STATE OF VERMONT
AGENCY OF TRANSPORTATION

RECORD PLANS

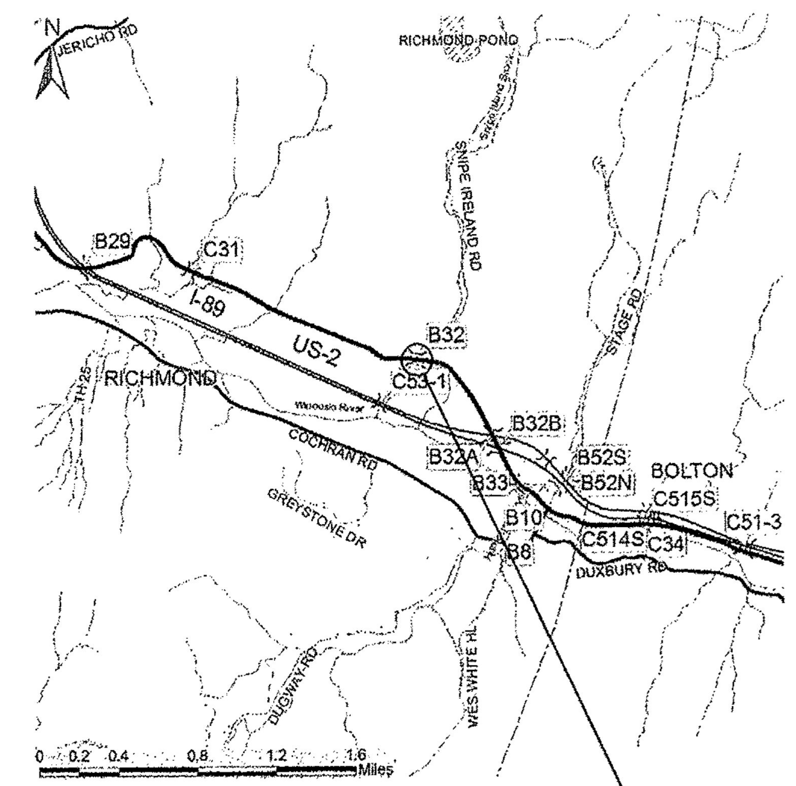
CONTRACTOR:	G.W. TATRO CONSTRUCTION, INC. - JEFFERSONVILLE, VT
RESIDENT ENGINEER:	PHIL HARRINGTON
CONSTRUCTION BEGAN:	MAY 10, 2017
CONSTRUCTION COMPLETE:	OCTOBER 21, 2017
RECORD PLANS BY:	PHIL HARRINGTON & AARON WEAVER

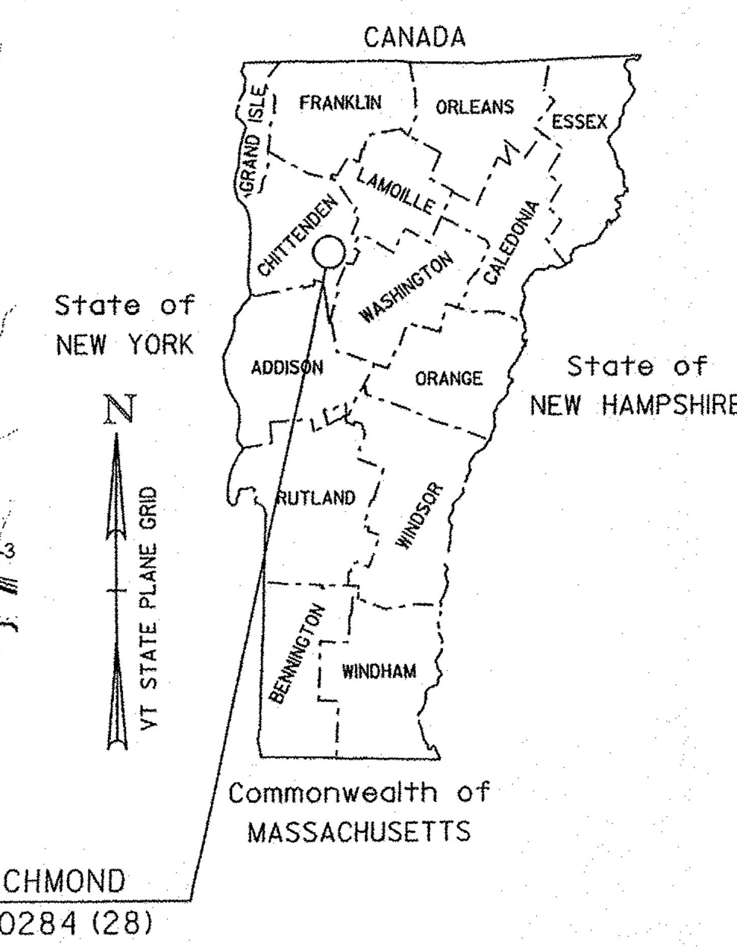
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY Phil Harrington RESIDENT ENGINEER

DATE 11/5/18

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.





PROPOSED IMPROVEMENT
BRIDGE PROJECT

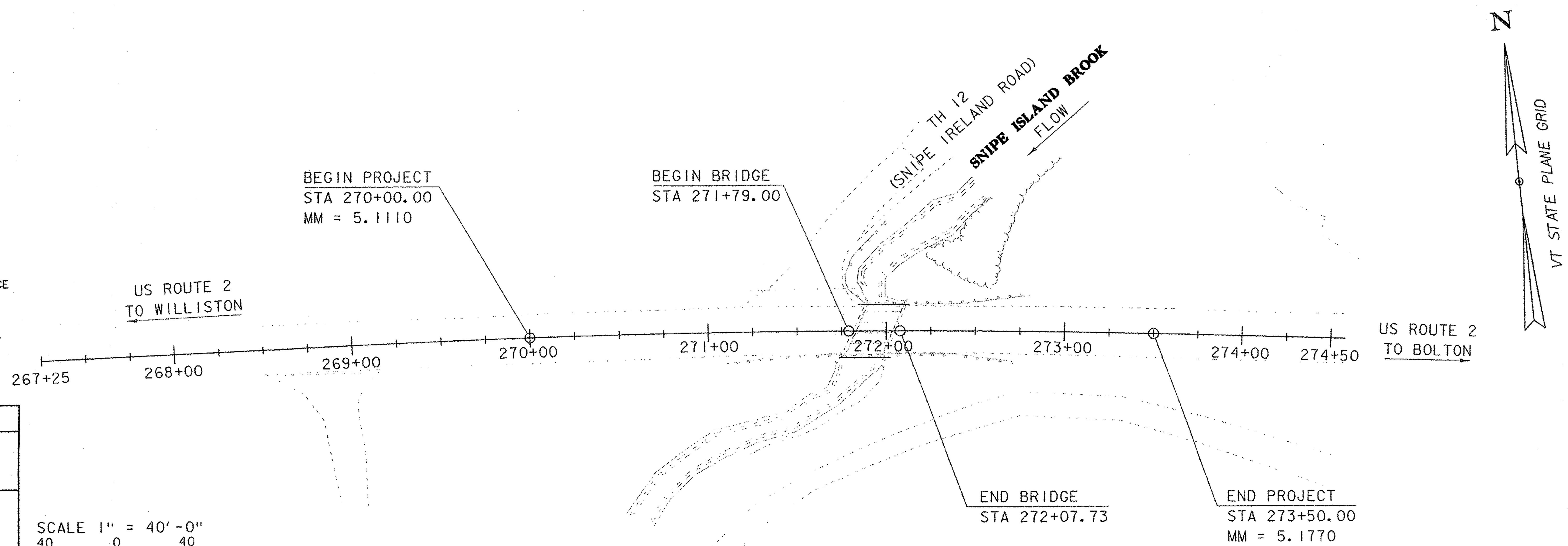
TOWN OF RICHMOND
COUNTY OF CHITTENDEN

ROUTE NO : US ROUTE 2, RURAL MAJOR COLLECTOR. BRIDGE #32

PROJECT LOCATION: 4.2 MILES EAST OF THE JUNCTION OF US ROUTE 2 AND VT ROUTE 117

PROJECT DESCRIPTION: REPLACEMENT OF THE EXISTING BRIDGE 32 INCLUDING APPROACH WORK

LENGTH OF STRUCTURE:	28.73 FEET
LENGTH OF ROADWAY:	321.27 FEET
LENGTH OF PROJECT:	350.00 FEET



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

QUALITY ASSURANCE PROGRAM : LEVEL 2

SURVEYED BY :	L. ORVIS
SURVEYED DATE :	06/12/2013

DATUM

VERTICAL	NAVD88
HORIZONTAL	NAD 83 (2011)

SCALE 1" = 40'-0"
40 0 40

DIRECTOR OF PROJECT DELIVERY
APPROVED [signature] DATE 9/8/2016

PROJECT MANAGER :	R. S. YOUNG
PROJECT NAME :	RICHMOND
PROJECT NUMBER :	BF 0284 (28)

SHEET 1 OF 54 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (CULVERT)

Version
LRFD

INDEX OF SHEETS

PLAN SHEETS

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HSD-621.06	GUARDRAIL TERMINAL LABEL DETAIL	11/3/2015

AS BUILT "REBAR" DETAIL

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	
2016	3500	410	63	1.8	310	20 year ESAL for flexible pavement from 2016 to 2036 : 2286000
2036	3700	430	63	2.8	510	40 year ESAL for flexible pavement from 2016 to 2056 : 5501000
						Design Speed : 50 mph

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: May 2015

DRAINAGE AREA : 5.2 sq. mi.
CHARACTER OF TERRAIN : Rural, mostly wooded, small ponds
STREAM CHARACTERISTICS : Sinuous and alluvial
NATURE OF STREAMBED : Gravel and sand

PEAK FLOW DATA

Q 2.33 =	200 cfs	Q 50 =	750 cfs
Q 10 =	450 cfs	Q 100 =	900 cfs
Q 25 =	600 cfs	Q 500 =	1260 cfs

DATE OF FLOOD OF RECORD: Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 10.8 fps
ICE CONDITIONS : Light to moderate
DEBRIS: Light
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: 2%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Concrete t-beam
YEAR BUILT: 1929
CLEAR SPAN(NORMAL TO STREAM): 22'
VERTICAL CLEARANCE ABOVE STREAMBED: 6'
WATERWAY OF FULL OPENING: 100 sq. ft.
DISPOSITION OF STRUCTURE: Remove and replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	313.8'	VELOCITY =	5.4 fps
Q10 =	316.0'	"	5.7 fps
Q25 =	316.4'	"	7.1 fps
Q50 =	317.0'	"	7.7 fps
Q100 =	318.5'	"	8.5 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
FREQUENCY: Q100
RELIEF ELEVATION: 317.6'
DISCHARGE OVER ROAD @Q100: 55 cfs

UPSTREAM STRUCTURE

TOWN: Richmond — DISTANCE: 4400'
HIGHWAY # : TH 12 — STRUCTURE #: 16
CLEAR SPAN: 12.3' — CLEAR HEIGHT: 7.8'
YEAR BUILT: 1969 — FULL WATERWAY:
STRUCTURE TYPE: CGMPPA

DOWNSTREAM STRUCTURE

TOWN: Richmond — DISTANCE: 1500'
HIGHWAY # : I-89 — STRUCTURE #: 53-1
CLEAR SPAN: 18' — CLEAR HEIGHT: 11'
YEAR BUILT: 1964 — FULL WATERWAY: 198 sq. ft.
STRUCTURE TYPE: Concrete box

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

FRAME DESIGN CRITERIA

1. PROPOSED FRAME IS A PRECAST CONCRETE STRUCTURE (25'-0" X 0'-0" X 0'-0" RIGID FRAME).
2. FRAME ENDS ARE SKEWED BY AN ANGLE OF 20°
3. FRAME WILL BE SET AT A SLOPE OF 0.25 IN. ON 1 FT.
4. FRAME WILL NOT REQUIRE FISH PASSAGE ACCOMODATIONS
5. FRAME CONSTRUCTION WILL NOT REQUIRE A TEMPORARY PIPE

PROPOSED STRUCTURE

STRUCTURE TYPE: Rigid Frame

CLEAR SPAN(NORMAL TO STREAM): 23'
VERTICAL CLEARANCE ABOVE STREAMBED: 8'
WATERWAY OF FULL OPENING: 185 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	313.8'	VELOCITY=	5.4 fps
Q10 =	315.4'	"	7.4 fps
Q25 =	316.1'	"	7.8 fps
Q50 =	316.8'	"	8.2 fps
Q100 =	318.0'	"	9.1 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 317.7'
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 318.4' (on upstream side)
VERTICAL CLEARANCE: @ Q50 = 1.6'

SCOUR: Minimum required depth for foundation design is 6' below streambed

REQUIRED CHANNEL PROTECTION: Stone Fill Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: — DEPTH OR ELEVATION:
ORDINARY LOW WATER:
ORDINARY HIGH WATER:

TEMPORARY BRIDGE REQUIREMENTS

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

ADDITIONAL INFORMATION

The hydraulics for this site were calculated without any backwater from the Winooski River.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_p:	3.0 INCH
3. CULVERT OPENING	D:	23.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5. PRESTRESSING STRAND	f_y:	- - -
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	- - -
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	- - -
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	- - -
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	- - -
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270	f_y:	- - -
14. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	- - -
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
16. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	- - -
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
18. PILE RESISTANCE FACTOR	ϕ:	- - -
19. LATERAL PILE DEFLECTION	Δ:	- - -
20. BASIC WIND SPEED	V_{3s}:	- - -
21. MINIMUM GROUND SNOW LOAD	p_g:	- - -
22. SEISMIC DATA — PGA: 0	S_s:	- - -
	S_1:	- - -
23.		
24.		- - -
25.		- - -
26.		- - -

PROJECT NAME: **RICHMOND**
PROJECT NUMBER: **BF 0284(28)**

FILE NAME:	s13c070pi.dgn	PLOT DATE:	06-OCT-2016
PROJECT LEADER:	R. S. YOUNG	DRAWN BY:	W. LAMMER
DESIGNED BY:	W. LAMMER	CHECKED BY:	S. COLEY
PRELIMINARY INFORMATION SHEET		SHEET	2 OF 54

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE VERMONT AGENCY OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2014 AASHTO LFRD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.

2. ALL PRECAST CONCRETE ELEMENTS TO BE FABRICATED TO THE SPECIFIED DIMENSIONS WITHIN THE TOLERANCES DICTATED IN THE PRECAST/ PRESTRESSED CONCRETE INSTITUTE TOLERANCE MANUAL FOR PRECAST AND PRESTRESSED CONCRETE CONSTRUCTION, MNL 135-00, AND ITS LATEST REVISIONS.

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

4. NO ADJUSTMENTS TO THE BITUMINOUS WEARING SURFACE ON THE BRIDGE SHALL BE MADE TO ACCOUNT FOR THE DIFFERENCE BETWEEN BEAM CAMBER AND THE THEORETICAL ROADWAY PROFILE. THE WEARING SURFACE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF THE ADJACENT BEAMS.

TRAFFIC CONTROL

5. TRAFFIC MANAGEMENT WILL BE ACCOMPLISHED USING AN OFF-SITE DETOUR ON I-89 DURING A FOUR WEEK BRIDGE CLOSURE PERIOD. A BICYCLE DETOUR VIA LOCAL ROADS WILL BE SIGNED AS SHOWN. REFER TO THE TRAFFIC CONTROL SHEET FOR ADDITIONAL TRAFFIC CONTROL NOTES.

EARTHWORK

6. THE REMOVAL OF EXISTING STRUCTURES WILL BE PAID FOR UNDER ITEM 529.15, ‘REMOVAL OF STRUCTURE’. THIS WORK SHALL INCLUDE REMOVAL OF THE ENTIRE SUPERSTRUCTURE AND ANY PORTIONS OF THE EXISTING ABUTMENTS THAT FALL OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION.

7. ITEM 900.608, “SPECIAL PROVISION (STONE FILL, STREAM BED MATERIAL) (TYPE II)” SHALL BE PLACED UNDER THE BRIDGE, AS SHOWN IN THE PLANS, BEFORE THE NEW RIGID FRAMES ARE SET.

CONCRETE

8. ALL LIFTING POINTS IN THE SUPERSTRUCTURE SHALL BE REMOVABLE TO THE MINIMUM CLEAR COVER FOR REINFORCING STEEL SPECIFIED IN THE PLANS. THE LIFTING POINTS SHALL BE DETAILED IN THE FABRICATION DRAWING. PAYMENT FOR THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE PRECAST ITEM.

9. ALL RECESSED LIFTING POINTS AND BLOCKOUTS SHALL BE FILLED WITH A TYPE IV MORTAR PER SUBSECTION 707.03 PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST ITEM.

10. THE METHOD OF FORMING FOR SUBSEQUENT POURS AFTER PLACING PRECAST/PRESTRESSED SUPERSTRUCTURE UNITS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR IS ENCOURAGED TO WORK WITH THE FABRICATOR IF ADDITIONAL SUPPORTS ARE REQUIRED. IN NO CASE SHALL THE CONTRACTOR ATTACH ADDITIONAL FORM OR SCREED SUPPORTS BY DRILLING OR SIMILAR MEANS INTO ANY PRECAST/PRESTRESSED SUPERSTRUCTURE UNIT.

11. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE FRAME ROOF BETWEEN DRIP NOTCHES.

12. ALL EXPOSED EDGES SHALL HAVE A 1”X1” CHAMFER UNLESS OTHERWISE NOTED.

13. HIGH PERFORMANCE CONCRETE, RAPID SET SHALL BE WET-CURED UNTIL IT HAS OBTAINED THE FOLLOWING COMPRESSIVE STRENGTH AS VERIFIED BY TESTING OF FIELD CYLINDERS:
    - FRAME SECTION AND APPROACH SLAB CLOSURE POURS: 4,000 PSI
    - PILE CAVITIES: 24 HOURS OR DESIGN STRENGTH, WHICHEVER OCCURS SOONER
    - PILE CAP CLOSURE POURS: 4,000 PSI

REINFORCING STEEL

14. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE.

15. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE “VERMONT AGENCY OF TRANSPORTATION MATERIAL SAMPLING MANUAL” AVAILABLE ON THE AGENCY WEBSITE. A MINIMUM OF TWO TEST SECTIONS ARE REQUIRED FOR EACH SIZE, BRAND, AND GRADE OR TYPE OF REINFORCING. SEE THE MANUAL FOR ACCEPTABLE DIMENSIONS OF TEST SECTIONS. ALL COSTS ASSOCIATED WITH PROVIDING BARS FOR TESTING WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

16. ALL REINFORCING STEEL IN THE RIGID FRAME AND CURB ATTACHED TO THE RIGID FRAME SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR “REINFORCING STEEL, LEVEL I (EPOXY COATED)” AND WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM. ALL REINFORCING STEEL IN THE RIGID FRAME CLOSURE POUR SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR “REINFORCING STEEL, LEVEL I (EPOXY COATED)” AND WILL BE PAID FOR UNDER ITEM 507.11 “REINFORCING STEEL, LEVEL I”

17. ALL REINFORCING STEEL IN THE APPROACH SLABS SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR “REINFORCING STEEL, LEVEL I (EPOXY COATED)” AND WILL BE INCLUDED IN THE UNIT PRICE BID. ALL REINFORCING STEEL IN THE APPROACH SLAB CLOSURE POURS SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR “REINFORCING STEEL, LEVEL I (EPOXY COATED)” AND WILL BE PAID FOR UNDER ITEM 507.11 “REINFORCING STEEL, LEVEL I”.

18. ALL REINFORCING STEEL IN THE PILE CAP SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR “REINFORCING STEEL, LEVEL I” AND WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

19. CUTTING AND REPAIRING DAMAGED AREAS OF COATED REINFORCING STEEL SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 507.04.

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

PRECAST PILE CAPS

21. IF A VERTICAL CONSTRUCTION JOINT IS REQUIRED BY THE CONTRACTOR FOR SHIPMENT OF THE PILE CAPS, THE SECTIONS SHALL BE JOINED WITH CLOSURE POUR DETAILED ON THE PILE CAP REINFORCING PLAN SHEET.

22. ITEM 524.21, JOINT SEALER, POLYURETHANE, SHALL BE APPLIED TO THE FAR FACE OF ALL VERTICAL CONSTRUCTION JOINTS.

PRECAST RIGID FRAME

23. THE PILE CAPS ARE DESIGNED FOR THE REACTIONS AND BEHAVIOR SUMMARIZED BELOW. IF THE PROPOSED FRAME REACTIONS AND GEOMETRY VARY BEYOND THE LIMITS DEFINED BELOW, THE FABRICATOR SHALL ASSUME DESIGN RESPONSIBILITY OF THE FOUNDATION, DESIGN THE NECESSARY REVISIONS TO THE FOUNDATION, AND SUBMIT STRUCTURAL CALCULATIONS FOR THE REVISED DESIGN IN ACCORDANCE WITH SUBSECTION 540.04.

    a. FRAME STIFFNESS: WHEN MODELING THE STIFFNESS OF THE FRAME FOR PURPOSES OF DESIGNING THE PILES AND PILE CAPS, THE FRAME LEG WAS ASSUMED TO HAVE A MINIMUM THICKNESS OF 12 INCHES. IF THE FABRICATOR’S PROPOSED LEG THICKNESS IS LESS THAN 12 INCHES, THE FABRICATOR SHALL ASSUME DESIGN RESPONSIBILITY OF THE PILES AND PILE CAP.

    b. FRAME REACTIONS AT TOP OF PEDESTAL: THE FOUNDATION WAS DESIGNED FOR A MAXIMUM UN-FACTORED REACTIONS OF:
    – STRUCTURE DEAD LOAD: 6.5 KIPS PER FOOT OF FRAME
    – LIVE LOAD: 5.5 KIPS PER FOOT OF FRAME
    – EARTH PRESSURE & LIVE LOAD SURCHARGE ON FRAME: 2.0 KIPS PER FOOT OF FRAME
    – LIVE LOAD SURCHARGE & EARTH PRESSURE ON PILE CAP: 1.6 KIPS PER FOOT OF FRAME

    c. TOP OF PILE CAP: THE PILE CAP IS DESIGNED FOR THE DIMENSIONS SHOWN IN THE PLANS. IF THE PROPOSED FABRICATOR’S DESIGN REQUIRES A HIGHER PEDESTAL ELEVATION, THE FABRICATOR SHALL ASSUME DESIGN RESPONSIBILITY OF THE PILE CAP.

24. THE PRECAST FRAME AND WINGWALLS SHALL BE DESIGNED BY THE PRECAST FABRICATOR, INLCUDING THE ANCHORAGE AND CONNETIONS BETWEEEN ELEMENTS. ALL ELEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE FABRICATOR’S RECOMMENDATIONS. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS AND CALCULATIONS TO THE ENGINEER IN ACCORDANCE WITH SECTION 105.

25. DESIGN CRITERIA:
    - LIVE LOAD = HL-93
    - UNIT WEIGHT OF BACKFILL = 140 LBS/CF
    - ACTIVE EARTH PRESSURE COEFFICIENT FOR BACKFILL Ka = 0.28
    - AT REST EARTH PRESSURE COEFFICIENT FOR BACKFILL Ko = 0.44
    - PASSIVE EARTH PRESSURE COEFFICIENT FOR BACKFILL Kp = 3.53

26. THE FABRICATOR SHALL SUPPLY THE STATE WITH THE LRFR LOAD RATING FACTORS FOR THE FRAME TO COMPLETE THE LOAD RATING TABLE ON THE PRELIMINARY INFORMATION SHEET.

27. CLEAR COVER ON THE REINFORCING STEEL SHALL BE ACCORDING TO THE FOLLOWING TABLE UNLESS NOTED OTHERWISE:

LOCATION	CLEAR COVER (INCHES)
UNDERSIDE OF FRAME ROOF	1.5
EXPOSED TO EARTH OR WEATHER	2.0
TOP OF FRAME AND APPROACH SLABS	2.5
DIRECT EXPOSURE TO DEICING SALTS (FRAME FASCIA AND CURB)	3.0
CAST AGAINST EARTH	3.0

28. THE LUMP SUM COST FOR ITEM 540.10 “PRECAST CONCRETE STRUCTURE (RIGID FRAME AND WINGWALLS)” SHALL INCLUDE THE PRECAST RIGID FRAME, WINGWALLS, AND MECHANICAL CONNECTIONS.

29. THE PRECAST STRUCTURE DETAILS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND CONFIGURATION WILL BE DEPENDENT ON THE FABRICATOR. THE INSIDE CLEAR DIMENSION OF THE PILE CAP SHALL BE A MINIMUM OF 23 FEET AND THE THICKNESS OF THE ROOF SLAB SHALL BE NO MORE THAN 18 INCHES.

30. THE USE OF EQUIPMENT AND THE METHOD OF BACKFILLING AROUND THE BURIED STRUCTURE SHALL BE IN ACCORDANCE WITH THE FABRICATOR’S RECOMMENDATIONS. CARE SHALL BE TAKEN WHEN BACKFILLING AGAINST JOINT SEALING MATERIALS.

31. NO HOLES SHALL BE DRILLED IN THE RIGID FRAME OR ARCH WITHOUT THE APPROVAL OF THE FABRICATOR AND THE AGENCY.

32. JOINTS BETWEEN ALL ABUTING PRECAST UNITS SHALL BE WATERTIGHT AND MECHANICALLY CONNECTED.

33. REINFORCING STEEL FROM THE DECK OF THE FRAME INTO THE BRIDGE CURB SHALL BE CONTINUOUS AND NEITHER SPLICED NOR JOINED WITH A MECHANICAL CONNECTOR.

APPROACH SLAB AND SUPERSTRUCTURE LONGITUDINAL CLOSURE POURS

34. THE CONCRETE EDGES ALONG THE LONGITUDINAL CLOSURE POURS SHALL BE TREATED TO PROVIDE A ROUGHENED/ EXPOSED AGGERGATE SURFACE. THAT AMPLITUDE OF THE EXPOSED AGGREGATE SHALL BE A MINIMUM OF 1/8” AND BE COMPLETED PRIOR TO ERECTION OF THE BEAMS. THE FABRICATOR SHALL INDICATE THE METHOD USED TO ACHIEVE THIS PROFILE ON THE FABRICATION DRAWING AND METHOD USED TO PROTECT THE REINFORCING STEEL.

35. THE CONCRETE FOR LONGITUDINAL CLOSURE POURS SHALL BE ITEM 900.608 “SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)” AND WILL BE PAID UNDER ITEM 900.608 “SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)”.

36. THE LONGITUDINAL CLOSURE POUR CONCRETE SHALL OBTAIN A STRENGTH OF 4,000 PSI PRIOR TO ANY VEHICULAR LOADING.

APPROACH SLABS

37. APPROACH SLAB CONCRETE STRENGTH: f'c = 5,000 PSI.

38. CORRUGATED POST-TENSIONING DUCTS IN THE PRECAST APPROACH SLABS FOR DOWEL CONNECTIONS SHALL BE CONSTRUCTED FROM EITHER POLYETHYLENE OR POLYPROPYLENE. THE DUCT SHALL HAVE A MINIMUM MATERIAL THICKNESS OF 0.080 IN. +/- 0.010 IN. AND SHALL HAVE A WHITE COATING ON THE OUTSIDE OR SHALL BE OF WHITE MATERIAL WITH UNTRAVIOLET STABILIZERS ADDED. POLYETHYLENE DUCT SHALL BE FABRICATED FROM RESINS MEETING OR EXCEEDING THE REQUIREMENTS OF ASTM D 3350 WITH A CELL CLASSIFICATION OF 345464A. POLYPROPYLENE DUCT SHALL BE FABRICATED FROM RESINS MEETING OR EXCEEDING THE REQUIREMENTS OF ASTM D 4101 WITH A CELL CLASSIFICATION RANGE OF PP0340B44544 TO PP340B65884. ALL COSTS ASSOCIATED WITH PLACING THE DUCT WILL BE INCLUDED IN THE BID PRICE FOR THE APPROPRIATE PRECAST APPROACH SLAB OPTION.

39. GROUT USED TO FILL DOWEL DUCTS IN THE PRECAST APPROACH SLABS FOR DOWEL CONNECTIONS SHALL BE MORTAR, TYPE IV IN ACCORDANCE WITH SECTION 540 – PRECAST CONCRETE. ALL COSTS ASSOCIATED WITH PROVIDING AND PLACING GROUT FOR THE APPROACH SLAB DOWEL CONNECTIONS WILL BE INCLUDED IN THE BID PRICE FOR THE APPROPRIATE PRECAST APPROACH SLAB OPTION.

H-PILES

40. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.

41. THE PILES SHALL BE HP 12 X 63 ORIENTED FOR STRONG AXIS BENDING AT BOTH ABUTMENTS.

42. TO PREVENT DAMAGE TO THE PILES, PILE SHOES ARE REQUIRED FOR DRIVEN PILES AND SHALL CONFORM TO SUBSECTION 505.04 (f).

43. THE PILES AT BOTH ABUTMENTS SHALL BE DRIVEN TO A NOMINAL AXIAL PILE DRIVING RESISTANCE (RNDR) OF 219 KIPS USING A PILE RESISTANCE FACTOR OF 0.65, PROVIDED A MINIMUM PENETRATION OF 25 FEET BELOW THE BOTTOM OF PILE CAP HAS BEEN ACHIEVED.

44. A MINIMUM OF ONE DYNAMIC PILE TEST SHALL BE CONDUCTED ON PILES AT EACH ABUTMENT.

45. THE TOPS OF THE PILES AFTER DRIVING OR PLACEMENT SHALL NOT VARY FROM THE POSITION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE HOW THE TOLERANCES WILL BE MET TO THE SATISFACTION OF THE ENGINEER. THESE MEASURES SHALL BE DEMONSTRATED IN A SUBMITTAL TO BE ACCEPTED BEFORE PILE DRIVING COMMENCES.

MISCELLANEOUS

46. EPSC EXISTING CONDITIONS SHEET AND EPSC PLAN SHEET HAVE BEEN INCLUDED AS A REFERENCE FOR SUBMITTALS.

47. ITEM 404.65 “EMULSIFIED ASPHALT” IS TO BE APPLIED AT A RATE OF 0.080 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AND ON ALL COLD PLANED SURFACES OR AS DIRECTED BY THE ENGINEER.

48. ITEM 520.10, “MEMBRANE WATERPROOFING, SPRAY APPLIED” SHALL BE APPLIED TO THE BRIDGE DECK AS PER THE MANUFACTURER’S INSTRUCTIONS AND EXTEND ONTO THE APPROACH SLABS 2 FEET BEYOND THE BEGIN BRIDGE/END OF BRIDGE.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES / TOTALS / DESCRIPTIONS

ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	
1390				1390		CY	COMMON EXCAVATION	203.15	
		550		550		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
35				35		CY	TRENCH EXCAVATION OF EARTH	204.20	
1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	
		230		230		CY	STRUCTURE EXCAVATION	204.25	
		170		170		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
310				310		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	
1730				1730		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
70				70		TON	AGGREGATE SHOULDERS	402.12	
18				18		CWT	EMULSIFIED ASPHALT	404.65	
1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	
385				385		TON	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (TYPE IIS)	490.30	
1				1		LU	AIR VOIDS PAY ADJUSTMENT (N.A.B.I.)	490.31	
1				1		LU	MAT DENSITY PAY ADJUSTMENT (N.A.B.I.)	490.32	
		1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10	
		1190		1190		LF	STEEL PILING, HP 12 X 63	505.155	
		2		2		EACH	DYNAMIC PILE LOADING TEST	505.45	
		957		957		LB	REINFORCING STEEL, LEVEL I	507.11	
		8		8		GAL	WATER REPELLENT, SILANE	514.10	
		65		65		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	
		120		120		SY	MEMBRANE WATERPROOFING, SPRAY APPLIED	520.10	
		65		65		LF	JOINT SEALER, HOT POURED	524.11	
		69		69		LF	JOINT SEALER, POLYURETHANE	524.21	
		58		58		LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33	
		1		1		EACH	REMOVAL OF STRUCTURE (680 SF - EST.)	529.15	
							BEGIN OPTION CC		
		1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #1)	540.10	
		1		1		LS	SPECIAL PROVISION (CONTRACTOR FABRICATED PRECAST CONCRETE STRUCTURES)(APPROACH SLAB #1)	900.645	
							END OPTION CC		
							BEGIN OPTION DD		
		1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #2)	540.10	
		1		1		LS	SPECIAL PROVISION (CONTRACTOR FABRICATED PRECAST CONCRETE STRUCTURE)(APPROACH SLAB #2)	900.645	
							END OPTION DD		
		1		1		LS	PRECAST CONCRETE STRUCTURE (PILE CAP ABUT #1)	540.10	
		1		1		LS	PRECAST CONCRETE STRUCTURE (PILE CAP ABUT #2)	540.10	
		1		1		LS	PRECAST CONCRETE STRUCTURE (RIGID FRAME AND WINGWALLS)	540.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORK SUMMARY
		FILL AVAILABLE
1390	CY	COMMON EXCAVATION (1380 x 1.0)
165	CY	CHANNEL EXCAVATION (550 x 0.3)
69	CY	STRUCTURE EXCAVATION, EARTH (230 x 0.3)
32	CY	TRENCH EXCAVATION (36 x 0.9)
4	CY	ROUNDING
1660		TOTAL FILL AVAILABLE
		FILL REQUIRED
120	CY	FILL (CY EARTH)
138	CY	FACTORED FILL (x 1.15)
2	CY	ROUNDING
1520		TOTAL WASTE
		SUPERPAVE BITUMINOUS CONCRETE PAVEMENT
385	TONS	TYPE IIS
328	TONS	TYPE IVB
713	TONS	TOTAL

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

FILE NAME: sl3c070qs
PROJECT LEADER: R. YOUNG
DESIGNED BY: S. COLEY
QUANTITY SHEET 1
PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 4 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS			
ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
							BEGIN OPTION AA		
70				70		LF	18" CSP .064 (2-2/3 X 1/2)	601.0015	
70				70		LF	18" CAAP .060 (2-2/3 X 1/2)	601.0215	
70				70		LF	18" PCCSP .079 (2-2/3 X 1/2)	601.0416	
70				70		LF	18" RCP CLASS III	601.0815	
70				70		LF	18" CPEP	601.0915	
70				70		LF	18" CPPP (SL)	601.2815	
							END OPTION AA		
		260		260		CY	STONE FILL, TYPE III	613.12	
							BEGIN OPTION BB		
160				160		LF	PRECAST REINFORCED CONCRETE CURB, TYPE B	616.26	
160				160		LF	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28	
							END OPTION BB		
75				75		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20	
4				4		EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50	
4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (GUARDRAIL APPROACH SECTION)	621.72	
270				270		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	
300				300		HR	UNIFORMED TRAFFIC OFFICERS	630.10	
500				500		HR	FLAGGERS	630.15	
			1	1		LS	FIELD OFFICE, ENGINEERS	631.10	
			1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16	
			1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17	
			3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	
1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11	
2				2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	
1150				1150		LF	DURABLE 4 INCH WHITE LINE, POLYUREA	646.404	
1070				1070		LF	DURABLE 4 INCH YELLOW LINE, POLYUREA	646.414	
17				17		LF	DURABLE 24 INCH STOP BAR, POLYUREA	646.484	
4				4		EACH	DURABLE LETTER OR SYMBOL, POLYUREA	646.494	
1810				1810		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11	
		560		560		SY	GEOTEXTILE UNDER STONE FILL	649.31	
	480			480		SY	GEOTEXTILE FOR SILT FENCE	649.51	
	150			150		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61	
	20			20		LB	SEED	651.15	
	100			100		LB	FERTILIZER	651.18	
	1			1		TON	AGRICULTURAL LIMESTONE	651.20	
	1			1		TON	HAY MULCH	651.25	
	100			100		CY	TOPSOIL	651.35	
		220		220		SY	GRUBBING MATERIAL	651.40	
	1			1		LS	EPSC PLAN	652.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

FILE NAME: sl3c070qs
PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG
DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY
CHECKED BY: W. LAMMER
QUANTITY SHEET 2
SHEET 5 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES					TOTALS		DESCRIPTIONS			
	ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
		10			10		HR	MONITORING EPSC PLAN	652.20	
		1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	
		880			880		SY	TEMPORARY EROSION MATTING	653.20	
		30			30		CY	VEHICLE TRACKING PAD	653.35	
		1080			1080		LF	BARRIER FENCE	653.50	
	6.92				6.92		SF	TRAFFIC SIGNS, TYPE A	675.20	
	76				76		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	
	8				8		EACH	REMOVING SIGNS	675.50	
	6				6		EACH	ERECTING SALVAGED SIGNS	675.60	
	4				4		EACH	DELINEATOR WITH STEEL POST	676.10	
	2				2		EACH	REMOVAL OF EXISTING DELINEATOR	676.12	
	1				1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	
			20		20		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)	900.608	
			100		100		CY	SPECIAL PROVISION (STONE FILL, STREAM BED MATERIAL)(TYPE II)	900.608	
	53000				53000		DL	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE)(N.A.B.I)	900.615	
	5				5		EACH	SPECIAL PROVISION (CPM SCHEDULE)	900.620	
	1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL ALL INCLUSIVE)	900.645	
	1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT)(N.A.B.I)	900.650	
	328				328		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT SMALL QUANTITY TYPE IVB)	900.680	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

FILE NAME: sl3c070qs
PROJECT LEADER: R. YOUNG
DESIGNED BY: S. COLEY
QUANTITY SHEET 3

PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 6 OF 54

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R.O.W. ABBREVIATIONS (CODES) & SYMBOLS

POINT CODE	DESCRIPTION
CH	CHANNEL EASEMENT
CONST	CONSTRUCTION EASEMENT
CUL	CULVERT EASEMENT
D&C	DISCONNECT & CONNECT
DIT	DITCH EASEMENT
DR	DRAINAGE EASEMENT
DRIVE	DRIVEWAY EASEMENT
EC	EROSION CONTROL
HWY	HIGHWAY EASEMENT
I&M	INSTALL & MAINTAIN EASEMENT
LAND	LANDSCAPE EASEMENT
R&RES	REMOVE & RESET
R&REP	REMOVE & REPLACE
SR	SLOPE RIGHT
UE	UTILITY EASEMENT
(P)	PERMANENT EASEMENT
(T)	TEMPORARY EASEMENT
BNDNS	BOUND SET
BNDNS	BOUND TO BE SET
IPNS	IRON PIN SET
IPNS	IRON PIN TO BE SET
CALC	EXISTING ROW POINT
PROW	PROPOSED ROW POINT
[LENGTH]	LENGTH CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT CODE	DESCRIPTION
APL	BOUND APPARENT LOCATION
BM	BENCHMARK
BND	BOUND
CB	CATCH BASIN
COMB	COMBINATION POLE
DITHR	DROP INLET THROATED DNC
EL	ELECTRIC POWER POLE
FPOLE	FLAGPOLE
GASFIL	GAS FILLER
GP	GUIDE POST
GSO	GAS SHUT OFF
GUY	GUY POLE
GUYW	GUY WIRE
GV	GATE VALUE
H	TREE HARDWOOD
HCTRL	CONTROL HORIZONTAL
HVCTRL	CONTROL HORIZ. & VERTICAL
HYD	HYDRANT
IP	IRON PIN
IPIPE	IRON PIPE
LI	LIGHT - STREET OR YARD
MB	MAILBOX
MH	MANHOLE (MH)
MM	MILE MARKER
PM	PARKING METER
PMK	PROJECT MARKER
POST	POST STONE/WOOD
RRSIG	RAILROAD SIGNAL
RRSL	RAILROAD SWITCH LEVER
S	TREE SOFTWOOD
SAT	SATELLITE DISH
SHRUB	SHRUB
SIGN	SIGN
STUMP	STUMP
TEL	TELEPHONE POLE
TIE	TIE
TSIGN	SIGN W/DOUBLE POST
VCTRL	CONTROL VERTICAL
WELL	WELL
WSO	WATER SHUT OFF

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

UGU	UTILITY (GENERIC-UNKNOWN)
UT	TELEPHONE
UE	ELECTRIC
UC	CABLE (TV)
UEC	ELECTRIC+CABLE
UET	ELECTRIC+TELEPHONE
UCT	CABLE+TELEPHONE
UECT	ELECTRIC+CABLE+TELEP.
G	GAS LINE
W	WATER LINE
S	SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

AGU	UTILITY (GENERIC-UNKNOWN)
T	TELEPHONE
E	ELECTRIC
C	CABLE (TV)
EC	ELECTRIC+CABLE
ET	ELECTRIC+TELEPHONE
AER E&T	ELECTRIC+TELEPHONE
CT	CABLE+TELEPHONE
ECT	ELECTRIC+CABLE+TELEP.
	UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

CZ	CLEAR ZONE
	PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

	TOP OF CUT SLOPE
	TOE OF FILL SLOPE
	STONE FILL
	BOTTOM OF DITCH ℄
	CULVERT PROPOSED
	STRUCTURE SUBSURFACE
PDF	PROJECT DEMARCATION FENCE
BF	BARRIER FENCE
	TREE PROTECTION ZONE (TPZ)
	STRIPING LINE REMOVAL
	SHEET PILES

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

TOWN LINE	TOWN BOUNDARY LINE
COUNTY LINE	COUNTY BOUNDARY LINE
STATE LINE	STATE BOUNDARY LINE
	PROPOSED STATE R.O.W. (LIMITED ACCESS)
	PROPOSED STATE R.O.W.
	STATE ROW (LIMITED ACCESS)
	STATE ROW
	TOWN ROW
	PERMANENT EASEMENT LINE (P)
	TEMPORARY EASEMENT LINE (T)
	SURVEY LINE
P/L	PROPERTY LINE (P/L)
SR	SLOPE RIGHTS
6F	6F PROPERTY BOUNDARY
4F	4F PROPERTY BOUNDARY
HAZ	HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

	FILTER CURTAIN
	SILT FENCE
	SILT FENCE WOVEN WIRE
	CHECK DAM
	DISTURBED AREAS REQUIRING RE-VEGETATION
	EROSION MATTING

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

	WETLAND BOUNDARY
	RIPARIAN BUFFER ZONE
	WETLAND BUFFER ZONE
	SOIL TYPE BOUNDARY
T&E	THREATENED & ENDANGERED SPECIES
HAZ	HAZARDOUS WASTE AREA
AG	AGRICULTURAL LAND
HABITAT	FISH & WILDLIFE HABITAT
FLOOD PLAIN	FLOOD PLAIN
OHW	ORDINARY HIGH WATER (OHW)
	STORM WATER
	USDA FOREST SERVICE LANDS
	WILDLIFE HABITAT SUIT/CONN

ARCHEOLOGICAL & HISTORIC

ARCH	ARCHEOLOGICAL BOUNDARY
HISTORIC DIST	HISTORIC DISTRICT BOUNDARY
HISTORIC	HISTORIC AREA
H	HISTORIC STRUCTURE

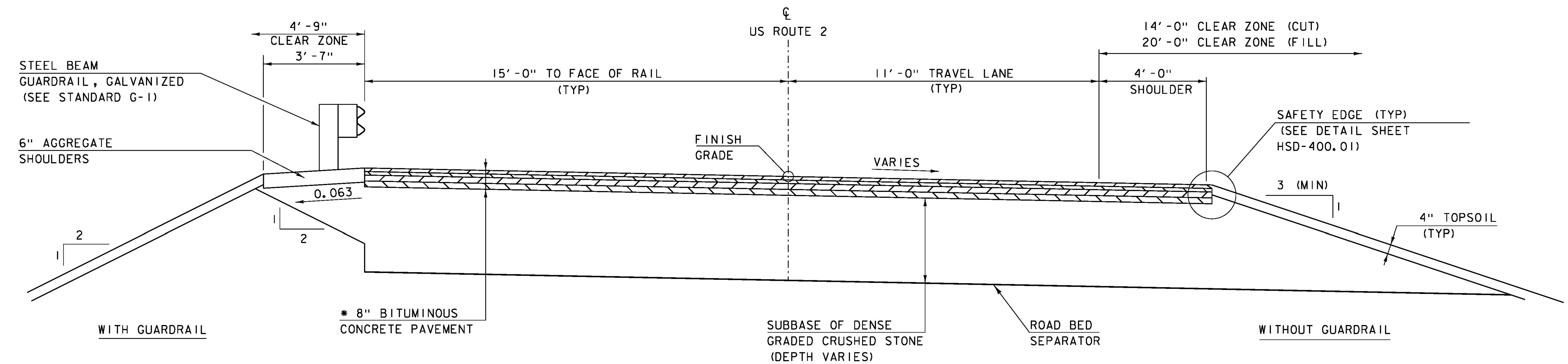
CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

- ROAD EDGE PAVEMENT
- ROAD EDGE GRAVEL
- DRIVEWAY EDGE
- DITCH
- FOUNDATION
- FENCE (EXISTING)
- FENCE WOOD POST
- FENCE STEEL POST
- GARDEN
- ROAD GUARDRAIL
- RAILROAD TRACKS
- CULVERT (EXISTING)
- STONE WALL
- WALL
- WOOD LINE
- BRUSH LINE
- HEDGE
- BODY OF WATER EDGE
- LEDGE EXPOSED

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	BF 0284(28)

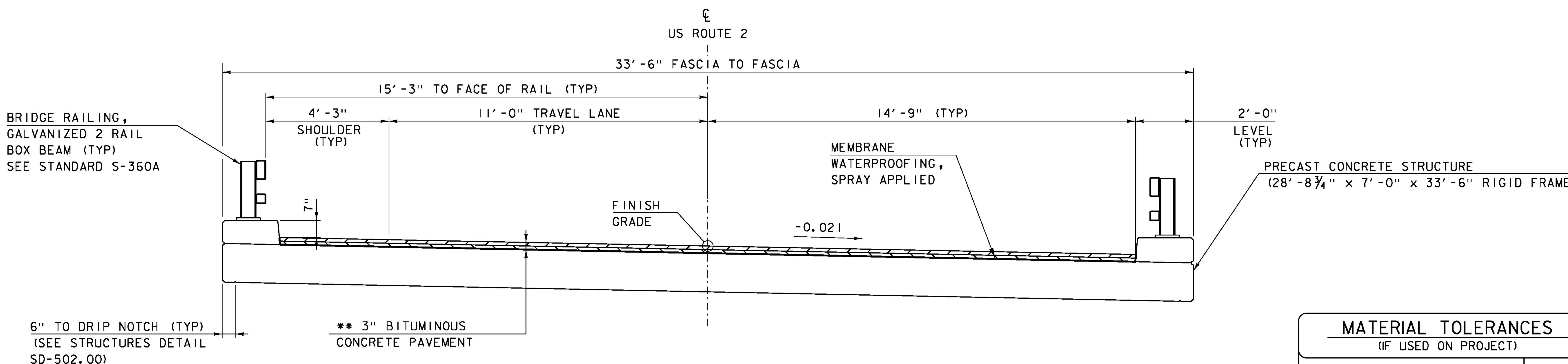
FILE NAME: sl3c070legend.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: M. LONGSTREET
DESIGNED BY: VTRANS	CHECKED BY: W. LAMMER
SYMBOLOGY LEGEND	SHEET 7 OF 54



* 1½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVB OVER
1½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVB OVER
2½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IIS OVER
2½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IIS

ROADWAY TYPICAL SECTION

SCALE ½" = 1'-0"



** 1½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVB OVER
1½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVB OVER

FRAME TYPICAL SECTION

SCALE ½" = 1'-0"

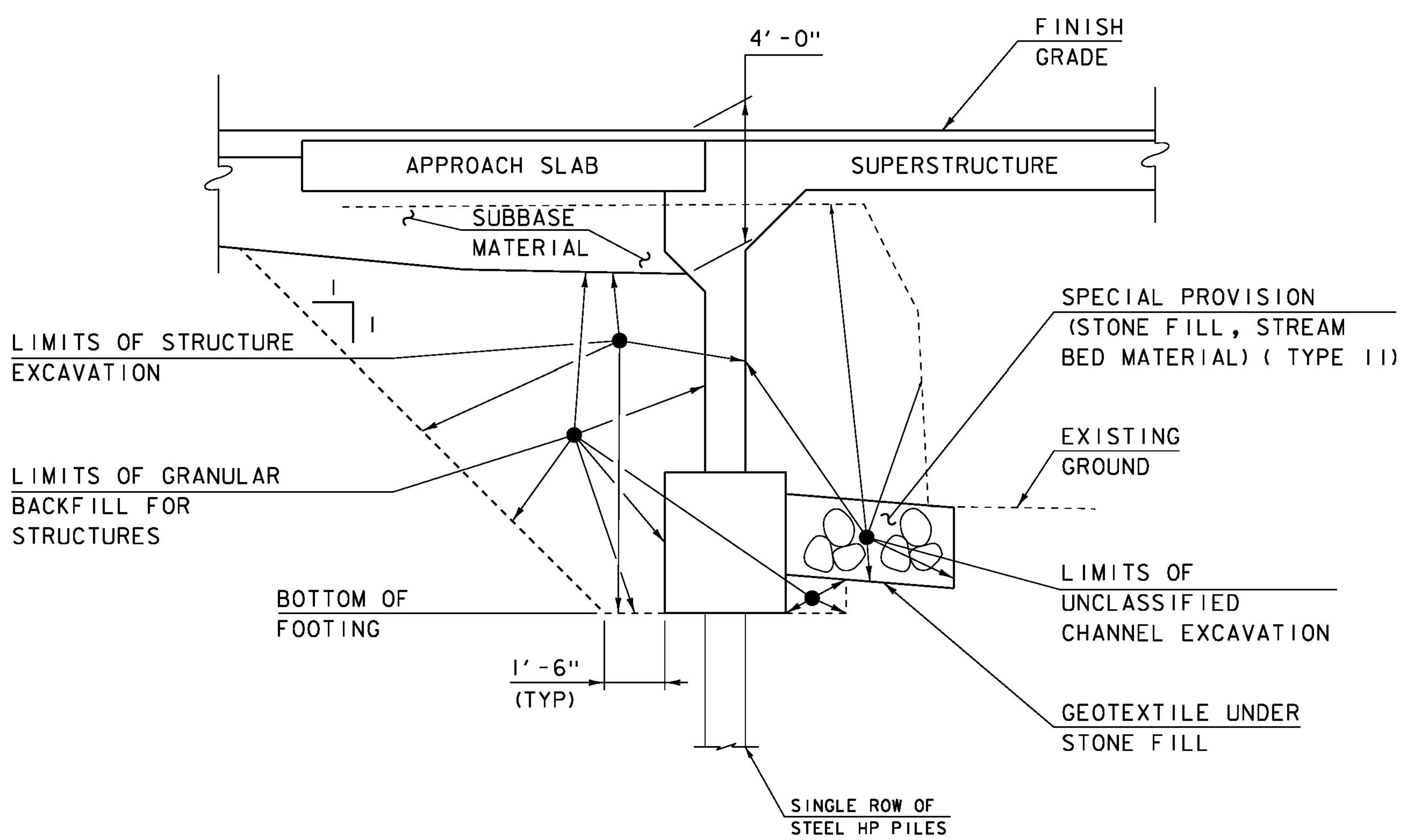
MATERIAL TOLERANCES
(IF USED ON PROJECT)

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

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

FILE NAME: sl3c070typ.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: W. LAMMER
TYPICAL SECTIONS I

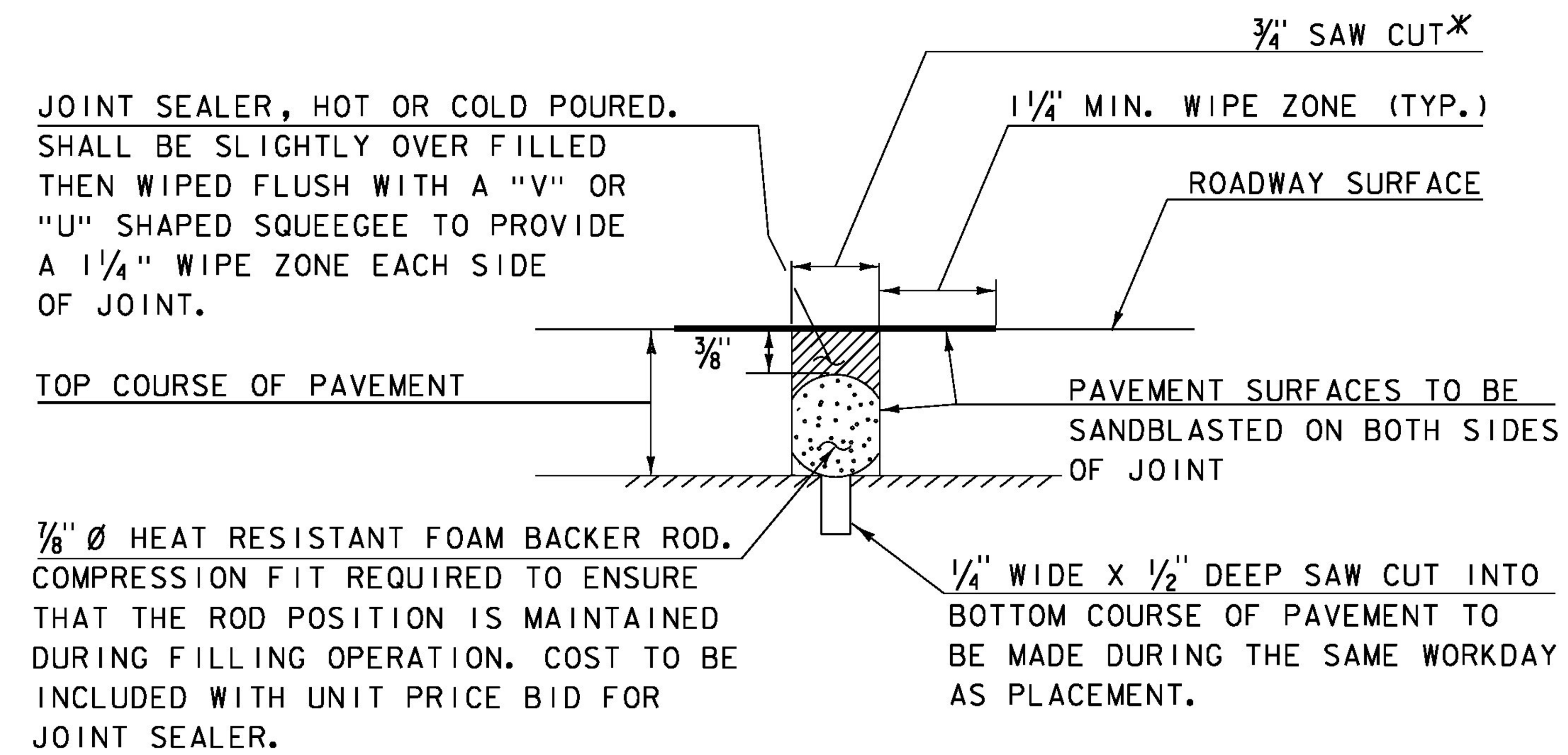
PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 8 OF 54



TYPICAL ABUTMENT SECTION

NOT TO SCALE

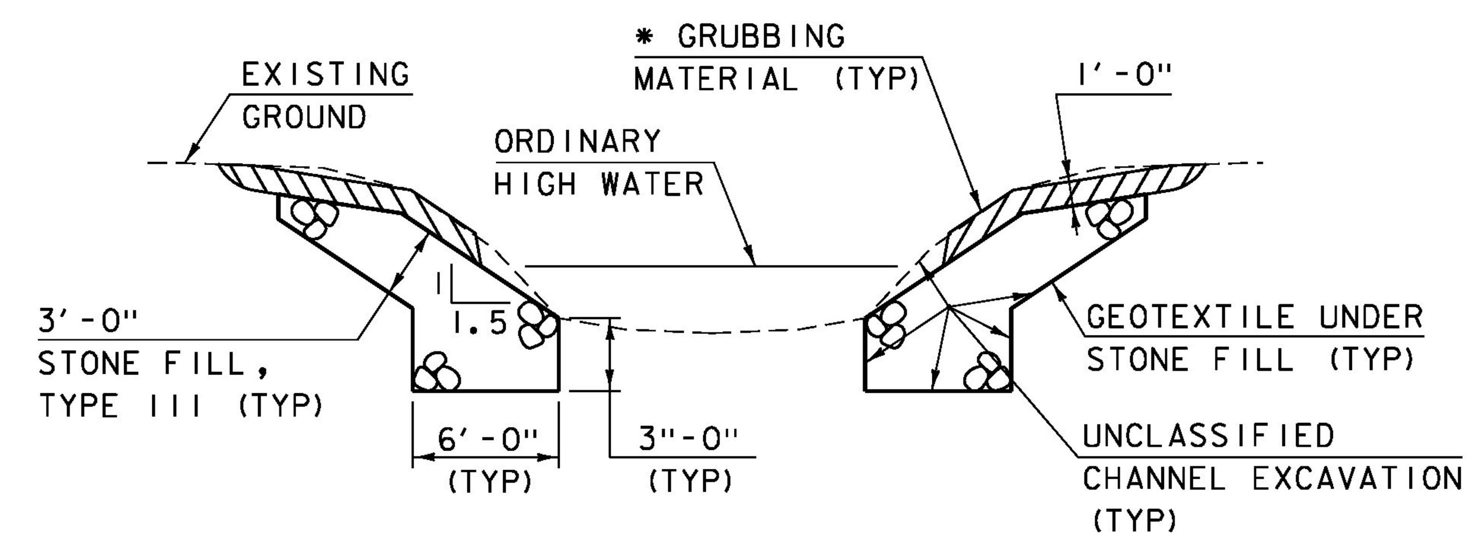
ACTUAL LIMITS OF STRUCTURE EXCAVATION SHALL BE DETERMINED BY CONTRACTOR. HOWEVER, ONLY EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25 "STRUCTURE EXCAVATION". EXCAVATION BY THE CONTRACTOR OUTSIDE OF THESE LIMITS WILL BE AT THE EXPENSE OF THE CONTRACTOR.



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.



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.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070typ.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: J. SALVATORI
TYPICAL SECTIONS 2	SHEET 9 OF 54

GPS CONTROL POINTS

SNIPE AZ MK

NORTH = 689236.655
EAST = 1522476.676
ELEV. = 322.130

THE MARK IS LOCATED ON INTERSTATE 89 IN THE SOUTHEAST SIDE OF THE U-TURN BETWEEN MILE MARKERS 74.40 AND 74.45. THIS IS THE MOST NORTHERN OF TWO U-TURNS JUST NORTH OF THE BRIDGES OVER US ROUTE 2 IN JONESVILLE. THE MARK IS SET 20 CM (8 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT. IT IS 7.9 M (25.9 FT) SOUTHEAST OF AND ABOUT 0.6 M (2.0 FT) LOWER THAN THE CENTERLINE OF THE U-TURN, 11.3 M (37.1 FT) SOUTHWEST OF THE SOUTHWEST EDGE OF PAVEMENT OF THE NORTHBOUND LANE, 3.7 M (12.1 FT) NORTHEAST OF THE NORTHEAST EDGE OF PAVEMENT OF THE SOUTHBOUND LANE, 8.3 M (27.2 FT) SOUTHWEST OF THE MOST SOUTHWESTERLY POST FOR A U-TURN SIGN AND 0.3 M (1.0 FT) SOUTHEAST OF A FIBERGLASS WITNESS POST.

SNIPE

NORTH = 690764.170
EAST = 1522549.836
ELEV. = 316.480

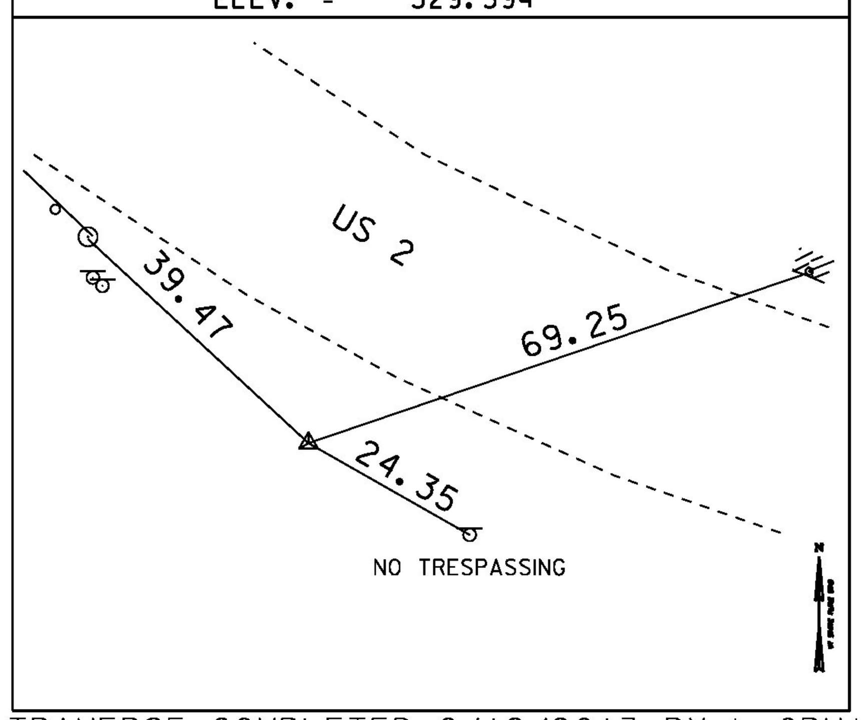
TO REACH FROM THE CENTER OF THE I-89 BRIDGES OVER US ROUTE 2 JUST NORTHWEST OF JONESVILLE, GO NORTHERLY ALONG US ROUTE 2 FOR 0.6 MI (1.0 KM) TO THE SITE OF THE MARK ON THE LEFT ABOUT OPPOSITE OF SNIPE IRELAND ROAD. THE MARK IS SET 20 CM (8 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT. IT IS 6.0 M (19.7 FT) SOUTH OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE CENTERLINE OF US ROUTE 2, 8.5 M (27.9 FT) WEST OF POLE NO 94-50, 34.6 M (113.5 FT) EAST OF POLE NO 94, 24.3 M (79.7 FT) WEST-SOUTHWEST OF THE SOUTHWEST CORNER OF BRIDGE NO 32 OVER SNIPE IRELAND BROOK AND 4.0 M (13.1 FT) WEST-SOUTHWEST OF THE WEST-SOUTHWEST END OF A STEEL BEAM GUARD RAIL POST.

GPS POINTS SET BY VTrans GSU 5/20/13

TRAVERSE TIES

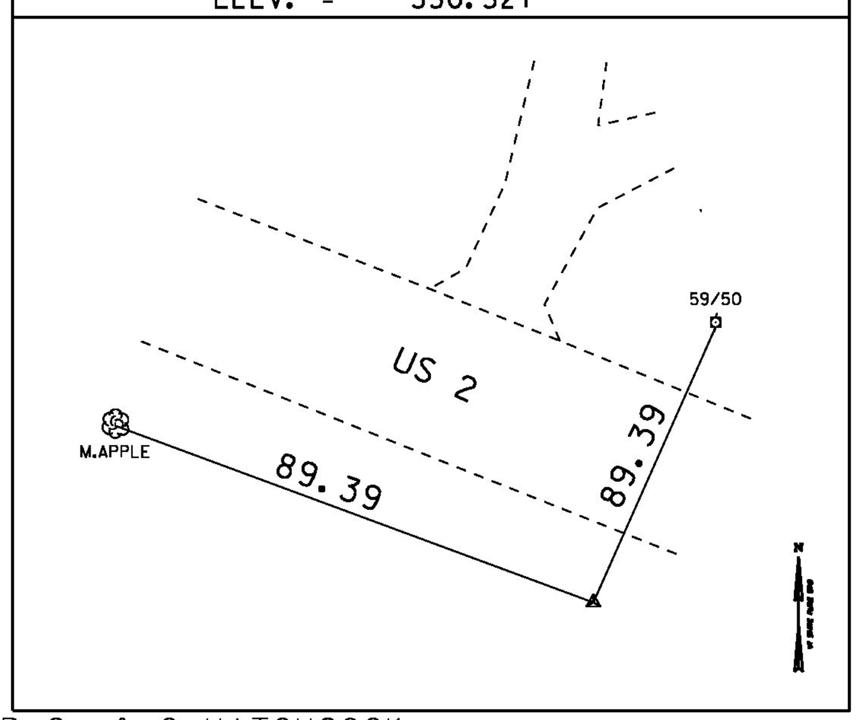
HVCTRL #3

NORTH = 690829.658
EAST = 1521678.345
ELEV. = 329.394



HVCTRL #4

NORTH = 691782.711
EAST = 1519542.675
ELEV. = 350.527



HVCRTL

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

TRAVERSE COMPLETED 6/12/2013 BY L.ORVIS P.C. & G.HITCHCOCK

ALIGNMENT TIES

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

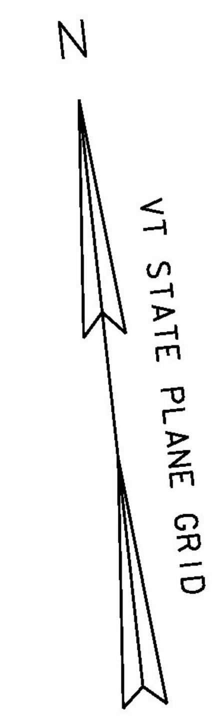
NORTH =
EAST =
ELEV. =

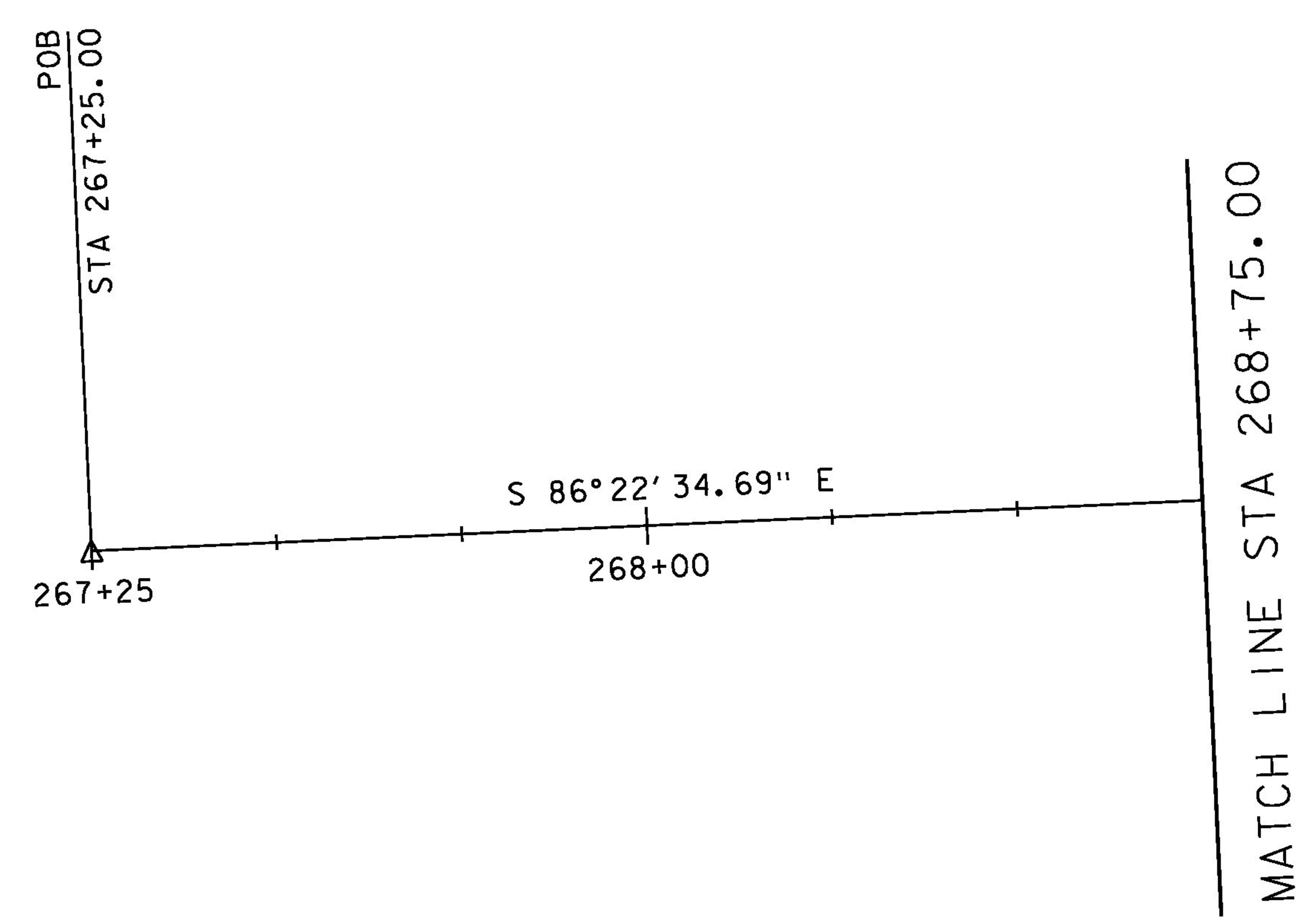
NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (2011)
ADJUSTMENT	COMPASS

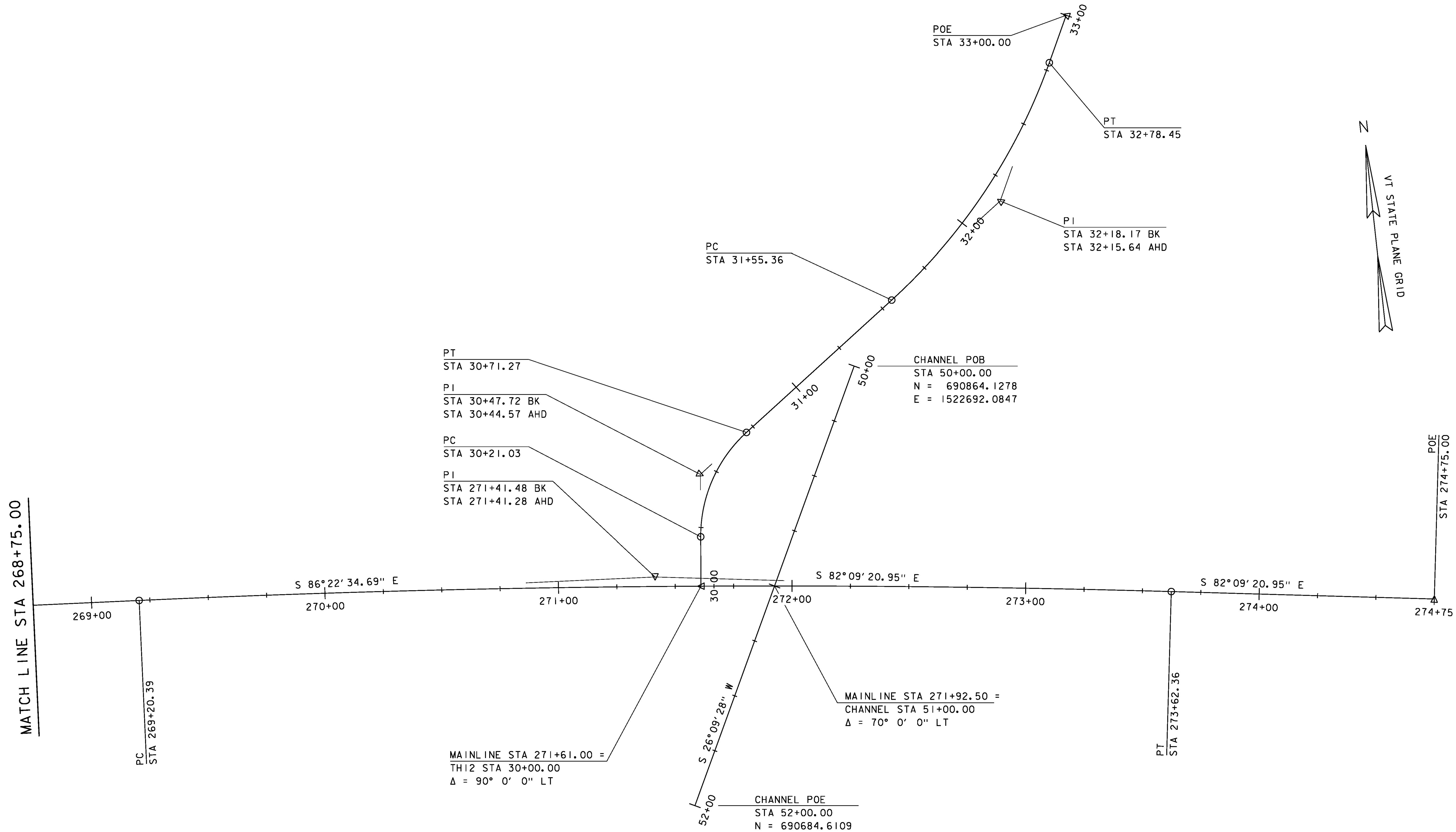
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: survey\xl3C070tl.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: G. HITCHCOCK
DESIGNED BY: VTRANS	CHECKED BY: P. BEYOR
TIE SHEET	SHEET 10 OF 54





SCALE 1" = 20′-0"
20 0 20

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070bdr_alg.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
ALIGNMENT SHEET 1	SHEET 11 OF 54



US 2 CURVE (1)	TH 12 CURVE (1)	TH 12 CURVE (2)	TH12 POB
DELTA = 4°13′14"	DELTA = 47°58′32"	DELTA = 28°05′46"	STA 30+00.00
D = 0°57′18"	D = 95°29′35"	D = 22°49′37"	N = 690777.7008
R = 6000.00′	R = 60.00′	R = 251.00′	E = 1522616.6807
T = 221.08′	T = 26.70′	T = 62.81′	
L = 441.97′	L = 50.24′	L = 123.08′	
E = 4.07′	E = 5.67′	E = 7.74′	

SCALE 1" = 20′-0"
20 0 20

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

FILE NAME: sl3c070bdr_alg.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: S. COLEY
ALIGNMENT SHEET 2

PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 12 OF 54

COLD PLANING
BITUMINOUS PAVEMENT
STA. 269+00 - 269+50
STA. 274+00 - 274+50

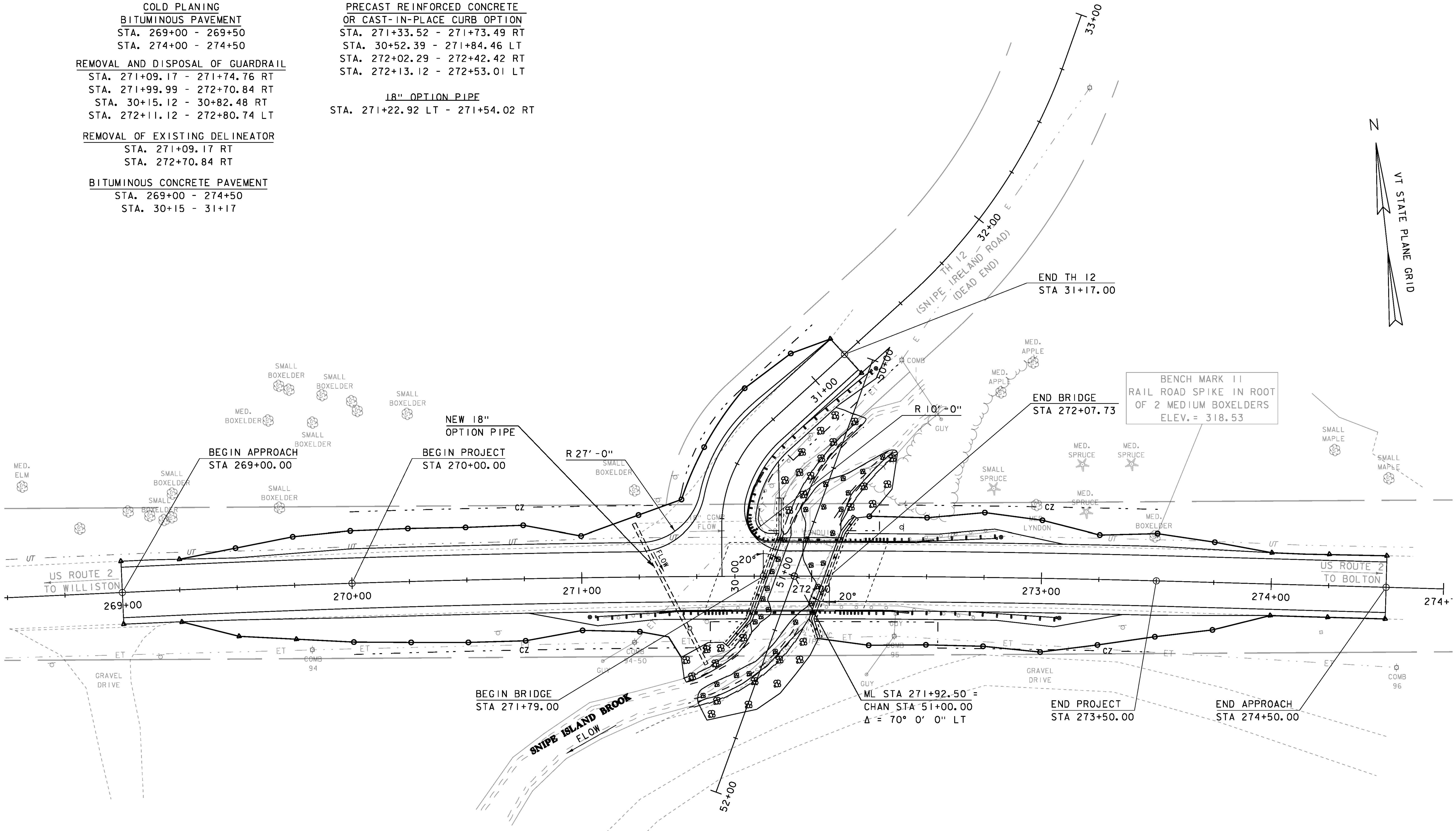
REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 271+09.17 - 271+74.76 RT
STA. 271+99.99 - 272+70.84 RT
STA. 30+15.12 - 30+82.48 RT
STA. 272+11.12 - 272+80.74 LT

REMOVAL OF EXISTING DELINEATOR
STA. 271+09.17 RT
STA. 272+70.84 RT

BITUMINOUS CONCRETE PAVEMENT
STA. 269+00 - 274+50
STA. 30+15 - 31+17

PRECAST REINFORCED CONCRETE
OR CAST-IN-PLACE CURB OPTION
STA. 271+33.52 - 271+73.49 RT
STA. 30+52.39 - 271+84.46 LT
STA. 272+02.29 - 272+42.42 RT
STA. 272+13.12 - 272+53.01 LT

18" OPTION PIPE
STA. 271+22.92 LT - 271+54.02 RT

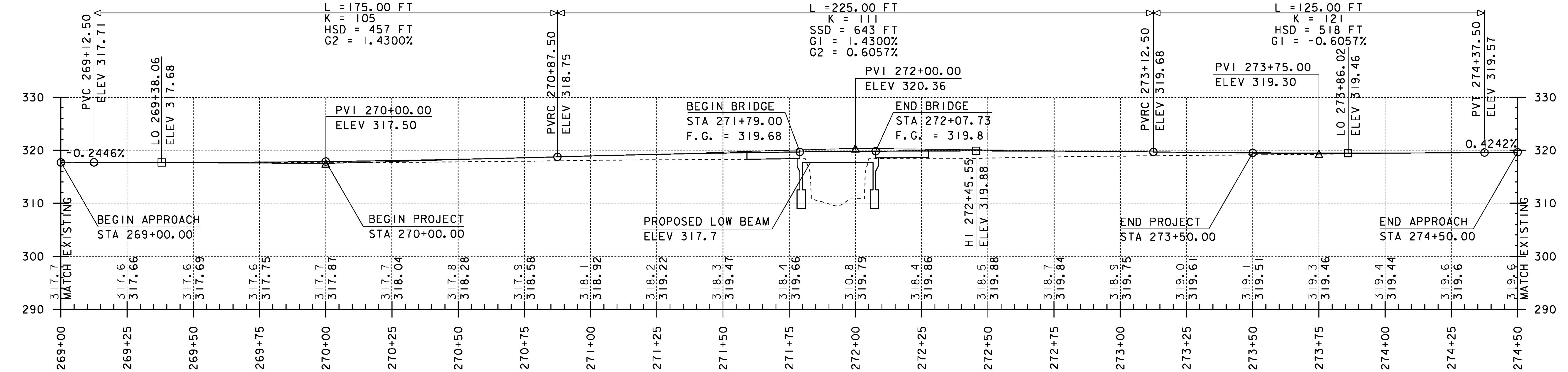


EXISTING BRIDGE DATA
SINGLE SPAN CONCRETE T-BEAM
BUILT 1929
25' LONG, 27'-7" CURB TO CURB

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

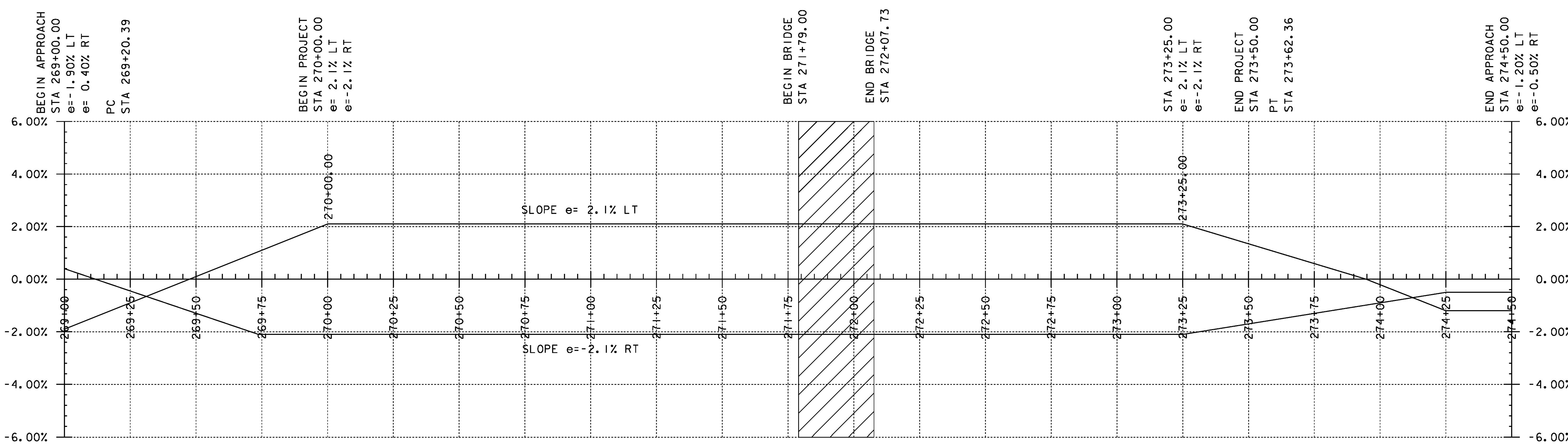
PROJECT NAME:	RICHMOND
PROJECT NUMBER:	BF 0284(28)

FILE NAME: sl3c070bdr.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
LAYOUT SHEET	SHEET 13 OF 54



US 2 PROFILE

HOR. SCALE 1" = 20'-0"
VER. SCALE 1" = 10'-0"



US 2 BANKING DIAGRAM

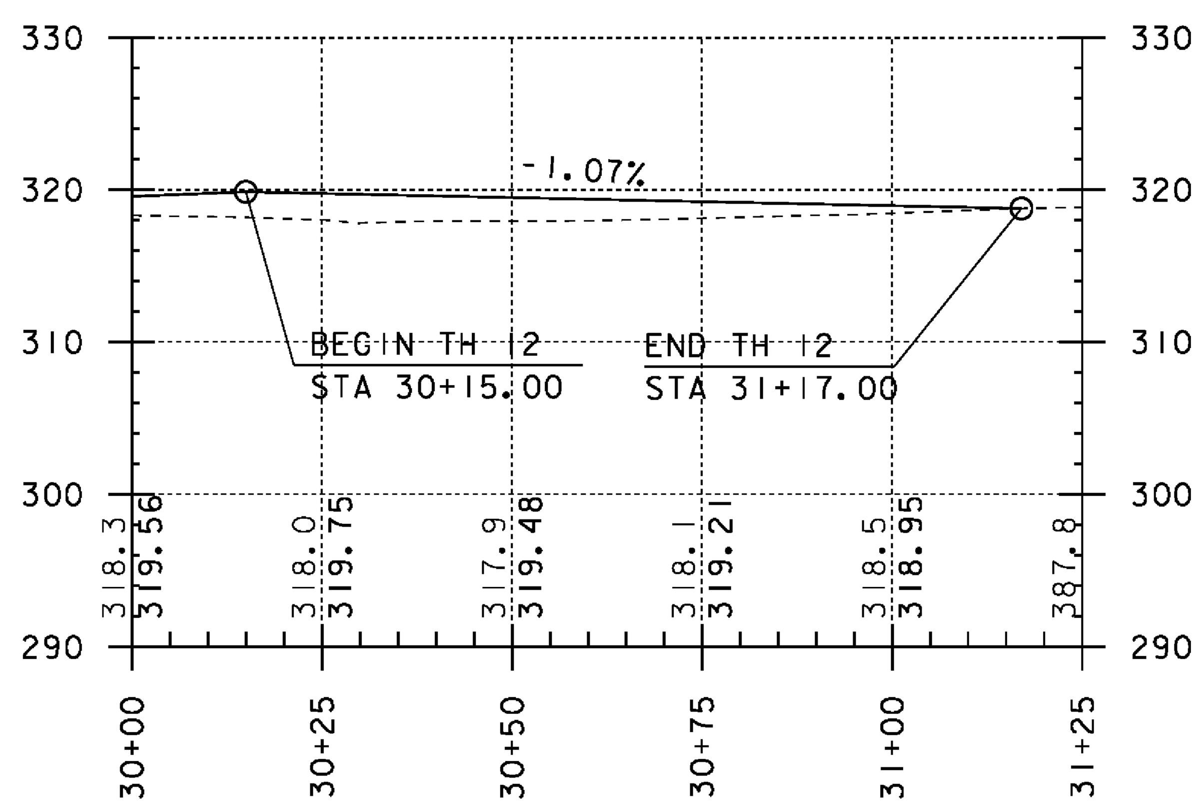
HOR. 1" = 20'-0"
VER. 1" = 10'-0"

NOTE:

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

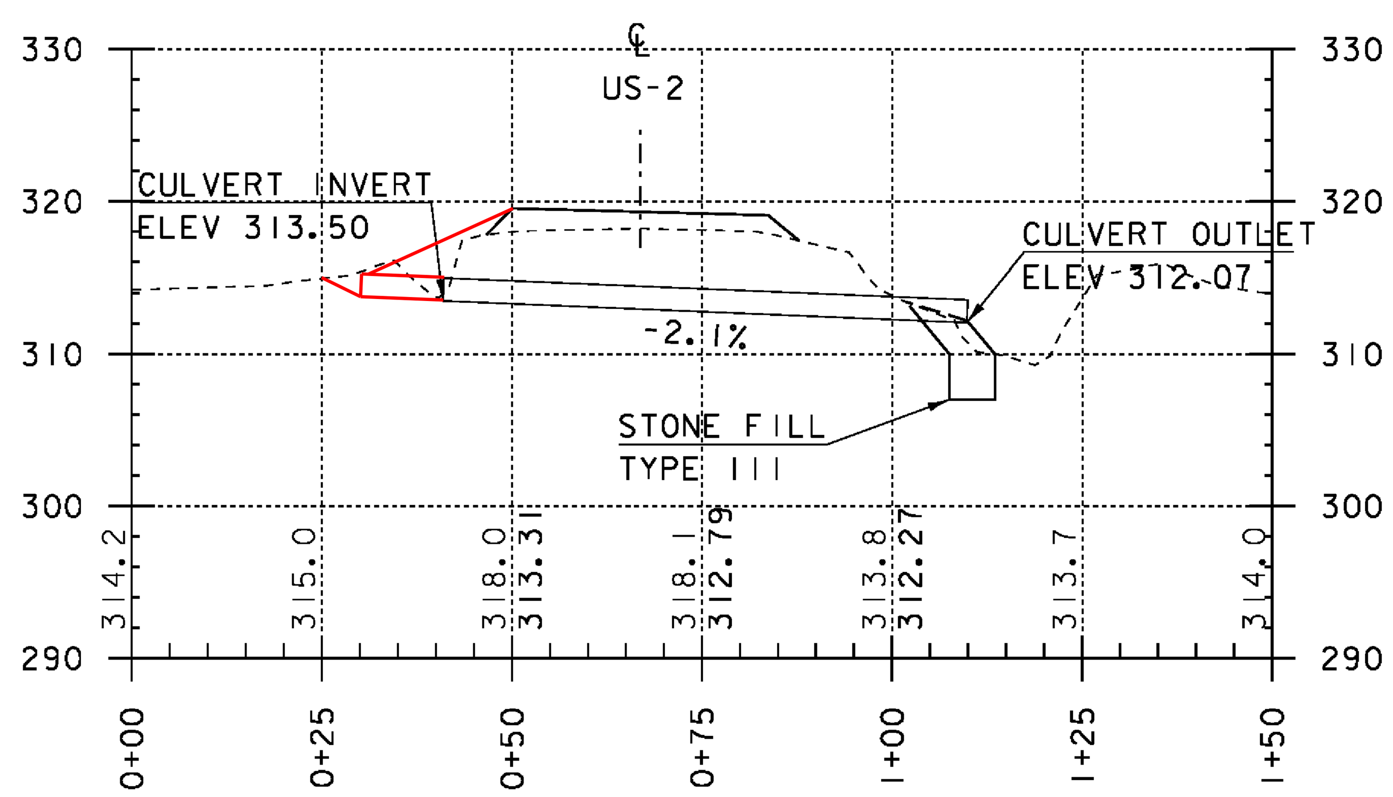
THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISHED GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: 13c070profile.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
MAINLINE PROFILE AND BANKING DIAGRAM	SHEET 14 OF 54



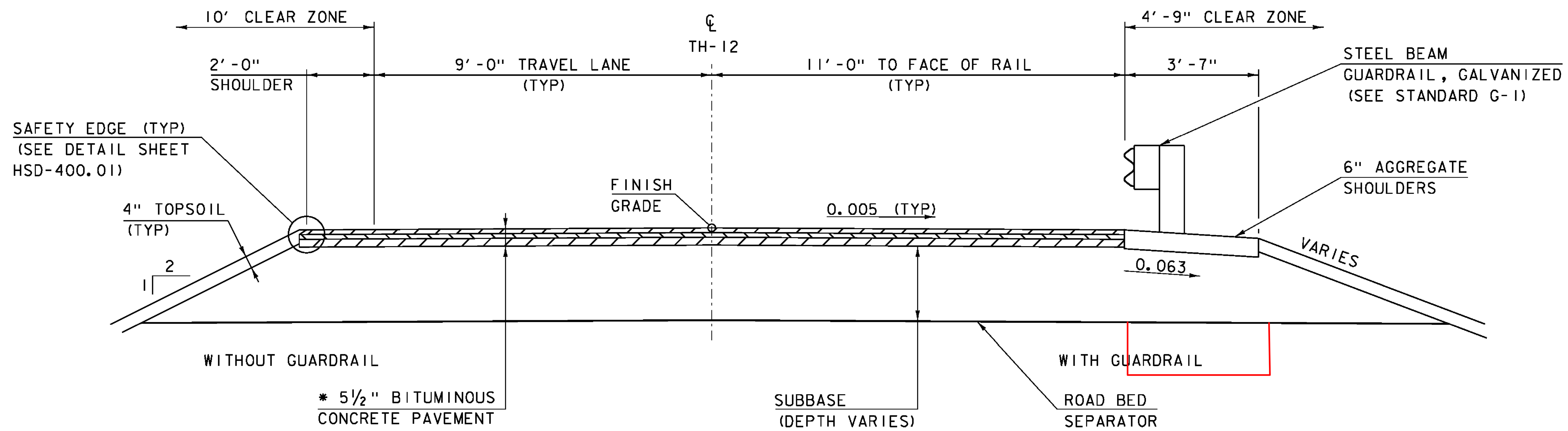
TH-12 PROFILE

HOR. SCALE 1" = 20'-0"
VER. SCALE 1" = 10'-0"



OPTION PIPE

HOR. SCALE 1" = 20'-0"
VER. SCALE 1" = 10'-0"



TH-12 TYPICAL SECTION

SCALE ½" = 1'-0"

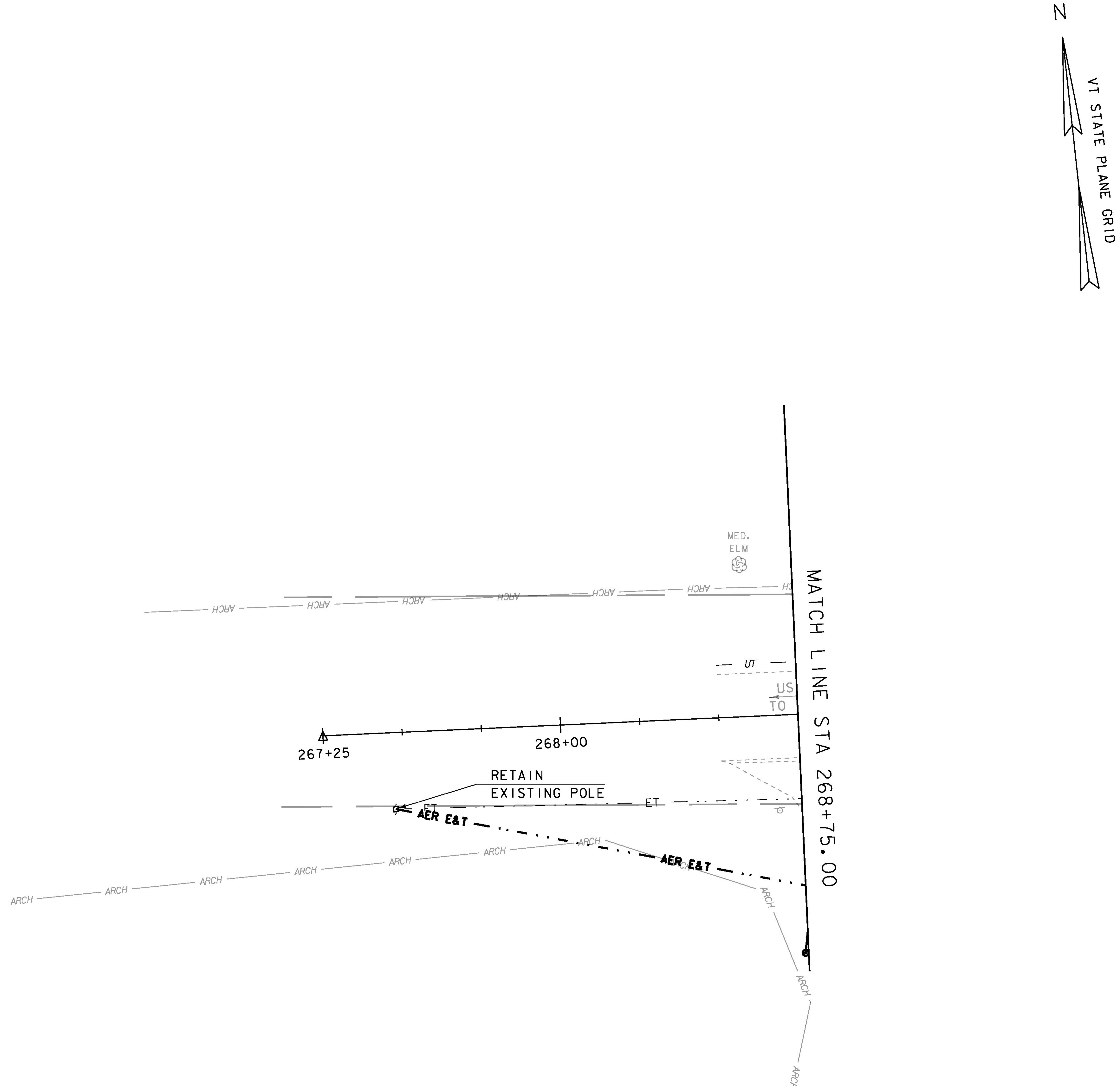
* 1½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVB OVER
1½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IVB OVER
2½" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IIS

NOTE:

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

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISHED GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: 13c070profile.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
TH 12 PROFILE AND TYPICAL SECTION	SHEET 15 OF 54



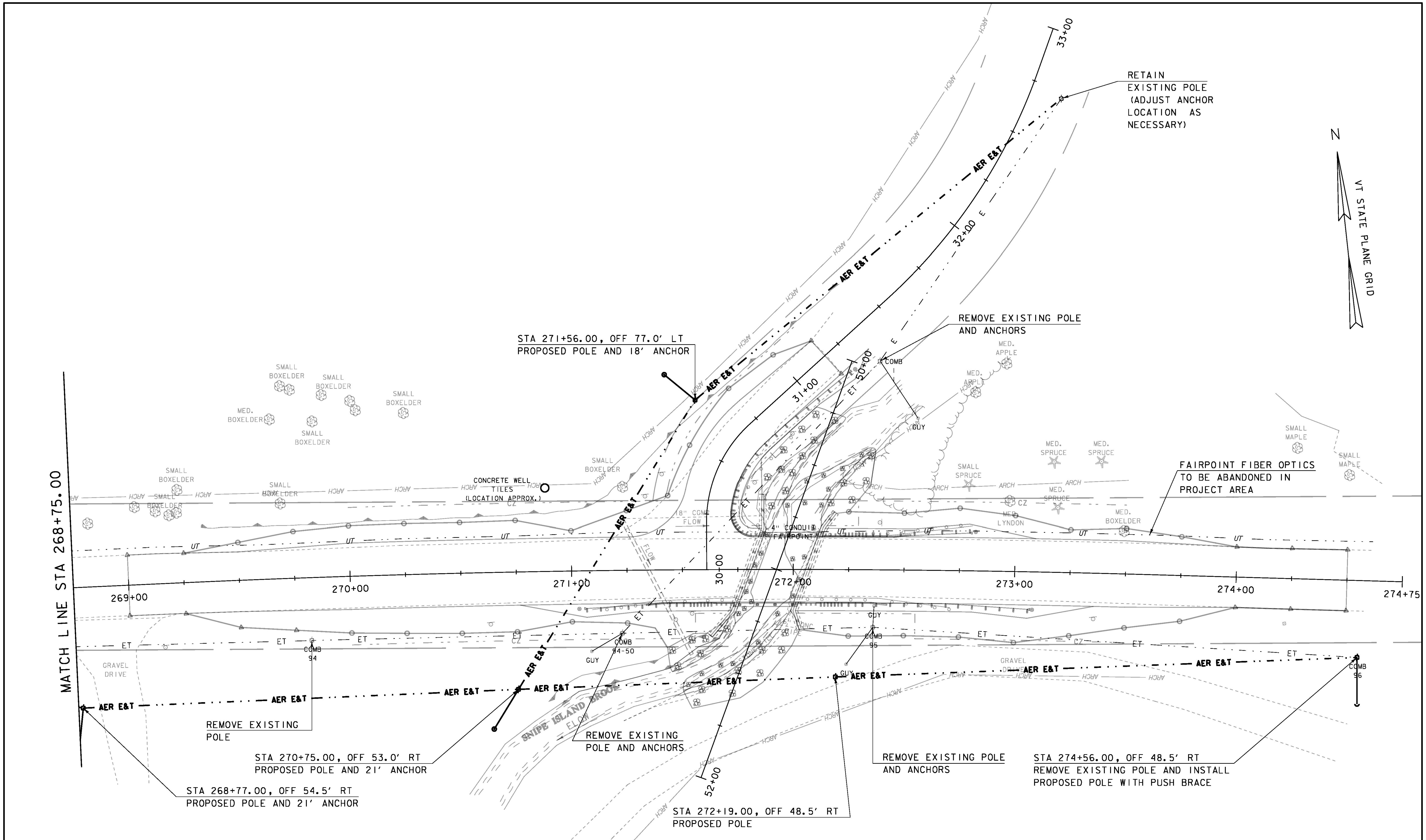
NOTES:

1. UTILITY RELOCATION TO BE DONE BY OTHERS.

2. RETAIN EXISTING POLE AT APPROXIMATELY STA 267+50 AND ADD ANCHORS AS REQUIRED.

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070bdr_utl.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
UTILITY RELOCATION PLAN 1	SHEET 16 OF 54



SCALE 1" = 20'-0"

20 0 20

NOTES:

1. UTILITY RELOCATION TO BE DONE BY OTHERS.

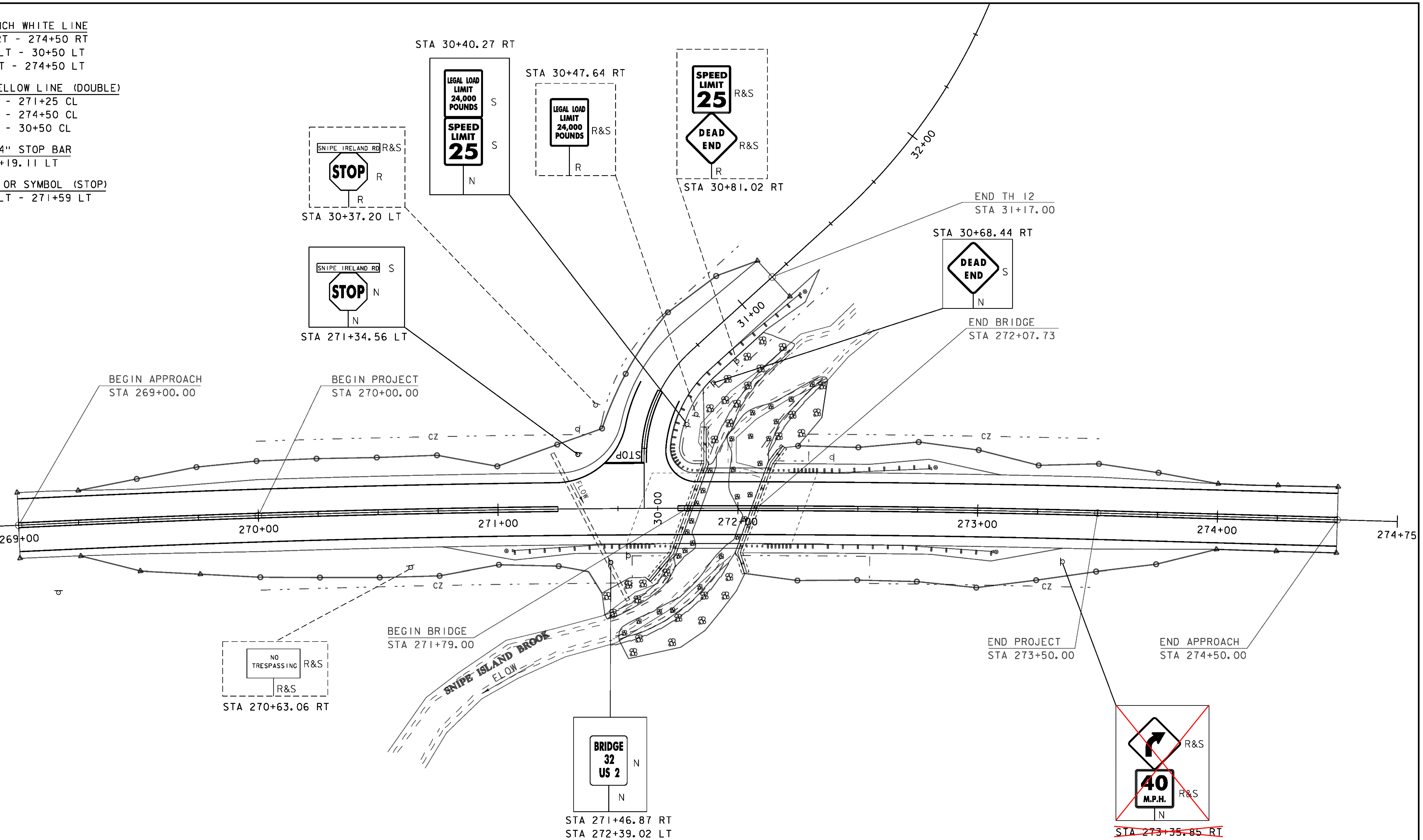
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070bdr_utl.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
UTILITY RELOCATION PLAN 2	SHEET 17 OF 54

DURABLE 4 INCH WHITE LINE
STA 269+00 RT - 274+50 RT
STA 269+00 LT - 30+50 LT
STA 30+50 RT - 274+50 LT

DURABLE 4 INCH YELLOW LINE (DOUBLE)
STA 269+00 - 271+25 CL
STA 271+75 - 274+50 CL
STA 30+19 - 30+50 CL

DURABLE 24" STOP BAR
STA. 30+19.11 LT

DURABLE LETTER OR SYMBOL (STOP)
STA. 271+49 LT - 271+59 LT



SIGN LEGEND
N = NEW
R = REMOVE
S = SALVAGE
R&S = REMOVE & SALVAGE
RET = RETAIN

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

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284 (28)

FILE NAME: s13c070sign.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: S. COLEY
SIGN AND PAVEMENT MARKINGS SHEET

PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 18 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS: EACH	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS: "A"	"B"	SALV SIGN	SALV TIS	EXIST POST: RETAIN	SALVAGE	NO. OF POST	NEW SIGN POSTS: FLANGED CHANNEL (LB / FT) 1.12	2.00	3.00	SQUARE STEEL (in) 1.75 (LB / FT) 1.88	2.00 / 2.42	2.50 / 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (IN) 3.00 (LB / FT) 1.30	4.00 / 1.70	4.0 MOD / 1.70	FOUNDATION	TUBULAR STEEL Ø (IN) 3.00 (LB / FT) 7.60	3.50 / 9.00	4.00 / 10.80	5.00 / 14.60	W-SHAPE STEEL: FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STANDARD SHEET NUMBER
												OPTION ITEMS																							
271+35 LT	STOP	1	30	30	6.25											15																	R1-1		
	SNIPE IRELAND RD	1	42	12			X																												
271+47 RT	BRIDGE 25 US 2	1	6	8	0.33						1				8			X															VD-701		T-42
272+40 LT	BRIDGE 25 US 2	1	6	8	0.33						1				8			X															VD-701		T-42
273+36 RT		~~1~~	~~30~~	~~30~~			~~X~~									~~15~~																	~~W1-2R~~		
	~~40 M.P.H.~~	~~1~~	~~24~~	~~24~~			~~X~~																										~~W13-1~~		
30+40 RT	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30			X									15																	VR-017		T-70
	SPEED LIMIT 25	1	24	30			X																										R2-1		
30+68 RT	DEAD END	1	30	30			X									15																			
												FT .	FT .	FT .	FT 16.	FT 60.	FT .	XXXXX XXXXX XXXXX XXXXX	EA .	LB .	LB .	LB .		LB .	LB .	LB .	LB .								
TOTALS					SF 6.92	SF .	EA. 6.	SF .	XXXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX			FT .			FT 76.					LB .			EA. .	LB .				EA. .	EA. .	LB .					

