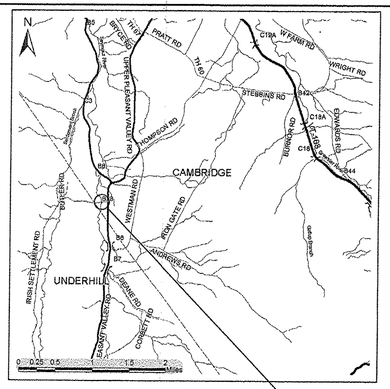
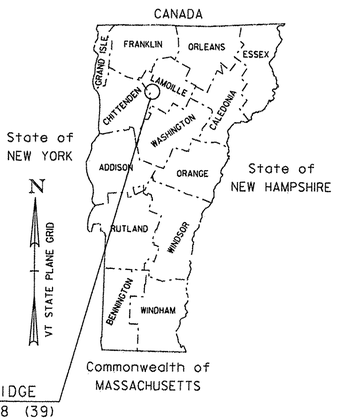
STATE OF VERMONT
AGENCY OF TRANSPORTATION





CAMBRIDGE
BRO 1448 (39)

PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF CAMBRIDGE
COUNTY OF LAMOILLE

ROUTE NO : TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD) , CLASS 3 TOWN HIGHWAY
BRIDGE NO : 28

PROJECT LOCATION: 0.1 MILES WEST OF JUNCTION WITH TOWN HIGHWAY 1 (PLEASANT VALLEY ROAD)

PROJECT DESCRIPTION: REPLACEMENT OF BRIDGE 28 WITH A NEW PRECAST CONCRETE STRUCTURE WITH RELATED APPROACH AND CHANNEL WORK.

LENGTH OF STRUCTURE:	60.66 FEET
LENGTH OF ROADWAY:	89.34 FEET
LENGTH OF PROJECT:	150.00 FEET

RECORD PLANS

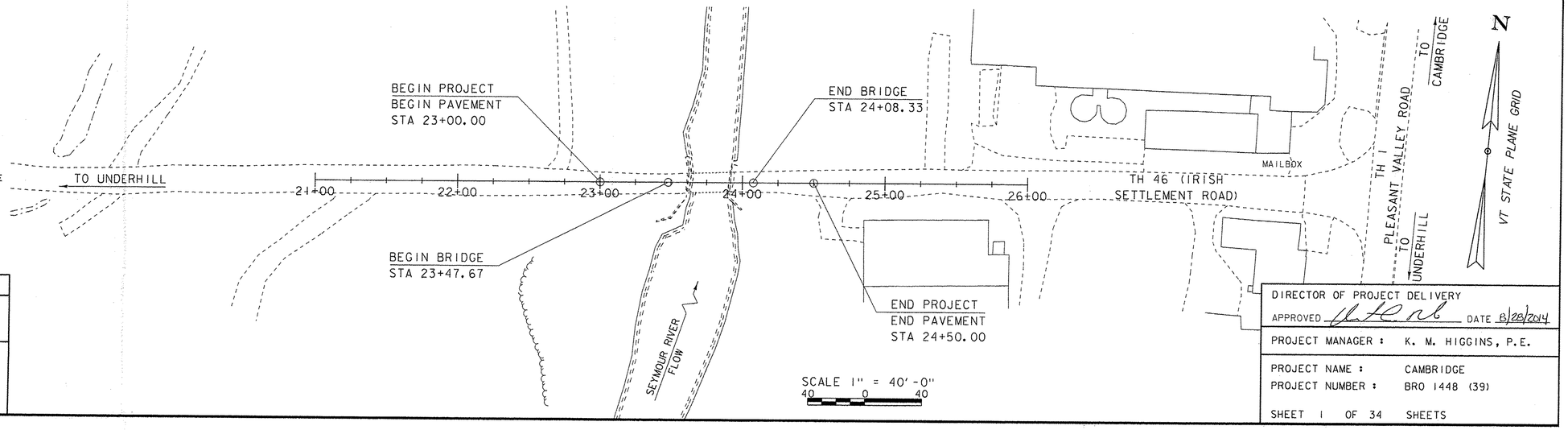
CONTRACTOR:	BLOW & COTE INC. – MORRISVILLE, VT
RESIDENT ENGINEER:	GREG WILCOX
CONSTRUCTION BEGAN:	MAY 18, 2015
CONSTRUCTION COMPLETE:	AUGUST 19, 2015
RECORD PLANS BY:	GREG WILCOX & KEVIN KING

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

BY _____ RESIDENT ENGINEER

DATE 5-17-16

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.



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

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY :	L.ORVIS
SURVEYED DATE :	04-24-2012
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (2007)

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE 8/28/2014

PROJECT MANAGER : K. M. HIGGINS, P.E.

PROJECT NAME : CAMBRIDGE
PROJECT NUMBER : BRO 1448 (39)

SHEET 1 OF 34 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 11.05.15

LRFD

INDEX OF SHEETS

PLAN SHEETS

1	TITLE SHEET
2	PRELIMINARY INFORMATION
3 - 4	TYPICAL SECTIONS 1 - 2
5 - 6	GENERAL NOTES 1-2
7 - 9	QUANTITY 1 - 3
10	BRIDGE QUANTITY
11	TIE SHEET
12	ALIGNMENT
13	LAYOUT
14	MAINLINE PROFILE
15	DRAINAGE LAYOUT
16	DRAINAGE DETAIL
17	EXISTING UTILITY LAYOUT
18	PROPOSED UTILITY LAYOUT
19	BRIDGE STREET GRAVITY SEWER BRIDGE CROSSING PLAN
20	BRIDGE STREET GRAVITY SEWER BRIDGE CROSSING PROFILE
21	BRIDGE STREET GRAVITY SEWER BRIDGE CROSSING SEWER DETAILS
22	SIGN LAYOUT
23	BORING INFORMATION
24 - 28	BORING LOGS 1 - 5
29	PLAN AND ELEVATION
30	BRIDGE RAIL ELEVATIONS
31	BRIDGE RAIL CONCRETE DETAILS
32	METAL HAND RAILING DETAILS
33	BRIDGE RAIL REINFORCING
34	APPROACH RAIL DETAILS
35	DECK PLAN
36	FRAMING & CROSS FRAME DETAILS
37	GIRDER DETAILS
38 - 39	SPLICE DETAIL 1 - 2
40	BRACING DETAILS
41	FIXED BEARING DETAILS
42	EXPANSION BEARING DETAILS
43	APPROACH SLAB DETAILS
44	ABUTMENT 1
45	ABUTMENT 1 REINFORCING PLAN
46	WING WALLS 1 & 2
47	BACKWALL ABUTMENT 1
48	ABUTMENT 2
49	ABUTMENT 2 REINFORCING AND PILE LAYOUT
50	WING WALLS 3 & 4
51	ABUTMENT 2 BACKWALL DETAILS
52	RETAINING WALL
53	REINFORCING STEEL SCHEDULE SHEET #1
54 - 58	MAINLINE CROSS SECTIONS 1 - 5
59	MATERIAL TRANSITION DIAGRAM
60 - 61	CHANNEL CROSS SECTIONS 1 - 2
62	EPSC NARRATIVE
63	EPSC EXISTING CONDITIONS
64	EPSC DURING CONSTRUCTION
65	EPSC FINAL CONDITIONS
66 - 68	EPSC DETAILS 1 - 3
69	RIGHT OF WAY LAYOUT SHEET
70	RIGHT OF WAY DETAIL SHEET

STANDARDS LIST

A-78	SHARED USE PATH TYPICAL	03-31-2004
A-80	SHARED USE PATH / HIGHWAY INTERSECTION DETAILS	03-31-2004
C-3A	SIDEWALK RAMPS	03-10-2008
C-10	CURBING	02-11-2008
D-1	PRECAST REINFORCED CONCRETE DROP INLET DETAILS	06-01-1994
D-11	STEEL OR IRON GRATES& COVERS (TYPE A)	06-01-1994
D-15	PRECAST REINF CONC. MH-GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E	06-01-1994
E-100	CONSTRUCTION APPROACH SIGNS	01-02-2004
E-102	CONSTRUCTION SIGN DETAILS	06-30-2003
E-102A	CONSTRUCTION SIGN DETAILS	05-01-2004
E-107	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	06-30-2003
E-107A	BREAKAWAY BARRICADE DETAILS	06-08-2009
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-134	BRIDGE NUMBER PLAQUE	08-08-1995
E-164	SQUARE STEEL SIGN POST	06-08-2009
E-193	PAVEMENT MARKING DETAILS	08-18-1995
E-195	SHARED USE PATH PAVEMENT MARKINGS AND SIGN DETAILS	06-09-2008
F-2	CHAIN LINK FENCE, TYPE I DETAILS	06-01-1994
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

STRUCTURAL DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES
SD-502.00	CONCRETE DETAILS AND NOTES
SD-516.10	BRDGE JOINT, ASPHALTIC PLUG
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES
SD-602.00	STRUCTURAL STEEL PLATE GIRDER AND NOTES

LRFR LOAD RATING FACTORS

LOADINGLEVELS	TRUCK						
	H-20	HL-93	3S2	6AXLE	3A.STR.	4A.STR.	5A.SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	2.22	1.22					
POSTING							
OPERATING	2.87	1.58	2.69	1.59	2.06	1.87	2.18
COMMENTS:							

NOTE: LOAD RATINGS TABLE
VALUES CHANGED PER
G. LAROCHE (PROJ. ENGINEER)

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2013	3400	380	53	3	180
2033	4100	460	53	3.6	260

20 year ESAL for flexible pavement from 2013 to 2033 : 594000
40 year ESAL for flexible pavement from 2013 to 2053 : 1323000
Design Speed : 25 mph

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: vised October 2010

DRAINAGE AREA : 34.0 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous, mostly rural, mostly forested
STREAM CHARACTERISTICS : Sinuous, incised, gorge at bridge site
NATURE OF STREAMBED : Mixed upstream, ledge at bridge

PEAK FLOW DATA

Q 2.33 =	1600 cfs	Q 50 =	5950 cfs
Q 10 =	3325 cfs	Q 100 =	7225 cfs
Q 25 =	4750 cfs	Q 500 =	10,850 cfs

DATE OF FLOOD OF RECORD : 1927
ESTIMATED DISCHARGE: unknown
WATER SURFACE ELEV.: unknown
NATURAL STREAM VELOCITY : @ Q25 = 25.2 fps
ICE CONDITIONS : moderate
DEBRIS: moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? no
IS ORDINARY RISE RAPID? no
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? no
IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span steel beam bridge
YEAR BUILT: 1949
CLEAR SPAN(NORMAL TO STREAM): 89'
VERTICAL CLEARANCE ABOVE STREAMBED: 36' +/-
WATERWAY OF FULL OPENING: 1965 sq. ft.
DISPOSITION OF STRUCTURE: Replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	707.9'	VELOCITY =	21.2 fps
Q10 =	710.1'	"	24.1 fps
Q25 =	711.5'	"	25.8 fps
Q50 =	712.6'	"	26.8 fps
Q100 =	713.7'	"	27.7 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 732.6'
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: Barre Town — DISTANCE: 2000'
HIGHWAY # : VT 63 — STRUCTURE #: BR 5
CLEAR SPAN: 15' + 15' = 30' — CLEAR HEIGHT: 12'
YEAR BUILT: 1970 — FULL WATERWAY: 360 sf
STRUCTURE TYPE: Twin cell RC Box

DOWNSTREAM STRUCTURE

TOWN: Barre Town — DISTANCE: 3200'
HIGHWAY # : Parkside Terrace — STRUCTURE #: BR 13
CLEAR SPAN: 82' — CLEAR HEIGHT: 26'
YEAR BUILT: 1997 — FULL WATERWAY: 1750 sf
STRUCTURE TYPE: Welded plate girder

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	2.47	1.1					
POSTING							
OPERATING	3.2	1.42	2.11	1.46	2.2	2.11	2.15
COMMENTS:							

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY	Rndr:	627.00 KIP
2. PILE TEST RESISTANCE FACTOR	ϕ:	0.65
3. MAXIMUM PILE TIP ELEVATION		VARIES
4. THREE DYNAMIC PILES TESTS REQUIRED		

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span curved steel girder

CLEAR SPAN(NORMAL TO STREAM): 116'
VERTICAL CLEARANCE ABOVE STREAMBED: 38'
WATERWAY OF FULL OPENING: 2145 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	#REF!	VELOCITY=	21.2 fps
Q10 =	#REF!	"	24.1 fps
Q25 =	#REF!	"	25.8 fps
Q50 =	#REF!	"	26.8 fps
Q100 =	#REF!	"	27.7 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 734.3'
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 732.3'
VERTICAL CLEARANCE: @ Q25 = 20.8'

SCOUR: Abutments to be founded on ledge

REQUIRED CHANNEL PROTECTION: Stone Fill, Type II

PERMIT INFORMATION

AVERAGE DAILY FLOW:	70 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	30 cfs	1.5'
ORDINARY HIGH WATER:	700 cfs	4.0'

TEMPORARY BRIDGE REQUIREMENTS

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

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:	3.0 INCH
3. DESIGN SPAN	L:	120.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	--- 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}:	5.0 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:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	3.0 KSI
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y:	50 KSI
14. SOIL UNIT WEIGHT	γ:	0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	22.2 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	
20. PILE YIELD STRENGTH ASTM A572	f_y:	50 KSI
21. PILE SIZE		HP 14X117
22. EST. AVG. PILE LENGTH	L_p:	25 FT
23. PILE RESISTANCE FACTOR	ϕ:	0.65
24. LATERAL PILE DEFLECTION	Δ:	---
25. BASIC WIND SPEED	V_{3s}:	---
26. MINIMUM GROUND SNOW LOAD	p_g:	---
27. SEISMIC DATA PGA: ---	S_s:	---
	S_1:	---

PROJECT NAME: **BARRE TOWN**
PROJECT NUMBER: **BRF 6100(7)**

FILE NAME: **s06j002pi.xls**
PROJECT LEADER: **J. LACROIX**
DESIGNED BY: **T. FILLBACH**
PRELIMINARY INFORMATION SHEET 1

PLOT DATE: 9/19/2012
DRAWN BY: **R. PELLETT**
CHECKED BY: **T. FILLBACH**
SHEET 2 OF 70

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

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

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

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

COMMON TOPOGRAPHIC POINT SYMBOLS

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

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

PROPOSED GEOMETRY CODES

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

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

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

ABOVE GROUND UTILITIES (AERIAL)

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

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- CZ — CLEAR ZONE
- PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

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

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

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

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

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

ENVIRONMENTAL RESOURCES

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

ARCHEOLOGICAL & HISTORIC

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

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

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

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448 (39)
FILE NAME: 12J166Legend.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: K. FRIEDLAND
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
LEGEND SHEET	SHEET 3 OF 34

GENERAL

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

2. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.

3. THERE IS A WATER AND ELECTRIC LINE ON THE EXISTING BRIDGE THAT WILL BE REMOVED PRIOR TO CONSTRUCTION. WORK TO BE PERFORMED BY OTHERS.

TRAFFIC CONTROL

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR ALL STAGES OF CONSTRUCTION. THE PLAN SHALL CLEARLY DETAIL HOW TRAFFIC WILL BE MAINTAINED. THE PLAN SHALL SPECIFY ALL CONSTRUCTION ACTIVITES REQUIRING ALTERNATING ONE WAY TRAFFIC, RELATE THOSE ACTIVITIES TO THE CONSTRUCTION SCHEDULE AND SHOW APPROPRIATE TEMPORARY TRAFFIC CONTROL. THE CONTRACTOR SHALL SUBMIT DETAILED TRAFFIC CONTROL PLANS TO THE ENGINEER FOR APPROVAL PER SUBSECTION 105.03. ALL COSTS SHALL BE INCLUDED IN ITEM 900.645 “SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)”.

5. ALL ITEMS REQUIRED TO IMPLEMENT THE CONTRACTOR’S TRAFFIC CONTROL PLAN WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED INCLUDED IN THE BID PRICE FOR ITEM 900.645, “SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

6. INSTALLATION OF TEMPRORARY TRAFFIC CONTROL SIGNS SHALL NOT BLOCK ANY EXISTING TRAFFIC CONTROL SIGN ASSEMBLIES. THE CONTRATOR SHALL TRY TO MAINTAIN AT LEAST 200 FEET BETWEEN SIGN ASSEMBLIES.

7. THE TOWN OF CAMBRIDGE SHALL BE RESPONSIBLE FOR CHOOSING AND SIGNING THE DETOUR ROUTE. THE CONTRACTOR SHALL NOTIFY THE TOWN A MINIMUM OF TWO WEEKS IN ADVANCE OF THE BRIDGE CLOSURE PERIOD.

EARTHWORK

8. THE “STONE FILL, TYPE III” UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW BEAMS ARE SET.

9. REMOVAL OF THE EXISTING STRUCTURE SHALL BE PAID FOR UNDER ITEM 529.15, "REMOVAL OF STRUCTURE". THIS WORK SHALL INCLUDE REMOVAL OF ANY PORTIONS OF THE EXISTING ABUTMENTS THAT FALL OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION.

CONCRETE

10. WATER REPELLENT, SILANE SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 514. SILANE SHALL BE SHOP APPLIED TO ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE, WITH THE EXCEPTION OF THE BOTTOM OF THE PRECAST NEXT BEAMS BETWEEN THE DRIP NOTCHES. PAYMENT FOR SILANE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

11. 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.

REINFORCING STEEL

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

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

14. ALL REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR “REINFORCING STEEL, LEVEL II”.

15. ALL REINFORCING STEEL INSIDE THE CLOSURE POURS SHALL BE PAID FOR UNDER ITEM 507.12 REINFORCING STEEL, LEVEL II (FPQ).

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

ALONG TOP SURFACE OF DECK SLAB:	2.5 INCH
ALONG BOTTOM SURFACE OF DECK SLAB:	1¾ INCH
ELSEWHERE UNLESS OTHERWISE INDICATED:	3 INCH

PRECAST ABUTMENTS AND POST-TENSIONING

17. IF A VERTICAL CONSTRUCTION JOINT IS REQUIRED BY THE CONTRACTOR FOR SHIPMENT OF THE ABUTMENTS, THE SECTIONS SHALL BE KEYED AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS. NO LESS THAN TWO PILES SHALL SUPPORT EACH PRECAST ABUTMENT SECTION.

18. EPOXY BOUNDING COMPOUND SHALL BE APPLIED TO ALL VERTICAL MATCH CAST CONSTRUCTION JOINTS. SEE AGENCY WEBSITE FOR LIST OF APPROVED EPOXY BOUNDING COMPOUNDS. PAYMENT FOR EPOXY WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

19. POST-TENSIONING AND ASSOCIATED ITEMS ARE ONLY REQUIRED IF THE PILE CAP 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 IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST 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.

20. GALVANIZE ANCHOR ASSEMBLIES AFTER FABRICATION ACCORDING TO AASHTO M232M/M 232.

21. 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 2 STRANDS PER CONDUIT.
    e. THE JACKING FORCE PER STRAND = 32 KIPS

22. THE CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01. ALL COSTS ASSOCIATED WITH PLACING THE CORRUGATED STEEL PIPE, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM..

23. THE CONCRETE FOR THE ABUTMENT PILE CAVITIES SHALL BE PAID FOR UNDER ITEM 900.608 SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ). SEE SPECIAL PROVISIONS FOR REQUIREMENTS.

NEXT D BEAMS

24. 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.

25. DESIGN VALUES
    a. CONCRETE COMPRESSIVE STRENGTH: f'c = 8,000 PSI.
    b. CONCRETE COMPRESSIVE STRENGTH AT RELEASE: f'ci = 6,000 PSI
    c. PRESTRESSING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7-WIRE STRANDS
    d. ASSUMED MODULUS OF ELASTICITY = 28,500 KSI.
    e. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 44.0 KIPS AFTER ACCOUNTING FOR CHUCK SLIPPAGE.
    f. SERVICE LOADS

MEMBER MOMENT	549 K-FT
SUPERIMPOSED DEAD LOAD MOMENT	108 K-FT
LIVE LOAD AND IMPACT MOMENT	938 K-FT
DEAD LOAD REACTION	54 KIPS
LIVE LOAD AND IMPACT REACTION	82 KIPS
TOTAL REACTION	136 KIPS
CAMBER AT RELEASE	1 1/8 INCHES
FINAL CAMBER	1 13/16 INCHES

26. FORMING FOR ENDS OF FLANGES ALONG LONGITUDINAL CLOSURE POURS SHALL BE TREATED WITH CONCRETE SURFACE RETARDER, OR SIMILAR, TO PROVIDE A ROUGHENED / EXPOSED AGGREGATE SURFACE; AND SHALL BE POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.

27. THE CONCRETE FOR FLANGE CLOSURE POURS SHALL BE PAID FOR UNDER ITEM 900.608 SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ). SEE SPECIAL PROVISIONS FOR REQUIREMENTS.

28. 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 BE ATTACHED TO ANY PREFABRICATED SUPERSTRUCTURE ELEMENT BY DRILLING OR SIMILAR MEANS.

29. THE FABRICATOR MAY ALTER THE DESIGN AS DETAILED IN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. THIS ALTERATION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN STATE OF VERMONT TO MEET SPECIFIED CRITERIA AND SHALL BE APPROVED BY THE PROJECT MANAGER.

H-PILES

30. THE PILES SHALL BE HP 12X63

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

32. THE PILES SHALL BE DRIVEN TO A NOMINAL PILE DRIVING RESISTANCE (R_{NDR}) OF 280 KIPS, PROVIDED A MINIMUM PENETRATION OF 25 FEET BELOW THE BOTTOM OF PILE CAP HAS BEEN ACHIEVED.

33. A MINIMUM OF ONE DYNAMIC PILE TESTS SHALL BE CONDUCTED AT EACH ABUTMENT. PAYMENT WILL BE MADE UNDER ITEM 505.45, "DYNAMIC PILE LOADING TEST".

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

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

ABUTMENT CLOSURE/END DIAPHRAGM

36. THE CONCRETE FOR THE ABUTMENT CLOSURE POUR SHALL BE MADE WITH HPC RAPID SET CONCRETE IN ACCORDANCE WITH ITEM 900.608, “SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)”. SEE SPECIAL PROVISIONS FOR REQUIREMENTS.

37. AFTER THE CONCRETE HAS BEEN PLACED AND THE FINISHING OPERATIONS CONCLUDED, IT SHALL NOT BE WALKED ON OR DISTURBED IN ANY MANNER, INCLUDING THE REMOVAL OF FORMS FOR 12 HOURS.

38. THE CONCRETE SHALL OBTAIN A STRENGTH OF 4000 PSI PRIOR TO ANY VEHICULAR LOADING.

MISCELLANEOUS

39. SHEET MEMBRANE WATERPROOFING, PREFORMED SHEET SHALL MEET THE REQUIREMENTS OF SUBSECTION 540.02 OF THE GENERAL SPECIAL PROVISIONS, DATED MAY 6, 2014; AND SHALL BE APPLIED TO THE ENTIRE FAR FACE OF THE ABUTMENT ABOVE THE BRIDGE SEAT AND EXTENDING A MINIMUM OF ONE (1) FOOT BELOW THE BRIDGE SEAT. PAYMENT FOR MEMBRANE WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 540.10.

40. EXISTING CONDITIONS SHEET HAS BEEN INCLUDED FOR THE CONTRACTOR TO USE FOR SUBMITTALS.

41. ITEM 404.65 “EMULSIFIED ASPHALT” IS TO BE APPLIED AT A RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT OR AS DIRECTED BY THE ENGINEER.

PROJECT NAME:	CAMBRIDGE		
PROJECT NUMBER:	BRO 1448(39)		
FILE NAME: ...Structures\sl2]166gen2.dgn		PLOT DATE:	16-SEP-2014
PROJECT LEADER:	K. HIGGINS	DRAWN BY:	G. LAROCHE
DESIGNED BY:	G. LAROCHE	CHECKED BY:	J. SALVATORI
GENERAL NOTES		SHEET	4 OF 34

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	EROSION CONTROL	BRIDGE	FULL CE ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	
340				340		CY	COMMON EXCAVATION	203.15	
		540		540		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	
		90		90		CY	STRUCTURE EXCAVATION	204.25	
		20		20		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
360				360		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
90				90		CY	AGGREGATE SURFACE COURSE	401.10	
15				15		CY	AGGREGATE SHOULDERS, IN PLACE	402.10	
4				4		CWT	EMULSIFIED ASPHALT	404.65	
1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	
		1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10	
		800		800		LF	STEEL PILING, HP 12 X 63	505.155	
		2		2		EACH	DYNAMIC PILE LOADING TEST	505.45	
		1900		1900		LB	REINFORCING STEEL, LEVEL II (FPQ)	507.12	
		44		44		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	
		150		150		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20	
		124		124		LF	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	525.335	
		1		1		EACH	REMOVAL OF STRUCTURE (450 SF - EST.)	529.15	
		12		12		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17	
							BEGIN OPTION AA		
		~~1~~		~~1~~		~~LS~~	~~PRECAST CONCRETE STRUCTURE (ABUTMENT #1)~~	~~540.10~~	
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)(ABUTMENT #1)	900.645	
							END OPTION AA		
							BEGIN OPTION BB		
		~~1~~		~~1~~		~~LS~~	~~PRECAST CONCRETE STRUCTURE (ABUTMENT #2)~~	~~540.10~~	
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)(ABUTMENT #2)	900.645	
							END OPTION BB		
		20		20		LF	CLEANING CULV. PIPE, IN-PLACE [0 TO 24 IN., INCL.]	601.995	
	1			1		MGAL	DUST CONTROL WITH WATER	609.10	
		320		320		CY	STONE FILL, TYPE III	613.12	
~~190~~				~~190~~		~~LF~~	~~REMOVING AND RESETTING FENCE~~	~~620.50~~	
39				39		LF	BOX BEAM GUARDRAIL	621.30	
2				2		EACH	MANUFACTURED TERMINAL SECTION, TANGENT	621.51	
4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	621.725	
112.5				112.5		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	
200				200		HR	FLAGGERS	630.15	
			1	1		LS	FIELD OFFICE, ENGINEERS	631.10	
			1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORK SUMMARY
340	CY	COMMON EXCAVATION (340*1.0)
405	CY	UNCLASSIFIED CHANNEL EXCAVATION (540*0.75)
67.5	CY	STRUCTURE EXCAVATION (90*0.75)
812.5	CY	SUB TOTAL
2.5	CY	ROUNDING
815	CY	TOTAL FILL AVAILIBLE
50	CY	TOTAL FILL REQUIRED
765	CY	TOTAL WASTE
		SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)
37	TON	TYPE IIIS
63	TON	TYPE IVS
100	TON	TOTAL

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: sl2j166qs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
QUANTITY SHEET 1

PLOT DATE: 16-SEP-2014
DRAWN BY: J. SALVATORI
CHECKED BY: G. LAROCHE
SHEET 5 OF 34

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

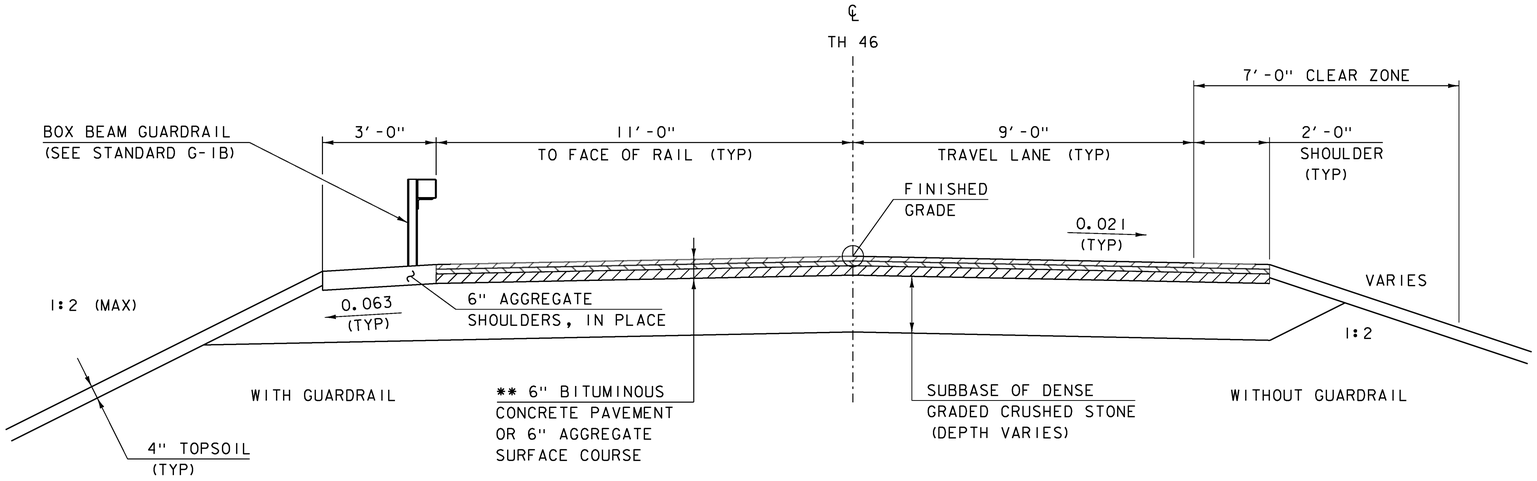
SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS			
ROADWAY	EROSION CONTROL	BRIDGE	FULL CE ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
			1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17	
			3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	
1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11	
		400		400		SY	GEOTEXTILE UNDER STONE FILL	649.31	
	250			250		SY	GEOTEXTILE FOR SILT FENCE	649.51	
	100			100		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61	
	5			5		LB	SEED	651.15	
	5			5		LB	SEED, WINTER RYE	651.17	
	40			40		LB	FERTILIZER	651.18	
	1			1		TON	AGRICULTURAL LIMESTONE	651.20	
	1			1		TON	HAY MULCH	651.25	
	40			40		CY	TOPSOIL	651.35	
		240		240		SY	GRUBBING MATERIAL	651.40	
	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	
	300			300		SY	TEMPORARY EROSION MATTING	653.20	
	60			60		CY	VEHICLE TRACKING PAD	653.35	
	180			180		LF	BARRIER FENCE	653.50	
	510			510		LF	PROJECT DEMARCATION FENCE	653.55	
0.66				0.66		SF	TRAFFIC SIGNS, TYPE A	675.20	
16				16		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	
4				4		EACH	DELINEATOR WITH STEEL POST	676.10	
		16		16		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)	900.608	
		171		171		LF	SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAM)(NEXT 28D)	900.640	
1				1		LS	SPECIAL PROVISION (CPM SCHEDULE)	900.645	
1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)	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)(NA.B.I.)	900.650	
100				100		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

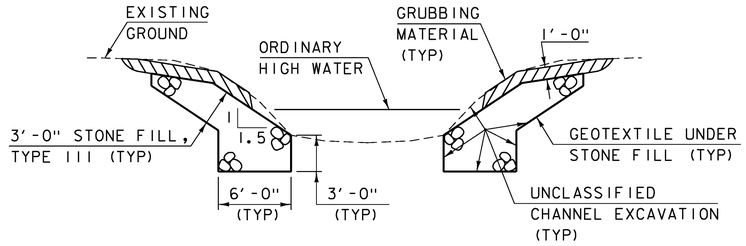
FILE NAME: s12j166qs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
QUANTITY SHEET 2

PLOT DATE: 29-AUG-2014
DRAWN BY: J. SALVATORI
CHECKED BY: G. LAROCHE
SHEET 6 OF 34



ROADWAY TYPICAL SECTION

SCALE ½" = 1'-0"



TYPICAL CHANNEL SECTION

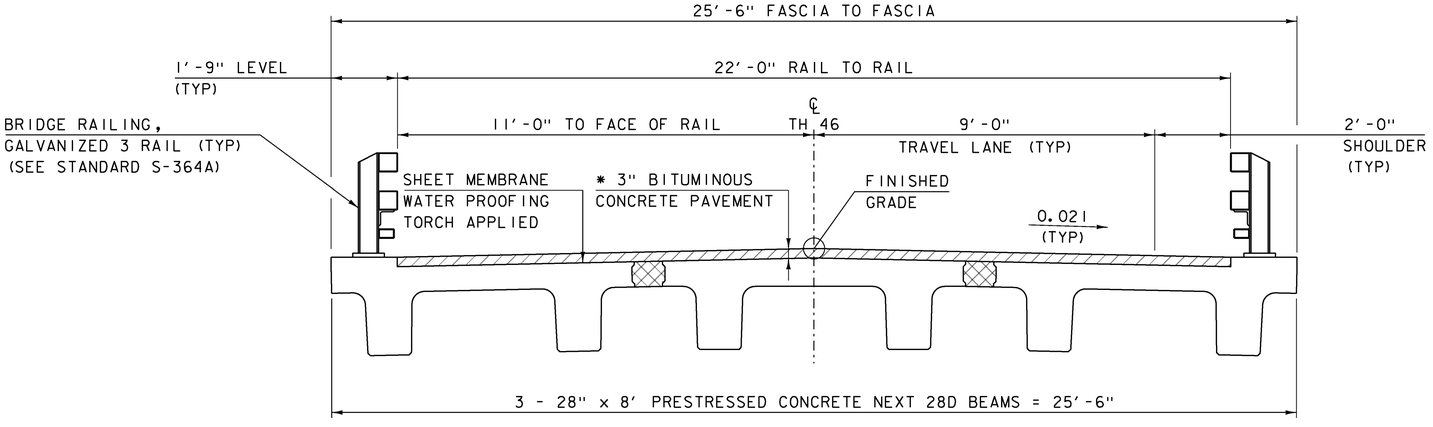
(NOT TO SCALE)

NOTES:

1. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT BOTTOM OF SUBBASE.
2. NO GRUBBING MATERIAL SHALL BE PLACED UNDER DOWNSPOUTS.

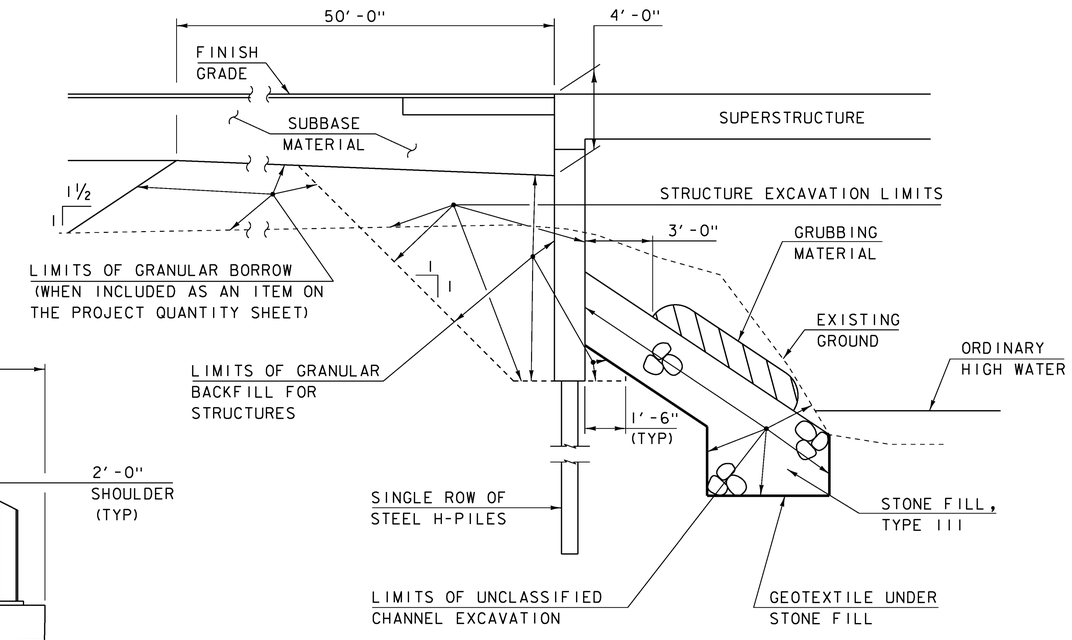
MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

** 1½"	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
1½"	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
3"	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IIIS
* 1½"	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
1½"	SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS



BRIDGE TYPICAL SECTION

SCALE ½" = 1'-0"



TYPICAL INTEGRAL ABUTMENT SECTION

NOT TO SCALE

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448(39)
FILE NAME: s12j166typ.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K.HIGGINS	DRAWN BY: G.LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
TYPICAL SECTIONS	SHEET 7 OF 34

GPS CONTROL POINTS

12J166 AZ MK

GENERAL LOCATION CAMBRIDGE VT
TO REACH FROM THE INTERSECTION OF VT ROUTE 15 WEST AND VT ROUTE 108 SOUTH IN CAMBRIDGE GO WEST ON VT ROUTE 15 FOR 2.3 MILES TO THE INTERSECTION OF LOWER PLEASANT VALLEY ROAD LEFT TURN LEFT ON LOWER PLEASANT VALLEY ROAD CONTINUE ON LOWER PLEASANT VALLEY ROAD FOR 4.0 MILE TO THE INTERSECTION OF PLEASANT VALLEY ROAD TURN RIGHT ON PLEASANT VALLEY ROAD GO 0.7 MILES TO THE SIGHT OF THE MARK ON THE RIGHT. ON THE EDGE OF A FIELD. ABOUT 0.1 MILES SOUTH OF THE CAMBRIDGE UNDERHILL TOWN LINE.
THE MARK IS A REBAR DRIVEN FLUSH INTO THE GROUND W/ A RED PLASTIC CAP (VT AOT TRAV PT)

THE MARK IS 5.5 METER EAST OF CENTERLINE OF THE ROAD AND ABOUT 1.0METER LOWER THEN THE ROAD 20.0 METERS NORTH WEST AND ACROSS THE ROAD FROM OF POLE # 11B/120A/6/150 20.10 SOUTH WEST OF A GRAVEL DRIVE 72.80 METER NORTH EAST OF POLE # 1/B/120/A1 0.6 METERS EAST OF MILE MARKER 0233/0415/0820. SEE HVCTRL #1 BELOW FOR COORDINATES

12J166

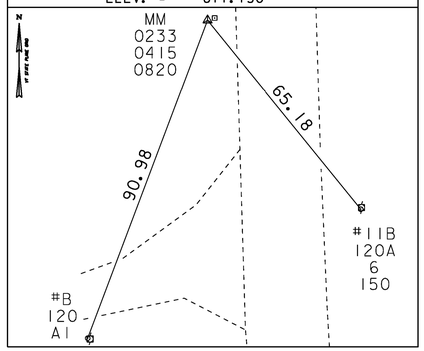
GENERAL LOCATION CAMBRIDGE VT
TO REACH FROM THE INTERSECTION OF VT ROUTE 15 WEST AND VT ROUTE 108 SOUTH IN CAMBRIDGE GO WEST ON VT ROUTE 15 FOR 2.3 MILES TO THE INTERSECTION OF LOWER PLEASANT VALLEY ROAD LEFT TURN LEFT ON LOWER PLEASANT VALLEY ROAD CONTINUE ON LOWER PLEASANT VALLEY ROAD FOR 4.0 MILE TO THE INTERSECTION OF PLEASANT VALLEY ROAD TURN RIGHT ON PLEASANT VALLEY ROAD GO 0.2 MILES TO THE SIGHT OF THE MARK ON THE LEFT ON THE EDGE OF A FIELD ACROSS FROM IRISH SETTLEMENT ROAD AND THE VALLEY DREAM FARM AND APPROXIMATELY 0.2 MILE NORTH OF THE UNDERHILL CAMBRIDGE TOWN LINE
THE MARK IS A REBAR DRIVEN FLUSH INTO THE GROUND W/ A RED PLASTIC CAP (VT AOT TRAV PT)
THE MARK IS 5.4 METERS EAST OF THE CENTERLINE OF THE ROAD AND 0.3 METER LOWER THEN CENTERLINE 3.1 METER SOUTH SOUTHEAST OF POLE # 67/6/139 13.8 METER NORTH OF FIRE HYDRANT 25.0 METER EAST AND ACROSS THE ROAD FROM THE NORTH EAST CORNER OF A BARN/GARAGE ATTACHED TO A HOUSE 16.0 METER SOUTHEAST AND ACROSS THE ROAD OF THE EAST SIDE OF A SIGN FOR VALLEY DREAM FARM AND ABOUT 20 METER NORTH OF A FIELD DRIVE. SEE HVCTRL #2 BELOW FOR COORDINATES.

