RECORD PLANS

CONTRACTOR: J.P. SICARD, INC. – BARTON, VT

RESIDENT ENGINEER: SETH HISMAN

CONSTRUCTION BEGAN: JULY 14, 2015

CONSTRUCTION COMPLETE: SEPTEMBER 3, 2015

RECORD PLANS BY: SETH HISMAN & AARON JAMES

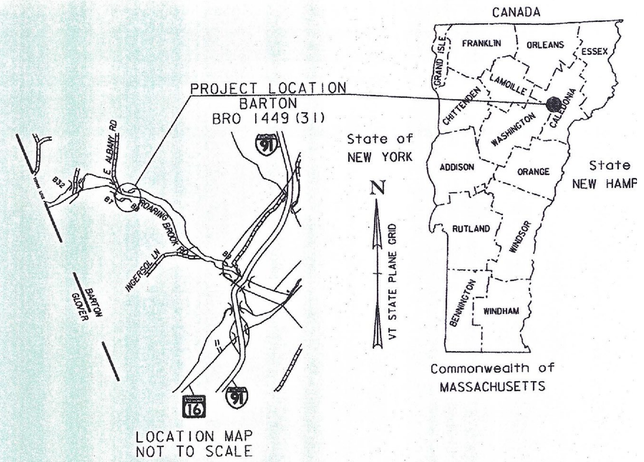
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY _____ RESIDENT ENGINEER

DATE 8/30/16

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION



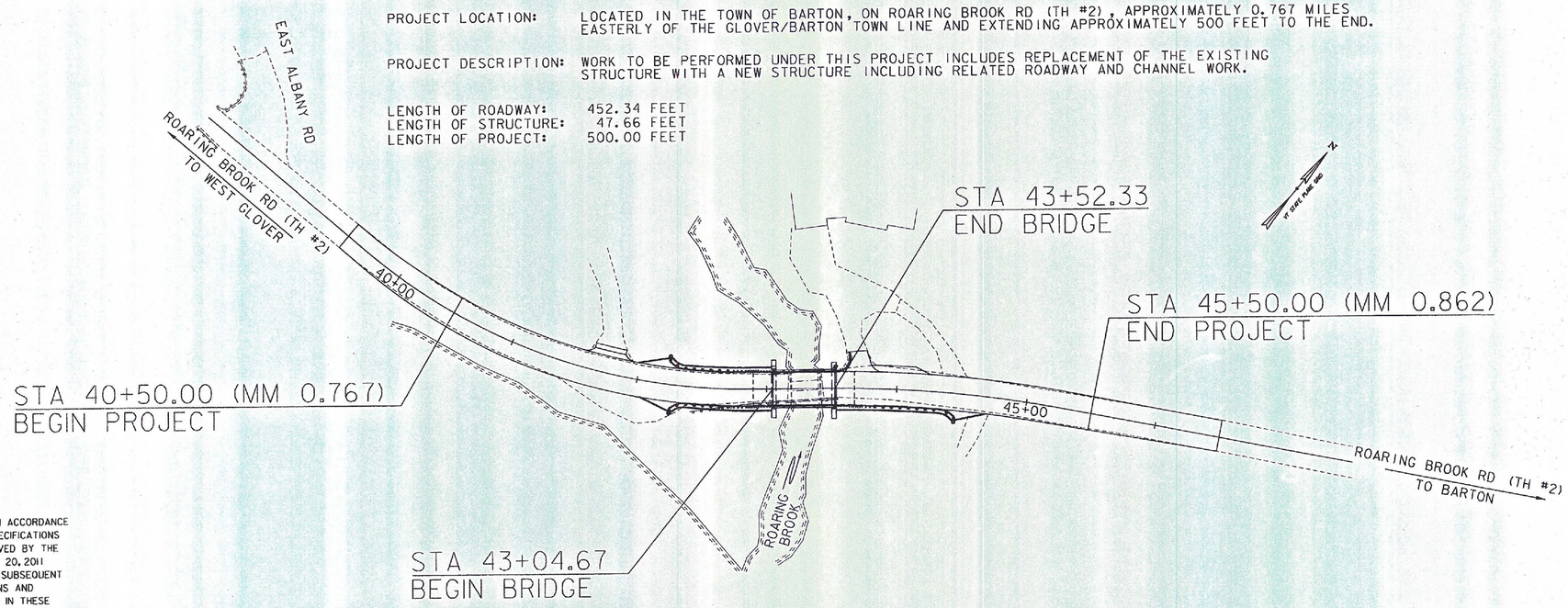
LOCATION MAP
NOT TO SCALE

PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF BARTON
COUNTY OF ORLEANS
ROARING BROOK ROAD (TH #2) (RURAL MINOR COLLECTOR) BRIDGE NO. 8

PROJECT LOCATION: LOCATED IN THE TOWN OF BARTON, ON ROARING BROOK RD (TH #2), APPROXIMATELY 0.767 MILES EASTERLY OF THE GLOVER/BARTON TOWN LINE AND EXTENDING APPROXIMATELY 500 FEET TO THE END.

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: 452.34 FEET
LENGTH OF STRUCTURE: 47.66 FEET
LENGTH OF PROJECT: 500.00 FEET



0 50 100
SCALE IN FEET

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

QUALITY ASSURANCE PROGRAM : LEVEL 2

SURVEYED BY : VTRANS
SURVEYED DATE : 8/11/2011

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (96)

BUILT AS DESIGNED

CHRISTOPHER A. KEA — STATE OF VERMONT — No. 8629 — REGISTERED PROFESSIONAL ENGINEER

JOHN P. EVATT — STATE OF VERMONT — NO. 8478 — Structural — LICENSED PROFESSIONAL ENGINEER

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

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE 12

PROJECT MANAGER : TODD SUMNER, P.E.

PROJECT NAME : BARTON
PROJECT NUMBER : BRO 1449 (31)

SHEET 1 OF 52 SHEETS

CLD 12-0174

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 11.06.15

LRFD

INDEX OF SHEETS

PLAN SHEETS

1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET
3	TYPICAL BRIDGE SECTION
4 - 5	TYPICAL ROADWAY SECTIONS
6	TYPICAL EARTHWORK SECTIONS
7 - 8	PROJECT NOTES
9 - 11	QUANTITY SHEETS
12	BRIDGE QUANTITY SHEET
13	CONVENTIONAL SYMBOLOGY LEGEND SHEET
14 - 15	TIE SHEETS
16	LAYOUT SHEET
17 - 18	PROFILE AND BANKING DIAGRAM SHEETS
19	TRAFFIC CONTROL SHEET
20	TRAFFIC SIGN SUMMARY SHEET
21	SIGN DETAIL SHEET
22	BORING INFORMATION SHEET
23 - 26	BORING LOGS
27	PLAN AND ELEVATION
28	BRIDGE PLAN AND TYPICAL SECTIONS
29 - 31	NEXT BEAM DETAILS
32	BEARING DETAILS
33	ABUTMENT 1 PLAN
34	ABUTMENT 1 REINFORCING
35	ABUTMENT 2 PLAN
36	ABUTMENT 2 REINFORCING
37	BEAM-END CLOSURE POUR REINFORCING
38	APPROACH SLAB DETAILS
39	RAIL AND CURB LAYOUT SHEET
40	REINFORCING STEEL SCHEDULE
41 - 44	ROADWAY CROSS SECTIONS
45 - 46	CHANNEL CROSS SECTIONS
47	EROSION CONTROL NARRATIVE
48 - 50	EPSC PLAN SHEETS
51 - 52	EPSC DETAILS

STRUCTURES DETAILS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012
SD-516.10	BRIDGE ASPHALTIC PLUG	08-29-2011

STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
B-17	GUARDRAIL, BRIDGES, REST AREA, TURNOUTS	02-23-1995
B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	01-03-2000
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	01-03-2000
J-3	MAIL BOX SUPPORT DETAILS	08-07-1995
S-360a	BRIDGE RAILING, GALVANIZED NETC 2 RAIL	04-23-2012
S-360b	GUARDRAIL APPROACH SECTION, GALVANIZED NETC 2 RAIL	04-23-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: 10/24/13

DRAINAGE AREA : 10.0 SQ. MI.
CHARACTER OF TERRAIN : HILLY TO MOUNTAINOUS
STREAM CHARACTERISTICS : SINUOUS, NON-ALLUVIAL, AND PERENNIAL CHANNEL
NATURE OF STREAMBED : GRAVEL AND COBBLES WITH BOULDERS

PEAK FLOW DATA

Q 2.33 =	500 CFS	Q 50 =	1380 CFS
Q 10 =	900 CFS	Q 100 =	1610 CFS
Q 25 =	1150 CFS	Q 500 =	2090 CFS

DATE OF FLOOD OF RECORD: UNKNOWN
ESTIMATED DISCHARGE: N/A
WATER SURFACE ELEV.: N/A
NATURAL STREAM VELOCITY: @ Q25 = 11.7 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: 4% HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CONCRETE T-BEAM WITH REINFORCED CONCRETE ABUTMENTS
YEAR BUILT: 1928
CLEAR SPAN(NORMAL TO STREAM): 26 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 7.3 FT
WATERWAY OF FULL OPENING: 166 SQ. FT.
DISPOSITION OF STRUCTURE: REMOVE AND REPLACE
TYPE OF MATERIAL UNDER SUBSTRUCTURE: SEE BORINGS

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1132.5 FT	VELOCITY =	7.4 FPS
Q10 =	1133.5 FT	"	10.7 FPS
Q25 =	1135.4 FT	"	10.4 FPS
Q50 =	1136.3 FT	"	11.2 FPS
Q100 =	1137.2 FT	"	12.1 FPS

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

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
FREQUENCY: N/A
RELIEF ELEVATION: 1139.4 FT
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: BARTON DISTANCE: 0.2 MI.
HIGHWAY # : TH #2 ROARING BROOK RD STRUCTURE #: 7
CLEAR SPAN: 18 FT CLEAR HEIGHT: 6 FT
YEAR BUILT: UNKNOWN FULL WATERWAY: 108 FT
STRUCTURE TYPE: UNKNOWN

DOWNSTRUCTURE STRUCTURE

TOWN: BARTON DISTANCE: 0.9 MI.
HIGHWAY # : TH NO. 2 STRUCTURE #: 9
CLEAR SPAN: 36 FT CLEAR HEIGHT: 6 FT
YEAR BUILT: 1928 FULL WATERWAY: 178 FT
STRUCTURE TYPE: CONCRETE T-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	1.58	1.38					
POSTING							
OPERATING	1.97	1.79	2.07	1.09	1.44	1.32	1.7
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: CONCRETE NEXT BEAM STRUCTURE ON INTEGRAL ABUTMENTS

CLEAR SPAN(NORMAL TO STREAM): 42 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 7.5 FT
WATERWAY OF FULL OPENING: 213 SQ. FT.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1132.2 FT	VELOCITY=	8.5 FPS
Q10 =	1133.6 FT	"	9.9 FPS
Q25 =	1134.3 FT	"	11.7 FPS
Q50 =	1134.9 FT	"	12.4 FPS
Q100 =	1135.4 FT	"	12.9 FPS

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
FREQUENCY: N/A
RELIEF ELEVATION: 1139.7 FT
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1135.4 FT
VERTICAL CLEARANCE: @ Q25 = 1.1 FT

SCOUR: CONTRACTION SCOUR 1 FT @ Q500

REQUIRED CHANNEL PROTECTION: TYPE IV STONE FILL

PERMIT INFORMATION

AVERAGE DAILY FLOW:	120 CFS	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	55 CFS	1129.9 FT
ORDINARY HIGH WATER:	200 CFS	1130.8 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:	0.0 INCH
3. DESIGN SPAN	L:	45.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	0.71 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}:	4.0 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	---
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:	0.120 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	283.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	f_y:	50 KSI
21. PILE SIZE		HP 12X63
22. EST. PILE LENGTH AT ABUTMENT #1	L_{p1}	72 FT
EST. PILE LENGTH AT ABUTMENT #2	L_{p2}	71 FT
23. PILE RESISTANCE FACTOR	ϕ:	0.50
24. LATERAL PILE DEFLECTION	Δ:	0.16 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:	6 %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	920	100	64	2.6	25
2034	980	110	64	3.4	35

20 year ESAL for flexible pavement from 2014 to 2034 : 188000
40 year ESAL for flexible pavement from 2014 to 2054 : 440000
Design Speed : 50 mph

PILE DRIVING AND TESTING REQUIREMENTS

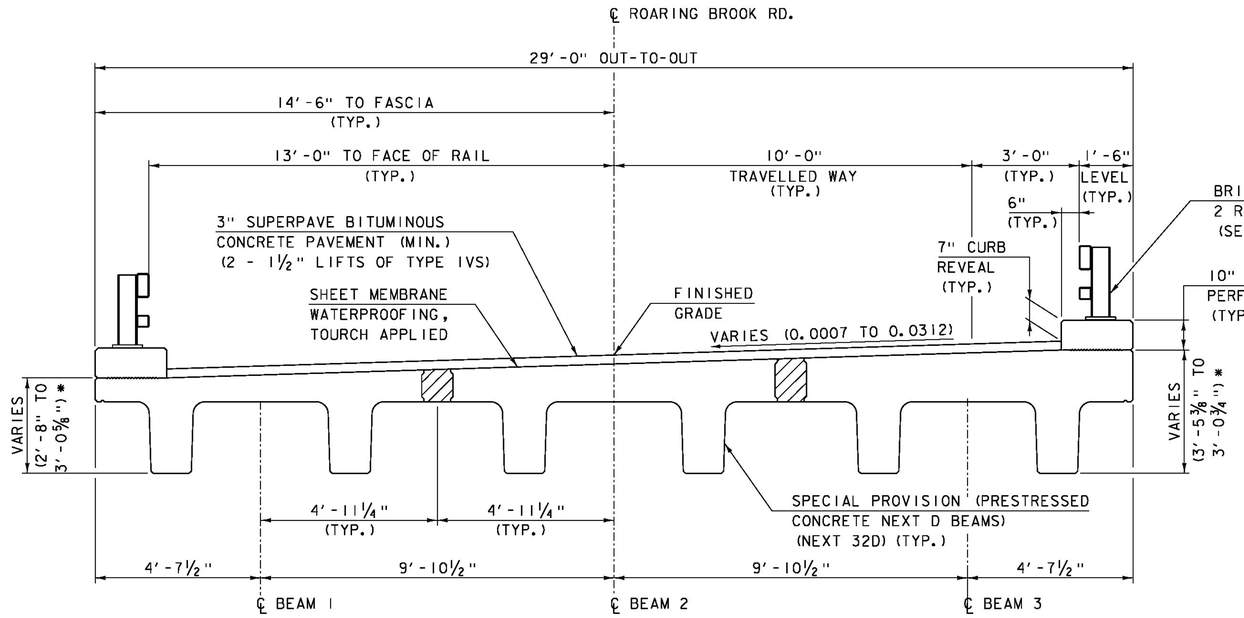
1. NOMINAL PILE DRIVING CAPACITY — R_{ndr}: 218.00 KIP
2. PILE TEST RESISTANCE FACTOR — ϕ: 0.65
3. MAXIMUM PILE TIP ELEVATION — SEE BORINGS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: z11j068pi.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
PRELIMINARY INFORMATION SHEET

PLOT DATE: 12/17/2014
DRAWN BY: M. HALEY
CHECKED BY: J. BYATT
SHEET 2 OF 52

MODEL: PI
CLD 12-2021

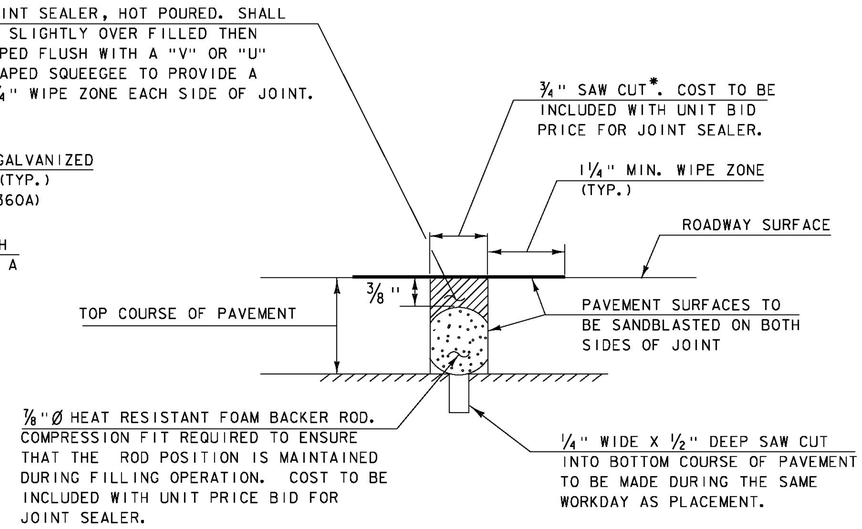


TYPICAL BRIDGE SECTION

SCALE: ½" = 1'-0"

* DIMENSIONS TAKEN AT BEGIN AND END BEAM FLANGE AT ABUTMENT 1 AND 2, RESPECTIVELY.

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)



SAWED PAVEMENT JOINT DETAIL

(NOT TO SCALE)

* JOINT IS TO BE LOCATED ACCURATELY BY STRING LINING, OR OTHER MEANS, PRIOR TO PAVING, SO THAT THE SAW CUTS WILL BE MADE DIRECTLY OVER THE END OF CONCRETE DECK. JOINT SHALL BE CUT DRY IN A SINGLE PASS AND BE SEALED WITHIN 24 HOURS OR PRIOR TO EXPOSURE TO TRAFFIC. JOINT SHALL BE CLEANED PRIOR TO APPLYING THE JOINT SEALER. ALL WORK SHALL BE PAID UNDER ITEM 524.11, "JOINT SEALER, HOT POURED".

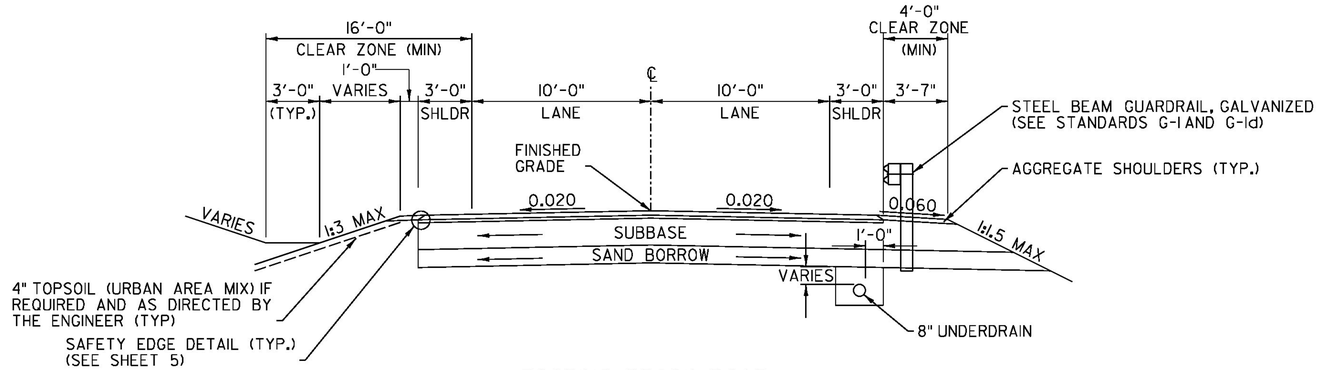
CLD 12-0174 MODEL: SUP01

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068sup.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
TYPICAL BRIDGE SECTION	SHEET 3 OF 52

CONSULTING ENGINEERS

MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

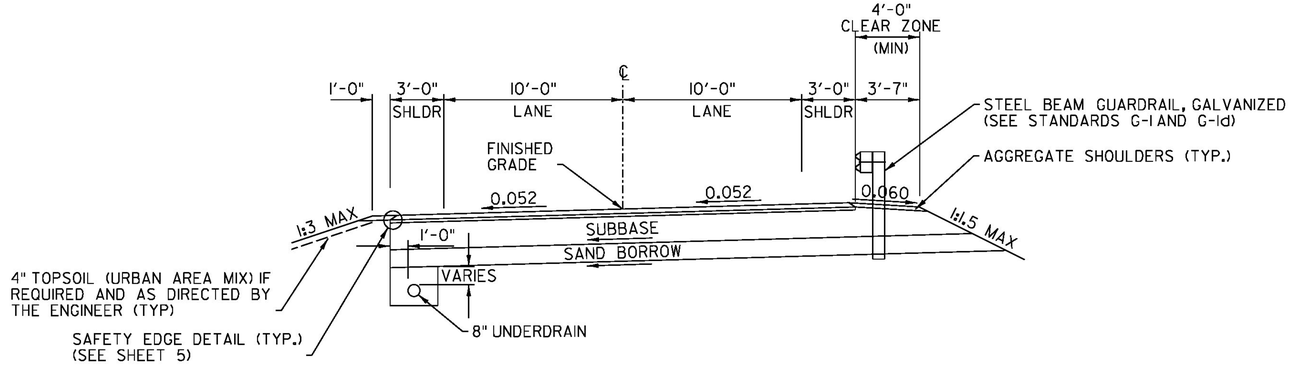
3" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (2-1 1/2" LIFTS) (TYPE IVS)
2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IIIS
18" SUBBASE OF DENSE GRADED CRUSHED STONE/OR SUBBASE OF CRUSHED GRAVEL, COARSE GRADED
12" SAND BORROW



ROARING BROOK ROAD
NORMAL SECTION

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

3" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (2-1 1/2" LIFTS) (TYPE IVS)
2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT TYPE IIIS
18" SUBBASE OF DENSE GRADED CRUSHED STONE/OR SUBBASE OF CRUSHED GRAVEL, COARSE GRADED
12" SAND BORROW



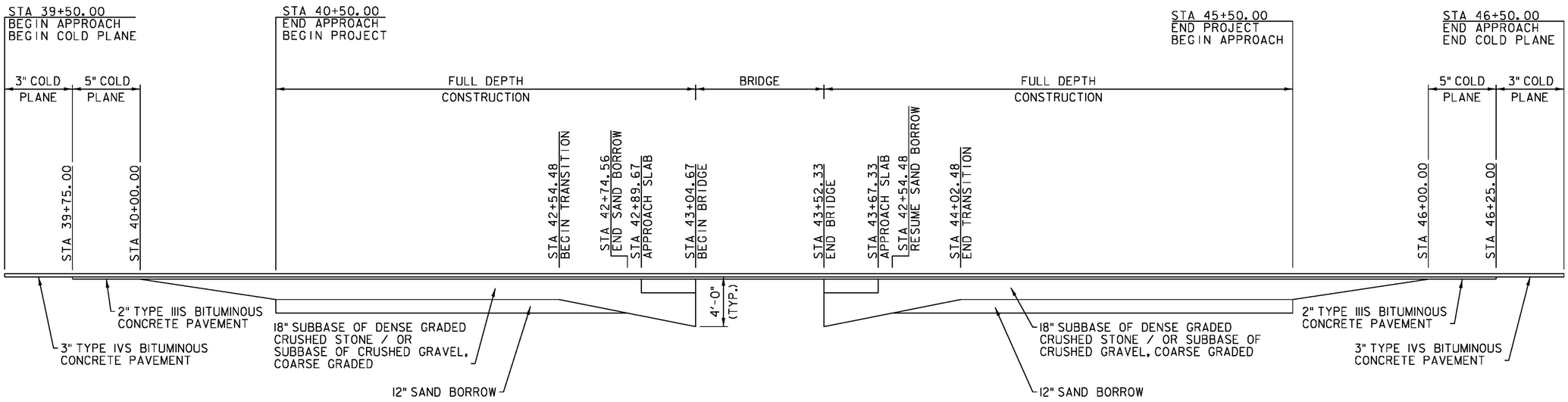
ROARING BROOK ROAD
MAXIMUM BANKED SECTION

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

CLD 12-0174 MODEL: TYP01

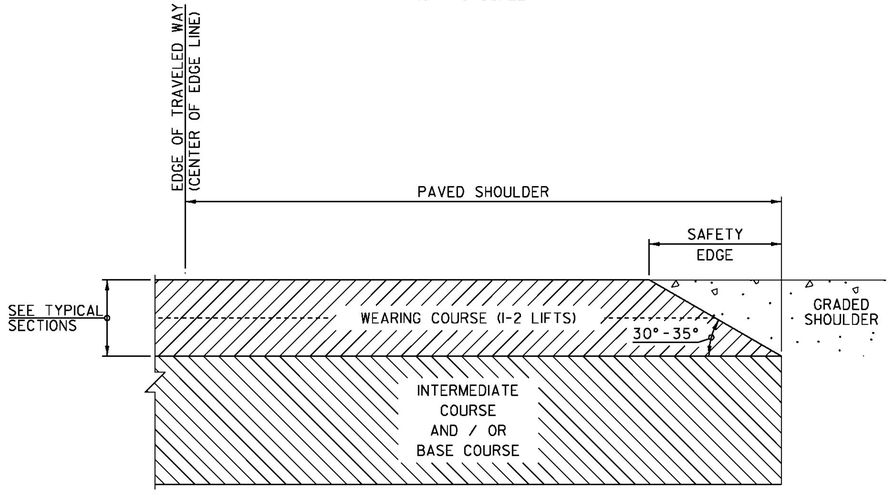
PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068frm.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: W. GORDON
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
TYPICAL ROADWAY SECTIONS SHEET 1	SHEET 4 OF 52

CLD CONSULTING ENGINEERS



MATERIAL TRANSITION DIAGRAM

NOT TO SCALE



SAFETY EDGE DETAIL

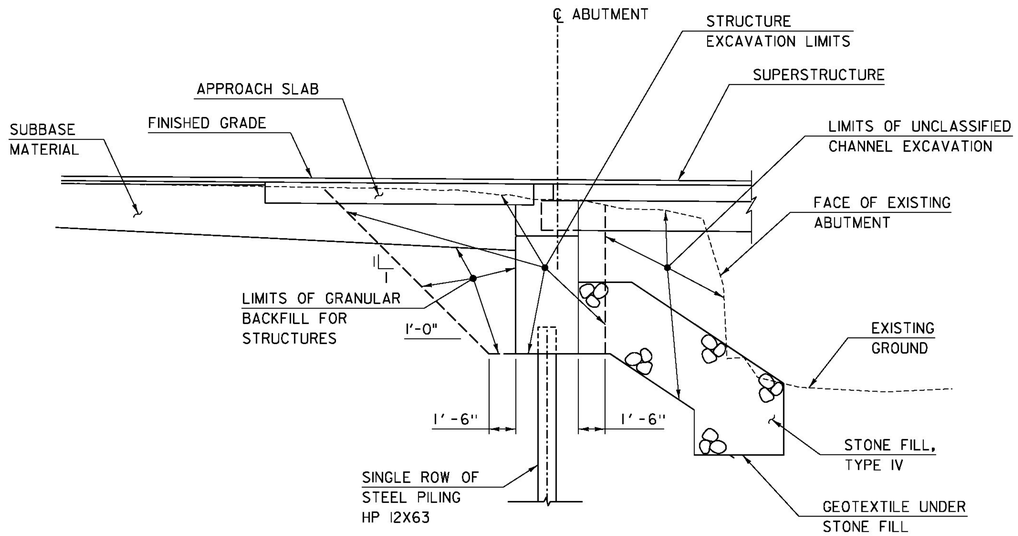
SAFETY EDGE NOTES

1. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.

2. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".

CLD 12-0174 MODEL: TYP02

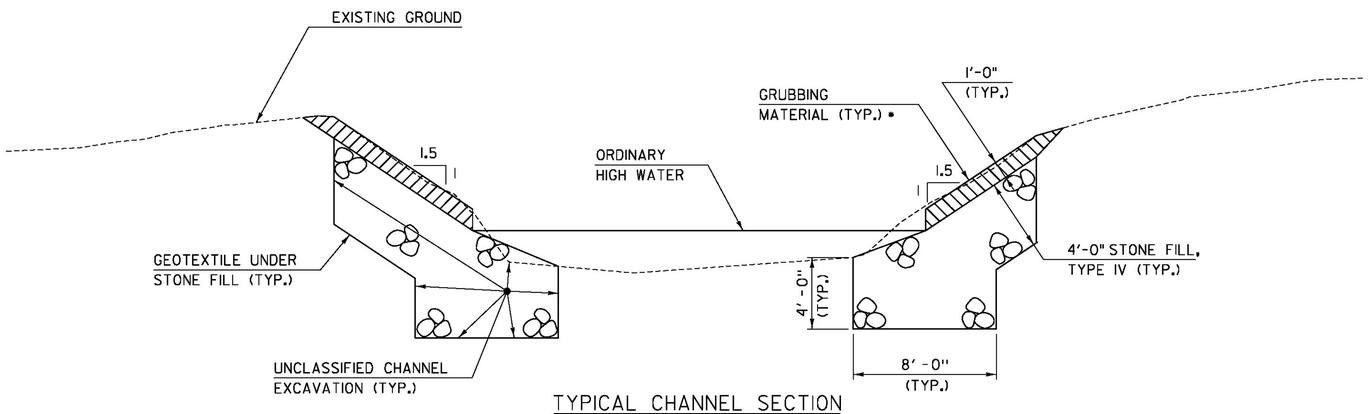
PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068frm.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: S. GOODWIN
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
TYPICAL ROADWAY SECTIONS SHEET 2	SHEET 5 OF 52



TYPICAL ABUTMENT EARTHWORKS SECTION

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

1. ACTUAL EXCAVATION LIMITS SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY THE STRUCTURE 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".



TYPICAL CHANNEL SECTION

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

• WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

CLD 12-0174 MODEL: SUB01

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068sub.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
TYPICAL EARTHWORK SECTIONS	SHEET 6 OF 52

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

3. 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.

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

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

6. THE CONTRACTOR IS MADE AWARE THAT EXISTING UTILITIES ARE WITHIN THE CONSTRUCTION LIMITS OF BRIDGE 8. 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 SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

7. NO SUBSTITUTION FOR PRECAST CONCRETE WILL BE PERMITTED.

8. ALL PG BINDER USED IN BITUMINOUS CONCRETE PAVEMENT SHALL BE IN ACCORDANCE WITH SUBSECTION 490.03b.

9. EMULSIFIED ASPHALT SHALL BE APPLIED ON ALL COLD PLANED SURFACES AT THE RATE OF 0.080 GAL/SY AND BETWEEN ALL COURSES OF PAVEMENT AT THE RATE OF 0.040 GAL/SY OR AS DIRECTED BY THE ENGINEER.

GENERAL (CONTINUED)

10. ANY REQUIRED SAWCUT OF EXISTING PAVEMENT SHALL BE INCIDENTAL TO THE WEARING COURSE PAY ITEM.

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

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO PRIVATE OR PUBLIC PROPERTY CAUSED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE ENGINEER.

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

14. ROARING BROOK ROAD (TH2) WILL BE CLOSED AND TRAFFIC DETOURED DURING CONSTRUCTION OF NEW BRIDGE 8. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS REGARDING THE CLOSURE PERIOD. DETOUR ROUTES WILL BE DETERMINED BY THE TOWN. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN AND THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SIGNAGE IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD AND VTRANS STANDARDS. PAYMENT FOR DETOUR SIGNAGE WILL BE MADE UNDER ITEM 641.10, "TRAFFIC CONTROL".

RIGHT-OF-WAY REFERENCES

15. "STATE OF VERMONT DEPARTMENT OF HIGHWAYS - PROPOSED IMPROVEMENT - SECONDARY PROJECT - TOWN OF BARTON, COUNTY OF ORLEANS, STATE AID ROUTE 4, WEST GLOVER-BARTON ROAD - PROJECT S NO. 94(1)", DATED 1954, ON FILE AT THE STATE OF VERMONT AGENCY OF TRANSPORTATION.

16. "STATE OF VERMONT AGENCY OF TRANSPORTATION - PROPOSED IMPROVEMENT - TOWN OF BARTON, COUNTY OF ORLEANS, TOWN HIGHWAY 2 (WEST GLOVER ROAD) - PROJECT SOS NO. 2199(4)", DATED 1976, ON FILE AT THE STATE OF VERMONT AGENCY OF TRANSPORTATION.

EARTHWORK

17. REMOVAL OF THE EXISTING STRUCTURE SHALL BE UNDER ITEM 529.15, "REMOVAL OF STRUCTURE". THIS WORK SHALL INCLUDE REMOVAL OF ANY PORTIONS OF THE EXISTING STRUCTURE, INCLUDING THE SUPERSTRUCTURE, ABUTMENTS, RETAINING WALLS, WINGWALLS, AND BRIDGE RAIL THAT FALL OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION.

18. 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

19. AS DETAILED ON THE QUANTITY SUMMARY SHEETS ON SHEETS 9-12, THE PRECAST CONCRETE SUBSTRUCTURES AND APPROACH SLABS ARE OPTION ITEMS. THE CONTRACTOR SHALL BID EITHER CONTRACT ITEM 540.10 FOR ALL OPTIONS OR CONTRACT ITEM 900.645 FOR ALL OPTIONS. MIXING OPTION ITEMS IN THE SUBMITTED BID IS NOT ALLOWED.

20. "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.

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

22. 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:	2.50 INCHES
ALONG BOTTOM SURFACE OF DECK SLAB:	1.75 INCHES
BEAM-END CLOSURE POUR:	2.00 INCHES
ELSEWHERE UNLESS OTHERWISE INDICATED:	3.00 INCHES

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

CONCRETE		REINFORCING STEEL	
STRUCTURAL ELEMENT:	CONTRACT ITEM:	TO MEET THE REQUIREMENTS FOR:	PAYMENT TO BE INCLUDED IN:
NEXT BEAMS	ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (NEXT 32D)"	REINFORCING STEEL, LEVEL II	ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (NEXT 32D)"
CAST-IN-PLACE CONCRETE*	ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)"	REINFORCING STEEL, LEVEL II	ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)"
SUBSTRUCTURE	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE), AS APPROPRIATE.	REINFORCING STEEL, LEVEL I	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE), AS APPROPRIATE.
BRIDGE CURBS	ITEM 501.33, "CONCRETE, HIGH PERFORMANCE CLASS A"	REINFORCING STEEL, LEVEL II	ITEM 507.12, "REINFORCING STEEL, LEVEL II"
APPROACH SLABS	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE), AS APPROPRIATE.	REINFORCING STEEL, LEVEL I	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE), AS APPROPRIATE.

* CAST-IN-PLACE CONCRETE SHALL INCLUDE ALL CONCRETE PLACED INTEGRALLY WITH THE SUPERSTRUCTURE AND APPROACH SLABS INCLUDING BEAM-END CLOSURE POURS, DECK CLOSURE POURS, AND APPROACH SLAB CLOSURE POURS, AND SUBSTRUCTURE CONCRETE FOR PILE CAVITIES AS DETAILED IN THE PLANS.

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: z111068notes.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
PROJECT NOTES (1 OF 2)

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 7 OF 52

CLD 12-0174 MODEL: GeneralNotes (1 of 2)

PRECAST ABUTMENTS AND POST-TENSIONING

24. WATERSTOPS SHALL BE PLACED AT THE JOINT BETWEEN THE PRECAST ABUTMENTS AND THE CAST-IN-PLACE CONCRETE BEAM-END CLOSURE POURS. THIS WORK SHALL BE PAID FOR UNDER THE APPROPRIATE PRECAST CONCRETE ABUTMENT PAY ITEM.

25. 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.

26. 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 APPROPRIATE PRECAST CONCRETE ABUTMENT PAY 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.

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

28. 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

29. THE CORRUGATED STEEL PIPE SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01 AND AASHTO M218. ALL COSTS ASSOCIATED WITH PLACING THE CORRUGATED STEEL PIPE SHALL BE INCLUDED UNDER THE APPROPRIATE PRECAST CONCRETE ABUTMENT PAY ITEM.

30. 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.
    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.
    I. BACKFILL MAY BE COMPLETED AFTER SPLICE CONNECTOR GROUT HAS REACHED 85% OF 5,000 PSI.

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

NEXT D BEAMS

32. 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.

33. DESIGN VALUES:
    A. CONCRETE DESIGN COMPRESSIVE STRENGTH: f`c = 6,000 PSI.
    B. CONCRETE COMPRESSIVE STRENGTH AT RELEASE: f`ci = 4,000 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	619.1 K-FT
SUPERIMPOSED DEAD LOAD MOMENT	124.4 K-FT
LIVE LOAD AND IMPACT MOMENT	802.8 K-FT
DEAD LOAD REACTION	64.5 KIPS
LIVE LOAD AND IMPACT REACTION	63.4 KIPS
TOTAL REACTION	127.9 KIPS
CAMBER AT RELEASE	11/16 INCHES
ERECTION CAMBER	1 1/8 INCHES
RESIDUAL CAMBER	1 5/16 INCHES
FINAL CAMBER	15/16 INCHES

    DIMENSION TOLERANCES SHALL BE INCLUDED IN FABRICATION DRAWINGS.

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

35. 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. THE CONTRACTOR SHALL NOT DRILL INTO NEXT BEAMS.

36. 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.

37. 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. THIS WORK WILL BE PAID FOR UNDER ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPO)"
    H. COMPLETE BEAM-END CLOSURE POUR TO TOP OF DECK, APPLY LONGITUDINAL GROOVES IN ACCORDANCE WITH SECTION 509, AND CURE. THIS WORK WILL BE PAID FOR UNDER ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPO)"

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

H-PILES

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

40. 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.

41. THE PILES SHALL BE DRIVEN TO A NOMINAL PILE DRIVING RESISTANCE (RNDR) OF 218 KIPS, AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING, AND AS INTERPRETED BY THE ENGINEER, AND TO A MINIMUM DEPTH OF 19 FEET BELOW THE BOTTOM OF THE PRECAST ABUTMENT. NO PILE SPLICES SHALL BE ALLOWED ABOVE THIS DEPTH.

42. 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 SUBSECTION 505.04. 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 WILL BE PAID FOR AT THE UNIT PRICE BID FOR CONTRACT ITEM 505.45.

43. 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.

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

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z1J068notes.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
PROJECT NOTES (2 OF 2)	SHEET 8 OF 52

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES							TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS				GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
1							1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	-			**EARTHWORK SUMMARY**
1540							1540		CY	COMMON EXCAVATION	203.15	11.1	1540	CY	COMMON EXCAVATION
													92	CY	UNCLASSIFIED CHANNEL EXCAVATION (0.25 x 368 CY)
		368					368		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	0.4	313	CY	STRUCTURE EXCAVATION (ASSUME 1.0 x 313 CY)
425							425		CY	SAND BORROW	203.31	3.8	1945	CY	TOTAL FILL AVAILABLE
1							1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	-	23	CY	TOTAL FILL REQUIRED (INCLUDING 1.15 FILL FACTOR)
		313					313		CY	STRUCTURE EXCAVATION	204.25	1.9	1922	CY	TOTAL WASTE
		99					99		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	1.2			
400							400		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	10.7			
20							20		CY	SUBBASE OF GRAVEL	301.15	2.8			
										BEGIN OPTION AA					
950							950		CY	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	301.25	18			
950							950		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	18			
										END OPTION AA					
1							1		CY	AGGREGATE SURFACE COURSE	401.10	0.2			
50							50		TON	AGGREGATE SHOULDERS	402.12	6.3			
8							8		CWT	EMULSIFIED ASPHALT	404.65	0.2			
1							1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	-			
		7					7		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	0.9			
		1					1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10	-			
		858					858		LF	STEEL PILING, HP 12 X 63	505.155	-			
		2					2		EACH	DYNAMIC PILE LOADING TEST	505.45	-			
		350					350		LB	REINFORCING STEEL, LEVEL II	507.12	0.9			
		8					8		GAL	WATER REPELLENT, SILANE	514.10	2.1			
		50					50		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	-			
		133					133		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20	0.6			
		50					50		LF	JOINT SEALER, HOT POURED	524.11	-			
		100					100		LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33	0.7			
		1					1		EACH	REMOVAL OF STRUCTURE (625 SF - EST.)	529.15	-			
		12					12		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17	-			
										BEGIN OPTION BB					
		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 BB					
										BEGIN OPTION CC					
		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 CC					

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11j068/cos/z11j068frm.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: M. HALEY
QUANTITY SHEET 1

PLOT DATE: 12/17/2014
DRAWN BY: S. GOODWIN
CHECKED BY: P. SHEDD

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							BEGIN OPTION DD					
		1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #1)	540.10	-			
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE) (APPROACH SLAB #1)	900.645	-			
							END OPTION DD					
							BEGIN OPTION EE					
		1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #2)	540.10	-			
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE) (APPROACH SLAB #2)	900.645	-			
							END OPTION EE					
250				250		LF	8 INCH UNDERDRAIN PIPE	605.11	1			
2				2		EACH	UNDERDRAIN FLUSHING BASIN	605.95	-			
35				35		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	EST.			
90				90		CY	STONE FILL, TYPE II	613.11	5			
		278		278		CY	STONE FILL, TYPE IV	613.13	1			
130				130		LF	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28	0.3			
1				1		EACH	RELOCATE MAILBOX, SINGLE SUPPORT	617.10	-			
175				175		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20	6.5			
4				4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60	-			
		4		4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	621.72	-			
75				75		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	2			
80				80		LF	TEMPORARY TRAFFIC BARRIER	621.90	-			
			1	1		LS	FIELD OFFICE, ENGINEERS	631.10	-			
			1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16	-			
			1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17	-			
			3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	-			
1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11	-			
1				1		LS	TRAFFIC CONTROL	641.10	-			
1400				1400		LF	DURABLE 4 INCH WHITE LINE, POLYUREA	646.404	-			
1400				1400		LF	DURABLE 4 INCH YELLOW LINE, POLYUREA	646.414	-			
1400				1400		LF	TEMPORARY 4 INCH WHITE LINE, PAINT	646.602	-			
1400				1400		LF	TEMPORARY 4 INCH YELLOW LINE, PAINT	646.612	-			
90				90		EACH	LINE STRIPING TARGETS	646.76	-			
180		312		492		SY	GEOTEXTILE UNDER STONE FILL	649.31	1.7			
	300			300		SY	GEOTEXTILE FOR SILT FENCE	649.51	-			
	20			20		LB	SEED	651.15	3.8			
	50			50		LB	FERTILIZER	651.18	-			
	0.5			0.5		TON	AGRICULTURAL LIMESTONE	651.20	0.3			
	0.5			0.5		TON	HAY MULCH	651.25	0.3			
55				55		CY	TOPSOIL	651.35	0.5			
30		64		94		SY	GRUBBING MATERIAL	651.40	1.8			

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068frm.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: M. HALEY
QUANTITY SHEET 2

PLOT DATE: 12/17/2014
DRAWN BY: S. GOODWIN
CHECKED BY: P. SHEDD

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
	1			1		LS	EPSC PLAN	652.10	-
	40			40		HR	MONITORING EPSC PLAN	652.20	-
	1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-
	175			175		SY	TEMPORARY EROSION MATTING	653.20	5
	3			3		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25	EST.
	1			1		EACH	FILTER BAG	653.45	-
1320				1320		LF	PROJECT DEMARCATION FENCE	653.55	7
18				18		SF	TRAFFIC SIGNS, TYPE A	675.20	0.16
50				50		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	-
7				7		EACH	REMOVING SIGNS	675.50	-
2				2		EACH	ERECTING SALVAGED SIGNS	675.60	-
1				1		EACH	SETTING SALVAGED POSTS	675.61	-
4				4		EACH	DELINEATOR WITH STEEL POST	676.10	-
1				1		EACH	REMOVAL OF EXISTING DELINEATOR	676.12	-
1				1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	-
		39		39		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608	2.8
		140		140		LF	SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (NEXT 32 D)	900.640	-
1				1		LS	SPECIAL PROVISION (CPM SCHEDULE)	900.645	-
1				1		LU	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE) (N.A.B.I.)	900.650	-
1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I.)	900.650	-
1				1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT) (N.A.B.I.)	900.650	-
65				65		SY	SPECIAL PROVISION (HAND-PLACED BITUMINOUS CONCRETE MATERIAL, DRIVES)	900.675	2
550				550		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	5

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)
200	TON	TYPE IIIS
345	TON	TYPE IVS
545	TON	SUBTOTAL
5	TON	ROUNDING
550	TON	TOTAL

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068frm.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: M. HALEY
QUANTITY SHEET 3

PLOT DATE: 1/5/2015
DRAWN BY: S. GOODWIN
CHECKED BY: P. SHEDD
SHEET 11 OF 52

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE QUANTITY SHEET 1

SUMMARY OF BRIDGE QUANTITIES					TOTALS	DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
APPROACH SLAB #1	APPROACH SLAB #2	ABUTMENT #1	ABUTMENT #2	SUPER-STRUCTURE	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
		191	177		368	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27			
		161	152		313	CY	STRUCTURE EXCAVATION	204.25			
		47	52		99	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30			
				7	7	CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33			
		0.5	0.5		1	LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10			
		432	426		858	LF	STEEL PILING, HP 12 X 63	505.155			
		1	1		2	EACH	DYNAMIC PILE LOADING TEST	505.45			
				350	350	LB	REINFORCING STEEL, LEVEL II	507.12			
		3	3	2	8	GAL	WATER REPELLENT, SILANE	514.10			
25	25				50	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10			
				133	133	SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20			
25	25				50	LF	JOINT SEALER, HOT POURED	524.11			
				100	100	LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33			
				1	1	EACH	REMOVAL OF STRUCTURE (625 SF - EST.)	529.15			
				12	12	EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17			
							BEGIN OPTION BB				
		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 BB				
							BEGIN OPTION CC				
			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 CC				
							BEGIN OPTION DD				
1					1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #1)	540.10			
1					1	LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE) (APPROACH SLAB #1)	900.645			
							END OPTION DD				
							BEGIN OPTION EE				
	1				1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #2)	540.10			
	1				1	LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE) (APPROACH SLAB #2)	900.645			
							END OPTION EE				
		138	140		278	CY	STONE FILL, TYPE IV	613.13			
				4	4	EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	621.72			
		157	155		312	SY	GEOTEXTILE UNDER STONE FILL	649.31			
		32	32		64	SY	GRUBBING MATERIAL	651.40			
2	2	16	15	4	39	CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608			
				140	140	LF	SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS) (NEXT 32 D)	900.640			

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068frm.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: M. HALEY
BRIDGE QUANTITY SHEET

PLOT DATE: 12/17/2014
DRAWN BY: S. GOODWIN
CHECKED BY: P. SHEDD
SHEET 12 OF 52

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
- (H) HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

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

CLD 12-074 MODEL: Legend

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068frm.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
CONVENTIONAL SYMBOLOGY LEGEND SHEET	SHEET 13 OF 52

GPS CONTROL POINTS

HVCTRL #1

REBAR

NORTH = 818474.143
EAST = 1712118.108
ELEV. = 1260.608

HVCTRL #2

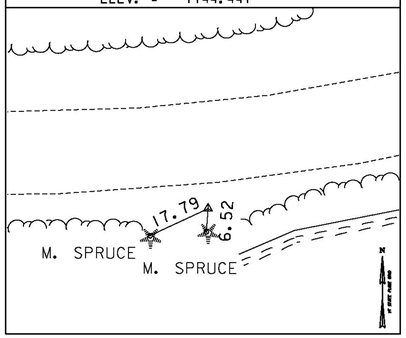
REBAR

NORTH = 816981.669
EAST = 1713275.201
ELEV. = 1214.944

TRAVERSE TIES

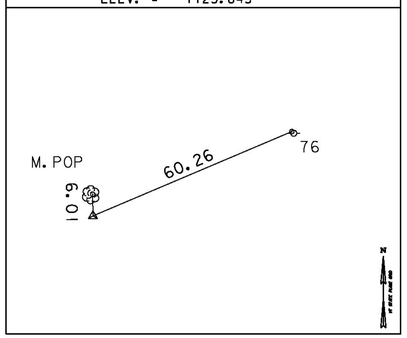
HVCTRL #4

NORTH = 816068.406
EAST = 1714460.305
ELEV. = 1144.447



HVCTRL #5

NORTH = 816632.784
EAST = 1715407.711
ELEV. = 1125.843



HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

ALIGNMENT TIES

HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83(96)
ADJUSTMENT COMPASS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

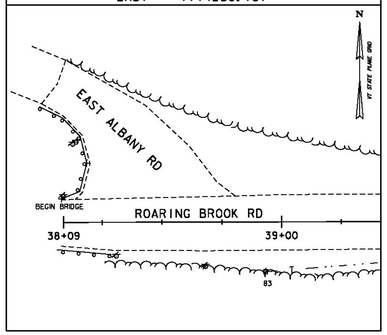
FILE NAME: survey\xlIJ068ti.dgn
PROJECT LEADER: C. WILLIAMS
DESIGNED BY:
TIE SHEET 1

PLOT DATE: 12/17/2014
DRAWN BY: R. BULLOCK
CHECKED BY:
SHEET 14 OF 52

ALIGNMENT TIES

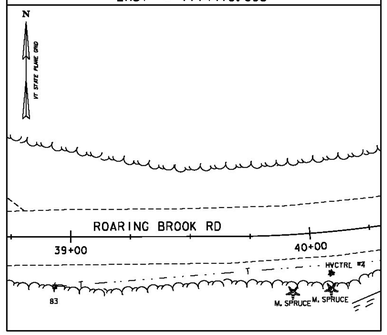
POT 38+08.83

NORTH = 816083.335
EAST = 1714260.167



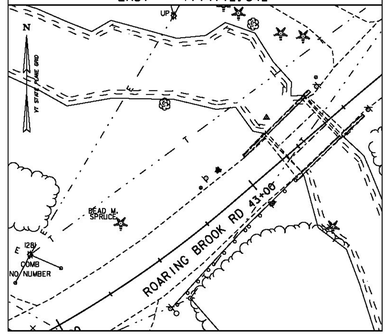
PC 39+66.76

NORTH = 816083.700
EAST = 1714418.093



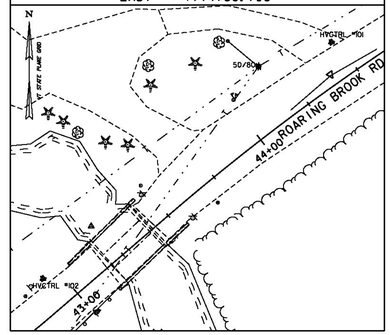
PT 42+87.76

NORTH = 816193.433
EAST = 1714712.642



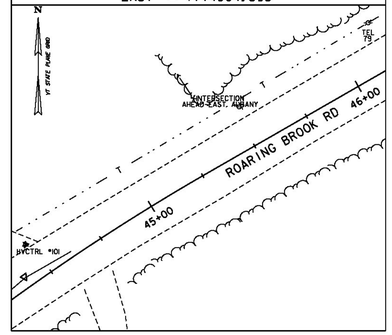
PC 43+51.30

NORTH = 816234.900
EAST = 1714760.796



PT 45+27.78

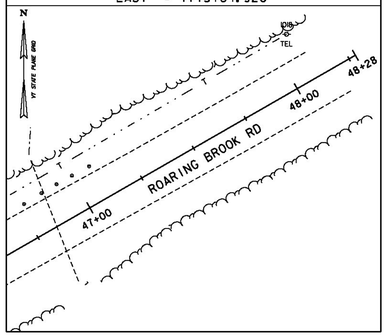
NORTH = 816336.744
EAST = 1714904.593



ALIGNMENT TIES

POT 48+28.03

NORTH = 816486.341
EAST = 1715164.920



CLD 12-0174 MODEL: TIE SHEET 02

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: z11J068/cos/z11J068ti.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: M. HALEY
TIE SHEET 2

PLOT DATE: 12/17/2014
DRAWN BY: W. GORDON
CHECKED BY: P. SHEDD
SHEET 15 OF 52

TEMPORARY 4 INCH WHITE LINE, PAINT
DURABLE 4 INCH WHITE LINE, POLYUREA
39+50 TO 46+50 SOLID LT & RT

TEMPORARY 4 INCH YELLOW LINE, PAINT
DURABLE 4 INCH YELLOW LINE, POLYUREA
39+50 TO 46+50 SOLID LT & RT

REMOVING SIGNS
AS SHOWN - 7

ERECTING SALVAGED SIGNS
AS SHOWN - 2

REMOVAL OF EXISTING DELINEATOR
42+43 RT

GUARDRAIL APPROACH SECTION,
GALVANIZED 2 RAIL BOX BEAM
42+74.3 TO 43+04.7 LT
42+75.0 TO 43+04.7 RT
43+52.3 TO 43+64.2 LT (R=10')
43+53.4 TO 43+82.8 RT

BRIDGE RAILING,
GALVANIZED 2 RAIL BOX BEAM
43+04.7 TO 43+52.3 LT
43+04.7 TO 43+53.4 RT

STEEL BEAM
GUARDRAIL, GALVANIZED
42+24.3 TO 42+74.3 LT
42+25.0 TO 42+75.0 RT
43+82.8 TO 44+45.3 RT

ANCHOR FOR STEEL BEAM RAIL
42+24.3 LT
42+25.0 RT
~~43+64.2 LT~~ SEE SHOP DRAWINGS
44+45.3 RT

REMOVAL AND DISPOSAL OF GUARDRAIL
42+43 TO 43+16 RT

CAST-IN-PLACE
CONCRETE CURB, TYPE B
42+64 TO 43+04 RT
42+73 TO 43+04 LT
43+52 TO 43+65 LT
43+52 TO 43+94 RT

CONSTRUCT DRIVES
41+75 LT (24.0 FT WIDE, GRAVEL,
W/ 4' PAVED APRON, RES.)
43+72 LT (13.0 FT WIDE, PAVED, RES.)

DELINEATOR WITH STEEL POST
42+24.3 LT
42+25.0 RT
43+55 LT
44+45.3 RT

RELOCATE MAILBOX, SINGLE SUPPORT
44+01 LT

STONE FILL, TYPE II
GEOTEXTILE UNDER STONE FILL
42+75 TO 43+03 LT (SLOPE)
43+55 TO 44+25 RT (DITCH)

STONE FILL, TYPE IV
GEOTEXTILE UNDER STONE FILL
43+03 TO 43+19 LT & RT
43+35 TO 43+55 LT & RT

8 INCH UNDERDRAIN PIPE
41+50 TO 43+02 LT
43+60 TO 44+50 RT

UNDERDRAIN FLUSHING BASIN
41+50 LT
44+50 RT

N
VT STATE PLANE GRID

STA 39+50.00
BEGIN APPROACH

PC
STA 39+66.76

CURVE (1)
DELTA = 40°36'00" LT
D = 12°38'53"
R = 453.00'
T = 167.57'
L = 321.00'
E = 30.00'
BANK = 0.052 AT 25 MPH

APPROX EXISTING R.O.W.

STA 40+50.00
BEGIN PROJECT

NEW AERIAL TELEPHONE

ROARING BROOK RD
TO WEST GLOVER

NEW TELEPHONE POLE WITH ANCHOR, STA 39+55, 16.0' RT

REMOVE EXISTING TELEPHONE POLE AND ANCHOR

N 89°52'03" E

N 49°16'02" E

CONSTRUCTION LIMITS (TYP)

PI STA 41+34.33 BK =
PI STA 41+20.19 AHD

SEE RAIL AND CURB LAYOUT SHEET (TYP.)

STA. 43+04.67
BEGIN BRIDGE

ROARING BROOK

PC
STA 43+51.30

43+60 TO 44+50 RT
NEW 8" X 53' UNDERDRAIN
W/ FLUSHING BASIN

41+50 TO 43+02 LT
NEW 8" X 156' UNDERDRAIN
W/ FLUSHING BASIN @ 41+50 LT

PT
STA 42+87.76

RETAIN AERIAL ELECTRIC

RETAIN POLE

RETAIN POLE

NEW AERIAL TELEPHONE

R=10' (TYP.)

ROARING BROOK RD
MAINLINE STA. 43+28.00
CHANNEL STA. 0+40.00
DELTA = 85°00'00"

STA. 43+52.33
END BRIDGE

REMOVE TELEPHONE POLE AND ANCHOR. REPLACE WITH NEW POLE AND ANCHOR, STA 43+18, 26.5' LT.

