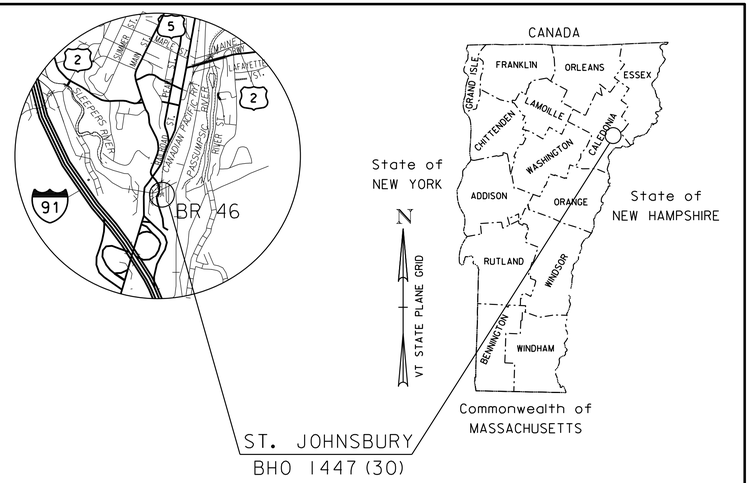
STATE OF VERMONT
AGENCY OF TRANSPORTATION



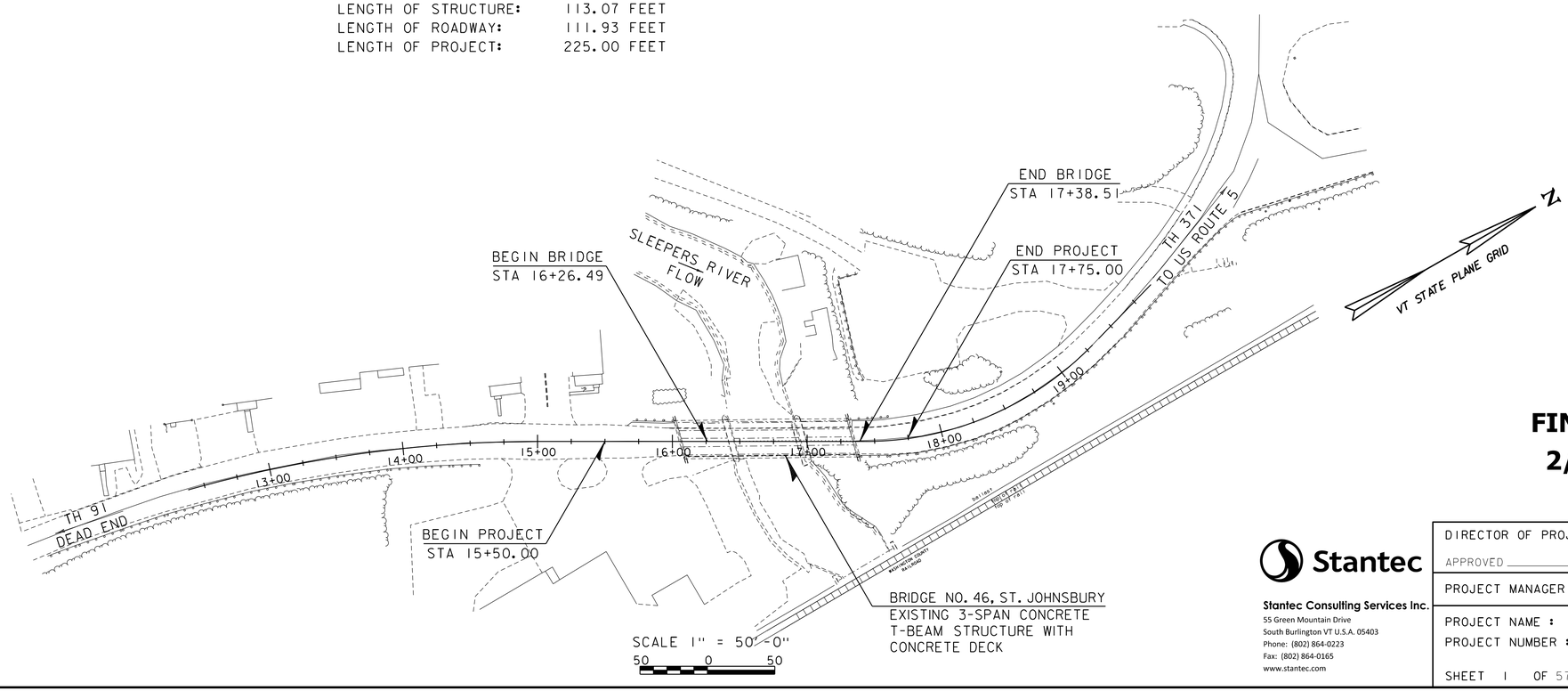
PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF ST. JOHNSBURY
COUNTY OF CALEDONIA
TH 371, RURAL LOCAL ROAD, CLASS 3 TOWN HIGHWAY
BRIDGE NUMBER 46

PROJECT LOCATION: THE PROJECT IS LOCATED ON TH 371 (MAIN STREET), APPROXIMATELY 0.1 MILES SOUTH OF JUNCTION WITH US ROUTE 5

PROJECT DESCRIPTION: DEMOLITION OF EXISTING BRIDGE, AND REPLACEMENTWITH A NEW BRIDGE ON THE EXISTING ALIGNMENT, WITH ASSOCIATED ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE: 113.07 FEET
LENGTH OF ROADWAY: 111.93 FEET
LENGTH OF PROJECT: 225.00 FEET



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

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY :	L. ORVIS
SURVEYED DATE :	5/16/2012
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD 83 (96)

FINAL PLANS
2/27/2015

Stantec
Stantec Consulting Services Inc.
55 Green Mountain Drive
South Burlington VT U.S.A. 05403
Phone: (802) 864-0223
Fax: (802) 864-0165
www.stantec.com

DIRECTOR OF PROJECT DELIVERY	
APPROVED _____	DATE _____
PROJECT MANAGER :	DANNY LANDRY
PROJECT NAME :	ST. JOHNSBURY
PROJECT NUMBER :	BHO 1447(30)
SHEET 1	OF 57 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

INDEX OF SHEETS

PLAN SHEETS

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STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	08-29-2011
SD-601.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	06-04-2010
SD-602.00	STRUCTURAL STEEL DETAILS AND NOTES	05-02-2011

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: July 2014

DRAINAGE AREA : 46.5 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous, mixture of forested and open land cover.
STREAM CHARACTERISTICS : Incised, alluvial, sinuous to meandering. Some armored banks.
NATURE OF STREAMBED : Silt, sand, gravel and some stones

PEAK FLOW DATA

Q 2.33 =	1,500 cfs	Q 50 =	5,400 cfs
Q 10 =	3,200 cfs	Q 100 =	6,600 cfs
Q 25 =	4,400 cfs	Q 500 =	10,000 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q25 = 7.0 fps
ICE CONDITIONS : Moderate
DEBRIS: Slight to moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
IF YES, DESCRIBE: Railroad bridge 100' downstream & confluence with Passumpsic River 700' downstream, affect hydraulics at the site.

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3 span concrete T-beam bridge
YEAR BUILT: 1929
CLEAR SPAN(NORMAL TO STREAM): 33' + 48' + 33' = 114' total
VERTICAL CLEARANCE ABOVE STREAMBED: 21'
WATERWAY OF FULL OPENING: 1,130 sq. ft.
DISPOSITION OF STRUCTURE: Remove and replace with new bridge
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	542.8'	VELOCITY =	7.0 fps
Q10 =	550.9'	"	5.8 fps
Q25 =	552.2'	"	7.5 fps
Q50 =	553.8'	"	8.3 fps
Q100 =	555.0'	"	9.5 fps

LONG TERM STREAMBED CHANGES: The streambed through the bridge has lowered 2' to 3' since 1928, based on a comparison between record plans and the current conditions.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 554.4'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: St. Johnsbury — DISTANCE: 1,150'
HIGHWAY # : US 5 — STRUCTURE #: 127
CLEAR SPAN: 2 spans at 20' each = 40' total — CLEAR HEIGHT: 24'
YEAR BUILT: 1975 — FULL WATERWAY: 960 sq. ft.
STRUCTURE TYPE: Twin cell concrete box

DOWNSTREAM STRUCTURE

TOWN: St. Johnsbury — DISTANCE: 100'
HIGHWAY # : Washington County Railroad — STRUCTURE #:
CLEAR SPAN: 48' — CLEAR HEIGHT: 14'
YEAR BUILT: — FULL WATERWAY: 570 sq. ft.
STRUCTURE TYPE: Single span side girder bridge

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam bridge

CLEAR SPAN(NORMAL TO STREAM): 105'
VERTICAL CLEARANCE ABOVE STREAMBED: 20'
WATERWAY OF FULL OPENING: 1570 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	543.1'	VELOCITY=	7.1 fps
Q10 =	550.8'	"	5.3 fps
Q25 =	551.9'	"	6.6 fps
Q50 =	553.4'	"	7.2 fps
Q100 =	554.7'	"	7.9 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 554.4'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 557.1'
VERTICAL CLEARANCE: @ Q25 = 5.2'

SCOUR: Total contraction scour and long term stream degradation = 4' at Q100'.
Contraction scour is 1' and there is a potential for 3' of long term stream degradation.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	95 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	45 cfs	Elevation 537'
ORDINARY HIGH WATER:	640 cfs	Elevation 541'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge
CLEAR SPAN (NORMAL TO STREAM): 75' minimum
VERTICAL CLEARANCE ABOVE STREAMBED: Minimum elev. 552.0' on low end*
WATERWAY AREA OF FULL OPENING: 1,130 sq ft.

ADDITIONAL INFORMATION

* Temporary bridge minimum average bottom of beam elevation 554.0'.
**Hydraulics at this site is affected by water backing up from the Passumpsic River. This report is based on equal frequency floods on both the Sleepers River and that river. Velocities will be higher than reported when the the Passumpsic River is at lower levels.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN ONE-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. INSTALL AND MAINTAIN TRAFFIC SIGNALS.
3. INSTALL SIDEWALKS ON THE LEFT SIDE OF THE BRIDGE
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_p:	0.0 INCH
3. DESIGN SPAN	L:	111.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y:	270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	10.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	8.0 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	4.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	3.0 KSI
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270	f_y:	- - -
14. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	- - -
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
16. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	- - -
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
18. PILE RESISTANCE FACTOR	ϕ:	0.65
19. LATERAL PILE DEFLECTION	Δ:	0.50 INCH
20. BASIC WIND SPEED	V_{3s}:	- - -
21. MINIMUM GROUND SNOW LOAD	p_g:	- - -
22. SEISMIC DATA — PGA: 0.65	S_s:	18 %g
	S_1:	5%g
23.		
24.		- - -
25.		18 %g
26.		5%g

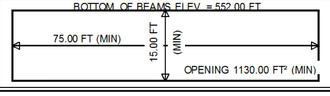
LRFR LOAD RATING FACTORS

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	1.38	1.01					
POSTING							
OPERATING	1.79	1.51	1.65	1.03	1.64	1.45	1.47
COMMENTS:							

AS BUILT "REBAR" DETAIL

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

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY	Rndr:	692.00 KIP
2. PILE TEST RESISTANCE FACTOR	ϕ:	0.65
3. MAXIMUM PILE TIP ELEVATION		459.50 FT
4. 0		

TRAFFIC DATA

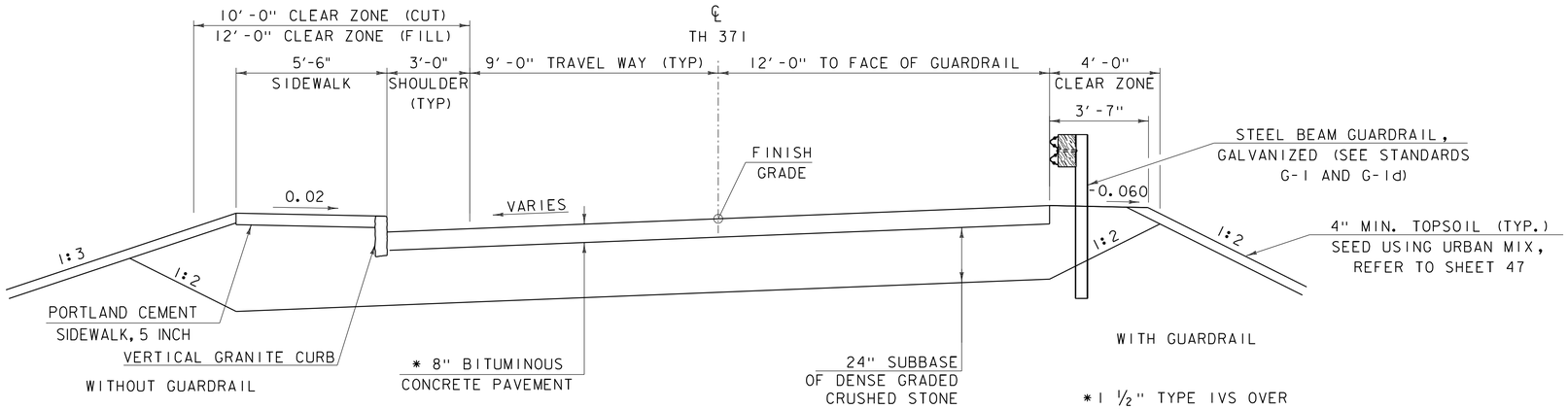
YEAR	ADT	DHV	% D	% T	ADTT
2015	1200	160	54	5.5	160
2035	1200	160	54	6.9	200

20 year ESAL for flexible pavement from 2015 to 2035 : 0
40 year ESAL for flexible pavement from 2015 to 2055 : 0
Design Speed : 30 mph

PROJECT NAME: **ST. JOHNSBURY**
PROJECT NUMBER: **BHO 1447(30)**

FILE NAME: st johnsbury pi.xls
PROJECT LEADER: Mike Chenette
DESIGNED BY: G. Bogue
PRELIMINARY INFORMATION SHEET

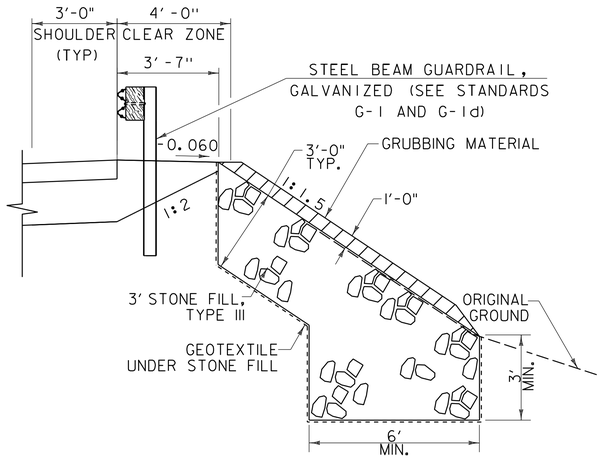
PLOT DATE: 2/25/2015
DRAWN BY: L. Buxton
CHECKED BY: M. Chenette
SHEET 2 OF 57



* 1 ½" TYPE IVS OVER
1 ½" TYPE IVS OVER
2 ½" TYPE IIS OVER
2 ½" TYPE IIS

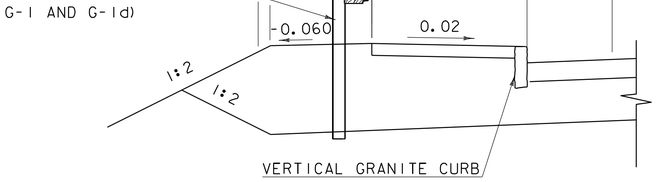
TH 371 ROADWAY TYPICAL SECTION

SCALE: ⅜" = 1'-0"

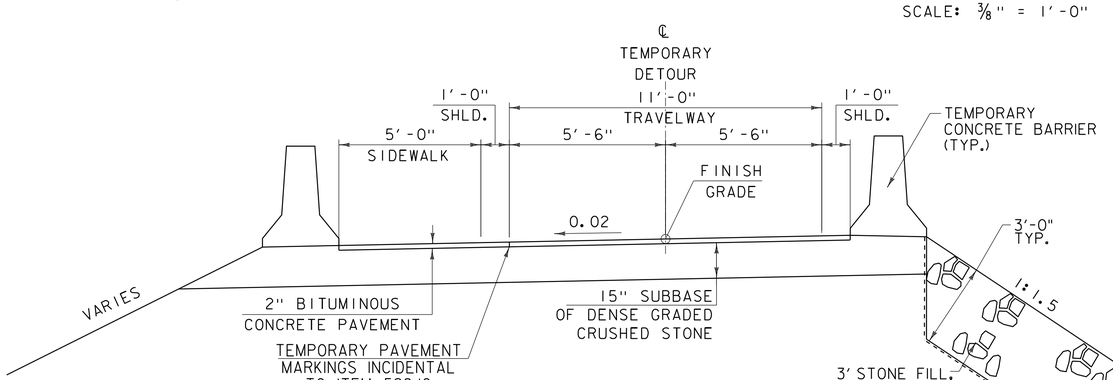


STEEP SLOPES TYPICAL

SCALE: ⅜" = 1'-0"



SIDEWALK WITH GUARDRAIL TYPICAL SECTION

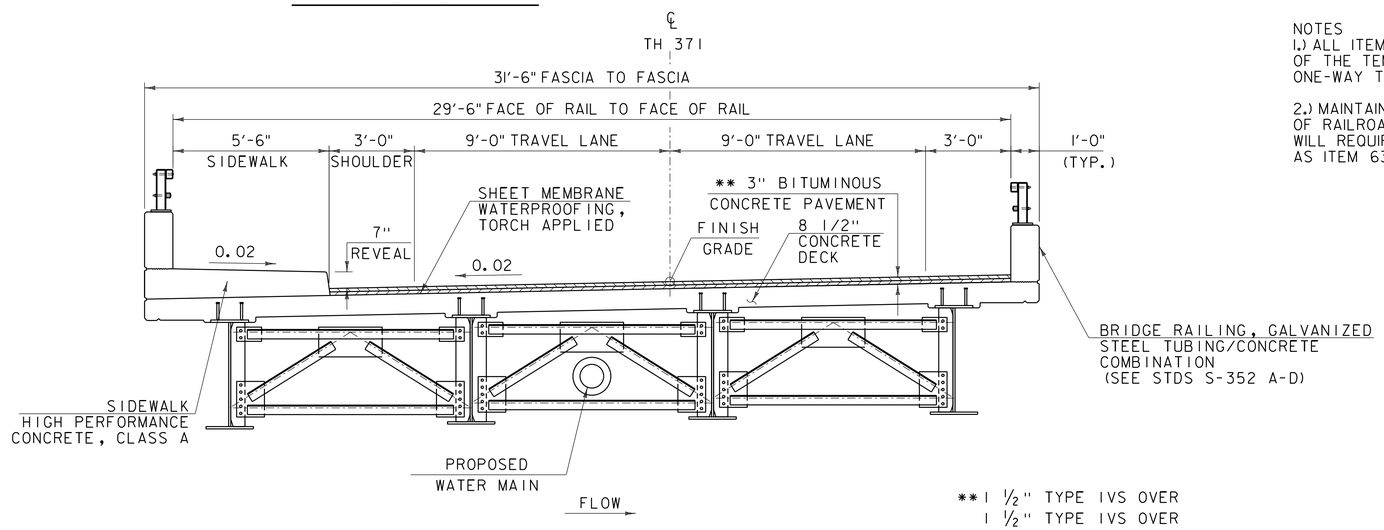


TEMPORARY DETOUR TYPICAL

SCALE: ⅜" = 1'-0"

NOTES
1.) ALL ITEMS ASSOCIATED WITH THE CONSTRUCTION AND REMOVAL OF THE TEMPORARY DETOUR SHALL BE PAID AS ITEM 528.10 ONE-WAY TEMPORARY BRIDGE.

2.) MAINTAIN MINIMUM CLEARANCE OF 9'-0" FROM CENTERLINE OF RAILROAD TRACKS. ALL WORK WITHIN RAILROAD FOUL ZONE WILL REQUIRE RAILROAD FLAGGERS ON SITE AND WILL BE PAID AS ITEM 630.20 FLAGGERS, RAILROAD.



** 1 ½" TYPE IVS OVER
1 ½" TYPE IVS OVER

BRIDGE TYPICAL SECTION

SCALE: ⅜" = 1'-0"

MATERIAL TOLERANCES

(IF USED ON PROJECT)

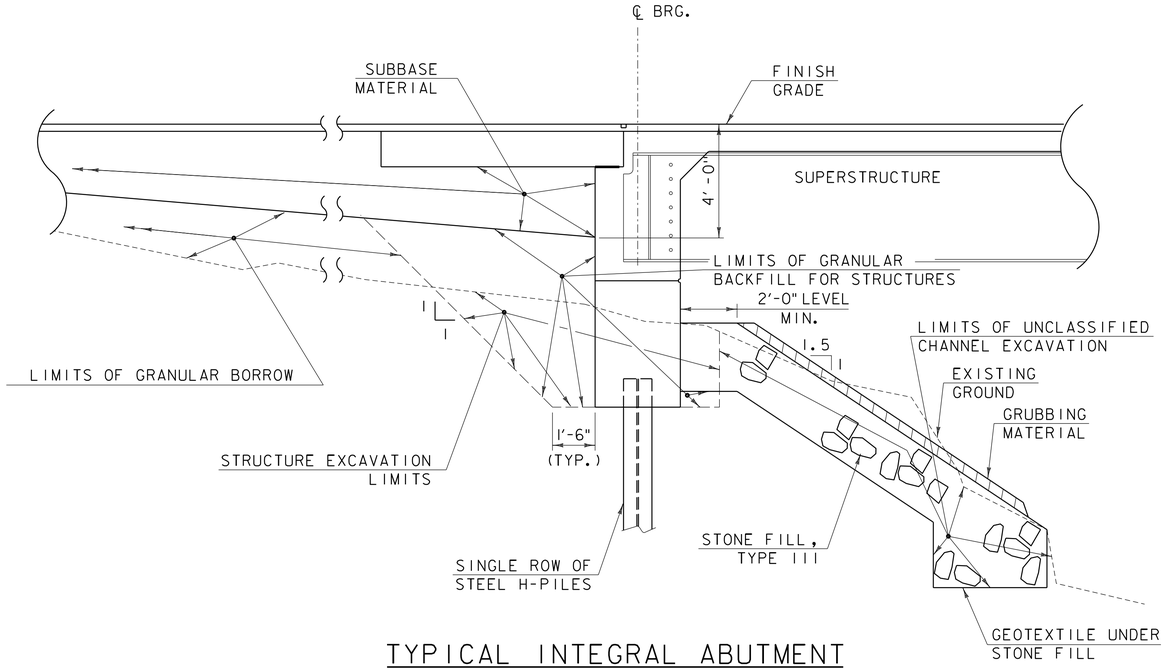
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
GRANULAR BORROW	+/- 1"

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12J164typ.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: J. HUNGERFORD
TYPICAL SECTIONS - TYP 1

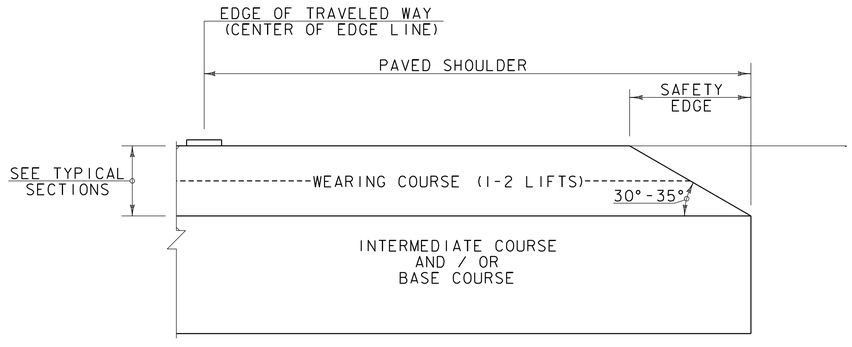
PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: M. CHENETTE



TYPICAL INTEGRAL ABUTMENT EARTHWORKS SECTION

(NOT TO SCALE)

ACTUAL LIMITS OF STRUCTURE EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25 (STRUCTURE EXCAVATION". EXCAVATION BY THE CONTRACTOR OUTSIDE OF THESE LIMITS WILL BE AT THE EXPENSE OF THE CONTRACTOR.



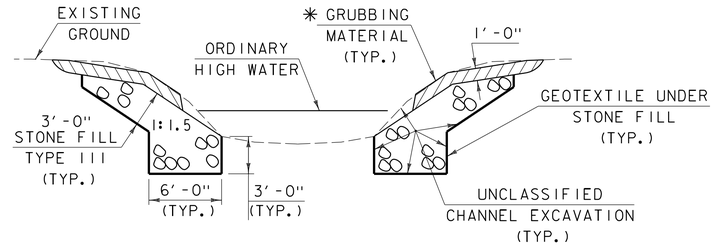
SAFETY EDGE DETAIL

NOT TO SCALE

NOTES:

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

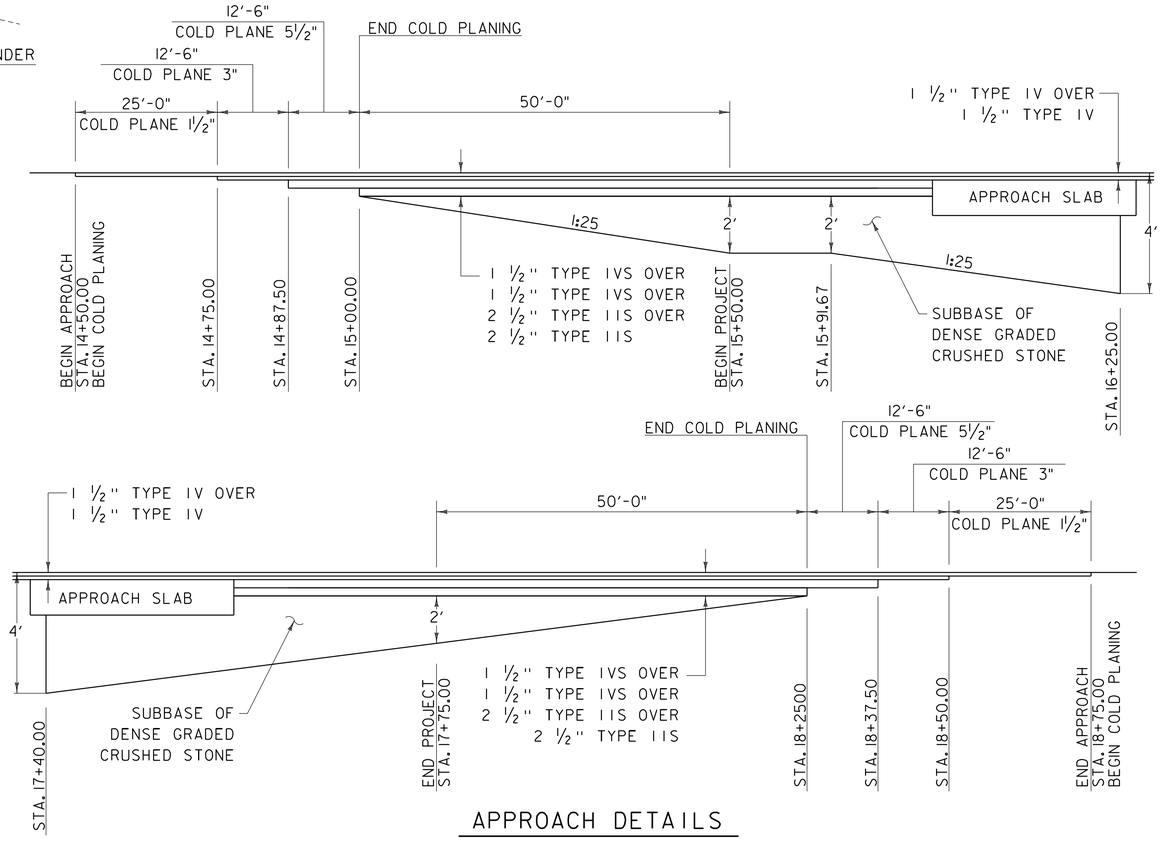
2. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".



CHANNEL TYPICAL SECTION

NOT TO SCALE

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



APPROACH DETAILS

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164typ.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: J. HUNGERFORD	CHECKED BY: M. CHENETTE
TYPICAL SECTIONS - TYP 2	SHEET 4 OF 57

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION, 2011 STANDARD SPECIFICATIONS AND IT'S LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2012, AND IT'S LATEST REVISIONS.
2. THE BRIDGE IS DESIGNED FOR HL93 LIVE LOAD.
3. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.

EARTHWORK & REMOVAL OF BRIDGE

4. ITEM 529.15 "REMOVAL OF STRUCTURE" IS FOR THE REMOVAL OF THE EXISTING STRUCTURE INCLUDING THE SUPERSTRUCTURE, ABANDONED UTILITIES AND APPURTENANCES, PIERS AND ABUTMENTS INCLUDING THE FOOTING AND ANY PORTION OF THE SUBSTRUCTURE OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION.
5. THE AREA DISTURBED BY THE TEMPORARY DETOUR OUTSIDE THE LIMITS OF THE PERMANENT CONSTRUCTION SHALL BE SEEDED AND MULCHED AFTER ALL THE FILL IS REMOVED TO THE ORIGINAL GROUND SURFACE. THE COST OF THE SEED, FERTILIZER, AND MULCH WILL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS.
6. ITEM 613.12 STONE FILL, TYPE III SHALL BE PLACED IN FRONT OF THE ABUTMENTS BEFORE THE STRUCTURAL STEEL HAS BEEN SET.

CONCRETE

7. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH BY 1 INCH, UNLESS OTHERWISE NOTED.
8. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
9. ITEM 501.33, "CONCRETE, HIGH PERFORMANCE CLASS A" SHALL BE USED FOR THE DECK, INTEGRAL ABUTMENT CURTAIN WALL AND WINGWALLS ABOVE THE PILE CAP CONSTRUCTION JOINT. ITEM 501.34, "CONCRETE, HIGH PERFORMANCE CLASS B SHALL BE USED BELOW THE PILE CAP CONSTRUCTION JOINT AND FOR THE APPROACH SLABS.
10. DECK POUR SEQUENCE: THE MAIN PORTION OF THE DECK SHALL BE PLACED PRIOR TO PLACING THE BRIDGE ENDS (ENDS OF DECK AND INTEGRAL CURTAIN WALLS). THERE SHALL BE A MINIMUM OF 96 HOURS BETWEEN COMPLETION OF THE MAIN PORTION OF THE DECK AND THE BRIDGE ENDS.
11. THE COST OF INSTALLING PVC WATERSTOPS, AS SHOWN IN THE PLANS, SHALL BE INCIDENTAL TO ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B". THE TYPE OF PVC WATERSTOP TO BE USED SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
12. ITEM 514.10 "WATER REPELLENT, SILANE" SHALL BE APPLIED TO ALL EXPOSED CONRETE SURFACES EXCEPT THE UNDERSIDE OF THE DECK BETWEEN THE DRIP NOTCHES.
13. CLEAR COVER ON REINFORCING STEEL SHALL BE PER THE FOLLOWING TABLE UNLESS NOTED OTHERWISE.

LOCATION	CLEAR COVER (INCHES)
UNDERSIDE OF BRIDGE DECK	1.5
EXPOSED TO EARTH OR WEATHER	2
TOP OF PAVED BRIDGE DECK	2.5
DIRECT EXPOSURE TO DEICING SALTS (CURBS, SIDEWALK AND RAILING)	3
CAST AGAINST EARTH	3

14. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".
15. ALL REINFORCING STEEL SHALL MEET THE REQUIREMENTS FOR LEVEL II CORROSION RESISTANCE REINFORCING STEEL IN ACCORDANCE WITH SECTION 507.
16. IN ACCORDANCE WITH SUBSECTION 506.23 (A) OF THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL TAKE MEASURES NECESSARY TO PROTECT ALL SUBSTRUCTURE CONCRETE FROM STAINING DUE TO OXIDE FORMATION ON THE STRUCTURAL STEEL PRIOR TO PLACEMENT OF THE DECK. THESE MEASURES WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B". ANY SUCH STAINING THAT OCCURS PRIOR TO DECK PLACEMENT SHALL BE REMOVED AT NO ADDITIONAL COST TO THE STATE.
17. SCREED RAIL SUPPORTS REQUIRED FOR THE PLACEMENT OF THE DECK SLAB CONCRETE SHALL BE LOCATED AT THE CENTERLINE OF THE GIRDER OR SUPPORTED ON OVERHANG BRACKETS. IF THE SCREED RAIL IS SUPPORTED ON OVERHANG BRACKETS, DRAWINGS AND DATA FOR THE OVERHANG BRACKETS SHALL BE SUBMITTED FOR DOCUMENTATION. A CONCRETE WEIGHT OF 150 PCF AND A LIVE LOAD OF 50 PCF SHALL BE USED IN CALCULATIONS. ADEQUATE PROVISIONS SHALL BE MADE FOR THE SCREED MACHINE LOADS. CALCULATIONS SHALL DEMONSTRATE THE STRUCTURAL ADEQUACY OF THE OVERHANG BRACKETS AND SHALL PROVE THAT CONCRETE COVER IN THE DECK WILL BE MAINTAINED.

STRUCTURAL STEEL

18. ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M 270M/M270, GRADE 50.
19. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.
20. BEAM WEBS SHALL BE PLUMB IN FINAL POSITION.
21. CHARPY V-NOTCH TEST: TEST STRUCTURAL STEEL MEMBERS DESIGNATED "CVN" IN THE PLANS IN ACCORDANCE WITH SUBSECTION 714.01.
22. BOLTS FOR ALL BOLTED FIELD CONNECTIONS SHALL BE 7/8 INCH DIAMETER HIGH STRENGTH BOLTS IN 15/16 INCH DIAMETER HOLES UNLESS OTHERWISE NOTED.
23. CONNECTIONS NOT SHOWN IN THE PLANS SHALL BE DETAILED BY THE FABRICATOR IN THE FABRICATION DRAWINGS AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
24. AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF GIRDERS SHALL BE TAKEN UNDER DIRECTION OF THE ENGINEER FOR USE IN DETERMINING THE FINAL GRADE AND HAUNCH DEPTHS.
25. HOLES IN WEB: FILL ANY BOLT HOLES IN THE WEBS OF THE BEAMS NOT OTHERWISE FILLED WITH BUTTON HEAD OR HEX HEAD BOLTS MEETING AASHTO M164 TYPE III. TIGHTEN THE BOLTS IN ACCORDANCE WITH SUBSECTION 506.19 OF THE STANDARD SPECIFICATIONS.

PILE NOTES

26. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AND ARE SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.
27. THE PILE SHALL BE HP14 x 89, GRADE 50.
28. PILE SHOES SHALL BE REQUIRED AND SHALL CONFORM TO SECTION 505.
29. THE REQUIRED NOMINAL AXIAL DRIVING RESISTANCE (RNDR) FOR THE PILES IS 692 KIPS PER PILE BASED ON AN APPLIED FACTORED AXIAL LOAD OF 450 KIPS PER PILE AND A DYNAMIC RESISTANCE FACTOR (ΦDYN) OF 0.65. TO ENSURE THAT THE NOMINAL RESISTANCE HAS BEEN ATTAINED AND TO PREVENT THE OVERSTRESSING OF THE PILES DURING DRIVING OPERATIONS, DYNAMIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 505.04 OF THE STANDARD SPECIFICATIONS. PAYMENT FOR PILE TESTING SHALL BE MADE UNDER ITEM 505.45 "DYNAMIC PILE LOAD TEST". A MINIMUM OF ONE DYNAMIC TEST SHALL BE CONDUCTED ON THE FIRST PILE DRIVEN FOR EACH ABUTMENT FOR A TOTAL OF TWO TESTS. MORE TESTS MAY BE REQUIRED BY THE ENGINEER.

TEMPORARY BRIDGE AND APPROACHES

30. TRAFFIC WILL BE MAINTAINED ON A ONE-WAY TEMPORARY BRIDGE. THE BRIDGE SHALL HAVE A SIDEWALK FOR PEDESTRIAN TRAFFIC.
31. THE DETOUR CURVES SHALL BE DESIGNED FOR A MINIMUM OF 25 MPH. ADVISORY SIGNS SHALL BE POSTED IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 528.10 "ONE-WAY TEMPORARY BRIDGE".

WATER MAIN RELOCATION

32. WATER MAIN RELOCATION WORK SHALL CONSIST OF THE CONSTRUCTION AND RELOCATION OF THE EXISTING 10" DUCTILE IRON (DI) WATER MAIN WITH A NEW PERMANENT 10" DI WATER MAIN SUPPORTED UNDER THE NEW BRIDGE.

    THE RELOCATION WORK SHALL INCLUDE, BUT IS NOT LIMITED TO, INSTALLATION OF TWO (2) NEW PERMANENT TAPPING SLEEVES WITH TAPPING VALVES, NEW TEMPORARY UNDERGROUND 10" DI WATER MAIN, NEW TEMPORARY BLOW-OFF, AND NEW TEMPORARY 10" DI WATER MAIN SUSPENDED UNDER THE NEW TEMPORARY BRIDGE, FOLLOWED BY CONSTRUCTION OF NEW 10" DI UNDERGROUND WATER MAIN PIPING CONNECTED TO NEW 10" DI WATER MAIN SUPPORTED UNDER THE NEW BRIDGE.

    ANCILLARY WORK INCLUDES INSTALLATION OF TWO (2) NEW IN-LINE GATE VALVES, RELOCATION OF EXISTING FIRE HYDRANT, WATER SERVICE CONNECTION TO EXISTING PROPERTY, MAINTAINING AND TRANSFERRING THE EXISTING SYSTEM PIPING TO THE NEW WATER SYSTEM PIPING, AND REMOVAL OF ALL ASSOCIATED EXISTING AND TEMPORARY WATER MAIN PIPING.

    SEE WATER PROFILE, TEMPORARY UTILITY PLAN, UTILITY PLAN AND WATER DETAIL SHEETS FOR ADDITIONAL DETAILS.

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164brg_nts.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: T. KNIGHT
GENERAL NOTES

PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: M. CHENETTE

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES								TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	UTILITIES	EROSION CONTROL	BRIDGE NO. 46	FULL C.E. ITEMS				GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
1								1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	-			
750								750		CY	COMMON EXCAVATION	203.15	-			
			1400					1400		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	-			
40								40		CY	GRANULAR BORROW	203.32	-			
1								1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	-			
			160					160		CY	STRUCTURE EXCAVATION	204.25	-			
			130					130		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	-			
270								270		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	-			
675								675		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	-			
9								9		CWT	EMULSIFIED ASPHALT	404.65	-			
1								1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	-			
			210					210		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	-			
			100					100		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	-			
			1					1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10	-			
			760					760		LF	STEEL PILING, HP 14 X 89	505.18	-			
			109000					109000		LB	STRUCTURAL STEEL, PLATE GIRDER	506.55	-			
			49568					49568		LB	REINFORCING STEEL, LEVEL II	507.12	-			
			30					30		GAL	WATER REPELLENT, SILANE	514.10	-			
			50					50		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	-			
			299					299		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20	-			
			50					50		LF	JOINT SEALER, HOT POURED	524.11	-			
			225					225		LF	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	525.45	-			
			1					1		LS	ONE-WAY TEMPORARY BRIDGE (1600 SF - EST.)	528.10	-			
			1					1		EACH	REMOVAL OF STRUCTURE (3700 SF - EST.)	529.15	-			
			8					8		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17	-			
20								20		LF	18" CPEP(SL)	601.2615	-			
1								1		EACH	18" CPEPES	601.7015	-			
1								1		EACH	PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE	604.18	-			
	1							1		EACH	CHANGING ELEVATION OF SEWER MANHOLES	604.42	-			
10								10		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25	-			
10								10		HR	TRUCK RENTAL	608.37	-			
1270								1270		CY	STONE FILL, TYPE III	613.12	-			
205								205		LF	VERTICAL GRANITE CURB	616.21	-			
1								1		EACH	RELOCATE MAILBOX, SINGLE SUPPORT	617.10	-			
110								110		SY	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH	618.10	-			
225								225		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20	-			
3								3		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60	-			
			4					4		EACH	GUARDRAIL APPROACH SECTION, CONC COMB BRIDGE RAILING TL-3	621.748	-			
150								150		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	-			
	3							3		EACH	ADJUST ELEVATION OF VALVE BOX	629.20	-			

Stantec

PROJECT NAME: ST JOHNSBURY
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FILE NAME: z12j164frm.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. YOULEN
QUANTITY SHEET 1- QTY 1

PLOT DATE: 2/27/2015
DRAWN BY: C. GENDRON
CHECKED BY: N. TIRK
SHEET 6 OF 57

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES							TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	UTILITIES	EROSION CONTROL	BRIDGE NO. 46	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
	1				1		EACH	RELOCATE HYDRANT	629.29	-			
	1				1		LS	TRANSFER TO NEW SYSTEM, WATER SYSTEM	629.42	-			
20					20		HR	UNIFORMED TRAFFIC OFFICERS	630.10	-			
200					200		HR	FLAGGERS	630.15	-			
100					100		HR	FLAGGERS, RAILROAD	630.20	-			
				1	1		LS	FIELD OFFICE, ENGINEERS	631.10	-			
				1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16	-			
				1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17	-			
				3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26	-			
1					1		LS	MOBILIZATION/DEMOBILIZATION	635.11	-			
4					4		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	-			
850					850		LF	DURABLE 4 INCH YELLOW LINE	646.410	-			
1300					1300		SY	GEOTEXTILE UNDER STONE FILL	649.31	-			
		70			70		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515	-			
		200			200		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61	-			
		35			35		LB	SEED	651.15	-			
		200			200		LB	FERTILIZER	651.18	-			
		1			1		TON	AGRICULTURAL LIMESTONE	651.20	-			
		1			1		TON	HAY MULCH	651.25	-			
		120			120		CY	TOPSOIL	651.35	-			
		1175			1175		SY	GRUBBING MATERIAL	651.40	-			
		1			1		LS	EPSC PLAN	652.10	-			
		100			100		HR	MONITORING EPSC PLAN	652.20	-			
		1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	-			
		1500			1500		SY	TEMPORARY EROSION MATTING	653.20	-			
		40			40		CY	VEHICLE TRACKING PAD	653.35	-			
		510			510		LF	PROJECT DEMARCATION FENCE	653.55	-			
15					15		SF	TRAFFIC SIGNS, TYPE A	675.20	-			
61					61		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341	-			
4					4		EACH	REMOVING SIGNS	675.50	-			
3					3		EACH	DELINEATOR WITH STEEL POST	676.10	-			
1					1		EACH	TEMPORARY TRAFFIC SIGNAL SYSTEM	678.40	-			
1					1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	-			
	1				1		EACH	SPECIAL PROVISION (CORPORATION STOP, ALL INCLUSIVE)(1")	900.620	-			
	1				1		EACH	SPECIAL PROVISION (EXTENSION SERVICE BOX AND CURB STOP, ALL INCLUSIVE)(1")	900.620	-			
	2				2		EACH	SPECIAL PROVISION (GATE VALVE WITH VALVE BOX, ALL INCLUSIVE) (10")	900.620				
	1				1		EACH	SPECIAL PROVISION (MANUAL AIR RELEASE, ALL INCLUSIVE)	900.620				
	2				2		EACH	SPECIAL PROVISION (TAPPING SLEEVE AND VALVE WITH VALVE BOX, ALL INCLUSIVE) (10" X 10")	900.620				
	80				80		LF	SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT LINED, ALL INCLUSIVE) (10")	900.640				

Stantec

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QUANTITY SHEET 2 - QTY 2

PLOT DATE: 2/27/2015
DRAWN BY: C. GENDRON
CHECKED BY: N. TIRK
SHEET 7 OF 57

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
					ROADWAY	UTILITIES	EROSION CONTROL	BRIDGE NO. 46	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						20				20		LF	SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT LINED, ALL INCLUSIVE) (6")	900.640				
						35				35		LF	SPECIAL PROVISION (SEAMLESS COPPER WATER TUBE, ALL INCLUSIVE)(1")	900.640	-			
					1					1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE)	900.645	-			
						1				1		LS	SPECIAL PROVISION (WATER MAIN ON BRIDGE)	900.645	-			
					1					1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
					1					1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
					150					150		SY	SPECIAL PROVISION (HAND-PLACED BITUMINOUS CONCRETE MATERIAL, DRIVES)	900.675				
					325					325		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	-			

Stantec

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FILE NAME: z12J164frm.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. YOULEN
QUANTITY SHEET 3 - QTY 3

PLOT DATE: 2/27/2015
DRAWN BY: C. GENDRON
CHECKED BY: N. TIRK
SHEET 8 OF 57

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE QUANTITY SHEET 1

SUMMARY OF BRIDGE QUANTITIES									TOTALS		DESCRIPTIONS			
MISC	DECK	ABUTMENT 1	ABUTMENT 2	APPROACH SLAB 1	APPROACH SLAB 2	SUPER-STRUCTURE	BRIDGE TOTAL		UNIT	ITEMS	ITEM NUMBER		QUANTITIES	UNIT	ITEMS
1400							1400		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
		52	108				160		CY	STRUCTURE EXCAVATION	204.25				
		65	65				130		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
	150	30	30				210		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33				
		29	29	21	21		100		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
		1					1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
		392	368				760		LF	STEEL PILING, HP 14 X 89	505.18				
						109000	109000		LB	STRUCTURAL STEEL, PLATE GIRDER	506.55				
	29924	7201	7424	2604	2415		49568		LB	REINFORCING STEEL, LEVEL II	507.12				
		4	4			22	30		GAL	WATER REPELLENT, SILANE	514.10				
				25	25		50		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
	299						299		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20				
				25	25		50		LF	JOINT SEALER, HOT POURED	524.11				
						225	225		LF	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	525.45				
1							1		LS	ONE-WAY TEMPORARY BRIDGE (1600 SF - EST.)	528.10				
1							1		EACH	REMOVAL OF STRUCTURE (3700 SF - EST.)	529.15				
		4	4				8		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17				
				2	2		4		EACH	GUARDRAIL APPROACH SECTION, CONC COMB BRIDGE RAILING TL-3	621.748				

DETAILED SUMMARY OF QUANTITIES

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164frm.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. YOULEN
BRIDGE QUANTITY SHEET 1

PLOT DATE: 2/27/2015
DRAWN BY: C. GENDRON
CHECKED BY: N. TIRK
SHEET 9 OF 57

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 SR 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

ENVIRONMENTAL RESOURCES

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

ARCHEOLOGICAL & HISTORIC

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

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

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

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164legend.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: VTRANS
DESIGNED BY: VTRANS	CHECKED BY: VTRANS
CONVENTIONAL SYMBOLOGY LEGEND	SHEET 10 OF 57

GPS CONTROL POINTS

HVCTRL #1

BAY ST

NORTH = 698954.890
EAST = 1767290.970
ELEV. = 573.601

17.9 M WSW OF AND ABOUT 0.4 M HIGHER THAN THE CL OF BAY STREET, 1.3 M E OF THE E EDGE OF THE GRAVEL DRIVE, 14.3 M SW OF POLE NO 3/3B, 31.6 M SE OF THE SE CORNER OF THE ADDITION OF THE WASHINGTON COUNTY RAILROAD BUILDING, 9.1 M NW OF THE NW CORNER OF A CHAIN LINK FENCE, 31.2 M E OF THE E RAIL OF THE MOST EASTERLY SET OF TRACKS, 36.8 M SSW OF AN UPRIGHT STEEL I-BEAM AT THE SE CORNER OF A SINGLE STORY, DOUBLE BAY, BRICK BUILDING AT THE CVPS BAY STREET SUBSTATION, AND 0.3 M W OF A WITNESS POST.