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

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)
FILE NAME: s13c070tss.dgn
PLOT DATE: 13-SEP-2016
PROJECT MANAGER: R. YOUNG
DRAWN BY: W. LAMMER
DESIGNED BY: S. COLEY
CHECKED: J. SALVATORI
TRAFFIC SIGN SUMMARY SHEET
SHEET 19 OF 54

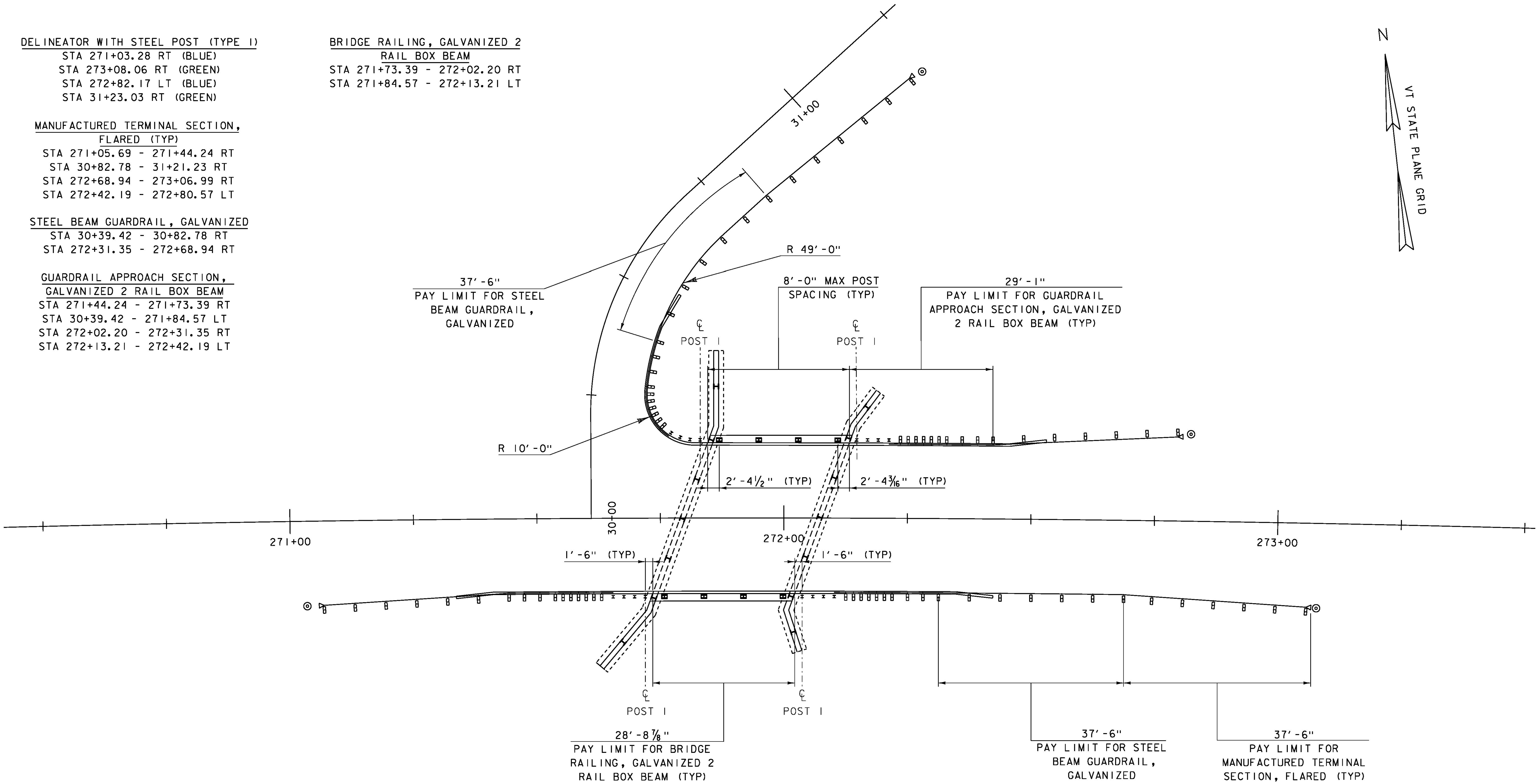
DELINEATOR WITH STEEL POST (TYPE 1)
STA 271+03.28 RT (BLUE)
STA 273+08.06 RT (GREEN)
STA 272+82.17 LT (BLUE)
STA 31+23.03 RT (GREEN)

MANUFACTURED TERMINAL SECTION, FLARED (TYP)
STA 271+05.69 - 271+44.24 RT
STA 30+82.78 - 31+21.23 RT
STA 272+68.94 - 273+06.99 RT
STA 272+42.19 - 272+80.57 LT

STEEL BEAM GUARDRAIL, GALVANIZED
STA 30+39.42 - 30+82.78 RT
STA 272+31.35 - 272+68.94 RT

GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM
STA 271+44.24 - 271+73.39 RT
STA 30+39.42 - 271+84.57 LT
STA 272+02.20 - 272+31.35 RT
STA 272+13.21 - 272+42.19 LT

BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM
STA 271+73.39 - 272+02.20 RT
STA 271+84.57 - 272+13.21 LT



NOTES:

1) ALL DIMENSIONS ARE TAKEN ALONG THE FACE OF THE RAIL

2) SEE STANDARDS G-1, S-360A, S-360B, AND T-40 FOR FURTHER DETAILS

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

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284 (28)	
FILE NAME: sl3c070rail.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: J. SALVATORI
RAIL LAYOUT SHEET	SHEET 20 OF 54

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)

N	DESCRIPTIVE TERM
<5	Very Loose
5-10	Loose
11-24	Med. Dense
25-50	Dense
>50	Very Dense

CONSISTENCY (COHESIVE SOILS)

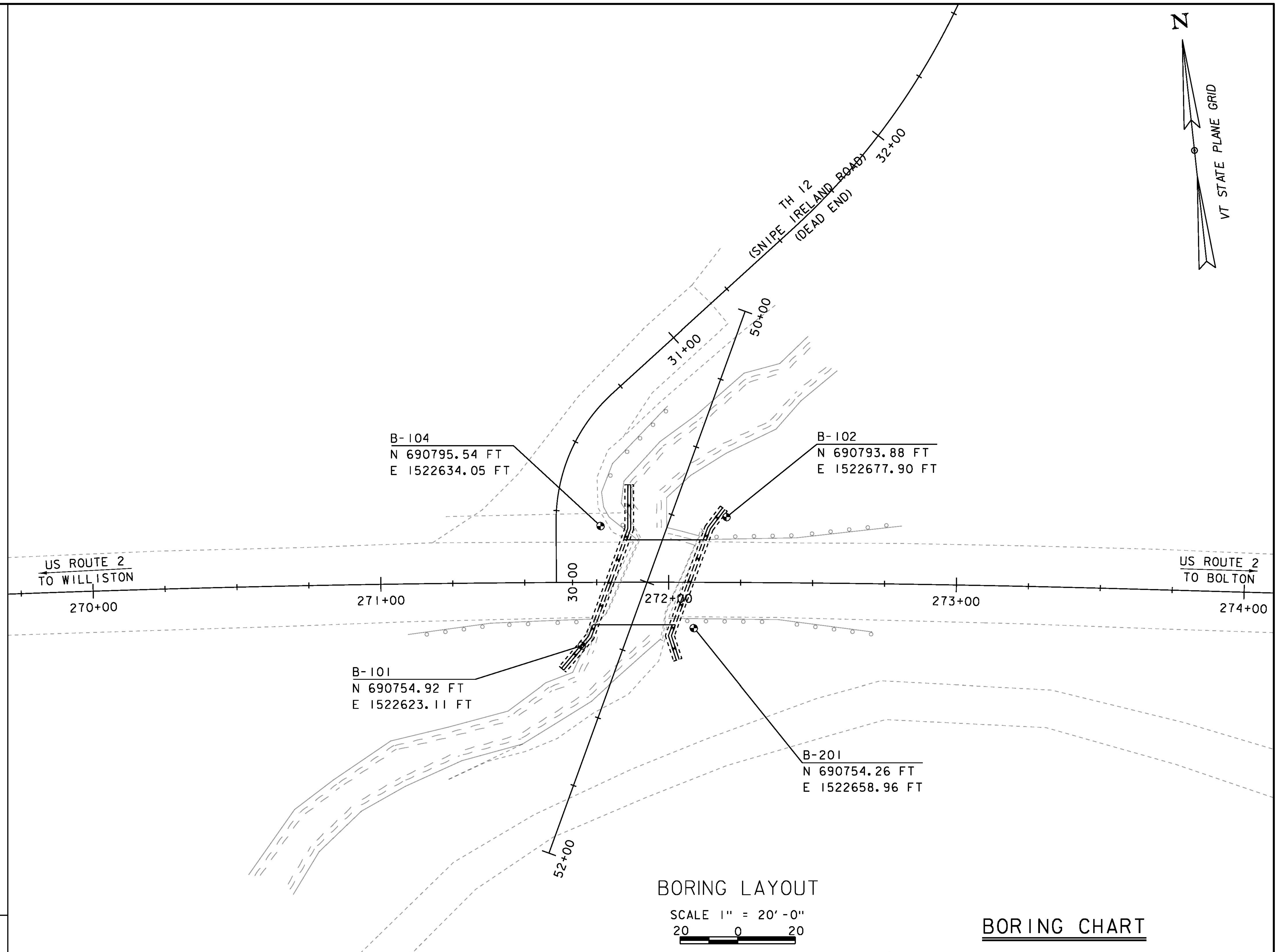
N	DESCRIPTIVE TERM
<2	Very Soft
2-4	Soft
5-8	Med. Stiff
9-15	Stiff
16-30	Very Stiff
31-60	Hard
>60	Very Hard

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 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of 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)
VTSPG	NAD83 - See Note 7

COLOR

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



BORING LAYOUT

SCALE 1" = 20'-0"

20 0 20

DEFINITIONS (AASHTO)

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

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

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

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

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

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

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

VARVED - Alternate layers of silt and clay.

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

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

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

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

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

DIP - Inclination of bed with a horizontal plane.

GENERAL NOTES

1. The subsurface explorations shown herein were made between 9/10/15 and 9/15/15, and 6/15/16 and 6/20/16 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment 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 judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. 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.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B-101	271+70.0	22.0 RT	312.3	UNK
B-102	272+20.0	22.7 LT	316.8	UNK
B-104	271+76.3	19.5 LT	317.7	UNK
B-201	272+05.5	18.5 RT	316.5	201.7

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

FILE NAME: sl3c070boring.dgn
PROJECT LEADER: R. S. YOUNG
DESIGNED BY: W. LAMMER
BORING INFORMATION SHEET
PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 21 OF 54

BOTTOM OF PILE CAP
ELEV. 309.00
ESTIMATED PILE
LENGTH OF 85 FT
BELOW PILE CAP

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Richmond
BF 0284(28)
US-2 Br #32

Boring No.: **B-101**
Page No.: 1 of 1
Pin No.: 13c070
Checked By: CEE

Boring Crew: GARROW, NIETO
Date Started: 9/15/15 Date Finished: 9/15/15
VTSPG NAD83: N 690754.92 ft E 1522623.11 ft
Station: 271+70 Offset: 22.00
Ground Elevation: 312.3 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = n/a

Groundwater Observations

Date	Depth (ft)	Notes
09/15/15	4.1	After Drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-a, SaGr, blk-brn, Moist, Rec. = 1.0 ft, Lab Note: A lot of asphalt pavement and some wood fiber was within sample.	2-9-8-7 (17)	9.4	73.0	24.3	2.7
		A-1-a, SaGr, gry, Moist, Rec. = 0.7 ft	14-7-9-4 (16)	12.4	66.1	26.4	7.5
5		A-1-b, GrSa, brn, Moist, Rec. = 0.6 ft	5-2-1-3 (3)	21.0	24.6	62.9	12.5
		No Recovery, 6.0 ft - 8.0 ft Field Note:, Cleaned out casing.	6-2-2-1 (4)				
		A-2-4, SiSa, gry, Moist, Rec. = 0.8 ft, Lab Note: Sample tested Non-Plastic.	2-2-2-3 (4)	23.4	7.8	68.9	23.3
10		A-1-b, Sa, gry, Moist, Rec. = 0.7 ft	3-2-2-4 (4)	18.9	11.1	80.0	8.9
		A-1-b, Sa, gry, Moist, Rec. = 0.8 ft	2-2-2-3 (4)	18.6	13.8	77.0	9.2
15		No Recovery, 14.0 ft - 16.0 ft	4-4-3-4 (7)				
20		A-1-a, SaGr, gry, Moist, Rec. = 0.6 ft, Lab Note: Broken Rock was within sample.	13-7-10-6 (17)	8.9	67.6	24.3	8.1
25		A-2-4, Sa, Lt/brn-gry, Moist, Rec. = 1.0 ft	5-3-3-4 (6)	20.5	19.5	63.3	17.2
30		A-3, Sa, Lt/brn, Moist, Rec. = 1.0 ft	4-4-5-6 (9)	22.2		92.1	7.9
35		No Recovery, 35.0 ft - 37.0 ft	4-7-4-6 (11)				
		Hole stopped @ 37.0 ft					
40		Remarks: Hole Collapsed at 4.2 feet.					

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND BF0284(28).GPJ VERMONT AOT.GDT 11/12/15

BOTTOM OF PILE CAP
ELEV. 309.00
ESTIMATED PILE
LENGTH OF 85 FT
BELOW PILE CAP

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Richmond
BF 0284(28)
US-2 Br #32

Boring No.: **B-102**
Page No.: 1 of 1
Pin No.: 13c070
Checked By: CEE

Boring Crew: HOOK, GARROW, NIETO
Date Started: 9/11/15 Date Finished: 9/14/15
VTSPG NAD83: N 690793.88 ft E 1522677.90 ft
Station: 272+20 Offset: -22.70
Ground Elevation: 316.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 45C SKID C_E = n/a

Groundwater Observations

Date	Depth (ft)	Notes
09/14/15	8.0	Before drilling,

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-2-4, GrSiSa, brn-Lt/brn, Moist, Rec. = 1.4 ft, Lab Note: Grass roots and wood fiber was within sample.	WH-1-2-3 (3)	8.3	30.5	53.7	15.8
		A-1-b, SaGr, brn, Moist, Rec. = 10.0 ft	1-2-4-3 (6)	6.1	48.5	36.1	15.4
5		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft	2-4-2-5 (6)	18.7	12.8	61.2	26.0
		No Recovery, 6.0 ft - 8.0 ft	5-7-8-14 (15)				
		A-1-a, SaGr, Lt/brn, Moist, Rec. = 0.6 ft	6-10-11-8 (21)	10.1	57.7	31.6	10.7
10		Field Note:, Cleaned out casing. No Recovery, 10.0 ft - 12.0 ft	5-3-2-1 (5)				
		A-2-4, GrSa, brn, MTW, Rec. = 0.4 ft	1-2-2-3 (4)	23.9	20.4	60.8	18.8
15		No Recovery, 14.0 ft - 16.0 ft	3-2-1-1 (3)				
		No Recovery, 16.0 ft - 18.0 ft	1-2-1-4 (3)				
20		A-1-b, SaGr, brn-Lt/brn, Moist, Rec. = 1.3 ft	2-4-6-6 (10)	12.5	49.4	40.4	10.2
25		Field Note:, Cleaned out casing. A-2-4, Sa, Lt/brn, Moist, Rec. = 1.2 ft	3-2-4-5 (6)	21.1	4.9	78.7	16.4
30		No Recovery, 30.0 ft - 32.0 ft	WH-3-3-5 (6)				
35		A-3, Sa, brn, Moist, Rec. = 1.3 ft	1-4-4-5 (8)	21.2	4.8	89.4	5.8
40		Visual Description:, SaSi, brn, Moist, Rec. = 0.1 ft, Lab Note: Possible thin layer of clay. Insufficient sample size for testing.	1-6-6-9 (12)	35.0			
		Hole stopped @ 42.0 ft					
45		Remarks: Hole Collapsed at 32.0 feet.					

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND BF0284(28).GPJ VERMONT AOT.GDT 11/12/15

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	BF 0284(28)

FILE NAME: sl3c070boring.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
BORING LOGS I	SHEET 22 OF 54

BOTTOM OF PILE CAP
ELEV. 309.00
ESTIMATED PILE
LENGTH OF 85 FT
BELOW PILE CAP

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

VTrans Working to Get You There
Vermont Agency of Transportation

BORING LOG

Richmond
BF 0284(28)
US-2 Br #32

Boring No.: **B-104**
Page No.: 1 of 1
Pin No.: 13c070
Checked By: CEE

Boring Crew: HOOK, JUDKINS, GARROW
Date Started: 9/10/15 Date Finished: 9/11/15
VTSPG NAD83: N 690795.54 ft E 1522634.05 ft
Station: 271+76.3 Offset: -19.50
Ground Elevation: 317.7 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_E = n/a

Groundwater Observations

Date	Depth (ft)	Notes
09/11/15	7.6	After Drilling.
09/11/15	7.6	Before Drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.66 ft					
		A-1-b, SiGrSa, brn, Moist, Rec. = 1.4 ft	5-5-5-4 (10)	9.9	30.3	45.6	24.1
		Cleaned out casing, 4.3 ft - 5.0 ft					
5		A-1-b, SaGr, brn, Moist, Rec. = 1.1 ft, Lab Note: Broken Rock was within sample.	9-35-11-6 (46)	12.6	47.4	40.9	11.7
		Cleaned out casing, 8.9 ft - 10.0 ft					
10		A-1-b, GrSa, gry, Moist, Rec. = 0.5 ft	6-4-5-6 (9)	22.5	40.0	55.8	4.2
		Cleaned out casing, 14.3 ft - 15.0 ft					
15		A-1-b, SiSaGr, gry, Moist, Rec. = 0.4 ft, Lab Note: Sample tested Non-Plastic.	3-3-3-3 (6)	16.8	40.0	35.2	24.8
20		A-1-b, Sa, gry, Moist, Rec. = 0.9 ft	3-2-3-3 (5)	21.8	3.3	87.2	9.5
		Cleaned out casing, 24.3 ft - 25.0 ft					
25		A-1-a, SaGr, gry, Moist, Rec. = 0.5 ft	5-2-4-5 (6)	11.2	59.5	30.6	9.9
		Cleaned out casing, 29.6 ft - 30.0 ft					
30		A-3, Sa, gry, Moist, Rec. = 0.2 ft	6-3-4-5 (7)	23.5	7.0	85.9	7.1
35		No Recovery, 35.0 ft - 37.0 ft, Changed to Mud Drilling due to light gray sand. 35-40 feet.	9-7-7-6 (14)				
40		A-4, Si, Lt/gry, Moist, Rec. = 1.3 ft	4-5-5-6 (10)	28.4		16.6	83.4
		Hole stopped @ 42.0 ft					
45		Remarks: Hole Collapsed at 7.8 feet.					

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND BF0284(28).GPJ VERMONT AOT.GDT 11/12/15

PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	BF 0284(28)		
FILE NAME:	sl3c070boring.dgn	PLOT DATE:	13-SEP-2016
PROJECT LEADER:	R. YOUNG	DRAWN BY:	S. COLEY
DESIGNED BY:	S. COLEY	CHECKED BY:	W. LAMMER
BORING LOGS 2		SHEET	23 OF 54

BOTTOM OF PILE CAP
ELEV. 309.00
ESTIMATED PILE
LENGTH OF 85 FT
BELOW PILE CAP

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STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Richmond
BF 0284(28)
US-2 Br #32

Boring No.: **B-201**
Page No.: 1 of 2
Pin No.: 13c070
Checked By: CEE

Boring Crew: Judkins, Garrow, Coletti
Date Started: 6/15/16 Date Finished: 6/20/16
VTSPG NAD83: N 690754.26 ft E 1522658.96 ft
Station: 272+5.5 Offset: 18.50
Ground Elevation: 316.5 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK C_E = 1.41

Groundwater Observations

Date	Depth (ft)	Notes
06/17/16	10.7	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, GrSa, brn, Dry, Rec. = 0.5 ft, Lab Note: Plant roots and pieces of broken glass were within sample				2-11-20-8 (31)	14.5	31.6	51.9	16.5
10		Field Note:, Cleaned out casing								
		A-4, SiSa, Dk/gry, Wet, Rec. = 1.0 ft, Lab Note: Plant material was within sample				3-2-1-2 (3)	42.3	9.9	52.1	38.0
20		A-2-4, SiSa, gry, Moist, Rec. = 0.7 ft				8-4-4-3 (8)	23.2	6.8	70.9	22.3
		Field Note:, Rollercone, Cleaned out casing								
30		A-3, Sa, brn, Moist, Rec. = 0.8 ft				9-4-4-4 (8)	23.3	2.0	89.7	8.3
		Field Note:, Rollercone, Cleaned out casing								
40		A-4, SiSa, brn, Moist, Rec. = 0.9 ft				18-8-4-5 (12)	24.0	0.1	54.0	45.9
		A-2-4, Sa, brn, Moist, Rec. = 1.0 ft				21-7-7-5 (14)	21.9	0.1	82.2	17.7
50		A-2-4, Sa, brn, Moist, Rec. = 0.7 ft				17-27-25-22 (52)	19.3		80.7	19.3
		Field Note:, No Recovery				6-5-7-4 (12)				
60		A-2-4, Sa, gry, Moist, Rec. = 1.2 ft				WR-WR-3-3 (3)	24.7	0.3	80.9	18.8
		Field Note:, Rollercone, Cleaned out casing								
		Field Note:, No sample attempted due to flowing sand								

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND BF0284(28).GPJ VERMONT AOT.GDT 8/2/16

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STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

Richmond
BF 0284(28)
US-2 Br #32

Boring No.: **B-201**
Page No.: 2 of 2
Pin No.: 13c070
Checked By: CEE

Boring Crew: Judkins, Garrow, Coletti
Date Started: 6/15/16 Date Finished: 6/20/16
VTSPG NAD83: N 690754.26 ft E 1522658.96 ft
Station: 272+5.5 Offset: 18.50
Ground Elevation: 316.5 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.

Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK C_E = 1.41

Groundwater Observations

Date	Depth (ft)	Notes
06/17/16	10.7	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
70		A-4, SaSi, gry, Moist, Rec. = 1.3 ft				16-20-20-25 (40)	22.4	0.1	40.9	59.0
		A-4, SiSa, gry, Moist, Rec. = 1.1 ft				6-16-20-21 (36)	23.5		57.7	42.3
80		A-4, SaSi, gry, Moist, Rec. = 1.1 ft				7-23-21-20 (44)	24.4	0.3	47.8	51.9
		A-4, SiSa, gry, Moist, Rec. = 1.3 ft				11-22-26-23 (48)	24.0	0.1	57.0	42.9
90										
		A-4, SiSa, gry, Moist, Rec. = 1.3 ft				9-25-26-40 (51)	23.0	0.1	63.7	36.2
100										
		Field Note:, No sample attempted due to flowing sand								
110										
		Field Note:, Cleaned out casing				Top of Bedrock @ 114.8 ft				
		114.8 ft - 119.8 ft, Light gray to gray, Weakly foliated, quartz-biotite-muscovite-pyrite METAWACKE, Hard, Unweathered, Poor rock, BX, RMR=36	1 (80)	96 (0)	7 6 5 5 6					
120		119.8 ft - 124.8 ft, Light gray to gray, Schistose muscovite-biotite-quartz-pyrite METAWACKE, Hard, Unweathered, Fair rock, BX, RMR=54	2 (80)	98 (55)	8 9 9 10 11					
		Hole stopped @ 124.8 ft								
130										

Remarks:
Hole collapsed at 19.9 feet.

1.) Started mud drilling at 10 feet.
2.) Switched to 3 inch casing at 65 feet.

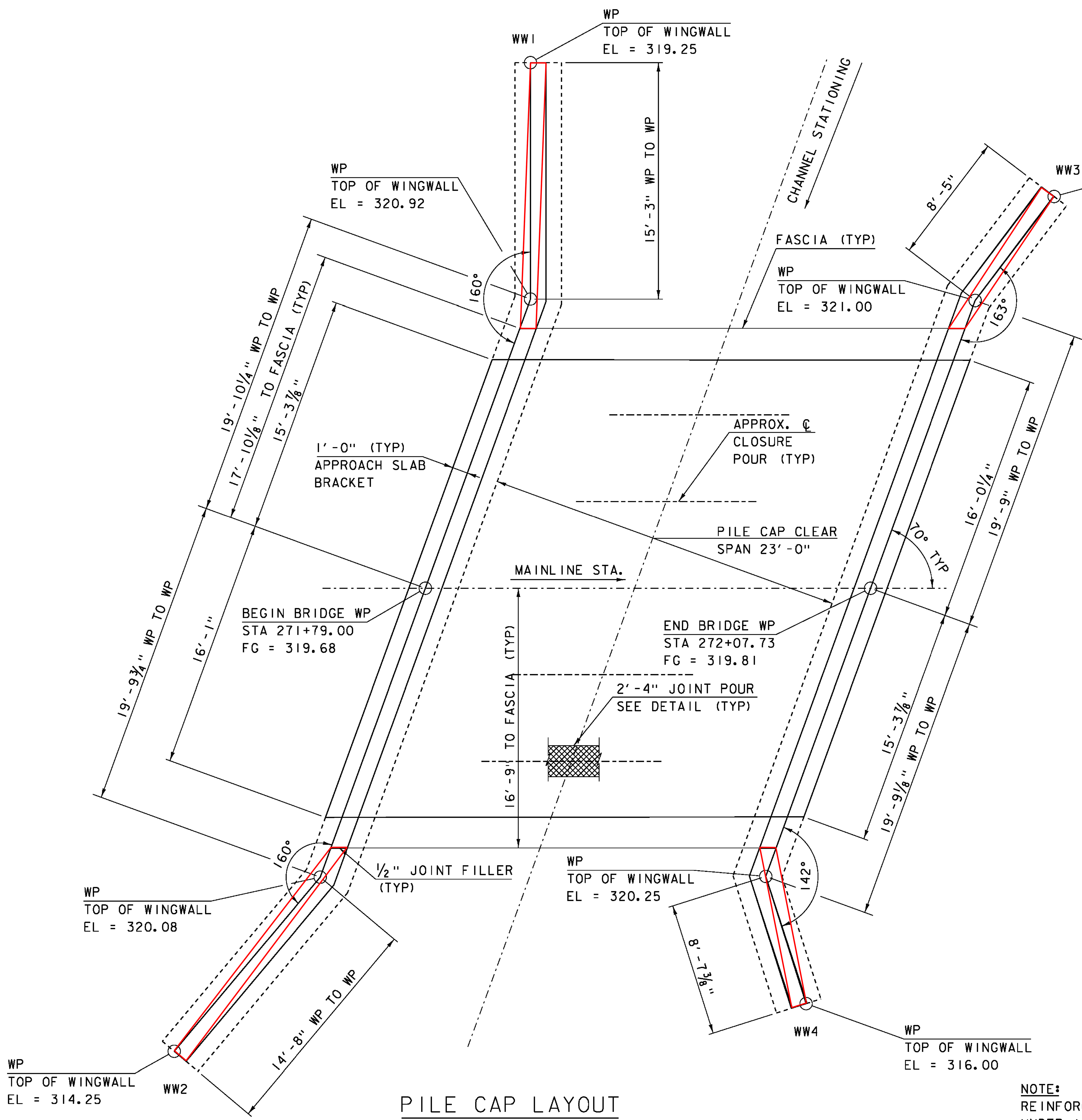
Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RICHMOND BF0284(28).GPJ VERMONT AOT.GDT 8/2/16

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

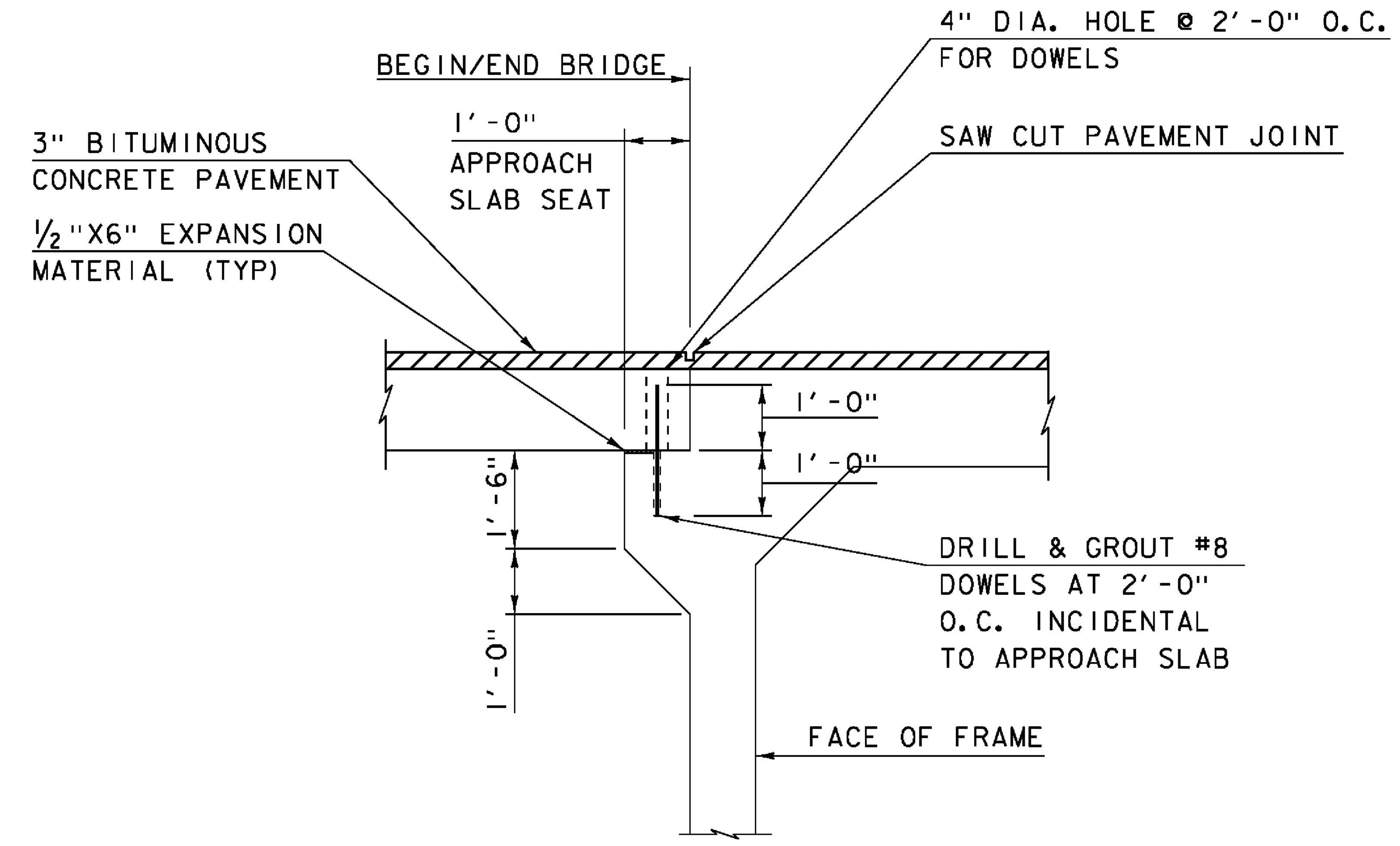
FILE NAME: s13c070boring.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: S. COLEY
BORING LOGS 3

PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 24 OF 54



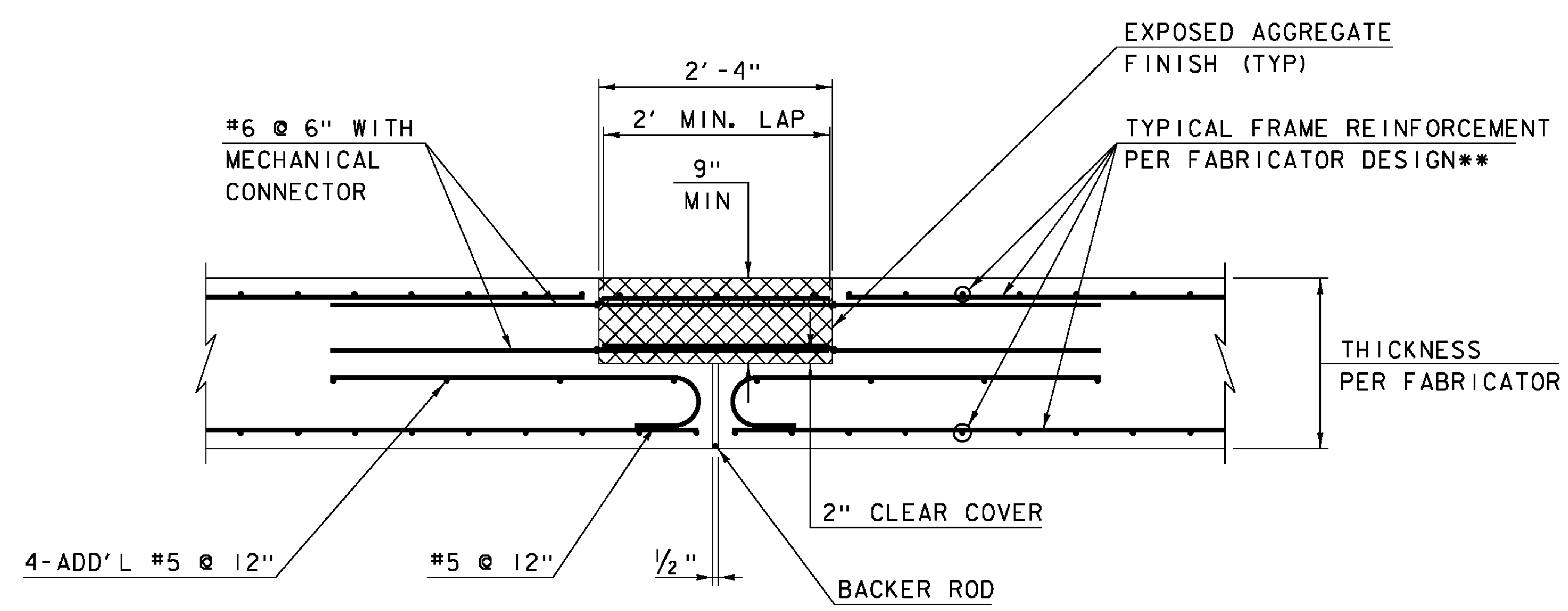
PILE CAP LAYOUT

SCALE ¼" = 1'-0"



BRIDGE END DETAIL

SCALE ½" = 1'-0"



RIGID FRAME JOINT POUR DETAIL

SCALE 1" = 1'-0"

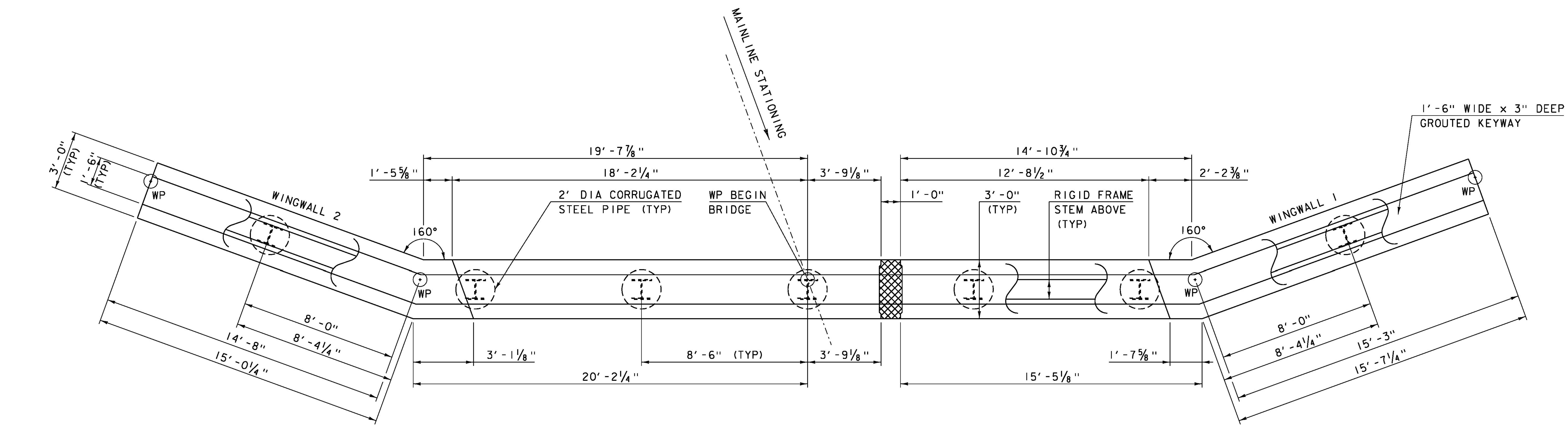
NOTE:

REINFORCING IN THE CLOSURE POUR WILL BE PAID UNDER ITEM 507.11 REINFORCING STEEL, LEVEL I (FPQ)

** DIMENSION SHOWN FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS SHALL BE DESIGNED BY FABRICATOR

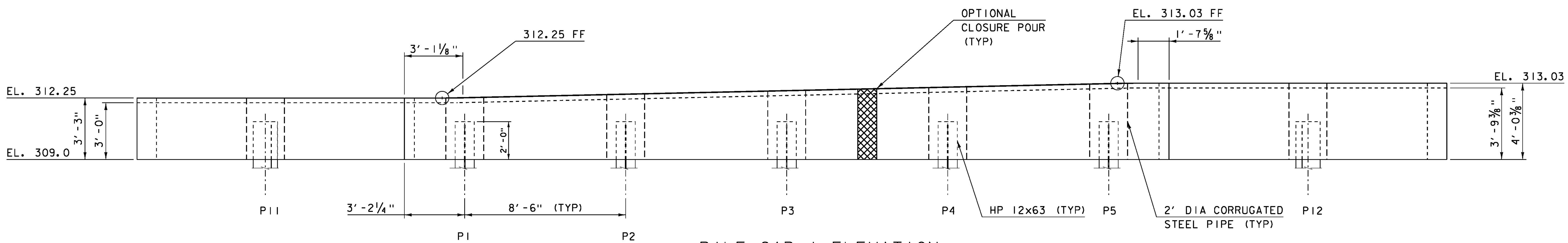
SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070sub.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
PILE CAP LAYOUT	SHEET 25 OF 54



PILE CAP 1 PLAN

SCALE 3/8" = 1'-0"



PILE CAP 1 ELEVATION

SCALE 3/8" = 1'-0"

NOTE:

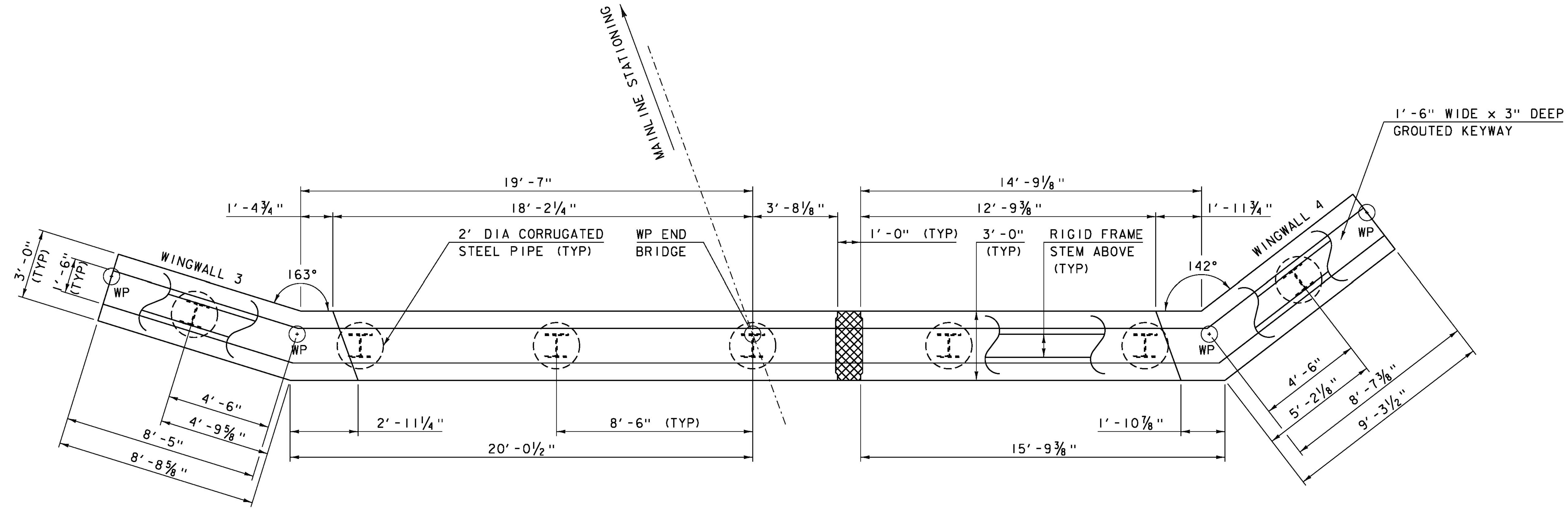
1. EACH SECTION OF THE OPTIONAL CLOSURE POUR MUST INCLUDE AT LEAST TWO PILES.

NF = NEAR FACE

FF = FAR FACE

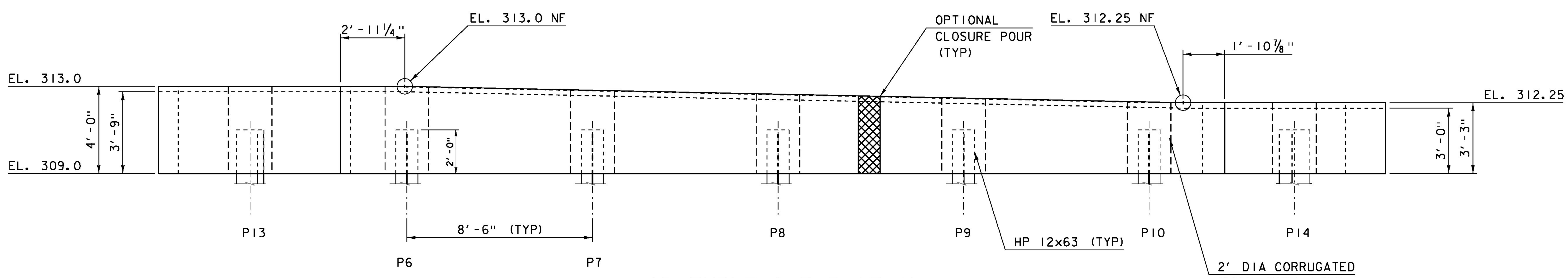
SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070sub.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
PILE CAP 1 PLAN	SHEET 26 OF 54



ABUTMENT 2 PLAN

SCALE 3/8" = 1'-0"



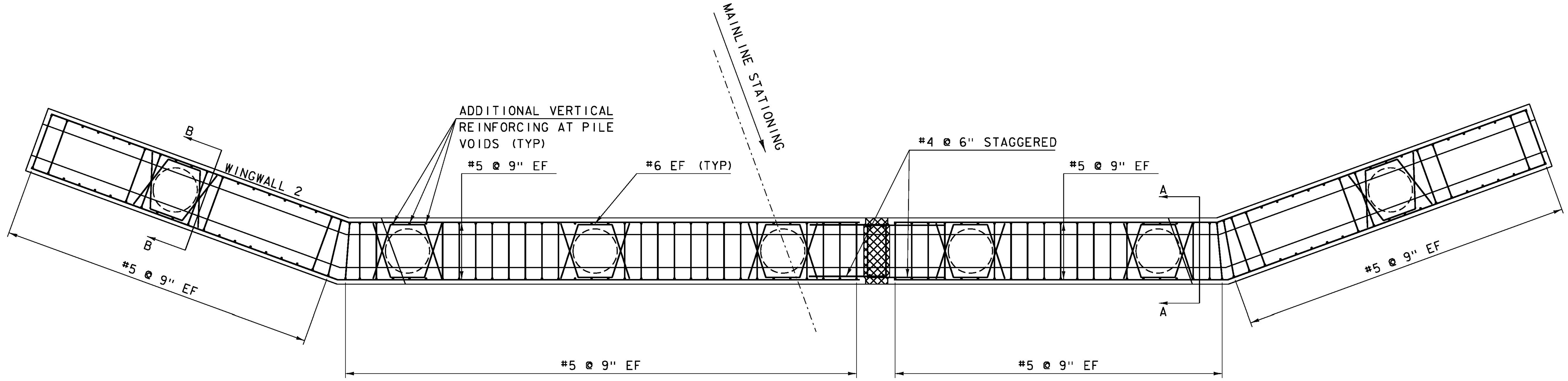
ABUTMENT 2 ELEVATION

SCALE 3/8" = 1'-0"

NOTE:
1. EACH SECTION OF THE OPTIONAL CLOSURE POUR MUST INCLUDE AT LEAST TWO PILES.
NF = NEAR FACE
FF = FAR FACE

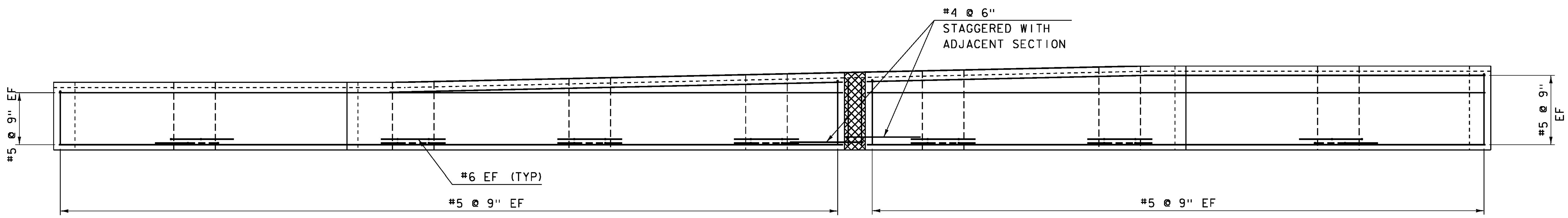
SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070sub.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
PILE CAP 2 PLAN	SHEET 27 OF 54



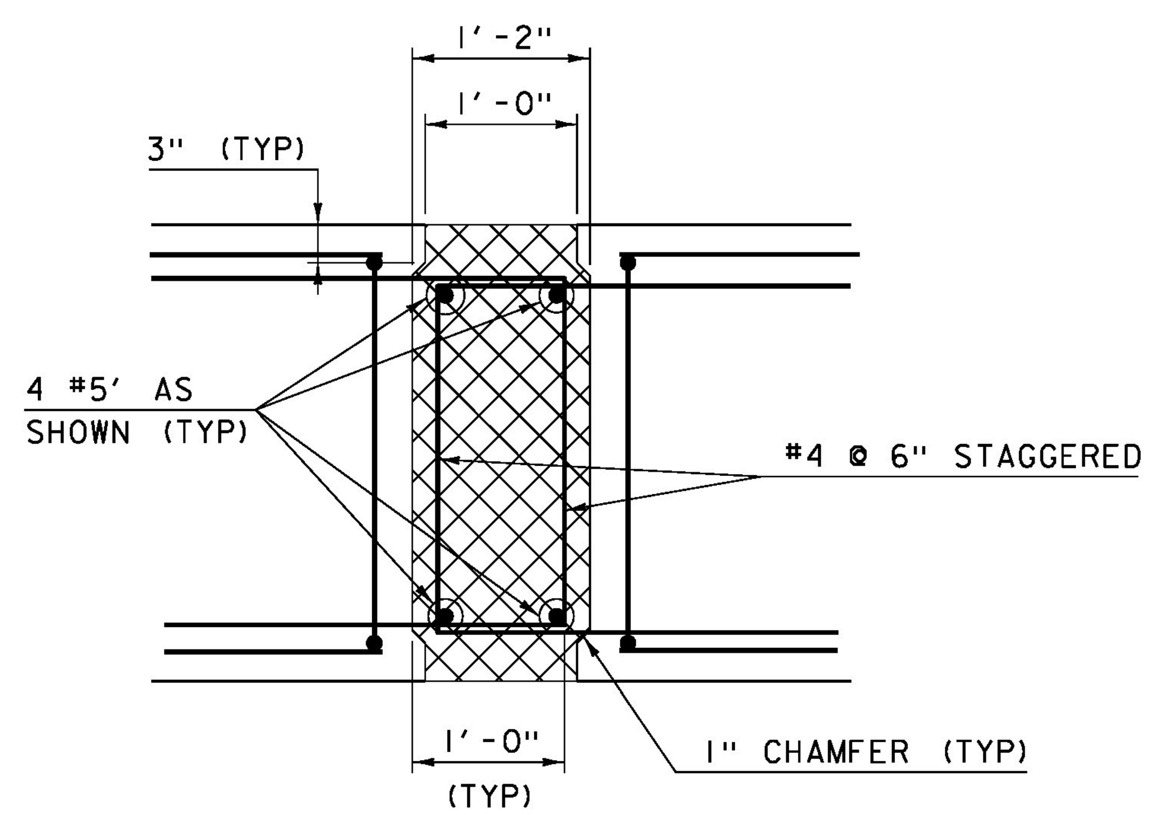
PILE CAP 1 PLAN

SCALE 3/8" = 1'-0"



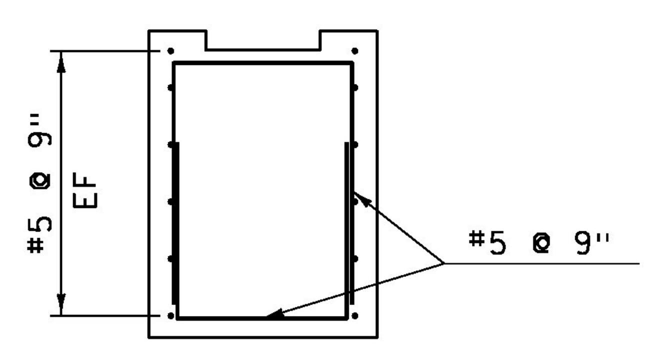
PILE CAP 1 ELEVATION

SCALE 3/8" = 1'-0"



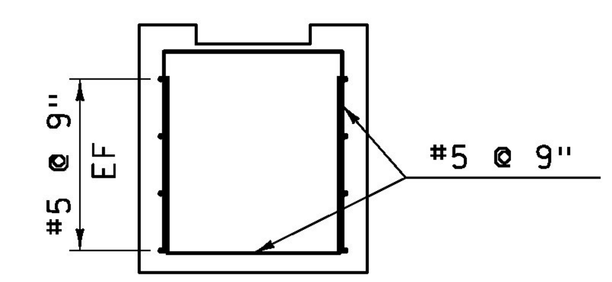
CLOSURE POUR DETAIL SECTION

SCALE 1" = 1'-0"



SECTION A-A

SCALE 1/2" = 1'-0"



SECTION B-B

SCALE 1/2" = 1'-0"

NOTES:

PILE CAP 1 SHOWN, PILE CAP 2 SIMILAR

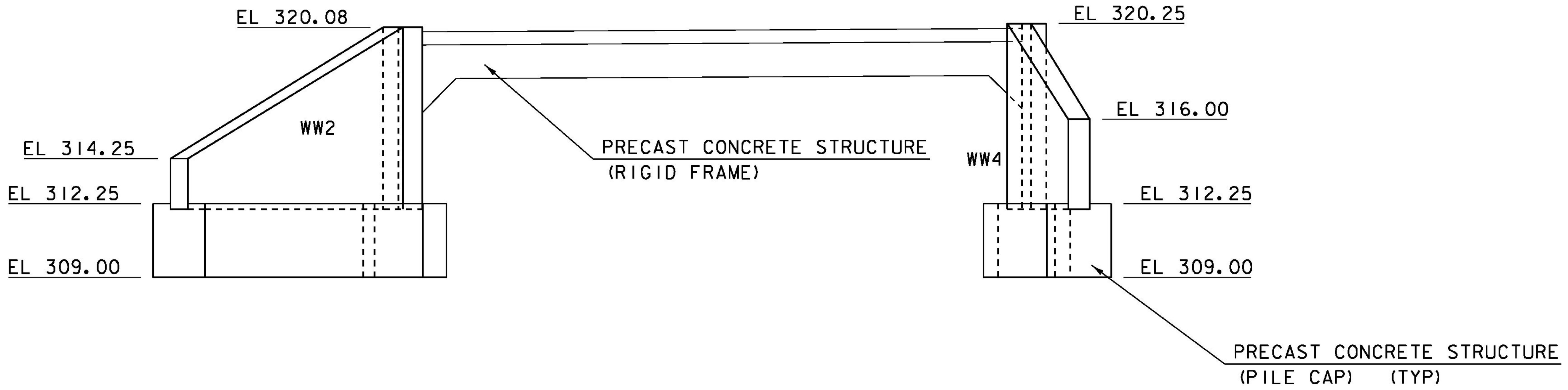
REINFORCING IN THE CLOSURE POUR WILL BE PAID UNDER ITEM 507.11 REINFORCING STEEL, LEVEL 1 (FPQ)

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)

NOTE:

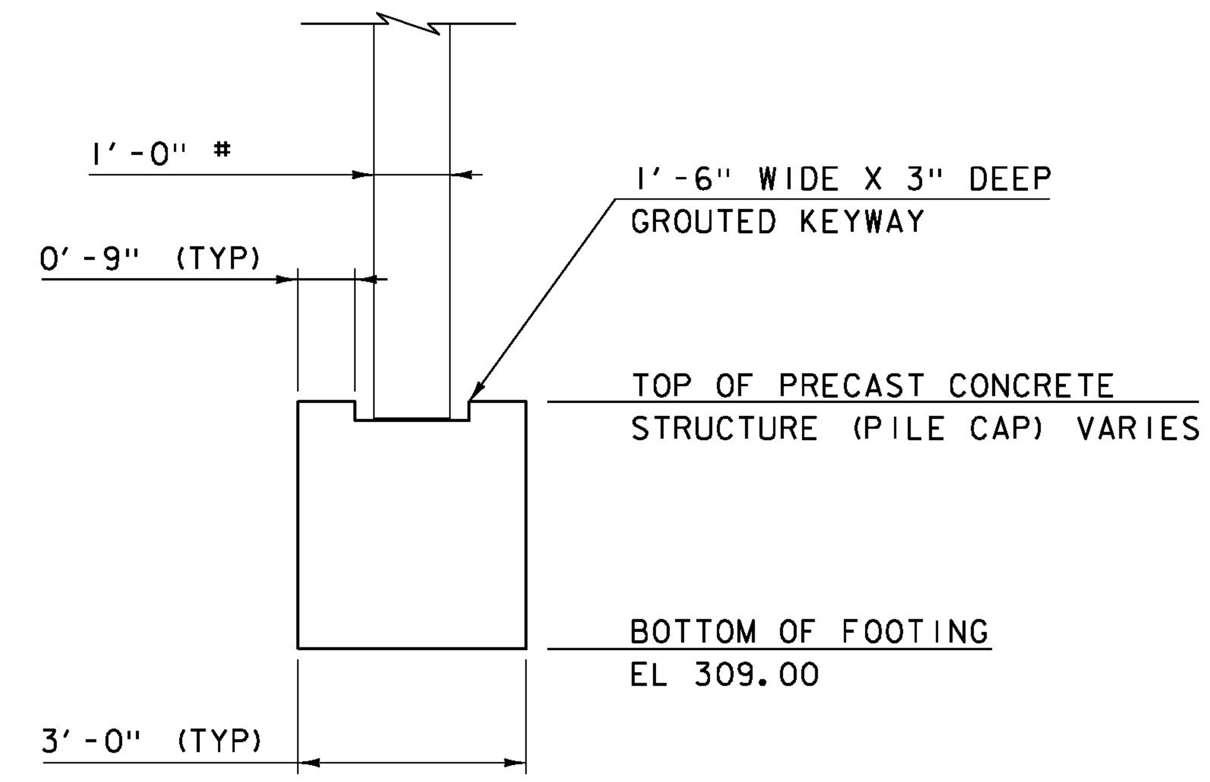
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR UNLESS OTHERWISE SPECIFIED ON THE PLANS
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070sub.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
PILE CAP REINFORCING PLAN	SHEET 28 OF 54



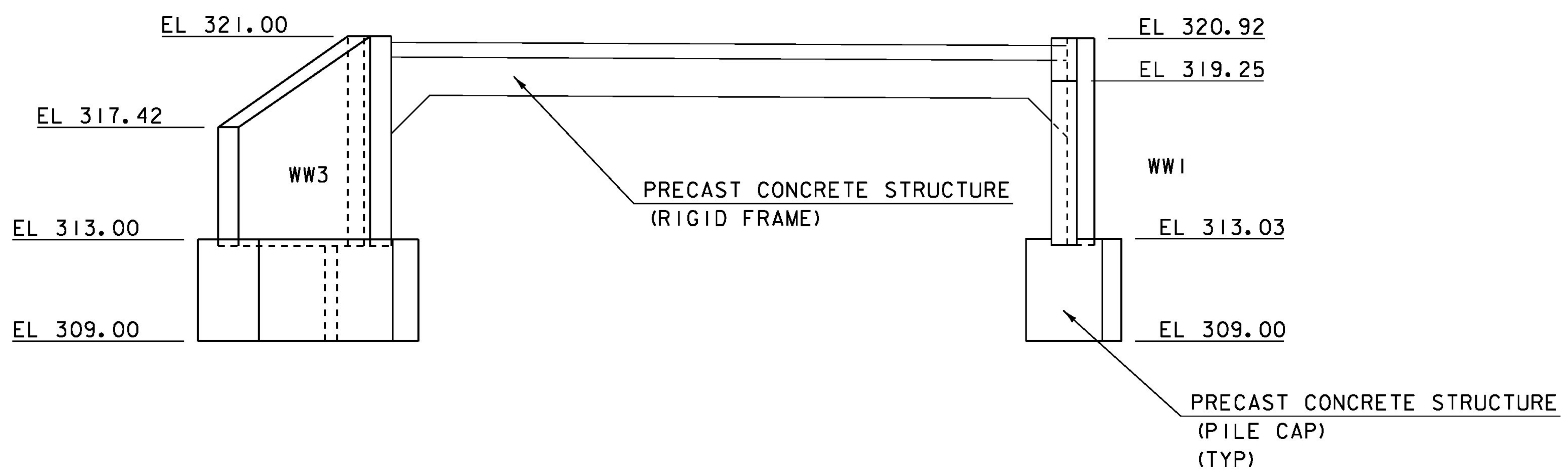
DOWNSTREAM ELEVATION
LOOKING UPSTREAM

SCALE 1/4" = 1'-0"



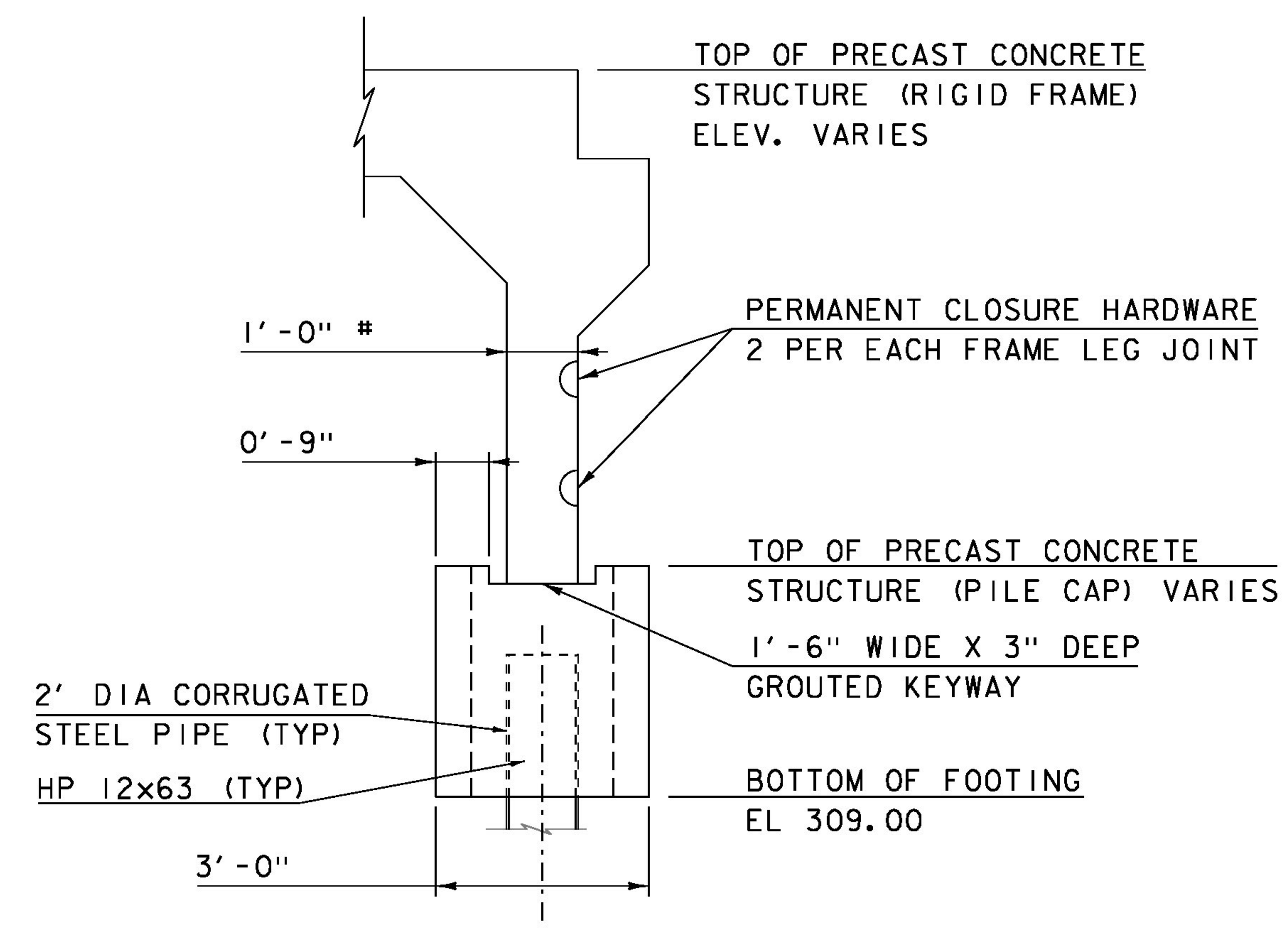
WINGWALL SECTION

SCALE 1/2" = 1'-0"



UPSTREAM ELEVATION
LOOKING DOWNSTREAM

SCALE 1/4" = 1'-0"

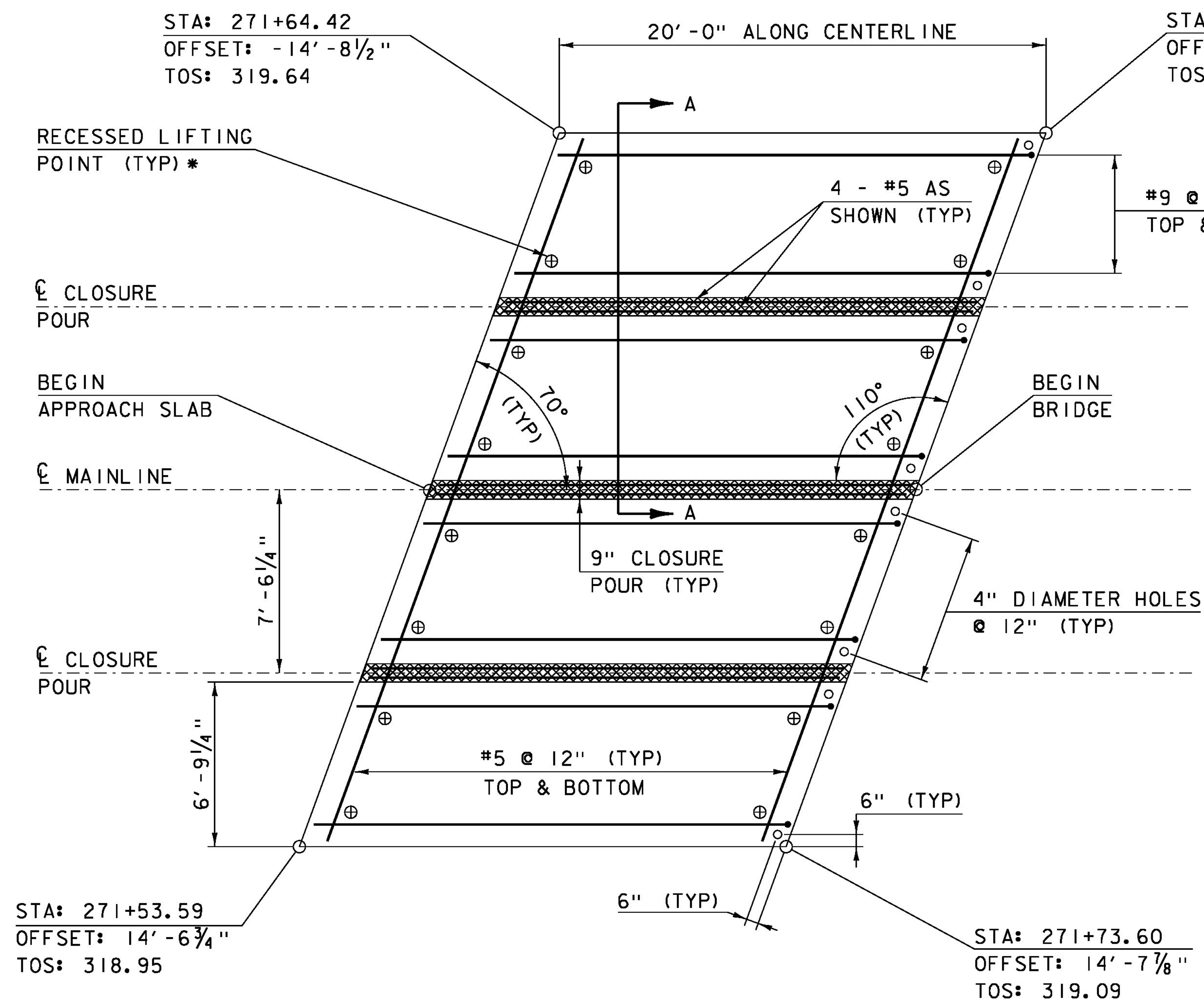


RIGID FRAME SECTION

SCALE 1/2" = 1'-0"

DIMENSION SHOWN FOR ESTIMATING PURPOSES ONLY. ACTUAL DIMENSIONS SHALL BE DESIGNED BY FABRICATOR

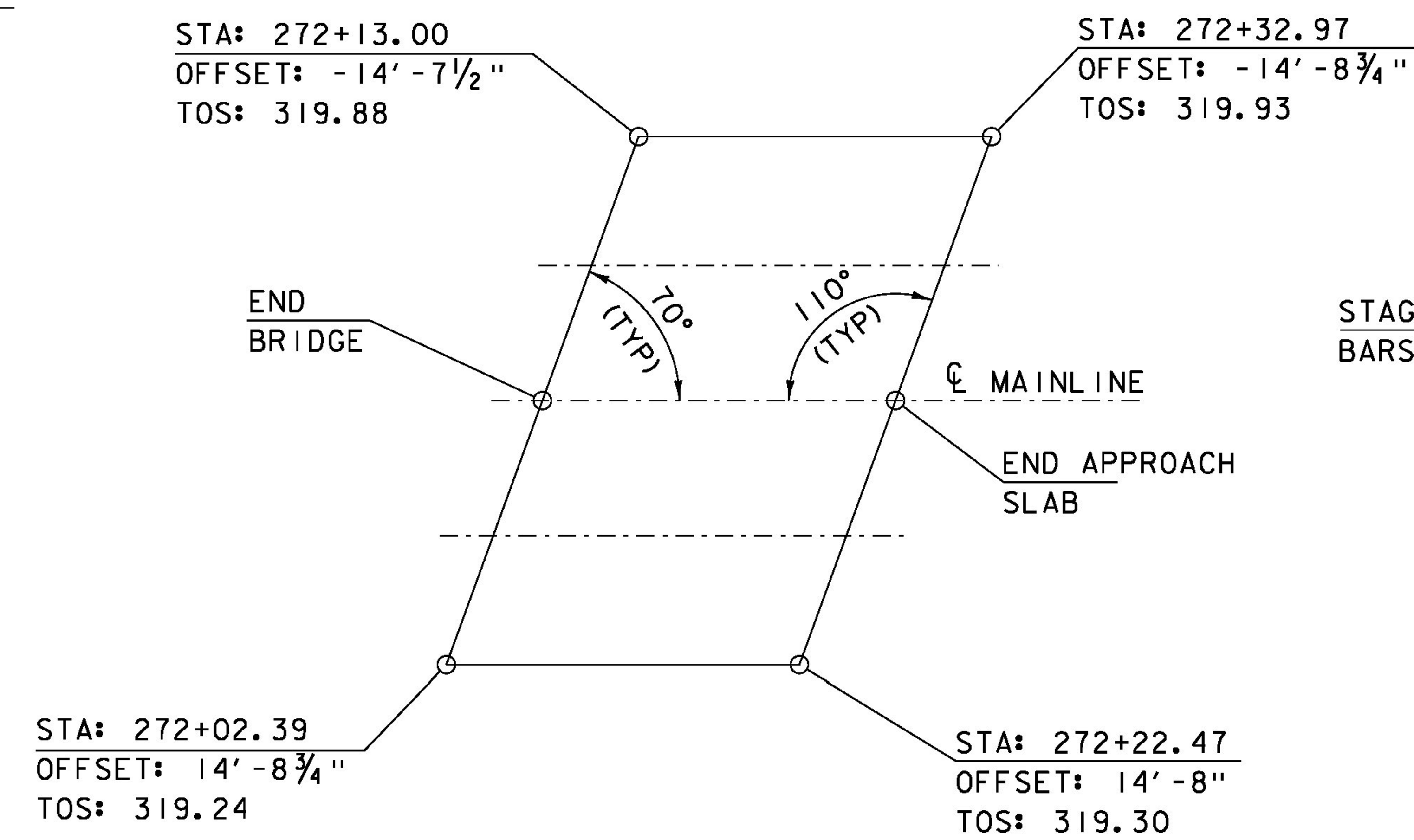
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070sub.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
RIGID FRAME ELEVATION	SHEET 29 OF 54



APPROACH SLAB #1 PLAN VIEW

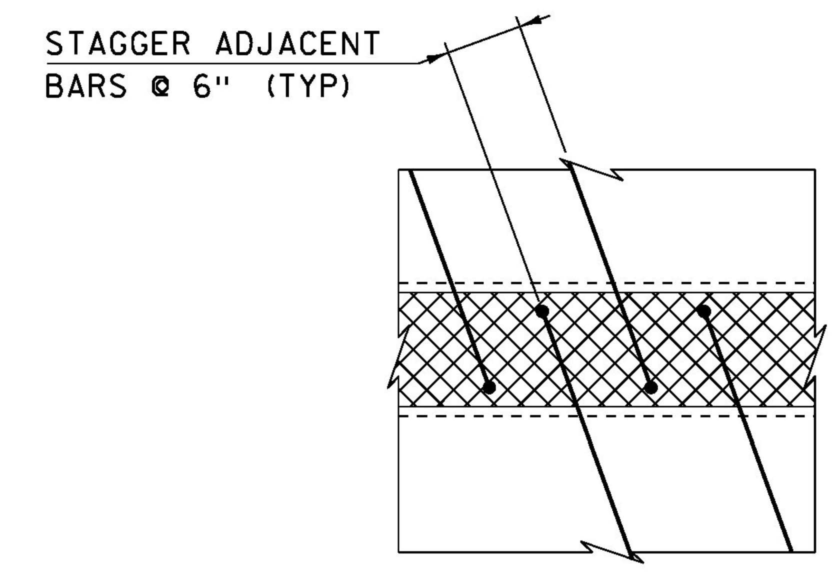
SCALE ¼" = 1'-0"

*NOTES:
1. LIFTING POINTS SHALL BE DESIGNED BY FABRICATOR AND SUBMITTED WITH CALCULATIONS
2. REINFORCING STEEL FOR APPROACH SLAB #1 SHOWN, APPROACH SLAB #2 SIMILAR.



