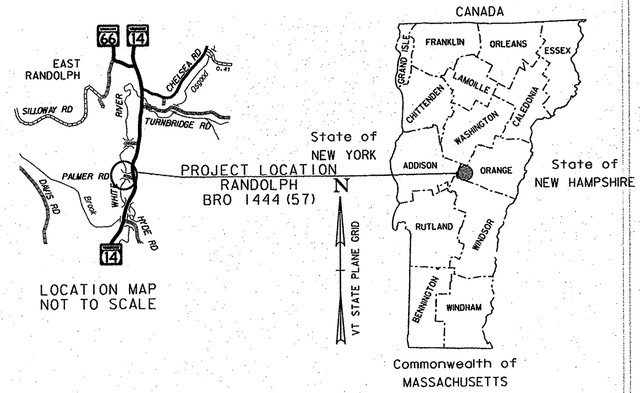
STATE OF VERMONT
AGENCY OF TRANSPORTATION



LOCATION MAP
NOT TO SCALE

RECORD PLANS	
CONTRACTOR:	J.P. SICARD, INC. – BARTON, VT
RESIDENT ENGINEER:	TOM CHASE
CONSTRUCTION BEGAN:	MAY 13, 2012
CONSTRUCTION COMPLETE:	JUNE 26, 2014
RECORD PLANS BY:	TOM CHASE

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

BY Thomas A. Chase RESIDENT ENGINEER

DATE 04/08/16

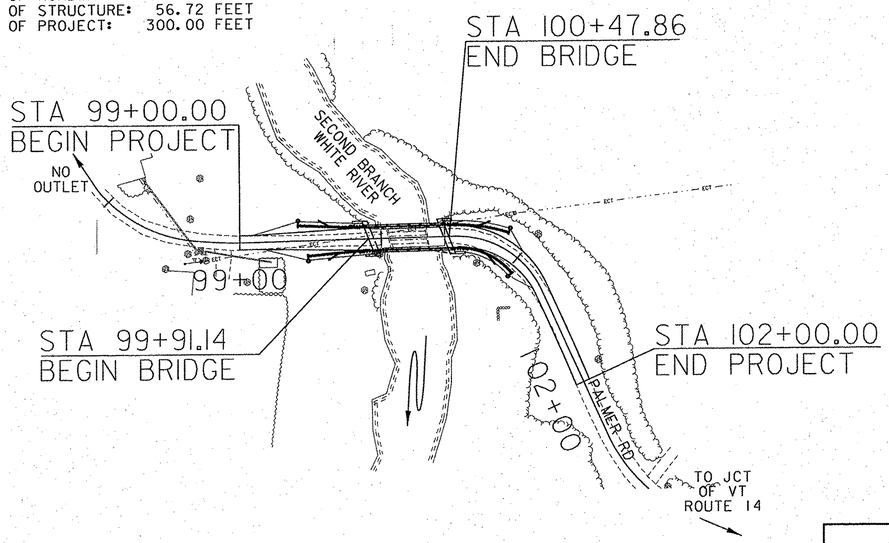
NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found by contacting Vtrans Records Management.

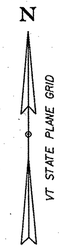
PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF RANDOLPH
COUNTY OF ORANGE
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD - BRIDGE NO. 35

PROJECT LOCATION: LOCATED IN THE TOWN OF RANDOLPH, ON TOWN HIGHWAY 65, BEGINNING FROM A POINT APPROXIMATELY 700 FEET WEST OF THE INTERSECTION WITH VT ROUTE 14 AND EXTENDING EASTERLY 300 FT TO A POINT APPROXIMATELY 400 FEET WEST OF THE INTERSECTION WITH VT ROUTE 14.

PROJECT DESCRIPTION: WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REPLACEMENT OF THE EXISTING STRUCTURE WITH A NEW STRUCTURE INCLUDING RELATED ROADWAY AND CHANNEL WORK.

LENGTH OF ROADWAY: 243.28 FEET
LENGTH OF STRUCTURE: 56.72 FEET
LENGTH OF PROJECT: 300.00 FEET





BUILT AS DESIGNED

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 : VTRANS
SURVEYED DATE : 12/11/2012

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83(96)

STATE OF VERMONT — JOHN P. BRADY — NO. 9478 — LICENSED PROFESSIONAL ENGINEER

CONSULTING ENGINEERS
540 Commercial Street
Manchester, NH 03101
(603) 668-8223
www.cldengineers.com

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE 8/12/2014

PROJECT MANAGER : TODD SUMNER, P.E.

PROJECT NAME : RANDOLPH
PROJECT NUMBER : BRO 1444(57)

SHEET 1 OF 39 SHEETS

CLD 12-0175 MODEL: TITle

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 11.06.15

LRFD

INDEX OF SHEETS

PLAN SHEETS

STRUCTURES DETAILS

STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: September 27, 2013

DRAINAGE AREA : 47.3 SQ. MI.
CHARACTER OF TERRAIN : HILLY TO MOUNTAINOUS
STREAM CHARACTERISTICS : STRAIGHT, NON-ALLUVIAL, AND PERENNIAL CHANNEL
NATURE OF STREAMBED : GRAVEL AND COBBLES WITH SILT

PEAK FLOW DATA

Q 2.33 =	1510 CFS	Q 50 =	7060 CFS
Q 10 =	3730 CFS	Q 100 =	8570 CFS
Q 25 =	5390 CFS	Q 500 =	13810 CFS

DATE OF FLOOD OF RECORD : UNKNOWN
ESTIMATED DISCHARGE: N/A
WATER SURFACE ELEV.: N/A
NATURAL STREAM VELOCITY: @ Q25 = 8.2 FPS
ICE CONDITIONS : MODERATE
DEBRIS: MODERATE
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? NO
IS ORDINARY RISE RAPID? NO
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CONCRETE JACK ARCH WITH STONE ABUTMENTS
YEAR BUILT: 1919
CLEAR SPAN(NORMAL TO STREAM): 26 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 9.5 FT (EL. 571.7 FT)
WATERWAY OF FULL OPENING: 240 SQ. FT.
DISPOSITION OF STRUCTURE: REPLACEMENT
TYPE OF MATERIAL UNDER SUBSTRUCTURE: SEE BORINGS

WATER SURFACE ELEVATIONS AT:

Q2.33 =	571.3 FT	VELOCITY =	9.1 FPS
Q10 =	576.2 FT	"	8.0 FPS
Q25 =	577.3 FT	"	8.2 FPS
Q50 =	578.0 FT	"	8.8 FPS
Q100 =	578.5 FT	"	9.3 FPS

LONG TERM STREAMBED CHANGES: MINIMAL DUE TO LARGE SIZE OF STREAMBED MATERIAL

IS THE ROADWAY OVERTOPPED BELOW Q100: YES
FREQUENCY: Q10
RELIEF ELEVATION: 573.6 FT
DISCHARGE OVER ROAD @Q100: 1438 CFS

UPSTREAM STRUCTURE

TOWN: RANDOLPH — DISTANCE: 0.5 MI.
HIGHWAY # : TH NO. 64 — STRUCTURE #: 38
CLEAR SPAN: 33 FT — CLEAR HEIGHT: UNKNOWN
YEAR BUILT: 1904 (REBUILT 2008) — FULL WATERWAY: UNKNOWN
STRUCTURE TYPE: ROLLED BEAM / SEMI KG POST - COVERED BRIDGE

DOWNSTREAM STRUCTURE

TOWN: RANDOLPH — DISTANCE: 0.4 MI.
HIGHWAY # : VT 14 — STRUCTURE #: 34
CLEAR SPAN: 55 FT — CLEAR HEIGHT: UNKNOWN
YEAR BUILT: 1995 — FULL WATERWAY: UNKNOWN
STRUCTURE TYPE: ROLLED BEAM

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	1.50	1.02					
POSTING							
OPERATING	1.88	1.33	1.86	1.04	1.35	1.23	1.47
COMMENTS:							

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY — R_{ndr}: **207.90 KIP**
2. PILE TEST RESISTANCE FACTOR — ϕ: **0.65**
3. MAXIMUM PILE TIP ELEVATION — **SEE BORINGS**
4.

PROPOSED STRUCTURE

STRUCTURE TYPE: CONCRETE NEXT BEAMS ON INTEGRAL ABUTMENTS

CLEAR SPAN(NORMAL TO STREAM): 47 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 9.7 FT (EL. 571.9 FT)
WATERWAY OF FULL OPENING: 354 SQ. FT.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	570.7 FT	VELOCITY=	6.0 FPS
Q10 =	575.8 FT	"	8.4 FPS
Q25 =	577.1 FT	"	8.2 FPS
Q50 =	577.9 FT	"	8.9 FPS
Q100 =	578.4 FT	"	9.3 FPS

IS THE ROADWAY OVERTOPPED BELOW Q100: YES
FREQUENCY: Q10
RELIEF ELEVATION: 574.0 FT
DISCHARGE OVER ROAD @Q100: 642 CFS

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 572.4 FT
VERTICAL CLEARANCE: @ Q25 = -4.7 FT (SUBMERGED)

SCOUR: CONTRACTION SCOUR - 0 FT

REQUIRED CHANNEL PROTECTION: TYPE IV STONE FILL

PERMIT INFORMATION

		DEPTH OR ELEVATION:
AVERAGE DAILY FLOW:	400 CFS	
ORDINARY LOW WATER:	250 CFS	565.9 FT
ORDINARY HIGH WATER:	648 CFS	567.9 FT

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: NO TEMPORARY STRUCTURE
CLEAR SPAN (NORMAL TO STREAM): N/A
VERTICAL CLEARANCE ABOVE STREAMBED: N/A
WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

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:	2.5 INCH
3.	DESIGN SPAN	L:	53.00 FT
4.	MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	0.81 INCH
5.	PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y:	270 KSI
6.	PRESTRESSED CONCRETE STRENGTH	f'_c:	6.0 KSI
7.	PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	4.8 KSI
8.	CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9.	CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	---
10.	CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	---
11.	CONCRETE, CLASS C	f'_c:	---
12.	REINFORCING STEEL	f_y:	60 KSI
13.	STRUCTURAL STEEL AASHTO M270	f_y:	---
14.	SOIL UNIT WEIGHT	γ:	0.125 KCF
15.	NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16.	SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17.	NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
18.	ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
19.	NOMINAL AXIAL PILE RESISTANCE	q_p:	270.3 KIPS
20.	PILE YIELD STRENGTH ASTM A572	f_y:	50 KSI
21.	PILE SIZE		HP 12X63
22.	EST. PILE LENGTHS (TWO SUBSTRUCTURES) (ABUTMENT 1 = 40 AND ABUTMENT 2 = 50) FT	L_p:	
23.	PILE RESISTANCE FACTOR	ϕ:	0.50
24.	LATERAL PILE DEFLECTION	Δ:	0.18 INCH
25.	BASIC WIND SPEED	V_{3s}:	---
26.	MINIMUM GROUND SNOW LOAD	p_g:	---
27.	SEISMIC DATA — PGA: 8 %g	S_s:	18 %g
		S_1:	5 %g

AS BUILT "REBAR" DETAIL

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

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2014	15	2	64	7.3	1
2034	20	2	64	9	2

20 year ESAL for flexible pavement from 2014 to 2034 : 4000
40 year ESAL for flexible pavement from 2014 to 2054 : 9000
Design Speed : 25 mph

PROJECT NAME: **RANDOLPH**
PROJECT NUMBER: **BRO 1444(57)**

FILE NAME: **z11j078pi.xls**
PROJECT LEADER: **J. BYATT**
DESIGNED BY: **N. CARON**
PRELIMINARY INFORMATION SHEET

PLOT DATE: 3/12/2014
DRAWN BY: **S. GOODWIN**
CHECKED BY: **J. BYATT**
SHEET 2 OF 39

MODEL: PI
CLD I2-0175

SEE REVISED SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 11.06.15

LRFD

INDEX OF SHEETS

PLAN SHEETS

STRUCTURES DETAILS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012

STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
G-1b	BOX BEAM GUARDRAIL	06-01-1994
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	08-06-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: September 27, 2013

DRAINAGE AREA : 47.3 SQ. MI.
CHARACTER OF TERRAIN : HILLY TO MOUNTAINOUS
STREAM CHARACTERISTICS : STRAIGHT, NON-ALLUVIAL, AND PERENNIAL CHANNEL
NATURE OF STREAMBED : GRAVEL AND COBBLES WITH SILT

PEAK FLOW DATA

Q 2.33 =	1510 CFS	Q 50 =	7060 CFS
Q 10 =	3730 CFS	Q 100 =	8570 CFS
Q 25 =	5390 CFS	Q 500 =	13810 CFS

DATE OF FLOOD OF RECORD : UNKNOWN
ESTIMATED DISCHARGE: N/A
WATER SURFACE ELEV.: N/A
NATURAL STREAM VELOCITY : @ Q25 = 8.2 FPS
ICE CONDITIONS : MODERATE
DEBRIS: MODERATE
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? NO
IS ORDINARY RISE RAPID? NO
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CONCRETE JACK ARCH WITH STONE ABUTMENTS
YEAR BUILT: 1919
CLEAR SPAN(NORMAL TO STREAM): 26 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 9.5 FT (EL. 571.7 FT)
WATERWAY OF FULL OPENING: 240 SQ. FT.
DISPOSITION OF STRUCTURE: REPLACEMENT
TYPE OF MATERIAL UNDER SUBSTRUCTURE: SEE BORINGS

WATER SURFACE ELEVATIONS AT:

Q2.33 =	571.3 FT	VELOCITY =	9.1 FPS
Q10 =	576.2 FT	"	8.0 FPS
Q25 =	577.3 FT	"	8.2 FPS
Q50 =	578.0 FT	"	8.8 FPS
Q100 =	578.5 FT	"	9.3 FPS

LONG TERM STREAMBED CHANGES: MINIMAL DUE TO LARGE SIZE OF STREAMBED MATERIAL

IS THE ROADWAY OVERTOPPED BELOW Q100: YES
FREQUENCY: Q10
RELIEF ELEVATION: 573.6 FT
DISCHARGE OVER ROAD @Q100: 1438 CFS

UPSTREAM STRUCTURE

TOWN: RANDOLPH — DISTANCE: 0.5 MI.
HIGHWAY # : TH NO. 64 — STRUCTURE #: 38
CLEAR SPAN: 33 FT — CLEAR HEIGHT: UNKNOWN
YEAR BUILT: 1904 (REBUILT 2008) — FULL WATERWAY: UNKNOWN
STRUCTURE TYPE: ROLLED BEAM / SEMI KG POST - COVERED BRIDGE

DOWNSTRUCTURE STRUCTURE

TOWN: RANDOLPH — DISTANCE: 0.4 MI.
HIGHWAY # : VT 14 — STRUCTURE #: 34
CLEAR SPAN: 55 FT — CLEAR HEIGHT: UNKNOWN
YEAR BUILT: 1995 — FULL WATERWAY: UNKNOWN
STRUCTURE TYPE: ROLLED BEAM

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEMI
TONNAGE	~~20~~	~~36~~	~~36~~	~~68~~	~~36~~	~~34.5~~	~~36~~
INVENTORY	1.49	1.02					
POSTING							
OPERATING	1.86	1.32	1.85	1.03	1.34	1.22	1.45
COMMENTS:							

⚠

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY — R_{ndr}: 207.90 KIP
2. PILE TEST RESISTANCE FACTOR — ϕ: 0.65
3. MAXIMUM PILE TIP ELEVATION — SEE BORINGS
4.

PROPOSED STRUCTURE

STRUCTURE TYPE: CONCRETE NEXT BEAMS ON INTEGRAL ABUTMENTS

CLEAR SPAN(NORMAL TO STREAM): 47 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 9.7 FT (EL. 571.9 FT)
WATERWAY OF FULL OPENING: 354 SQ. FT.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	570.7 FT	VELOCITY=	6.0 FPS
Q10 =	575.8 FT	"	8.4 FPS
Q25 =	577.1 FT	"	8.2 FPS
Q50 =	577.9 FT	"	8.9 FPS
Q100 =	578.4 FT	"	9.3 FPS

IS THE ROADWAY OVERTOPPED BELOW Q100: YES
FREQUENCY: Q10
RELIEF ELEVATION: 574.0 FT
DISCHARGE OVER ROAD @Q100: 642 CFS

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 572.4 FT
VERTICAL CLEARANCE: @ Q25 = -4.7 FT (SUBMERGED)

SCOUR: CONTRACTION SCOUR - 0 FT

REQUIRED CHANNEL PROTECTION: TYPE IV STONE FILL

PERMIT INFORMATION

AVERAGE DAILY FLOW:	400 CFS	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	250 CFS	565.9 FT
ORDINARY HIGH WATER:	648 CFS	567.9 FT

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: NO TEMPORARY STRUCTURE
CLEAR SPAN (NORMAL TO STREAM): N/A
VERTICAL CLEARANCE ABOVE STREAMBED: N/A
WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

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:	2.5 INCH
3. DESIGN SPAN	L:	53.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	0.81 INCH
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y:	270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	6.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	4.8 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	---
11. CONCRETE, CLASS C	f'_c:	---
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270	f_y:	---
14. SOIL UNIT WEIGHT	γ:	0.125 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	270.3 KIPS
20. PILE YIELD STRENGTH ASTM A572	f_y:	50 KSI
21. PILE SIZE		HP 12X63
22. EST. PILE LENGTHS (TWO SUBSTRUCTURES) (ABUTMENT 1 = 40 AND ABUTMENT 2 = 50) FT	L_p:	
23. PILE RESISTANCE FACTOR	ϕ:	0.50
24. LATERAL PILE DEFLECTION	Δ:	0.18 INCH
25. BASIC WIND SPEED	V_{3s}:	---
26. MINIMUM GROUND SNOW LOAD	p_g:	---
27. SEISMIC DATA PGA : 8 %g	S_s:	18 %g
	S_1:	5 %g

PROJECT NAME: **RANDOLPH**
PROJECT NUMBER: **BRO 1444(57)**

FILE NAME: z11j078pi.xls — PLOT DATE: 11/20/2014
PROJECT LEADER: J. BYATT — DRAWN BY: S. GOODWIN
DESIGNED BY: N. CARON — CHECKED BY: J. BYATT
PRELIMINARY INFORMATION SHEET — SHEET 2 OF 39

REVISIONS

⚠1	11/21/14	RATING UPDATE DUE TO STRAND LAYOUT REVISION

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2014	15	2	64	7.3	1
2034	20	2	64	9	2

20 year ESAL for flexible pavement from 2014 to 2034 : 4000
40 year ESAL for flexible pavement from 2014 to 2054 : 9000
Design Speed : 25 mph

AS BUILT "REBAR" DETAIL

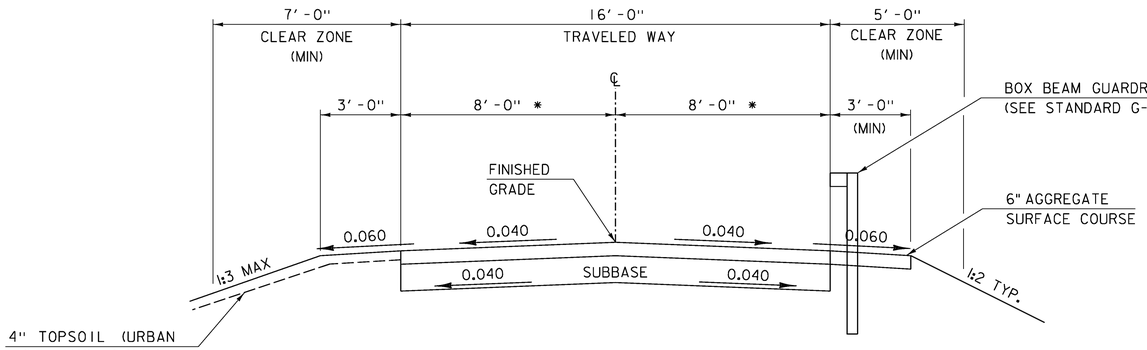
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

MODEL: PI
CLD I2-0175

MATERIAL TOLERANCES
(IF USED ON PROJECT)

SURFACE	
- AGGREGATE SURFACE COURSE	+/- ½"
- SUBBASE	+/- 1"

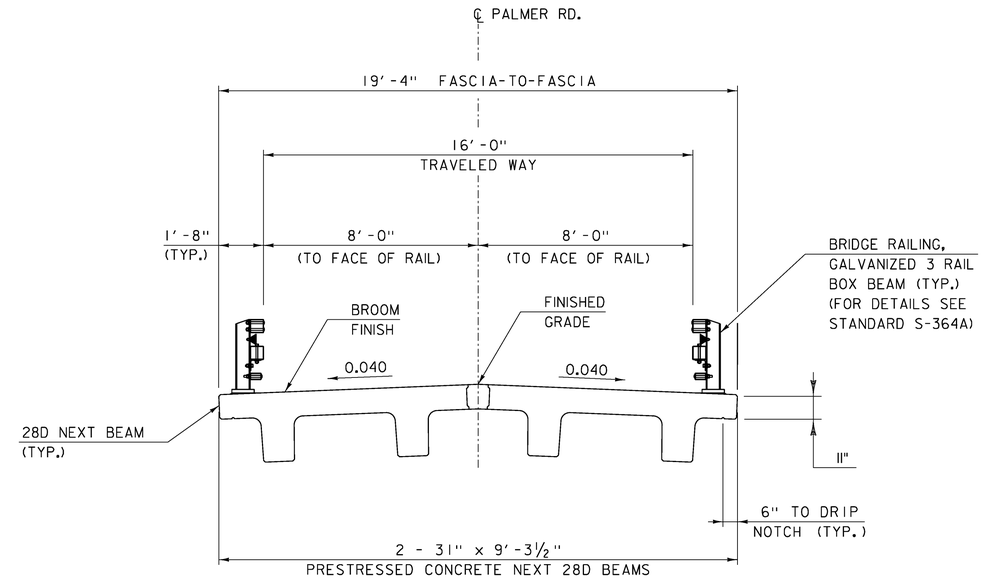
6" AGGREGATE SURFACE COURSE
12" SUBBASE OF CRUSHED GRAVEL, FINE GRADED



ROADWAY TYPICAL SECTION

SCALE: ⅜" = 1'-0"

*WIDTH OF GRAVEL ROAD APPROACH TO BRIDGE VARIES FROM 16' AT BRIDGE TO 10' TO MATCH EXISTING ROAD WIDTH. SEE LAYOUT SHEET.

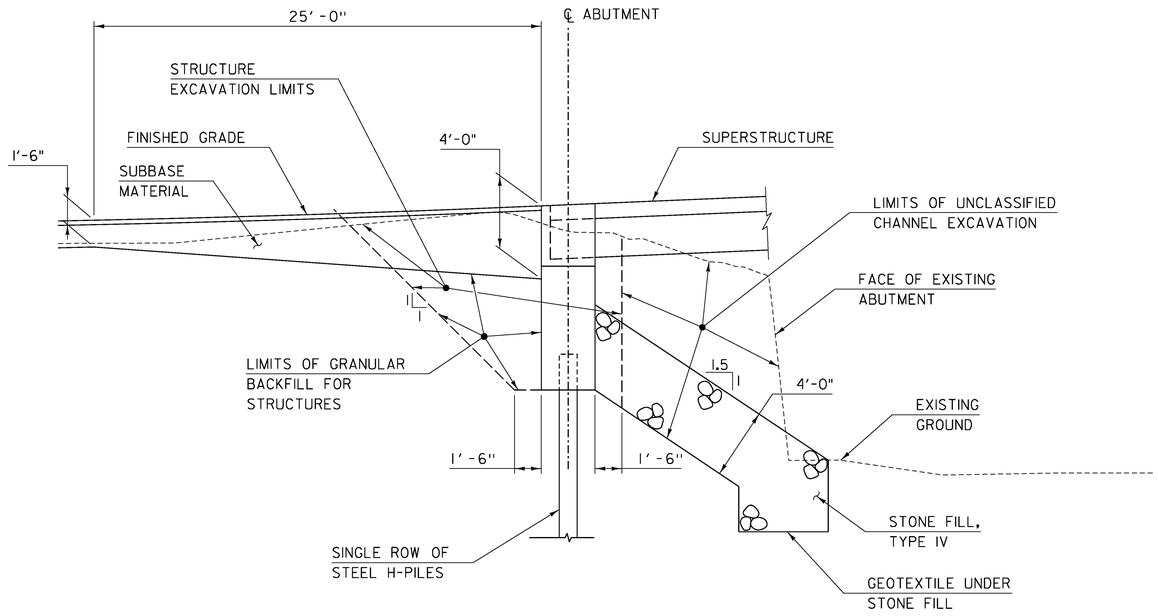


BRIDGE TYPICAL SECTION

SCALE: ⅜" = 1'-0"

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078typ.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: J. SMITH
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
TYPICAL SECTIONS	SHEET 3 OF 39

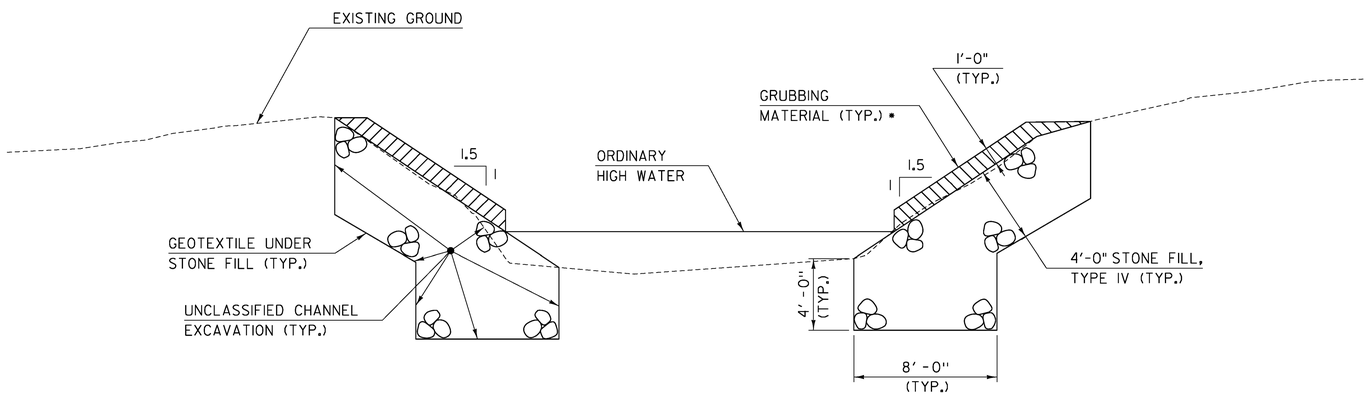
CLD XX-XXXX MODEL: 01



ABUTMENT EARTHWORKS TYPICAL SECTION

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

NOTE: ACTUAL EXCAVATION LIMITS SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER ONLY THE EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25, "STRUCTURE EXCAVATION". ALL NECESSARY EXCAVATION OUTSIDE OF THESE LIMITS SHALL BE PAID FOR UNDER ITEM 203.27, "UNCLASSIFIED CHANNEL EXCAVATION".



CHANNEL TYPICAL SECTION

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

• 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.

CLD 12-0175 MODEL: 01

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11J078sub.dgn	PLOT DATE: 9/9/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
TYPICAL EARTHWORK SECTIONS	SHEET 4 OF 39

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2012, AND ITS LATEST REVISIONS.

2. THE BRIDGE WAS DESIGNED FOR THE HL-93 LIVE LOAD WITH AN ALLOWANCE FOR 2½" OF FUTURE PAVEMENT.

3. 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.

4. DUE TO STABILITY CONCERNS AT THE ABUTMENTS DURING THE ERECTION OF THE SUPERSTRUCTURE THE CONTRACTOR SHALL SUBMIT THE ERECTION PLAN A MINIMUM OF 30 WORKING DAYS PRIOR TO THE BRIDGE CLOSURE PERIOD. UNDER NO CIRCUMSTANCES SHALL A BRIDGE CLOSURE PERIOD BEGIN PRIOR TO HAVING AN ACCEPTED ERECTION PLAN.

5. 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 MAY BE REQUIRED. IN NO CASE SHALL THE CONTRACTOR ATTACH ADDITIONAL FORM OR SCREED SUPPORTS BY DRILLING OR SIMILAR MEANS INTO ANY PRECAST/PRESTRESSED SUPERSTRUCTURE UNIT.

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

7. THE CONTRACTOR SHALL BE MADE AWARE THAT EXISTING UTILITIES ARE WITHIN THE CONSTRUCTION LIMITS OF BRIDGE 35. THE UTILITIES WILL BE RELOCATED BY OTHERS PRIOR TO THE START OF CONSTRUCTION. THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THE PLANS IS APPROXIMATE. NO CLAIMS ARE MADE AS TO THE ACCURACY OR COMPLETENESS OF THE UTILITIES SHOWN. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR LOCATING AND PROTECTING FROM DAMAGE ALL UTILITIES ON SITE DURING ALL STAGES OF CONSTRUCTION. SEE LAYOUT PLAN AND SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

8. NO SUBSTITUTION FOR PRECAST CONCRETE WILL BE PERMITTED.

9. A TEMPORARY DETOUR ACCESS ROAD ON THE WEST SIDE OF THE RIVER WILL BE USED BY THE HOMEOWNER AT THE END OF PALMER ROAD DURING THE BRIDGE CLOSER PERIOD. THE TOWN OF RANDOLPH IS RESPONSIBLE FOR THE TEMPORARY ACCESS ROAD AND IT IS ONLY INTENDED TO BE USED BY THE HOMEOWNER AND TOWN EMERGENCY VEHICLES. NO CONSTRUCTION VEHICLES OR EQUIPMENT SHALL USE THIS ACCESS FOR ANY PURPOSE, AS INDICATED IN THE ENVIRONMENTAL STIPULATIONS FOR THE PROJECT.

10. THE CONTRACTOR SHALL REVIEW AND UNDERSTAND ALL APPLICABLE ENVIRONMENTAL PERMITS AND ENSURE THAT ALL CONSTRUCTION CONDITIONS ARE MET.

11. SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-5.

EARTHWORK

12. REMOVAL OF THE EXISTING STRUCTURE SHALL BE UNDER ITEM 529.15, "REMOVAL OF STRUCTURE (EXISTING ORIGINAL STRUCTURE)". THIS WORK SHALL INCLUDE REMOVAL OF ANY PORTIONS OF THE EXISTING STRUCTURE, INCLUDING EXISTING GUARDRAIL, THE SUPERSTRUCTURE, ABUTMENTS, AND WINGWALLS, THAT FALL OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION. REMOVAL OF THE TEMPORARY BRIDGE SHALL BE PAID UNDER ITEM 529.15, "REMOVAL OF STRUCTURE (EXISTING TEMPORARY STRUCTURE)". SEE NOTE 47 FOR MORE DETAILS.

13. THE "STONE FILL, TYPE IV" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW BEAMS ARE SET.

CONCRETE AND REINFORCING STEEL

14. "WATER REPELLENT, SILANE" SHALL BE APPLIED IN ACCORDANCE WITH SECTION 514 TO ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE, WITH THE EXCEPTION OF THE BOTTOM OF THE PRECAST NEXT BEAMS BETWEEN DRIP NOTCHES. THIS WORK SHALL BE PAID FOR UNDER THE CONTRACT OPTIONAL PRECAST ABUTMENT BID ITEM, OR CONTRACT ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (NEXT 28 D)" AS APPROPRIATE.

15. ALL CONCRETE PLACED INTEGRALLY WITH THE SUPERSTRUCTURE SHALL BE ITEM 900.608," SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".

16. ALL PRECAST SUBSTRUCTURE CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 540 - PRECAST CONCRETE.

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

18. PAYMENT FOR REINFORCING STEEL IN PRECAST OR PRESTRESSED COMPONENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST OR PRESTRESSED CONCRETE CONTRACT ITEM. ALL REINFORCING STEEL PLACED WITHIN THE BEAM-END CLOSURE POURS SHALL BE PAID FOR UNDER CONTRACT OPTIONAL PRECAST ABUTMENT BID ITEM. ALL REINFORCING STEEL PLACED WITHIN THE NEXT BEAM FLANGE CLOSURE POUR SHALL BE PAID FOR UNDER CONTRACT ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (28D)".

19. ALL REINFORCING STEEL IN THE PRECAST ABUTMENTS SHALL MEET THE REQUIREMENTS FOR REINFORCING STEEL, LEVEL 1, UNLESS NOTED OTHERWISE. ALL REINFORCING STEEL IN THE NEXT BEAMS, NEXT BEAM FLANGE CLOSURE POUR, BEAM-END CLOSURE POUR, AND PRECAST WINGWALLS SHALL MEET THE REQUIREMENTS FOR REINFORCING STEEL, LEVEL 1, EPOXY COATED.

20. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

ALONG BACK FACES OF WALLS AGAINST EARTH:	2.00 INCHES
ALONG TOP SURFACE OF DECK SLAB:	3.50 INCHES
ALONG BOTTOM SURFACE OF DECK SLAB:	1.75 INCHES
BEAM-END CLOSURE POUR:	2.00 INCHES
ELSEWHERE UNLESS OTHERWISE INDICATED:	3.00 INCHES

21. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE "VERMONT AGENCY OF TRANSPORTATION MATERIALS SAMPLING MANUAL".

H-PILES

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

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

24. THE PILES SHALL BE DRIVEN TO A NOMINAL PILE DRIVING RESISTANCE (RNDR) OF 207.9 KIPS, AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING, AND AS INTERPRETED BY THE ENGINEER. HOWEVER, THE PILES SHALL BE DRIVEN TO A MINIMUM DEPTH OF 20 FEET BELOW THE BOTTOM OF THE PRECAST ABUTMENT.

25. TO ENSURE THAT THE NOMINAL CAPACITY HAS BEEN ATTAINED AND TO PREVENT THE OVERSTRESSING OF THE PILES DURING DRIVING OPERATIONS, DYNAMIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 505. A MINIMUM OF ONE DYNAMIC PILE TEST SHALL BE CONDUCTED ON THE FIRST PILE DRIVEN FOR EACH SUBSTRUCTURE UNIT, FOR A TOTAL OF TWO TESTS. MORE TESTS MAY BE ORDERED BY THE ENGINEER. ADDITIONAL TEST(S) ORDERED BY THE ENGINEER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR CONTRACT ITEM 505.45.

26. STRESSES IN THE PILE DURING DRIVING SHALL NOT EXCEED THE MAXIMUM DRIVING STRESS. THE MAXIMUM DRIVING STRESS SHALL BE DETERMINED AS 90 PERCENT OF THE PILE STEEL STRENGTH MULTIPLIED BY A RESISTANCE FACTOR OF 1.00.

27. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED TO BE AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTH MAY VARY.

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11J078gennotes.dgn	PLOT DATE: 9/9/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
PROJECT NOTES (1 OF 2)	SHEET 5 OF 39

CLD 12-020 MODEL: GeneralNotes (1 of 2)

PRECAST ABUTMENTS AND POST-TENSIONING

28. THE UNIT PRICE FOR EACH PRECAST ABUTMENT SHALL INCLUDE THE ASSOCIATED WINGWALLS AND ALL LABOR AND MATERIALS TO CONNECT THE WINGWALLS TO THE ABUTMENT. THIS WORK SHALL BE PAID FOR UNDER THE CONTRACT OPTIONAL PRECAST ABUTMENT BID ITEM.

29. WATERSTOPS SHALL BE PLACED AT THE JOINT BETWEEN THE PRECAST ABUTMENTS AND CAST-IN-PLACE END DIAPHRAGMS. THIS WORK SHALL BE PAID FOR UNDER THE CONTRACT OPTIONAL PRECAST ABUTMENT BID ITEM.

30. IF VERTICAL CONSTRUCTION JOINTS ARE REQUIRED BY THE CONTRACTOR FOR SHIPPING OF THE ABUTMENTS THEN THE SECTIONS SHALL BE KEYED AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS.

31. POST-TENSIONING AND ASSOCIATED ITEMS ARE ONLY REQUIRED IF THE PRECAST ABUTMENT IS CONSTRUCTED OF MORE THAN ONE UNIT. ANY POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 - PRESTRESSED CONCRETE. GALVANIZED ANCHOR ASSEMBLIES, CONDUIT, AND POST-TENSIONING STRANDS SHALL BE INCLUDED UNDER THE CONTRACT OPTIONAL PRECAST ABUTMENT BID ITEM. POST-TENSIONING STRANDS SHALL BE COVERED WITH SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF THE STRAND, EXCEPT AT ANCHORAGE LOCATIONS.

32. GALVANIZE ANCHOR ASSEMBLIES AFTER FABRICATION ACCORDING TO AASHTO M232M/M232.

33. DESIGN VALUES:
    - A. CONCRETE COMPRESSIVE STRENGTH: f`c= 5,000 PSI.
    - B. POST-TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS.
    - C. ASSUMED MODULUS OF ELASTICITY IS 28,500 KSI.
    - D. THERE SHALL BE TWO STRANDS PER CONDUIT.
    - E. JACKING FORCE PER STRAND: 32 KIPS

34. THE CONCRETE FOR THE ABUTMENT #1 AND ABUTMENT #2 PILE CAVITIES SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".

35. THE CORRUGATED STEEL PIPE SHALL BE TYPE 1 AND SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01 AND AASHTO M289. ALL COST ASSOCIATED WITH PLACING THE CORRUGATED STEEL PIPE SHALL BE INCLUDED IN THE CONTRACT OPTIONAL PRECAST ABUTMENT BID ITEM.

36. PROPOSED SEQUENCE OF CONSTRUCTION:
    - A. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
    - B. DRIVE PILES.
    - C. PLACE PRECAST ABUTMENTS AND INSTALL TRANSVERSE STRANDS (IF MORE THAN ONE UNIT IS USED).
    - D. APPLY EPOXY BONDING COMPOUND TO MATCH CAST FACES OF VERTICAL CONSTRUCTION JOINT (IF MORE THAN ONE UNIT IS USED).
    - E. USE A CALIBRATED JACK TO TENSION TO 3 KIPS TO REMOVE SAG IN STRANDS.
    - F. CHECK ALIGNMENT OF PRECAST ABUTMENT ELEMENTS.
    - G. STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK.
    - H. FILL PILE CAVITIES WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
    - I. PLACE PRECAST WINGWALLS AND GROUT SPLICE CONNECTORS.
    - J. BACKFILL MAY BE COMPLETED AFTER SPLICE CONNECTOR GROUT HAS REACHED 85% OF 5,000 PSI.

37. ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL.

NEXT D BEAMS

38. NEXT D BEAMS ARE A NON-PROPRIETARY SHAPE DEVELOPED BY PCI NORTHEAST (PCINE). STANDARDIZED SECTION PROPERTIES AND DETAILS MAY BE FOUND AT http://www.pcine.org.

39. DESIGN VALUES:
    - A. CONCRETE DESIGN COMPRESSIVE STRENGTH: f`c = 6,000 PSI.
    - B. CONCRETE COMPRESSIVE STRENGTH AT RELEASE: f`ci = 4,800 PSI.
    - C. PRESTRESSING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7-WIRE STRANDS.
    - D. ASSUMED MODULUS OF ELASTICITY: 28,500 KSI.
    - E. JACKING FORCE PER STRAND: 44 KIPS.
    - F. SERVICE LOADS:

MEMBER MOMENT	634.6 K-FT
SUPERIMPOSED DEAD LOAD MOMENT	173.7 K-FT
LIVE LOAD AND IMPACT MOMENT	797.1 K-FT
DEAD LOAD REACTION	74.1 KIPS
LIVE LOAD AND IMPACT REACTION	50.7 KIPS
TOTAL REACTION	124.8 KIPS
CAMBER AT RELEASE	13/16 INCHES
FINAL CAMBER	1 5/16 INCHES

40. ENDS OF FLANGES IN CONTACT WITH GROUT SHALL BE SANDBLASTED PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.

41. FILL THE FLANGE TO FLANGE CONNECTION WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".

42. THE TOP FLANGE OF THE NEXT BEAMS, TOP OF THE FLANGE CONNECTION POUR, AND TOP OF THE BEAM-END CLOSURE POUR SHALL RECIEVE A BROOM FINISH. THE COST OF APPLYING THE BROOM FINISH SHALL BE INCLUDED IN CONTRACT ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (NEXT 28 D)" OR CONTRACT ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET", AS APPROPRIATE.

43. METHOD OF FORMING FLANGE CONNECTION SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER. FORM SUPPORTS SHALL NOT PENETRATE THROUGH THE TOP OF POUR UNLESS APPROVED BY THE ENGINEER.

44. THE FABRICATOR MAY ALTER THE DESIGN AS DETAILED IN THESE PLANS TO ACCOMMODATE THE FABRICATOR'S SPECIFIC OPERATION. THIS ALTERATION MUST BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT, MEET THE ABOVE CRITERIA, AND SHALL BE APPROVED BY THE PROJECT MANAGER.

45. PROPOSED SEQUENCE OF CONSTRUCTION:
    - A. LAY OUT WORKING LINES THE ENTIRE WIDTH OF THE BRIDGE ALONG CENTERLINE OF BEARING, MEASURED FROM A SINGLE WORKING POINT. THE WORKING LINES SHALL BE BASED ON THE NOMINAL BEAM WIDTHS.
    - B. VERIFY THE BEAM SEAT ELEVATIONS AND TAKE CORRECTIVE ACTION IF NECESSARY.
    - C. INSTALL BEARINGS.
    - D. ERECT THE BEAMS TO FIT WITHIN THE WORKING LINES.
    - E. ADJUST BEAMS TO FIT SNUG AGAINST ½" CORK ON INTERIOR OF CHEEK WALLS.
    - F. CONSTRUCT FORMS FOR THE FLANGE CONNECTION POUR AND BEAM-END CLOSURE POUR.
    - G. GROUT CONNECTIONS BETWEEN BEAM FLANGES, APPLY LONGITUDINAL GROOVES IN ACCORDANCE WITH SECTION 509, AND CURE.
    - H. COMPLETE BEAM-END CLOSURE POUR TO TOP OF DECK, APPLY LONGITUDINAL GROOVES IN ACCORDANCE WITH SECTION 509, AND CURE.

46. ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL.

MISCELLANEOUS

47. A TEMPORARY BRIDGE IS IN PLACE OVER THE EXISTING STRUCTURE. REMOVAL OF THE TEMPORARY BRIDGE SHALL BE PAID FOR UNDER ITEM 529.15, "REMOVAL OF STRUCTURE (EXISTING TEMPORARY STRUCTURE)". THIS WORK SHALL INCLUDE THE REMOVAL OF ANY PORTIONS OF THE SUPERSTRUCTURE AND SUBSTRUCTURE OVERLAYING THE EXISTING STRUCTURE.

48. THE EXISTING STRUCTURAL STEEL ON THIS PROJECT WAS PAINTED WITH A MATERIAL WHICH MAY CONTAIN LEAD. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSITION OF THE STRUCTURAL STEEL.

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11J078gennotes.dgn	PLOT DATE: 9/9/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
PROJECT NOTES (2 OF 2)	SHEET 6 OF 39

CLD 12-020 MODEL: GeneralNotes (2 of 2)

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	EROSION CONTROL	BRIDGE 35	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	-
240				240		CY	COMMON EXCAVATION	203.15	5.2
		306		306		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
20				20		CY	EARTH BORROW	203.30	-
1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	-
		266		266		CY	STRUCTURE EXCAVATION	204.25	0.7
		39		39		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	0.6
150				150		CY	SUBBASE OF CRUSHED GRAVEL, FINE GRADED	301.26	6.9
80				80		CY	AGGREGATE SURFACE COURSE	401.10	2.3
		1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10	-
		360		360		LF	STEEL PILING, HP 12 X 63	505.155	-
		2		2		EACH	DYNAMIC PILE LOADING TEST	505.45	-
		117		117		LF	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	525.335	0.5
		1		1		EACH	REMOVAL OF STRUCTURE (400 SF. - EST.) (EXISTING ORIGINAL STRUCTURE)	529.15	-
		1		1		EACH	REMOVAL OF STRUCTURE (629 SF. - EST.) (EXISTING TEMPORARY STRUCTURE)	529.15	-
		8		8		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17	-
							BEGIN OPTION AA		
		1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #1)	540.10	-
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE) (ABUTMENT #1)	900.645	
							END OPTION AA		
							BEGIN OPTION BB		
		1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #2)	540.10	-
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE) (ABUTMENT #2)	900.645	
							END OPTION BB		
	40			40		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	EST.
		296		296		CY	STONE FILL, TYPE IV	613.13	0.1
60				60		LF	BOX BEAM GUARDRAIL	621.30	4.8
		4		4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	621.725	-
			1	1		LS	FIELD OFFICE, ENGINEERS	631.10	-
			1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16	-
			3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	-
1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11	-
1				1		LS	TRAFFIC CONTROL	641.10	-
		373		373		SY	GEOTEXTILE UNDER STONE FILL	649.31	
	80			80		SY	GEOTEXTILE FOR SILT FENCE	649.51	5
	20			20		LB	SEED	651.15	6.5
	50			50		LB	FERTILIZER	651.18	3
	0.5			0.5		TON	AGRICULTURAL LIMESTONE	651.20	0.33
	0.5			0.5		TON	HAY MULCH	651.25	0.33

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORKS SUMMARY
235	CY	COMMON EXCAVATION
306	CY	UNCLASSIFIED CHANNEL EXCAVATION
285	CY	STRUCTURE EXCAVATION
826	CY	SUBTOTAL
5	CY	ROUNDING
831	CY	TOTAL FILL AVAILABLE
59	CY	TOTAL FILL REQUIRED (1.15 FACTOR)
772	CY	TOTAL WASTE

CLD 12-0175 MODEL: 01

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

FILE NAME: z11j078qss.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: J. SMITH
QUANTITY SHEET 1

PLOT DATE: 9/9/2014
DRAWN BY: K. RUTTER
CHECKED BY: D. MUNRO
SHEET 7 OF 39

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS			
ROADWAY	EROSION CONTROL	BRIDGE 35	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
50				50		CY	TOPSOIL	651.35	5
		121		121		SY	GRUBBING MATERIAL	651.40	0.1
	1			1		LS	EPSC PLAN	652.10	-
	50			50		HR	MONITORING EPSC PLAN	652.20	8
	1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-
	150			150		SY	TEMPORARY EROSION MATTING	653.20	8
	6			6		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25	-
	15			15		CY	VEHICLE TRACKING PAD	653.35	EST.
	2			2		EACH	FILTER BAG	653.45	-
130				130		LF	BARRIER FENCE	653.50	5.8
350				350		LF	PROJECT DEMARCATION FENCE	653.55	0.9
1				1		EACH	REMOVING SIGNS	675.50	-
4				4		EACH	DELINEATOR WITH STEEL POST	676.10	-
		18		18		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608	1
		109		109		LF	SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (NEXT 28 D)	900.640	-

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

FILE NAME: z11j078qss.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: J. SMITH
QUANTITY SHEET 2

PLOT DATE: 8/12/2014
DRAWN BY: K. RUTTER
CHECKED BY: D. MUNRO
SHEET 8 OF 39

CONSULTING ENGINEERS

MODEL: 02
CLD 12-0175

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 RADIUS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

- 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)

- 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 — PDF — PROJECT DEMARCATION FENCE
- BF — 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 SR SR — SLOPE RIGHTS
- 6f — 6f — 6F PROPERTY BOUNDARY
- 4f — 4f — 4F PROPERTY BOUNDARY
- HAZ — 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

ENVIRONMENTAL RESOURCES

- WETLAND BOUNDARY
- RIPARIAN BUFFER ZONE
- WETLAND BUFFER ZONE
- SOIL TYPE BOUNDARY
- T&E — THREATENED & ENDANGERED SPECIES
- HAZ — 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
- Ⓗ 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

CLD 12-0175 MODEL: 01

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

FILE NAME: z11j078legend.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: VTRANS
CONVENTIONAL SYMBOLOGY LEGEND SHEET

PLOT DATE: 8/12/2014
DRAWN BY: J. SMITH
CHECKED BY: D. MUNRO
SHEET 9 OF 39

GPS CONTROL POINTS

HVCTRL #1

EAST RANDOLPH

NORTH = 521893.79
EAST = 1626547.81
ELEV. = 657.60

GENERAL LOCATION, RANDOLPH, VT., JUST SOUTH OF EAST RANDOLPH. TO REACH FROM THE INTERSECTION OF VT ROUTE 14 AND VT ROUTE 66 IN EAST RANDOLPH GO SOUTH ALONG VT ROUTE 14 FOR 0.6 MI (1.0 KM) TO THE EAST RANDOLPH SCHOOL ON THE LEFT AND THE SITE OF THE MARK ON THE LEFT IN A LAWN IN FRONT OF THE SCHOOL. THE MARK IS SET 10 CM BELOW GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT POURED 1.3 M (4.3 FT) DEEP. IT IS 6.7 M (22.0 FT) EAST OF AND ABOUT 0.1 M (0.3 FT) LOWER THAN THE CENTERLINE OF VT ROUTE 14, 13.0 M (42.7 FT) NORTH OF THE CENTERLINE OF THE MOST SOUTHERLY ENTRANCE DRIVE TO THE SCHOOL, 27.1 M (88.9 FT) WEST NORTHWEST OF THE SOUTHWEST CORNER OF THE SCHOOL BUILDING, AND 18.1 M (59.4 FT) SOUTHEAST OF POLE NO 61/20 AND A FIBERGLASS WITNESS POST.

HVCTRL #2

EAST RANDOLPH AZ MK

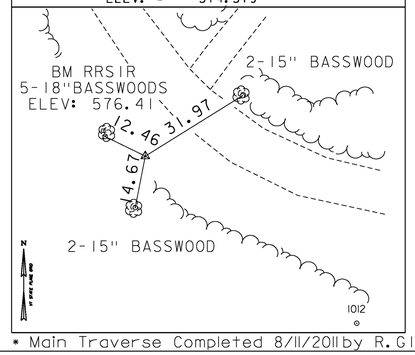
NORTH = 520093.26
EAST = 1626438.54
ELEV. = 647.11

GENERAL LOCATION, RANDOLPH, VT., JUST SOUTH OF EAST RANDOLPH. TO REACH FROM THE INTERSECTION OF VT ROUTE 14 AND VT ROUTE 66 IN EAST RANDOLPH GO SOUTH ALONG VT ROUTE 14 FOR 0.9 MI (1.4 KM) TO THE INTERSECTION OF A GRAVEL DRIVE LEFT, AT THE SOUTH EDGE OF A CEMETERY, AND THE SITE OF THE MARK ON THE LEFT, SOUTH OF THE GRAVEL DRIVE. THE MARK IS SET 3 CM BELOW GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT POURED 1.3 M (4.3 FT) DEEP. IT IS 6.6 M (21.7 FT) EAST OF AND ABOUT 0.5 M (1.6 FT) HIGHER THAN THE CENTERLINE OF VT ROUTE 14, 5.1 M (16.7 FT) SOUTH OF THE CENTERLINE OF THE GRAVEL DRIVE, 13.1 M (43.0 FT) EAST OF POLE NO 30T/7/122/61/30, 14.8 M (48.6 FT) SOUTHWEST OF THE SOUTHWEST CORNER OF THE GRAVESTONE OF BLODGETT, AND 0.3 M (1.0 FT) WEST OF A FIBERGLASS WITNESS POST.