LOST IN CONSTRUCTION

TRAVERSE TIES

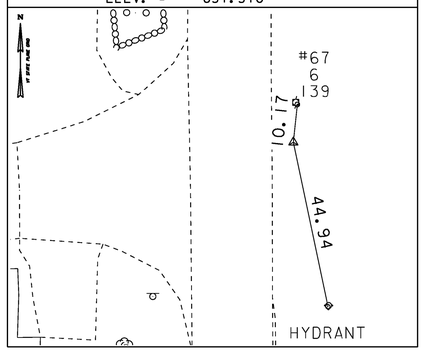
HVCTRL #1

NORTH =	759389.443
EAST =	1545719.097
ELEV. =	677.730



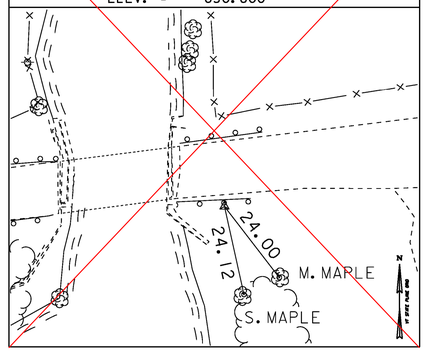
HVCTRL #2

NORTH =	761553.707
EAST =	1545741.991
ELEV. =	651.310



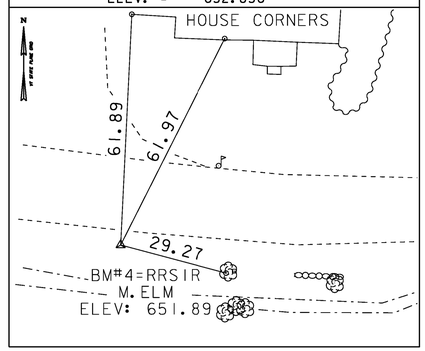
HVCTRL #3

NORTH =	761500.372
EAST =	1545280.697
ELEV. =	650.600



HVCTRL #4

NORTH =	761454.236
EAST =	1544694.694
ELEV. =	652.836



NORTH =	
EAST =	
ELEV. =	

ALIGNMENT TIES

NORTH =	
EAST =	
ELEV. =	

NORTH =	
EAST =	
ELEV. =	

NORTH =	
EAST =	
ELEV. =	

NORTH =	
EAST =	
ELEV. =	

NORTH =	
EAST =	
ELEV. =	

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD 83 (07)

ADJUSTMENT COMPASS

PROJECT NAME: CAMBRIDGE

PROJECT NUMBER: BRO 1448 (39)

FILE NAME: x12J166ti.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
TIE SHEET

PLOT DATE: 29-AUG-2014
DRAWN BY: R. BULLOCK
CHECKED BY: P.BEYOR
SHEET 8 OF 34

BUTLER, JOHN A. &
CAROL L. PENBERTHY

TISBERT, JOSEPH M. &
ANNE MARIE
joined by VERMONT LAND TRUST, INC.

TISBERT, JOSEPH M. &
ANNE MARIE
joined by VERMONT LAND TRUST, INC.

LyD LYMAN-TUNBRIDGE
FINE SANDY LOAMS
WITH 15%-25% SLOPES
"K" FACTOR = .24 -.28
VERY STONY

LyC LYMAN-TUNBRIDGE
FINE SANDY LOAMS
WITH 8%-15% SLOPES
"K" FACTOR = .24 -.28
VERY ROCKY

N

VT STATE PLANE GRID

RIPARIAN BUFFER

EXISTING ROW

TH 46
TO UNDERHILL

TH 46
TO CAMBRIDGE

21+00 22+00 23+00 24+00 25+00 26+00

24.75'

FIELD DRIVE

GRAVEL DRIVE

PAVED DRIVE

HISTORIC

FENCE

WATER VALVE

SEYMOUR RIVER FLOW

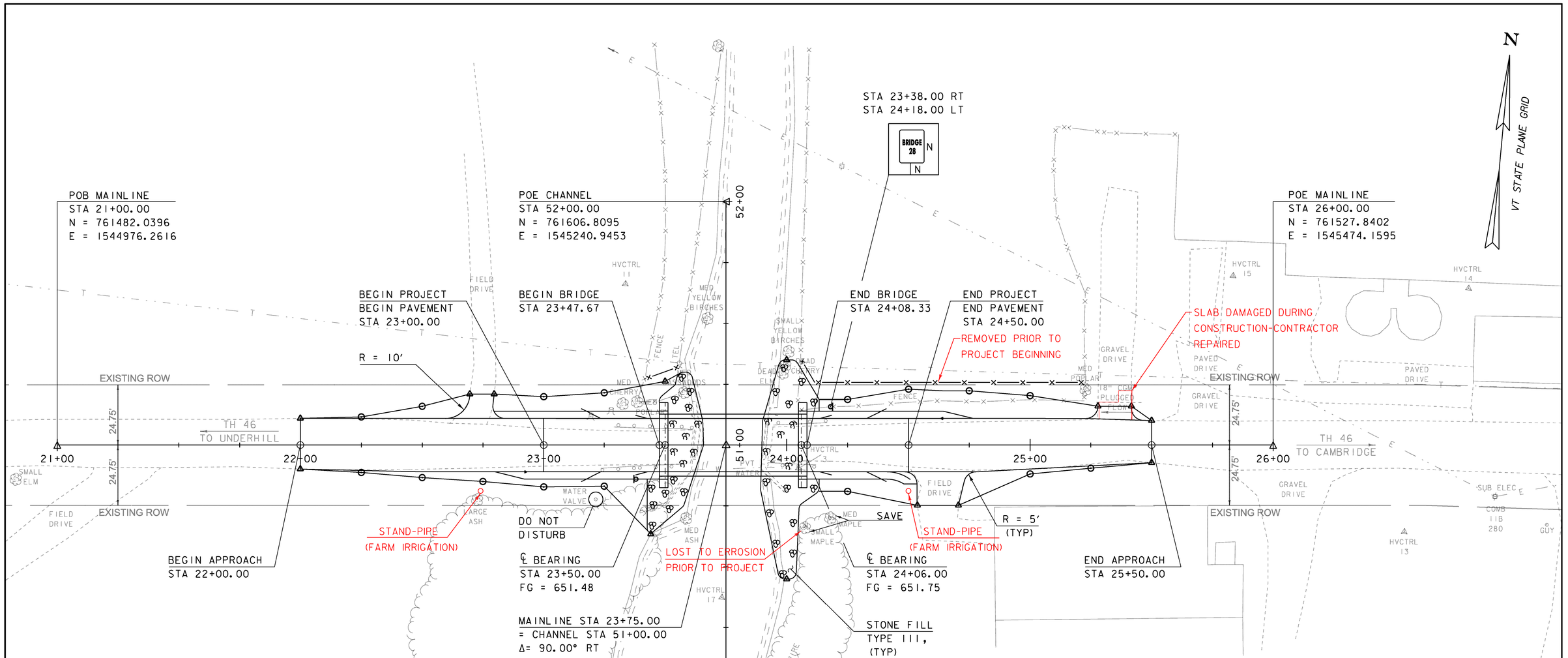
7' x7' WELL CONCRETE

EXISTING BRIDGE DATA
38' STEEL BEAM, W/ CONCRETE DECK.
DECK WIDTH OF 14.3 FEET. BUILT
IN 1919, RECONSTRUCTED IN 1975.

EXISTING CONDITIONS

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

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448(39)
FILE NAME: s12j166existing_conditions.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: K. FRIEDLAND
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
EXISITING CONDITIONS	SHEET 9 OF 34



SIGN LEGEND

N = NEW

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS WIDTH (In)	SIGN DIMENSIONS HEIGHT (In)	NEW SIGN "A"	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	SQUARE STEEL (In) 1.75 lb/ft 1.88	SQUARE STEEL (In) 2.0 2.42	SQUARE STEEL (In) 2.5 3.35	ANCHOR	SLEEVE	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	SIGN DETAIL STD. SHEET NUMBER
23+38 RT	BRIDGE 28	6	8	0.33			1	8			X		VD-701		T-42
24+18 LT	BRIDGE 28	6	8	0.33			1	8			X		VD-701		T-42
								FT 16	FT	FT		EA			
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."	TOTALS			SF 0.66					FT 16				SHS = STANDARD HIGHWAY SIGNS (MUTCD)		

LAYOUT SHEET

SCALE 1" = 20'-0"

20 0 20

CLEANING CULV. PIPE, IN-PLACE
STA 25+26+.10 - 25+45.83 LT

CONSTRUCT FIELD DRIVE
STA 22+75.00 LT
STA 24+62.00 RT

CONSTRUCT DRIVE
STA 25+35.00 LT

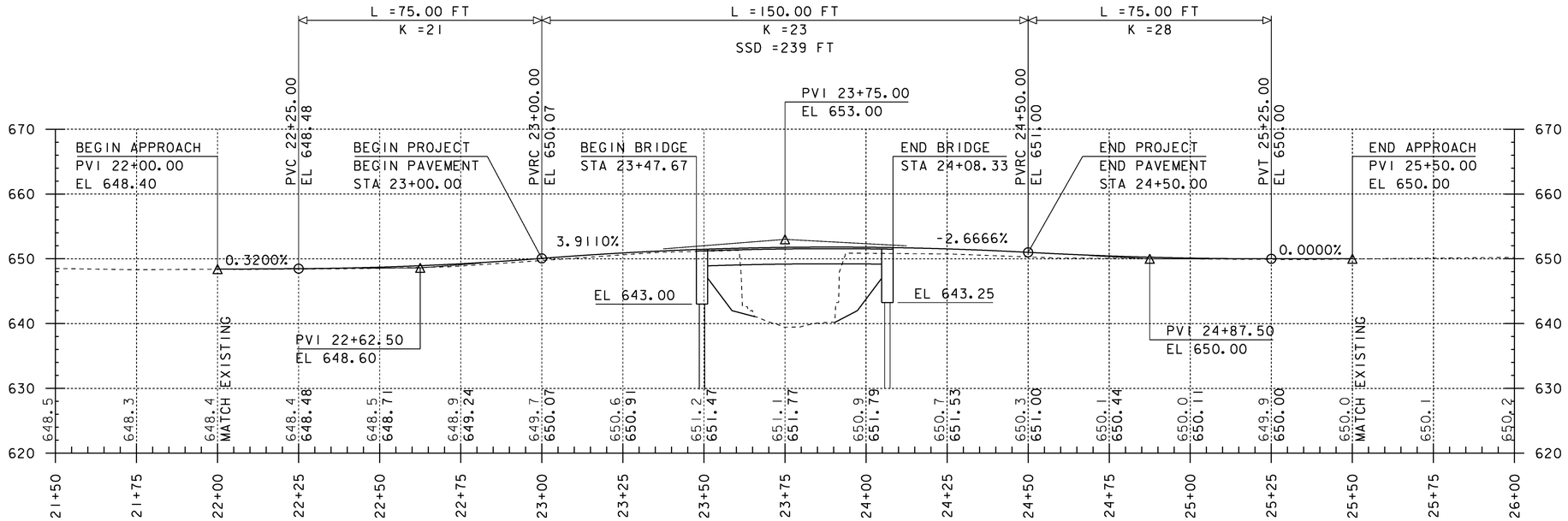
REMOVING AND RESETTING FENCE
STA 23+41.50 - 23+56.07 LT
STA 24+06.00 - 25+23.00 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 23+23.60 - 23+57.73 RT
STA 23+29.00 - 23+61.51 LT
STA 23+92.00 - 24+12.00 RT
STA 23+94.50 - 24+16.70 LT

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

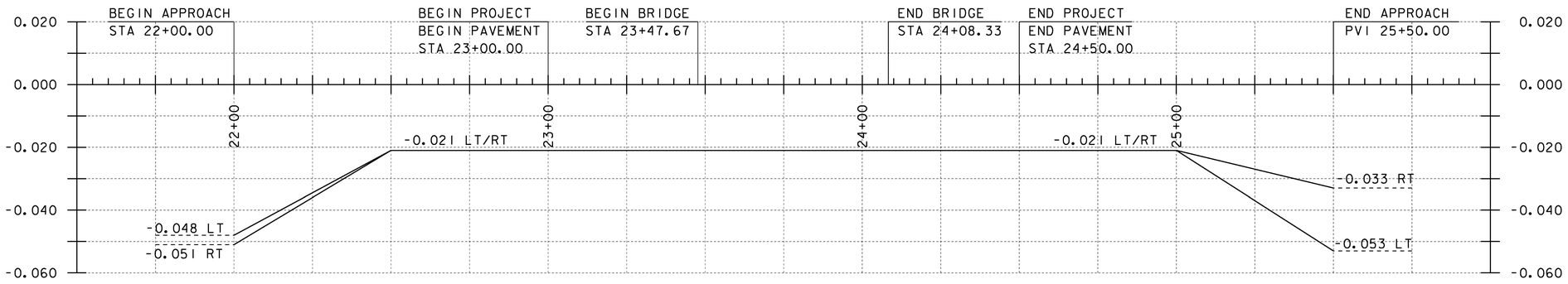
FILE NAME: s12j166bdr.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
LAYOUT SHEET

PLOT DATE: 29-AUG-2014
DRAWN BY: K. FRIEDLAND
CHECKED BY: J. SALVATORI
SHEET 10 OF 34



MAINLINE PROFILE

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



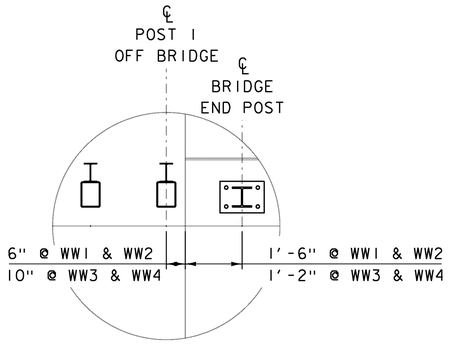
BANKING DIAGRAM

SCALE: HORIZONTAL 1"=20'-0"
NO VERTICAL SCALE

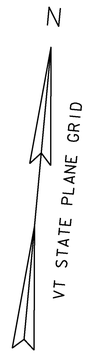
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

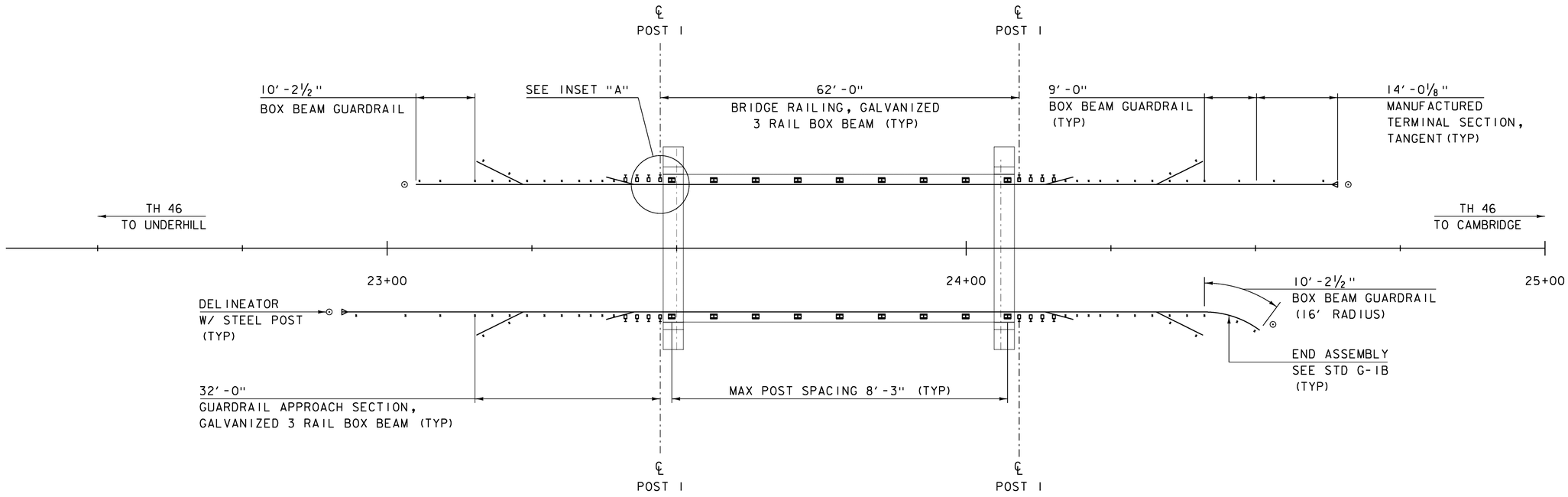
THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448 (39)
FILE NAME: s12j166profile.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
MAINLINE PROFILE AND BANKING DIAGRAM	SHEET 11 OF 34



INSET "A"
NOT TO SCALE





RAIL LAYOUT SHEET

SCALE 1" = 10'-0"

DELINEATOR W/ STEEL POST
STA 23+03.00 LT (GREEN)
STA 22+90.00 RT (BLUE)
STA 24+53.00 RT (GREEN)
STA 24+66.00 LT (BLUE)

NOTES:

1. SEE STANDARDS G-1b, S-364A, S-364B, S-364C AND T-40 FOR FURTHER DETAILS.

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448(39)
FILE NAME: sl2jl66rail.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: J. SALVATORI
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
RAIL LAYOUT SHEET	SHEET 12 OF 34

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

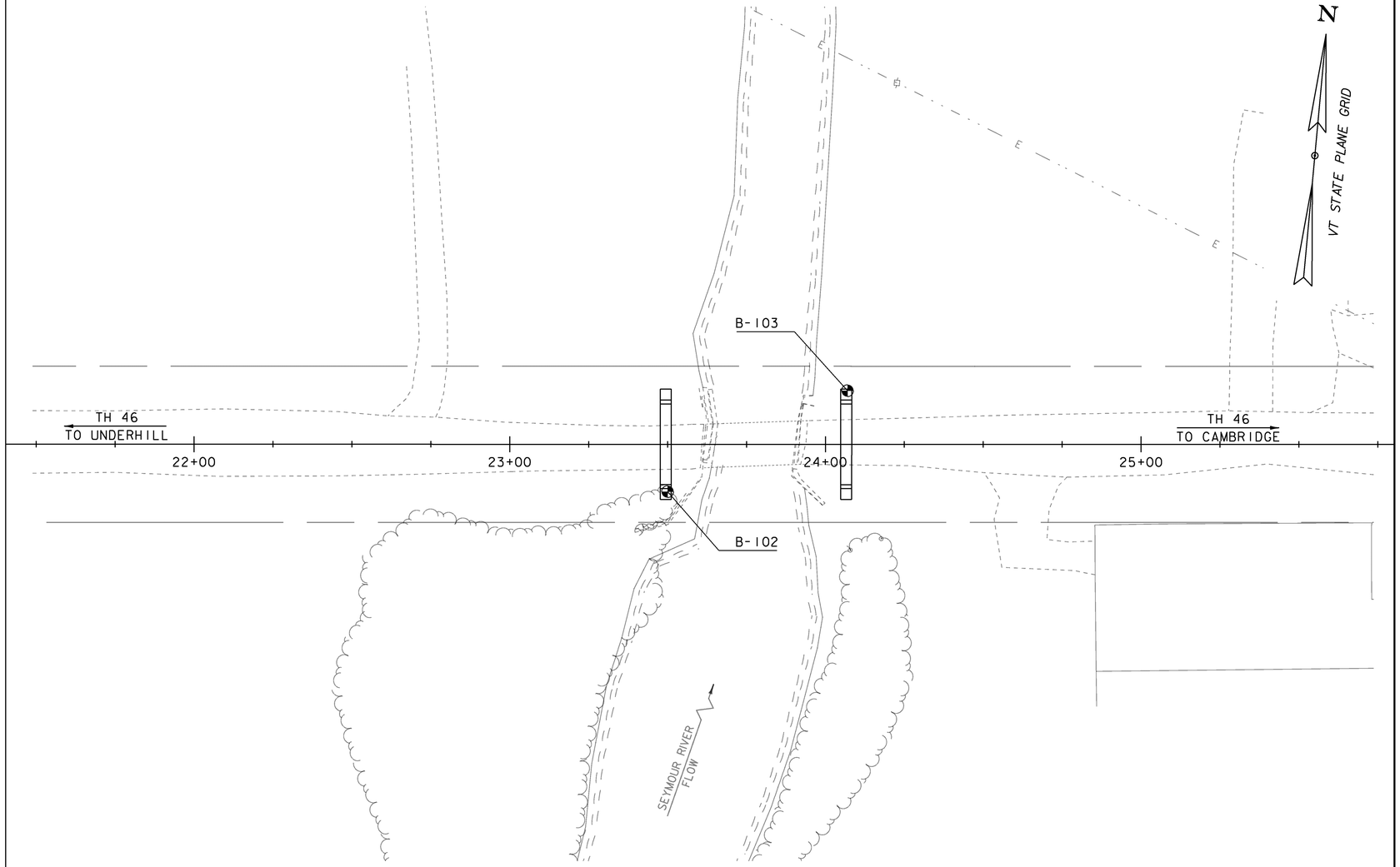
CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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 LAYOUT

SCALE 1" = 20'-0"

20 0 20

DEFINITIONS (AASHTO)

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

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

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

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

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

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

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

VARVED - Alternate layers of silt and clay.

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

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

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

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

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

DIP - Inclination of bed with a horizontal plane.

GENERAL NOTES

1. The subsurface explorations shown herein were made between 2-4-2013 and 2-21-2013 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)

FILE NAME: s12j166boring.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
BORING LAYOUT

PLOT DATE: 29-AUG-2014
DRAWN BY: K. FRIEDLAND
CHECKED BY: J. SALVATORI
SHEET 13 OF 34

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

BORING LOG

CAMBRIDGE
BRO 1448(39)
TH-46 BR-28

Boring No.: B-102
Page No.: 1 of 2
Pin No.: 12J166
Checked By:

Boring Crew: GARROW, DAIGNEAULT, WHITLOCK
Date Started: 2/04/13 Date Finished: 2/21/13
VTSPG NAD83: N 761519.87 ft E 1545223.83 ft
Station: 23+50 Offset: 15.00
Ground Elevation: 649.19 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
02/06/13	7.9	AM
02/14/13	6.3	AM
02/21/13	4.3	AM

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		A-1-b, SaGr, gry, Moist, Rec. = 1.2 ft, Broken Rocks were within sample.				7-31-27-22 (58)	8.2	47.0	37.9	15.1		
		A-1-b, SlSaGr, gry, Moist, Rec. = 0.6 ft, Roots & Broken Rock were within sample.				10-3-20-9 (23)	19.2	51.1	27.5	21.4		
		Field Note:, NXDC, GrSa										
10		A-1-b, SlSaGr, brn, Moist, Rec. = 0.5 ft, Broken Rocks were within sample.				2-4-7-5 (11)	14.0	48.8	30.3	20.9		
		Field Note:, No Recovery				4-3-3-6 (6)						
		Field Note:, NXDC, SaSi										
		A-4, Si, gry, MTW, Rec. = 0.9 ft				1-2-3-3 (5)	32.1	0.6	12.1	87.3		
20		A-6, SlCl, gry, MTW, Rec. = 1.4 ft				2-2-2-3 (4)	40.6		3.7	96.3	32	13
		A-6, SlCl, gry, Moist, Rec. = 0.7 ft, No N-Value data.					39.6		0.6	99.4	35	11
30		A-4, Si, gry, Moist, Rec. = 1.5 ft				WH-2-2-3 (4)	33.9		12.0	88.0		
		A-6, SlCl, gry, Moist, Rec. = 2.0 ft				2-WH-WH-WH (WH)	33.9		1.8	98.2	35	11
40		A-4, SaSi, gry, Moist, Rec. = 1.1 ft				2-4-5-7 (9)	30.9		26.8	73.2	25	6
		A-4, Si, gry, Moist, Rec. = 1.4 ft				1-2-4-5 (6)	33.0		11.4	88.6		
50		A-4, SaSi, gry, Moist, Rec. = 1.0 ft				1-3-6-10 (9)	29.6		24.6	75.4		
		A-4, Si, gry, Moist, Rec. = 0.7 ft				2-5-5-4 (10)	33.4		16.7	83.3		

ABUTMENT 1
BOTTOM OF
PILE CAP
EL 643.00

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

BORING LOG 2 CAMBRIDGE BRO 1448(39).GPJ VERMONT AOT.GDT 3/12/13

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

BORING LOG

CAMBRIDGE
BRO 1448(39)
TH-46 BR-28

Boring No.: B-102
Page No.: 2 of 2
Pin No.: 12J166
Checked By:

Boring Crew: GARROW, DAIGNEAULT, WHITLOCK
Date Started: 2/04/13 Date Finished: 2/21/13
VTSPG NAD83: N 761519.87 ft E 1545223.83 ft
Station: 23+50 Offset: 15.00
Ground Elevation: 649.19 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
02/06/13	7.9	AM
02/14/13	6.3	AM
02/21/13	4.3	AM

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		A-4, Si, gry, Moist, Rec. = 0.5 ft				1-1-WH-WH (1)	33.5		1.8	98.2	29	2
70		A-4, Si, gry, Moist, Rec. = 1.2 ft				3-4-4-3 (8)	30.4		9.8	90.2	24	2
		A-4, SaSi, gry, Moist, Rec. = 1.2 ft				1-1-4-4 (5)	24.2		27.4	72.6		
		A-4, SaSi, gry, Moist, Rec. = 1.4 ft				2-3-4-1 (7)	26.8		24.0	76.0		
80		Field Note:, Cleaned out casing. Appears to be Gr Sa										
		A-1-b, SiGrSa, gry, Moist, Rec. = 0.3 ft				7-2-3-5 (5)	9.8	35.7	39.2	25.1		
90		Field Note:, Cleaned out casing. Appears to be Gravel										
		A-2-4, GrSiSa, gry, Moist, Rec. = 0.7 ft				31-R (R)	9.6	29.4	37.5	33.1		
100		102.0 ft – 107.0 ft, Silvery-green, Phyllite, Moderately soft, Moderately weathered, Poor rock, NXMDC, RMR = 25	1 (80)	54 (0)	6 6 5 6 6 5			Top of Bedrock @ 102.0 ft				
110		107.0 ft – 112.0 ft, Silvery-green, Phyllite, Moderately soft, Slightly weathered, Poor rock, NXMDC, RMR = 25	2 (80)	94 (10)	6 6 7 6 7							
		Hole stopped @ 112.0 ft										

PILE TIP
EL 547.19

Remarks:
Ground surface elevation estimated from topographic plan.

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

BORING LOG 2 CAMBRIDGE BRO 1448(39).GPJ VERMONT AOT.GDT 3/12/13

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)

FILE NAME: s12j166boring.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
BORING LOG 1

PLOT DATE: 29-AUG-2014
DRAWN BY: J. SALVATORI
CHECKED BY: G. LAROCHE
SHEET 14 OF 34

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

BORING LOG

CAMBRIDGE
BRO 1448(39)
TH-46 BR-28

Boring No.: B-103
Page No.: 1 of 2
Pin No.: 12J166
Checked By:

Boring Crew: GARROW, DAIGNEAULT, WHITLOCK
Date Started: 2/25/13 Date Finished: 2/28/13
VTSPG NAD83: N 761493.24 ft E 1545283.52 ft
Station: 24+07 Offset: -17.00
Ground Elevation: 648.64 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
02/26/13	3.4	AM
02/28/13	3.3	AM

ABUTMENT 2
BOTTOM OF
PILE CAP
EL 643.25

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Field Note:, Cleaned out casing										
		Field Note:, No Recovery				2-3-2-4 (5)						
		Field Note:, Lost Water Return at 6.0 ft.										
10		A-1-a, SaGr, brn, MTW, Rec. = 0.5 ft, Broken Rock was within sample.				4-4-4-6 (8)	15.9	59.1	33.5	7.4		
		Field Note:, Cleaned out casing. Appears to be SaSi										
		A-4, Si, gry, MTW, Rec. = 1.2 ft, A very thin layer of Clay was noticeable.				2-3-3-5 (6)	32.0	0.3	4.5	95.2		
20		A-4, ClSi, gry, MTW, Rec. = 2.0 ft				1-WH-WH-1 (WH)	32.9		5.6	94.4	27	7
		A-4, ClSi, gry, MTW, Rec. = 1.4 ft				2-1-2-2 (3)	36.8		7.8	92.2	29	10
30		A-4, ClSi, gry, MTW, Rec. = 1.6 ft, Regained Water Return at 29.0 ft.				1-WH-1-1 (1)	56.9		6.1	93.9	30	9
		A-4, SaSi, gry, MTW, Rec. = 1.5 ft				1-3-6-3 (9)	31.2		22.1	77.9		
		Field Note:, Cleaned out casing. Appears to be Si Sa										
40		A-4, ClSi, gry, MTW, Rec. = 1.2 ft				4-5-4-4 (9)	38.4	0.1	11.3	88.6	28	9
		A-4, Si, gry, MTW, Rec. = 1.8 ft, A very thin layer of Clay was noticeable.				2-2-3-3 (5)	34.5		11.7	88.3		
50		A-4, SaSi, gry, MTW, Rec. = 1.0 ft				2-2-3-3 (5)	30.1		43.2	56.8		
		A-4, Si, gry, MTW, Rec. = 1.4 ft				2-3-2-2 (5)	33.0		15.2	84.8		
		A-4, Si, gry, MTW, Rec. = 2.0 ft				WH-WH WH-2 (WH)	36.0		2.0	98.0	31	4

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

BORING LOG 2 CAMBRIDGE BRO 1448(39).GPJ VERMONT AOT.GDT 3/12/13

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

BORING LOG

CAMBRIDGE
BRO 1448(39)
TH-46 BR-28

Boring No.: B-103
Page No.: 2 of 2
Pin No.: 12J166
Checked By:

Boring Crew: GARROW, DAIGNEAULT, WHITLOCK
Date Started: 2/25/13 Date Finished: 2/28/13
VTSPG NAD83: N 761493.24 ft E 1545283.52 ft
Station: 24+07 Offset: -17.00
Ground Elevation: 648.64 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	CE = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
02/26/13	3.4	AM
02/28/13	3.3	AM

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		A-4, SaSi, gry, MTW, Rec. = 2.0 ft, A very thin layer of Clay was noticeable.				WH-1-WH-1 (1)	26.5	0.1	27.5	72.4		
70		A-4, Si, gry, MTW, Rec. = 1.8 ft				1-WH-1-2 (1)	29.0		18.2	81.8		
		Field Note:, Cleaned out casing. Appears to be Sa Gr				10-7-1-2 (8)	9.3	45.2	34.6	20.2		
80		A-1-b, SiSaGr, gry, Moist, Rec. = 0.4 ft										
		Field Note:, Cleaned out casing. Appears to be Sa				8-27-20-16 (47)						
90		Field Note:, No Recovery										
		Field Note:, No Recovery				R@6.0"						
100		98.2 ft – 102.2 ft, Soft, Broken, Weathered Rock. Poor rock, NXDC										
		102.2 ft – 107.2 ft, Silvery-green, Quartz-muscovite-chlorite Schist, Moderately hard, Unweathered, Fair rock, NXMDC, RMR = 56	1 (80)	100 (62)	4 5 5 5 5 5							
110		107.2 ft – 112.2 ft, Silvery-green, Quartz-muscovite-chlorite Schist, Moderately hard, Unweathered, Good rock, NXMDC, RMR = 63	2 (80)	100 (92)	5 7 7 7 8 6							
		Hole stopped @ 112.2 ft										

Top of Bedrock @ 98.2 ft

PILE TIP
EL 546.44

Remarks:
Ground surface elevation estimated from topographic plan.