HVCTRL #2

R 54

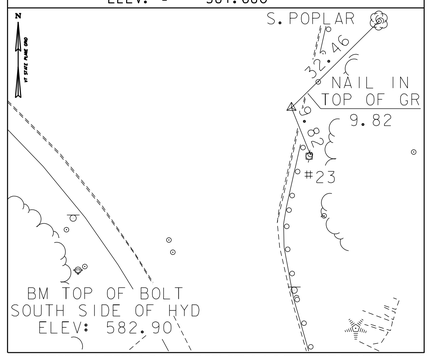
NORTH = 696739.040
EAST = 1766088.430
ELEV. = 580.69

GENERAL LOCATION, ST. JOHNSBURY, VT. TO REACH FROM THE INTERSECTION OF U.S. ROUTE 5 AND U.S. ROUTE 2 EAST IN DOWNTOWN ST. JOHNSBURY GO SOUTH ALONG U.S. ROUTE 5 FOR 0.6 MI (1.0 KM) TO THE INTERSECTION OF SOUTH STREET LEFT AND ALT 5 RIGHT AND THE MARK ON THE RIGHT IN THE SOUTHWEST QUADDRANT OF THE INTERSECTION. THE MARK IS A STANDARD DISK SET INSIDE A 4 INCH PVC PIPE. IT IS 1.6 M (5.2 FT) NORTHWEST OF THE NORTHWEST EDGE OF PAVEMENT OF U.S. ROUTE 5, 5.9 M (19.4 FT) SOUTH OF A WATER SHUT OFF RISER, 10.6 M (34.8 FT) SOUTHWEST OF A 1.2 M (3.9 FT) X 1.2 M (3.9 FT) CONCRETE DRAINAGE INLET, 0.8 M (2.6 FT) NORTHWEST OF A STEEL LIGHT POLE, AND 0.3 M (1.0 FT) SOUTHEAST OF A METAL WITNESS POST. STATION RECOVERY (2001) RECOVERY NOTE BY VERMONT GEODETIC SURVEY 2001 (CHR) TO REACH FROM THE INTERSECTION OF U.S. ROUTE 5 AND U.S. ROUTE 2 EAST IN DOWNTOWN ST JOHNSBURY GO SOUTH ALONG U.S. ROUTE 5 FOR 0.6 MI TO THE INTERSECTION OF MAIN STREET LEFT AND RIGHT AND THE SITE OF THE MARK ON THE RIGHT IN THE SOUTHWEST QUADRANT OF THE INTERSECTION. NOTE, MAIN STREE RIGHT IS ALSO ALTERNATE U.S. ROUTE 5.

TRAVERSE TIES

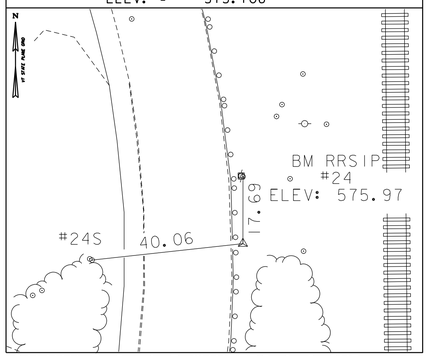
HVCTRL #20

NORTH = 696707.910
EAST = 1766320.490
ELEV. = 581.680



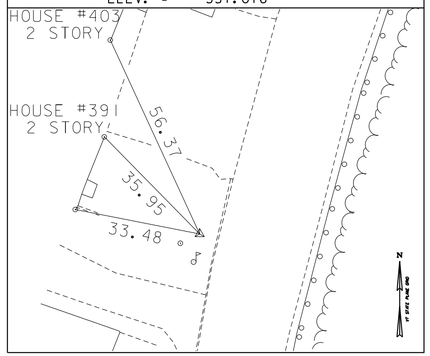
#30

NORTH = 696470.533
EAST = 1766371.005
ELEV. = 573.706



HVCTRL #31

NORTH = 695901.656
EAST = 1766089.299
ELEV. = 557.076



* MAIN TRAVERSE COMPLETED 5/16/2012 BY R. GILMAN P.C. & P. WINTERS & C. CYR

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 NAVD 88
HORIZONTAL NAD 83 (96)
ADJUSTMENT COMPASS

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164ti.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: VTRANS
TIE SHEET

PLOT DATE: 2/27/2015
DRAWN BY: VTRANS
CHECKED BY: VTRANS
SHEET II OF 57

BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION
STA. 16+21 TO 17+34, LT
STA. 16+30 TO 17+42, RT

VERTICAL GRANITE CURB
STA. 15+30 TO 16+27, LT
STA. 17+18 TO 18+25, LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
STA. 15+26 TO 16+27, LT
STA. 17+38 TO 18+25, LT

STEEL BEAM GUARDRAIL, GALVANIZED
STA. 15+65.5 TO 16+03.0, LT
STA. 15+80.3 TO 16+12.0, RT
STA. 17+52.0 TO 17+89.5, LT
STA. 17+60.0 TO 18+75.0, RT (CONNECT TO EXISTING)

ANCHOR FOR STEEL BEAM RAIL
STA. 15+65.5, LT
STA. 15+80.3, RT
STA. 17+89.5, LT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 15+71 TO 16+01, LT
STA. 17+32 TO 17+62, LT
STA. 17+40 TO 18+25, RT

CONSTRUCT DRIVE
STA. 14+98, RT (34' PAVED)
STA. 15+08, LT (34.5' PAVED)
STA. 15+66, RT (39.5' PAVED

GUARDRAIL APPROACH SECTION, CONC COMB BRIDGE RAILING TL-3
STA. 16+03 TO 16+21, LT
STA. 15+94 TO 16+12, RT
STA. 17+34 TO 17+52, LT
STA. 17+42 TO 17+60, RT

RELOCATE MAILBOX, SINGLE SUPPORT
STA. 15+75, LT

CURVE 1 DATA
PC = STA 11+51.42
Δ = 20°55'01"
D = 5°59'58"
R = 955.00'
T = 176.28'
L = 348.64'
E = 16.13'

CURVE 2 DATA
Δ = 45°57'00"
D = 24°22'52"
R = 235.00'
T = 99.63'
L = 188.47'
E = 20.25'

VT STATE PLANE GRID

BEGIN APPROACH
STA. 14+50.00

BEGIN PROJECT
STA. 15+50.00

P.I. (CURVE 1)
STA 13+27.71 BK
STA 13+23.79 AH

EXISTING R.O.W.

RAIL FENCE

10" WATER MAIN 5' DEEP

HVCTRL 105

HVCTRL 106

HOUSE

GRAVEL DRIVE

PAVED DRIVE

R=5'

R=10'

COMMERCIAL DRIVE, PAVED

PAVED PARKING LOT

BUILDING

PT STA 15+00.07

BEGIN BRIDGE
STA. 16+26.49
F.G. EL. 559.40

℄ BRG. ABUT. 1
STA. 16+27.00 =
F.G. EL. 559.43

STONE FILL, TYPE III

HVCTRL 103

MAINLINE STATION 16+75.00
=CHANNEL STATION 51+00.00
Δ = 75° 0' 0" RT

POB
STA 50+00.00

50+00

51+00

52+00

14+00

15+00

16+00

17+00

18+00

19+00

N 29°47'00" E

S 15°13'00" E

OHW

LAMOILLE VALLEY RAIL TRAIL

SLEEPERS RIVER FLOW

HVCTRL 101

HVCTRL 104

ELECTRIC TRANSMISSION LINES

STONE FILL, TYPE III

STA. 17+50.00, 30.9' CPEP (ES)
INVERT = 561.50

℄ BRG. ABUT. 2
STA. 17+38.00 =
F.G. EL. 565.99

END BRIDGE
STA. 17+38.51
F.G. EL. 566.02

18" X 20' CPEP (SL)

STA. 17+61.00, 11.0' LT.
PRECAST DI
GRATE EL. = 567.00
18" INVERT OUT = 562.00

WATER MAIN 6" DEEP

DIST = 40.00'

DIST = 40.69'

HVCTRL 102

STA 19+93.58 POE

EXISTING R.O.W.

STA 19+31.33 PT

N 16°10'00" W

P.I. (CURVE 2)
STA 18+42.49 BK
STA 18+31.70 AH

STA 18+42.186 PC

END APPROACH
STA. 18+75.00

LIMIT OF TEMPORARY DETOUR (TYP)

END PROJECT
STA. 17+75.00

STA 52+00.00 POE

WASHINGTON COUNTY RAILROAD

top of bank

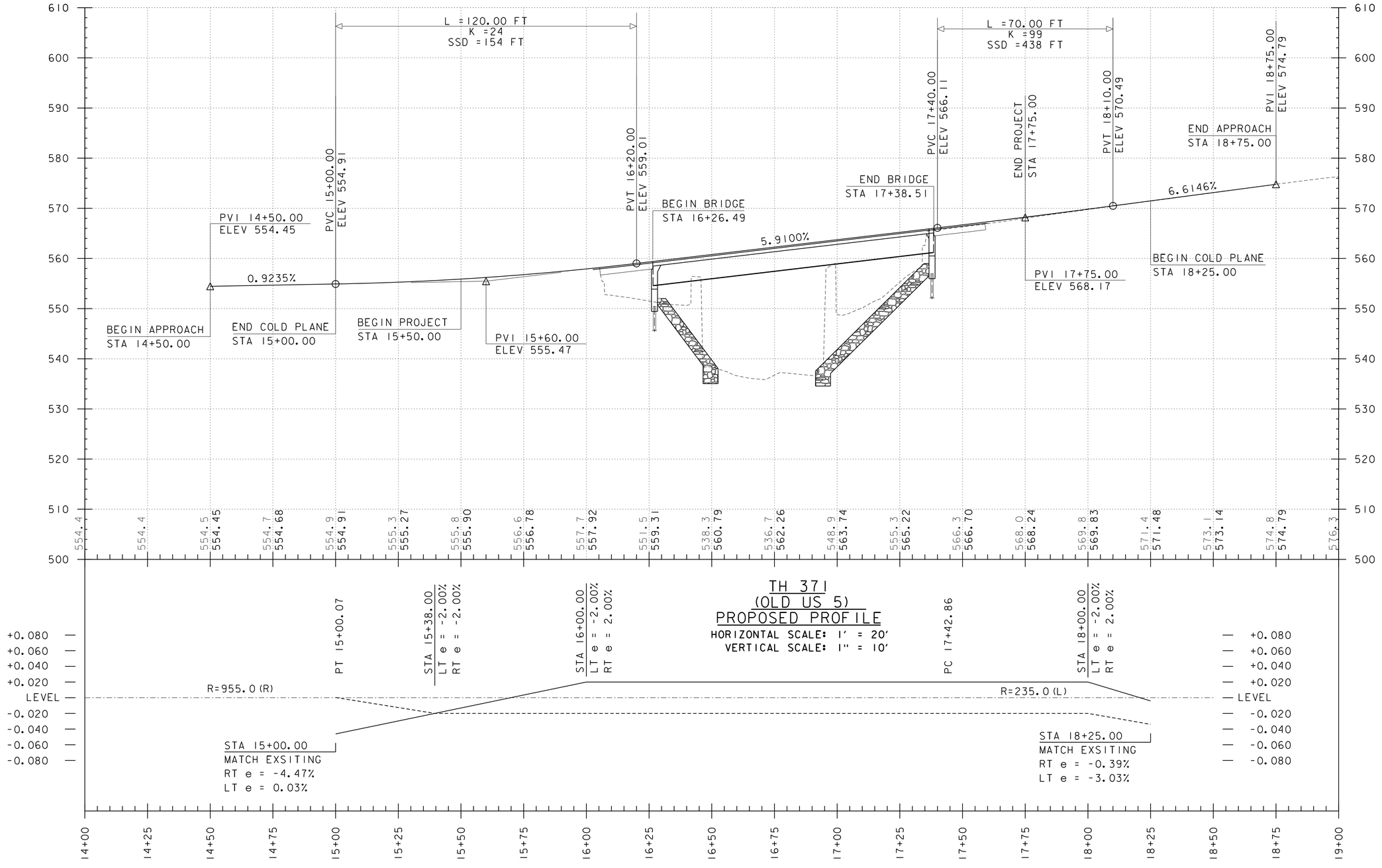
LAYOUT

0 20 40

SCALE: 1" = 20'-0"

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: I. MAYNARD
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
PLAN LAYOUT SHEET	SHEET 12 OF 57



BANKING DIAGRAM

HORIZONTAL SCALE: 1' = 20'

NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄

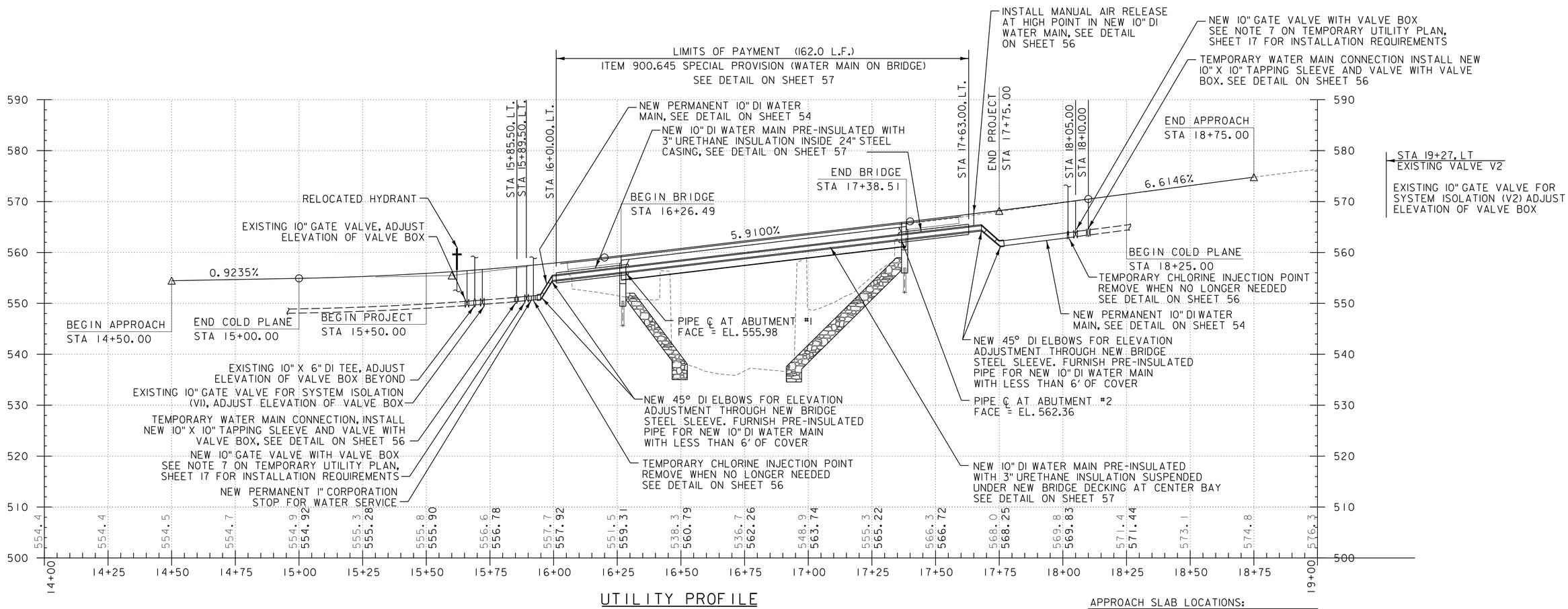
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164profile.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
PROFILE SHEET

PLOT DATE: 2/27/2015
DRAWN BY: I. MAYNARD
CHECKED BY: M. CHENETTE
SHEET 13 OF 57



UTILITY PROFILE

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

APPROACH SLAB LOCATIONS:

BEGIN APPROACH SLAB, STATION: 16+06.48
END APPROACH SLAB, STATION: 16+26.48
BEGIN APPROACH SLAB, STATION: 17+38.52
END APPROACH SLAB, STATION: 17+58.52

NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164profile-u.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. CAMPBELL
UTILITY PROFILE

PLOT DATE: 2/27/2015
DRAWN BY: D. HARRINGTON
CHECKED BY: G. SANTY
SHEET 14 OF 57

GENERAL TRAFFIC CONTROL NOTES

1. THE TRAFFIC CONTROL PLAN IS SCHEMATIC ONLY AND SHOULD BE USED AS A REFERENCE. THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT SITE SPECIFIC TRAFFIC CONTROL PLAN FOR TEMPORARY BRIDGE PER THE LATEST VERSION OF THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR SHALL ALLOW THE ENGINEER 14 CALENDAR DAYS TO REVIEW AND ACCEPT THE PROPOSED PLANS BEFORE THEY ARE TO BE IMPLEMENTED. NO WORK SHALL COMMENCE UNTIL THE TRAFFIC CONTROL AND PROTECTION PLAN HAS BEEN APPROVED.

2. DEVELOPMENT AND IMPLEMENTATION OF TRAFFIC CONTROL PLAN SHALL BE PAID FOR UNDER ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

3. ALL SIGNS, PAVEMENT MARKINGS, BARRELS, BARRICADES, AND OTHER INCIDENTALS REQUIRED SHALL BE PAID FOR UNDER ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

4. ACCESS TO ALL EXISTING SIDE ROADS, DRIVES AND PARKING AREAS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

5. DESIGN OF THE SIGNAL SUPPPORTS AND ANY REQUIRED GUYING IS THE RESPONSIBILITY OF THE CONTRACTOR.

6. SIGNAL TIMING / TIMING ADJUSTMENTS REQUESTED BY THE ENGINEER SHALL BE ACCOMPLISHED WITHIN A 48 HOUR PERIOD AND PAYMENT SHALL BE INCIDENTAL TO ITEM 678.40, TEMPORARY TRAFFIC SIGNAL SYSTEM. THE ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.

7. SIGNAL FACES SHALL BE LED AND CONSIST OF 12" LENSES. (RED, YELLOW, AND GREEN).

8. THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16.5 FEET NOR MORE THAN 19 FEET ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF A SIGNAL FACE NOT MOUNTED OVER A ROADWAY SHALL NOT BE LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE GROUND. CAUTION SHOULD BE USED TO INSURE COMPLIANCE WITH THE HEIGHT REQUIREMENTS IN THE EVENT THE NEW APPROACH GRADES DIFFER SIGNIFICANTLY FROM THE OLD ROAD GRADE.

9. SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER FACES.

10. SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. AT LEAST ONE SIGNAL HEAD SHALL BE UNMISTAKABLY IN LINE WITH THE CENTER OF APPROACHING TRAFFIC AT ALL TIMES. THE SECOND SIGNAL HEAD MAY BE POST MOUNTED, LOCATED AT A DISTANCE OF NO GREATER THAN 14.5 FEET FROM THE CENTER OF THE APPROACH LANE WHEN THE STOP BAR IS 40 FEET FROM THE SIGNAL HEAD. CONSULT THE CURRENT EDITION OF THE M.U.T.C.D. FOR ADDITIONAL INFORMATION CONCERNING SIGNAL PLACEMENT.

11. THE SIGNAL SYSTEM SHALL CONSIST OF POLES, SIGNS AND POSTS, WARNING SIGNS, LUMINARIES, FLASHING BEACONS, ASSOCIATED PAVEMENT MARKINGS, AND SIGNAL EQUIPMENT TO PROVIDE FOR AN ADEQUATE DESIGN. IT ALSO INCLUDES PERMITS AND COSTS ASSOCIATED WITH PROVIDING ELECTRICAL POWER. ALL WORK SHALL BE INCIDENTAL TO ITEM 678.40 "TEMPORARY TRAFFIC SIGNAL SYSTEM."

12. INSTALL WIRING BETWEEN SIGNAL POLES TO PROVIDE FOR A SAFE INSTALLATION. ATTACHMENT TO UTILITY POLES TO BE COORDINATED BY THE CONTRACTOR WITH THE UTILITY COMPANY.

13. PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE POSSIBLE.

14. POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL BE PLACED SO AS NOT TO CREATE A HAZARD TO THE TRAVELING PUBLIC.

15. ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC., SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR REMOVAL INCLUDING ANY TEMPORARY PAVEMENT MARKINGS, UTILITY POLES, WIRES, ETC.

16. A 250 WATT MER/150 WATT HSP LUMINAIRE AND MAST ARM SHALL BE PROVIDED ON A POLE ON EACH APPROACH AT A MOUNTING HEIGHT OF 30 FEET ABOVE THE ROADWAY CENTERLINE. THE INTENT IS TO LIGHT UP THE AREA AROUND THE SIGNAL HEADS AND STOP BAR FOR INCREASED VISIBILITY. THE ENGINEER SHALL DETERMINE THE ADEQUACY OF THE LIGHTING AND DIRECT CHANGES IF THE LIGHTING IS INSUFFICIENT. LIGHTING SHALL BE PAID INCIDENTAL TO ITEM 678.40, TEMPORARY TRAFFIC SIGNAL SYSTEM.

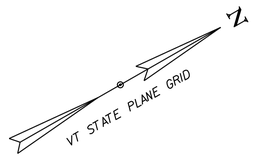
17. STOP BARS SHALL BE LOCATED A MINIMUM OF 40' AND A MAXIMUM OF 120' FROM THE NEAREST SIGNAL HEAD.

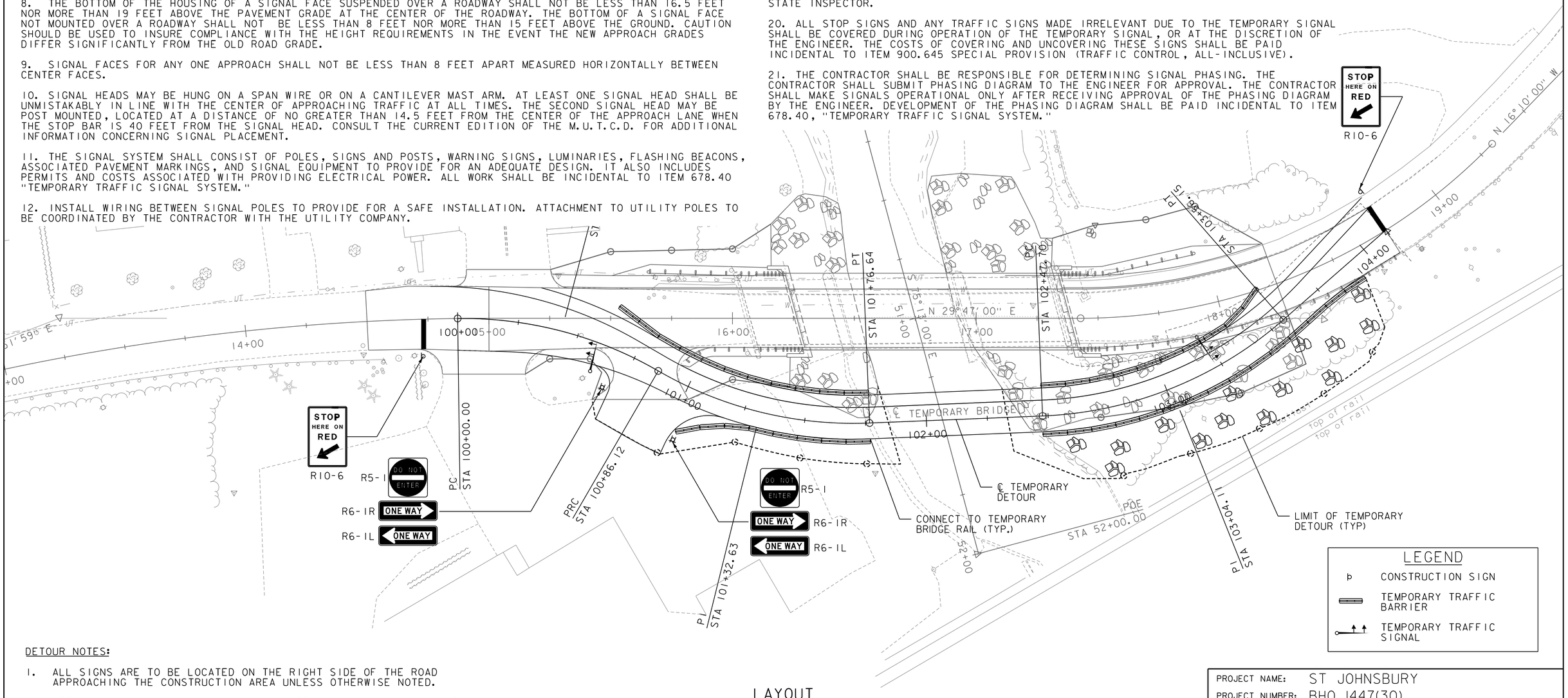
18. SEE STD. E-140 FOR "STOP HERE ON RED" SIGN DETAIL. SEE STD. E-121 FOR SIGN PLACEMENT, SEE STD. E-171A AND E-172 FOR ADDITIONAL INFORMATION ON SIGNALS.

19. ALL ELECTRIC WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND STATE INSPECTOR.

20. ALL STOP SIGNS AND ANY TRAFFIC SIGNS MADE IRRELEVANT DUE TO THE TEMPORARY SIGNAL SHALL BE COVERED DURING OPERATION OF THE TEMPORARY SIGNAL, OR AT THE DISCRETION OF THE ENGINEER. THE COSTS OF COVERING AND UNCOVERING THESE SIGNS SHALL BE PAID INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING SIGNAL PHASING. THE CONTRACTOR SHALL SUBMIT PHASING DIAGRAM TO THE ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL MAKE SIGNALS OPERATIONAL ONLY AFTER RECEIVING APPROVAL OF THE PHASING DIAGRAM BY THE ENGINEER. DEVELOPMENT OF THE PHASING DIAGRAM SHALL BE PAID INCIDENTAL TO ITEM 678.40, "TEMPORARY TRAFFIC SIGNAL SYSTEM."





LEGEND

- CONSTRUCTION SIGN
- TEMPORARY TRAFFIC BARRIER
- TEMPORARY TRAFFIC SIGNAL

DETOUR NOTES:

1. ALL SIGNS ARE TO BE LOCATED ON THE RIGHT SIDE OF THE ROAD APPROACHING THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED.
2. SEE CONSTRUCTION APPROACH SIGNING SHEET FOR APPROACH SIGNAGE.
3. SEE CONTRUCTION APPROACH SIGNING SHEET FOR PEDESTRIAN TRAFFIC CONTROL NOTES.

LAYOUT

0 20 40

SCALE: 1" = 20'-0"

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164bdr.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
TRAFFIC CONTROL PLAN

PLOT DATE: 2/27/2015
DRAWN BY: D. BARNES
CHECKED BY: G. SANTY
SHEET 15 OF 57

PEDESTRIAN TEMPORARY TRAFFIC CONTROL NOTES:

1. THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN THROUGH MOVEMENTS FROM ONE END OF THE CONSTRUCTION AREA TO THE OTHER, ON AT LEAST ONE SIDE OF THE STREET DURING CONSTRUCTION. ANY SIDEWALK CLOSURES SHALL MEET THE REQUIREMENTS OF THE MUTCD, PART 6.

2. PEDESTRIAN ACCESS SHALL BE PROVIDED TO ALL ADJACENT PROPERTIES, BUILDINGS, RESIDENCES AND COMMERCIAL PROPERTIES AT ALL TIMES. THIS MAY INCLUDE TEMPORARY WALKWAYS SPANNING THE CONSTRUCTION AREA.

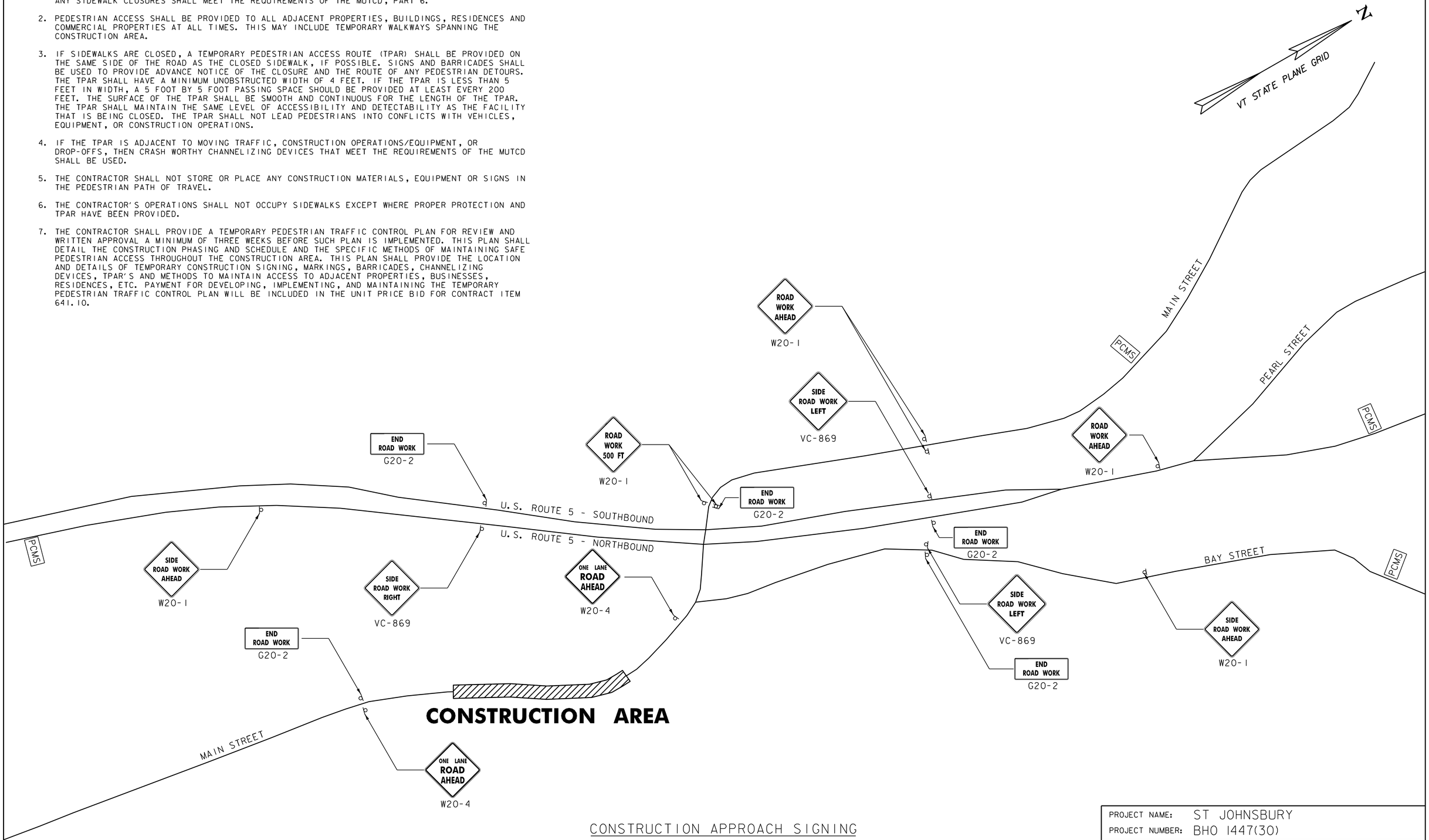
3. IF SIDEWALKS ARE CLOSED, A TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) SHALL BE PROVIDED ON THE SAME SIDE OF THE ROAD AS THE CLOSED SIDEWALK, IF POSSIBLE. SIGNS AND BARRICADES SHALL BE USED TO PROVIDE ADVANCE NOTICE OF THE CLOSURE AND THE ROUTE OF ANY PEDESTRIAN DETOURS. THE TPAR SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4 FEET. IF THE TPAR IS LESS THAN 5 FEET IN WIDTH, A 5 FOOT BY 5 FOOT PASSING SPACE SHOULD BE PROVIDED AT LEAST EVERY 200 FEET. THE SURFACE OF THE TPAR SHALL BE SMOOTH AND CONTINUOUS FOR THE LENGTH OF THE TPAR. THE TPAR SHALL MAINTAIN THE SAME LEVEL OF ACCESSIBILITY AND DETECTABILITY AS THE FACILITY THAT IS BEING CLOSED. THE TPAR SHALL NOT LEAD PEDESTRIANS INTO CONFLICTS WITH VEHICLES, EQUIPMENT, OR CONSTRUCTION OPERATIONS.

4. IF THE TPAR IS ADJACENT TO MOVING TRAFFIC, CONSTRUCTION OPERATIONS/EQUIPMENT, OR DROP-OFFS, THEN CRASH WORTHY CHANNELIZING DEVICES THAT MEET THE REQUIREMENTS OF THE MUTCD SHALL BE USED.

5. THE CONTRACTOR SHALL NOT STORE OR PLACE ANY CONSTRUCTION MATERIALS, EQUIPMENT OR SIGNS IN THE PEDESTRIAN PATH OF TRAVEL.

6. THE CONTRACTOR'S OPERATIONS SHALL NOT OCCUPY SIDEWALKS EXCEPT WHERE PROPER PROTECTION AND TPAR HAVE BEEN PROVIDED.

7. THE CONTRACTOR SHALL PROVIDE A TEMPORARY PEDESTRIAN TRAFFIC CONTROL PLAN FOR REVIEW AND WRITTEN APPROVAL A MINIMUM OF THREE WEEKS BEFORE SUCH PLAN IS IMPLEMENTED. THIS PLAN SHALL DETAIL THE CONSTRUCTION PHASING AND SCHEDULE AND THE SPECIFIC METHODS OF MAINTAINING SAFE PEDESTRIAN ACCESS THROUGHOUT THE CONSTRUCTION AREA. THIS PLAN SHALL PROVIDE THE LOCATION AND DETAILS OF TEMPORARY CONSTRUCTION SIGNING, MARKINGS, BARRICADES, CHANNELIZING DEVICES, TPAR'S AND METHODS TO MAINTAIN ACCESS TO ADJACENT PROPERTIES, BUSINESSES, RESIDENCES, ETC. PAYMENT FOR DEVELOPING, IMPLEMENTING, AND MAINTAINING THE TEMPORARY PEDESTRIAN TRAFFIC CONTROL PLAN WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10.



CONSTRUCTION APPROACH SIGNING

NOT TO SCALE

SEE VTrans STANDARD T-1, T-10, T-30 FOR SIGN PLACEMENT.

Stantec

PROJECT NAME: ST JOHNSBURY	
PROJECT NUMBER: BHO 1447(30)	
FILE NAME: z12j164cas.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: I. MAYNARD
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
CONSTRUCTION APPROACH SIGNING	SHEET 16 OF 57

TEMPORARY WATER MAIN RELOCATION NOTES:

1. THE PROPOSED TEMPORARY WATER MAIN PLAN CONFIGURATION DOES NOT, AND IS NOT INTENDED TO, COVER ALL REQUIREMENTS FOR THE TEMPORARY WATER MAIN RELOCATION AND IS PROVIDED TO ASSIST THE CONTRACTOR IN DEVELOPING HIS COMPREHENSIVE WATER MAIN RELOCATION PLAN. THE FOLLOWING IS INTENDED TO BE A SUGGESTED CONSTRUCTION SEQUENCE FOR THE WATER MAIN RELOCATION:

   - CONSTRUCT TEMPORARY BRIDGE LOCATED ON THE DOWNSTREAM SIDE OF THE EXISTING STRUCTURE.
   - CONSTRUCT AN APPROXIMATELY 290' LONG, TEMPORARY 10" DI WATER MAIN SUPPORTED UNDERNEATH THE TEMPORARY BRIDGE.
   - CONNECT THE TEMPORARY 10" DI WATER MAIN INTO THE EXISTING 10" DI WATER MAIN VIA TWO LIVE PRESSURE TAPS WITH 10" TAPPING SLEEVES AND TAPPING VALVES (ONE TAPPING SLEEVE AND TAPPING VALVE EACH SIDE OF CROSSING).
   - PRESSURE TEST, FLUSH, AND DISINFECT THE TEMPORARY 10" DI WATER MAIN.
   - ISOLATE THE EXISTING WATER MAIN AND INSTALL ONE, NEW 10" IN-LINE GATE VALVE WITH PLUG ON EACH SIDE OF THE EXISTING BRIDGE. EXISTING WATER MAIN CROSSING TO BE DE-PRESSURIZED DURING INSTALLATION OF THESE TWO, NEW 10" IN-LINE GATE VALVES. INSTALLATION TIME PERIOD TO BE MINIMIZED (FOUR HOUR MAX. ALLOWABLE). COORDINATE WATER MAIN SHUTDOWN WITH ST. JOHNSBURY DEPARMENT OF PUBLIC WORKS.
   - REMOVE EXISTING BRIDGE AND ASSOCIATED EXISTING 10" WATER MAIN.
   - CONSTRUCT NEW BRIDGE WITH NEW 10" DI WATER MAIN SUPPORTED ON THE UNDERSIDE OF THE STRUCTURE.
   - PRESSURE TEST, FLUSH, AND DISINFECT THE NEW 10" DI WATER MAIN.
   - PRESSURIZE THE NEW 10" DI WATER MAIN AND DISCONNECT THE TEMPORARY WATER MAIN.
   - REMOVE TEMPORARY BRIDGE INCLUDING TEMPORARY WATER MAIN.

2. ALL TEMPORARY DUCTILE IRON WATER MAIN PIPE SHALL BE CLASS 52.

3. TEMPORARY DUCTILE IRON WATER MAIN PIPE FOR BRIDGE CROSSING SHALL BE RESTRAINED JOINT PIPE.

4. ALL TEMPORARY DUCTILE IRON PIPE INSTALLED UNDER THE TEMPORARY BRIDGE AND INSTALLED WITH LESS THAN 6' OF COVER SHALL BE PRE-INSULATED WITH 3" OF URETHANE INSULATION.

5. SUBMIT FABRICATION DRAWINGS, INCLUDING PLAN, DETAILS, AND A SEQUENCE OF CONSTRUCTION, IN ACCORDANCE WITH SECTION 105 FOR ALL TEMPORARY WATER MAIN AND APPURTENANCES. PIPE SUPPORTS FOR SUPPORTING THE TEMPORARY WATER MAIN UNDER THE TEMPORARY BRIDGE SHALL INCLUDE DESIGN CALCULATIONS AND SHALL BE STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER, REGISTERED IN THE STATE OF VERMONT.

6. PAYMENT FOR NEW 10" DI TEMPORARY WATER MAIN AND ALL APPURTENANCES, INCLUDING REMOVAL OF EXISTING 10" DI WATER MAIN, ABANDONED 8" WATER MAIN, AND TEMPORARY 10" WATER MAIN, SHALL BE CONSIDERED INCIDENTAL TO ITEM 629.42, TRANSFER TO NEW SYSTEM, WATER SYSTEM.

7. UPON COMPLETE INSTALLATION OF THE NEW 10" DI TEMPORARY WATER MAIN INCLUDING FLUSHING, PRESSURE TESTING, AND DISINFECTION, CONTRACTOR SHALL CUT THE EXISTING 10" DI WATER MAIN AND INSTALL A NEW PERMANENT 10" GATE VALVE WITH VALVE BOX, END CAP, AND THRUST RESTRAINT AT EACH CUT END. COORDINATE SYSTEM SHUT DOWN AND ISOLATION BETWEEN EXISTING VALVE #1 AND VALVE #2 WITH THE TOWN OF ST. JOHNSBURY DEPARTMENT OF PUBLIC WORKS AND THE ENGINEER PRIOR TO INSTALLATION. A MAXIMUM SHUT DOWN PERIOD OF 4 HOURS WILL BE ALLOWED TO PERFORM INSTALLATION OF BOTH NEW GATE VALVES AND END CAPS.

8. ALL TEMPORARY RELATED WATER MAIN PIPING AND APPURTENANCES SHALL BE REMOVED AFTER THE NEW PERMANENT WATER MAIN IS PLACED INTO SERVICE.

ITEM 900.620 SPECIAL PROVISION
(TAPPING SLEEVE AND VALVE WITH VALVE BOX, ALL INCLUSIVE) (10"X10")

STA 15+85, LT.
STA 18+10, LT.

ITEM 900.620 SPECIAL PROVISION
(GATE VALVE WITH VALVE BOX, ALL INCLUSIVE) (10")

STA 15+90, LT.
STA 18+05, LT.

WATER SERVICE:

ITEM 900.620 SPECIAL PROVISION
(EXTENSION SERVICE BOX AND CURB STOP, ALL INCLUSIVE) (1")

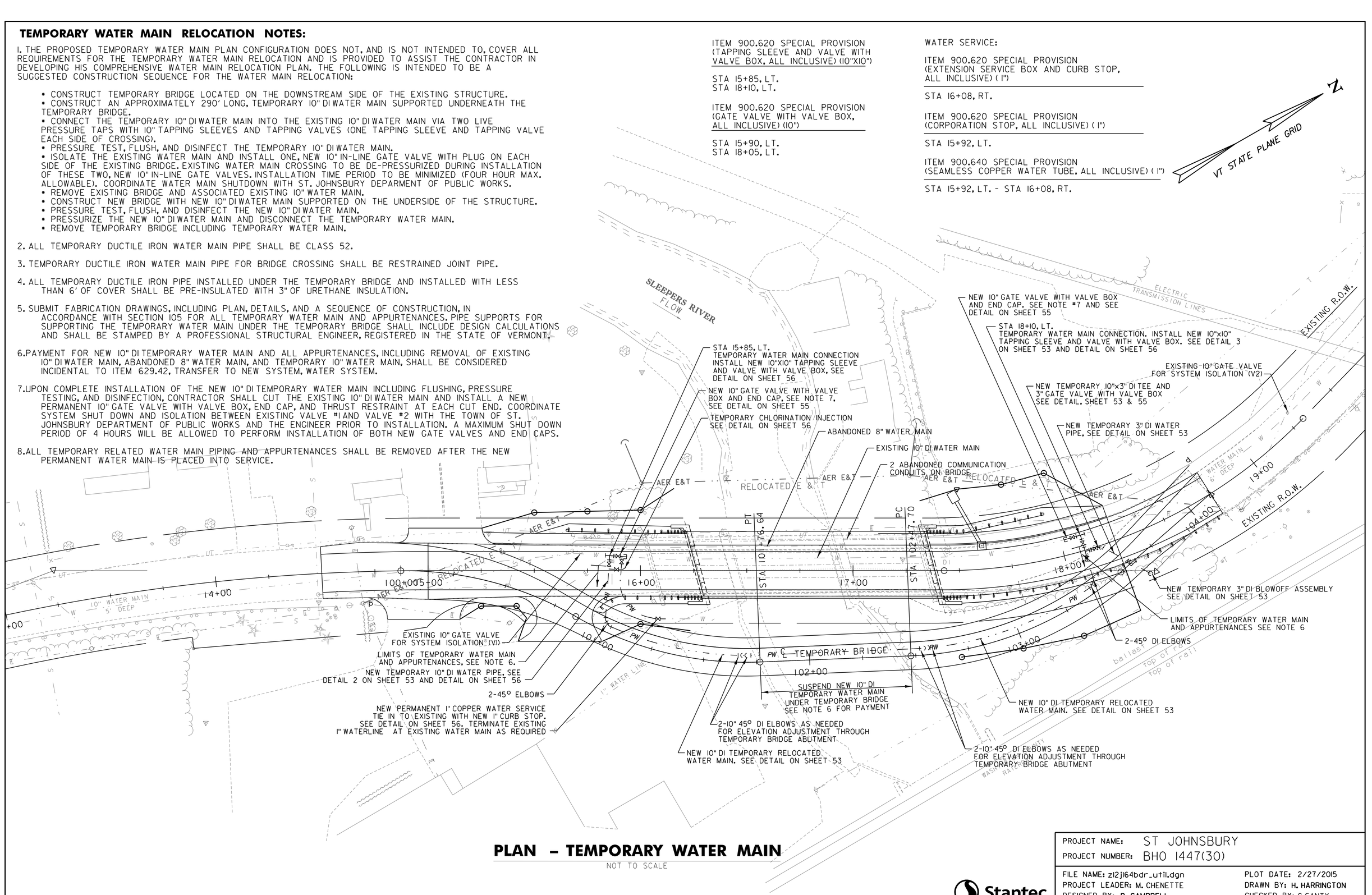
STA 16+08, RT.

ITEM 900.620 SPECIAL PROVISION
(CORPORATION STOP, ALL INCLUSIVE) (1")

STA 15+92, LT.

ITEM 900.640 SPECIAL PROVISION
(SEAMLESS COPPER WATER TUBE, ALL INCLUSIVE) (1")

STA 15+92, LT. - STA 16+08, RT.



PLAN – TEMPORARY WATER MAIN

NOT TO SCALE

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr_util.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: H. HARRINGTON
DESIGNED BY: D. CAMPBELL	CHECKED BY: G.SANTY
TEMPORARY UTILITY PLAN	SHEET 17 OF 57

SANITARY SEWER
ITEM 604.42 CHANGING ELEVATION OF SEWER MANHOLES

STA 15+38, RT.

WATER
ITEM 629.20 ADJUST ELEVATION OF VALVE BOX

STA 15+66, LT.
STA 15+68, LT.
STA 15+72, LT

ITEM 629.29. RELOCATE HYDRANT

STA 15+62, LT.

ITEM 900.620, SPECIAL PROVISION
(MANUAL AIR RELEASE, ALL INCLUSIVE)

STA 17+65, LT.

ITEM 900.620, SPECIAL PROVISION
(GATE VALVE WITH VALVE BOX, ALL INCLUSIVE) (10")

STA 15+90, LT.
STA 18+05, LT.

ITEM 900.620, SPECIAL PROVISION
(TAPPING SLEEVE AND VALVE WITH VALVE BOX, ALL INCLUSIVE) (10" X 10")

STA 15+85, LT.
STA 18+10, LT.

ITEM 900.640, SPECIAL PROVISION
(DUCTILE IRON PIPE, CEMENT LINED, ALL INCLUSIVE) (6")

STA 15+68, 10' LT. - STA 15+69, 21' LT.

ITEM 900.640, SPECIAL PROVISION
(DUCTILE IRON PIPE, CEMENT LINED, ALL INCLUSIVE) (10")

STA 15+90, LT. - STA 16+01, LT.
STA 17+63, LT. - STA 18+05, LT.

ITEM 900.645, SPECIAL PROVISION
(WATER MAIN ON BRIDGE)

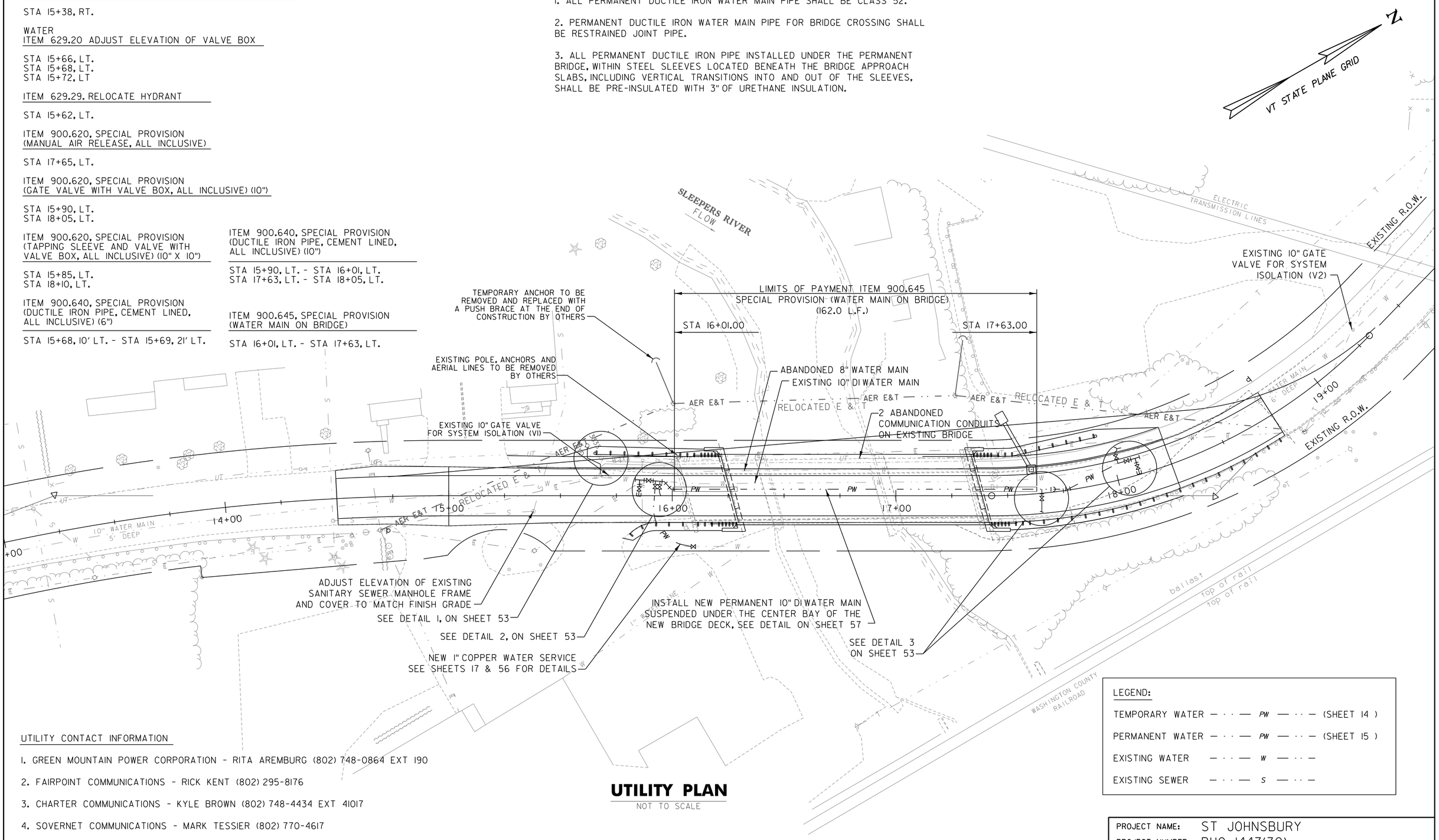
STA 16+01, LT. - STA 17+63, LT.