PI STA 44+39.80 BK =
PI STA 44+39.28 AHD

REMOVE NARROW BRIDGE WARNING SIGN NEAR STA 49+00 LT

RETAIN AERIAL TELEPHONE

APPROX EXISTING R.O.W.

N 49°16'02" E

N 60°06'59" E

MATCHLINE SEE BELOW

APPROX EXISTING R.O.W.

STA 45+50.00
END PROJECT

PT
STA 45+27.78

STA 46+50.00
END APPROACH

MATCHLINE SEE ABOVE

INTERSECTION AHEAD-EAST ALBANY

ROARING BROOK RD
TO BARTON

WOODEN GUARD RAIL (7)

CURVE (2)
DELTA = 10°50'56" RT
D = 6°08'51"
R = 932.00'
T = 88.50'
L = 176.47'
E = 4.19

(A) 43+01 RT, 43+47 LT

(B) 42+87 LT, 43+57 RT

(C) 45+53 LT — E. Albany

(C) 41+00 LT — E. Albany S, S, S

(D) 38+65 RT, 46+25 LT — 25 MPH, N, N, N

(E) 43+00 RT, 43+57 LT — BRIDGE 8 TH 2, N, N

LEGEND

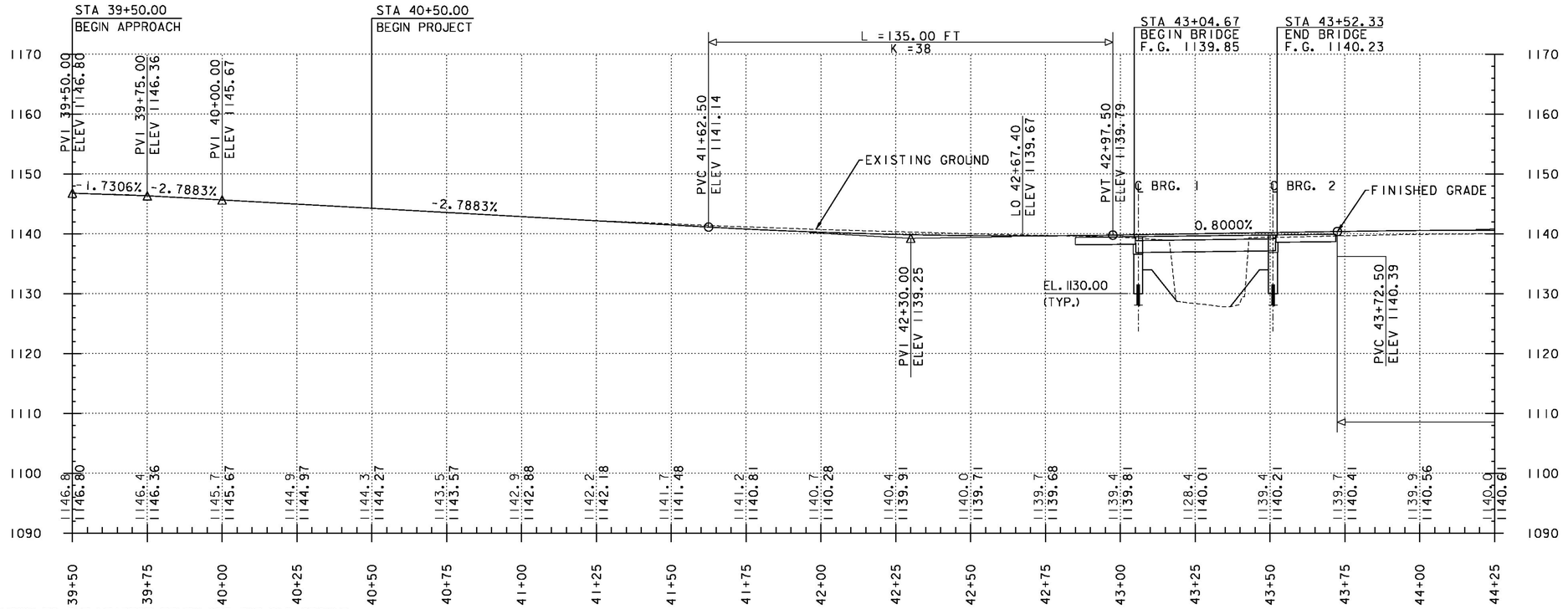
N	NEW SIGN
R	RETAIN SIGN
S	SALVAGE SIGN
	REMOVE SIGN

0 20 40
(SCALE 1" = 20')

EXISTING BRIDGE DATA:
A 26-FOOT SPAN CONCRETE T-BEAM BRIDGE ON CAST-IN-PLACE CONCRETE ABUTMENTS ON SPREAD FOOTINGS CONSTRUCTED IN 1928.

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068bdr.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
LAYOUT SHEET	SHEET 16 OF 52

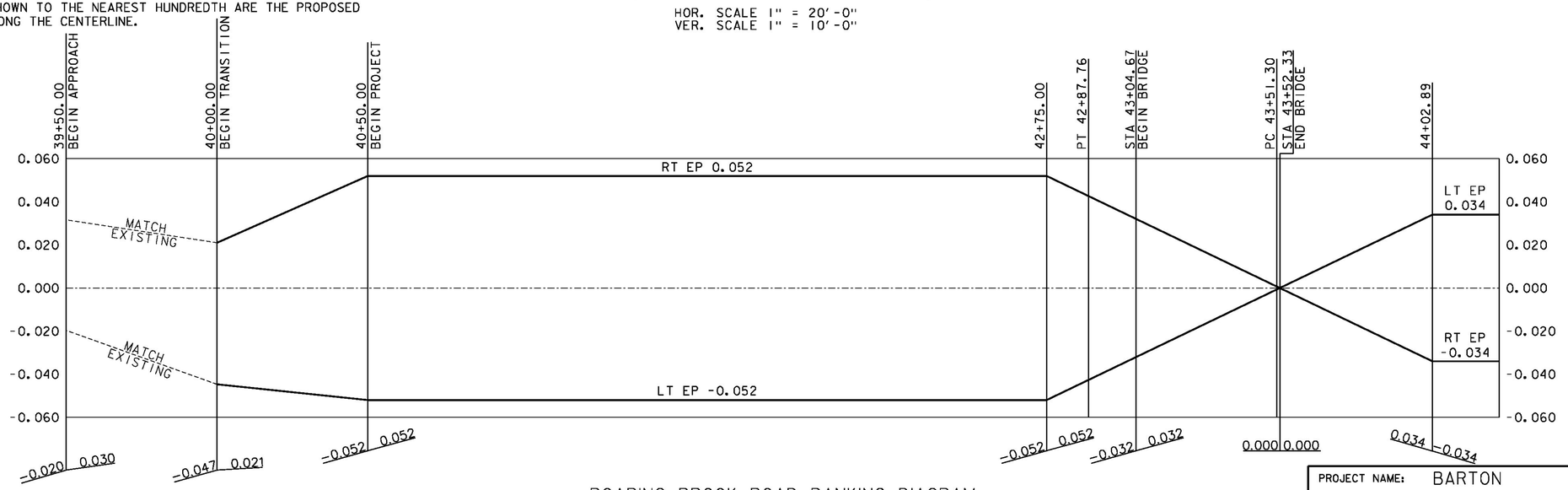


THE ELEVATIONS SHOWN TO THE NEAREST TENTH ARE THE OLD GROUND ALONG THE CENTERLINE.

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

ROARING BROOK ROAD PROFILE

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



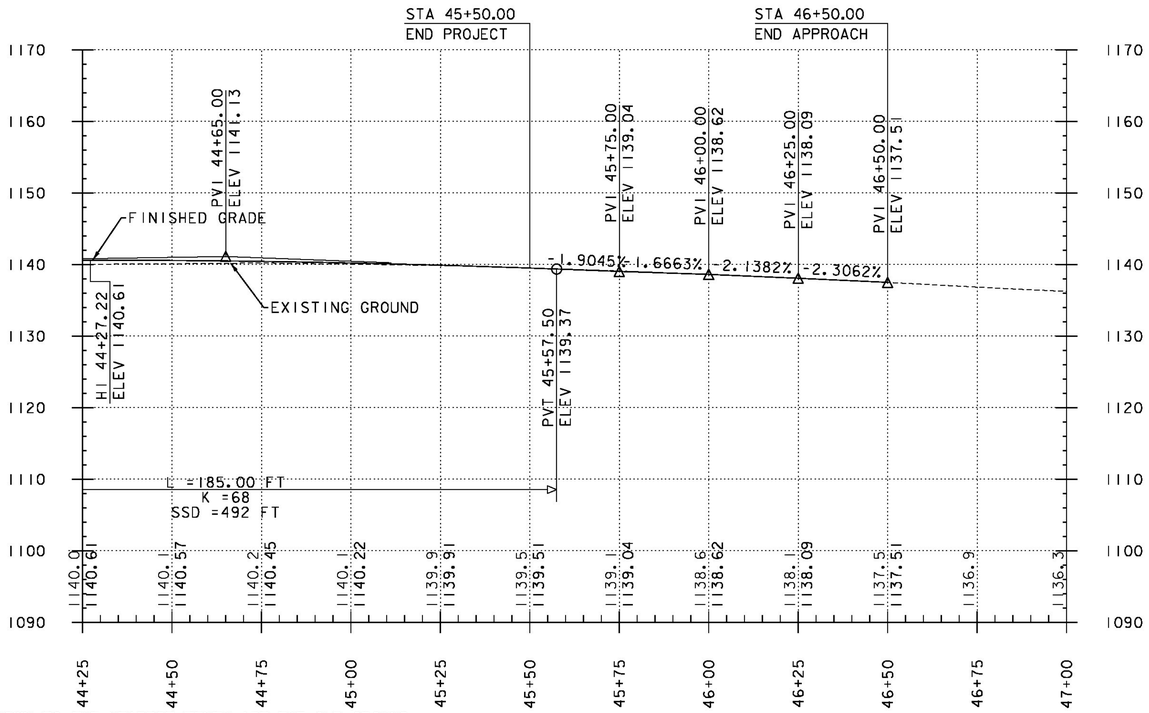
ROARING BROOK ROAD BANKING DIAGRAM

NOT TO SCALE

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: IIJ068/cos/zIIJ068pro.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
PROFILE AND BANKING DIAGRAM SHEET 1	SHEET 17 OF 52

CONSULTING ENGINEERS

CLD 12-0174 MODEL: PROD1

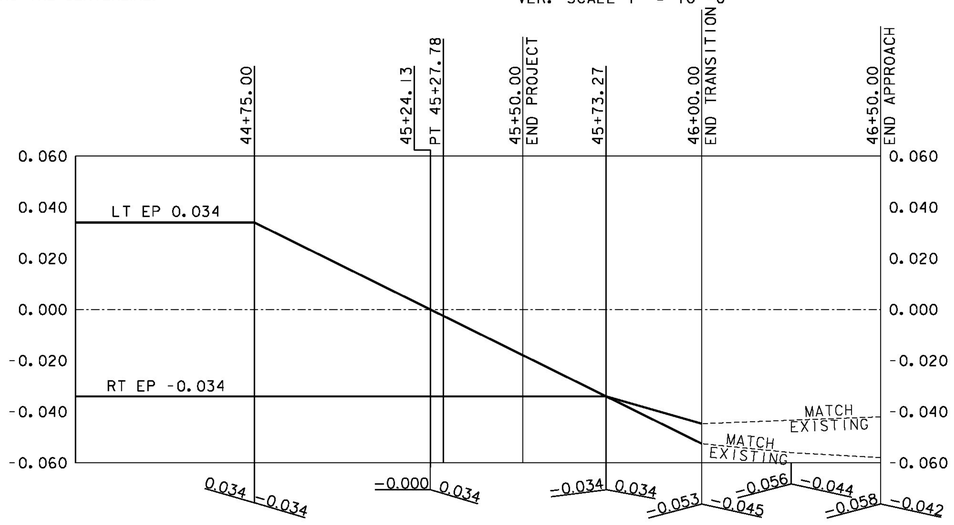


THE ELEVATIONS SHOWN TO THE NEAREST TENTH ARE THE OLD GROUND ALONG THE CENTERLINE.

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

ROARING BROOK ROAD PROFILE

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



CLD 12-0174 MODEL: PR002

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068pro.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
PROFILE AND BANKING DIAGRAM SHEET 2	SHEET 18 OF 52

CLD CONSULTING ENGINEERS

NOTES

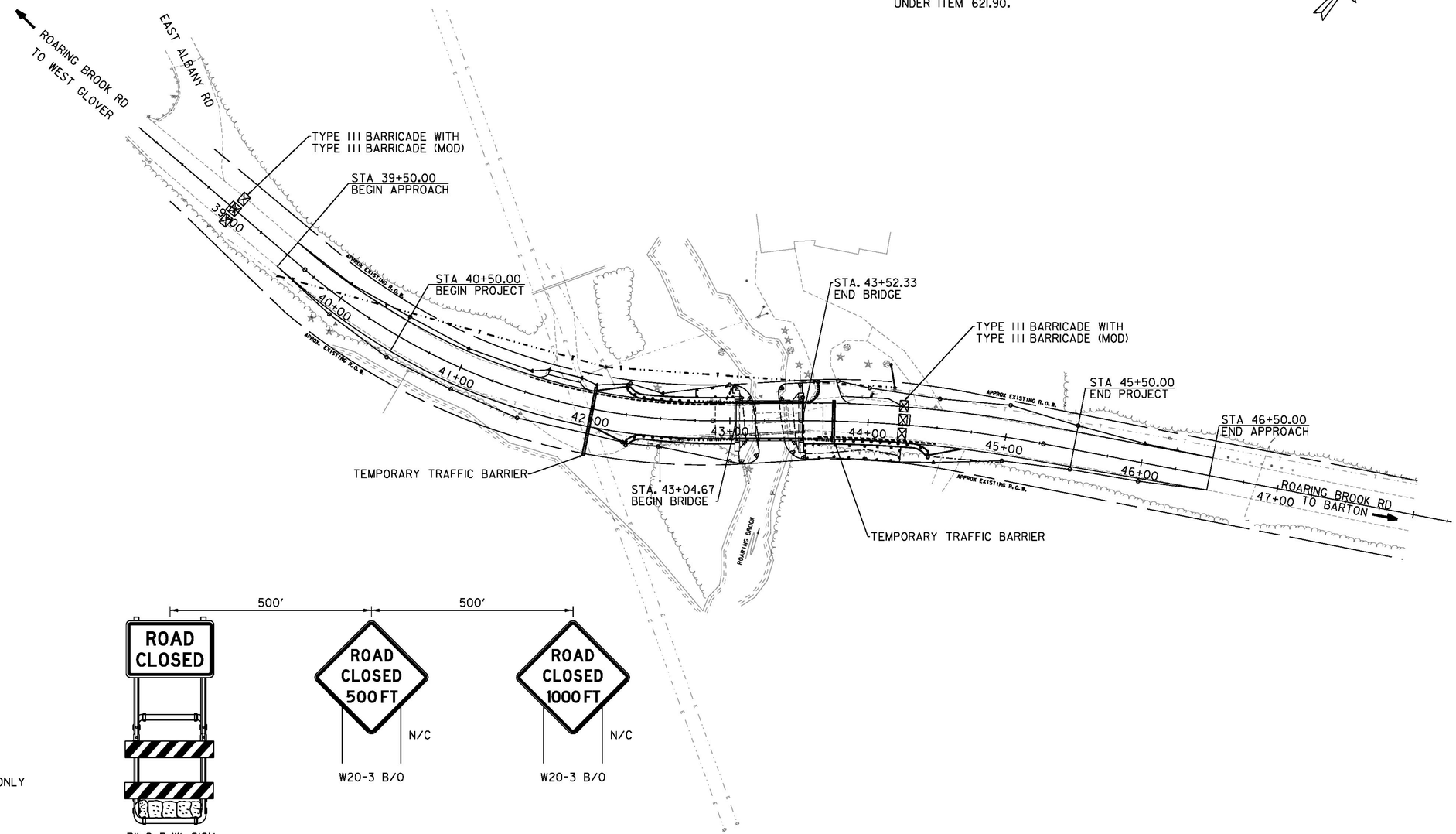
1. DETOUR ROUTES WILL BE DETERMINED BY THE TOWN. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN AND THE ENGINEER.

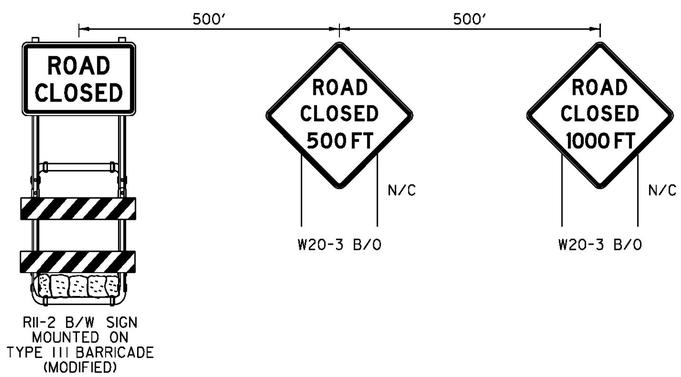
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SIGNAGE AS SHOWN ON THIS SHEET AND IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD AND VTRANS STANDARDS. PAYMENT FOR SIGNAGE WILL BE MADE UNDER ITEM 641.10, TRAFFIC CONTROL.

3. TEMPORARY TRAFFIC BARRIER WILL BE PAID FOR UNDER ITEM 621.90.

N

VT STATE PLANE GRID





R11-2 B/W SIGN MOUNTED ON TYPE III BARRICADE (MODIFIED)

LEGEND

N/C	NEW SIGN/CONSTRUCTION ONLY
B/O	BLACK/ORANGE
B/W	BLACK/WHITE
☒	TYPE III BARRICADE
☒	TYPE III BARRICADE (MOD.)
═	TEMPORARY TRAFFIC BARRIER

0 40 80
(SCALE 1" = 40')

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068bdrtcp.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
TRAFFIC CONTROL SHEET	SHEET 19 OF 52

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

SHSM = FHWA 2004 STANDARD HIGHWAY SIGNS AND MARKINGS BOOK AND THE 2012 SUPPLEMENT TO THE 2004 EDITION

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																	REMARKS	SIGN DETAIL		
		EA	WIDTH (in)	HEIGHT (in)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POSTS	SQUARE STEEL (in)			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in)			FOUND-ATION	TUBULAR STEEL Ø (in)				W-SHAPE STEEL				SIGNS REQUIRED			
												1.75	2.0	2.5			3.0	4.0	4.0 MOD		3.0	3.5	4.0	5.0	FTG. SIZE		WEIGHT	POST SIZE				
												lb/ft					lb/ft				lb/ft				24"	30"						
												1.88	2.42	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
TH 2 38+65 RT		1	30	30	6.25						1		X		X														WI-2L		
	25 M.P.H.	1	18	18	2.25																								WI3-1P		
41+00 LT							1			1																					
	E. Albany RD						1																									
43+00 RT	BRIDGE 8 TH 2	1	6	10	0.42						1	X			X													VD-701			T-42
43+57 LT	BRIDGE 8 TH 2	1	6	10	0.42						1	X			X													VD-701			T-42
46+25 LT		1	30	30	6.25						1		X		X														WI-2L		
	25 M.P.H.	1	18	18	2.25																								WI3-1P		
	ROUNDING				0.16						0	0																			
											FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB							
											20	30																			
SHEET TOTALS		SF			18.00	SF	EA.	SF			FT					LB			EA.	LB				EA.	EA.	LB				
							2				50																				

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

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: z11J068tsdet.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: M. HALEY
TRAFFIC SIGN SUMMARY SHEET

PLOT DATE: 12/17/2014
DRAWN BY: W. GORDON
CHECKED BY: P. SHEDD
SHEET 20 OF 52

CLD 12-0121

GENERAL NOTES

SIGN DESIGN AND FABRICATION NOTES

1. ALL SIGNS SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST REVISION OF THE 2009 MUTCD, THE 2004 STANDARD HIGHWAY SIGNS AND MARKINGS (SHSM), AND THE 2012 SUPPLEMENT TO THE 2004 EDITION (SHSM) DETAILS AS AVAILABLE, VAOT STANDARDS OR AS DETAILED IN THE PLANS.

2. ALL LETTERS AND NUMBERS USED FOR ALL SIGNS SHALL CONFORM TO THE APPLICABLE FONT AS DEFINED AND DETAILED IN THE 2004 SHSM AND THE 2012 SUPPLEMENT.

3. ALL ARROWS AND SYMBOLS SHALL CONFORM WITH THE 2004 SHSM AND THE 2012 SUPPLEMENT UNLESS OTHERWISE DETAILED IN THE PLANS.

4. COLORS USED ON ALL SIGNS SHALL CONFORM WITH THE REQUIREMENTS OF SECTION 1A.12 OF THE MUTCD.

5. SIGN SHEETING FOR FLUORESCENT YELLOW AND FLUORESCENT YELLOW GREEN SHALL BE AASHTO M268 (ASTM D4956) TYPE VII, VIII OR IX. ALL OTHER SIGN SHEETING SHALL BE TYPE III OR IV.

6. SHEETING TYPES AND MANUFACTURERS SHALL NOT BE MIXED ON A SINGLE SIGN ASSEMBLY. SHEETING COLOR/TYPE SHOULD BE BY THE SAME MANUFACTURER AND BE CONSISTENT THROUGHOUT THE PROJECT UNLESS OTHERWISE DETAILED ON THE PLANS.

7. SIGN BASE MATERIAL FOR DELINEATORS AND MILE MARKER PLAQUES (VD-700) SHALL BE 0.063" THICK FLAT SHEET ALUMINUM. ALL TOWN HIGHWAY SIGNS (D3-1) SHALL BE 0.125" THICK FLAT SHEET ALUMINUM OR EXTRUDED ALUMINUM WITH 0.25 INCH FLANGE AND 0.090 INCH WEB. UNLESS OTHERWISE NOTED ON THE PLANS, ALL OTHER SIGNS SHALL BE FLAT SHEET ALUMINUM WITH THE FOLLOWING MINIMUM THICKNESSES:

SIGN SIZE	12" X 12"		
	18" X 18"		
	21" X 15"		
	24" X 8"		
	24" X 10"		48" X 18"
	24" X 12"	36" X 12"	48" X 24"
	24" X 18"	36" X 15"	48" X 30"
	24" X 24"	36" X 18"	48" X 42"
	24" X 30"	36" X 24"	48" X 48"
	30" X 15"	36" X 36"	48" X 60"
	30" X 18"	36" X 42"	72" X 10"
	30" X 30"	36" X 48"	72" X 12"
	30" X 42"	36" X 54"	72" X 20"
THICKNESS	0.080"	0.100"	0.125"

SIGN POST NOTES

1. ALL SIGN POSTS SHALL BE INSTALLED IN A NEW ANCHOR. ALL SIGNS INSTALLED IN PAVED OR CONCRETE ISLANDS OR SIDEWALKS SHALL ALSO BE INSTALLED WITH AN 18" SLEEVE. PAYMENT FOR SLEEVE SHALL BE INCIDENTAL TO THE SIGN POST.

2. 1.75" SQUARE STEEL POSTS SHALL BE 14 GAUGE STEEL. 2.0" AND 2.5" SQUARE STEEL POSTS SHALL BE 12 GAUGE STEEL.

SIGN INSTALLATION NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO PRIVATE OR PUBLIC PROPERTY CAUSED BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE.

2. ALL SIGNS WITHIN THE PROJECT LIMITS ARE TO BE REPLACED UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER. SIGN LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD.

3. ALL SIGN PLACEMENT SHALL BE IN CONFORMANCE WITH VAOT STANDARD E-121 STANDARD SIGN PLACEMENT CONVENTIONAL ROADS, UNLESS OTHERWISE NOTED.

4. ALL SIGNS, FRAMES, MOUNTING HARDWARE, POSTS, AND ANCHORS FOR ANY SIGN ASSEMBLY SHALL BE REPLACED AT THE SAME TIME. MIXING OF OLD AND NEW SIGNS ON THE SAME ASSEMBLY WILL NOT BE ALLOWED EXCEPT AS NOTED ON THE PLANS.

5. NEW SIGNS WITH THEIR GREATER NIGHTTIME RETROREFLECTIVITY CAN OBSCURE OLDER SIGNS MOUNTED ADJACENT TO THEM. TO AVOID CONFUSION OF ROAD USERS, WORK SHALL BE COORDINATED SUCH THAT ALL SIGNS ASSOCIATED WITH A CURVE, INTERSECTION, OR SPEED CHANGE, SHALL BE REPLACED ON THE SAME DAY AND NOT LEFT INCOMPLETE NOR WITH A MIXTURE OF OLD AND NEW SIGNS WITHIN A GROUP OF ASSOCIATED SIGNS.

NOT TO SCALE

CLD 12-0121

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z1ij068tsdet.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: W. GORDON
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
SIGN DETAIL SHEET	SHEET 21 OF 52

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

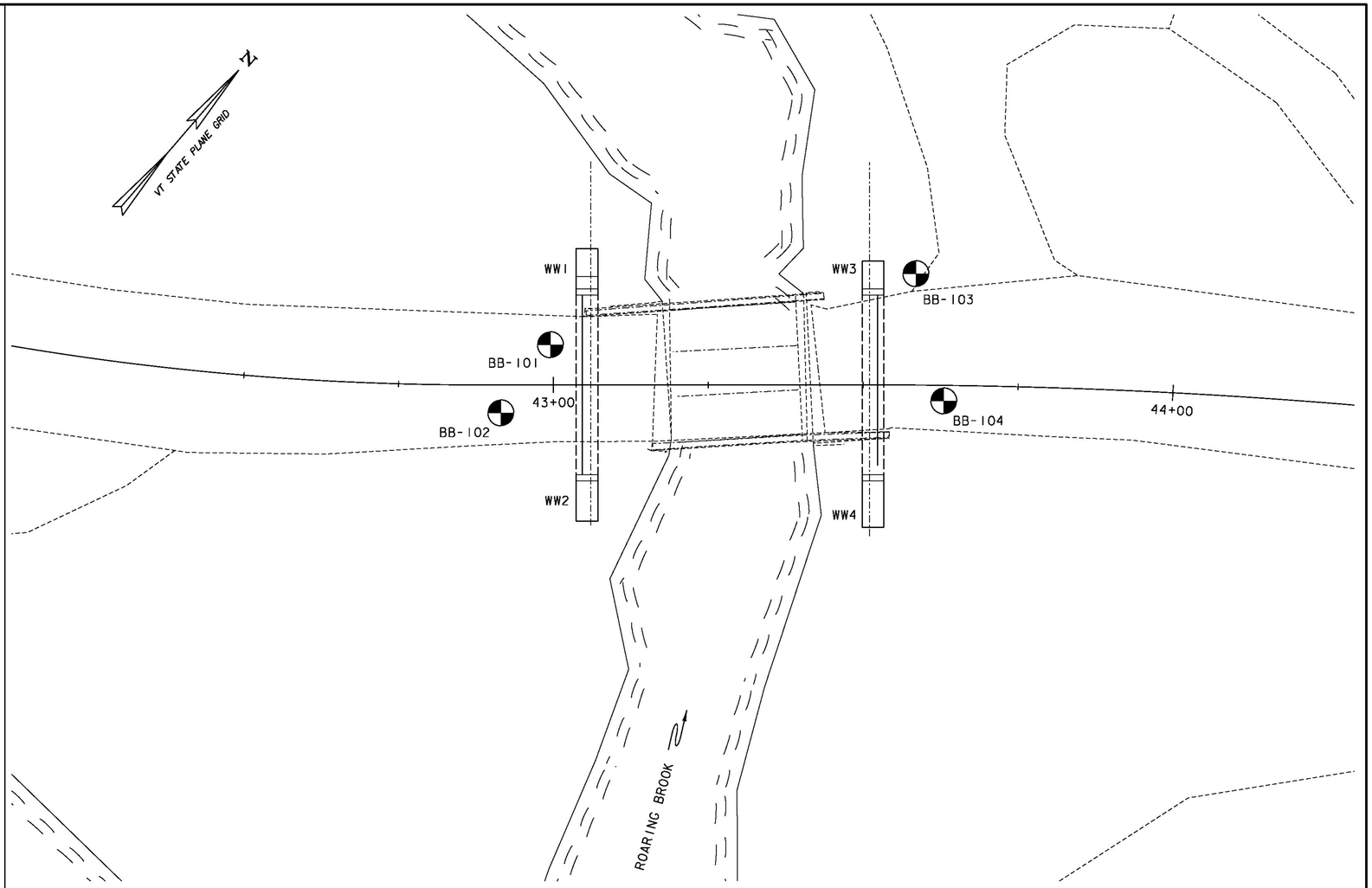
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

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-101	42+99.5	6.5' LT	1139.0'	N/A
BB-102	42+91.5	4.5' RT	1139.0'	1060.0'
BB-103	43+58.5	18.0' LT	1139.0'	1061.0'
BB-104	43+63.0	2.5' RT	1139.0'	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: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
BORING INFORMATION SHEET

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 22 OF 52

CLD 12-0174 MODEL: BOR01

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

BORING NUMBER: BB-101
SHEET 1 of 2
DATE STARTED: 2/14/13
DATE COMPLETED: 2/15/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 42+99.5
OFFSET: LT 6.5'
VTSPG: N 816206.00 ft E 1714717.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 9.3 ft 2/15/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)
		0.0 ft - 0.5 ft, Asphalt.					
		3.0 ft - 5.0 ft, A-1-B, GrSa, Brown, wet, very dense, fine to coarse SAND and GRAVEL (GM) [Sample 1D]., Rec. = 1.58 ft	98-86-57-13 (R)				
5		5.0 ft - 7.0 ft, A-2-4, Sa, Brown, wet, compact, fine to medium SAND (SP) [Sample 2D]., Rec. = 0.42 ft	9-5-7-5 (12)				
		7.0 ft - 9.0 ft, A-2-4, Sa, Brown-gray, wet, very loose, fine SAND, some fine to coarse gravel, trace medium sand, trace organics (wood) (SP) [Sample 3D]., Rec. = 1.33 ft	1-2-1-2 (3)				
10		9.0 ft - 10.0 ft, A-2-4, GrSiSa, Brown, wet, loose, silty gravelly SAND with rust colored staining (SM) [Sample 4D - Top 12"]., Rec. = 1.42 ft	1-4-5-7 (9)		16.6	54.3	29.1
		10.0 ft - 11.0 ft, A-6, SiCl, Gray, wet, stiff, CLAY with lenses of silt and fine to medium sand, medium plasticity (CL) [Sample 4D - Bottom 7"].					
		13.0 ft - 14.0 ft, Boulder based on drill behavior.					
15		14.0 ft - 16.0 ft, A-2-4, GrSaSi, Gray, wet, very dense, silty gravelly SAND (SM) [Sample 5D]., Rec. = 0.58 ft	16-77-21-18 (98)				
		19.0 ft - 21.0 ft, No recovery [Sample 6D]., Rec. = 0.0 ft	18-34-34-64 (68)				
20							
		24.0 ft - 26.0 ft, A-4, GrSaSi, Gray, wet, very dense, sandy SILT, trace fine gravel (ML) [Sample 7D]., Rec. = 1.25 ft	20-40-48-49 (88)				
25							
		29.0 ft - 31.0 ft, A-4, SaSi, Gray, wet, very dense, sandy SILT (ML) [Sample 8D]., Rec. = 1.0 ft	25-49-65-78		6.9	23.7	69.4

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

BOTTOM OF ABUT. 1
EL. 1130.0'

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

BORING NUMBER: BB-101
SHEET 2 of 2
DATE STARTED: 2/14/13
DATE COMPLETED: 2/15/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 42+99.5
OFFSET: LT 6.5'
VTSPG: N 816206.00 ft E 1714717.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 9.3 ft 2/15/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)
			(R)				
35		34.0 ft - 36.0 ft, A-4, SaSi, Gray, wet, very dense, fine SAND, increasing silt with depth (SM) [Sample 9D]., Rec. = 0.75 ft	24-62-54-32 (R)				
40		39.0 ft - 41.0 ft, A-4, Si, Gray, wet, very dense, SILT, some fine sand (ML) [Sample 10D]., Rec. = 1.58 ft	20-25-32-35 (57)				
45		44.0 ft - 46.0 ft, A-6, Cl, Gray, wet, hard, CLAY, low plasticity (CL) [Sample 11D]., Rec. = 2.0 ft	9-14-17-26 (31)				
50		49.0 ft - 51.0 ft, A-4, SaSi, Gray, wet, dense, sandy SILT, some black staining (ML) [Sample 12D]., Rec. = 1.83 ft	16-14-19-25 (33)				
		51.0 ft, Completed boring at 51 ft-bgs in soil. Backfilled with cuttings and sealed with cold patch asphalt upon completion. Hole stopped @ 51.0 ft					
55							

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

CLD 12-0174 MODEL: BOR02

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068bor.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
BORING LOGS (1 OF 4)	SHEET 23 OF 52

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

BORING NUMBER: BB-102
SHEET 1 of 3
DATE STARTED: 2/13/13
DATE COMPLETED: 2/14/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 42+91.5
OFFSET: RT 4.5'
VTSPG: N 816192.00 ft E 1714718.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 5.4 ft 2/14/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
		0.0 ft - 0.5 ft, Asphalt.							
		1.0 ft - 1.3 ft, A-1-B, GrSa, Dark brown, moist, very dense, fine to coarse SAND and GRAVEL (GW) [Sample 1D]., Rec. = 0.25 ft	100/3" (R)						
		2.0 ft - 2.4 ft, A-2-4, GrSa, Dark brown, moist, very dense, fine to medium SAND, trace coarse sand and gravel (SP) [Sample 2D]., Rec. = 0.42 ft	105/5" (R)						
5		3.0 ft - 5.0 ft, A-2-4, GrSaSi, Brown, moist, dense, fine to coarse SAND, more fine sand with depth (SP) [Sample 3D]., Rec. = 1.0 ft	38-36-13-9 (49)						
		5.0 ft - 7.0 ft, A-2-4, GrSaSi, Brown, moist, compact, fine to coarse SAND, some gravel (SP) [Sample 4D]., Rec. = 0.92 ft	9-11-5-10 (16)						
BOTTOM OF ABUT. I EL. 1130.0'		7.0 ft - 9.0 ft, Wash in spoon, otherwise no recovery [Sample 5D].							
10		9.0 ft - 11.0 ft, A-6, Cl, Gray, wet, stiff, CLAY, some fine sand, low plasticity, sand in ~1mm lenses (CL) [Sample 6D]., Rec. = 1.5 ft	2-3-8-17 (11)	21.0				25	11
15		14.0 ft - 16.0 ft, A-4, ClSi, Gray, wet, very stiff, clayey SILT, trace fine sand, low plasticity (ML) [Sample 7D]., Rec. = 1.25 ft	11-10-10-8 (20)						
20		19.0 ft - 21.0 ft, A-4, SaSi, Gray, wet, very dense, SILT, some fine sand (ML) [Sample 8D]., Rec. = 1.08 ft	24-32-35-41 (67)		0.0	5.7	94.3		
25		24.0 ft - 26.0 ft, A-4, SaSi, Gray, wet, very dense, sandy SILT (ML) [Sample 9D]., Rec. = 1.25 ft	21-36-41-52 (77)						
		28.0 ft - 28.5 ft, Cobble based on drill behavior.							
		29.0 ft - 31.0 ft, Some wash in tip of spoon, otherwise no recovery [Sample 10D]., Rec. = 0.0 ft	58-100/5" (R)						

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

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

BORING NUMBER: BB-102
SHEET 2 of 3
DATE STARTED: 2/13/13
DATE COMPLETED: 2/14/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 42+91.5
OFFSET: RT 4.5'
VTSPG: N 816192.00 ft E 1714718.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 5.4 ft 2/14/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
35		34.0 ft - 36.0 ft, A-4, SaSi, Gray, wet, very dense, SILT, trace fine sand (ML) [Sample 11D]., Rec. = 1.25 ft	12-30-29-55 (59)		0.6	3.8	95.6		
40		39.0 ft - 41.0 ft, A-6, SiCl, Gray, wet, hard, interbedded CLAY and SILT in 1-2" layers, low plasticity (CL-ML) [Sample 12D]., Rec. = 1.5 ft	14-20-27-31 (47)						
45		44.0 ft - 46.0 ft, A-6, Cl, Gray, wet, hard, CLAY, some fine sand, low plasticity, sand in ~1mm layers, (CL) [Sample 13D]., Rec. = 1.42 ft	10-15-21-23 (36)						
50		49.0 ft - 51.0 ft, A-4, ClSi, Gray, wet, hard, clayey SILT, low plasticity (ML) [Sample 14D]., Rec. = 1.75 ft	15-20-23-27 (43)						
55									

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

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

BORING NUMBER: BB-102
SHEET 3 of 3
DATE STARTED: 2/13/13
DATE COMPLETED: 2/14/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 42+91.5
OFFSET: RT 4.5'
VTSPG: N 816192.00 ft E 1714718.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 5.4 ft 2/14/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
		61.0 ft, No samples collected 51-79 ft.							
65									
70									
75									
APPROX. PILE TIP EL. 1060.0'									
80		79.0 ft, Tri-cone refusal, possible bedrock. Backfilled with cuttings and sealed with cold patch asphalt upon completion. Hole stopped @ 79.0 ft							
85									

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

CLD 12-0174 MODEL: BOR03

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
BORING LOGS (2 OF 4)

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 24 OF 52

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

BORING NUMBER: BB-103
SHEET 1 of 3
DATE STARTED: 2/12/13
DATE COMPLETED: 2/12/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 43+58.5
OFFSET: LT 18.0'
VTSPG: N 816253.00 ft E 1714754.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 7.6 ft 2/12/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
		0.0 ft - 2.0 ft, A-1-B, GrSa, Brown, moist, very dense, fine to coarse SAND and GRAVEL (GW) [Sample 1D]., Rec. = 1.33 ft	60-58-34-63 (92)						
5		4.0 ft - 6.0 ft, A-4, GrSiSa, Brown-gray, wet, loose, silty fine SAND, some medium sand and gravel, trace clay (SM) [Sample 2D]., Rec. = 0.17 ft	11-4-3-3 (7)						
BOTTOM OF ABUT. 2 EL. 1130.0'									
10		9.0 ft - 11.0 ft, A-7-5, Cl, Gray, wet, very stiff, CLAY, trace medium sand, low plasticity (CL) [Sample 3D]., Rec. = 1.25 ft	6-6-10-8 (16)	31.0				41	21
15		14.0 ft - 16.0 ft, A-7-5, Cl, Gray, wet, stiff, CLAY, trace gravel and medium sand, high plasticity (CH) [Sample 4D]., Rec. = 2.0 ft	7-7-7-7 (14)	25.0				52	31
20		19.0 ft - 21.0 ft, A-4, GrSiSa, Gray, wet, fine SAND and SILT, trace gravel (SM) [Sample 5D]., Rec. = 1.33 ft	18-32-49-48 (81)		1.7	61.5	36.8		
25		24.0 ft - 25.4 ft, A-4, SiSa, Gray, wet, very dense, silty fine SAND, layers of medium to coarse sand (ML) [Sample 6D]., Rec. = 0.92 ft	29-57-100/5" (R)						
		25.4 ft - 27.5 ft, Boulder based on drill behavior.							
		29.0 ft - 33.0 ft, Cored through nested boulders.							

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

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

BORING NUMBER: BB-103
SHEET 2 of 3
DATE STARTED: 2/12/13
DATE COMPLETED: 2/12/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 43+58.5
OFFSET: LT 18.0'
VTSPG: N 816253.00 ft E 1714754.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 7.6 ft 2/12/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
35		34.0 ft - 36.0 ft, Wash, otherwise no recovery [Sample 7D].							
40		39.0 ft - 41.0 ft, A-4, SiCl, Gray, wet, hard, silty CLAY, trace fine sand, low plasticity (CL) [Sample 8D]., Rec. = 2.0 ft	16-19-20-37 (39)	25.0				24	7
45		44.0 ft - 46.0 ft, A-4, SiCl, Gray, wet, hard, silty CLAY, some fine sand, low plasticity, sand in ~1mm lenses (CL) [Sample 9D]., Rec. = 2.0 ft	15-21-20-26 (41)						
APPROX. PILE TIP EL. 1061.0'									
50									
55									

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

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

BORING NUMBER: BB-103
SHEET 3 of 3
DATE STARTED: 2/12/13
DATE COMPLETED: 2/12/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 43+58.5
OFFSET: LT 18.0'
VTSPG: N 816253.00 ft E 1714754.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: 7.6 ft 2/12/13
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
		60.0 ft, No samples collected 46-78 ft.							
65									
70									
75									
		78.0 ft, Tri-cone refusal, possible bedrock. Backfilled with cuttings upon completion. Hole stopped @ 78.0 ft							
80									
85									

LOG OF BORING & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

CLD 12-0174 MODEL: BORD4

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
BORING LOGS (3 OF 4)

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 25 OF 52

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

BORING NUMBER: BB-104
SHEET 1 of 2
DATE STARTED: 2/13/13
DATE COMPLETED: 2/13/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 43+63.0
OFFSET: RT 2.5'
VTSPG: N 816240.00 ft E 1714771.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: NM
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
		0.0 ft - 0.5 ft, Asphalt.							
		1.0 ft - 1.5 ft, A-1-B, GrSa, Brown, moist, very dense, fine to coarse SAND and GRAVEL (GW) [Sample 1D]., Rec. = 0.5 ft	120 (R)						
		3.0 ft - 5.0 ft, A-4, GrSaSi, Brown-gray, wet, very dense, fine SAND and SILT ,some clay, some coarse sand and fine gravel, clay in ~1-2" layer near bottom of spoon (ML) [Sample 2D]., Rec. = 1.17 ft	50-42-22-7 (64)		0.9	42.2	56.9		
5		5.0 ft - 6.3 ft, A-4, GrSaSi, Brown-gray, wet, compact, fine SAND, some silt, trace gravel, trace organics (wood) (SM) [Sample 3D]., Rec. = 0.92 ft	9-10-100/3" (R)						
		6.3 ft - 7.0 ft, Cobble based on drill behavior.							
10		9.0 ft - 9.4 ft, A-4, SaSi, Brown, wet, compact, fine SAND and SILT, trace gravel (SM) [Sample 4D - Top 5"]., Rec. = 1.5 ft	7-10-17-22 (27)						
		9.4 ft - 11.0 ft, A-7-5, SiCl, Gray, wet, very stiff, CLAY, some silt, low plasticity (CL) [Sample 4D - Bottom 13"].							
15		14.0 ft - 16.0 ft, A-7-5, SiCl, Gray, wet, very stiff, silty CLAY, ~1mm lenses of fine sand, low plasticity (CL) [Sample 5D]., Rec. = 1.67 ft	9-8-9-11 (17)	31.0				50	28
20		19.0 ft - 20.0 ft, Boulder based on drill behavior., Rec. = 0.0 ft	50/0" (R)						
25		24.0 ft - 25.5 ft, Broken rock in spoon tip, no recovery, possibly pushing cobble [Sample 6D]., Rec. = 0.08 ft	49-37-63-40/2" (R)						
		25.5 ft - 28.5 ft, Cored through nested boulders.							
		29.0 ft - 29.4 ft, A-4, SiSa, Brown-gray, wet, very dense, fine SAND and SILT (ML) [Sample 7D]. Low recovery.	100/5" (R)						

BOTTOM OF
ABUT. 2
EL. 1130.0'

LOG OF BORINGS & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

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

BORING NUMBER: BB-104
SHEET 2 of 2
DATE STARTED: 2/13/13
DATE COMPLETED: 2/13/13

PROJECT NAME: CLD Roaring Brook Bridge
SITE NAME: Barton, VT
STATION: 43+63.0
OFFSET: RT 2.5'
VTSPG: N 816240.00 ft E 1714771.00 ft

PROJECT NUMBER: 123-87464
SITE NUMBER: BRO 1449(31)
GROUND ELEVATION: 1139.0 ft
GROUNDWATER DEPTH: NM
PROJECT PIN NUMBER: Barton, VT TH 2 BR 8

BORING CREW:
DRILLER: P. LaBoissier
LOGGER: N. Chinburg
BORING RIG: Mobile B-47 Truck

BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
HAMMER TYPE:
CHECKED BY: MRH

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 IN (N VALUE)	M.C. (%)	AASHTO GRAVEL (%)	AASHTO SAND (%)	AASHTO FINES (%)	LL (%)	PI (%)
		broken rock pieces in spoon tip., Rec. = 0.25 ft							
		29.4 ft - 32.0 ft, Boulder based on drill behavior. Hole collapsed to 28 ft.							
35		34.0 ft - 36.0 ft, A-6, SiCl, Gray, wet, hard, CLAY, some fine sand, trace coarse gravel, low plasticity, sand in ~1mm layers (CL) [Sample 8D]., Rec. = 0.67 ft	19-15-20-62 (35)	21.0				36	17
		37.0 ft - 38.0 ft, Boulder based on drill behavior.							
40		39.0 ft - 41.0 ft, A-6, SiSa, Gray, wet, fine SAND, some silt (ML) [Sample 9D]., Rec. = 0.67 ft	33-53-64-75/1" (R)						
		41.0 ft, Completed hole at 41 ft -bgs in soil. Backfilled with cuttings and sealed with cold patch asphalt upon completion.							
		Hole stopped @ 41.0 ft							

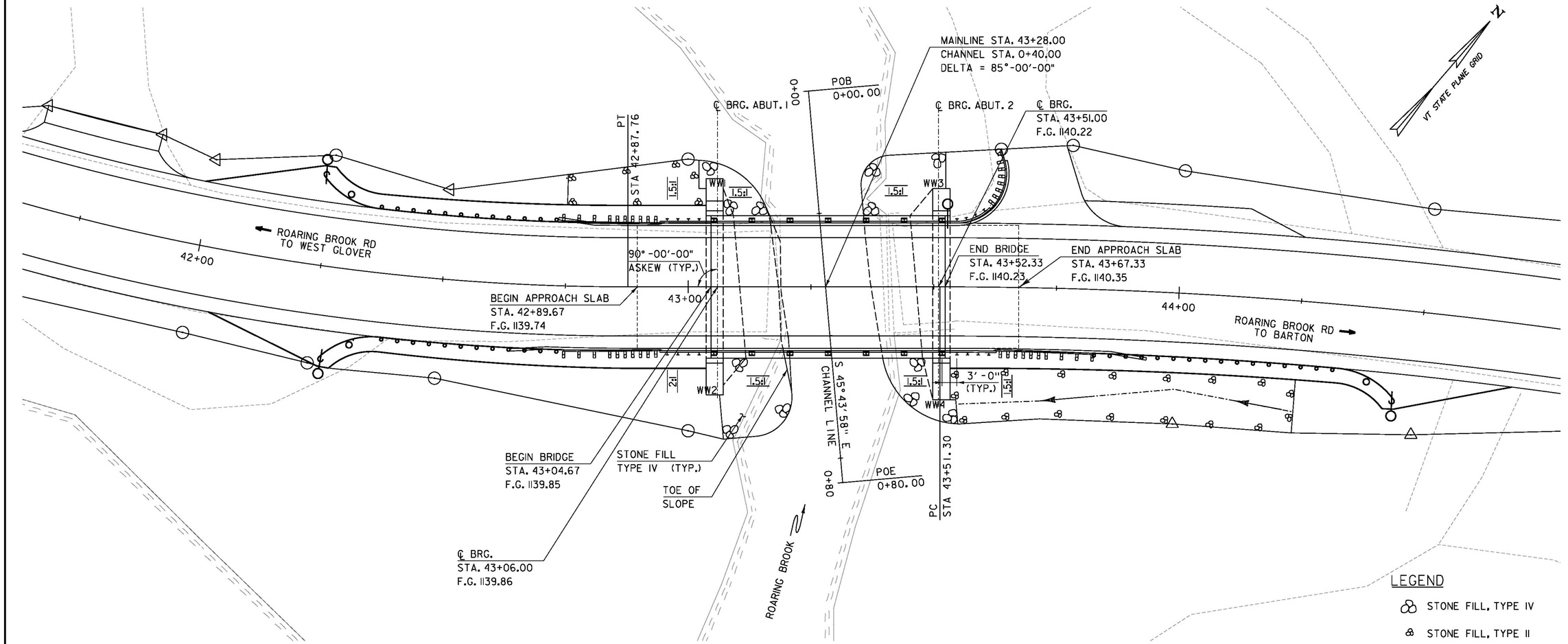
LOG OF BORINGS & WELL CLD BARTON BRIDGE.GPJ VT AOT.GDT 8/25/14

CLD 12-0174 MODEL: BOR05

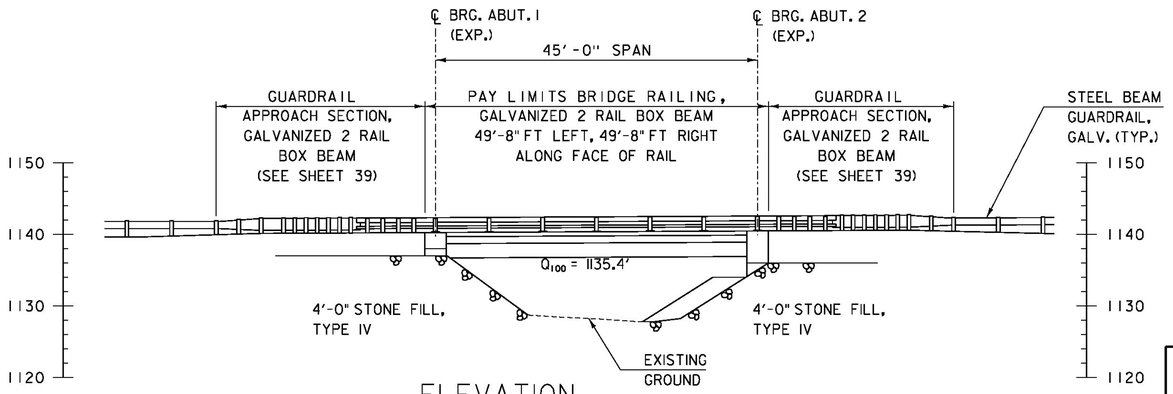
PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068bor.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
BORING LOGS (4 OF 4)

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 26 OF 52



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



ELEVATION
SCALE: 1" = 10'-0"

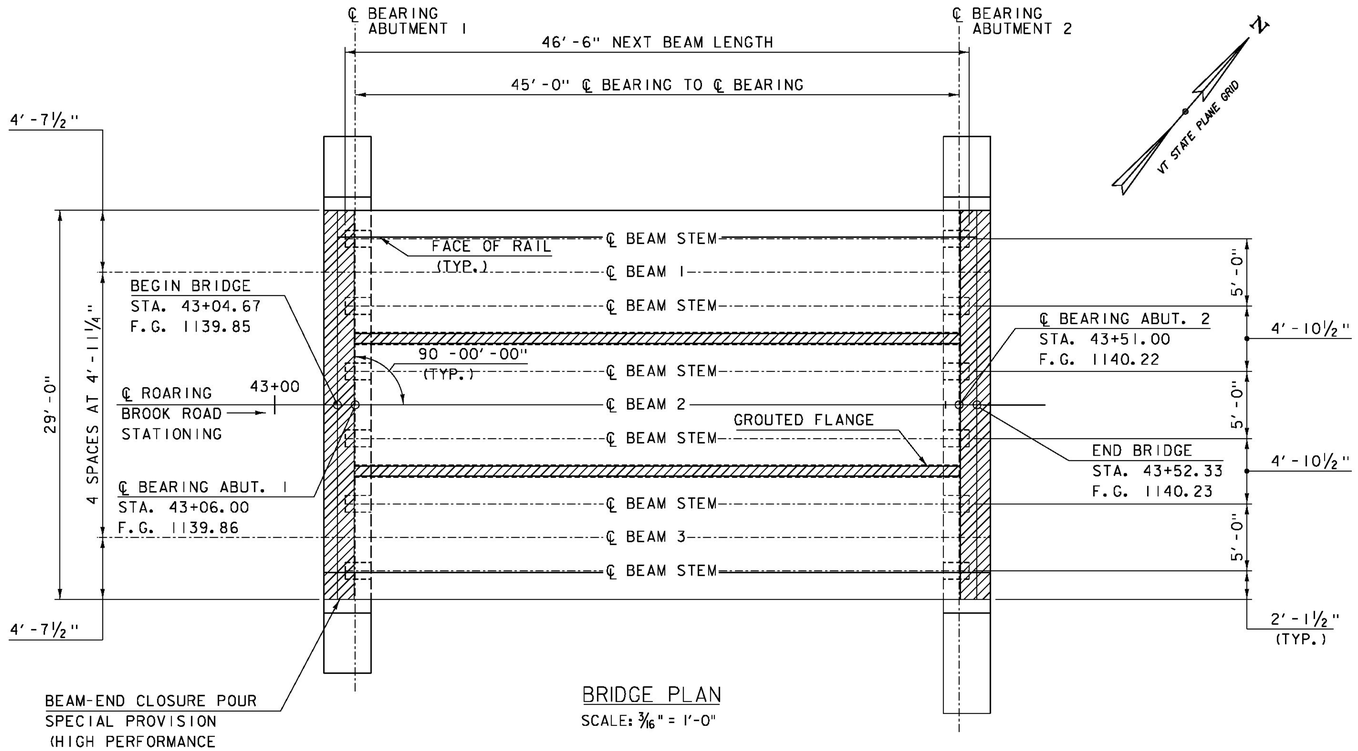
0 10 20
(SCALE 1" = 10')

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)

CONSULTING ENGINEERS
540 Commercial Street, Manchester, NH 03101
(603) 668-8223 • Fax: (603) 668-8802
cld@cldengineers.com • www.cldengineers.com
Maine • New Hampshire • Vermont

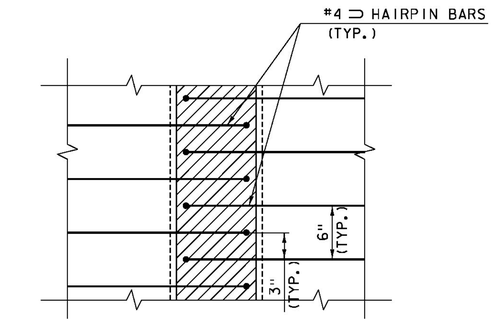
FILE NAME: 11J068/cos/z11J068pe.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
PLAN AND ELEVATION	SHEET 27 OF 52

CLD 12-0174 MODEL: PE01



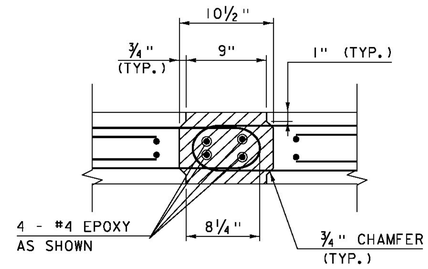
BRIDGE PLAN

SCALE: 3/16" = 1'-0"



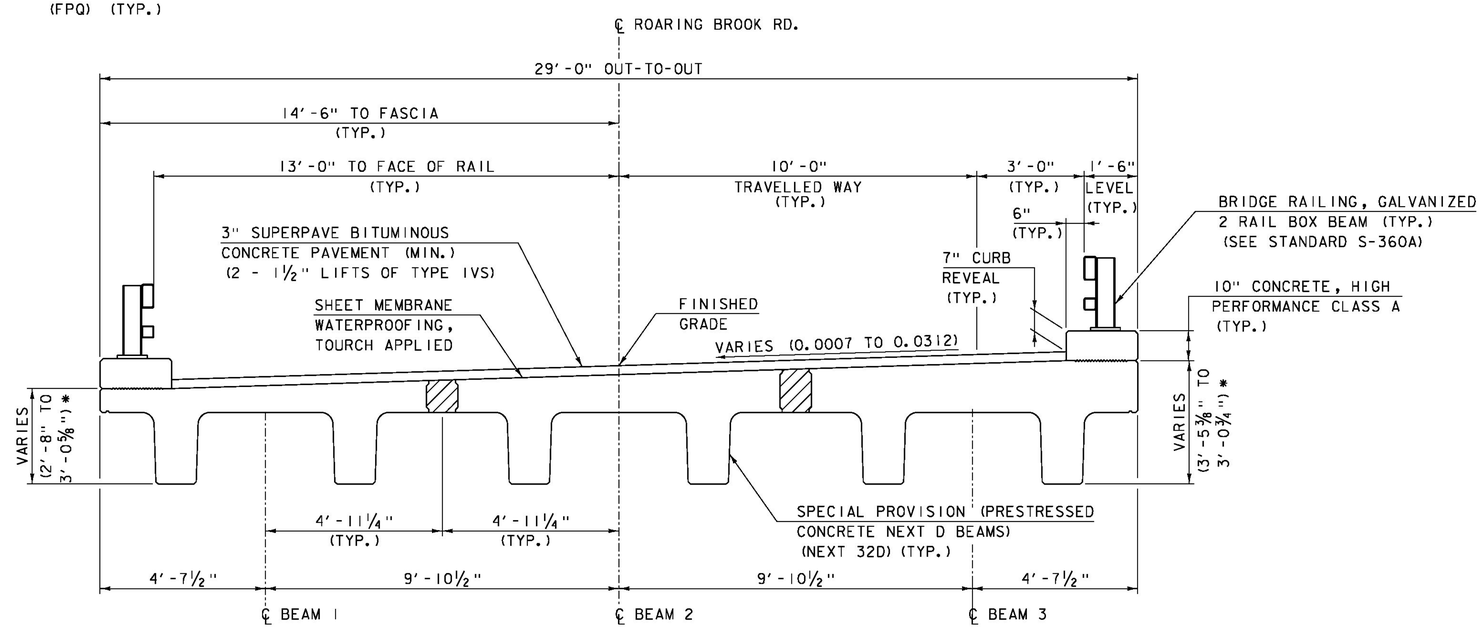
CONNECTION DETAIL PLAN

SCALE: 1½" = 1'-0"



CONNECTION DETAIL SECTION

SCALE: 1½" = 1'-0"



TYPICAL BRIDGE SECTION

SCALE: ½" = 1'-0"

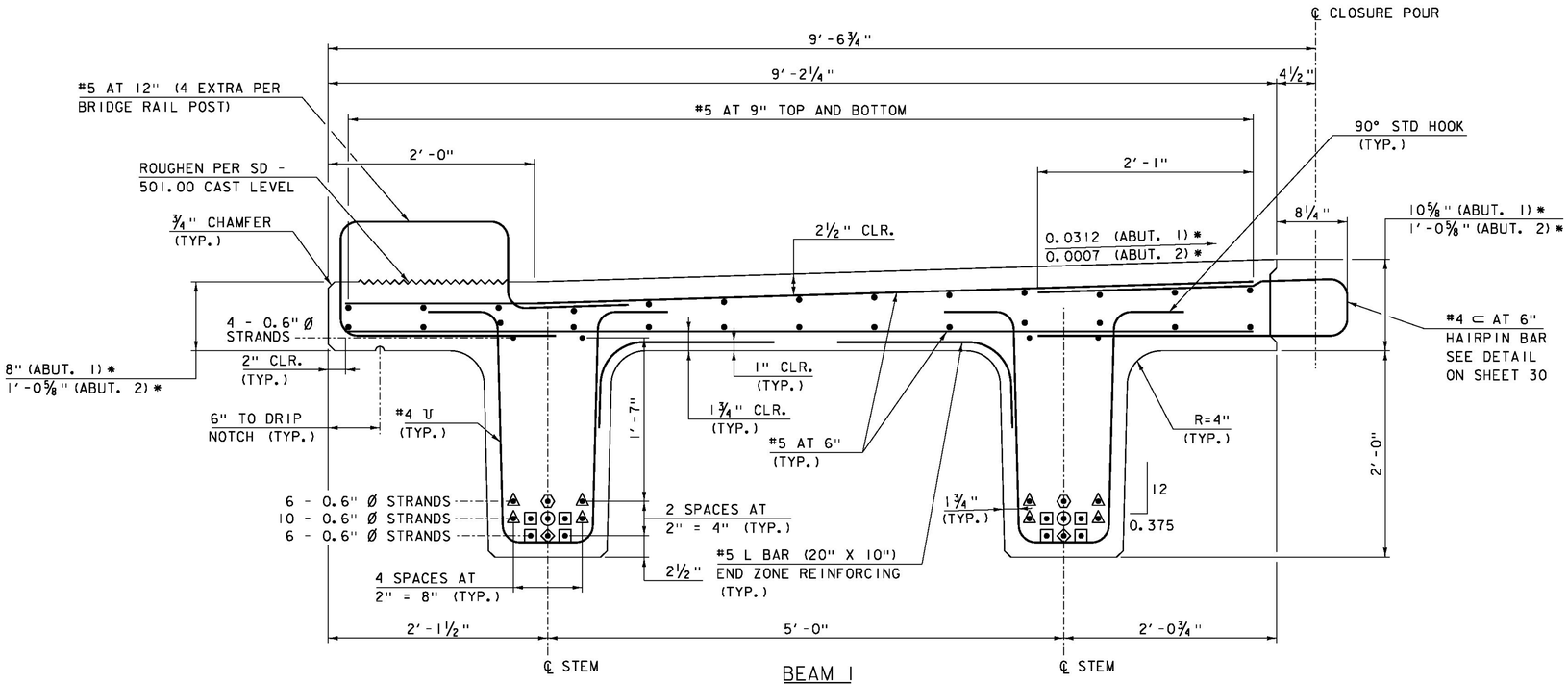
* DIMENSIONS TAKEN AT BEGIN AND END BEAM FLANGE AT ABUTMENT 1 AND 2, RESPECTIVELY.