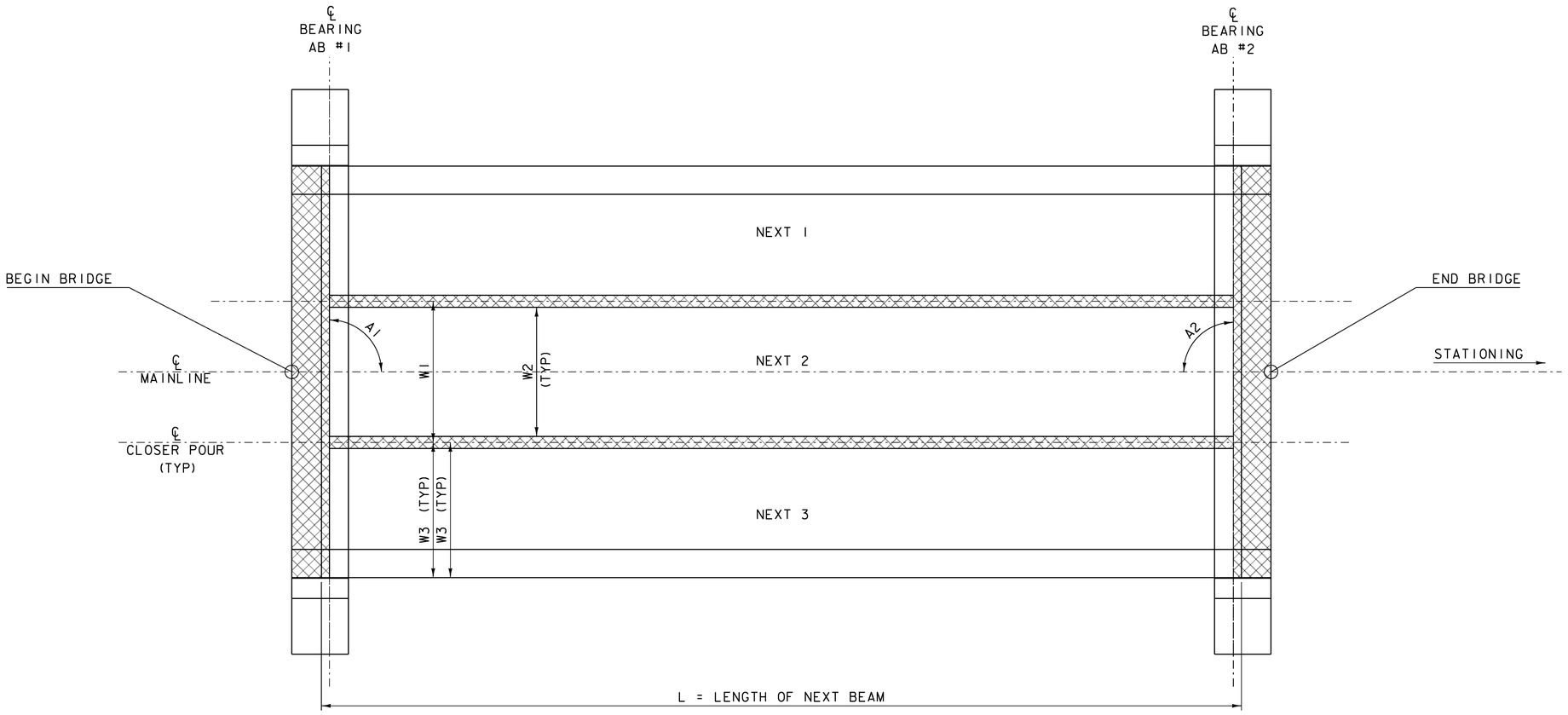
Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations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

BORING LOG 2 CAMBRIDGE BRO 1448(39).GPJ VERMONT AOT.GDT 3/12/13

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)

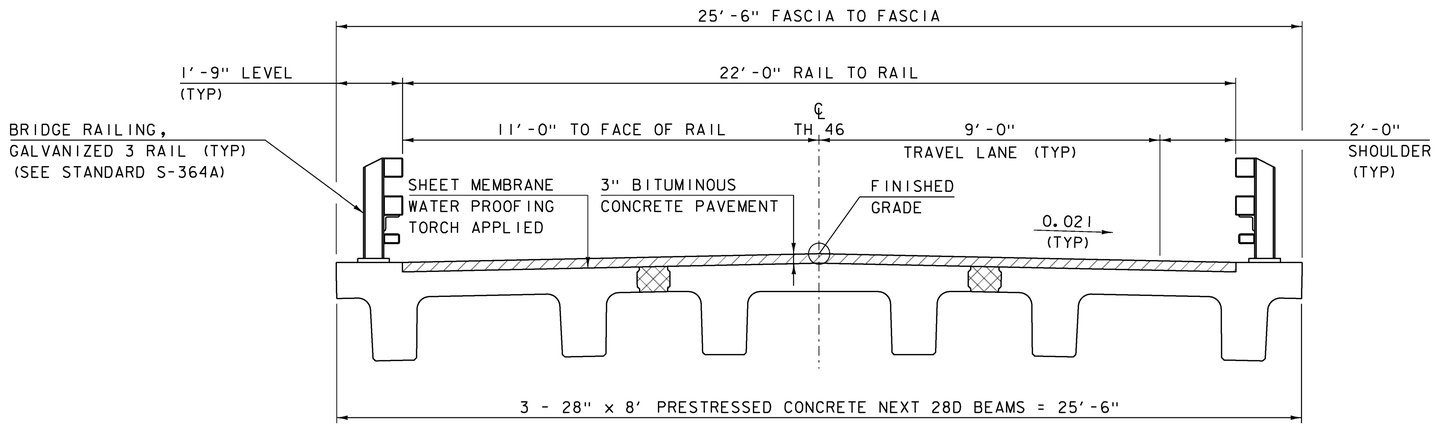
FILE NAME: s12J166boring.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
BORING LOG 2

PLOT DATE: 29-AUG-2014
DRAWN BY: J. SALVATORI
CHECKED BY: G. LAROCHE
SHEET 15 OF 34



DECK PLAN

SCALE 1/4" = 1'-0"



BRIDGE TYPICAL SECTION

SCALE 1" = 1'-0"

SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)

BITUMINOUS CONCRETE PAVEMENT

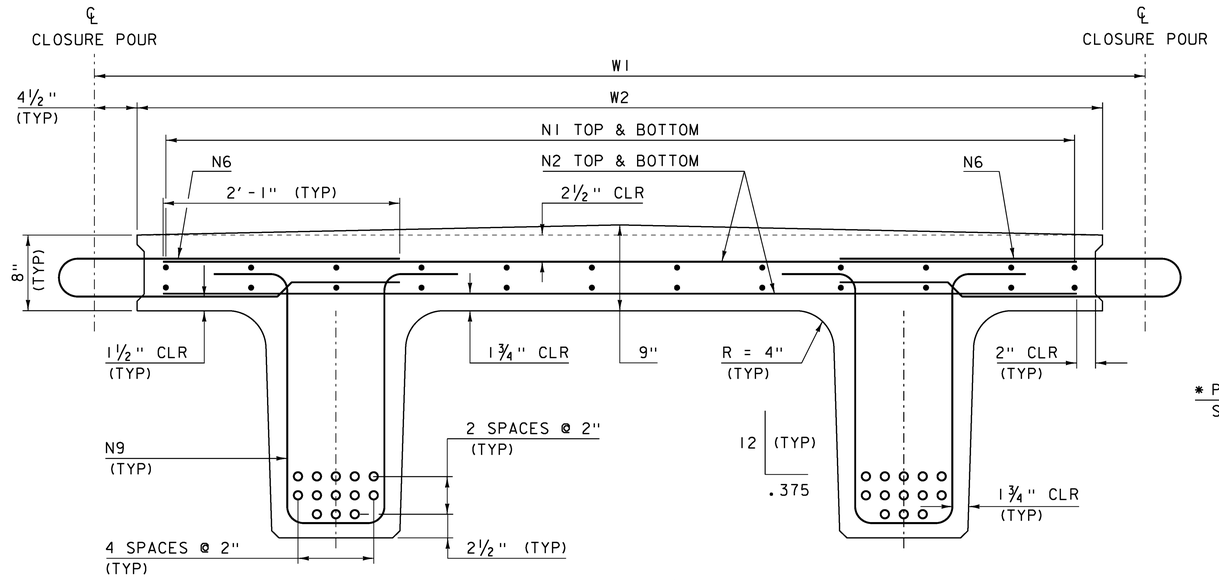
L	57'-0"
W1	8'-9"
W2	8'-0"
W3	8'-4 1/2"

SKEW	A1	90°
	A2	90°

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

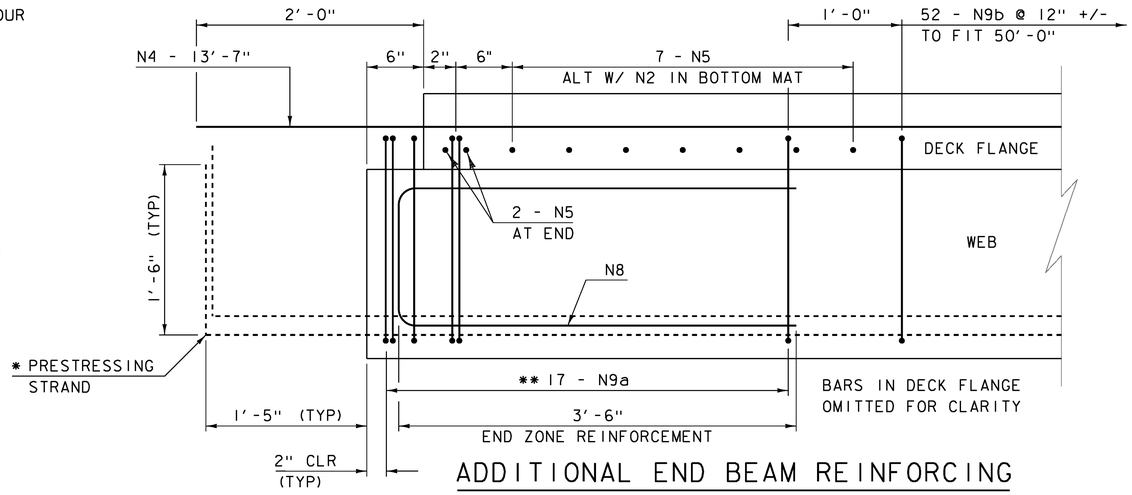
FILE NAME: sl2j166sup.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
FRAMING PLAN

PLOT DATE: 16-SEP-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 16 OF 34



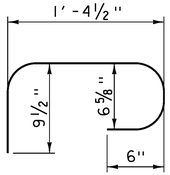
UNIT 2

NOT TO SCALE



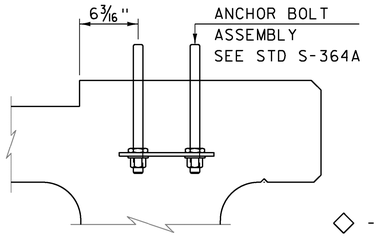
ADDITIONAL END BEAM REINFORCING LONGITUDINAL SECTION

NOT TO SCALE



N7

NOT TO SCALE



END SECTION

NOT TO SCALE

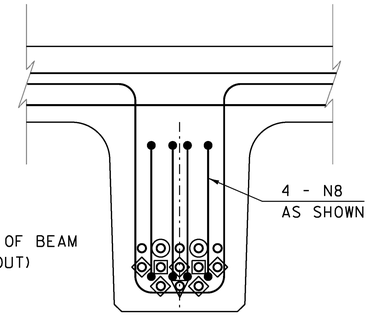
LEGEND

◇ - EXTEND 2'-11" OUT OF BEAM (90° BEND @ 1'-5" OUT)

○ - DEBONDED 0'-6"

□ - DEBONDED 1'-0"

▽ - DEBONDED 1'-6"



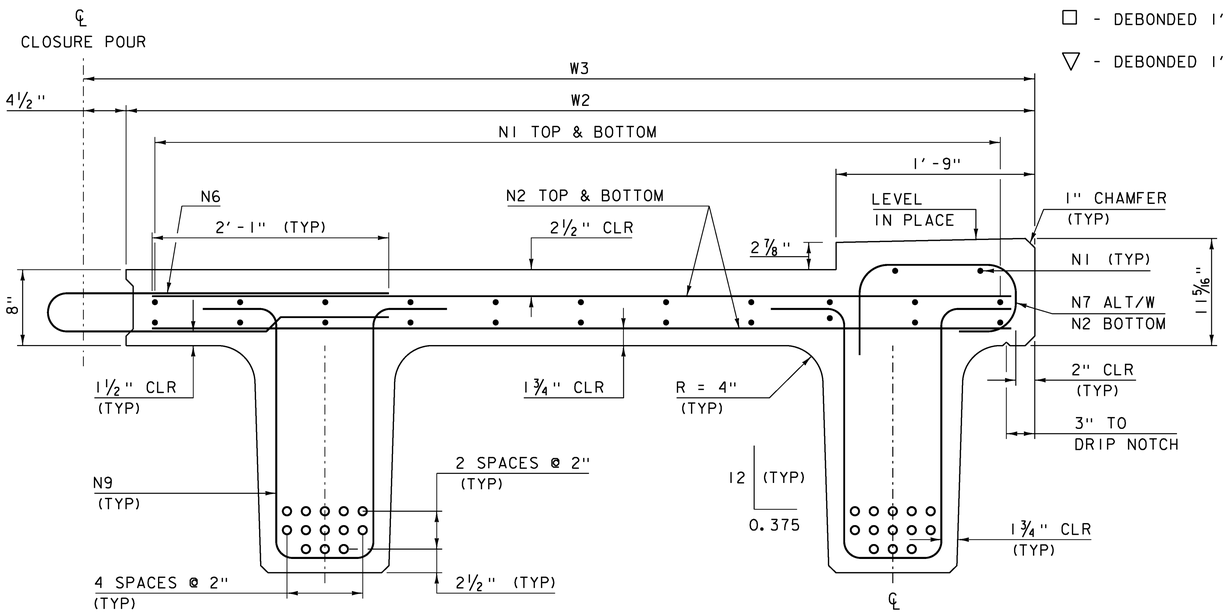
BEAM SECTION

NOT TO SCALE

NOTES:

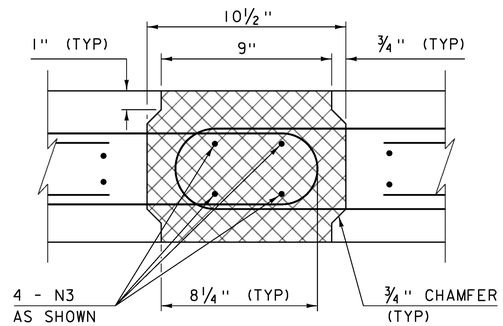
* LEAVE FIVE STRANDS LONG PER STEM AS INDICATED. TIE STRANDS TO HORIZONTAL FF REINFORCING IN DECK CLOSURE POUR. SLEEVES FOR PERMANENT BENDING OF THE PRESTRESSING STRANDS WILL NOT BE ALLOWED INSIDE THE CLOSURE POUR.

** THE FIRST AND THIRD PAIRS WILL BE BUNDLED.



UNITS 1 & 3

NOT TO SCALE



CONNECTION DETAIL SECTION

NOT TO SCALE

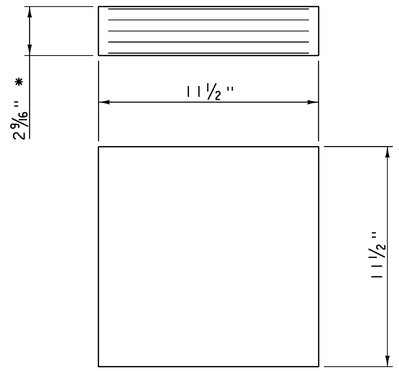
NEXT BEAM REINFORCING CHART

BAR	SIZE	SPACING	TYPE
N1	5	9"	STR
N2	5	6"	STR
N3	4	AS SHOWN	STR
N4	6	6"	STR
N5	4	6"	STR
N6	4	6"	S11
N7	5	6"	SEE DETAIL
N8	5	AS SHOWN	S10
N9	4	12"	S4
N9a	4	3"	S4
N9b	4	12"	S4

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12J166sup.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
NEXT BEAM TYPICAL SECTIONS

PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 17 OF 34



ELASTOMERIC BEARING DETAIL

SCALE 3" = 1'-0"

* 2 - 1/8" EXTERIOR LAYERS OF ELASTOMER
  4 - 1/2" INTERIOR LAYERS OF ELASTOMER
  5- 1/16" STEEL REINFORCING PLATES

BEARING NOTES:

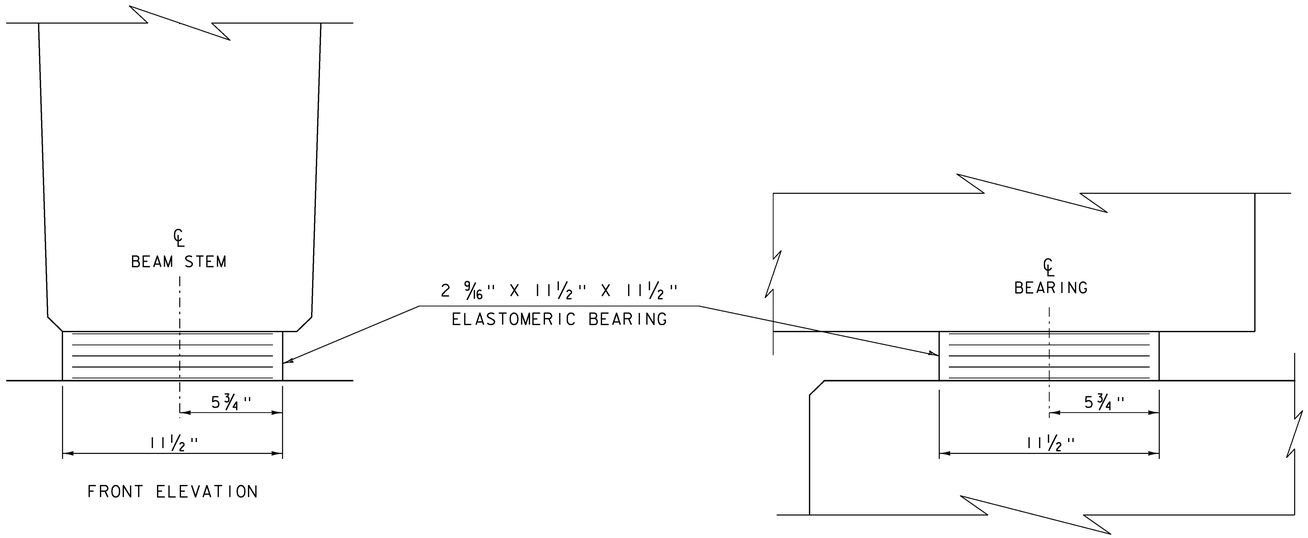
1. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.

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 1/8" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.

4. THE ELASTOMER WAS DESIGNED WITH A SHEAR MODULUS OF 100 PSI +/- 15%

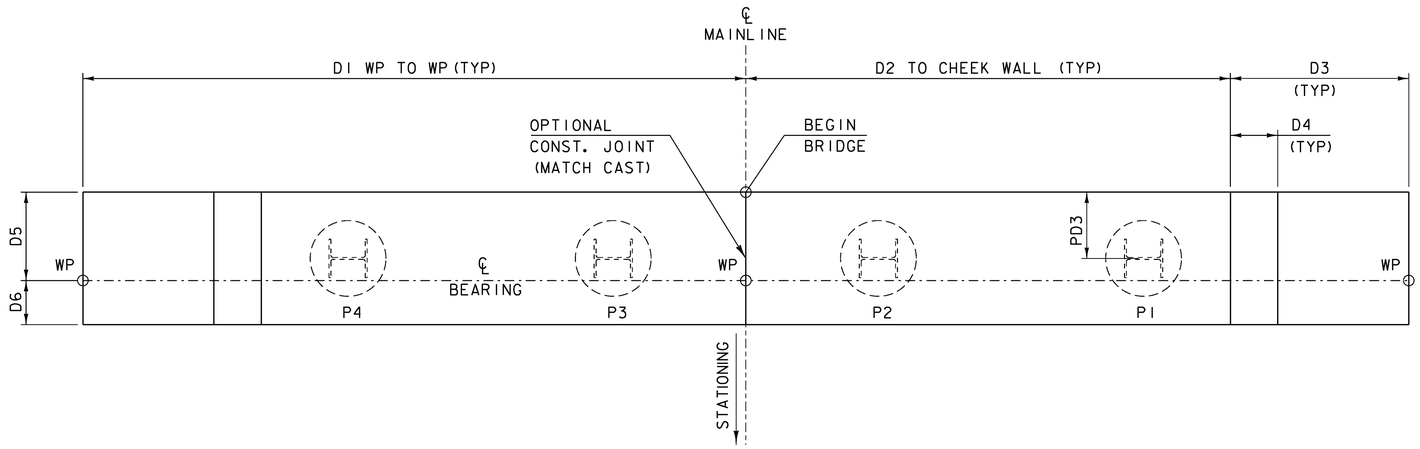
5. THE CONTRACTOR IS ADVISED TO HAVE A MINIMUM OF 12 - 1/4"x12 1/2"x12 1/2" GALVANIZED STEEL SHIMS AVAILABLE FOR USE FOR ELEVATION ADJUSTMENTS UPON THE SETTING OF THE SUPERSTRUCTURE UNITS. THE SHIMS SHALL BE FABRICATED ACCORDING TO SECTION 531 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 531.17,"BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD".



ELASTOMERIC BEARING DETAILS

SCALE 3" = 1'-0"

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448(39)
FILE NAME: s12j166brg.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: W. LAMMER
BEARING DETAILS	SHEET 18 OF 34



ABUTMENT PLAN

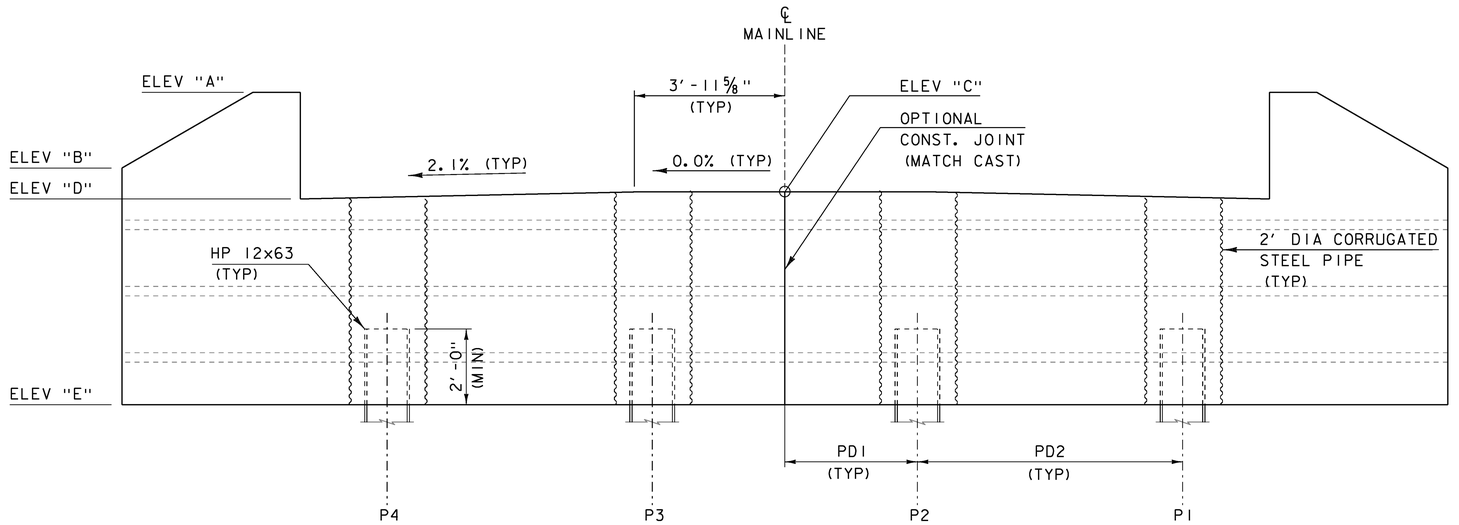
SCALE ½" = 1'-0

ABUTMENT ELEVATIONS

	AB1	AB2
ELEV "A"	651.50	651.70
ELEV "B"	649.50	649.80
ELEV "C"	648.60	648.87
ELEV "D"	648.42	648.69
ELEV "E"	643.00	643.25

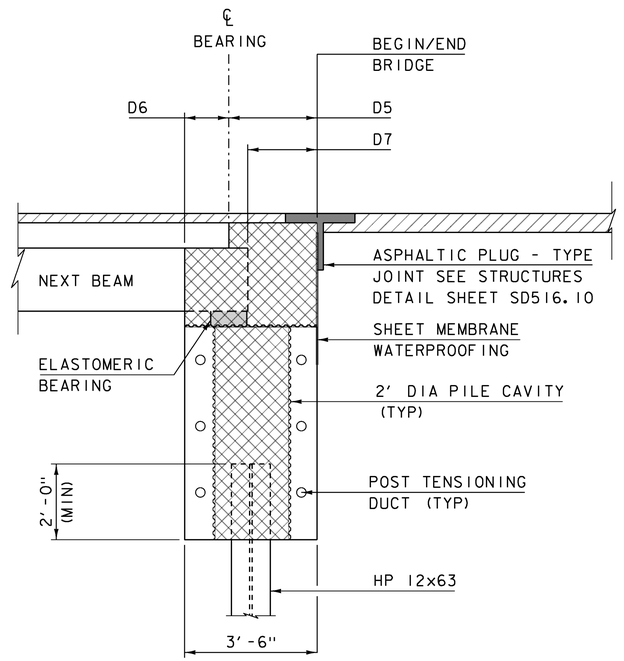
ABUTMENT DIMENSIONS

	AB1	AB2
D1	17'-6"	17'-6"
D2	12'-9½"	12'-9½"
D3	4'-8½"	4'-8½"
D4	1'-3"	1'-3"
D5	2'-4"	2'-4"
D6	1'-2"	1'-2"
D7	1'-10"	1'-10"
PD1	3'-6"	3'-6"
PD2	7'-0"	7'-0"
PD3	1'-9"	1'-9"



ABUTMENT ELEVATION

SCALE ½" = 1'-0



ABUTMENT TYPICAL

SCALE ½" = 1'-0"

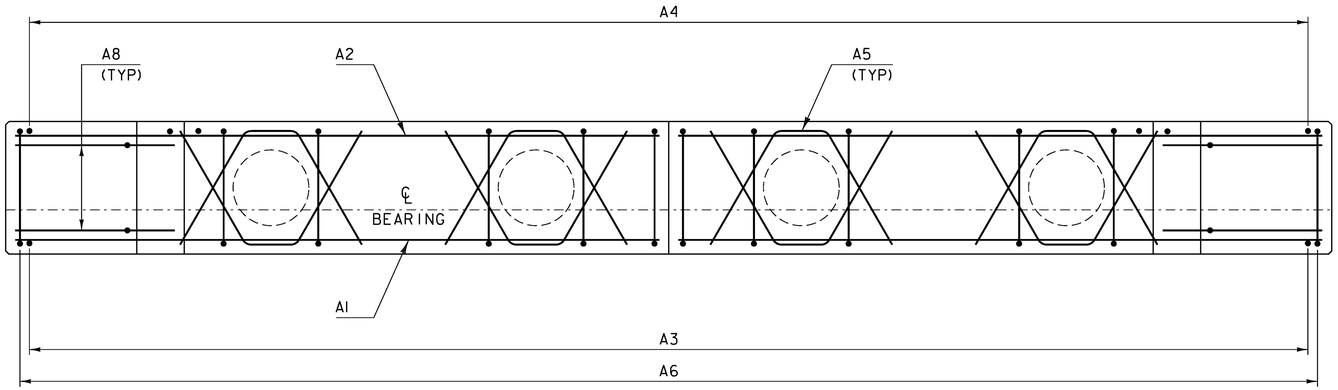
NOTES:

1. ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR.
2. THE BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO ABUTMENT 1. ALL WORK TO INSTALL THE PLAQUE SHALL BE INCIDENTAL TO THE APPROPRIATE PRECAST ITEM. SEE SD-502.00 FOR FURTHER DETAILS.
3. THE BRIDGE SEAT SHALL HAVE A ROUGHENED FINISH. AREAS UNDER BEARING PADS SHALL BE TROWELED SMOOTH TO THE PROPOSED SLOPE.

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166sub.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
ABUTMENT PLAN

PLOT DATE: 29-AUG-2014
DRAWN BY: J. SALVATORI
CHECKED BY: W. LAMMER
SHEET 19 OF 34

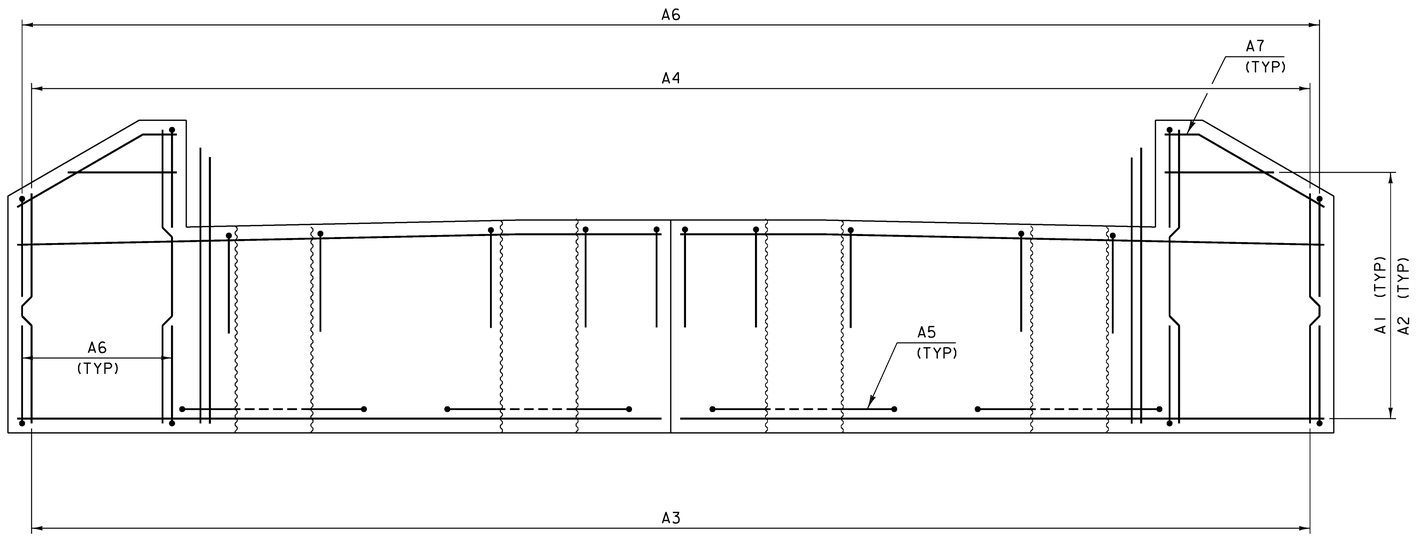


ABUTMENT REINFORCING PLAN

SCALE 1/2" = 1'-0

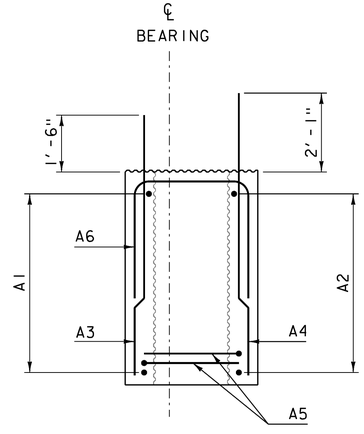
ABUTMENT REINFORCING CHART

BAR	SIZE	SPACING	FACE	TYPE
A1	5	12"	NF	STR
A2	5	6"	FF	STR
A3	5	12"	NF	STR
A4	6	6"	FF	STR
A5	6	---	EF	14
A6	5	12	---	17
A7	5	---	EF	19



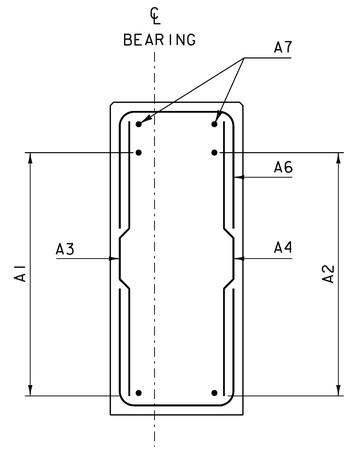
ABUTMENT REINFORCING ELEVATION

SCALE 1/2" = 1'-0



ABUTMENT REINFORCING AT BRIDGE SEAT

SCALE 1/2" = 1'-0"



ABUTMENT REINFORCING AT CHEEK WALL

SCALE 1/2" = 1'-0"

NOTES:

1. ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR.
2. CUT TO FIT A3 AT STEM LOCATIONS.

NOTE:

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

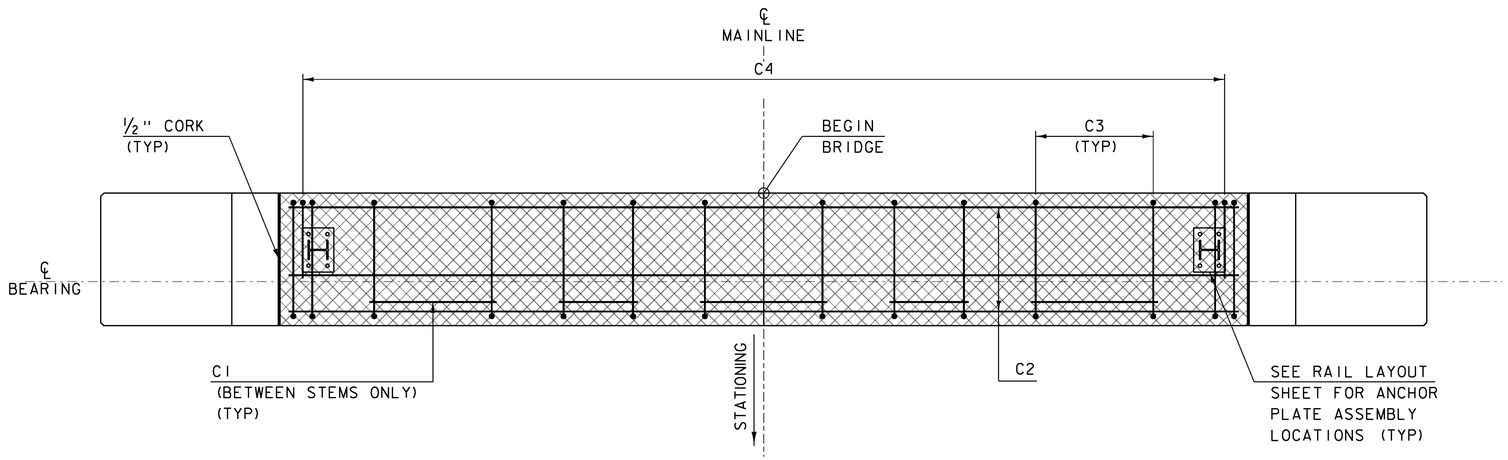
PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166sub.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
ABUTMENT REINFORCING

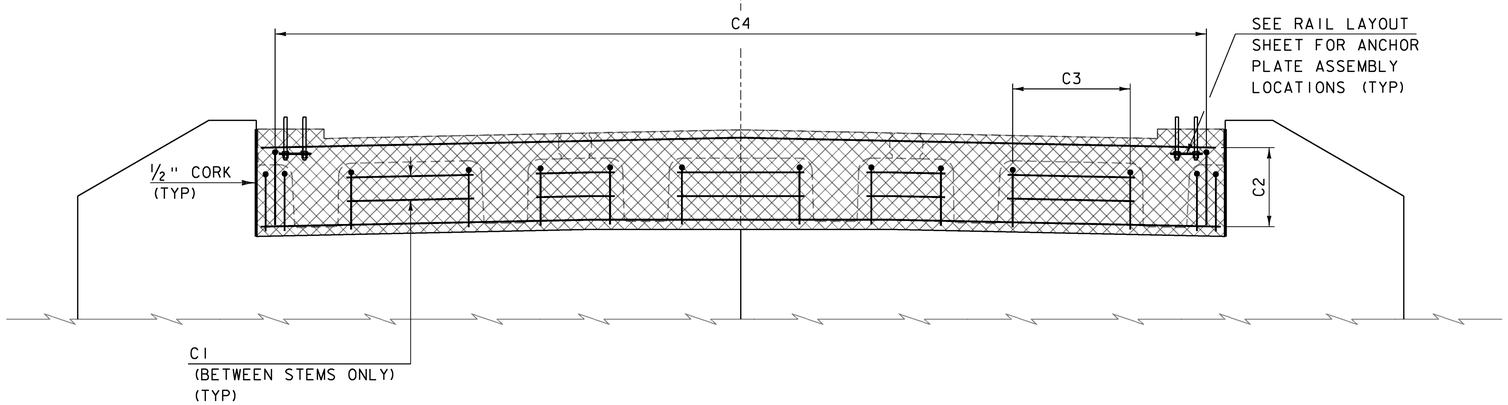
PLOT DATE: 29-AUG-2014
DRAWN BY: J. SALVATORI
CHECKED BY: W. LAMMER
SHEET 20 OF 34

CLOSURE POUR REINFORCING

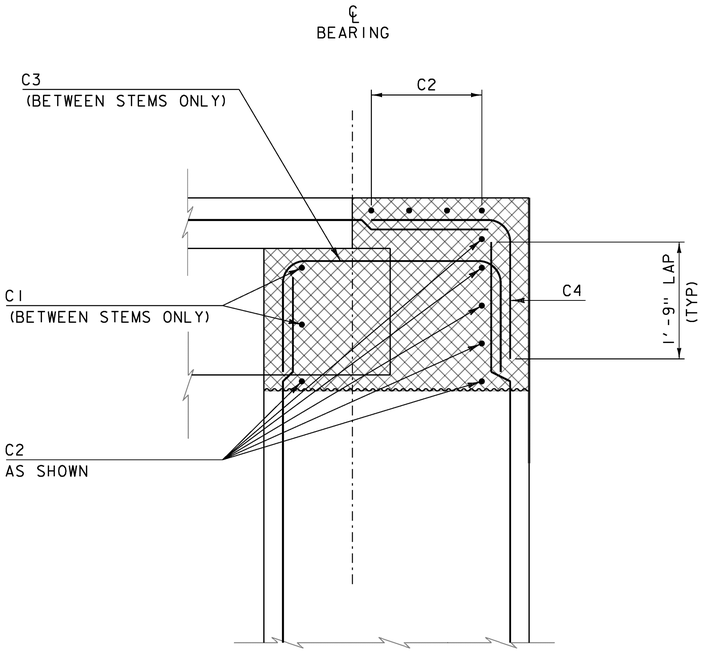
BAR	SIZE	SPACING	FACE	TYPE
C1	5	12"	NF	STR
C2	5	6"	AS SHOWN	STR
C3	5	12"	---	17
C4	6	6"	---	17



DECK CLOSURE POUR REINFORCING PLAN
SCALE 1/2" = 1'-0



DECK CLOSURE POUR REINFORCING ELEVATION
SCALE 1/2" = 1'-0



REINFORCING TYPICAL
SCALE 1" = 1'-0

NOTE:

1. ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR.

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12J166sub.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
DECK CLOSURE POUR

PLOT DATE: 29-AUG-2014
DRAWN BY: J. SALVATORI
CHECKED BY: W. LAMMER
SHEET 21 OF 34

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF BRIDGE 28 WITH RELATED APPROACH AND CHANNEL WORK. BRIDGE 28 WILL BE REPLACED WITH A PRECAST STRUCTURE. THE PROJECT LOCATION IS IN THE TOWN OF CAMBRIDGE, VT ON TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD) 0.1 MILES WEST FROM THE JUNCTION WITH TOWN HIGHWAY 1 (PLEASANT VALLEY ROAD).

THE NEW STRUCTURE WILL BE APPROXIMATELY 60 FEET WITH 89 FEET OF ROAD WORK.

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

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.40 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 RELATIVELY FLAT WITH OPEN FARM FIELDS AND SOME RIPARIAN VEGETATION AND TREES.

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

SEYMOUR BROOK IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE BROOK IS CLASSIFIED AS SINUOUS AND ALLUVIAL, WITH A MODERATELY WIDE VALLEY FLOOD PLAIN. THE STREAMBED CONSISTS OF SAND, GRAVEL AND COBBLES.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF SMALL DIAMETER TREES ALONG THE BANKS OF THE SEYMOUR RIVER WITH FARM FIELDS OUTSIDE OF THIS VEGETATED AREA. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE EXISTING BRIDGE. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE III 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 LAMOILLE, VERMONT.

LyD LYMAN-TUNBRIDGE	15% - 25% SLOPES	"K" FACTOR = 0.24 - 0.28
LyC LYMAN-TUNBRIDGE	8% - 15% SLOPES	"K" FACTOR = 0.24 - 0.28

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 - ARCHEOLOGICAL, (SEE PLANS, STA 21+00.00 - 23+50.00 LT)
YES - HISTORICAL, (SEE PLANS, STA 24+03.00 - 25+50.00 LT, STA 24+00.00 - 25+50.00 RT)
PRIME AGRICULTURAL LAND: YES
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: SEYMOUR RIVER
WETLANDS: NO

1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORM WATER 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) AND BARRIER FENCE SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES AS SHOWN ON THE PLANS.

1.4.2 LIMIT DISTURBANCE AREA

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

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

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTORS PROGRESS SCHEDULE.

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

1.4.4 INSTALL SEDIMENT BARRIERS

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

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

FILTER CURTAIN 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.

THE PROJECT AREA IS RELATIVELY FLAT. THEREFORE IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

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

IT IS NOT ANTICIPATED THAT CHECK STRUCTURES WILL BE NECESSARY.

1.4.7 CONSTRUCT PERMANENT CONTROLS

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

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

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

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

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

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

1.4.9 WINTER STABILIZATION

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

1.4.10 STABILIZE SOIL AT FINAL GRADE

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

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

1.4.11 DE-WATERING ACTIVITIES

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

TREATMENT OF DEWATERING COFFERDAM IS NOT ANTICIPATED.

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 SPECIFICATION 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448 (39)

FILE NAME: s12j166epsc_nar.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: K. FRIEDLAND
DESIGNED BY: C. LAROCHE	CHECKED BY: J. SALVATORI
EPSC NARRATIVE	SHEET 22 OF 34

LyD LYMAN-TUNBRIDGE
FINE SANDY LOAMS
WITH 15%-25% SLOPES
"K" FACTOR = .24 -.28
VERY STONY

LyC LYMAN-TUNBRIDGE
FINE SANDY LOAMS
WITH 8%-15% SLOPES
"K" FACTOR = .24 -.28
VERY ROCKY

BEGIN PROJECT
BEGIN PAVEMENT
STA 23+00.00

BEGIN BRIDGE
STA 23+47.67

END BRIDGE
STA 24+08.33

END PROJECT
END PAVEMENT
STA 24+50.00

BEGIN APPROACH
STA 22+00.00

END APPROACH
STA 25+50.00

DO NOT
DISTURB

SAVE

STONE FILL
TYPE III,
(TYP)

RIPARIAN BUFFER

RIPARIAN BUFFER

EXISTING ROW

EXISTING ROW

EXISTING ROW

EXISTING ROW

TH 46
TO UNDERHILL

TH 46
TO CAMBRIDGE

21+00 22+00 23+00 24+00 25+00 26+00

50+00 51+00 52+00

24.75'

BF PDF HISTORIC ARCH FENCE OHW WATER

FIELD DRIVE GRAVEL DRIVE PAVED DRIVE SMALL ELM LARGE ASH MED YELLOW BIRCHES SMALL YELLOW BIRCHES MED POPLAR SMALL MAPLE MED MAPLE 18" CCMP PLUGGED FLOWLINE SUB ELEC COMB 11B 280 GUY

HVCTRL 11 HVCTRL 12 HVCTRL 13 HVCTRL 14 HVCTRL 15 HVCTRL 16 HVCTRL 17

SEYMOUR RIVER FLOW

BARBED WIRE FENCE

WATER VALVE

7'x7' WELL CONCRETE

640 650

N

VT STATE PLANE GRID

EPSC PLAN

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

NOTES:

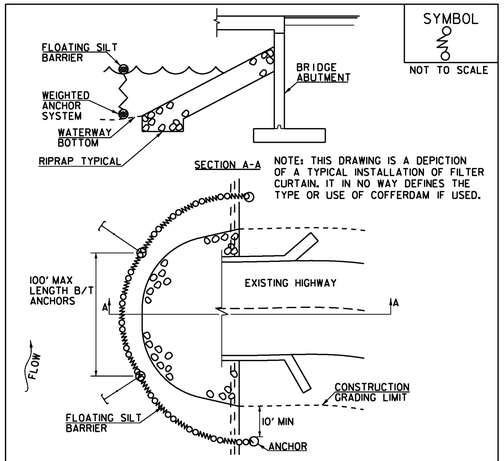
1. FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN INDICATED. HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE.

