STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

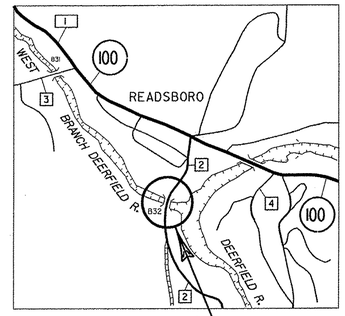
TOWN OF READSBORO
COUNTY OF BENNINGTON

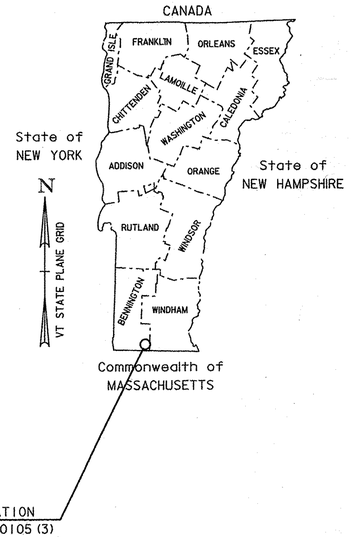
ROUTE NO: TH 2, FAS 105, (MAJOR COLLECTOR) BRIDGE #32

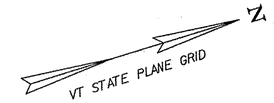
PROJECT LOCATION : LOCATED IN THE COUNTY OF BENNINGTON, TOWN OF READSBORO ON TH 2, BRIDGE 32 APPROXIMATELY 0.16 KM SOUTH OF THE INTERSECTION OF TH2 AND TH 1 (VT ROUTE 100).

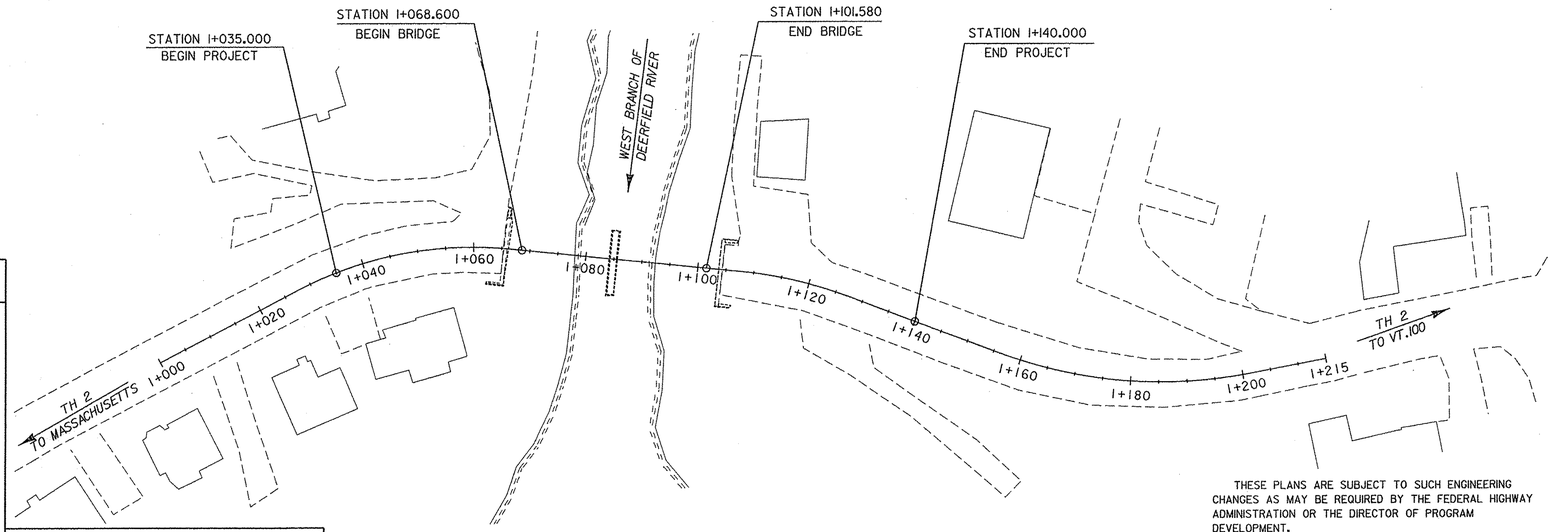
PROJECT DESCRIPTION : THE PROJECT SHALL CONSIST OF THE REPLACEMENT OF THE EXISTING STRUCTURE WITH A NEW SIMPLE SPAN BRIDGE WITH MINIMAL CHANNEL WORK. THE SOUTHERN APPROACH WORK WILL BE MINIMAL WHILE THE EXTENDED NORTHERN APPROACH WORK WILL BE MODERATE.

LENGTH OF STRUCTURE : 32.980 METERS
LENGTH OF ROADWAY: 72.020 METERS
LENGTH OF PROJECT: 105.000 METERS









0 10 20 30
SCALE 1:500

QUALITY ASSURANCE PROGRAM: LEVEL 2

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS SR SR SR
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : L. ORVIS
SURVEYED DATE : FEBRUARY 14, 1994

DATUM
VERTICAL NAV D88
HORIZONTAL NAD-83 (92)

RECORD PLANS

CONTRACTOR: RENAUD BROTHERS, INC. – VERNON, VT
RESIDENT ENGINEER: FREDERICK ROSS III
CONSTRUCTION BEGAN: NOVEMBER 19, 2012
CONSTRUCTION COMPLETE: NOVEMBER 20, 2013
RECORD PLANS BY: FREDERICK ROSS III, PERCY BANNERMAN

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

BY _____ RESIDENT ENGINEER
DATE 4-21-15

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

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

VAST Metric

UNLESS NOTED OTHERWISE
STATIONS ARE IN KILOMETERS
ELEVATIONS ARE IN METERS
DIMENSIONS ARE IN MILLIMETERS

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE 3-7-12

PROJECT MANAGER : J. LACROIX

PROJECT NAME : READSBORO
PROJECT NUMBER : BRF 0105 (3)

SHEET 1 OF 90 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

Version 09.02.02

LRFD

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G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	3-Jan-00

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2012	650	100	53	7.9	75
2032	740	110	53	12.8	140

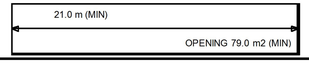
20 year ESAL for flexible pavement from 2012 to 2032 : 257000

40 year ESAL for flexible pavement from 2012 to 2052 : 628000

Design Speed : 25 mph

TEMPORARY BRIDGE PROFILE ALONG TEMP CL

MIN. BOTTOM OF BEAM ELEV. = 358.5



FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: 4/10/2001

DRAINAGE AREA : 81.6 square kilometers
CHARACTER OF TERRAIN : Mountainous, forested to wetlands
STREAM CHARACTERISTICS : Perennial, sinuous, not braided and equiwidth
NATURE OF STREAMBED : Boulders, cobble to gravel

PEAK FLOW DATA

Q 2.33 =	40 cms	Q 50 =	147 cms
Q 10 =	85 cms	Q 100 =	178 cms
Q 25 =	122 cms	Q 500 =	239 cms

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: "
WATER SURFACE ELEV.: "
NATURAL STREAM VELOCITY : @ Q25 = 4.1 mps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
IF YES, DESCRIBE: Confluence with the Deerfield River 45 meters below Bridge 32

WATERSHED STORAGE: 4% HEADWATERS: X
UNIFORM:
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Two span steel beam bridge
YEAR BUILT: 1900 (reconstructed in 1967)
CLEAR SPAN(NORMAL TO STREAM): 36.0 m
VERTICAL CLEARANCE ABOVE STREAMBED: 5.8m (average low steel =360.8 m)
WATERWAY OF FULL OPENING: 106 sq m
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Refer to boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	357.0 m *	VELOCITY =	2.8 mps
Q10 =	357.8 m *	"	3.8 mps
Q25 =	358.3 m *	"	4.2 mps
Q50 =	358.6 m *	"	4.4 mps
Q100 =	358.9 m *	"	4.6 mps

LONG TERM STREAMBED CHANGES: Some scour noted through the bridge area, due to the channel drop in this area and stone fill protection constricting the flow.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 361.5 m
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Readsboro DISTANCE: 450 m
HIGHWAY # : TH-3 STRUCTURE #: 31
CLEAR SPAN: 30 m CLEAR HEIGHT: 7 m
YEAR BUILT: 1948 FULL WATERWAY: unk.
STRUCTURE TYPE: Single span bridge

DOWNSTREAM STRUCTURE

TOWN: N/A-Confluence with Deerfield DISTANCE:
HIGHWAY # : STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE:

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	HI -93	3S2	6 AXLE	3A STR.	4A STR.	5A SEMI	
TONNAGE	36	36	66	30	34.5	38	
INVENTORY	1.17						
POSTING	1.29						
OPERATING		1.85	1.13	1.82	1.63	1.65	
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: Steel Plate Girder

CLEAR SPAN(NORMAL TO STREAM): 31 m
VERTICAL CLEARANCE ABOVE STREAMBED: 4.6 m
WATERWAY OF FULL OPENING: 84 sq m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	356.7 m *	VELOCITY=	3.0 mps
Q10 =	357.5 m *	"	3.6 mps
Q25 =	357.9 m *	"	4.0 mps
Q50 =	358.2 m *	"	4.2 mps
Q100 =	358.4 m *	"	4.4 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 361.1 m
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 359.6 m
VERTICAL CLEARANCE: @ Q25 = 1.7 m *(see note below)

SCOUR: Maximum contraction scour of 1 m @ Q500

REQUIRED CHANNEL PROTECTION: Type IV Stone Fill

PERMIT INFORMATION

AVERAGE DAILY FLOW:	2 cms	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	1 cms	0.3 m
ORDINARY HIGH WATER:	17 cms	1.0 m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge
CLEAR SPAN (NORMAL TO STREAM): 21 m
VERTICAL CLEARANCE ABOVE STREAMBED: 358.5 m (min. elevation)**
WATERWAY AREA OF FULL OPENING: 79 sq m

ADDITIONAL INFORMATION

* This bridge is located immediately upstream of the confluence. During a flood event, there will be backwater effects from the Deerfield River which would raise water surface elevations at this site. There is no flood insurance study for the Deerfield in this area so normal depth was assumed.
** Temporary bridge was sized to be installed approximately 7 m upstream of the existing bridge.

