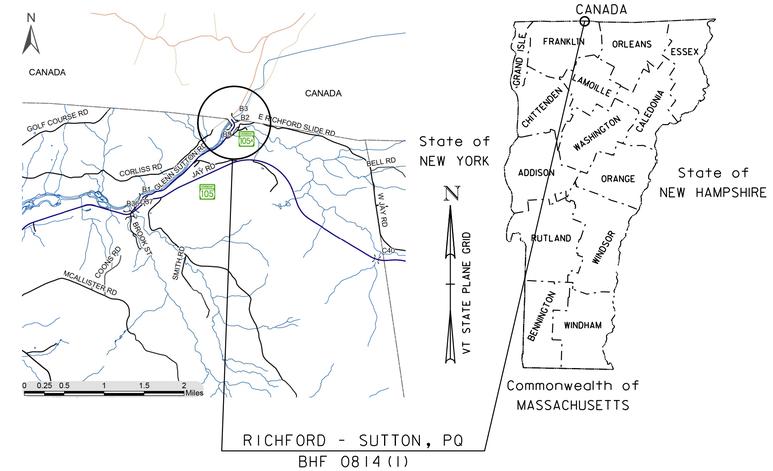
REVIEWER NOTES

1. FINAL HYDRAULICS HAS BEEN REQUESTED BUT NOT INCLUDED IN THIS PLAN SET.
2. FINAL DETERMINATION OF SALVAGED VS REPLACED TRUSS COMPONENTS WILL REQUIRE AN IN-DEPTH INSPECTION OF THE ENTIRE TRUSS SPAN DURING THE FINAL PLAN PHASE.
3. IT IS ANTICIPATED THAT RIGHT-OF-WAY ACQUISITION WILL NOT BE NECESSARY FOR THIS PROJECT.
4. IT IS ANTICIPATED THAT UTILITY RELOCATION WILL NOT BE NEEDED.
5. BRIDGE WILL BE CLOSED DURING CONSTRUCTION. A SIGNED DETOUR FOR THE PROJECT WILL UTILIZE VT 105 TO VT 139 TO THE BORDER CROSSING IN EAST RICHFORD, VT.
6. THE UNITED STATES BORDER CROSSING STATION HAS A TRAFFIC SIGNAL AS WELL AS DETECTION EQUIPMENT BURIED IN THE PAVEMENT AND GROUND. VTRANS WILL NEED TO COORDINATE TO EITHER REPLACE WITH THE PROPER EQUIPMENT, LEAVE IT ALONE, OR HAVE BORDER CROSSING REMOVE PRIOR TO CONSTRUCTION.

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF RICHFORD, VT-SUTTON, PQ

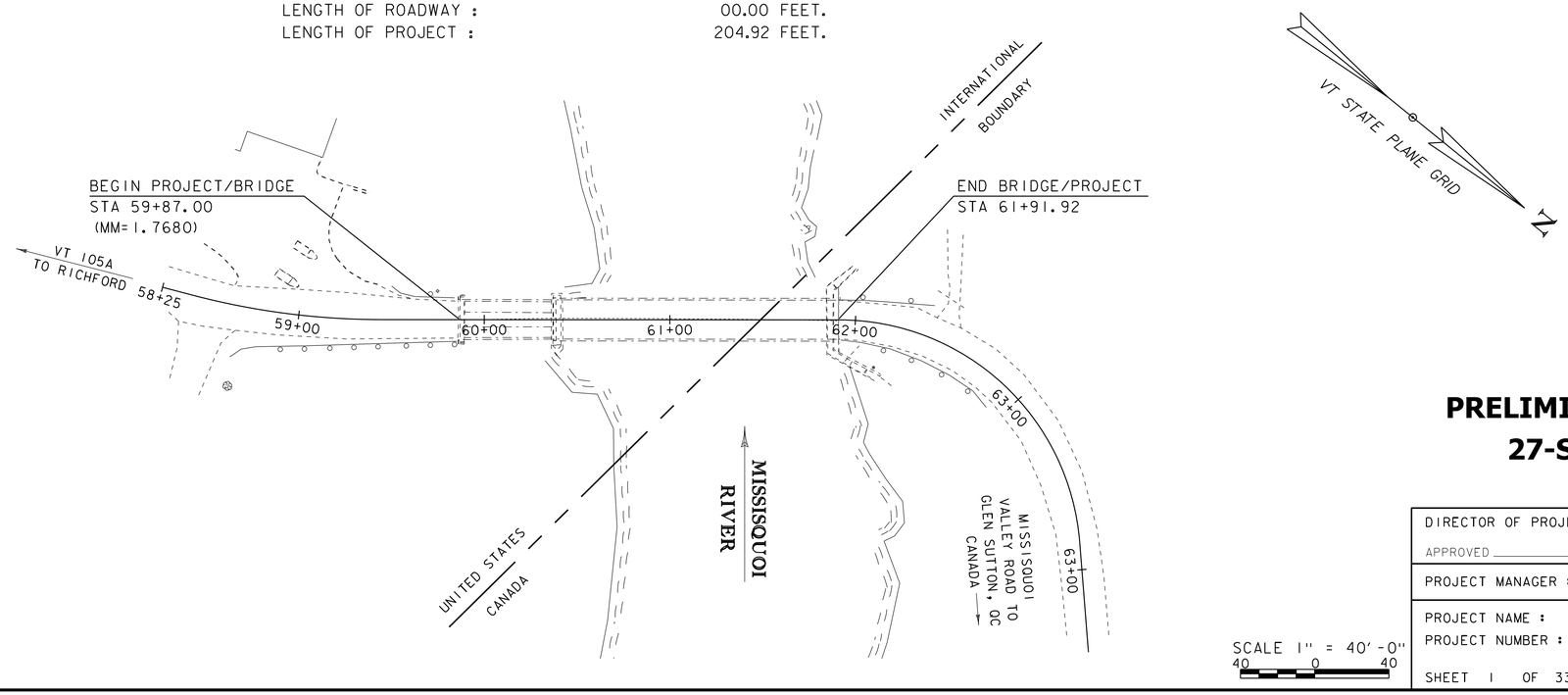
COUNTY OF FRANKLIN

ROUTE NO : VT 105A, MINOR COLLECTOR BRIDGE NO : 3

PROJECT LOCATION : ON VT 105A OVER THE MISSISQUOI RIVER BEGINNING APPROXIMATELY 1.7 MILES EAST FROM THE INTERSECTION WITH VT 105 AND EXTENDING EASTERLY APPROXIMATELY .039 MILES. BRIDGE IS LOCATED DIRECTLY ON THE BORDER BETWEEN THE UNITED STATES AND CANADA.

PROJECT DESCRIPTION : REPLACEMENT OF THE APPROACH SPAN, REPLACEMENT OF ABUTMENT #1, REHABILITATION OF THE STEEL TRUSS, REPAIR WORK OF THE PIER AND ABUTMENT #2, AS WELL AS ALL NECESSARY APPROACH WORK.

LENGTH OF STRUCTURE :	204.92 FEET.
LENGTH OF ROADWAY :	00.00 FEET.
LENGTH OF PROJECT :	204.92 FEET.



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

PRELIMINARY PLANS
27-SEP-2016

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY :	VTRANS - R.GILMAN
SURVEYED DATE :	02-09-2015
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (2007)

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

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE _____

PROJECT MANAGER : C.W. CARLSON, P.E.

PROJECT NAME : RICHFORD - SUTTON, PQ
PROJECT NUMBER : BHF 0814(1)

SHEET 1 OF 33 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

INDEX OF SHEETS

PLAN SHEETS

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23	MATERIAL TRANSITION & BANKING DIAGRAM
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30	EPSC EXISTING CONDITION
31	EPSC CONSTRUCTION / FINAL CONDITION
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STANDARDS LIST

STRUCTURES DETAIL SHEETS

FINAL HYDRAULIC REPORT

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		H-15
2.	FUTURE PAVEMENT	d_p:	2.5 INCH
3.	ABUTMENT BEARING TO BEARING LENGTH (TWO SPANS) (50.00 - 150.00) FT	L:	200.00 FT
4.	MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5.	PRESTRESSING STRAND	f_y:	- - -
6.	PRESTRESSED CONCRETE STRENGTH	f'_c:	- - -
7.	PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	- - -
8.	CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	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 (PAINTED)	f_y:	50 KSI
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:	- - -
19.	LATERAL PILE DEFLECTION	Δ:	- - -
20.	BASIC WIND SPEED	V_{3s}:	- - -
21.	MINIMUM GROUND SNOW LOAD	p_g:	- - -
22.	SEISMIC DATA PGA: 0	S_s:	- - -
		S_1:	- - -
23.			
24.			- - -
25.			- - -
26.			- - -

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

AS BUILT "REBAR" DETAIL

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

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2018	210	25	60	5.3	10
2038	240	30	60	6.8	10

20 year ESAL for flexible pavement from 2018 to 2038 : 24000

40 year ESAL for flexible pavement from 2018 to 2058 : 57000

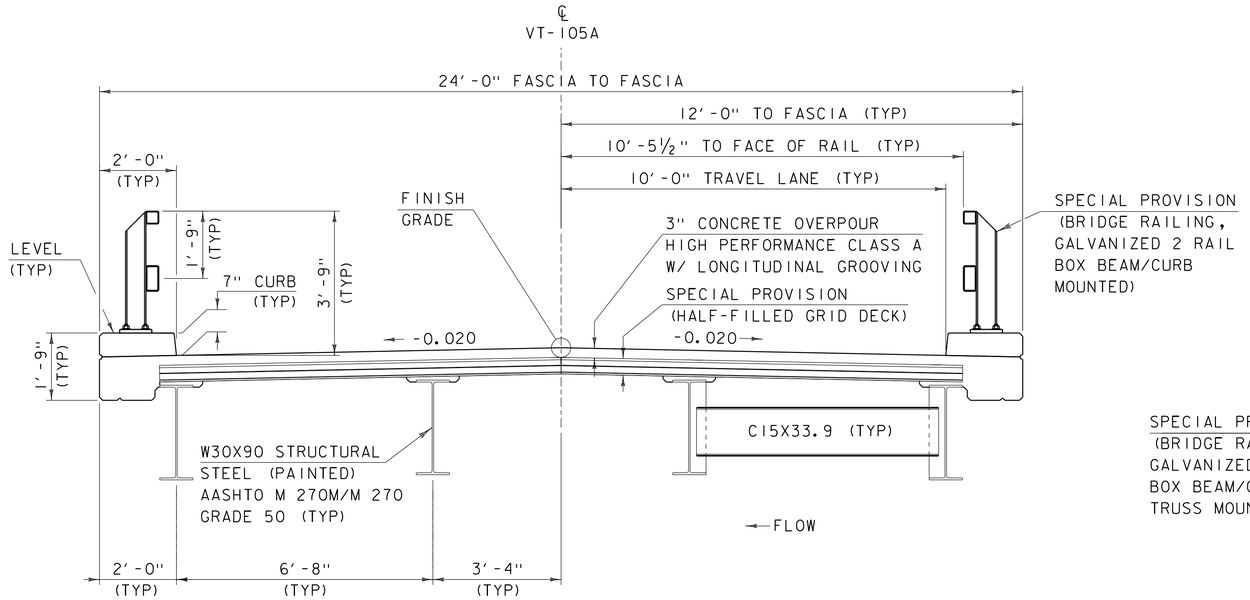
Design Speed : 25 mph

PROJECT NAME: **RICHFORD-SUTTON, PQ**

PROJECT NUMBER: **BHF 0814(1)**

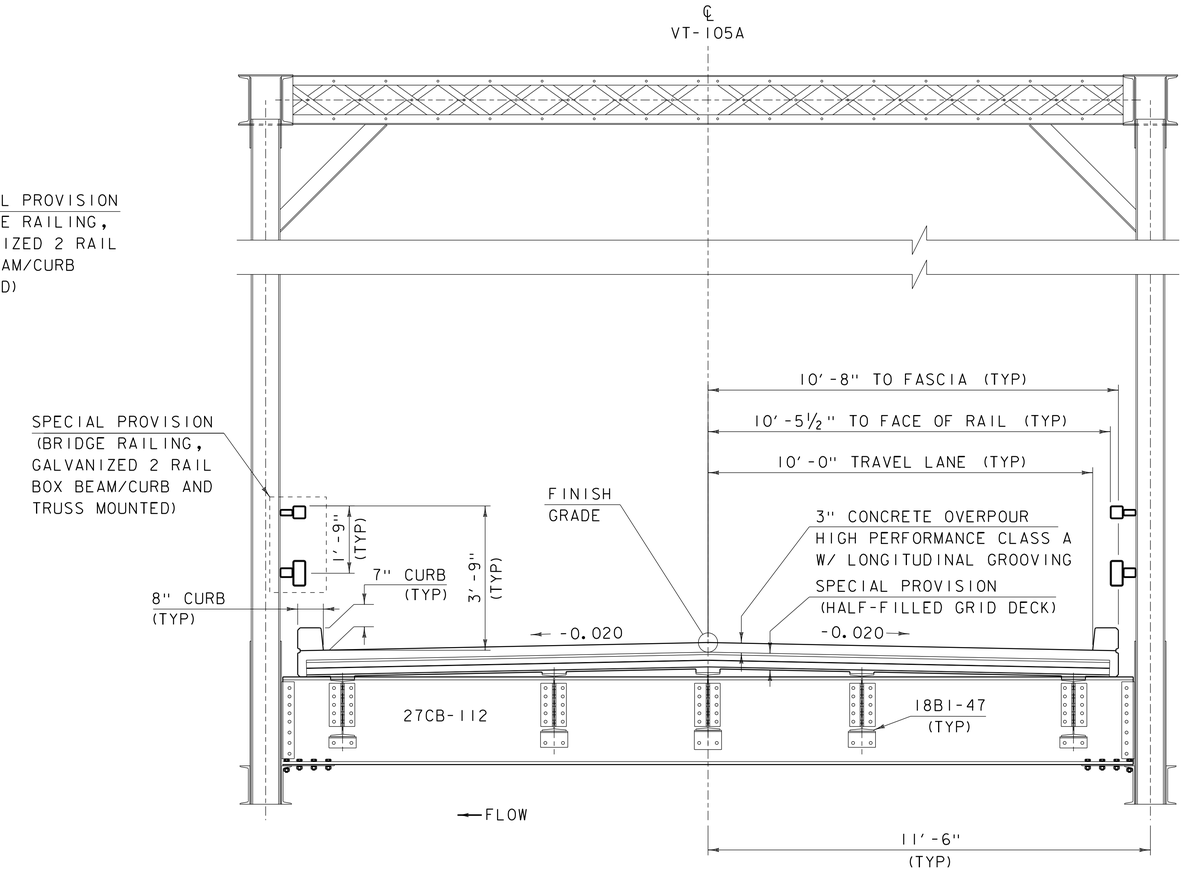
FILE NAME: **s10c222pi.xls**
PROJECT LEADER: **C. CARLSON**
DESIGNED BY: **C. BURRALL**
PRELIMINARY INFORMATION SHEET

PLOT DATE: 9/26/2016
DRAWN BY: **G. ROKES**
CHECKED BY: **C. BURRALL**
SHEET 2 OF 33



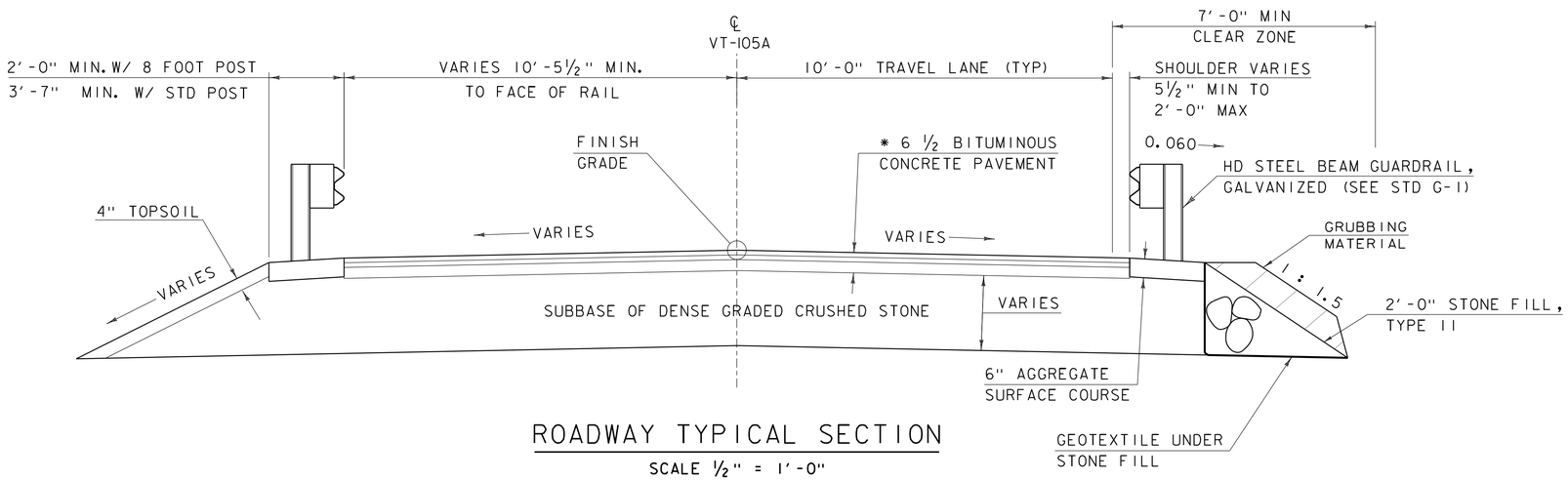
APPROACH SPAN TYPICAL SECTION

SCALE ½" = 1'-0"



TRUSS SPAN TYPICAL SECTION

SCALE ½" = 1'-0"



ROADWAY TYPICAL SECTION

SCALE ½" = 1'-0"

SEE "ROADWAY SECTIONS" AND "MATERIAL TRANSITION" SHEETS FOR ACTUAL SLOPES AND DEPTHS.

PAVEMENT SHALL BE PAID FOR UNDER ITEM 900.680 "SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITIY)".

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT A RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AND 0.080 GAL/SY ON COLD PLANED SURFACES AS DIRECTED BY THE ENGINEER.

MATERIAL TOLERANCES

(IF USED ON PROJECT)

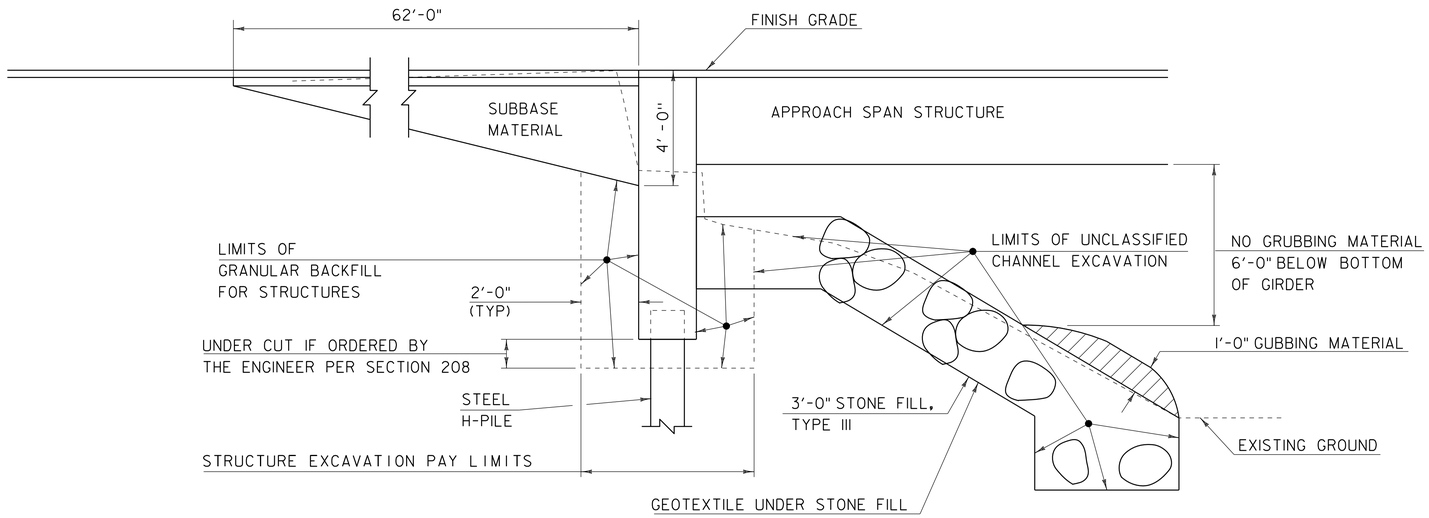
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

* 1 ½" BITUMINOUS CONCRETE PAVEMENT, TYPE IVS OVER
1 ½" BITUMINOUS CONCRETE PAVEMENT, TYPE IVS OVER
3 ½" BITUMINOUS CONCRETE PAVEMENT, TYPE IIS

PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

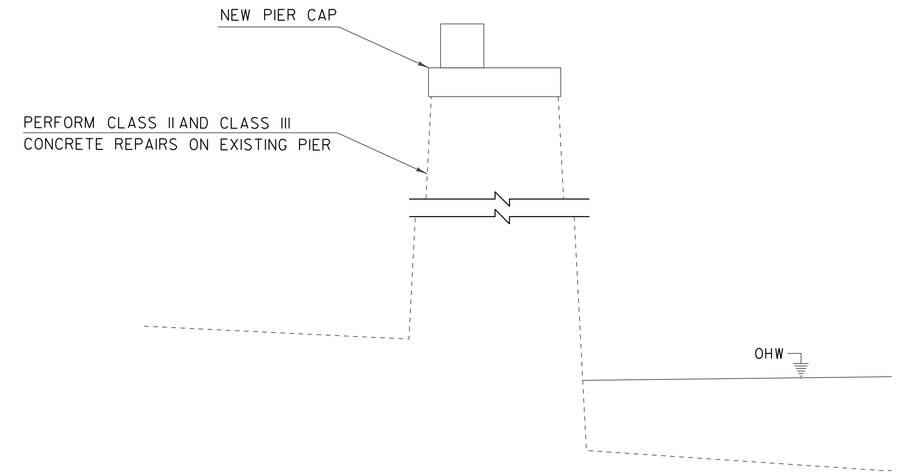
FILE NAME: s10c222typ.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
TYPICAL SECTION 1

PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET 3 OF 33



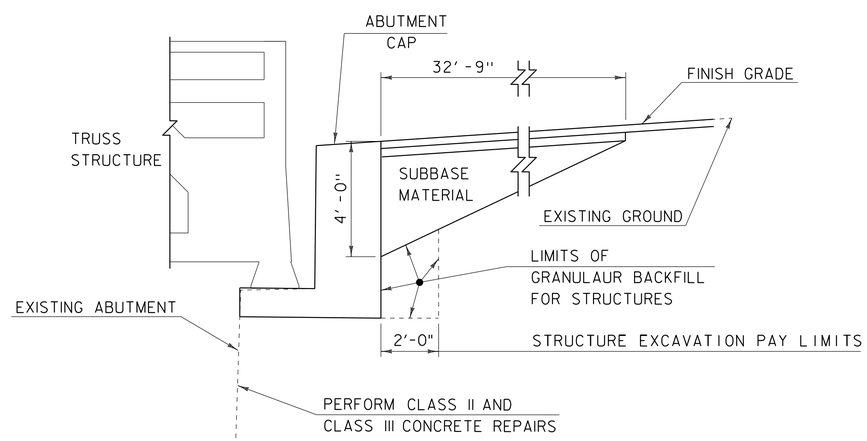
ABUTMENT #1 EARTHWORK TYPICAL SECTION

SCALE 3/8" = 1'-0"



PIER TYPICAL SECTION

SCALE 3/8" = 1'-0"



ABUTMENT #2 EARTHWORK TYPICAL SECTION

SCALE 3/8" = 1'-0"

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222typ.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
TYPICAL SECTION 2	SHEET 4 OF 33

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

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

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

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

COMMON TOPOGRAPHIC POINT SYMBOLS

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

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

PROPOSED GEOMETRY CODES

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

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

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

ABOVE GROUND UTILITIES (AERIAL)

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

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

CZ	CLEAR ZONE
	PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

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

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

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

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

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

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

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

ARCHEOLOGICAL & HISTORIC

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

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

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

PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

FILE NAME: s10c222epscdet.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
LEGEND SHEET

PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET 5 OF 33

GPS CONTROL POINTS

HVCTRL #1

GROSS

NORTH = 914490.7360
EAST = 1617660.0750
ELEV. = 504.226

GENERAL LOCATION, RICHFORD, VT. THE MARK IS SET FLUSH WITH GROUND SURFACE IN THE TOP OF AN OLD CONCRETE FOUNDATION. IT IS 15.8 M SE OF AND ABOUT LEVEL WITH THE CENTERLINE OF SLIDE ROAD, 9.7 M NORTH OF THE NW CORNER OF A BARN, 22.2 M WEST OF THE NE CORNER OF THE BARN, 8.4 M NE OF THE CENTERLINE OF THE DRIVE LEADING TO HOUSE NO 14, 19.9 M NE OF POLE NO 141, 19.2 M NORTH OF THE NE CORNER OF THE HOUSE, AND 9.7 M SW OF THE CENTER OF A CAST IRON PLANTER.