2. EXISTING CONTOURS SHOWN. SEE CROSS SECTIONS FOR FINAL CONDITIONS.

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166epsc.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
EPSC PLAN

PLOT DATE: 29-AUG-2014
DRAWN BY: K. FRIEDLAND
CHECKED BY: J. SALVATORI
SHEET 23 OF 34



SYMBOL

NOT TO SCALE

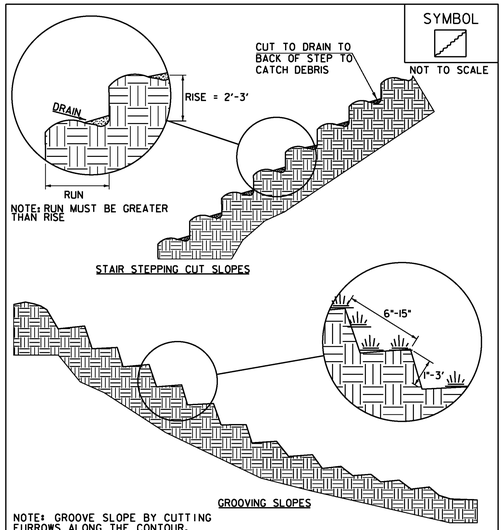
CONSTRUCTION SPECIFICATIONS

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

FILTER CURTAIN

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

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



SYMBOL

NOT TO SCALE

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

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

SURFACE ROUGHENING

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

VAOT 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

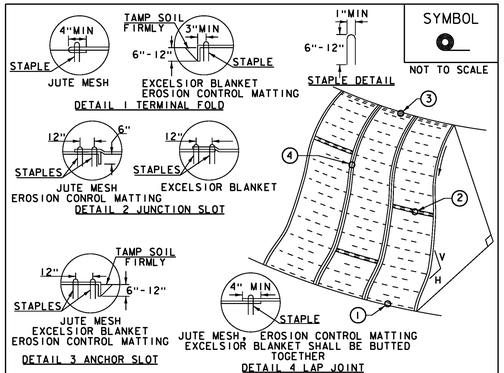
1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 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

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

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



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

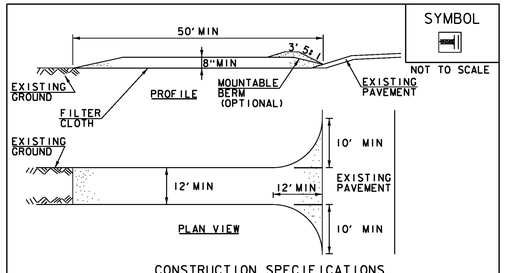
1. APPLY TO SLOPES GREATER THAN 3H: 1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 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. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

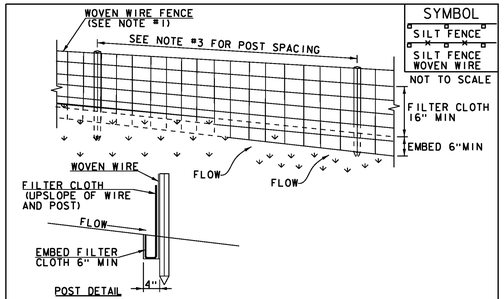
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

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

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF



SYMBOL

SILT FENCE

SILT FENCE WOVEN WIRE

NOT TO SCALE

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.

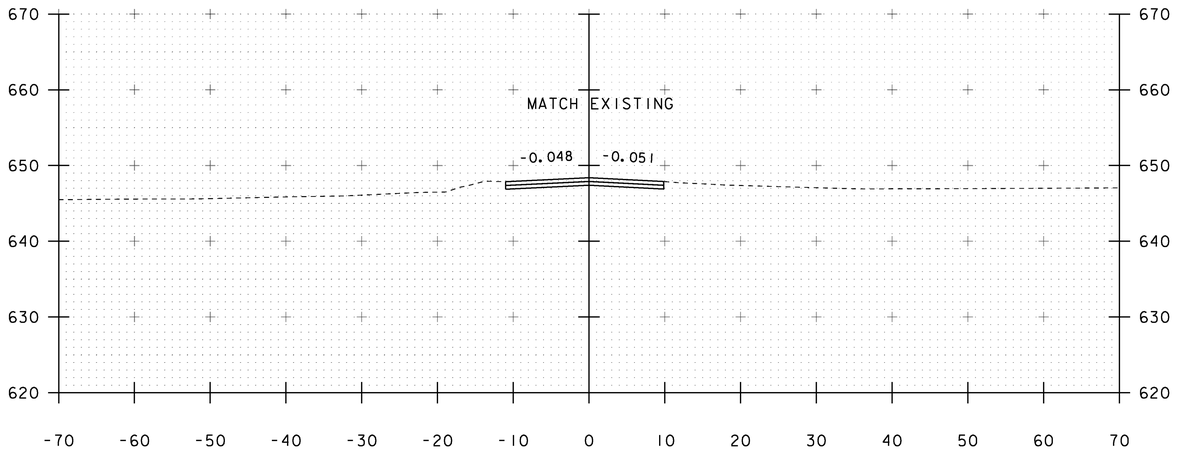
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) ~~OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).~~

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

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)

FILE NAME: s12J166ero_det.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
EPSC DETAILS

PLOT DATE: 29-AUG-2014
DRAWN BY: K. FRIEDLAND
CHECKED BY: J. SALVATORI



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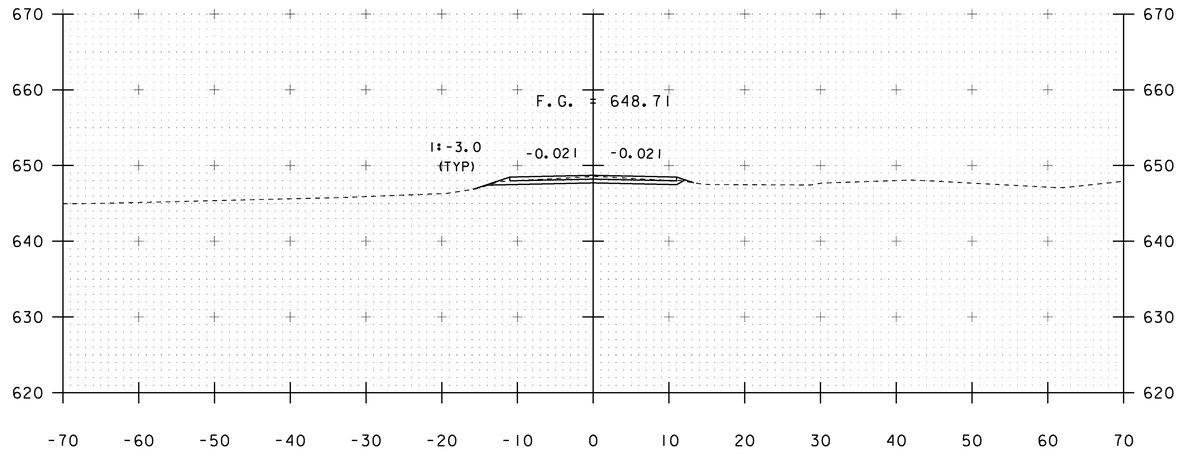

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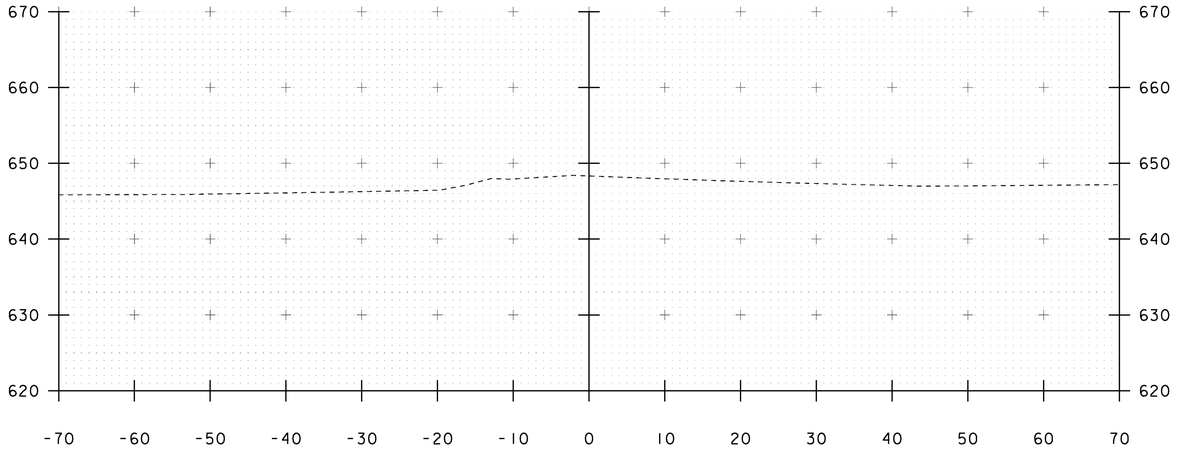
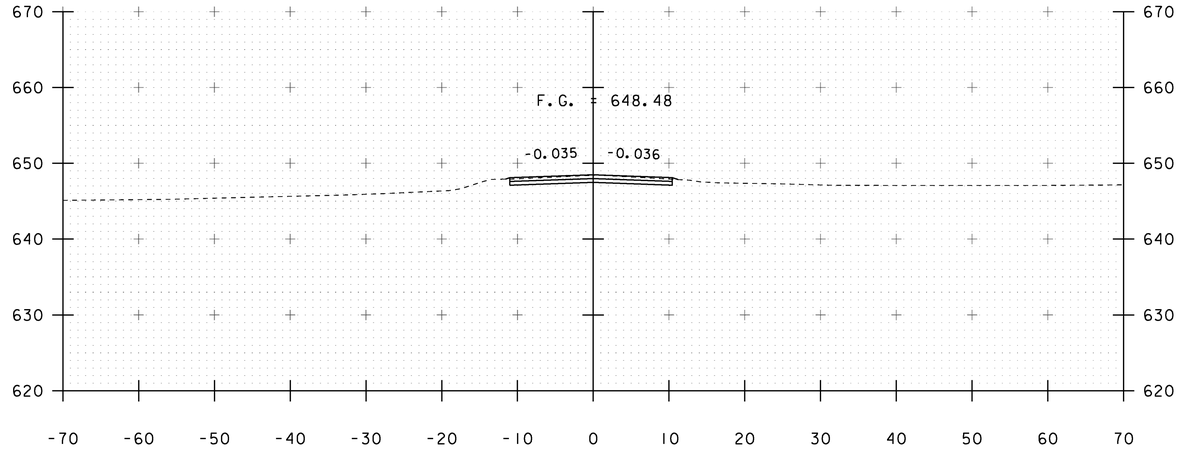


21+75



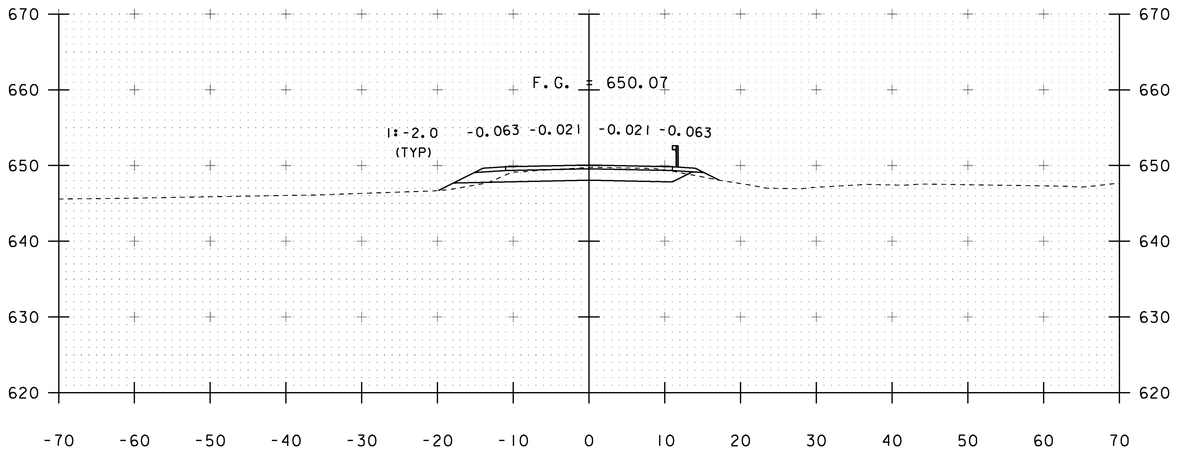
22+25

STA. 21+75 TO STA. 22+50

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166xs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
MAINLINE SECTIONS 1

PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 25 OF 34



23+00
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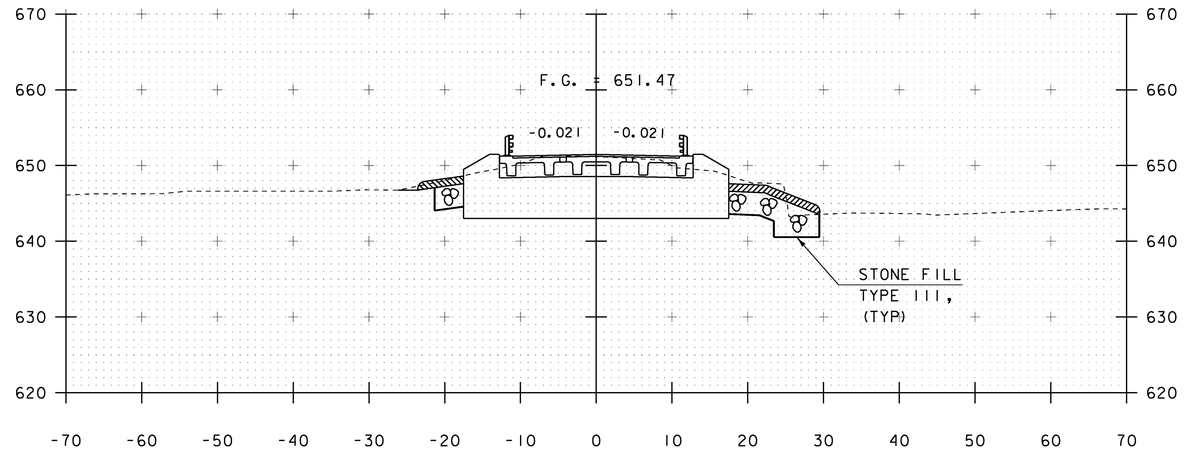
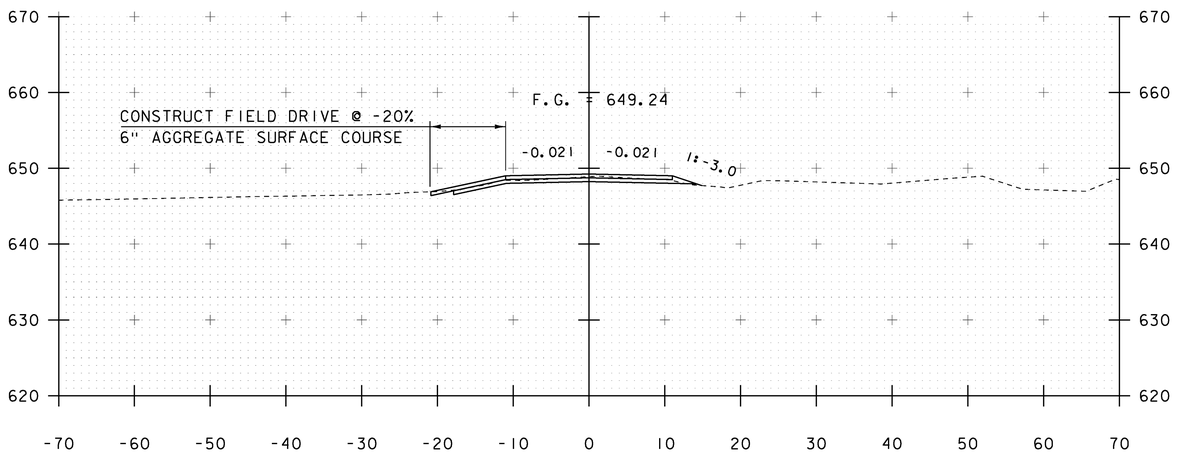
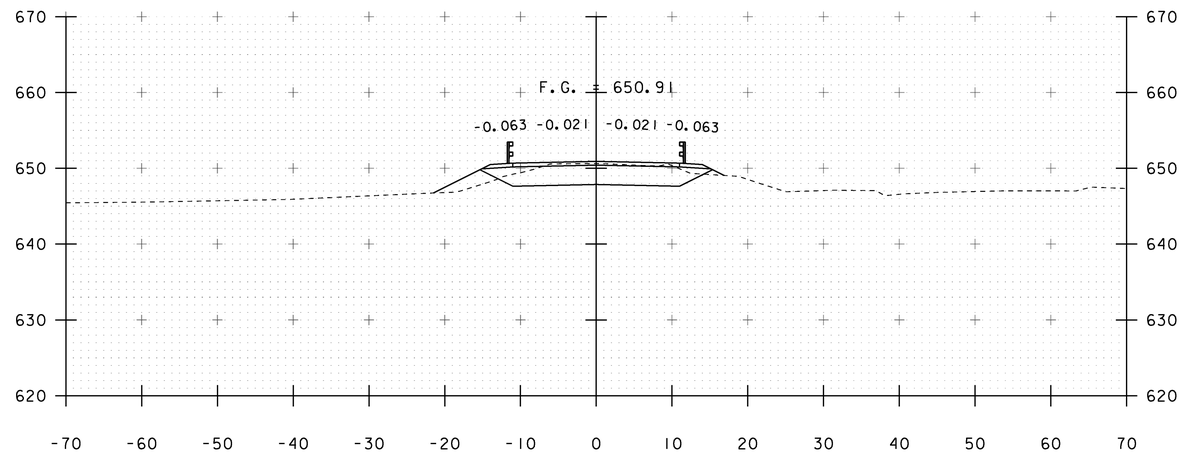
BEGIN PAVEMENT



23+50
23+47.67 BEGIN BRIDGE



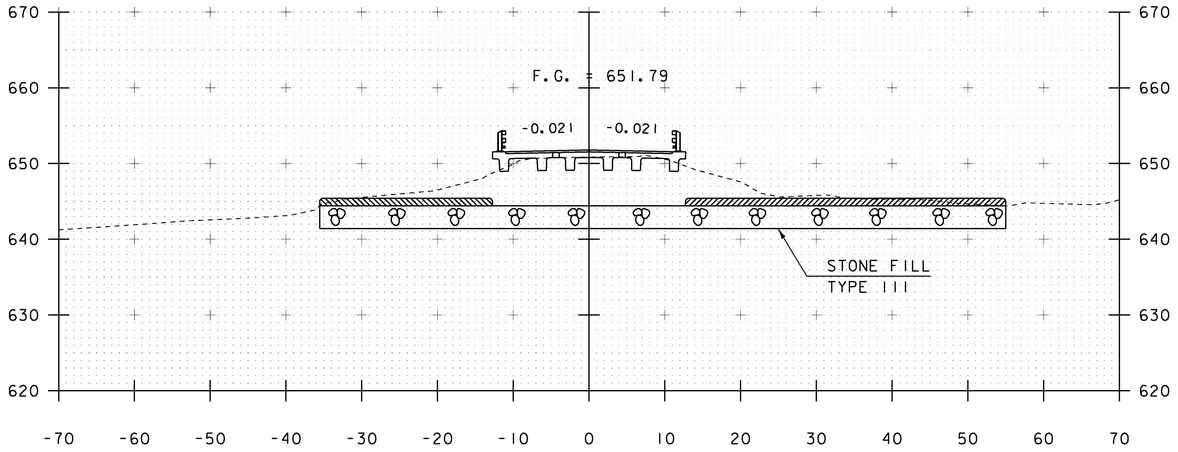
22+75



23+25

STA. 22+75 TO STA. 23+50

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448(39)
FILE NAME: s12j166xs.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
MAINLINE SECTIONS 2	SHEET 26 OF 34



24+00
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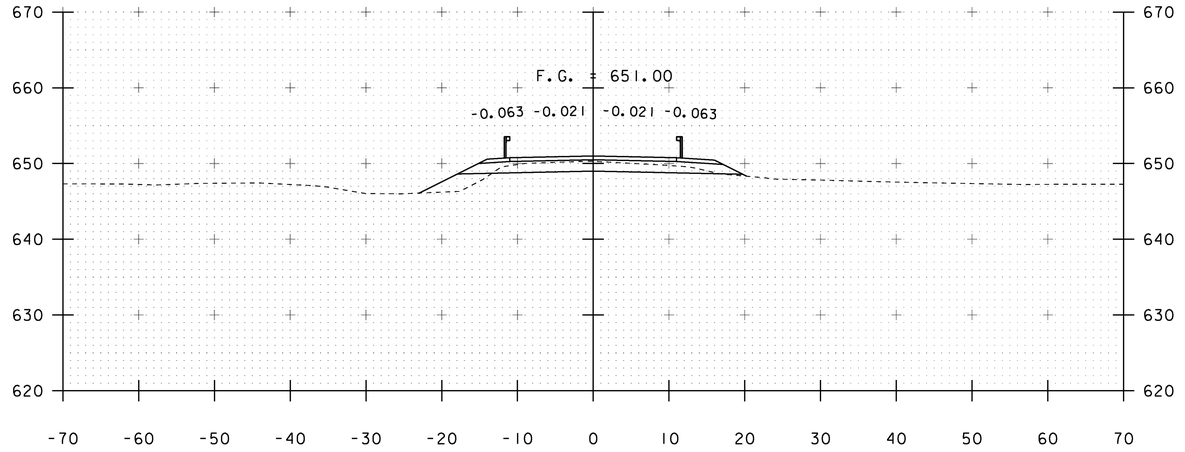
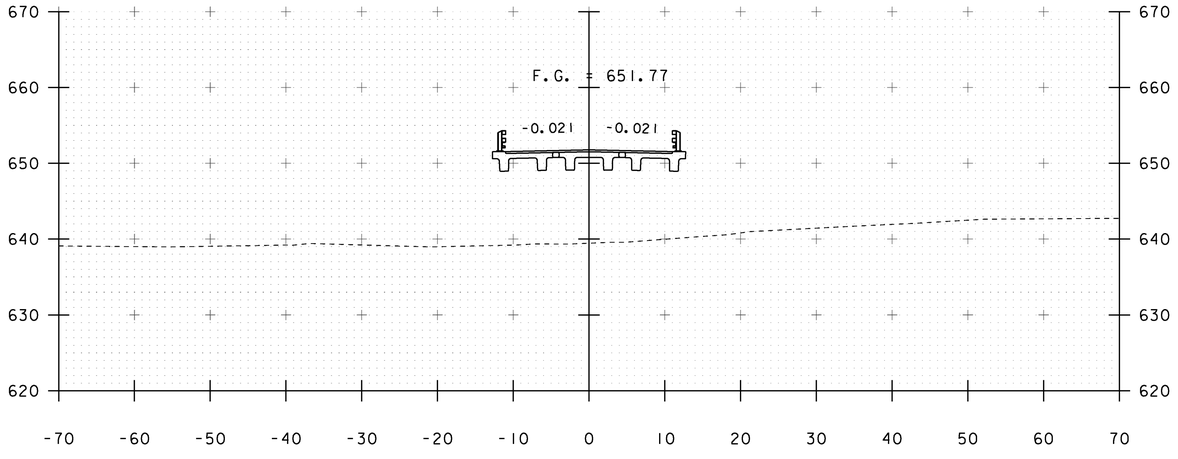
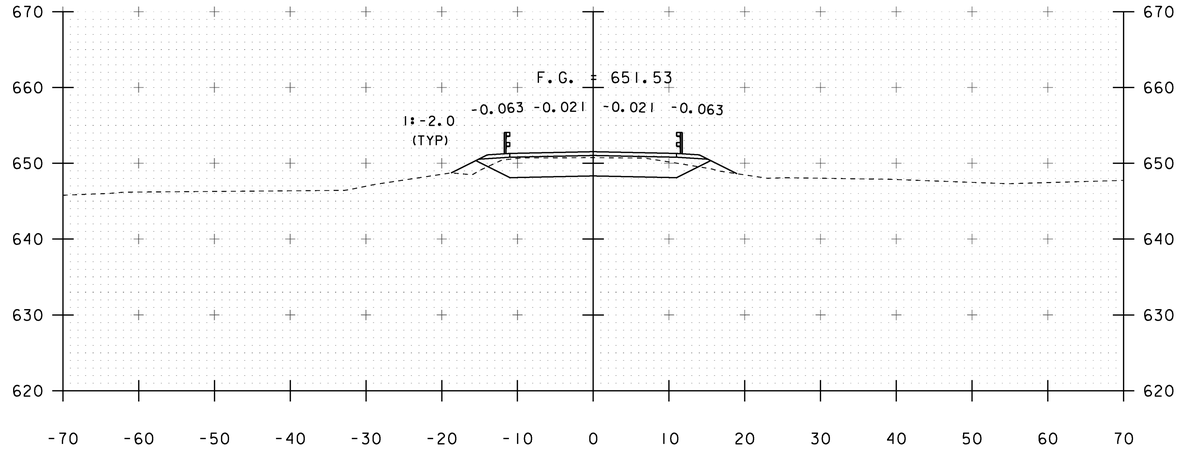


24+50
END PROJECT
END PAVEMENT



23+75



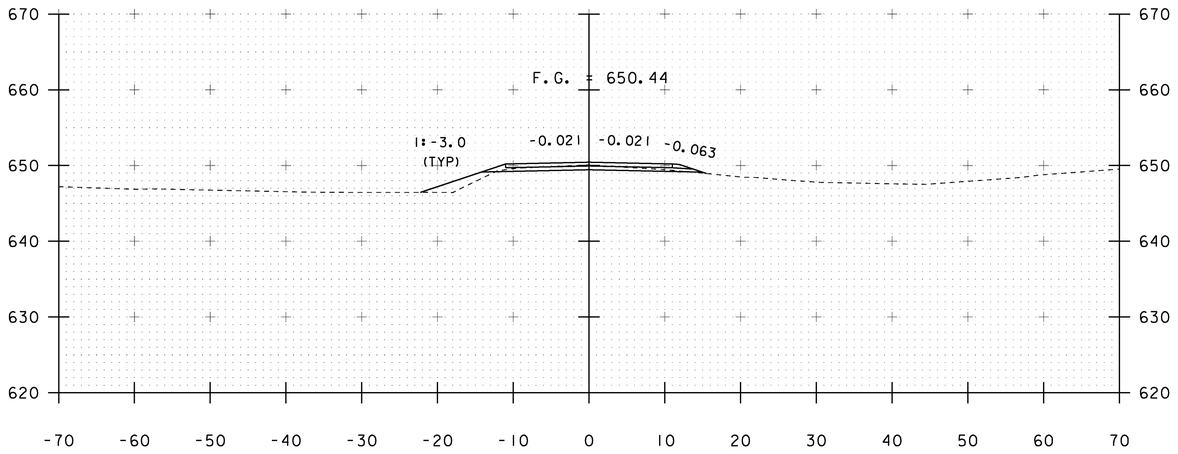
24+25

STA. 23+75 TO STA. 24+50

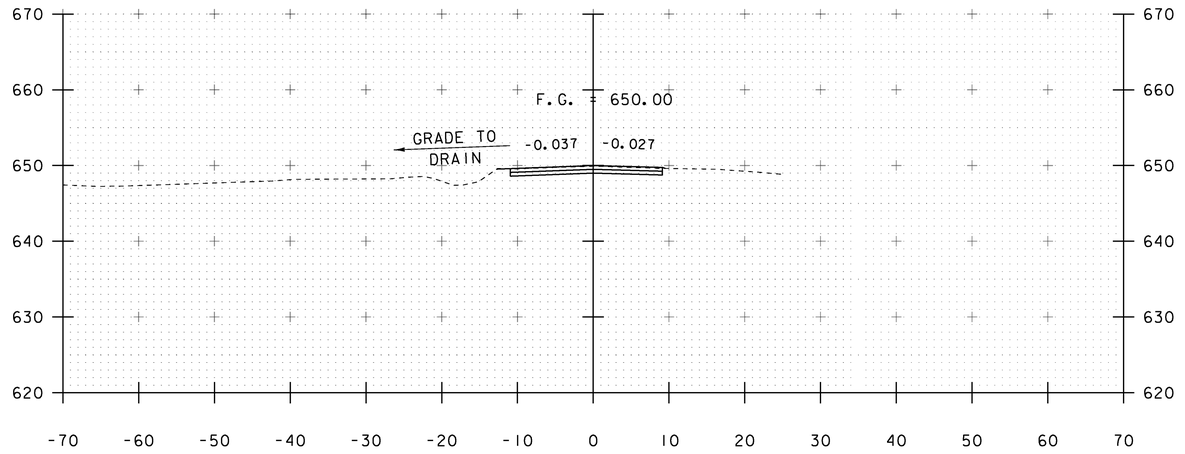
PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166xs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
MAINLINE SECTIONS 3

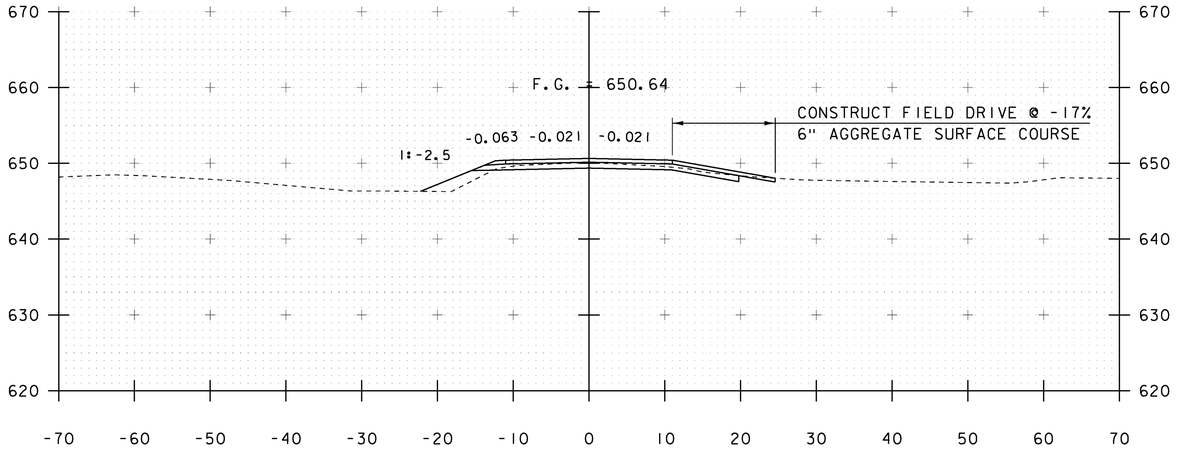
PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 27 OF 34



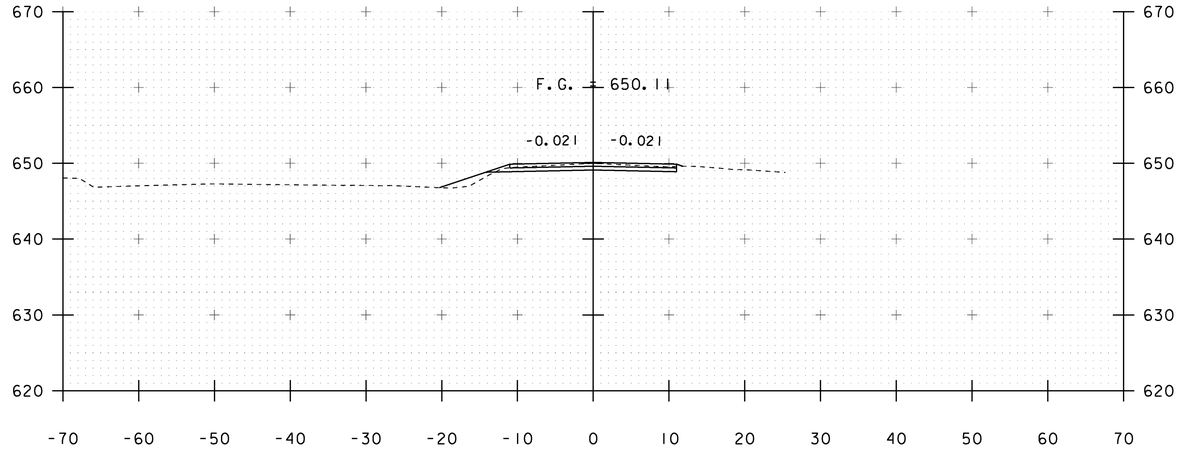
24+75



25+25



24+65



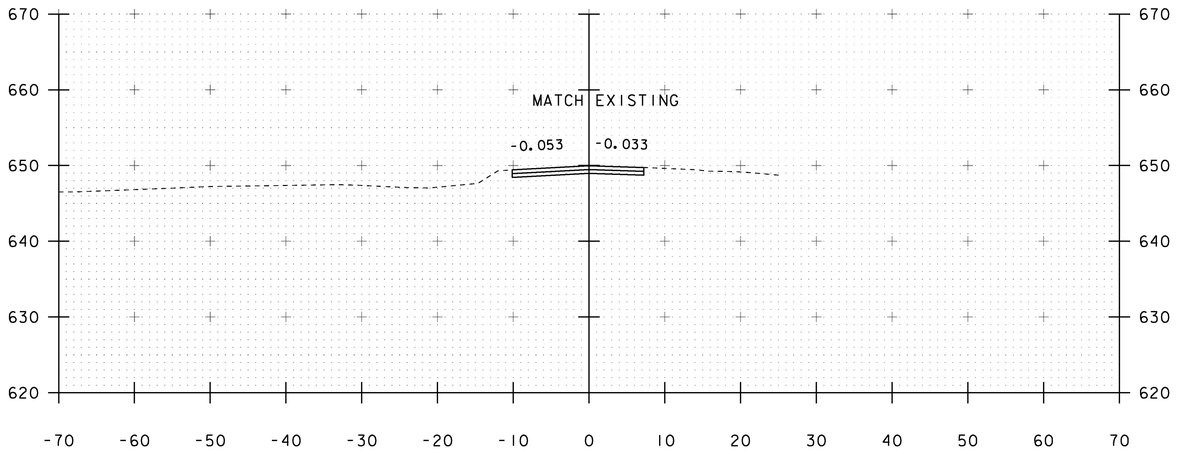
25+00

STA. 24+65 TO STA. 25+25

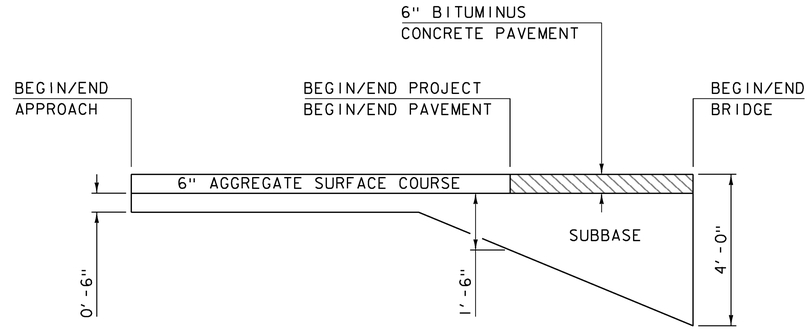
PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166xs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
MAINLINE SECTIONS 4

PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 28 OF 34

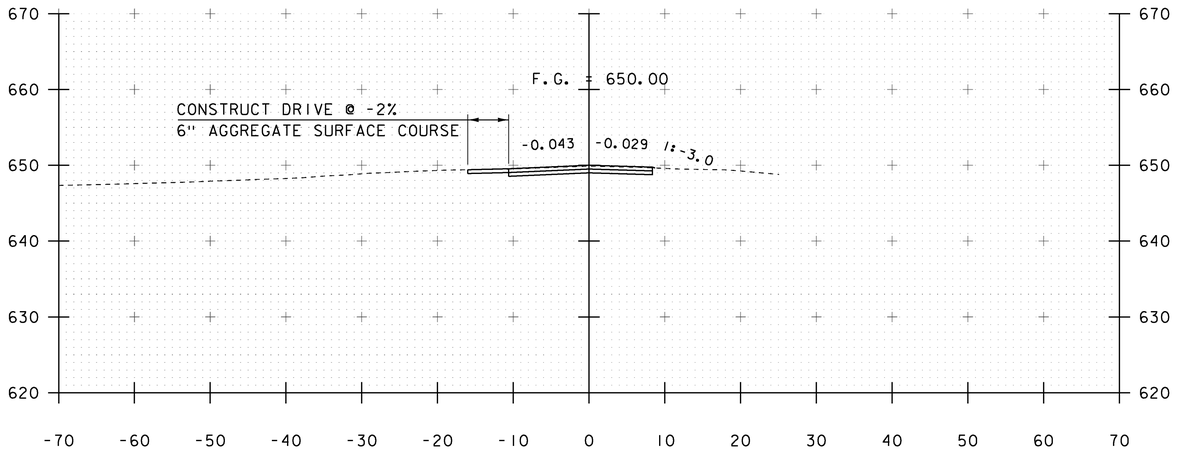


25+50
END APPROACH

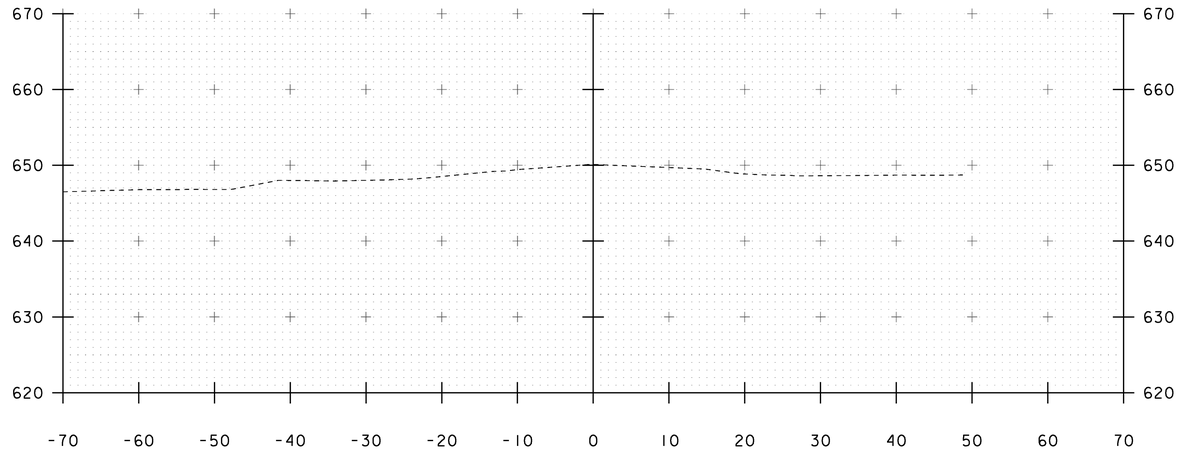


MATERIAL TRANSITION

NOT TO SCALE



25+35



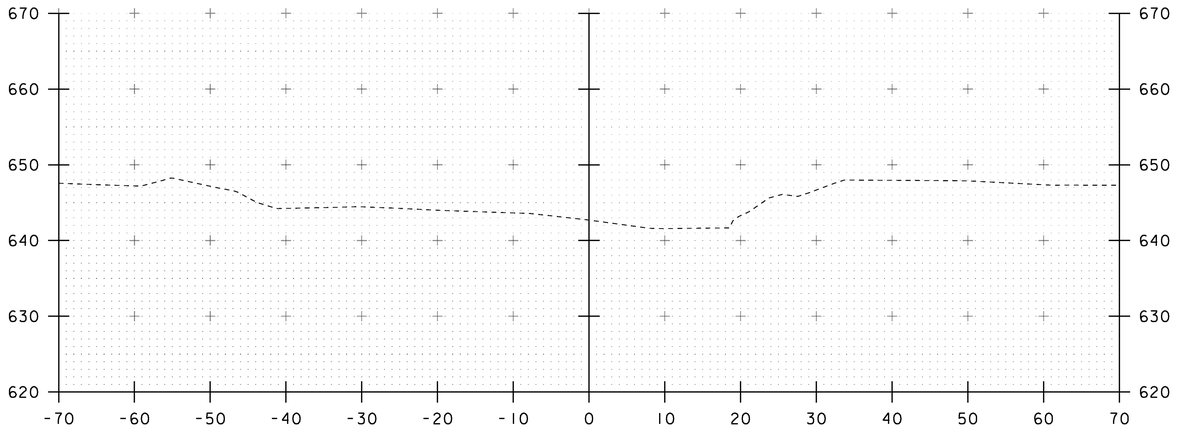
25+75

STA. 25+35 TO STA. 25+75

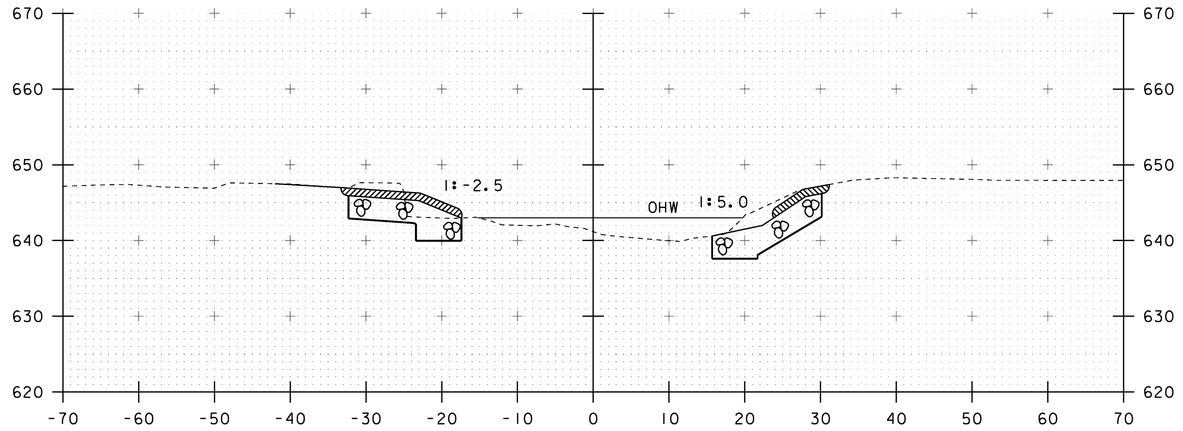
PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166xs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
MAINLINE SECTIONS 5

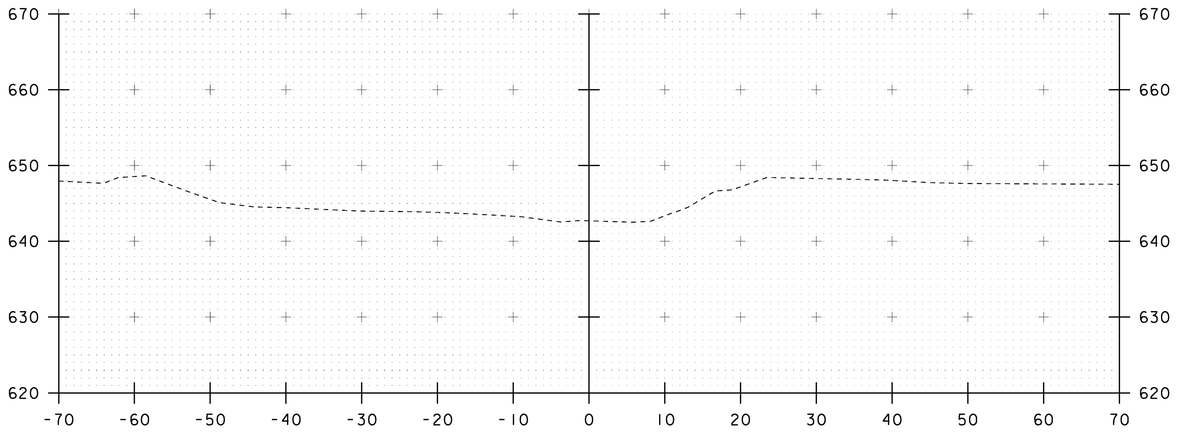
PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 29 OF 34



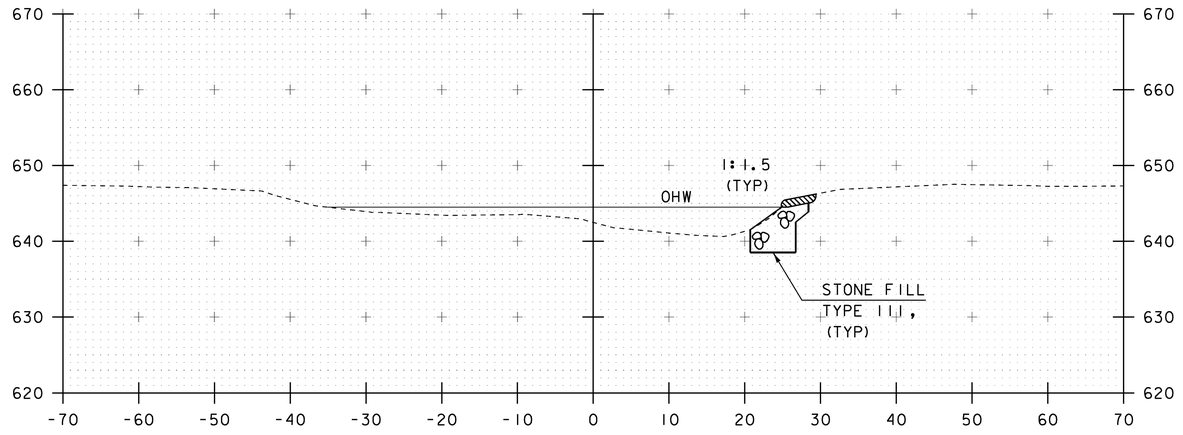
50+25



50+75



50+00



50+50

STA 50+64.10 LT (AB #1)
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONEFILL, TYPE III
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL

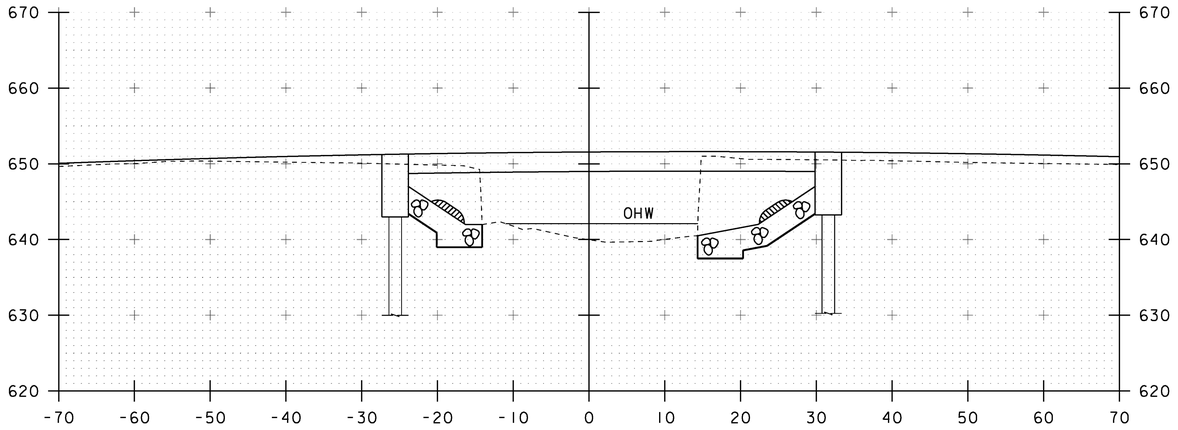
STA 50+45.00 RT (AB #2)
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONEFILL, TYPE III
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL

STA. 50+00 TO STA. 50+75

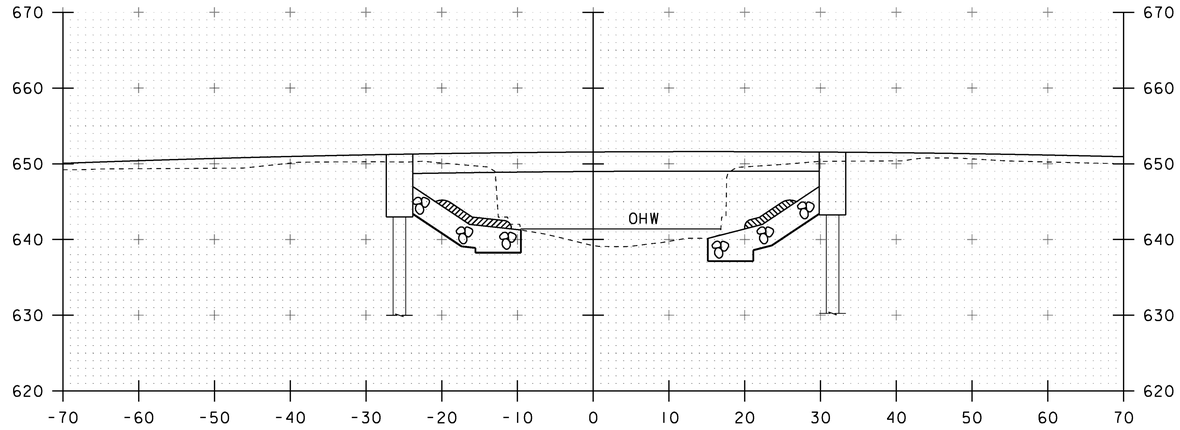
PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166xs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
CHANNEL SECTIONS 1

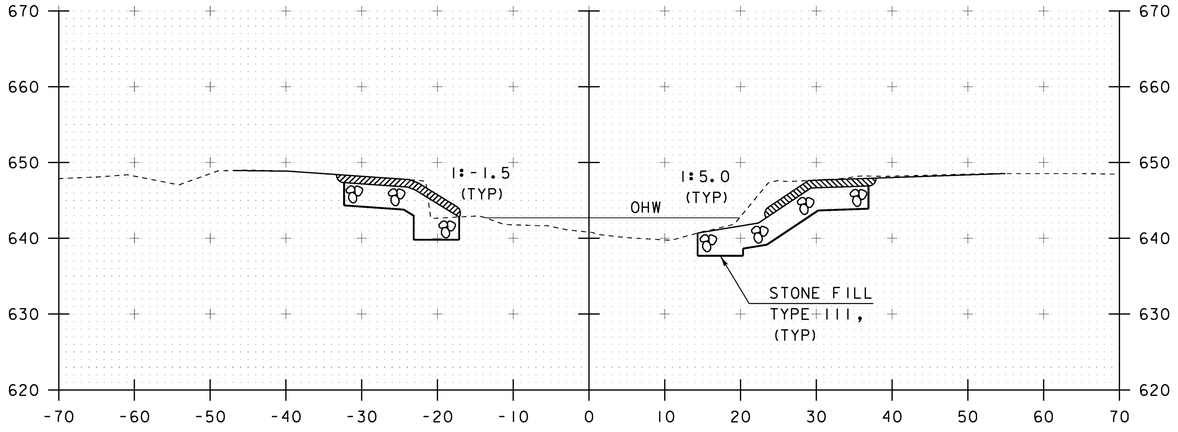
PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 30 OF 34



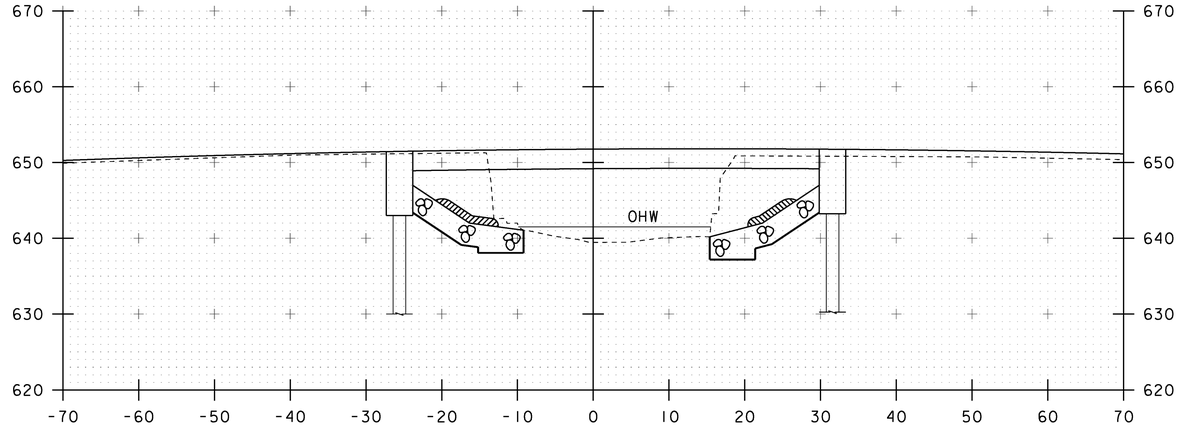
50+90



51+10



50+80

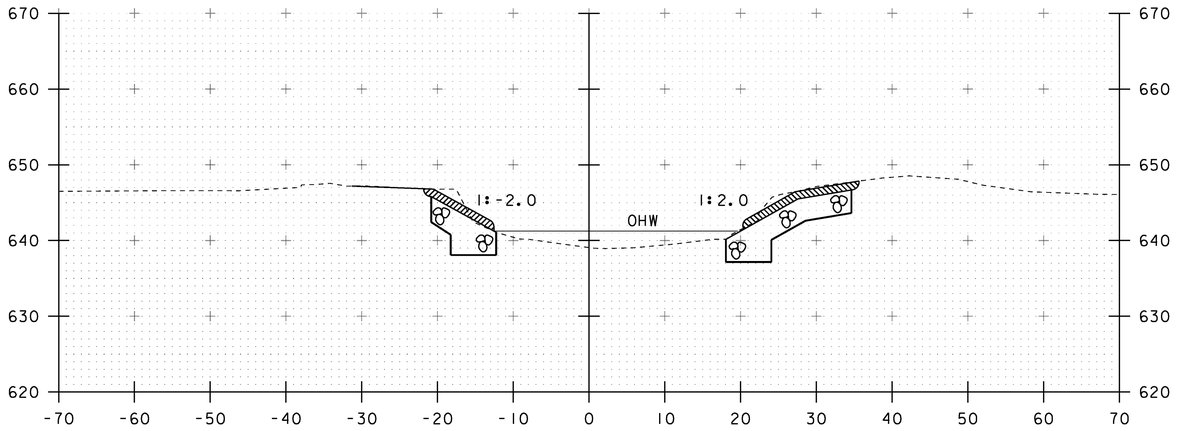


51+00

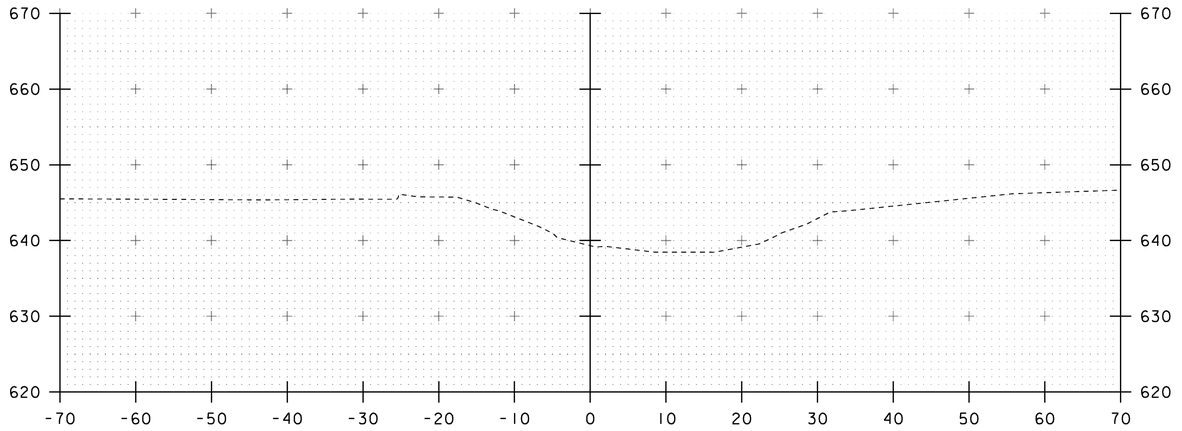
STA. 50+80 TO STA. 51+10

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448(39)

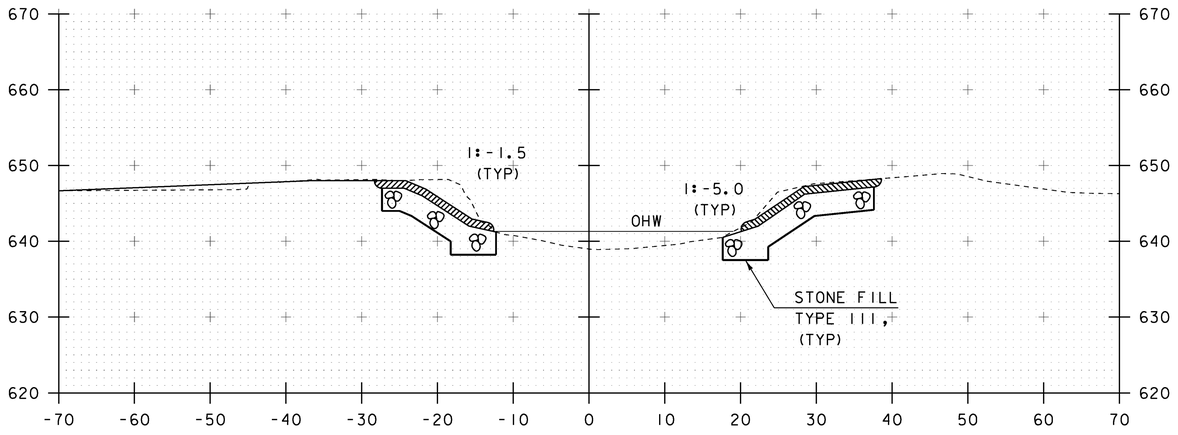
FILE NAME: s12J166xs.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
CHANNEL SECTIONS 2	SHEET 31 OF 34



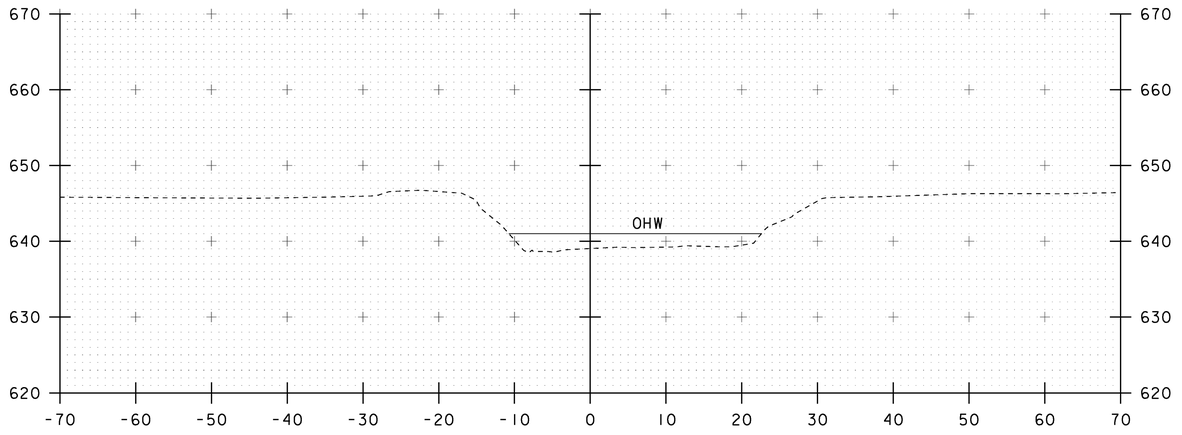
51+25



51+75



51+20



51+50

STA 51+30.00 LT (AB #1)
END UNCLASSIFIED CHANNEL EXCAVATION
END STONEFILL, TYPE III
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL

STA 51+35.00 RT (AB #2)
END UNCLASSIFIED CHANNEL EXCAVATION
END STONEFILL, TYPE III
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL

STA. 51+20 TO STA. 51+75

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448(39)

FILE NAME: s12j166xs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
CHANNEL SECTIONS 3

PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: J. SALVATORI
SHEET 32 OF 34

1

BUTLER, JOHN A. &
CAROL L. PENBERTHY

2B

TISBERT, JOSEPH M. &
ANNE MARIE
joined by VERMONT LAND TRUST, INC.

END ROW PROJECT
BRO 1448 (39)
STA. 25+23 24.75' LT

N

VT STATE PLANE GRID

POB MAINLINE
STA 21+00.00
N = 761482.0396
E = 1544976.2616

LyD LYMAN-TUNBRIDGE
FINE SANDY LOAMS
WITH 15%-25% SLOPES
"K" FACTOR = .24 -.28
VERY STONY

POE CHANNEL
STA 52+00.00
N = 761606.8095
E = 1545240.9453

POB MAINLINE
STA 26+00.00
N = 761527.8402
E = 1545474.1595

BEGIN PROJECT
BEGIN PAVEMENT
STA 23+00.00

BEGIN BRIDGE
STA 23+47.67

END BRIDGE
STA 24+08.33

END PROJECT
END PAVEMENT
STA 24+50.00

R = 10'

EXISTING ROW

24.75'

TH 46
TO UNDERHILL

TH 46
TO CAMBRIDGE

21+00 22+00 23+00 24+00 25+00 26+00

50+00 51+00 52+00

CH (P)
CONST (T)
INSTALL (T)
SR (P)
RESET (T)
SAVE

R = 5'
(TYP)

BEGIN APPROACH
STA 22+00.00

END APPROACH
STA 25+50.00

℄ BEARING
STA 23+50.00
FG = 651.48

℄ BEARING
STA 24+06.00
FG = 651.75

MAINLINE STA 23+75.00
= CHANNEL STA 51+00.00
Δ= 90.00° RT

POB CHANNEL
STA 50+00.00
N = 761407.6504
E = 1545259.2655

STONE FILL
TYPE III,
(TYP)

W-1
7'x7' WELL
CONCRETE

BEGIN ROW PROJECT
BRO 1448 (39)
STA. 23+26 24.75' RT

2A

TISBERT, JOSEPH M. &
ANNE MARIE
joined by VERMONT LAND TRUST, INC.

CLEANING CULV. PIPE, IN-PLACE
STA 25+26+.10 - 25+45.83 LT

CONSTRUCT FIELD DRIVE
STA 22+75.00 LT
STA 24+62.00 RT

CONSTRUCT DRIVE
STA 25+35.00 LT

REMOVING AND RESETTING FENCE
STA 23+41.50 - 23+56.07 LT
STA 24+06.00 - 25+23.00 LT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 23+23.60 - 23+57.73 RT
STA 23+29.00 - 23+61.51 LT
STA 23+92.00 - 24+12.00 RT
STA 23+94.50 - 24+16.70 LT

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

FOR R.O.W. USE ONLY

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

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)

FILE NAME: r12jl66lay.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
ROW LAYOUT SHEET 1OF 1

PLOT DATE: 29-AUG-2014
DRAWN BY: A. EGIZI
CHECKED BY: R. CLOUTIER
SHEET 33 OF 34

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	ROW LAYOUT NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	T / P	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
1	BUTLER, JOHN A. & CAROL L. PENBERTHY	1	23+33 LT	23+59 LT			CONST	T	80 SF						INCL. BF, RESETTING FENCE
			23+42 LT	23+56 LT			SLOPE	P	18 SF						INCL. EC
			23+59 LT	23+66 LT			INSTALL	T	32 SF						FILTER CURTAIN
			23+54 LT	23+62 LT			CHANNEL	P	32 SF						INCL. STONE FILL
			23+91 LT	23+98 LT			INSTALL	T	52 SF						FILTER CURTAIN
			23+94 LT	24+06 LT			CHANNEL	P	94 SF						INCL. STONE FILL
			23+98 LT	24+06 LT			CONST	T	26 SF						INCL. PDF
2A	TISBERT, JOSEPH M. & ANNE MARIE,	1	23+26 RT	23+44 RT			CONST	T	80 SF	WDOE	06/17/14	CAMBRIDGE	400	334-337	INCL. PDF
	joined by VERMONT LAND TRUST, INC.		23+33 RT	23+43 RT			SLOPE	P	51 SF						INCL. EC
			23+42 RT	23+65 RT			INSTALL	T	212 SF						FILTER CURTAIN
			23+43 RT	23+58 RT			CHANNEL	P	96 SF						INCL. STONE FILL
			23+89 RT	23+99 RT			INSTALL	T	74 SF						FILTER CURTAIN
			23+91 RT	24+06 RT			CHANNEL	P	320 SF						INCL. STONE FILL
			23+98 RT												MONITOR WELL W-1
			23+99 RT	24+09 RT			CONST	T	88 SF						INCL. PDF
2B		1	24+05 LT	24+10 LT			CHANNEL	P	16 SF						INCL. STONE FILL
			24+06 LT	24+12 LT			CONST	T	35 SF						INCL. PDF
			24+06 LT	25+23 LT			RESET	T							FENCE
3	VERMONT ELECTRIC COOPERATIVE, INC.	1													UTILITY
4	FAIRPOINT COMMUNICATIONS, INC.	1													UTILITY

APPROVED: RYAN CLOUTIER DATE: 12-04-13
CHIEF, PLANS & TITLES

TABLE OF REVISIONS

REVISION NO.	ROW SET SHEET #	DESCRIPTION	DATE
1	3, 4	PARCEL 2, TISBERT - ADDED CLAUSE	02/12/14
		TO PROPERTY OWNER NAME.	
		BY: MT C.O. 9862 APPR BY: RC	
2	3, 4	PARCEL 2, TISBERT - CHANGED NAME	05/12/14
		FROM AMERICAN FARMLAND TRUST,	
		INC. TO VERMONT LAND TRUST, INC.	
		BY: MT C.O. 9884 APPR BY: RC	

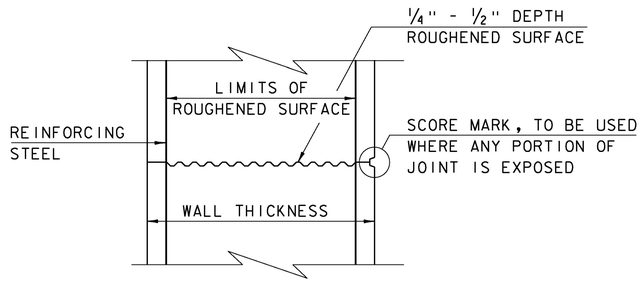
PROJECT NAME: **CAMBRIDGE**
PROJECT NUMBER: **BRO 1448 (39)**

FILE NAME: **r12j166Detail.xls**
PROJECT LEADER: **K. HIGGINS**
DESIGNED BY: **R. WHITE**
R.O.W. DETAIL SHEET #1

PLOT DATE: 29-AUG-2014
DRAWN BY: **M. TROTTIER**
CHECKED BY: **A. EGIZI**
SHEET 34 OF 34

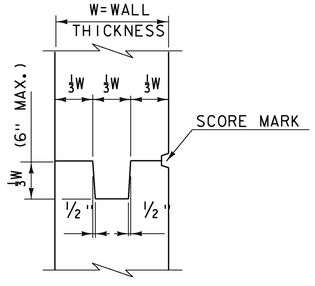
CONCRETE GENERAL NOTES

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.

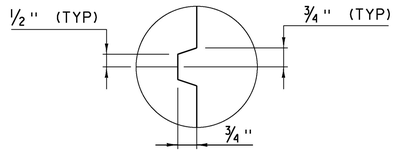


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

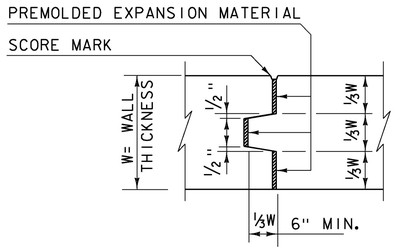
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



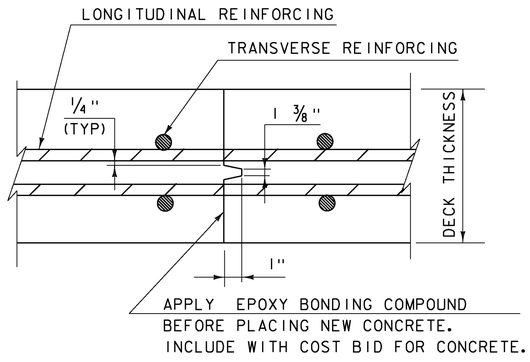
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



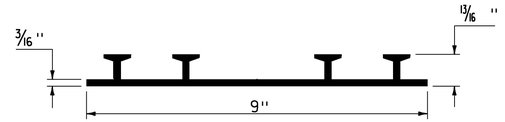
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



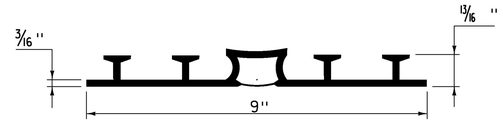
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



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.

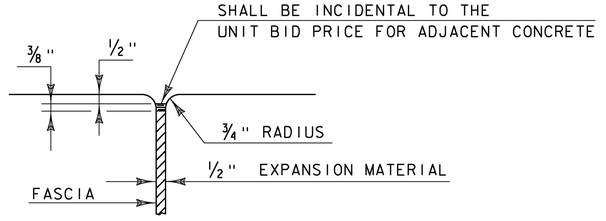
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



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.



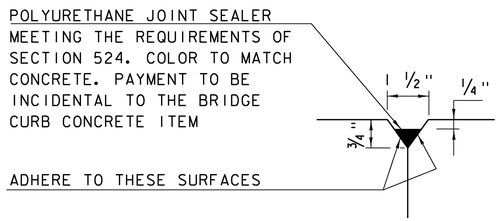
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

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

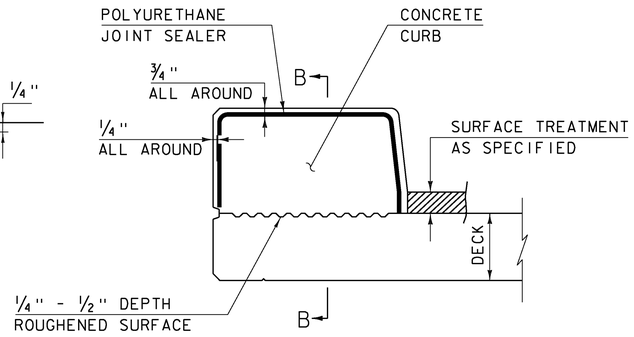
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-501.00

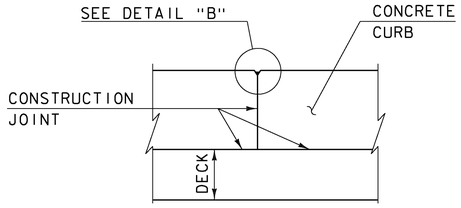


DETAIL "B"
(NOT TO SCALE)

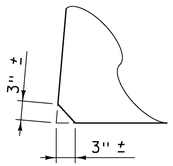


CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

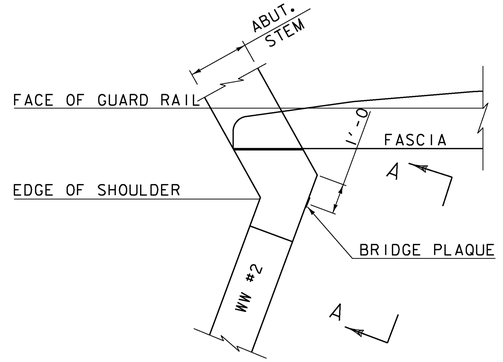
1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



SECTION B - B
(NOT TO SCALE)



ACUTE ANGLE CLIP DETAIL
(NOT TO SCALE)



PLAN

CONCRETE CURB JOINT NOTES

1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.

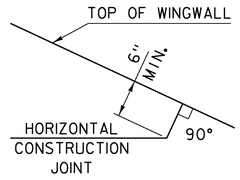
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.

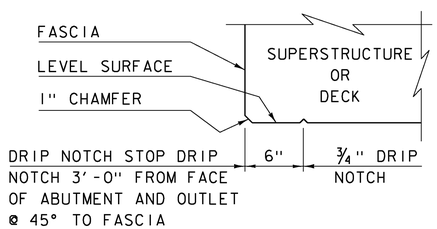
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.

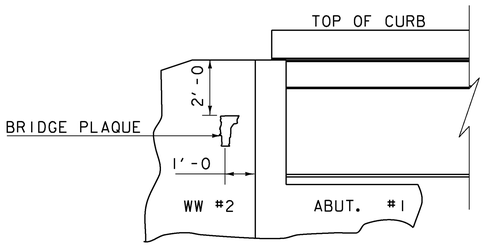
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)

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

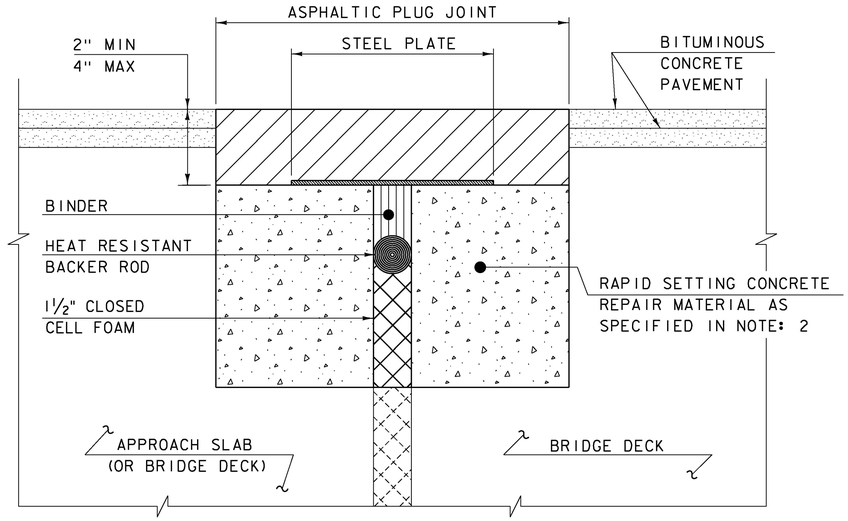
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

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

CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-502.00



ASPHALTIC PLUG JOINT DETAIL - REHAB

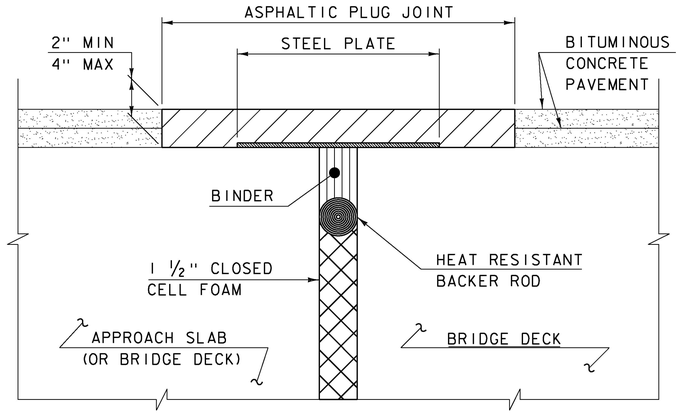
NOTES:

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.

