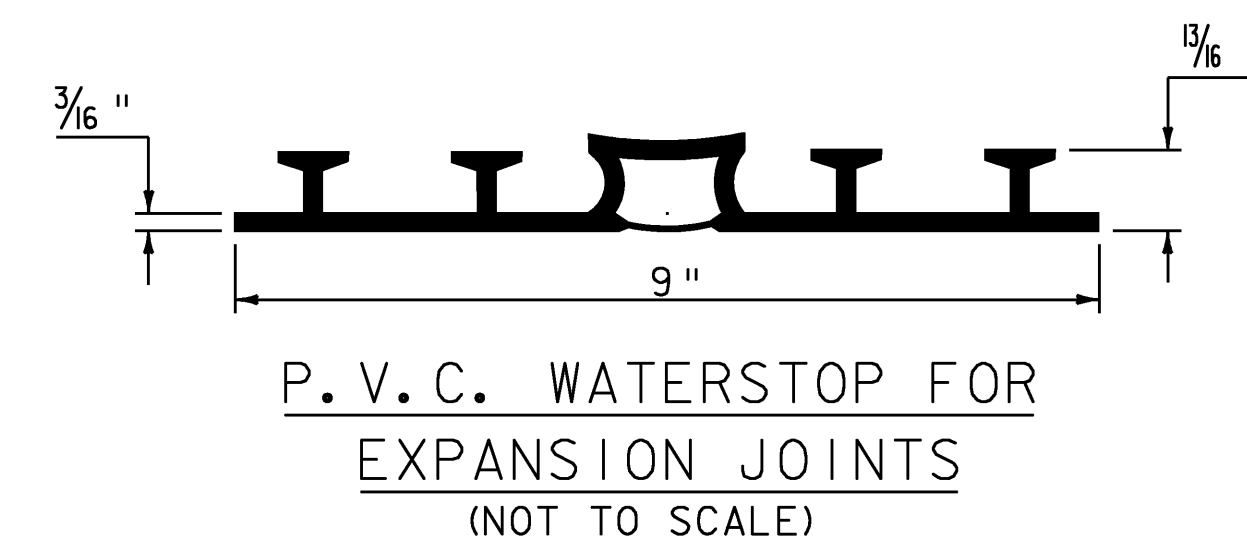


SCORE MARK DETAIL



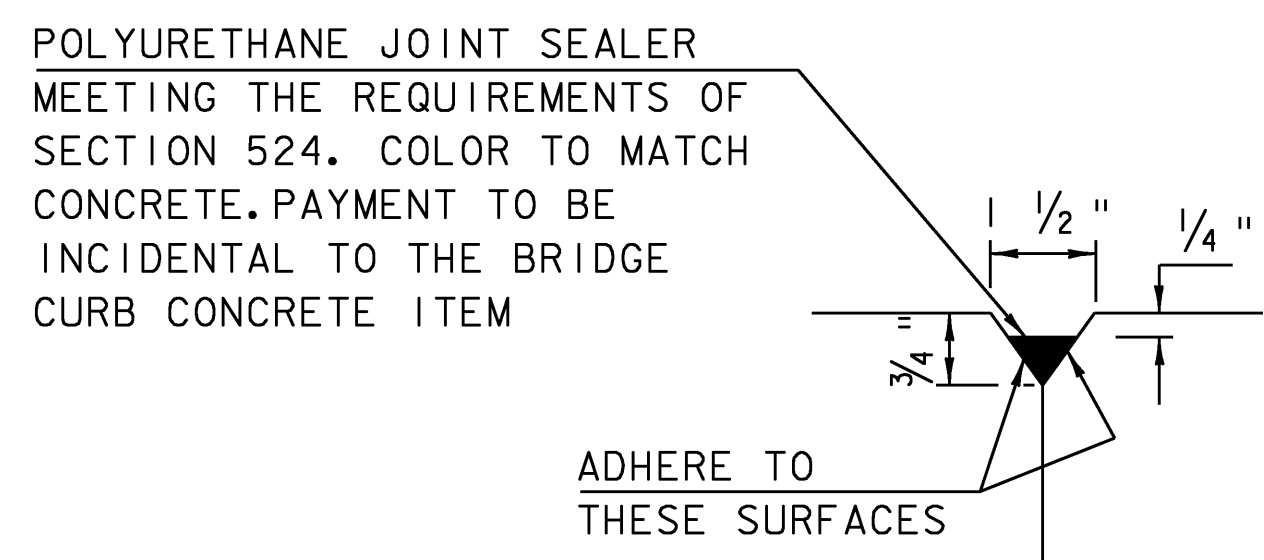
PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.

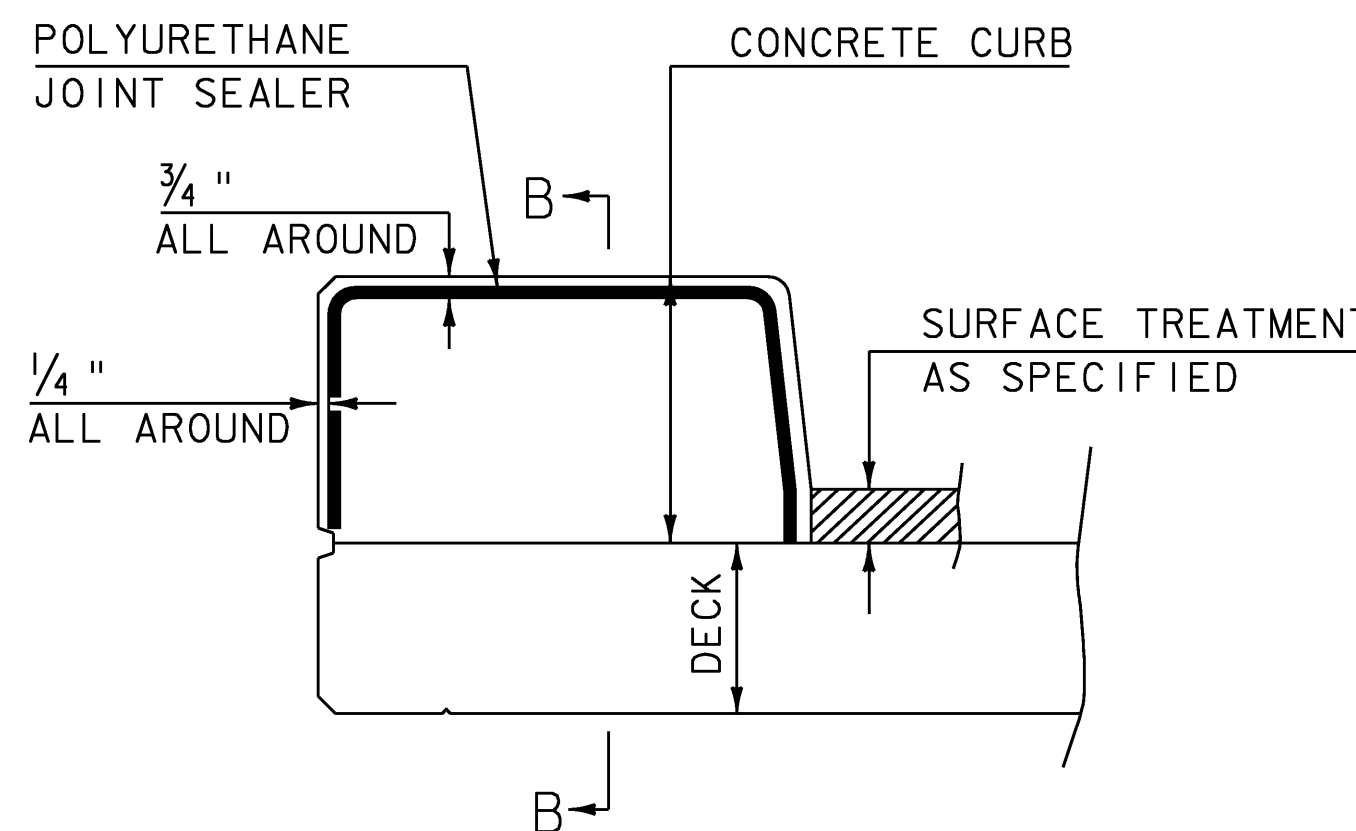


PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

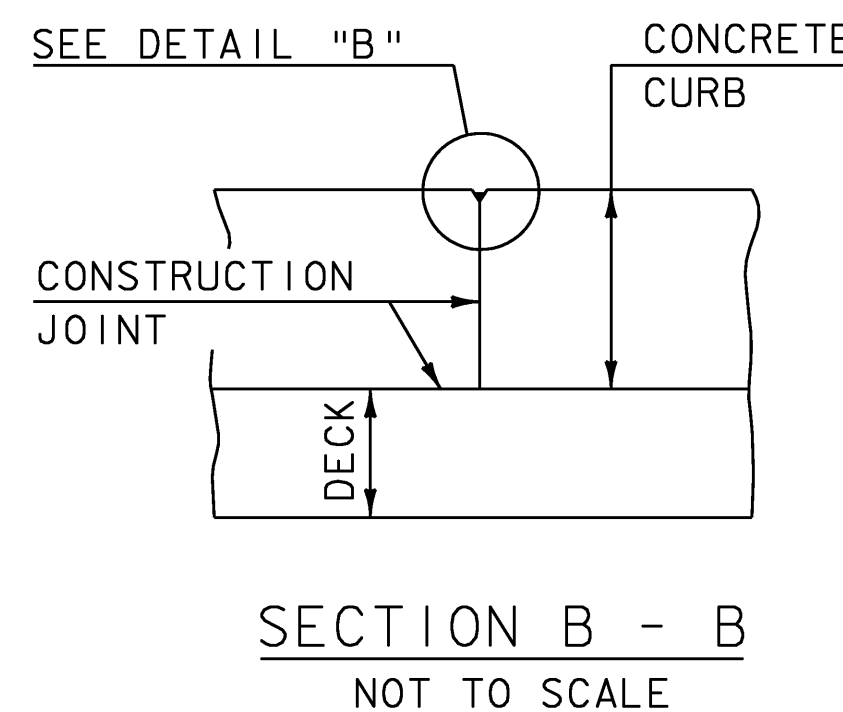
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



DETAIL "B"
NOT TO SCALE



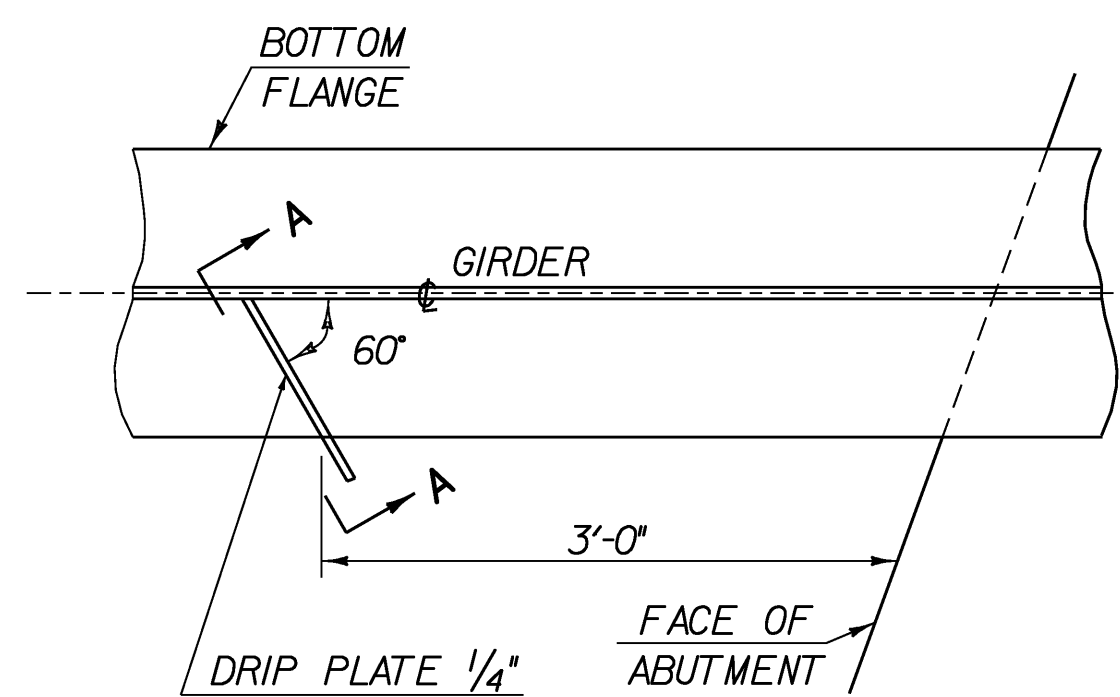
CONCRETE CURB JOINT SECTION
NOT TO SCALE



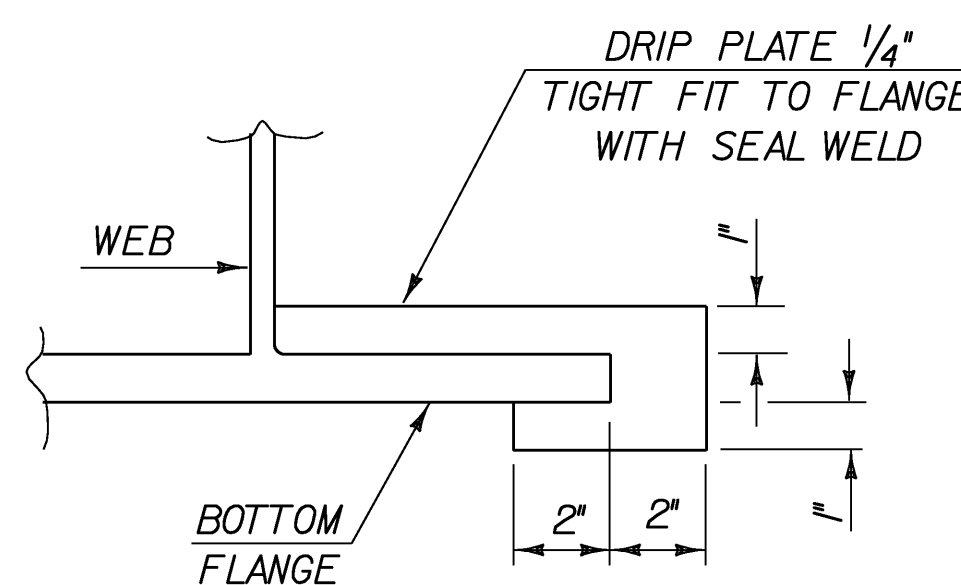
SECTION B - B
NOT TO SCALE

CONCRETE CURB JOINT NOTES

1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION. IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.
3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.
5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.

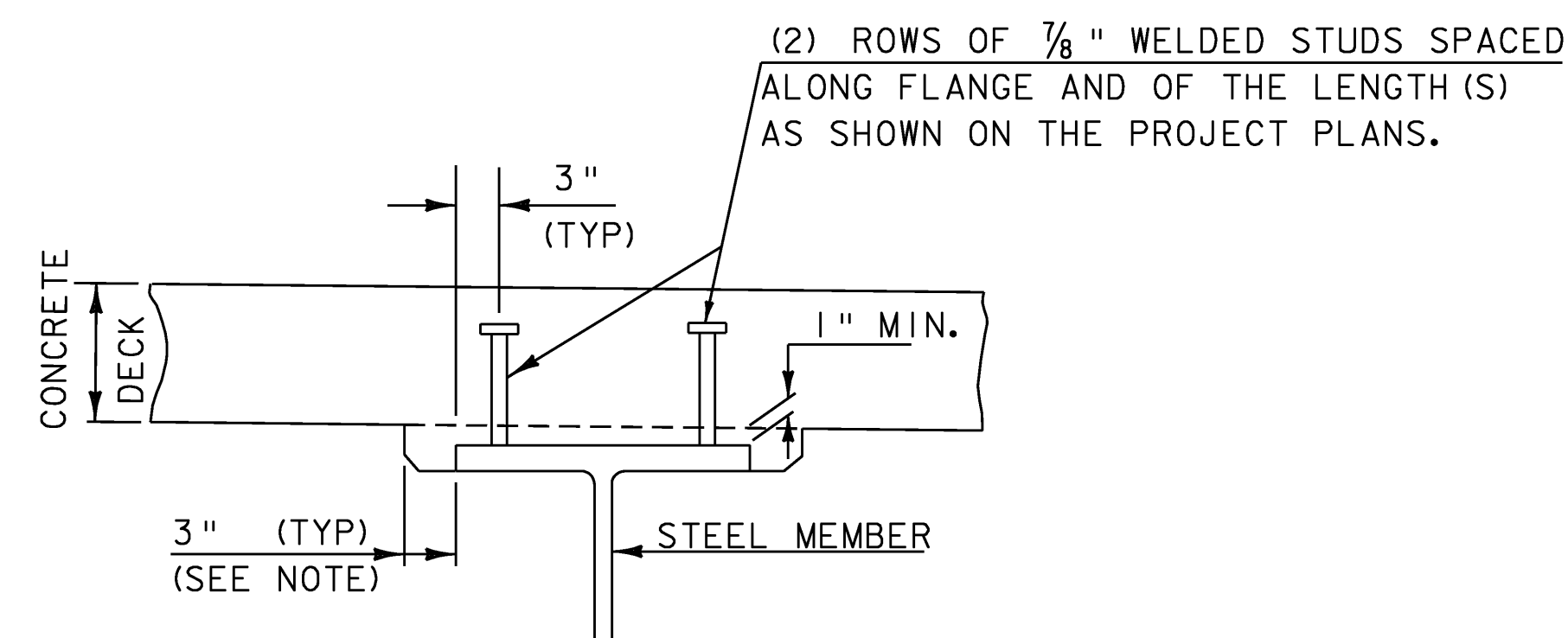


PLAN DRIP PLATE



SECTION A - A

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



NOTE: THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. ANY VOIDS RESULTING FROM FORMING SYSTEM ELEMENTS SHALL BE FILLED WITH JOINT SEALER, POLYURETHANE MEETING THE REQUIREMENTS OF SECTION 524. THE COST OF THE JOINT SEALER, POLYURETHANE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

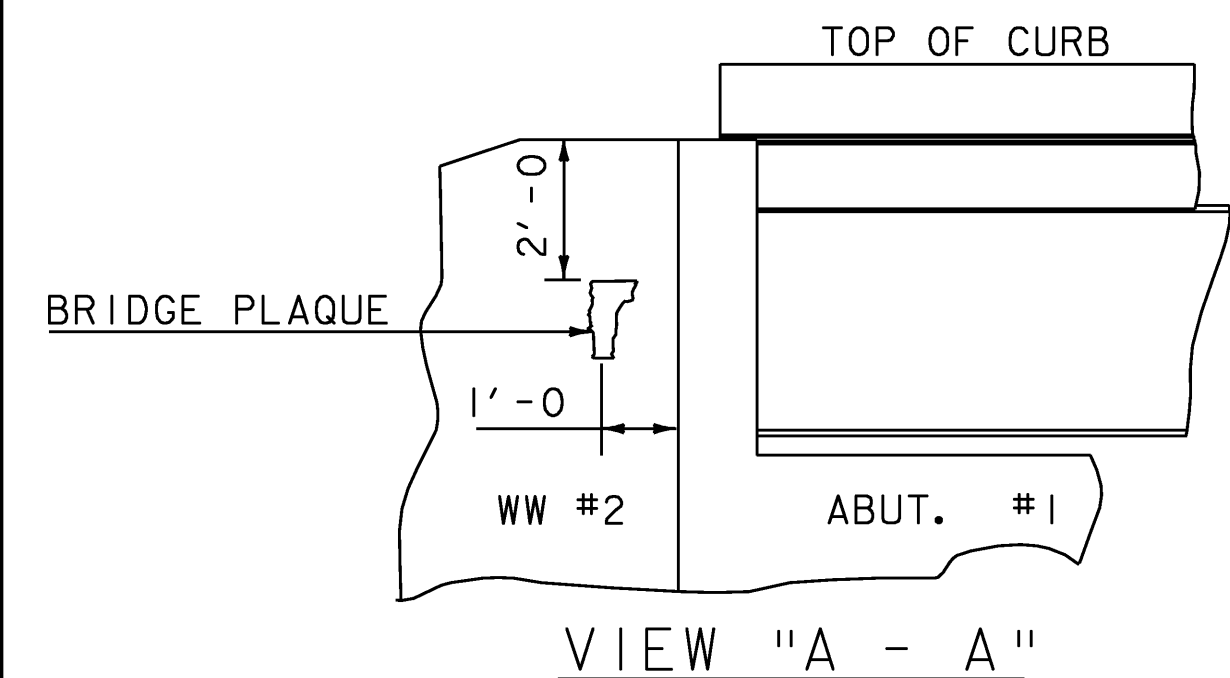
HAUNCH AND SHEAR CONNECTOR DETAIL
(NOT TO SCALE)

SUPERSTRUCTURE DETAILS (1)

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: 04c098/struc./s04c098sup
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S. SCRIBNER

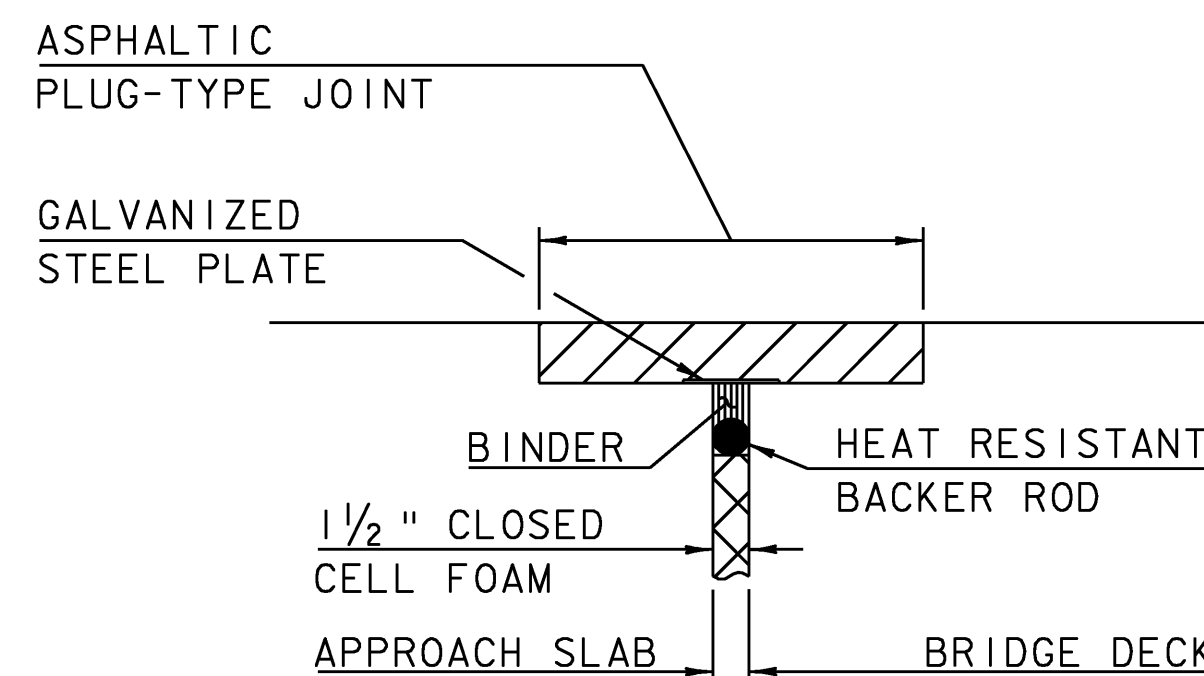
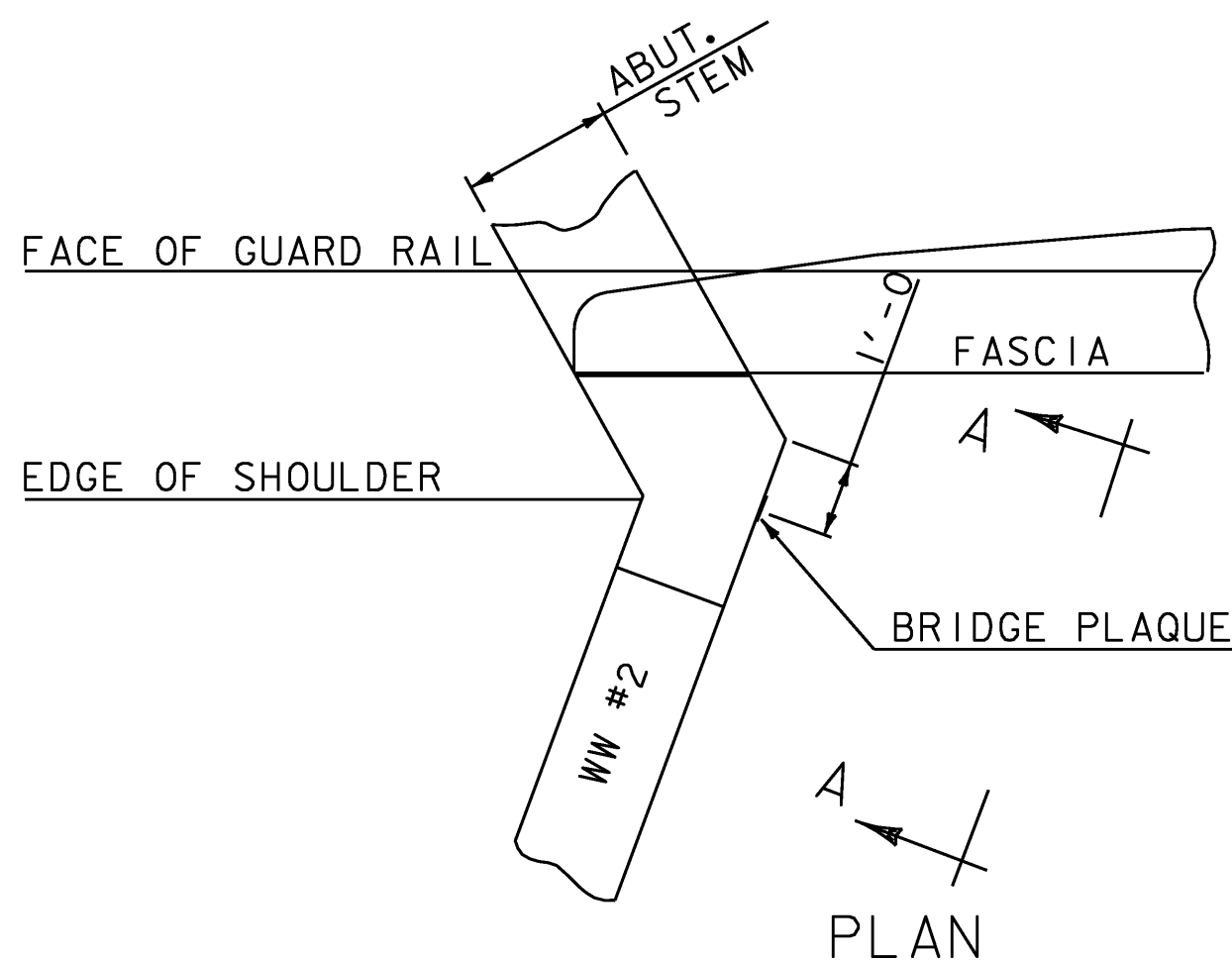
PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 42 OF 66



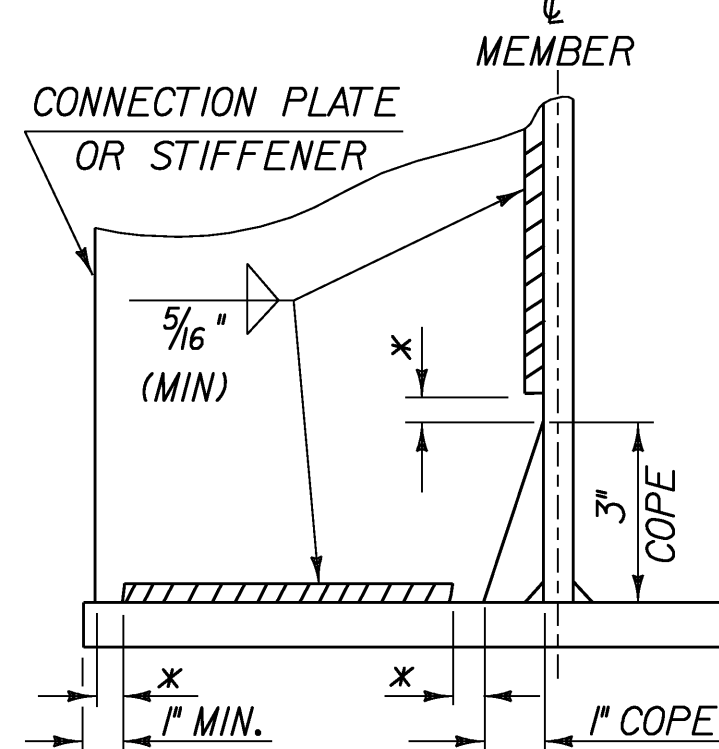
BRIDGE PLAQUE
(NOT TO SCALE)

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.



ASPHALTIC PLUG-TYPE
JOINT DETAIL
(NOT TO SCALE)



WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

*NO WELD FOR 3/8" MIN. 7/8" MAX. (EXCEPT MUST MAINTAIN 1" MINIMUM FROM EDGE OF FLANGE)

JOINT SEALER, HOT OR COLD POURED. SHALL BE SLIGHTLY OVER FILLED THEN WIPED FLUSH WITH A "V" OR "U" SHAPED SQUEEGEE TO PROVIDE A 1 1/4" WIPE ZONE EACH SIDE OF JOINT.

TOP COURSE OF PAVEMENT

7/8" Ø HEAT RESISTANT FOAM BACKER ROD. COMPRESSION FIT REQUIRED TO ENSURE THAT THE ROD POSITION IS MAINTAINED DURING FILLING OPERATION. COST TO BE INCLUDED WITH UNIT PRICE BID FOR JOINT SEALER.

SAWED PAVEMENT JOINT DETAIL
(NOT TO SCALE)

*JOINT IS TO BE LOCATED ACCURATELY BY STRING LINING, OR OTHER MEANS, PRIOR TO PAVING, SO THAT THE SAW CUTS WILL BE MADE DIRECTLY OVER THE END OF CONCRETE DECK. JOINT SHALL BE CUT DRY IN A SINGLE PASS AND BE SEALED WITHIN 24 HOURS OR PRIOR TO EXPOSURE TO TRAFFIC. JOINT SHALL BE CLEANED PRIOR TO APPLYING THE JOINT SEALER. PAYMENT INCIDENTAL TO 406.25

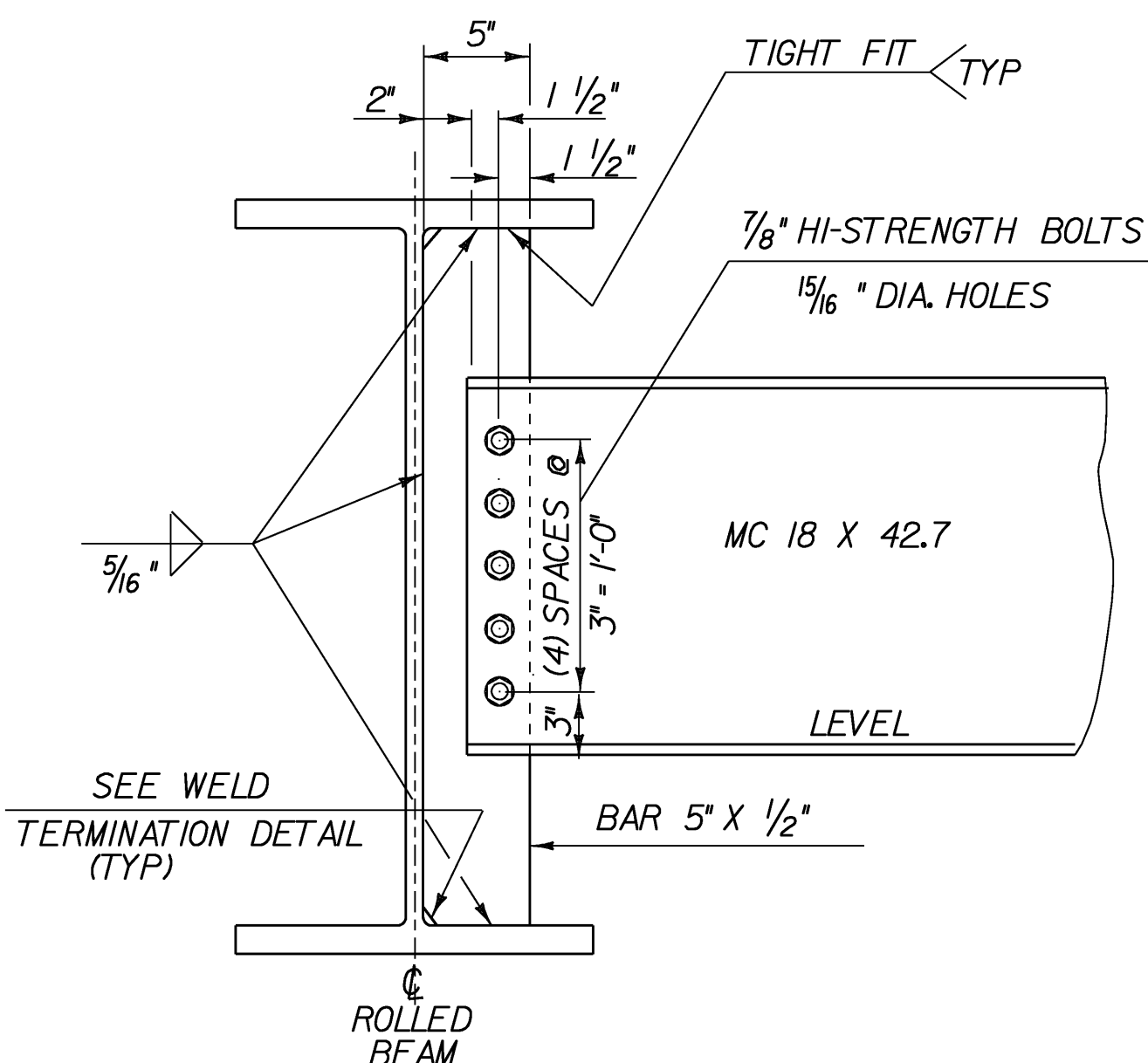
ASPHALTIC PLUG JOINT NOTES

1. INSTALLATION

- LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
- REMOVE THE BITUMINOUS CONCRETE PAVEMENT FULL DEPTH AS SHOWN ON THE PLANS. THE PAVEMENT SHALL BE DRY AND SAW CUT TO THE LIMITS REQUIRED TO PLACE THE JOINT. A PNUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.
- BLAST CLEAN THE JOINT AREA OF DEBRIS AND ASPHALT. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
- REPAIR SPALLED AND DEFECTIVE CONCRETE WITH AN APPROVED MATERIAL AS AGREED UPON BY THE ENGINEER.
- PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
- HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
- PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRESTAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.
- HEAT AND MIX THE BINDER MATERIAL AND AGGREGATE AS RECOMMENDED BY THE MANUFACTURER.
- INSTALLATION OF MATERIAL, COMPACTION, AND TOP COATING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
- IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.
- PROTECT JOINT FROM TRAFFIC UNTIL THE MATERIAL HAS COOLED TO 51 DEG C (125 DEG F) +/-.

2. WEATHER LIMITATIONS. (APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER):

- THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
- THE ROAD SURFACE IS DRY.
- WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

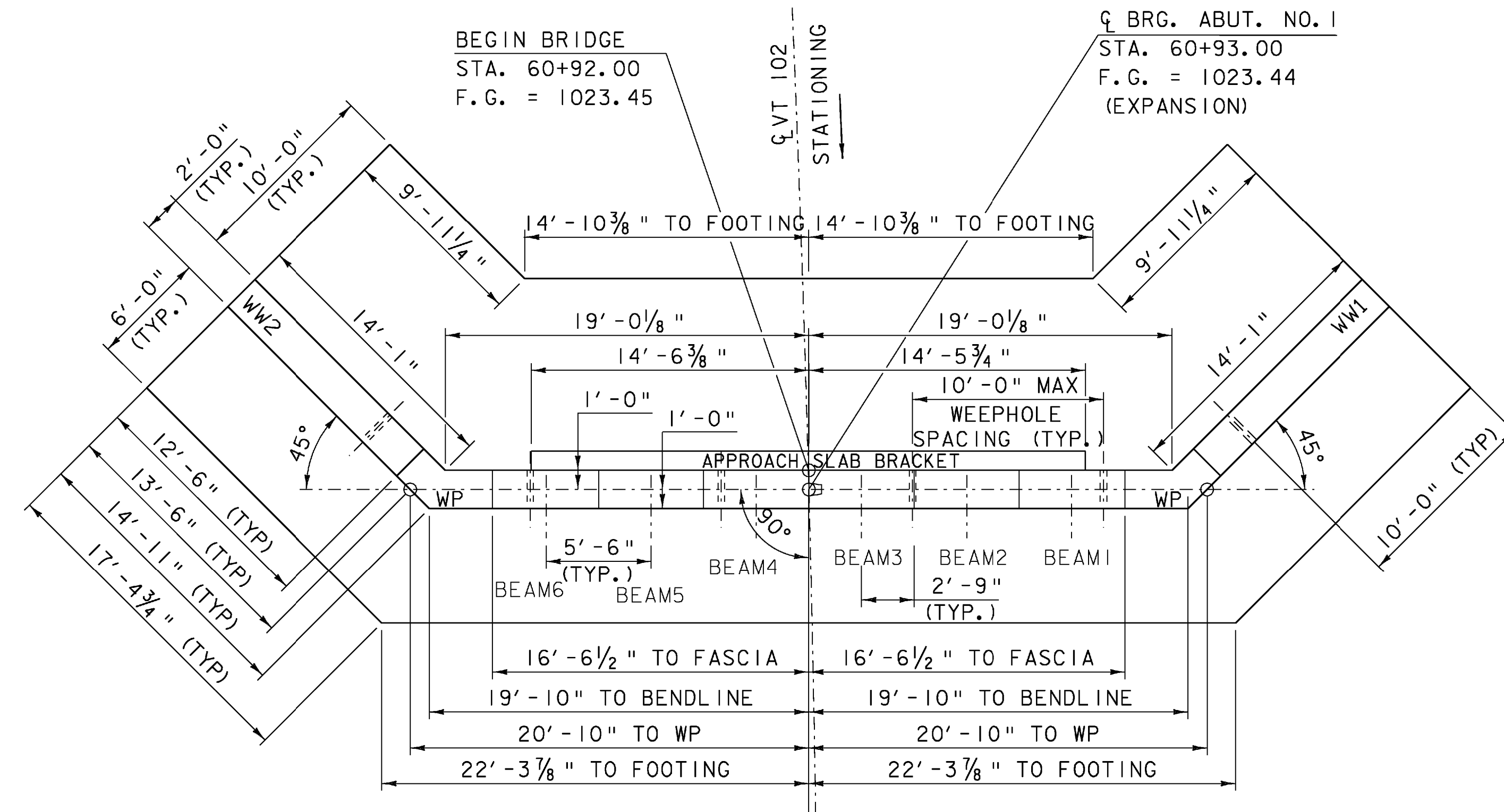


NOTE: HI-STRENGTH BOLTS, NUTS AND WASHERS SHALL CONFORM TO AASHTO DESIGNATION M164.

INTERMEDIATE DIAPHRAGMS

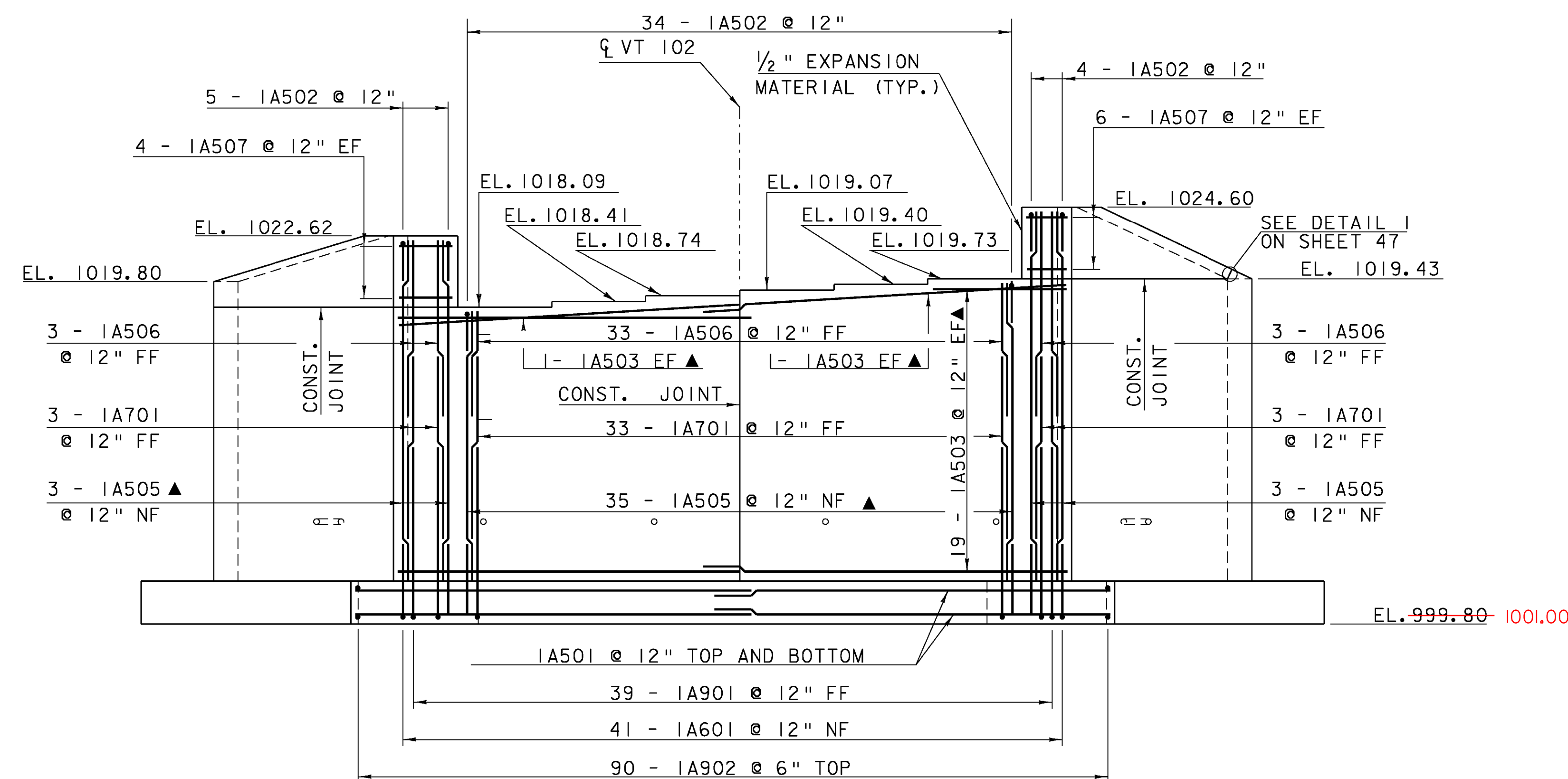
SUPERSTRUCTURE DETAILS (2)

PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271(I6)
FILE NAME: 04c098/struc./s04c098sup	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. EVANS-MONGEON	DRAWN BY: L. DUQUETTE
DESIGNED BY: S. SCRIBNER	CHECKED BY: S. SCRIBNER
	SHEET 43 OF 66



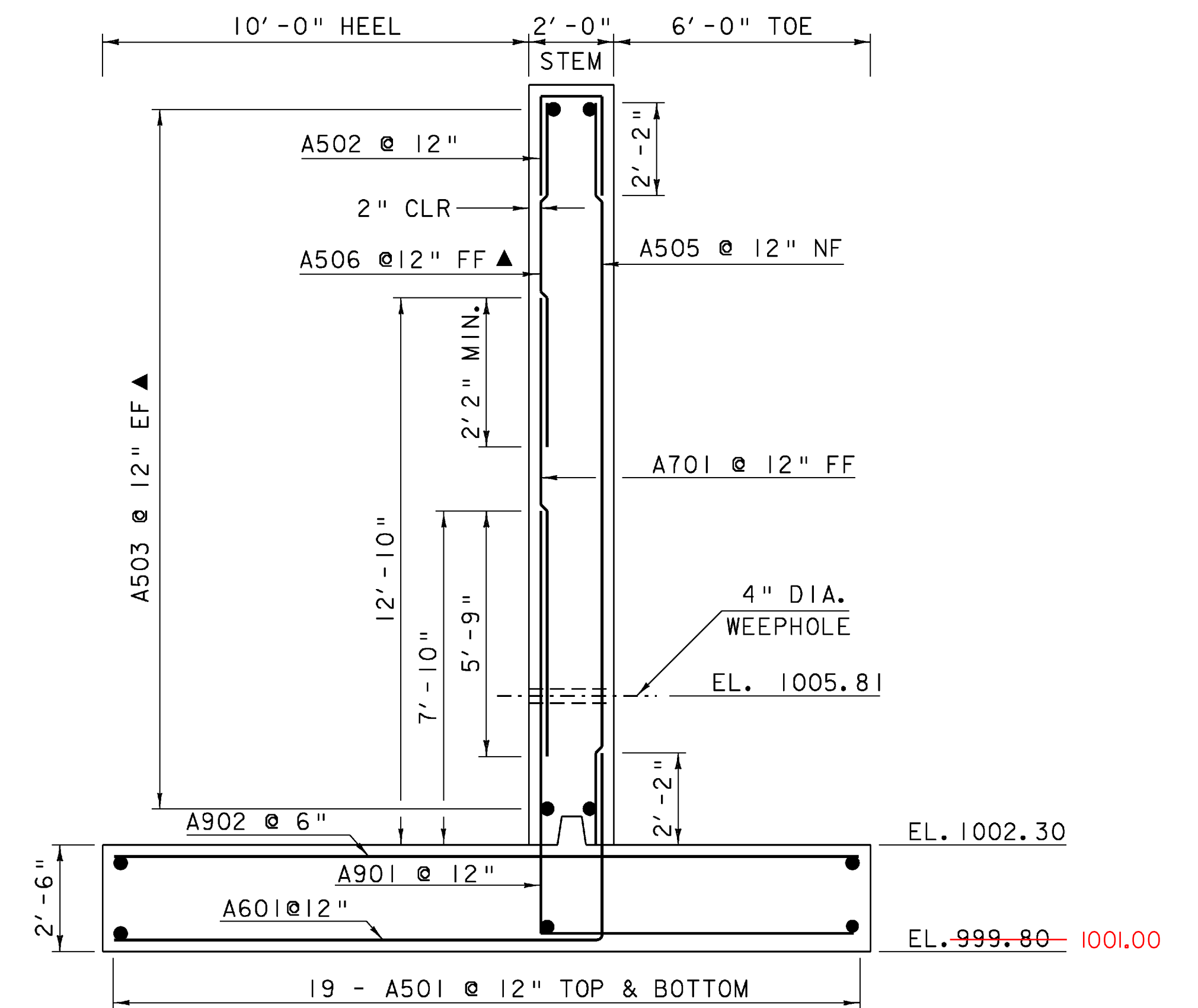
ABUTMENT NO. 1 PLAN

SCALE 3/16" = 1'-0"
1 0 2 4 6 8



ABUTMENT NO. 1 ELEVATION

SCALE 3/16" = 1'-0"
1 0 2 4 6 8



ABUTMENT TYPICAL

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

NOTE:

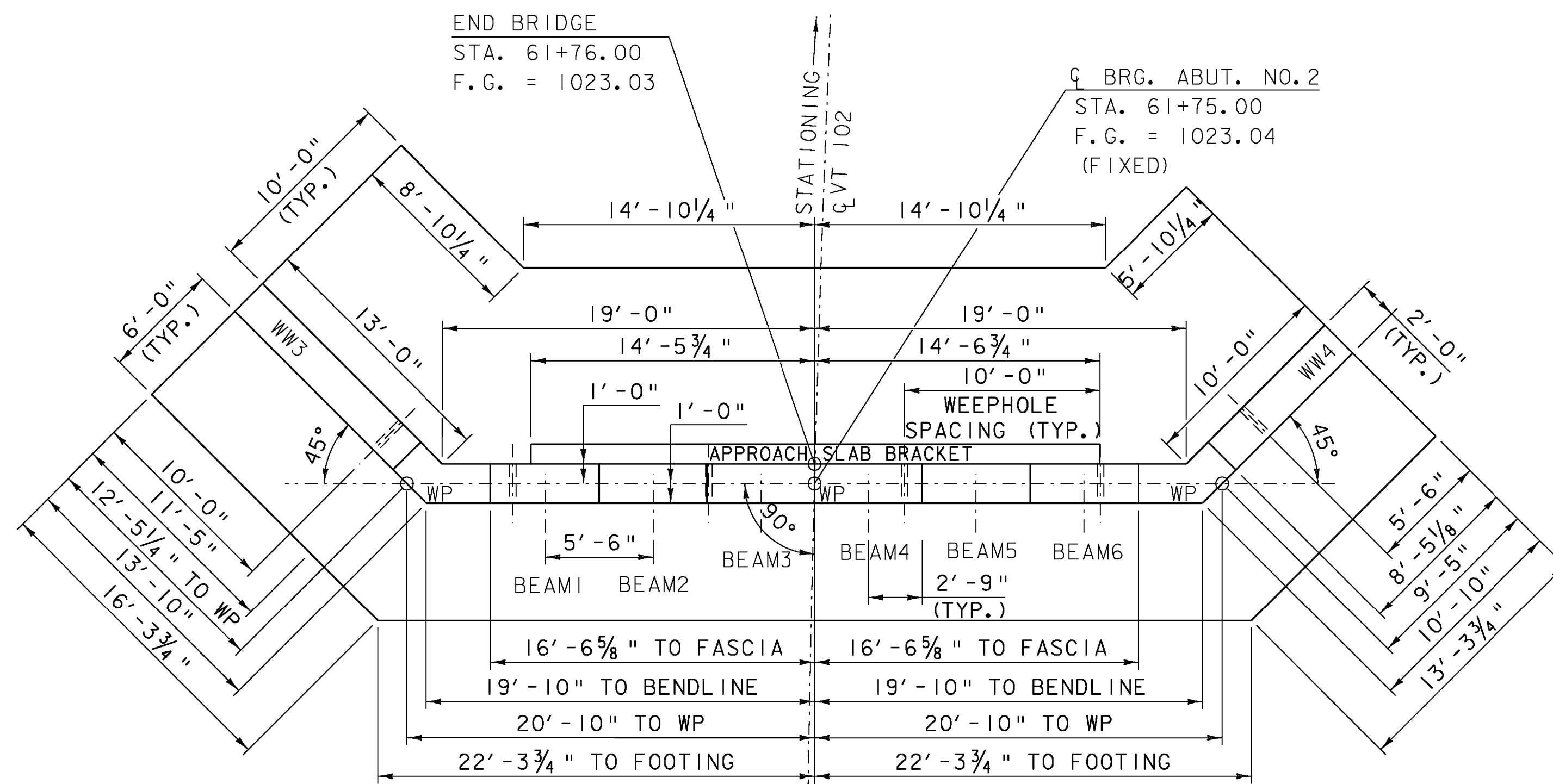
NF = NEAR FACE
 FF = FAR FACE
 EF = EACH FACE
 ▲ = CUT TO FIT IN FIELD
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ALL DIMENSIONS ARE TAKEN FROM THE MAJOR CHORD NOT FROM THE Q OF VT 102

ABUTMENT #1 DETAILS

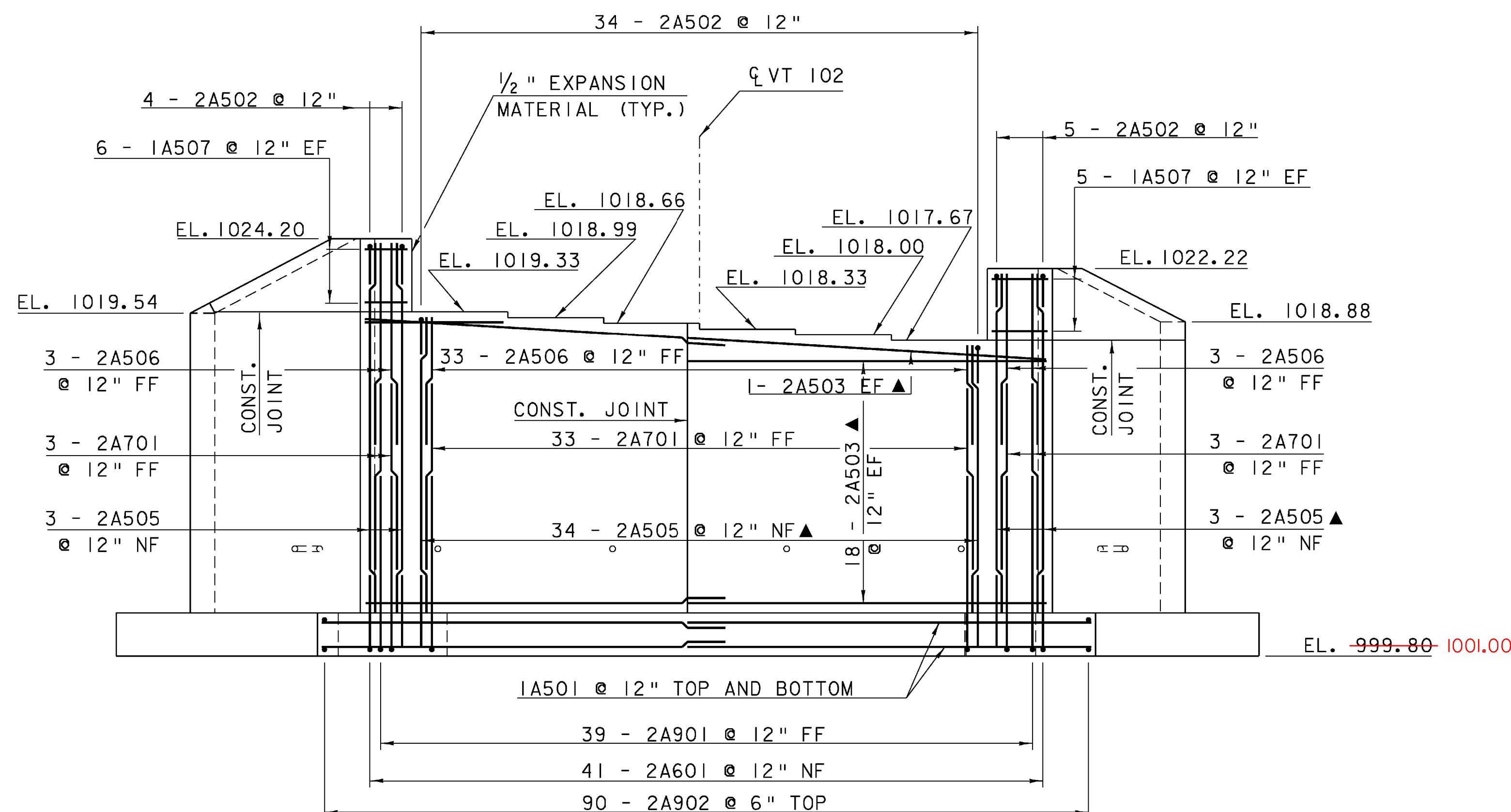
PROJECT NAME: CANAAN
 PROJECT NUMBER: ER ST 0271(16)

FILE NAME: 04c098/struc./s04c098sup
 PROJECT LEADER: M. EVANS-MONGEON
 DESIGNED BY: S. SCRIBNER
 PLOT DATE: 18-AUG-2008
 DRAWN BY: C. JOLLY
 CHECKED BY: S. SCRIBNER
 SHEET 44 OF 66



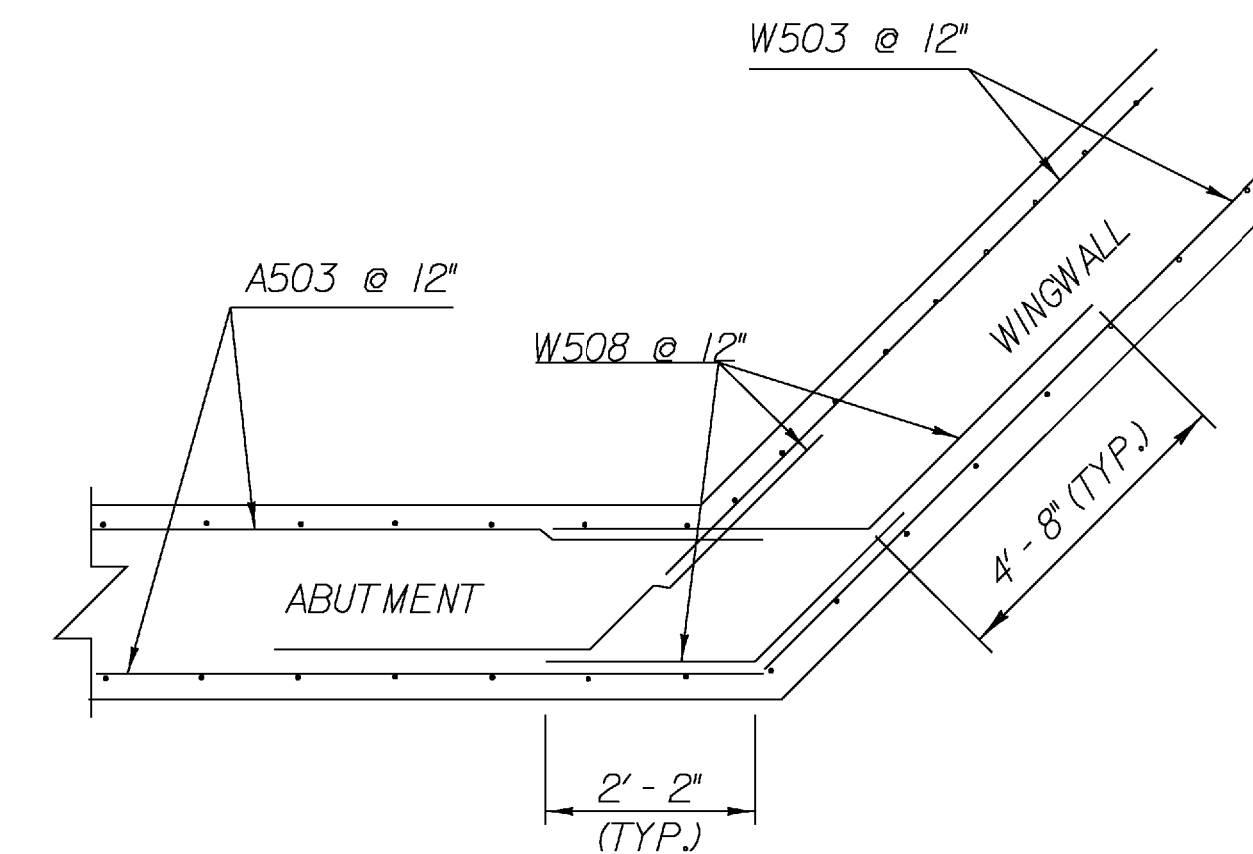
ABUTMENT NO. 2 PLAN

SCALE 3/16" = 1'-0"
1 0 2 4 6 8



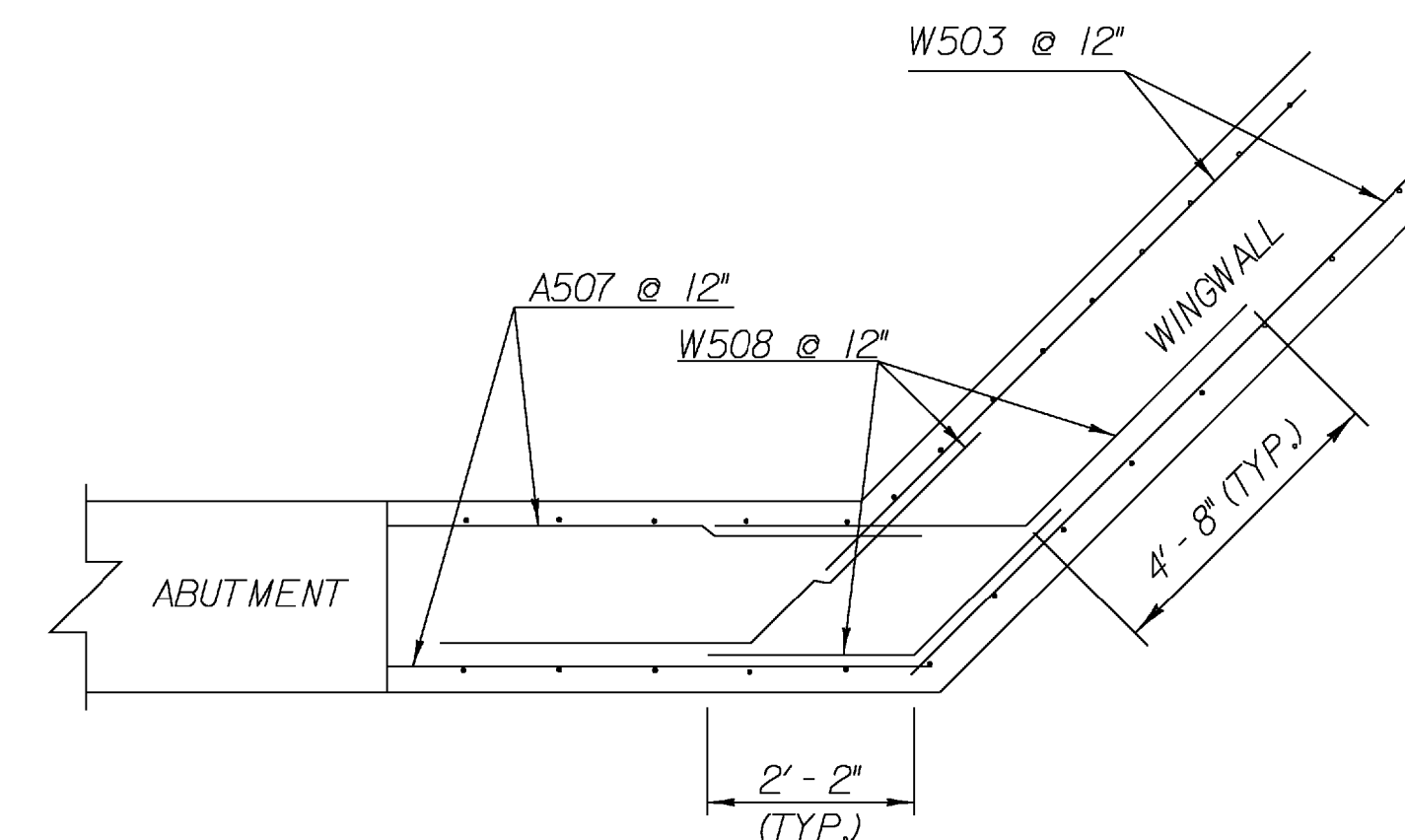
ABUTMENT NO. 2 ELEVATION

SCALE 3/16" = 1'-0"
1 0 2 4 6 8



WINGWALL CORNER DETAIL FOR 45° OR UNDER

WINGWALL CORNER DETAIL
(BELOW BRIDGE SEAT)
NOT TO SCALE



WINGWALL CORNER DETAIL FOR 45° OR UNDER

WINGWALL CORNER DETAIL
(ABOVE BRIDGE SEAT)
NOT TO SCALE

NOTE:

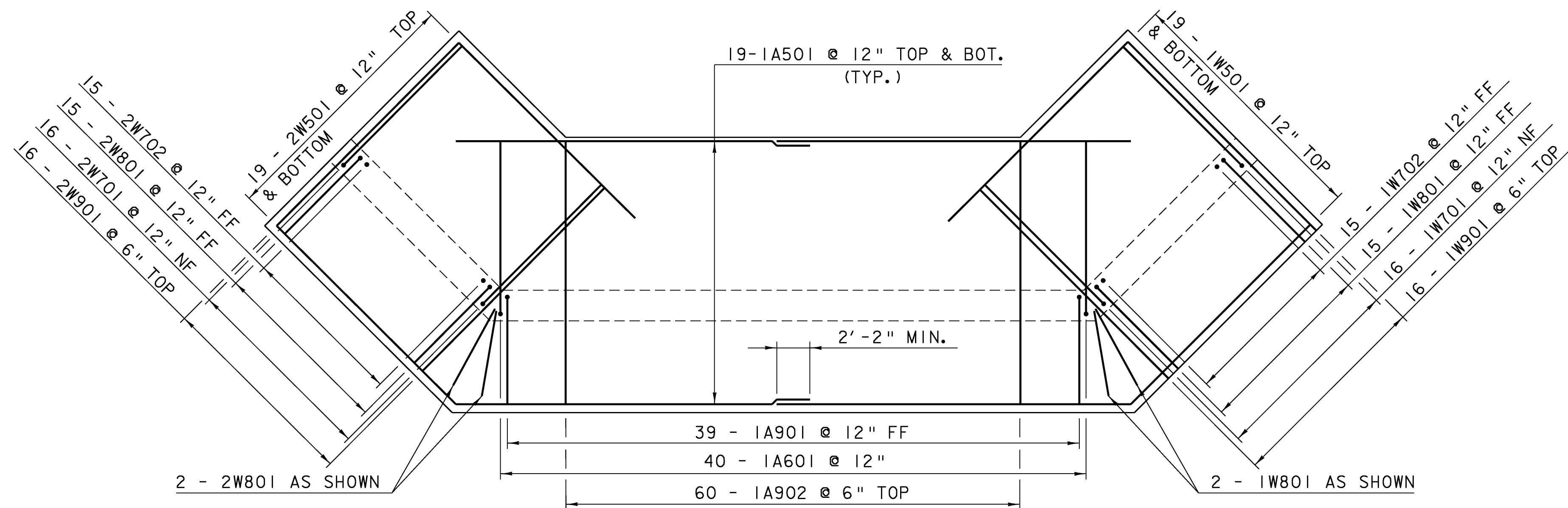
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE
SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE
SPECIFIED ON THE PLANS.