PERMANENT WATER MAIN RELOCATION NOTES:

1. ALL PERMANENT DUCTILE IRON WATER MAIN PIPE SHALL BE CLASS 52.

2. PERMANENT DUCTILE IRON WATER MAIN PIPE FOR BRIDGE CROSSING SHALL BE RESTRAINED JOINT PIPE.

3. ALL PERMANENT DUCTILE IRON PIPE INSTALLED UNDER THE PERMANENT BRIDGE, WITHIN STEEL SLEEVES LOCATED BENEATH THE BRIDGE APPROACH SLABS, INCLUDING VERTICAL TRANSITIONS INTO AND OUT OF THE SLEEVES, SHALL BE PRE-INSULATED WITH 3" OF URETHANE INSULATION.



UTILITY PLAN
NOT TO SCALE

LEGEND:

TEMPORARY WATER	PW (SHEET 14)
PERMANENT WATER	PW (SHEET 15)
EXISTING WATER	W
EXISTING SEWER	S

UTILITY CONTACT INFORMATION

1. GREEN MOUNTAIN POWER CORPORATION - RITA AREMBURG (802) 748-0864 EXT 190
2. FAIRPOINT COMMUNICATIONS - RICK KENT (802) 295-8176
3. CHARTER COMMUNICATIONS - KYLE BROWN (802) 748-4434 EXT 41017
4. SOVERNET COMMUNICATIONS - MARK TESSIER (802) 770-4617
5. TOWN OF SAINT JOHNSBURY, VT - HUGH WESCOTT, PUBLIC WORKS DIRECTOR (802) 751-9339

Stantec

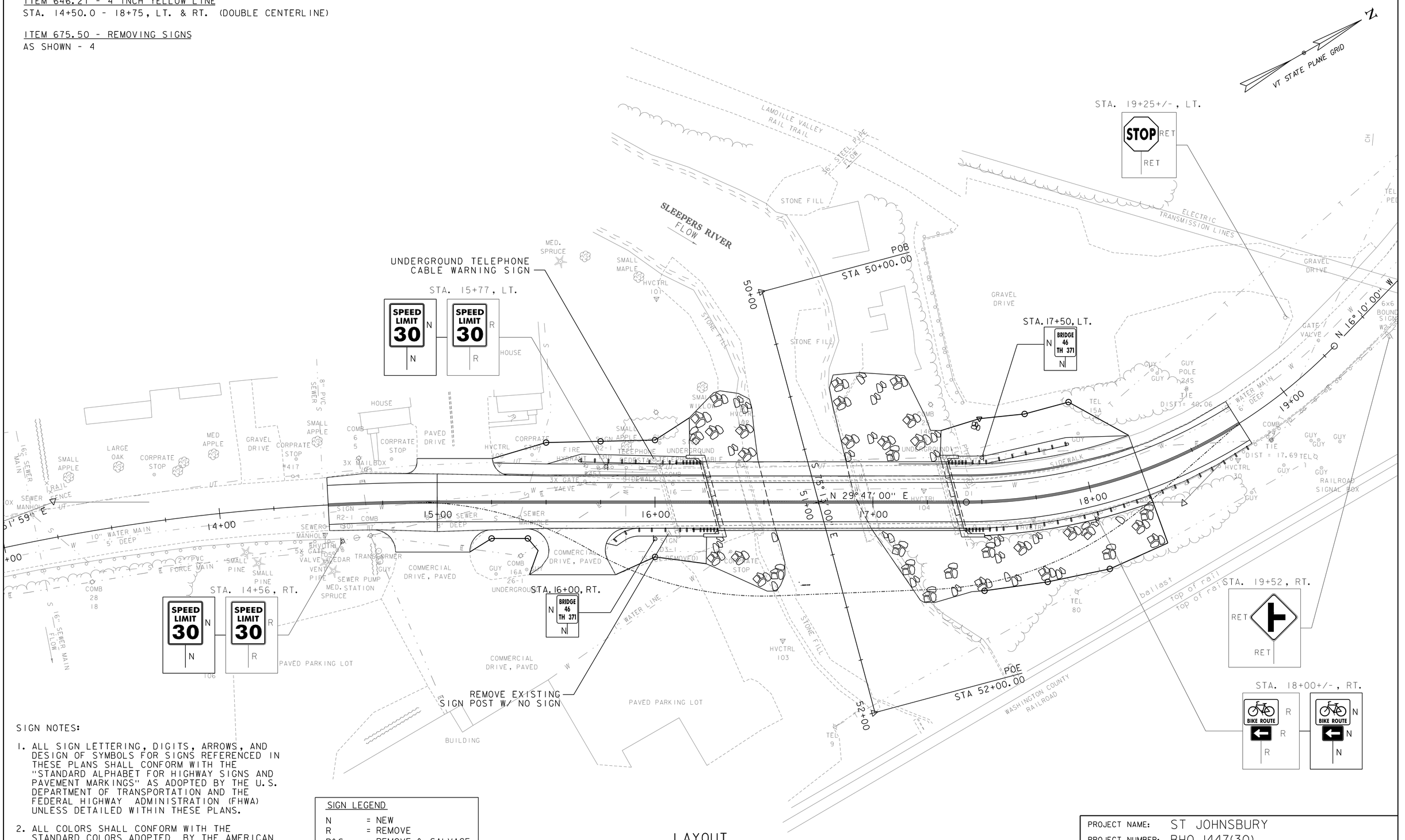
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164bdr_util.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. CAMPBELL
UTILITY PLAN

PLOT DATE: 2/27/2015
DRAWN BY: H. HARRINGTON
CHECKED BY: G. SANTY
SHEET 18 OF 57

ITEM 646.21 - 4 INCH YELLOW LINE
STA. 14+50.0 - 18+75, LT. & RT. (DOUBLE CENTERLINE)

ITEM 675.50 - REMOVING SIGNS
AS SHOWN - 4



SIGN NOTES:

1. ALL SIGN LETTERING, DIGITS, ARROWS, AND DESIGN OF SYMBOLS FOR SIGNS REFERENCED IN THESE PLANS SHALL CONFORM WITH THE "STANDARD ALPHABET FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AS ADOPTED BY THE U.S. DEPARTMENT OF TRANSPORTATION AND THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) UNLESS DETAILED WITHIN THESE PLANS.
2. ALL COLORS SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AND APPROVED BY FHWA UNLESS OTHERWISE NOTED.
3. ALL SHEETING SHALL BE TYPE III MINIMUM.

SIGN LEGEND	
N	= NEW
R	= REMOVE
R&S	= REMOVE & SALVAGE
S	= SALVAGE SIGN
RET	= RETAIN
B-B	= BACK TO BACK

LAYOUT

0 20 40

SCALE: 1" = 20'-0"

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: D. BARNES
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
SIGNING & PAVEMENT MARKINGS PLAN	SHEET 19 OF 57

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) lb/ft 1.75 1.88	2.0 2.42	2.5 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) lb/ft 3.0 1.3	4.0 1.7	4.0 MOD 1.7	TUBULAR STEEL Ø (in) FOUNDATION	3.0 7.6	3.5 9.0	4.0 10.8	5.0 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL: DETAIL IN SHSM BOOK	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
T.H. 371																																				
14+56, RT	SPEED LIMIT 30	1	24	30	5.00						1					X		X																R2-1	X		
15+77, LT	SPEED LIMIT 30	1	24	30	5.00						1					X		X																R2-1	X		
16+00, RT	BRIDGE 46 TH 371	1	6	10	0.42						1				X			X																VR-701			T-42
17+50, LT	BRIDGE 46 TH 371	1	6	10	0.42						1				X			X																VR-701			T-42
18+00, +/- RT	BIKE ROUTE	1 1	24 12	18 9	3.00 0.75						1					X		X																D11-1 M6-1 (GREEN ON WHITE)	X X		
TOTALS		SF 14.59	SF	EA.	SF		FT				FT 61								EA	LB			EA.	LB				EA.	EA.	LB						

"SHSM"-STANDARD HIGHWAY SIGNS AND MARKINGS

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

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164tss.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
TRAFFIC SIGN SUMMARY SHEET

PLOT DATE: 2/27/2015
DRAWN BY: D. BARNES
CHECKED BY: G. SANTY
SHEET 20 OF 57

SOIL CLASSIFICATION

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

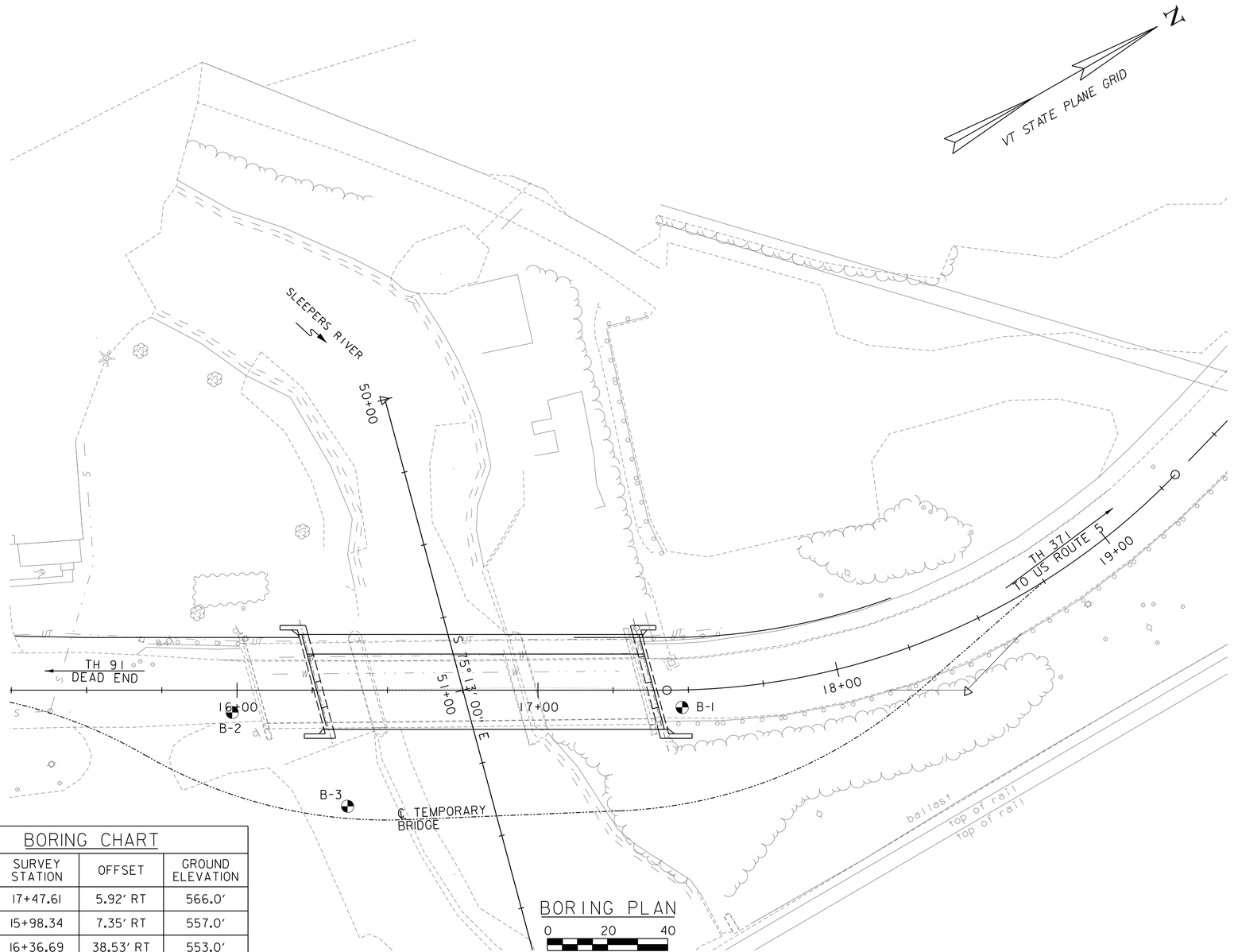
CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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

COMMONLY USED SYMBOLS

▼	Water Elevation
⊙	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	To 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)

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



BORING PLAN

0 20 40

SCALE

BORING CHART

BORING NUMBER	SURVEY STATION	OFFSET	GROUND ELEVATION
B-1	17+47.61	5.92' RT	566.0'
B-2	15+98.34	7.35' RT	557.0'
B-3	16+36.69	38.53' RT	553.0'

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 in July 1986, and Nov-Dec 2004 by VTRANS.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information 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 judgement 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 judgement 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.

Stantec

LEGEND:

BRIDGE BORING

PROJECT NAME: ST JOHNSBURY

PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164bdr_bor_pl.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: J. HUNGERFORD
BORING PLAN

PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: M. CHENETTE
SHEET 21 OF 57

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-1**
Page No.: 1 of 3
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/02/13 Date Finished: 12/04/13
VTSPG NAD83: N 696354.25 ft E 1766333.22 ft
Station: 17+47.61 Offset: 5.92 RT
Ground Elevation: 566.0 ft

	Casing	Sampler
Type:	WASH BORE	SS
I.D.:	4 in	1.38 in
Hammer Wt:	300 lb.	140 lb.
Hammer Fall:	24 in	30 in.
Hammer/Rod Type:	Safety/N	
Rig: N.H. BORING - Truck	C_e = 1	

Groundwater Observations

Date	Depth (ft)	Notes
12/04/13	25.0	

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, 0.0 ft - 0.5 ft								
		Gravel base course, 0.5 ft - 2.0 ft								
		12 inches of Concrete, 2.0 ft - 3.0 ft								
		Visual Classification, Sa, brn, Moist, Rec. = 1.0 ft				3-3-2-4 (5)				
5		A-3, Sa, brn, Moist, Rec. = 1.0 ft				4-5-7-8 (12)	5.2	17.0	77.0	6.0
BOTTOM OF PILE CAP APPROX. EL. 555.2										
10		Visual Classification, GrSa, brn, Moist, Rec. = 0.3 ft				5-5-4-4 (9)				
15		Visual Classification, GrSa, brn, Moist, Rec. = 0.7 ft				7-6-5-5 (11)				
20		A-1-b, GrSa, brn, Moist, Rec. = 0.3 ft				2-3-3-4 (6)	17.2	21.0	69.0	10.0
25		A-2-4, SiSa, brn, Wet, Rec. = 1.5 ft				1-1-1-1 (2)	34.2		75.0	25.0
30		Visual Classification, Sa, brn, Wet, Rec. = 0.8 ft				10-11-12-12 (23)				
35		Visual Classification, Sa, brn, Wet, Rec. = 0.8 ft				6-7-10-10 (17)				

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 of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY VTRANS_BRIDGE 46_ST JOHNSBURY_VT.GPJ VERMONT AOT.GDT 3/5/14

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-1**
Page No.: 2 of 3
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/02/13 Date Finished: 12/04/13
VTSPG NAD83: N 696354.25 ft E 1766333.22 ft
Station: 17+47.61 Offset: 5.92 RT
Ground Elevation: 566.0 ft

	Casing	Sampler
Type:	WASH BORE	SS
I.D.:	4 in	1.38 in
Hammer Wt:	300 lb.	140 lb.
Hammer Fall:	24 in	30 in.
Hammer/Rod Type:	Safety/N	
Rig: N.H. BORING - Truck	C_e = 1	

Groundwater Observations

Date	Depth (ft)	Notes
12/04/13	25.0	

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 %
		A-1-b, Sa, brn, Wet, Rec. = 1.2 ft				10-17-18-12 (35)	16.6	20.0	74.0	6.0
45		Visual Classification, SiSa, brn, Wet, Rec. = 0.7 ft				16-25-80-99 (105)				
50		A-2-4, SiSa, Lt/brn, Wet, Rec. = 1.0 ft				26-25-29-30 (54)	21.8		76.0	24.0
55		Visual Classification, SiSa, gry, Wet, Rec. = 1.0 ft				24-24-33-36 (62)				
60		Visual Classification, SiSa, gry, Wet, Rec. = 1.3 ft				17-20-24-24 (44)				
65		A-2-4, SiSa, gry, Wet, Rec. = 0.8 ft				17-27-29-29 (56)	23.0		74.0	26.0
70		Visual Classification, Sa, gry, Wet, Rec. = 1.2 ft				15-17-18-19 (35)				
75		A-3, Sa, gry, Wet, Rec. = 1.5 ft				24-24-25-28 (49)	19.2		94.0	6.0

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 of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY VTRANS_BRIDGE 46_ST JOHNSBURY_VT.GPJ VERMONT AOT.GDT 3/5/14

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164bor_log.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: T. DYKSTRA
BORING LOG 1

PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: J. HUNGERFORD
SHEET 22 OF 57

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-1**
Page No.: 3 of 3
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/02/13 Date Finished: 12/04/13
VTSPG NAD83: N 696354.25 ft E 1766333.22 ft
Station: 17+47.61 Offset: 5.92 RT
Ground Elevation: 566.0 ft

	Casing	Sampler
Type:	WASH BORE	SS
I.D.:	4 in	1.38 in
Hammer Wt:	300 lb.	140 lb.
Hammer Fall:	24 in	30 in.
Hammer/Rod Type:		Safety/N
Rig: N.H. BORING - Truck		C_r = 1

Groundwater Observations

Date	Depth (ft)	Notes
12/04/13	25.0	

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 %
85		Visual Classification, Sa, gry, Wet, Rec. = 1.2 ft				26-28-21-21 (49)				
90										
95		A-3, Sa, gry, Wet, Rec. = 1.3 ft				25-45-47-59 (92)	18.8		96.0	4.0
100										
105		Visual Classification, Sa, gry, Wet, Rec. = 1.2 ft				17-27-100/5" (R)				
BOTTOM OF PILE TIP APPROX. EL. 459.5		106.5 ft - 111.5 ft, Gry, Phyllite, Hard, Fresh, Good rock, NXDC, Joints are moderatley dipping, moderately spaced, smooth to rough, and tight. RMR = 61	1 (35-55)	98 (98)	4 5 6 12 21	Top of Bedrock @ 106.5 ft				
110										
115		111.5 ft - 116.5 ft, Gry, Phyllite, Hard, Fresh, Good rock, NXDC, Joints are moderatley dipping, moderately spaced, smooth to rough, and tight. RMR = 64	2 (35-55)	97 (92)	12 10 11 15 11					
		Hole stopped @ 116.5 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 of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY VTRANS_BRIDGE 46_ST JOHNSBURY_VT.GPJ VERMONT_DOT.GDT 3/5/14

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164bor_log.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: T. DYKSTRA
BORING LOG 2

PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: J. HUNGERFORD
SHEET 23 OF 57

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-2**
Page No.: 1 of 3
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/04/13 Date Finished: 2/06/13
VTSPG NAD83: N 696223.63 ft E 1766260.41 ft
Station: 15+98.34 Offset: 7.35 RT
Ground Elevation: 557.0 ft

	Casing	Sampler
Type:	WASH BORE	SS
I.D.:	4 in	1.38 in
Hammer Wt:	300 lb.	140 lb.
Hammer Fall:	24 in	30 in.
Hammer/Rod Type:		Safety/N
Rig: N.H. BORING - Truck		C_e = 1

Groundwater Observations

Date	Depth (ft)	Notes
12/06/13	15.0	

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, 0.0 ft - 0.25 ft								
		Sand, 0.25 ft - 0.42 ft								
		Concrete with rebar., 0.42 ft - 1.92 ft								
		Visual Classification, GrSa, brn, Moist, Rec. = 0.7 ft				2-3-5-3 (8)				
5		A-1-b, GrSa, brn, Moist, Rec. = 0.8 ft				3-4-5-4 (9)	8.6	33.0	60.0	7.0
		Visual Classification, GrSa, blk-brn, Wet, Rec. = 0.3 ft				4-3-8-5 (11)				
BOTTOM OF PILE CAP APPROX. EL. 548.7		Visual Classification, Wood, Rec. = 0.3 ft				7-24-10-7 (34)				
10		Visual Classification, GrSa, brn, Wet, Rec. = 0.7 ft				6-100/5" (R)				
		A-2-4, Sa, gry, Moist, Rec. = 1.0 ft				7-5-3-2 (8)	27.3		83.0	17.0
15		Visual Classification, SiSa, gry, Wet, Rec. = 1.5 ft				1-5-5-4 (10)				
		Visual Classification, SiSa, gry, Wet, Rec. = 1.3 ft				4-5-7-8 (12)				
20		Visual Classification, Sa, brn-gry, Moist, Rec. = 0.3 ft				5-7-12-10 (19)				
		Visual Classification, GrSa, brn-gry, Moist, Rec. = 0.8 ft				12-10-33-41 (43)				
		A-1-b, SaGr, gry, Wet, Rec. = 1.0 ft				35-22-25-29 (47)	11.6	47.0	44.0	9.0
25		Visual Classification, GrSa, gry, Wet, Rec. = 1.2 ft, organic material in sample				41-38-31-39 (69)				
30		Visual Classification, Sa, brn-gry, Wet, Rec. = 1.2 ft				66-44-21-17 (65)				
35		A-1-b, GrSa, brn, Wet, Rec. = 0.8 ft				38-21-26-29 (47)	15.9	23.0	69.0	8.0

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_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY VTRANS_BRIDGE 46_ST JOHNSBURY_VT.GPJ VERMONT AOT.GDT 3/5/14

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-2**
Page No.: 2 of 3
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/04/13 Date Finished: 2/06/13
VTSPG NAD83: N 696223.63 ft E 1766260.41 ft
Station: 15+98.34 Offset: 7.35 RT
Ground Elevation: 557.0 ft

	Casing	Sampler
Type:	WASH BORE	SS
I.D.:	4 in	1.38 in
Hammer Wt:	300 lb.	140 lb.
Hammer Fall:	24 in	30 in.
Hammer/Rod Type:		Safety/N
Rig: N.H. BORING - Truck		C_e = 1

Groundwater Observations

Date	Depth (ft)	Notes
12/06/13	15.0	

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 %
		Visual Classification, Sa, brn, Wet, Rec. = 1.0 ft				19-24-22-30 (66)				
45		A-4, SiSa, brn, Wet, Rec. = 1.5 ft				9-11-18-21 (29)	22.9		57.0	43.0
50		Visual Classification, Sa, brn, Wet, Rec. = 1.3 ft				15-24-18-30 (42)				
55		A-3, Sa, brn, Wet, Rec. = 1.2 ft				17-17-20-24 (37)	26.8		93.0	7.0
60		Visual Classification, SiSa, brn, Wet, Rec. = 1.3 ft				18-18-20-19 (38)				
65		Visual Classification, Sa, gry, Wet, Rec. = 1.2 ft				15-21-36-27 (57)				
70		A-3, Sa, gry, Wet, Rec. = 1.3 ft				26-44-51-40 (95)	25.3		94.0	6.0
75		Visual Classification, Sa, gry, Wet, Rec. = 1.5 ft				14-29-41-36 (70)				

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_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY VTRANS_BRIDGE 46_ST JOHNSBURY_VT.GPJ VERMONT AOT.GDT 3/5/14

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164bor_log.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: T. DYKSTRA
BORING LOG 3

PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: J. HUNGERFORD

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-2**
Page No.: 3 of 3
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/04/13 Date Finished: 2/06/13
VTSPG NAD83: N 696223.63 ft E 1766260.41 ft
Station: 15+98.34 Offset: 7.35 RT
Ground Elevation: 557.0 ft

	Casing	Sampler
Type:	WASH BORE	SS
I.D.:	4 in	1.38 in
Hammer Wt:	300 lb.	140 lb.
Hammer Fall:	24 in	30 in.
Hammer/Rod Type:		Safety/N
Rig: N.H. BORING - Truck		C_e = 1

Groundwater Observations

Date	Depth (ft)	Notes
12/06/13	15.0	

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 %
		Visual Classification, Sa, gry, Wet, Rec. = 1.2 ft				17-26-27-27 (53)				
85		A-3, Sa, gry, Wet, Rec. = 0.8 ft				18-24-25-24 (49)	20.2		91.0	9.0
90		Visual Classification, Sa, gry, Wet, Rec. = 1.2 ft				21-23-32-32 (55)				
95		93.5 ft - 98.5 ft, Gry, Phyllite, Hard, Fresh, Poor rock, NXDC, Joints are low angle to moderatley dipping, closely spaced, smooth to rough, and tight to open. RMR = 39	1 (5-55)	53 (28)	10 4 2 3 3	Top of Bedrock @ 93.5 ft				
BOTTOM OF PILE TIP APPROX. EL. 459.5										
100		99.0 ft - 104.0 ft, Gry, Phyllite, Hard, Fresh, Fair rock, NXDC, Joints are low angle, moderately close, smooth to rough, and tight. RMR = 58	2 (5-55)	93 (80)	6 5 6 7 8					
105		Hole stopped @ 104.0 ft								
110		Remarks: Cleaned out hole to 99 feet bgs with roller bit after core run no. 1.								
115										

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_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY VTRANS_BRIDGE 46_ST JOHNSBURY_VT.GPJ VERMONT AOT.GDT 3/5/14

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164bor_log.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: T. DYKSTRA
BORING LOG 4

PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: J. HUNGERFORD
SHEET 25 OF 57

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-3**
Page No.: 1 of 2
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/06/13 Date Finished: 12/06/13
VTSPG NAD83: N 696241.43 ft E 1766306.51 ft
Station: 16+36.69 Offset: 38.53 RT
Ground Elevation: 553.0 ft

	Casing	Sampler
Type:	WASH BORE	SS
I.D.:	4 in	1.38 in
Hammer Wt:	300 lb.	140 lb.
Hammer Fall:	24 in	30 in.
Hammer/Rod Type:	Safety/N	
Rig: N.H. BORING - Truck	C_r = 1	

Groundwater Observations		
Date	Depth (ft)	Notes
12/06/13	9.0	

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Not Sampled, 12 inches of crushed stone for parking area, Dry					
		Visual Classification, Sa, tan, Moist, Rec. = 1.2 ft, PID = 0 ppm	12-13-13-15 (26)				
BOTTOM OF PILE CAP APPROX. EL. 548.7		Visual Classification, Sa, brn, Moist, Rec. = 0.8 ft, PID = 0.1 ppm (3-4 ft) and 5.2 ppm (3-4 ft)	52-39-27-21 (66)				
5		Visual Classification, Sa, red-brn, Moist, Rec. = 1.2 ft, PID = 6.2 ppm (4-5 ft) and 5.2 ppm (5-6 ft)	18-22-20-35 (42)				
		A-3, Sa, red-brn, Moist, Rec. = 0.8 ft, PID = 14.8 ppm (6-7 ft) and 15.2 ppm (7-8 ft)	18-16-12-7 (28)	9.9	2.0	89.0	9.0
10		Visual Classification, SiSa, brn, Wet, Rec. = 1.0 ft, PID = 15.9 ppm (8-9 ft) and 16.5 ppm (9-10 ft)	17-23-25-25 (48)				
15		Visual Classification, SiSa, Dk/gry, Wet, Rec. = 1.5 ft, Strong petroleum odor, PID = 65.2 ppm (14-15 ft) and 62.2 ppm (15-16 ft)	3-2-1-2 (3)				
20		Visual Classification, Sa, Dk/gry, Wet, Rec. = 1.3 ft, Petroleum odor, PID = 3.2 ppm (19-20 ft) and 0.8 ppm (20-21 ft), Organic Content = 6.4%	5-5-7-8 (12)	78.3			
25		Visual Classification, SaSi, brn-gry, Wet, Rec. = 1.5 ft	6-8-11-11 (19)				
30		A-2-4, Sa, Lt/brn, Wet, Rec. = 1.2 ft	11-13-17-11 (30)	24.7		82.0	18.0
35		Visual Classification, Sa, brn, Wet, Rec. = 1.7 ft	5-10-11-12 (21)				
		Visual Classification, SaSi, Lt/brn, Wet, Rec. = 1.2 ft	19-24-				

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 of groundwater may occur due to other factors than those present at the time measurements were made.

BOTTOM OF PILE TIP APPROX. EL. 459.5

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

BORING LOG

St. Johnsbury
BRO 1447(30)
TH 371, Bridge #46 Over Sleepers River

Boring No.: **B-3**
Page No.: 2 of 2
Pin No.: 12J164
Checked By: TAD

Boring Crew: NH Boring, Derry, NH, Burke (Stantec)
Date Started: 12/06/13 Date Finished: 12/06/13
VTSPG NAD83: N 696241.43 ft E 1766306.51 ft
Station: 16+36.69 Offset: 38.53 RT
Ground Elevation: 553.0 ft

Type: WASH BORE SS
I.D.: 4 in 1.38 in
Hammer Wt: 300 lb. 140 lb.
Hammer Fall: 24 in 30 in.
Hammer/Rod Type: Safety/N
Rig: N.H. BORING - Truck C_r = 1

Groundwater Observations
Date: 12/06/13 Depth (ft): 9.0

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
			34-15 (58)				
45		Visual Classification, Sa, brn, Wet, Rec. = 1.5 ft	18-26-22-29 (48)				
50		Visual Classification, Sa, brn, Wet, Rec. = 1.5 ft	14-18-29-32 (47)				
		Hole stopped @ 51.0 ft					
55		Remarks: No refusal.					
60							
65							
70							
75							

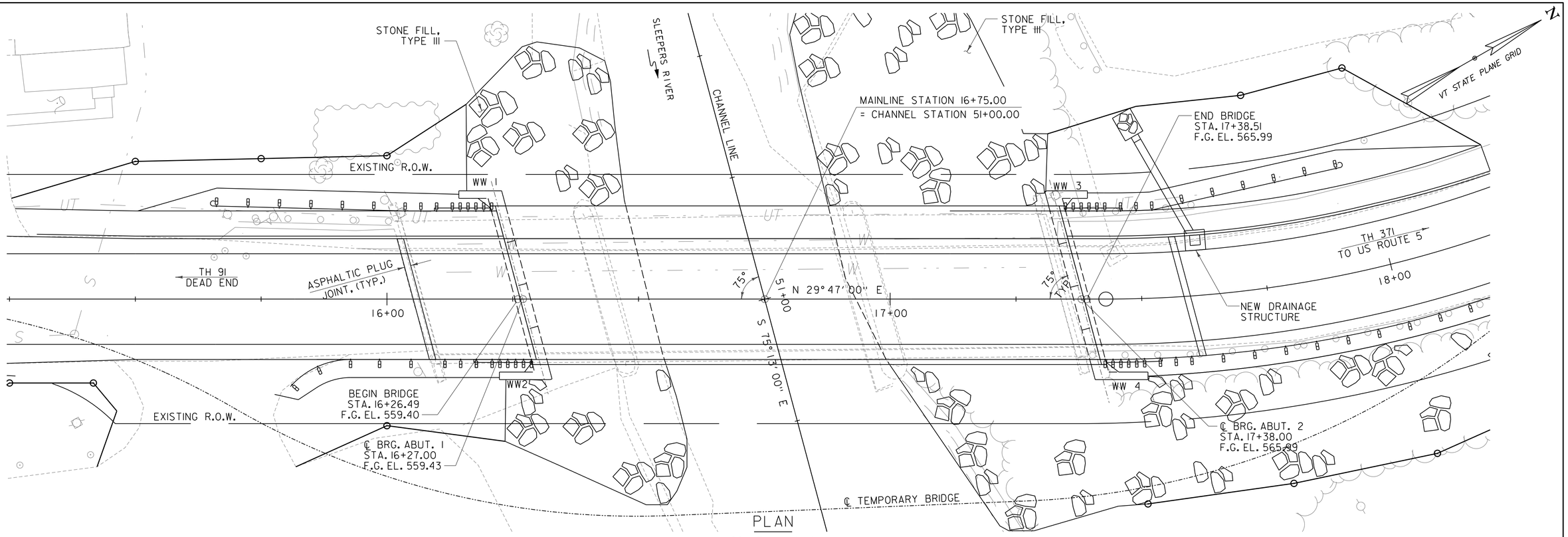
Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of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

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12J164bor_log.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: T. DYKSTRA
BORING LOG 5

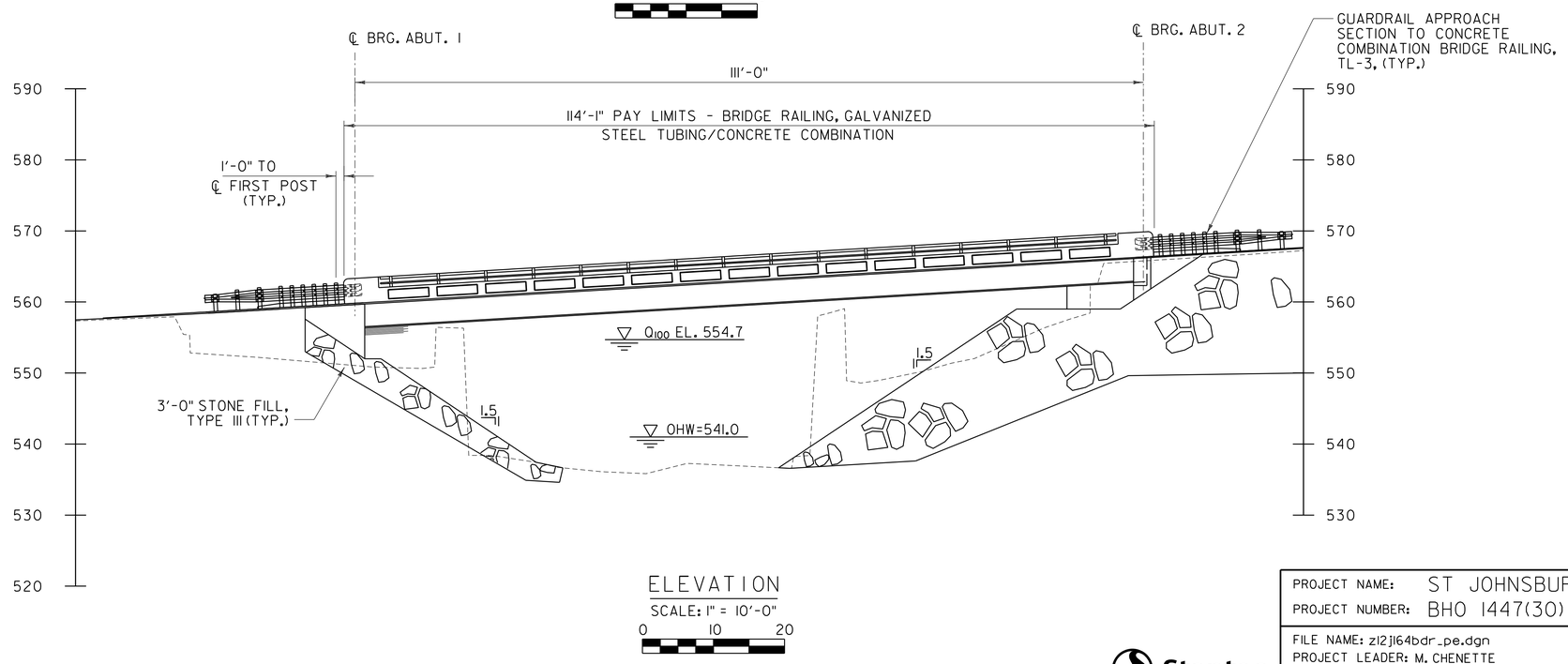
PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: J. HUNGERFORD
SHEET 26 OF 57



PLAN

SCALE: 1" = 10'-0"

0 10 20



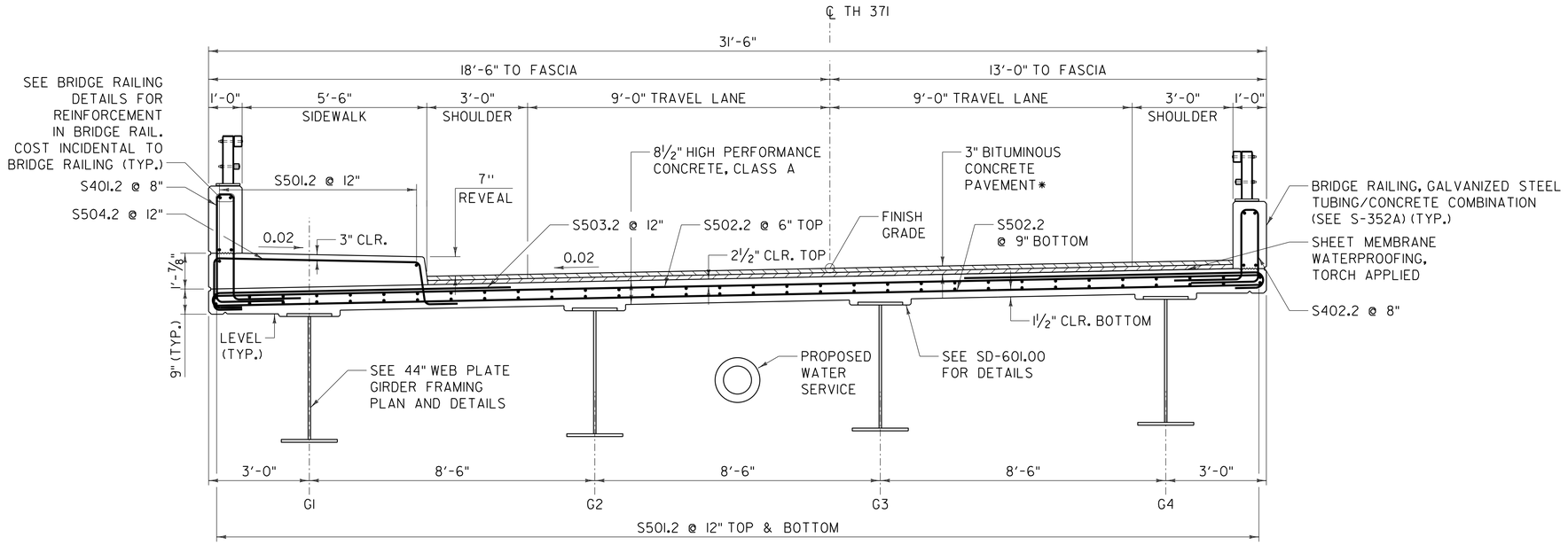
ELEVATION

SCALE: 1" = 10'-0"

0 10 20

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr_pe.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: J. HUNGERFORD	CHECKED BY: M. CHENETTE
PLAN AND ELEVATION	SHEET 27 OF 57

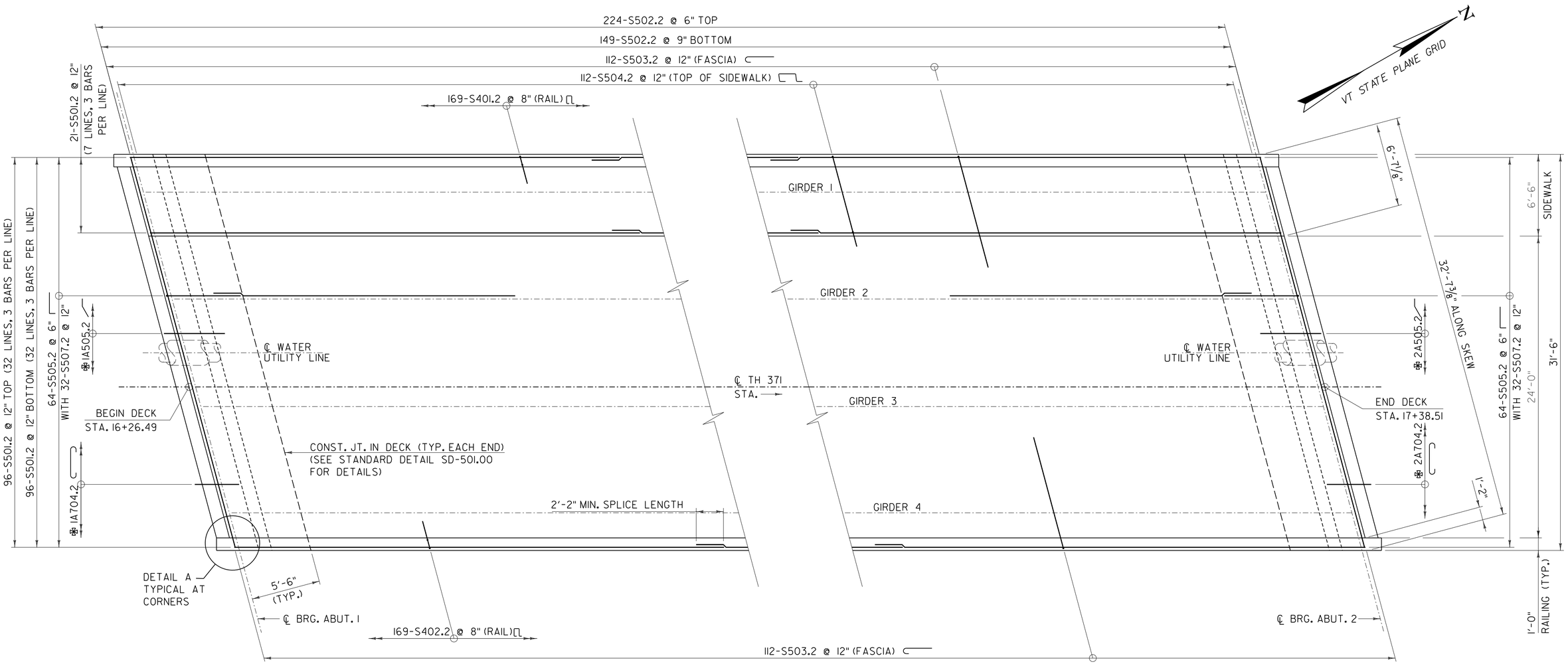


DECK TYPICAL
SCALE: ½" = 1'-0"

*1½" TYPE IVS OVER
1½" TYPE IVS

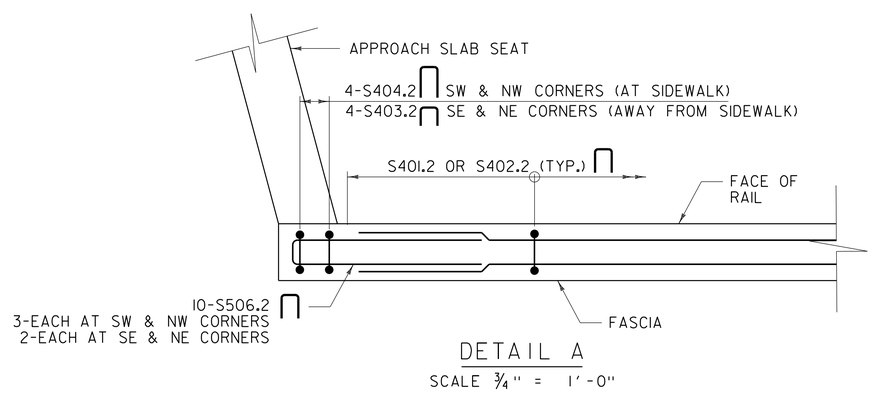
Stantec

PROJECT NAME: ST JOHNSBURY	
PROJECT NUMBER: BHO 1447(30)	
FILE NAME: z12j164fra_dets.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: J. SOTER
DESIGNED BY: D. TAYLOR	CHECKED BY: T. KNIGHT
DECK REINFORCING SECTION	SHEET 28 OF 57



BRIDGE DECK REINFORCING PLAN

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



DETAIL A

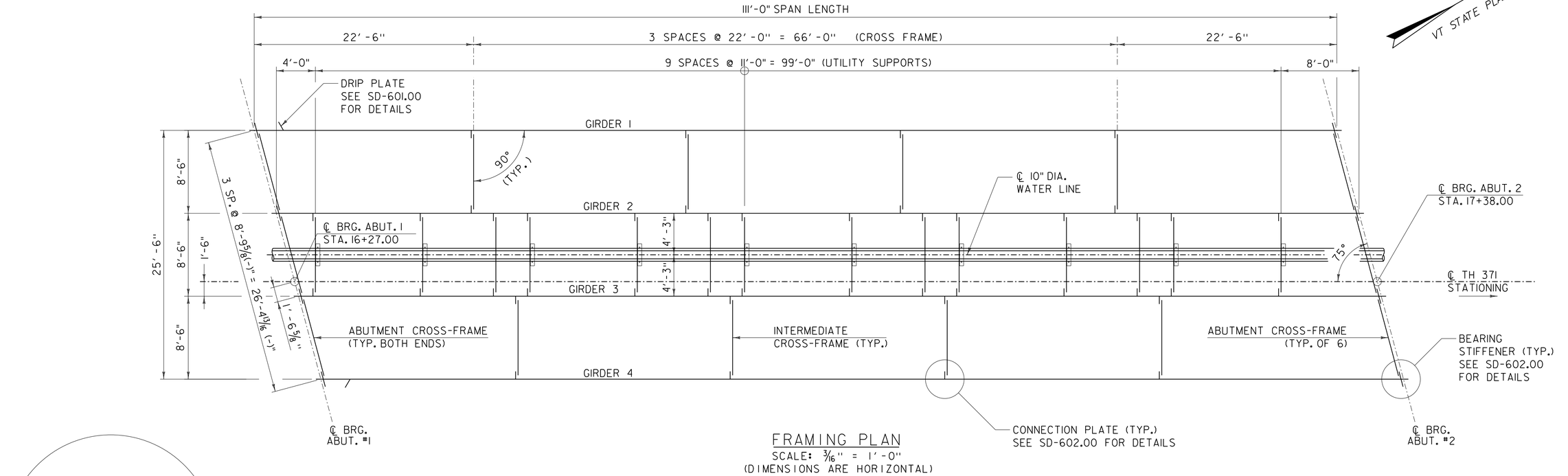
SCALE 3/4" = 1'-0"

NOTES:

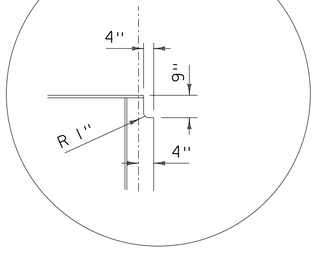
1. 2'-2" MINIMUM BAR LAP UNLESS OTHERWISE SPECIFIED ON PLANS.
2. ❄ - INDICATES ABUTMENT BAR. REFER TO ABUTMENT DRAWINGS FOR DETAILS.

