

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT BRIDGE PROJECT

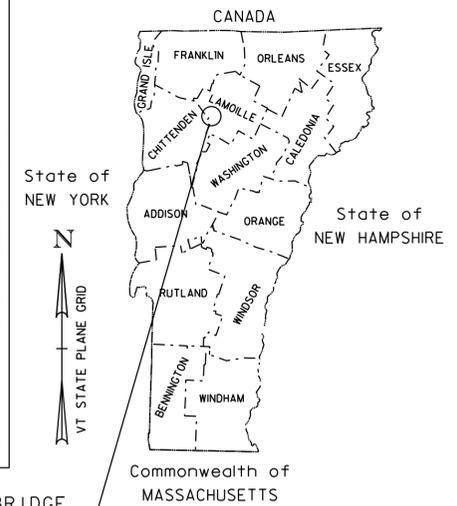
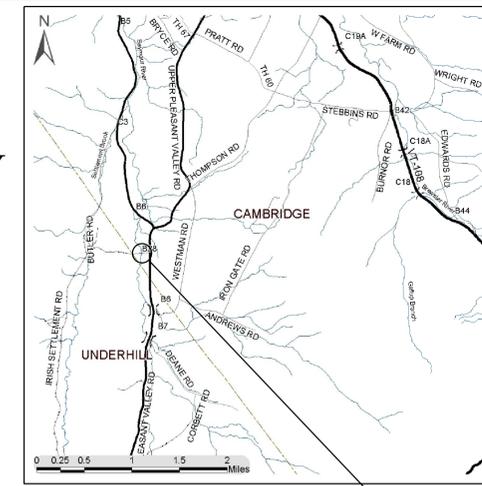
TOWN OF CAMBRIDGE
COUNTY OF LAMOILLE

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

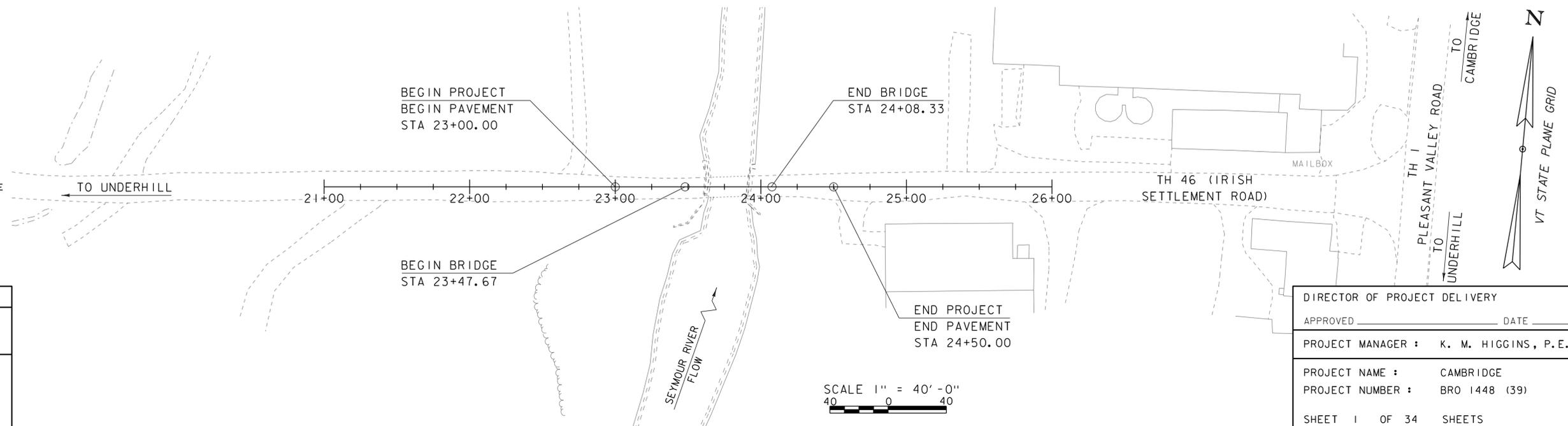
PROJECT LOCATION: 0.1 MILES WEST OF JUNCTION WITH TOWN HIGHWAY 1 (PLEASANT VALLEY ROAD)

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



CAMBRIDGE
BRO 1448 (39)



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)

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

DIRECTOR OF PROJECT DELIVERY	
APPROVED _____	DATE _____
PROJECT MANAGER : K. M. HIGGINS, P.E.	
PROJECT NAME :	CAMBRIDGE
PROJECT NUMBER :	BRO 1448 (39)
SHEET 1 OF 34 SHEETS	

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STANDARDS LIST

E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1B	BOX BEAM GUARD RAIL	06-01-1994
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	08-06-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-29	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	08-06-2012
T-31	CONSTRUCTION SIGN DETAILS	08-06-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	5/7/2010

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2015 to 2035 : 51000
2015	230	50	63	7.7	15	40 year ESAL for flexible pavement from 2015 to 2055 : 101000
2035	240	50	63	9.6	20	Design Speed : 35 mph

AS BUILT "REBAR" DETAIL

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

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: May 2013

DRAINAGE AREA : 10.0 sq. mi.
 CHARACTER OF TERRAIN : Wide valley at site. Hilly to mountainous drainage basin.
 STREAM CHARACTERISTICS : Sinuous, alluvial, with moderately wide valley floodplain
 NATURE OF STREAMBED : Sand, gravel and cobbles

PEAK FLOW DATA

Q 2.33 =	700 cfs	Q 50 =	2360 cfs
Q 10 =	1360 cfs	Q 100 =	2740 cfs
Q 25 =	1940 cfs	Q 500 =	3700 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q25 = 10.2 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
 IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span steel beam bridge with concrete deck
 YEAR BUILT: Built 1919, reconstructed 1975
 CLEAR SPAN(NORMAL TO STREAM): 30'
 VERTICAL CLEARANCE ABOVE STREAMBED: 9'
 WATERWAY OF FULL OPENING: 250 sq. ft.
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	644.6'	VELOCITY =	7.7 fps
Q10 =	646.8'	"	9.4 fps
Q25 =	648.6'	"	11.4 fps
Q50 =	649.6'	"	5.9 fps
Q100 =	649.8'	"	6.5 fps

LONG TERM STREAMBED CHANGES: No information found and no changes noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Slightly below Q25
 RELIEF ELEVATION: 648.4'
 DISCHARGE OVER ROAD @Q100: 1070 cfs

UPSTREAM STRUCTURE

TOWN: Underhill - Not applicable, stream divides DISTANCE:
 HIGHWAY #: TH 1 STRUCTURE #: 6 and 7
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: Cambridge DISTANCE: 3,000'
 HIGHWAY #: TH 1 STRUCTURE #: 6
 CLEAR SPAN: about 76' CLEAR HEIGHT: 30'
 YEAR BUILT: 1956 FULL WATERWAY: N/A
 STRUCTURE TYPE: Single span steel beam bridge with concrete deck.

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	2.08	1.44					
POSTING							
OPERATING	2.7	1.87	2.53	1.49	1.94	1.75	2.05
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span, pre-cast concrete bridge superstructure

CLEAR SPAN(NORMAL TO STREAM): 53'
 VERTICAL CLEARANCE ABOVE STREAMBED: 9'
 WATERWAY OF FULL OPENING: 340 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	645.4'	VELOCITY =	7.7 fps
Q10 =	646.8'	"	8.8 fps
Q25 =	647.8'	"	9.7 fps
Q50 =	649.3'	"	5.7 fps
Q100 =	649.4'	"	6.3 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Above Q25
 RELIEF ELEVATION: 648.4'
 DISCHARGE OVER ROAD @Q100: 610 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 648.8'
 VERTICAL CLEARANCE: @ Q25 = 1.0'

SCOUR: 2' of contraction scour & long term streambed degradation, at Q100 and Q500

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 20 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 10 cfs Depth = 0.5'
 ORDINARY HIGH WATER: 300 cfs Depth = 2'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Road will be closed and traffic detoured. No temporary bridge needed.
 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: 56.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS) Δ : 1.13 INCH
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX) f_y : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH f'_c : 8.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH f'_{cr} : 6.0 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA f'_c : 4.0 KSI
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 f_y : ---
14. NOMINAL BEARING RESISTANCE OF SOIL q_n : 4.0 KSF
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) ϕ : ---
16. NOMINAL BEARING RESISTANCE OF ROCK q_n : 10.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) ϕ : ---

18. PILE RESISTANCE FACTOR ϕ : 0.65
19. LATERAL PILE DEFLECTION Δ : ---
20. BASIC WIND SPEED V_{3s} : ---
21. MINIMUM GROUND SNOW LOAD p_g : ---
22. SEISMIC DATA PGA : 0.65 S_s : --- S_1 : ---

PROJECT NAME: CAMBRIDGE

PROJECT NUMBER: BRO 1448 (39)

FILE NAME: s12j166excel.dgn PLOT DATE: 9/16/2014
 PROJECT LEADER: K. HIGGINS DRAWN BY: K. FRIEDLAND
 DESIGNED BY: G. LAROCHE CHECKED BY: J. SALVATORI
PRELIMINARY INFORMATION SHEET SHEET 2 OF 34

GENERAL INFORMATION

SYMBOLGY LEGEND NOTE

THE SYMBOLGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLGY. THE SYMBOLGY 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. SYMBOLGY 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 SYMBOLGY

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 SYMBOLGY

PROJECT DESIGN & LAYOUT SYMBOLGY

— CZ —	CLEAR ZONE
—	PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

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

CONVENTIONAL BOUNDARY SYMBOLGY

BOUNDARY LINES

—	TOWN BOUNDARY LINE
—	COUNTY BOUNDARY 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	PROPERTY LINE (P/L)
SR	SLOPE RIGHTS
6f	6F PROPERTY BOUNDARY
4f	4F PROPERTY BOUNDARY
HAZ	HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLGY

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	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 SYMBOLGY

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: I2J166Legend.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
LEGEND SHEET

PLOT DATE: 29-AUG-2014
DRAWN BY: K. FRIEDLAND
CHECKED BY: J. SALVATORI
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 ACTIVITIES 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 TEMPORARY 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:	1 1/4 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 KEYS 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\sl2j166gen2.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

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE	FULL CE ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
							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 RESETTNG 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				

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

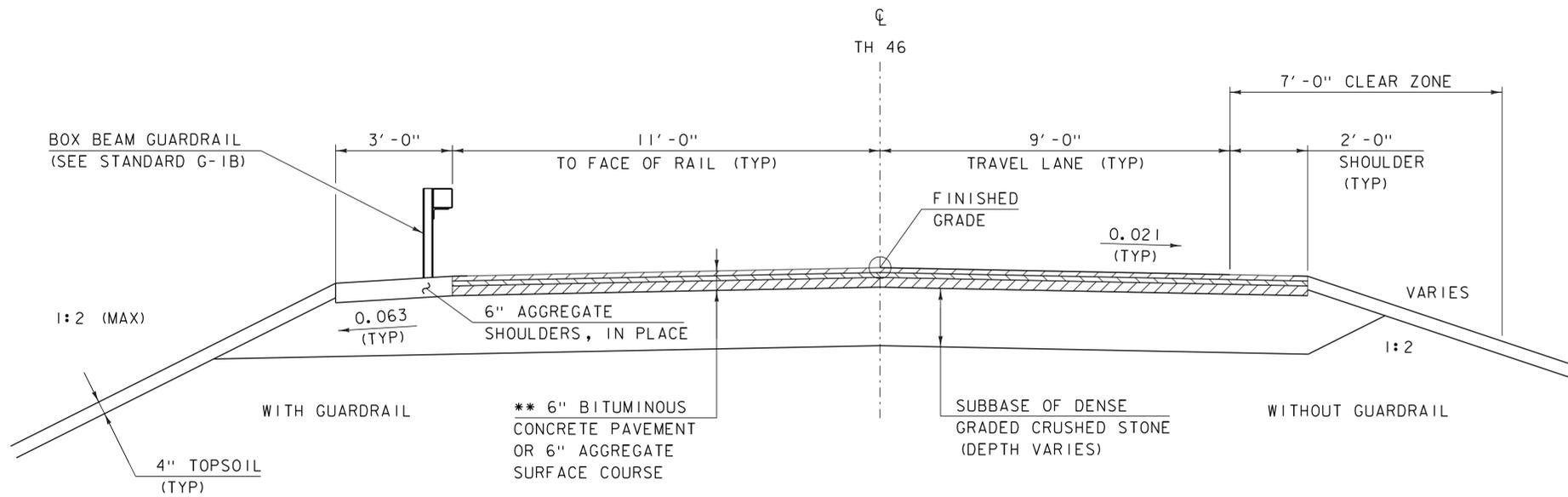
QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE	FULL CE ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
										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)(N.A.B.I.)	900.650				
								100			100		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

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

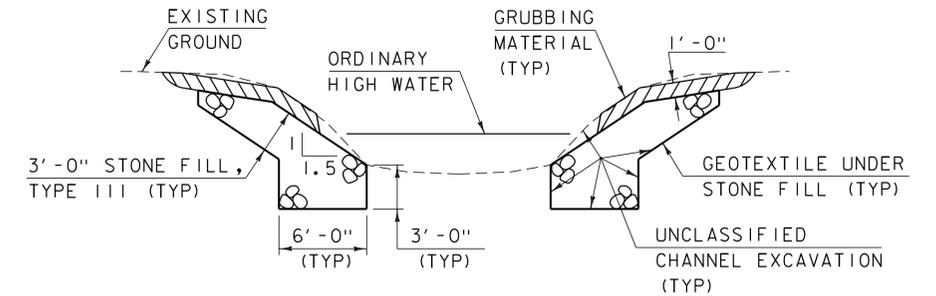
FILE NAME: sl2j166qs.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
QUANTITY SHEET 2

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



ROADWAY TYPICAL SECTION

SCALE 1/2" = 1'-0"



TYPICAL CHANNEL SECTION

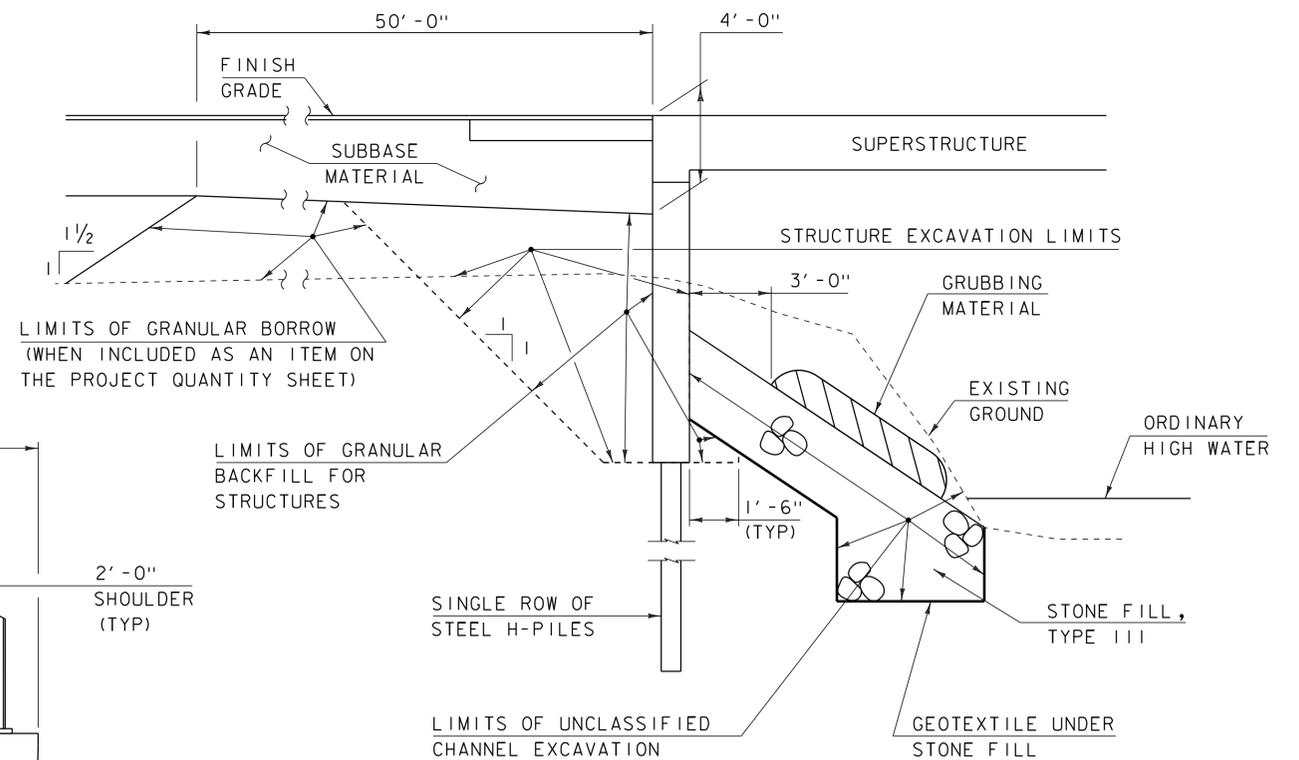
(NOT TO SCALE)

NOTES:

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

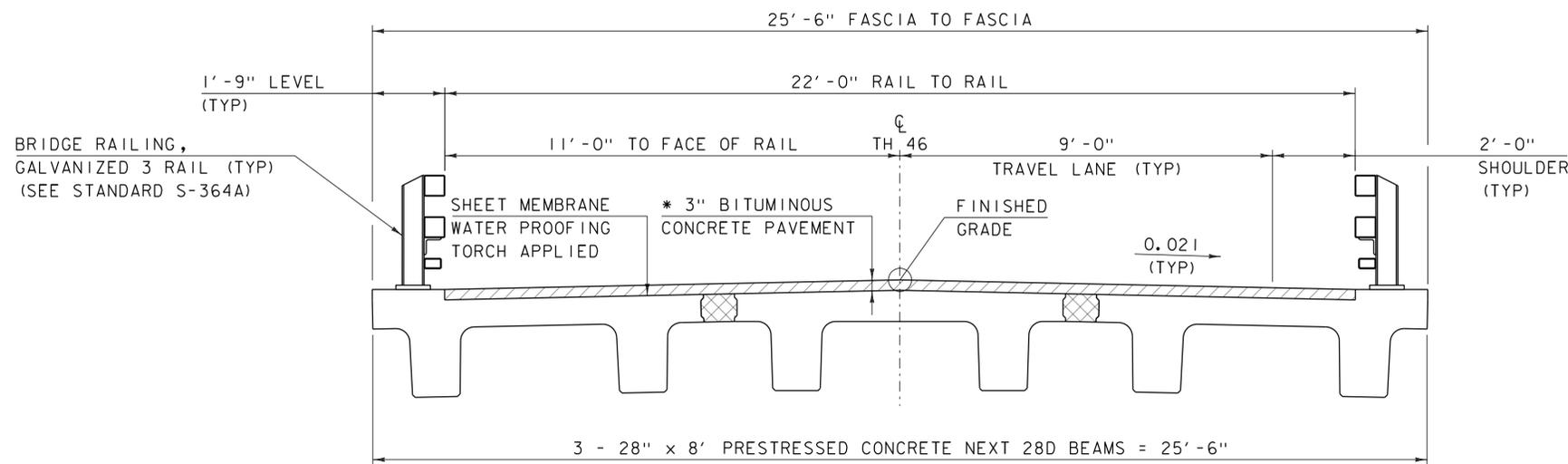
MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	
SAND BORROW	+/- 1"

- * 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
- 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
- 3" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IIIIS
- * 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
- 1 1/2" SUPERPAVE BITUMINOUS CONCRETE PAVEMENT, TYPE IVS



TYPICAL INTEGRAL ABUTMENT SECTION

NOT TO SCALE



BRIDGE TYPICAL SECTION

SCALE 1/2" = 1'-0"

PROJECT NAME: CAMBRIDGE	PLOT DATE: 29-AUG-2014
PROJECT NUMBER: BRO 1448(39)	DRAWN BY: G.LAROCHE
FILE NAME: sl2j166+yp.dgn	CHECKED BY: J. SALVATORI
PROJECT LEADER: K.HIGGINS	SHEET 7 OF 34
DESIGNED BY: G. LAROCHE	
TYPICAL SECTIONS	

GPS CONTROL POINTS

12J166 AZ MK

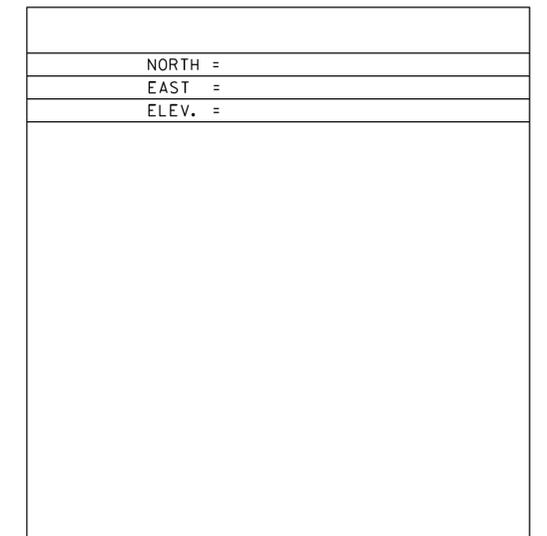
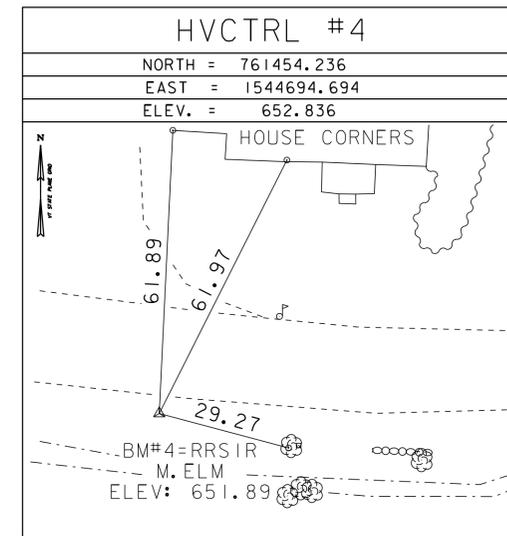
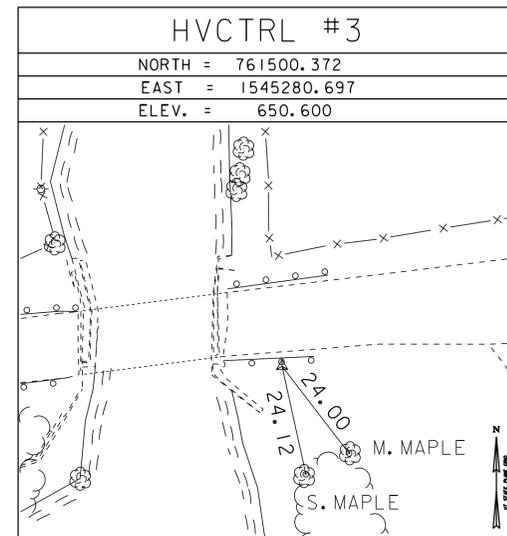
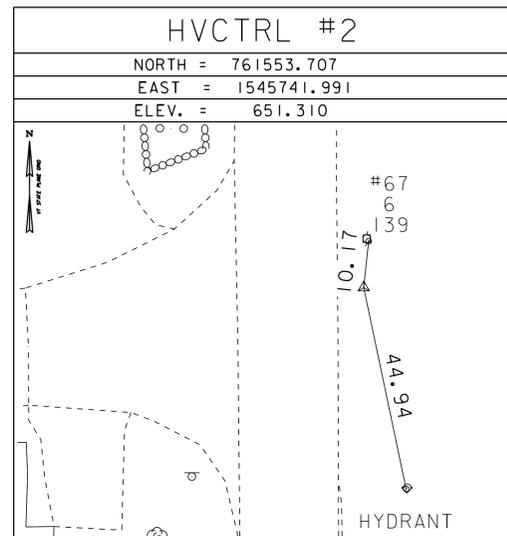
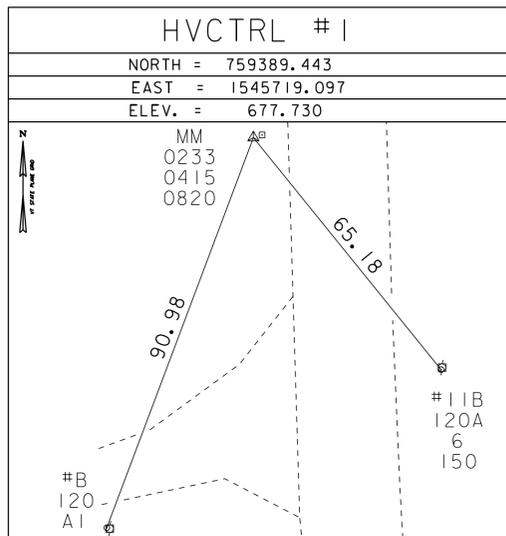
GENERAL LOCATION CAMBRIDGE VT
 TO REACH FROM THE INTERSECTION OF VT ROUTE 15 WEST AND VT ROUTE 108 SOUTH IN CAMBRIDGE GO WEST
 ON VT ROUTE 15 FOR 2.3 MILES TO THE INTERSECTION OF LOWER PLEASANT VALLEY ROAD LEFT TURN LEFT
 ON LOWER PLEASANT VALLEY ROAD CONTINUE ON LOWER PLEASANT VALLEY ROAD FOR 4.0 MILE 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 1.0 METER 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

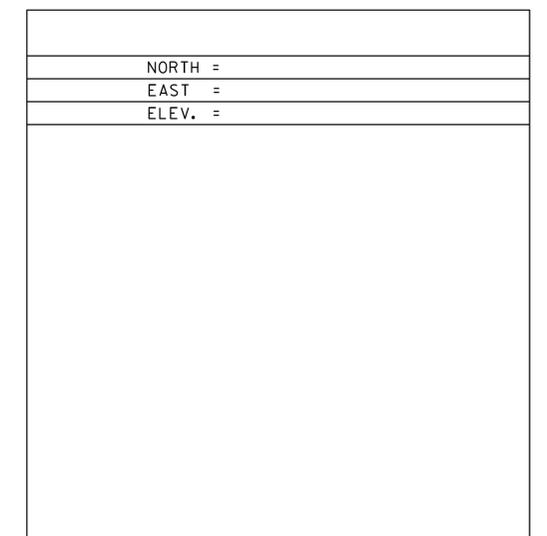
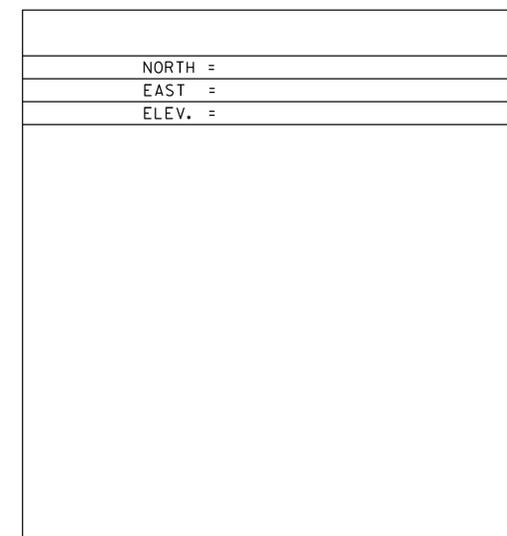
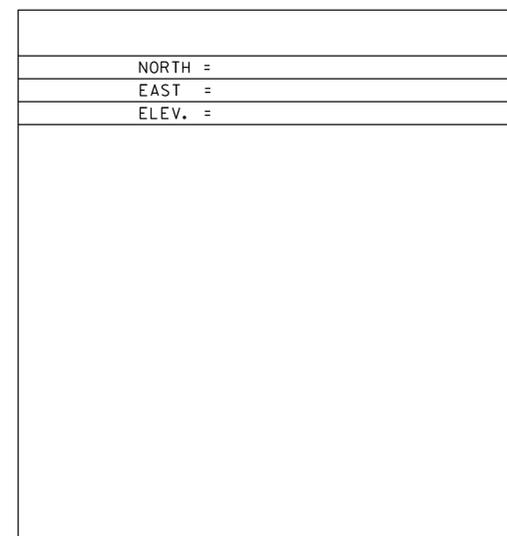
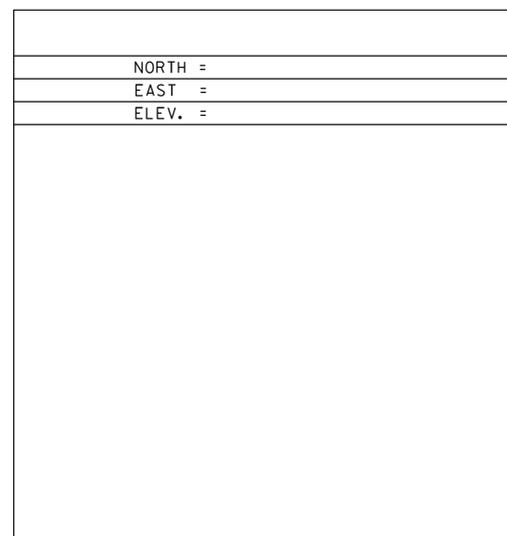
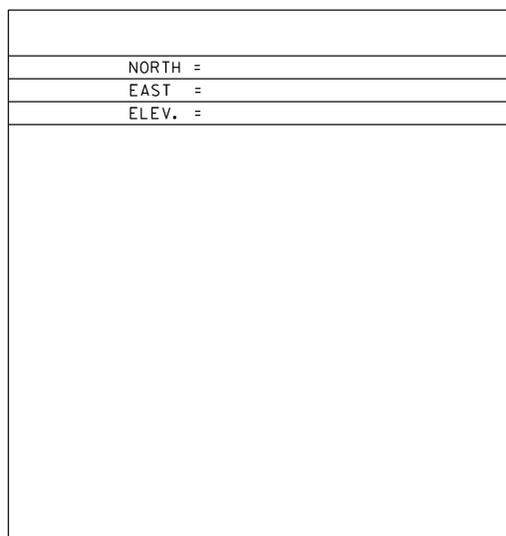
12J166

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.