HVCTRL #2=79

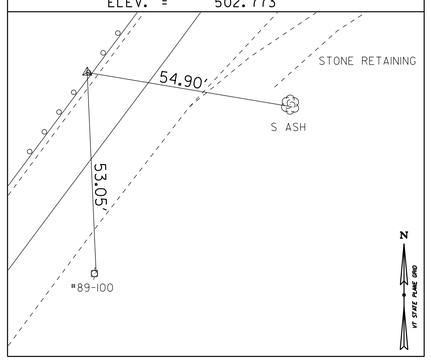
NORTH = 914325.3920
EAST = 1617197.7720
ELEV. = 502.773

POINT #2 IS #79 FROM Richford STP 2916(1) [10C234]

TRAVERSE TIES

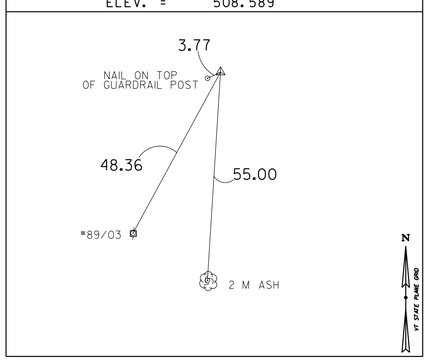
HVCTRL #2

NORTH = 914325.3920
EAST = 1617197.7720
ELEV. = 502.773



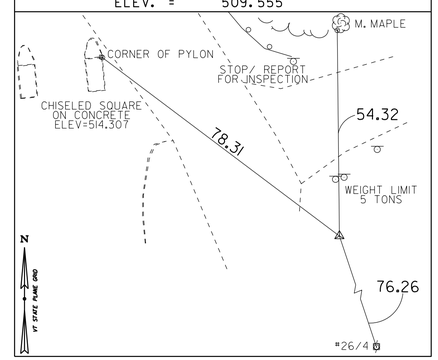
HVCTRL #3

NORTH = 915078.1660
EAST = 1617792.5930
ELEV. = 508.589



HVCTRL #4

NORTH = 915353.1500
EAST = 1617806.5200
ELEV. = 509.555



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

ALIGNMENT TIES

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83(2007)
ADJUSTMENT	COMPASS

PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

FILE NAME: s10c222tie.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: VTRANS
TIE SHEET

PLOT DATE: 27-SEP-2016
DRAWN BY: C. CYR
CHECKED BY: P. BEYOR
SHEET 6 OF 33

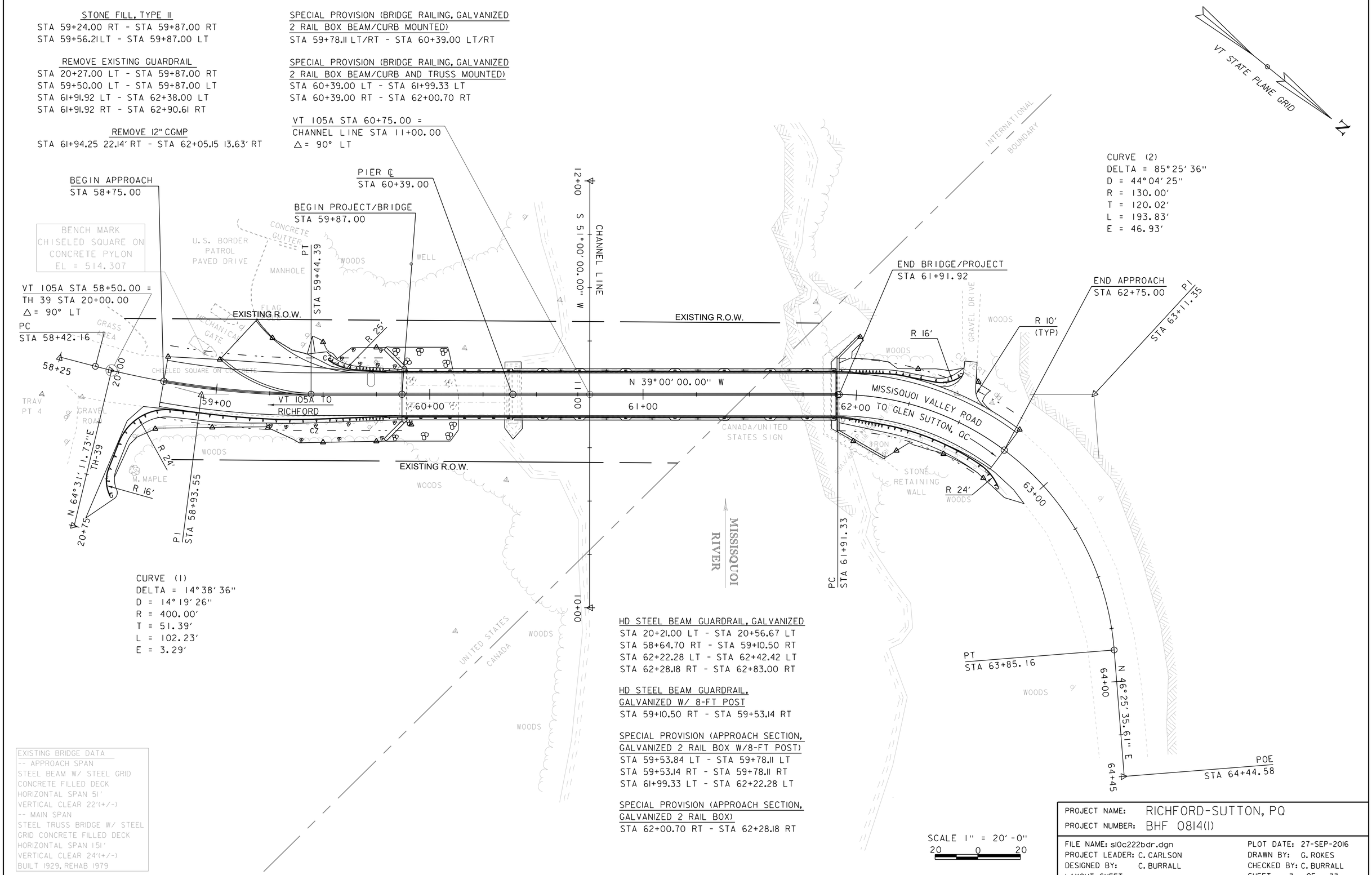
STONE FILL, TYPE II
STA 59+24.00 RT - STA 59+87.00 RT
STA 59+56.21 LT - STA 59+87.00 LT

REMOVE EXISTING GUARDRAIL
STA 20+27.00 LT - STA 59+87.00 RT
STA 59+50.00 LT - STA 59+87.00 LT
STA 61+91.92 LT - STA 62+38.00 LT
STA 61+91.92 RT - STA 62+90.61 RT

REMOVE 12" CGMP
STA 61+94.25 22.14' RT - STA 62+05.15 13.63' RT

SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM/CURB MOUNTED)
STA 59+78.11 LT/RT - STA 60+39.00 LT/RT

SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM/CURB AND TRUSS MOUNTED)
STA 60+39.00 LT - STA 61+99.33 LT
STA 60+39.00 RT - STA 62+00.70 RT



HD STEEL BEAM GUARDRAIL, GALVANIZED
STA 20+21.00 LT - STA 20+56.67 LT
STA 58+64.70 RT - STA 59+10.50 RT
STA 62+22.28 LT - STA 62+42.42 LT
STA 62+28.18 RT - STA 62+83.00 RT

HD STEEL BEAM GUARDRAIL, GALVANIZED W/ 8-FT POST
STA 59+10.50 RT - STA 59+53.14 RT

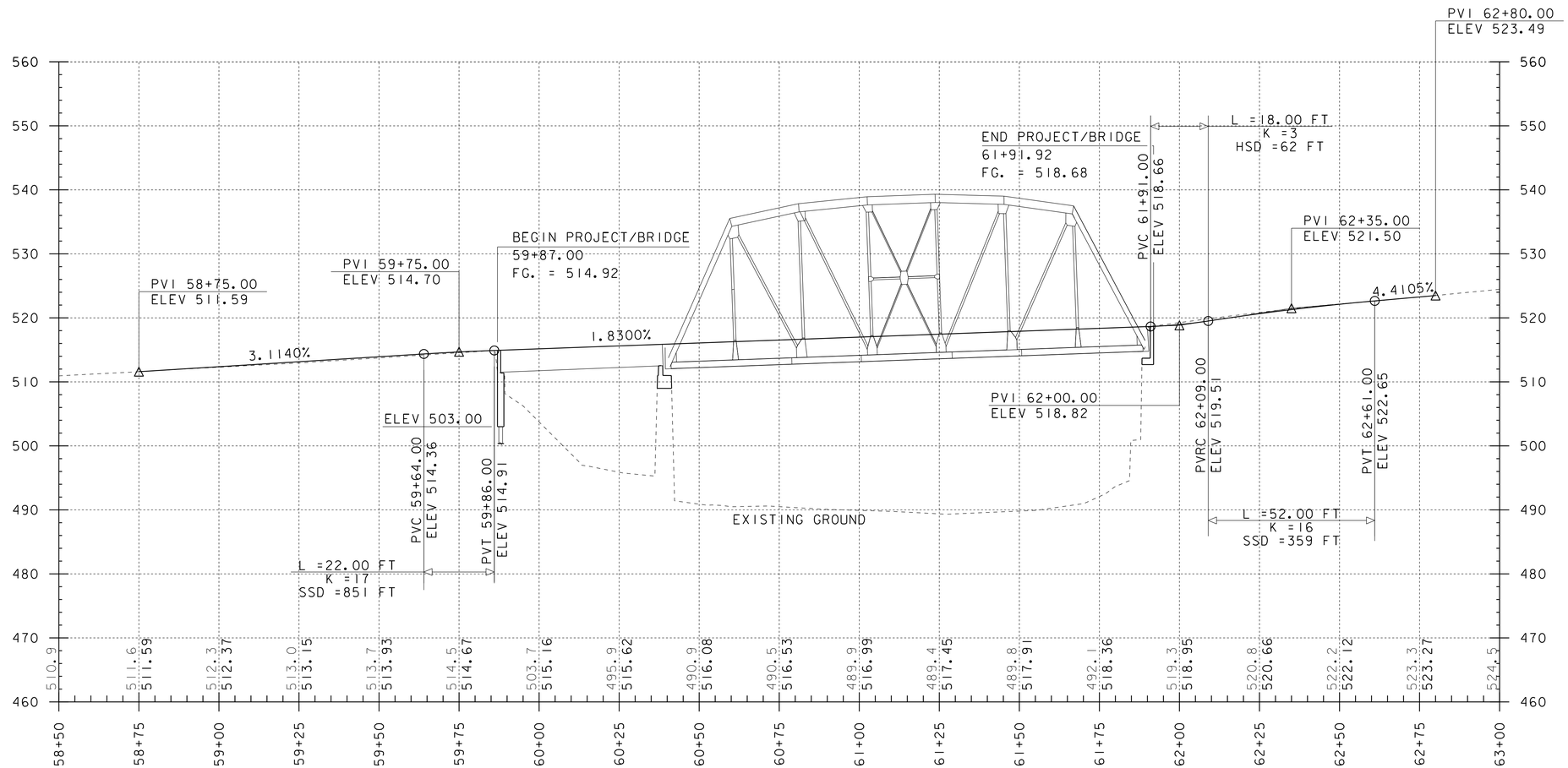
SPECIAL PROVISION (APPROACH SECTION, GALVANIZED 2 RAIL BOX W/8-FT POST)
STA 59+53.84 LT - STA 59+78.11 LT
STA 59+53.14 RT - STA 59+78.11 RT
STA 61+99.33 LT - STA 62+22.28 LT

SPECIAL PROVISION (APPROACH SECTION, GALVANIZED 2 RAIL BOX)
STA 62+00.70 RT - STA 62+28.18 RT

EXISTING BRIDGE DATA
-- APPROACH SPAN
STEEL BEAM W/ STEEL GRID
CONCRETE FILLED DECK
HORIZONTAL SPAN 51'
VERTICAL CLEAR 22'(+/-)
-- MAIN SPAN
STEEL TRUSS BRIDGE W/ STEEL
GRID CONCRETE FILLED DECK
HORIZONTAL SPAN 151'
VERTICAL CLEAR 24'(+/-)
BUILT 1929, REHAB 1979

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

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222bdr.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
LAYOUT SHEET	SHEET 7 OF 33



PROFILE ALONG VT 105A

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

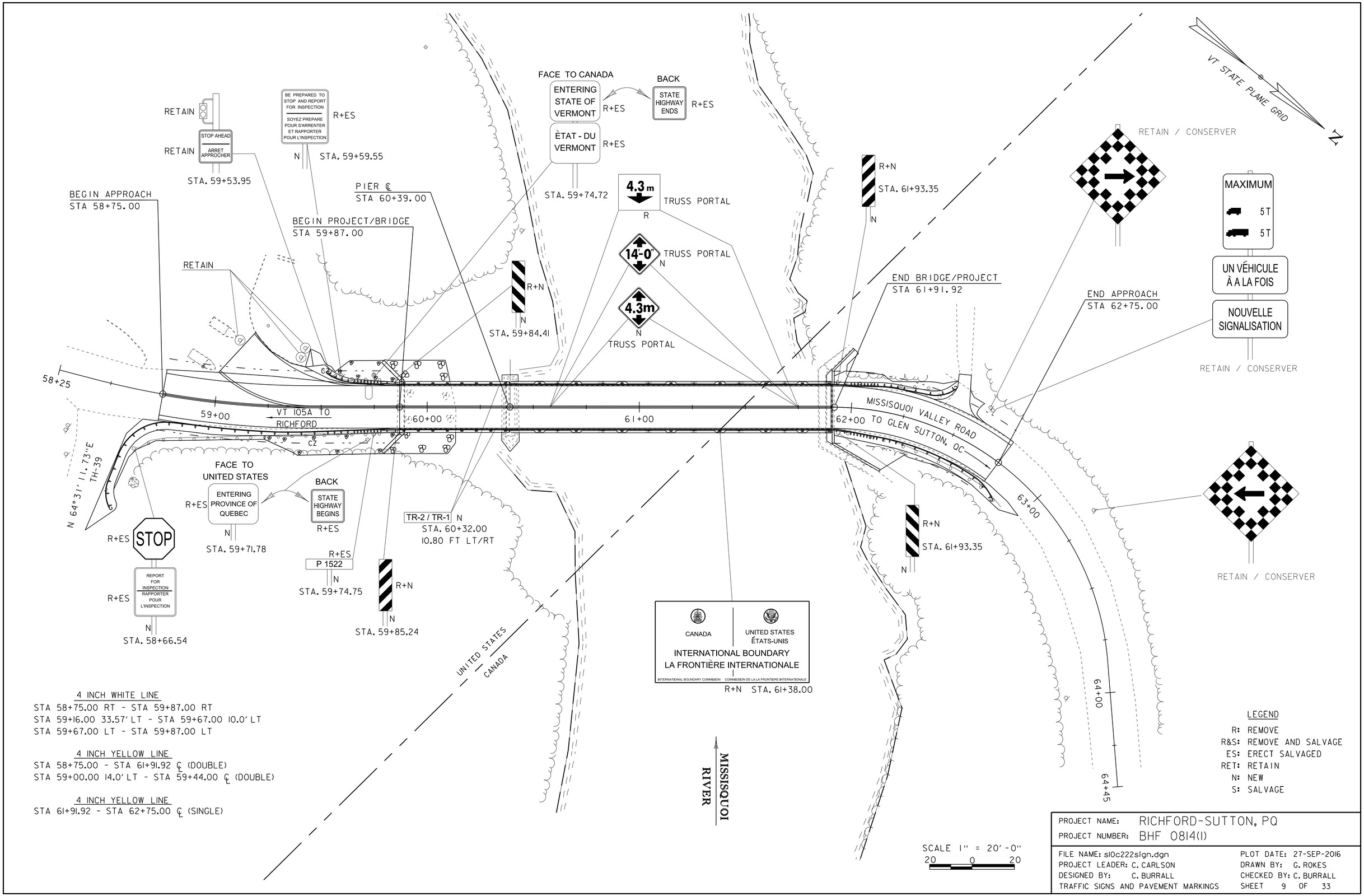
PROFILE SHOWN IS A BEST FIT TO MATCH EXISTING GRADE WITH TRUSS ENTRANCE AND EXIT GRADE CHANGES. ALL ELEVATIONS FOR TRUSS REHABILITATION SHALL BE FIELD VERIFIED.

NOTE:

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

ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADES ALONG PROPOSED CENTERLINE.

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222pro.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
VT 105A PROFILE	SHEET 8 OF 33


VT STATE PLANE GRID
N
RETAIN
RETAIN
STOP AHEAD
ARRET APPROCHER
STA. 59+53.95
BE PREPARED TO STOP AND REPORT FOR INSPECTION
SOYEZ PREPARE POUR S'ARRENTER ET RAPPORTER POUR L'INSPECTION
R+ES
N
STA. 59+59.55
FACE TO CANADA
ENTERING STATE OF VERMONT
R+ES
BACK
STATE HIGHWAY ENDS
R+ES
ÈTAT - DU VERMONT
R+ES
STA. 59+74.72
4.3 m
R
TRUSS PORTAL
14'-0"
N
TRUSS PORTAL
4.3m
N
TRUSS PORTAL
R+N
STA. 61+93.35
N
RETAIN / CONSERVER
MAXIMUM
5T
5T
UN VÉHICULE À A LA FOIS
NOUVELLE SIGNALISATION
RETAIN / CONSERVER
BEGIN APPROACH
STA 58+75.00
PIER ℄
STA 60+39.00
BEGIN PROJECT/BRIDGE
STA 59+87.00
RETAIN
R+N
N
STA. 59+84.41
END BRIDGE/PROJECT
STA 61+91.92
END APPROACH
STA 62+75.00
58+25
59+00
VT 105A TO RICHFORD
60+00
61+00
62+00 TO GLEN SUTTON, QC
MISSISQUOI VALLEY ROAD
63+00
64+00
64+45
N 64° 31' 11.73" E
TH-39
FACE TO UNITED STATES
ENTERING PROVINCE OF QUEBEC
R+ES
N
STA. 59+71.78
BACK
STATE HIGHWAY BEGINS
R+ES
R+ES
STOP
REPORT FOR INSPECTION
RAPPORTER POUR L'INSPECTION
R+ES
N
STA. 58+66.54
R+ES
P 1522
N
STA. 59+74.75
R+N
N
STA. 59+85.24
TR-2 / TR-1
N
STA. 60+32.00
10.80 FT LT/RT
R+N
N
STA. 61+93.35
RETAIN / CONSERVER
CANADA
UNITED STATES
ÉTATS-UNIS
INTERNATIONAL BOUNDARY
LA FRONTIÈRE INTERNATIONALE
INTERNATIONAL BOUNDARY COMMISSION
COMMISSION DE LA FRONTIERE INTERNATIONALE
R+N
STA. 61+38.00
UNITED STATES
CANADA
MISSISQUOI RIVER
SCALE 1" = 20'-0"
20
0
20
4 INCH WHITE LINE
STA 58+75.00 RT - STA 59+87.00 RT
STA 59+16.00 33.57' LT - STA 59+67.00 10.0' LT
STA 59+67.00 LT - STA 59+87.00 LT
4 INCH YELLOW LINE
STA 58+75.00 - STA 61+91.92 ℄ (DOUBLE)
STA 59+00.00 14.0' LT - STA 59+44.00 ℄ (DOUBLE)
4 INCH YELLOW LINE
STA 61+91.92 - STA 62+75.00 ℄ (SINGLE)
LEGEND
R: REMOVE
R&S: REMOVE AND SALVAGE
ES: ERECT SALVAGED
RET: RETAIN
N: NEW
S: SALVAGE
PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)
FILE NAME: s10c222sign.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
TRAFFIC SIGNS AND PAVEMENT MARKINGS
PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET 9 OF 33

SOIL CLASSIFICATION

AASHTO

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)

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

CONSISTENCY (COHESIVE SOILS)