Stantec

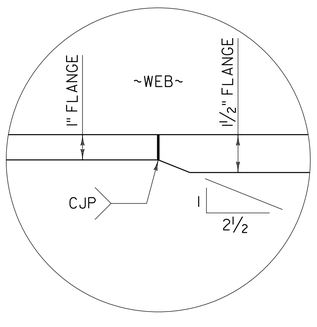
PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164deck.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: J. SOTER
DESIGNED BY: D. TAYLOR	CHECKED BY: TEK/DDT
DECK REINFORCING PLAN	SHEET 29 OF 57



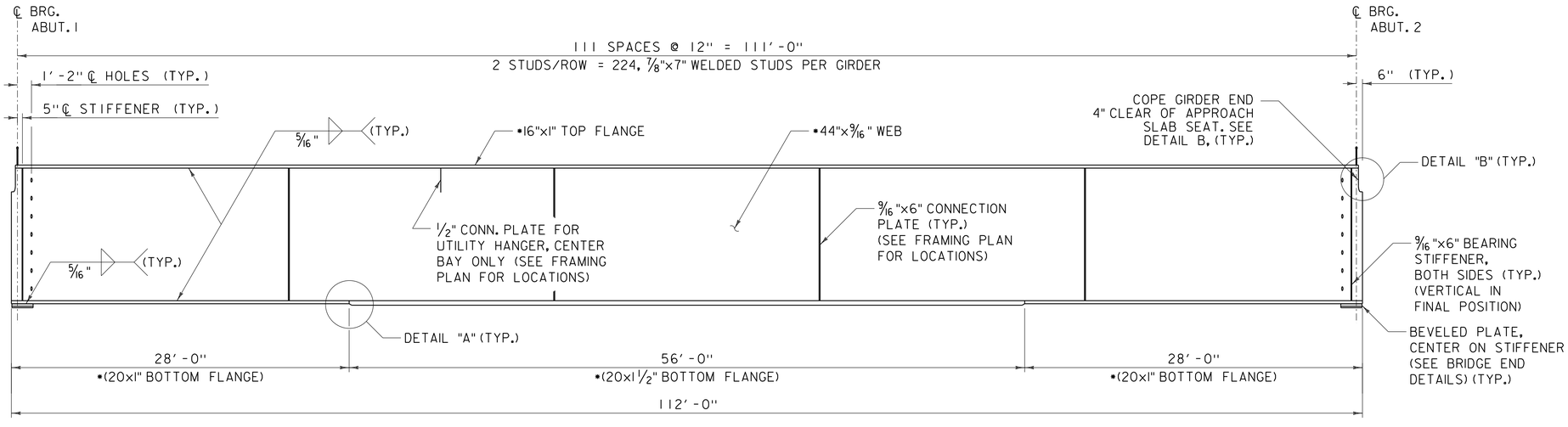
FRAMING PLAN
SCALE: 3/16" = 1'-0"
(DIMENSIONS ARE HORIZONTAL)



DETAIL B
NOT TO SCALE



DETAIL A
NOT TO SCALE

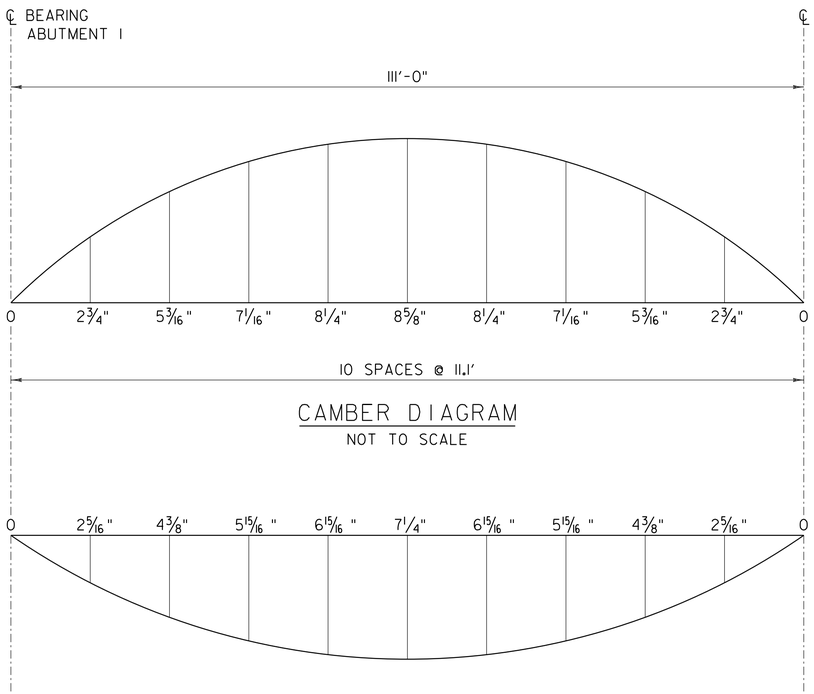


GIRDER ELEVATION
NOT TO SCALE

* DENOTES CHARPY V-NOTCH TEST REQUIRED

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164fra.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: J. SOTER
DESIGNED BY: D. TAYLOR	CHECKED BY: TEK/DDT
FRAMING PLAN	SHEET 30 OF 57

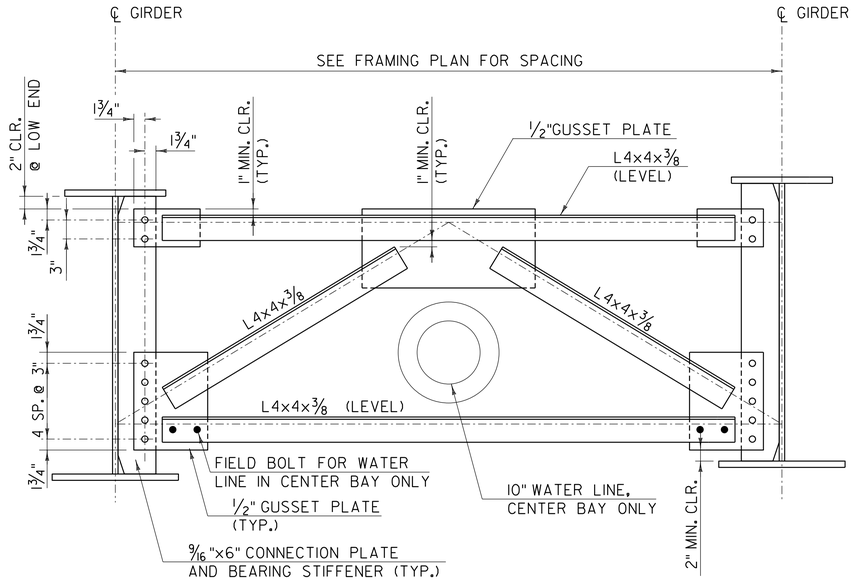


CAMBER DIAGRAM

NOT TO SCALE

DEAD LOAD DEFLECTION DIAGRAM

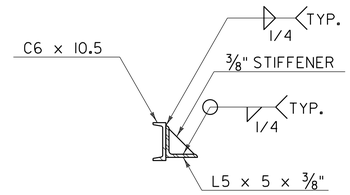
NOT TO SCALE



INTERMEDIATE CROSS FRAME SHOWN,
ABUTMENT CROSS FRAME SIMILAR

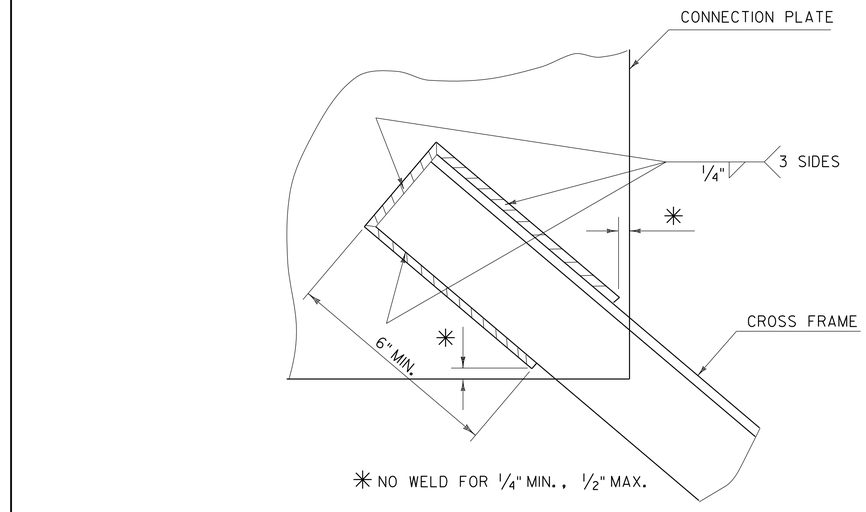
INTERMEDIATE AND ABUTMENT CROSS-FRAME DETAIL

SCALE: 1" = 1'-0"



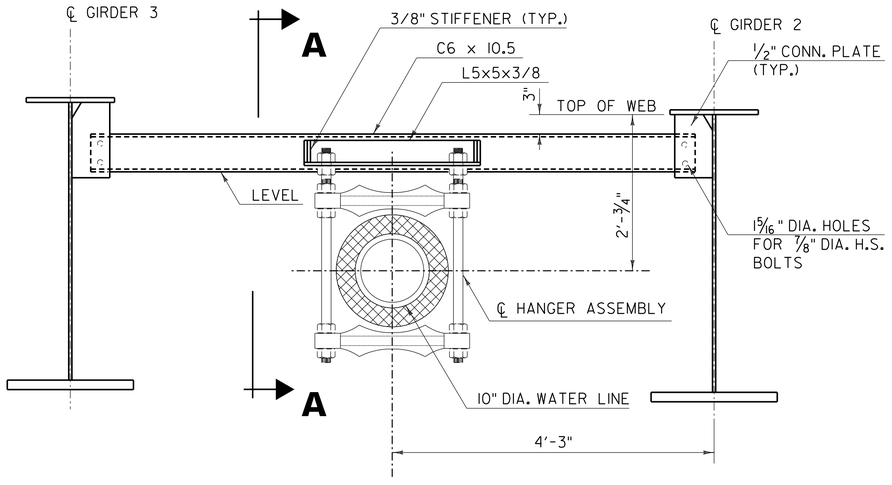
DETAIL B

SCALE: 1" = 1'-0"



WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING

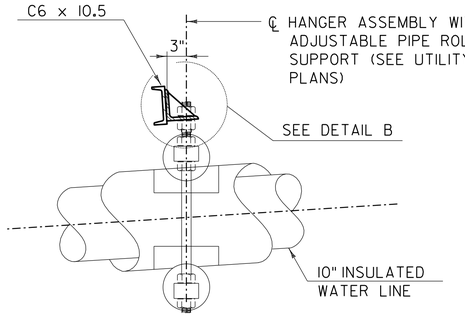
NOT TO SCALE



(LOOKING BACK STATION)

UTILITY SUPPORT DETAIL

SCALE: 1" = 1'-0"



SECTION A-A

SCALE: 1" = 1'-0"

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164fra_dets.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. TAYLOR
STEEL DETAILS

PLOT DATE: 2/27/2015
DRAWN BY: J. SOTER
CHECKED BY: TEK/DDT
SHEET 31 OF 57

Stantec

BEARING NOTES:

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

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

3. THE BEARINGS ARE DESIGNED SO THAT THE SUPERSTRUCTURE MAY BE ERECTED WHEN THE BEAM TEMPERATURE IS WITHIN THE RANGE OF 20 DEGREES F AND 70 DEGREES F WITHOUT ADJUSTING THE BEARINGS FOR TEMPERATURE. IF THE BEAM TEMPERATURE IS OUTSIDE THIS RANGE, THE BEARINGS SHALL BE RESET AS DIRECTED BY THE RESIDENT.

4. STEEL REINFORCED ELASTOMERIC BEARINGS WERE DESIGNED PER METHOD = A.

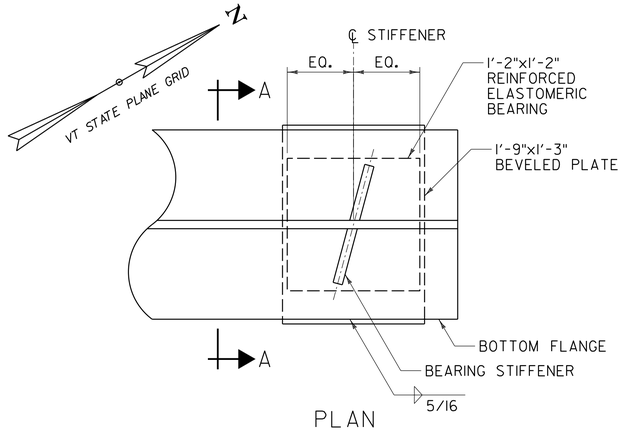
5. THE ELASTOMER WAS DESIGNED WITH A SHEAR MODULUS OF 152 PSI +/- 15%.

6. ABUTMENT 1 AND 2 BEARINGS
   - A. DESIGN DEAD LOAD REACTION = 70.0 KIPS/BEARING
   - B. DESIGN LIVE LOAD REACTION = N/A
   - C. ROTATION CAPACITY = 0.015 RADIANS
   - D. LONGITUDINAL DESIGN TRANSLATION = 0.25"

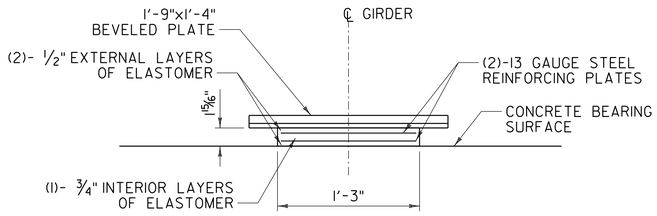
7. THE CONCRETE SURFACE UNDER THE BEARING SHALL BE LEVEL.

8. THE ELASTOMER SHALL MEET THE REQUIREMENTS OF SUBSECTION 731.03.

9. ALTERNATE CONFIGURATIONS FOR BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE DESIGN LOADS AND CRITERIA SHOWN ON THE PLANS.

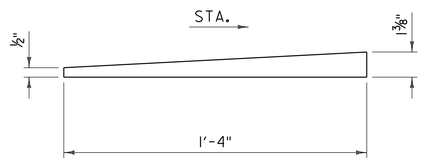


PLAN

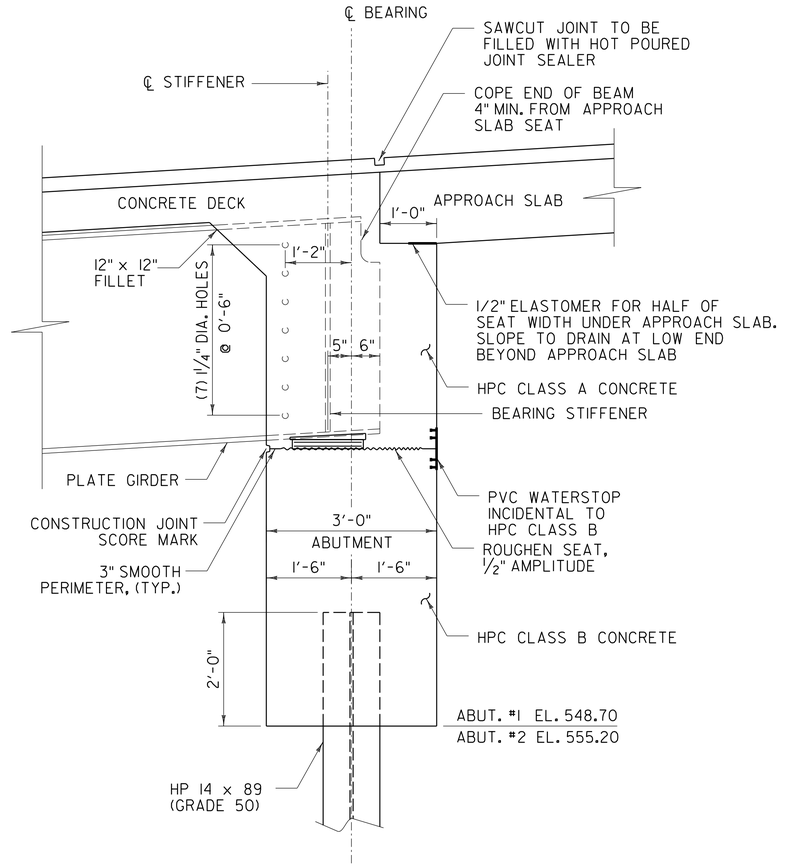


SECTION A-A
(GIRDER NOT SHOWN FOR CLARITY)

ELASTOMERIC BEARING ASSEMBLY
SCALE 1½" = 1'-0"



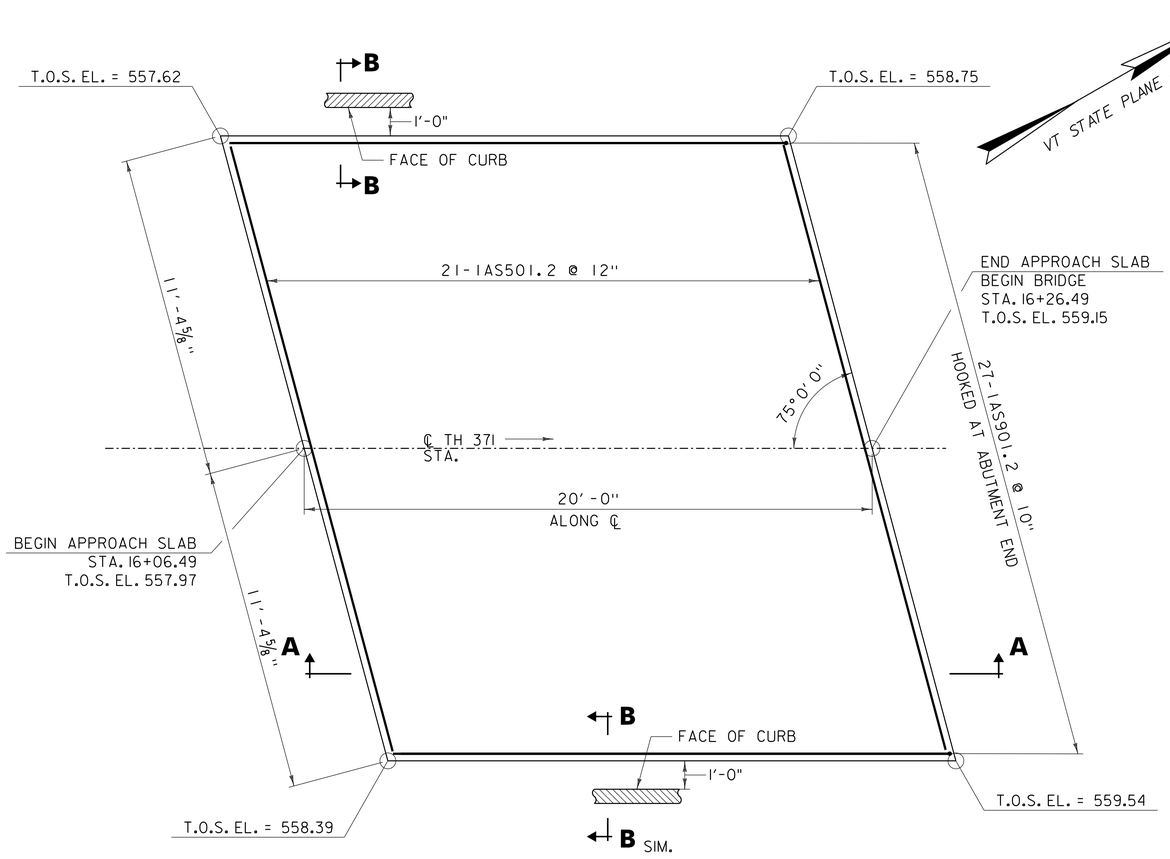
BEVELED PLATE DETAIL
NOT TO SCALE



BRIDGE END DETAIL
SCALE ¾" = 1'-0"

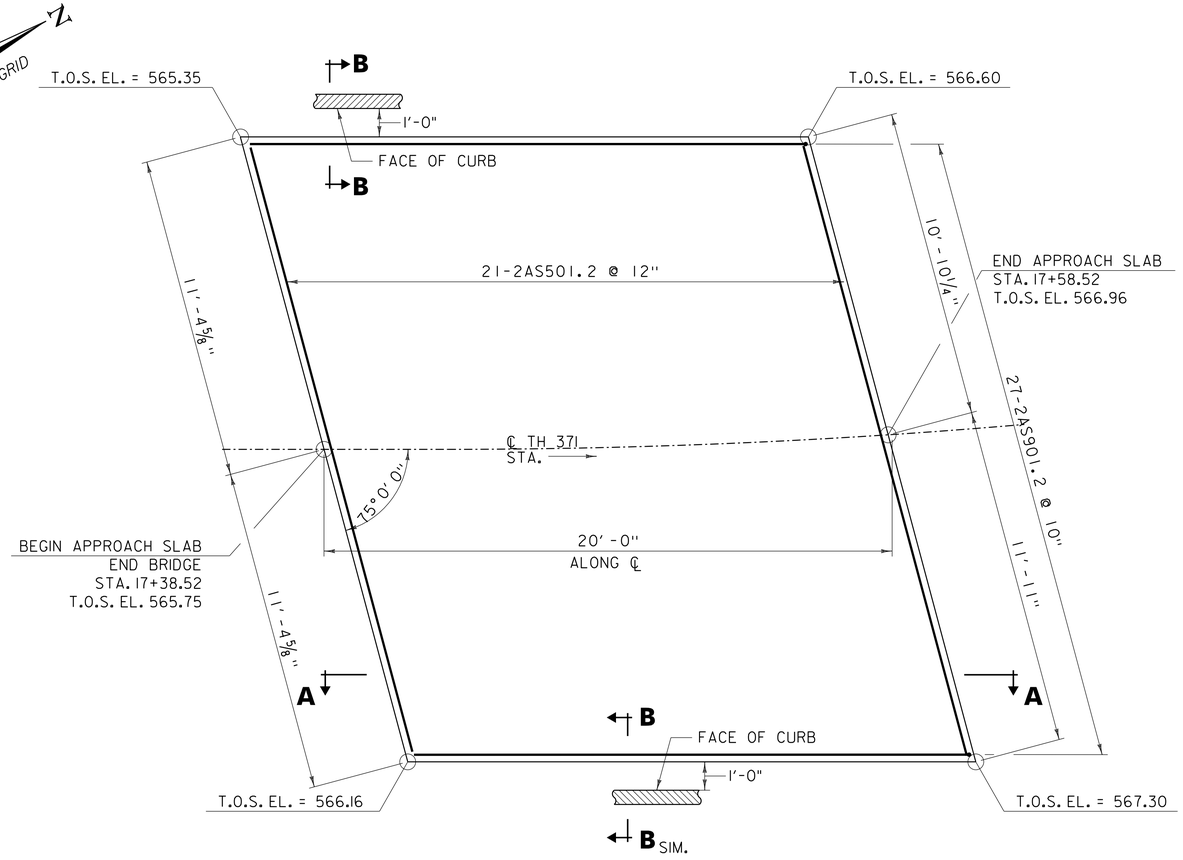
PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164end det.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: N. TIRK	CHECKED BY: T. KNIGHT/N. TIRK
BRIDGE END DETAILS	SHEET 32 OF 57

Stantec



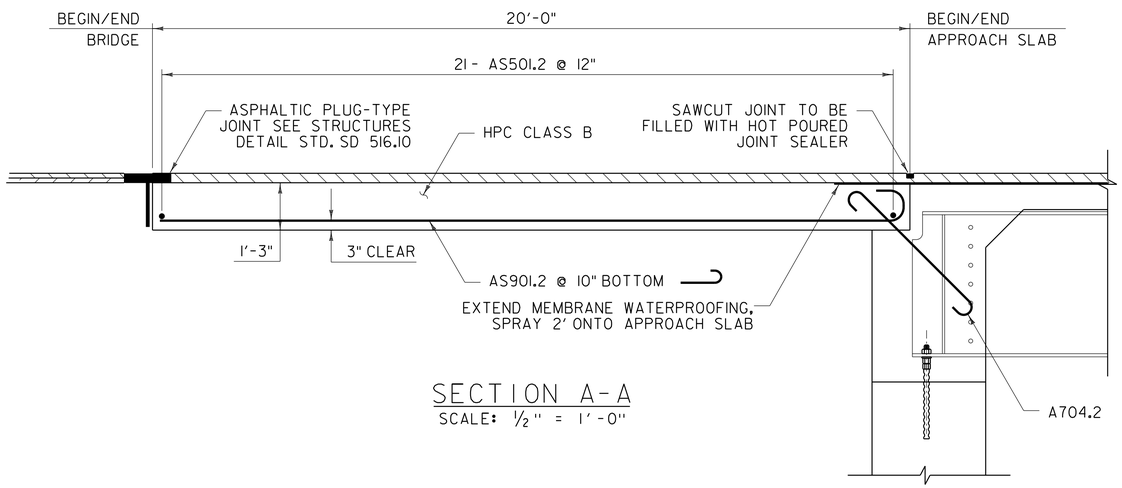
APPROACH SLAB #1 PLAN

SCALE 3/8" = 1'-0"



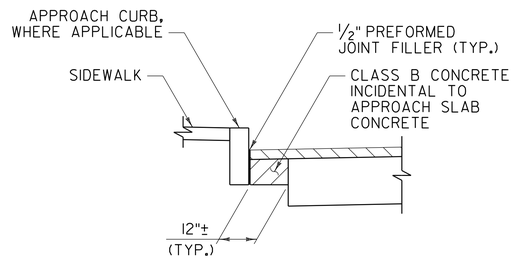
APPROACH SLAB #2 PLAN

SCALE 3/8" = 1'-0"



SECTION A-A

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



SECTION B-B

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

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

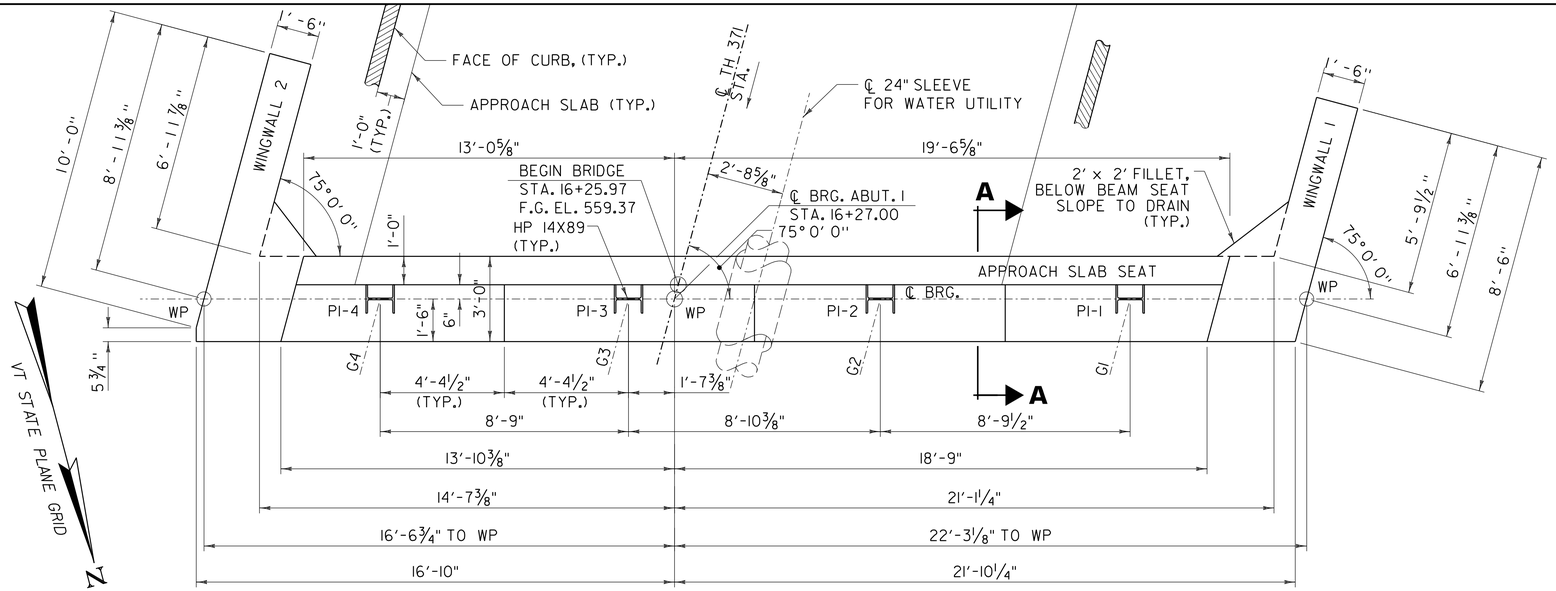
ALL LAPS ARE 2'-0" UNLESS OTHERWISE SPECIFIED ON THE PLANS.

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

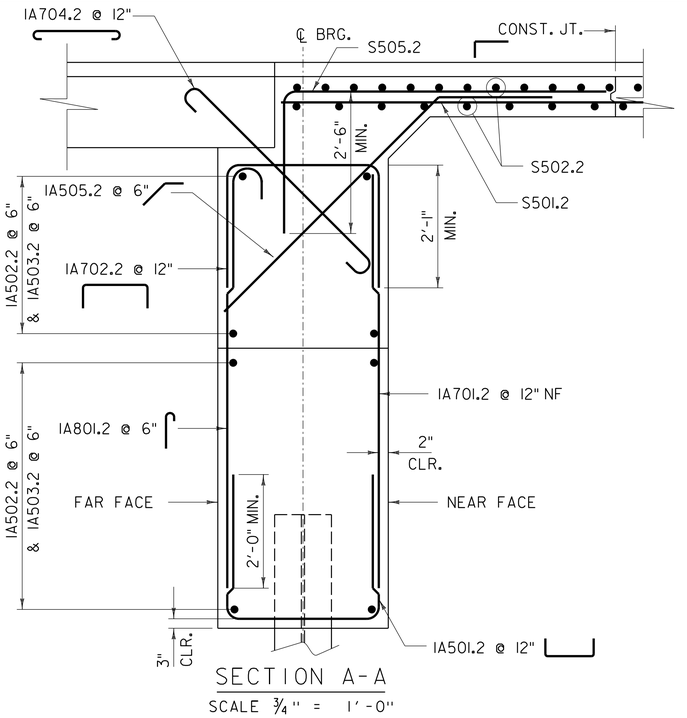
FILE NAME: z12j164app slabs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: N. TIRK
APPROACH SLAB DETAILS

PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: N. TIRK
SHEET 33 OF 57



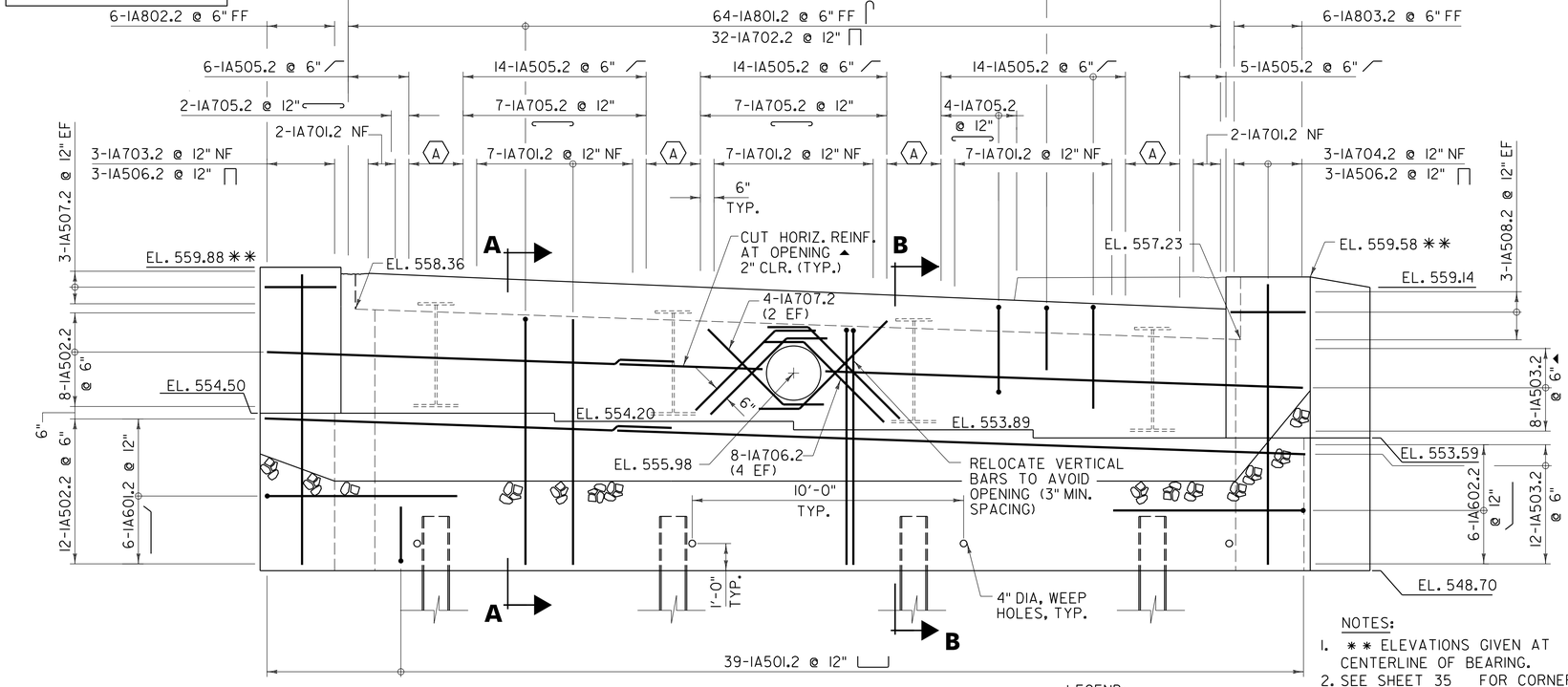
ABUTMENT 1 PLAN

SCALE ⅜" = 1'-0"



SECTION A-A

SCALE ¾" = 1'-0"



ABUTMENT 1 ELEVATION

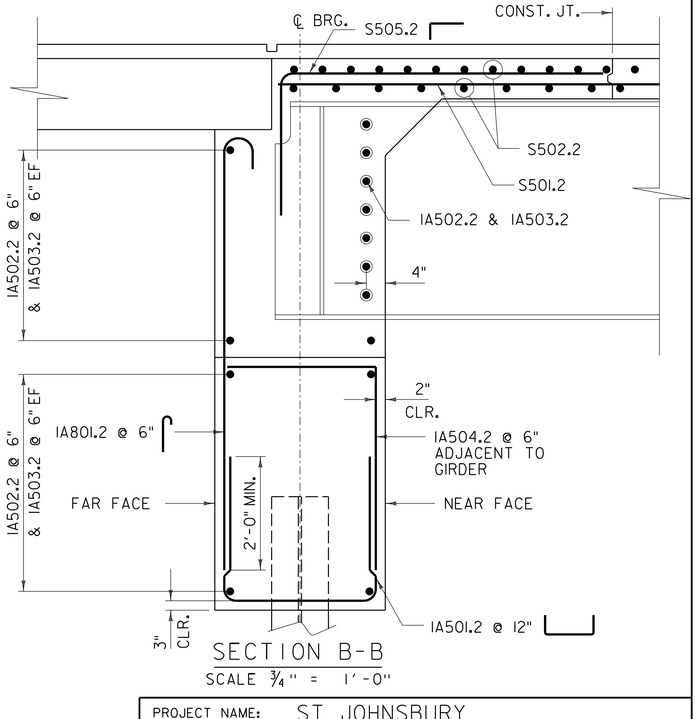
SCALE ⅜" = 1'-0"

LEGEND:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

NOTES:

1. ** ELEVATIONS GIVEN AT CENTERLINE OF BEARING.
2. SEE SHEET 35 FOR CORNER REINFORCING SECTIONS FOR BARS NOT SHOWN.
3. SEE SHEET 29 FOR DECK REINFORCING BARS NOT SHOWN.
4. SEE SHEET 36 FOR WINGWALL REINFORCING BARS NOT SHOWN.



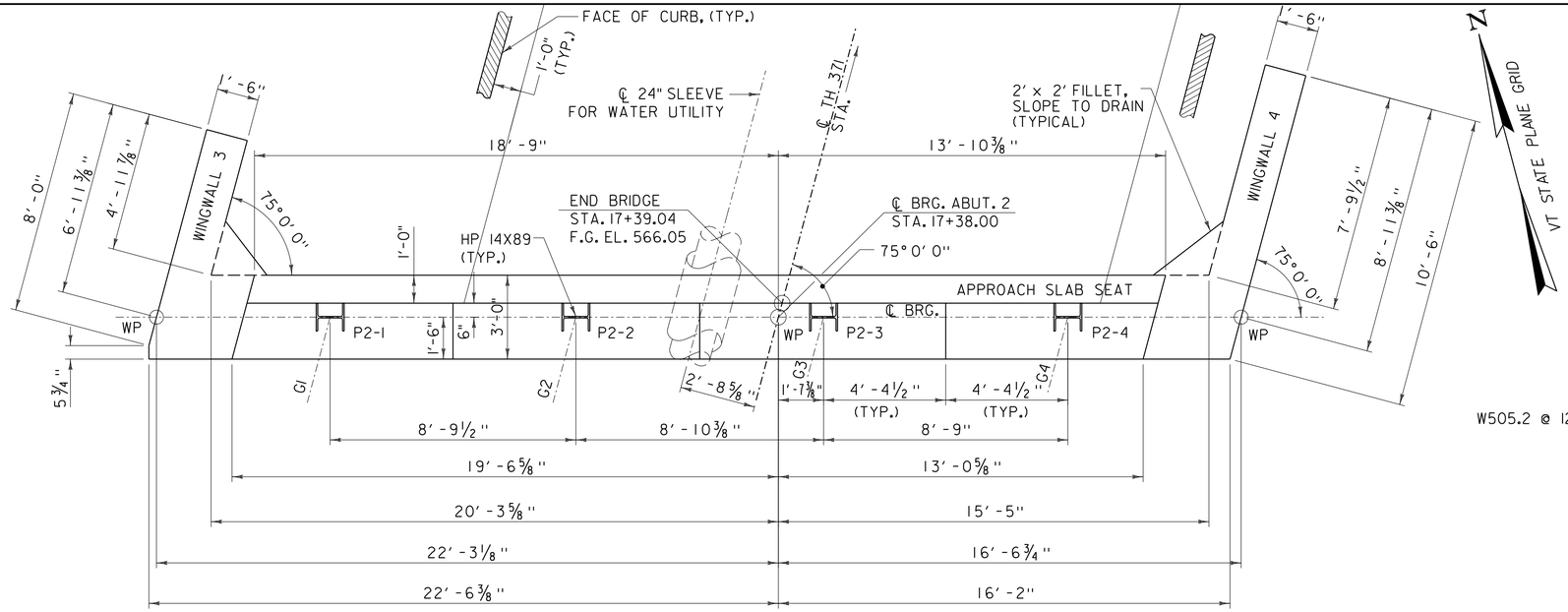
SECTION B-B

SCALE ¾" = 1'-0"

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)

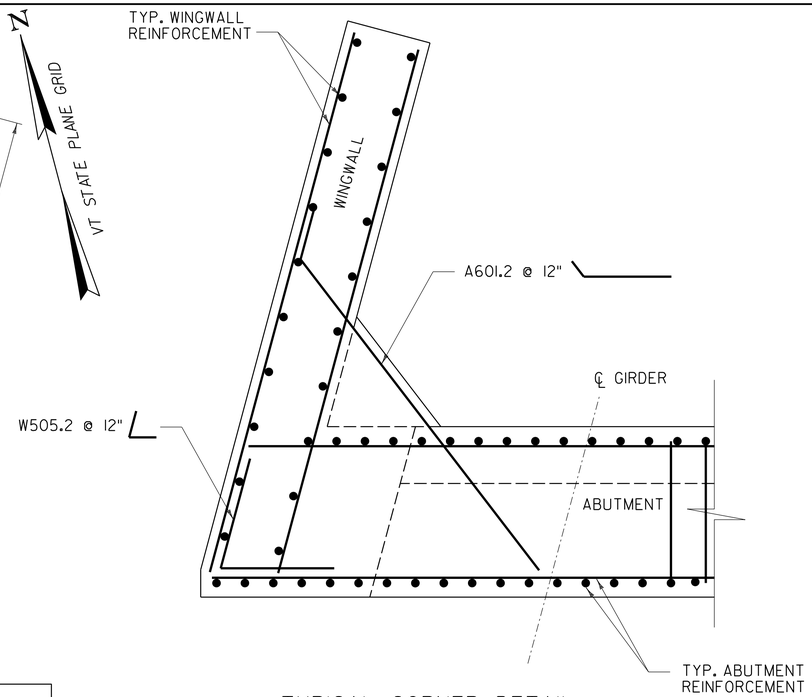
FILE NAME: z12J164abuts.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: N. TIRK	CHECKED BY: T. KNIGHT/N. TIRK
ABUTMENT 1 PLAN & ELEVATION	SHEET 34 OF 57

Stantec



ABUTMENT 2 PLAN

SCALE ⅜" = 1'-0"

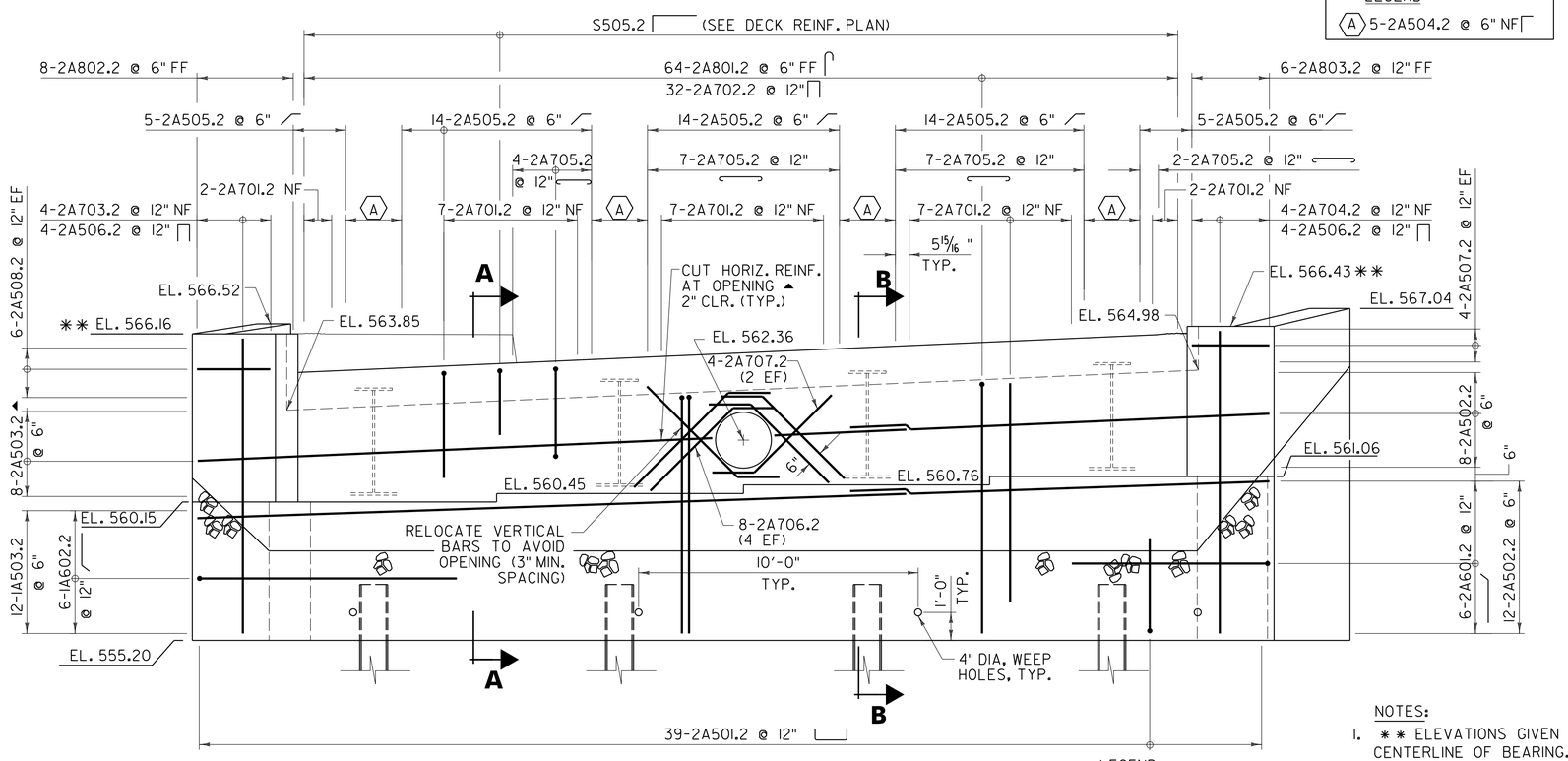


TYPICAL CORNER DETAIL
WINGWALLS 2 & 3 - BELOW BEAM SEAT

SCALE ¾" = 1'-0"

LEGEND

(A) 5-2A504.2 @ 6" NF



ABUTMENT 2 ELEVATION

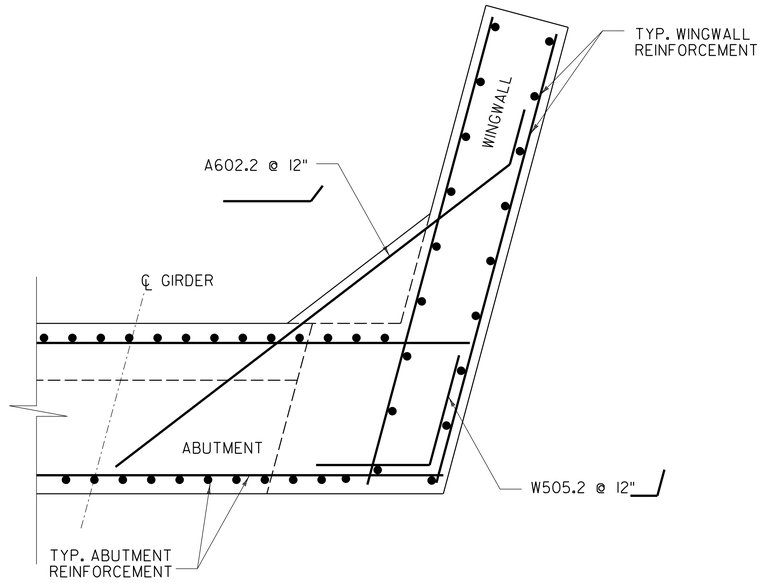
SCALE ⅜" = 1'-0"

LEGEND:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

NOTES:

1. ** ELEVATIONS GIVEN AT CENTERLINE OF BEARING.
2. SEE SHEET 34 FOR SECTIONS A-A & B-B.
3. SEE SHEET 29 FOR DECK REINFORCING BARS NOT SHOWN.
4. SEE SHEET 36 FOR WINGWALL REINFORCING BARS NOT SHOWN.