TRAFFIC MAINTENANCE NOTES

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

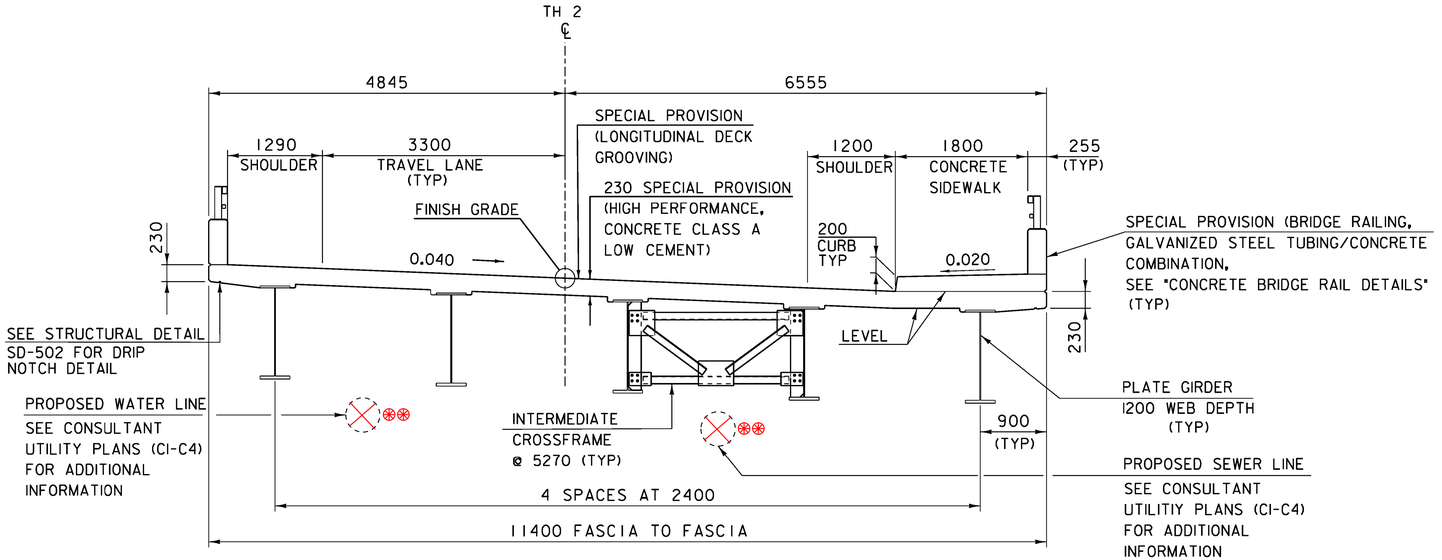
DESIGN VALUES

1. DESIGN LIVE LOAD			HL-93
2. Future Pavement		d_p:	75 mm
3. DESIGN SPAN		L:	32.89 m
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)		Δ:	---
5. PRESTRESSING STRAND		f_y:	---
6. PRESTRESSED CONCRETE STRENGTH		f'_c:	---
7. PRESTRESSED CONCRETE RELEASE STRENGTH		f'_{ci}:	---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	(30 Mpa)	f'_c:	---
9. CONCRETE, HIGH PERFORMANCE CLASS A ,LOW CEMENT	(30 Mpa)	f'_c:	4.0 ksi
10. CONCRETE, HIGH PERFORMANCE CLASS B	(25 Mpa)	f'_c:	3.5 ksi
11. CONCRETE, CLASS C	(20 Mpa)	f'_c:	---
12. REINFORCING STEEL	(420 Mpa)	f_y:	420
13. STRUCTURAL STEEL AASHTO M270,GRADE 345W	(350 Mpa) (WE/	f_y:	350
14. SOIL UNIT WEIGHT	(22 kN/m3)	γ:	0.14 kcf
15. MAX. FACTORED BEARING RESISTANCE (SOIL)	(380 kPa)	q_n:	8 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)		ϕ:	0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	(475 kPa)	q_n:	10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)		ϕ:	---
19. NOMINAL AXIAL PILE RESISTANCE		q_p:	---
20. PILE YIELD STRENGTH ASTM A572		f_y:	---
21. PILE SIZE			---
22. EST. PILE LENGTH		L_p:	
23. PILE RESISTANCE FACTOR		ϕ:	0.55
24. LATERAL PILE DEFLECTION		Δ:	---
25. BASIC WIND SPEED		V_{3s}:	40 m/s
26. MINIMUM GROUND SNOW LOAD		p_g:	2.4 kN/m2
27. SEISMIC DATA	PGA: ---	S_s:	---
		S_1:	---

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **BRF 0105(3)**

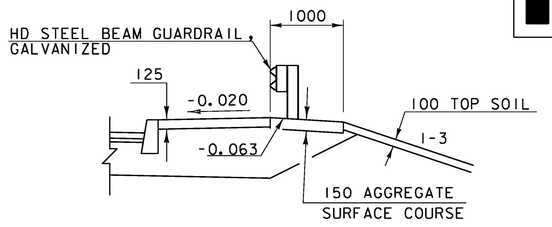
FILE NAME: **s89j088pi .xls**
PROJECT LEADER: **J. LACROIX**
DESIGNED BY: **W.PELLETIER**
PRELIMINARY INFORMATION SHEET

PLOT DATE: 3/5/2012
DRAWN BY: **G.ROKES**
CHECKED BY: **W.PELLETIER**
SHEET 2 OF 90

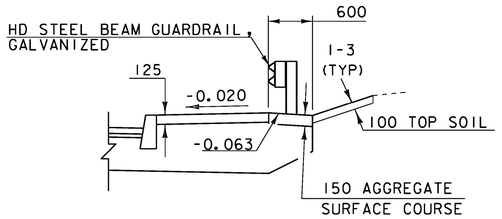


TYPICAL BRIDGE SECTION
(40:1 SCALE)

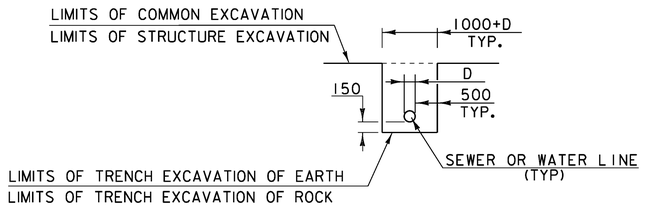
⊛⊛ TOWN DID NOT WANT THESE (TOO LOW) AND CHANGES WERE MADE. SEE CHANGE ORDER #4, DATED 10/17/13



TYPICAL ROADWAY SECTION WITH GUARDRAIL FROM 1+108.600 RT TO 1+121.00 RT
(40:1 SCALE)

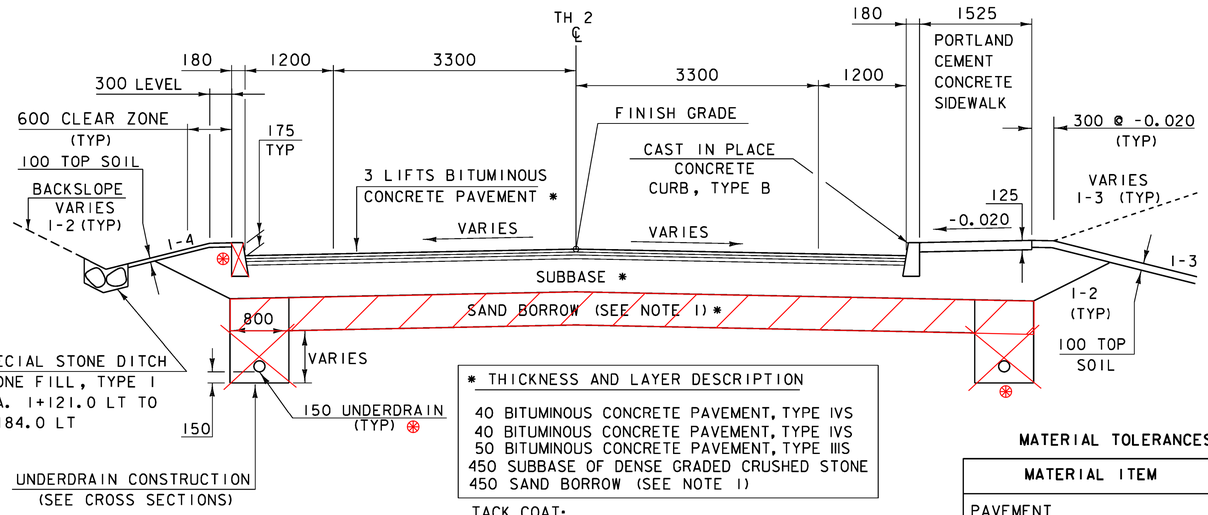


TYPICAL ROADWAY SECTION WITH GUARDRAIL FROM 1+057.900 RT TO 1+062.100 RT
(40:1 SCALE)



NOTE: FOR "D" SIZES SEE CONSULTANT UTILITY PLANS (C1-C4)

TYPICAL SEWER AND WATER PIPE SECTION
(NOT TO SCALE)



⊛ TOWN DID NOT WANT CURBING ON LEFT OR STONE DITCH, pUT A PAVED SWALE WITH NO UNDERDRAIN REQUIRED. SOME UNDERDRAIN PLACED BEHIND ABUTMENT 2 (SEE COMPUTATIONS BINDER PAGE 60510-1)