ALL DIMENSIONS ARE TAKEN FROM THE
MAJOR CHORD NOT FROM THE CL OF VT 102

ABUTMENT #2 DETAILS

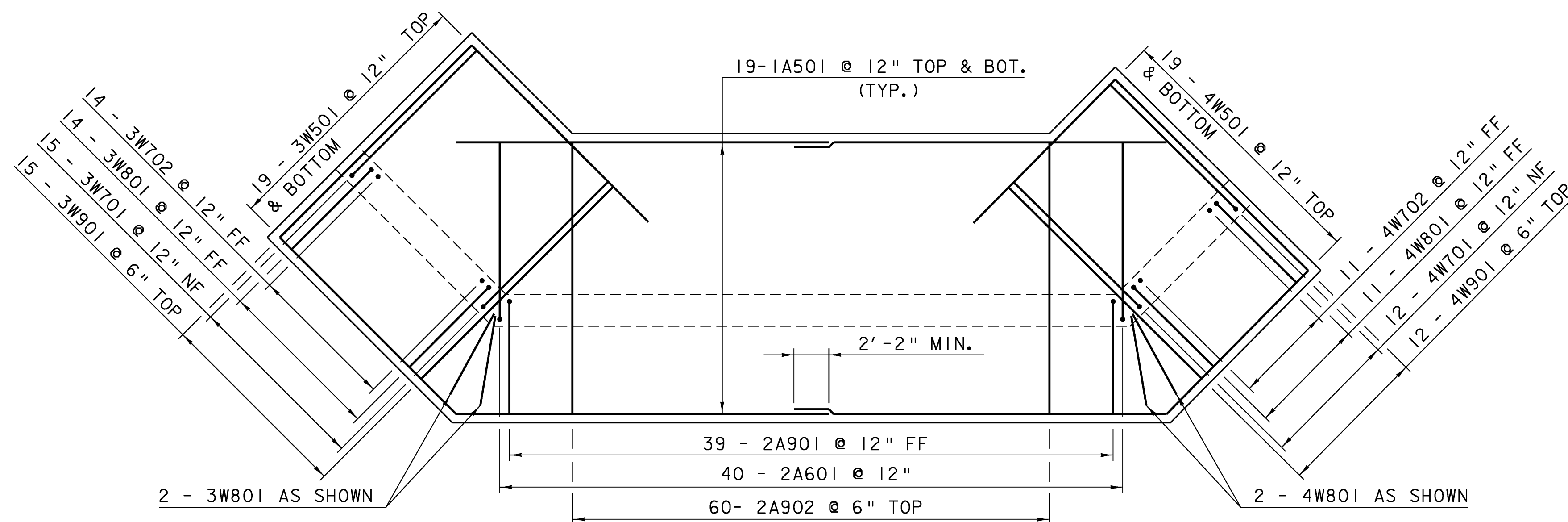
PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: 04c098/struc./s04c098sup
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S. SCRIBNER
PLOT DATE: 18-AUG-2008
DRAWN BY: C. JOLLY
CHECKED BY: S. SCRIBNER
SHEET 45 OF 66



ABUTMENT NO. 1 FOOTING REINFORCING PLAN

SCALE $\frac{3}{16}" = 1'-0"$
1 0 2 4 6 8



ABUTMENT NO. 2 FOOTING REINFORCING PLAN

SCALE $\frac{3}{16}" = 1'-0"$
1 0 2 4 6 8

NOTE:

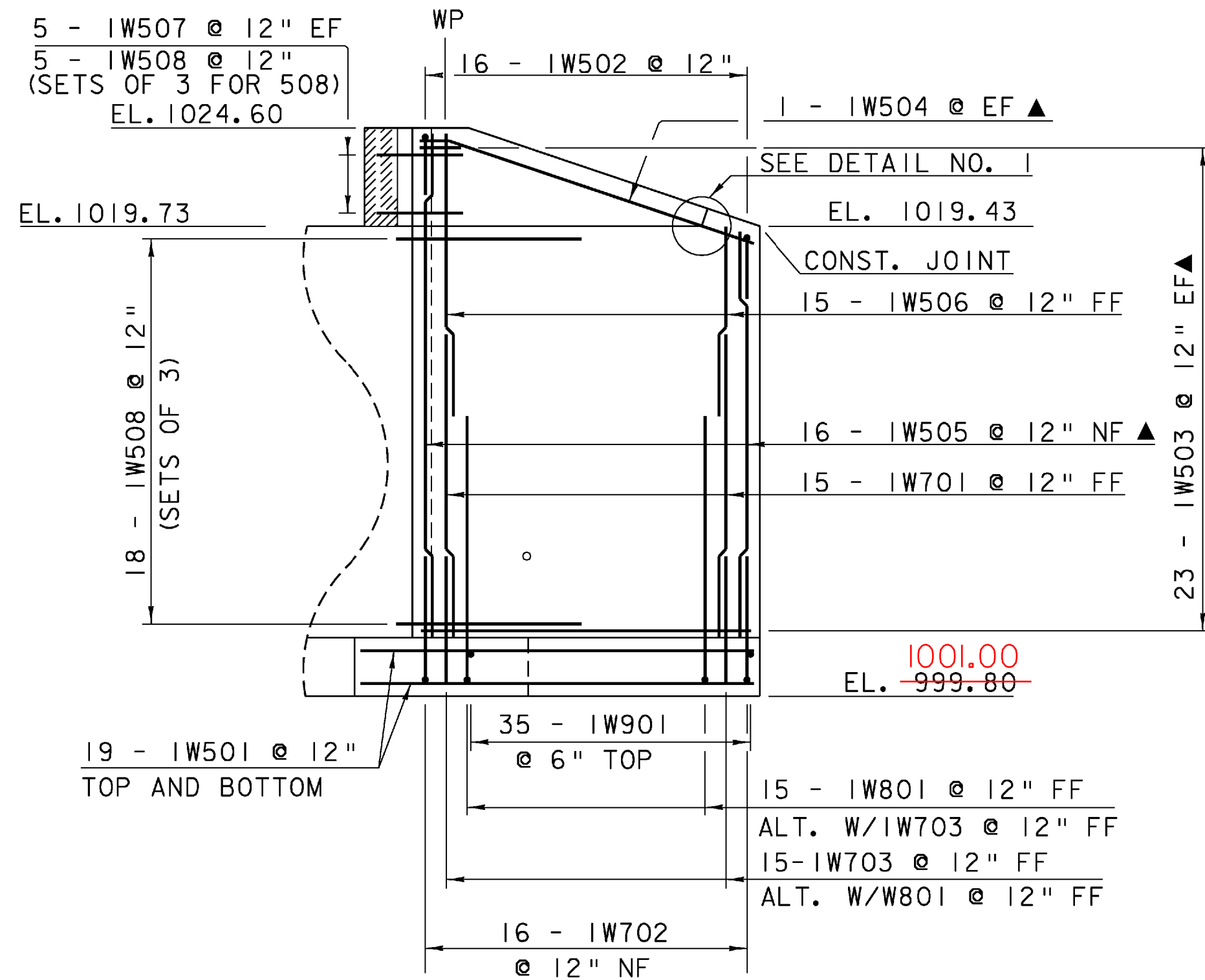
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE
SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE
SPECIFIED ON THE PLANS.

FOOTING REINFORCING PLAN

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(I6)

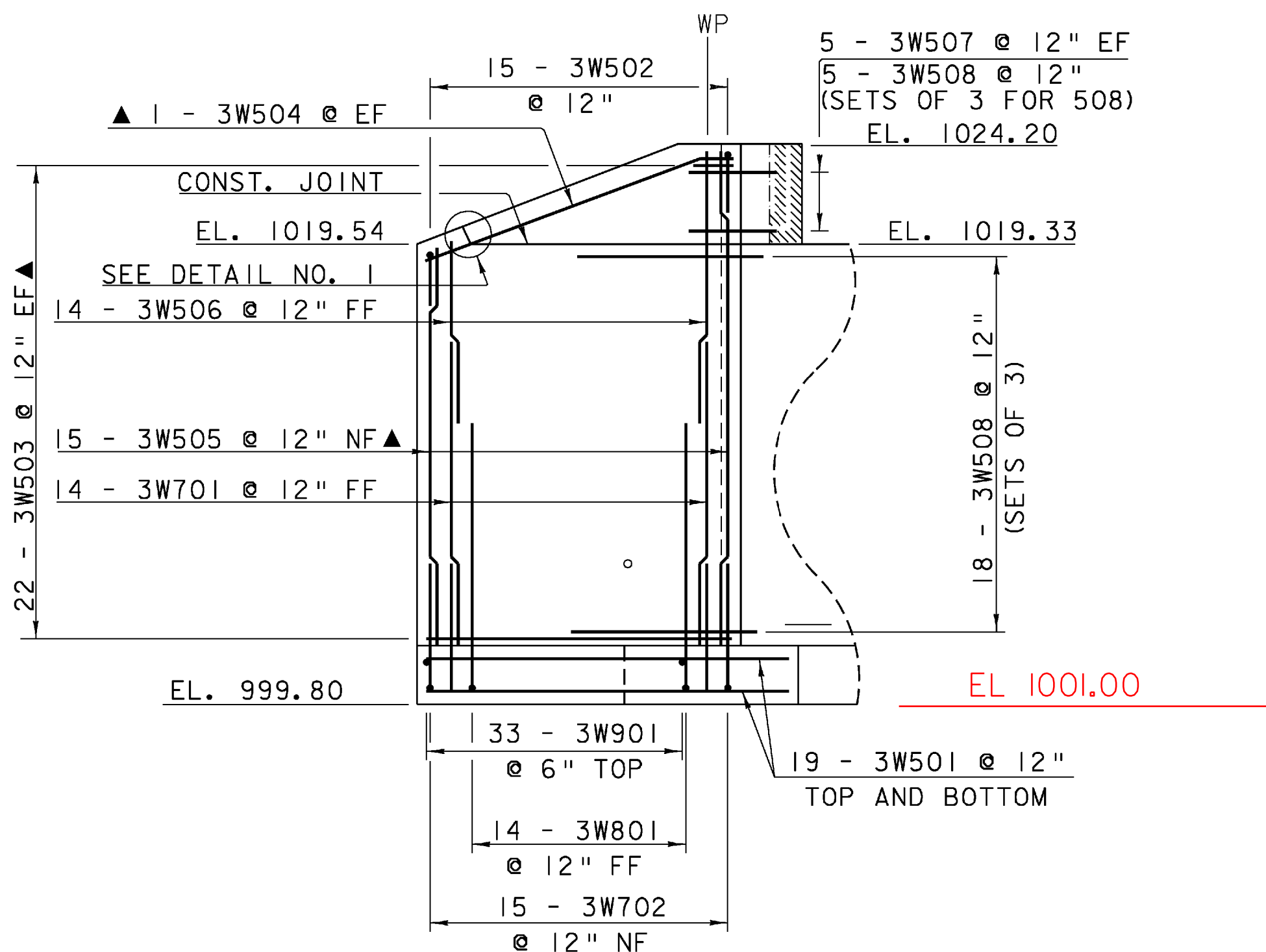
FILE NAME: 04c098/struc./s04c098sup
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S. SCRIBNER

PLOT DATE: 18-AUG-2008
DRAWN BY: C. JOLLY
CHECKED BY: S. SCRIBNER
SHEET 46 OF 66



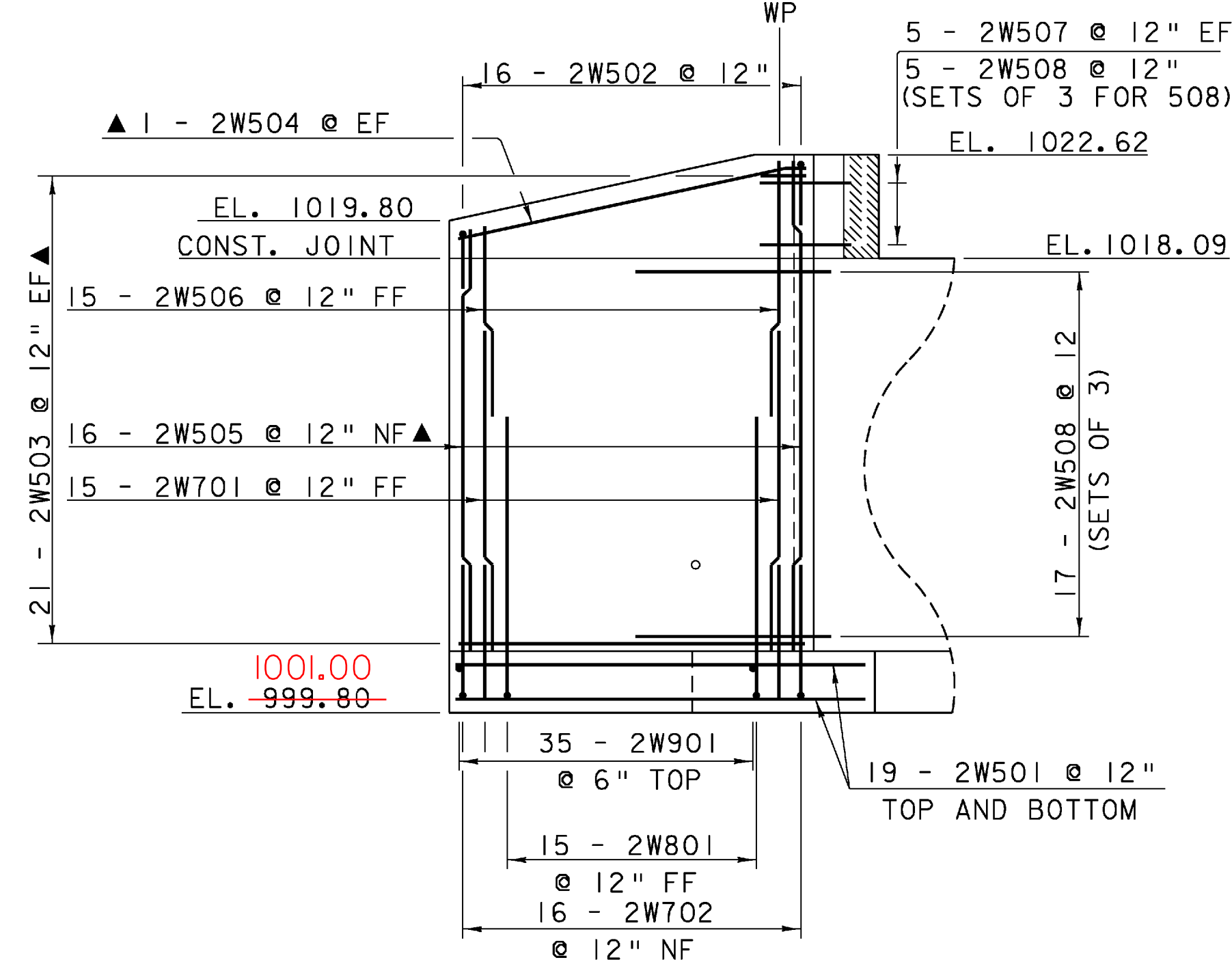
WINGWALL NO. 1 ELEVATION

SCALE $\frac{3}{16}" = 1'-0"$
1 0 2 4 6 8



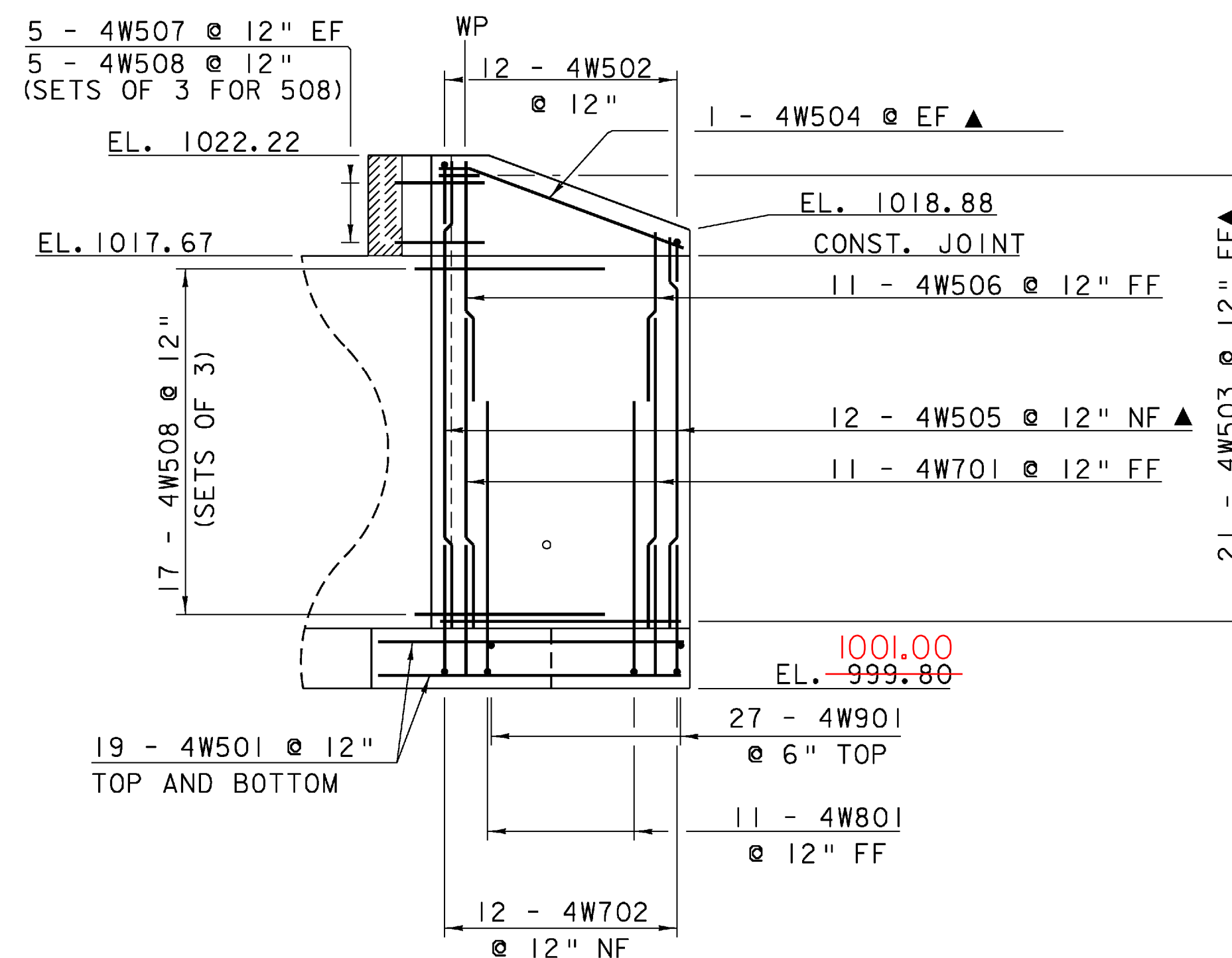
WINGWALL NO. 3 ELEVATION

SCALE $\frac{3}{16}" = 1'-0"$
1 0 2 4 6 8



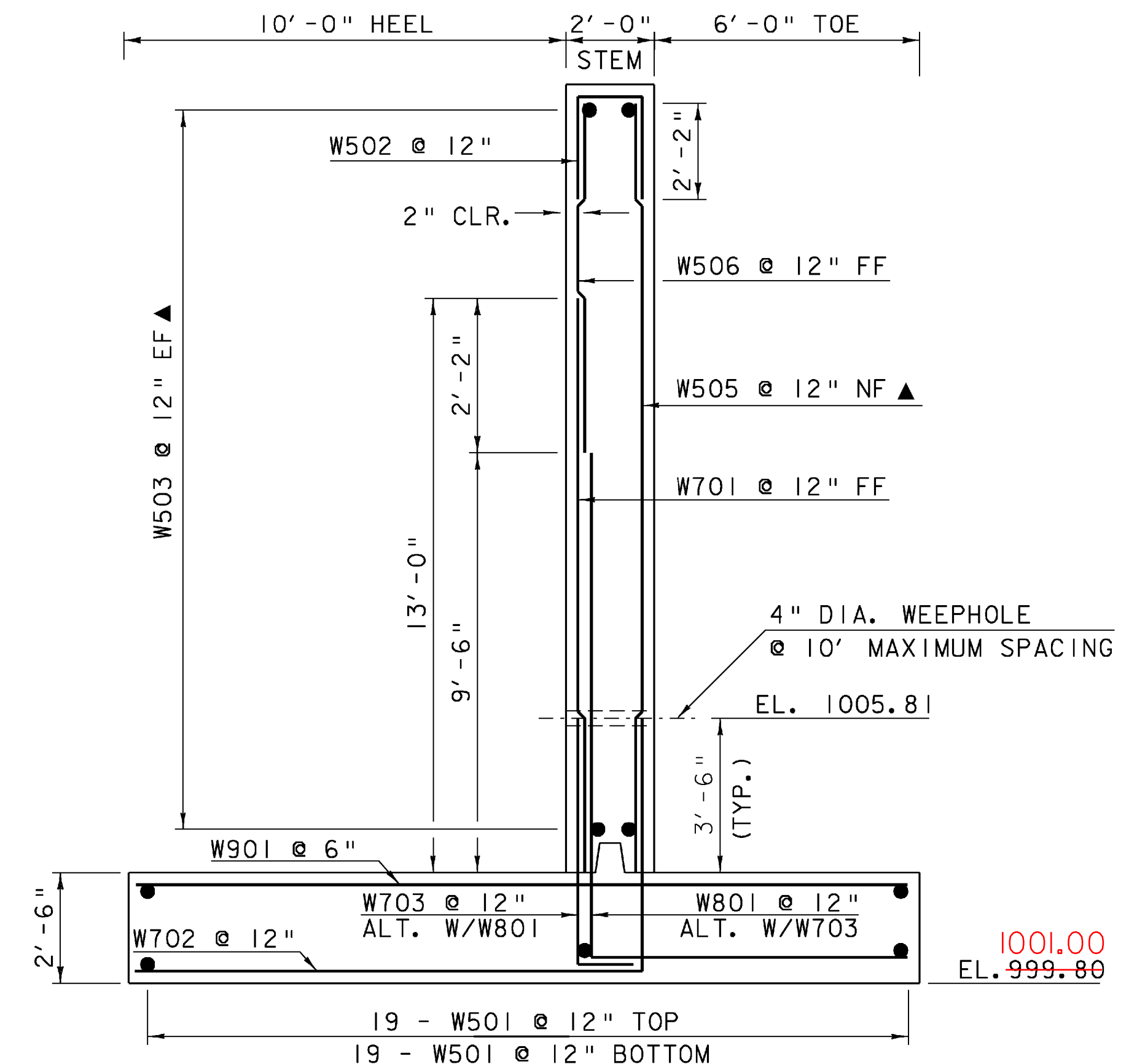
WINGWALL NO. 2 ELEVATION

SCALE $\frac{3}{16}" = 1'-0"$
1 0 2 4 6 8



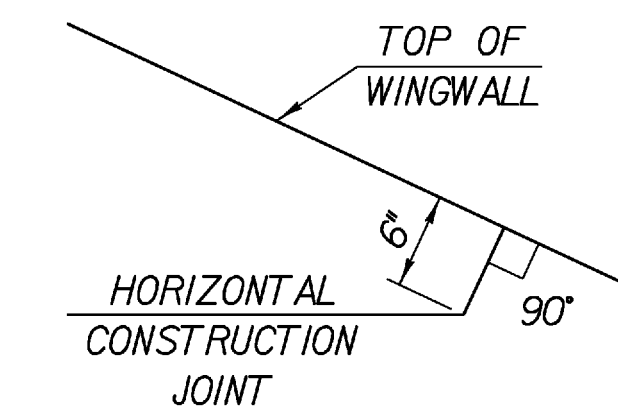
WINGWALL NO. 4 ELEVATION

SCALE $\frac{3}{16}" = 1'-0"$
1 0 2 4 6 8



WINGWALL TYPICAL

SCALE $\frac{3}{16}" = 1'-0"$
1 0 1 2 3 4



DETAIL NO. 1

NOT TO SCALE

NOTE:

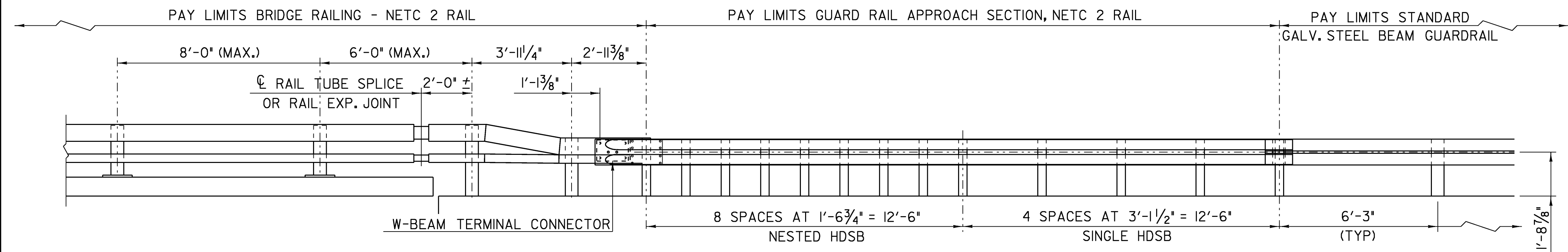
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE
SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE
SPECIFIED ON THE PLANS.

WINGWALL DETAILS

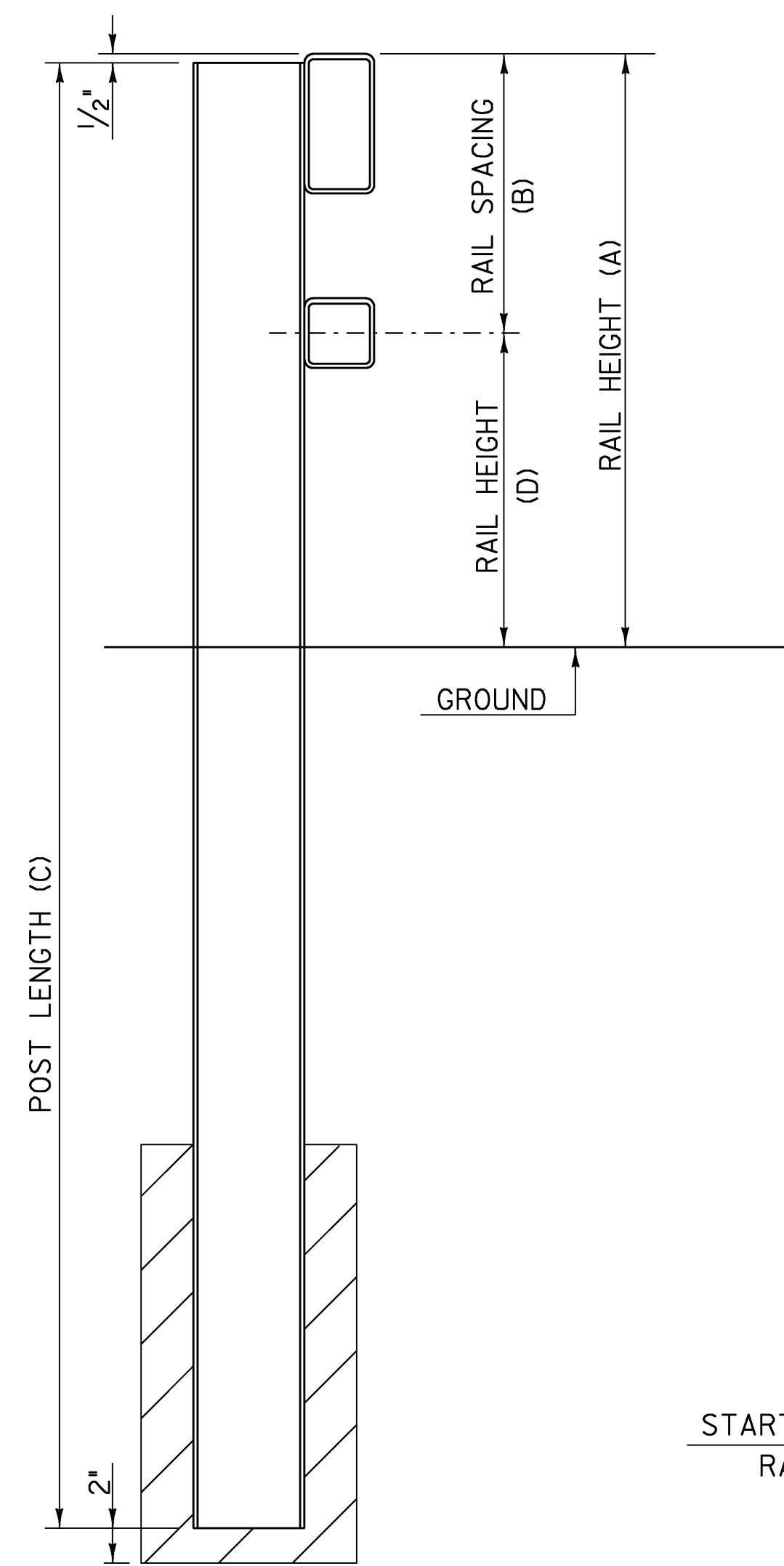
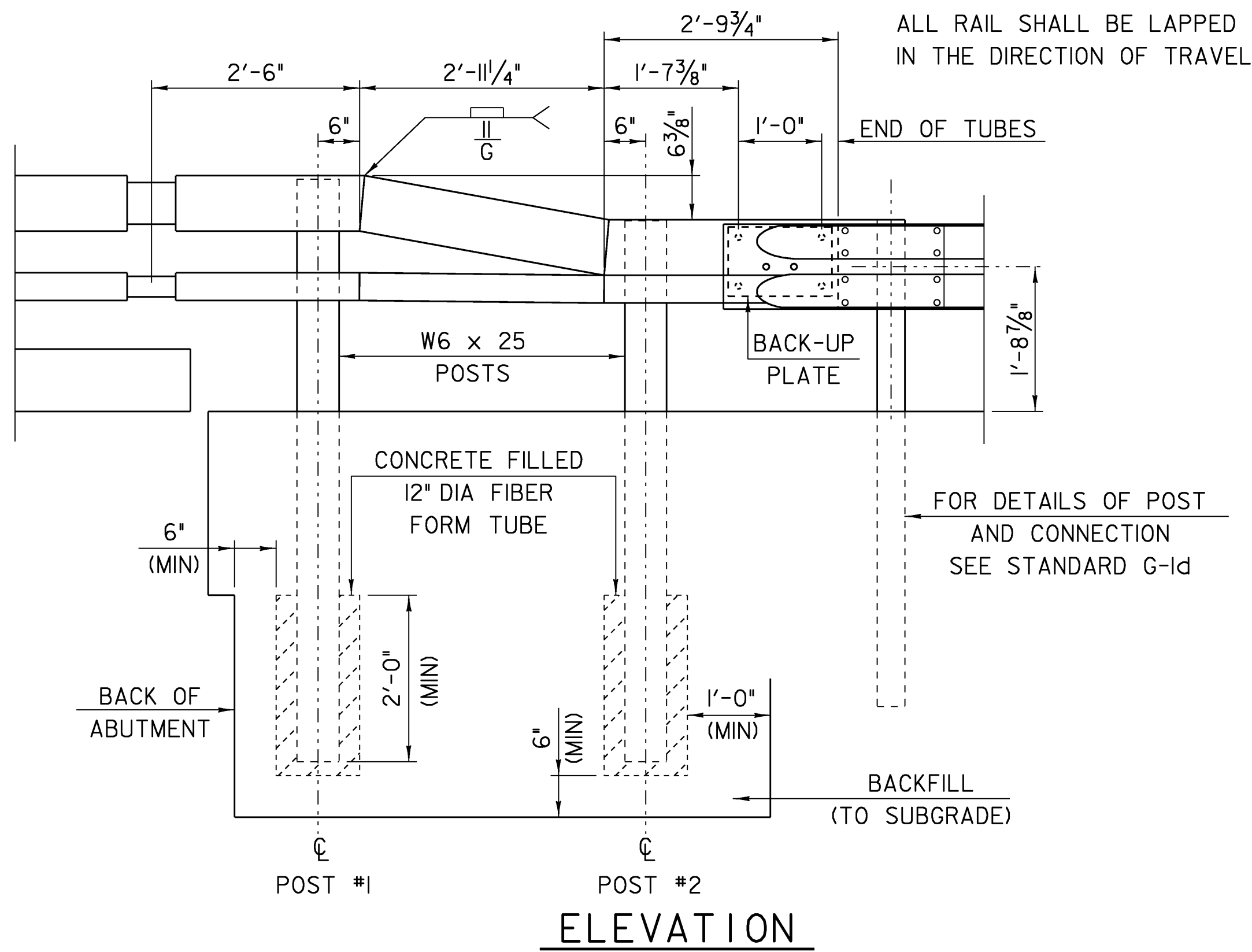
PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: 04c098/st+ruc./s04c098sup
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S. SCRIBNER

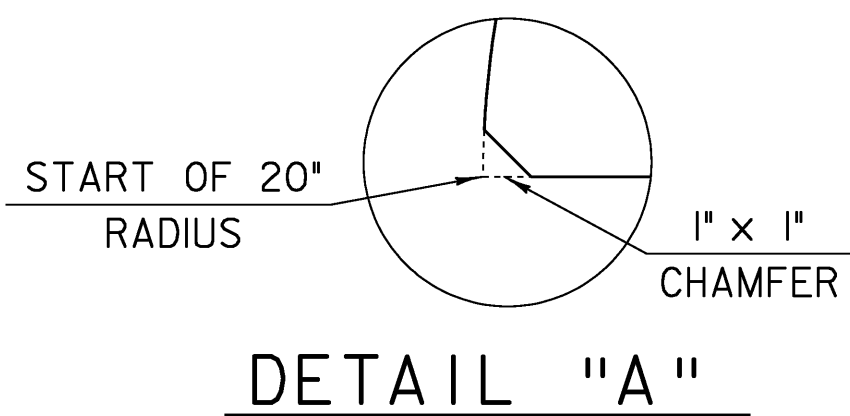
PLOT DATE: 18-AUG-2008
DRAWN BY: C. JOLLY
CHECKED BY: S. SCRIBNER
SHEET 47 OF 66



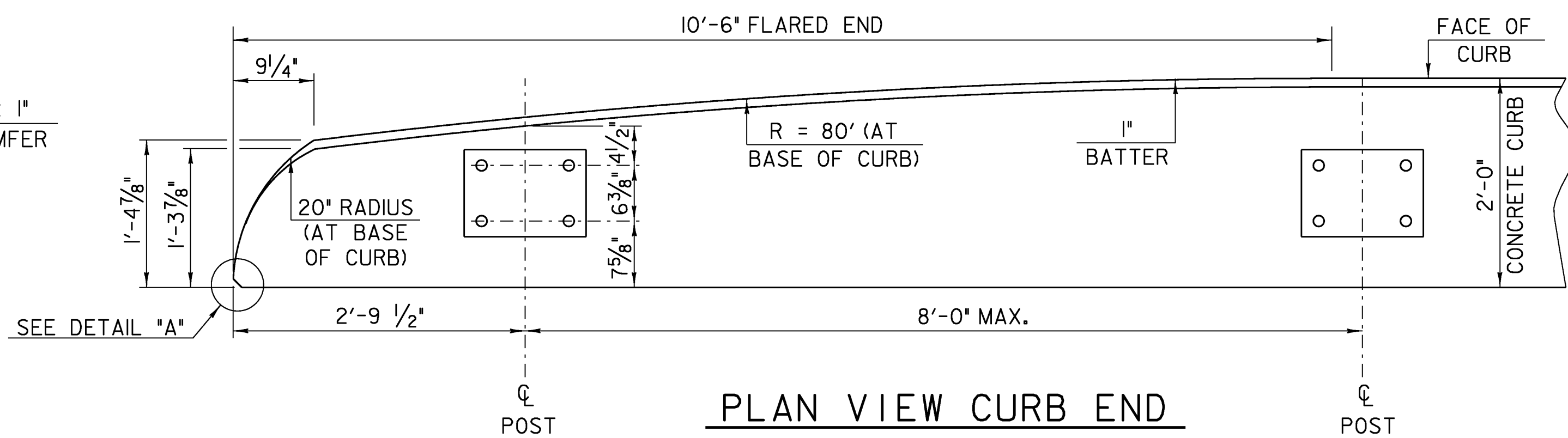
RAILING TRANSITION ELEVATION



TYPICAL SECTION

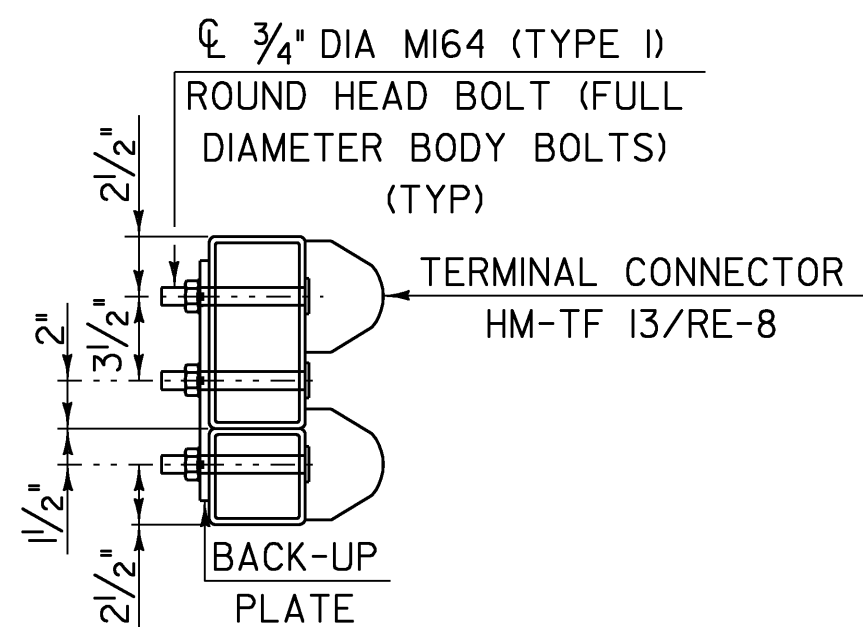


DETAIL "A"

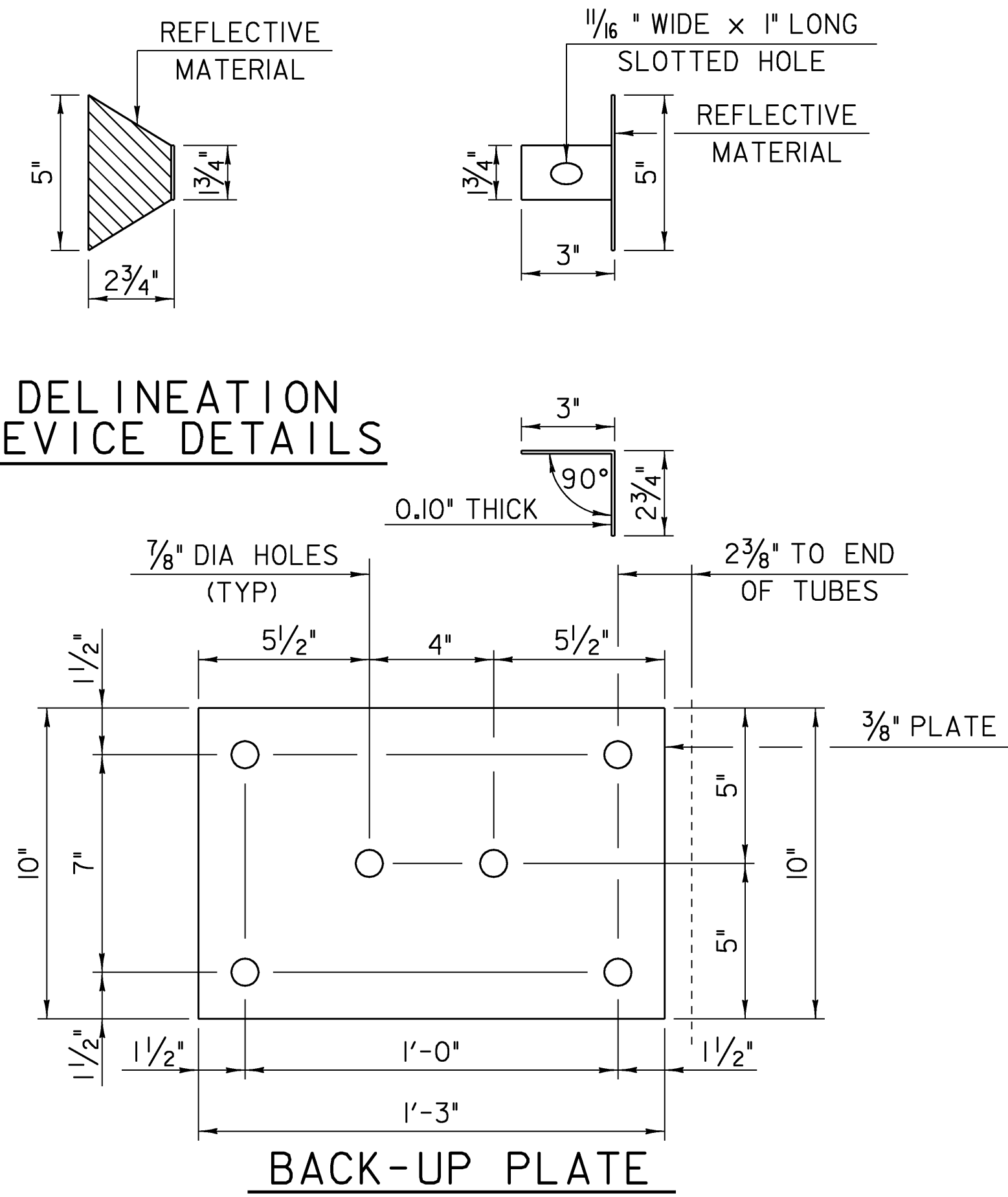


PLAN VIEW CURB END

SECTION THROUGH GUARD RAIL CONNECTION AT TERMINAL CONNECTOR



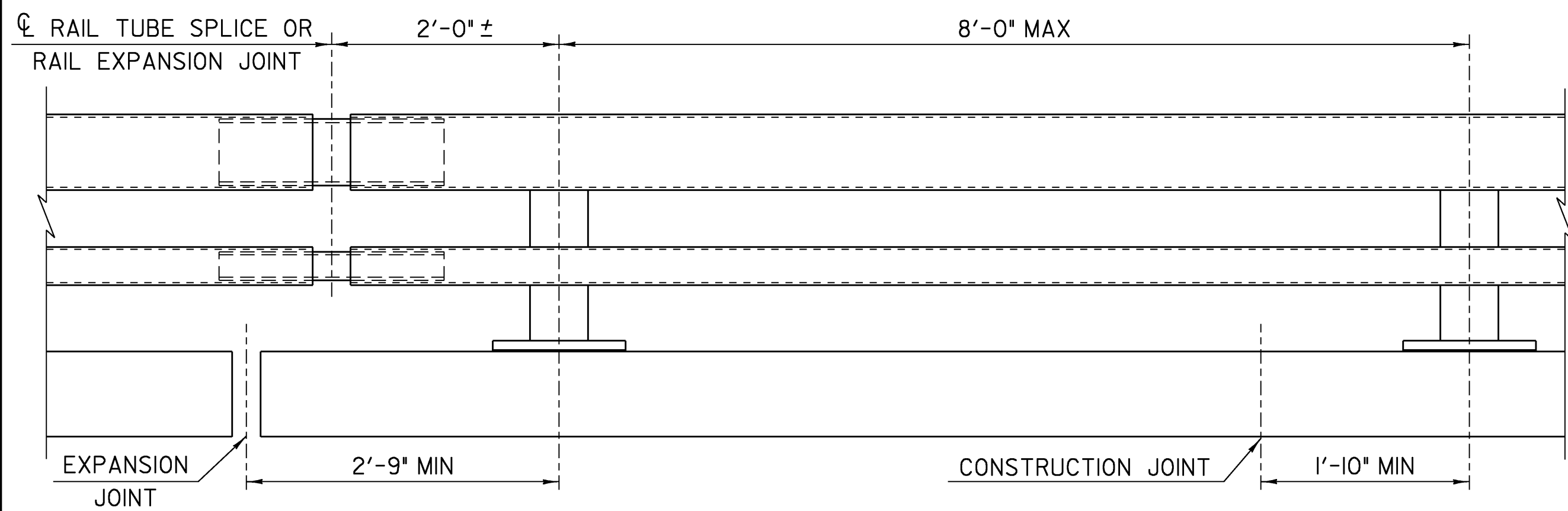
DELINEATION DEVICE DETAILS



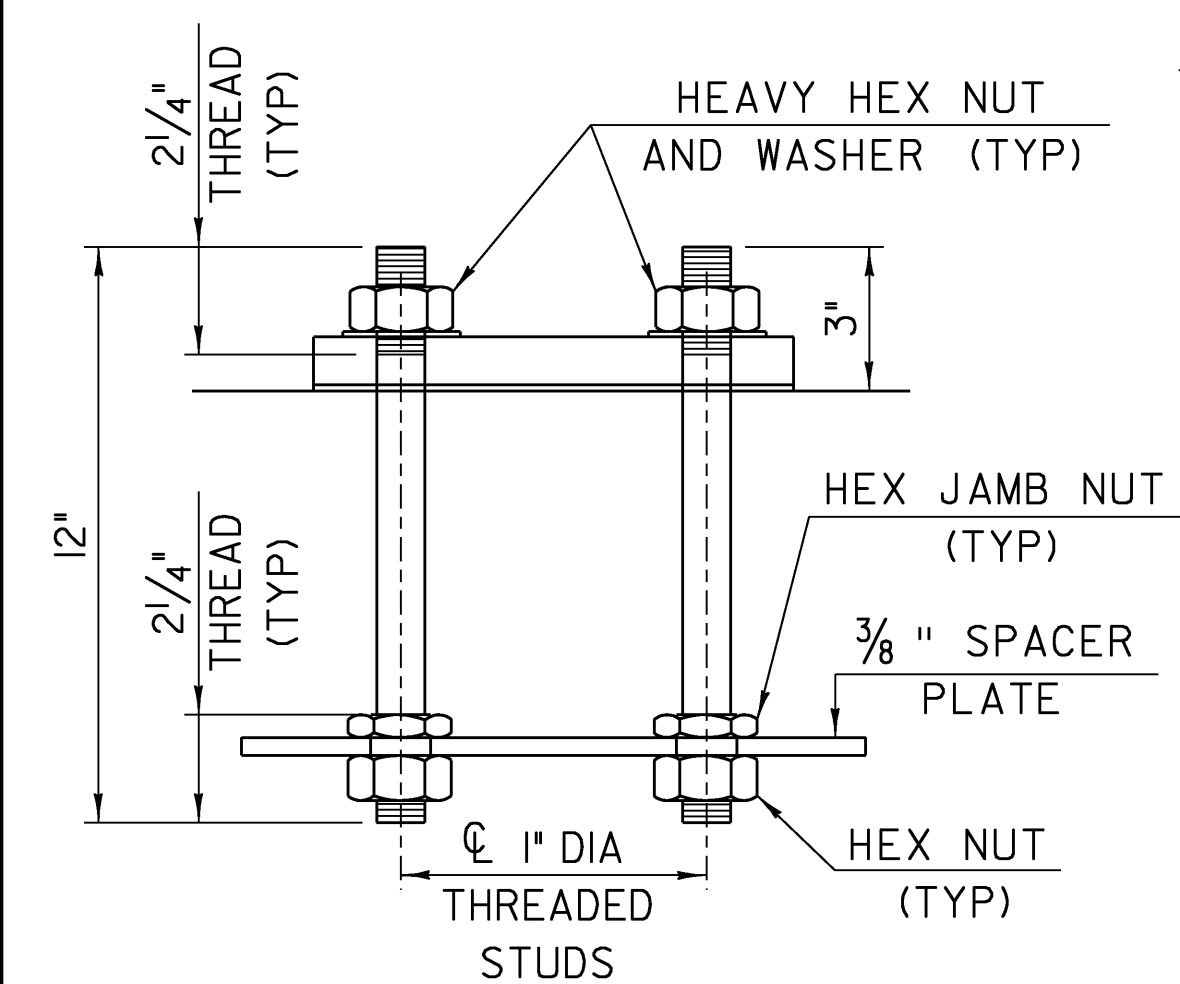
NETC RAIL DETAILS (1)

PROJECT NAME: CANAAN	
PROJECT NUMBER: ER ST 0271(16)	
FILE NAME: 04c098/struc./s04c098d1s	PLOT DATE: 18-AUG-2008
PROJECT LEADER: M. EVANS-MONGEON	DRAWN BY: L. DUQUETTE
DESIGNED BY: S.SCRIBNER	CHECKED BY: S. SCRIBNER
	SHEET 48 OF 66

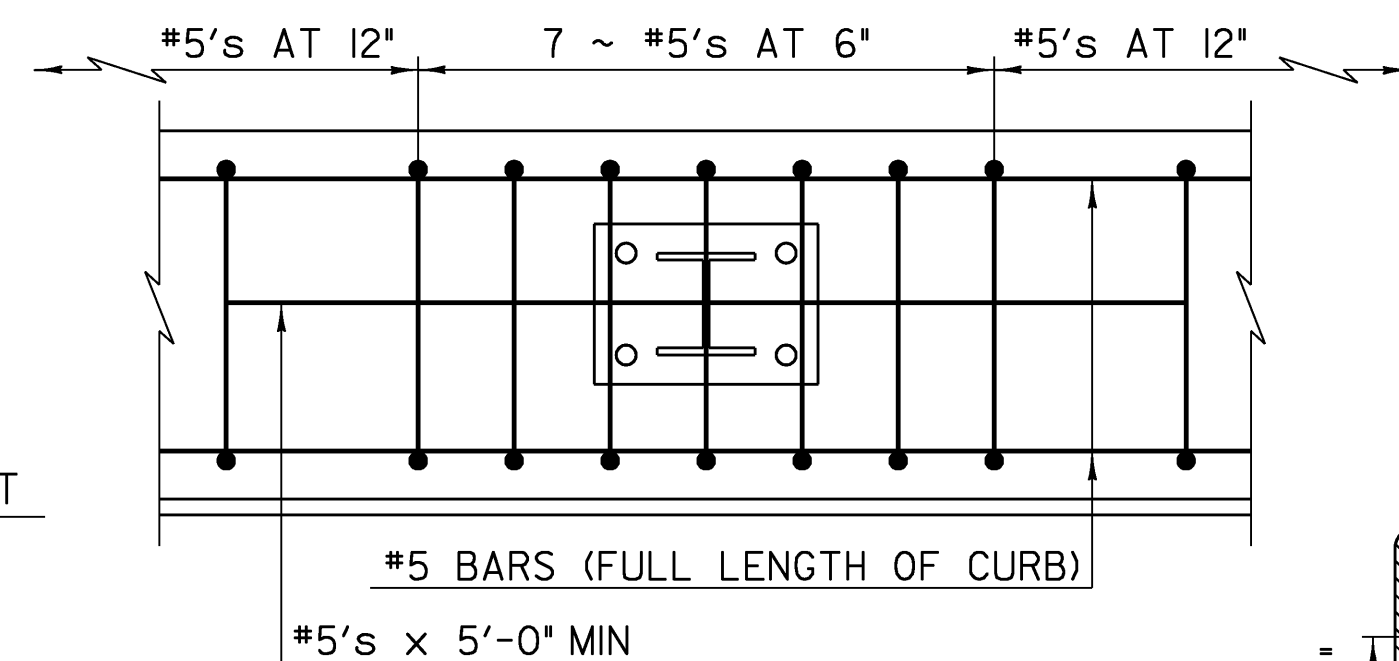
- Notes:**
- REFER TO SHEET 49 FOR ADDITIONAL DETAILS, NOTES AND MATERIAL SPECIFICATIONS.
 - TO FACILITATE FIELD FIT - UP OF THE TRANSITION RAILING, POSTS SHALL BE SET LOOSELY INTO FIBER FORM TUBES WHILE TRANSITION PARTS ARE BEING ASSEMBLED. POST HOLES SHALL BE BACKFILLED WITH A CONCRETE MIX APPROVED BY THE ENGINEER. PAYMENT FOR COMPONENTS, INCLUDING BACKUP PLATE AND END TERMINAL CONNECTOR FOR GUARD RAIL, AUGERING, FIBER FORM TUBES AND CONCRETE, AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO BRIDGE RAILING, GALVANIZED NETC 2 RAIL.
 - THE REFLECTORIZED ALUMINUM DELINEATION IS TO BE ERECTED EVERY 30' (OR CLOSEST POST) WITH A 5/8" DIAMETER BOLT. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052-H32.
 - RETROREFLECTIVE MATERIAL SHALL MEET REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVER'S LEFT AND SILVER ON THEIR RIGHT.
 - ON BRIDGES WITH A SIDEWALK, DELINEATORS ARE NOT TO BE INSTALLED ON THE SIDEWALK SIDE OF THE BRIDGE (I.E. DELINEATORS INSTALLED ONLY ON THE CURB SIDE AND ON THE APPROACH ON THE CURB SIDE). PAYMENT SHALL BE INCIDENTAL TO ALL OTHER ITEMS.
 - ALL APPROACH RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.
 - SEE STANDARDS G-1 AND G-1d FOR ADDITIONAL INFORMATION.



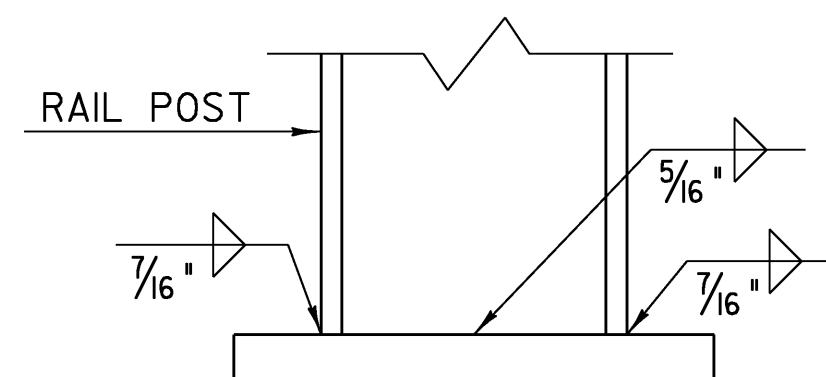
BRIDGE RAILING ELEVATION



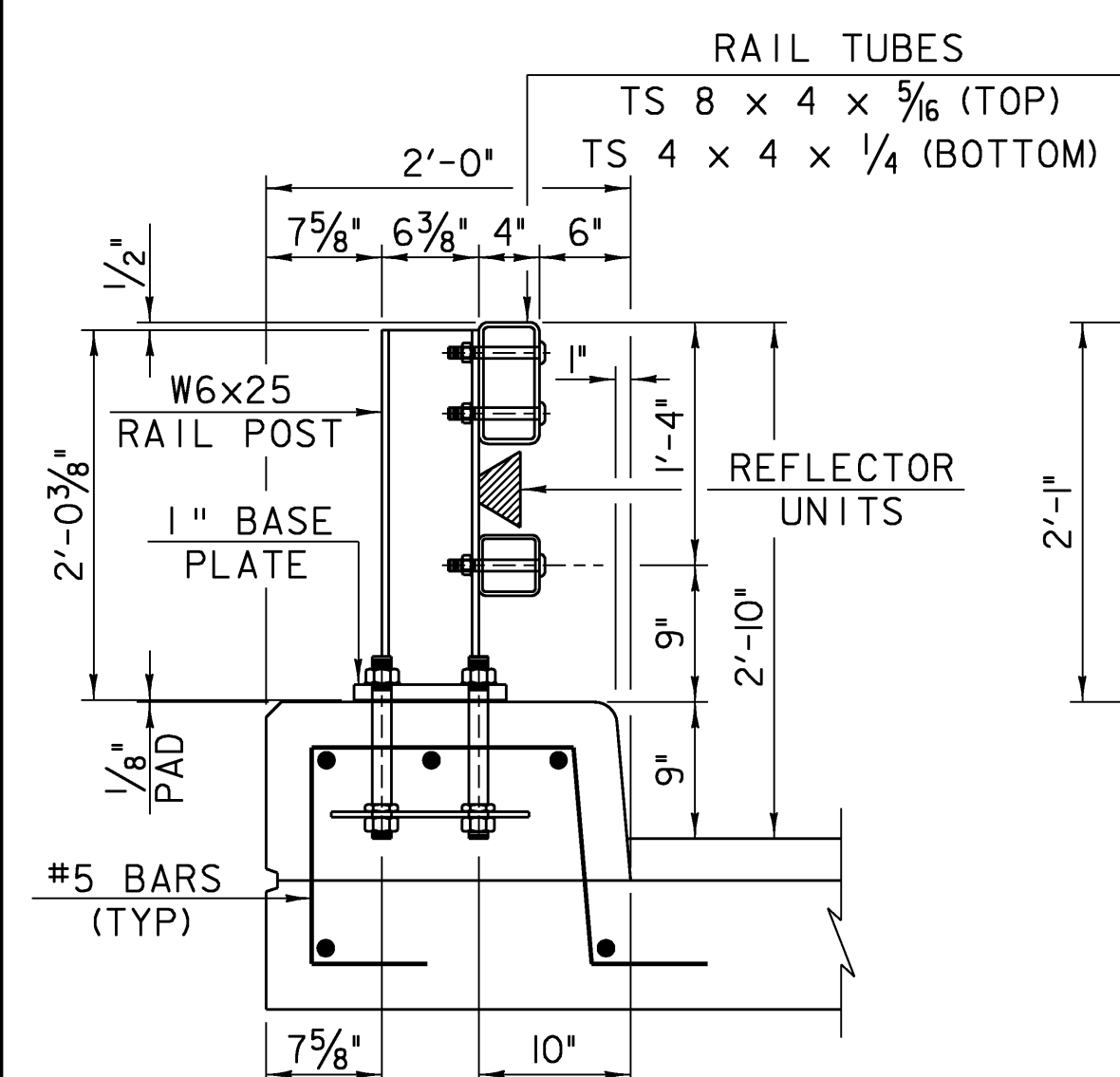
RAIL POST ANCHORAGE



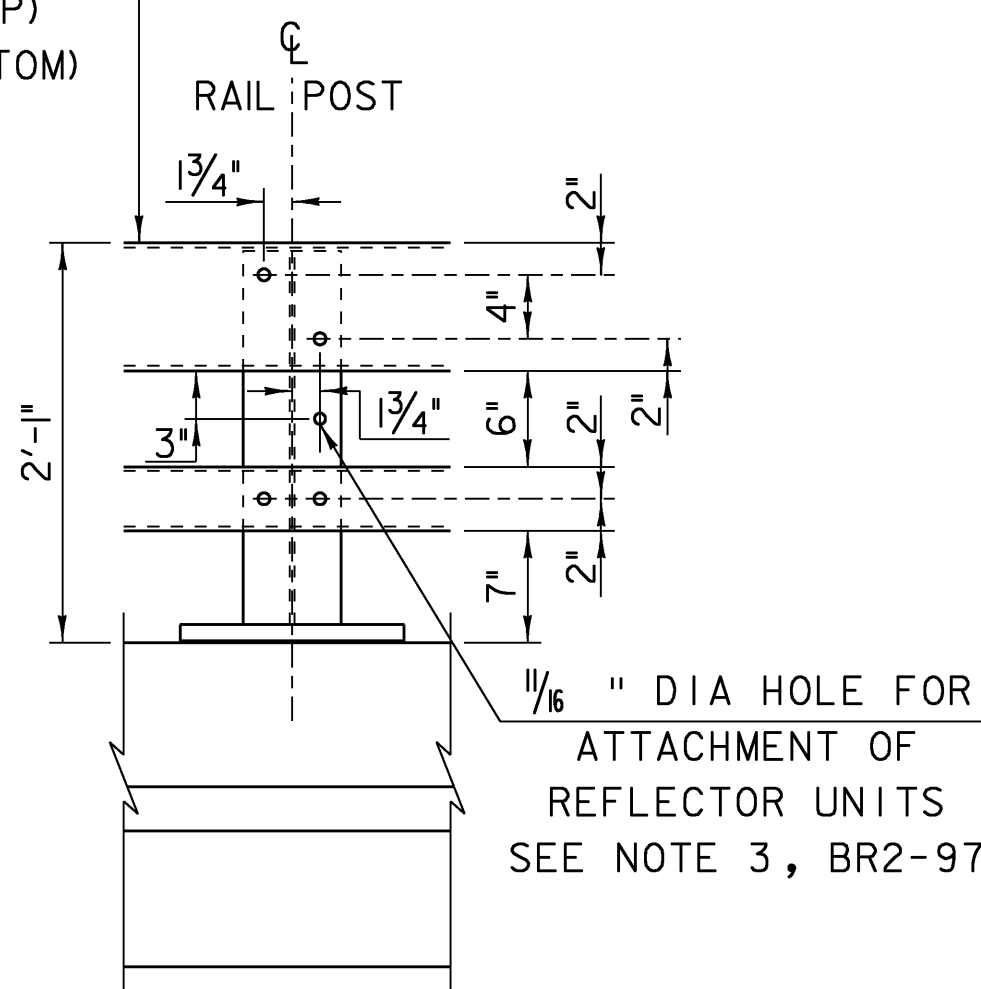
CURB REINFORCING PLAN



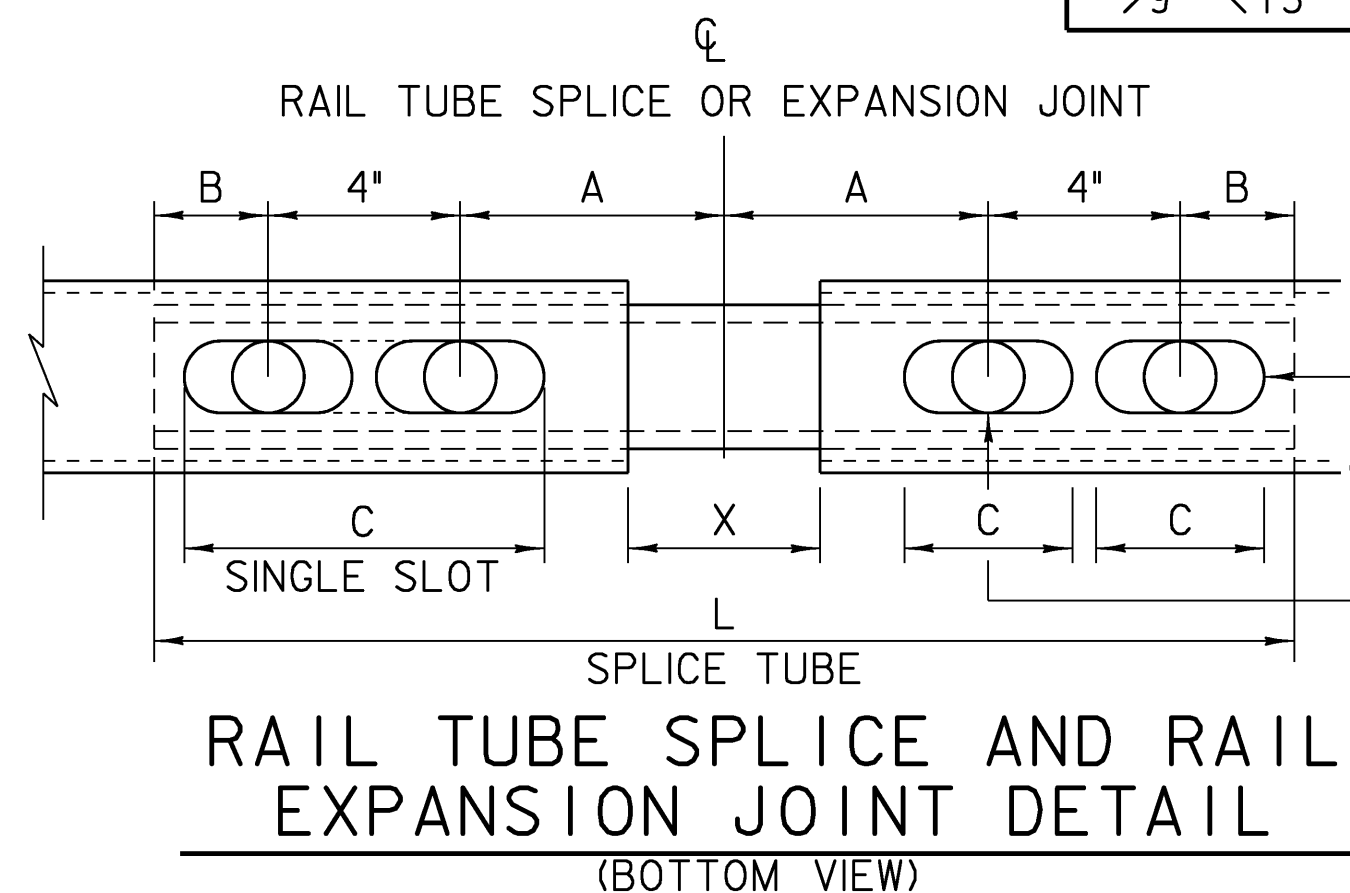
BASE WELD DETAIL



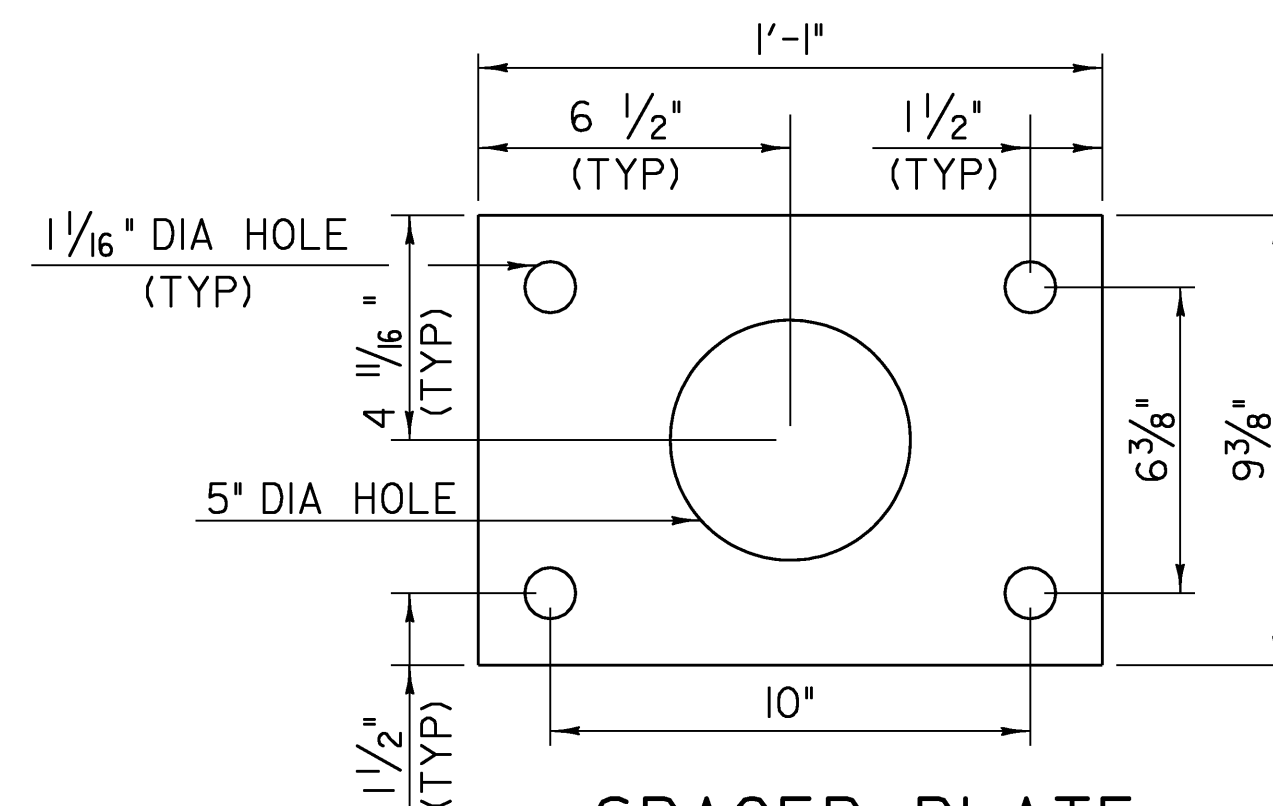
TYPICAL SECTION



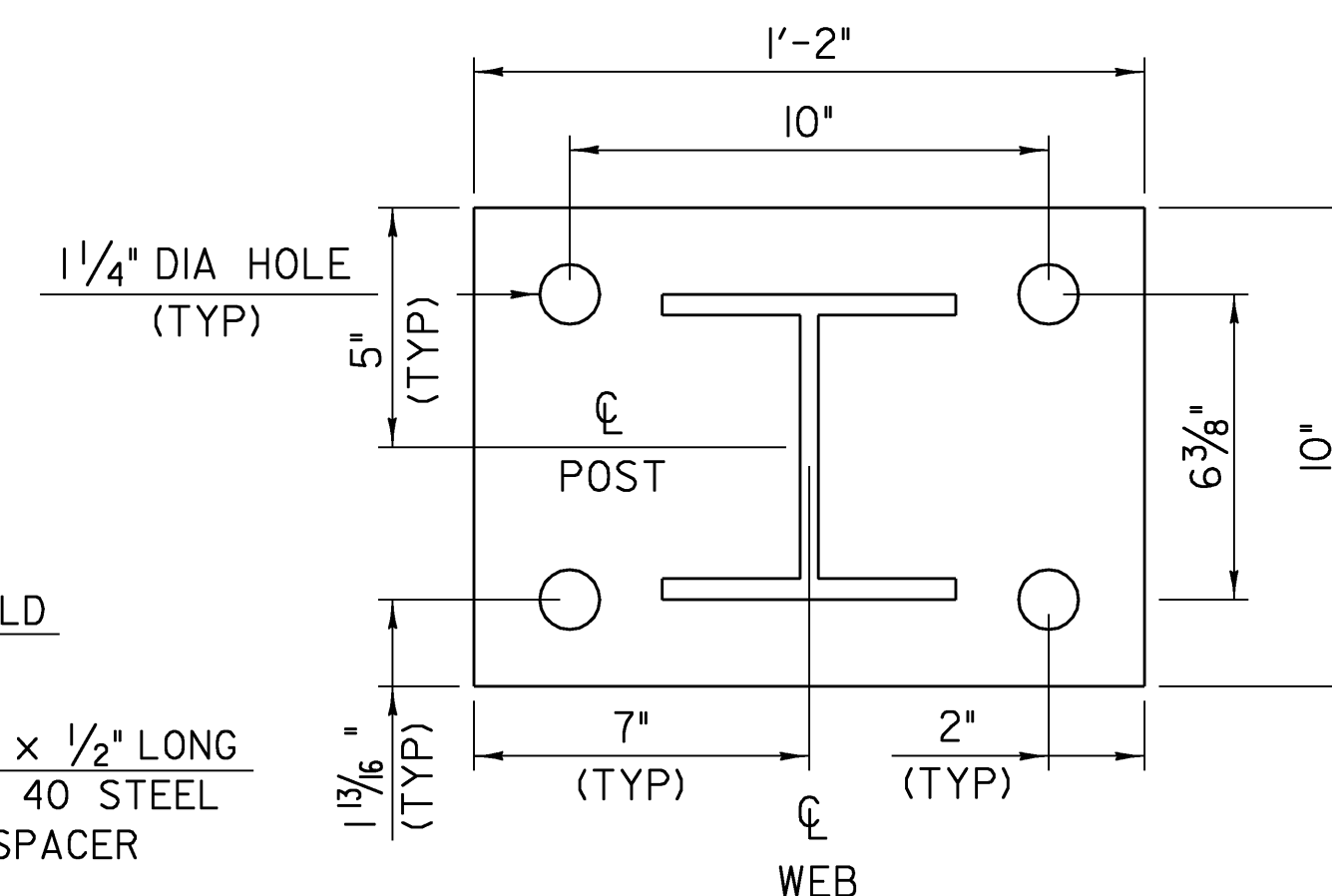
ELEVATION



RAIL TUBE SPLICE AND RAIL
EXPANSION JOINT DETAIL
(BOTTOM VIEW)



SPACER PLATE



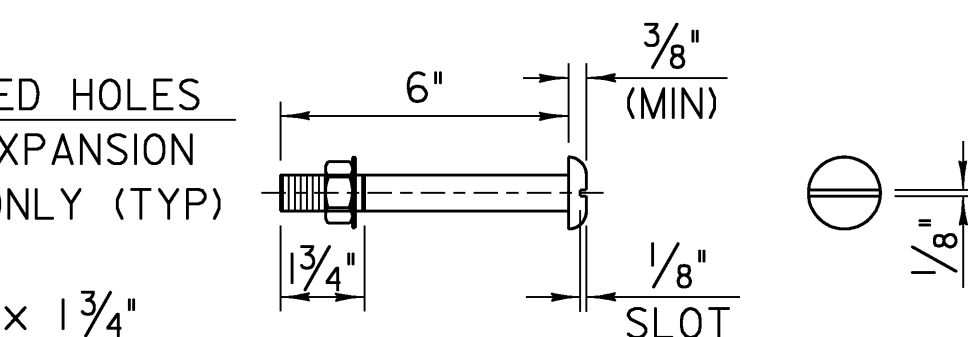
POST AND BASE PLATE

EXPANSION JOINT SECTION

FOR DETAILS NOT SHOWN,
SEE "RAIL TUBE SPLICE SECTION."