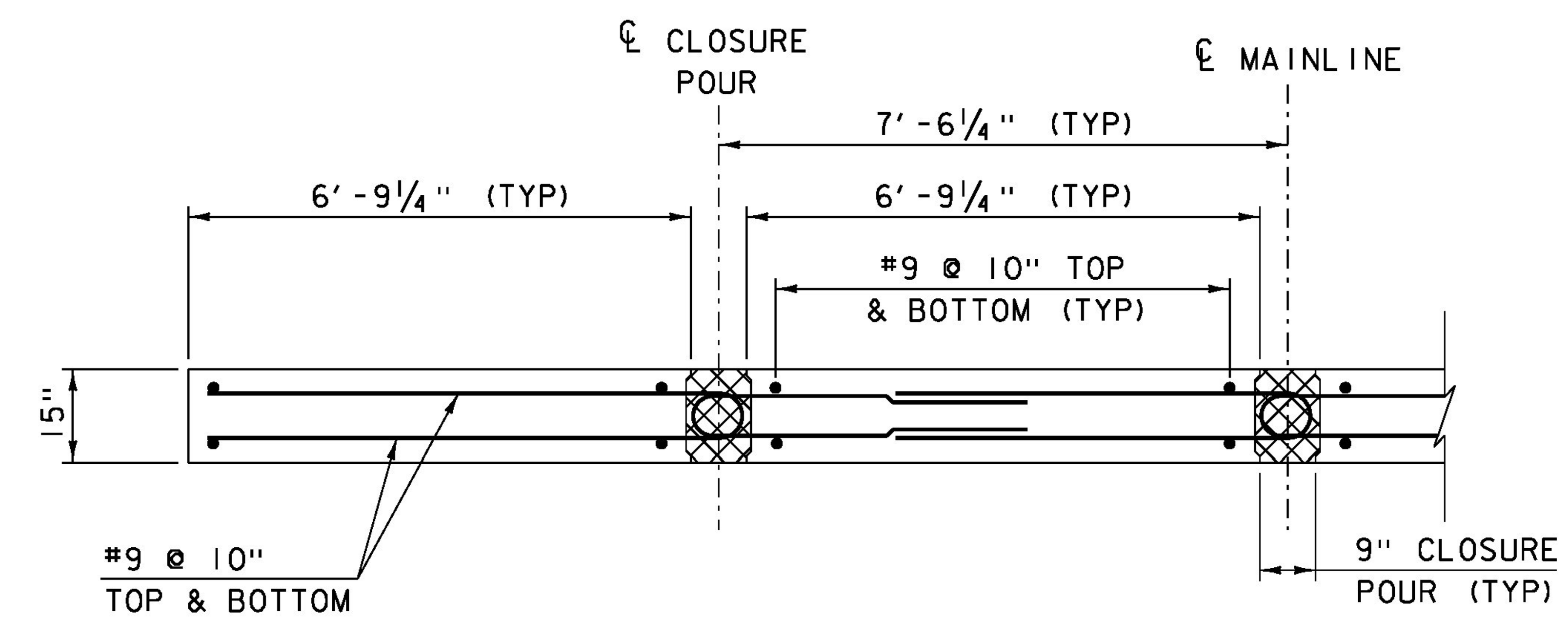
APPROACH SLAB #2 PLAN VIEW

NOT TO SCALE



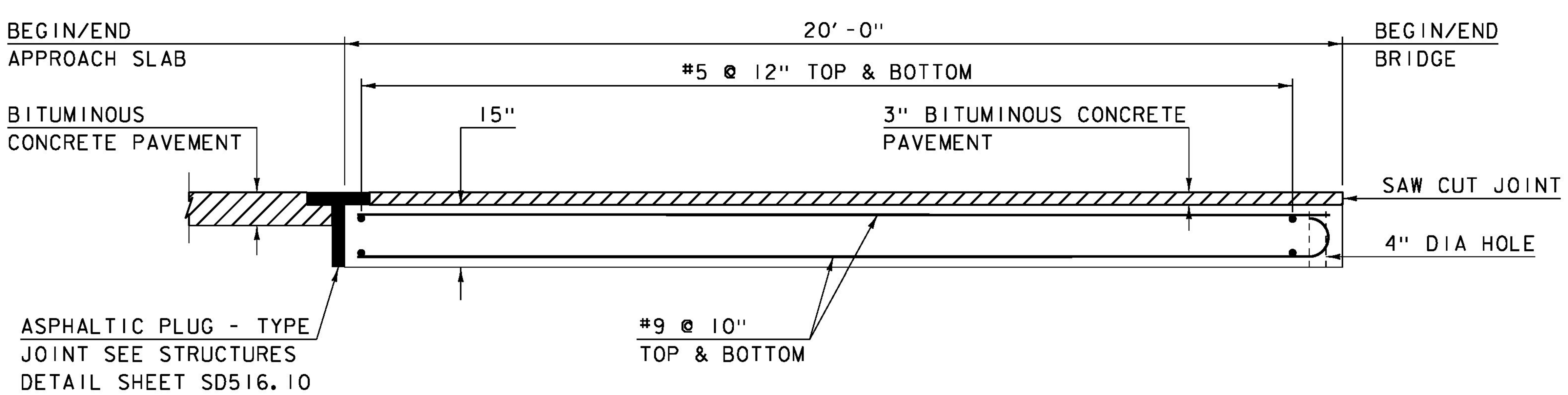
CONNECTION DETAIL PLAN

SCALE 1" = 1'-0"



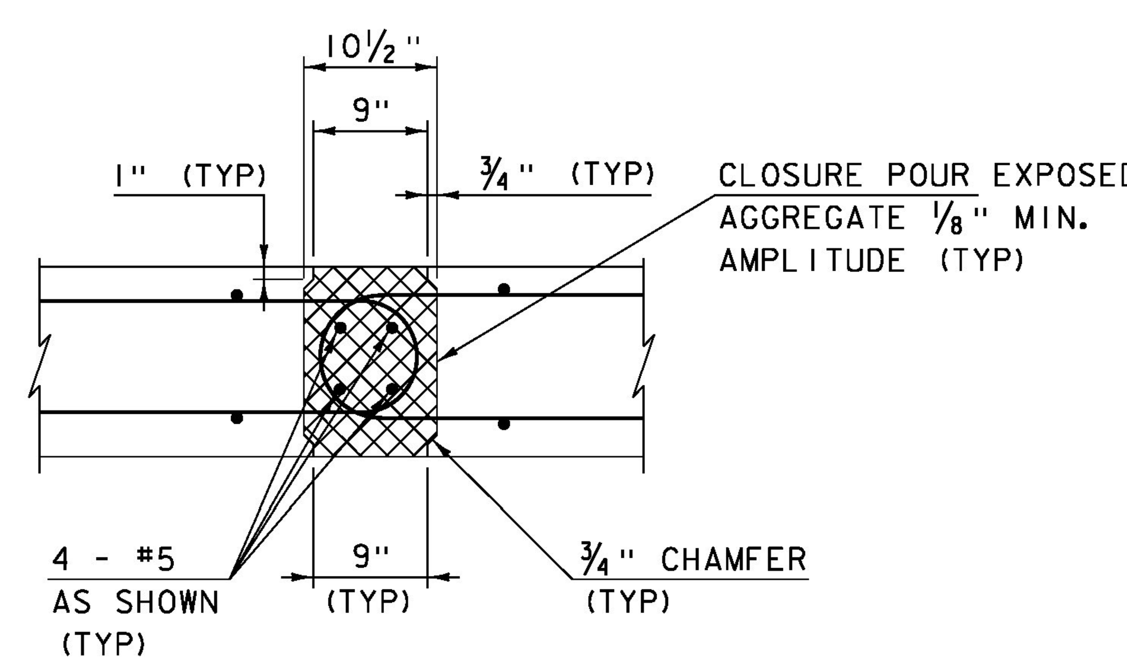
SECTION A-A

SCALE ½" = 1'-0"



APPROACH SLAB ELEVATION VIEW

SCALE ½" = 1'-0"



CONNECTION DETAIL SECTION

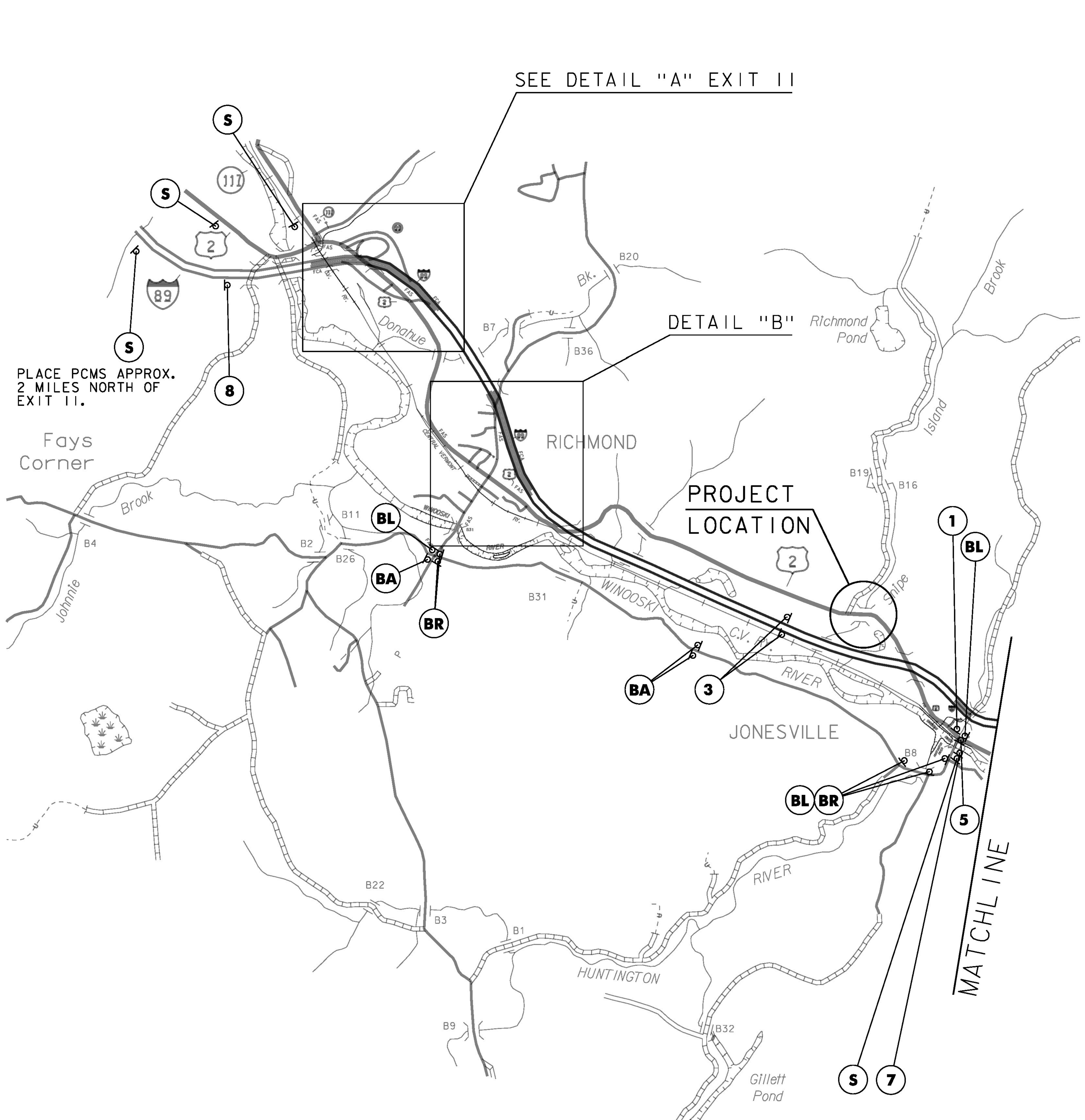
SCALE 1" = 1'-0"

*NOTES:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)

REINFORCING IN THE CLOSURE POUR WILL BE PAID UNDER ITEM 507.11 REINFORCING STEEL, LEVEL I (FPQ)

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070approach.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
APPROACH SLAB DETAILS	SHEET 30 OF 54



US 2
CLOSED

PORTABLE CHANGEABLE SIGN - PHASE 1

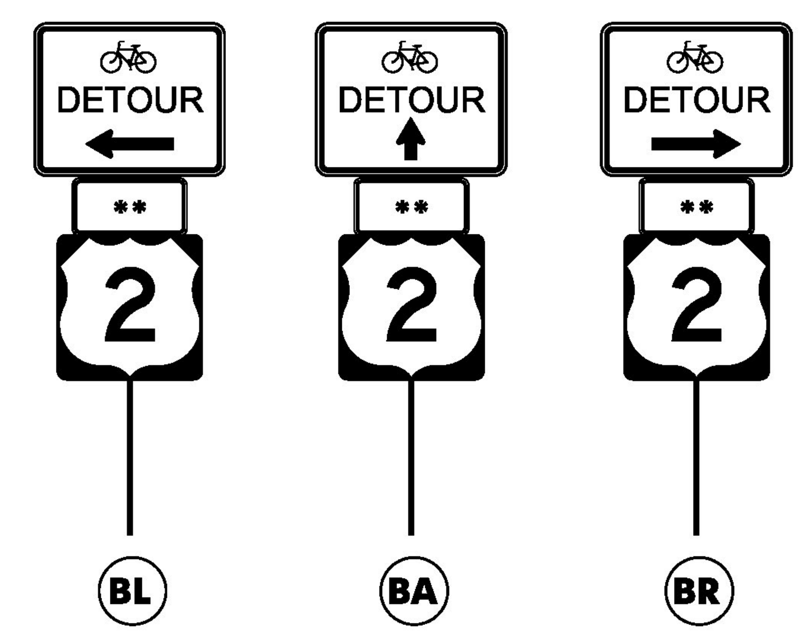
3 MILES
EAST OF
RICHMOND

PORTABLE CHANGEABLE SIGN - PHASE 2

*MMMM DD-
*MMMM DD

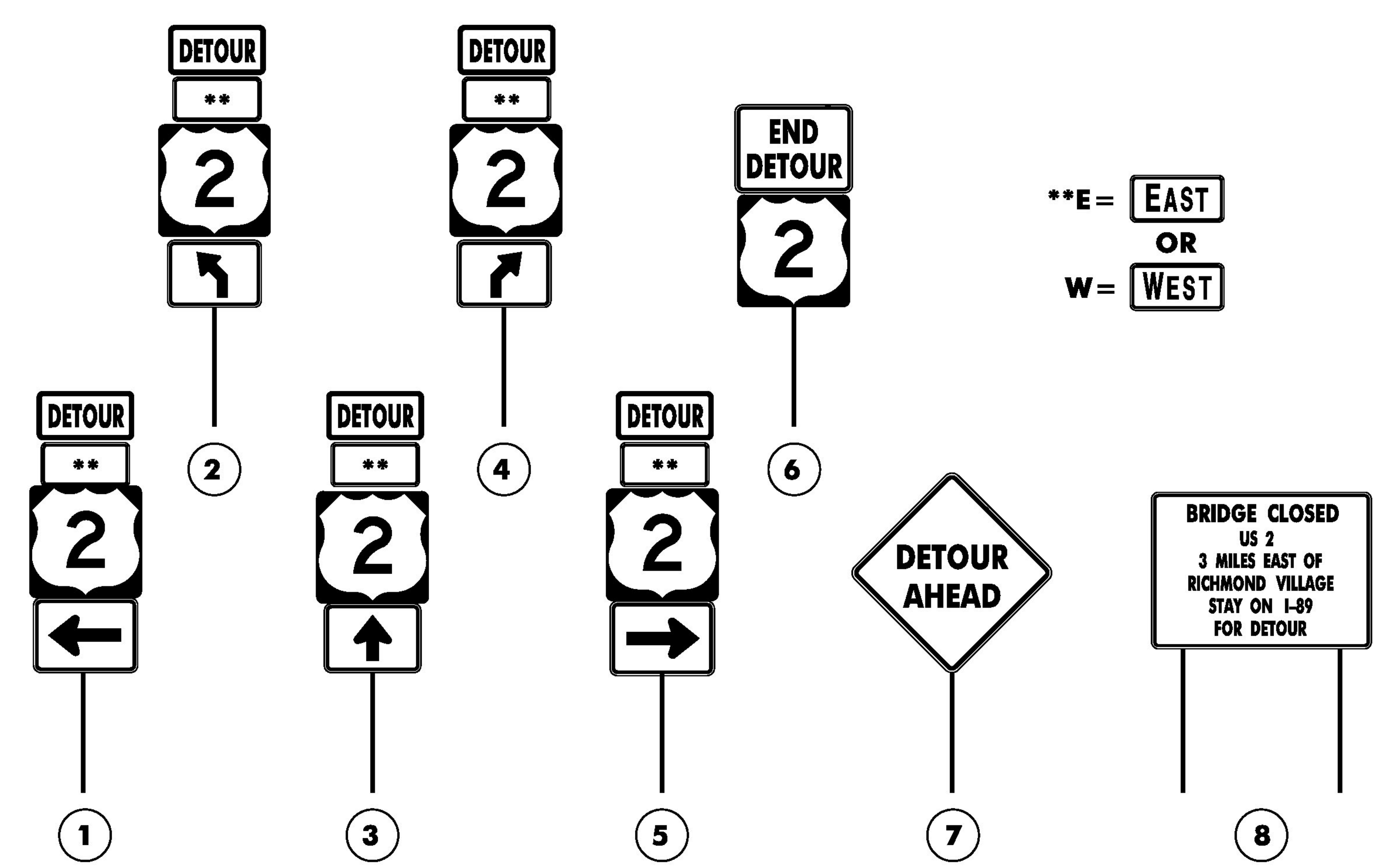
PORTABLE CHANGEABLE SIGN - PHASE 3

(S) * M=MONTH D=DAY



NOTES:

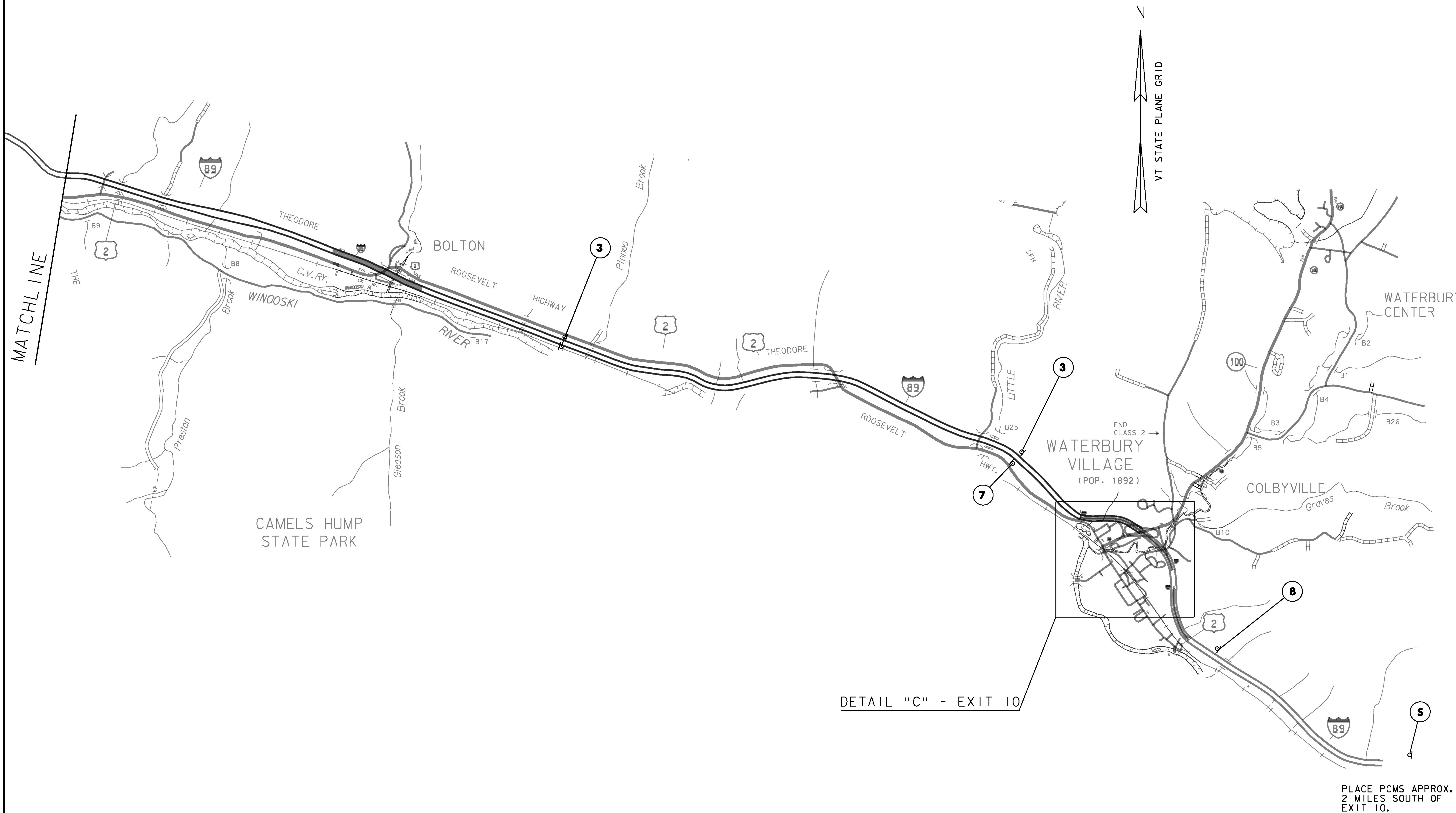
1. THE PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE FULLY OPERATIONAL A MINIMUM OF TWO WEEKS PRIOR TO THE CLOSURE OF US 2.
2. DURING ACTUAL CLOSURE, ELIMINATE PHASE 3 ONLY.
3. DETOUR SIGNS SHALL BE LOCATED ADJACENT TO EXISTING INTERSECTION ROUTE MARKER ASSEMBLIES WHERE APPLICABLE.
4. CONFIRMATION ROUTE MARKERS (SIGN 3) SHALL BE INSTALLED IMMEDIATELY FOLLOWING EACH TURN AND AT ALL LOCATIONS ALONG THE DETOUR WHERE ROUTE MAKERS EXIST FOR THE PARENT ROUTE. WHEN EXISTING ROUTE MARKER ASSEMBLIES ARE LOCATED AT THE INTERSECTIONS OR ALONG THE DETOUR ROUTE, THE DETOUR ROUTE MARKER ASSEMBLIES SHALL BE INSTALLED ADJACENT TO THE EXISTING ROUTE MARKER ASSMBLIES AND THE ROUTE MARKER SHALL BE COVERED IF THE ASSEMBLY CONFLICTS WITH THE DETOUR ROUTE MARKER ASSEMBLY. DETOUR ROUTE CONFIRMATION SIGNS ARE NEEDED AFTER EACH MAJOR INTERSECTION THROUGHOUT THE DETOUR ROUTE. TRAIL BLAZERS SHOULD BE INSTALLED EVERY MILE OR TWO ALONG THE ROUTE IN BOTH DIRECTIONS OF TRAVEL.
5. DETOUR SIGNING IS THE RESPONSIBILITY OF THE CONTRACTOR. PAYMENT FOR ALL TEMPORARY TRAFFIC CONTROL DEVICES FOR IMPLEMENTING THE DETOUR, INCLUDING BUT NOT LIMITED TO SIGNS AND BARRICADES (WITH THE EXCEPTION OF PORTABLE CHANGEABLE MESSAGE SIGNS) WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL -INCLUSIVE). THE REMOVAL OF VEGETATION INTERFERING WITH THE PLACEMENT OF TEMPORARY TRAFFIC CONTROL DEVICES WILL BE INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).
6. THIS DETOUR PLAN IS A CONCEPTUAL OUTLINE ONLY AND THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN OF EACH INTERSECTION SHOWING DETOUR SIGN LOCATIONS IN RELATION TO EXISTING SIGNS.
7. CONCURRENT VTRANS PROJECT: WATERBURY-STOWE STP 2945(1)VT 100 RECLAIM IS SCHEDULED FOR CONSTRUCTION IN THE AREA OF THE DETOUR FOR THIS PROJECT DURING THE 2017 AND 2018 CONSTRUCTION SEASONS. THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING DETOUR SIGN CONFLICTS WITH THIS PROJECT.



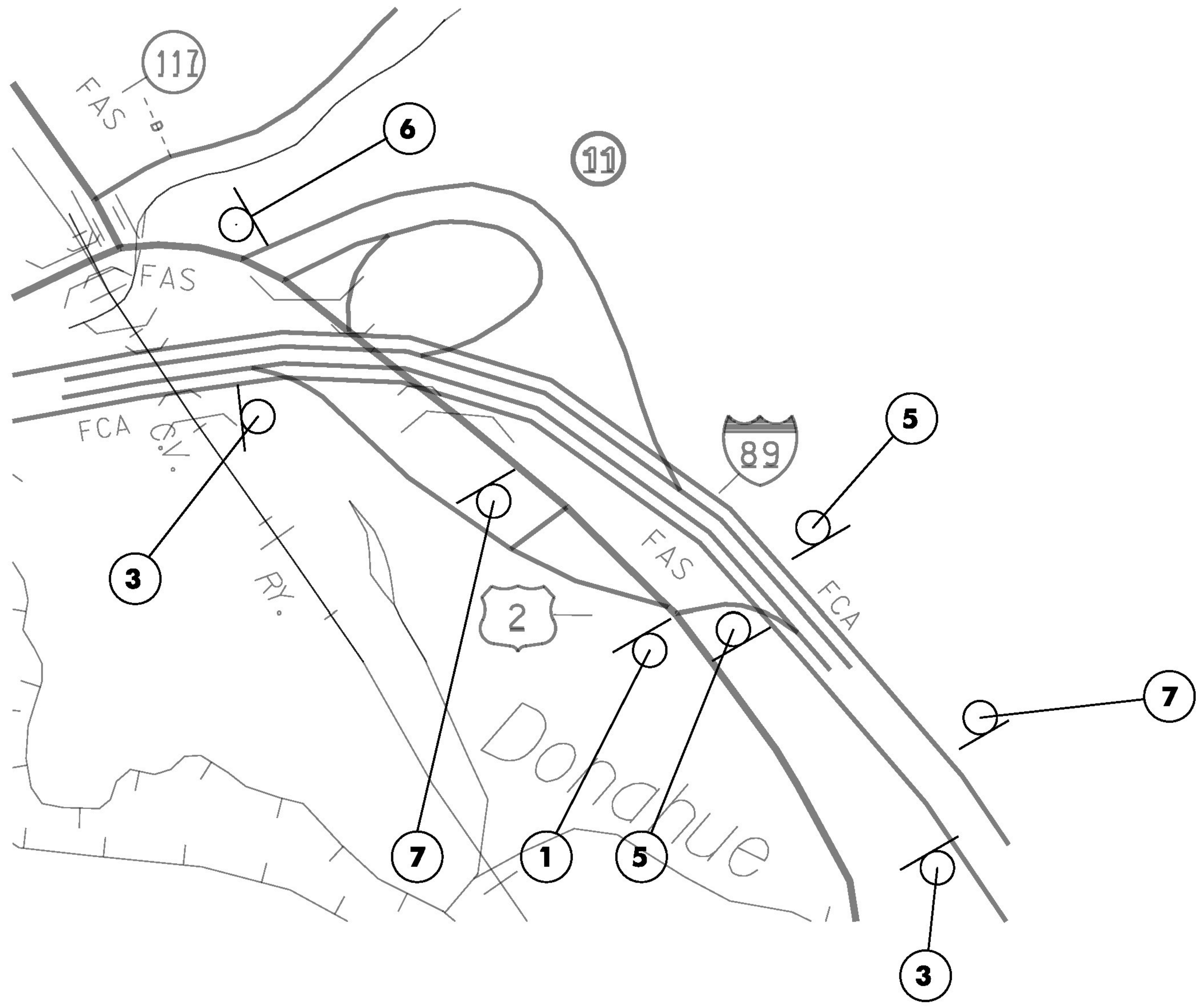
DETOUR SIGNS ALONG THE INTERSTATE SHALL BE GATE POSTED.

M5-2 ARROW PLAQUES SHALL BE FLOURESCENT ORANGE.

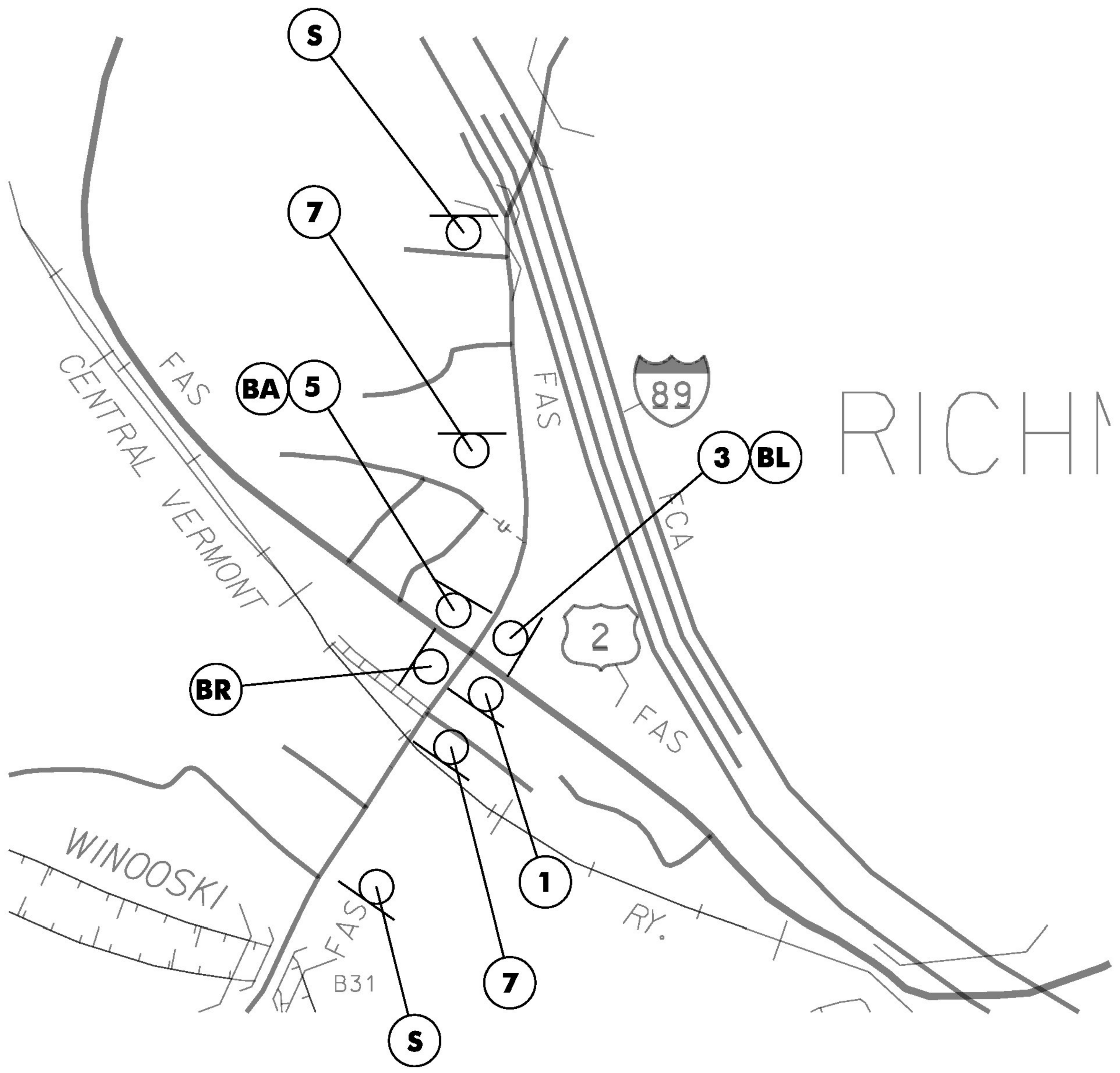
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070detour.dgn	PLOT DATE: 06-OCT-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: S. COLEY
DETOUR PLAN 1	SHEET 31 OF 54



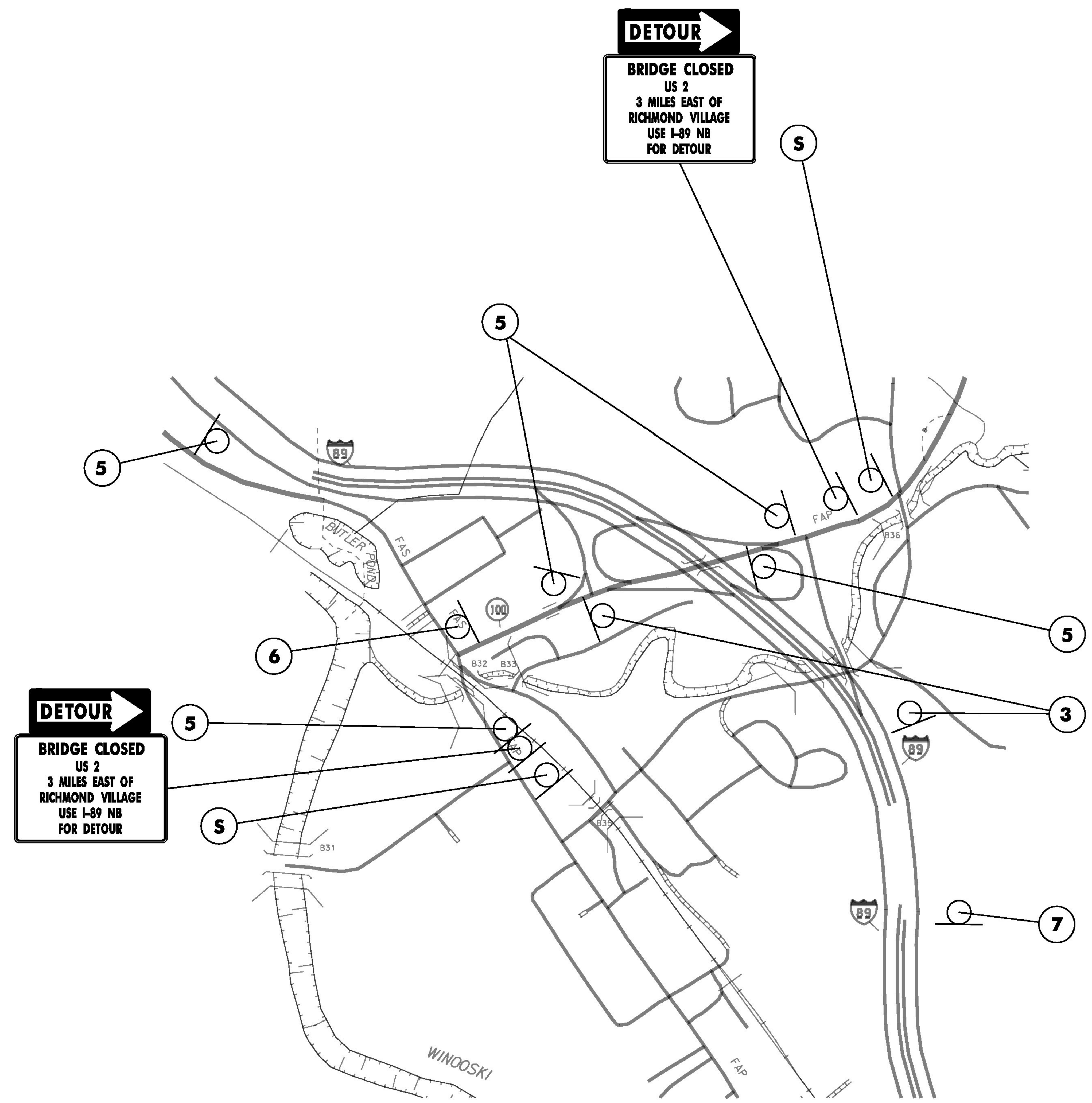
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF0284(28)	
FILE NAME: sl3c070detour.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: S. COLEY
DETOUR PLAN 2	SHEET 32 OF 54



DETAIL "A" EXIT 11

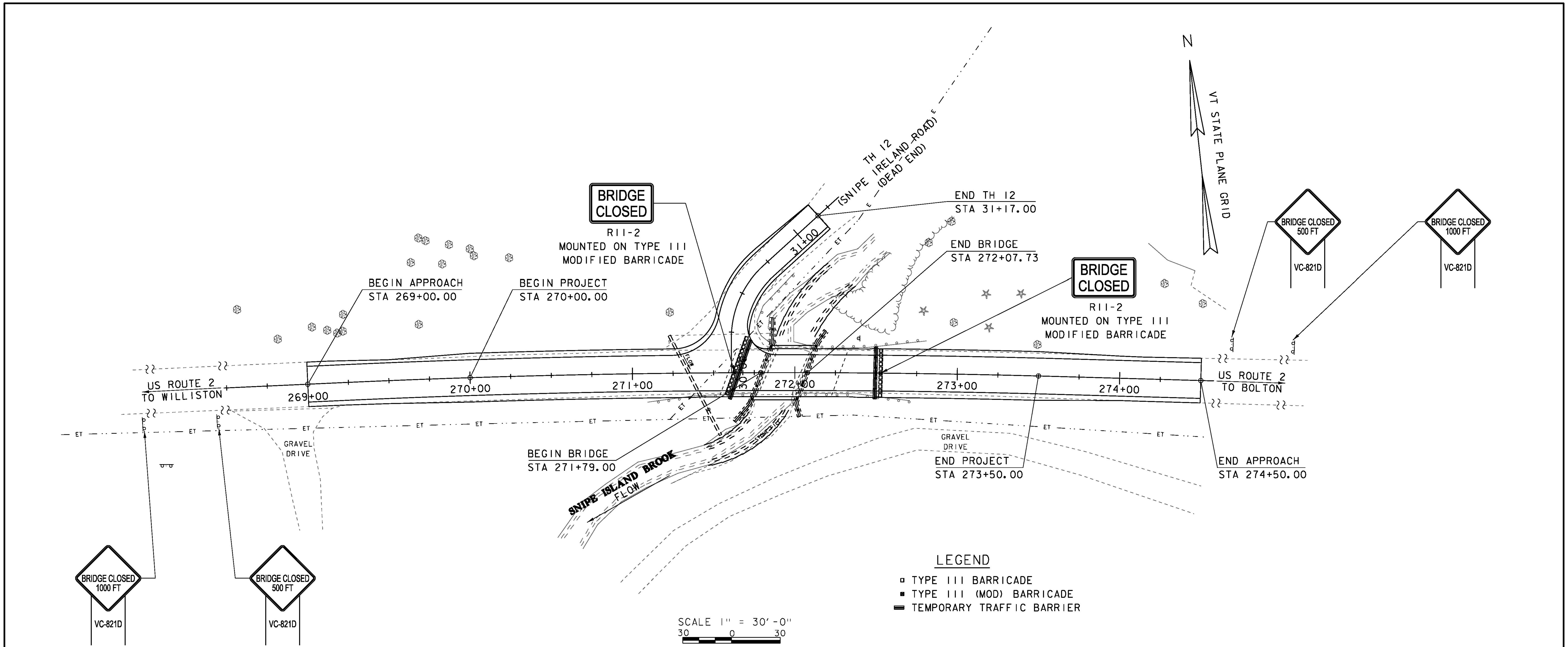


DETAIL "B"



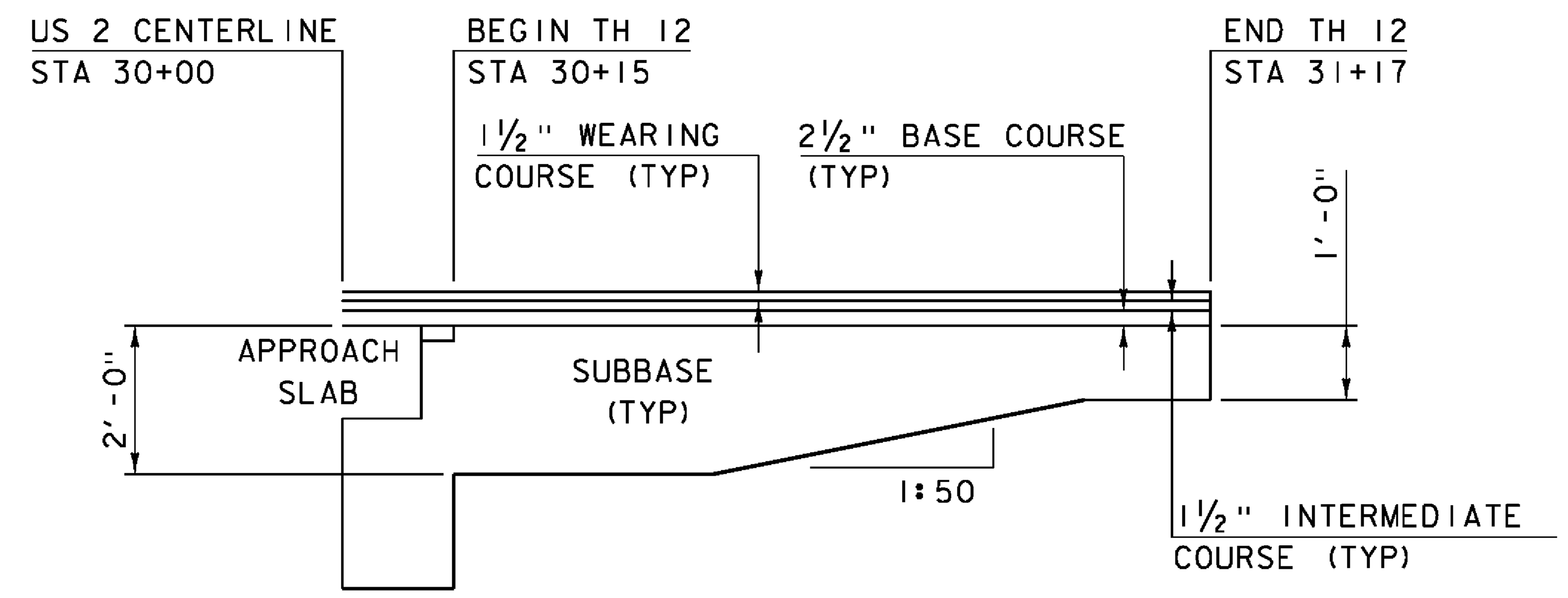
DETAIL "C" - EXIT 10

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF0284(28)	
FILE NAME: sl3c070detour.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: W. LAMMER
DESIGNED BY: W. LAMMER	CHECKED BY: S. COLEY
DETOUR PLAN 3	SHEET 33 OF 54



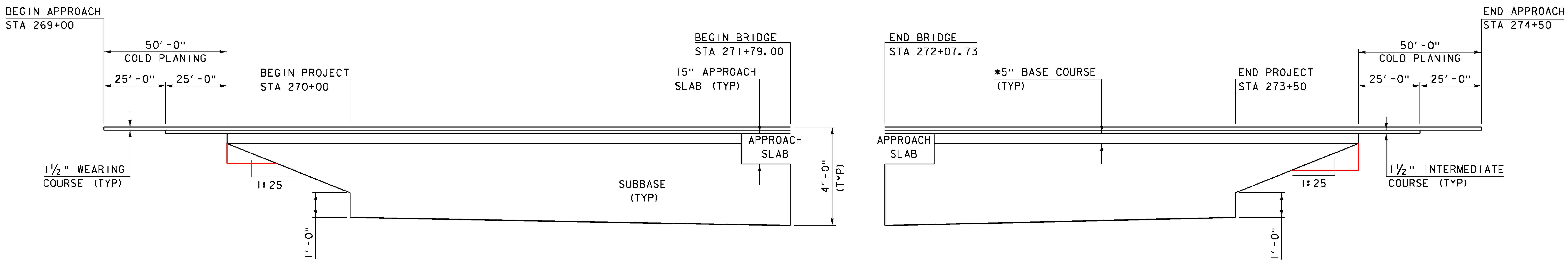
1. THE OFFICIAL STATE DETOUR SIGNING PLAN FOR THE ROAD CLOSURE IS SHOWN ON DETOUR PLAN 1 & 2.
2. NO LOCAL DETOUR ROUTE WILL BE SIGNED OR OFFICIALLY RECOGNIZED FOR THIS PROJECT.
3. A PUBLIC OUTREACH COORDINATOR SHALL BE USED FOR PUBLICIZING AND COORDINATING DETOUR INFORMATION, INCLUDING (BUT NOT LIMITED TO) TRAFFIC DELAYS FOR THE PUBLIC AND ALTERNATIVE ROUTES FOR BICYCLES. THE CONTRACTOR SHALL COORDINATE WITH THE PUBLIC INFORMATION OFFICER AS NEEDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, ERECTING AND MAINTAINING (AS WELL AS REMOVING AND RESETTING) ALL DETOUR AND ON-PROJECT TEMPORARY TRAFFIC CONTROL ZONE DEVICES, INCLUDING (BUT NOT LIMITED TO) CONSTRUCTION SIGNS, BARRICADES, TEMPORARY TRAFFIC BARRIERS, PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) AND OTHER REQUIRED DEVICES (AS ORDERED BY THE ENGINEER) USED TO REGULATE, WARN AND GUIDE TRAFFIC DURING CONSTRUCTION. TRAFFIC CONTROL DEVICES SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND PERTINENT E-SERIES AND T-SERIES STANDARDS. WHERE CONFLICTS EXIST, THE MUTCD SHALL GOVERN. EXACT LOCATIONS OF DEVICES SHALL BE COORDINATED WITH THE RESIDENT ENGINEER. ADDITIONAL PROJECT CONSTRUCTION SIGNS SHALL BE INSTALLED AS REQUIRED BY THE RESIDENT ENGINEER. THE COST OF ALL DETOUR AND ON-PROJECT TEMPORARY TRAFFIC CONTROL ZONE DEVICES (WITH THE EXCEPTION OF PORTABLE CHANGEABLE MESSAGE SIGNS) SHALL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION (TRAFFIC ONTROL, ALL INCLUSIVE).
5. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED AT THE APPROXIMATE LOCATIONS SHOWN ON THE PLANS OR WHERE DESIGNATED BY THE ENGINEER. PCMS SHALL BE PLACED OFF THE EDGE OF THE ROAD, OUTSIDE THE CLEAR ZONE, BUT SHALL BE VISIBLE FROM THE ROADWAY.
6. TRAFFIC WILL BE ALLOWED TO BE REDUCED TO ONE LANE FOR A MAXIMUM OF 14 DAYS PRIOR TO THE BRIDGE CLOSURE PERIOD. THE CONTRACTOR IS REQUIRED TO INFORM THE PUBLIC OUTREACH COORDINATOR PRIOR TO REDUCING TRAFFIC TO ONE LANE. ALL SIGNS, SIGNALS, BARRIERS, ETC. REQUIRED TO MAINTAIN ONE LANE OF TRAFFIC (WITH THE EXCEPTION OF PORTABLE CHANGEABLE MESSAGE SIGNS) IS TO BE INCLUDED UNDER ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE).
7. THE US ROUTE MARKERS USED FOR THE DETOUR AS SHOWN ON THE PLANS SHALL FOLLOW MUTCD REQUIREMENTS. THESE SIGNS SHALL BE REMOVED AT THE END OF THE ROAD CLOSURE. THESE SIGNS AND THEIR REMOVAL SHALL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE).
8. ALL TRAFFIC CONTROL DEVICES SHALL BE KEPT IN THEIR PROPER POSITION AT ALL TIMES AND SHALL BE REPAIRED, REPLACED OR CLEANED AS NECESSARY TO PRESERVE THEIR APPEARENCE AND CONTINUITY. THIS WORK SHALL BE PAID UNDER ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE).
9. ALL SIGNS SHALL BE PLACED WITHIN EXISTING STATE OR TOWN RIGHTS-OF-WAY, UNLESS OTHERWISE NOTED.
10. ACCESS TO ALL EXISTING DRIVES AND SIDE ROADS SHALL BE MAINTAINED AT ALL TIMES DURING ALL PHASES OF CONSTRUCTION
11. INSTALLATION OF DETOUR AND ONSITE SIGNS SHALL NOT BLOCK ANY EXISTING TRAFFIC CONTROL SIGN ASSEMBLIES AND SHALL MODIFY OR BE PLACED ADJACENT TO EXISTING ROUTE MARKER SIGN ASSEMBLIES WHEN POSSIBLE. THE CONTRACTOR SHOULD MAINTAIN AT LEAST 200 FEET BETWEEN SIGN ASSEMBLIES WHENEVER POSSIBLE.
12. EXISTING SIGNS THAT ARE IN CONFLICT WITH THE TRAFFIC FLOW OF THE DETOUR SHALL BE REMOVED OR COVERED BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER. ALL SIGNS REMOVED OR COVERED SHALL BE REPLACED OR UNCOVERED WHEN THE TRAFFIC CONTROL PACKAGE IS DISASSEMBLED. PAYMENT FOR THIS WORK WILL BE INCLUDED IN ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE).
13. NO CONSTRUCTION SIGNS SHALL BE INSTALLED AS TO INTERFERE WITH STOPPING SIGHT DISTANCE AND CORNER SIGHT DISTANCE FROM DRIVES AND TOWN HIGHWAYS.
14. AFTER THE IDENTIFIED WORK TO OPEN THE NEW BRIDGE TO TWO-WAY TRAFFIC IS COMPLETED, TEMPORARY TRAFFIC BARRIERS MAY BE INCORPORATED TO CONSTRUCT THE BRIDGE CURB AND BRIDGE RAILING, SEE SPECIAL PROVISIONS. ALL COSTS SHALL BE INCLUDED IN ITEM 900.645, SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE).

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070tcp.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
TRAFFIC CONTROL SHEET	SHEET 34 OF 54



TH 12 MATERIAL TRANSITION DETAIL

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



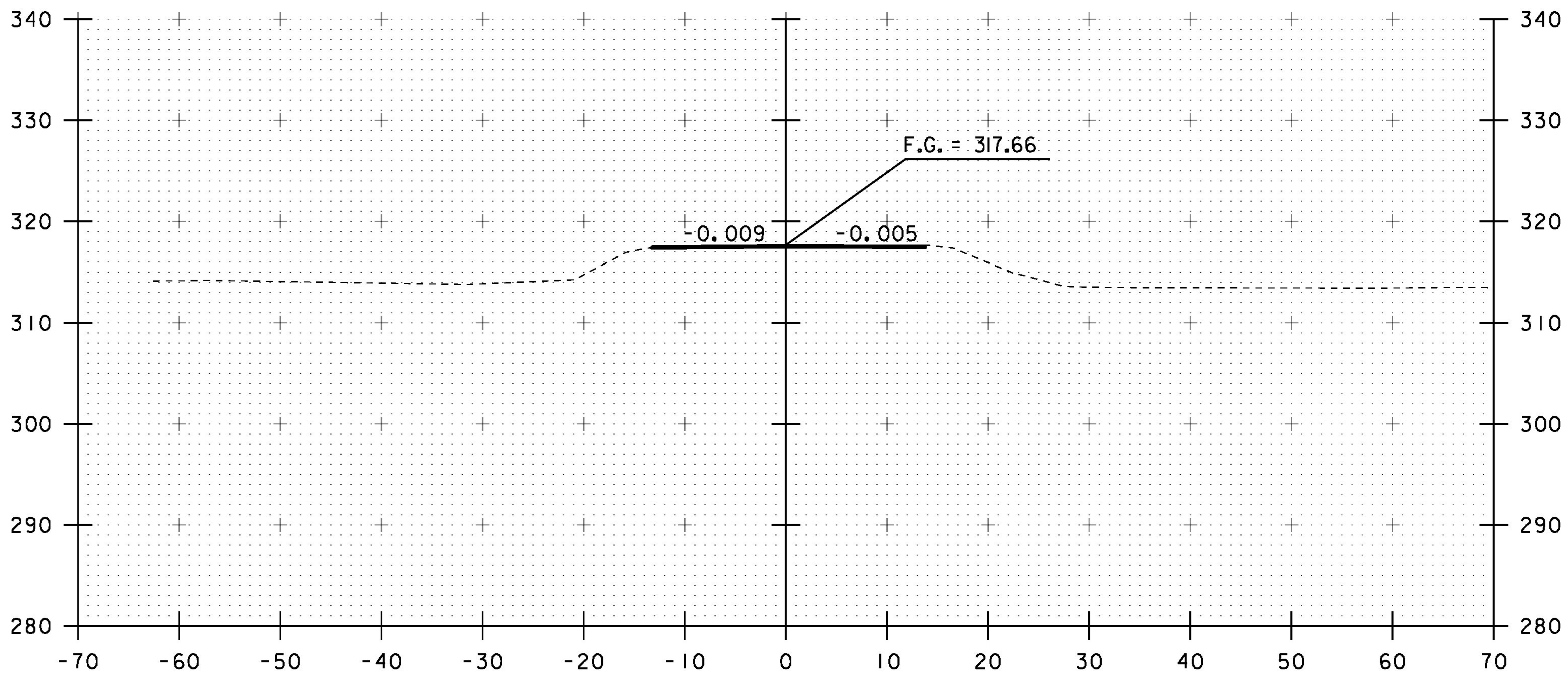
US 2 MATERIAL TRANSITION DETAIL

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

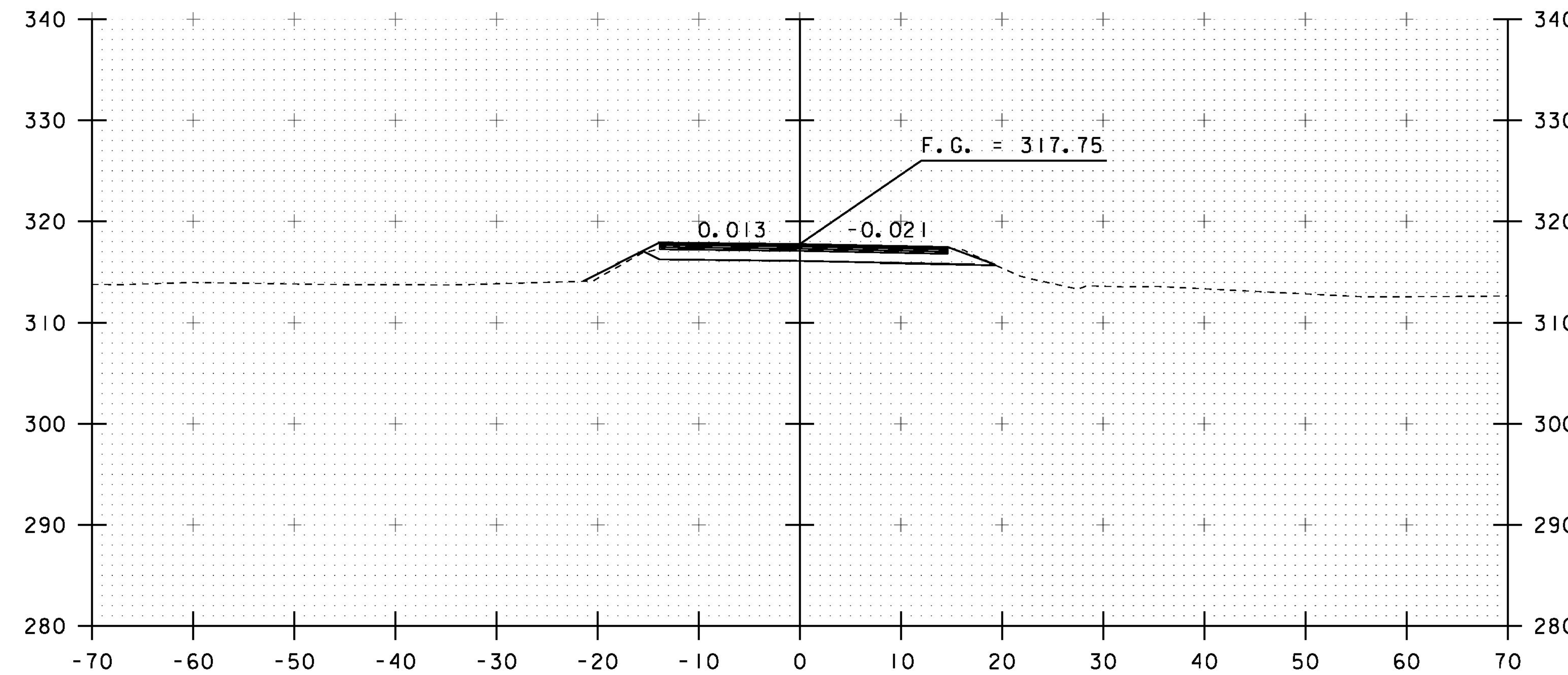
NOTE:
* TWO 2.5 INCH LIFTS OF TYPE 11S BASE

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284 (28)

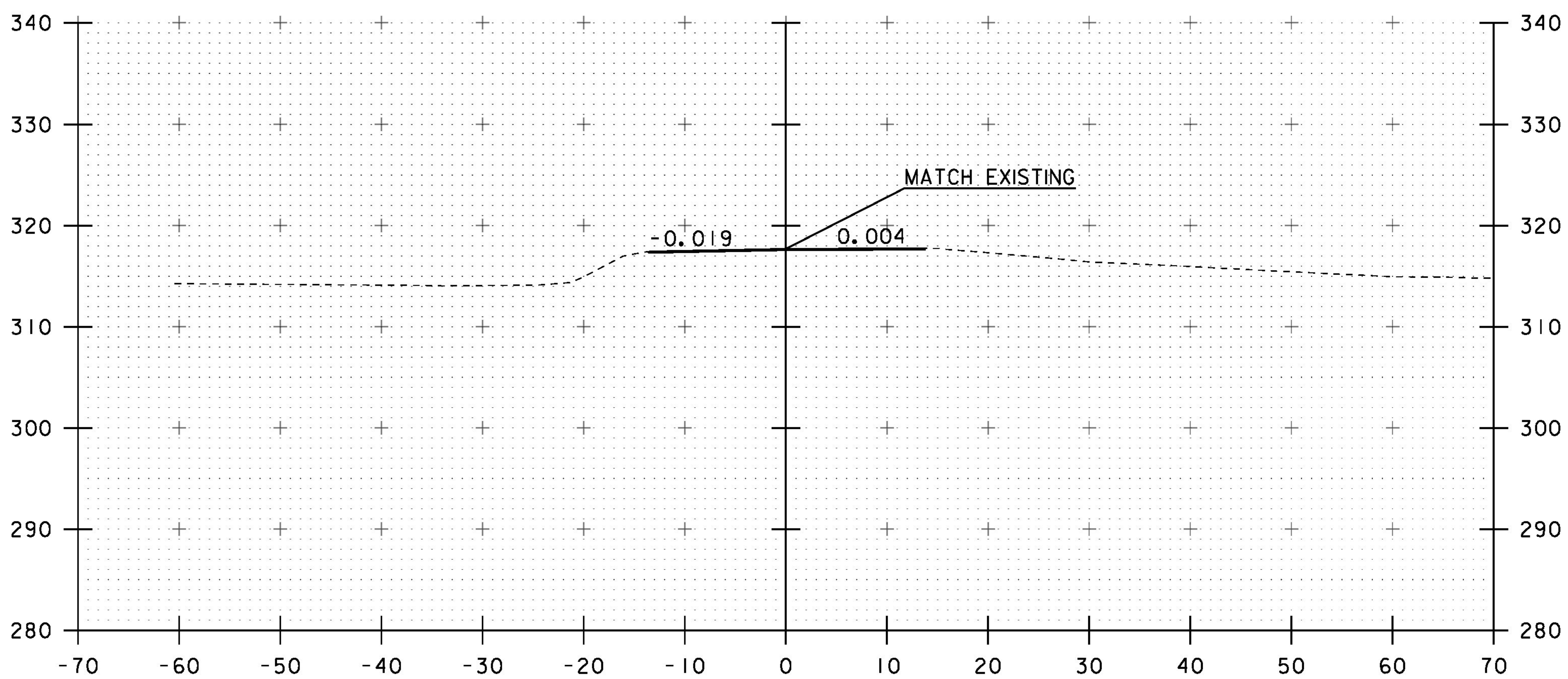
FILE NAME: sl3c070transition	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
MATERIAL TRANSITION DETAIL	SHEET 35 OF 54



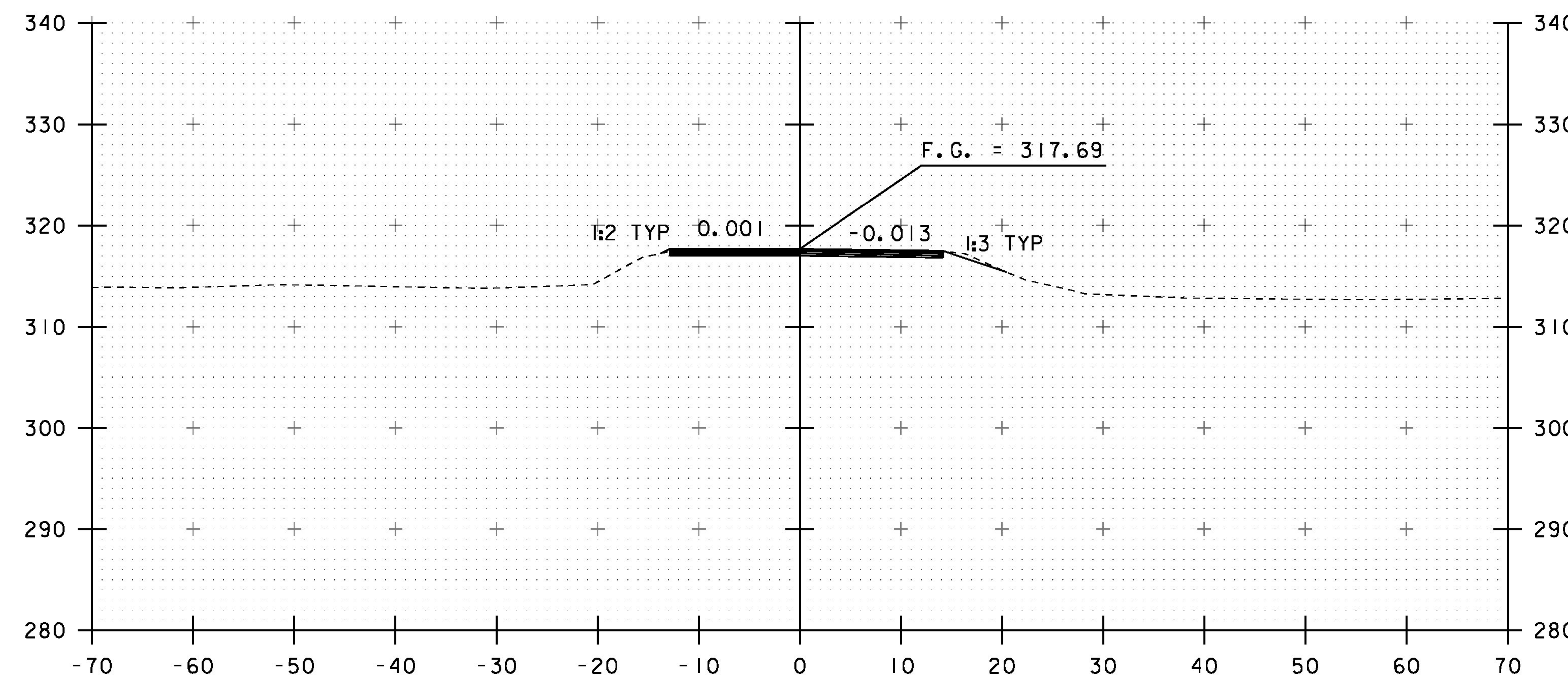
269+25



269+75



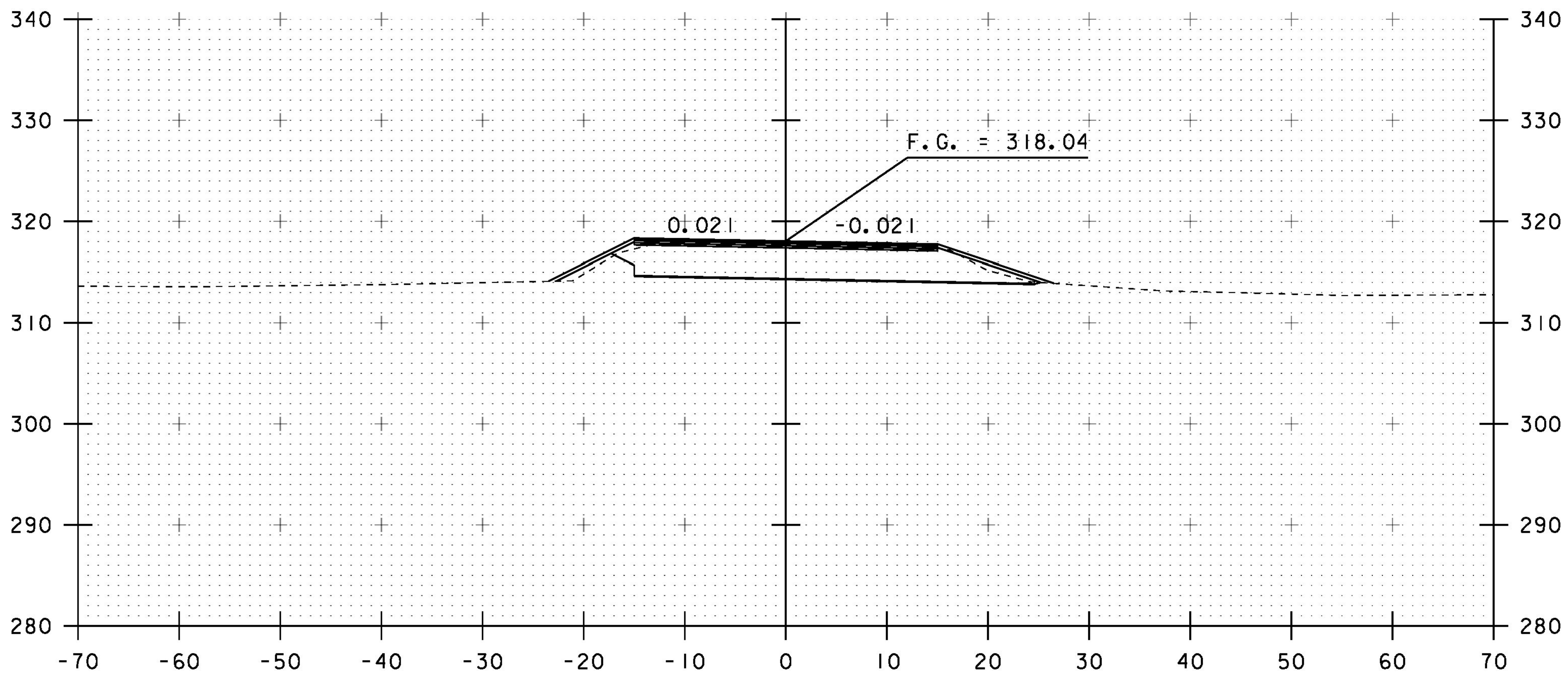
269+00
BEGIN APPROACH



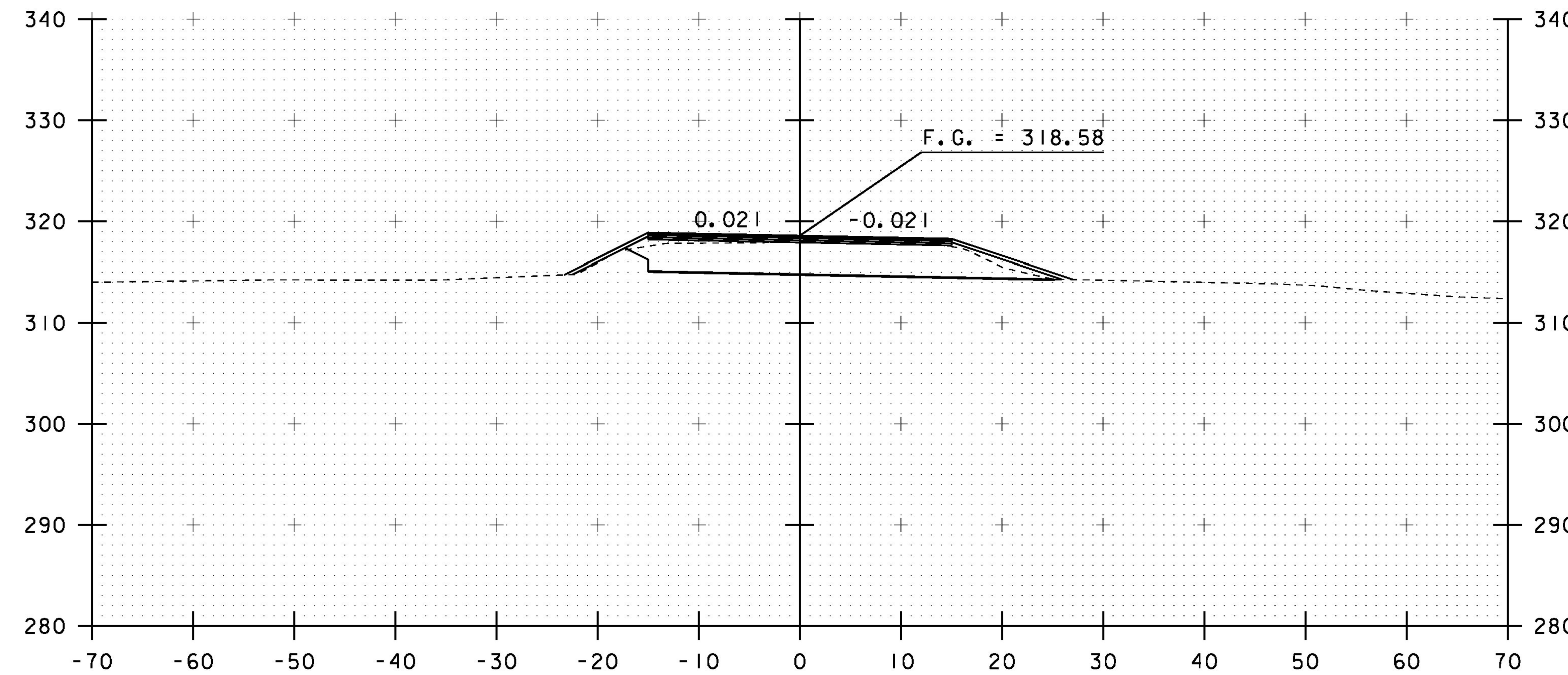
269+50

STA. 269+00 TO STA. 269+75

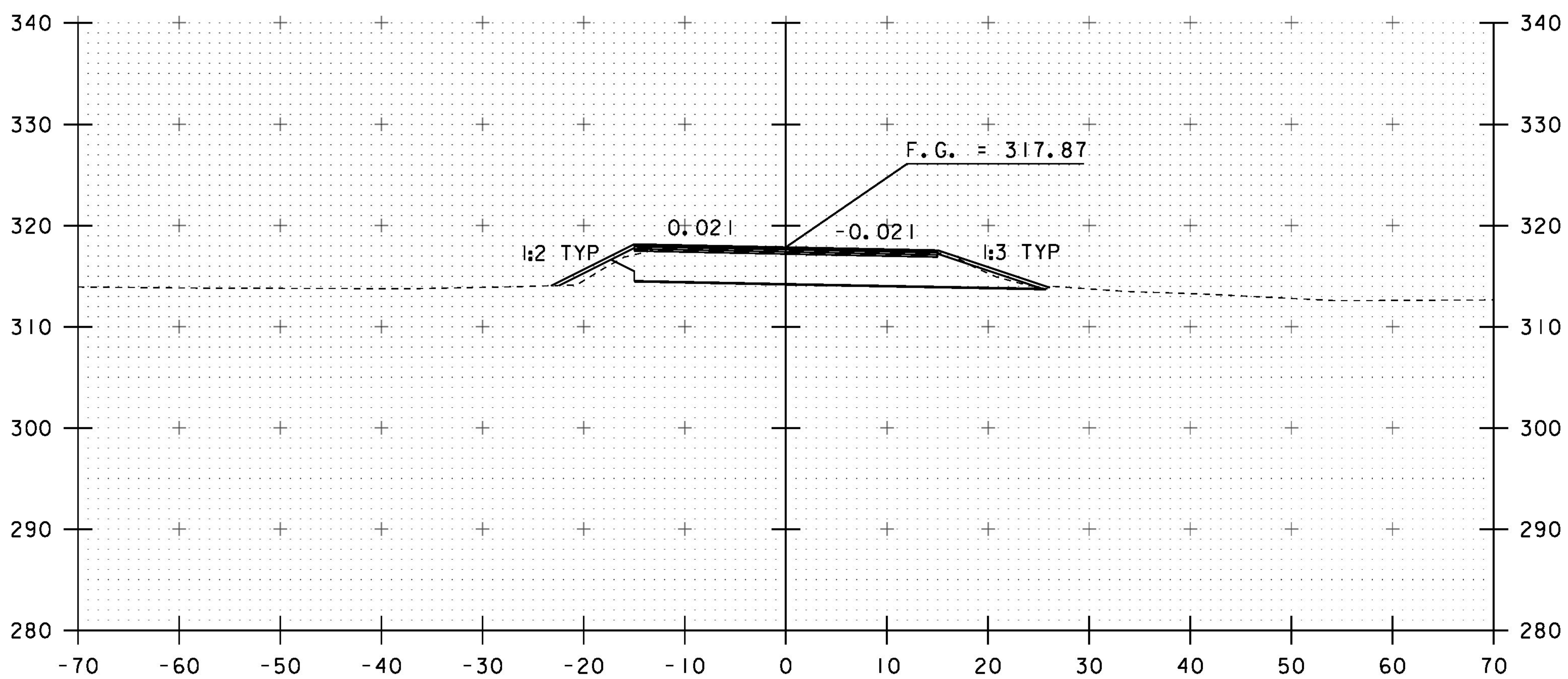
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
ROADWAY CROSS SECTIONS I	SHEET 36 OF 54



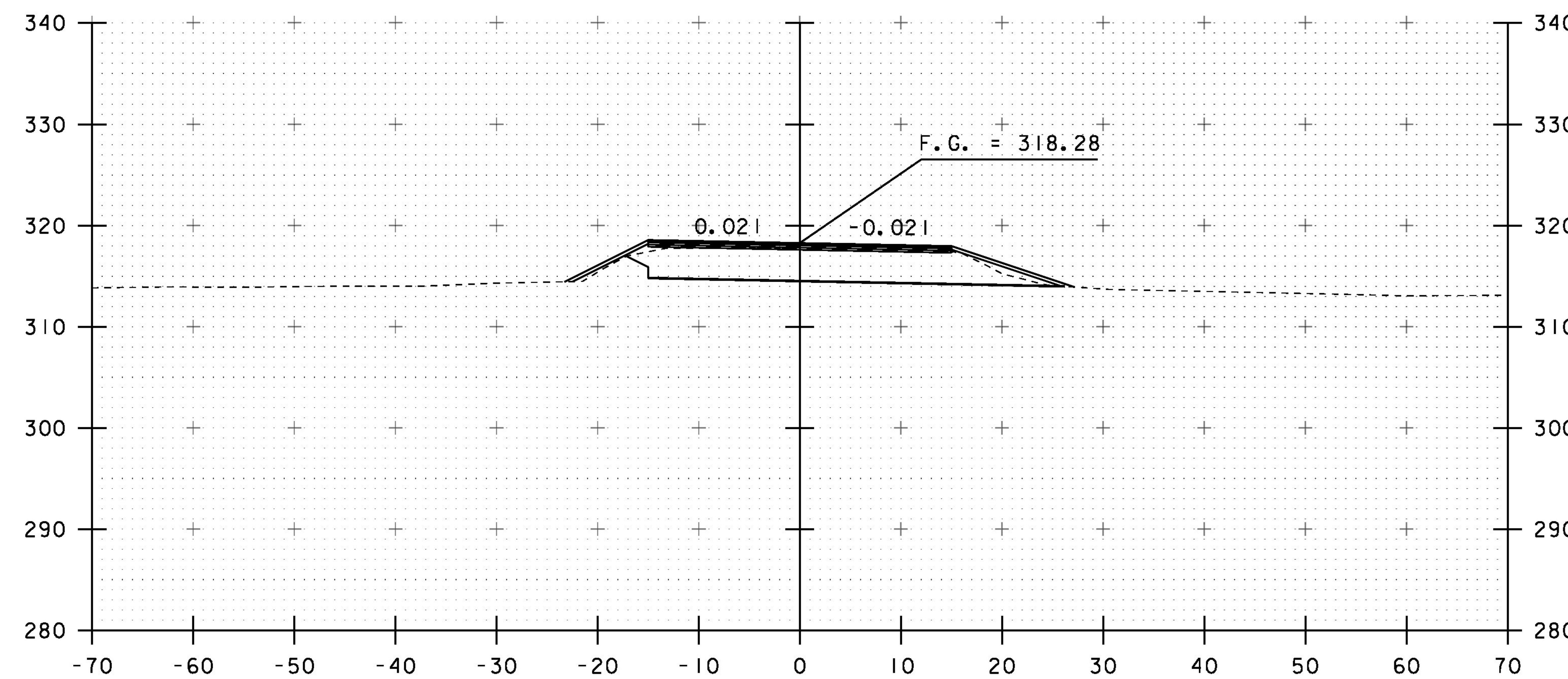
270+25



270+75



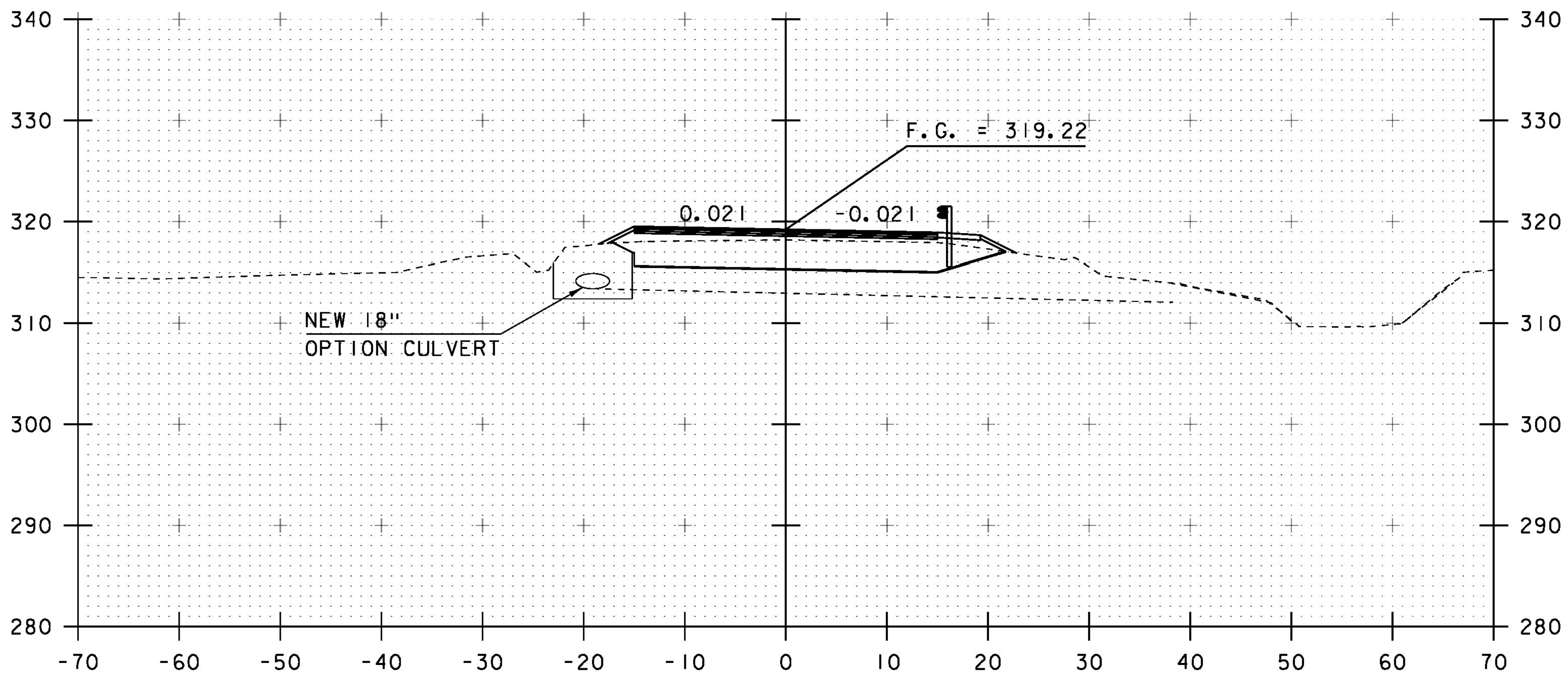
270+00
BEGIN PROJECT



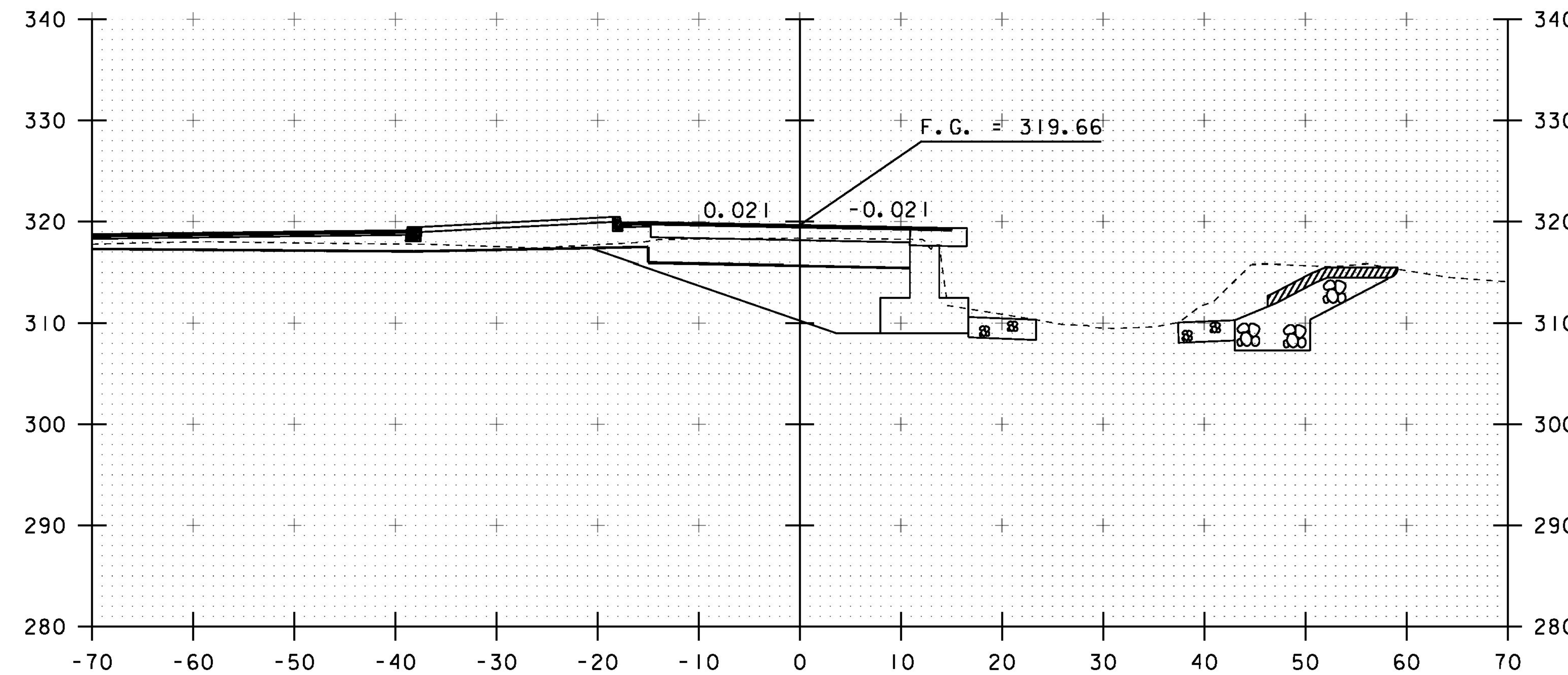
270+50

STA. 270+00 TO STA. 270+75

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
ROADWAY CROSS SECTIONS 2	SHEET 37 OF 54

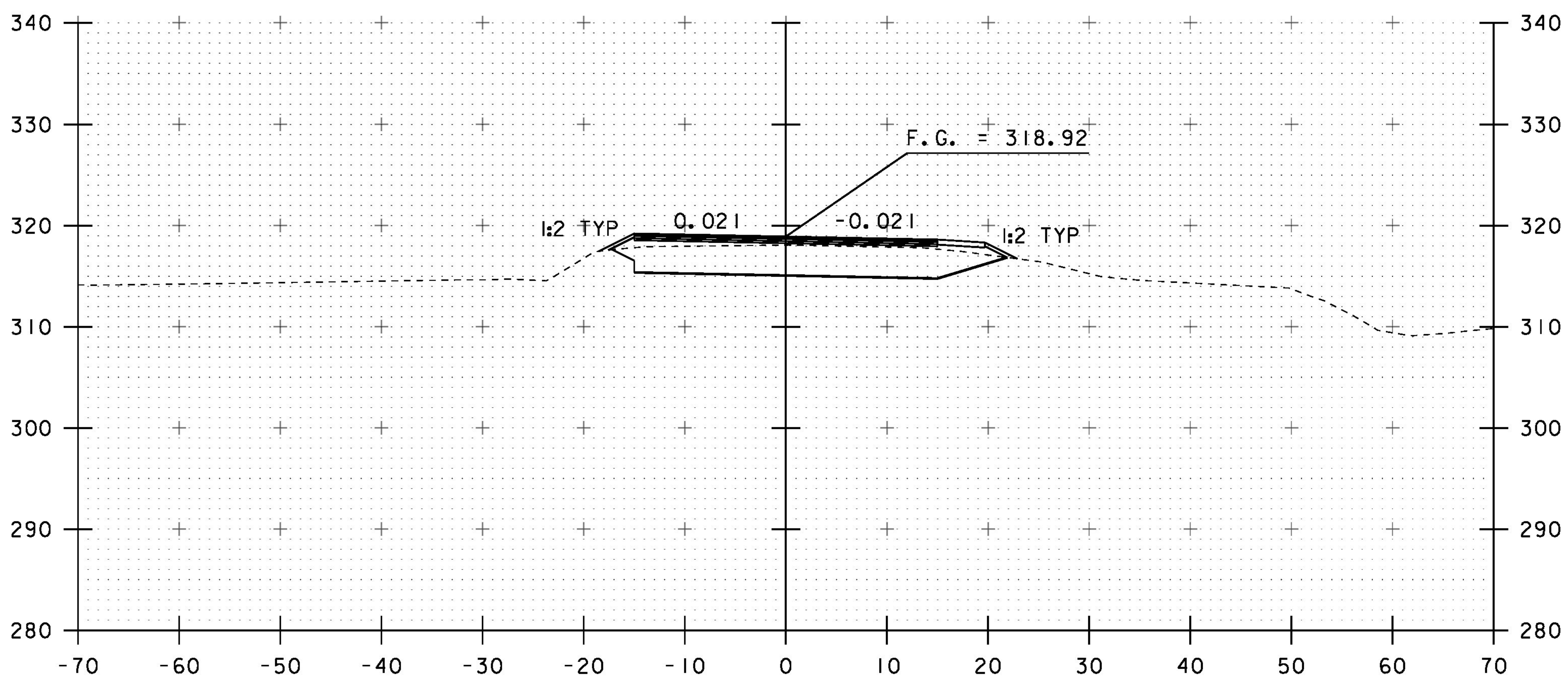


271+25

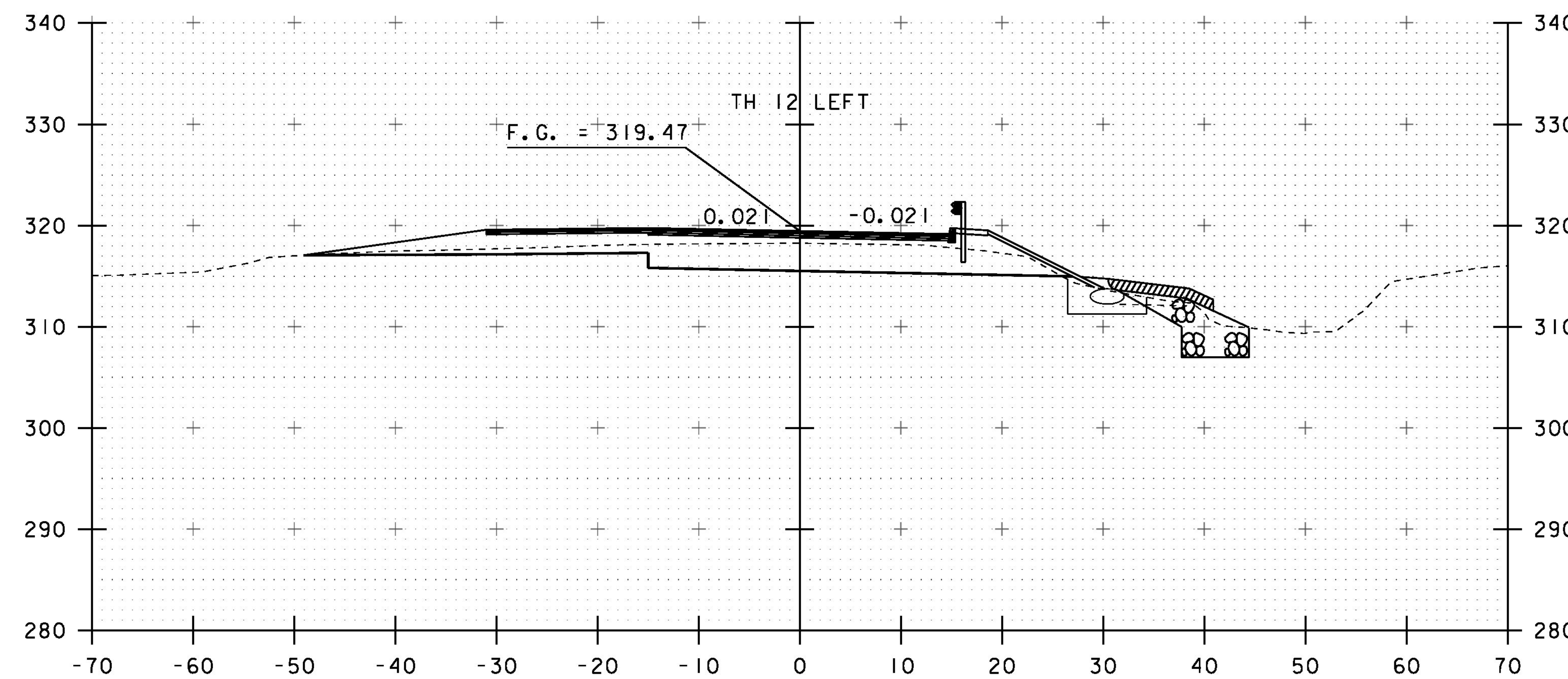


271+75

STA 271+79.00
BEGIN BRIDGE



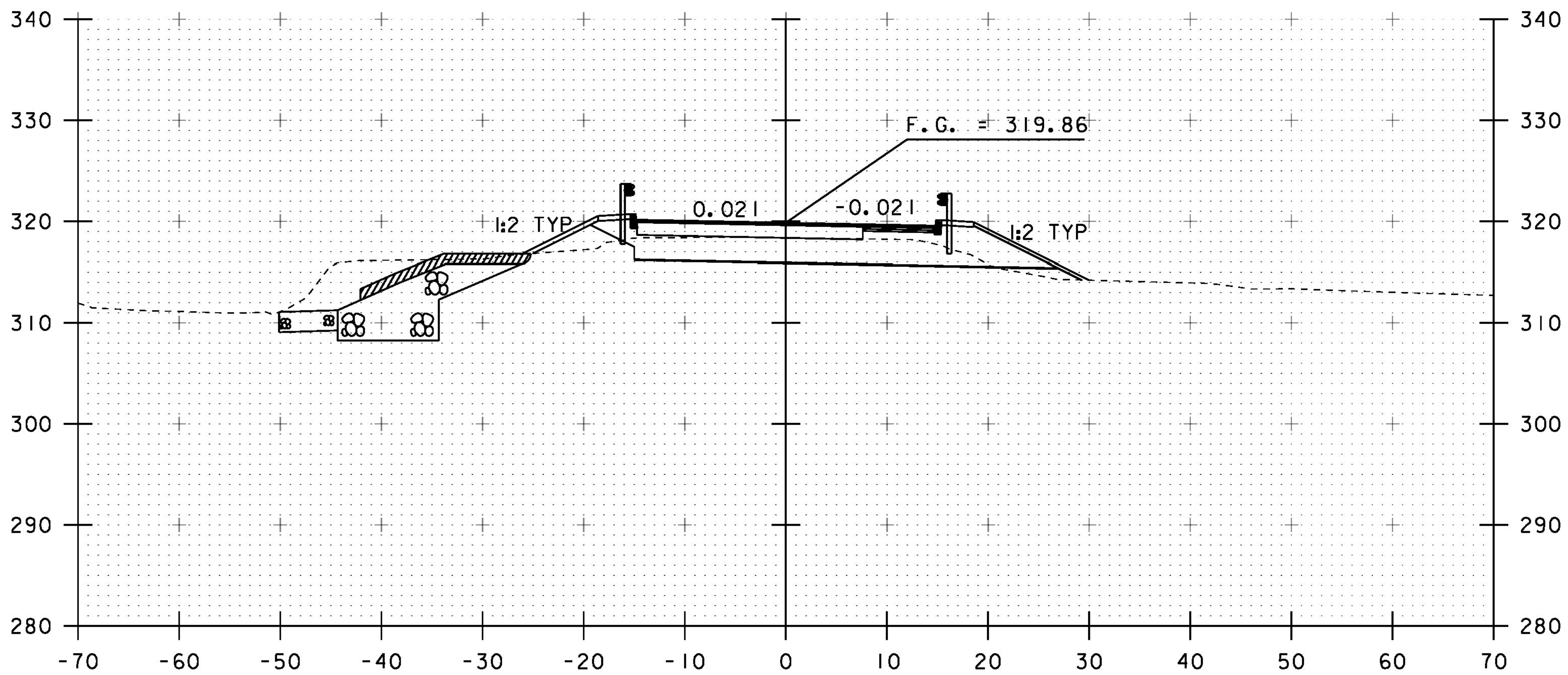
271+00



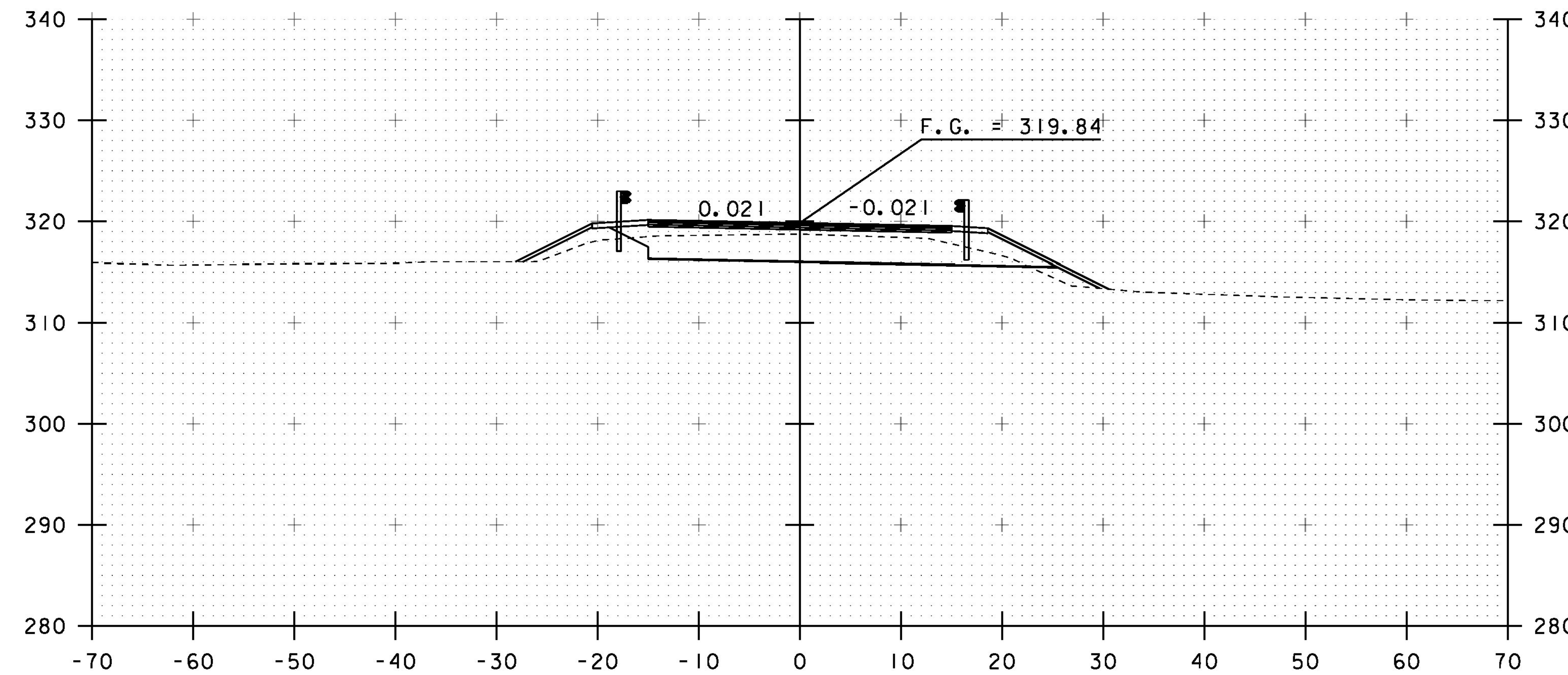
271+50

STA. 271+00 TO STA. 271+75

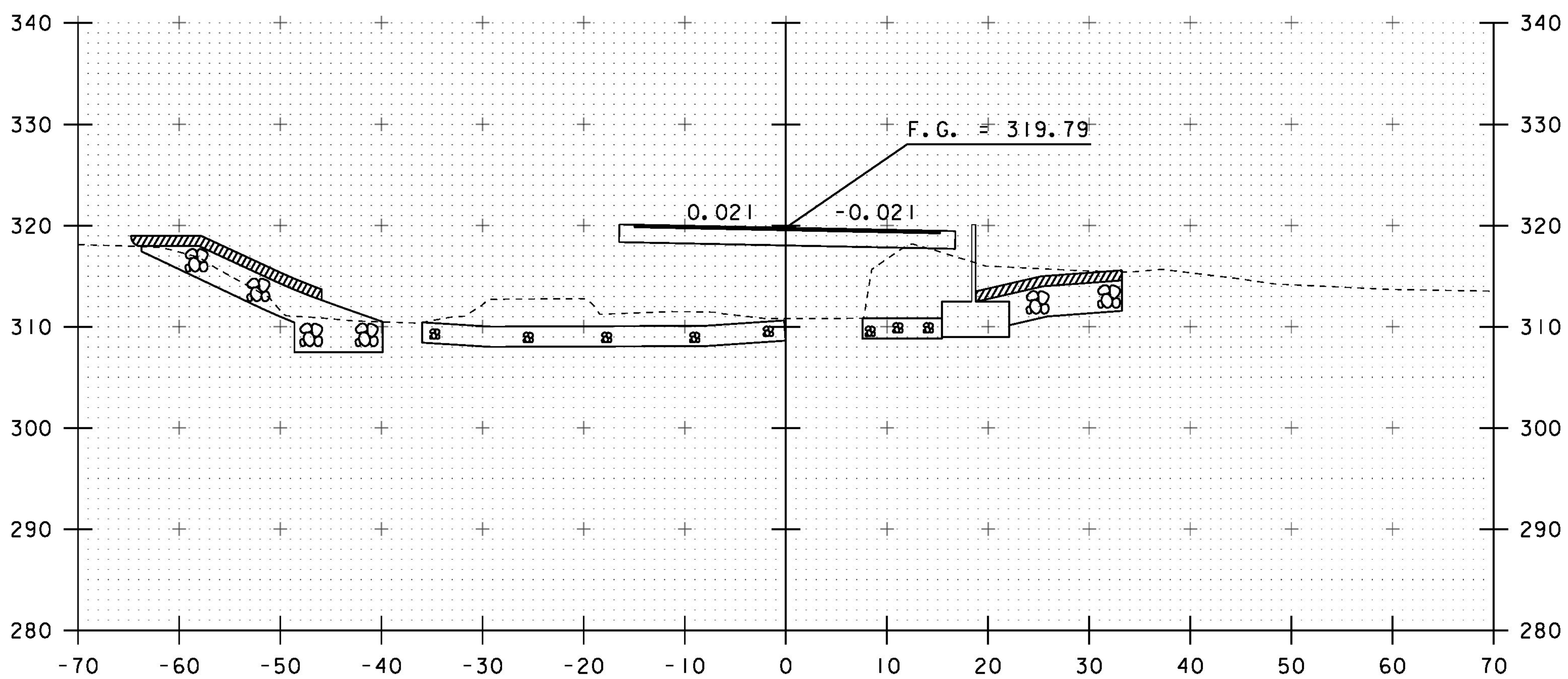
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
ROADWAY CROSS SECTIONS 3	SHEET 38 OF 54