* THICKNESS AND LAYER DESCRIPTION

40 BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
40 BITUMINOUS CONCRETE PAVEMENT, TYPE IVS
50 BITUMINOUS CONCRETE PAVEMENT, TYPE IIIS
450 SUBBASE OF DENSE GRADED CRUSHED STONE
450 SAND BORROW (SEE NOTE 1)

TACK COAT:
EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.115 L/m^2 BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

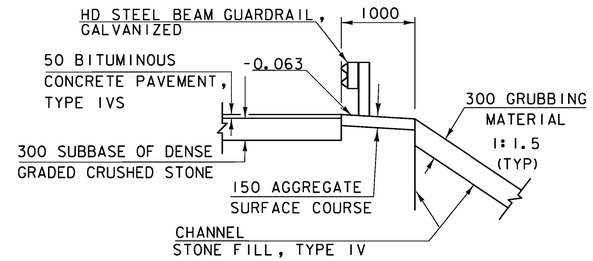
TYPICAL ROADWAY SECTION
(40:1 SCALE)

= SAND BORROW

NOTE 1: SEE "PROJECT NOTES" SHEET FOR SAND BORROW SUBSTITUTION

MATERIAL TOLERANCES (IF USED ON PROJECT)

MATERIAL ITEM	TOLERANCE
PAVEMENT	±5 mm TOTAL THICKNESS
AGGREGATE SURFACE COURSE	± 10 mm
BASE COURSE	± 10 mm
SUBBASE	± 30 mm
SAND BORROW	± 30 mm
GRANULAR BORROW	± 30 mm

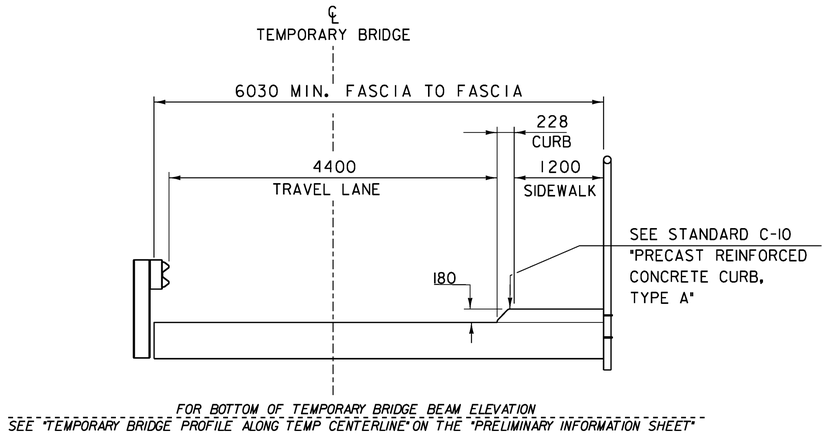


TYPICAL APPROACH GUARDRAIL SECTION AT WINGWALL #1 AND SIDE DRIVE LEFT
(40:1 SCALE)

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

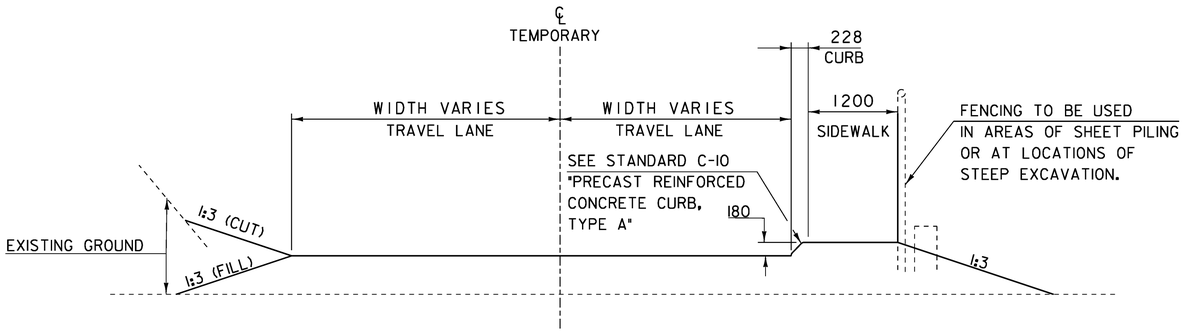
FILE NAME: 89J088/STR/s89J088typ.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
TYPICAL SECTIONS SHEET 1

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER



TEMPORARY ONE LANE BRIDGE TYPICAL SECTION

(NOT TO SCALE)

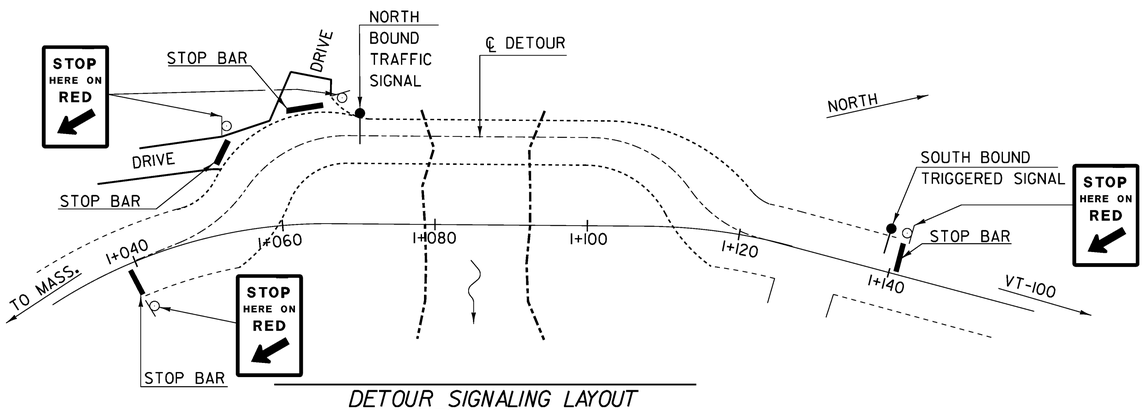


TEMPORARY ROAD APPROACH SECTION

(NOT TO SCALE)

DETOUR NOTES:

NORTH BOUND TRAFFIC TO VT-100 ON TH-2 SHALL HAVE A CONTINUOUSLY GREEN TRAFFIC SIGNAL INCLUDING THE TWO DRIVES AT 1+060.00 LT SEE "DETOUR SIGNALING LAYOUT" THIS SHEET. THE SOUTH BOUND TRAFFIC TO MASSACHUSETTS SHALL HAVE A RED SIGNAL AT AROUND STA. 1+140.00 THAT IS TRIGGERED GREEN BY A DETECTION DEVICE AND INTURN STOPS NORTH BOUND TRAFFIC AT AROUND STA. 1+040.00 SEE "DETOUR SIGNALING LAYOUT" THIS SHEET; ALSO SEE "SIGNAL TIMING CHART" THIS SHEET.



DETOUR SIGNALING LAYOUT

(NOT TO SCALE)

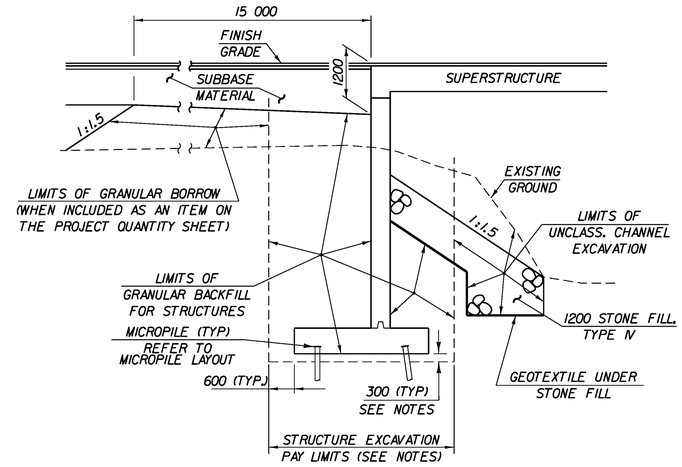
NORTH BOUND SIGNAL SEQUENCE

LIGHT	SECONDS
RED	ACTIVATED BY SOUTH BOUND TRIGGER
YELLOW	3.5
GREEN	CONTINUOUS

SOUTH BOUND SIGNAL SEQUENCE

LIGHT	SECONDS
RED	20.0
YELLOW	3.5
GREEN	TRIGGERED SIGNAL

SIGNAL TIMMING CHART

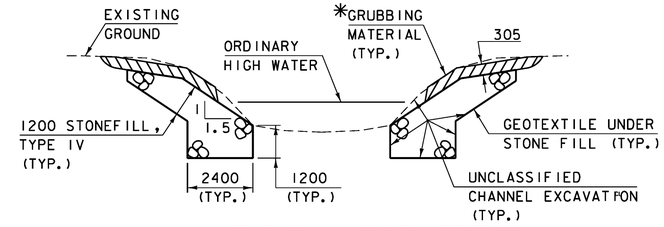


NOTE: ANY PORTIONS OF EXISTING ABUTMENTS WHICH ARE OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION SHALL BE REMOVED USING PAY ITEM 529.15 REMOVAL OF STRUCTURE.

300mm UNDERCUT AS DETERMINED NECCESSARY BY THE RESIDENT ENGINEER.