SPLICE TABLE					
T	A	B	C	L	X
N/A	4"	2"	--	20"	3/4"
EXPANSION JOINT TABLE					
<4"	4"	2"	2 1/2"	20"	2 1/2"
>4" <6 1/2"	5 1/2"	2 3/8"	3 1/2"	23 3/4"	4"
>6 1/2" <9"	6 1/2"	3 3/8"	9"*	27 3/4"	5"
>9" <13"	8 1/2"	4 3/8"	11"*	33 3/4"	7"

T = TOTAL MOVEMENT BETWEEN BRIDGE
EXPANSION JOINTS. SEE NOTE 6.
* = SINGLE SLOT



ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.

NOTES

- ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525.
- ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.
- RAIL POSTS SHALL BE SET NORMAL TO GRADE.
- SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
- RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
- ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232.
- RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
- RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY AASHTO MI64 (TYPE I) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
- HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
- ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.
- THE FABRICATOR SHALL SUBMIT DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISIONS OF SUBSECTION 525.03. ALL WELDING SHALL CONFORM WITH SUBSECTION 506.10.
- RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A-370 CHARPY IMPACT TESTING USING TYPE A SPECIMEN.

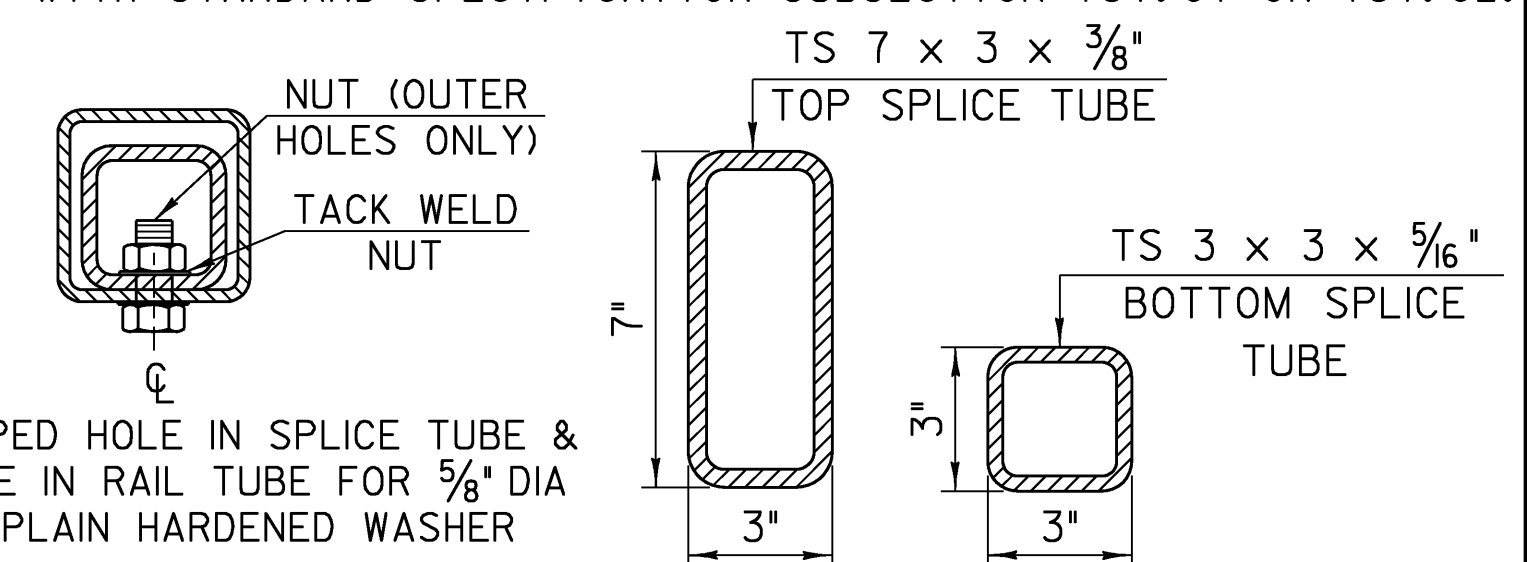
MATERIALS

RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES.....ASTM A709A709M, GRADE 50
ALL OTHER SHAPES AND PLATES.....ASTM A709/A709M, GRADE 36
ANCHOR STUDS.....ASTM A449
ALL OTHER BOLTS (UNLESS NOTED).....AASHTO MI64, TYPE I

NUTS FOR AASHTO MI64 (ASTM A325) BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASHTO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATIONS.

1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.

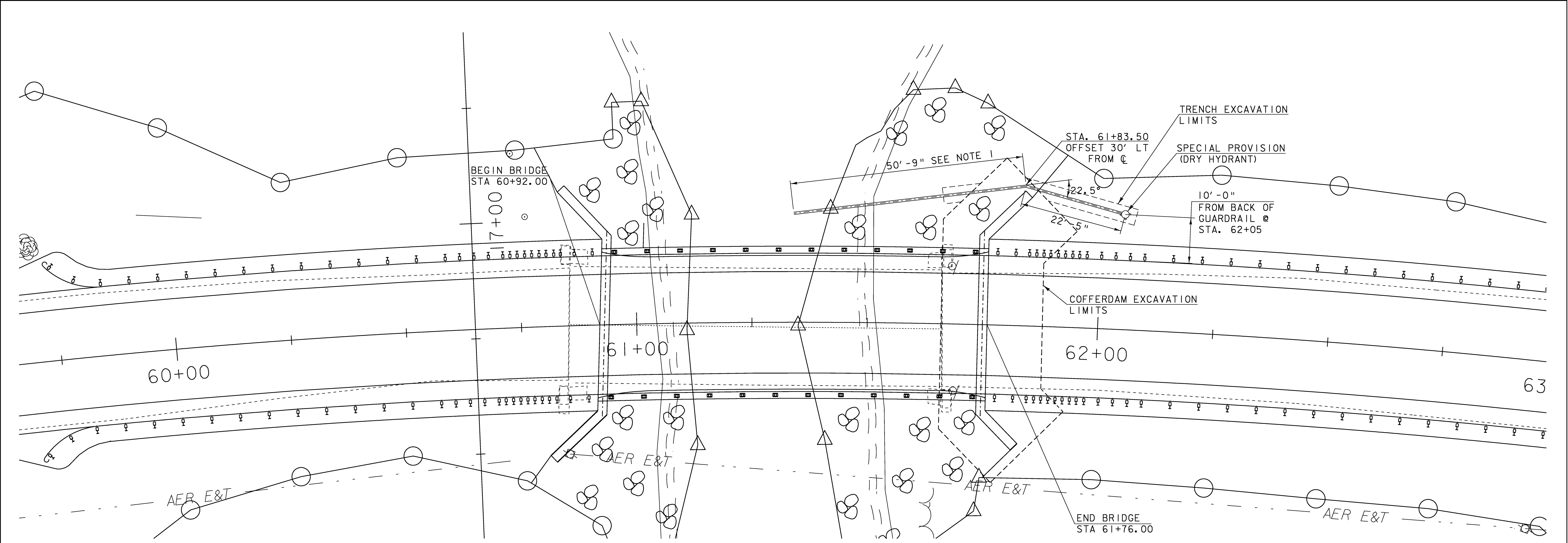


RAIL TUBE SPLICE SECTION

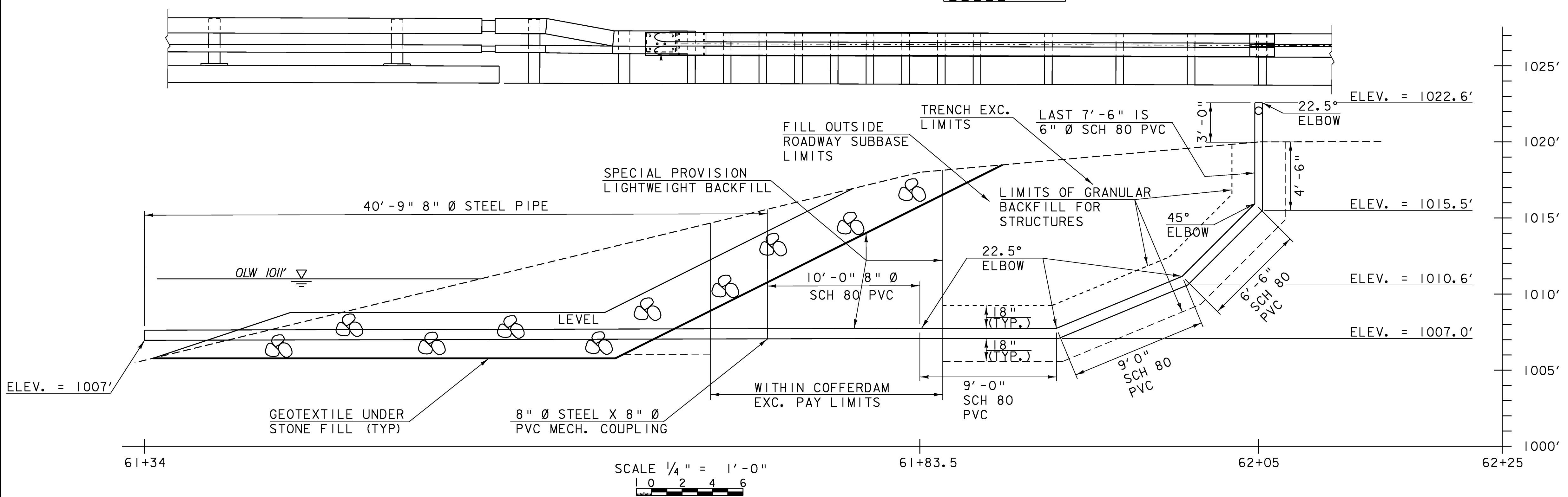
NETC RAIL DETAILS (2)

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271(I6)

FILE NAME: 04c098/struc./s04c098d1s
PROJECT LEADER: M. EVANS-MONGEON
DESIGNED BY: S.SCRIBNER
PLOT DATE: 18-AUG-2008
DRAWN BY: L. DUQUETTE
CHECKED BY: S. SCRIBNER
SHEET 49 OF 66



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



*CARE SHALL BE GIVEN THAT ANY EXCAVATION OUTSIDE THE COFFERDAM EXCAVATION LIMITS AND CHANNEL EXCAVATION LIMITS FOR THE PURPOSE OF PLACING THE DRY HYDRANT WILL BE PAID UNDER TRENCH EXCAVATION LIMITS

- NOTE:
1. VERIFY LENGTH TO DEEPEST CHANNEL POINT IN FIELD PRIOR TO INSTALLATION
 2. SEE CHANNEL CROSS SECTION 17+00

DRY HYDRANT DETAIL

PROJECT NAME:	Canaan
PROJECT NUMBER:	ER ST 027(16)
FILE NAME:	Structures\X04c098xs.dgn
PROJECT LEADER:	M. Evans-Mongeon
DESIGNED BY:	S. Scribner
CHECKED BY:	S. SCRIBNER.
PLOT DATE:	19-AUG-2008
DRAWN BY:	L.DUQUETTE
SHEET	50
OF	66

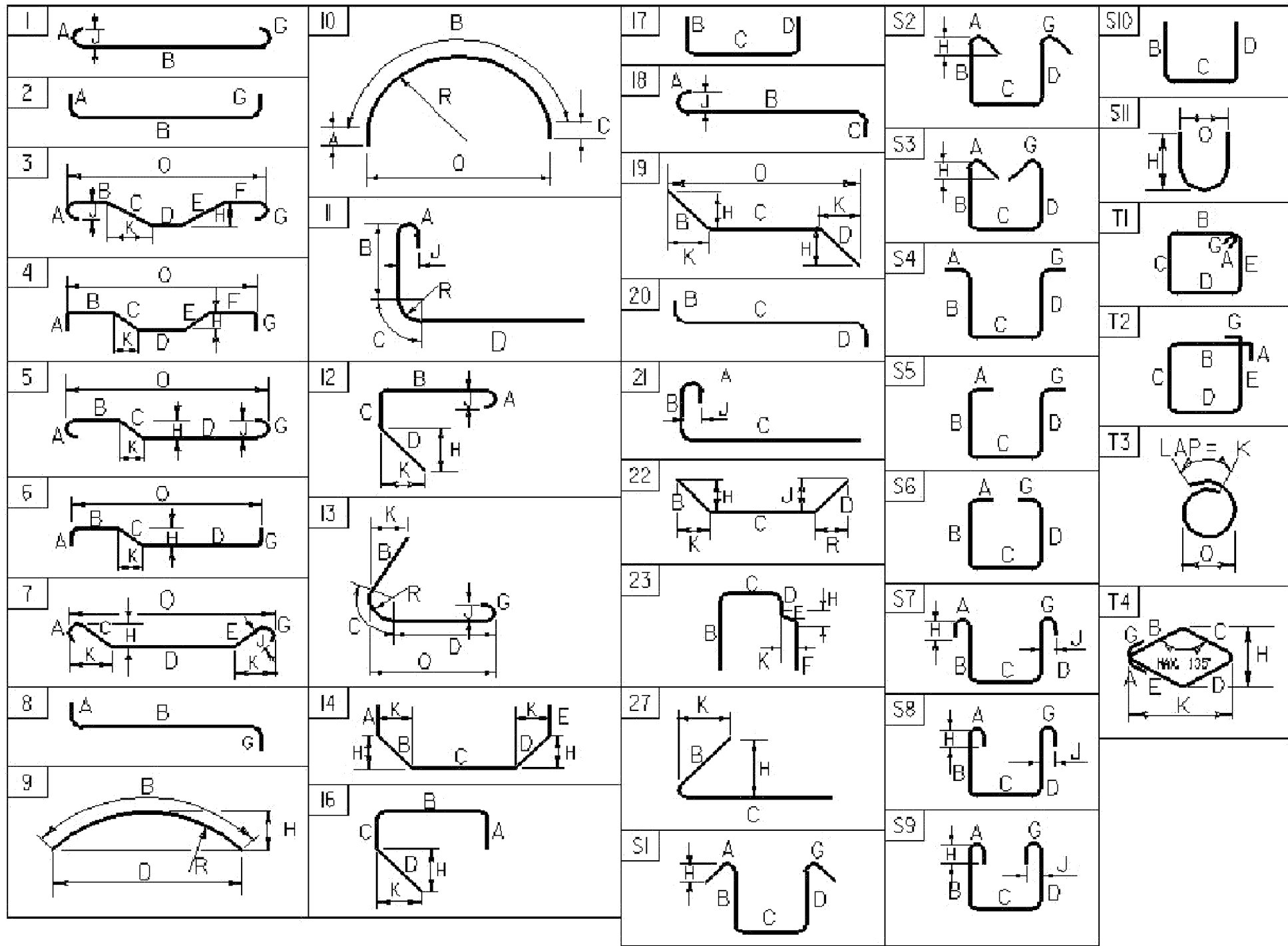
STATE OF VERMONT
AGENCY OF TRANSPORTATION

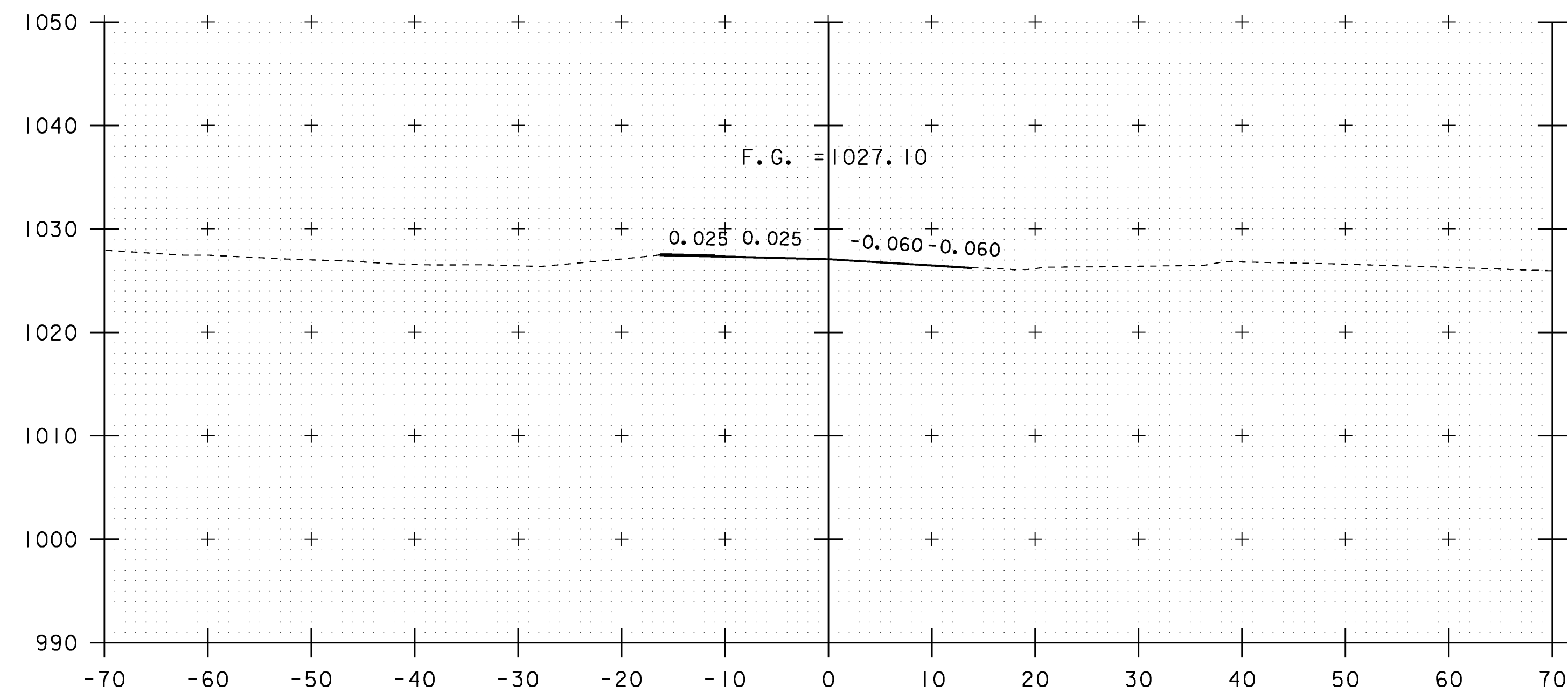
REINFORCING STEEL SCHEDULE

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		
DECK & CURB																																					
*	246	5	30'- 0"	ES501	STR	30'- 0"												▲	76	5	23'- 2"	2A501	STR	23'- 2"													
	170	5	32'- 6"	ES502	STR	32'- 6"													72	5	21'- 5"	2A503	STR	21'- 5"													
	170	5	5'- 0"	ES503	STR	5'- 0"													ABUTMENT # 2																		
	30	5	30'- 0"	ES504	STR	30'- 0"													41	5	21'- 0"	2A505	STR	21'- 0"													
	30	5	32'- 6"	ES507	STR	32'- 6"													39	5	12'- 1"	2A506	STR	12'- 1"													
																		▲	20	5	3'- 6"	2A507	STR	3'- 6"													
	242	5	5'- 5"	ES505	S5	1'- 0"	1'- 0"	1'- 5"	1'- 0"			1'- 0"							43	5	5'- 11"	2A502	17		2'- 2"	1'- 7"	2'- 2"										
	68	5	4'- 3"	ES508	16	1'- 0"	1'- 3"	0'- 7"	1'- 5"				1'- 0"						42	6	15'- 11"	2A601	17		4'- 5"	11'- 6"											
	68	5	8'- 2"	ES509	S6	0'- 6"	3'- 4"	0'- 6"	3'- 4"			0'- 6"						*	39	7	10'- 9"	2A701	STR	10'- 9"													
*	86	6	32'- 6"	ES601	STR	32'- 6"													90	9	17'- 6"	2A902	STR	17'- 6"													
△	37	8	3'- 4"	ES801	19		1'- 4"	2'- 0"											39	9	17'- 8"	2A901	17		10'- 1"	7'- 7"											
ABUTMENT # 1																																					
▲	76	5	23'- 1"	1A501	STR	23'- 1"												▲	38	5	15'- 9"	3W501	STR	15'- 9"													
	76	5	22'- 8"	1A503	STR	22'- 8"													44	5	13'- 4"	3W503	STR	13'- 4"													
*	41	5	21'- 7"	1A505	STR	21'- 7"												▲	2	5	13'- 11"	3W504	STR	13'- 11"													
	40	5	12'- 3"	1A506	STR	12'- 3"													15	5	21'- 4"	3W505	STR	21'- 4"													
	20	5	3'- 6"	1A507	STR	3'- 6"													14	5	12'- 1"	3W506	STR	12'- 1"													
	41	5	5'- 11"	1A502	17		2'- 2"	1'- 7"	2'- 2"									▲	15	5	5'- 11"	3W502	17		2'- 2"	1'- 7"	2'- 2"										
	41	6	15'- 11"	1A601	17		4'- 5"	11'- 6"											69	5	9'- 4"	3W508	19		4'- 8"	4'- 8"					3'- 4"		3'- 4"				
*	40	7	10'- 9"	1A701	STR	10'- 9"													14	7	13'- 0"	3W701	STR	13'- 0"													
	90	9	17'- 6"	1A902	STR	17'- 6"													14	7	0'- 0"	3W702	17		11'- 6"	5'- 9"											
	39	9	17'- 8"	1A901	17		10'- 1"	7'- 7"											14	7	6'- 9"	3W703	17		5'- 9"	1'- 0"											
WINGWALL # 1																																					
▲	38	5	16'- 10"	1W501	STR	16'- 10"												▲	38	5	12'- 10"	4W501	STR	12'- 10"													
	46	5	14'- 4"	1W503	STR	14'- 4"													42	5	10'- 4"	4W503	STR	10'- 4"													
	2	5	15'- 0"	1W504	STR	15'- 0"													2	5	10'- 9"	4W504	STR	10'- 9"													
	16	5	22'- 0"	1W505	STR	22'- 0"													12	5	19'- 4"	4W505	STR	19'- 4"													
	15	5	12'- 6"	1W506	STR	12'- 6"													11	5	10'- 1"	4W506	STR	10'- 1"													
	16	5	5'- 11"	1W502	17		2'- 2"	1'- 7"	2'- 2"									▲	42	5	10'- 4"	4W503	STR	10'- 4"													
	66	5	9'- 4"	1W508	19		4'- 8"	4'- 8"											2	5	10'- 9"	4W504	STR	10'- 9"													
	15	7	13'- 0"	1W701	STR	13'- 0"													12	5	19'- 4"	4W505	STR	19'- 4"													
	16	7	13'- 0"	1W702	17		11'- 6"	5'- 9"											11	5	10'- 1"	4W506	STR	10'- 1"													
	15	7	6'- 9"	1W703	17		1'- 0"	5'- 9"											12	5	5'- 11"	4W502	17		2'- 2"	1'- 7"	2'- 2"										
	17	8	19'- 3"	1W801	17		11'- 9"	7'- 6"										*	66	5	9'- 4"	4W508	19		4'- 8"	4'- 8"					3'- 4"		3'- 4"				
	17	8	19'- 3"	1W801	17		11'- 9"	7'- 6"											11	7	13'- 0"	4W701	STR	13'- 0"													
	35	9	17'- 6"	1W901	STR	17'- 6"													14	7	0'- 0"	4W702	17		11'- 6"	5'- 9"											
																			11	7	6'- 9"	4W703	17		5'- 9"	1'- 0"											
																			14	7	6'- 9"	4W703	17		5'- 9"	1'- 0"											
WINGWALL # 2																																					
▲	38	5	16'- 9"	2W501	STR	16'- 9"												▲	38	5	12'- 10"	4W501	STR	12'- 10"													
	42	5	14'- 4"	2W503	STR	14'- 4"													42	5	10'- 4"	4W503	STR	10'- 4"													
	2	5	14'- 6"	2W504	STR	14'- 6"													2	5	10'- 9"	4W504	STR	10'- 9"													
	16	5	19'- 9"	2W505	STR	19'- 9"													12	5	19'- 4"	4W505	STR	19'- 4"													
	15	5	10'- 6"	2W506	STR	10'- 6"													11	5	10'- 1"	4W506	STR	10'- 1"													
	16	5	5'- 11"	2W502	17		2'- 2"	1'- 7"	2'- 2"									*	42	5	10'- 4"	4W503	STR	10'- 4"													
	69	5	9'- 4"	2W508	19		4'- 8"	4'- 8"											2	5	10'- 9"	4W504	STR	10'- 9"													
	15	7	13'- 0"	2W701	STR	13'- 0"													12	5	19'- 4"	4W505	STR	19'- 4"													
	16	7	17'- 3"	2W702	17		5'- 9"	11'- 6"											11	5	10'- 1"	4W506	STR	10'- 1"													
	15	7	6'- 9"	2W703	17		1'- 0"	5'- 9"											12	5	5'- 11"	4W502	17		2'- 2"	1'- 7"	2'- 2"										
	17	8	19'- 3"	2W801	17		11'- 9"	7'- 6"										*	66	5	9'- 4"	4W508	19		4'- 8"	4'- 8"					3'- 4"		3'- 4"				
	17	8	19'- 3"	2W801	17		11'- 9"	7'- 6"											11	7	13'- 0"	4W701	STR	13'- 0"													
	35	9	17'- 6"	2W901	STR	17'- 6"													14	7	0'- 0"	4W702	17		11'- 6"	5'- 9"											
																			11	7	6'- 9"	4W703	17		5'- 9"	1'- 0"											
																			14	7	6'- 9"	4W703	17		5'- 9"	1'- 0"											
WINGWALL # 2																																					
▲	38	5	16'- 9"	2W501	STR	16'- 9"												▲	38	5	12'- 10"	4W501	STR	12'- 10"													
	42	5	14'- 4"	2W503	STR	14'- 4"													42	5	10'- 4"	4W503	STR	10'- 4"													
	2	5	14'- 6"	2W504	STR	14'- 6"													2	5	10'- 9"	4W504	STR	10'- 9"													
	16	5	19'- 9"	2W505	STR	19'- 9"													12	5	19'- 4"	4W505	STR	19'- 4"													
	15	5	10'- 6"	2W506	STR	10'- 6"													11	5	10'- 1"	4W506	STR	10'- 1"													
	16	5	5'- 11"	2W502	17		2'- 2"	1'- 7"	2'- 2"									*	42	5	10'- 4"	4W503	STR	10'- 4"													
	69	5	9'- 4"	2W508	19		4'- 8"	4'- 8"											2	5	10'- 9"	4W504	STR	10'- 9"													
	15	7	13'- 0"	2W701	STR	13'- 0"													12	5	19'- 4"	4W505	STR	19'- 4"													
	16	7	17'- 3"	2W702	17		5'- 9"	11'- 6"											11	5	10'- 1"	4W506	STR	10'- 1"													
	15	7	6'- 9"	2W703	17		1'- 0"	5'- 9"																													

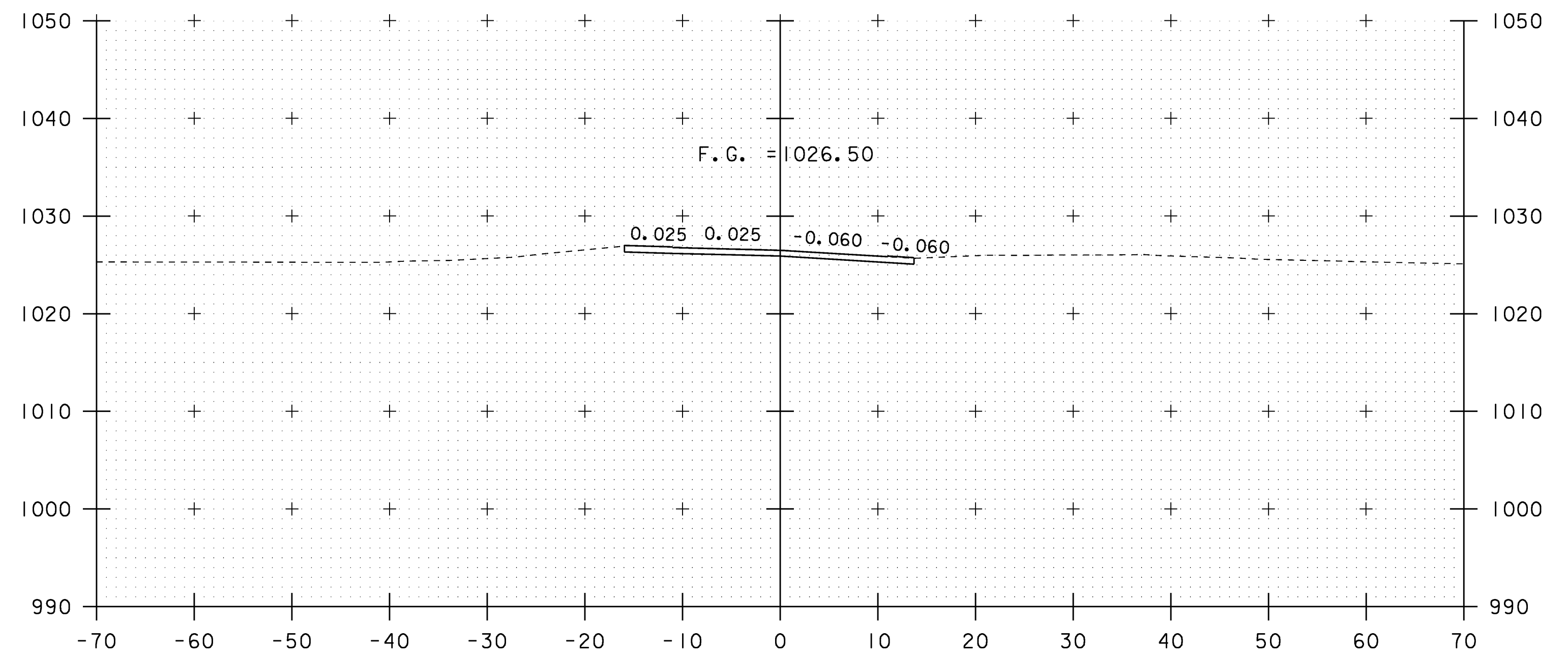
~ NOTES ~

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

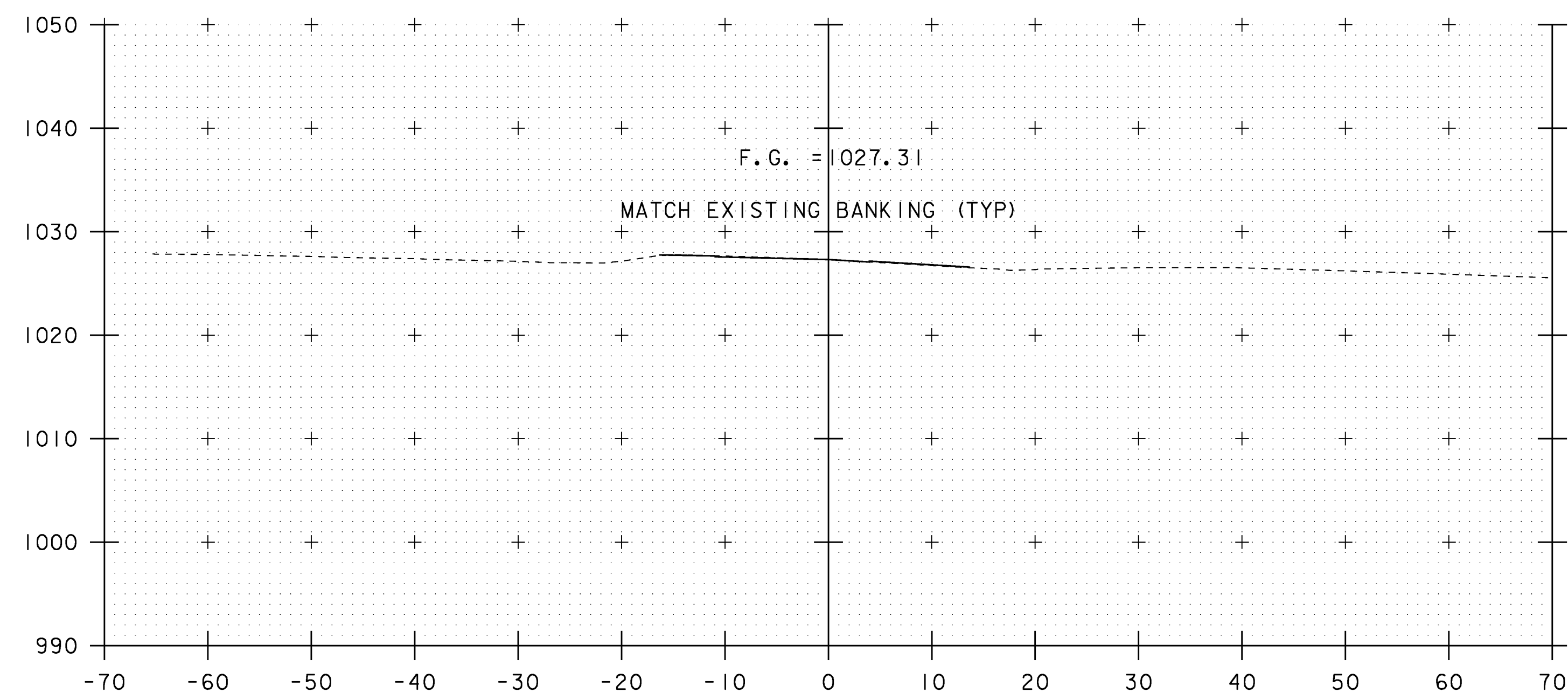




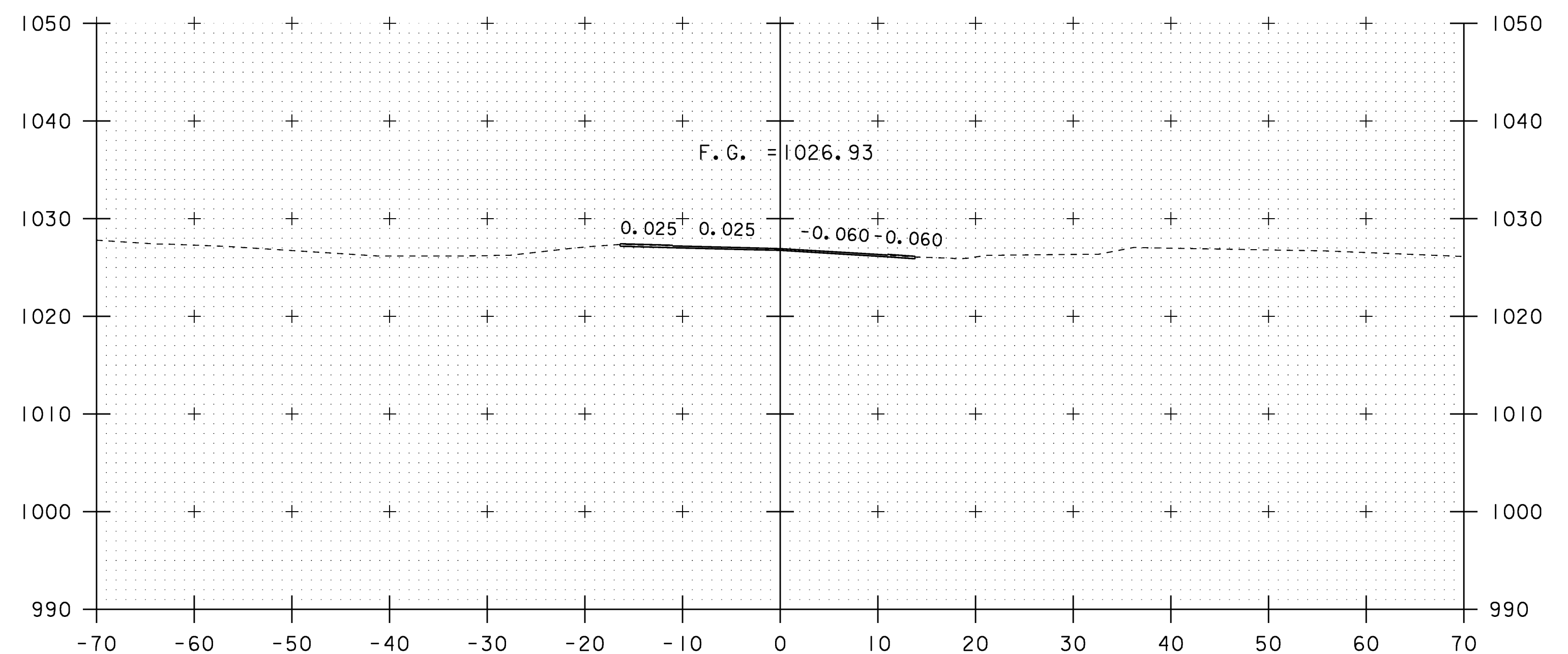
57+64



58+00



57+50



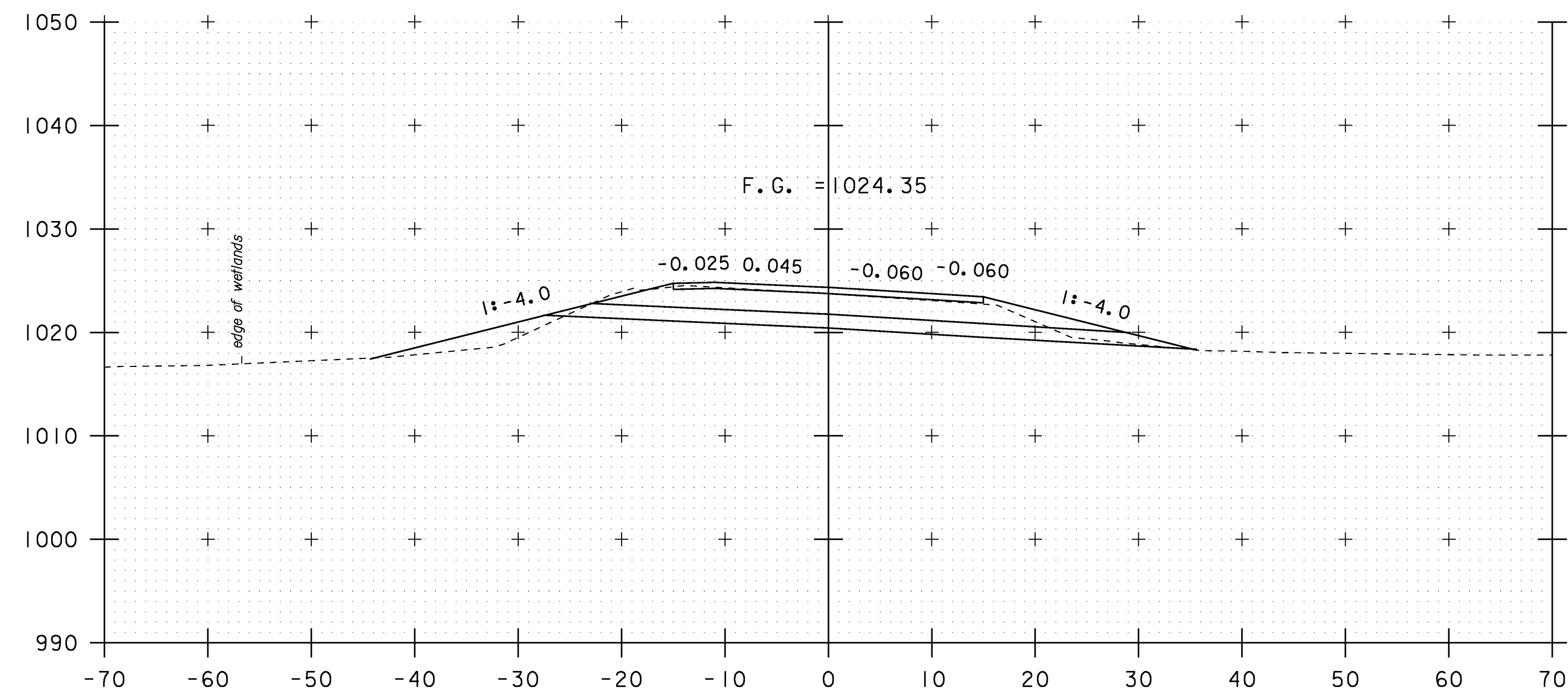
57+75

STA. 57+50
BEGIN APPROACH
MATCH EXISTING GRADE AND BANKING

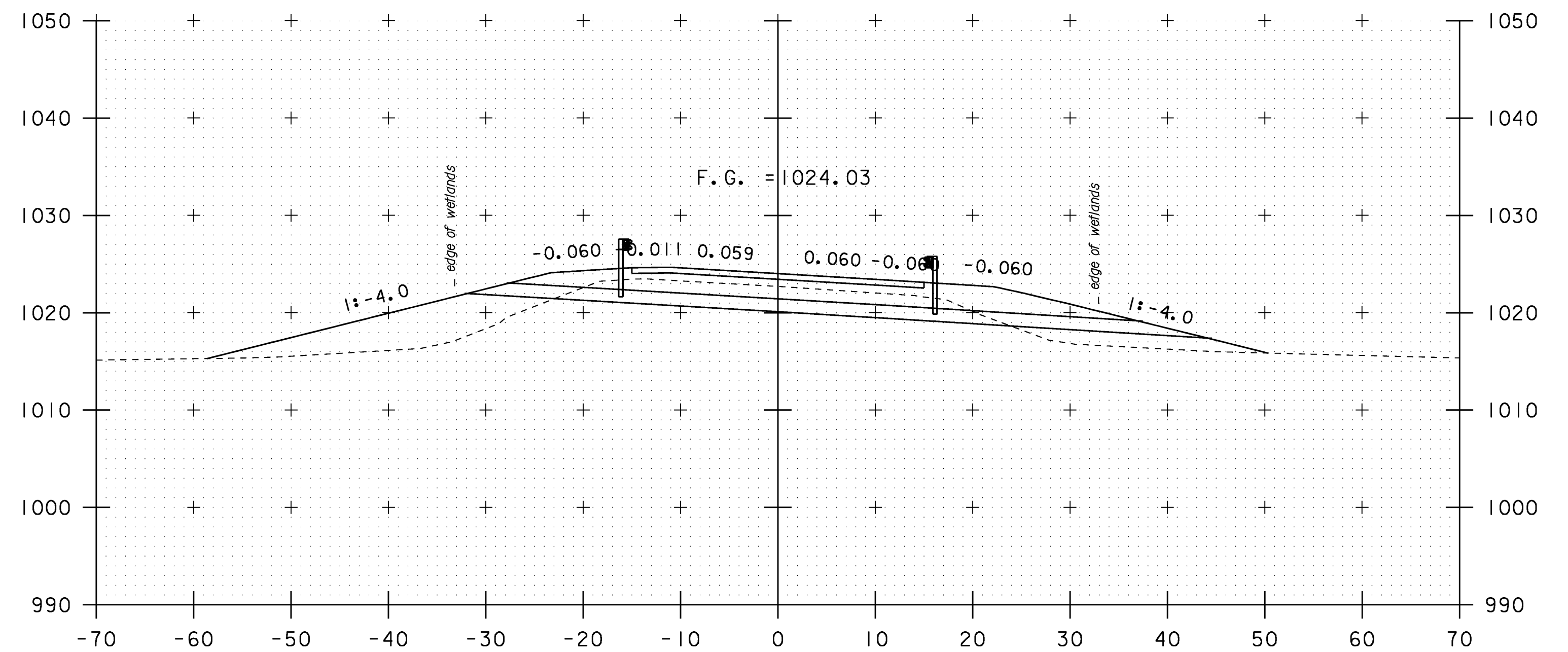
SCALE 1" = 10'-0"
10 0 10

VT 102 CROSS SECTIONS (1)

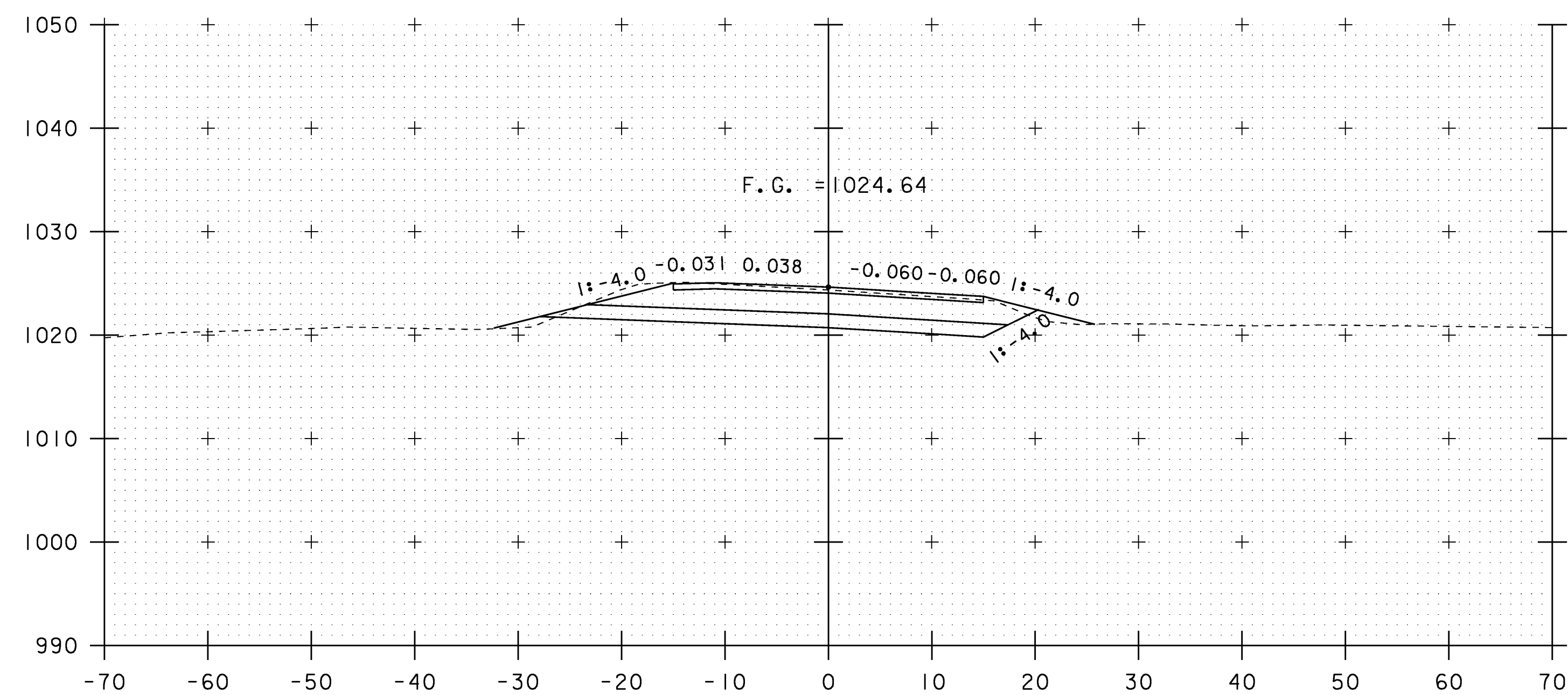
PROJECT NAME: CANAAN	
PROJECT NUMBER: ER ST 0271 (16)	
FILE NAME: /str2/04c098/x04c098xs.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: EVANS-MONGEON	DRAWN BY: HUSK
DESIGNED BY: SCRIBNER	CHECKED BY: SCRIBNER
x04c098rxml	SHEET 52 OF 66



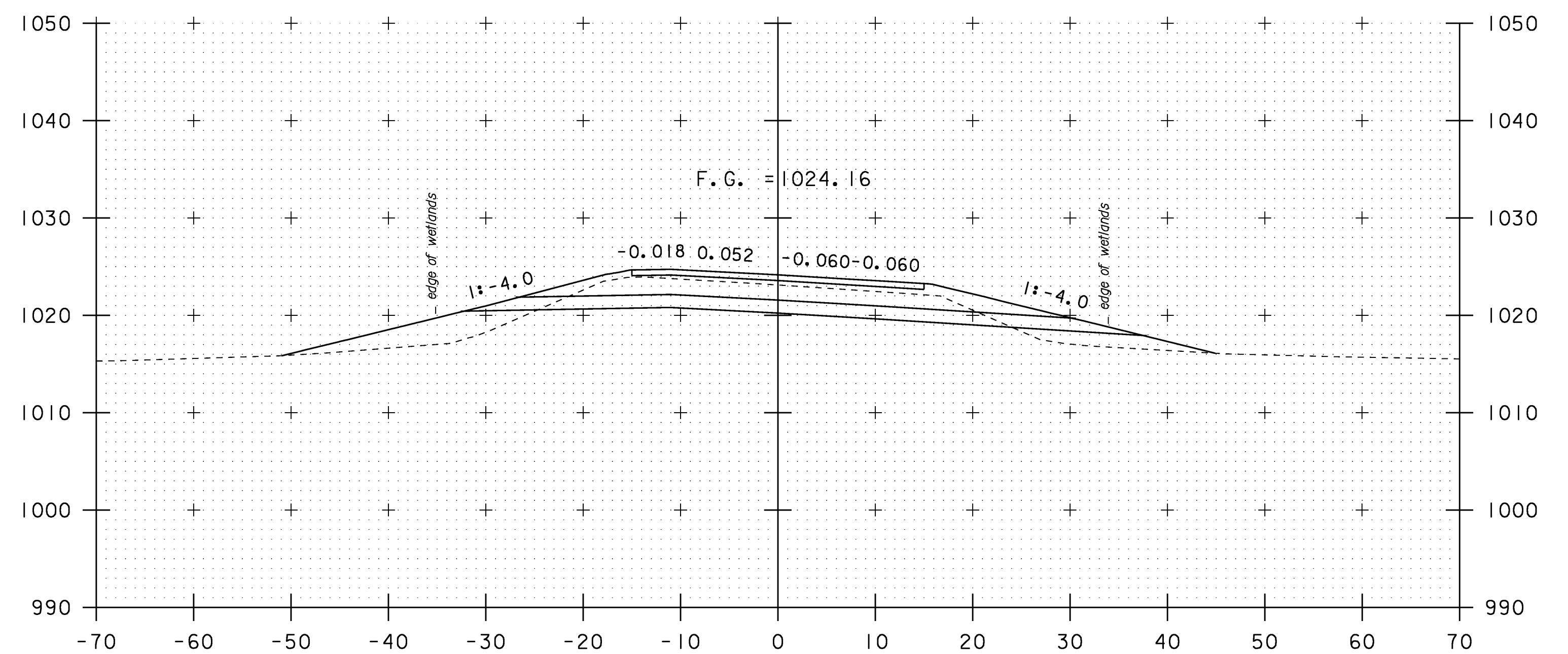
59+25



59+75



59+00



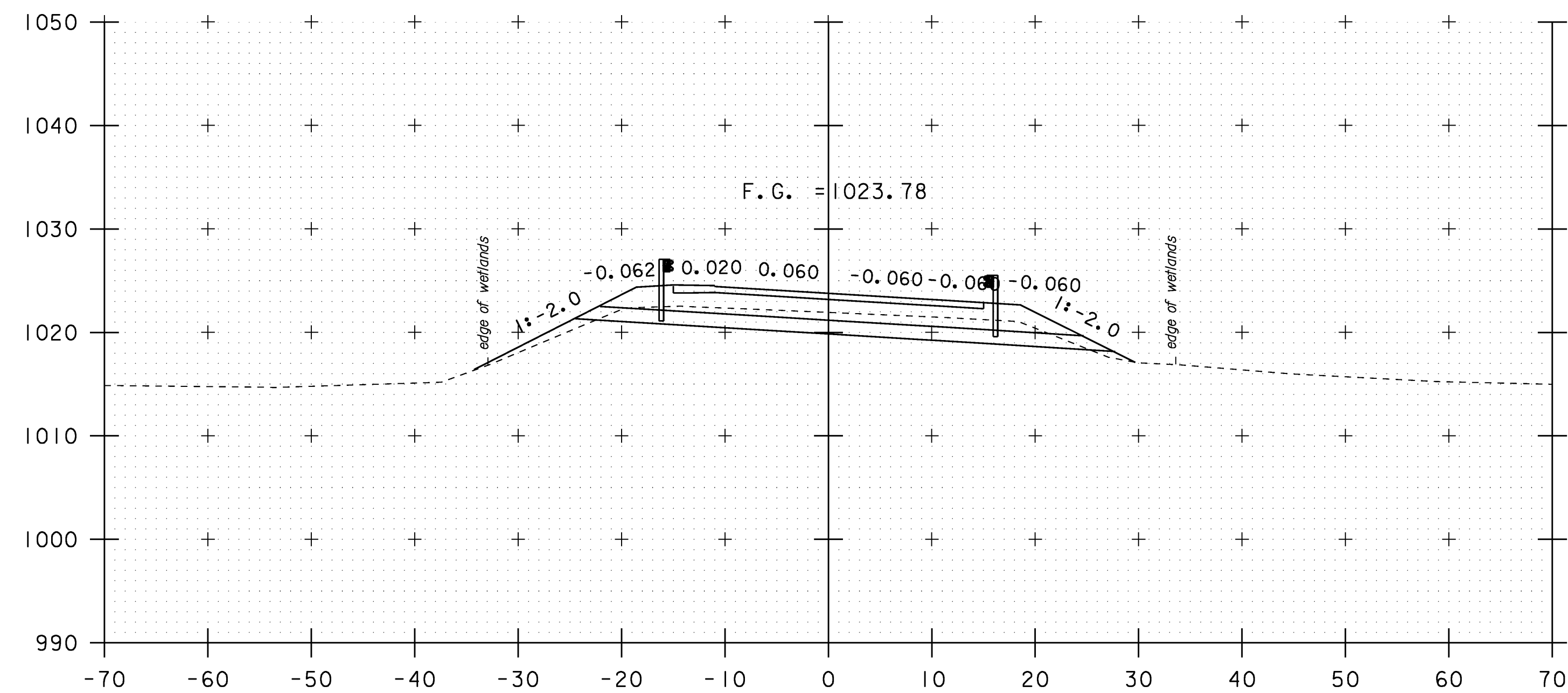
59+50

SCALE 1" = 10'-0"

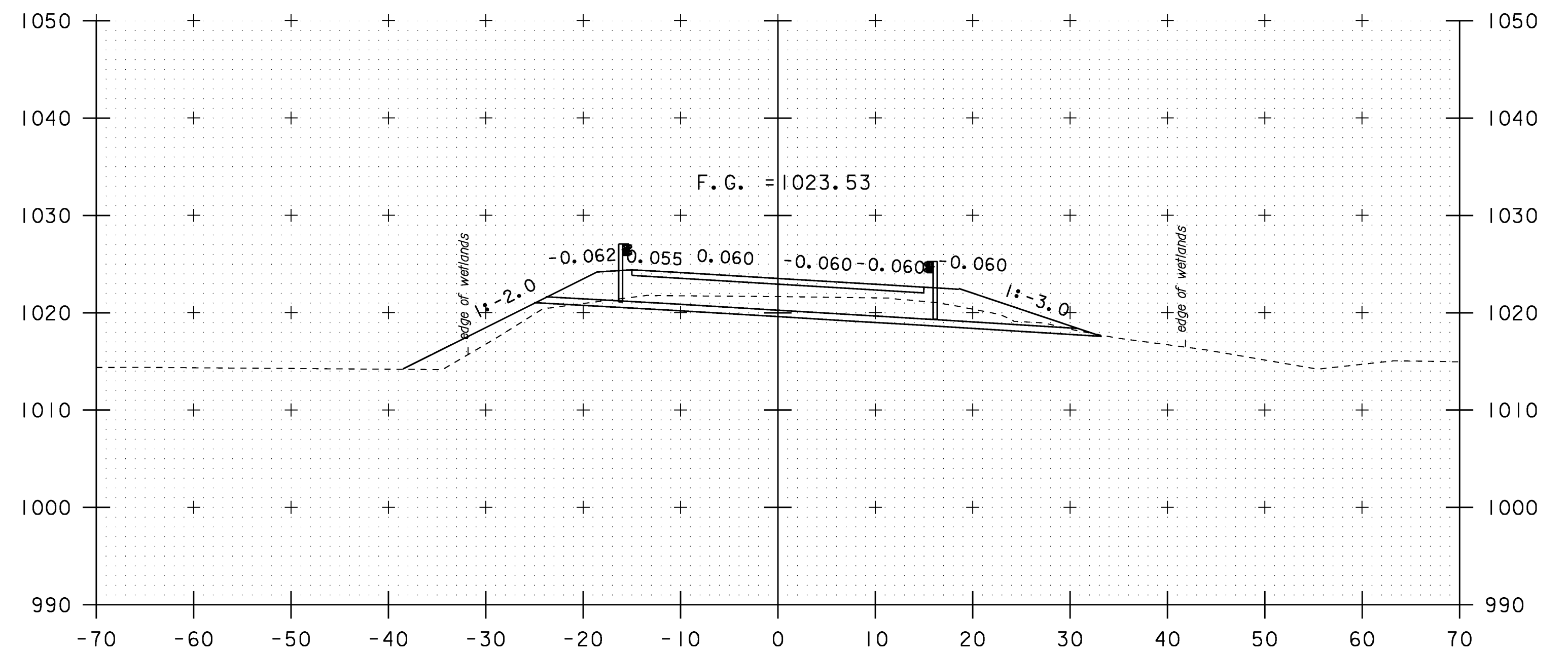
10 0 10

VT 102 CROSS SECTIONS (3)

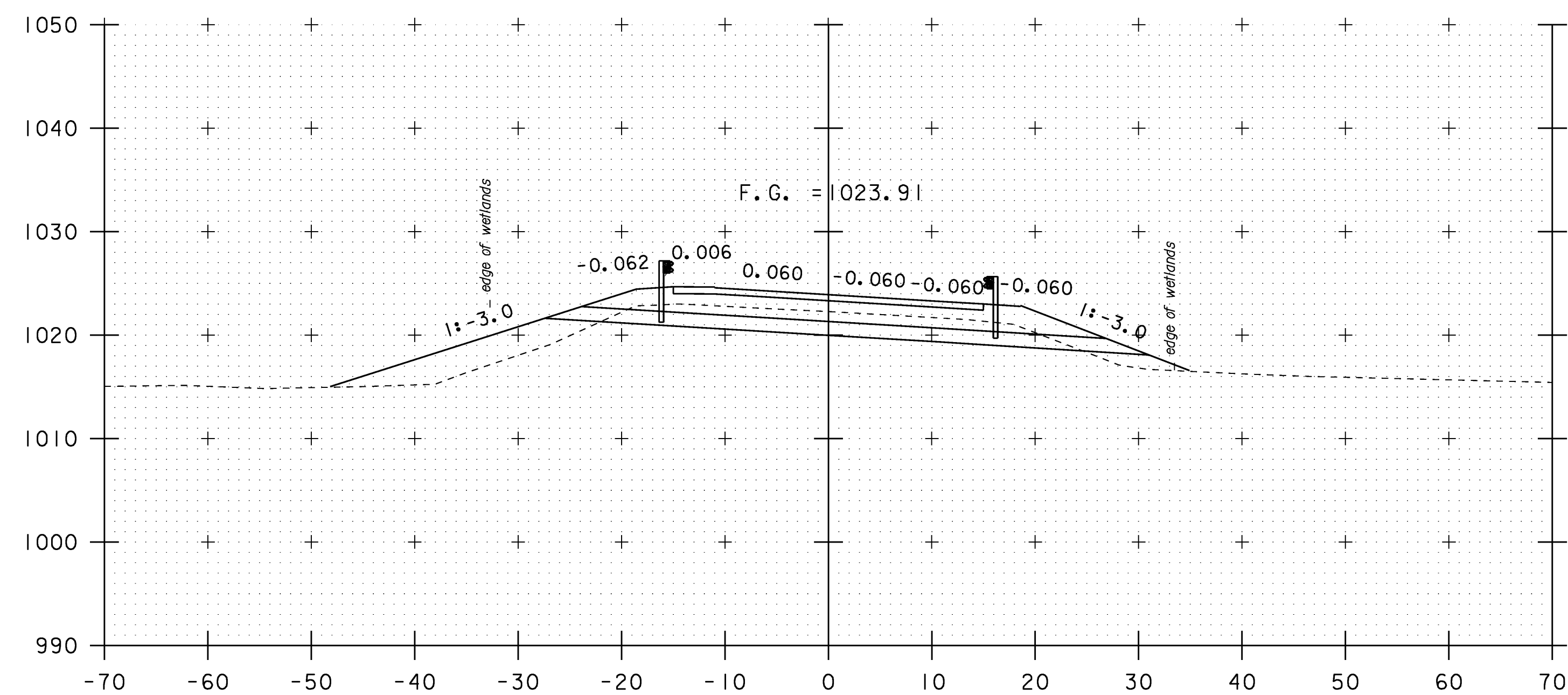
PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	/str2/04c098/x04c098bdr.dgn
PROJECT LEADER:	EVANS-MONGEON
DESIGNED BY:	SCRIBNER
CHECKED BY:	SCRIBNER
SHEET	54
OF	66



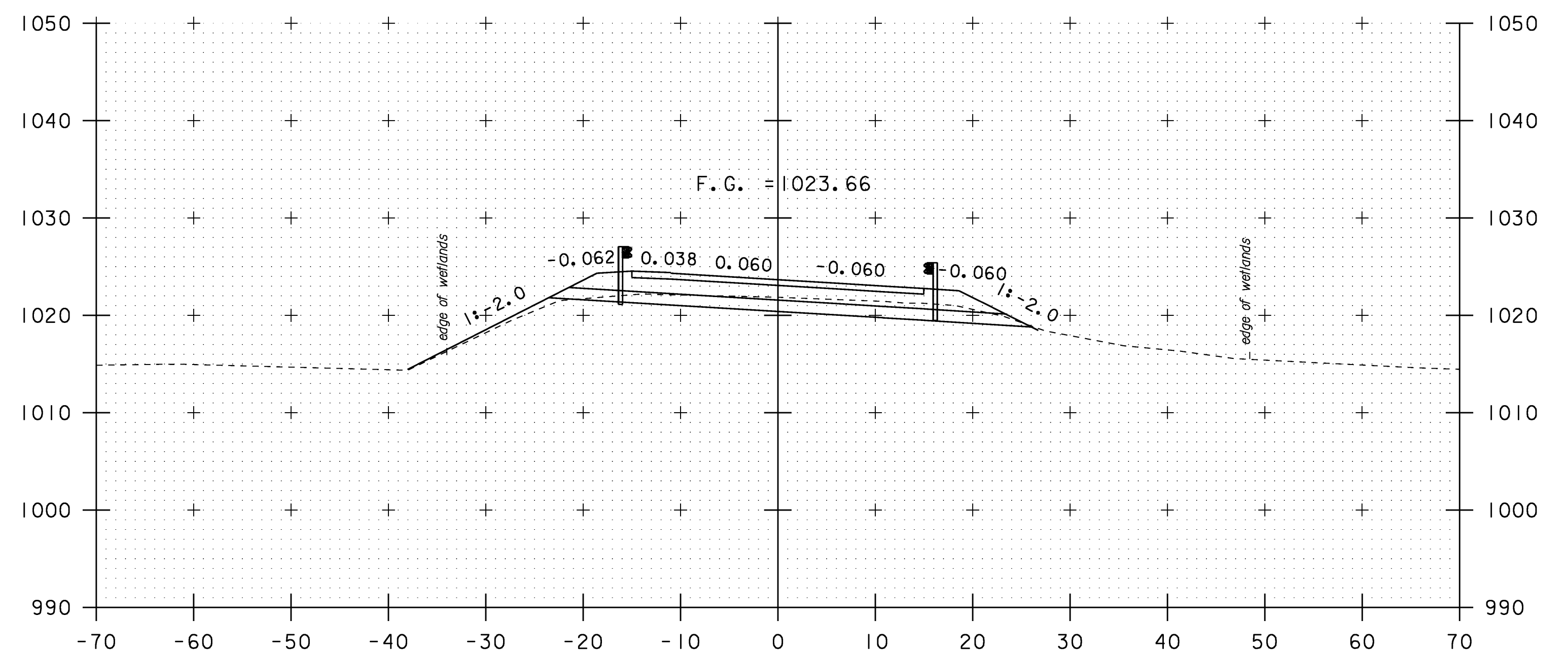
60+25



60+75



60+00

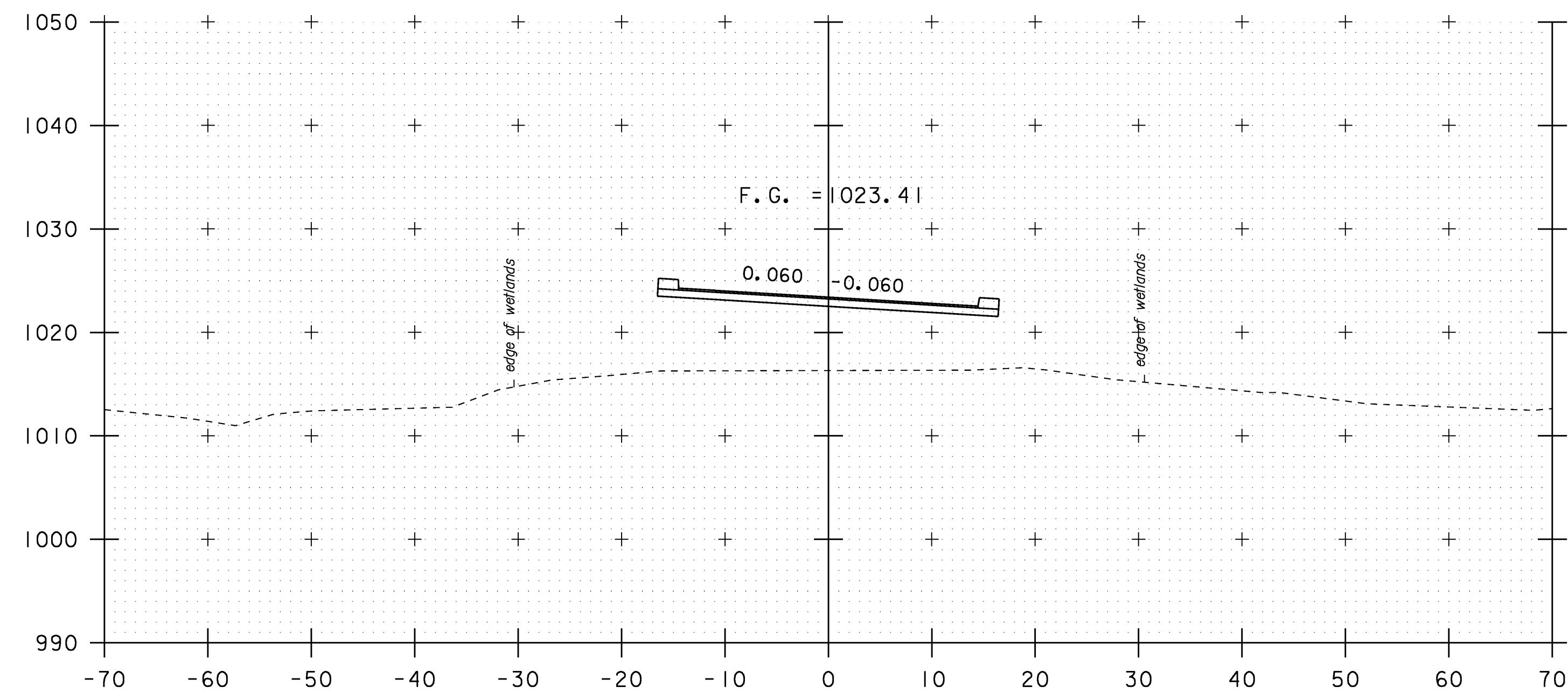


60+50

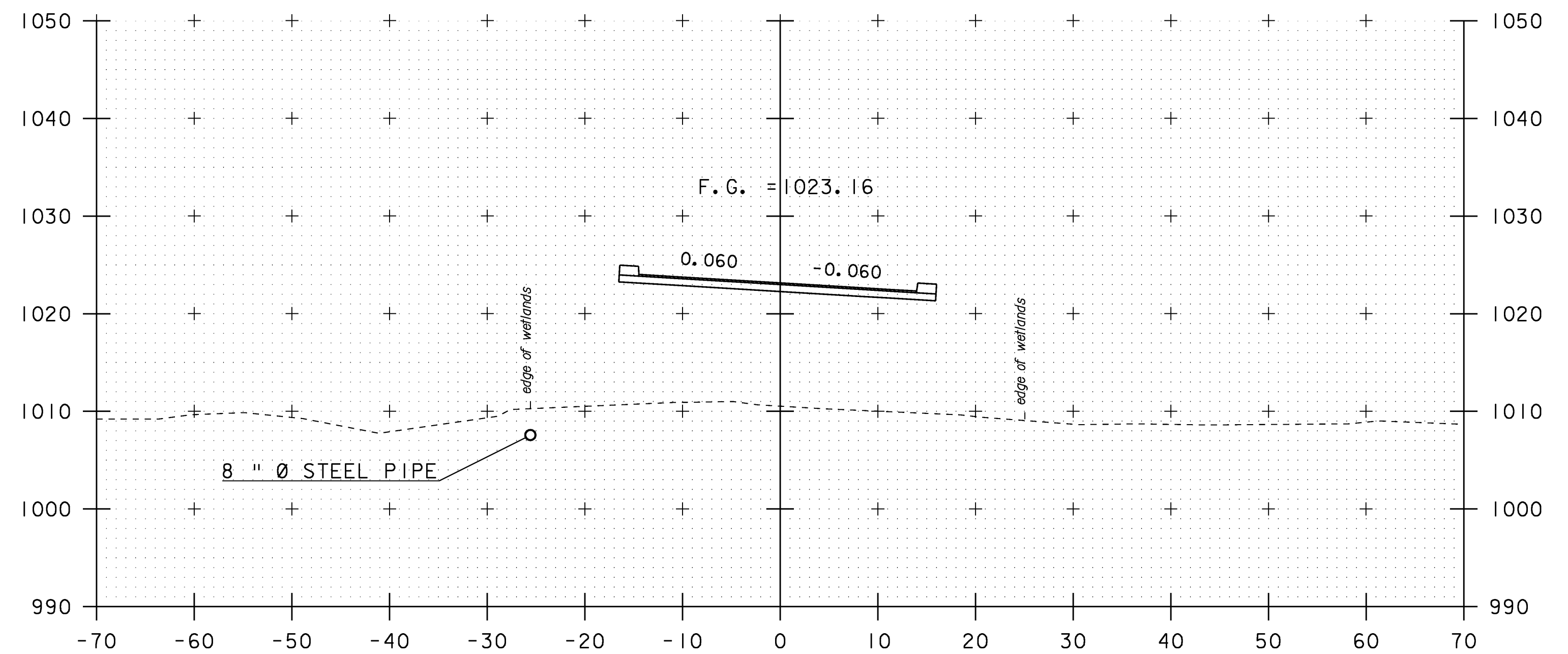
SCALE 1" = 10'-0"