TYPICAL CORNER DETAIL
WINGWALLS 1 & 4 - BELOW BEAM SEAT

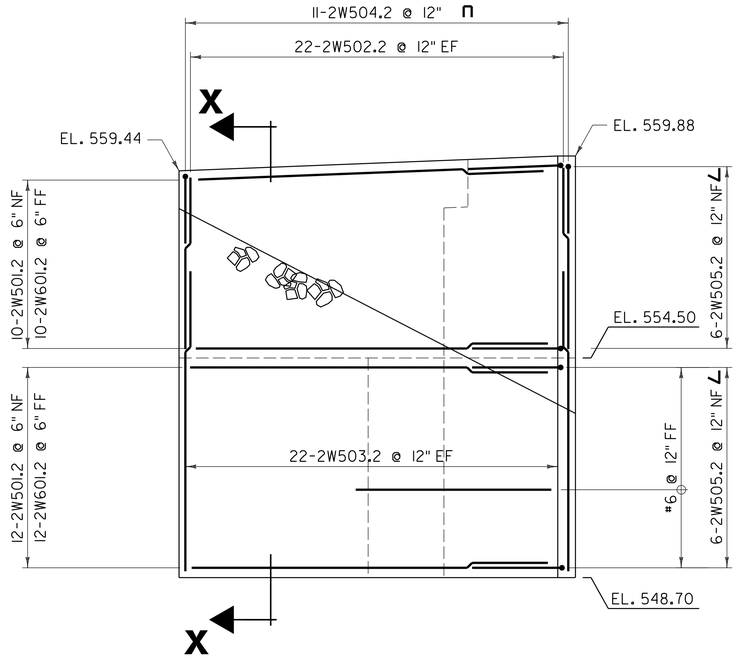
SCALE ¾" = 1'-0"

Stantec

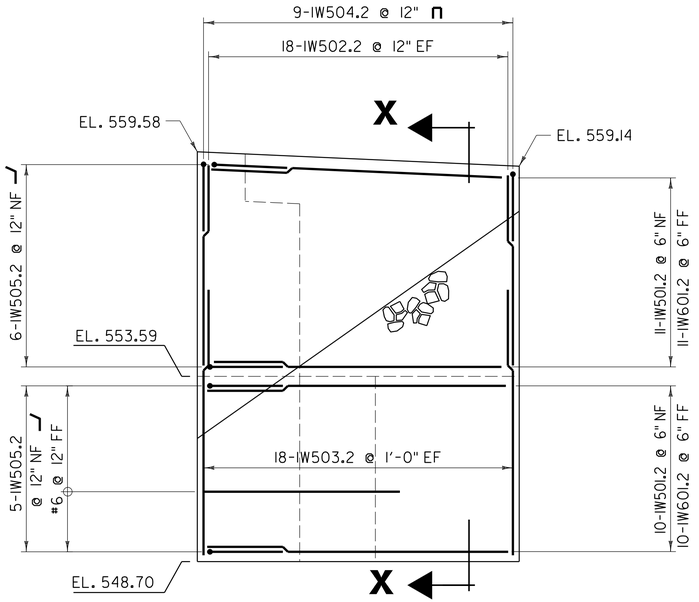
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164abuts.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: N. TIRK
ABUTMENT 2 PLAN & ELEVATION

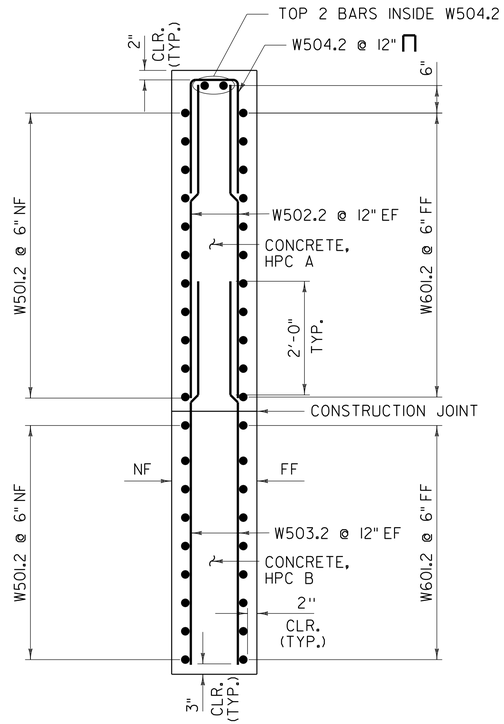
PLOT DATE: 2/27/2015
DRAWN BY: L. BUXTON
CHECKED BY: T. KNIGHT/N. TIRK
SHEET 35 OF 57



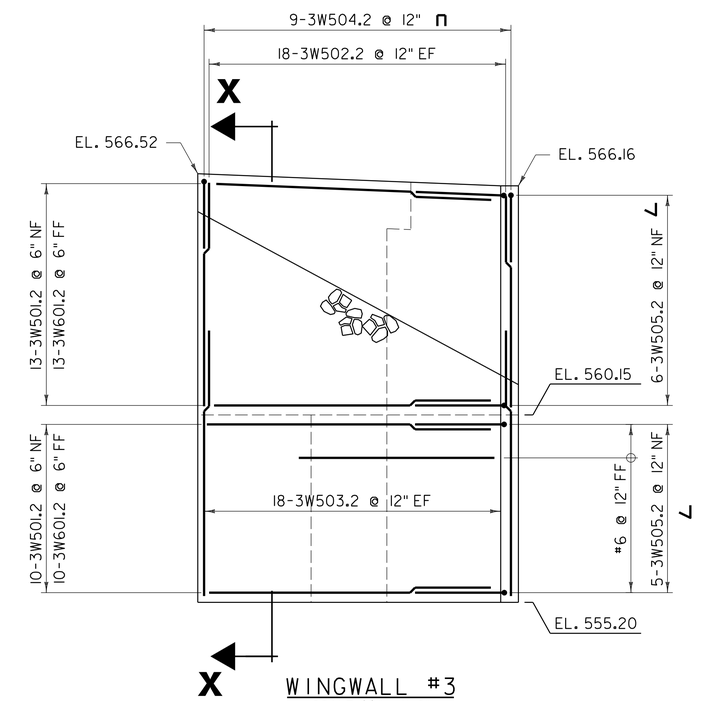
WINGWALL #2
SCALE: ½" = 1'-0"



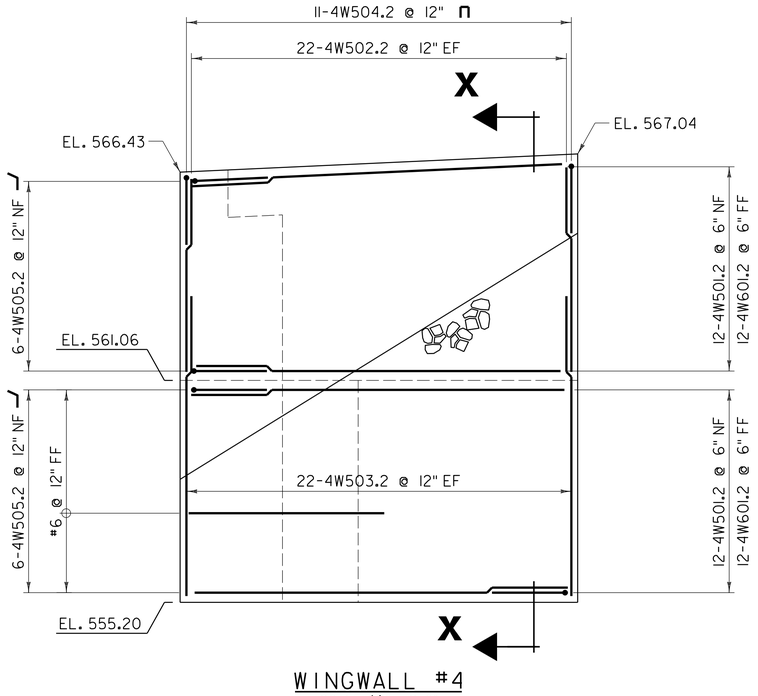
WINGWALL #1
SCALE: ½" = 1'-0"



SECTION X
SCALE ¾" = 1'-0"



WINGWALL #3
SCALE: ½" = 1'-0"



WINGWALL #4
SCALE: ½" = 1'-0"

NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD

ALL LAPS ARE 2'-0" (MIN.) UNLESS OTHERWISE SPECIFIED ON THE PLANS.

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12J164abuts.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: L. BUXTON
DESIGNED BY: N. TIRK	CHECKED BY: N. TIRK
WINGWALLS	SHEET 36 OF 57

STATE OF VERMONT
AGENCY OF TRANSPORTATION

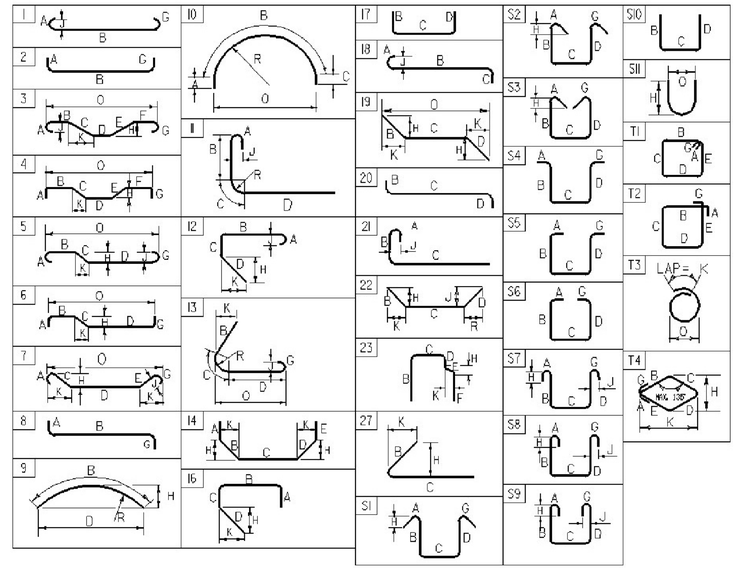
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	DECK																
✳	170	4	12'- 0"	S401.2	S5	2'- 2"	3'- 7"	6"	3'- 7"			2'- 2"					
	169	4	10'- 0"	S402.2	S5	2'- 2"	2'- 7"	6"	2'- 7"			2'- 2"					
✳	5	4	8'- 0"	S403.2	S4	---	3'- 9"	6"	3'- 9"			---					
	4	4	10'- 0"	S404.2	S4	---	4'- 9"	6"	4'- 9"			---					
	213	5	38'- 9"	S501.2	STR												
	373	5	32'- 3"	S502.2	STR												
✳	225	5	9'- 4"	S503.2	18	7"	8'- 9"	---						5"			
	112	5	10'- 7"	S504.2	S5	10"	1'- 5"	6'- 4"	1'- 2"			10"					
✳	129	5	8'- 4"	S505.2	17		2'- 6"	5'- 10"	---								
	10	5	7'- 2"	S506.2	S4	---	3'- 4"	6"	3'- 4"			---					
	64	5	24'- 0"	S507.2	STR												
	APPROACH SLAB NO. 1																
△	23	5	22'- 3"	1AS501.2	STR												
△	29	9	21'- 0"	1AS901.2	1	1'- 6"	19'- 6"					---		9"			
	APPROACH SLAB NO. 2																
	21	5	22'- 3"	2AS501.2	STR												
	27	9	21'- 0"	2AS901.2	1	1'- 6"	19'- 6"					---		9"			
	ABUTMENT NO. 1																
	39	5	8'- 6"	1A501.2	17		2'- 11"	2'- 8"	2'- 11"								
	20	5	15'- 0"	1A502.2	STR												
▲	20	5	25'- 4"	1A503.2	STR												
	20	5	7'- 2"	1A504.2	17		2'- 8"	4'- 6"	---								
△	55	5	7'- 6"	1A505.2	19		2'- 0"	5'- 6"	---				3'- 10"		3'- 10"		---
	6	5	7'- 4"	1A506.2	17		2'- 4"	2'- 8"	2'- 4"								
	6	5	2'- 9"	1A507.2	STR												
	6	5	2'- 8"	1A508.2	STR												
△	8	6	7'- 10"	1A601.2	19		10"	7'- 0"	---				8"		6"		---
	6	6	9'- 11"	1A602.2	19		10"	9'- 1"	---				6"		8"		---
	25	7	8'- 1"	1A701.2	STR												
	32	7	8'- 10"	1A702.2	17		3'- 1"	2'- 8"	3'- 1"								
✳	4	7	10'- 9"	1A703.2	STR												
✳	4	7	10'- 6"	1A704.2	STR												
	20	7	5'- 5"	1A705.2	1	10"	4'- 7"					---		7"			
	8	7	6'- 3"	1A706.2	19		1'- 6"	4'- 9"	---				1'- 1"		1'- 1"		---
	4	7	5'- 5"	1A707.2	19		1'- 6"	3'- 11"	---				1'- 1"		1'- 1"		---
	64	8	9'- 1"	1A801.2	1	11"	8'- 2"					---		8"			
✳	7	8	10'- 9"	1A802.2	STR												
✳	7	8	10'- 6"	1A803.2	STR												
	ABUTMENT NO. 2																
	39	5	8'- 6"	2A501.2	17		2'- 11"	2'- 8"	2'- 11"								
	20	5	15'- 0"	2A502.2	STR												
▲	20	5	25'- 4"	2A503.2	STR												
	20	5	7'- 2"	2A504.2	17		2'- 8"	4'- 6"	---								
△	54	5	7'- 6"	2A505.2	19		2'- 0"	5'- 6"	---				3'- 10"		3'- 10"		
	8	5	7'- 4"	2A506.2	17		2'- 4"	2'- 8"	2'- 4"								
	4	5	2'- 9"	2A507.2	STR												
	6	5	2'- 8"	2A508.2	STR												
△	8	6	7'- 10"	2A601.2	19		10"	7'- 0"	---				8"		6"		
	6	6	9'- 11"	2A602.2	19		10"	9'- 1"	---				6"		8"		
	25	7	8'- 2"	2A701.2	STR												
	32	7	8'- 10"	2A702.2	17		3'- 1"	2'- 8"	3'- 1"								
✳	5	7	10'- 6"	2A703.2	STR												
✳	5	7	10'- 9"	2A704.2	STR												
	20	7	5'- 5"	2A705.2	1	10"	4'- 7"					---		7"			
	8	7	6'- 3"	2A706.2	19		1'- 6"	4'- 9"	---				1'- 1"		1'- 1"		---
	4	7	5'- 5"	2A707.2	19		1'- 6"	3'- 11"	---				1'- 1"		1'- 1"		---
	64	8	9'- 1"	2A801.2	1		11"	8'- 2"				---		8"			
✳	9	8	10'- 6"	2A802.2	STR												
✳	7	8	10'- 9"	2A803.2	STR												
	WINGWALL NO. 1																
	21	5	8'- 0"	1W501.2	STR												
	18	5	5'- 3"	1W502.2	STR												
	18	5	6'- 9"	1W503.2	STR												
	9	5	5'- 9"	1W504.2	S10		2'- 4"	1'- 0"	2'- 4"								
	11	5	4'- 0"	1W505.2	19		2'- 0"	2'- 0"	---				6"		1'- 11"		---
	21	6	8'- 0"	1W601.2	STR												

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	WINGWALL NO. 2																
	22	5	9'- 6"	2W501.2	STR												
	22	5	4'- 7"	2W502.2	STR												
	22	5	7'- 8"	2W503.2	STR												
	11	5	5'- 9"	2W504.2	S10		2'- 4"	1'- 0"	2'- 4"								
	12	5	4'- 8"	2W505.2	27		2'- 4"	2'- 4"	---				7"		2'- 3"		
	22	6	9'- 6"	2W601.2	STR												
	WINGWALL NO. 3																
	23	5	7'- 6"	3W501.2	STR												
	18	5	5'- 8"	3W502.2	STR												
	18	5	6'- 10"	3W503.2	STR												
	9	5	5'- 8"	3W504.2	S10		2'- 4"	1'- 0"	2'- 4"								
	11	5	4'- 8"	3W505.2	27		2'- 4"	2'- 4"	---				7"		2'- 3"		
	23	6	7'- 6"	3W601.2	STR												
	WINGWALL NO. 4																
	24	5	10'- 0"	4W501.2	STR												
	22	5	5'- 1"	4W502.2	STR												
	22	5	7'- 9"	4W503.2	STR												
	11	5	6'- 2"	4W504.2	S10		2'- 7"	1'- 0"	2'- 7"								
	12	5	4'- 0"	4W505.2	19		2'- 0"	2'- 0"	---				6"		1'- 11"		---
	24	6	10'- 0"	4W601.2	STR												

~ NOTES ~

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



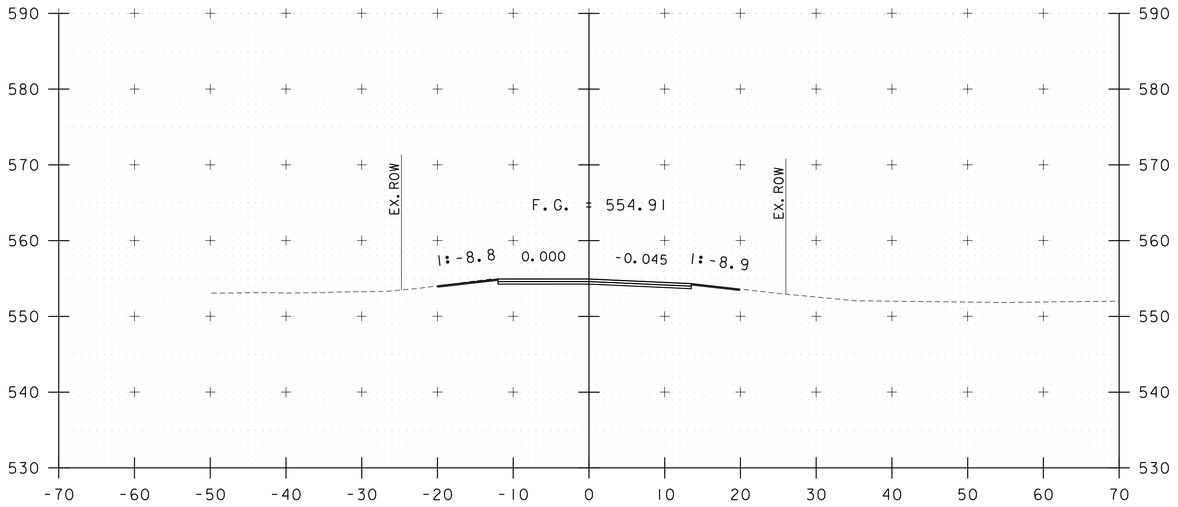
ASTM STANDARD REINFORCING BARS

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

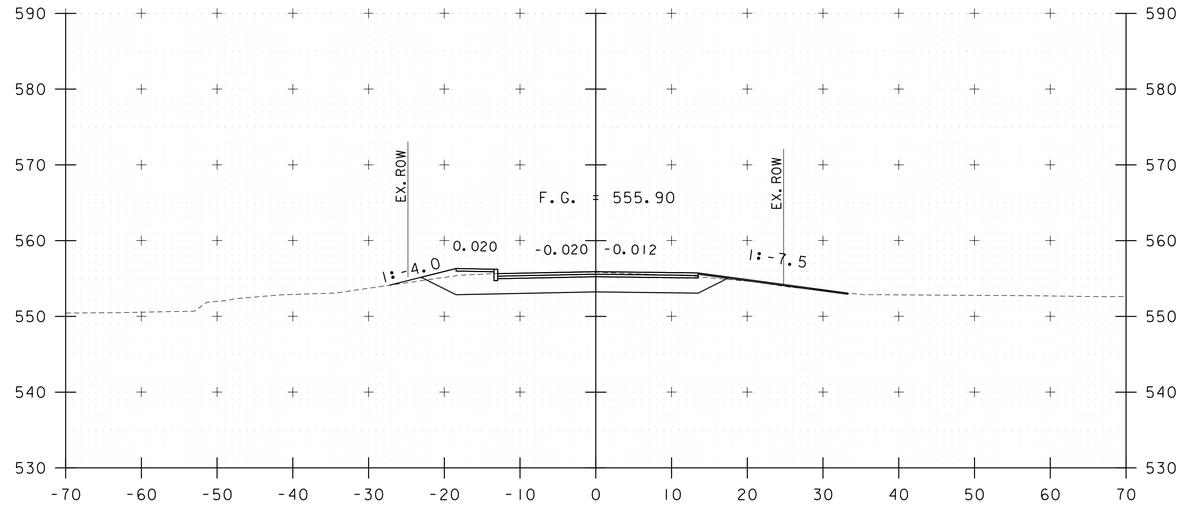
PROJECT NAME: **ST. JOHNSBURY**
PROJECT NUMBER: **BHO 1447(30)**

FILE NAME:
PROJECT MANAGER: **M. CHENETTE**
DESIGNED BY: **T. KNIGHT**
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: **2/24/2015**
DRAWN BY: **J. SOTER**
CHECKED BY: **M. CHENETTE**
SHEET 37 OF 57



15+00



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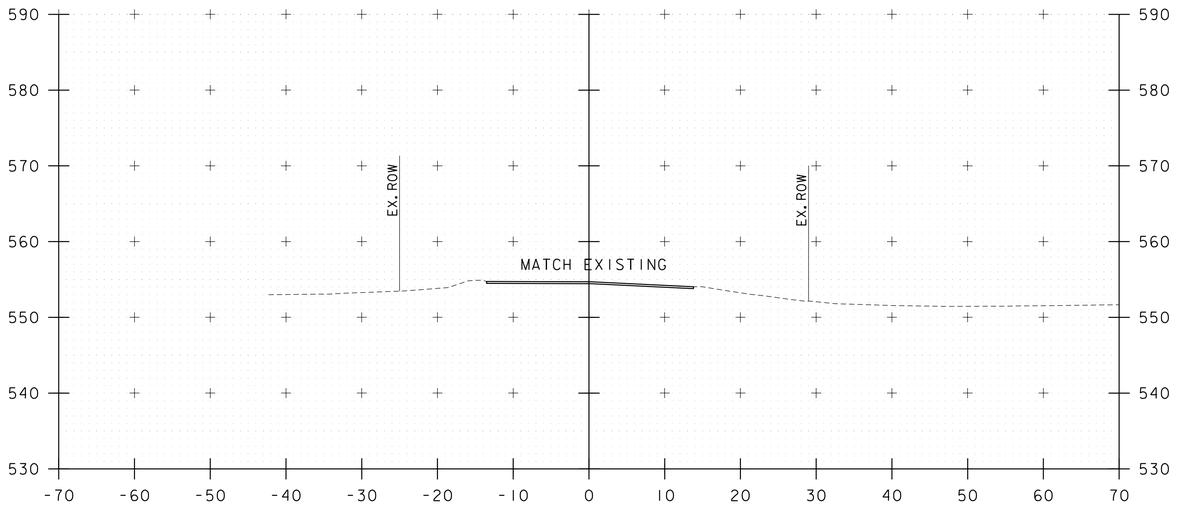
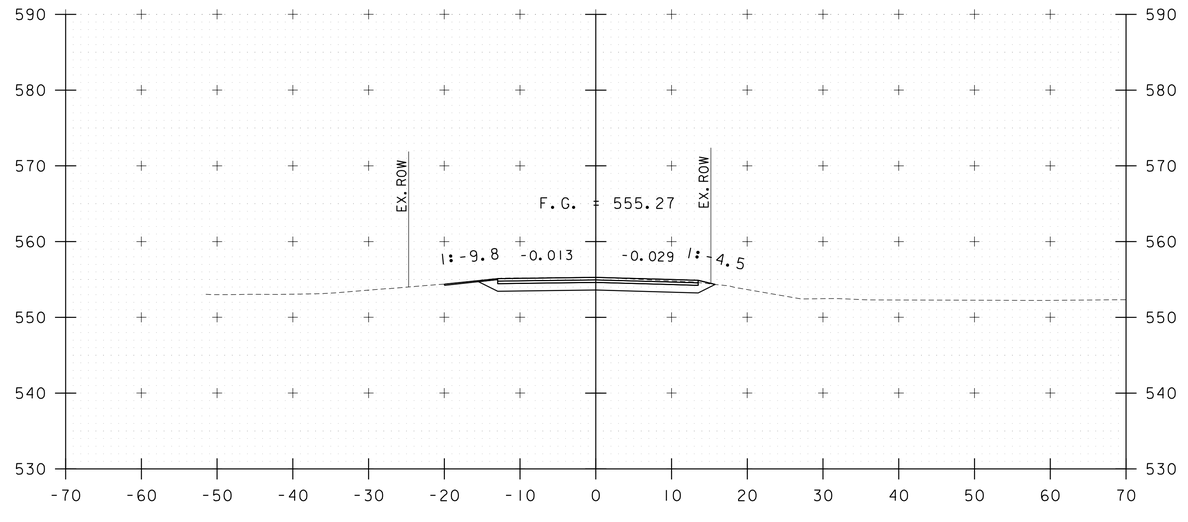


14+75
14+50
BEGIN APPROACH



15+25

STA. 14+75 TO STA. 15+50

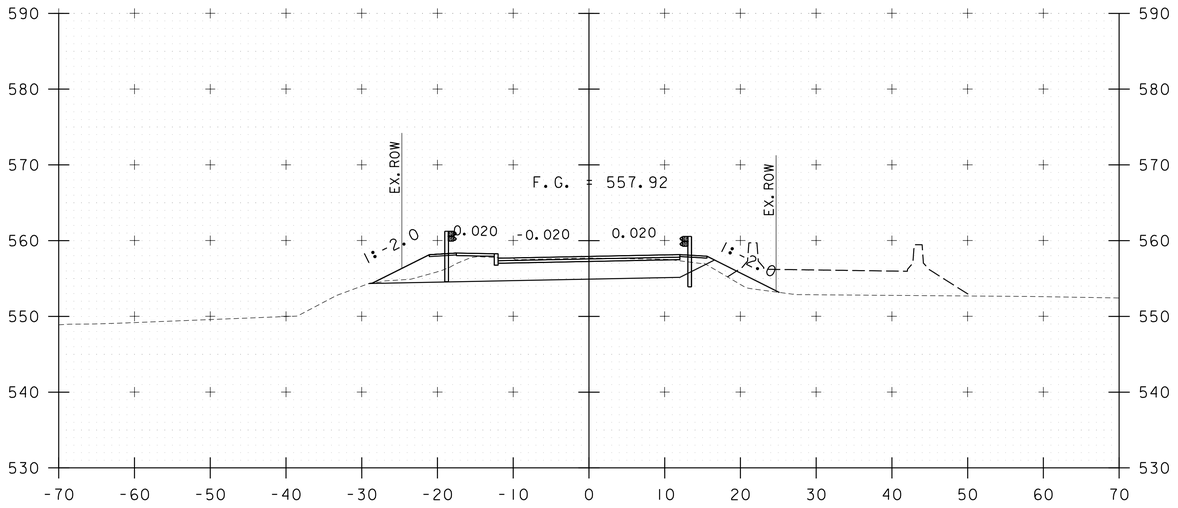
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164xs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
ROADWAY CROSS SECTIONS - RXS 1

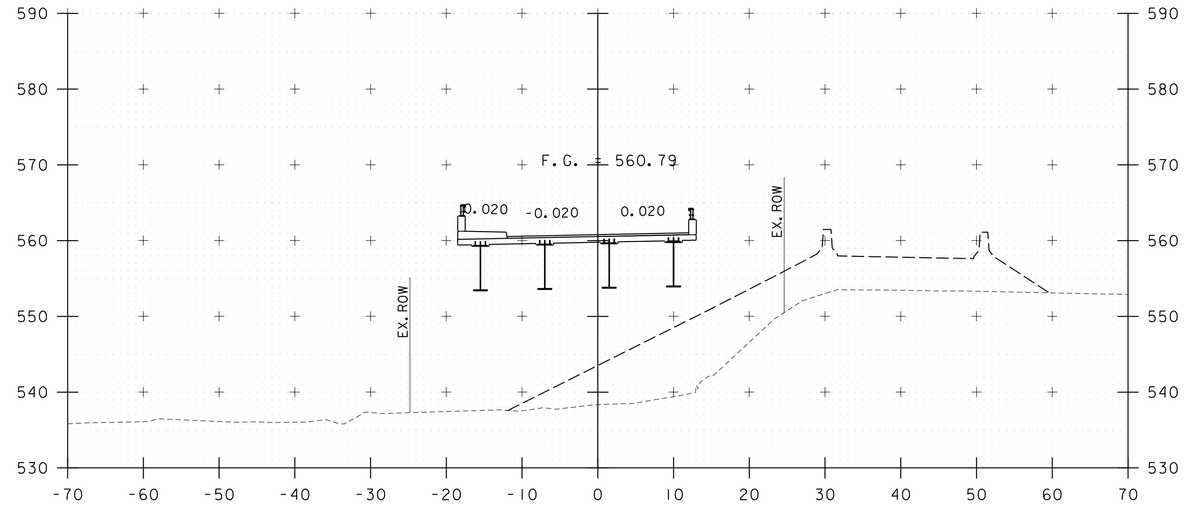
PLOT DATE: 2/27/2015
DRAWN BY: I. MAYNARD
CHECKED BY: G. SANTY
SHEET 38 OF 57

0 10 20
SCALE: 1" = 10'

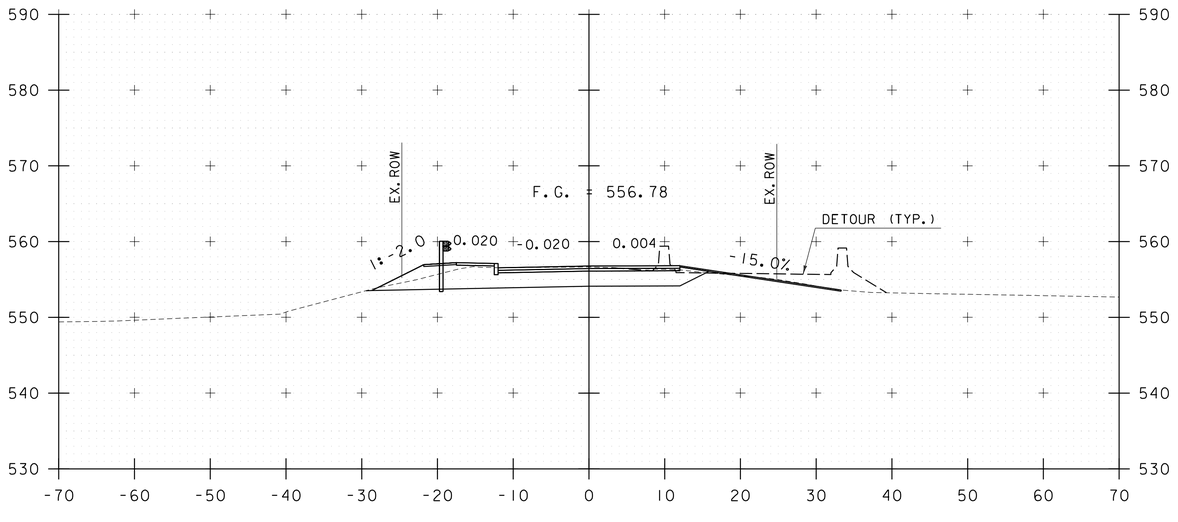
Stantec



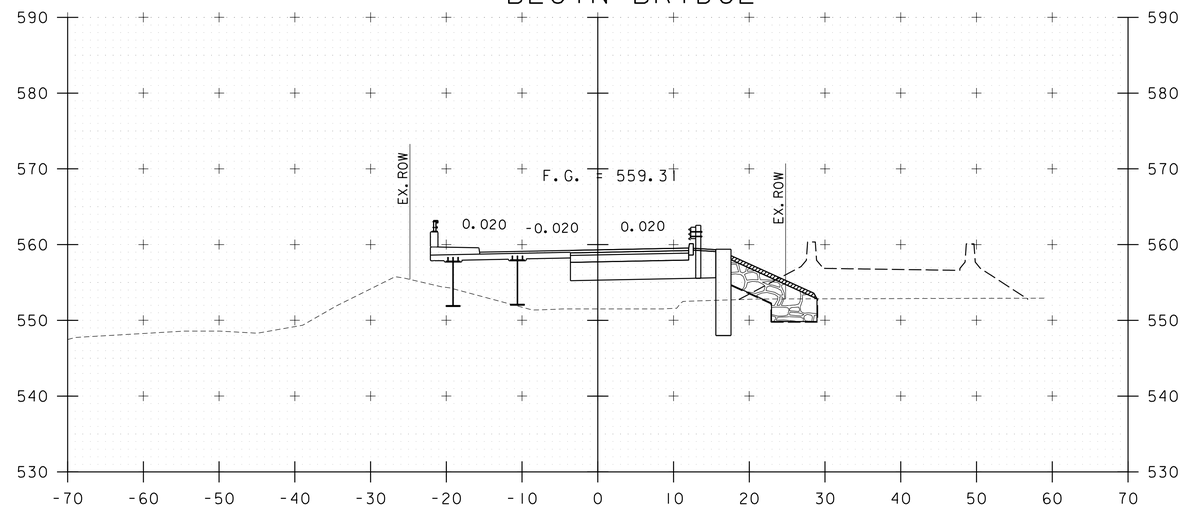
16+00



16+50
16+30.17
BEGIN BRIDGE



15+75



16+25

STA. 15+75 TO STA. 16+50

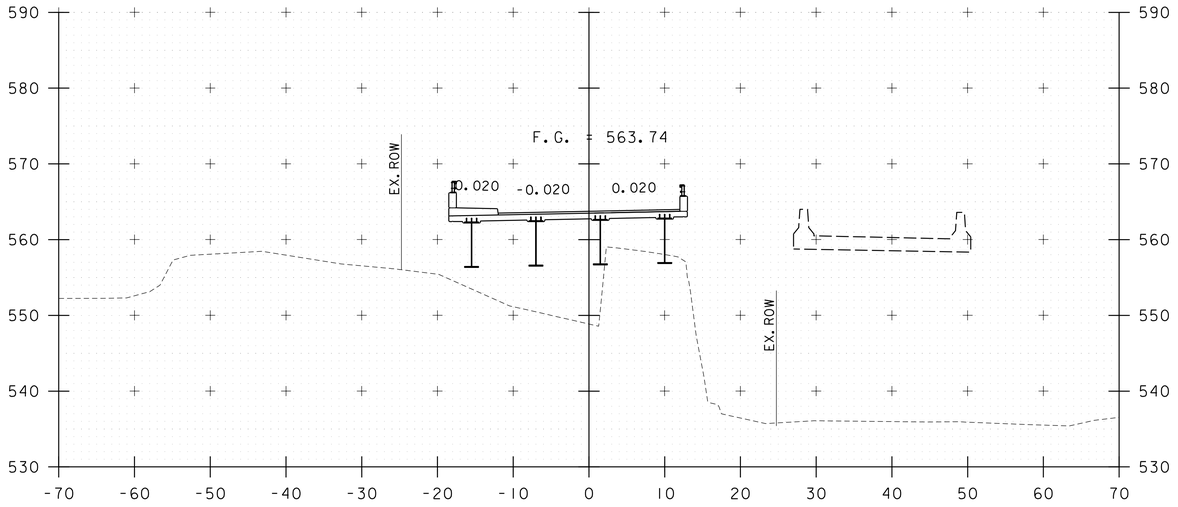
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164xs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
ROADWAY CROSS SECTIONS - RXS 2

PLOT DATE: 2/27/2015
DRAWN BY: I. MAYNARD
CHECKED BY: G. SANTY
SHEET 39 OF 57

0 10 20
SCALE: 1" = 10'

Stantec



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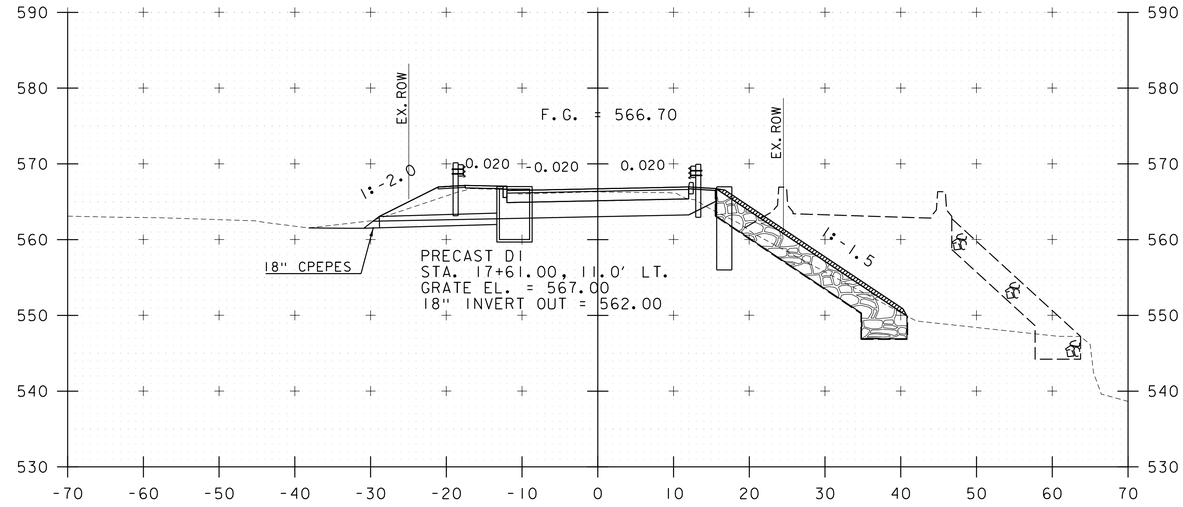

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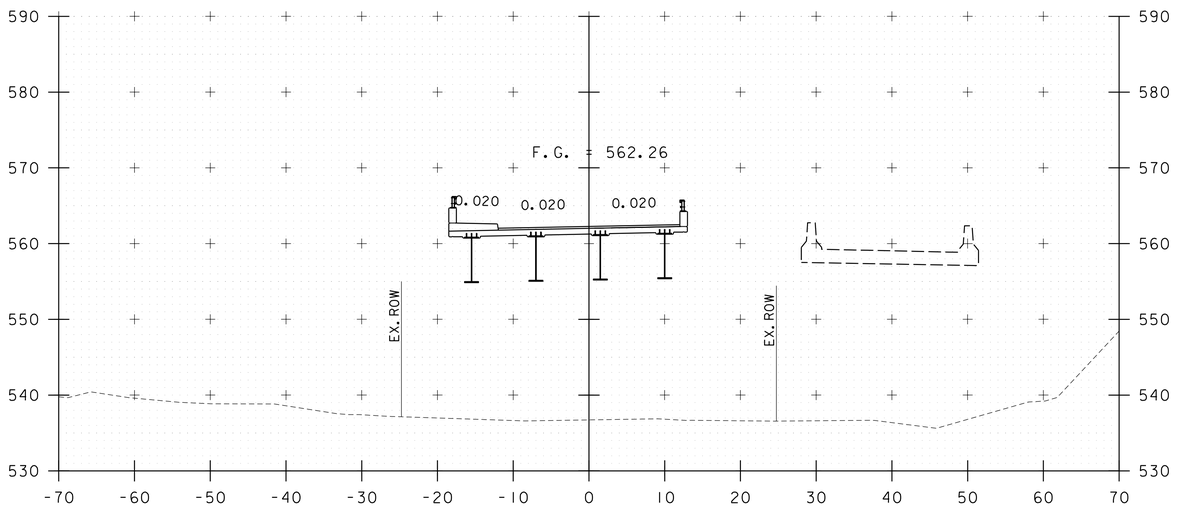
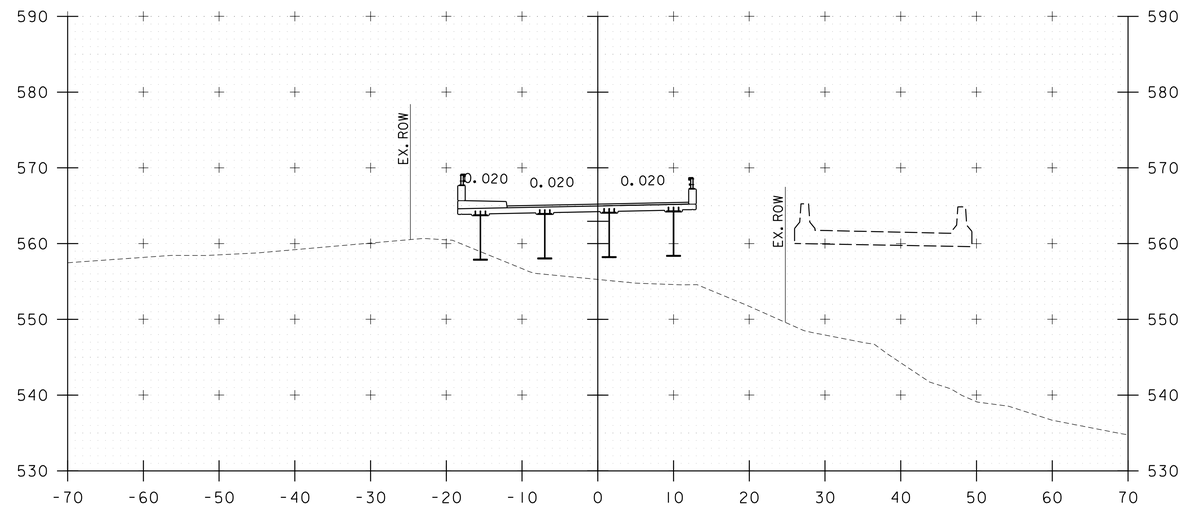


16+75



17+25
17+21.83
END BRIDGE

STA. 16+75 TO STA. 17+50

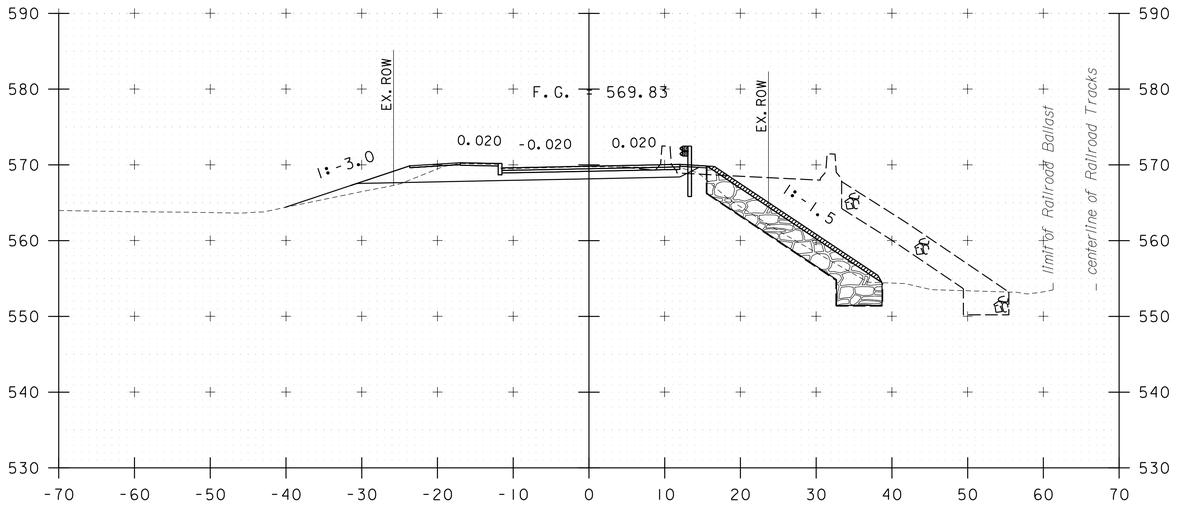
0 10 20
SCALE: 1" = 10'

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164xs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
ROADWAY CROSS SECTIONS - RXS 3

PLOT DATE: 2/27/2015
DRAWN BY: I. MAYNARD
CHECKED BY: G. SANTY
SHEET 40 OF 57



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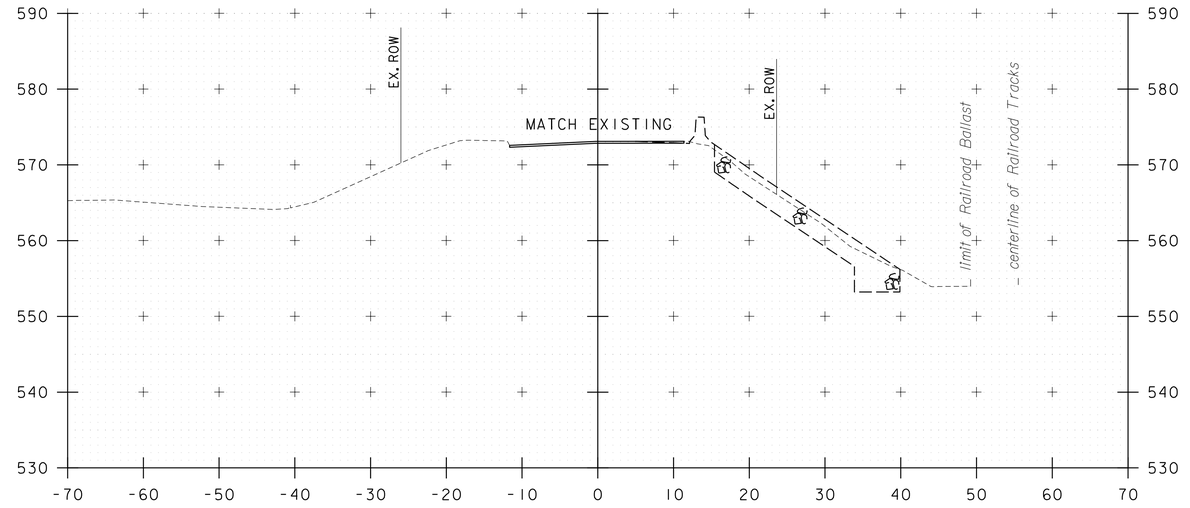
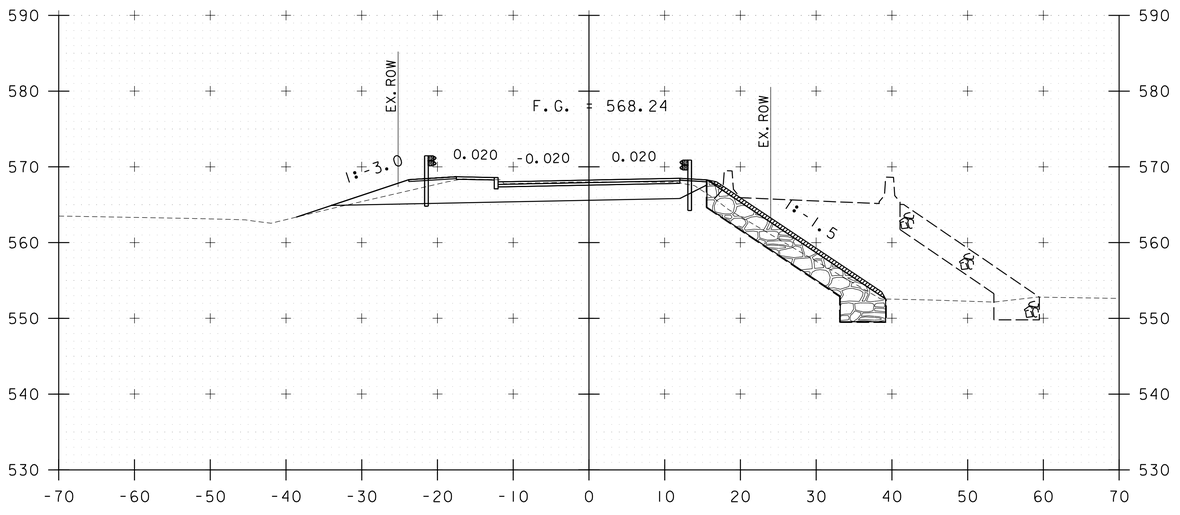


18+50

18+75
END APPROACH



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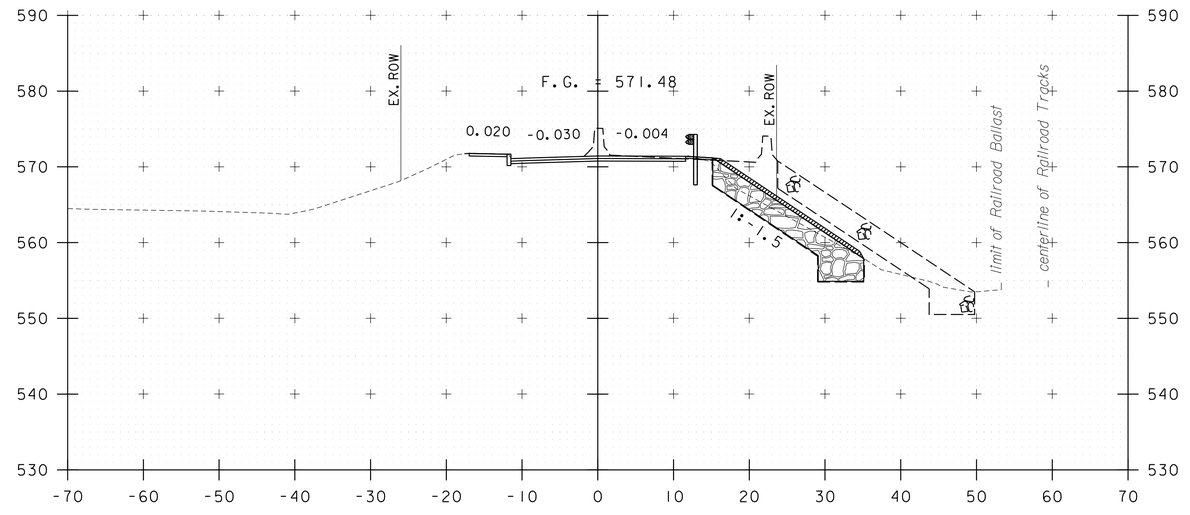
END PROJECT