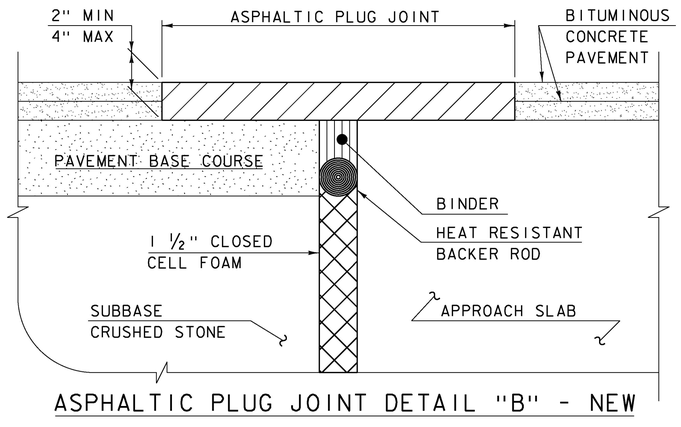
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

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

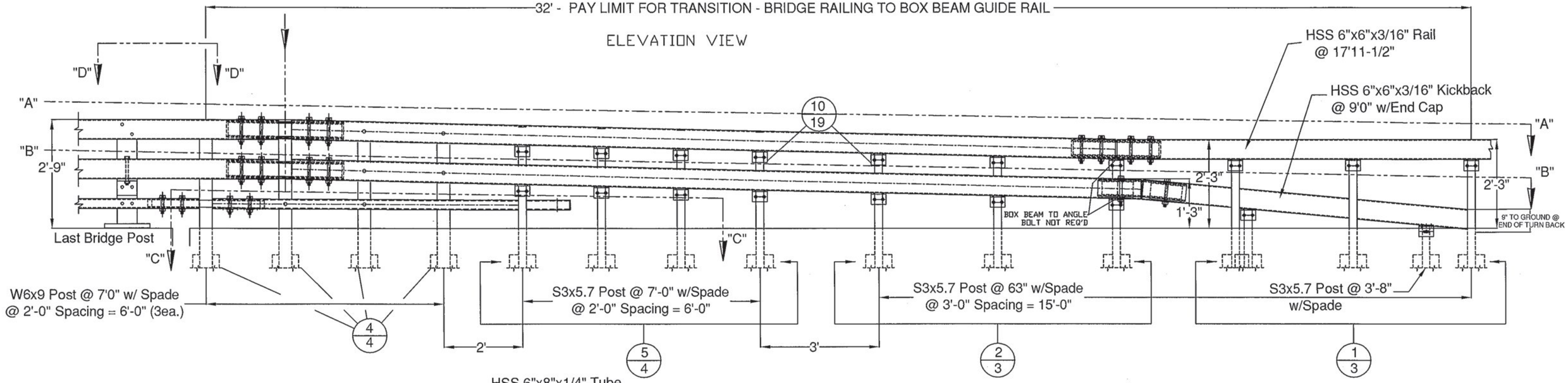
BRIDGE JOINT
ASPHALTIC PLUG

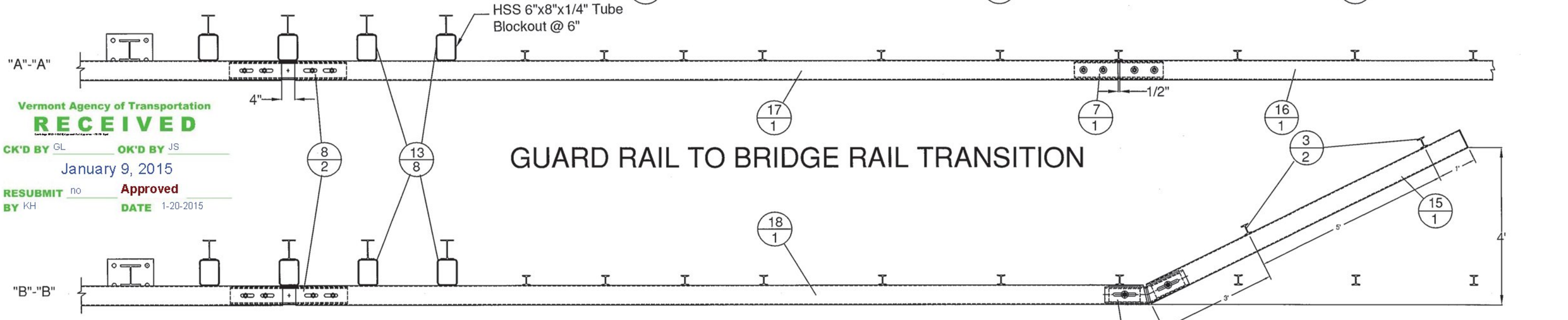
VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

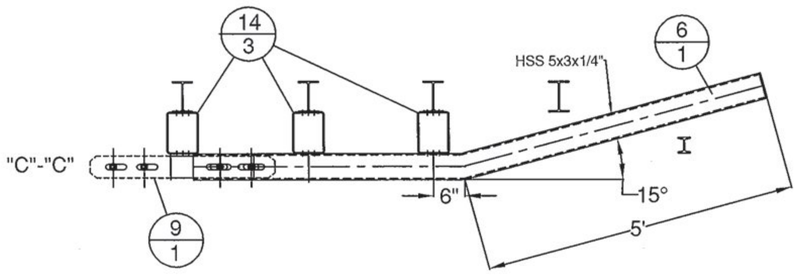
STRUCTURES DETAIL
SD-516.10

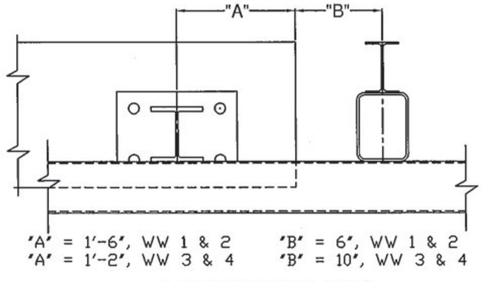
32' - PAY LIMIT FOR TRANSITION - BRIDGE RAILING TO BOX BEAM GUIDE RAIL

ELEVATION VIEW









VIEW "D"-"D"

GUARD RAIL TO BRIDGE RAIL TRANSITION

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
January 9, 2015
RESUBMIT no Approved
BY KH DATE 1-20-2015

ITEM #: 621.725

SHEET 1 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

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

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD), BRIDGE # 28
TOWN OF CAMBRIDGE, COUNTY OF LAMOILLE, VT.

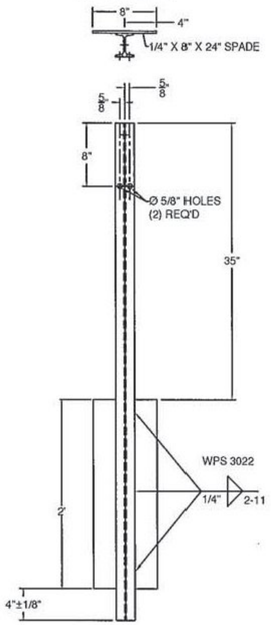
R E V	NO.	DATE	DESCRIPTION	BY
	1	1/7/15	REVISED PER 12/29/14 MARK-UP	EP

R E V	NO.	DATE	DESCRIPTION	BY

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

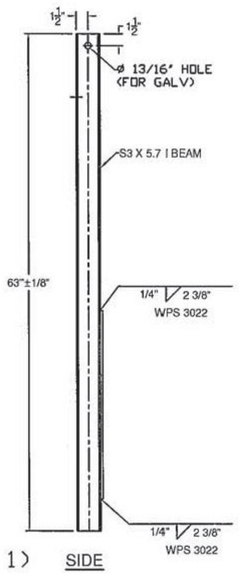
DRAWN	E.P.	12/3/14
CHECKED	D.L.	12/3/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-CAMBRIDGE-T	

PLAN VIEW



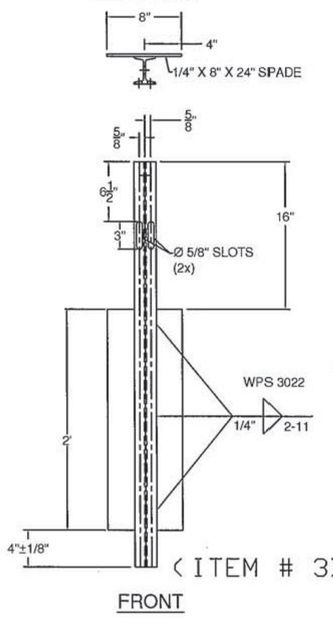
FRONT (ITEM # 1)

STANDARD POST DETAIL
(POST #12)



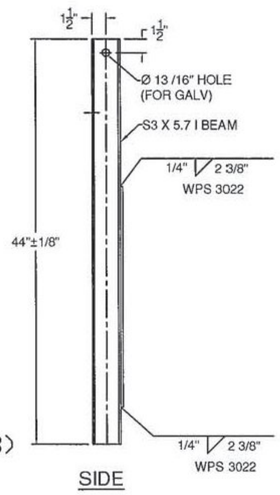
SIDE

PLAN VIEW



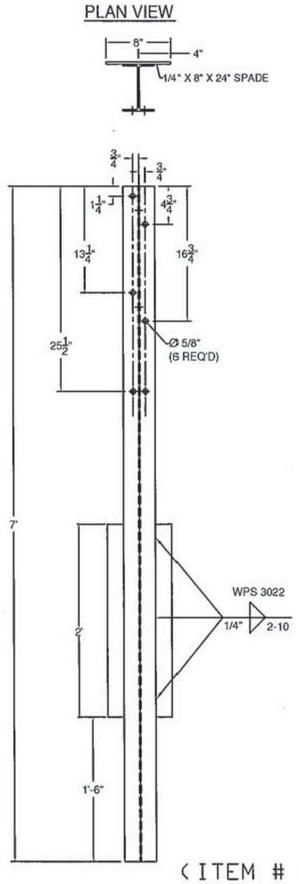
FRONT (ITEM # 3)

END POST DETAIL



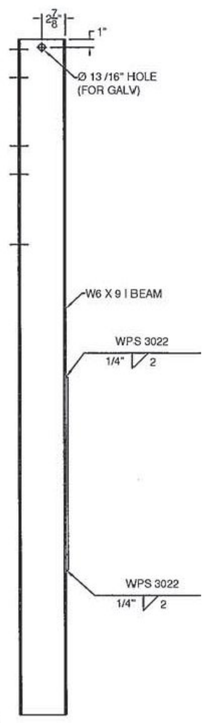
SIDE

PLAN VIEW



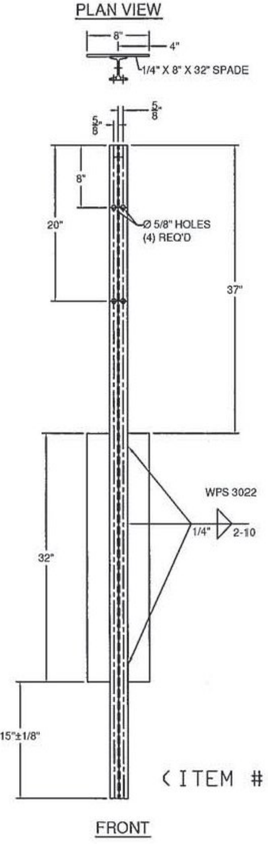
FRONT (ITEM # 4)

HEAVY POST DETAIL
(POST #1 ~ 4)



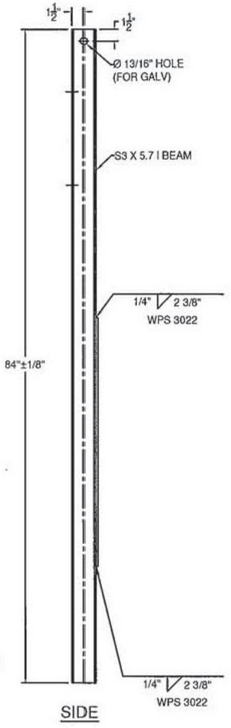
SIDE

PLAN VIEW



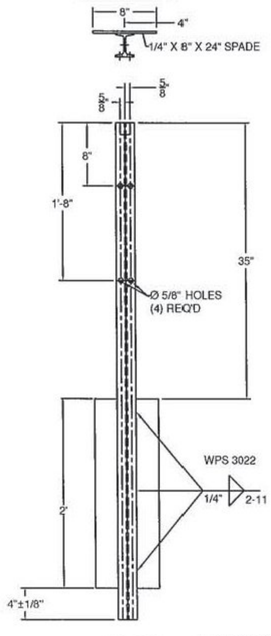
FRONT (ITEM # 5)

TRANSITION POST DETAIL
(POST #5 ~ 8)



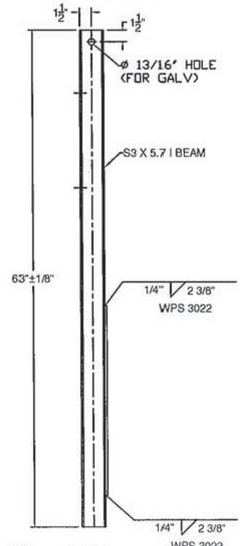
SIDE

PLAN VIEW



FRONT (ITEM # 2)

TRANSITION STANDARD
POST DETAIL
(POST #9 ~ 11)



SIDE

GENERAL NOTES:

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

BILL OF MATERIALS (EACH CORNER)

ITEM #	QTY.	COMPONENT #	DESCRIPTION	MATERIAL (ASTM)
1	3	0013.57021	S3 X 5.7 POST, PUNCH 8' W/SPD @ 63" LG	ASTM A572 Gr. 50
2	3	0013.57025	S3 X 5.7 POST, PUNCH 8', & 20' W/SPD @ 63" LG	ASTM A572 Gr. 50
3	2	0013.57060	S3 X 5.7 END POST W/SPD @ 3'-8" LG	ASTM A572 Gr. 50
4	4	0013.09001	W6 X 9 POST @ 7' W/SPD & 5/8" HOLES	ASTM A572 Gr. 50
5	4	0013.57010	S3 X 5.7 POST, PUNCH 8' & 20', W/8X32' SPADE @7'	ASTM A572 Gr. 50
6	1	0033.80403	3 X 5' BTM TRANS RAIL W/5'-0" KB, EXP END	A500 Gr. B
7	1	0033.00640	HSS 5X5 TUBE SPLICE @27" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
8	2	0033.00730	HSS 5x5 EXP TUBE SPLICE @ 36" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
9	1	0033.00930	BR EXP BAR SPLICE 2-1/8" X 4-1/4" @ 36" LG	ASTM A36
10	19	0054.00050	REG BB SHELF ANGLES @ 4-1/2"	ASTM A36
12	1	0054.00074	HSS 5 X 5 X 5/16" DBL BEND TUBE SPL @ 27" LG,	A500 Gr. B / A572 Gr 50
13	8	0054.00563	6 X 8 X 1/4" TRANS. TUBE B/□ @ 6" LG	A500 Gr. B
14	3	0054.00565	6 X 8 X 1/4" TRANS. TUBE B/□ @ 3" LG	A500 Gr. B
15	1	0054.09000	6 X 6 x 3/16" BB @ 9'-0" KICKBACK, W/ CAP, & 13° MITER	A500 Gr. B / A36
*16	1	0054.18000	6 X 6 x 3/16" BB @ 9'-0" (THIS PAY ITEM), DRILL 3" CC	A500 Gr. B
17	1	0054.90092	6 X 6 x 3/16" BB TOP TRANS @ 20'-9 5/8" LG W/EXP END	A500 Gr. B
18	1	0054.90093	6 X 6 x 3/16" BB BTM TRANS @ 21'-4 5/8" LG W/EXP END	A500 Gr. B
19	18	0080.03355	3/8" X 7 1/2" BOLT, NUT, & 2 FW	A307, A563 DH, F436
20	19	0080.04100	1/2" x 1-1/2" BOLT, NUT, & FW	A307, A563 DH, F436
21	22	0080.04120	1/2" x 1-1/2" BOLT, NUT, 2 FW & LW	A307, A563 DH, F436
22	4	0080.06255	3/4" X 4-1/2" BOLT, NUT, 2 FW	A325, A563 DH, F436
23	12	0080.06340	3/4" X 7-1/2" BOLT, NUT, 2 FW	A325, A563 DH, F436
24	6	0080.06370	3/4" X 8" CARR BOLT, NUT, FW & LW	A307, A563 DH, F436
25	2	0080.06400	3/4" X 8" BOLT, NUT, 2 FW, & LW	A325, A563 DH, F436

* - WW #4 - SPECIAL LENGTH W/ 16' RADIUS IN PAY ITEM 621.30

HARDWARE NOTES

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

APPLICABLE NOTES IN THE BRIDGE RAIL DRAWING SHALL ALSO BE APPLICABLE ON THESE DRAWINGS

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
January 9, 2015
RESUBMIT no Approved
BY KH DATE 1-20-2015

ITEM #: 621.725

SHEET 2 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

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

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

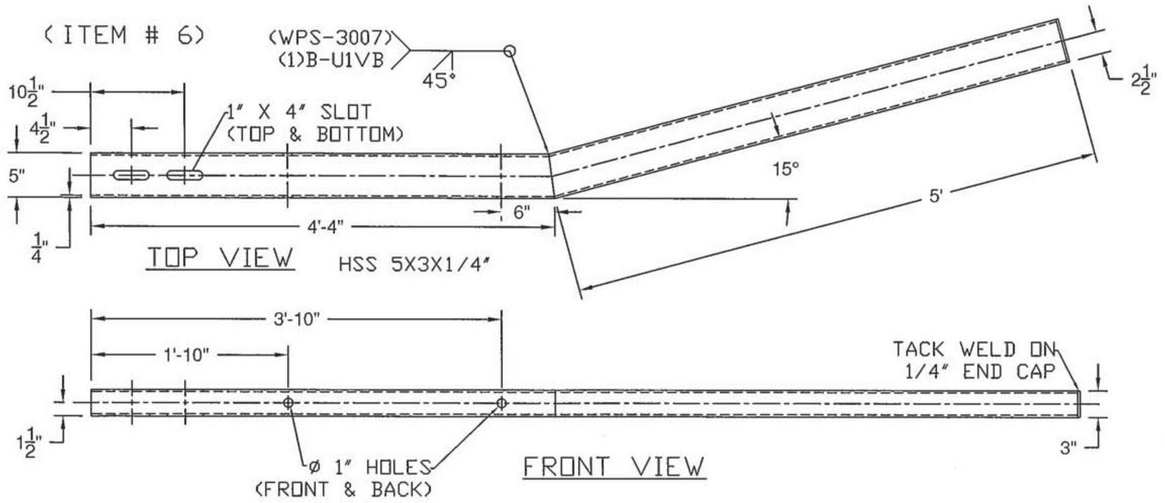
TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD), BRIDGE # 28
TOWN OF CAMBRIDGE, COUNTY OF LAMOILLE, VT.

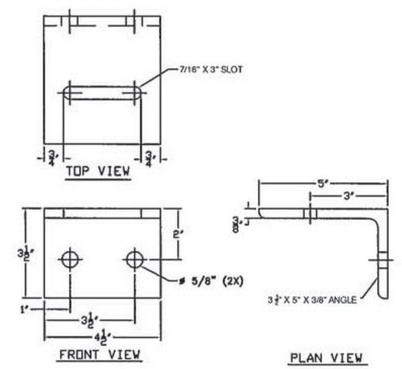
R	NO.	DATE	DESCRIPTION	BY	R	NO.	DATE	DESCRIPTION	BY
E	1	1/7/15	REVISED PER 12/29/14 MARK-UP	EP	E				
V					V				

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

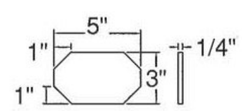
CERTIFIED FABRICATOR

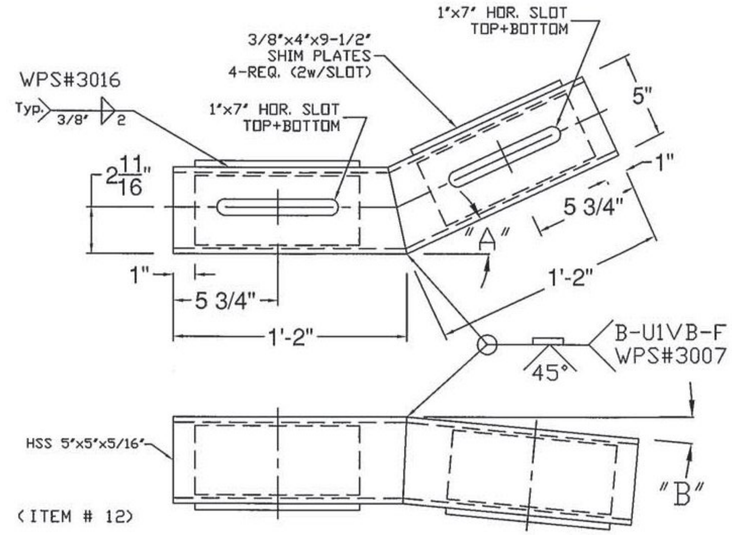
DRAWN	E.P.	12/3/14
CHECKED	D.L.	12/3/14
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-CAMBRIDGE-T	





(ITEM # 10)

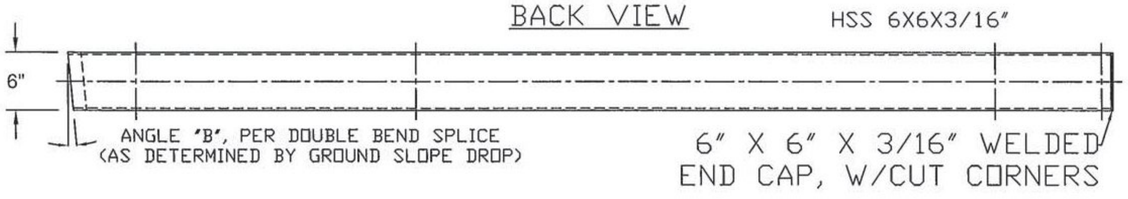


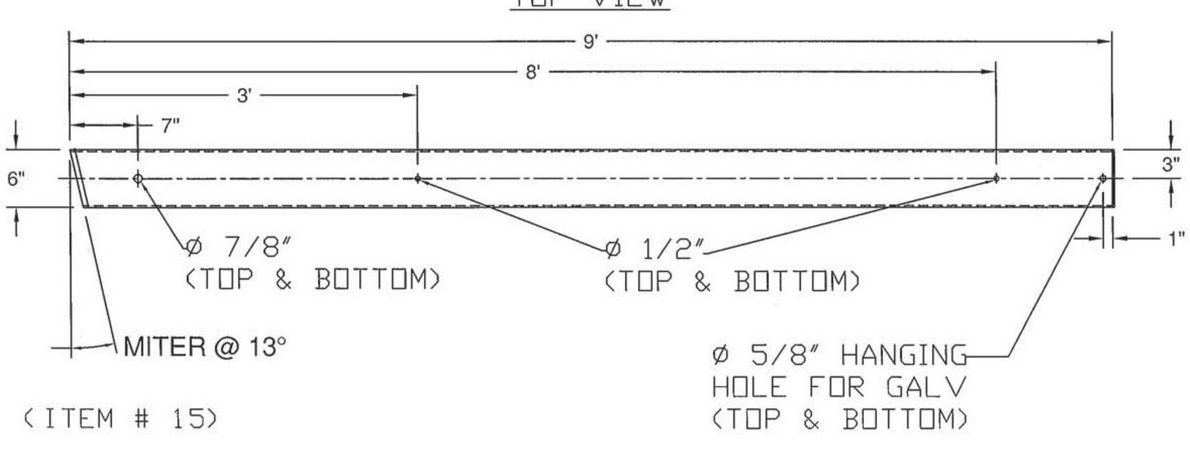


(ITEM # 12)

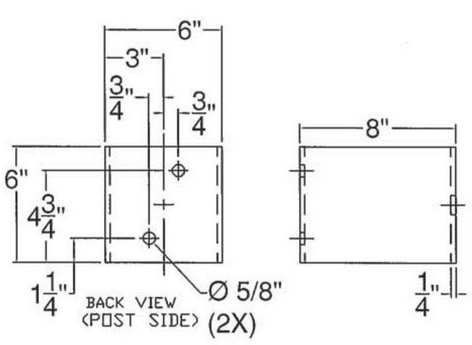
"A" - 26°
"B" - TURN DOWN ANGLE SET BY THE 9" MEASURMENT AT THE END OF THE BOX BEAM.

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
January 9, 2015
RESUBMIT no Approved
BY KH DATE 1-20-2015

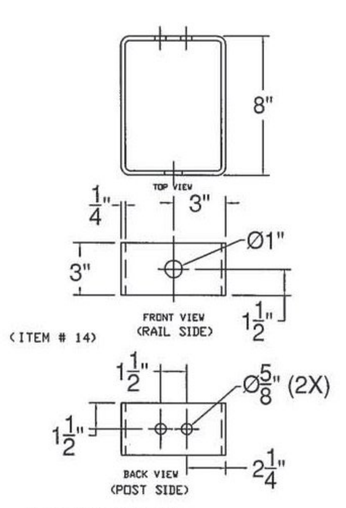


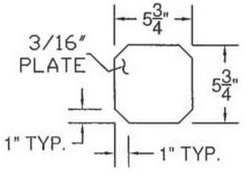


(ITEM # 15)



(ITEM # 13)





ITEM #: 621.725

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

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

SHEET 3 OF 5

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD), BRIDGE # 28
TOWN OF CAMBRIDGE, COUNTY OF LAMOILLE, VT.

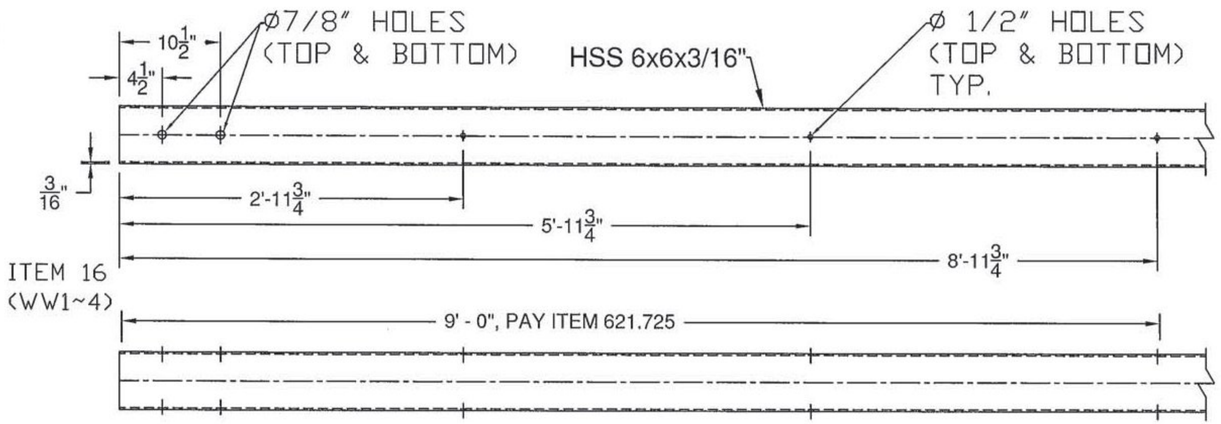
R E V	NO.	DATE	DESCRIPTION	BY
	1	1/7/15	REVISED PER 12/29/14 MARK-UP	EP

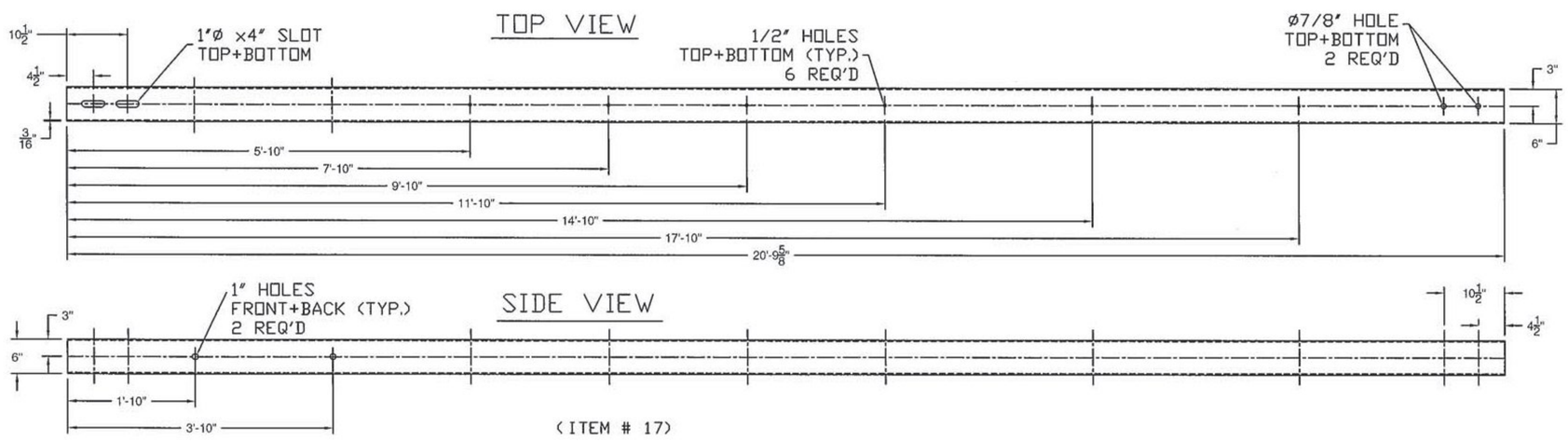
R E V	NO.	DATE	DESCRIPTION	BY

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

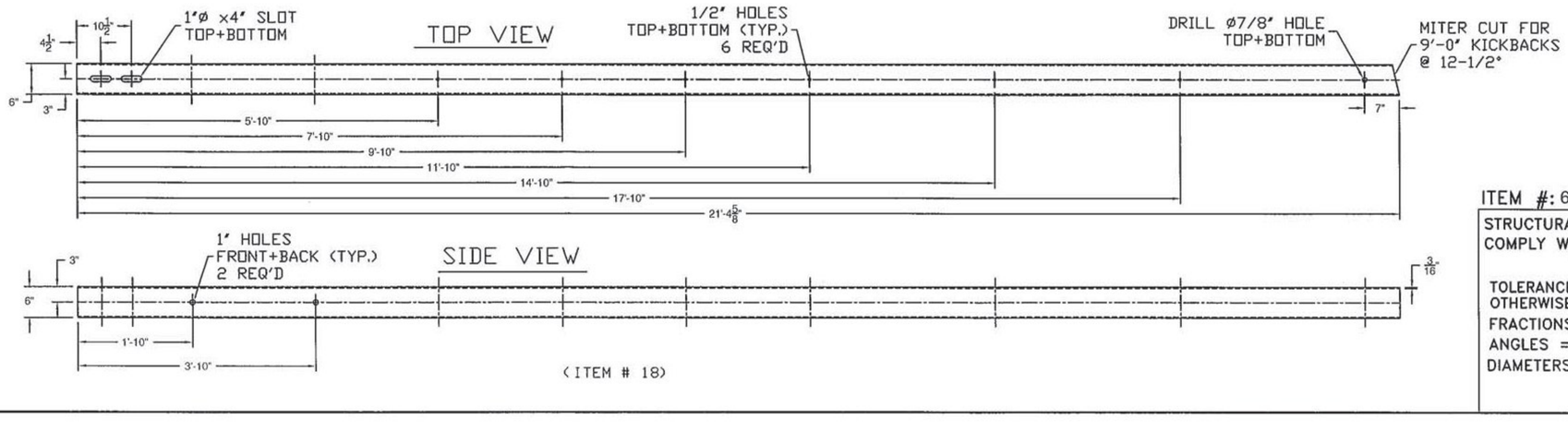
CERTIFIED FABRICATOR

DRAWN	E.P.	12/3/14
CHECKED	D.L.	12/3/14
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-CAMBRIDGE-T	





(ITEM # 17)



(ITEM # 18)

Vermont Agency of Transportation

RECEIVED

CK'D BY GL OK'D BY JS

January 9, 2015

RESUBMIT no Approved

BY KH DATE 1-20-2015

ITEM #: 621.725

SHEET 4 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

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

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD), BRIDGE # 28
TOWN OF CAMBRIDGE, COUNTY OF LAMOILLE, VT.

REV	NO.	DATE	DESCRIPTION	BY
	1	1/7/15	REVISED PER 12/29/14 MARK-UP	EP

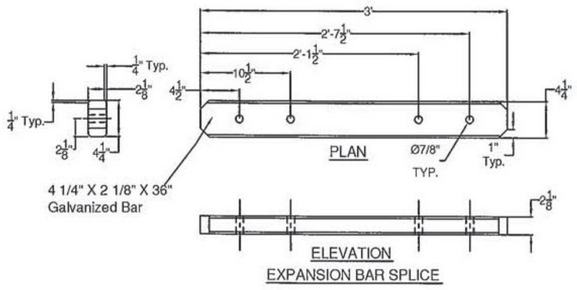
REV	NO.	DATE	DESCRIPTION	BY

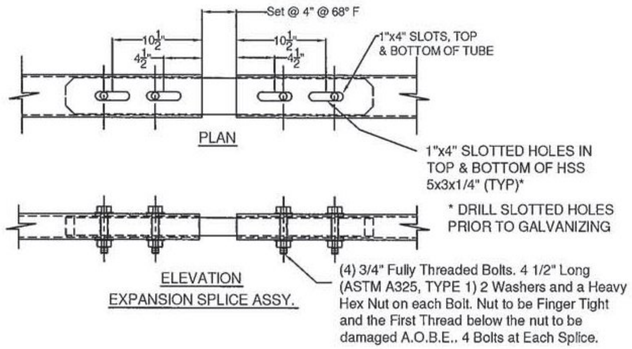
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

AISC CERTIFIED FABRICATOR

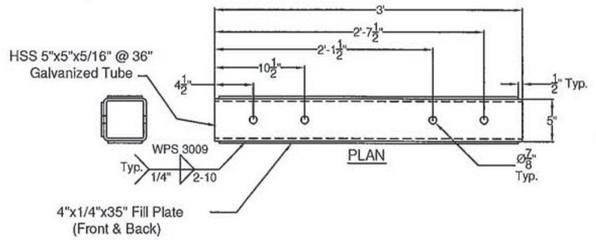
DRAWN	E.P.	12/3/14
CHECKED	D.L.	12/3/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-CAMBRIDGE-T	

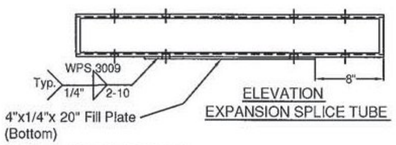
SPLICE BAR - EXPANSION



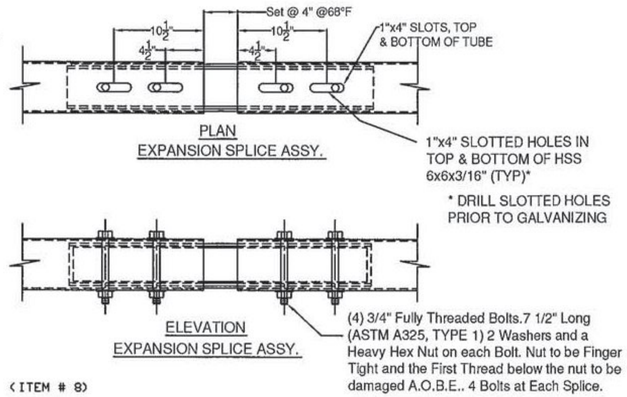


(ITEM # 9)

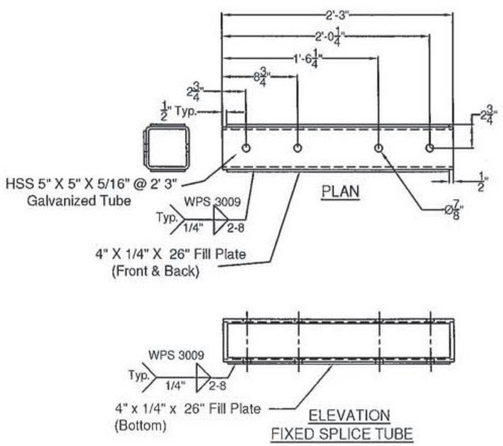


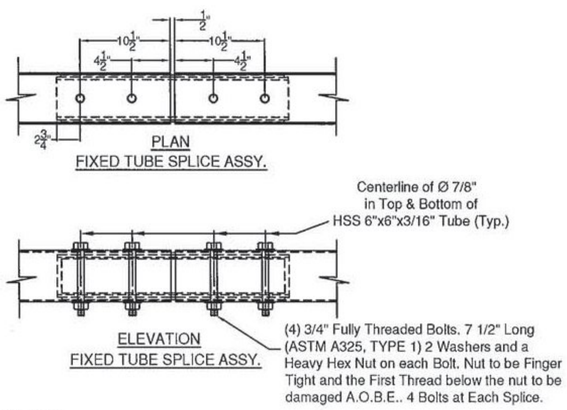


SPLICE TUBE - EXPANSION



(ITEM # 8)





(ITEM # 7)

SPLICE TUBE - FIXED

Vermont Agency of Transportation

RECEIVED

CK'D BY GL OK'D BY JS

January 9, 2015

RESUBMIT no Approved

BY KH DATE 1-20-2015

ITEM #: 621.725

SHEET 5 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

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

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD), BRIDGE # 28
TOWN OF CAMBRIDGE, COUNTY OF LAMOILLE, VT.

REV	NO.	DATE	DESCRIPTION	BY
	1	1/7/15	REVISED PER 12/29/14 MARK-UP	EP

REV	NO.	DATE	DESCRIPTION	BY

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

AISC CERTIFIED FABRICATOR

DRAWN	E.P.	12/3/14
CHECKED	D.L.	12/3/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-CAMBRIDGE-T	

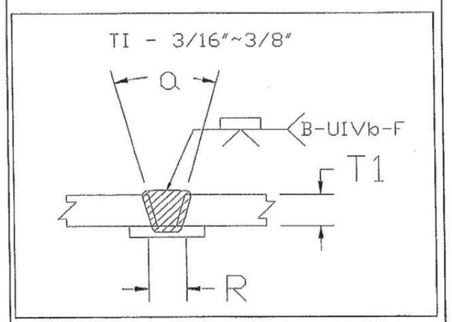
WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE#3

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

WELDING PROCEDURE

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



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

Procedure No. 3007

Revision No. _____

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

Date 7/28/2014

Vermont Agency of Transportation

RECEIVED

CK'D BY _____ OK'D BY JC

January 9, 2015

RESUBMIT NO Approved

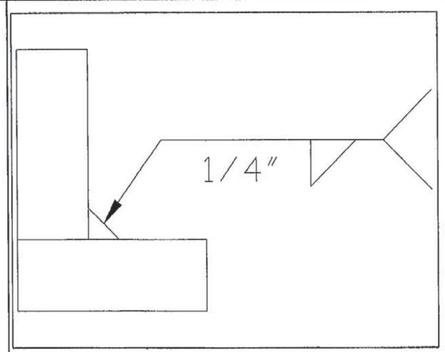
BY KH DATE 1-20-2015

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

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

WELDING PROCEDURE

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

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

Procedure No. 3009

Revision No. _____

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

Date 3/20/2014

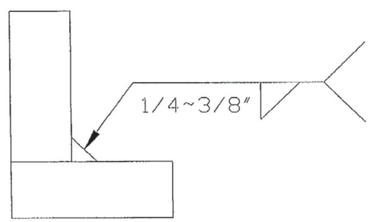
WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

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

WELDING PROCEDURE

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



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

Procedure No. 3016

Revision No. _____

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

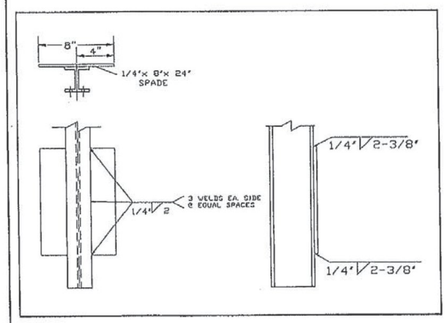
Date 8/4/2014

WELDING PROCEDURE SPECIFICATION

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

WELDING PROCEDURE

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



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

Procedure No. 3022

Revision No. _____

Contractor Elderlee, Inc.