TRAVERSE TIES

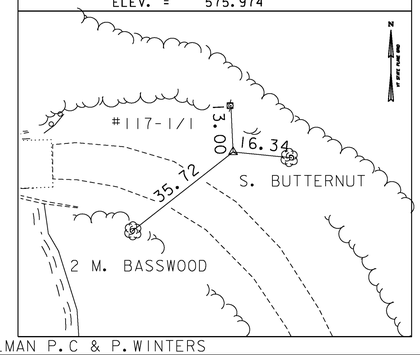
HVCTRL #11

NORTH = 518535.839
EAST = 1625958.462
ELEV. = 574.579



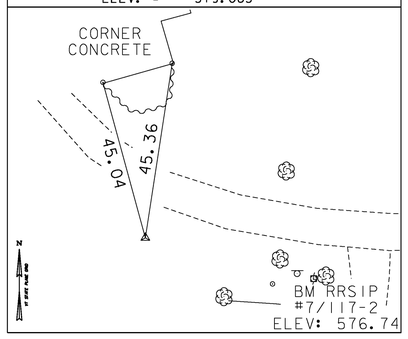
HVCTRL #12

NORTH = 518733.393
EAST = 1625878.691
ELEV. = 575.974



HVCTRL #13

NORTH = 518725.245
EAST = 1625608.917
ELEV. = 579.065

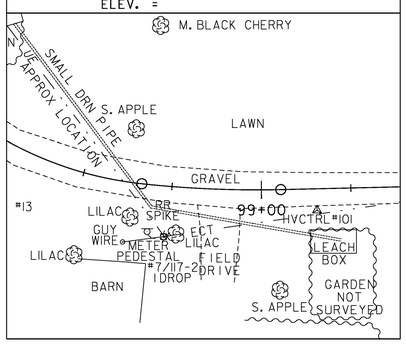


* Main Traverse Completed 8/11/2011 by R. GILMAN P.C & P. WINTERS

ALIGNMENT TIES

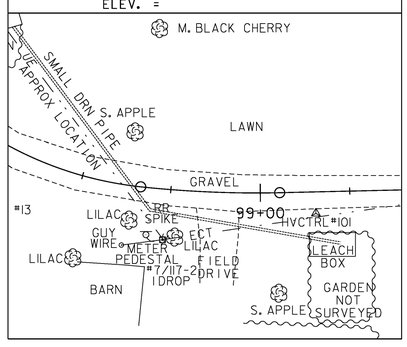
PCC 98+66.53

NORTH = 518728.6428
EAST = 1625649.8553
ELEV. =



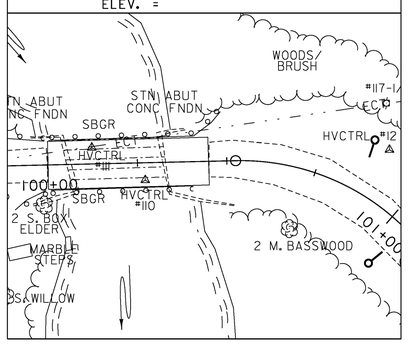
PT 99+05.42

NORTH = 518727.0072
EAST = 1625688.6835
ELEV. =



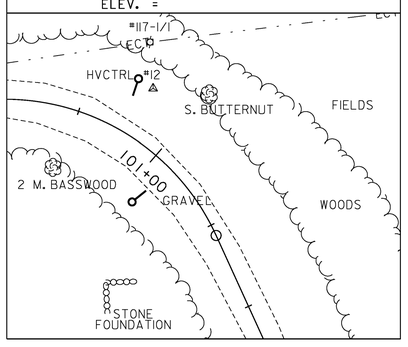
PC 100+52.46

NORTH = 518730.3473
EAST = 1625835.6873
ELEV. =



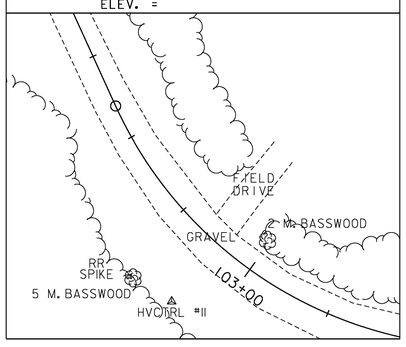
PT 101+28.21

NORTH = 518692.3464
EAST = 1625896.2989
ELEV. =



PC 102+40.25

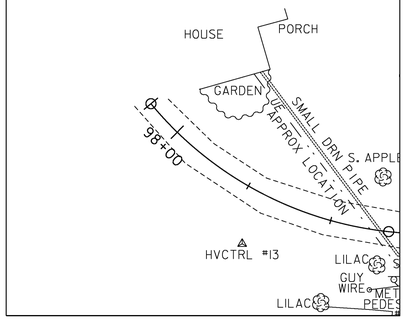
NORTH = 518590.4204
EAST = 1625942.8060
ELEV. =



ALIGNMENT TIES

PC 97+89.16

NORTH = 518764.4017
EAST = 1625583.4154
ELEV. =



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

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444 (57)
FILE NAME: survey\x11j078t1.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER:	DRAWN BY: R. Bullock
DESIGNED BY:	CHECKED BY:
TIE SHEET	SHEET 10 OF 39

CLD 12-0175 MODEL: TIE 01

CURVE (1)
BK BRG = S 39°32′46" E
AH BRG = S 83°52′27" E
DELTA = 44°19′41" LT
D = 57°17′45"
R = 100.00′
T = 40.74′
L = 77.37′
E = 7.98′

CURVE (2)
PI 98+86.00 BK =
PI 98+85.95 AH
DELTA = 7°25′39" LT
D = 19°05′55"
R = 300.00′
T = 19.47′
L = 38.89′
E = 0.63′

BOX BEAM GUARDRAIL
99+41.3 TO 99+55.1 LT
99+48.0 TO 99+61.8 RT
100+74.3 TO 100+86.1 LT
100+88.6 TO 101+04.8 RT

GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM
99+55.1 TO 99+87.2 LT
99+61.8 TO 99+93.7 RT
100+45.3 TO 100+74.3 LT
100+51.9 TO 100+88.6 RT

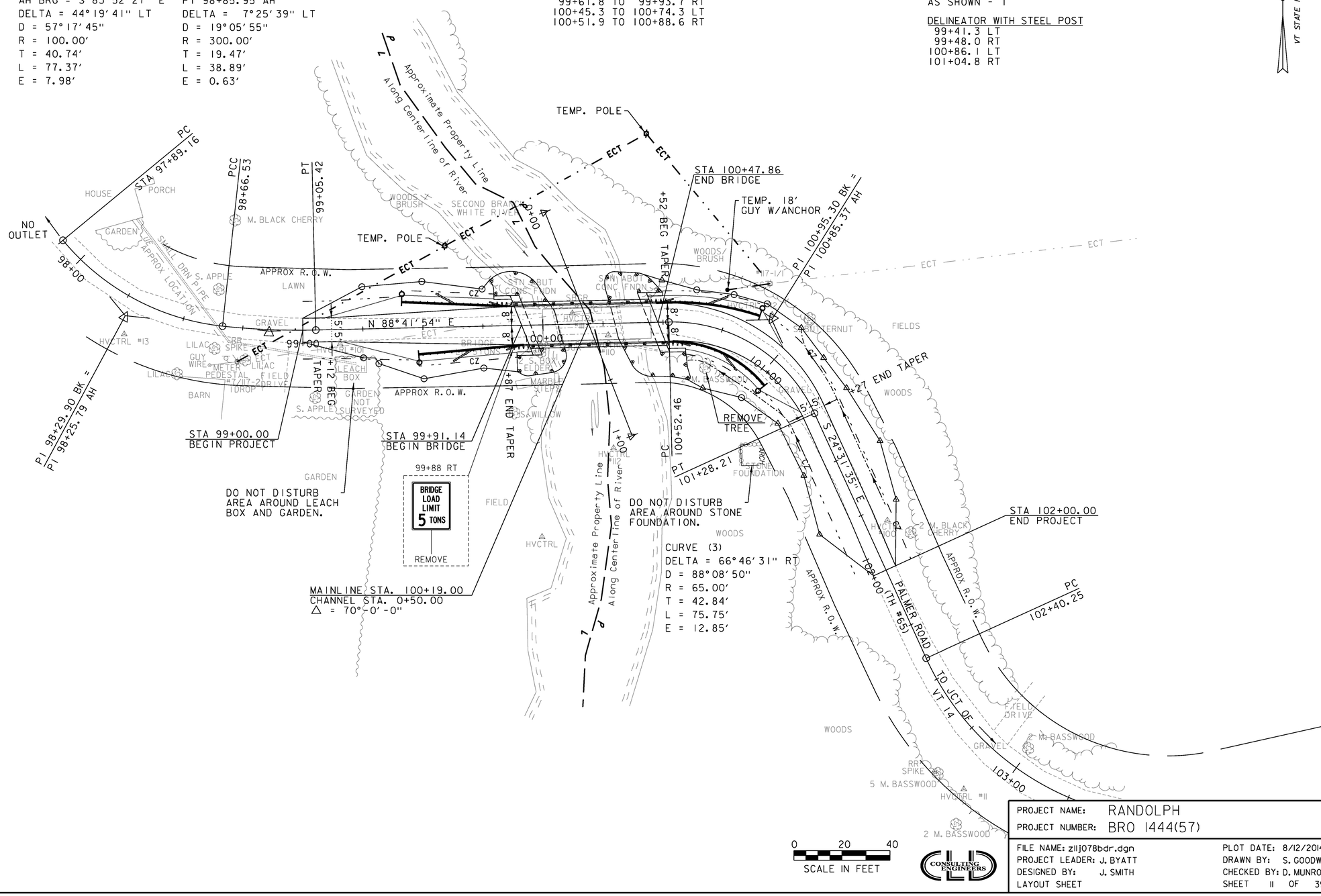
BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM
99+87.2 TO 100+45.3 LT
99+93.7 TO 100+51.9 RT

REMOVAL AND DISPOSAL OF GUARDRAIL
INCLUDED UNDER BRIDGE REMOVAL ITEM

REMOVING SIGNS
AS SHOWN - 1

DELINEATOR WITH STEEL POST
99+41.3 LT
99+48.0 RT
100+86.1 LT
101+04.8 RT

N
VT STATE PLANE GRID

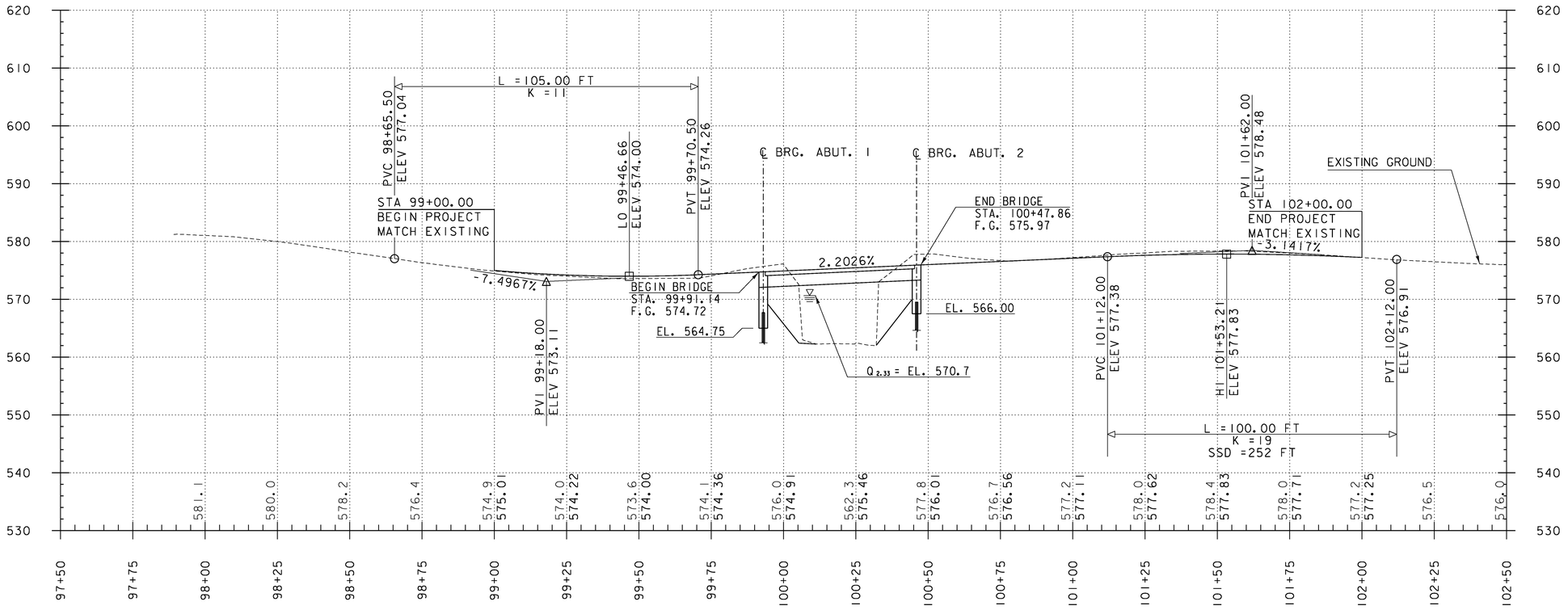


0 20 40
SCALE IN FEET

CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z111078bdr.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
LAYOUT SHEET	SHEET 11 OF 39

CLD 12-0175 MODEL: 01



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

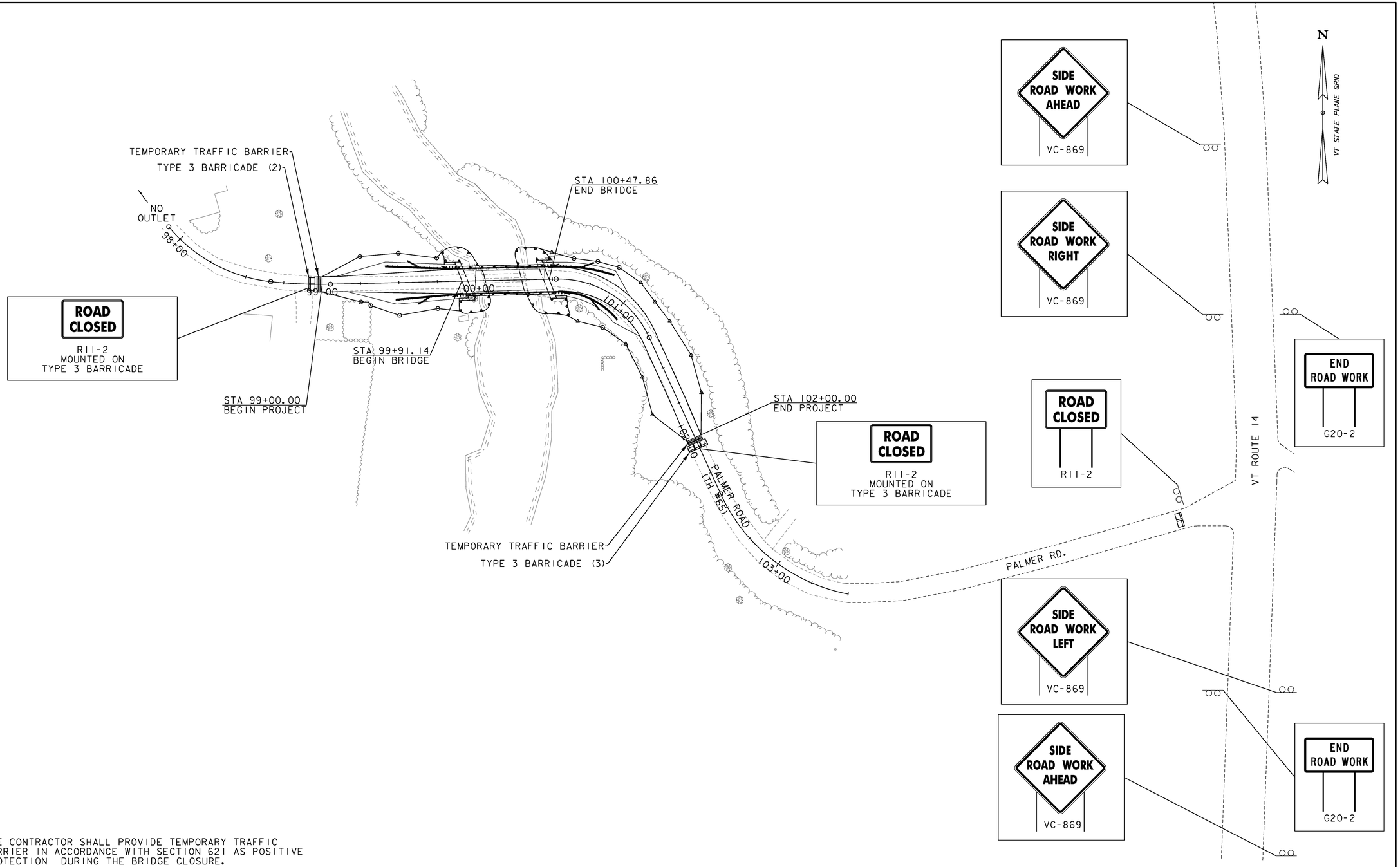
THE ELEVATIONS SHOWN TO THE NEAREST TENTH ARE FOR EXISTING GROUND ALONG THE CENTERLINE.

THE ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FOR PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

CLD 12-0175 MODEL: PRO

CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z111078pro.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: J. SMITH
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
PROFILE SHEET	SHEET 12 OF 39



NOTES:

1. THE CONTRACTOR SHALL PROVIDE TEMPORARY TRAFFIC BARRIER IN ACCORDANCE WITH SECTION 621 AS POSITIVE PROTECTION DURING THE BRIDGE CLOSURE.
2. ALL TEMPORARY SIGNING, TEMPORARY TRAFFIC BARRIER, AND BARRICADES SHALL BE PAID FOR UNDER ITEM 641.10 TRAFFIC CONTROL.
3. REFER TO STANDARD SHEET T-10 FOR APPLICABLE SIGN PLACEMENT AND SPACING CRITERIA ON VT ROUTE 14.

LEGEND

- TYPE 3 BARRICADE
- TEMPORARY TRAFFIC BARRIER

0 30 60
SCALE IN FEET

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BRO 1444(57)	
FILE NAME: z111078bdrtcp.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: K. RUTTER	CHECKED BY: D. MUNRO
TRAFFIC CONTROL SHEET	SHEET 13 OF 39

CLD 12-0175 MODEL: 01

SOIL CLASSIFICATION

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

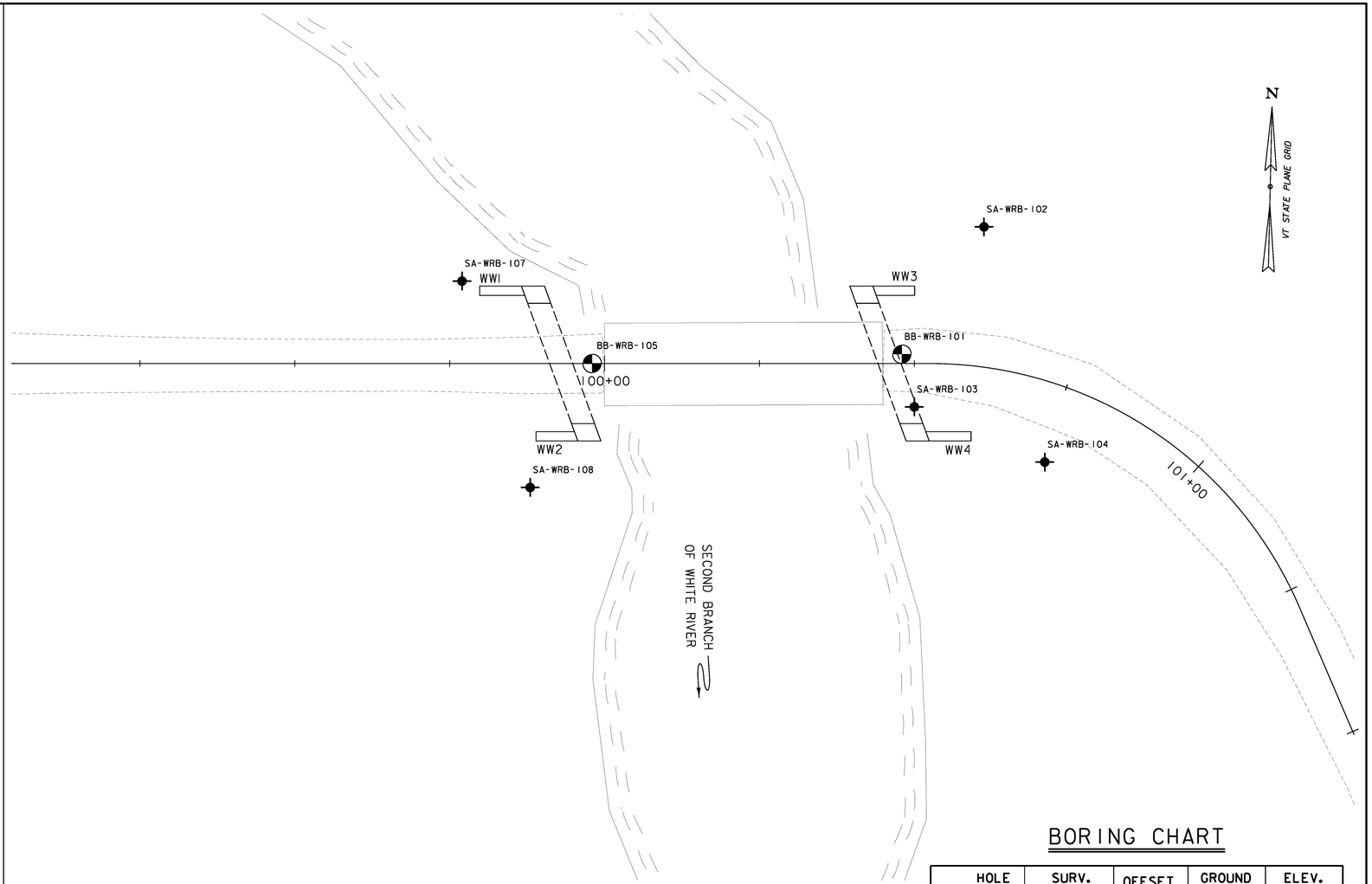
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊗	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 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 PLAN

SCALE 1" = 10'-0"

10 0 10

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
BB-WRB-101	100+48	1.5 LT	577.00	N/A
BB-WRB-105	99+98	0	575.95	529.7

AUGER CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
SA-WRB-102	100+59	22.5 LT	572.34	N/A
SA-WRB-103	100+50	7.0 RT	576.06	N/A
SA-WRB-104	100+76	12.5 RT	576.97	N/A
SA-WRB-107	99+77	12.0 LT	572.09	N/A
SA-WRB-108	99+88	20.0 RT	570.97	N/A

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 6/24/13 and 6/25/13 by Golder Associates, Inc.
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.

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH

PROJECT NUMBER: BRO 1444(57)

FILE NAME: z111078bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: N. CARON
BORING INFORMATION SHEET

PLOT DATE: 8/12/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 14 OF 39

QLD 12-0106 MODEL: BOR01

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

BORING NUMBER: BB-WRB-101
SHEET 1 of 3
DATE STARTED: 6/24/13
DATE COMPLETED: 6/24/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 100+48
OFFSET: 1.5 LT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 577.0 ft
GROUNDWATER DEPTH: 12.6 ft 6/24/13
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
CREW CHIEF: W. Hoeckle
DRILLER: W. Hoeckle
LOGGER: C. Stuart

BORING RIG: Diedrich D-50 Track
BORING TYPE: Wash Bore
SAMPLE TYPE: Split Barrel
CHECKED BY: JDL

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		A-1-a, GrSa, Rec. = 1.0 ft, brown, moist, medium dense, gravelly fine to coarse SAND, subrounded, (GW), [Sample 1D].	16				
2.5							
5.0		A-4, SaSi, Rec. = 0.92 ft, brown, moist, medium dense, silty fine SAND, (SM), [Sample 2D - Top 8"].	28				
		A-4, SaSi, gray-brown, moist, medium dense, silty fine SAND, (SM), [Sample 2D - Bottom 3"].					
7.5							
10.0		A-4, SaSi, Rec. = 1.25 ft, gray-brown, wet, medium dense, silty fine SAND, (SM), [Sample 3D].	14	29.8	0.0	58.0	42.0
		10.0 ft, End of fill layer.					
12.5							
		13.5 ft, Driller reported possible cobble.					
15.0		A-1-b, SaGr, Rec. = 0.42 ft, dark gray-brown, wet, very dense, gravelly fine to coarse SAND, (SW), [Sample 4D].	53				
17.5		18.0 ft, Driller reported high casing blows (approx. 350 blows / 5 ft).					
20.0		A-1-b, SaGr, Rec. = 0.42 ft, gray, wet, very dense, gravelly fine to coarse SAND, some silt, (SM), [Sample 5D].	69				
22.5							
		A-1-b, SaGrSi, Rec. = 0.75 ft, dark gray, wet, fine to coarse SAND, some gravel, little silt, (SM), [Sample 6D], Note: some weathered	40	12.9	46.0	38.0	16.0

BOTTOM OF
ABUT. 2
EL. 566.00'

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 7/23/13

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

BORING NUMBER: BB-WRB-101
SHEET 2 of 3
DATE STARTED: 6/24/13
DATE COMPLETED: 6/24/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 100+48
OFFSET: 1.5 LT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 577.0 ft
GROUNDWATER DEPTH: 12.6 ft 6/24/13
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
CREW CHIEF: W. Hoeckle
DRILLER: W. Hoeckle
LOGGER: C. Stuart

BORING RIG: Diedrich D-50 Track
BORING TYPE: Wash Bore
SAMPLE TYPE: Split Barrel
CHECKED BY: JDL

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		oxidized rock fragments observed (platy). Casing hammer broke; open hole from 24 ft to 51 ft.					
27.5							
30.0		A-4, SaSiGr, Rec. = 1.0 ft, dark gray with some brown, dense, silty fine to coarse SAND, little gravel, (SM), [Sample 7D], Note: 2" gravel and fractured cobble in spoon.	41				
32.5							
35.0		A-1-b, SaGr, Rec. = 1.42 ft, gray, wet, very dense, medium to fine SAND, trace fine gravel, (SP), [Sample 8D].	57				
37.5							
40.0		A-1-b, SaSiGr, Rec. = 1.33 ft, gray with some oxidized spotting, wet, very dense, fine to coarse SAND, some silt, little coarse gravel, (SM), [Sample 9D], Note: fractured cobble in sampler.	86				
42.5							
45.0		A-1-b, SaSiGr, Rec. = 1.67 ft, gray brown, wet, very dense, fine SAND, some silt, little gravel, (SM), [Sample 10D - Top 10"].	46				
		A-2-4, Sa, gray, wet, fine SAND, (SP), [Sample 10D- Bottom 10"].					
47.5							
		A-1-b, SaGrSi, Rec. = 1.67 ft, dark gray and brown, wet, very dense, medium SAND, little gravel, little silt (SM), [Sample 11D - Top 14"].	67	14.2	25.0	59.0	16.0

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 7/23/13

ESTIMATED
PILE TIP
EL. 520.00'

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

BORING NUMBER: BB-WRB-101
SHEET 3 of 3
DATE STARTED: 6/24/13
DATE COMPLETED: 6/24/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 100+48
OFFSET: 1.5 LT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 577.0 ft
GROUNDWATER DEPTH: 12.6 ft 6/24/13
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
CREW CHIEF: W. Hoeckle
DRILLER: W. Hoeckle
LOGGER: C. Stuart

BORING RIG: Diedrich D-50 Track
BORING TYPE: Wash Bore
SAMPLE TYPE: Split Barrel
CHECKED BY: JDL

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		A-4, SaSiGr, dark gray and brown, wet, very dense, silty medium to coarse SAND, some gravel, (SM), [Sample 11D - Bottom 6"].					
52.5		51.0 ft, Drill bit plugging up, possible caving. End of exploration. Hole stopped @ 51.0 ft					
55.0		Safe-T hydraulic winch 140 lb hammer used.					
57.5							
60.0							
62.5							
65.0							
67.5							
70.0							
72.5							

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 7/23/13

CLD 12-0175 $FILEABBREV$ MODEL: BOR02

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

FILE NAME: z11j078bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: N. CARON
BORING LOGS (1 OF 4)

PLOT DATE: 8/12/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 15 OF 39

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

BORING NUMBER: BB-WRB-105
SHEET 1 of 3
DATE STARTED: 6/25/13
DATE COMPLETED: 6/25/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 99+98
OFFSET: 0.00
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 575.95 ft
GROUNDWATER DEPTH: 11.25 ft 6/25/13
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
CREW CHIEF: W. Hoeckle
DRILLER: W. Hoeckle
LOGGER: C. Stuart

BORING RIG: Diedrich D-50 Track
BORING TYPE: Wash Bore
SAMPLE TYPE: Split Barrel
CHECKED BY: JDL

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		A-1-b, SaGr, Rec. = 1.42 ft, brown, dry , medium dense, subrounded gravely fine to coarse SAND, (SW), [Sample 1D].	26				
2.5							
5.0		A-4, SaSiGr, Rec. = 1.0 ft, brown to gray, wet, medium dense, silty fine SAND, trace gravel, (SM), [Sample 2D].	23				
7.5							
10.0		A-4, SaSi, Rec. = 1.5 ft, gray, wet, loose, silty fine SAND, (SM), [Sample 3D]. Note: Some oxidized coloring @ 10.5ft, wood encountered in bottom 3".	6	34.5	0.0	53.0	47.0
		10.75 ft, End of fill layer.					
12.5		12.5 ft - 13.0 ft, Driller notes harder material. Casing driven from this point on.					
15.0		A-1-b, SaGrSi, Rec. = 0.58 ft, gray, wet, dense, gravely fine to coarse SAND, some silt, (SW), [Sample 4D].	41				
17.5							
20.0		A-4, SiSa, Rec. = 1.25 ft, gray, wet, medium dense, SILT, trace fine sand, (ML), [Sample 5D].	17	28.3	0.0	4.0	96.0
22.5							
		A-4, SiSa, Rec. = 1.25 ft, gray, wet, medium dense, SILT, trace fine sand, (ML), [Sample 6D].	17				

BOTTOM OF
ABUT. I
EL. 564.75'

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 7/23/13

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

BORING NUMBER: BB-WRB-105
SHEET 2 of 3
DATE STARTED: 6/25/13
DATE COMPLETED: 6/25/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 99+98
OFFSET: 0.00
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 575.95 ft
GROUNDWATER DEPTH: 11.25 ft 6/25/13
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
CREW CHIEF: W. Hoeckle
DRILLER: W. Hoeckle
LOGGER: C. Stuart

BORING RIG: Diedrich D-50 Track
BORING TYPE: Wash Bore
SAMPLE TYPE: Split Barrel
CHECKED BY: JDL

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT / RUN	M.C. (%) / REC (%)	GRAVEL (%) / RQD (%)	SAND (%) / Dip (deg)	FINES (%) / Drill Rate (min/ft)
27.5							
30.0		A-2-4, SaSi, Rec. = 1.33 ft, gray, wet, medium dense, fine to medium SAND, little silt, (SM), [Sample 7D].	24	16.7	5.0	78.0	17.0
32.5		32.5 ft, Driller reported possible cobble.					
35.0		A-1-b, SaSi, Rec. = 0.92 ft, gray, wet, medium dense, medium SAND, trace silt, (SP), [Sample 8D].	15				
37.5							
40.0		A-3, SaGrSi, Rec. = 0.83 ft, brown, wet, dense, fine SAND, little coarse sand, trace gravel, trace silt, gap graded, (SP), [Sample 9D]. End of casing. Open hole from 39 ft to 52.3 ft.	44				
42.5							
45.0		Rec. = 0.0 ft, 44.0 ft - 46.0 ft, No recovery [Sample 10D].	42				
		Top of Bedrock @ 46.3 ft					
47.5		Run 1: 47.3-52.3 ft Dark grey (N3) to medium light grey (N6), fine to medium grained, strongly foliated, slightly weathered to fresh, strong (R4), muscovite-biotite-quartz SCHIST. Foliation dips 50-60 degrees. Discontinuities very closely to closely spaced, dipping 25-30 degrees, planar, very rough. Trace dark red garnets to 0.25 inch diameter. [Gile Mountain Formation]	1	100	99.6	60	0.3

ESTIMATED
PILE TIP
EL. 529.75'

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 7/23/13

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

BORING NUMBER: BB-WRB-105
SHEET 3 of 3
DATE STARTED: 6/25/13
DATE COMPLETED: 6/25/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 99+98
OFFSET: 0.00
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 575.95 ft
GROUNDWATER DEPTH: 11.25 ft 6/25/13
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
CREW CHIEF: W. Hoeckle
DRILLER: W. Hoeckle
LOGGER: C. Stuart

BORING RIG: Diedrich D-50 Track
BORING TYPE: Wash Bore
SAMPLE TYPE: Split Barrel
CHECKED BY: JDL

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	RUN	REC (%)	RQD (%)	Dip (deg)	Drill Rate (min/ft)
		R1: Core times (min:sec) 47.3-48.3' (4:00) 48.3-49.3' (5:05) 49.3-50.3' (4:00) 50.3-51.3' (2:45) 51.3-52.3' (3:20), 46.3 ft NX, Rec. = 5.0 ft					
52.5		Hole stopped @ 52.3 ft					
55.0		Safe-T hydraulic 140 lb winch hammer used.					
57.5							
60.0							
62.5							
65.0							
67.5							
70.0							
72.5							

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 7/23/13

CLD 12-0175 $FILEABBREV$ MODEL: BOR03

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

FILE NAME: z11j078bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: N. CARON
BORING LOGS (2 OF 4)

PLOT DATE: 8/12/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 16 OF 39

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

BORING NUMBER: SA-WRB-102
SHEET 1 of 1
DATE STARTED: 6/25/13
DATE COMPLETED: 6/25/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 100+59
OFFSET: 22.5 LT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 572.34 ft
GROUNDWATER DEPTH: Not measured
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
DRILLER: W. Hoeckle
LOGGER: C. Stuart
BORING RIG: Diedrich D-50 Track

BORING TYPE: 4" AUGER
SAMPLE TYPE:
HAMMER TYPE:
CHECKED BY: JRS

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)
0		0.0 ft - 22.5 ft, A-2-4, Silty fine SAND, Alluvium sediments.					
22.5		22.5 ft, End of exploration. AUGER REFUSAL. Hole stopped @ 22.5 ft Notes: - A 4" continuous flight solid stem auger was used. - This was an auger probe exploration intended to find refusal conditions in the upper 30 ft of the soil profile. Samples were not collected and all comments are based on driller's comments and field observations.					

BOTTOM OF
ABUT. 2
EL. 566.00'

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

BORING NUMBER: SA-WRB-103
SHEET 1 of 1
DATE STARTED: 6/25/13
DATE COMPLETED: 6/25/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 100+50
OFFSET: 7.0 RT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 576.06 ft
GROUNDWATER DEPTH: Not measured
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
DRILLER: W. Hoeckle
LOGGER: C. Stuart
BORING RIG: Diedrich D-50 Track

BORING TYPE: 4" AUGER
SAMPLE TYPE:
HAMMER TYPE:
CHECKED BY: JRS

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)
0		0.0 ft - 18.0 ft, A-2-4, Brown, silty SAND.					
18.0		18.0 ft - 29.0 ft, A-1-b, GRAVEL. Driller reports a dense gravel layer encountered at 18 ft.					
25.5		25.5 ft, Driller reports cobbles.					
28.0		28.0 ft, Driller reports difficult drilling.					
29.0		29.0 ft, End of exploration. AUGER REFUSAL. Hole stopped @ 29.0 ft Notes: - A 4" continuous flight solid stem auger was used. - This was an auger probe exploration intended to find refusal conditions in the upper 30 ft of the soil profile. Samples were not collected and all comments are based on driller's comments and field observations.					

BOTTOM OF
ABUT. 2
EL. 566.00'

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

BORING NUMBER: SA-WRB-104
SHEET 1 of 1
DATE STARTED: 6/25/13
DATE COMPLETED: 6/25/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 100+76
OFFSET: 12.5 RT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 576.97 ft
GROUNDWATER DEPTH: Not measured
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
DRILLER: W. Hoeckle
LOGGER: C. Stuart
BORING RIG: Diedrich D-50 Track

BORING TYPE: 4" AUGER
SAMPLE TYPE:
HAMMER TYPE:
CHECKED BY: JRS

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)
0		0.0 ft - 26.0 ft, A-1-b, Sandy GRAVEL. Driller notes subsurface materials contain more gravel/cobbles than other probes.					
26.0		26.0 ft, End of exploration. AUGER REFUSAL. Hole stopped @ 26.0 ft Notes: - A 4" continuous flight solid stem auger was used. - This was an auger probe exploration intended to find refusal conditions in the upper 30 ft of the soil profile. Samples were not collected and all comments are based on driller's comments and field observations.					

BOTTOM OF
ABUT. 2
EL. 566.00'

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 9/27/13

CLD 12-0175 $FILEABBREV$ MODEL: BOR04

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

FILE NAME: z11j078bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: N. CARON
BORING LOGS (3 OF 4)

PLOT DATE: 8/12/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 17 OF 39

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

BORING NUMBER: SA-WRB-107
SHEET 1 of 1
DATE STARTED: 6/26/13
DATE COMPLETED: 6/26/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 99+77
OFFSET: 12.0 LT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 572.09 ft
GROUNDWATER DEPTH: Not measured
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
DRILLER: W. Hoeckle
LOGGER: C. Stuart
BORING RIG: Diedrich D-50 Track

BORING TYPE: 4" AUGER
SAMPLE TYPE:
HAMMER TYPE:
CHECKED BY: JRS

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)
5		0.0 ft - 10.0 ft, A-1-b, Likely silty SAND, some to little gravel. Based on BB-WRB-105. Auger was starting to kickout in a northeasterly direction.					
10		10.0 ft - 29.0 ft, A-6, Silty CLAY material encountered approximately 10-15 ft bgs. Rolled thread of clay which broke at a 1-3 mm diameter. No dilatancy. Appears to be very sensitive; clay did not retain its spherical shape during the dilatancy test. Very sticky to the touch.					
15							
20							
25							
30		29.0 ft, End of exploration. NO REFUSAL. Hole stopped @ 29.0 ft Notes: - A 4" continuous flight solid stem auger was used. - This was an auger probe exploration intended to find refusal conditions in the upper 30 ft of the soil profile. Samples were not collected and all comments are based on driller's comments and field observations. - Little return above silty clay layer.					

BOTTOM OF
ABUT. I
EL. 564.75'

LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 9/27/13

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

BORING NUMBER: SA-WRB-108
SHEET 1 of 1
DATE STARTED: 6/26/13
DATE COMPLETED: 6/26/13

PROJECT NAME: Randolph Bro 1444(57) TH 65 BR35
SITE NAME: Randolph, VT
STATION: 99+88
OFFSET: 20.0 RT
VTSPG:

PROJECT NUMBER: 123-87463
SITE NUMBER: TH 65 BR 35
GROUND ELEVATION: 570.97 ft
GROUNDWATER DEPTH: Not measured
PROJECT PIN NUMBER:

BORING CREW: New Hampshire Boring
DRILLER: W. Hoeckle
LOGGER: C. Stuart
BORING RIG: Diedrich D-50 Track

BORING TYPE: 4" AUGER
SAMPLE TYPE:
HAMMER TYPE:
CHECKED BY: JRS

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)
5		0.0 ft - 12.0 ft, A-1-B, Gravelly SAND. Very easy to easy drilling.					
10		12.0 ft - 20.0 ft, A-1-B, Gravelly SAND. Easier drilling beyond the dense gravel/cobble layer at 13 ft.					
15							
20		20.0 ft - 30.0 ft, A-6, Very soft, silty CLAY. Augers pulled rig into ground, including hydraulic jacks.					
25							
30		30.0 ft, End of exploration. NO REFUSAL. Hole stopped @ 30.0 ft Notes: - A 4" continuous flight solid stem auger was used. - This was an auger probe exploration intended to find refusal conditions in the upper 30 ft of the soil profile. Samples were not collected and all comments are based on driller's comments and field observations. - Little return above silty clay layer.					

BOTTOM OF
ABUT. I
EL. 564.75'

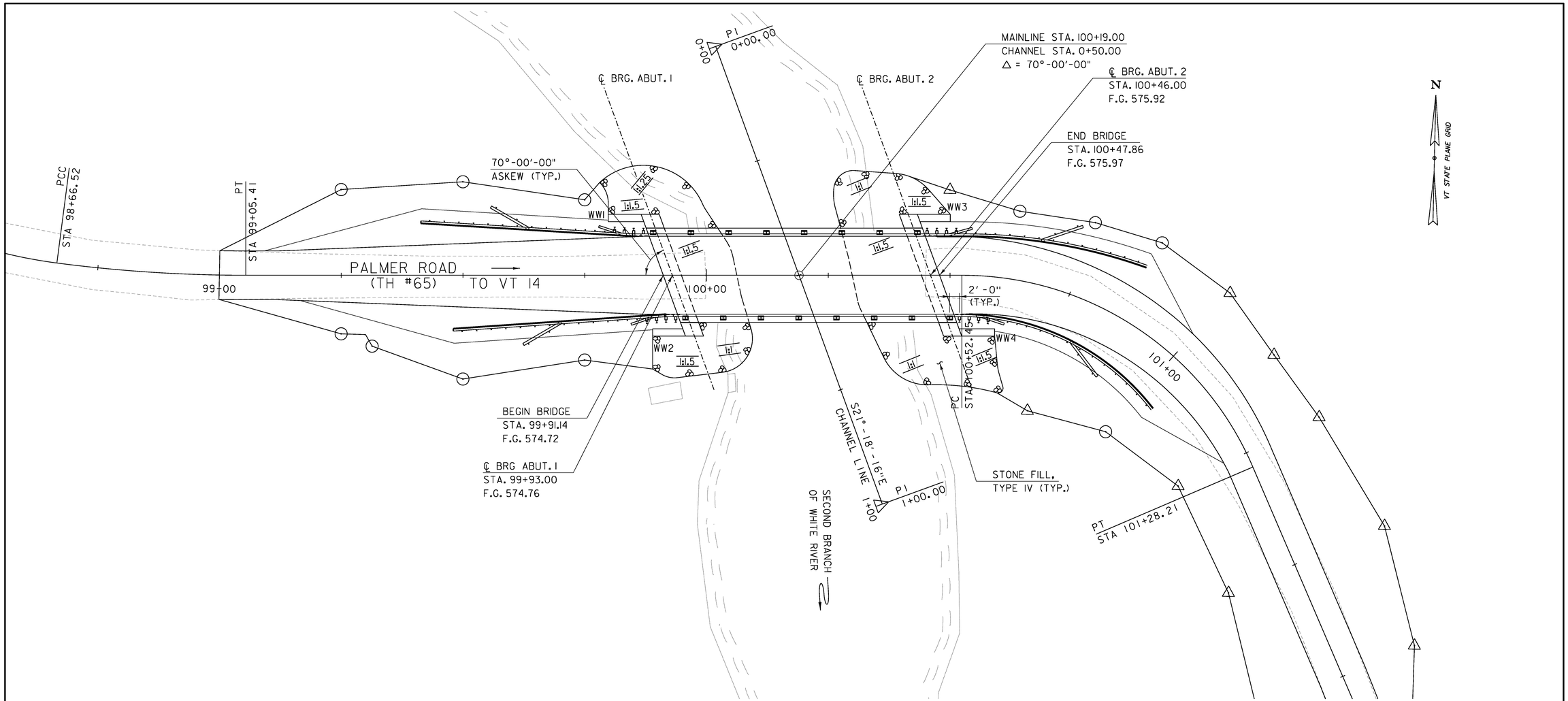
LOG OF BORING & WELL 123-87463 RANDOLPH.GPJ VT AOT.GDT 9/27/13

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

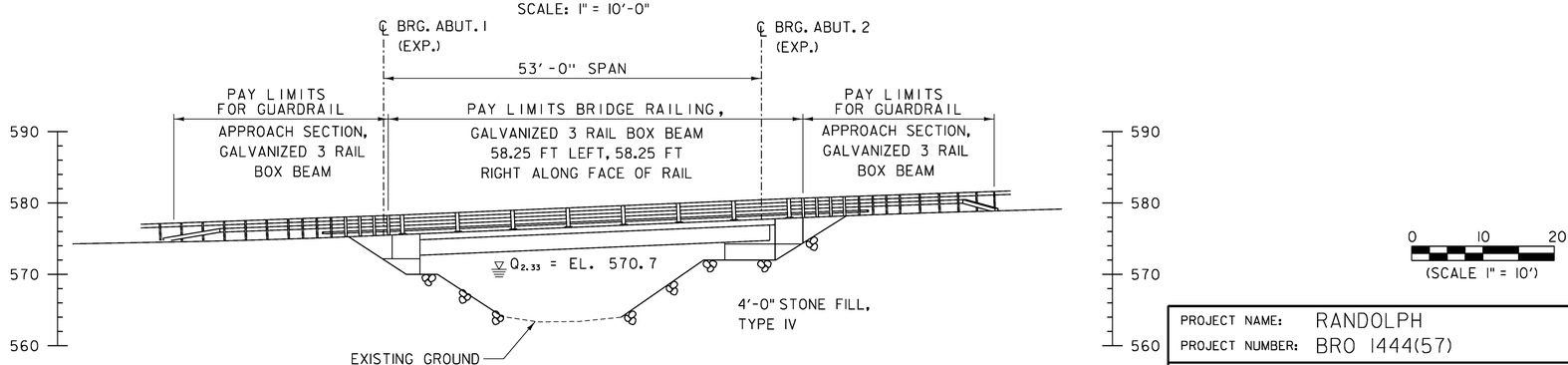
FILE NAME: z11j078bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: N. CARON
BORING LOGS (4 OF 4)

PLOT DATE: 8/12/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 18 OF 39

CLD 12-0175 $FILEABBREV$ MODEL: BOROS



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

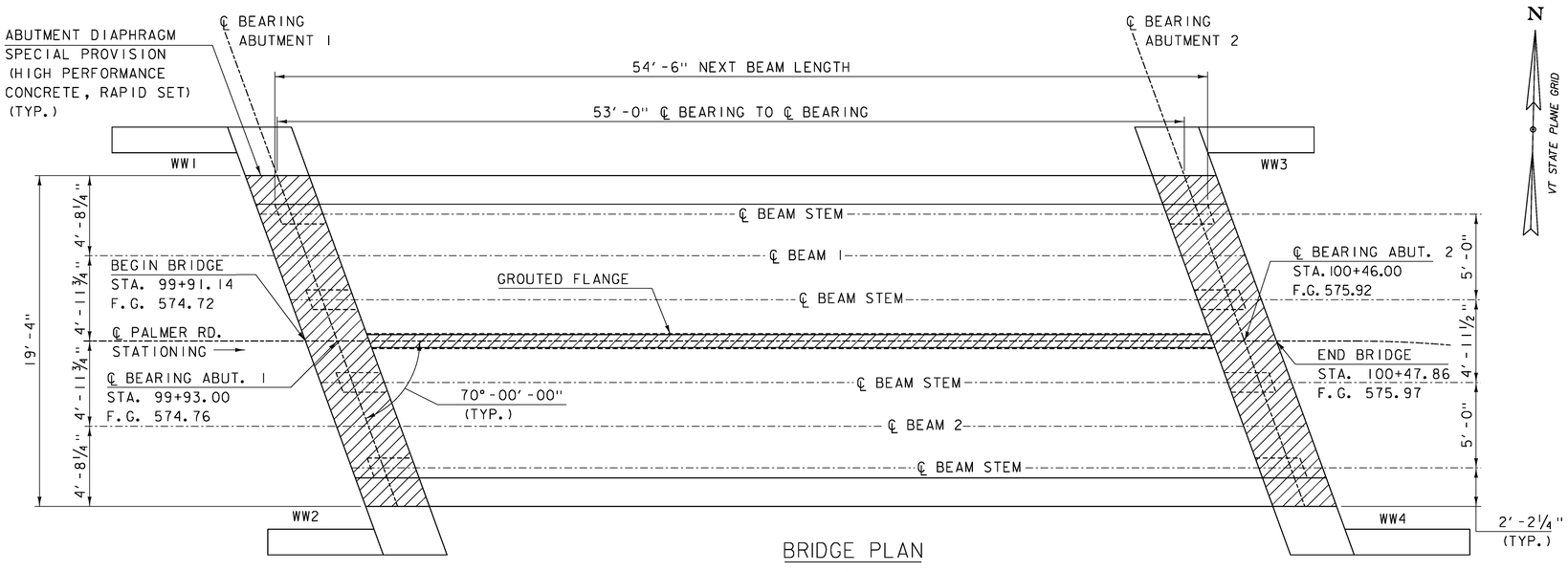


ELEVATION
SCALE: 1" = 10'-0"

0 10 20
(SCALE 1" = 10')

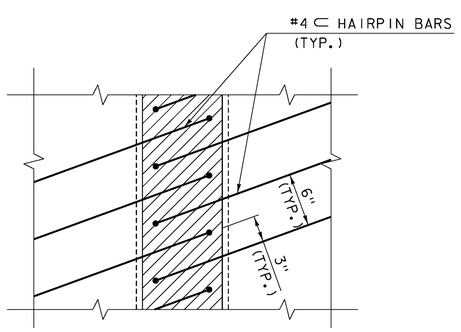
PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078pe.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
PLAN AND ELEVATION	SHEET 19 OF 39

CLD 12-0175 MODEL: PE01



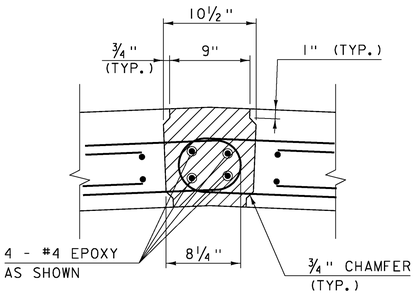
BRIDGE PLAN

SCALE: ¼" = 1'-0"



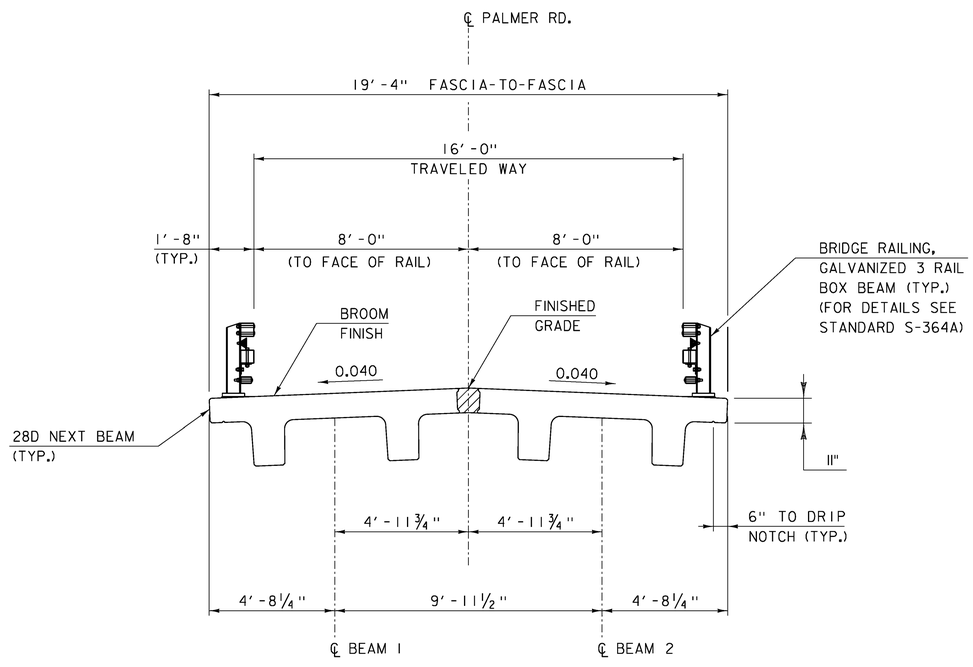
CONNECTION DETAIL PLAN

SCALE: 1½" = 1'-0"



CONNECTION DETAIL SECTION

SCALE: 1½" = 1'-0"



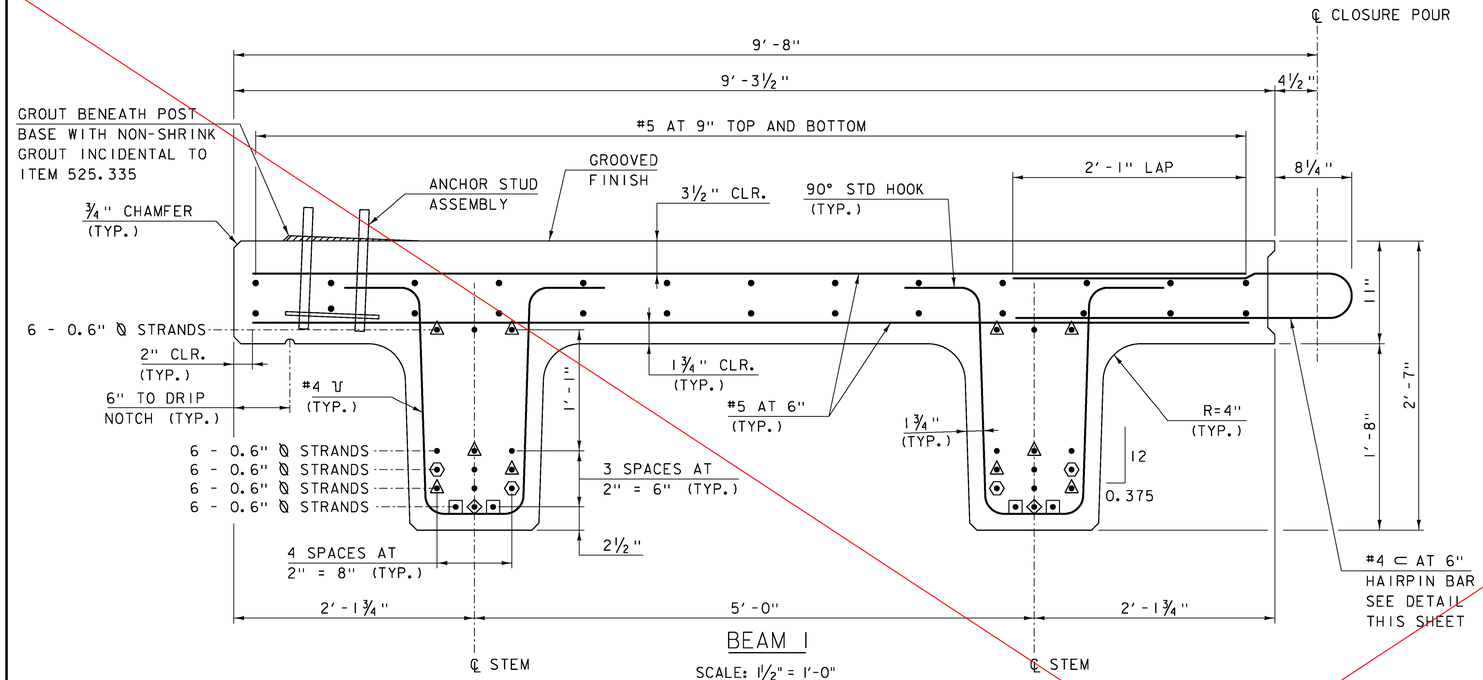
TYPICAL BRIDGE SECTION

SCALE: ⅜" = 1'-0"

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (TYP.)