VT 102 CROSS SECTIONS (4)

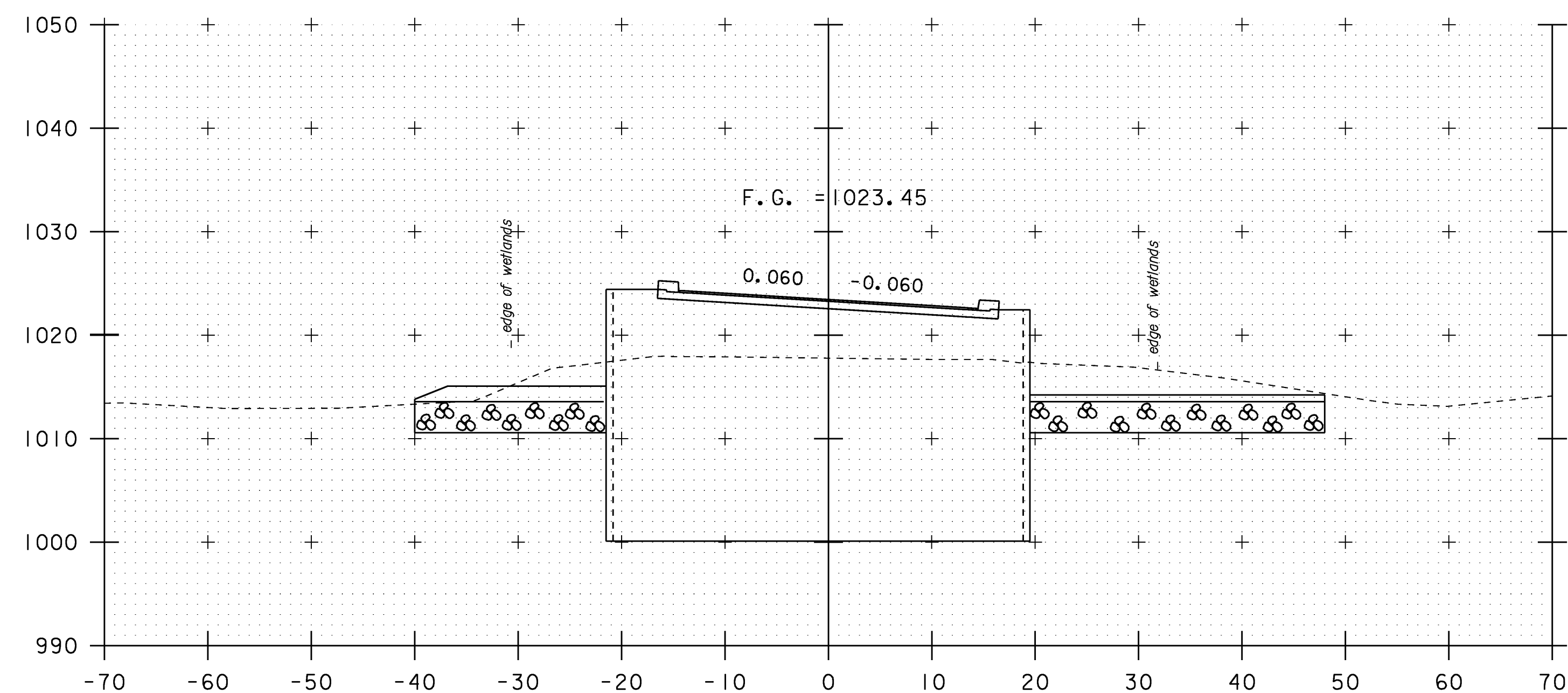
PROJECT NAME: CANAAN			
PROJECT NUMBER: ER ST 0271 (16)			
FILE NAME: /str2/04c098/x04c098bdr.dgn PLOT DATE: 18-AUG-2008			
PROJECT LEADER: EVANS-MONGEON		DRAWN BY: HUSK	
DESIGNED BY: SCRIBNER		CHECKED BY: SCRIBNER	
x04c098rxs4.1		SHEET 55 OF 66	



61+00

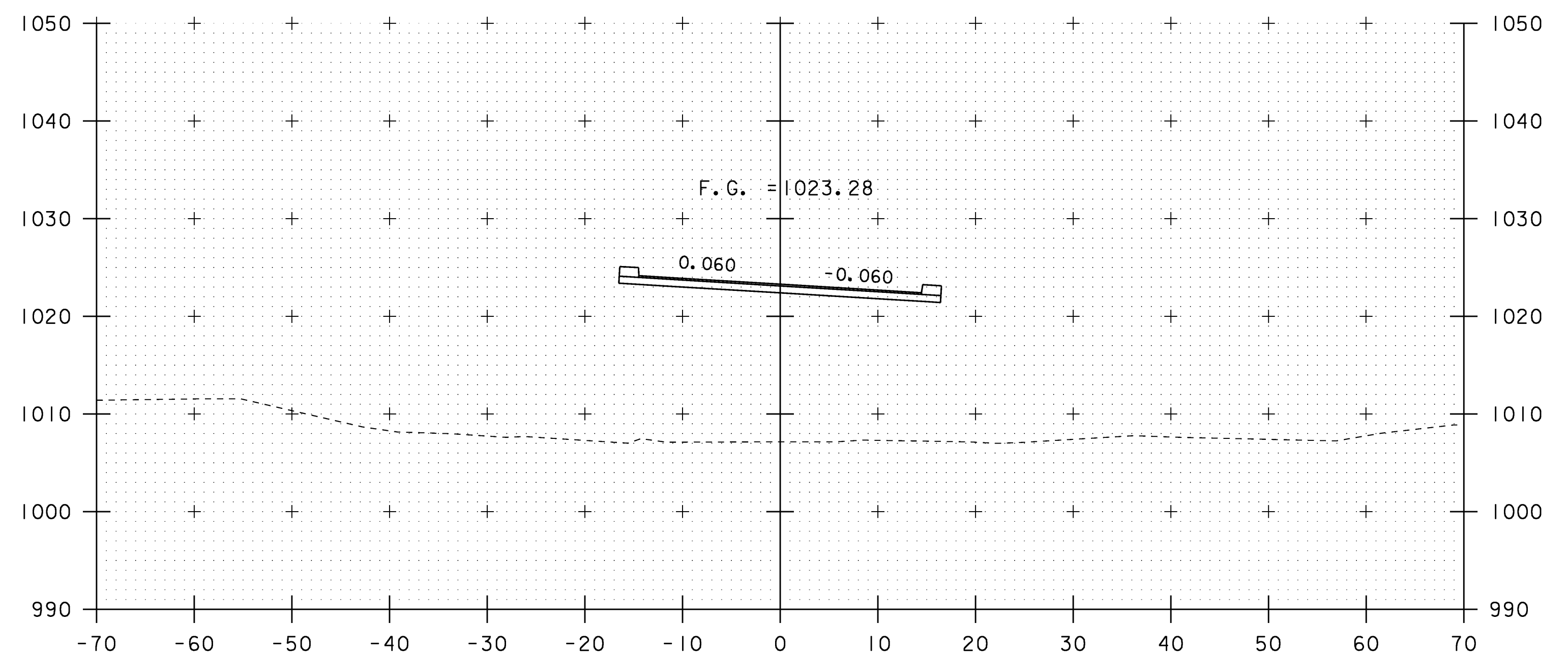


61+50



STA. 60+92
BEGIN BRIDGE

60+93

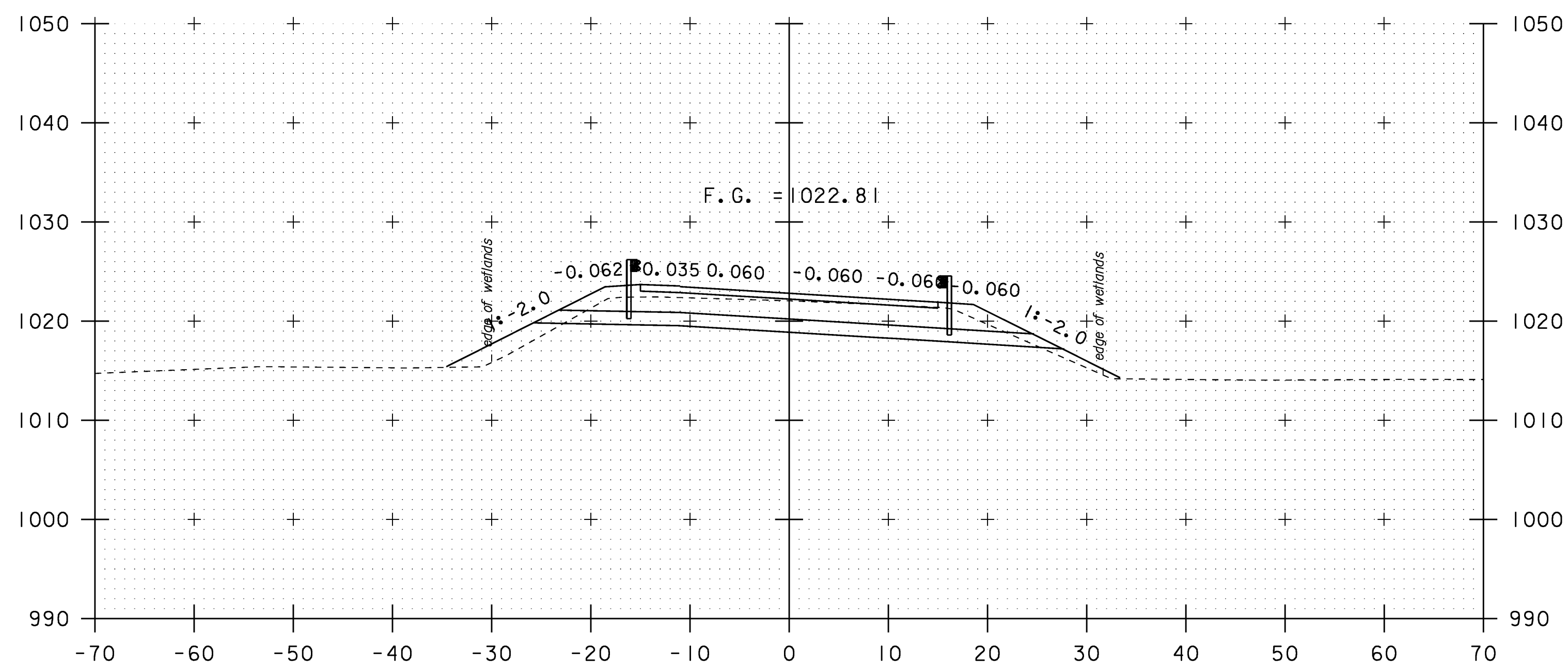
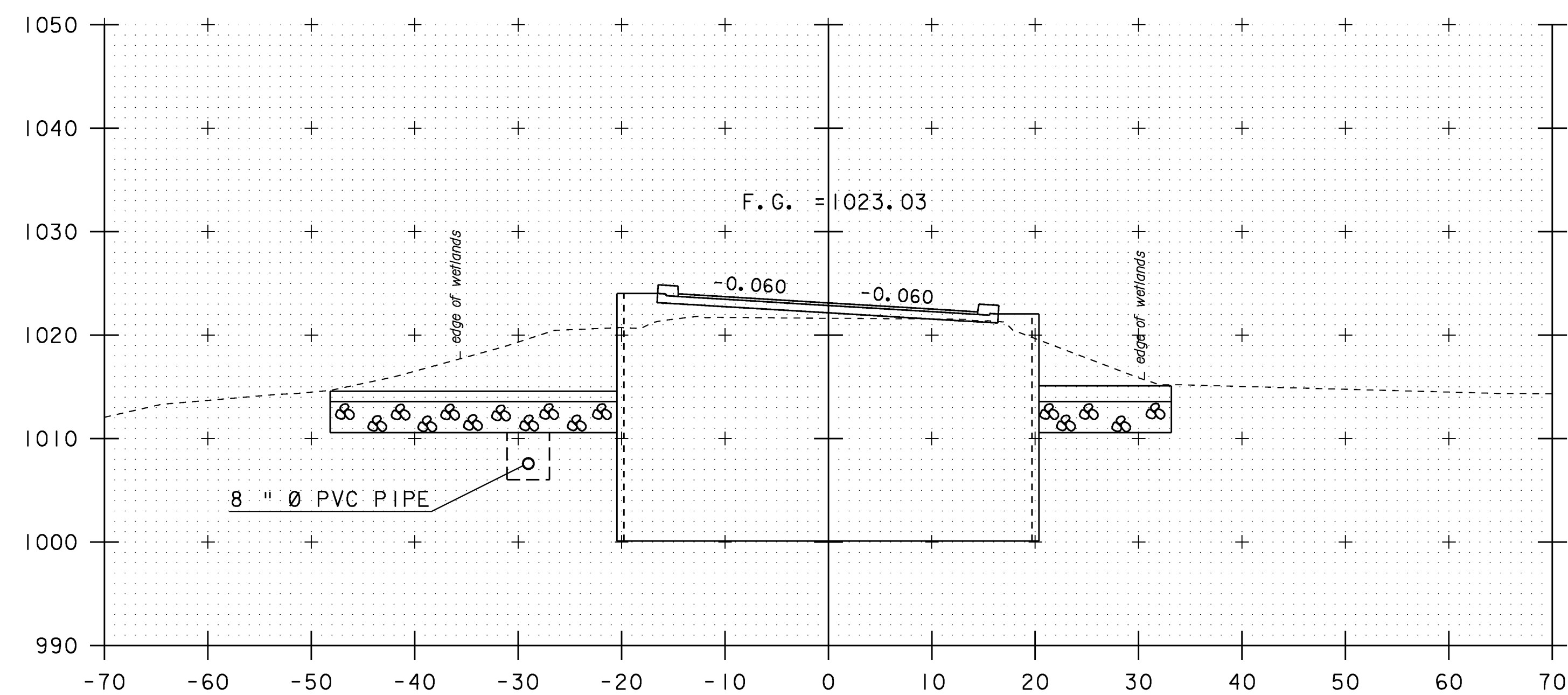
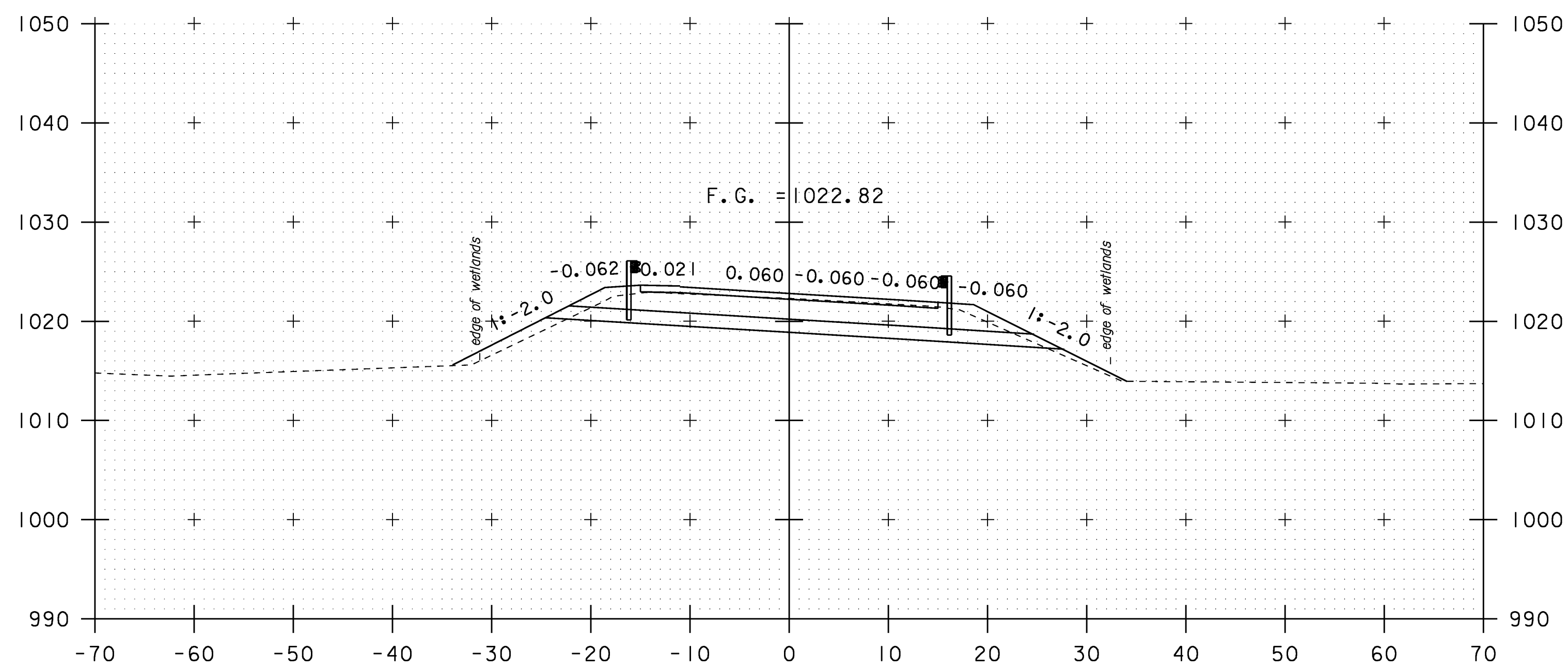
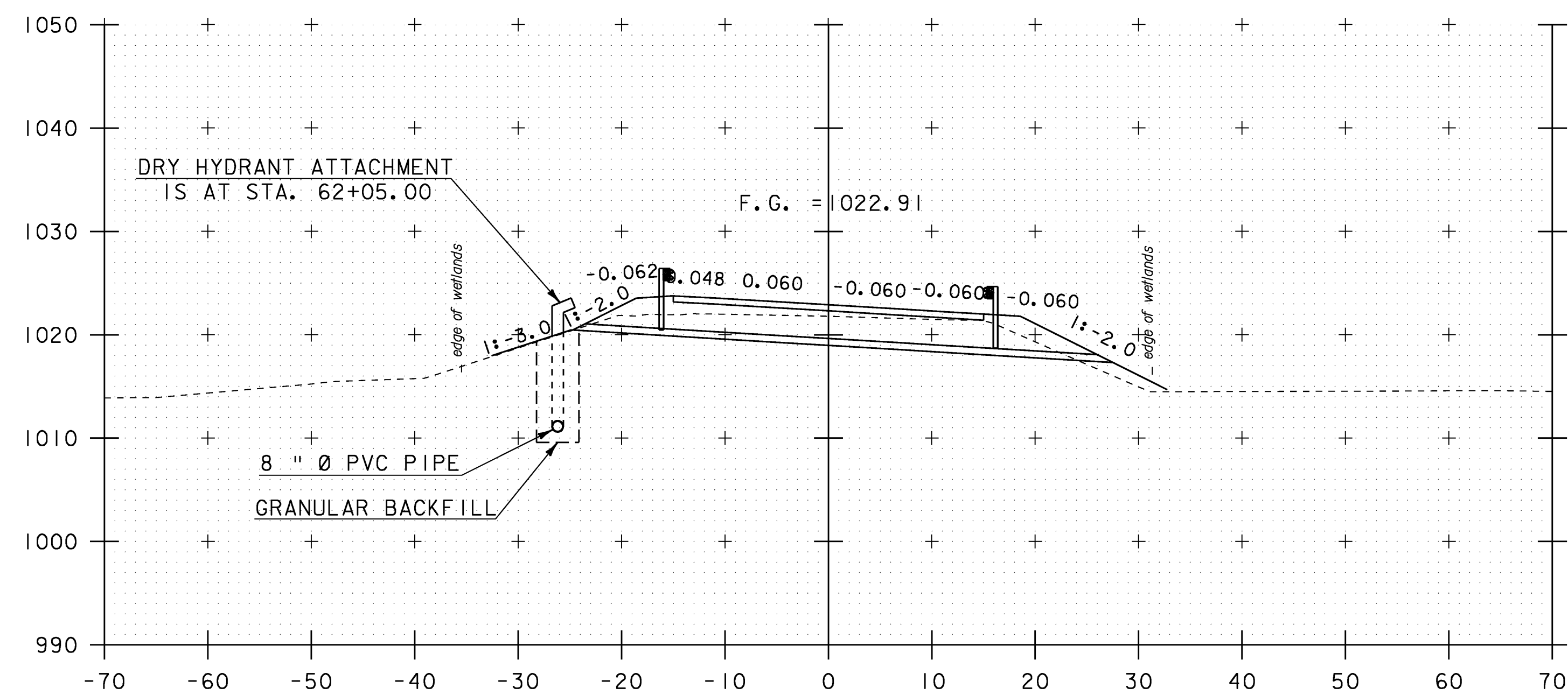


61+25

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

VT 102 CROSS SECTIONS (5)

PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	/str2/04c098/x04c098bdr.dgn
PROJECT LEADER:	EVANS-MONGEON
DESIGNED BY:	SCRIBNER
CHECKED BY:	SCRIBNER
PLOT DATE:	18-AUG-2008
DRAWN BY:	HUSK
SHEET	56
OF	66



STA. 61+76
END BRIDGE

SCALE 1" = 10'-0"

10 0 10

VT 102 CROSS SECTIONS (6)

PROJECT NAME: CANAAN

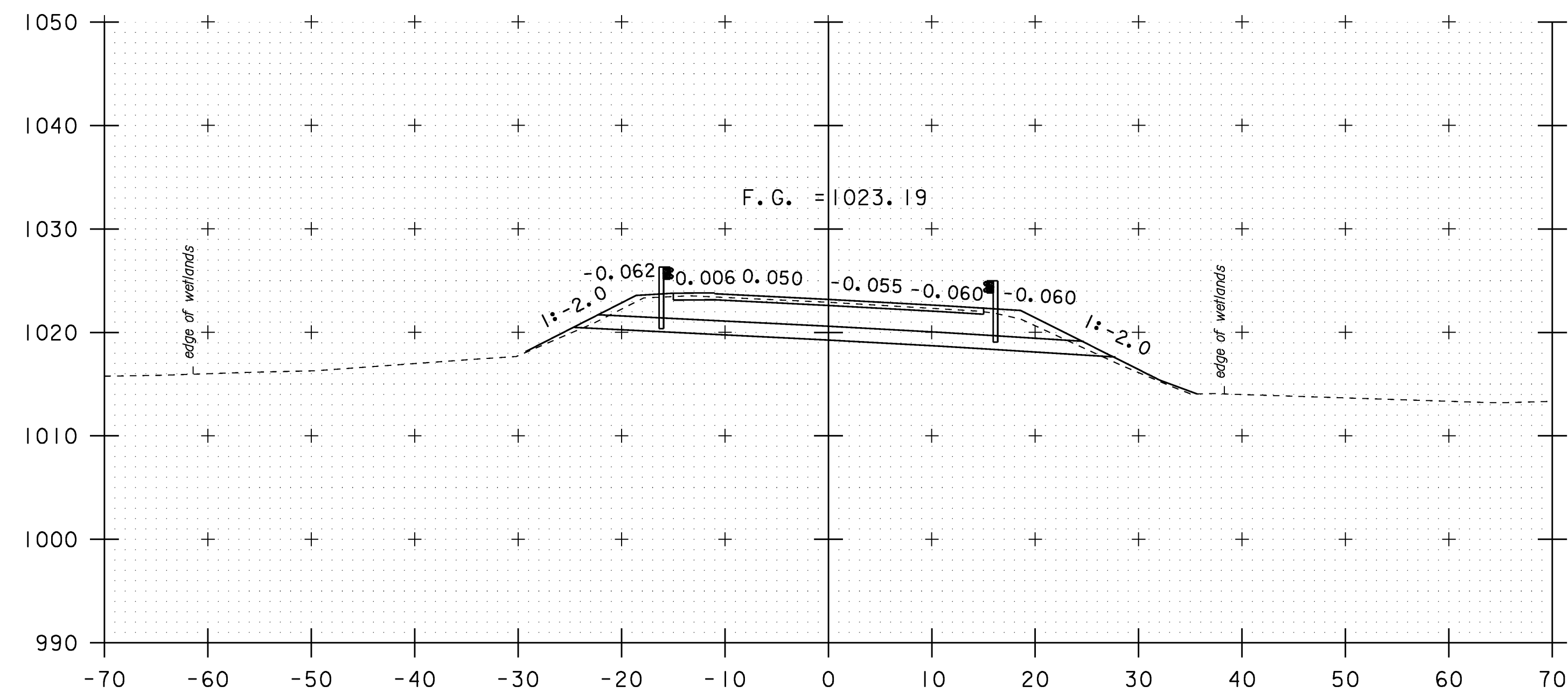
PROJECT NUMBER: ER ST 0271(16)

FILE NAME: /str2/04c098/x04c098bdr.dgn PLOT DATE: 18-AUG-2008

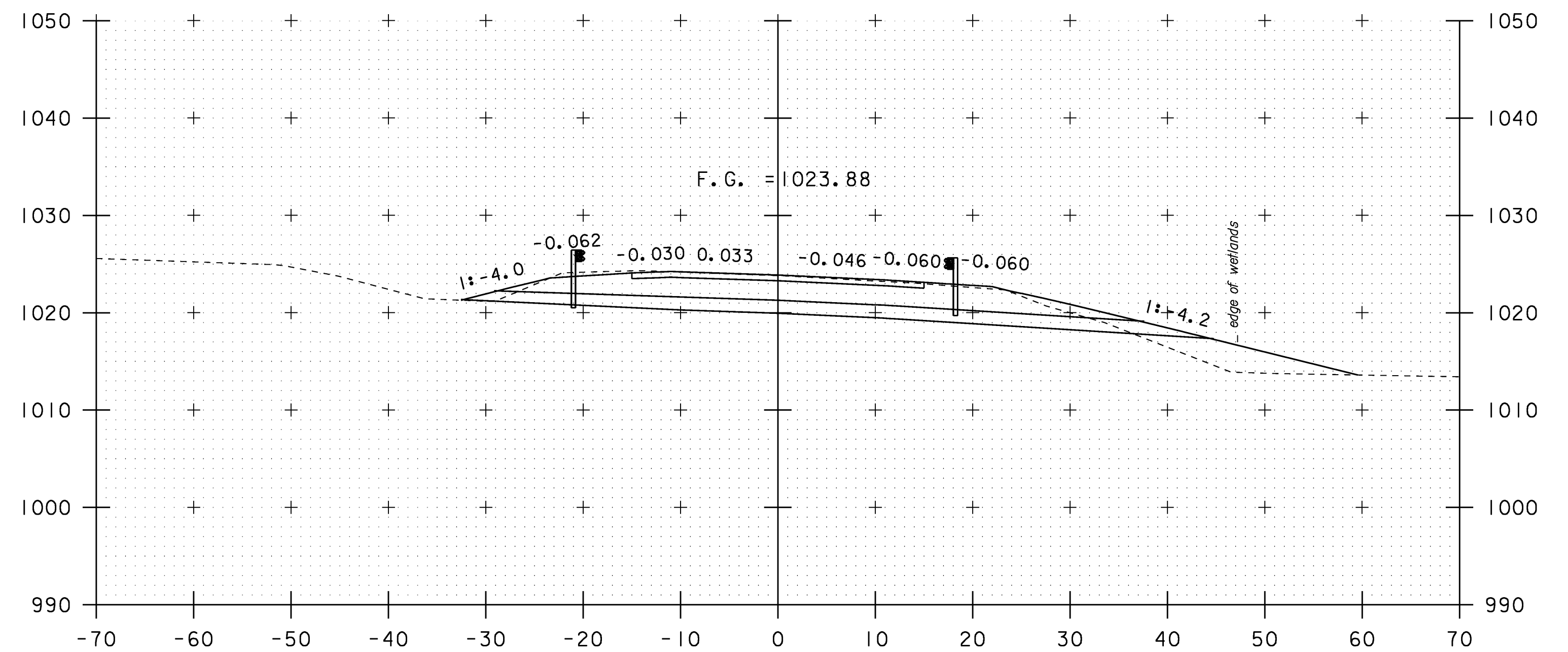
PROJECT LEADER: EVANS-MONGEON DRAWN BY: HUSK

DESIGNED BY: SCRIBNER CHECKED BY: SCRIBNER

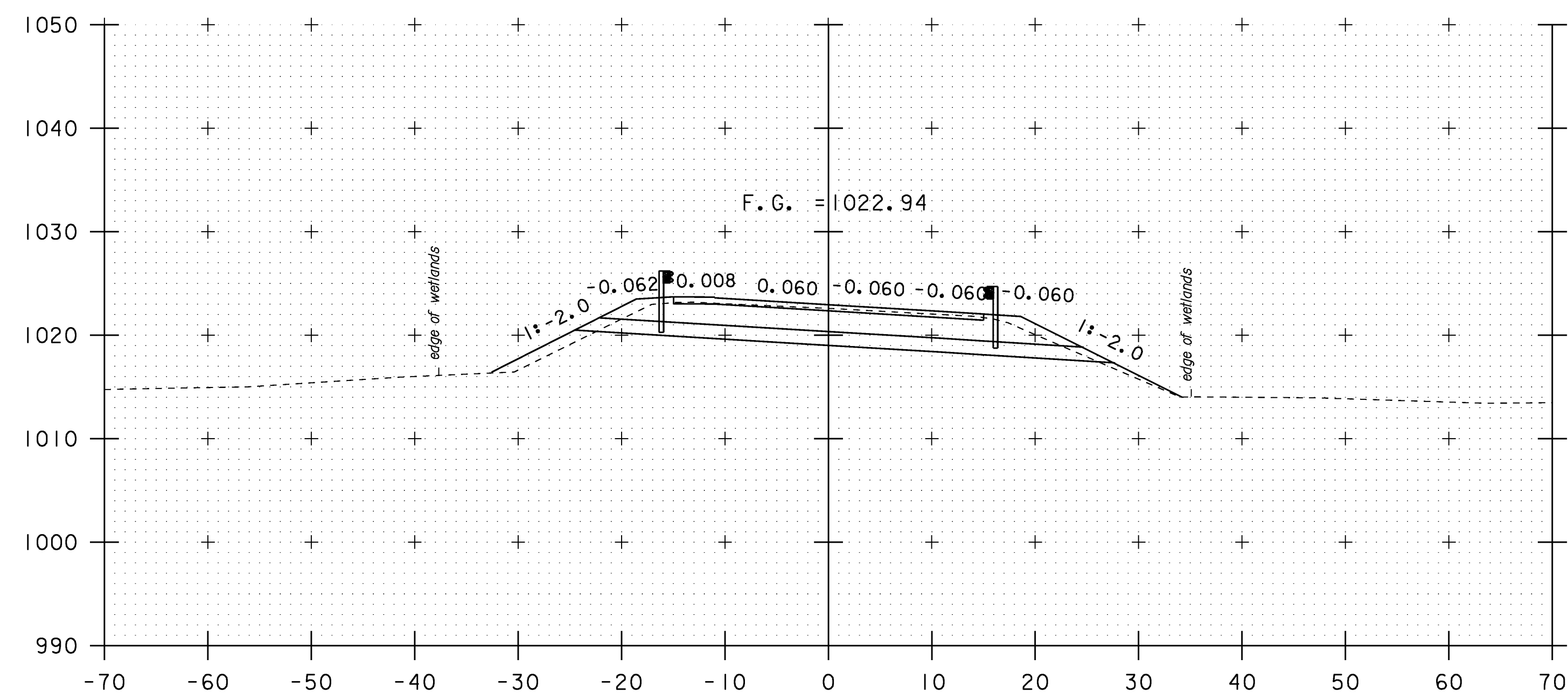
x04c098rxs6.1 SHEET 57 OF 66



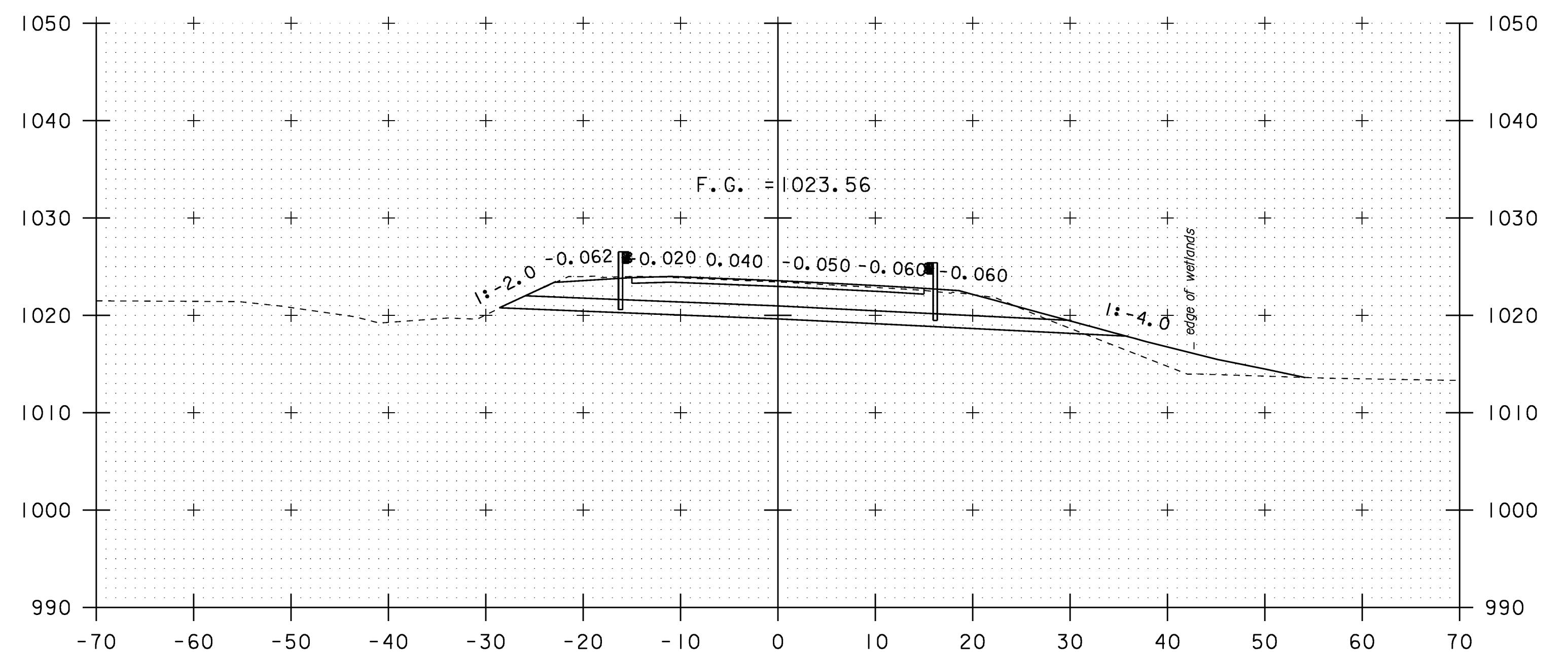
63+00



63+42



62+75

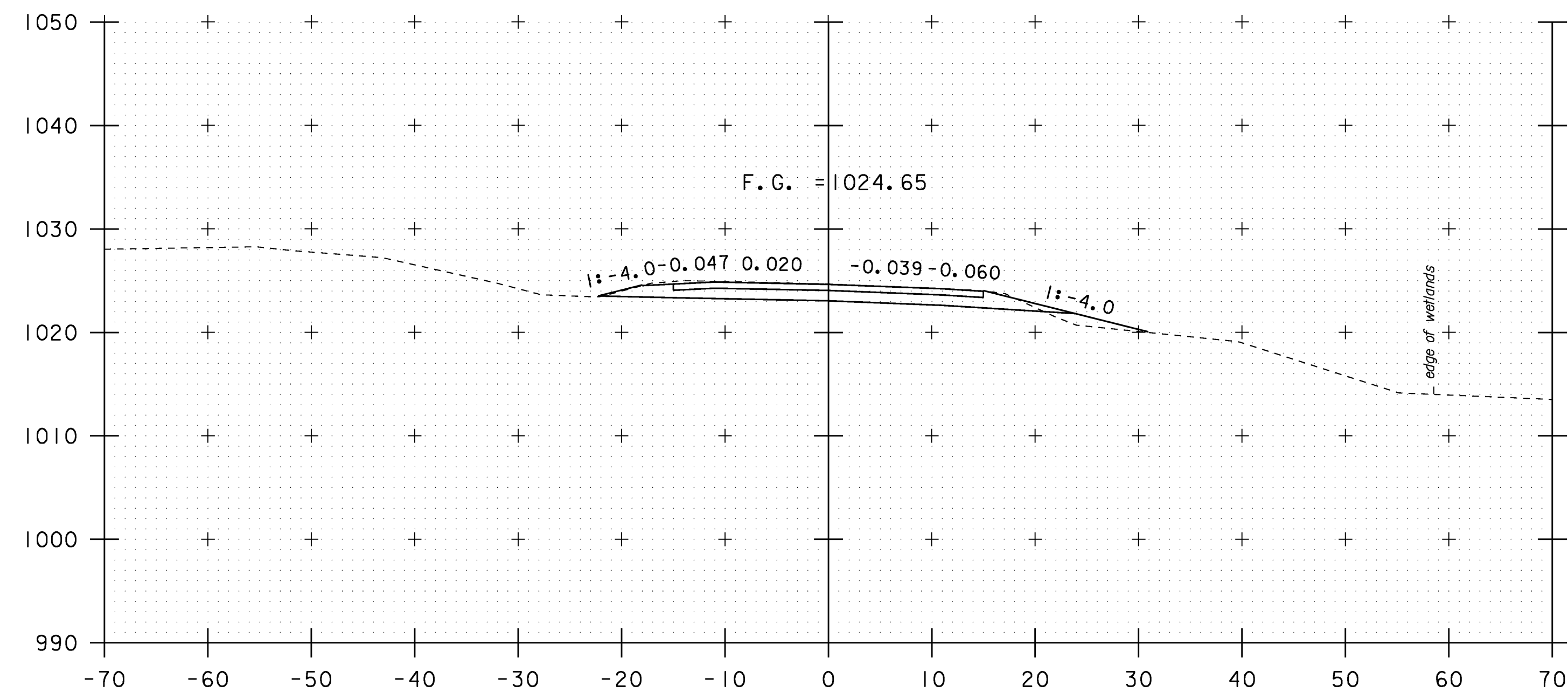


63+25

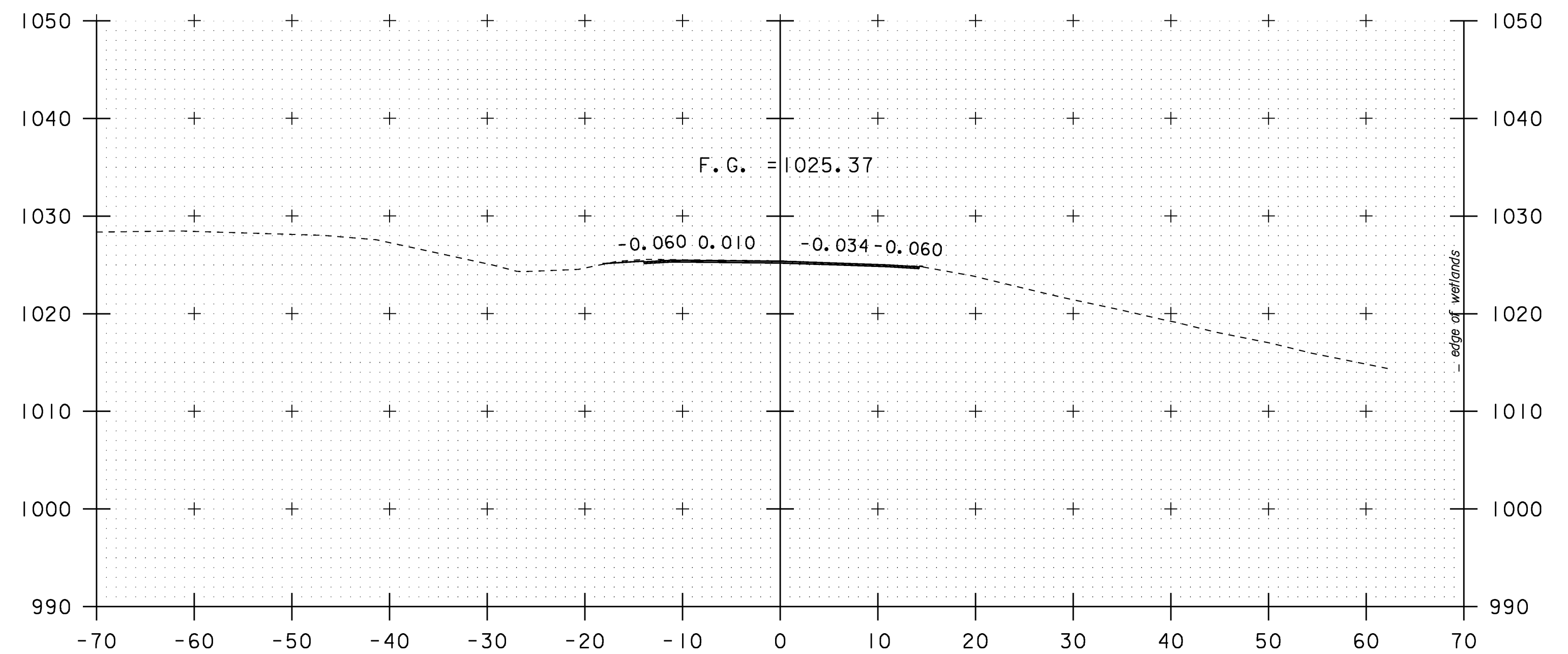
SCALE 1" = 10'-0"

VT 102 CROSS SECTIONS (7)

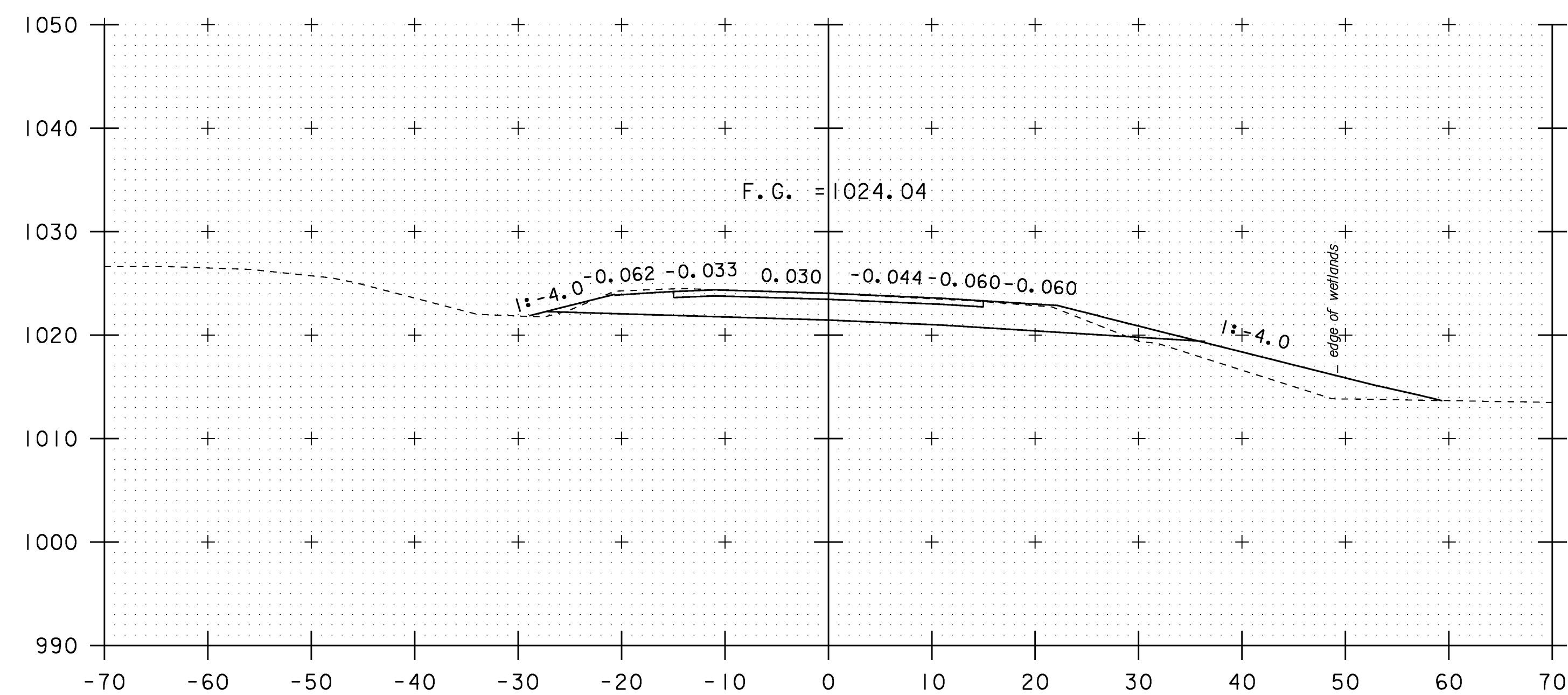
PROJECT NAME: CANAAN			
PROJECT NUMBER: ER ST 0271(16)			
FILE NAME: /str2/04c098/x04c098bdr.dgn PLOT DATE: 18-AUG-2008			
PROJECT LEADER: EVANS-MONGEON		DRAWN BY: HUSK	
DESIGNED BY: SCRIBNER		CHECKED BY: SCRIBNER	
x04c098rxs7.1		SHEET 58 OF 66	



63+75

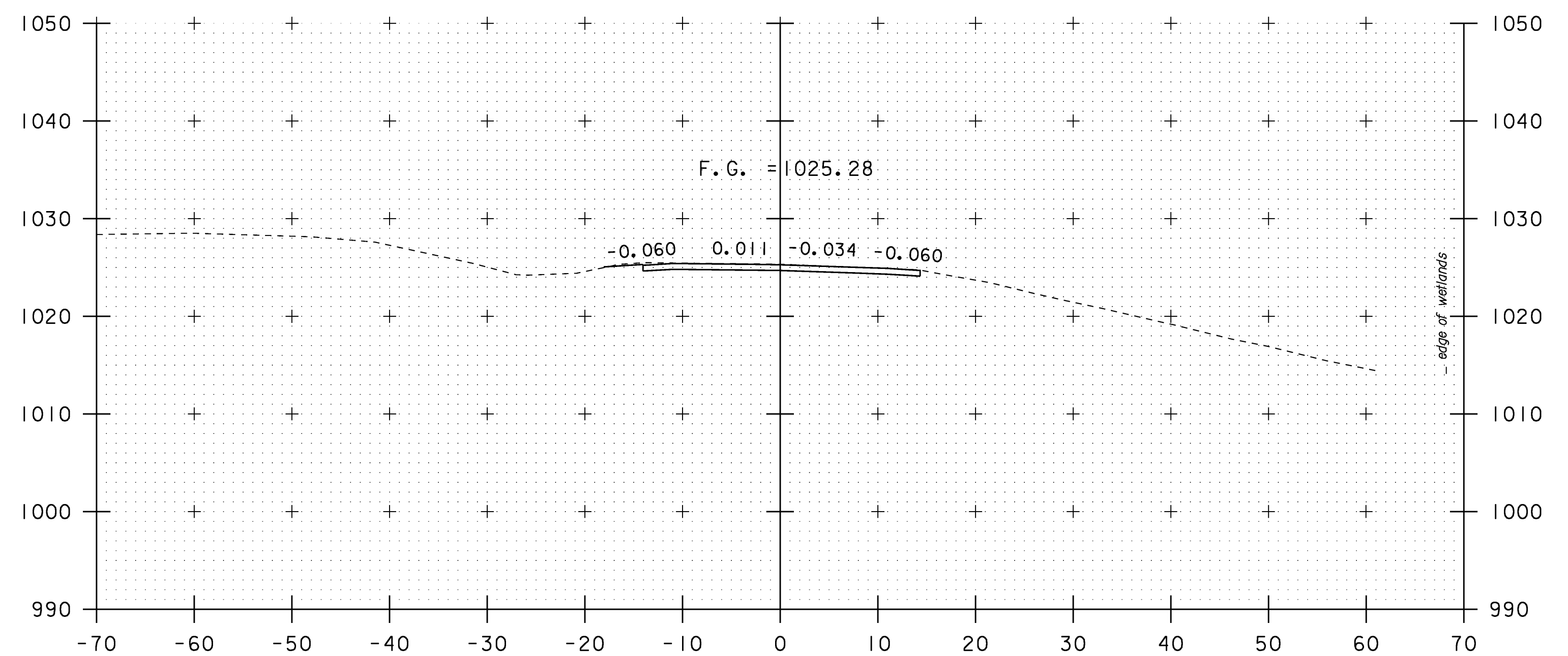


64+00



63+50

STA. 63+50
END PROJECT
BEGIN APPROACH

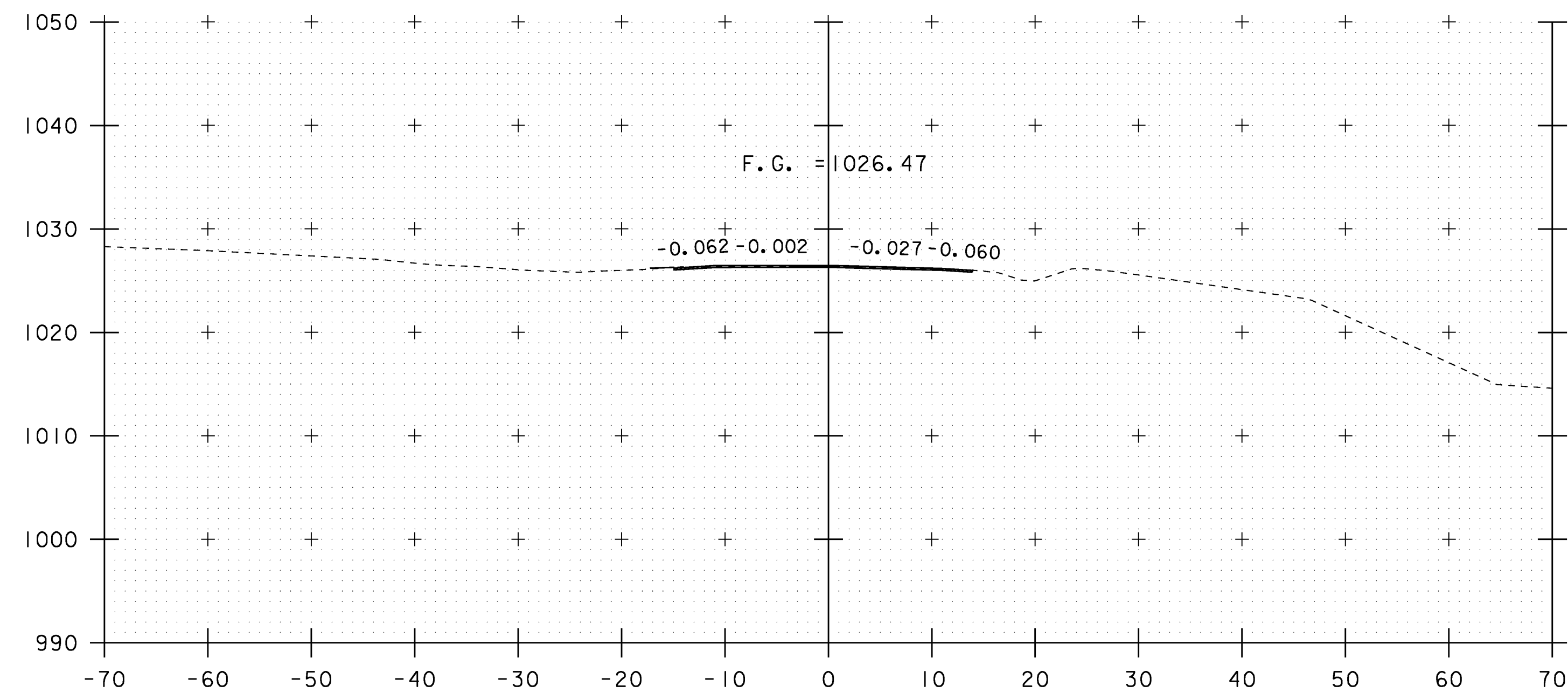


63+97

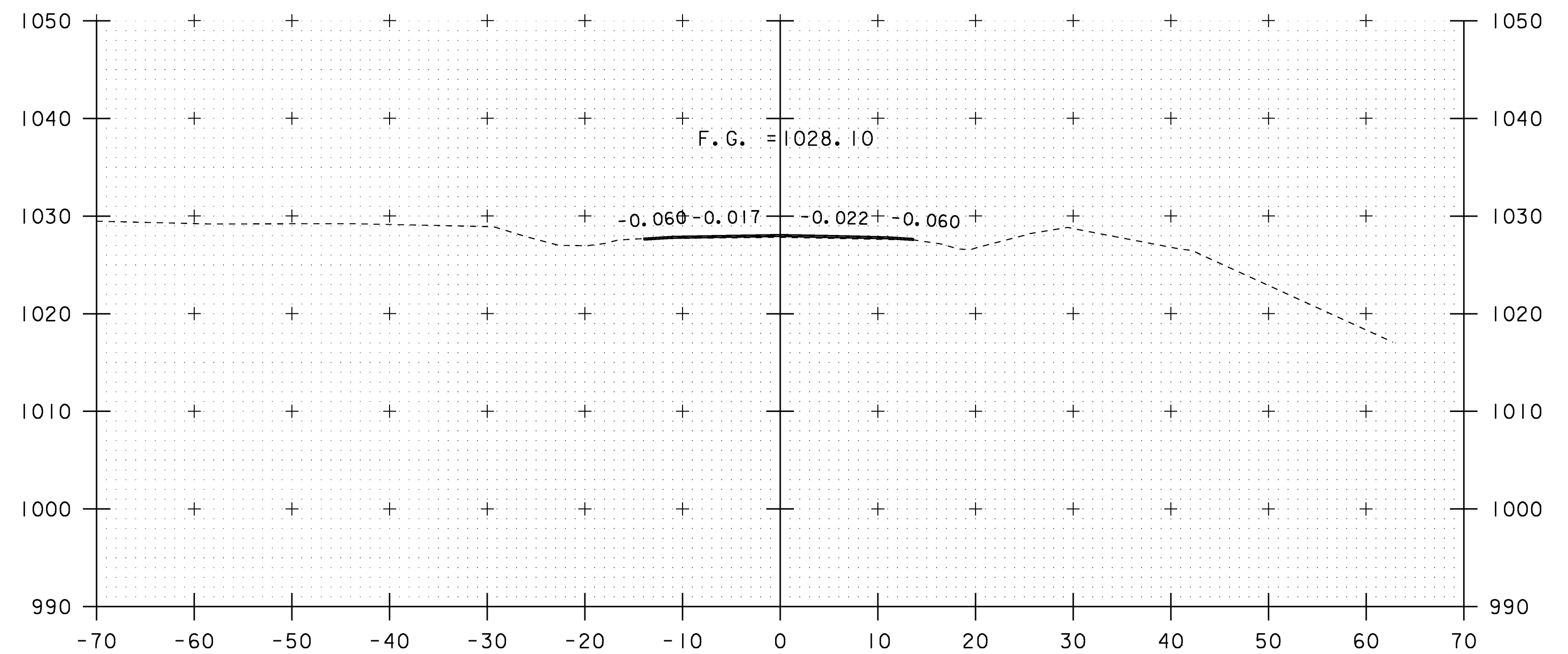
SCALE 1" = 10'-0"
10 0 10

VT 102 CROSS SECTIONS (8)

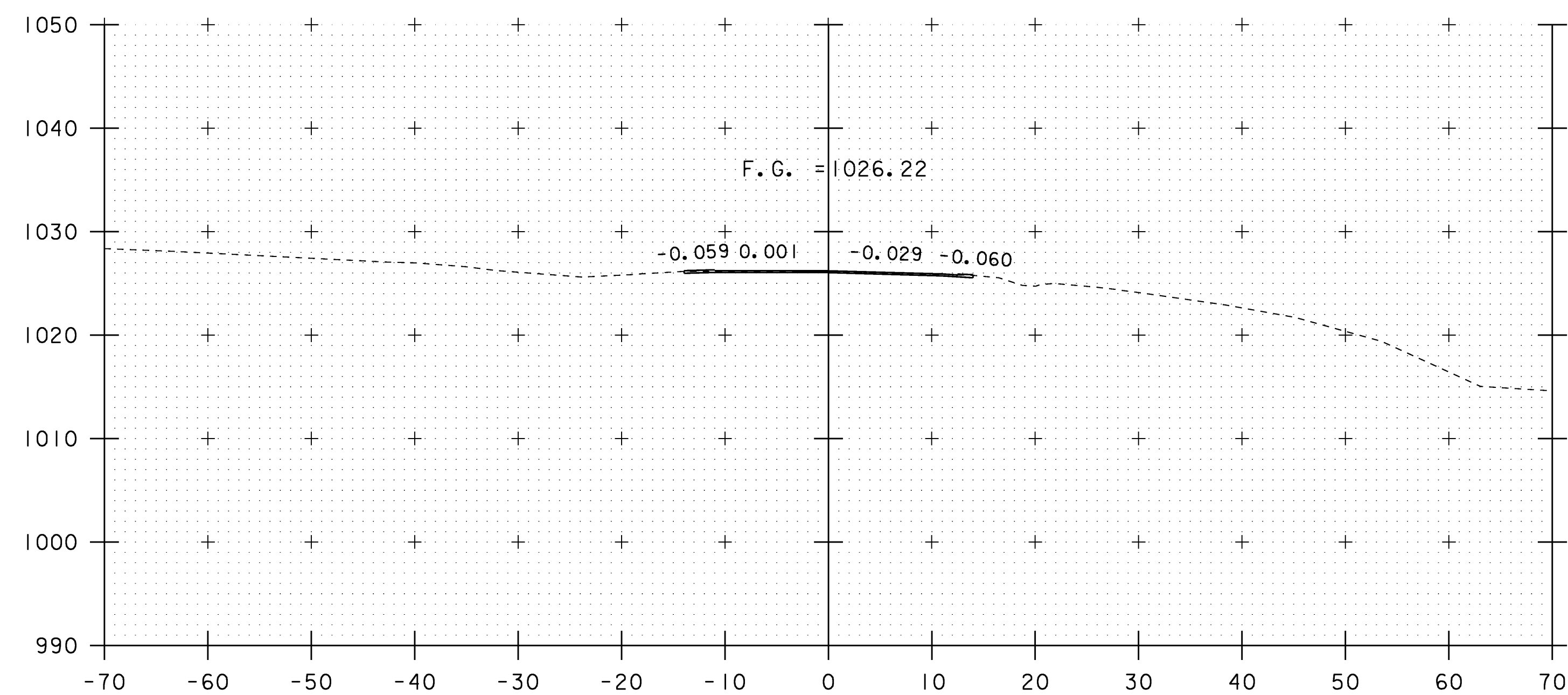
PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271 (16)
FILE NAME:	/str2/04c098/x04c098bdr.dgn
PROJECT LEADER:	EVANS-MONGEON
DESIGNED BY:	SCRIBNER
x04c098rxs8.1	
PLOT DATE:	18-AUG-2008
DRAWN BY:	HUSK
CHECKED BY:	SCRIBNER
SHEET 59	OF 66