18+25

STA. 17+75 TO STA. 18+50

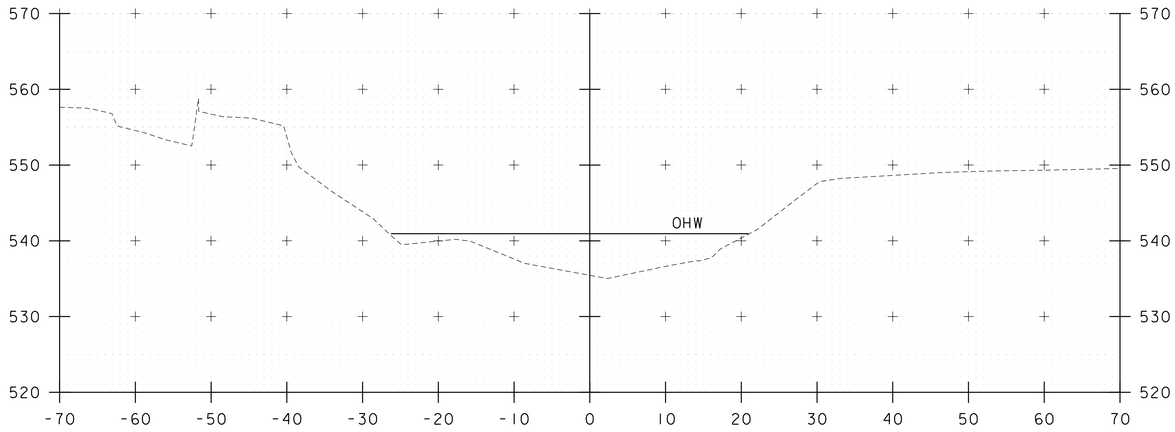
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164xs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
ROADWAY CROSS SECTIONS - RXS 4

PLOT DATE: 2/27/2015
DRAWN BY: I. MAYNARD
CHECKED BY: G. SANTY
SHEET 41 OF 57

0 10 20
SCALE: 1" = 10'

Stantec



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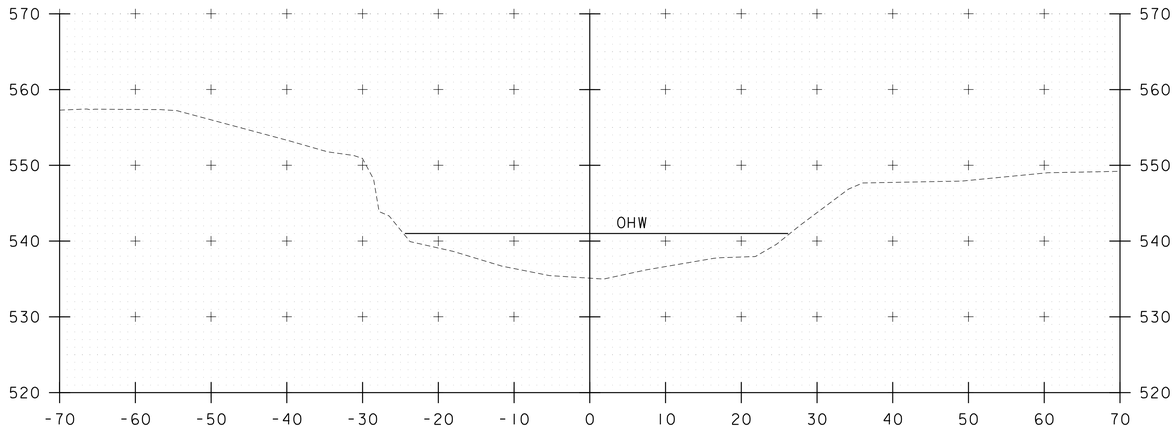
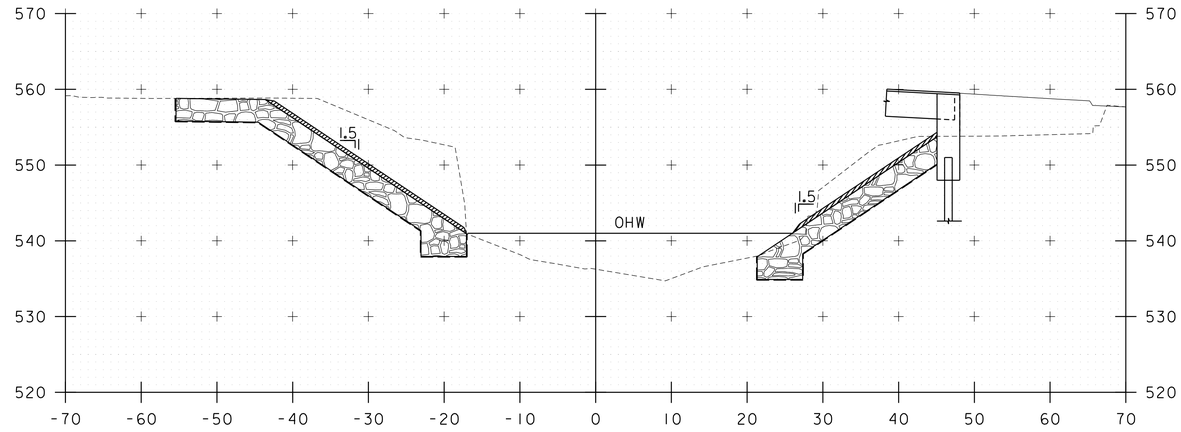
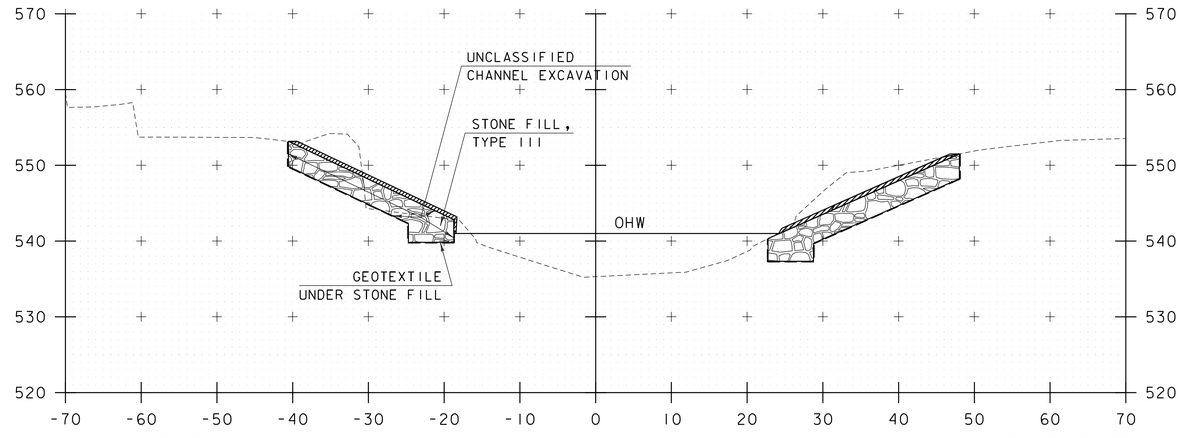


50+00



50+70



STA. 50+45 LT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONE FILL, TYPE III
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL

50+50

STA. 50+39 RT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN STONE FILL, TYPE III
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL

STA. 50+00 TO STA. 50+70

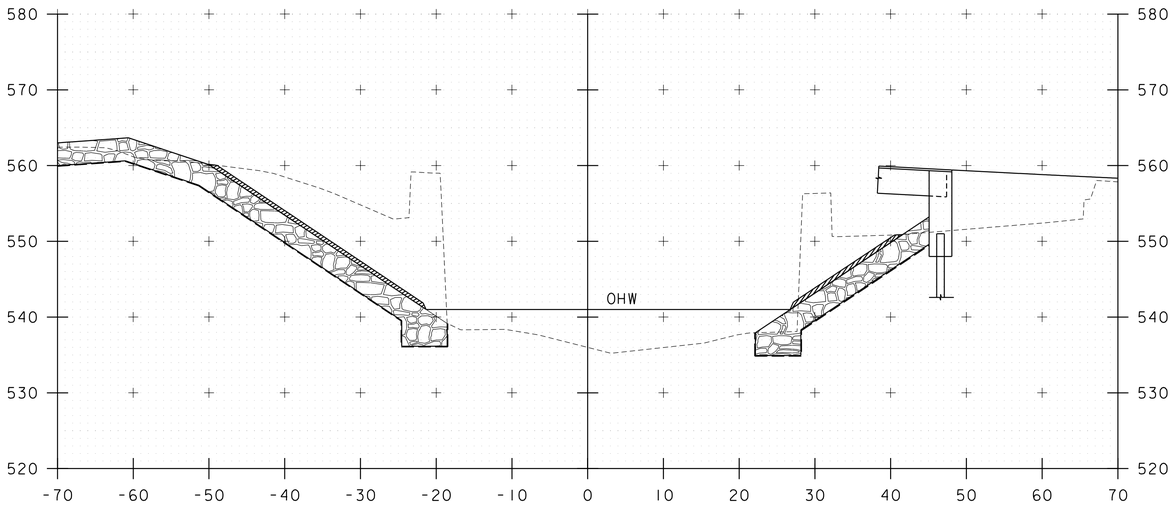
0 10 20
SCALE: 1" = 10'

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164xs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
CHANNEL CROSS SECTIONS - CXS 1

PLOT DATE: 2/27/2015
DRAWN BY: J. HUNGERFORD
CHECKED BY: M. CHENETTE
SHEET 42 OF 57



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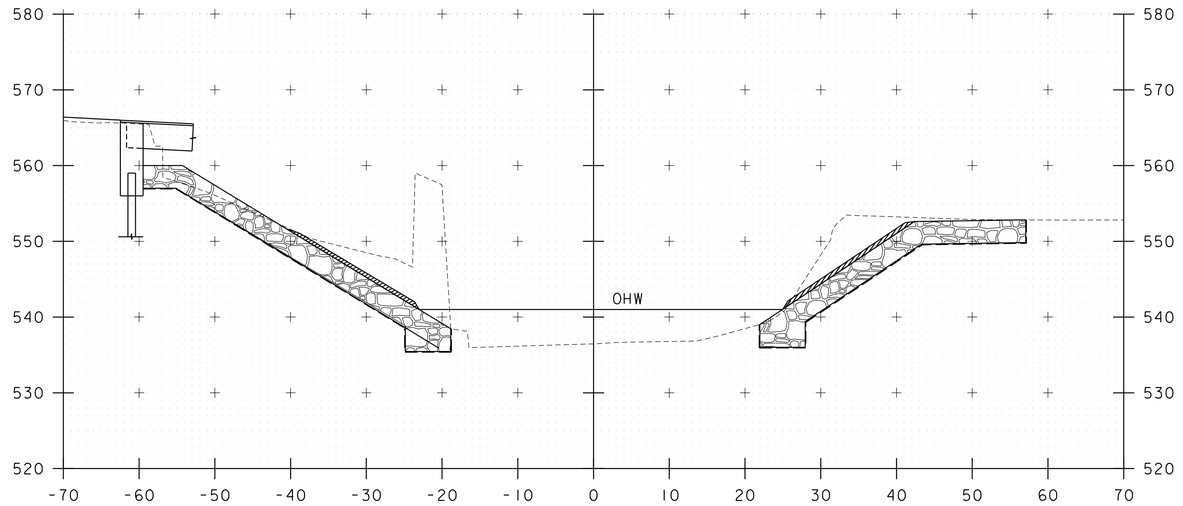
50+90



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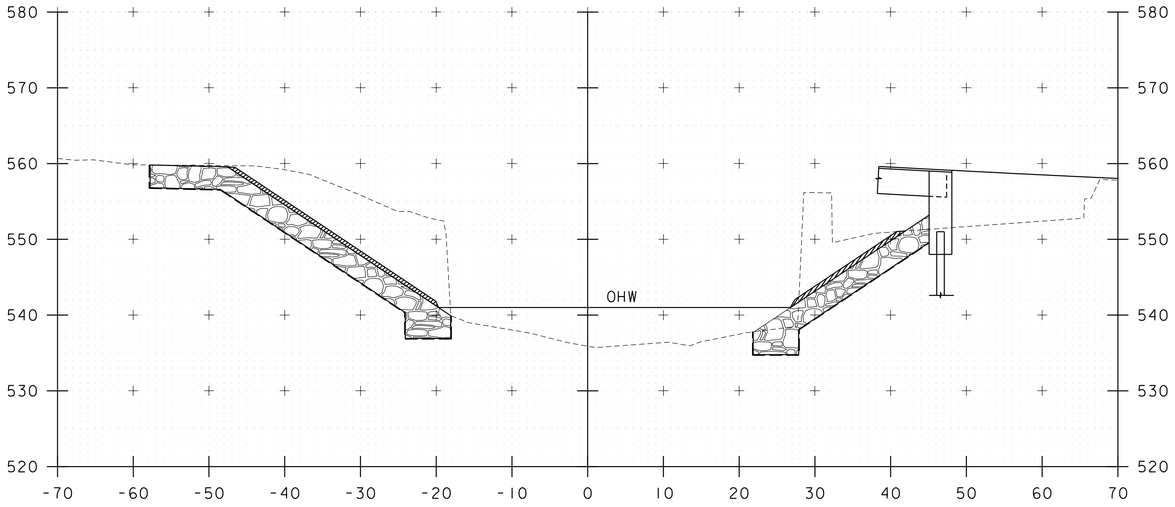
51+14



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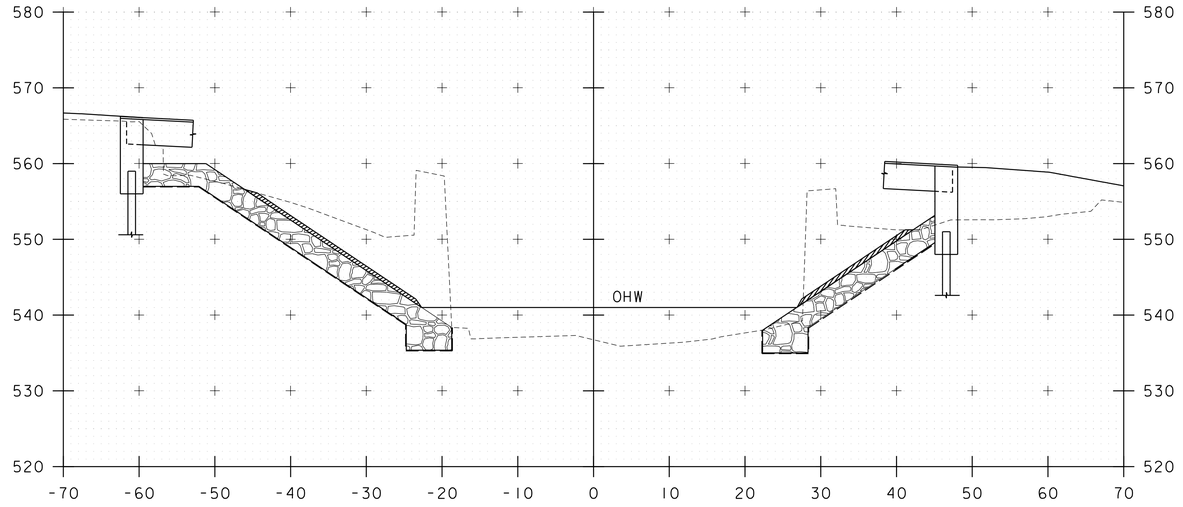
50+81



51+00

STA. 50+81 TO STA. 51+14

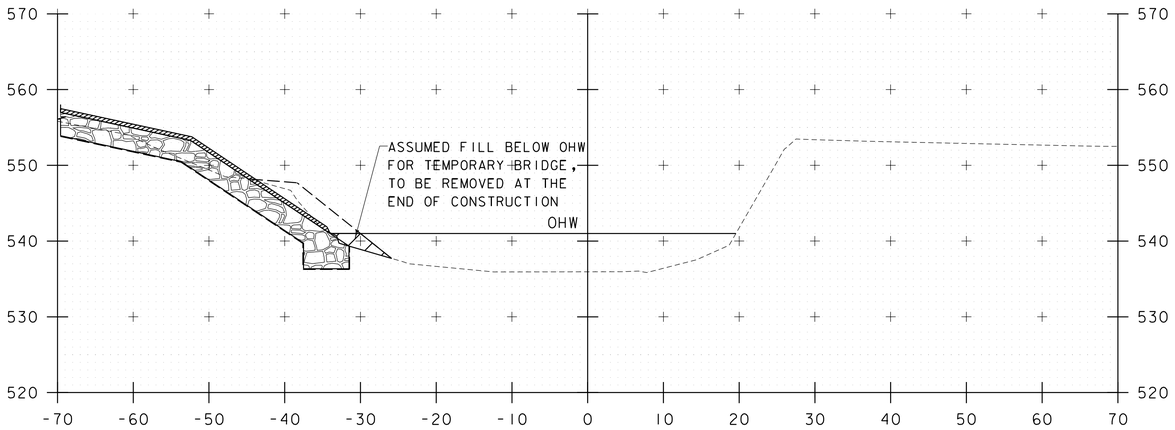
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

0 10 20
SCALE: 1" = 10'

Stantec

FILE NAME: z12j164xs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
CHANNEL CROSS SECTIONS - CXS 2

PLOT DATE: 2/27/2015
DRAWN BY: J. HUNGERFORD
CHECKED BY: M. CHENETTE
SHEET 43 OF 57



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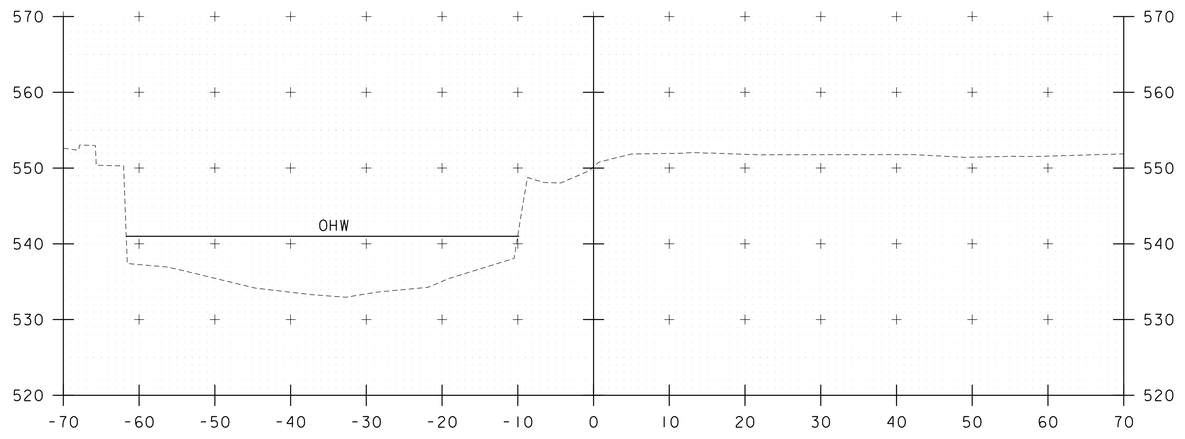
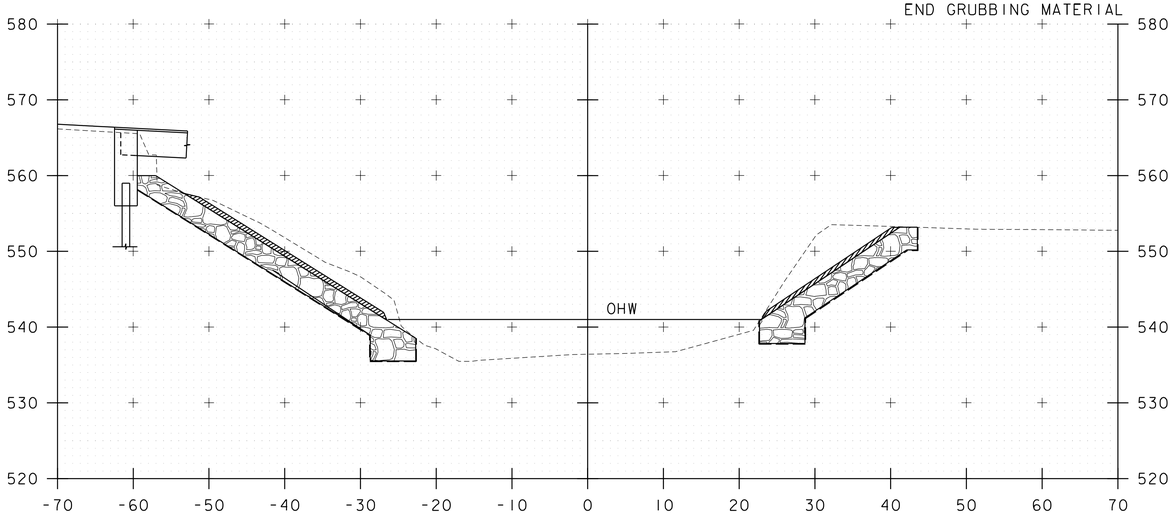
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL

51+50



52+00



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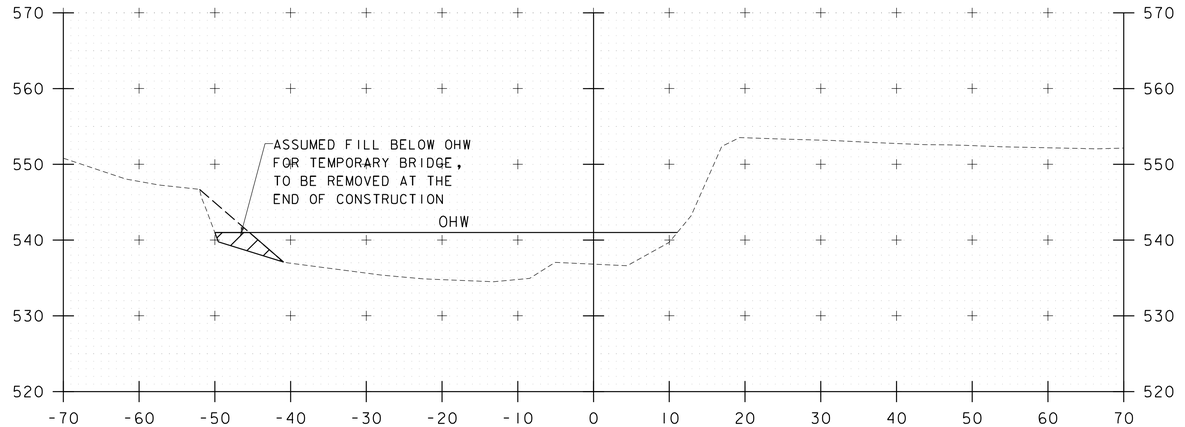
BEGIN GRUBBING MATERIAL

51+25



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END STONE FILL, TYPE III
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL

51+75

STA. 51+25 TO STA. 52+00

0 10 20
SCALE: 1" = 10'

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164xs.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
CHANNEL CROSS SECTIONS - CXS 3

PLOT DATE: 2/27/2015
DRAWN BY: J. HUNGERFORD
CHECKED BY: M. CHENETTE
SHEET 44 OF 57

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF BRIDGE #46, RELATED CHANNEL WORK AND INCIDENTALS. BRIDGE #46 WILL BE REPLACED WITH A STEEL GIRDER BRIDGE OVER SLEEPERS RIVER, ON NEW INTEGRAL ABUTMENTS. BRIDGE #46 IS LOCATED IN THE TOWN OF ST. JOHNSBURY, T.H. 371, 0.1 MILES SOUTH OF THE JUNCTION WITH U.S. ROUTE 5. THE LENGTH OF THE BRIDGE WILL BE DECREASED TO 113.07 FEET.

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

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.65 ACRES.

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

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE IMMEDIATE PROJECT AREA IS HILLY TO MOUNTAINOUS AND FEATURES A MIXTURE OF FORESTED AND OPEN LAND COVER. TOWN HIGHWAY 371 IS WITHIN THE PROJECT SITE. THERE IS ONE HOUSE AND A COMMERCIAL BUILDING ADJACENT TO THE SITE.

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

THE SLEEPER RIVER IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE SLEEPER RIVER IS CLASSIFIED AS SINUOUS TO MEANDERING, WITH SOME ARMORED BANKS. THE STREAM BED CONSISTS OF SILT, SAND, GRAVEL AND SOME STONES. DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF WATER FROM NEARBY SLOPES.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF OPEN GRASSED AREAS, HARDWOOD TREES AND UNDERGROWTH. THERE WILL BE MINOR CLEARING ASSOCIATED WITH THE TEMPORARY DETOUR. THE CHANNEL WILL NOT BE AFFECTED BY CONSTRUCTION. 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 URBAN LAND-ADAMS-NICHOLVILLE COMPLES, 0 TO 8% SLOPES. URBAN LAND SOILS SINCE NON NATIVE AND PLACED DURING PAST CONSTRUCTION ARE NOT ASSIGNED A K-VALUE. THE NEAREST NATIVE SOIL TO THE SITE IS ONDAWA-SUNDAY COMPLEX AND CARRIES A 0.24 K-VALUE.

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: ST JOHNSBURY HISTORIC DISTRICT
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: SLEEPERS 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 APPPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

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

1.4.2 LIMIT DISTURBANCE AREA

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

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

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

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

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

1.4.4 INSTALL SEDIMENT BARRIERS

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

SILT FENCE, FILTER CURTAIN AND INLET PROTECTION DEVICES SHALL BE USED IN THE LOCATIONS SHOWN 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 WITH MINIMAL OFF-SITE RUNOFF FLOWING THROUGH THE SITE. THERFORE DIVERSION MEASURES WILL NOT BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

THERE IS NO DITCHING ASSOCIATED WITH THIS PROJECT. IT IS NOT ANTICIPIPATED THAT DEVICES FOR REDUCING VELOCITIES OF CHANNELIZED RUNOFF WILL BE REQUIRED.

1.4.7 CONSTRUCT PERMANENT CONTROLS

THERE ARE NO PERMANENT STORMWATER TREATMENT DEVICES TO BE INSTALLED WITH THIS PROJECT.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

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

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

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

1.4.9 WINTER STABILIZATION

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

1.4.10 STABILIZE SOIL AT FINAL GRADE

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

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

1.4.11 DE-WATERING ACTIVITIES

IT IS NOT ANTICIPATED THAT DEWATERING ACTIVITIES WILL BE REQUIRED.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS.

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 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.

Stantec

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164frm.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: I. MAYNARD
EPSC NARRATIVE

PLOT DATE: 2/27/2015
DRAWN BY: D. BARNES
CHECKED BY: G. SANTY

SOIL INFORMATION: URBAN LAND-ADAMS-NICHOLVILLE COMPLEX, 0 TO 8% SLOPES
K VALUE NOT IDENTIFIED FOR NON-NATIVE SOIL.
NEAREST NATIVE SOIL HAS K=0.24

BENCH MARK
TOP OF BOLT
BETWEEN 6 AND 0
ELEV = 558.04

BENCH MARK
RAIL ROAD SPIKE
IN RAIL
ELEV = 575.97

N

VT STATE PLANE GRID

SLEEPERS RIVER FLOW

LAMOILLE VALLEY RAIL TRAIL

STONE FILL

GRAVEL DRIVE

ELECTRIC TRANSMISSION LINES

GATE VALVE

6x6 MARKER

6x6 BOUND

CHAIN LINK FENCE

4' GUY

TEL PED

HOUSE

SMALL MAPLE

MED. SPRUCE

HVCTRL 101

SMALL WILLOW

HVCTRL 102

HVCTRL 103

HVCTRL 104

HVCTRL 100

HVCTRL 106

SMALL APPLE

LARGE OAK

MED APPLE

GRAVEL DRIVE

CORPRATE STOP

PAVED DRIVE

FIRE HYDRANT

SIGN R2-1 (30)

SIGN D3-1 (SIGN REMOVED)

SIGN (TELEPHONE PEDESTAL)

SIGN (UNDERGROUND TELEPHONE CABLE)

3X MAILBOX

3X GATE VALVE

SIDEWALK

8" PVC SEWER 8' DEEP

SEWER MANHOLE

10" WATER MAIN 5' DEEP

10" WATER MAIN 6' DEEP

2" PVC FORCE MAIN

8" PVC SEWER

16" SEWER MAIN

16" SEWER FLOW

SEWER PUMP STATION

TRANSFORMER

VENT PIPE

5X GATE VALVE

COMMERCIAL DRIVE, PAVED

PAVED PARKING LOT

BUILDING

COMB 25 14E 5 UNDERGROUND

COMB 6 5

COMB 28 18

COMB 26-1 UNDERGROUND

COMB 16A

COMB 167

TEL 15A

TEL 80

TEL 9

GUY POLE

GUY

DIST= 40.06

DIST= 57.69

RAILROAD SIGNAL BOX

ballast

top of rail

top of rail

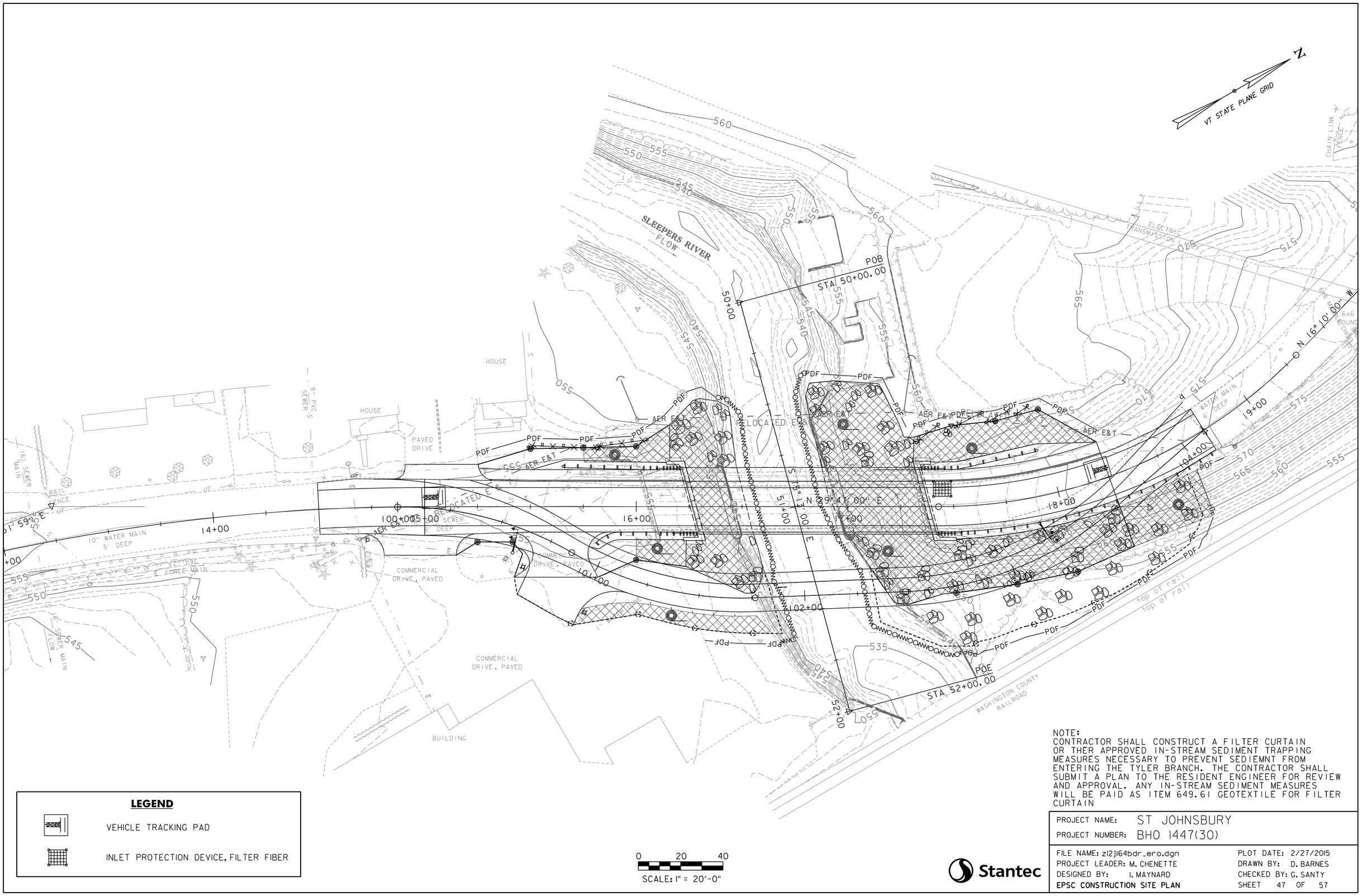
WASHINGTON COUNTY RAILROAD

0 20 40

SCALE: 1" = 20'-0"

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr_ero.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: D. BARNES
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
EPSC EXISTING CONDITIONS SITE PLAN	SHEET 46 OF 57



LEGEND

- VEHICLE TRACKING PAD
- INLET PROTECTION DEVICE, FILTER FIBER

0 20 40

SCALE: 1" = 20'-0"

NOTE:
CONTRACTOR SHALL CONSTRUCT A FILTER CURTAIN OR THER APPROVED IN-STREAM SEDIMENT TRAPPING MEASURES NECESSARY TO PREVENT SEDIEMNT FROM ENTERING THE TYLER BRANCH. THE CONTRACTOR SHALL SUBMIT A PLAN TO THE RESIDENT ENGINEER FOR REVIEW AND APPROVAL. ANY IN-STREAM SEDIMENT MEASURES WILL BE PAID AS ITEM 649.61 GEOTEXTILE FOR FILTER CURTAIN

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr_ero.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: D. BARNES
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
EPSC CONSTRUCTION SITE PLAN	SHEET 47 OF 57

N

VT STATE PLANE GRID

MENARD, RICHARD D.
& CARMEN A.

TOWN OF ST. JOHNSBURY

STATE OF VERMONT

VINTON, DRURY L.

SLEEPERS RIVER
FLOW

POB
STA 50+00.00

POE
STA 19+93.58

PT
STA 19+31.33

N 16° 10' 00" W

P.I. (CURVE 1)
STA 13+27.71 BK
STA 13+23.79 AH

P.I. (CURVE 2)
STA 18+42.49 BK
STA 18+31.70 AH

PC
STA 18+42.86

PT
STA 15+00.07

POE
STA 52+00.00

N 29° 47' 00" E

S 15° 13' 00" E

RELOCATED E & T

AER E&T

E&T

HOUSE

PAVED DRIVE

8" PVC SEWER

10" WATER MAIN
5' DEEP

2" PVC FORCE MAIN

16" SEWER MAIN
FLOW

1" WATER LINE

COMMERCIAL DRIVE, PAVED

BUILDING

RAIL FENCE

CHAIN LINK FENCE

6x6 WOOD BOUNDARY MARKER

WASHINGTON COUNTY RAILROAD

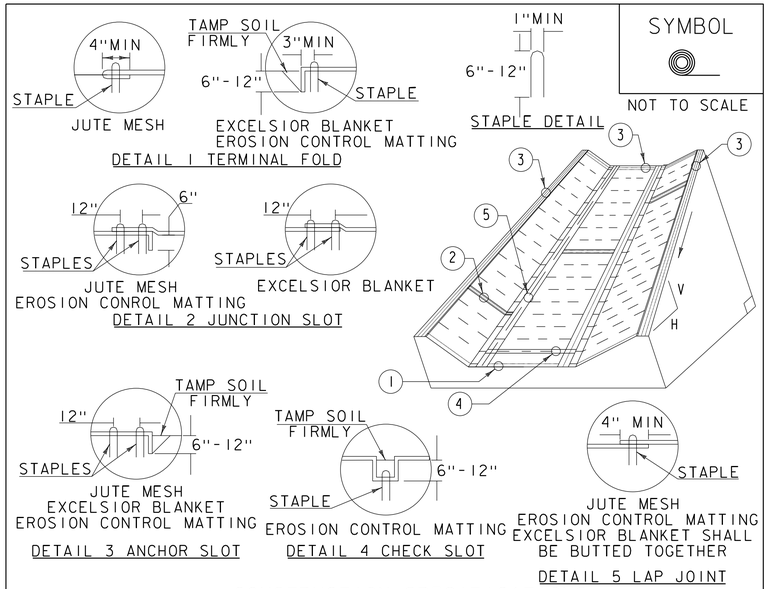
top of bank

0 20 40

SCALE: 1" = 20'-0"

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr_ero.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: D. BARNES
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
EPSC FINAL SITE PLAN	SHEET 48 OF 57



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

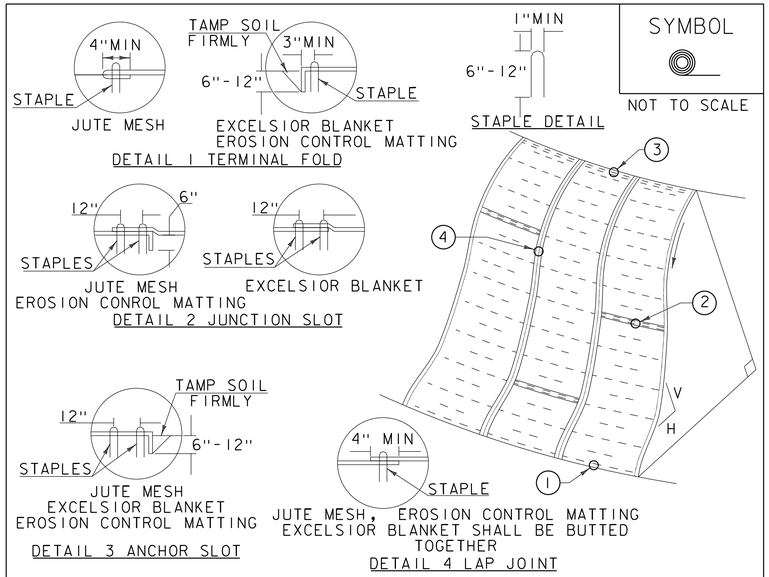
1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

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

ROLLED EROSION CONTROL PRODUCT (RECP) DITCH

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

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



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

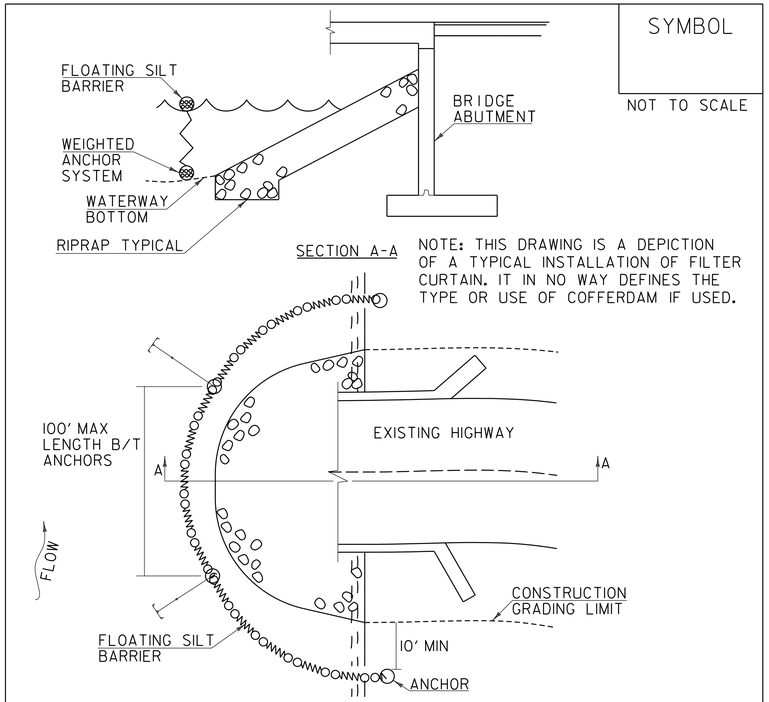
1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER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

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

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

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

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. 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

PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164ero_dets.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: VAOT
EPSC DETAILS 1

PLOT DATE: 2/27/2015
DRAWN BY: VAOT
CHECKED BY: VAOT
SHEET 49 OF 57

VAOT URBAN LAWN MIX						
	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
42.5%	34	68	CREEPING RED FESCUE	FESTUCA RUBRA X RUBRA	85%	98%
20.0%	16	32	PERENNIAL RYE GRASS	LOLIUM PERENNE	90%	95%
32.5%	26	52	KENTUCKY BLUE GRASS	POA PRATENSIS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	80	160				

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

CONSTRUCTION GUIDANCE

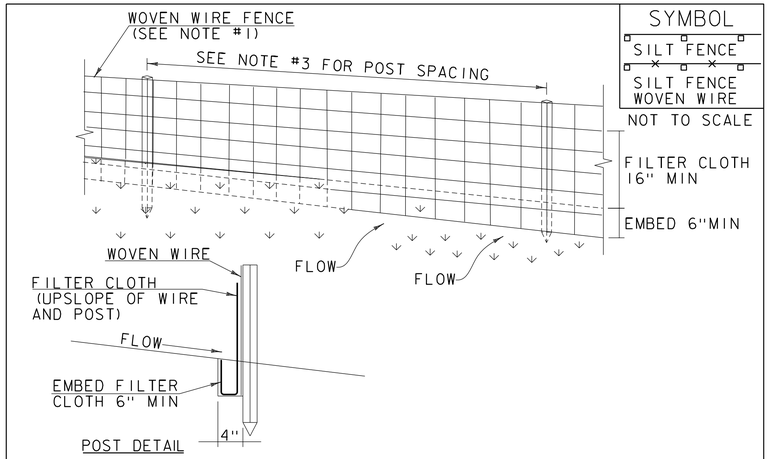
1. SEED MIX: THE URBAN AREA MIX SHALL NOT BE USED IN WETLANDS OR ANY WATERS OF THE STATE OF VERMONT.
2. SEED MIX: USE ONLY AS INDICATED IN THE PLANS.
3. SEED MIX: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES 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 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 22, 2015	WHF	



CONSTRUCTION SPECIFICATIONS

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

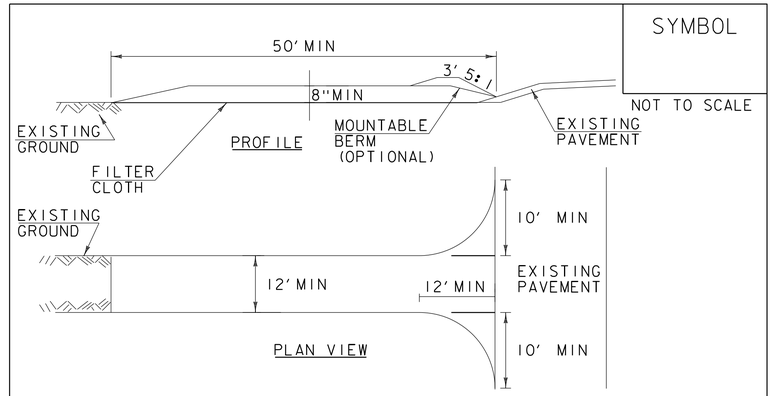
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

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

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

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



CONSTRUCTION SPECIFICATIONS

1. STONE 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	

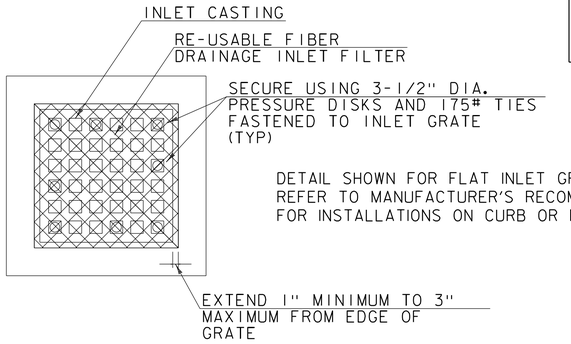
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164ero_dets.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: VAOT
EPSC DETAILS 2

PLOT DATE: 2/27/2015
DRAWN BY: VAOT
CHECKED BY: VAOT
SHEET 50 OF 57

SYMBOL

NOT TO SCALE



DETAIL SHOWN FOR FLAT INLET GRATES ONLY. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATIONS ON CURB OR ROUND INLETS.

CONSTRUCTION SPECIFICATIONS

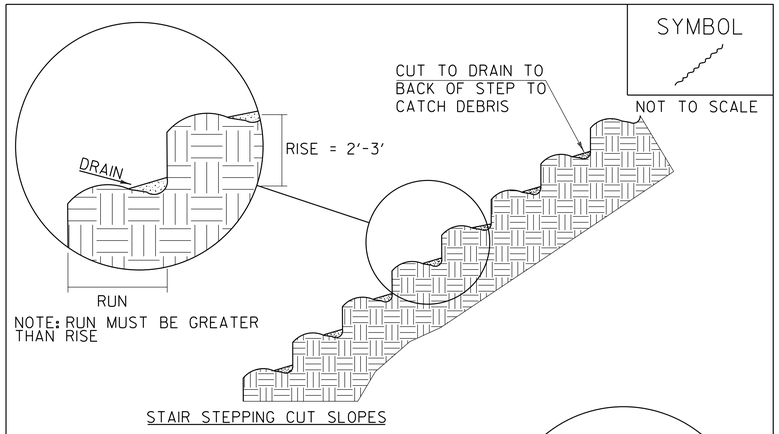
1. FILTERS SHALL RETAIN ALL CONSTRUCTION DEBRIS AND SHALL RETAIN OR OTHERWISE CONTROL MOST OF THE SEDIMENT PRODUCED BY CONSTRUCTION OPERATIONS.
2. IF CLOGGING OCCURS, INLETS SHALL BE ABLE TO BE EASILY UNCLOGGED BY BROOMING THE SIDES AND TOP OF THE FILTER.
3. INSTALLED FILTERS SHALL BE RESISTANT TO TRAFFIC DAMAGE, INCLUDING TRAFFIC BY STREET CLEANING MACHINES.
4. FILTER UNITS SHALL BE BIODEGRADABLE AND MAY OFTEN BE RE-USED.
5. INSTALL FILTER UNIT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
6. MINIMUM NUMBER OF ANCHORS PER FILTER UNIT: 7 FOR CURB INLETS, 8 FOR FLAT GRATES.
7. INSPECT ALL INSTALLED FILTER UNITS AFTER EVERY RAIN.
8. INSPECT ALL INSTALLED FILTER UNITS PRIOR TO INITIATING CONSTRUCTION ACTIVITIES FOR THE DAY IF RAIN PERSISTS OVERNIGHT.
9. IF, UPON VISUAL INSPECTION, 50% OR MORE OF FILTER FABRIC SURFACE AREA IS INUNDATED WITH SEDIMENT OR FILTER FABRIC IS CLOGGED, CONTRACTOR SHALL BROOM COLLECTED MATERIAL OFF FILTER UNIT SURFACES AND AWAY FROM EDGES.
10. REMOVE SEDIMENT AND DEBRIS COLLECTED AROUND FILTER UNITS. DISPOSE OF COLLECTED SEDIMENT AND DEBRIS AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

INLET PROTECTION DEVICE, FILTER FIBER

NOTES:
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR PAY ITEM 653.41 INLET PROTECTION DEVICE, TYPE II.