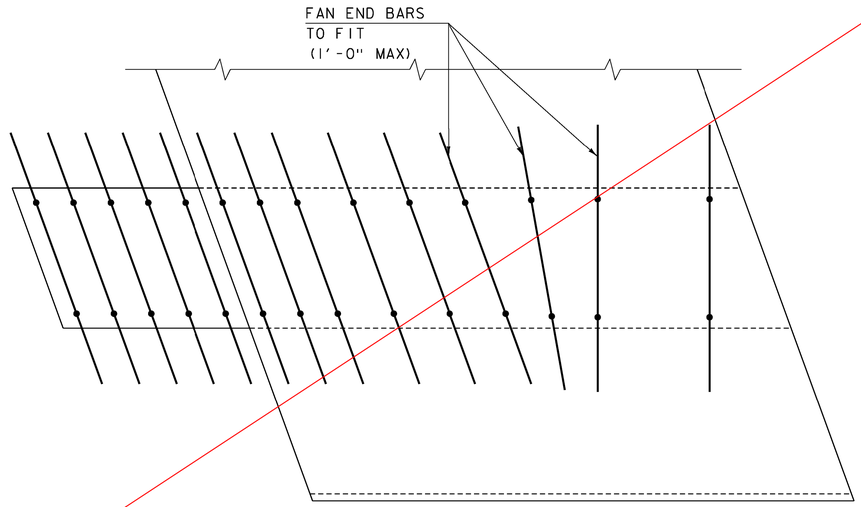
CLD 12-0175 MODEL: 01

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078sup.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
BRIDGE PLAN AND TYPICAL SECTIONS	SHEET 20 OF 39



BEAM 1

SCALE: 1½" = 1′-0"

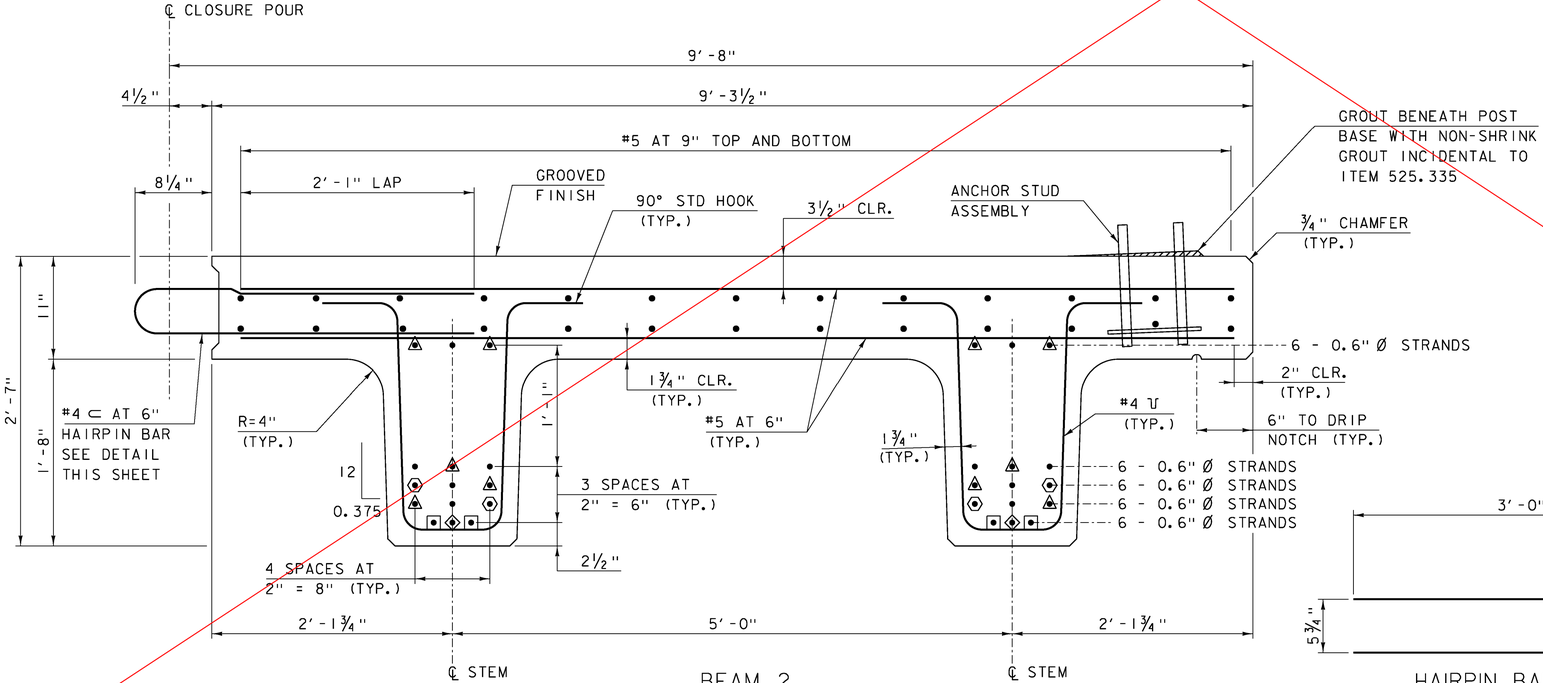


SKEWED END DETAIL

SCALE: 1½" = 1′-0"

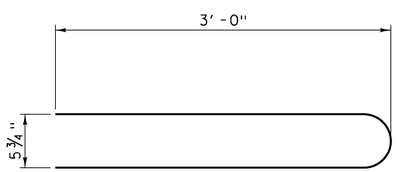
NOTE:

1. BARS IN DECK OMITTED FOR CLARITY.
2. TRANSVERSE REINFORCING IN THE DECK SHALL BE PLACED PARALLEL TO THE SKEW.



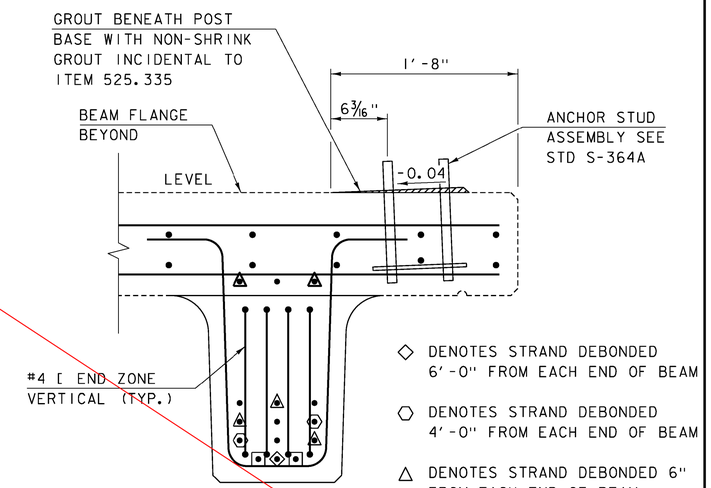
BEAM 2

SCALE: 1½" = 1′-0"



HAIRPIN BAR DETAIL

SCALE: 1½" = 1′-0"



END SECTION DETAIL

SCALE: 1½" = 1′-0"

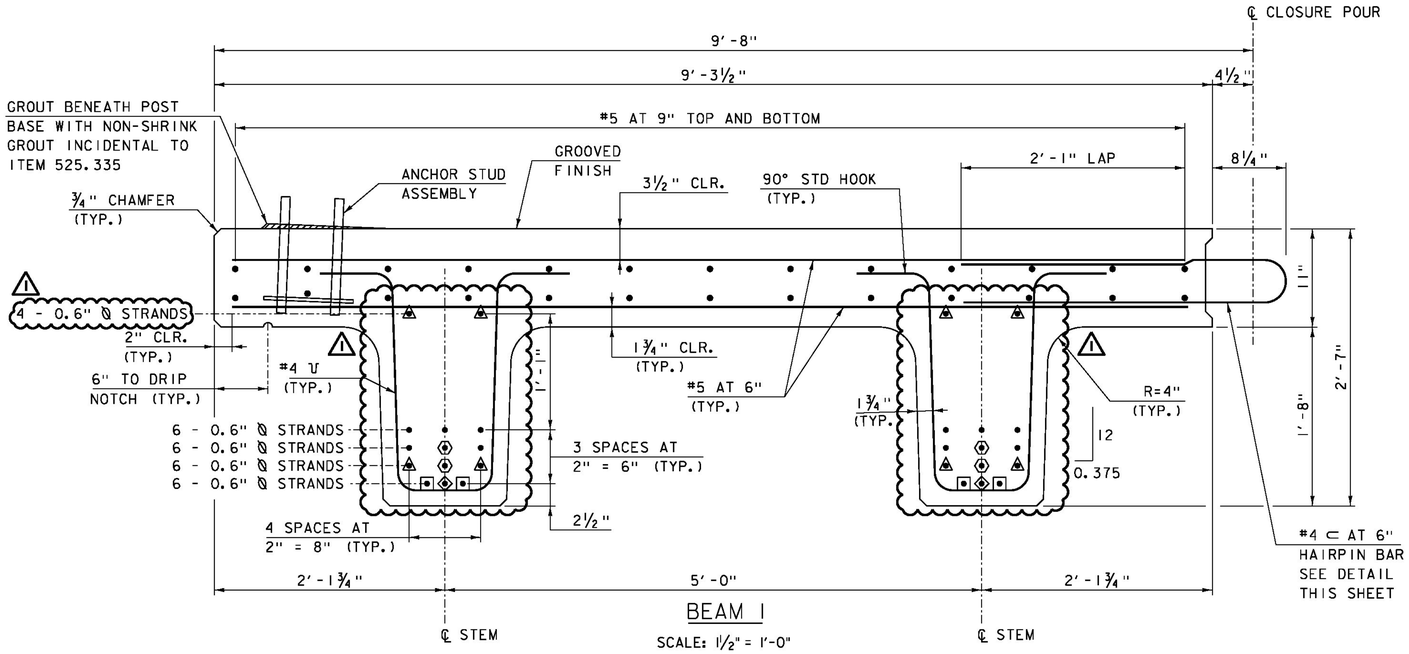
PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)

FILE NAME: z111078sup.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
NEXT BEAM DETAILS (1 OF 2)	SHEET 21 OF 39

CONSULTING ENGINEERS

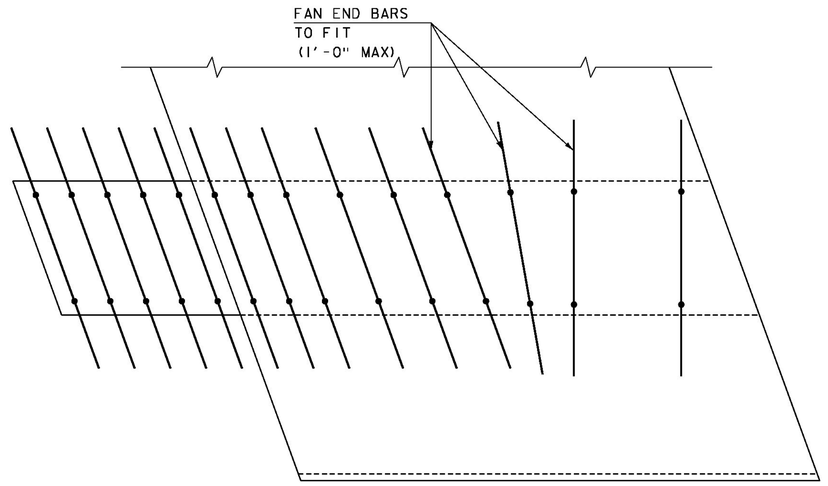
SEE REVISED SHEET

CLD 12-0175 MODEL: 02



BEAM 1

SCALE: 1½" = 1′-0"

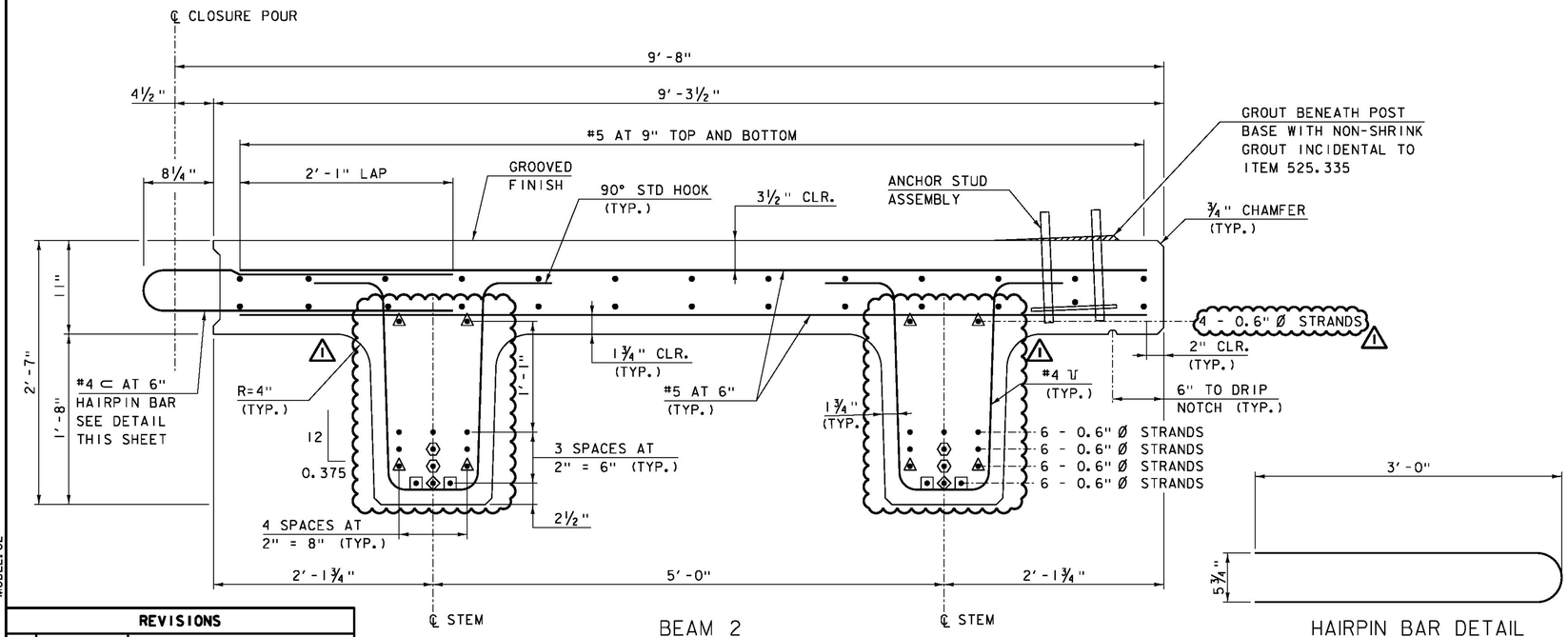


SKEWED END DETAIL

SCALE: 1½" = 1′-0"

NOTE:

1. BARS IN DECK OMITTED FOR CLARITY.
2. TRANSVERSE REINFORCING IN THE DECK SHALL BE PLACED PARALLEL TO THE SKEW.

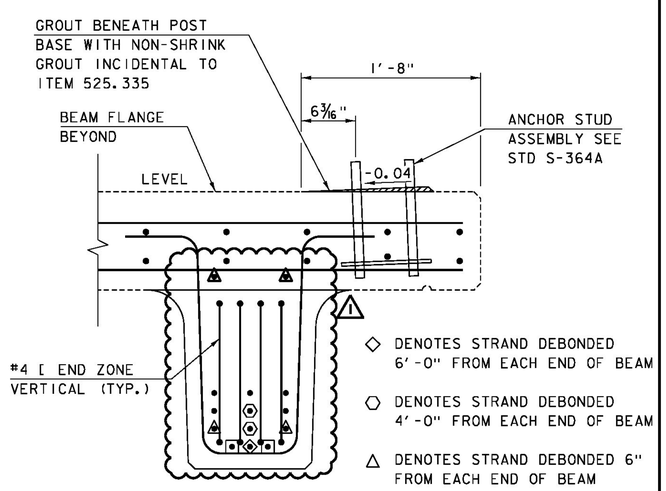


BEAM 2

SCALE: 1½" = 1′-0"

HAIRPIN BAR DETAIL

SCALE: 1½" = 1′-0"



END SECTION DETAIL

SCALE: 1½" = 1′-0"

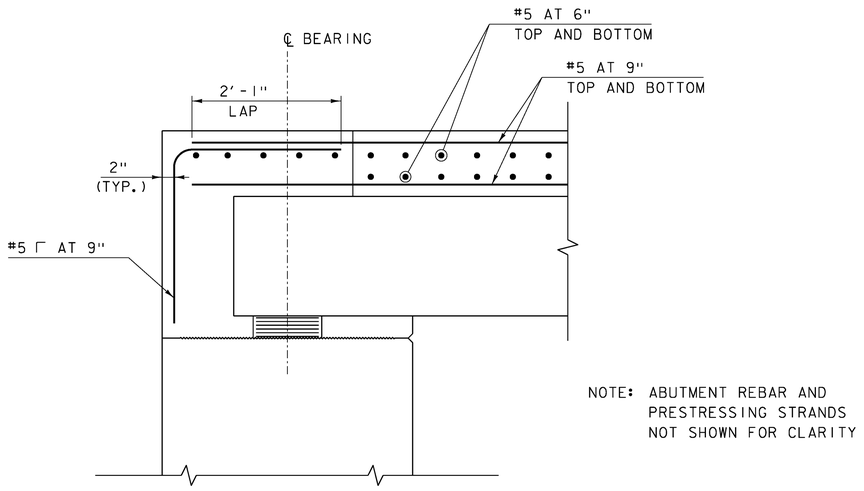
REVISIONS		
1	11/21/14	STRAND LAYOUT REVISIONS

MODEL: 02

CLD 12-0175

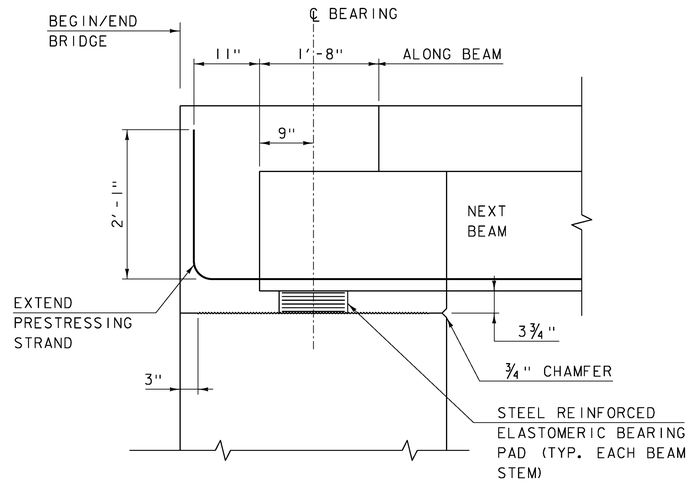
CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11J078sup.dgn	PLOT DATE: 11/21/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
NEXT BEAM DETAILS (1 OF 2)	SHEET 21 OF 39



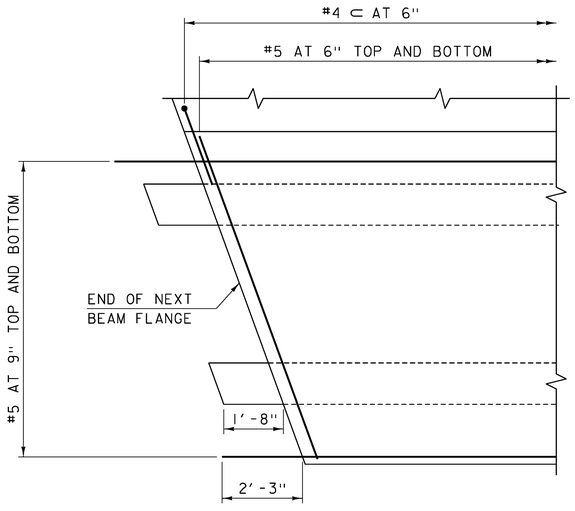
TYPICAL DECK REINFORCING AT BEAM END

SCALE: 1" = 1'-0"



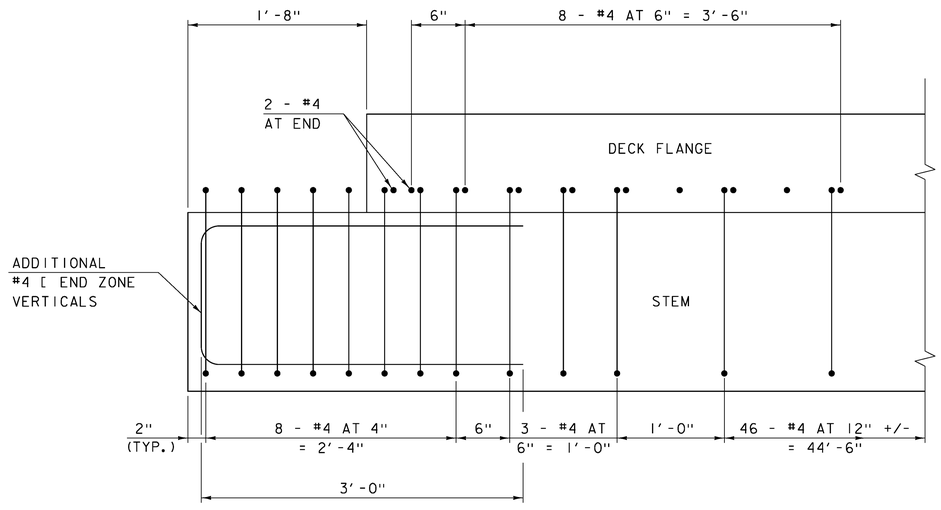
TYPICAL BEAM END DETAIL

SCALE: 1" = 1'-0"



PARTIAL BEAM FLANGE PLAN

SCALE: ½" = 1'-0"



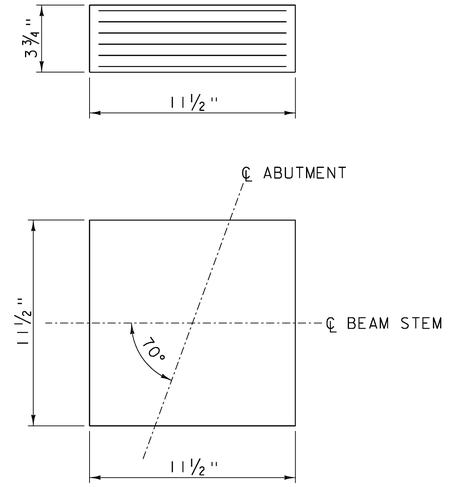
ADDITIONAL BEAM END REINFORCING
LONGITUDINAL SECTION

SCALE: 1½" = 1'-0"

CLD 12-0175 MODEL: 03

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078sup.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
NEXT BEAM DETAILS (2 OF 2)	SHEET 22 OF 39

CLD CONSULTING ENGINEERS



ELASTOMERIC BEARING DETAIL

SCALE: 3" = 1'-0"

2 - ¼" EXTERIOR LAYERS OF ELASTOMER
5 - ½" INTERIOR LAYERS OF ELASTOMER
6 - ⅛" STEEL REINFORCING PLATES

BEARING NOTES

1. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731 AND SHALL BE PAID UNDER CONTRACT ITEM 531.17.

2. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMER SHALL BE STEEL MEETING THE REQUIREMENTS OF SUBSECTION 714.02. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.

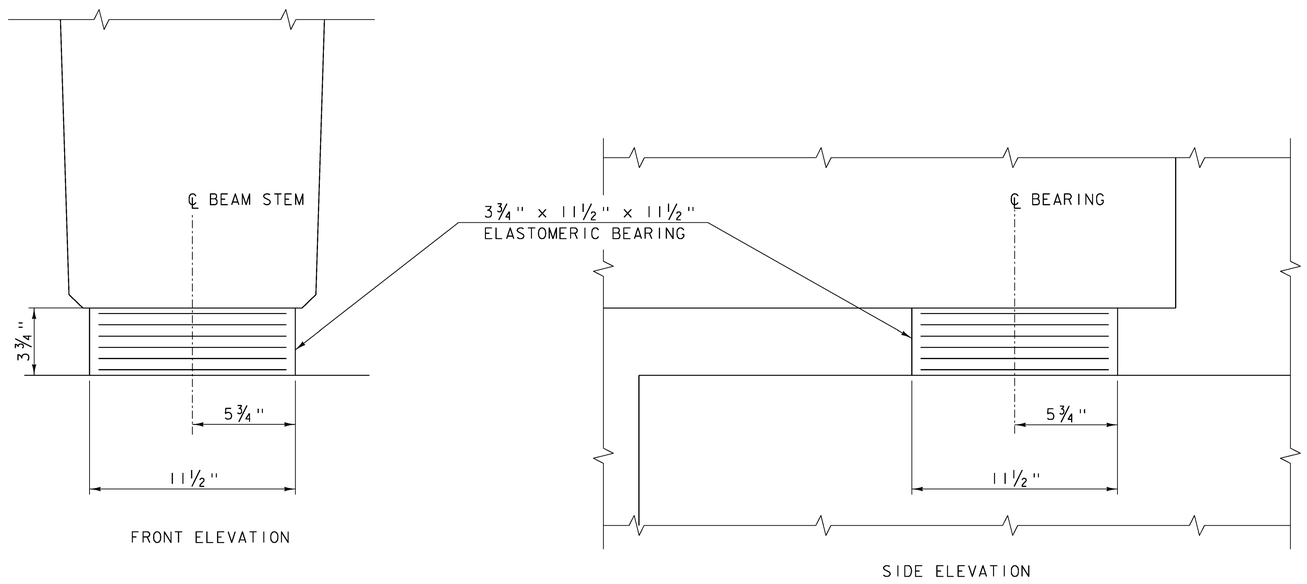
3. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM ¼" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.

4. THE ELASTOMER WAS DESIGNED WITH A SHEAR MODULUS RANGE OF 130 PSI - 200 PSI.

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

6. THE CONTRACTOR IS ADVISED TO HAVE A MINIMUM OF 8 - ¼" x 12½" x 12½" GALVANIZED STEEL SHIMS AVAILABLE FOR ELEVATION ADJUSTMENTS UPON THE SETTING OF THE SUPERSTRUCTURE UNITS. THE SHIMS SHALL BE FABRICATED ACCORDING TO SECTION 531 AND SHALL BE INCLUDED IN THE UNIT BID PRICE FOR CONTRACT ITEM 531.17.

7. DESIGN SERVICE LOADS PER BEARING: (DESIGN METHOD A)
   MAX DEAD LOAD: 30.5 K
   MAX LIVE LOAD: 30.4 K



FRONT ELEVATION

SIDE ELEVATION

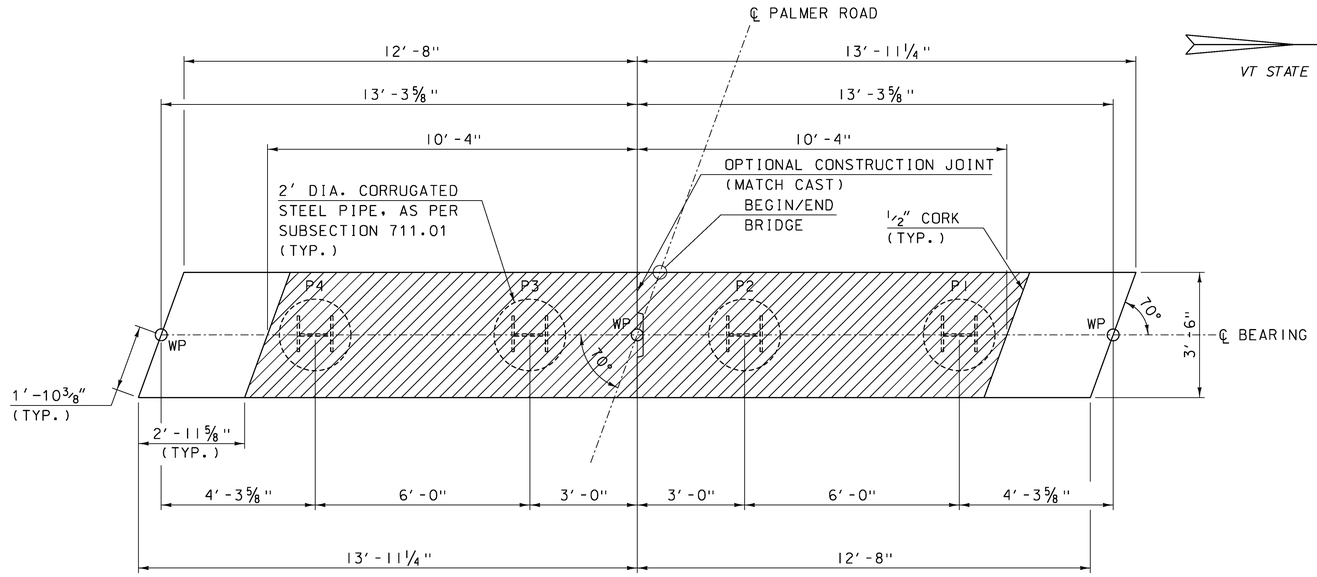
ELASTOMERIC BEARING DETAIL

SCALE: 3" = 1'-0"

CLD 12-0175 MODEL: 04

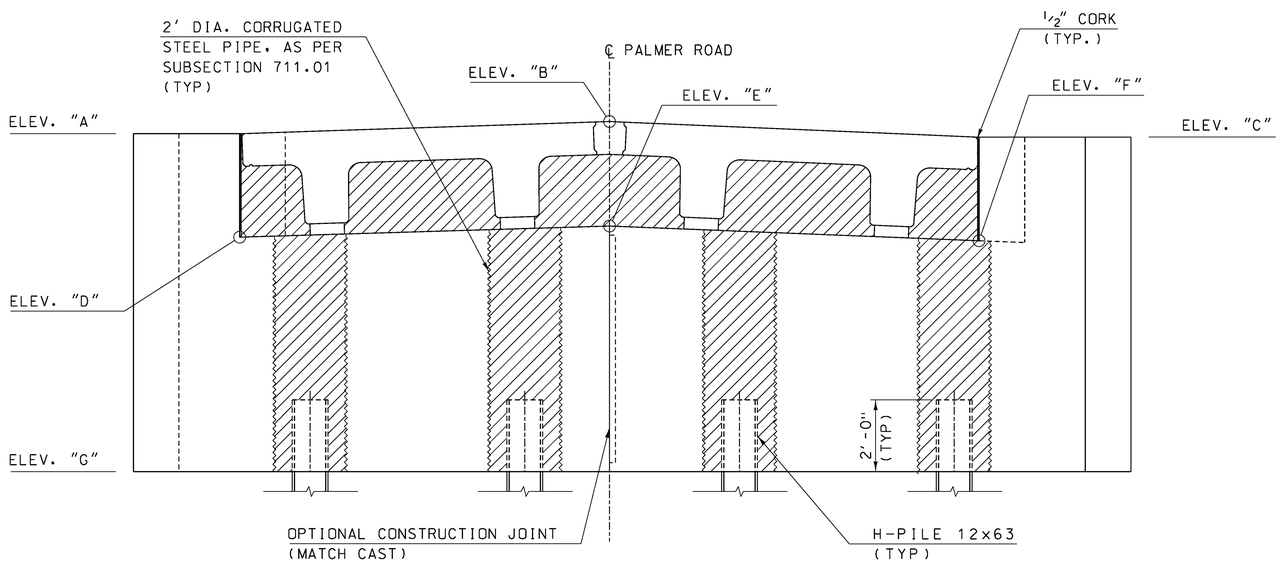
CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BRO 1444(57)	
FILE NAME: z11j078sup.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
BEARING DETAILS	SHEET 23 OF 39



ABUTMENT 1 PLAN (PCU 1)

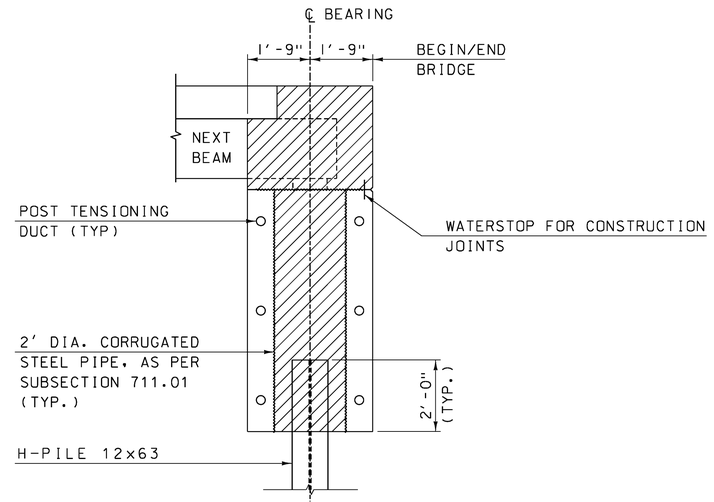
SCALE: ½" = 1′-0"



ABUTMENT ELEVATION

SCALE: ½" = 1′-0"

NOTE: ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR



ABUTMENT TYPICAL

SCALE: ½" = 1′-0"

PCU ELEVATIONS

	AB1	AB2
ELEV "A"	574.45	575.46
ELEV "B"	574.76	575.92
ELEV "C"	574.29	575.62
ELEV "D"	571.55	572.56
ELEV "E"	571.86	573.03
ELEV "F"	571.40	572.72
ELEV "G"	564.75	566.00

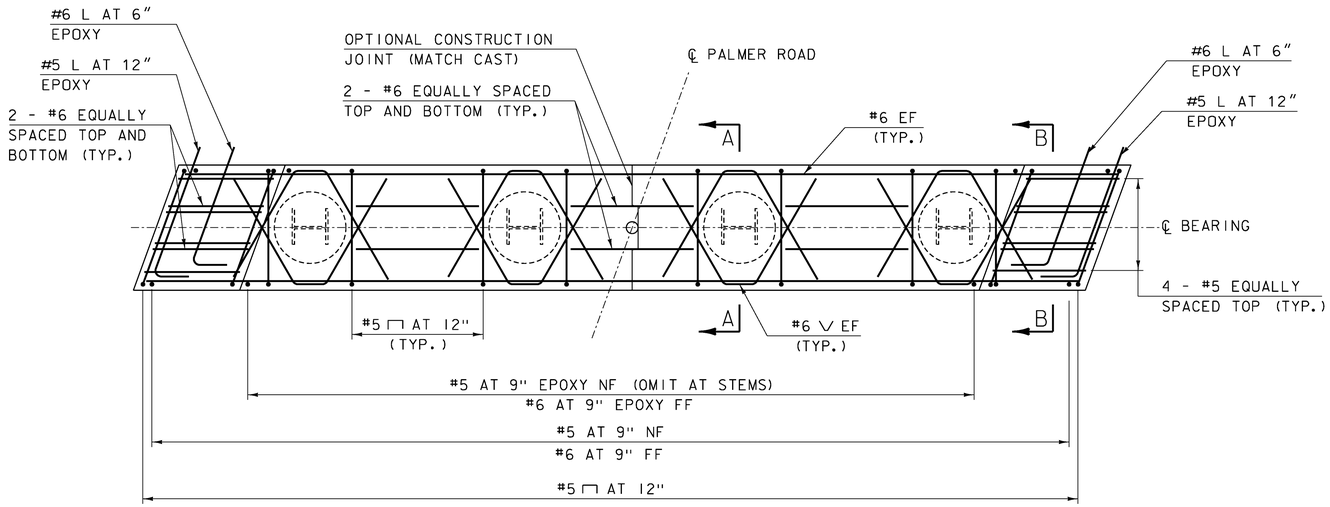
NOTE: ELEVATIONS ARE AT CENTERLINE BEARING

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

FILE NAME: z111078sub.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: N. CARON
ABUTMENT PLAN

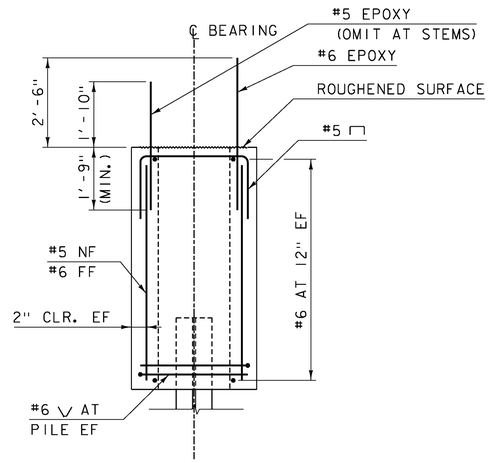
PLOT DATE: 8/12/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 24 OF 39

CLD 12-0175 MODEL: 02



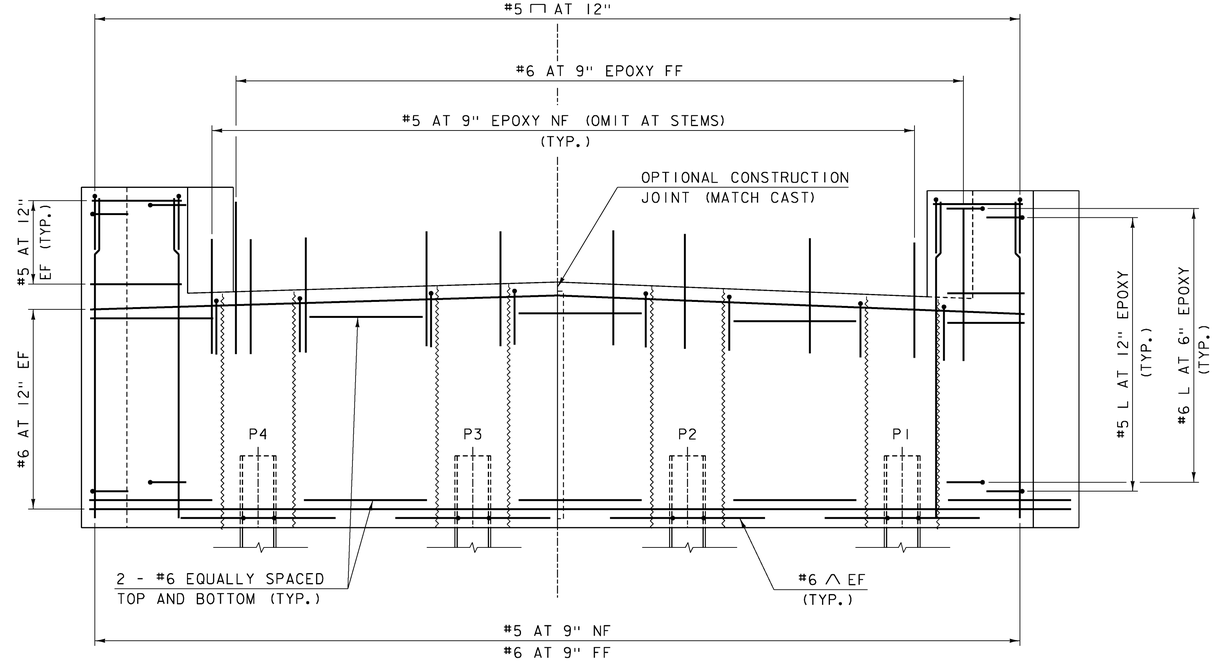
ABUTMENT 1 REINFORCING PLAN (PCU 1)

SCALE: ½" = 1'-0"



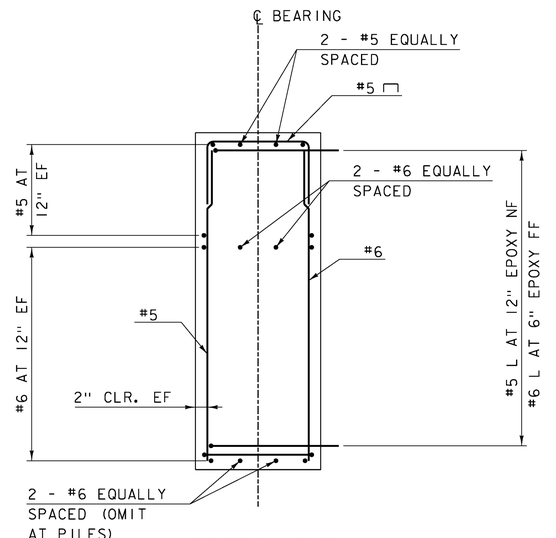
SECTION A-A

SCALE: ½" = 1'-0"



ABUTMENT 1 REINFORCING ELEVATION (PCU 1)

SCALE: ½" = 1'-0"



SECTION B-B

SCALE: ½" = 1'-0"

NOTE: REINFORCING STEEL FOR ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR

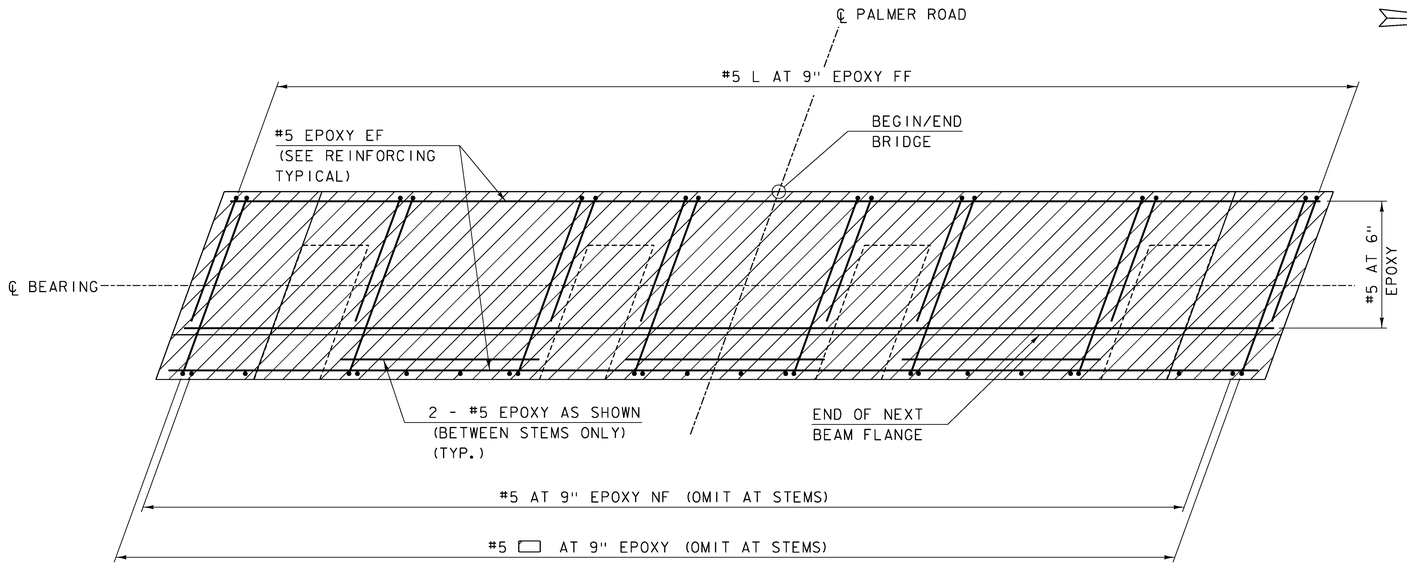
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE THE PLANS.
2'-6" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

CONSULTING ENGINEERS

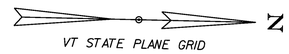
PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z111078sub.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
ABUTMENT REINFORCING	SHEET 25 OF 39

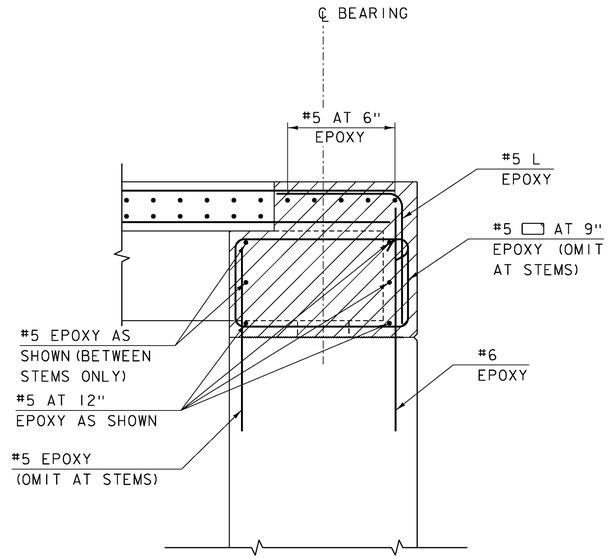
CLD 12-0175 MODEL: 03



BEAM-END CLOSURE POUR
REINFORCING PLAN

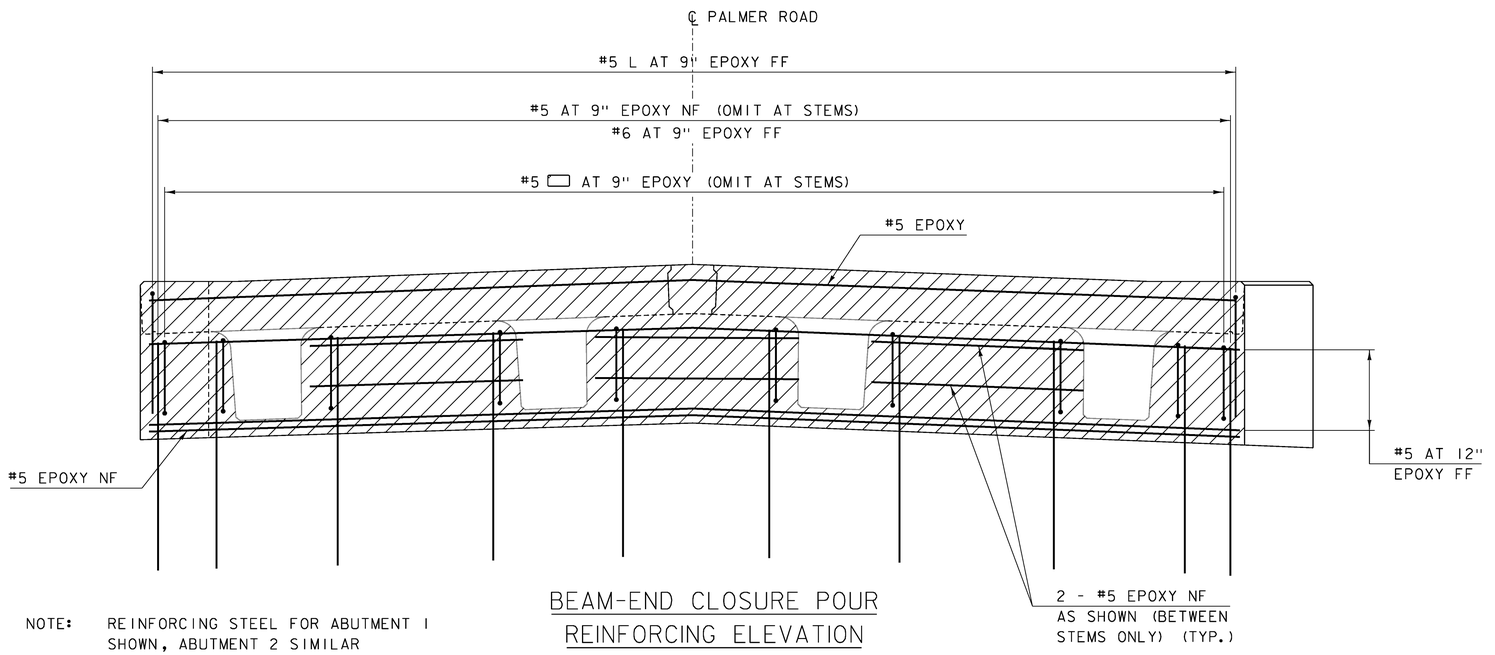
SCALE: 3/4" = 1'-0"





REINFORCING TYPICAL

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



NOTE: REINFORCING STEEL FOR ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR

BEAM-END CLOSURE POUR
REINFORCING ELEVATION

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

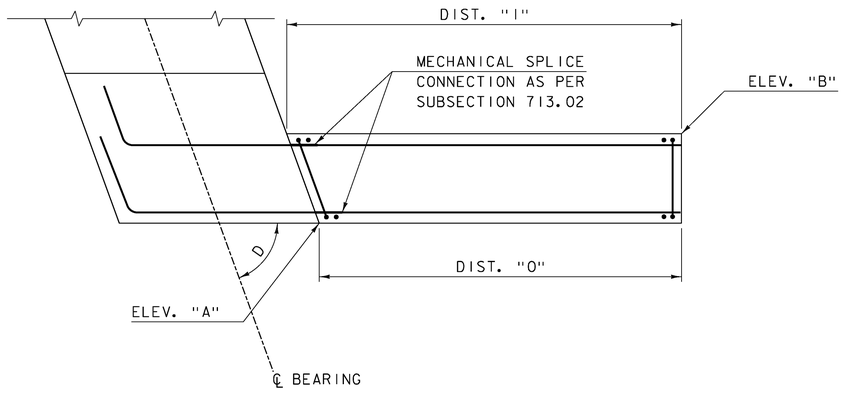
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
2" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE THE PLANS.
2'-1" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

CLD 12-0175 MODEL: 05

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BRO 1444(57)	
FILE NAME: z11j078sup.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
BEAM-END CLOSURE POUR DETAILS	SHEET 26 OF 39



WWI PLAN (PCU3)

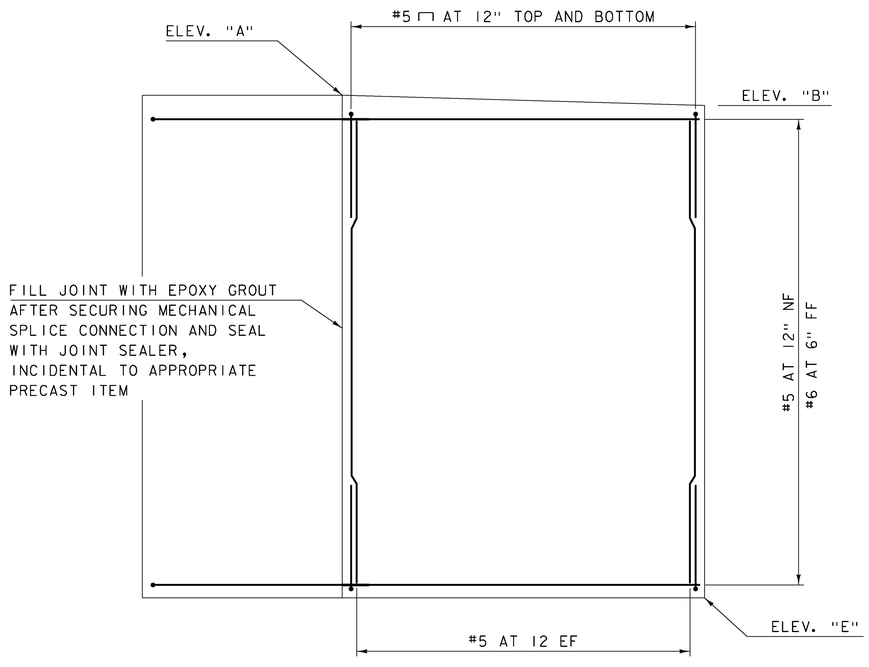
SCALE: 3/4" = 1'-0"

PCU ELEVATIONS

	WW1	WW2	WW3	WW4
ELEV. "A"	574.25	574.41	575.50	575.66
ELEV. "B"	574.08	574.28	576.63	575.86
ELEV. "E"	564.75	564.75	566.00	566.00
DIST. "W"	1'-6"	1'-6"	1'-6"	1'-6"
DIST. "I"	7'-3½"	6'-2½"	6'-2½"	7'-3½"
DIST. "O"	6'-9"	6'-9"	6'-9"	6'-9"
ANGLE "D"	70°	110°	110°	70°

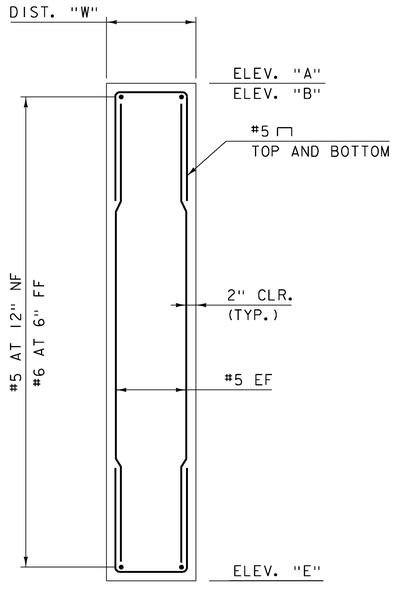
NOTES:

1. EPOXY GROUT SHALL BE INCIDENTAL TO ITEM 540.10, "PRECAST CONCRETE STRUCTURE".
2. ALL REBAR AND MECHANICAL CONNECTORS IN WINGWALLS SHALL BE LEVEL I EPOXY COATED.
3. THE BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO WINGWALL 2. ALL WORK TO INSTALL THE PLAQUE SHALL BE INCIDENTAL TO THE PRECAST CONCRETE STRUCTURE ITEM. SEE SD-502.00 FOR FURTHER DETAILS.
4. WWI SHOWN, OTHERS SHALL BE SIMILAR.