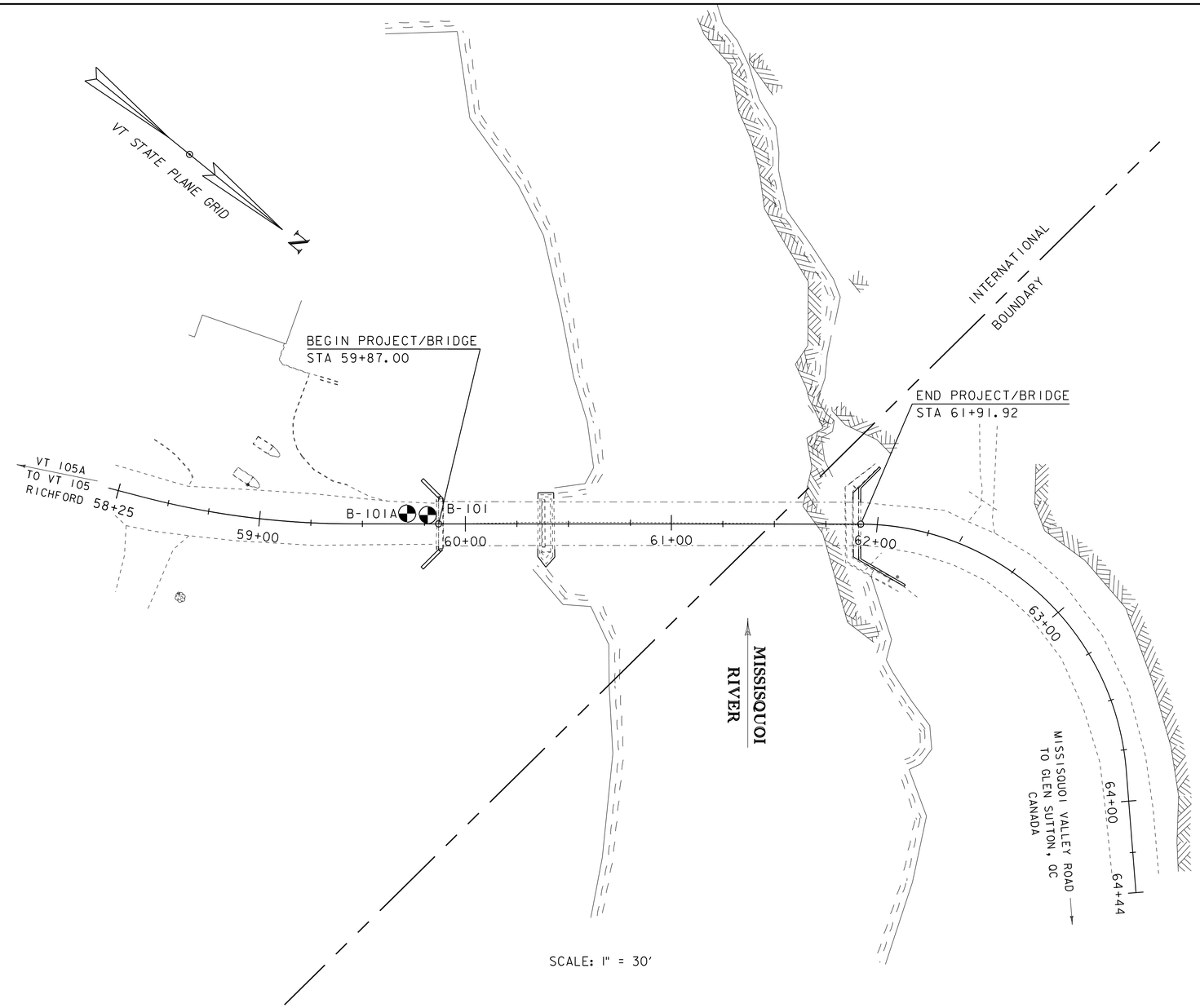
N	DESCRIPTIVE TERM
<2	Very Soft
2-4	Soft
5-8	Med. Stiff
9-15	Stiff
16-30	Very Stiff
31-60	Hard
>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊗	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test "Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR

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



SCALE: 1" = 30'

DEFINITIONS (AASHTO)

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

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

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

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

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

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

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

VARVED - Alternate layers of silt and clay.

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

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

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

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

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

DIP - Inclination of bed with a horizontal plane.

GENERAL NOTES

1. The subsurface explorations shown herein were made between 6/6/16 and 6/9/16 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B-101	59+76.60	-4.30	514.6	N/A
B-101A	59+66.60	-5.00	514.3	444.2

PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

FILE NAME: s10c222bor.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
BORING INFORMATION SHEET

PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET 10 OF 33

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

BORING LOG

Richford-Sutton
BHF 0814(1)
VT-105A Bridge #3

Boring No.: **B-101**
Page No.: 1 of 1
Pin No.: 10c222
Checked By: END

Boring Crew: Garrow, Judkins, Nieto
Date Started: 6/06/16 Date Finished: 6/07/16
VTSPG NAD83: N 915475.54 ft E 1617697.85 ft
Station: 59+76.6 Offset: -4.30
Ground Elevation: 514.6 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C. = 1.42

Groundwater Observations

Date	Depth (ft)	Notes
06/06/16	21.6	W.T. after drilling
06/07/16	21.5	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.85 ft					
		A-1-a, SaGr, Dk/brn, Moist, Rec. = 1.3 ft, Lab Note: Pieces of asphalt pavement were within sample	10-8-5-5 (13)	7.4	52.1	41.0	6.9
		A-1-b, GrSa, Dk/brn, Moist, Rec. = 0.7 ft	4-5-4-6 (9)	6.5	33.0	57.9	9.1
5		A-1-a, SaGr, gry, Moist, Rec. = 1.0 ft, Lab Note: Broken concrete was within sample	5-5-4-3 (9)	6.7	54.3	33.2	12.5
		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.2 ft, Lab Note: Broken rock was within sample Field Note:, Cleaned out casing	5-24-9-9 (33)	3.0	65.2	28.0	6.8
10		A-1-b, GrSa, gry, MTW, Rec. = 0.3 ft, Lab Note: Broken rock was within sample Field Note:, Rollercone, Cleaned out casing	9-5-4-5 (9)	20.5	27.7	68.8	3.5
		A-1-a, SaGr, brn-gry, Moist, Rec. = 0.5 ft, Lab Note: Broken rock and pieces of broken concrete were within sample Field Note:, NXDC, Cleaned out casing, cobbles, stones and concrete	3-1-4-24 (5)	12.7	50.2	41.3	8.5
		A-1-a, Gr, gry, Moist, Rec. = 0.7 ft, Lab Note: A lot of pieces of broken concrete were within sample Field Note:, Cleaned out casing	17-9-6-7 (15)	12.8	87.2	10.9	1.9
15		A-1-a, SaGr, brn, Moist, Rec. = 0.5 ft, Lab Note: Pieces of broken concrete were within sample Field Note:, NXDC, Cleaned out casing, cobbles, stones and concrete	4-2-5-2 (7)	13.7	65.9	25.6	8.5
		A-1-a, Gr, gry, Moist, Rec. = 0.6 ft, Lab Note: A lot of broken rock and pieces of concrete were within sample Field Note:, NXDC, Cleaned out casing, cobbles and concrete	4-5-12-11 (17)	7.2	87.5	11.4	1.1
20		A-1-a, SaGr, gry, Moist, Rec. = 0.5 ft	11-14-6-4 (20)	12.3	76.4	22.3	1.3
		Field Note:, Cleaned out casing					
25		24.4 ft - 25.0 ft Field Note:, No Recovery Field Note:, NXDC, Cleaned out casing	4-7-18-9 (25)				
30		Field Note:, Cored concrete from 27.3 feet to 42.3 feet					
35							
40							
		Hole stopped @ 42.3 ft					
45		Remarks: Hole Collapsed at 18.5 feet.					

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

BORING LOG 2 RICHFORD-SUTTON BHF0814(1).GPJ VERMONT AOT.GDT 7/19/16

PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

FILE NAME: s10c222bor.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
BORING LOGS 1

PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET II OF 33

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

BORING LOG

Richford-Sutton
BHF 0814(1)
VT-105A Bridge #3

Boring No.: **B-101A**
Page No.: 1 of 2
Pin No.: 10c222
Checked By: END

Boring Crew: Nieto, Judkins, Coletti
Date Started: 6/07/16 Date Finished: 6/09/16
VTSPG NAD83: N 915467.77 ft E 1617704.14 ft
Station: 59+66.6 Offset: -5.00
Ground Elevation: 514.3 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_e = 1.42

Groundwater Observations		
Date	Depth (ft)	Notes
06/09/16	19.5	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.3 ft								
5										
10										
15		Field Note:, Cobbles								
20		Field Note:, Cobbles and boulder								
25		A-1-a, SaGr, gry-brn, Moist, Rec. = 1.2 ft, Lab Note: A lot of broken rock was within sample				13-27-20-27 (47)	1.2	60.1	29.5	10.4
		Field Note:, Cleaned out casing								
30		A-1-a, SaGr, gry-brn, Moist, Rec. = 0.8 ft, Lab Note: Broken rock was within sample				13-23-16-24 (39)	0.8	54.4	34.2	11.4
		Field Note:, Cleaned out casing								
35		A-1-a, Gr, gry, Moist, Rec. = 0.3 ft, Lab Note: A lot of broken rock was within sample				40-R@3.5" (R)	0.3	81.0	14.3	4.7
40		A-1-a, SaGr, gry, Moist, Rec. = 0.8 ft, Lab Note: A lot of broken rock was within sample				14-16-22-16 (38)	0.8	68.0	22.6	9.4
		Field Note:, BXDC, Cleaned out casing								

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

BORING LOG 2 RICHFORD-SUTTON BHF0814(1).GPJ VERMONT AOT.GDT 7/19/16

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

BORING LOG

Richford-Sutton
BHF 0814(1)
VT-105A Bridge #3

Boring No.: **B-101A**
Page No.: 2 of 2
Pin No.: 10c222
Checked By: END

Boring Crew: Nieto, Judkins, Coletti
Date Started: 6/07/16 Date Finished: 6/09/16
VTSPG NAD83: N 915467.77 ft E 1617704.14 ft
Station: 59+66.6 Offset: -5.00
Ground Elevation: 514.3 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_e = 1.42

Groundwater Observations		
Date	Depth (ft)	Notes
06/09/16	19.5	W.T. before drilling

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Field Note:, No Recovery				8-8-8-6 (16)				
50		Field Note:, BXDC, Cleaned out casing A-2-4, Sa, Dk/brn, Moist, Rec. = 0.9 ft				6-5-7-8 (12)	0.9	0.3	80.5	19.2
55		A-4, Si, gry, Moist, Rec. = 1.2 ft				2-4-5-4 (9)	1.2		9.1	90.9
		Field Note:, BXDC, Cleaned out casing								
60		Field Note:, No Recovery				6-4-5-4 (9)				
		Field Note:, BXDC, Cleaned out casing								
65		Field Note:, No Recovery				5-2-3-2 (5)				
70		Field Note:, No Recovery				R@70 (R)				
		70.1 ft - 75.1 ft, Gray, Graphitic biotite-muscovite-quartz-albite-pyrite SCHIST, Faint brown and rust staining along joints and pyrite inclusions. Hard, Unweathered, Fair rock, BX, RMR=49	1 (75)	90 (30)	7 4 4 4 4					
75		75.1 ft - 80.1 ft, Gray, Graphitic biotite-muscovite-quartz-albite-pyrite SCHIST, Hard, Unweathered, Poor rock, BX, RMR=31, Low recovery due to mechanical difficulties during drilling	2 (75)	10 (0)	5 3 3 5 4					
80		80.1 ft - 85.1 ft, Gray, Graphitic biotite-muscovite-quartz-albite-pyrite gneissic SCHIST, Rust and brown staining along joints. Hard, Very slightly weathered, Fair rock, BX, RMR=43	3 (75-80)	84 (12)	6 5 5 5 5					
85		Hole stopped @ 85.1 ft								

Remarks:
Hole collapsed at 20.0 feet.

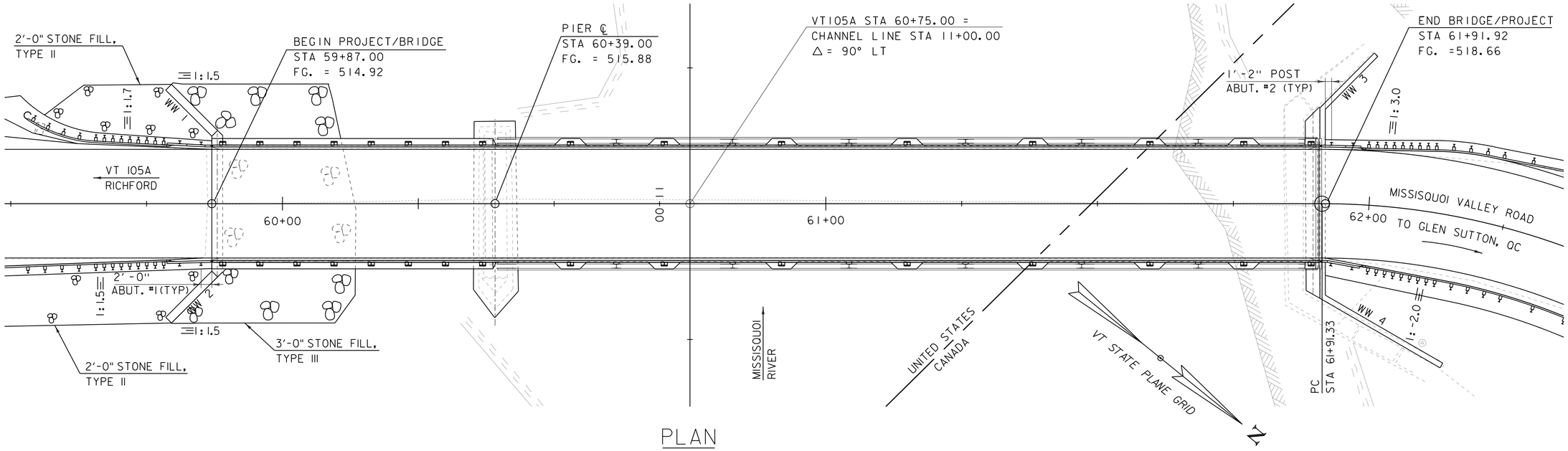
Top of Bedrock @ 70.1 ft

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

BORING LOG 2 RICHFORD-SUTTON BHF0814(1).GPJ VERMONT AOT.GDT 7/19/16

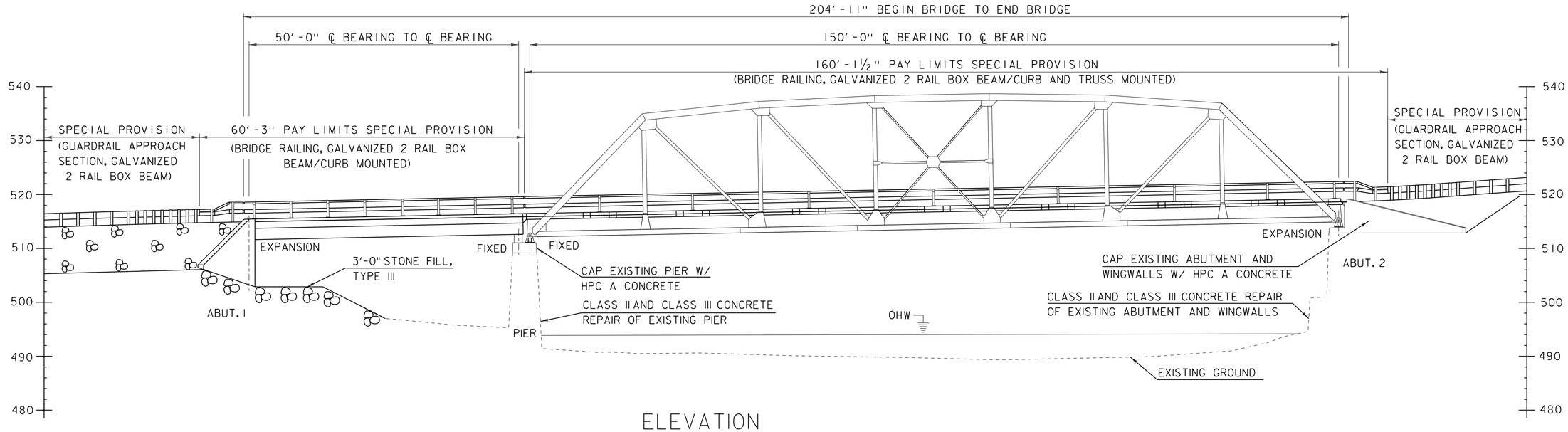
PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

FILE NAME: s10c222bor.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
BORING LOGS 2
PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET 12 OF 33



PLAN

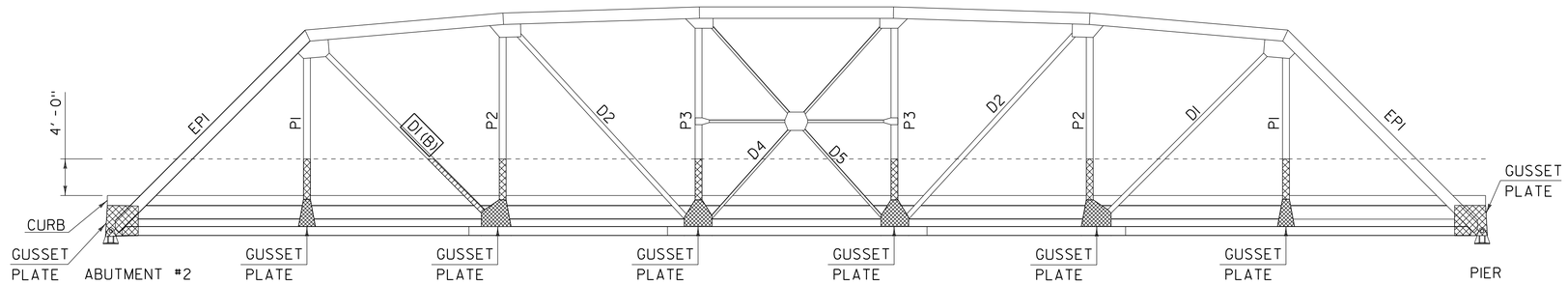
SCALE 1" = 10'-0"
10 0 10



ELEVATION

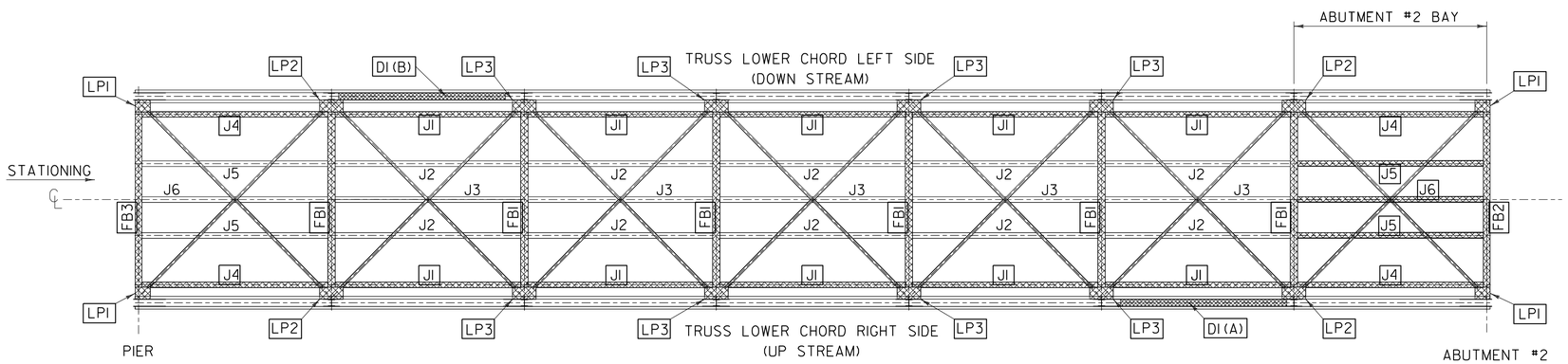
SCALE 1" = 10'-0"
10 0 10

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222pe.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
PLAN AND ELEVATION	SHEET 13 OF 33



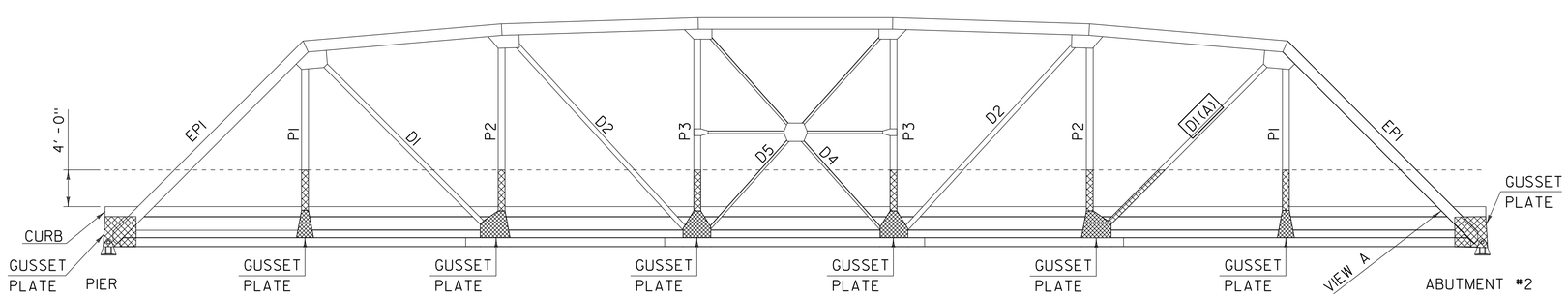
TRUSS LEFT SIDE ELEVATION (DOWN STREAM)

SCALE 3/8" = 1'-0"



TRUSS FLOOR SYSTEM PLAN

SCALE 3/8" = 1'-0"



TRUSS RIGHT SIDE ELEVATION (UP STREAM)

SCALE 3/8" = 1'-0"

THE MEMBERS SHOWN TO BE REPLACED ARE THE MINIMUM REQUIREMENT. FIELD INSPECTION MAY REQUIRE THAT ADDITIONAL MEMBERS BE REPLACED. ALL REPLACEMENT MEMBERS SHALL BE OF EQUAL GEOMETRY AND SECTION PROPERTIES AS THOSE BEING REPLACED (UNLESS OTHERWISE NOTED).

SALVAGE ALL MEMBERS THAT ARE NOT IDENTIFIED AS REPLACE.