Authorized By RANDY SCOTT

Date 3/20/2014

Vermont Agency of Transportation

RECEIVED

CK'D BY GL OK'D BY JS

January 9, 2015

RESUBMIT no Approved

BY KH DATE 1-20-2015

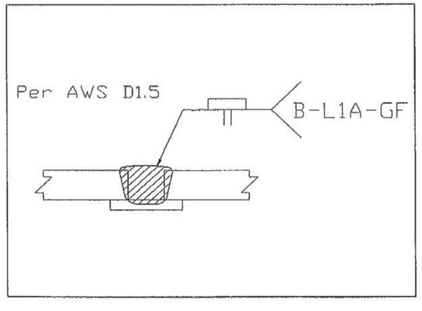
WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

Material Specification	A500 TO A36
Welding Process	FCAW-G
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT/HORIZONTAL
Filler Metal Specification	A5.29
Filler Metal Classification	E81T1-Ni1C-JH4
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE
Welding Progression	STRINGER
Root Treatment	CLEAN PER D1.5
Preheat and Interpass Temperature	PER D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

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

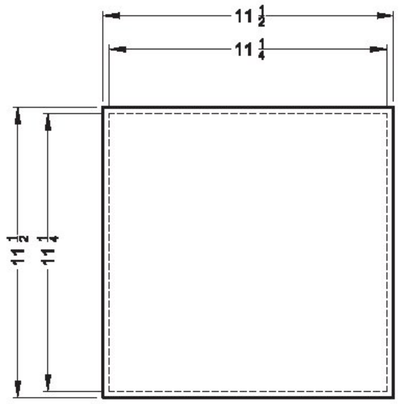


This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

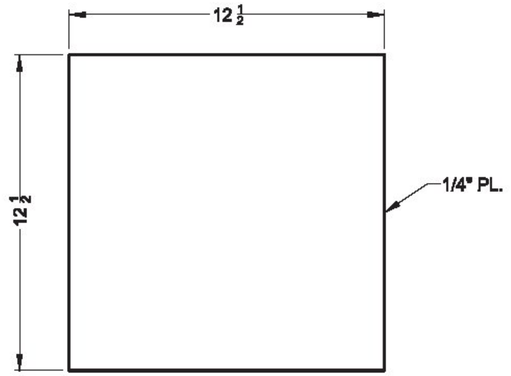
Procedure No. 3026
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 3/24/2014

REVISIONS					
ZONE	REV	DESCRIPTION	REVISED BY	DATE	APPROVED
--	A	PER ENGINEERS MARKS	EG	12/31/14	BF



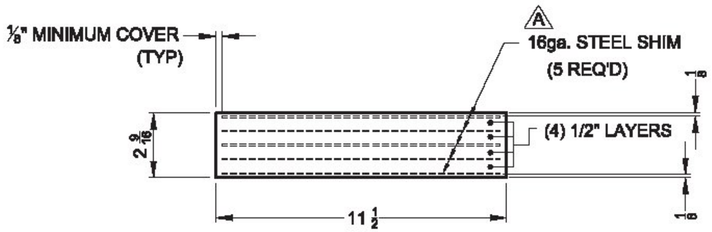
PLAN VIEW



SHIMS
PLAN VIEW

QTY. REQ'D. = 12
A36 GALVANIZED
A SHIPPED LOOSE

APPROVER NOTE: THESE SHIMS ARE FOR FIELD USE AND ARE NOT PART OF THE BEARING. PLEASE READ NOTE 5 ON SHEET 18 OF CONTRACT DRAWINGS.



ELEVATION VIEW

QTY. REQ'D. = 12

Vermont Agency of Transportation

RECEIVED

CK'D BY GL OK'D BY JS

January 6, 2015

RESUBMIT NO Approved AsNoted

BY KH DATE 1-7-2015

AMSCOT IS NOT WELDING ANYTHING ON THIS PROJECT SO NO WELDING PROCEDURE WILL BE PROVIDED. AMSCOT IS NOT BONDING TO EXTERNAL PLATES, SO BONDING PROCEDURE WILL BE NOT BE PROVIDED. 1/16" SHEETS ARE NOT AVAILABLE , SHIM MATERIAL SHALL BE 16ga. SHEETS.

SHEET 18 OF THE STATE CONTRACT DRAWINGS CALLS OUT THE STEEL SHIMS AS PLATES IN NOTES 2 & 3 AND ALSO IN THE QUANTITIES LISTED UNDER THE ELASTOMERIC BEARING DETAIL. PLEASE SEND US A REVISED SHEET 18 WITH THESE ERRORS CORRECTED FOR OUR RECORDS.

NOTES:

1. MANUFACTURING FACILITY LOCATION:
   AMSCOT STRUCTURAL PRODUCTS CORP.
   241 E. BLACKWELL STREET
   DOVER, N.J. 07801
   CONTACT- PETER SOMOGYI
   PH: 973-989-8800
   FAX: 973-989-5851

2. A ALL BEARING PADS TO BE MANUFACTURED IN ACCORDANCE WITH AASHTO SECTION 18.
   THE ELASTOMER SHALL BE GRADE 4 NATURAL RUBBER WITH A DUROMETER HARDNESS OF 50 ± 5, WITH A SHEAR MODULUS OF 100 PSI ± 15%.
   THE STEEL REINFORCING SHEETS SHALL CONFORM TO ASTM A36.

3. A ALL BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 & 731 OTF THE VTAOT STANDARD SPECIFICATIONS.

4. ALL INTERNAL SHIM MATERIAL SHALL BE ASTM A1011 GR. 36.

5. ALL DIMENSIONS ARE IN INCHES , UNLESS OTHERWISE NOTED.

6. TOLERANCES: THICKNESS -0 +1/4
   PLAN -0 +1/4 A

INCLUDE TEST PADS PER AASHTO SECTION 18.1.5. DESIGN LOAD = 22 KIPS

TOWN HIGHWAY 46 BRIDGE #28
TOWN OF CAMBRIDGE
COUNTY OF LAMOILLE VERMONT

PROJECT NO. : BRO 1448 (39)

CONTRACT NO. : | PIN NO. :

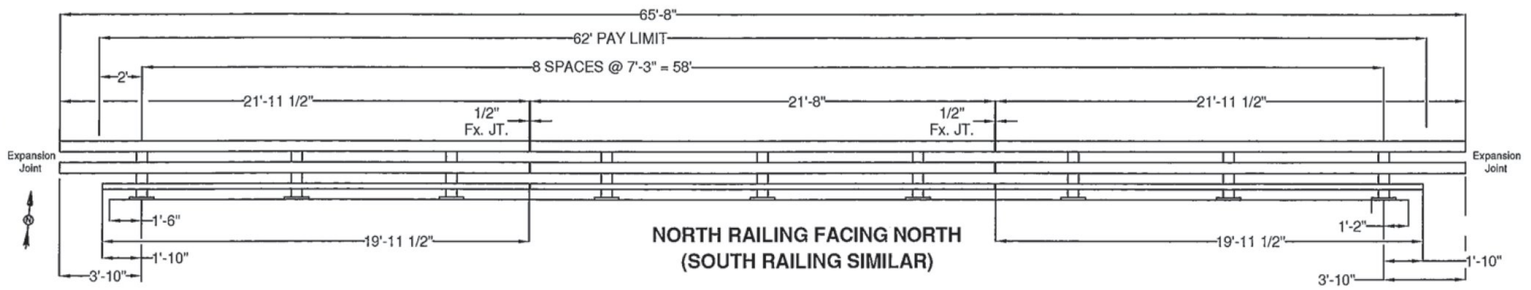
STEEL REINFORCED ELASTOMERIC BEARING PAD DETAILS

AMSCOT
STRUCTURAL PRODUCTS CORP.

SCALE: N.T.S.	APPRV'D:	DRAWN BY: E.J.G.
DATE: 10/23/13	BF	REVISION: A

FOR: BLOW & COTE

DWG NO: BC14B1RA		SHEET 1 OF 1



NORTH RAILING FACING NORTH
(SOUTH RAILING SIMILAR)

Vermont Agency of Transportation

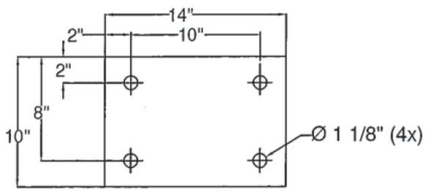
RECEIVED

CK'D BY GL OK'D BY JS

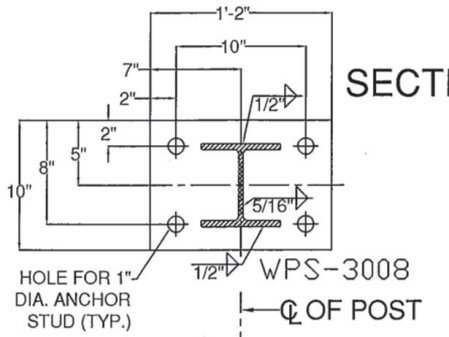
January 8, 2015

RESUBMIT NO Approved

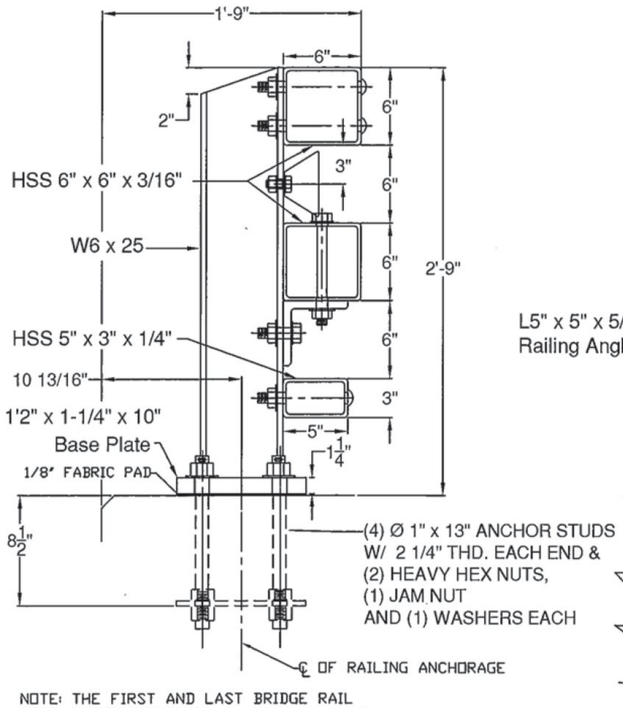
BY KH DATE 1-8-2015



1/8" FABRIC PAD

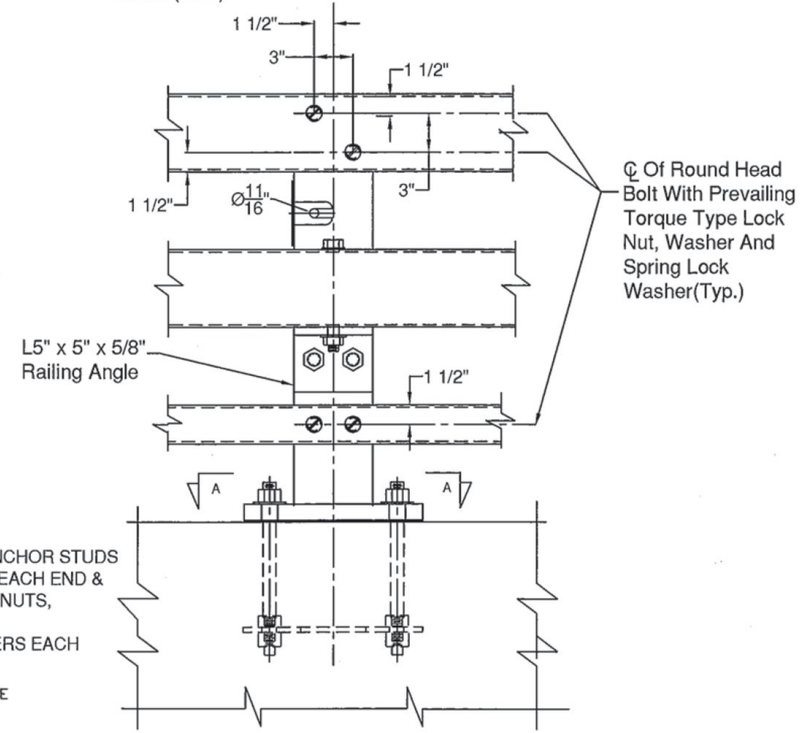


SECTION A-A



NOTE: THE FIRST AND LAST BRIDGE RAIL POST ANCHORAGE SHALL BE CAST INTO TH CLOSURE POUR AT EACH END OF THE BRIDGE. 3 INCHES OF THE ANCHOR STUDS SHALL BE PROJECTING OUT OF THE CONCRETE

SECTION



ELEVATION

STEEL BRIDGE RAILING

BILL OF MATERIAL

ITEM #	QTY	PART #	DESCRIPTION	ASTM DESIGNATION
1	18	0033.03610	W6x25, THREE RAIL POST @ 2'-9" OA ON 1 1/4x10x1'-2" B.P.	A572 Gr. 50
2	4	0033.91283	HSS 3" X 5" X 1/4" RAIL @ 19'-11 1/2"	A500 Gr. B
3	2	0033.91284	HSS 3" X 5" X 1/4" RAIL @ 21'-8"	A500 Gr. B
5	8	0033.91285	HSS 6" X 6" X 3/16" RAIL @ 21'-11 1/2"	A500 Gr. B
6	4	0033.91286	HSS 6" X 6" X 3/16" RAIL @ 21'-8"	A500 Gr. B
8	4	0033.00840	2-1/8" X 4-1/4" FIX. SPLICE BAR @ 2'-3"	A572 Gr. 50
9	8	0033.00640	HSS 5" X 5" X 5/16" FIX. SPLICE TUBE @ 2'-3"	A500 Gr. B, A572 Gr. 50
10	18	0033.00220	3/8" X 10" X 14" ANCHOR PLATES	A572 Gr. 50
11	18	0033.90050	1/8" X 10" X 14" FABRIC PAD	AASHTO M251
12	74*	0042.21013	Ø 1" X 13" ANCHOR STUDS, W/ 2 1/4" THD. EACH END	A449 TYPE 1
13	146*	0080.18901	Ø 1" HEAVY HEX NUTS	A563 DH
14	72	0080.18911	Ø 1" FLAT WASHERS	F436
15	72	0080.18905	Ø 1" HEX JAM NUTS	A563 DH
16	72	0080.07500	Ø 7/8" X 8" ROUND HEAD BOLT, NUT, SQ. WASHER, L.W.	A449, A563 DH, F436, ASME D18.2
17	18	0080.06400	Ø 3/4" X 8" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563DH, F436, & ASME D18.2
18	36	0080.06140	Ø 3/4" X 2-3/4" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563 DH, F436, & ASME D18.2
19	32	0080.06340	Ø 3/4" X 7-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563 DH, & F436
20	16	0080.06255	Ø 3/4" X 4-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563 DH, & F436
21	18	0033.00500	L5" X 5" X 5/8" RAILING ANGLE @ 6"	A572 Gr. 50
22	6		DELINEATORS - NOT SHOWN	(SUPPLIED BY CUSTOMER)

*-2 EXTRA FOR VDAT TESTING

GENERAL NOTES:

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

ITEM #: 525.335

SHEET 1 OF 2

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

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

BRIDGE RAIL DETAILS SHEET

TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD), BRIDGE # 28
TOWN OF CAMBRIDGE, COUNTY OF LAMOILLE, VT.

R	NO.	DATE	DESCRIPTION	BY
E	1	1/7/15	Revised Per 12/19/14 Markup	E.P.
V				

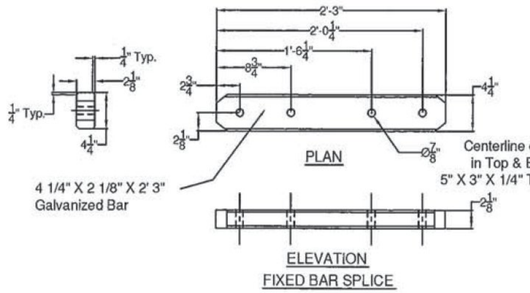
R	NO.	DATE	DESCRIPTION	BY
E				
V				

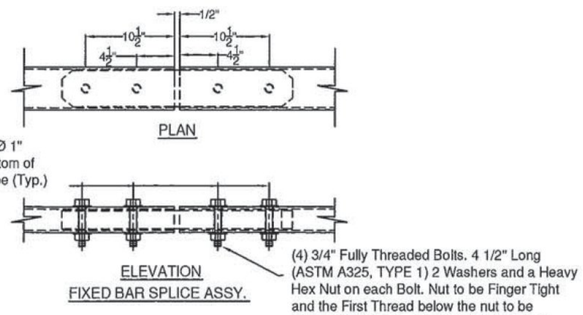
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com, epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

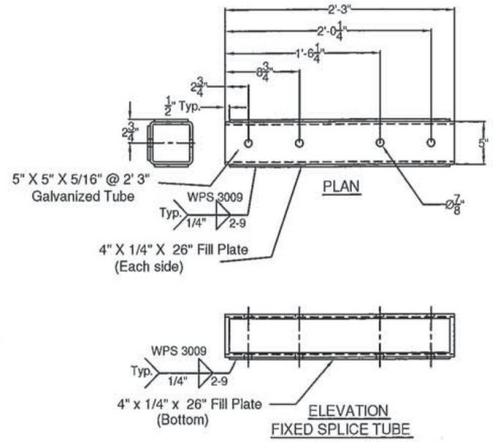
CERTIFIED FABRICATOR

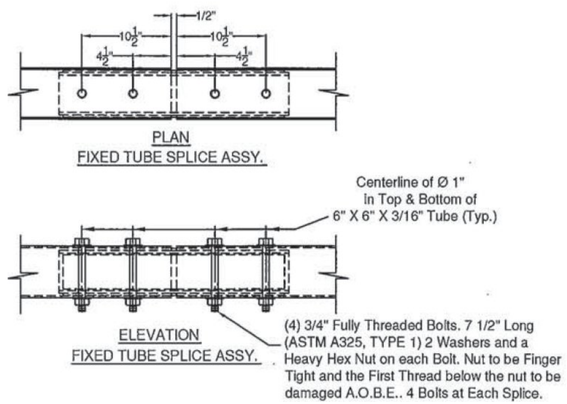
DRAWN	E.P.	11/21/14
CHECKED	D.L.	11/21/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LaFAYETTE-CAMBRIDGE	

SPLICE BAR - FIXED









SPLICE TUBE - FIXED

Vermont Agency of Transportation

RECEIVED

Cambridge Bridge Rail approved 1-8-2015pdf

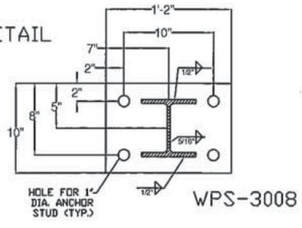
CK'D BY GL **OK'D BY** JS

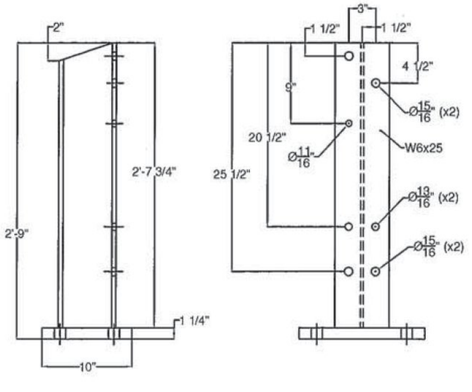
January 8, 2015

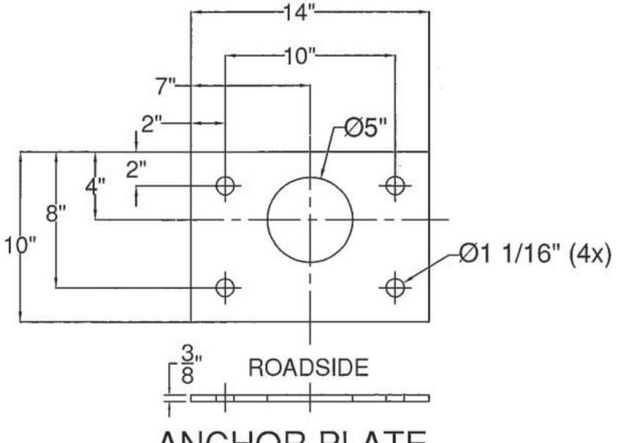
RESUBMIT NO Approved

BY KH **DATE** 1-8-2015

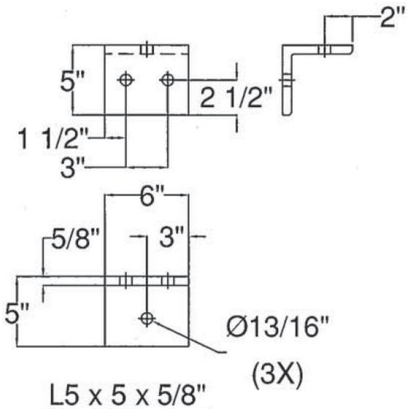
BRIDGE POST DETAIL



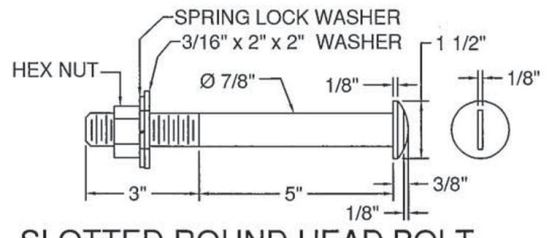




ANCHOR PLATE



L5 x 5 x 5/8"
RAILING ANGLE



SLOTTED ROUND HEAD BOLT

ITEM #: 525.335

SHEET 2 OF 2

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

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

BRIDGE RAIL DETAILS SHEET

TOWN HIGHWAY 46 (IRISH SETTLEMENT ROAD), BRIDGE # 28
TOWN OF CAMBRIDGE, COUNTY OF LAMOILLE, VT.

R	NO.	DATE	DESCRIPTION	BY	R	NO.	DATE	DESCRIPTION	BY
E	1	1/7/15	Revised Per 12/19/14 Markup	E.P.	E				
V					V				

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

AISC CERTIFIED FABRICATOR

DRAWN	E.P.	11/21/14
CHECKED	D.L.	11/21/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LaFAYETTE-CAMBRIDGE	

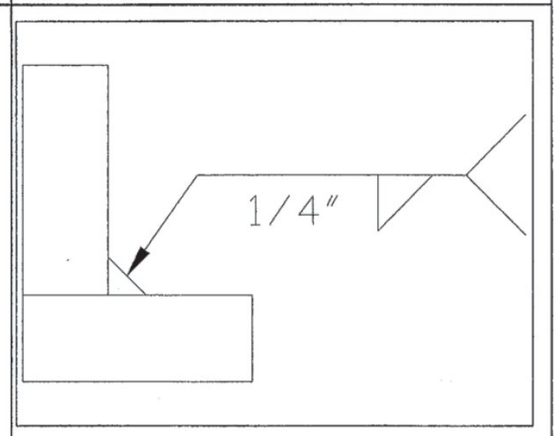
WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

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

WELDING PROCEDURE

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



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

Procedure No. 3009
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 3/20/2014

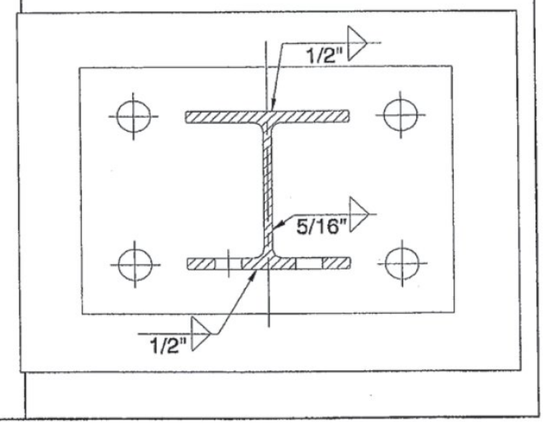
WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE#1

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

WELDING PROCEDURE

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



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

Procedure No. 3008
Revision No. _____

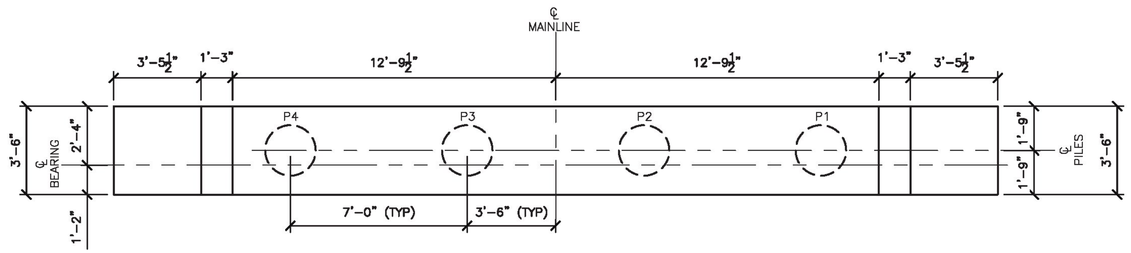
Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 5/29/2013

Vermont Agency of Transportation
RECEIVED
Cambridge Bridge Rail Approval 1-8-2015.pdf

CK'D BY JC OK'D BY JS

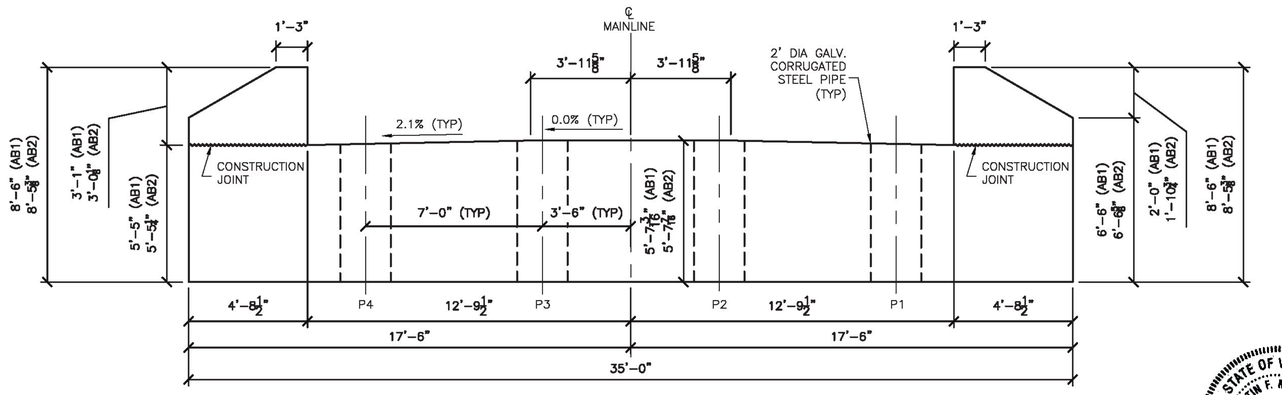
January 8, 2015

RESUBMIT NO Approved
BY KH DATE 1-8-2015



TYPICAL ABUTMENT PLAN

SCALE: 1/4"=1'–0"



TYPICAL ABUTMENT ELEVATION

SCALE: 1/4"=1'–0"

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
June 19, 2015
RESUBMIT NO Approved
BY RY DATE 6-23-2015

STATE OF VERMONT
KRISTIN F. McCLAIN
NO. 5380
STRUCTURAL
LICENSED
PROFESSIONAL ENGINEER

1

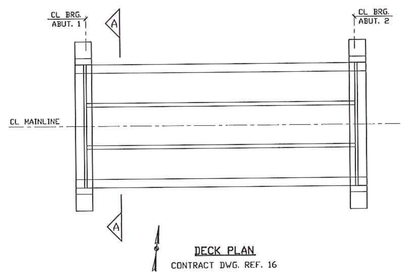
PREPARED BY: KFM
CHECKED BY: TRF
DATE: 05/20/15

CAMBRIDGE BRO 1448(39)
Abutments #1 and #2
Cambridge, VT

T. R. FELLOWS
VT NH
ENGINEERING
CIVIL – STRUCTURAL

134 COUNTY ROAD
P.O. BOX 428
WALPOLE, NH 03608
TELEPHONE 603.445.5551
trfellows@myfairpoint.net

PO BOX 56
ROCHESTER, VT 05767
TEL: 802.767.3753
FAX: 802.767.3753
krickert@mpolenlaw.com



DECK PLAN
CONTRACT DWG. REF. 16

LIST 1 (F.F.) (2 THUS)

3 #6 X 8'-0" (2) F.F.
1 #6 X 7'-10" (2) F.F.
1 #6 X 7'-7" (2) F.F.
1 #6 X 7'-3" (2) F.F.
1 #6 X 7'-0" (2) F.F.
1 #6 X 6'-8" (2) F.F.
1 #6 X 6'-5" (2) F.F.
1 #6 X 6'-1" (2) F.F.

LIST 3 (F.F.) (2 THUS)

3x1 #5 X 4'-2" (2) F.F.
1 #5 X 3'-8" (2) F.F.
1 #5 X 2'-9" (2) F.F.
1 #5 X 1'-11" (2) F.F.

LIST 2 (N.F.) (2 THUS)

2 #5 X 8'-0" (2) N.F.
1 #5 X 7'-10" (2) N.F.
1 #5 X 7'-3" (2) N.F.
1 #5 X 6'-8" (2) N.F.
1 #5 X 6'-1" (2) N.F.

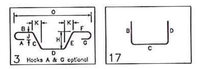
LIST 4 (N.F.) (2 THUS)

1 #5 X 4'-2" (2) N.F.
1 #5 X 3'-8" (2) N.F.
1 #5 X 1'-11" (2) N.F.

Release Number:

BAR LIST

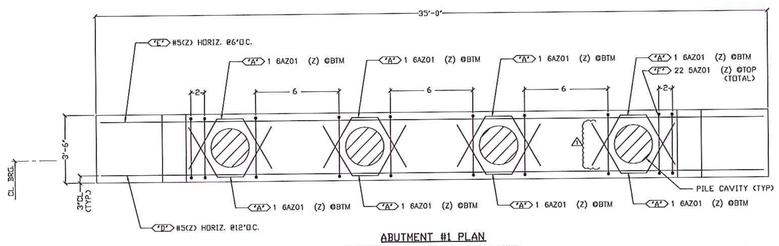
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
5A201	48	#5	8'-8"	17			2'-10"	3'-0"	2'-10"							
5A202	4	#5	4'-9"	3			0'-11"	3'-10"					1'-11"		3'-8"	4'-3"
6A201	8	#6	7'-5 K"	3				2'-11 K"	1'-6"	2'-11 K"			2'-7"		1'-8"	4'-8"



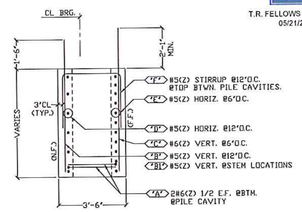
LIFTING POINT LOCATIONS & ANCHORS - BY OTHERS/G.C.

4 #7 SHEAR BAR FOR WIRE ANCHORS
4 #7 X 4'-0" (2) TOTAL

BAR MARKS MAY CHANGE, DUE TO REVISIONS



ABUTMENT #1 PLAN
(VERTICALS NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



SECTION 1
(REINF. @ BRIDGE SEAT)
CONTRACT DWG. REF. 20

APPROVED
T.R. FELLOWS ENGINEERING
05/21/2015

FOR APPROVAL

LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
O.F.-OUTER FACE
E.E.-EACH END
E.F.-EACH FACE
N.F.-NEAR FACE
F.F.-FAR FACE
E.W.-EACH WAY
O.C.-ON CENTER
L.W.-LONG WAY
S.W.-SHORT WAY

LAP CHART

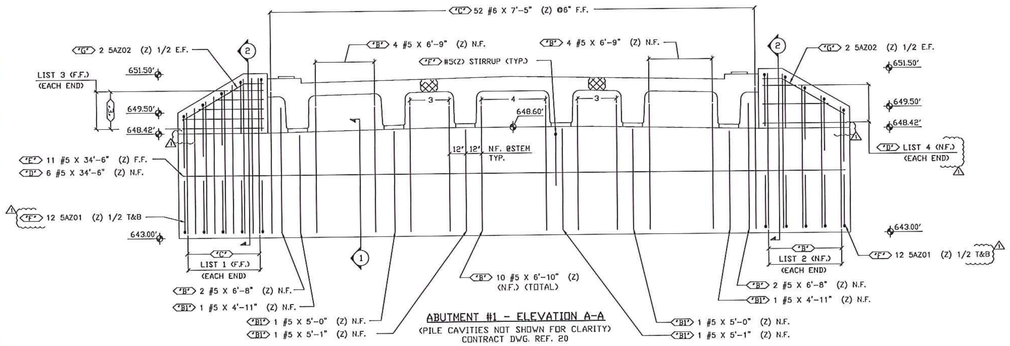
#5, #6	2'-7" (U.N.)

ALL REINF. BARS
LEVEL II - DUAL COATED

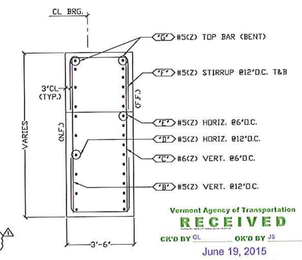
ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR DIMENSIONAL CONSTRUCTION.

DUAL COATED REINF. BARS ASTM A615 GRADE 60, MARKED (Z)

VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.



ABUTMENT #1 - ELEVATION A-A
(PILE CAVITIES NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



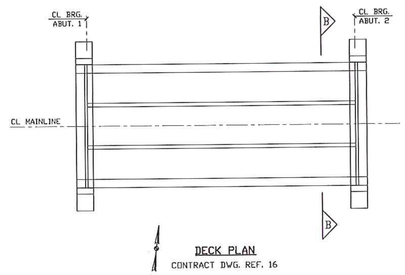
SECTION 2
(REINF. @ CHEEK WALL)
CONTRACT DWG. REF. 20

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
June 19, 2015
RESUBMIT NO Approved
BY RY DATE 6-23-2015

6			
5			
4			
3			
2	5/21/15	--	REVISED PER APPROVAL
1	1/29/15	--	FOR APPROVAL
	DATE	REV #	SENT FOR

DIMENSION
DIMENSION FABRICATORS INC.
3000 FIX STREET
BOSTON, N.Y. 12828
PH. (212) 314-1828
FAX (212) 314-1829
www.dimensionfabricators.com

STRUCTURE	VTAOT CAMBRIDGE BRO 1448(39)
LOCATION	CAMBRIDGE, VERMONT
ARCHITECT	
ENGINEER	
CUSTOMER	BLOW & COTE, INC.
DRAWN BY	KRIS J
DATE	1/23/15
SHT #	9127
DRAWING CONTENTS	WEST ABUTMENT #1
DRAWING #	A



DECK PLAN
CONTRACT DWG. REF. 16

LIST 1 (F.F.) (2 THUS)
3 #6 X 7'-11" (2) F.F.
1 #6 X 7'-10" (2) F.F.
1 #6 X 7'-6" (2) F.F.
1 #6 X 7'-3" (2) F.F.
1 #6 X 7'-0" (2) F.F.
1 #6 X 6'-9" (2) F.F.
1 #6 X 6'-5" (2) F.F.
1 #6 X 6'-2" (2) F.F.

LIST 3 (F.F.) (2 THUS)
3x1 #5 X 4'-2" (2) F.F.
1 #5 X 3'-8" (2) F.F.
1 #5 X 2'-9" (2) F.F.
1 #5 X 1'-10" (2) F.F.

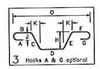
LIST 2 (N.F.) (2 THUS)
2 #5 X 7'-11" (2) N.F.
1 #5 X 7'-10" (2) N.F.
1 #5 X 7'-3" (2) N.F.
1 #5 X 6'-9" (2) N.F.
1 #5 X 6'-2" (2) N.F.

LIST 4 (N.F.) (2 THUS)
1 #5 X 4'-2" (2) N.F.
1 #5 X 3'-8" (2) N.F.
1 #5 X 1'-10" (2) N.F.

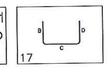
Release Number:

BAR LIST

Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
58201	46	#5	8'-8"	17			2'-10"	3'-0"	2'-10"							
58202	4	#5	4'-7 K"	3			0'-11"	3'-8 K"						3'-3 K"	4'-2 K"	
68201	8	#6	7'-5 K"	3				2'-11 K"	1'-8"	2'-11 K"				1'-5"	4'-8"	



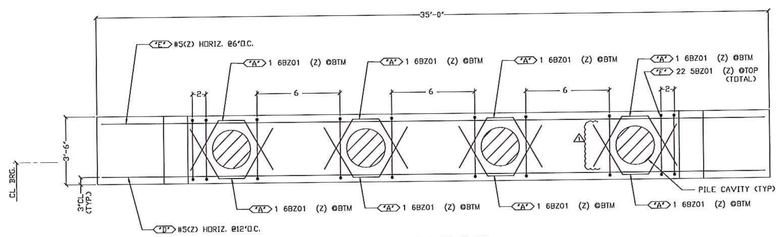
3 Hooks A & O optional



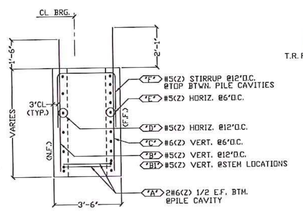
17

LIFTING POINT LOCATIONS & ANCHORS – BY OTHERS/GC.

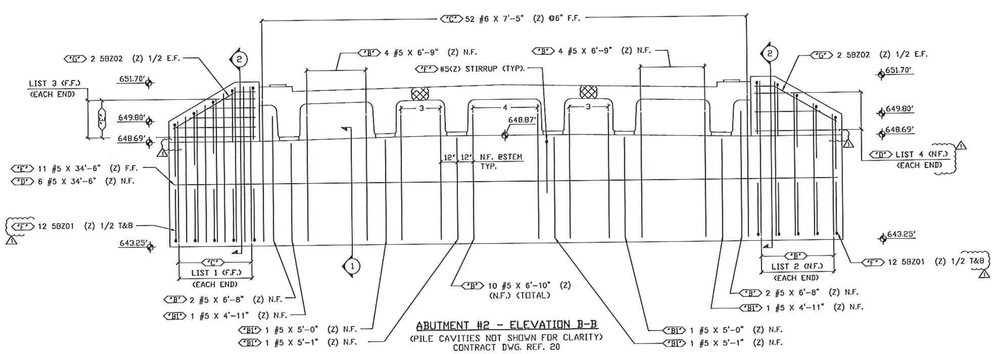
4 #7 SHEAR BAR FOR WIRE ANCHORS
4 #7 X 4'-0" (2) TOTAL



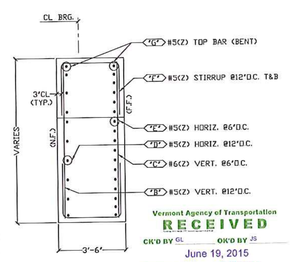
ABUTMENT #2 PLAN
(VERTICALS NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



SECTION 1
(REINF. @ BRIDGE SEAT)
CONTRACT DWG. REF. 20



ABUTMENT #2 – ELEVATION B-B
(PILE CAVITIES NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



SECTION 2
(REINF. @ CHEEK WALL)
CONTRACT DWG. REF. 20

APPROVED
T.R. FELLOWS ENGINEERING
05/21/2015

FOR APPROVAL

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
June 19, 2015
RESUBMIT NO Approved
BY RY DATE 6-23-2015

LEGEND:
CONT.–CONTINUOUS
TRANS.–TRANSVERSE
DWLS.–DOWELS
VERTS.–VERTICAL
HORIZ.–HORIZONTAL
T&B –TOP & BOTTOM
I.F.–INNER FACE
O.F.–OUTER FACE
E.E.–EACH END
E.F.–EACH FACE
N.F.–NEAR FACE
F.F.–FAR FACE
E.W.–EACH WAY
O.C.–ON CENTER
L.W.–LONG WAY
S.W.–SHORT WAY

LAP CHART

#5, #6	2'-7" (UN.)