272+25

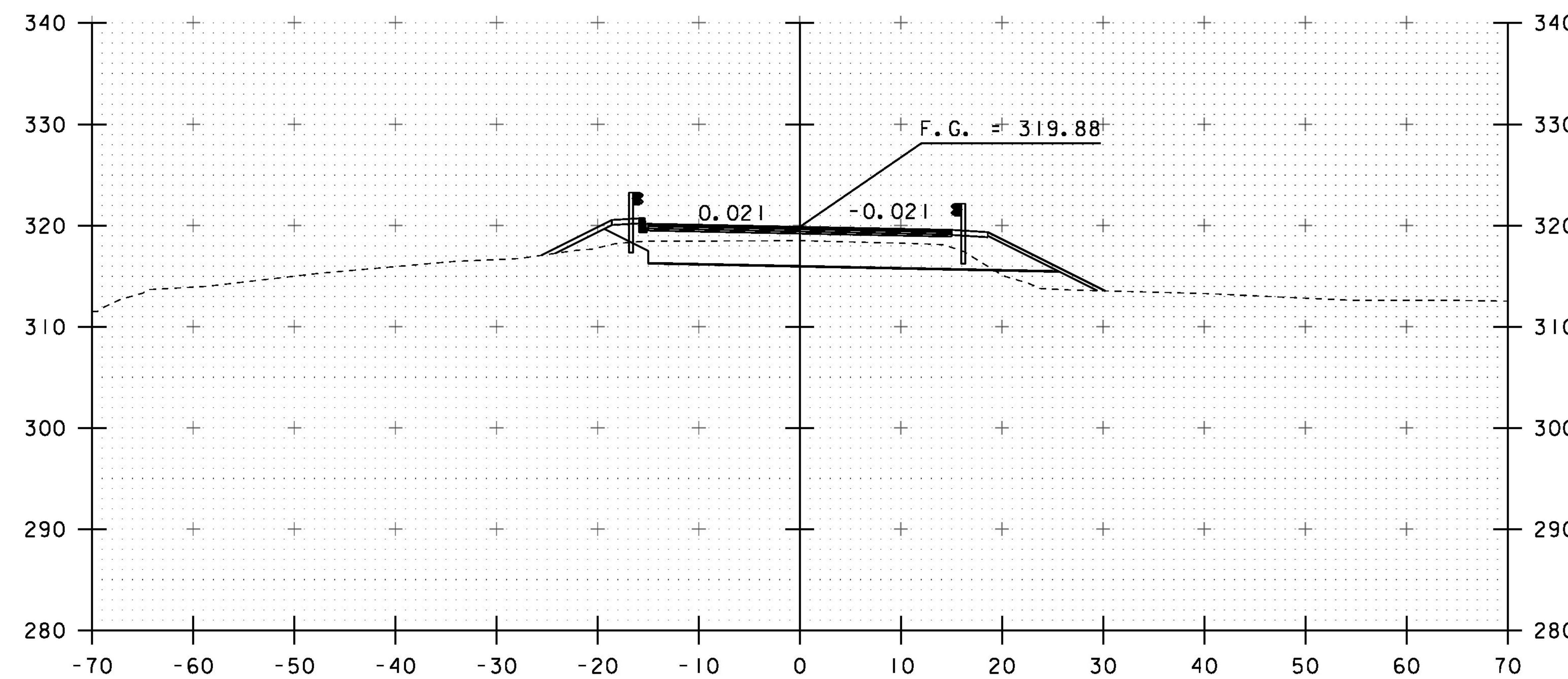


272+75



272+00

STA 272+07.73
END BRIDGE

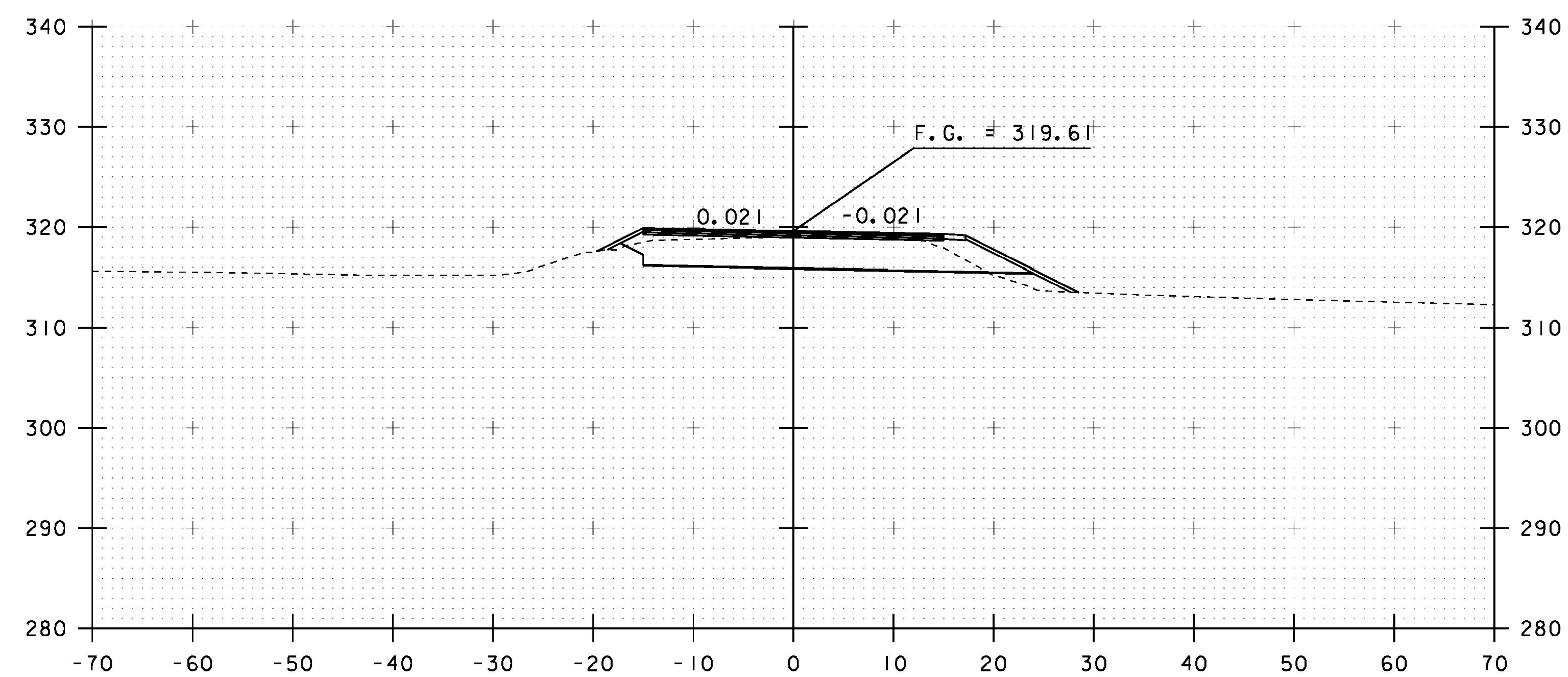


272+50

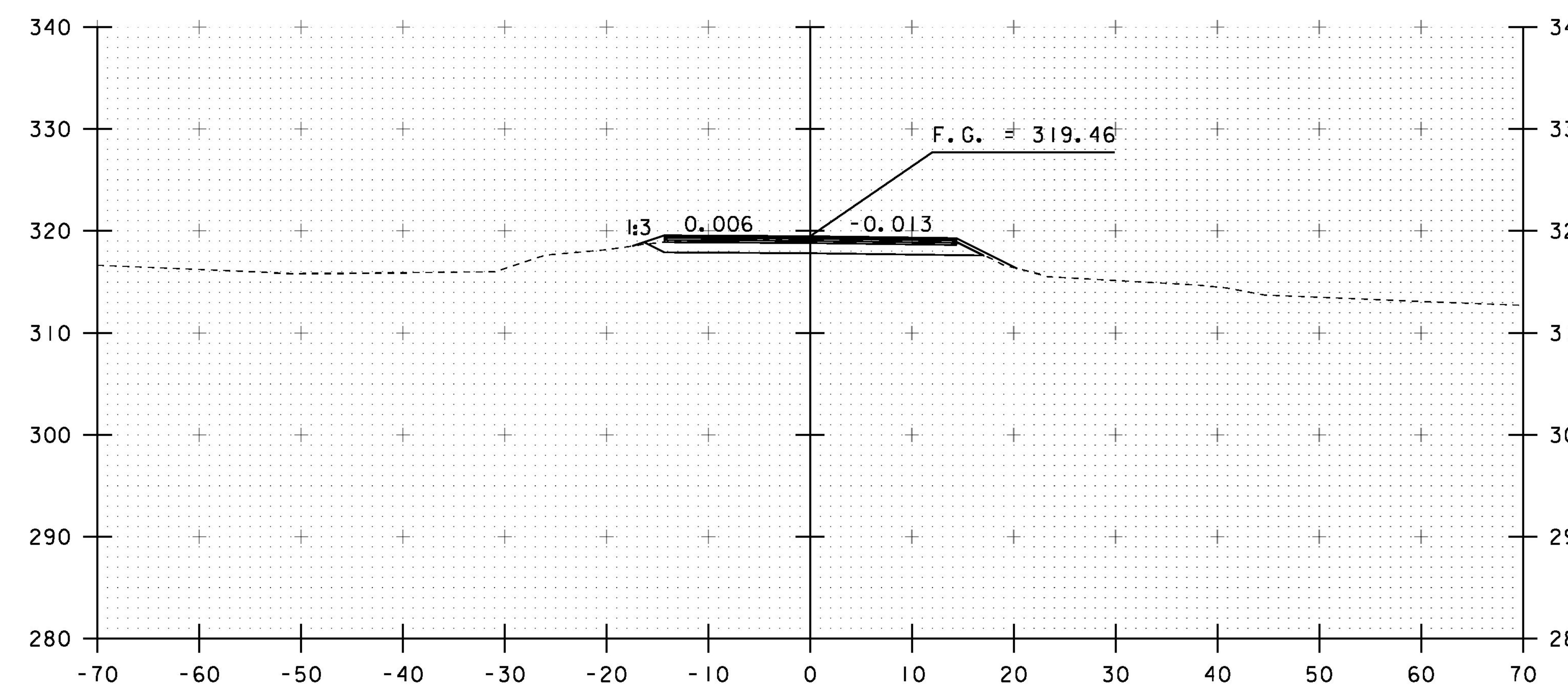
STA. 272+00 TO STA. 272+75

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284(28)

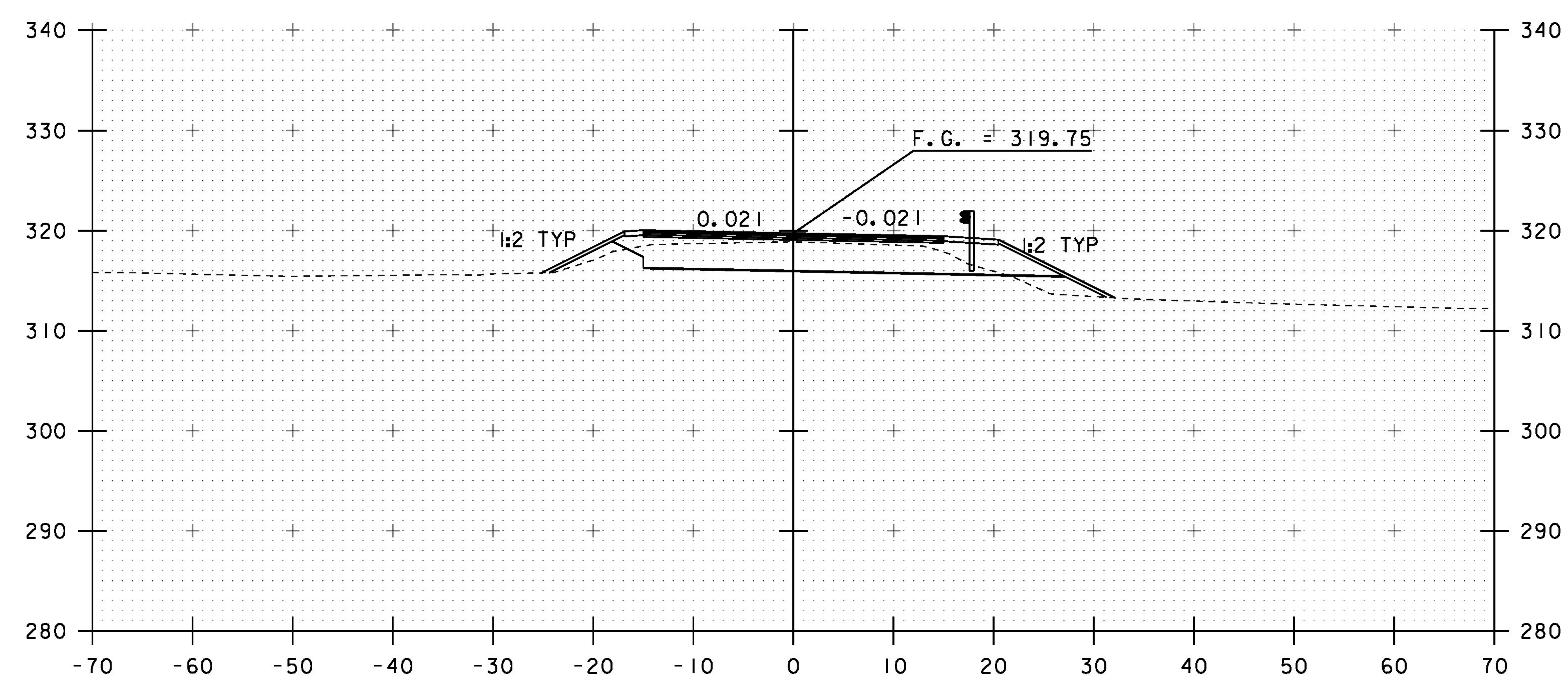
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R.YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
ROADWAY CROSS SECTIONS 4	SHEET 39 OF 54



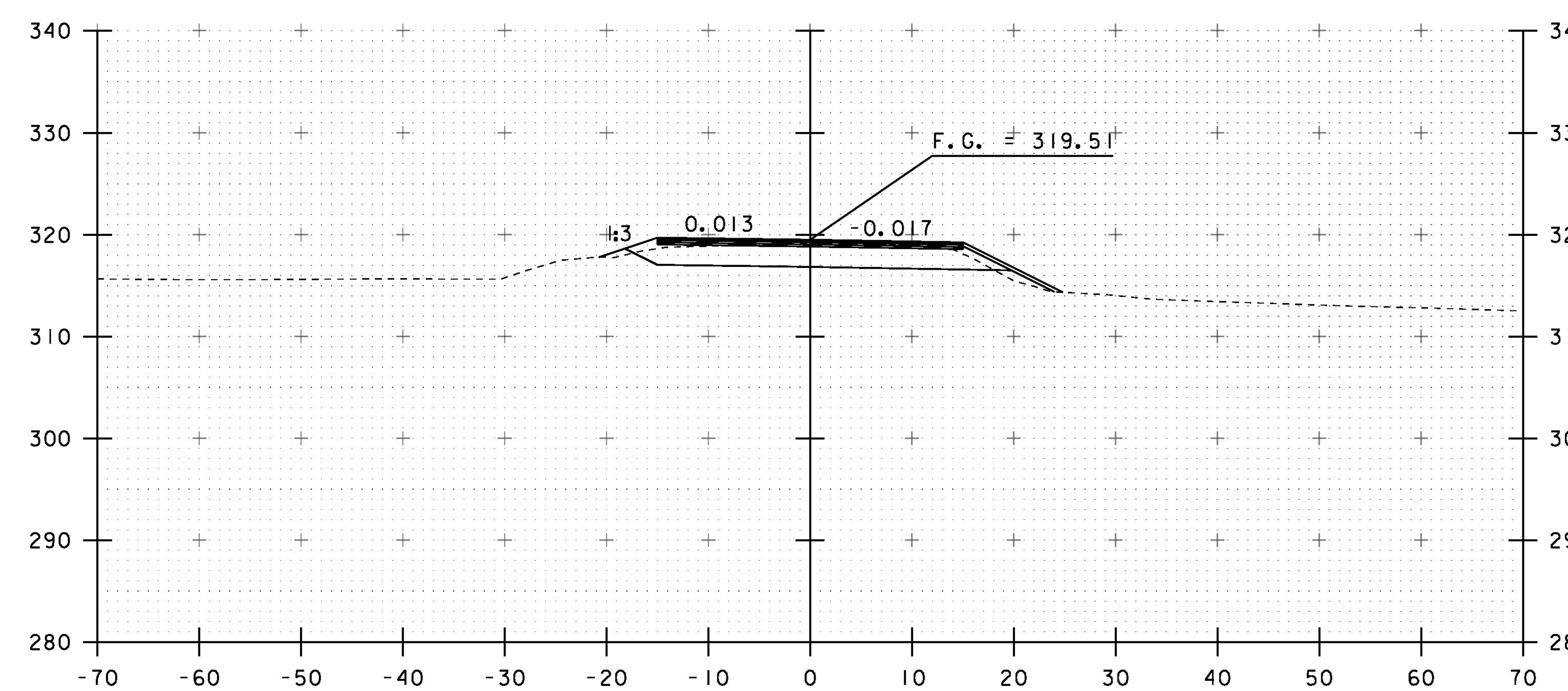
273+25



273+75



273+00

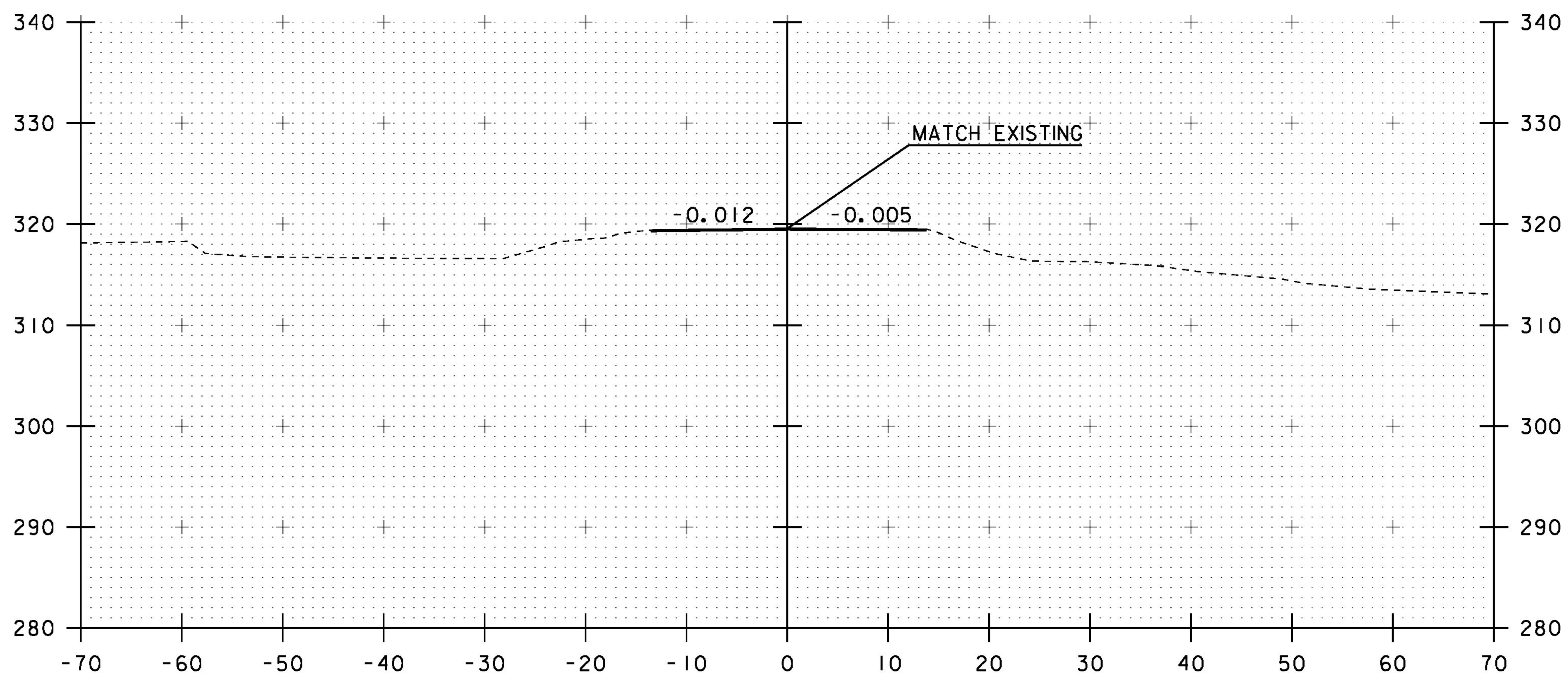


273+50

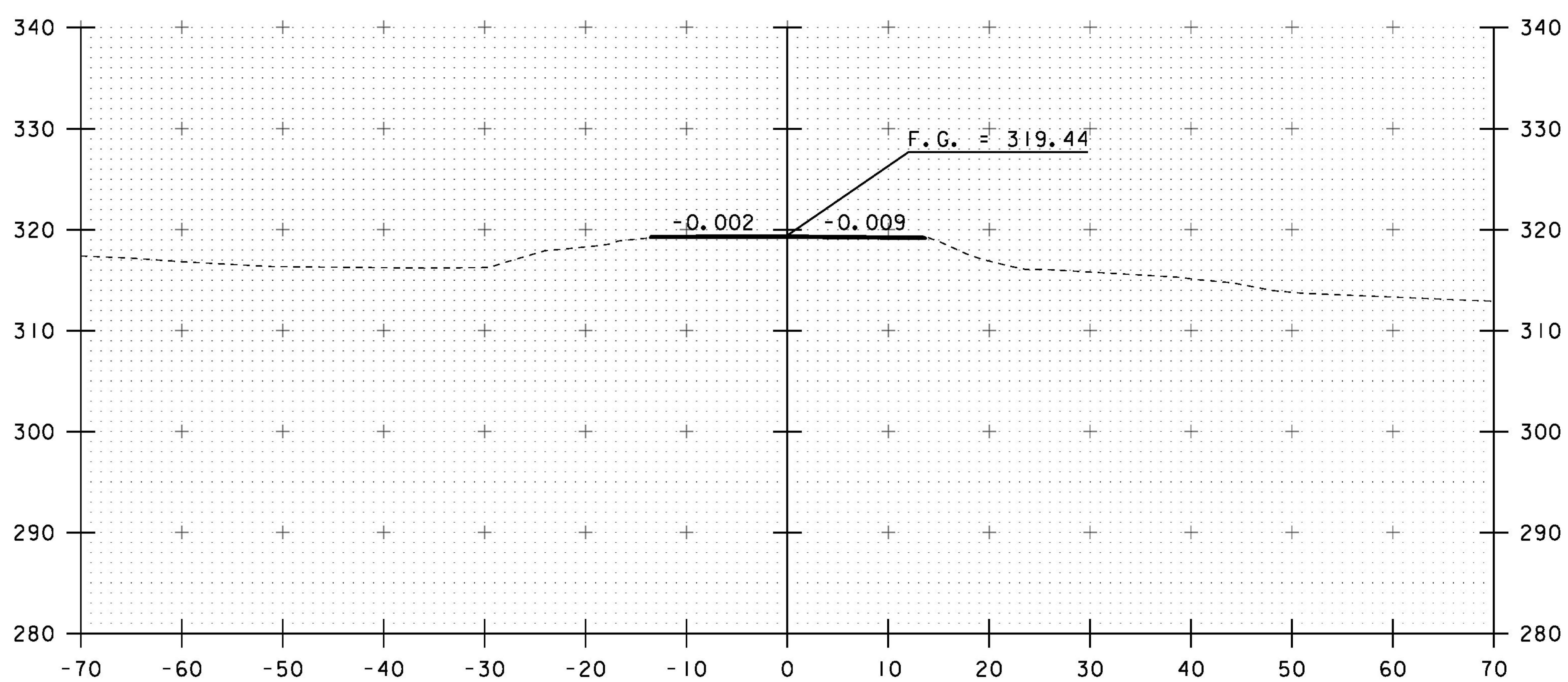
END PROJECT

STA. 273+00 TO STA. 273+75

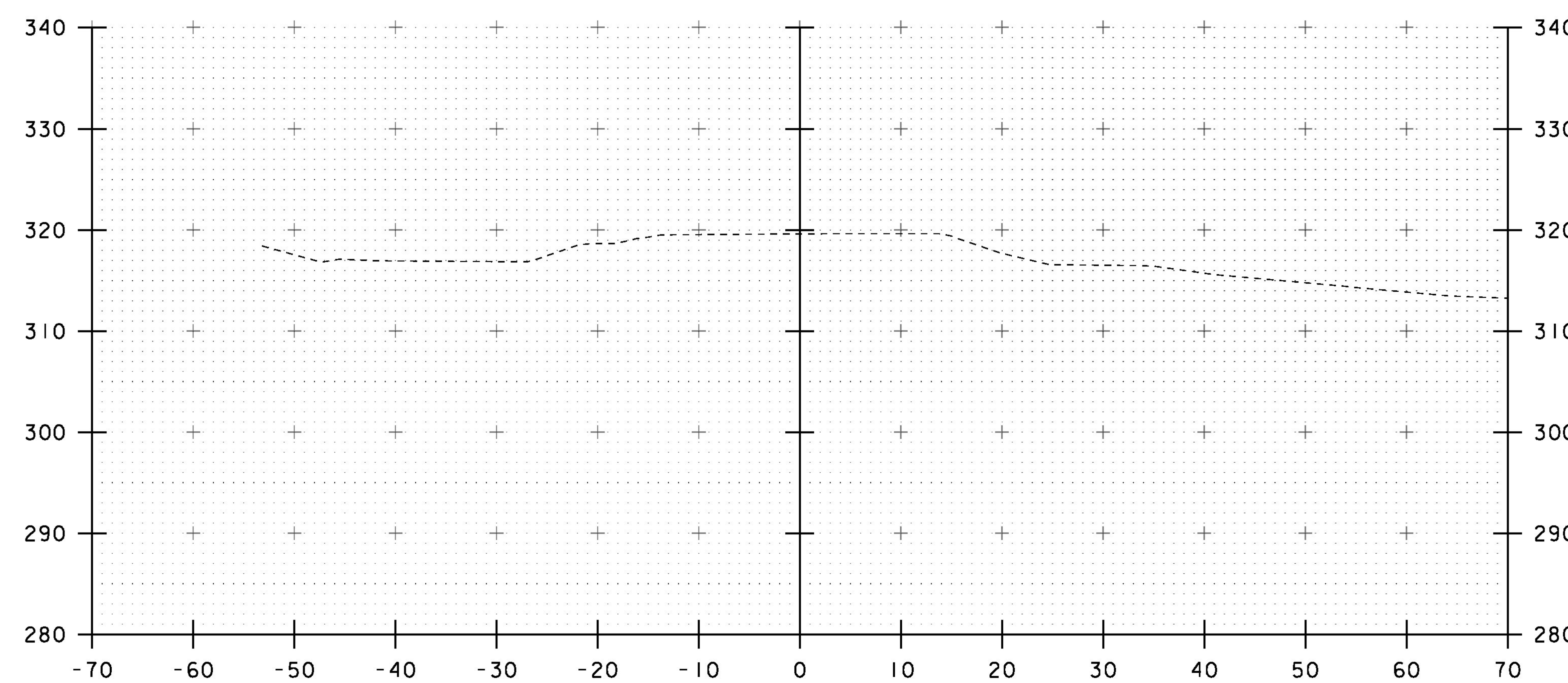
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
ROADWAY CROSS SECTIONS 5	SHEET 40 OF 54



274+25



274+00



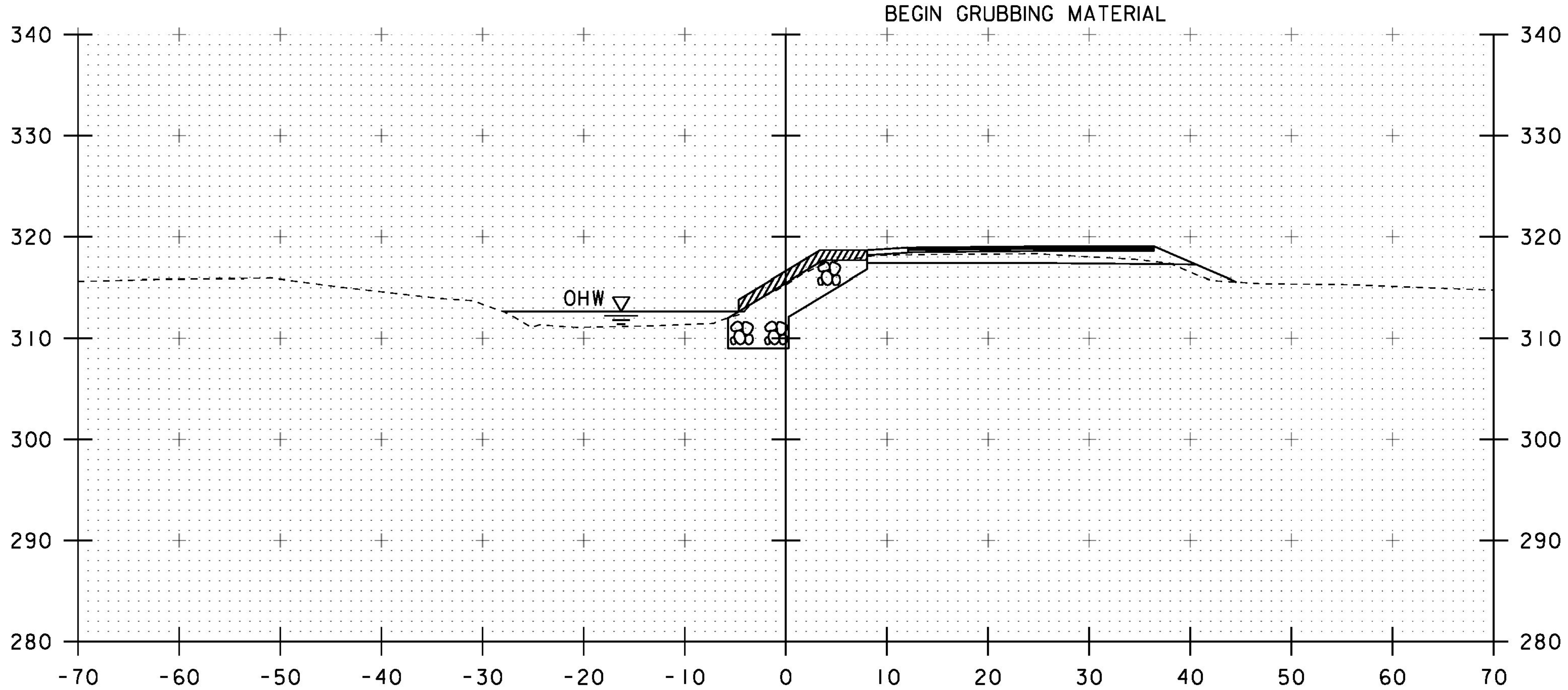
274+50

END APPROACH

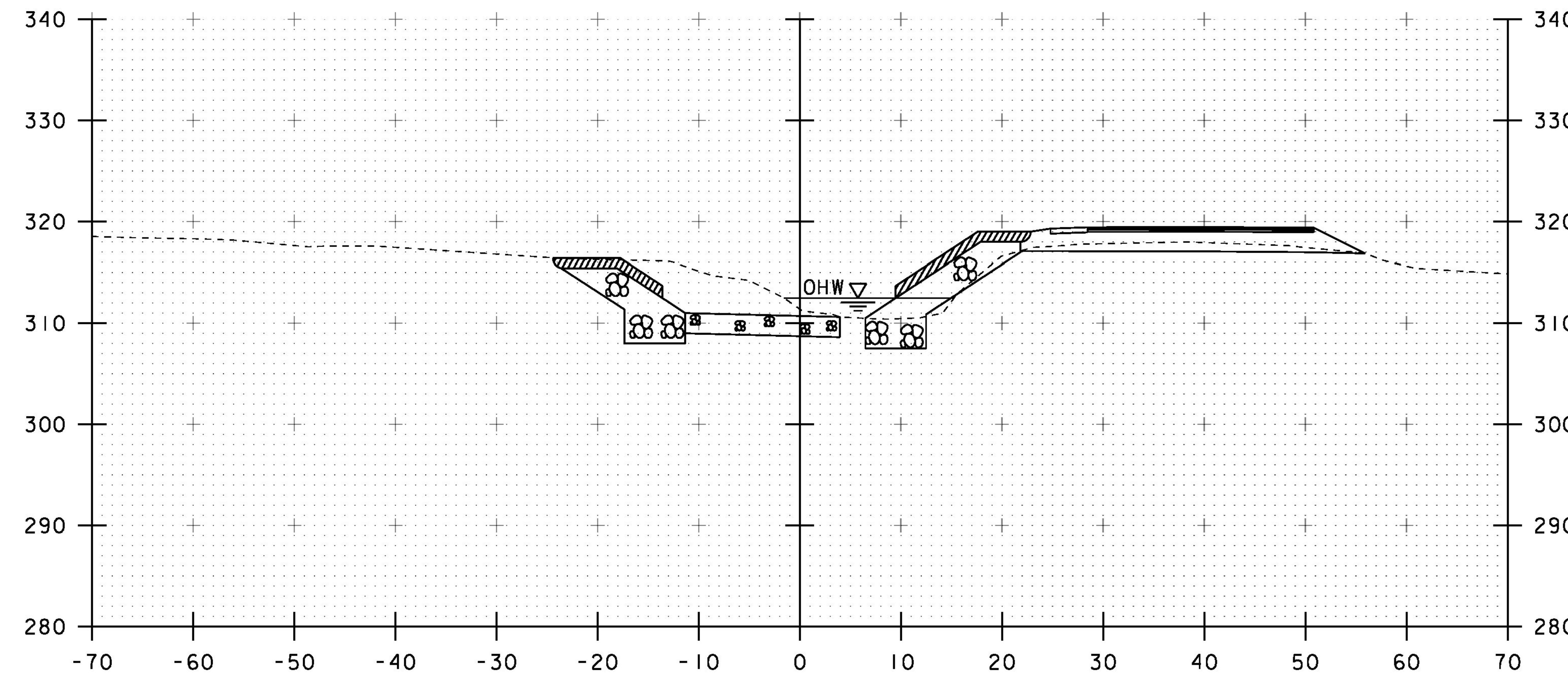
STA. 274+00 TO STA. 274+50

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
ROADWAY CROSS SECTIONS 6	SHEET 41 OF 54

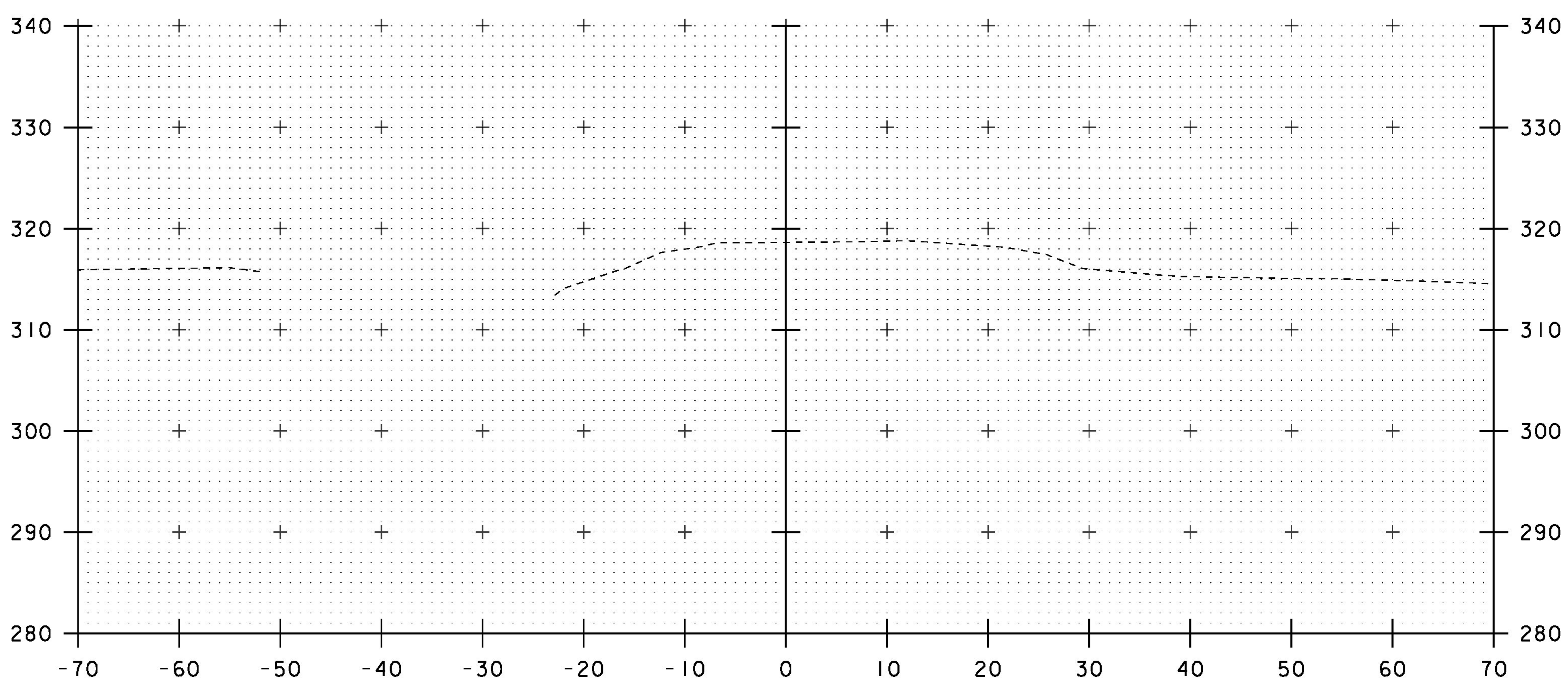
STA 50+25 RT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONE FILL, TYPE III
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL



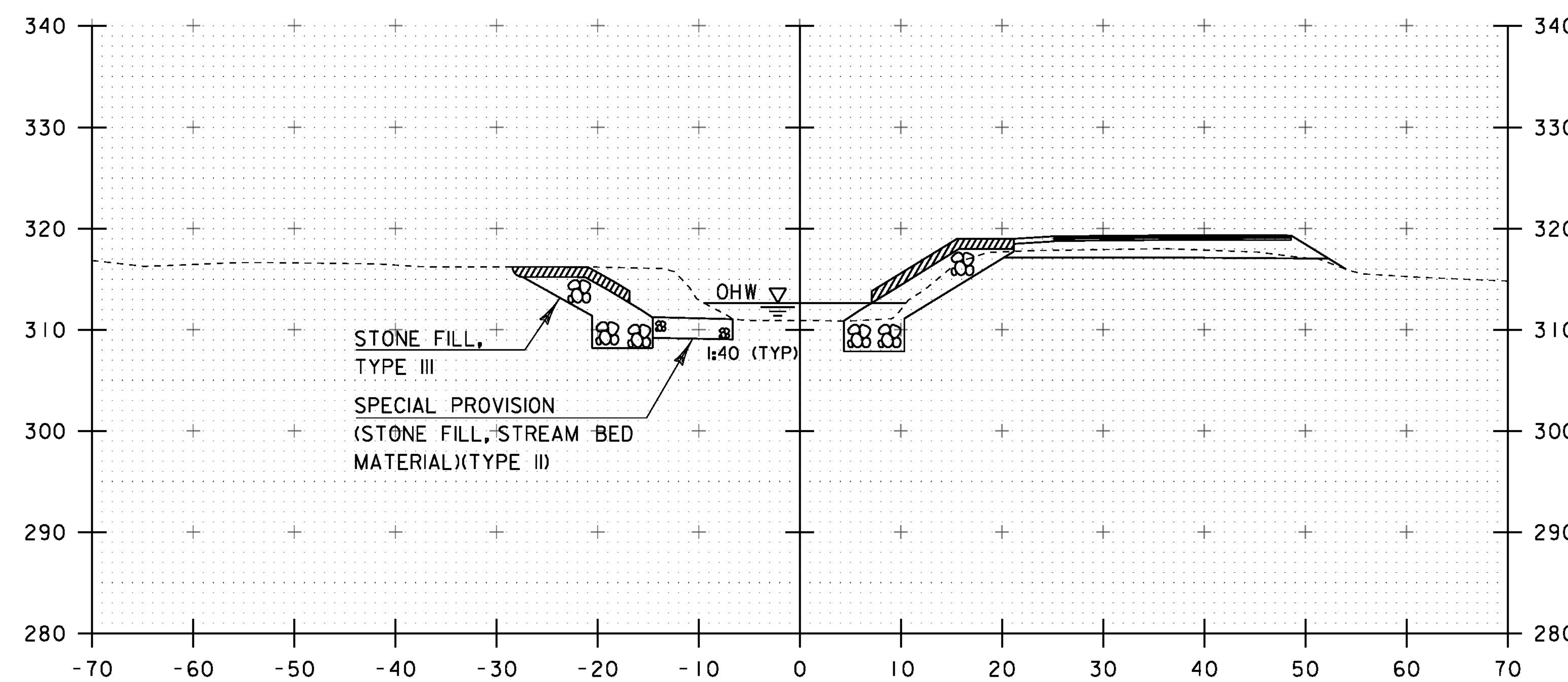
50+25



50+60



50+00



50+50

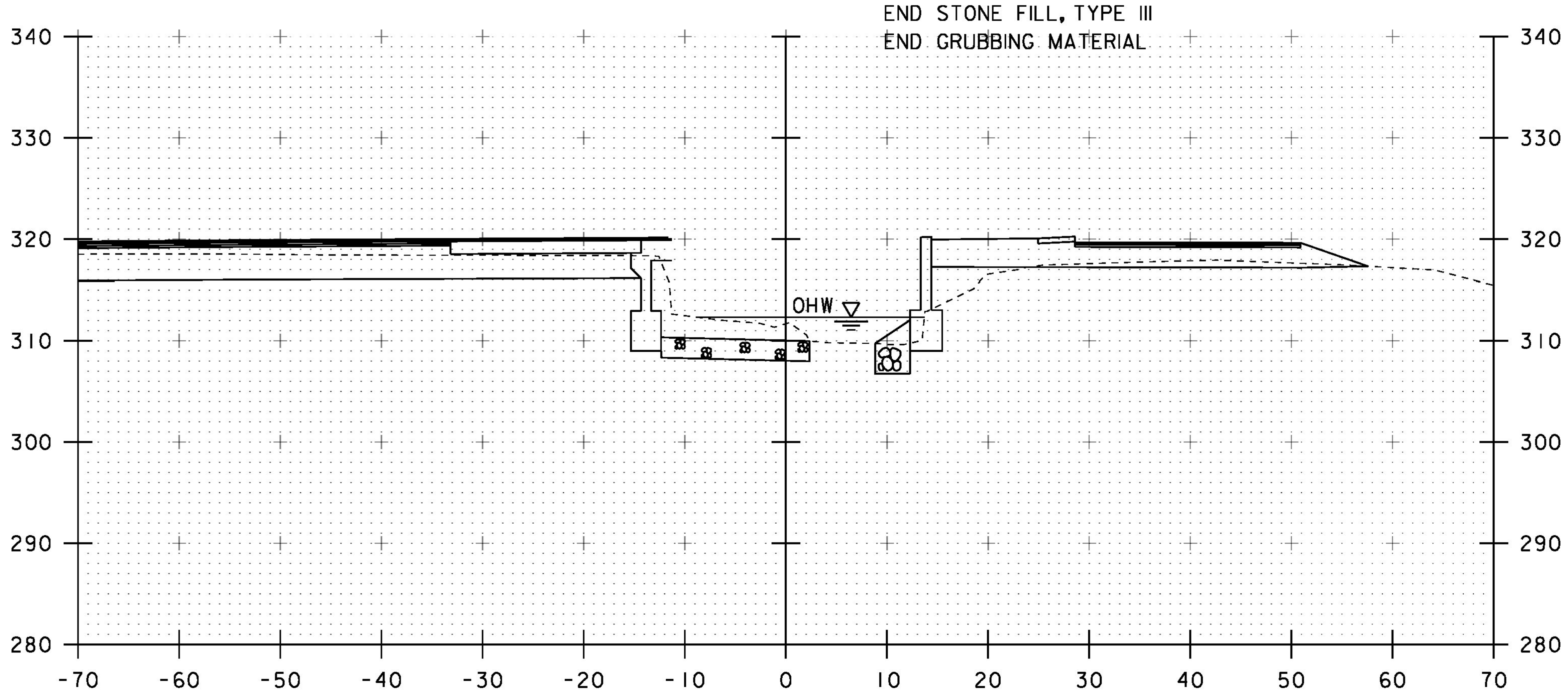
STA 50+33.63 LT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONE FILL, TYPE III
BEGIN SPECIAL PROVISION (STONE FILL,
STREAM BED MATERIAL)(TYPE II)
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL

STA. 50+00 TO STA. 50+60

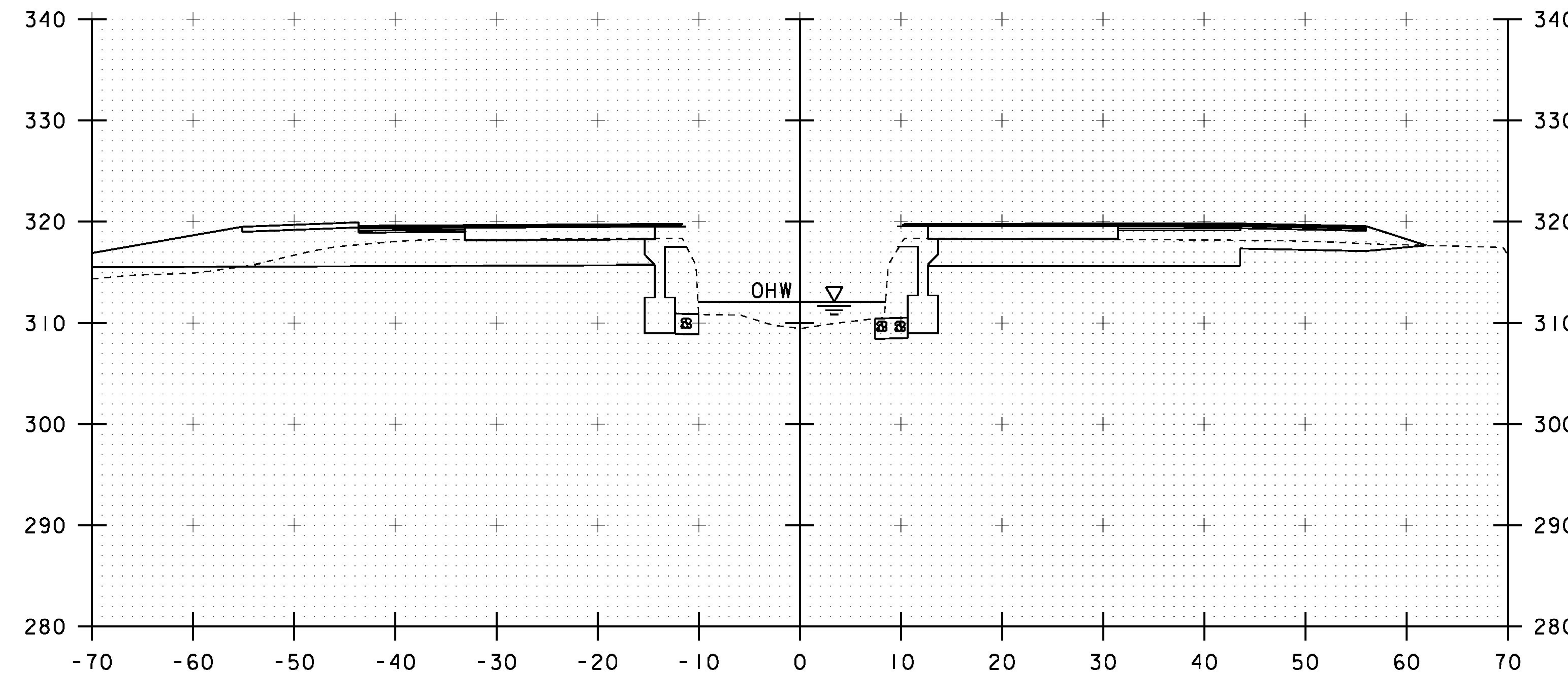
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
CHANNEL CROSS SECTIONS I	SHEET 42 OF 54

STA 50+80.00 RT
BEGIN SPECIAL PROVISION (STONE FILL, STREAM BED MATERIAL)(TYPE II)

STA 50+84.66 RT
END STONE FILL, TYPE III
END GRUBBING MATERIAL

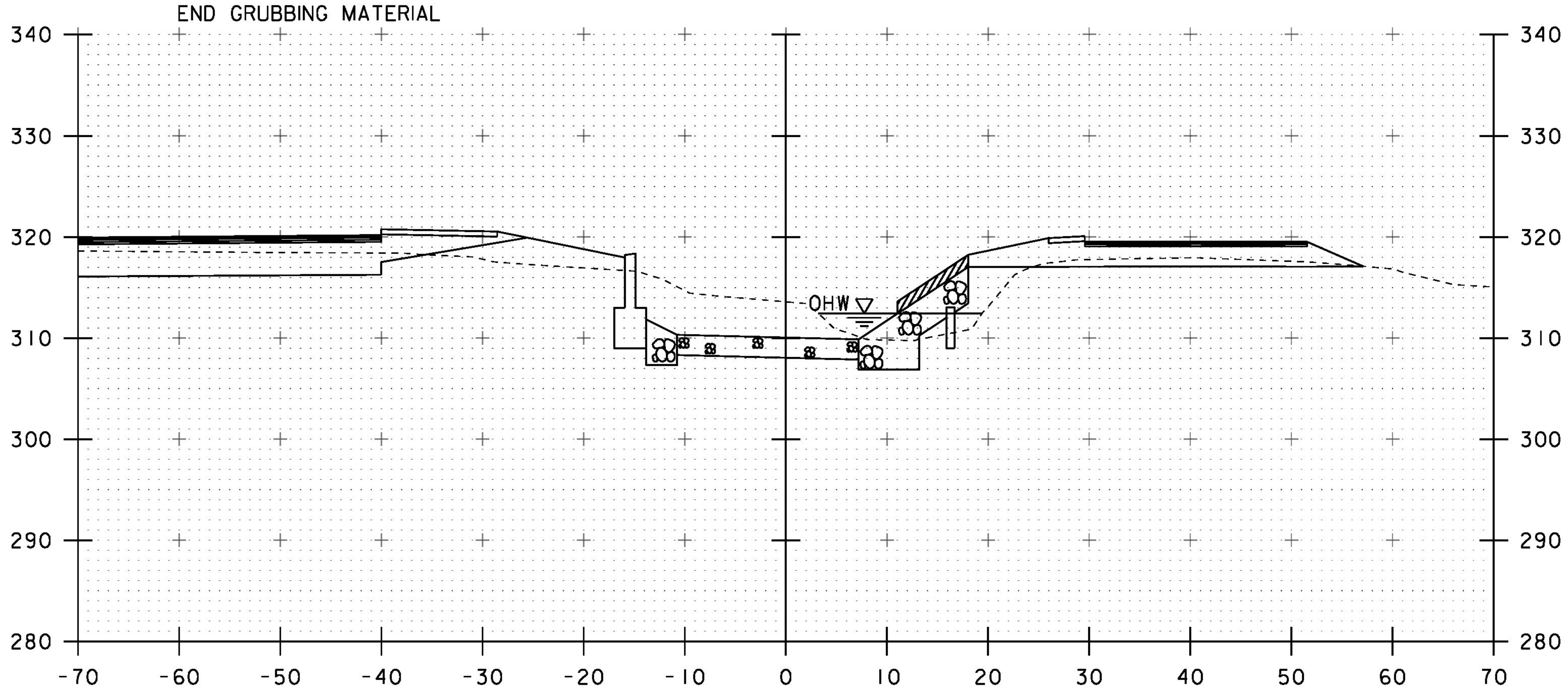


50+80

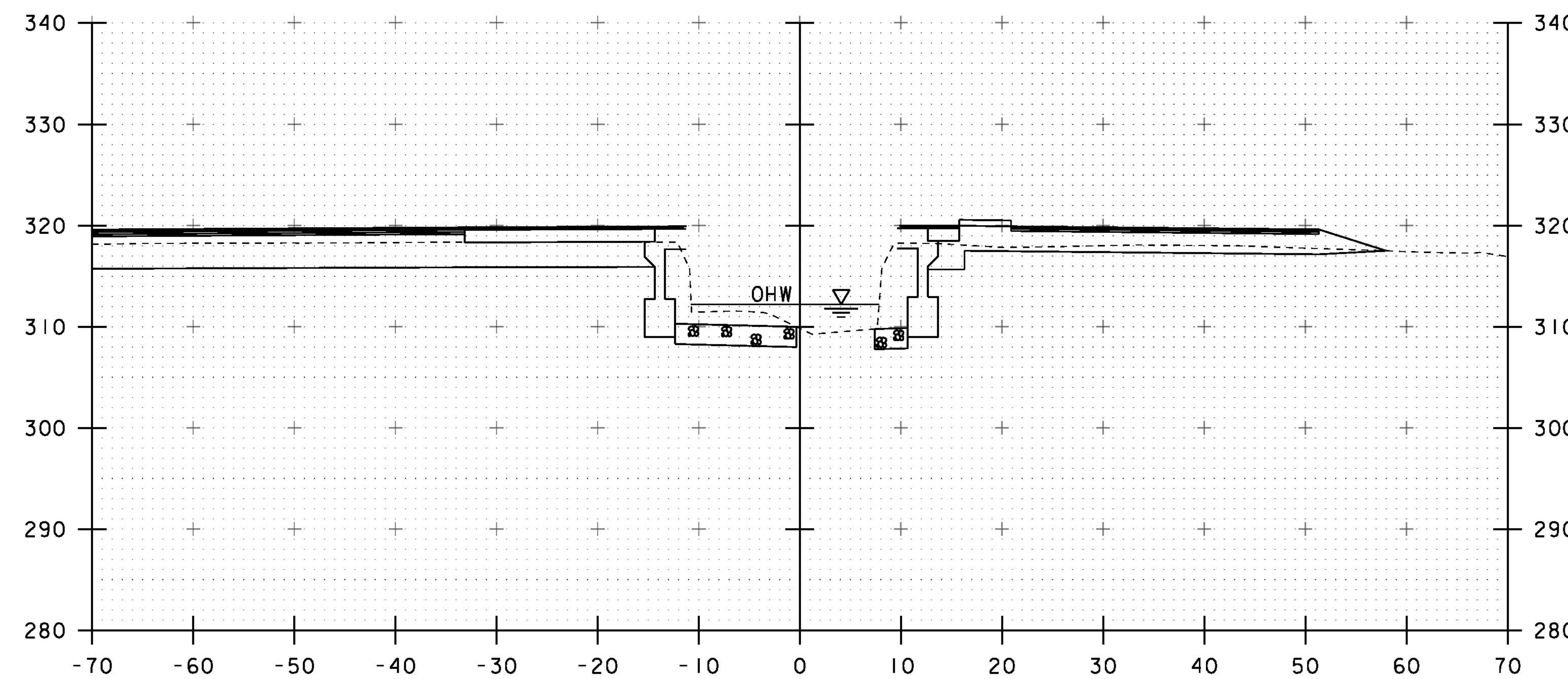


51+00

STA 50+74.77 LT
END STONE FILL, TYPE III
END GRUBBING MATERIAL



50+70



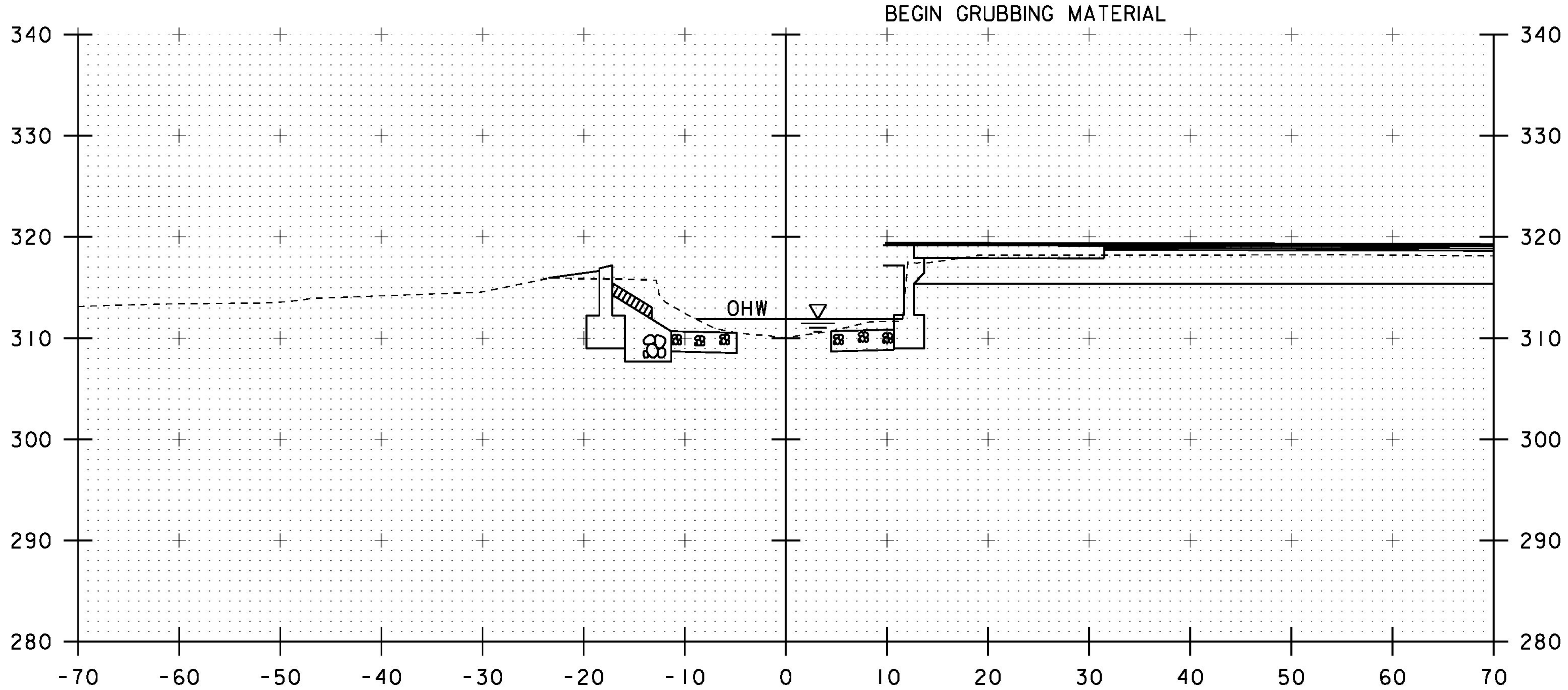
50+90

STA. 50+70 TO STA. 51+00

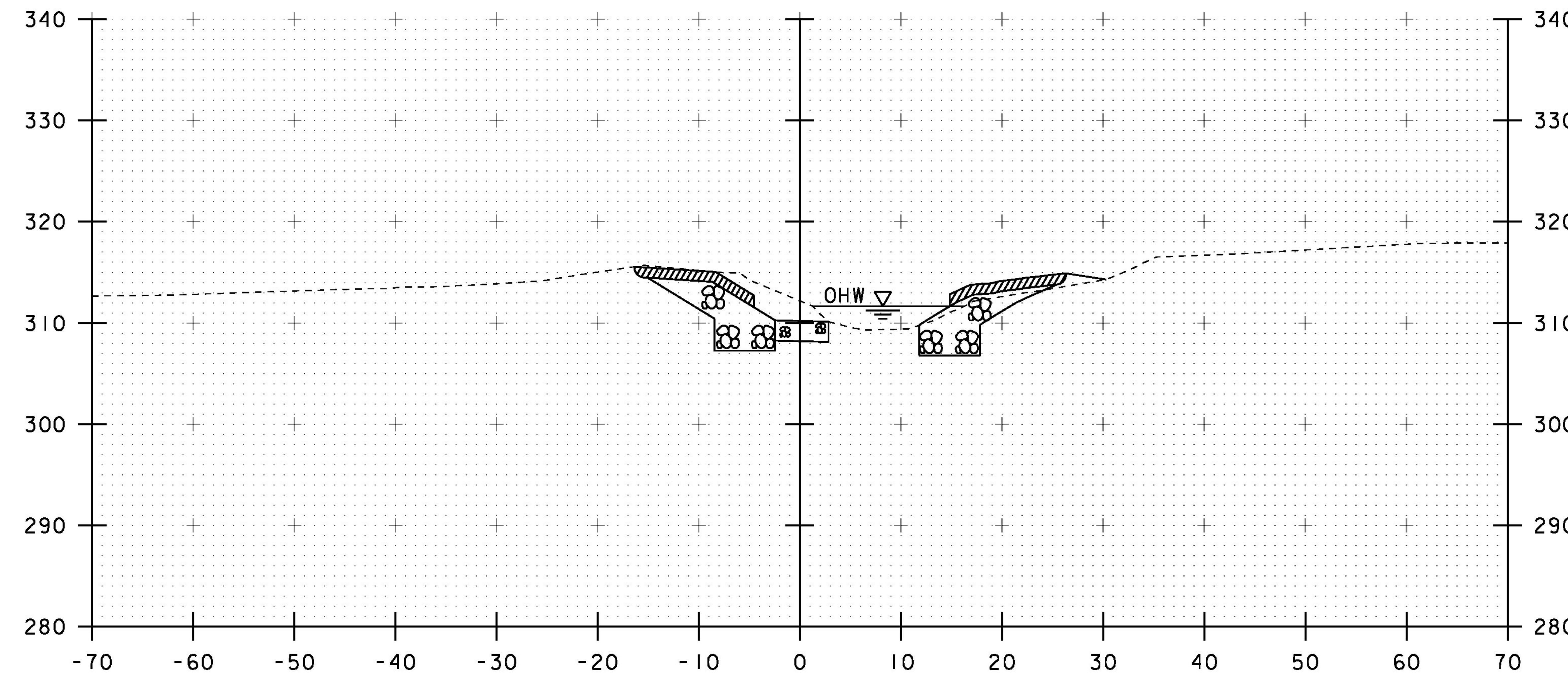
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
CHANNEL CROSS SECTIONS 2	SHEET 43 OF 54

STA 51+29.31RT
END STREAM BED MATERIAL, TYPE II

STA 51+24.93 RT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL

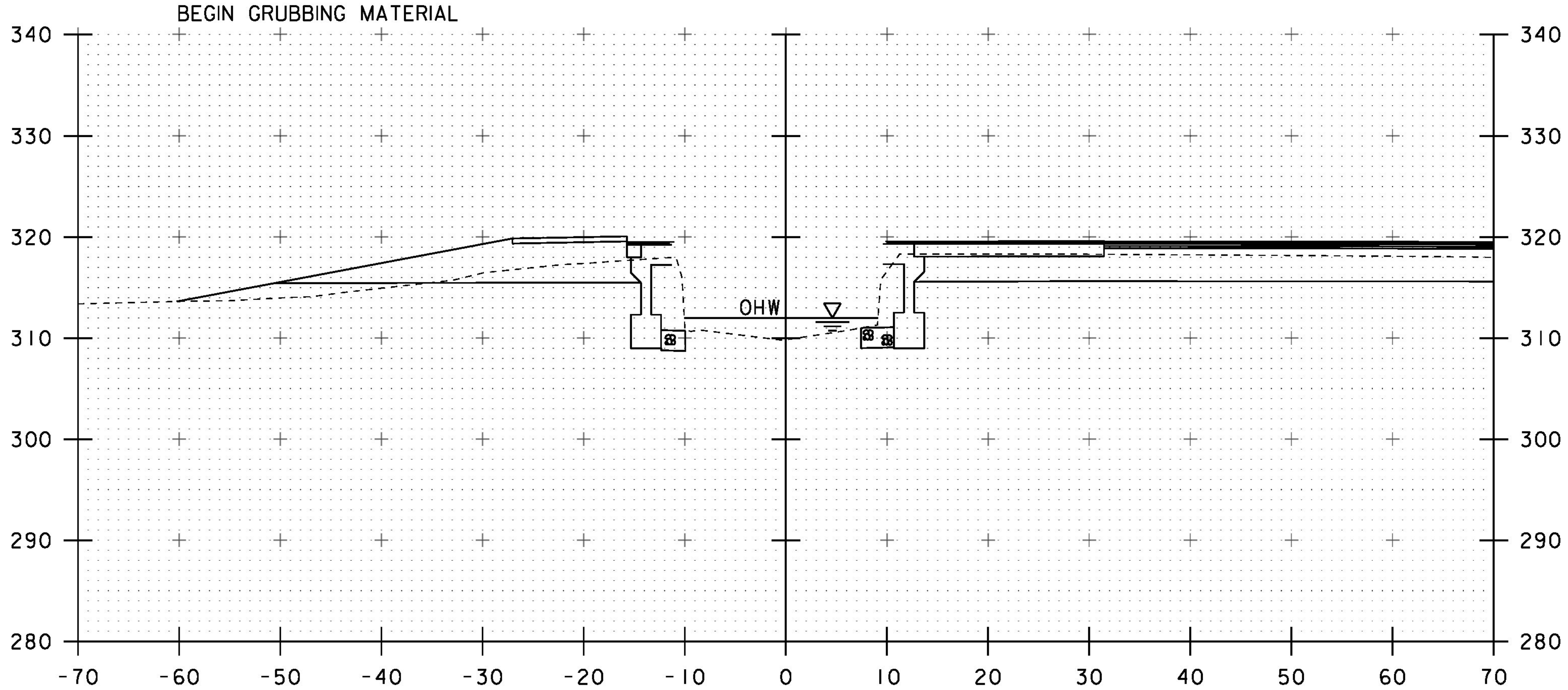


51+20

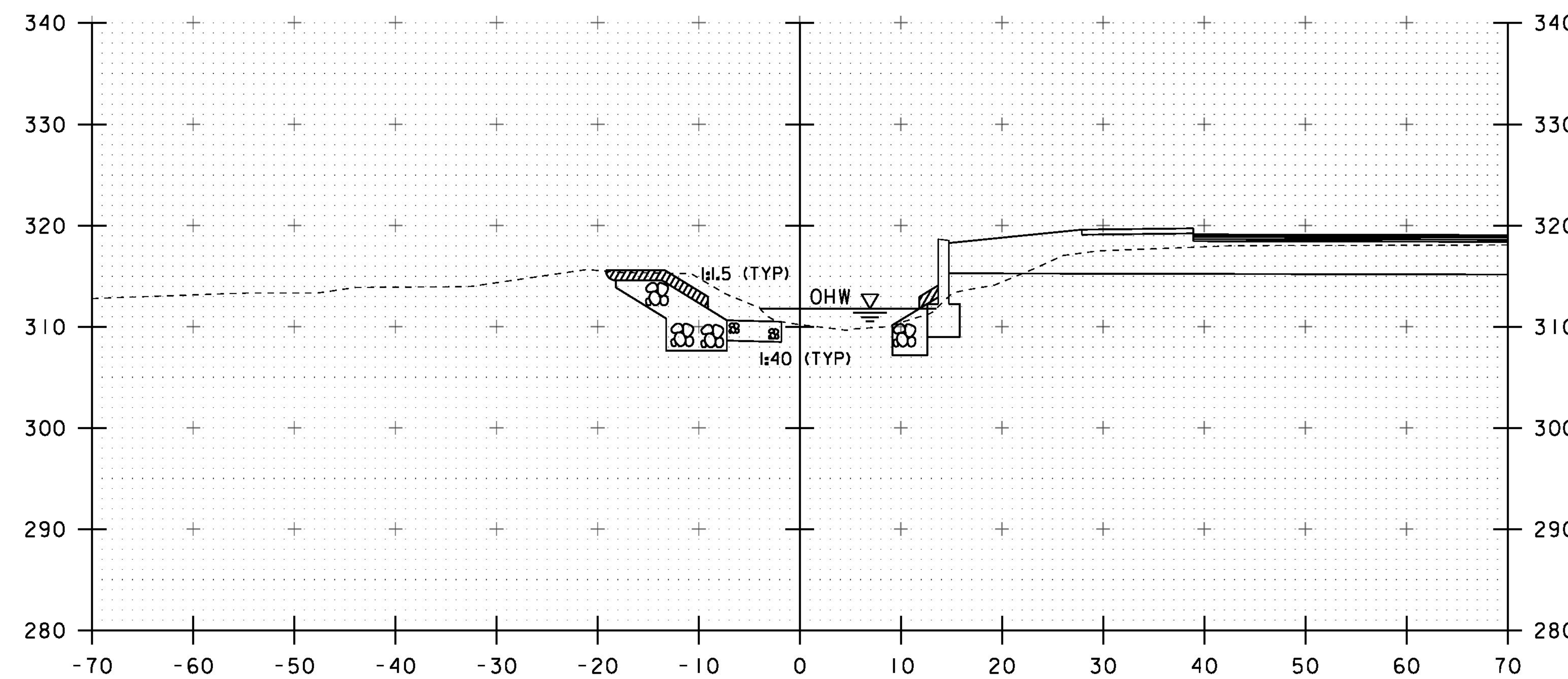


51+40

STA 51+15.27 LT
BEGIN STONE FILL, TYPE III
BEGIN GRUBBING MATERIAL



51+10



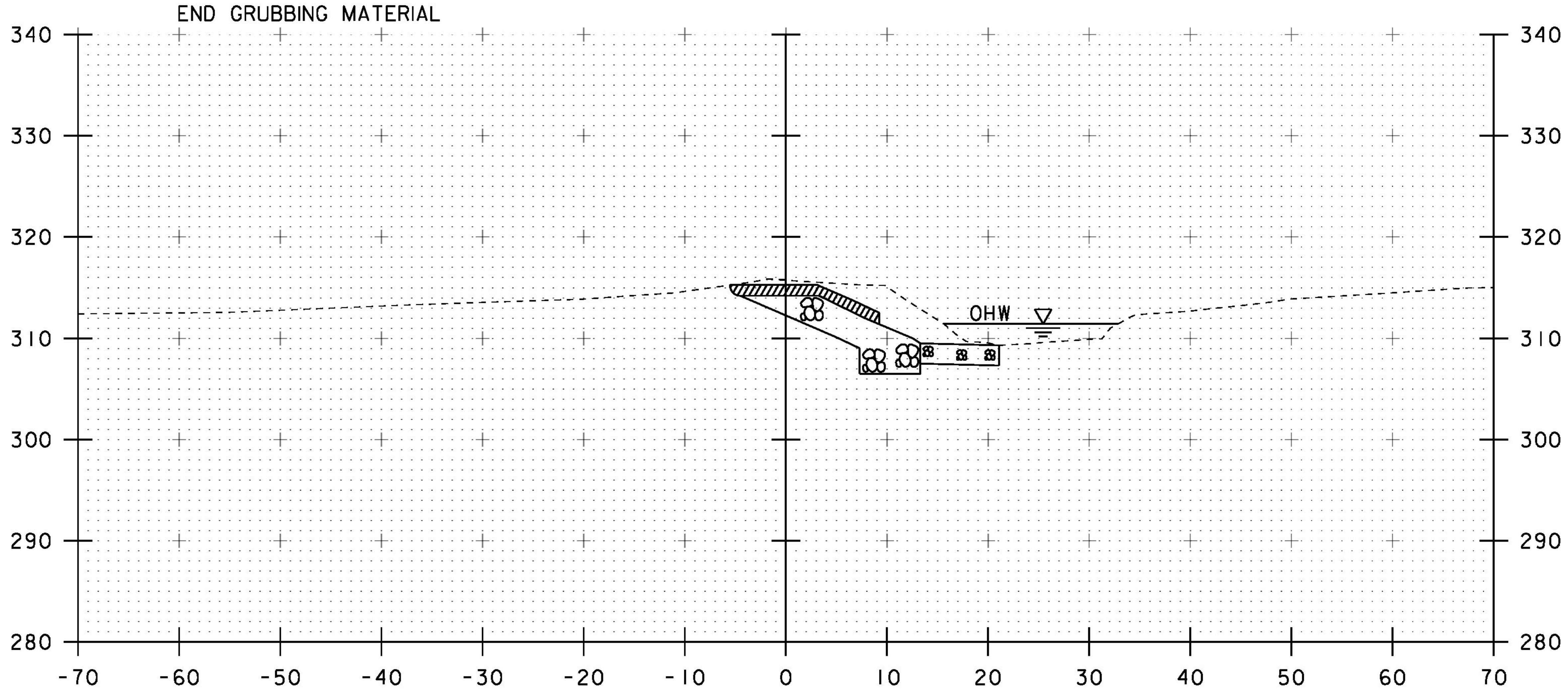
51+30

STA. 51+10 TO STA. 51+40

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
CHANNEL CROSS SECTIONS 3	SHEET 44 OF 54

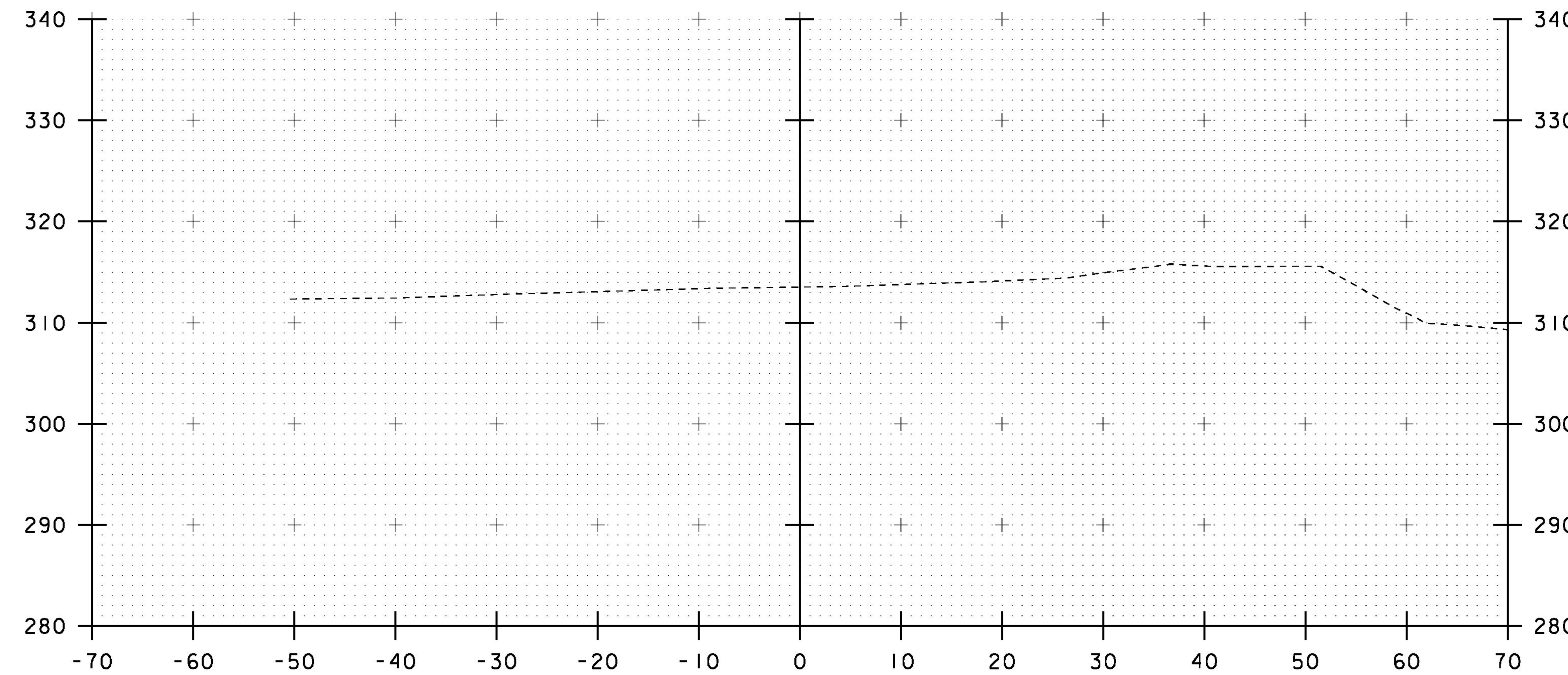
STA 51+66.15 LT
END SPECIAL PROVISION (STONE FILL, STREAM BED MATERIAL)(TYPE II)

STA 51+71.89 LT
END UNCLASSIFIED CHANNEL EXCAVATION
END STONE FILL, TYPE III
END GRUBBING MATERIAL

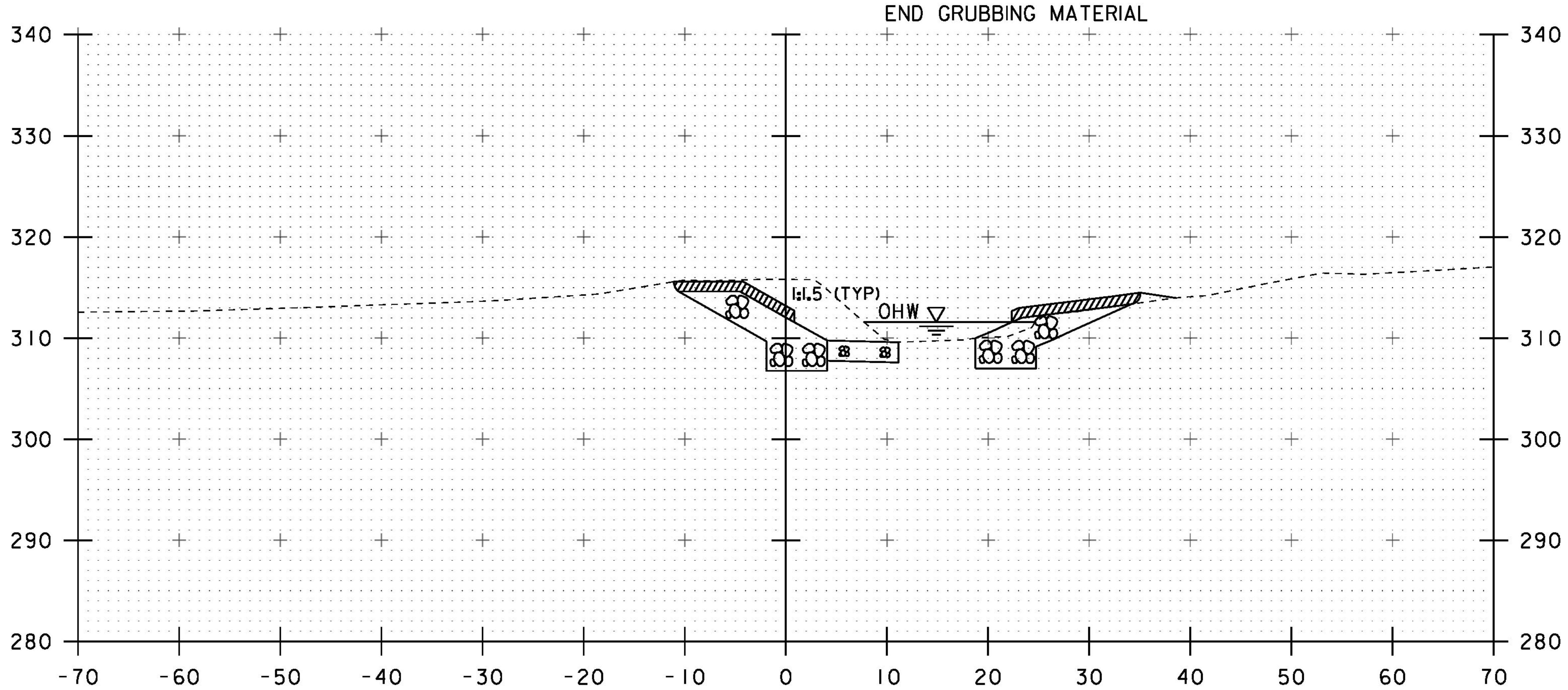


51+60

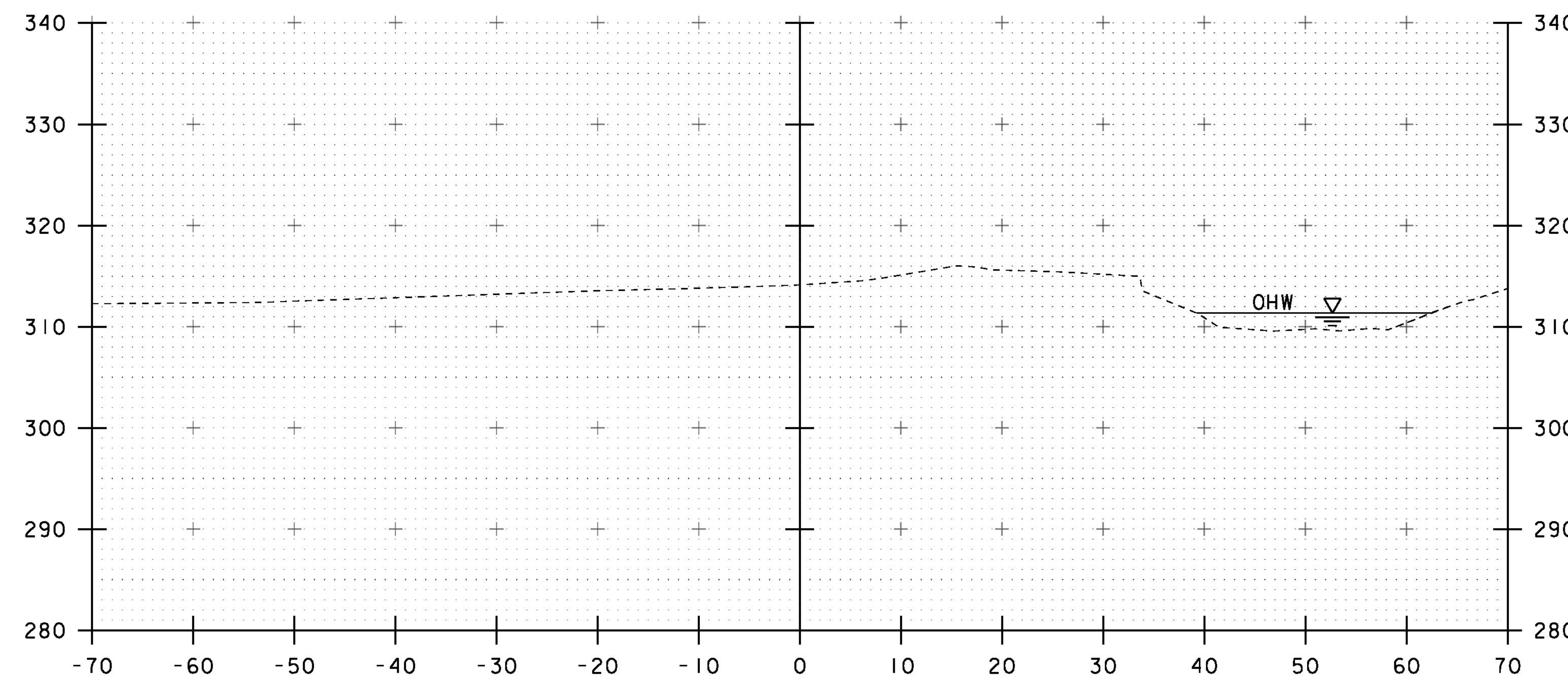
STA 51+59.42 RT
END UNCLASSIFIED CHANNEL EXCAVATION
END STONE FILL, TYPE III
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL



52+00



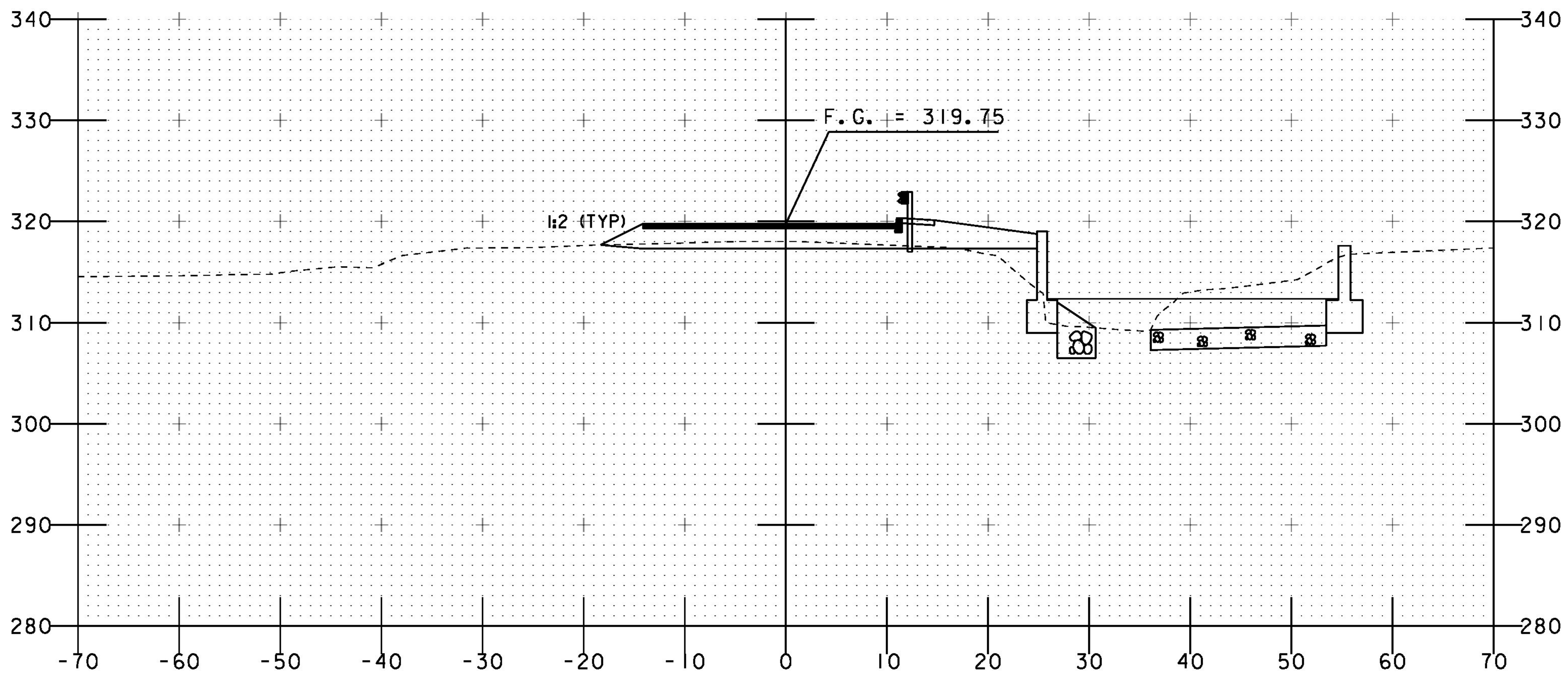
51+50



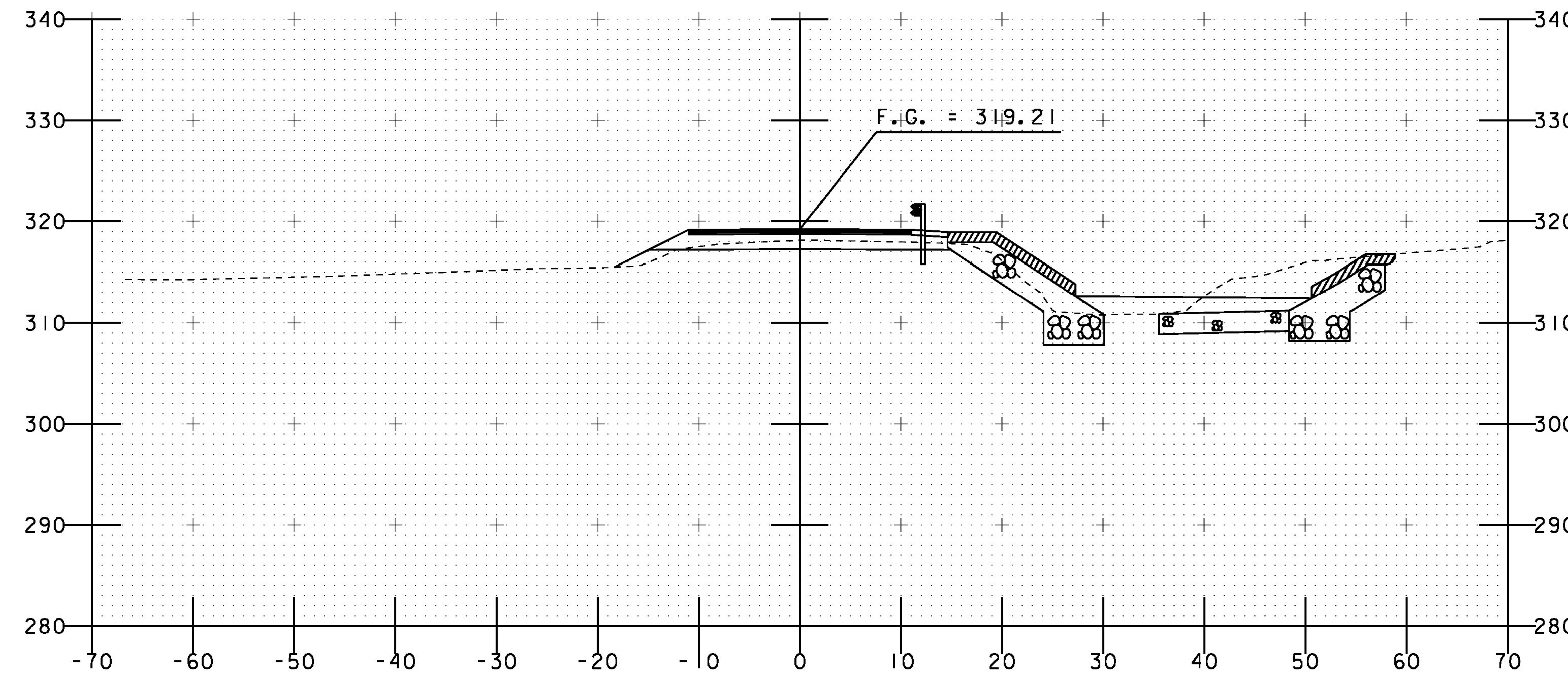
51+80

STA. 51+50 TO STA. 52+00

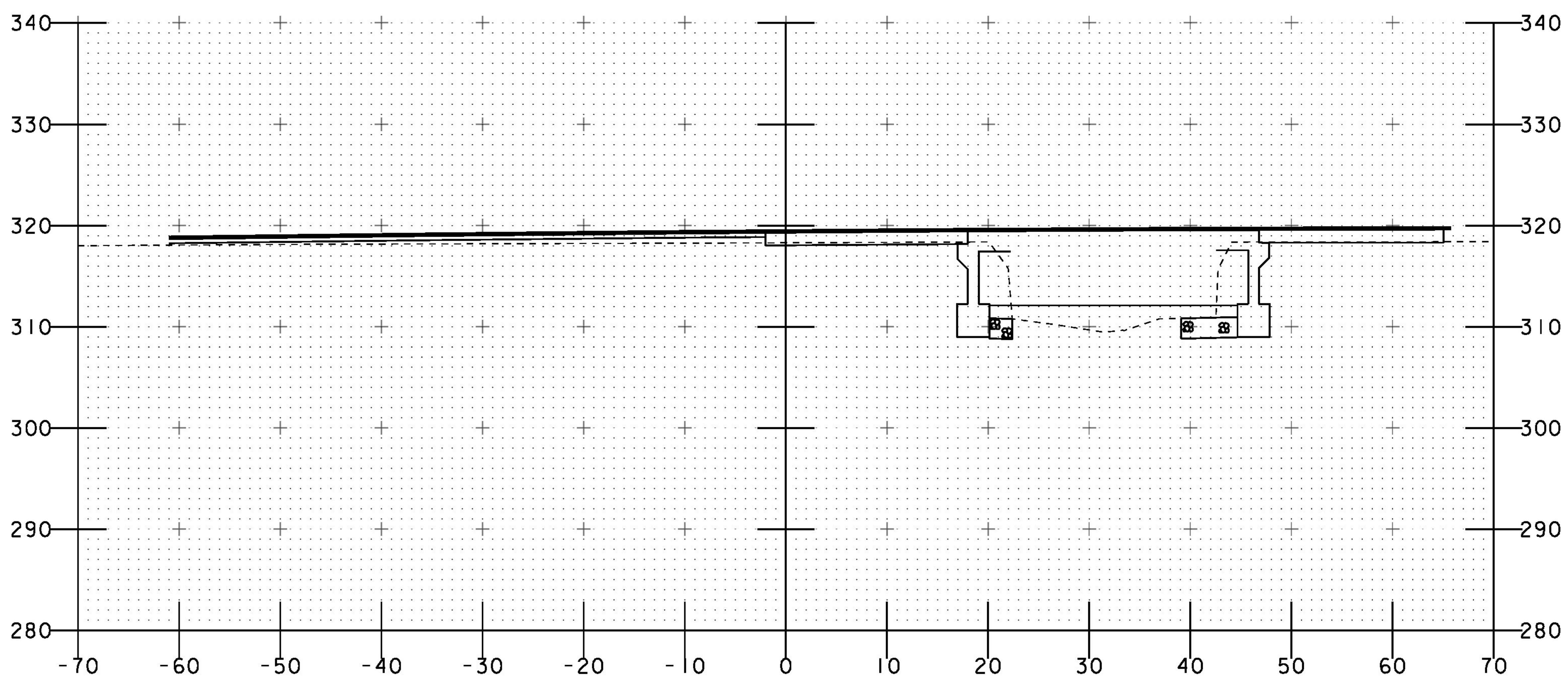
PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
CHANNEL CROSS SECTIONS 4	SHEET 45 OF 54



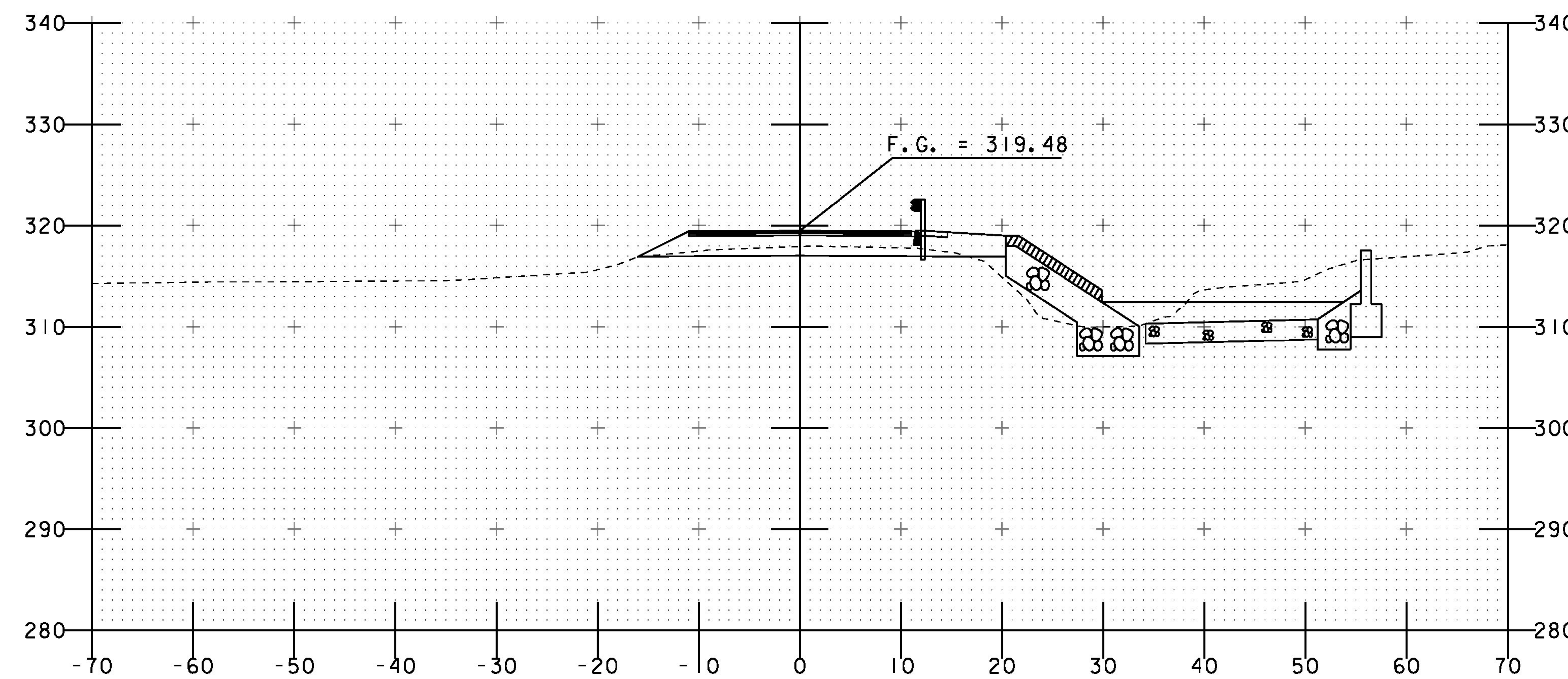
30+25



30+75



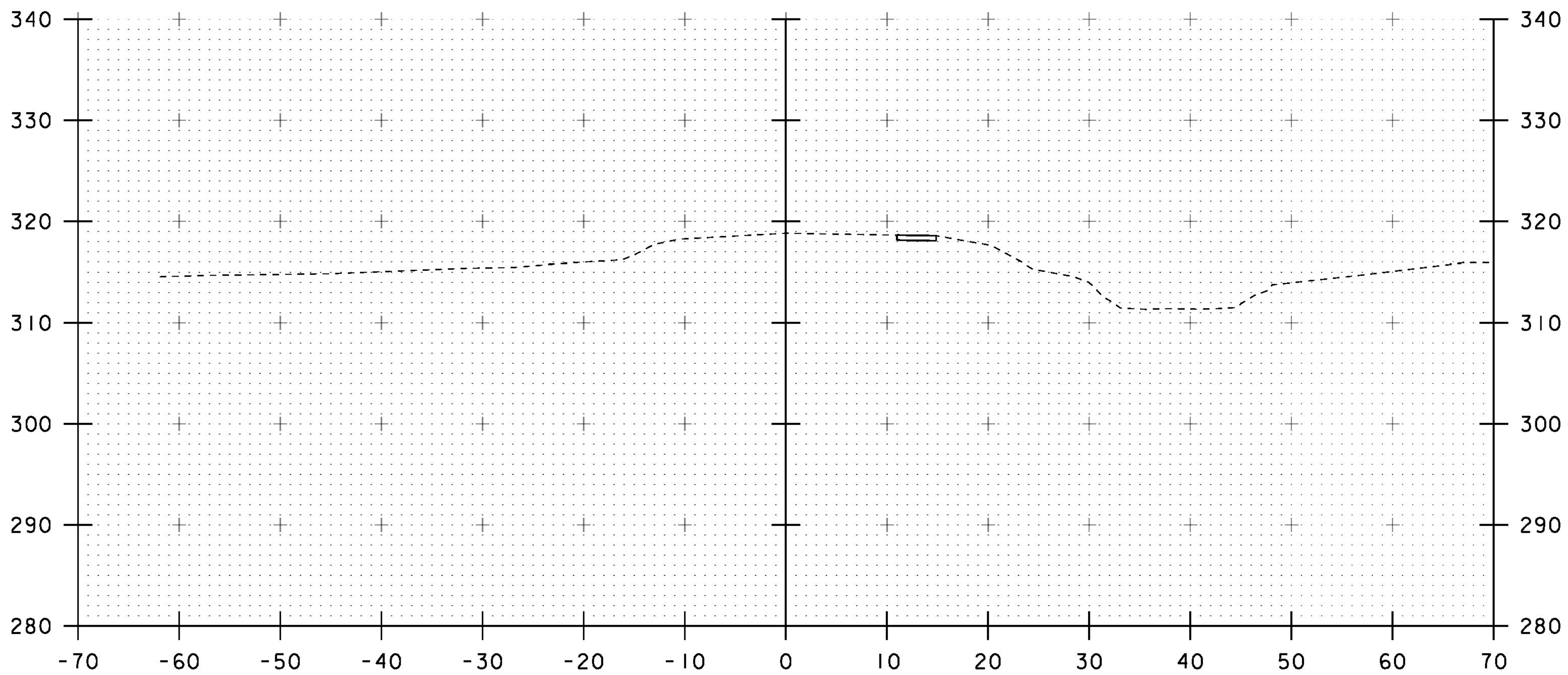
30+00



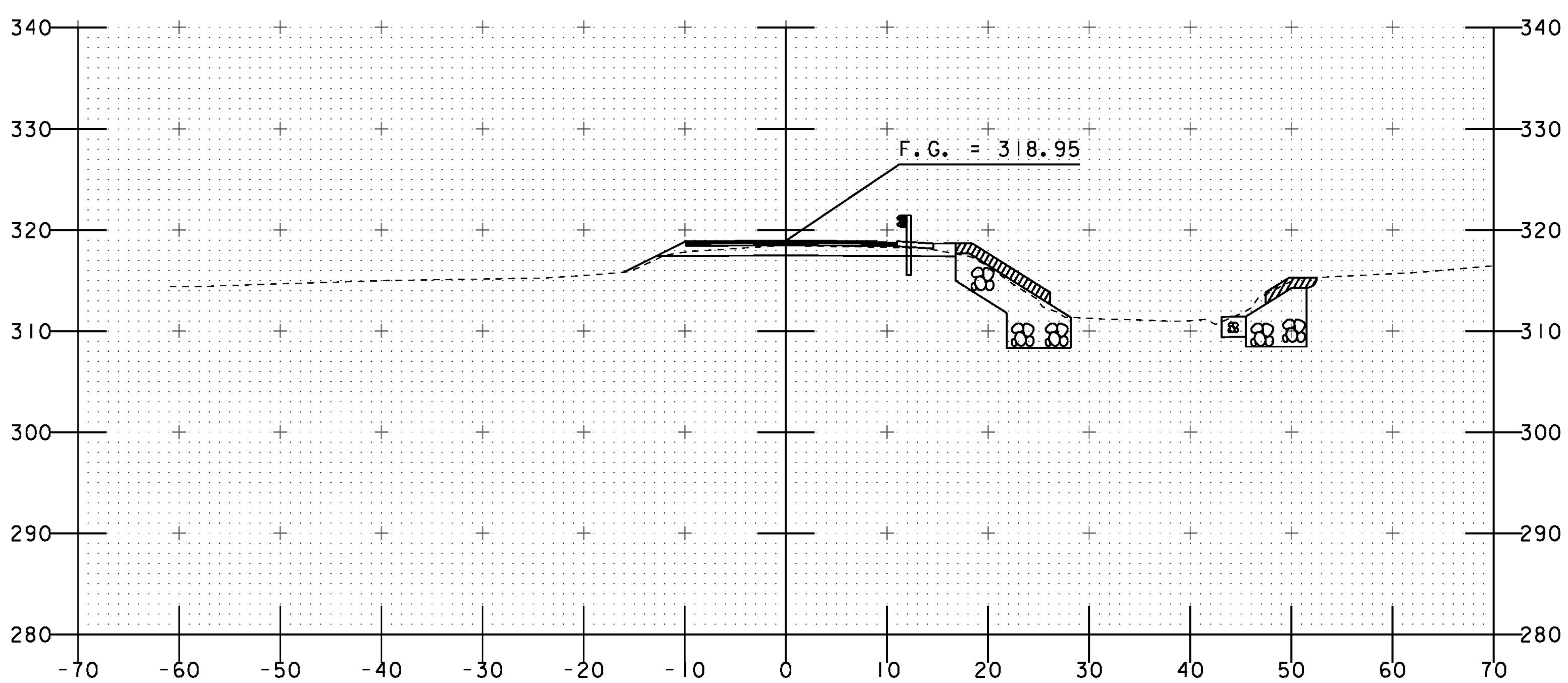
30+50

STA. 30+00 TO STA. 30+75

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
THI2 CROSS SECTION I	SHEET 46 OF 54



31+25



31+00

STA 31+17
END TH-12

STA. 31+00 TO STA. 31+25

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070xs.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
TH12 CROSS SECTION 2	SHEET 47 OF 54

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF BRIDGE 32 WITH RELATED APPROACH AND CHANNEL WORK. THE PROJECT LOCATION IS IN THE TOWN OF RICHMOND, VT ON US ROUTE 2, BEGINNING AT MILE POST 5.1110 (STA 270+00) AND ENDING AT MILE POST 5.1770 (STA 273+50).