WWI ELEVATION (PCU3)

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



WWI TYPICAL (PCU3)

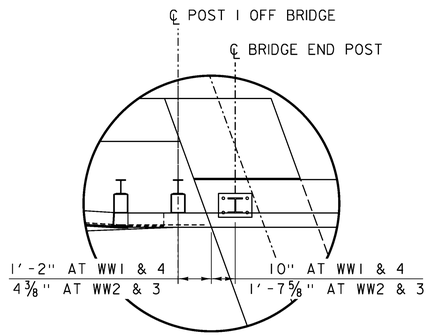
SCALE: 3/4" = 1'-0"

NOTE:

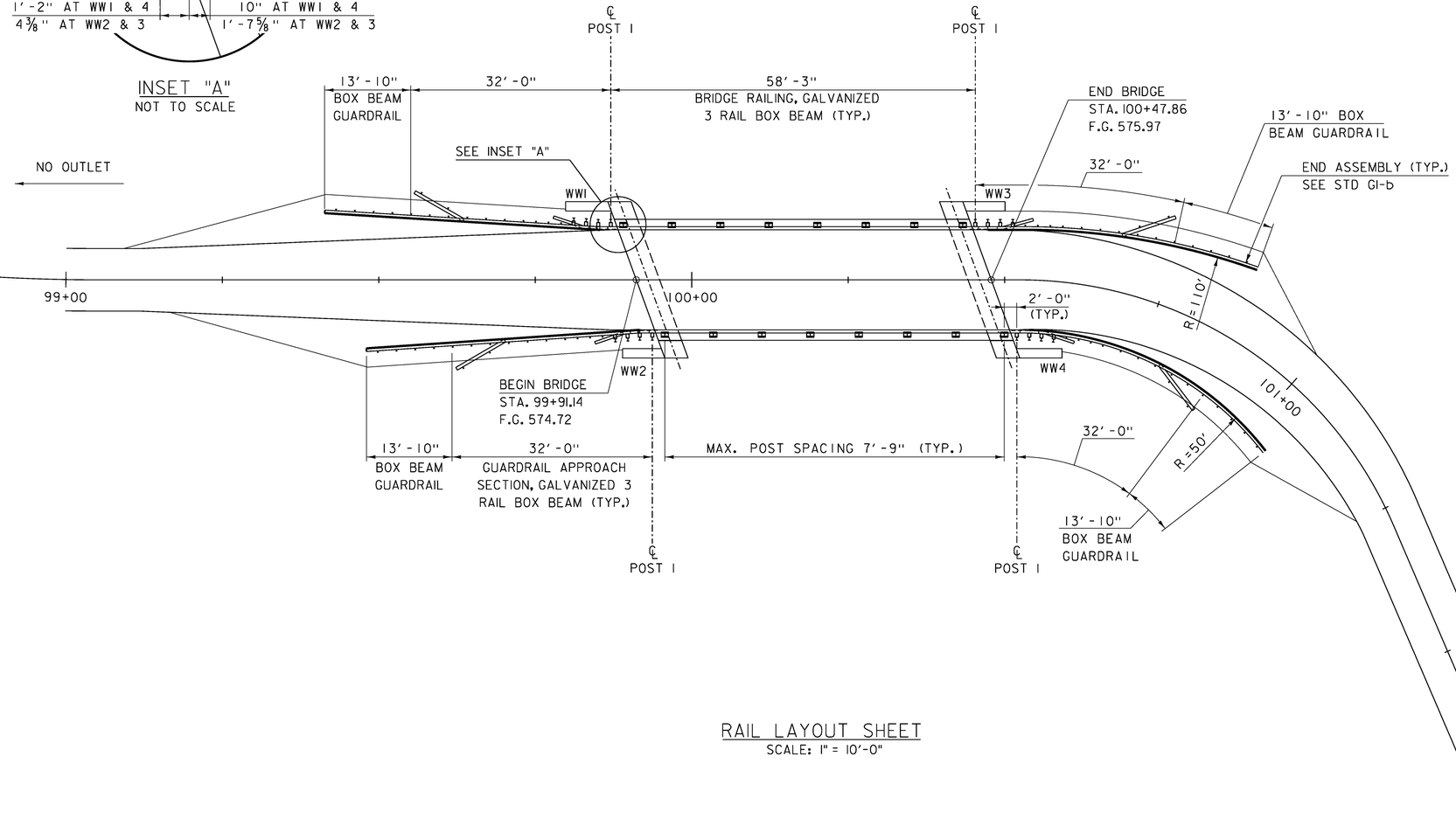
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE THE PLANS.
2'-6" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

CLD 12-0175 MODEL: 04

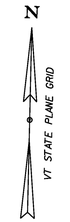
PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078sub.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
WINGWALL DETAILS	SHEET 27 OF 39



INSET "A"
NOT TO SCALE



RAIL LAYOUT SHEET
SCALE: 1" = 10'-0"

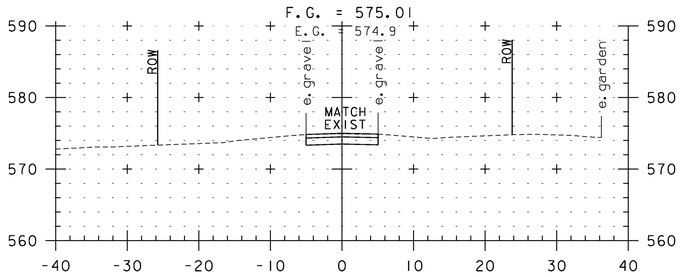


NOTES:

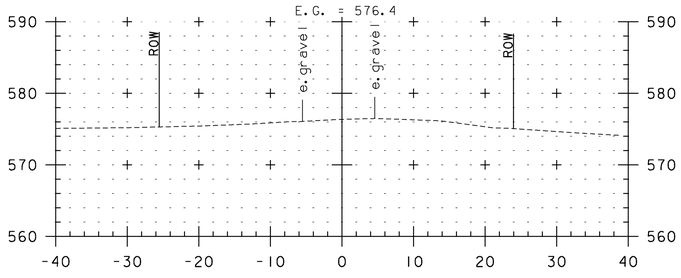
1. SEE STANDARDS G-1b, S-364A, S-364B, S364C AND S-364D FOR FURTHER DETAILS.

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078rail.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
RAIL LAYOUT SHEET	SHEET 28 OF 39

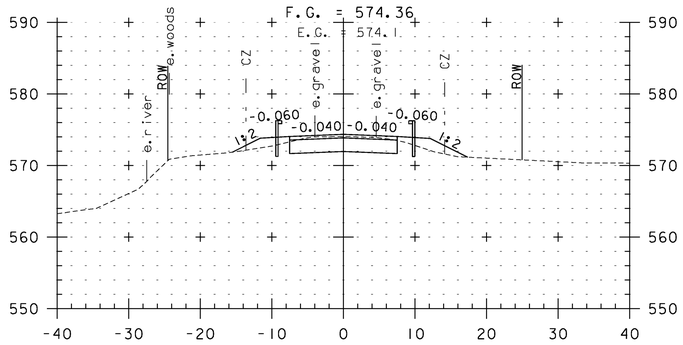
CLD 12-0175 MODEL: 01



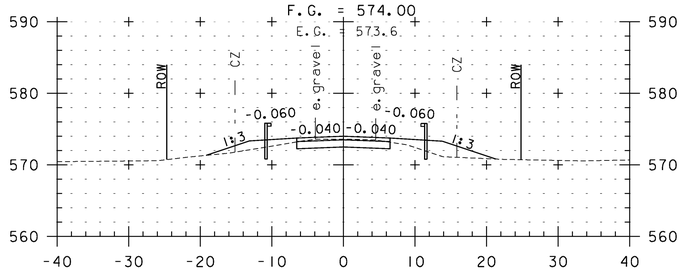
99+00
BEGIN PROJECT



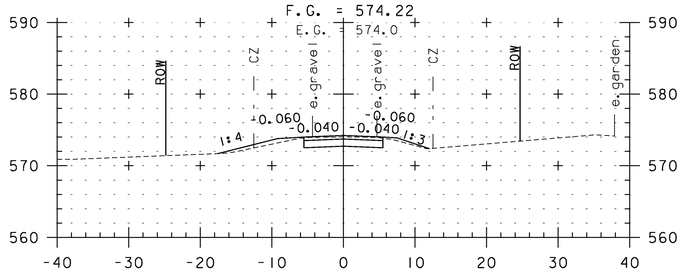
98+75



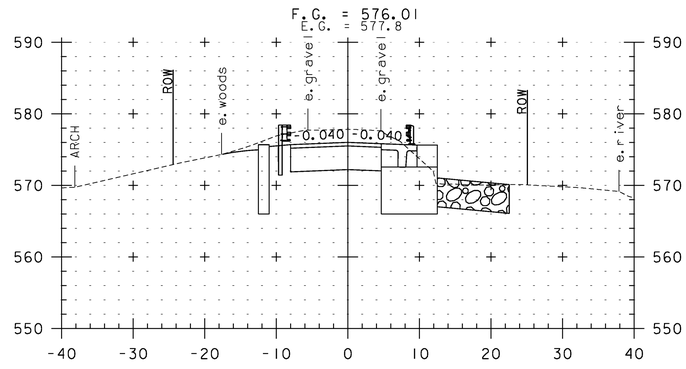
99+75



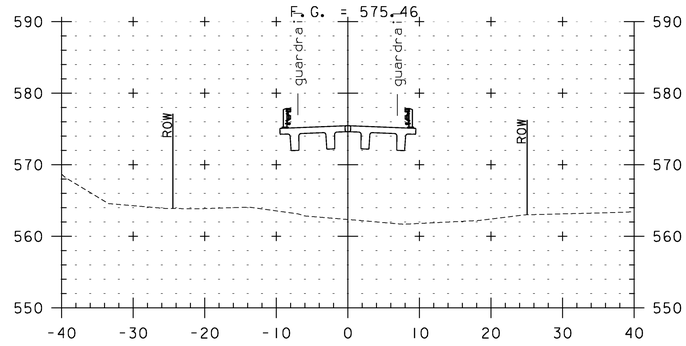
99+50



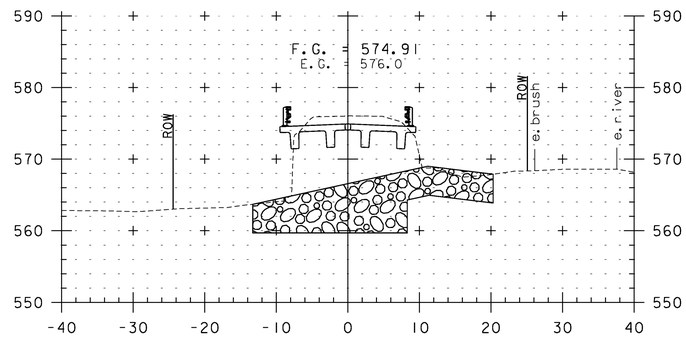
99+25



100+50
END BRIDGE STA. 100+47.86



100+25



100+00
BEGIN BRIDGE STA. 99+91.14

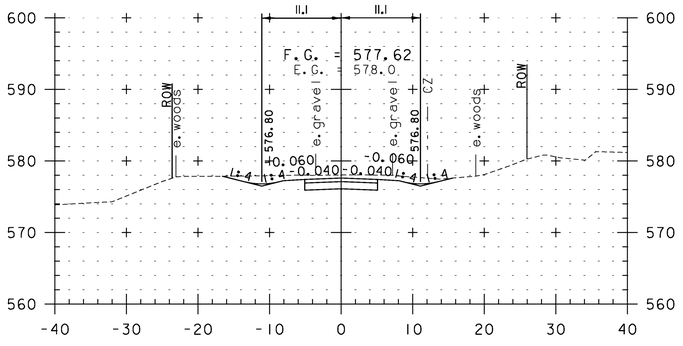
STA. 98+75 TO STA. 100+50

0 10 20
(SCALE 1" = 10')

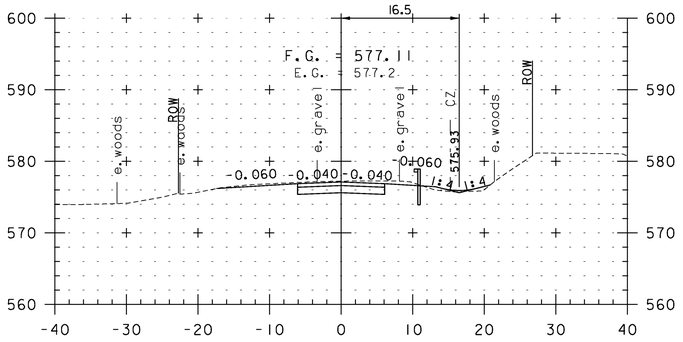
CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078xsl.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: J. SMITH
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
ROADWAY CROSS SECTIONS 1	SHEET 29 OF 39

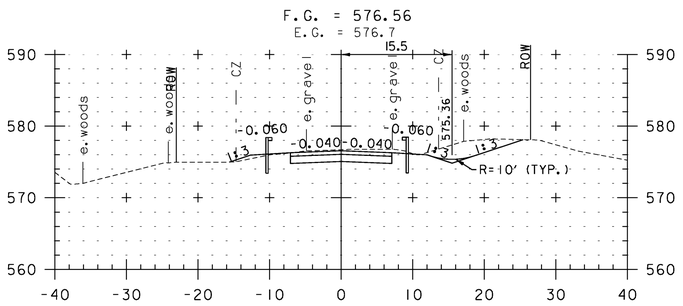
CLD 12-0175 MODEL: XS01



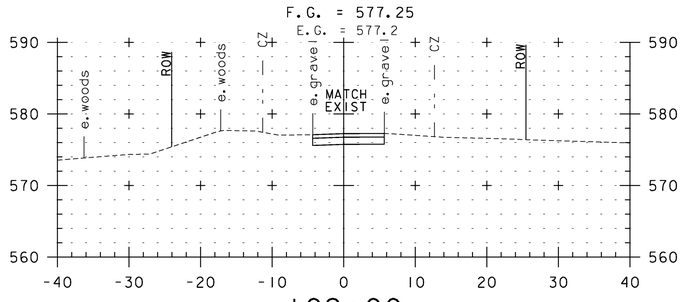
101+25



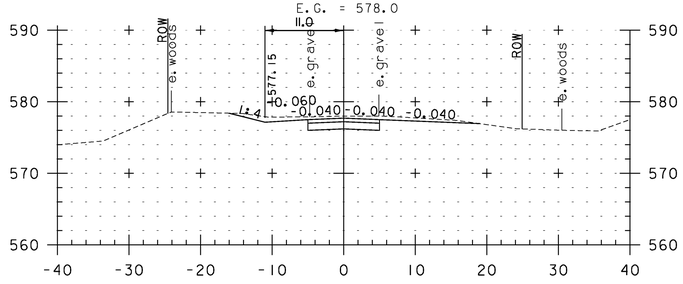
101+00



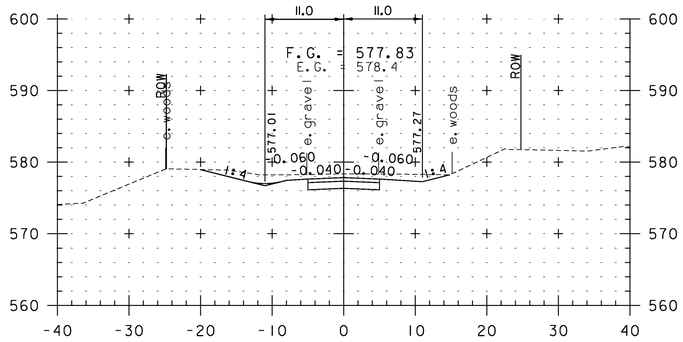
100+75



102+00
END PROJECT



101+75



101+50

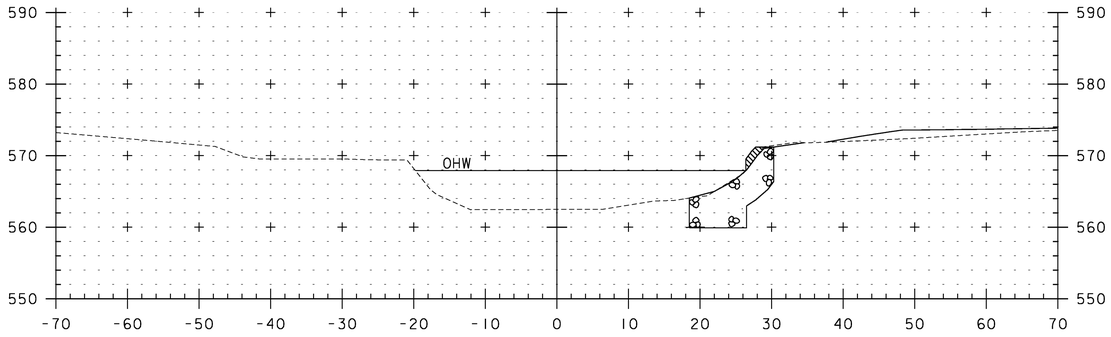
STA. 100+75 TO STA. 102+00

0 10 20
(SCALE 1" = 10')

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z1lj078xsl.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: J. SMITH
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
ROADWAY CROSS SECTIONS 2	SHEET 30 OF 39

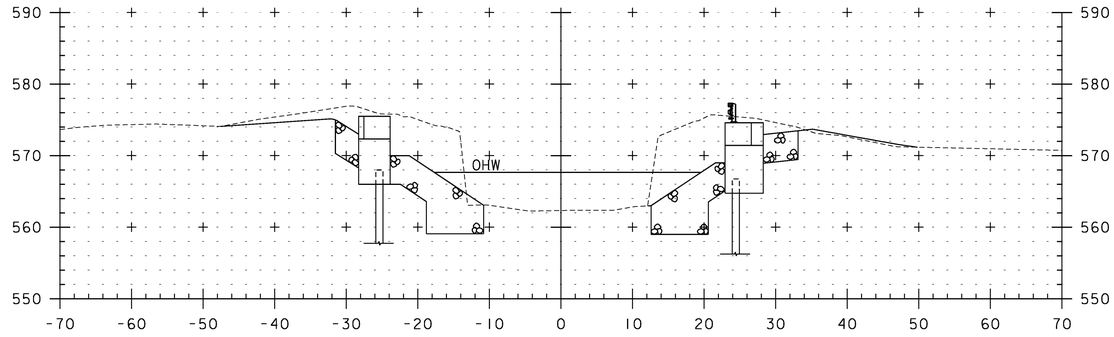
CLD CONSULTING ENGINEERS

CLD 12-0175 MODEL: XS02



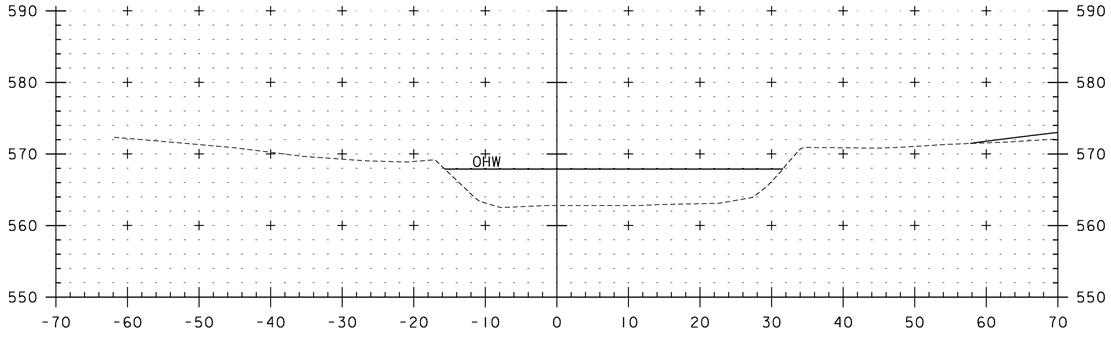
0+20

STA. 0+17 RT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL, TYPE IV
GEOTEXTILE UNDER STONE FILL, TYPE IV
GRUBBING MATERIAL

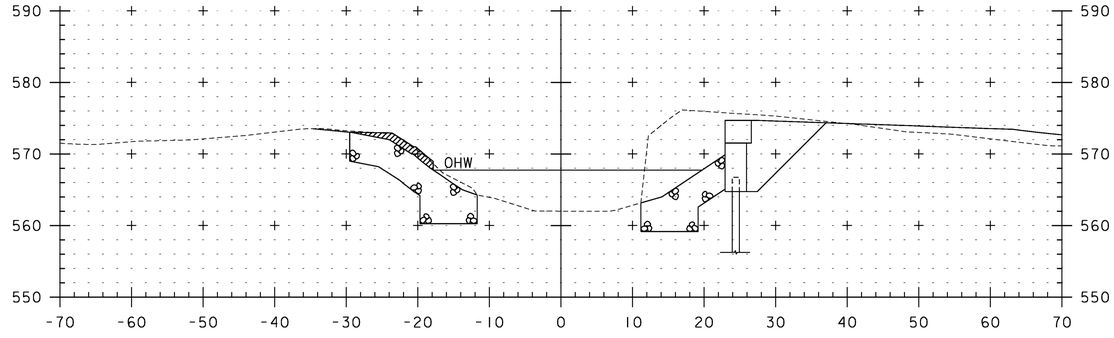


STA. 0+49 LT
END GRUBBING MATERIAL

0+50



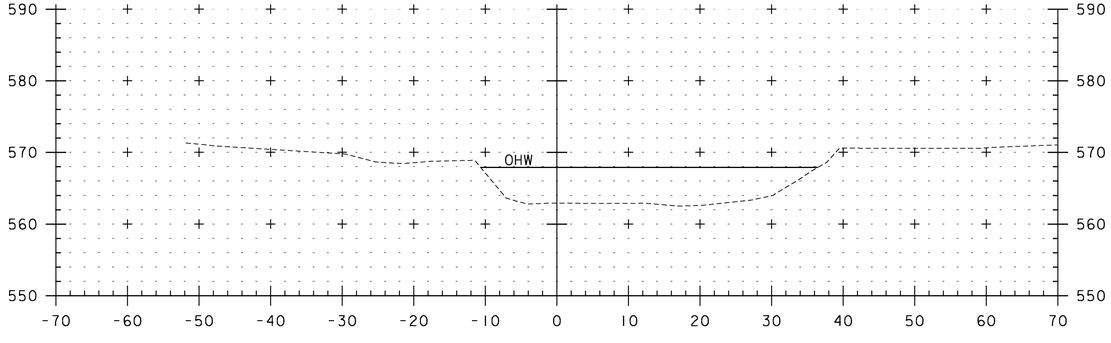
0+10



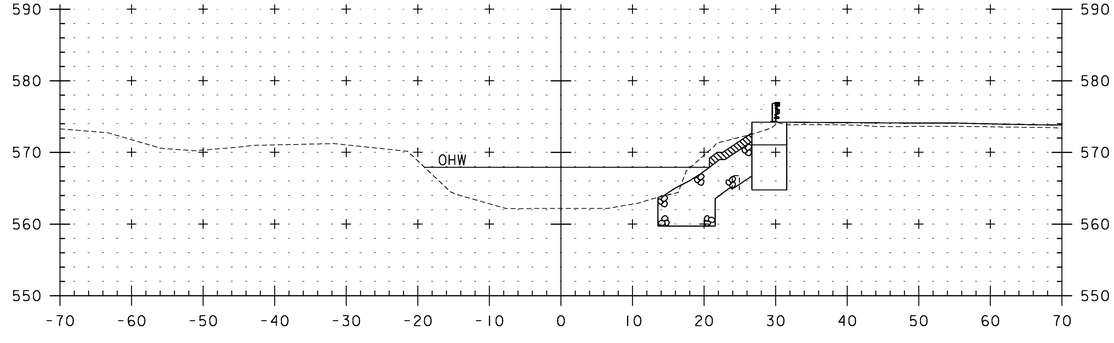
STA. 0+33 LT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL, TYPE IV
GEOTEXTILE UNDER STONE FILL, TYPE IV
GRUBBING MATERIAL

0+40

STA. 0+36 RT
END GRUBBING MATERIAL



0+00



0+30

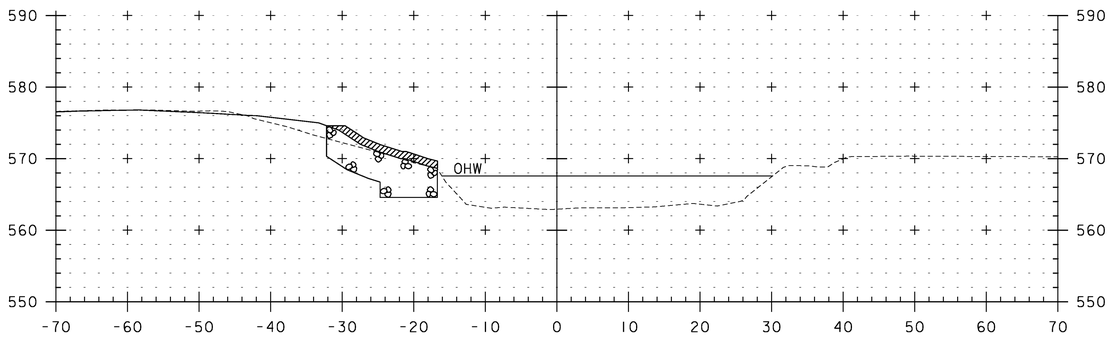
STA. 0+00 TO STA. 0+50

0 10 20
(SCALE 1" = 10')

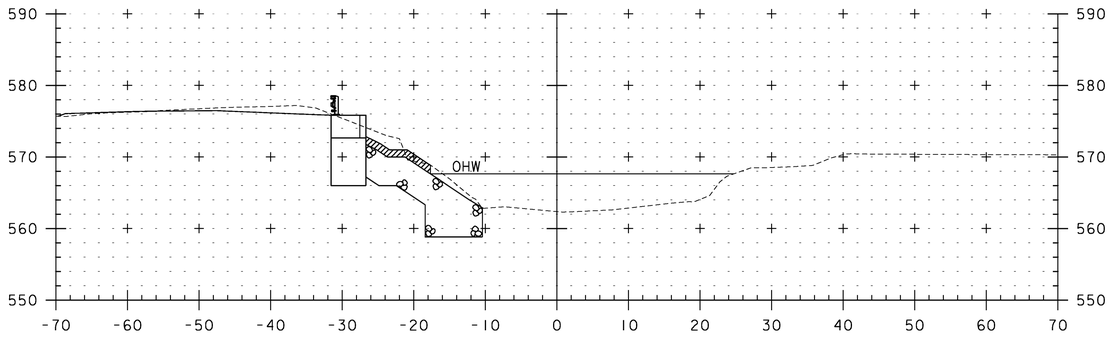
CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BRO 1444(57)	
FILE NAME: z11j078xschl.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
CHANNEL CROSS SECTIONS (1 OF 2)	SHEET 31 OF 39

CLD 12-0175 MODEL: XSCHL01



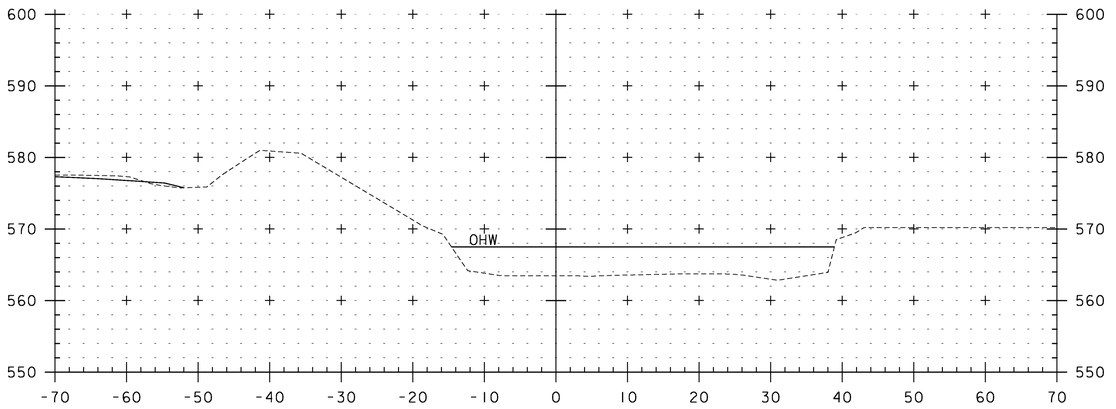
0+80



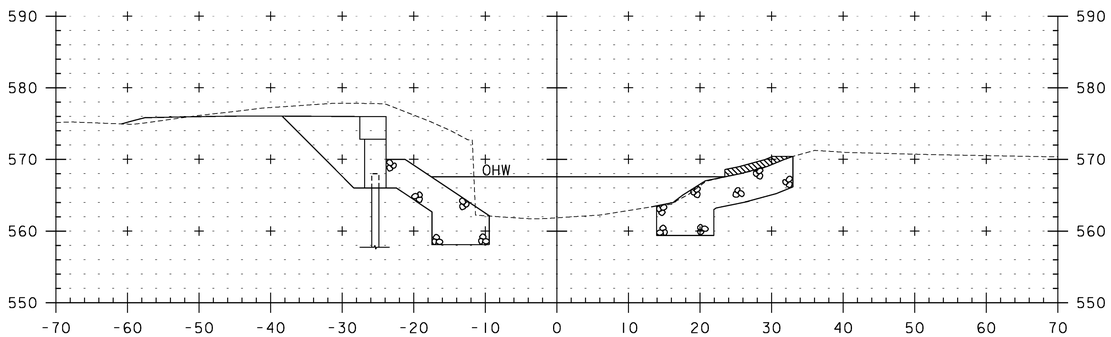
STA. 0+63 LT
BEGIN GRUBBING MATERIAL

0+70

STA. 0+64 RT
END UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL, TYPE IV
GEOTEXTILE UNDER STONE FILL, TYPE IV
GRUBBING MATERIAL

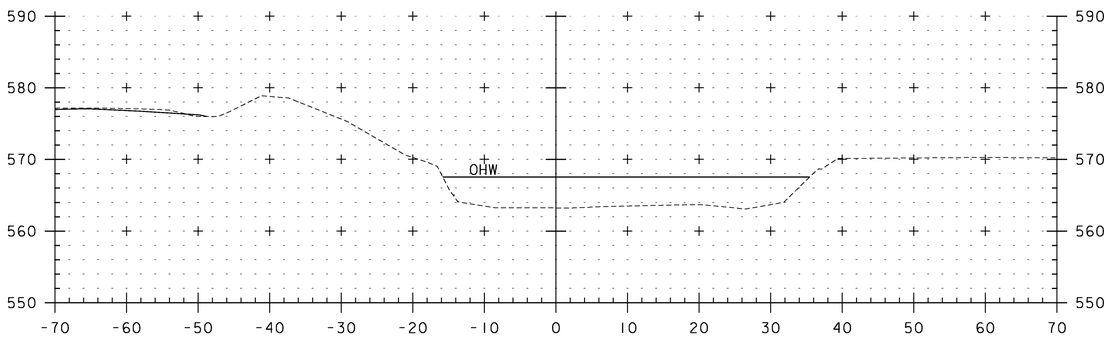


1+00



0+60

STA. 0+52 RT
BEGIN GRUBBING MATERIAL



STA. 0+87 LT
END UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL, TYPE IV
GEOTEXTILE UNDER STONE FILL, TYPE IV
GRUBBING MATERIAL

0+90

STA. 0+60 TO STA. 1+00

0 10 20
(SCALE 1" = 10')

CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078xschl.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
CHANNEL CROSS SECTIONS (2 OF 2)	SHEET 32 OF 39

CLD 12-0175 MODEL: XSCHL02

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REMOVAL OF BRIDGE 35 WHICH IS A 28-FOOT-SPAN JACK ARCH BRIDGE WITH A CONCRETE DECK SUPPORTED ON DRY LAID STONE ABUTMENTS WITH CONCRETE FOOTINGS. BRIDGE 35 WILL BE REPLACED WITH A PRECAST STRUCTURE, SPANNING 57 FEET OVER THE SECOND BRANCH OF THE WHITE RIVER, ON NEW FOOTINGS ALONG THE SAME ALIGNMENT. THE WIDTH OF THE BRIDGE WILL BE INCREASED TO 16 FEET. BRIDGE 35 IS LOCATED IN THE TOWN OF RANDOLPH ON TOWN HIGHWAY 65, APPROXIMATELY 585 FEET WEST OF THE INTERSECTION OF TOWN HIGHWAY 65 AND VERMONT ROUTE 14.

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 0.29 ACRES.

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

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA IS A VALLEY THAT IS WOODED WITH FARM FIELDS. THERE IS ONE RESIDENCE AND A BARN ON THE WEST SIDE OF THE PROJECT. THERE IS ALSO A SMALL GARDEN AREA ON THE SOUTHWEST SIDE OF THE PROJECT.

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

THE SECOND BRANCH OF THE WHITE RIVER IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THERE ARE NO WETLANDS OR SIGNIFICANT NATURAL COMMUNITIES IDENTIFIED WITHIN THE PROJECT AREA. THE STREAM BED CONSISTS OF PRIMARILY GRAVEL AND COBBLES. THE TRIBUTARY AREA AT THE BRIDGE CROSSING IS 47.3 SQUARE MILES. DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF WATER FROM A FEW NEARBY SLOPES.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF PINE AND HARDWOOD TREES, UNDERGROWTH, AND BRUSH. 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 IV 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 ORANGE, VERMONT. SOILS ON THE PROJECT SITE ARE WINOOSKI VERY FINE SANDY LOAM, 0 TO 3% SLOPES, "K FACTOR" = 0.49. THE SOIL IS CONSIDERED HIGHLY ERODIBLE.

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, ONE ARCHAEOLOGICAL AREA IN THE SOUTHEAST QUADRANT CONSISTING OF A SMALL STONE CELLAR HOLE APPROXIMATELY 75 FEET SOUTHEAST OF THE BRIDGE.
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: SECOND BRANCH OF WHITE RIVER
WETLANDS: NO

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, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE 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.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

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 MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTORS PROGRESS SCHEDULE.

A TRACKING PAD WILL BE UTILIZED AT THE INTERSECTION OF VT ROUTE 14. THE EXISTING GRAVEL ROADWAY WILL BE CLOSED DURING CONSTRUCTION AND WILL BE UTILIZED TO ACCESS THE BRIDGE.

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 ESPC PLAN.

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.

MOST OF THE PROJECT AREA SITS HIGHER THAN THE SURROUNDING TERRAIN. CONSTRUCTION VEHICLES WILL BE ABLE TO UTILIZE THE EXISTING ROADWAY. THEREFORE IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

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

STONE CHECK DAMS WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN, AT A MINIMUM.

1.4.7 CONSTRUCT PERMANENT CONTROLS

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

PERMANENT STORMWATER TREATMENT DEVICES ARE NOT 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. TEMPORARY EROSION CONTROL MATTING WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN, AT A MINIMUM.

1.4.9 WINTER STABILIZATION

IT IS NOT ANTICIPATED THAT WINTER STABILIZATION WILL BE REQUIRED ON THIS PROJECT. 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. STONE FILL SHALL BE USED TO STABILIZE ROADWAY SLOPES AND THE CHANNEL AS SHOWN ON THE PLANS.

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.

TREATMENT OF DISCHARGE FROM DEWATERING ACTIVITIES IS ANTICIPATED. A LOCATION FOR TREATMENT HAS BEEN PROPOSED AND SHOWN ON THE PLANS. HOWEVER, THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR. ALL COSTS FOR TREATMENT OF DISCHARGE WILL BE PAID UNDER CONTRACT ITEM 653.45.

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.

1.5.3 UPDATES

CLD 12-0175 MODEL: ECOI

CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11J078erodet.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
EROSION CONTROL NARRATIVE	SHEET 33 OF 39

N

VT STATE PLANE GRID

50' RIPARIAN BUFFER (TYP.)

50' RIPARIAN BUFFER (TYP.)

SOIL INFORMATION: WINOOSKI VERY FINE SANDY LOAM
K = 0.49, HIGHLY ERODIBLE
HYDROLOGIC SOIL GROUP: B

SOIL INFORMATION: MERRIMAC FINE SANDY LOAM, 25 TO 50 PERCENT SLOPES
K = 0.24, NOT HIGHLY ERODIBLE
HYDROLOGIC SOIL GROUP: A

0 20 40
SCALE IN FEET

CONSULTING ENGINEERS

PROJECT NAME: RANDOLPH	
PROJECT NUMBER: BRO 1444(57)	
FILE NAME: z11j078bdreroex.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
EPSC EXISTING PLAN SHEET	SHEET 34 OF 39

CLD 12-0175 MODEL: 01

GEOTEXTILE FOR SILT FENCE
99+00 TO 99+06 LT
99+09 TO 99+12 RT
99+19 TO 99+23 LT
99+28 TO 99+77 LT
99+32 TO 99+90 RT
100+43 TO 100+65 LT
100+64 TO 101+10 LT

TEMPORARY EROSION MATTING
99+34 TO 99+81 LT
99+41 TO 99+88 RT
100+41 TO 100+92 LT
100+59 TO 101+13 RT

TEMPORARY STONE
CHECK DAM, TYPE I
100+62 TO 101+50 RT
101+00 TO 101+75 LT

STONE FILL, TYPE IV
GEOTEXTILE UNDER STONE FILL
99+79 TO 100+09 LT & RT
100+26 TO 100+65 LT & RT

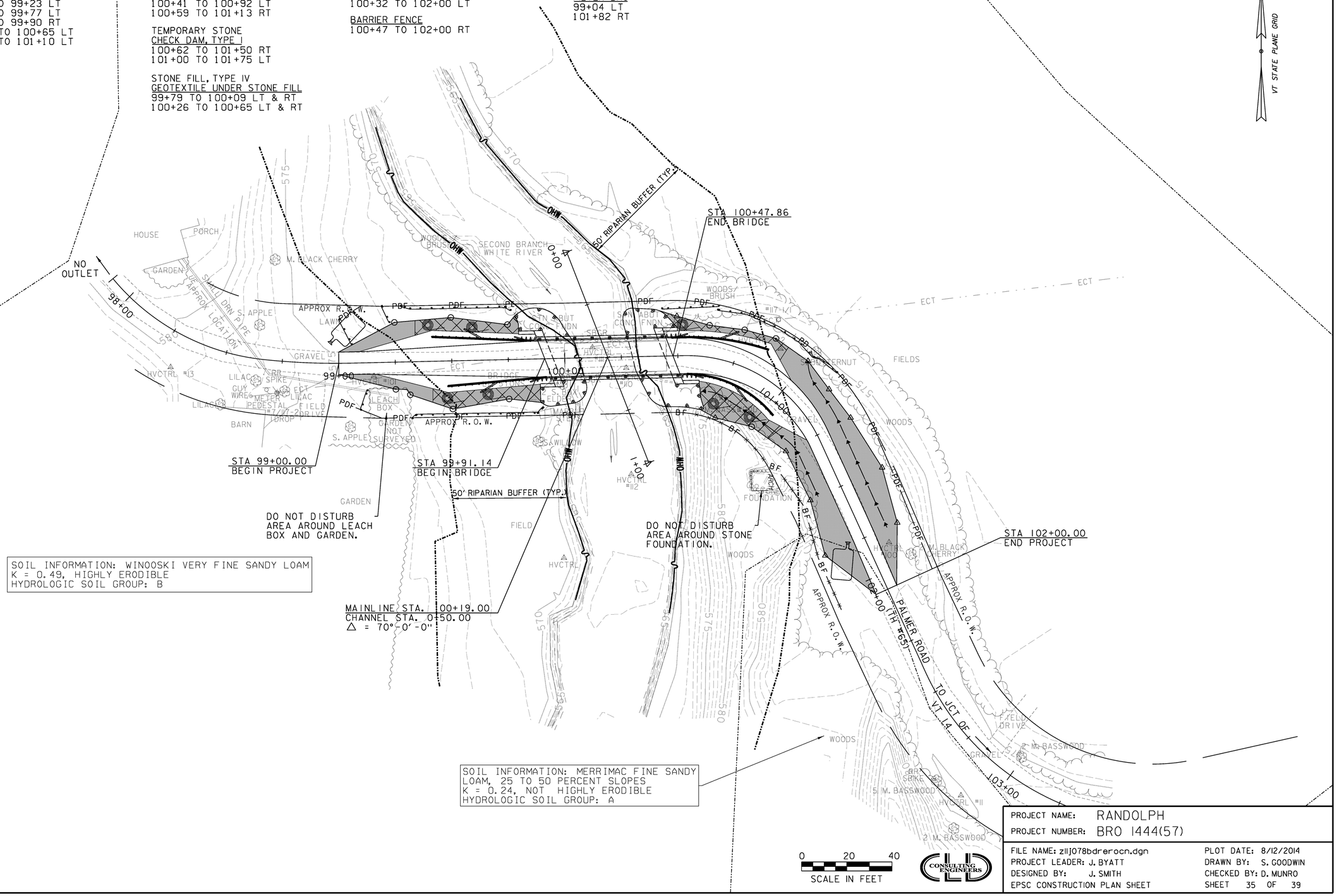
PROJECT DEMARCATION FENCE
99+00 TO 99+78 LT
99+00 TO 100+04 RT
100+32 TO 102+00 LT

BARRIER FENCE
100+47 TO 102+00 RT

VEHICLE TRACKING PAD
PLACED ON PALMER RD AT INTERSECTION WITH VT 14

FILTER BAG
99+04 LT
101+82 RT

N
VT STATE PLANE GRID

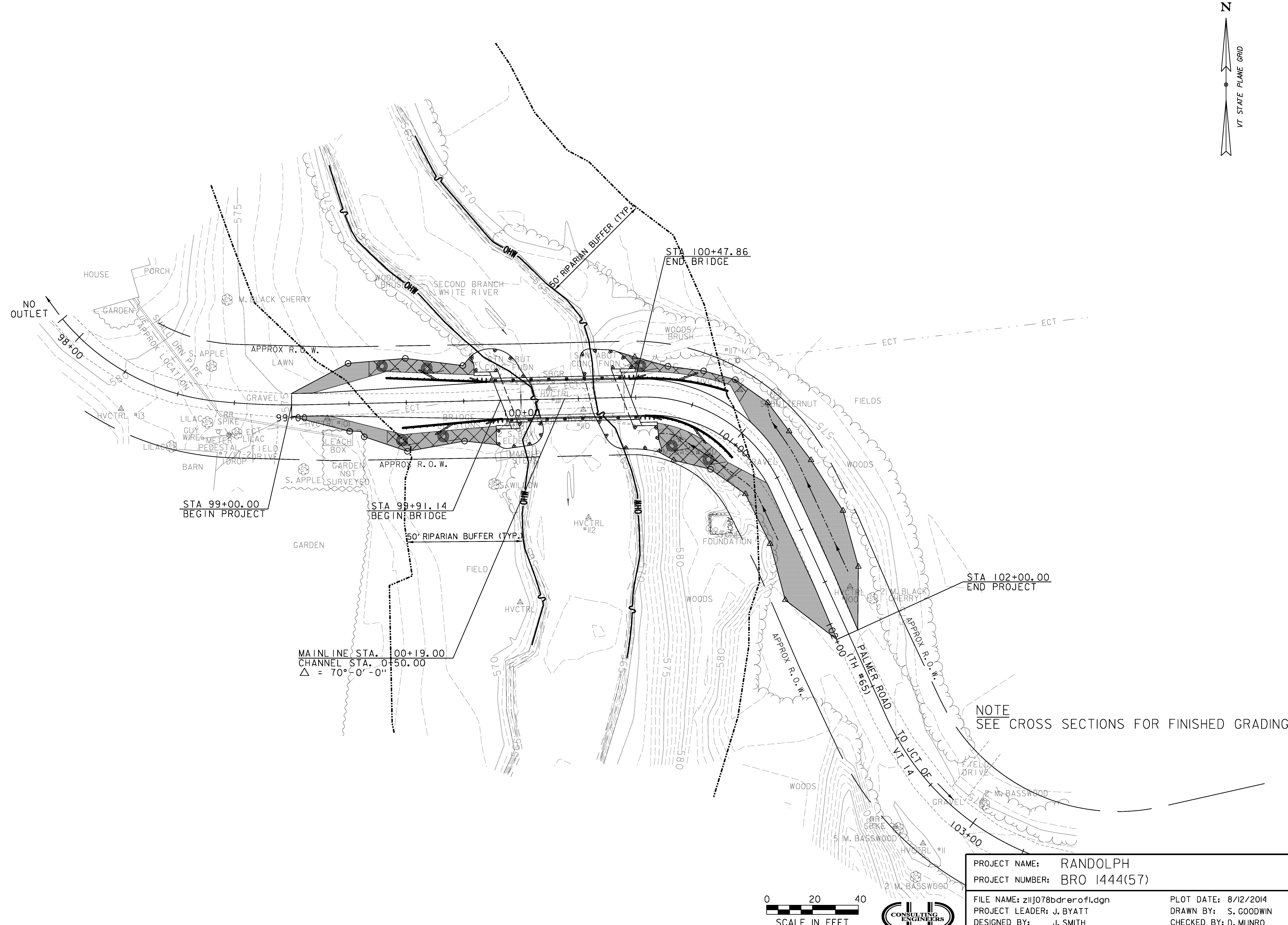


0 20 40
SCALE IN FEET

CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z111078bdrerocn.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
EPSC CONSTRUCTION PLAN SHEET	SHEET 35 OF 39

CLD 12-0175 MODEL: 01


N
VT STATE PLANE GRID
NO OUTLET
98+00
99+00
100+00
101+00
102+00
103+00
HOUSE
PORCH
GARDEN
M. BLACK CHERRY
SECOND BRANCH WHITE RIVER
APPROX R.O.W.
LAWN
GRAVEL
BARN
LILAC
GUY WIRE
METER PEDESTAL
LEACH BOX
GARDEN NOT SURVEYED
S. APPLE
HVCTRL #13
ECT
FIELDS
WOODS
WOODS/BRUSH
BUTTERNUT
50' RIPARIAN BUFFER (TYP.)
STA 100+47.86
END BRIDGE
STA 99+00.00
BEGIN PROJECT
STA 99+91.14
BEGIN BRIDGE
MAINLINE STA. 100+19.00
CHANNEL STA. 0+50.00
△ = 70°-0'-0"
HVCTRL #12
STONE FOUNDATION
FIELD
STA 102+00.00
END PROJECT
2 M. BLACK CHERRY
PALMER ROAD (TH #65)
TO JCT OF VT 14
FIELD DRIVE
2 M. BASSWOOD
5 M. BASSWOOD
HVCTRL #11
NOTE
SEE CROSS SECTIONS FOR FINISHED GRADING
0 20 40
SCALE IN FEET

MODEL: 01

CLD 12-0175

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)

FILE NAME: z11j078bdrerofl.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
EPSC FINAL PLAN SHEET	SHEET 36 OF 39

VAOT RURAL AREA MIX					
	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX					
	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE			
FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	*FOLLOW*	PELLETIZED	*FOLLOW*
500 LBS/AC	*MANUFACTURER*	2 TONS/AC	*MANUFACTURER*

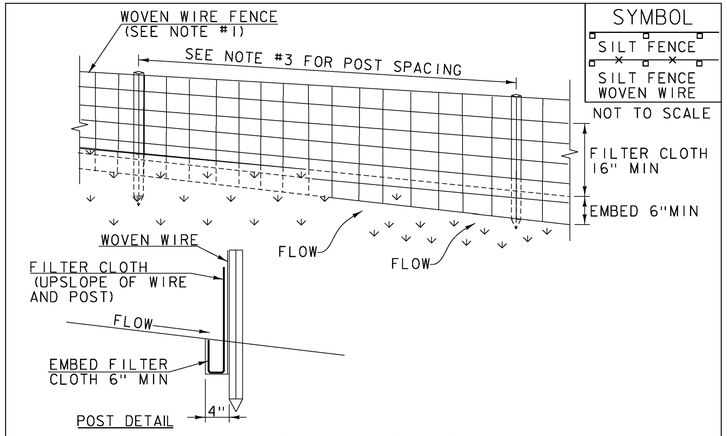
CONSTRUCTION GUIDANCE

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN 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. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. 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

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	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, MIRAFI100X, 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.