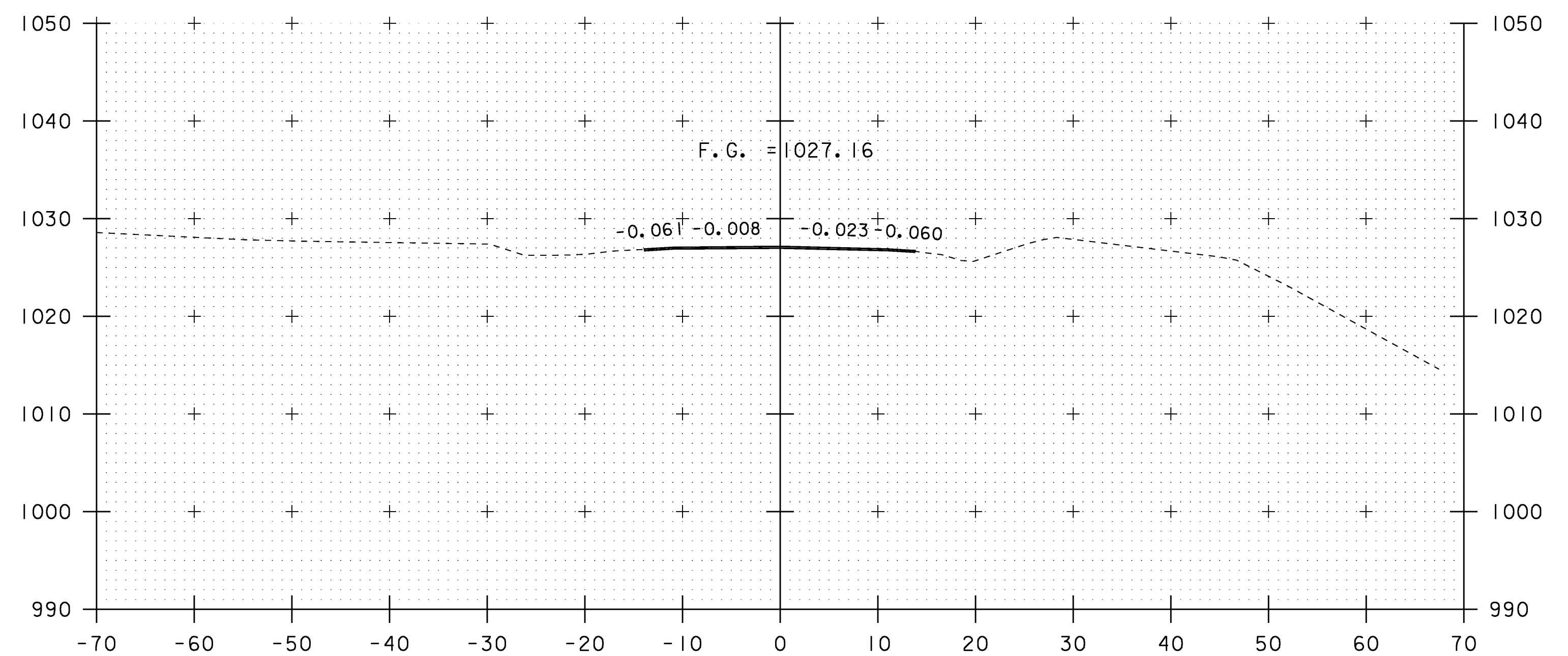
64+32



64+75



64+25

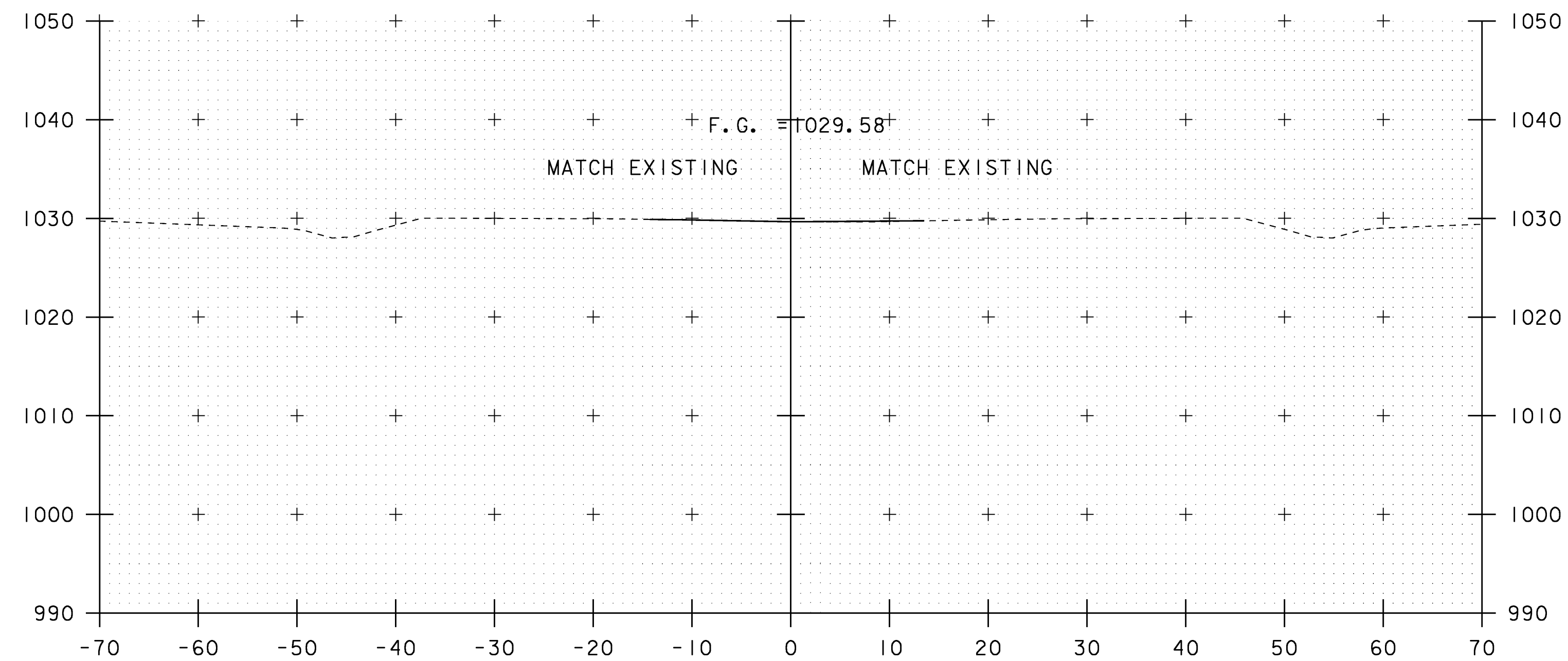


64+50

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

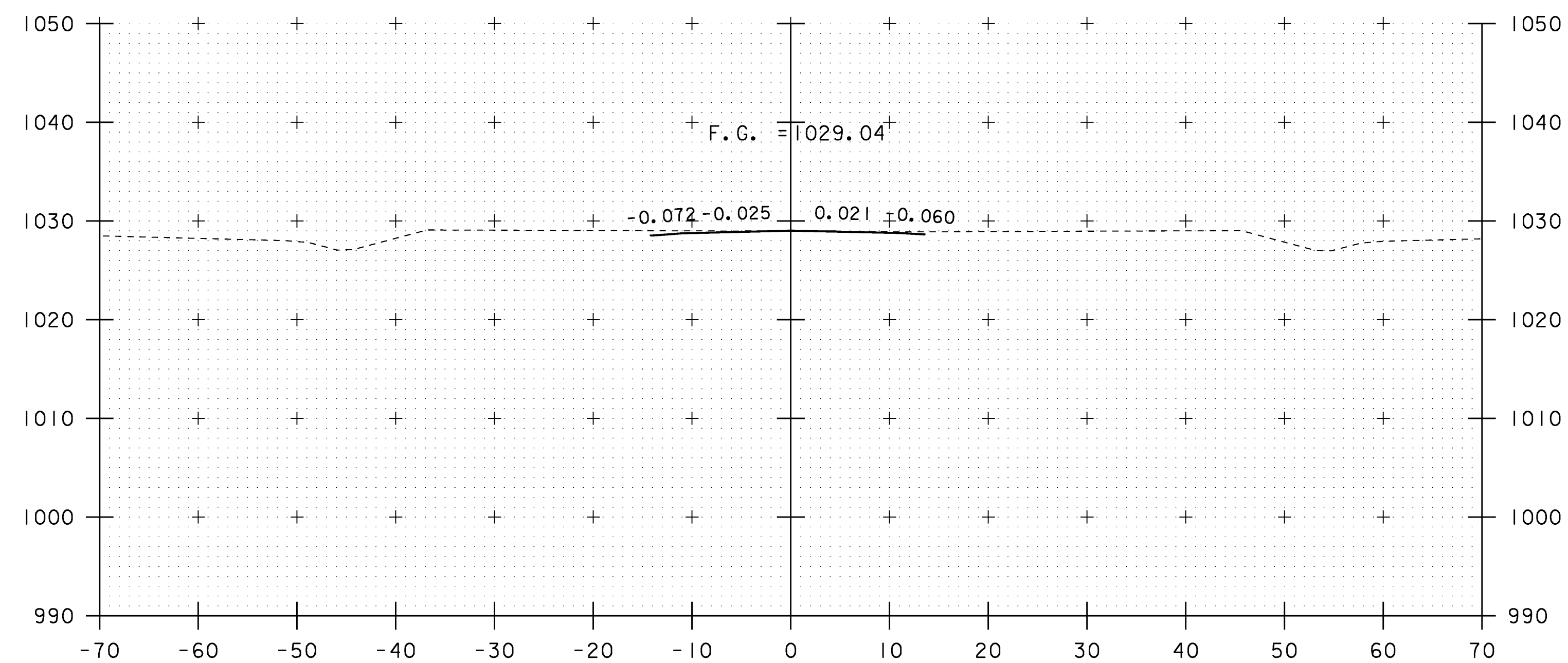
VT 102 CROSS SECTIONS (9)

PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271 (16)
FILE NAME:	/str2/04c098/x04c098bdr.dgn
PLOT DATE:	18-AUG-2008
PROJECT LEADER:	EVANS-MONGEON
DRAWN BY:	HUSK
DESIGNED BY:	SCRIBNER
CHECKED BY:	SCRIBNER
x04c098rxs9.1	SHEET 60 OF 66



STA. 65+15
END APPROACH
MATCH EXISTING GRADE AND BANKING

65+15



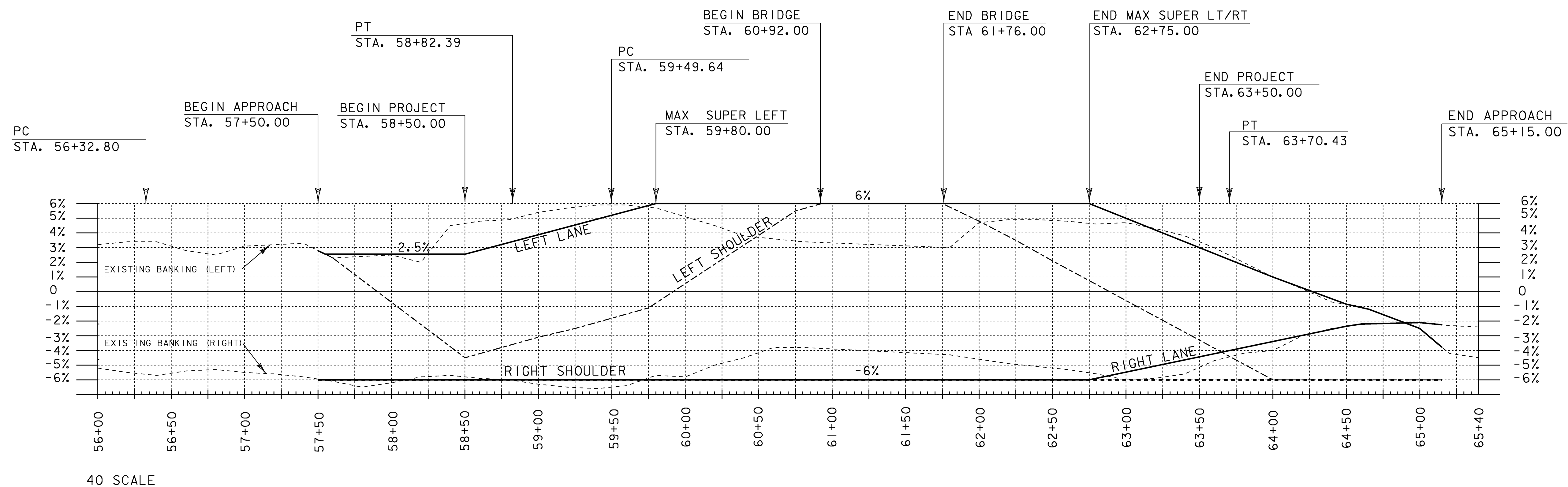
65+00

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

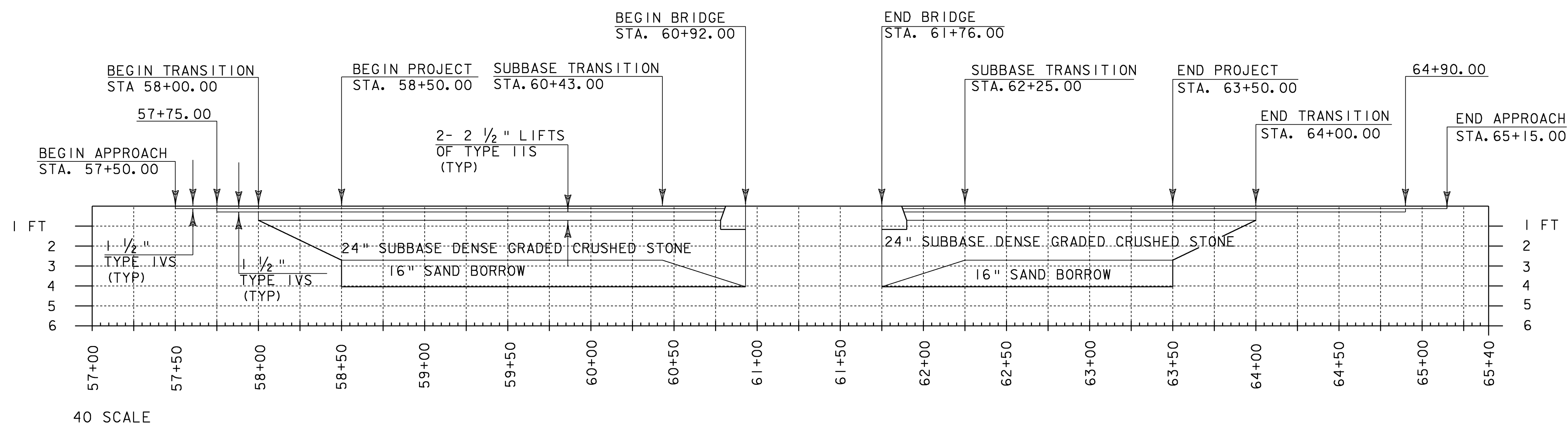
VT 102 CROSS SECTIONS (10)

PROJECT NAME:	CANAAN	PROJECT NUMBER:	ER ST 0271 (16)
FILE NAME:	/str2/04c098/x04c098bdr.dgn	PLOT DATE:	18-AUG-2008
PROJECT LEADER:	EVANS-MONGEON	DRAWN BY:	HUSK
DESIGNED BY:	SCRIBNER	CHECKED BY:	SCRIBNER
x04c098r.xsl0.1		SHEET 61	OF 66

BANKING DIAGRAM



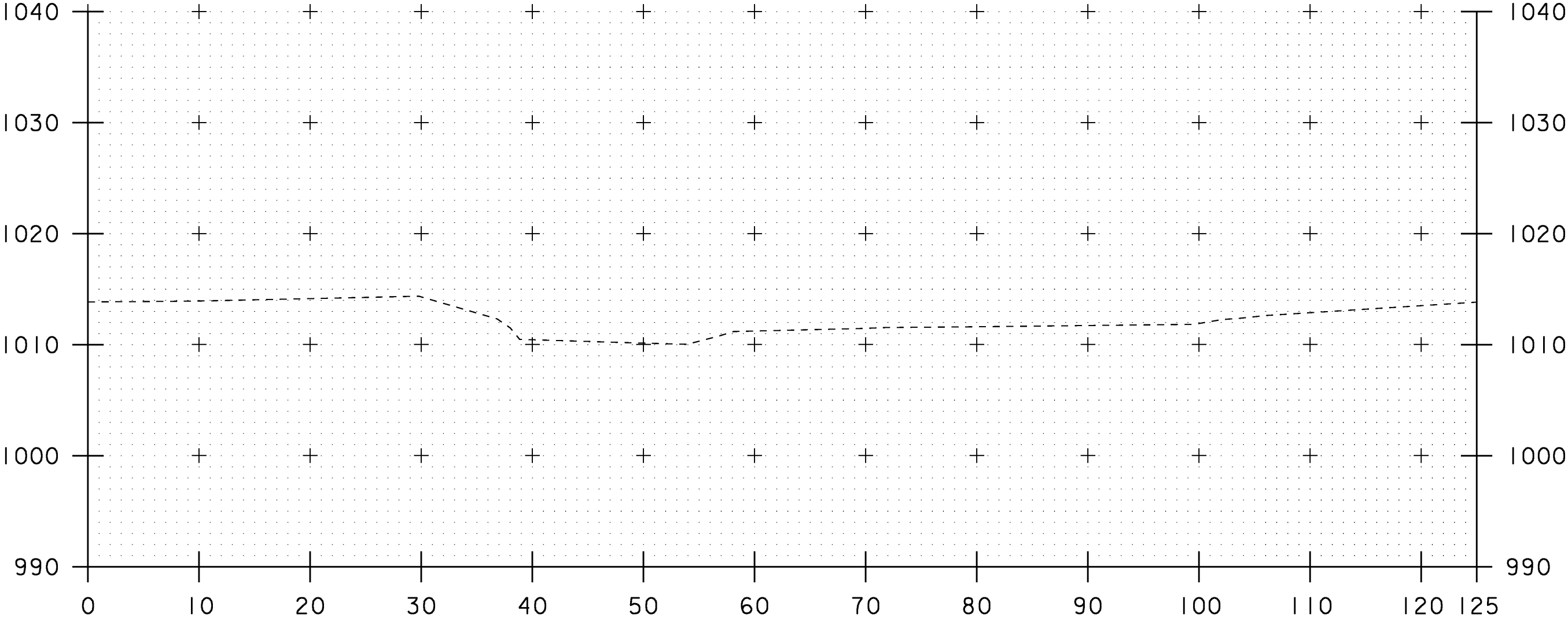
MATERIAL TRANSITIONS



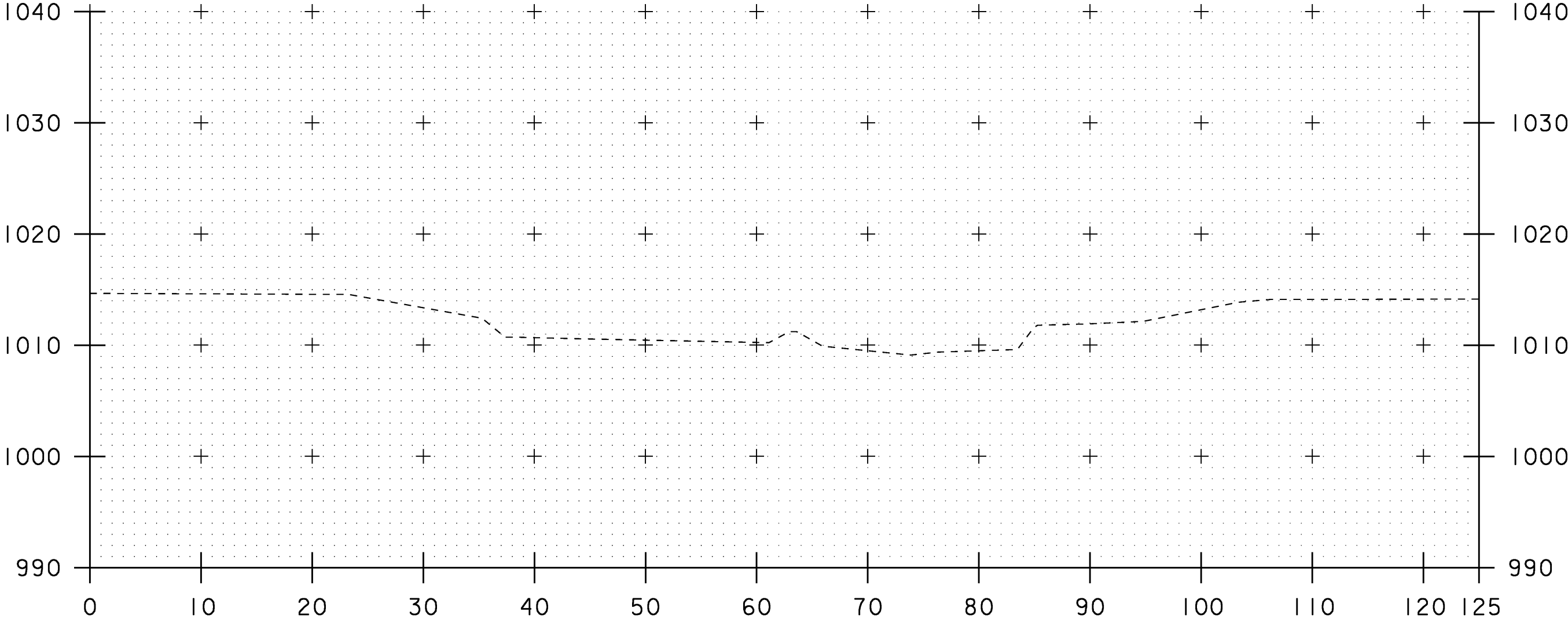
BANKING DIAGRAM & MATERIAL TRANSITION

PROJECT NAME: CANAAN
PROJECT NUMBER: ER ST 0271 (16)

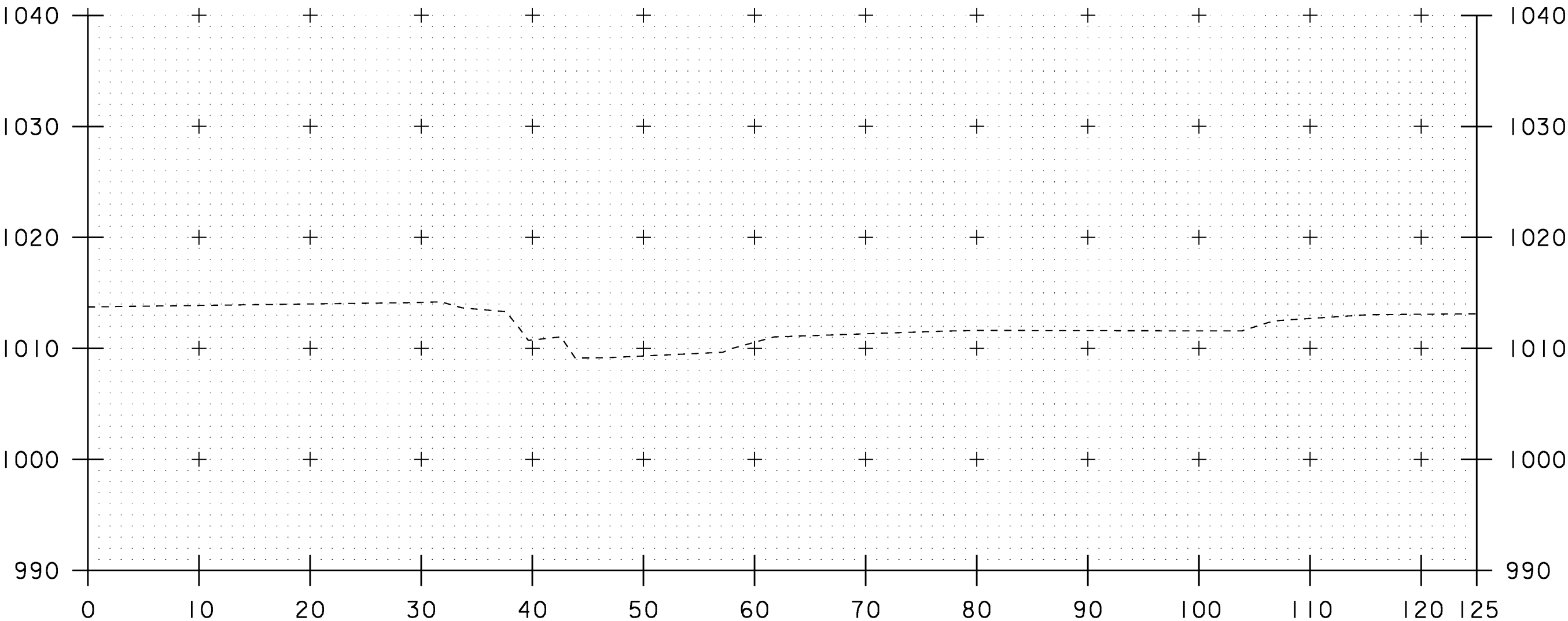
FILE NAME: /str2/04c098/x04c098xs.dgn PLOT DATE: 02-SEP-2008
PROJECT LEADER: EVANS-MONGEON DRAWN BY: HUSK
DESIGNED BY: SCRIBNER CHECKED BY: SCRIBNER
x04c098pfil SHEET 62 OF 66



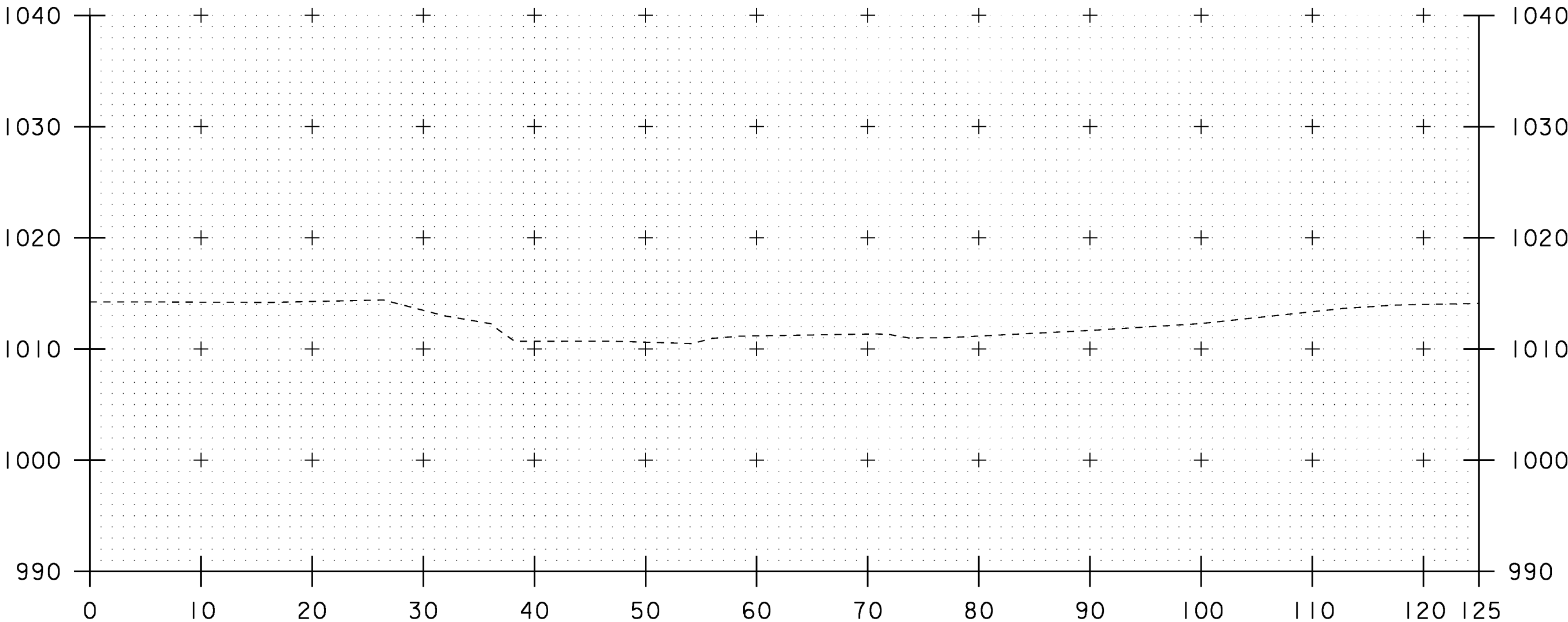
15+25



15+75



15+00

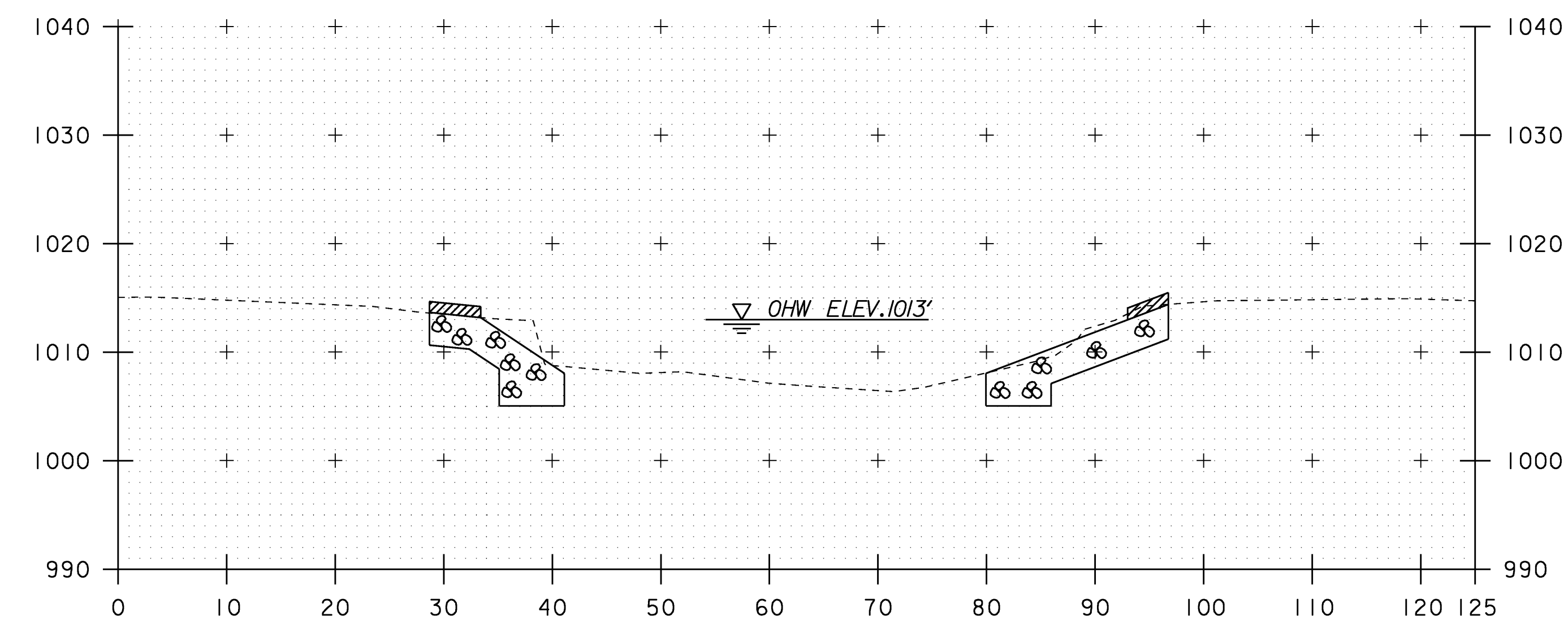


15+50

SCALE 1" = 10'-0"

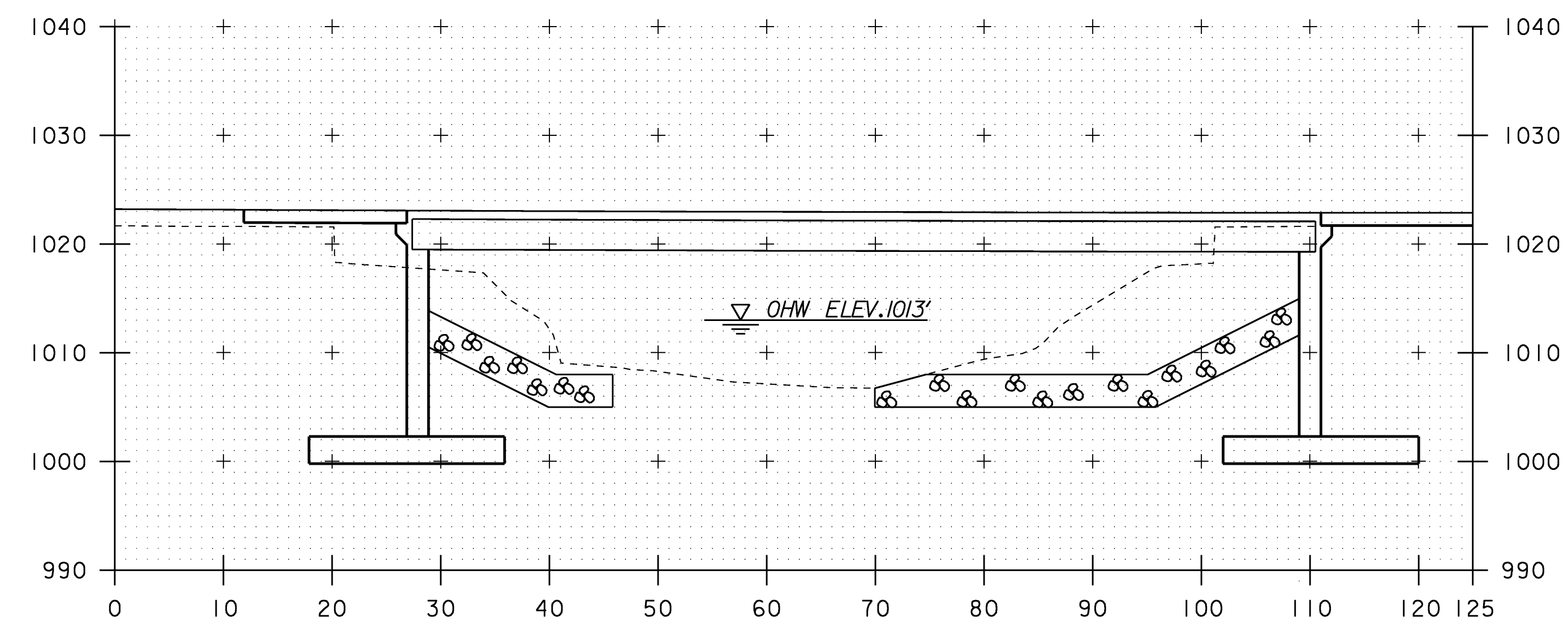
CHANNEL CROSS SECTIONS (1)

PROJECT NAME: CANAAN	
PROJECT NUMBER: ER ST 0271 (16)	
FILE NAME: /str2/04c098/x04c098bdr.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: EVANS-MONGEON	DRAWN BY: HUSK
DESIGNED BY: SCRIBNER	CHECKED BY: SCRIBNER
x04c098cxsl1	SHEET 63 OF 66



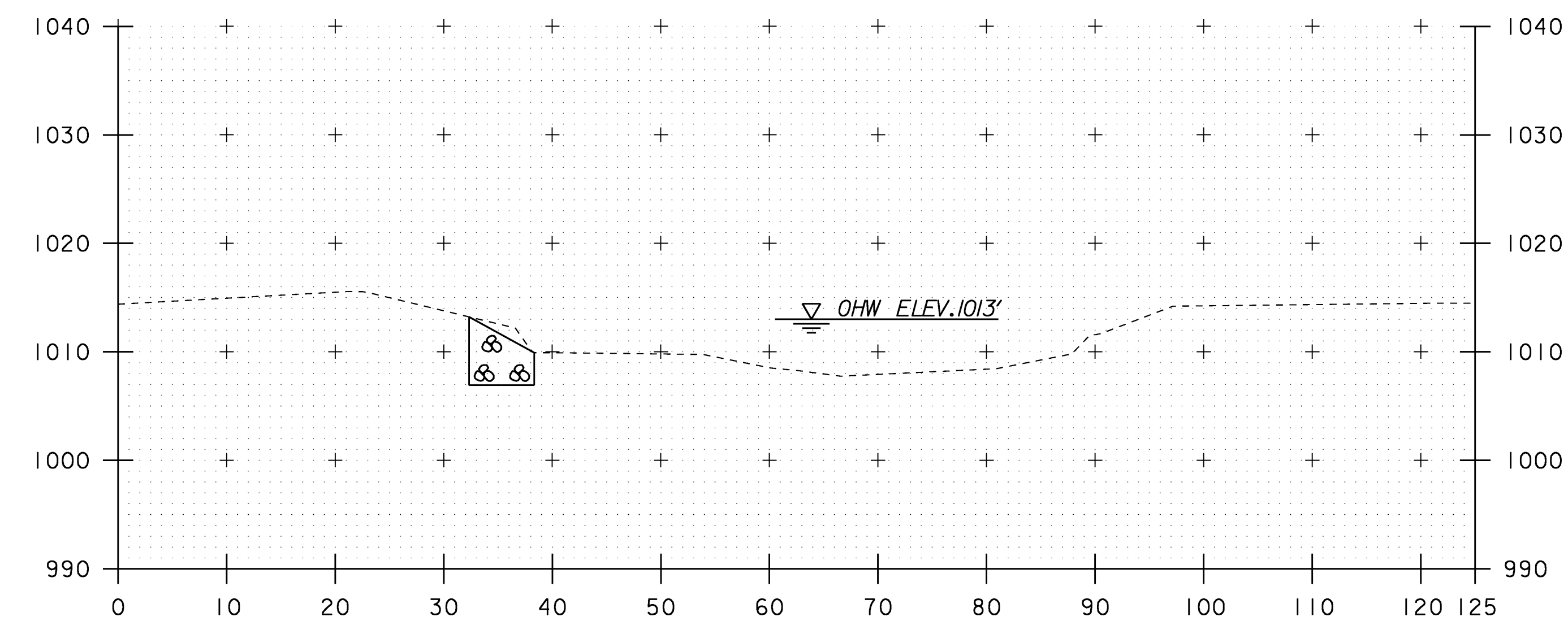
STA. 16+25 ABUT #2
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONE FILL, TYPE III
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
STA. 16+25 ABUT #1
BEGIN GRUBBING MATERIAL

16+25



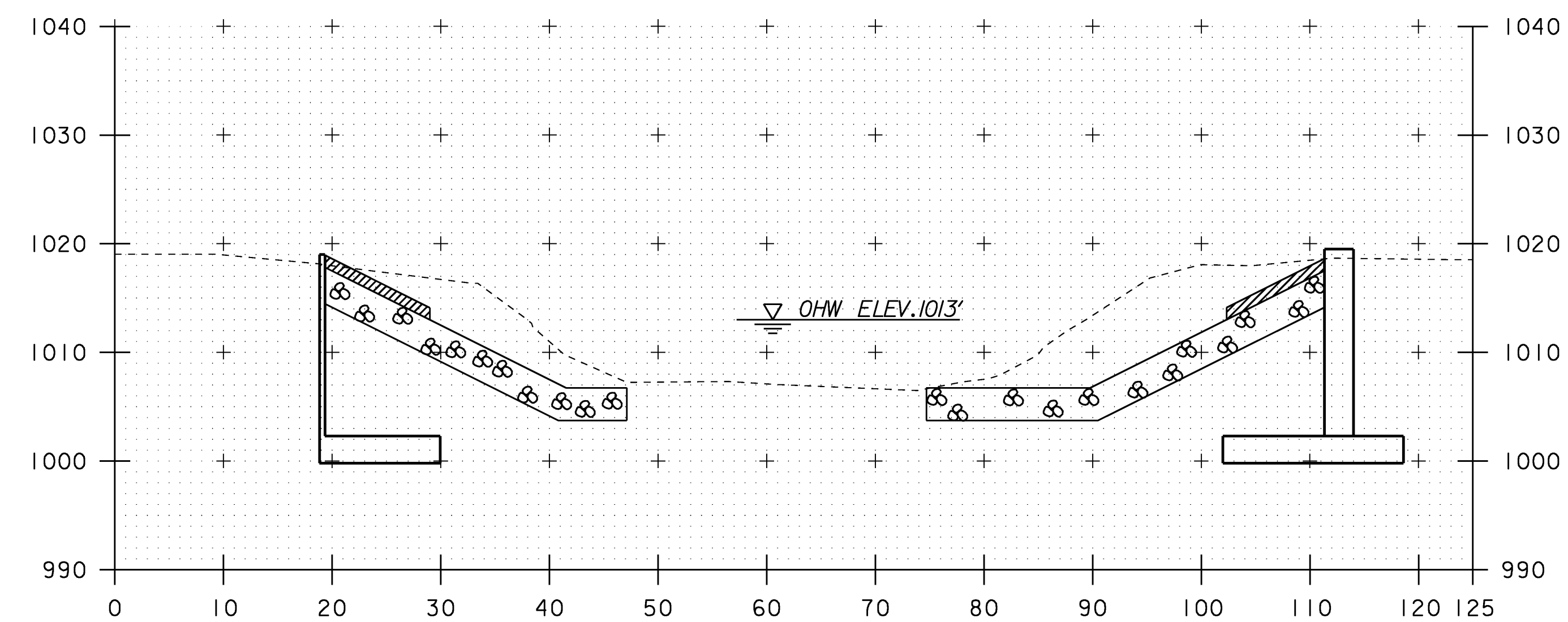
STA. 16+60 ABUT #1 & #2
END GRUBBING MATERIAL

16+75



STA. 16+00 ABUT #1
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONE FILL, TYPE III
BEGIN GEOTEXTILE UNDER STONE FILL

16+00



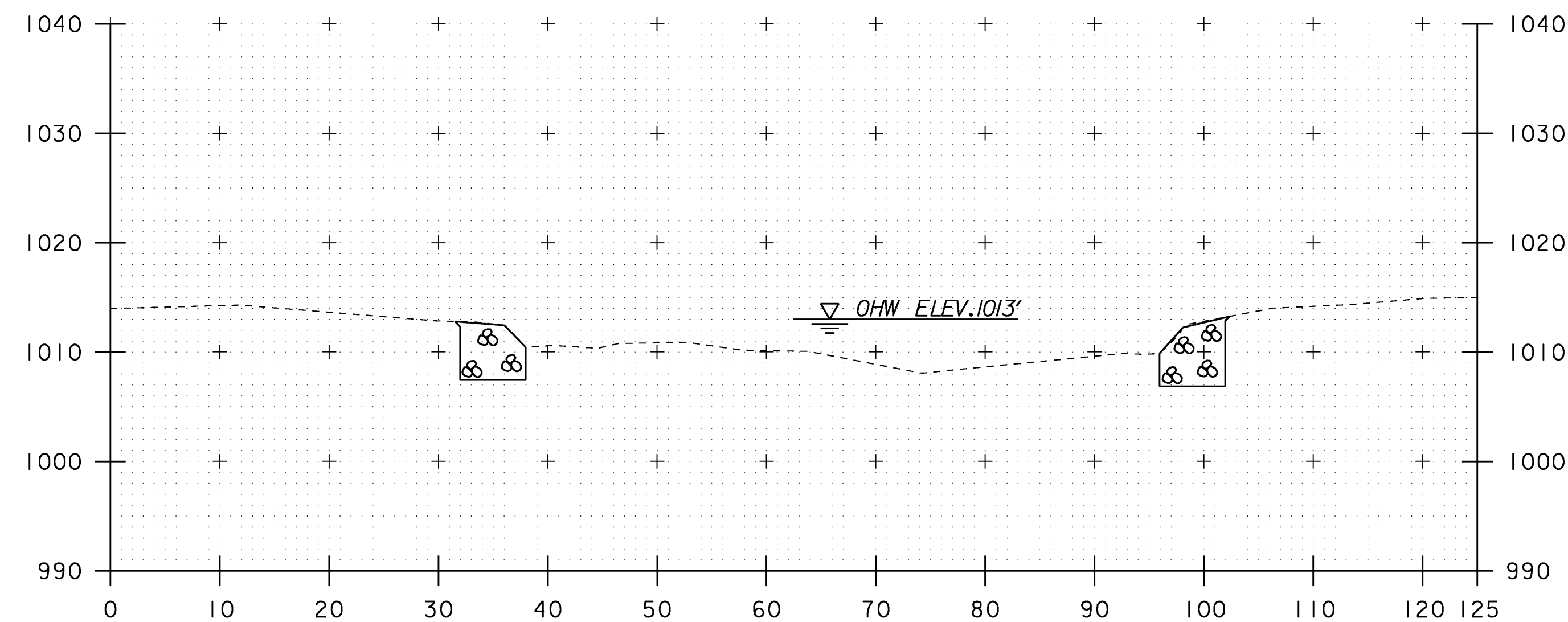
STA. 16+41 ABUT #1
BEGIN COFFERDAM EXCAVATION EARTH
BEGIN LIGHTWEIGHT
BACKFILL PRODUCT
STA. 16+40 ABUT #2
BEGIN COFFERDAM EXCAVATION EARTH
BEGIN LIGHTWEIGHT
BACKFILL PRODUCT

16+50

CHANNEL CROSS SECTIONS (2)

PROJECT NAME:	CANAAN
PROJECT NUMBER:	ER ST 0271(16)
FILE NAME:	/str2/04c098/x04c098bdr.dgn
PLOT DATE:	18-AUG-2008
PROJECT LEADER:	EVANS-MONGEON
DRAWN BY:	HUSK
DESIGNED BY:	SCRIBNER
CHECKED BY:	SCRIBNER
x04c098cxs2.l	SHEET 64 OF 66

SCALE 1" = 10'-0"

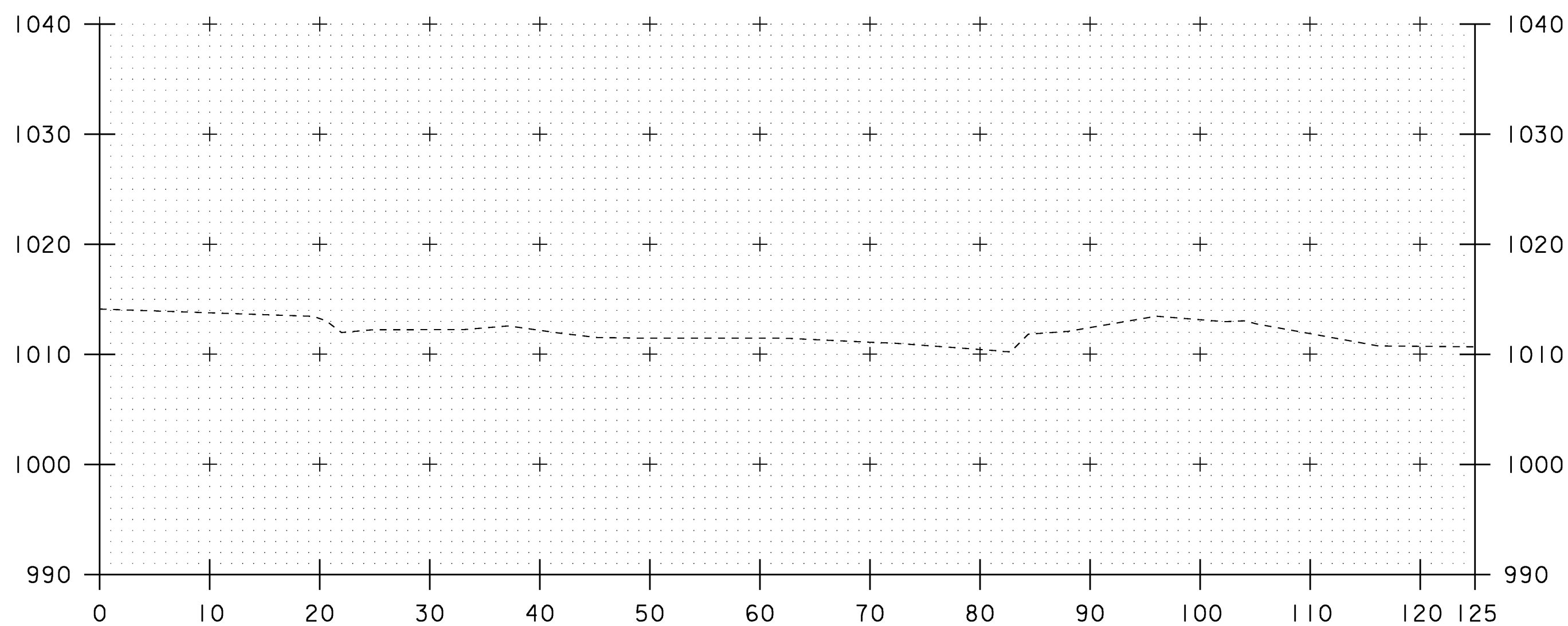


STA. 17+25 ABUT #1 & #2
END GRUBBING MATERIAL
END GEOTEXTILE UNDER STONE FILL
END UNCLASSIFIED CHANNEL EXCAVATION
END STONE FILL, TYPE III

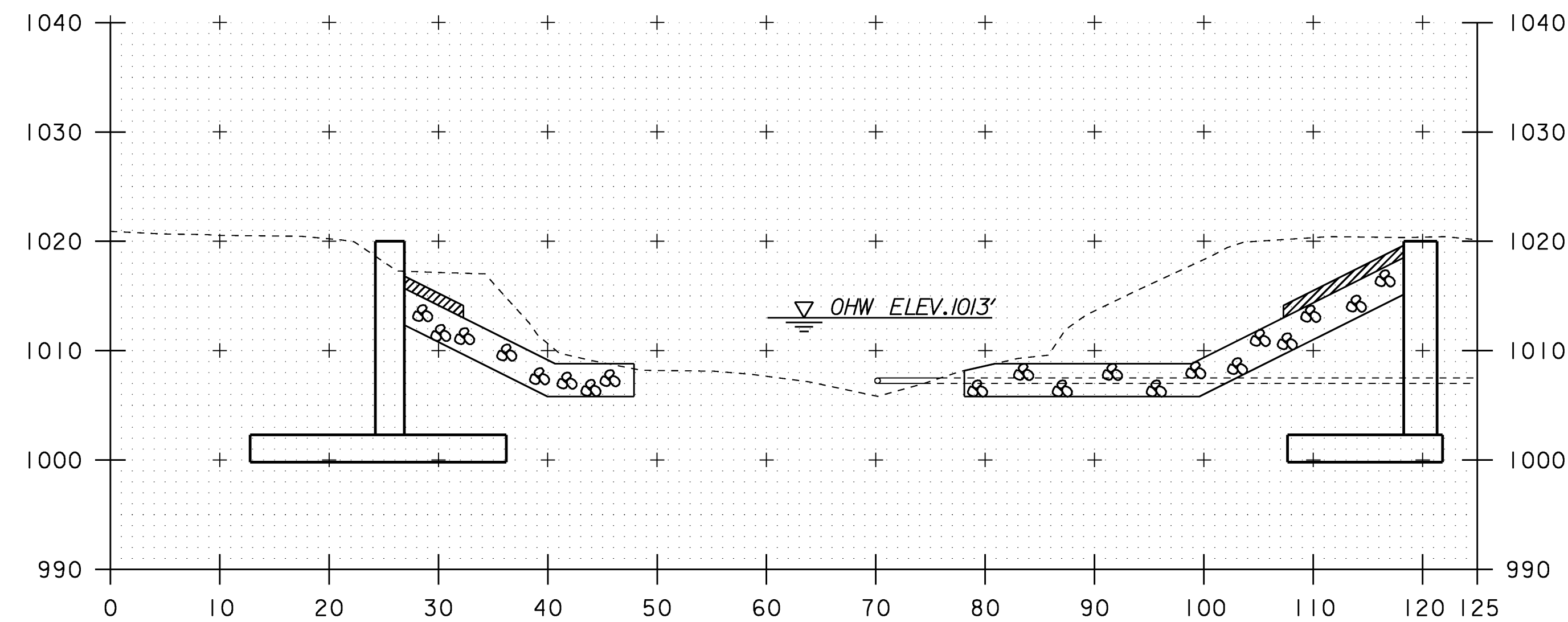
STA. 17+12 ABUT #1
END COFFERDAM EXCAVATION EARTH
END LIGHTWEIGHT
BACKFILL PRODUCT

STA. 17+08 ABUT #2
END COFFERDAM EXCAVATION EARTH
END LIGHTWEIGHT
BACKFILL PRODUCT

17+25

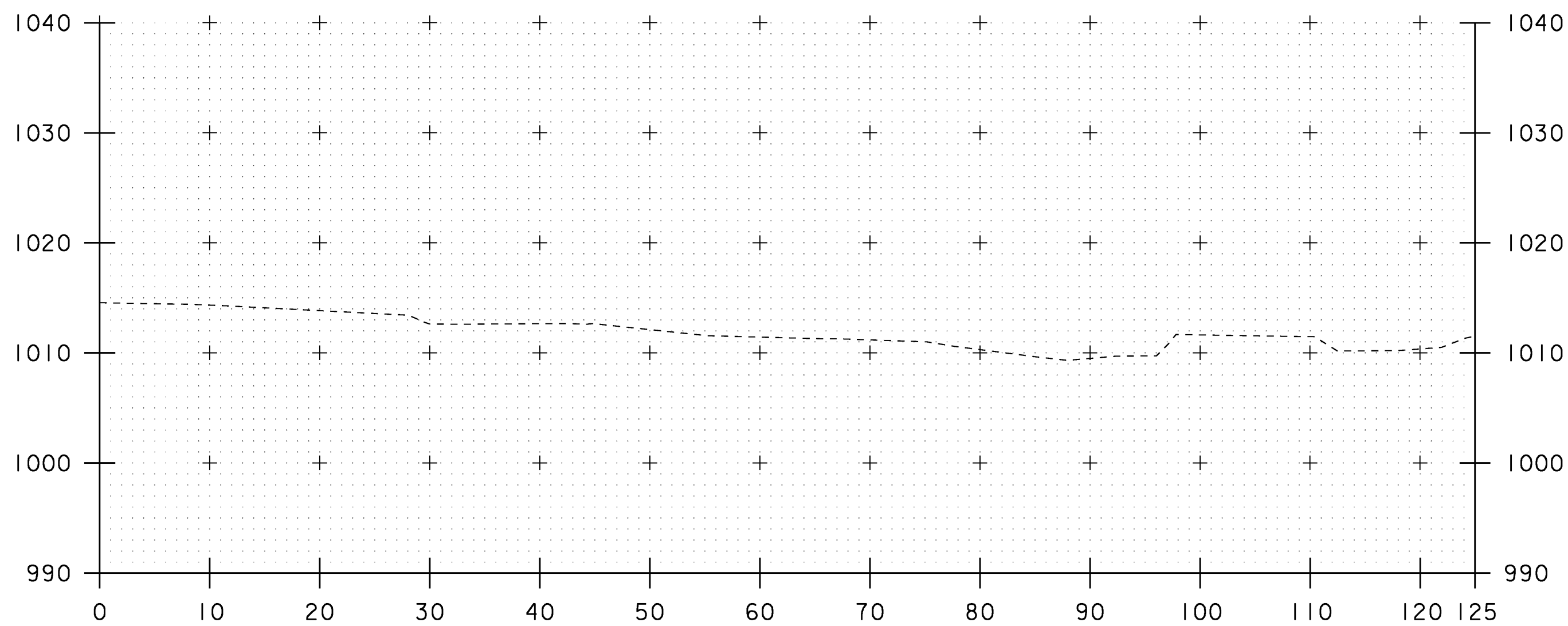


17+75



STA. 16+95 ABUT #1 & #2
BEGIN GRUBBING MATERIAL

17+00



17+50

SCALE 1" = 10'-0"

CHANNEL CROSS SECTIONS (3)

PROJECT NAME: CANAAN

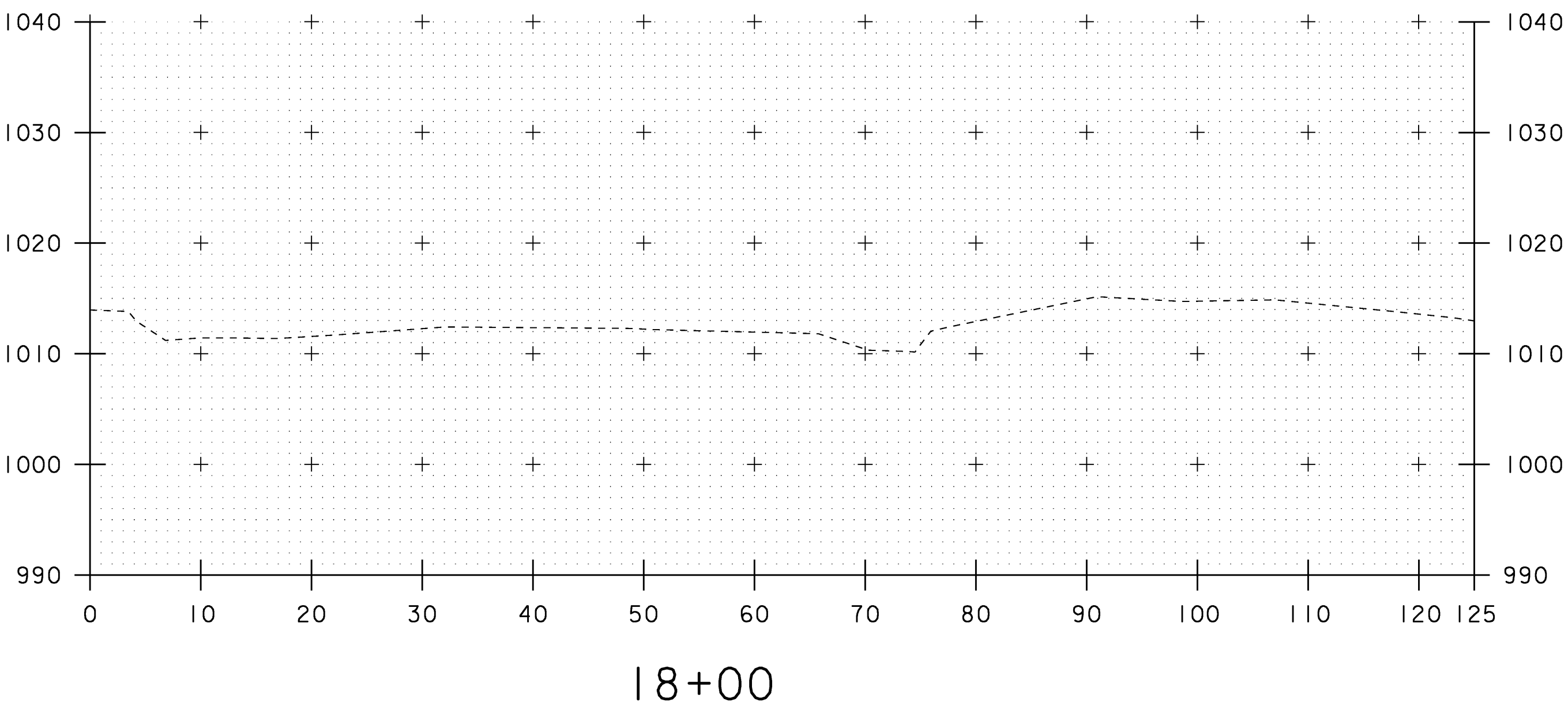
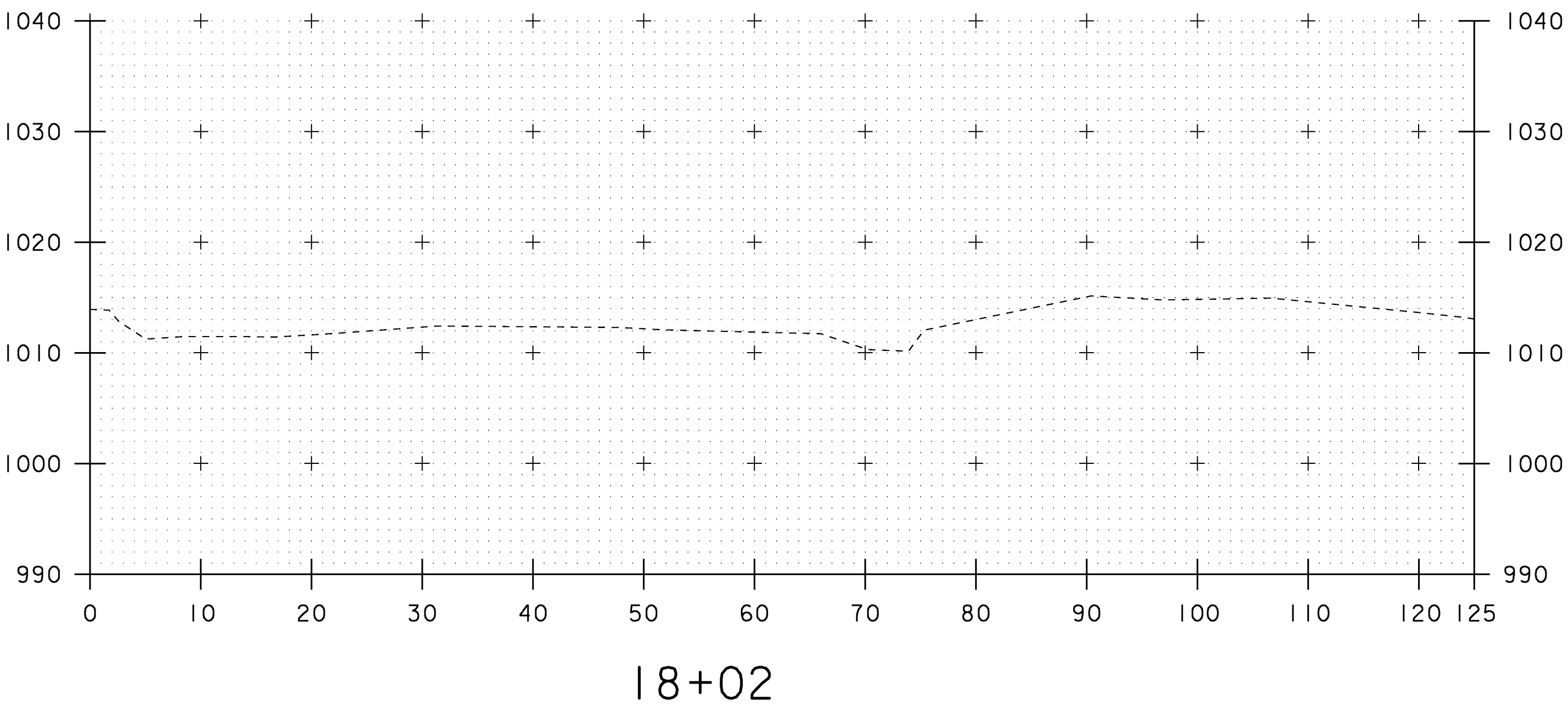
PROJECT NUMBER: ER ST 0271 (16)

FILE NAME: /str2/04c098/x04c098bdr.dgn PLOT DATE: 18-AUG-2008

PROJECT LEADER: EVANS-MONGEON DRAWN BY: HUSK

DESIGNED BY: SCRIBNER CHECKED BY: SCRIBNER

x04c098cxs3.1 SHEET 65 OF 66



SCALE 1" = 10'-0"

CHANNEL CROSS SECTIONS (4)

PROJECT NAME: CANAAN	
PROJECT NUMBER: ER ST 0271 (16)	
FILE NAME: /str2/04c098/x04c098bdr.dgn	PLOT DATE: 18-AUG-2008
PROJECT LEADER: EVANS-MONGEON	DRAWN BY: HUSK
DESIGNED BY: SCRIBNER	CHECKED BY: SCRIBNER
x04c098cxs4.l	SHEET 66 OF 66



State of Vermont
PDD/Structures Design Section
National Life Building – Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

(phone)

802-828-2621

(fax)

802-828-3566

(tdd)

800-253-0191

Agency of Transportation

See next sheet for instructions

DS Brown Company
300 East Cherry Street
North Baltimore, Ohio 45872

DATE: February 6, 2009

Project Name: Canaan Project #: ER ST 0271 (16)

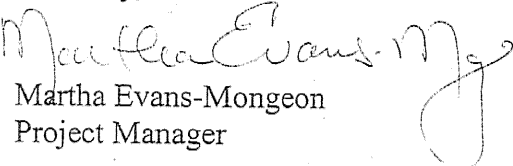
Structure Identification: VT 102, BR # 16, over the Willard Stream

The following Expansion bearing details Item # 531.11, Bearing Device Assembly, Elastomeric Pad for the above project Vendor's Job #25217 transmitted with your letter dated January 290, 2009 have been reviewed and are being returned herewith.

Sheets: GN1, 01, 02
are approved [X]

Sheets: _____
Are to be reconsidered (note comments in red) and resubmitted for final approval.

There shall be no fabrication done until all drawings and welding procedures are approved. You must provide notice to our fabrication inspector, Jeff Clark, as to the date fabrication represented by these drawings will begin. That notice must be received and acknowledged at least seven days prior to that date, as per Specification 506.03. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Martha Evans-Mongeon
Project Manager

Attachments

cc: [X] Resident Engineer w/prints, Doug Bumps
[X] Shop Inspector w/prints, Jeff Clark
[X] Contractor w/prints, Winterset, Inc.
[] Subcontractor – letter only
[X] Construction Division – letter only
[X] Materials & Research Section (C&IA Unit) – letter only
[X] Files (Structures & Central)

DSBROWN

Production Joint Welding Procedure Specification (D1.5-02)

Procedure No: B-FF-01

Date Issued: 3-28-08

Revision No: 0

Rev. Date: _____

Contractor (Fabricator) D. S. Brown Company

Prepared by: Brad Streeter, Quality Assurance Manager

1. Non-Fracture Critical ☒ Fracture Critical ☐

WPS Expiration Date: 3-6-13

2. Qualified in accordance with: AWS D1.5:2002 (5.13)

Referenced PQR No(s): PQR-FCAW-01-(08)

Referenced FWST No(s): N/A

3. Material specification(s) ASTM A709 Gr. 36, 50, 60W

For DOT Approval

4. Material Thickness (ts) Unlimited

Welding process FCAW

6. Manual ☐ , machine ☐ , or semiautomatic ☒

7. Position(s) of welding 1F, 2F

8. Filler metal specification AWS A5.20

9. Filler metal class and brand name E71T-1CH8 (UltraCore71C)

10. Flux class & brand N/A , Type N/A

11. Shielding gas 100% CO2 Flow rate 45 CFH

12. Single pass ☒ Or multiple pass ☒

13. Single arc ☒ Or multiple arc ☐

14. Welding Current DCEP

15. Polarity Reverse

16. Welding progression stringers

17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)

18. Postheat treatment N/A

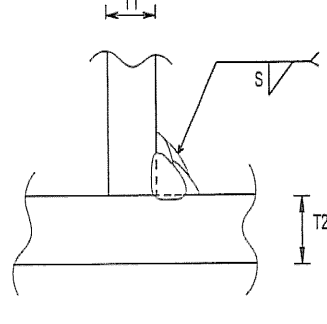
19. Calculated Heat Input (KJ/in) Min 32.2 KJ/in Max 45.8 KJ/in

20. Electrode extension (electrical stickout) 3/4"

Weld size (in)	Pass No(s)	Electrode Size (in)	Welding Process Variables		Travel Speed (IPM)
			AMPS/WFS*	VOLTS	
**1/4"	1	1/16"	257-295	26.1-29.5	11.4-12.5
5/16"	1	1/16"	257-295	26.1-29.5	11.4-12.5
3/8"	2-3	1/16"	257-295	26.1-29.5	11.4-12.5
7/16"	3-5	1/16"	257-295	26.1-29.5	11.4-12.5
1/2"	4-6	1/16"	257-295	26.1-29.5	11.4-12.5
5/8"	5-7	1/16"	257-295	26.1-29.5	11.4-12.5
3/4"	6-8	1/16"	257-295	26.1-29.5	11.4-12.5

Joint Detail (Fillet)

Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies

T2 = Varies

S = Weld Size

** T1 & T2 equal to or less than 3/4" for 1/4" welds.

* Wire feed speed may be used along with amperage (include chart)

Prepared By: _____ DSB QA Manager

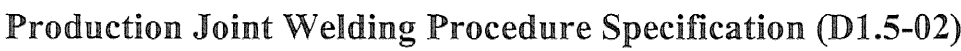
Project: _____

DSB Job: 25217-1104

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤3/4"	50°F	450°F
>3/4" to ≤1.5"	70°F	450°F
>1.5" to ≤5"	150°F	450°F
>2.5"	225°F	450°F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.



VTRANS
JWC
01/09/0

Joint Detail (Fillet)
 how all dimensions, weld sizes, passes, and AWS symbols

The diagram shows a cross-section of a fillet weld joining two plates. The weld is a convex fillet. Dimension T1 is the horizontal distance from the vertical centerline of the joint to the toe of the weld. Dimension T2 is the vertical distance from the horizontal centerline of the joint to the toe of the weld. Dimension S is the weld size, indicated by a line with a 45-degree angle pointing to the weld face.

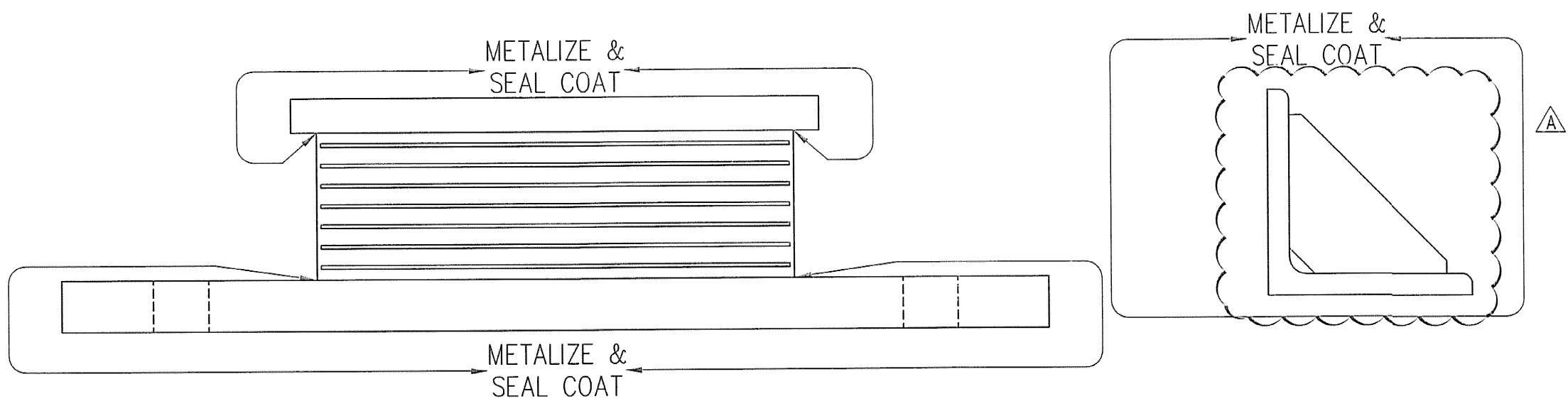
T1 = Varies
 T2 = Varies
 S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

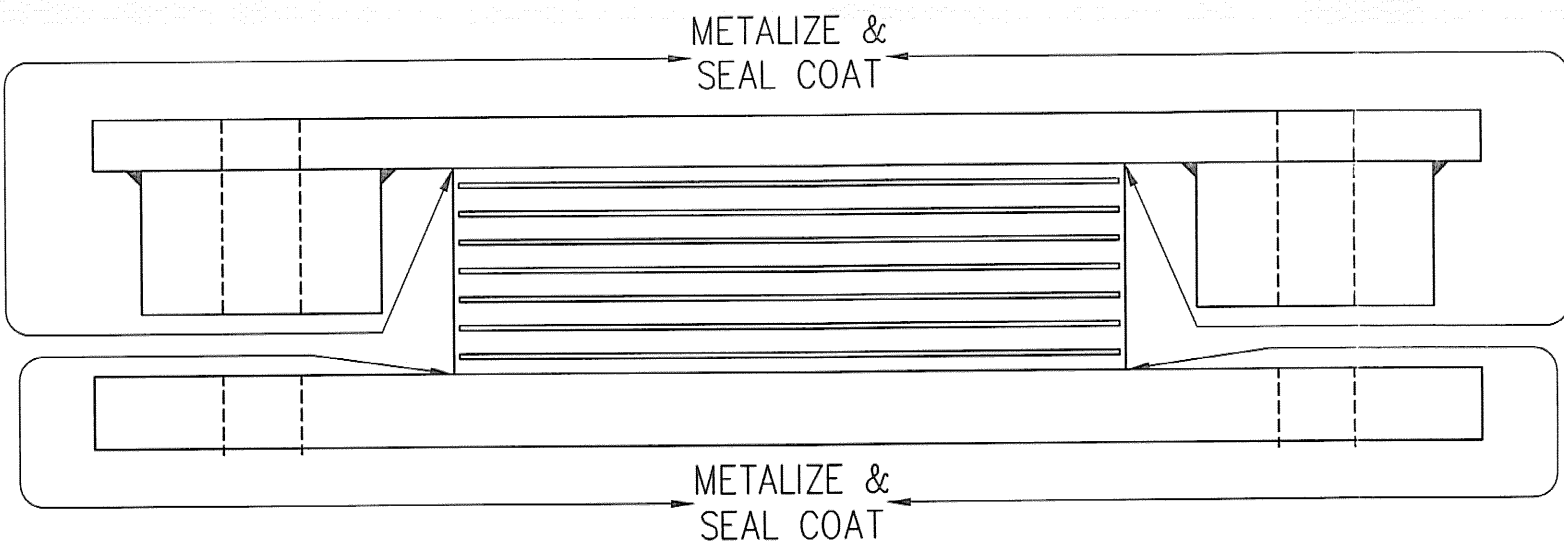
DSB Job: 25217-1104

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450 °F
>3/4" to ≤ 5"	70°F	450 °F
>1.5" to ≤ 5"	150°F	450 °F
>2.5"	225°F	450 °F



EXPANSION BEARING COATING LIMITS



FIXED BEARING COATING LIMITS

GENERAL NOTES:

1. PAD AND MATERIALS SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006 AND THE LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, (FOURTH EDITION, DATED 2007, AND ITS LATEST REVISIONS, CONTRACT PLANS, AND THE SPECIAL PROVISIONS. GENERAL SHOP PRACTICES, STRUCTURAL FABRICATION, WELDING AND ASSEMBLY SHALL BE GOVERNED BY ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.
2. THESE SHOP DRAWINGS ARE PREPARED IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS. THE D.S. BROWN COMPANY DOES NOT ACCEPT LIABILITY FOR THE DESIGN OF THE PRODUCTS DETAILED IN THESE SHOP DRAWINGS.
3. THE D.S. BROWN COMPANY TO SUPPLY ONLY THE PARTS SHOWN ON THESE DRAWINGS.
4. ALL STEEL SHALL BE PRODUCED IN THE UNITED STATES OF AMERICA.
5. THE BEARING SHALL BE SUBJECT 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.
6. THE TEMPERATURE OF THE STEEL ADJACENT TO THE ELASTOMER SHALL NOT EXCEED 93°C (200°F). TEMPERATURE SHALL BE CONTROLLED BY THE USE OF A TEMPERATURE INDICATING CRAYON OR OTHER DEVICES APPROVED BY THE ENGINEERS.
7. ALL CORNERS AND EDGES OF STEEL PLATES SHALL BE GROUND TO A 0.063" RADIUS.
8. ALL STRUCTURAL STEEL SURFACES TO BE METALIZED SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP5.
9. ALL SPECIFIED STEEL TO BE ZINC METALIZED IN ACCORDANCE WITH AWS C 2.18 SPECIFICATIONS TO A MINIMUM DRY FILM THICKNESS OF 6 MILS. THE ZINC METALIZED SHALL CONSIST OF 99.9% ZINC. EXTERIOR SURFACES SHALL BE SEALED WITH CARBOLINE SEALER "RUSTABOND" WITH A MINIMUM DRY FILM THICKNESS 2 MILS. SEE COATING LIMITS FOR LOCATIONS.