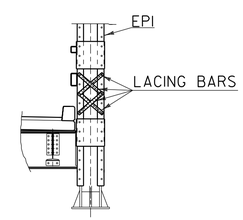
REPLACE THE FOLLOWING:

IDENTIFICATION MARK	COMMENTS
FB1 FB2 FB3	COMPLETE REPLACEMENT
J1	COMPLETE REPLACEMENT
J4 J5 J6	COMPLETE REPLACEMENT, ABUT#2 BAY ONLY
LP1 LP2 LP3	COMPLETE REPLACEMENT
P1 P2 P3	REPLACE UP TO 4'-0" FROM ABOVE CURB
GUSSET PLATES	REPLACE CONNECTIONS TO LOWER CHORD
DI(A), DI(B)	REPLACE UP TO 4'-0" FROM ABOVE CURB
LACING BARS	REPLACE AS INDICATED IN VIEW A

LEGEND

AFFECTED MEMBERS

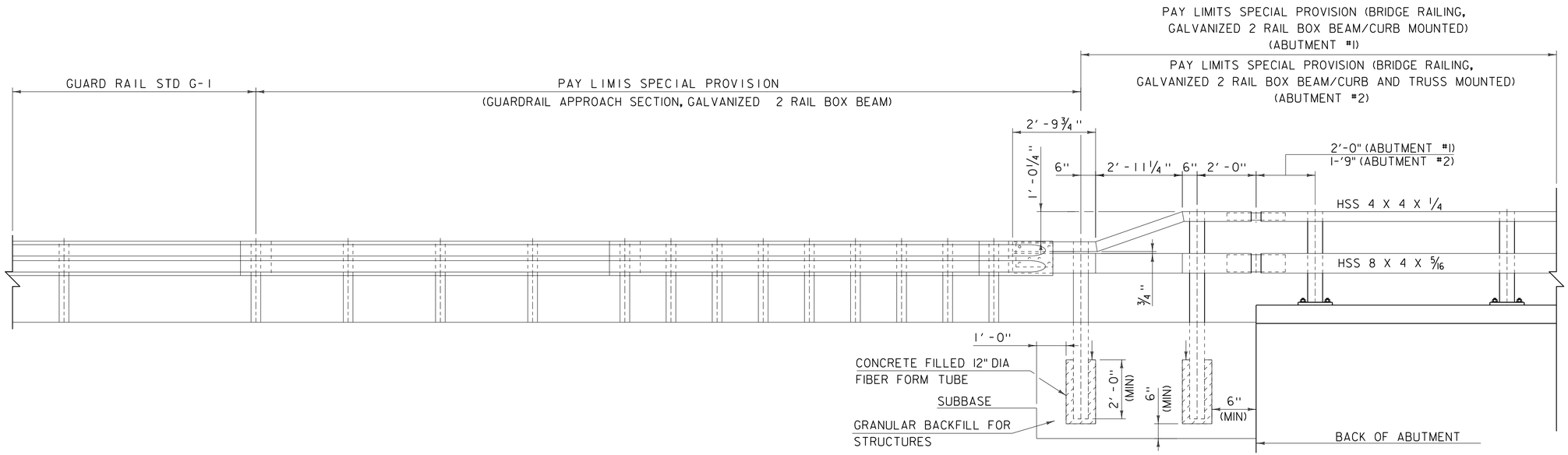
AFFECTED MEMBERS NOMENCLATURE AS INDICATED IN ORIGINAL PLANS



VIEW A

NTS

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222sup.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
TRUSS FRAMING	SHEET 14 OF 33



NOTES:

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

2. TO FACILITATE FIELD FIT - UP OF THE TRANSITION RAILING, POSTS SHALL BE SET LOOSELY INTO FIBER FORM TUBES WHILE TRANSITION PARTS ARE BEING ASSEMBLED. POST HOLES SHALL BE BACKFILLED WITH A CONCRETE MIX APPROVED BY THE ENGINEER. PAYMENT FOR COMPONENTS, INCLUDING BACKUP PLATE AND END TERMINAL CONNECTOR FOR GUARDRAIL, AUGERING, FIBER FORM TUBES AND CONCRETE, AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM, CURB MOUNTED.

3. THE RETROREFLECTIVE MATERIAL IS TO BE ERECTED EVERY 30' (OR CLOSEST POST) WITH A 5/8" DIAMETER BOLT AND SHALL MEET REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE A 0.063" ALUMINUM BACKING WHITE REFLECTOR.

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

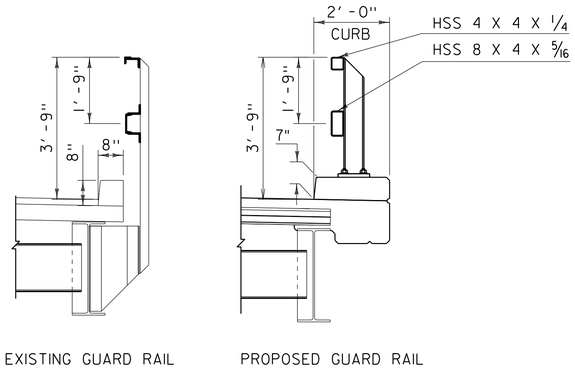
5. TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.

6. APPROACH RAIL BOLTS SHALL BE ASTM A307 GRADE A AND NUTS SHALL BE AASHTO M291 (ASTM A563 GRADE A OR BETTER) (GALVANIZED). WASHERS SHALL BE ASTM F844.

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

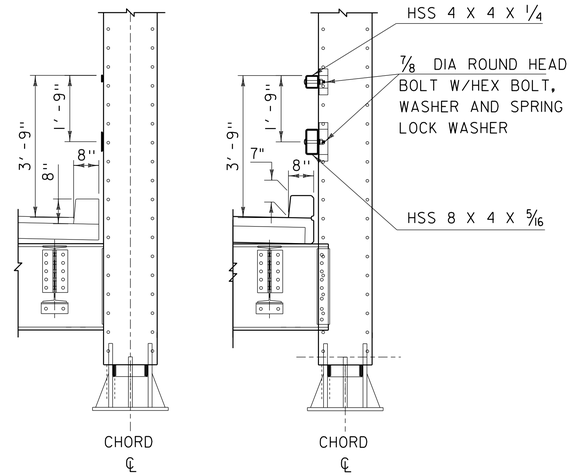
8. SEE STANDARD G-1 AND G-1d FOR ADDITIONAL INFORMATION.

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222rail.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
APPROACH RAIL DETAILS	SHEET 15 OF 33



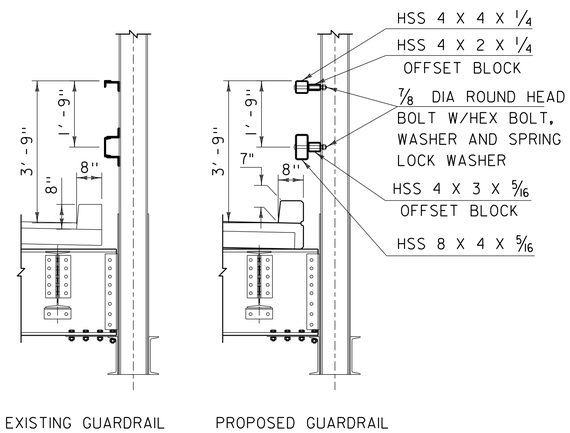
TYPICAL APPROACH SPAN GUARDRAIL

SCALE 1/2" = 1'-0"



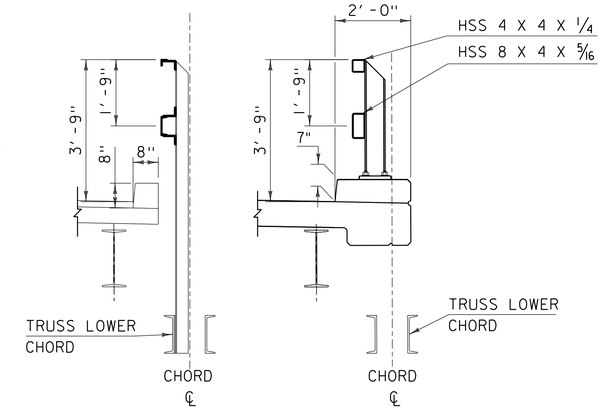
GUARDRAIL TRUSS PORTAL

SCALE 1/2" = 1'-0"



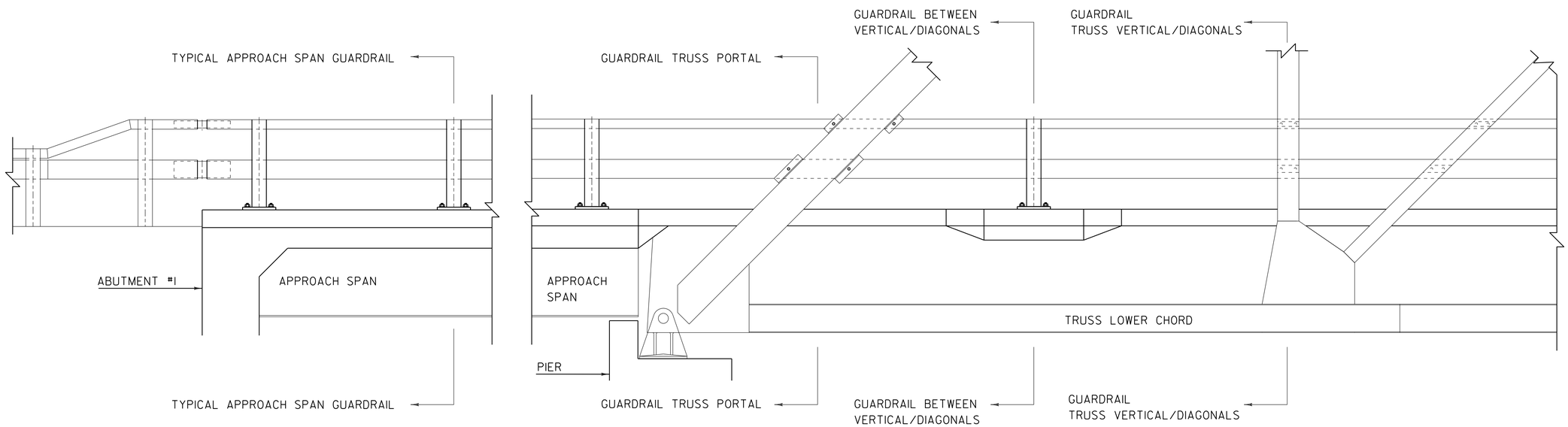
GUARDRAIL TRUSS VERTICAL/DIAGONALS

SCALE 1/2" = 1'-0"



GUARDRAIL BETWEEN VERTICAL/DIAGONALS

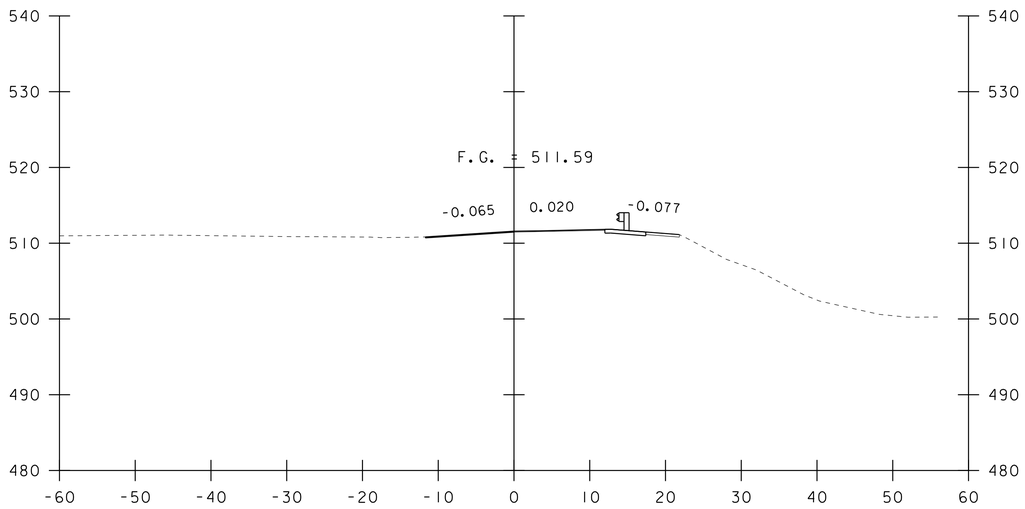
SCALE 1/2" = 1'-0"



ELEVATION BRIDGE GUARD RAIL

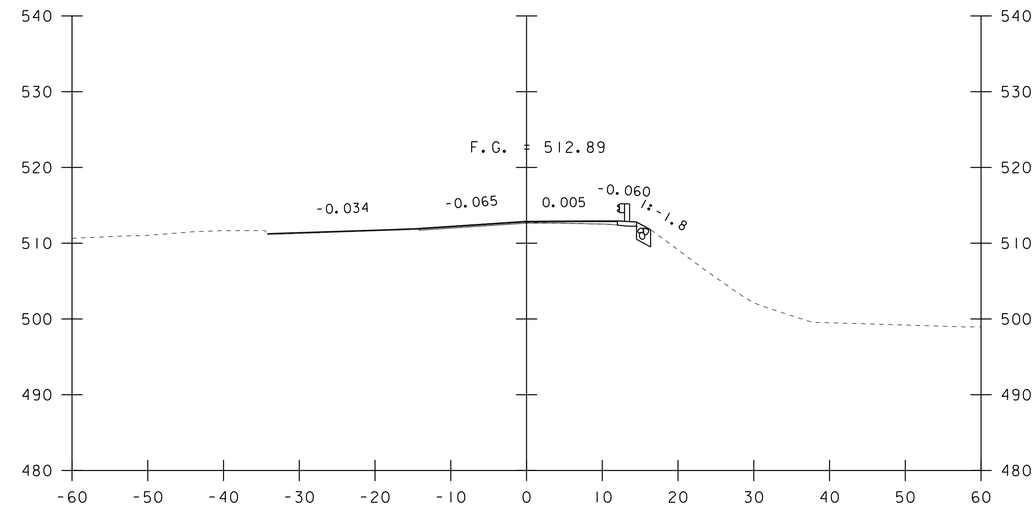
SCALE 1/2" = 1'-0"

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222rail.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
BRIDGE RAIL DETAILS	SHEET 16 OF 33

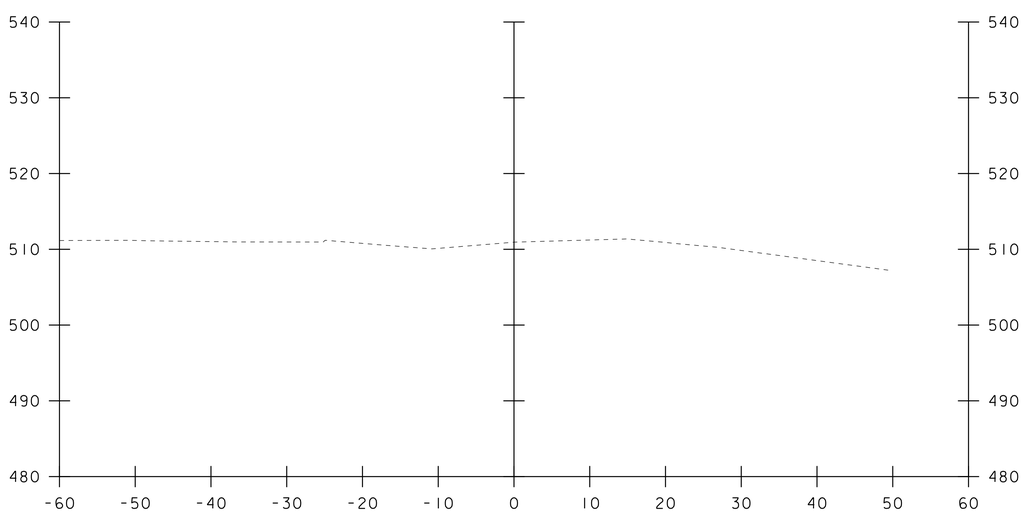


58+75

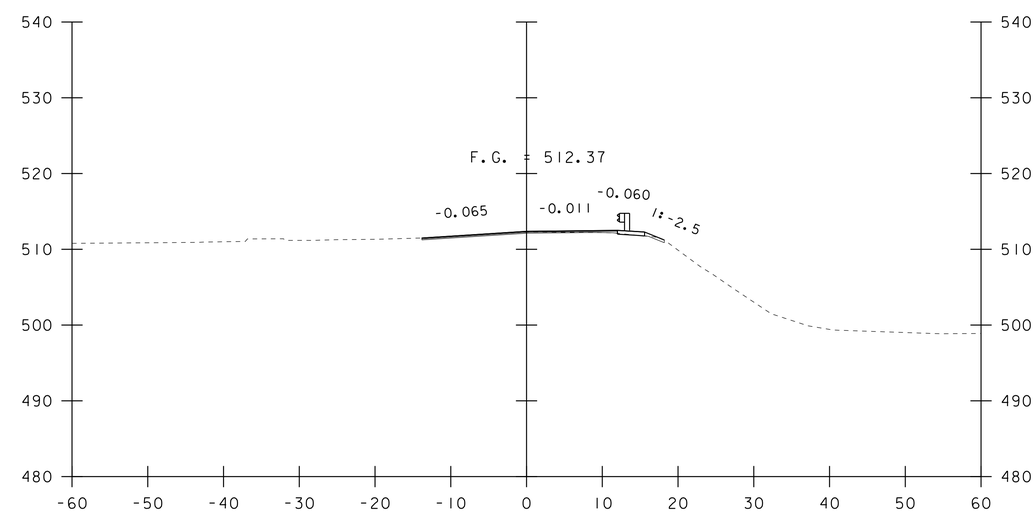
STA 58+75.00
BEGIN APPROACH
MATCH EXISTING



59+17



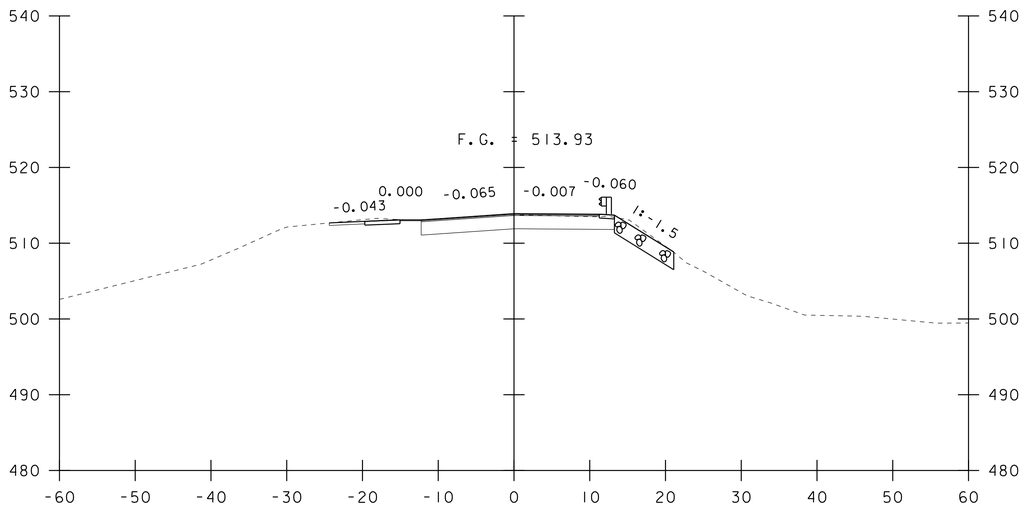
58+50



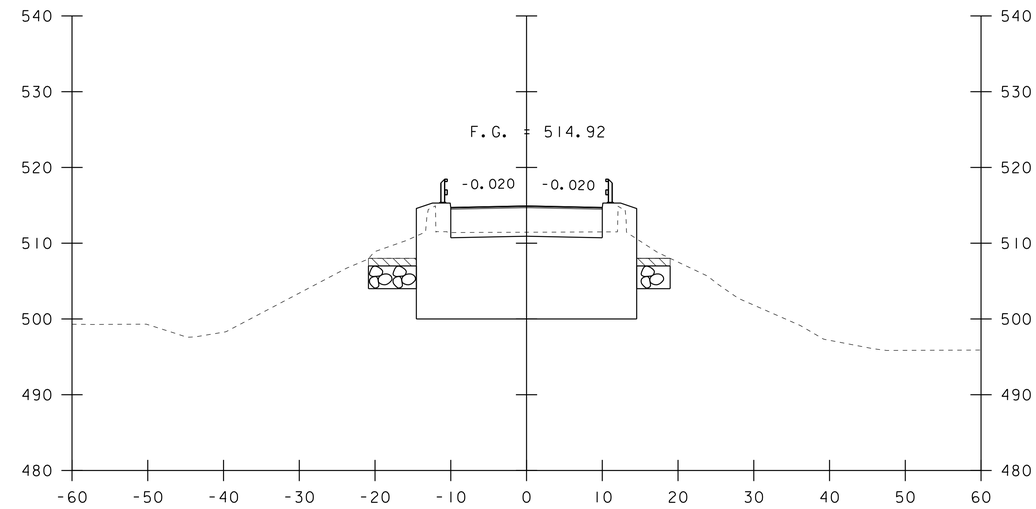
59+00

STA. 58+50 TO STA. 59+17

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
VT 105A CROSS SECTION 1	SHEET 17 OF 33