TYPICAL ABUTMENT SECTION - (NO COFFERDAM)

(NOT TO SCALE)



TYPICAL CHANNEL SECTION

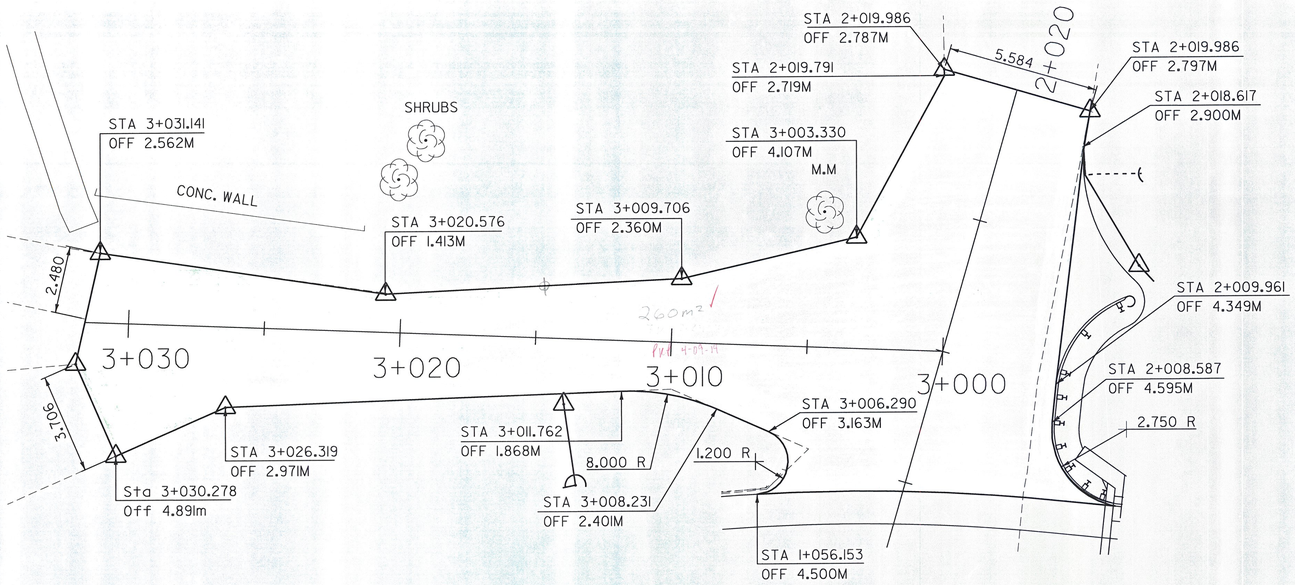
(NOT TO SCALE)

*GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

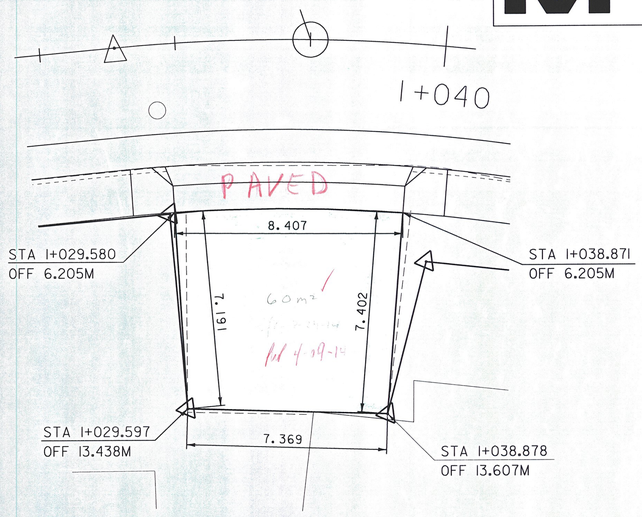
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088typ.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
TYPICAL SECTIONS SHEET 2

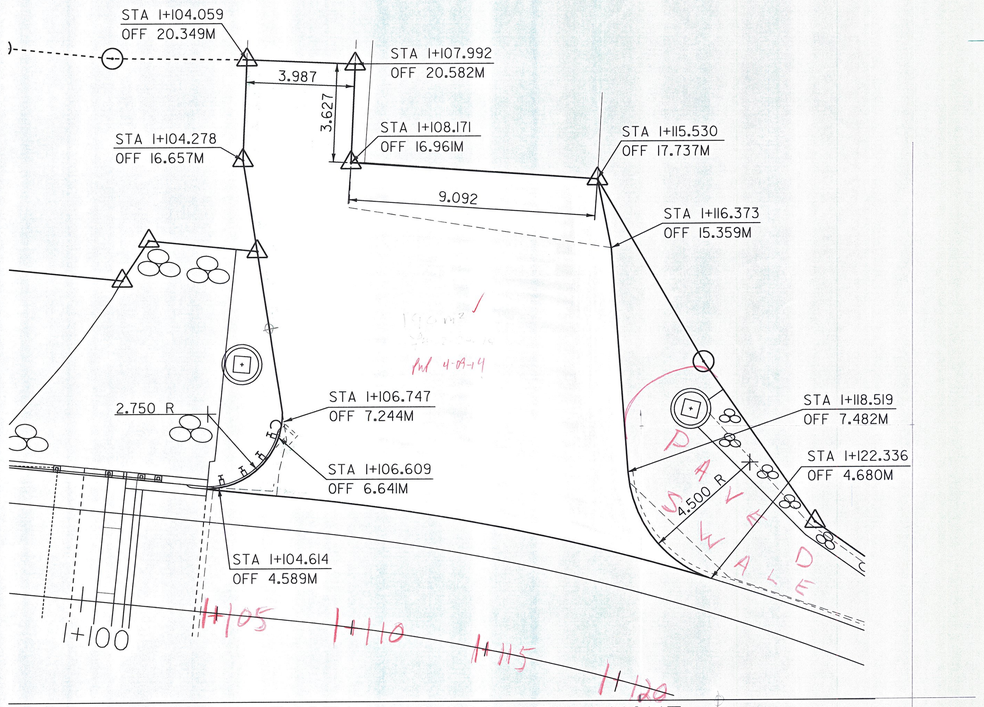
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 4 OF 90



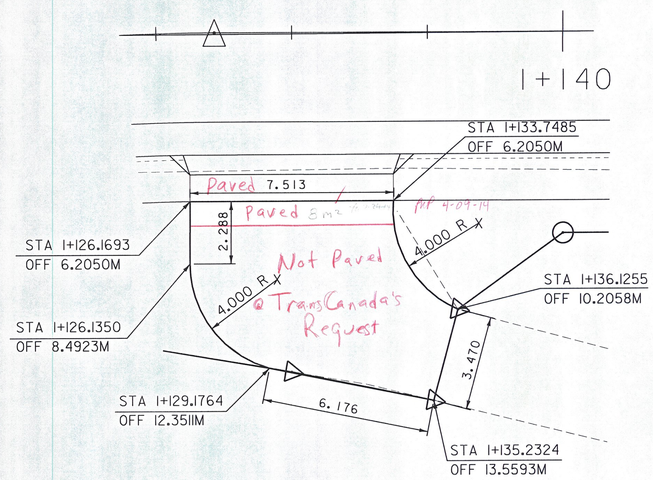
DRIVES 1 AND 2 AT STA. 1+060.000 LT LAYOUT



DRIVE STA. 1+034.230 RT LAYOUT



DRIVE STA. 1+112.000 LT LAYOUT



DRIVE STA. 1+130.000 RT LAYOUT

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088drv.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
DRIVE LAYOUTS	SHEET 5 OF 90

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

Metric

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	TRAINING	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS
1				
1030				
			540	
305				
670				
24				
1				
62			386	
290			310	
652				
640				
9				
340				
1				
			227	
			62690	
			79	
			12500	
			24000	
			1	
			1	
			311	
			10.9	
			1	
			1	
			10	
63				
63				
63				
5				
2				
1				
3				
79				
35				
4				
7560				

TOTALS

GRAND TOTAL	FINAL
1	
1030	
540	
305	
670	
24	
1	
448	
600	
652	
640	
9	
340	
1	
227	
62690	
79	
12500	
24000	
1	
1	
311	
10.9	
1	
1	
10	
63	
63	
63	
5	
2	
1	
3	
79	
35	
4	
7560	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER	ROUND
LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	
CM	COMMON EXCAVATION	203.15	
CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
CM	SAND BORROW	203.31	
CM	TRENCH EXCAVATION OF EARTH	204.20	
CM	TRENCH EXCAVATION OF ROCK	204.21	
CM	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	
CM	STRUCTURE EXCAVATION	204.25	
CM	GRANULAR BACKFILL FOR STRUCTURES	204.30	
SM	COLD PLANING, BITUMINOUS PAVEMENT	210.10	
CM	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
CM	AGGREGATE SURFACE COURSE	401.10	
KG	EMULSIFIED ASPHALT	404.65	
LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	
CM	CONCRETE, HIGH PERFORMANCE CLASS B (FPQ)	501.34	
KG	STRUCTURAL STEEL, PLATE GIRDER (FPQ)	506.55	
KG	STRUCTURAL STEEL	506.60	
KG	REINFORCING STEEL (FPQ)	507.15	
KG	EPOXY COATED REINFORCING STEEL (FPQ)	507.17	
LS	SHEAR CONNECTORS (970-22 X 178)	508.15	
LS	STRUCTURAL PAINTING, SHOP APPLIED	513.25	
LS	SURFACE PREPARATION, SHOP	513.40	
L	WATER REPELLENT, SILANE	514.10	
M	BRIDGE EXPANSION JOINT, VERMONT	516.11	
LS	ONE-WAY TEMPORARY BRIDGE (231 SM - EST.)	528.10	
EACH	REMOVAL OF STRUCTURE (200 SM - EST.)	529.15	
EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11	
	BEGIN OPTION AA		
M	450 CAAP 1.52 (68 X 12)	601.0215	
M	450 PCCSP 1.63 (68 X 12)	601.0415	
M	450 CPEP(SL)	601.2615	
	END OPTION AA		
EACH	PRECAST REINFORCED CONCRETE CATCH BASIN WITH CAST IRON GRATE	604.20	
EACH	SANITARY SEWER MANHOLE	604.22	
EACH	CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES	604.40	
EACH	CHANGING ELEVATION OF SEWER MANHOLES	604.42	
M	150 MM UNDERDRAIN PIPE	605.10	
M	150 MM UNDERDRAIN CARRIER PIPE	605.20	
EACH	UNDERDRAIN FLUSHING BASIN	605.95	
CM	DUST CONTROL WITH WATER	609.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARHTWORKS SUMMARY
		FILL REQUIRED
		FILL AVAILABLE
1030	CM	COMMON EXCAVATION: 1030X1.0
324	CM	UNCLASSIFIED CHANNEL EXCAVATION: 540X.6
269	CM	STRUCTURE EXCAVATION: 448X.6
670	CM	TRENCH EXCAVATION EARTH: 670X1.0
12	CM	TRENCH EXCAVATION ROCK: 24x.5
2305	CM	SUBTOTAL
0	CM	ROUNDING
2305	CM	TOTAL
2305	CM	FILL AVAILABLE
0	CM	FILL REQUIRED
2305	CM	WASTE
		COMMON EXCAVATION
940	CM	MAINLINE
90	CM	DRIVES AND SIDEWALKS
0	CM	ROUNDING
1030	CM	TOTAL
		SUBBASE OF DENSE GRADED CRUSHED STONE
590	CM	MAINLINE
50	CM	DRIVES AND SIDEWALKS
0	CM	ROUNDING
640	CM	TOTAL