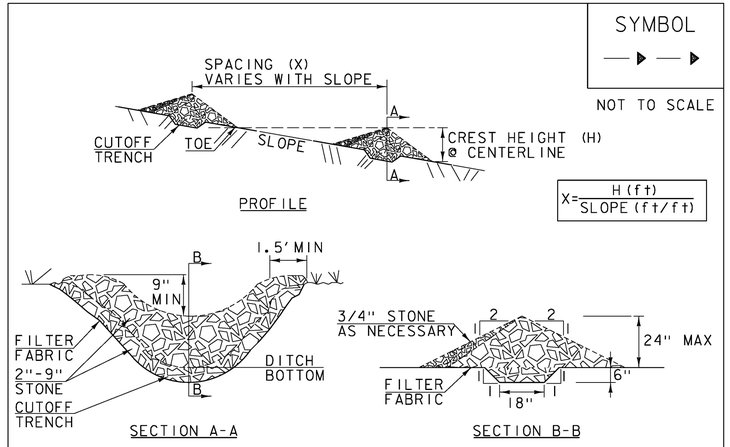
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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 WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. CHECK DAMS SHALL BE SPACED SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. 3/4" FILTERING STONE MAY BE ADDED TO THE FACE OF THE CHECK DAM AS NECESSARY.
4. EXTEND THE STONE A MINIMUM OF 1.5' BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
5. PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
6. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
7. MAXIMUM DRAINAGE AREA 2 ACRES.

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

CHECK DAM

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

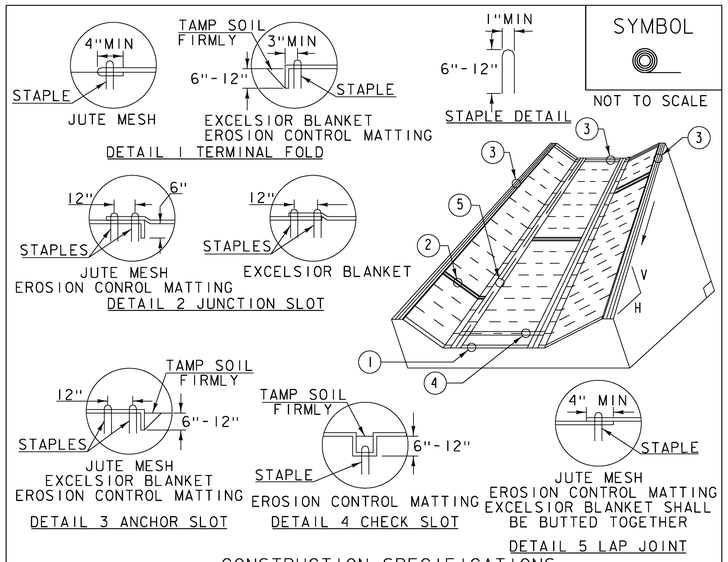
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE I (PAY ITEM 653.25)

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF

CLD 12-0175 MODEL: EC02

CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078erodet.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
EPSC DETAILS 1	SHEET 37 OF 39



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

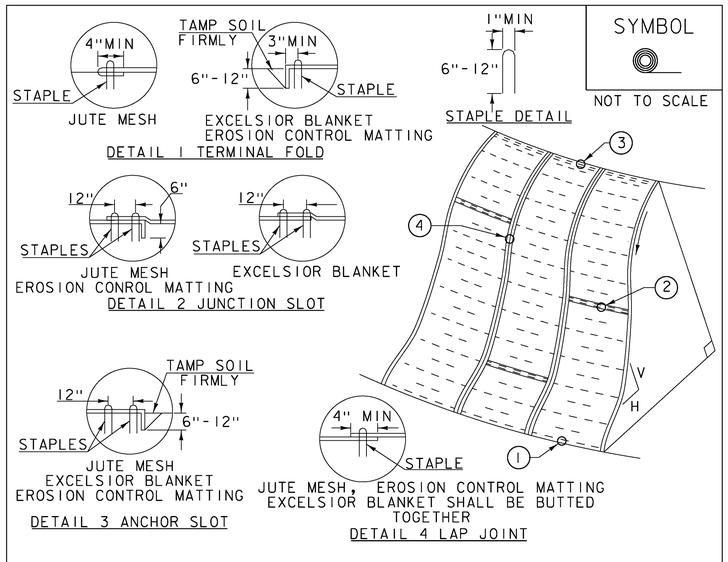
1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50′ ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25′.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO 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



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

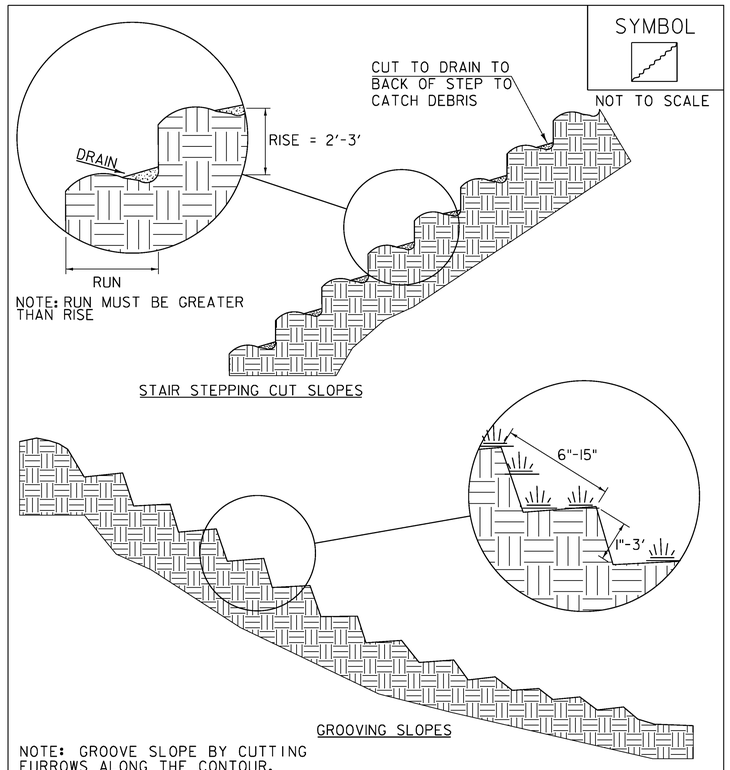
1. APPLY TO SLOPES GREATER THAN 3H: IV OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2′ APART AND IN ROWS APPROXIMATELY 3′ APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 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



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.

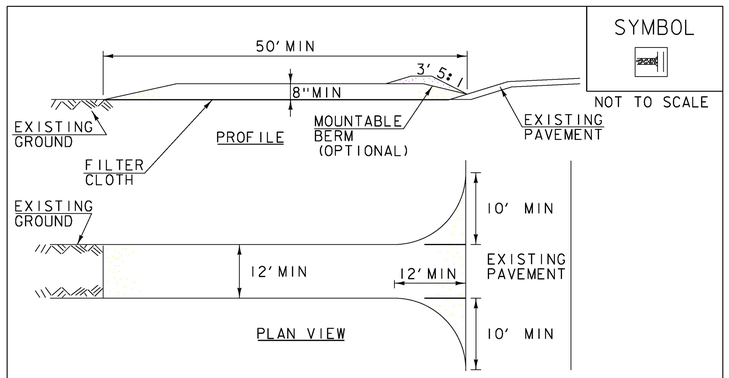
THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

CONSULTING ENGINEERS

PROJECT NAME:	RANDOLPH
PROJECT NUMBER:	BRO 1444(57)
FILE NAME: z11j078erodet.dgn	PLOT DATE: 8/12/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: J. SMITH	CHECKED BY: D. MUNRO
EPSC DETAILS 2	SHEET 38 OF 39

CLD 12-0175 MODEL: ECO3



SYMBOL

NOT TO SCALE

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.

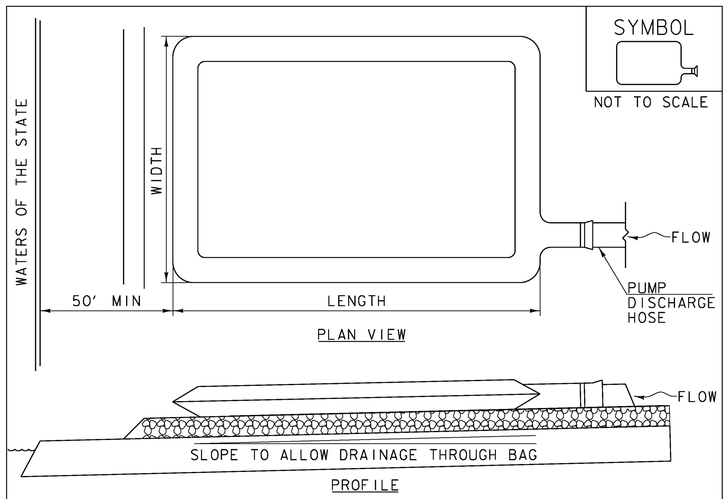
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE PRIMARY PURPOSE OF FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS.
2. FILTER BAGS SHALL BE INSTALLED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG.
3. FILTER BAGS MAY ALSO BE PLACED ON COARSE AGGREGATE, STONE, OR HAYBALES TO INCREASE FILTRATION EFFICIENCY.
4. FILTER BAGS SHALL BE LOCATED A MINIMUM OF 50' FROM WATERS OF THE STATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. THE NECK OF THE FILTER BAG SHALL BE STRAPPED TIGHTLY TO THE DISCHARGE HOSE.
6. A FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE.
7. FILTER BAG SHALL BE DISPOSED OF AS APPROVED IN THE EPSC PLAN OR AS DIRECTED BY THE ENGINEER.

FILTER BAG

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 FILTER BAG (PAY ITEM 653.45) AND AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

CONSULTECH ENGINEERS

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRO 1444(57)

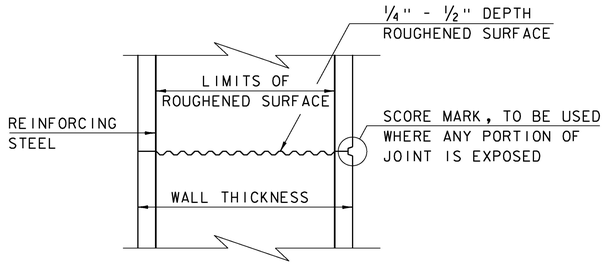
FILE NAME: z11j078erodet.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: J. SMITH
EPSC DETAILS 3

PLOT DATE: 8/12/2014
DRAWN BY: S. GOODWIN
CHECKED BY: D. MUNRO
SHEET 39 OF 39

CLD 12-0175 MODEL: ECO4

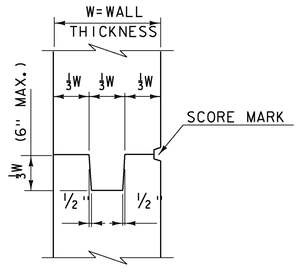
CONCRETE GENERAL NOTES

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.

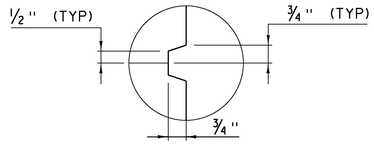


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

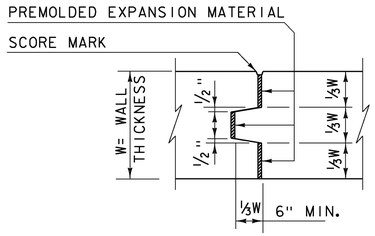
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



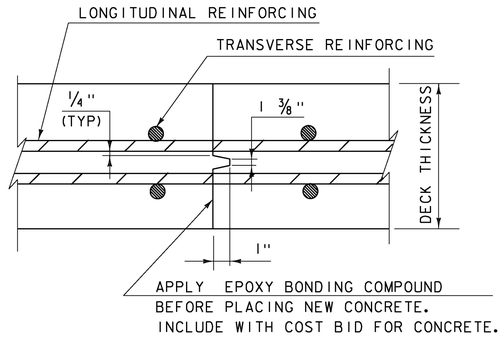
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



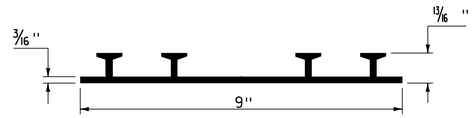
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



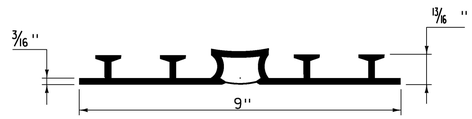
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



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.

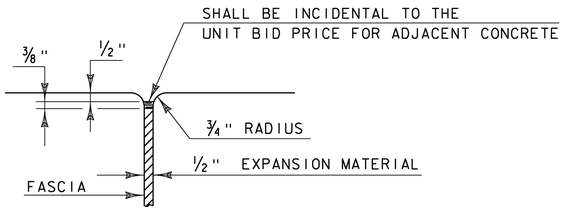
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



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.



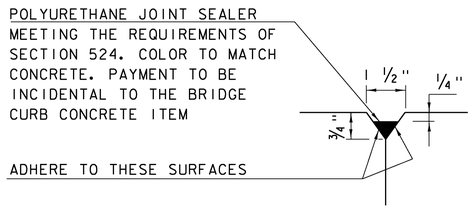
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

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

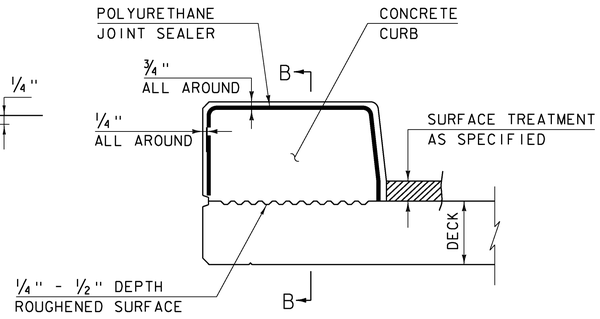
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

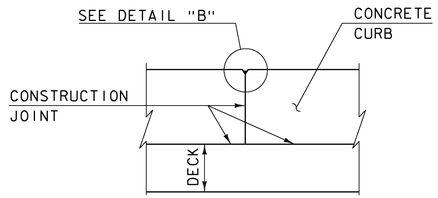
STRUCTURES DETAIL
SD-501.00



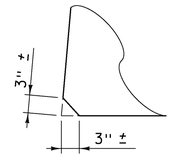
DETAIL "B"
(NOT TO SCALE)



CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

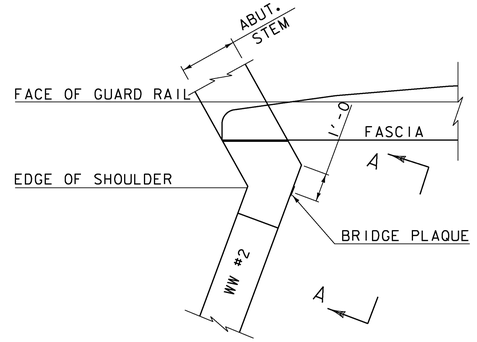


SECTION B - B
(NOT TO SCALE)



ACUTE ANGLE CLIP DETAIL
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



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.

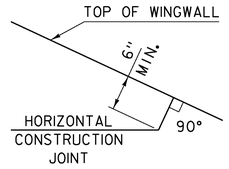
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

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.

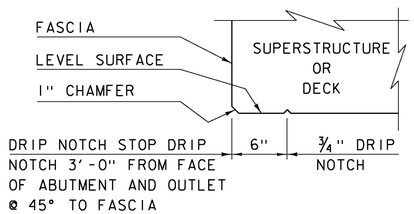
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

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.

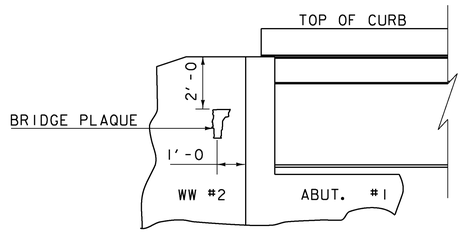
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)

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

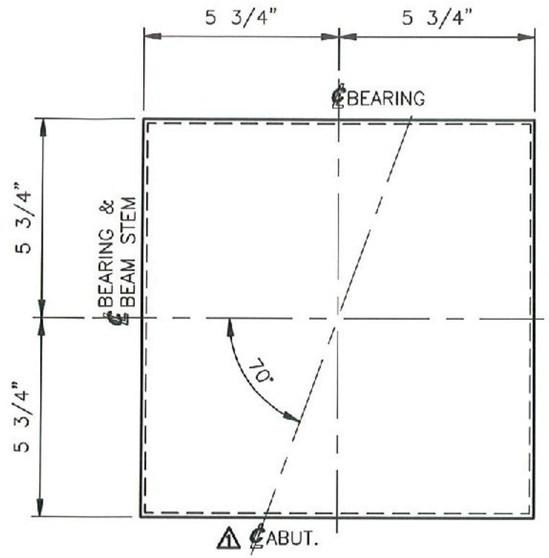
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

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

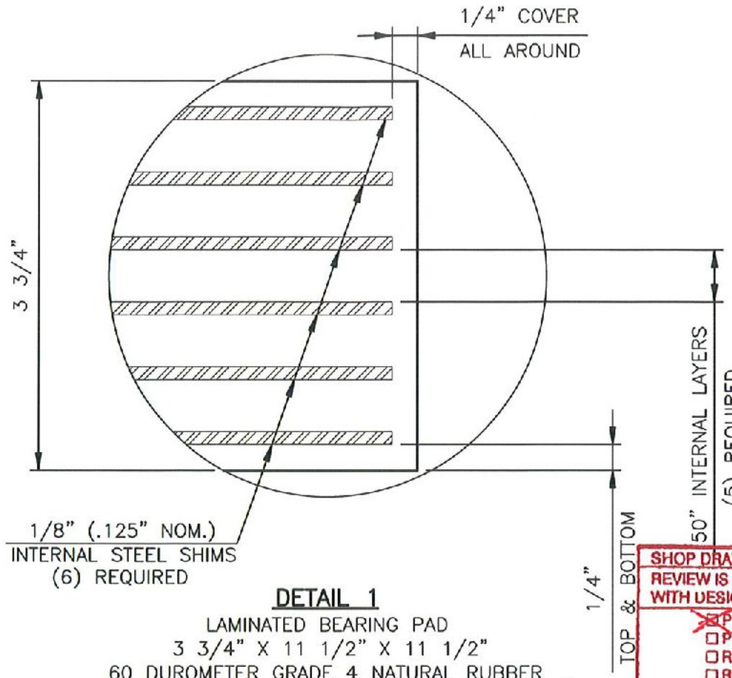
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-502.00



PLAN VIEW

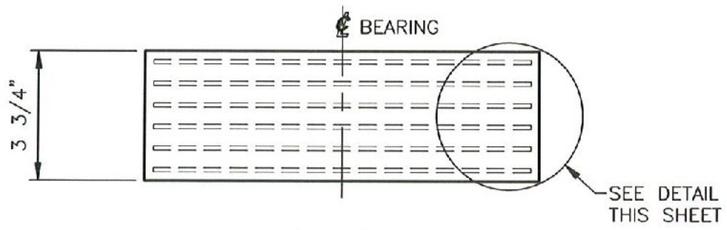


DETAIL 1

LAMINATED BEARING PAD
3 3/4" X 11 1/2" X 11 1/2"
60 DUROMETER GRADE 4 NATURAL RUBBER
WITH A SHEAR MODULUS OF 130 PSI TO 200 PSI ⚠
(8) REQUIRED FOR STRUCTURE

TEST PAD

LAMINATED BEARING PAD
3 3/4" X 11 1/2" X 11 1/2"
60 DUROMETER GRADE 4 NATURAL RUBBER
WITH A SHEAR MODULUS OF 130 PSI TO 200 PSI ⚠
(2) REQUIRED FOR TESTING



ELEVATION VIEW

LAMINATED ELASTOMERIC BEARING PAD MARK: LEP1

(4) LOCATED AT ABUT. 1
(4) LOCATED AT ABUT. 2
(8) TOTAL REQUIRED FOR STRUCTURE

MAX. DESIGN SERVICE LOADS	
DEAD LOAD =	30.5 kips
LIVE LOAD =	30.4 kips

⚠ **CONTRACTOR NOTE:**
GALVANIZED STEEL SHIMS ARE SUPPLIED BY OTHERS, NOT COSMEC, INC.

SHOP NOTES:

1. ALL BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731 OF THE 2011 VTAOT STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
2. MATERIAL:
   ELASTOMER: 60 DUROMETER GRADE 4 NATURAL RUBBER. WITH A SHEAR MODULUS OF 130 PSI – 200 PSI ⚠
   STEEL LAMINAE: ASTM A709 GR.36, A1011 GRADE 36 OR EQUAL.
3. ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. ALL MARKS SHALL BE PERMANANT AND BE VISIBLE AFTER ERECTION.
4. ALL DIMENSIONS ARE IN INCHES.
5. COSMEC REPRESENTATIVE KERRY MARCHAND: (508) 455-3290
6. VT.A.O.T. WILL BE NOTIFIED (7) DAYS BEFORE THE START OF FABRICATION.

SHOP DRAWING REVIEW
REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT
☒ PROVIDE AS SUBMITTED
☐ PROVIDE AS CORRECTED
☐ REVISE AND RESUBMIT
☐ REJECTED - SEE REMARKS
☐ SUBMITTAL NOT REQUIRED - RETURNED WITHOUT REVIEW

THIS REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION, CORRECTIONS OR COMMENTS SHOWN AND/OR NOTED ARE SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR: DETERMINING THE ACCURACY AND COMPLETENESS OF DETAILS, SUCH AS DIMENSIONS AND QUANTITIES; SUBSTANTIATING INSTRUCTIONS FOR INSTALLATION OR PERFORMANCE OF EQUIPMENT OR SYSTEMS; THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, INCLUDING SAFETY PRECAUTIONS AND PROCEDURES; AND THE SELECTION OF FABRICATION PROCESSES. ENGINEER'S APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. FURTHER, ENGINEER'S REVIEW OF CONTRACTOR'S SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR OF ITS OBLIGATIONS UNDER THE CONTRACT DOCUMENTS WITH RESPECT TO THE PREPARATION AND/OR APPROVAL OF SUCH SUBMITTALS

CLD CONSULTING ENGINEERS, INC.
540 COMMERCIAL ST.
MANCHESTER, NEW HAMPSHIRE 03101

BY: NDC DATE: 1/20/15

Vermont Agency of Transportation
RECEIVED
CK'D BY MJC OK'D BY TAS
January 16, 2015
RESUBMIT No Approved
BY M. J. Chenette DATE 1/21/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
BRIDGE NO.35
TOWN HIGHWAY 65 (PALMER ROAD)
CLASS 3 LOCAL ROAD
ITEM NO. 531.17
TOWN OF RANDOLPH

STATE	COUNTY	CONTROL NO.
VT	ORANGE	N/A

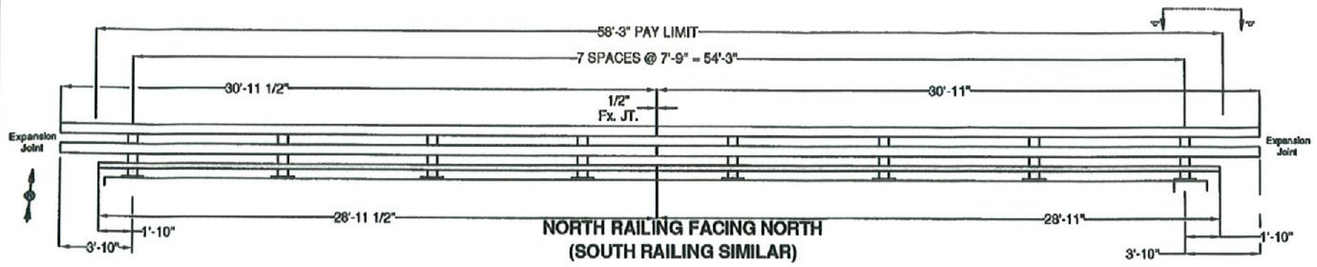
PROJ. NO.: BRO 1444(57)

DYNAMIC RUBBER.: LAMINATED BEARING PADS

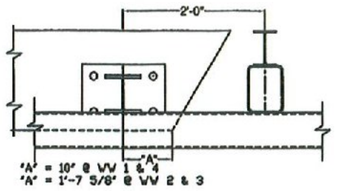
Cosmec
1501 ROCKY RIDGE ROAD
P.O. BOX 2159
ATHENS, TEXAS 75751

REV.	DESCRIPTION	BY	DATE	CK'D	DATE
⚠	REMOVED TOLERANCE FOR THE SHEAR MODULUS, ADDED CONTRACTOR NOTE, ADDED CENTERLINE OF ABUTMENT PER APPROVER	RP	1/14/15	ELS	1/14/15

SCALE: NONE
DRAWN BY: RP DATE: 12/3/14
CHECKED BY: ELS DATE: 12/15/14
SHEET 1 OF 1
JOB NO.: 12849
CUSTOMER: J.P. SICARD, INC.
DRAWING NUMBER 12849-D1 REV. 1



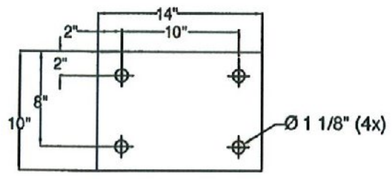
NORTH RAILING FACING NORTH
(SOUTH RAILING SIMILAR)



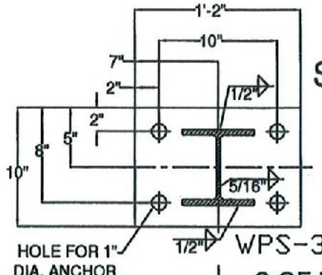
VIEW "C"-"C"

Vermont Agency of Transportation

RECEIVED
ON: January 22, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 01/28/15



1/8" FABRIC PAD

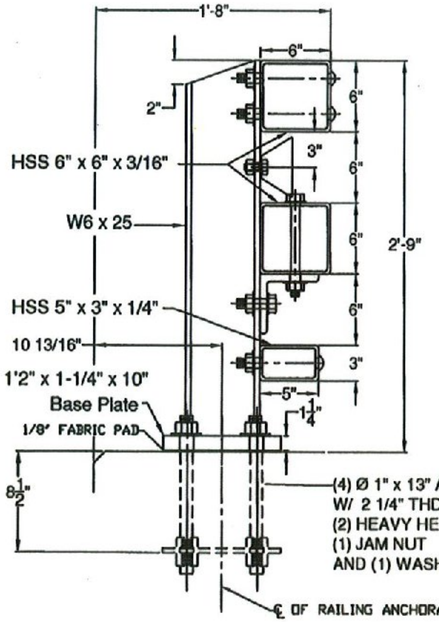


SECTION A-A

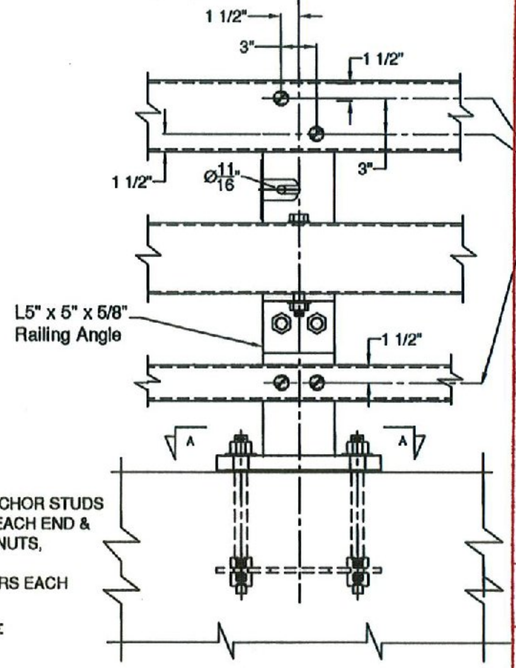
HOLE FOR 1" DIA. ANCHOR STUD (TYP.)

WPS-3008

℄ OF POST



SECTION



ELEVATION

STEEL BRIDGE RAILING

BILL OF MATERIAL				
ITEM #	QTY	PART #	DESCRIPTION	ASTM DESIGNATION
1	16	0033.03610	W6x25, THREE RAIL POST @ 2'-9" OA ON 1 1/4x10x1'-2" B.P.	A572 Gr. 50
2	2	0033.91321	HSS 3" X 5" X 1/4" RAIL @ 28'-11 1/2"	A500 Gr. B
3	2	0033.91322	HSS 3" X 5" X 1/4" RAIL @ 28'-11"	A500 Gr. B
5	4	0033.91323	HSS 6" X 6" X 3/16" RAIL @ 30'-11 1/2"	A500 Gr. B
6	4	0033.91324	HSS 6" X 6" X 3/16" RAIL @ 30'-11"	A500 Gr. B
8	2	0033.00840	2-1/8" X 4-1/4" FIX. SPLICE BAR @ 2'-3"	A572 Gr. 50
9	4	0033.00640	HSS 5" X 5" X 5/16" FIX. SPLICE TUBE @ 2'-3"	A500 Gr. B, A572 Gr. 50
10	16	0033.00220	3/8" X 10" X 14" ANCHOR PLATES	A572 Gr. 50
11	16	0033.90050	1/8" X 10" X 14" FABRIC PAD	AASHTO M251
12	66##	0042.21013	ø 1" X 13" ANCHOR STUDS, W/ 2 1/4" THD. EACH END	A449
13	130##	0080.18901	ø 1" HEAVY HEX NUTS	A563
14	64	0080.18911	ø 1" FLAT WASHERS	F436
15	64	0080.18905	ø 1" HEX JAM NUTS	A563
16	64	0080.07500	ø 7/8" X 8" ROUND HEAD BOLT, NUT, SQ. WASHER, L.W.	A449, A563, F436, ASME D18.2
17	16	0080.06400	ø 3/4" X 8" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563, F436, & ASME D18.2
18	32	0080.06140	ø 3/4" X 2-3/4" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563, F436, & ASME D18.2
19	16	0080.06340	ø 3/4" X 7-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
20	8	0080.06255	ø 3/4" X 4-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
21	16	0033.00500	L5" X 5" X 5/8" RAILING ANGLE @ 6'	A572 Gr. 50
22	6		DELINEATORS - NOT SHOWN	(SUPPLIED BY CUSTOMER)

2 EXTRA FOR VDOT TESTING

SHOP DRAWING REVIEW
REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT

- ☐ PROVIDE AS SUBMITTED
- ☒ PROVIDE AS CORRECTED
- ☐ REVISE AND RESUBMIT
- ☐ REJECTED - SEE REMARKS
- ☐ SUBMITTAL NOT REQUIRED - RETURNED WITHOUT REVIEW

THIS REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION, CORRECTIONS OR COMMENTS SHOWN AND/OR NOTED ARE SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR: DETERMINING THE ACCURACY AND COMPLETENESS OF DETAILS, SUCH AS DIMENSIONS AND QUANTITIES; SUBSTANTIATING INSTRUCTIONS FOR INSTALLATION OR PERFORMANCE OF EQUIPMENT OR SYSTEMS; THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, INCLUDING SAFETY PRECAUTIONS AND PROCEDURES; AND THE SELECTION OF FABRICATION PROCESSES. ENGINEER'S APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. FURTHER, ENGINEER'S REVIEW OF CONTRACTOR'S SUBMITTALS SHALL NOT RELIEVE THE CONTRACTOR OF ITS OBLIGATIONS UNDER THE CONTRACT DOCUMENTS WITH RESPECT TO THE PREPARATION AND/OR APPROVAL OF SUCH SUBMITTALS

CLD CONSULTING ENGINEERS, INC.
540 COMMERCIAL ST.
MANCHESTER, NEW HAMPSHIRE 03101

BY: NDC DATE: 1/23/15

GENERAL NOTES:

1) ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 525 OF THE STANDARD SPECIFICATIONS.
2) PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
3) ALL POST SHALL BE SET NORMAL TO GRADE. THE MAXIMUM CENTER TO CENTER SPACING OF BRIDGE RAIL POST IS 8' 3".
4) SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE POSTS AND PREFERABLY TO AT LEAST 4 POSTS.
5) RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPER STRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4"@ 68°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
6) STD. SPLICE HOLES ONLY IN BRIDGE RAIL TUBES. REST TO BE DRILLED BY CUSTOMER. FIELD DRILLED HOLES TO BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
7) BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
8) SEE STANDARD DRAWING G-I FOR DETAILS OF DELINEATORS. A DELINEATOR SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. 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 FOR DELINEATORS SHALL BE INCIDENTAL TO OTHER ITEMS.
9) ANY BENDING OF RAIL SHALL BE DONE AT THE FABRICATION PLANT ACCORDING TO A PROCEDURE PROVIDED BY THE FABRICATOR.
10) THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.
11) PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
12) THIS RAILING MEETS THE REQUIREMENTS FOR A TL-4 SERVICE LEVEL.

ITEM #: 525.335

SHEET 1 OF 2

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2"
DIAMETERS = ± 1/32"

BRIDGE RAIL DETAILS SHEET

TOWN HIGHWAY 65 (PALMER ROAD), CLASS 3 LOCAL ROAD - BRIDGE # 35
TOWN OF RANDOLPH, COUNTY OF ORANGE, VT.

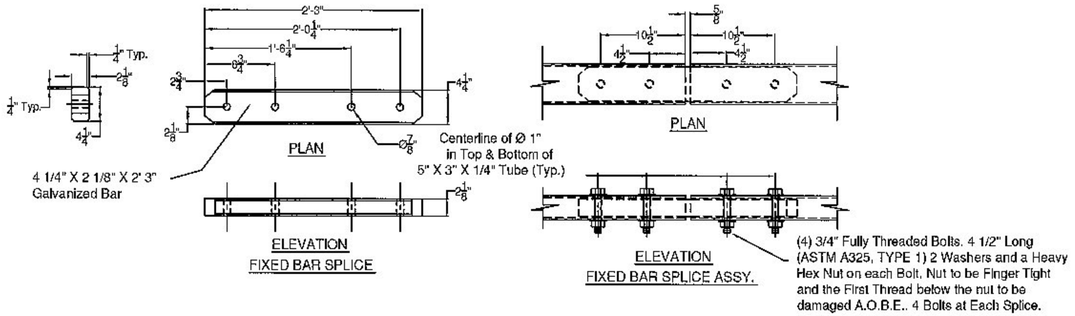
R E V	NO.	DATE	DESCRIPTION	BY
	1	1/14/15	REVISED PER 1/13/15 MARK-UP	E.P.

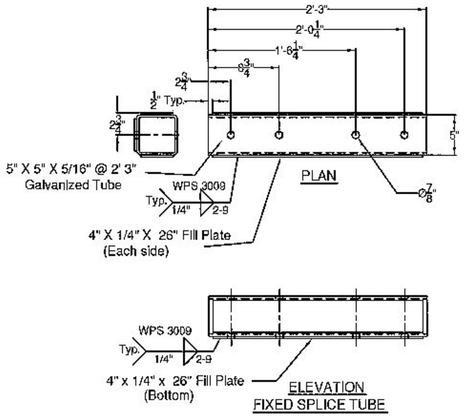
R E V	NO.	DATE	DESCRIPTION	BY

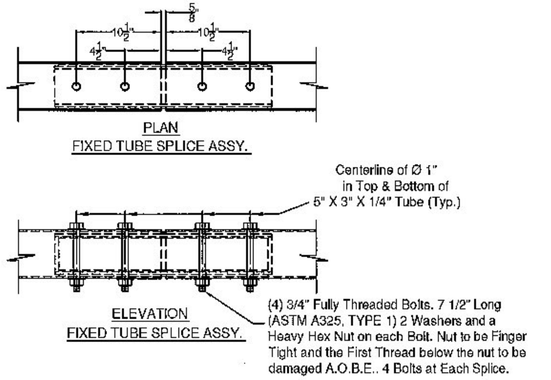
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com, epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6616

DRAWN	E.P.	12/10/14
CHECKED	D.L.	12/11/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LaFAYETTE-RANDOLPH	

SPLICE BAR - FIXED







SPLICE TUBE - FIXED

Vermont Agency of Transportation

RECEIVED

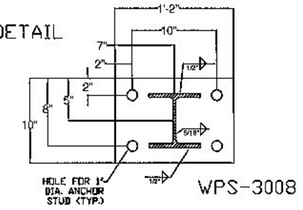
ON: January 22, 2015

and Checked for

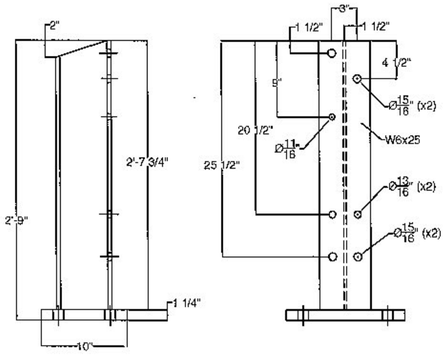
CONFORMANCE

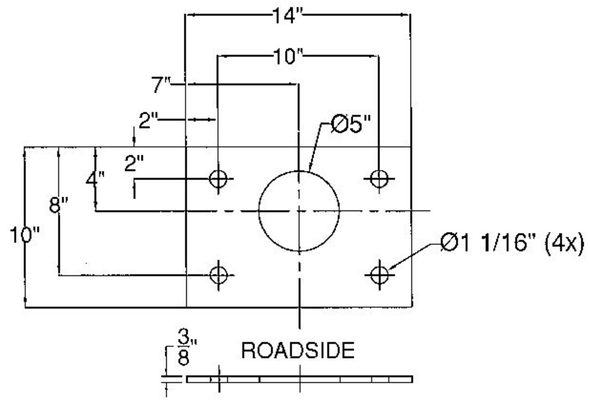
BY: T. A. Sumner DATE: 01/28/15

BRIDGE POST DETAIL

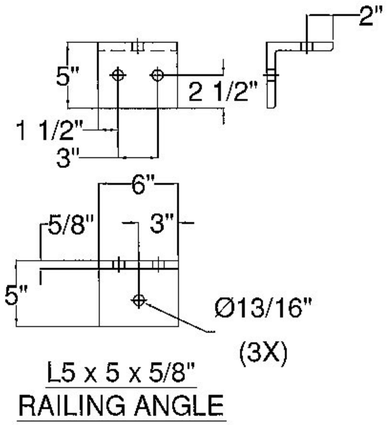


WPS-3008

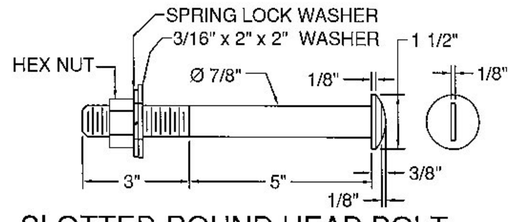




ANCHOR PLATE



L5 x 5 x 5/8"
RAILING ANGLE



SLOTTED ROUND HEAD BOLT

ITEM #: 525.335

SHEET 2 OF 2

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

BRIDGE RAIL DETAILS SHEET

TOWN HIGHWAY 65 (PALMER ROAD), CLASS 3 LOCAL ROAD - BRIDGE # 35
TOWN OF RANDOLPH, COUNTY OF ORANGE, VT.

R E V	NO.	DATE	DESCRIPTION	BY
	1	1/14/15	REVISED PER 1/13/15 MARK-UP	E.P.

R E V	NO.	DATE	DESCRIPTION	BY

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

CERTIFIED FABRICATOR

DRAWN	E.P.	12/10/14
CHECKED	D.L.	12/11/14
APPROVED	.	.
SCALE	SCHEMATIC	

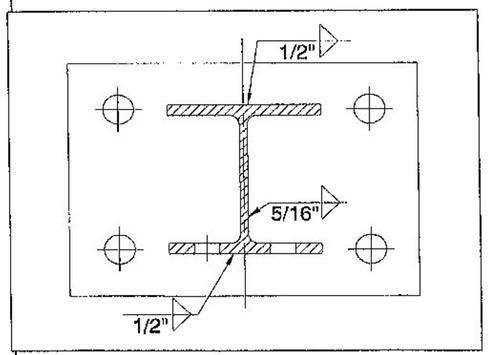
DRAWING NO. F.R. LAFAYETTE-RANDOLPH

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE#1

Material Specification	A572 GRD. 50 /A992-06a			
Welding Process	FCAW			
Manual or Machine	SEMAUTOMATIC			
Position of Welding	FLAT/HORIZONTAL			
Filler Metal Specification	A5.20			
Filler Metal Classification	E70 LINCOLN OUTERSHEILD			
Flux	N/A			
Shielding Gas	CO 2	Dew Point	-40DEG F	Flow Rate 50 CFM (45 TO 63 CFM)
Single or Multiple Pass	SINGLE			
Single or Multiple Arc	N/A			
Welding Current	DC			
Polarity	DCEP			
Welding Progression	STRINGER			
Root Treatment	PER D1.5			
Preheat and Interpass Temperature	PER D1.5			
Postheat Temperature	NONE			
Heat Input	Min		Max	

WELDING PROCEDURE

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

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

Procedure No. 3008

Revision No.

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

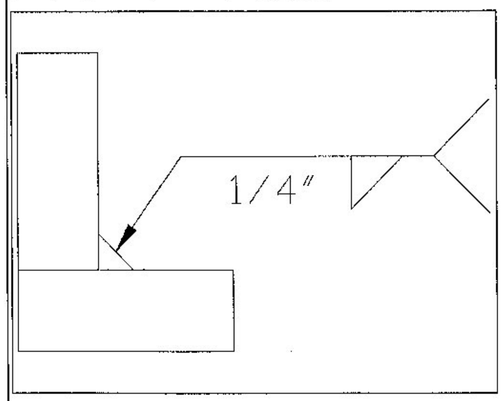
Date 5/29/2013

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

Material Specification	A709 TO A500 GR B
Welding Process	FCAW-G
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT/HORIZONTAL
Filler Metal Specification	A5.29
Filler Metal Classification	E81T1-NI1C-JH4
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE ELECTRODE POSITIVE
Welding Progression	STRINGER
Root Treatment	D1.5
Preheat and Interpass Temperature	D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	310	25	11	
Variable	LIMITS	341 TO 269	27 TO 23	12 TO 10	

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

Procedure No. 3009

Revision No. _____

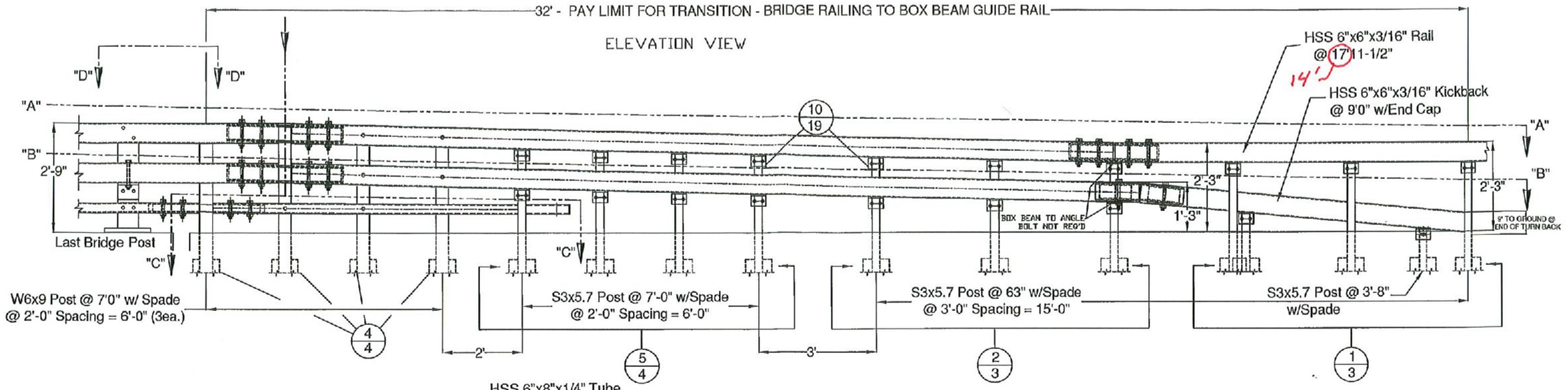
Contractor Elderlee, Inc.

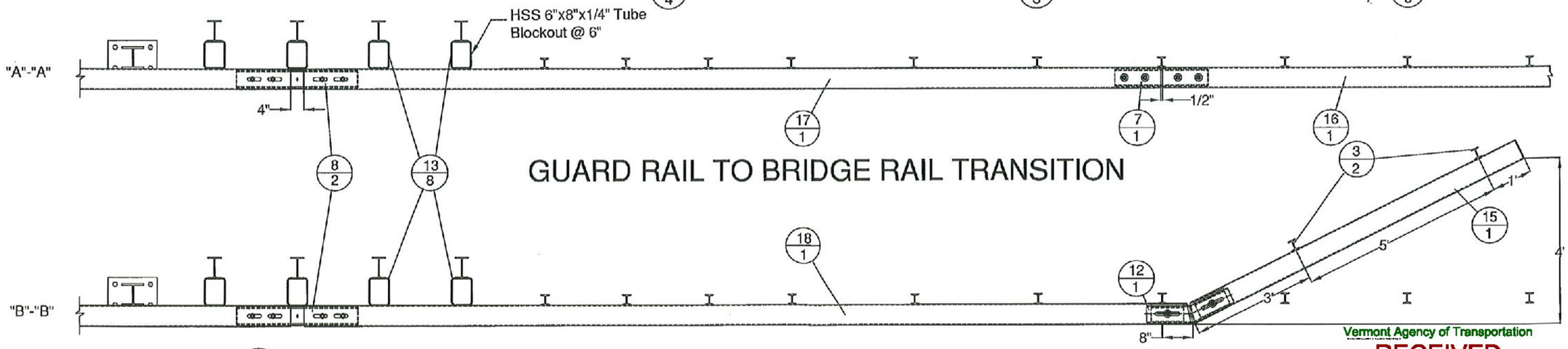
Authorized By RANDY SCOTT

Date 3/20/2014

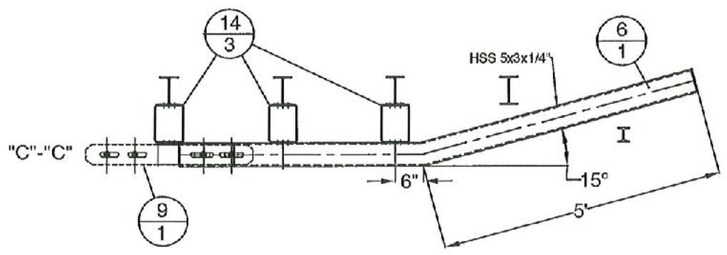
32' - PAY LIMIT FOR TRANSITION - BRIDGE RAILING TO BOX BEAM GUIDE RAIL

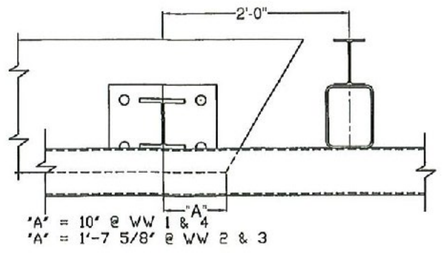
ELEVATION VIEW





GUARD RAIL TO BRIDGE RAIL TRANSITION





VIEW "D"-"D"

Vermont Agency of Transportation
RECEIVED
ON: January 22, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 01/28/15

ITEM #: 621.725

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

SHEET 1 OF 5

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 65 (PALMER ROAD), CLASS 3 LOCAL ROAD - BRIDGE #35
PROJECT: BRO 1444(57), TOWN OF RANDOLPH, COUNTY OF ORANGE, VT.

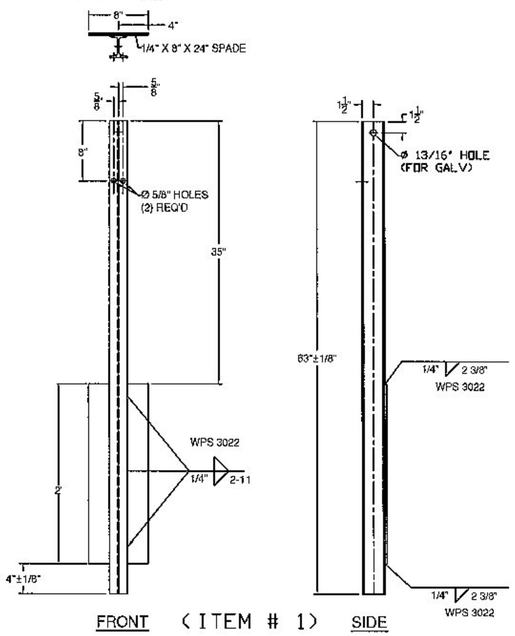
REVISIONS	NO.	DATE	DESCRIPTION	BY	NO.	DATE	DESCRIPTION	BY

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

NCERTIFIED STEEL FABRICATOR

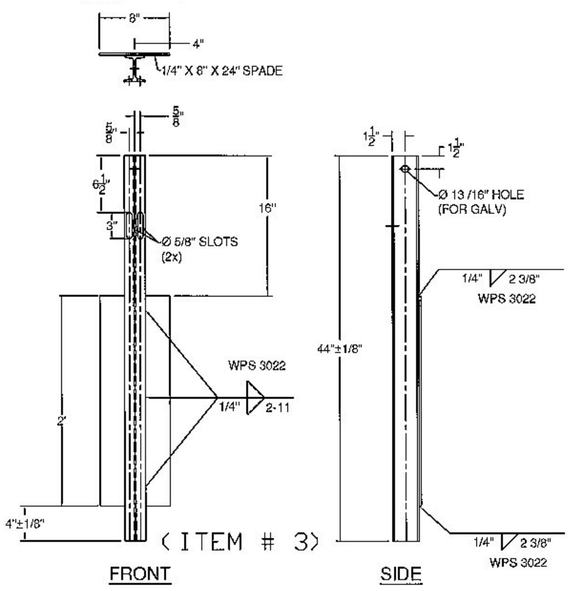
DRAWN	E.P.	12/12/14
CHECKED	D.L.	12/15/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-RANDOLPH-T	

PLAN VIEW



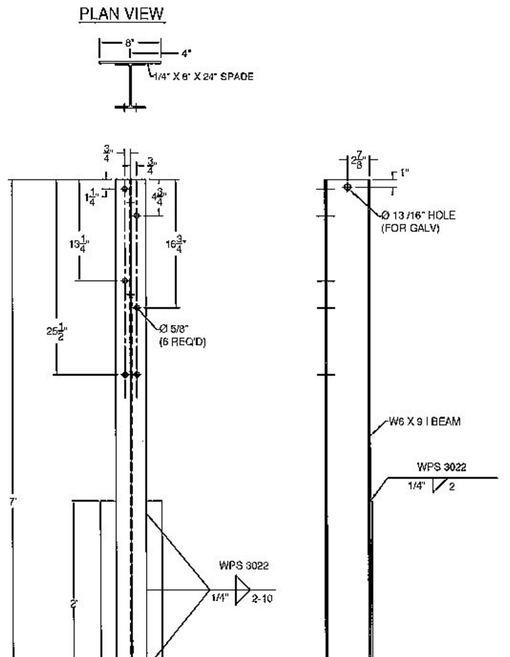
FRONT (ITEM # 1) SIDE

PLAN VIEW



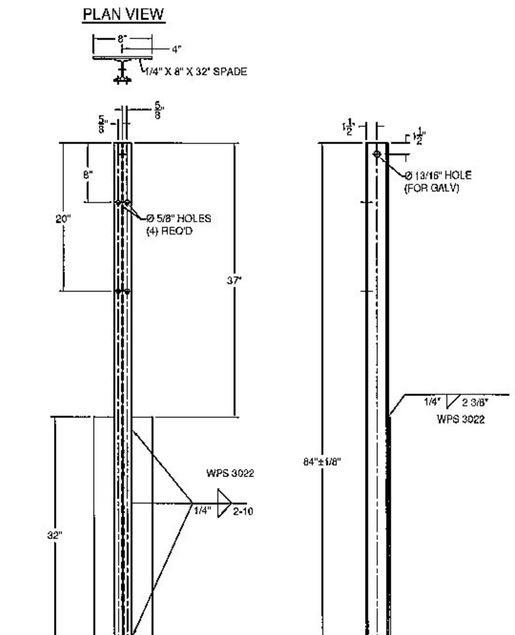
FRONT (ITEM # 3) SIDE

PLAN VIEW



FRONT (ITEM # 4) SIDE

PLAN VIEW

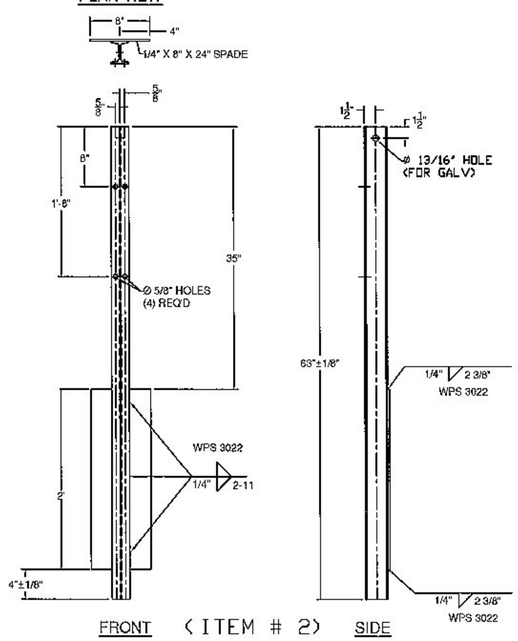


FRONT (ITEM # 5) SIDE

GENERAL NOTES:

1) ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 525 OF THE STANDARD SPECIFICATIONS.
2) BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
3) PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
4) BOX BEAM TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.
5) ANY BENDING OF RAIL SHALL BE DONE AT THE FABRICATION PLANT. RADII GREATER THAN 16' TO BE CURVED ON A TUBE BENDING MACHINE, RADII LESS THAN 16' TO BE "PIE CUT" AND WELDED. CURVED RAILING WILL HAVE AN 18" LENGTH ON EACH END STRAIGHT TO ACCOMADATE SPLICES. "PIE CUTS ARE LOCATED SO AS TO NOT CONFLICT WITH POST FASTENING HOLES. PIE CUTS WILL BE WELDED ACCORDING TO PROCEDURE WPS-3026.