11.

TOLERANCE TABLE	
DESCRIPTION (ELASTOMER)	TOLERANCE
OVERALL VERTICAL DIMENSION	+ 1/8", -0
ELASTOMERIC BEARING DESIGN THICKNESS > 1.250"	+ 1/4", -0
ELASTOMERIC BEARING PLAN ≤ 36"	+ 1/4", -0
ELASTOMERIC COVER TOP & BOTTOM	+ 1/8", -0
ELASTOMERIC COVER SIDES	+ 1/8", -0
THICKNESS OF INDIVIDUAL LAYERS OF ELASTOMER (LAMINATED BEARINGS ONLY) AT ANY POINT WITHIN THE BEARING	± 1/8"
VARIATION FROM A PLANE PARALLEL TO THE THEORETICAL SURFACE (AS DETERMINED BY MEASUREMENTS AT THE EDGE OF THE BEARINGS)	
TOP	0.005 RAD
SIDES	± 1/4"
POSITION OF EXPOSED CONNECTION MEMBERS	± 1/8"
EDGE COVER OF EMBEDDED LAMINATES OF CONNECTION MEMBERS	+ 1/8", -0
SIZE OF HOLES, SLOTS, OR INSERTS	± 1/8"
POSITION OF HOLES, SLOTS, OR INSERTS	± 1/8"

MASONRY PL. PLAN DIMENSIONS	±1/4"
MASONRY PL. UNDERSIDE SURFACE FLATNESS	CLASS C
MASONRY PL. UPSIDE SURFACE FLATNESS	CLASS A
MASONRY PL. THICKNESS	±1/16"
HOLE LOCATION	±1/16"
SOLE PL. PLAN DIMENSIONS	±1/16" A
SOLE PL. UNDERSIDE SURFACE FLATNESS	CLASS A
SOLE PL. UPSIDE SURFACE FLATNESS	CLASS C
SOLE PL. BEVEL SLOPE	± 0.002 RAD
SOLE PL THICKNESS	±1/16"
MASONRY & SOLE PLATE SURFACE FINISH (BEARING SIDE)	125 RMS

FLATNESS TOLERANCE		
CLASS	X	NOM. DIM.
A		0.0005
B		0.001
C		0.002

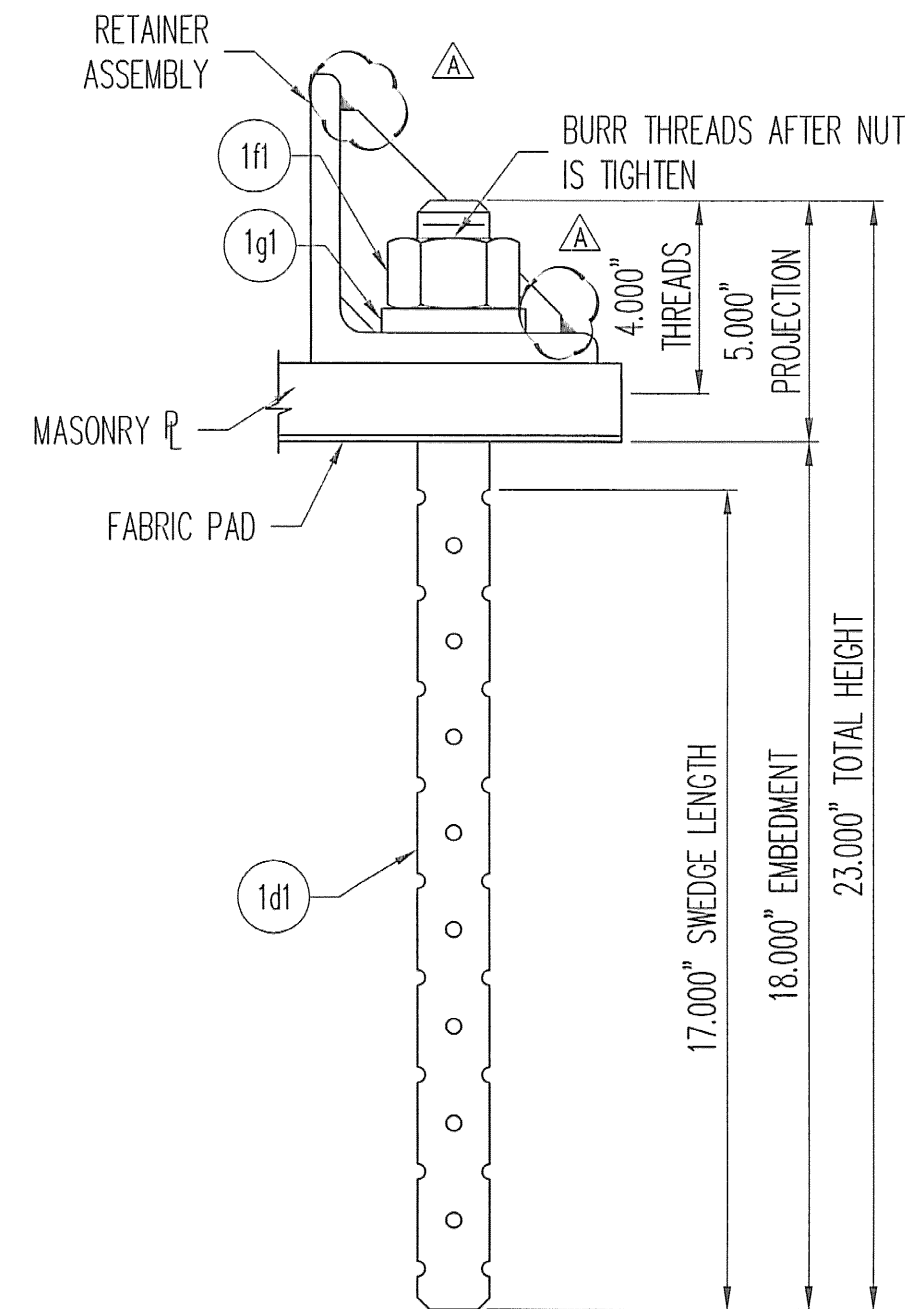
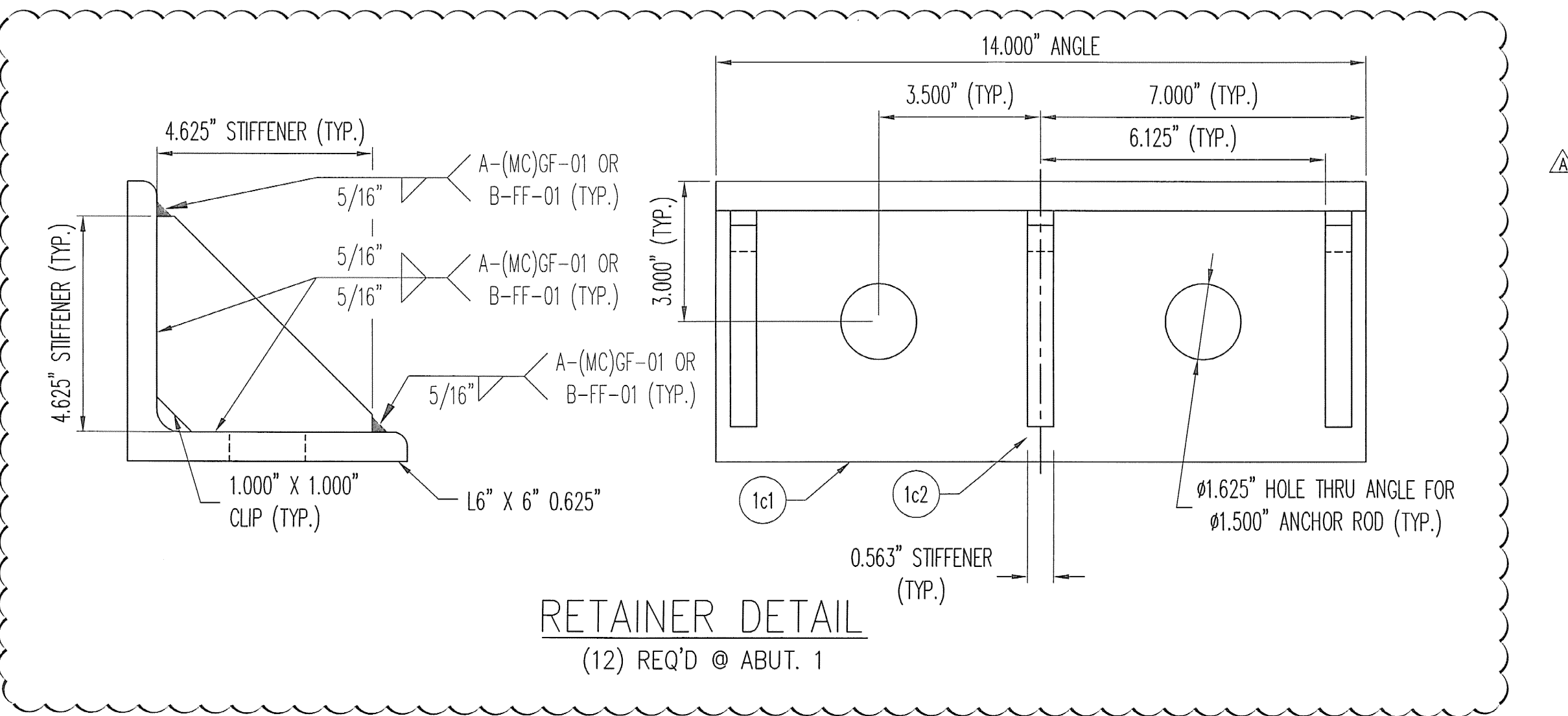
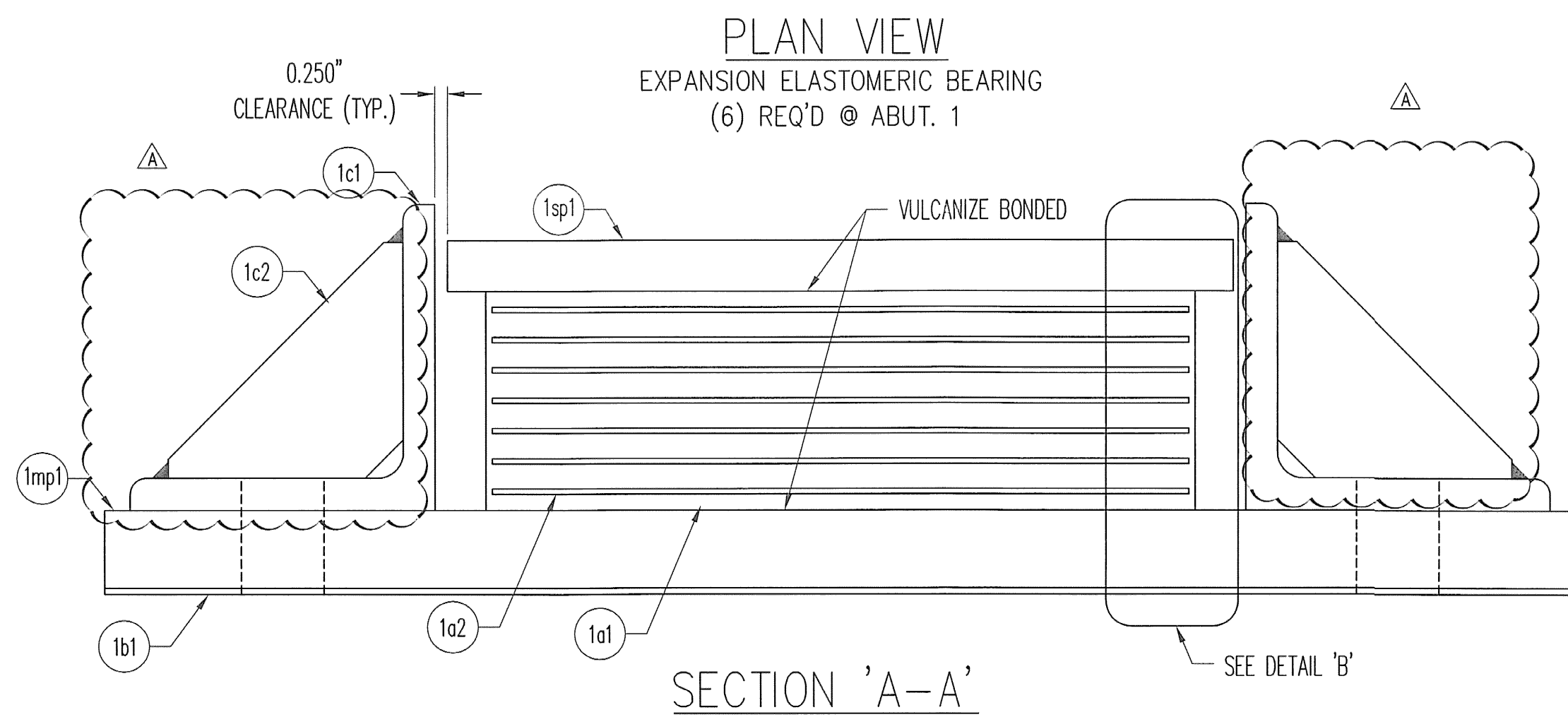
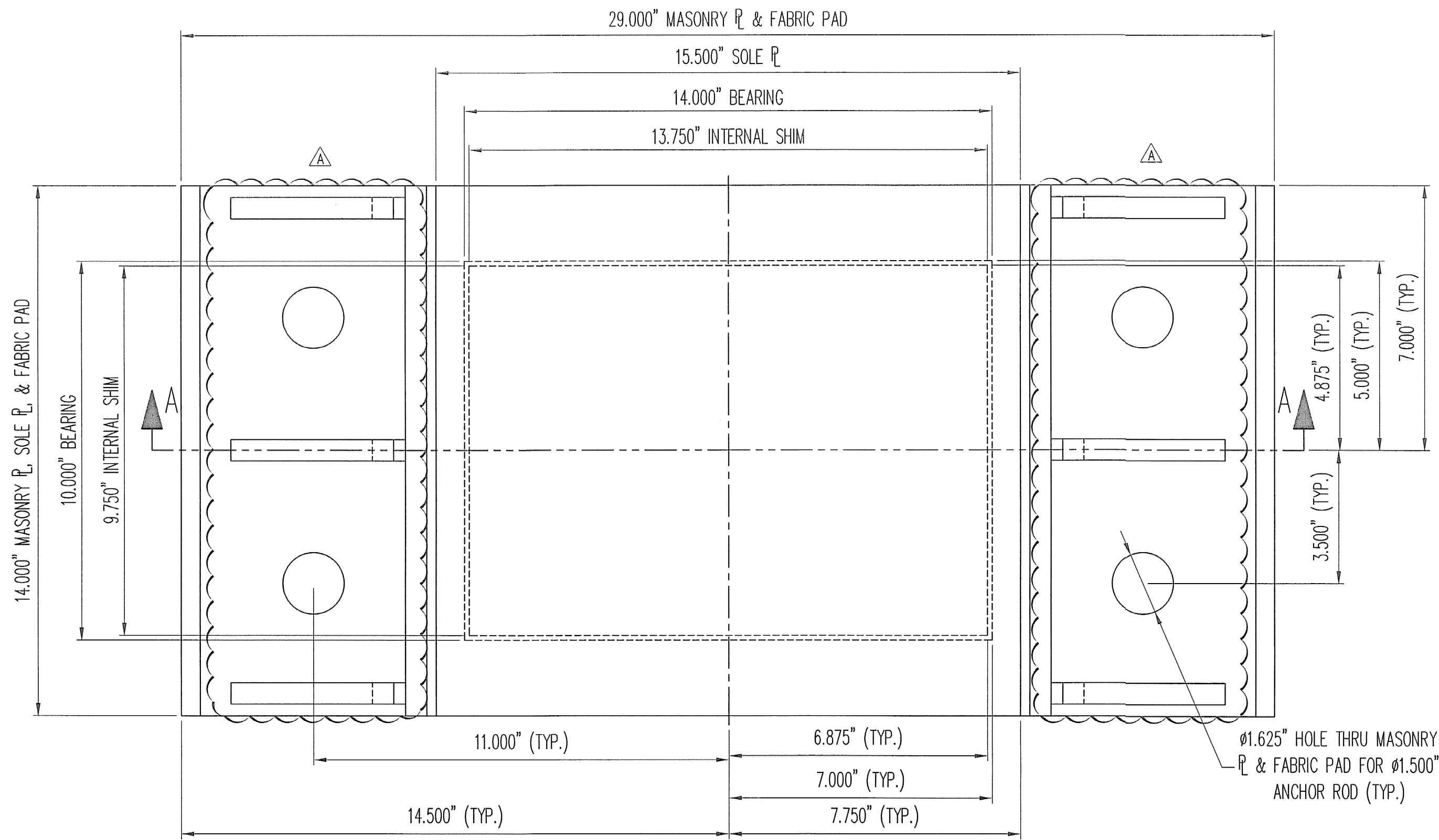
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CHKD BY: SSS OK'D BY: MSM
DATE: 12/15/08
BY: DAE DATE: 2/3/09



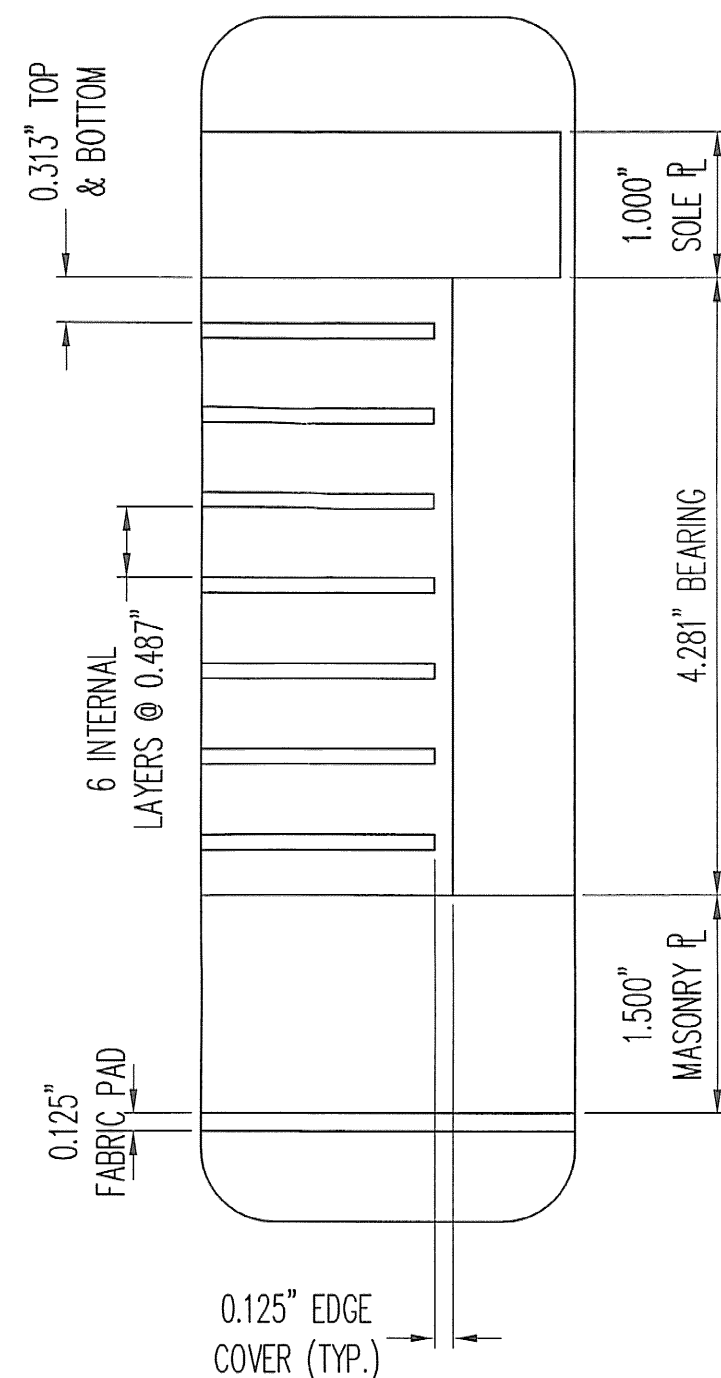
THE D.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
WWW.DSBROWN.COM



REVIEWER'S COMMENTS	1/27/09	DA	DAE
DESCRIPTION	DATE	DET.	CKD.
LOCATION — VT 102 (MAJOR COLLECTOR)	ITEM	QUANTITY	
PROJECT NO. — ER ST 0271 (16)	—	—	
BRIDGE — 16	—	—	
—	—	—	
—	—	—	
—	—	—	
P.O. NO. — C2223	—	—	
DESIGNER — VT DOT	—	—	
CUSTOMER — WINTERSET INC.	—	—	
DESCRIPTION: GENERAL NOTES & COATING LIMITS ESSEX CO., VT	SCALE: N.T.S. PROJECT NUMBER: 25217	DRAWN BY: DA PRODUCT CODE: 1104	CHECKED BY: DAE RELEASE: 1
	DATE: 12/15/08		SHEET: GN1



ANCHOR ROD DETAIL

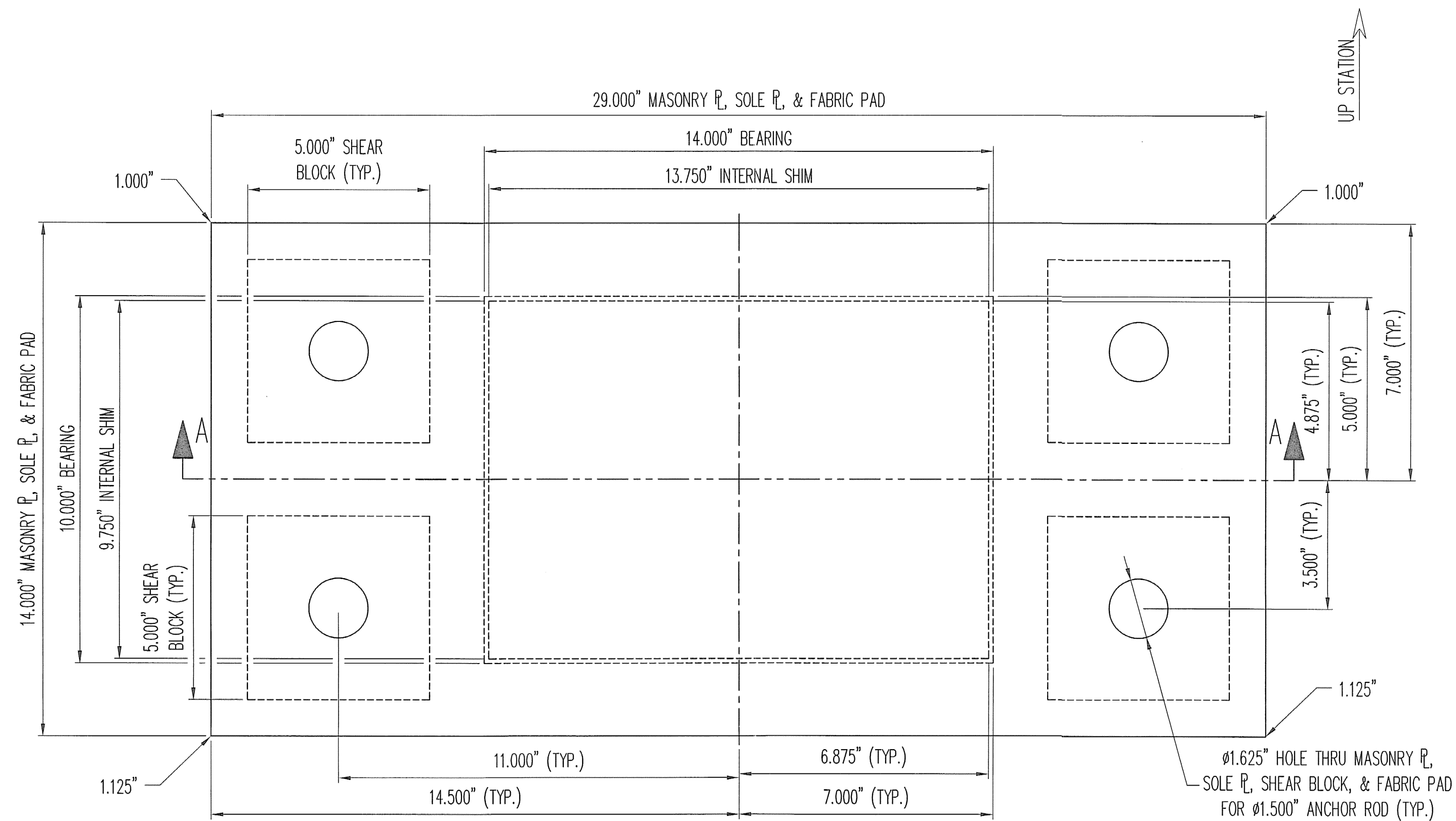


DETAIL 'B'

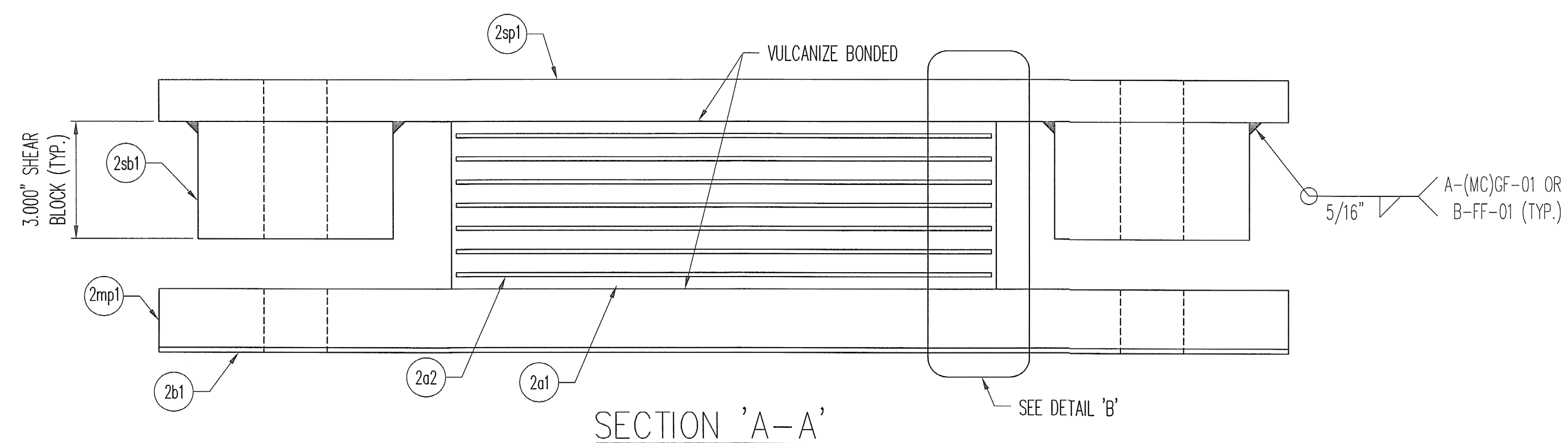
MK	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	REV
1A	6	ELASTOMERIC BEARING				-
1a1	6	4.281" X 14.000"	NATURAL RUBBER	10.000"	60+/-5 DURO GR.4	-
1a2	42	12 GA. X 13.750"	A1011 GR. 36	9.750"	PLAIN	-
1mp1	6	1.500" X 29.000"	A709 GR 50	14.000"	METALIZE, SEAL	A
1sp1	6	1.000" X 15.500"	A709 GR 50	14.000"	METALIZE, SEAL	A
1B	6	FABRIC PAD				-
1b1	6	0.125" X 29.000"	AASHTO (LRFD) 18.10.2	14.000"	HOLES	-
1C	12	RETAINER				-
1c1	12	L6 X 6 X 5/8	A709 GR 50 OR A992	14.000"	1.625" Holes; METALIZE, SEAL	A
1c2	36	0.563" X 4.625"	A709 GR 50 OR A992	4.625"	CLIPPED; METALIZE, SEAL	A
1D	24	SWEDGE ROD				-
1d1	24	Ø1.500" X 23.000" SWEDGED ROD	A449		4" THREADS, 17" SWEDGE; A153-HDG	-
1F	24	HEAVY HEX NUT				-
1f1	24	Ø1.500" HEX NUT	A563-DH OR A194-2H		A153-HDG	-
1G	24	WASHER PLATE				-
1g1	24	0.500" X 3.000"	A709 GR 50	3.000"	1.563" HOLE @ CENTER; A123-HDG	A
					1/28/09 11:18:46 AM	

SEE SHT. GN1 FOR GENERAL NOTES & COATING LIMITS.

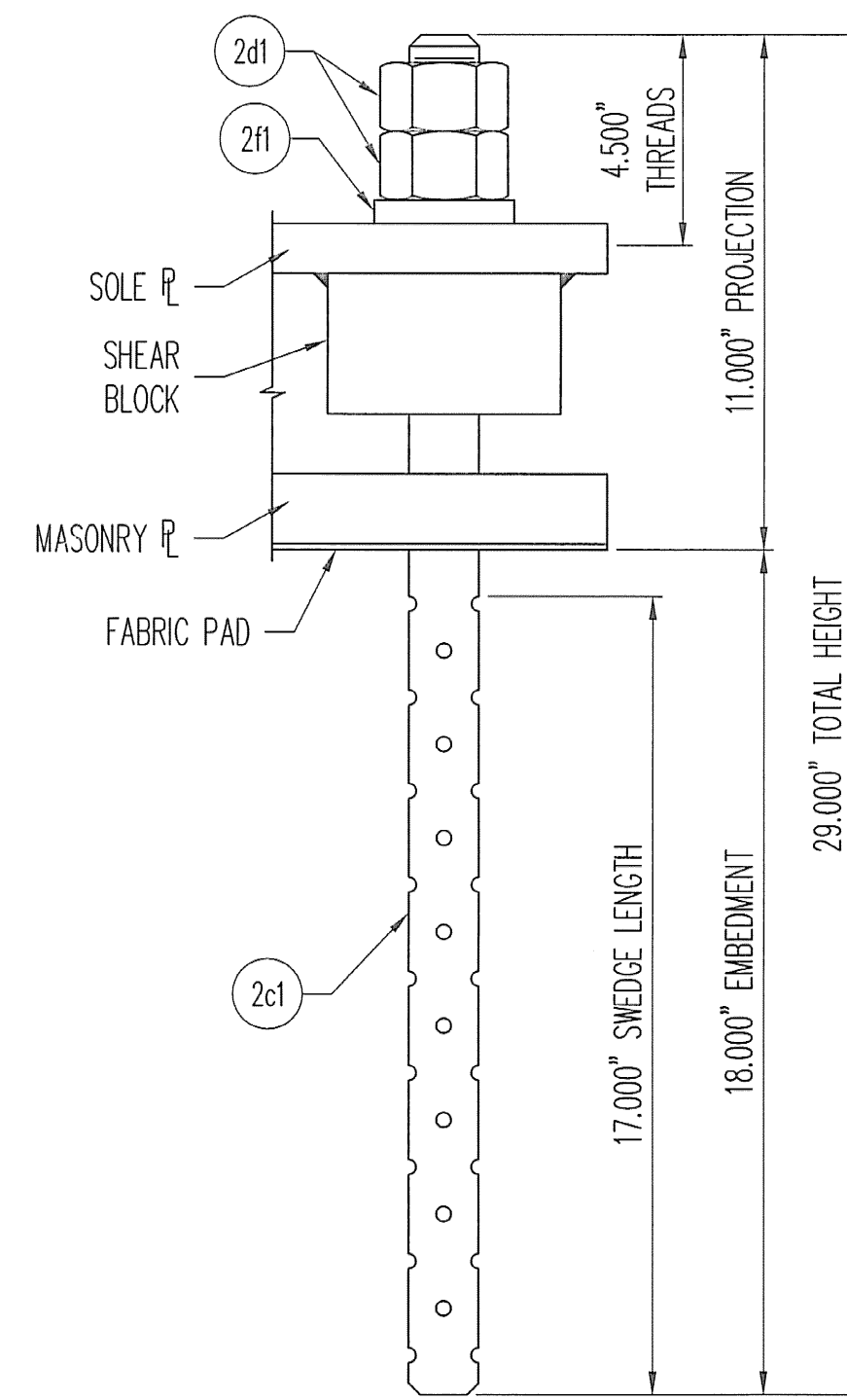
 THE D.S. BROWN COMPANY 300 E. CHERRY STREET NORTH BALTIMORE, OHIO 45872 419.257.3561 FAX: 419.257.0332 WWW.DSBROWN.COM 	REVIEWERS COMMENTS		1/27/09		DA	DAE
	LOCATION — VT 102 (MAJOR COLLECTOR)		ITEM		QUANTITY	
	PROJECT NO. — ER ST 0271 (16)		25217-1104-1		6 OF 6	
	BRIDGE — 16		—		—	
	—		—		—	
	—		—		—	
	P.O. NO. — C2223		—		—	
	DESIGNER — VT DOT		—		—	
	CUSTOMER — WINTERSET INC.		—		—	
			—		—	
DESCRIPTION:		SCALE:	DRAWN BY:	CHECKED BY:	DATE:	
VERSIFLEX ELASTOMERIC BEARING ESSEX CO., VT		N.T.S.	DA	DAE	12/15/08	—
		PROJECT NUMBER	PRODUCT CODE		RELEASE	SHEET
		25217	1104		1	01



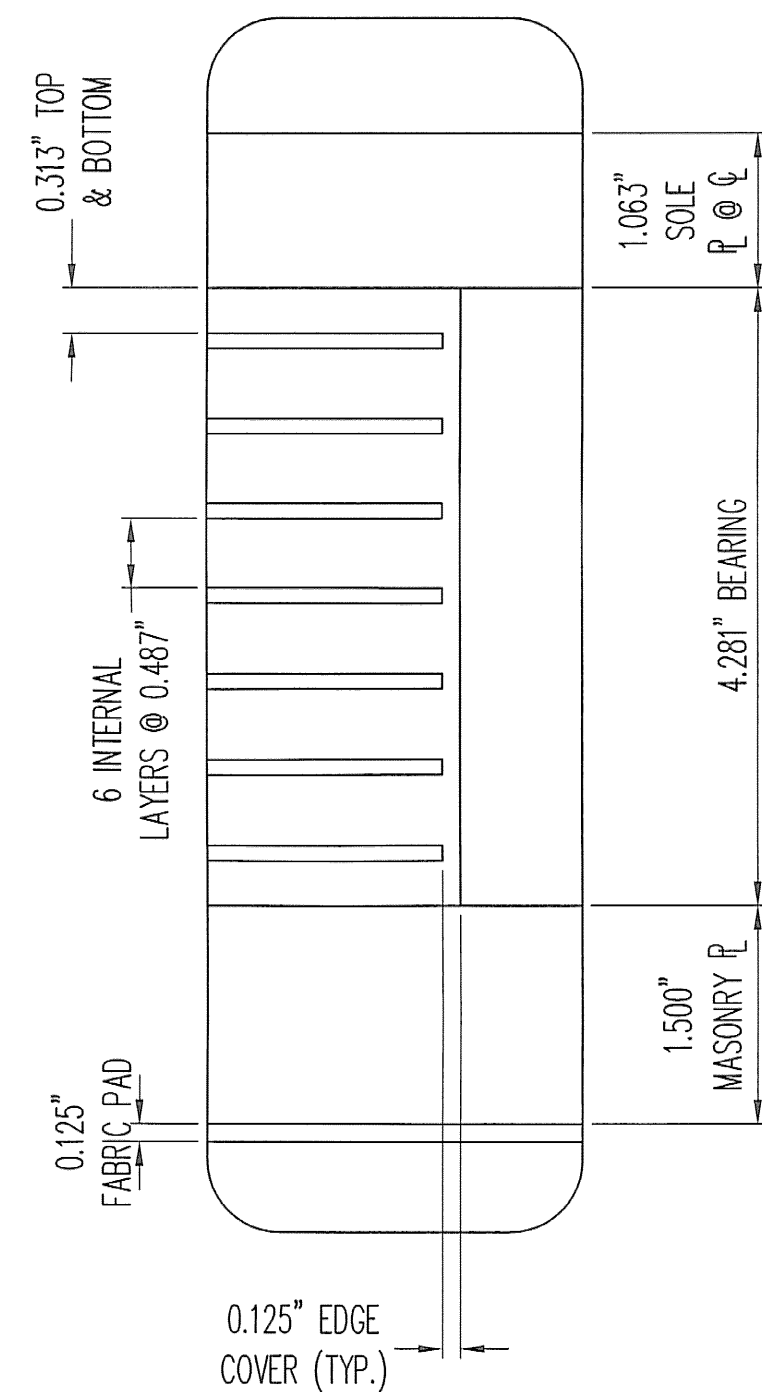
PLAN VIEW
FIXED ELASTOMERIC BEARING
(6) REQ'D @ ABUT. 2



SECTION 'A-A'



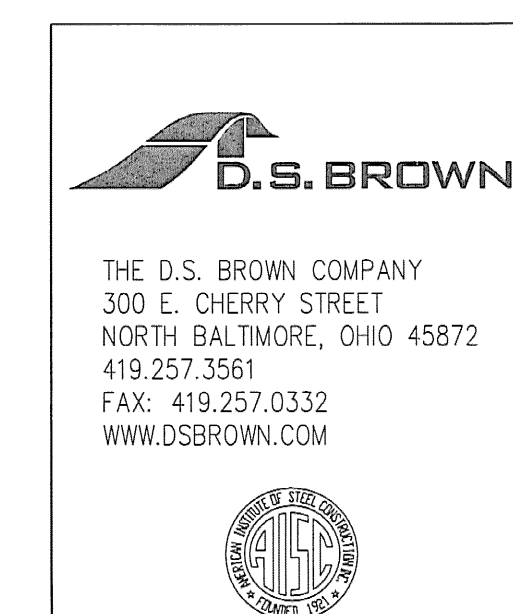
ANCHOR ROD DETAIL



DETAIL 'B'

MK	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	REV
2A	6	ELASTOMERIC BEARING				-
2a1	6	4.281" X 14.000"	NATURAL RUBBER	10.000"	60+/-5 DURO GR.4	-
2a2	42	12 GA. X 13.750"	A1011 GR 36	9.750"	PLAIN	-
2mp1	6	1.500" X 29.000"	A709 GR 50	14.000"	METALIZE, SEAL	A
2sb1	12	3.000" X 5.000"	A709 GR 50	5.000"	METALIZE, SEAL	A
2sp1	6	1.125" X 29.000"	A709 GR 50	14.000"	METALIZE, SEAL	A
2B	6	FABRIC PAD				-
2b1	6	0.125" X 29.000"	AASHTO (LRFD) 18.10.2	14.000"	HOLES	-
2C	24	SWEDGE ROD				-
2c1	24	Ø1.500" X 29.000" SWEDGED ROD	A449		4.5" THREADS, 17" SWEDGE; A153-HDG	-
2D	48	HEAVY HEX NUT				-
2d1	48	Ø1.500" HEX NUT	A563-DH OR A194-2H		A153-HDG	-
2F	24	ELASTOMERIC WASHER				-
2f1	24	0.500" X 3.000"	NATURAL RUBBER	3.000"	60 MIN. DURO GR.3; 1.563" Ø HOLE @ CENTER	-
					1/27/2009 10:05:23 AM	

SEE SHT. GN1 FOR GENERAL NOTES & COATING LIMITS.



REVIEWERS COMMENTS	1/27/09	DA	DAE
REV. DESCRIPTION	DATE	DET.	CKD.
LOCATION — VT 102 (MAJOR COLLECTOR)	ITEM	QUANTITY	
PROJECT NO. — ER ST 0271 (16)	25217-1104-2	6 OF 6	
BRIDGE — 16	—	—	
—	—	—	
—	—	—	
P.O. NO. — C2223	—	—	
DESIGNER — VT DOT	—	—	
CUSTOMER — WINTERSET INC.	—	—	
DESCRIPTION: VERSIFLEX ELASTOMERIC BEARING ESSEX CO., VT	SCALE: N.T.S.	DRAWN BY: DA	CHECKED BY: DAE
	PROJECT NUMBER: 25217	PRODUCT CODE: 1104	DATE: 12/15/08
		RELEASE: 1	SHEET: 02

RECEIVED
OK'D BY SSS
DATE 1/27/09
BY mem



State of Vermont
PDD/Structures Design Section
National Life Building - Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

(phone) 802-828-2621
(fax) 802-828-3556
(tel) 800-253-0191

Agency of Transportation

Foster Precise
3 Farm Lane
Georgetown, MA 01833

DATE: January 29, 2009

Project Name: Canaan Project #: ER ST 0271 (16)

Structure Identification: Bridge #16, VT 102 over the Willard Stream

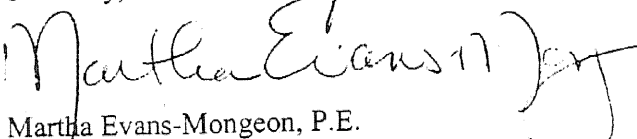
The following Structural Steel details, Item # 506.50, Structural Steel, Rolled Beam for the above project (Vendor's Job # 3476) transmitted with your letter dated 01/19/2009 have been reviewed and are being returned herewith.

Sheets: GN1, E1, L-7, and X1
are approved

Sheets: _____
are approved "as noted"

You must provide notice to our fabrication inspector, Jeff Clark, as to the date fabrication represented by these drawings will begin. Jeff must receive and acknowledge your notice at least seven days prior to that date, as per Specification 506.03. You may contact Jeff by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Please submit extended weights for our approval.
Partial payment for this item will be withheld until extended weights are received and approved.

Sincerely,

Martha Evans-Mongee, P.E.
Project Manager

RECEIVED

FEB - 2 2009

FOSTER-PRECISE
Division of L.B. Foster Company

Attachments
cc: [X] Resident Engineer w/prints, Doug Bumps
[X] Shop Inspector w/prints, Jeff Clark
[X] Contractor w/prints, Winterset
[X] Construction Division - letter only
[X] Materials & Research Section (C&IA Unit) - letter only
[X] Files (Structures & Central)

LB Foster SHIPPING LIST PAGE 1
JOB: 3476 - ER ST 0271 (16) Canaan CONTRACT:
PROJECT: DATE: 2/2/2009
REMARKS:

#	PIECE		QTY.	TYPE	DESCRIPTION	LENGTH	MILL		GRADE	CAMBER	REMARKS	WEIGHT ONE ITEM	WEIGHT LINE TOTAL
	MARK						MARK						
✓1)	1A	✓1 W	36	x	135 ✓	✓83'- 6 11/16			C 50 ✓		crn bevel ✓	✓11280.23	✓11280.23 ✓
✓2)	pxcl	✓1 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓24.01 ✓
✓3)	pxcl	✓3 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓72.04 ✓
✓4)	pxcl	✓3 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓72.04 ✓
✓5)	pxcl	✓1 PL	1/4	x	2 13/16 ✓	0'- 8 5/16 ✓			G 50 ✓			✓✓1.66	✓1.66 ✓
WEIGHT OF ALL PIECES 1A:						11449.98 LBS. ✓	WEIGHT OF 1 PIECE:						11449.98 LBS. ✓
✓6)	2A	✓1 W	36	x	135 ✓	✓83'- 6 11/16			C 50 ✓		crn bevel ✓	✓11280.23	✓11280.23 ✓
✓7)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
✓8)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
WEIGHT OF ALL PIECES 2A:						11616.43 LBS. ✓	WEIGHT OF 1 PIECE:						11616.43 LBS. ✓
✓9)	3A	✓1 W	36	x	135 ✓	✓83'- 6 11/16			C 50 ✓		crn bevel ✓	✓11280.23	✓11280.23 ✓
✓10)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
✓11)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
WEIGHT OF ALL PIECES 3A:						11616.43 LBS. ✓	WEIGHT OF 1 PIECE:						11616.43 LBS. ✓
✓12)	4A	✓1 W	36	x	135 ✓	✓83'- 6 11/16			C 50 ✓		crn bevel ✓	✓11280.23	✓11280.23 ✓
✓13)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
✓14)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
WEIGHT OF ALL PIECES 4A:						11616.43 LBS. ✓	WEIGHT OF 1 PIECE:						11616.43 LBS. ✓
✓15)	5A	✓1 W	36	x	135 ✓	✓83'- 6 11/16			C 50 ✓		crn bevel ✓	✓11280.23	✓11280.23 ✓
✓16)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
✓17)	pxcl	✓1 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓24.01 ✓
✓18)	pxcl	✓3 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓72.04 ✓
✓19)	pxcl	✓3 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓72.04 ✓
WEIGHT OF ALL PIECES 5A:						11616.42 LBS. 0.01 LBS.	WEIGHT OF 1 PIECE:						11616.42 LBS. 0.01 LBS.
✓20)	6A	✓1 W	36	x	135 ✓	✓83'- 6 11/16			C 50 ✓		crn bevel ✓	✓11280.23	✓11280.23 ✓
✓21)	pxcl	✓7 PL	1/2	x	5 ✓	✓2'- 9 7/8			G 50 ✓			✓24.01	✓168.10 ✓
✓22)	pxcl	✓1 PL	1/4	x	2 13/16 ✓	0'- 8 5/16			G 50			✓✓1.66	✓1.66 ✓
WEIGHT OF ALL PIECES 6A:						11449.99 LBS. ✓	WEIGHT OF 1 PIECE:						11449.99 LBS. ✓
✓23)	7A	✓35 WC	18	x	42.7 ✓	✓5'- 1 3/8			G 50 ✓			✓✓218.39	✓7643.74 ✓
WEIGHT OF ALL PIECES 7A:						7643.74 LBS. ✓	WEIGHT OF 1 PIECE:						218.39 LBS. ✓

LB Foster SHIPPING LIST PAGE 2
JOB: 3476 - ER ST 0271 (16) Canaan CONTRACT:
PROJECT: DATE: 2/2/2009
REMARKS:

*** JOB SUMMARY ***

ITEM	MATERIAL	MATERIAL	STEEL	STAINLESS	ALUMINUM
QTY	TYPE	WEIGHT	SURFACE AREA	SURFACE AREA	SURFACE AREA
✓ 6	W SHAPE	✓ 67682 LBS.	✓ 4889 SQ. FT.	0 SQ. FT.	0 SQ. FT.
✓ 25	MC SHAPE	✓ 7644 LBS.	✓ 751 SQ. FT.	0 SQ. FT.	0 SQ. FT.
✓ 72	PLATE	✓ 1685 LBS.	✓ 182 SQ. FT.	0 SQ. FT.	0 SQ. FT.
JOB TOTAL:		✓ 77011 LBS.	✓ 5822 SQ. FT.	0 SQ. FT.	0 SQ. FT.



State of Vermont
PDD/Structures Design Section
National Life Building – Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

(phone) 802-828-2621
(fax) 802-828-3566
(ttd) 800-253-0191

Agency of Transportation

Foster Precise
3 Farm Lane
Georgetown, MA 01833

DATE: January 29, 2009

Project Name: Canaan Project #: ER ST 0271 (16)

Structure Identification: Bridge #16, VT 102 over the Willard Stream

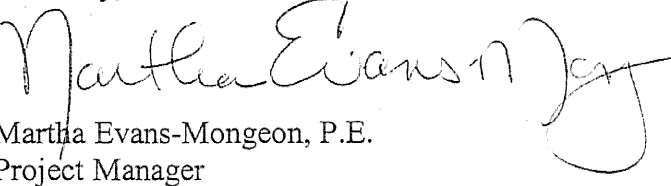
The following Structural Steel details, Item # 506.50, Structural Steel, Rolled Beam for the above project (Vendor's Job # 3476) transmitted with your letter dated 01/19/2009 have been reviewed and are being returned herewith.

Sheets: GN1, E1, 1-7, and X1
are approved

Sheets: _____
are approved “as noted”

You must provide notice to our fabrication inspector, Jeff Clark, as to the date fabrication represented by these drawings will begin. Jeff must receive and acknowledge your notice at least seven days prior to that date, as per Specification 506.03. You may contact Jeff by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Please submit extended weights for our approval.
Partial payment for this item will be withheld until extended weights are received and approved.

Sincerely,

Martha Evans-Mongee, P.E.
Project Manager

Attachments
cc: [X] Resident Engineer w/prints, Doug Bumps
 [X] Shop Inspector w/prints, Jeff Clark
 [X] Contractor w/prints, Winterset
 [X] Construction Division – letter only
 [X] Materials & Research Section (C&IA Unit) – letter only
 [X] Files (Structures & Central)

LB FOSTER CO Precise Structural Products
Welding Procedure Specification

Page 1 of 2

001 - FILLET WELD

Material Spec. ASTM A709 G36, G60 & G50W AASHTO M270 G36, G60 & G50W

Welding Process(es) SAW

Position of Welding 1F & 2F

Manual ☐ Machine ☐ Semi-Automatic ☒ Automatic ☐

Filler Metal Specification AWS A5.23

Filler Metal Classification F7A2-ENi1K-Ni1-H8

Flux LINCOLN 860

Shielding Gas N/A Gas Flow Rate N/A

Single or Multiple Pass BOTH

Single or Multiple Arc SINGLE

Welding Current REVERSE

Polarity: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

Welding Progression Up ☐ Down ☐

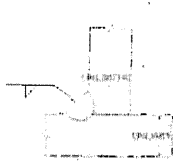
Root Treatment CLEAN AS TO REMOVE CONTAMINANTS

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

Postheat Treatment N/A

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

WELDING PROCEDURE

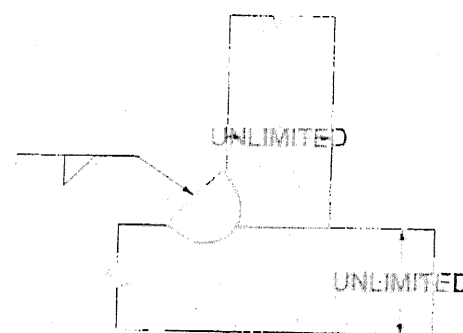
Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other	Joint Detail
All	5/64	330-350	33-35	10-11		
VT RECEIVED OK'D BY <u>JWC</u> DEC 1 2008 BY <u>PROVED</u> DATE <u>01/09/09</u>						

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

Procedure No. 001 - FILLET WELD Contractor _____

Revision No. 01 Authorized By WALTER J. BORKOWSKI Date 3/14/2008

Joint Detail



MEMO

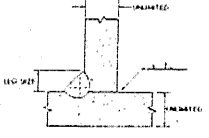
*** MINIMUM PREHEAT AND INTERPASS TEMPERATURE SHALL BE AS FOLLOWS: TO 3/4" INCL 50 DEG F, OVER 3/4" TO 1-1/2" INCL 70 DEG F, OVER 1-1/2" TO 2-1/2" INCL 150 DEG F, OVER 2-1/2" 225 DEG F.

LEG DIMENSION AS FOLLOWS: 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 3/4".

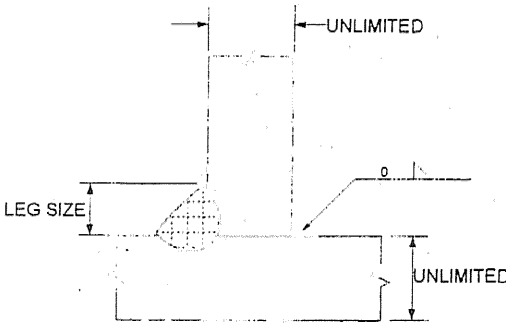
PROCEDURE QUALIFICATION RECORD NUMBER SAW-01-2007

LB FOSTER CO Precise Structural Products
Welding Procedure Specification

Page 1 of 2
3476-01

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 <u>VT</u> <u>TRANS</u> RECEIVED DEC 1 2008 APPROVED <u>✓</u> 09/05/09						
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>12/31/2008</u>						

Joint Detail



MEMO

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

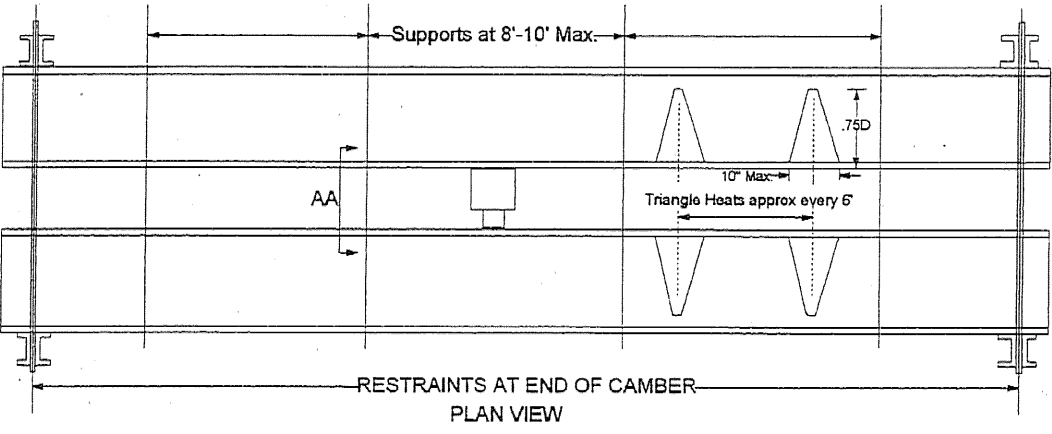
HEAT CAMBER PROCEDURE

Heating Equipment: Heating shall be performed using large, approximately 1 inch diameter, multi-orifice (rosebud) heating torch operating at approximately 25 psi of propane and 125 psi oxygen. Heating shall be confined to the patterns described herein and shall be conducted to bring the steel within the planned pattern to a temperature between 1000 Deg F and 1150 Deg F as rapidly as possible without overheating the steel.

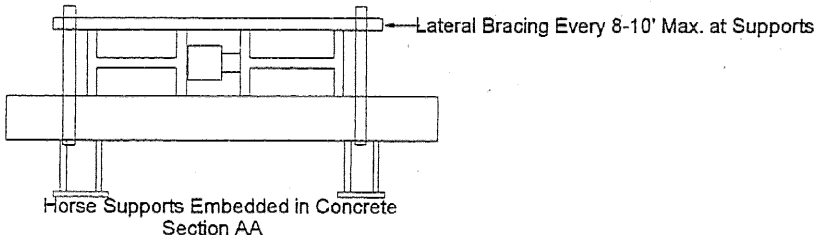
Heat Measurement: Heating measurements shall be made using temperature indicating crayons manufactured, for 1000 Deg F, 1100 Deg F, 1150 and 1200 Deg F. Heat measurements shall be made after heating flame is removed.

Order of Events:

1. Stringer flanges shall be supported in the no load position (web horizontal). Stringers are to be place on steel horses. Steel horses are approximately every 8' to 10 '.
2. Stringers are to be laid back to back (flange to flange). Two stringers shall be heat cambered simultaneously.
3. Triangular heating patterns shall be marked onto the webs and flanges as required, to achieve specified camber. See sketch below.
4. Maximum 20,000-psi compressive stress shall be induced. One ram shall be used to accomplish specified camber at each location. Ram shall have a calibrated pressure gauge. Once specified camber is achieved the ram is repositioned to the next location.
5. Heating shall begin at the apex of the triangle and progress to the base and across the full width of the flange. Temperature shall be brought between 1000 Deg F and 1150 Deg F as rapidly as possible. Temperature exceeding 1200 Deg F shall be cause for rejection.
6. Stringers are to be cooled in still air. Quenching with water or water and air will not be performed.
7. Cambers are checked in the unloaded position accordance with the approved shop drawing(s).



VTRANS
RECEIVED
OK'D BY _____ OK'D BY JWC
JAN 05 2009
R _____ APPROVED _____
BY _____ DATE 01/06/09

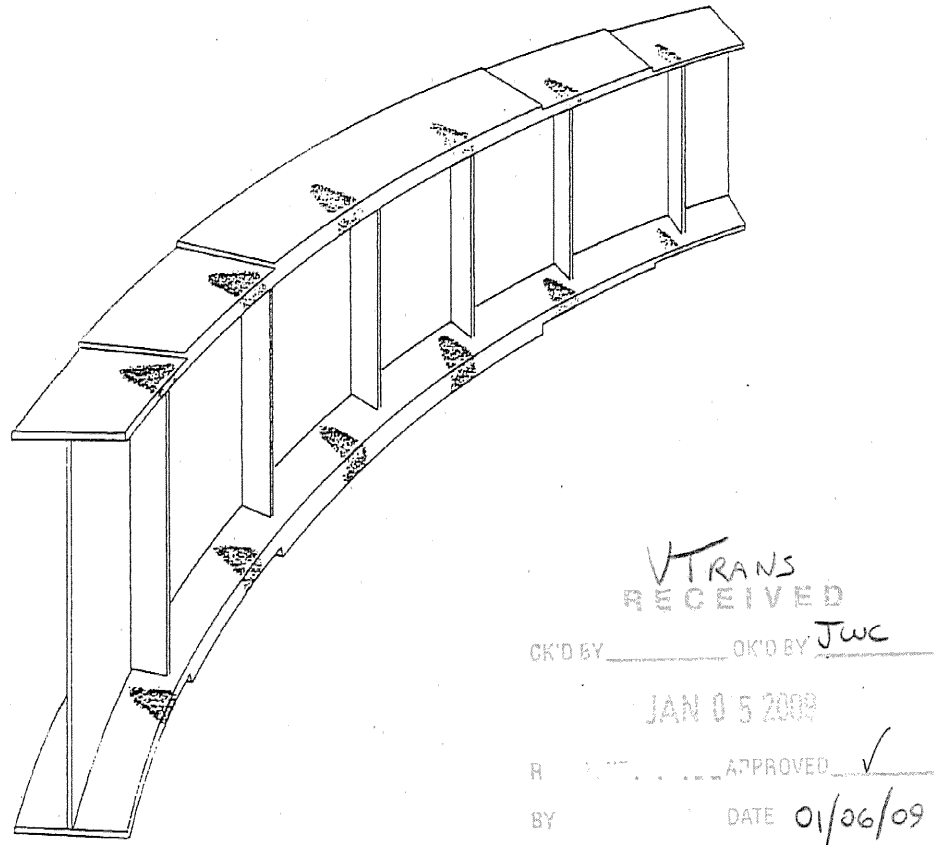


HEAT STRAIGHTENING AND SWEEP PROCEDURE

Heat straightening and sweep of rolled sections where the radius is less than 1,000 feet.

- 1) Heating V type patterns shall be marked on flange as required to obtain desired curvature. The truncated triangle shall have an included angle of approximately 15 to 30 degrees. The apex of the truncated triangle shall terminate just before the juncture of the web. The base of the truncated triangle shall not exceed 10 inches (Typically 3" to 5"). See Detail Below.
- 2) Heating shall be performed using large, approximately 1 inch diameter, multi-orifice (rosebud) heating torch. Approximately 25 psi propane and 126 psi oxygen.
- 3) Heating operation shall begin at the apex of the truncated triangle and progress to the base (Do not heat the apex once heating progresses to base). Heating both inside and outside of flange surfaces concurrently is required when the flange thickness is greater than 1 1/4".
- 4) Maximum heating temperature shall be 1150 degrees F as verified with temperature indicating crayons. 1000, 1100, 1150, 1200 degrees F temperature indicating crayons shall be allied after heat is removed. Temperature exceeding 1,200 degrees F shall be cause for rejection.
- 5) Particular attention shall be placed on unwanted web distortion.
- 6) Cooling shall be performed in still dry air.
- 7) Stringer sweep shall be re-inspected, with the web in the vertical position.
- 8) Operation shall be performed in accordance with AASHTO Div 2 11.4.12.2.

Diagram below depicts typical sweep type procedure. For heat straightening the V heats are applied on the outside of the curve. It is understood that the apex of the triangles, are pointed in the opposite direction of desired movement.



WINTERSET INCORPORATED

P.O. BOX 968

LYNDONVILLE, VERMONT 05851

(802) 626-9330

FAX (802) 626-8933

TO

State of Vermont

Agency of Transportation

LETTER OF TRANSMITTAL

DATE

1/28/2009

JOB NO.

ATTENTION

Martha Evans-Mangeon

RE:

Canaan

ERT 6271 (16)

WE ARE SENDING YOU

☒ Attached

☐ Under separate cover via

the following items:

☐ Shop drawings☐ Prints☐ Plans☐ Samples☐ Specifications

☐ Copy of letter☐ Change order☐

COPIES	DATE	NO.	DESCRIPTION
1	12/3/08	1	Welding Procedure Specifications (2)

THESE ARE TRANSMITTED as checked below:

☐ For approval☒ For your use☐ As requested☐ For review and comment☐ FOR BIDS DUE

☐ Approved as submitted☐ Approved as noted☐ Returned for corrections☐

☐ Resubmit _____ copies for approval☐ Submit _____ copies for distribution☐ Return _____ corrected prints☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

COPY TO

SIGNED: Alex Thompson

If enclosures are not as noted, kindly notify us at once.

Winterset Inc

L.B.Foster Co.

Letter Of Transmittal

Foster Precise

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

Project Number: 3476

LOT No.: 2

Project Name: VT AOT - VT 102 Bridge Project Canaan

Date: 12/31/08 10:08 AM

To: Alex Thompson, PE
Winterset, Inc.
PO Box 968
128 Winterset Drive
Lyndonville, VT 05851
Ph: (802) 626-9330
Fax: (802) 626-8933

CC: None

Subject: WELDING PROCEDURE SPECIFICATIONS (2)

We are sending you the following 13 page(s) via

Please return the following by:

☐Shop Drawings

☐Contract Drawings

☒Miscellaneous

Other:

Purpose of Transmittal: For Approval

Items:

Copies	Date	Rev #	Description
1	12/31/2008		SMAW TACK PROCEDURE
Sheets: 2			
1	11/20/2007		SAW PROCEDURE QUALIFICATION
Sheets: 9			
1	3/14/2008		SAW FILLET WELD PROCEDURE SPECIFICATION
Sheets: 2			

Remarks:

Gentlemen,

Please find attached welding procedure specifications for consideration by the Vermont Agency of Transportation.

Please feel free to call with any questions.

Respectfully,

Walter Borkowski Ext.14

FOSTER PRECISE

Printed: Wednesday, December 31, 2008

Project Number: 3476

LOT Number: 2

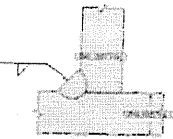
Page 1 of 1

AbacusPM® www.abacuspm.net

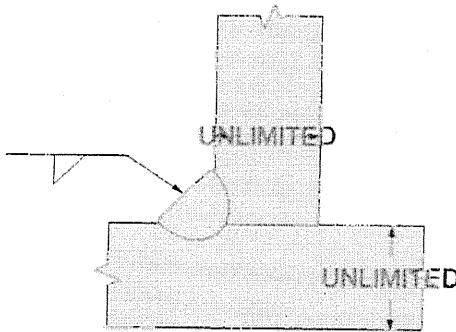
LB FOSTER CO Precise Structural Products
Welding Procedure Specification

Page 1 of 2

001 - FILLET WELD

Material Spec.	ASTM A709 G36, G50 & G50W		AASHTO M270 G36, G50 & G50W	
Welding Process(es)	SAW			
Position of Welding	1F & 2F			
Manual ☐	Machine ☐	Semi-Automatic ☒	Automatic ☐	
Filler Metal Specification	AWS A5.23			
Filler Metal Classification	F7A2-ENi1K-Ni1-H8			
Flux	LINCOLN 860			
Shielding Gas	N/A		Gas Flow Rate N/A	
Single or Multiple Pass	BOTH			
Single or Multiple Arc	SINGLE			
Welding Current	REVERSE			
Polarity:	AC ☐	DCEP ☒	DCEN ☐	Pulsed ☐
Welding Progression	Up ☐	Down ☐		
Root Treatment	CLEAN AS TO REMOVE CONTAMINANTS			
Preheat Temperature	*** SEE PAGE 2		Interpass Temperature *** SEE PAGE 2	
Postheat Treatment	N/A			
Heat Input	Min 48.55 KILOJOULES/IN		Max 76.29 KILOJOULES/IN	
WELDING PROCEDURE				
Pass No.	Electrode Size	Amperes	Volts	Travel Speed Other
All	5/64	330-350	33-35	10-11
				
This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.				
Procedure No.	001 - FILLET WELD		Contractor	
Revision No.	01		Authorized By WALTER J. BORKOWSKI Date 3/14/2008	

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 AS FOLLOWS: 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 3/4".

PROCEDURE QUALIFICATION RECORD NUMBER SAW-01-2007

PROCEDURE QUALIFICATION RECORD - SAW-01-2007

Contractor	<u>L.B. Foster Company</u>	Test Date	<u>November 20, 2007</u>
Process	<u>Submerged Arc Welding (SAW)</u>	Filler Metal	<u>A5.23</u>
Position	<u>Flat (1G)</u>		
Electrode(s) Mfg. Designation	<u>Lincoln LA-75</u>	AWS Specification	<u>A5.23</u>
Flux Mfg. Designation	<u>not available</u>	AWS Classification	<u>F7A2-ENiK-Ni1-H8</u>
Electrode Extension			<u>1.25 inches</u>

Electrode		Diameter	Current	IPM*	Voltage	Current & Polarity
	(1)	<u>5/64 inches</u>	<u>340</u>	<u>10</u>	<u>34</u>	<u>DC/EP</u>
	(2)					
	(3)					
Calculated Heat Input	<u>69.36</u>	<u>kilojoules / inch</u>		(See 5.12)		
Shielding Gas		<u>not applicable</u>		Flow Rate	<u>not applicable</u>	
Dew Point		<u>not available</u>		Travel Speed	<u>10 IPM</u>	
Base Metal Specification & Thickness		<u>AASHTO M270, grade 50W, 1 inches thick</u>				
(Attach Certified Copy of Mill Test Report)						
Preheat Temp.	<u>200 ° F</u>	Interpass Temp.	Min.	<u>200 ° F</u>	Max.	<u>400 ° F</u>

SPECIMEN		TEST RESULTS	
All Weld Metal Tension (AWMT)	Tensile Strength (PSI)	1.	<u>76,334</u>
	Yield Strength (PSI)		<u>59,675</u>
	Elongation in 2 inches (%)		<u>30.9</u>
	Reduction in Area (%)		<u>69.8</u>

Side Bend	1.	<u>acceptable</u>	2.	<u>acceptable</u>	3.	<u>acceptable</u>	4.	<u>acceptable</u>
Reduced Section Tension	Tensile Strength (PSI)	1.	<u>82,220</u>	Location of Break	1.	<u>base metal</u>		
		2.	<u>85,789</u>		2.	<u>base metal</u>		
Charpy V-notch Impact Toughness (of Weld Metal SMAW, SAW, GMAW 5 required ESW & EGW - 8 required)	(<u>56</u> , <u>44</u> , <u>36</u> , <u>68</u>)	average ft - lbs **	<u>45.33</u>	@	<u>- 20</u>	degrees F.		
	(<u>NA</u> , <u>NA</u> , <u>NA</u>)							
	average ft - lbs **	<u>NA</u>	@	<u>NA</u>	degrees F.			
** Discard the highest and lowest values and average the remaining values.								