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **BRF 0105 (3)**

FILE NAME: **s89j088/STR/s89088forms.dgn**
PROJECT LEADER: **J. LACROIX**
DESIGNED BY: **W. PELLETIER**
QUANTITY SHEET #1

PLOT DATE: **02/16/2012**
DRAWN BY: **G. ROKES**
CHECKED BY: **W. PELLETIER**
SHEET **6** OF **90**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

Metric

SUMMARY OF ESTIMATED QUANTITIES								TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS				GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
0.5								0.5		T	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15				
14								14		CM	STONE FILL, TYPE I	613.10				
			490					490		CM	STONE FILL, TYPE IV	613.13				
275								275		M	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28				
245.5								245.5		SM	PORTLAND CEMENT CONCRETE SIDEWALK, 125 MM	618.10				
2								2		EACH	YIELDING MARKER POSTS	619.17				
23.2								23.2		M	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21				
4								4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
1								1		CM	INSULATION BOARD	622.10				
			3.6					3.6		M	SLEEVES FOR UTILITIES (1 X 500 MM)(STEEL)	625.10				
12.8								12.8		M	DUCTILE IRON PIPE, CEMENT-LINED (200 MM)	628.28				
34.5								34.5		M	PVC SEWER PIPE (200 MM)	628.35				
			1					1		LS	TRANSFER TO NEW SYSTEM, SANITARY SEWER	628.42				
8								8		EACH	ADJUST ELEVATION OF VALVE BOX	629.20				
20								20		M	SEAMLESS COPPER WATER TUBE (19 MM)	629.23				
20								20		M	DUCTILE IRON PIPE, CEMENT-LINED (150 MM)	629.24				
24.6								24.6		M	DUCTILE IRON PIPE, CEMENT-LINED (200 MM)	629.24				
2								2		EACH	GATE VALVE WITH VALVE BOX (150 MM)	629.27				
6								6		EACH	GATE VALVE WITH VALVE BOX (200 MM)	629.27				
2								2		EACH	HYDRANT	629.28				
2								2		EACH	REMOVE HYDRANT	629.30				
			1					1		LS	TRANSFER TO NEW SYSTEM, WATER SYSTEM	629.42				
100								100		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
2000								2000		HR	FLAGGERS	630.15				
				1				1		LS	FIELD OFFICE, ENGINEERS	631.10				
				1				1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
				1				1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
				5000				5000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
	520							520		HR	EMPLOYEE TRAINEESHIP	634.10				
1								1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
418								418		M	100 MM WHITE LINE	646.20				
418								418		M	100 MM YELLOW LINE	646.21				
			410					410		SM	GEOTEXTILE UNDER STONE FILL	649.31				
		480						480		SM	GEOTEXTILE FOR UNDERDRAIN TRENCH LINING	649.41				
		188						188		SM	GEOTEXTILE FOR SILT FENCE	649.51				
		194						194		SM	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515				
		50						50		SM	GEOTEXTILE FOR FILTER CURTAIN	649.61				
		25						25		KG	SEED	651.15				
		3						3		KG	SEED, WINTER RYE	651.17				
		150						150		KG	FERTILIZER	651.18				

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: s89j088/STR/s89088forms.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
QUANTITY SHEET #2

PLOT DATE: 02/16/2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 7 OF 90

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

Not Metric

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	TRAINING	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS
		1		
		1		
		52		
		213		
		1		
		100		
		1		
		180		
		2		
		64		
		6		
		155		
		150		
0.14				
5				
1				
2				
1				
1				
1				
			110	
4				
			1	
			75	
			151	
			241	
			1	
1				
1				
			1	
1				
			1	
1				
1				
60				
			295	
462				

TOTALS

GRAND TOTAL	FINAL
1	
1	
52	
213	
1	
100	
1	
180	
2	
64	
6	
155	
150	
0.14	
5	
1	
2	
1	
1	
110	
4	
1	
75	
151	
241	
1	
1	
1	
1	
1	
1	
1	
1	
60	
295	
462	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER	ROUND
T	AGRICULTURAL LIMESTONE	651.20	
T	HAY MULCH	651.25	
CM	TOPSOIL	651.35	
SM	GRUBBING MATERIAL	651.40	
LS	EPSC PLAN	652.10	
HR	MONITORING EPSC PLAN	652.20	
LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	
SM	TEMPORARY EROSION MATTING	653.20	
CM	TEMPORARY STONE CHECK DAM, TYPE I	653.25	
CM	VEHICLE TRACKING PAD	653.35	
EACH	INLET PROTECTION DEVICE, TYPE I	653.40	
M	BARRIER FENCE	653.50	
M	PROJECT DEMARCATION FENCE	653.55	
SM	TRAFFIC SIGNS, TYPE A	675.20	
M	SQUARE TUBE SIGN POST AND ANCHOR	675.341	
EACH	REMOVING SIGNS	675.50	
EACH	DELINEATOR WITH STEEL POST	676.10	
EACH	TEMPORARY TRAFFIC SIGNAL SYSTEM	678.40	
LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50	
CM	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)(FPQ)	900.608	
EACH	SPECIAL PROVISION (GUARDRAIL APPROACH SECTION TO CONCRETE BRIDGE RAILING) (TL-2)	900.620	
EACH	SPECIAL PROVISION (MICROPILE VERIFICATION LOAD TEST)	900.620	
M	SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION)	900.640	
M	SPECIAL PROVISION (MICROPILE, CASED) (245 MM)	900.640	
M	SPECIAL PROVISION (MICROPILE, UNCASED)(220 MM)	900.640	
LS	SPECIAL PROVISION (FURNISHING EQUIPMENT FOR INSTALLING MICROPILES)	900.645	
LS	SPECIAL PROVISION (MAINTENANCE OF EXISTING WASTEWATER FLOWS)	900.645	
LS	SPECIAL PROVISION (MAINTENANCE OF EXISTING WATER FLOWS)	900.645	
LS	SPECIAL PROVISION (SEWER MAIN ON BRIDGE)(200 MM)(DUCTILE IRON)	900.645	
LS	SPECIAL PROVISION (TRAFFIC CONTROL ALL INCLUSIVE)	900.645	
LS	SPECIAL PROVISION (WATER MAIN ON BRIDGE) (200 MM)(DUCTILE IRON PIPE)	900.645	
LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I)	900.650	
LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I)	900.650	
SM	SPECIAL PROVISION (HAND-PLACED BITUMINOUS CONCRETE MATERIAL, DRIVES)	900.675	
SM	SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)	900.675	
T	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **BRF 0105 (3)**

FILE NAME: **s89j088/STR/s89088forms.dgn**
PROJECT LEADER: **J. LACROIX**
DESIGNED BY: **W. PELLETIER**
QUANTITY SHEET #3

PLOT DATE: **03/12/2012**
DRAWN BY: **G. ROKES**
CHECKED BY: **W. PELLETIER**
SHEET **8** OF **90**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE QUANTITY SHEET 1

Metric

SUMMARY OF BRIDGE QUANTITIES						TOTALS	DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
ABUTMENT NO. 1	ABUTMENT NO. 2	SUPER STRUCTURE	APPROACH SLAB NO. 1	APPROACH SLAB NO. 2		BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
362	178					540	CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27			
126	260					386	CM	STRUCTURE EXCAVATION	204.25			
105	205					310	CM	GRANULAR BACKFILL FOR STRUCTURES	204.30			
81	105		21	20		227	CM	CONCRETE, HIGH PERFORMANCE CLASS B (FPQ)	501.34			
		62690				62690	KG	STRUCTURAL STEEL, PLATE GIRDER (FPQ)	506.55			
		79				79	KG	STRUCTURAL STEEL	506.60			
4284	8216					12500	KG	REINFORCING STEEL (FPQ)	507.15			
1126	1574	18252	1539	1509		24000	KG	EPOXY COATED REINFORCING STEEL (FPQ)	507.17			
		1				1	LS	SHEAR CONNECTORS (970-22 X 178)	508.15			
		1				1	LS	STRUCTURAL PAINTING, SHOP APPLIED	513.25			
		1				1	LS	SURFACE PREPARATION, SHOP	513.40			
28	38	245				311	L	WATER REPELLENT, SILANE	514.10			
	10.9					10.9	M	BRIDGE EXPANSION JOINT, VERMONT	516.11			
		1				1	LS	ONE-WAY TEMPORARY BRIDGE (231 SM - EST.)	528.10			
		1				1	EACH	REMOVAL OF STRUCTURE (200 SM - EST.)	529.15			
5	5					10	EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11			
315	175					490	CM	STONE FILL, TYPE IV	613.13			
1.8	1.8					3.6	M	SLEEVES FOR UTILITIES (1 X 500 MM)(STEEL)	625.10			
		1				1	LS	TRANSFER TO NEW SYSTEM, SANITARY SEWER	628.42			
		1				1	LS	TRANSFER TO NEW SYSTEM, WATER SYSTEM	629.42			
205	205					410	SM	GEOTEXTILE UNDER STONE FILL	649.31			
	1	109				110	CM	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)(FPQ)	900.608			
1						1	EACH	SPECIAL PROVISION (MICROPILE VERIFICATION LOAD TEST)	900.620			
		75				75	M	SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION)	900.640			
64	87					151	M	SPECIAL PROVISION (MICROPILE, CASED) (245 MM)	900.640			
42	199					241	M	SPECIAL PROVISION (MICROPILE, UNCASED)(220 MM)	900.640			
		1				1	LS	SPECIAL PROVISION (FURNISHING EQUIPMENT FOR INSTALLING MICROPILES)	900.645			
		1				1	LS	SPECIAL PROVISION (SEWER MAIN ON BRIDGE)(200 MM)(DUCTILE IRON)	900.645			
		1				1	LS	SPECIAL PROVISION (WATER MAIN ON BRIDGE) (200 MM)(DUCTILE IRON PIPE)	900.645			
		295				295	SM	SPECIAL PROVISION (LONGITUDINAL DECK GROOVING)	900.675			