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z11068sup.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
BRIDGE PLAN AND TYPICAL SECTIONS	SHEET 28 OF 52

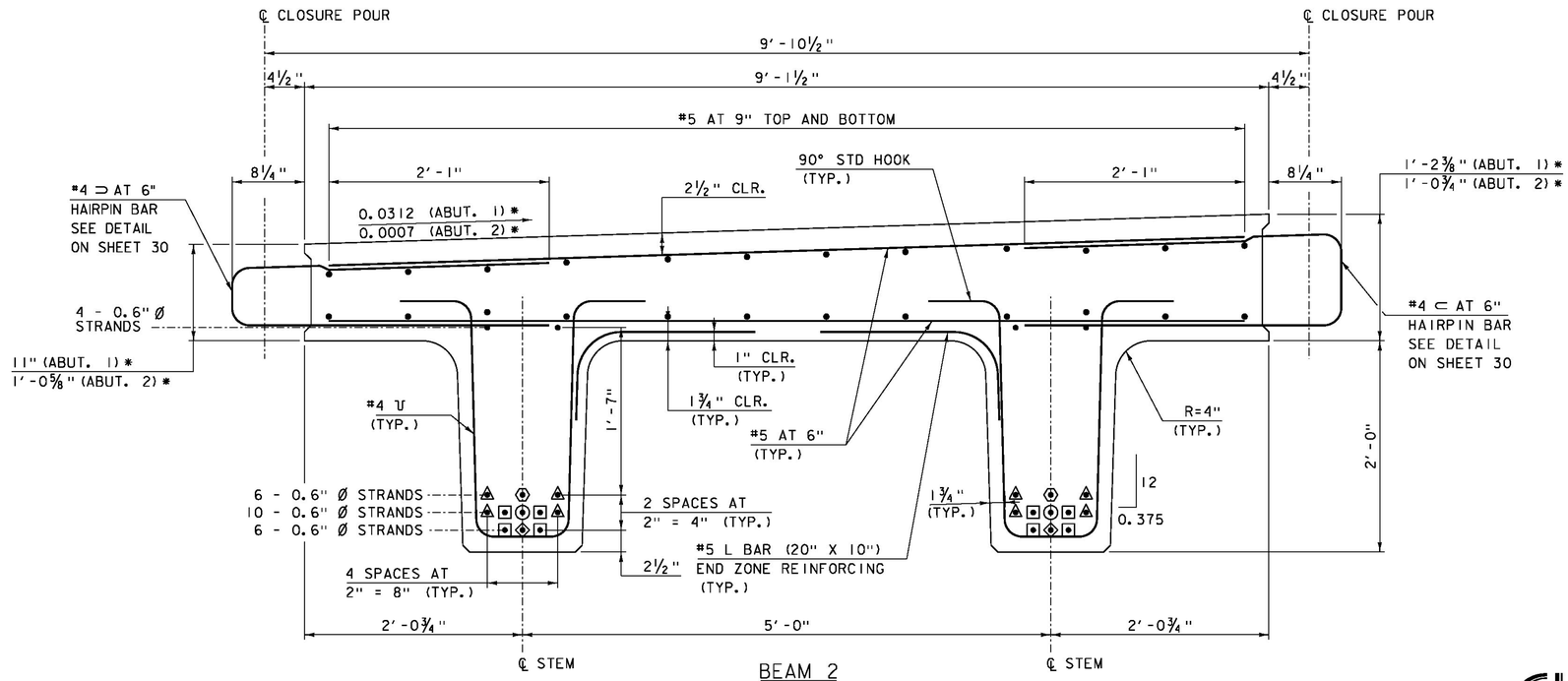
CONSULTING ENGINEERS

CLD 12-0174 MODEL: SUP02



BEAM 1

SCALE: 1½" = 1′-0"



BEAM 2

SCALE: 1½" = 1′-0"

* DIMENSIONS TAKEN AT BEGIN AND END BEAM FLANGE AT ABUTMENT 1 AND 2, RESPECTIVELY. TRANSITION SLOPES AND DIMENSIONS BETWEEN THE TWO LOCATIONS.

◇ DENOTES STRAND DEBONDED 8′-0" FROM EACH END OF BEAM

○ DENOTES STRAND DEBONDED 4′-0" FROM EACH END OF BEAM

⬡ DENOTES STRAND DEBONDED 2′-0" FROM EACH END OF BEAM

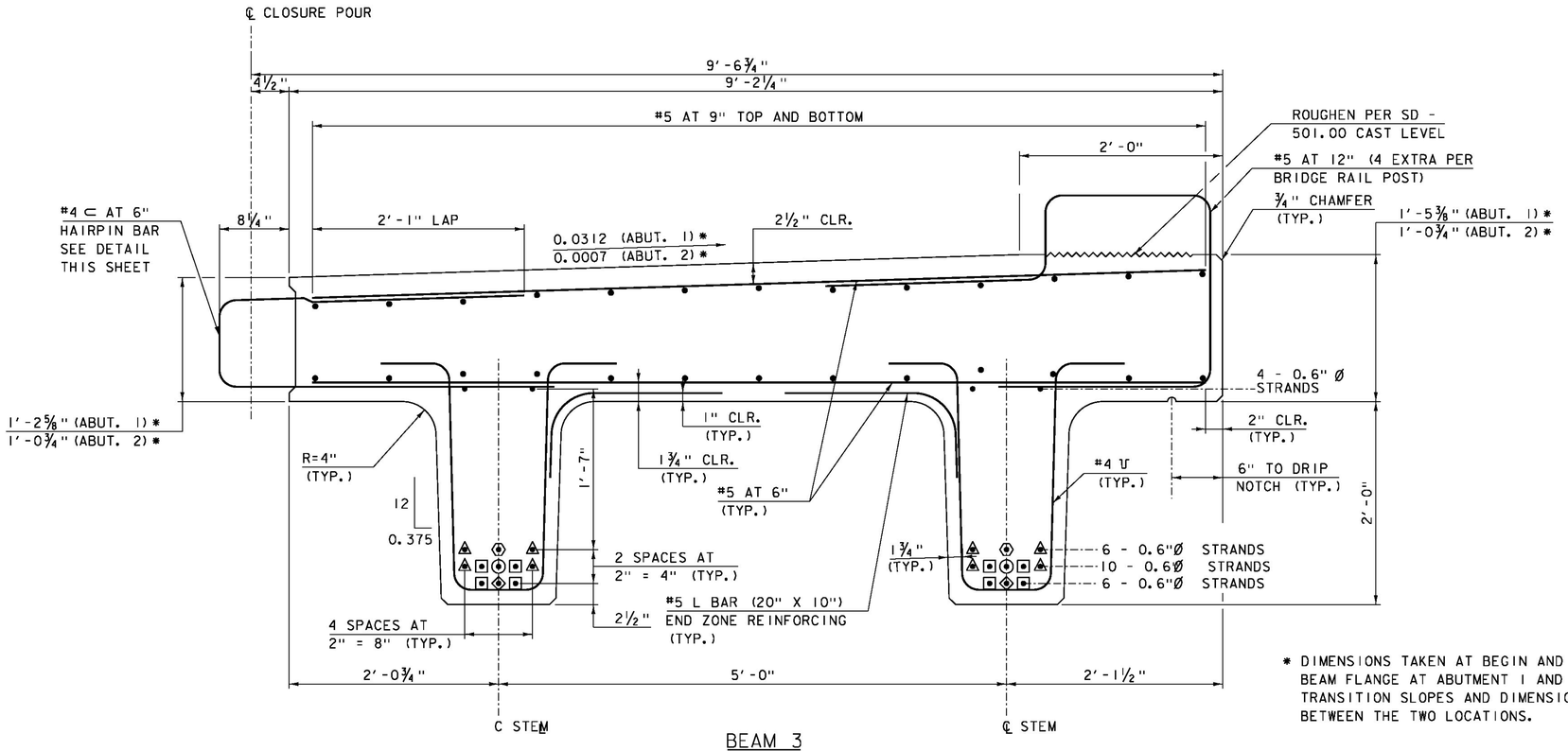
△ DENOTES STRAND DEBONDED 6" FROM EACH END OF BEAM

□ DENOTES FULLY BONDED STRAND EXTENDED 2′-0" FROM BEAM END

CLD 12-0174 MODEL: SUP03

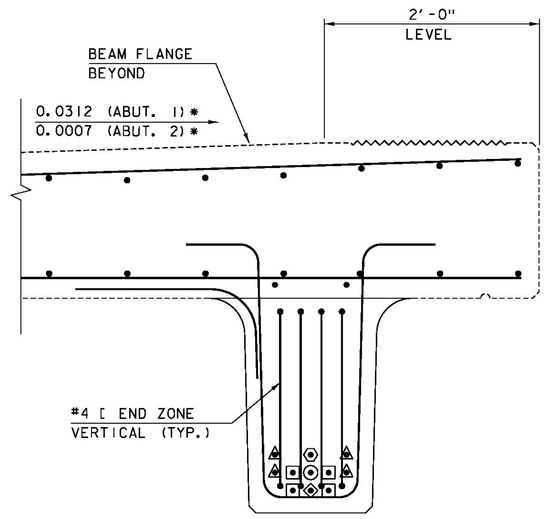
CONSULTING ENGINEERS

PROJECT NAME: BARTON	
PROJECT NUMBER: BRO 1449(31)	
FILE NAME: z11j068sup.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
NEXT BEAM DETAILS (1 OF 3)	SHEET 29 OF 52



BEAM 3

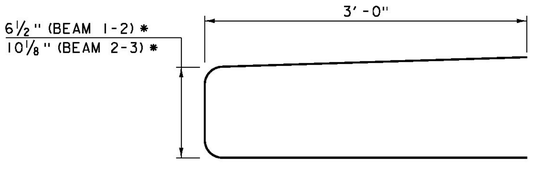
SCALE: 1½" = 1′-0"



END SECTION DETAIL

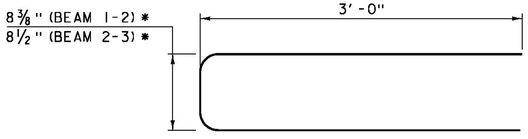
SCALE: 1½" = 1′-0"

* DIMENSIONS TAKEN AT BEGIN AND END BEAM FLANGE AT ABUTMENT 1 AND 2. TRANSITION SLOPES AND DIMENSIONS BETWEEN THE TWO LOCATIONS.



HAIRPIN BAR DETAIL AT ABUTMENT 1

SCALE: 1½" = 1′-0"



HAIRPIN BAR DETAIL AT ABUTMENT 2

SCALE: 1½" = 1′-0"

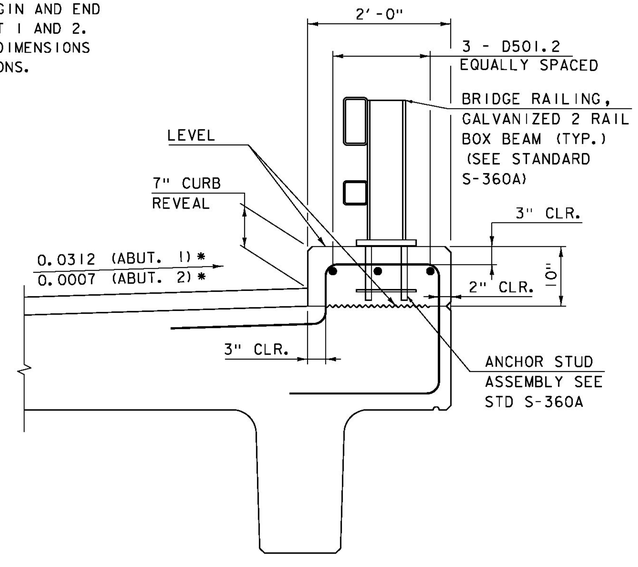
◇ DENOTES STRAND DEBONDED 8′-0" FROM EACH END OF BEAM

○ DENOTES STRAND DEBONDED 4′-0" FROM EACH END OF BEAM

⬡ DENOTES STRAND DEBONDED 2′-0" FROM EACH END OF BEAM

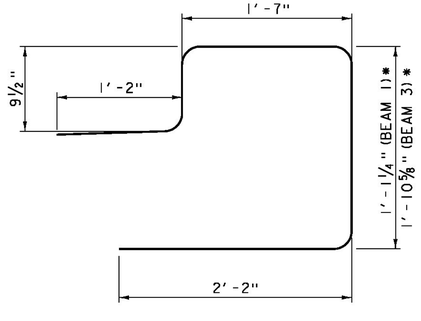
△ DENOTES STRAND DEBONDED 6" FROM EACH END OF BEAM

□ DENOTES FULLY BONDED STRAND EXTENDED 2′-0" FROM BEAM END



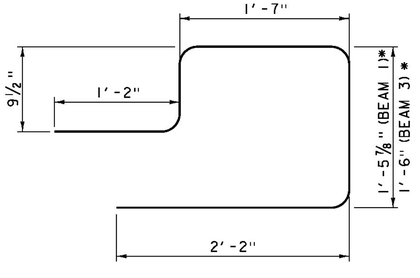
CURB SECTION

SCALE: 1" = 1′-0"



CURB BAR DETAIL AT ABUTMENT 1

SCALE: 1½" = 1′-0"



CURB BAR DETAIL AT ABUTMENT 2

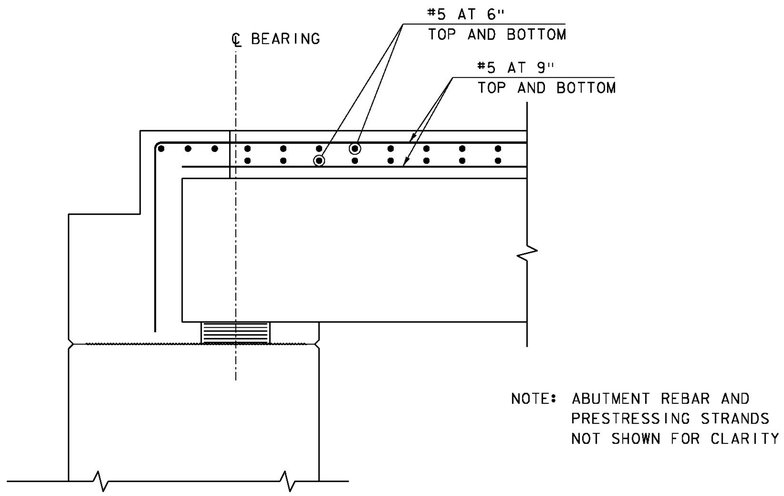
SCALE: 1½" = 1′-0"

* HAIRPIN AND CURB BAR DIMENSIONS ARE TAKEN AT BEGIN AND END BEAM FLANGE AT ABUTMENT 1 AND 2, RESPECTIVELY. TRANSITION SLOPES AND DIMENSIONS BETWEEN THE TWO LOCATIONS.

CONSULTING ENGINEERS

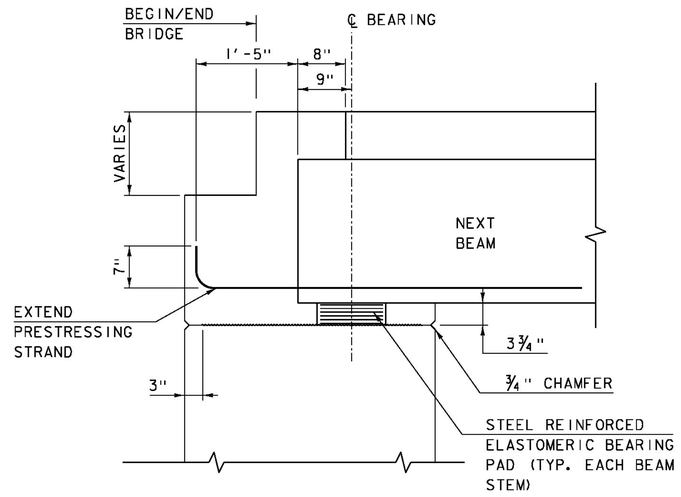
PROJECT NAME: BARTON	
PROJECT NUMBER: BRO 1449(31)	
FILE NAME: z11j068sup.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
NEXT BEAM DETAILS (2 OF 3)	SHEET 30 OF 52

CLD 12-0174 MODEL: SUP04



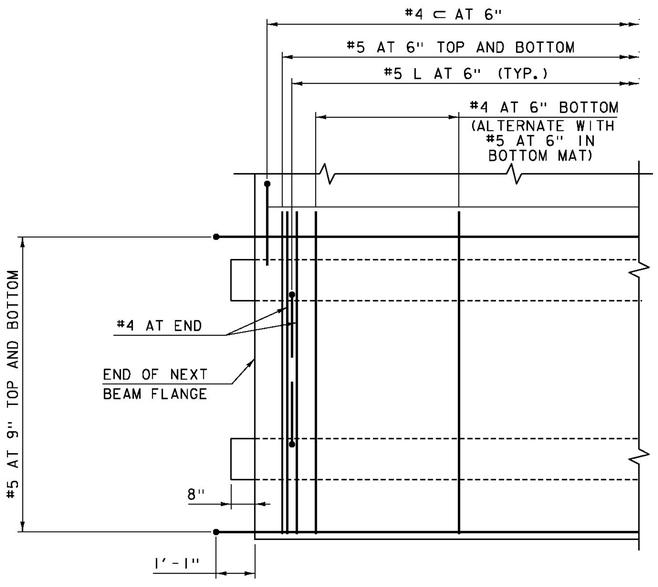
TYPICAL DECK REINFORCING AT BEAM END

SCALE: 1" = 1'-0"



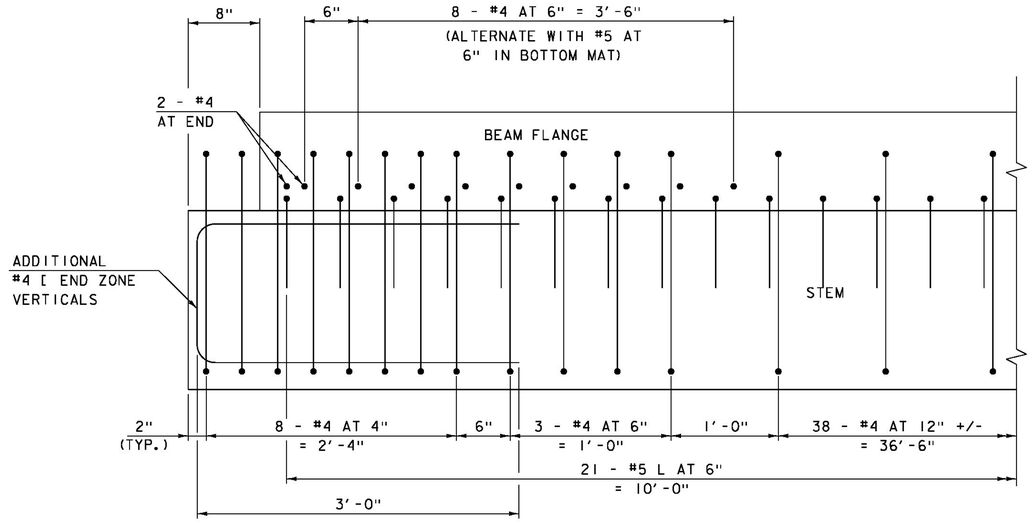
TYPICAL BEAM END DETAIL

SCALE: 1" = 1'-0"



PARTIAL BEAM FLANGE PLAN

SCALE: 1/2" = 1'-0"



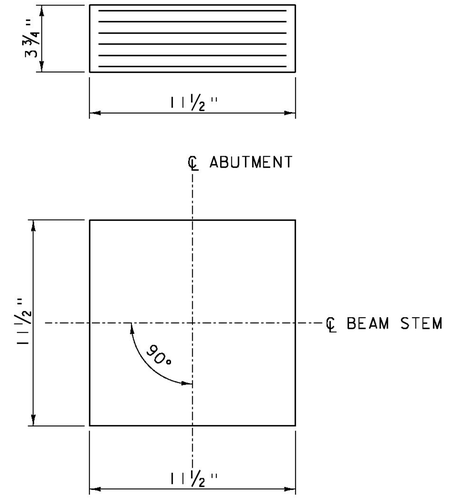
LONGITUDINAL SECTION

SCALE: 1 1/2" = 1'-0"

PROJECT NAME: BARTON	
PROJECT NUMBER: BRO 1449(31)	
FILE NAME: z11j068sup.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: N. CARON	CHECKED BY: J. BYATT
NEXT BEAM DETAILS (3 OF 3)	SHEET 31 OF 52

CLD CONSULTING ENGINEERS

CLD 12-0174 MODEL: SUP05



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 WILL BE PAID FOR 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.

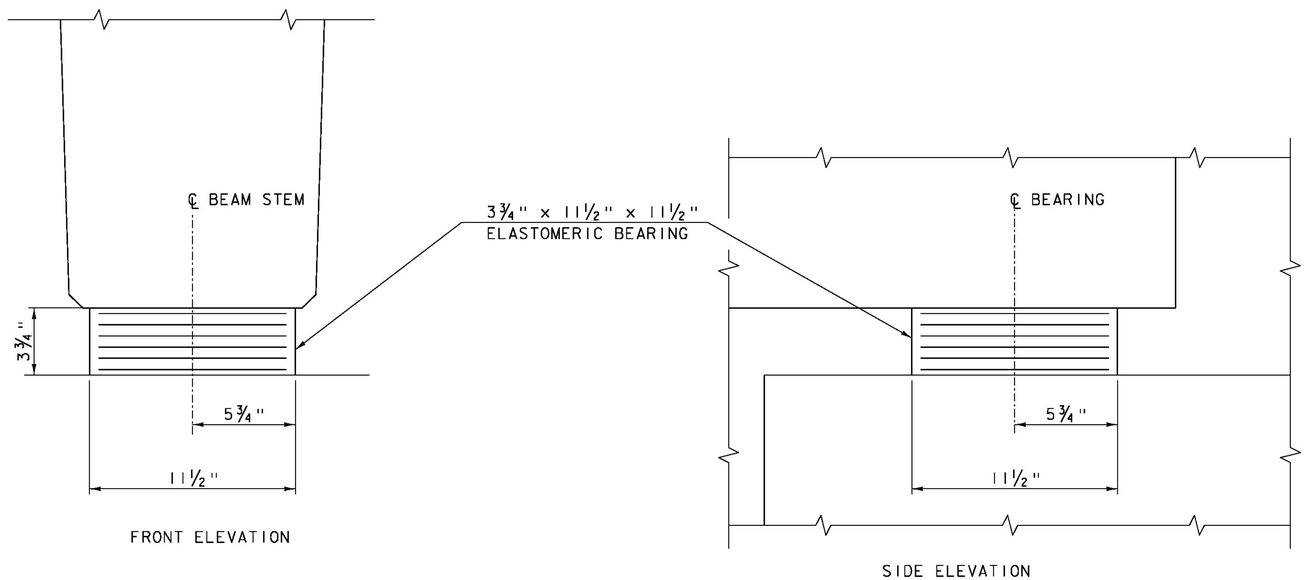
3. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM ¼" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.

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 AND HAVE A HARDNESS OF 60 ON THE SHORE A SCALE.

6. THE CONTRACTOR IS ADVISED TO HAVE A MINIMUM OF 16 - 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: 32.2 K
   MAX LIVE LOAD: 31.7 K

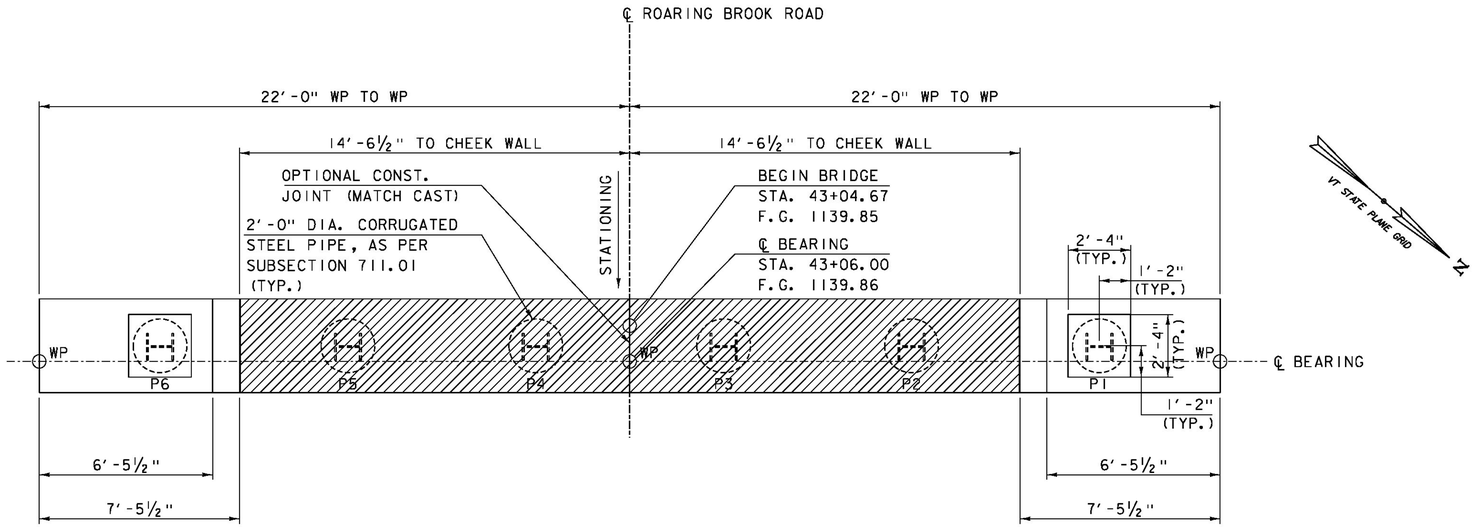


ELASTOMERIC BEARING DETAIL

SCALE: 3" = 1'-0"

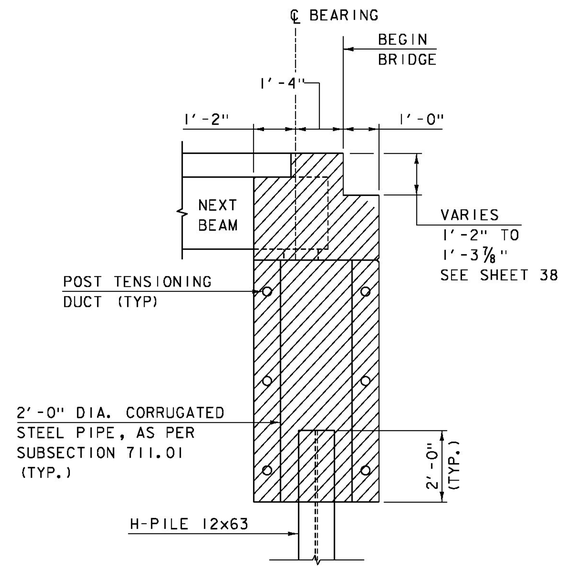
CLD 12-0174 MODEL: SUP06

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z11j068sup.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
BEARING DETAILS	SHEET 32 OF 52



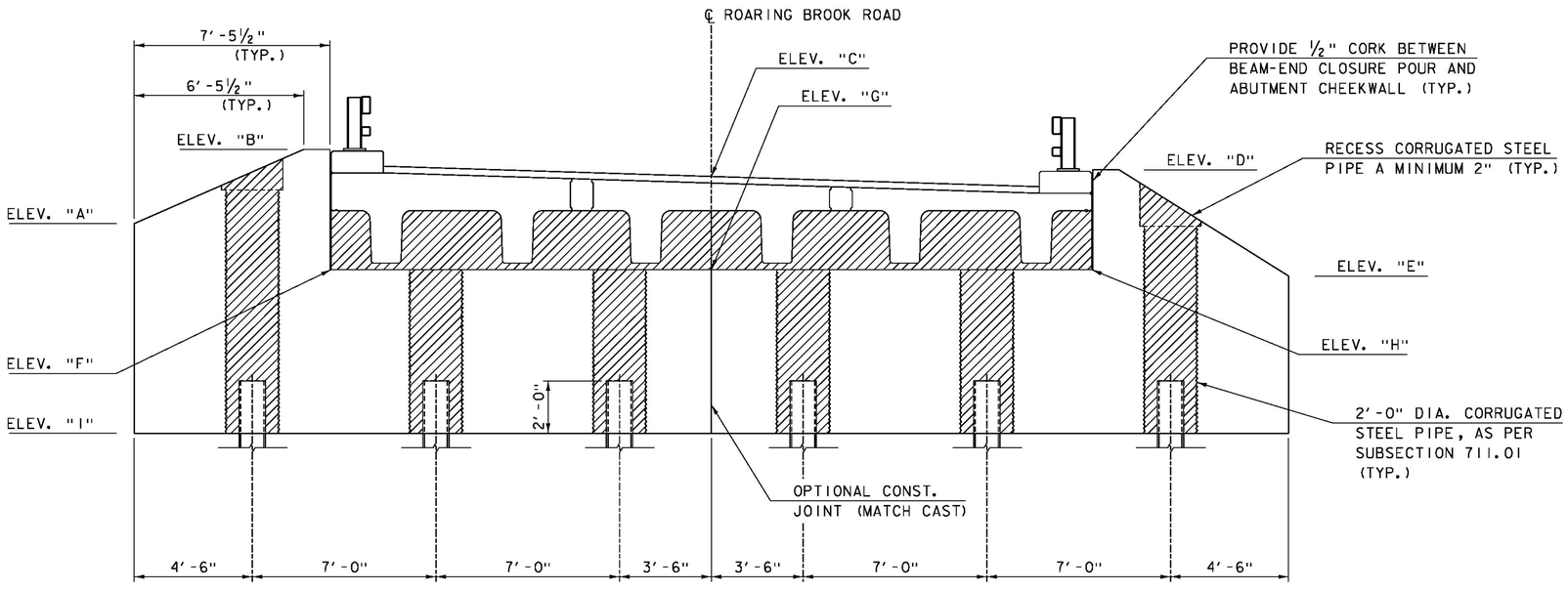
ABUTMENT 1 PLAN (PCU 1)

SCALE: ⅜" = 1'-0"



ABUTMENT 1 TYPICAL

SCALE: ½" = 1'-0"



ABUTMENT 1 ELEVATION (PCU 1)

SCALE: ⅜" = 1'-0"

PCU ELEVATIONS

	AB1
ELEV "A"	1138.00
ELEV "B"	1140.83
ELEV "C"	1139.86
ELEV "D"	1140.05
ELEV "E"	1136.00
ELEV "F"	1136.24
ELEV "G"	1136.24
ELEV "H"	1136.24
ELEV "I"	1130.00

NOTE: ELEVATIONS ARE AT CENTERLINE BEARING

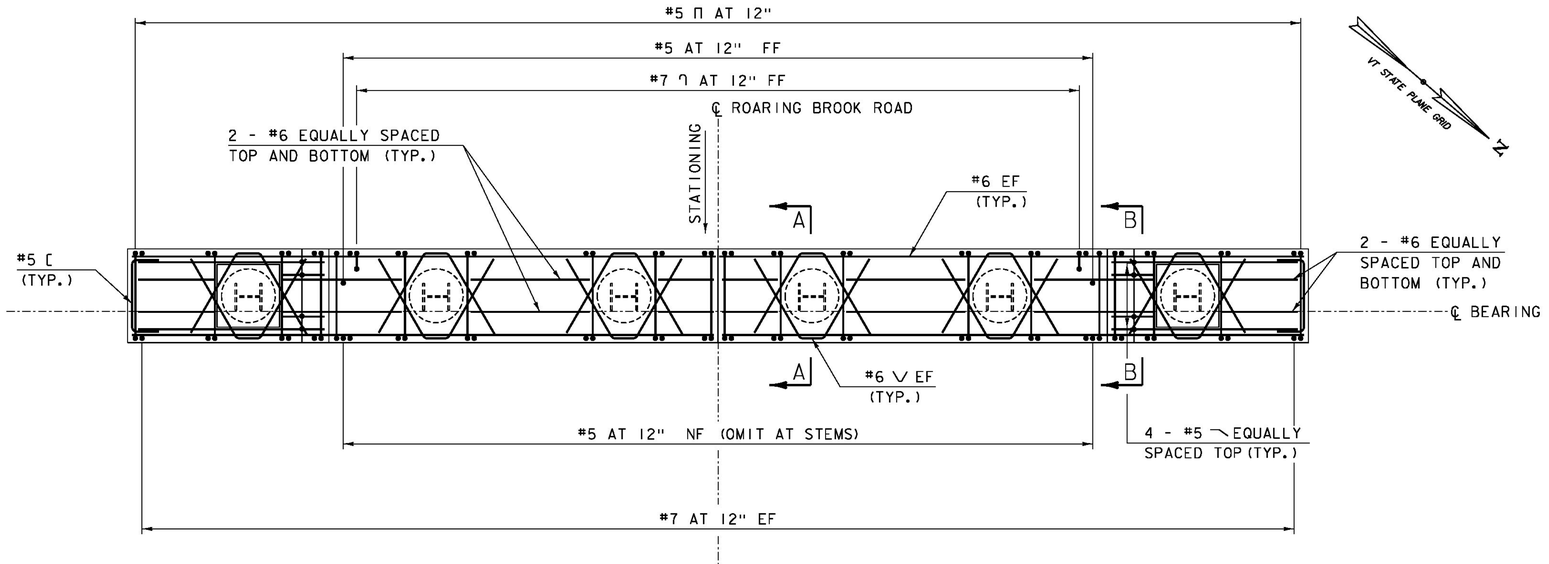
▨ SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

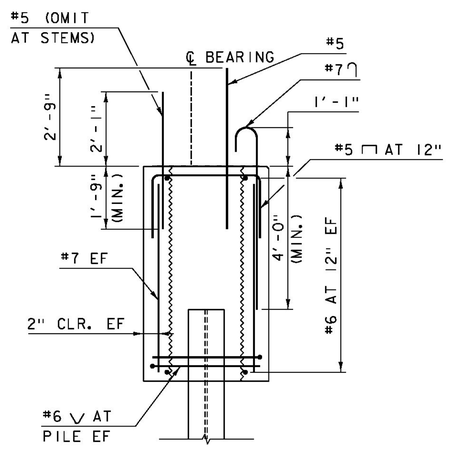
FILE NAME: z11J068abut1.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
ABUTMENT 1 PLAN

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 33 OF 52



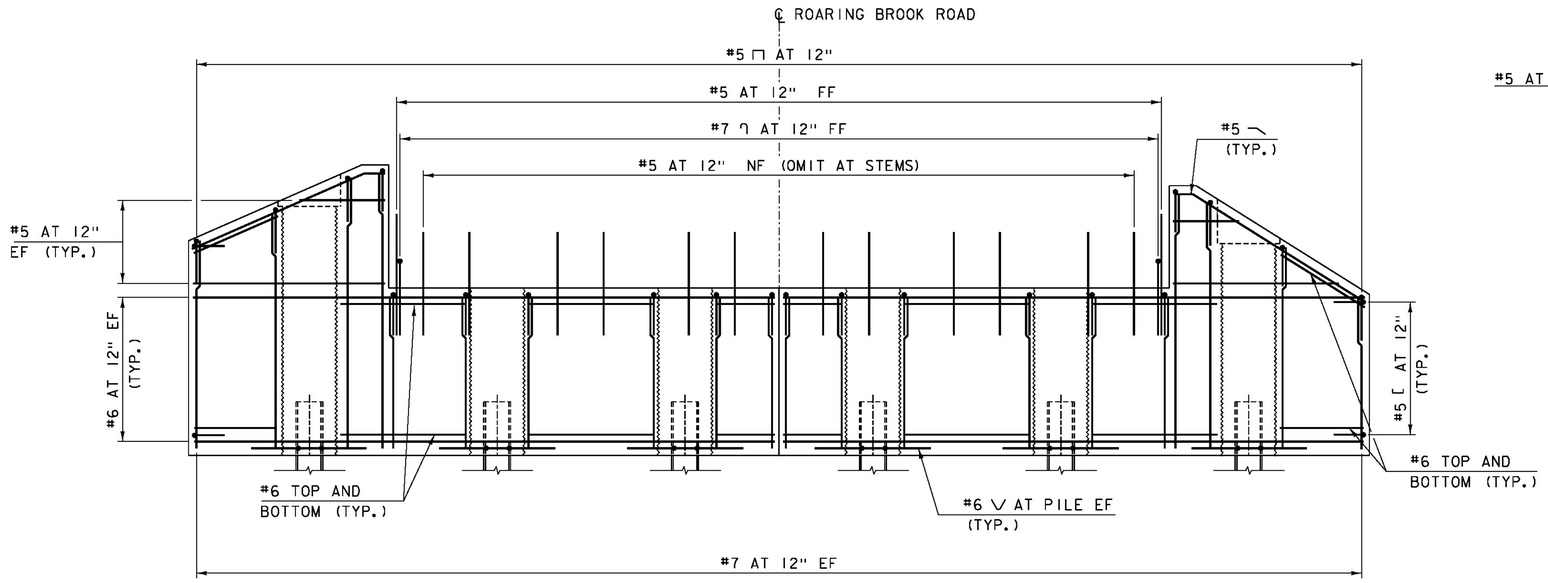
ABUTMENT I REINFORCING PLAN (PCU I)

SCALE: 3/8" = 1'-0"



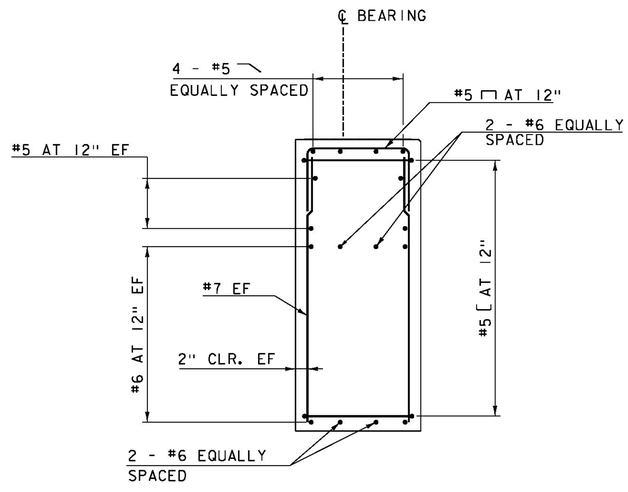
SECTION A-A

SCALE: 1/2" = 1'-0"



ABUTMENT I REINFORCING ELEVATION (PCU I)

SCALE: 3/8" = 1'-0"

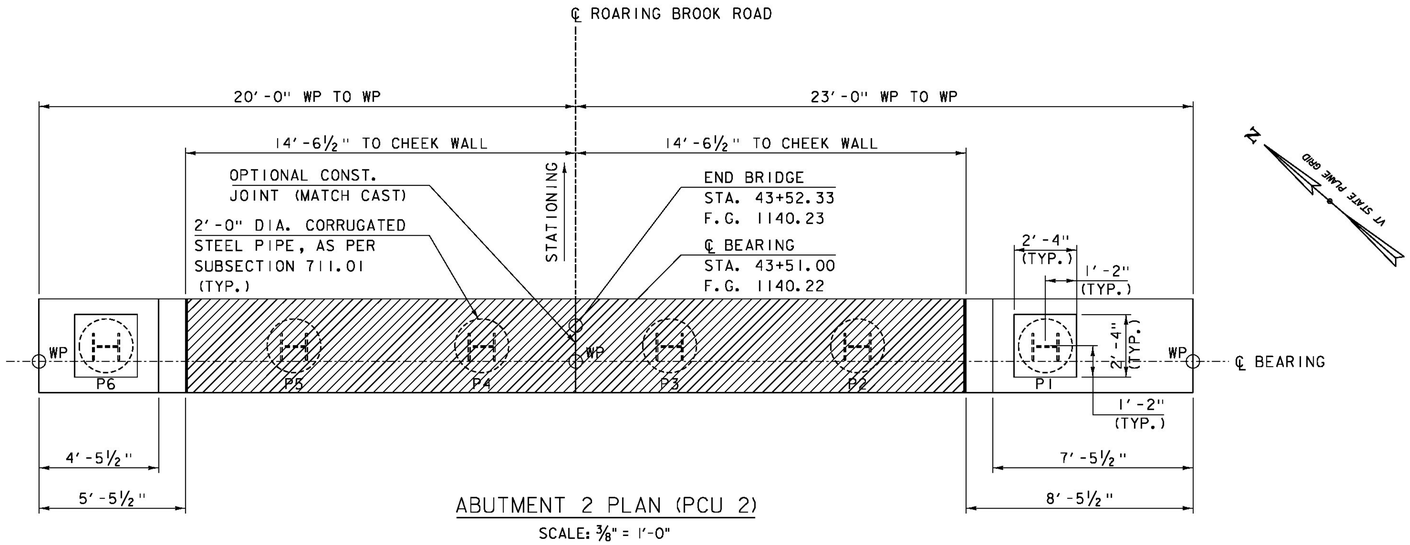


SECTION B-B

SCALE: 1/2" = 1'-0"

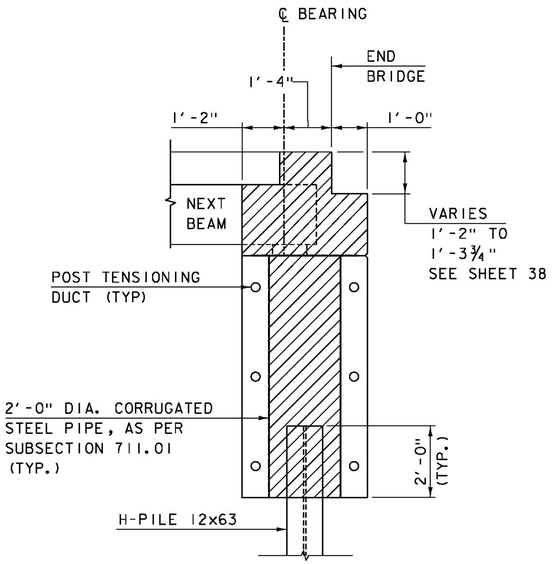
PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z11J068abut1.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
ABUTMENT I REINFORCING	SHEET 34 OF 52

CONSULTING ENGINEERS



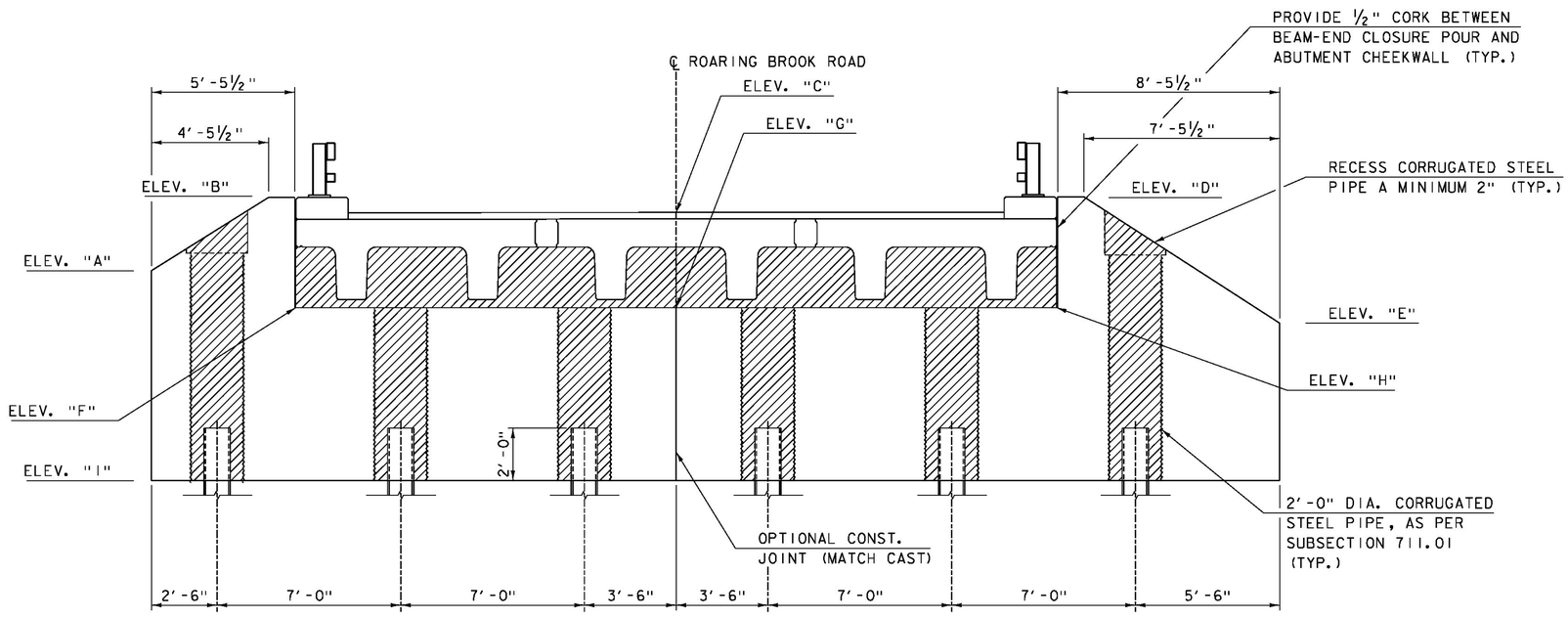
ABUTMENT 2 PLAN (PCU 2)

SCALE: ⅜" = 1'-0"



ABUTMENT 2 TYPICAL

SCALE: ½" = 1'-0"



ABUTMENT 2 ELEVATION (PCU 2)

SCALE: ⅜" = 1'-0"

PCU ELEVATIONS

	AB2
ELEV "A"	1138.00
ELEV "B"	1140.79
ELEV "C"	1140.22
ELEV "D"	1140.81
ELEV "E"	1136.00
ELEV "F"	1136.59
ELEV "G"	1136.59
ELEV "H"	1136.59
ELEV "I"	1130.00

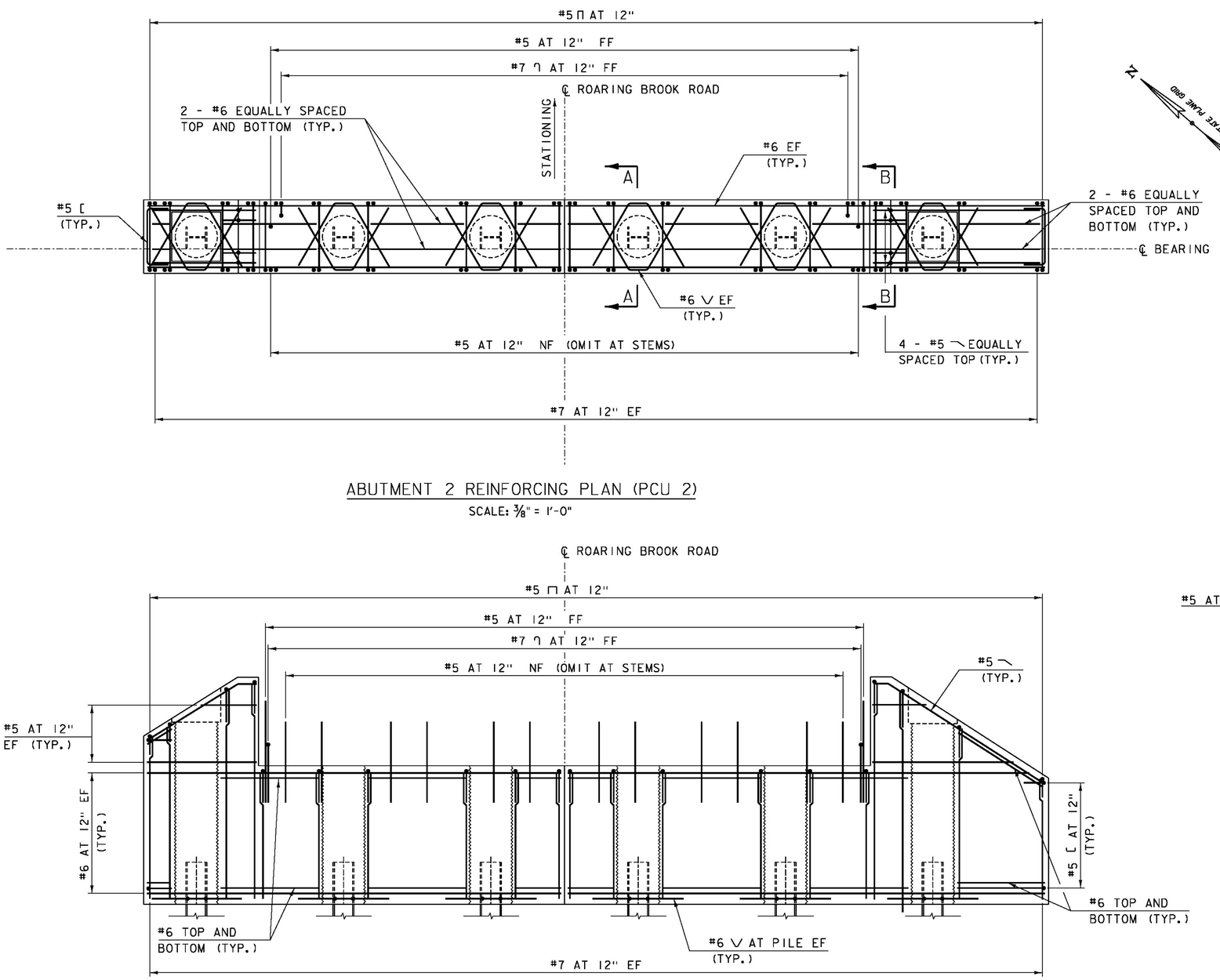
NOTE: ELEVATIONS ARE AT CENTERLINE BEARING

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

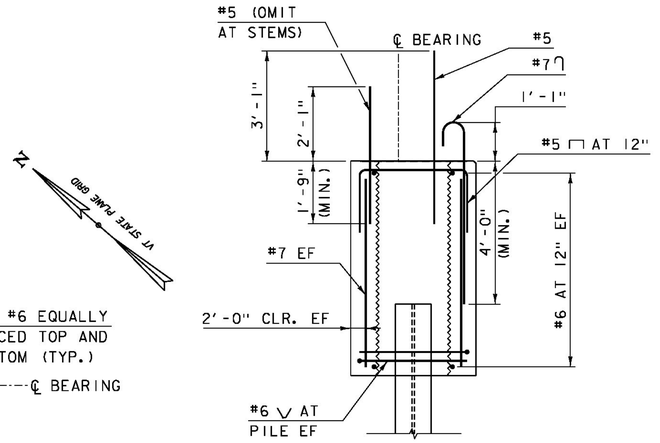
FILE NAME: z11J068abut2.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
ABUTMENT 2 PLAN

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 35 OF 52



ABUTMENT 2 REINFORCING PLAN (PCU 2)

SCALE: 3/8" = 1'-0"

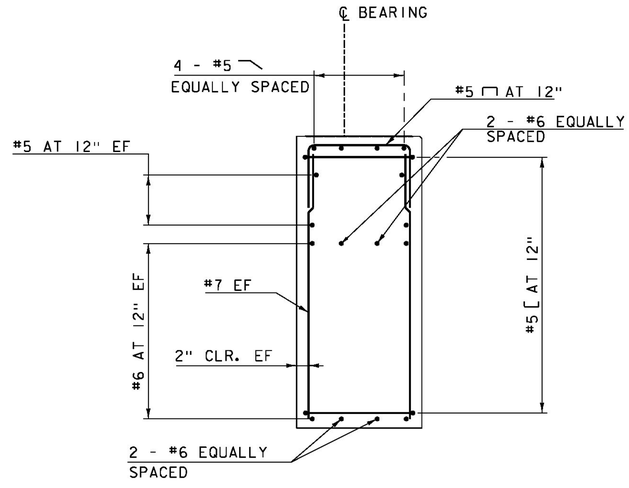


SECTION A-A

SCALE: 1/2" = 1'-0"

ABUTMENT 2 REINFORCING ELEVATION (PCU 2)

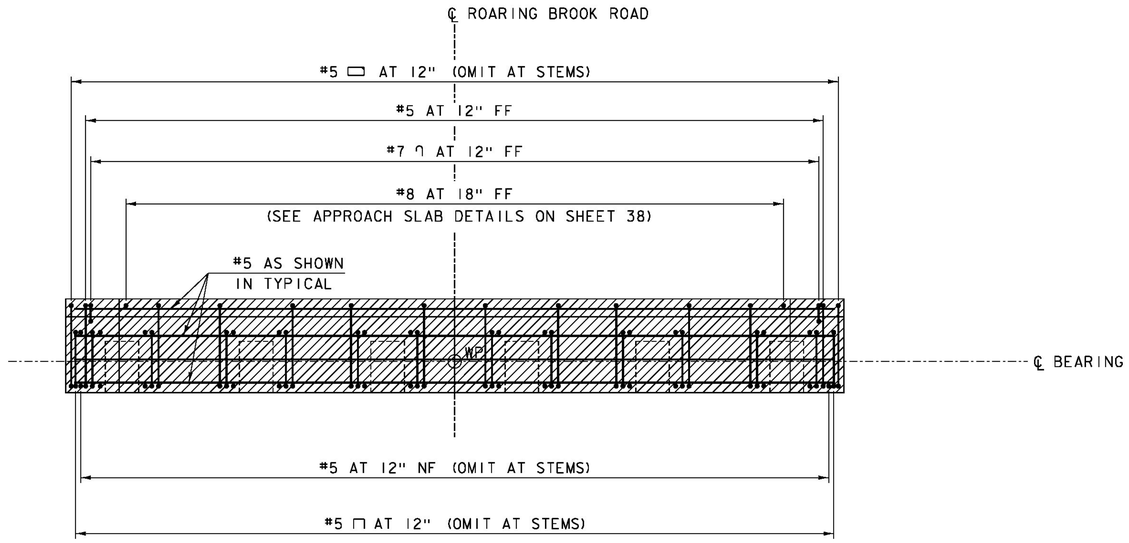
SCALE: 3/8" = 1'-0"



SECTION B-B

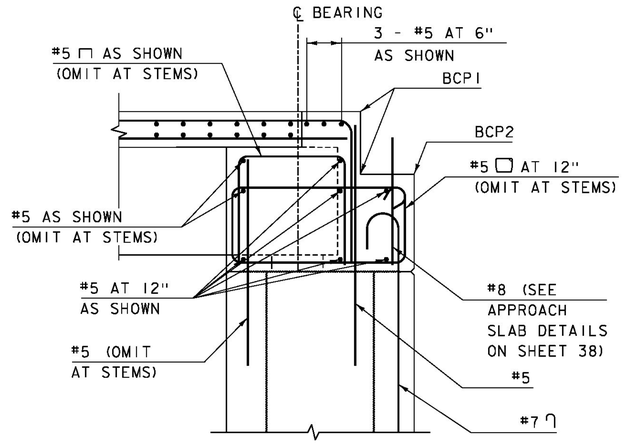
SCALE: 1/2" = 1'-0"

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z11J068abut2.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
ABUTMENT 2 REINFORCING	SHEET 36 OF 52



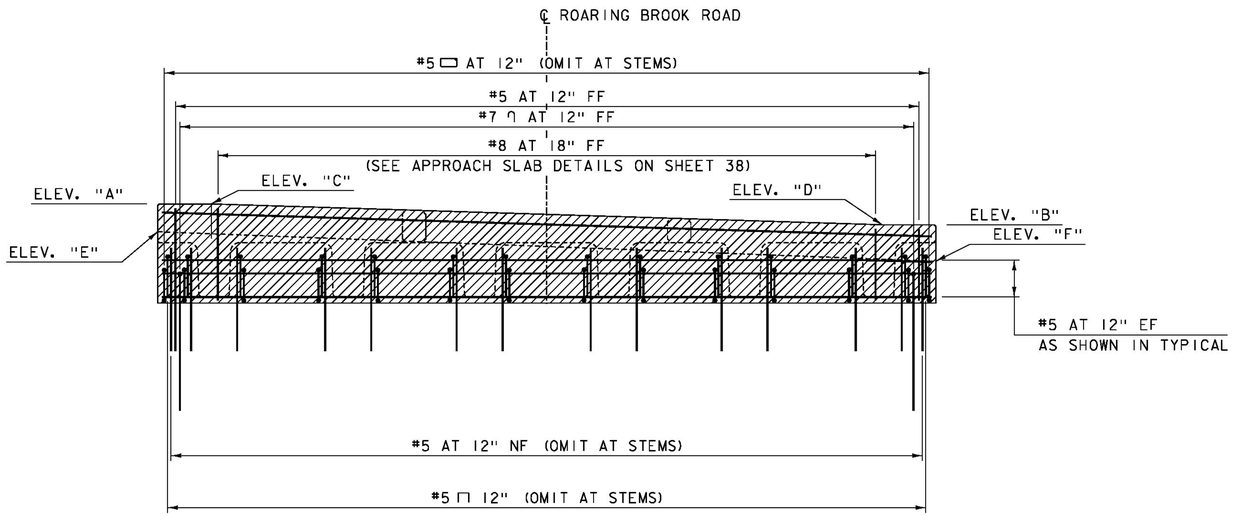
BEAM-END CLOSURE POUR
REINFORCING PLAN

SCALE: 3/8" = 1'-0"



REINFORCING TYPICAL

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



BEAM-END CLOSURE POUR
REINFORCING ELEVATION

SCALE: 3/8" = 1'-0"

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

BEAM-END CLOSURE POUR ELEVATIONS

	BEGIN/END BRIDGE BCP1		BACK OF ABUTMENT BCP2	
	ABUT. 1	ABUT. 2	ABUT. 1	ABUT. 2
ELEV "A"	1140.00	1139.98	–	–
ELEV "B"	1139.20	1139.98	–	–
ELEV "C"	1140.00	1139.98	–	–
ELEV "D"	1139.20	1139.98	–	–
ELEV "E"	1138.91	1138.83	1138.90	1138.83
ELEV "F"	1137.80	1138.64	1137.80	1138.65

NOTE: SEE REINFORCING TYPICAL AND ELEVATION FOR ELEVATION LOCATIONS.