TRAVERSE TIES



ALIGNMENT TIES



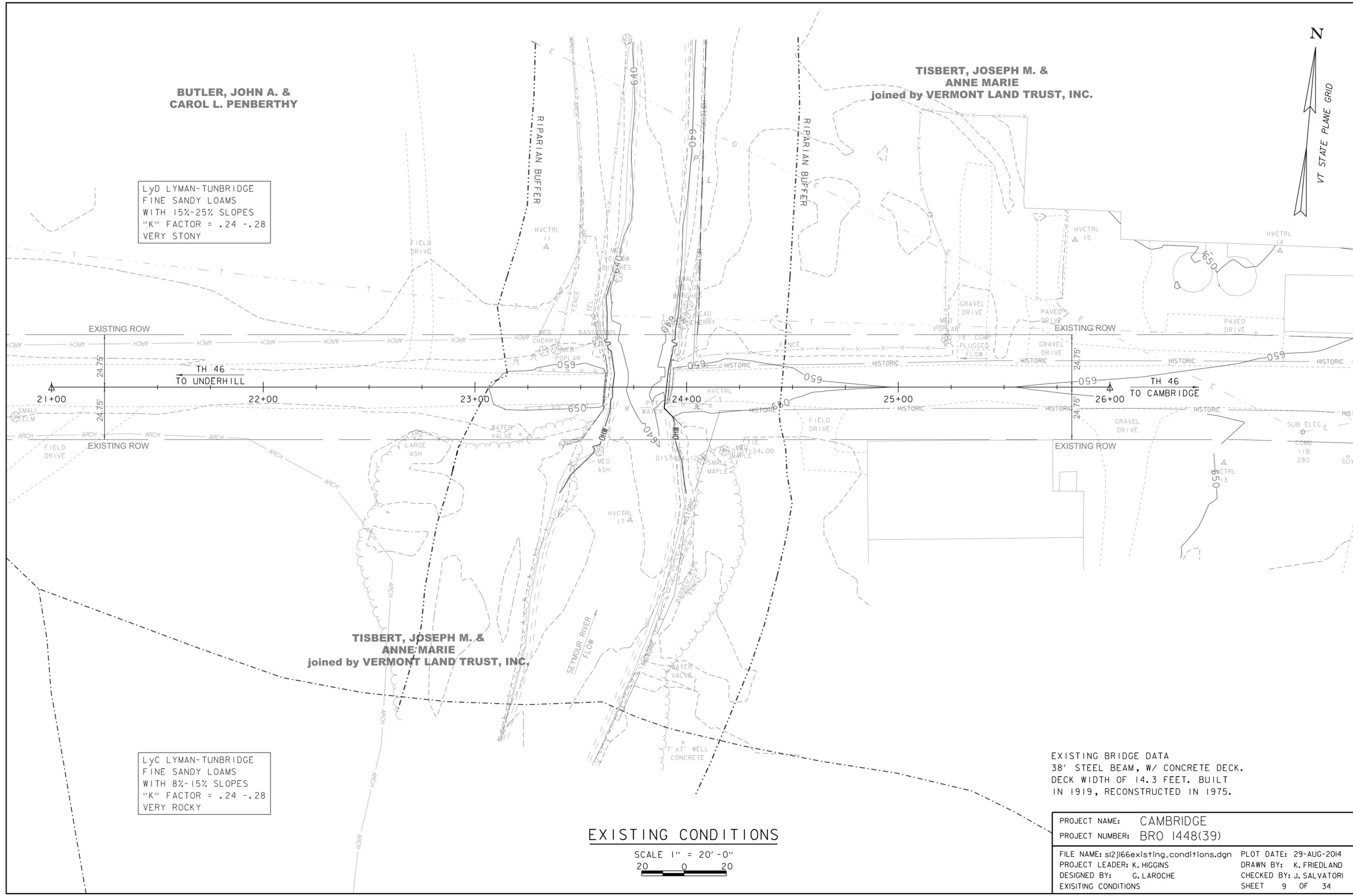
DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (07)
ADJUSTMENT COMPASS

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)
FILE NAME: x12j166t1.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**

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

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

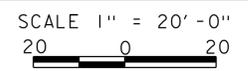


**TISBERT, JOSEPH M. &
ANNE MARIE
joined by VERMONT LAND TRUST, INC.**

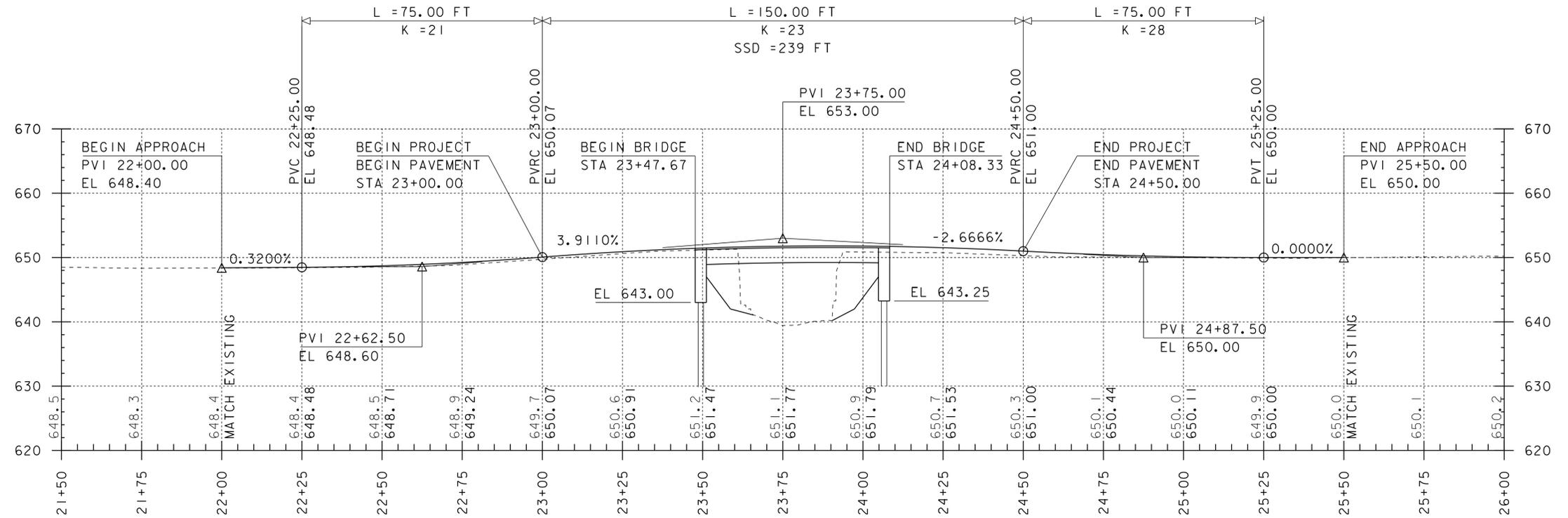
LyC LYMAN-TUNBRIDGE
FINE SANDY LOAMS
WITH 8%-15% SLOPES
"K" FACTOR = .24 -.28
VERY ROCKY

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

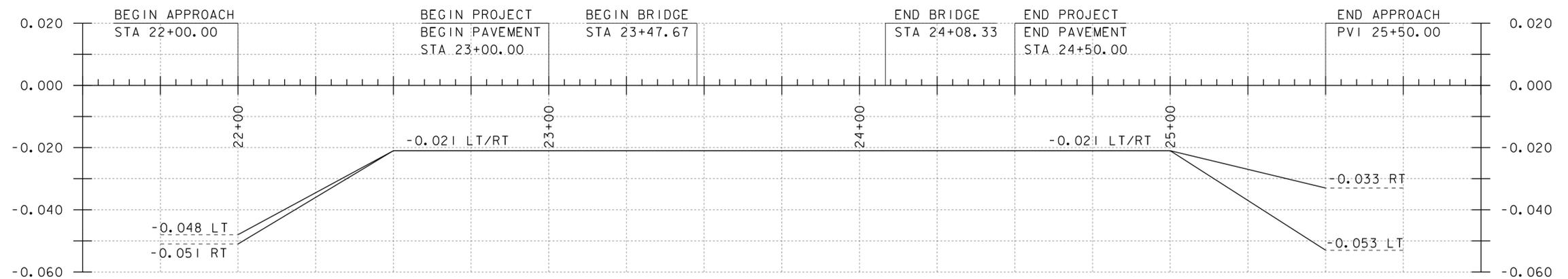
EXISTING CONDITIONS



PROJECT NAME:	CAMBRIDGE	PLOT DATE:	29-AUG-2014
PROJECT NUMBER:	BRO 1448(39)	DRAWN BY:	K. FRIEDLAND
FILE NAME:	sl2j16existing_conditions.dgn	CHECKED BY:	J. SALVATORI
PROJECT LEADER:	K. HIGGINS	EXISTING CONDITIONS	SHEET 9 OF 34
DESIGNED BY:	G. LAROCHE		



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

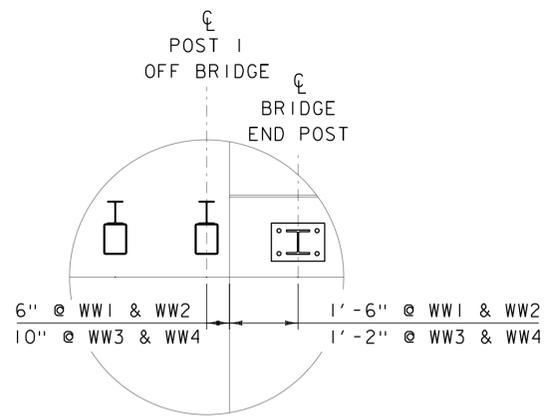
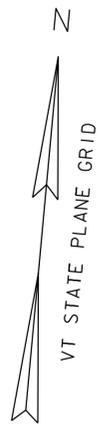


BANKING DIAGRAM
 SCALE: HORIZONTAL 1"=20' -0"
 NO VERTICAL SCALE

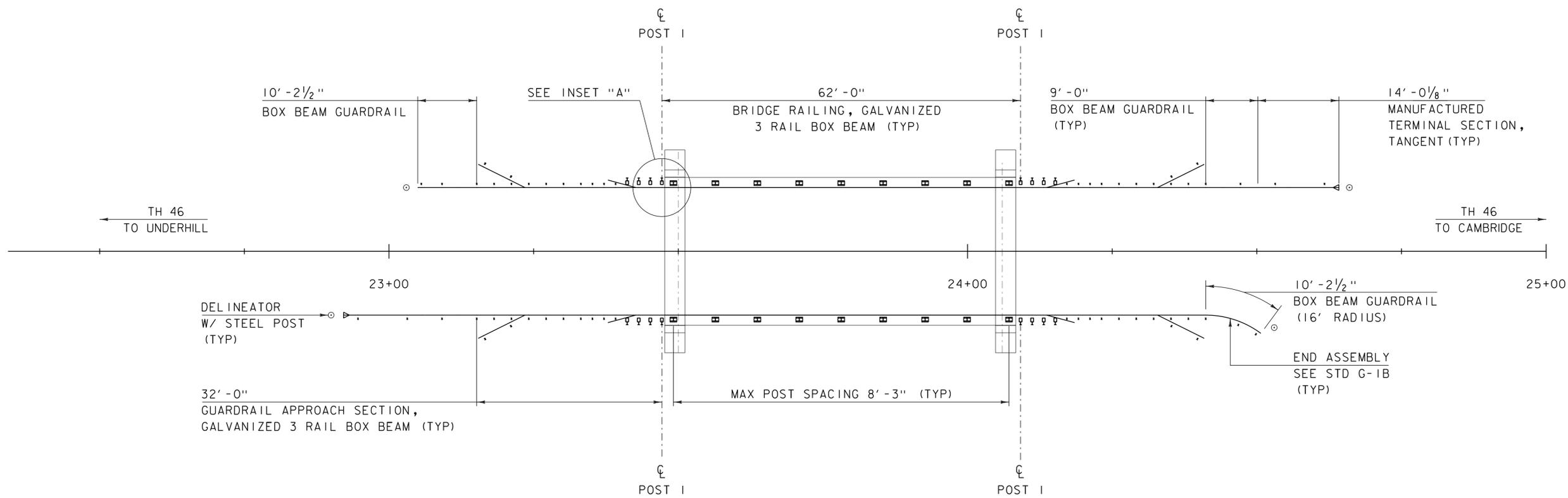
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

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: sl2j166profile.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 II 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:

- 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: sl2j166rail.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

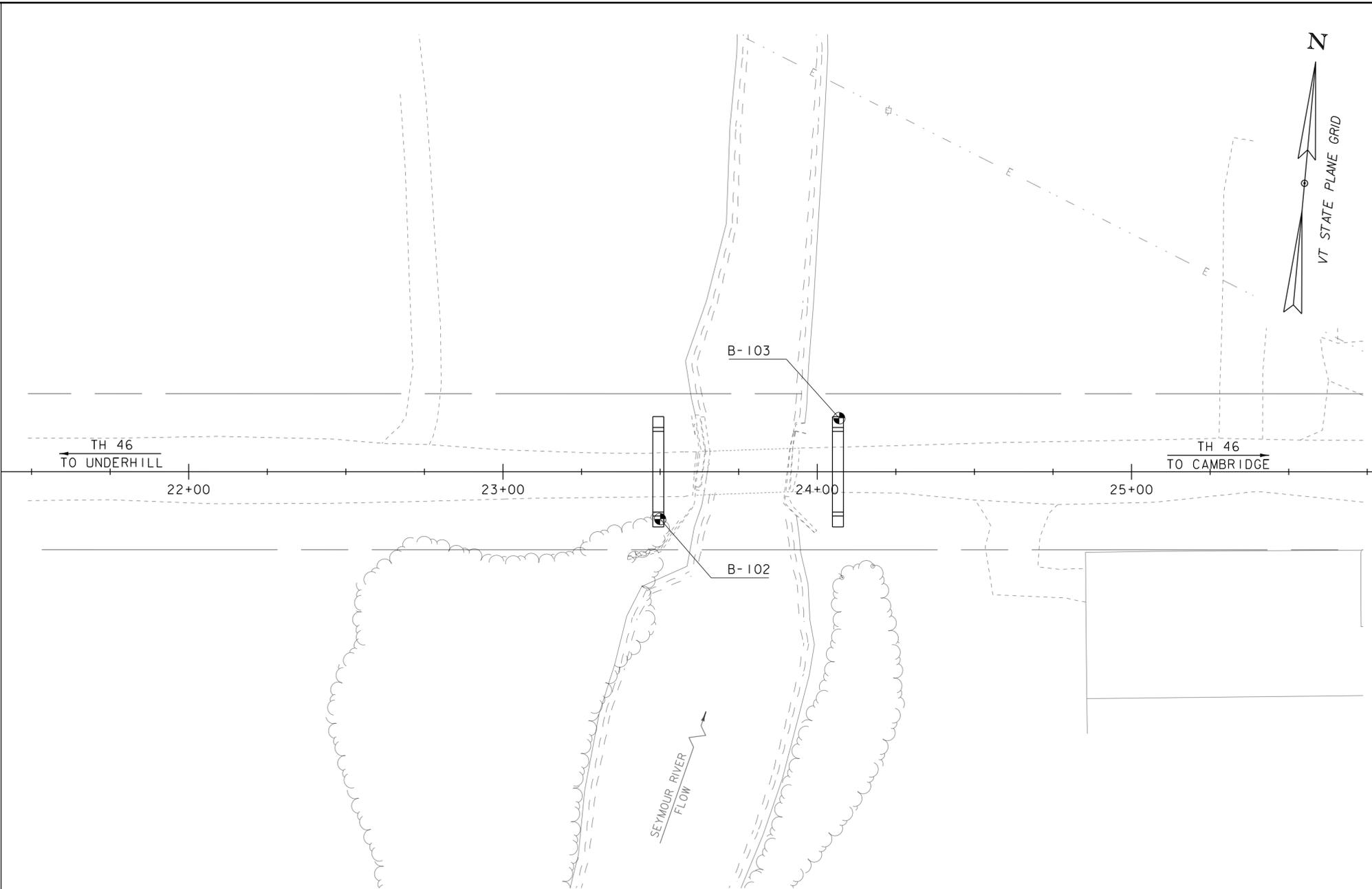
▼	Water Elevation
⊕	Standard Penetration Boring
⊗	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O. D. Sampler 1 3/8" I. D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 3/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
1/2 Rec.	Percent Recovery
ROD	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
gr'y	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.	VARVED - Alternate layers of silt and clay.
BOULDER - A rock fragment with an average dimension > 12 inches.	HARDPAN - Extremely dense soil, cemented layer, not softened when wet.
COBBLE - Rock fragments with an average dimension between 3 and 12 inches.	MUCK - Soft organic soil (containing > 10% organic material).
GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).	MOISTURE CONTENT - Weight of water divided by dry weight of soil.
SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).	FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.	STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.
CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.	DIP - Inclination of bed with a horizontal plane.



BORING LAYOUT

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

GENERAL NOTES

- The subsurface explorations shown herein were made between 2-4-2013 and 2-21-2013 by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering 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.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- 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: sl2j166boring.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

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-102						
		CAMBRIDGE BRO 1448(39) TH-46 BR-28		Page No.: 1 of 2		Pin No.: 12J166						
		Checked By: _____										
Boring Crew: GARROW, DAIGNEAULT, WHITLOCK		Casing: WB		Sampler: SS		Groundwater Observations						
Date Started: 2/04/13 Date Finished: 2/21/13		I.D.: 4 in		Date		Depth (ft) Notes						
VTSPG NAD83: N 761519.87 ft E 1545223.83 ft		Hammer Wt: N.A. 140 lb.		02/06/13		7.9 AM						
Station: 23+50 Offset: 15.00		Hammer Fall: N.A. 30 in.		02/14/13		6.3 AM						
Ground Elevation: 649.19 ft		Hammer/Rod Type: Auto/AWJ		02/21/13		4.3 AM						
		Rig: CME 55 TRACK		CE = 1.46								
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
10		A-1-b, SaGr, gry, Moist, Rec. = 1.2 ft, Broken Rocks were within sample.				7-31-27-22	8.2	47.0	37.9	15.1		
		A-1-b, SiSaGr, gry, Moist, Rec. = 0.6 ft, Roots & Broken Rock were within sample.				10-3-20-9	19.2	51.1	27.5	21.4		
10		Field Note: NXDC, GrSa										
		A-1-b, SiSaGr, brn, Moist, Rec. = 0.5 ft, Broken Rocks were within sample.				2-4-7-5	14.0	48.8	30.3	20.9		
20		Field Note: No Recovery				4-3-3-6	32.1	0.6	12.1	87.3		
		Field Note: NXDC, SaSi				1-2-3-3	32.1	0.6	12.1	87.3		
20		A-4, Si, gry, MTW, Rec. = 0.9 ft				1-2-3-3	32.1	0.6	12.1	87.3		
		A-6, SiCl, gry, MTW, Rec. = 1.4 ft				2-2-2-3	40.6	3.7	96.3	32	13	
30		A-6, SiCl, gry, Moist, Rec. = 0.7 ft, No N-Value data.					39.6	0.6	99.4	35	11	
		A-4, Si, gry, Moist, Rec. = 1.5 ft				WH-2-2-3	33.9	12.0	88.0			
40		A-6, SiCl, gry, Moist, Rec. = 2.0 ft				2-WH-WH-WH	33.9	1.8	98.2	35	11	
		A-4, SaSi, gry, Moist, Rec. = 1.1 ft				2-4-5-7	30.9	26.8	73.2	25	6	
50		A-4, Si, gry, Moist, Rec. = 1.4 ft				1-2-4-5	33.0	11.4	88.6			
		A-4, SaSi, gry, Moist, Rec. = 1.0 ft				1-3-6-10	29.6	24.6	75.4			
50		A-4, Si, gry, Moist, Rec. = 0.7 ft				2-5-5-4	33.4	16.7	83.3			

ABUTMENT I
BOTTOM OF
PILE CAP
EL 643.00

BORING LOG: 2 CAMBRIDGE BRO 1448(39).GPJ VERMONT AOT.GDT 5/12/13

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.

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-102						
		CAMBRIDGE BRO 1448(39) TH-46 BR-28		Page No.: 2 of 2		Pin No.: 12J166						
		Checked By: _____										
Boring Crew: GARROW, DAIGNEAULT, WHITLOCK		Casing: WB		Sampler: SS		Groundwater Observations						
Date Started: 2/04/13 Date Finished: 2/21/13		I.D.: 4 in		Date		Depth (ft) Notes						
VTSPG NAD83: N 761519.87 ft E 1545223.83 ft		Hammer Wt: N.A. 140 lb.		02/06/13		7.9 AM						
Station: 23+50 Offset: 15.00		Hammer Fall: N.A. 30 in.		02/14/13		6.3 AM						
Ground Elevation: 649.19 ft		Hammer/Rod Type: Auto/AWJ		02/21/13		4.3 AM						
		Rig: CME 55 TRACK		CE = 1.46								
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
70		A-4, Si, gry, Moist, Rec. = 0.5 ft				1-1-WH-WH	33.5	1.8	98.2	29	2	
		A-4, Si, gry, Moist, Rec. = 1.2 ft				3-4-4-3	30.4	9.8	90.2	24	2	
80		A-4, SaSi, gry, Moist, Rec. = 1.2 ft				1-1-4-4	24.2	27.4	72.6			
		A-4, SaSi, gry, Moist, Rec. = 1.4 ft				2-3-4-1	26.8	24.0	76.0			
90		Field Note: Cleaned out casing. Appears to be Gr Sa										
		A-1-b, SiGrSa, gry, Moist, Rec. = 0.3 ft				7-2-3-5	9.8	35.7	39.2	25.1		
100		Field Note: Cleaned out casing. Appears to be Gravel										
		A-2-4, GrSiSa, gry, Moist, Rec. = 0.7 ft				31-R	9.6	29.4	37.5	33.1		
110		102.0 ft - 107.0 ft, Silvery-green, Phyllite, Moderately soft, Moderately weathered, Poor rock, NXMDC, RMR = 25	1 (80)	54 (0)	6 (6)							
		107.0 ft - 112.0 ft, Silvery-green, Phyllite, Moderately soft, Slightly weathered, Poor rock, NXMDC, RMR = 25	2 (80)	94 (10)	6 (6)							
		Hole stopped @ 112.0 ft										
		Remarks: Ground surface elevation estimated from topographic plan.										