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **BRF 0105 (3)**

FILE NAME: **s89j088/STR/s89088forms.dgn**
PROJECT LEADER: **J. LACROIX**
DESIGNED BY: **W. PELLETIER**
BRIDGE QUANTITY SHEET #1

PLOT DATE: **02/16/2012**
DRAWN BY: **G. ROKES**
CHECKED BY: **W. PELLETIER**
SHEET **9** OF **90**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DRAINAGE DETAIL SHEET

Metric

	STATION	STATION	POS.	ASKEW	INLET/OUTLET TYPE		DITCH		PIPE ARCH			PIPE		ALLOWABLE OPTIONS						PIPE ELBOW	ES	CB	DEPTH DI	CONC CLASS B	REINF STEEL	DI GRATE	CHAN ELEV	CRM	TRENCH EXCAVATION		COMM EXC	UNC CHAN EXC	STRUCT EXCAV	GRAN BKFILL STRUCT	GRAN BORR	EROS MATT	STONE FILL		MARKER POSTS		REMARKS
	km + m	km + m		no. deg.	INLET	OUTLET	IN	OUT	SPAN mm	RISE mm	L m	D mm	L m	PCCSP mm	CAAP mm	RCP CL	CSP mm	CPEP SL mm	PCCSP PI mm	no. deg.	ea	ea	mm	m^3	kg	type	ea	m^3	EARTH m^3	ROCK m^3	m^3	m^3	m^3	m^3	m^3	m^2	m^3	type	LT ea	RT ea	
1	1+98.830	1+121.800	LT		DI	STONE						450	24.00																83.5												REMOVE EXISTING 450 CGMP
2	1+121.852		LT																			X											1.6								REMOVE EXISTING DROP INLET
1	1+035.000		LT		FB	UD						150	3.00																2.9	0.5											FLUSHING BASIN, AND CARRIER PIPE
2	1+035.000	1+053.000	LT		CP	CP						150	19.00																19.8	3.0											UNDERDRAIN
3	1+053.000	1+060.000	LT/RT		UD	CB						150	11.00																14.7	2.0											CARRIER PIPE TO CATCH BASIN
4	1+040.000		RT		FB	CP						150	4.00																2.5	0.5											FLUSHING BASIN, AND CARRIER PIPE
5	1+041.500	1+058.500	RT		CP	CP						150	16.00																17.0	2.0											UNDERDRAIN
6	1+058.500	1+060.000	RT		UD	CB						150	2.00																1.9												CARRIER PIPE TO CATCH BASIN
7	1+045.000		RT			PIPE																X				E						10.6	7.1							1200 PRECAST REIN. CONCRETE CATCH BASIN
8	1+045.500	1+059.500	RT		CB	CB						450	13.00	X	X			X											18.7	3.0				20.1							450 PIPE
9	1+060.000		RT		PIPE	PIPE																X				E						13.8	9.2							1200 PRECAST REIN. CONCRETE CATCH BASIN
10	1+060.400	1+073.400	RT		CB	STONE						450	15.00	X	X			X											22.0	3.0				23.1						X	450 PIPE TO OUTLET TO CHANNEL STONE FILL
11	1+100.333	1+104.533	LT		CB	STONE						450	5.00	X	X			X											12.3	1.0				12.3					X		450 PIPE TO OUTLET OTOCHANNEL STONE FILL
12	1+105.000		LT		PIPE	PIPE																X				E						13.8	9.2							1200 PRECAST REIN. CONCRETE CATCH BASIN
13	1+105.150	1+109.830	LT/RT		CB	CB						450	14.00	X	X			X											26.0	3.5				27.3							450 PIPE
14	1+110.000		RT		CP	PIPE																X				E						12.4	8.3							1200 PRECAST REIN. CONCRETE CATCH BASIN
15	1+105.493	1+119.548	LT		CB	CB						450	16.00	X	X			X											37.2	5.5				39.5							450 PIPE
16	1+120.000		LT			PIPE																X				E						9.4	6.2							1200 PRECAST REIN. CONCRETE CATCH BASIN
17	1+110.400	1+112.000	RT		UD	CB						150	2.00																2.5												CARRIER PIPE TO CATCH BASIN
18	1+112.000	1+140.000	RT		CP	CP						150	27.00																24.0												UNDERDRAIN
19	1+140.000		RT		FB	CP						150	3.00																2.9												FLUSHING BASIN, AND CARRIER PIPE
20	1+120.000	1+123.250	LT		UD	CB						150	7.00																6.0												CARRIER PIPE TO CATCH BASIN
21	1+123.250	1+140.000	LT		CP	CP						150	17.00																15.6												UNDERDRAIN
22	1+140.000		LT		FB	CP						150	3.00																3.6												FLUSHING BASIN, AND CARRIER PIPE
																													313.1	24.0			61.6	163.0						
		TOTAL MARKER POST			2	EA			TOTAL 150mm CARRIER PIPE				35.0	M														TOTAL												
									TOTAL 150mm UNDER DRAIN				79.0	M																											
									TOTAL 450mm PIPE				63.0	M																											

TOTAL CB 5
TOTAL GRATE (TYPE E) 5

STONE = CHANNEL STONE FILL

FB = FLUSHING BASIN

CP = CARRIER PIPE

UD = UNDERDRAIN

CB = PRECAST REINFORCED CONCRETE CATCH BASIN

□ DENOTES ITEMS TO BE REMOVED

⬡ DENOTES NEW ITEMS TO BE PLACED

PROJECT NAME: **READSBORO**

PROJECT NUMBER: **BRF 0105 (3)**

FILE NAME: **89j088/STR/s89j088forms.dgn**
PROJECT LEADER: **J. LACROIX**
DESIGNED BY: **G.ROKES**
DRAINAGE DETAIL SHEET

PLOT DATE: **12/28/2011**
DRAWN BY: **G. ROKES**
CHECKED BY: **W. PELLETIER**
SHEET **10** OF **90**

Metric

GPS CONTROL POINTS

HVCTRL # 16

IRON REBAR SET

TEMP #3
N = 29427.985
E = 463552.807
ELEV. = 356.42

NO DESCRIPTION AVAILABLE
POINT DESTROYED

HVCTRL # 2

"F 33 1942"

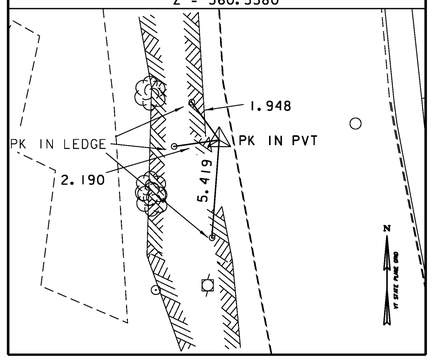
N = 29625.070
E = 463549.749
ELEV. = 356.574

RECOVERED AS DESCRIBED WITH THE FOLLOWING ADDITION. TO REACH FROM THE INTERSECTION OF VT ROUTES 8 AND 100 IN HEARTWELLVILLE GO SOUTHEAST ALONG VT ROUTE 100 FOR 4.9 MI (7.9 KM) TO THE INTERSECTION OF TUNNEL ROAD RIGHT, IN READSBORO VILLAGE. TURN RIGHT AND GO SOUTH ALONG TUNNEL ROAD FOR 0 .5 MI (0.8 KM) TO THE SITE OF THE MARK ON THE LEFT.