PLAN VIEW



FRONT (ITEM # 2) SIDE

BILL OF MATERIALS (EACH CORNER)

ITEM #	QTY.	COMPONENT #	DESCRIPTION	MATERIAL (ASTM)
1	3	0013.57021	3' I-POST, PUNCH 8' W/SPD @ 63' LG	ASTM A572 Gr. 50
2	3	0013.57025	3' I-POST, PUNCH 8', & 20' W/SPD @ 63' LG	ASTM A572 Gr. 50
3	2	0013.57060	3' I-END POST W/SPD @ 3'-8' LG	ASTM A572 Gr. 50
4	4	0013.09001	W6X9 POST @ 7' W/SPD & 5/8' HOLES	ASTM A572 Gr. 50
5	4	0013.57010	3' I-POST, PUNCH 8' & 20', W/8X32' SPADE @7'	ASTM A572 Gr. 50
6	1	0033.80403	3X5' BTM TRANS RAIL W/5'-0" KB, EXP END	A500 Gr. B
7	1	0033.00640	HSS 5X5 TUBE SPLICE @27' LG W/ 1/4' SHIMS	A500 Gr. B / A572 Gr 50
8	2	0033.00730	HSS 5x5 EXP TUBE SPLICE @ 36' LG W/ 1/4' SHIMS	A500 Gr. B / A572 Gr 50
9	1	0033.00930	BR EXP BAR SPLICE 2-1/8' X 4-1/4' @ 36' LG	ASTM A572 Gr. 50
10	19	0054.00050	REG BB SHELF ANGLES @ 4-1/2'	ASTM A36
12	1	0054.00074	HSS 5X5 DBL BEND TUBE SPL @ 27' LG,	A500 Gr. B / A572 Gr 50
13	8	0054.00563	6X8' TRANS. TUBE B/O @ 6' LG	A500 Gr. B
14	3	0054.00565	6X8' TRANS. TUBE B/O @ 3' LG	A500 Gr. B
15	1	0054.09000	6X6' BB @ 9'-0' KICKBACK, W/ CAP, & 13° MITER	A500 Gr. B / A36
*16	0.5	0054.18000	6X6' BB @ 14'-11 1/2', DRILL 3' CC	A500 Gr. B
*17	1	0054.90092	6X6' BB TOP TRANS @ 20'-9 5/8' LG W/EXP END	A500 Gr. B
*18	1	0054.90093	6X6' BB BTM TRANS @ 21'-4 5/8' LG W/EXP END	A500 Gr. B
19	18	0080.03355	3/8' X 7 1/2' BOLT, NUT, & 2 FW	A307, A563, F436
20	19	0080.04100	1/2' x 1-1/2' BOLT, NUT, & FW	A307, A563, F436
21	22	0080.04120	1/2' x 1-1/2' BOLT, NUT, 2 FW & LW	A307, A563, F436
22	4	0080.06255	3/4' X 4-1/2' BOLT, NUT, 2 FW	A325, A563, F436
23	12	0080.06340	3/4' X 7-1/2' BOLT, NUT, 2 FW	A325, A563, F436
24	6	0080.06370	3/4' X 8' CARR BOLT, NUT, FW & LW	A307, A563, F436
25	2	0080.06400	3/4' X 8' BOLT, NUT, 2 FW, & LW	A325, A563, F436

* WW3 - ITEMS 16, 17, & 18 - FACE OF RAIL TO HAVE 110° CONCAVE RADIUS
* WW4 - ITEMS 16, 17, & 18 - FACE OF RAIL TO HAVE 50° CONVEX RADIUS

HARDWARE NOTES

ITEM #	FUNCTION
19	BOLT RAIL TO SHELF ANGLE (ITEM #10)
20	BOLT SHELF ANGLE (ITEM #'S 10 & 11) TO POST
21	BOLT BLOCK-OUTS (ITEM #'S 13 & 14) TO HEAVY POST
22	(4) PER SPLICE BAR (ITEM #9)
23	(4) PER SPLICE TUBING (ITEM #'S 7 & 8)
24	BOLT RAIL (ITEMS #'S 6,17, & 18 TO BLOCK-OUTS (ITEM #'S 13 & 14) [WHERE FASTENED]
25	BOLT DOUBLE BEND SPLICE TUBE (ITEM #12) TO RAIL (ITEM #18) & KICKBACK (ITEM #15)

Vermont Agency of Transportation
RECEIVED
ON: January 22, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 01/28/15

ITEM #: 621.725

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

SHEET 2 OF 5

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

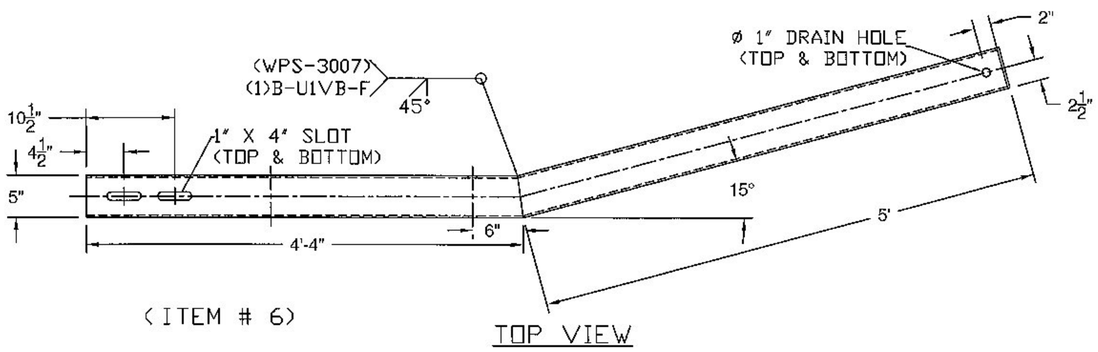
TOWN HIGHWAY 65 (PALMER ROAD), CLASS 3 LOCAL ROAD - BRIDGE # 35
PROJECT: BRO 1444(57), TOWN OF RANDOLPH, COUNTY OF ORANGE, VT.

R E V	NO.	DATE	DESCRIPTION	BY	R E V	NO.	DATE	DESCRIPTION	BY

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

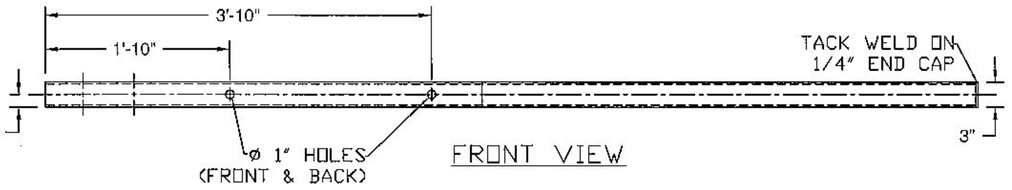
CERTIFIED FABRICATOR

DRAWN	E.P.	12/12/14
CHECKED	D.L.	12/15/14
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-RANDOLPH-T	

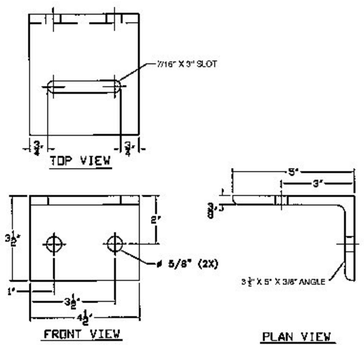


(ITEM # 6)

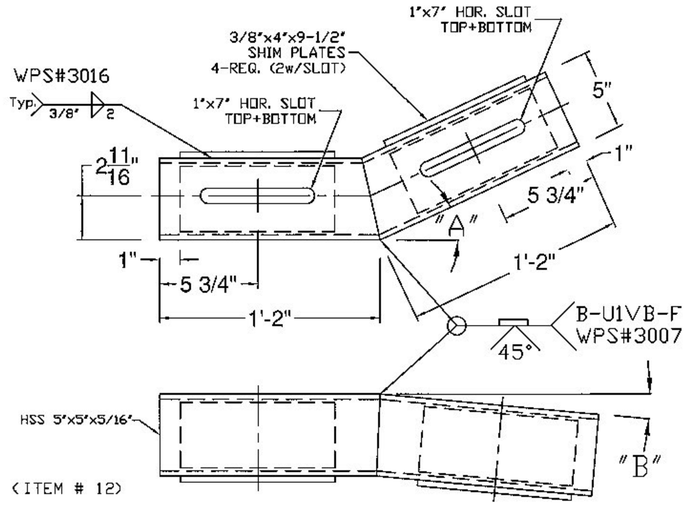
TOP VIEW



FRONT VIEW



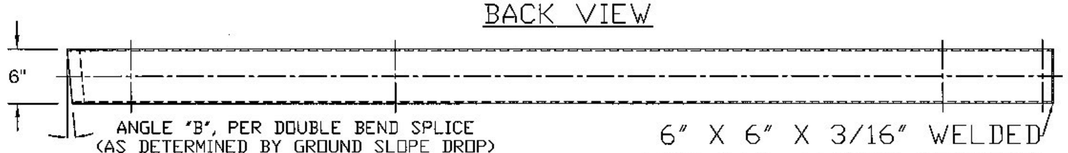
(ITEM # 10)



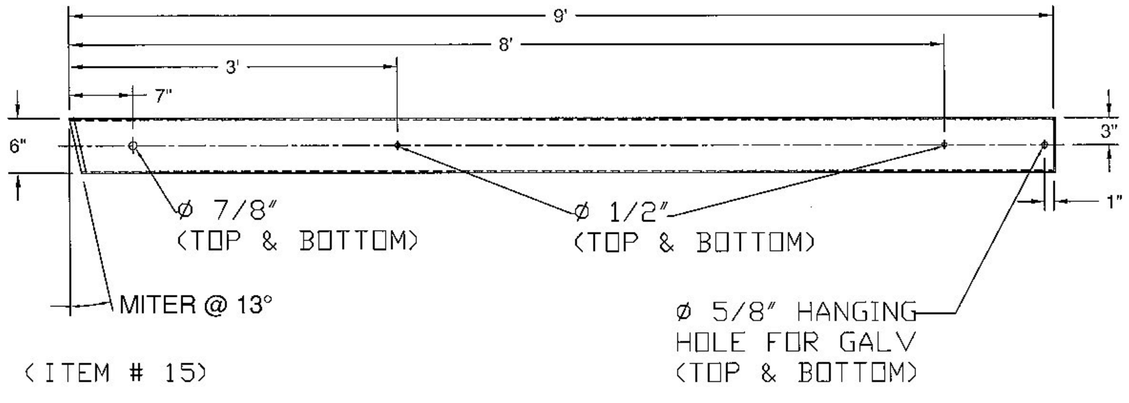
(ITEM # 12)

"A" - 26°
"B" - TURN DOWN ANGLE SET BY THE 9" MEASURMENT AT THE END OF THE BOX BEAM.

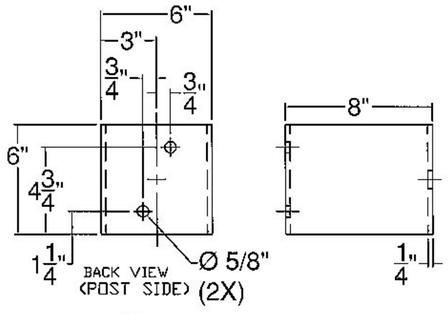
BACK VIEW



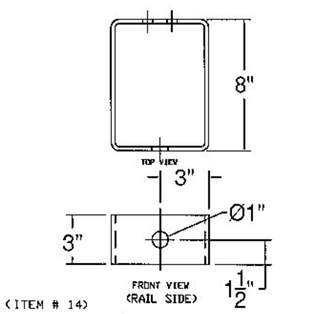
TOP VIEW



(ITEM # 15)



(ITEM # 13)



(ITEM # 14)

Vermont Agency of Transportation

RECEIVED

ON: January 22, 2015

and Checked for

CONFORMANCE

BY: T. A. Sumner DATE: 01/28/15

ITEM #: 621.725

SHEET 3 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 65 (PALMER ROAD), CLASS 3 LOCAL ROAD - BRIDGE # 35
PROJECT: BRO 1444(57), TOWN OF RANDOLPH, COUNTY OF ORANGE, VT.

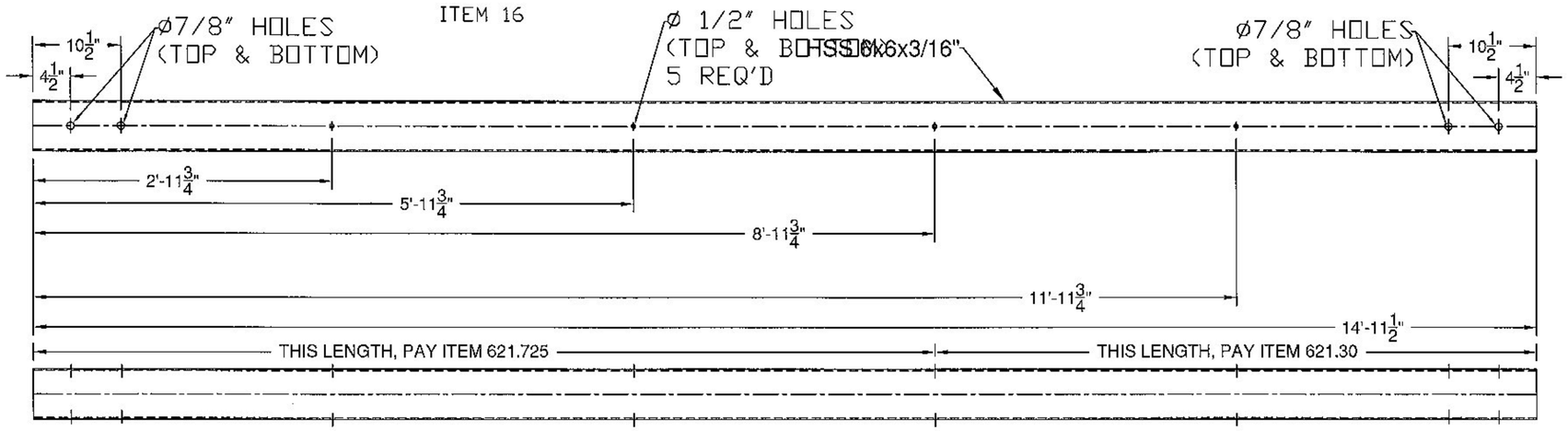
REV	NO.	DATE	DESCRIPTION	BY	REV	NO.	DATE	DESCRIPTION	BY

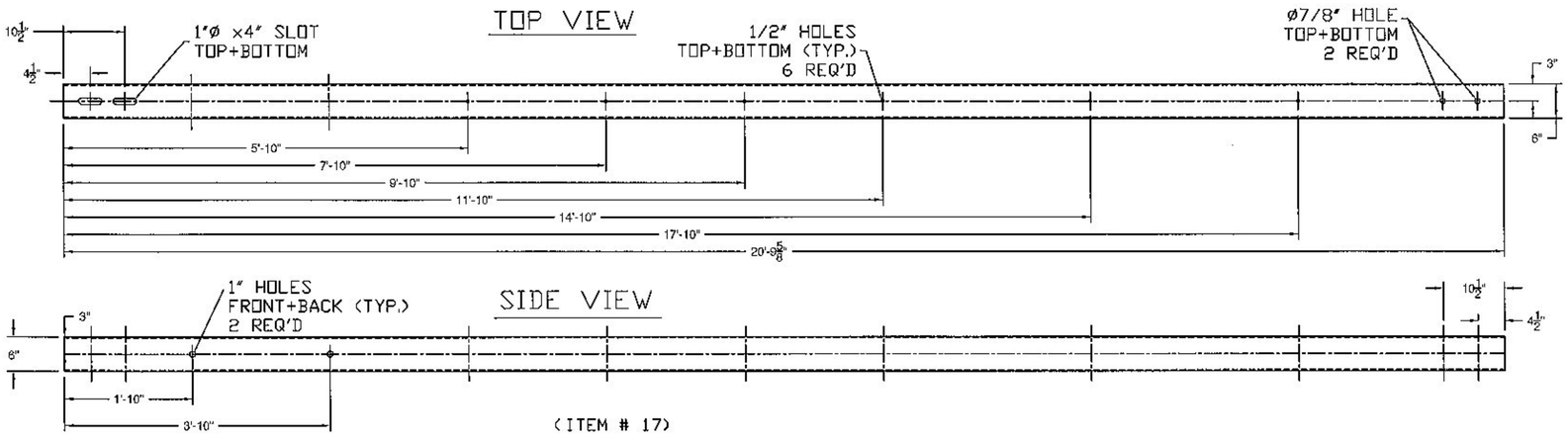
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-788-6615

CERTIFIED FABRICATOR

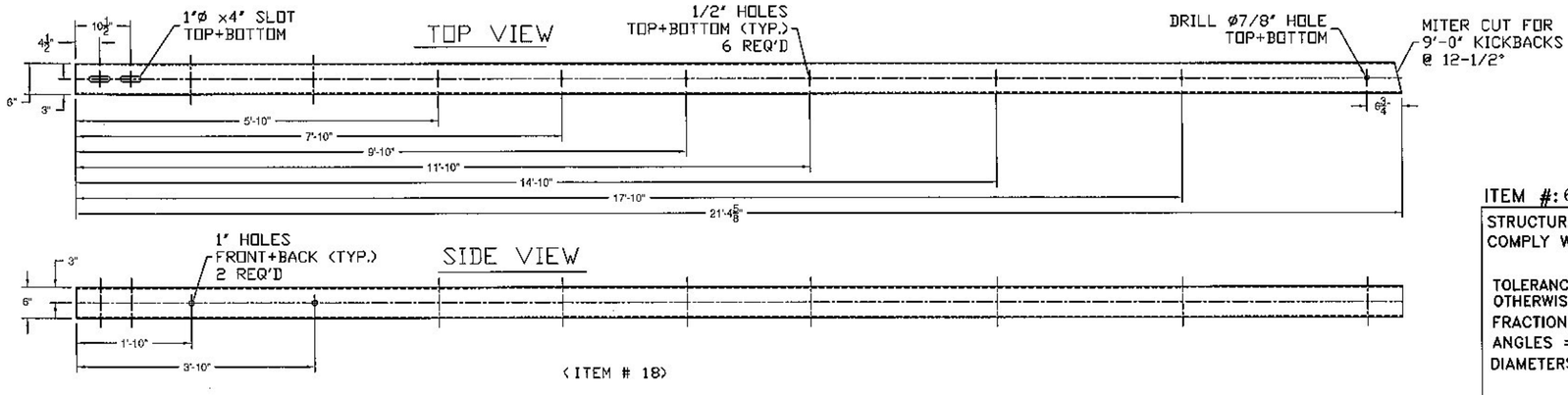
DRAWN	E.P.	12/12/14
CHECKED	D.L.	12/15/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-RANDOLPH-T	

ITEM 16





(ITEM # 17)



(ITEM # 18)

Vermont Agency of Transportation

RECEIVED

ON: January 22, 2015

and Checked for

CONFORMANCE

BY: T. A. Sumner DATE: 01/28/15

ITEM #: 621.725

SHEET 4 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 65 (PALMER ROAD), CLASS 3 LOCAL ROAD - BRIDGE # 35
PROJECT: BRO 1444(57), TOWN OF RANDOLPH, COUNTY OF ORANGE, VT.

R E V	NO.	DATE	DESCRIPTION	BY

R E V	NO.	DATE	DESCRIPTION	BY

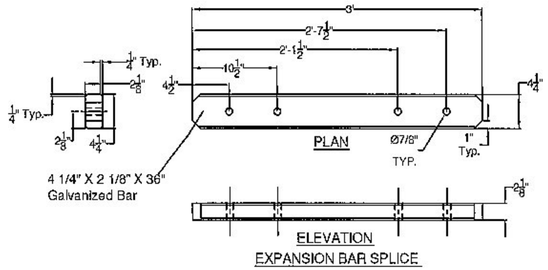
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

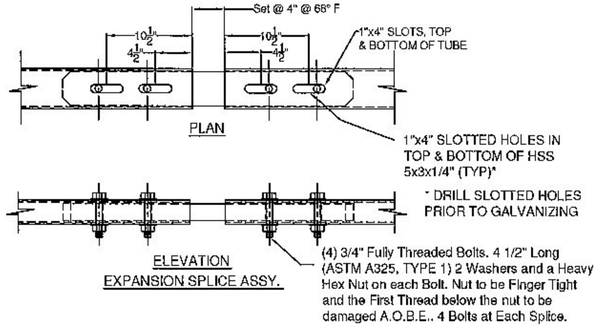
AISC CERTIFIED FABRICATOR

DRAWN	E.P.	12/12/14
CHECKED	D.L.	12/15/14
APPROVED		
SCALE	SCHEMATIC	

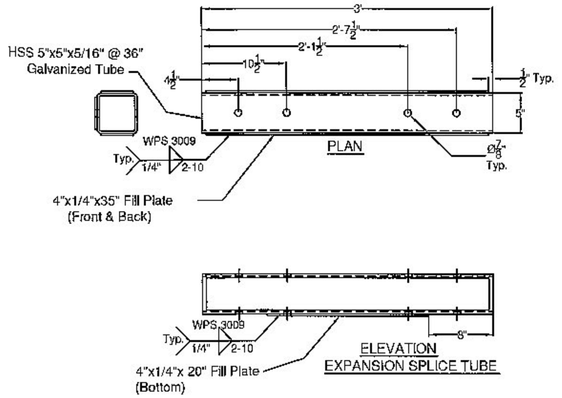
DRAWING NO. F.R.L.-RANDOLPH-T

SPLICE BAR - EXPANSION

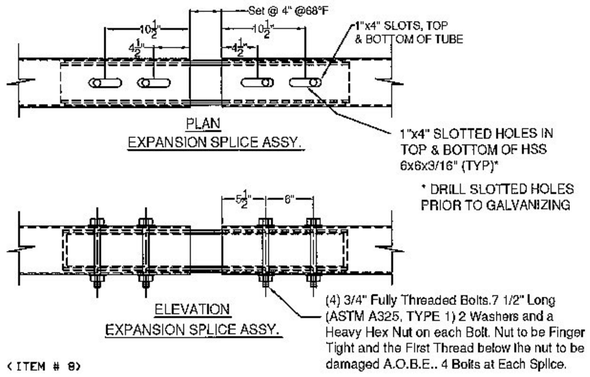




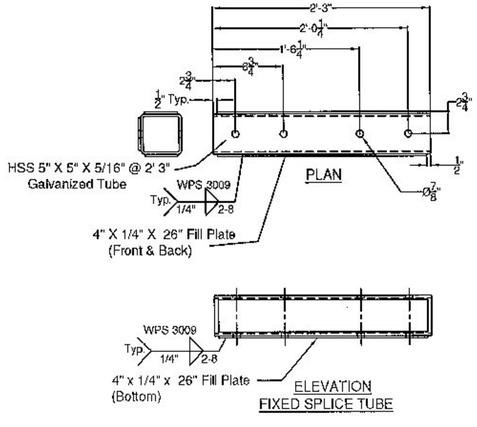
(ITEM # 9)

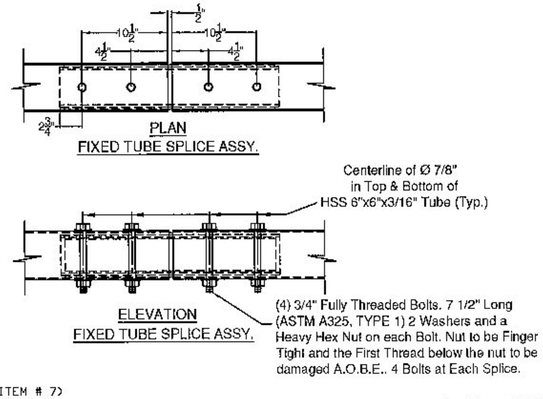


SPLICE TUBE - EXPANSION



(ITEM # 8)





(ITEM # 7)

SPLICE TUBE - FIXED

Vermont Agency of Transportation

RECEIVED

ON: January 22, 2015

and Checked for

CONFORMANCE

BY: T. A. Sumner DATE: 01/28/15

ITEM #: 621.725

SHEET 5 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 65 (PALMER ROAD), CLASS 3 LOCAL ROAD - BRIDGE # 35

PROJECT: BRO 1444(57), TOWN OF RANDOLPH, COUNTY OF ORANGE, VT.

REV	NO.	DATE	DESCRIPTION	BY	REV	NO.	DATE	DESCRIPTION	BY

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

NYSDOT CERTIFIED FABRICATOR

DRAWN	E.P.	12/12/14
CHECKED	D.L.	12/15/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-RANDOLPH-T	

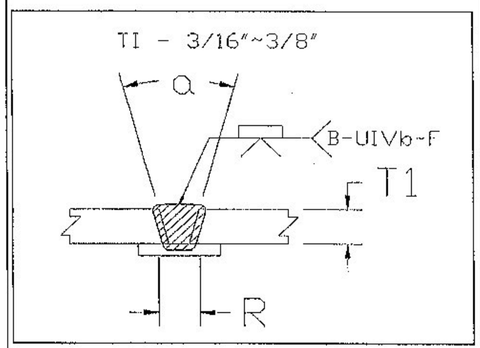
WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE#3

Material Specification	A500 GR B to A572 GR 50		
Welding Process	FCAW-G		
Manual or Machine	SEMAUTOMATIC		
Position of Welding	FLAT/HORIZONTAL		
Filler Metal Specification	A5.29		
Filler Metal Classification	E81T1-NI1C-JH4		
Flux	N/A		
Shielding Gas	CO 2	Dew Point -40DEG F Flow Rate 50CFH	
Single or Multiple Pass	SINGLE		
Single or Multiple Arc	SINGLE		
Welding Current	DC		
Polarity	REVERSE ELECTRODE POSITIVE		
Welding Progression	STRINGER		
Root Treatment	PER D1.5		
Preheat and Interpass Temperature	PER D1.5		
Postheat Temperature	NONE		
Heat Input	Min	Max	

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	310	25	11	
Variable	LIMITS	341 TO 269	27 TO 23	12 TO 10	



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

Procedure No. 3007

Revision No.

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

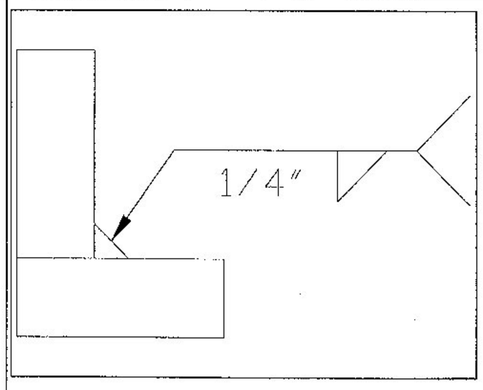
Date 7/28/2014

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

Material Specification	A709 TO A500 GR B		
Welding Process	FCAW-G		
Manual or Machine	SEMAUTOMATIC		
Position of Welding	FLAT/HORIZONTAL		
Filler Metal Specification	A5.29		
Filler Metal Classification	E81T1-Ni1C-JH4		
Flux	N/A		
Shielding Gas	CO 2	Dew Point -40DEG F Flow Rate 50CFH	
Single or Multiple Pass	SINGLE		
Single or Multiple Arc	SINGLE		
Welding Current	DC		
Polarity	REVERSE ELECTRODE POSITIVE		
Welding Progression	STRINGER		
Root Treatment	D1.5		
Preheat and Interpass Temperature	D1.5		
Postheat Temperature	NONE		
Heat Input	Min	Max	

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	310	25	11	
Variable	LIMITS	341 TO 269	27 TO 23	12 TO 10	

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

Procedure No. 3009

Revision No.

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

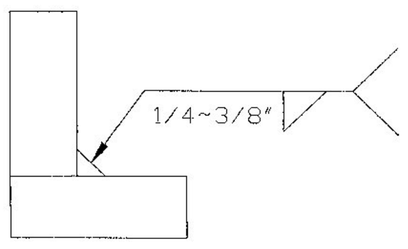
Date 3/20/2014

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

Material Specification	A500 TO A572 GR 50
Welding Process	FCAW-G
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT/HORIZONTAL
Filler Metal Specification	A5.29
Filler Metal Classification	E81T1-Ni1C-JH4
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE
Welding Progression	STRINGER
Root Treatment	PER D1.5
Preheat and Interpass Temperature	PER D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	310	25	11	
Variable	LIMITS	341 TO 269	27 TO 23	12 TO 10	

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

Procedure No. 3016

Revision No. _____

Contractor Elderlee, Inc.

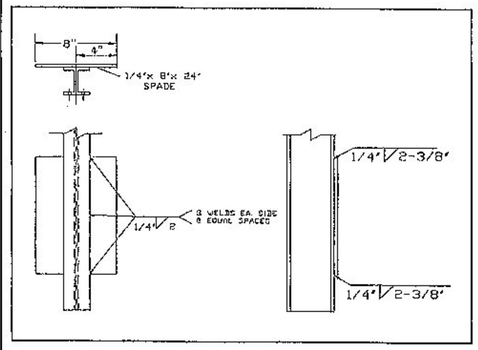
Authorized By RANDY SCOTT

Date 8/4/2014

WELDING PROCEDURE SPECIFICATION

Material Specification	A572 GR 50	
Welding Process	GMAW	
Manual or Machine	SEMIAUTOMATIC/ROBOTIC	
Position of Welding	FLAT/HORIZONTAL	
Filler Metal Specification	A5.18	
Filler Metal Classification	L-56	LINCOLN
Flux	N/A	
Shielding Gas	90% ARGON /10% CO2	Dew Point -40DEG F Flow Rate 45CFH
Single or Multiple Pass	SINGLE	
Single or Multiple Arc	SINGLE	
Welding Current	DC	
Polarity	REVERSE	
Welding Progression	STRINGER	
Root Treatment	PER D1.5	
Preheat and Interpass Temperature	PER D1.5	
Postheat Temperature	NONE	
Heat Input	Min	Max

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current		Travel speed	Joint detail
		Amperes	Volts		
	.045	190	22	19	
Variable	LIMITS	171 TO 209	20 TO 24	17 TO 21	

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

Procedure No. 3022

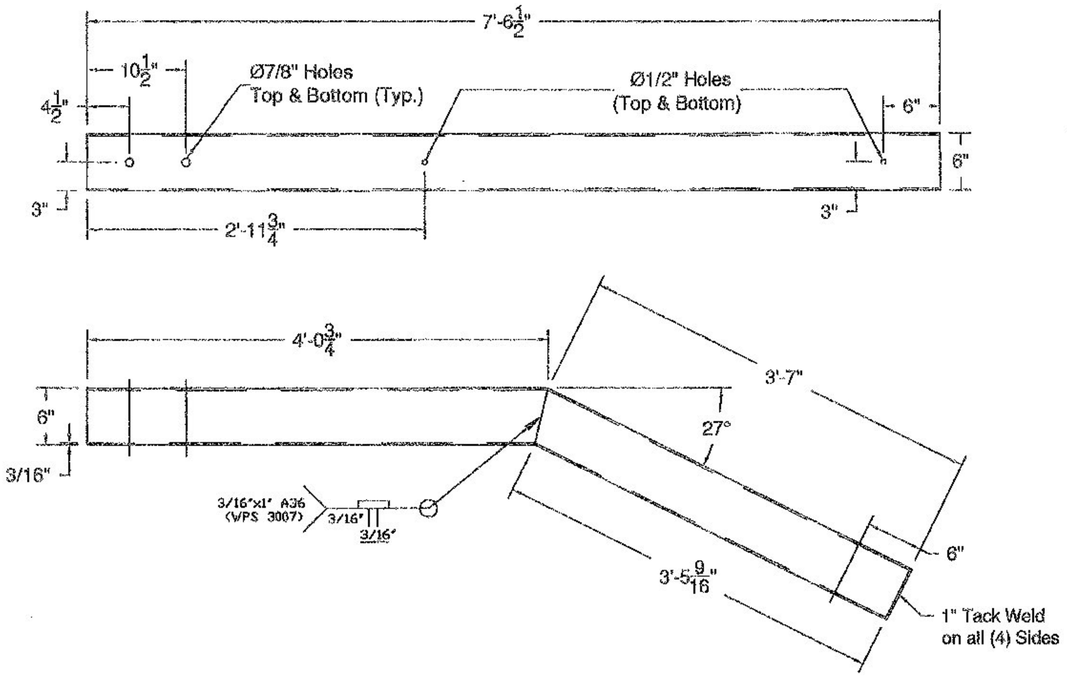
Revision No.

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

Date 3/20/2014

6"x6"x3/16" Tube Prior to Miter Cut (Miter @ 13.5 Degrees)



VAULT - Typical End Section (G1-b)			
QTY.	PART #	DESCRIPTION	MATERIAL (ASTM)
1		6" x 6" x 3/16" TUBE @ 7'6-1/2"	A500 Gr. B
2	0053.99001	3/16" x 1" x 5 1/8" BACKER	A36
2	0053.99002	3/16" x 1" x 5 1/8" BACKER, W/ 21° BEND	A36
1	0053.00061	6" x 6" END CAP W/ CUT CORNERS	A36/A709 CVN

MATERIAL: PER COMPONENT LIST
GALVANIZE: ASTM A123
WEIGHT (BLACK): 112 Lbs.

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

REV	NO.	DATE	DESCRIPTION	BY

REV	NO.	DATE	DESCRIPTION	BY

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°

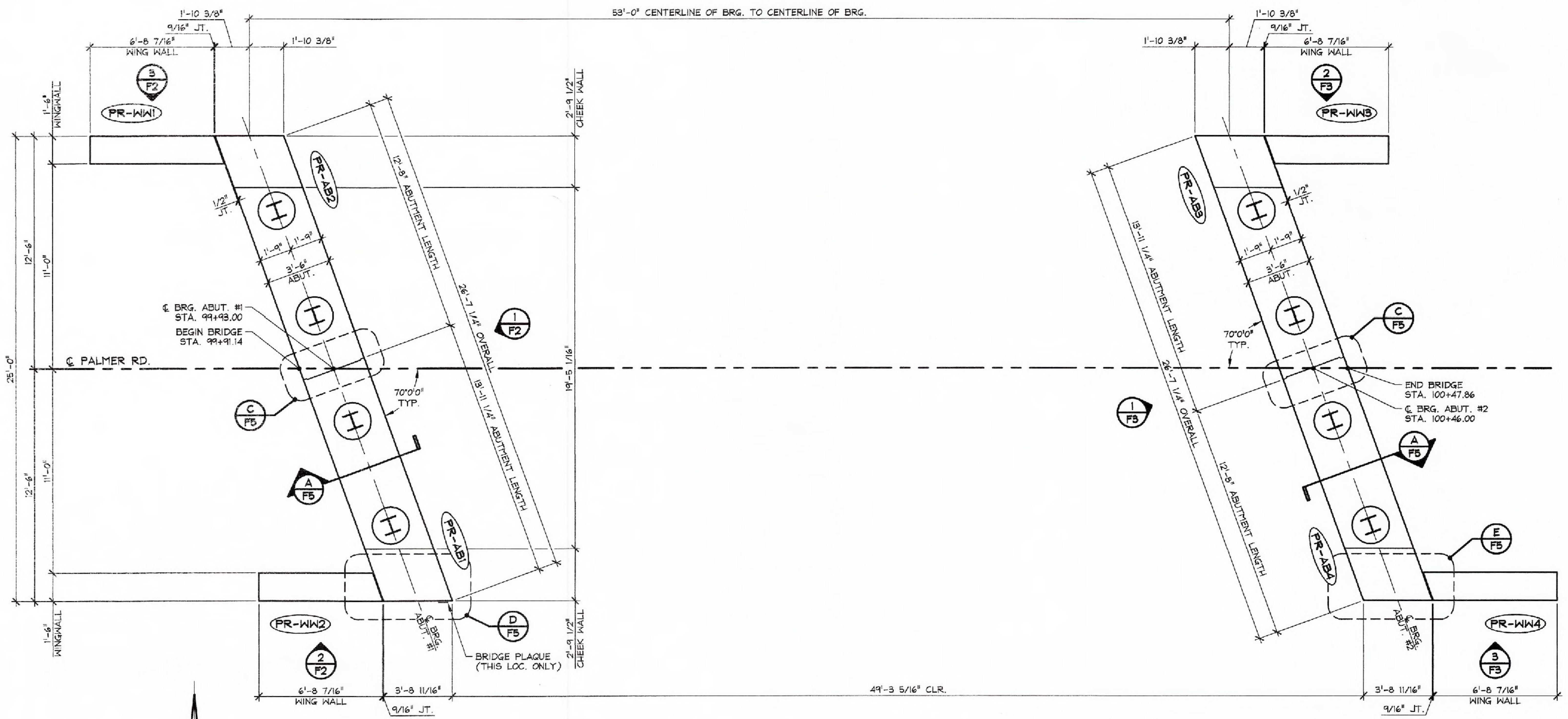
ORTHOGRAPHIC PROJECTION

ACTIVE MEMBER

DRAWN	D.L.	07/24/14
CHECKED	E.P.	07/24/14
APPROVED		

Typical 6"x6"x3/16" End Section (Vermont)

DRAWING NO. 0054.01001



1 / F1 PRECAST ABUTMENT LAYOUT
1/4" = 1'-0"

ABUTMENT & WING WALL GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 5,000 PSI.
2. MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 3,500 PSI (UNLESS NOTED OTHERWISE).
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL I (EPOXY COATED) OR LEVEL I (BLACK STEEL) (AS NOTED ON SHOP DRAWINGS).
4. THE TOP OF ABUTMENTS SHALL RECEIVE A RAKE FINISH ROUGHENED TO 1/4" AMPLITUDE (UNLESS NOTED OTHERWISE).
5. THE TOP OF WING WALLS SHALL RECEIVE A SMOOTH SCREED FINISH (UNLESS NOTED OTHERWISE).
6. PRECAST CONCRETE UNITS SHALL BE HANDLED AND ERECTED USING THE LIFTING INSERTS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. NON-PRESTRESSED UNITS SHALL BE STORED & TRANSPORTED WITH TIMBER SUPPORTS AT 5th POINTS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
7. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. P510.02 AND P510.05 RESPECTIVELY.

   DESIGN MIX:

   WING WALLS: J.P.C. BRIDGE MIX #445MSCC

   ABUTMENTS: J.P.C. BRIDGE MIX #445MSCC
8. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
9. CURING METHOD: AS SOON AS THE TOP OF PRECAST CONCRETE UNITS ARE FINISHED, A COVER OF POLY WILL BE PLACED OVER THE UNIT. NATURAL CURE WITH NO EXTERNAL HEAT APPLIED.
10. ABUTMENT POST-TENSIONING SEQUENCE:
    A. ERECT PRECAST CONCRETE ABUTMENTS, AND POST-TENSION CENTER TENDON TO APPROXIMATELY 5,000 LBS.
    B. GROUT SHEAR KEY.
    C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI; POST-TENSION TENDONS TO 32,000 LBS.

Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW

☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

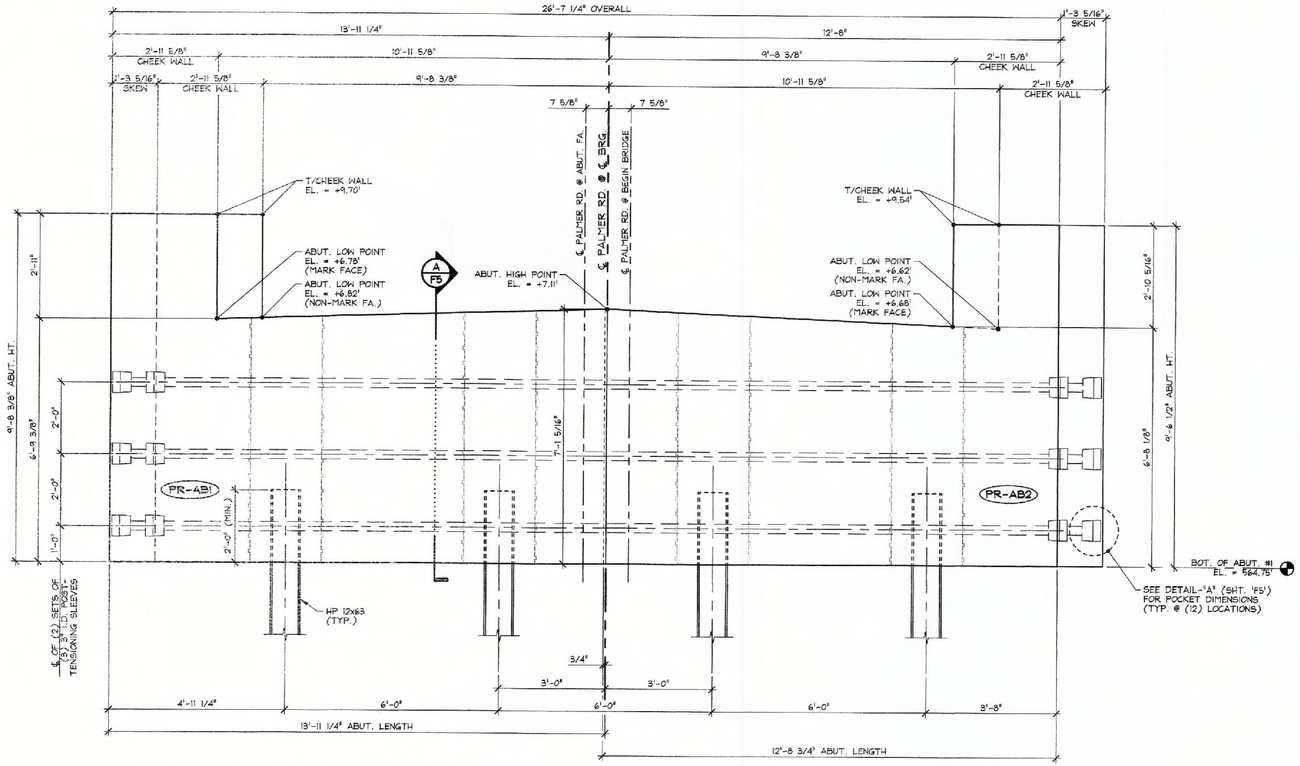
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS: SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION: COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES: AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers, Inc.
540 Commercial Street
Manchester, NH 03101
603-668-8223

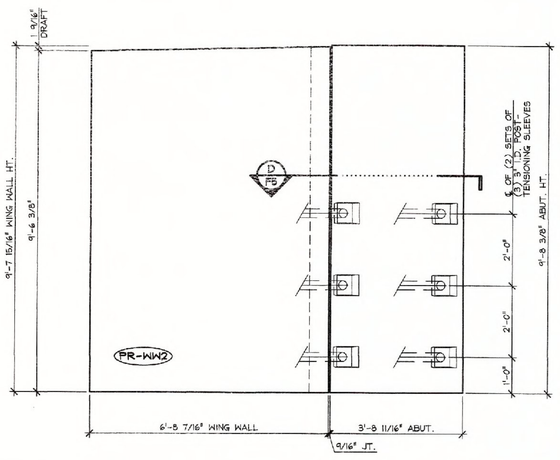
Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	J.P. SICARD, INC. CONTRACTOR BARTON, VERMONT
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF ORANGE	DATE: NOV. 18, 2014 SCALE: NOTED
	TOWN OF RANDOLPH TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)	CHKD: B.C. DFTM: B.L. JOB NO: 23449-014
	PRECAST ABUTMENT & WING WALL LAYOUT	DWG. NO: F1

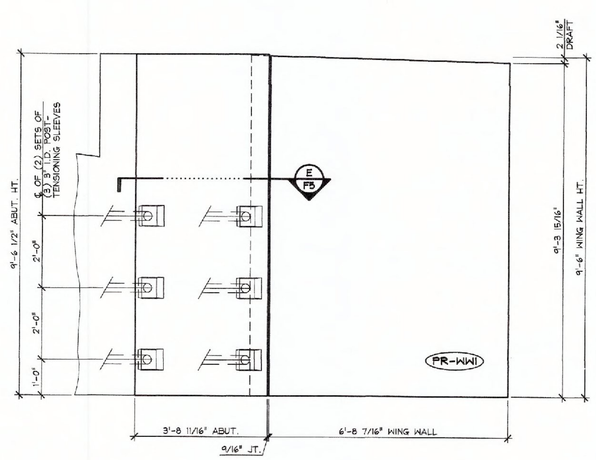
F:\VT-Bridges\23449-14 Randolph\23449-F1.dwg, 1/19/2015 3:22:32 PM



1 / F2 ABUTMENT #1 ELEVATION
1/2" = 1'-0"



2 / F2 WING WALL ELEVATION "PR-WW2"
1/2" = 1'-0"



3 / F2 WING WALL ELEVATION "PR-WW1"
1/2" = 1'-0"

Vermont Agency of Transportation

RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW

☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

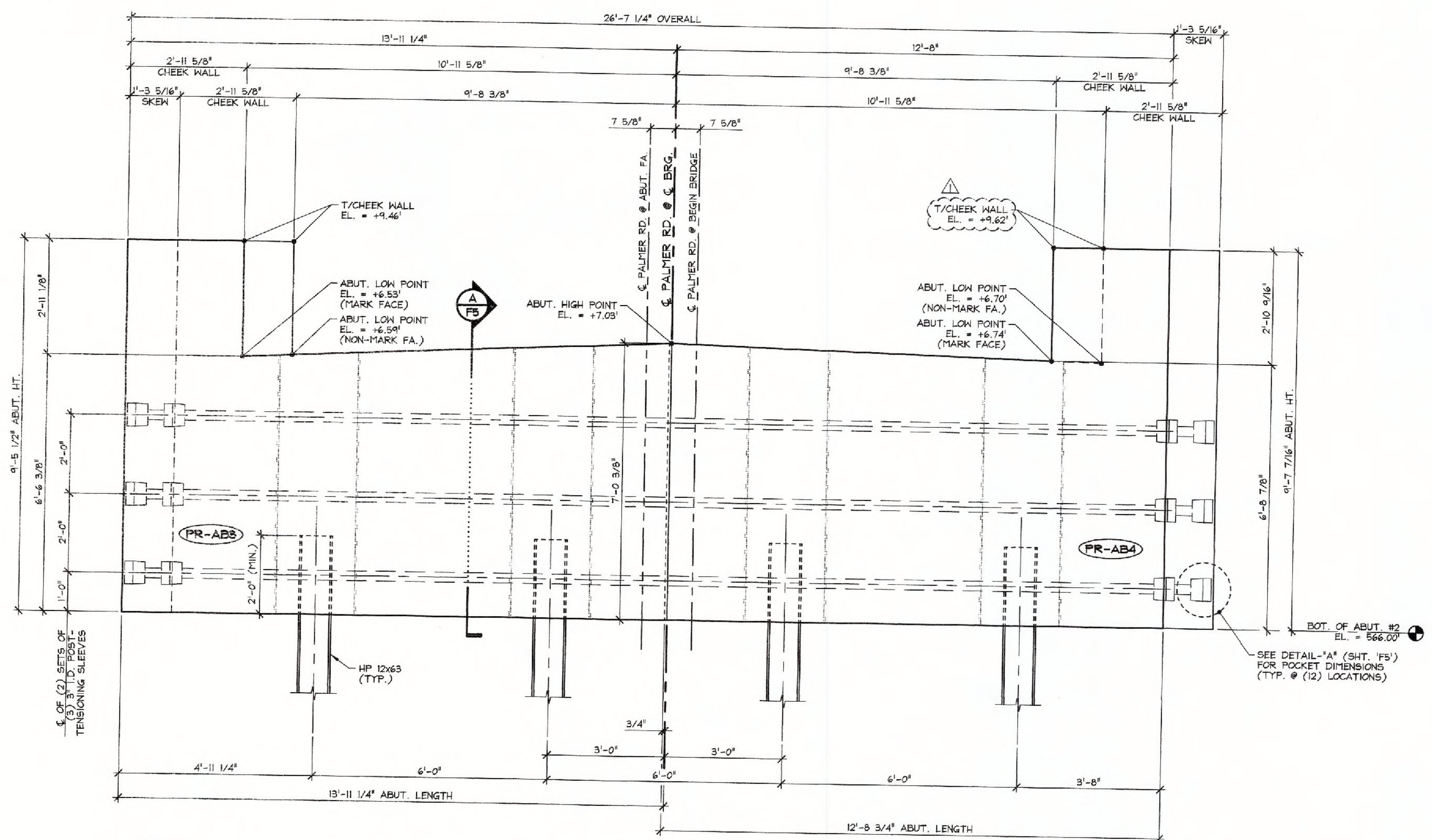
SLC Consulting Engineers, Inc. 240 Commercial Street Manchester, NH 03101 603-668-8223