PILE TIP
EL 547.19

BORING LOG: 2 CAMBRIDGE BRO 1448(39).GPJ VERMONT AOT.GDT 5/12/13

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.

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

FILE NAME: sl2j166boring.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
BORING LOG I

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

VTTrans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG			Boring No.: B-103					
				CAMBRIDGE BRO 1448(39) TH-46 BR-28			Page No.: 1 of 2 Pin No.: 12J166 Checked By:					
Boring Crew: GARROW, DAIGNEAULT, WHITLOCK		Casing: WB		Sampler: SS		Groundwater Observations						
Date Started: 2/25/13 Date Finished: 2/28/13		I.D.: 4 in		Date		Depth (ft)		Notes				
VTSPG NAD83: N 761493.24 ft E 1545283.52 ft		Hammer Wt: N.A. 140 lb.		02/26/13		3.4		AM				
Station: 24+07 Offset: -17.00		Hammer Fall: N.A. 30 in.		02/28/13		3.3		AM				
Ground Elevation: 648.64 ft		Hammer/Rod Type: Auto/AWJ		Rig: CME 55 TRACK		CE = 1.46						
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Field Note: Cleaned out casing				2-3-2-4 (5)						
		Field Note: No Recovery										
		Field Note: Lost Water Return at 6.0 ft.				4-4-4-6 (8)	15.9	59.1	33.5	7.4		
10		A-1-a, SaGr, brn, MTW, Rec. = 0.5 ft, Broken Rock was within sample.				2-3-3-5 (6)	32.0	0.3	4.5	95.2		
		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.				1-WH-WH-1 (WH)	32.9		5.6	94.4	27	7
20		A-4, CISi, gry, MTW, Rec. = 2.0 ft				2-1-2-2 (3)	36.8		7.8	92.2	29	10
		A-4, CISi, gry, MTW, Rec. = 1.4 ft				1-WH-1 (1)	56.9		6.1	93.9	30	9
30		A-4, CISi, gry, MTW, Rec. = 1.6 ft, Regained Water Return at 29.0 ft.				1-3-6-3 (9)	31.2		22.1	77.9		
		A-4, SaSi, gry, MTW, Rec. = 1.5 ft										
		Field Note: Cleaned out casing. Appears to be Si Sa				4-5-4-4 (9)	38.4	0.1	11.3	88.6	28	9
40		A-4, CISi, gry, MTW, Rec. = 1.2 ft				2-2-3-3 (5)	34.5		11.7	88.3		
		A-4, Si, gry, MTW, Rec. = 1.8 ft, A very thin layer of Clay was noticeable.				2-2-3-3 (5)	30.1		43.2	56.8		
50		A-4, SaSi, gry, MTW, Rec. = 1.0 ft				2-3-2-2 (5)	33.0		15.2	84.8		
		A-4, Si, gry, MTW, Rec. = 1.4 ft										
		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.												

ABUTMENT 2
BOTTOM OF
PILE CAP
EL 643.25

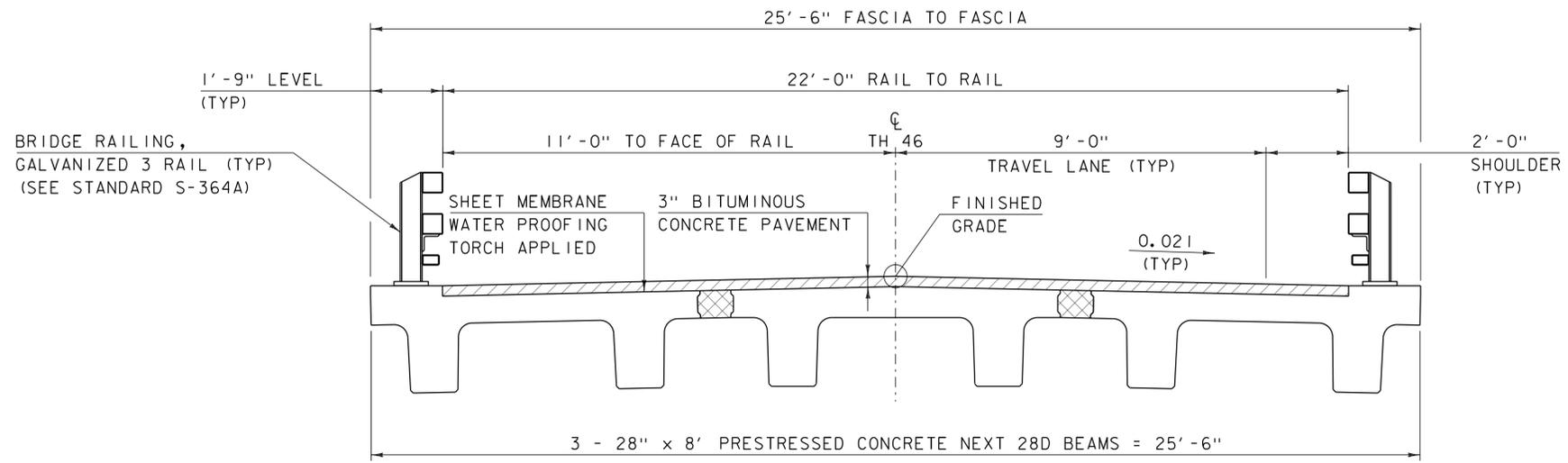
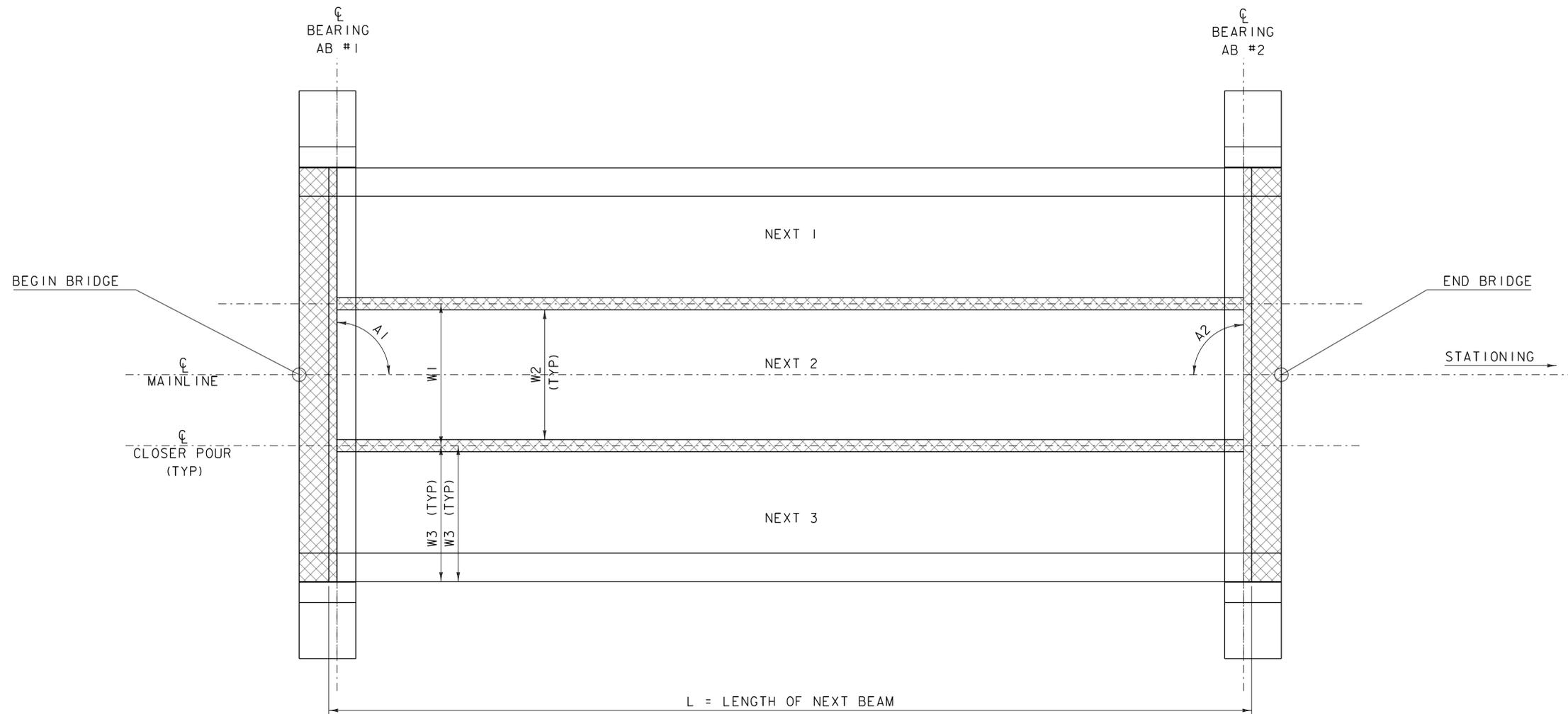
BORING LOG: 2 CAMBRIDGE BRO 1448(39).GPJ VERMONT AOT.GDT 3/12/13

VTTrans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG			Boring No.: B-103					
				CAMBRIDGE BRO 1448(39) TH-46 BR-28			Page No.: 2 of 2 Pin No.: 12J166 Checked By:					
Boring Crew: GARROW, DAIGNEAULT, WHITLOCK		Casing: WB		Sampler: SS		Groundwater Observations						
Date Started: 2/25/13 Date Finished: 2/28/13		I.D.: 4 in		Date		Depth (ft)		Notes				
VTSPG NAD83: N 761493.24 ft E 1545283.52 ft		Hammer Wt: N.A. 140 lb.		02/26/13		3.4		AM				
Station: 24+07 Offset: -17.00		Hammer Fall: N.A. 30 in.		02/28/13		3.3		AM				
Ground Elevation: 648.64 ft		Hammer/Rod Type: Auto/AWJ		Rig: CME 55 TRACK		CE = 1.46						
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	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										
80		A-1-b, SiSaGr, gry, Moist, Rec. = 0.4 ft				10-7-1-2 (8)	9.3	45.2	34.6	20.2		
		Field Note: Cleaned out casing. Appears to be Sa										
90		Field Note: No Recovery				8-27-20-16 (47)						
		Field Note: Cleaned out casing. Appears to be Sa										
		Field Note: No Recovery										
		98.2 ft - 102.2 ft, Soft, Broken, Weathered Rock. Poor rock, NXDC				R@6.0"						
		Top of Bedrock @ 98.2 ft										
100		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					
		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					
		Hole stopped @ 112.2 ft					7					
							8					
							6					
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.												

PILE TIP
EL 546.44

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

PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)
FILE NAME: sl2j166boring.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



SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)

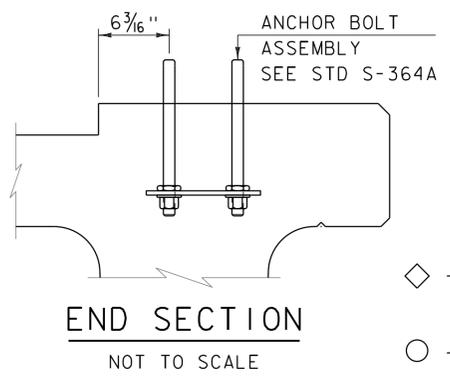
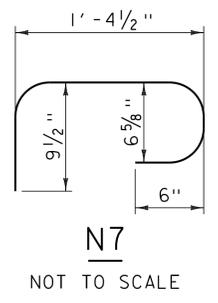
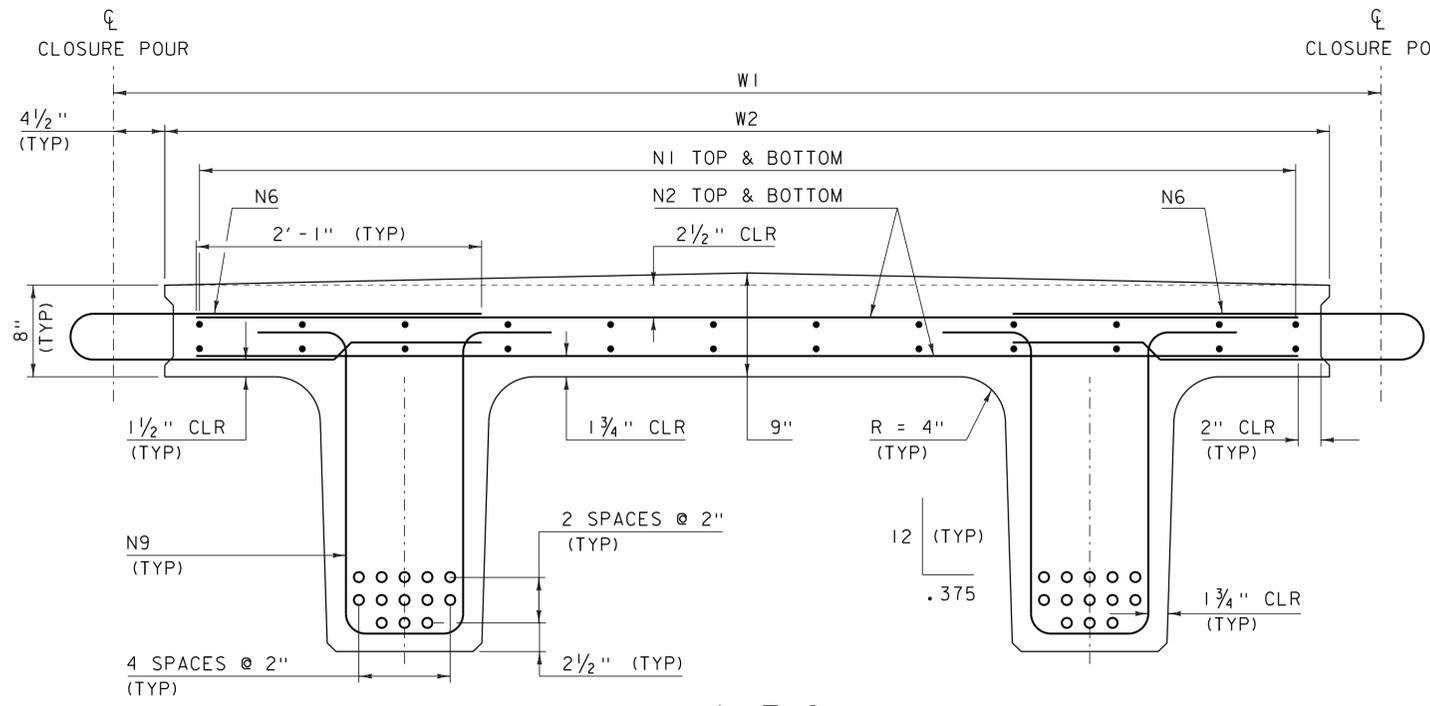
BITUMINOUS CONCRETE PAVEMENT

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

SKEW	A1	90°
	A2	90°

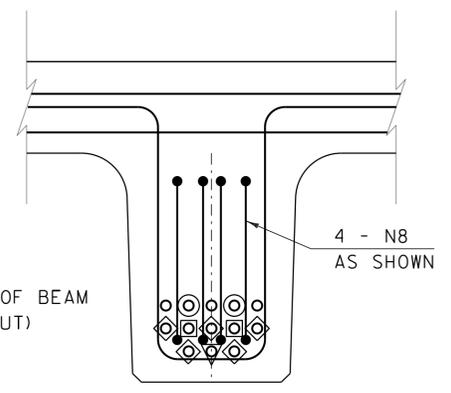
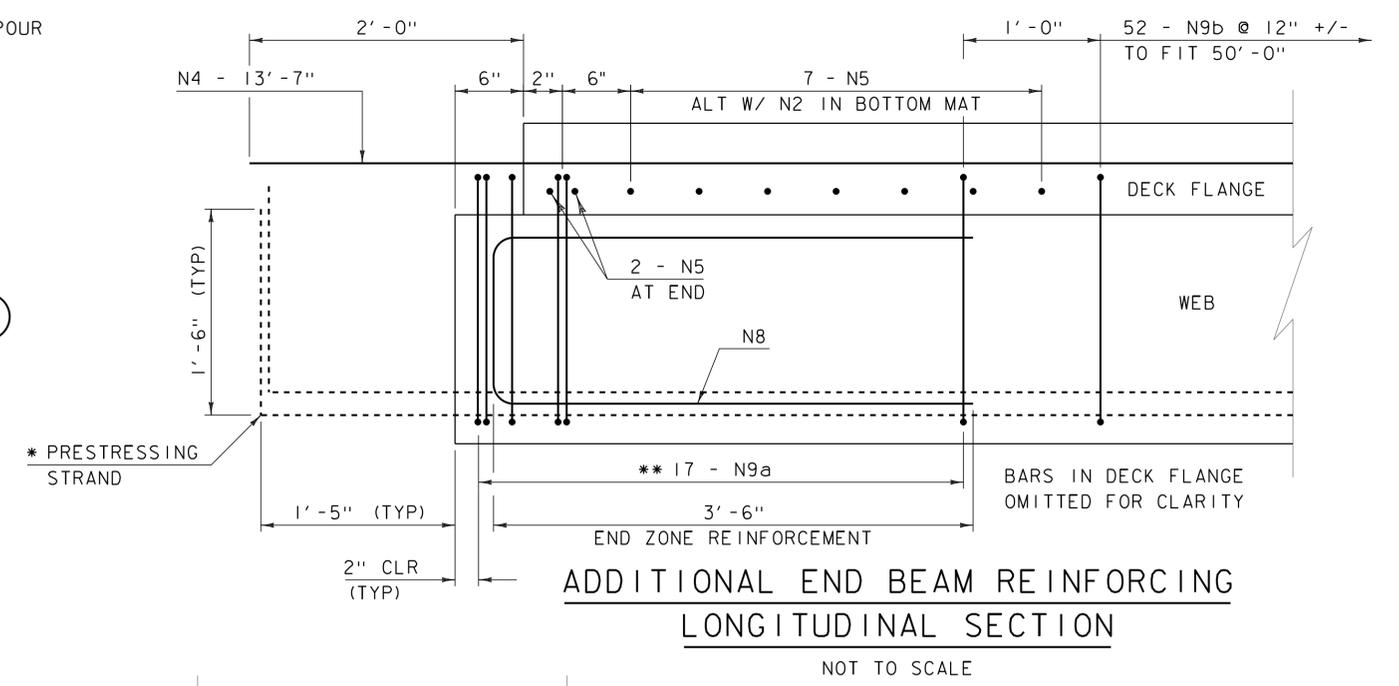
PROJECT NAME: CAMBRIDGE
 PROJECT NUMBER: BRO 1448(39)
 FILE NAME: sl2j166sup.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: G. LAROCHE
 FRAMING PLAN

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



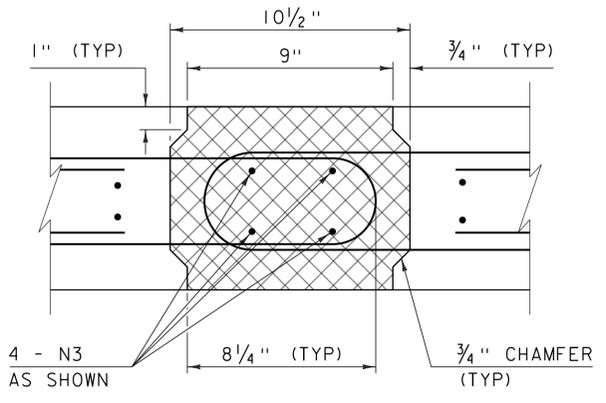
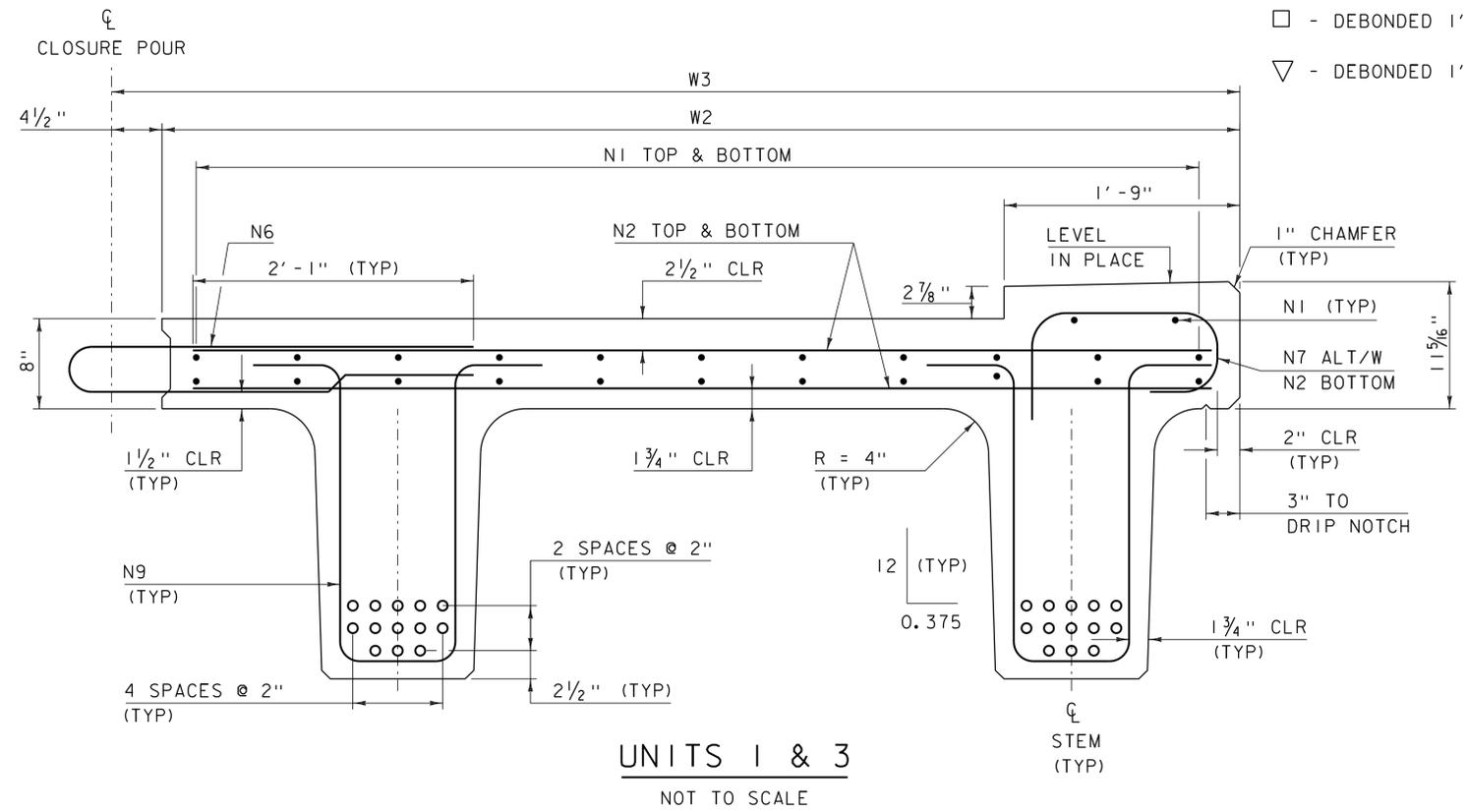
LEGEND

- ◇ - EXTEND 2'-11" OUT OF BEAM (90° BEND @ 1'-5" OUT)
- - DEBONDED 0'-6"
- - DEBONDED 1'-0"
- ▽ - DEBONDED 1'-6"



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.