TRAVERSE TIES

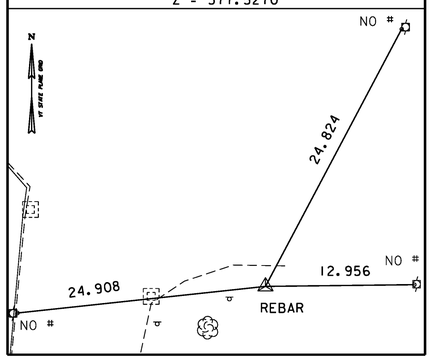
HVCTRL #5

N = 30076.5180
E = 463328.6500
Z = 360.5580



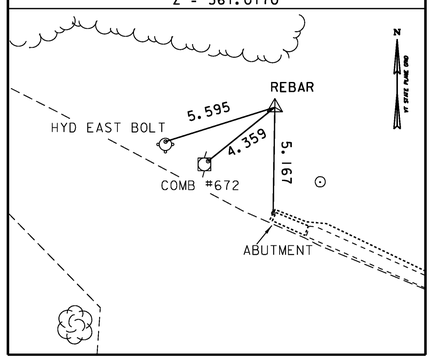
HVCTRL #6

N = 30278.0590
E = 463416.4810
Z = 377.5270



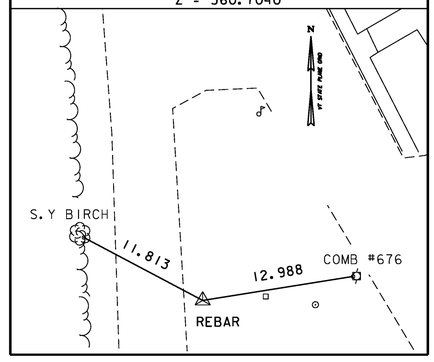
HVCTRL #11

N = 30121.1200
E = 463331.3340
Z = 361.0170



HVCTRL #12

N = 29944.4530
E = 463357.5140
Z = 360.7040

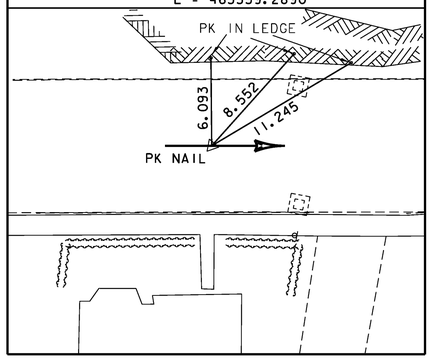


* MAIN TRAVERSE COMPLETED: BY L.ORVIS & B.SMITH ON JAN 5, 1995

ALIGNMENT TIES

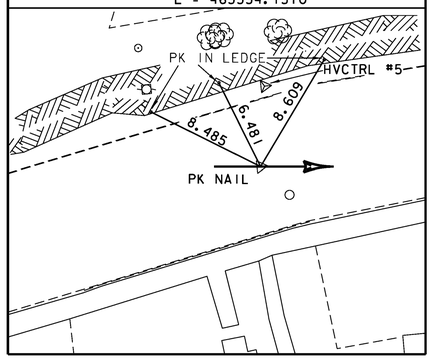
POB 1+000.000

N = 30048.3740
E = 463339.2890



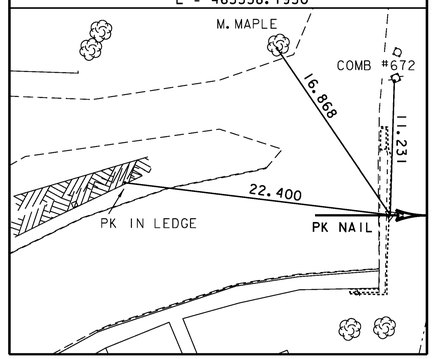
PC 1+027.760

N = 30075.6550
E = 463334.1570



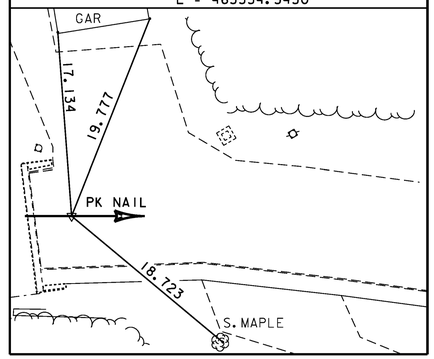
PT 1+066.256

N = 30113.3890
E = 463338.1930



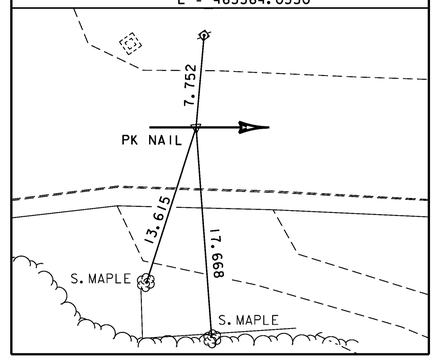
PC 1+107.821

N = 30151.6880
E = 463354.3450



PT 1+127.149

N = 30168.3380
E = 463364.0550



* ALIGMENT STAKED ON APRIL 8, 2002 BY L.ORVIS & T.WILSON

DATUM

VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (92)

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

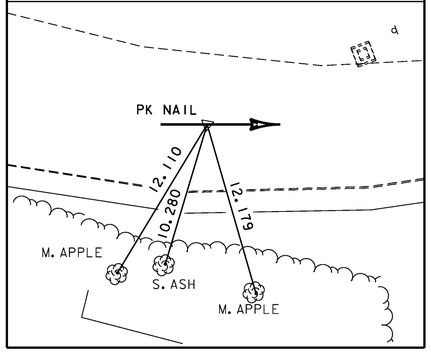
FILE NAME: survey\x89j088ti.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
TIE SHEET 1

PLOT DATE: 07-MAR-2012
DRAWN BY: R. BULLOCK
CHECKED BY: G. HITCHCOCK
SHEET II OF 90

ALIGNMENT TIES

PI 1+160.000
N = 30194.3544
E = 463384.1132
POINT WAS SET BUT NOT TIED
PK NAIL →

POE 1+175.000
N = 30207.3210
E = 463391.6550



ALIGNMENT TIES

N =	N =	N =	N =
E =	E =	E =	E =
Z =	Z =	Z =	Z =

ALIGNMENT TIES

N =	N =	N =	N =	N =
E =	E =	E =	E =	E =

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83 (92)

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: survey\x89J088ti.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
TIE SHEET 2

PLOT DATE: 07-MAR-2012
DRAWN BY: R. BULLOCK
CHECKED BY: G. HITCHCOCK
SHEET 12 OF 90

CHANGED TO GRANITE CURB AT TOWNS REQUEST AND CONTRACTOR INSTALLED AT SAME CONTRACT PRICE

~~CAST IN PLACE CONCRETE CURB, TYPE B~~
~~STATION 1+007.000 - 1+055.000 LT~~
~~STATION 1+020.000 - 1+029.313 RT~~
~~STATION 1+039.139 - 1+068.600 RT~~
~~STATION 1+101.580 - 1+125.926 RT~~
~~STATION 1+123.000 - 1+150.000 LT~~
~~STATION 1+134.000 - 1+150.000 RT~~

PORTLAND CEMENT CONCRETE SIDEWALK, 125 mm
STATION 1+020.000 - 1+068.600 RT
STATION 1+101.580 - 1+150.000 RT

SPECIAL PROVISION (GUARDRAIL APPROACH SECTION TO CONCRETE BRIDGE RAILING), (TL-2)
STATION 1+062.100 - 1+065.985 RT
STATION 1+104.180 - 1+106.600 LT
STATION 1+105.065 - 1+108.600 RT
DRIVE 1 STATION 2+007.680 RT TO MAINLINE STATION 1+068.600 LT

SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION)
STATION 1+065.985 - 1+105.065 RT
STATION 1+068.600 - 1+104.180 LT

DELINEATOR WITH STEEL POST
STA. 1+074.246 OFFSET 11.383 RT (WHITE)
STA. 1+100.342 OFFSET 9.221LT (WHITE)

VERTICAL GRANITE CURB
APPROX. STA. 1+023 ~ 1+025 LT
APPROX. STA. 1+023 ~ 1+025 RT
STA. 1+040 ± STA. 1+062.5 RT
STA. 1+107.68 ~ STA. 1+122 ± RT
APPROX. STA. 1+130 ~ STA 1+205 RT

CONSTRUCT PAVED DRIVES
MAINLINE STATION 1+034.230 RT (8.5 WIDTH)
MAINLINE STATION 1+112.000 LT (12.7 WIDTH)
MAINLINE STATION 1+130.000 RT (7.5 WIDTH)
DRIVE 1 STATION 2+004.660 - 2+020.000 (WIDTH VARIES)
DRIVE 2 STATION 3+004.460 - 3+031.610 (4.0 WIDTH)

HD STEEL BEAM GUARDRAIL, GALVANIZED
MAINLINE STATION 1+057.900 - 1+062.100 RT
STATION 1+108.600 - 1+121.000 RT
DRIVE 1 STATION 2+007.680 - 2+013.500 RT

ANCHOR FOR STEEL BEAM RAIL
MAINLINE STATION 1+060.650 RT
STATION 1+106.800 LT
STATION 1+118.400 RT
DRIVE 1 STATION 2+011.750 RT

B.M.#1 (NOT ON PLAN)
APPROX. STATION 0+896 (11.940 LEFT)
CHISEL SQUARE IN TOP OF BOULDER
ELEV.= 360.818

B.M.#2
APPROX. STATION 1+041.431 (5.989 LEFT)
CHISEL SQUARE IN LEDGE
ELEV.= 361.973

DRIVE 1 - 2+010.000 = DRIVE 2 - 3+000.000
MAINLINE 1+060.000 = SIDELINE 1 - 2+000.000 ASKEW 15°-36'-00"
STATION 2+020.000 END PAVED DRIVE 1
CHANNEL POE Sta 5+030.000
MAINLINE 1+067.000 = CHANNEL LINE 5+015.000 Δ = 90°-00'-00"
STATION 1+068.600 BEGIN BRIDGE
STATION 1+101.580 END BRIDGE
STATION 1+140.000 END PROJECT
STATION 3+031.610 END PAVED DRIVE 2
STATION 1+035.000 BEGIN PROJECT
STATION 1+005.000 BEGIN APPROACH
PI Sta 1+047.576 BK =Sta. 1+046.440 AH
PI Sta 1+117.539 BK =Sta. 1+117.431 AH
LIMITS OF TEMPORARY DETOUR
CENTERLINE TEMPORARY DETOUR
ORDINARY HIGH WATER
STONE FILL TYPE I
STONE FILL TYPE IV (TYP)
CHANNEL POB Sta 5+000.000
PT Sta 1+066.256
PC Sta 1+107.821
PT Sta 1+127.149
PC Sta 1+021.160
TH-2 MASSACHUSETTS
TH-2 TO VT-100
WEST BRANCH OF DEERFIELD RIVER
MATCH LINE STA. 1+150
VT STATE PLANE GRID
N
N10°39'15.4"W
N56°58'51.0"W
S19°19'22.3"W
N22°51'58.8"E
N37°37'56.2"E
L04°
2.75 R
8.0 R
1.2 R
4.5 R
4.0 R
4.0 R
GRAVEL DRIVE
PAVED DRIVE
HOUSE
2 STORY HOUSE
1.5 STORY HOUSE
GARAGE
FIRE STATION
WOODS
STONE WALL
FOUNDATION
SHRUBS
CONC.WALL
HEDGE
LEDGE
BRUSH
LILACS (SAVE)
M.STUMP
M.P.
I.P.
SMH
HYD.
WSO
GUY
SIGN
460 RCP
460 COMP
310 CPEP
COMB. POLE
CONC. WALL
EXISTING R.O.W.
201 HCTRL
672 HCTRL
1+000
1+020
1+040
1+060
1+080
1+100
1+120
1+140
2+000
3+000
4+000
5+000