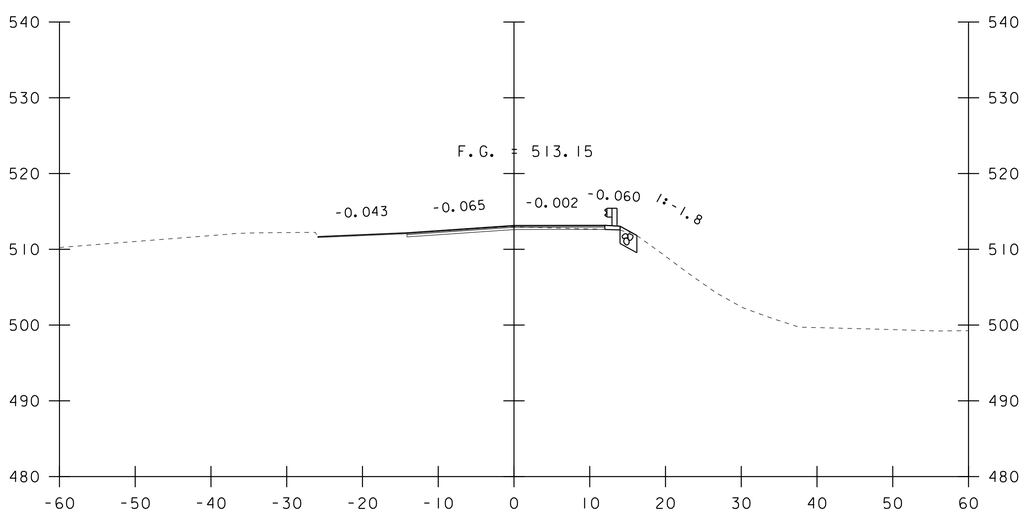


59+50



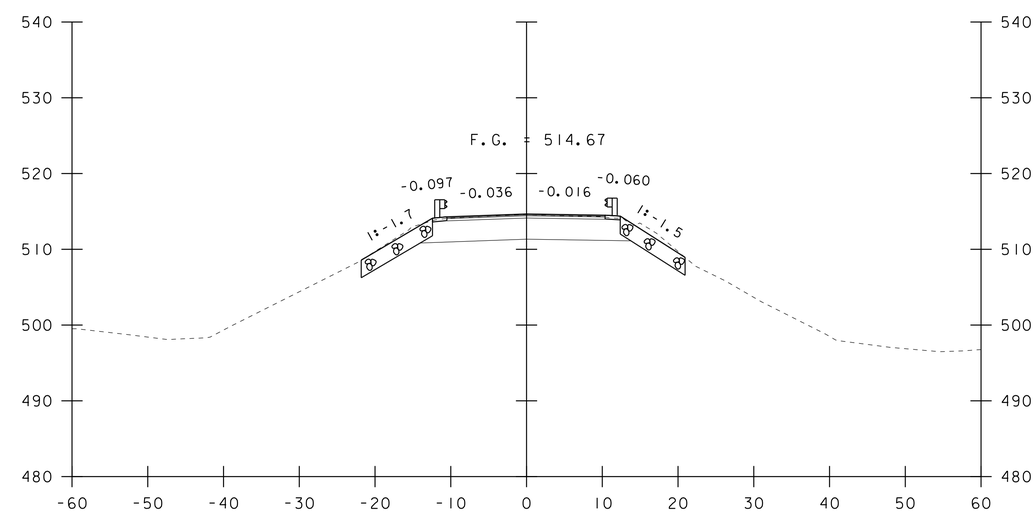
59+87

STA 59+87.00
BEGIN BRIDGE



59+25

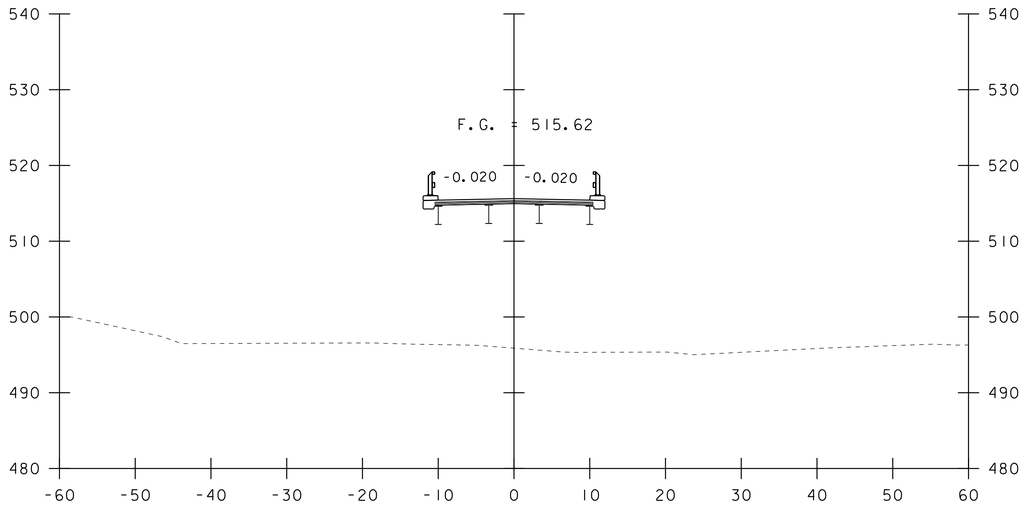
STA 59+25.00
BEGIN PROJECT



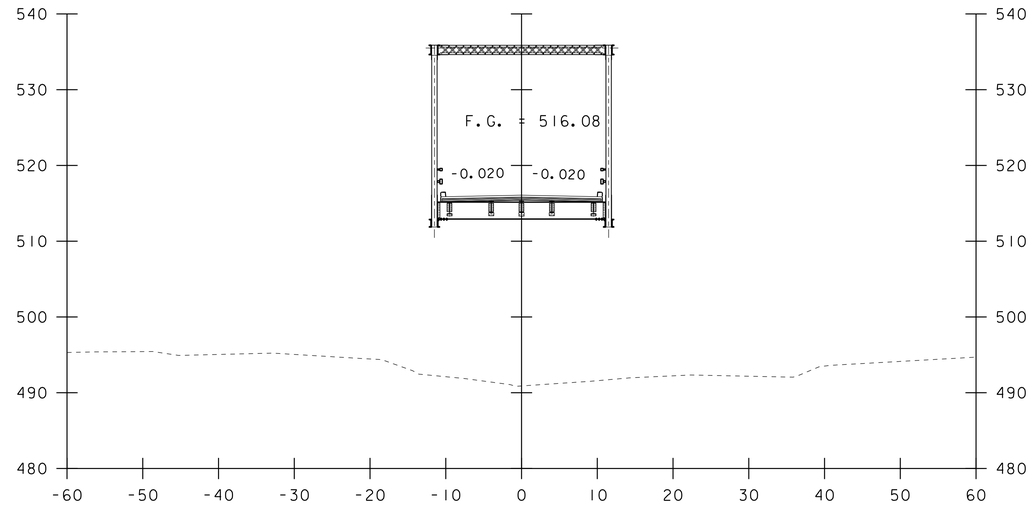
59+75

STA. 59+25 TO STA. 59+87

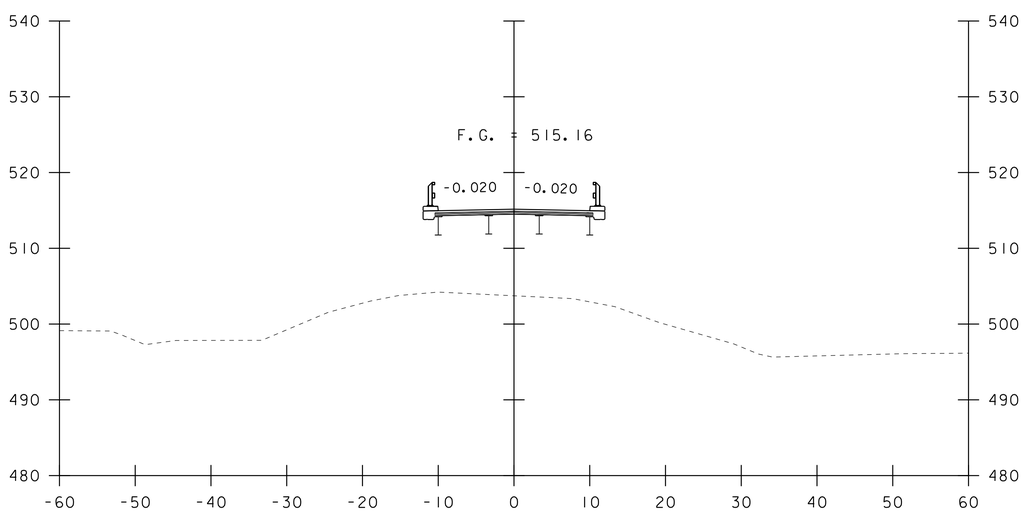
PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
VT 105A CROSS SECTION 2	SHEET 18 OF 33



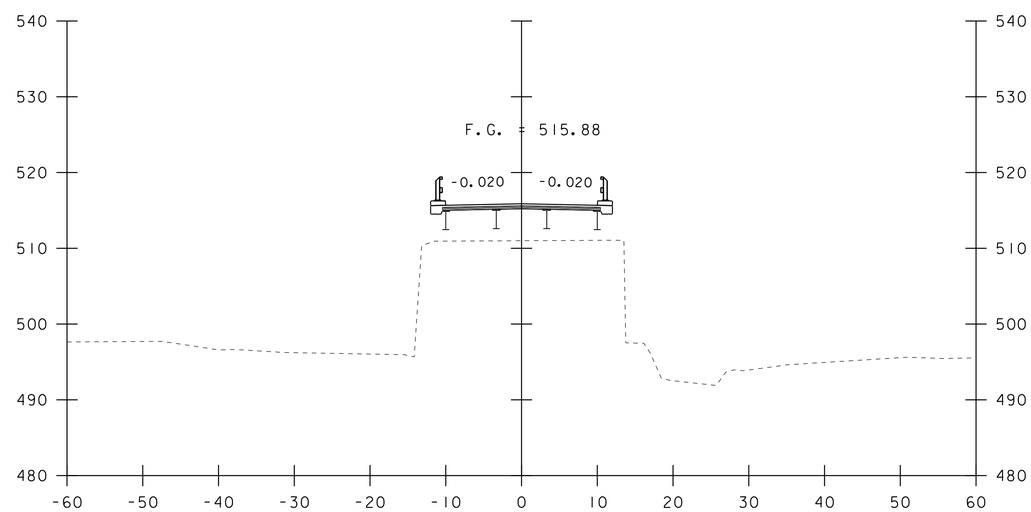
60+25



60+50



60+00

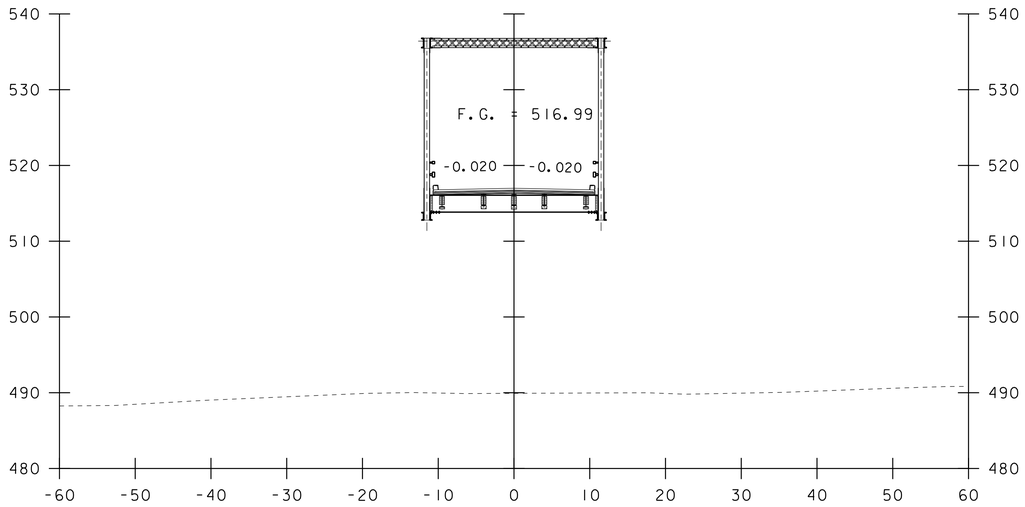


STA 60+39.00
PIER

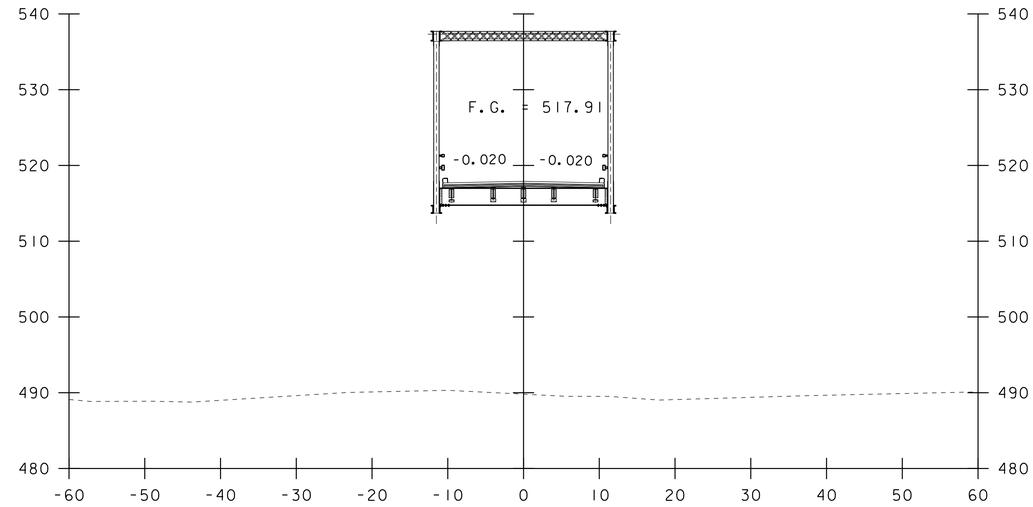
60+39

STA. 60+00 TO STA. 60+50

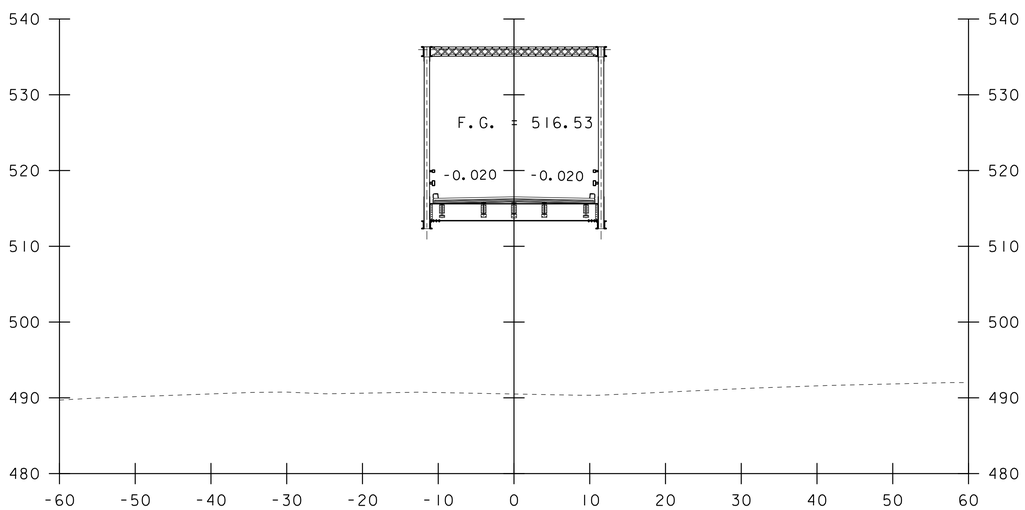
PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
VT 105A CROSS SECTION 3	SHEET 19 OF 33



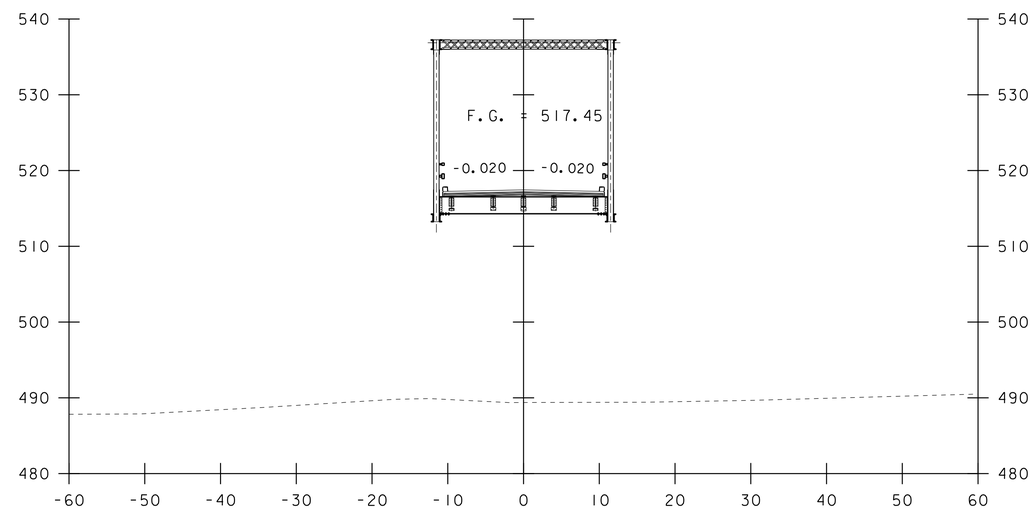
61+00



61+50



60+75

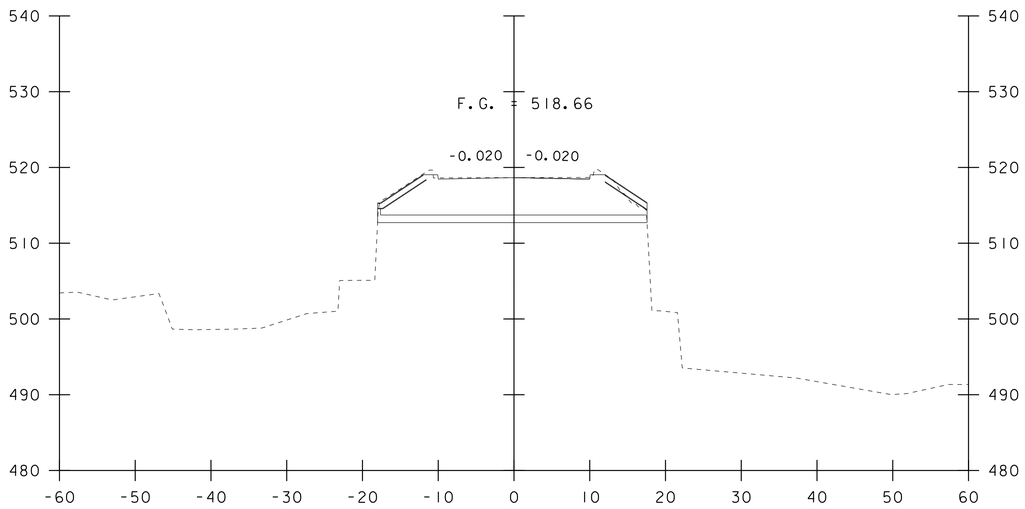


61+25

STA. 60+75 TO STA. 61+50

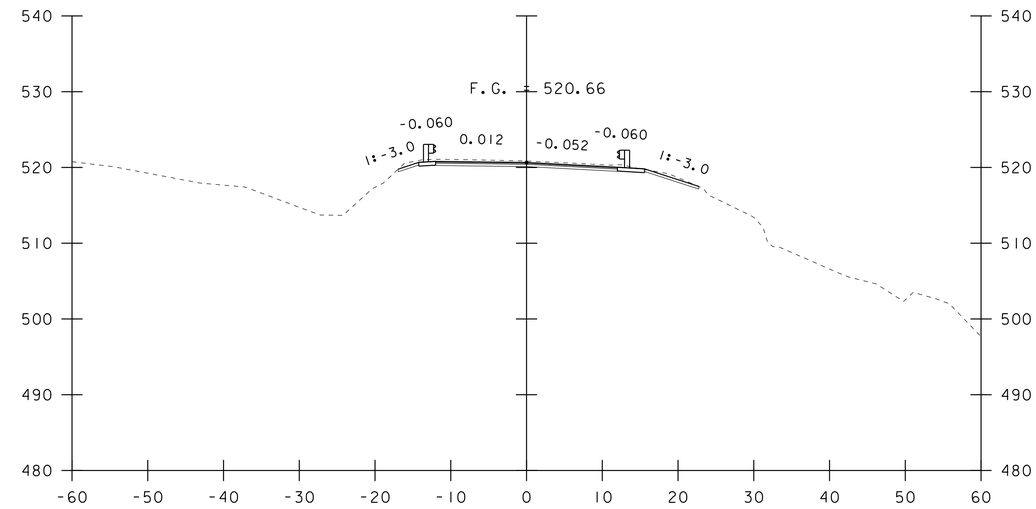
PROJECT NAME:	RICHFORD-SUTTON, PQ
PROJECT NUMBER:	BHF 0814(1)

FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
VT 105A CROSS SECTION 4	SHEET 20 OF 33