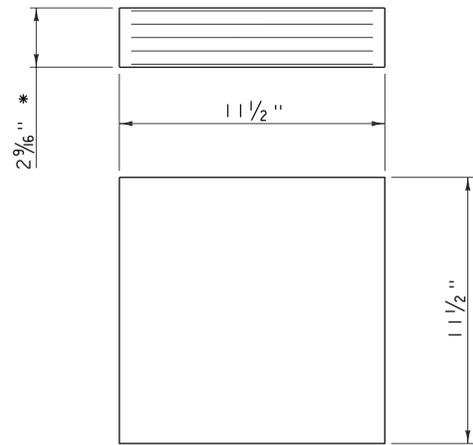


NEXT BEAM REINFORCING CHART

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: sl2j166sup.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



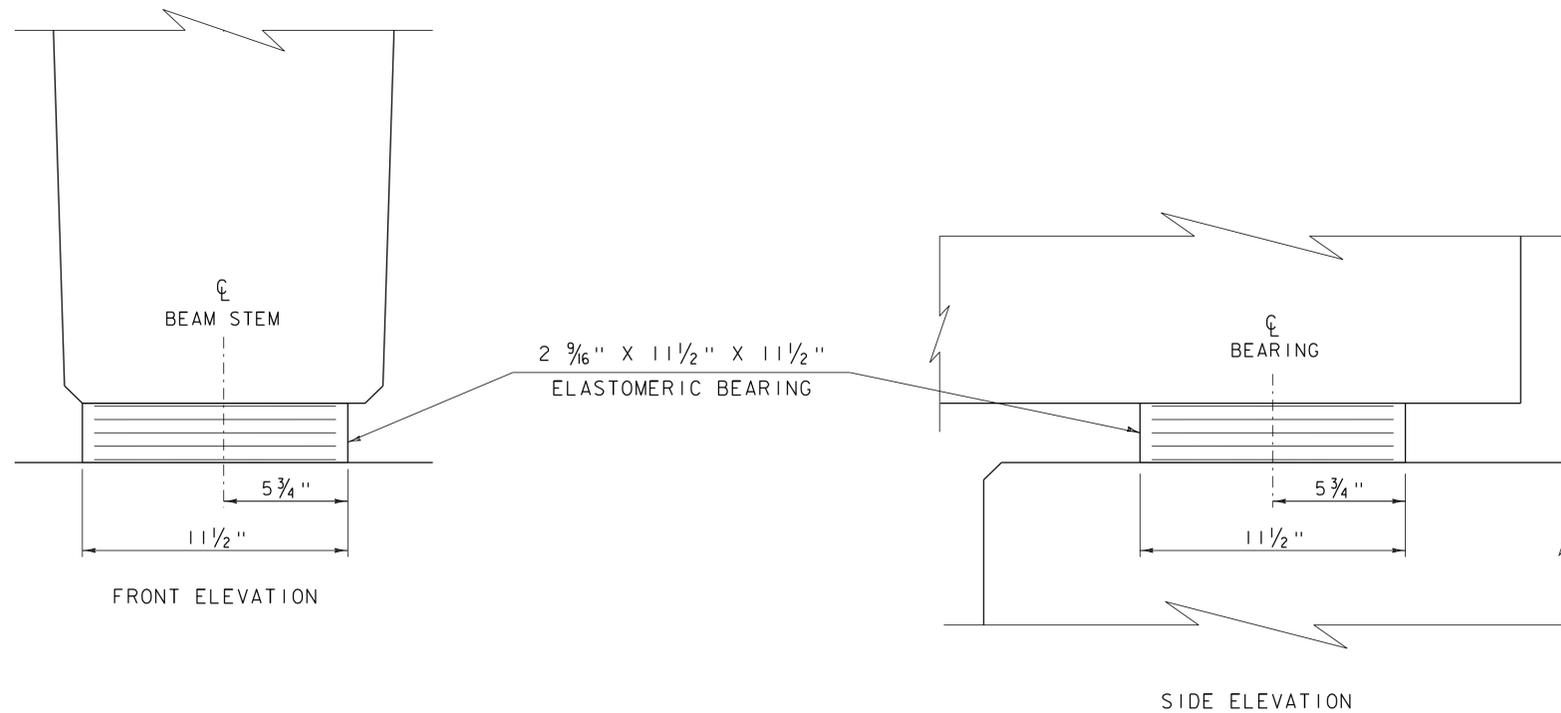
ELASTOMERIC BEARING DETAIL

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: s2j166brg.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
BEARING DETAILS

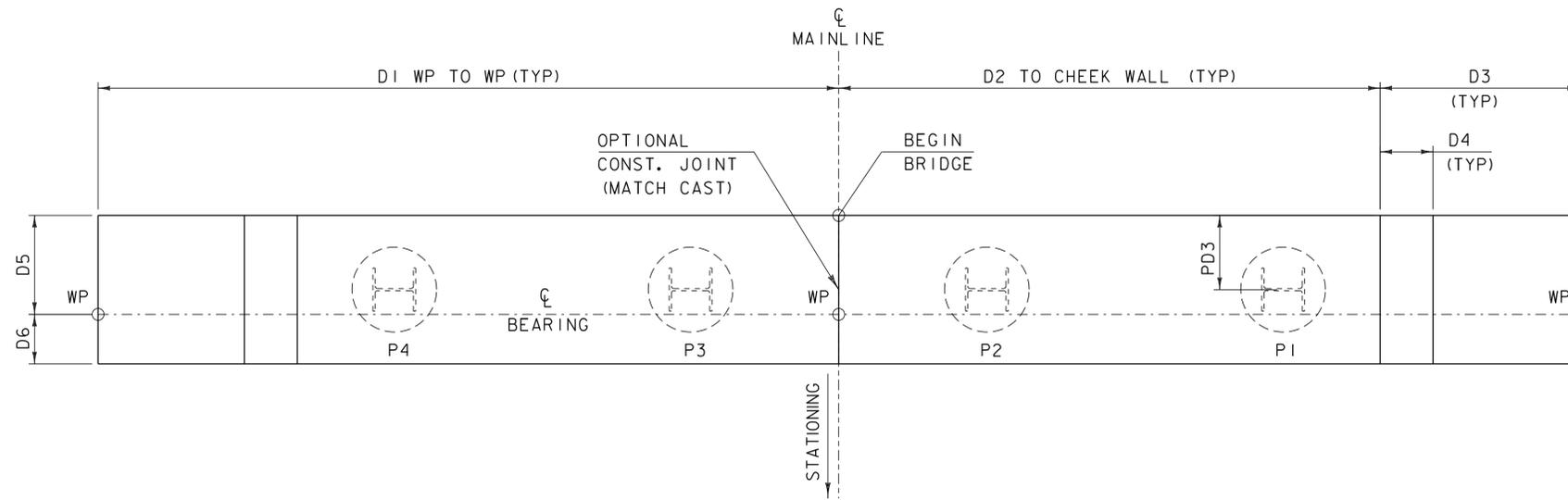
PLOT DATE: 29-AUG-2014
DRAWN BY: G. LAROCHE
CHECKED BY: W. LAMMER
SHEET 18 OF 34

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

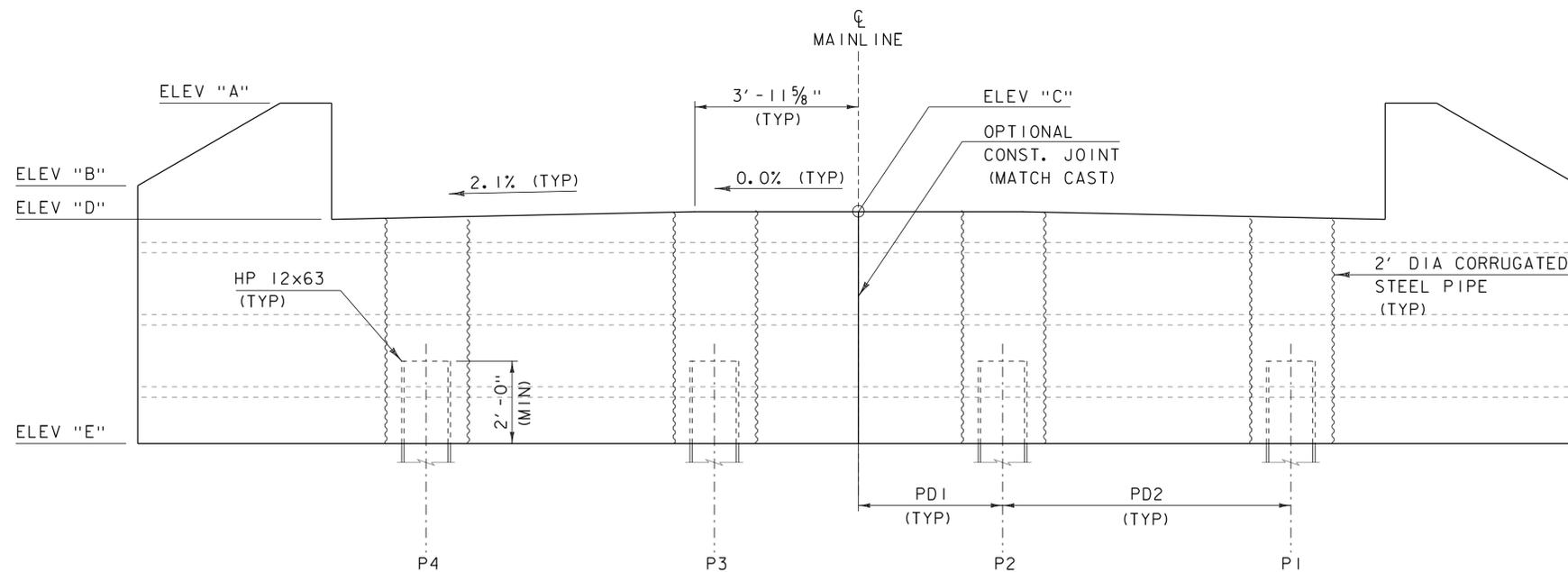
ABUTMENT DIMENSIONS

	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 PLAN

SCALE 1/2" = 1'-0"

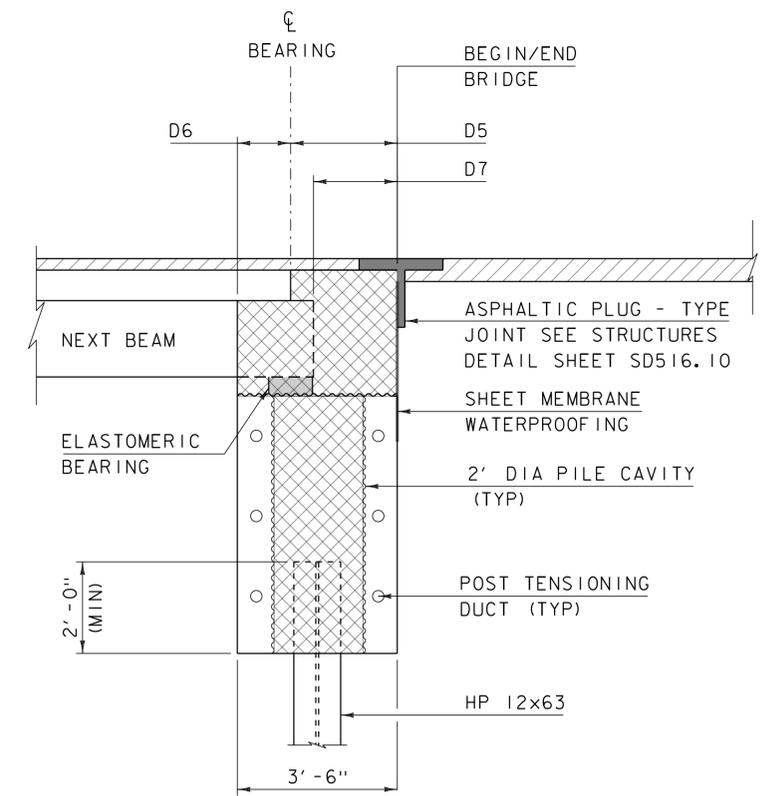


ABUTMENT ELEVATION

SCALE 1/2" = 1'-0"

NOTES:

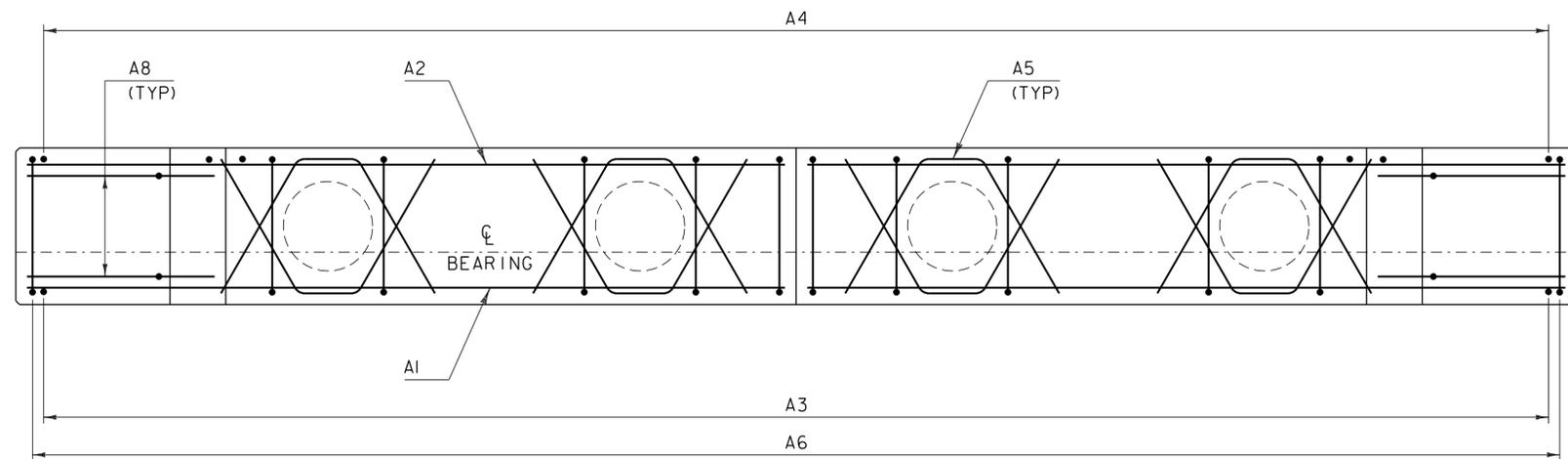
1. ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR.
2. THE BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO ABUTMENT 1. ALL WORK TO INSTALL THE PLAQUE SHALL BE INCIDENTAL TO THE APPROPRIATE PRECAST ITEM. SEE SD-502.00 FOR FURTHER DETAILS.
3. THE BRIDGE SEAT SHALL HAVE A ROUGHENED FINISH. AREAS UNDER BEARING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



ABUTMENT TYPICAL

SCALE 1/2" = 1'-0"

PROJECT NAME:	CAMBRIDGE	FILE NAME:	sl2j166sub.dgn	PLOT DATE:	29-AUG-2014
PROJECT NUMBER:	BRO 1448(39)	PROJECT LEADER:	K. HIGGINS	DRAWN BY:	J. SALVATORI
		DESIGNED BY:	G. LAROCHE	CHECKED BY:	W. LAMMER
		ABUTMENT PLAN		SHEET	19 OF 34

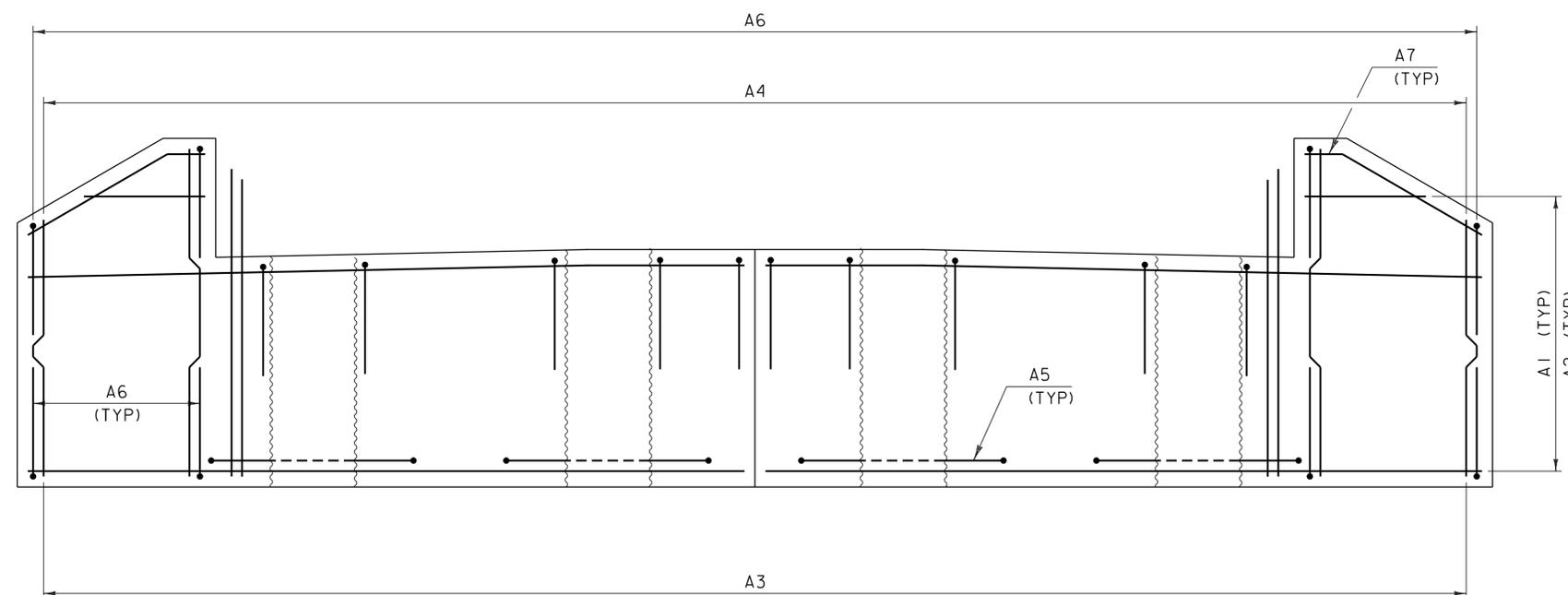


ABUTMENT REINFORCING PLAN

SCALE 1/2" = 1'-0"

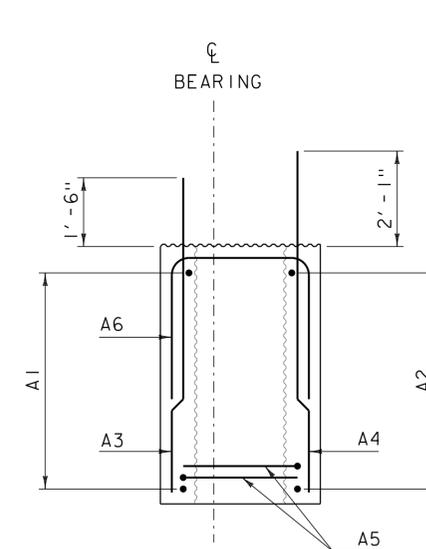
ABUTMENT REINFORCING CHART

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



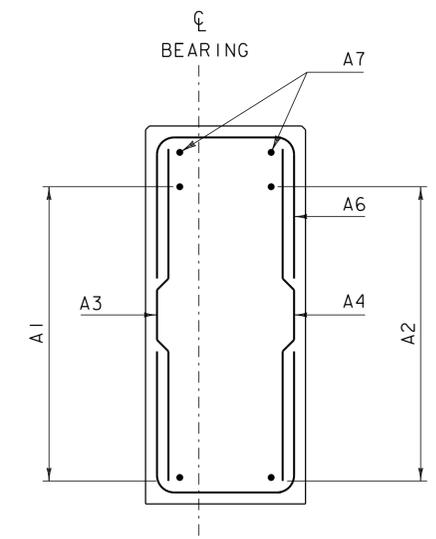
ABUTMENT REINFORCING ELEVATION

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.

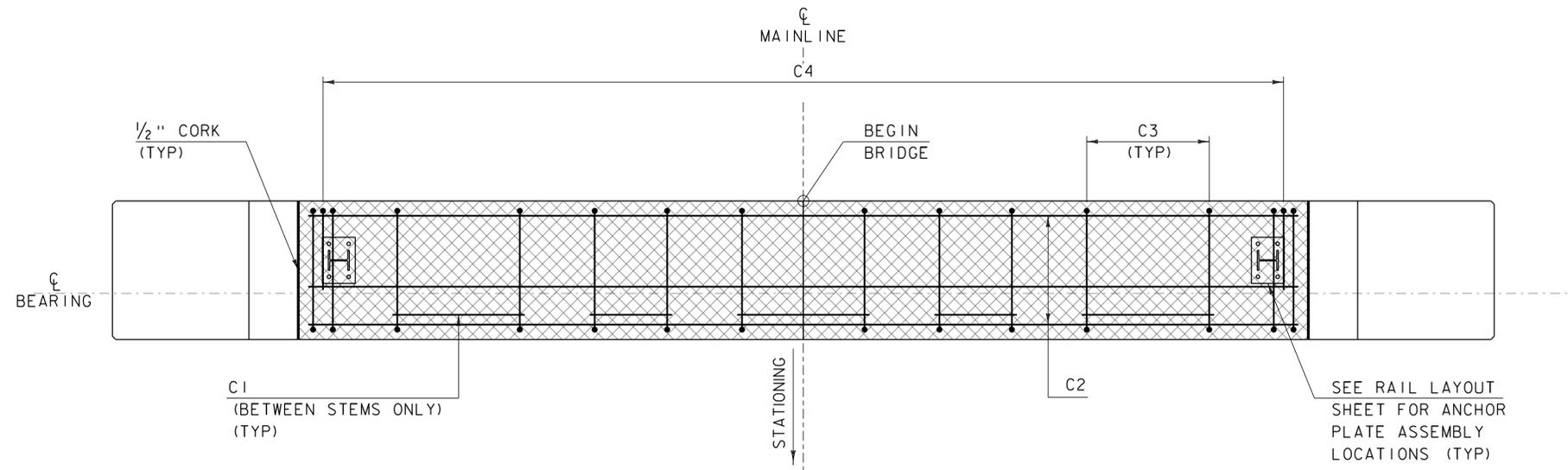
PROJECT NAME: CAMBRIDGE
 PROJECT NUMBER: BRO 1448(39)

FILE NAME: sl2j166sub.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

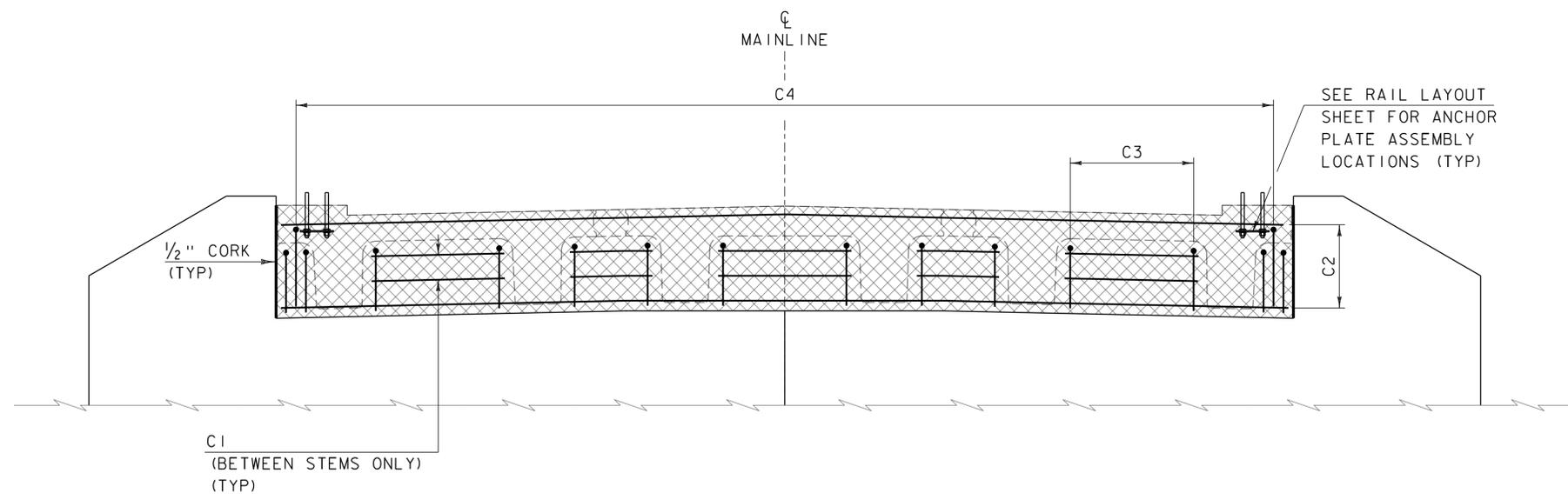
CLOSURE POUR REINFORCING

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



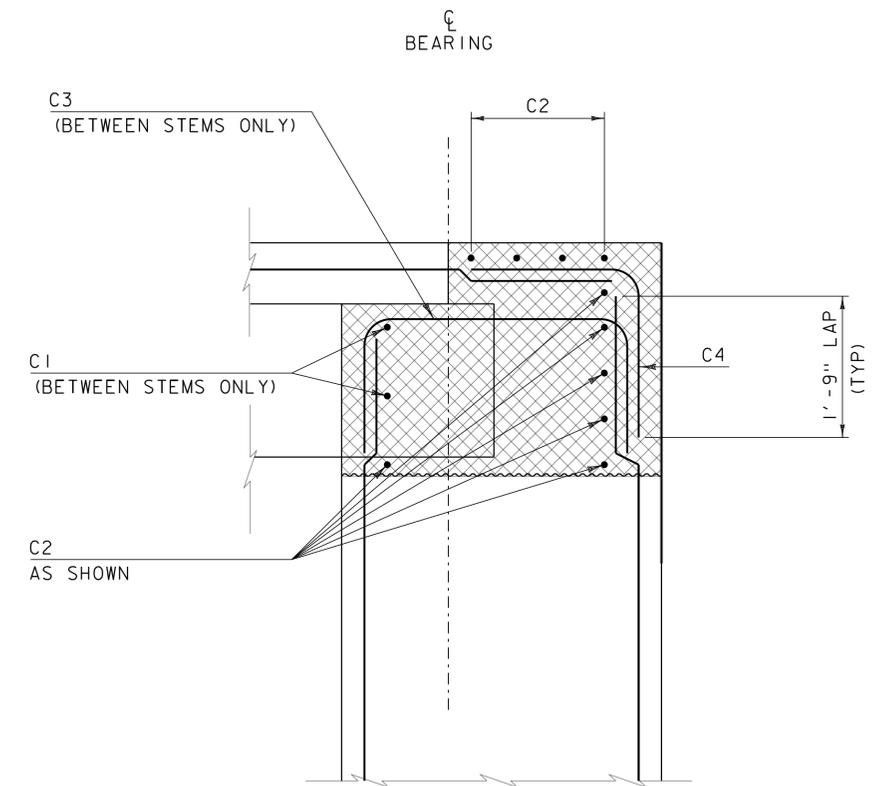
**DECK CLOSURE POUR
REINFORCING PLAN**

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	PLOT DATE: 29-AUG-2014
PROJECT NUMBER: BRO 1448(39)	DRAWN BY: J. SALVATORI
FILE NAME: sl2j166sub.dgn	CHECKED BY: W. LAMMER
PROJECT LEADER: K. HIGGINS	SHEET 21 OF 34
DESIGNED BY: G. LAROCHE	
DECK CLOSURE POUR	

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 EROSION 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.

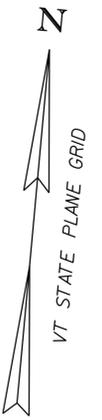
1.5.1 CONSTRUCTION SEQUENCE

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: sl2j166epsc_nar.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: K. FRIEDLAND
DESIGNED BY: G. 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

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

STONE FILL
TYPE III,
(TYP)

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

NOTES:

1. FOR CLARITY, AREAS TO BE SEEDDED AND MULCHED HAVE NOT BEEN INDICATED. HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDDED AND MULCHED AS APPLICABLE.
2. EXISTING CONTOURS SHOWN. SEE CROSS SECTIONS FOR FINAL CONDITIONS.