NOTES:

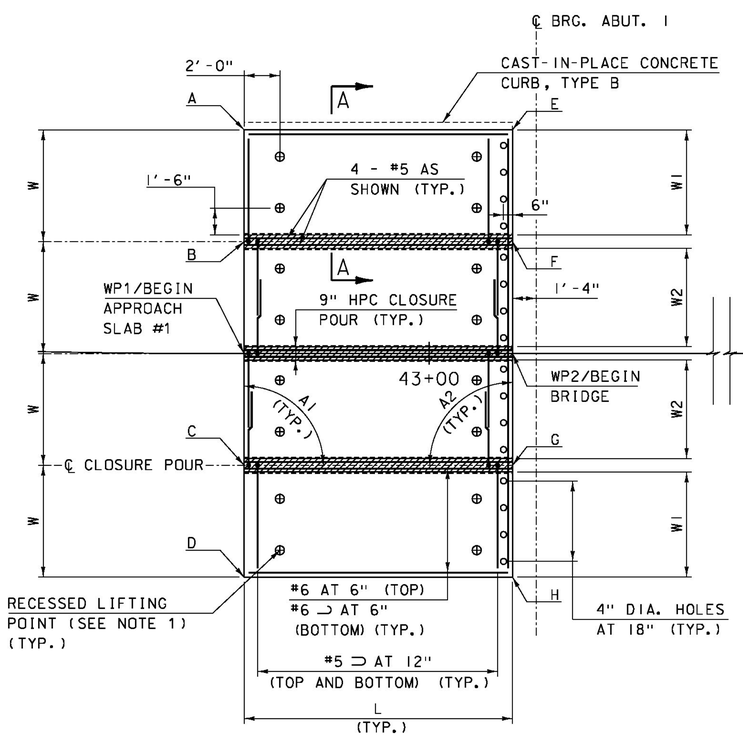
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
2" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE THE PLANS.
2'-6" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

▨ SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

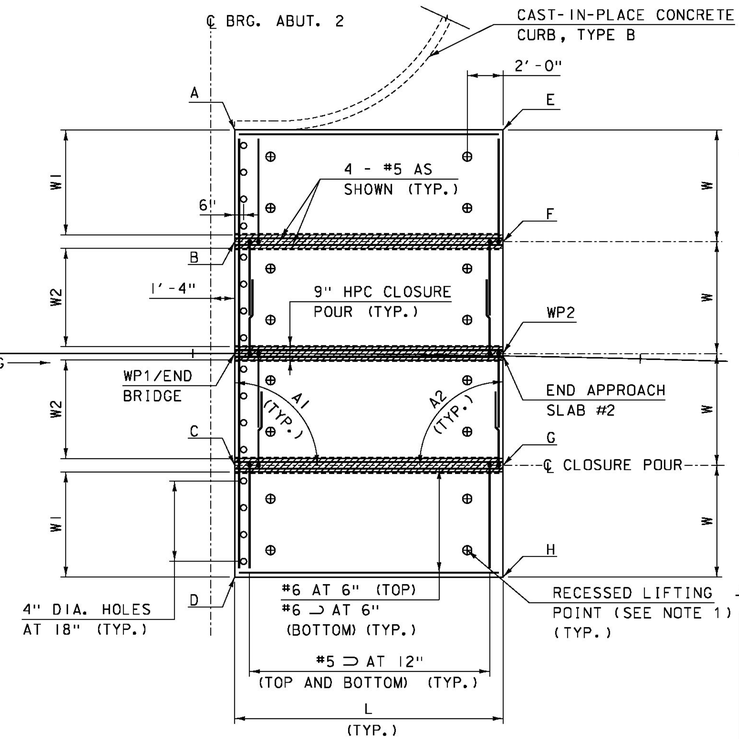
FILE NAME: z111068abut1.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
BEAM-END CLOSURE POUR REINFORCING

PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 37 OF 52



APPROACH SLAB 1 PLAN VIEW

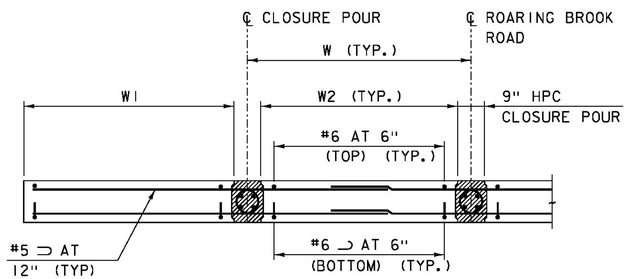
SCALE: 1/4" = 1'-0"



APPROACH SLAB 2 PLAN VIEW

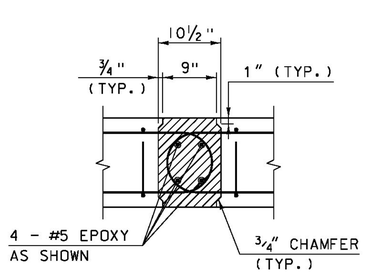
SCALE: 1/4" = 1'-0"

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)



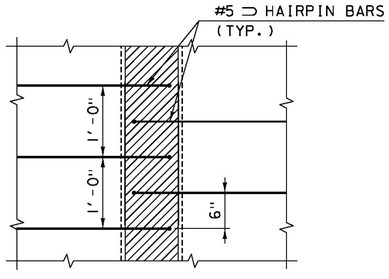
SECTION A-A

SCALE: 1/2" = 1'-0"



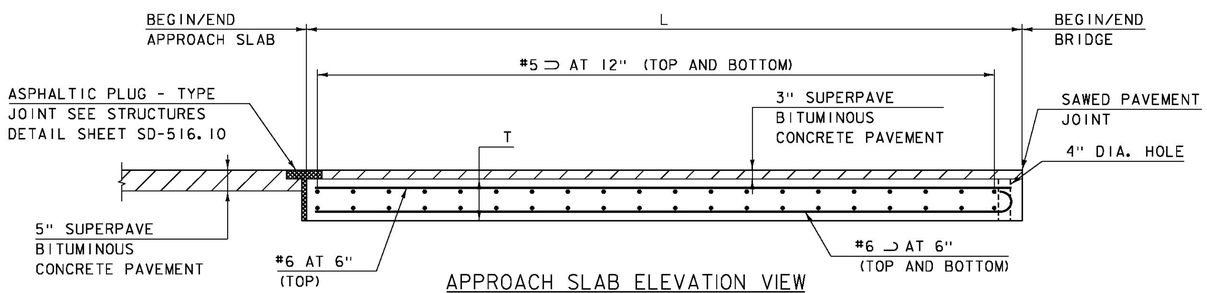
JOINT DETAIL SECTION

SCALE: 1" = 1'-0"



JOINT DETAIL PLAN

SCALE: 1" = 1'-0"



APPROACH SLAB ELEVATION VIEW

SCALE: 1/2" = 1'-0"

NOTES:

1. FABRICATOR TO DESIGN LIFTING POINTS AND INCLUDE CALCULATIONS WITH SUBMITTAL.
2. 2" CLEAR UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. 2'-6" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.
4. THE CROSS SLOPE TRANSITIONS ALONG THE FULL LENGTH OF THE APPROACH SLABS AND BRIDGE. SEE APPROACH SLAB TOP AND BOTTOM ELEVATIONS THIS SHEET.

APPROACH SLAB DIMENSIONS

APPROACH SLAB #1	A1	90°
	A2	90°
APPROACH SLAB #2	A1	90°
	A2	90°

T	VARIES (1'-2" TO 1'-3 7/8")
L	15'-0"
W	6'-3"
W1	5'-10 1/2"
W2	5'-6"

APPROACH SLAB ELEVATIONS

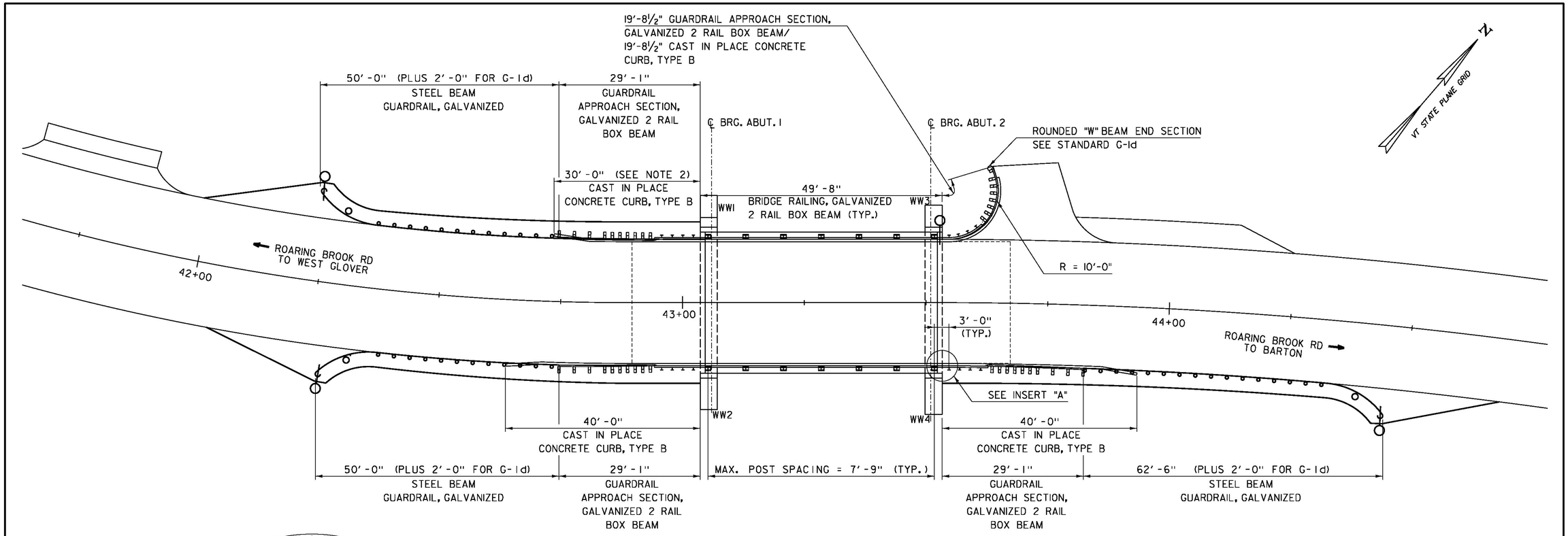
	STATION	OFFSET	TOP OF SLAB ELEVATION	BOTTOM OF SLAB ELEVATION
1A	42+89.67	-12.50	1138.96	1137.79
1B	42+89.67	-6.25	1139.22	1138.02
BEGIN/ WP1 AS #1	42+89.67	0.00	1139.49	1138.24
1C	42+89.67	6.25	1139.75	1138.47
1D	42+89.67	12.50	1140.01	1138.69
1E	43+04.67	-12.50	1139.20	1137.88
1F	43+04.67	-6.25	1139.40	1138.12
WP2 AS#1/ BEGIN BRIDGE	43+04.67	0.00	1139.60	1138.35
1G	43+04.67	6.25	1139.80	1138.59
1H	43+04.67	12.50	1140.00	1138.83
2A	43+52.32	-12.50	1139.98	1138.81
2B	43+52.33	-6.25	1139.98	1138.77
END BRIDGE/ WP1 AS#2	43+52.33	0.00	1139.98	1138.74
2C	43+52.34	6.25	1139.98	1138.70
2D	43+52.35	12.50	1139.98	1138.66
2E	43+67.12	-12.63	1140.23	1138.91
2F	43+67.22	-6.39	1140.16	1138.88
WP2	43+67.33	-0.14	1140.10	1138.86
END AS #2	43+67.33	0.00	1140.10	1138.86
2G	43+67.44	6.11	1140.04	1138.83
2H	43+67.55	12.36	1139.97	1138.80

PROJECT NAME: BARTON
PROJECT NUMBER: BRF 0269(13)

FILE NAME: z11j068slab.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
APPROACH SLAB DETAILS

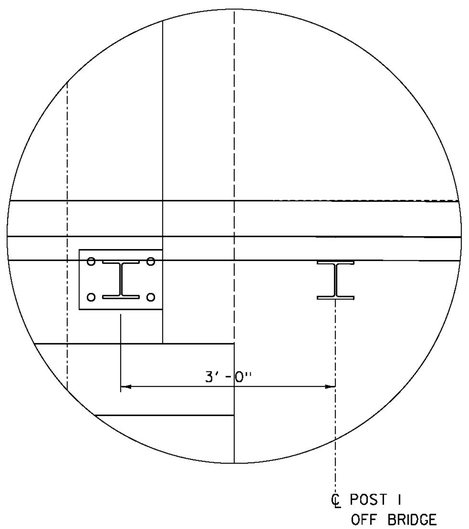
PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 38 OF 52

CLD 12-0174 MODEL: Slab01



RAIL AND CURB LAYOUT PLAN

SCALE: 1" = 10'-0"



INSERT "A"

(SOUTHEAST CORNER SHOWN, OTHER CORNERS SIMILAR)
SCALE: 1" = 10'-0"

NOTES:

1. SEE STANDARDS G-1, G-1d, S-360A AND S-360B.
2. NORTHWEST CURB LENGTH HAS BEEN MODIFIED FROM STANDARD TO ACCOMMODATE DRAINAGE AT THE LOW POINT OF THE ROAD. PROVIDE REVEAL TAPER AND FLARE DETAILED IN STANDARD AT REVISED LOCATION.

0 10 20
(SCALE 1" = 10')

CLD 12-0174 MODEL: RAIL01

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068rail.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
RAIL AND CURB LAYOUT SHEET	SHEET 39 OF 52

STATE OF VERMONT
AGENCY OF TRANSPORTATION

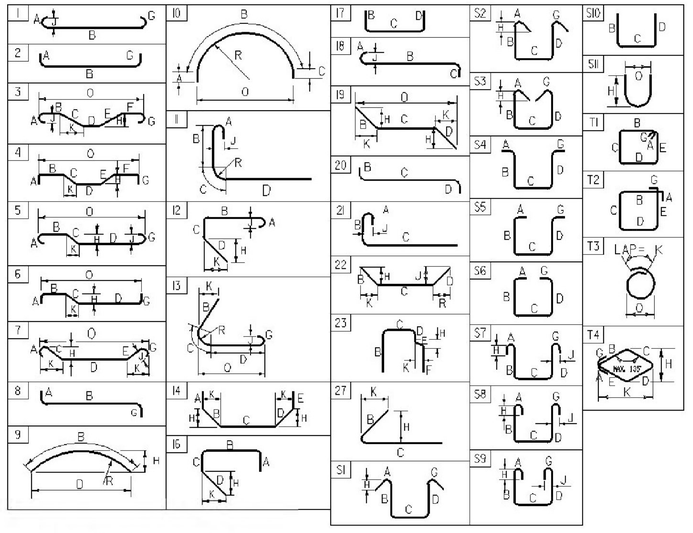
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	CURB																
✳	13	5	25'- 9"	D501.2	STR	25'- 9"											

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O

~ NOTES ~

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



ASTM STANDARD REINFORCING BARS

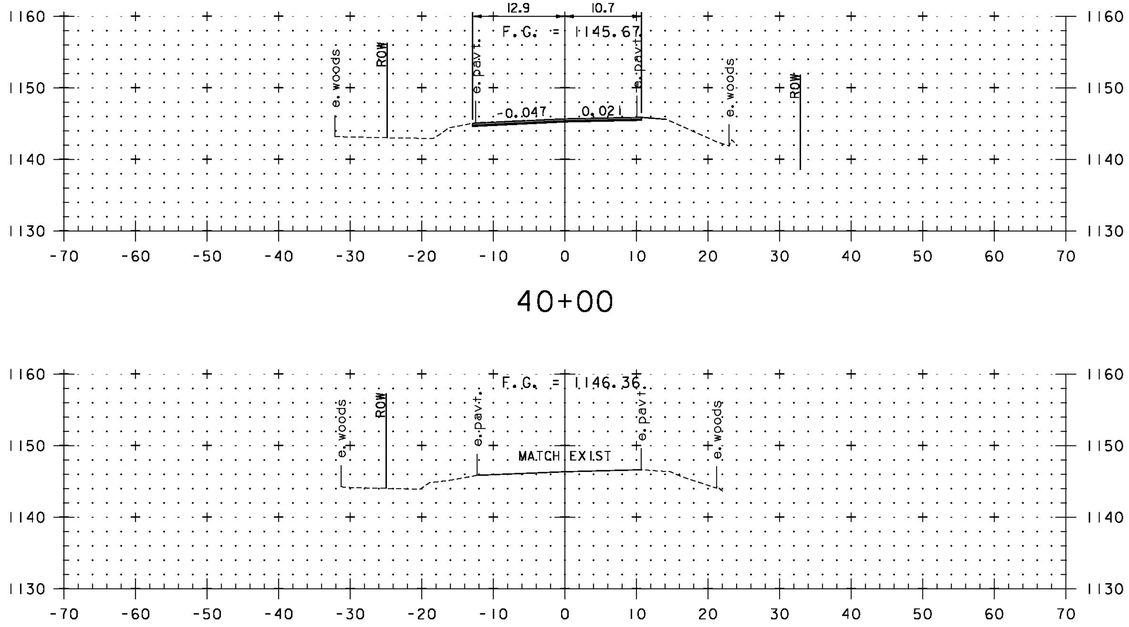
BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES ^{2}	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128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

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 10c412/cos/@FILEABBREV$
PROJECT LEADER: J. BYATT
DESIGNED BY: S. BEAUMONT
REINFORCING STEEL SCHEDULE

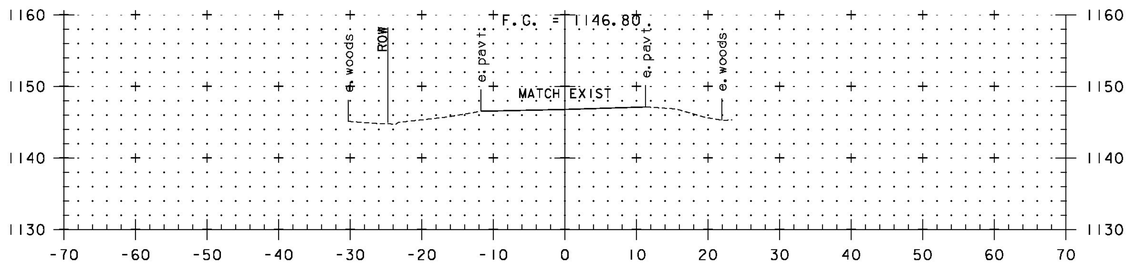
PLOT DATE: 12/17/2014
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
SHEET 40 OF 52

CLOUD 12/19/2014 M:\0600\ENGR\Standards\Rebar\

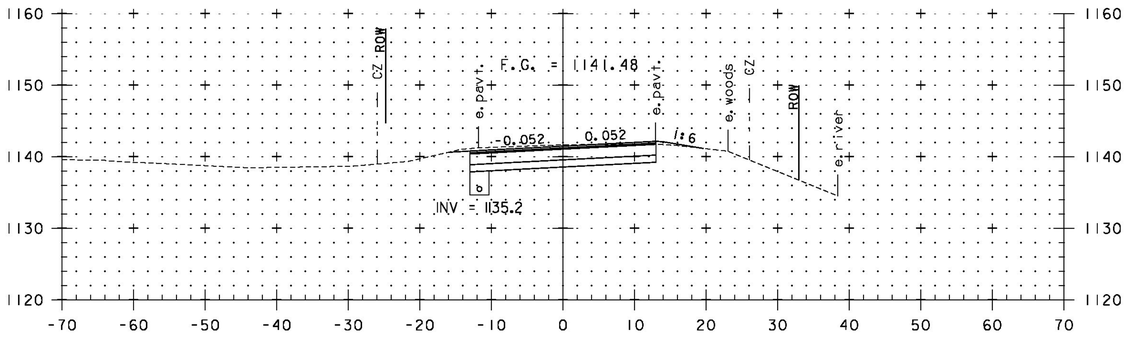


40+00

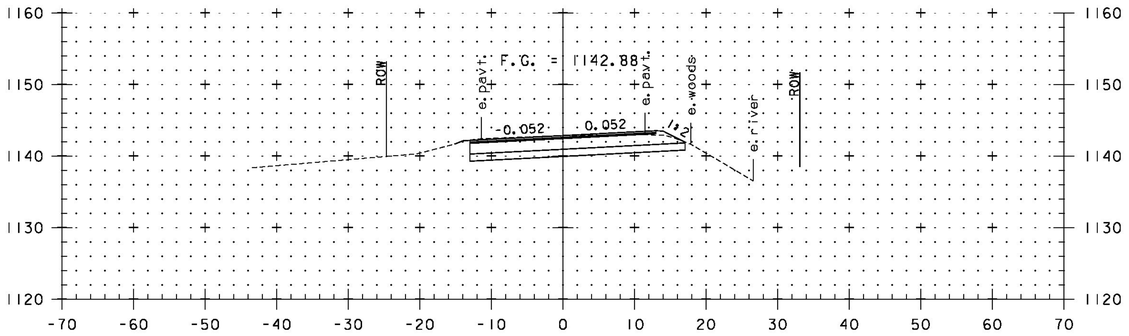
39+75



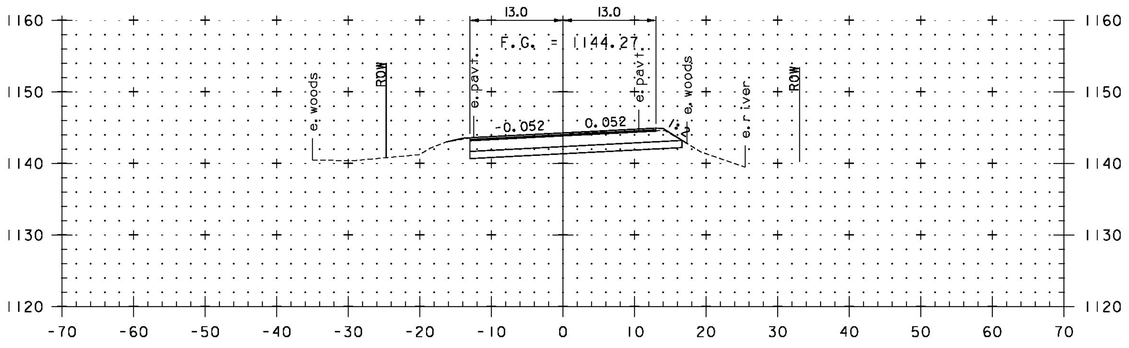
39+50
BEGIN APPROACH



41+50



41+00



40+50
BEGIN PROJECT

STA. 39+50 TO STA. 41+50

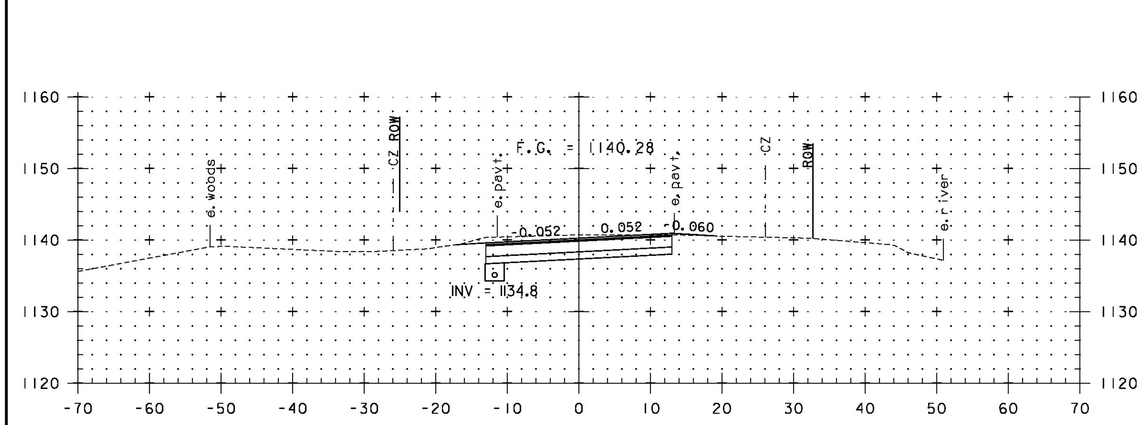
0 10 20
(SCALE 1" = 10')

CONSULTING ENGINEERS

PROJECT NAME: BARTON
PROJECT NUMBER: BRO 1449(31)

FILE NAME: 11J068/cos/z11J068xs.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: M. HALEY
ROADWAY CROSS SECTIONS 1

PLOT DATE: 12/17/2014
DRAWN BY: M. HALEY
CHECKED BY: P. SHEDD
SHEET 41 OF 52

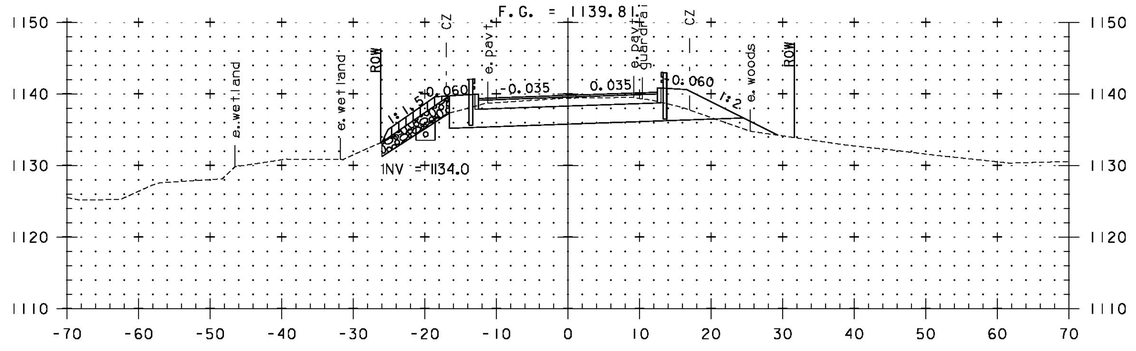


42+00

41+75
DRIVE LT

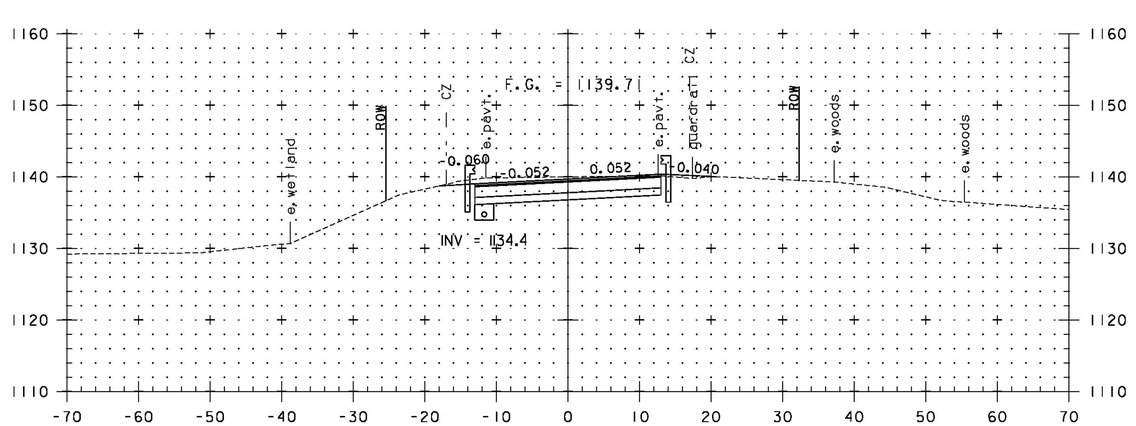
END APPROACH SLAB
BEGIN BRIDGE
STA. 43+04.67

℄ BRIDGE ABUTMENT #1
STA. 43+06.00



43+00

BEGIN APPROACH SLAB
STA. 42+89.67



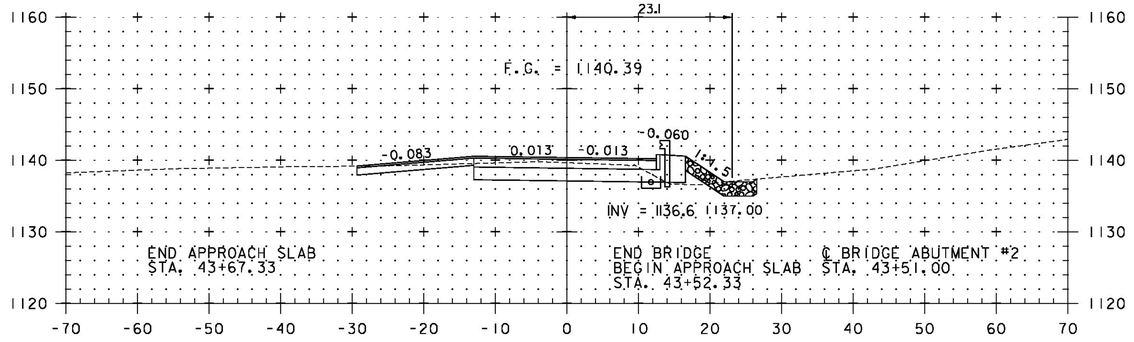
42+50

STA. 41+75 TO STA. 43+00

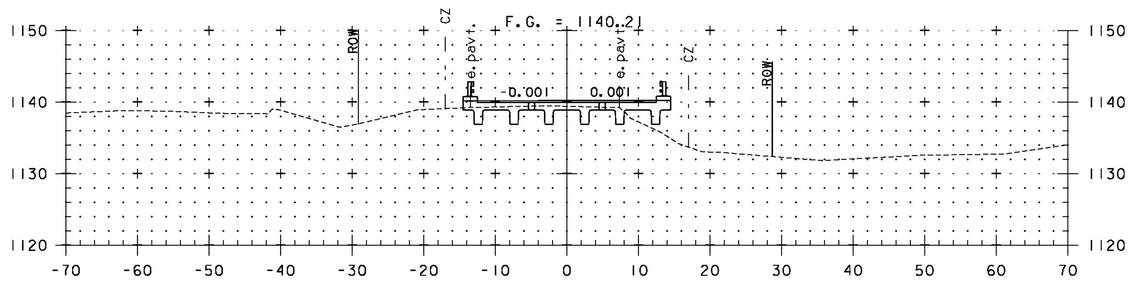
0 10 20
(SCALE 1" = 10')

CONSULTING ENGINEERS

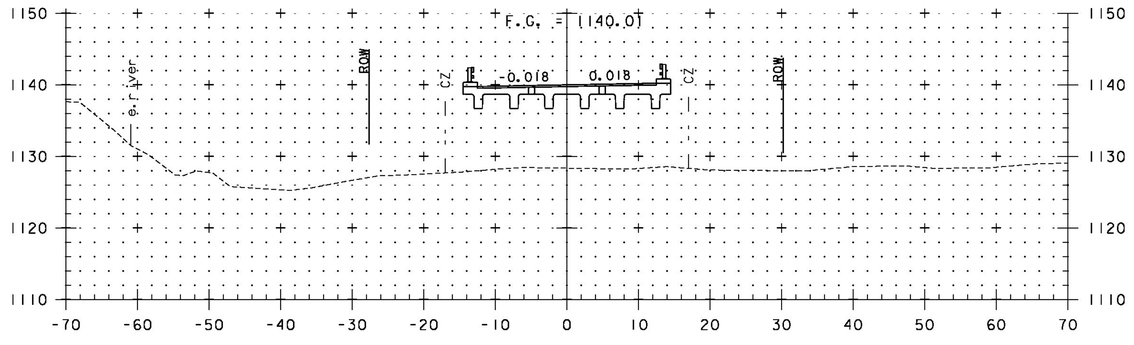
PROJECT NAME: BARTON	
PROJECT NUMBER: BRO 1449(31)	
FILE NAME: 11J068/cos/z11J068xs.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
ROADWAY CROSS SECTIONS 2	SHEET 42 OF 52



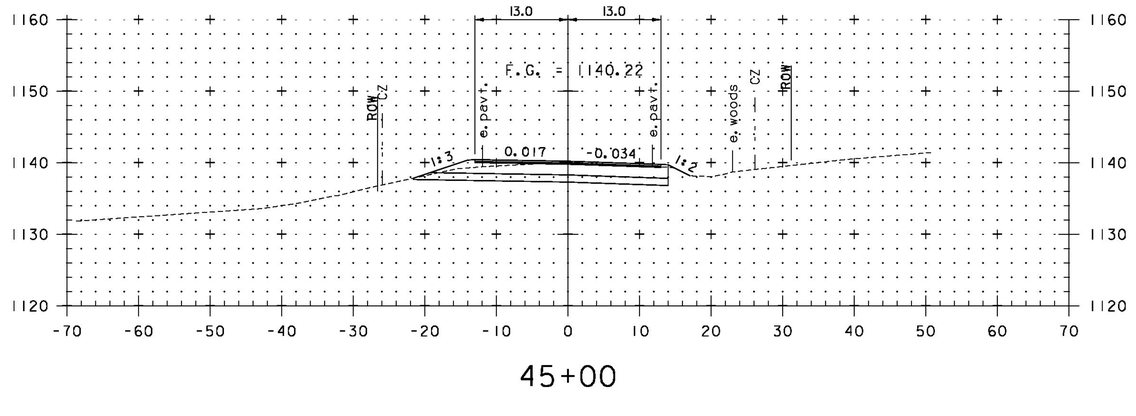
43+72



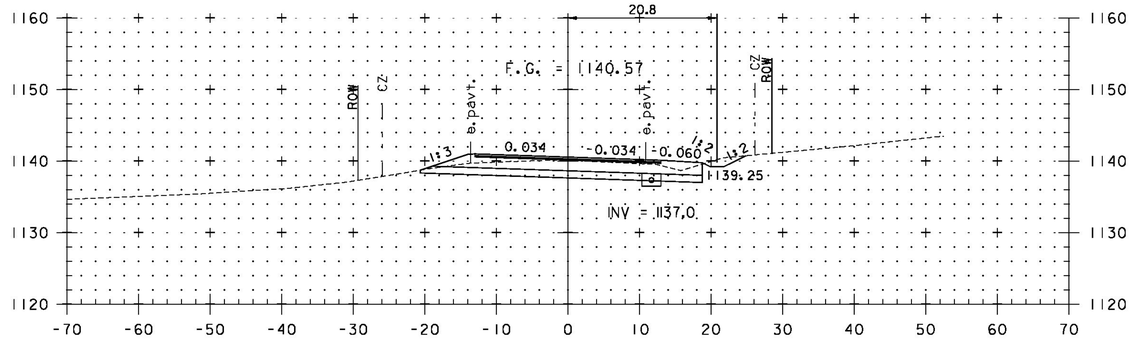
43+50



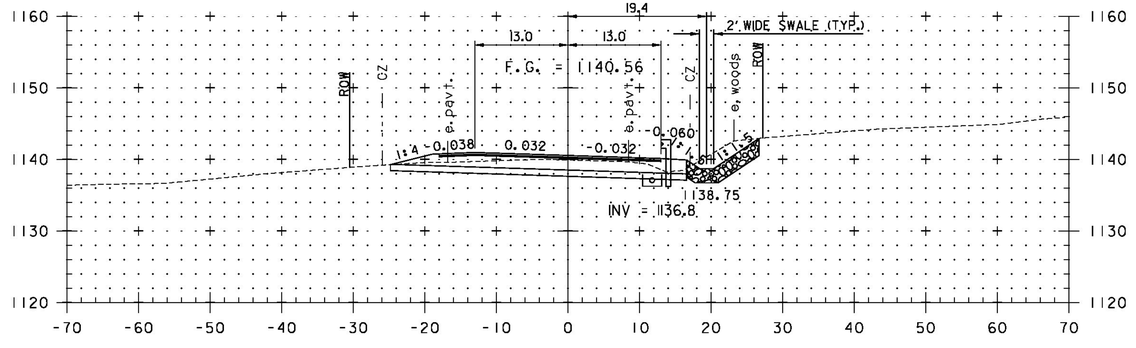
43+25



45+00



44+50



44+00

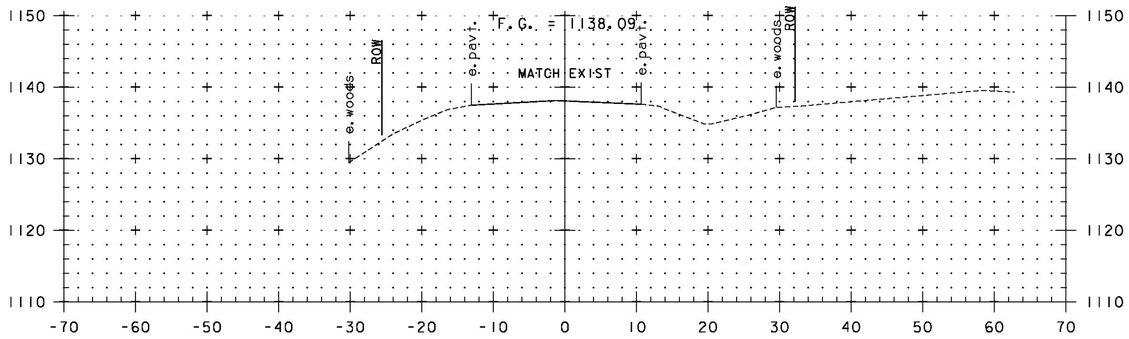
STA. 43+25 TO STA. 45+00

0 10 20
(SCALE 1" = 10')

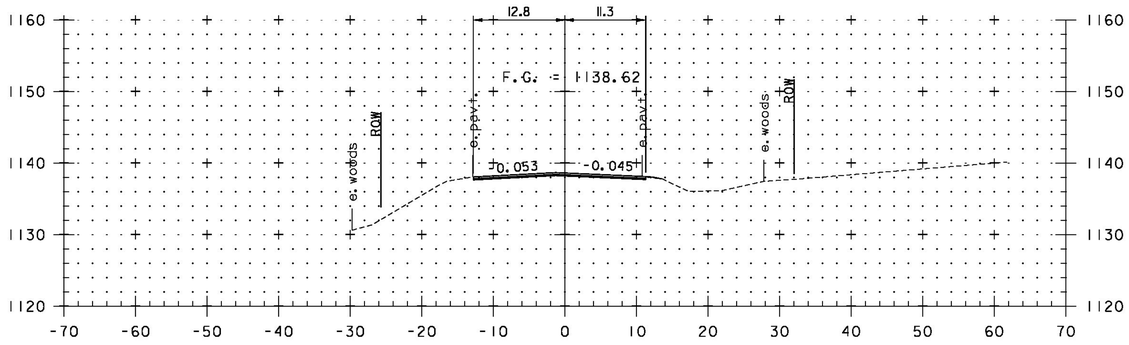
CONSULTING ENGINEERS

PROJECT NAME: BARTON	
PROJECT NUMBER: BRO 1449(31)	
FILE NAME: 11J068/cos/z11J068xs.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
ROADWAY CROSS SECTIONS 3	SHEET 43 OF 52

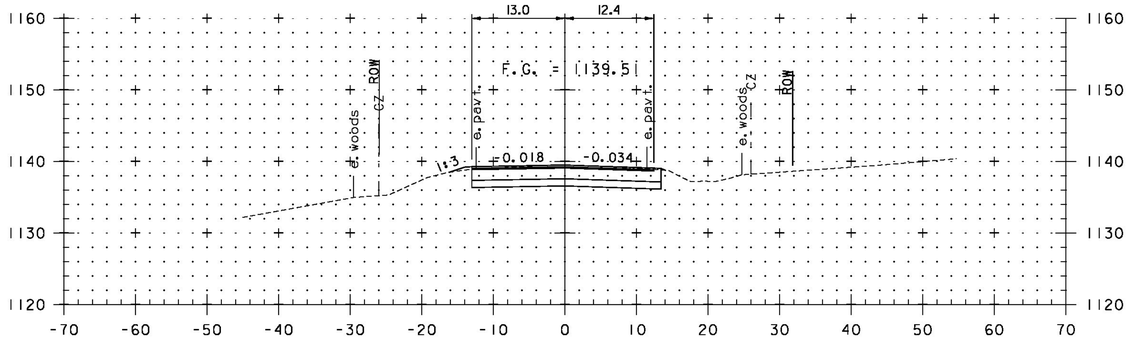
CLD 12-0174 MODEL: XS03



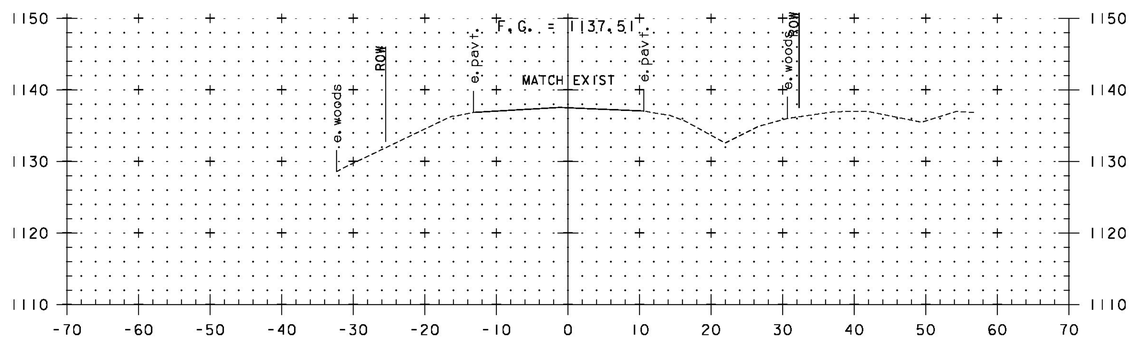
46+25



46+00



45+50
END PROJECT



46+50
END APPROACH

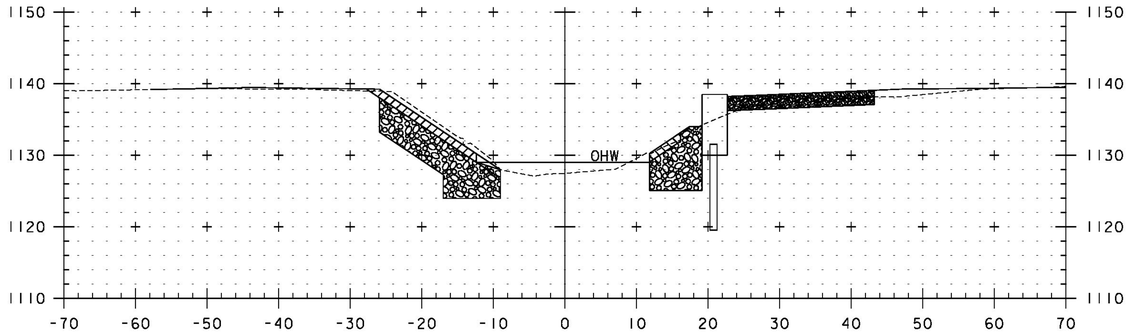
STA. 45+50 TO STA. 46+50

0 10 20
(SCALE 1" = 10')

CONSULTING ENGINEERS

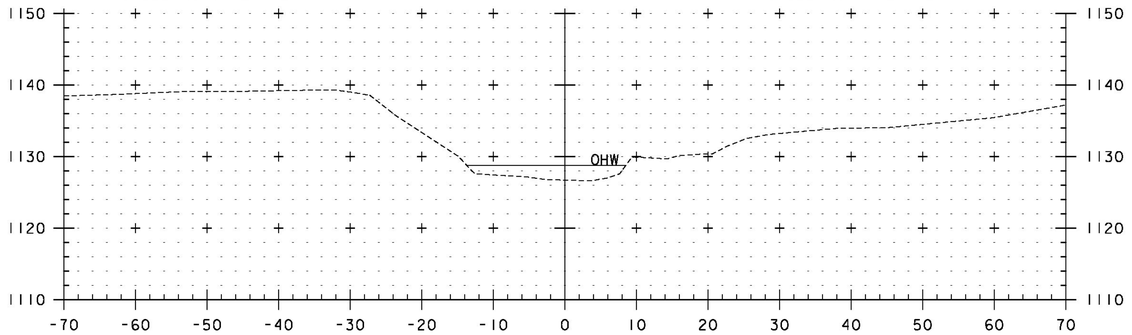
PROJECT NAME: BARTON	
PROJECT NUMBER: BRO 1449(31)	
FILE NAME: 11J068/cos/z11J068xs.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
ROADWAY CROSS SECTIONS 4	SHEET 44 OF 52

CLD 12-0174 MODEL: XS04

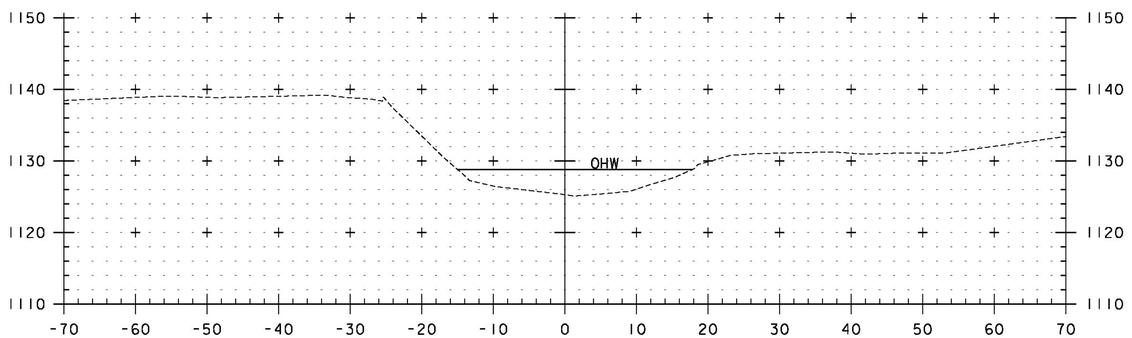


0+20

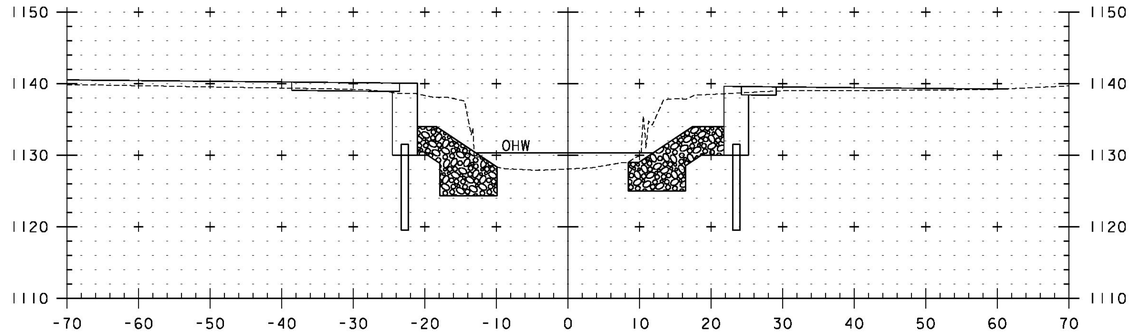
STA. 0+14 LT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE IV
GRUBBING MATERIAL



0+10

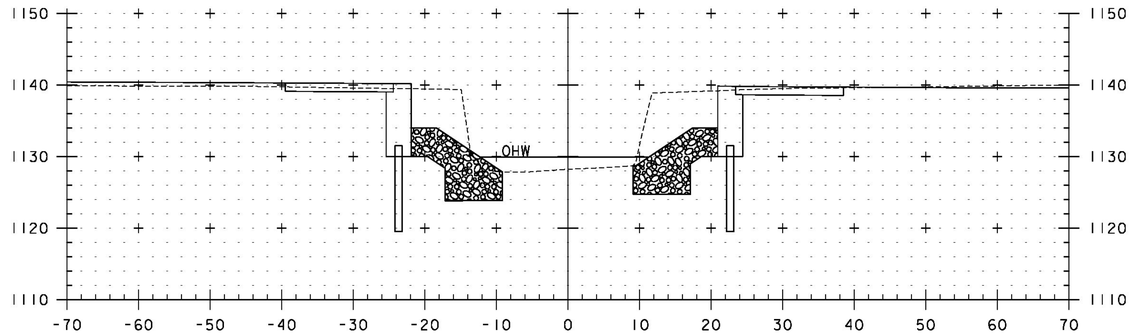


0+00

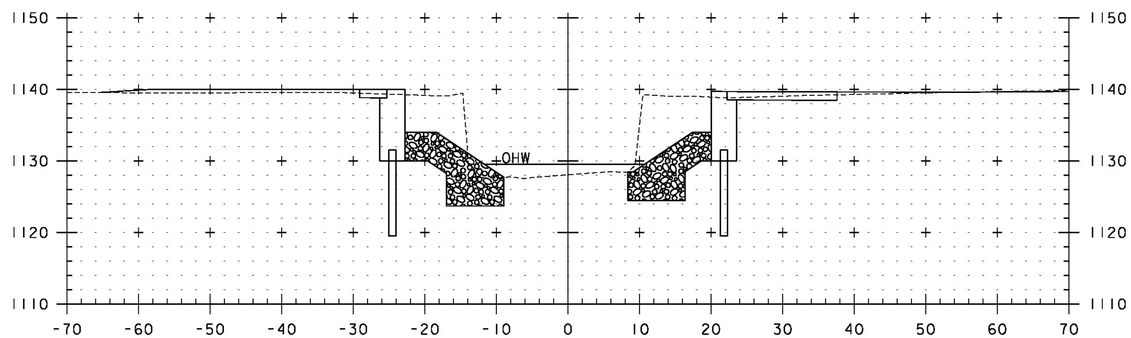


0+50

STA. 0+12 RT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE IV
GRUBBING MATERIAL



0+40



0+30

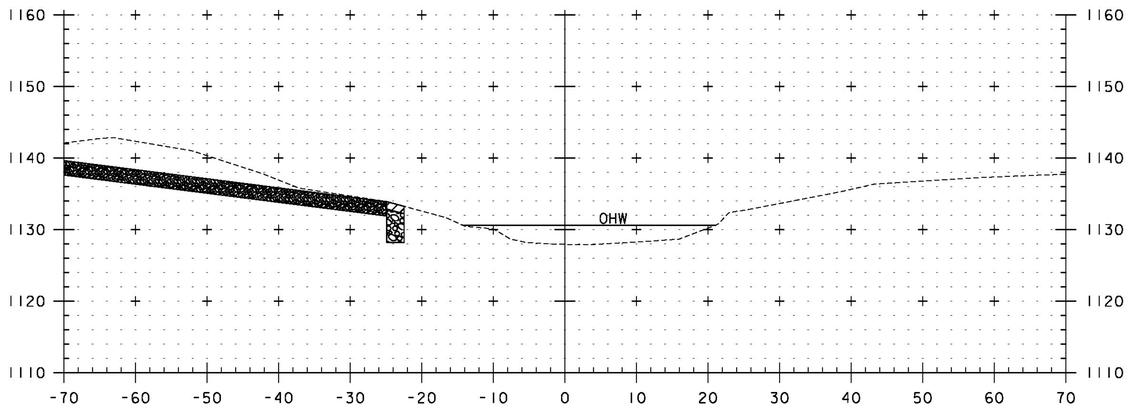
STA. 0+28 LT
STOP GRUBBING MATERIAL

STA. 0+25 RT
STOP GRUBBING MATERIAL

STA. 0+00 TO STA. 0+50

CLD 12-0174 MODEL: XSCHANOI

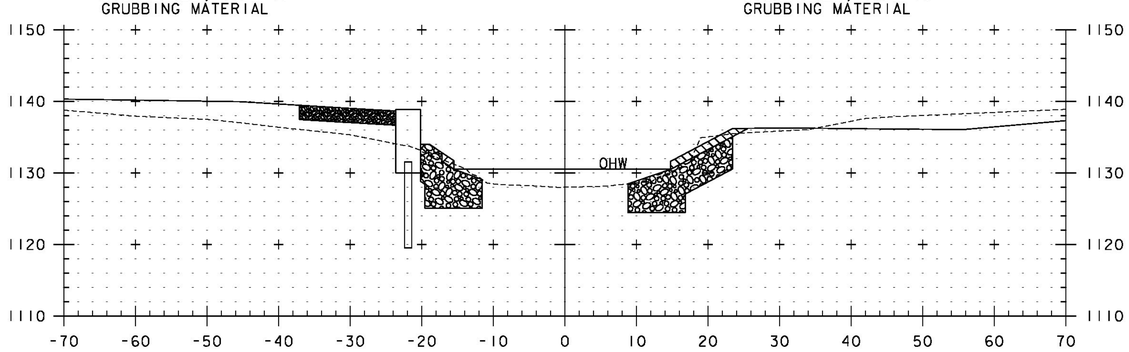
PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z11j068xschan.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
CHANNEL CROSS SECTIONS 1	SHEET 45 OF 52



STA. 0+70 LT
END UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE IV
GRUBBING MATERIAL

0+70

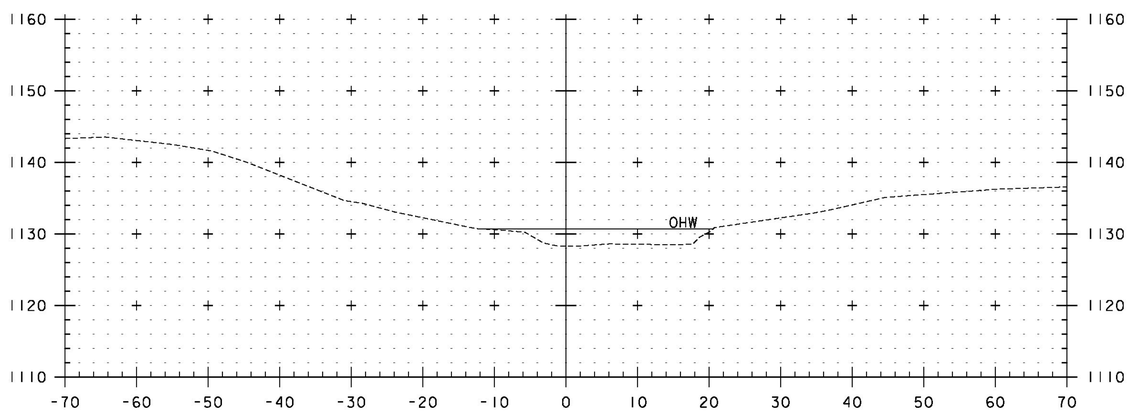
STA. 0+69 RT
END UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE IV
GRUBBING MATERIAL



STA. 0+55 LT
RESUME GRUBBING MATERIAL

0+60

STA. 0+52 RT
RESUME GRUBBING MATERIAL



0+80

STA. 0+60 TO STA. 0+80

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: z111068xschan.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. SMITH
DESIGNED BY: S. BEAUMONT	CHECKED BY: J. BYATT
CHANNEL CROSS SECTIONS 2	SHEET 46 OF 52

MODEL: XSCHAN02
CLD 12-0174

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REMOVAL OF BRIDGE 8, INCLUDING ABUTMENTS AND FOUNDATIONS. BRIDGE 8 WILL BE REPLACED WITH A PRECAST STRUCTURE SPANNING APPROXIMATELY 45 FEET OVER THE ROARING BROOK, ON NEW FOOTINGS ALONG APPROXIMATELY THE SAME ALIGNMENT. BRIDGE 8 IS LOCATED IN THE TOWN OF BARTON, ON ROARING BROOK ROAD, APPROXIMATELY 0.78 MILES EASTERLY OF THE GLOVER/BARTON TOWN LINE. THE WIDTH OF THE BRIDGE WILL BE INCREASED TO 29 FEET.