THE NEW STRUCTURE WILL BE APPROXIMATELY 28.73 FEET IN LENGTH WITH 323 FEET OF ROADWAY WORK.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.84 ACRES.

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

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE PROJECT AREA IS RELATIVELY FLAT WITH STEEP BANKS ALONG THE UPSTREAM CHANNEL ALONGSIDE WINGWALL ONE. IT IS RURAL MOSTLY WOODED TO THE NORTH WITH AGRICULTURAL FIELDS TO THE SOUTH.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

SNIPE ISLAND BROOK IS THE ONLY WATER SOURCE ON THE PROJECT SITE.

THE BROOK IS CLASSIFIED AS SINUOUS AND ALLUVIAL AT THE SITE. THE STREAM BED CONSISTS OF GRAVEL AND SAND. THE DRAINAGE AREA AT THE BRIDGE CROSSING IS 5.2 SQUARE MILES.

THERE IS AN 18” CORRUGATED METAL PIPE RUNNING UNDER TH 12 RUNNING PARALLEL TO US ROUTE 2.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE EXISTING BRIDGE. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE III AND II AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF CHITTENDEN, VERMONT.

LIMERICK SILT LOAM	0% TO 3% SLOPES	“K” FACTOR = 0.49
COLTON GRAVELLY LOAMY SAND	12% TO 20% SLOPES	“K” FACTOR = 0.17

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: YES – NORTHEAST AND SOUTHEAST OF BRIDGE
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NORTHERN LONG-EARED BAT
WATER RESOURCE: SNIPE ISLAND BROOK
WETLANDS: YES – CLASS II NORTHWEST OF INTERSECTION OF US ROUTE 2 AND TH 12.
CLASS III SOUTH OF US ROUTE 2, WEST OF SNIPE ISLAND BROOK.

1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THESE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

TO ADEQUATELY PROTECT THE WETLANDS ALONG THE WESTERN PROJECT APPROACH, AND ARCHAELOLOGICALLY SENSITIVE AREAS ALONG THE EASTERN PROJECT APPROACH, BARRIER FENCE SHALL BE USED TO DEMARCATE THE PROJECT LIMITS.

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MNIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

TURBIDITY CURTAIN WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN. INSTALLATION OF THE STONE FILL IN THE CHANNEL MAY NEED TO BE COMPLETED IN PHASES.

1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

THE IMMEDIATE PROJECT AREA IS NOT LIKELY TO BE IMPACTED BY RUNOFF FROM UPSLOPE AREAS. THEREFORE, IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY. CONTRACTOR TO INSTALL DIVERSION MEASURES IF IT IS NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED, IF NECESSARY, TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

THERE ARE NO PERMANENT STORM WATER TREATMENT DEVICES ANTICIPATED ON THIS PROJECT.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

DEWATERING IS NOT ANTICIPATED FOR THIS PROJECT.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

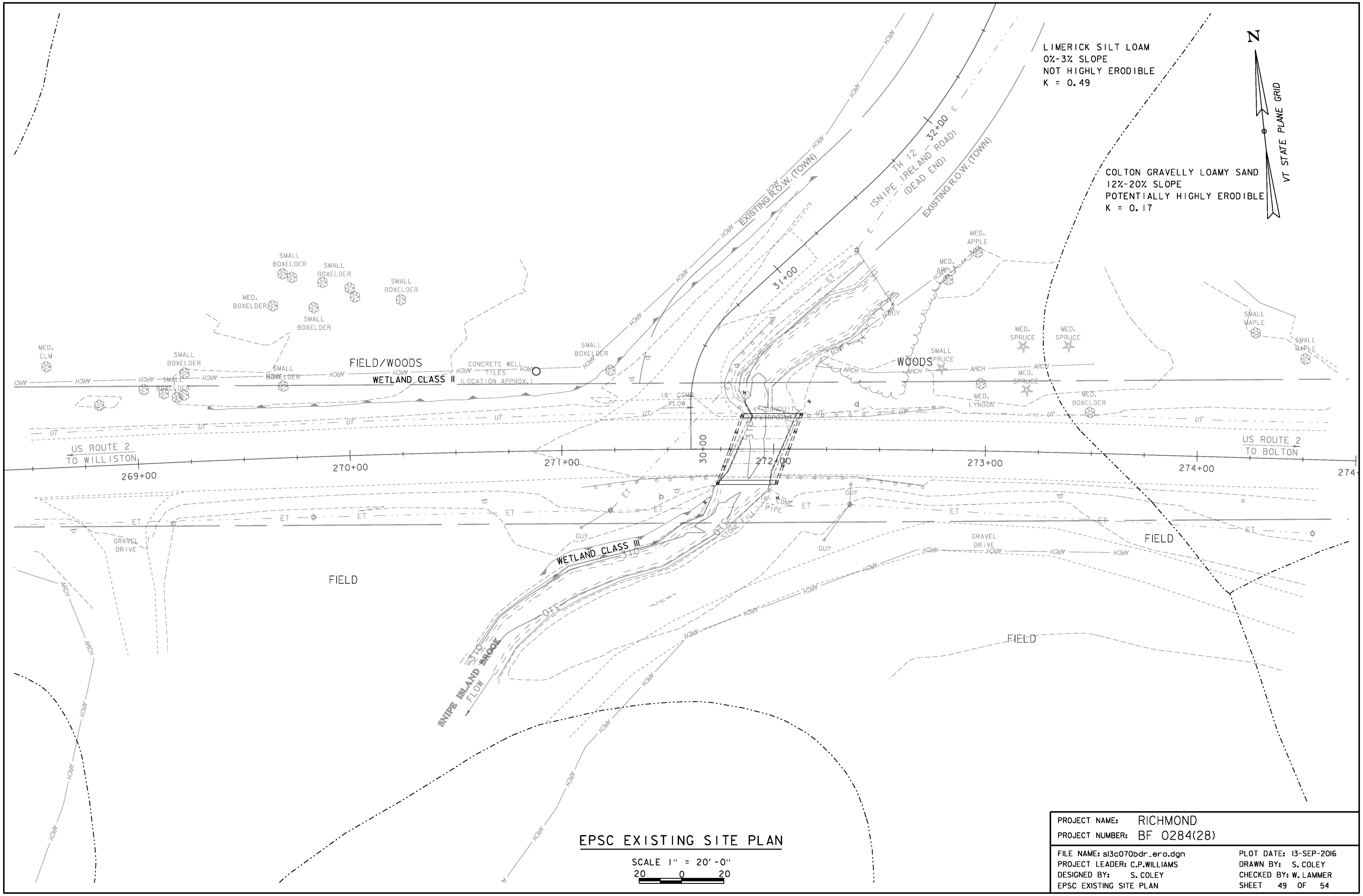
1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

1.5.2 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

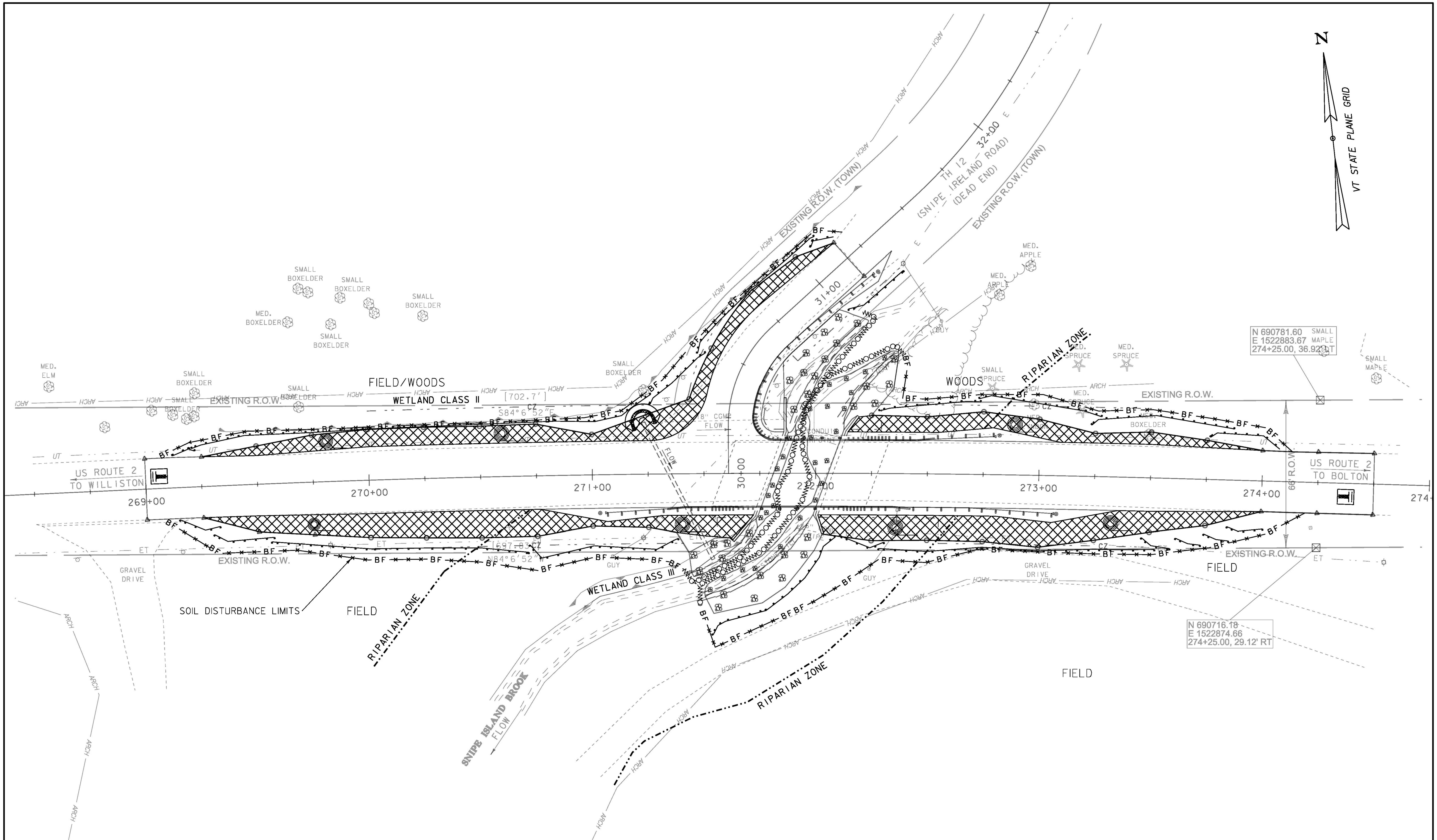


EPSC EXISTING SITE PLAN

SCALE 1" = 20'-0"

20 0 20

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070bdr_ero.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
EPSC EXISTING SITE PLAN	SHEET 49 OF 54



NOTES:

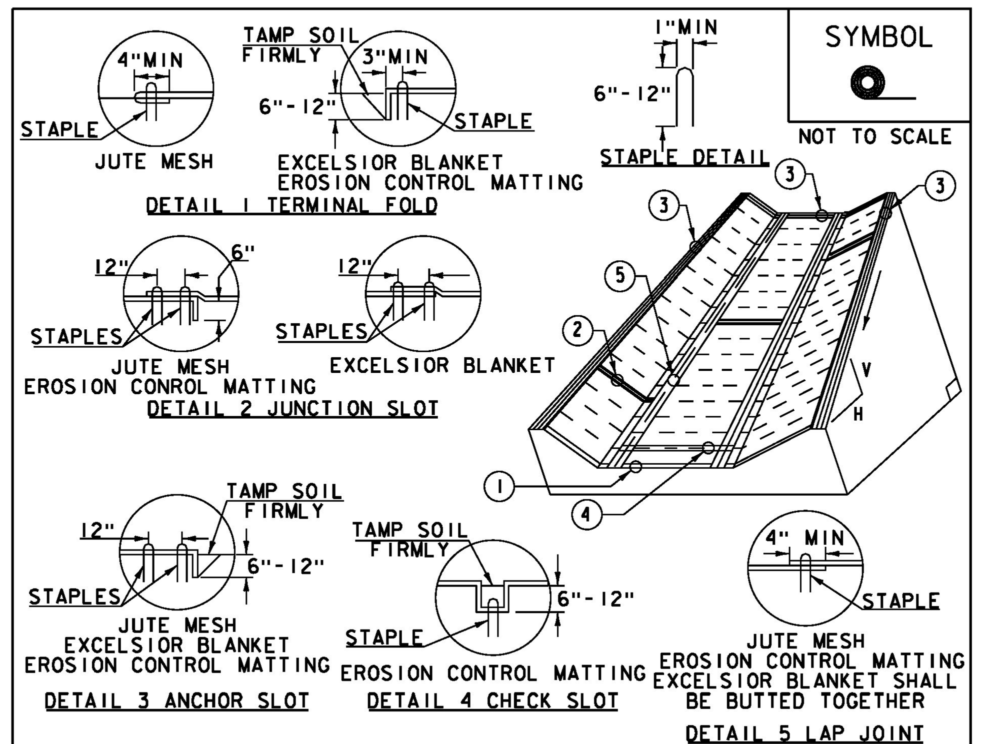
1. FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN INDICATED. HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE.
2. IMPACTS IN RAPARIAN ZONE SHALL BE MINIMIZED

EPSC PLAN

SCALE 1" = 20'-0"

20 0 20

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070bdr.ero	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: S. COLEY
DESIGNED BY: S. COLEY	CHECKED BY: W. LAMMER
EPSC PLAN	SHEET 50 OF 54



CONSTRUCTION SPECIFICATIONS

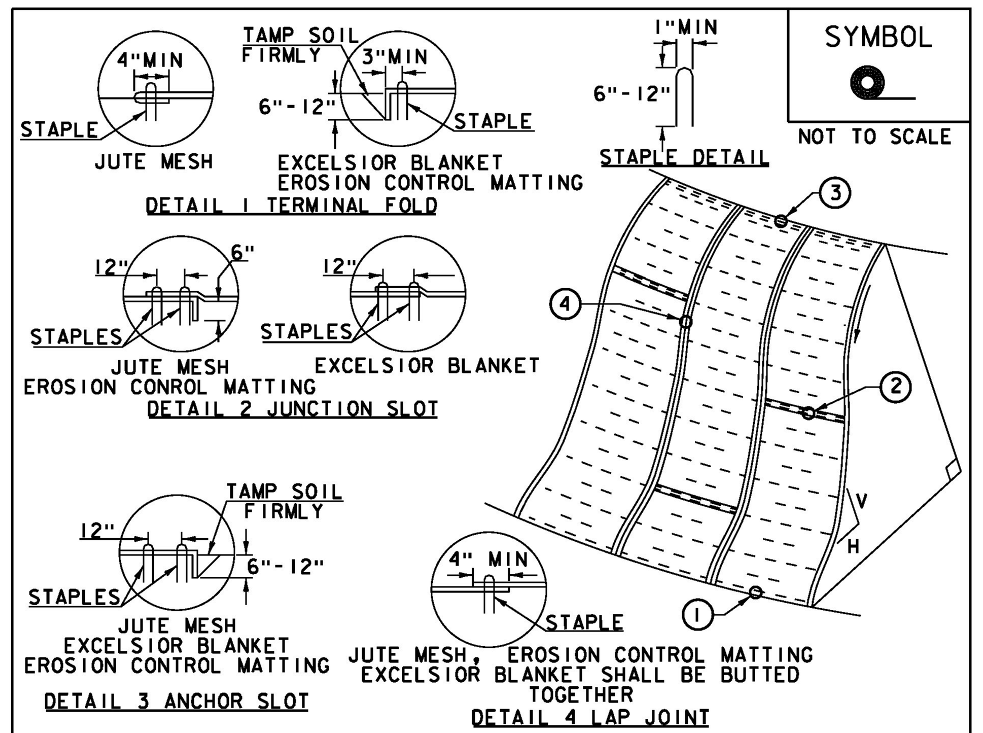
1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) DITCH

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) ~~OR PERMANENT EROSION MATTING (PAY ITEM 653.21).~~

REVISIONS	
MARCH 8, 2007	JMF
APRIL 16, 2007	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

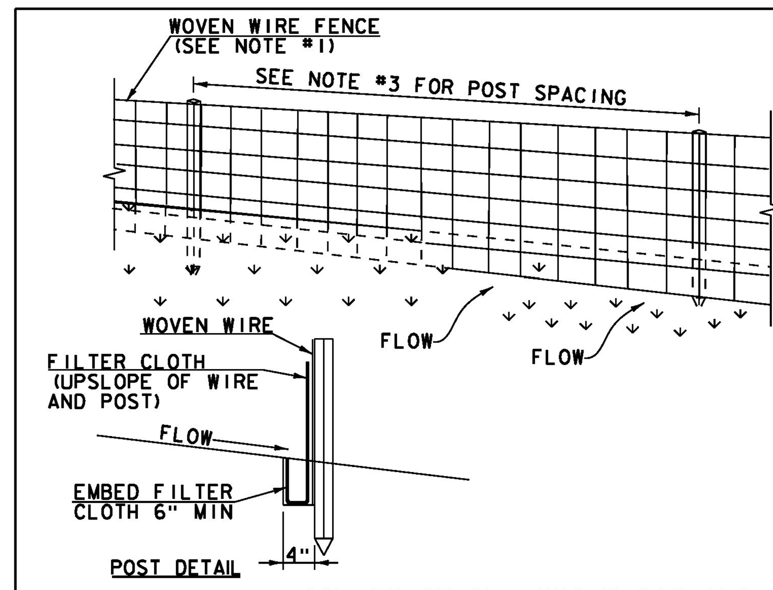
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) ~~OR PERMANENT EROSION MATTING (PAY ITEM 653.21).~~

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

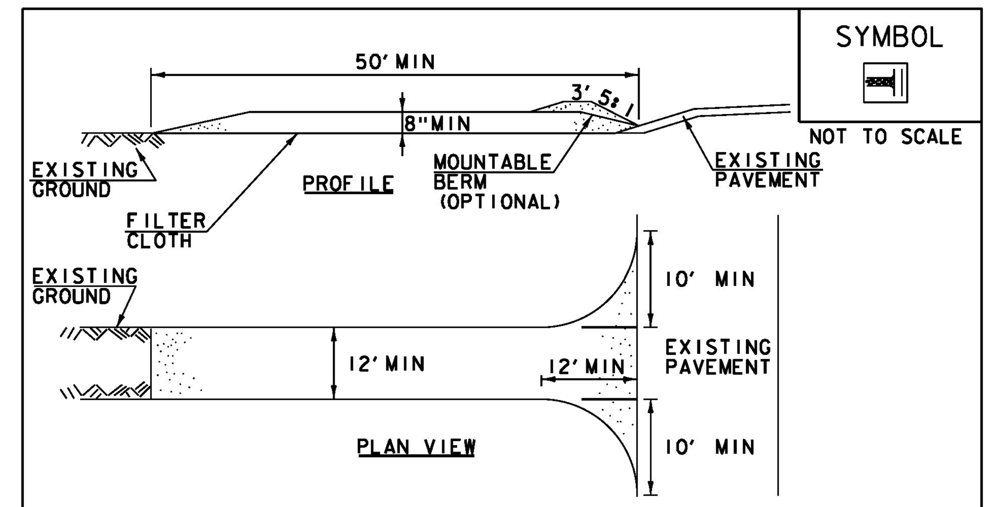
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

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

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) ~~OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).~~

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

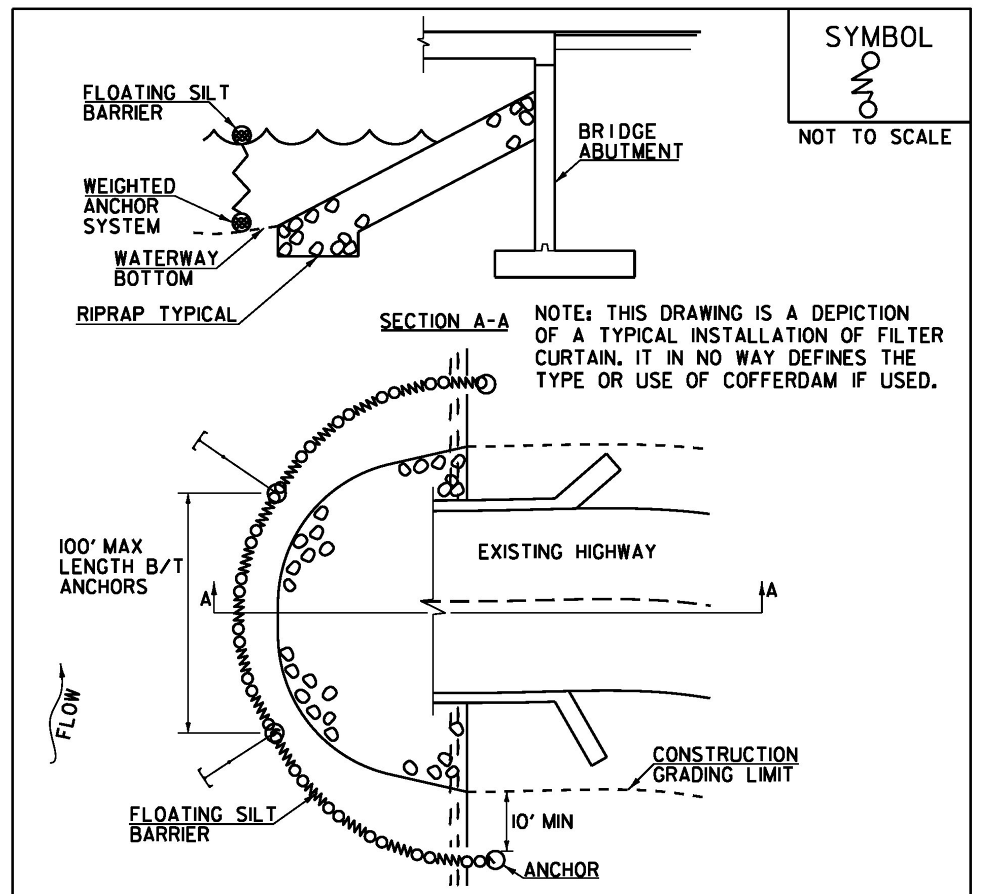
1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF



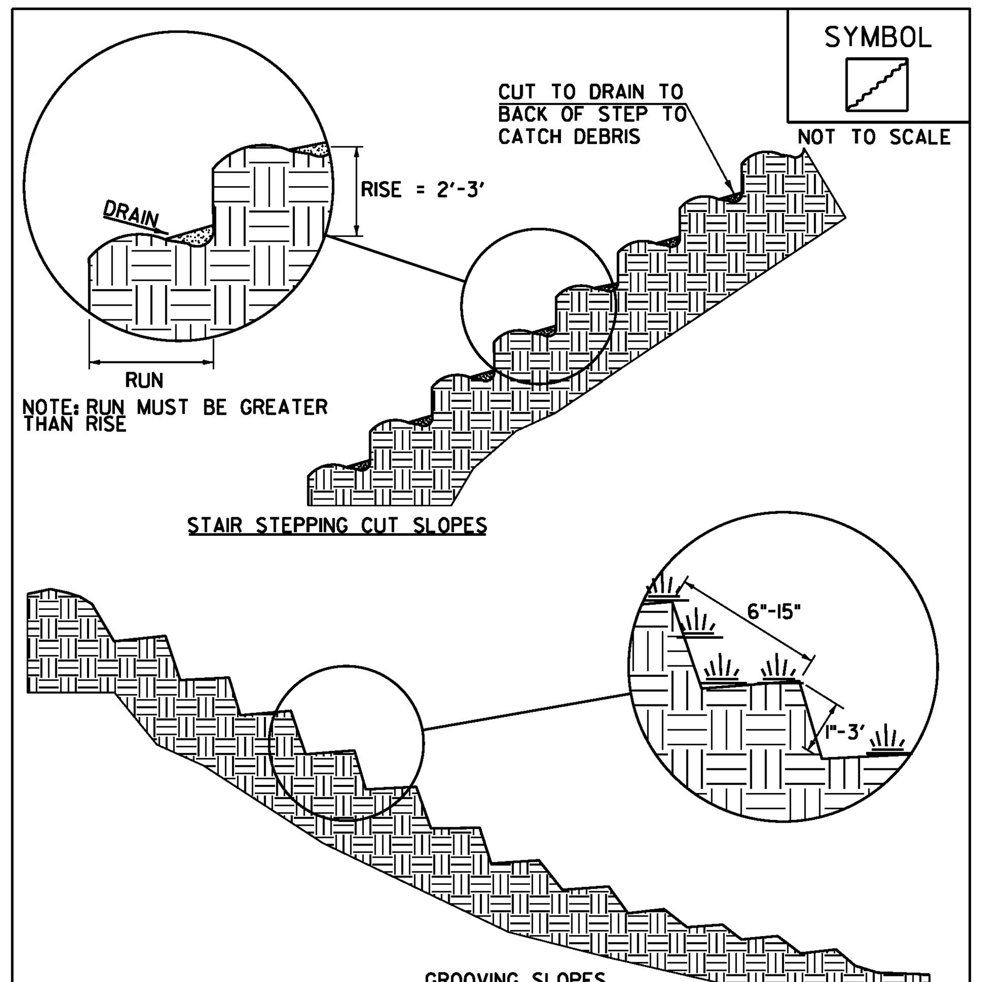
CONSTRUCTION SPECIFICATIONS

1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

FILTER CURTAIN

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF



NOTE: GROOVE SLOPE BY CUTTING FURROWS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND RETAIN LIME, FERTILIZER AND SEED.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SURFACE ROUGHENING

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

VAOT LOW GROW/FINE FESCUE MIX

	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
38%	57	95	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX

	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
37.5%	22.5	45	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE

FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

CONSTRUCTION GUIDANCE

1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

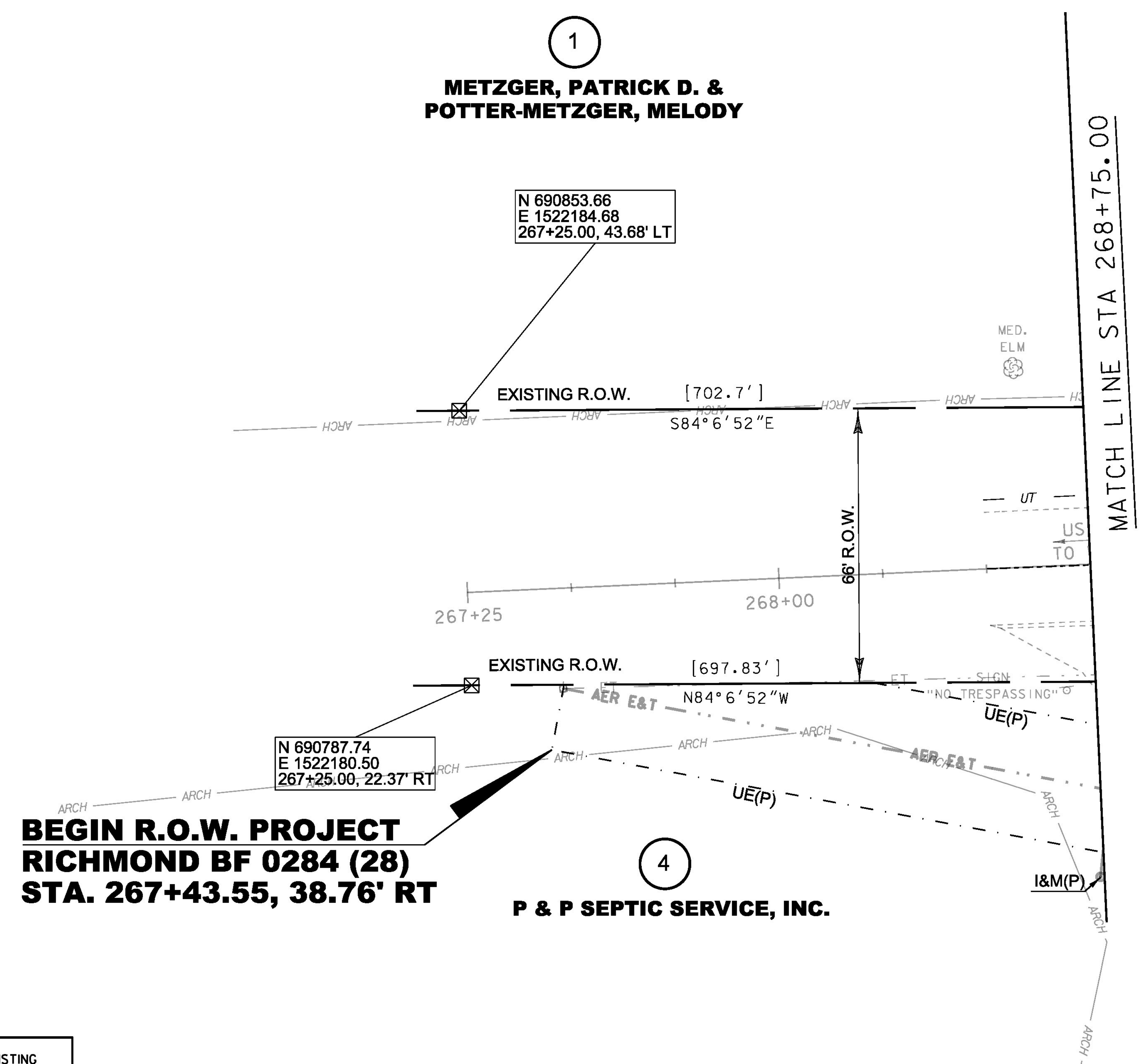
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.15)

REVISIONS	
JANUARY 12, 2015	WHF

PROJECT NAME: RICHMOND
PROJECT NUMBER: BF 0284 (28)

FILE NAME: sl3c070epscdetail.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: S. COLEY
EPSC DETAILS

PLOT DATE: 06-OCT-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 51 OF 54



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.

FOR R.O.W. USE ONLY

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070rowlay.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: A. EGIZI
DESIGNED BY: W. LAMMER	CHECKED BY: R. CLOUTIER
R.O.W. LAYOUT SHEET 1 OF 2	SHEET 52 OF 54

COLD PLANING
BITUMINOUS PAVEMENT
STA. 269+00 - 269+50
STA. 274+00 - 274+50

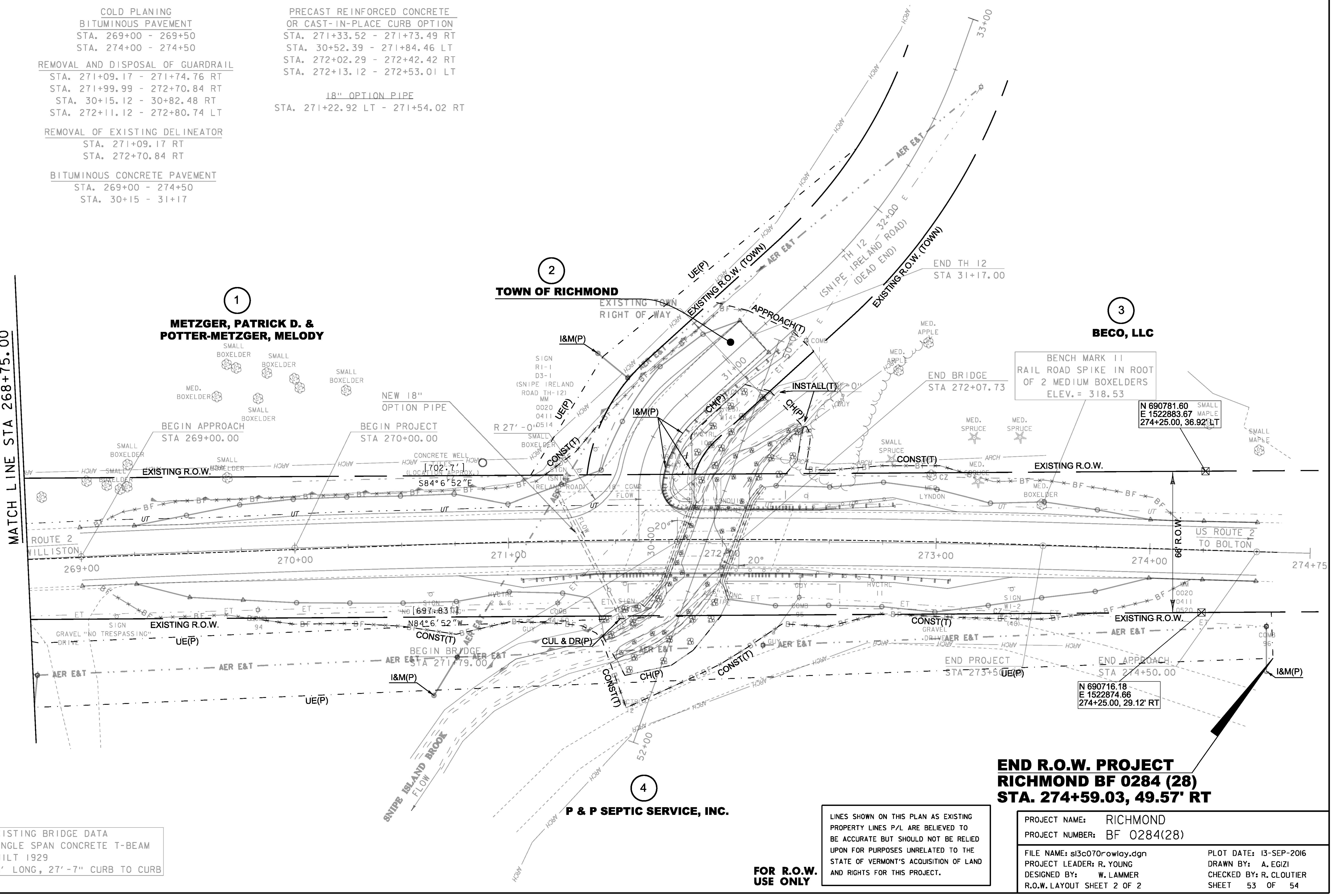
REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 271+09.17 - 271+74.76 RT
STA. 271+99.99 - 272+70.84 RT
STA. 30+15.12 - 30+82.48 RT
STA. 272+11.12 - 272+80.74 LT

REMOVAL OF EXISTING DELINEATOR
STA. 271+09.17 RT
STA. 272+70.84 RT

BITUMINOUS CONCRETE PAVEMENT
STA. 269+00 - 274+50
STA. 30+15 - 31+17

PRECAST REINFORCED CONCRETE
OR CAST-IN-PLACE CURB OPTION
STA. 271+33.52 - 271+73.49 RT
STA. 30+52.39 - 271+84.46 LT
STA. 272+02.29 - 272+42.42 RT
STA. 272+13.12 - 272+53.01 LT

18" OPTION PIPE
STA. 271+22.92 LT - 271+54.02 RT



EXISTING BRIDGE DATA
SINGLE SPAN CONCRETE T-BEAM
BUILT 1929
25' LONG, 27'-7" CURB TO CURB

END R.O.W. PROJECT
RICHMOND BF 0284 (28)
STA. 274+59.03, 49.57' RT

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.

FOR R.O.W. USE ONLY

PROJECT NAME: RICHMOND	
PROJECT NUMBER: BF 0284(28)	
FILE NAME: sl3c070rowlay.dgn	PLOT DATE: 13-SEP-2016
PROJECT LEADER: R. YOUNG	DRAWN BY: A. EGIZI
DESIGNED BY: W. LAMMER	CHECKED BY: R. CLOUTIER
R.O.W. LAYOUT SHEET 2 OF 2	SHEET 53 OF 54

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	ROW LAYOUT NO.	BEGINNING STATION	ENDING STATION	TAKE AREA±	REMAINDER AREA±	RIGHT TYPE	RIGHT T / P	RIGHT AREA ±	RECORDING DATA TITLE TAKEN	RECORDING DATA DATE	RECORDING DATA TOWN / CITY	RECORDING DATA BOOK	RECORDING DATA PAGE	REMARKS
1	METZGER, PATRICK D. &	2	271+10.77 LT	272+61.03 LT			UTILITY	P	2,547 SF						
	POTTER-METZGER, MELODY		271+17 LT	TH12 30+48 LT			CONSTRUCTION	T	197 SF						INCL. BF & EC
			271+43 LT	271+56 LT			INSTALL & MAINTAIN	P							GUY WIRE & ANCHOR
2	TOWN OF RICHMOND	2	271+37 LT	TH-12 31+33 RT			APPROACH	T	4,208 SF						INCL. BF & EC
			271+73 LT	TH-12 30+52 RT			INSTALL & MAINTAIN	P							CONCRETE CURB
			271+73 LT	TH-12 31+22 RT			INSTALL & MAINTAIN	P							GUARD RAIL & GUIDE POST
			271+81.36 LT	272+21.99 LT			CHANNEL	P	483 SF						INCL. STONE FILL
			271+85 LT	271+87 LT			INSTALL & MAINTAIN	P							WINGWALL
3	BECO, LLC	2	271+87.14 LT	272+37.53 LT			CHANNEL	P	1,199 SF						INCL. STONE FILL
			272+22 LT	272+27 LT			INSTALL	T							FILTER CURTAIN
			272+29.59 LT	273+12 LT			CONSTRUCTION	T	294 SF						INCL. BF & EC
			272+33 LT	272+40 LT			INSTALL	T							FILTER CURTAIN
4	P & P SEPTIC SERVICE, INC.	1, 2	267+43.55 RT	274+59.03 RT			UTILITY	P	0.45 A						19,706 SF±
			268+74 RT	268+77 RT			INSTALL & MAINTAIN	P							GUY WIRE & ANCHOR
			269+78 RT	272+73 RT			CONSTRUCTION	T	1,908 SF						INCL. BF & EC
			270+63 RT	270+75 RT			INSTALL & MAINTAIN	P							GUY WIRE & ANCHOR
			271+42.02 RT	271+99.68 RT			CHANNEL	P	1,065 SF						INCL. STONE FILL
			271+51 RT	271+55 RT			CULVERT & DRAIN	P							
			272+81 RT	273+75 RT			CONSTRUCTION	T	144 SF						INCL. BF & EC
			274+55 RT	274+56 RT			INSTALL & MAINTAIN	P							PUSH BRACE
5	GREEN MOUNTAIN POWER CORPORATION		267+43.55 RT	274+59.03 RT											UTILITY
6	WAITSFIELD AND CHAMPLAIN VALLEY		267+43.55 RT	274+59.03 RT											UTILITY
	TELECOM														
7	COMCAST OF CONNECTICUT/GEORGIA/		267+43.55 RT	274+59.03 RT											UTILITY
	MASSACHUSETTS/NEW HAMPSHIRE/														
	NEW YORK/NORTH CAROLINA/VIRGINIA/														
	VERMONT, LLC														
8	TELEPHONE OPERATING COMPANY		267+43.55 RT	274+59.03 RT											UTILITY
	OF VERMONT, LLC														

TABLE OF REVISIONS

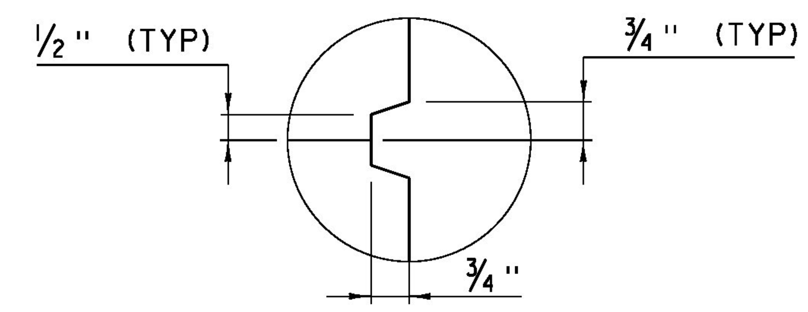
REVISION NO.	ROW SET SHEET #	DESCRIPTION	DATE
1	3	PARCEL 4, P&P SEPTIC - ADD CULVERT &	03/02/16
		DRAIN(P) BEGIN STA. 271+51 RT AND	
		END STA. 271+55 RT ON DETAIL SHEET.	
		REV BY: MT CO 10085 APPR BY: RC	

APPROVED: RYAN CLOUTIER DATE: 12-10-15
CHIEF, PLANS & TITLES

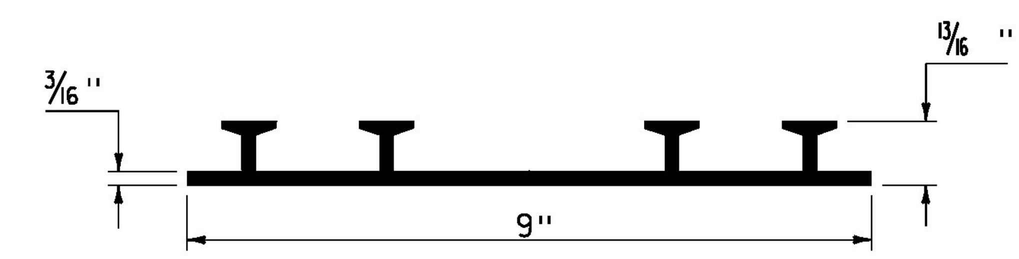
PROJECT NAME:	RICHMOND		
PROJECT NUMBER:	BF 0284(28)		
FILE NAME:	r13c070detail.xls	PLOT DATE:	13-SEP-2016
PROJECT LEADER:	R. YOUNG	DRAWN BY:	M. TROTTIER
DESIGNED BY:	A. EGIZI	CHECKED BY:	R. CLOUTIER
R.O.W. DETAIL SHEET		SHEET 54	OF 54

CONCRETE GENERAL NOTES

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.



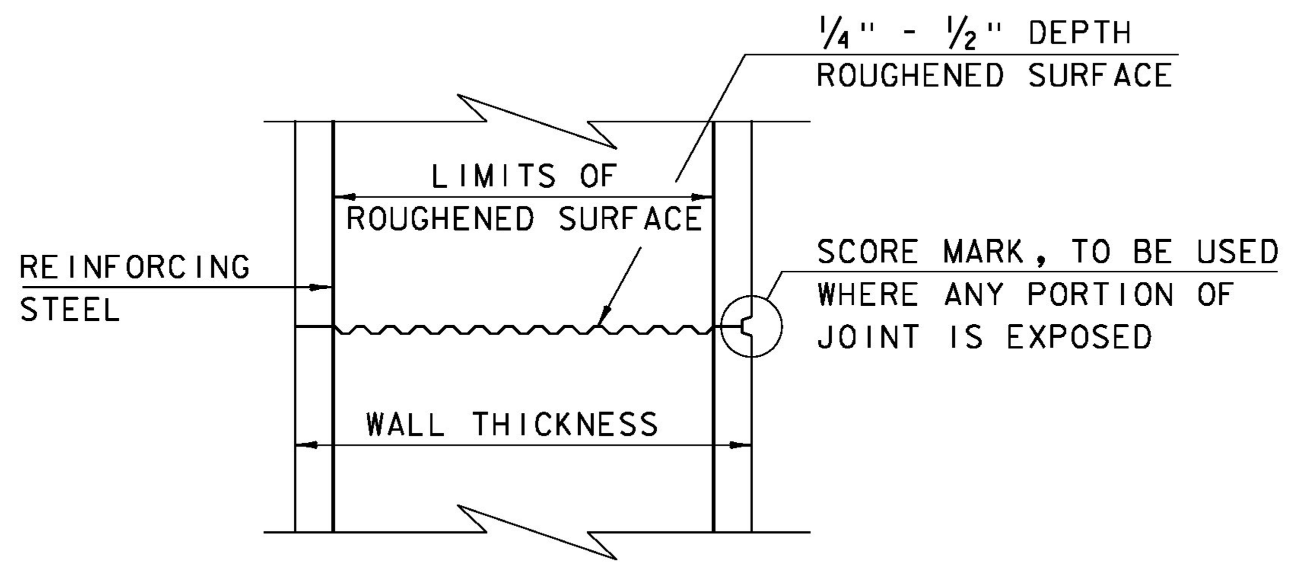
SCORE MARK DETAIL
(NOT TO SCALE)



P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS
(NOT TO SCALE)

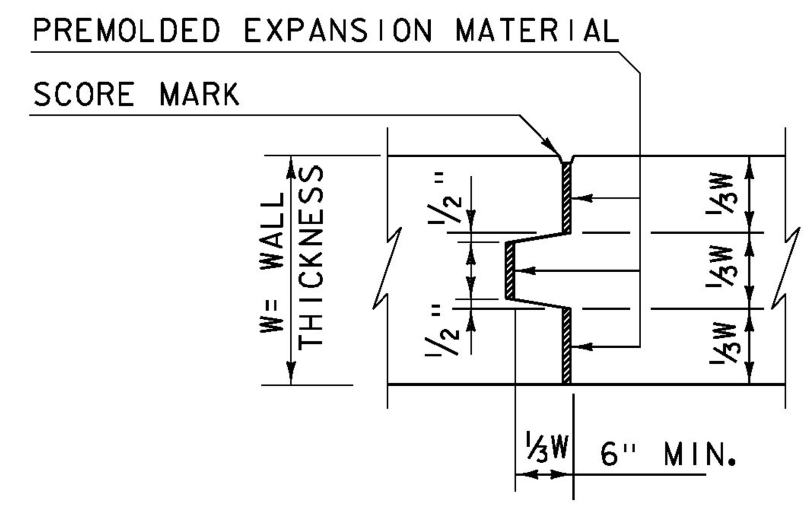
PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

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

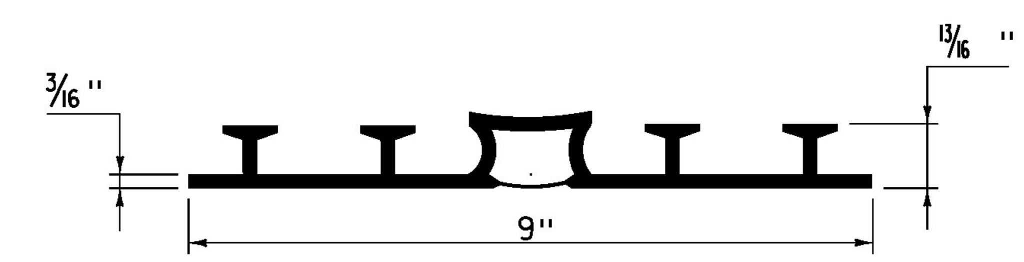


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



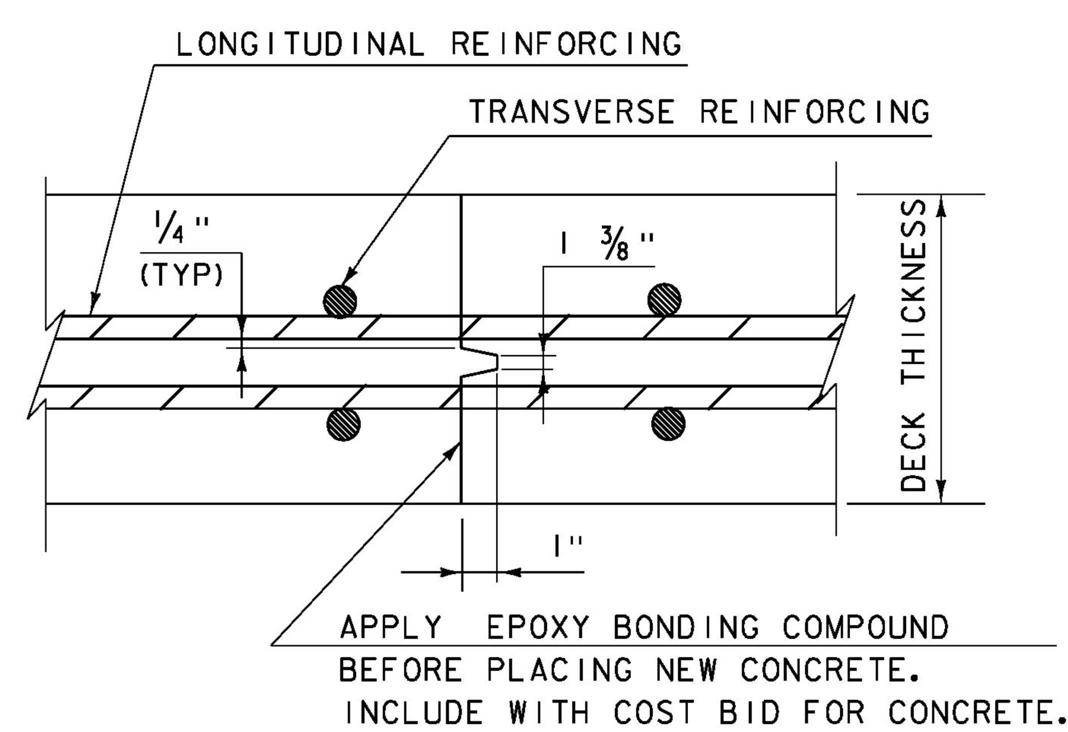
TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



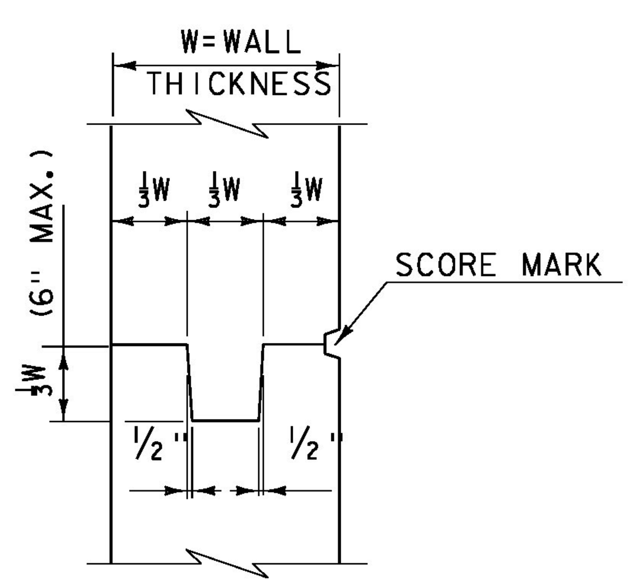
P.V.C. WATERSTOP FOR EXPANSION JOINTS
(NOT TO SCALE)

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

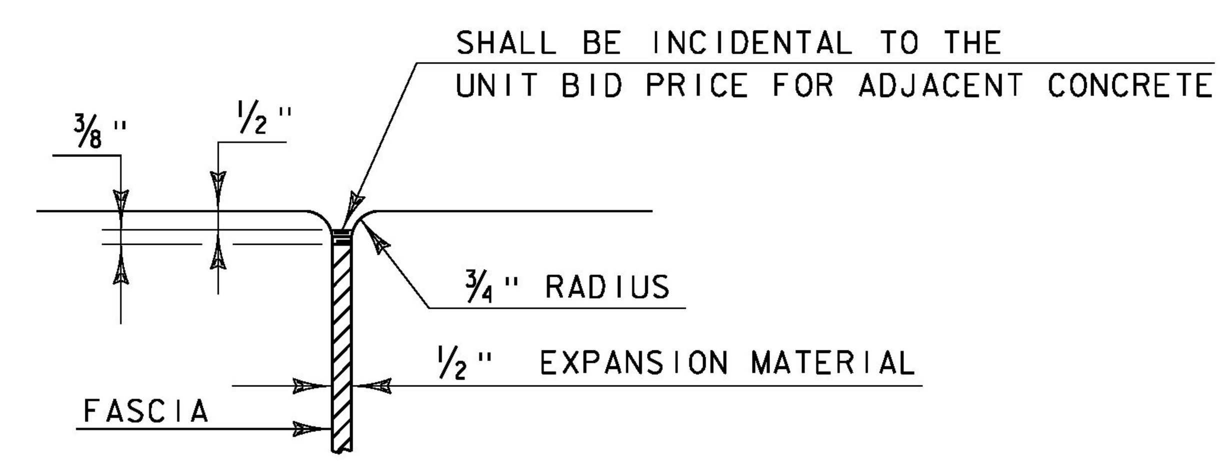
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



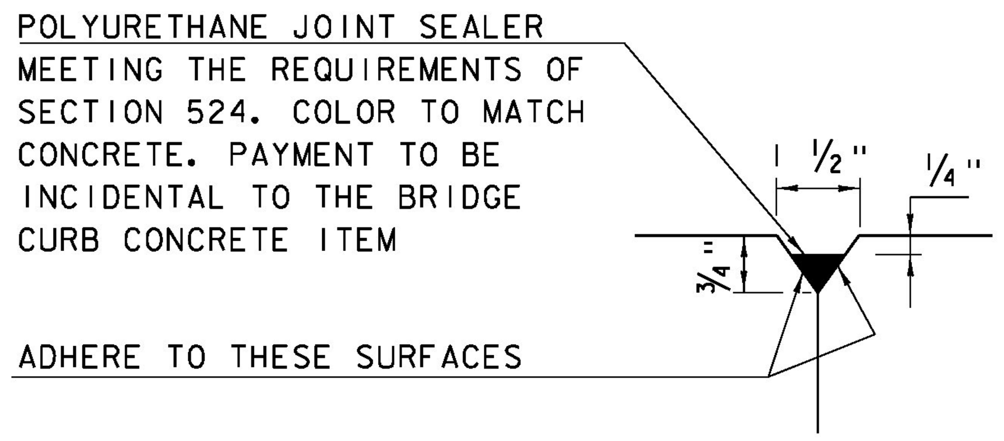
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

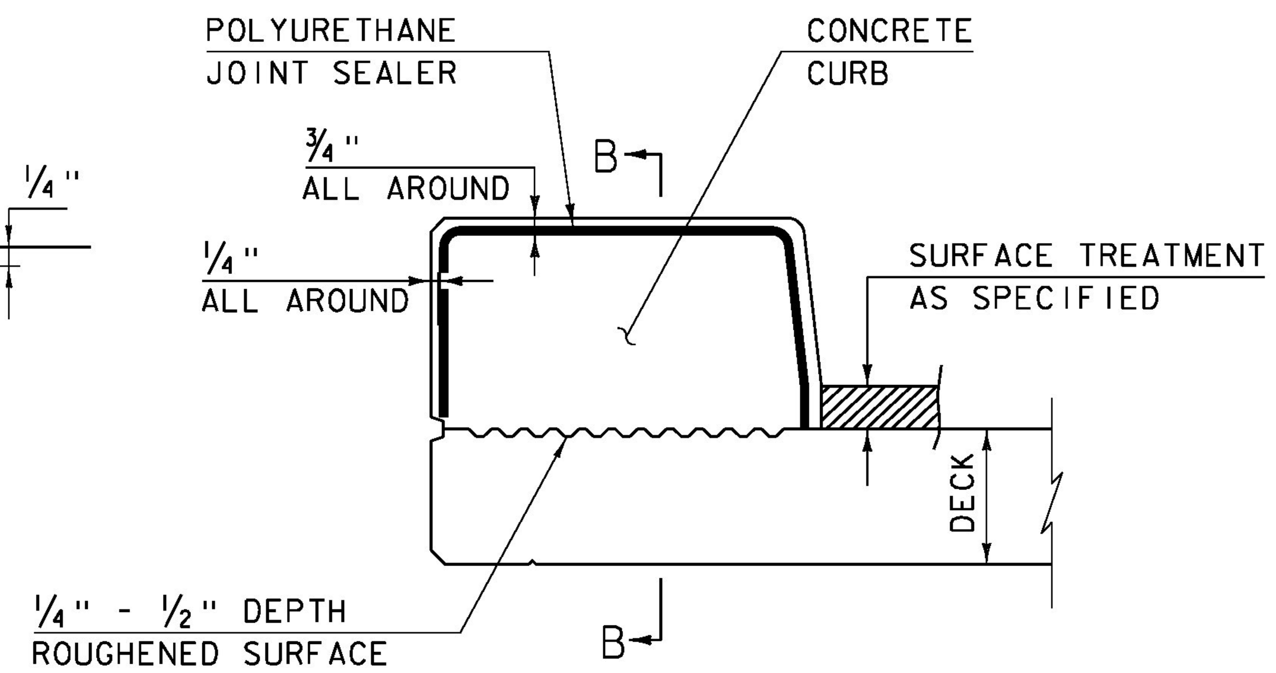
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-501.00

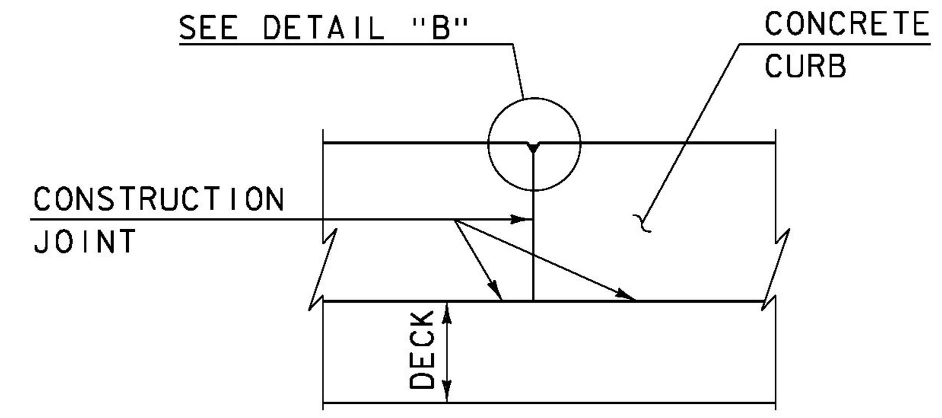


DETAIL "B"
(NOT TO SCALE)

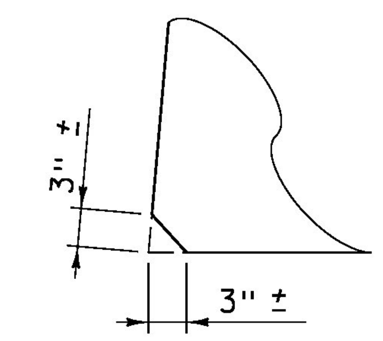


CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

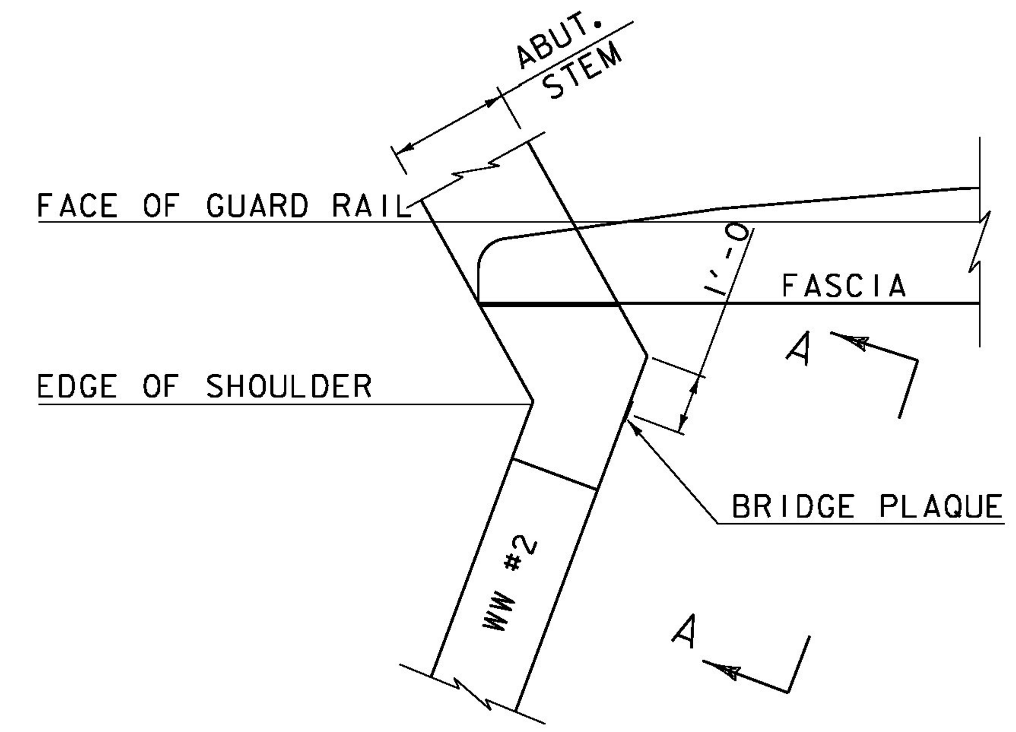
1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



SECTION B - B
(NOT TO SCALE)



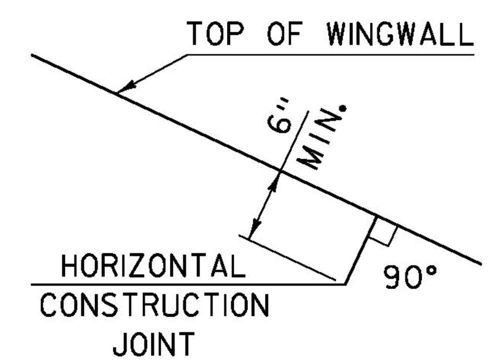
ACUTE ANGLE
CLIP DETAIL
(NOT TO SCALE)



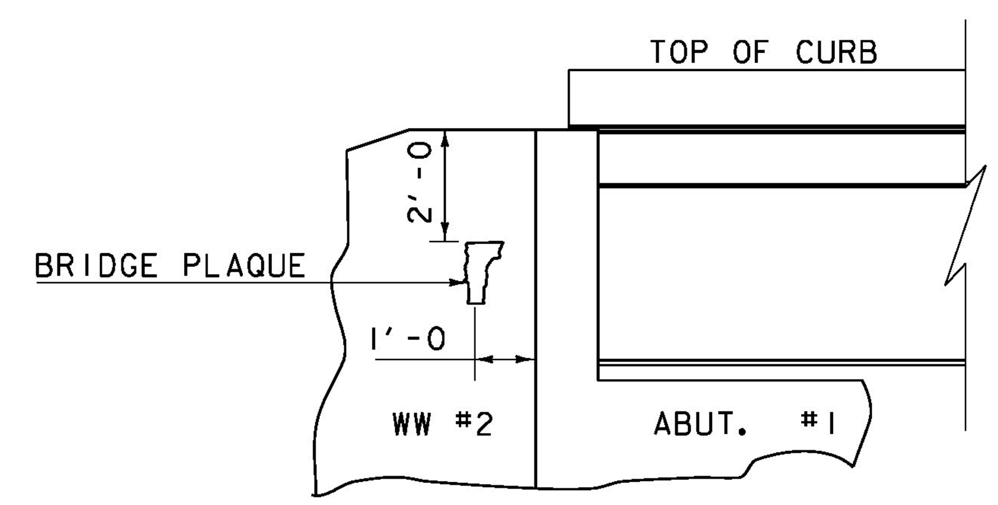
PLAN

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.

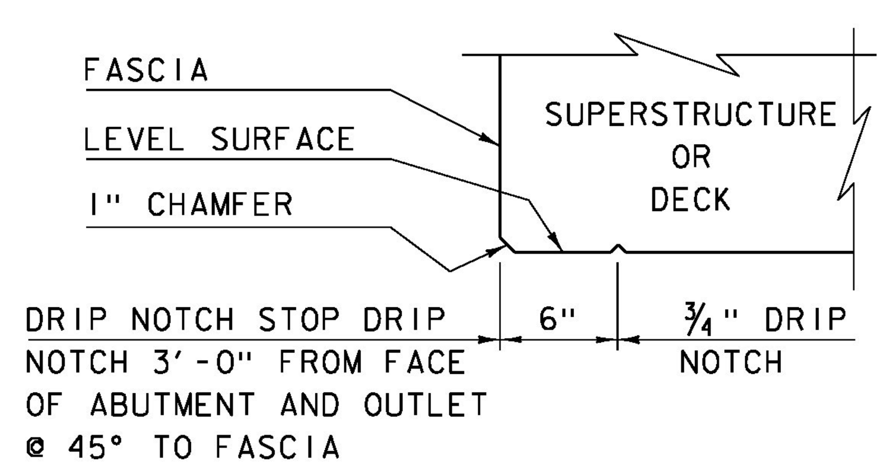


HORIZONTAL WINGWALL
CONSTRUCTION JOINT
(NOT TO SCALE)



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)



DRIP NOTCH DETAIL
(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.

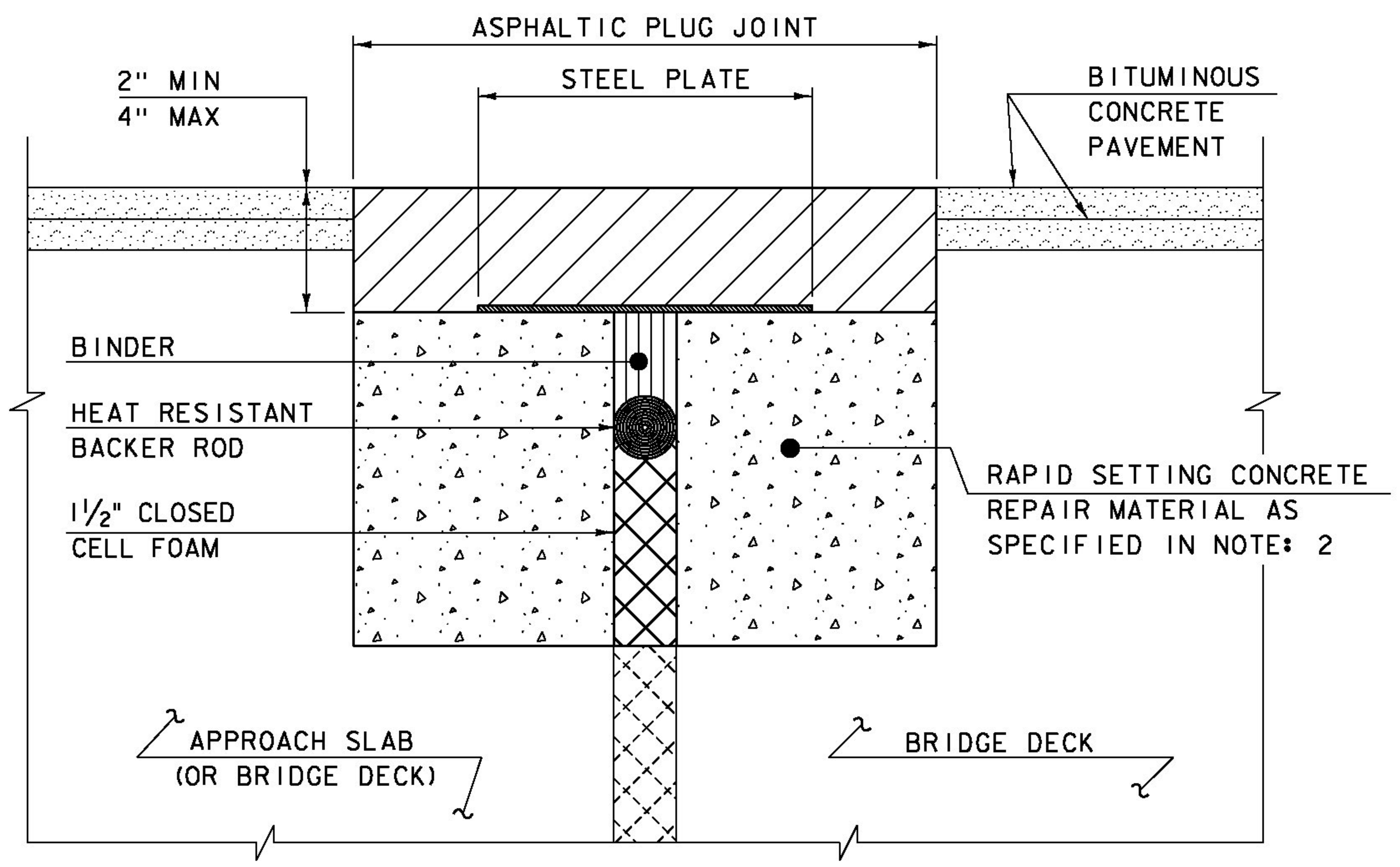
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS
OCTOBER 10, 2012	MODIFIED HORZ. JOINT WINGWALL ADD 6" MIN. DIMENSION

CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION · STRUCTURES SECTION

STRUCTURES DETAIL
SD-502.00



ASPHALTIC PLUG JOINT DETAIL - REHAB

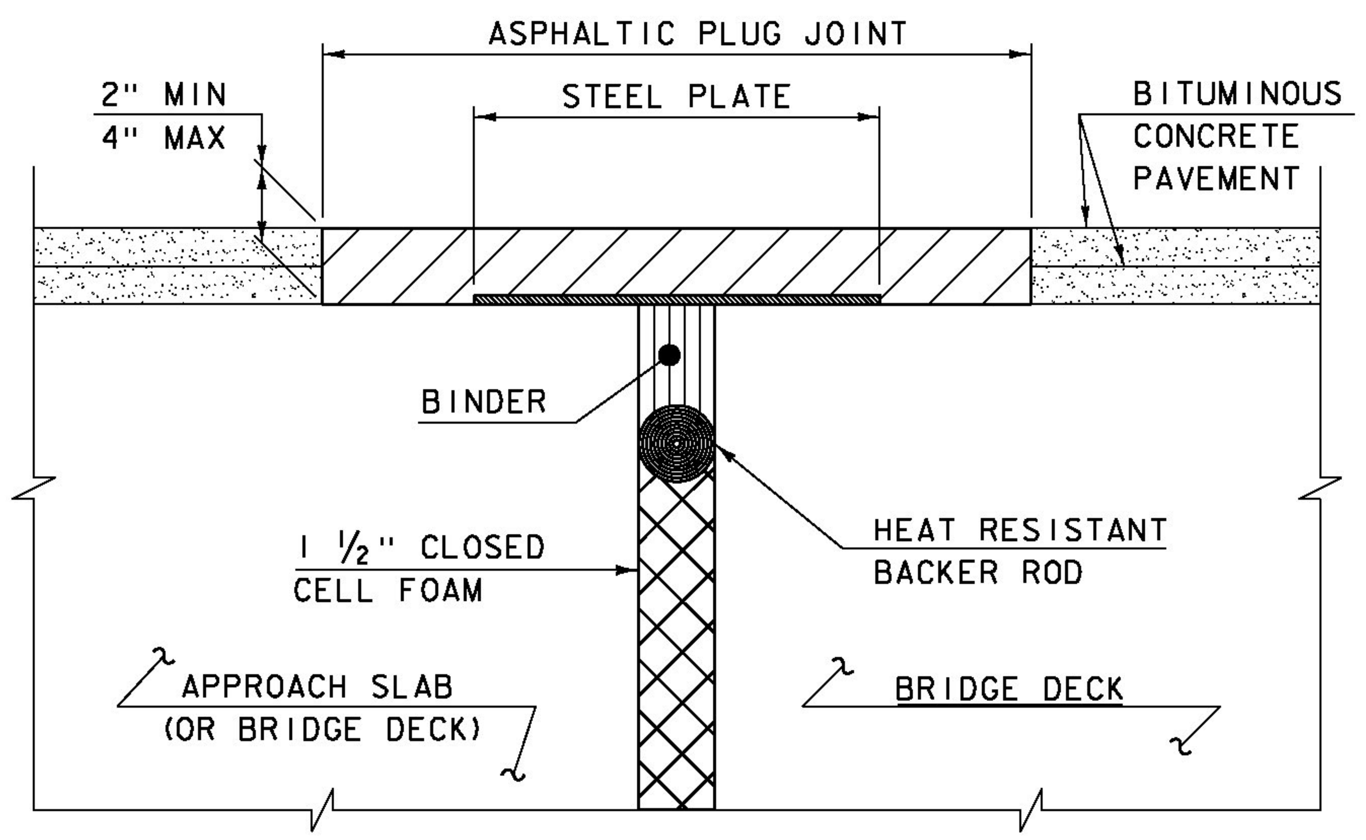
NOTES:

1. THE CONTRACTOR SHALL REMOVE ALL ASPHALTIC PLUG JOINT MATERIAL AND DETERIORATED CONCRETE AS DIRECTED BY THE ENGINEER. REMOVAL OF THE FIRST 4 INCHES OF MATERIAL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 516.10 BRIDGE EXPANSION JOINT, ASPHALTIC PLUG. ANY REMOVAL OF MATERIAL GREATER THAN 4 INCHES SHALL BE INCLUDED IN THE BID PRICE OF ITEM 580.20 RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE.

2. THE CONTRACTOR SHALL REPLACE REMOVED MATERIAL THAT IS LESS THAN 4" FROM FINISHED GRADE WITH ASPHALTIC PLUG JOINT MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 707.15. ALL REMOVED MATERIAL THAT IS GREATER THAN 4 INCHES FROM FINISHED GRADE SHALL BE REPLACED WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.

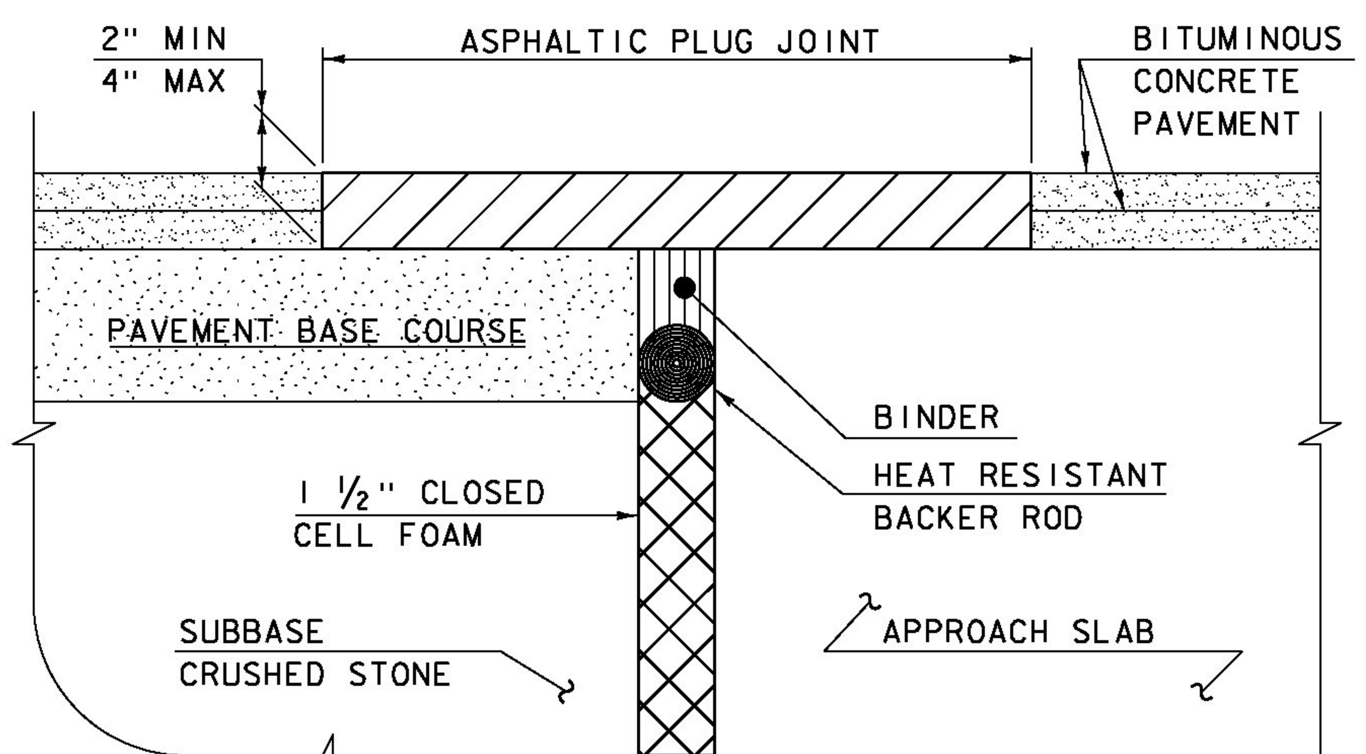
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

4. 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 PRE-STAMPED 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.



ASPHALTIC PLUG JOINT DETAIL "A" - NEW

NOTE:
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 PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER.



ASPHALTIC PLUG JOINT DETAIL "B" - NEW

ASPHALTIC PLUG JOINT NOTES

INSTALLATION:

1. LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT, MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
2. 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 PNEUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.
3. BLAST CLEAN THE JOINT AREA OF DEBRIS, ASPHALT AND SHEET MEMBRANE. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
4. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
5. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
6. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.

WEATHER LIMITATIONS

APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER:

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

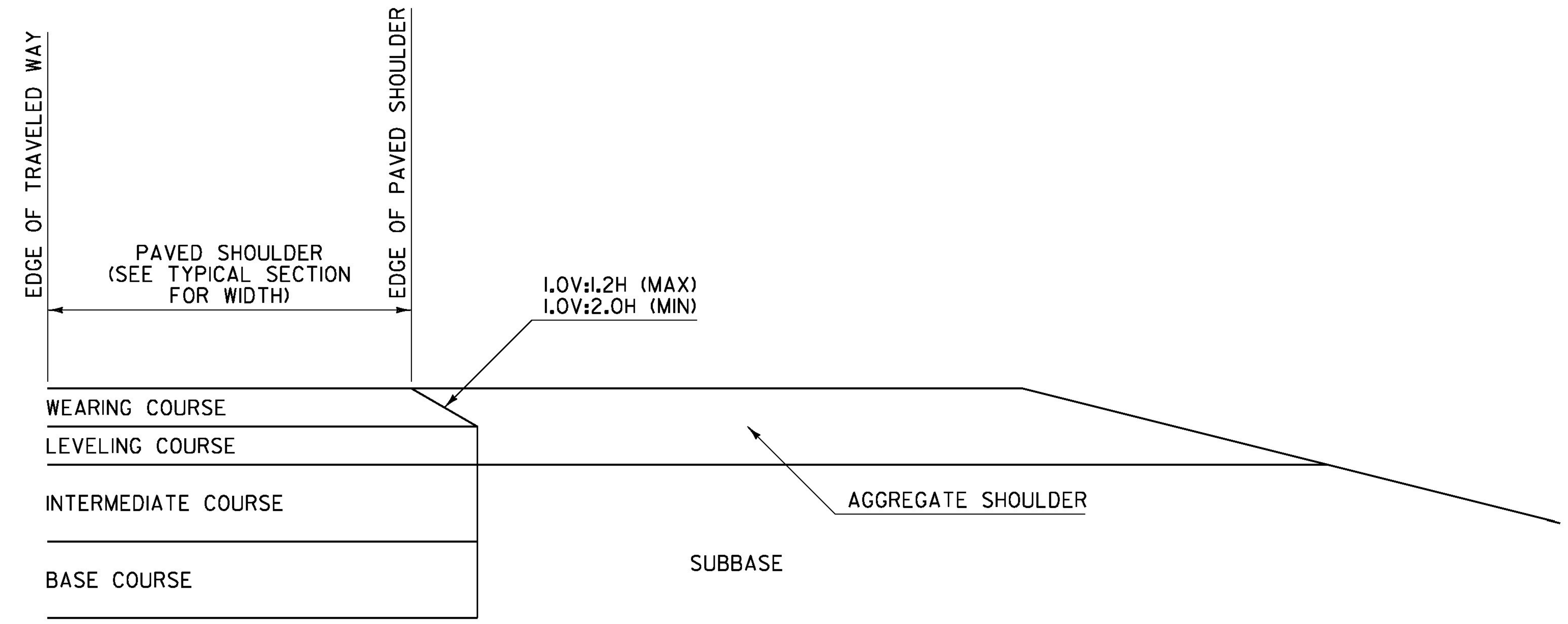
DETAILS ON THIS SHEET ARE NOT TO SCALE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
AUGUST 29, 2011	ADD DETAIL "B" AND REV. NOTES

BRIDGE JOINT ASPHALTIC PLUG

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

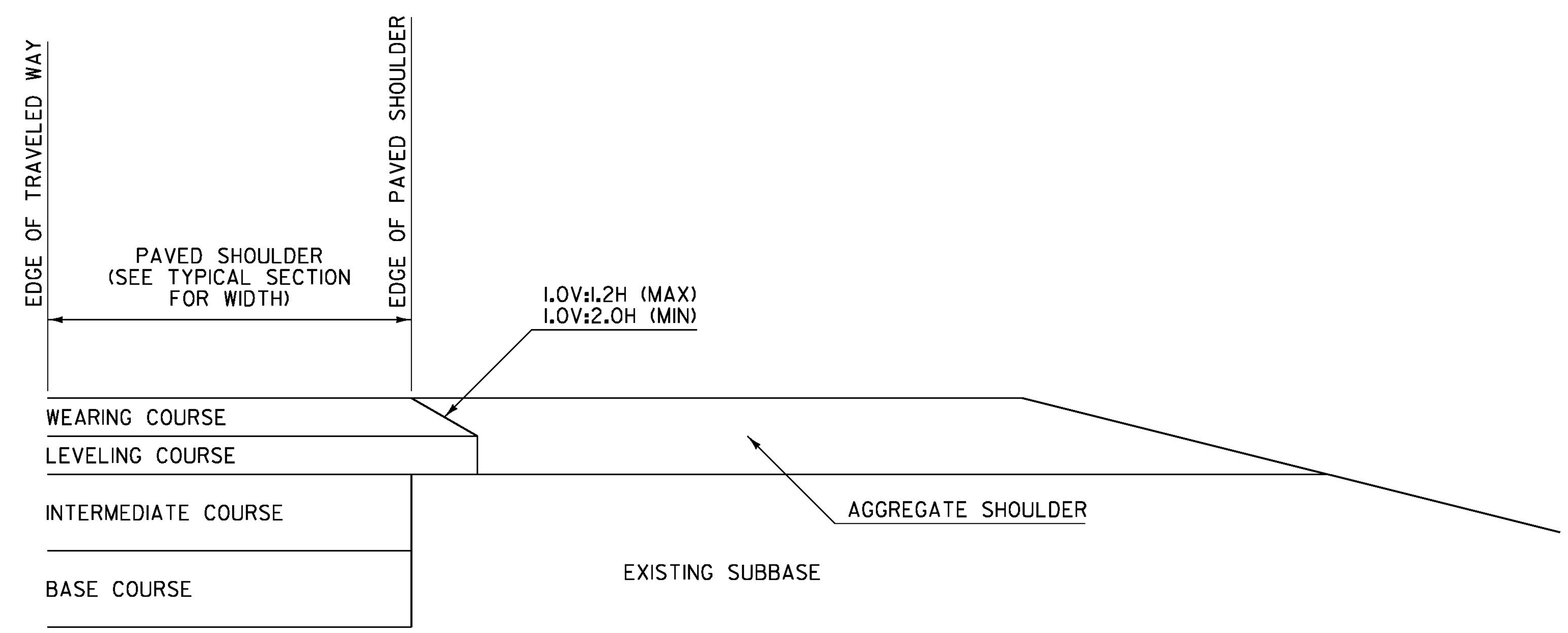
STRUCTURES DETAIL
SD-516.10



SAFETY EDGE DETAIL
FOR PAVING BELOW WEARING COURSE

NOTES:

1. THIS DETAIL IS INTENDED FOR WHEN PAVING EXTENDS BELOW THE WEARING COURSE.
2. PRIOR TO PLACEMENT OF THE LEVELING AND/OR WEARING COURSE, THE SUBBASE LOCATED BENEATH THE AGGREGATE SHOULDER SHALL BE PREPARED FLUSH WITH THE BOTTOM OF THE LEVELING COURSE.
3. BASE COURSE LIMITS MAY VARY, SEE TYPICAL SECTIONS FOR WIDTH.