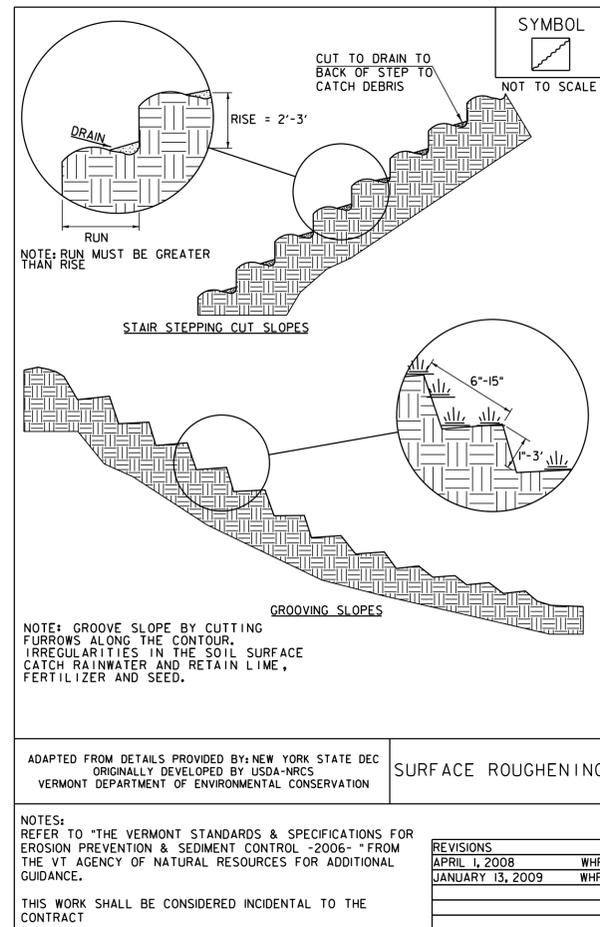
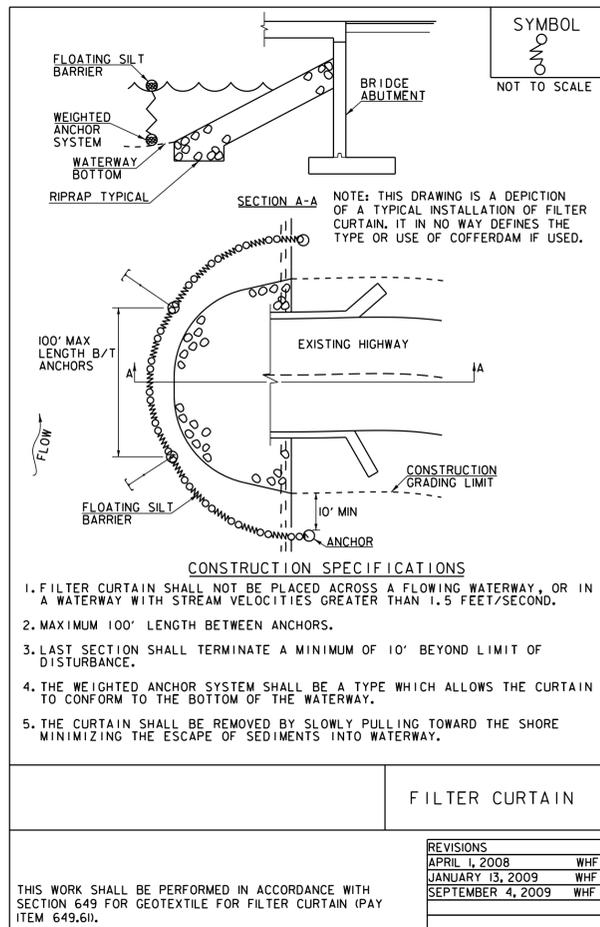
EPSC PLAN

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

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

FILE NAME: sl2j166epsc.dgn
PROJECT LEADER: K. HIGGINS
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EPSC PLAN

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



VAOT RURAL AREA MIX

% 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	BIRD'SFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX

% 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

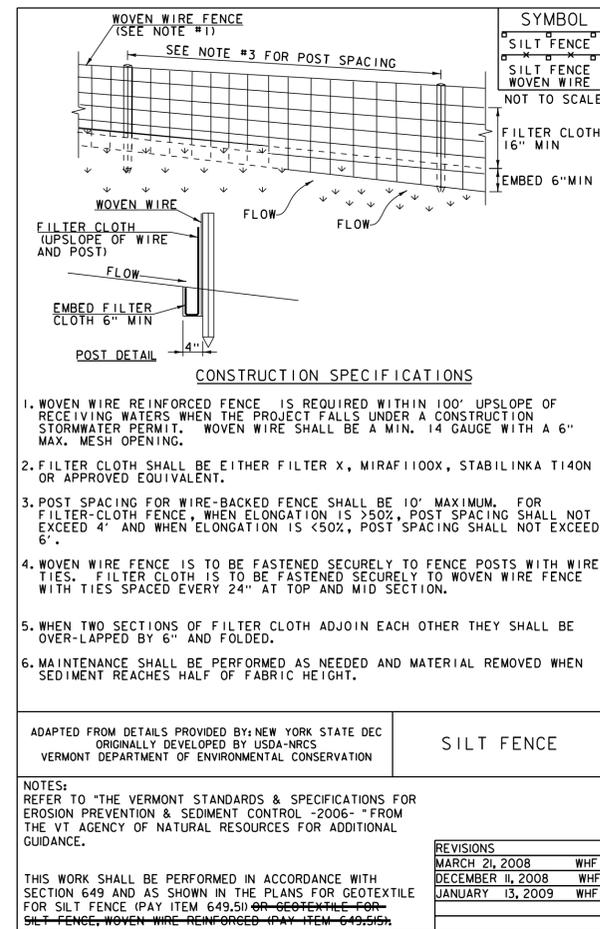
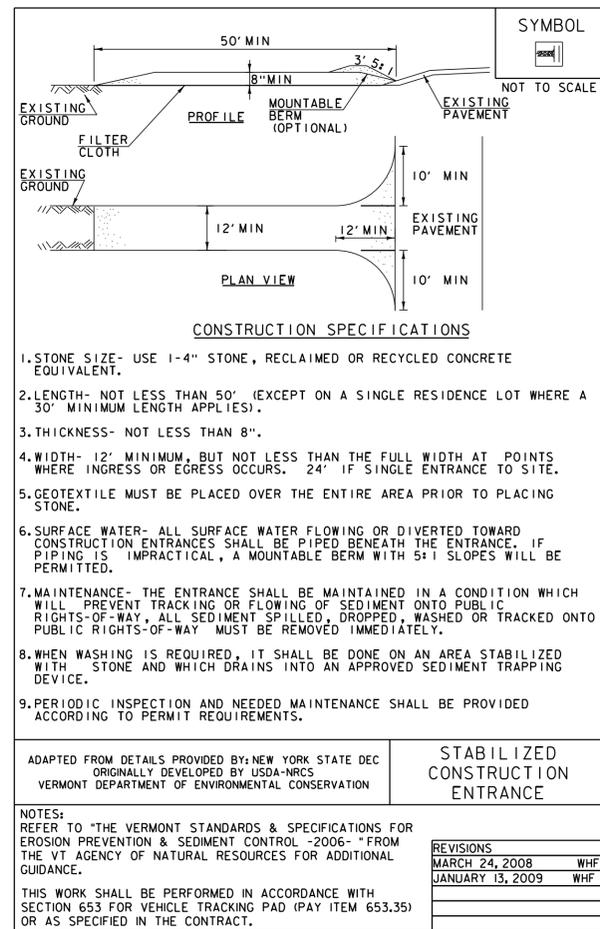
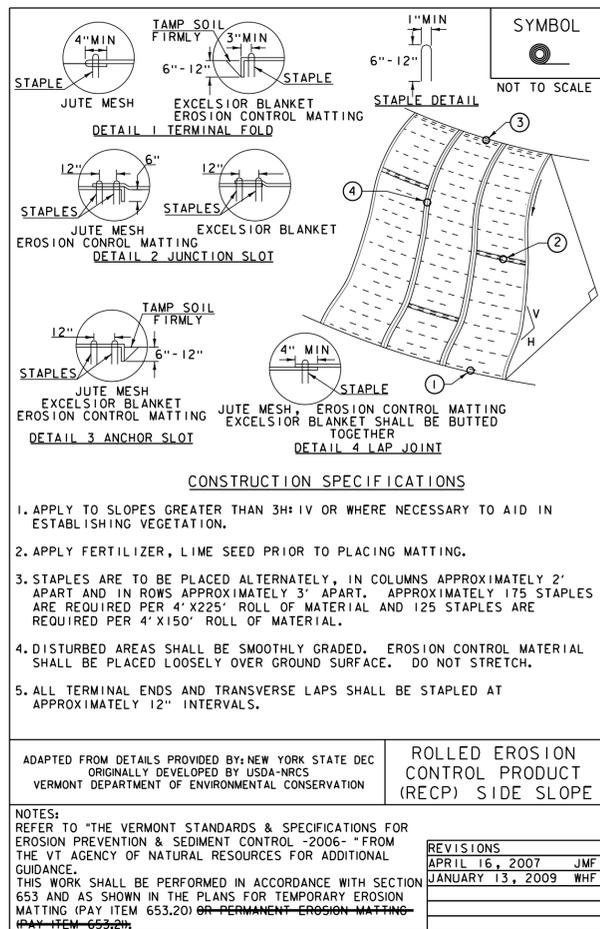
FERTILIZER	LIME
BROADCAST HYDROSEED	BROADCAST HYDROSEED
10-20-10 FOLLOW	PELLETIZED FOLLOW
500 LBS/AC MANUFACTURER	2 TONS/AC MANUFACTURER

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.

REVISIONS

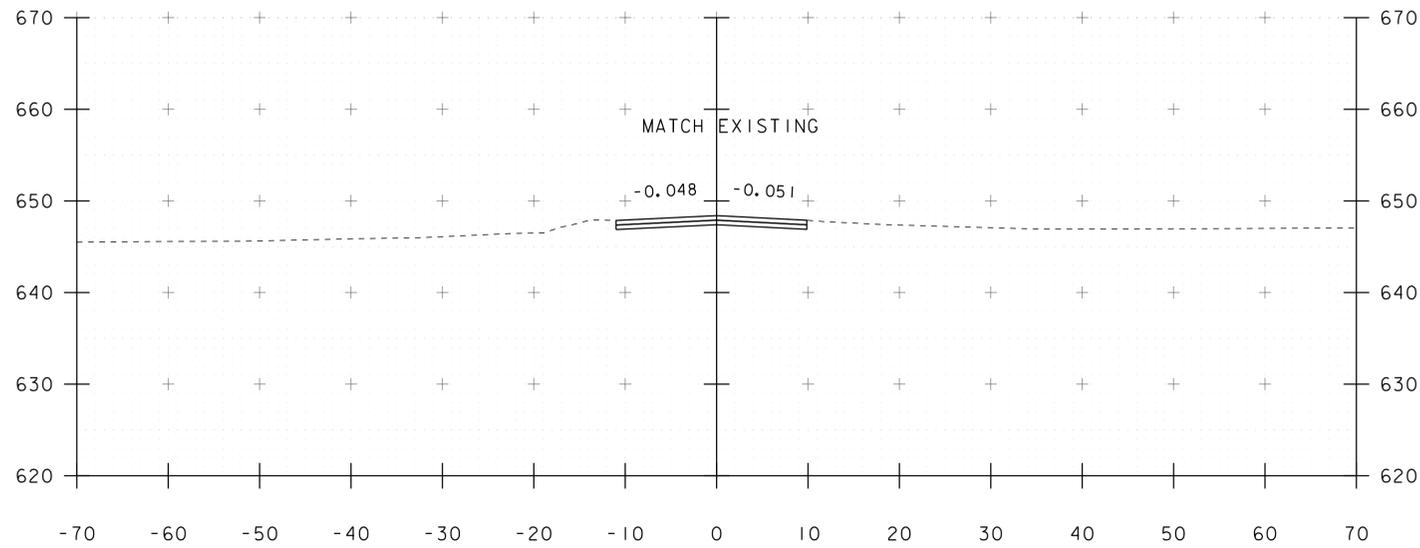
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF



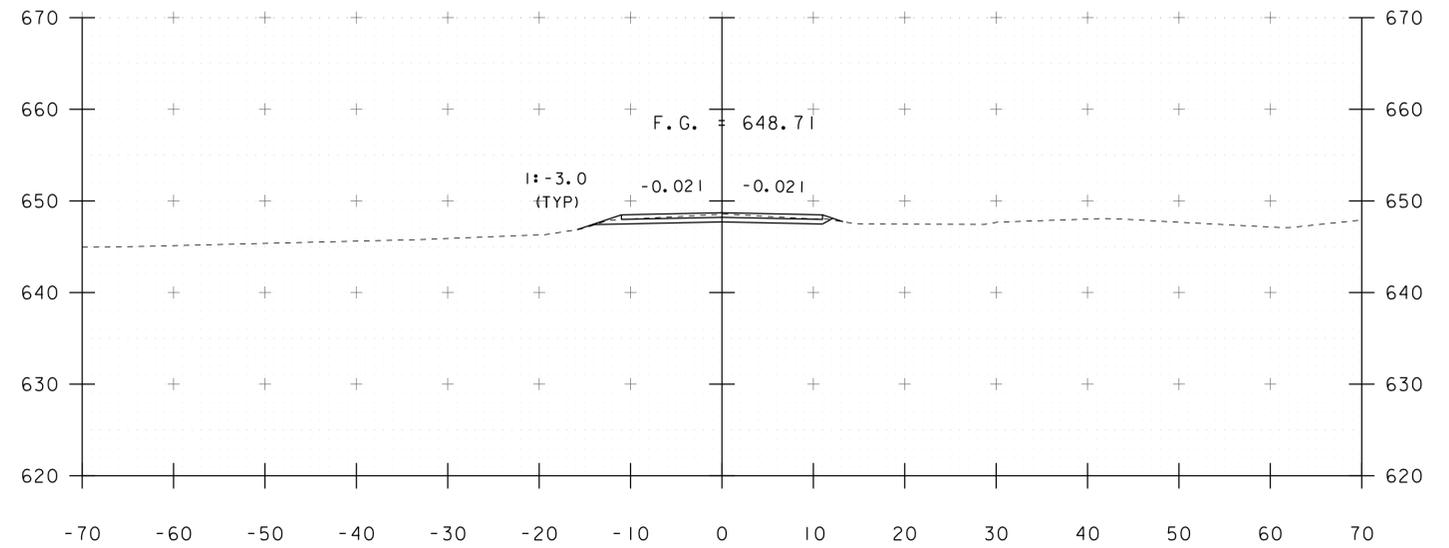
PROJECT NAME: CAMBRIDGE
PROJECT NUMBER: BRO 1448 (39)

FILE NAME: sl2j166ero_det.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: G. LAROCHE
EPSC DETAILS

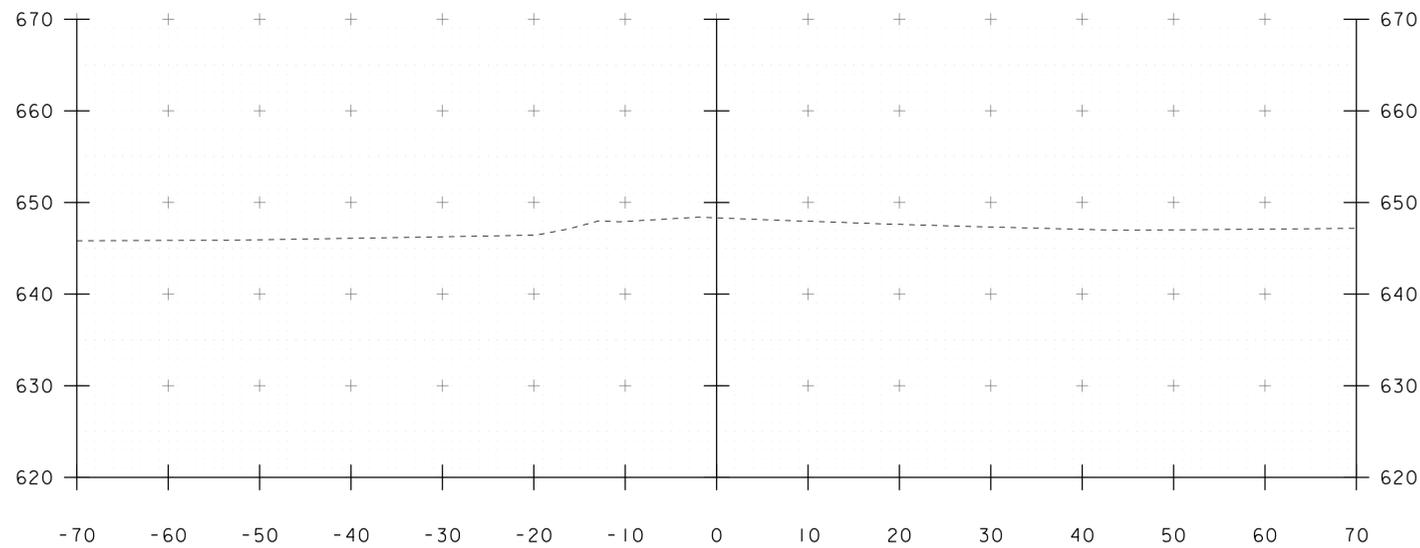
PLOT DATE: 29-AUG-2014
DRAWN BY: K. FRIEDLAND
CHECKED BY: J. SALVATORI
SHEET 24 OF 34



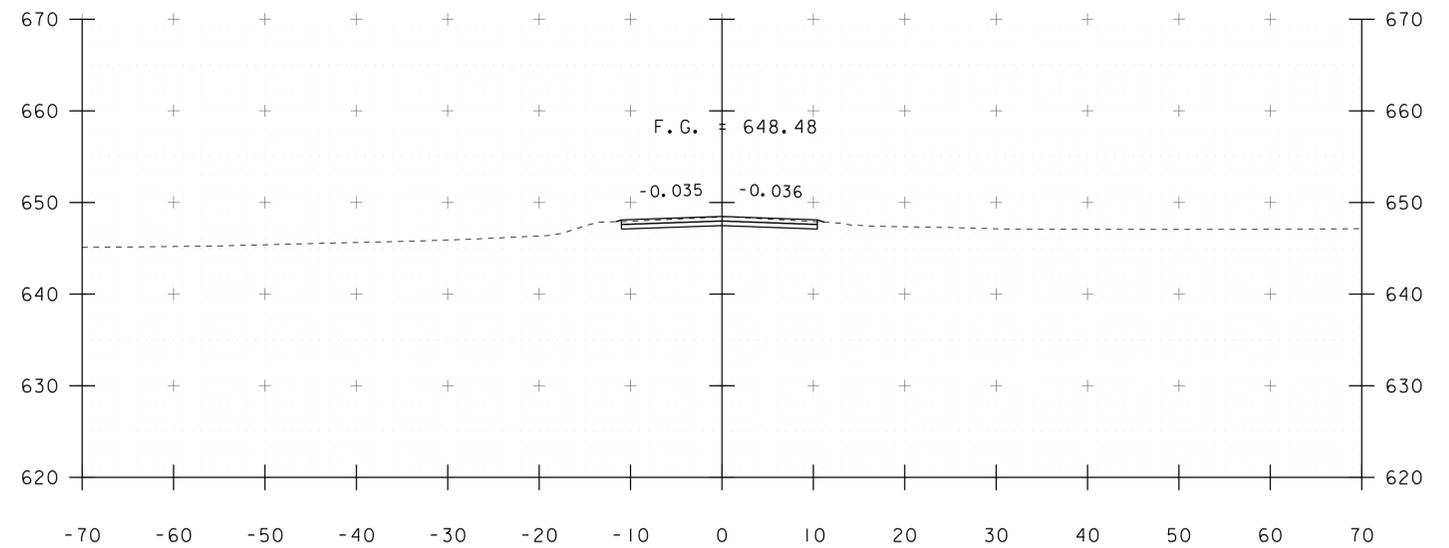
22+00
BEGIN APPROACH



22+50



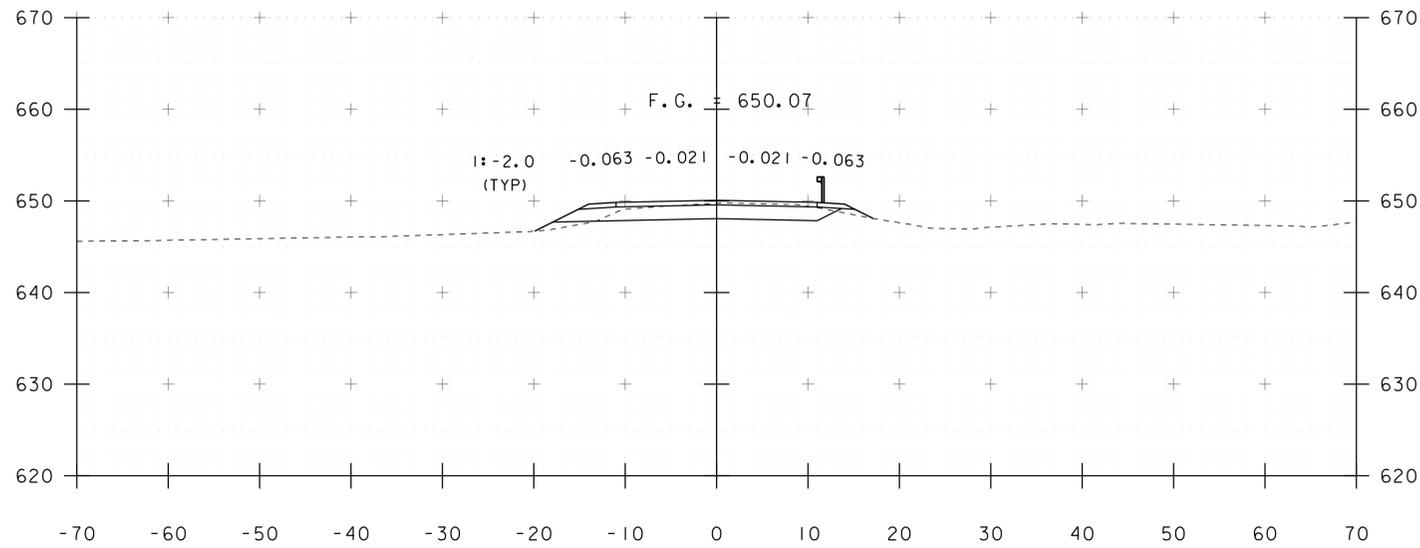
21+75



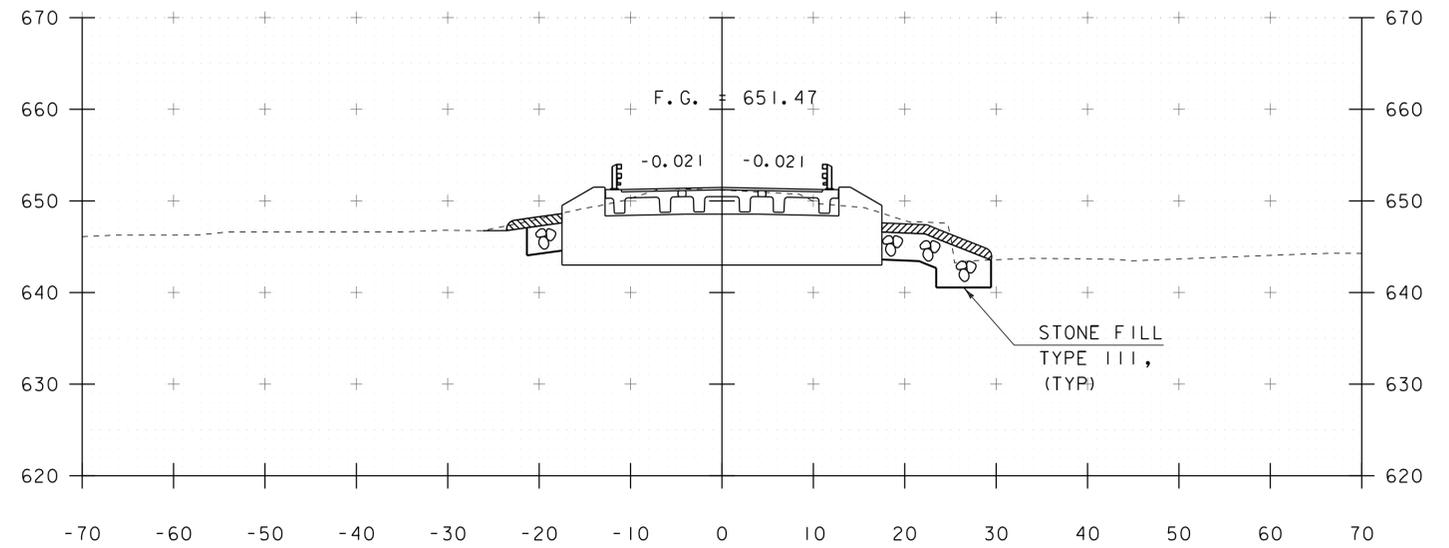
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STA. 21+75 TO STA. 22+50

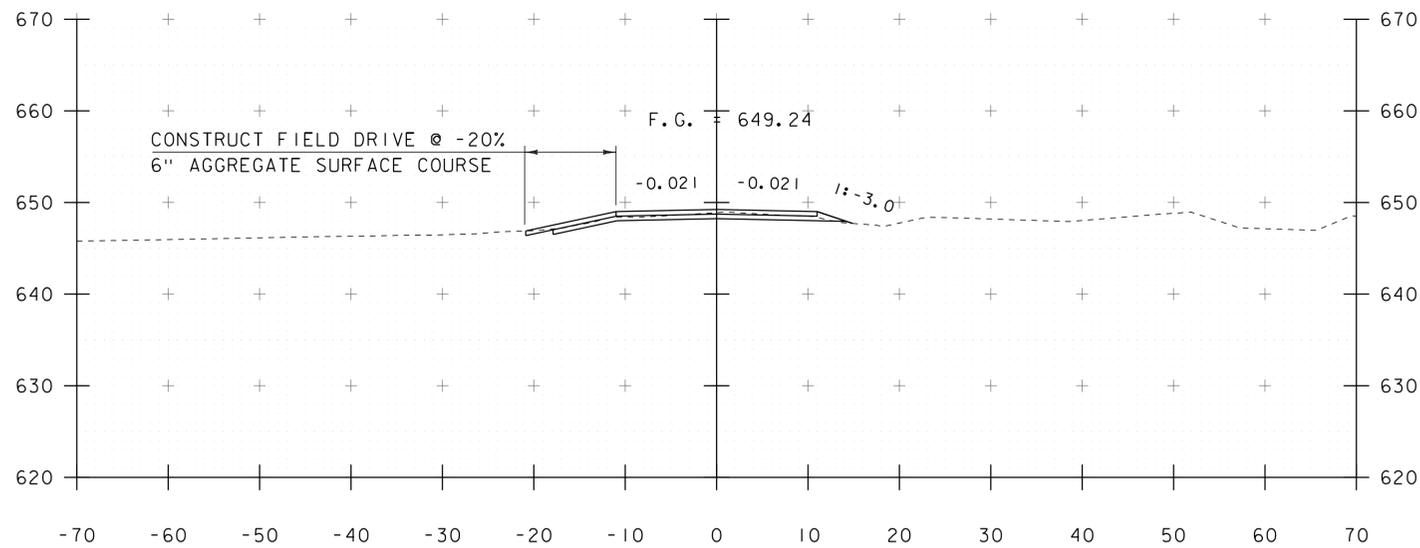
PROJECT NAME: CAMBRIDGE	
PROJECT NUMBER: BRO 1448(39)	
FILE NAME: sl2j166xs.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
MAINLINE SECTIONS 1	SHEET 25 OF 34