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 0.40 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 HILLY TO MOUNTAINOUS WITH A MOSTLY WELL ESTABLISHED FOREST WITH OCCASIONAL OPEN AREAS. ROARING BROOK ROAD AND MULTIPLE DRIVEWAYS ARE WITHIN THE PROJECT SITE. THERE IS A RESIDENCE ON THE NORTH SIDE OF THE PROJECT WITH GRASS AND TREE BUFFERS.

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

THE ROARING BROOK AND AN ARTISAN WELL ARE THE ONLY WATER SOURCES ON THE PROJECT SITE. THE BROOK IS CLASSIFIED AS SINUOUS, NON-ALLUVIAL, AND NARROW WITH A CONFINED AND ARMORED CHANNEL AT THE SITE. THE STREAM BED CONSISTS OF GRAVEL, COBBLES AND BOULDERS. THE TRIBUTARY AREA AT THE BRIDGE CROSSING IS 10 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 HARDWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE EXISTING BRIDGE AND SLOPE GRADING. 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 ORLEANS, VERMONT. SOILS ON THE PROJECT SITE ARE BUCKLAND FINE SANDY LOAM, 35% TO 60% SLOPES, VERY STONY, "K FACTOR" = 0.37. THE SOIL IS CONSIDERED HIGHLY ERODIBLE DUE TO SIGNIFICANT SLOPES.

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 ARCHAEOLOGICALLY SENSITIVE AREA SOUTHWEST OF THE BRIDGE AND ONE ARCHAEOLOGICALLY SENSITIVE AREA SOUTHEAST OF THE BRIDGE.
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: ROARING BROOK
WETLANDS: YES. TWO SMALL AREAS, ONE UPSTREAM AND ONE DOWNSTREAM OF THE BRIDGE. THE PROPOSED WORK WILL NOT IMPACT EITHER AREA.

1.3 RISK EVALUATION

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

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

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 CONTRACTOR'S PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES ARE NOT ANTICIPATED TO BE NEEDED AS DESIGNED. THE EXISTING ROADWAY WILL BE CLOSED TO ALL TRAFFIC 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 EPSC 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.

DIVERSION MEASURES ARE NOT ANTICIPATED TO BE NEEDED AS DESIGNED.

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 TO BE NEEDED AS DESIGNED.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

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

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

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

1.4.9 WINTER STABILIZATION

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

WINTER STABILIZATION IS NOT ANTICIPATED TO BE NEEDED AS DESIGNED.

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.

TEMPORARY EROSION MATTING SHALL BE USED TO STABILIZE ROADWAY SLOPES AND STONE FILL SHALL BE USED TO STABILIZE 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. THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR. ALL COSTS FOR TREATMENT OF DISCHARGE SHALL BE PAID FOR 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 12-0174 MODEL: ECOI

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME:	II1068/cos/zII1068erodet.dgn
PROJECT LEADER:	J. BYATT
DESIGNED BY:	M. HALEY
EROSION CONTROL NARRATIVE	
PLOT DATE:	12/17/2014
DRAWN BY:	M. HALEY
CHECKED BY:	P. SHEDD
SHEET	47 OF 52

STA 39+50.00
BEGIN APPROACH

SOIL INFORMATION:
BUCKLAND FINE SANDY LOAM,
K = 0.37, VERY STONY,
HIGHLY ERODIBLE
HYDROLOGIC SOIL GROUP: C

STA 40+50.00
BEGIN PROJECT

SOIL INFORMATION:
BUCKLAND FINE SANDY LOAM,
K = 0.37, VERY STONY,
HIGHLY ERODIBLE
HYDROLOGIC SOIL GROUP: C

STA 45+50.00
END PROJECT

STA 46+50.00
END APPROACH

MATCHLINE SEE ABOVE RIGHT

MATCHLINE SEE BELOW LEFT

SOIL INFORMATION:
CABOT SILT LOAM, VERY STONY
K = 0.28,
POTENTIALLY HIGHLY ERODIBLE
HYDROLOGIC SOIL GROUP: D

NOTE
SEE SHEET 13 FOR CONVENTIONAL SYMBOLOGY LEGEND.

(SCALE 1" = 20')

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068bdreroex.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
EPSC EXISTING PLAN SHEET	SHEET 48 OF 52

CONSULTING ENGINEERS

STA 39+50.00
BEGIN APPROACH

STA 40+50.00
BEGIN PROJECT

APPROX EXISTING R.O.W.

ROARING BROOK RD
TO WEST GLOVER

40+00

41+00

42+00

43+00

44+00

45+00

M. SPRUCE
TIE DIST=8.79

M. SPRUCE
DIST=6.52

18 CPEP

TREES

GRAVEL
DRIVE

GRASS

50' RIPARIAN BUFFER (TYP)

WELL
ARTESIAN

GUYW

L. HEMLOCK

M. CEDAR

M. BIRCH

M. CEDAR

STA. 43+52.33
END BRIDGE

PAVED
DRIVE

M. SPRUCE

M. MAPLE

S. SPRUCE

LAWN

S. MAPLE

GRAVEL
DRIVE

HCWYW

ISWF

LAWN

DEAD M. SPRUCE

POSTW

HVCTRL

HAZARD

BRIDGE #8

1696

5BM

APPROX EXISTING R.O.W.

MATCHLINE SEE BELOW LEFT

OVERGROWN
WOODS DRIVE

WOODS

STA. 43+04.67
BEGIN BRIDGE

ROARING BROOK

STA 45+50.00
END PROJECT

MATCHLINE SEE ABOVE RIGHT

WOODS

INTERSECTION AHEAD-EAST ALBANY

STA 46+50.00
END APPROACH

ROARING BROOK RD
TO BARTON

46+00

WOODEN GUARD
RAIL (T)

36 CF

0 20 40
(SCALE 1" = 20')

NOTE
SEE SHEET 13 FOR CONVENTIONAL SYMBOLOGY LEGEND.

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)

FILE NAME: II\068/cos/ zII\068bdreroca.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
EPSC CONSTRUCTION PLAN SHEET	SHEET 49 OF 52

CONSULTING ENGINEERS

STA 39+50.00
BEGIN APPROACH

STA 40+50.00
BEGIN PROJECT

APPROX EXISTING R.O.W.

ROARING BROOK RD
TO WEST GLOVER

40+00

41+00

42+00

43+00

44+00

45+00

M. SPRUCE
TIE DIST=8F.79

CTRL

SPRUCE
DIST=6.52

18 CPEP

TREES

GRASS

GRAVEL DRIVE

50' RIPARIAN BUFFER (TYP)

ARCH

HDWY

COMB
NO NUMBER

DEAD M. SPRUCE

POSTW

HVCTRL

GRAVEL

TEL

WELL
ARTESIAN

GUYW

EL

L. HEMLOCK

M. CEDAR

W. BIRCH

M. CEDAR

STA. 43+52.33
END BRIDGE

PAVED DRIVE

M. SPRUCE

N. MAPLE

LAWN

S. MAPLE

S. SPRUCE

GRAVEL DRIVE

LAWN

SPIKE IN POLE #50780

5" RIB

1696

HAZARD

BRIDGE #8

APPROX EXISTING R.O.W.

CZ

OVERGROWN
WOODS DRIVE

WOODS

MATCHLINE SEE BELOW LEFT

STA. 43+04.67
BEGIN BRIDGE

ROARING BROOK

140

STA 45+50.00
END PROJECT

MATCHLINE SEE ABOVE RIGHT

INTERSECTION AHEAD-EAST ALBANY

STA 46+50.00
END APPROACH

ROARING BROOK RD
TO BARTON

46+00

WOODEN GUARD
RAIL (T)

36 CP

0 20 40
(SCALE 1" = 20')

NOTES
1. SEE CROSS SECTIONS FOR FINISHED GRADING.
2. SEE SHEET 13 FOR CONVENTIONAL SYMBOLOGY LEGEND.

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)

FILE NAME: IIJ068/cos/zIIJ068bdrerofl.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
EPSC FINAL PLAN SHEET	SHEET 50 OF 52

CONSULTING ENGINEERS

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*

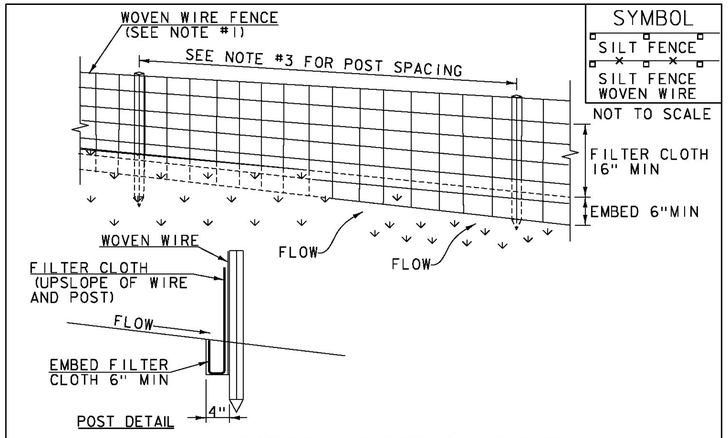
CONSTRUCTION GUIDANCE

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.

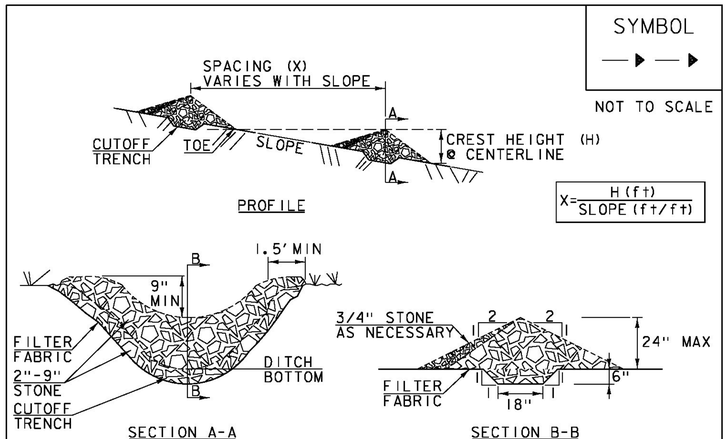
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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.

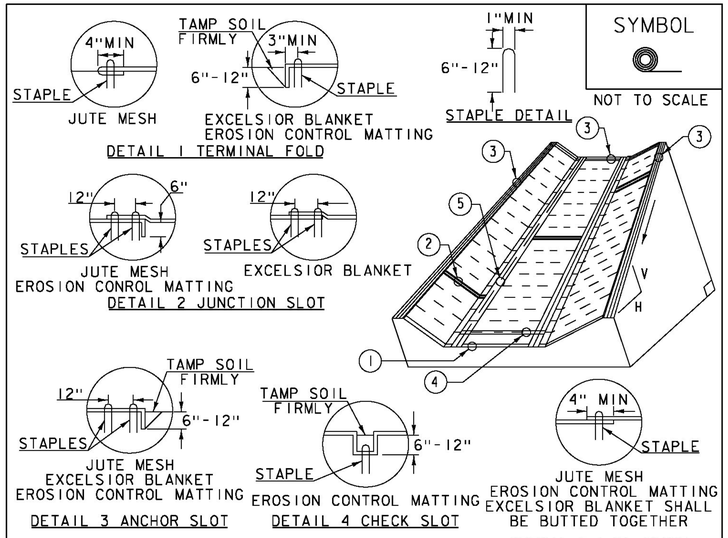
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE I (PAY ITEM 653.25)

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF

CLD 12-0174 MODEL: EC02

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068erodet.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
EPSC DETAILS 1	SHEET 51 OF 52



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

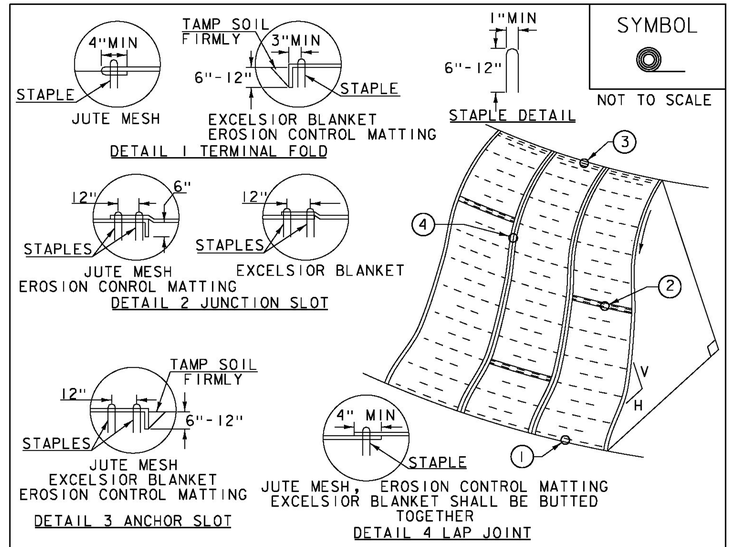
1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO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

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



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

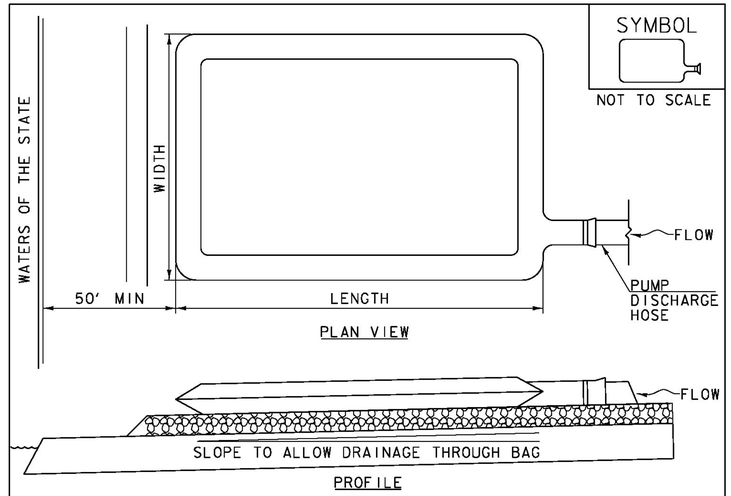
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER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

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

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

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

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF



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

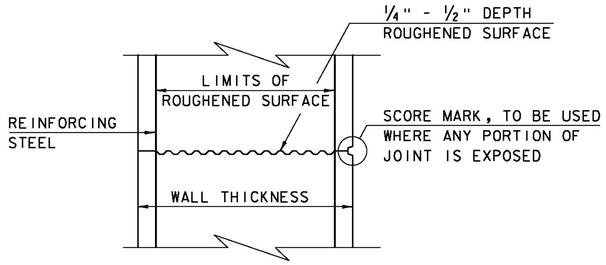
CLD 12-0174 MODEL: EC03

CONSULTING ENGINEERS

PROJECT NAME:	BARTON
PROJECT NUMBER:	BRO 1449(31)
FILE NAME: 11J068/cos/z11J068erodet.dgn	PLOT DATE: 12/17/2014
PROJECT LEADER: J. BYATT	DRAWN BY: M. HALEY
DESIGNED BY: M. HALEY	CHECKED BY: P. SHEDD
EPSC DETAILS 2	SHEET 52 OF 52

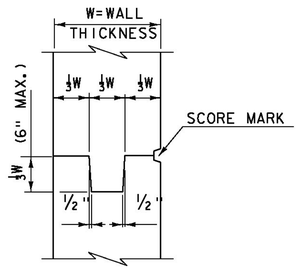
CONCRETE GENERAL NOTES

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.

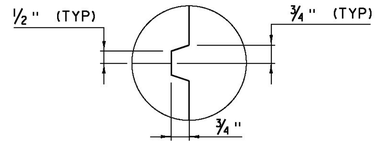


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

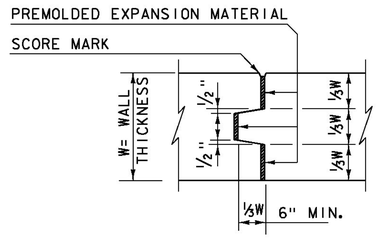
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



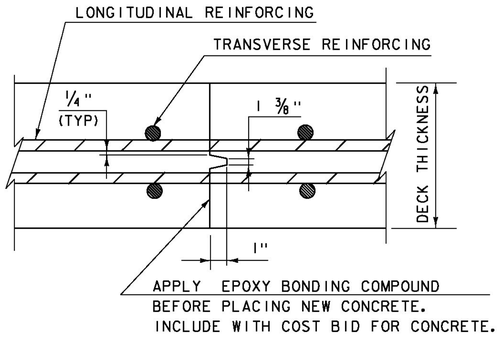
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



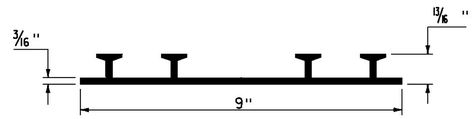
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



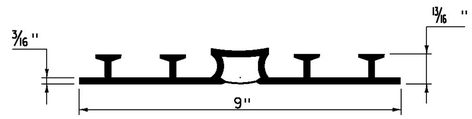
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



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.

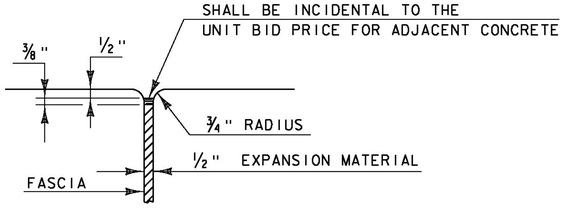
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



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.



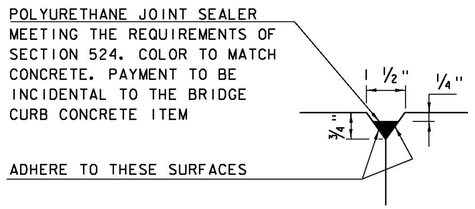
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

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

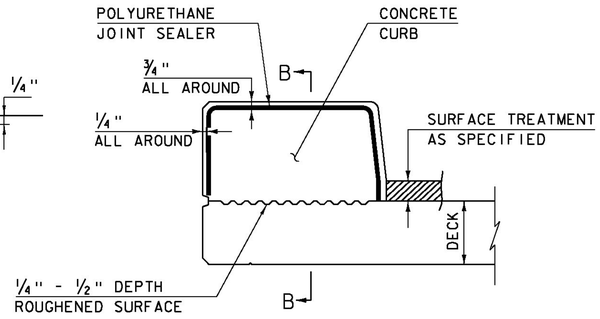
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES SECTION

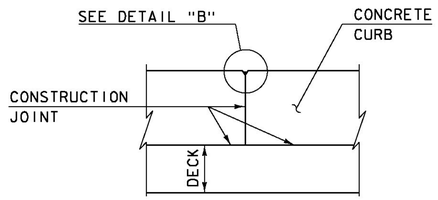
STRUCTURES DETAIL
SD-501.00



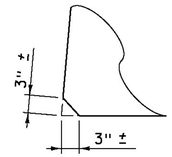
DETAIL "B"
(NOT TO SCALE)



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

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.

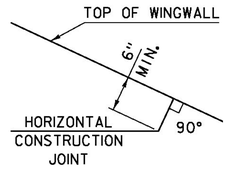
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

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.

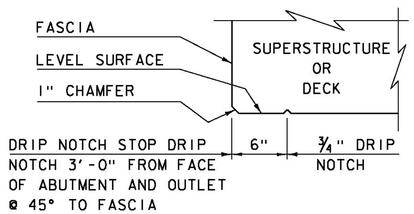
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

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.

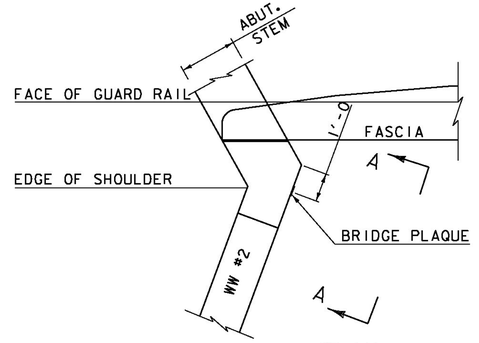
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



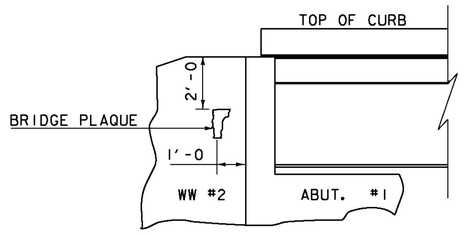
HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



PLAN



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.

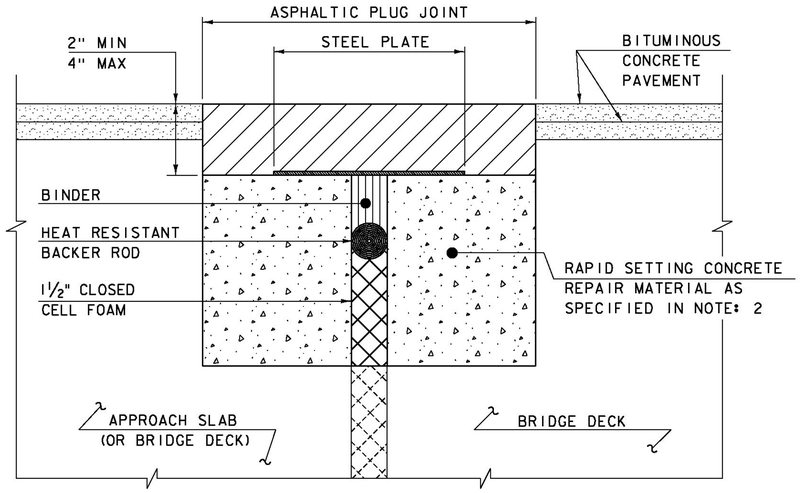
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

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



ASPHALTIC PLUG JOINT DETAIL - REHAB

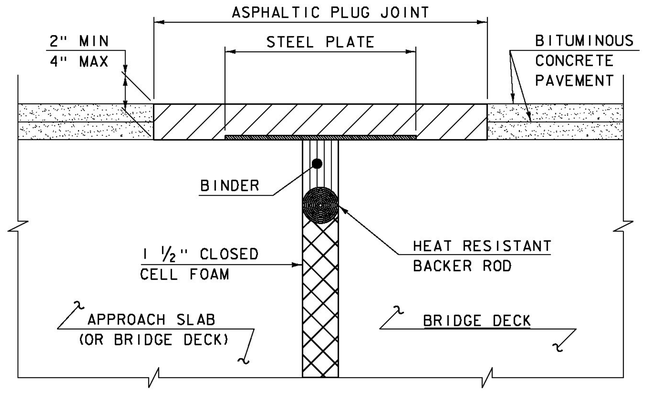
NOTES:

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

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

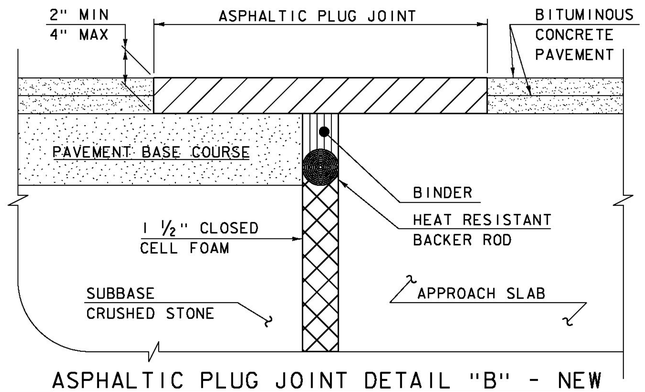
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

4. PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.



ASPHALTIC PLUG JOINT DETAIL "A" - NEW

NOTE:
PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER.



ASPHALTIC PLUG JOINT DETAIL "B" - NEW

ASPHALTIC PLUG JOINT NOTES

INSTALLATION:

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

WEATHER LIMITATIONS

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

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

DETAILS ON THIS SHEET ARE NOT TO SCALE.

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

BRIDGE JOINT
ASPHALTIC PLUG

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

STRUCTURES DETAIL
SD-516.10

Vermont Agency of Transportation

RECEIVED

ON: April 2, 2015

and Checked for

CONFORMANCE

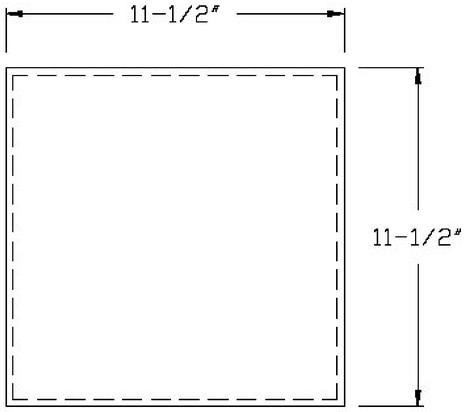
BY: Todd A. Sumner DATE: 05/11/2015

885 DENMARK DRIVE
SUITE 103
McCARRAN, NV 89434
PH. (775) 284-8500
FAX (775) 284-8501

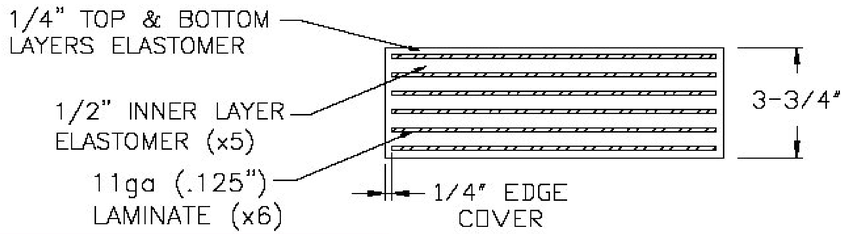
SCOUGAL RUBBER

SERVICE DESIGN LOADS:
(DESIGN METHOD A)

MAXIMUM DEAD LOAD = 32.2 K
MINIMUM LIVE LOAD = 31.7 K



PLAN
LAMINATED PAD @ ABUTMENTS



PAD SECTION

(QTY. 12) PADS
(PLUS 2 FOR M251 TESTING)

ALSO INCLUDED:
(QTY. 16)
1/4" x 12-1/2" x 12-1/2"
GALVANIZED SHIMS

NOTES:

1. ELASTOMERIC BEARING PADS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION (SECTIONS 531 AND 731), DATED 2011, AND IT'S LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2012, AND IT'S LATEST REVISIONS, AND THE CONTRACT DRAWINGS PROVIDED FOR THIS PROJECT.
2. ELASTOMER SHALL BE 60 +/-5 DUROMETER (SHORE "A") AASHTO GRADE 4 NATURAL RUBBER, WITH A SHEAR MODULUS RANGE OF 130 - 200 psi.
3. 11ga INTERNAL STEEL LAMINATES SHALL BE PER ASTM A1011, GRADE 36, CONFORMING WITH VERMONT STANDARD SPECIFICATION SUBSECTION 714.02. LAMINATES SHALL BE SAND BLASTED AND FREE OF BURRS AND SHARP EDGES.
4. 1/4" EXTERNAL STEEL SHIMS SHALL BE PER ASTM A36, AND GALVANIZED PER ASTM A123.
5. SCOUGAL RUBBER WILL PROVIDE MILL CERTS AND MATERIAL TEST REPORTS. AASHTO M251 TESTING WILL BE PROVIDED.
6. WHERE APPLICABLE, MATERIALS SHALL COMPLY WITH THE "BUY AMERICA" ACT OF 1982.
7. SCOUGAL RUBBER REQUIRES A MINIMUM OF 6-8 WEEKS FROM APPROVAL OF THIS SHOP DRAWING TO FABRICATE THE BEARING PADS.

SOLD TO: J.P. SICARD, INC.	SCOUGAL RUBBER CORP.
	ROARING BROOK ROAD BRIDGE (TH 2) (BRIDGE #8) TOWN OF BARTON ORLEANS COUNTY, VERMONT PROJECT# BRO-1449(31)
SRC# 13546	SIZE A — DRAWN BY: R. JENSEN — ELASTOMERIC BEARING PAD DETAILS
DATE: MARCH 2015	SCALE: 1:1 (AutoCAD) — CHECKED BY: R. TIMMONS — SHEET 1 OF 1

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 DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERA_ CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERA_ COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPOINSIBLE FOR: CONFIRMING AND CORRELAT NG 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: 120174
Reviewed by: SRB
Date: 05/11/2015

Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

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 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: 128174

Reviewed by: AEG

Date: 05/14/2014

Material specification: A572 gr 50, A709 Gr 50

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

Manual, semi-automatic, or automatic: Semi-Automatic

Position of welding: Flat (1F) or Horizontal (2F)

Filler metal specification: AWS A5.18

Filler metal classification: ER70S-6

Electrode and manufacturer: Lincoln Electric Lincoln Weld L-56

Flux and manufacturer: N/A

Shielding gas: 86% Argon / 14% CO2 Flow rate: 35-45 CFM

Single or multiple pass: Single or Multiple

Single or multiple arc: Single

Welding current: DCEP

Polarity: Reverse - electrode positive

Welding progression: Stringers

Root treatment: clean base metal

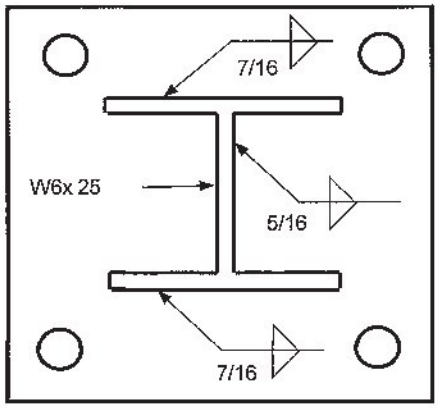
Preheat and interpass temperature: base metal up to 3/4" (50°F) ; over 3/4 thru 1-1/2" (150°F) : over 1-1/2" thru 2-1/2" (225°F)

Postheat treatment: None

Electrode extension: 3/4" ± 1/4"

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters		Travel speed	Joint detail
			Amperes	Volts		
5/16"	1	0.062"	300 A ± 30	29 V ± 2	15 ipm ± 2	
7/16"	1 & 2	0.062"	↓	↓	15 ipm ± 2	



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

WPS no. W-VTPEDPOST1

Revision no. 0

Supporting PQR no. Pre-Qualified

Project Name: Barton, Vermont

Fabricator: Highway Safety Corporation

Prepared By: Paul Radice

Date: 4/23/15

Project Number: BRO 1449(31)

Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

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 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, 603-669-8160

Job Number: 120174
Reviewed by: AEG
Date: 05/14/2014

Material specification: **ASTM A500 gr B**

Welding process: **Gas Metal Arc Welding (GMAW)**

Manual, semi-automatic, or automatic: **Semi-Automatic**

Position of welding: **Flat (1F) or Horizontal (2F)**

Filler metal specification: **AWS A5.18**

Filler metal classification: **ER70S-6**

Electrode and manufacturer: **Lincoln Electric Lincoln Weld L-56**

Flux and manufacturer: **N/A**

Shielding gas: **86% Argon / 14% CO2** Flow rate: **35-45 CFM**

Single or multiple pass: **Single**

Single or multiple arc: **Single**

Welding current: **DCEP**

Polarity: **Reverse - electrode positive**

Welding progression: **Stringers**

Root treatment: **clean base metal**

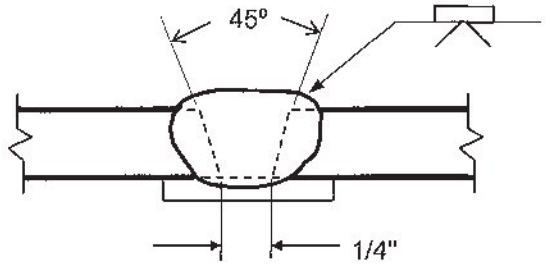
Preheat and interpass temperature: **base metal up to 3/4" (50°F)**

Postheat treatment: **None**

Electrode extension: **3/4" ± 1/4"**

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters		Travel speed	Joint detail
			Amperes	Volts		
	1	0.063"	300 A ± 30	29 V ± 2	15 ipm ± 2	B-U2a-GF



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

WPS no. **W-VGwBCK**

Revision no. **0**

Supporting PQR no. **Pre-Qualified**

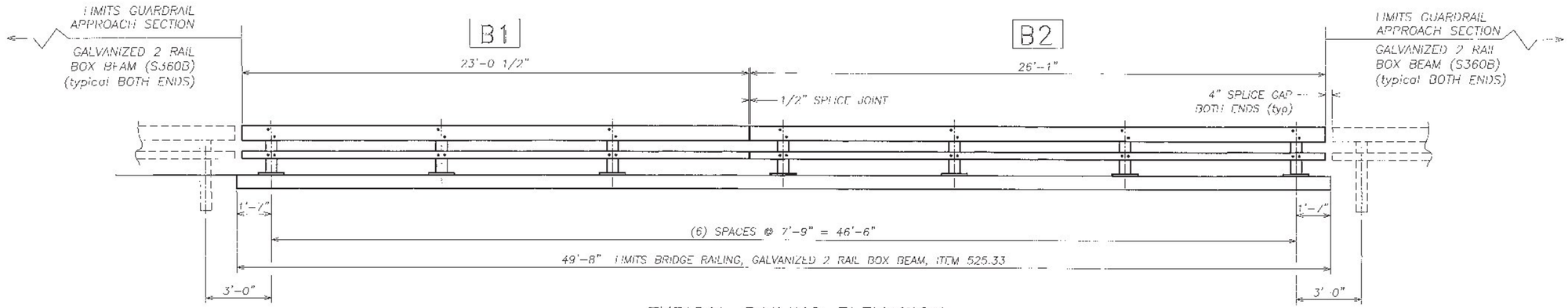
Project Name **Barton, Vermont**

Fabricator **Highway Safety Corporation**

Prepared By: **Paul Radice**

Date **4/23/15**

Project Number **BRO 1449(31)**



TYPICAL RAILING ELEVATION

LOOKING AT FACE OF RAILING FROM CENTERLINE OF ROAD
BOTH SIDES TYPICAL

BILL OF MATERIAL

Qty	mk	Description	Spec.
100 LF		ITEM 525.33 BRIDGE RAILING, GALVANIZED, 2 RAIL BOX BEAM	
14		BRIDGE RAILING POST W6 x 25 x 2'-2.375" OAH WITH 1 x 10 x 14 BASE PLATE (GLV)	A709 gr 50
2		SPLICE TUBE (FOR 8X4 RAIL) HSS 7 x 3 x 3/8 x 1'-8.000" OAL w/ TAPPED HOLES & 2 WELDED NUTS (GLV)	A500 gr B
2		SPLICE TUBE (FOR 4X4 RAIL) HSS 3 x 3 x 5/16 x 1'-8.000" OAL w/ TAPPED HOLES & 2 WELDED NUTS (GLV)	A500 gr B
2	B1	RAIL TUBE HSS 8 x 4 x 5/16 x 23 ft - 0.5 in OAL - FIX splice 1 end, EXP splice 1 end (GLV)	A500 gr B
2	B2	RAIL TUBE HSS 8 x 4 x 5/16 x 26 ft - 1 in OAL - FIX splice 1 end, EXP splice 1 end (GLV)	A500 gr B
2	B1	RAIL TUBE HSS 4 x 4 x 1/4 x 23 ft - 0.5 in OAL - FIX splice 1 end, EXP splice 1 end (GLV)	A500 gr B
2	B2	RAIL TUBE HSS 4 x 4 x 1/4 x 26 ft - 1 in OAL - FIX splice 1 end, EXP splice 1 end (GLV)	A500 gr B
14		ANCHOR SPACER PLATE PL 0.375 x 13.000 x 9.375	A709 gr 36
56		ANCHOR STUD DBL END PART THREAD - 1" DIA x 12.000 w/ 2.250" THD EACH END (GLV)	A449
112		HEAVY HEX NUT 1" (GLV)	A563 DH
56		ROUND WASHER (SAE) - 1" DIA SMALL (GLV)	F436
56		JAM NUT 1" (GALV)	A563 DH
56		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 6" LG. FULL BODY (GLV)	A449 / A325
56		LOCK NUT 3/4" (GLV)	A563 DH
56		ROUND WASHER (SAE) 3/4" (GLV)	F436
16		HEX HEAD BOLT 5/8" DIA x 1.75" LG. (GLV)	A325
16		ROUND WASHER (SAE) 5/8" (GLV)	F436
14		BEARING PAD 0.125" THICK x 10.000 x 14.000 (NEOPRENE 60 duro +/-10)	aashto M251

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 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, 603-669-5020

Job Number 12017.4
Reviewed by AEG
Date: 05/14/2014

No.	Remarks	Date
0	Initial submittal	4/29/15

REVISIONS

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 525.33 BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM (S-360A)
ITEM 621.72 GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (S-360B)
BRO 1449(31)
ROARING BROOK ROAD (TH2) BRIDGE #8
TOWN OF BARTON, ORLEANS COUNTY VT

AISC CERTIFIED FABRICATOR

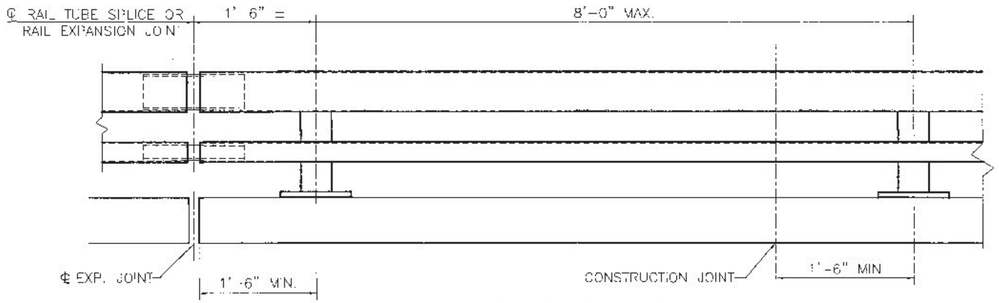
ORIGINAL CONTRACTOR

SUB CONTRACTOR
VT REC

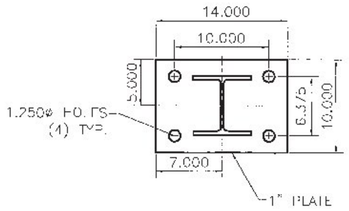
HSC JOB NO. 2045

SHEET NO. 1 of 4

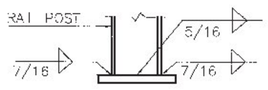
DRAWN	CHECKED	DATE	SCALE	SIZE
PAR		04-22-15	NONE	D



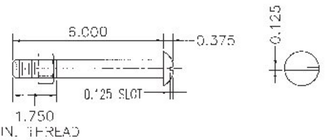
BRIDGE RAILING ELEVATION



POST AND BASE PLATE



BASE WELD DETAIL



3/4" DIA. A449
ROUND HEAD BOLT

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

SHOP DRAWING REVIEW

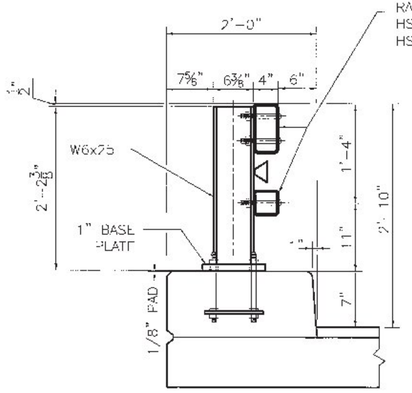
☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

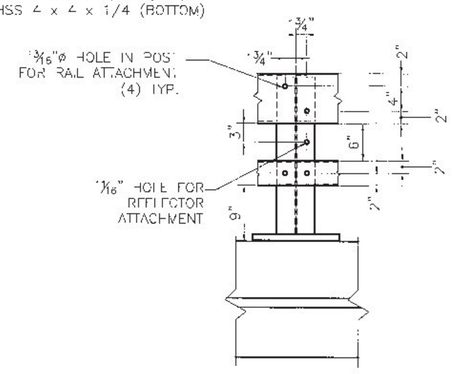
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION 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, 603-668-5229

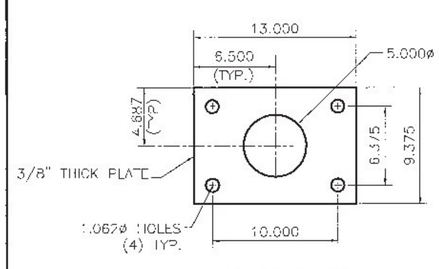
Job Number: 120174
Reviewed by: AEG
Date: 05/14/2014



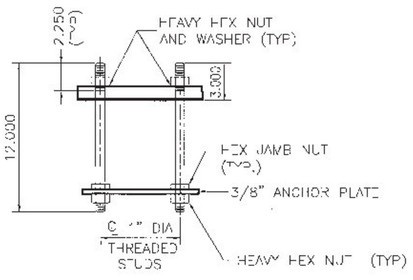
TYPICAL SECTION



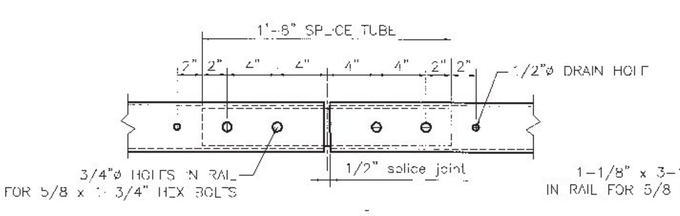
ELEVATION



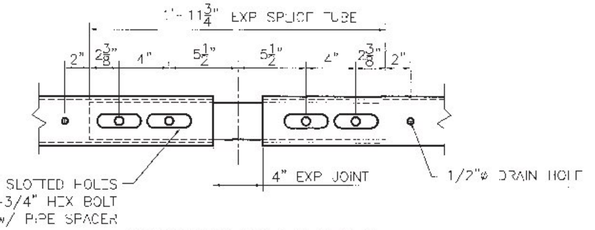
ANCHOR PLATE



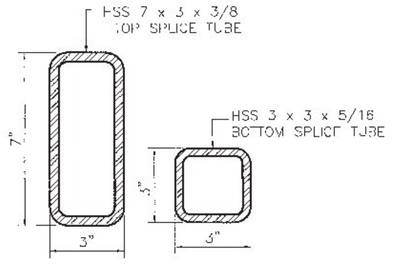
RAIL POST ANCHORAGE



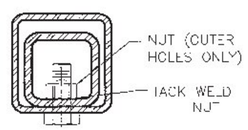
FIXED SPLICE JOINT DETAIL
BOTTOM VIEW



EXPANSION SPLICE DETAIL
BOTTOM VIEW

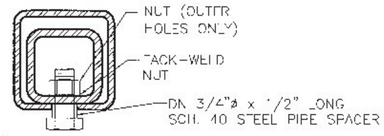


RAIL TUBE SPLICE SECTION



5/8"ø TAPPED HOLE IN SPLICE TUBE &
3/4"ø HOLE IN RAIL TUBE FOR BOLT &
PLAIN HARDENED WASHER

FIXED SPLICE JOINT SECTION



5/8"ø TAPPED HOLE IN SPLICE TUBE
AND 1 1/8" x 'C' SLOT IN RAIL TUBE FOR
BOLT AND PLAIN HARDENED WASHER

EXPANSION JOINT SECTION

NOTES:

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

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

3. ALL POSTS SHALL BE SET NORMAL TO GRADE.

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

5. RAIL TUBE EXPANSION JOINT SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.

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

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

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

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

10. THE MINIMUM DISTANCE FROM A POST TO AN EXPANSION JOINT SHALL BE SUCH TO MAINTAIN MINIMUM EDGE DISTANCE OF 6" FROM ANY ANCHOR BOLT TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS FOUR, IF ONE IS USED.

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

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

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

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

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

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

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

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 525.33 BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM (S-3604)

BRO 1449(31)
ROARING BROOK ROAD (TH-2) BRIDGE #8
TOWN OF BARTON, ORLEANS COUNTY VT

AISC CERTIFIED FABRICATOR

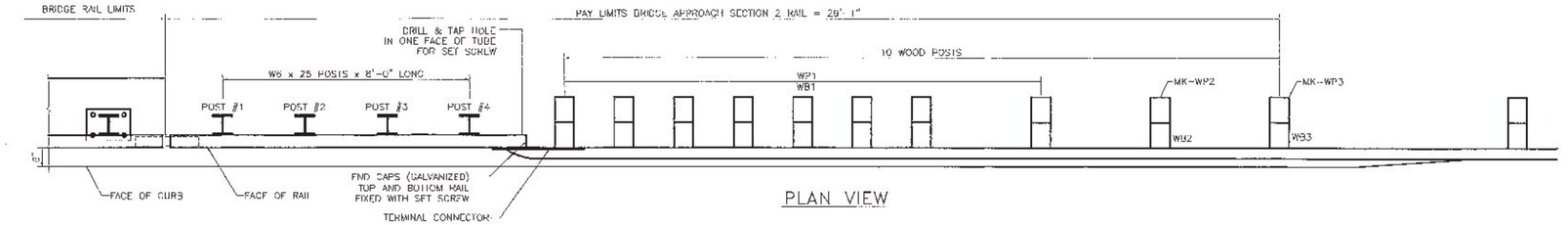
MSC JOB NO. 2045

GENERAL CONTRACTOR

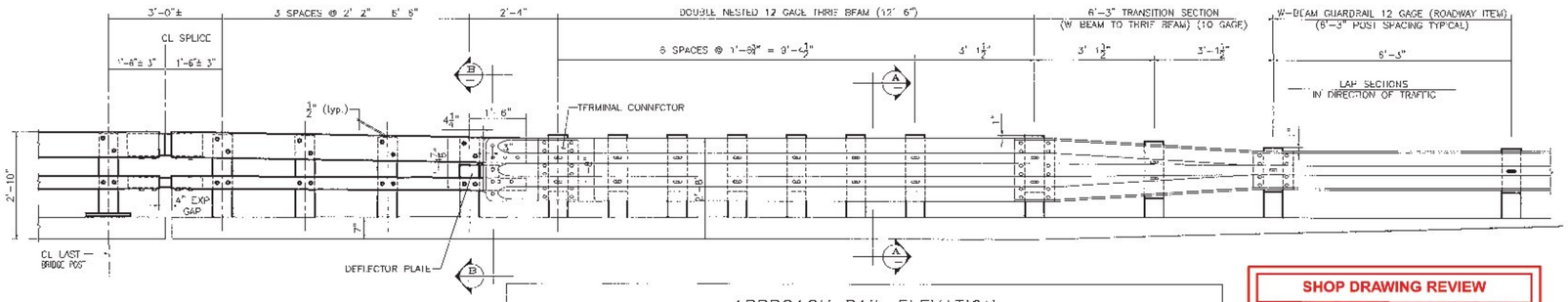
SUB CONTRACTOR VT REC

SHEET NO. 2 of 4

DRAWN PAR | CHECKED | DATE 04-22-15 | SCALE NONE | SIZE D



PLAN VIEW



APPROACH RAIL ELEVATION

LEADING END (RIGHT) IS SHOWN (TYP AT SW QUADRANT)

DEPARTURE END (LEFT) SIMILAR BUT OPPPOSITE HAND (TYP AT SE & NW QUADRANT)

SEE SHEET 4 FOR SPECIAL CURVED APPROACH AT NE QUADRANT

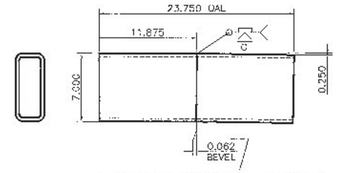
NOTES:
1. PAYMENT FOR GUARDRAIL APPROACH SECTION - GALVANIZED 2 RAIL, SHALL INCLUDE THE TERMINAL CONNECTOR, TIE CONNECTION PLATE, TIE DEFLECTOR PLATE, RAIL, POSTS, BLOCKS AND ATTACHMENT HARDWARE.

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

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

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

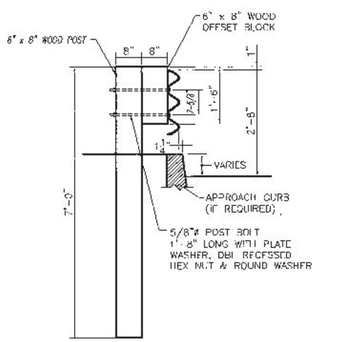
5. WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD (B-U2).