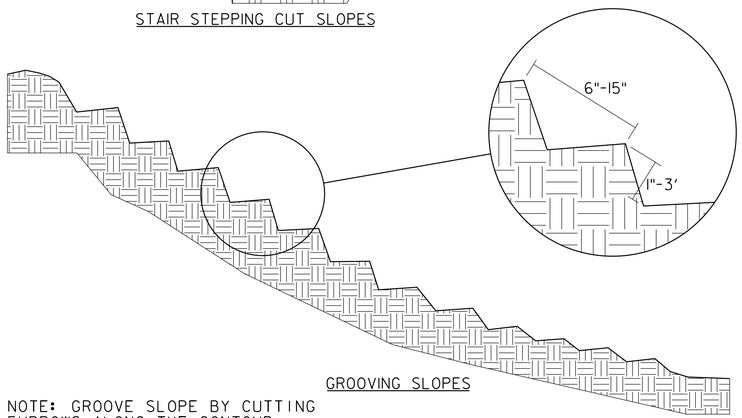
SYMBOL

NOT TO SCALE



NOTE: RUN MUST BE GREATER THAN RISE

STAIR STEPPING CUT SLOPES



GROOVING SLOPES

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

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

SURFACE ROUGHENING

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

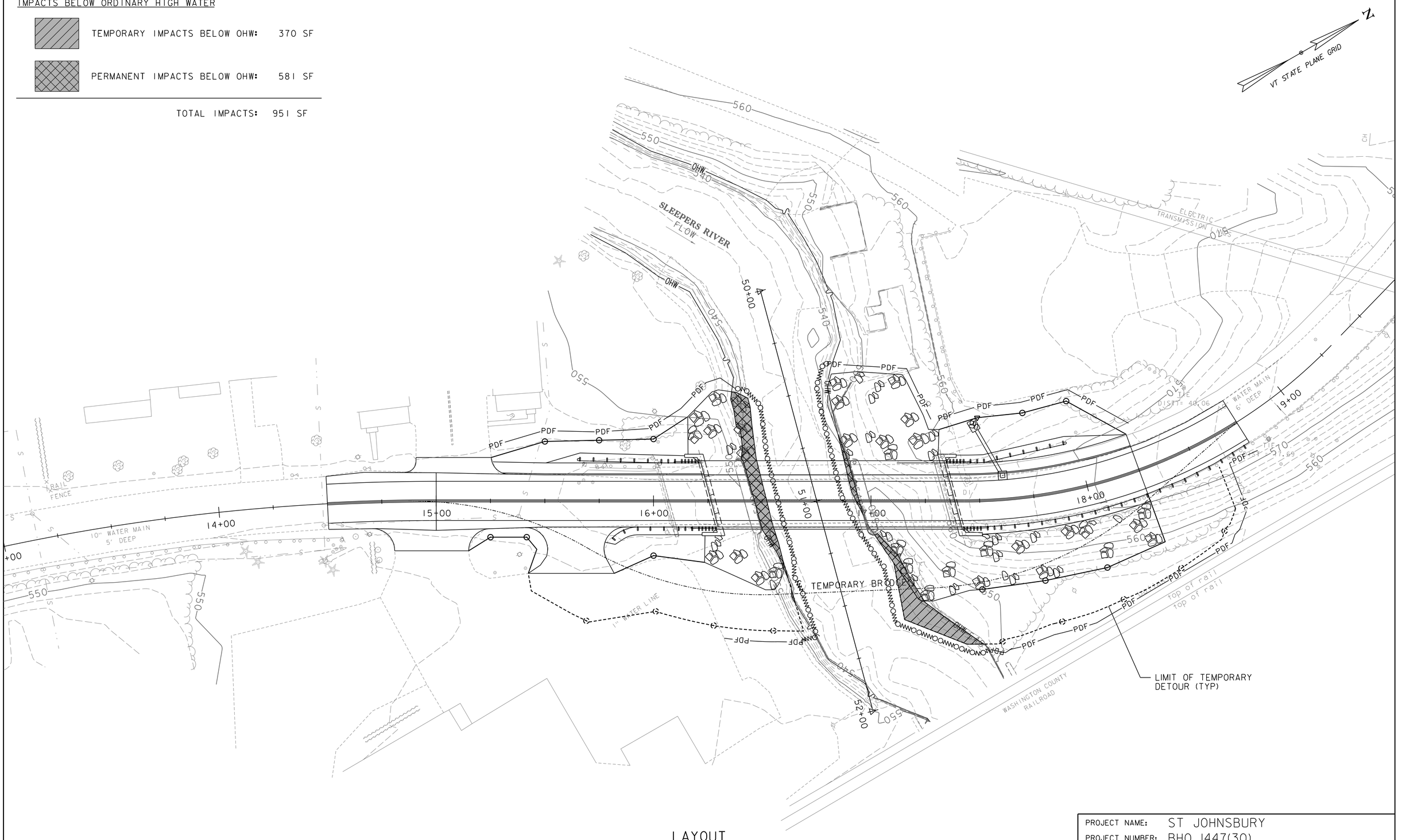
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164ero_dets.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: VAOT
EPSC DETAILS 3

PLOT DATE: 2/27/2015
DRAWN BY: VAOT
CHECKED BY: VAOT
SHEET 51 OF 57

IMPACTS BELOW ORDINARY HIGH WATER

TEMPORARY IMPACTS BELOW OHW:	370 SF
PERMANENT IMPACTS BELOW OHW:	581 SF
TOTAL IMPACTS:	951 SF



= STONE FILL, TYPE III

LAYOUT

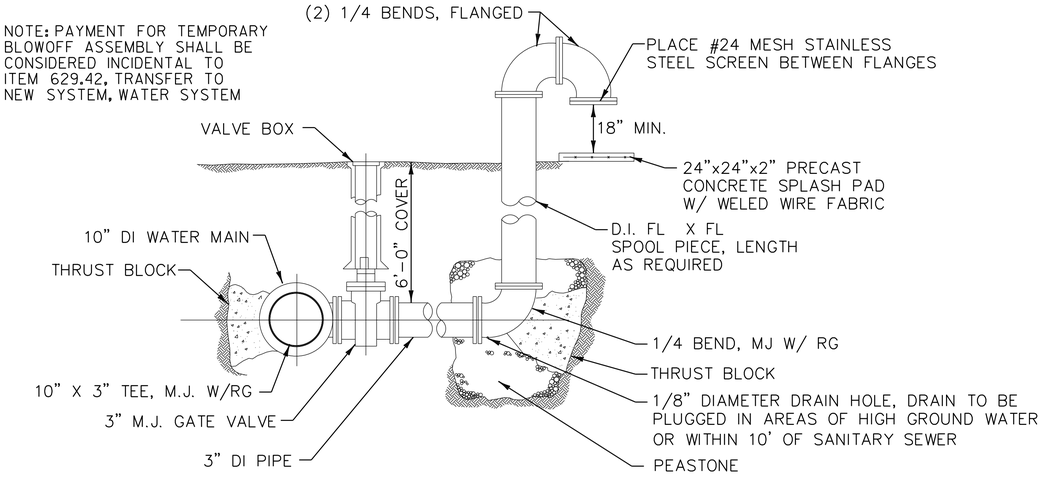
0 20 40

SCALE: 1" = 20'-0"

Stantec

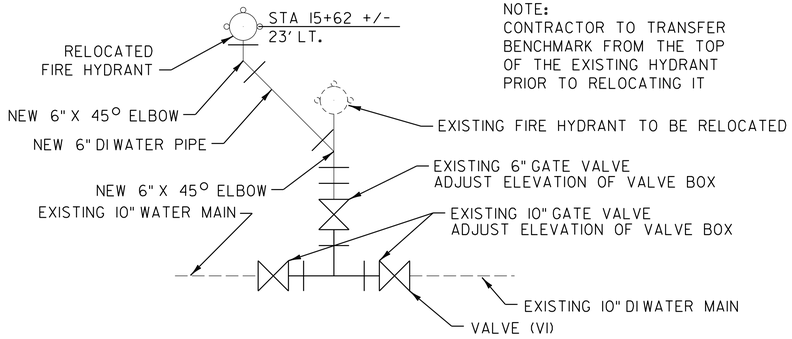
PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164bdr.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: I. MAYNARD
DESIGNED BY: I. MAYNARD	CHECKED BY: M. CHENETTE
IMPACTS PLAN	SHEET 52 OF 57

NOTE: PAYMENT FOR TEMPORARY BLOWOFF ASSEMBLY SHALL BE CONSIDERED INCIDENTAL TO ITEM 629.42, TRANSFER TO NEW SYSTEM, WATER SYSTEM



TEMPORARY BLOWOFF ASSEMBLY

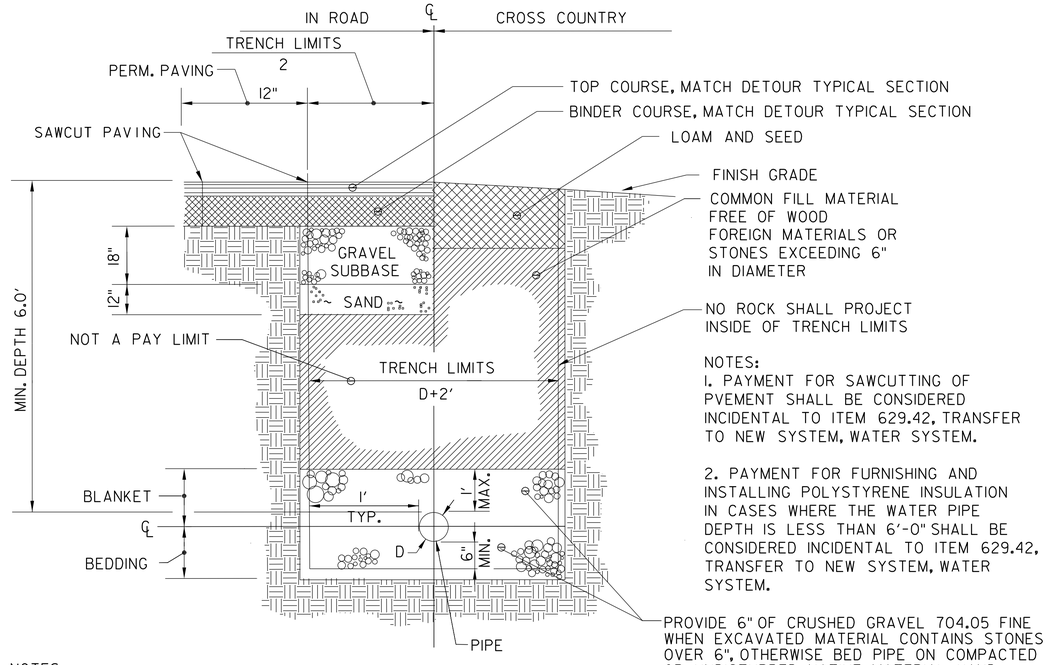
NOT TO SCALE



NOTE: CONTRACTOR TO TRANSFER BENCHMARK FROM THE TOP OF THE EXISTING HYDRANT PRIOR TO RELOCATING IT

DETAIL 1

NOT TO SCALE
SEE UTILITY PLAN FOR LOCATION



NOTES:
1. PAYMENT FOR SAWCUTTING OF PVEMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM 629.42, TRANSFER TO NEW SYSTEM, WATER SYSTEM.

2. PAYMENT FOR FURNISHING AND INSTALLING POLYSTYRENE INSULATION IN CASES WHERE THE WATER PIPE DEPTH IS LESS THAN 6'-0" SHALL BE CONSIDERED INCIDENTAL TO ITEM 629.42, TRANSFER TO NEW SYSTEM, WATER SYSTEM.

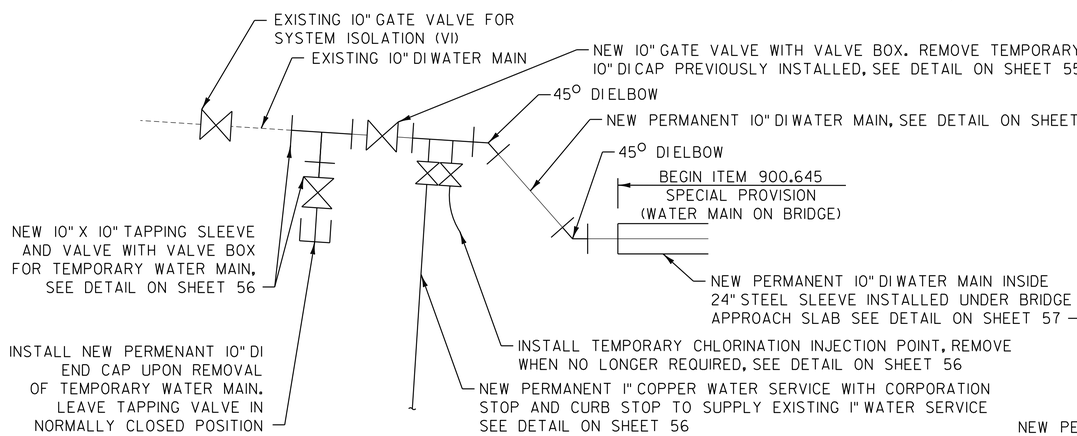
NOTES:
1. COMPACTION TO BE IN ACCORDANCE WITH SPECIFICATION.

2. PAYMENT FOR TEMPORARY DUCTILE IRON WATER PIPE SHALL BE CONSIDERED INCIDENTAL TO ITEM 629.42, TRANSFER TO NEW SYSTEM, WATER SYSTEM.

TYPICAL TEMPORARY DI TRENCH DETAIL

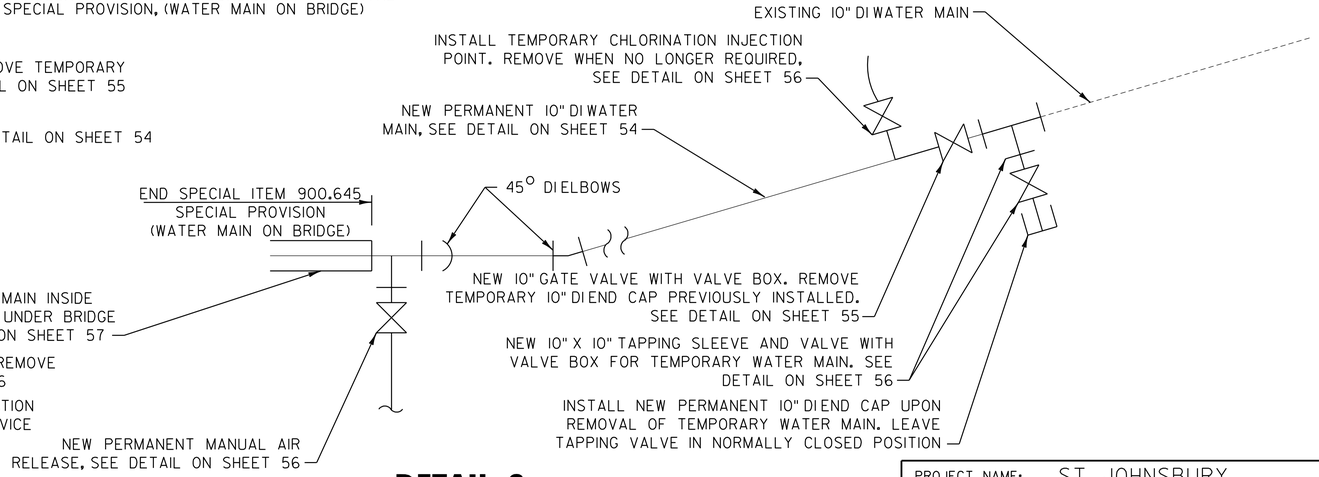
NOT TO SCALE

NOTE: EXTEND 3" PRE-INSULATION ALONG 10" DI WATER MAIN BEYOND THE STEEL SLEEVE AT EACH END AND UNTIL THE PIPE REACHES THE POINT WHERE THERE IS 6'-0" MINIMUM COVER OVER THE PIPE. PAYMENT FOR 3" PRE-INSULATION SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION, (WATER MAIN ON BRIDGE)



DETAIL 2

NOT TO SCALE
SEE UTILITY PLAN FOR LOCATION

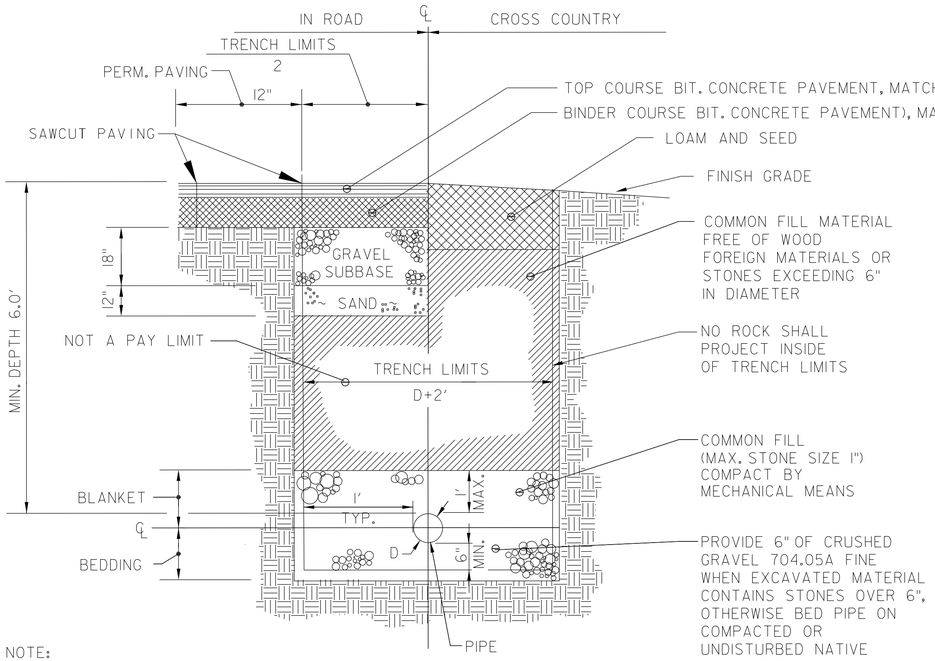


DETAIL 3

NOT TO SCALE
SEE UTILITY PLAN FOR LOCATION

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164wtr_dets2d.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: D. HARRINGTON
DESIGNED BY: D. CAMPBELL	CHECKED BY: G. SANTY
WATER DETAILS I	SHEET 53 OF 57



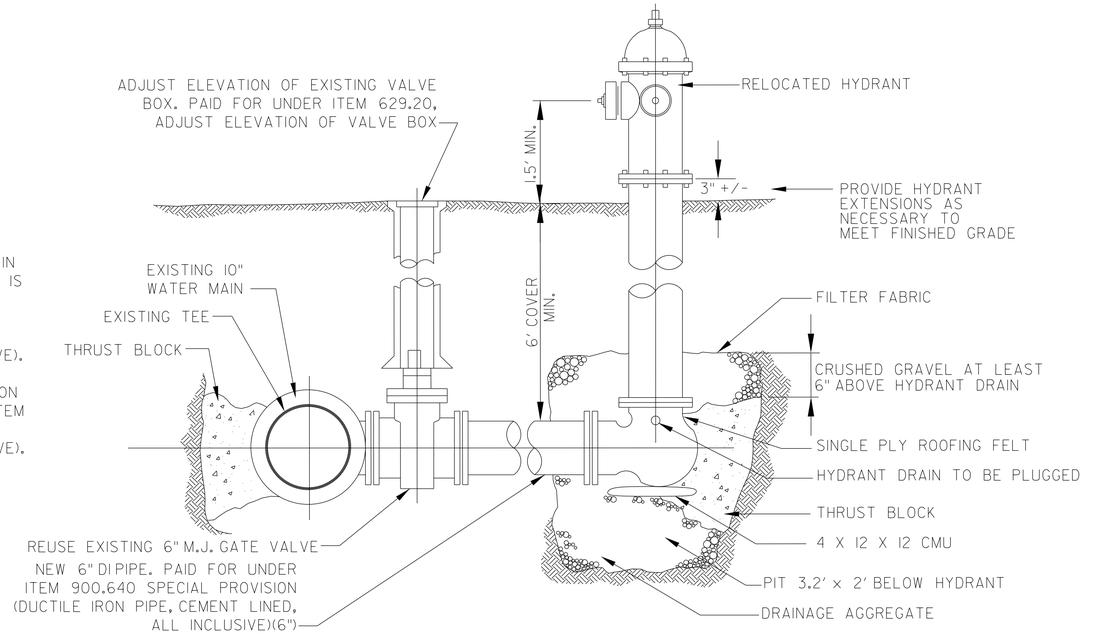
NOTE:
COMPACTION TO BE IN ACCORDANCE WITH SPECIFICATION

NOTES:

1. PAYMENT FOR SAWCUTTING OF PAVEMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.640 SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL INCLUSIVE).
2. PAYMENT FOR FURNISHING AND INSTALLING POLYSTYRENE INSULATION IN CASES WHERE THE WATER PIPE DEPTH IS LESS THAN 6'-0" IN DEPTH SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.640 SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL INCLUSIVE).
3. PAYMENT FOR PERMANENT DUCTILE IRON WATER PIPE SHALL BE MADE UNDER ITEM 900.640. SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT LINED, ALL INCLUSIVE).

TYPICAL PERMANENT DUCTILE IRON TRENCH DETAIL

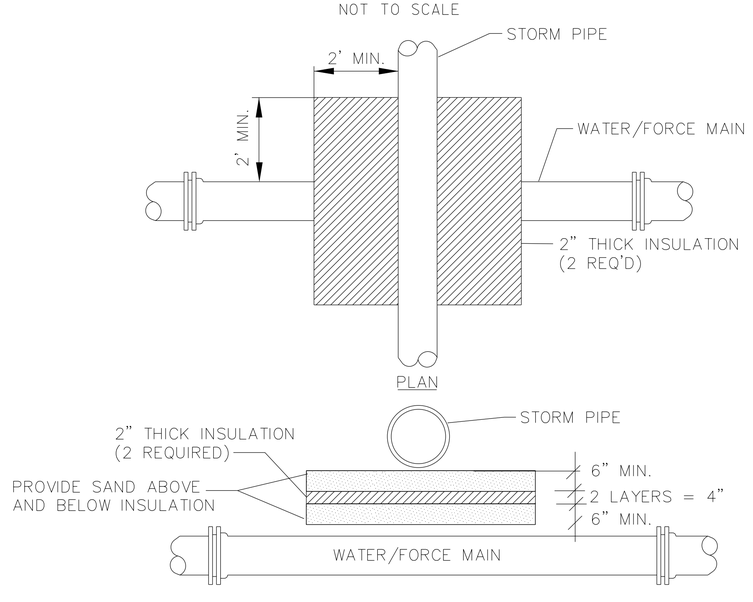
NOT TO SCALE



RELOCATED HYDRANT ASSEMBLY DETAIL

NOT TO SCALE

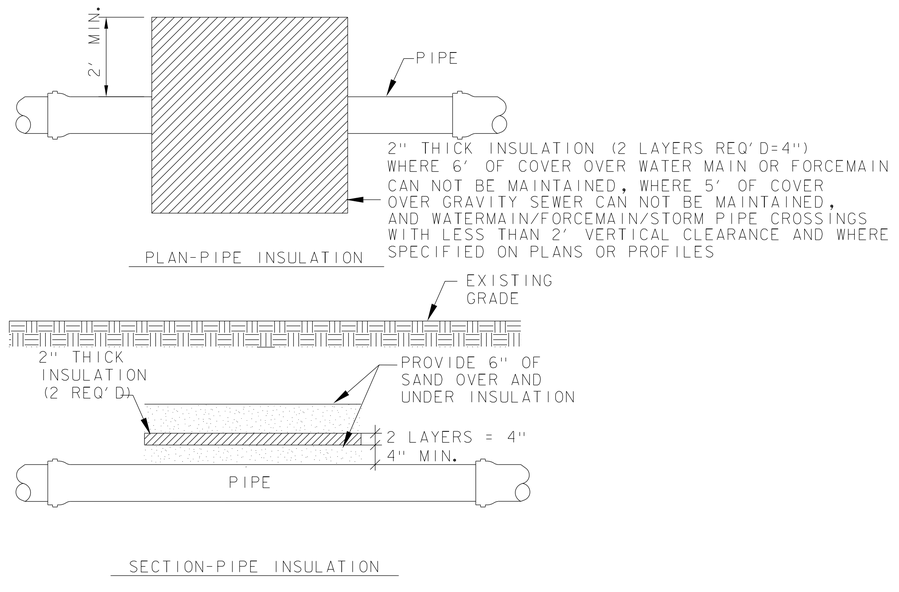
PAYMENT FOR RELOCATING THE EXISTING FIRE HYDRANT SHALL BE MADE UNDER ITEM 629.29, RELOCATE HYDRANT.



SECTION

STORM SEWER CROSSING INSULATION DETAIL

NOT TO SCALE



SECTION-PIPE INSULATION

RIGID BOARD INSULATION

NOT TO SCALE

PAYMENT FOR POLYSTYRENE RIGID BOARD INSULATION AND SAND BEDDING SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.640, SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT LINED, ALL INCLUSIVE)

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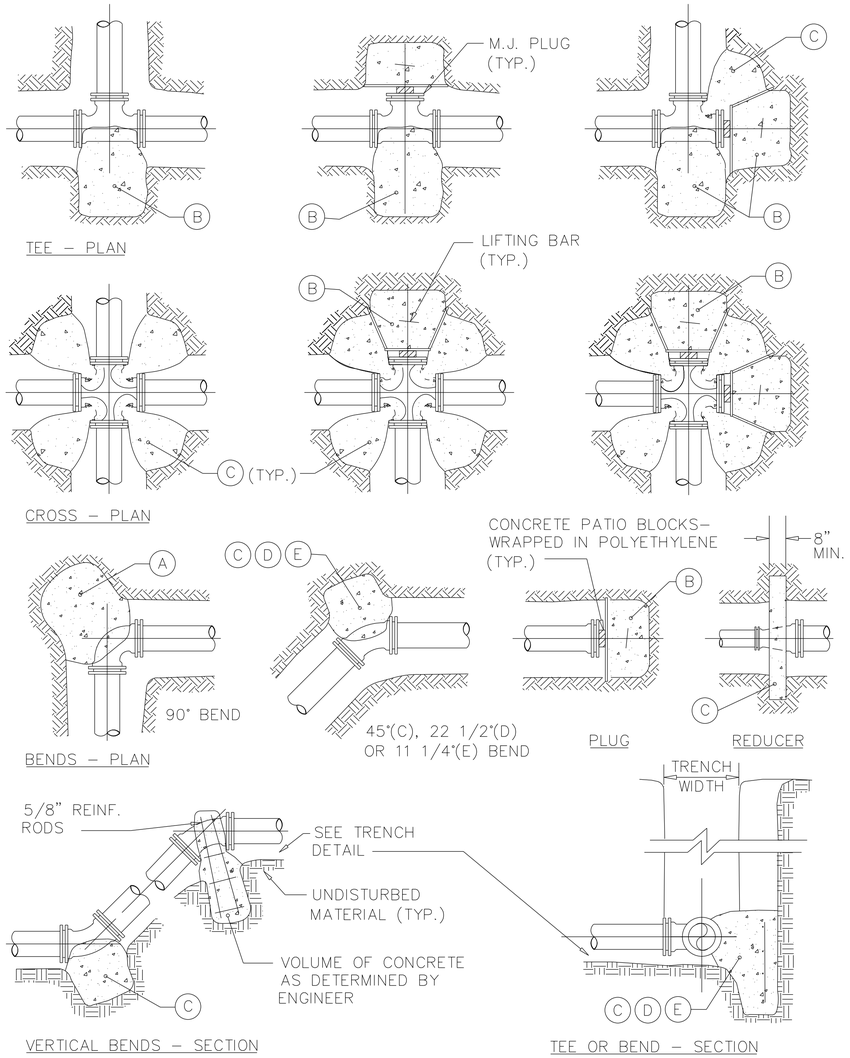
PROJECT NAME: ST JOHNSBURY
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164wtr_dets2d.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. CAMPBELL
WATER DETAILS 2

PLOT DATE: 2/27/2015
DRAWN BY: D. HARRINGTON
CHECKED BY: G. SANTY
SHEET 54 OF 57



THRUST BLOCK DETAILS

NOT TO SCALE

THRUST BLOCK SCHEDULE SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL			
REACTION TYPE		PIPE SIZE	
		6"	12"
TEST PRESSURE = 100 PSIG	(A)	2.19	8.62
	(B)	1.55	6.09
	(C)	1.19	4.66
	(D)	0.60	2.37
	(E)	0.30	1.19
OTHER TEST PRESSURES FOR THE ABOVE REACTIONS	SQUARE FEET OF CONCRETE THRUST BLOCKING FOR OTHER TEST PRESSURES IS DIRECTLY PROPORTIONAL TO THE ABOVE TABLE. FOR INSTANCE, AT 200 PSI TEST PRESSURE FOR ABOVE NUMBERS DOUBLE.		

NOTES:

1. THRUST BLOCKS SHALL BE CONSTRUCTED WITH CLASS B CONCRETE. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.

2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.

3. PLACE CONCRETE PATIO BLOCKS IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK.

4. REQUIREMENTS OF THE ABOVE TABLE PRESUME MINIMUM SOIL BEARING OF 1 TON PER SQUARE FOOT, AND MAY BE VARIED BY THE ENGINEER TO MEET OTHER CONDITIONS ENCOUNTERED.

5. RETAINER GLANDS ARE REQUIRED FOR ALL MECHANICAL JOINTS. THESE GLANDS DO NOT REDUCE THE REQUIREMENTS FOR THRUST RESTRAINT.

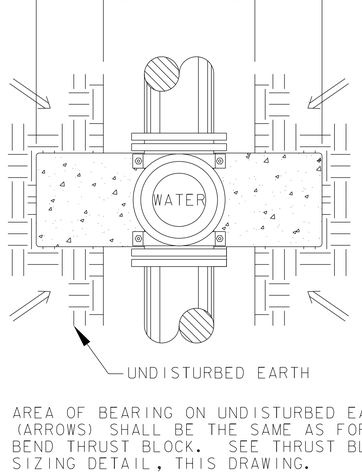
6. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.

7. THREADED ROD SHALL BE ANSI A242 FY50 PIPE RESTRAINT NUTS TO MATCH AWWA C111. THREADED RODS AND NUTS TO BE FIELD COATED WITH BITUMINOUS PAINT.

8. THRUST RESTRAINT IS REQUIRED FOR ALL TEES, BENDS, REDUCERS, CAPS, PLUGS, OR CROSSES.

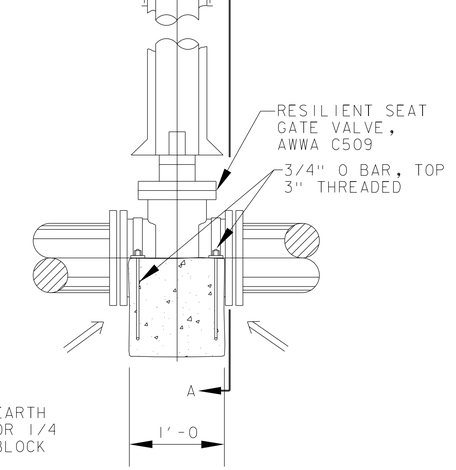
9. INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.

10. PAYMENT FOR ALL THRUST RESTRAINT SHALL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE CONTRACT BID ITEM.

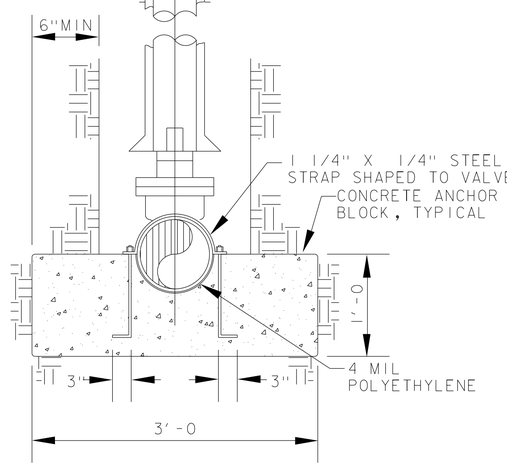


AREA OF BEARING ON UNDISTURBED EARTH (ARROWS) SHALL BE THE SAME AS FOR 1/4 BEND THRUST BLOCK. SEE THRUST BLOCK SIZING DETAIL, THIS DRAWING.

PLAN



ELEVATION



SECTION A-A

VALVE ANCHOR DETAILS

NOT TO SCALE

PAYMENT FOR VALVE ANCHORS SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.620, SPECIAL PROVISION (GATE VALVE WITH VALVE BOX, ALL INSLUSIVE) (10")

Stantec

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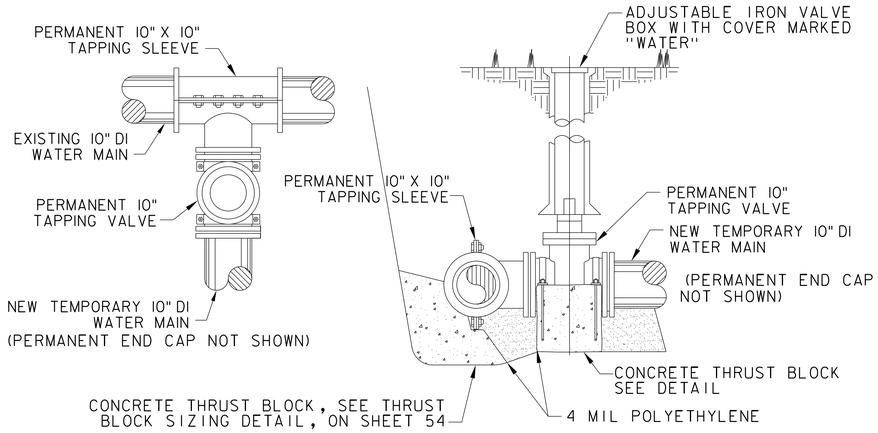
PROJECT NUMBER: BHO 1447(30)

FILE NAME: z12j164wtr_dets2d.dgn
PROJECT LEADER: M. CHENETTE
DESIGNED BY: D. CAMPBELL
WATER DETAILS 3

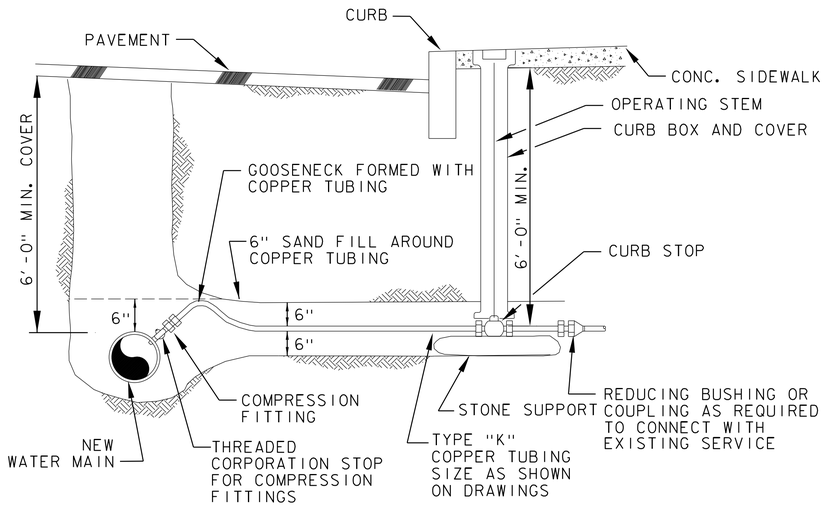
PLOT DATE: 2/27/2015
DRAWN BY: D. HARRINGTON
CHECKED BY: G. SANTY
SHEET 55 OF 57



PAYMENT FOR TAPPING SLEEVE AND VALVE SHALL BE MADE UNDER ITEM 900.620, SPECIAL PROVISION (TAPPING SLEEVE AND VALVE WITH VALVE BOX, ALL INSLUSIVE) (10" X 10")

TAPPING SLEEVE AND VALVE

NOT TO SCALE



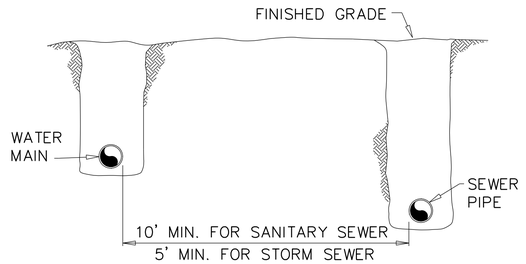
NOTES:
1. PAYMENT FOR EXTENSION SERVICE BOX AND CURB STOP SHALL BE MADE UNDER ITEM 900.620 SPECIAL PROVISION (EXTENSION SERVICE BOX AND CURB STOP, ALL INCLUSIVE) (1")

2. PAYMENT FOR CORPORATION STOP SHALL BE MADE UNDER ITEM 900.620 SPECIAL PROVISION (CORPORATION STOP, ALL INCLUSIVE) (1")

3. PAYMENT FOR SEAMLESS COPPER TUBING SHALL BE MADE UNDER ITEM 900.640 SPECIAL PROVISION (SEAMLESS COPPER WATER TUBE, ALL INCLUSIVE) (1")

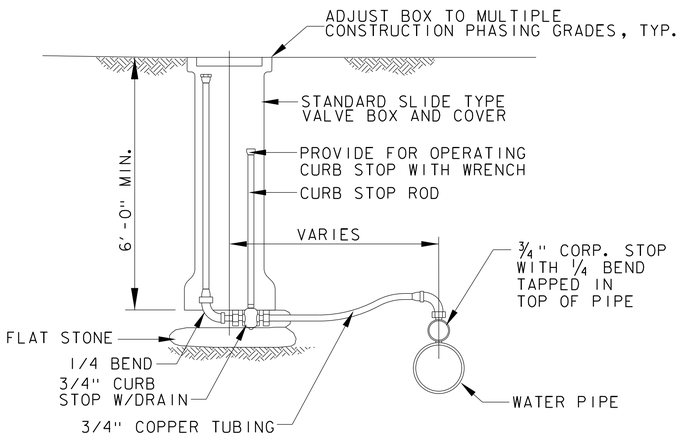
TYPICAL WATER SERVICE CONNECTION

NOT TO SCALE



SEWER-WATER PARALLEL INSTALLATION

NOT TO SCALE

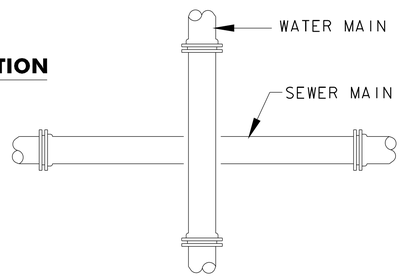


NOTES:
1. PAYMENT FOR PERMANENT MANUAL AIR RELEASE SHALL BE MADE UNDER ITEM 900.620, SPECIAL PROVISION (MANUAL AIR RELEASE, ALL INCLUSIVE)

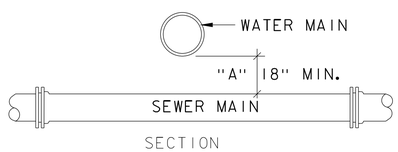
2. PAYMENT FOR TEMPORARY CHLORINATION INJECTION SHALL BE CONSIDERED INCIDENTAL TO ITEM 629.42, TRANSFER TO NEW SYSTEM, WATER SYSTEM

TYPICAL INSTALLATION FOR PERMANENT MANUAL AIR RELEASE AND TEMPORARY CHLORINATION INJECTION

NOT TO SCALE



PLAN VIEW



SECTION

CONSTRUCTION RESTRICTIONS

1. IN ALL NEW CONSTRUCTION, DIMENSION "A" SHALL NEVER BE LESS THAN 18 INCHES FOR WATERLINE AND SANITARY SEWER CROSSING, AND NEVER LESS THAN 18 INCHES FOR WATERLINE AND STORM DRAIN CROSSING.

2. WITH ALL NEW CONSTRUCTION, THE CROSSING SHALL BE ARRANGED AS SHOWN IN THE DIAGRAM, SO THAT THE SEWER OR STORM JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

3. IF THE WATER MAIN MUST PASS BENEATH THE SEWER OR STORM DRAIN IN NEW CONSTRUCTION, THEN ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER OR STORM. THE FIRST SEWER PIPE JOINT ON EACH SIDE OF THE WATER MAIN SHALL BE CONCRETE ENCASED.

WATER AND SEWER CROSSING

NOT TO SCALE

Stantec

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FILE NAME: z12j164wtr_dets2d.dgn	PLOT DATE: 2/27/2015
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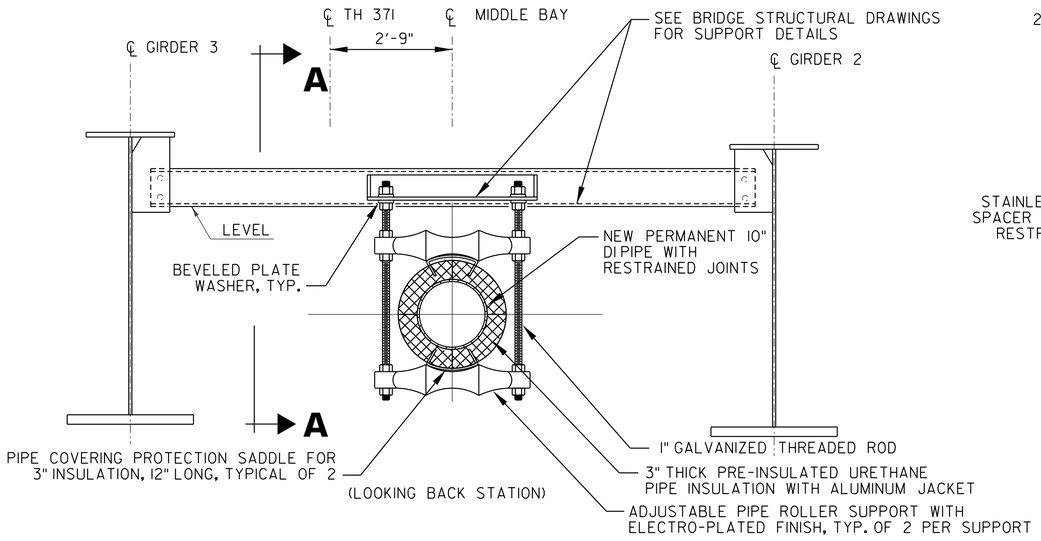
DESIGNED BY: D. CAMPBELL	CHECKED BY: G. SANTY
WATER DETAILS 4	SHEET 56 OF 57



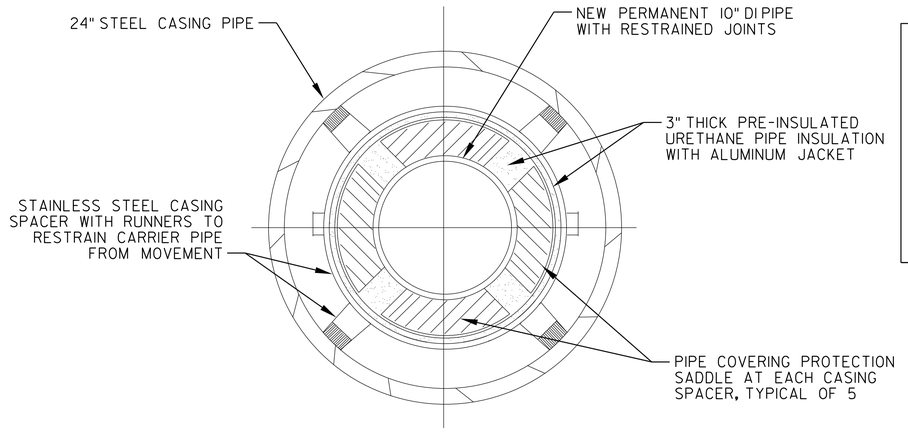
NOTES:
1. ALL STRUCTURAL STEEL FOR UTILITY SUPPORTS SHALL CONFORM TO AASHTO M270M/M270 GRADE 50. ALL STRUCTURAL STEEL AND FASTENERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111 AND M 232.

2. ALL PIPE FITTINGS, RESTRAINED JOINTS, AND EXPANSION JOINTS SHALL BE INSTALLED WITH 3" THICK PRE-INSULATED URETHANE PIPE INSULATION WITH ALUMINUM JACKET.

3. PAYMENT FOR NEW BRIDGE PIPE SUPPORTS INCLUDING PIPE AND INSULATION SHALL BE MADE UNDER ITEM 900.645, SPECIAL PROVISION (WATER MAIN ON BRIDGE)

BRIDGE PIPE SUPPORT DETAIL

NOT TO SCALE



NOTES:
1. INFORMATION ON THIS SHEET SHOULD ONLY BE CONSTRUED TO REPRESENT WATER MAIN AND APPURTENANCES. OTHER INFORMATION SHOWING STRUCTURAL ITEMS, IS SHOWN ONLY FOR RELATIVE RELATIONSHIPS ONLY. THIS INFORMATION SHOULD BE OBTAINED FROM OTHER DRAWINGS.

2. DUCTILE IRON PIPE FOR BRIDGE CROSSING SHALL BE ANSI/AWWA C151/A21.51, CLASS 52, CEMENT LINED WITH SEAL COATING INSIDE AND OUTSIDE. PIPE SHALL BE RESTRAINED JOINT PIPE. JOINTS SHALL BE LAYED OUT TO AVOID HANGER LOCATIONS WITH PIPE LENGTHS MODIFIED, IF NECESSARY.