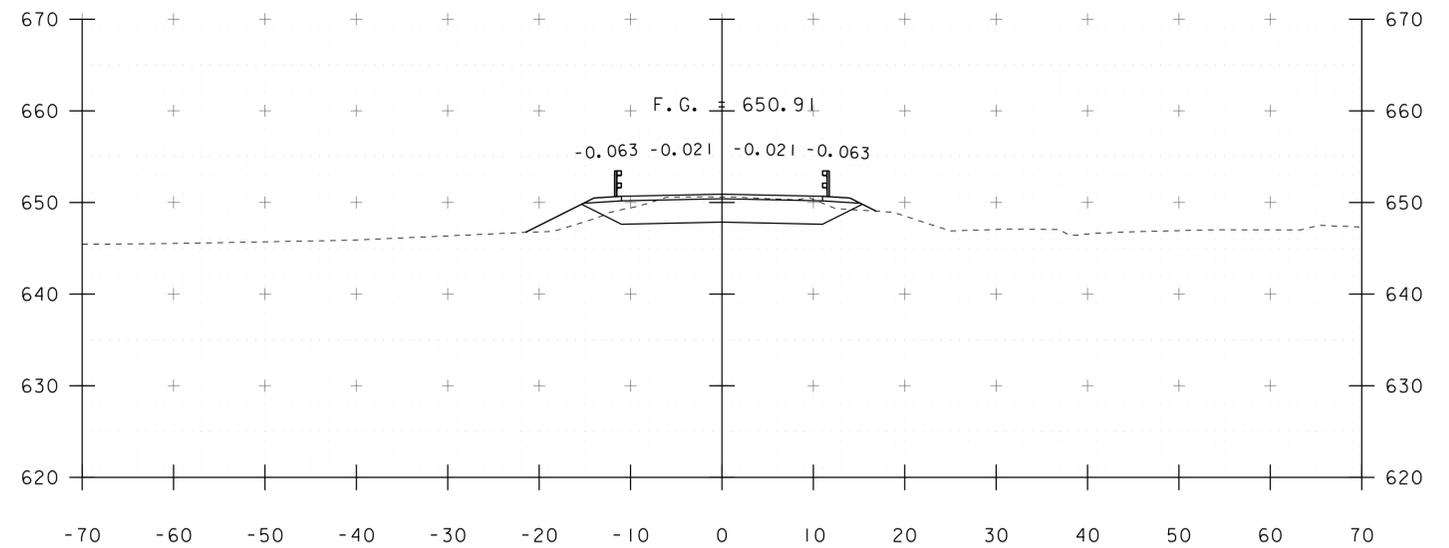
23+00
 BEGIN PROJECT
 BEGIN PAVEMENT



23+50
 23+47.67 BEGIN BRIDGE



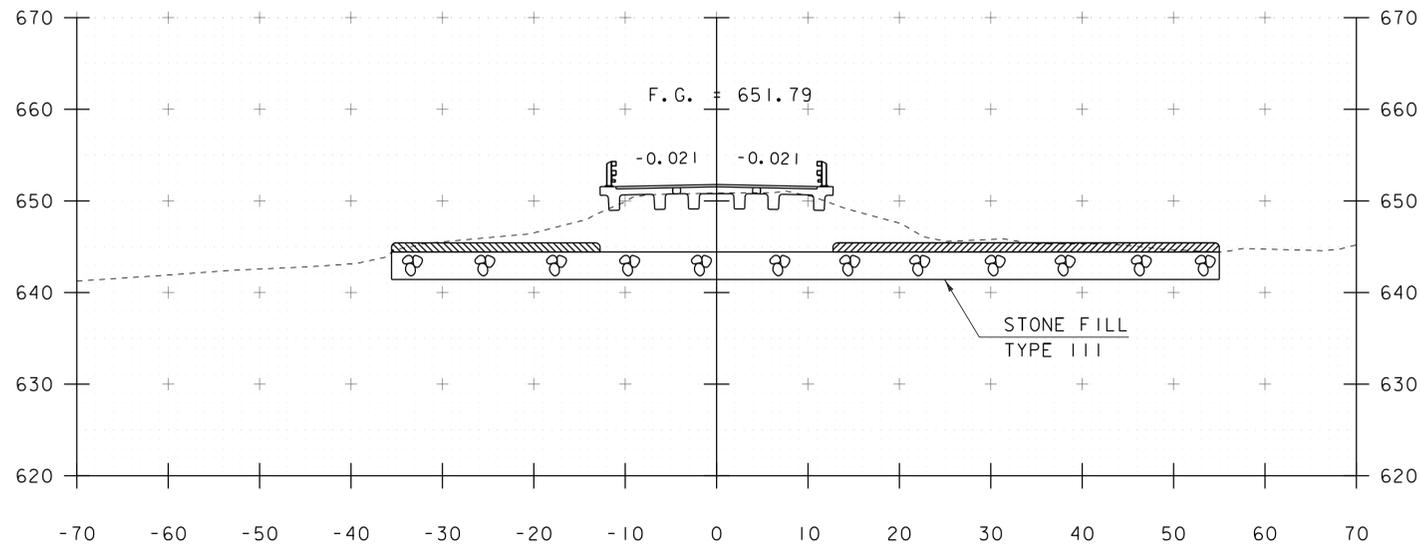
22+75



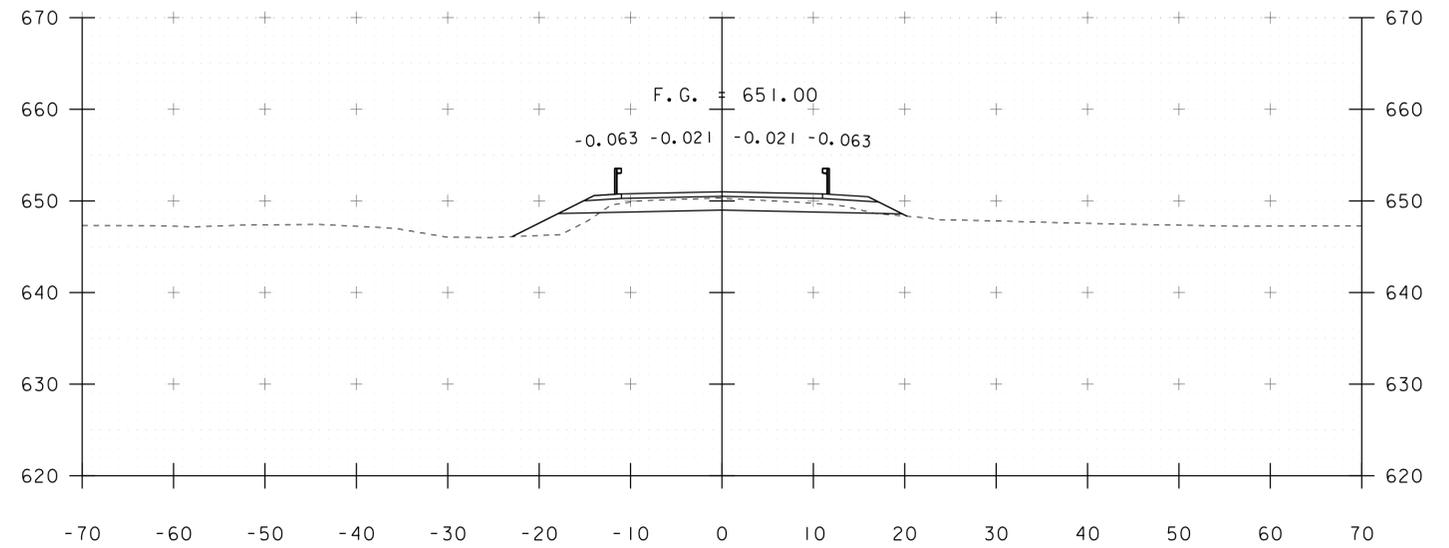
23+25

STA. 22+75 TO STA. 23+50

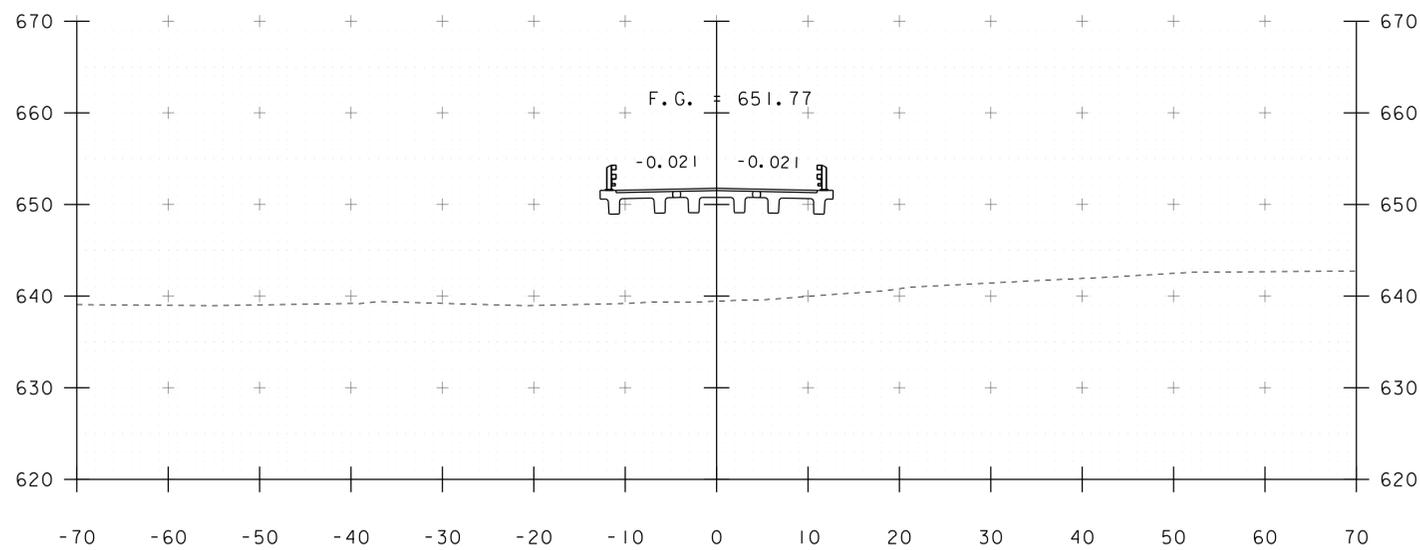
PROJECT NAME: CAMBRIDGE	
PROJECT NUMBER: BRO 1448(39)	
FILE NAME: sl2j166xs.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
MAINLINE SECTIONS 2	SHEET 26 OF 34



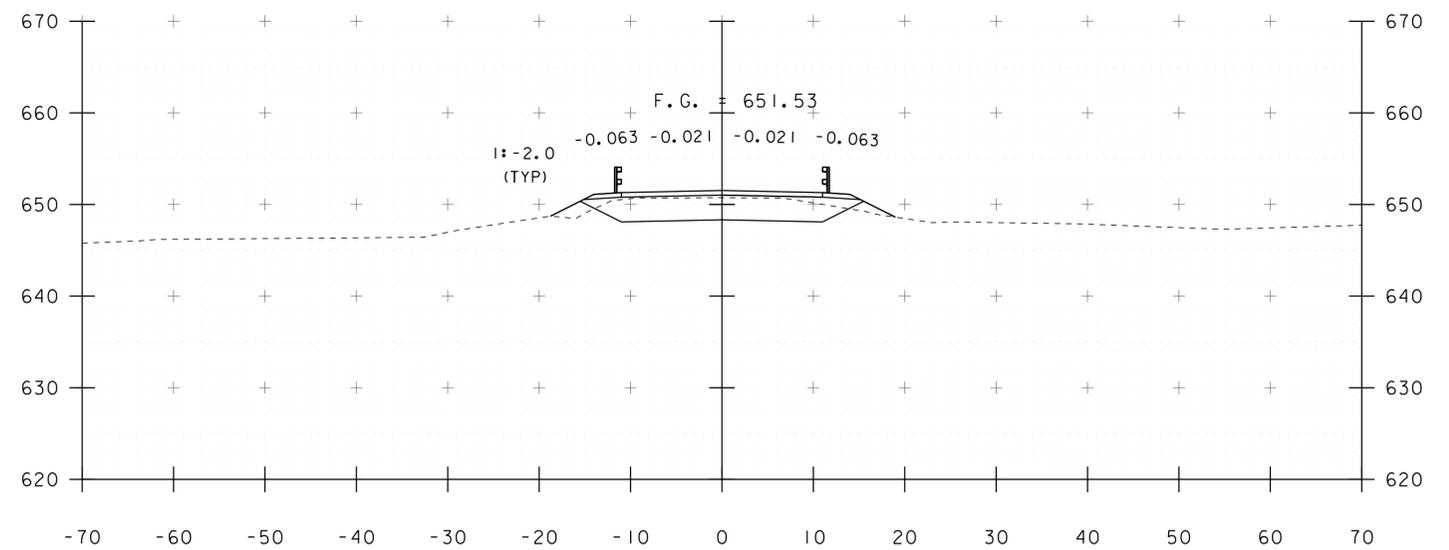
24+00
24+08.33 END BRIDGE



24+50
END PROJECT
END PAVEMENT



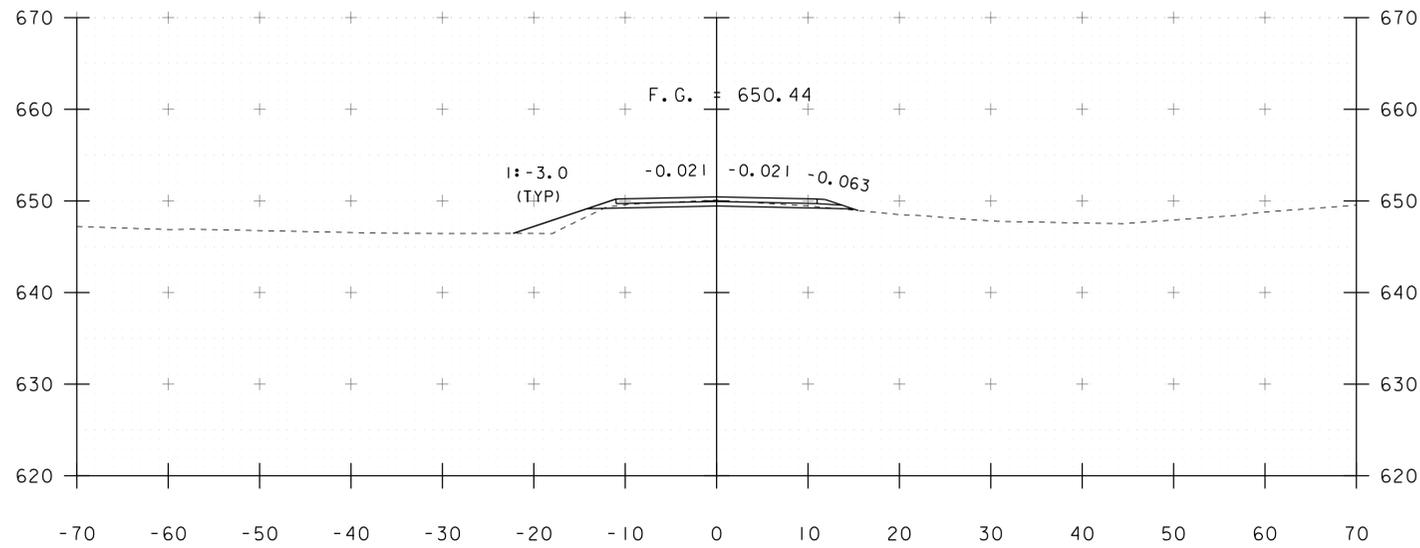
23+75



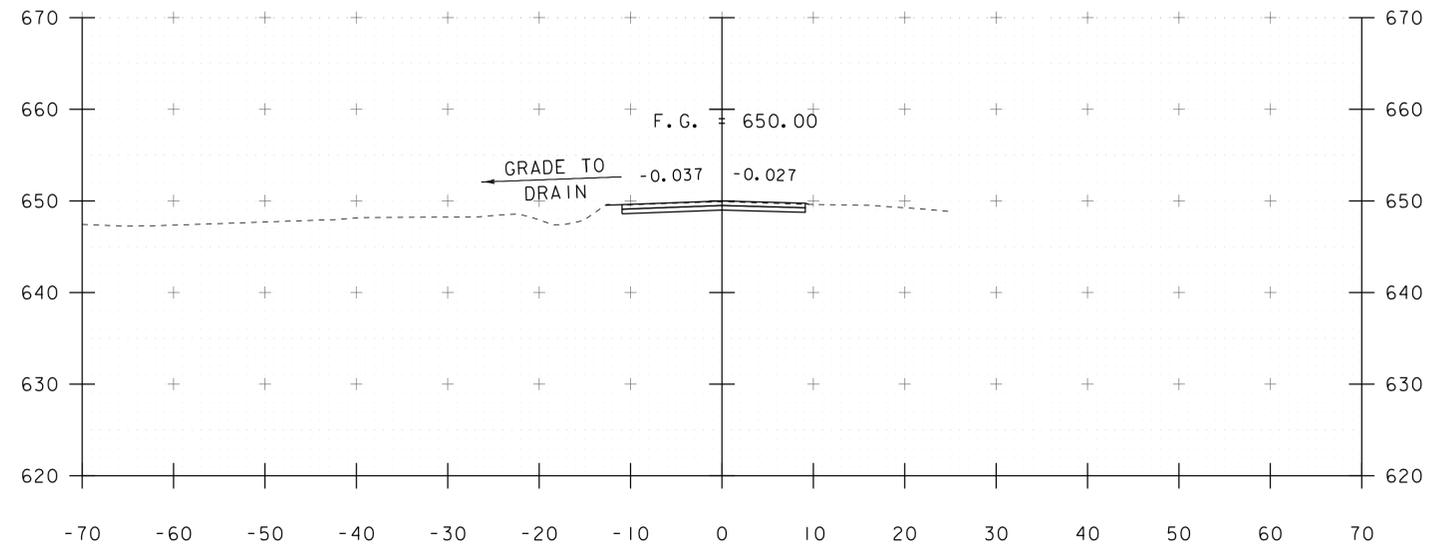
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STA. 23+75 TO STA. 24+50

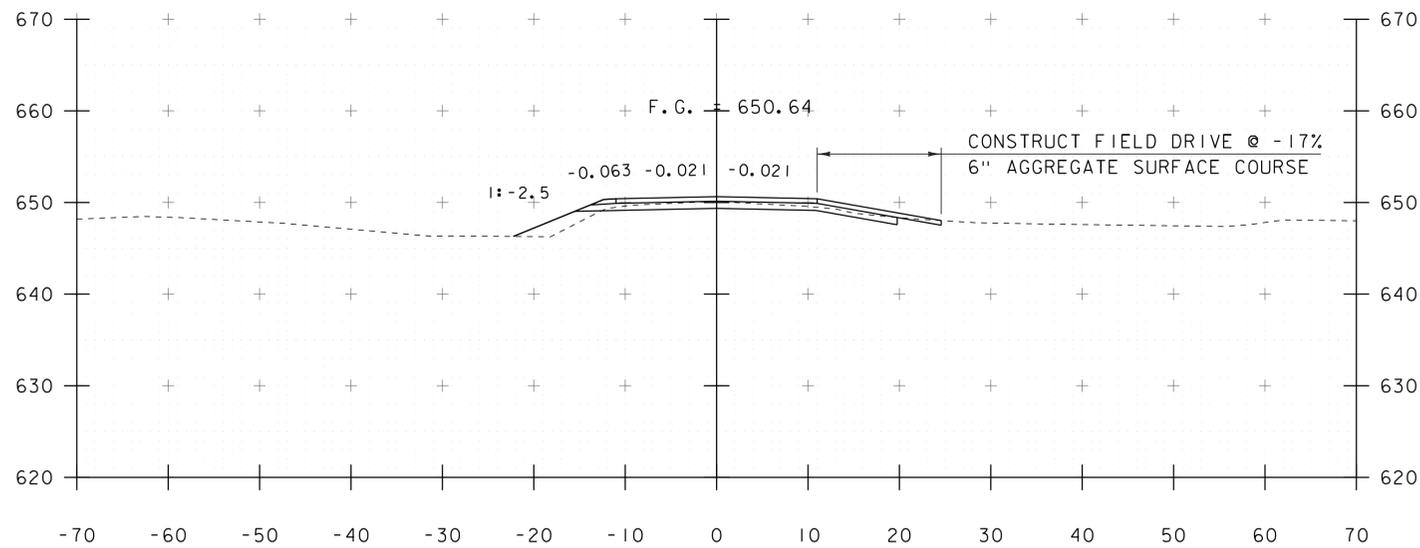
PROJECT NAME: CAMBRIDGE	PLOT DATE: 29-AUG-2014
PROJECT NUMBER: BRO 1448(39)	DRAWN BY: G. LAROCHE
FILE NAME: sl2j166xs.dgn	CHECKED BY: J. SALVATORI
PROJECT LEADER: K. HIGGINS	SHEET 27 OF 34
DESIGNED BY: G. LAROCHE	
MAINLINE SECTIONS 3	