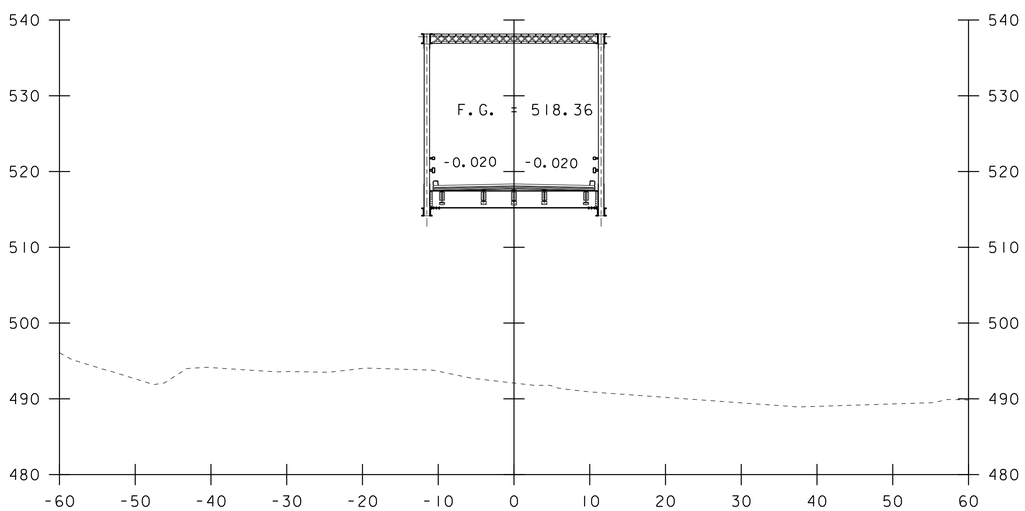
61+91

STA 61+91.00
END BRIDGE

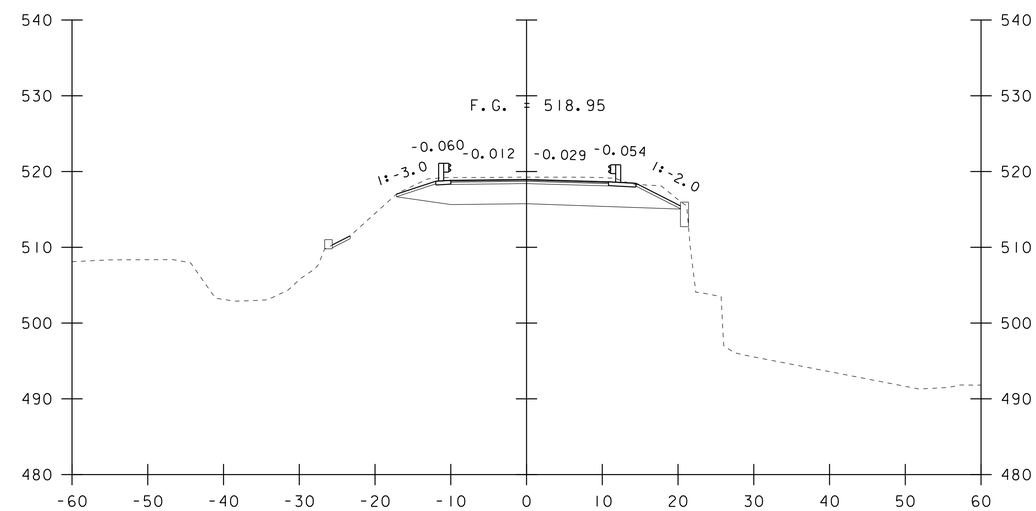


62+25

STA 62+25.00
END PROJECT



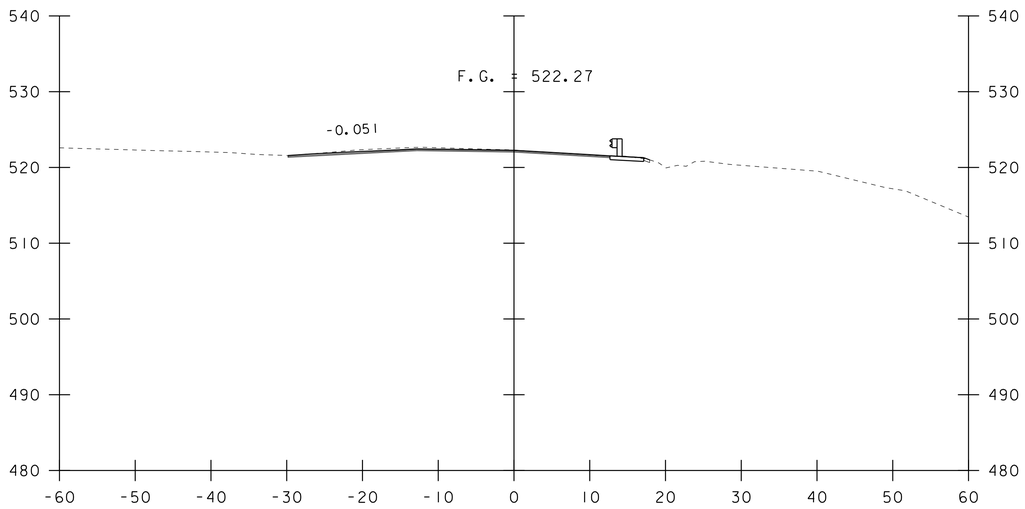
61+75



62+00

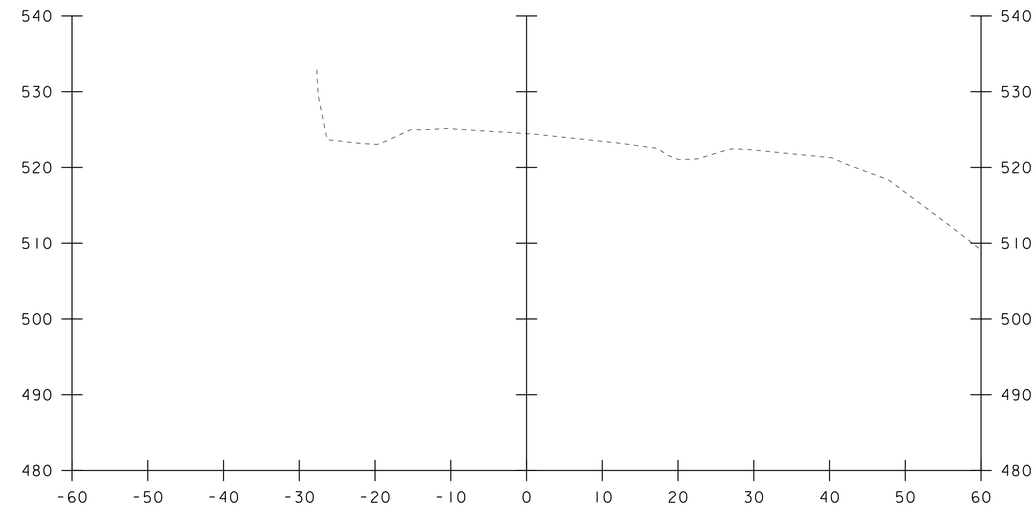
STA. 61+75 TO STA. 62+25

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
VT 105A CROSS SECTION 5	SHEET 21 OF 33

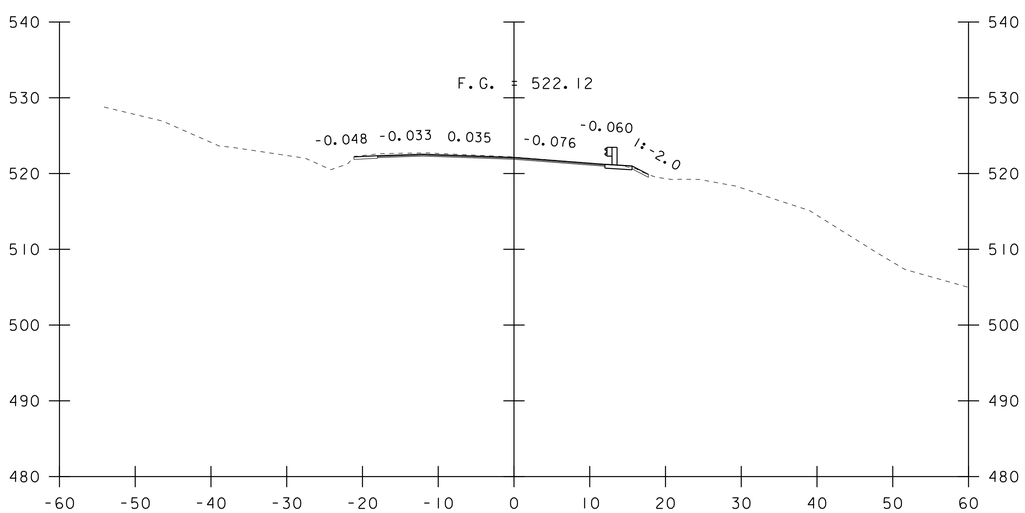


62+53

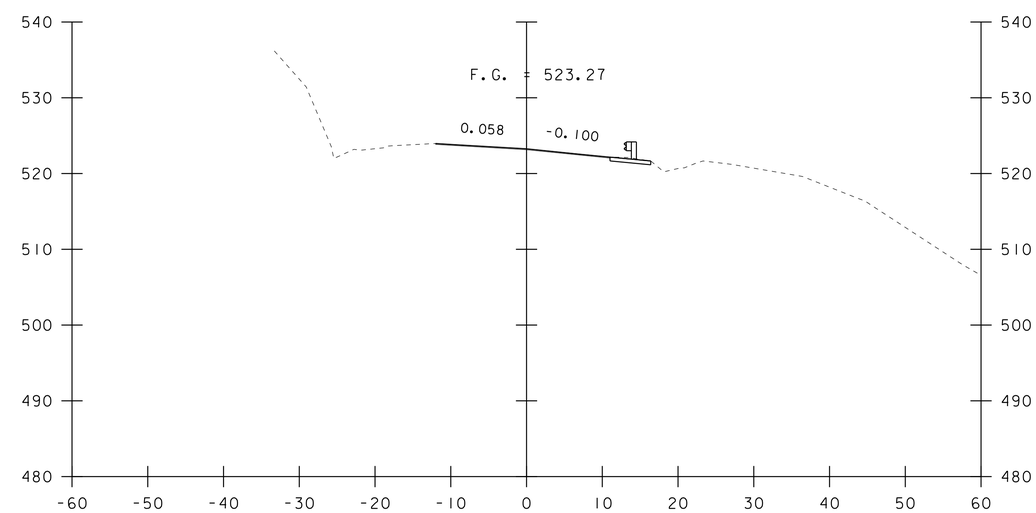
STA 62+53.00
DRIVE LEFT



63+00



62+50

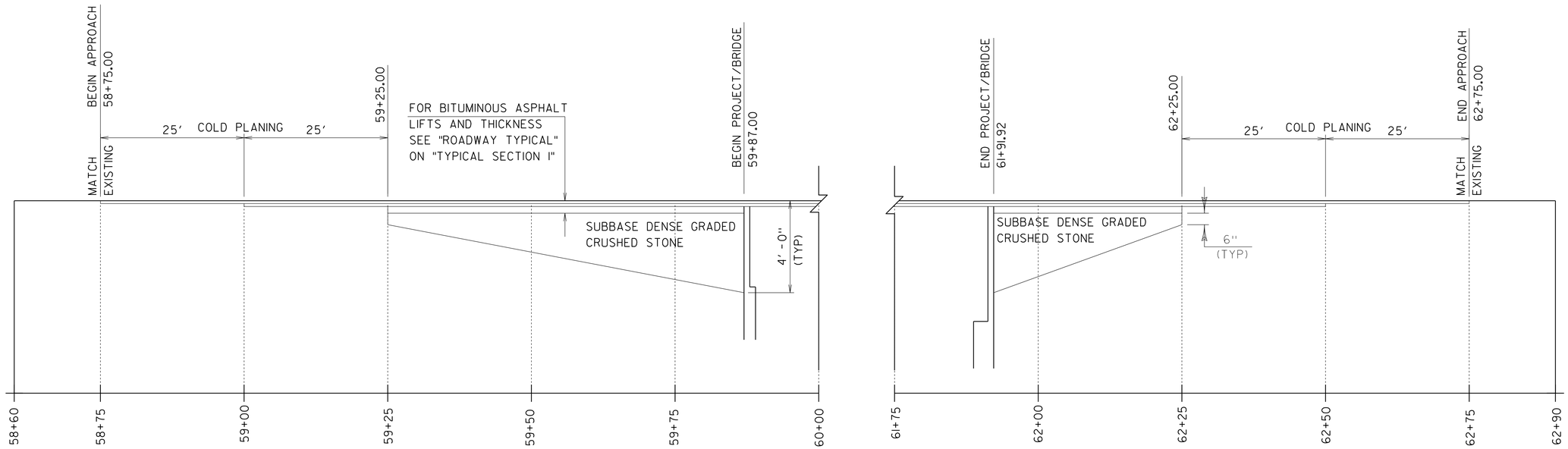


STA 62+75.00
END APPROACH
MATCH EXISTING

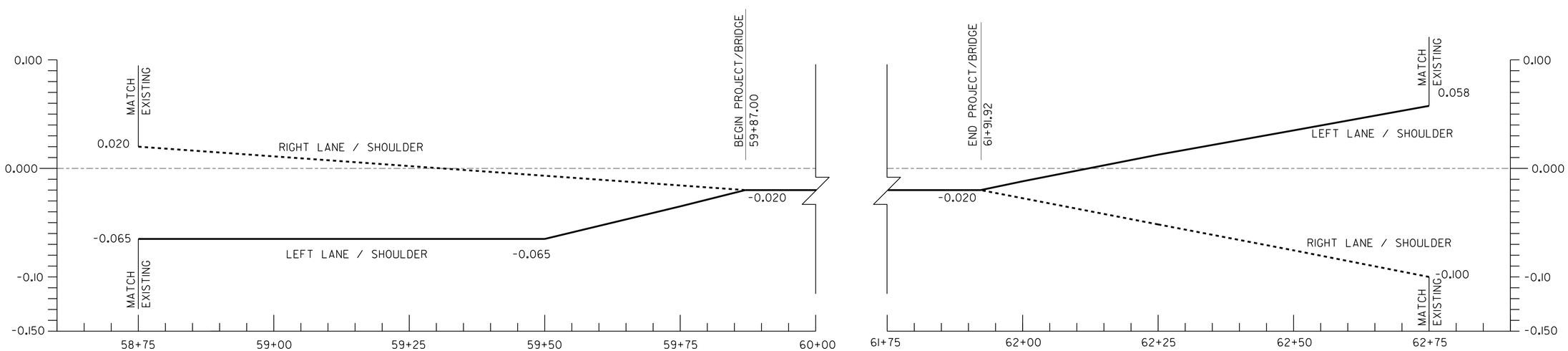
62+75

STA. 62+50 TO STA. 63+00

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(I)	
FILE NAME: sl0c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
VT 105A CROSS SECTION 6	SHEET 22 OF 33

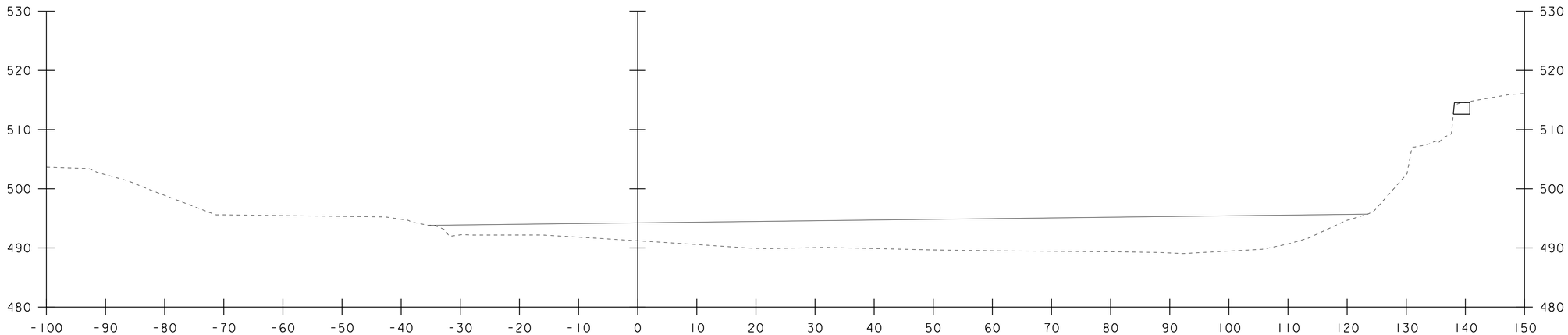


MATERIAL TRANSITION

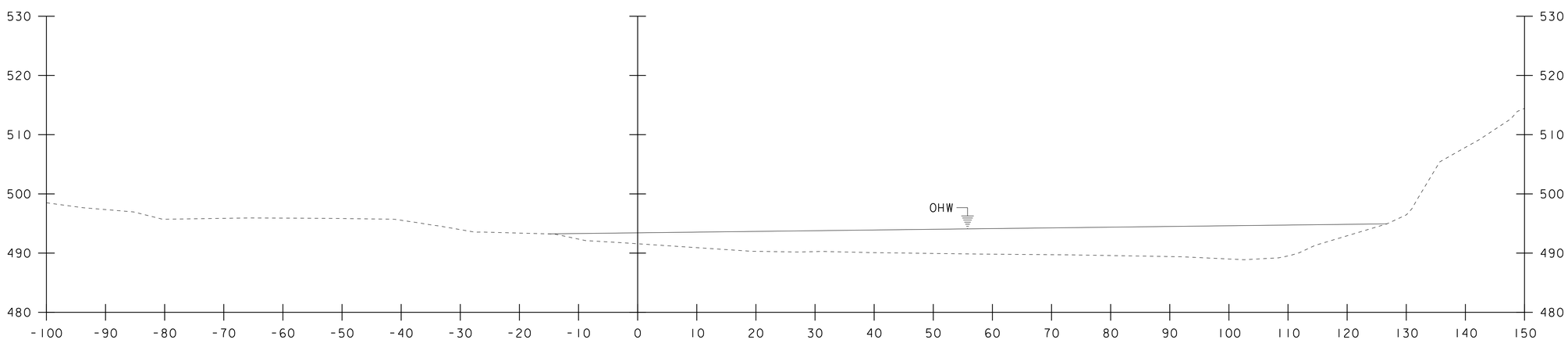


BANKING DIAGRAM

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222pro.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
MATERIAL TRANSITION & BANKING DIAGRAM	SHEET 23 OF 33



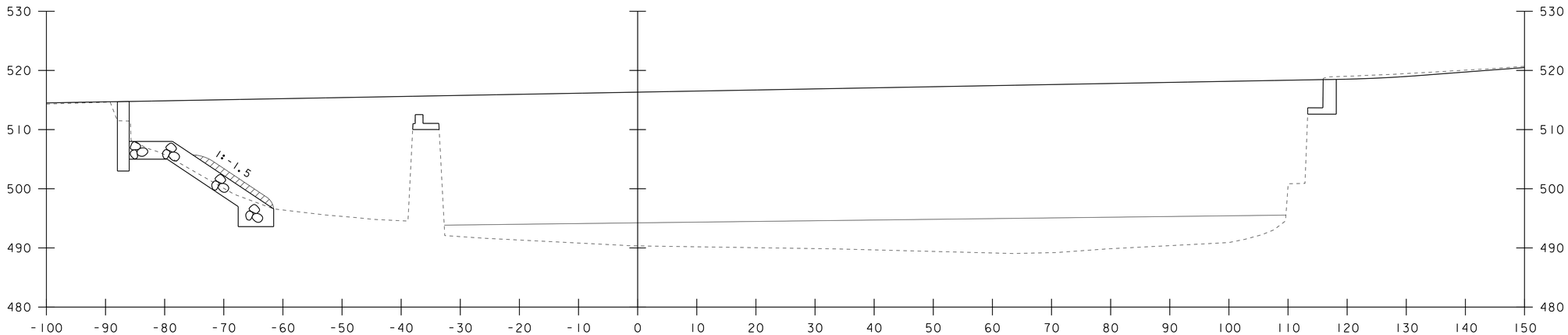
10+70



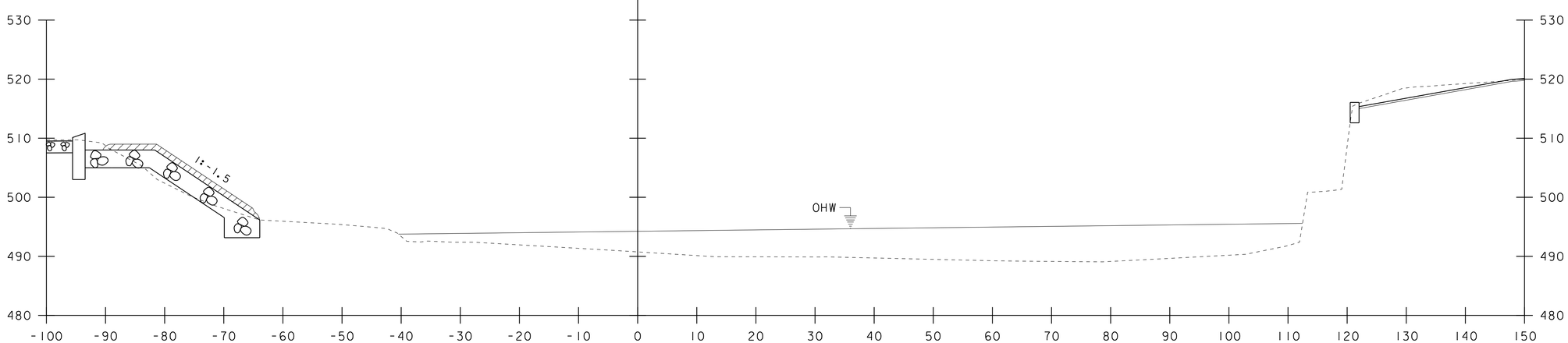
10+60

STA. 10+60 TO STA. 10+70

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
CHANNEL CROSS SECTION 1	SHEET 24 OF 33



10+90

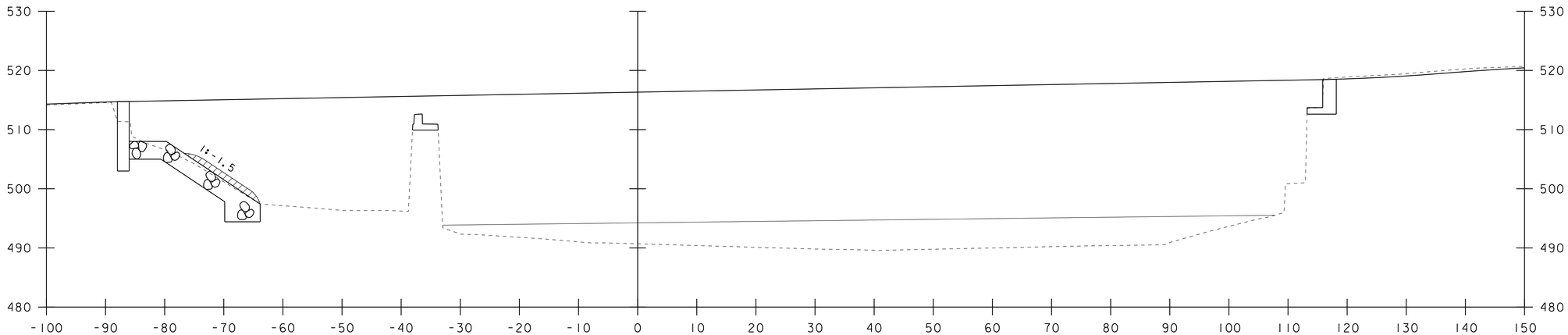


BEGIN
STA. 10+71.75 LEFT
UNCLASSIFIED CHANNEL EXCAVATION
GRUBBING MATERIAL
STONE FILL, TYPE III
GEOTEXTILE UNDER STONE FILL

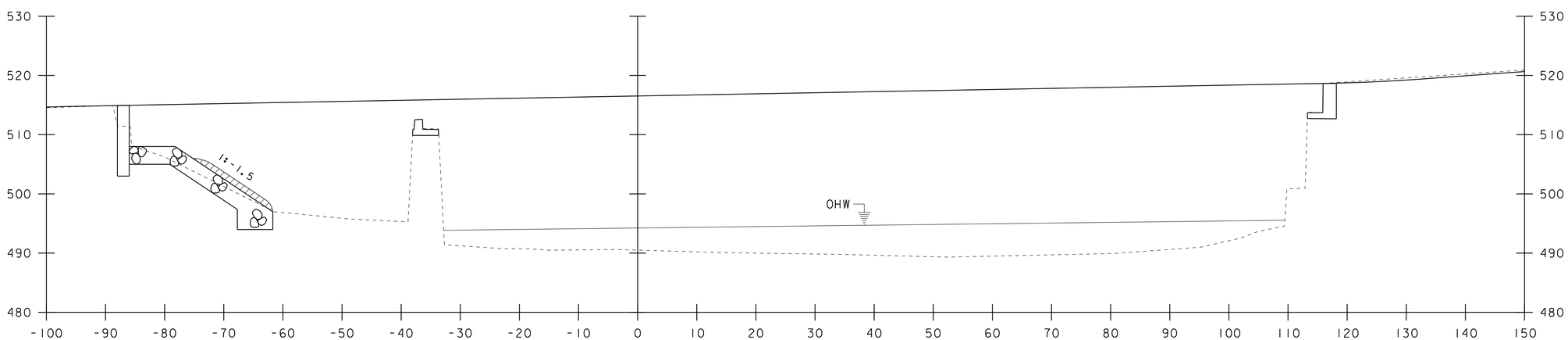
10+80

STA. 10+80 TO STA. 10+90

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
CHANNEL CROSS SECTION 2	SHEET 25 OF 33