Chemistry of Deposited Weld Metal When required by Contract Documents	C	<u>NA</u>	Mn	<u>NA</u>	Si	<u>NA</u>	P	<u>NA</u>	S	<u>NA</u>
	Ni	<u>NA</u>	Cr	<u>NA</u>	Mo	<u>NA</u>	V	<u>NA</u>	Cu	<u>NA</u>

REMARKS	Visual	<u>acceptable</u>	Radiographic Test	<u>acceptable</u>
---------	--------	-------------------	-------------------	-------------------

* Wire feed may be used in lieu of current when a correlation curve is provided for the same electrode diameter and same electrode extension.

Test Witness	<u>Derek Crowe</u>	Agency	<u>Mass Highway Department</u>
Results Reviewed		State Acceptance	Date

ABC Testing Inc.
95 FIRST STREET • P.O. BOX 868 • BRIDGEWATER, MASSACHUSETTS 02324
TELEPHONE 508 • 697 • 6068 • FAX # 508 • 697 • 6154

MECHANICAL TEST REPORT

ABC Testing number: 117007 Date: December 10, 2007
Customer: L.B. Foster Company Purchase order: per transmittal - W. Borkowski
Code or Standard: ASTM E-8, ASTM E-23, AWS D1.5 & WYS-SCM
PQR #: Heat #, or other: SAH-01-2007
Material & Dimensions: 1 inch thick plate (ASTM A709, Grade 50W)
Remarks: Impact tests: -20 degrees F

BEND TESTS

Type and Figure	Result
Transverse Side - Figure 5.11	Acceptable
Transverse Side - Figure 5.11	Acceptable
Transverse Side - Figure 5.11	Acceptable
Transverse Side - Figure 5.11	Acceptable
Transverse Side - Figure 5.11	Acceptable

TENSILE TESTS

Type & Figure Transverse Rectangular - Figure 5.10

Specimen	Width (inches)	Thickness (inches)	Area (sq. in.)	Ultimate Load (pounds)	Ultimate Strength (PSI)	Type of Failure
A	0.983	0.997	0.980	81,400	82,220	Duct - BM
B	0.933	0.982	0.916	78,600	85,789	Duct - BM

Type & Figure Round (all weld metal) - Figure 5.9

Specimen	Diameter (inches)	Area (sq. inches)	Yield Load (pounds)	Tensile Load (pounds)	Yield Strength (PSI)	Tensile Strength (PSI)
WM1	0.606	0.291	12,000	15,350	69,675	78,334
WM2	0.606	0.290	12,000	15,150	69,917	76,638
Gage length (inches)	New length (inches)	% elongation	New diameter (inches)	Reduced Area (sq. inches)	% RA	
WM1	2.014	2.637	30.53	0.278	0.061	69.82
WM2	2.014	2.660	32.08	0.275	0.069	70.35

IMPACT TESTS

Type & Figure Type A - Figure 5.13

Specimen	1	2	3	4	5	average **
	(ft - lbs)	(ft - lbs)	(ft - lbs)	(ft - lbs)	(ft - lbs)	(ft - lbs)
Value	50	44	36	68	24	45.33

**discard the highest and lowest values and average the remaining values

All tests were conducted in accordance with the referenced standard.

By: James E. Hamington Jr.

95 FIRST STREET • P.O. BOX 868 • BRIDGEWATER, MASSACHUSETTS 02324
TELEPHONE 508 - 697 - 6068 • FAX # 508 - 697 - 6154

RECORD OF RADIOGRAPHIC EXAMINATION

TO L. B. Foster Company
3 Farm Lane
Georgetown, MA 01833-1843

Client's Order No. verbal(W.Borkowski)
 ABC Project No. 117907
 Date November 29, 2007
 Drawing No. _____
 Contract No. _____

Location Involved		ABC Testing Laboratory		Date		November 29, 2007	
Object or Part Radiographed		PQR plate		Approved proc. No.		RT 1/3 rev. 2	
Joint Type		long butt		Coverage		full	
Type of Material		steel		Group No.		1	
Wall Thickness		1 in		Total Exposure Thickness		1 in	
Source of Radiation		X-ray		Curies		NA	
Focal Spot		4.0 mm		KV		300	
Mfr of Machine		Philips		Exposure Type		single	
Standard		AWS D1.5		Object to Film Distance		1 in	
Time of Exposure		0.8 minutes		Type of Film		Afga D5	
Acceptance Standard		AWS D1.5		Radiograph Status		original	
				View Type		single	

Remarks:

[illegible]

Radiographed _____ Reported _____
By Jeffrey Rodrigues By Jeffrey Rodrigues

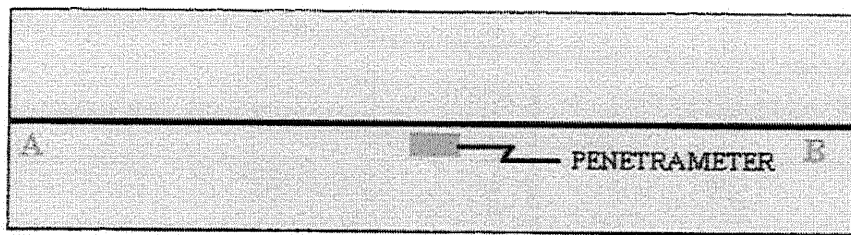
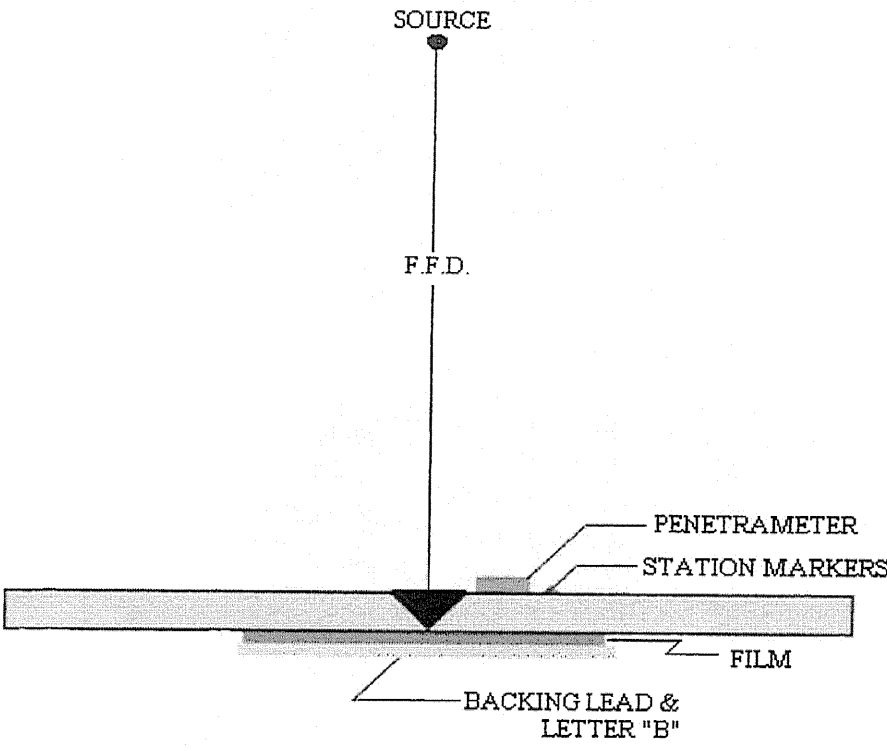
Owner / Manufacturers Review
By _____ Date: _____

A. B. C. Testing, Inc.

95 FIRST STREET • P.O. BOX 868 • BRIDGEWATER, MASSACHUSETTS 02324
TELEPHONE 508 - 697 - 6068 • FAX # 508 - 697 - 6154

Radiographic Shooting Sketch

Client: L.B. Foster Company
Purchase order: verbal(Walter Borkowski)
Object: PQR plate
RT date: November 29, 2007



Technique variables data

Source: X-ray
Penetrameter: #20
Film type: Agfa D5
Focal Film distance: 36 inches
Shim: 0



4001 PHILADELPHIA PIKE
CLAYMONT, DELAWARE 19703 U.S.A.

MATERIAL TEST REPORT

SOLD TO:
FOSTER PRECISE FABRICATING
DIVISION OF L.B. FOSTER COMPANY
3 FARM LANE

GEORGETOWN, MA

ASTM A709-00a Grade 50 W T Type A Zone 2

MILL ORDER
156112

BILL OF LADING
185098

CUSTOMER P.O. NO.
106808-3059

DATE
04/28/03

1. Material is 100% melted and manufactured in the USA. 2. Mercury, radium or alpha source materials have not been used. 3. Test piece serial # represents actual plate tested, not necessarily plate shipped (except PVO where every plate is tested).

CHEMICAL ANALYSIS																	
HEAT	C	Mn	P	S	Si	Cu	NE	Cr	Mn	Sn	Al	V	Nb	N	Acid Soluble Al	Ti	Tl
1M071	0.13	0.90	0.009	0.015	0.38	0.30	0.21	0.61	0.061	0.020	0.007	0.046	0.003	0.010	0.006	0.002	

DIMENSION				TENSILE TESTS				IMPACT TESTS									
HEAT	NO PCS	GUAGE (IN)	WIDTH (IN)	LENGTH (IN)	TEST PIECE SERIAL #	NORM	TENSILE (KSI)	YIELD (KSI)	ELONG (%)	REDU (%)	TEST TEMP (F)	FT LBS 1 2 3	MILS LAT EXP 1 2 3	% SHEAR 1 2 3			
1M071	2	1.0000	60.0000	240.0000	0662506		79.0	60.0	23	6							
Part Number: 106808-3059																	
1M071	-	1.0000	60.0000	240.0000	0662558		80.0	55.0	27	2	25	98.0 98.0 98.0	80.0 78.0 76.0	75.0 60.0 65			
1M071	-	1.0000	60.0000	240.0000	0662558												

NOTARY SEAL
NAME: Ann Marie Deringer

OTHER TESTS / INFORMATION
[DND] DC 1/1/4

I CERTIFY THE ABOVE RESULTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION
DAVID J. CERNAWA
DAVID J. CERNAWA
METALLURGIST
(Tot. Pcs: 11)

TAPEL STEEL CO.

PO/Rel

QUALITY CONTROL APPROVED

Certificate of Mill Test Results

PHL-000000-000

Pg 1/1

PART NO.

FOSTER PRESS

CHSSteel/USA

INCORPORATED

4001 PHILADELPHIA PIKE

CLAYMONT, DELAWARE 19703 U.S.A.

4001 PHILADELPHIA PIKE

CLAYMONT, DELAWARE 19703 U.S.A.

MATERIAL TEST REPORT

SOLD TO:

CHAPEL STEEL COMPANY

P.O. BOX 1000

SPRING HOUSE, PA

MILL ORDER

176948

BILL OF LADING

220029

CUSTOMER P.O. NO.

PHL-5954

DATE

09/21/05

ASTM A588-94 GRADE A, 1995 ED.

ASTM A588-94 GRADE B, 1995 ED.

Unless otherwise specified, the following conditions apply: 1. Material is 100% melted and manufactured in the USA. 2. Mercuric sulfide or alpha source materials have not been used. 3. Test piece serial # represents actual plate lot(s), not necessarily plate shipped (except PVO where every plate is tested).

HEAT

C

Mn

P

S

Si

Cu

Ni

Cr

Mo

Sn

Al

V

Nb

N

Acid Soluble

Al

Y

B

1U318

0.14

0.89

0.007

0.022

0.39

0.29

0.11

0.52

0.029

0.028

0.009

0.032

0.004

0.011

0.008

0.002

0.0006

1U324

0.14

0.88

0.005

0.013

0.40

0.27

0.13

0.52

0.031

0.021

0.008

0.041

0.003

0.010

0.008

0.003

0.0006

1U345

0.15

0.89

0.010

0.017

0.38

0.31

0.12

0.56

0.031

0.023

0.011

0.041

0.005

0.010

0.008

0.003

0.0006

DIMENSION

NO. OF

GAUGE

WIDTH

LENGTH

TEST PIECE

SERIAL #

NORM

HEAT

NO. OF

GAUGE

WIDTH

LENGTH

TEST PIECE

SERIAL #

NORM

1U318

2

0.3750

96.0000

480.0000

776630

86

71

17

8

1U324

2

0.3750

96.0000

480.0000

776624

85

71

18

8

1U324

-

0.3750

96.0000

480.0000

776141

91

55

28

2

1U345

3

0.3750

96.0000

480.0000

776836

83

69

20

8

1U345

-

0.3750

96.0000

480.0000

777136

80

62

25

2

TENSILE TESTS

TENSILE

YIELD

ELONG

REDUC

TEST

HEAT

TENSILE

YIELD

ELONG

REDUC

TEST

1U318

86

71

17

8

8

1U324

85

71

18

8

8

1U324

91

55

28

2

2

1U345

83

69

20

8

8

1U345

80

62

25

2

2

IMPACT TESTS

FT-LBS

MILS LAT EXP

% SHEAR

HEAT

FT-LBS

MILS LAT EXP

% SHEAR

1U318

3

1

2

3

1

2

3

1U324

3

1

2

3

1

2

3

1U324

3

1

2

3

1

2

3

1U345

3

1

2

3

1

2

3

1U345

3

1

2

3

1

2

3

OTHER TESTS / INFORMATION

I CERTIFY THE ABOVE RESULTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION

DAVID J. CERNAVA

DAVID J. CERNAVA

CHIEF METALLURGIST

Doc No. 135201

Indexed 25Sep05 by garyh

Doc No. 135201

Indexed 25Sep05 by garyh

Doc No. 135201

Indexed 25Sep05 by garyh

Doc No. 135201

Indexed 25Sep05 by garyh

LABORATORY TESTING INC.

2331 Topaz Drive, Hatfield, PA 19440

Phone: 800-219-9095 • Fax: 800-219-9096

Certified Test Report

CSC002-05-11-29581-1

CHARPY APPROVED

ISO 9001:2008

Material Testing Laboratory

NOT PLM/UT

SOLD TO

Chapel Steel Company

Attn: Tara Townsend

P.O. Box 1000

Spring House, PA 19477

SHIP TO

Chapel Steel Company

Building 2E, Suite 106

191 South Keim Street

Pottstown, PA 19464

ATTN: Gary Halteman

CUSTOMER P.O.

73911

CERTIFICATION DATE

11/7/05

SHIP VIA

FAX AND MAIL

DESCRIPTION

2 pcs 5" x 7" Test Samples, 1pc .3/4" Thick and 1pc 3/8" Thick ASTM A709-01b, Gr *50WT2, Heat #1U345

Reference: Customer #11686, Customer PO #13331-3059, Chapel W.O. #73911

*AMENDED CERTIFICATION (12/07/2005)

Longitudinal Charpy V-Notch Impact testing at 40° F was performed on (2) sets of the submitted Test Specimens and (2) sets were found to be in conformance to ASTM A709-01b⁶³ and Customer's Requirements with the following results:

SAMPLE SIZE REQUIRED	PIECE NO. - - -	FT-LBS. 15 MIN. AVG.	LAT. EXP. - - -	% SHEAR - - -
3/4"	1	79	.066"	65
	2	74	.062"	65
	3	75	.063"	65
3/8"	1	76	.083"	100
	2	76	.079"	100
	3	77	.078"	100

NOTE: Sub-size (9mm x 10mm) charpy specimens were used for testing 3/8" sample.

*This clarification is in response is to Chapel Steel's request to explain why LTI used the average energy (Yield) to determine the temperature to perform the Charpy Notch Test. Chapel Steel Work Order # 73911 identified the heat as 1U345.

ASTM A709-1b Table S1-2 Notes:

Note A states "The CVN-impact testing shall be "H" heat frequency testing in accordance with Specification A673/A 673M."

Note B states "If the yield point of the material exceeds 65 Ksi (450 MPa), the testing temperature for the minimum average energy required shall be reduced by 15°F (8°C) for each increment of 10 Ksi (70 MPa). The yield point is the value given on the certified "Mil Test Report".

Chapel Steel identified that LTI use the requirements from ASTM A709/A 709 M 50WT2 Specification. Using the Notes in Table S1-2 for the Grade that was identified on the Work Order we determined that as long as the same heat is being tested than we could average the Yield on the Clisteel Material Test Report, which gave two Yields for the same heat. (69 & 62 Ksi - Ave. 65.5 Ksi)

The services performed above were done in accordance with LTI's Quality System Program Manual Revision 17 dated 12/3/04 and ISO/IEC 17025. These results relate only to the items tested and this report shall not be reproduced, except in full, without the written approval of Laboratory Testing, Inc. LTI is accredited by NADCAP to ISO/IEC 17025, Material's Testing and NDT (MT, PT and UT).

MERCURY CONTAMINATION: During the testing and inspection, the product did not come in direct contact with mercury or any of its compounds nor with any mercury containing devices employing a single boundary of containment.

NOTE: The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under Federal Statutes.

Donald J. DiFilippo

QA Manager

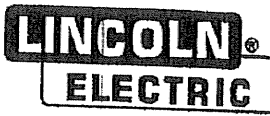
By:

Authorized Signature

Page 1 of 1

The Lincoln Electric Company
22801 St. Clair Avenue
Cleveland, Ohio 44117-1199

CERTIFICATE OF CONFORMANCE
(APPLIES ONLY TO U.S. PRODUCTS)



[1 Year]

Product: Lincolnweld® 880 Flux/
LA-75 Electrode
Classification: F7A2-ENi1K-Ni1-H8
Specification: AWS A5.23-97, ASME SFA-5.23
Test Completed: July 26, 2007

This is to certify that the product named above and supplied on the referenced order number is of the same classification, manufacturing process, and material requirements as the material which was used for the test that was conducted on the date shown, the results of which are shown below. All tests required by the specifications shown for classification were performed at that time and the material tested met all requirements. It was manufactured and supplied according to the Quality System Program of the Lincoln Electric Company, Cleveland, Ohio, U.S.A., which meets the requirements of ISO9001, NCA3800, ANSI/AWS A5.01, AS 2592, and other specification and Military requirements, as applicable. The Quality System Program has been approved by ASME, ABS, and VOTUV.

Operating Settings	AWS/ASME Requirements	Results
Electrode Size	5/32 inch	5/32 inch
Polarity	DC+	DC+
Voltage, V	27 - 30	28
Wire Feed Speed, cm/min (in/min)		112 (44)
Current, amps	475 - 575	525
Contact Tip to Work Distance, mm (in.)	(1 - 1 1/2)	32 (1 1/4)
Travel Speed, cm/min (in/min)	(15 - 17)	41 (16)
Passes/Layers		17/8
Preheat Temp. °C (°F)	(275 - 325)	150 (300)
Interpass Temp. °C (°F)	(275 - 325)	150 (300)
Mechanical properties of the weld deposits (in the as-welded condition)		
Tensile Strength, MPa (ksi)	(70 - 95)	560 (80)
Yield Strength, 0.2% offset, MPa (ksi)	(58 min.)	450 (65)
Elongation, %	22 min.	32
Average Hardness Rockwell B	Not Required	87
Avg. Charpy V-notch Impact Properties		
Joules @ -20 °C (ft-lb @ -20 °F)	(20 min.)	108 (79)
Diffusible Hydrogen, (mL/100g) per AWS A4.3	8.0 max	95,111,112 (71,82,63)
Absolute Humidity (grains moisture/lb dry air)		4.4
		66

Chemical composition of the weld deposit and electrode				
Analysis (weight %)	Ni1 Deposit		ENi1K Electrode	
	Requirements	Results	Requirements	Results
C	0.12 max.	0.04	0.12 max.	0.08
Mn	1.50 max.	1.53	0.80 - 1.40	0.98
Si	0.80 max.	0.47	0.40 - 0.80	0.55
S	0.025 max.	0.011	0.020 max.	0.008
P	0.030 max.	0.018	0.020 max.	0.008
Cr	0.15 max.	0.03	Not Required	0.02
Ni	0.75 - 1.10	0.78	0.75 - 1.25	0.87
Mo	0.35 max.	0.01	Not Required	0.02
V+Ti+Zr	0.05 max.	0.01	Not Required	0.00
Cu (total)	0.35 max.	0.09	0.35 max.	0.08

This certificate complies to the requirements of EN 10204, Type 2.2.
Radiographic Test: Met requirements.
Test assembly constructed of ASTM A516 Grade 70 steel.

Results below the detection limits of the instrument or lower than the precision required by specification are reported as zero.
Strength values in SI units are reported to the nearest 10 MPa converted from actual data. Preheat and interpass temperature values in SI units are reported to the nearest 5 degrees.

David A. Fink July 26, 2007
Manager, Compliance Engineering
Consumable R&D Department

L.B. FOSTER COMPANY
PRECISE STRUCTURAL PRODUCTS

SAW MACROETCH TEST REPORT

Test Date: 3/27/2008

Test conducted in accordance with AWS D1.5 Section 5.10 FIGURE 5.8
Plate Thickness: T1 & T2 = 1" HEAT NUMBER T0371

Position: FLAT
Maximum Single-Pass: 3/8" NO REJECTABLE INDICATION - PASS
Smallest Multi-Pass: 7/16" NO REJECTABLE INDICATION – PASS

Position: HORIZONTAL
Maximum Single-Pass: 5/16" NO REJECTABLE INDICATION - PASS
Smallest Multi-Pass: 7/16" NO REJECTABLE INDICATION – PASS

Test Conducted By: Walter J. Borkowski & Michael Morelli
L.B. FOSTER COMPANY
QUALITY DEPARTMENT

Preparation and testing witnessed by Mr. Derek Crowe Massachusetts Highway
Department

Derek Crowe 4/7/2008

LB FOSTER CO Precise Structural Products
Welding Procedure Specification

Page 1 of 2
3476-01

Material Spec. ASTM A709 G36, G50 & G50W

Welding Process(es) SMAW

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

Manual ☒ Machine ☐ Semi-Automatic ☐ Automatic ☐

Filler Metal Specification AWS A5.1

Filler Metal Classification E7018

Flux N/A

Shielding Gas N/A Gas Flow Rate N/A

Single or Multiple Pass Single

Single or Multiple Arc SINGLE

Welding Current REVERSE

Polarity: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

Welding Progression Up ☐ Down ☐

Root Treatment CLEAN AS TO REMOVE CONTAMINANTS

Preheat Temperature N/A Interpass Temperature N/A

Postheat Treatment N/A

Heat Input Min N/A Max N/A

WELDING PROCEDURE

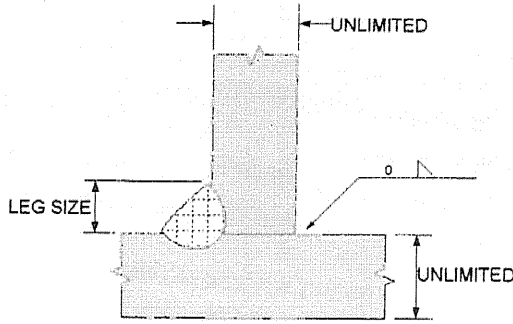
Pass No.	Electrode Size	Amperes	Volts	Travel Speed	Other	Joint Detail
ALL	3/32	120-150				
ALL	1/8	140-180				
ALL	5/32	160-210				
ALL	3/16	190-250				

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

Procedure No. 1 TACK WELD Contractor _____

Revision No. _____ Authorized By WALTER J. BORKOWSKI Date 12/31/2008

Joint Detail



MEMO

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

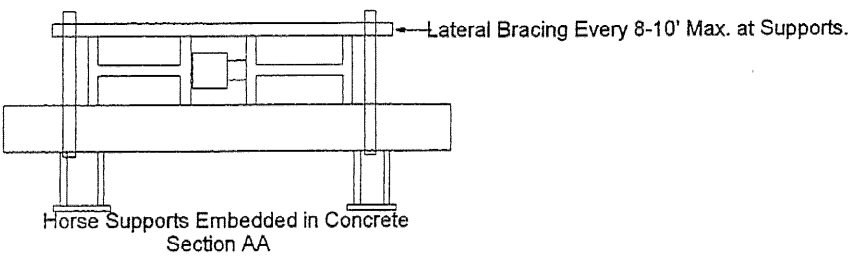
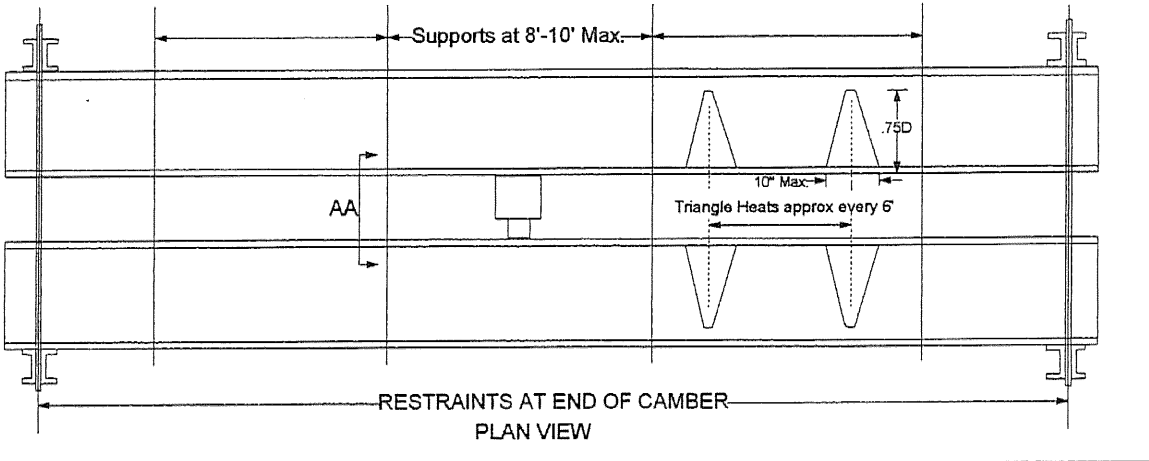
HEAT CAMBER PROCEDURE

Heating Equipment: Heating shall be performed using large, approximately 1 inch diameter, multi-orifice (rosebud) heating torch operating at approximately 25 psi of propane and 125 psi oxygen. Heating shall be confined to the patterns described herein and shall be conducted to bring the steel within the planned pattern to a temperature between 1000 Deg F and 1150 Deg F as rapidly as possible without overheating the steel.

Heat Measurement: Heating measurements shall be made using temperature indicating crayons manufactured, for 1000 Deg F, 1100 Deg F, 1150 and 1200 Deg F. Heat measurements shall be made after heating flame is removed.

Order of Events:

1. Stringer flanges shall be supported in the no load position (web horizontal). Stringers are to be place on steel horses. Steel horses are approximately every 8' to 10'.
2. Stringers are to be laid back to back (flange to flange). Two stringers shall be heat cambered simultaneously.
3. Triangular heating patterns shall be marked onto the webs and flanges as required, to achieve specified camber. See sketch below.
4. Maximum 20,000-psi compressive stress shall be induced. One ram shall be used to accomplish specified camber at each location. Ram shall have a calibrated pressure gauge. Once specified camber is achieved the ram is repositioned to the next location.
5. Heating shall begin at the apex of the triangle and progress to the base and across the full width of the flange. Temperature shall be brought between 1000 Deg F and 1150 Deg F as rapidly as possible. Temperature exceeding 1200 Deg F shall be cause for rejection.
6. Stringers are to be cooled in still air. Quenching with water or water and air will not be performed.
7. Cambers are checked in the unloaded position accordance with the approved shop drawing(s).

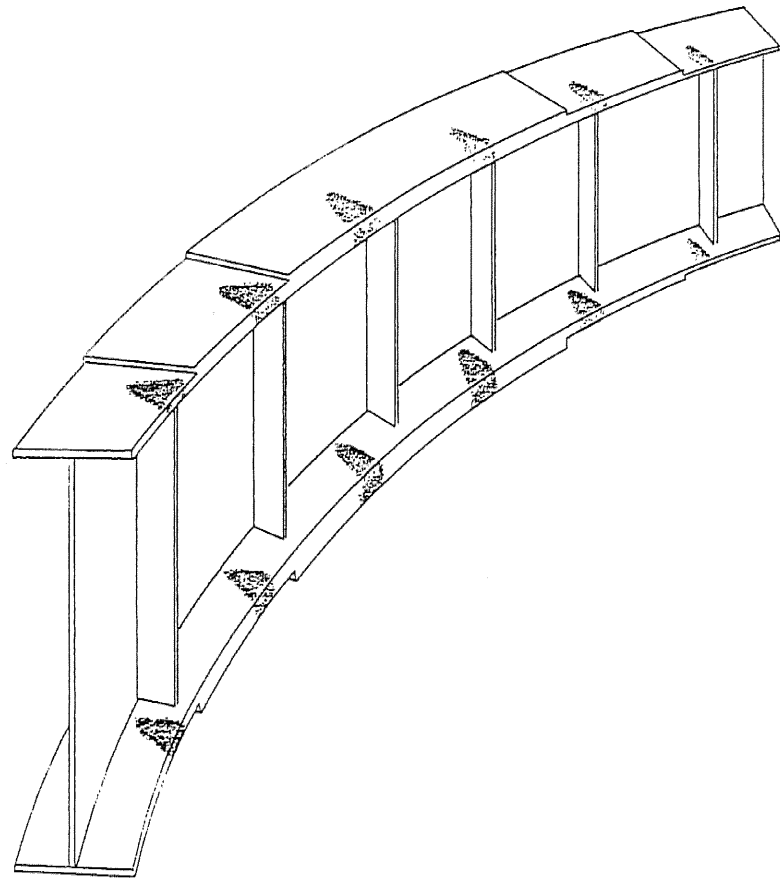


HEAT STRAIGHTENING AND SWEEP PROCEDURE

Heat straightening and sweep of rolled sections where the radius is less than 1,000 feet.

- 1) Heating V type patterns shall be marked on flange as required to obtain desired curvature. The truncated triangle shall have an included angle of approximately 15 to 30 degrees. The apex of the truncated triangle shall terminate just before the juncture of the web. The base of the truncated triangle shall not exceed 10 inches (Typically 3" to 5"). See Detail Below.
- 2) Heating shall be performed using large, approximately 1 inch diameter, multiorifice (rosebud) heating torch. Approximately 25 psi propane and 126 psi oxygen.
- 3) Heating operation shall begin at the apex of the truncated triangle and progress to the base (Do not heat the apex once heating progresses to base). Heating both inside and outside of flange surfaces concurrently is required when the flange thickness is greater than 1 1/4".
- 4) Maximum heating temperature shall be 1150 degrees F as verified with temperature indicating crayons. 1000, 1100, 1150, 1200 degrees F temperature indicating crayons shall be allied after heat is removed. Temperature exceeding 1,200 degrees F shall be cause for rejection.
- 5) Particular attention shall be placed on unwanted web distortion.
- 6) Cooling shall be performed in still dry air.
- 7) Stringer sweep shall be re-inspected, with the web in the vertical position.
- 8) Operation shall be performed in accordance with AASHTO Div 2 11.4.12.2.

Diagram below depicts typical sweep type procedure. For heat straightening the V heats are applied on the outside of the curve. It is understood that the apex of the triangles, are pointed in the opposite direction of desired movement.



GENERAL NOTES

SPECIFICATIONS

ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006, AND ITS LATEST REVISIONS AND AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FOURTH EDITION, DATED 2007 AND ITS LATEST REVISIONS.

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

MATERIAL SPECIFICATIONS

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

ALL BOLTS FOR THIS PROJECT SHALL BE HIGH STRENGTH HEX HEAD BOLTS AND CONFORM TO ASTM A325 TYPE 1.

FABRICATION

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

MAIN LOAD CARRYING MEMBERS ARE ALL STRINGER BEAMS.

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

REMOVE SURFACE OF FLAME HARDENED STEEL BY GRINDING TO EXTENT NECESSARY TO ACHIEVE THE SPECIFIED SURFACE PROFILE.

ERECTION NOTES

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

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

CLEANING

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

PAINT

DRY FILM THICKNESS:

PRIMER: 2-3 MILS MIN. U.N.-----CAR80 859

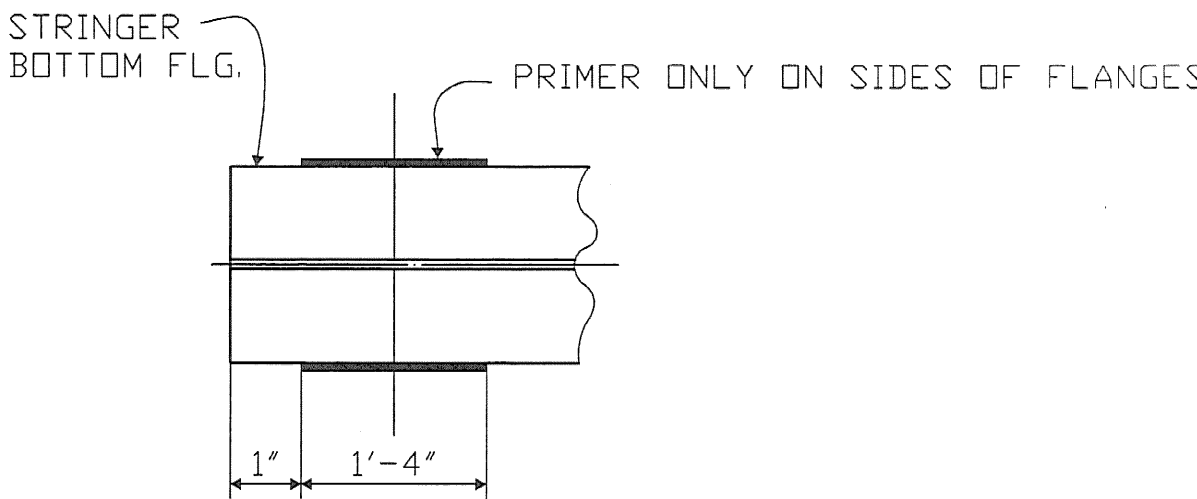
INTERMEDIATE: 4-6 MILS-----CARBOLINE 888

FINISH: 3-5 MILS-----CARBOTHANE 133HB ALIPHATIC POLYURETHANE
COLOR 20059 (BROWN) OF FEDERAL STANDARD 595B.

PAINTED AREAS:

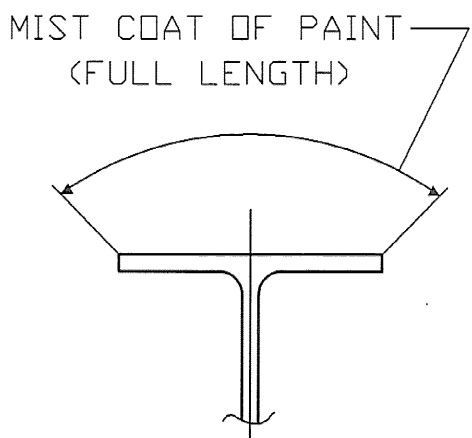
FAYING AREAS WITHIN 3" OF OPEN HOLES SHALL BE GIVEN A COAT OF PRIMER PAINT ONLY.

THE TOP OF TOP FLANGE OF BEAMS WHICH ARE TO RECEIVE FIELD WELDED STUDS SHALL BE GIVEN A MIST COAT (1-1½ MILS) OF PRIMER PAINT ONLY.
(SEE DETAIL 1 BELOW)



SOLE PL WELD PREP

TYPICAL ALL BEAMS EACH END



DETAIL 1

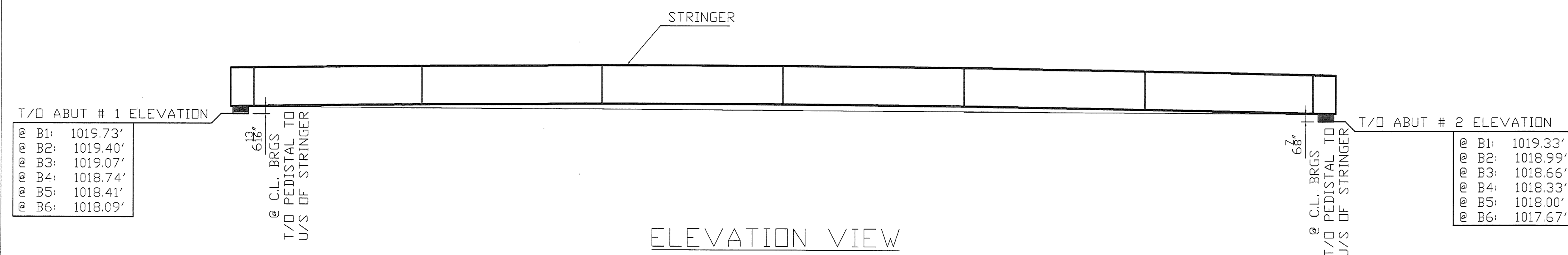
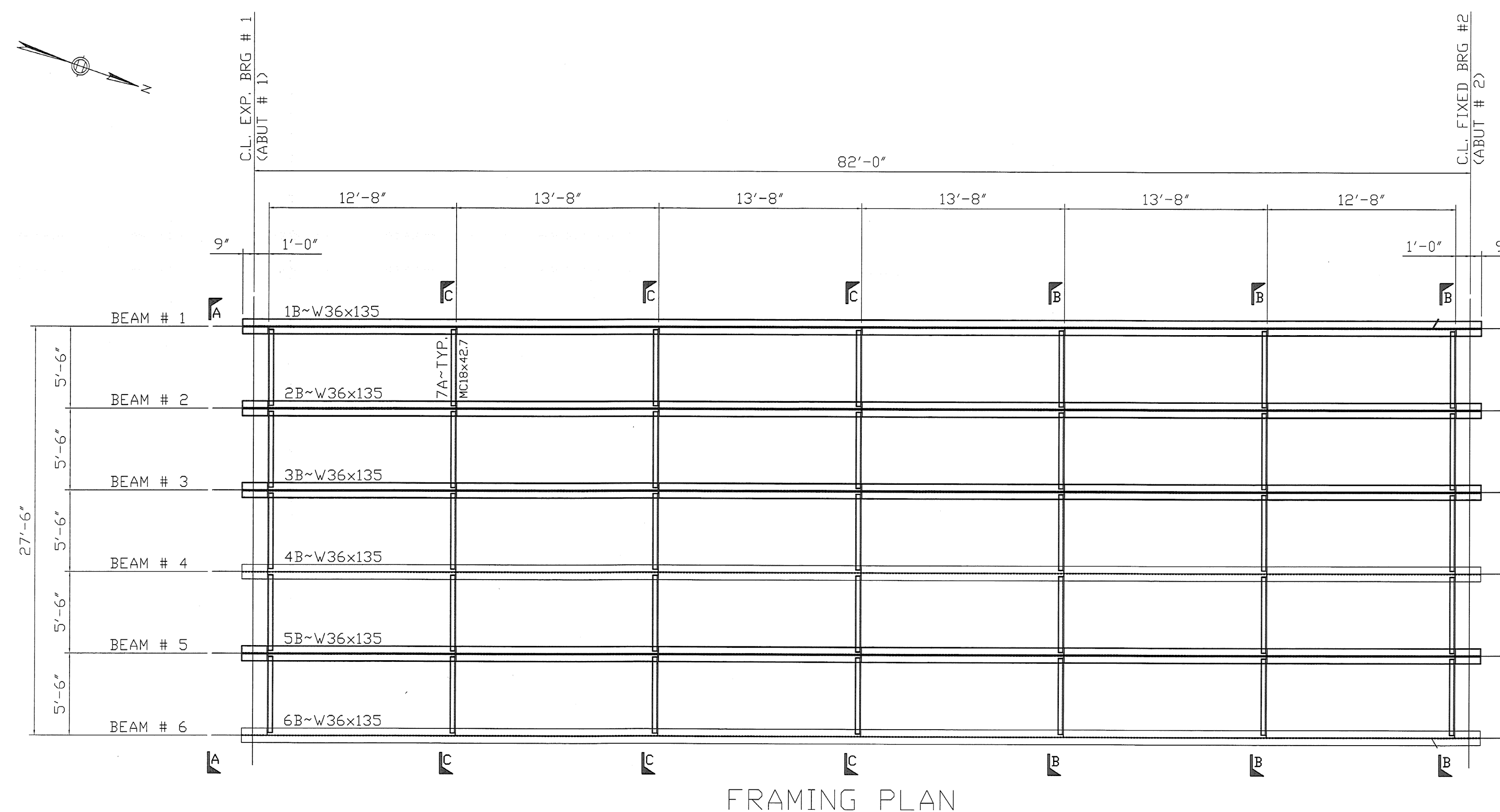
TEM NO.
506.50
513.25
513.40

DESCRIPTION
Structural Steel, Rolled Beam
Structural Steel Paint Shop Applied
Surface Preparation Shop

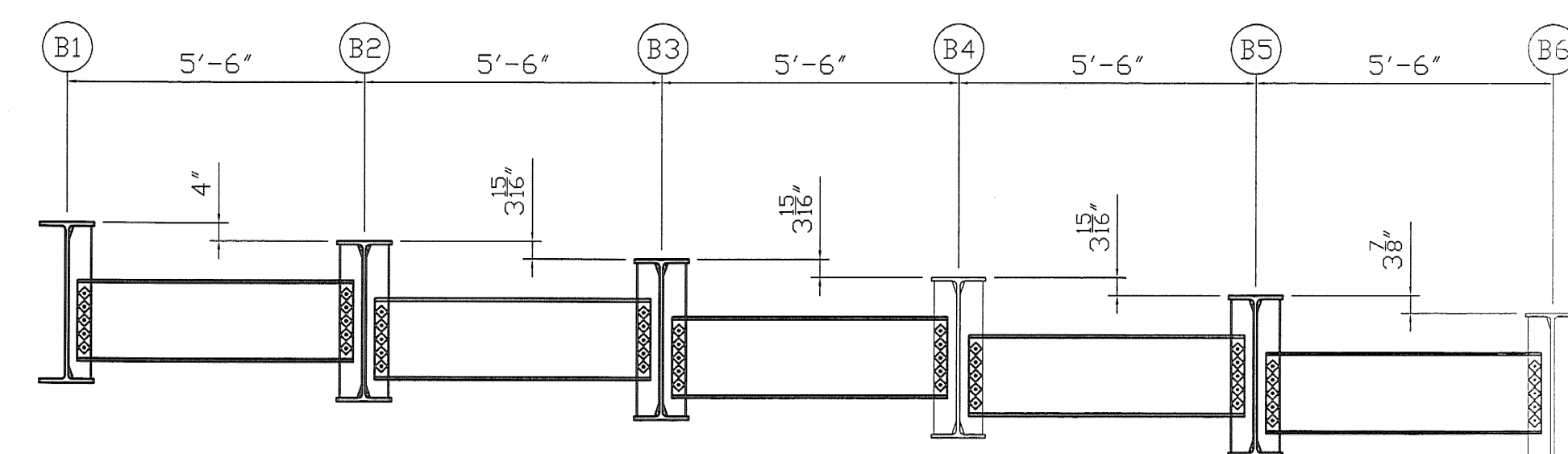
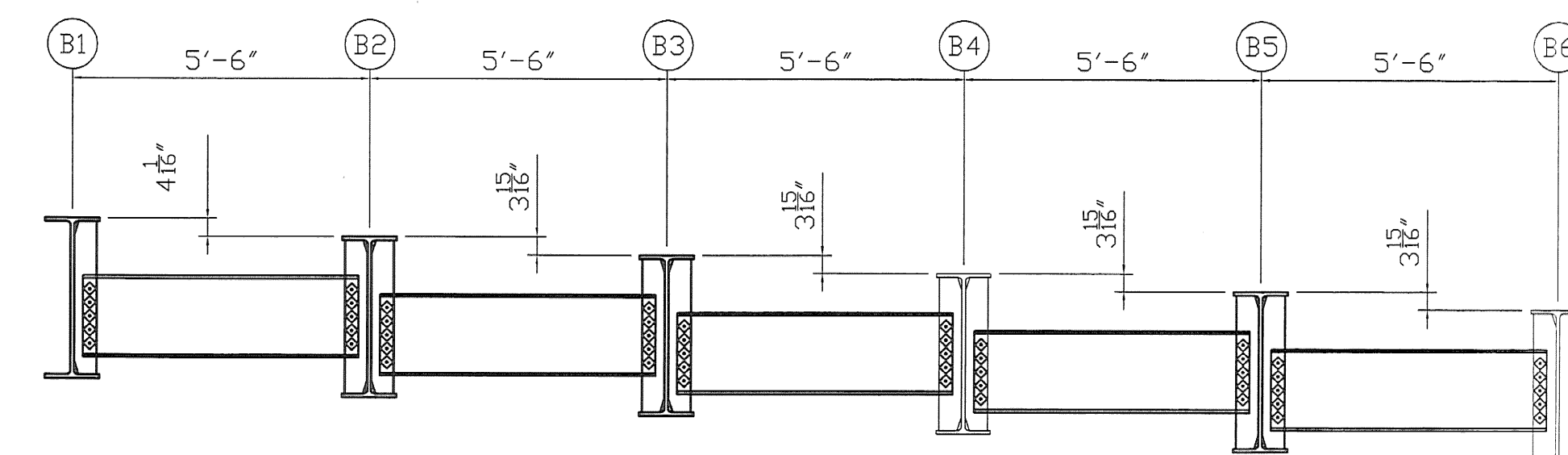
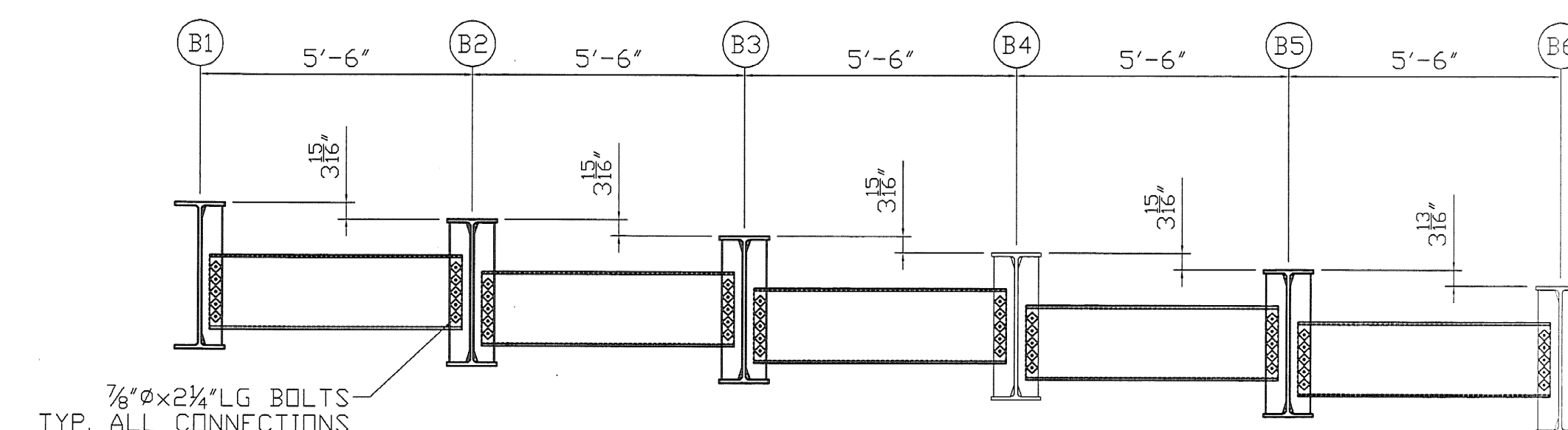
PER LB
LS
LS

RECEIVED
OK'D BY *SSS* OK'D BY *Mfm*
JAN 26 2009
APPROVED *✓*
DATE *1/26/09*

3					
2					
1	1/9/09	APPROVER COMMENTS			
REV.NO	DATE	REVISION			
GENERAL NOTES					
VT.102 (MAJOR COLLETOR) BRIDGE #16 CANAAN, VT					
PROJECT NUMBER ER ST 0271 (16)					
FOSTER • PRECISE					
3 FARM LANE GEORGETOWN, MA 01833					
978-352-2591 FAX 978-352-2182					
OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION					
CONTRACTOR: WINTEREST INC.					
DRAWN BY		CHECKED BY		JOB NO.	SHEET NO.
KC		WL		3476	GN1
11/23/08		11/30/08			



FIELD BOLT LIST							ASTM M164M (ASTM A325) TYPE 1 BOLTS U.N.O.				
LINE	ACTUAL No. REQ'D	BOLT DIAM	BOLT LENGTH	BOLTS / CONN.	# OF CONNS.	GRIP	THICKNESS OF PCS. CONNECTED		WASHER CODE	REMARKS	
1	350	7/8"	24"	70	5	1 1/2"	3/8"	1/2"	1	DIAPHRAGM TO BEAM CONNECTION	
2											
3											
4											
5											
6											
							WASHER CODES				
1 - 1 FLAT WASHER							2 - 2 FLAT WASHERS				
							3 - 1 BEVEL WASHERS				
FIELD BOLT SUMMARY							NOTE: 4% ADDITIONAL BOLTS ADDED + 3 FOR TESTING				
LINE	No. OF BOLTS	BOLT DIAM	TYPE	BOLT LENGTH	ACTUAL COUNT	REMARKS			WEIGHT		
1	367	7/8"	ASTM - A325 TYPE 1	24"	350	w / 1 FLAT WASHER					
2											
3											
4											
										TOTAL WT.	

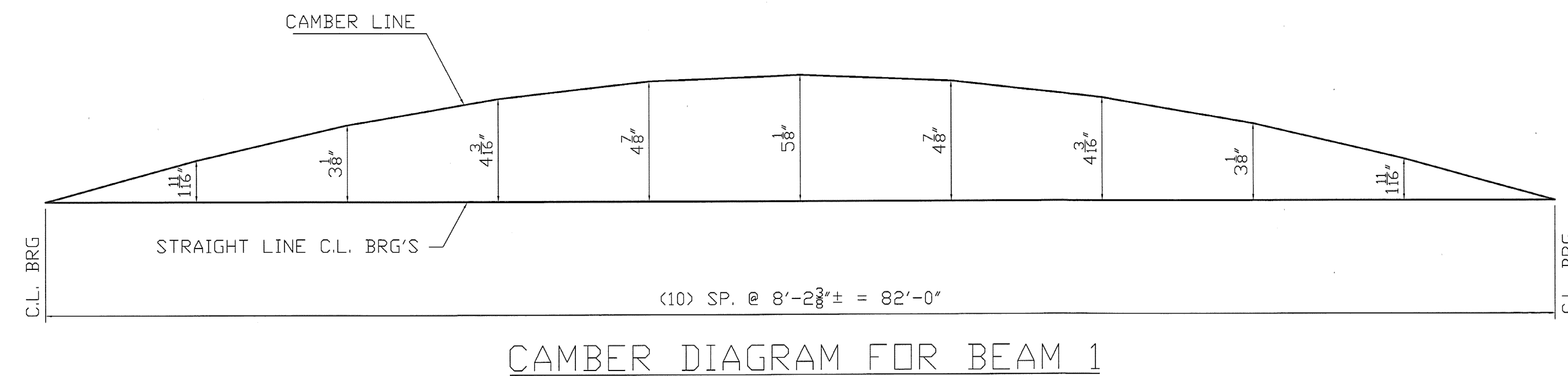
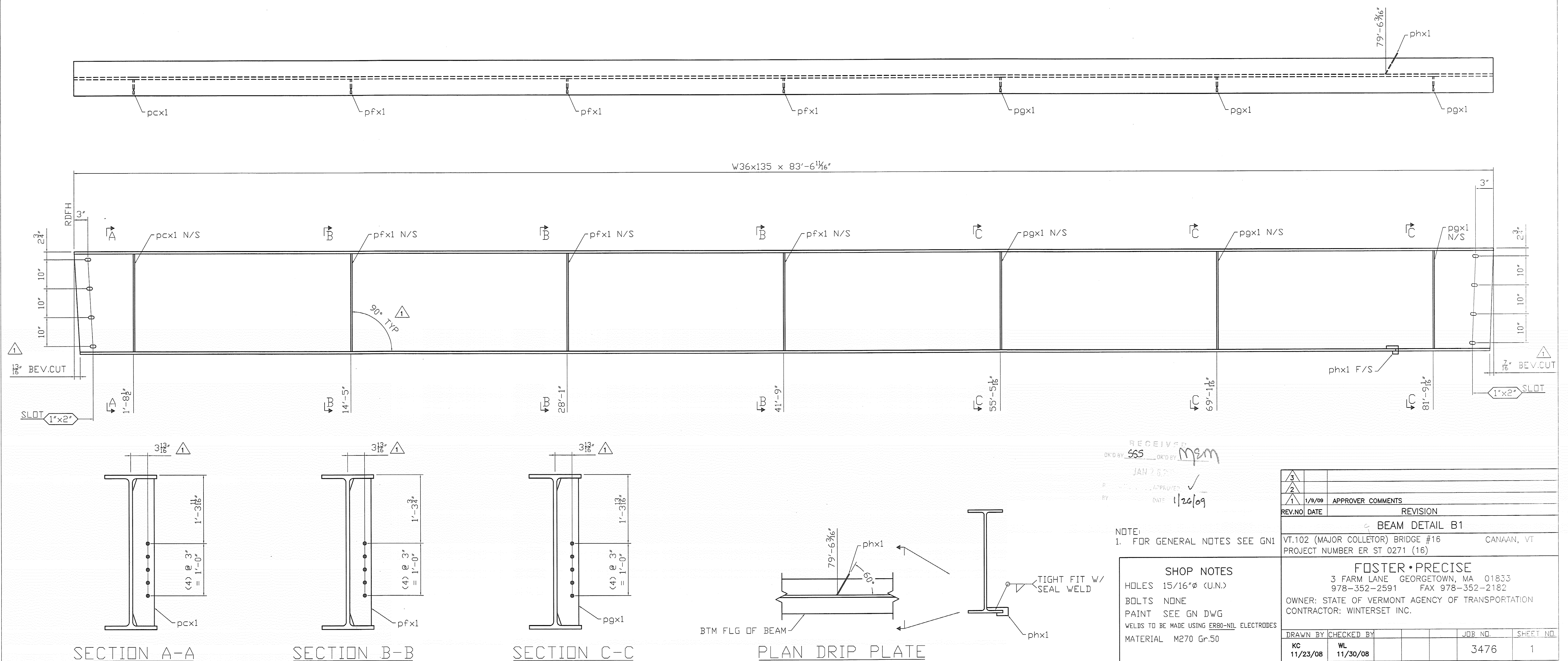


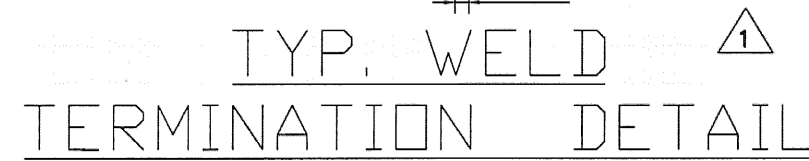
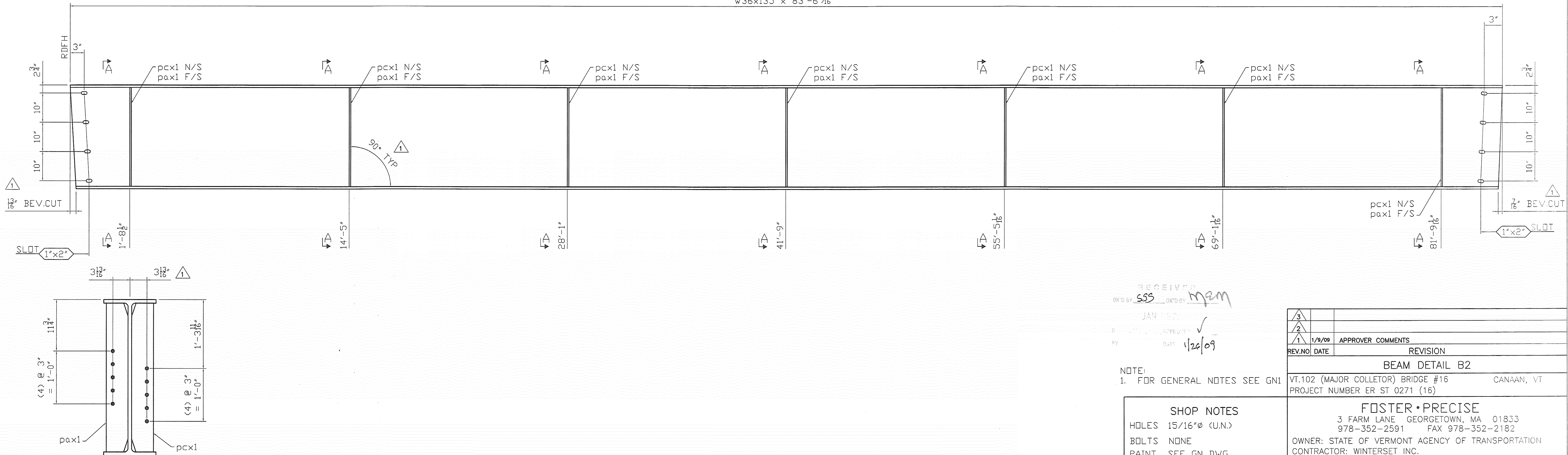
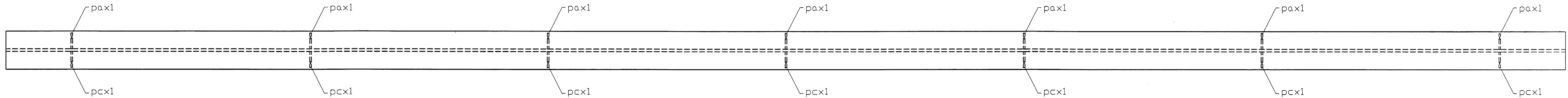
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OK'D BY: *SES* OK'D BY: *mjm*
JAN 26 2009
APPROVED: *✓*
BY: DATE: 1/26/09

NOTE:
1. FOR GENERAL NOTES SEE GN

SHOP NOTES
HOLES 15/16"Ø (U.N.)
BOLTS NONE
PAINT SEE GN DWG
WELDS TO BE MADE USING ER80-NiL ELECTRODES
MATERIAL M270 Gr.50

REV. NO.	DATE	REVISION
1		
2		
3		
ERECTION DRAWING		
VT.102 (MAJOR COLLECTOR) BRIDGE #16 CANAAN, VT		
PROJECT NUMBER ER ST 0271 (16)		
FOSTER•PRECISE		
3 FARM LANE GEORGETOWN, MA 01833		
978-352-2591 FAX 978-352-2182		
OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION		
CONTRACTOR: WINTERSET INC		
DRAWN BY	CHECKED BY	JOB NO.
KC	WL	3476
11/23/08	11/30/08	
		SHEET NO.
		E1

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[illegible]

JAN 23 2009
RECEIVED
BY DATE 1/26/09

NOTE:
1. FOR GENERAL NOTES SEE GN.

SHOP NOTES

HOLES 15/16"Ø (U.N.)

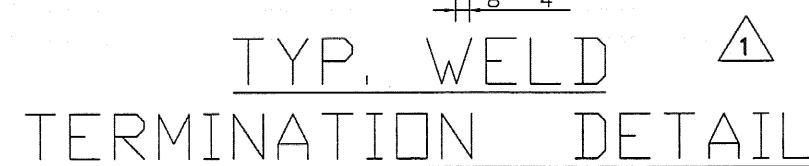
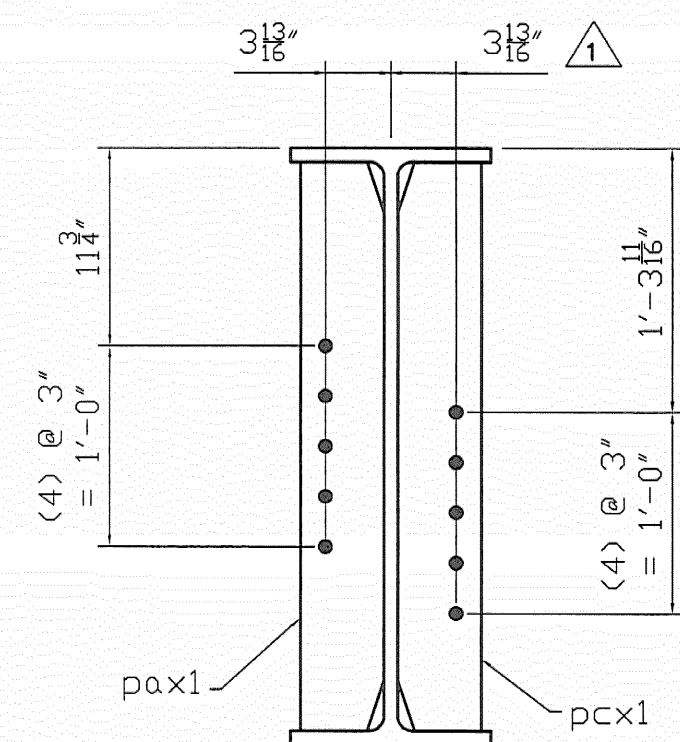
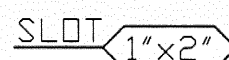
BOLTS NONE

PAINT SEE GN DWG

WELDS TO BE MADE USING ER80-NiL ELECTRODE

MATERIAL M270 Gr.50

3					
2					
1	1/9/09	APPROVER	COMMENTS		
REV.NO	DATE	REVISION			
BEAM DETAIL B2					
VT.102 (MAJOR COLLETOR) BRIDGE #16				CANAAN, VT	
PROJECT NUMBER ER ST 0271 (16)					
FOSTER PRECISE					
3 FARM LANE GEORGETOWN, MA 01833					
978-352-2591 FAX 978-352-2182					
OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION					
CONTRACTOR: WINTERSET INC.					
DRAWN BY		CHECKED BY		JOB NO.	SHEET NO.
KC 11/23/08		WL 11/30/08		3476	2

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SECTION A-A

RECEIVED
OK'D BY SSS OK'D BY mgm
JAN 19 1964
RECEIVED
BY SSS DATE 1/20/64

NOTE:
1. FOR GENERAL NOTES SEE GN

SHOP NOTES

HOLES 15/16"Ø (U.N.)

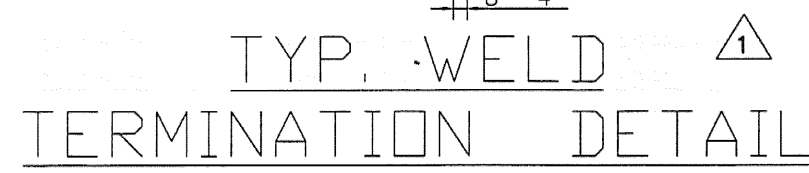
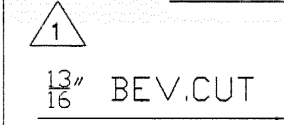
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PAINT SEE GN DWG

WELDS TO BE MADE USING ER80-NiL ELECTRODES

MATERIAL M270 Gr.50

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REV.NO	DATE	REVISION							
BEAM DETAIL B3									
VT.102 (MAJOR COLLETOR) BRIDGE #16					CANAAN, VT				
PROJECT NUMBER ER ST 0271 (16)									
FOSTER • PRECISE									
3 FARM LANE GEORGETOWN, MA 01833									
978-352-2591 FAX 978-352-2182									
OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION									
CONTRACTOR: WINTERSET INC.									
DRAWN BY		CHECKED BY				JOB NO.		SHEET NO.	
KC 11/23/08		WL 11/30/08				3476		3	

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SECTION A-A

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JAN 19 1969
BY _____ DATE 1/20/69

NOTE:
1. FOR GENERAL NOTES SEE GN1

SHOP NOTES

HOLES 15/16"Ø (U.N.)

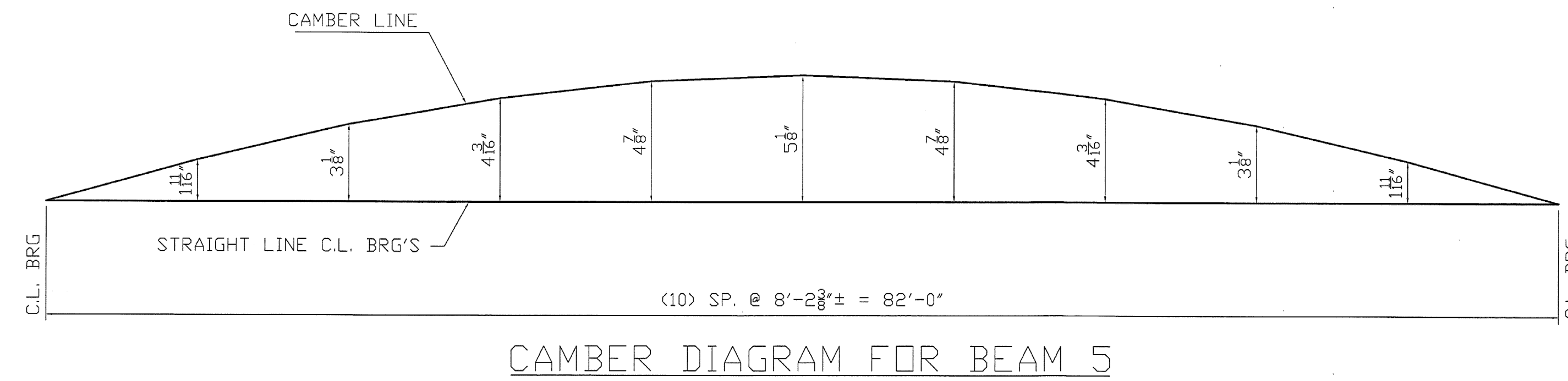
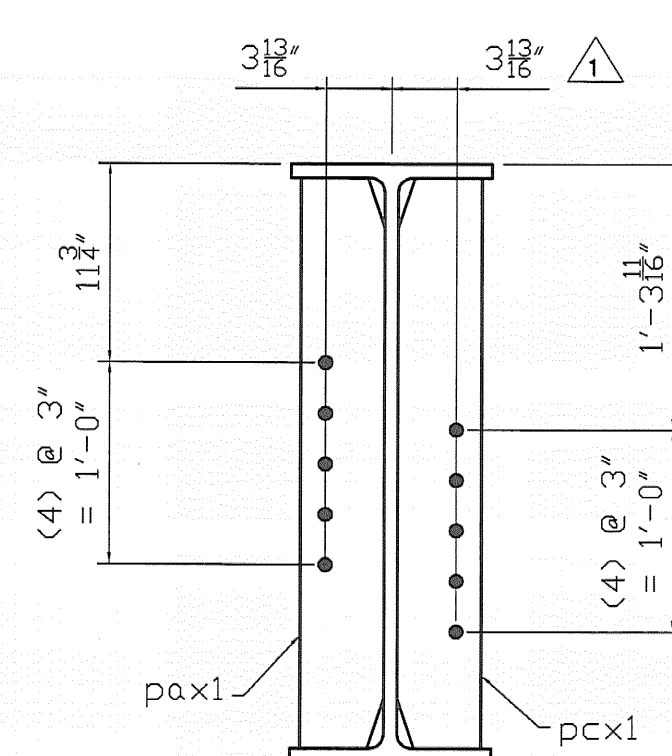
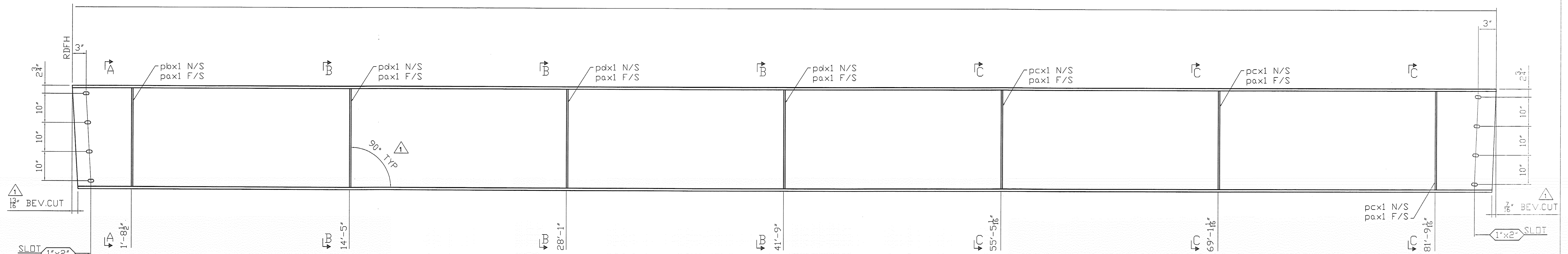
BOLTS NONE

PAINT SEE GN DWG

WELDS TO BE MADE USING ER80-NiL ELECTRODES

MATERIAL M270 Gr.50

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2					
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REV.NO	DATE	REVISION			
BEAM DETAIL B4					
VT.102 (MAJOR COLLECTOR) BRIDGE #16				CANAAAN, VT	
PROJECT NUMBER ER ST 0271 (16)					
FOSTER • PRECISE					
3 FARM LANE				GEORGETOWN, MA	01833
978-352-2591				FAX	978-352-2182
OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION					
CONTRACTOR: WINTERSET INC.					
DRAWN BY	CHECKED BY			JOB NO.	SHEET NO.
KC 11/23/08	WL 11/30/08			3476	4

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OK'D BY SSS OK'D BY mzm
JAN
FEB
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1/26/09

SHOP NOTES

HOLES 15/16"Ø (U.N.)