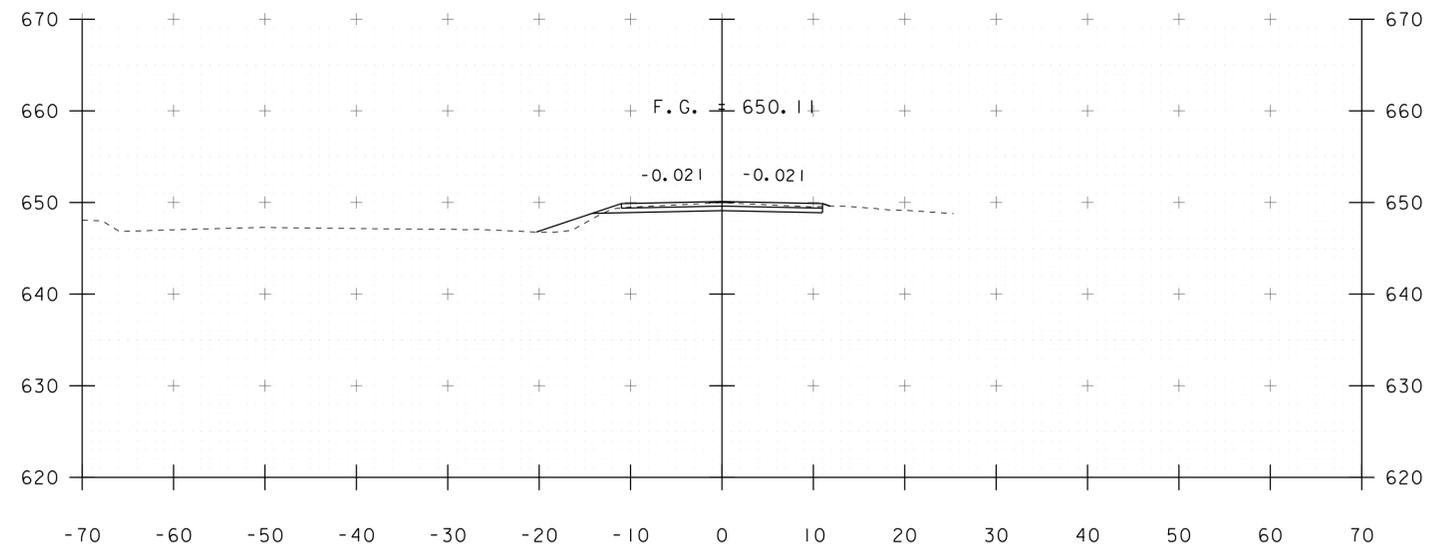
24+75



25+25



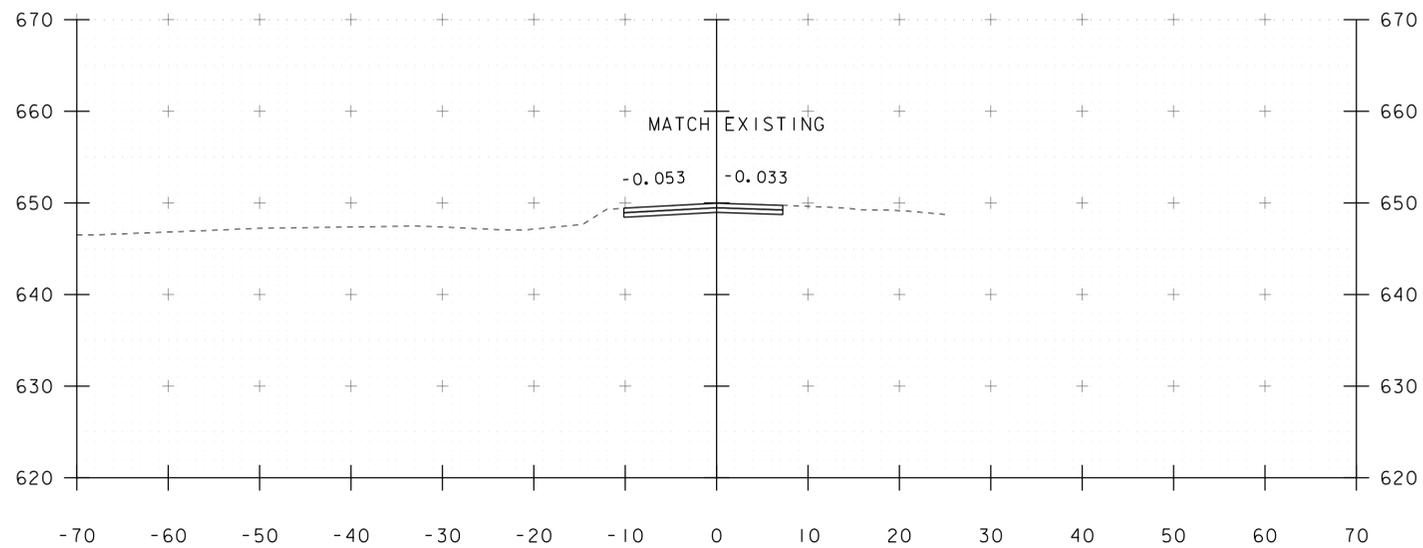
24+65



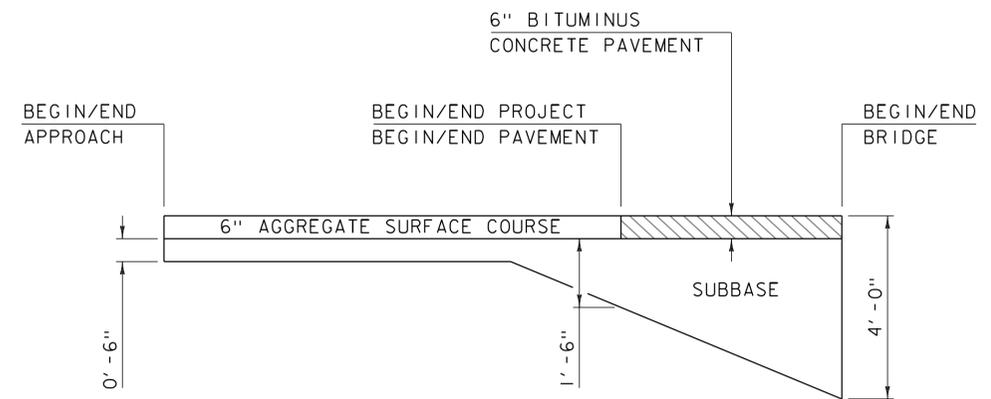
25+00

STA. 24+65 TO STA. 25+25

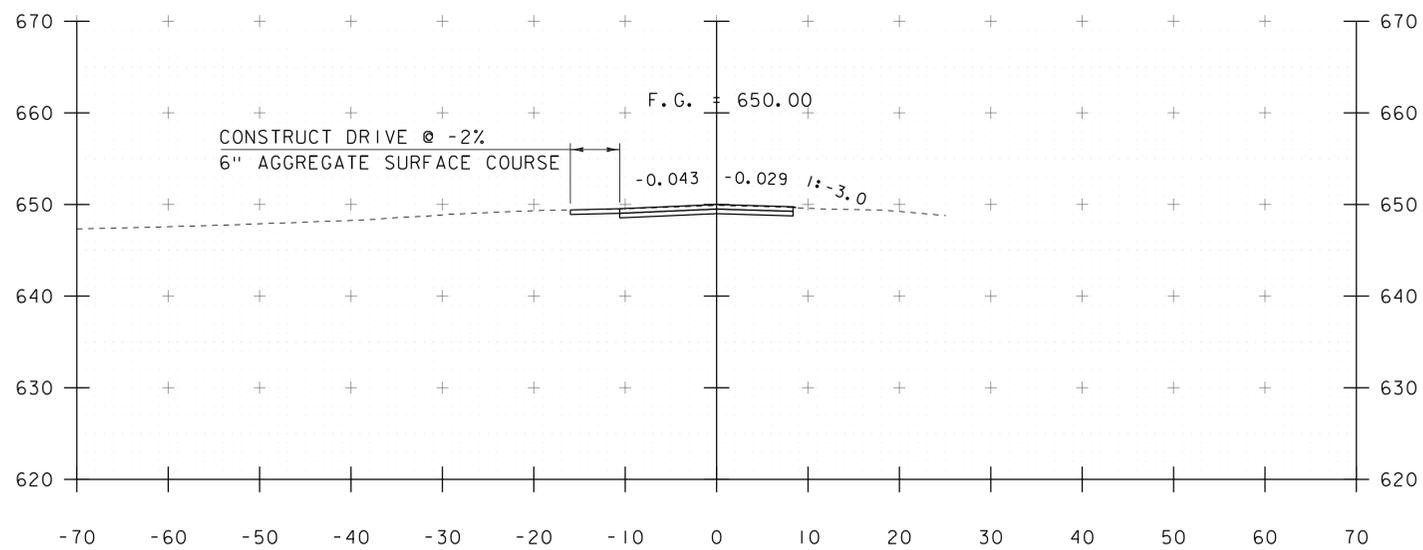
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PROJECT NUMBER:	BRO 1448(39)	DRAWN BY:	G. LAROCHE
FILE NAME:	sl2j166xs.dgn	CHECKED BY:	J. SALVATORI
PROJECT LEADER:	K. HIGGINS	MAINLINE SECTIONS	4
DESIGNED BY:	G. LAROCHE	SHEET	28 OF 34



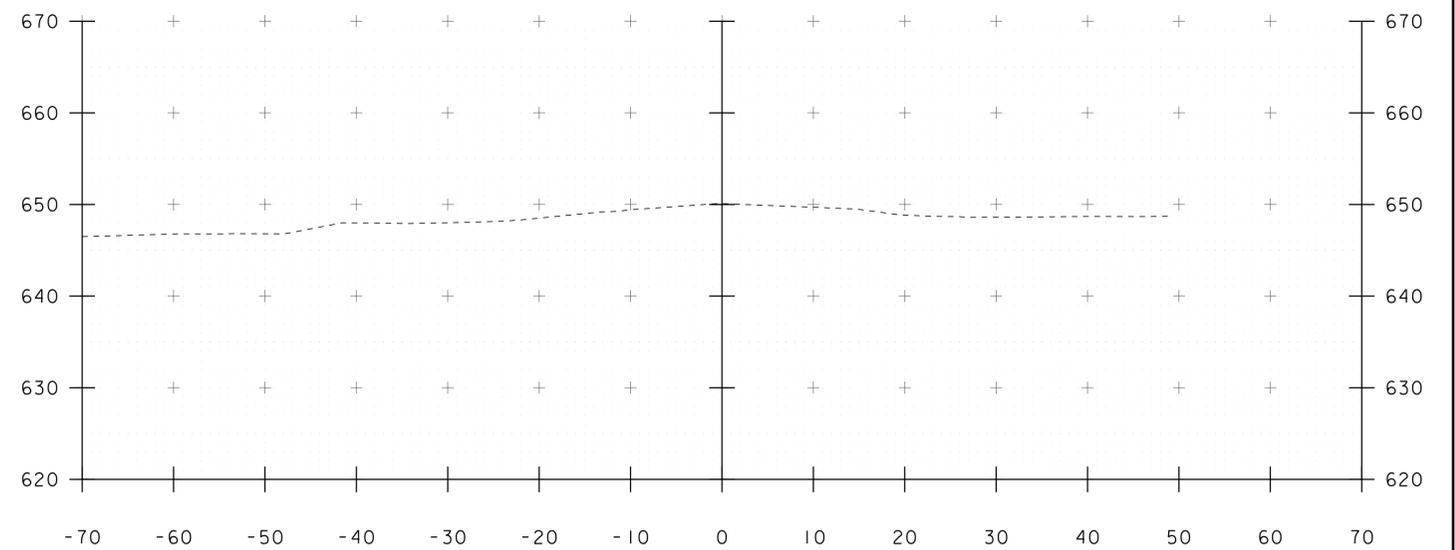
25+50
END APPROACH



MATERIAL TRANSITION
NOT TO SCALE



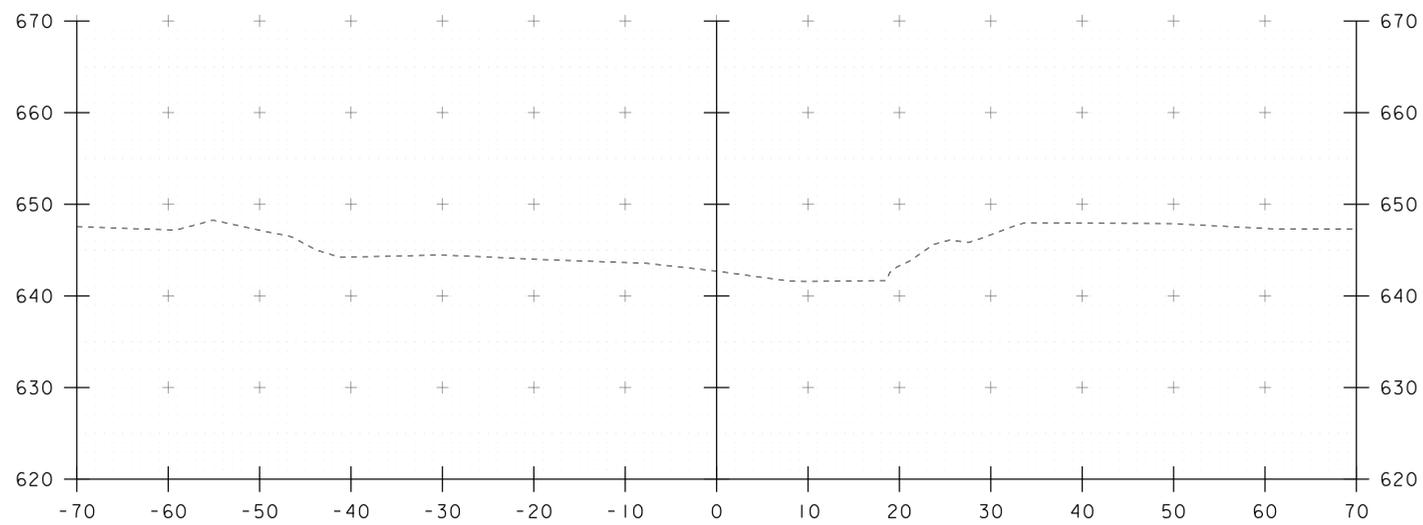
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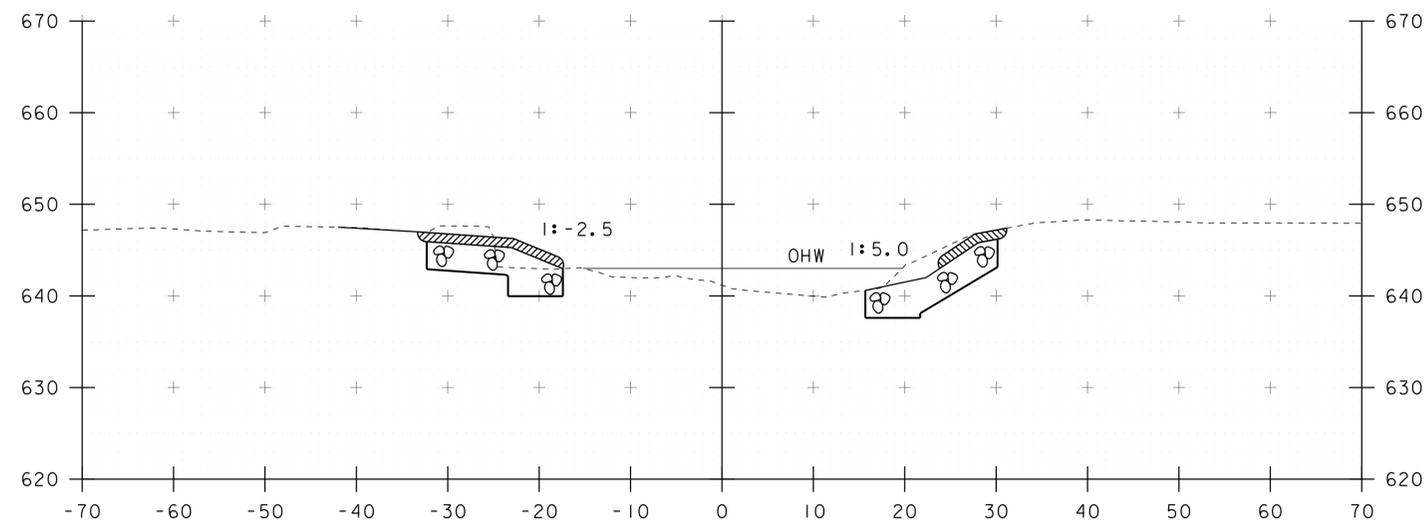
25+75

STA. 25+35 TO STA. 25+75

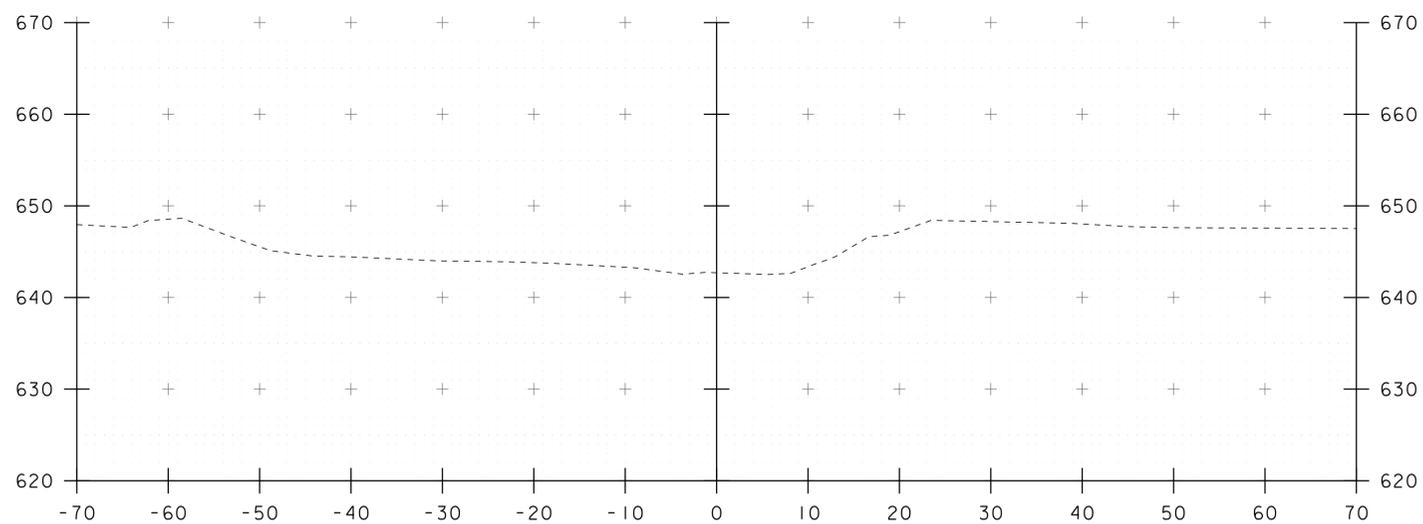
PROJECT NAME: CAMBRIDGE	PLOT DATE: 29-AUG-2014
PROJECT NUMBER: BRO 1448(39)	DRAWN BY: G. LAROCHE
FILE NAME: sl2j166xs.dgn	CHECKED BY: J. SALVATORI
PROJECT LEADER: K. HIGGINS	SHEET 29 OF 34
DESIGNED BY: G. LAROCHE	
MAINLINE SECTIONS 5	



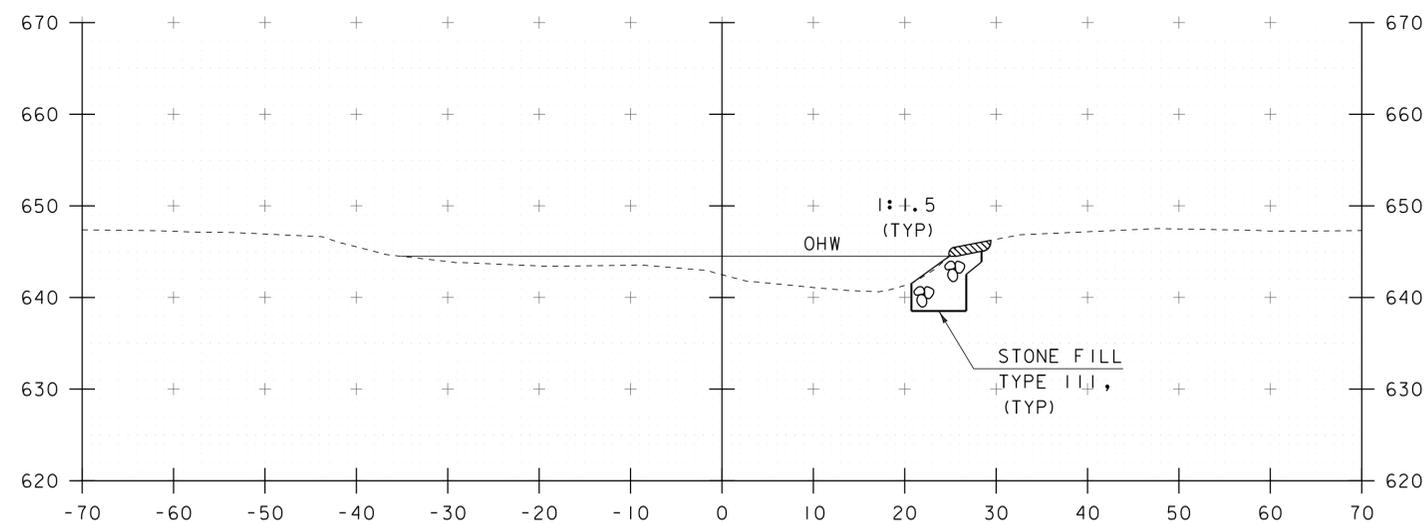
50+25



50+75



50+00



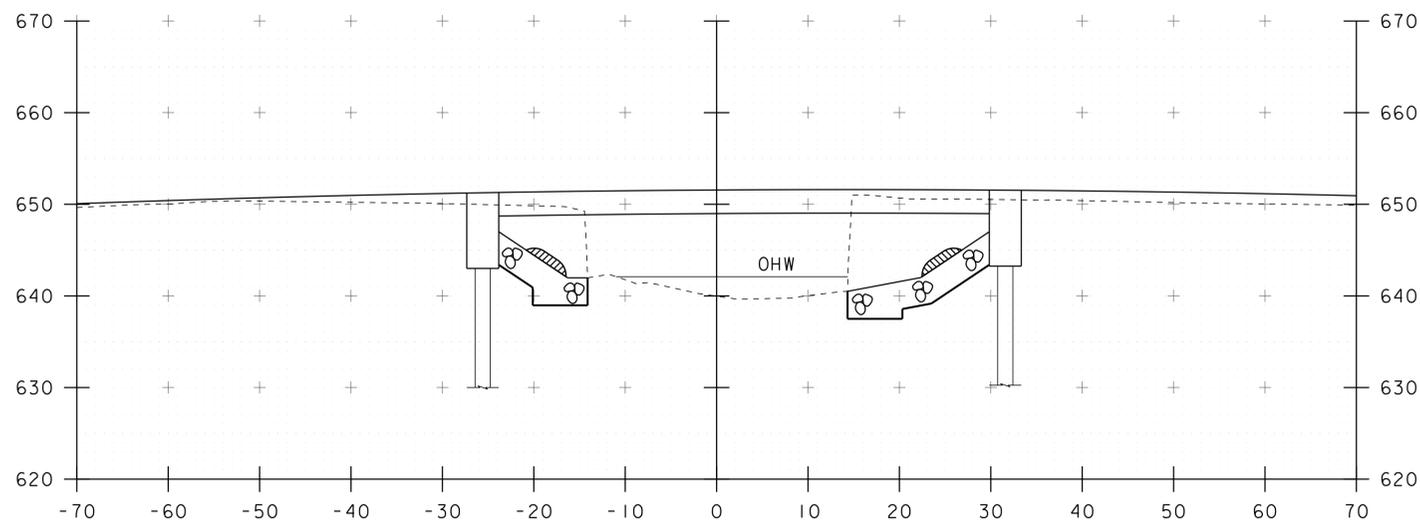
50+50

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

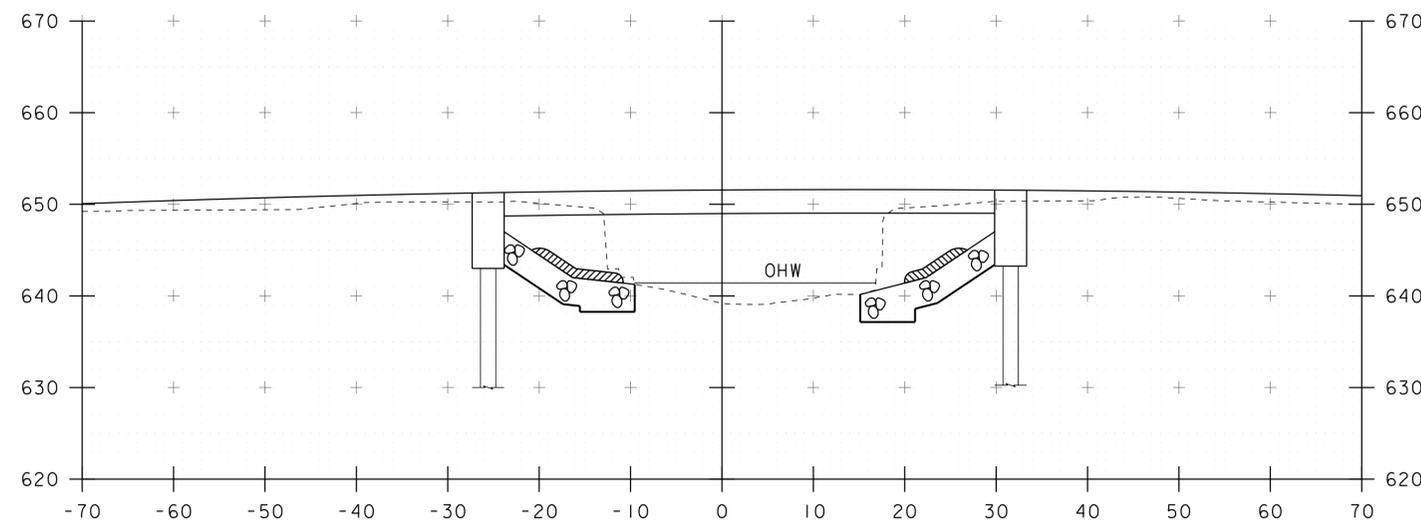
STA 50+45.00 RT (AB #2)
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION
 BEGIN STONEFILL, TYPE III
 BEGIN GEOTEXTILE UNDER STONE FILL
 BEGIN GRUBBING MATERIAL

STA. 50+00 TO STA. 50+75

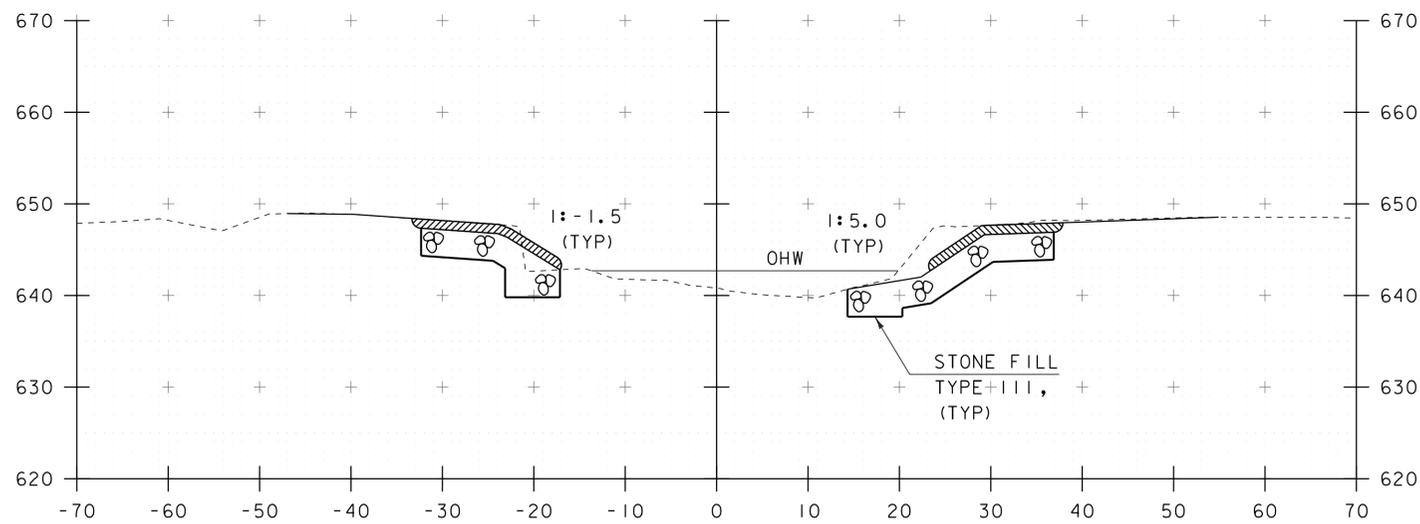
PROJECT NAME: CAMBRIDGE	
PROJECT NUMBER: BRO 1448(39)	
FILE NAME: sl2j166xs.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
CHANNEL SECTIONS 1	SHEET 30 OF 34