Job Number: 12-0175
Reviewed By: MBC
Date: 2/20/15

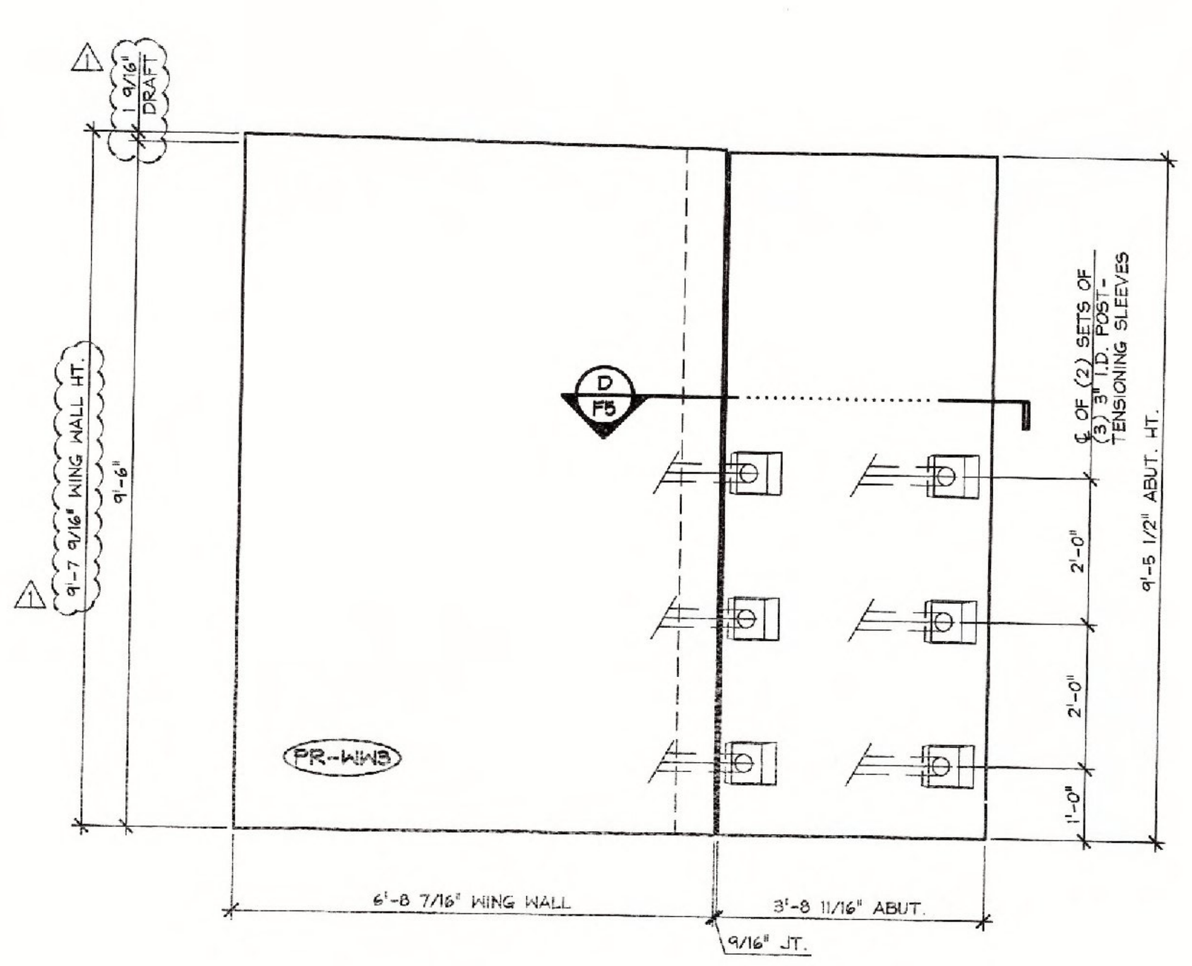
APPROVAL STAMP:

J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2484 OAK STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	J.P. SICARD, INC. CONTRACTOR BARTON, VERMONT	
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF ORANGE	DATE: NOV. 18, 2014	
	SCALE: NOTED	
TOWN OF RANDOLPH TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)	CHKD: B.C.	DFTM: B.L.
	JOB NO: 23449-014	
PRECAST ABUTMENT #1 ELEVATIONS	DWG. NO: F2	

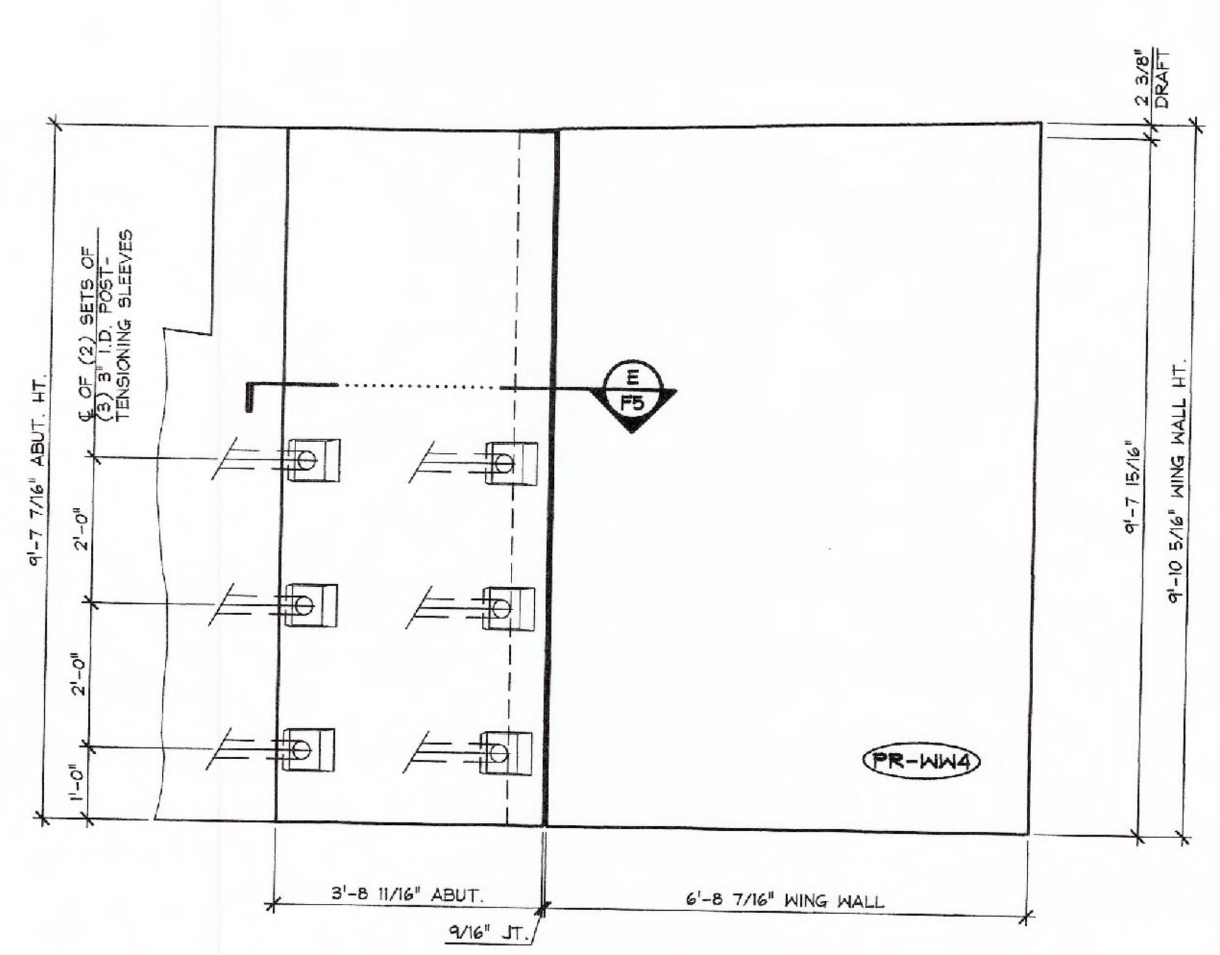
F:\VT-Bridges\23449-14 Randolph\23449-F2.dwg, 1/19/2015 3:22:41 PM



1/F3 ABUTMENT #2 ELEVATION
1/2" = 1'-0"



2/F3 WING WALL ELEVATION "PR-WW3"
1/2" = 1'-0"



3/F3 WING WALL ELEVATION "PR-WW4"
1/2" = 1'-0"

Vermont Agency of Transportation
Randolph_Sub4_5_Rev2_Precast_AA#.pdf
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW

☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

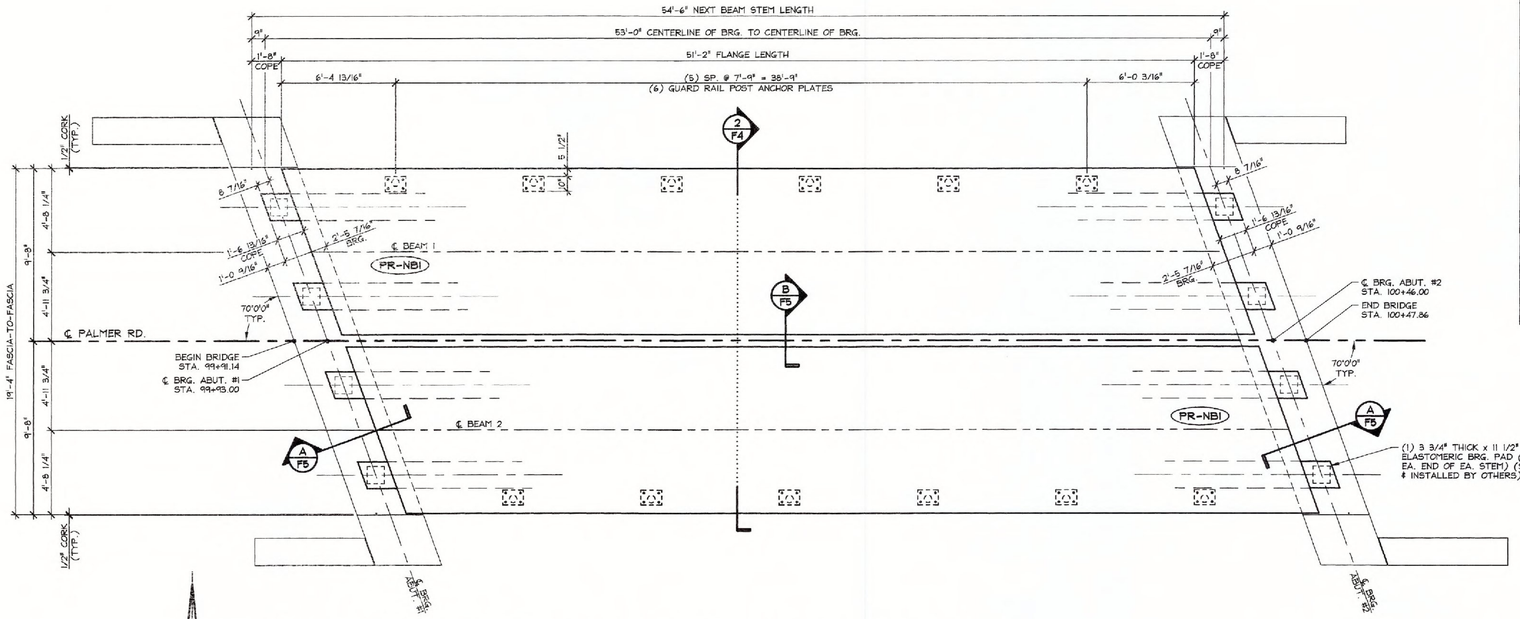
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers, Inc.
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

⚠1 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	J.P. SICARD, INC. CONTRACTOR BARTON, VERMONT
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF ORANGE	DATE: NOV. 18, 2014 SCALE: NOTED
	TOWN OF RANDOLPH TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)	CHKD: B.C. DFTM: B.L. JOB NO: 23449-014
	PRECAST ABUTMENT #2 ELEVATIONS	DWG. NO: F3



1/F4 PRESTRESSED NEXT BEAM LAYOUT
1/4" = 1'-0"

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60"ø x 270 KSI
AREA: 0.217 IN^2
TENSION: 44,000 LB. EACH STRAND
GRIP-TO-GRIP: 252'-0" = 252.00'
Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE:

$$\Delta = \frac{PL}{AE} = \frac{(44{,}000 - 3{,}000) \times 252.00 \times 12}{0.217 \times 28{,}600{,}000} = 19.977"$$

THEREFORE: (TOLERANCES ± 5%)
Δ UPPER LIMIT = 1.05 x 19.977" = 20.98" = 21"
Δ LOWER LIMIT = 0.95 x 19.977" = 18.98" = 19"

EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:

$$\Delta P = \frac{0.5 \times 41{,}000}{19.977} = 1{,}026 \text{ LBS.}$$

TOTAL TENSIONING FORCE = 44,000 + 1,026 = 45,026 LBS.

STRAND TENSIONING PROCEDURE:

1. PULL EACH STRAND INITIALLY TO 3,000# LBS. AND MARK STRAND.
2. THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,026# LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 19"± AND 21"±.

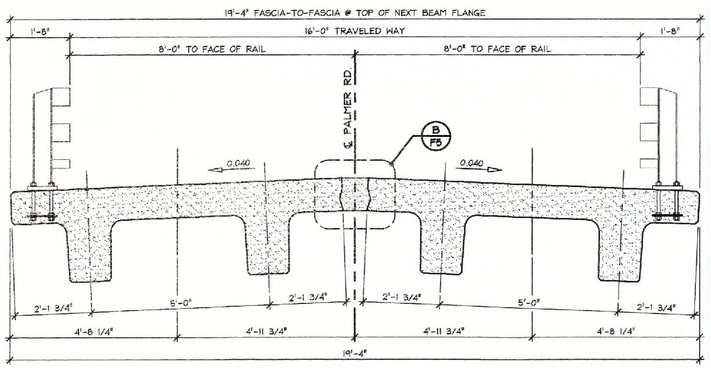
* NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

NEXT BEAM GENERAL NOTES

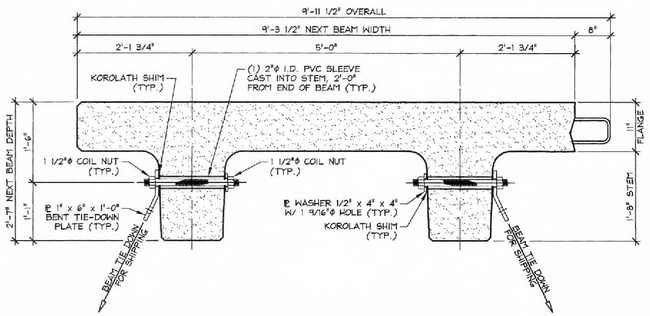
1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 6,000 PSI.
2. MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4,800 PSI.
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL 1 (EPOXY COATED).
4. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 0.60"ø x 270 KSI 7-WIRE LOW RELAXATION STRANDS.
5. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 44.0 K AFTER ACCOUNTING FOR CHUCK SLIPPAGE. TENSION SHALL BE VERIFIED BY MEASURING STRAND ELONGATION. (SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE, THIS SHEET.)
6. ENDS OF PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH END OF NEXT BEAM STEMS (UNLESS NOTED OTHERWISE) AND EPOXY PAINTED.
7. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4" (UNLESS NOTED OTHERWISE).
8. THE TOP OF BEAMS SHALL RECEIVE A (1) LONGITUDINAL LIGHT BROOM FINISH (UNLESS NOTED OTHERWISE).
9. SHEAR KEY SURFACES SHALL BE SAND BLASTED CLEAN.
10. BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL AND VERTICAL FORCES ARE APPLIED TO EACH OF THE TWO LIFTING LOOPS AT EACH END OF THE BEAM. **THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, THIS SHEET.** BEAMS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE BEAM ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
11. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. P510.02 AND P510.05 RESPECTIVELY.

    DESIGN MIX: J.P.C. BRIDGE MIX #4216M (NO DCI)
12. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
13. CURING METHOD: AS SOON AS THE TOP OF BEAM IS FINISHED, A COVER OF INSULATED POLY. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW 70°F. THE TEMPERATURE SHALL BE RECORDED BY AUTOMATIC SENSOR INSTRUMENTS ON GRAPH CHARTS, SPACED NOT MORE THAN 100' APART AND WILL CONTINUE UNTIL RELEASE STRENGTH IS ACHIEVED. EACH CHART SHALL BE MARKED WITH THE CASTING DATED AND LOCATION OF THE RECORDER. IF NECESSARY TO MAINTAIN CASTING BED TEMPERATURE PRIOR TO CONCRETE PLACEMENT OR TO ACCELERATE EARLY AGE STRENGTH GAIN, EXTERNAL RADIANT HEAT MAY BE EMPLOYED VIA HOT WATER DUCTS BENEATH AND WITHIN THE PERIPHERY OF THE CASTING BED. MAXIMUM CURING TEMPERATURE SHALL NOT EXCEED PCI SPECIFIED LIMITS.
14. OWNER SHALL PROVIDE APPROPRIATE WATERPROOFING TO GROUTED AND/OR EPOXIED SHEAR KEYS. J.P. CARRARA & SONS, INC. SHALL NOT BE HELD LIABLE FOR PROBLEMS ASSOCIATED WITH MOISTURE INFILTRATING GROUTED AND/OR EPOXIED SHEAR KEYS.

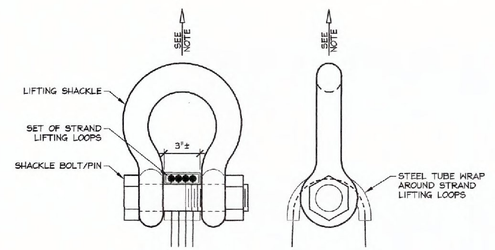
DESIGN LIVE LOAD: HL-93



2/F4 TRANSVERSE SECTION
1/2" = 1'-0"



MODIFIED NEXT BEAM 28D HOLD-DOWN DETAIL FOR SHIPPING
3/4" = 1'-0"



NOTE: BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL AND VERTICAL FORCES ARE APPLIED TO EACH SET OF LIFTING LOOPS AT EACH END OF THE BEAM. SHACKLE BOLT/PIN SHALL BE PLACED UNDER LIFT LOOPS AS SHOWN. DESIGN AND CONFIGURATION OF RIGGING BY PURCHASER.

LIFTING SHACKLE DETAILS
N.T.S.

Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW

[X] REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.
[ ] REJECTED [ ] REVISE AND RESUBMIT [ ] APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THIS WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 603-669-6229
Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

△ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2454 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6381 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

DATE: NOV. 18, 2014
SCALE: NOTED

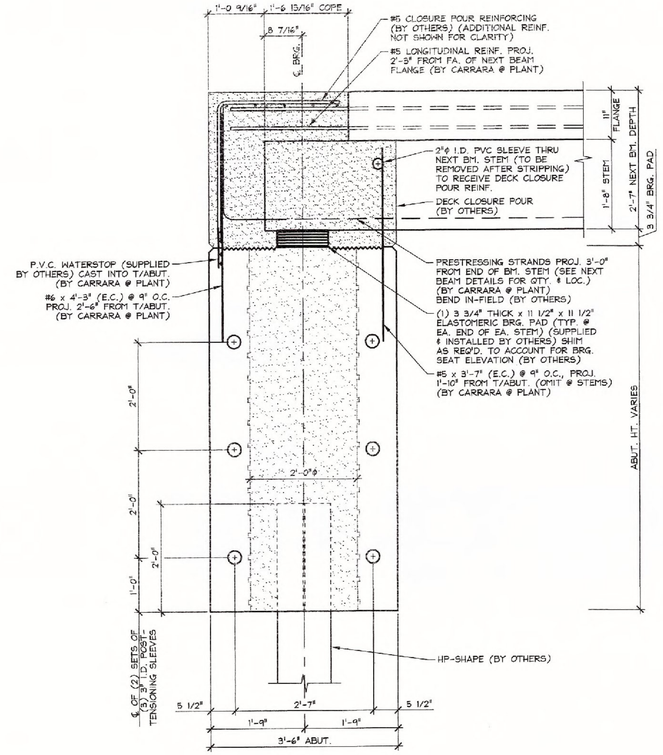
TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014

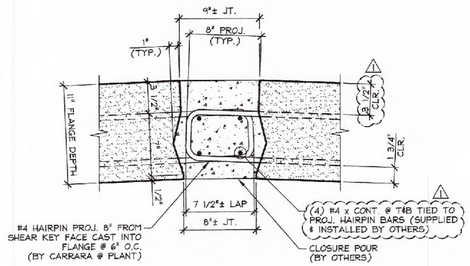
PRESTRESSED NEXT BEAM LAYOUT & SECTION

DWG. NO: F4

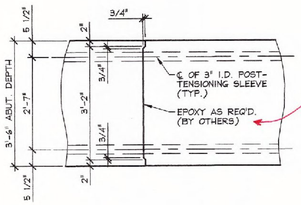
F:\VT-Bridges\23449-14 Randolph\23449-F4.dwg, 2/13/2015 3:53:26 PM



A / F5 BEARING SECTION
NEXT BEAM STEM BEARING
3/4" = 1'-0"

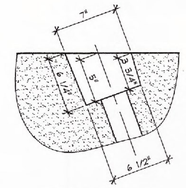


B / F5 NEXT BEAM CLOSURE POUR
1 1/2" = 1'-0"

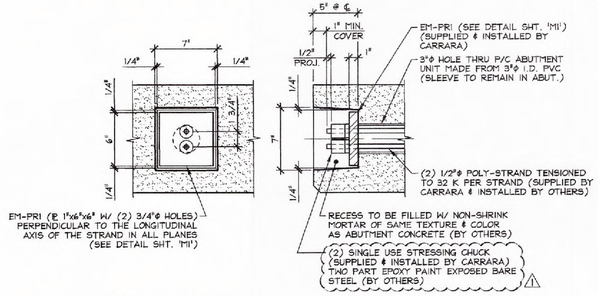


CLARIFY THE EPOXY PRODUCT TO BE USED A MINIMUM OF ONE WEEK PRIOR TO FABRICATION

C / F5 MATCH CAST SECTION @ P.T. SLEEVE
1/2" = 1'-0"

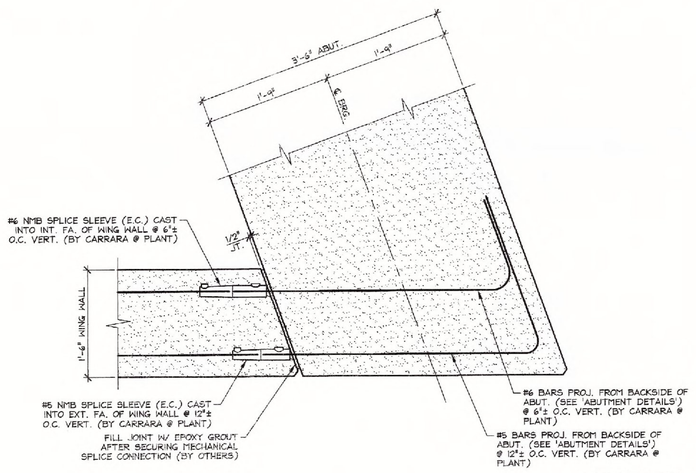


PLAN OF POCKET



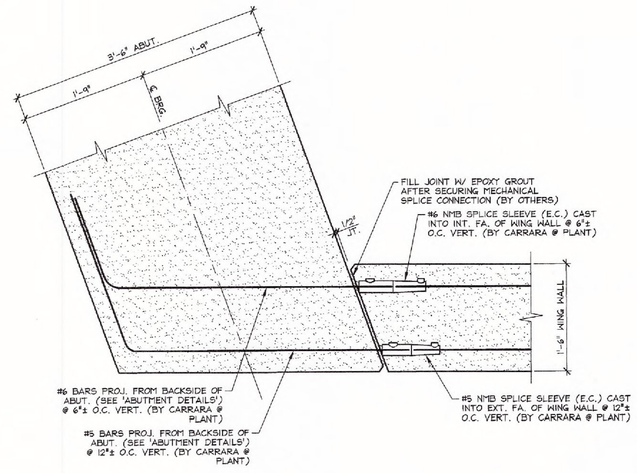
ABUTMENT ELEVATION — SECTION AT CENTERLINE

DETAIL - "A"
1 1/2" = 1'-0"



D / F5 WING WALL CONNECTION DETAIL
1" = 1'-0"

GENERAL NOTE:
ALL SPLICE SLEEVES TO BE GROUTED W/ NMB SS MORTAR PER MANUFACTURERS INSTRUCTION, (BY OTHERS)



E / F5 WING WALL CONNECTION DETAIL
1" = 1'-0"

Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW
☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.
☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIVES. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.
C.L.D. Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 603-669-5253
Job Number: 12-0175
Reviewed By: NK
Date: 2/20/15

⚠ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 OGE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

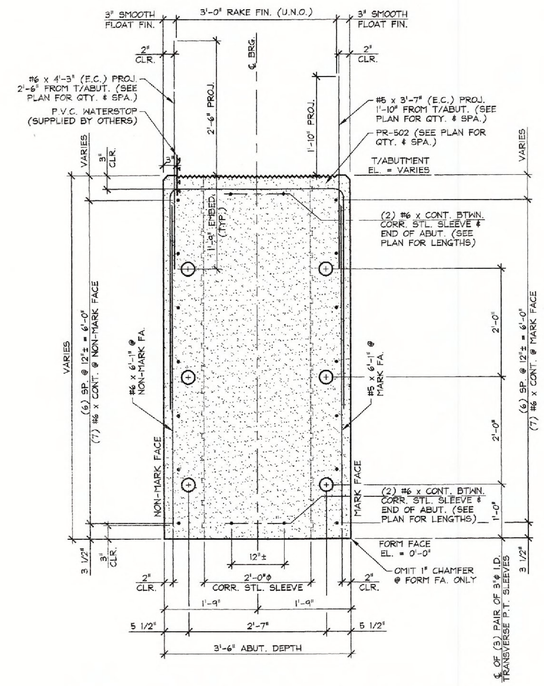
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

ABUTMENT SECTIONS & DETAILS

DATE: NOV. 18, 2014
SCALE: NOTED
CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014
DWG. NO: F5

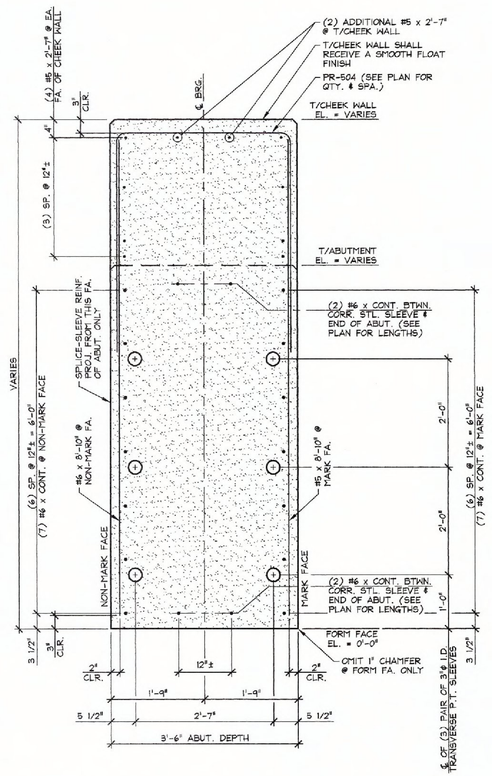
F:\VT-Bridges\23449-14 Randolph\23449-F5.dwg, 2/13/2015 3:31:45 PM



A AB1 ABUTMENT SECTION

3/4" = 1'-0"

SHOP NOTE:
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)



B AB1 ABUTMENT SECTION

SPLICE-SLEEVE REINFORCING NOT SHOWN FOR CLARITY

3/4" = 1'-0"

SHOP NOTE:
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)

Vermont Agency of Transportation

RECEIVED

ON: February 19, 2015

and Checked for

CONFORMANCE

BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW

☑ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

LLD Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 603-668-8223

Job Number: 12-0178
Reviewed By: NDC
Date: 2/20/15

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2494 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-6010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

DATE: NOV. 18, 2014
SCALE: NOTED

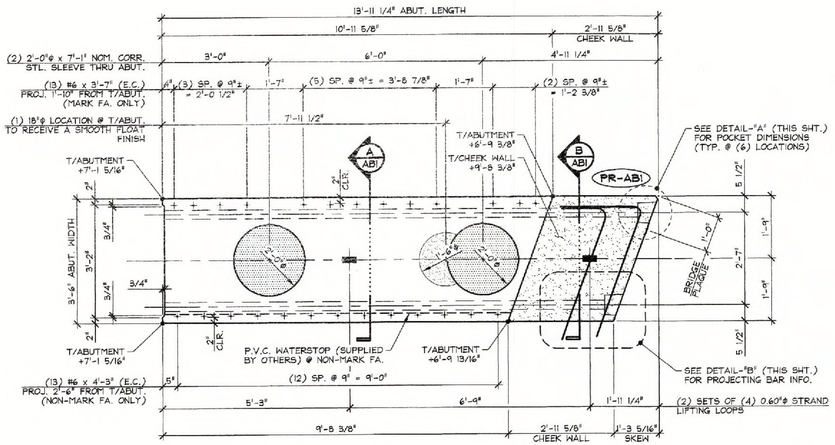
TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014

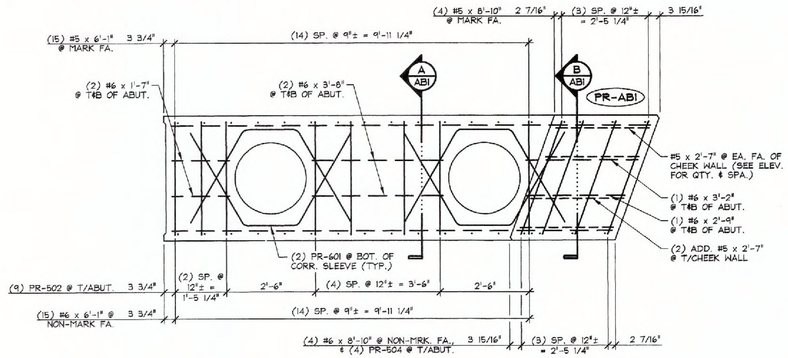
PRECAST ABUTMENT DETAILS

DWG. NO: AB1

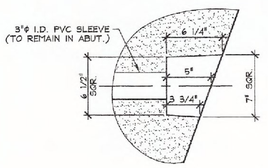
F:\VT-Bridges\23449-14 Randolph\23445-AB1.dwg, 1/19/2015 3:43:20 PM



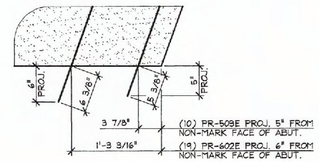
1 AB2 PRECAST ABUTMENT PLAN VIEW IN FORM
1/2" = 1'-0"



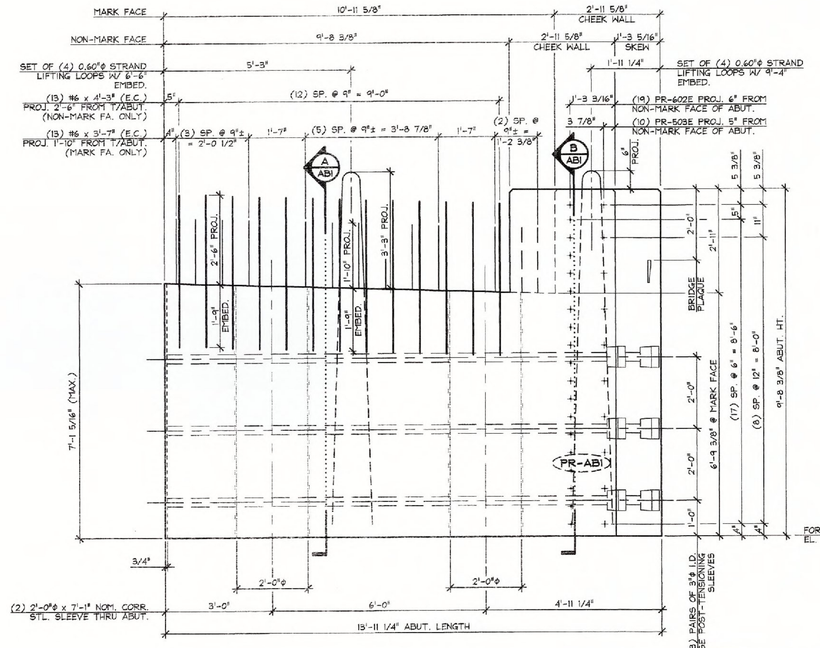
3 AB2 REINFORCING PLAN VIEW IN FORM
1/2" = 1'-0"



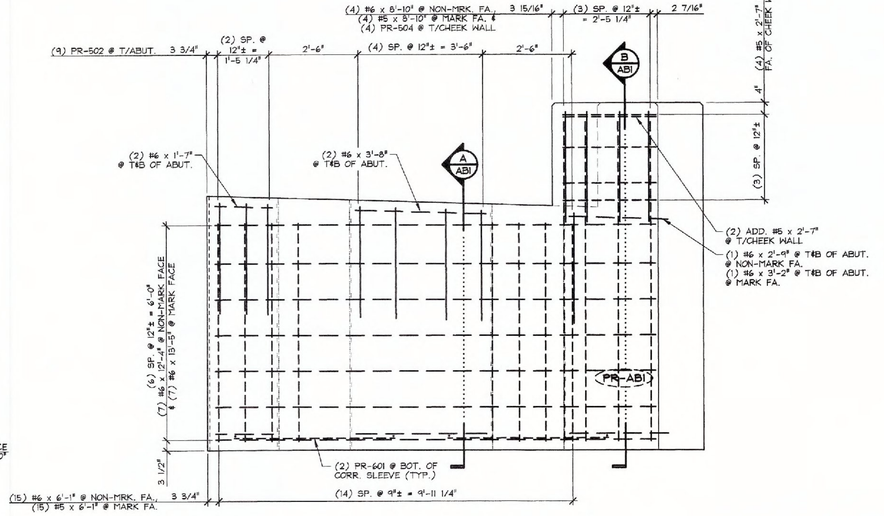
DETAIL - "A"
1 1/2" = 1'-0"



DETAIL - "B"
1" = 1'-0"



2 AB2 PRECAST ABUTMENT ELEVATION NON-MARK FACE
1/2" = 1'-0"



4 AB2 REINFORCING ELEVATION NON-MARK FACE
1/2" = 1'-0"

MARK: PR-AB1	QTY.: 1	WT.: 23.08 T	VOL.: 11.40 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	PR-502	#5 BENT BAR	9
2	PR-503E	#5 BENT BAR (EPOXY COATED)	10
3	PR-504	#5 BENT BAR	4
4		#5 x 2'-7"	10
5		#5 x 6'-1"	15
6		#5 x 8'-10"	4
7			
8	PR-601	#6 BENT BAR	4
9	PR-602E	#6 BENT BAR (EPOXY COATED)	19
10		#6 x 4'-3" (EPOXY COATED)	13
11		#6 x 3'-7" (EPOXY COATED)	13
12		#6 x 6'-1"	15
13		#6 x 12'-4"	7
14		#6 x 13'-5"	7
15		#6 x 1'-7"	4
16		#6 x 3'-8"	4
17		#6 x 2'-9"	2
18		#6 x 3'-2"	2
19		#6 x 8'-10"	4
20			
21		P.V.C. WATERSTOP (SUPPLIED BY OTHERS)	9.67 LF
22		BRIDGE PLAQUE (SUPPLIED BY OTHERS)	1
23		2'-0"ϕ x 7'-1" (NOM.) CORRUGATED STEEL SLEEVE	2
24		SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	2
25			

SHOP DRAWING REVIEW
REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.
REJECTED REVISE AND RESUBMIT APPROVED AS NOTED
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.
CLD Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 888-663-5299
Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2484 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

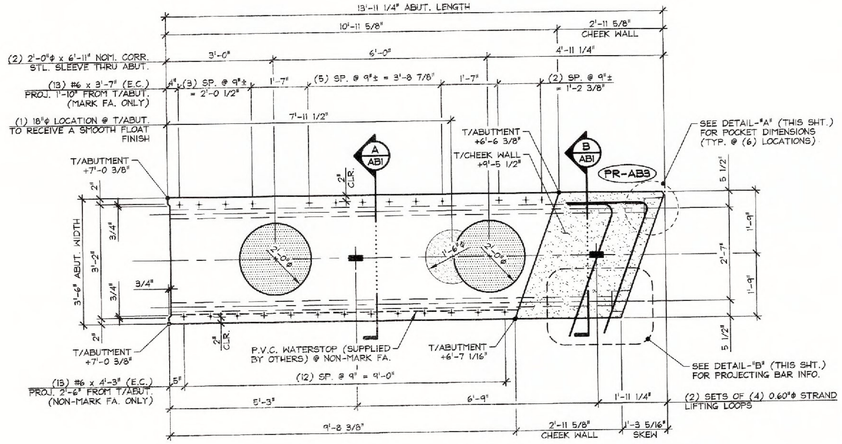
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 55 PROJECT NO.: BRO 1444(57)

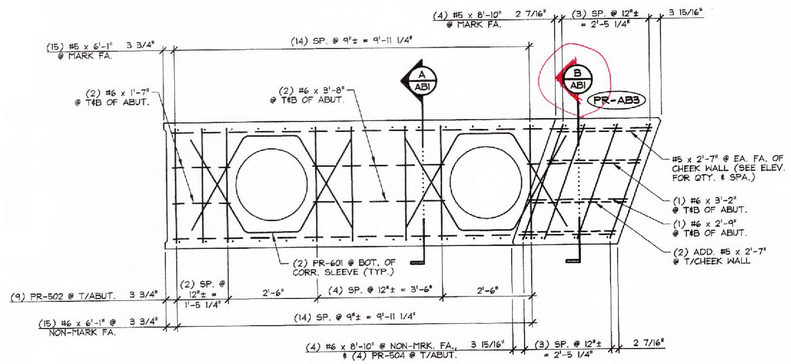
PRECAST ABUTMENT DETAILS

DATE: NOV. 18, 2014
SCALE: NOTED
CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014
DWG. NO: AB2

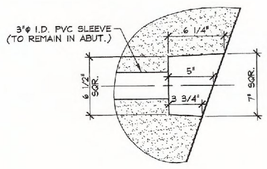
F:\VT-Bridges\23449-14 Randolph\23448-AB2.dwg, 1/19/2015 3:44:25 PM



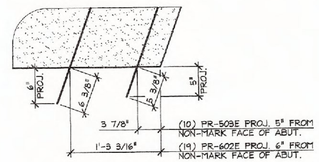
1 AB3 PRECAST ABUTMENT PLAN VIEW IN FORM
1/2" = 1'-0"



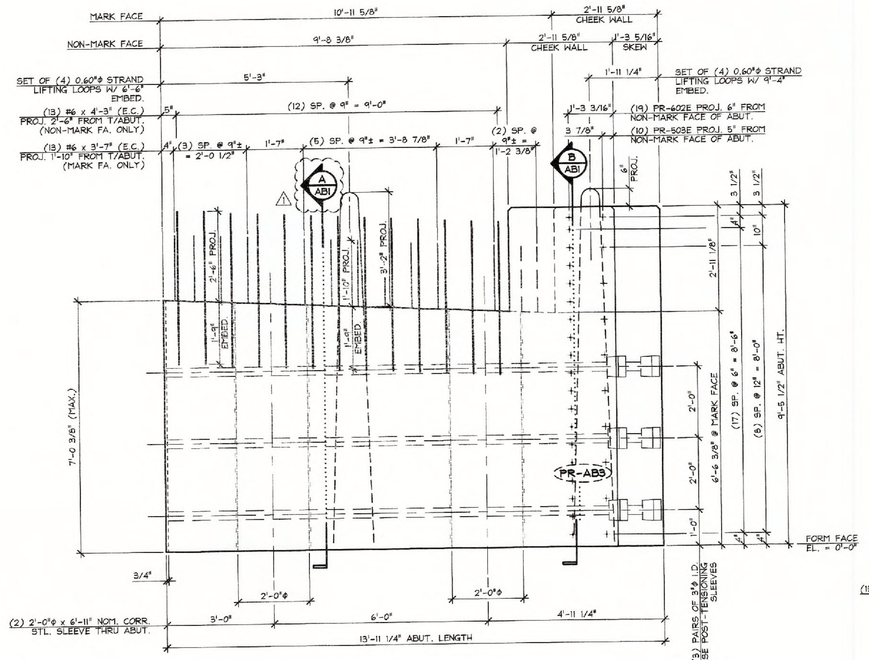
3 AB3 REINFORCING PLAN VIEW IN FORM
1/2" = 1'-0"



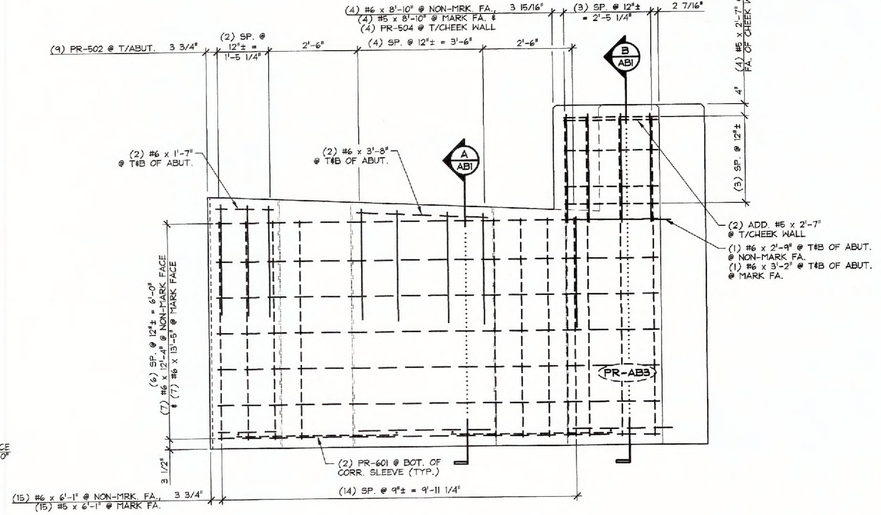
DETAIL - "A"
1 1/2" = 1'-0"



DETAIL - "B"
1" = 1'-0"



2 AB3 PRECAST ABUTMENT ELEVATION NON-MARK FACE
1/2" = 1'-0"



4 AB3 REINFORCING ELEVATION NON-MARK FACE
1/2" = 1'-0"

MARK: PR-AB3	QTY.: 1	WT.: 22.57 T	VOL.: 11.14 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	PR-502	#5 BENT BAR	9
2	PR-503E	#5 BENT BAR (EPOXY COATED)	10
3	PR-504	#5 BENT BAR	4
4		#5 x 2'-7"	10
5		#5 x 6'-1"	15
6		#5 x 8'-10"	4
7			
8	PR-601	#6 BENT BAR	4
9	PR-602E	#6 BENT BAR (EPOXY COATED)	19
10		#6 x 4'-3" (EPOXY COATED)	13
11		#6 x 3'-7" (EPOXY COATED)	13
12		#6 x 6'-1"	15
13		#6 x 12'-4"	7
14		#6 x 13'-5"	7
15		#6 x 1'-7"	4
16		#6 x 3'-8"	4
17		#6 x 2'-9"	2
18		#6 x 3'-2"	2
19		#6 x 8'-10"	4
20			
21		P.V.C. WATERSTOP (SUPPLIED BY OTHERS)	9.67 LF
22		2'-0"ø x 6'-11" (NOM.) CORRUGATED STEEL SLEEVE	2
23		SET OF (4) 0.60"ø STRAND LIFTING LOOPS	2
24			
25			

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLYING WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 603-668-8223

Job Number: 12-0175 NDC
Reviewed By:
Date: 2/20/15

Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

⚠ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

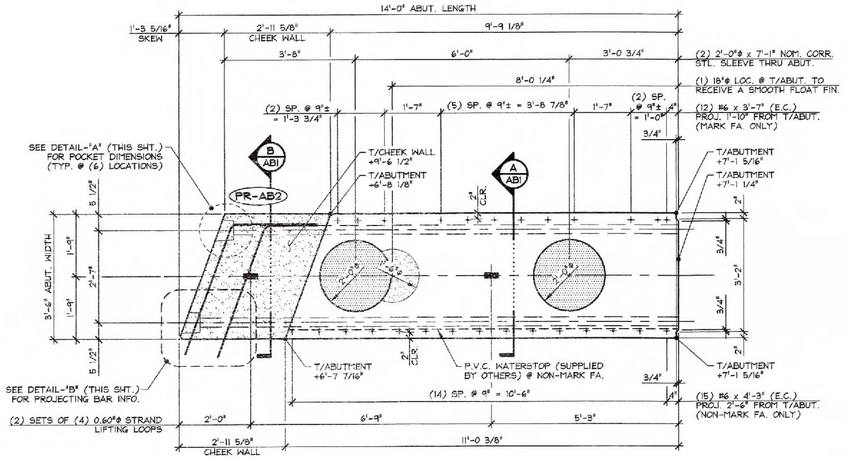
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

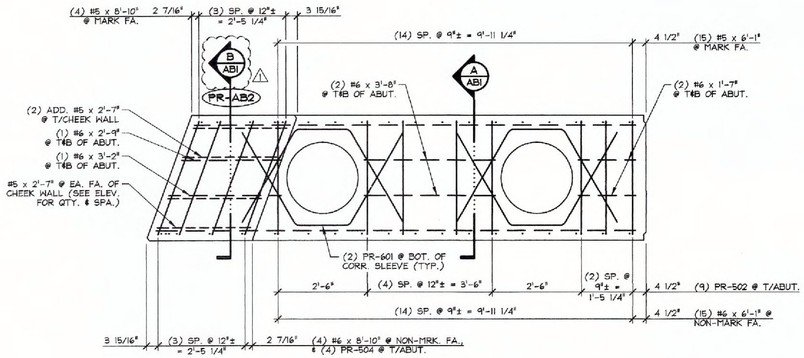
PRECAST ABUTMENT DETAILS

DATE: NOV. 18, 2014
SCALE: NOTED
CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014
DWG. NO: AB3

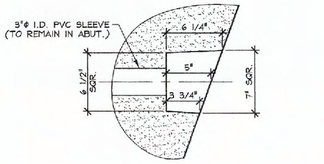
F:\VT-Bridges\23449-14 Randolph\23449-AB3.dwg, 2/13/2015 3:33:29 PM



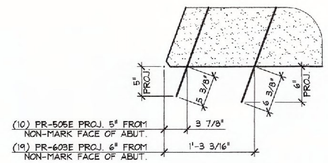
1 AB4 PRECAST ABUTMENT PLAN VIEW IN FORM
1/2" = 1'-0"



3 AB4 REINFORCING PLAN VIEW IN FORM
1/2" = 1'-0"



DETAIL - "A"
1 1/2" = 1'-0"



DETAIL - "B"
1" = 1'-0"

2 AB4 PRECAST ABUTMENT ELEVATION NON-MARK FACE
1/2" = 1'-0"

4 AB4 REINFORCING ELEVATION NON-MARK FACE
1/2" = 1'-0"

MARK: PR-AB2	QTY.: 1	WT.: 22.96 T	VOL.: 11.34 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	PR-502	#5 BENT BAR	9
2	PR-504	#5 BENT BAR	4
3	PR-505E	#5 BENT BAR (EPOXY COATED)	10
4		#5 x 2'-7"	10
5		#5 x 6'-1"	15
6		#5 x 8'-10"	4
7			
8	PR-601	#6 BENT BAR	4
9	PR-603E	#6 BENT BAR (EPOXY COATED)	19
10		#6 x 4'-3" (EPOXY COATED)	15
11		#6 x 3'-7" (EPOXY COATED)	12
12		#6 x 6'-1"	15
13		#6 x 12'-4"	7
14		#6 x 13'-5"	7
15		#6 x 1'-7"	4
16		#6 x 3'-8"	4
17		#6 x 2'-9"	2
18		#6 x 3'-2"	2
19		#6 x 8'-10"	4
20			
21		P.V.C. WATERSTOP (SUPPLIED BY OTHERS)	11 LF
22		2'-0"ø x 7'-1" (NOM.) CORRUGATED STEEL SLEEVE	2
23		SET OF (4) 0.60"ø STRAND LIFTING LOOPS	2
24			
25			

SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers, Inc. 242 Commerce Street Manchester, NH 03101 603-669-0223

Job Number: 12-0175
Reviewed By: NBC
Date: 2/20/15

Vermont Agency of Transportation

RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

⚠ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2484 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

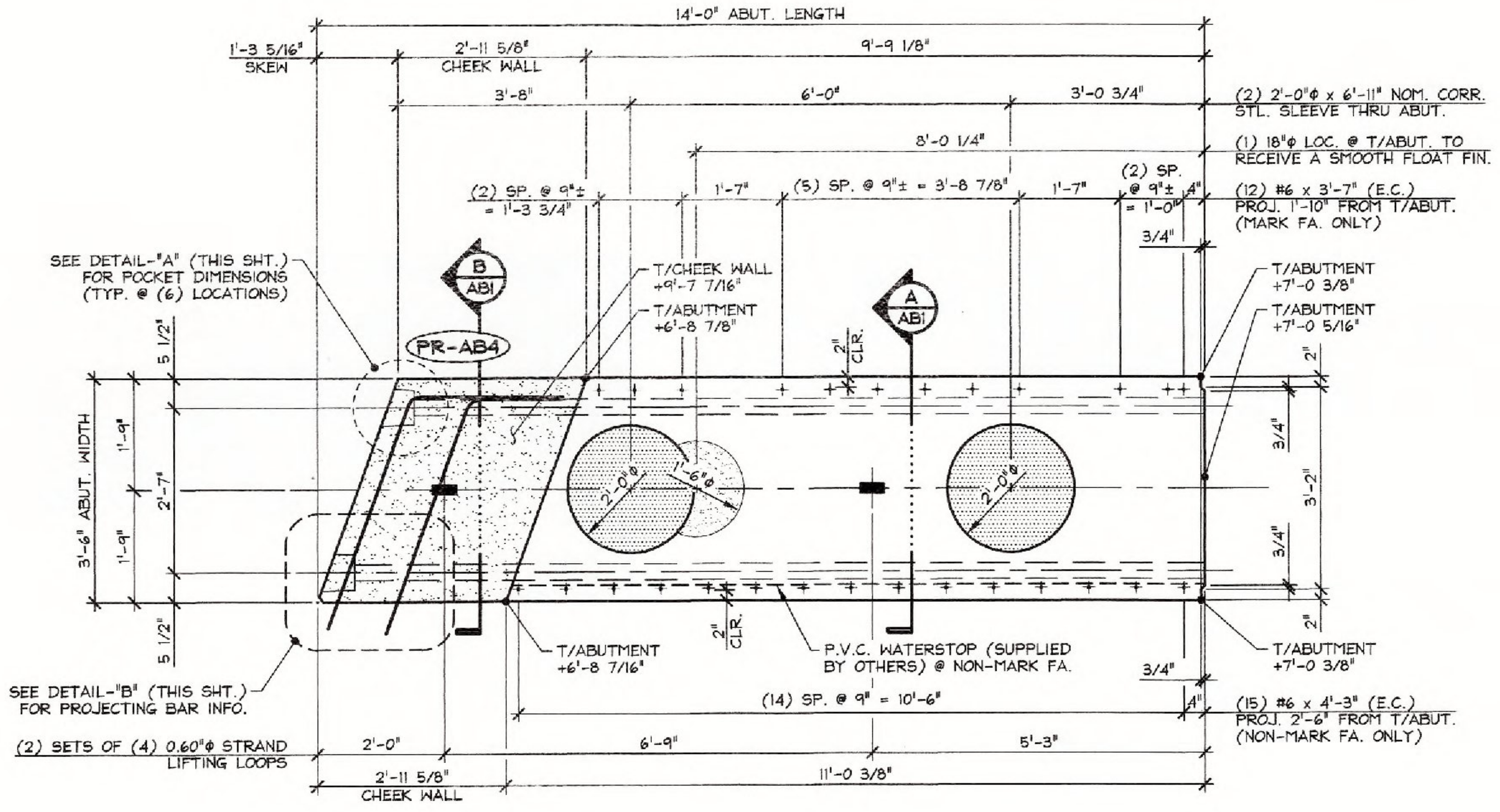
DATE: NOV. 18, 2014
SCALE: NOTED
CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