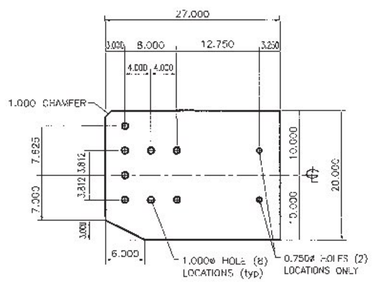
ANGLED SPLICE DETAIL

TUBE 7 x 3 x 5/8 - FOR UPPER RAIL SPLICE

SEE BRIDGE RAIL SHEET FOR DETAIL ON LOWER RAIL SPLICE TUBE

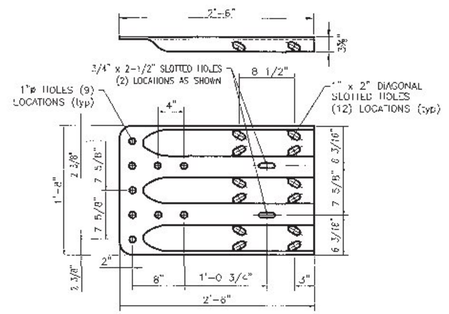


SECTION A-A



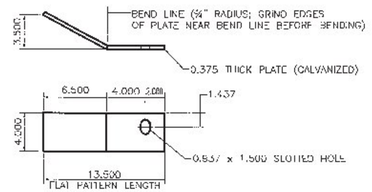
CONNECTION PLATE

0.375 x 20.000 x 27.000 (A709 gr 36)



TERMINAL CONNECTOR

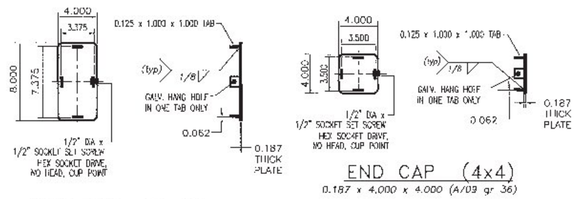
10 GAUGE (AASHTO M180 B2)



DEFLECTOR PLATE

0.375 x 4.000 x 13.500 (A709 gr 36)

RIGHT HAND APPROACH SHOWN - LEFT HAND BENT OPPOSITE

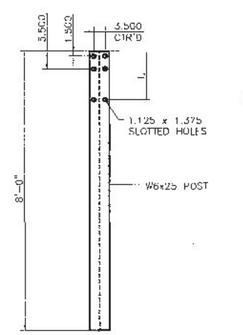


END CAP (8x4)

0.187 x 4.000 x 8.000 (A709 gr 36)

END CAP (4x4)

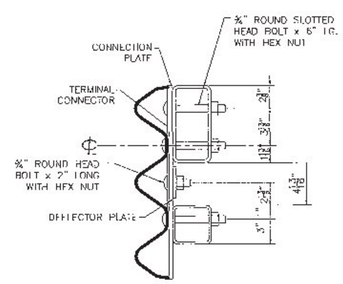
0.187 x 4.000 x 4.000 (A709 gr 36)



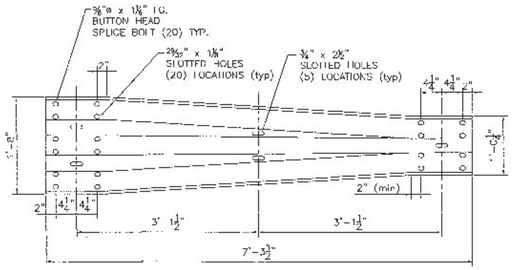
STEEL POST

STEEL POST CHART

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

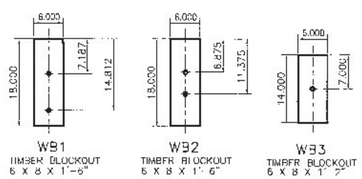


SECTION B-B



THRIE TRANSITION PANEL

10 GAUGE (AASHTO M180 B2)



WOOD BLOCK DETAILS

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 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: 120174
Reviewed by: AEG
Date: 05/14/2014

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 607.77 GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (S-3SGS)

BRO 1449(31)
ROARING BROOK ROAD (TH2) BRIDGE #8
TOWN OF BARTON, ORLEANS COUNTY VT

AISC CERTIFIED FABRICATOR

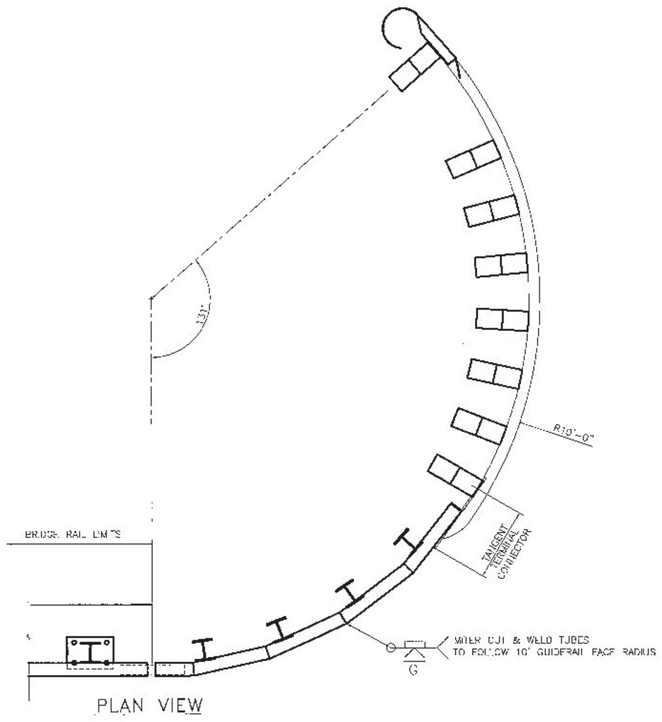
GENERAL CONTRACTOR

SUB CONTRACTOR: VT REC

MBC JOB NO. 2045

SHEET NO. 3 of 4

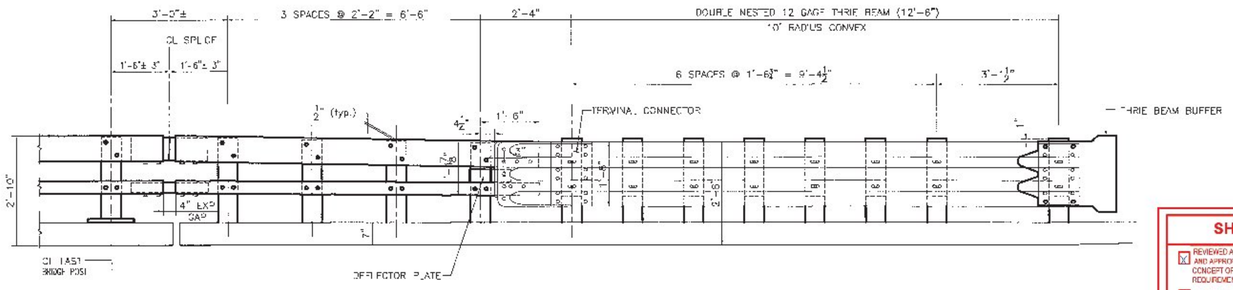
DRAWN: PAR | CHECKED | DATE: 04-22-15 | SCALE: NONE | SIZE: D



PLAN VIEW

BILL OF MATERIAL

Qty	mk	Description	Spec.
4 EA		ITEM 621.72 GUARDRAIL APPROACH SECTION, GALVANIZED, 2 RAIL BOX BEAM	
4	01	W6x25 APPROACH POST - #1 x 8'-0" OAL (GALV)	A709 gr 50
4	02	W6x25 APPROACH POST - #2 x 8'-0" OAL (GALV)	A709 gr 50
4	03	W6x25 APPROACH POST - #3 x 8'-0" OAL (GALV)	A709 gr 50
4	04	W6x25 APPROACH POST - #4 x 8'-0" OAL (GALV)	A709 gr 50
		BRIDGE RAILING POST W6 x 25 x 2'-2.375" OAH WITH 1 x 10 x 14 BASE PLATE (GLV)	A709 gr 50
3		UPPER RAIL APPROACH TUBE HSS 8 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV)	A500 gr B
3		LOWER RAIL APPROACH TUBE HSS 4 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV)	A500 gr B
1		UPPER APP TUBE HSS 8 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV) **miter cut & weld 10'R**	A500 gr B
1		LOWER APP TUBE HSS 4 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV) **miter cut & weld 10'R**	A500 gr B
4		CONNECTION PLATE PL 0.375" x 20.000" x 27.000" (GALV)	A709 gr 36
2		DEFLECTOR PLATE (RIGHT) PL 0.375 x 4.000 x 13.375 (GALV)	A709 gr 36
2		DEFLECTOR PLATE (LEFT) PL 0.375 x 4.000 x 13.375 (GALV)	A709 gr 36
4		END CAP FOR 8x4 TUBE 0.187 THICK PLATE 8.000 x 4.000 w/ WELDED TABS (GALV)	A709 gr 36
4		END CAP FOR 4x4 TUBE 0.187 THICK PLATE 4.000 x 4.000 w/ WELDED TABS (GALV)	A709 gr 36
4		(ANGLED) SPLICE TUBE (EXPANSION) FOR 8x4 UPPER RAIL HSS 7 x 3 x 3/8 x 1'-11.750" OAL (GALV)	A500 gr B
4		SPLICE TUBE (EXPANSION) FOR 4x4 LOWER RAIL HSS 3 x 3 x 5/16 x 1'-11.750" OAL (GALV)	A500 gr B
32		WOOD POST (WP1) 6 x 8 x 7'-0"	TIMBER
32		WOOD BLOCKOUT (WB1) 6 x 8 x 1'-6"	TIMBER
3		WOOD POST (WP2) 6 x 8 x 7'-0"	TIMBER
3		WOOD BLOCKOUT (WB2) 6 x 8 x 1'-6"	TIMBER
3		WOOD POST(WP3) 6 x 8 x 7'-0"	TIMBER
3		WOOD BLOCKOUT (WB3) 6 x 8 x 1'-2"	TIMBER
4		THRIE FLAT LIP BRIDGE SHOE (MODIFIED) 10 GA. GALV	aashto M180 B2
3		THRIE TRANSITION PANEL 6'-3" / 3'-1 1/2" 10 GA. GALV.	aashto M180 B2
6		THRIE PANEL 12'-6" / 1'-6 3/4" 12 GA. GALV.	aashto M180 A2
2		THRIE PANEL 12'-6" / 1'-6 3/4" 12 GA. GALV. **shop curve 10'R convex**	aashto M180 A2
1		THRIE BEAM BUFFER END 12 GA. GALV	aashto M180 A2
92		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 6" LG. (GLV) w/ LOCK NUT & FLAT WASHER	A449
4		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 2" LG. (GLV) w/ HEX NUT	A449
8		ROUND HEAD POST BOLT - oval shoulder 5/8" DIA x 1'-8" LG. (GALV) w/ DBL RECESS NUT, FLAT WASHER	A307
65		ROUND HEAD POST BOLT - oval shoulder 5/8" DIA x 1'-6" LG. (GALV) w/ DBL RECESS NUT, FLAT WASHER	A307
32		HEX HEAD BOLT 5/8 x 1-3/4" (GALV) w/ FLAT WASHER	A325
132		PANEL SPLICE BOLT 5/8 x 1-1/4" (GALV) w/ DOUBLE RECESSED NUT	A307
73		RECTANGULAR PLATE WASHER 0.187 x 1.750 x 3.000 (GALV)	A709 gr 36
32		SPACER PIPE - GALVANIZED 3/4" SCH. 40 x 1/2" LONG (GLV)	A53 gr B



NE APPROACH RAIL ELEVATION

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, 560 Commercial Street, Manchester, NH 03101, 603-668-8223

Job Number: 120174
Reviewed by: AEG
Date: 05/14/2014

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 621.72 GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (S-36CR)

BRO 1449(31)
ROARING BROOK ROAD (TH2) BRIDGE #8
TOWN OF BARTON, ORLEANS COUNTY VT

GENERAL CONTRACTOR

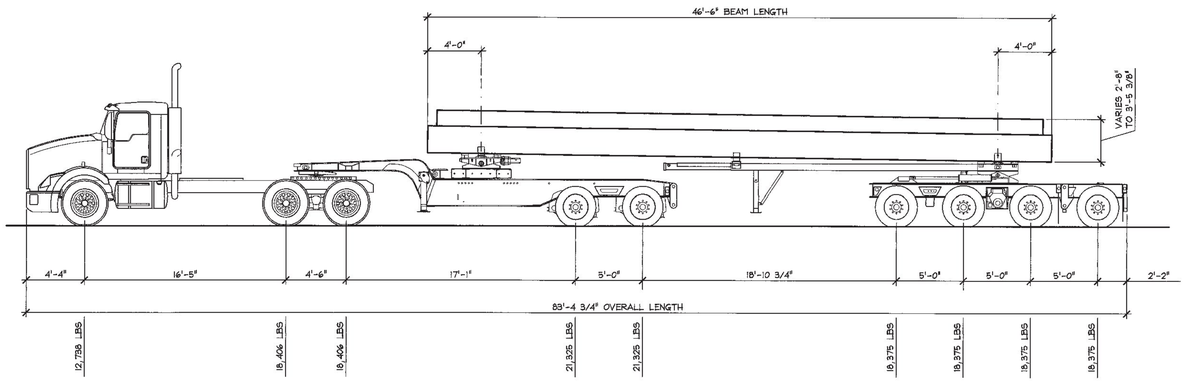
SUB CONTRACTOR
VT REC

NSC CERTIFIED FABRICATOR

HSC JOB NO. 2045

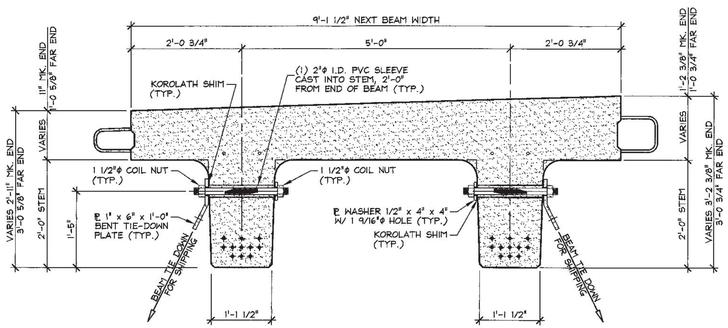
SHEET NO. 4 of 4

Drawn	Checked	Date	Scale	Rev
PAR		04-22-15	NONE	3



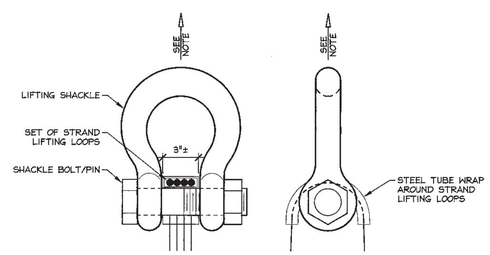
SHIPPING ELEVATION

3/16" = 1'-0"



MODIFIED NEXT BEAM 32D 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.

ABUTMENT & APPROACH SLAB 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 (BLACK STEEL) (UNLESS NOTED OTHERWISE).
4. THE TOP OF ABUTMENTS SHALL RECEIVE A 1/4" RAKED AMPLITUDE FINISH (UNLESS NOTED OTHERWISE).
   THE TOP OF ABUTMENT CHEEKWALLS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
5. SHEAR KEY SURFACES SHALL HAVE 1/8" COURSE AGGREGATE EXPOSED.
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:

   APPROACH SL : J.P.C. BRIDGE MIX #4456MSCC (APPROVED 4-2-2015)

   ABUTMENT : J.P.C. BRIDGE MIX #4456M-NO DCI (APPROVED 3-21-2015)
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 RIGID INSULATION AND POLY WILL BE PLACED OVER THE UNIT. NATURAL CURE WITH NO EXTERNAL HEAT APPLIED.
10. ABUTMENT POST-TENSIONING SEQUENCE:
    A. ERECT PRECAST ABUTMENTS AND INSTALL TRANSVERSE STRANDS.
    B. APPLY EPOXY BONDING COMPOUND TO MATCH CAST FACES OF VERTICAL CONSTRUCTION JOINT.
    C. TENSION STRANDS TO 3K TO REMOVE SAG.
    D. CHECK ALIGNMENT OF PRECAST ELEMENTS.
    E. POST TENSION TENDONS TO 32,000 LBS.

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 4,000 PSI.
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL II (DUAL 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 COATED WITH TWO PART EPOXY PAINT SYSTEM.
7. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4" (UNLESS NOTED OTHERWISE).
8. THE TOP OF BEAMS SHALL RECEIVE A SMOOTH SCREED 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 #4310M-NO DCI (SUBMITTED 3-21-2015)
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 (50°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. CONTRACTOR 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.
15. MANUFACTURING TOLERANCES SHALL COMPLY WITH PCI MNL-116. SINCE PRESTRESSED PRODUCT CAMBER IS A RESULT OF REQUIRED DESIGN LOADS AND SPAN LENGTH, CAMBER TOLERANCES SHALL NOT APPLY.

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.

ADDITIONALLY, INCREASED ELONGATION AND THE CORRESPONDING FORCE DUE TO FORM SHORTENING SHALL BE ACCOUNTED FOR IN THE CALCULATIONS USED FOR CONSTRUCTION PER PROVISION PCI MNL-116 5.3.11.3.

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.
3. STRANDS IN BOTTOM TWO ROWS SHALL BE RE-PULLED TO VERIFY SHORTENING EFFECT OF SELF STRESSING BED. RE-PULL FORCE SHALL NOT INCLUDE OVER-PULL FOR SHORTENING.

DESIGN LIVE LOAD: HL-93

SHOP DRAWING REVIEW

[X] REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THIS 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
149 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

1 5/28/2015 REVISED AS NOTED T.D.

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
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

DATE: FEB. 25, 2015
SCALE: NOTED

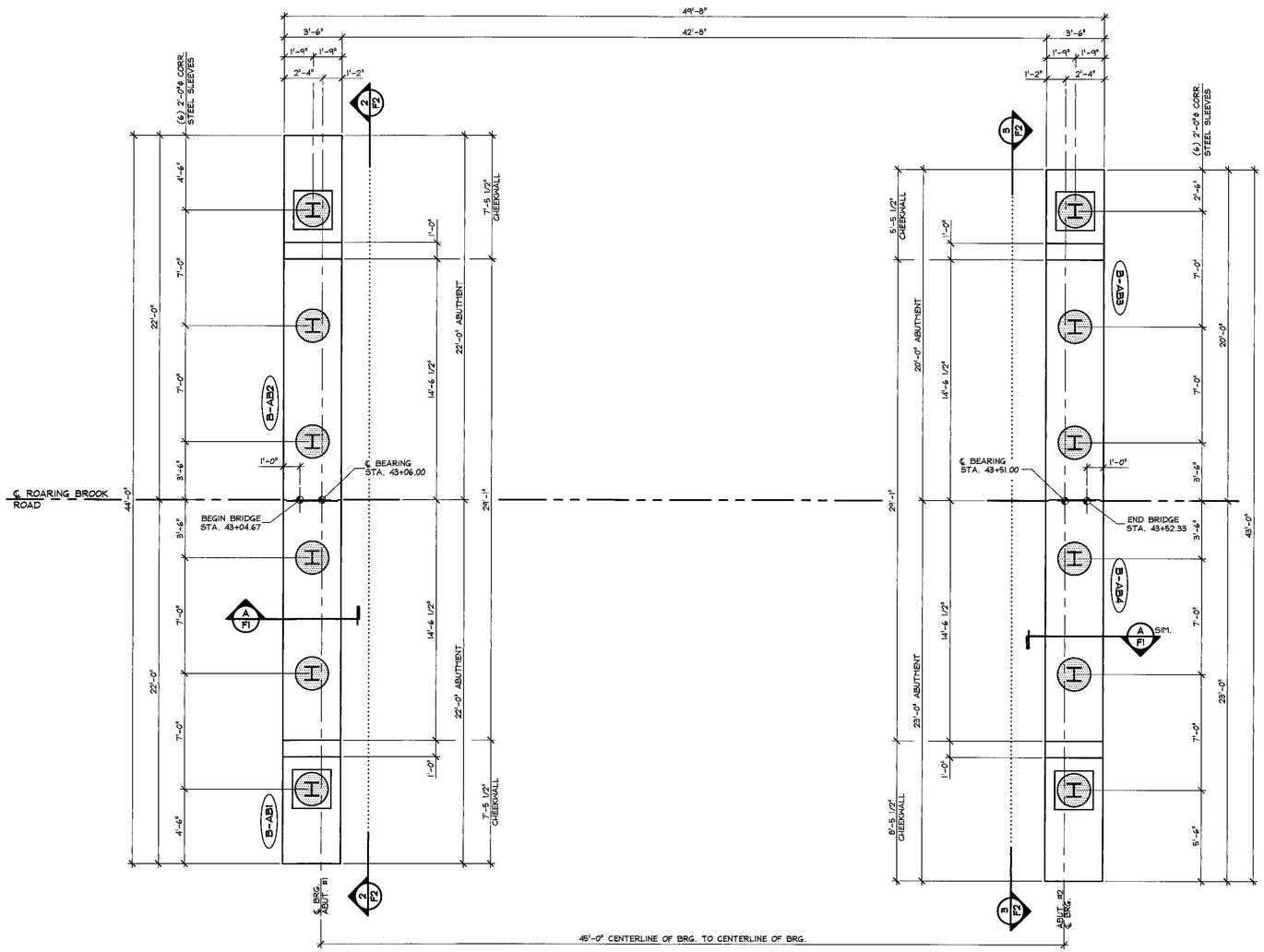
TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

CHKD: DFTM: T.D.
JOB NO: 23462-015

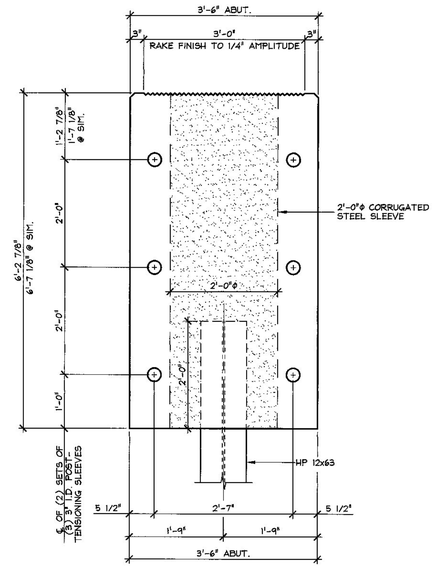
COVER SHEET

DWG. NO: C1

F:\VT-Bridges\23462.14 Barton\23462_C1.dwg, 6/10/2015 9:42:45 AM



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



A / F1 ABUTMENT SECTION
3/4" = 1'-0"

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 COMPLIANCEWITH 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
249 Commercial Street
Manchester, NH 03101
603-669-8223

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

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
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.

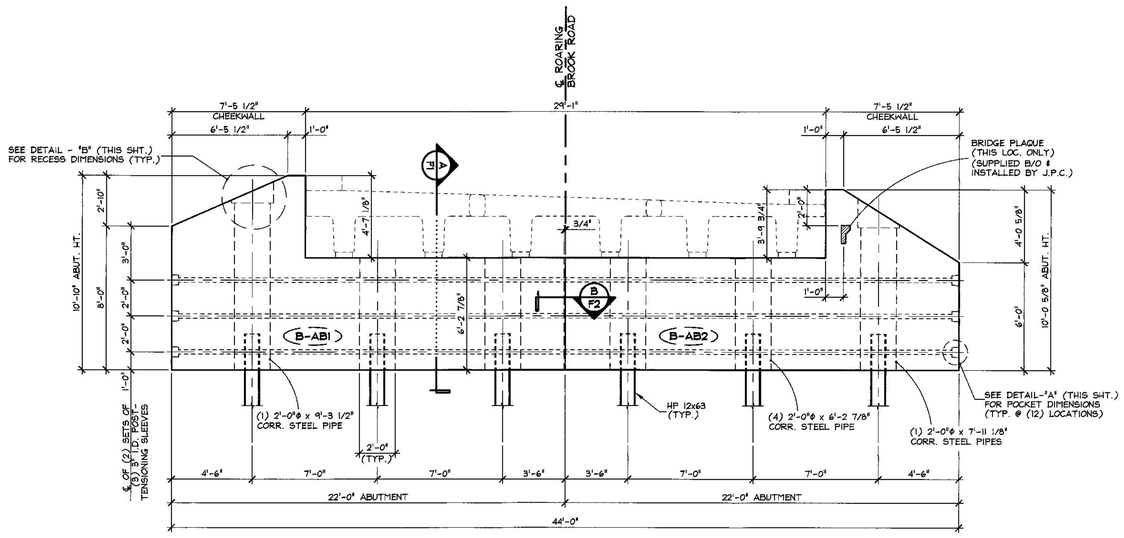
TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

JOB NO: 23462-015

PRECAST ABUTMENT LAYOUT

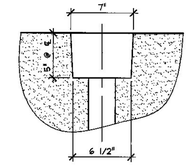
DWG. NO: F1

F:\VT-Bridges\23462-14 Barton\23462-F1.dwg, 6/10/2015 9:43:30 AM

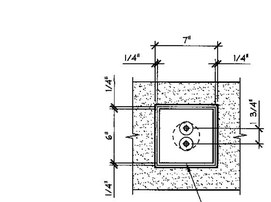


2 / F2 PRECAST ABUTMENT #1 ELEVATION

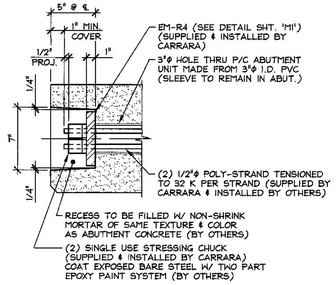
1/4" = 1'-0"



PLAN OF POCKET



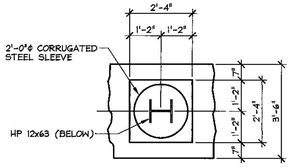
FASCIA ELEVATION



SECTION AT CENTERLINE

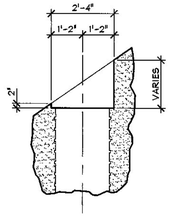
DETAIL - "A"

1 1/2" = 1'-0"



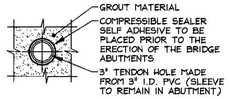
PLAN VIEW

3/8" = 1'-0"



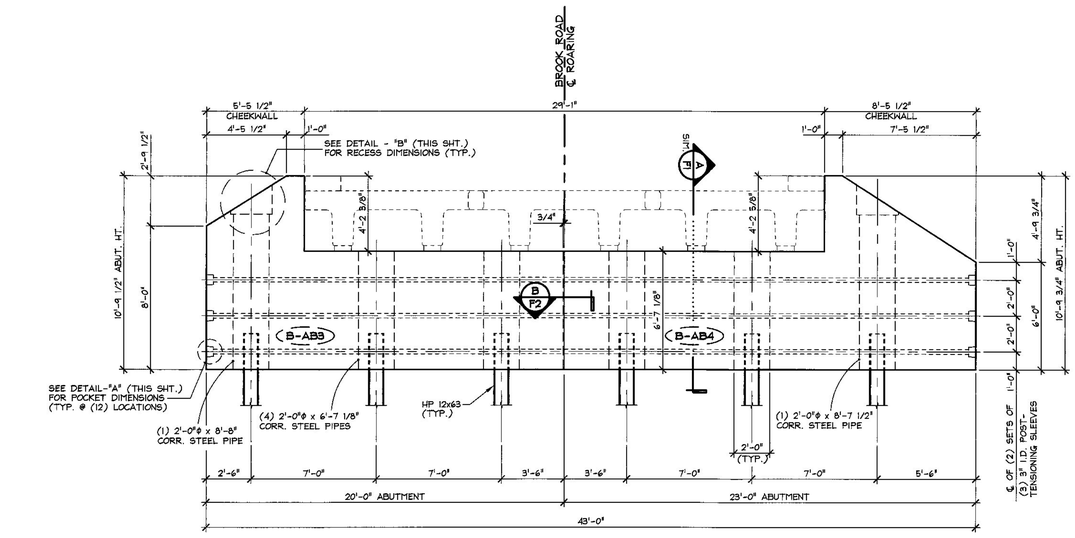
DETAIL - "B"

3/8" = 1'-0"



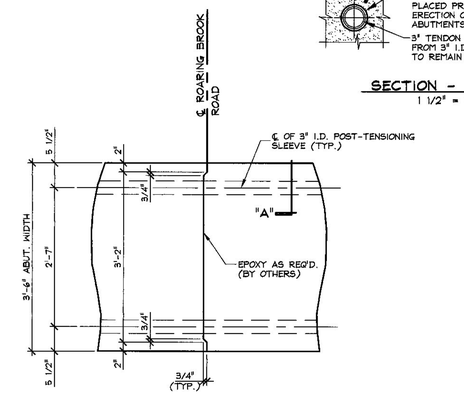
SECTION - "A"

1 1/2" = 1'-0"



3 / F2 PRECAST ABUTMENT #2 ELEVATION

1/4" = 1'-0"



B / F2 CONSTRUCTION JOINT SECTION @ P.T. SLEEVE (ABUTMENT)

3/4" = 1'-0"

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 COMPLIANCEWITH 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.

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

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

APPROVAL STAMP:

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

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

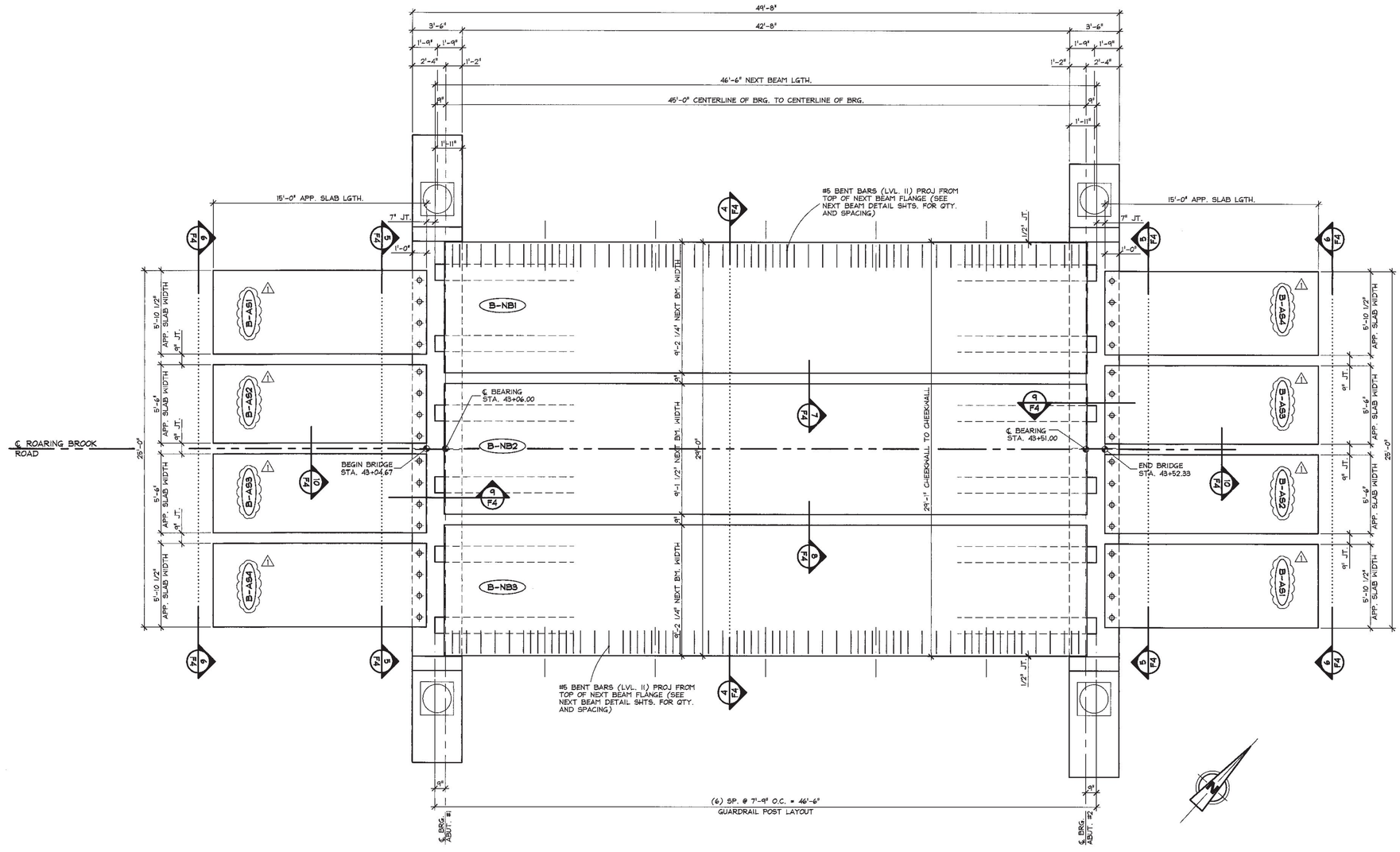
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

PRECAST ABUTMENT ELEVATIONS & DETAILS

DWG. NO: F2

F:\V1-Bridges\23462.14 Barton\23462.F2.dwg, 6/10/2015 9:44:15 AM



1/F3 PRESTRESSED NEXT BEAM & APPROACH SLAB LAYOUT

1/4" = 1'-0"

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: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

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

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

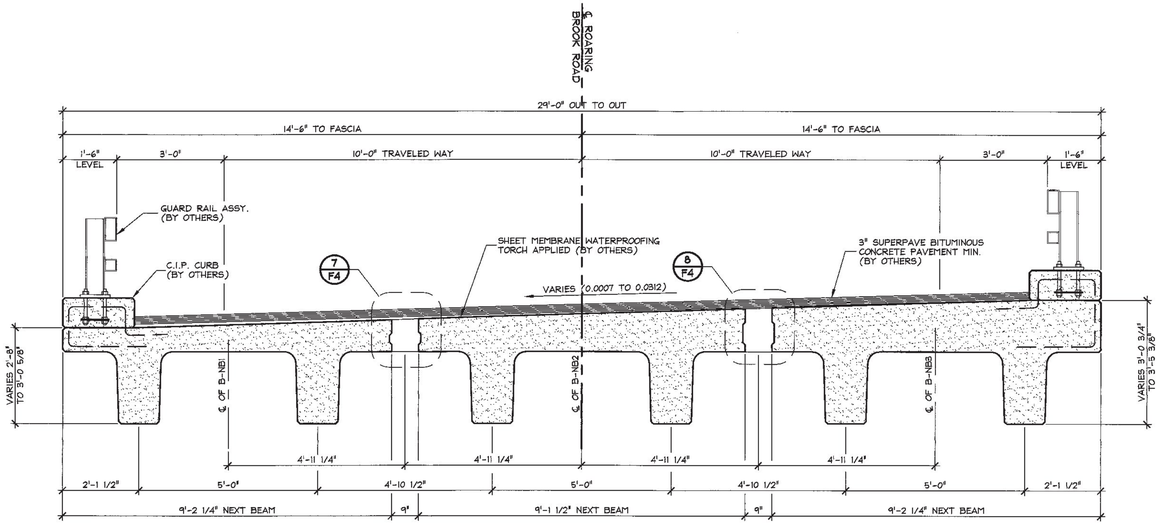
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

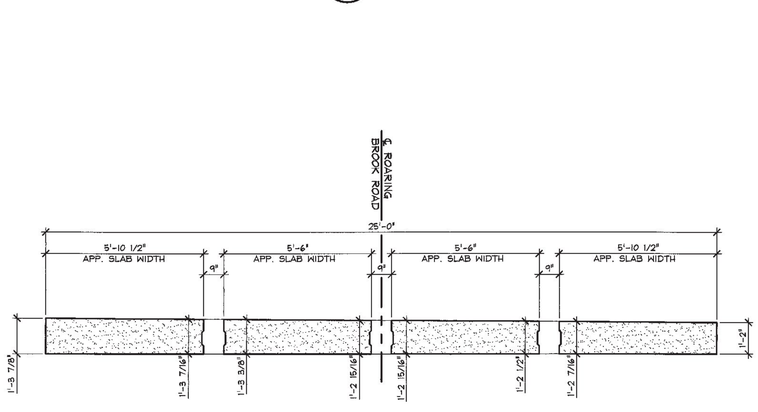
PRECAST NEXT BEAM & APPROACH SLAB LAYOUT

DWG. NO: F3

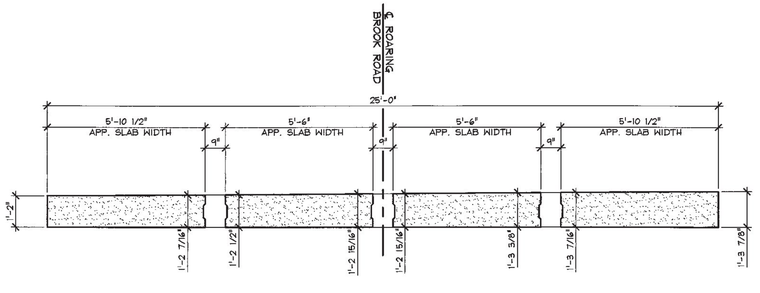
F:\VT-Bridges\23462-14 Barton\23462-F3.dwg, 6/10/2015 9:45:20 AM



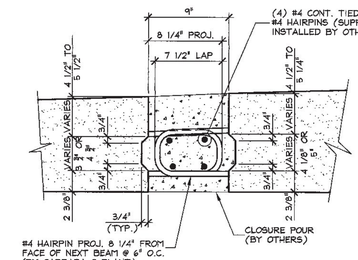
4 / F4 TRANSVERSE SECTION THRU NEXT BEAMS
1/2" = 1'-0"



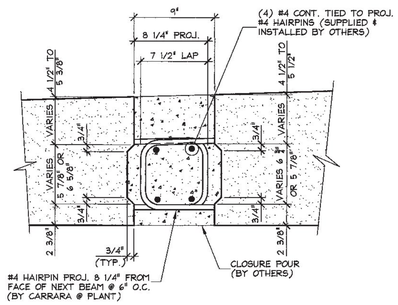
5 / F4 SECTION AT APPROACH SLABS (ABUT. #1 & ABUT. #2)
3/8" = 1'-0"



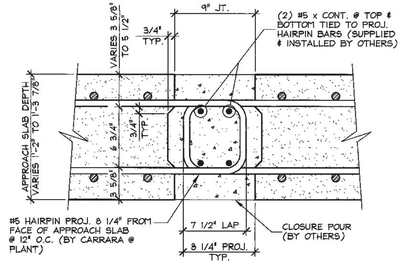
6 / F4 SECTION AT APPROACH SLABS (ABUT. #1 & ABUT. #2)
3/8" = 1'-0"



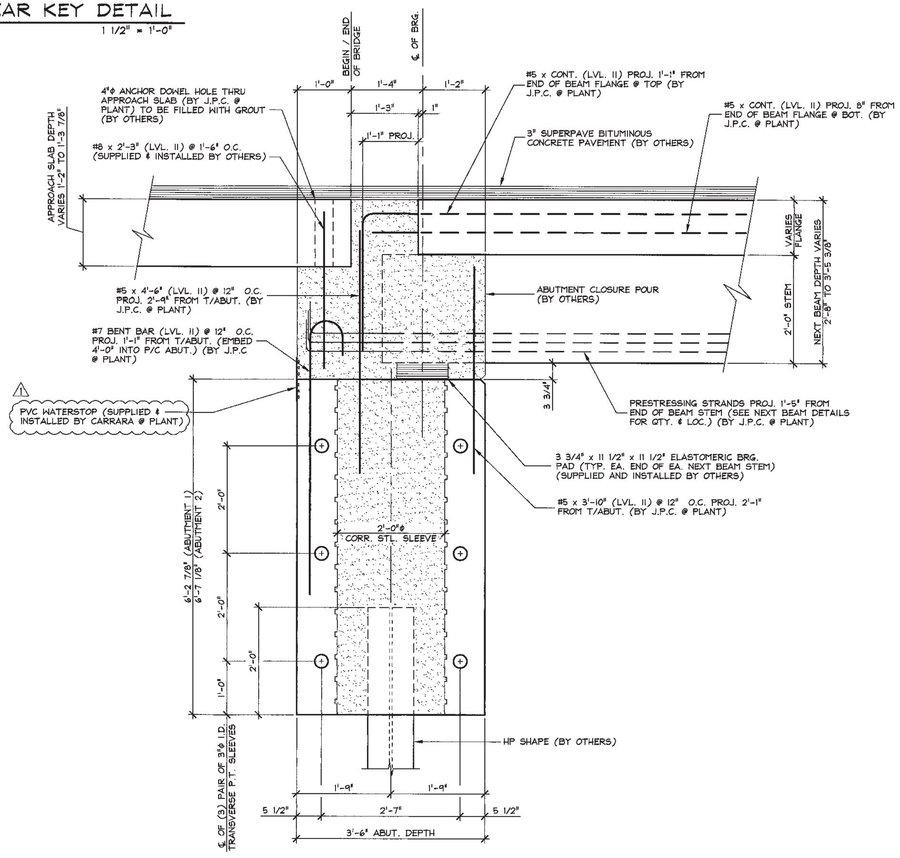
7 / F4 SHEAR KEY DETAIL
1 1/2" = 1'-0"



8 / F4 SHEAR KEY DETAIL
1 1/2" = 1'-0"



10 / F4 APPROACH SLAB CLOSURE POUR
1 1/2" = 1'-0"



9 / F4 ABUTMENT SECTION
3/4" = 1'-0"

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 DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH 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: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

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
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

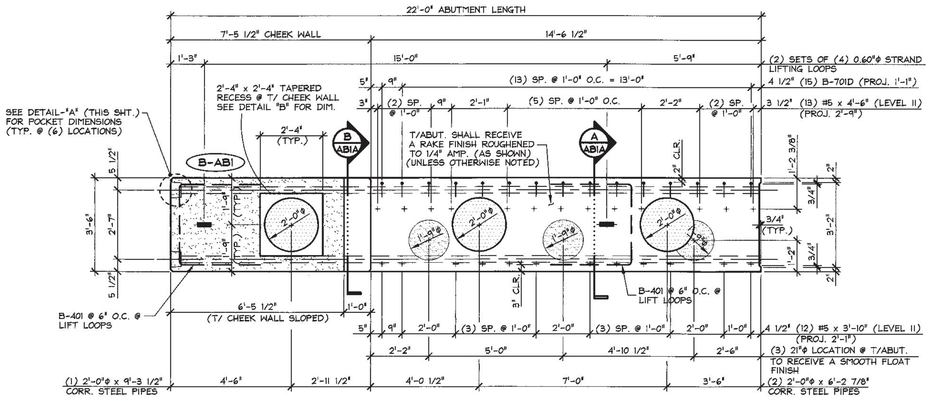
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

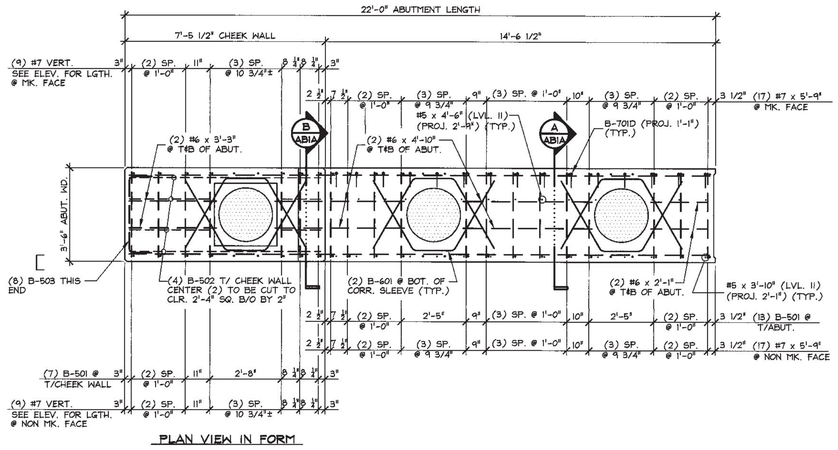
SECTIONS AND DETAILS

DWG. NO: F4

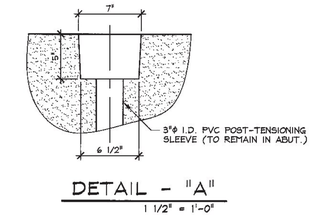
F:\VT-Bridges\23462-14 Barton\23462-F4.dwg, 6/10/2015 9:46:08 AM



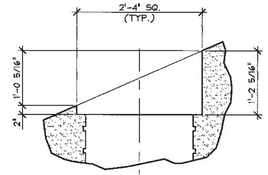
PLAN VIEW IN FORM



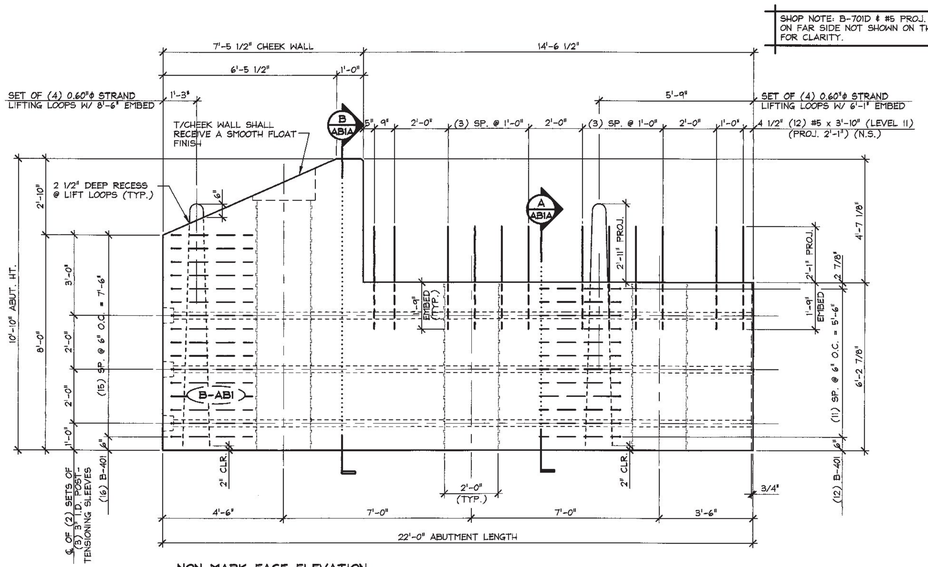
PLAN VIEW IN FORM



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



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

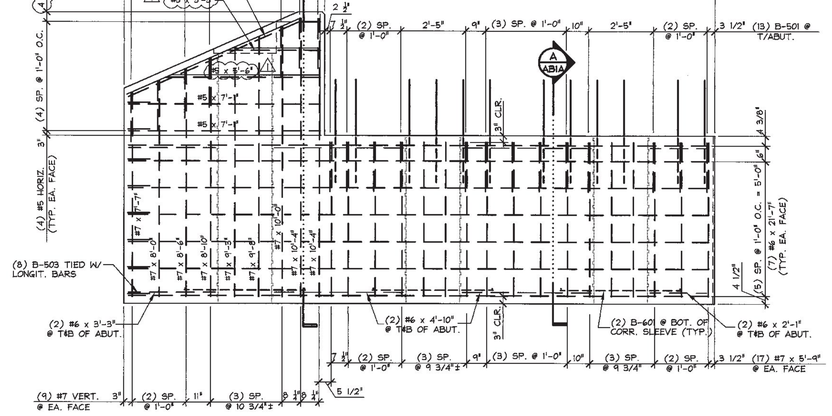


NON MARK FACE ELEVATION

1 ABI ABUTMENT DIMENSIONAL DETAILS
3/8" = 1'-0"

SHOP NOTE:
28 DAYS = 5,000 PSI
RELEASE = 5,000 PSI

MIX DESIGN:
MIX NO. 425M-NO DCI
APPROVED 3-21-2015



NON MARK FACE ELEVATION

2 ABI ABUTMENT REINFORCING DETAILS
3/8" = 1'-0"

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

MARK: B-ABI	QTY.: 1	WT.: 37.33 T	VOL.: 18.21 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	B-401	#4 BENT BAR (LEVEL I)	28
2	B-501	#5 BENT BAR (LEVEL I)	20
3	B-502	#5 BENT BAR (LEVEL I)	4
4	B-503	#5 BENT BAR (LEVEL I)	8
5	B-601	#6 BENT BAR (LEVEL I)	6
6	B-701D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
7		#5 x 3'-10" (LEVEL II, DUAL COATED)	12
8		#5 x 4'-6" (LEVEL II, DUAL COATED)	13
9		(#5 x 3'-3" (LEVEL I)) ⚠	2
10		(#5 x 5'-6" (LEVEL I)) ⚠	2
11		#5 x 7'-1" (LEVEL I)	4
12		#6 x 2'-1" (LEVEL I)	4
13		#6 x 3'-3" (LEVEL I)	4
14		#6 x 4'-10" (LEVEL I)	8
15		#6 x 21'-7" (LEVEL I)	14
16		#7 x 5'-9" (LEVEL I)	34
17		#7 x 7'-7" (LEVEL I)	2
18		#7 x 8'-0" (LEVEL I)	2
19		#7 x 8'-6" (LEVEL I)	2
20		#7 x 8'-10" (LEVEL I)	2
21		#7 x 10'-0" (LEVEL I)	2
22		#7 x 10'-4" (LEVEL I)	4
23		#7 x 9'-3" (LEVEL I)	2
24		#7 x 9'-8" (LEVEL I)	2
25		SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	2
26		2'-0"ϕ x 6'-2 7/8" CORRUGATED STEEL PIPE (GALV.)	2
27		2'-0"ϕ x 9'-3 1/2" CORRUGATED STEEL PIPE (GALV.)	1

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: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

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

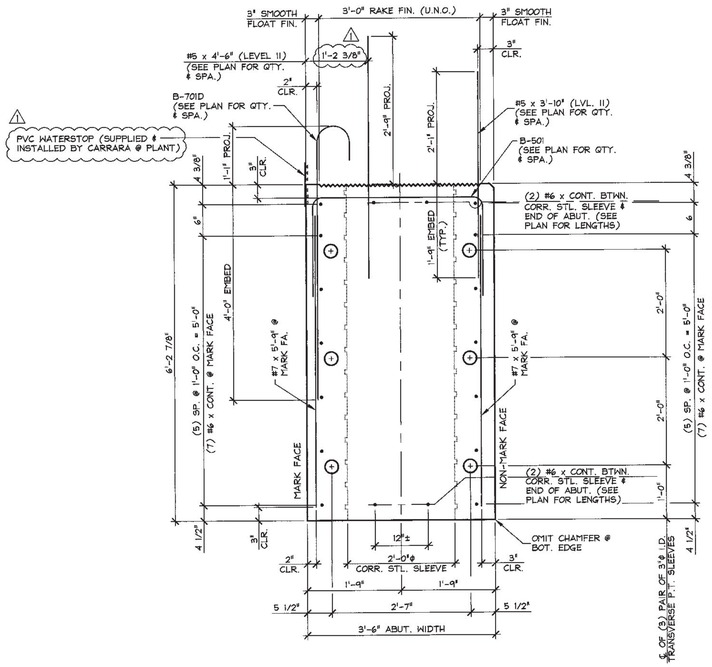
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

PRECAST ABUTMENT DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AB1

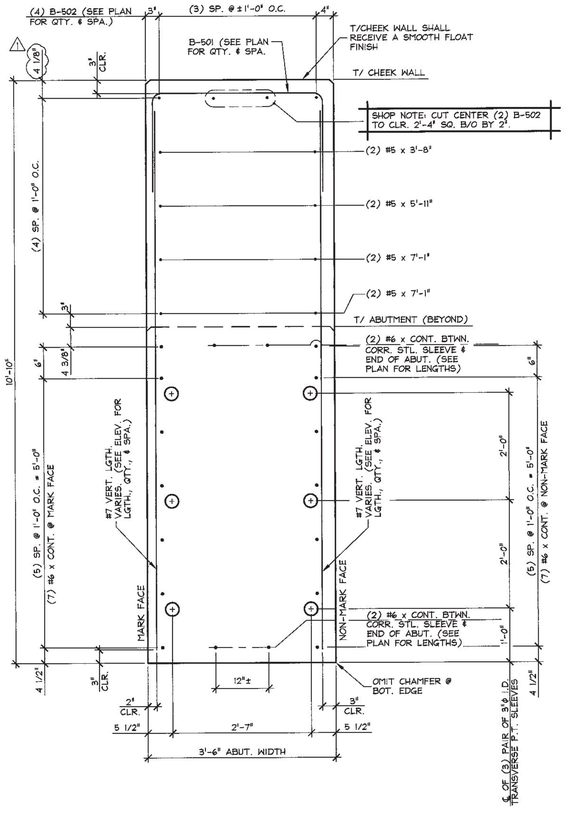
F:\VT-Bridges\23462-14 Barton\23462-AB1.dwg, 6/10/2015 10:21:05 AM



A ABIA ABUTMENT SECTION (B-AB1 & B-AB2)

3/4" = 1'-0"

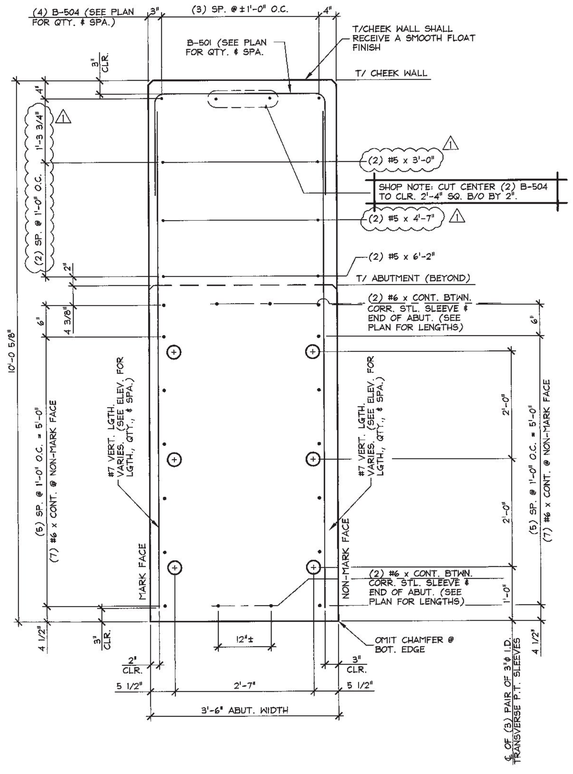
SHOP NOTE:
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)



B ABIA ABUTMENT SECTION (B-AB1)

3/4" = 1'-0"

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



C ABIA ABUTMENT SECTION (B-AB2)

3/4" = 1'-0"

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

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
Job Number: 12017.4
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2414 OSE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

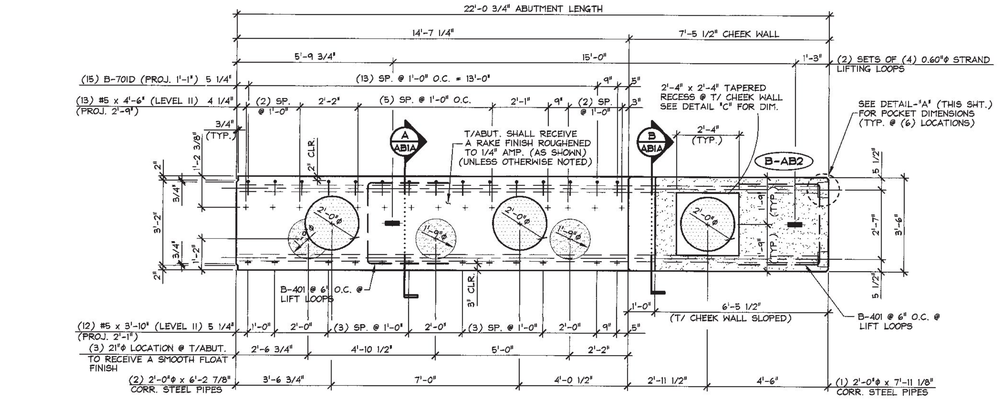
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

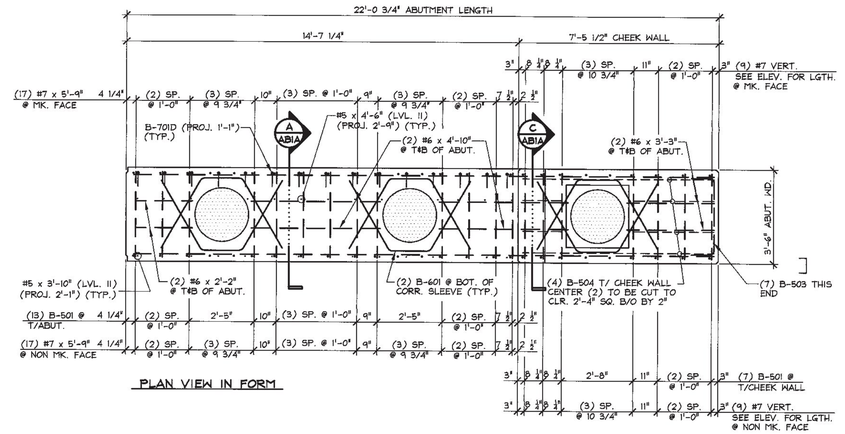
PRECAST ABUTMENT SECTIONS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AB1A

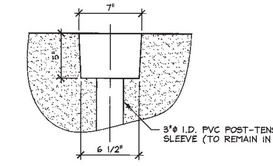
F:\VT-Bridges\23462-14 Barton\23462 AB1A.dwg, 6/10/2015 10:21:42 AM



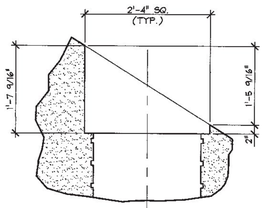
PLAN VIEW IN FORM



PLAN VIEW IN FORM

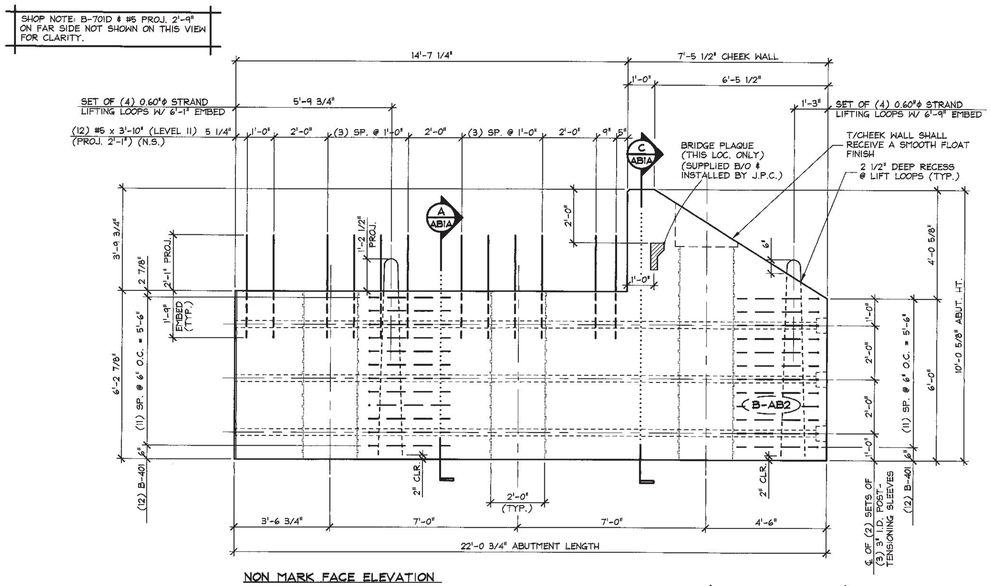


DETAIL - "A"
1 1/2" = 1'-0"



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

SHOP NOTE: B-701D # #5 PROJ. 2'-9" ON FAR SIDE NOT SHOWN ON THIS VIEW FOR CLARITY.