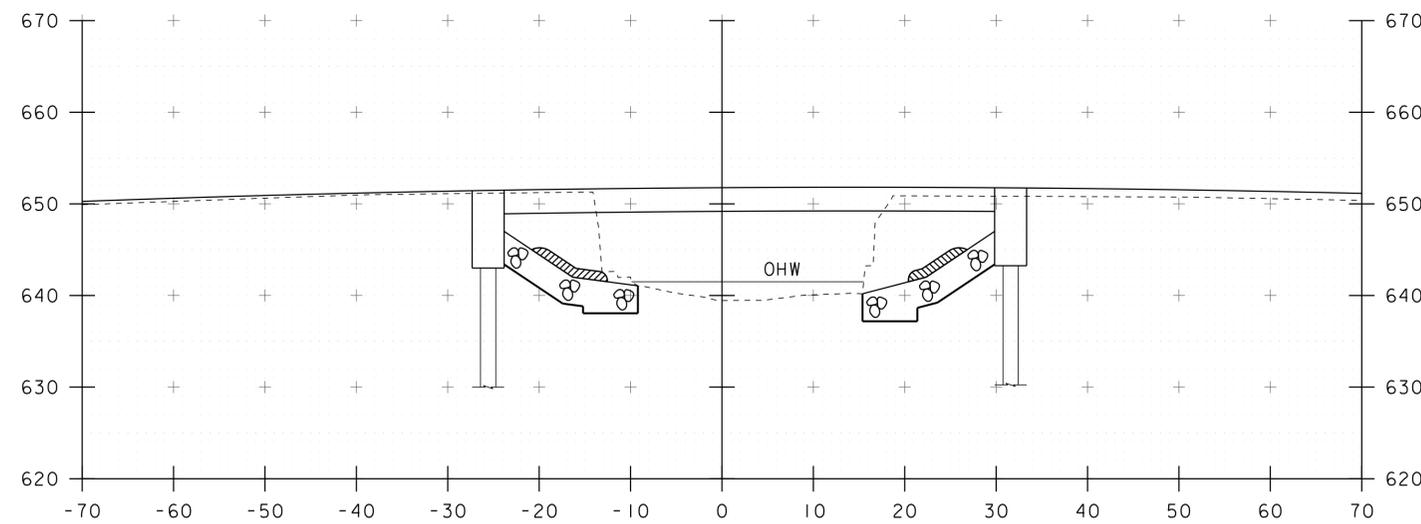
50+90



51+10



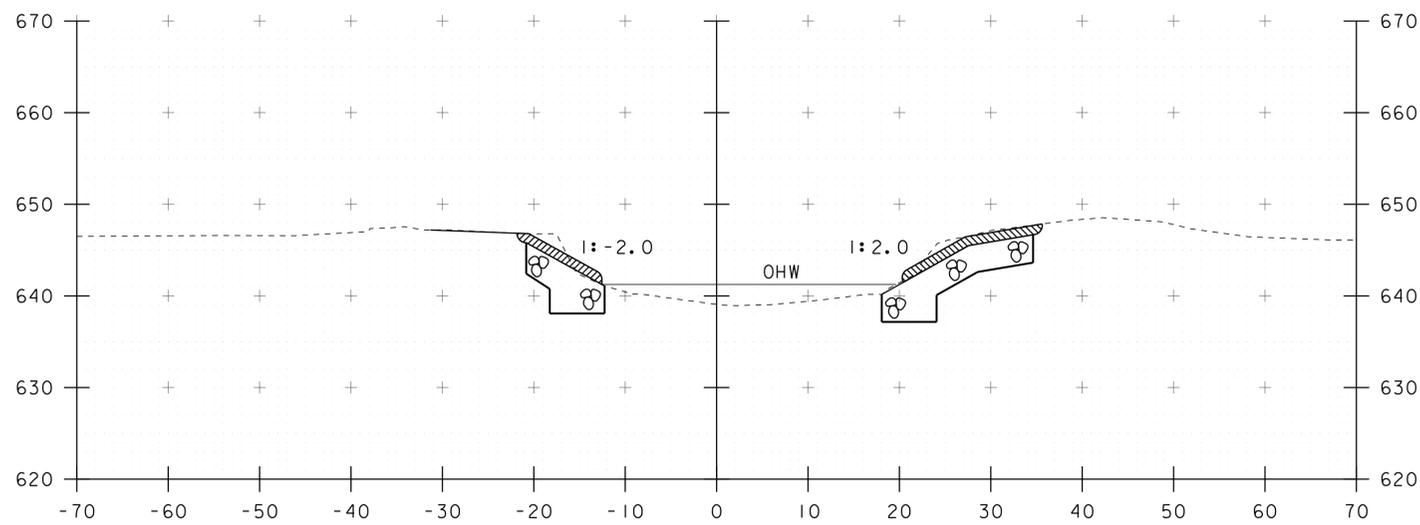
50+80



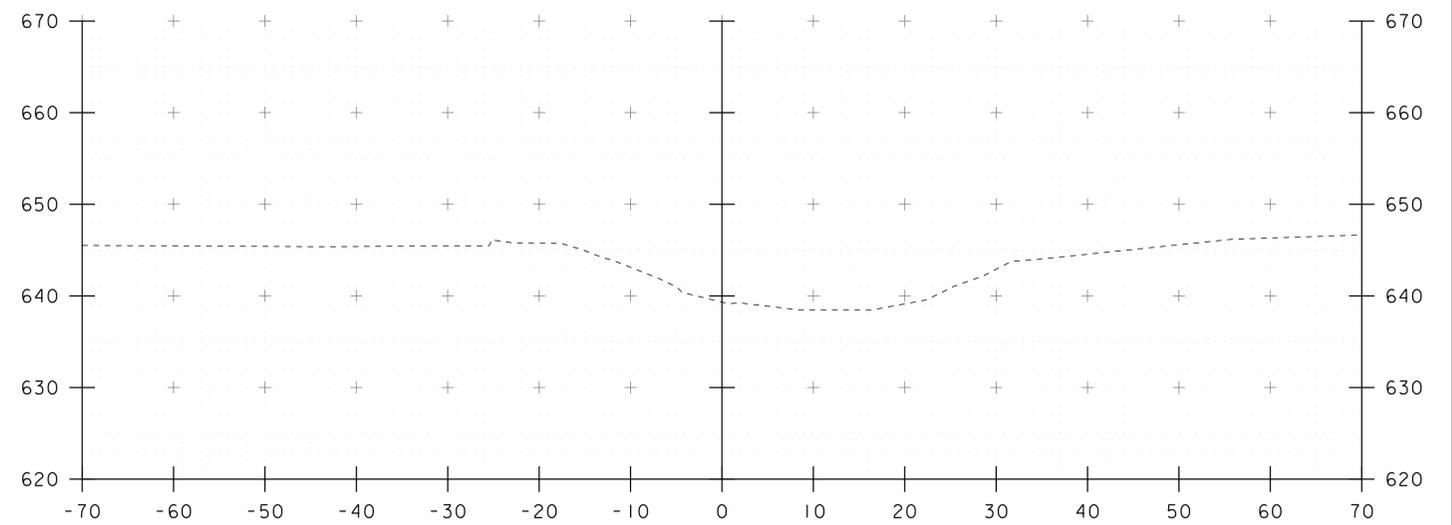
51+00

STA. 50+80 TO STA. 51+10

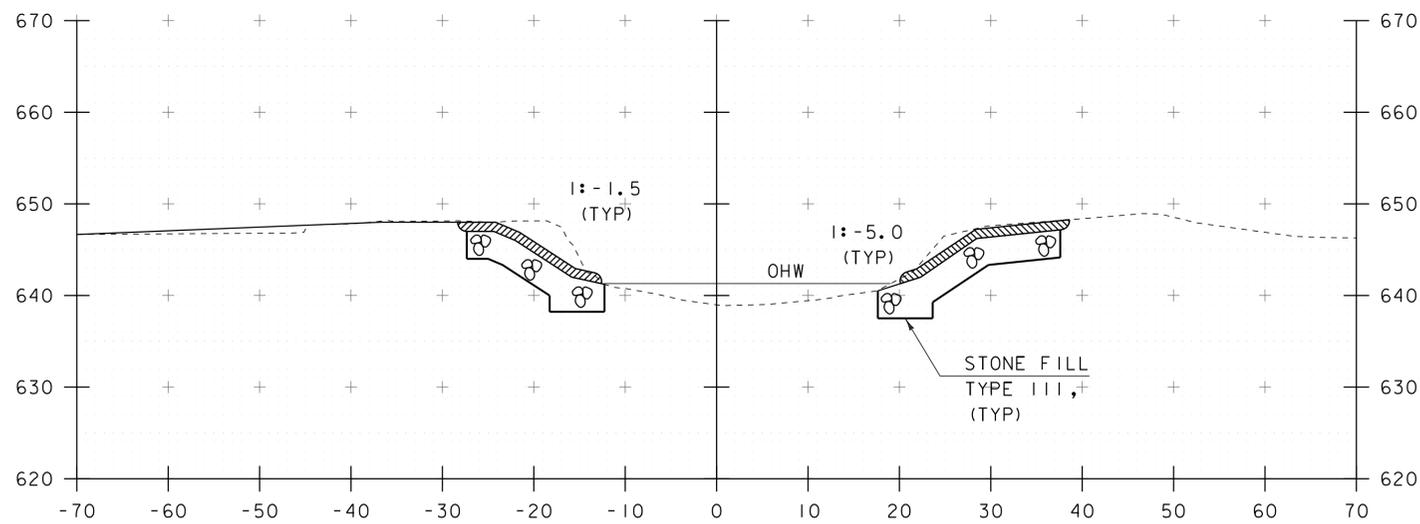
PROJECT NAME:	CAMBRIDGE	PLOT DATE:	29-AUG-2014
PROJECT NUMBER:	BRO 1448(39)	DRAWN BY:	G. LAROCHE
FILE NAME:	sl2j166xs.dgn	DESIGNED BY:	G. LAROCHE
PROJECT LEADER:	K. HIGGINS	CHECKED BY:	J. SALVATORI
CHANNEL SECTIONS 2		SHEET	31 OF 34



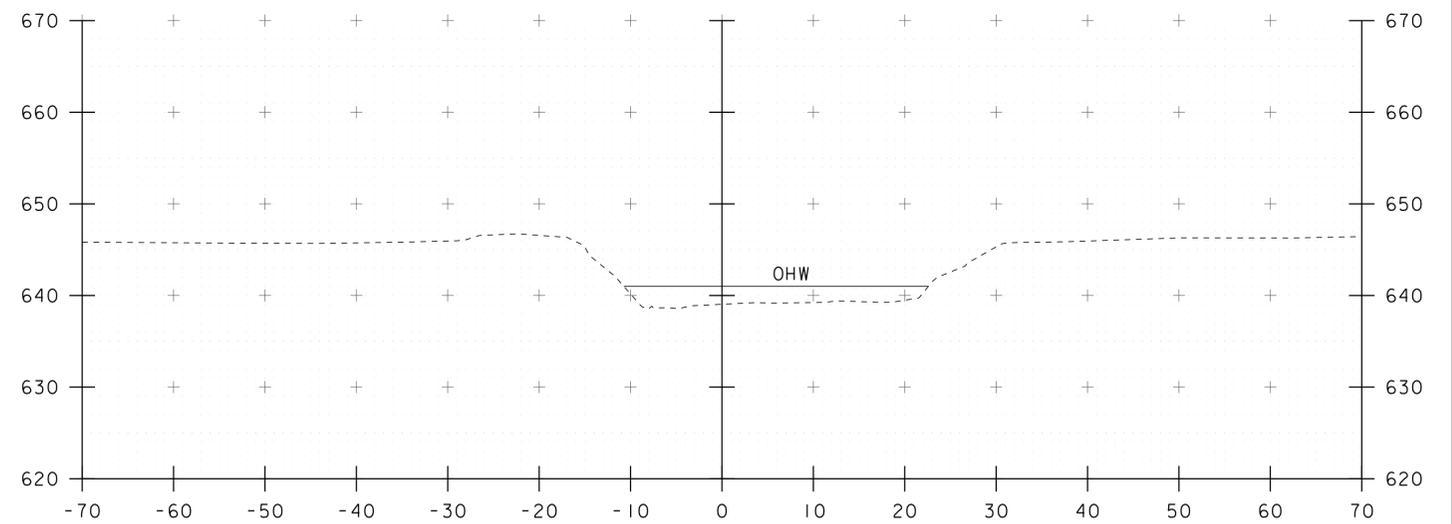
51+25



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

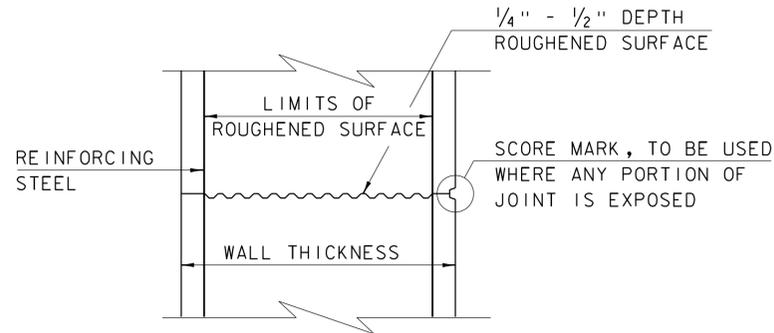
STA 51+35.00 RT (AB #2)
 END UNCLASSIFIED CHANNEL EXCAVATION
 END STONEFILL, TYPE III
 END GEOTEXTILE UNDER STONE FILL
 END GRUBBING MATERIAL

STA. 51+20 TO STA. 51+75

PROJECT NAME: CAMBRIDGE	
PROJECT NUMBER: BRO 1448(39)	
FILE NAME: sl2j166xs.dgn	PLOT DATE: 29-AUG-2014
PROJECT LEADER: K. HIGGINS	DRAWN BY: G. LAROCHE
DESIGNED BY: G. LAROCHE	CHECKED BY: J. SALVATORI
CHANNEL SECTIONS 3	SHEET 32 OF 34

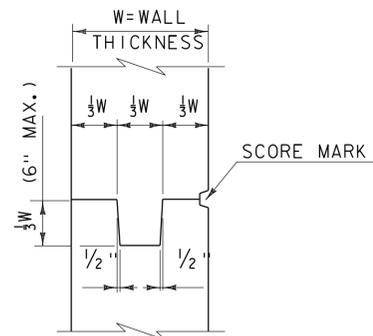
CONCRETE GENERAL NOTES

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.

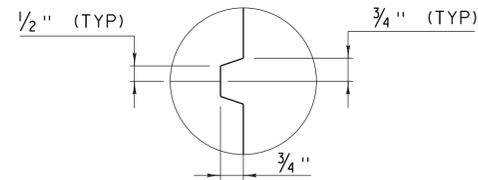


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

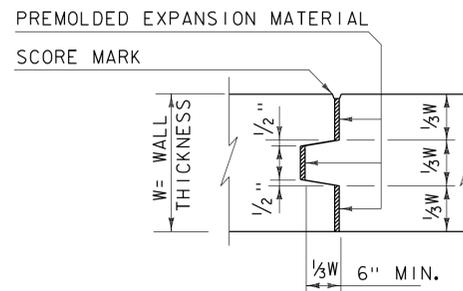
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



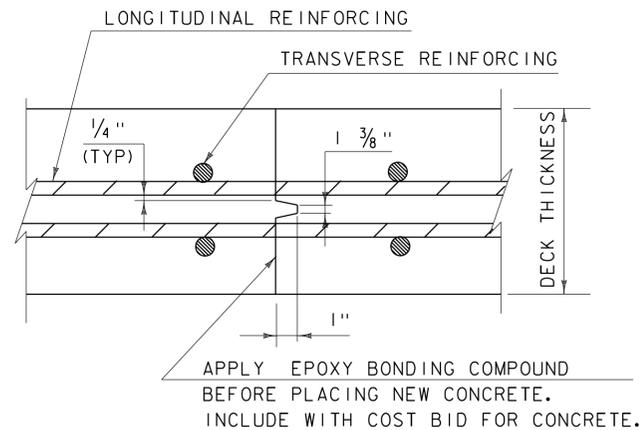
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



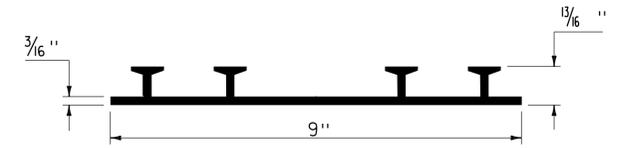
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



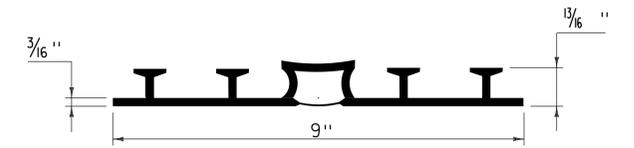
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



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.

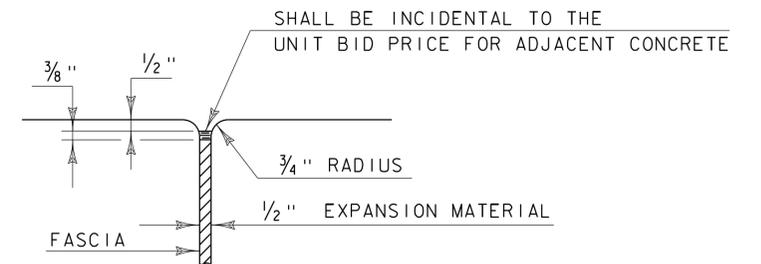
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



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)

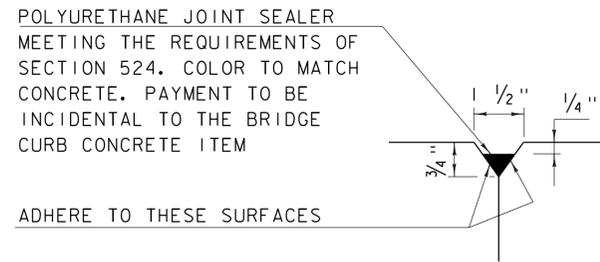
REVISIONS

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

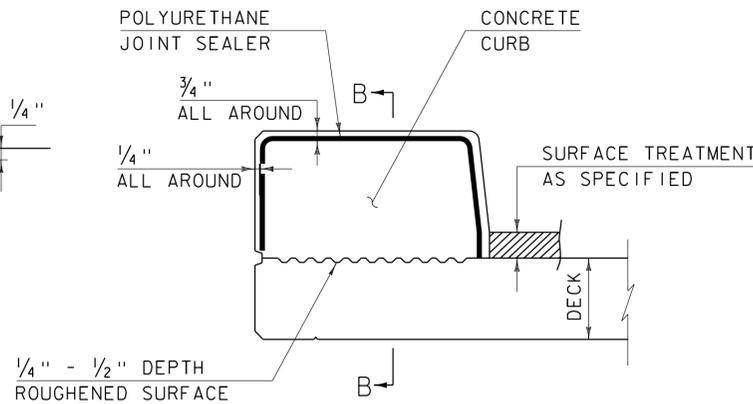
**CONCRETE
DETAILS AND NOTES**



**STRUCTURES
DETAIL
SD-501.00**

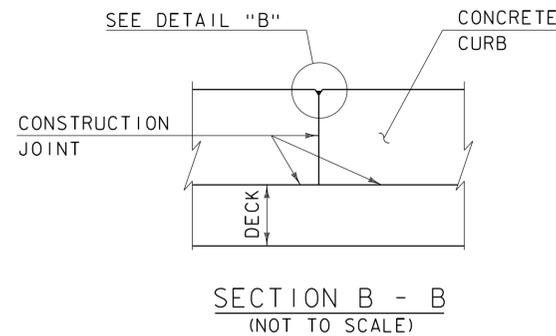


DETAIL "B"
(NOT TO SCALE)

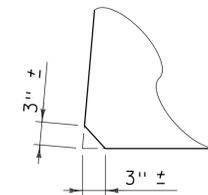


CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



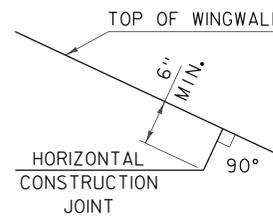
SECTION B - B
(NOT TO SCALE)



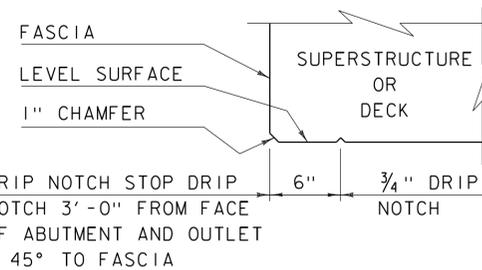
ACUTE ANGLE
CLIP DETAIL
(NOT TO SCALE)

CONCRETE CURB JOINT NOTES

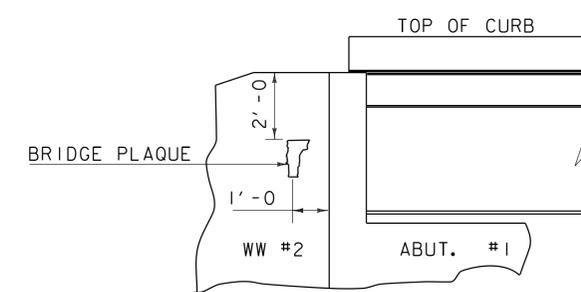
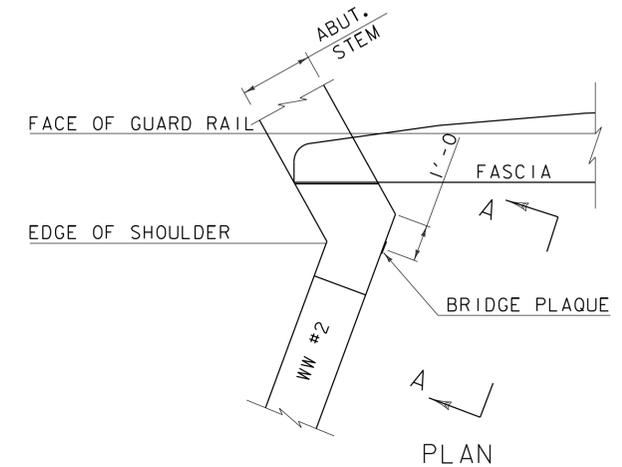
1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.
2. IF THE CONTRACTOR CHOOSES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



STRUCTURES
DETAIL
SD-502.00

ASPHALTIC PLUG JOINT NOTES

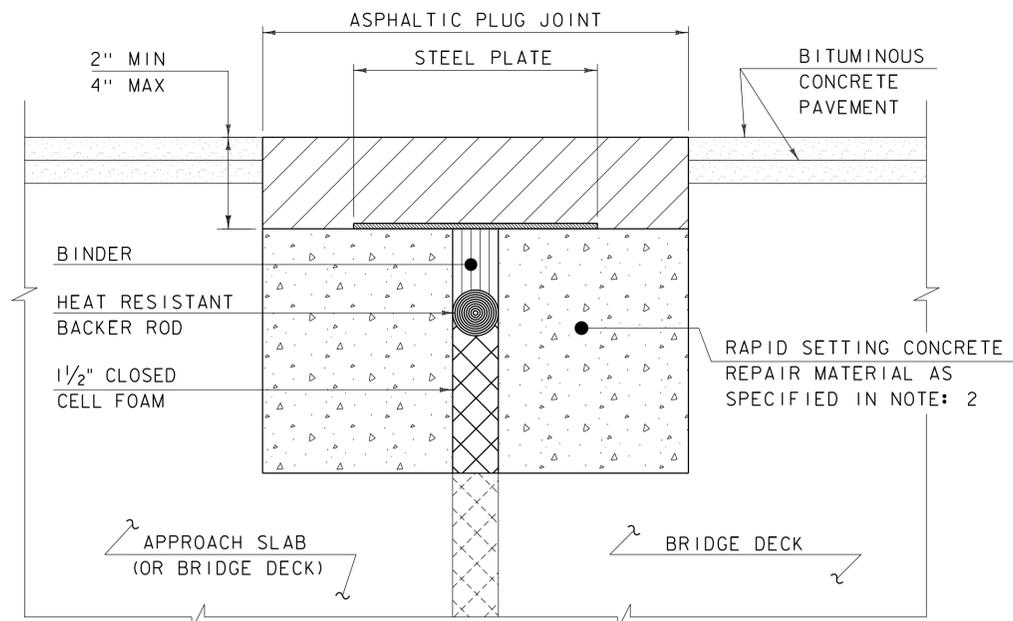
INSTALLATION:

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:

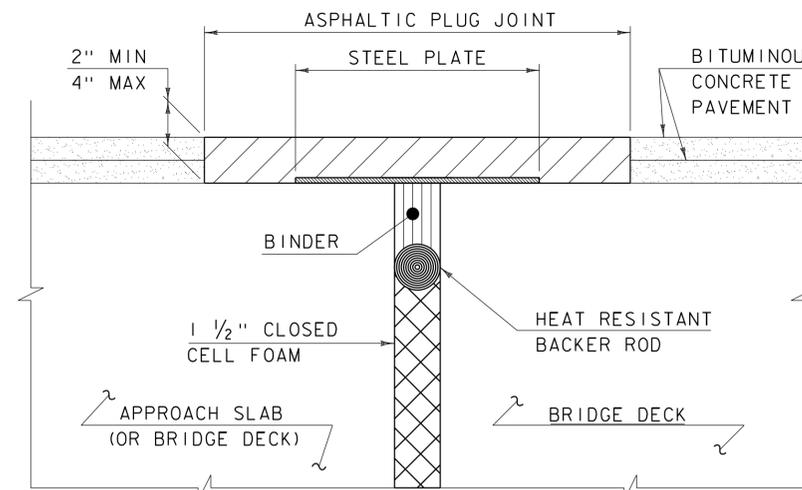
1. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
2. THE ROAD SURFACE IS DRY.
3. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.



ASPHALTIC PLUG JOINT DETAIL - REHAB

NOTES:

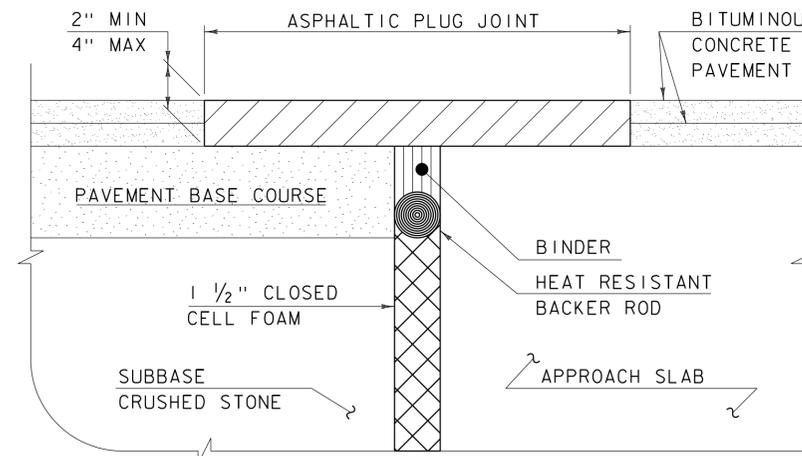
1. THE CONTRACTOR SHALL REMOVE ALL ASPHALTIC PLUG JOINT MATERIAL AND DETERIORATED CONCRETE AS DIRECTED BY THE ENGINEER. REMOVAL OF THE FIRST 4 INCHES OF MATERIAL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 516.10 BRIDGE EXPANSION JOINT, ASPHALTIC PLUG. ANY REMOVAL OF MATERIAL GREATER THAN 4 INCHES SHALL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

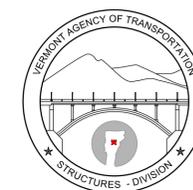


ASPHALTIC PLUG JOINT DETAIL "B" - NEW

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



STRUCTURES
DETAIL
SD-516.10