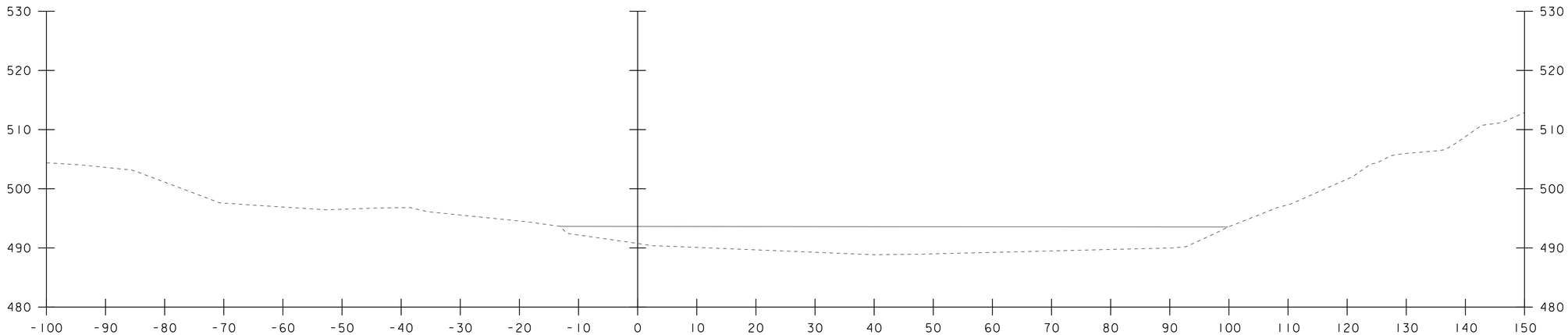
11+10



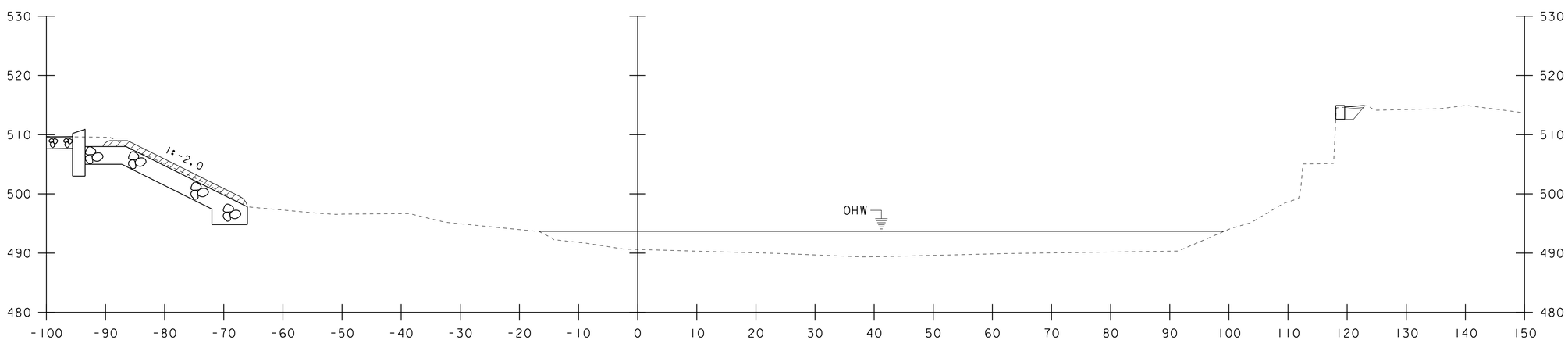
11+00

STA. 11+00 TO STA. 11+10

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
CHANNEL CROSS SECTION 3	SHEET 26 OF 33



11+30

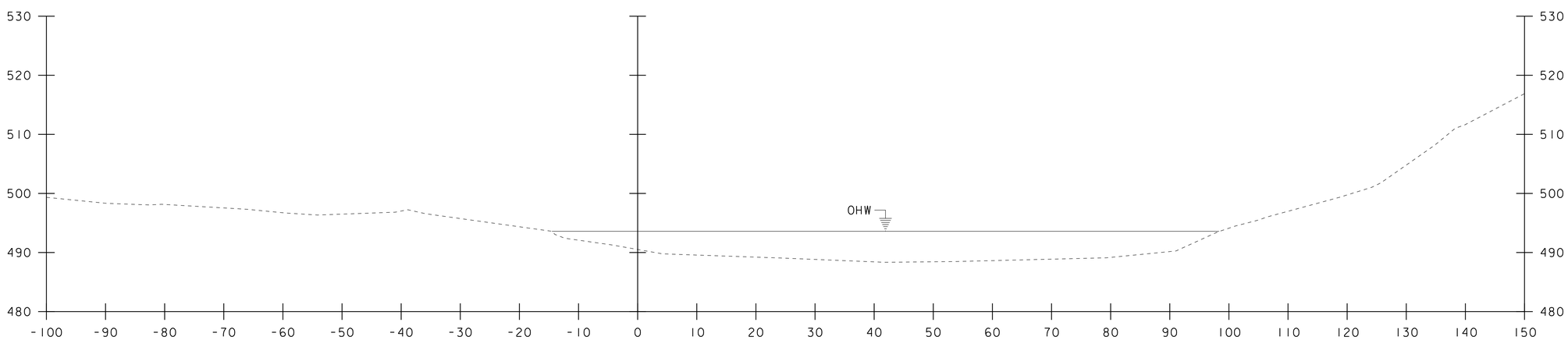


END
STA. 11+22.00 LEFT
UNCLASSIFIED CHANNEL EXCAVATION
GRUBBING MATERIAL
STONE FILL, TYPE III
GEOTEXTILE UNDER STONE FILL

11+20

STA. 11+20 TO STA. 11+30

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
CHANNEL CROSS SECTION 4	SHEET 27 OF 33



11+40

STA. 11+40 TO STA. 11+40

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222xs.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
CHANNEL CROSS SECTION 5	SHEET 28 OF 33

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE RESTORATION OF THE EXISTING STEEL TRUSS, REPLACEMENT OF THE APPROACH SPAN, REPLACEMENT OF ABUTMENT #1, REPAIR WORK OF THE EXISTING PIER AND EXISTING ABUTMENT #2, AS WELL AS ALL NECESSARY APPROACH 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 0.16 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 FROM THE INTERNATIONAL BORDER TO THE SOUTH. AS YOU CROSS THE BORDER THE TOPOGRAPHY CHANGES TO HILLY TERRAIN WITH MOSTLY WELL ESTABLISHED FOREST WITH OCCASIONAL OPEN AREAS. VT ROUTE 105A, TH 39, AND A PAVED DRIVEWAY FOR THE US BORDER STATION, ARE WITHIN THE PROJECT SITE. THERE IS A US BORDER CROSSING STATION ON THE SOUTH SIDE OF THE PROJECT AND A CANADIAN BORDER CROSSING TO THE NORTH OF THE PROJECT SITE.

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

THE MISSISQUOI RIVER IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE RIVER IS CLASSIFIED AS LOW SLOPE, SINUOUS, WIDE, WITH A NONCONFINED AND UNARMORED CHANNEL AT THE SITE. THE STREAM BED CONSISTS OF SILT, GRAVEL AND COBBLES. THE TRIBUTARY AREA AT THE STRUCTURE CROSSING IS 4.6 MILES^2. DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF WATER FROM A FEW NEARBY SLOPES.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT AND REHABILITATION 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 FRANKLIN, VERMONT. SOILS ON THE PROJECT SITE ARE PODUNK VARIANT SILT LOAM, 0%-2% SLOPES, “K FACTOR” = 0.32; COLTON GRAVELLY LOAMY SAND, 2%-8% SLOPES, “K FACTOR” = 0.17; AND WOODSTOCK-ROCK OUTCROP COMPLEX, 15%-25% SLOPES, “K FACTOR” = 0.24.

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
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: THIS AREA HAS BEEN IDENTIFIED AS POTENTIAL HABITAT FOR THE NLEB. FURTHER INVESTIGATION WILL BE CONDUCTED.
WATER RESOURCE: MISSISQUOI RIVER
WETLANDS: NO

1.3 RISK EVALUATION
THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE 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. MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED. PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES, ETC).

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.

GEOTEXTILE FOR SILT FENCE; GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED AND GEOTEXTILE FOR FILTER CURTAIN SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

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

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

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

NONE ANTICIPATED HERE.

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

NONE ANTICIPATED HERE.

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.

NONE ANTICIPATED HERE.

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.

NONE ANTICIPATED HERE.

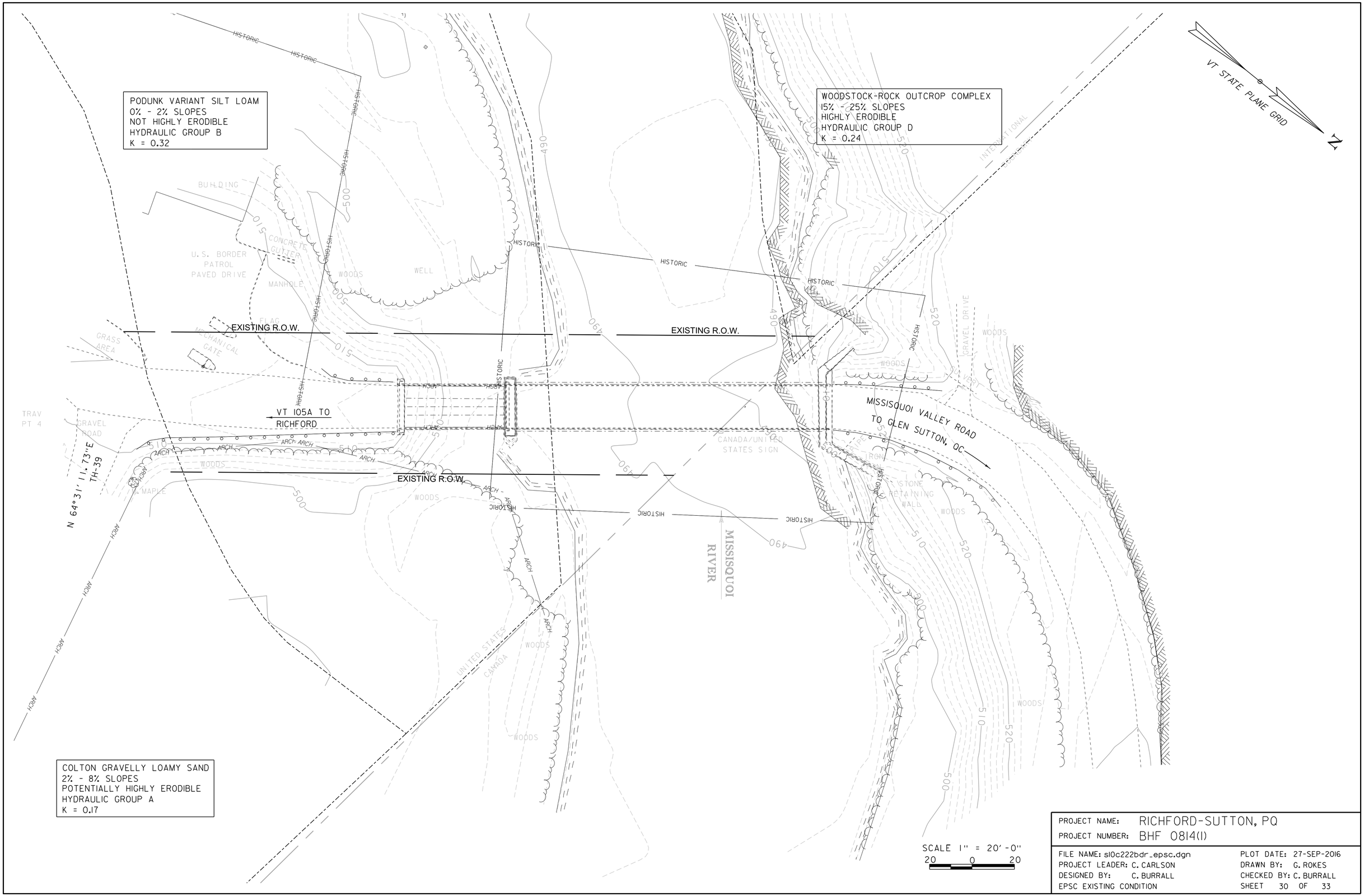
1.4.12 INSPECT YOUR SITE
INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

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:	RICHFORD-SUTTON, PQ
PROJECT NUMBER:	BHF 0814(1)

FILE NAME: s10c222bdr_epsc.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
EPSC EXISTING CONDITION	SHEET 30 OF 33

VT STATE PLANE GRID

N

VT 105A STA 60+75.00 =
CHANNEL LINE STA 11+00.00
Δ = 90° LT

CHANNEL LINE
S 51°00'00.00" W

EXISTING R.O.W.

MISSISQUOI VALLEY ROAD

VT 105A TO RICHFORD

62+00 TO GLEN SUTTON, QC

MISSISQUOI RIVER

INTERNATIONAL BOUNDARY

CANADA/UNITED STATES SIGN

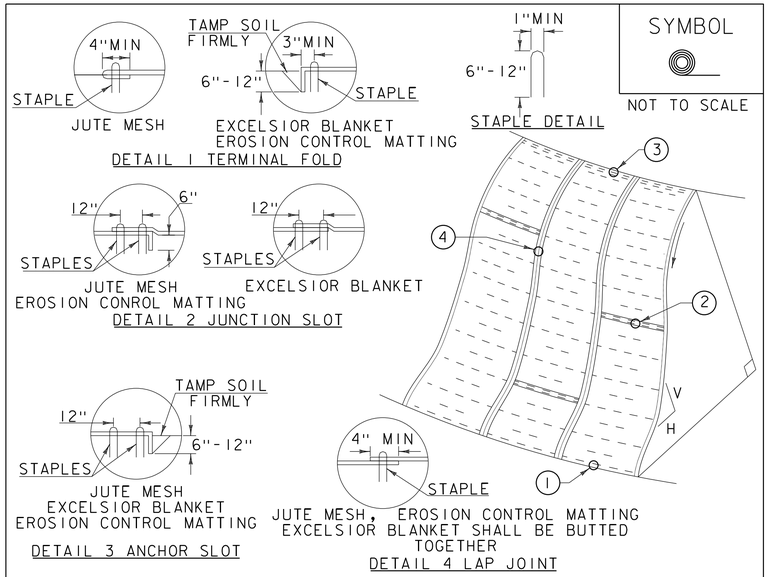
UNITED STATES
CANADA

N 64°31' 11.73"E
TH-39

58+25
59+00
60+00
61+00
62+00
63+00
64+00
64+45
10+00
11+00
12+00

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

PROJECT NAME: RICHFORD-SUTTON, PQ	
PROJECT NUMBER: BHF 0814(1)	
FILE NAME: s10c222bdr_epsc.dgn	PLOT DATE: 27-SEP-2016
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: C. BURRALL	CHECKED BY: C. BURRALL
EPSC CONSTRUCTION/FINAL CONDITION	SHEET 31 OF 33



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

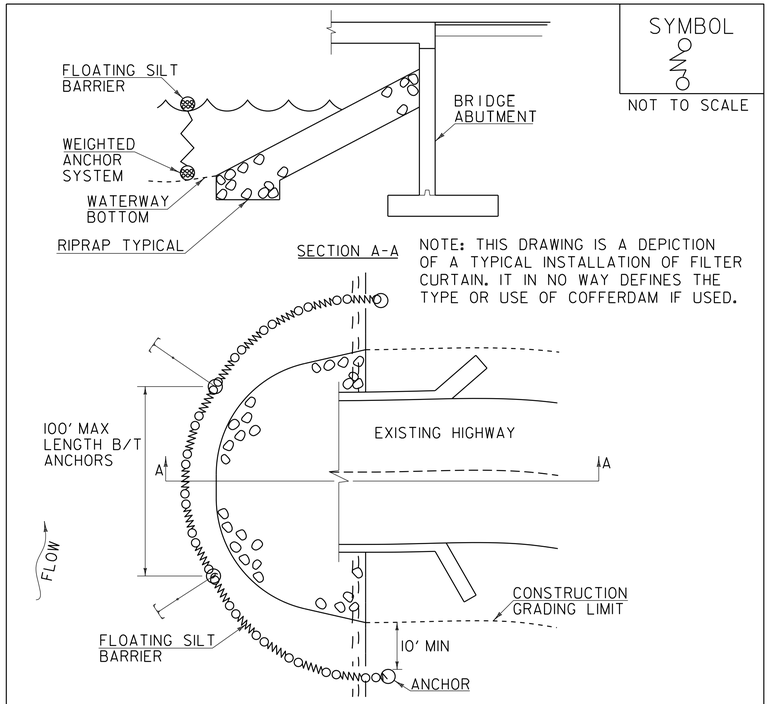
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER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

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

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

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

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF



SYMBOL

NOT TO SCALE

NOTE: THIS DRAWING IS A DEPICTION OF A TYPICAL INSTALLATION OF FILTER CURTAIN. IT IN NO WAY DEFINES THE TYPE OR USE OF COFFERDAM IF USED.

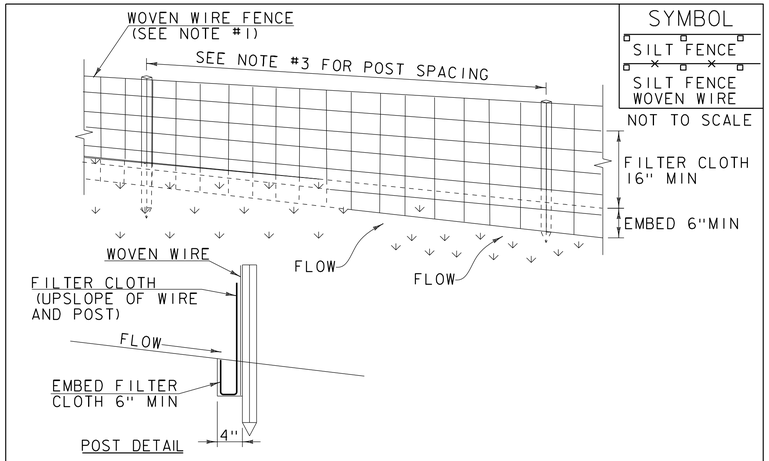
CONSTRUCTION SPECIFICATIONS

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

FILTER CURTAIN

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

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



SYMBOL

SILT FENCE

SILT FENCE WOVEN WIRE

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

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

SILT FENCE

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

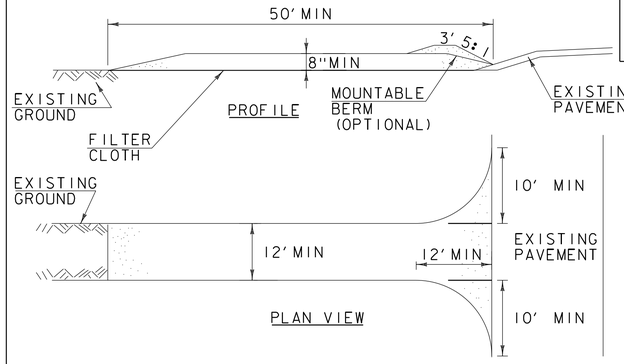
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

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

PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

FILE NAME: s10c222epscdet.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
EPSC DETAIL 1

PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET 32 OF 33



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

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

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

STABILIZED CONSTRUCTION ENTRANCE

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

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

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

VAOT LOW GROW/FINE FESCUE MIX

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

VAOT RURAL AREA MIX

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

GENERAL AMENDMENT GUIDANCE

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

CONSTRUCTION GUIDANCE

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

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

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

REVISIONS	
JANUARY 12, 2015	WHF

PROJECT NAME: RICHFORD-SUTTON, PQ
PROJECT NUMBER: BHF 0814(1)

FILE NAME: s10c222epscdet.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: C. BURRALL
EPSC DETAIL 2

PLOT DATE: 27-SEP-2016
DRAWN BY: G. ROKES
CHECKED BY: C. BURRALL
SHEET 33 OF 33

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Traffic Management Plan

FOR

Richford, VT - Sutton, PQ BHF 0814(1)

VT ROUTE 105A, BRIDGE 3 OVER THE MISSISQUOI RIVER

September 27, 2016

This document shall be provided to the Resident Engineer prior to the preconstruction meeting.

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1.0 Project Description

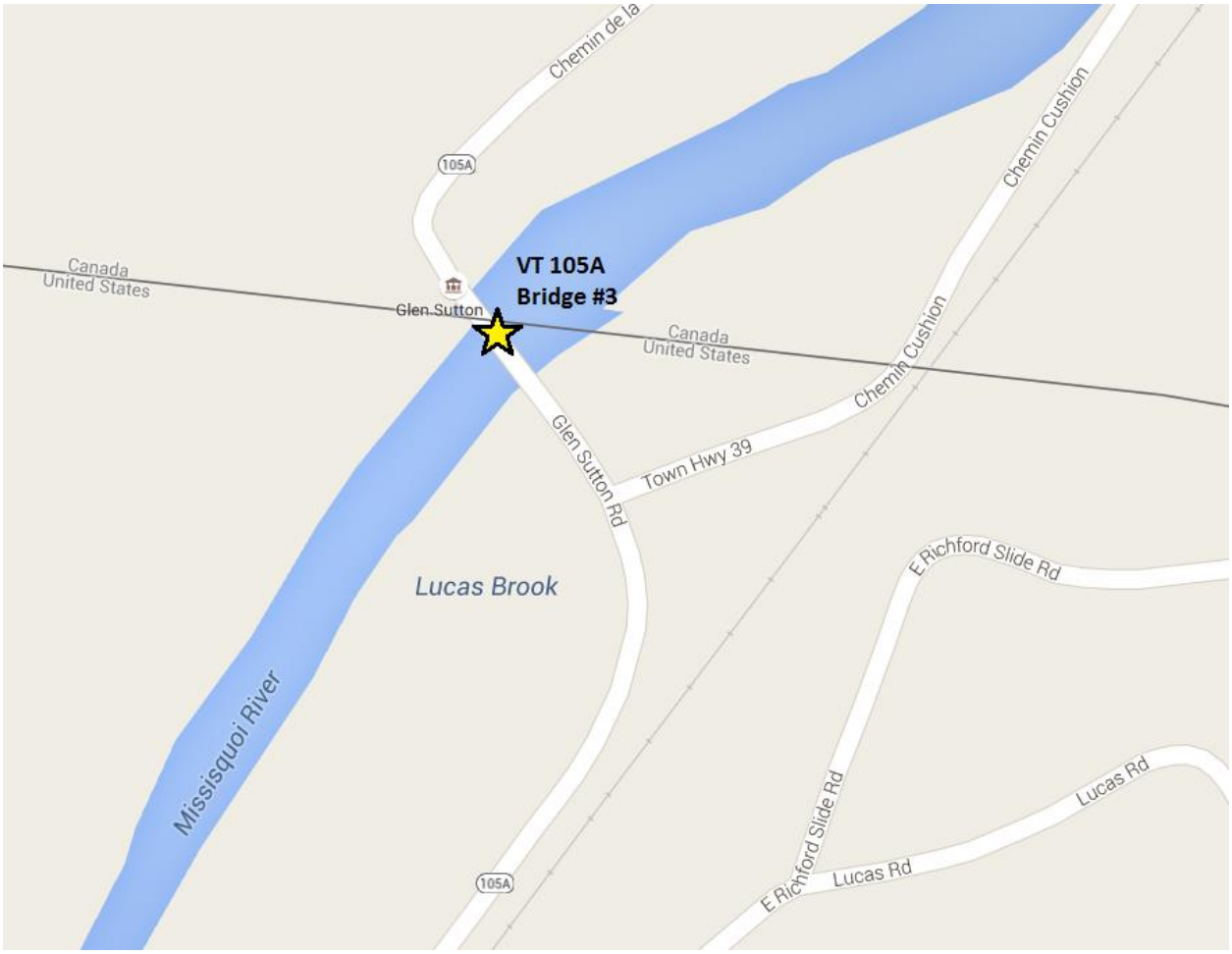
- **Project Location**
  - Town of Richford, VT in Franklin County on VT Route 105A over the Missisquoi River. The bridge is located approximately 1.8 northeast of the intersection of VT Route 105 and VT Route 105A directly on the US/ Canadian border with Sutton, Province of Quebec.