ALL REINF. BARS
LEVEL II - DUAL COATED

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR DIMENSIONAL CONSTRUCTION.

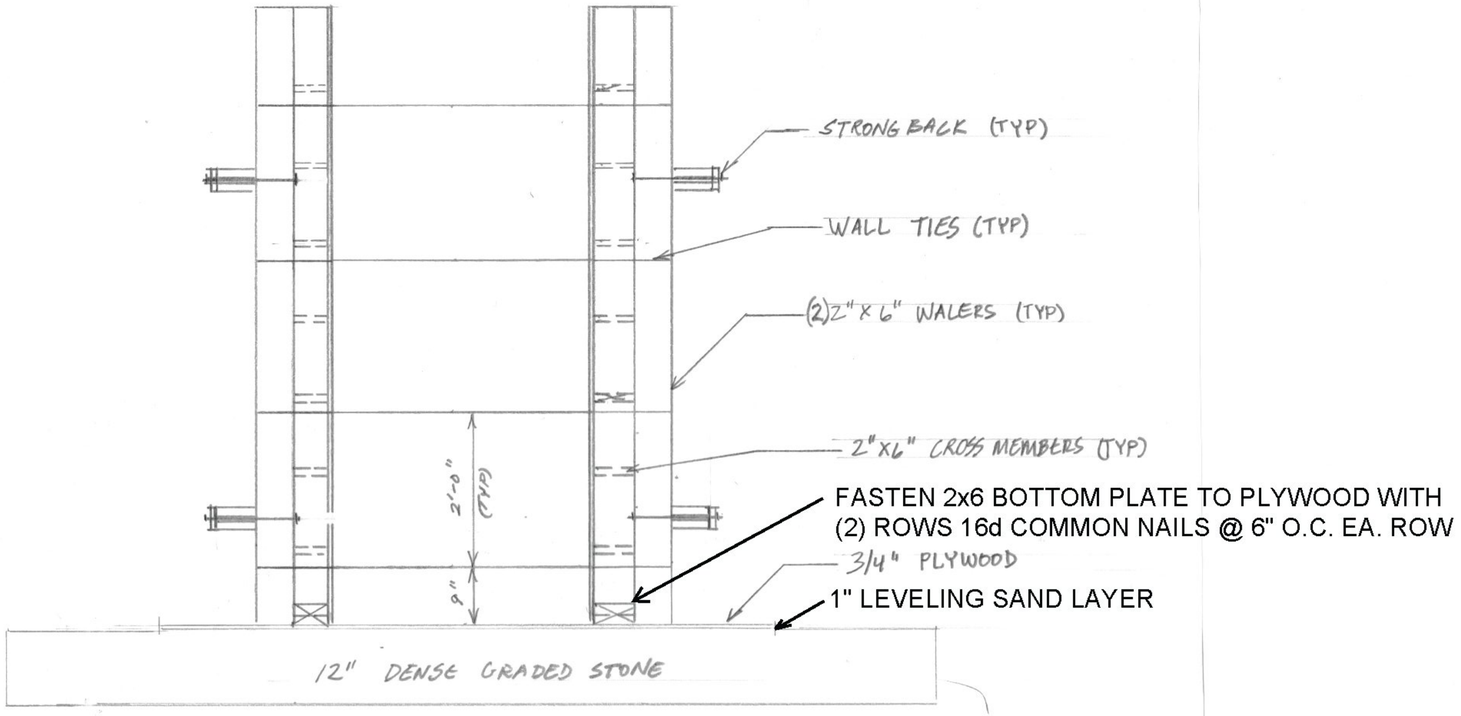
DUAL COATED REINF. BARS ASTM A615 GRADE 60, MARKED (Z)

VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

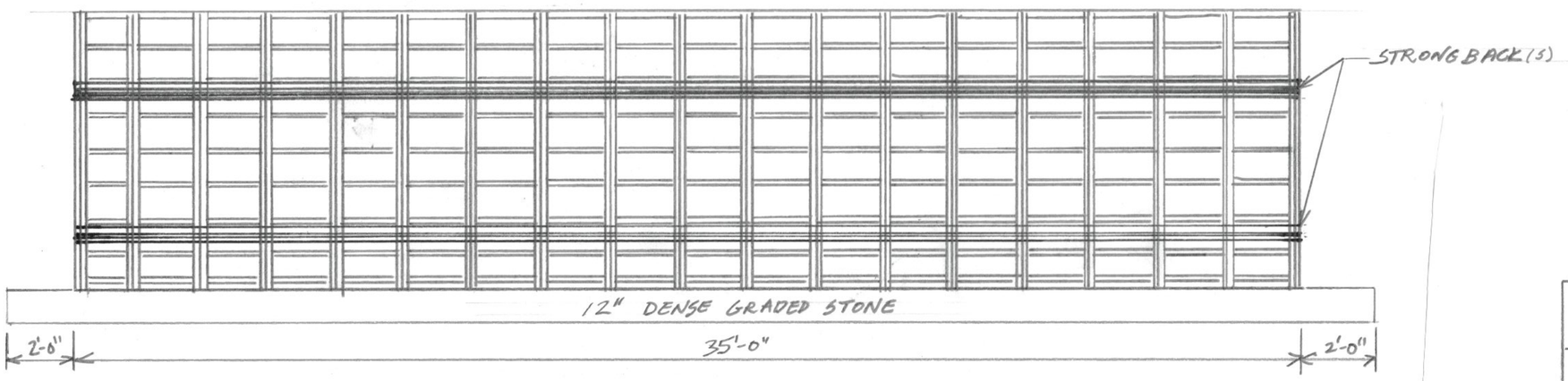
6			
5			
4			
3			
2	5/21/15	⚠	REVISED PER APPROVAL
1	1/23/15	-	FOR APPROVAL
	DATE	REV.#	SENT FOR

DIMENSION
DIMENSION FABRICATORS INC.
3000 US ROUTE 302
BERLIN, VT 05602
PH: (802) 371-1138
FAX (802) 371-1155
www.dimensionfabricators.com

STRUCTURE	VTAOT CAMBRIDGE BRO 1448(39)
LOCATION	CAMBRIDGE, VERMONT
ARCHITECT	
ENGINEER	
OWNER	BLOW & COTE, INC.
DRAWN BY	KRIS J
DATE	1/23/15
QTY #	9127
DRAWING CONTENTS	EAST ABUTMENT #2
DRAWING #	B



TYPICAL FORM SECTION
1/2" = 1'-0"



TYPICAL FORM ELEVATION
1/4" = 1'-0"

Vermont Agency of Transportation

RECEIVED

CK'D BY GL OK'D BY JS

June 19, 2015

RESUBMIT NO Approved

BY RY DATE 6-23-2015

STATE OF VERMONT
KRISTIN F. McCUEN
NO. 15806
STRUCTURAL
LICENSED
PROFESSIONAL ENGINEER

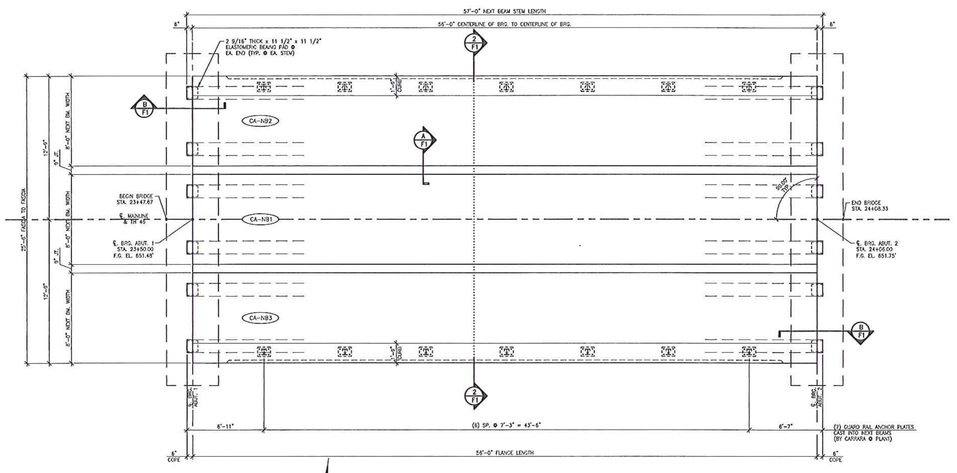
BLOW & COTE, INC.

CAMBRIDGE BRO 1448(39)

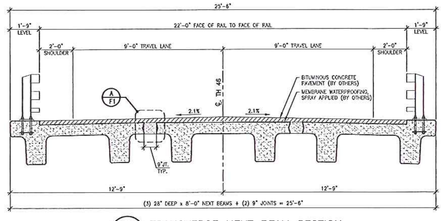
PRECAST FORM DETAILS

SCALE: AS SHOWN

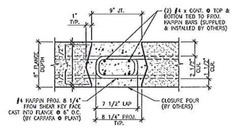
2 FEB 15



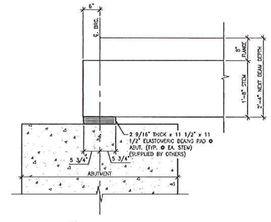
1 / F1 NEXT BEAM LAYOUT
1/4" = 1'-0"



2 / F1 TRANSVERSE NEXT BEAM SECTION
3/8" = 1'-0"



A / F1 NEXT BEAM CLOSURE POUR
1 1/2" = 1'-0"



B / F1 BEARING DETAIL
3/4" = 1'-0"

Submitted
5-15-15
J. P. Carrara & Sons, Inc.
Middlebury, VT 05753

△ 05-7-15 REMOVED CROWN FROM NEXT BM.
△ 01-28-15 REVISED

APPROVAL STAMP:
Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
May 18, 2015
RESUBMIT NO Approved
BY KH DATE 5-19-2015

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
244 OLE ST6, BERLIN, VT 05641 PH:(802)388-4961 FX:(802)388-9510

BLOW & COTE, INC.
CONTRACTOR
MORRISVILLE, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF LAMOILLE

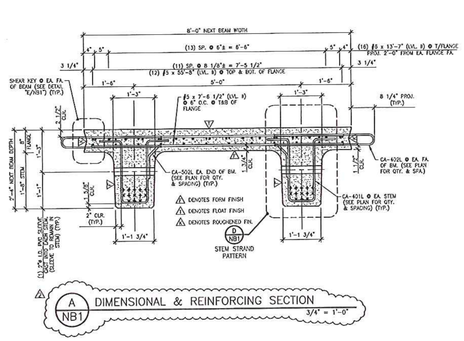
DATE: JAN. 28, 2015
SCALE: NOTED

TOWN OF CAMBRIDGE
IRISH SETTLEMENT ROAD TH.46 CLASS 3
BRIDGE NO.: 28 PROJECT NO.: BRO 1448(39)

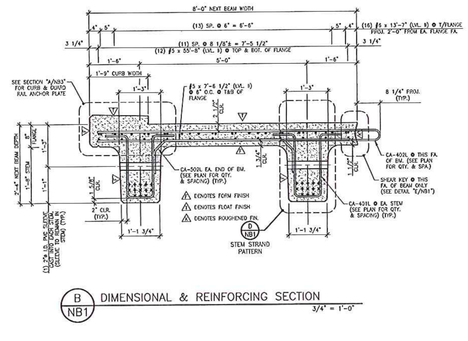
CHKD: RM DFTM: PSS
JOB NO: 23447-014

PRESTRESSED NEXT BEAM LAYOUT

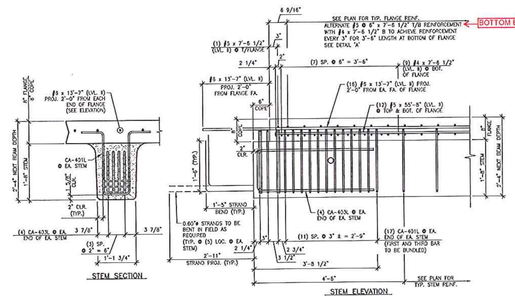
DWG. NO: F1



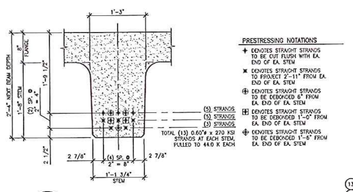
A NB1 DIMENSIONAL & REINFORCING SECTION
3/4" = 1'-0"



B NB1 DIMENSIONAL & REINFORCING SECTION
3/4" = 1'-0"

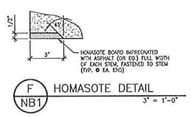


C NB1 END BLOCK STEM REINFORCING DETAILS
3/4" = 1'-0"

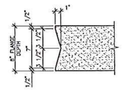


D NB1 STEM STRAND PATTERN
1" = 1'-0"

DETENSIONING SCHEDULE
N.T.S.



F NB1 HOMASOTE DETAIL
3" = 1'-0"



E NB1 SHEAR KEY DETAIL
1 1/2" = 1'-0"

Submitted
5-15-15
J.P. Carrara & Sons, Inc.
Memo to file VT 05101

△ 05-7-15 REMOVED CROWN FROM NEXT BM.
△ 01-28-15 REVISED

APPROVAL STAMP:
Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
May 18, 2015
RESUBMIT NO Approved AsNoted
BY KH DATE 05/19/2015

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
344 OLE 5TH, MIDDLEBURY, VERMONT 05753 Phone (802)388-4961 Fax (802)388-9013

BLOW & COTE, INC.
CONTRACTOR
MORRISVILLE, VERMONT

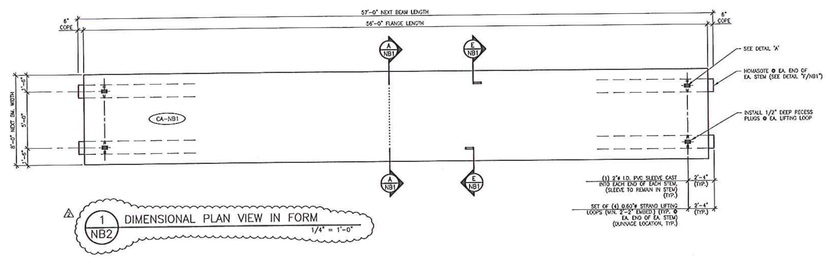
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF LAMOILLE

TOWN OF CAMBRIDGE
IRISH SETTLEMENT ROAD TH.46 CLASS 3
BRIDGE NO.: 28 PROJECT NO.: BRO 1448(39)

PRESTRESSED NEXT BEAM DETAILS

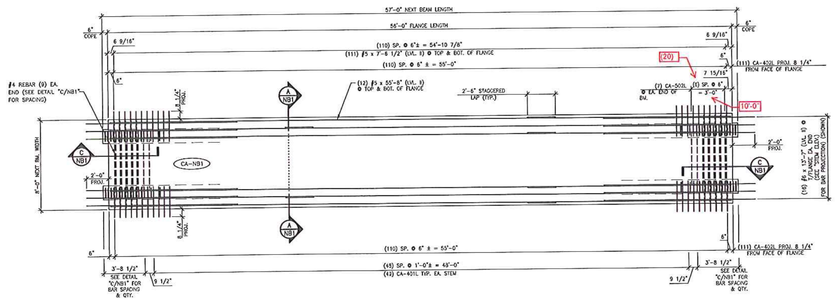
DATE: JAN. 28, 2015
SCALE: NOTED
CHK'D: RM | DFTM: PSS
JOB NO: 23447-014
DWG. NO: NB1

F:\VT-design\23447-14 Campbell\23447-NB1.dwg, 5/7/2015 2:52:40 PM



1 NB2 DIMENSIONAL PLAN VIEW IN FORM
1/4" = 1'-0"

A NB2 LIFT LOOP DETAIL
3/4" = 1'-0"



2 NB2 REINFORCING PLAN VIEW IN FORM
1/4" = 1'-0"

MARK: CA-NB1	QTY.: 1	WT.: (38.61 T)	VOL.: (19.06 cy)

MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	CA-401L	#4 BENT BAR (LEVEL II, DUAL COATED)	165
2	CA-402L	#4 BENT BAR (LEVEL II, DUAL COATED)	222
3	CA-403L	#4 BENT BAR (LEVEL II, DUAL COATED)	18
4	CA-502L	#5 BENT BAR (LEVEL II, DUAL COATED)	14
5		#4 x 7'-4 1/2" (LEVEL II, DUAL COATED)	18
6			
7		#5 x 7'-8 1/2" (LEVEL II, DUAL COATED)	224
8		#5 x 55'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	24
9			
10			
11		#5 x 13'-7" (LEVEL II, DUAL COATED)	32
12			
13		2"ø I.D. PVC SLEEVE	4
14		SET OF (4) 0.60"ø x 270 KSI STRAND LIFTING LOOPS	4
15			

△ 05-7-15 REMOVED CROWN FROM NEXT BM.
△ 01-28-15 REVISED

APPROVAL STAMP:

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
May 18, 2015
RESUBMIT NO Approved AsNoted
BY KH DATE 05/19/2015

Submitted
5-15-15
J.P. CARRARA & SONS, INC.
MIDDLEBURY, VT 05753

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
244 DGE STR, MIDDLEBURY, VERMONT 05753 Phn+(802)388-4581 Fax(802)388-9010

BLOW & COTE, INC.
CONTRACTOR
MORRISVILLE, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF LAMOILLE

TOWN OF CAMBRIDGE
IRISH SETTLEMENT ROAD TH.46 CLASS 3
BRIDGE NO.: 28 PROJECT NO.: BRO 1448(39)

PRESTRESSED NEXT BEAM DETAILS

DATE: JAN. 28, 2015
SCALE: NOTED
CHK'D: RM DFTM: PSS
JOB NO: 23447-014
DWG. NO: NB2

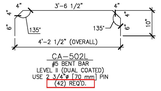
P:\VT-Bridges\23447-14 Cambridge\23447-NB2.dwg, 5/7/2015 2:04:51 PM

CA-401L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 2"ø (50 mm) PIN
(498) REQ'D.

CA-402L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 2"ø (50 mm) PIN
(442) REQ'D.

CA-403L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 2"ø (50 mm) PIN
(48) REQ'D.

CA-501L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"ø (70 mm) PIN
(224) REQ'D.



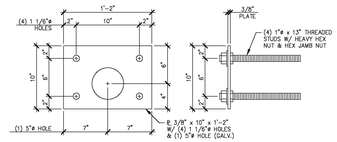
CA-502L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"ø (70 mm) PIN
(42) REQ'D.

CHANGE ORDER QUANTITY:
LENGTH = 50.5" + 10" + 10" = 70.5" = 5.875 FT / BAR
WEIGHT PER BAR = 5.875 FT * 1.04 LB / FT = 6.11 LB
OF BARS = 2 ENDS x 3 BEAMS x 21 BARS @ EA END = 126 BARS
TOTAL ADDITIONAL WEIGHT = 126 BARS * 6.11 LB / BAR = 769.86 LB = 770 LB

PRESTRESSED NEXT BEAMS

NEXT BEAM MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1		54	#4 x 7'-6 1/2" (LEVEL II, DUAL COATED)	
2				
3		672	#5 x 7'-6 1/2" (LEVEL II, DUAL COATED)	
4		78	#5 x 55'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	
5				
6		96	#6 x 13'-7" (LVL. II, DUAL COATED)	
7				
8				
9				
10				
11				
12				
13				
14				
15		14	GUARD RAIL ANCHOR PLATE (GALV.)	SUPPLIED BY OTHERS; SEE DETAIL THIS SHEET
16		12	SET OF (4) 0.60"ø x 270 KSI STRAND LIFTING LOOPS	
17		12	2"ø I.D. PVC SLEEVE	
18				
19				
20				



GUARD RAIL ANCHOR PLATE

SUPPLIED BY OTHERS — 1 1/2" = 1'-0"

⚠ 01-28-15 REVISED

APPROVAL STAMP:

Vermont Agency of Transportation
RECEIVED
CK'D BY GL OK'D BY JS
January 29, 2015
RESUBMIT NO Approved AsNoted
BY KH DATE 2-3-2015

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
244 OKE STR, MIDDLEBURY, VERMONT 05753 Phone:(802)388-4361 Fax:(802)388-9010

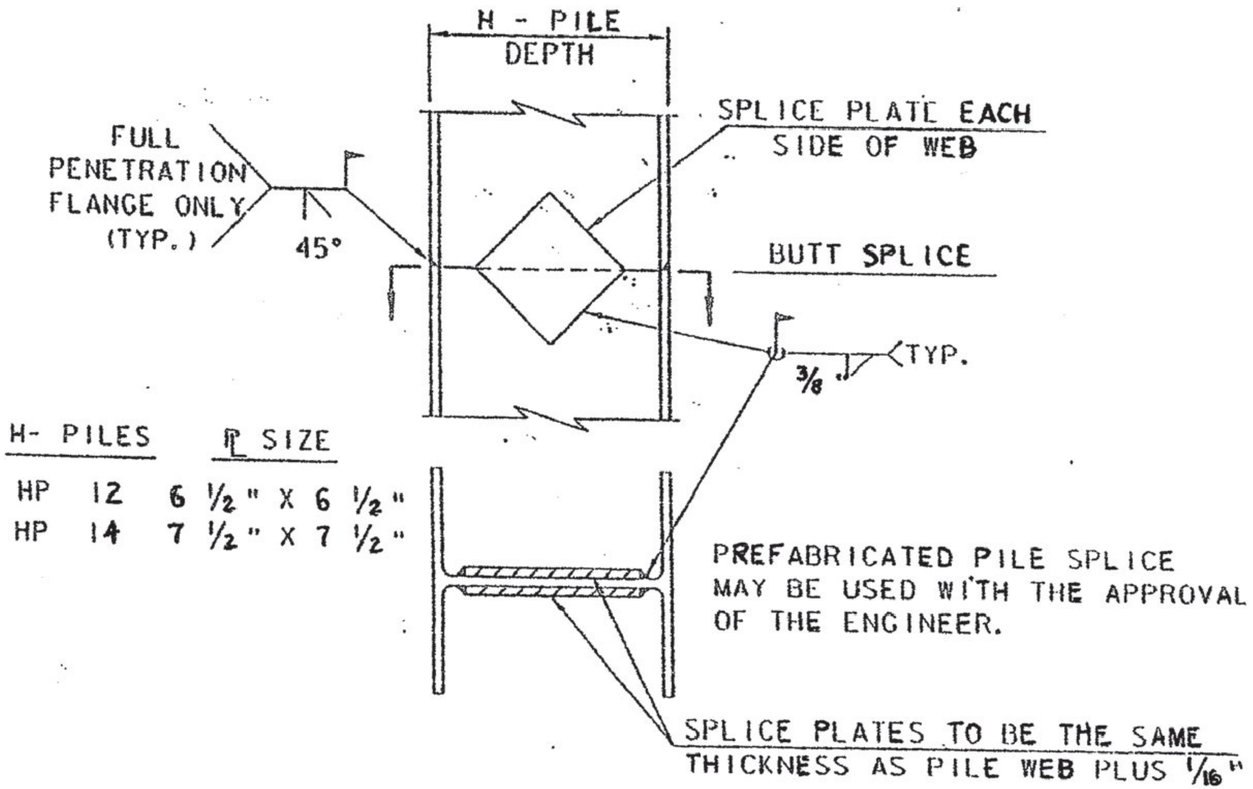
BLOW & COTE, INC.
CONTRACTOR
MORRISVILLE, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF LAMOILLE

TOWN OF CAMBRIDGE
IRISH SETTLEMENT ROAD T.H.46 CLASS 3
BRIDGE NO.: 28 PROJECT NO.: BRO 1448(39)

MATERIALS LIST

DATE: JAN. 28, 2015
SCALE: NOTED
CHKD: RM | DFTM: PSS
JOB NO: 23447-014
DWG. NO: M1



DETAIL OF PILE SPLICE

N. T. S.

CONTRACTOR:

BLOW & COTE, INC.
815 VT Route 15 East
Morrisville, VT 05661

PROJECT:

CAMBRIDGE BRO 1448(39)

SUBMITTED BY:

MARC COTE

PREQUALIFIED JOINT WELDING PROCEDURE
PROCEDURE SPECIFICATION

Material specification Grade 50
Welding process SMAW
Manual or machine Manual
Position of welding all Positions
Filler metal specification A5.1
Filler metal classification E7018
Flux N/A
Weld metal grade* —
Shielding gas N/A Flow rate —
Single or multiple pass Multiple
Single or multiple arc Single
Welding current DC
Polarity Reverse
Welding progression Tack 1" 3 locations @ Flange then stringer head alternating flanges
Root treatment Grind and wire brush
Preheat and interpass temperature Per AWS D1.5
Postheat treatment none

*Applicable only when filler metal has no AWS classification.

WELDING PROCEDURE

Pass no.	Electrode size	Welding current		Travel speed	Joint detail
		Amperes	Volts		
All	5/32	180	30	4"/min	Pile Point welding Detail (See attached)

CONTRACTOR: BLOW & COTE, INC.
815 VT RTE 15E
MORRISVILLE, VT 05661

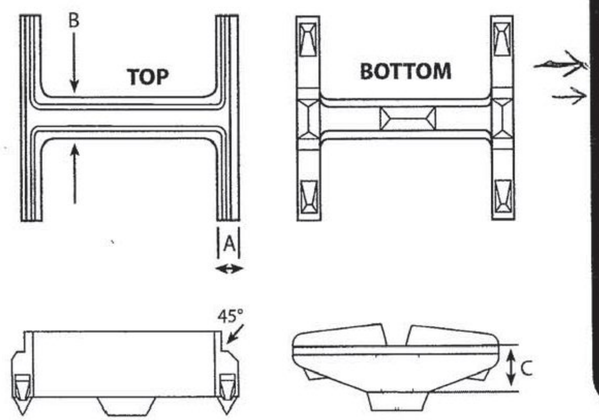
PROJECT: CAMBRIDGE
BRO 1498 (34)

BLOW & COTE, INC.
815 VT RTE 15E
MORRISVILLE, VT 05661

PROJECT: CAMBRIDGE
BRD 1448(37)

HARD-BITE POINT

HP 77600-B, HP 77600-B-18#
HP 77600-B-30#, HP 77600-B-46#



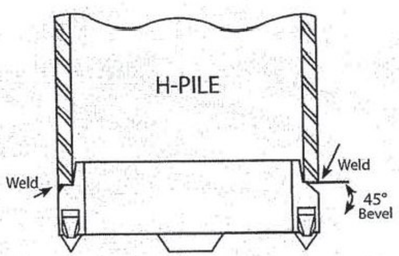
H-PILE POINT MODEL	A	B	C
14" HP			
77600-B	1"	1-1/4"	2-3/4"
77600-B-46#	1-1/2"	1-3/4"	3"
77750-B	1"	1"	4"
12" HP			
77600-B-30#	1"	1-5/16"	3"
77750-B	3/4"	3/4"	3-1/2"
7780-B	3/4"	3/4"	3"
10" HP			
77600-B	1"	1"	2-1/16"
77600-B-18#	1"	1-1/8"	2-3/8"
77750-B	3/4"	3/4"	3"
8" HP			
77600-B	1-1/16"	1"	1-7/16"

Installation Instructions

1.) Fit point onto the end of a square cut pile end.

2.) Weld point to the pile in either flat or vertical position using E70XX electrodes.

3.) Weld across full width of flange following chart below for minimum size weld.



H-PILE SIZE	FLANGE THICKNESS	MINIMUM SIZE GROOVE WELD
HP 14		
x 117	.805	7/16
x 102	.705	3/8
x 89	.615	3/8
x 73	.505	5/16
HP 12		
x 84	.685	3/8
x 74	.610	3/8

H-PILE SIZE	FLANGE THICKNESS	MINIMUM SIZE GROOVE WELD
HP 12		
x 63	.515	5/16
x 53	.435	5/16
HP 10		
x 57	.565	5/16
x 42	.420	5/16
HP 8		
x 36	.445	5/16

All calculations and information should be double-checked by a qualified engineer.

WELDER, WELDING OPERATOR OR TRACK WELDER QUALIFICATION TEST RECORD

Type of Welder

Name: Adam Thomann | Identification No.: AT-001

Welding Procedure Specification No. AT-001B | Date: 12/31/2009

Variables	Record Actual Values Used in Qualifications	Qualification Range
Process/Type	SMAW	
Electrode (single or multiple)	Single	
Current/Polarity	DCEP	
Position	3G	Flat/Horizontal/Vertical
Weld Progression	Uphill	uphill all passes
Backing (YES or NO)	Yes	
Material/Spec.		
Base Material	A36	
Thickness (Plate)	1"	
Groove		1/8" - unlimited
Fillet		unlimited
Thickness: (Pipe/Tube)		
Groove		
Fillet		
Diameter: (Pipe)		
Groove		
Fillet		
Filler Metal		
Spec. No.	E7018	
Class	AWS A5.1 / A5.5	AWS A5.1 / A5.5
F-No.	E7018	E70XX
Gas/Flux Type	F-4	F-4
Other		
	5/32 " Lincoln Rod	

Visual Inspection Acceptable YES or NO

Guided Bend Test Results

Type	Results	Type	Results
Face		Face	
Root		Root	
Side	Accept	Side	Accept

Fillet Test Results

Appearance — Fillet Size

Fracture Test Root Penetration — Macro etch

(Describe the location, nature and size of any crack or tearing of specimen.)

Inspected by: Ed Loprete | Test No.: TA12312009

Organization: VT Nondestructive Testing | Date: 12/31/2009

Radiographic Results

Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by:

Organization:

Test Number:

Date:

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section 5 of AWS D1.5, 2008 Bridge Welding Code

Inspected by: *Richard F.Irick AWS/CWI* Witnessed by: Ed Loprete

Certification Property of Adam Thomann Date: 12/31/2009

AWS QC 1 RICHARD F IRICK 99060221 CWI

Work Log for Adam Thomann dba Spectrum Welding
Certified 12/31/2009
Updated 1/24/2015

Feb 2010
Kubricky Construction
Bridge Welding requiring certification. SMAW

June – August 2010
St Onge Construction
Leroy Farr Bridge – Pile Splices. SMAW

August – September 2010
Dartmouth Medical Center - NH moment connections
CCS – White River Train Bridge

January – December 2011
Kubricky Construction
2 bridges in Ludlow Vermont requiring welding certification. SMAW, FCAW

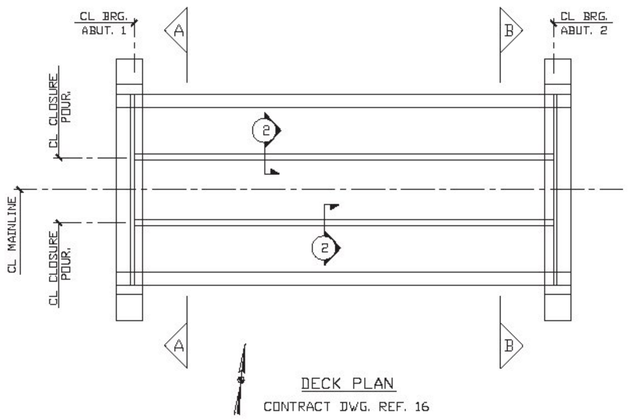
January – December 2012 & 2013
Cote Steel Erectors
Colchester Steel Building requiring welding certification.

November – December 2013, April – May 2014
Blow & Cote, Inc.
Bristol BRO 1445(32) – Pile Splices. SMAW

August – 2014
The Belden Co.
Rutland BRF 3000(18) – Pile Splices. SMAW,

November – 2014
ECI Engineers Construction
Ryegate CULV(10) Pile Splices. SMAW

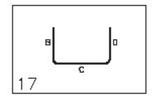
January 9 – 24 2015
PC Construction Co.
Middlebury Field House – Handrails, Stairs, Structural welding steel beams. SMAW

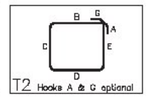


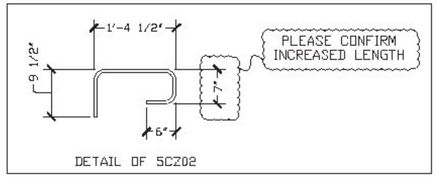
DECK PLAN

CONTRACT DWG. REF. 16

Release Number:						BAR LIST ⚠1										
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
5CZ01	54	#5	6'-2"	17		1'-7"	3'-0"	1'-7"								
5CZ02	16	#5	3'-3"	T2		0'-9 ⅛"	1'-4 ⅛"	0'-7"	0'-6"							
6CZ01	104	#6	4'-0"	17		2'-0"	2'-0"									





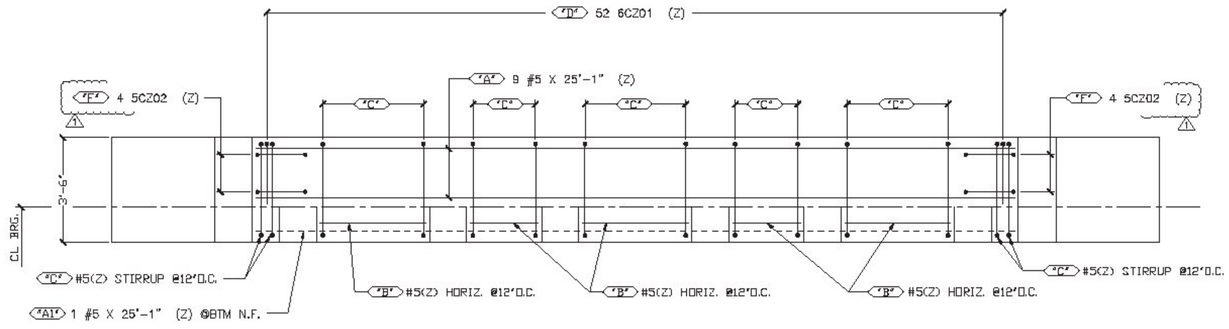


DETAIL OF 5CZ02

⚠1 BAR MARKS MAY CHANGE, DUE TO REVISIONS

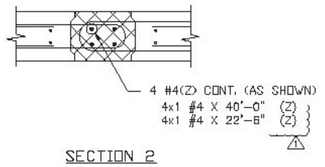
LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
O.F.-OUTER FACE
E.E.-EACH END
E.F.-EACH FACE
N.F.-NEAR FACE
F.F.-FAR FACE
E.W.-EACH WAY
O.C.-ON CENTER
L.W.-LONG WAY
S.W.-SHORT WAY

FOR APPROVAL



ABUTMENT #1 & #2 PLAN

CONTRACT DWG. REF. 19 & 21



SECTION 2

(2 THUS)

CONTRACT DWG. REF. 17

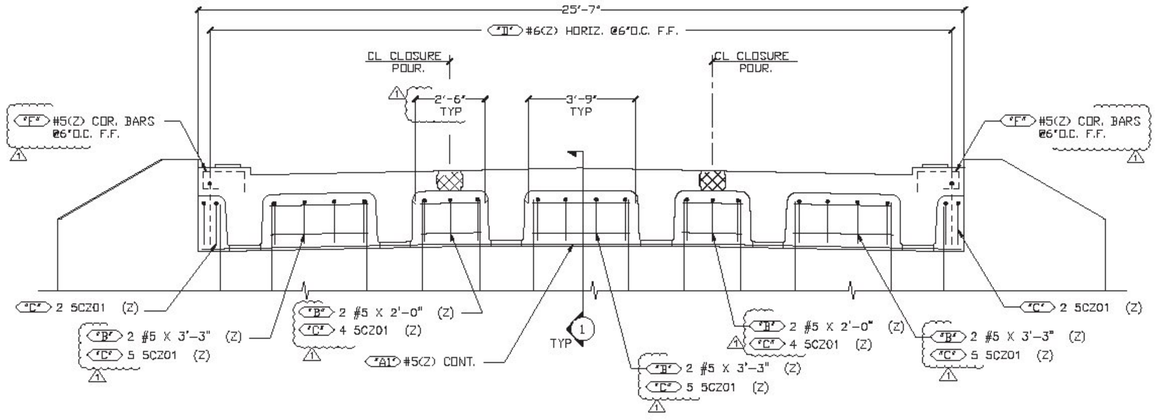
LAP CHART	
#4	2'-2" (U.N.)
#5	2'-7" (U.N.)
#6	3'-5" (U.N.)

ALL REINF. BARS
LEVEL II - DUAL COATED

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR DIMENSIONAL CONSTRUCTION.

DUAL COATED REINF. BARS ASTM A615 GRADE 60, MARKED (Z)

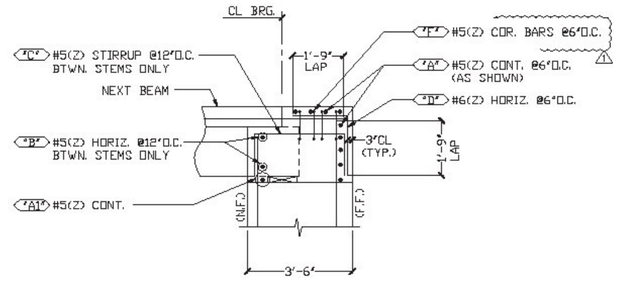
VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.



ABUTMENT #1 - ELEVATION A-A
ABUTMENT #2 - ELEVATION B-B

(PILE CAVITIES NOT SHOWN FOR CLARITY)

CONTRACT DWG. REF. 19 & 21



SECTION 1

CONTRACT DWG. REF. 19 & 21

Vermont Agency of Transportation
RECEIVED
CK'D BY JS OK'D BY GL
February 27, 2015
RESUBMIT NO Approved
BY KH DATE 3-2-2015

6			
5			
4			
3			
2	2/27/15	⚠1	REVISED PER APPROVAL
1	1/29/15	–	FOR APPROVAL
	DATE	REV.#	SENT FOR

DIMENSION
DIMENSION FABRICATORS INC.
2000 7TH STREET
SCOTIA, N.Y. 12302
PH: (518) 374-1638
FAX: (518) 374-0330
WWW.DIMENSIONFABRICATORS.COM

STRUCTURE	VTAOT CAMBRIDGE BRO 1448(39)
LOCATION	CAMBRIDGE, VERMONT
ARCHITECT	
ENGINEER	
CUSTOMER	BLOW & COTE, INC.
DRAWN BY	KRIS J
DATE	1/23/15
DFI #	9127
DRAWING DESCRIPTION	CLOSURE POURS
DRAWING #	C