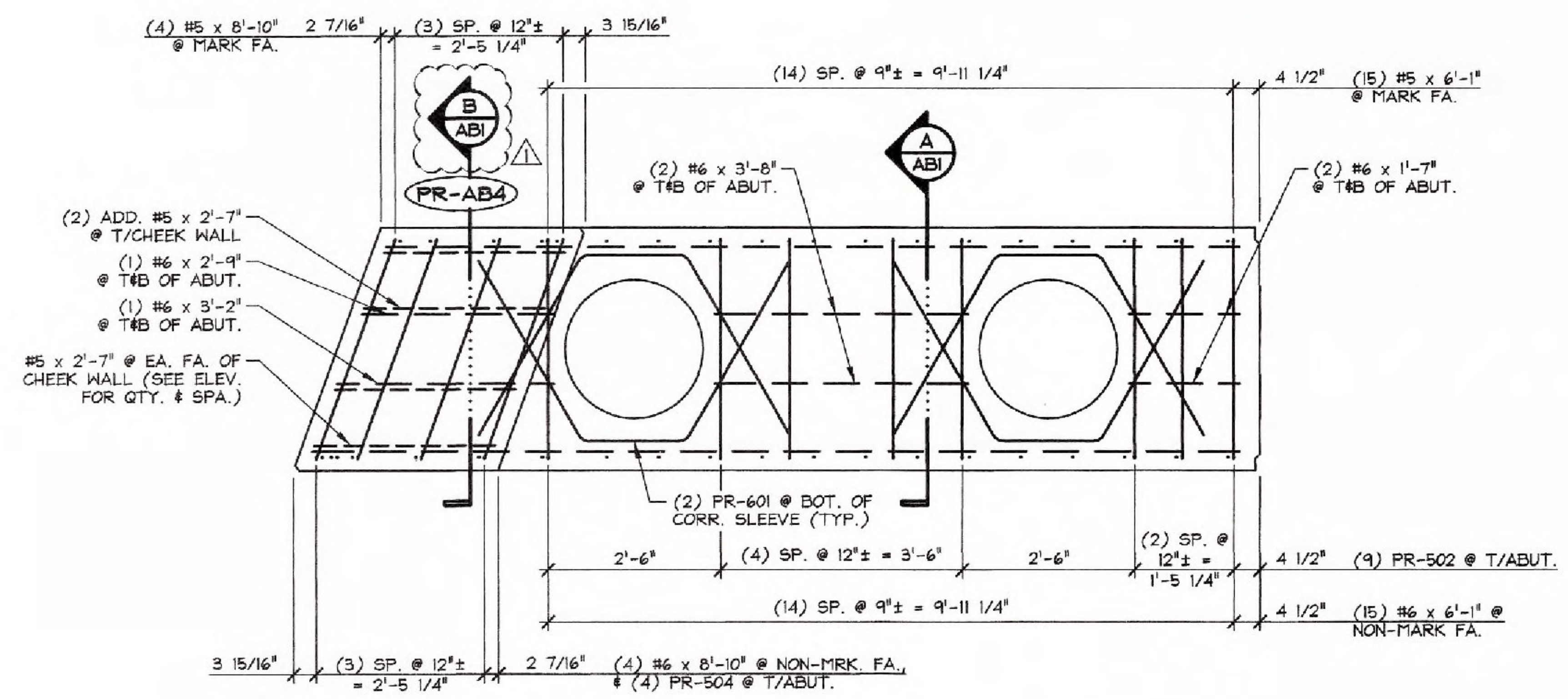
PRECAST ABUTMENT DETAILS

DWG. NO: AB4

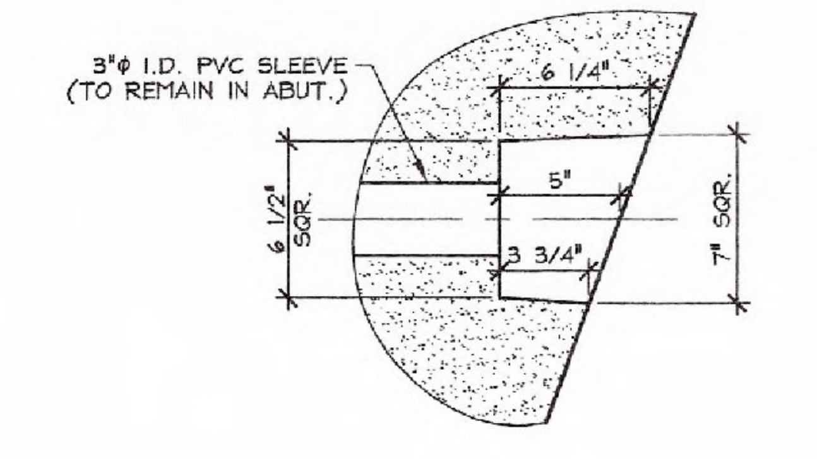
F:\VT-Bridges\23449.14 Randolph\23449-AB4 dwg, 2/13/2015 3:36:36 PM



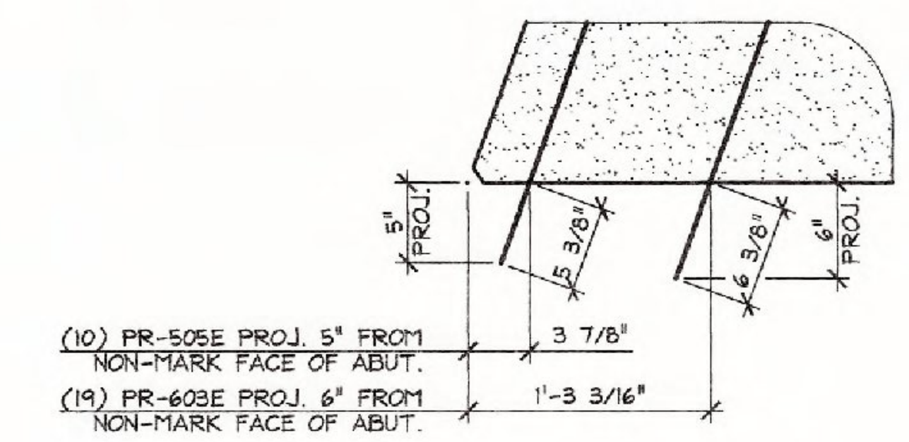
1 AB5 PRECAST ABUTMENT PLAN VIEW IN FORM 1/2" = 1'-0"



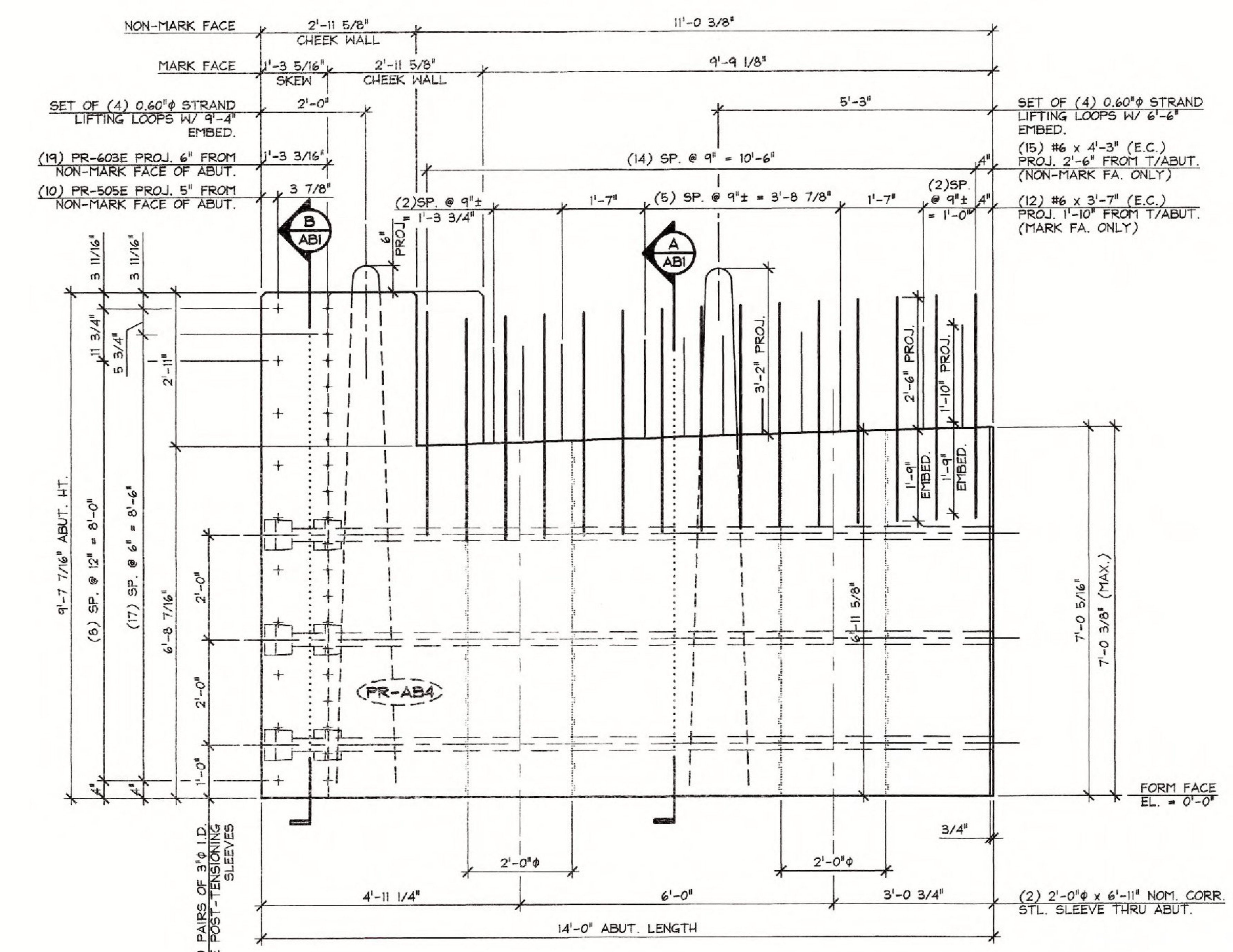
3 AB5 REINFORCING PLAN VIEW IN FORM 1/2" = 1'-0"



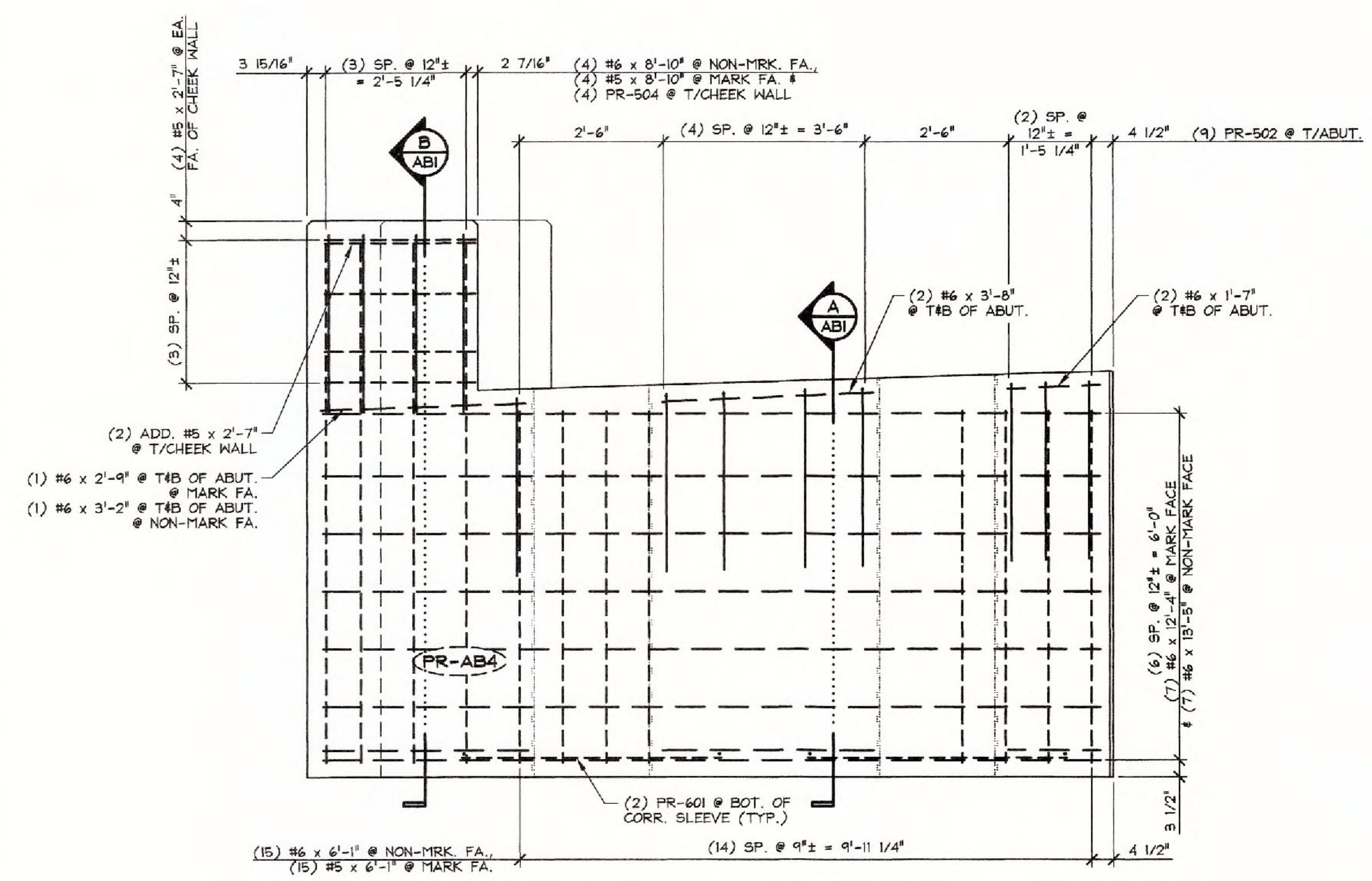
DETAIL - "A" 1 1/2" = 1'-0"



DETAIL - "B" 1" = 1'-0"



2 AB5 PRECAST ABUTMENT ELEVATION NON-MARK FACE 1/2" = 1'-0"



4 AB5 REINFORCING ELEVATION NON-MARK FACE 1/2" = 1'-0"

MARK: PR-AB4	QTY.: 1	WT.: 23.12 T	VOL.: 11.42 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	PR-502	#5 BENT BAR	9
2	PR-504	#5 BENT BAR	4
3	PR-505E	#5 BENT BAR (EPOXY COATED)	10
4		#5 x 2'-7"	8
5		#5 x 6'-1"	15
6		#5 x 8'-10"	4
7			
8	PR-601	#6 BENT BAR	4
9	PR-603E	#6 BENT BAR (EPOXY COATED)	19
10		#6 x 4'-3" (EPOXY COATED)	15
11		#6 x 3'-7" (EPOXY COATED)	12
12		#6 x 6'-1"	15
13		#6 x 12'-4"	7
14		#6 x 13'-5"	7
15		#6 x 1'-7"	4
16		#6 x 3'-8"	4
17		#6 x 2'-9"	2
18		#6 x 3'-2"	2
19		#6 x 8'-10"	4
20			
21		P.V.C. WATERSTOP (SUPPLIED BY OTHERS)	11 LF
22		2'-0"φ x 6'-11" (NOM.) CORRUGATED STEEL SLEEVE	2
23		SET OF (4) 0.60"φ STRAND LIFTING LOOPS	2
24			
25			

⚠1 2-12-15 REVISED PER VT AOT COMMENTS

SHOP DRAWING REVIEW

[X] REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

[ ] REJECTED [ ] REVISE AND RESUBMIT [ ] APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

Job Number: 12-0175
Reviewed By: HDC
Date: 2/20/15

Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

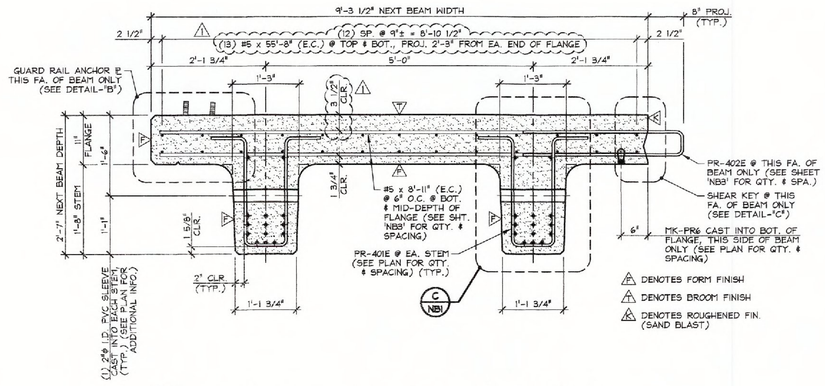
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

PRECAST ABUTMENT DETAILS

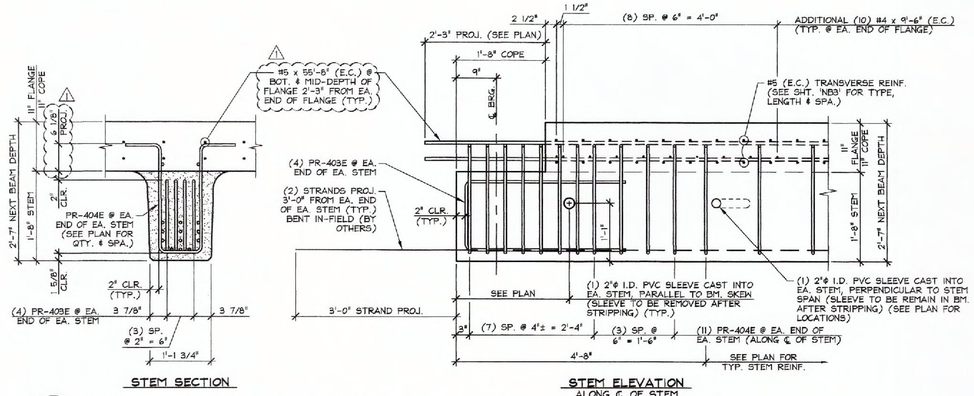
DATE: NOV. 18, 2014	
SCALE: NOTED	
CHKD: B.C.	DFTM: B.L.
JOB NO: 23449-014	
DWG. NO: AB5	

F:\VT Bridges\23449-14 Randolph\23449-AB5.dwg, 2/13/2015 3:37:53 PM



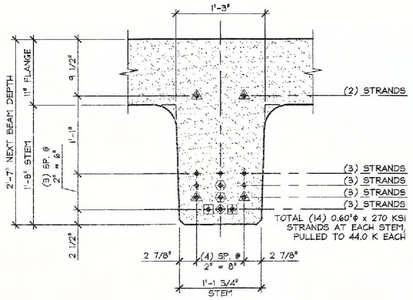
A NB1 DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"



B NB1 END BLOCK STEM REINFORCING DETAILS

3/4" = 1'-0"

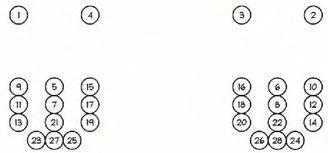


C NB1 STEM STRAND PATTERN

1" = 1'-0"

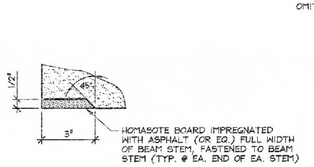
PRESTRESSING NOTATIONS

- ✦ DENOTES STRAIGHT STRANDS TO BE CUT FLUSH WITH EA. END OF EA. STEM
- ✚ DENOTES STRAIGHT STRANDS TO PROJECT 3'-0" FROM EA. END OF EA. STEM
- ✦ DENOTES STRAIGHT STRANDS TO BE DEBONDED 6" FROM EA. END OF EA. STEM
- ✚ DENOTES STRAIGHT STRANDS TO BE DEBONDED 4'-0" FROM EA. END OF EA. STEM
- ◆ DENOTES STRAIGHT STRANDS TO BE DEBONDED 6'-0" FROM EA. END OF EA. STEM



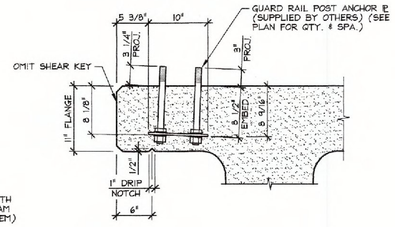
DETENSIONING SCHEDULE

N.T.S.



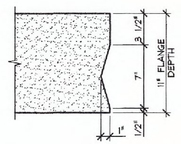
DETAIL - "A"

3" = 1'-0"



DETAIL - "B"

1" = 1'-0"



DETAIL - "C"

1 1/2" = 1'-0"

Vermont Agency of Transportation

RECEIVED

ON: February 19, 2015

and Checked for

CONFORMANCE

BY: T. A. Sumner DATE: 02/25/15

2-12-15 REVISED PER VT AOT COMMENTS

SHOP DRAWING REVIEW

☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES, AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers, Inc. 549 Commercial Street Manchester, NH 03101 603-669-8029

Job Number: 12-0175
Reviewed By: NBC
Date: 2/20/15

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

DATE: NOV. 18, 2014
SCALE: NOTED

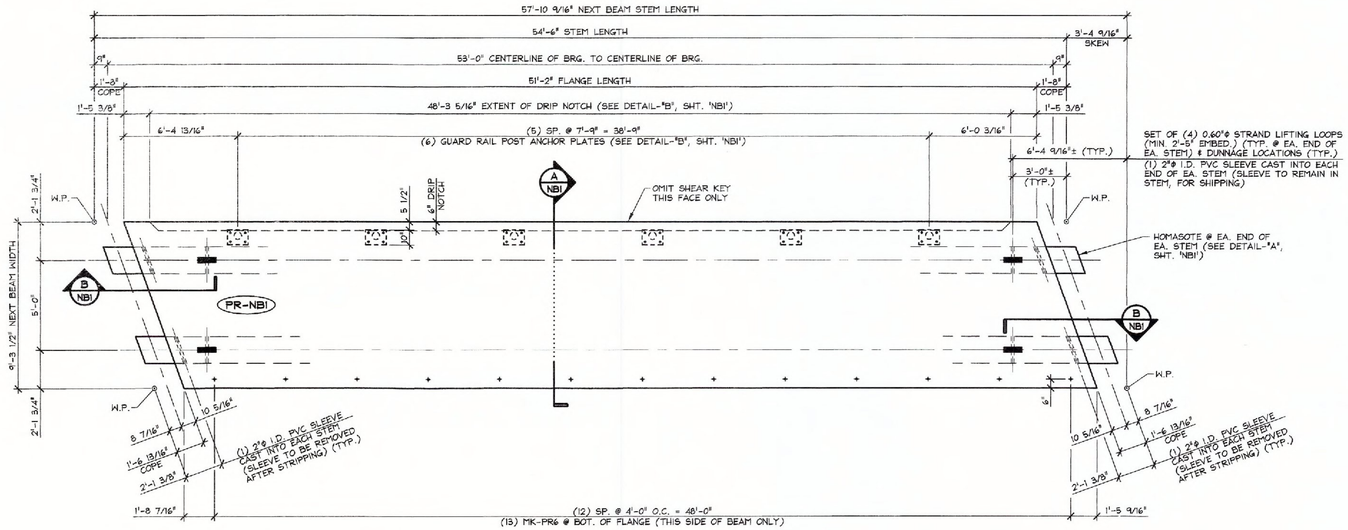
TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014

PRESTRESSED NEXT BEAM DETAILS

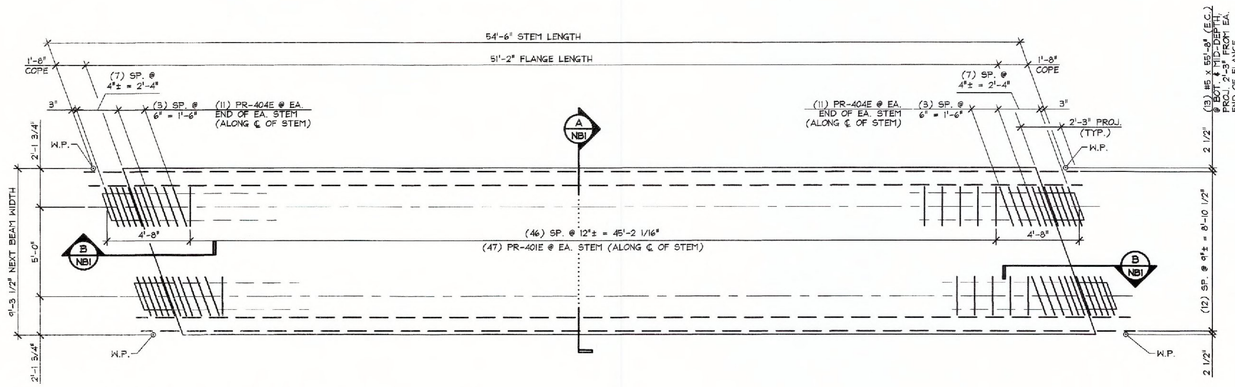
DWG. NO: NB1

F:\VT-Bridges\23449-14 Randolph\23449-NB1.dwg, 2/13/2015 4:01:26 PM



1 NB2 DIMENSIONAL PLAN VIEW IN FORM

1/4" = 1'-0"



2 NB2 REINFORCING PLAN VIEW IN FORM

SEE SHEET 'NB3' FOR TRANSVERSE AND SHEAR KEY REINFORCING

1/4" = 1'-0"

MARK: PR-NB1	QTY.: 2	WT.: 49.16 T	VOL.: 24.28 cy

MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	PR-401E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	94
2	PR-402E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	79
3	PR-403E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	16
4	PR-404E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	44
5	PR-405E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	21
6	PR-406E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	2
7	PR-407E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	2
8	PR-408E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	2
9	PR-409E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	2
10		#4 x 9'-6" (LEVEL 1, EPOXY COATED)	20
11		~~#4 x 8'-8" (LEVEL 1, EPOXY COATED)~~	~~4~~
12		~~#4 x 6'-4 13/16" (LEVEL 1, EPOXY COATED)~~	~~16~~
13		~~#4 x 50'-10" (LEVEL 1, EPOXY COATED)~~	~~10~~
14			
15		#5 x 4'-0" (LEVEL 1, EPOXY COATED)	16
16		#5 x 8'-11" (LEVEL 1, EPOXY COATED)	154
17		#5 x 8'-11 3/4" (LEVEL 1, EPOXY COATED)	4
18		#5 x 9'-1" (LEVEL 1, EPOXY COATED)	4
19		#5 x 9'-3" (LEVEL 1, EPOXY COATED)	4
20		#5 x 9'-6" (LEVEL 1, EPOXY COATED)	36
21		#5 x 55'-8" (LEVEL 1, EPOXY COATED)	26
22			
23	MK-PR6	DAYTON 3/4"ϕ F-42 LOOP FERRULE INSERT (GALV.)	13
24		GUARD RAIL ANCHOR PLATE (SUPPLIED BY OTHERS)	6
25		SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	4

Vermont Agency of Transportation

RECEIVED

ON: February 19, 2015

and Checked for

CONFORMANCE

BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW

☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

DLD Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 603-669-8233

Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

⚠ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

PRESTRESSED NEXT BEAM PLANS

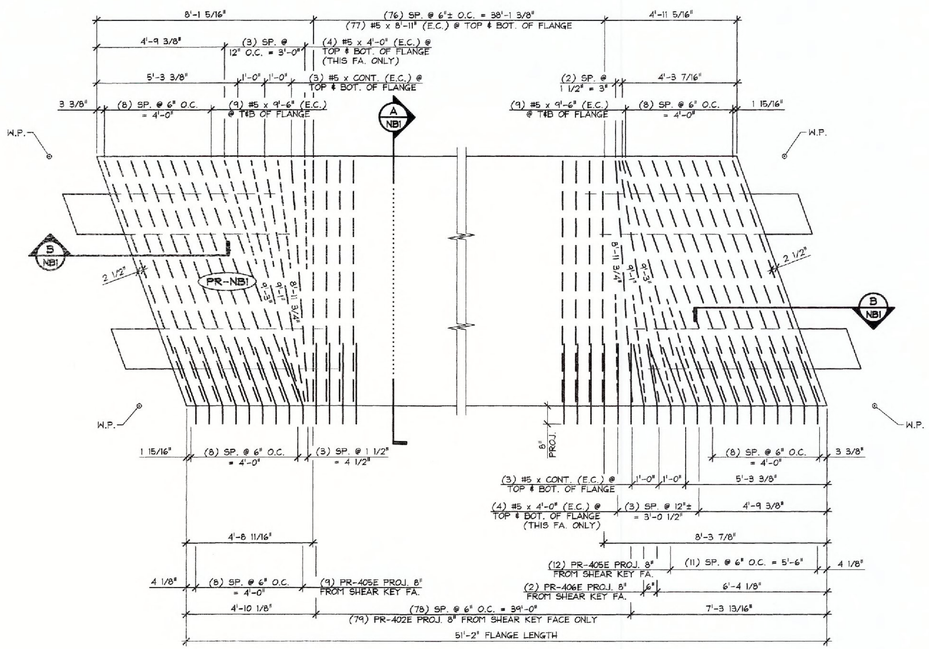
DATE: NOV. 18, 2014
SCALE: NOTED
CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014
DWG. NO: NB2

F:\VT-Bridges\23449-14 Randolph\23449-NB2.dwg, 2/13/2015 4:03:00 PM

⚠ THIS DETAIL HAS BEEN OMITTED

1/NB3 T/FLANGE #4 (E.C.) TRANSVERSE REINFORCING PLAN

LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY — 3/8" = 1'-0"



2/NB3 TOP & BOTTOM #5 (E.C.) TRANSVERSE REINFORCING PLAN

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- ADDITIONAL #4 (E.C.) TRANSVERSE REINFORCING NOT SHOWN FOR CLARITY (SEE DETAIL "B/NB1")

3/8" = 1'-0"

Vermont Agency of Transportation

RECEIVED

ON: February 19, 2015

and Checked for

CONFORMANCE

BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW

☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

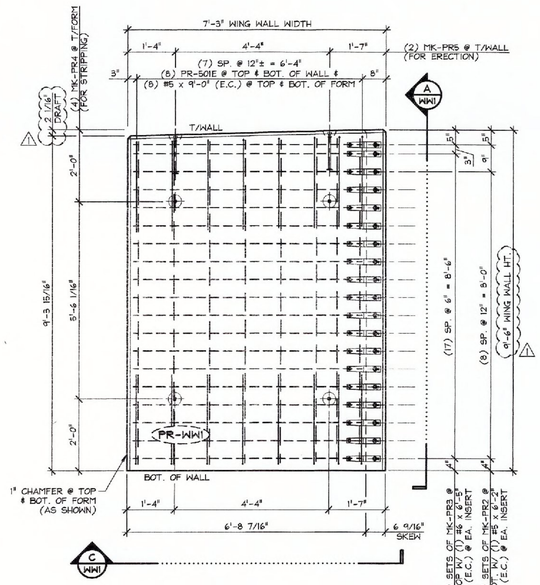
CLD Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 603-263-6023

Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

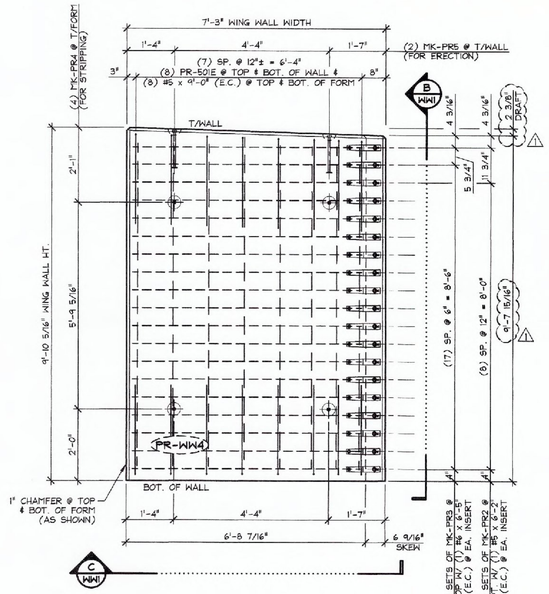
⚠ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2484 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-8361 Fax:(802)388-9010	J.P. SICARD, INC. CONTRACTOR BARTON, VERMONT	
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF ORANGE	DATE: NOV. 18, 2014	
		SCALE: NOTED	
	TOWN OF RANDOLPH TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)	CHKD: B.C.	DFTM: B.L.
		JOB NO: 23449-014	
	PRESTRESSED NEXT BEAM FLANGE REINFORCING	DWG. NO: NB3	

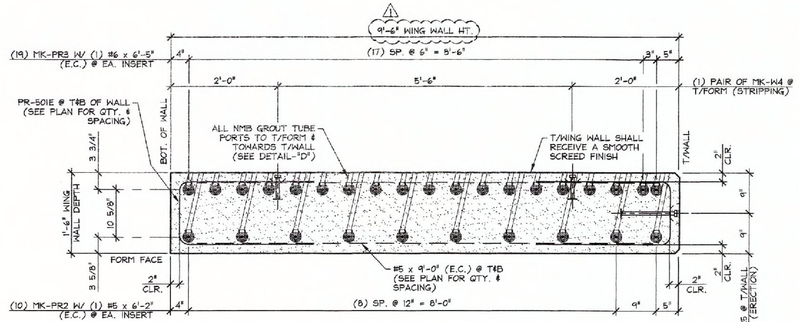
F:\VT-Bridges\23449-14 Randolph\23449-NB3.dwg, 2/13/2015 4:04:01 PM



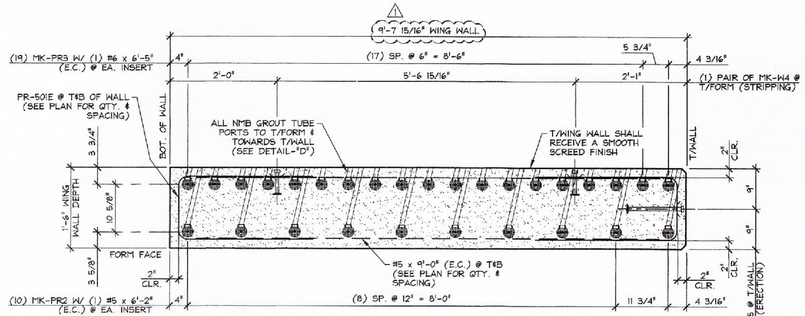
PLAN VIEW IN FORM - "PR-WW1"
1/2" = 1'-0"



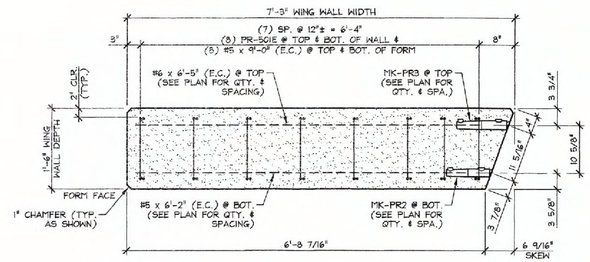
PLAN VIEW IN FORM - "PR-WW4"
1/2" = 1'-0"



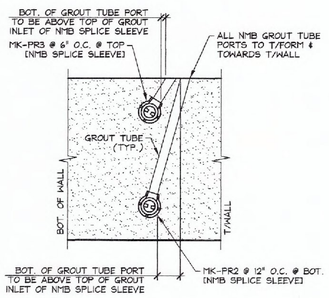
A WW1 WING WALL SIDE ELEVATION
3/4" = 1'-0"



B WW1 WING WALL SIDE ELEVATION
3/4" = 1'-0"



C WW1 WING WALL BOTTOM ELEVATION
3/4" = 1'-0"



D E T A I L - "D"
3/4" = 1'-0"

Vermont Agency of Transportation

RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW
☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.
☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.
CLD Consulting Engineers, Inc. 543 Commercial Street Manchester, NH 03101 603-628-3223
Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

MARK: PR-WW1	QTY.: 1	WT.: 7.39 T	VOL.: 3.65 cy
MARK: PR-WW4	QTY.: 1	WT.: 7.65 T	VOL.: 3.78 cy

MATERIAL LIST / WING WALL

ITEM	MARK	DESCRIPTION	QTY./WALL WW1	QTY./WALL WW4
1	PR-501E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	16	16
2		#5 x 6'-2" (LEVEL 1, EPOXY COATED)	10	10
3		#5 x 9'-0" (LEVEL 1, EPOXY COATED)	16	16
4				
5		#6 x 6'-5" (LEVEL 1, EPOXY COATED)	19	19
6				
7				
8				
9				
10				
11	MK-PR2	NMB SPLICE SLEEVE 6U-X(PG) (EPOXY COATED)	10	10
12	MK-PR3	NMB SPLICE SLEEVE 6U-X(PG) (EPOXY COATED)	19	19
13	MK-PR4	4T x 5 1/2" SWIFT LIFT LIFTER	4	4
14	MK-PR5	8T x 13 3/8" SWIFT LIFT LIFTER	2	2
15				

⚠ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 DIKE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6261 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

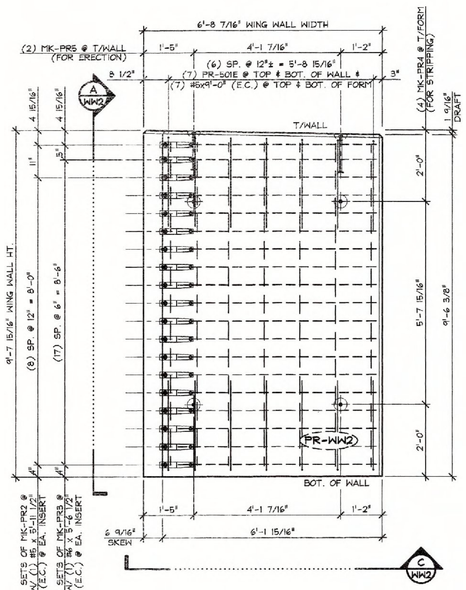
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

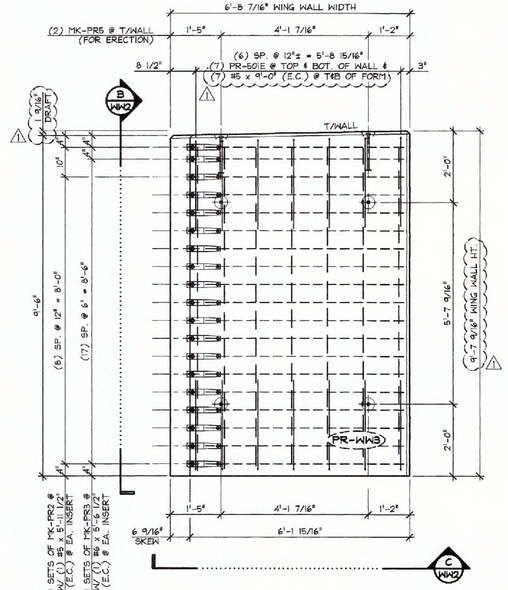
PRECAST WING WALL DETAILS

DATE: NOV. 18, 2014
SCALE: NOTED
CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014
DWG. NO: WW1

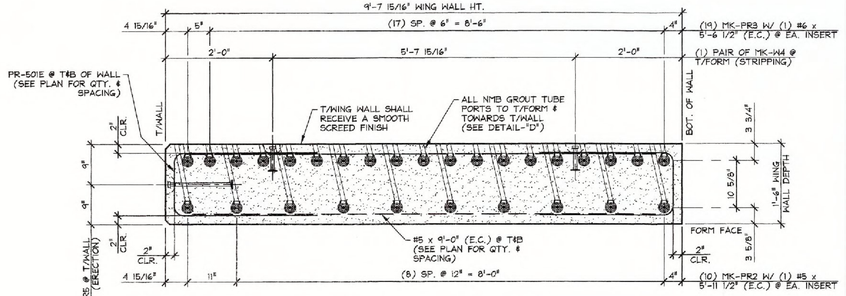
F:\VT-Bridges\23449-14 Randolph\23449-WW1.dwg, 2/13/2015 4:15:47 PM



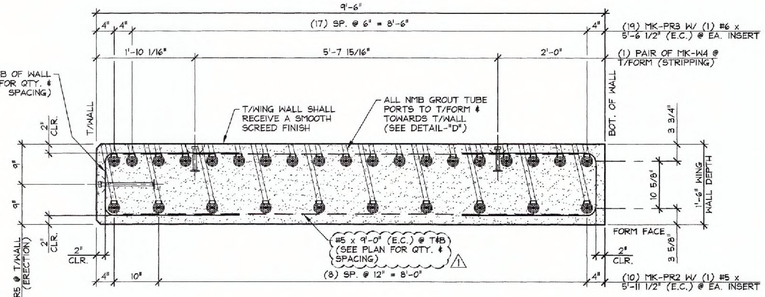
PLAN VIEW IN FORM - "PR-WW2"
1/2" = 1'-0"



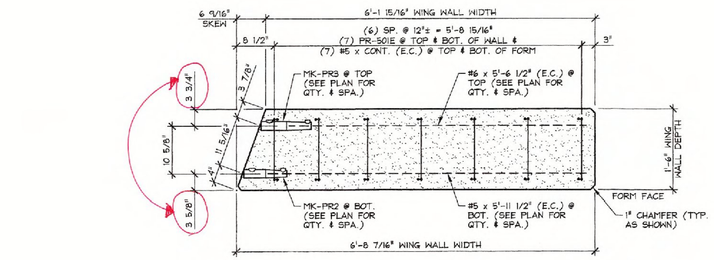
PLAN VIEW IN FORM - "PR-WW3"
1/2" = 1'-0"



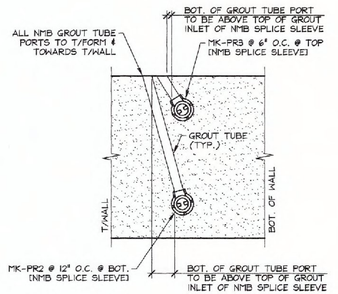
A WW2 WING WALL SIDE ELEVATION
3/4" = 1'-0"



B WW2 WING WALL SIDE ELEVATION
3/4" = 1'-0"



C WW2 WING WALL BOTTOM ELEVATION
3/4" = 1'-0"



DETAIL - "D"
3/4" = 1'-0"

⚠ 2-12-15 REVISED PER VT AOT COMMENTS

MARK: PR-WW2	QTY.: 1	WT.: 6.94 T	VOL.: 3.42 cy
MARK: PR-WW3	QTY.: 1	WT.: 6.94 T	VOL.: 3.42 cy ⚠

MATERIAL LIST / WING WALL

ITEM	MARK	DESCRIPTION	QTY./WALL WW2	QTY./WALL WW3
1	PR-501E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	14	14
2		#5 x 5'-11 1/2" (LEVEL 1, EPOXY COATED)	10	10
3		#5 x 9'-0" (LEVEL 1, EPOXY COATED)	14	14
4		~~#5 x 9'-0" (LEVEL 1, EPOXY COATED)~~ ⚠		~~14~~
5				
6		#6 x 5'-6 1/2" (LEVEL 1, EPOXY COATED)	19	19
7				
8				
9				
10				
11	MK-PR2	NMB SPLICE SLEEVE 5U-X(PG) (EPOXY COATED)	10	10
12	MK-PR3	NMB SPLICE SLEEVE 6U-X(PG) (EPOXY COATED)	19	19
13	MK-PR4	4T x 5 1/2" SWIFT LIFT LIFTER	4	4
14	MK-PR5	8T x 13 3/8" SWIFT LIFT LIFTER	2	2
15				

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 DOGE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

DATE: NOV. 18, 2014
SCALE: NOTED

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014

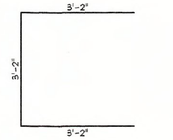
PRECAST WING WALL DETAILS

DWG. NO: WW2

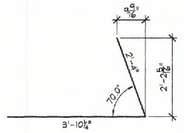
Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW
☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.
☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.
CLD Consulting Engineers, Inc. 249 Commercial Street Manchester, NH 03101 603-669-8223
Job Number: 12-0175
Reviewed By: NDC
Date: 2/20/15

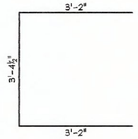
F:\VT-Bridges\23449-14 Randolph\23449-WW2.dwg, 2/13/2015 4:17:11 PM



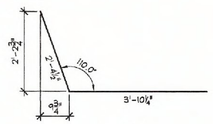
PR-502
#5 BENT BAR
LEVEL I (BLACK STEEL)
USE 2¾"ϕ (70 mm) PIN
(36) REQ'D.



PR-503E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(20) REQ'D.



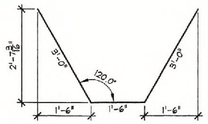
PR-504
#5 BENT BAR
LEVEL I (BLACK STEEL)
USE 2¾"ϕ (70 mm) PIN
(16) REQ'D.



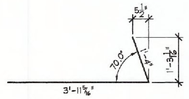
PR-505E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(20) REQ'D.

PR-501E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(40) REQ'D.

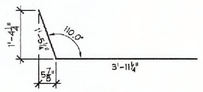
PRECAST WING WALLS



PR-601
#6 BENT BAR
LEVEL I (BLACK STEEL)
USE 4"ϕ (100 mm) PIN
(16) REQ'D.



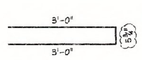
PR-602E
#6 BENT BAR
LEVEL I (EPOXY COATED)
USE 4"ϕ (100 mm) PIN
(38) REQ'D.



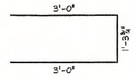
PR-603E
#6 BENT BAR
LEVEL I (EPOXY COATED)
USE 4"ϕ (100 mm) PIN
(38) REQ'D.

PRECAST ABUTMENTS

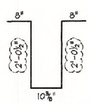
PR-401E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(188) REQ'D.



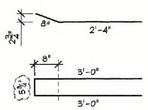
PR-402E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(158) REQ'D.



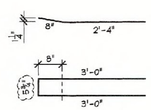
PR-403E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(32) REQ'D.



PR-404E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(88) REQ'D.



PR-405E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(42) REQ'D.



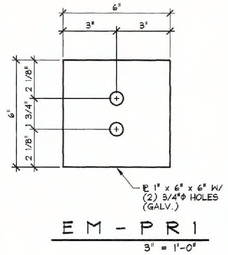
PR-406E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(4) REQ'D.

⚠ **PR-407E**
THIS BAR HAS BEEN OMITTED

⚠ **PR-408E**
THIS BAR HAS BEEN OMITTED

⚠ **PR-409E**
THIS BAR HAS BEEN OMITTED

PRESTRESSED NEXT BEAMS



E M - P R 1
3" = 1'-0"

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS	
1		20	#5 x 5'-11 1/2" (LEVEL I, EPOXY COATED)		PRECAST WING WALLS
2		20	#5 x 6'-2" (LEVEL I, EPOXY COATED)		
3		60	#5 x 9'-0" (LEVEL I, EPOXY COATED)		
4		~~14~~	~~#5 x 9'-3" (LEVEL I, EPOXY COATED)~~		
5					
6		38	#6 x 5'-6 1/2" (LEVEL I, EPOXY COATED)		
7		38	#6 x 6'-5" (LEVEL I, EPOXY COATED)		
8					
9					
10					
11	MK-PR2	40	NMB SPLICE SLEEVE 5U-X(PG) (EPOXY COATED)		
12	MK-PR3	76	NMB SPLICE SLEEVE 6U-X(PG) (EPOXY COATED)		
13	MK-PR4	16	4T x 5 1/2" SWIFT LIFT LIFTER		
14	MK-PR5	8	5T x 13 3/8" SWIFT LIFT LIFTER		
15					
16	EM-PR1	24	E 1" x 6" x 6" W/ (2) 3/4"ϕ HOLES (GALV.)	FOR ERECTION; SEE DETAIL THIS SHEET	PRECAST ABUTMENTS
17		24	1/2"ϕ x 29'-4" POLY-STRAND	FOR ERECTION	
18		48	1/2"ϕ SINGLE USE STRESSING CHUCK	FOR ERECTION	
19					
20		40	#5 x 2'-7"		
21		60	#5 x 6'-1"		
22		16	#5 x 8'-10"		
23					
24		56	#6 x 4'-3" (LEVEL I, EPOXY COATED)		
25		50	#6 x 3'-7" (LEVEL I, EPOXY COATED)		
26		60	#6 x 6'-1"		
27		28	#6 x 12'-4"		
28		28	#6 x 13'-5"		
29		16	#6 x 1'-7"		
30		16	#6 x 3'-8"		
31		8	#6 x 2'-9"		
32		8	#6 x 3'-2"		
33		16	#6 x 8'-10"		
34					
35		41.33 LF	P.V.C. WATERSTOP	SUPPLIED BY OTHERS	
36		1	BRIDGE PLAQUE	SUPPLIED BY OTHERS	
37		4	2'-0"ϕ x 7'-1" (NOM.) CORRUGATED STEEL SLEEVE		
38		4	2'-0"ϕ x 6'-11" (NOM.) CORRUGATED STEEL SLEEVE		
39		8	SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS		
40					
41		40	#4 x 9'-6" (LEVEL I, EPOXY COATED)		PRESTRESSED NEXT BEAMS
42		~~8~~	~~#4 x 9'-0" (LEVEL I, EPOXY COATED)~~		
43		~~12~~	~~#4 x 9'-4½" (LEVEL I, EPOXY COATED)~~		
44		~~20~~	~~#4 x 50'-10" (LEVEL I, EPOXY COATED)~~		
45					
46		32	#5 x 4'-0" (LEVEL I, EPOXY COATED)		
47		308	#5 x 8'-11" (LEVEL I, EPOXY COATED)		
48		8	#5 x 8'-11 3/4" (LEVEL I, EPOXY COATED)		
49		8	#5 x 9'-1" (LEVEL I, EPOXY COATED)		
50		8	#5 x 9'-3" (LEVEL I, EPOXY COATED)		
51		72	#5 x 9'-6" (LEVEL I, EPOXY COATED)		
52		52	#5 x 55'-8" (LEVEL I, EPOXY COATED)		
53					
54	MK-PR6	26	DAYTON 3/4"ϕ F-42 LOOP FERRULE INSERT	GALVANIZE	
55		12	GUARD RAIL ANCHOR PLATE	SUPPLIED BY OTHERS	
56		8	SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS		
57					
58					
59					
60					

Vermont Agency of Transportation
RECEIVED
ON: February 19, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/25/15

SHOP DRAWING REVIEW
REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.
☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.
CLD Consulting Engineers, Inc. 540 Commercial Street Manchester, NH 03101 603-668-8223
Job Number: 12-0178
Reviewed By: NDC
Date: 2/20/15

⚠ 2-12-15 REVISED PER VT AOT COMMENTS

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 DADE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. SICARD, INC.
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORANGE

TOWN OF RANDOLPH
TOWN HIGHWAY 65 (PALMER ROAD) CLASS 3 LOCAL ROAD
BRIDGE NO.: 35 PROJECT NO.: BRO 1444(57)

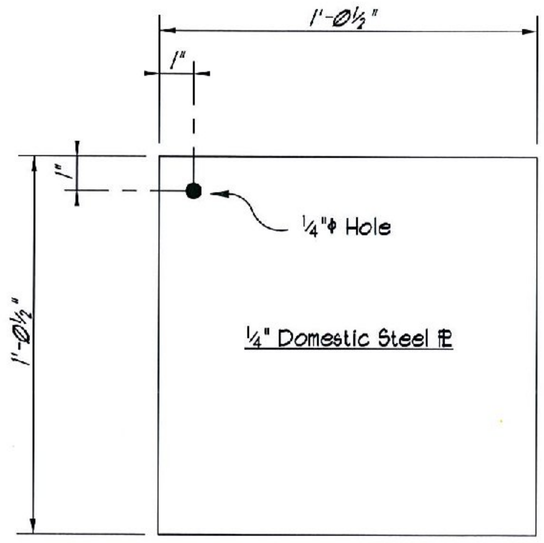
MATERIALS LIST

DATE: NOV. 18, 2014
SCALE: NOTED
CHKD: B.C. DFTM: B.L.
JOB NO: 23449-014
DWG. NO: M1

F:\VT-Bridges\23449-14 Randolph\23449-M1.dwg, 2/13/2015 4:19:28 PM

BILL OF MATERIAL

QTY.	MARK	SHAPE	LENGTH		REMARKS
8		1'-Ø½ x ¼" Stl PL	1	Ø½	ASTM A-36 Domestic Steel PL



Make 8
Shims

Vermont Agency of Transportation
RECEIVED
ON: February 11, 2015
and Checked for
CONFORMANCE
BY: T. A. Sumner DATE: 02/12/15

General Notes:

Steel plate to be domestic ASTM A-36.

Prior to galvanizing, all corners and edges of steel plates, shapes, etc., shall be ground to a 1/16" (1.6mm) radius.

Surfaces to be galvanized shall be zinc coated in conformance with AASHTO M 111 M / M 111 or, when applicable, AASHTO M 232M / M232.

SHOP DRAWING REVIEW

☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 12-0175
Reviewed By: NDC
Date: 2/12/15

02-10-2015 Revised & Resub Per App

DESCRIPTION: Steel Shim PLs Per Customer Information

OSGOOD WELDING 144 Grissom Lane, Claremont, N.H. 03743 Phone: 603-643-1703	PROJECT: Randolph BRO 1444 (51)	DR. GBB - WFM	HOLES ¼"ϕ	DATE 2-03-2015
	LOCATION: Town Highway 65 (Palmer Rd) Bridge 35	CH.	BOLTS	JOB NO.
	GEN'L. CONTR.: Town of Randolph, County of Orange, Vt	PAINT None - Galv'd Per Specs		APPROVED
				SK. NO. SK-1