SAFETY EDGE DETAIL
FOR PAVING WEARING COURSE ONLY

NOTES:

1. THIS DETAIL IS INTENDED FOR WHEN ONLY THE LEVELING AND/OR WEARING COURSE IS TO BE PLACED.
2. PAVEMENT COURSES MAY VARY, SEE TYPICAL SECTIONS FOR ACTUAL PAVEMENT COURSES REQUIRED.

SAFETY EDGE WIDTH BASED ON WEARING COURSE THICKNESS AND A 1V:1.6H SLOPE

WEARING COURSE THICKNESS (INCHES)	NOMINAL SAFETY EDGE WIDTH (INCHES)
1.25	2.000
1.50	2.375
1.75	2.750
2.00	3.125
2.25	3.500
2.50	4.000

GENERAL NOTES:

1. PLACEMENT OF THE WEARING COURSE SHALL INCLUDE THE SAFETY EDGE, UNLESS THE FOLLOWING APPLIES:
   - A. THE ADJACENT SLOPE IS STEEPER THAN THE SAFETY EDGE.
   - B. THE EDGE OF PAVEMENT BEING PLACED ABUTS BOUND MATERIAL.
   - C. VEHICLES ARE RESTRICTED FROM LEAVING THE PAVED SURFACE (EXAMPLE: GUARDRAIL).
2. THE SAFETY EDGE SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE SLOPE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
3. THE SAFETY EDGE SHALL NOT BE CONSIDERED PART OF THE PAVED SHOULDER.
4. THIS WORK SHALL BE INCIDENTAL TO THE RESPECTIVE BITUMINOUS CONCRETE PAVEMENT ITEM.

REV.	DATE	DESCRIPTION
0	MAR. 29, 2016	ORIGINAL APPROVAL

OTHER DETAILS REQUIRED: NONE

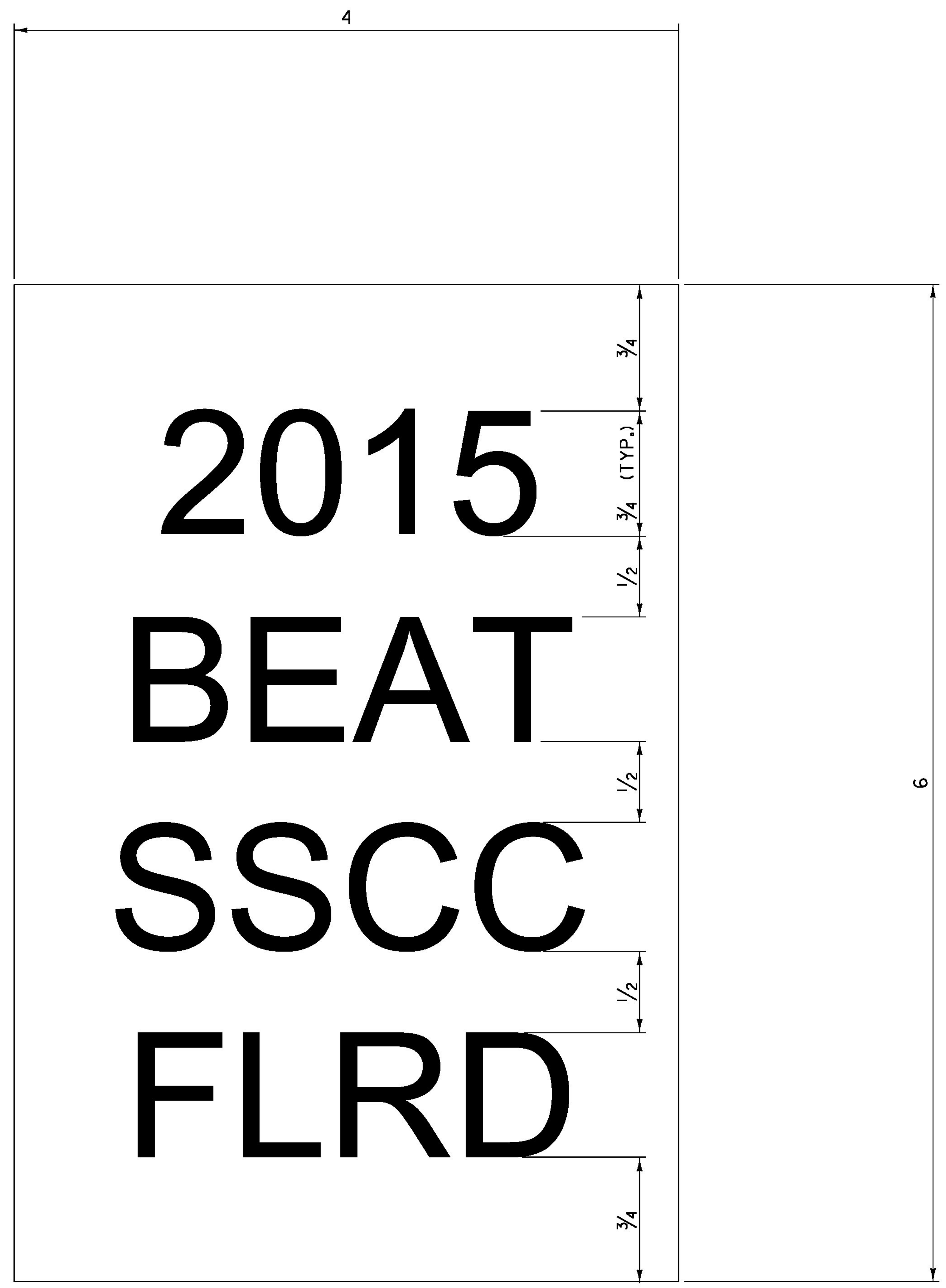
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

SAFETY EDGE DETAILS

VTrans Working to Get You There VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

HSD-400.01



GENERAL NOTES:

1. LINE ONE SHALL INDICATE THE INSTALLATION YEAR (YYYY).
2. LINE TWO SHALL INDICATE THE MODEL AS IDENTIFIED ON THE APPROVED PRODUCTS LIST. FOR GENERIC INSTALLATIONS THE STANDARD DRAWING DESIGNATION OR NAME AS IDENTIFIED IN THE FHWA ELIGIBILITY LETTER SHALL BE USED.
3. LINE THREE SHALL SHALL INDICATE ADDITIONIAL MODEL INFORMATION IF NECESSARY.
4. LINE FOUR SHALL INDICATE FLARED (FLRD) OR TANGENT (TANG).
5. LEGEND SHALL BE ONE ARIEL FONT.
6. LEGEND SHALL BE BLACK ON A WHITE BACKGROUND, LENGEND AND BACKGROUND SHALL NOT BE REFLECTIVE.
7. SUITABLE MATERIAL SHALL BE USED SO AS TO NOT DETERIORATE DURING EXPOSURE TO WEATHER.
8. LABELS SHALL BE APPLIED IN SUCH A WAY THAT THEY REMAIN INTACT DURING THE LIFE OF THE TERMINAL.
9. FOR W-BEAM GUARDRAIL, LABEL SHALL BE PLACED ON THE TOP OF POST ONE FACING AWAY FROM TRAFFIC.
10. FOR BOX BEAM GUARDRAIL, LABEL SHALL BE PLACED ON THE BOX BEAM ADJACENT TO POST ONE FACING AWAY FROM TRAFFIC.
11. PAYMENT SHALL BE INCIDENTAL TO OTHER TRAFFIC BARRIER ITEMS.
12. ALL DIMENSIONS IN INCHES.

REV.	DATE	DESCRIPTION
0	NOV. 3, 2015	ORIGINAL APPROVAL

OTHER DETAILS REQUIRED: NONE

DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN

GUARDRAIL TERMINAL LABEL DETAIL

VTrans Working to Get You There VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

HSD-621.06

REVIEWED
By Stephen Coley (stephen.coley@vermont.gov) at 5:40 pm, Apr 24, 2017

REVIEWED
By Jim Wild (jim.wild@vermont.gov) at 8:57 am, Apr 25, 2017

Mix designs submitted. Add note with mix numbers and approved date.

REVIEWED
By Nick Van Den Berg (nick.vandenberg@vermont.gov) at 6:26 am, May 01, 2017

REVIEWED
By Phil Harrington (phillip.harrington@state.vt.us) at 9:14 am, May 02, 2017

Should reference the approved mix design(s) that will be used for the project

GENERAL NOTES:

1. THE PLANS ARE INTENDED TO BE DRAWN TO SCALE. HOWEVER, IF A CRITICAL DIMENSION IS NOT PROVIDED, WHITE MOUNTAIN PRECAST, LLC SHOULD BE CONTACTED FOR VERIFICATION.

2. IF ANY OF THE WORK TO BE DONE AS SHOWN ON THE DRAWINGS DOES NOT CORRESPOND WITH THE EXISTING FIELD CONDITIONS, CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.

3. FIELD-VERIFY ALL ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. IF THERE ARE ANY DISCREPANCIES, CONSULT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.

4. MAINTAIN MINIMUM 60 DEGREE SLING ANGLE WHEN HANDLING PRECAST COMPONENTS.

5. PRECAST COMPONENTS SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI PRIOR TO STRIPPING, AND HANDLING, THEN THE MINIMUM DESIGN COMPRESSIVE STRENGTH PRIOR TO SHIPPING, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

6. ALL HORIZONTAL JOINTS AND VOIDS SHALL BE FILLED WITH NON-SHRINK GROUT. VERTICAL SURFACE GAPS BETWEEN UNITS TO BE FILLED WITH FIVE STAR STRUCTURAL CONCRETE V/0 (VERTICAL/OVERHEAD PERMANENT REPAIR).

7. ALL EXPOSED EDGES TO BE CHAMFERED ¾" UNLESS OTHERWISE NOTED. ALL EXPOSED SURFACES SHOULD BE COATED IN THE FIELD WITH AN OWNER-APPROVED WATER REPELLANT (SUPPLIED AND APPLIED BY OTHERS).

8. SHOP DRAWINGS WERE DEVELOPED USING THE FOLLOWING RESOURCES:
- STATE OF VERMONT AGENCY OF TRANSPORTATION PLANS FOR TOWN OF RICHMOND, COUNTY OF CHITTENDEN, ROUTE No. US 2, RURAL MAJOR COLLECTOR, BRIDGE #32, APPROVED 9/8/2016.
- VAOT STANDARD SPECIFICATION FOR CONSTRUCTION, 2011, SECTION 540.

9. IF THERE IS ADDITIONAL INFORMATION PERTINENT TO THE FABRICATION AND INSTALLATION OF THESE UNITS THAT IS NOT CONTAINED WITHIN THE RESOURCES LISTED ABOVE IT SHALL BE BROUGHT TO THE ATTENTION OF WHITE MOUNTAIN PRECAST, LLC. FAILURE TO MAKE SUCH ADDITIONAL INFORMATION AVAILABLE SHALL RELIEVE WHITE MOUNTAIN PRECAST, LLC OF ALL LIABILITIES ARISING FROM ERRORS OR OMISSIONS RELATED TO THE OMITTED INFORMATION.

THREE SIDED RIGID FRAME NOTES:

1. THREE SIDED RIGID FRAME SECTIONS ARE DESIGNED IN ACCORDANCE WITH
- AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 6TH EDITION.
- VTDOT "SPECIFICATIONS FOR CONSTRUCTION, DATED 2011"

2. THE FOLLOWING CRITERIA WAS USED FOR DESIGN:
- LIVE LOAD: AASHTO HL-93
- EARTH COVER: 1.99' MAX. (NO EARTH FILL ACTUAL – DESIGN ACCOUNTS FOR ASPHALT/FUTURE WEARING)
- BACKFILL SOIL UNIT WEIGHT: 140 PCF
- MINIMUM LATERAL EARTH PRESSURE: 30PSF
- MAXIMUM LATERAL EARTH PRESSURE: 60 PSF
- CONCRETE STRENGTH: 6,500 PSI
- STEEL YIELD STRENGTH: 60,000 PSI
- MINIMUM STRIPPING/HANDLING STRENGTH: 3,000 PSI

3. RIGID FRAME CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 6,500 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 AND VTRANS SECTION 540.02, WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150.

4. REINFORCING SHALL BE GRADE 60 DEFORMED EPOXY BARS CONFORMING TO ASTM A775 AND VTRANS SECTION 507 & CURRENT SP'S. ALL BARS SHALL BE BENT COLD.

5. RIGID FRAME UNITS TO BE STORED UPRIGHT WITHOUT DUNNAGE. UNITS TO BE SHIPPED ON SIDE WITHOUT DUNNAGE.

6. BACKFILL MATERIAL SHALL CONFORM TO VTRANS SECTION 704.08 GRANULAR BACKFILL FOR STRUCTURES. PLACEMENT SHALL CONFORM TO VTRANS SECTION 204.08.

7. EACH SECTION SHALL BE CONNECTED WITH A C.I.P. CLOSURE POUR, BY OTHERS. SEE DETAILS IN DRAWING SET FOR ADDITIONAL INFORMATION. CLOSED-CELL NEOPRENE JOINT SEALANT SHALL BE USED IN ALL JOINTS UNLESS NOTED OTHERWISE.

Yes, item # specifies 5ksi, but design was submitted for 4ksi. Discussed with PM and this is ok.

540.05(e) = 5 ksi minimum 28 day compressive strength

PRECAST CONCRETE PILE CAP NOTES:

1. FOOTING SECTIONS ARE DESIGNED IN ACCORDANCE WITH
- AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 6TH EDITION.
- VTRANS "SPECIFICATIONS FOR CONSTRUCTION" DATED 2011.

2. THE FOLLOWING CRITERIA WAS USED FOR DESIGN:
- BACKFILL SOIL UNIT WEIGHT: 140 PCF
- BACKFILL SOIL FRICTION ANGLE: 31 DEG
- CONCRETE STRENGTH: 4,000 PSI
- STEEL YIELD STRENGTH: 60,000 PSI
- PILE DESIGN BY OTHERS

3. FOOTING CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150. STRIPPING AND HANDLING AT 3,000 PSI MINIMUM

4. REINFORCING SHALL BE GRADE 60 DEFORMED BLACK BARS CONFORMING TO ASTM A-615/AASHTO M31/VTRANS SECTION 507 AND CURRENT SP'S. ALL BARS SHALL BE BENT COLD.

5. FOOTINGS TO BE STORED AND SHIPPED UPRIGHT WITHOUT DUNNAGE.

6. SUBGRADE PREPARATION SHALL CONFORM TO VTRANS SECTION 704.08. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A). ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL.

7. EACH FOOTING SECTION SHALL BE PROVIDED WITH EXTENDED REBAR FOR ATTACHMENT TO ADJACENT SECTIONS. HPC-RS PER VTRANS SECTION 900 TO BE USED TO INFILL NOTED AREAS BETWEEN UNITS AND CURED (BY OTHERS), PRIOR TO ERECTION OF BRIDGE UNITS.

8. CAST-IN PILE BLOCKOUTS TO BE CORRUGATED METAL PIPE PER ASTM A760.

WING WALL NOTES:

1. SECTIONS ARE DESIGNED IN ACCORDANCE WITH
- AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 6TH EDITION
- VTRANS "STANDARD SPECIFICATIONS FOR CONSTRUCTION" DATED 2011.

2. THE FOLLOWING SOIL PROPERTIES WERE USED IN THE DESIGN:

	SOIL WEIGHT [PCF]	FRICTION ANGLE [DEG]
• RETAINED SOIL	140	31
• FOUNDATION SOIL	140	31

- LIVE LOAD SURCHARGE = 2FT EQUIVALENT HEIGHT OF SOIL AS REQ'D. SEE WW DESIGN.
- BACKSLOPE ANGLE: NONE, WALL DESIGNED FULL HEIGHT.
- ANTICIPATED BEARING PRESSURE = 3,000PSF (SERVICE I), 4,000PSF (STRENGTH I)

CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE FOUNDATION MATERIAL ACHIEVES THE DESIGN FACTORED BEARING RESISTANCE.

3. CONCRETE SHALL BE SELF-CONSOLIDATING CONFORMING TO ASTM C260 WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. AGGREGATE SHALL CONFORM TO ASTM C-33 AND VTRANS SECTION 540.02, WITH A MAXIMUM DIAMETER OF 3/4". CEMENT SHALL CONFORM TO ASTM C150. STRIPPING AND HANDLING AT 3,000 PSI MINIMUM.

4. REINFORCING SHALL BE GRADE 60 DEFORMED EPOXY BARS CONFORMING TO ASTM A775 AND VTRANS SECTION 507 & CURRENT SP'S. ALL BARS SHALL BE BENT COLD.

5. WING WALLS TO BE STORED AND SHIPPED FACE DOWN WITH FULL-LENGTH TIMBER DUNNAGE LOCATED BELOW LIFT ANCHOR POINTS.

6. BACKFILL SHALL CONFORM TO VTRANS SECTION 704.08 GRANULAR BACKFILL. PLACEMENT SHALL CONFORM TO VTRANS 204.08.

7. SUBGRADE PREPARATION SHALL CONFORM TO VTRANS SECTION 704.08. FOOTINGS SHALL BE PLACED AT ELEVATIONS SHOWN ON A MINIMUM OF 1'-0" OF CRUSHED STONE CONFORMING TO VTRANS 704.05(A), EXTEND BACKFILL 1'-6" BEYOND THE STRUCTURE. ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL.

CURING

1. THIS SECTION APPLIES TO ALL PRECAST PIECES CAST IN EACH RESPECTIVE LOT. ALL CURING PROCEDURES SHALL ADHERE TO THE REQUIREMENTS OF SECTION 540.08 OF THE VT STANDARD SPECIFICATIONS FOR CONSTRUCTION 2011 EDITION.
2. AS SOON AS PRACTICAL AFTER PLACEMENT OF FRESH CONCRETE THE CASTING FORMS SHALL BE COVERED WITH POLYETHYLENE SHEETING UNTIL STRIPPING STRENGTH HAS BEEN ACHIEVED.
3. ONCE STRIPPING STRENGTH HAS BEEN ACHIEVED THE PRECAST PRODUCT SHALL BE REMOVED FROM THE FORM AND PLACED IN A DESIGNATED CURING AREA (INTERIOR OR EXTERIOR DEPENDING ON WEATHER CONDITIONS)
4. AT THE DESIGNATED CURING AREA THE PRECAST SHALL BE CURED USING ONE OF THE APPROVED METHODS IN SECTION 501.17 UNTIL DESIGN STRENGTH HAS BEEN ACHIEVED.
-FOR VAOT PROJECT# BF 0284 (28) – RICHMOND, VT ROUTE 2, BRIDGE #32 THE FOLLOWING METHOD WILL BE UTILIZED; 501.17 (4) – WHITE POLYETHYLENE SHEETING METHOD.
5. THE TEMPERATURE MONITORING METHOD WILL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING WITH THE CONTRACTOR AND VAOT PERSONNEL.
5. AS SOON AS THE DESIGN STRENGTH HAS BEEN ACHIEVED THE PRODUCT WILL BE REMOVED FROM THE CURING AREA AND TRANSPORTED TO THE STAGING AREA WHERE IT WILL BE STORED UNTIL SHIPPING.

FINISH

1. ALL PRECAST COMPONENTS WILL HAVE A STEEL FORM FINISH ON THE VISIBLE FACES. THE BURIED SIDE OF THE WINGWALLS AND CURBWALLS WILL BE THE POUR FACE AND WILL HAVE A STEEL TROWEL FINISH. THE BRIDGE SECTIONS WILL HAVE A STEEL FORM FINISH ON ALL FACES EXCEPT THE TOP OF THE DECK, THIS WILL HAVE A STEEL TROWEL FINISH.
2. ANY AND ALL REPAIR PROCEDURES WILL ADHERE TO NPCA BEST PRACTICES, AND WILL BE GENERATED SPECIFICALLY FOR THE APPLICATION AT THE TIME OF NEED.

HANDLING/STORAGE

1. ONCE STRIPPING STRENGTH HAS BEEN ACHIEVED, ALL PRECAST COMPONENTS WILL BE REMOVED FROM THE FORMS USING OVERHEAD CRANES. THE PIECES WILL THEN BE PLACED ON FLATBED TRAILERS AND TRANSPORTED TO THE CURING AREA, OR STORAGE YARD WHERE THEY WILL EITHER BE PLACED ON DUNNAGE (WINGWALLS) OR DIRECTLY ON THE GROUND (CULVERT). ONCE THE CURING PROCESS HAS REACHED DESIGN STRENGTH, THE PRECAST WILL BE HANDLED USING THE INDICATED LIFTERS/ANCHORS AND APPROPRIATE RIGGING, IN PREPARATION FOR SHIPPING ON FLAT BED TRAILERS. PLACEMENT OF THE DUNNAGE WILL GENERALLY FOLLOW THE ¼ RULE OR BE PLACED UNDER THE LIFTERS, HOWEVER FINAL DECISIONS REGARDING PLACEMENT WILL BE THAT OF THE MANUFACTURER/DESIGNER.

PRODUCTION CONTROL PROCEDURES(TYPICAL ALL PRECAST BRIDGE UNITS, WINGWALLS AND FOOTINGS)

1. CYLINDER SAMPLING AND CURING:
A. A MINIMUM OF EIGHT (8) CYLINDERS PER LOT WILL BE MADE IN ACCORDANCE WITH ASTM C31. CYLINDERS WILL BE TESTED IN ACCORDANCE WITH ASTM C39.
B. UNIT WEIGHT (ASTM CI38), AIR CONTENT (ASTM C231), SPREAD PER SCC GUIDELINES, AND TEMPERATURE TESTS WILL BE TAKEN INITIALLY FOR EACH BATCH. NOT TO EXCEED NINE (9) CUBIC YARDS. THE FREQUENCY OF SOME TESTS MAY BE REDUCED WHEN THE VTRANS REPRESENTATIVE DETERMINES THAT THE PRECASTER IS CONSISTENT IN HIS BATCHING OPERATION. THESE TESTS WILL BE TAKEN PRIOR TO PLACING CONCRETE IN FORM.

NOTE: 1 AIR TEST PER BATCH (OR DELIVERY TRUCK) IS REQUIRED, AND SHALL NOT BE REDUCED

C. ALL CAST CYLINDERS WILL BE CURED IN THE SAME MANNER AS THE PIECES THEY REPRESENT.

2. CYLINDER BREAKS:
A. FOR EARLY STRENGTH VERIFICATION, CYLINDERS MAY BE BROKEN AT ANY TIME UP TO 28 DAYS AFTER CASTING. IF THE AVERAGE STRENGTH OF TWO (2) CYLINDERS MEETS OR EXCEEDS THE REQUIRED 28 DAY STRENGTH (WITH EACH CYLINDER HAVING A MINIMUM OF 95% OF THE REQUIRED 28 DAY STRENGTH), THE LOT SHALL BE ACCEPTED FOR STRENGTH.

3. QUALITY CONTROL TEST AND EQUIPMENT:

CYLINDER TESTER:	FORNEY 500 SERIES WITH DR-2 DIGITAL READOUT CALIBRATED BIANNUALLY
AIR METER:	PRESSURE METER BY FORNEY (CALIBRATED MONTHLY)
SLUMP CONE:	STANDARD 8" BASE, 4" AT RIM, 12" IN HEIGHT MEASURED IN ACCORDANCE WITH SCC GUIDELINES
SCALES FOR UNIT WEIGHT:	MEASURED IN ACCORDANCE WITH ASTM C143 100 LBS. CAPACITY CALIBRATED ANNUALLY TO THE NEAREST 1/10TH POUND
CYLINDER MOLDS:	4" DIAMETER X 8" PLASTIC

4. CONCRETE TESTING AND AIR METER CALIBRATION WILL BE DONE BY PLANT PERSONNEL (ACI GRADE I CERTIFIED) ALL TESTING PROCEDURES WILL BE OBSERVED BY VERMONT INSPECTORS OR AUTHORIZED REPRESENTATIVES.

BILL OF MATERIALS

QTY	DESCRIPTION			IN STOCK	ORDERED FROM	DATE ORDERED	DATE DELIVERED
	ITEMS CAST-IN						
	RIGID FRAME BRIDGE						
29LF	2.5"DIA PVC PIPE (18-15" PIECES, 2-33" PIECES)						
20	RL-4 8-TON TECH ANCHORS						
8	8NC 6X6 DWA						
8	RAIL POST ANCHOR ASSEMBLIES						
	PILE CAPS						
56LF	24"DIA. CORRUGATED PIPE (15 PIECES, 4'-0 3/8" MAX.)						
16	RL-24 8-TON PLATE ANCHOR (7 1/8")						
	WINGWALLS						
14	5-TON UTILITY ANCHORS						
8	8NC 6X6 DWA						
	APPROACH SLABS						
32	5-TON UTILITY ANCHORS						
16	4" DIA. CORRUGATED POST-TENSION SLEEVES (15" LONG)						
	ITEMS FOR PRESHIPPING/PREP.						
160LF	1" CLOSED CELL NEOPRENE						
1 GAL	RED ADHESIVE						
	ITEMS TO SHIP TO THE JOB						
172LF	24" ROYSTON JOINT WRAP						
3 GAL	ROYBOND 740 ADHESIVE						
46	7/8"X21"GALV. THREADED ROD W/NUTS AND WASHERS						
20	POP-IT PLUGS						
2	(10"X19"X1/2" GALV. STEEL WW PLATE (162 DEG)						
2	(10"X27"X1/2" GALV. STEEL WW PLATE (163 DEG)						
2	(10"X26"X1/2" GALV. STEEL WW PLATE (166DEG)						
2	(10"X18.5"X1/2" GALV. STEEL WW PLATE (149 DEG)						
32	1"DIA X 5" NC THREADED ROD W/NUT						
32	4"X4"X1/4" PLATE WASHER						

verify quantity

6"

LOOSE REINFORCING TO BE SHIPPED TO JOB SITE (EPOXY COATED)

LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
APPROACH CLOSURE	FB1	24	#5	--	STR	19'-6"
PILE CAP CLOSURE (HORIZ)	FB2	24	#4	12"	SEE S3.2	6'-6"
PILE CAP CLOSURE (VERT)	FB3	24	#4	--	STR	3'-8"*
RFB CLOSURE	FB4	78	#6	12"	SEE S2.0	SEE DETAIL S2.0
DOWEL-IN BARS	DI	80	#4	12"	L BAR	8"X12"

*CUT OR FIELD BEND TO MAINTAIN COVER FOR VARYING HEIGHT.

REINFORCING FOR TESTING (EPOXY COATED)

LOCATION	QTY	SIZE	NOTES	CUT LENGTH
BAR COUPLER/DOWEL-IN	3	#10	COMPLETE ASSY.	AS DETAILED
GUIDE RAIL W/ANCHOR BOLTS	2	1"ø	SEE S5.0	AS DETAILED
REBAR	1	#4	STR	3'-0"
REBAR	1	#5	STR	3'-0"
REBAR	1	#6	STR	3'-0"
REBAR	1	#7	STR	3'-0"
REBAR	1	#8	STR	3'-0"
REBAR	1	#9	STR	3'-0"
REBAR	1	#10	STR.	3'-0"

The minimum required for testing is two test sections each 2.5' long

The rebar for sampling should be randomly selected from designated groups that have the largest quantities and closest to the sample length. We need 2 pieces with straight sections over 2.5' or one piece with a straight section over 5' for each size and type

SHEET LIST:
S0.0 – NOTES
S1.0 – LAYOUT VIEWS
S2.0 – END ELEVATIONS AND CONNECTION DETAILS
S3.1 – PILE CAP LAYOUT AND DETAILS
S3.2 – PILE CAP DETAILS
S3.3 – PILE CAP DETAILS
S3.4 – APPROACH SLAB DETAILS
S4.0 – RIGID FRAME DETAILS
S5.0 – RIGID FRAME W/HEADWALL DETAILS
S6.0 – WW1 AND WW2 WINGWALL DETAILS
S7.0 – WW3 AND WW4 WINGWALL DETAILS
S8.0 – ANCHOR WALL DETAILS
S9.0 – PILE LAYOUT

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
STUART D. GORKA
NO 84443
CIVIL
LICENSED
PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

US Route 2, Rural Major Collector. Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Notes

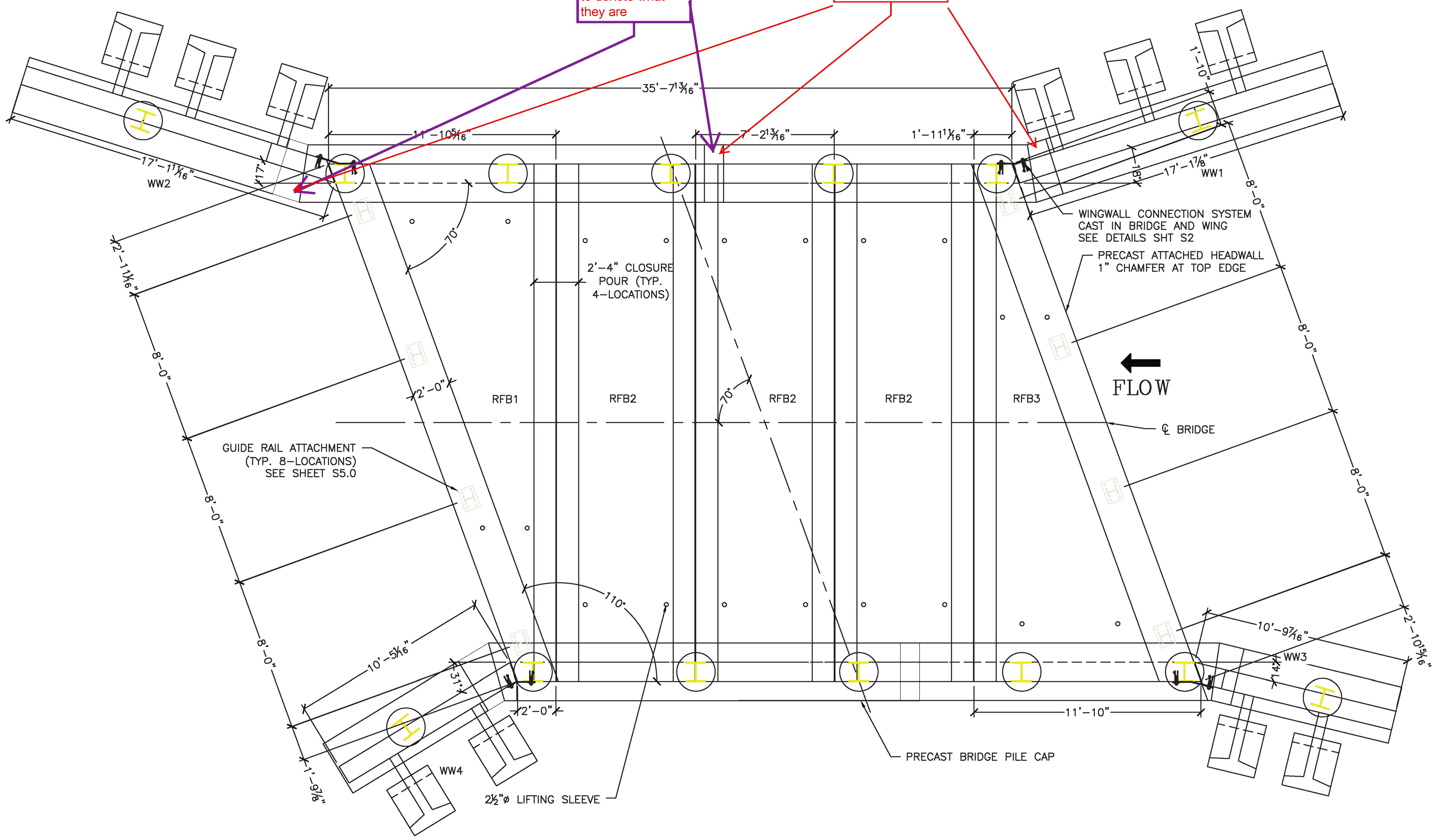
Project No. 7084
Scale: AS SHOWN
Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S0.0

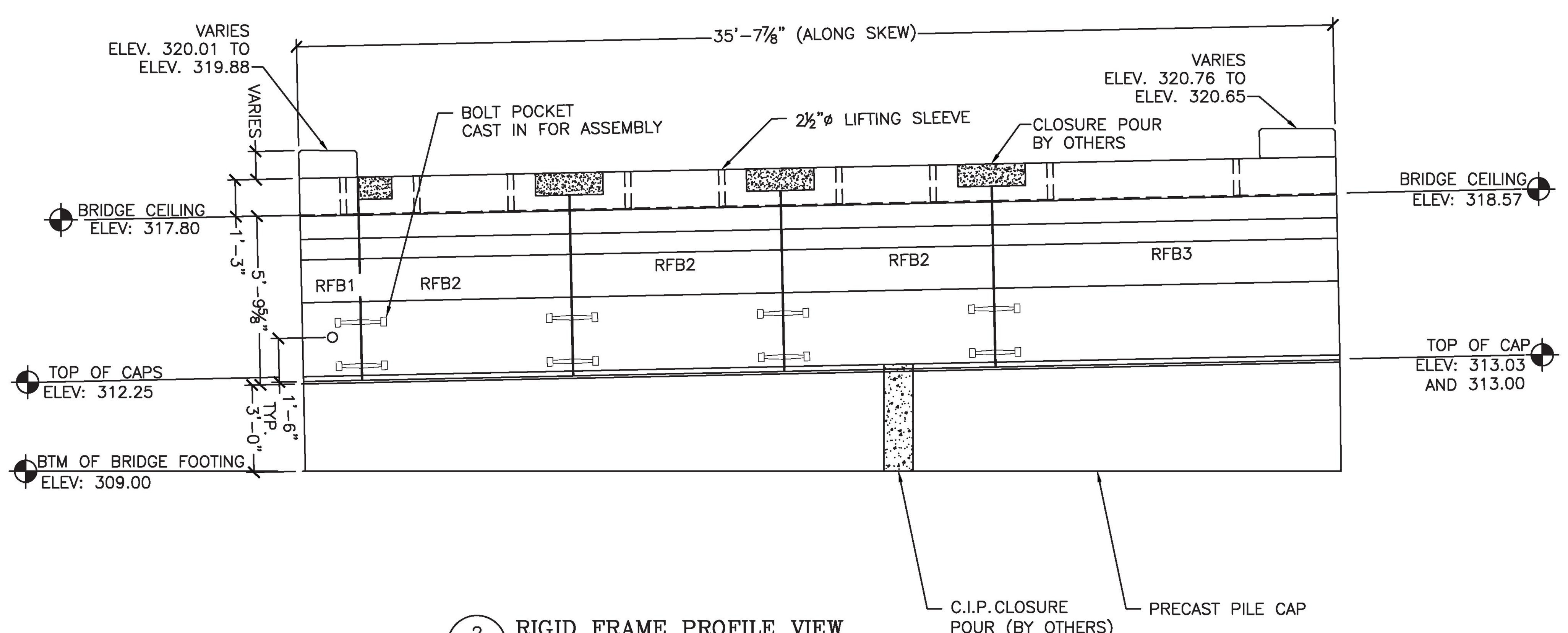
shade in the closure pour areas, like on sheet S 9.0, and label these areas to denote what they are

Closure pour (typ)



1 S1.0 RIGID FRAME PLAN VIEW
¼" = 1'-0"

SEE FOLLOWING SHEET FOR APPROACH SLAB LAYOUT



2 S1.0 RIGID FRAME PROFILE VIEW
¼" = 1'-0"

WINGWALLS NOT SHOWN IN THIS VIEW.

SPECIALTY ENGINEERING SERVICES PROVIDED BY: CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT STUART D. GORSKI NO 84443 CIVIL LICENSED PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

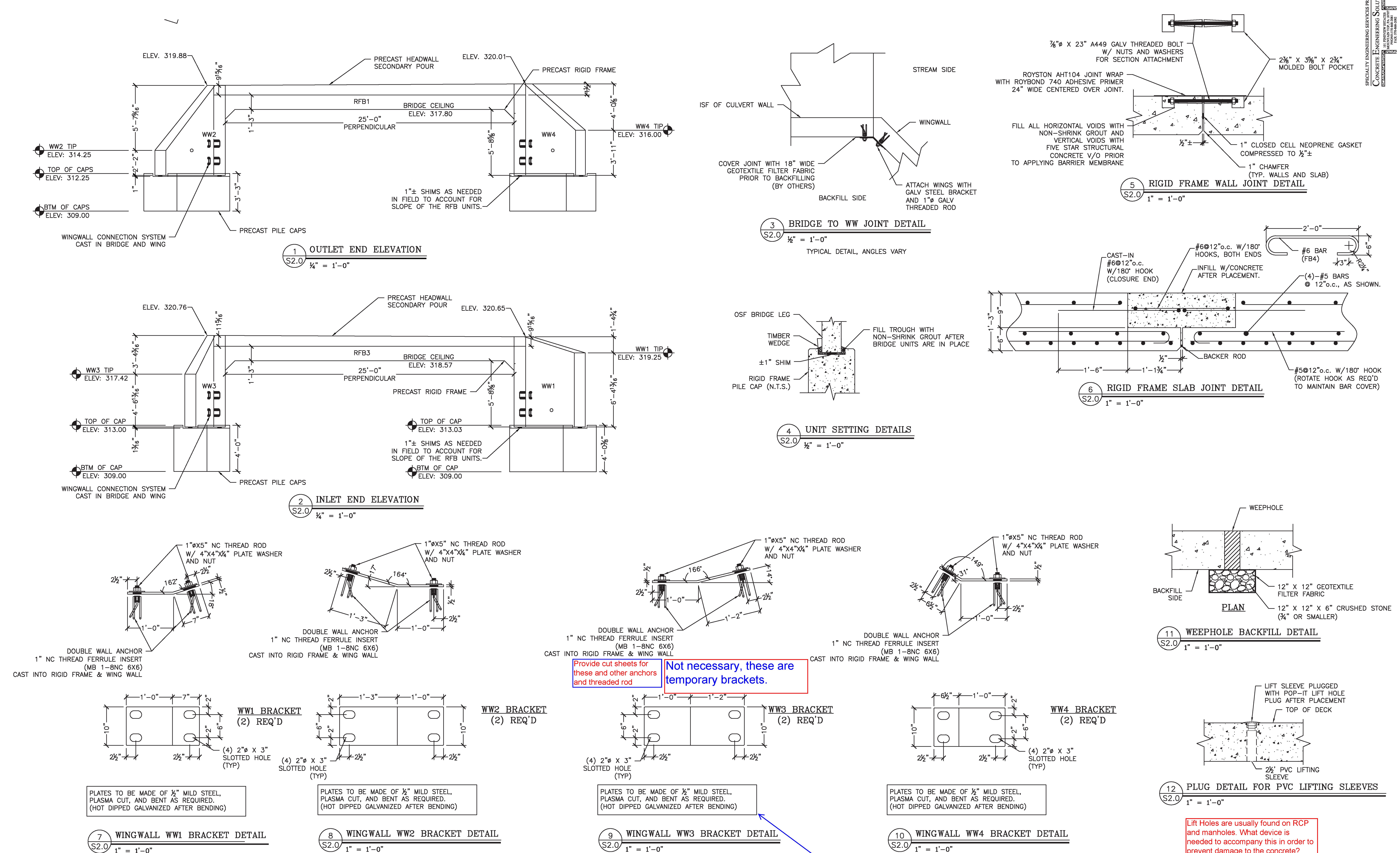
US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Layout Views

Project No. 7084 | Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP | Scale: AS SHOWN

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S1.0



Provide cut sheets for these and other anchors and threaded rod

Not necessary, these are temporary brackets.

Should call out a specific material specification with a minimum allowable yield strength for these plates. What strength of steel is used in the design calcs for these connections?

Not necessary, these are temporary brackets.

Lift Holes are usually found on RCP and manholes. What device is needed to accompany this in order to prevent damage to the concrete? Would lift pins or other engineered lifting product work better?

SPECIALTY ENGINEERING SERVICES PROVIDED BY: CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT — STUART D. GORDON — NO 84443 — CIVIL — LICENSED PROFESSIONAL ENGINEER — 4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

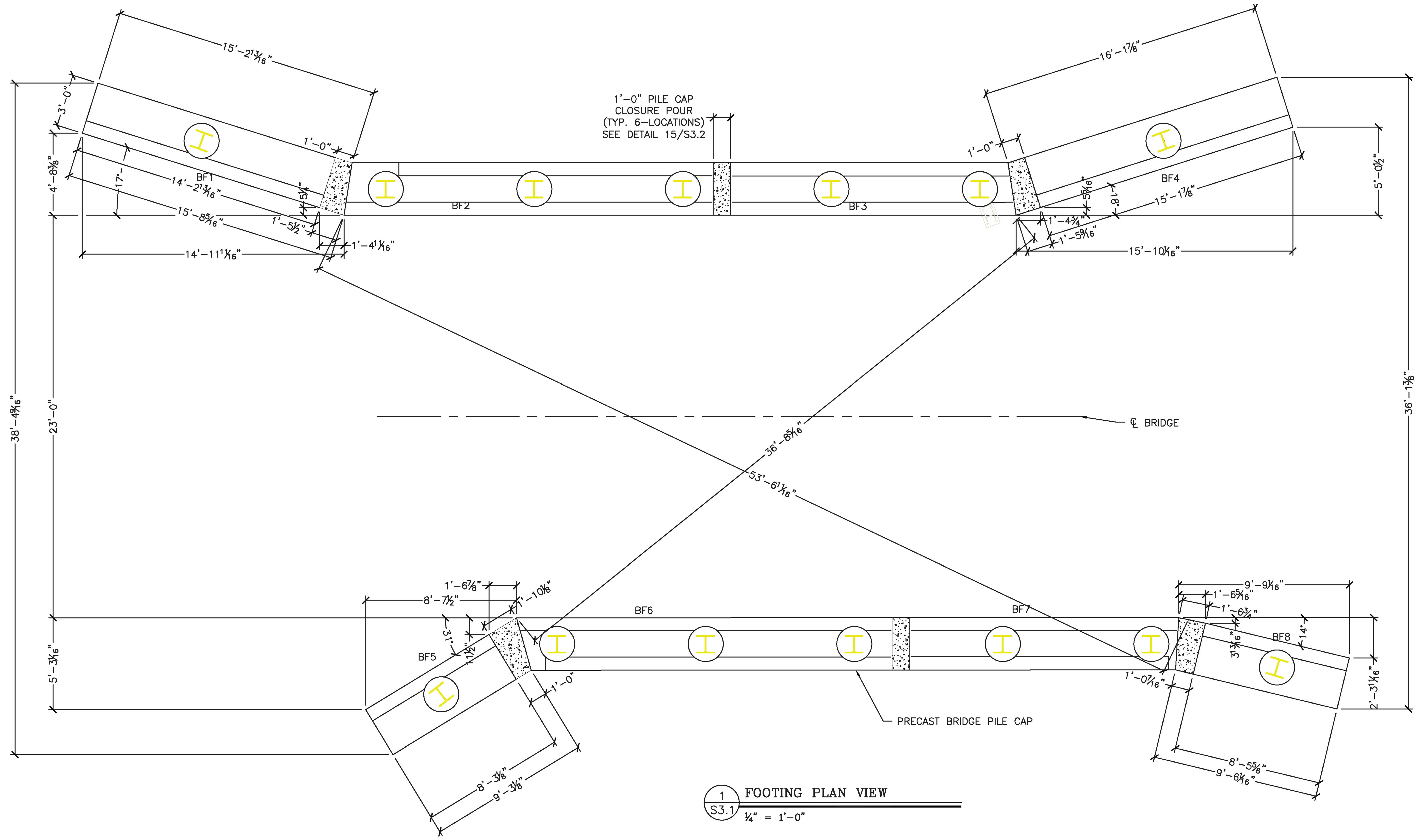
US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
End Elevations and Connection Details

Project No. 7084 | Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP | Scale: AS SHOWN

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO. S2.0



1 / S3.1 FOOTING PLAN VIEW

¼" = 1'-0"

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
STUART D. GORKA
NO 84443
CIVIL
LICENSED
PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

US Route 2, Rural Major Collector. Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Footing Layout and Details

Project No. 7084 — Scale: AS SHOWN

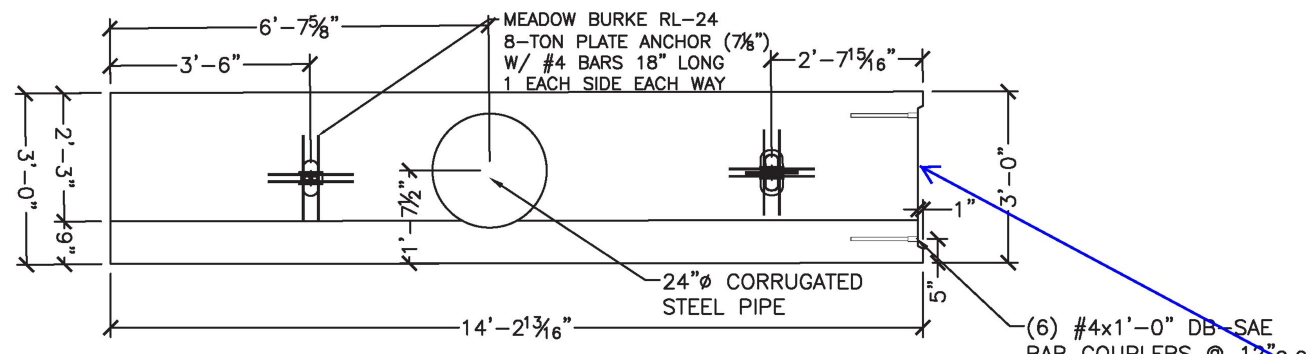
Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP

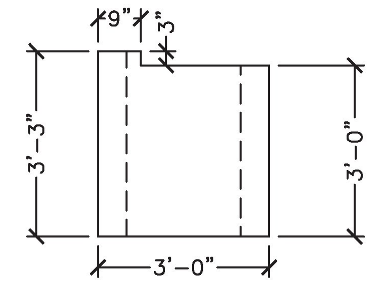
Prepared for:

G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO. S3.1

C:\WORK\39-MICHIE\17-39.01 GW TATRO CONST RICHMOND VT\RFB 25X6 7665-170414.DWG 4/18/2017 3:41 PM





BF1 - (1) REQ'D

1 / S3.2 BF1 PLAN VIEW
3/8" = 1'-0"

ITEM #282400
UNIT AND VOLUME:
4.49CY
TOTAL WT – 18,200#

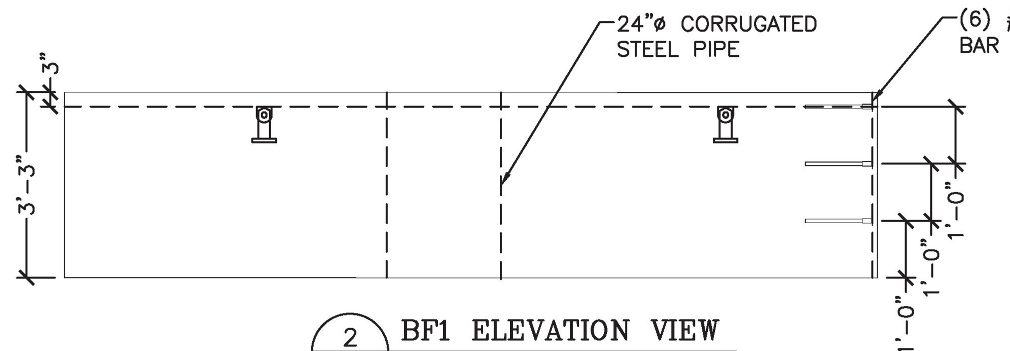
3 / S3.2 BF1 END VIEW
3/8" = 1'-0"

Consider adding roughened surface to these closure pour faces to increase bond and overall stiffness of footing.

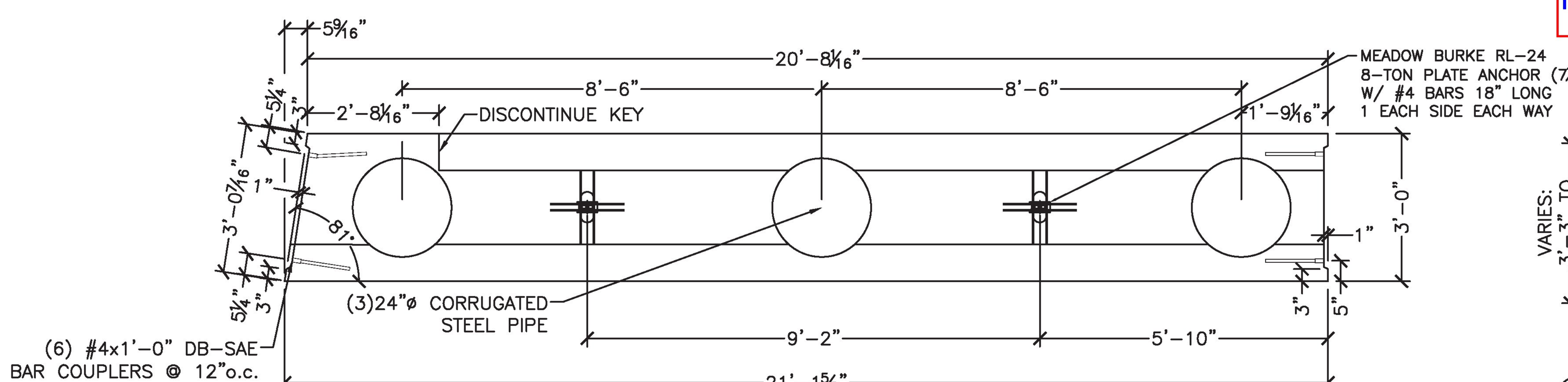
Considered for the future.

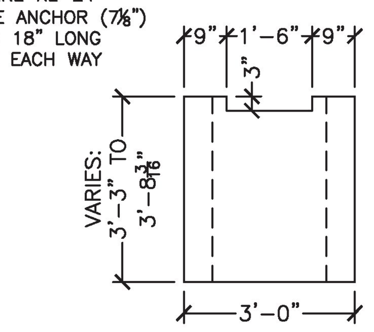
I am wondering how the contractor will assemble the footing and slide it down over the piles. Do they first insert all the rebar into the couplers and then slide the entire footing down onto the piles? If so that seems like a difficult thing to rig and lift without the pieces moving. I don't see how, if they first slide each footing piece down over the pile, they can then insert a 3' long rebar into a 1' wide space to get the bar ends into the couplers. Seems like we usually utilize protruding bar from the adjacent pieces for closure pours like this.

Place the abutment pieces; insert the L-bars, which are 12" x 8" = 20"; place the FB2 stirrups; place the FB3 straight bars.



2 / S3.2 BF1 ELEVATION VIEW
3/8" = 1'-0"



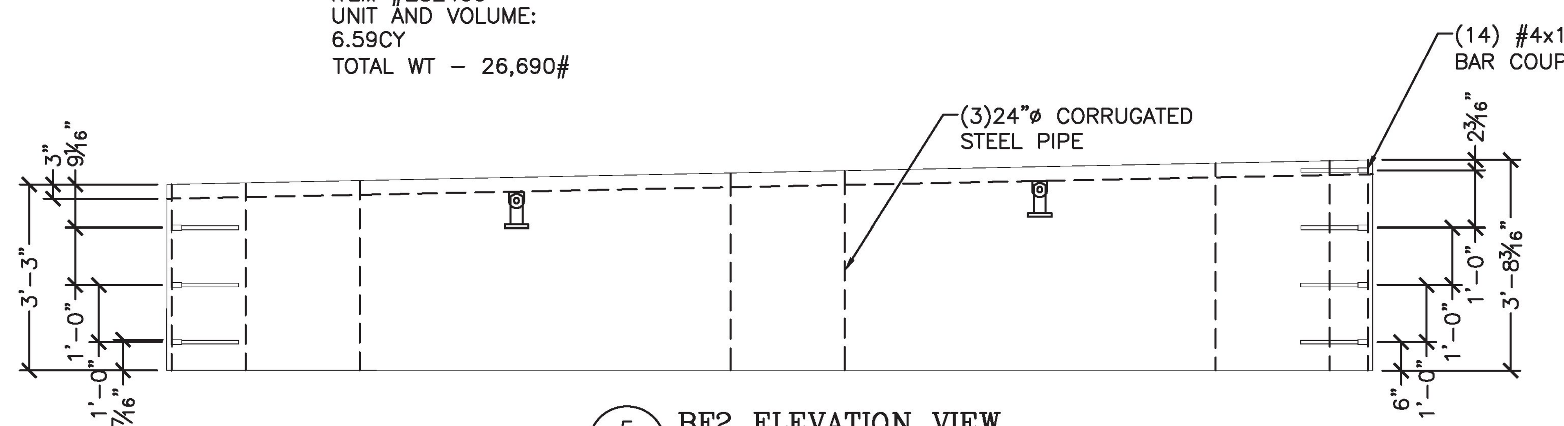


BF2 - (1) REQ'D

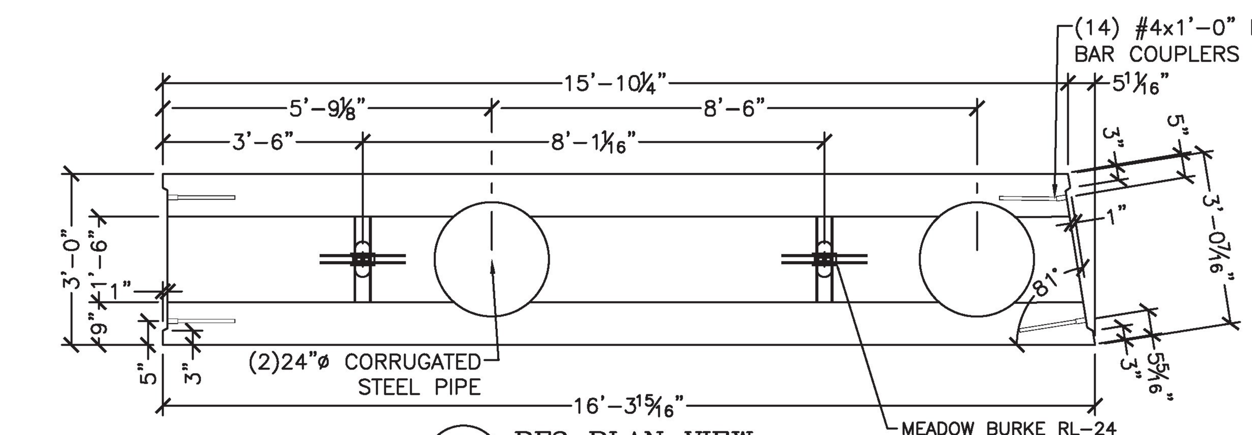
4 / S3.2 BF2 PLAN VIEW
3/8" = 1'-0"

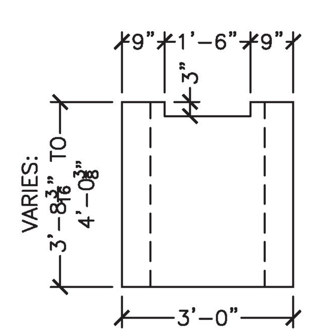
ITEM #282400
UNIT AND VOLUME:
6.59CY
TOTAL WT – 26,690#

6 / S3.2 BF2 END VIEW
3/8" = 1'-0"



5 / S3.2 BF2 ELEVATION VIEW
3/8" = 1'-0"



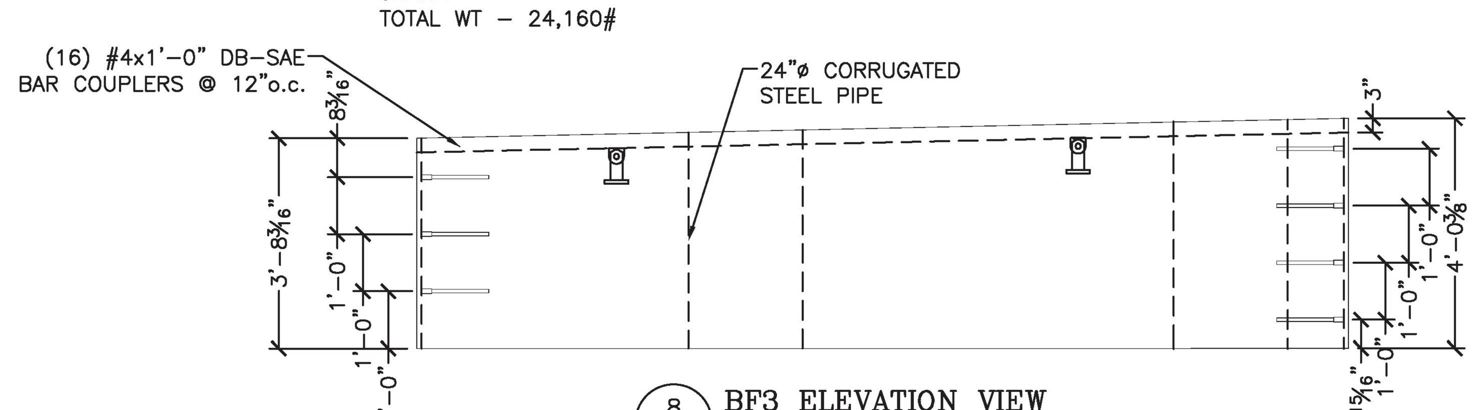


BF3 - (1) REQ'D

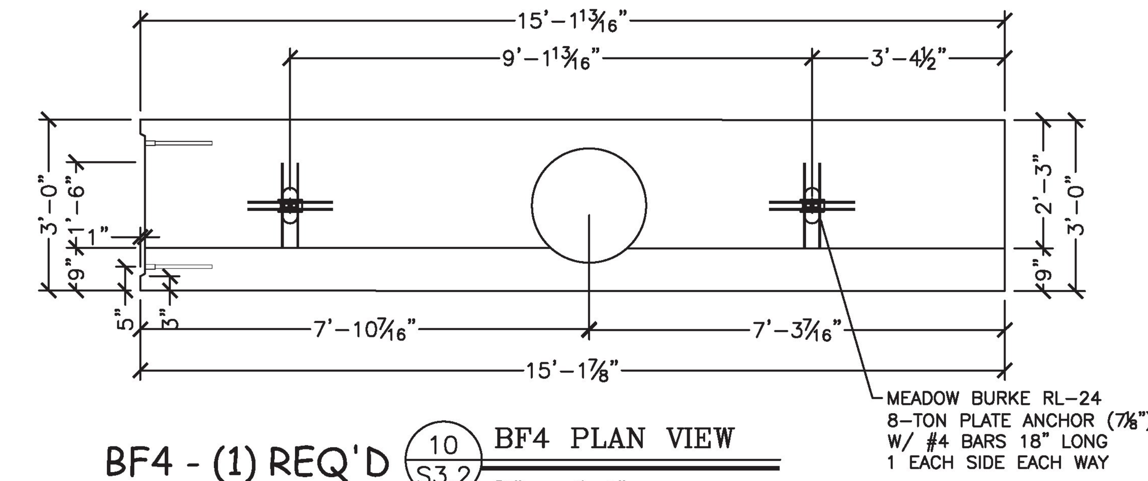
7 / S3.2 BF3 PLAN VIEW
3/8" = 1'-0"

ITEM #282400
UNIT AND VOLUME:
5.96CY
TOTAL WT – 24,160#

9 / S3.2 BF3 END VIEW
3/8" = 1'-0"



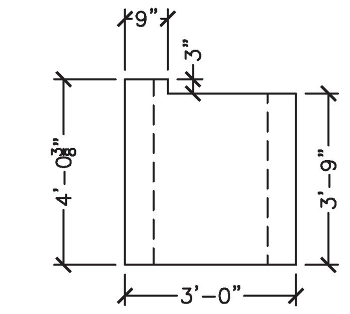
8 / S3.2 BF3 ELEVATION VIEW
3/8" = 1'-0"



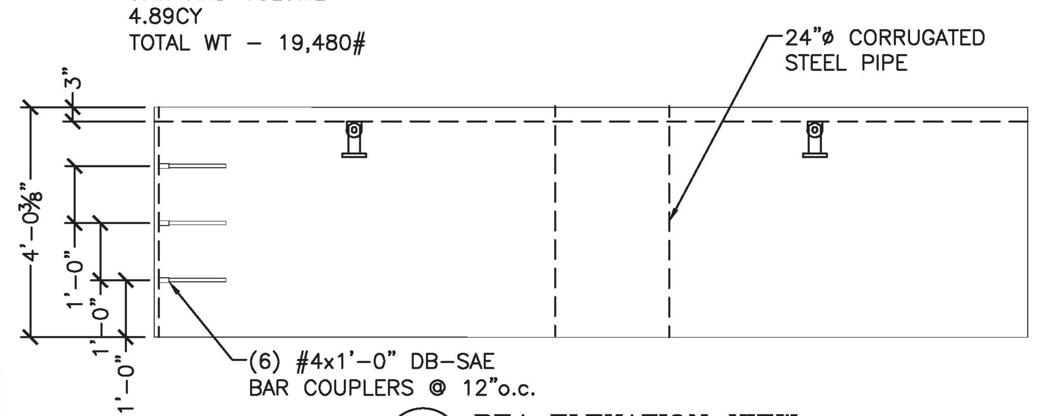
BF4 - (1) REQ'D

10 / S3.2 BF4 PLAN VIEW
3/8" = 1'-0"

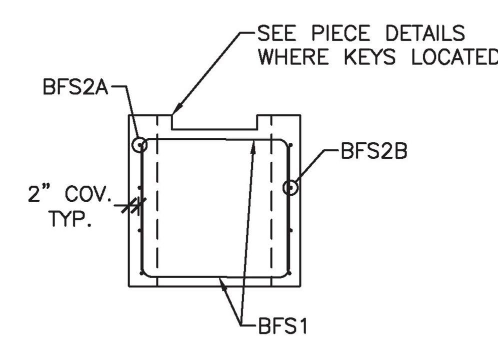
ITEM #282400
UNIT AND VOLUME:
4.89CY
TOTAL WT – 19,480#



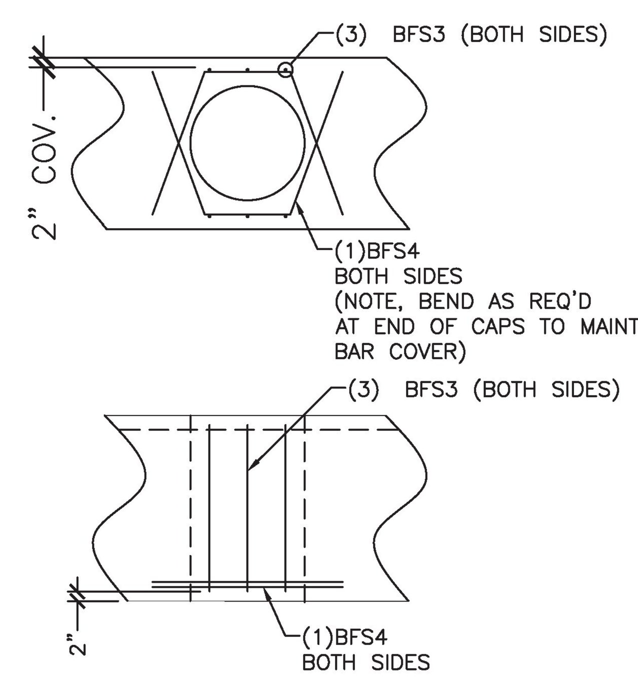
12 / S3.2 BF4 END VIEW
3/8" = 1'-0"



11 / S3.2 BF4 ELEVATION VIEW
3/8" = 1'-0"

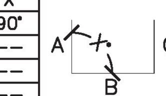


13 / S3.2 13 / S3.3 PILE CAP REINFORCING
3/8" = 1'-0"



14 / S3.2 14 / S3.3 PILE VOID REINFORCING
3/8" = 1'-0"

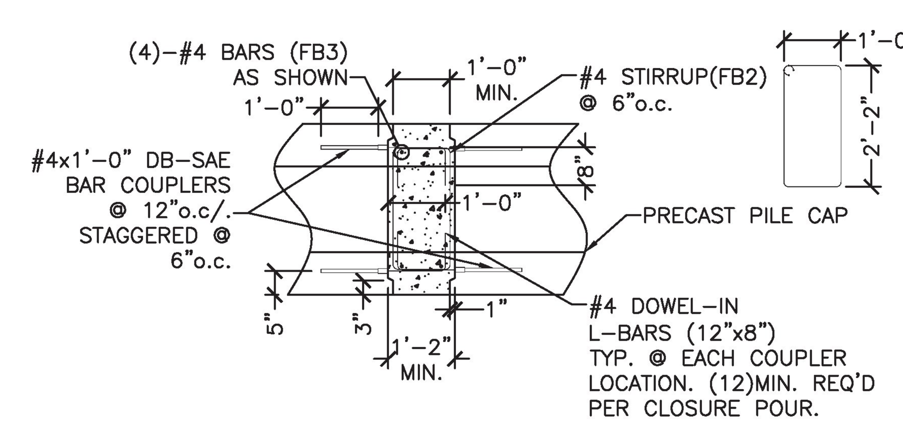
BF1 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	34	#5	9"	U BAR	7'-8"	2'-8"	2'-5 1/4"	2'-8"	90°
BFS2A	4	#7	9"	STR	13'-11"	--	--	--	--
BFS2B	4	#7	9"	STR	13'-11"	--	--	--	--
BFS3	6	#6	8"	STR	2'-8"	--	--	--	--
BFS4	2	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	6	#4	12"	STR	1'-0"	--	--	--	--



BF2 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	36	#5	9"	U BAR	7'-8"	2'-8"	2'-5 1/4"	2'-8"	90°
BFS2A	4	#7	9"	STR	20'-4"	--	--	--	--
BFS2B	4	#7	9"	STR	20'-10"	--	--	--	--
BFS3	18	#6	8"	STR	2'-11"	--	--	--	--
BFS4	6	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	14	#4	12"	STR	1'-0"	--	--	--	--

BF3 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	30	#5	9"	U BAR	8'-4"	3'-1"	2'-5 1/4"	3'-1"	90°
BFS2A	4	#7	9"	STR	15'-6"	--	--	--	--
BFS2B	4	#7	9"	STR	16'-0"	--	--	--	--
BFS3	12	#6	8"	STR	3'-4"	--	--	--	--
BFS4	4	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	14	#4	12"	STR	1'-0"	--	--	--	--

BF4 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	36	#5	9"	U BAR	9'-0"	3'-5"	2'-5 1/4"	3'-5"	90°
BFS2A	4	#7	9"	STR	14'-9"	--	--	--	--
BFS2B	4	#7	9"	STR	14'-9"	--	--	--	--
BFS3	6	#6	8"	STR	3'-5"	--	--	--	--
BFS4	2	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	6	#4	12"	STR	1'-0"	--	--	--	--



15 / S3.2 CLOSURE POUR DETAIL
3/8" = 1'-0" PLAN VIEW

NOTE: FIELD BEND DOWEL-IN BARS AS REQ'D TO MAINTAIN BAR COVER AT SKEWED CLOSURES.

Show elevation view

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
△	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
STUART D. GORDON
NO 84443
CIVIL
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PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

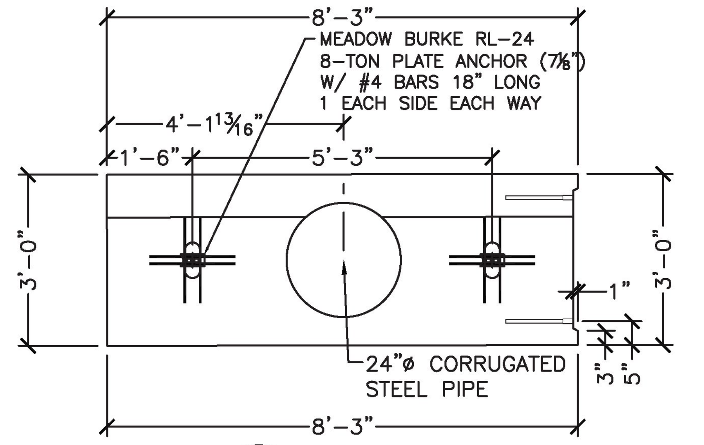
US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Pile Cap Details

Scale: AS SHOWN
Checked By: CFP
Drawn by: SDG
Designed by: SDG
Project No. 7084
Date: 2/9/17

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

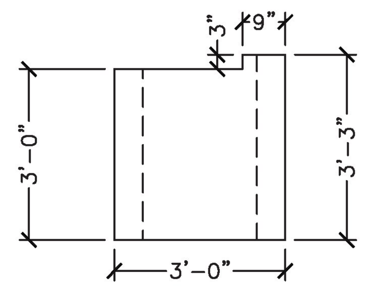
DWG NO.
S3.2



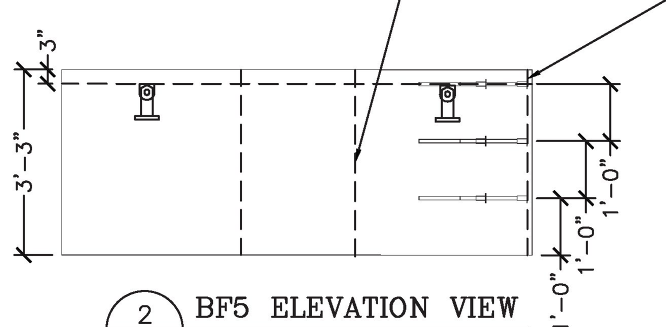
BF5 - (1) REQ'D

ITEM #282400
UNIT AND VOLUME:
2.00CY
TOTAL WT - 8,100#

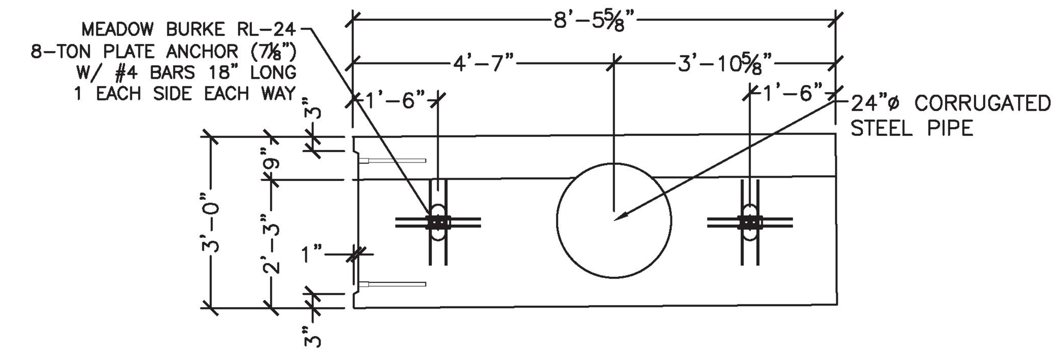
1 / S3.3 BF5 PLAN VIEW
3/8" = 1'-0"



3 / S3.3 BF5 END VIEW
3/8" = 1'-0"



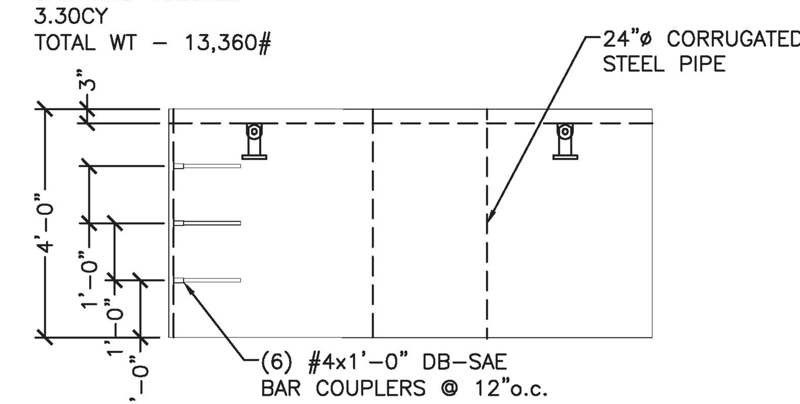
2 / S3.3 BF5 ELEVATION VIEW
3/8" = 1'-0"



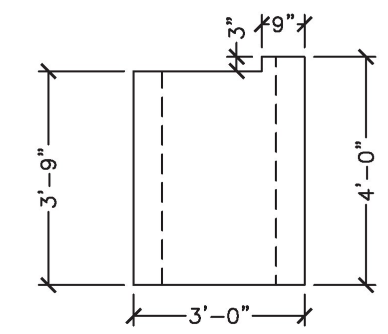
BF8 - (1) REQ'D

ITEM #282400
UNIT AND VOLUME:
3.30CY
TOTAL WT - 13,360#

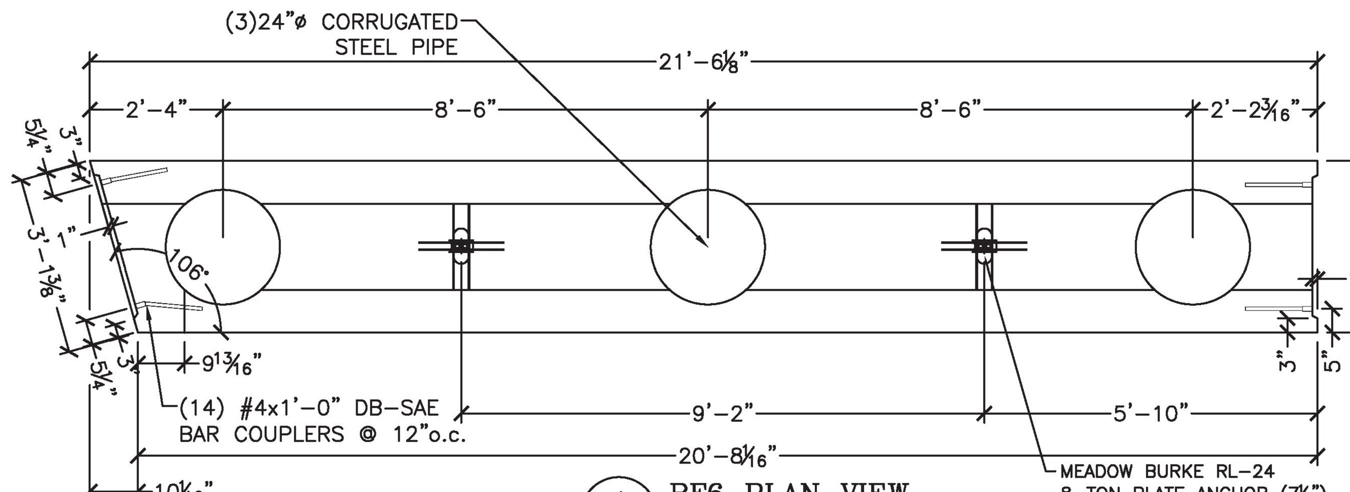
10 / S3.3 BF8 PLAN VIEW
3/8" = 1'-0"



11 / S3.3 BF8 ELEVATION VIEW
3/8" = 1'-0"



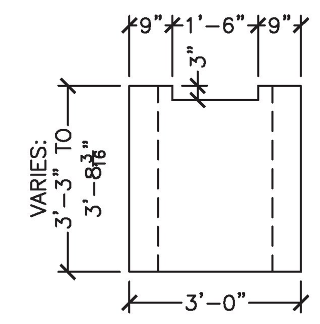
12 / S3.3 BF8 END VIEW
3/8" = 1'-0"



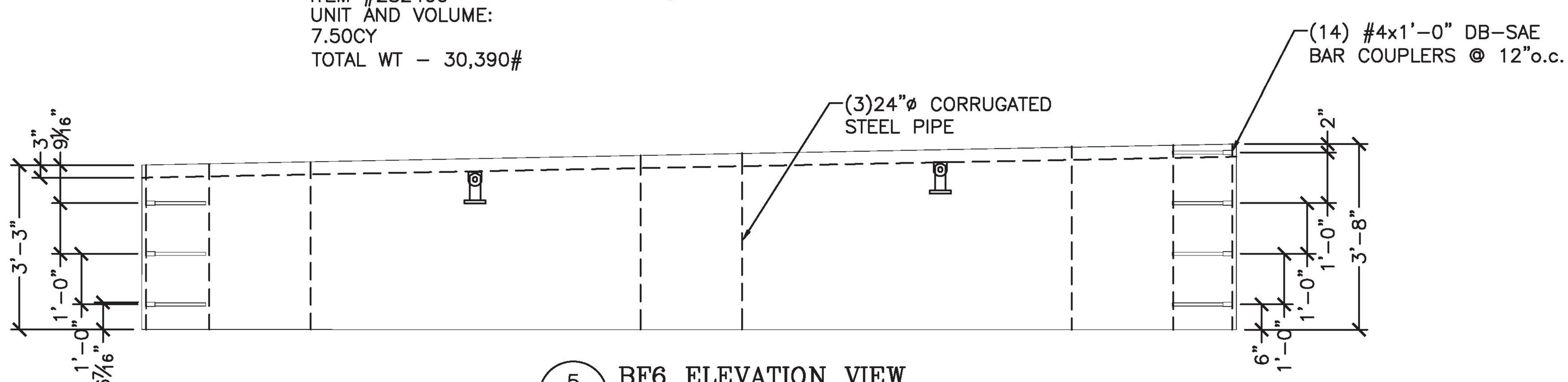
BF6 - (1) REQ'D

ITEM #282400
UNIT AND VOLUME:
7.50CY
TOTAL WT - 30,390#

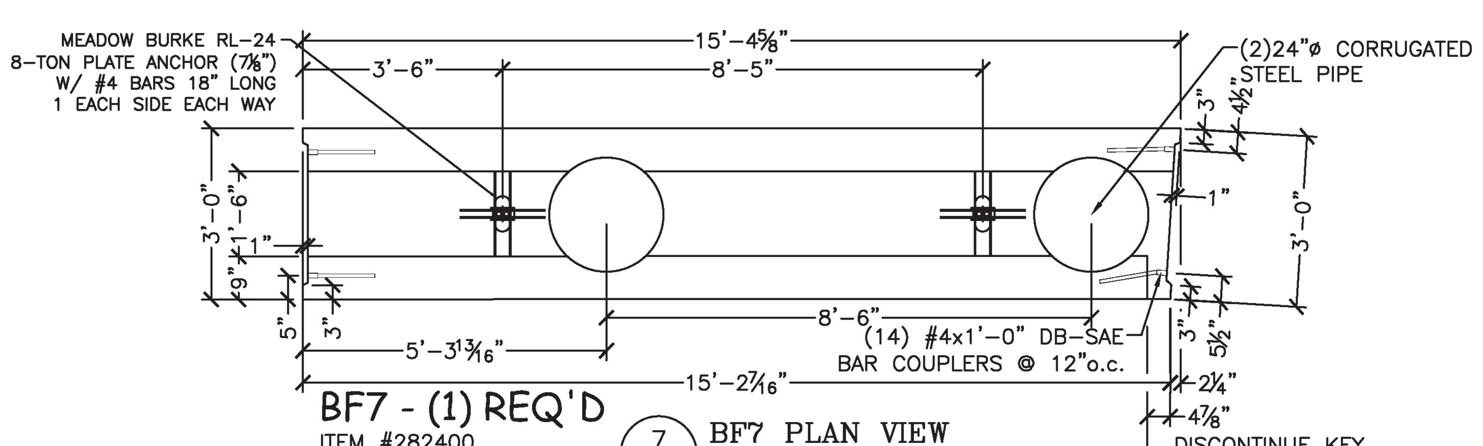
4 / S3.3 BF6 PLAN VIEW
3/8" = 1'-0"



6 / S3.3 BF6 END VIEW
3/8" = 1'-0"



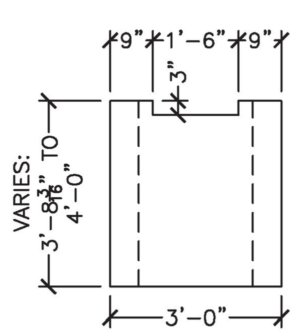
5 / S3.3 BF6 ELEVATION VIEW
3/8" = 1'-0"



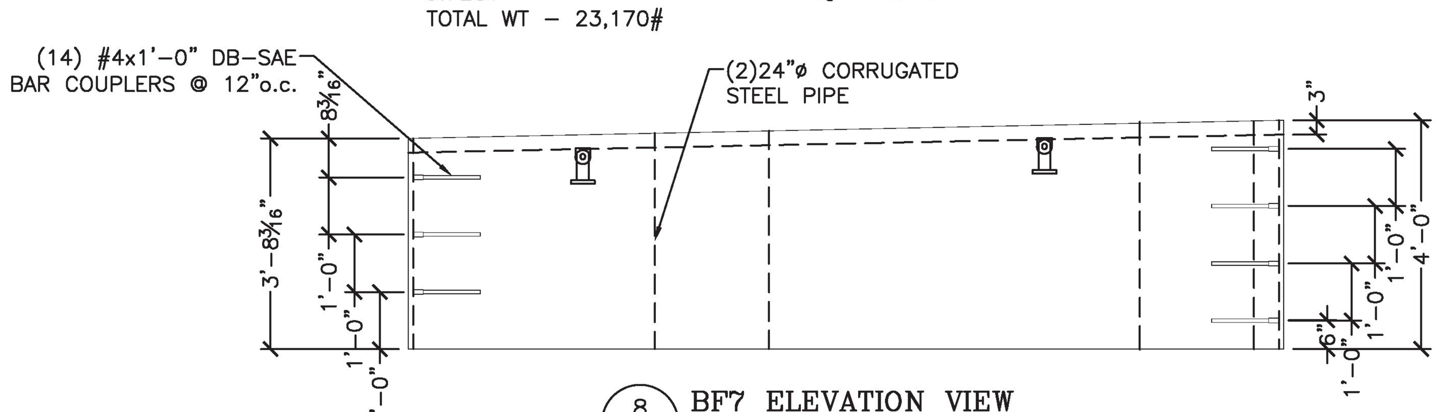
BF7 - (1) REQ'D

ITEM #282400
UNIT AND VOLUME:
5.72CY
TOTAL WT - 23,170#

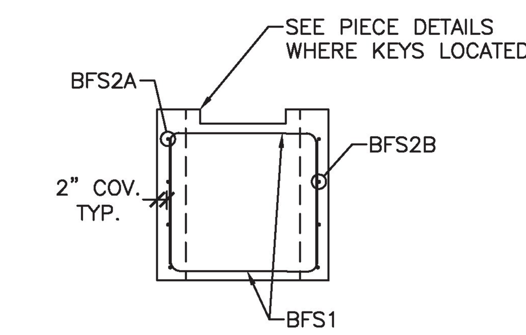
7 / S3.3 BF7 PLAN VIEW
3/8" = 1'-0"



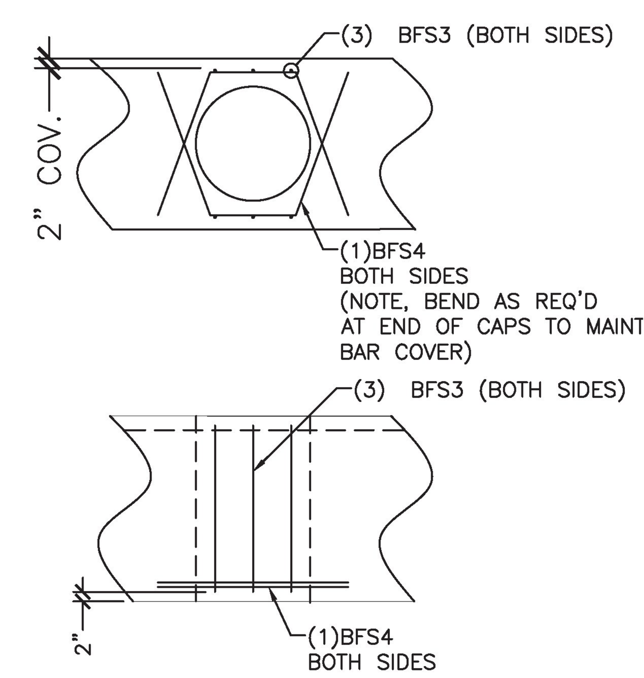
9 / S3.3 BF7 END VIEW
3/8" = 1'-0"



8 / S3.3 BF7 ELEVATION VIEW
3/8" = 1'-0"



13 / S3.2 13 / S3.3 PILE CAP REINFORCING
3/8" = 1'-0"



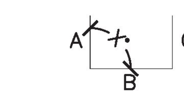
14 / S3.2 14 / S3.3 PILE VOID REINFORCING
3/8" = 1'-0"

BF5 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	18	#5	9"	U BAR	7'-8"	2'-8"	2'-5 1/4"	2'-8"	90°
BFS2A	4	#7	9"	STR	7'-9"	--	--	--	--
BFS2B	4	#7	9"	STR	7'-9"	--	--	--	--
BFS3	6	#6	8"	STR	2'-8"	--	--	--	--
BFS4	2	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	6	#4	12"	STR	1'-0"	--	--	--	--

BF6 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	36	#5	9"	U BAR	7'-8"	2'-8"	2'-5 1/4"	2'-8"	90°
BFS2A	4	#7	9"	STR	20'-6"	--	--	--	--
BFS2B	4	#7	9"	STR	19'-8"	--	--	--	--
BFS3	18	#6	8"	STR	2'-8"	--	--	--	--
BFS4	6	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	14	#4	12"	STR	1'-0"	--	--	--	--

BF7 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	28	#5	9"	U BAR	8'-4"	3'-1"	2'-5 1/4"	3'-1"	90°
BFS2A	4	#7	9"	STR	14'-11"	--	--	--	--
BFS2B	4	#7	9"	STR	14'-8"	--	--	--	--
BFS3	12	#6	8"	STR	3'-1"	--	--	--	--
BFS4	4	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	14	#4	12"	STR	1'-0"	--	--	--	--

BF8 REINFORCING									
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH	A	B	C	X
BFS1	18	#5	9"	U BAR	9'-0"	3'-5"	2'-5 1/4"	3'-5"	90°
BFS2A	4	#7	9"	STR	8'-1"	--	--	--	--
BFS2B	4	#7	9"	STR	8'-1"	--	--	--	--
BFS3	6	#6	8"	STR	3'-5"	--	--	--	--
BFS4	2	#6	--	U BAR	6'-2 1/2"	2'-6"	1'-6"	2'-6"	110°
COUPLERS	6	#4	12"	STR	1'-0"	--	--	--	--



SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
STUART D. GORDON
NO 84443
CIVIL
LICENSED
PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

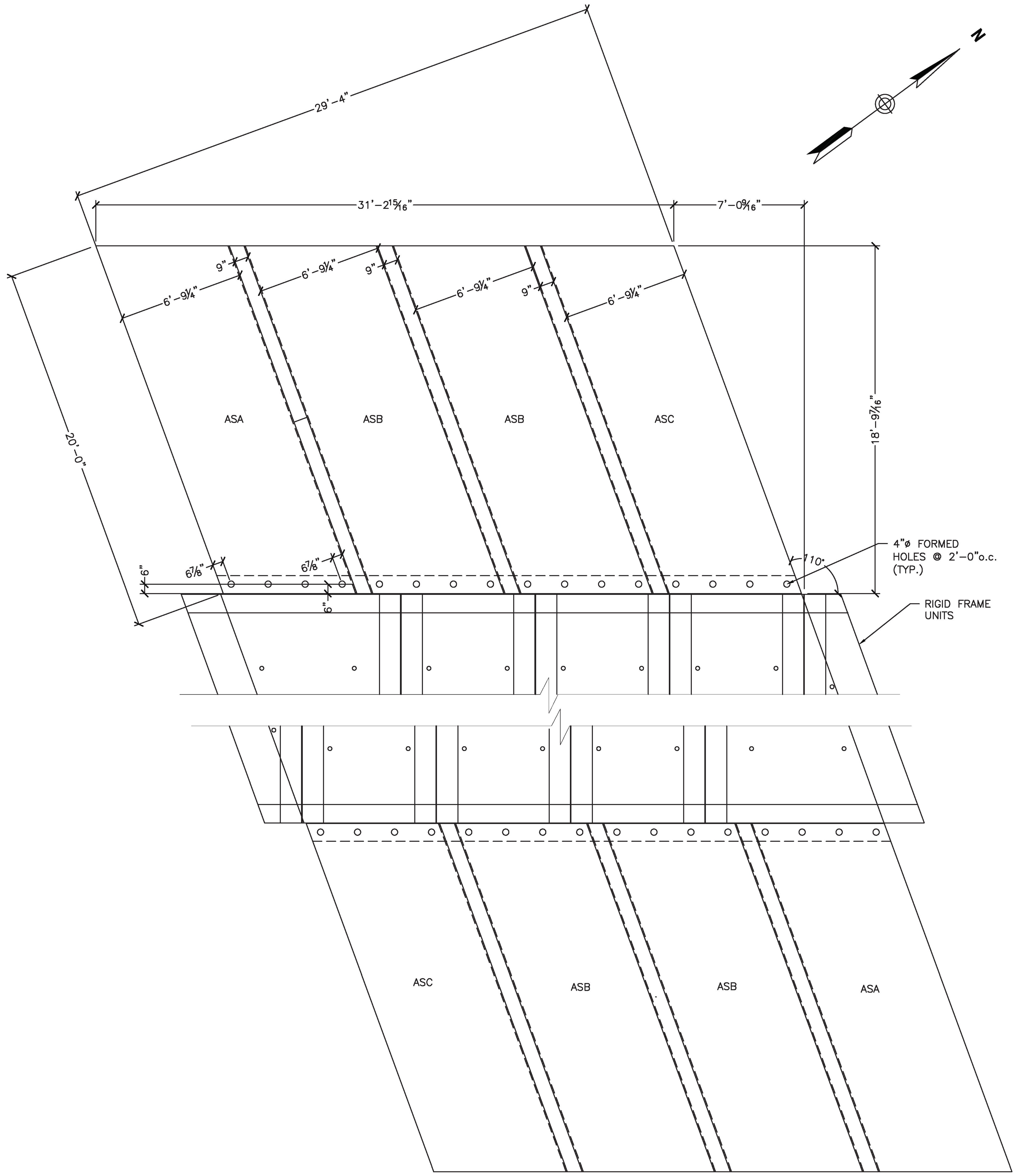
25'-0" x 5'-3" Rigid Frame Bridge
Pile Cap Details

Project No. 7084 | Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP | Scale: AS SHOWN

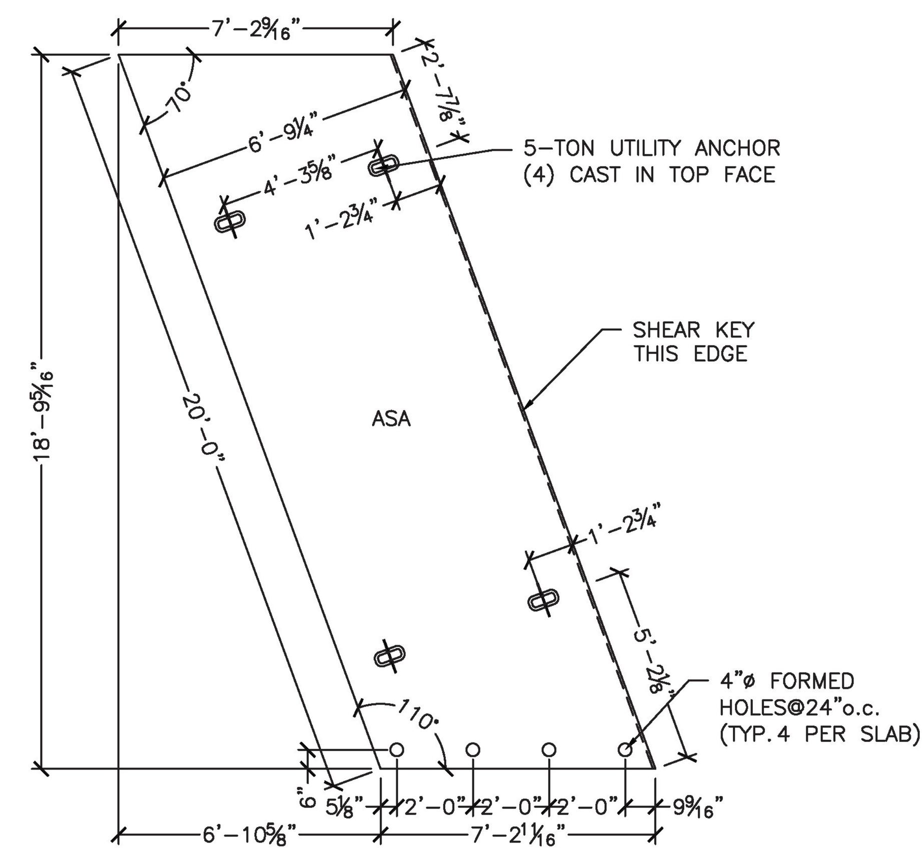
Prepared for:

G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S3.3

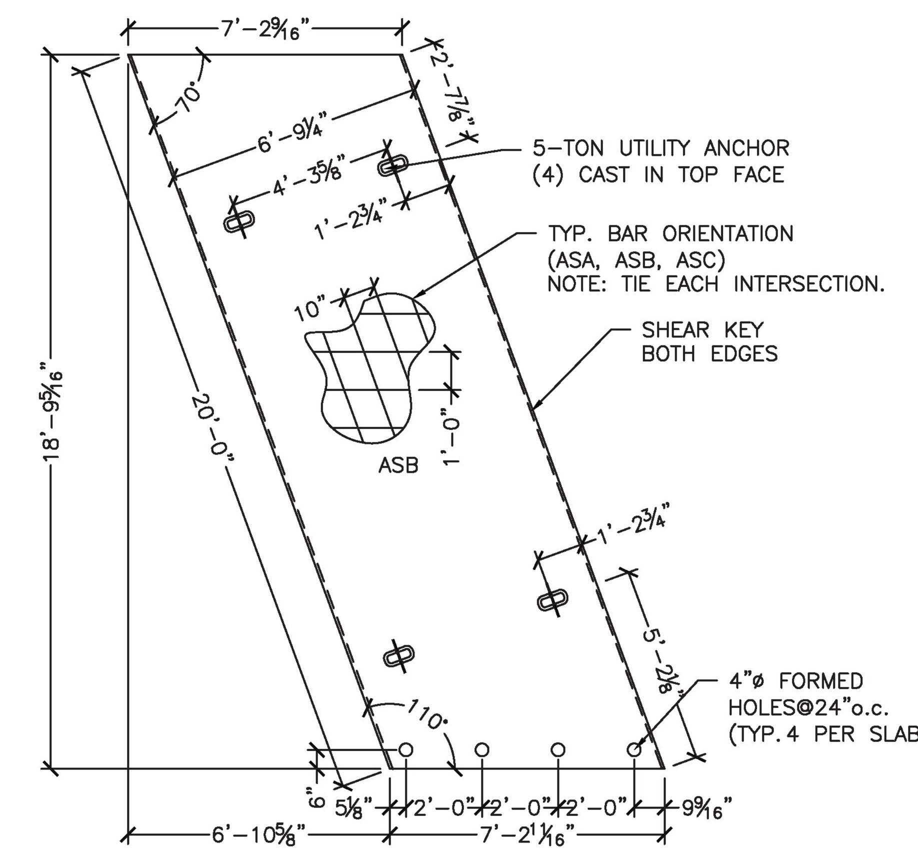


1 S3.4 APPROACH SLAB PLAN VIEW
1/4" = 1'-0"



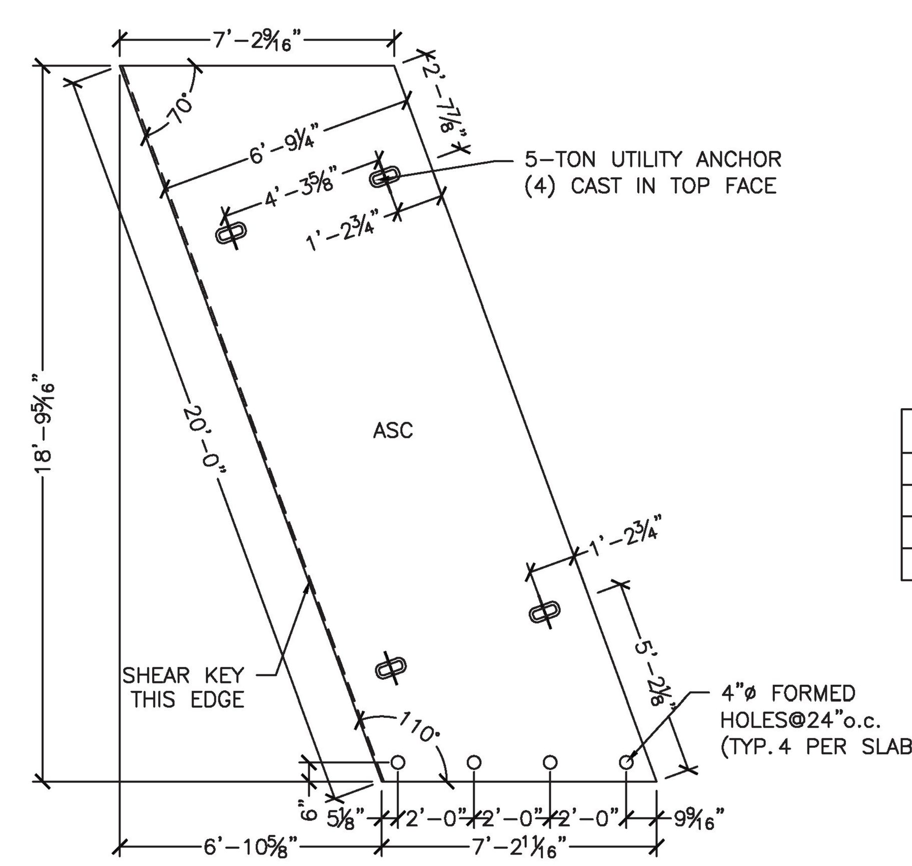
2 S3.4 ASA PLAN VIEW
1/4" = 1'-0"

ASA - (2) REQ'D
ITEM #380000
UNIT AND VOLUME:
VOL. 6.27CY
WT - 25,406#



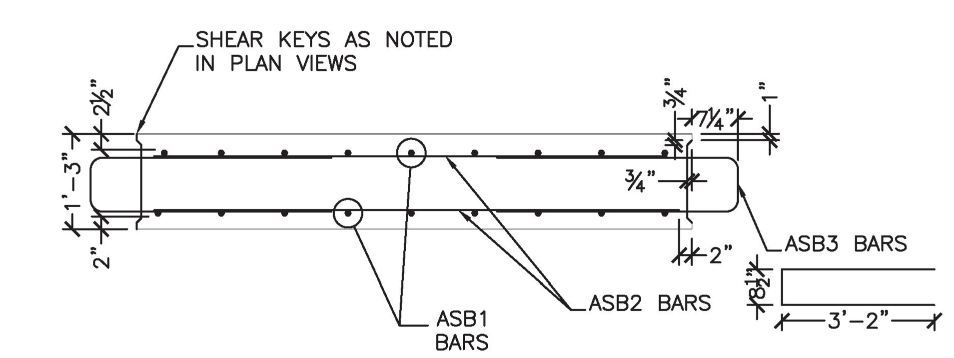
3 S3.4 ASB PLAN VIEW
1/4" = 1'-0"

ASB - (4) REQ'D
ITEM #380000
UNIT AND VOLUME:
VOL. 6.27CY
WT - 25,406#



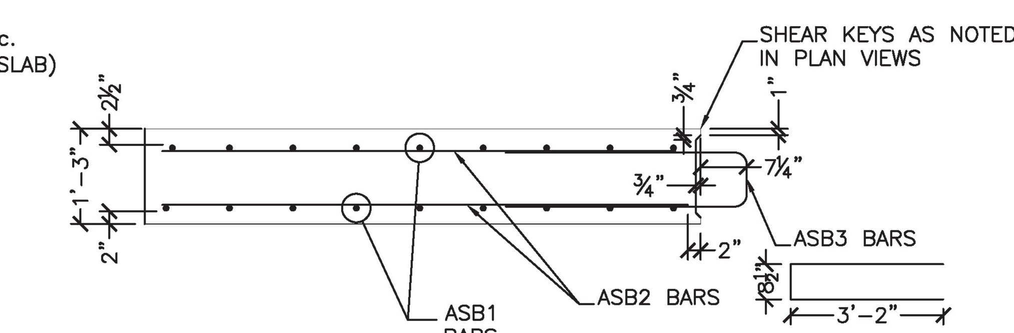
4 S3.4 ASC PLAN VIEW
1/4" = 1'-0"

ASC - (2) REQ'D
ITEM #380000
UNIT AND VOLUME:
VOL. 6.27CY
WT - 25,406#



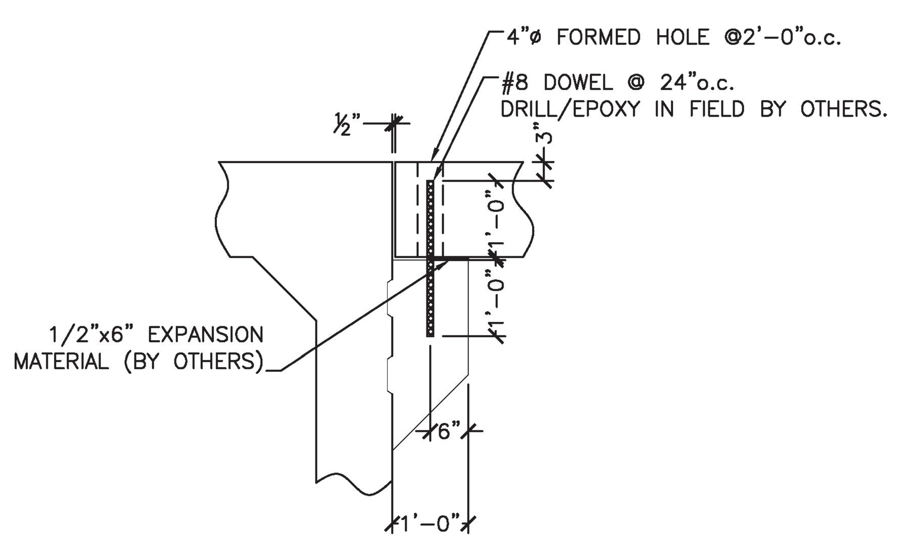
ASA, ASB, ASC REINFORCING					
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
ASB1	18	#9	10"	STR	19'-8"
ASB2	38	#5	12"	STR	6'-9"
ASB3	38	#5	12"	'U'	6'-9 1/2"

5 S3.4 ASB SECTION VIEW
1/2" = 1'-0"

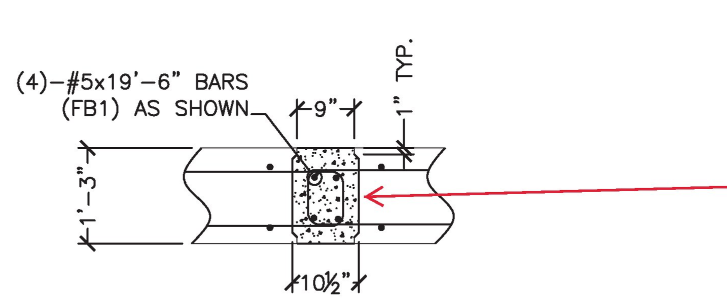


ASA & ASC REINFORCING					
MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
ASB1	18	#9	10"	STR	19'-8"
ASB2	38	#5	12"	STR	6'-9"
ASB3	19	#5	12"	'U'	6'-9 1/2"

6 S3.4 ASA & ASC SECTION VIEW
1/2" = 1'-0"



7 S3.4 APPROACH SLAB/RFB CONNECTION
1/2" = 1'-0"



Contract plans sheet 3 note 34 says 1/8" exposed agg and indicate method used

8 S3.4 APPROACH SLAB CONNECTION
1/2" = 1'-0"

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
STUART D. GORKA
NO 84443
CIVIL
LICENSED
PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

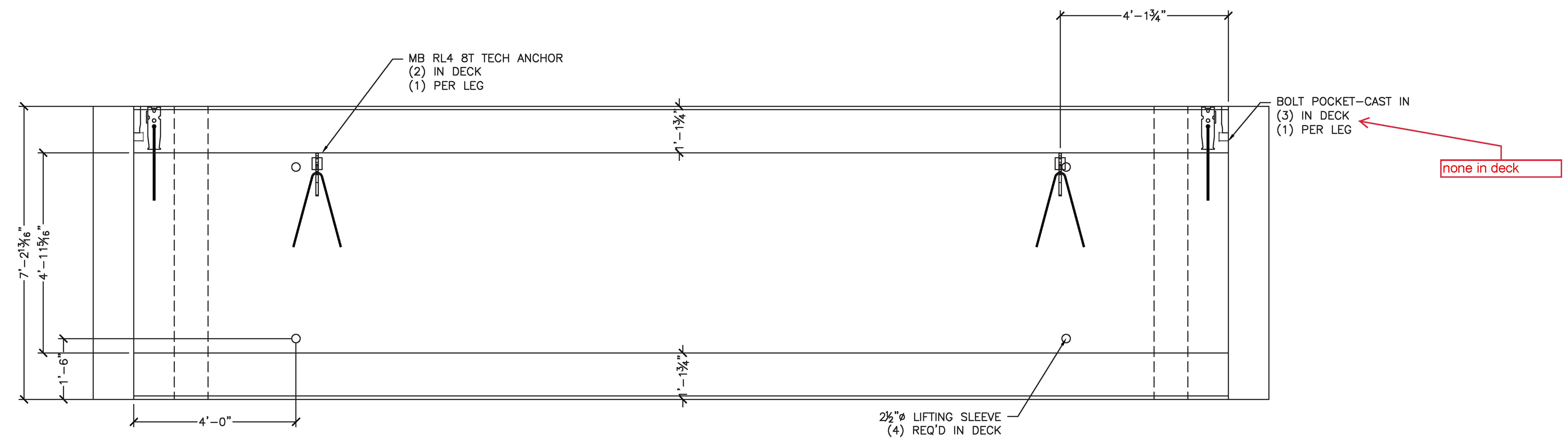
US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Approach Slab Layout and Details

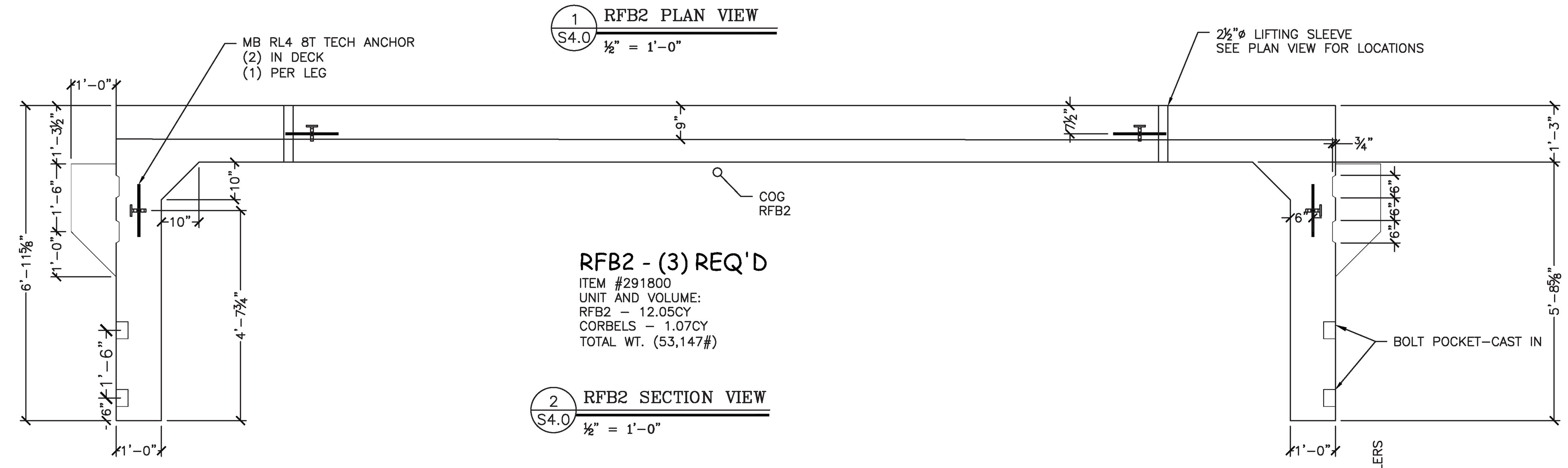
Project No. 7084
Scale: AS SHOWN
Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

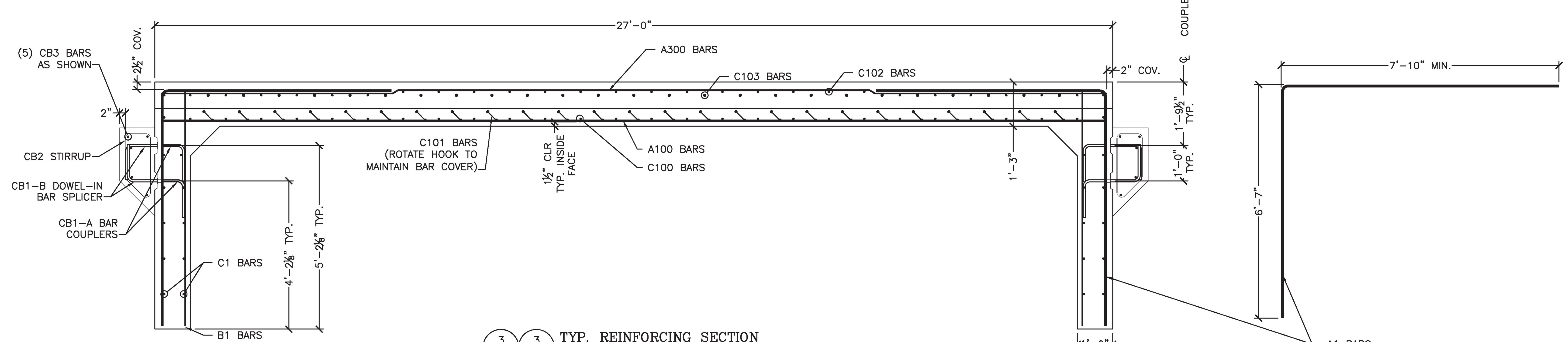
DWG NO.
S3.4



1 S4.0 RFB2 PLAN VIEW
½" = 1'-0"



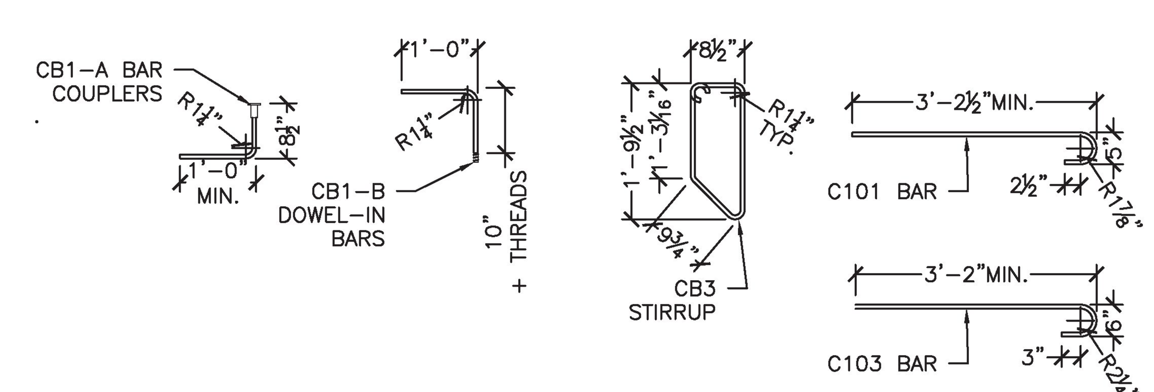
2 S4.0 RFB2 SECTION VIEW
½" = 1'-0"

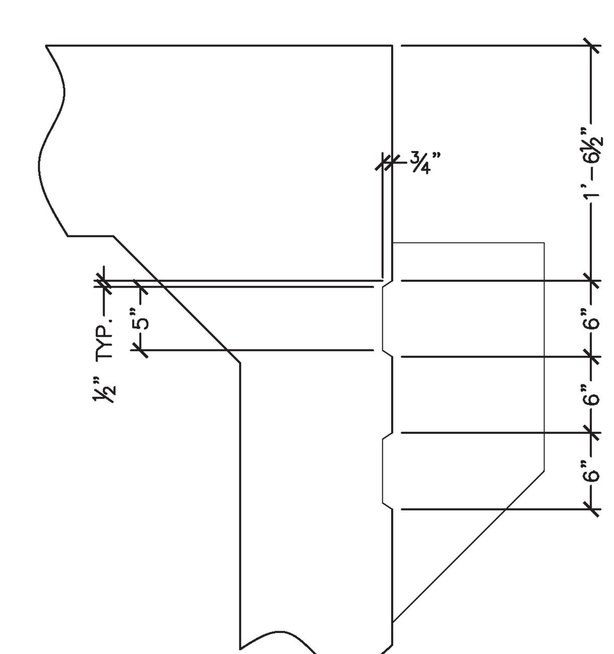


3 S4.0 3 S5.0 TYP. REINFORCING SECTION
½" = 1'-0"

Verify quantity

RFB2 REINFORCING (EPOXY COATED)						
LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	13	#10	7"	STR	26'-0"
TOP SLAB (MID)	A200	4	#5	12"	STR	26'-0"
TOP SLAB (EXT)	A300	8	#4	12"	STR	26'-0"
WALL (EXT)	A1	26	#8	7"	L BAR	14'-5"
WALL (INT)	B1	16	#4	12"	STR	6'-6"
TOP SLAB LONGIT. (INT)	C100	36	#5	7"	STR	6'-11"
TOP SLAB (LEDGE REINF)	C101	26	#5	12"	SEE BELOW	3'-9"
TOP SLAB LONGIT. (EXT)	C102	26	#4	12"	STR	4'-7"
TOP SLAB CLOSURE REINF.	C103	26	#6	12"	SEE BELOW	3'-10"
WALL LONGIT. (INT)	C1	12	#4	12"	STR	6'-11"
WALL LONGIT. (EXT)	C1	12	#4	12"	STR	6'-11"
CORBEL COUPLERS	CB1-A	32	#5	12"	SEE BELOW	--
CORBEL SPLICERS	CB1-B	32	#5	12"	SEE BELOW	--
CORBEL STIRRUPS	CB-2	16	#5	12"	SEE BELOW	4'-5"
CORBEL LONGIT.	CB-3	10	#4	--	STR	6'-11"





4 S4.0 7 S5.0 CORBEL KEY DETAIL
1" = 1'-0"

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
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STATE OF VERMONT
STUART D. GORDON
NO 84443
CIVIL
LICENSED
PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Rigid Frame Details

Scale: AS SHOWN
Checked By: CFP
Drawn by: SDG
Designed by: SDG
Project No. 7084
Date: 2/9/17

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S4.0

RFB1/RFB3 REINFORCING (EPOXY COATED)

LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
TOP SLAB (INT)	A100	13	#10	7"	STR	28'-0"*
TOP SLAB SKEWED (INT)	A101	6	#10	--	STR	23'-6"
TOP SLAB SKEWED (INT)	A102	1	#10	--	STR	24'-11"
TOP SLAB (MID)	A200	4	#5	12"	STR	28'-0"
TOP SLAB (EXT)	A300	8	#4	12"	STR	28'-0"*
WALL (EXT)	A1	26	#8	7"	L BAR	17'-4 1/2"
WALL (INT)	B1	15	#4	12"	STR	6'-6"
TOP SLAB LONGIT. (INT)	C100	36	#5	7"	STR	9'-10"*
TOP SLAB (LEDGE REINF)	C101	26	#5	12"	SEE BELOW	3'-9"
TOP SLAB LONGIT. (EXT)	C102	26	#4	12"	STR	11'-1"*
TOP SLAB CLOSURE REINF.	C103	26	#6	12"	SEE BELOW	3'-10"
WALL LONGIT. (EXT-LONG)	C1	6	#4	12"	STR	11'-6"
WALL LONGIT. (EXT-SHORT)	C1	6	#4	12"	STR	1'-8"
WALL LONGIT. (INT-LONG)	C1	6	#4	12"	STR	11'-1"
WALL LONGIT. (INT-SHORT)	C1	6	#4	12"	STR	2'-0"
CORBEL COUPLERS	CB1-A	24	#5	12"	SEE BELOW	--
CORBEL SPLICERS	CB1-B	24	#5	12"	SEE BELOW	--

verify rebar quantity and length

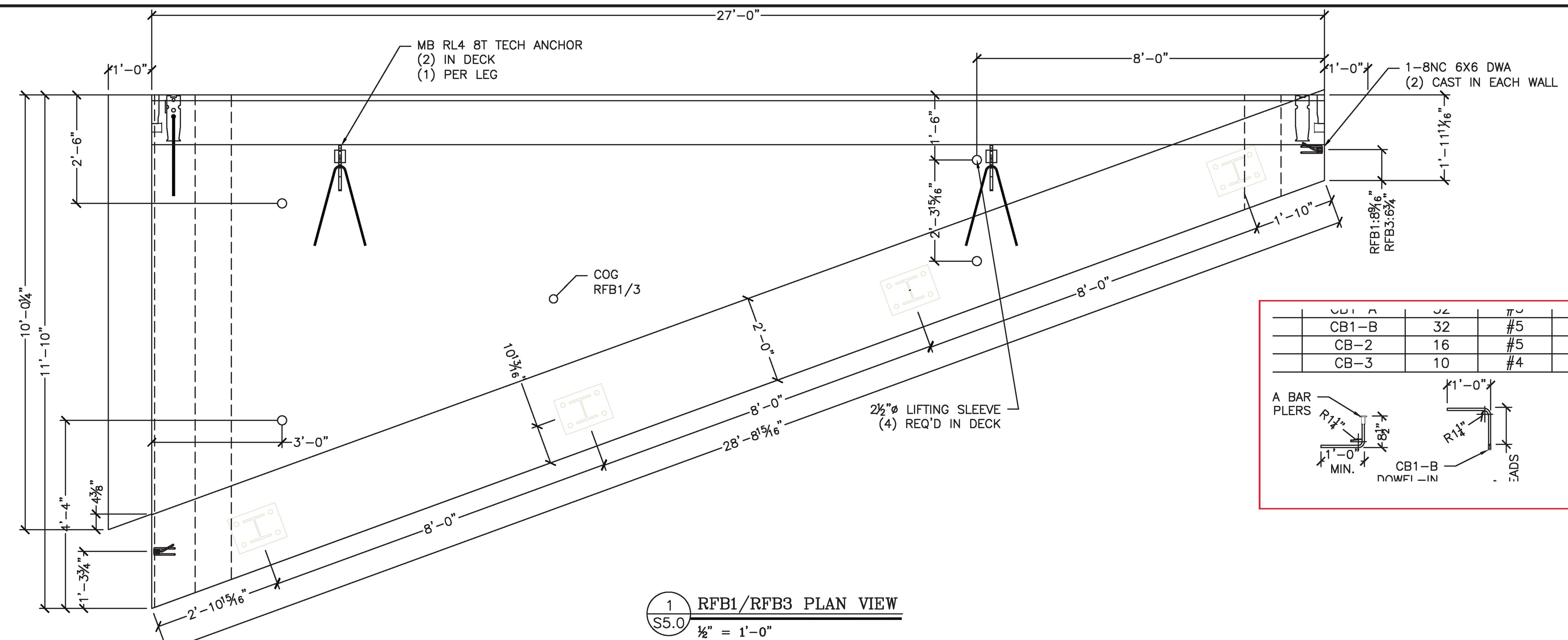
CB1-B	32	#5	12"	SEE BELOW
CB-2	16	#5	12"	SEE BELOW
CB-3	10	#4	--	STR

A BAR PLERS R1¼" 8½" 1'-0" MIN. CB1-B DOWEL-IN 1'-0" R1¼" 8½" 1'-9½" 1'-3⅛" R1¼" TYP. C101

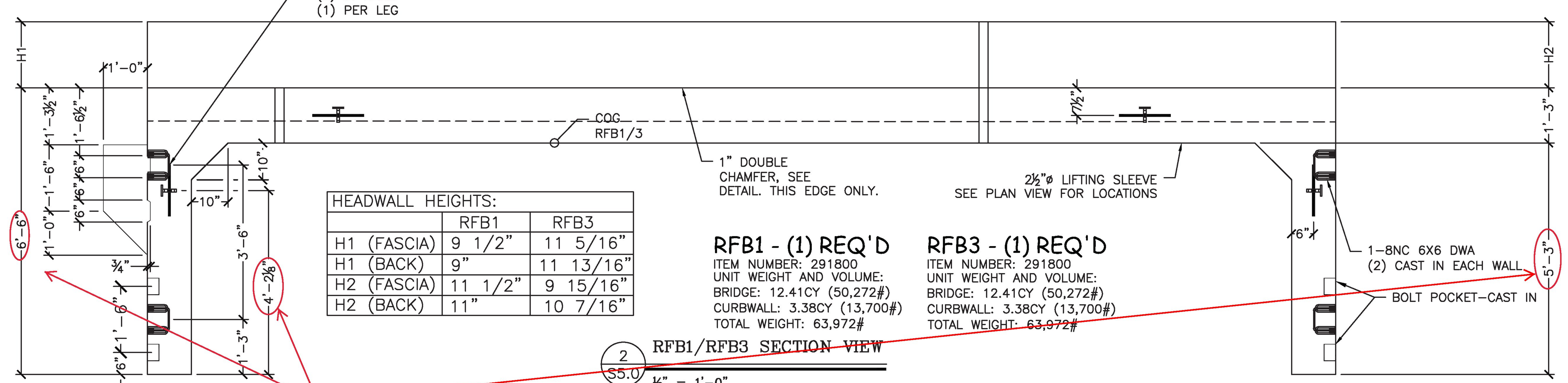
RFB1/RFB3 SUPPLEMENTAL CURBWALL REINFORCING (EPOXY COATED)

LOCATION	MARK	QTY	SIZE	SPACING	TYPE	CUT LENGTH
CURBWALL	CW1-C	90	#5	12"**	L	SEE DETAIL
CURBWALL	CW1-D	90	#5	12"**	U	SEE DETAIL
CURBWALL	CW2	5	#5	--	STR	28'-5"

** MAX. SPACING, ALIGN W/TOP SLAB C1 BARS.



1 RFB1/RFB3 PLAN VIEW (S5.0) ½" = 1'-0"



HEADWALL HEIGHTS:		
	RFB1	RFB3
H1 (FASCIA)	9 1/2"	11 5/16"
H1 (BACK)	9"	11 13/16"
H2 (FASCIA)	11 1/2"	9 15/16"
H2 (BACK)	11"	10 7/16"

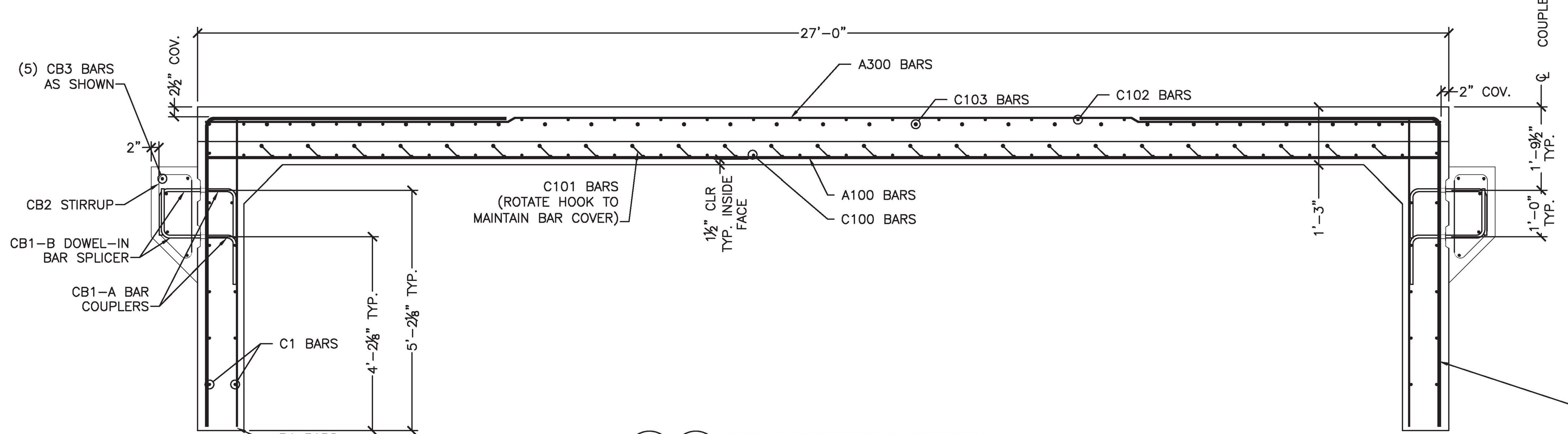
RFB1 - (1) REQ'D
ITEM NUMBER: 291800
UNIT WEIGHT AND VOLUME:
BRIDGE: 12.41CY (50,272#)
CURBWALL: 3.38CY (13,700#)
TOTAL WEIGHT: 63,972#

RFB3 - (1) REQ'D
ITEM NUMBER: 291800
UNIT WEIGHT AND VOLUME:
BRIDGE: 12.41CY (50,272#)
CURBWALL: 3.38CY (13,700#)
TOTAL WEIGHT: 63,972#

2 RFB1/RFB3 SECTION VIEW (S5.0) ½" = 1'-0"

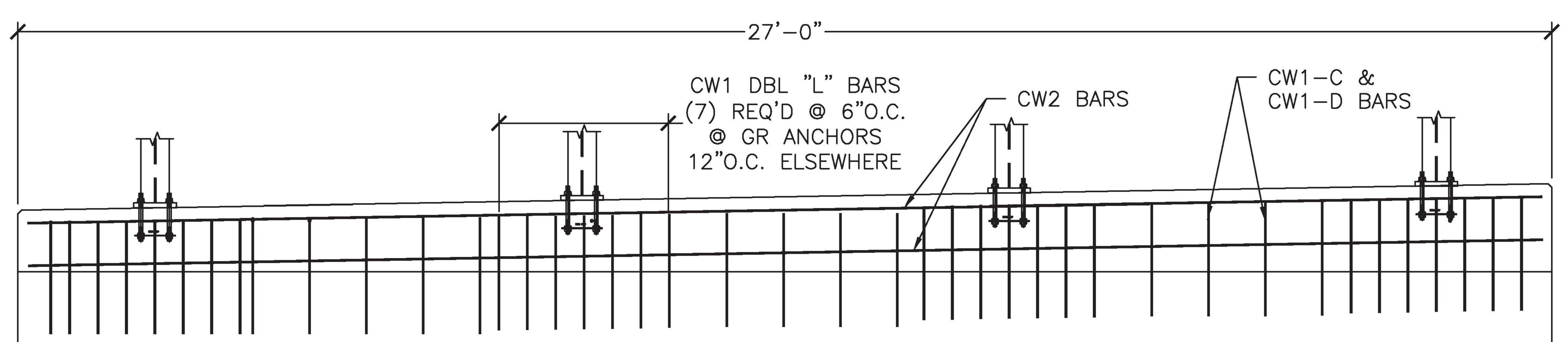
* BUILDER MAY SPLICE CW2 BARS (26" MIN SPLICE REQ'D)

NOTE:
CW BARS ARE TO BE CAST IN RFB1 AND RFB3 ONLY

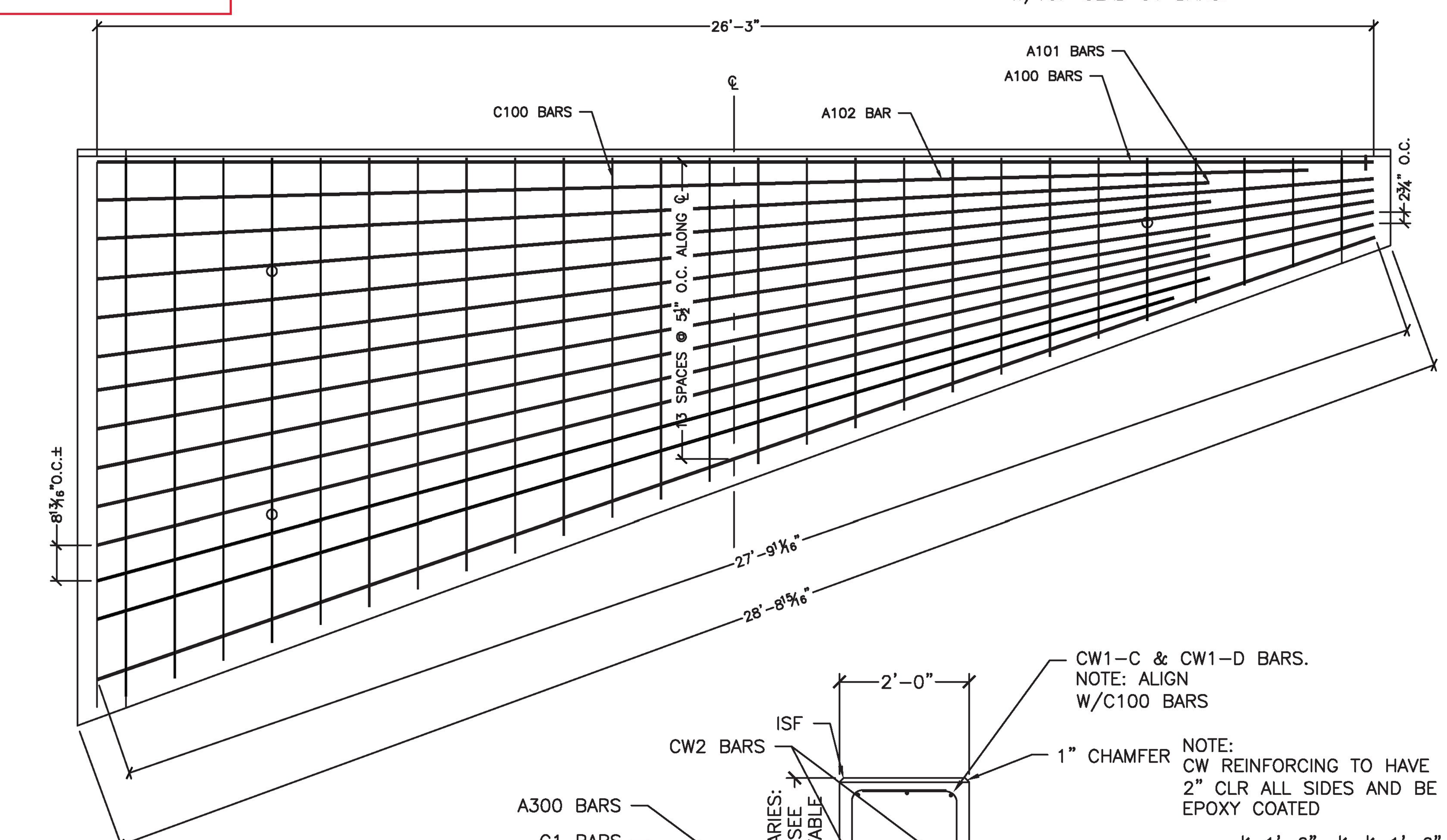


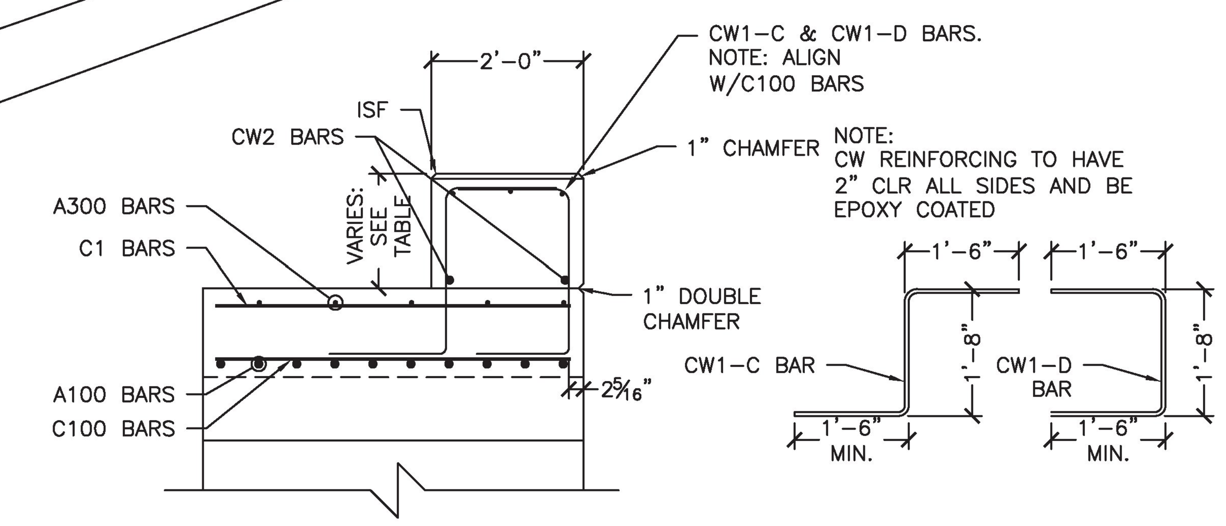
3 (S4.0) 3 (S5.0) TYP. REINFORCING SECTION ½" = 1'-0"

NOTE:
CW BARS ARE TO BE CAST IN RFB1 AND RFB3 ONLY

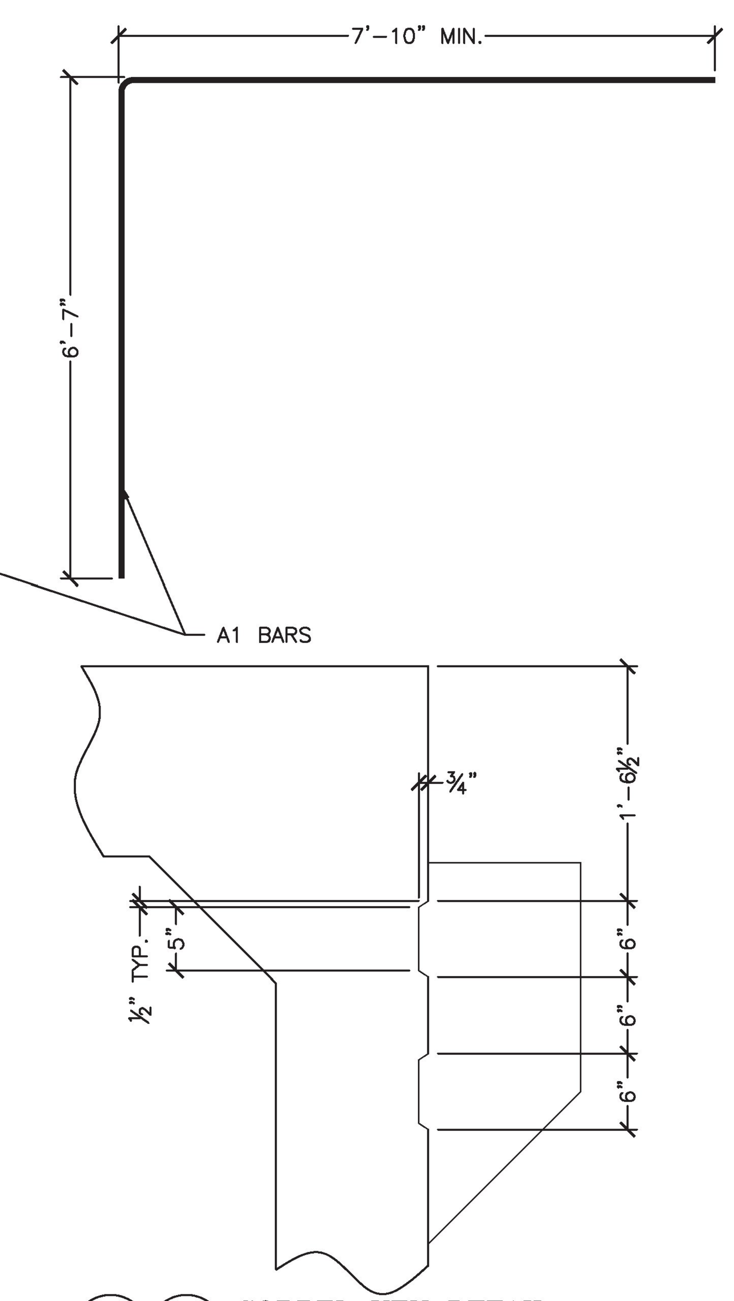


4 RFB1/RFB3 HW BAR (S5.0) ½" = 1'-0"



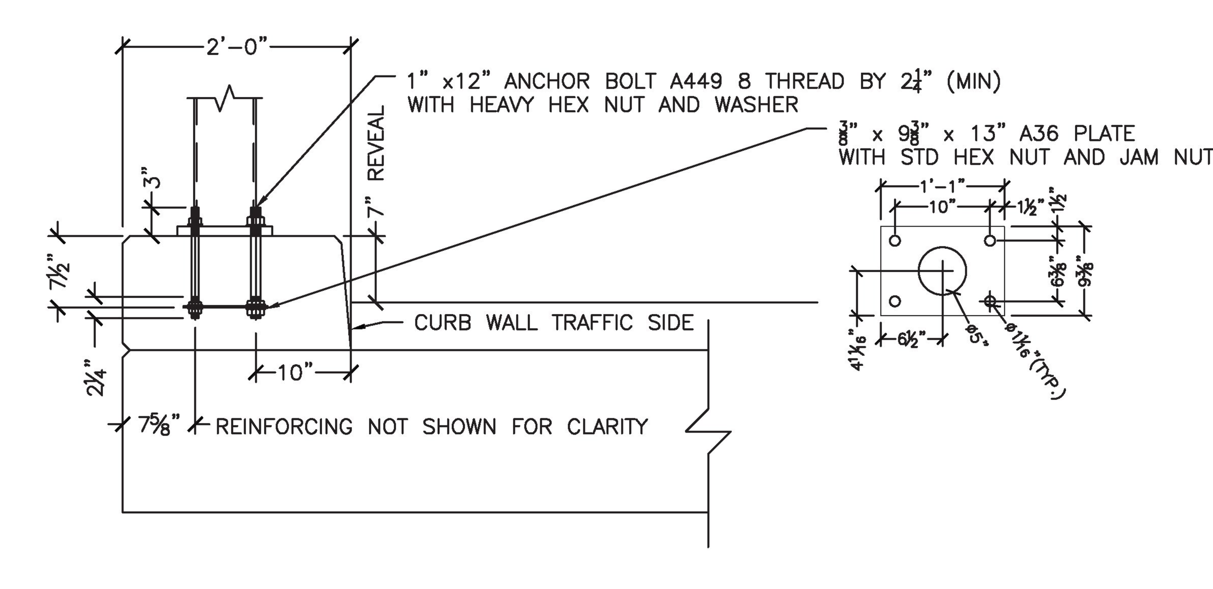


5 CURBWALL REINFORCING SECTION (S5.0) ½" = 1'-0"



4 (S4.0) 7 (S5.0) CORBEL KEY DETAIL 1" = 1'-0"

NOTES:
- GUARDRAIL ANCHORAGE COMPONENTS SHALL BE SUPPLIED BY WHITE MOUNTAIN PRECAST, LLC.
- BASE PLATE, POST, AND RAIL BY OTHERS
- ALL COMPONENTS TO BE HOT-DIPPED GALVANIZED.
- SEE VTRANS STANDARD S-360A FOR ADDITIONAL DETAILS



6 GUARDRAIL ANCHORAGE DETAIL (S5.0) ¾" = 1'-0" (24" CURB 7" REVEAL)

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC
101 PINEVIEW ESTATES
MOUNTAIN TOP, PA 18707
PHONE: 570-868-2081
FAX: 570-868-2082

No.	Date	Revision	By
△	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
NO 84443
CIVIL
LICENSED PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

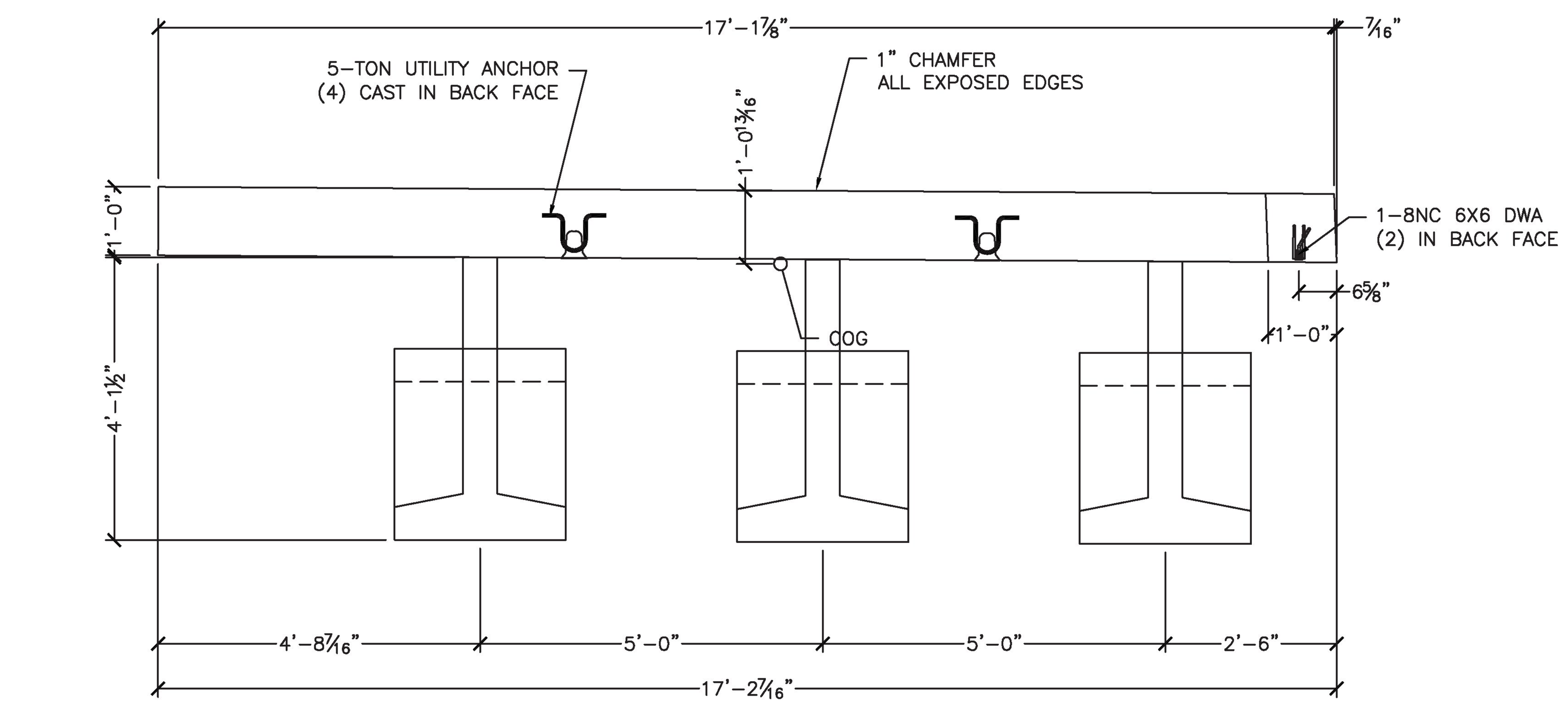
US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Rigid Frame and Headwall Details

Project No. 7084
Date: 2/9/17
Designed by: SDG
Drawn by: SDG
Checked by: CFP
Scale: AS SHOWN

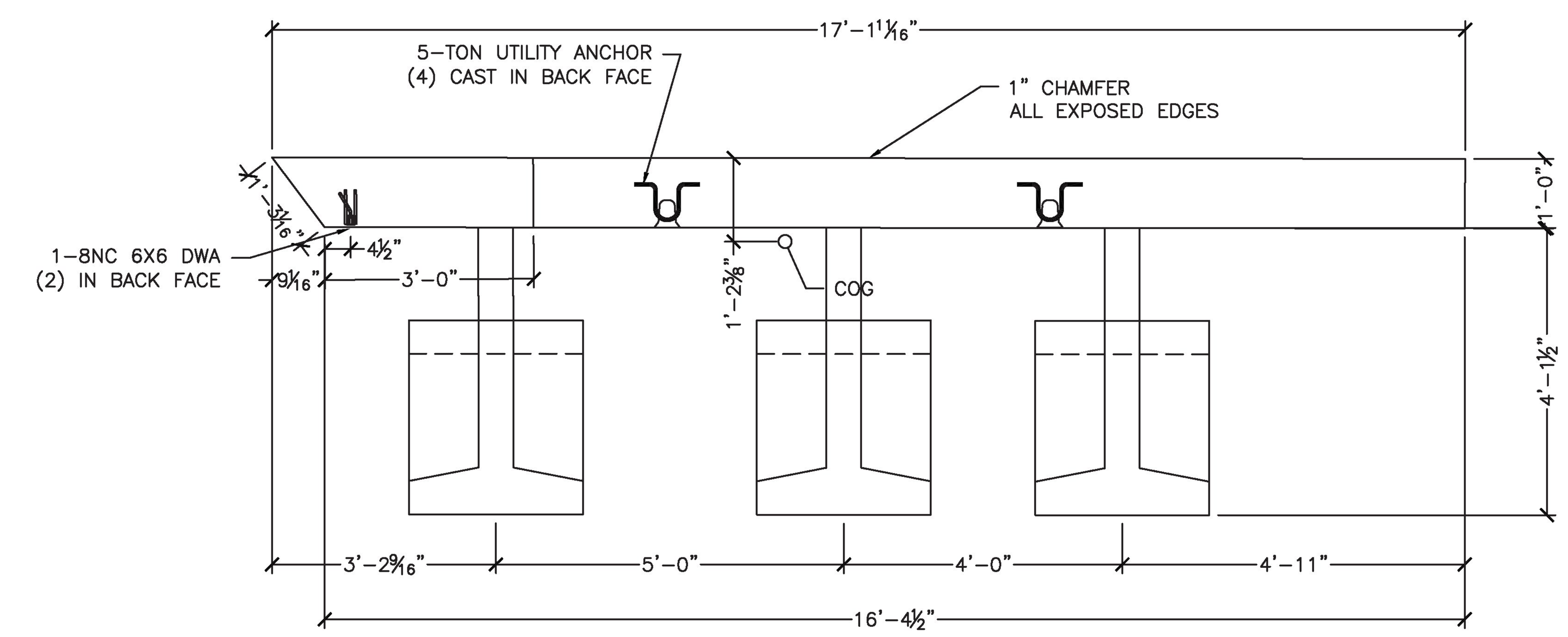
Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO. S5.0



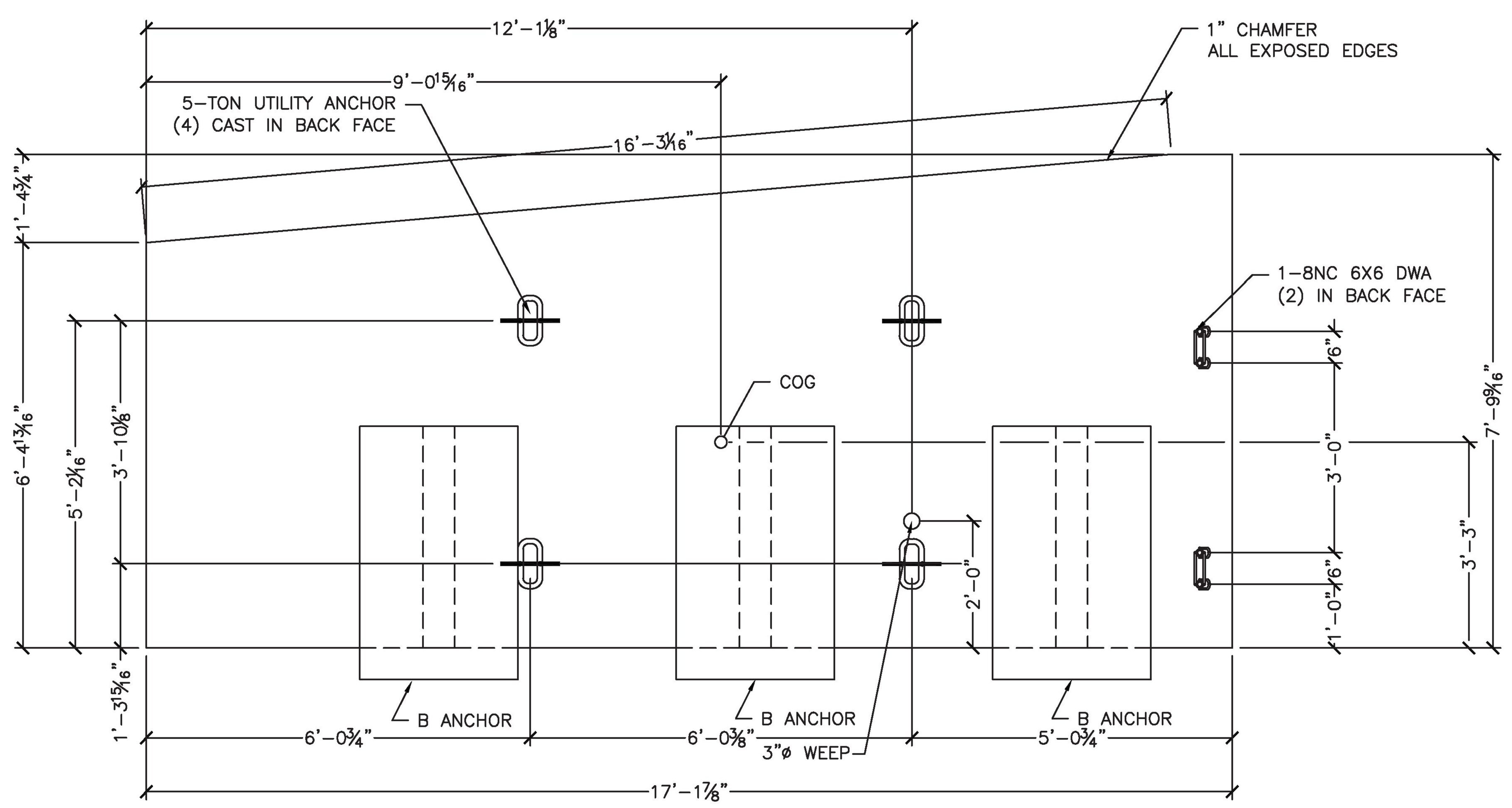
1 S6.0 WW1 PLAN VIEW
½" = 1'-0"

WW1 - (1) REQ'D
ITEM #275602
UNIT AND VOLUME:
PANEL – 4.64CY
B ANCHOR – 0.41CY/EA
TOTAL WT – 24,000#

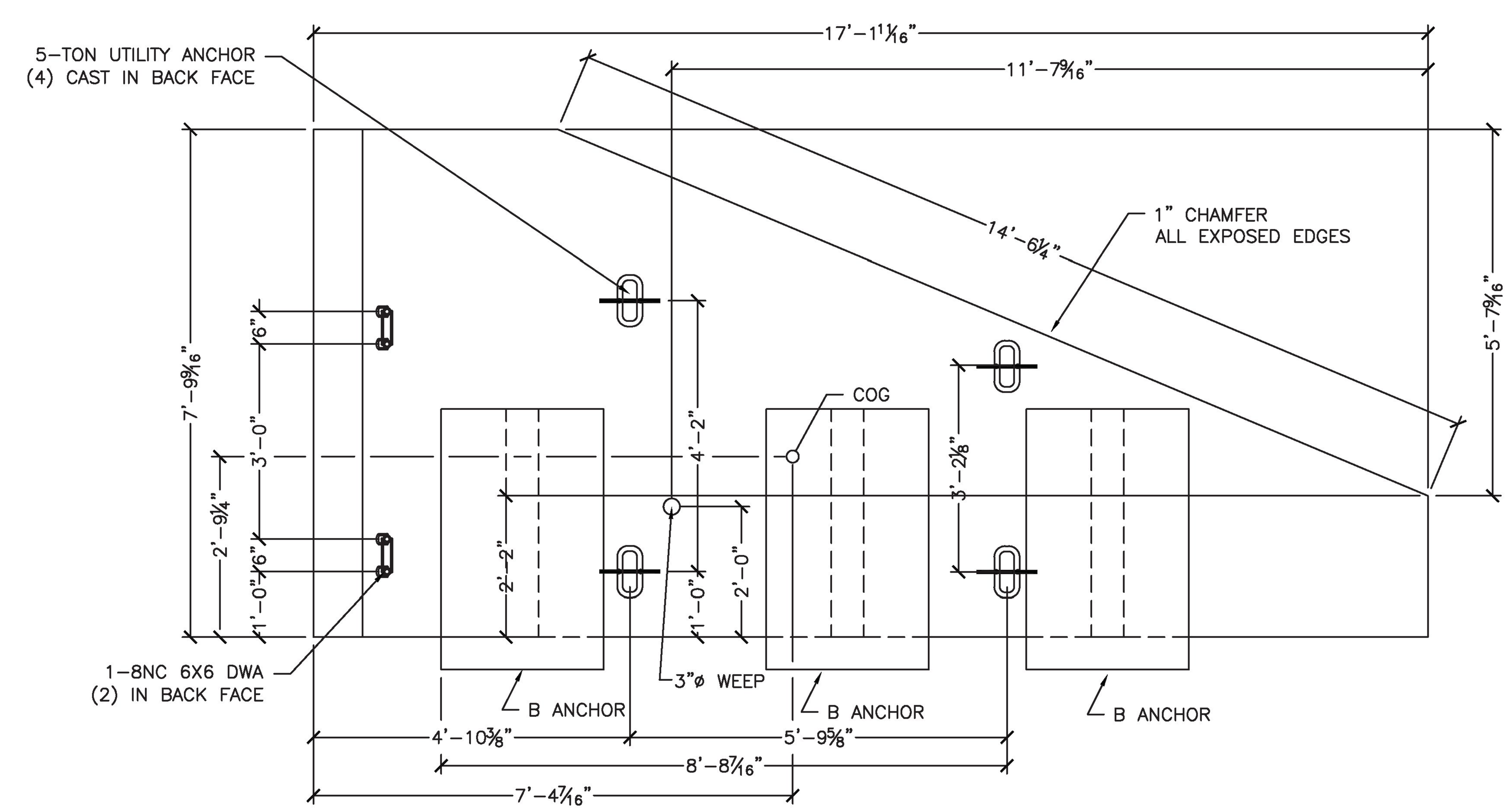


3 S6.0 WW2 PLAN VIEW
½" = 1'-0"

WW2 - (1) REQ'D
ITEM #275602
UNIT AND VOLUME:
PANEL – 3.52CY
B ANCHOR – 0.41CY/EA
TOTAL WT – 19,490#



2 S6.0 WW1 ELEVATION VIEW
½" = 1'-0"



4 S6.0 WW2 ELEVATION VIEW
½" = 1'-0"

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
STUART D. GORDON
NO 84443
CIVIL
LICENSED
PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

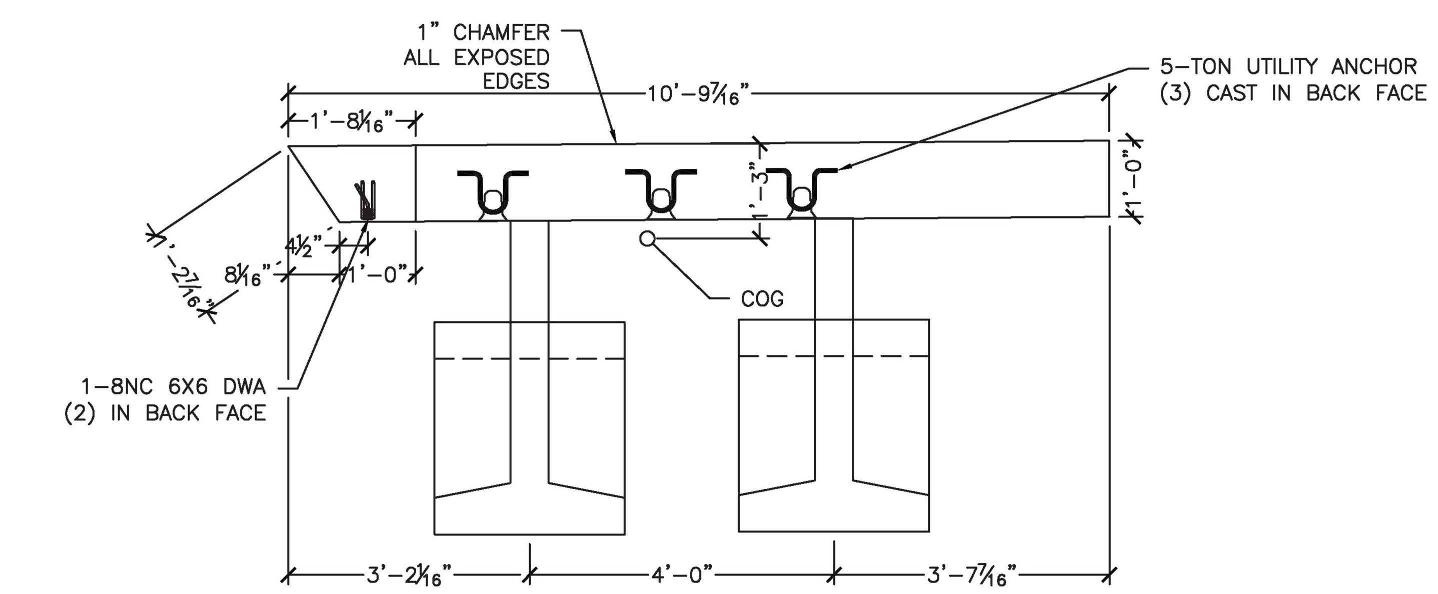
US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
WW1 & WW2

Scale: AS SHOWN
Project No. 7084 | Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP

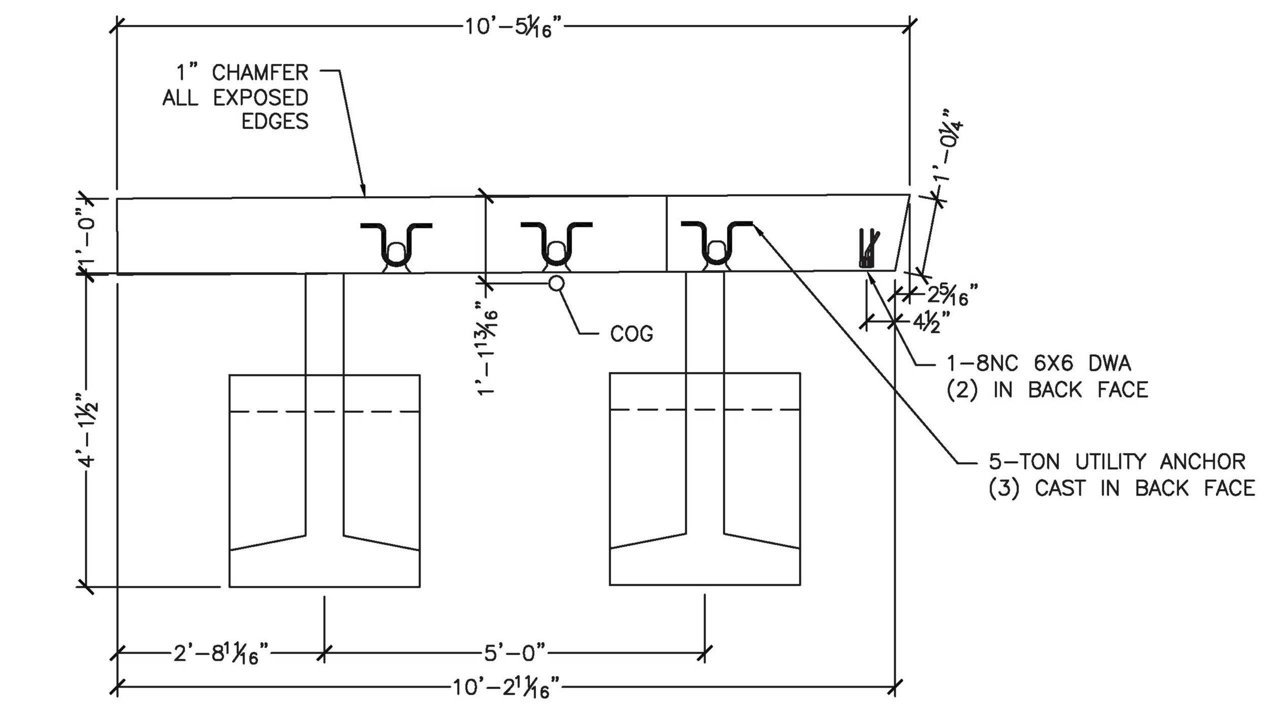
Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S6.0



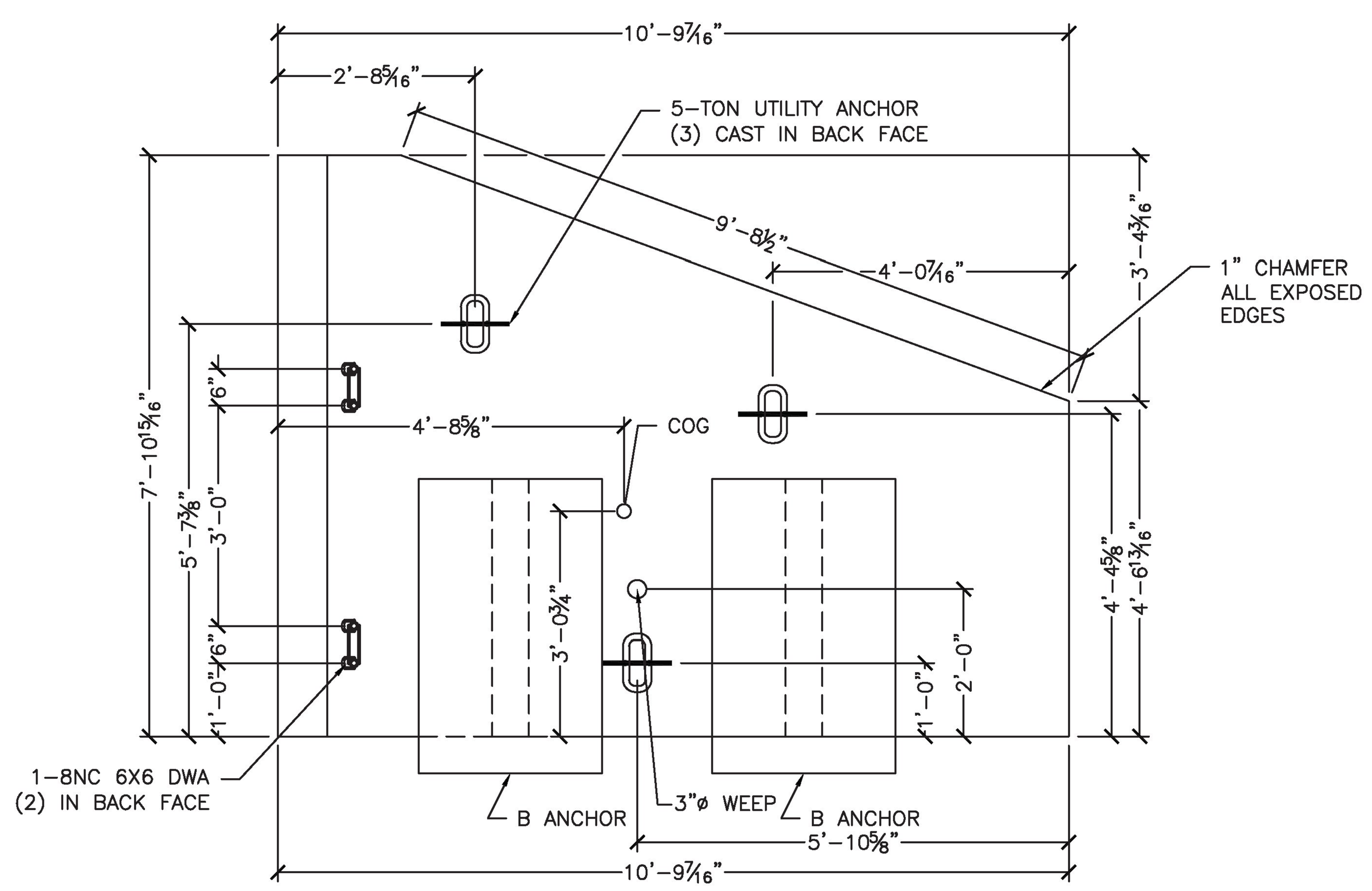
1 S7.0 WW3 PLAN VIEW
½" = 1'-0"

WW3 - (1) REQ'D
ITEM #275602
UNIT AND VOLUME:
PANEL – 2.15CY
B ANCHOR – 0.41CY/EA
TOTAL WT – 12,190#

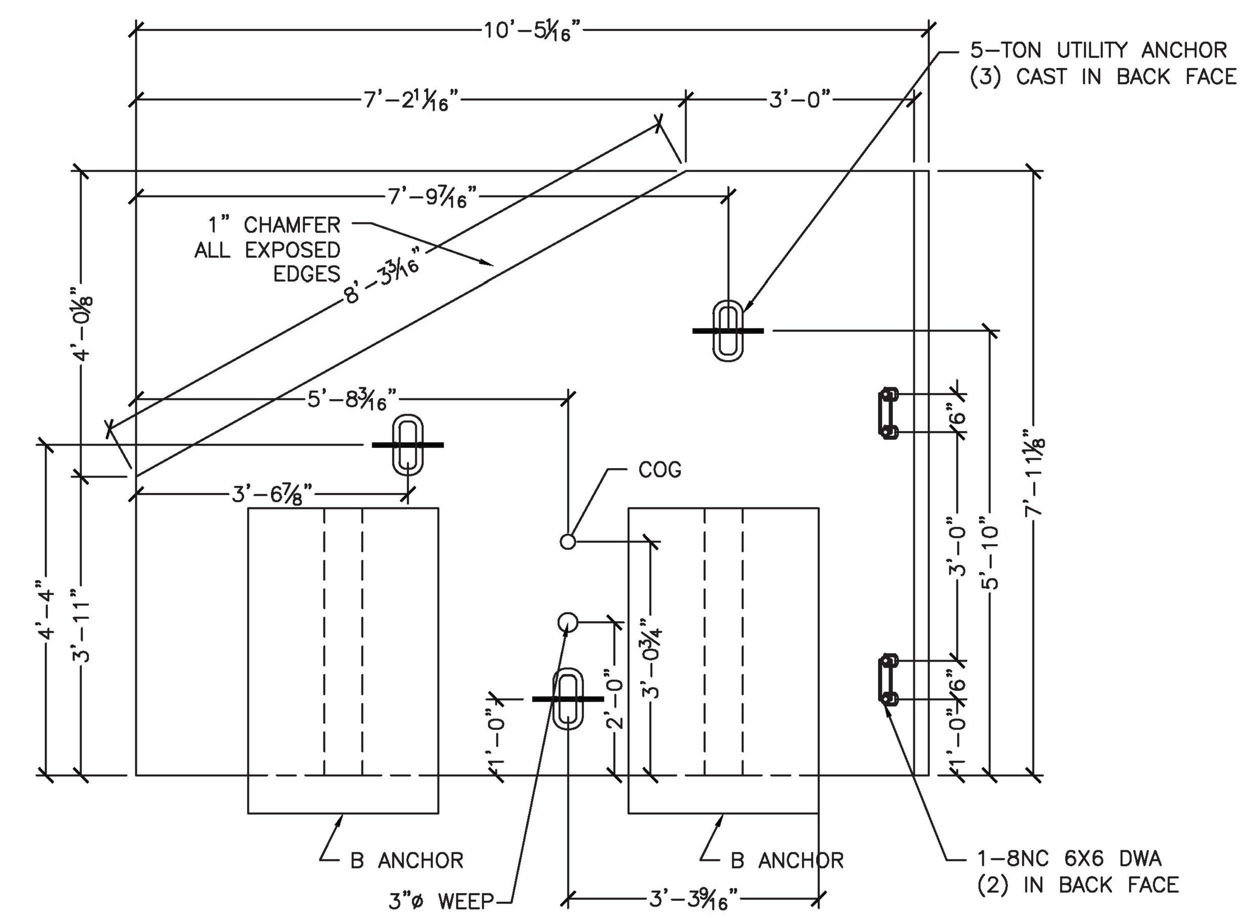


3 S7.0 WW4 PLAN VIEW
½" = 1'-0"

WW4 - (1) REQ'D
ITEM #275602
UNIT AND VOLUME:
PANEL – 2.58CY
B ANCHOR – 0.41CY/EA
TOTAL WT – 13,940#



2 S7.0 WW3 ELEVATION VIEW
½" = 1'-0"



4 S7.0 WW4 ELEVATION VIEW
½" = 1'-0"

SPECIALTY ENGINEERING SERVICES PROVIDED BY: CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT STUART D. GERRY NO 84443 CIVIL LICENSED PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

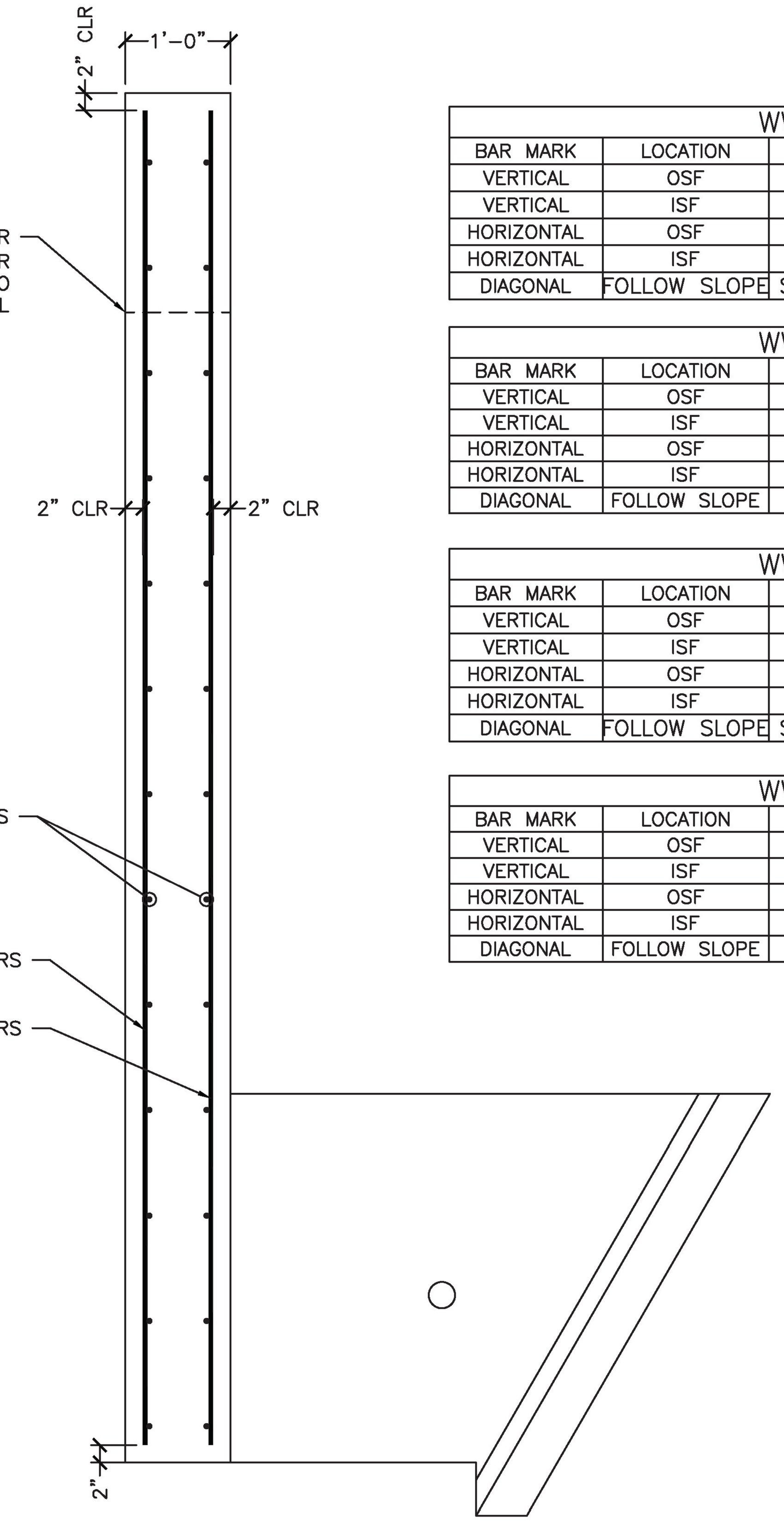
25'-0" x 5'-3" Rigid Frame Bridge
WWC and WWD Details

Project No. 7084 | Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP | Scale: AS SHOWN

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S7.0

Verify rebar lengths



1 S8.0 WINGWALL REINFORCING (TYP)
NTS

WW1 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#5 @ 12"	VARIES 7'-9" TO 6'-1"	18
VERTICAL	ISF	STRAIGHT	#5 @ 12"	VARIES 7'-9" TO 6'-1"	18
HORIZONTAL	OSF	STRAIGHT	#5 @ 12"	16'-9" LONGEST PIECE	8
HORIZONTAL	ISF	STRAIGHT	#5 @ 12"	16'-9" LONGEST PIECE	8
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	17'-0"	2

WW2 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#5 @ 12"	VARIES 7'-6" TO 1'-10"	18
VERTICAL	ISF	STRAIGHT	#5 @ 12"	VARIES 7'-6" TO 1'-10"	18
HORIZONTAL	OSF	STRAIGHT	#5 @ 12"	16'-9" LONGEST PIECE	8
HORIZONTAL	ISF	STRAIGHT	#5 @ 12"	16'-0" LONGEST PIECE	8
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	14'-3"	2

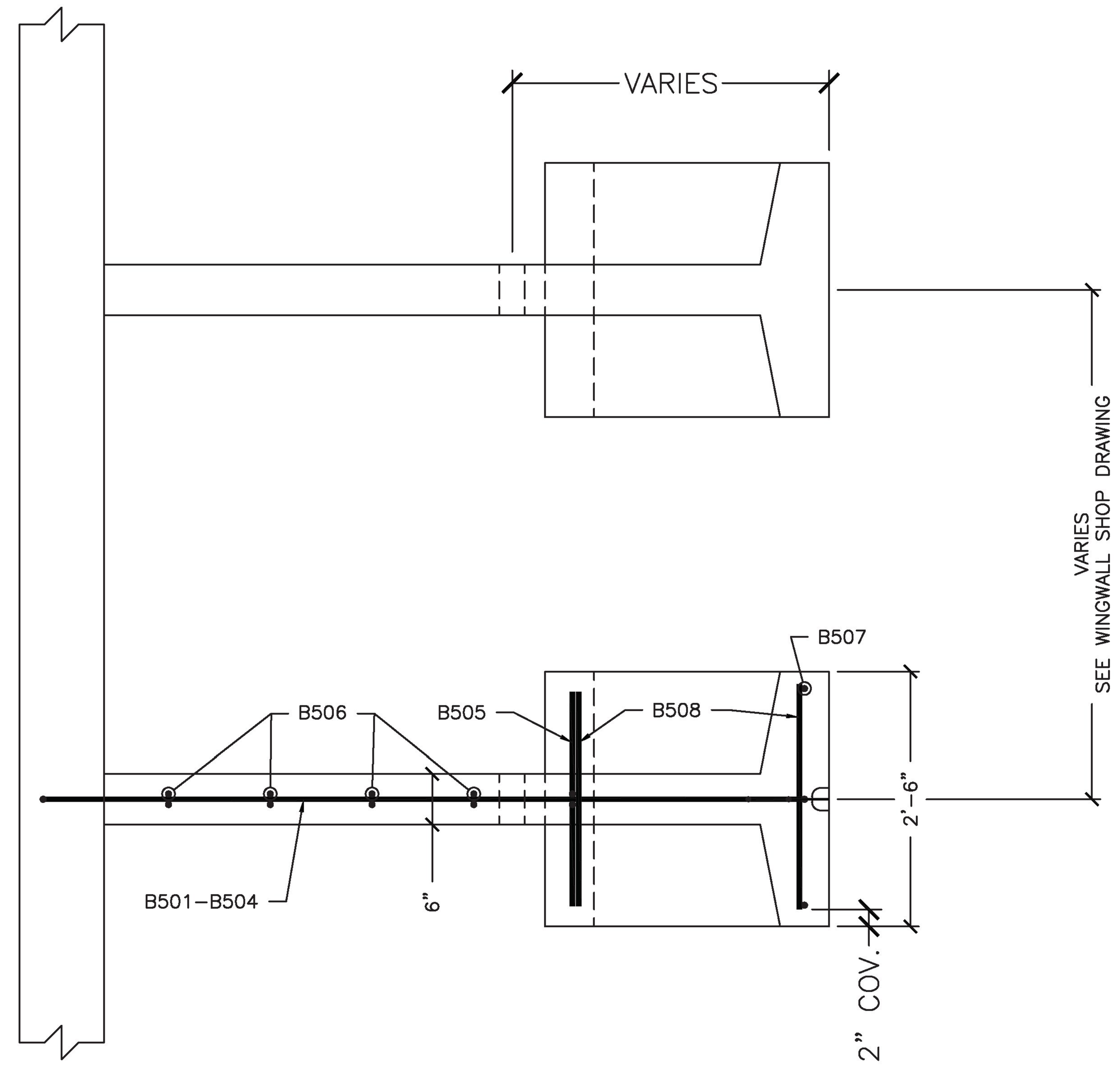
WW3 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#5 @ 12"	VARIES 7'-10" TO 1'-10"	11
VERTICAL	ISF	STRAIGHT	#5 @ 12"	VARIES 8'-10" TO 6'-8"	11
HORIZONTAL	OSF	STRAIGHT	#5 @ 12"	10'-5" LONGEST PIECE	8
HORIZONTAL	ISF	STRAIGHT	#5 @ 12"	9'-9" LONGEST PIECE	8
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	9'-0"	2

WW4 REINFORCING SCHEDULE					
BAR MARK	LOCATION	TYPE	SIZE/SPACING	CUT LENGTH	# OF PCS
VERTICAL	OSF	STRAIGHT	#5 @ 12"	VARIES 8'-10" TO 7'-2"	11
VERTICAL	ISF	STRAIGHT	#5 @ 12"	VARIES 8'-10" TO 7'-2"	11
HORIZONTAL	OSF	STRAIGHT	#5 @ 12"	10'-1" LONGEST PIECE	8
HORIZONTAL	ISF	STRAIGHT	#5 @ 12"	9'-11" LONGEST PIECE	8
DIAGONAL	FOLLOW SLOPE	STRAIGHT	#4	9'-4"	2

TYPE "B"
10 REQ'D

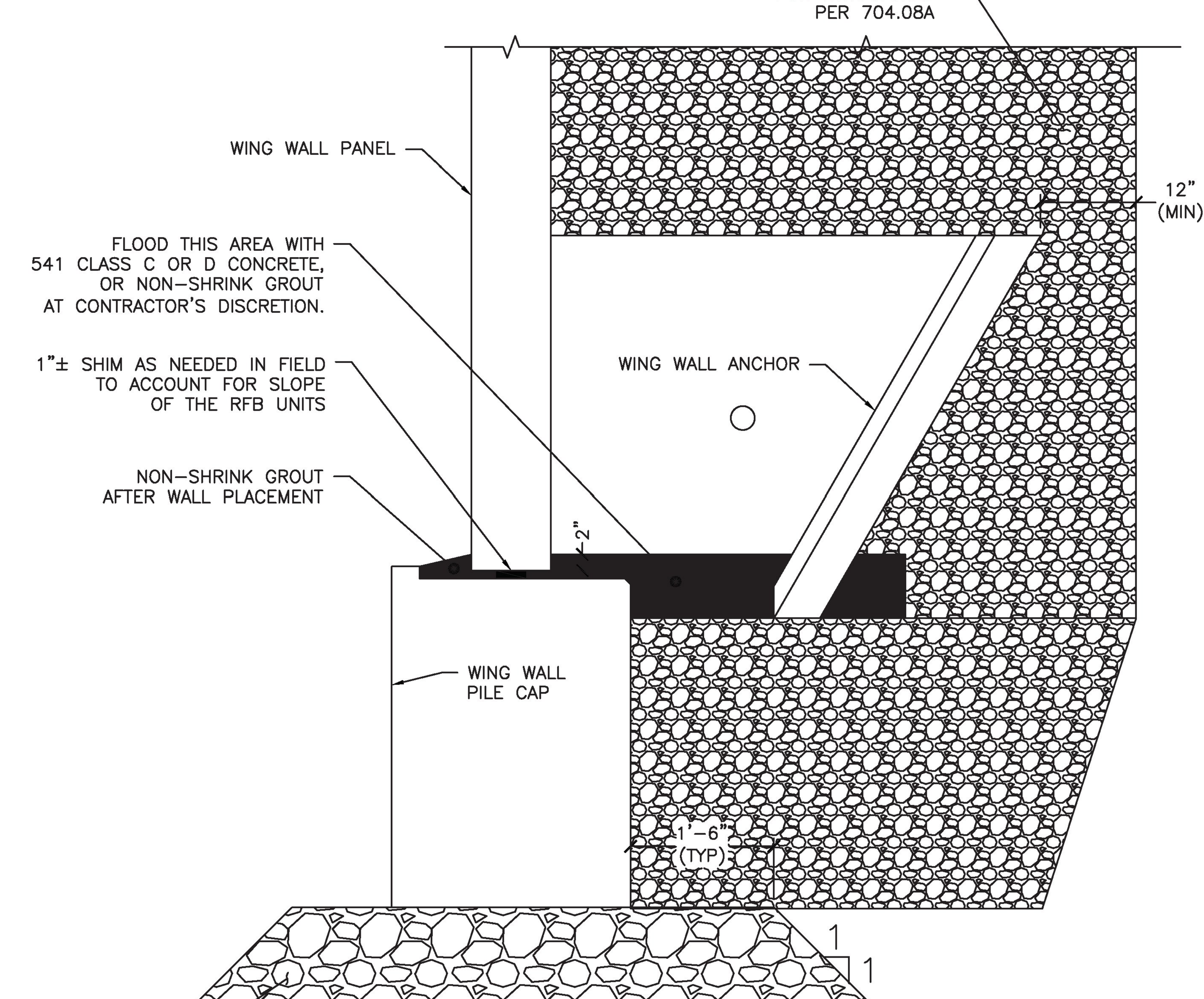
ANCHOR TYPE "B"					
CONCRETE QUANTITY				0.41 CY	
WEIGHT				1740 LB	
W1				1'-4"	
W2				3'-5⅜"	
X =	2'-2⅛"	Y=	1'-8⅜"		
BAR LIST					
MARK	QTY	SIZE	L	TYPE	LENGTH
B501	1	#5	4'-4½"	1	10'-1½"
B502	1	#5	4'-0½"	1	9'-5"
B503	1	#5	3'-8¼"	1	8'-9"
B504	1	#5	3'-0"	1	7'-4½"
B505	2	#5	3'-8"	2	4'-7"
B506	2	#5	----	Str.	3'-2"
B507	4	#5	----	Str.	4'-4½"
B508	7	#5	----	Str.	2'-2"

SPECIALTY ENGINEERING SERVICES PROVIDED BY:
CONCRETE ENGINEERING SOLUTIONS, LLC
101 PINEVIEW ESTATES
MOUNTAIN TOP, PA 18707

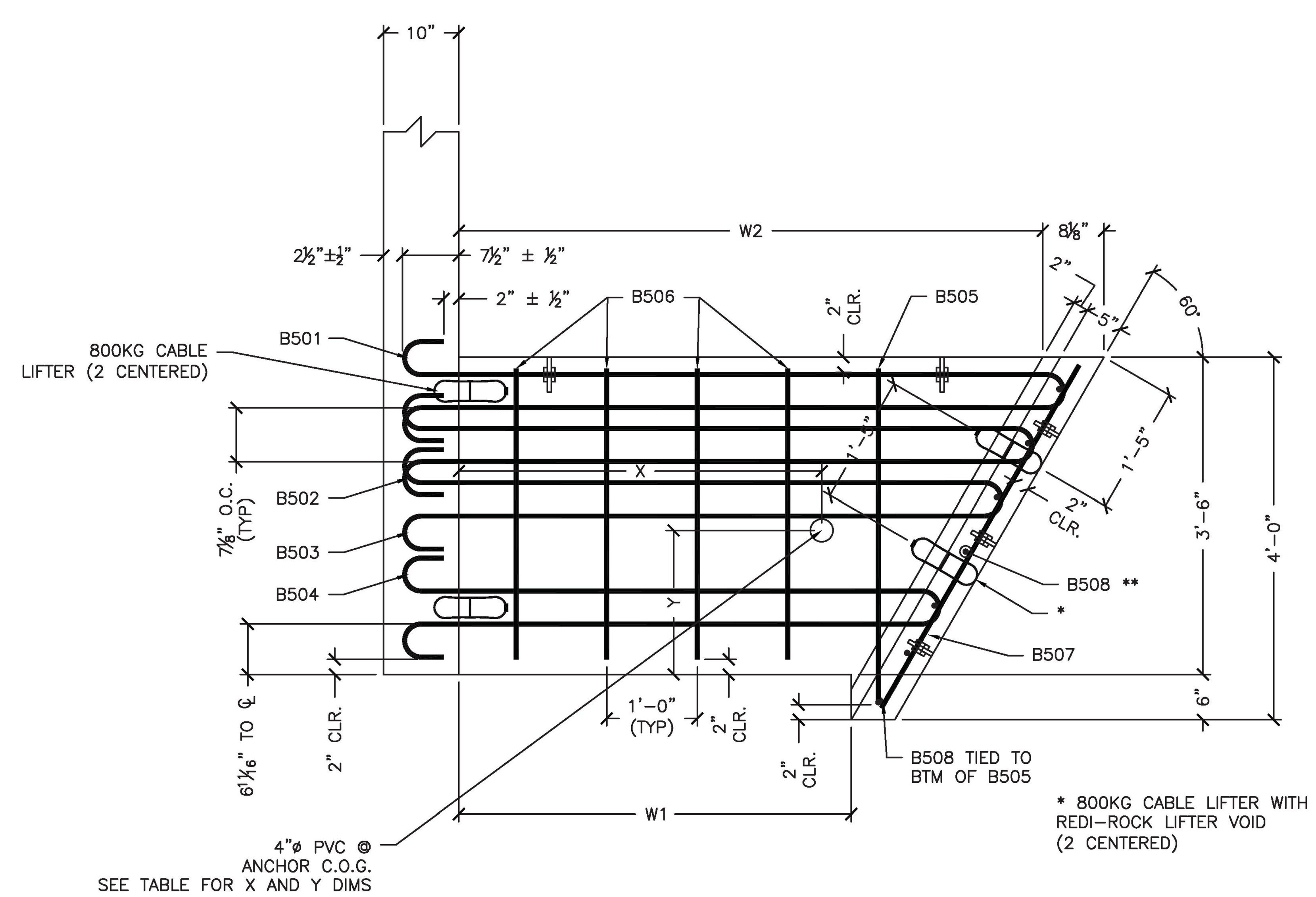


NOTE: REINFORCING SHOWN REPRESENTS "E" ANCHOR
OTHER ANCHOR REINFORCING SIMILAR

SEE STRUCTURE AND WINGWALL NOTES FOR BACKFILL AND FOUNDATION SPECIFICATIONS



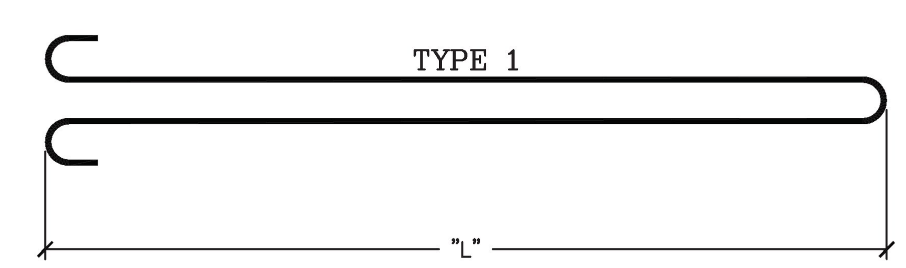
2 S8.0 FOOTING TO WW ATTACHMENT DETAIL
NTS