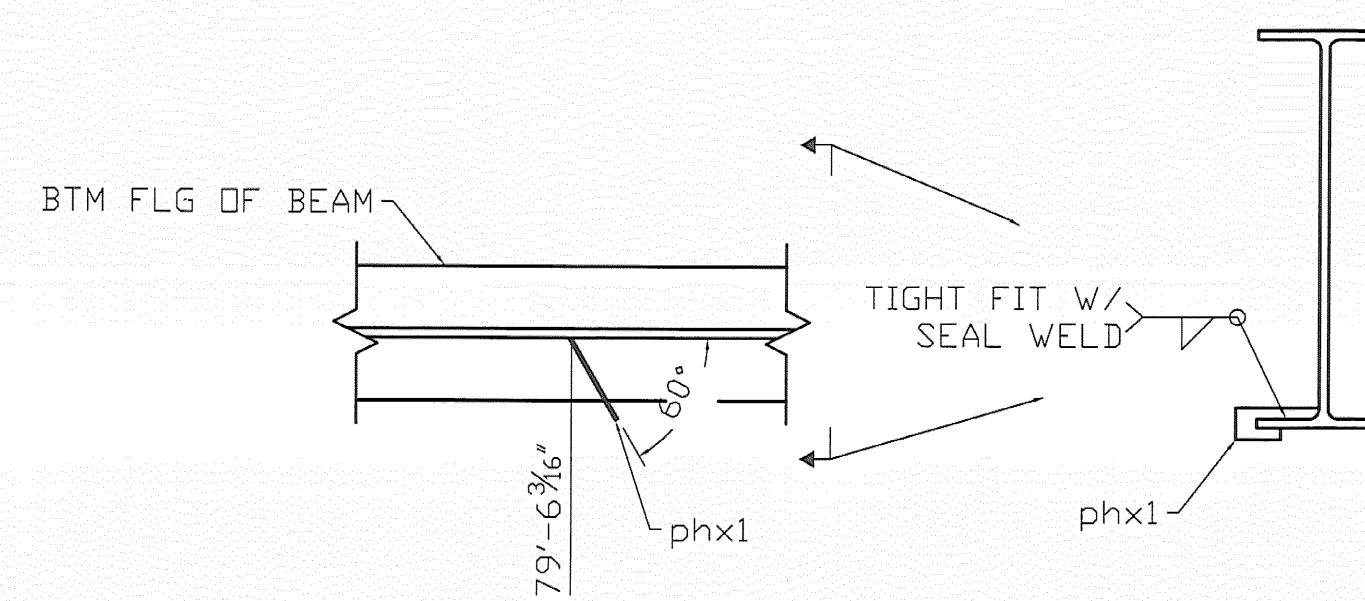
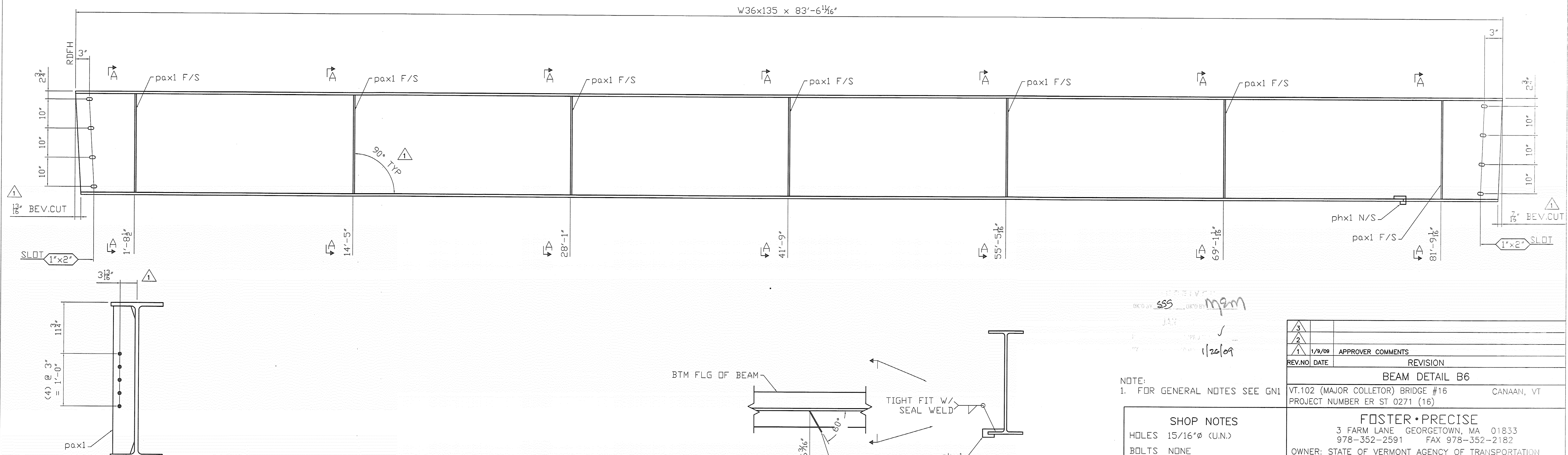
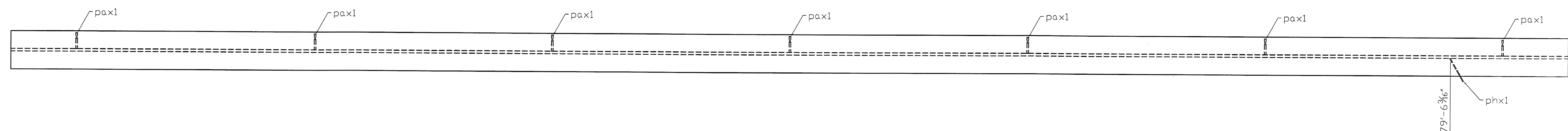
BOLTS NONE

PAINT SEE GN DWG

WELDS TO BE MADE USING ER80-NiL ELECTRODES

MATERIAL M270 Gr.50

3					
2					
1	1/9/09	APPROVER	COMMENTS		
REV.NO	DATE	REVISION			
BEAM DETAIL B5					
VT.102 (MAJOR COLLECTOR) BRIDGE #16 CANAAN, VT					
PROJECT NUMBER ER ST 0271 (16)					
FOSTER • PRECISE					
3 FARM LANE GEORGETOWN, MA 01833					
978-352-2591 FAX 978-352-2182					
OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION					
CONTRACTOR: WINTERSET INC.					
DRAWN BY		CHECKED BY		JOB NO.	SHEET NO.
KC 11/23/08		WL 11/30/08		3476	5

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NOTE:
1. FOR GENERAL NOTES SEE GN1

SHOP NOTES

HOLES 15/16"Ø (U.N.)

BOLTS NONE

PAINT SEE GN DWG

WELDS TO BE MADE USING ER80-NiL ELECTRODES

MATERIAL M270 Gr.50

3					
2					
1	1/9/09	APPROVER COMMENTS			
REV.NO	DATE	REVISION			
BEAM DETAIL B6					
VT.102 (MAJOR COLLECTOR) BRIDGE #16			CANAAN, VT		
PROJECT NUMBER ER ST 0271 (16)					
FOSTER • PRECISE					
3 FARM LANE GEORGETOWN, MA 01833					
978-352-2591 FAX 978-352-2182					
OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION					
CONTRACTOR: WINTERSET INC.					
DRAWN BY		CHECKED BY		JOB NO.	SHEET NO.
KC 11/23/08		WL 11/30/08		3476	6



A triangle with the number 1 inside.

OK'D BY SSS OK'D BY mmmm
JAN 19 1964
1/26/09

NOTE:
1. FOR GENERAL NOTES SEE GN1

SHOP NOTES

HOLES 15/16"Ø (U.N.)

BOLTS NONE

PAINT SEE GN DWG

WELDS TO BE MADE USING ER80-NiL ELECTRODES

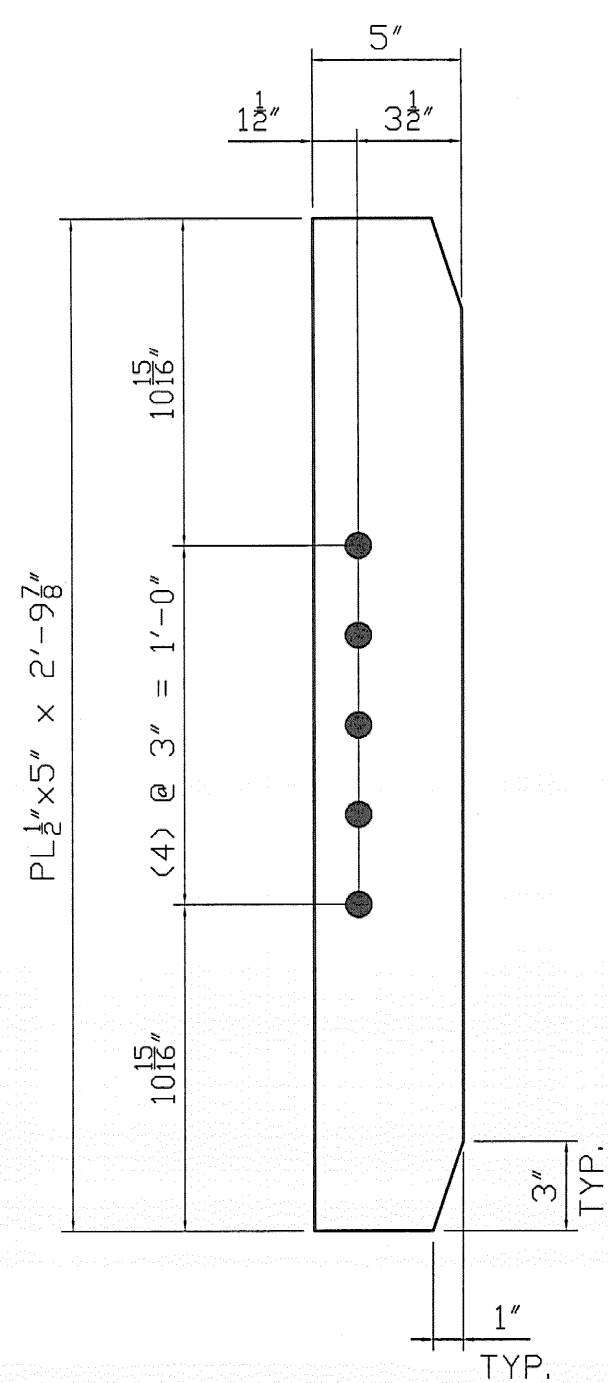
MATERIAL M270 GR50



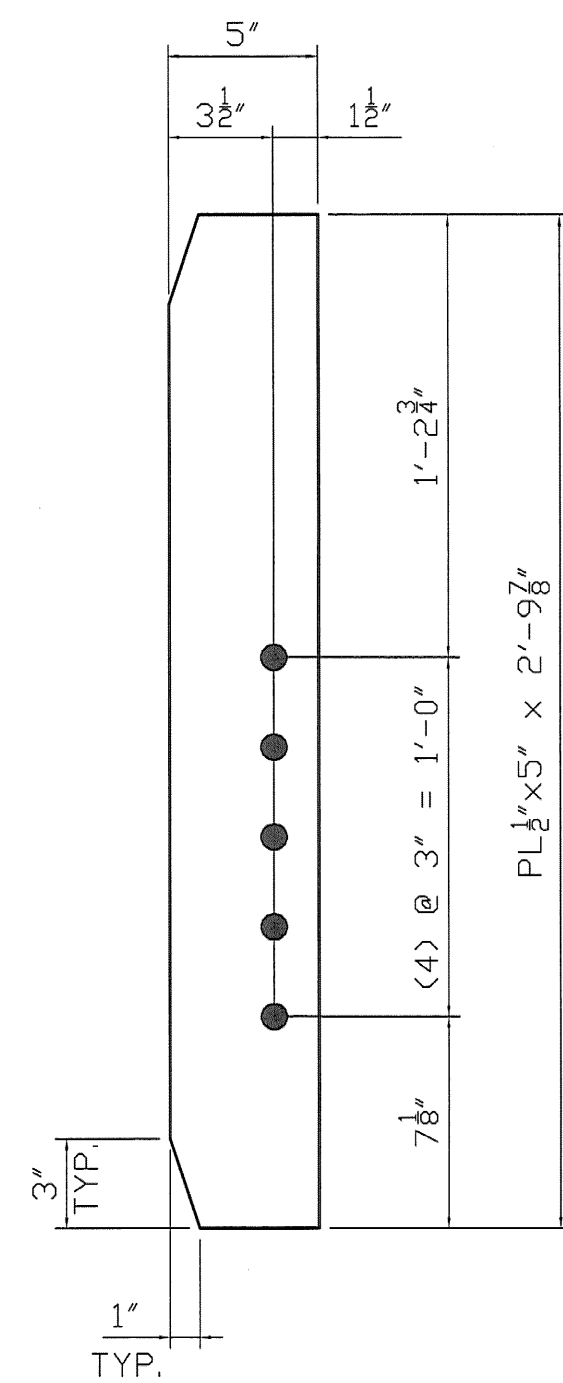
△ 12 REQ'D ~ BLOCK OUT PLS. ~ 7P5

Approved for payment
9/28/2009 mem

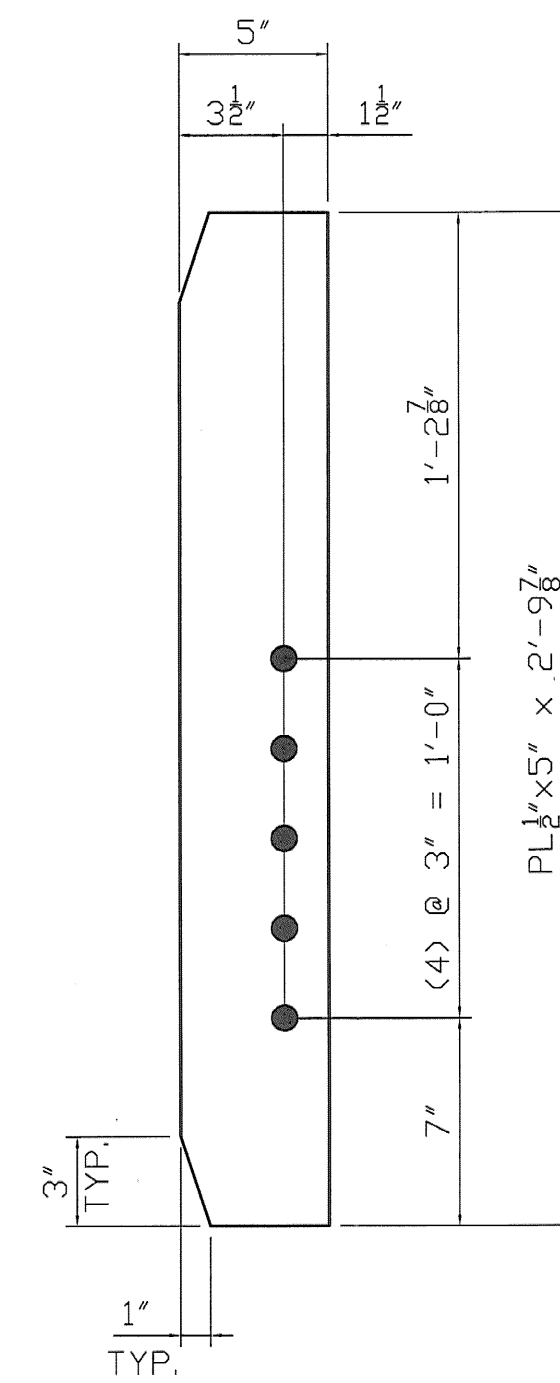
NOTE:
1. FOR GENERAL NOTES SEE GN1



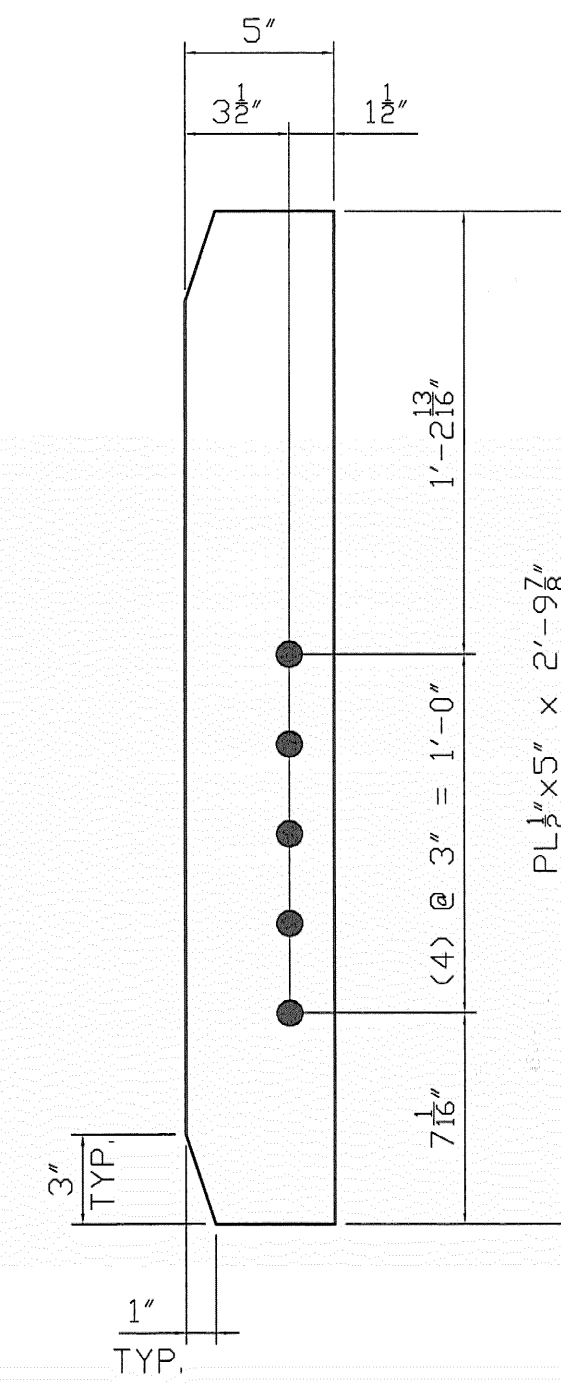
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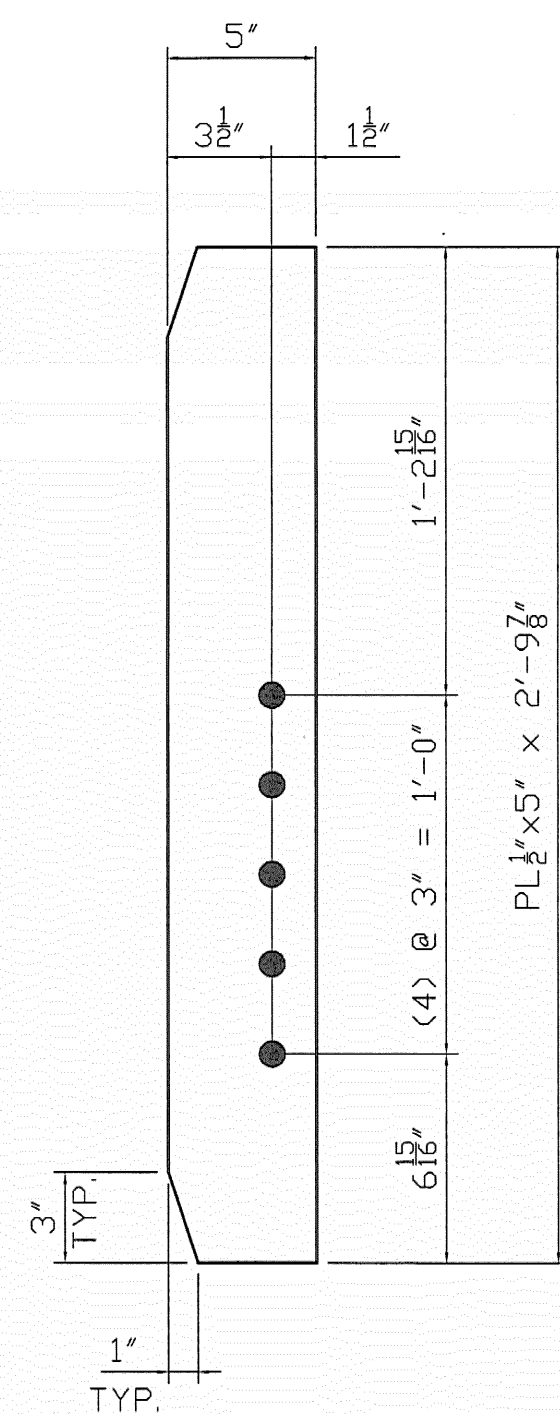
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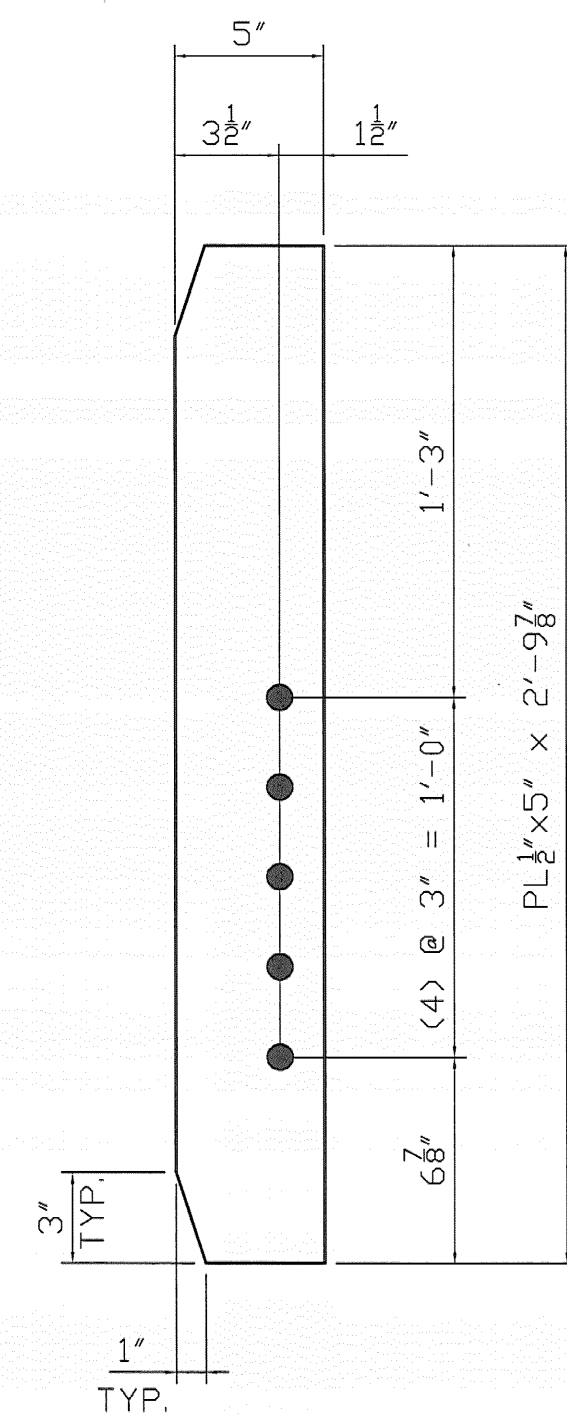
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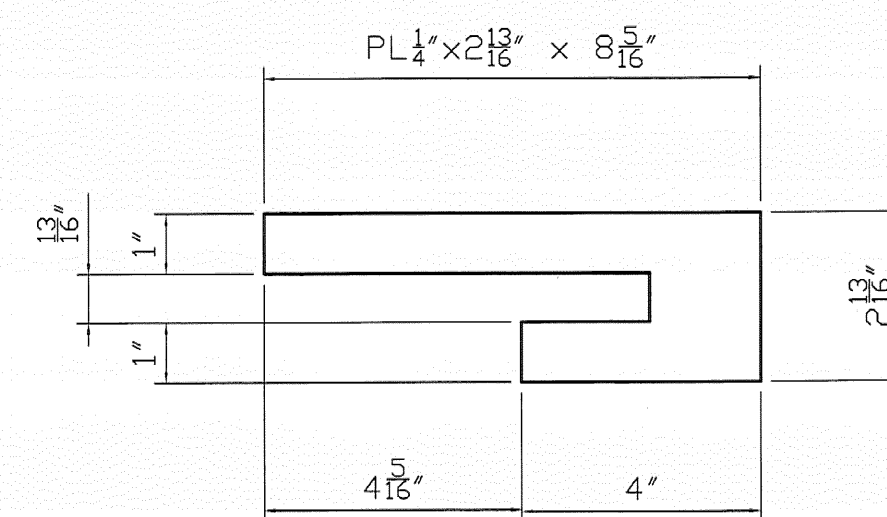
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3 REQ'D ~ GUSSET ~ pfx1



3 REQ'D ~ GUSSET ~ pgx1



2 REQ'D ~ GUSSET ~ phx1

DRAWN BY: *mem*
 CHECKED BY: *mem*
 DATE: 1/26/09

NOTE:
 1. FOR GENERAL NOTES SEE GN:

SHOP NOTES
 HOLES 15/16" Ø (U.N.)
 BOLTS NONE
 PAINT SEE GN DWG
 WELDS TO BE MADE USING ER80-NiL ELECTRODES
 MATERIAL M270 Gr.50

REV	NO	DATE	REVISION
3			
2			
1			
DIAPHRAM DETAIL			
VT.102 (MAJOR COLLECTOR) BRIDGE #16 CANAAN, VT			
PROJECT NUMBER ER ST 0271 (16)			
FOSTER • PRECISE 3 FARM LANE GEORGETOWN, MA 01833 978-352-2591 FAX 978-352-2182 OWNER: STATE OF VERMONT AGENCY OF TRANSPORTATION CONTRACTOR: WINTERSET INC			
DRAWN BY: KC		CHECKED BY: WL	
11/23/08		11/30/08	
		JOB NO. 3476	
		SHEET NO. X1	



State of Vermont
PDD/Structures Design Section
National Life Building – Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-233-0191

Agency of Transportation

See next sheet for instructions

Highway Safety Corp.
P.O. Box 358
Glastonbury, CT 06033

DATE: February 19, 2009

Project Name: Canaan Project #: ER ST 0271 (16)

Structure Identification: VT 102, BR # 16, over the Willard Stream

The following Bridge Railing details Item # 525.33, Bridge Railing, NETC 2-Rail for the above project Vendor's Job #1684 transmitted with your letter dated February 4, 2009, have been reviewed and are being returned herewith.

Sheets: 1 of 2
is approved [X]

Sheets: 2 of 2
is approved as noted [X]

There shall be no fabrication done until all drawings and welding procedures are approved. You must provide notice to our fabrication inspector, Jeff Clark, as to the date fabrication represented by these drawings will begin. That notice must be received and acknowledged at least seven days prior to that date, as per Specification 506.03. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

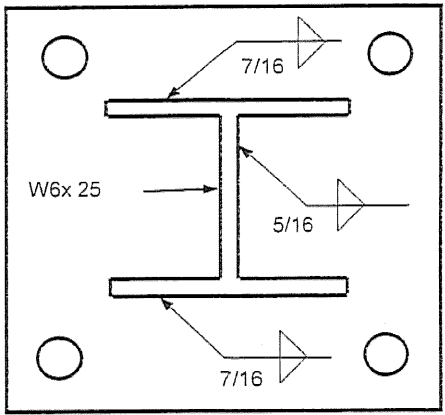
Martha Evans-Mongeon
Project Manager

Attachments
cc: [X] Resident Engineer w/prints, Doug Bumps
[X] Shop Inspector w/prints, Jeff Clark
[X] Contractor w/prints, Winterset, Inc.
[X] Subcontractor – letter only F.R. Lafayette
[X] Construction Division – letter only
[X] Materials & Research Section (C&IA Unit) – letter only
[X] Files (Structures & Central)

Glastonbury, CT

WELDING PROCEDURE					Joint detail
Weld size	Pass no.	Electrode size	Welding parameters Amperes Volts	Travel speed	
5/16"	1	0.062"	275 A ± 25	25 V ± 2	8-10 ipm
7/16"	1 & 2	0.062"	↓	↓	8-10 ipm

WPS no. W-1684-A	Fabricator Highway Safety Corporation
Revision no. 0	Authorized by Paul Radice 
Supporting PQR no. Pre-Qualified	Date 2/3/09
Project Name Canaan, VT rt 102	Project Number ER ST 0271(10)

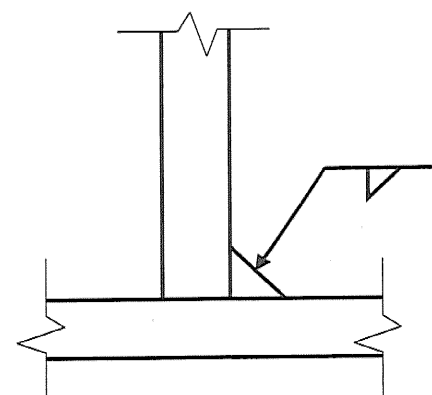


Highway Safety Corporation
Glastonbury, CT

Welding Procedure Specification

Material specification	ASTM A36, A709 Gr 36, A500 gr B, A53 gr B		
Welding process	Gas Metal Arc Welding (GMAW)		
Manual, semi-automatic, or automatic	Semi-Automatic		
Position of welding	Flat (1F) or Horizontal (2F)		
Filler metal specification	AWS A5.18		
Filler metal classification	ER70S-3		
Electrode and manufacturer	Lincoln Electric Lincoln Weld L-50		
Flux and manufacturer	N/A		
Shielding gas	85% Argon / 15% CO2	Flow rate	19-27 L / min
Single or multiple pass	Single		
Single or multiple arc	Single		
Welding current	DCEP		
Polarity	Reverse - electrode positive		
Welding progression	Stringers		
Root treatment	clean base metal		
Preheat and interpass temperature	base metal up to 3/4" (50°F) ; over 3/4 thru 1-1/2" (150°F) ; over 1-1/2" thru 2-1/2" (225°F)		
Postheat treatment	None		
Electrode extension	3/4" ± 1/4"		

WELDING PROCEDURE

Weld size	Pass no.	Electrode -size	Welding parameters		Travel speed	Joint detail
1/8"	1	0.045"	300 A ± 30	29 V ± 2	28 ipm ± 2	TYPICAL ALL FILLET WELDS 
3/16"	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	
TRANS RECEIVED OK'D BY: _____ OK'D BY: <u>Jue</u> FEB 03 2008 APPROVED: <u>X</u> DATE <u>02/13/09</u>						

This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1 / D1.5

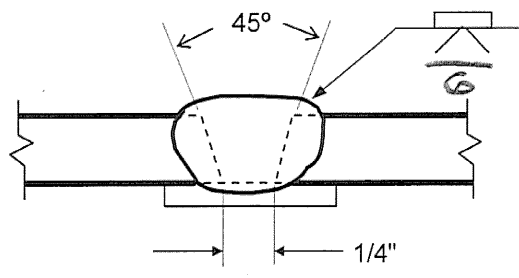
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Revision no.	0	Authorized by	Paul Radice
Supporting PQR no.	Pre-Qualified	Date	2/3/09
Project Name	Canaan, VT rt 102	Project Number	ER ST 0271(10)

Highway Safety Corporation
Glastonbury, CT

Welding Procedure Specification

Material specification	ASTM A500 Gr B		
Welding process	Shielded Metal Arc Welding (SMAW)		
Manual, semi-automatic, or automatic	Manual		
Position of welding	Flat (1G)		
Filler metal specification	AWS A5.1		
Filler metal classification	ER7018		
Electrode and manufacturer	Lincoln Electric Jet LH 78 MR		
Flux and manufacturer	N/A		
Shielding gas	N/A	Flow rate	N/A
Single or multiple pass	Multiple		
Single or multiple arc	Single		
Welding current	AC		
Polarity	N/A		
Welding progression	Stringers		
Root treatment	clean base metal		
Preheat and interpass temperature	50°F (min)		
Postheat treatment	None		
Electrode extension	N/A		

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters		Travel speed	Joint detail
	ALL	5/32"	Amperes	Volts	VARIES	
			150 A to 220 A			B-U2a
		TRANS RECEIVED				
		OK'D BY	DATE	OK'D BY		
			FEB 03 2009	Juc		
		APPROVED	DATE			
			02/13/09			

This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1

WPS no.	W-1684-C	Fabricator	Highway Safety Corporation
Revision no.	0	Authorized by	Paul Radice
Supporting PQR no.	Pre-Qualified	Date	2/3/09
Project Name	Canaan, VT rt 102	Project Number	ER ST 0271(10)

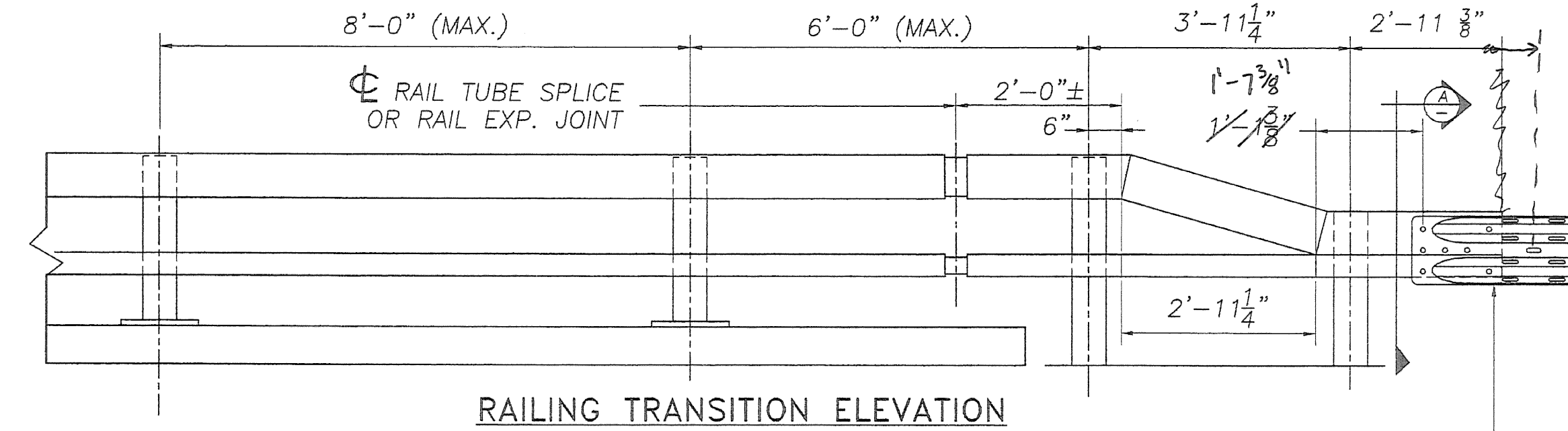


NOTES:
1. ITEMS MARKED "*" ARE NOT SUPPLIED BY HIGHWAY SAFETY CORPORATION, AND THEY ARE SHOWN ONLY FOR REFERENCE.

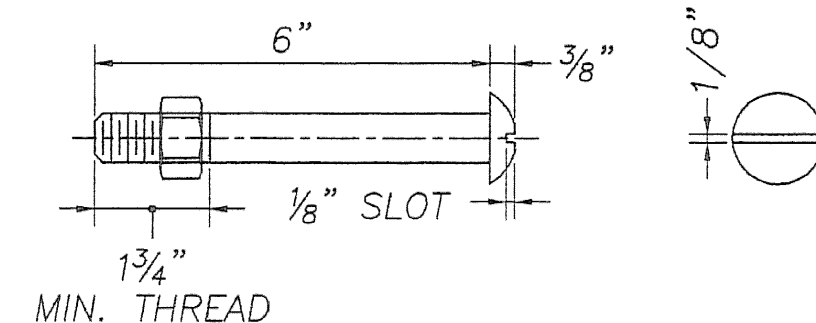
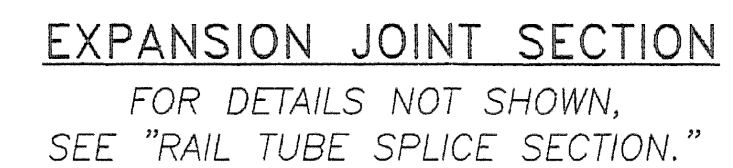
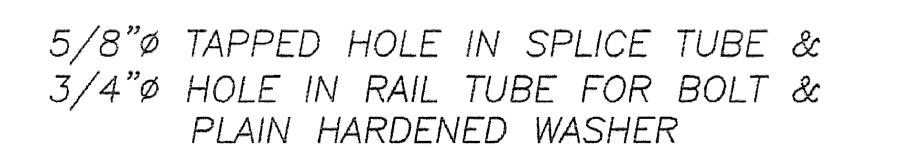
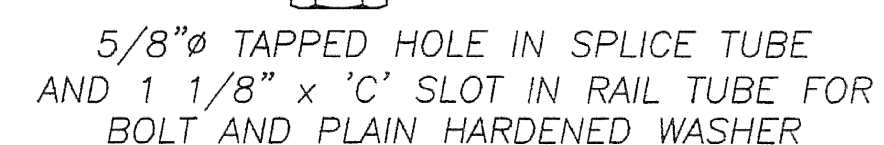
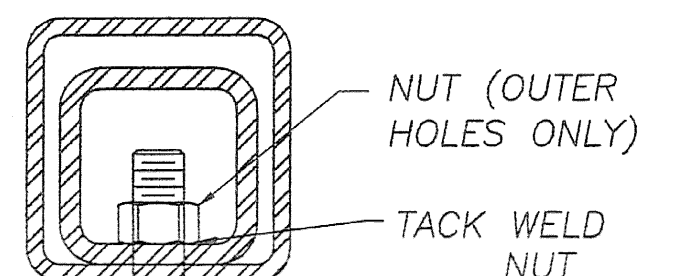
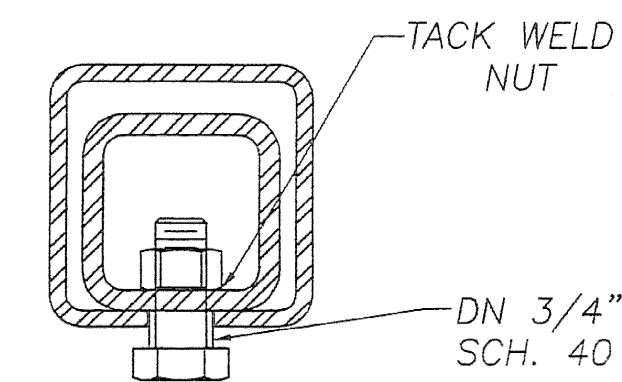
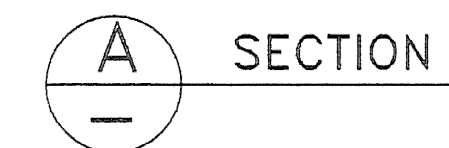
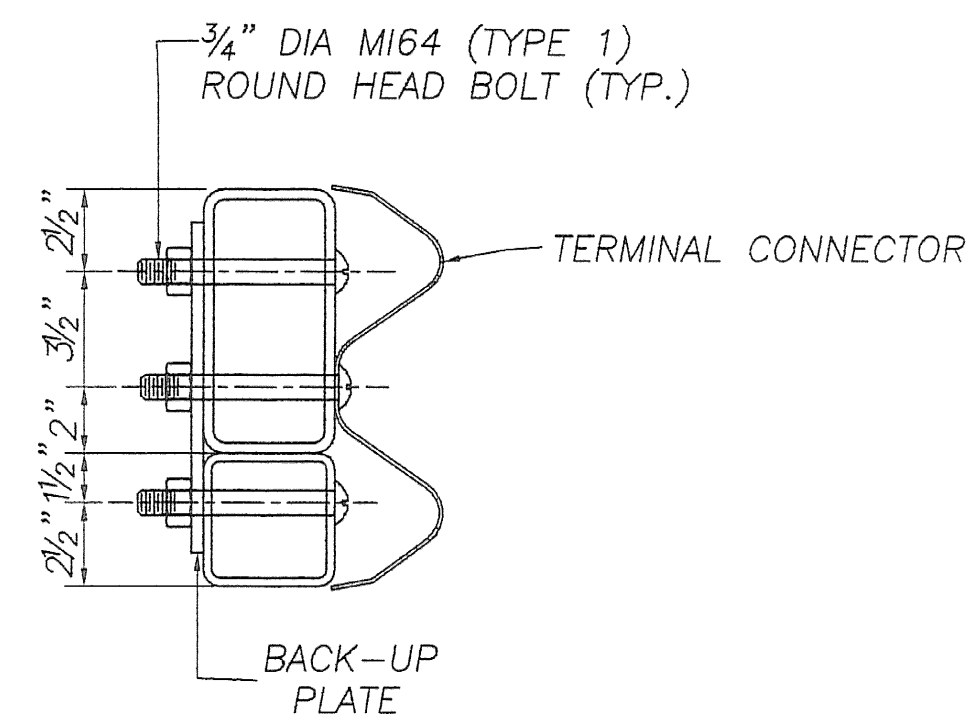
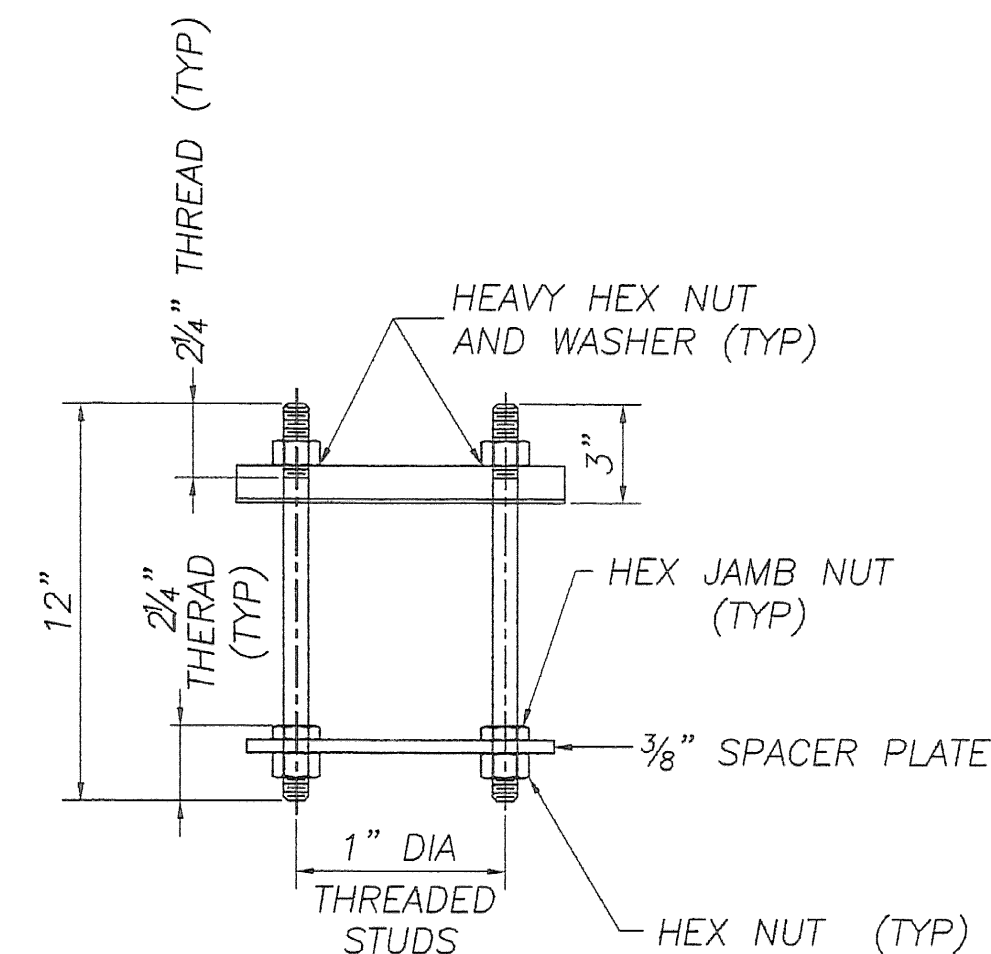
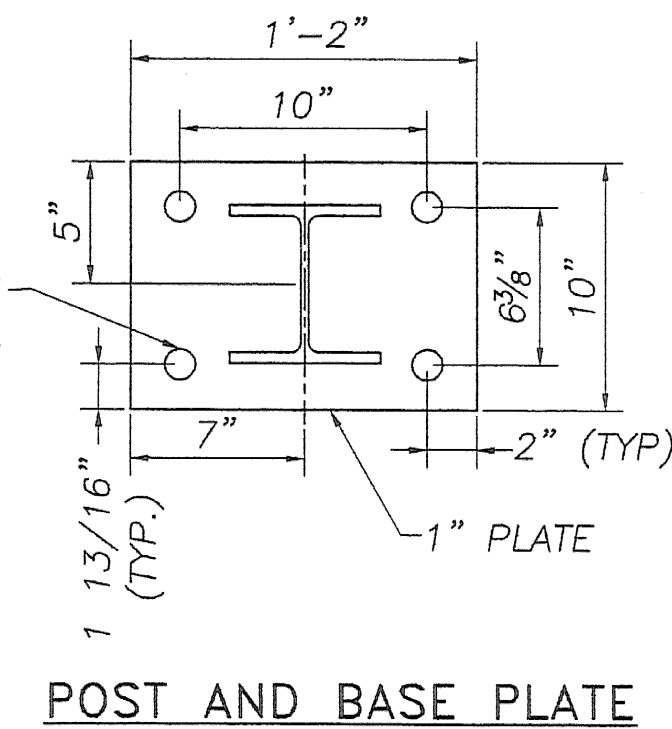
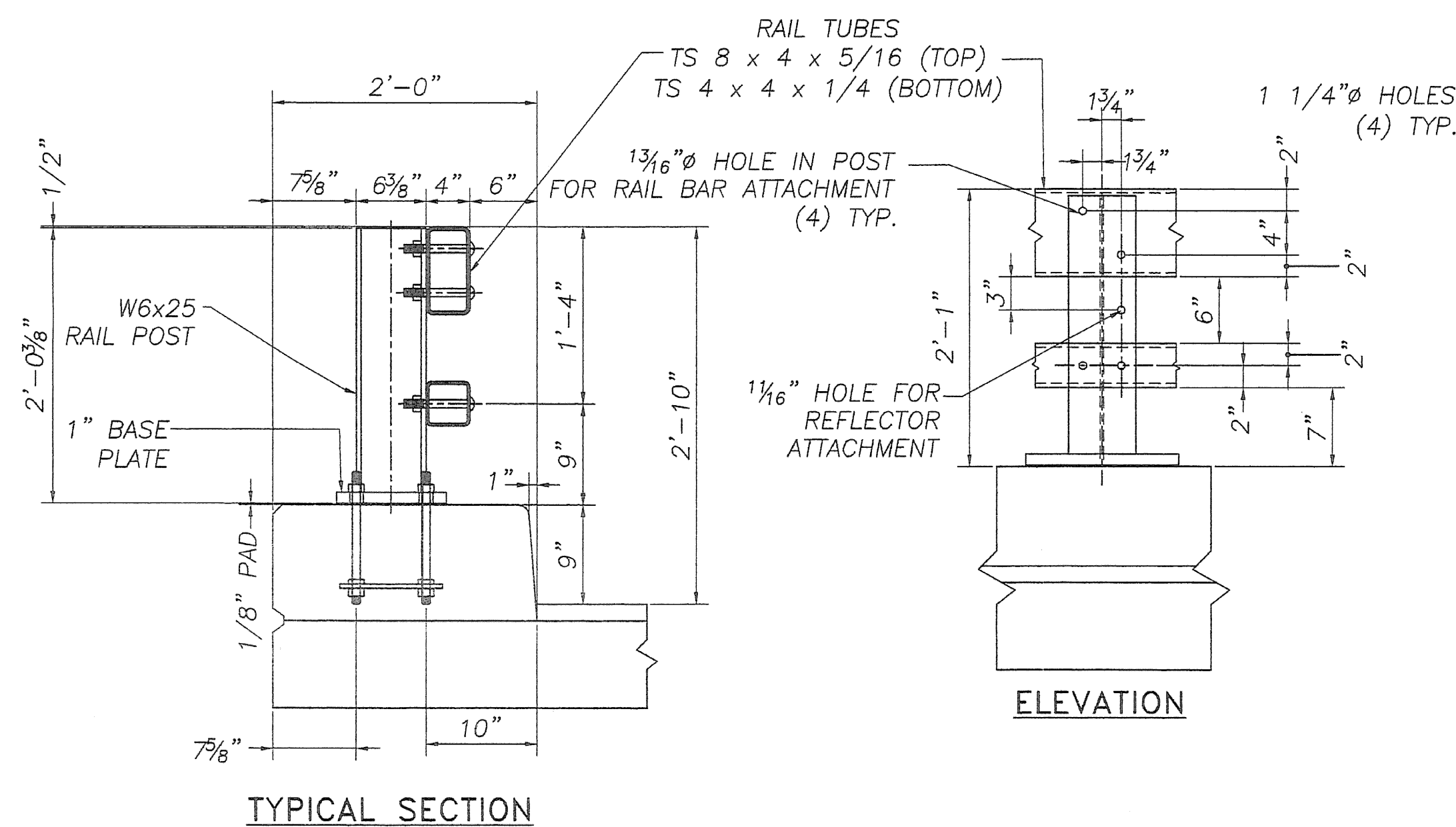
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BY _____ DATE 2/11/09



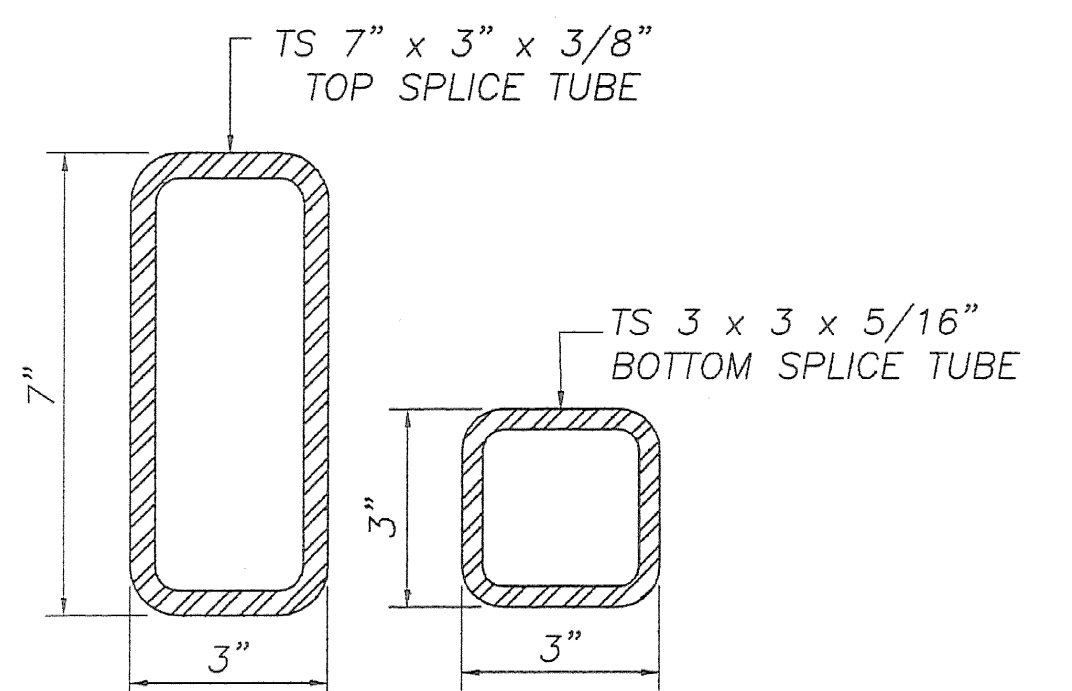
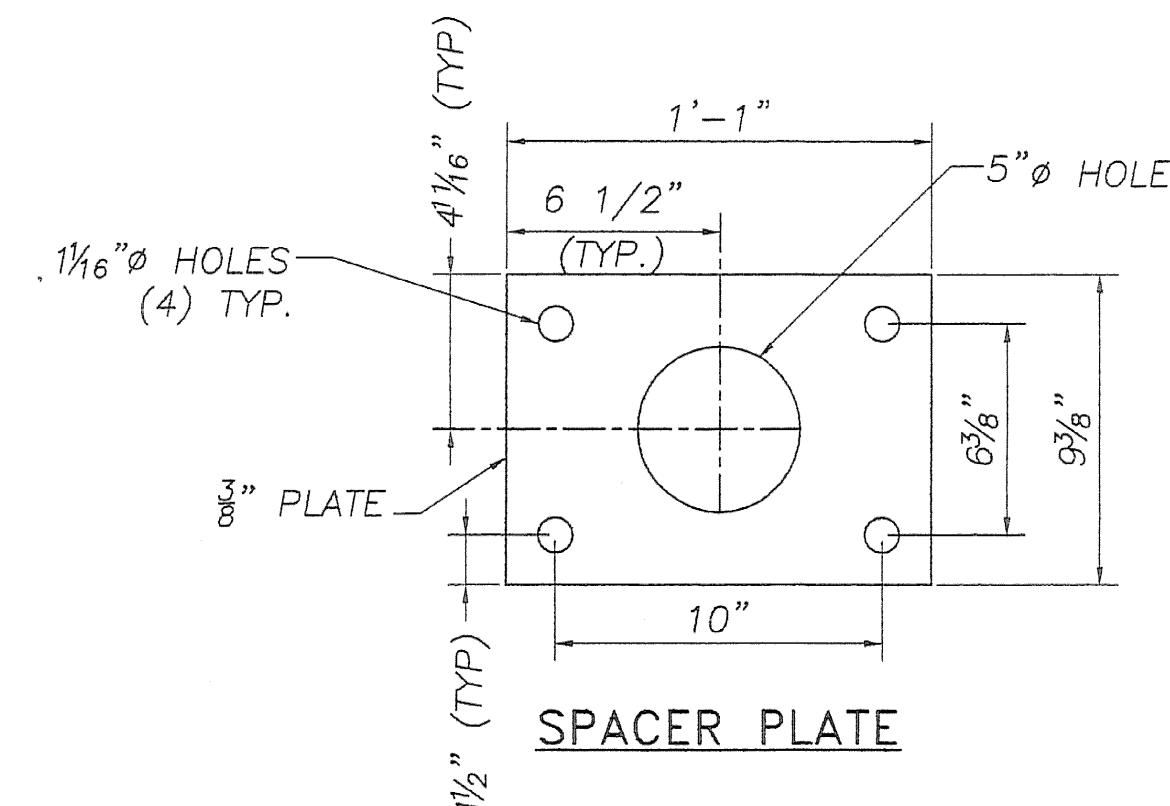
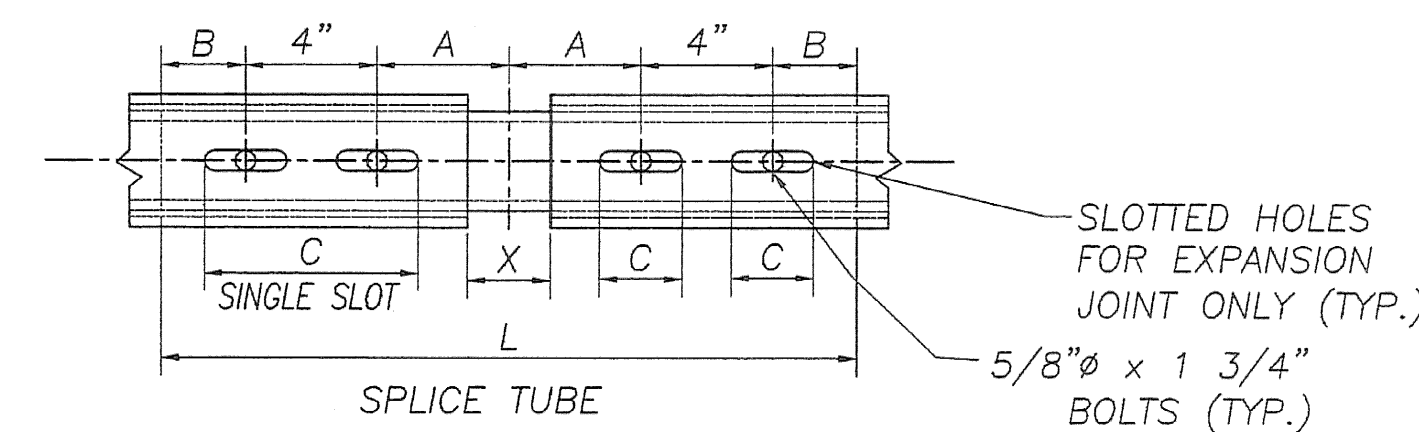
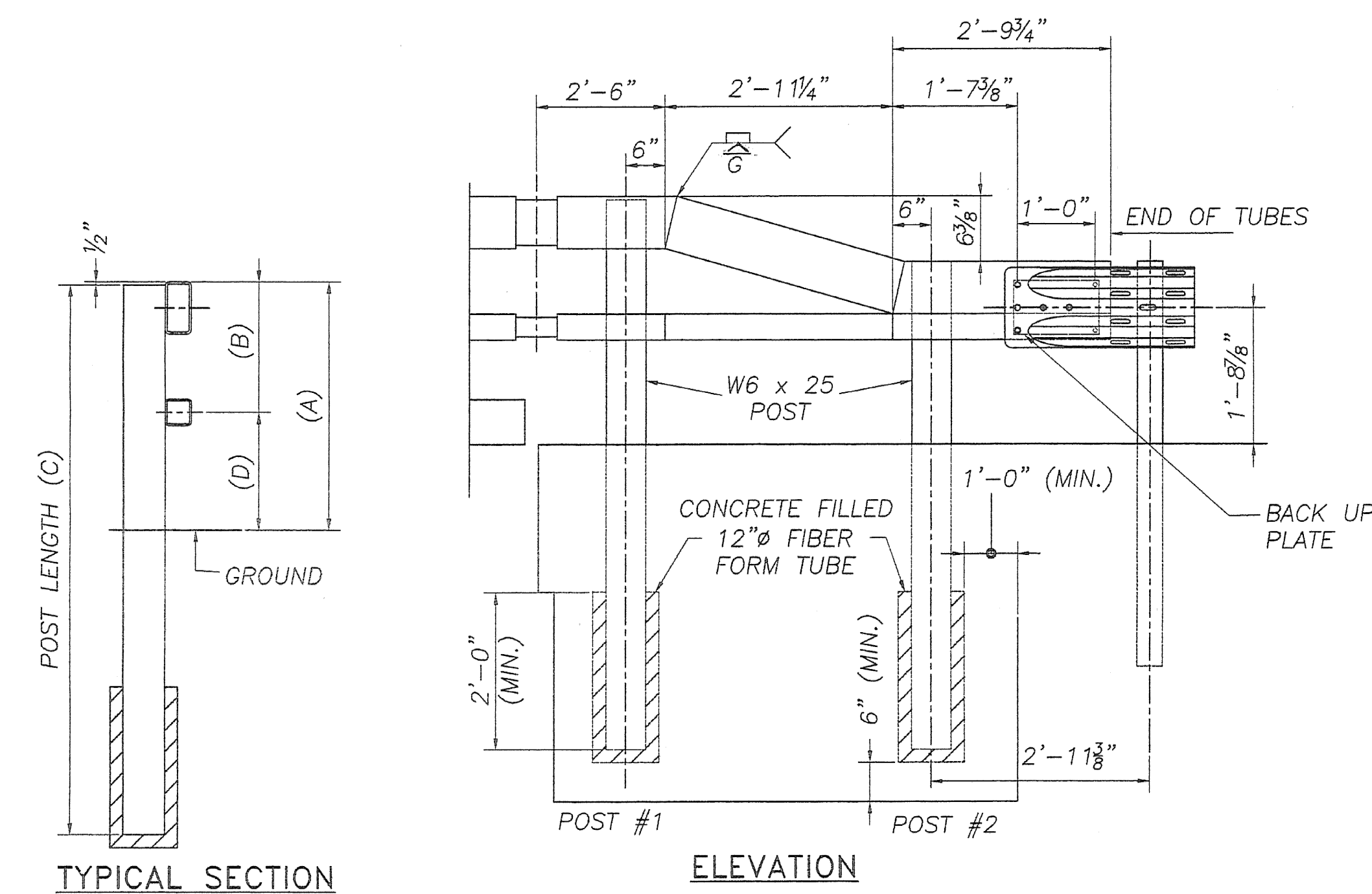
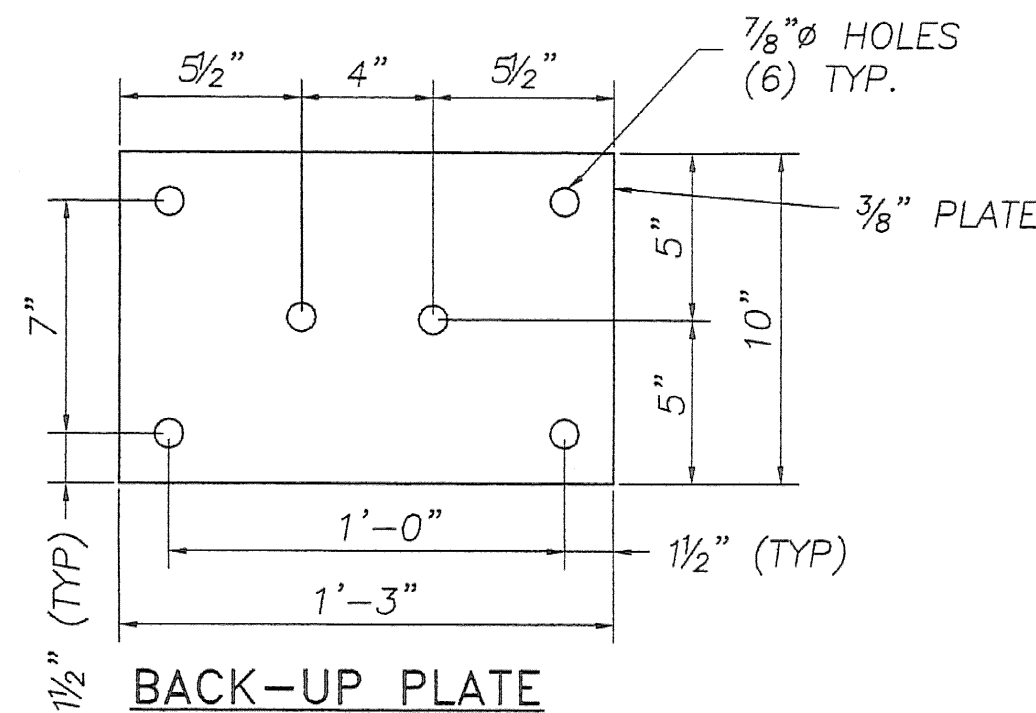
	HIGHWAY SAFETY CORP.	
	GLASTONBURY, CT	
ITEM 525.33 - BRIDGE RAILING-NETC 2 RAIL PROJECT No. ER ST 0271(10) TOWN OF CANAAN COUNTY OF ESSEX ROUTE No. VT 102 BRIDGE NO. : 16		
DRAWN		RWL
CHECKED		<i>P. Radice</i>
DATE		2/2/09
SCALE		NONE
HSC REFERENCE NO.		1684
GENERAL CONTRACTOR		SIZE D REVISION 0
SUB CONTRACTOR		SHEET NO. 1 of 2
F.R. LAFAYETTE, INC.		



- BRIDGE RAILING ELEVATION



(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #9)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



MATERIALS

RAIL TUBES.....	ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES.....	ASTM A709/A709M, GRADE 50
RAIL END CHAIRS AND PLATES.....	ASTM A709/A709M, GRADE 50
ANCHOR STUDS.....	ASTM A449
ALL OTHER BOLTS (UNLESS NOTED).....	AASHTO M164, TYPE1

NUTS FOR AASHTO M164 BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASHTO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATIONS.

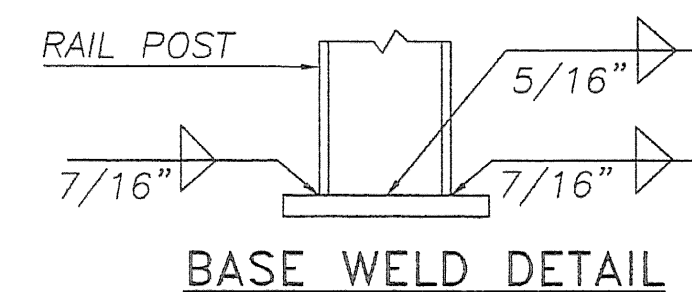
1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.



	RAIL HEIGHT	RAIL SPACING	POST LENGTH	RAIL HEIGHT
POST NUMBER	(A)	(B)	(C)	(D)
1	2'-10"	1'-4"	7'-0"	1'-6"
2	2'-3 5/8"	10"	6'-5"	1'-5 5/8"

SPlice TABLE					
T	A	B	C	L	X
N/A	4"	2"	--	20"	3/4"
EXPANsION JOINT TABLE					
<4"	4"	2"	2 1/2"	20"	2 1/2"

T = TOTAL MOVEMENT BETWEEN BRIDGE
EXPANSION JOINTS. SEE NOTE 6



REVISIONS		
No.	Remarks	Date
0	Initial submittal	2/4/09

 HIGHWAY SAFETY CORP. GLASTONBURY, CT															
RECEIVED OK'D BY <u>SAS</u> OK'D BY _____ FEB 11 1999 BY _____ DATE <u>2/11/09</u> <i>AS NOTED</i>	<table border="1"> <tr> <td>ITEM 525.33 - BRIDGE RAILING-NETC 2 RAIL</td> <td>DRAWN _____ RWL</td> </tr> <tr> <td>PROJECT No. ER ST 0271(16)</td> <td>CHECKED <u>P. Radice</u></td> </tr> <tr> <td>TOWN OF CANAAN COUNTY OF ESSEX</td> <td>DATE <u>2/2/09</u></td> </tr> <tr> <td>ROUTE No. VT 102</td> <td>SCALE NONE</td> </tr> <tr> <td>BRIDGE NO. : 16</td> <td>HSC REFERENCE NO. <u>1684</u></td> </tr> <tr> <td>GENERAL CONTRACTOR _____</td> <td>SIZE D REVISION 0</td> </tr> <tr> <td>SUB CONTRACTOR <u>F.R. LAFAYETTE, INC.</u></td> <td>SHEET NO. <u>2 of 2</u></td> </tr> </table>	ITEM 525.33 - BRIDGE RAILING-NETC 2 RAIL	DRAWN _____ RWL	PROJECT No. ER ST 0271(16)	CHECKED <u>P. Radice</u>	TOWN OF CANAAN COUNTY OF ESSEX	DATE <u>2/2/09</u>	ROUTE No. VT 102	SCALE NONE	BRIDGE NO. : 16	HSC REFERENCE NO. <u>1684</u>	GENERAL CONTRACTOR _____	SIZE D REVISION 0	SUB CONTRACTOR <u>F.R. LAFAYETTE, INC.</u>	SHEET NO. <u>2 of 2</u>
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