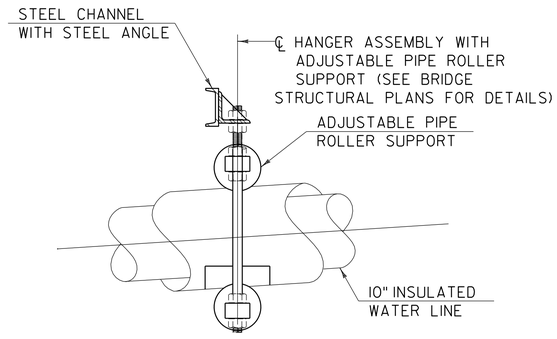
NOTES:

1. INSTALL 3 STAINLESS STEEL SPACERS INSIDE STEEL CASING PIPE PER LENGTH OF DUCTILE IRON PIPE AT BOTH ENDS OF BRIDGE.

2. PAYMENT FOR STEEL CASING PIPE INCLUDING DI WATER PIPE AND INSULATION SHALL BE MADE UNDER ITEM 900.645, SPECIAL PROVISION (WATER MAIN ON BRIDGE)

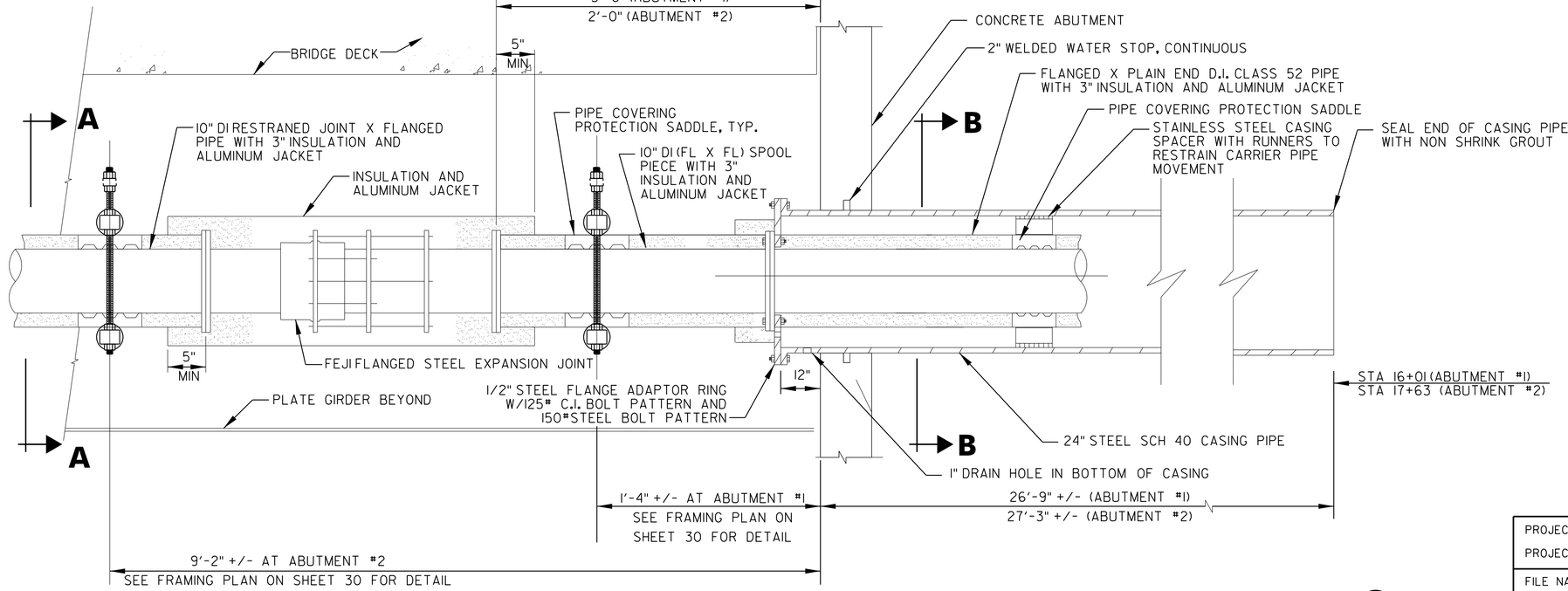
SECTION B-B: STEEL SLEEVE THROUGH BRIDGE ABUTMENT AND UNDER APPROACH SLAB

NOT TO SCALE



SECTION A-A

NOT TO SCALE



EXPANSION JOINT AND SUPPORT DETAIL

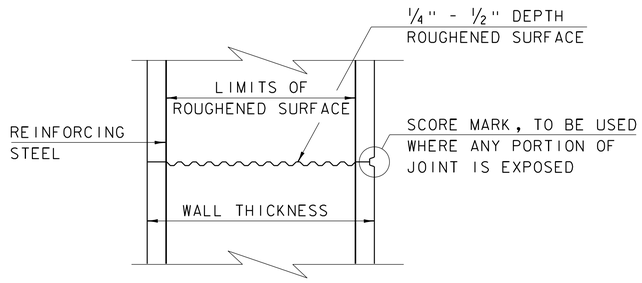
NOT TO SCALE TYPICAL BOTH ENDS OF BRIDGE

Stantec

PROJECT NAME:	ST JOHNSBURY
PROJECT NUMBER:	BHO 1447(30)
FILE NAME: z12j164wtr_dets2d.dgn	PLOT DATE: 2/27/2015
PROJECT LEADER: M. CHENETTE	DRAWN BY: D. HARRINGTON
DESIGNED BY: D. CAMPBELL	CHECKED BY: G. SANTY
WATER DETAILS 5	SHEET 57 OF 57

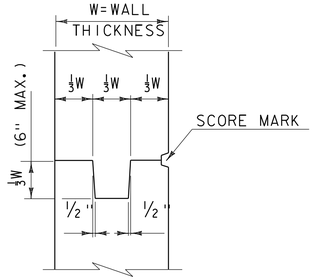
CONCRETE GENERAL NOTES

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.

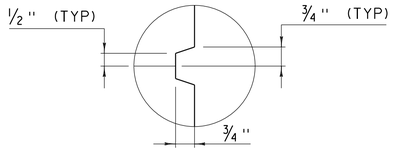


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

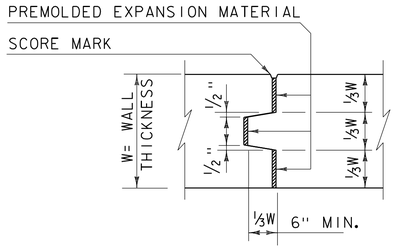
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



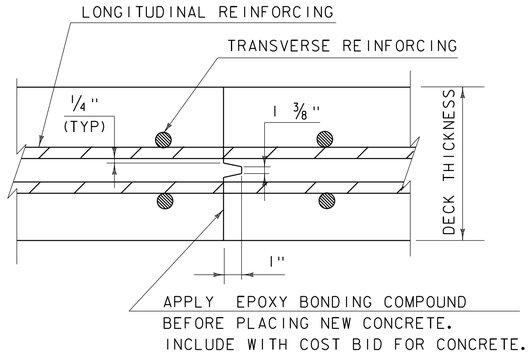
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



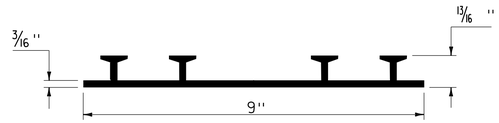
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



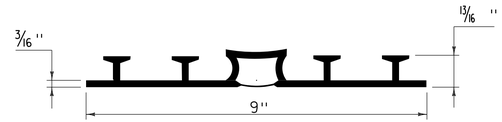
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

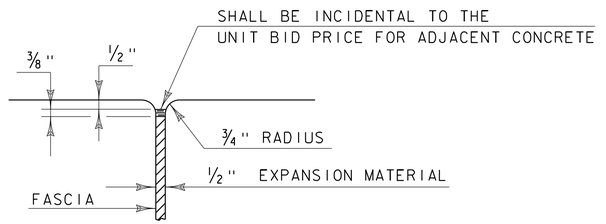
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



P.V.C. WATERSTOP FOR EXPANSION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

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



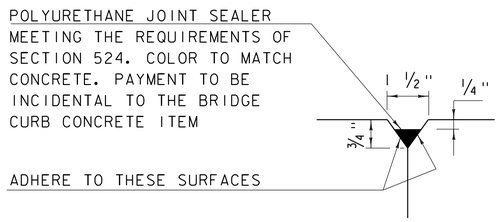
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

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

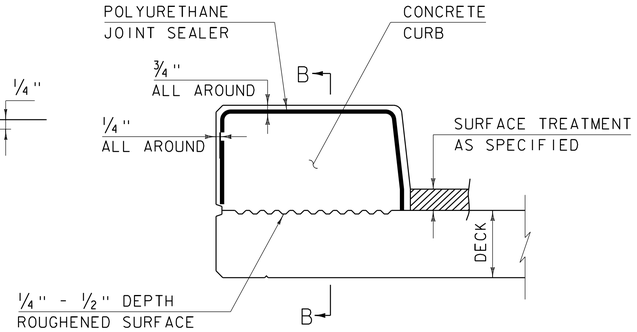
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-501.00

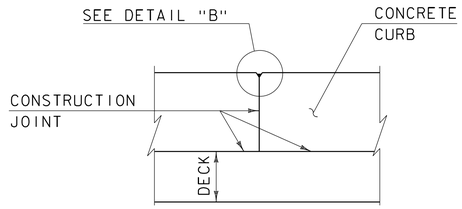


DETAIL "B"
(NOT TO SCALE)

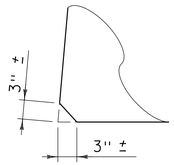


CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

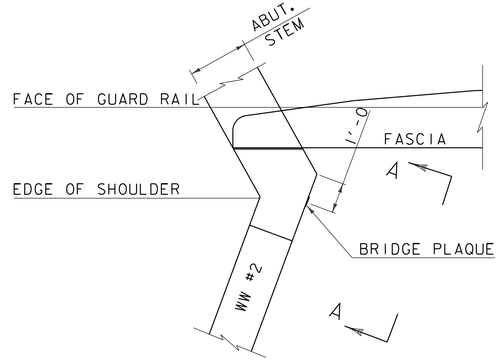
1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



SECTION B - B
(NOT TO SCALE)



ACUTE ANGLE CLIP DETAIL
(NOT TO SCALE)



PLAN

CONCRETE CURB JOINT NOTES

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

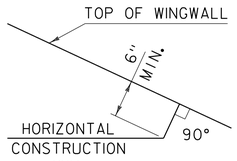
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

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

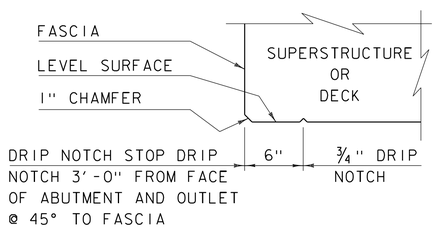
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

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

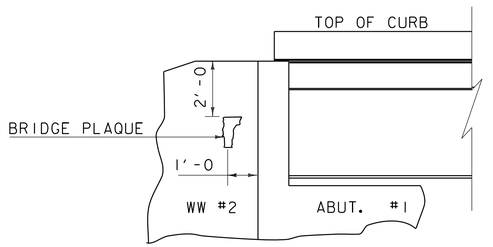
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)

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

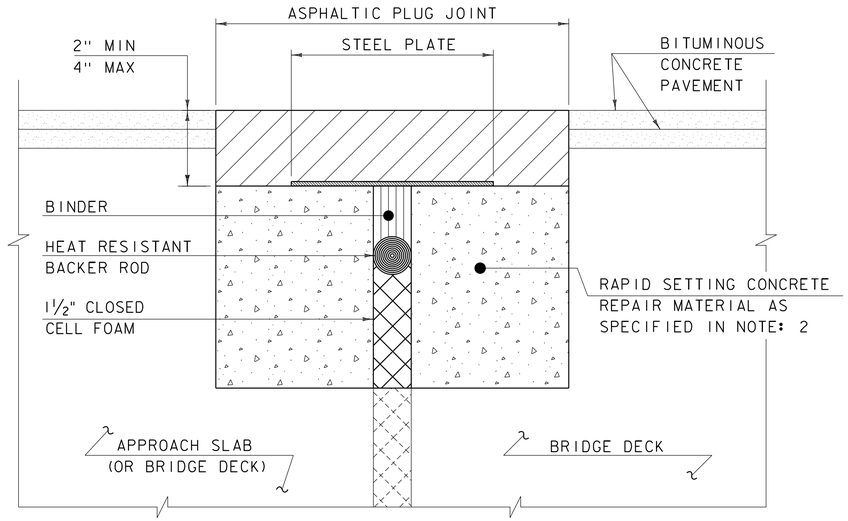
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

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

CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL SD-502.00



ASPHALTIC PLUG JOINT DETAIL - REHAB

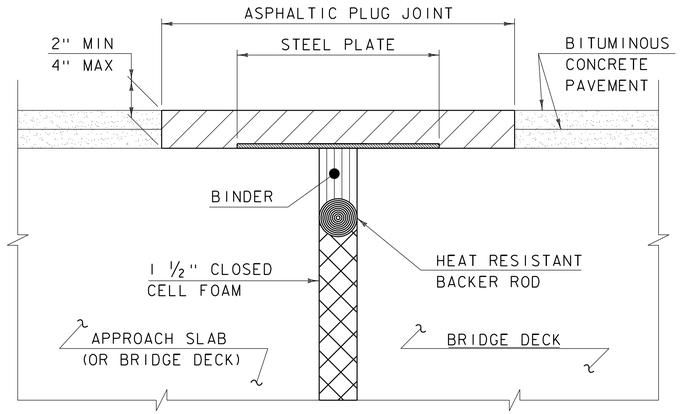
NOTES:

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

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

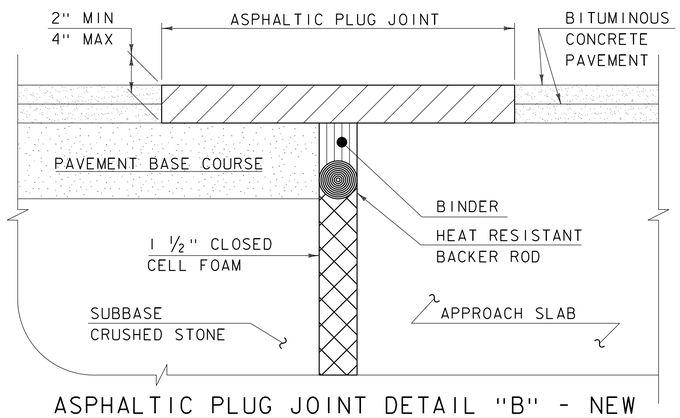
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

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



ASPHALTIC PLUG JOINT DETAIL "A" - NEW

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



ASPHALTIC PLUG JOINT DETAIL "B" - NEW

ASPHALTIC PLUG JOINT NOTES

INSTALLATION:

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

WEATHER LIMITATIONS

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

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

DETAILS ON THIS SHEET ARE NOT TO SCALE.

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

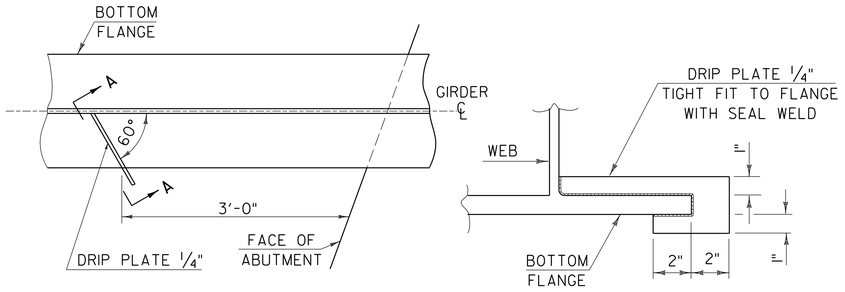
BRIDGE JOINT
ASPHALTIC PLUG

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

STRUCTURES DETAIL
SD-516.10

STRUCTURAL STEEL GENERAL NOTES:

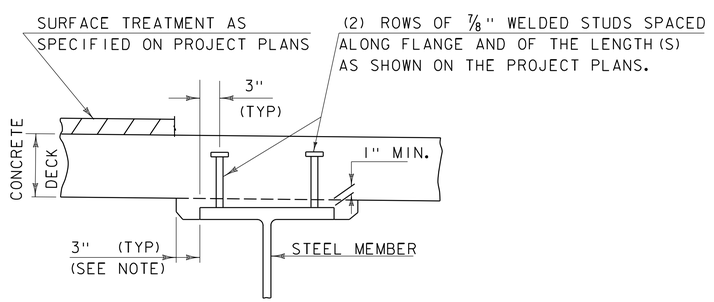
1. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH-STRENGTH BOLTS IN 15/16" DIAMETER HOLES, PER SUBSECTION 506.19, UNLESS OTHERWISE SPECIFIED.
2. ALL HOLES IN THE WEBS OF THE FASCIA GIRDERS THAT ARE NOT OTHERWISE FILLED, SHALL BE FILLED WITH EITHER BUTTON HEAD OR HEX HEAD BOLTS. THESE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19.
3. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.
4. ANY CONNECTIONS THAT ARE NOT DETAILED ON THE PLANS SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.
5. STRUCTURAL STEEL MEMBERS DESIGNATED "CVN" IN THE PLANS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SUBSECTION 714.01 OF THE STANDARD SPECIFICATIONS.
6. ENDS OF GIRDERS ARE TO BE VERTICAL IN THEIR FINAL POSITION.
7. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF THE GIRDERS SHALL BE TAKEN AS DIRECTED BY THE RESIDENT ENGINEER FOR USE IN DETERMINING FINISHED GRADES.



PLAN DRIP PLATE

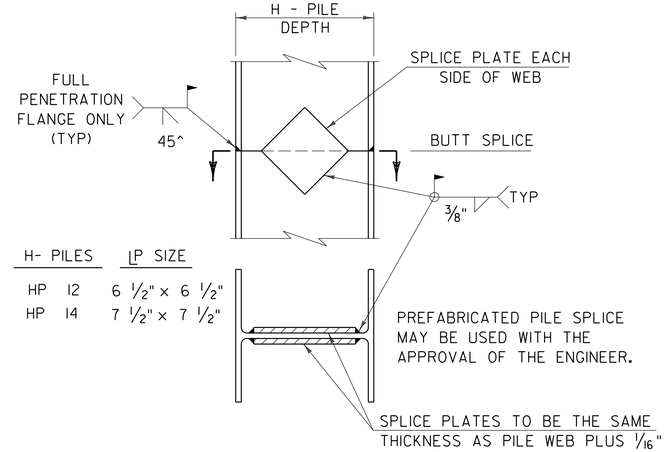
SECTION A - A

NOTE: DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA GIRDERS ON THE HIGH SIDE OF ALL PIERS AND ABUTMENTS OR AS INDICATED ON PROJECT PLANS.



NOTE:
THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. ANY VOIDS RESULTING FROM FORMING SYSTEM ELEMENTS SHALL BE FILLED WITH JOINT SEALER, POLYURETHANE MEETING THE REQUIREMENTS OF SECTION 524. THE COST OF THE JOINT SEALER, POLYURETHANE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

HAUNCH AND SHEAR CONNECTOR DETAIL



H- PILES	LP SIZE
HP 12	6 1/2" x 6 1/2"
HP 14	7 1/2" x 7 1/2"

DETAIL OF PILE SPLICE

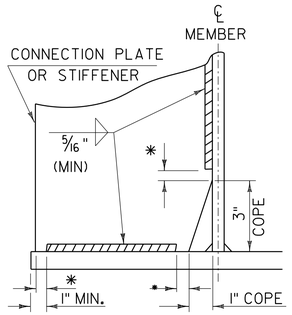
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED NOTES

STRUCTURAL STEEL DETAILS & NOTES

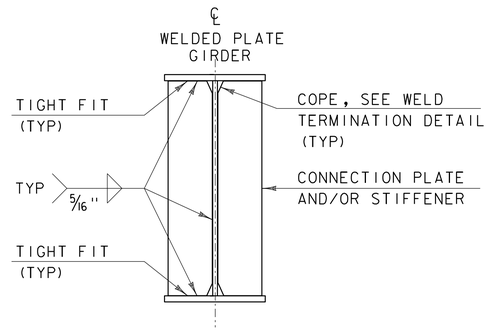
VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-601.00



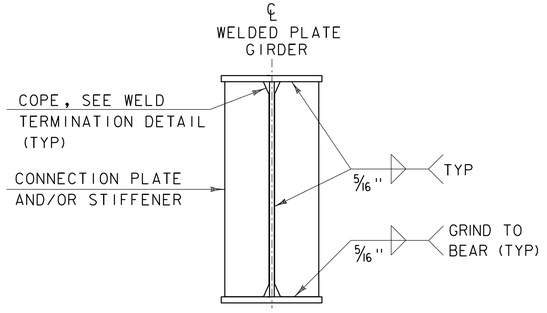
WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

*NO WELD FOR 3/8" MIN. 7/8" MAX. (EXCEPT MUST MAINTAIN 1" MINIMUM FROM EDGE OF FLANGE)

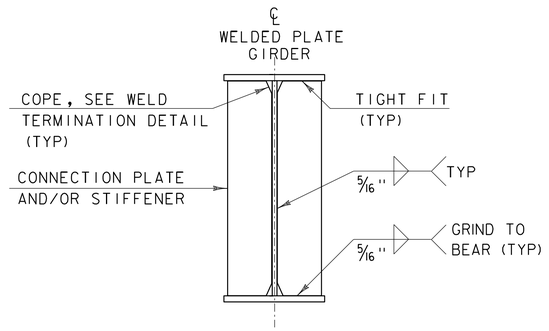


INTERMEDIATE CONNECTION PLATES AND/OR STIFFENERS FOR WELDED PLATE GIRDERS

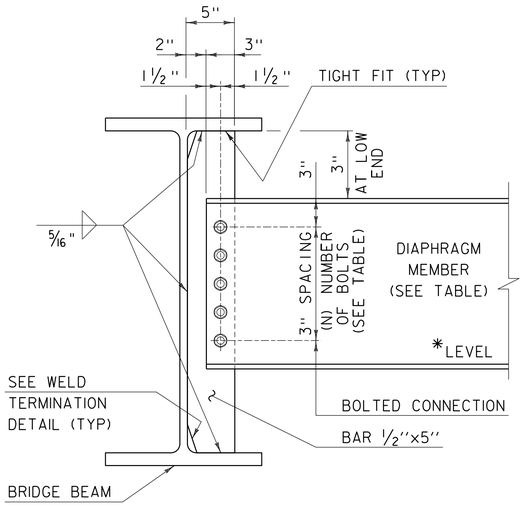
INTERMEDIATE DETAIL IS ONLY USED WHEN PLATE DOES NOT OCCUR AT AN ABUTMENT OR PIER.



ABUTMENT BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



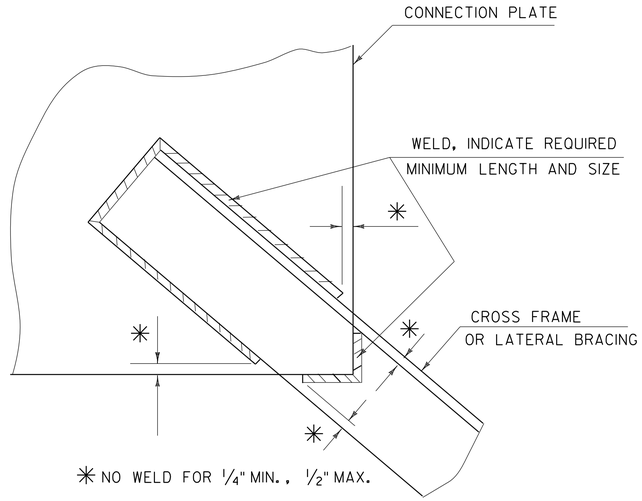
PIER BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



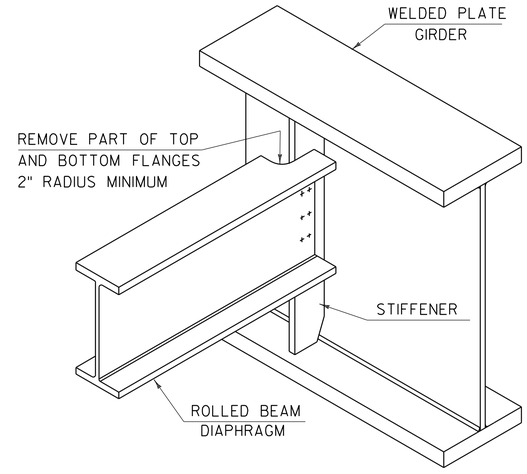
DEPTH		DIAPHRAGM MEMBER	(N) BOLTS
ROLLED BEAM	24" 30"	C15x33.9	4
	31" 36"	MC18x42.7	5
	37" 42"	W21x44	6
PLATE GIRDER WEB	31" 36"	W27x84	7
	37" 42"	W33x118	9
	43" 48"	W36x135	10

INTERMEDIATE DIAPHRAGMS FOR 24" TO 48" BRIDGE BEAMS

* IF CLEARANCE CANNOT BE MET, DIAPHRAGM MAY BE SLOPED.



WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING



SEE CONTRACT DRAWINGS FOR SIZES OF MEMBERS AND CONNECTION DETAILS

ROLLED BEAM USED AS DIAPHRAGM

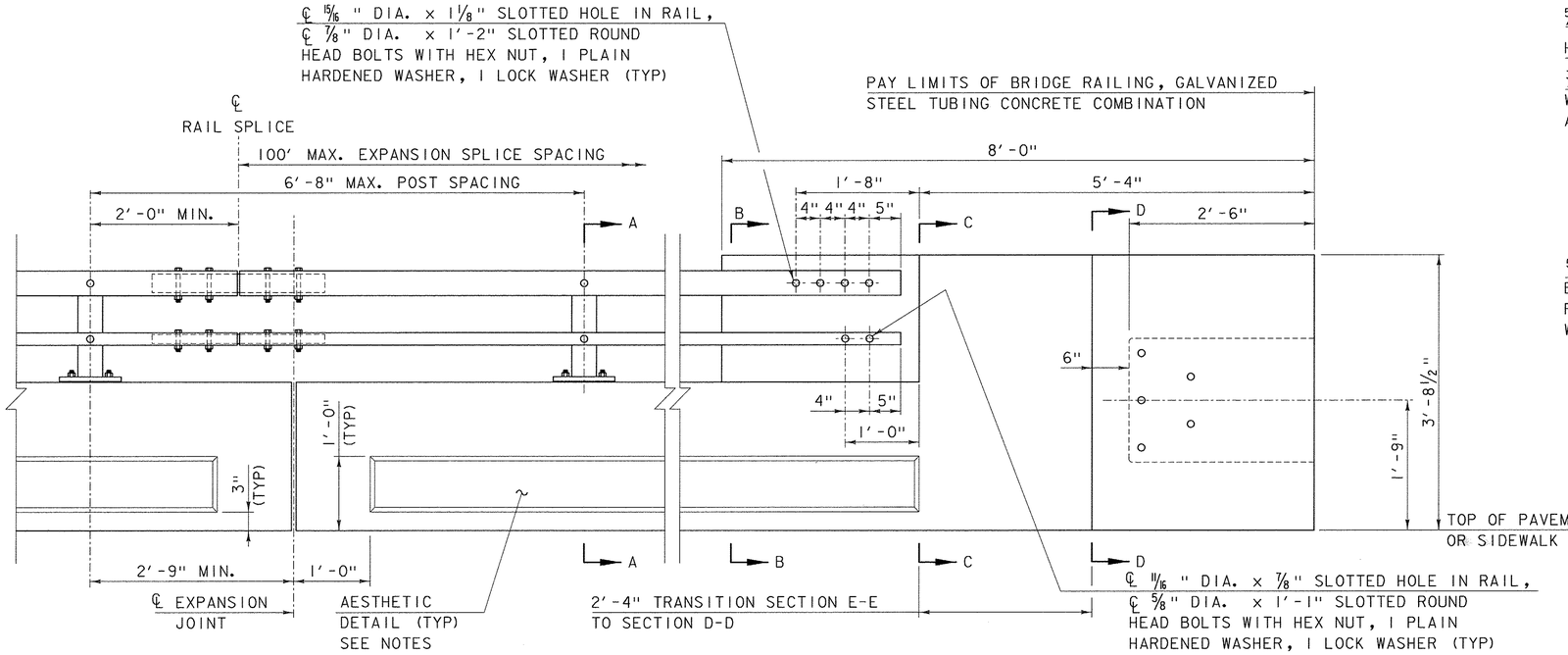
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
MAY 2, 2011	ADD INTERMEDIATE DIAPHRAGMS DETAIL & ADD NOT TO SCALE NOTE

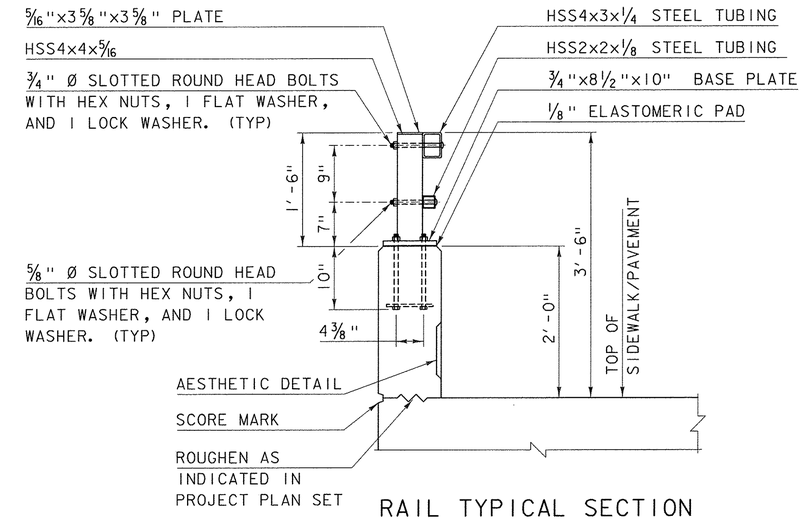
STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL SD-602.00



RAILING & END WALL APPROACH

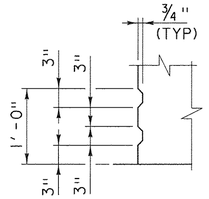


RAIL TYPICAL SECTION

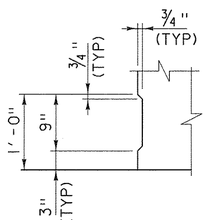
NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.
2. PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
3. ALL POSTS SHALL BE SET NORMAL TO GRADE.
4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE POSTS AND PREFERABLY TO AT LEAST 4 POSTS.
5. HOLES IN RAILS FOR TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
6. BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
7. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY ASTM A 449 (TYPE I) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE.
8. SEE STANDARD DRAWING G-1 FOR DETAILS OF DELINEATORS. A DELINEATOR SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT. PAYMENT FOR DELINEATORS SHALL BE INCIDENTAL TO OTHER ITEMS.
9. AESTHETIC TREATMENT TYPE SHALL BE APPLIED AS SPECIFIED IN THE CONTRACT PLANS. IF NONE IS SPECIFIED IT SHALL NOT BE USED. AESTHETIC TREATMENT DETAILED ON THIS SHEET MAY ALSO BE APPLIED ON THE FASCIA SIDE OF THE RAIL, IF SPECIFIED IN THE CONTRACT PLANS.
10. BRIDGE RAILING SHALL HAVE A RUBBED FINISH IN ACCORDANCE WITH SECTION 501.
11. THIS RAILING MEETS THE REQUIREMENTS FOR A NCHRP REPORT 350 TL-4 SERVICE LEVEL.

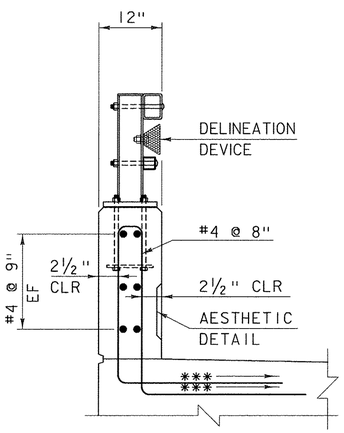
NOTE:
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.
*** MATCH SLOPE OF NEAREST TRANSVERSE STEEL



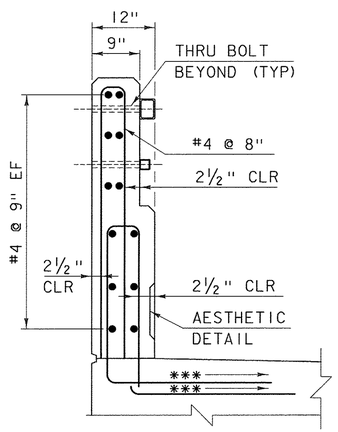
AESTHETIC DETAIL A



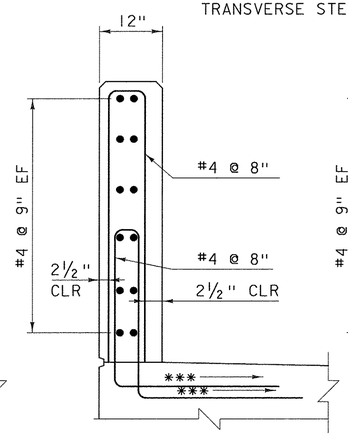
AESTHETIC DETAIL B



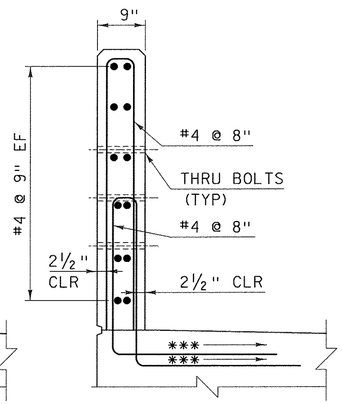
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

OTHER STDS. REQUIRED:	G-1

REVISIONS AND CORRECTIONS

AUGUST 22, 2012 - ORIGINAL APPROVAL

APPROVED

Wm. Michael Hedges
STRUCTURES ENGINEER

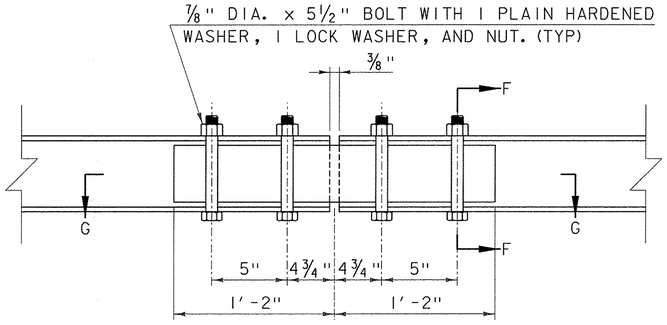
Richard Peterson
DIRECTOR OF PROGRAM DEVELOPMENT

Mark D. Richter
FEDERAL HIGHWAY ADMINISTRATION

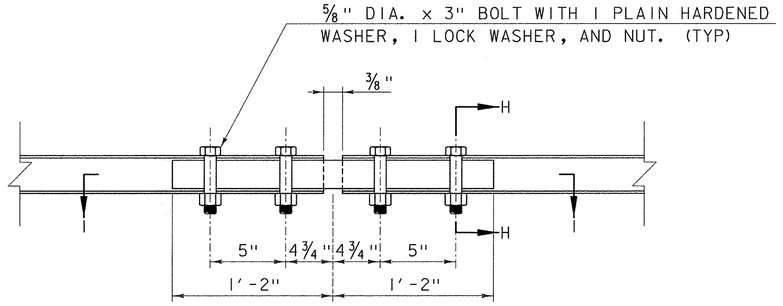
BRIDGE RAILING, GALVANIZED STEEL TUBING / CONCRETE COMBINATION

VERMONT AGENCY OF TRANSPORTATION

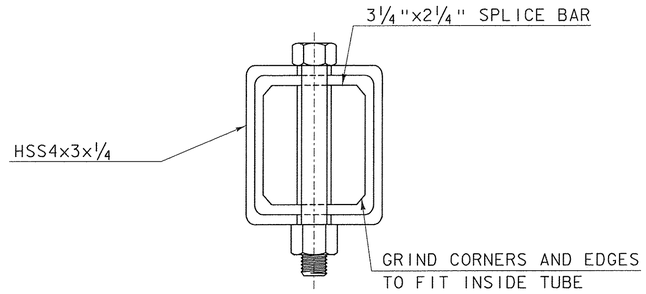
STANDARD S-352A



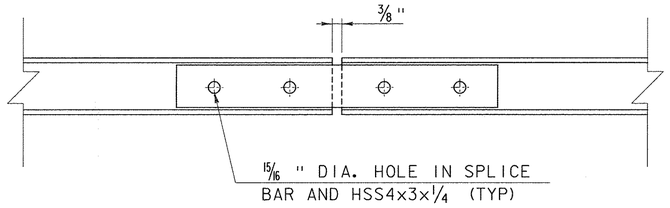
TOP RAIL FIXED SPLICE DETAIL



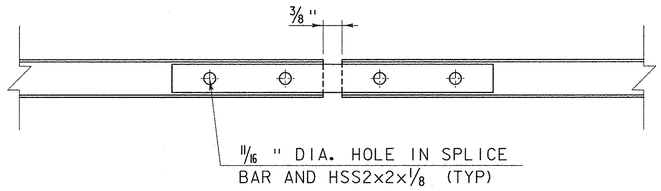
BOTTOM RAIL FIXED SPLICE DETAIL



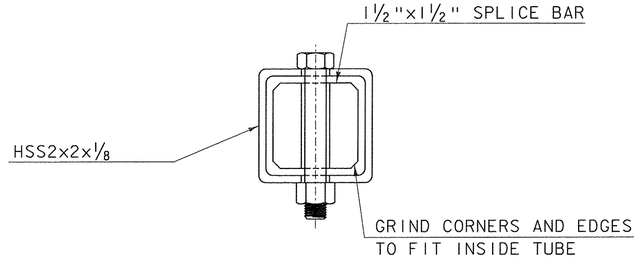
SECTION F-F



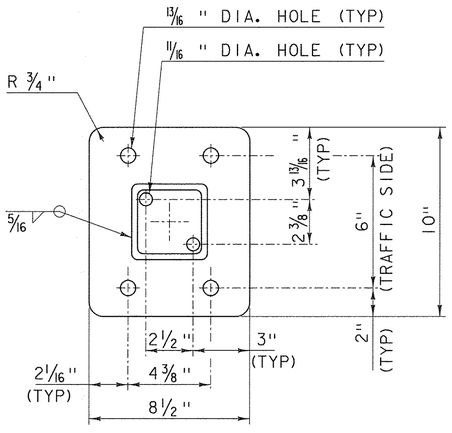
SECTION G-G



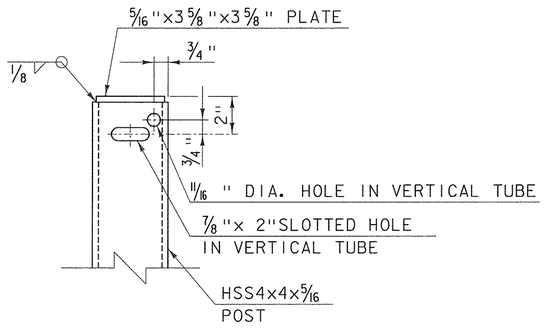
SECTION I-I



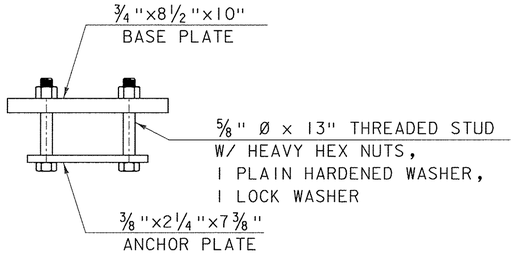
SECTION H-H



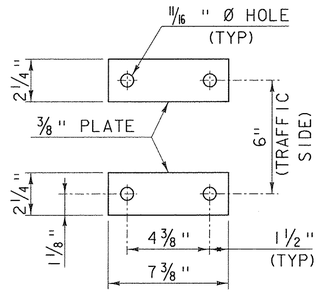
BASE PLATE



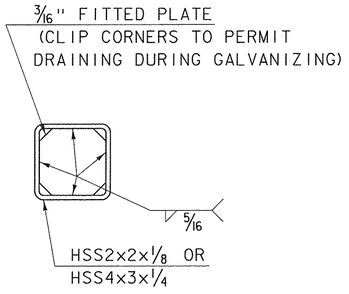
VERTICAL TUBE DETAIL
(FRONT VIEW)



RAIL POST ANCHORAGE



ANCHOR PLATES



END OF RAIL DETAIL

OTHER STDS. REQUIRED: G-1

REVISIONS AND CORRECTIONS

AUGUST 22, 2012 - ORIGINAL APPROVAL

APPROVED

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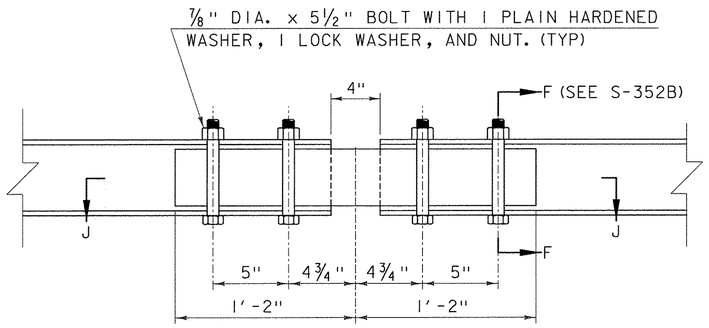
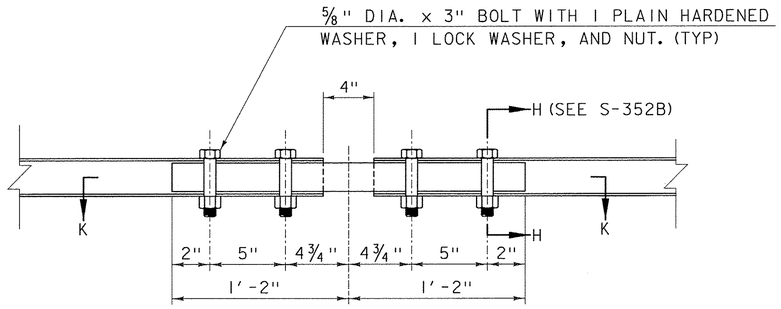
BRIDGE RAILING, GALVANIZED STEEL TUBING / CONCRETE COMBINATION

VERMONT AGENCY OF TRANSPORTATION

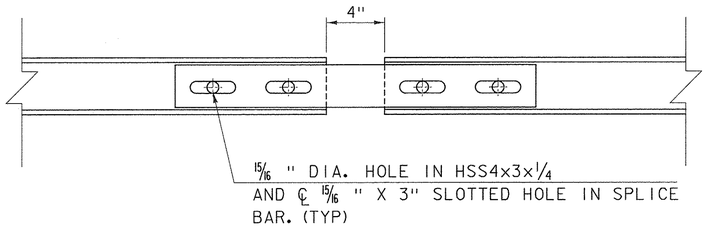
STANDARD S-352B



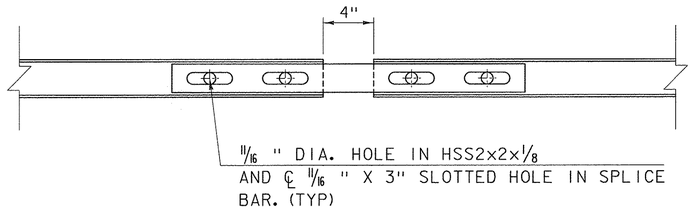
TOP RAIL EXPANSION SPLICE DETAIL



BOTTOM RAIL EXPANSION SPLICE DETAIL



SECTION J-J



SECTION K-K

OTHER STDS. REQUIRED: G-1

REVISIONS AND CORRECTIONS

AUGUST 22, 2012 - ORIGINAL APPROVAL

APPROVED

STRUCTURES ENGINEER

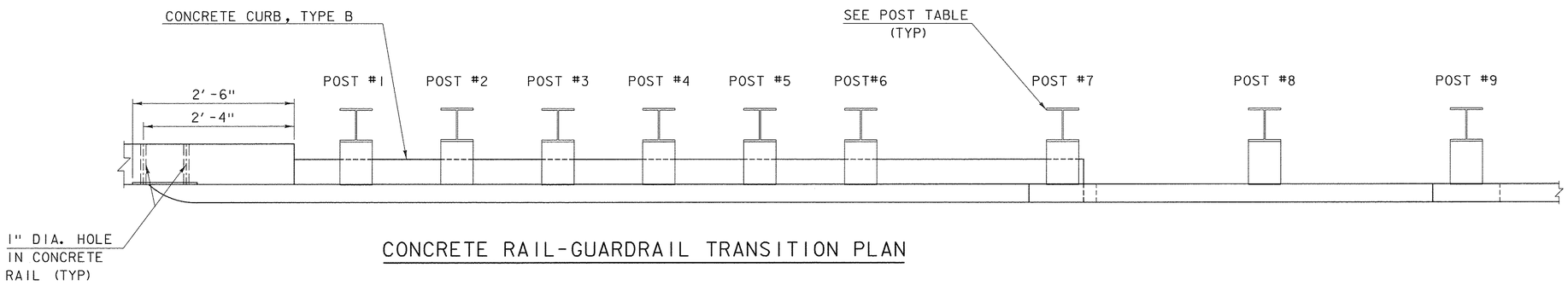
DIRECTOR OF PROGRAM DEVELOPMENT

FEDERAL HIGHWAY ADMINISTRATION

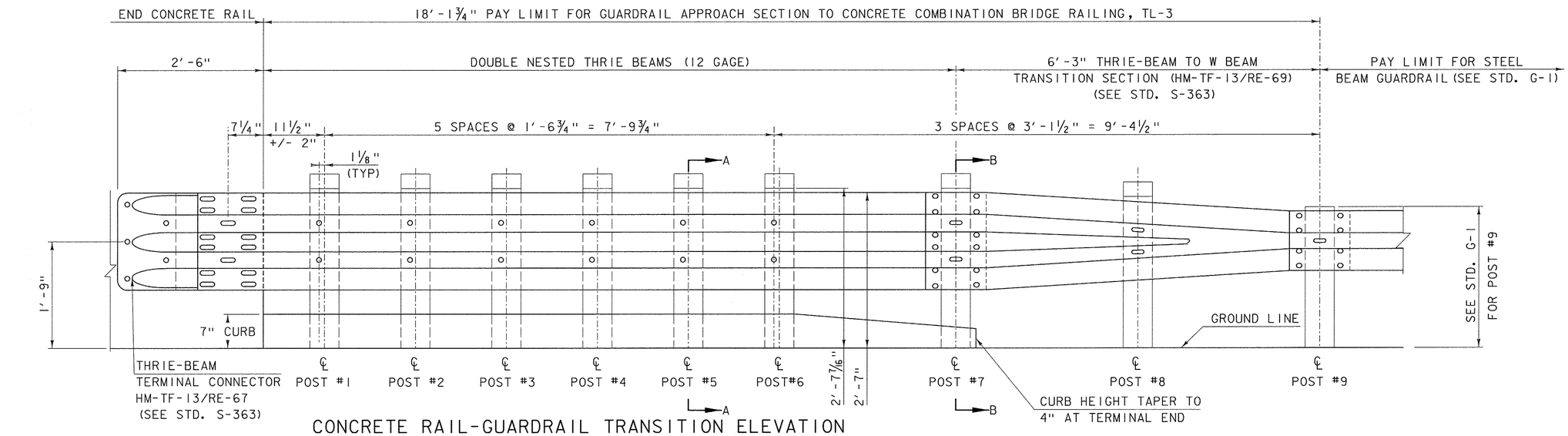
BRIDGE RAILING, GALVANIZED STEEL TUBING / CONCRETE COMBINATION

VERMONT AGENCY OF TRANSPORTATION

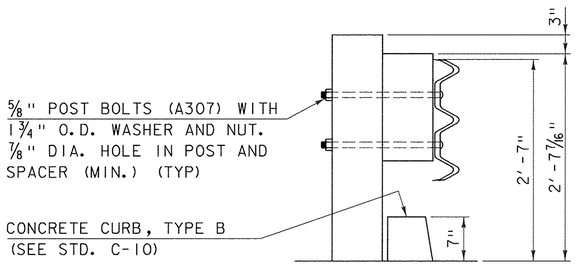
STANDARD S-352C



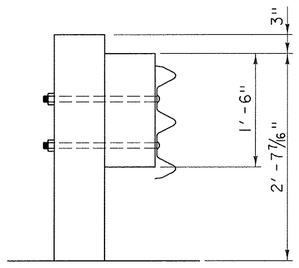
CONCRETE RAIL-GUARDRAIL TRANSITION PLAN



CONCRETE RAIL-GUARDRAIL TRANSITION ELEVATION



SECTION A-A



SECTION B-B

		STEEL	WOOD
SECTION		W6x9	6"X8"
OFFSET BLOCK		6"X8" WOOD	6"X8" RECESSED WOOD
EMBEDMENT DEPTH	POST# 1-6	7'-0"	7'-0"
	POST# 7&8	6'-0"	6'-0"
	POST# 9	SEE STD. G-1	SEE STD. G-1

POST TABLE

NOTES:

1. THRIE-BEAM TERMINAL CONNECTOR SHALL BE INCLUDED IN THE UNIT BID PRICE FOR GUARDRAIL APPROACH SECTION TO CONCRETE COMBINATION BRIDGE RAILING, TL-3.
2. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, A COMPOSITE MATERIAL POST AND/OR BLOCKOUT FROM THE APPROVED PRODUCTS LIST MAY BE SUBSTITUTED FOR A POST AND/OR BLOCKOUT OF SIMILAR DIMENSIONS.
3. THIS RAILING MEETS THE REQUIREMENTS FOR A NCHRP REPORT 350 TL-3 SERVICE LEVEL.

OTHER STDS. REQUIRED: **C–10, G–1, S–363**

REVISIONS AND CORRECTIONS

AUGUST 22, 2012 - ORIGINAL APPROVAL

APPROVED

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GUARDRAIL APPROACH SECTION TO CONCRETE COMBINATION BRIDGE RAILING, TL-3

VERMONT AGENCY OF TRANSPORTATION

STANDARD S-352D