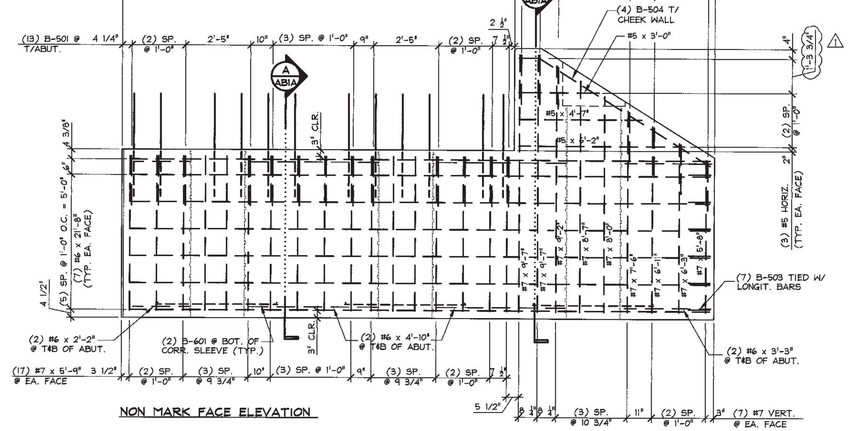


NON MARK FACE ELEVATION

1 AB2 ABUTMENT DIMENSIONAL DETAILS
3/8" = 1'-0"

SHOP NOTE:
28 DAYS = 5,000 PSI
RELEASE = 5,000 PSI

MIX DESIGN:
MIX NO. 425M-NO DCI
APPROVED 3-21-2015



NON MARK FACE ELEVATION

2 AB2 ABUTMENT REINFORCING DETAILS
3/8" = 1'-0"

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

MARK: B-AB2	QTY.: 1	WT.: 35.13 T	VOL.: 17.14 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	B-401	#4 BENT BAR (LEVEL I)	24
2	B-501	#5 BENT BAR (LEVEL I)	20
3	B-504	#5 BENT BAR (LEVEL I)	4
4	B-503	#5 BENT BAR (LEVEL I)	7
5	B-601	#6 BENT BAR (LEVEL I)	6
6	B-701D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
7		#5 x 3'-10" (LEVEL II, DUAL COATED)	12
8		#5 x 4'-6" (LEVEL II, DUAL COATED)	13
9		#5 x 3'-0" (LEVEL I)	2
10		#5 x 4'-7" (LEVEL I)	2
11		#5 x 6'-2" (LEVEL I)	2
12		#6 x 2'-2" (LEVEL I)	4
13		#6 x 3'-3" (LEVEL I)	4
14		#6 x 4'-10" (LEVEL I)	8
15		#6 x 21'-8" (LEVEL I)	14
16		#7 x 5'-9" (LEVEL I)	34
17		#7 x 5'-8" (LEVEL I)	2
18		#7 x 6'-3" (LEVEL I)	2
19		#7 x 6'-11" (LEVEL I)	2
20		#7 x 7'-6" (LEVEL I)	2
21		#7 x 9'-2" (LEVEL I)	2
22		#7 x 9'-7" (LEVEL I)	4
23		#7 x 8'-7" (LEVEL I)	2
24		#7 x 8'-0" (LEVEL I)	2
25		SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	2
26		2'-0"ϕ x 6'-2 7/8" CORRUGATED STEEL PIPE (GALV.)	2
27		2'-0"ϕ x 7'-11 1/8" CORRUGATED STEEL PIPE (GALV.)	1

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 COMPLIANCEWITH 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: 120174
Reviewed by: SRB
Date: 08/11/2015

⚠1 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

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

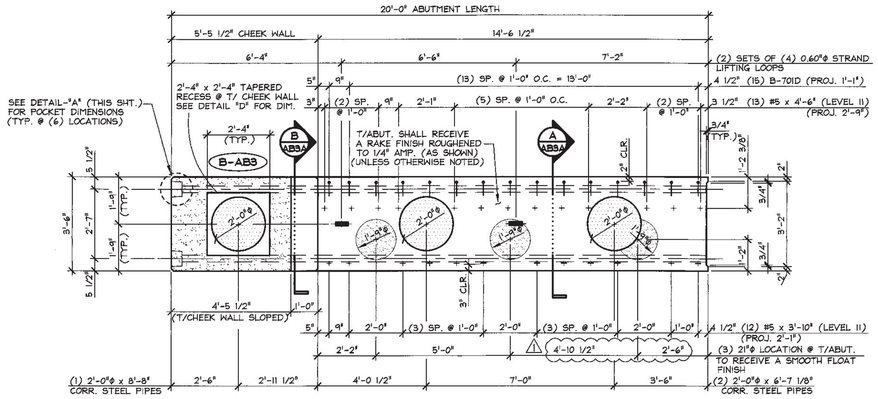
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

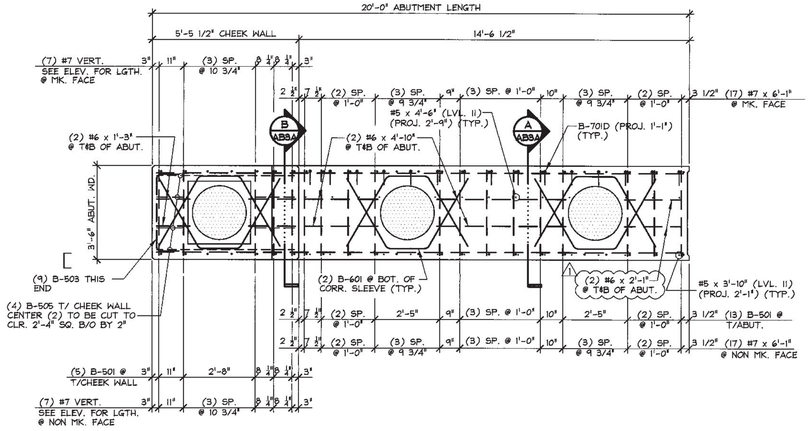
PRECAST ABUTMENT DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AB2

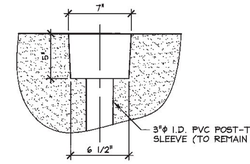
F:\VT-Bridges\23462-14 Barton\23462-AB2.dwg, 6/10/2015 10:22:53 AM



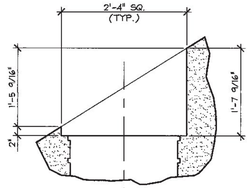
PLAN VIEW IN FORM



PLAN VIEW IN FORM

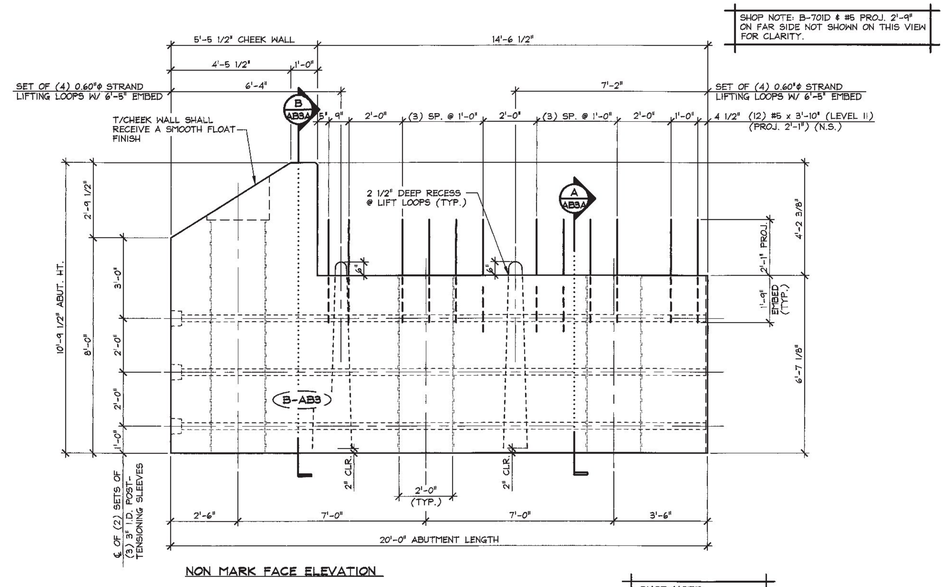


DETAIL - "A"
1 1/2" = 1'-0"



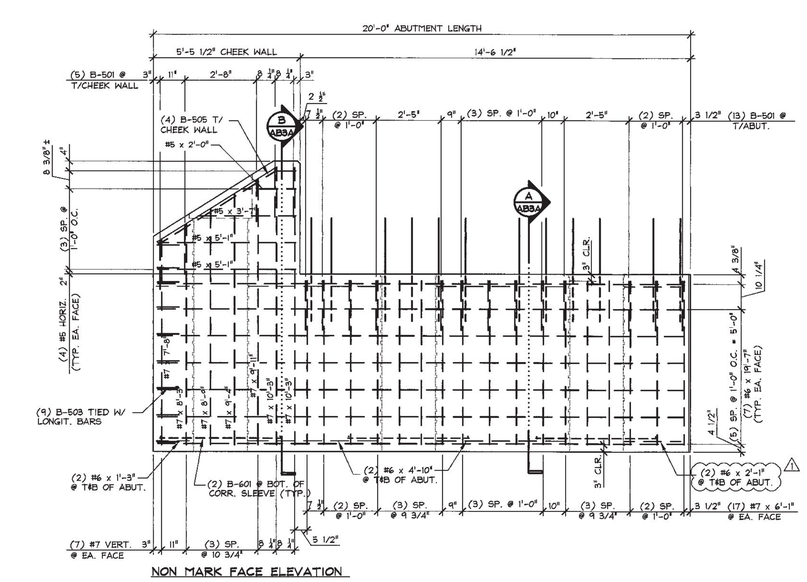
DETAIL - "D"
3/4" = 1'-0"

SHOP NOTE: B-701D & #5 PROJ. 2'-9" ON FAR SIDE NOT SHOWN ON THIS VIEW FOR CLARITY.



NON MARK FACE ELEVATION

1 AB3 ABUTMENT DIMENSIONAL DETAILS
3/8" = 1'-0"



NON MARK FACE ELEVATION

2 AB3 ABUTMENT REINFORCING DETAILS
3/8" = 1'-0"

SHOP NOTE:
28 DAYS = 5,000 PSI
RELEASE = 5,000 PSI

MIX DESIGN:
MIX NO. 425M-NO DCI
APPROVED 3-21-2015

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

MARK: B-AB3	QTY.: 1	WT.: 33.63 T	VOL.: 16.61 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1			
2	B-501	#5 BENT BAR (LEVEL I)	18
3	B-505	#5 BENT BAR (LEVEL I)	4
4	B-503	#5 BENT BAR (LEVEL I)	9
5	B-601	#6 BENT BAR (LEVEL I)	6
6	B-701D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
7		#5 x 3'-10" (LEVEL II, DUAL COATED)	12
8		#5 x 4'-6" (LEVEL II, DUAL COATED)	13
9		#5 x 2'-0" (LEVEL I)	2
10		#5 x 3'-7" (LEVEL I)	2
11		#5 x 5'-1" (LEVEL I)	4
12		#6 x 2'-1" (LEVEL I) ⚠	4
13		#6 x 1'-3" (LEVEL I)	4
14		#6 x 4'-10" (LEVEL I)	8
15		#6 x 19'-7" (LEVEL I)	14
16		#7 x 6'-1" (LEVEL I)	34
17		#7 x 7'-8" (LEVEL I)	2
18		#7 x 8'-3" (LEVEL I)	2
19		#7 x 9'-11" (LEVEL I)	2
20		#7 x 10'-3" (LEVEL I)	4
21		#7 x 8'-9" (LEVEL I)	2
22		#7 x 9'-4" (LEVEL I)	2
23		SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	2
24		2'-0"ϕ x 6'-7 1/8" CORRUGATED STEEL PIPE (GALV.)	2
25		2'-0"ϕ x 8'-8" CORRUGATED STEEL PIPE (GALV.)	1

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, 603-669-8223

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

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

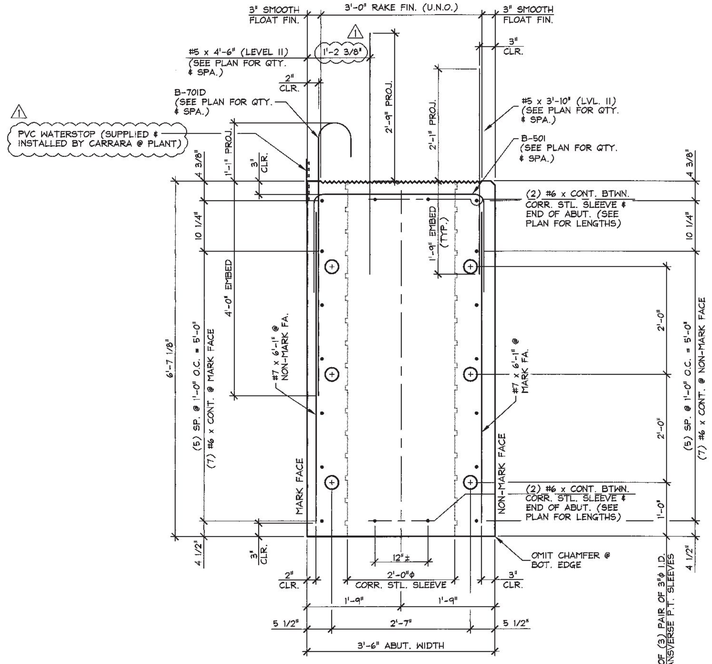
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

PRECAST ABUTMENT DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AB3

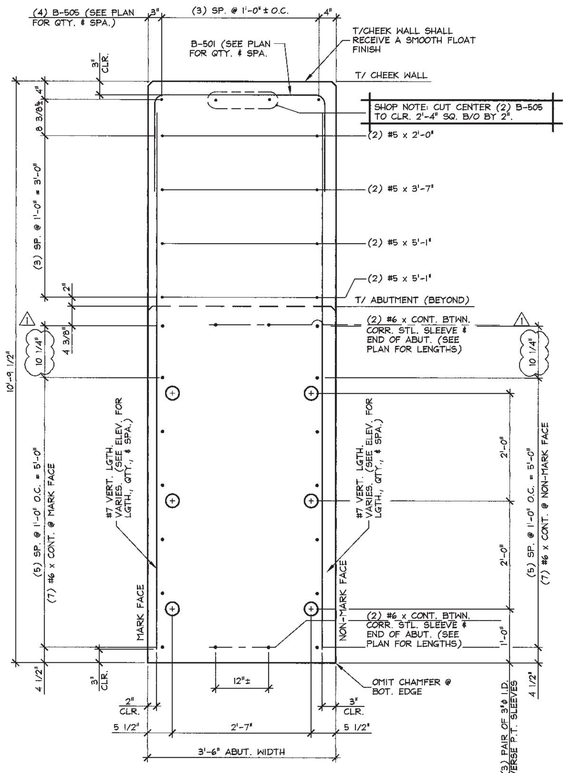
F:\VT-Bridges\23462-14 Barton\23462-AB3.dwg, 6/10/2015 10:35:51 AM



A AB3A ABUTMENT SECTION (B-AB3 & B-AB4)

3/4" = 1'-0"

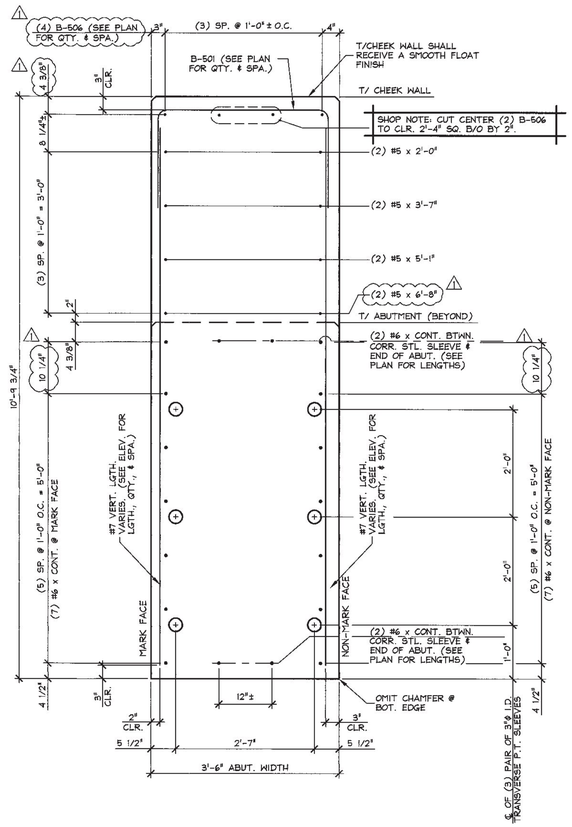
SHOP NOTE:
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)



B AB3A ABUTMENT SECTION (B-AB3)

3/4" = 1'-0"

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



C AB3A ABUTMENT SECTION (B-AB4)

3/4" = 1'-0"

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

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.

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

Job Number: 12017.4
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

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

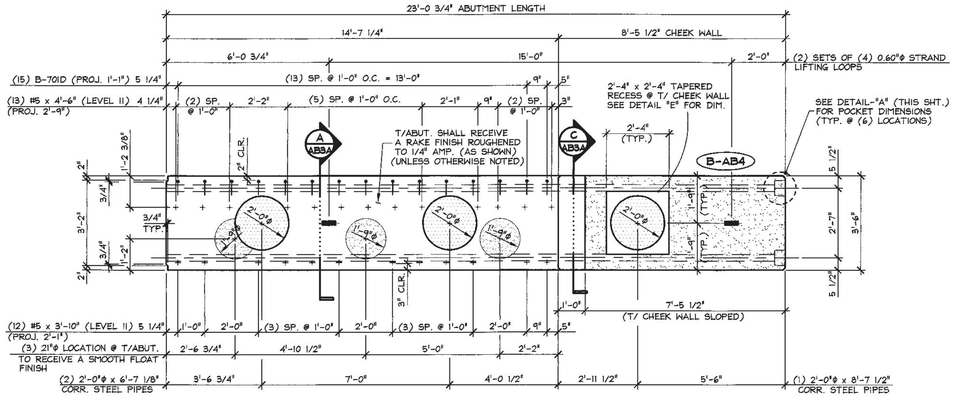
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

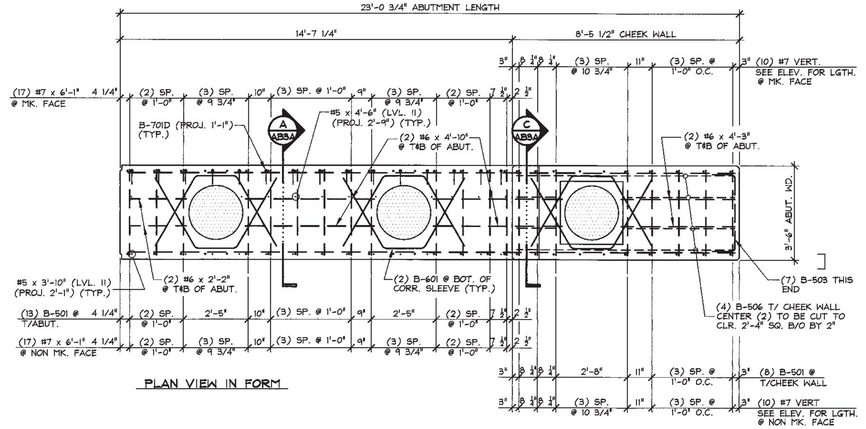
PRECAST ABUTMENT SECTIONS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AB3A

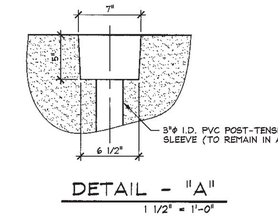
F:\VT-Bridges\23462-14 Barton\23462-AB3A.dwg, 6/10/2015 10:36:23 AM



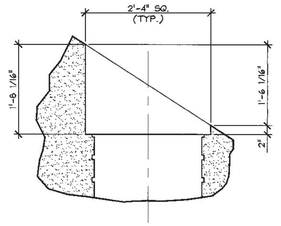
PLAN VIEW IN FORM



PLAN VIEW IN FORM



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



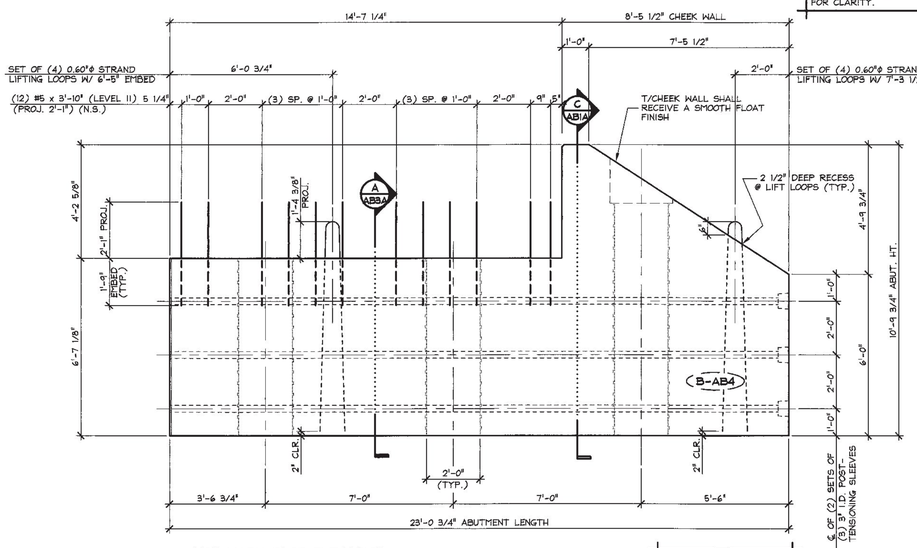
DETAIL - "E"
3/4" = 1'-0"

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

MARK: B-AB4	QTY.: 1	WT.: 39.78 T	VOL.: 19.65 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	B-501	#5 BENT BAR (LEVEL I)	21
2 ⚠1	B-506	#5 BENT BAR (LEVEL I)	4
3	B-503	#5 BENT BAR (LEVEL I)	7
4	B-601	#6 BENT BAR (LEVEL I)	6
5	B-701D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
6		#5 x 3'-10" (LEVEL II, DUAL COATED)	12
7		#5 x 4'-6" (LEVEL II, DUAL COATED)	13
8		#5 x 2'-0" (LEVEL I)	2
9		#5 x 3'-7" (LEVEL I)	2
10		#5 x 5'-1" (LEVEL I)	2
11		#5 x 6'-8" (LEVEL I)	2
12		#6 x 2'-2" (LEVEL I)	4
13		#6 x 4'-3" (LEVEL I)	4
14		#6 x 4'-10" (LEVEL I)	8
15		#6 x 22'-7" (LEVEL I)	12
16		#6 x 21'-11" (LEVEL I)	2
17		#7 x 6'-1" (LEVEL I)	34
18		#7 x 5'-8" (LEVEL I)	2
19		#7 x 6'-4" (LEVEL I)	2
20		#7 x 6'-11" (LEVEL I)	2
21		#7 x 7'-7" (LEVEL I)	2
22		#7 x 8'-2" (LEVEL I)	2
23		#7 x 9'-11" (LEVEL I)	2
24		#7 x 10'-4" (LEVEL I)	4
25		#7 x 8'-9" (LEVEL I)	2
26		#7 x 9'-4" (LEVEL I)	2
27			
28		SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	2
29		2'-0"ϕ x 6'-7 1/8" CORRUGATED STEEL PIPE (GALV.)	2
30		2'-0"ϕ x 8'-7 1/2" CORRUGATED STEEL PIPE (GALV.)	1

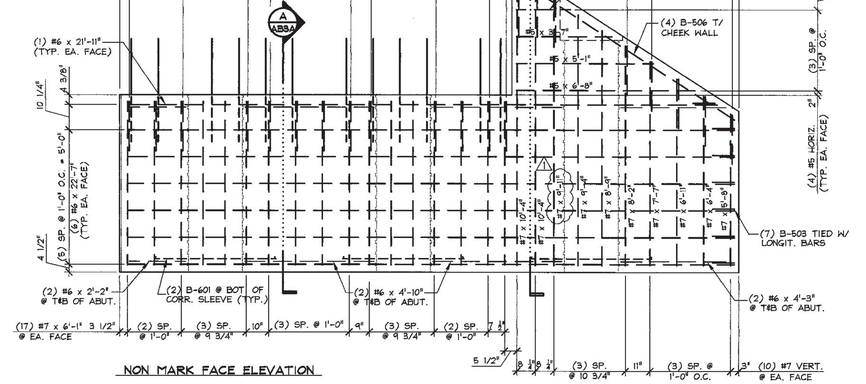


NON MARK FACE ELEVATION

1 AB4 ABUTMENT DIMENSIONAL DETAILS
3/8" = 1'-0"

SHOP NOTE:
28 DAYS = 5,000 PSI
RELEASE = 5,000 PSI

MIX DESIGN:
MIX NO. 425M-NO DCI
APPROVED 3-21-2015



NON MARK FACE ELEVATION

2 AB4 ABUTMENT REINFORCING DETAILS
3/8" = 1'-0"

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 COMPLIANCEWITH 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 RESPOINSIBLE 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
560 Commercial Street
Manchester, NH 03101
603-669-6223

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠1 5/26/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

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

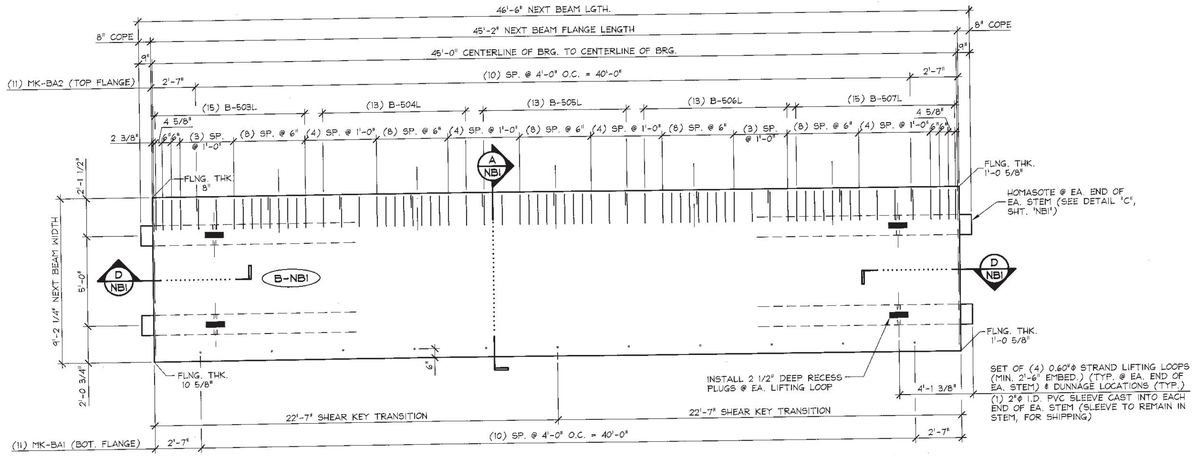
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

PRECAST ABUTMENT DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AB4

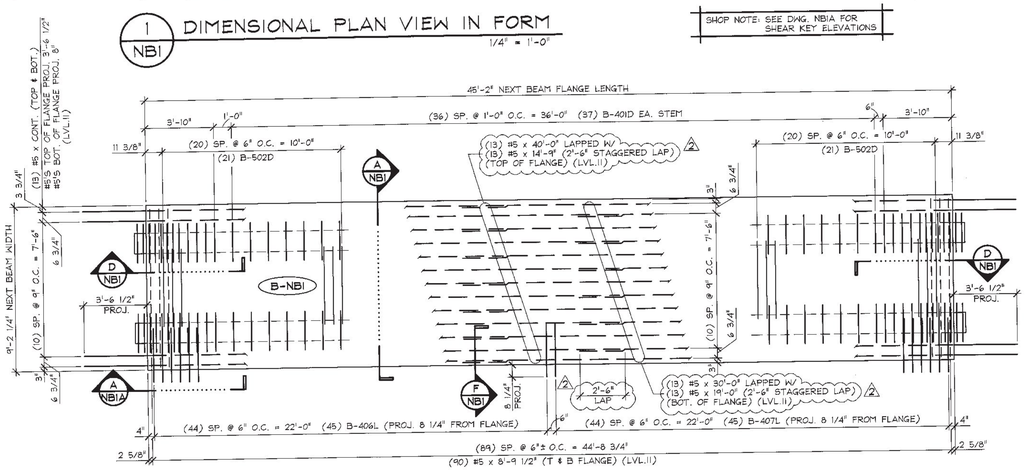
F:\VT-Bridges\23462.14 Barton\23462_AB4.dwg, 6/10/2015 10:37:07 AM



1 NBI DIMENSIONAL PLAN VIEW IN FORM

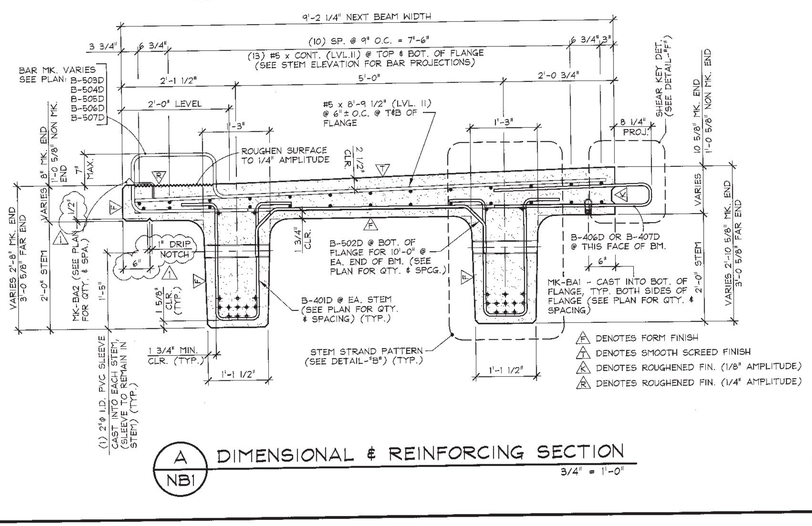
1/4" = 1'-0"

SHOP NOTE: SEE DWG. NB1A FOR SHEAR KEY ELEVATIONS



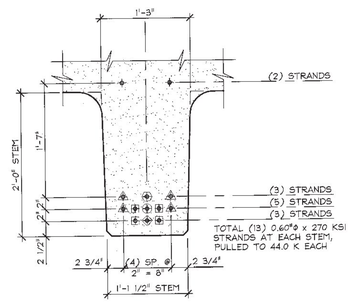
2 NBI REINFORCING PLAN VIEW IN FORM

1/4" = 1'-0"



A NBI DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"



B NBI STEM STRAND PATTERN

1" = 1'-0"

PRESTRESSING NOTATIONS

- ◆ DENOTES STRAIGHT STRANDS TO BE DEBONDED 6" FROM EA. END OF EA. STEM
- ◆ DENOTES FULLY BONDED STRAIGHT STRANDS EXTENDED 2'-0" FROM EA. END OF EA. STEM
- ◆ DENOTES STRAIGHT STRANDS TO BE DEBONDED 8'-0" FROM EA. END OF EA. STEM
- ◆ DENOTES STRAIGHT STRANDS TO BE DEBONDED 41'-0" FROM EA. END OF EA. STEM
- ◆ DENOTES STRAIGHT STRANDS TO BE DEBONDED 2'-0" FROM EA. END OF EA. STEM
- ◆ DENOTES FULLY BONDED STRAIGHT STRANDS TO BE CUT FLUSH W/ EA. END OF EA. STEM

SHOP DRAWING REVIEW

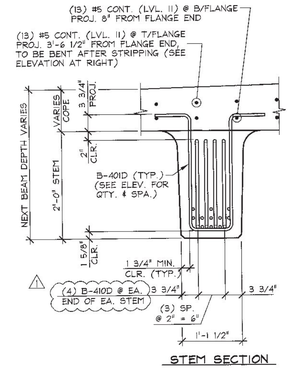
☒ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

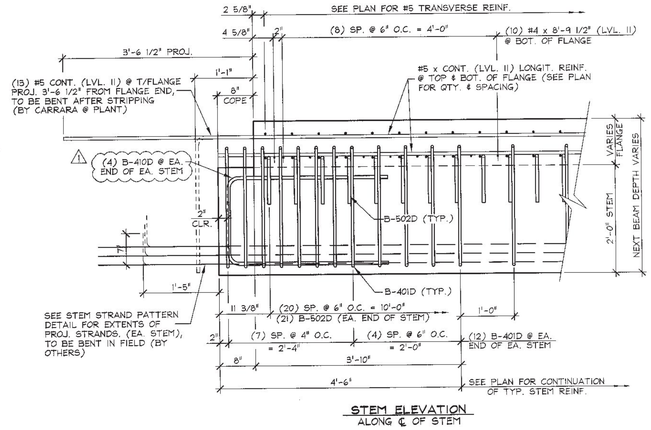
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION 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: 120174
Reviewed by: SRB
Date: 06/11/2015



STEM SECTION

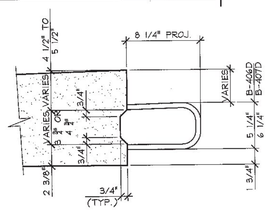


STEM ELEVATION ALONG ℄ OF STEM

D NBI END BLOCK STEM REINFORCING DETAILS

3/4" = 1'-0"

SHOP NOTE: SEE SHEAR KEY ELEVATION SHT. NB1A FOR FURTHER DIMENSIONS & BENT BAR LAYOUT

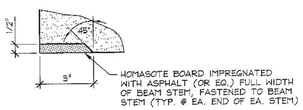


F NBI SHEAR KEY DETAIL

1 1/2" = 1'-0"

DETENSIONING SCHEDULE

N.T.S.



C NBI HOMASOTE DETAIL

3" = 1'-0"

MARK: B-NBI	QTY.: 1	WT.: 44.87 T	VOL.: 22.15 cy

MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	MK-BA1	3/4"ø F42 FERRULE INSERT (GALV.)	11
2	MK-BA2	DAYTON C-24 TYPE 4-APR DECK FORM HANGER (GALV.)	11
3			
4	B-401D	#4 BENT BAR (LEVEL II, DUAL COATED)	122
5	B-406D	#4 BENT BAR (LEVEL II, DUAL COATED)	45
6	B-407D	#4 BENT BAR (LEVEL II, DUAL COATED)	45
7 ⚠1	B-410D	#4 BENT BAR (LEVEL II, DUAL COATED)	16
8	B-502D	#5 BENT BAR (LEVEL II, DUAL COATED)	42
9	B-503D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
10	B-504D	#5 BENT BAR (LEVEL II, DUAL COATED)	13
11	B-505D	#5 BENT BAR (LEVEL II, DUAL COATED)	13
12	B-506D	#5 BENT BAR (LEVEL II, DUAL COATED)	13
13	B-507D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
14		#4 x 8'-9 1/2" (LEVEL II, DUAL COATED)	20
15		#5 x 8'-9 1/2" (LEVEL II, DUAL COATED)	180
16		#5 x 40'-0" (LEVEL II, DUAL COATED)	13
17 ⚠2		#5 x 14'-9" (LEVEL II, DUAL COATED)	13
18		#5 x 30'-0" (LEVEL II, DUAL COATED)	13
19		#5 x 19'-0" (LEVEL II, DUAL COATED)	13
20		SET OF (4) 0.60"ø STRAND LIFTING LOOPS	4

⚠2 6/9/2015 REVISED AS NOTED T.D.
⚠1 6/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2414 CAST STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

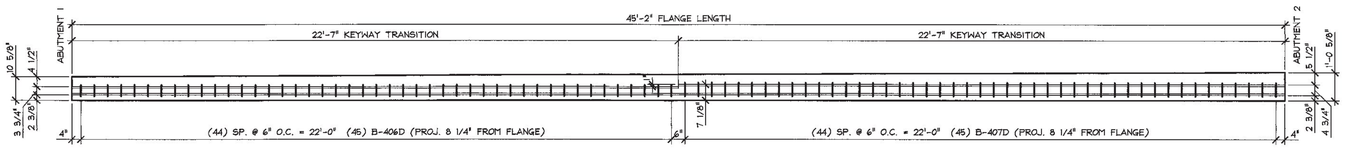
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

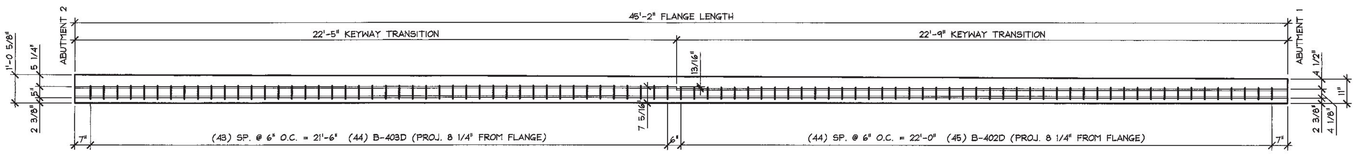
PRESTRESSED NEXT BEAM DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: - DFTM: T.D.
JOB NO: 23462-015
DWG. NO: NB1

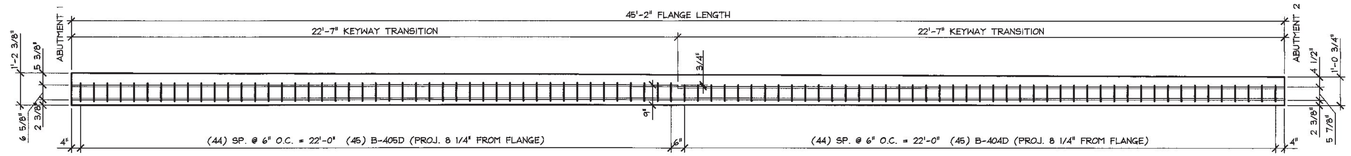
F:\VT-Bridges\23462-14 Barton\23462-NB2.dwg, 6/10/2015 4:04:25 PM



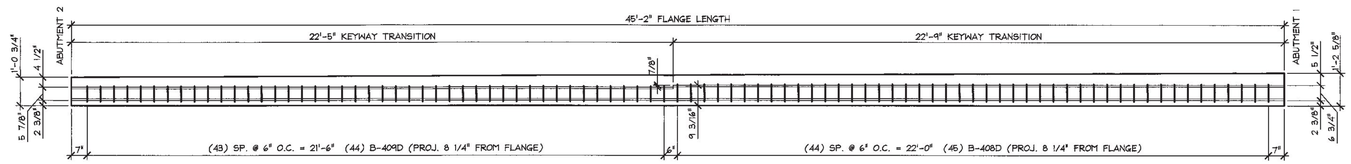
KEY ELEVATION - "A"
3/8" = 1'-0"



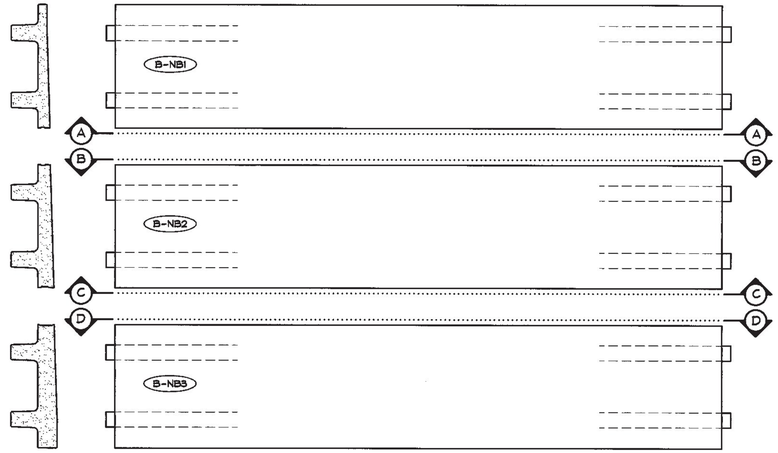
KEY ELEVATION - "B"
3/8" = 1'-0"



KEY ELEVATION - "C"
3/8" = 1'-0"



KEY ELEVATION - "D"
3/8" = 1'-0"



SCHEMATIC PLAN VIEW OF NEXT BEAMS
N.T.S.

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 COMPLIANCEWITH 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 RESPOINSIBLE 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: 120174
Reviewed by: SRB
Date: 06/11/2015

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
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

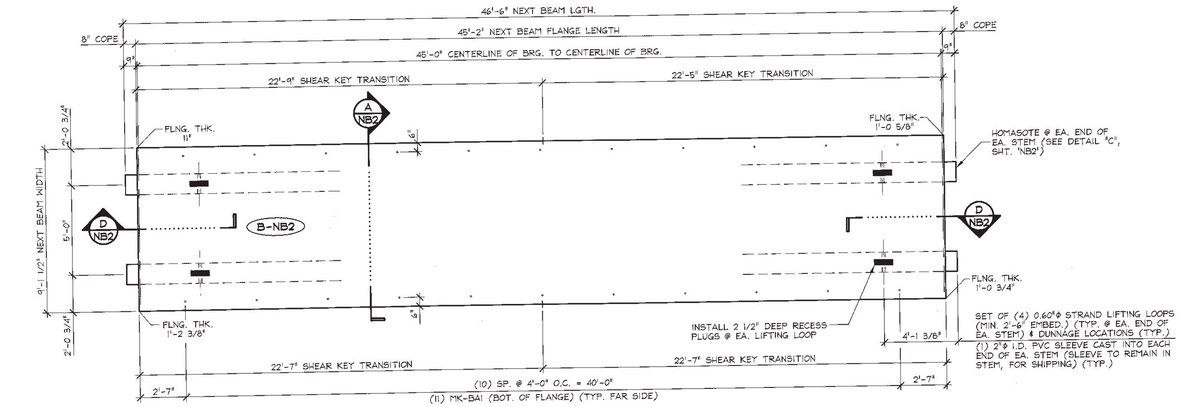
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

SHEAR KEY ELEVATIONS

DWG. NO: NB1A

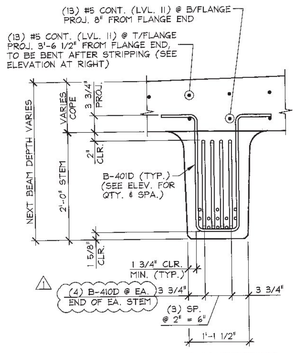
F:\VT-Bridges\23462-14 Barton\23462-NB1A.dwg, 6/10/2015 9:58:41 AM



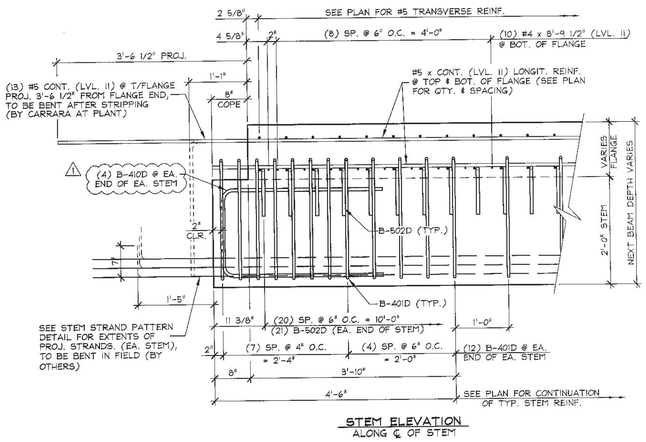
1 NB2 DIMENSIONAL PLAN VIEW IN FORM

1/4" = 1'-0"

SHOP NOTE: SEE DWG. NB1A FOR SHEAR KEY ELEVATIONS



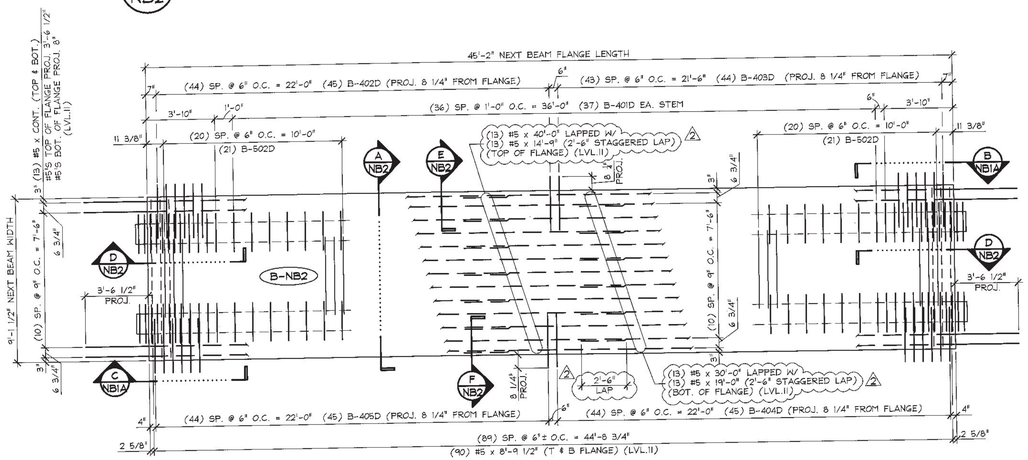
STEM SECTION



STEM ELEVATION
ALONG ℄ OF STEM

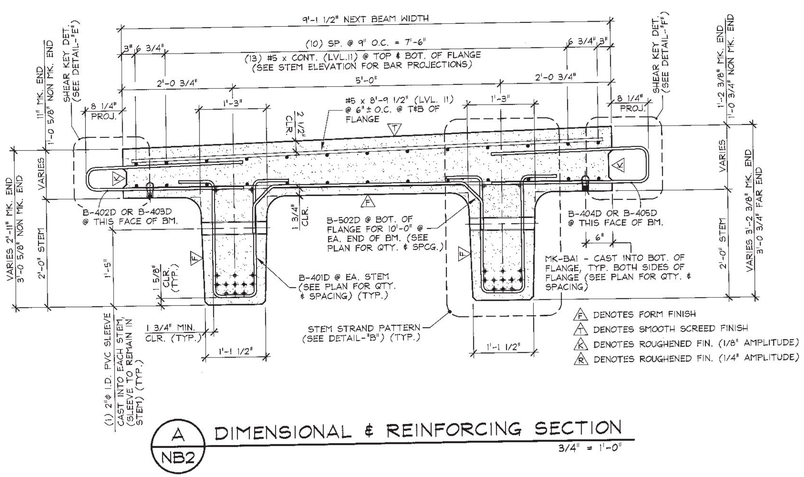
D NB2 END BLOCK STEM REINFORCING DETAILS

3/4" = 1'-0"



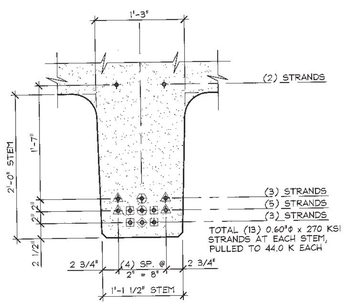
2 NB2 REINFORCING PLAN VIEW IN FORM

1/4" = 1'-0"



A NB2 DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"



B NB2 STEM STRAND PATTERN

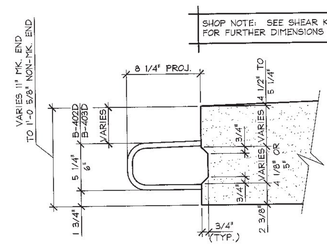
1" = 1'-0"

PRESTRESSING NOTATIONS

- DENOTES STRAIGHT STRANDS TO BE DEBONDED 6" FROM EA. END OF EA. STEM
- DENOTES FULLY BONDED STRAIGHT STRANDS EXTENDED 2'-0" FROM EA. END OF EA. STEM
- DENOTES STRAIGHT STRANDS TO BE DEBONDED 8'-0" 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 2'-0" FROM EA. END OF EA. STEM
- DENOTES FULLY BONDED STRAIGHT STRANDS TO BE CUT FLUSH W/ EA. END OF EA. STEM

DETENSIONING SCHEDULE

N.T.S.

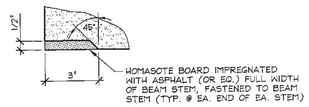


E NB2 SHEAR KEY DETAIL

1 1/2" = 1'-0"

F NB2 SHEAR KEY DETAIL

1 1/2" = 1'-0"



C NB2 HOMASOTE DETAIL

3" = 1'-0"

MARK: B-NB2	QTY.: 1	WT.: 49.36 T	VOL.: 24.38 cy

MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	MK-BA1	3/4"ø F42 FERRULE INSERT (GALV.)	22
2	B-401D	#4 BENT BAR (LEVEL II, DUAL COATED)	122
3	B-402D	#4 BENT BAR (LEVEL II, DUAL COATED)	46
4	B-403D	#4 BENT BAR (LEVEL II, DUAL COATED)	44
5	B-404D	#4 BENT BAR (LEVEL II, DUAL COATED)	46
6	B-405D	#4 BENT BAR (LEVEL II, DUAL COATED)	46
7 ⚠1	B-410D	#4 BENT BAR (LEVEL II, DUAL COATED)	16
8	B-502D	#5 BENT BAR (LEVEL II, DUAL COATED)	42
9		#4 x 8'-9 1/2" (LEVEL II, DUAL COATED)	20
10		#5 x 8'-9 1/2" (LEVEL II, DUAL COATED)	180
11		#5 x 40'-0" (LEVEL II, DUAL COATED)	13
12	⚠2	#5 x 14'-9" (LEVEL II, DUAL COATED)	13
13		#5 x 30'-0" (LEVEL II, DUAL COATED)	13
14		#5 x 19'-0" (LEVEL II, DUAL COATED)	13
15		SET OF (4) 0.60"ø STRAND LIFTING LOOPS	4

⚠2 6/9/2015 REVISED AS NOTED T.D.

⚠1 5/28/2015 REVISED AS NOTED T.D.

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, 603-669-6223

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

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
CONTRACTOR
BARTON, VERMONT

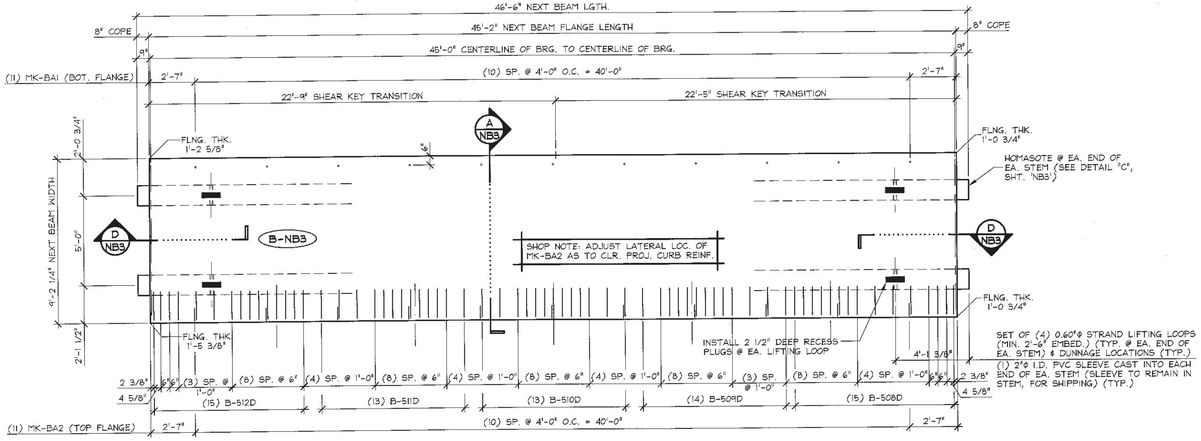
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

PRESTRESSED NEXT BEAM DETAILS

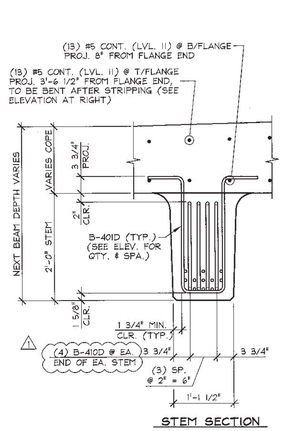
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: - DFTM: T.D
JOB NO: 23462-015
DWG. NO: NB2

F:\VT-Bridges\23462-14 Barton\23462-NB1.dwg, 6/10/2015 4:05:01 PM

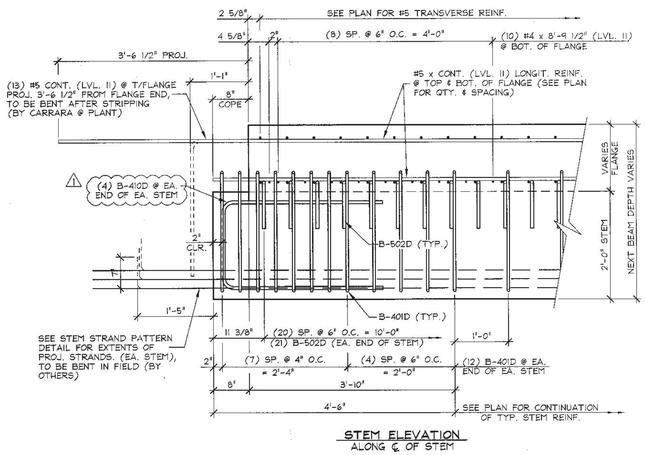


1 NB3 DIMENSIONAL PLAN VIEW IN FORM

1/4" = 1'-0"



STEM SECTION

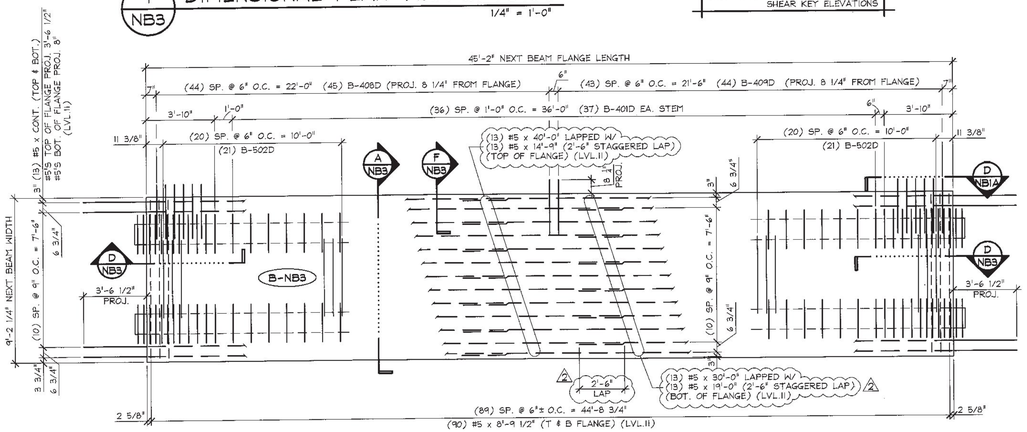


STEM ELEVATION
ALONG ℄ OF STEM

SHOP NOTE: SEE DWG. NB1A FOR SHEAR KEY ELEVATIONS

D NB3 END BLOCK STEM REINFORCING DETAILS

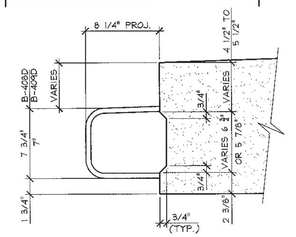
3/4" = 1'-0"



2 NB3 REINFORCING PLAN VIEW IN FORM

1/4" = 1'-0"

SHOP NOTE: SEE SHEAR KEY ELEVATION SHT. NB1A FOR FURTHER DIMENSIONS & BENT BAR LAYOUT



F NB3 SHEAR KEY DETAIL

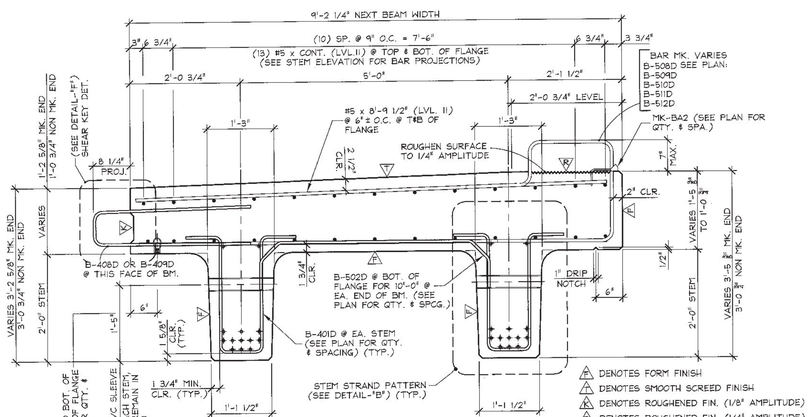
1 1/2" = 1'-0"

DETENSIONING SCHEDULE

N.T.S.