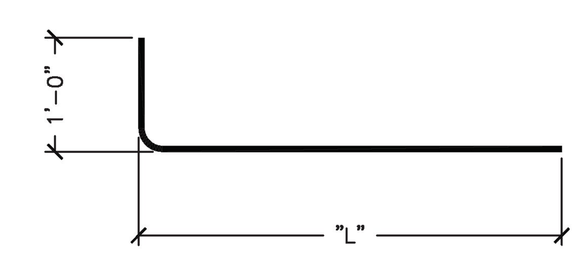
3 S8.0 ANCHOR DETAIL
¾" = 1'-0"

* 800KG CABLE LIFTER WITH REDI-ROCK LIFTER VOID (2 CENTERED)

** PLACE (1) B508 THROUGH EACH HOOP BARS, (1) CENTERED BETWEEN HOOP BARS 503 & 504, AND (2) BELOW B504 HOOP BAR W/ BOTTOM B508 2" CLEAR FROM BOTTOM (7 TOTAL)



TYPE 1



TYPE 2

No.	Date	Revision	By
△	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT
STUART D. GORSKI
NO 84443
CIVIL
LICENSED PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

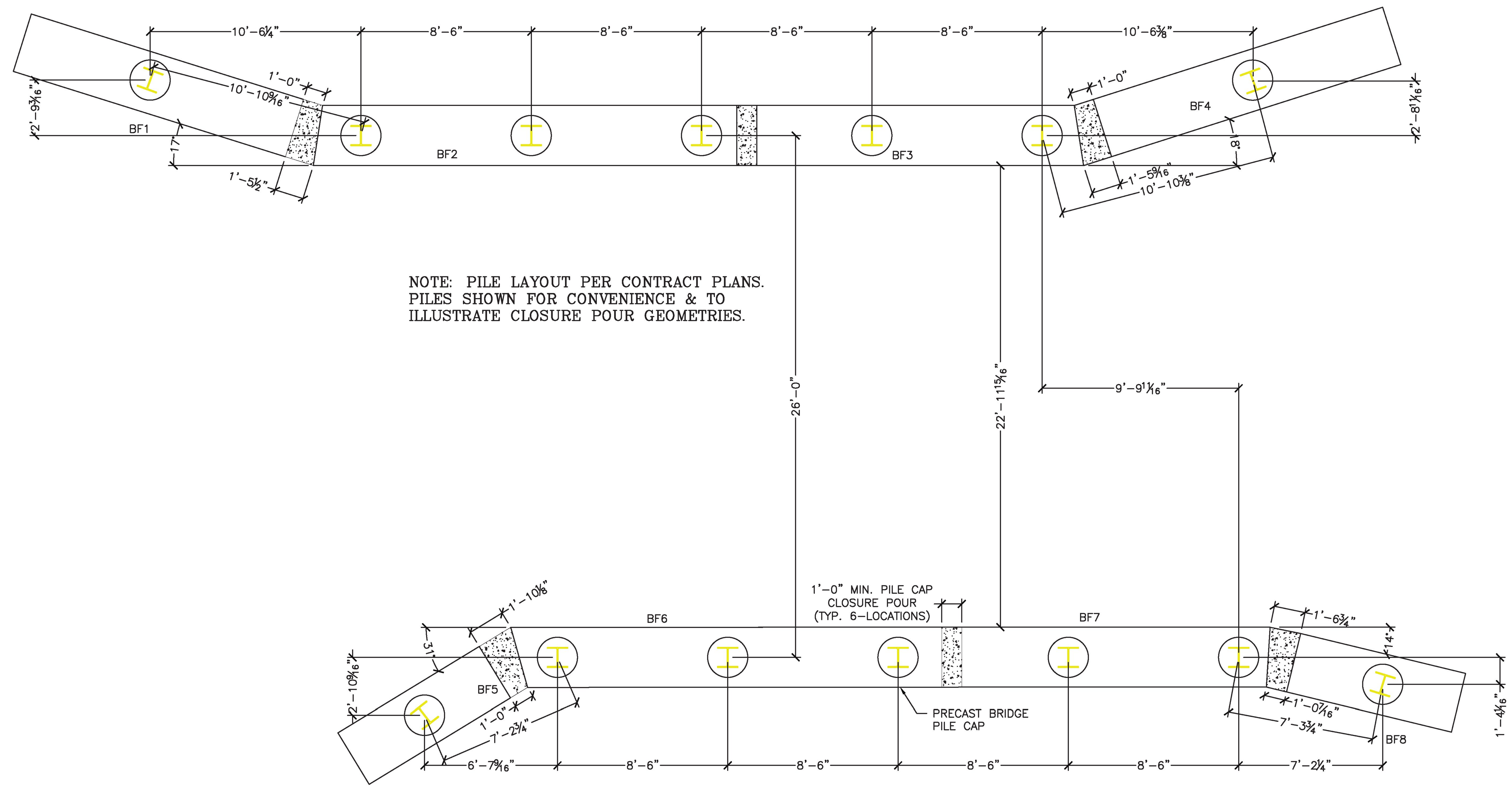
US Route 2, Rural Major Collector, Bridge 32
Town of Richmond, Project BF 0284(28)

25'-0" x 5'-3" Rigid Frame Bridge
Anchor Details

Project No. 7084 | Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP | Scale: AS SHOWN

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S8.0



1 / S3.1 PILE LAYOUT PLAN VIEW
1/4" = 1'-0"

SPECIALTY ENGINEERING SERVICES PROVIDED BY: CONCRETE ENGINEERING SOLUTIONS, LLC

No.	Date	Revision	By
1	04/18/2017	REV. PER COMMENTS	SDG

STATE OF VERMONT STUART D. GERKE NO 84443 CIVIL LICENSED PROFESSIONAL ENGINEER
4/18/17

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

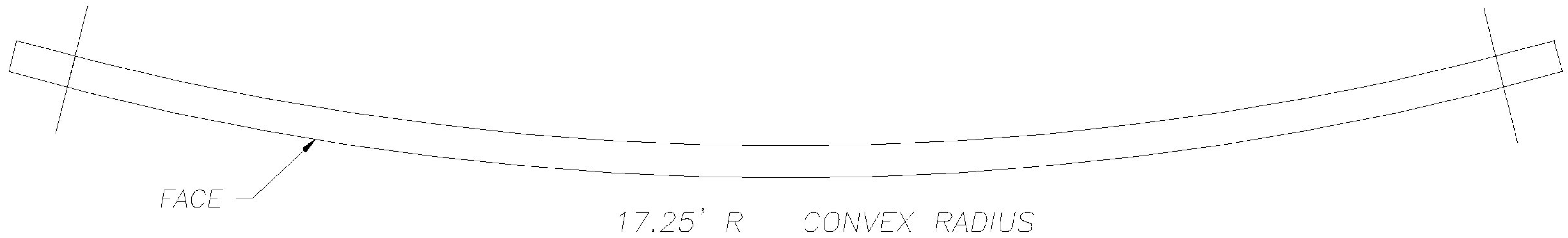
US Route 2, Rural Major Collector. Bridge 32
Town of Richmond, Project BF 0284(28)

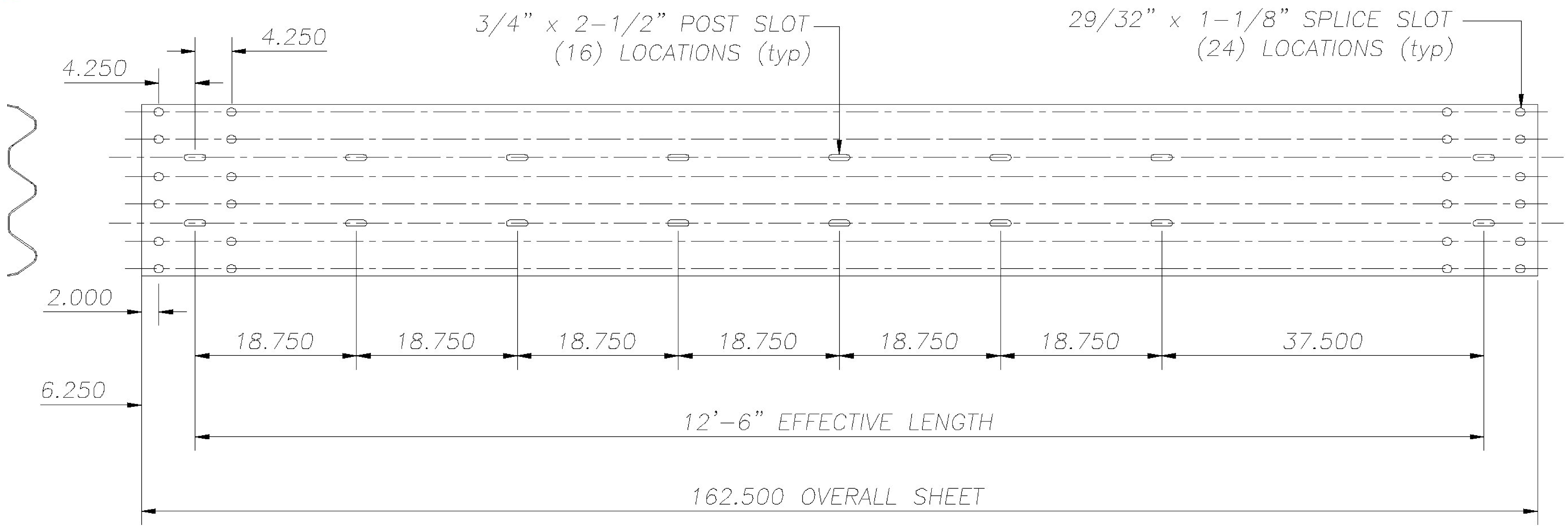
25'-0" x 5'-3" Rigid Frame Bridge
Footing Layout and Details

Project No. 7084 | Scale: AS SHOWN
Date: 2/9/17 | Designed by: SDG | Drawn by: SDG | Checked By: CFP

Prepared for:
G.W.Tatro Construction
PO Box 339
5195 VT Rt 15
Jeffersonville, VT 05464

DWG NO.
S9.0

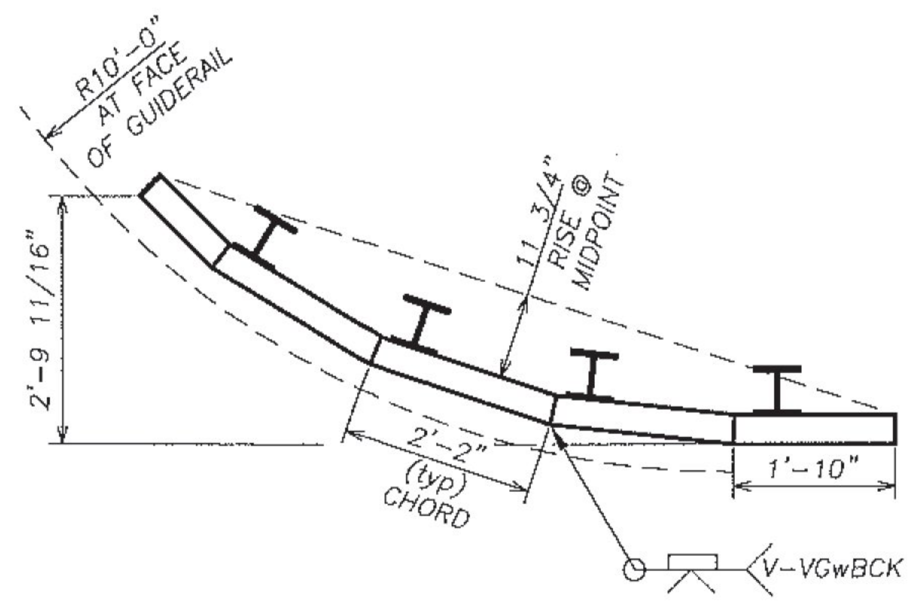




12'-6" EFF x (6) sp @ 1'-6.750" + (1) sp @ 3'-1.500"

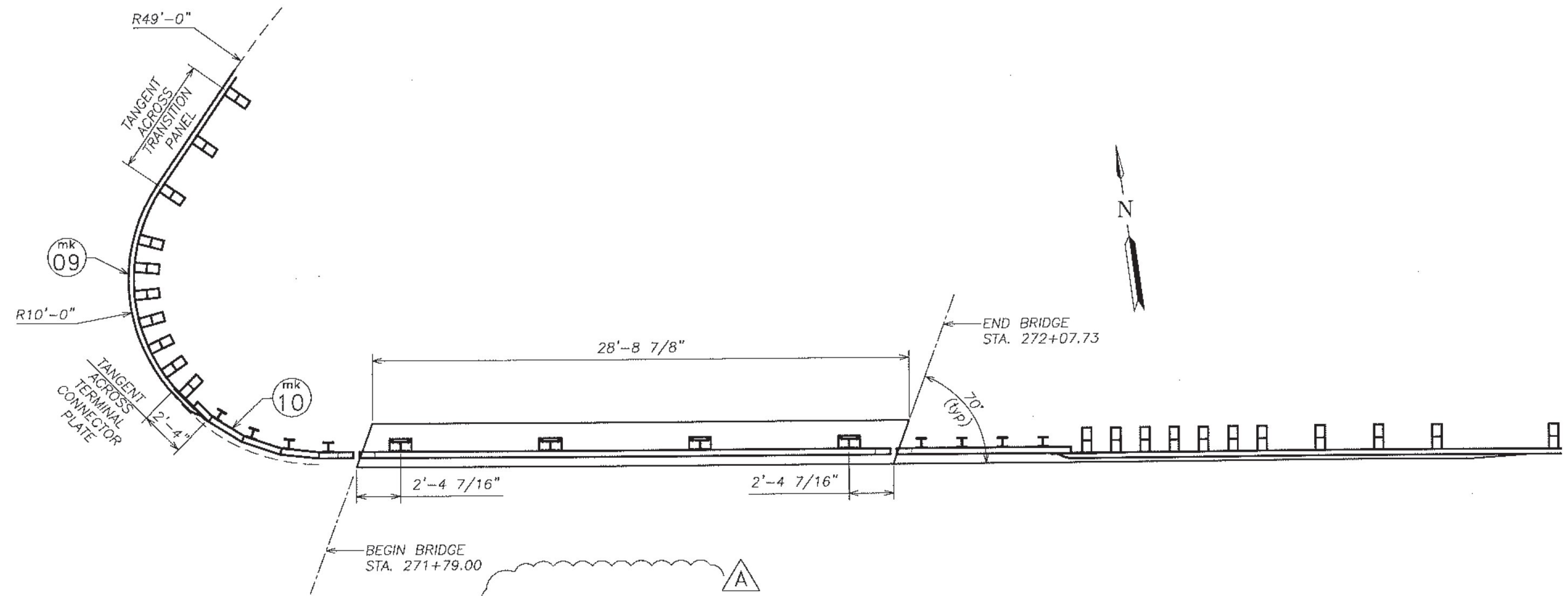
17'-3" convex radius

sk082917

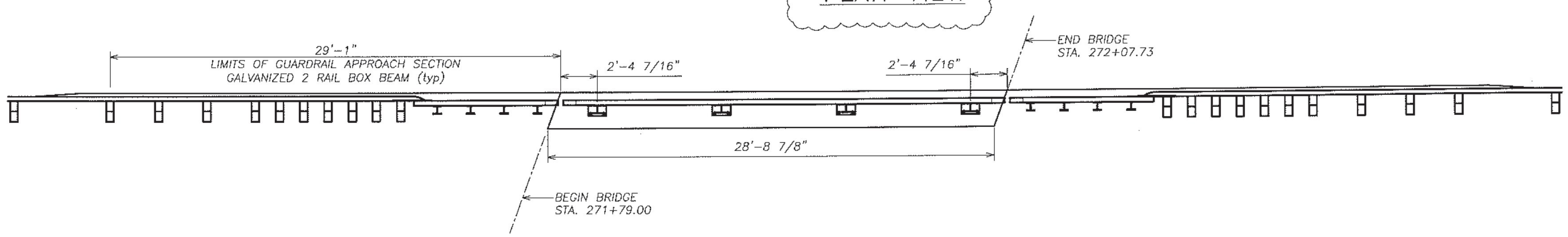


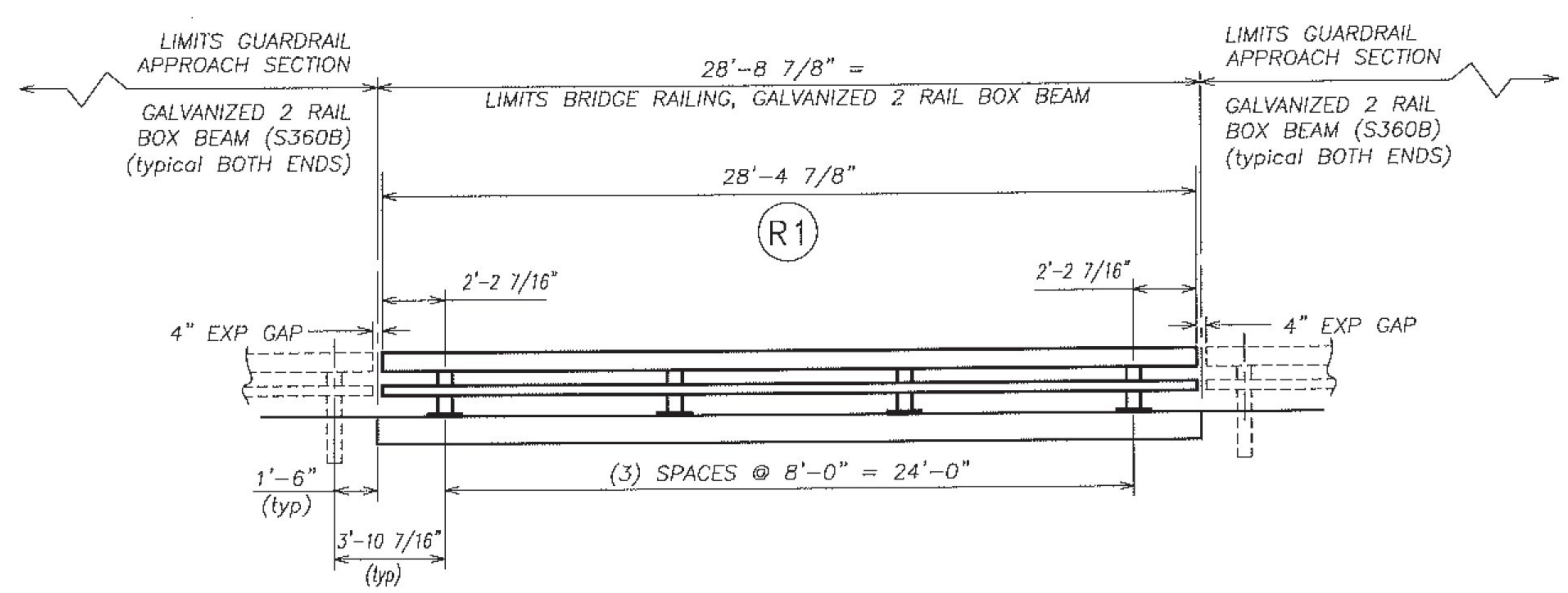
mk 10 NW APPROACH TUBE

MITER CUT & WELD
TO FOLLOW 10'R



PLAN VIEW (A)





TYPICAL RAILING ELEVATION

LOOKING AT TRAFFIC FACE OF RAILING
BOTH SIDES TYPICAL
FACING NORTH OR SOUTH FROM CENTERLINE OF ROAD

BILL OF MATERIAL

Qty	mk	Description	Spec.
58 LF		ITEM 525.33 BRIDGE RAILING, GALVANIZED, 2 RAIL BOX BEAM	
8		BRIDGE RAILING POST W6 x 25 x 2'-2.375" OAH WITH 1 x 10 x 14 BASE PLATE (GLV)	A709 gr 50
2	R1	UPPER RAIL TUBE 8 x 4 x 5/16 (GALV) 28 ft - 4.875 in LG (EXP splice both ends)	A500 gr B
2	R1	LOWER RAIL TUBE 4 x 4 x 1/4 (GALV) 28 ft - 4.875 in LG (EXP splice both ends)	A500 gr B
8		ANCHOR SPACER PLATE PL 0.375 x 13.000 x 9.375	A709 gr 36
32		ANCHOR STUD DBL END PART THREAD - 1" DIA x 12.000 w/ 2.250" THD EACH END (GLV)	A449
64		HEAVY HEX NUT 1" (GLV)	A563 DH
32		ROUND WASHER (SAE) - 1" DIA SMALL (GLV)	F436
32		JAM NUT 1" (GALV)	A563 DH
32		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 6" LG. FULL BODY (GLV)	A449 / A325
32		LOCK NUT 3/4" (GLV)	A563 DH
32		ROUND WASHER (SAE) 3/4" (GLV)	F436
8		BEARING PAD 0.125" THICK x 10.000 x 14.000 (NEOPRENE 80 duro +/-10)	aashto M251

No.	Remarks	Date
A	revised submittal	01-06-17
0	initial submittal	12-12-16

REVISIONS – APPLIES TO SET

Vermont Agency of Transportation
RECEIVED
CK'D BY SMC OK'D BY WDL
January 9, 2017
RESUBMIT BY No RSY Approved
DATE 01/31/2017

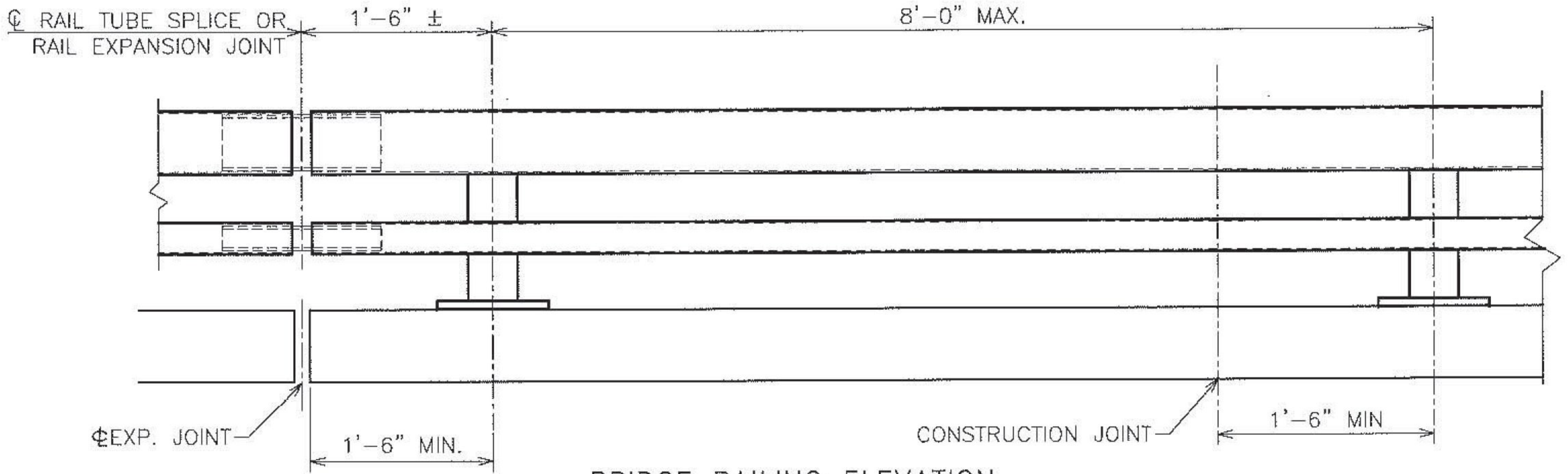
HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 525.33 BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM (S-360A)
ITEM 621.72 GUARDRAIL APPROACH, GALV 2 RAIL BOX BEAM (S-360B)

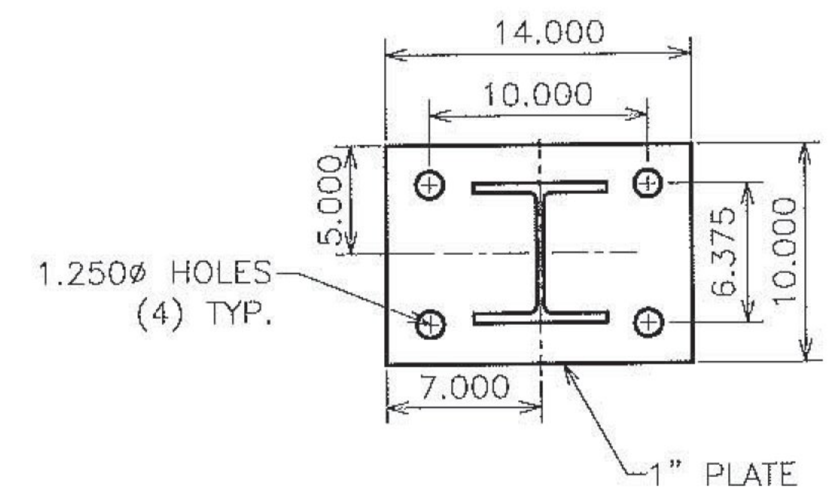
TOWN OF RICHMOND, VERMONT
US RT 2 & VT ROUTE 117 JUNCTION BRIDGE #32
BF 0284 (28)

AISC CERTIFIED FABRICATOR

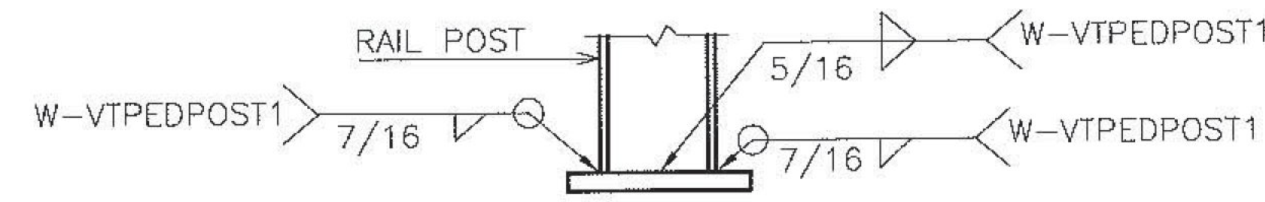
HSC JOB NO. 2146
GENERAL CONTRACTOR
SUB CONTRACTOR VT REC
SHEET NO. 1 of 3
DRAWN PAR CHECKED DATE 12-09-16 SCALE NONE SIZE D



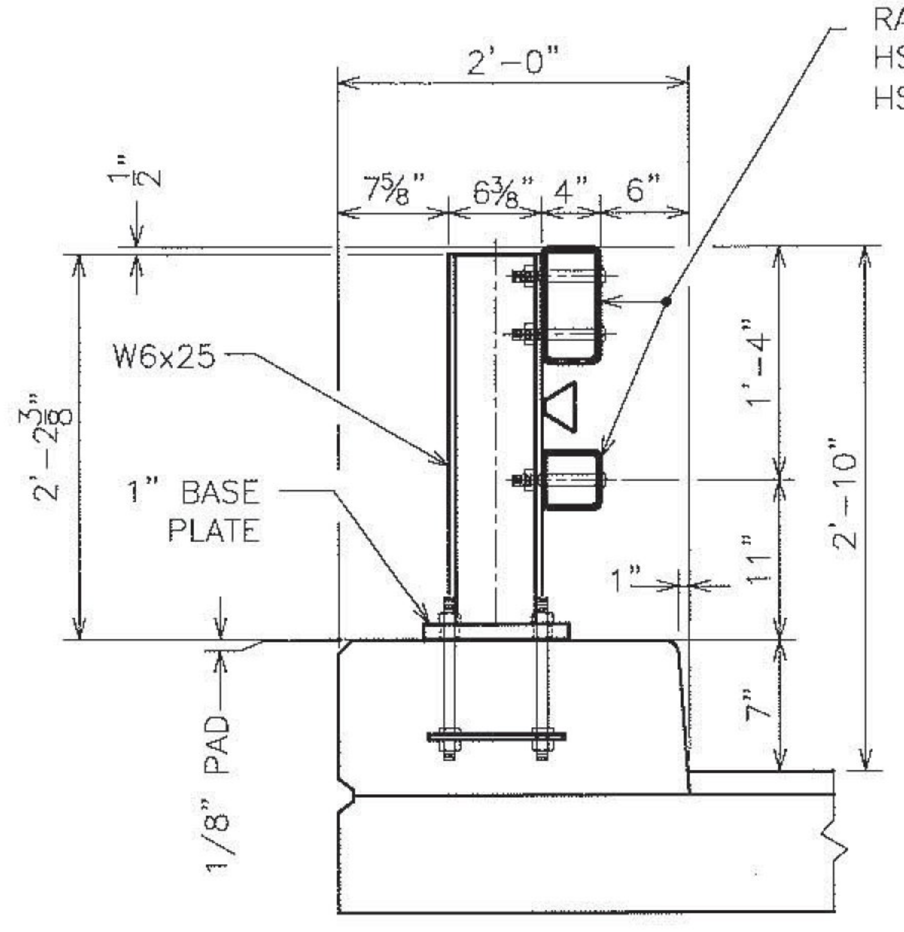
BRIDGE RAILING ELEVATION



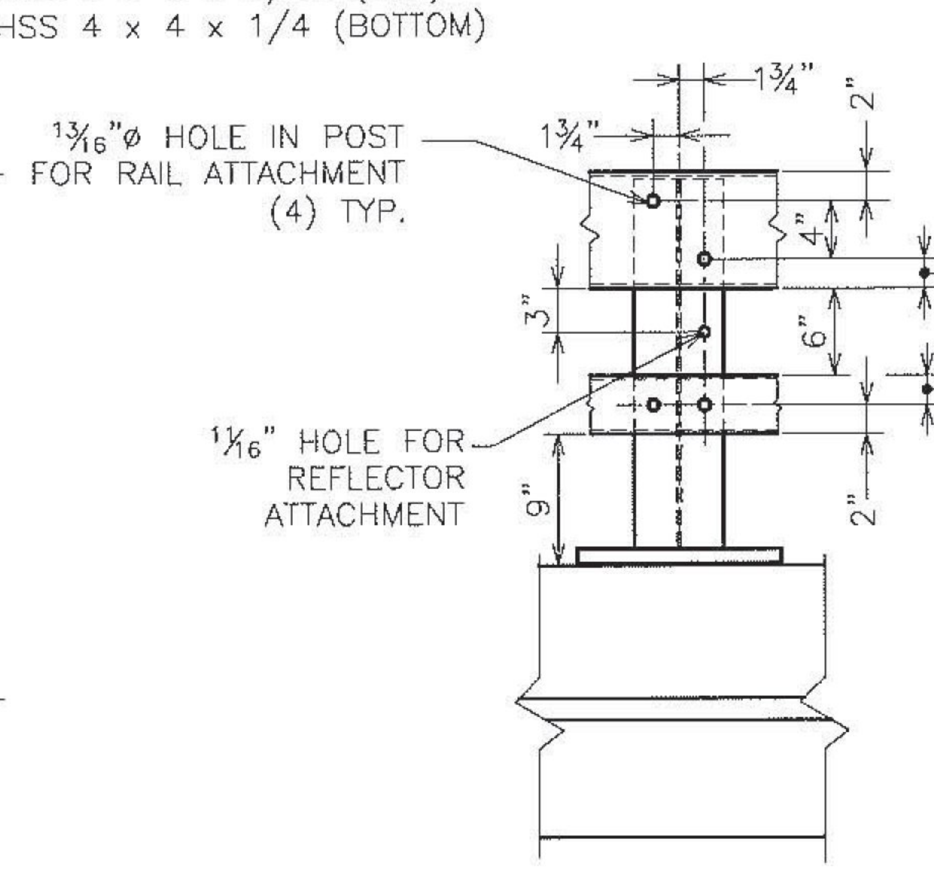
POST AND BASE PLATE



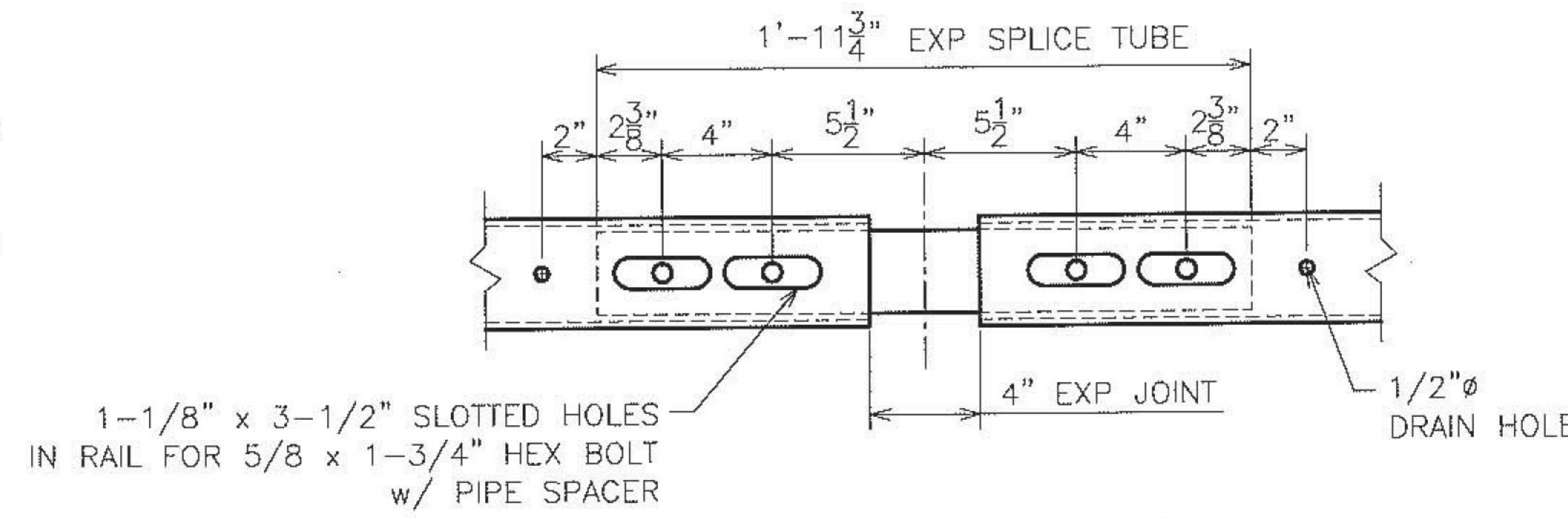
BASE WELD DETAIL



TYPICAL SECTION

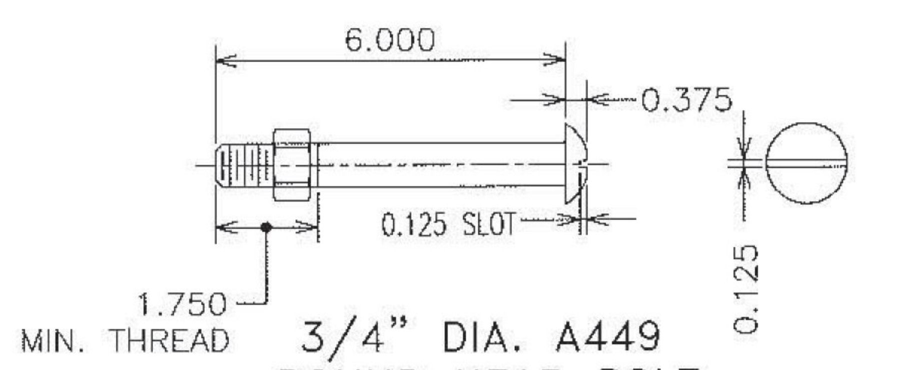


ELEVATION



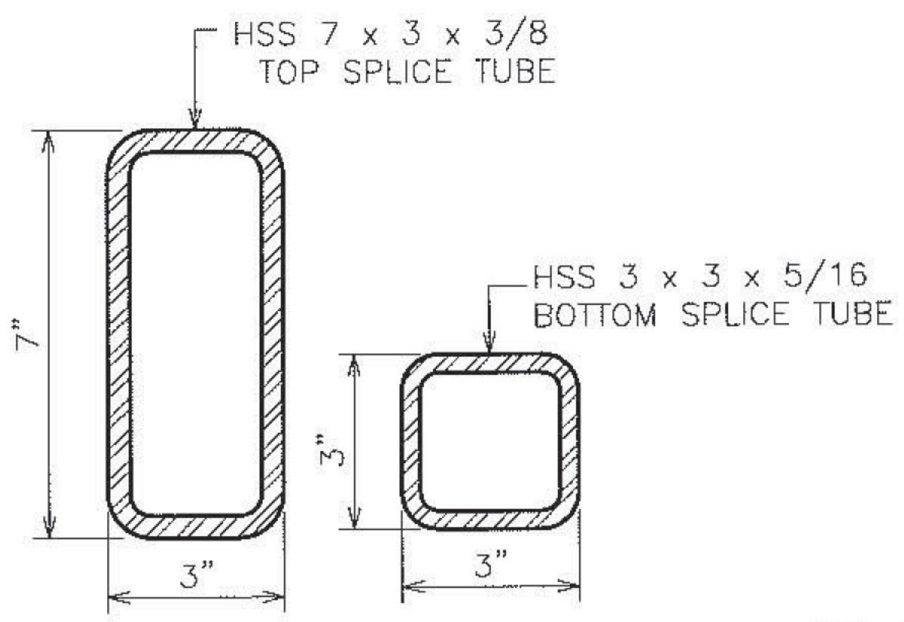
EXPANSION SPLICE DETAIL

BOTTOM VIEW

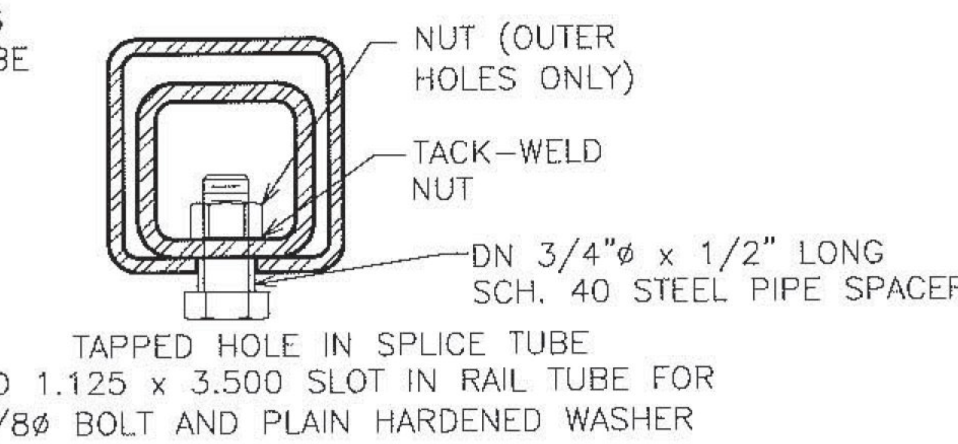


3/4" DIA. A449
ROUND HEAD BOLT

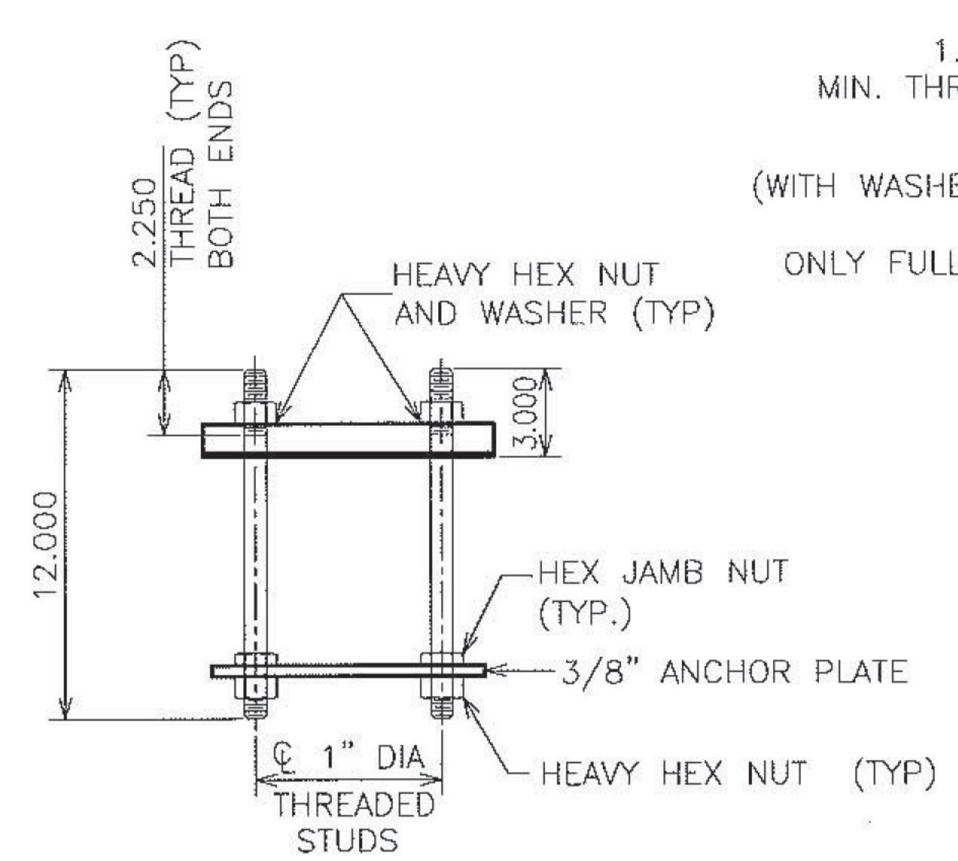
(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #8)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



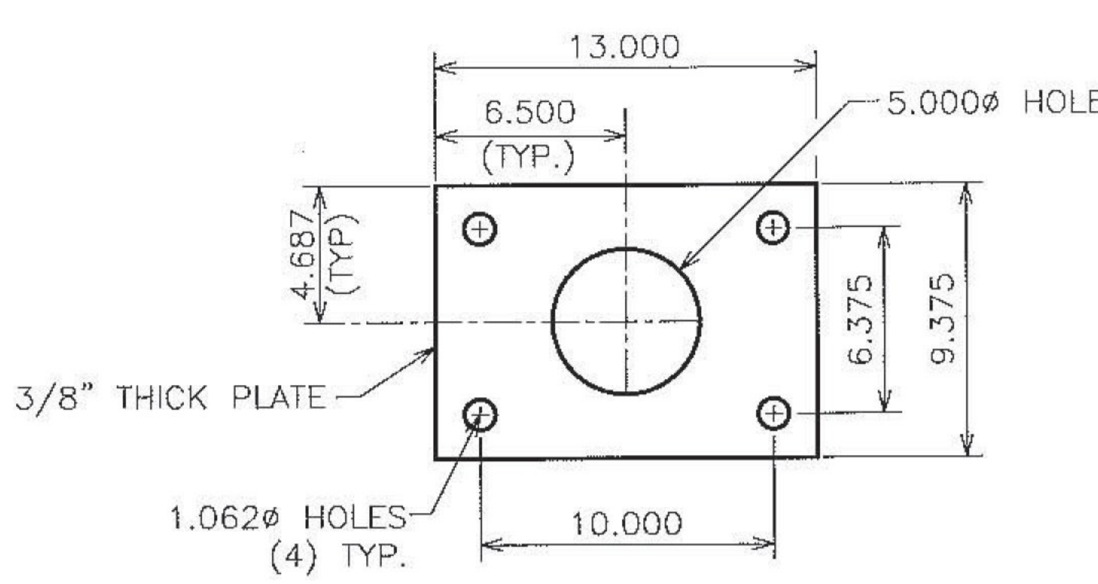
RAIL TUBE SPLICE SECTION



EXPANSION JOINT SECTION



RAIL POST ANCHORAGE



ANCHOR PLATE

NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.

2. PRIOR TO GALVANIZING, ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.

3. ALL POSTS SHALL BE SET NORMAL TO GRADE.

4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.

A 5. RAIL TUBE EXPANSION JOINT SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4" AT 68°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.

6. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT SHALL BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.

7. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.

8. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY ASTM A449 ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.

9. ANY BENDING OR CURVING OF RAIL SHALL BE DONE IN A FABRICATION PLANT IN ACCORDANCE WITH SUBMITTED PROCEDURES.

10. THE MINIMUM DISTANCE FROM A POST TO AN EXPANSION JOINT SHALL BE SUCH TO MAINTAIN MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.

11. A DELINEATOR (SEE VAOT STANDARD DRAWING G-1 FOR DETAILS) SHALL BE INSTALLED AT NEAREST POST TO 30 FT SPACING. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT. PAYMENT SHALL BE INCIDENTAL TO OTHER ITEMS.

12. THIS RAILING MEETS THE REQUREMENTS FOR A TL-4 SERVICE LEVEL.

MATERIAL NOTES:

RAIL TUBES....................ASTM A500 GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES....................ASTM A709/A709M, GRADE 50
ALL OTHER SHAPES AND PLATES....................ASTM A709/A709M, GARDE 36
ANCHOR STUDS....................ASTM A449
ALL OTHER BOLTS (UNLESS NOTED)....................AASHTO M164, TYPE1

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

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

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

RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A370 CHARPY IMPACT TESTING USING TYPE A SPECIMEN.

Vermont Agency of Transportation
RECEIVED
CK'D BY SMC OK'D BY WDL
January 9, 2017
RESUBMIT No Approved
BY RSY DATE 01/31/2017

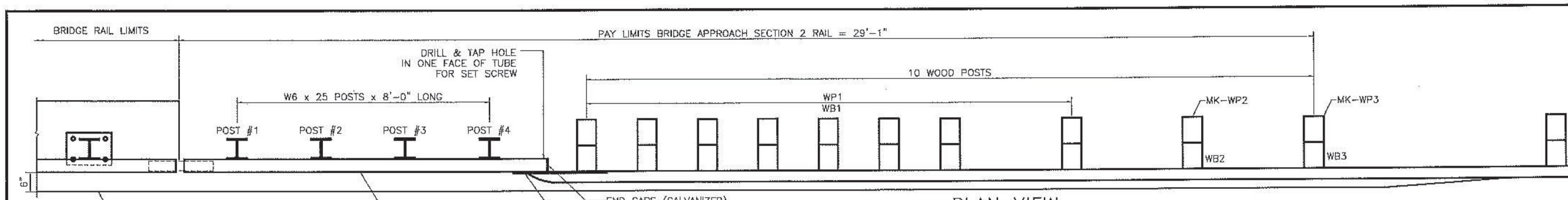
HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 525.33 BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM (S-350A)

AISC CERTIFIED FABRICATOR

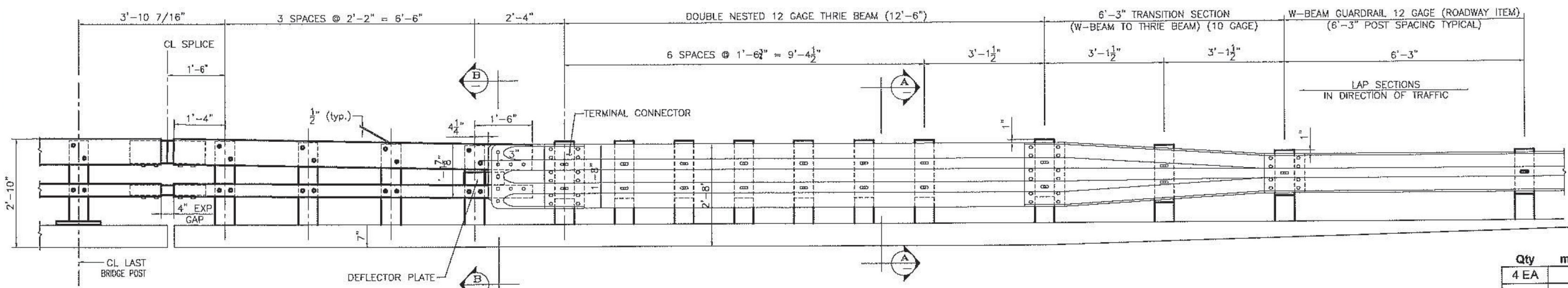
TOWN OF RICHMOND, VERMONT
US RT 2 & VT ROUTE 117 JUNCTION BRIDGE #32
BF 0284 (28)

GENERAL CONTRACTOR
SUB CONTRACTOR VT REC
HSC JOB NO. 2146
SHEET NO. 2 of 3
DRAWN PAR | CHECKED | DATE 12-09-16 | SCALE NONE | SIZE D



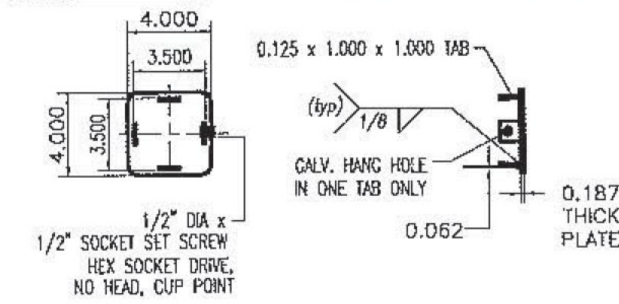
PLAN VIEW

DEPICTED STRAIGHT FOR CLARITY
SEE SHEET 1 FOR CURVE DETAILS IN NORTHWEST CORNER



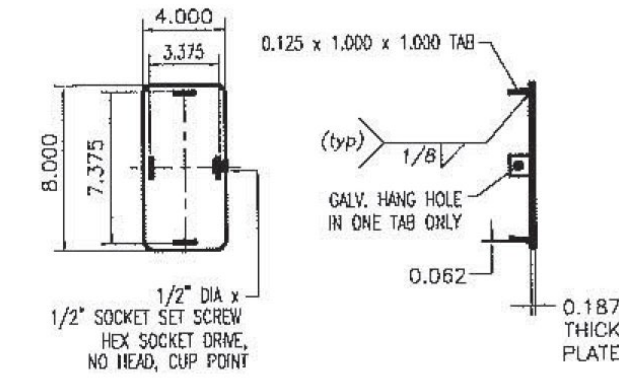
APPROACH RAIL ELEVATION

LEADING END (RIGHT) IS SHOWN (NE+SW)
DEPARTURE END (LEFT) SIMILAR BUT OPPPOSITE HAND (NW+SE)



END CAP (4x4)

0.187 x 4.000 x 4.000 (A709 gr 36)



END CAP (8x4)

0.187 x 4.000 x 8.000 (A709 gr 36)

NOTES:

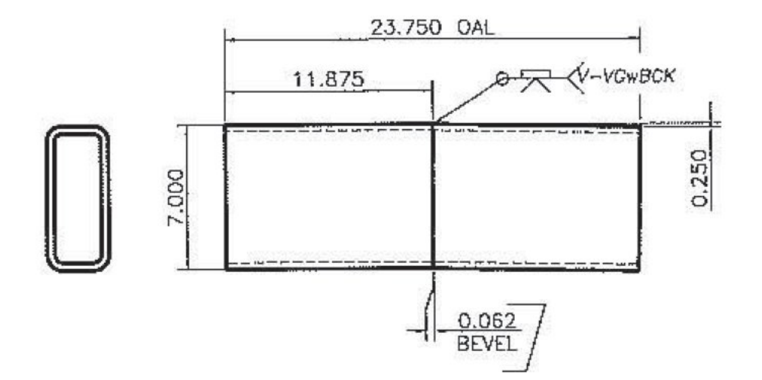
1. PAYMENT FOR GUARDRAIL APPROACH SECTION – GALVANIZED 2 RAIL, SHALL INCLUDE THE TERMINAL CONNECTOR, THE CONNECTION PLATE, THE DEFLECTOR PLATE, RAIL, POSTS, BLOCKS AND ATTACHMENT HARDWARE.

2. ALL APPROACH RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.

3. TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL UNLESS OTHERWISE NOTED.

4. APPROACH RAIL BOLTS SHALL BE ASTM A307 GRADE A AND NUTS SHALL BE AASHTO M291 (ASTM 563 GRADE A OR BETTER (GALVANIZED). WASHERS SHALL BE ASTM F844.

A 5. WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD (B-U2a).

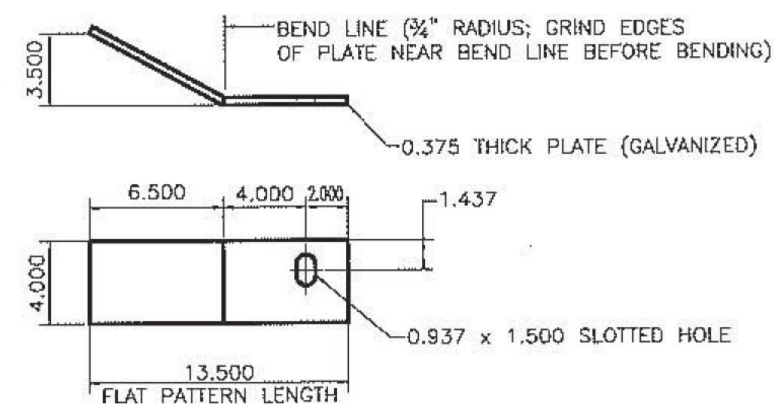


ANGLED SPLICE DETAIL

HSS 7 x 3 x 3/8 – FOR UPPER RAIL SPLICE
SEE BRIDGE RAIL SHEET FOR DETAIL ON LOWER RAIL SPLICE TUBE

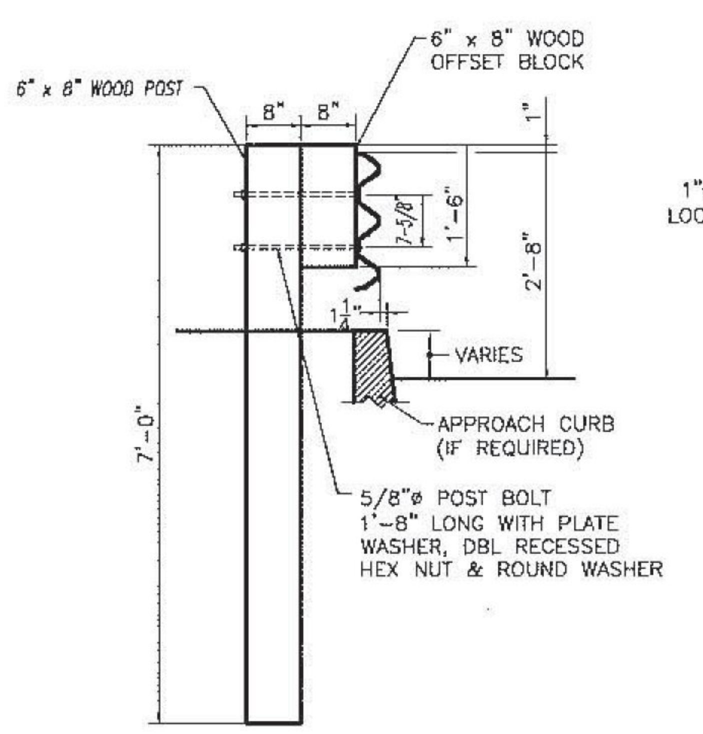
BILL OF MATERIAL

Qty	mk	Description	Spec.
4 EA		ITEM 621.72 GUARDRAIL APPROACH SECTION, GALVANIZED, 2 RAIL BOX BEAM	
4	01	W6x25 APPROACH POST - #1 x 8'-0" OAL (GALV)	A709 gr 50
4	02	W6x25 APPROACH POST - #2 x 8'-0" OAL (GALV)	A709 gr 50
4	03	W6x25 APPROACH POST - #3 x 8'-0" OAL (GALV)	A709 gr 50
4	04	W6x25 APPROACH POST - #4 x 8'-0" OAL (GALV)	A709 gr 50
3		UPPER RAIL APPROACH TUBE HSS 8 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV)	A500 gr B
3		LOWER RAIL APPROACH TUBE HSS 4 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV)	A500 gr B
1	10	UPPER TUBE HSS 8 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV) **miter cut & weld for 10'R**	A500 gr B
1	10	LOWER TUBE HSS 4 x 4 x 1/4 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV) **miter cut & weld for 10'R**	A500 gr B
4		CONNECTION PLATE PL 0.375" x 20.000" x 27.000" (GALV)	A709 gr 36
2		DEFLECTOR PLATE (RIGHT) PL 0.375 x 4.000 x 13.375 (GALV)	A709 gr 36
2		DEFLECTOR PLATE (LEFT) PL 0.375 x 4.000 x 13.375 (GALV)	A709 gr 36
4		END CAP FOR 8x4 TUBE 0.187 THICK PLATE 8.000 x 4.000 w/ WELDED TABS (GALV)	A709 gr 36
4		END CAP FOR 4x4 TUBE 0.187 THICK PLATE 4.000 x 4.000 w/ WELDED TABS (GALV)	A709 gr 36
4		(ANGLED) SPLICE TUBE (EXPANSION) FOR 8x4 UPPER RAIL HSS 7 x 3 x 3/8 x 1'-11.750" OAL (GALV)	A500 gr B
4		SPLICE TUBE (EXPANSION) FOR 4x4 LOWER RAIL HSS 3 x 3 x 5/16 x 1'-11.750" OAL (GALV)	A500 gr B
32		WOOD POST (WP1) 6 x 8 x 7'-0"	TIMBER
32		WOOD BLOCKOUT (WB1) 6 x 8 x 1'-6"	TIMBER
4		WOOD POST (WP2) 6 x 8 x 7'-0"	TIMBER
4		WOOD BLOCKOUT (WB2) 6 x 8 x 1'-6"	TIMBER
4		WOOD POST(WP3) 6 x 8 x 7'-0"	TIMBER
4		WOOD BLOCKOUT (WB3) 6 x 8 x 1'-2"	TIMBER
4		THRIE FLAT LIP BRIDGE SHOE (MODIFIED) 10 GA. GALV	aashto M180 B2
4		THRIE TRANSITION PANEL 6'-3" / 3'-1 1/2" 10 GA. GALV.	aashto M180 B2
6		THRIE PANEL 12'-6" / 1'-6 3/4" 12 GA. GALV.	aashto M180 A2
2	09	THRIE PANEL 12'-6" / 1'-6 3/4" 12 GA. GALV. **(SHOP CURVE FOR 10' RADIUS CONVEX)**	aashto M180 A2
92		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 6" LG. (GLV) w/ LOCK NUT & FLAT WASHER	A449
4		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 2" LG. (GLV) w/ HEX NUT	A449
8		ROUND HEAD POST BOLT - oval shoulder 5/8" DIA x 1'-8" LG. (GALV) w/ DBL RECESS NUT, FLAT WASHER	A307
68		ROUND HEAD POST BOLT - oval shoulder 5/8" DIA x 1'-6" LG. (GALV) w/ DBL RECESS NUT, FLAT WASHER	A307
32		HEX HEAD BOLT 5/8 x 1-3/4" (GALV) w/ FLAT WASHER	A325
128		PANEL SPLICE BOLT 5/8 x 1-1/4" (GALV) w/ DOUBLE RECESSED NUT	A307
76		RECTANGULAR PLATE WASHER 0.187 x 1.750 x 3.000 (GALV)	A709 gr 36
32		SPACER PIPE - GALVANIZED 3/4" SCH. 40 x 1/2" LONG (GLV)	A53 gr B

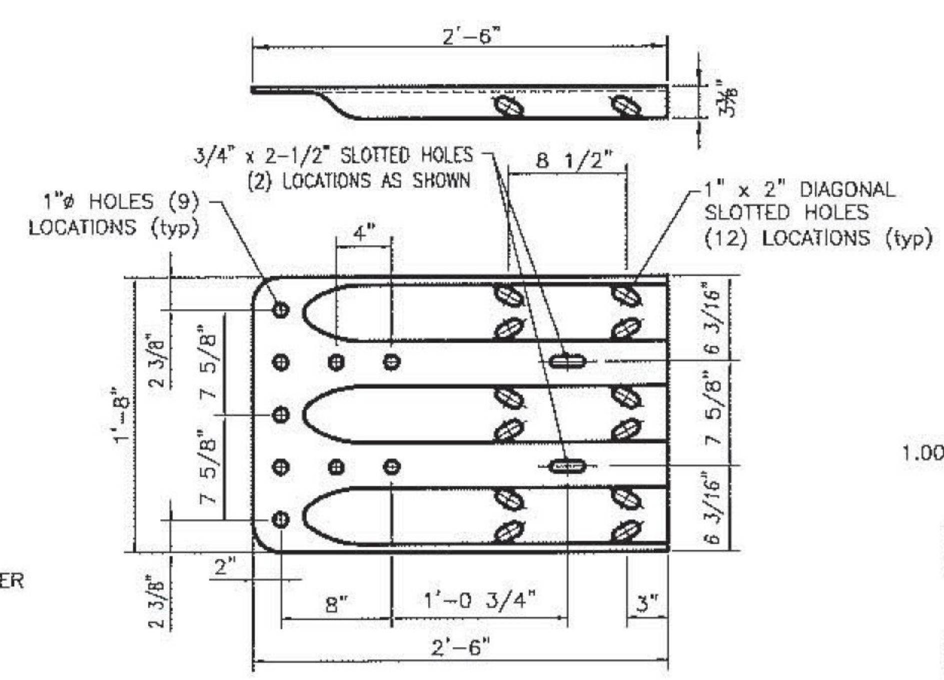


DEFLECTOR PLATE

0.375 x 4.000 x 13.500 (A709 gr 36)
RIGHT HAND APPROACH SHOWN – LEFT HAND BENT OPPOSITE

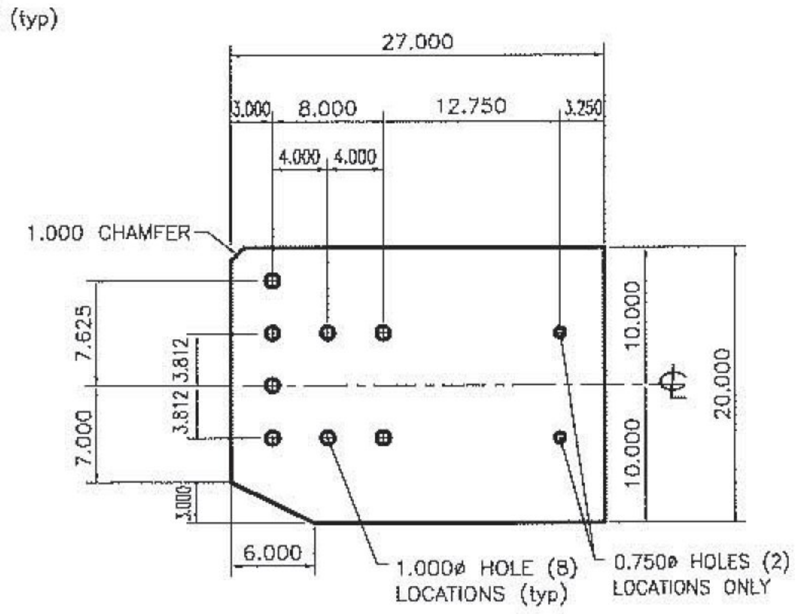


SECTION A–A



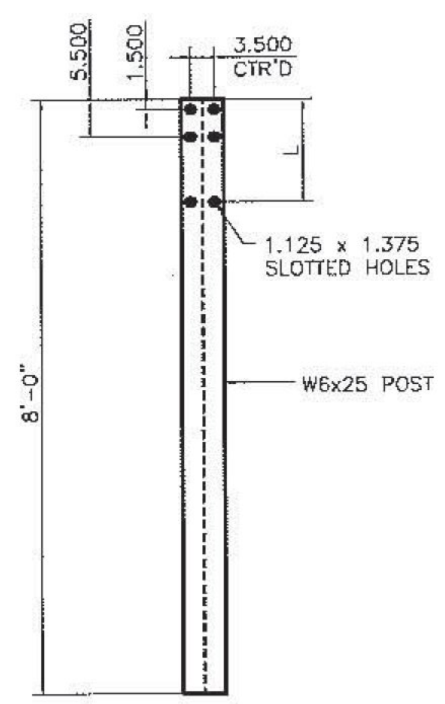
TERMINAL CONNECTOR

10 GAUGE (AASHTO M180 B2)



CONNECTION PLATE

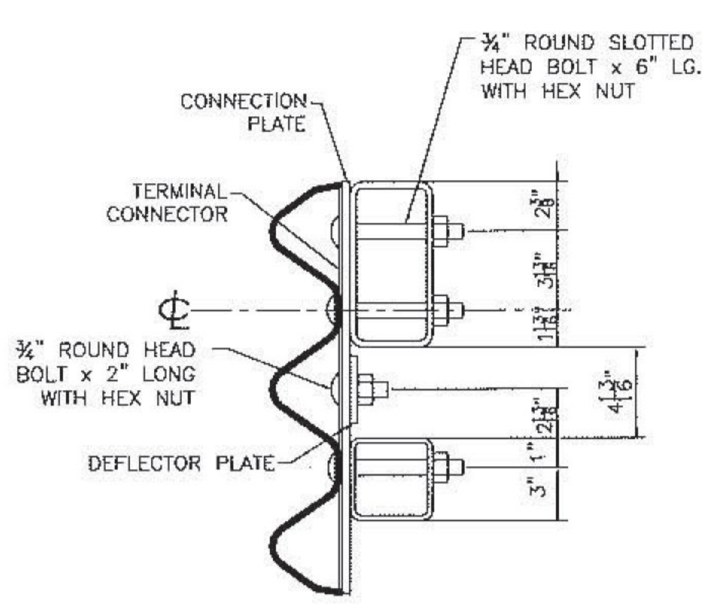
0.375 x 20.000 x 27.000 (A709 gr 36)



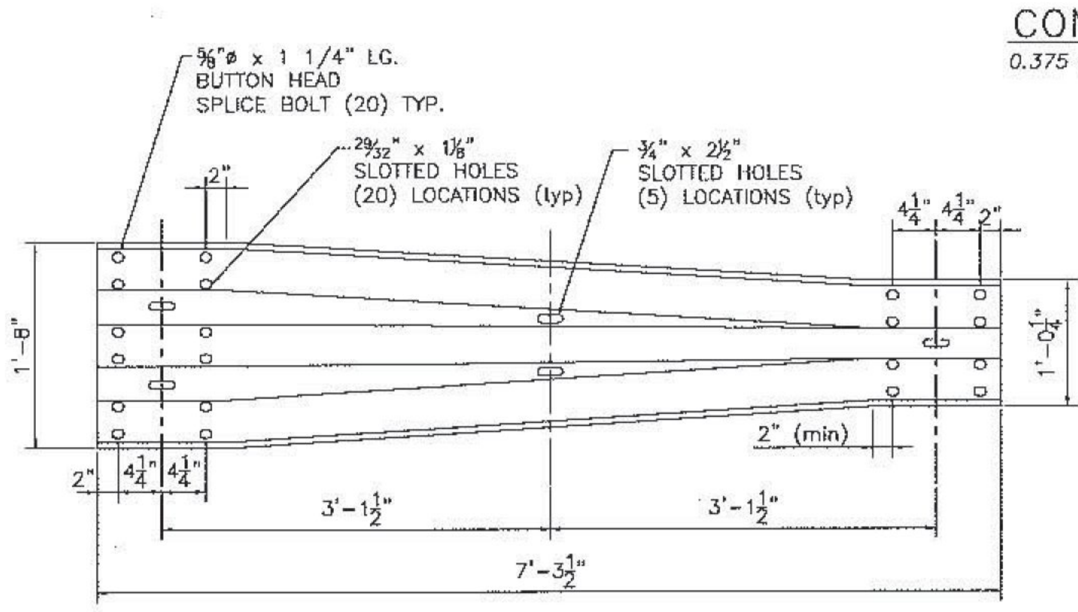
STEEL POST

STEEL POST CHART

No.	L
#1	1'-3.250"
#2	1'-3.000"
#3	1'-2.687"
#4	1'-2.375"

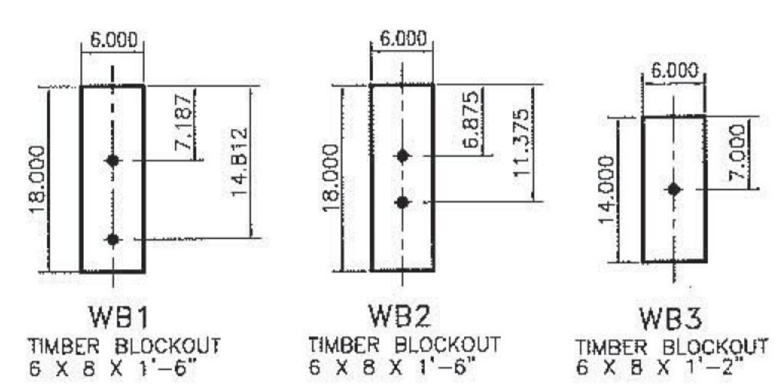


SECTION B–B



THRIE TRANSITION PANEL

10 GAUGE (AASHTO M180 B2)



WOOD BLOCK DETAILS

Vermont Agency of Transportation
RECEIVED
CK'D BY SMC OK'D BY WDL
January 9, 2017
RESUBMIT BY No RSY
Approved
DATE 01/31/2017

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 621.72 GUARDRAIL APPROACH, GALV 2 RAIL BOX BEAM (S-360B)
TOWN OF RICHMOND, VERMONT
US RT 2 & VT ROUTE 117 JUNCTION BRIDGE #32
BF 0284 (28)

AISC CERTIFIED FABRICATOR

GENERAL CONTRACTOR
SUB CONTRACTOR VT REC
HSC JOB NO. 2146
SHEET NO. 3 of 3
DRAWN PAR | CHECKED | DATE 12-09-16 | SCALE NONE | SIZE D

Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Vermont Agency of Transportation
RECEIVED
CK'D BY R. Foster OK'D BY WDL
January 3, 2017
RESUBMIT No Approved
BY RSY DATE 01/31/2017

Material specification: A572 gr 50, A709 Gr 50

Welding process: Gas Metal Arc Welding (GMAW) Spray Transfer

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-6

Electrode and manufacturer: Lincoln Electric Lincoln Weld L-56

Flux and manufacturer: N/A

Shielding gas: 86% Argon / 14% CO2 Flow rate: 38 - 46 CFH

Single or multiple pass: Single or Multiple

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" (50ºF) ; over 3/4 thru 1-1/2" (150ºF) : over 1-1/2" thru 2-1/2" (225ºF)

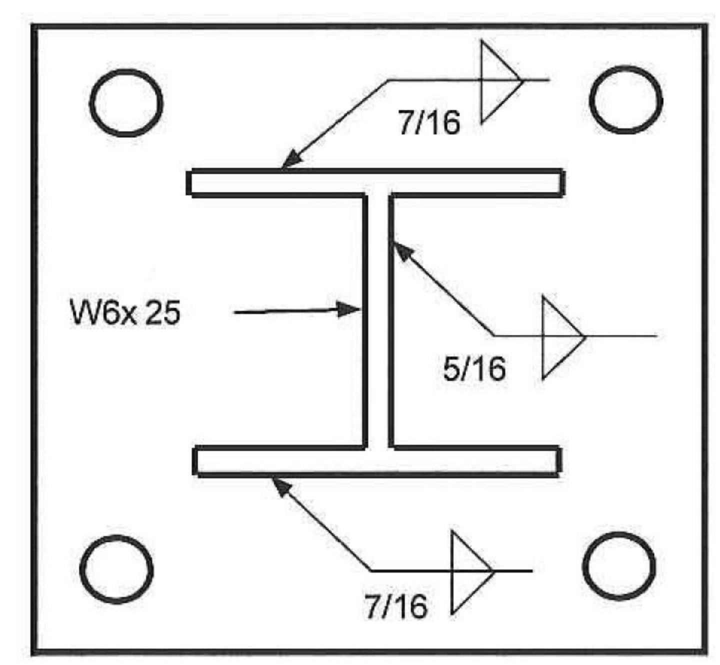
Postweld heat treatment: None

Electrode extension: 3/4" ± 1/4"

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed
5/16"	1	1/16"	310 A ± 30	29 V ± 1	17 - 19 ipm
7/16"	1 & 2	1/16"	↓	↓	↓

Joint detail



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 D1.5

AWS® Paul A Radice CWI 98070221 QC1 EXP. 7/1/2019

WPS no.: W-VTPEDPOST1

Revision no.: 2

Supporting PQR no.: HSCTGD15052416

Project Name: Richmond, VT

Fabricator: Highway Safety Corp

Prepared By: Paul Radice

Date: 12/21/16

Project Number: BF 0284 (28)

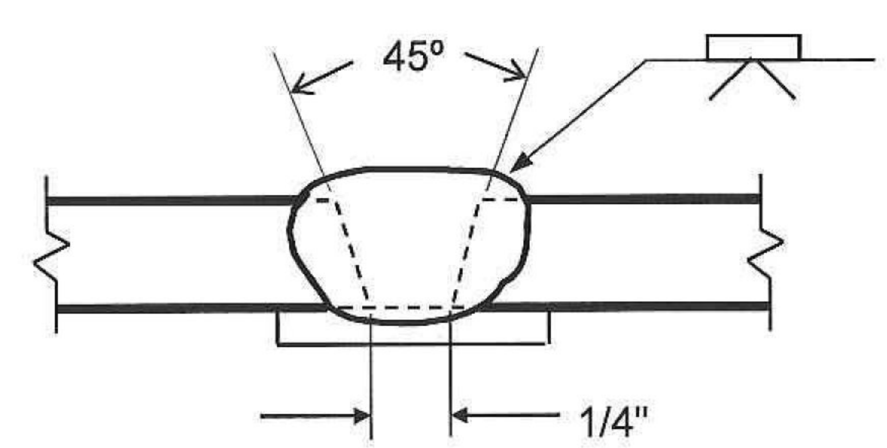
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification: **ASTM A500 gr B**
Welding process: **Gas Metal Arc Welding (GMAW)**
Manual, semi-automatic, or automatic: **Semi-Automatic**
Position of welding: **Flat (1F)**
Filler metal specification: **AWS A5.18**
Filler metal classification: **ER70S-6**
Electrode and manufacturer: **Lincoln Electric Lincoln Weld L-56**
Flux and manufacturer: **N/A**
Shielding gas: **86% Argon / 14% CO2** Flow rate: **38 - 46 CFH**
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" (50ºF)**
Postweld heat treatment: **None**
Electrode extension: **3/4" ± 1/4"**

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed	Joint detail
	1	1/16"	310 A ± 30	29 V ± 1	17 - 19 ipm	B-U2a-GF 

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 D1.5

WPS no. **W-VGwBCK**
Revision no. **2**
Supporting PQR no. **HSCTGD15052416**
Project Name **Richmond, VT**

Fabricator **Highway Safety Corporation**
Prepared By: **Paul Radice**
Date **12/21/16**
Project Number **BF 0284 (28)**

SCP

SCITUATE CONCRETE PIPE CORPORATION
PO.Box 870
Scituate, MA 2066
Phone: (800) 322-4488
Fax: (781) 545-6021

Quote Number: 7162

Order Date: 3/27/2017

Customer Copy

Bill to:	G.W Tatro Construction, Inc. 17 GW Tatro Drive Suite 1 Jeffersonville, VT 05464			**Delivery to:**	RICHMOND VT - Proposed Bridge Imp. TBD Richmond, VT
Contact:	Cody Marsh			**Project Manager:**	TBD
Phone :	(802) 644-8875	**Fax:**	(802) 644-5020	**Phone :**	**Fax:**
Customer ID:	GWTatro	**PO:**	**ShipVia:**	**Sales Rep:**	D.F.
Terms:	C.O.D.			**Bid Date:**	

Qty	Item	Description	Unit Price	TX	Extension
		Structure: ☐ **Curb**			
72	CURB8	8' STRAIGHT LENGTH ROCK CURB			
24	CURB4	4' STRAIGHT LENGTH ROCK CURB			
15	CURB3	3' STRAIGHT LENGTH ROCK CURB			
20	CURB5	5' STRAIGHT LENGTH ROCK CURB			
		Structure: ☐ **Delivery**			
1	DC	DELIVERY CHARGE			
		Structure: ☐ **Radius**			
3	RAD10	PIECES OF 10' RADIUS CURBING (5.23')			
3	RAD45	PIECES OF 45' RADIUS CURBING			

All applicable Federal ,State and Local Taxes will be added to these prices.
Returns shall be first-quality only and prior approval will be required. A 25% handling charge and all transportation costs will be deducted.
Prices quoted on specific projects are valid for 60 days or the date agreed on the quote.
Custom products must have a signed shop drawing & will require a 50% deposit before it's manufactured.
All Pricing based on full trailer quantities.

NPCA
American Concrete Pipe Association

Vermont Agency of Transportation
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CK'D BY WDL OK'D BY WDL
May 3, 2017
RESUBMIT No Approved
BY RSY DATE 05/10/2017

COLD PLANING
BITUMINOUS PAVEMENT
STA. 269+00 - 269+50
STA. 274+00 - 274+50

REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 271+09.17 - 271+74.76 RT
STA. 271+99.99 - 272+70.84 RT
STA. 30+15.12 - 30+82.48 RT
STA. 272+11.12 - 272+80.74 LT

REMOVAL OF EXISTING DELINEATOR
STA. 271+09.17 RT
STA. 272+70.84 RT

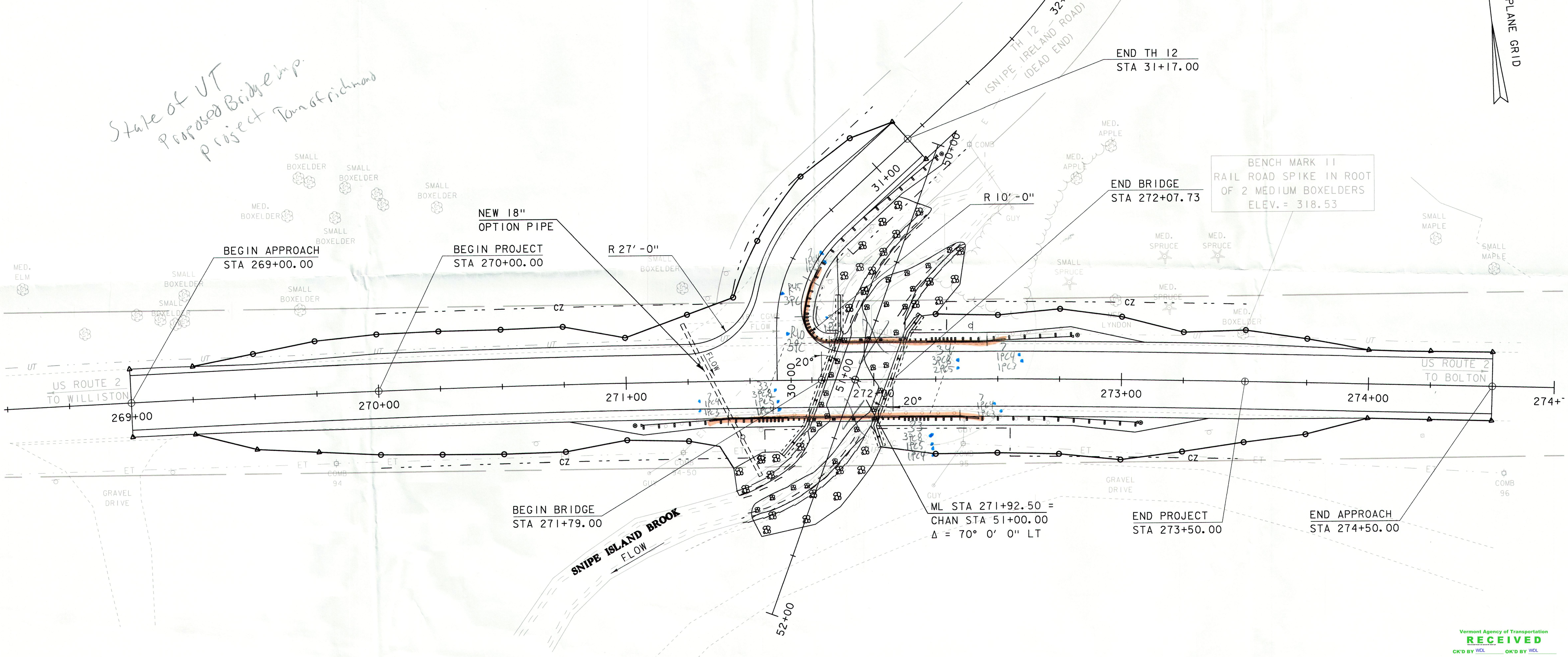
BITUMINOUS CONCRETE PAVEMENT
STA. 269+00 - 274+50
STA. 30+15 - 31+17

PRECAST REINFORCED CONCRETE
OR CAST-IN-PLACE CURB OPTION
STA. 271+33.52 - 271+73.49 RT
STA. 30+52.39 - 271+84.46 LT
STA. 272+02.29 - 272+42.42 RT
STA. 272+13.12 - 272+53.01 LT

18" OPTION PIPE
STA. 271+22.92 LT - 271+54.02 RT

GW Tatro
Richmond, VT

State of VT
Proposed Bridge imp.
project Town of richmond



EXISTING BRIDGE DATA
SINGLE SPAN CONCRETE T-BEAM
BUILT 1929
25' LONG, 27'-7" CURB TO CURB

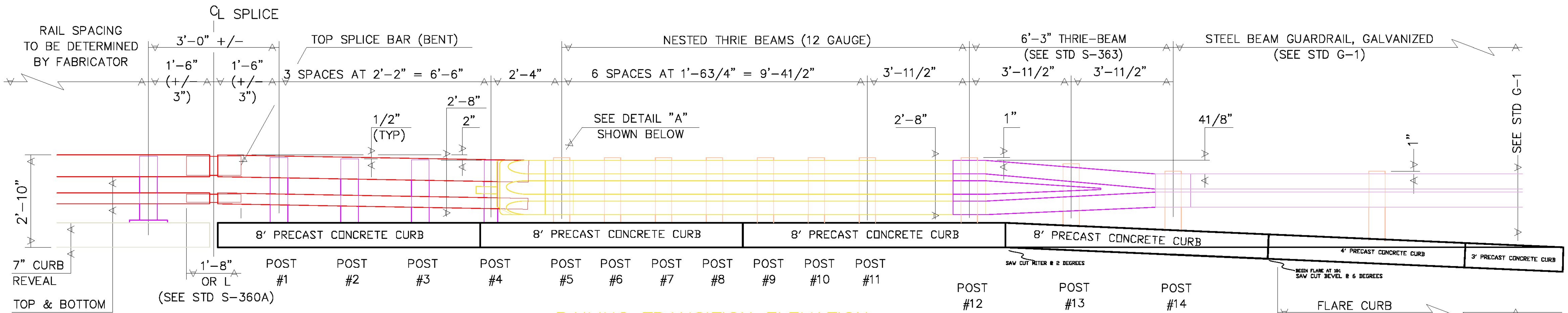
SCALE 1" = 20'-0"
20 0 20

Vermont Agency of Transportation
RECEIVED
CK'D BY WDL OK'D BY WDL
May 3, 2017
RESUBMIT No Approved
BY RSY DATE 05/10/2017

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	BF 0284(28)

FILE NAME: sl3c070bdr.dgn
PROJECT LEADER: R. YOUNG
DESIGNED BY: S. COLEY
LAYOUT SHEET

PLOT DATE: 13-SEP-2016
DRAWN BY: S. COLEY
CHECKED BY: W. LAMMER
SHEET 13 OF 54



RAILING TRANSITION ELEVATION

NTS

PRECAST CURB		
DRAWN JL	DATE 4/27/2017	TYPICAL APPROACH
APPROVED	DATE	
SCALE NTS	SHEET	PROJECT NO. RICHMOND BF 0284(28)

Specification	Material name	Certification type B	Manufacturer
707.05	**Joint Sealer, Polyurethane**		
Const. Sections:	**511,524.20,524.21**		
	SikaFelx 2c NS		Sika Corporation 201 Polito Avenue Lyndhurst, NJ 07071
	Sikaflex 1a		Sika Corporation 201 Polito Avenue Lyndhurst, NJ 07071
	Sikaflex 2c SL		Sika Corporation 201 Polito Avenue Lyndhurst, NJ 07071
	Pourthane SL Sika Corp Manufacturer's this product		W.R. Meadows of PA P.O. Box 7550 York, PA 17404

End of List of advance certification Type B

Vermont Agency of Transportation
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CK'D BY WDL OK'D BY WDL
May 3, 2017
RESUBMIT No Approved
BY RSY DATE 05/10/2017

Product Data Sheet
Edition 1.29.2007
Identification no. 431
Sikaflex-1a

SEALANT • WATERPROOFING & RESTORATION INSTITUTE
Issued to: Sika Corporation
Product: Sikaflex 1A Construction Sealant
C719: Pass ✔ Ext:+35% Comp:-35%
Substrate: Mortar, Aluminum, Glass
[mortar substrate primed with Sikaflex 429 Primer]
C661: Rating 40
Validation Date: 12/22/06 - 12/21/11
No. 1206-S1A11 *Copyright © 2006*
SEALANT VALIDATION
www.swrionline.org

Construction

Sikaflex®-1a

One part polyurethane, elastomeric sealant/adhesive

Description

Sikaflex-1a is a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-based, non-sag elastomeric sealant. Meets Federal specification TT-S-00230C, Type II, Class A. Meets ASTM C-920, Type S, Grade NS, Class 35, use T, NT, O, M, G, I; Canadian standard CAN/CGSB 19.13-M87.

Where to Use

- Designed for all types of joints where maximum depth of sealant will not exceed 1/2 in.
- Excellent for small joints and fillets, windows, door frames, reglets, flashing, and many construction adhesive applications.
- Suitable for vertical and horizontal joints; readily placeable at 40°F.
- Has many applications as an elastic adhesive between materials with dissimilar coefficients of expansion.
- Submerged conditions, such as canal and reservoir joints.

Advantages

- Eliminates time, effort, and equipment for mixing, filling cartridges, pre-heating or thawing, and cleaning of equipment.
- Fast tack-free and final cure times.
- High elasticity - cures to a tough, durable, flexible consistency with exceptional cut and tear-resistance.
- Stress relaxation.
- Excellent adhesion - bonds to most construction materials without a primer.
- Excellent resistance to aging, weathering.
- Proven in tough climates around the world.
- NSF Registered, meets 1998 USDA guidelines.
- Odorless, non-staining.
- Jet fuel resistant.
- NSF Certified to NSF/ANSI Standard 61 for potable water contact.
- Urethane-based; suggested by EPA for radon reduction.
- Paintable with water-, oil- and rubber-based paints.
- Capable of ±35% joint movement.

Coverage

10.3 fl. oz. cartridge seals 12.4 lineal ft. of 1/2 x 1/4 in. joint. 20 fl. oz. uni-pac sausage seals 24 lineal ft. of 1/2 x 1/4 in. joint.

Typical Data *(Material and curing conditions @ 73°F (23°C) and 50% R.H.)*

Shelf Life

10.3 fl. oz. cartridges	15 months
20 fl. oz. uni-pac sausages	15 months
5 gallon pail	9 months
55 gallon drum	9 months

Storage Conditions Store at 40°-95°F (4°-35°C). Condition material to 65°-75°F before using.

Colors White, colonial white, aluminum gray, limestone, black, dark bronze, capitol tan. Special architectural colors on request.

Application Temperature 40° to 100°F. Sealant should be installed when joint is at mid-range of its anticipated movement.

Service Range -40° to 170°F

Curing Rate

Tack-free time	4 hours
Tack-free to touch	3 hours
Final cure	4 to 7 days

Tear Strength (ASTM D-624) 55 lb./in.

Shore A Hardness (ASTM D-2240) 21 day 40±5

Tensile Properties (ASTM D-412)

21 day	Tensile Stress		175 psi (1.21 MPa)
	Elongation at Break		550%
	Modulus of Elasticity	25%	35 psi (0.24 MPa)
		50%	60 psi (0.41 MPa)
		100%	85 psi (0.59 MPa)

Adhesion in Peel (TT-S-00230C, ASTM C 794)

Substrate	Peel Strength	Adhesion Loss
Concrete	20 lb.	0%
Aluminum	20 lb.	0%
Glass	20 lb.	0%

Weathering Resistance Excellent

Chemical Resistance Good resistance to water, diluted acids, and diluted alkalines. Consult Technical Service for specific data.

Construction

Packaging	Disposable 10.3 fl. oz., moisture-proof composite cartridges, 24/case; and uni-pac sausages, 20 fl. oz., 20/carton.

Linear Feet of Sealant per Gallon

Depth

Width: Inches	¼	½	¾	1	1¼	1½
¼	308.0					
½	154.0	77.0				
¾	102.7	51.3	34.2			
1	77.0	38.5	25.7	19.3		
1¼	61.6	30.8	20.5	15.4	12.3	
1½	51.3	25.7	17.1	12.8	10.3	8.6

How to Use

Surface Preparation

Clean all surfaces. Joint walls must be sound, clean, dry, frost-free, and free of oil and grease. Curing compound residues and any other foreign matter must be thoroughly removed. Install bond breaker tape or backer rod to prevent bond at base of joint.

Priming

Priming is not usually necessary. Most substrates only require priming if testing indicates a need or where sealant will be subjected to water immersion after cure.

Consult Sikaflex Primer Technical Data Sheet or Technical Service for additional information on priming.

Application

Recommended application temperatures: 40°-100°F. For cold weather application, condition units at approximately 70°F; remove prior to using.

For best performance, Sikaflex-1a should be gunned into joint when joint slot is at mid-point of its designed expansion and contraction.

Place nozzle of gun into bottom of the joint and fill entire joint. Keep the nozzle in the sealant, continue on with a steady flow of sealant preceding the nozzle to avoid air entrapment.

Avoid overlapping of sealant to eliminate entrapment of air. Tool as required. Joint dimension should allow for 1/4 inch minimum and 1/2 inch maximum thickness for sealant. Proper design is 2:1 width to depth ratio,

For use in horizontal joints in traffic areas, the absolute minimum depth of the sealant is 1/2 in. and closed cell backer rod is recommended. Tool as necessary.

Limitations

- Allow 1-week cure at standard conditions when using Sikaflex-1a in total water immersion situations and prior to painting.
- When overcoating with water, oil and rubber based paints, compatibility and adhesion testing is essential.
- Avoid exposure to high levels of chlorine. (Maximum continuous level is 5 ppm of chlorine.)
- Maximum depth of sealant must not exceed 1/2 in.; minimum depth is 1/4 in.
- Maximum expansion and contraction should not exceed 25% of average joint width.
- Do not cure in the presence of curing silicone sealants.
- Avoid contact with alcohol and other solvent cleaners during cure.
- Do not apply when moisture-vapor-transmission condition exists from the substrate as this can cause bubbling within the sealant.
- Use opened cartridges and uni-pac sausages the same day.
- When applying sealant, avoid air-entrapment.
- Since system is moisture-cured, permit sufficient exposure to air.
- White color tends to yellow slightly when exposed to ultraviolet rays.
- Light colors can yellow slightly if exposed to direct gas fired heating elements prior to formation of initial skin.
- The ultimate performance of Sikaflex-1a depends on good joint design and proper application with joint surfaces properly prepared.
- The depth of sealant in horizontal joints subject to traffic is 1/2 in.
- Do not tool with detergent or soap solutions.
- Do not use in contact with bituminous/asphaltic materials without prior adhesion and compatibility testing

Caution

Irritant

Keep away from open flames and high heat. Contains xylene; avoid breathing vapors. Use with adequate ventilation.

Combustible

Avoid skin and eye contact. Use of NIOSH approved organic vapor respirator, safe and chemical-resistant gloves recommended. Remove contaminated clothing and shoes.

First Aid

In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes; contact physician. Wash clothing before re-use. Discard contaminated shoes.

Clean Up

Uncured material can be removed with approved solvent. Cured material can only be removed mechanically. For spillage, collect, absorb, and dispose of in accordance with current, applicable local, state, and federal regulations.

Vermont Agency of Transportation
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CK'D BY WDL OK'D BY WDL
May 3, 2017
RESUBMIT No Approved
BY RSY DATE 05/10/2017

KEEP CONTAINER TIGHTLY CLOSED
NOT FOR INTERNAL CONSUMPTION
KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY
CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION

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Regional Information and Sales Centers. For the location of your nearest Sika sales office, contact your regional center.

Sika Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: 800-933-7452
Fax: 201-933-6225

Sika Canada Inc.
601 Delmar Avenue
Pointe Claire
Quebec H9R 4A9
Phone: 514-697-2610
Fax: 514-694-2792

Sika Mexicana S.A. de C.V.
Carretera Libre Celaya Km. 8.5
Fracc. Industrial Balvanera
Corregidora, Queretaro
C.P. 76920
Phone: 52 442 2385800
Fax: 52 442 2250537

QUALITY ISO 9001 9002 ACHIEVEMENT

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