- **Work zone limits**
  - Station 59+87 (Begin Project/ Bridge) to Station 61+91.92 (End Bridge/ Project).

- **Project background information.**
  - The Richford-Sutton Bridge 3 project will rehabilitate the existing bridge over the Missisquoi River, which has deteriorating components in the deck, superstructure, and substructure elements. The existing bridge is a two-span structure built in 1929, with the first span being a 51-ft steel rolled beam structure and the second span being a 151-ft steel truss. The bridge spans over the border between the United States and Canada, with approximately 80% in the United States and 20% in Canada. The existing approach span has substantial corrosion to the metal grid deck, rusting of the beams, and concrete cracking in the skeletal abutment. The truss span also has significant deterioration of the metal grid deck, as well as truss components with section loss in need of repair or replacement. Currently the bridge is posted for a weight limit of 5 tons.
  - The rehabilitation project will consist of the replacement of the entire approach span with a new partial-filled grid deck system supported by new steel rolled beams. A new abutment on piles will also be installed at the south end of the bridge. The existing truss span will be rehabilitated with a new partial-filled grid deck system and new steel members will replace significantly deteriorated members in the truss. The remaining truss will be cleaned and painted. The rehabilitation will also include substructure repair work to the existing pier and abutment at the north end of the bridge. The bridge will have two, ten-foot travel lanes with new bridge rail to improve the safety on the bridge.

- **Specific traffic restrictions expected on major roadways during the work**
  - Bridge 3 will be closed to traffic during construction. The contractor will be required to sign a detour route that will follow state-owned roads via VT 105 and VT 139 to the border crossing in East Richford, VT on VT 139. Town Highway 39 adjacent to the project will remain open to traffic during the project and vehicles will be required to stop at the US border crossing.

- **Specific roadways that will be directly affected by the project work zones**
  - See Bridge Location Map on following page.



- **Regional projects that may impact each other**
  - None known of at this time.

- **Project schedule**
  - Target Construction Schedule: Construction activities will likely take place beginning in April 2018 and last one construction season.

2.0 TMP Team—Contact Information

Defining roles and responsibilities from the initial stages of a project helps to coordinate all the activities related to TMP development and implementation. This section includes contact information and roles and responsibilities for major personnel involved in the project.

- **TMP Development Managers**—Personnel with the primary responsibility for developing the TMP.
- **TMP Implementation Managers**—Personnel primarily responsible for implementing the TMP.
- **Emergency Contacts**— Public or semi-public agencies (e.g., hospitals, schools, fire, police, select board/town administrator, road foremen) that need to be kept informed about work zone activities, especially in case of a road closures.

Contact information and roles and responsibilities of major personnel involved in the project.

TMP Development Managers	
Agency of Transportation (AOT) DPM	**Town of Richford, VT**
Name/Title: Carolyn Carlson, PE/Project Manager Unit: Structures Phone: 802-828-0048 Email: Carolyn.carlson@vermont.gov	Name/Title: Unit: Phone: Email:
Roles and Responsibilities: Development of the Traffic Management Plan. AOT will be responsible for developing the TMP related to the area within the project construction limits.	
TMP Implementation/Monitoring Managers	
AOT Resident Engineer	**Town of Richford, VT**
Name/Title: Unit: Phone: Email:	Name/Title: Alan Fletcher, Town Clerk Unit: Phone: 802-848-7751 Email:
Roles and Responsibilities: Implementing the Traffic Management Plan. AOT will be responsible for implementing the TMP related to the area within the project construction limits.	
Other Important Agency Contacts	
AOT Regional Engineer	**AOT Construction and Materials Bureau Director**
Name/Title: Chris Williams / Northwest Regional Construction Engineer Unit: Construction and Materials Phone: 802-828-1333 Email: chris.williams@vermont.gov	Name/Title: David Hoyne/Director Unit: Construction and Materials Phone: 802-828-2593 (main desk) Email: david.hoyne@vermont.gov
Roles and Responsibilities:	
Emergency Service Contacts	
VT State Police (St. Albans Barracks)	**Richford Fire Department**
Name/Title: Maurice Lamothe, Lieutenant Address: 140 Fisher Pond Road, St. Albans, VT 05478 Phone: 802-524-5993 Email: maurice.lamothe@vermont.gov	Name/Title: Ken Pigeon, Chief Address: 48 Main Street, Richford, VT 05476 Phone: 802-848-7743 Email:
Richford Ambulance Service	
Name/Title:	

Phone: Address: Email:	
Roles and Responsibilities:	
Contractor	
Contractor	**Superintendent**
Name/Title: Address: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	
Contractors Competent Person	**Contractors Safety Officer**
Name/Title: Unit: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	

3.0 Preliminary Work Zone Impact Assessment

This preliminary assessment of work zone impacts should be developed in the early planning stages of the project to help identify issues or uncover problem areas that should be considered during project development.

Preliminary assessment of work zone impacts questionnaire:

Does the project include a long-term closure and/or an extended weekend closure? If Yes, what is/are the applicable type of facility(ies) being used to accommodate traffic?

- Yes, this project includes a bridge closure on a Rural Minor Collector. The AADT on VT 105A is 210 vehicles/day. There are no sidewalks leading up to or on the existing bridge.

Can traffic be detoured?

- Traffic from the Unites States side of the bridge will be detoured to VT 105 to VT 139 to the Richford-Abercorn border crossing on VT 139 in Richford, VT. During construction the US border crossing at the bridge project will remain open for traffic traveling on TH 39 adjacent to the project.
- It will be up to Canadian officials to determine the detour routes they wish to utilize on the Canadian side of the bridge during construction.
- Early coordination with the border patrol, police, and fire departments will result in the greatest success of the project closure.

Is the existing shoulder sufficient to support traffic during construction?

- The existing roadway is relatively narrow and has limited shoulders. In addition, the US border crossing station restricts the ability to build out the shoulders to support traffic on during construction.

Is additional width required on culverts or bridges to maintain traffic?

- Since the project includes an entire replacement of the approach span, significant work to the existing truss span, and lead paint removal, traffic on the bridge during construction as an option was not considered

Is there a pedestrian/bicycle facility that must be maintained?

- There are no sidewalks on the existing or the proposed bridge, so pedestrian traffic will not need to be maintained during construction.

Would a temporary structure(s) be required?

- Due to the 200-ft plus crossing of the Missisquoi River, the existing site does not allow for a temporary bridge either upstream or downstream. In addition, archaeological resources and a US border patrol station would prohibit the installation of a temporary bridge either upstream or downstream. Numerous US/ Canada border stations are located within a reasonable distance to warrant a bridge closure during construction.

Would a median crossover be needed?

- N/A

Would there be a need to maintain railroad traffic?

- N/A

Could maintenance of traffic have an impact on existing or proposed utilities?

- There are no aerial utilities located in the project are, so maintenance of traffic will not have an impact on the existing or proposed utilities.

Does it appear that maintenance of traffic will require additional Right-of-Way?

- No, detouring traffic will not require additional Right-of-Way. If a temporary bridge were constructed, additional Right-of-Way would be necessary.

Can the contractor restrict the roadway during the time periods listed?

- a.m. peak hours, one direction - Yes, an AADT of 210 would support one way alternating traffic with a minimal drop in Level of Service (LOS)
- p.m. peak hours, one direction - Yes, an AADT of 210 would support one way alternating traffic with a minimal drop in Level of Service (LOS)
- a.m. peak hours, both directions - only during the closure period
- p.m. peak hours, both directions - only during the closure period
- Overnight - only during the closure period
- Local celebrations - only during the closure period
- Holidays or weekends - only during the closure period
- Sporting events/other special events - only during the closure period

Will project timing (for example, start or end date) be affected by special events?

- No, the bridge closure will last an entire construction season.
- School closings or openings: The bridge closure will likely take place while school is in session.

- Holidays: No special consideration for holidays
- Special events: None Noted

Are there any projects to be considered along the corridor or in the region?

- Roadwork in the immediate area that may affect traffic or the contractor's operations?
  - None known of at this time
- Roadwork on other roads that may affect the use of alternate routes?
  - None known of at this time

Are there other maintenance of traffic issues? If so, specify.

- No.

4.0 Existing Conditions

This section provides an overview of the existing conditions within the project area, and includes:

- Roadway characteristics (history, roadway classification, number of lanes, geometrics, urban/suburban/rural).
  - Roadway Classification: Rural Minor Collector
  - Roadway Lane/Shoulder Widths and Bridge Lane/Shoulder Widths: 8'/1.5' (21') roadway, 10'/0' (20') bridge
- Historical traffic data (volumes, speed, capacity, volume/capacity, percent trucks, queue length, peak traffic hours).
  - A traffic study of this site was performed by the Vermont Agency of Transportation. The traffic volumes are projected for the years 2018 and 2038.

TRAFFIC DATA	2018	2038
AADT	210	240
DHV	25	30
ADTT	10	10
%T	5.3	6.8
%D	60	60

  - Design Speed: 25 mph
- Traffic operations (signal timing, traffic controls).
  - There is a signal for the US border crossing station located at the bridge project site.
- Crash data.
  - There are no recorded crashes in the project area.
- Pedestrian/bicycle facilities.
  - There are no sidewalks or bicycle facilities through the project area.
- Transit facilities.
  - There is currently no public transit route scheduled through the project area.
- Truck routes.

- This route sees very little truck traffic due to the clearance height of the thru truss and an additional overhead railroad crossing located along VT 105A. In addition, the bridge is posted for a weight limit of 5 tons.

- Local community and business concerns/issues.
  - Comments/concerns regarding traffic operations, delays, access/egress, etc., that have been received from community, business representatives, and stakeholders during the planning and design stages of the project development:
    - Canada has indicated that they may close their border crossing station located on their side of the bridge in order to perform renovations to the building. The US border crossing station anticipates remaining open during construction.
  - Specific concerns on pedestrian, bicycle, transit, facilities, etc.:
    - None noted at this time

5.0 Work Zone Impact Management Strategies

This section provides an overview of various strategies to be deployed to improve the safety and mobility of the work zone and reduce the work zone impacts on the road users, community, and businesses.

The strategies are grouped according to the following three categories.

1. Temporary Traffic Control (TTC).
2. Transportation Operations (TO).
3. Public Information and Outreach (PI&O).

5.1. Temporary Traffic Control (TTC)

A TTC plan describes temporary traffic control measures to be used for facilitating road users through a work zone or an incident area. The TTC plan plays a vital role in providing continuity of reasonably safe and efficient road user flow and highway worker safety when a work zone, incident, or other event temporarily disrupts normal road user flow. The TTC plan shall be consistent with the provisions of the MUTCD and AASHTO Roadside Design Guide.

Temporary Traffic Control (TTC)	Check if recommended for use
Control Strategies	
1. Construction phasing/staging	
2. Full roadway closures	**X**
3. Lane shifts or closures	**X**
4. One-lane, two-way controlled operation	
5. Two-way, one-lane traffic/reversible lanes	
6. Night work	
7. Weekend work	**X**
8. Work hour restrictions for peak travel	

9. Pedestrian/bicycle access improvements	X
10. Business access improvements	X
11. Off-site detours/use of alternate routes	X
Traffic Control Devices	
12. Temporary signs	X
13. Arrow boards	
14. Portable changeable message signs	X
15. Channelizing devices	
16. Temporary pavement markings	
17. Flaggers and uniformed traffic control officers	X
18. Automated Flagger Assistant Devices	
19. Temporary traffic signals	
20. Lighting devices	
21. Truck attenuators	
Project Coordination Strategies	
22. Other area projects	X
23. Utilities	X
24. Right-of-Way	X
25. Other transportation infrastructure	
Innovative or Accelerated Construction Techniques	
26. Prefabricated/precast elements	
27. Rapid cure materials	

5.2. Transportation Operations (TO)

The TO component shall include the identification of strategies to mitigate impacts of the work zone on the operation of the transportation system within the work zone impact area. The work zone impact area consists of the immediate work zone as well as affects to the surrounding roadways and communities. Additional information can be acquired from the "Workzone Safety and Mobility Guidelines" (WSMG) and "Appendix A" in the WSMG document.

Transportation Operations (TO)	Check if recommended for use
Demand Management Strategies	
1. Shuttle services for pedestrian traffic	
Corridor/Network Management Strategies	
2. Signal timing/coordination improvements	

3. Temporary traffic signals	
4. Street/intersection improvements	X
5. Bus turnouts	
6. Turn restrictions	
7. Parking restrictions	X
8. Truck/heavy vehicle restrictions	
9. Reversible lanes	
10. Dynamic lane closure system	
Work Zone Safety Management Strategies	
11. Speed limit reduction/variable speed limits	X
12. Temporary traffic signals	
13. Temporary traffic barrier	X
14. Movable traffic barrier systems	
15. Crash cushions	
16. Project task force/committee	
17. Construction safety supervisors/inspectors	X
18. Road safety audits	
19. TMP monitor/inspection team	X
Incident Management and Enforcement Strategies	
20. Media coordination	X
21. Local detour routes	X
22. Contract support for incident management	
23. Incident/Emergency management coordination	X
24. Incident/Emergency response plan	X
25. Dedicated (paid) police enforcement	
26. Cooperative police enforcement	

Contingency/Incident Management Plans—

It is best to develop the Contingency/Incident Management plan as a collaborative effort with the emergency response and the public safety community. Development of such a plan is crucial in the early phases to properly integrate the concerns of the first responder personnel.

5.3. Public Information and Outreach (PI&O)

The PI component shall include communication strategies that seek to inform the general public of work zone impacts and the changing condition of the project. The general public may include road users, area

residences and businesses, and other public entities. Examples of communications strategies that may be used to satisfy the PI component may be found at:
http://www.ops.fhwa.AOT.gov/wz/rule_guide/sec6.htm#sec63.

Public Information and Outreach can be important for the success of bridge closure projects. This project will create a short term impact to travelers, businesses, residents, and truckers. Properly informing these stakeholders of what to expect during construction will ensure proper public support and reduce problems during construction. The following measures can be used:

- Factsheets
  - A project factsheet can be used to show the detour routes, if any, describe the project and why and when it is taking place.
- Business concerns/issues
- Public Input and Surveys
- Social Media to inform the public

Public Information and Outreach (PI&O)	Check if recommended for use
Public Awareness Strategies	
1. Brochures and mailers	
2. Press releases/media alerts	**X**
3. Telephone hotline	
4. Planned lane closure website	
5. Project website	
6. Public meetings/hearings, workshops	**X**
7. Community task forces	
8. Coordination with media/schools/business/emergency services	**X**
9. Email alerts	**X**
Motorist Information Strategies	
10. Changeable message signs	**X**
11. Temporary motorist information signs	**X**
12. Dynamic speed message sign	
13. Project information hotline	

6.0 Notes

Any additional notes on selected strategies, the TMP in general, or any item requiring special attention for the project can be provided in this section.

This section should include meeting notes or conversation notes where decisions pertaining to the TMP are made.

7.0 TMP Summary

This summary should include a brief description of the traffic management strategies selected for use on the project as well as important contact information. This summary should be included in the contract documents.

TMP Summary

- The following temporary traffic control (TTC) measures have been identified for use though the construction area.
    - Control Strategies: During construction the bridge will be closed to traffic. The selection and signing of the offsite detour will be the responsibility of the contactor based off the desired routes by US and Canadian officials.
    - Traffic Control Devices: Traffic Barriers and "Road Closed" signs will be deployed during the closure to protect cars from driving into the construction site.
- The following transportation operations (TO) measures have been identified for use for mitigation of impacts to the work zone and the surrounding roadway network
    - Incident Management and Enforcement Strategies: The media should be coordinated with to inform the public of any delays that occur due to unexpected incidents, Emergency response personnel should be aware of the local routes available in case of emergency, and an Incident/Emergency response plan should be drafted and coordinated with emergency personnel.

Public Information and Outreach Summary

The following measures are recommended to warn the public of the possible impacts to them:

- Public meetings prior to the closure should be held in order to notify the public what to expect during the closure, and to hear concerns.
- Factsheets
- Public Input and Surveys
- Social Media to inform the public of upcoming impacts and changes in traffic patterns

Contacts

Design Project Manager: Carolyn Carlson, 802-828-0048
Resident Engineer: TBD
Regional Engineer: Chris Williams, 802-281-5000
Public Information Officer: TBD
Richford Fire Department: Ken Pigeon(Chief), 802-848-7743
VT State Police Services: Maurice Lamothe (Lieutenant, St. Albans Barracks), 802-524-5993
Ambulance Service: TBD
Contractor: TBD
Superintendent: TBD
Contractors Competent Person: TBD
Contractor Safety Officer: TBD

8.0 TMP Review/Approvals

TMPs, and changes to TMPs, can be submitted for review by the Transportation Systems Management & Operations (TSMO) section at AOT before they are implemented. Review of the TMP by AOT prior to implementation is not mandatory, but is highly encouraged.

TSMO Contacts
AOT - Transportation Systems Management & Operations (TSMO)
Name/Title: Amy Gamble, PE\Traffic Operations Engineer Address: 1 National Life Drive, Montpelier, VT 05633-5001 Phone: 802-477-3251 Email: amy.gamble@vermont.gov
Roles and Responsibilities: Review of Traffic Management Plans

The approval of the TMP should be based on conformance of the TMP with the Work Zone Safety and Mobility Guide.

Regional Construction Engineer			Traffic Operations Engineer			Project Manager		
All approvals must be obtained prior to the start of work								
Signature: Name: Date:			Signature: Name: Date:			Signature: Name: Date:		
Revision#	Initials	Date	Revision #	Initials	Date	Revision#	Initials	Date
1			1			1		
2			2			2		

9.0 Appendices

Future appendices could include:

- Traffic Counts
- Temporary Traffic Control Plans
- Public Information and Outreach Plan
- TMP Review Notes
- Project Monitoring Form or Post-Project Evaluation Form.

LEVEL 1 - RISK REGISTER				Project Name:	Richford-Sutton BHF 0814(1), VT 105A, Bridge 3 over the Missisquoi River		Bridge Rehabilitation On Alignment with an Offsite Detour		Project Manager	Carolyn Carlson		
Risk Identification							Risk Rating		Risk Response			
Status	ID #	Type	Category	Title	Risk Statement	Current status/assumptions	Priority Rating	Rationale for Rating	Strategy	Response Actions	Risk Owner	Updated
Active	1	Threat	ROW	Right-of-Way	If the ROW process is lengthy, then Project Development time could be effected	Proposed work falls within state ROW. May be possible ROW acquisition in Canada or along gravel side road TH 39 which wasn't surveyed	Low	5 year Project Development should leave ample time for ROW Process			C. Carlson	7/28/2016
Active	2	Threat	Environmental	Historic Resource Mitigation	If section 106 and section 4(f) permits are difficult to obtain, then Project Development time could be effected		Medium				C. Carlson	7/28/2016
Active	3	Threat	Environmental	Historic Resource Mitigation	If the existing truss characteristics are not documented properly, then replicating the structure will be difficult	Field measurements and record plans will be used to ensure new truss components replicate historic truss as closely as possible	Medium				C. Carlson	7/28/2016
Active	4	Threat	Environmental	Archaeological Resources	If construction goes outside the project limits, then archaeologically sensitive resources could be impacted which could be costly	Barrier fence will confine the construction within the project limits. It is anticipated that any archaeological sensitive areas are well outside project limits.	Low				C. Carlson	7/28/2016
Active	5	Threat	Design	Drainage	If drainage details are not properly designed, then there could be ponding water on the structure	Stone fill will protect the embankments and ditches will be constructed to channel runoff	Low				C. Carlson	7/28/2016
Active	6	Threat	Design	United States and Canada cooperation	The bridge crosses the border between Vermont and the Province of Quebec, Canada with approximately 80% of the bridge in the US and 20% in Canada	Since Vermont owns the majority of the bridge they are responsible for the design of the project but will need to coordinate with Quebec on the design and contract specifications	Low				C. Carlson	7/28/2016
Active	7	Threat	PM	Project Advertisement	If the project is not advertised on time, then construction year could be delayed		Low	5 year Project Development should leave ample time for ROW Process			C. Carlson	7/28/2016
Active	8	Threat	PM	Bidding Process	Since this is a international bridge both US and Canadian contractors will be bidding for the job	It will be important to determine which rules will apply such as By America, Davis Bacon Act, Equal Opportunity, Canadian laws regarding past DUI convictions, etc.	Low				C. Carlson	7/28/2016
Active	9	Threat	Construction	Clean and Painting	The truss contains lead that will need to be removed and repainted	Lead removal will be included in the contract and will be contained during construction	Low				C. Carlson	7/28/2016
Active	10	Threat	Construction	Truss Rehabilitation	Without having a thorough inspection and removing the layers of paint on the truss it will be impossible to identify all the members that can be salvaged or need to be replaced prior to construction.	Contract will be written to include the major members to be salvaged vs replaced but also include language to replace members that are determined deficient by the resident engineer during construction	Medium	There is potential for more of the truss being replaced than anticipated, especially if contractor indicates that splicing of members is more work and more expensive than replacing the entire member			C. Carlson	7/28/2016
Active	11	Threat	Construction	Truss Connections	The existing truss is made up of built up sections and structural steel beam types that are no longer in use	New truss members will need to be fabricated to as close as existing members	Low				C. Carlson	7/28/2016
Active	12	Threat	Construction	Emergency Response During Closure	If the bridge is closed, Emergency response time could be lengthened	Coordination with Emergency Services to mitigate this risk is encouraged	Low				C. Carlson	7/28/2016
Active	13	Threat	Construction	Traffic Congestion	If traffic is detoured, then traffic congestion could occur at intersections along the detour	Traffic at the project location is not very high, so transferring volume to other intersections and roads won't have much affect.	Low				C. Carlson	7/28/2016
Active	14	Threat	Construction	Reopening Bridge Late	If the bridge is not opened on time, then construction could last a second season increasing the overall cost of the project	Contact agreement will include deadlines	Low				C. Carlson	7/28/2016