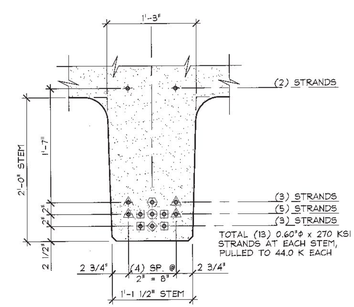
C NB3 HOMASOTE DETAIL

3" = 1'-0"



A NB3 DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"



B NB3 STEM STRAND PATTERN

1" = 1'-0"

PRESTRESSING NOTATIONS

- ◬ DENOTES STRAIGHT STRANDS TO BE DEBONDED 6" FROM EA. END OF EA. STEM
- ⊕ DENOTES FULLY BONDED STRAIGHT STRANDS EXTENDED 2'-0" FROM EA. END OF EA. STEM
- ◈ DENOTES STRAIGHT STRANDS TO BE DEBONDED 8'-0" 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 2'-0" FROM EA. END OF EA. STEM
- ✦ DENOTES FULLY BONDED STRAIGHT STRANDS TO BE CUT FLUSH W/ EA. END OF EA. STEM

△1 DENOTES FORM FINISH
△2 DENOTES SMOOTH SCREED FINISH
△3 DENOTES ROUGHENED FIN. (1/8" AMPLITUDE)
△4 DENOTES ROUGHENED FIN. (1/4" AMPLITUDE)

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 THIS SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH 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, 603-669-5225

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

MARK: B-NB3	QTY.: 1	WT.: 54.39 T	VOL.: 26.86 cy

MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	MK-BA1	3/4"ϕ F42 FERRULE INSERT (GALV.)	11
2	MK-BA2	DAYTON C-24 TYPE 4-APR DECK FORM HANGER (GALV.)	11
3			
4	B-401D	#4 BENT BAR (LEVEL II, DUAL COATED)	122
5	B-408D	#4 BENT BAR (LEVEL II, DUAL COATED)	45
6	B-409D	#4 BENT BAR (LEVEL II, DUAL COATED)	44
7 △1	B-410D	#4 BENT BAR (LEVEL II, DUAL COATED)	16
8	B-502D	#5 BENT BAR (LEVEL II, DUAL COATED)	42
9	B-508D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
10	B-509D	#5 BENT BAR (LEVEL II, DUAL COATED)	14
11	B-510D	#5 BENT BAR (LEVEL II, DUAL COATED)	13
12	B-511D	#5 BENT BAR (LEVEL II, DUAL COATED)	13
13	B-512D	#5 BENT BAR (LEVEL II, DUAL COATED)	15
14		#4 x 8'-9 1/2" (LEVEL II, DUAL COATED)	20
15		#5 x 8'-9 1/2" (LEVEL II, DUAL COATED)	180
16		#5 x 40'-0" (LEVEL II, DUAL COATED)	13
17 △2		#5 x 14'-9" (LEVEL II, DUAL COATED)	13
18		#5 x 30'-0" (LEVEL II, DUAL COATED)	13
19		#5 x 19'-0" (LEVEL II, DUAL COATED)	13
20		SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	4

△2 6/9/2015 REVISED AS NOTED T.D.
△1 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2494 OAKE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

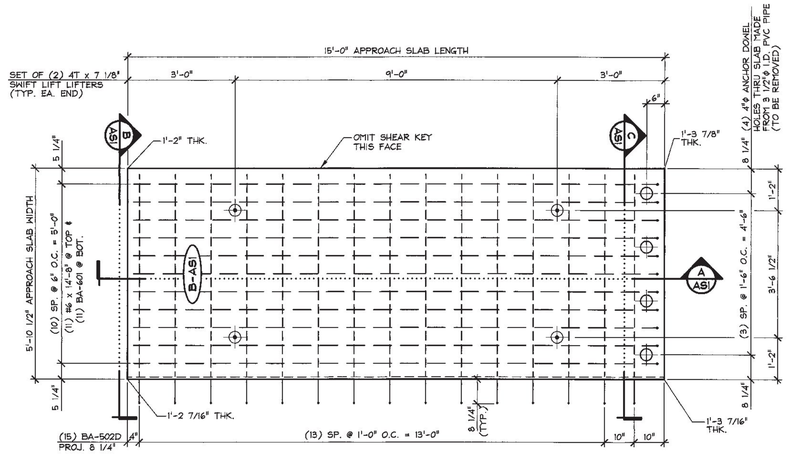
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

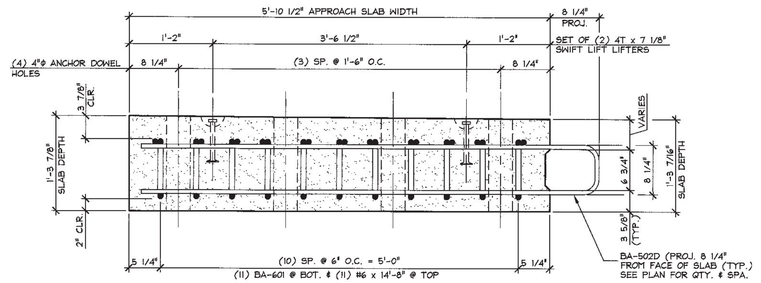
PRESTRESSED NEXT BEAM DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: - DFTM: T.D.
JOB NO: 23462-015
DWG. NO: NB3

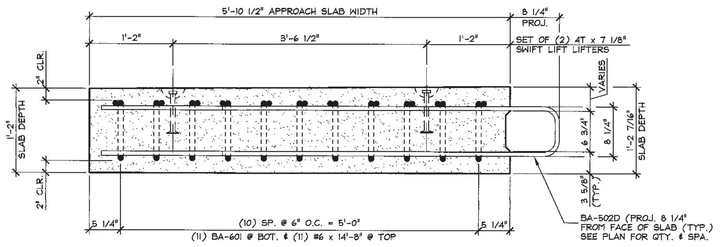
F:\VT-Bridges\23462-14 Barton\23462-NB3.dwg, 6/10/2015 4:03:44 PM



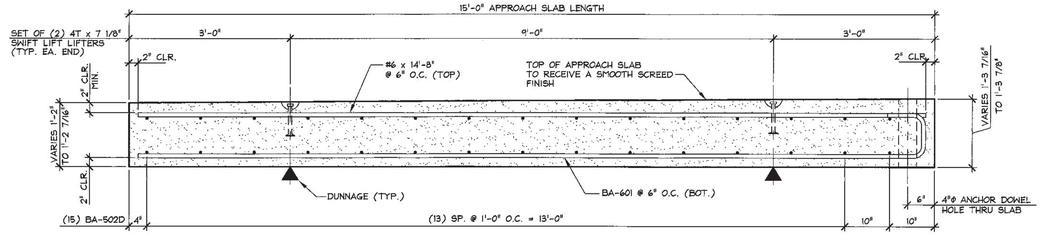
1 / AS1 PLAN VIEW IN FORM
1/2" = 1'-0"



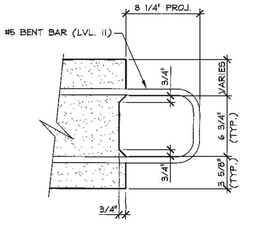
C / AS1 SECTION
1" = 1'-0"



B / AS1 SECTION
1" = 1'-0"



A / AS1 LONGITUDINAL SECTION
3/4" = 1'-0"



SHEAR KEY DETAIL
1 1/2" = 1'-0"

MARK: B-AS1	QTY.: 2	WT.: 8.26 T	VOL.: 4.08 cy

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1			
2	BA-502D	#5 BENT BAR (LEVEL 1, DUAL COATED)	15
3	BA-601	#6 BENT BAR (LEVEL 1)	11
4			
5			
6		#6 x 14'-8" (LEVEL 1)	11
7			
8			
9			
10			
11			
12			
13			
14		⚠ DAYTON 4T x 7 1/8" SWIFT LIFT (DOMESTIC)	4
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 COMPLIANCEWITH 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
549 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

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
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

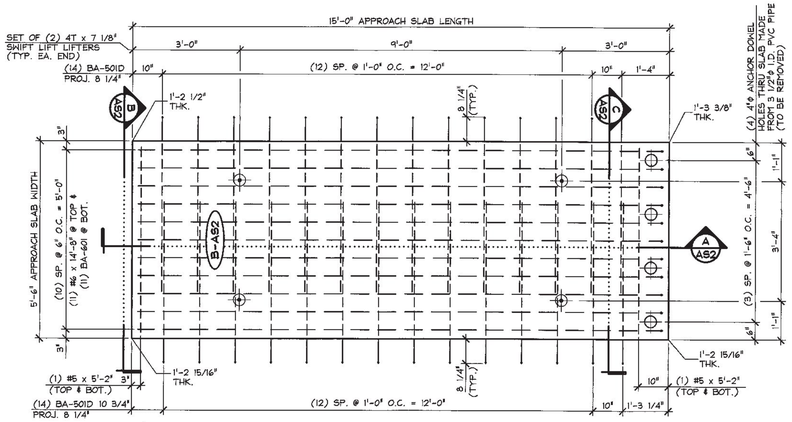
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

APPROACH SLAB DETAILS

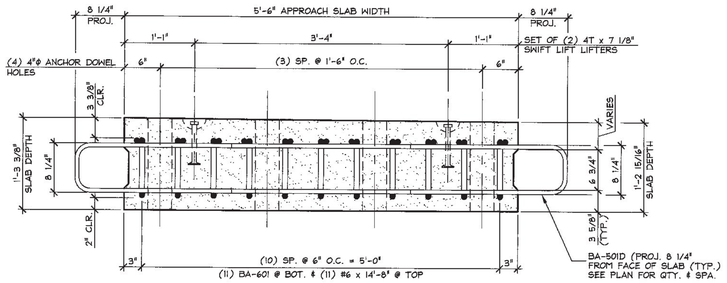
DWG. NO: AS1

F:\VT-Bridges\23462-14 Barton\23462-AS1.dwg, 6/10/2015 10:54:25 AM



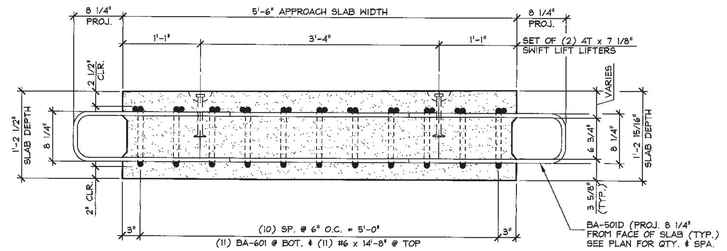
1 AS2 PLAN VIEW IN FORM

1/2" = 1'-0"



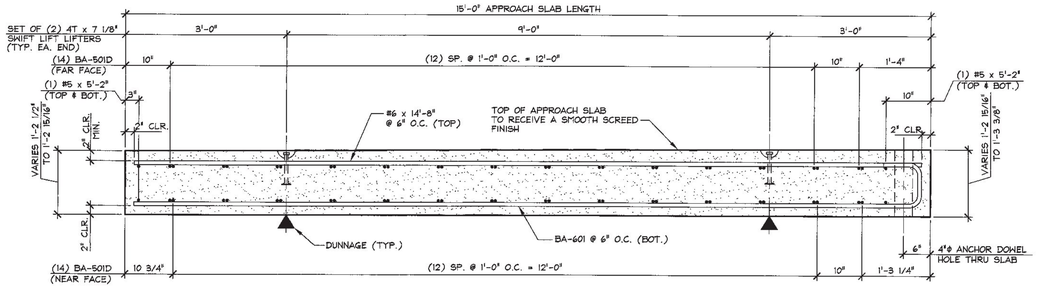
C AS2 SECTION

1" = 1'-0"



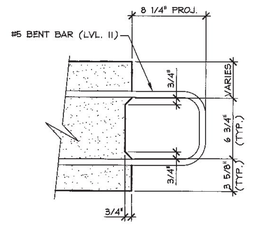
B AS2 SECTION

1" = 1'-0"



A AS2 LONGITUDINAL SECTION

3/4" = 1'-0"



SHEAR KEY DETAIL

1 1/2" = 1'-0"

MARK: B-AS2	QTY.: 2	WT.: 7.73 T	VOL: 3.82 cy

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1			
2	BA-501D	#5 BENT BAR (LEVEL 11, DUAL COATED)	28
3	BA-601	#6 BENT BAR (LEVEL 1)	11
4			
5			
6		#6 x 14'-8" (LEVEL 1)	11
7		#5 x 5'-2" (LEVEL 1)	4
8			
9			
10			
11			
12			
13			
14		⚠ DAYTON 4T x 7 1/8" SWIFT LIFT (DOMESTIC)	4
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
249 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 12017.4
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2444 OSE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

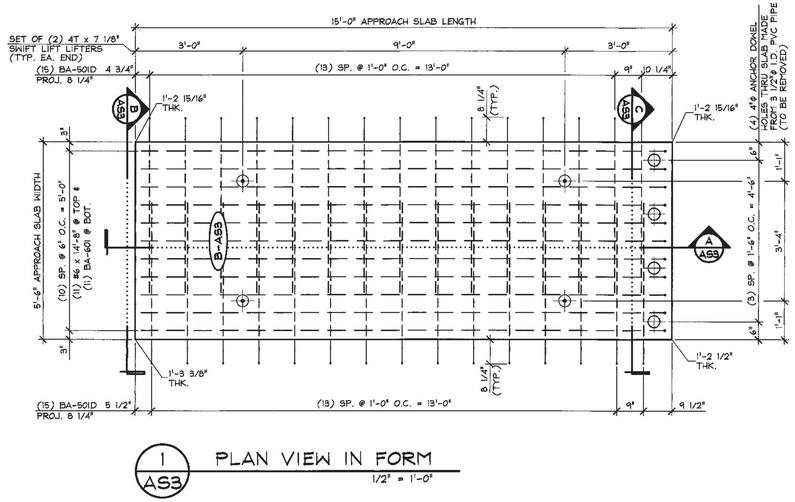
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

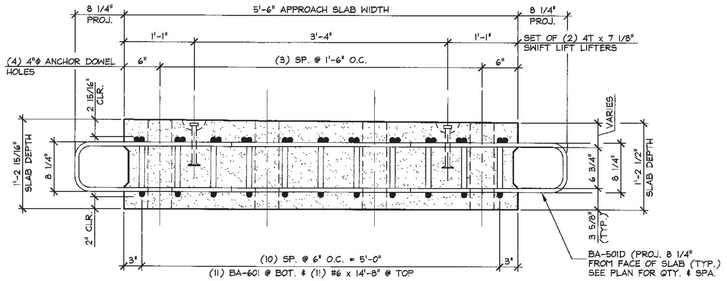
APPROACH SLAB DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AS2

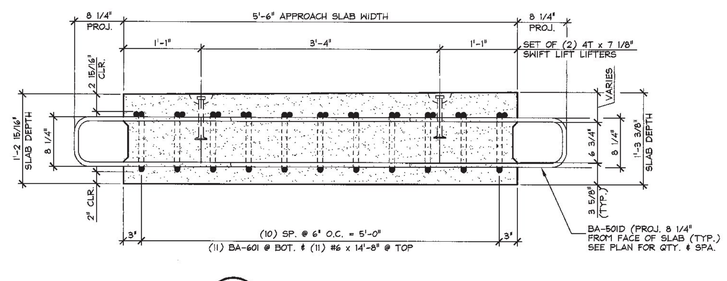
F:\VT-Bridges\23462-14 Barton\23462-AS2.dwg, 6/10/2015 10:55:16 AM



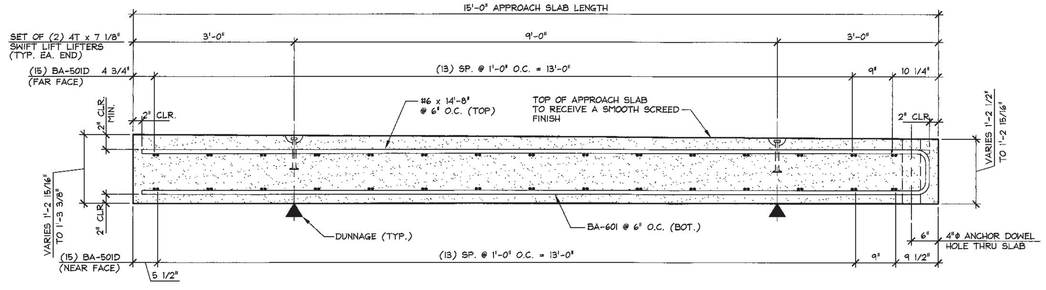
1 AS3 PLAN VIEW IN FORM
1/2" = 1'-0"



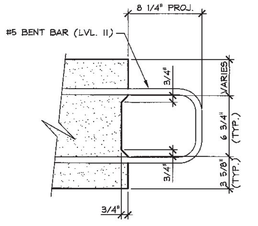
C AS2 SECTION
1" = 1'-0"



B AS2 SECTION
1" = 1'-0"



A AS3 LONGITUDINAL SECTION
3/4" = 1'-0"



SHEAR KEY DETAIL
1 1/2" = 1'-0"

MARK: B-AS3	QTY.: 2	WT.: 7.73 T	VOL.: 3.82 cy

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1			
2	BA-501D	#5 BENT BAR (LEVEL II, DUAL COATED)	30
3	BA-601	#6 BENT BAR (LEVEL I)	11
4			
5			
6		#6 x 14'-8" (LEVEL I)	11
7			
8			
9			
10			
11			
12			
13			
14		⚠1 DAYTON 4T x 7 1/8" SWIFT LIFT (DOMESTIC)	4
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
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 12074
Reviewed by: SRB
Date: 06/11/2015

⚠1 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
3464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

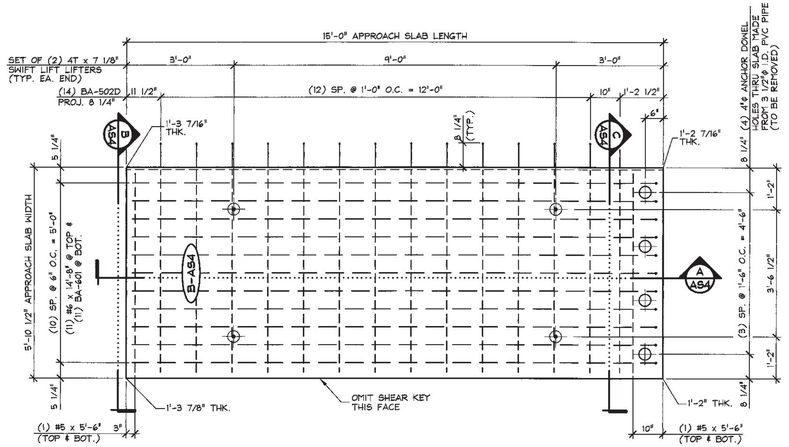
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

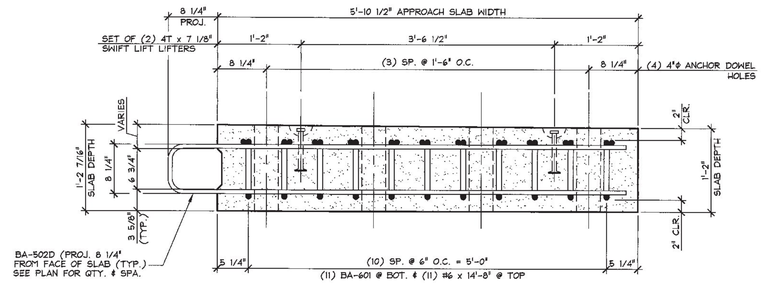
APPROACH SLAB DETAILS

DWG. NO: AS3

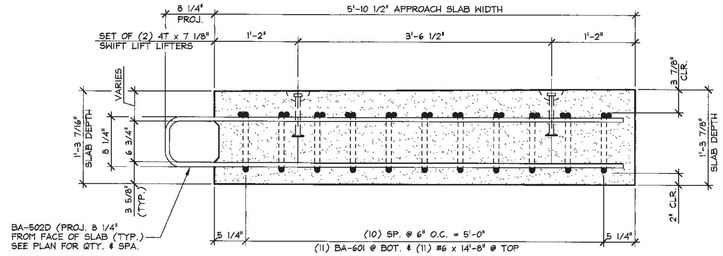
F:\VT-Bridges\23462-14 Barton\23462-AS3.dwg, 6/10/2015 10:56:01 AM



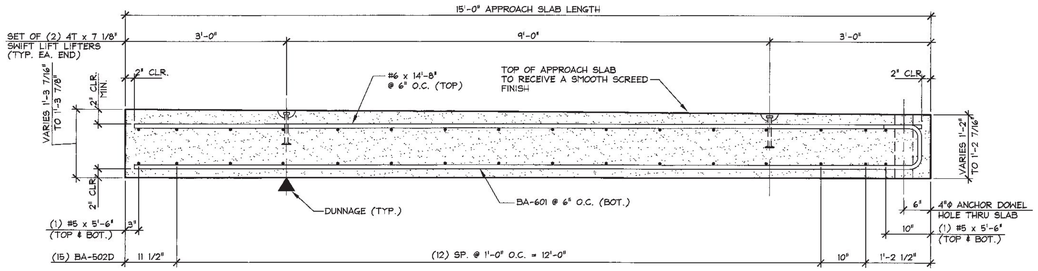
1 AS4 PLAN VIEW IN FORM
1/2" = 1'-0"



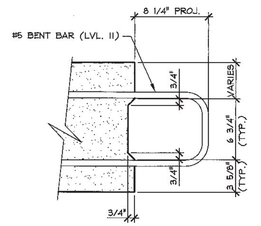
C AS4 SECTION
1" = 1'-0"



B AS4 SECTION
1" = 1'-0"



A AS4 LONGITUDINAL SECTION
3/4" = 1'-0"



SHEAR KEY DETAIL
1 1/2" = 1'-0"

MARK: B-AS4	QTY.: 2	WT.: 8.26 T	VOL.: 4.08 cy

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1			
2	BA-502D	#5 BENT BAR (LEVEL II, DUAL COATED)	14
3	BA-601	#6 BENT BAR (LEVEL I)	11
4			
5			
6		#6 x 14'-8" (LEVEL I)	11
7		#5 x 5'-6" (LEVEL I)	4
8			
9			
10			
11			
12			
13			
14	⚠	DAYTON 4T x 7 1/8" SWIFT LIFT (DOMESTIC)	4
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 COMPLIANCEWITH 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: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠ 5/28/2015 REVISED AS NOTED T.D.

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
CONTRACTOR
BARTON, VERMONT

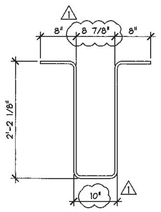
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

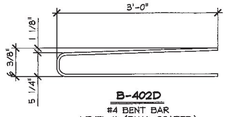
APPROACH SLAB DETAILS

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015
DWG. NO: AS4

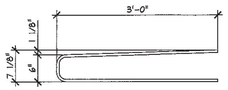
F:\VT-Bridges\23462-14 Barton\23462_AS4.dwg, 6/10/2015 10:56:37 AM



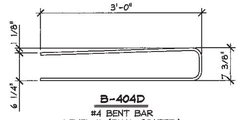
B-401D
#4 BENT BAR
LEVEL II (DUAL COATED)
(366) REQ'D.



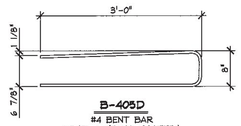
B-402D
#4 BENT BAR
LEVEL II (DUAL COATED)
(45) REQ'D.



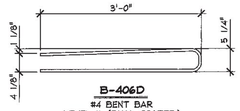
B-403D
#4 BENT BAR
LEVEL II (DUAL COATED)
(44) REQ'D.



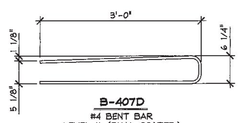
B-404D
#4 BENT BAR
LEVEL II (DUAL COATED)
(45) REQ'D.



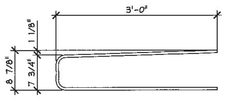
B-405D
#4 BENT BAR
LEVEL II (DUAL COATED)
(45) REQ'D.



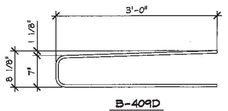
B-406D
#4 BENT BAR
LEVEL II (DUAL COATED)
(45) REQ'D.



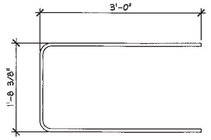
B-407D
#4 BENT BAR
LEVEL II (DUAL COATED)
(45) REQ'D.



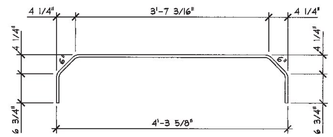
B-408D
#4 BENT BAR
LEVEL II (DUAL COATED)
(45) REQ'D.



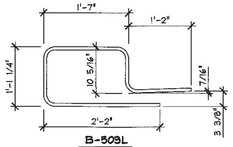
B-409D
#4 BENT BAR
LEVEL II (DUAL COATED)
(44) REQ'D. ⚠1



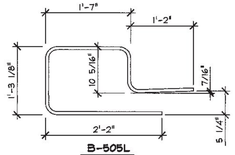
B-410D ⚠1
#4 BENT BAR
LEVEL II (DUAL COATED)
(48) REQ'D.



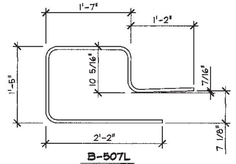
B-502D
#5 BENT BAR
LEVEL II (DUAL COATED)
(126) REQ'D.



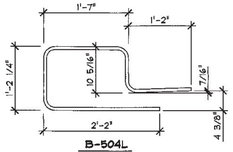
B-503L
#5 BENT BAR
LEVEL II (DUAL COATED)
(15) REQ'D.



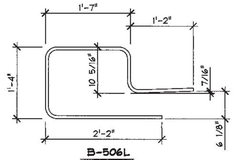
B-505L
#5 BENT BAR
LEVEL II (DUAL COATED)
(13) REQ'D.



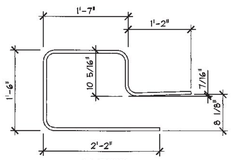
B-507L
#5 BENT BAR
LEVEL II (DUAL COATED)
(15) REQ'D.



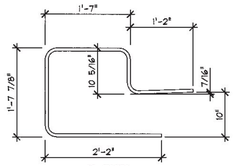
B-504L
#5 BENT BAR
LEVEL II (DUAL COATED)
(13) REQ'D.



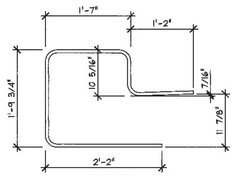
B-506L
#5 BENT BAR
LEVEL II (DUAL COATED)
(13) REQ'D.



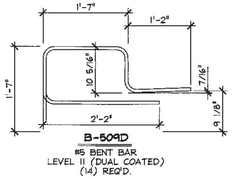
B-508D
#5 BENT BAR
LEVEL II (DUAL COATED)
(15) REQ'D.



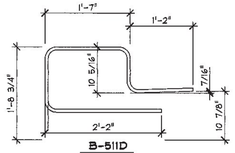
B-510D
#5 BENT BAR
LEVEL II (DUAL COATED)
(13) REQ'D.



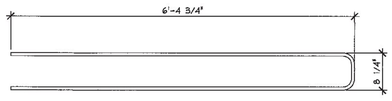
B-512D
#5 BENT BAR
LEVEL II (DUAL COATED)
(15) REQ'D.



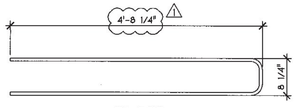
B-509D
#5 BENT BAR
LEVEL II (DUAL COATED)
(14) REQ'D.



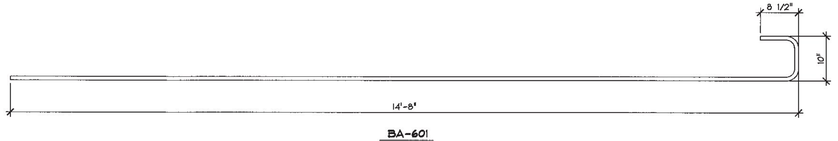
B-511D
#5 BENT BAR
LEVEL II (DUAL COATED)
(13) REQ'D.



BA-502D
#5 BENT BAR
LEVEL II (DUAL COATED)
(58) REQ'D.



BA-501D
#5 BENT BAR
LEVEL II (DUAL COATED)
(116) REQ'D.



BA-601
#6 BENT BAR
LEVEL II
(84) REQ'D. ⚠

MISCELLANEOUS MATERIALS — P/S NEXT BEAMS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	B-401D	366	#4 BENT BAR (LEVEL II, DUAL COATED)	
2	B-402D	45	#4 BENT BAR (LEVEL II, DUAL COATED)	
3	B-403D	44	#4 BENT BAR (LEVEL II, DUAL COATED)	
4	B-404D	45	#4 BENT BAR (LEVEL II, DUAL COATED)	
5	B-405D	45	#4 BENT BAR (LEVEL II, DUAL COATED)	
6	B-406D	45	#4 BENT BAR (LEVEL II, DUAL COATED)	
7	B-407D	45	#4 BENT BAR (LEVEL II, DUAL COATED)	
8	B-408D	45	#4 BENT BAR (LEVEL II, DUAL COATED)	
9 ⚠1	B-409D	44	#4 BENT BAR (LEVEL II, DUAL COATED)	
10	B-410D	48	#4 BENT BAR (LEVEL II, DUAL COATED) ⚠1	
11	B-502D	126	#5 BENT BAR (LEVEL II, DUAL COATED)	
12	B-503D	15	#5 BENT BAR (LEVEL II, DUAL COATED)	
13	B-504D	13	#5 BENT BAR (LEVEL II, DUAL COATED)	
14	B-505D	13	#5 BENT BAR (LEVEL II, DUAL COATED)	
15	B-506D	13	#5 BENT BAR (LEVEL II, DUAL COATED)	
16	B-507D	15	#5 BENT BAR (LEVEL II, DUAL COATED)	
17	B-508D	15	#5 BENT BAR (LEVEL II, DUAL COATED)	
18	B-509D	14	#5 BENT BAR (LEVEL II, DUAL COATED)	
19	B-510D	13	#5 BENT BAR (LEVEL II, DUAL COATED)	
20	B-511D	13	#5 BENT BAR (LEVEL II, DUAL COATED)	
21	B-512D	15	#5 BENT BAR (LEVEL II, DUAL COATED)	
22				
23		61	#4 x 8'-9 1/2" (LEVEL II, DUAL COATED)	(+1 SAMPLE) ⚠1
24		541	#5 x 8'-9 1/2" (LEVEL II, DUAL COATED)	(+1 SAMPLE)
25		39	#5 x 40'-0" (LEVEL II, DUAL COATED)	
26		39	#5 x 14'-9" (LEVEL II, DUAL COATED)	
27	⚠2	39	#5 x 30'-0" (LEVEL II, DUAL COATED)	
28		39	#5 x 19'-0" (LEVEL II, DUAL COATED)	
29		12	SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	
30	MK-BA1	44	3/4"ϕ F42 FERRULE INSERT (GALV.)	
31	MK-BA2	22	DAYTON C-24 TYPE 4-APR DECK FORM HANGER (GALV.)	

MISCELLANEOUS MATERIALS — P/C APPROACH SLABS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	BA-501D	116	#5 BENT BAR (LEVEL II, DUAL COATED)	
2	BA-502D	58	#5 BENT BAR (LEVEL II, DUAL COATED) ⚠1	
3	BA-601	84	#6 BENT BAR (LEVEL I)	(+1 SAMPLE) ⚠1
4		⚠1		
5				
6		88	#6 x 14'-8" (LEVEL I)	
7		8	#5 x 5'-2" (LEVEL I)	
8		8	#5 x 5'-6" (LEVEL I)	
9				
10		32	DAYTON 4T x 7 1/8" SWIFT LIFT (DOMESTIC) ⚠1	

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 COMPLIANCEWITH 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: 120174
Reviewed by: SRB
Date: 06/11/2015

⚠2 6/9/2015 REVISED AS NOTED T.D.
⚠1 5/28/2015 REVISED AS NOTED T.D.

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
CONTRACTOR
BARTON, VERMONT

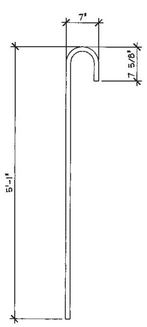
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

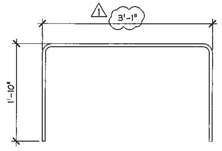
NEXT BEAM MATERIAL LIST

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: - DFTM: T.D.
JOB NO: 23462-015
DWG. NO: M1

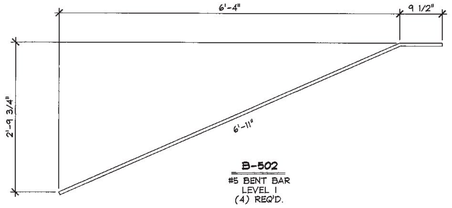
F:\VT-Bridges\23462-14 Barton\23462-M1.dwg, 6/9/2015 3:23:24 PM



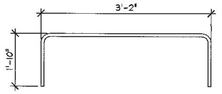
B-701D
#7 BENT BAR
LEVEL II (DUAL COATED)
(61) REQ'D.



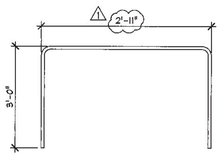
B-501
#5 BENT BAR
LEVEL I
(74) REQ'D



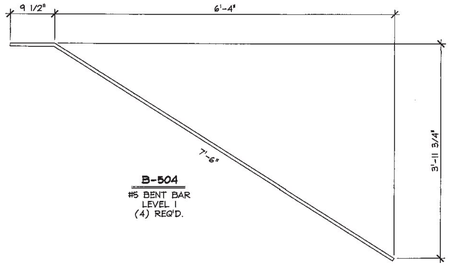
B-502
#5 BENT BAR
LEVEL I
(4) REQ'D.



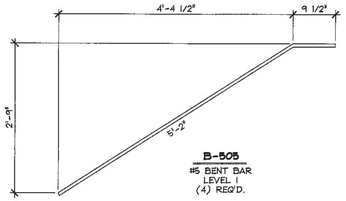
B-503
#5 BENT BAR
LEVEL I
(31) REQ'D.



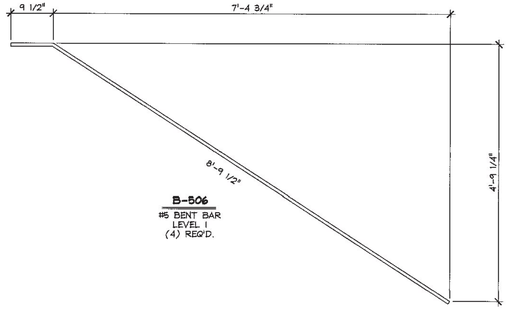
B-401
#4 BENT BAR
LEVEL I
(52) REQ'D.



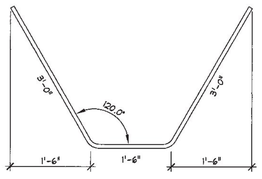
B-504
#5 BENT BAR
LEVEL I
(4) REQ'D.



B-505
#5 BENT BAR
LEVEL I
(4) REQ'D.



B-506
#5 BENT BAR
LEVEL I
(4) REQ'D.



B-601
#6 BENT BAR
LEVEL I
(24) REQ'D.

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	B-401	52	#4 BENT BAR (LEVEL I)	
2 △	B-501	79	#5 BENT BAR (LEVEL I)	
3	B-502	4	#5 BENT BAR (LEVEL I)	
4 △	B-503	31	#5 BENT BAR (LEVEL I)	
5	B-504	4	#5 BENT BAR (LEVEL I)	
6	B-505	4	#5 BENT BAR (LEVEL I)	
7	B-506	4	#5 BENT BAR (LEVEL I)	
8	B-601	24	#6 BENT BAR (LEVEL I)	
9 △	B-701D	61	#7 BENT BAR (LEVEL II, DUAL COATED)	(+1 SAMPLE) △
10				
11		48	#5 x 3'-10" (LEVEL II, DUAL COATED)	
12	△	52	#5 x 4'-6" (LEVEL II, DUAL COATED)	
13				
14		4	#5 x 2'-0" (LEVEL I)	
15		4	#5 x 3'-7" (LEVEL I)	
16		2	#5 x 3'-3" (LEVEL I)	
17		2	#5 x 3'-0" (LEVEL I) △	
18		2	#5 x 4'-7" (LEVEL I)	
19		6	#5 x 5'-1" (LEVEL I)	
20		2	#5 x 5'-6" (LEVEL I) △	
21		2	#5 x 6'-2" (LEVEL I)	
22		2	#5 x 6'-8" (LEVEL I)	
23		4	#5 x 7'-1" (LEVEL I)	
24				
25		4	#6 x 1'-3" (LEVEL I)	
26	△	8	#6 x 2'-1" (LEVEL I)	
27	△	8	#6 x 2'-2" (LEVEL I)	
28		8	#6 x 3'-3" (LEVEL I)	
29		4	#6 x 4'-3" (LEVEL I) △	
30		32	#6 x 4'-10" (LEVEL I)	
31		14	#6 x 19'-7" (LEVEL I)	
32		14	#6 x 21'-7" (LEVEL I)	
33		14	#6 x 21'-8" (LEVEL I)	
34		12	#6 x 22'-7" (LEVEL I)	
35		2	#6 x 21'-11" (LEVEL I)	
36				
37		68	#7 x 5'-9" (LEVEL I)	
38		68	#7 x 6'-1" (LEVEL I)	
39		4	#7 x 5'-8" (LEVEL I)	
40		2	#7 x 6'-3" (LEVEL I)	
41		2	#7 x 7'-6" (LEVEL I)	
42		4	#7 x 7'-7" (LEVEL I)	
43		4	#7 x 6'-11" (LEVEL I)	
44		2	#7 x 6'-4" (LEVEL I)	
45		2	#7 x 7'-6" (LEVEL I)	
46		2	#7 x 8'-2" (LEVEL I)	
47		2	#7 x 8'-3" (LEVEL I)	
48		4	#7 x 8'-0" (LEVEL I)	
49		2	#7 x 8'-6" (LEVEL I)	
50		2	#7 x 8'-7" (LEVEL I)	
51		4	#7 x 8'-9" (LEVEL I)	
52		2	#7 x 8'-10" (LEVEL I)	
53		2	#7 x 9'-3" (LEVEL I)	
54		2	#7 x 9'-2" (LEVEL I)	
55		4	#7 x 9'-4" (LEVEL I)	
56		4	#7 x 9'-7" (LEVEL I)	
57		2	#7 x 9'-8" (LEVEL I)	
58		4	#7 x 9'-11" (LEVEL I)	
59		4	#7 x 10'-3" (LEVEL I)	
60		8	#7 x 10'-4" (LEVEL I)	
61		2	#7 x 10'-0" (LEVEL I)	
62				
63		4	2'-0"ϕ x 6'-2 7/8" CORRUGATED STEEL PIPE (GALV.)	
64		4	2'-0"ϕ x 6'-7 1/8" CORRUGATED STEEL PIPE (GALV.)	
65		1	2'-0"ϕ x 9'-3 1/2" CORRUGATED STEEL PIPE (GALV.)	
25		1	2'-0"ϕ x 7'-11 1/8" CORRUGATED STEEL PIPE (GALV.)	
25		1	2'-0"ϕ x 8'-8" CORRUGATED STEEL PIPE (GALV.)	
25		1	2'-0"ϕ x 8'-7 1/2" CORRUGATED STEEL PIPE (GALV.)	
25	△	8	SET OF (4) 0.60"ϕ STRAND LIFTING LOOPS	

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 COMPLIANCEWITH 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: 120174
Reviewed by: SRB
Date: 06/11/2015

△2 6/9/2015 REVISED AS NOTED T.D.
△1 5/28/2015 REVISED AS NOTED T.D.

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2444 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

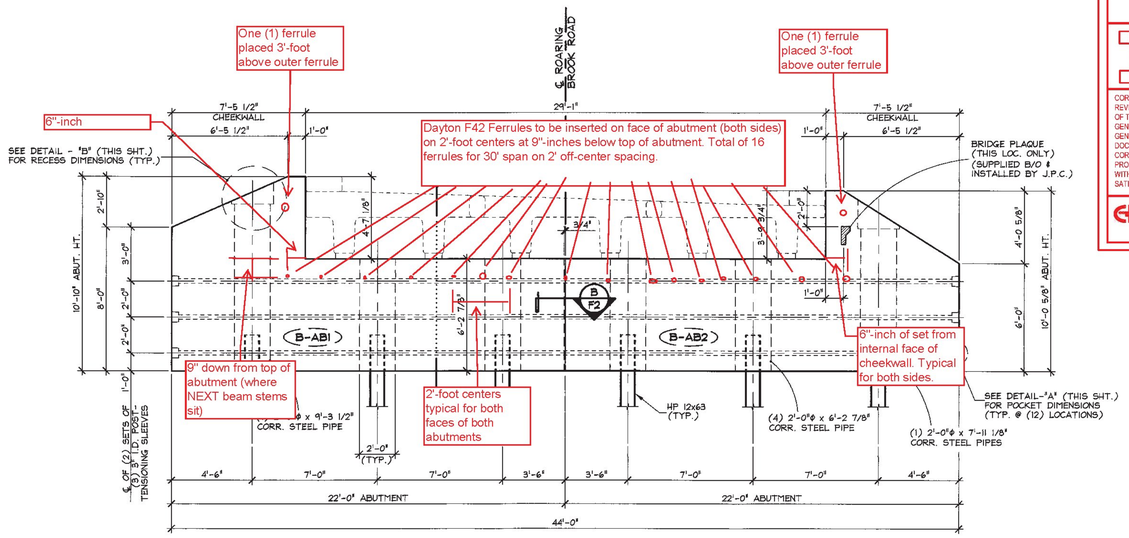
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

PRECAST ABUTMENT
MATERIAL LIST

DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: - DFTM: T.D.
JOB NO: 23462-015
DWG. NO: M2

F:\VT-Bridges\23462-14 Barton\23462 M2.dwg, 6/10/2015 8:05:35 AM



2 / F2 PRECAST ABUTMENT #1 ELEVATION
1/4" = 1'-0"

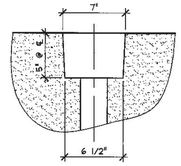
SHOP DRAWING REVIEW

☐ 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.

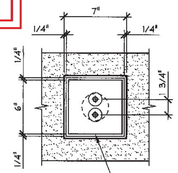
☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH 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.

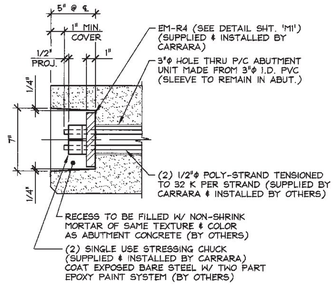
CLD Consulting Engineers, 540 Commercial Street, Manchester, NH 03101, 603-668-8223 — Job Number: 120174; Reviewed by: SRB; Date: 07/09/2015



PLAN OF POCKET

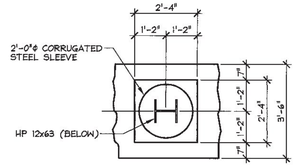


FASCIA ELEVATION

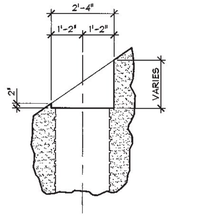


SECTION AT CENTERLINE

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

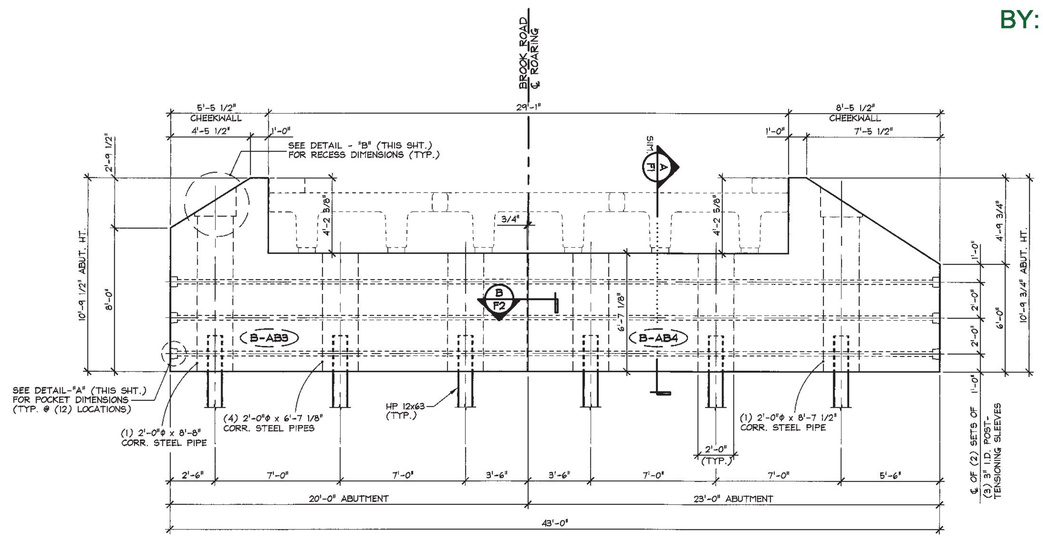


PLAN VIEW
3/8" = 1'-0"



DETAIL - "B"
3/8" = 1'-0"

Vermont Agency of Transportation
RECEIVED
ON: July 9, 2015
and Checked for
CONFORMANCE
BY: T Sumner DATE: 07/09/2015



3 / F2 PRECAST ABUTMENT #2 ELEVATION
1/4" = 1'-0"

Vermont Agency of Transportation
RECEIVED
ON: June 10, 2015
and Checked for
CONFORMANCE
BY: Todd A. Sumner DATE: 06/16/2015

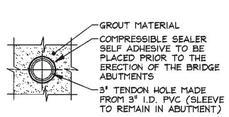
SHOP DRAWING REVIEW

☒ 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.

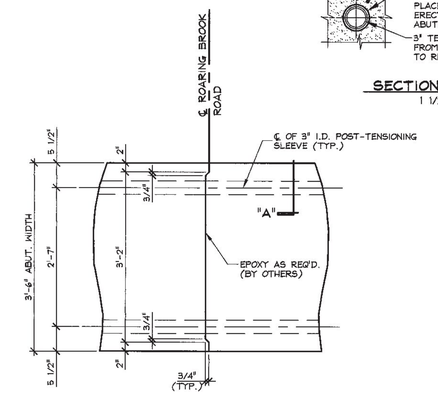
☐ REJECTED ☐ REVISE AND RESUBMIT ☐ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH 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: 120174; Reviewed by: SRB; Date: 06/11/2015



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



B / F2 CONSTRUCTION JOINT SECTION @ P.T. SLEEVE (ABUTMENT) 3/4" = 1'-0"

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2494 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

J.P. Sicard
CONTRACTOR
BARTON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF ORLEANS

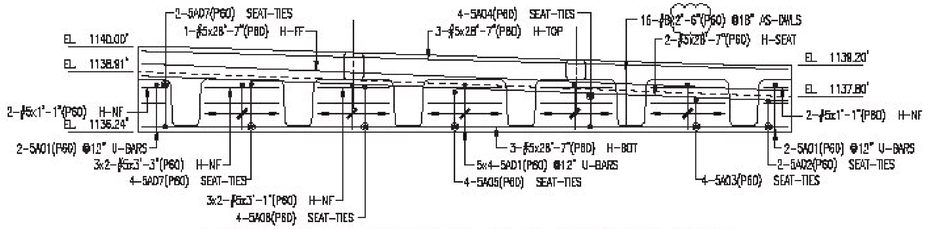
DATE: FEB. 25, 2015
SCALE: NOTED
CHKD: DFTM: T.D.
JOB NO: 23462-015

TOWN OF BARTON
ROARING BROOK ROAD TH #2, RURAL MINOR COLLECTOR
BRIDGE NO.: 8 PROJECT NO.: BRO 1449(31)

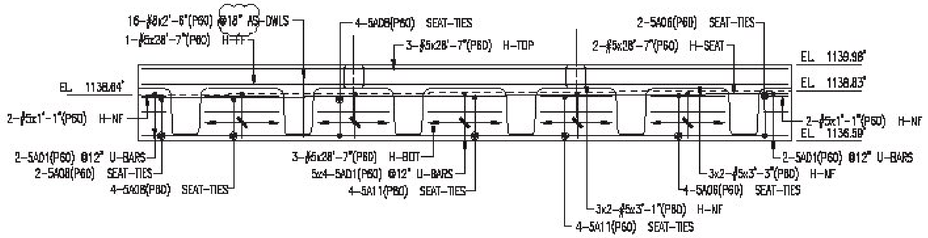
PRECAST ABUTMENT ELEVATIONS & DETAILS

DWG. NO: F2

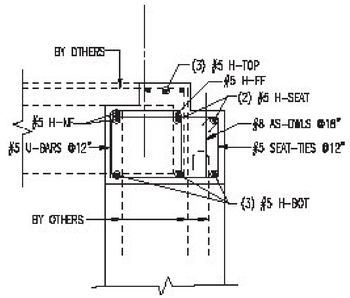
F:\VT-Bridges\23462-14 Barton\23462-F2.dwg, 6/10/2015 9:44:15 AM



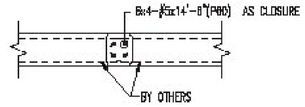
ABUTMENT #1 CLOSURE POUR REINFORCEMENT



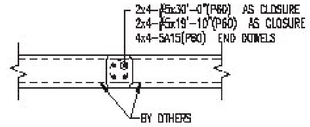
ABUTMENT #2 CLOSURE POUR REINFORCEMENT



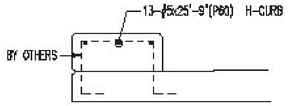
TYPICAL ABUTMENT CLOSURE SECTION



APPROACH SLAB CLOSURES
(8) REQUIRED @ 15'-0"

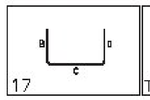


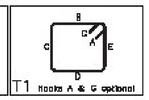
DECK SLAB CLOSURES
(2) REQUIRED @ 47'-8"



DECK CURB REINFORCEMENT
(2) REQUIRED @ 47'-8"

Drawing Sheet : R01					BAR LIST											
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'L'	'M'
5A01	48	#5	8'-2"	17		2'-0"	2'-0"	2'-0"								
5A02	2	#5	8'-2"	T1	5 X?	1'-2"	3'-2"	1'-2"	3'-2"		5 X?					
5A03	4	#5	8'-8"	T1	5 X?	1'-3"	3'-2"	1'-3"	3'-2"		5 X?					
5A04	4	#5	10'-1"	T1	5 X?	1'-5"	3'-2"	1'-5"	3'-2"		5 X?					
5A05	4	#5	10'-5"	T1	5 X?	1'-7"	3'-2"	1'-7"	3'-2"		5 X?					
5A06	10	#5	10'-11"	T1	5 X?	1'-10"	3'-2"	1'-10"	3'-2"		5 X?					
5A07	8	#5	11'-1"	T1	5 X?	1'-11"	3'-2"	1'-11"	3'-2"		5 X?					
5A08	16	#5	10'-7"	T1	5 X?	1'-8"	3'-2"	1'-8"	3'-2"		5 X?					
5A11	8	#5	10'-8"	T1	5 X?	1'-8"	3'-2"	1'-8"	3'-2"		5 X?					
5A15	16	#4	5'-0"	17		2'-0"	3'-0"									





PLACING DRAWING APPROVAL AUTHORITY: VERIFICATION OF DIMENSIONS, DETAILS, ETC ARE REQUESTED WHERE INDICATED. IF EACH VERIFICATION IS NOT NOTED OTHERWISE, IT WILL BE ASSUMED TO BE CORRECT AS SHOWN.

ALL MATERIAL ON THIS DRAWING NOTED AS "P60" SHALL BE ASTM A1055 GRADE 60 DUAL COATED

Vermont Agency of Transportation

RECEIVED

ON: May 13, 2015

and Checked for

CONFORMANCE

BY: Todd A. Sumner DATE: 5/14/2015

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 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
569 Commerce Street
Manchester, NH 03101
603-668-8223

Job Number: 12-0174
Reviewed by: AJES
Date: 05-14-2015

No.	Description	Date	By
2	FINAL APPROVAL PRINT	05/12/15	CPS
0	APPROVAL PRINT	04/08/15	CPS

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-trades.

THIS DRAWING IS NOT TO BE SCALED.

Harris Rebar Barker Steel
National Strength. Local Service.

DETAILED AT:
CANAAN
NEW HAMPSHIRE

Project: BARTON BRO (1449)31
BARTON VT

Drawing: BRIDGE CLOSURE POURS REINFORCEMENT

Customer: SICARD CONSTRUCTION

Engineer: CLD

Refer to Release:

Date	Drawn	Chkd.	JOB No.	Dwg. No.
04/08/15	CPS		33505589	R01

W:\csample\Projects\33505589\Placing Drawings\DWGs\R01.dwg