CURVE #1 DATA
Δ = 33°-31'-14.2" RT
R = 65.800
T = 19.816
L = 38.496
E = 2.919
BANK = 0.040

CURVE #2 DATA
Δ = 14°-45'-57.4" RT
R = 75.000
T = 9.718
L = 19.329
E = 0.627
BANK = 0.040

0 10 20
SCALE 1:250

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

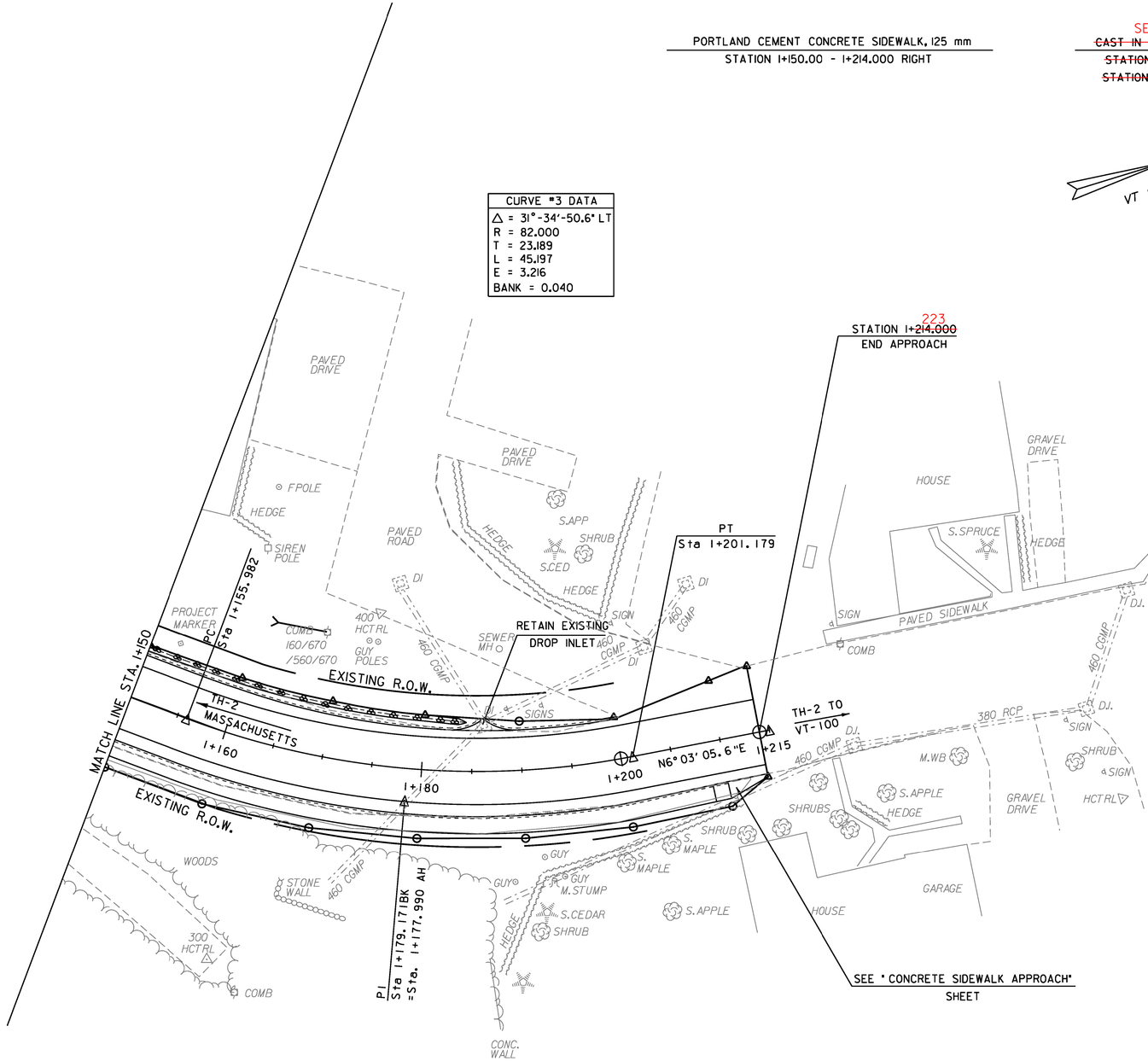
FILE NAME: 89J088/STR/s89J088bdr.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
LAYOUT SHEET 1
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 13 OF 90

PORTLAND CEMENT CONCRETE SIDEWALK, 125 mm
STATION 1+150.00 - 1+214.000 RIGHT

SEE NOTE ON SHEET 13
~~CAST IN PLACE CONCRETE CURB, TYPE B~~
~~STATION 1+150.000 - 1+200.000 LEFT~~
~~STATION 1+150.000 - 1+ 210.000 RIGHT~~

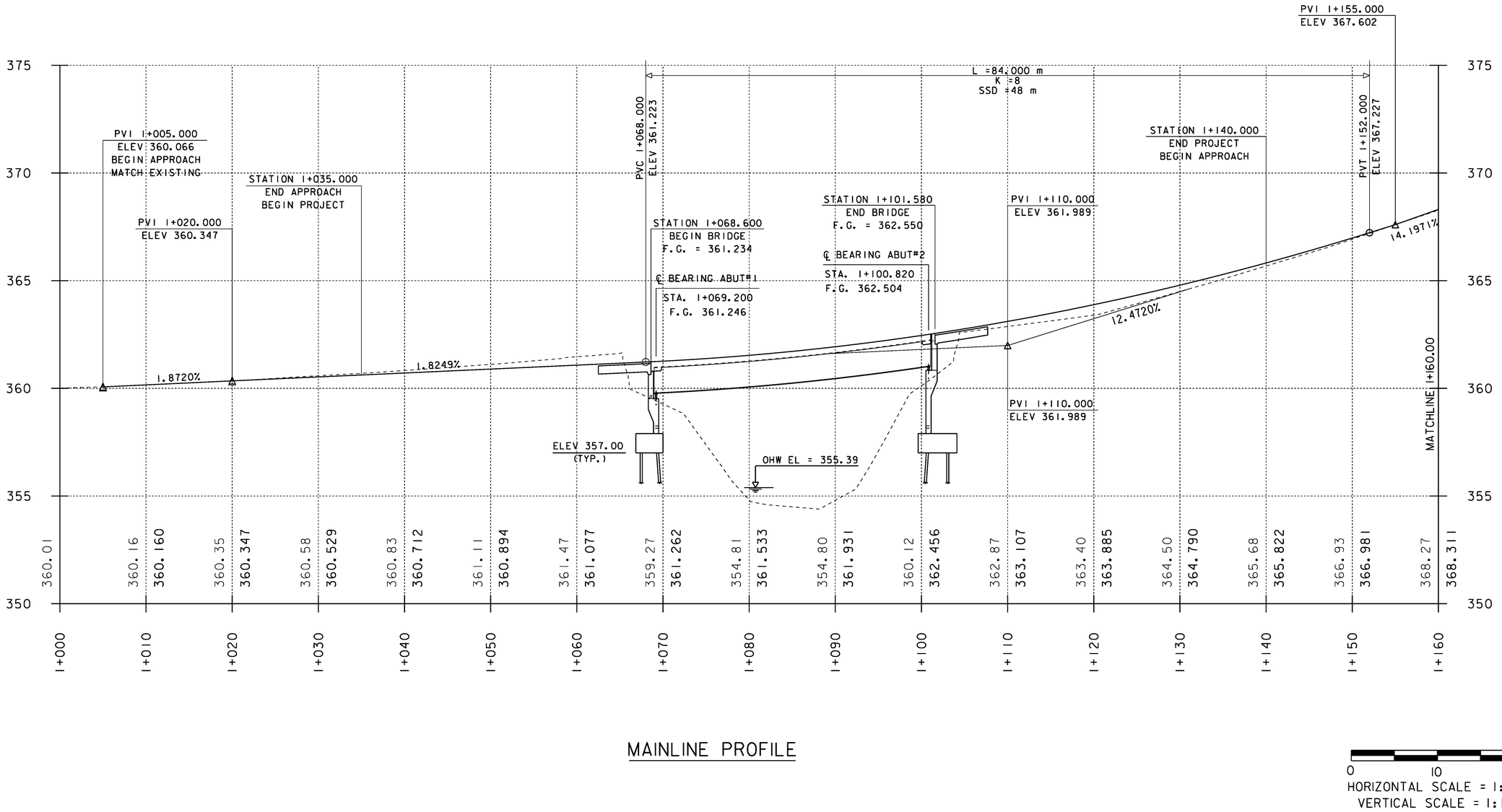
VT STATE PLANE GRID

CURVE #3 DATA
△ = 31°-34'-50.6" LT
R = 82.000
T = 23.189
L = 45.197
E = 3.216
BANK = 0.040



0 10 20
SCALE 1:250

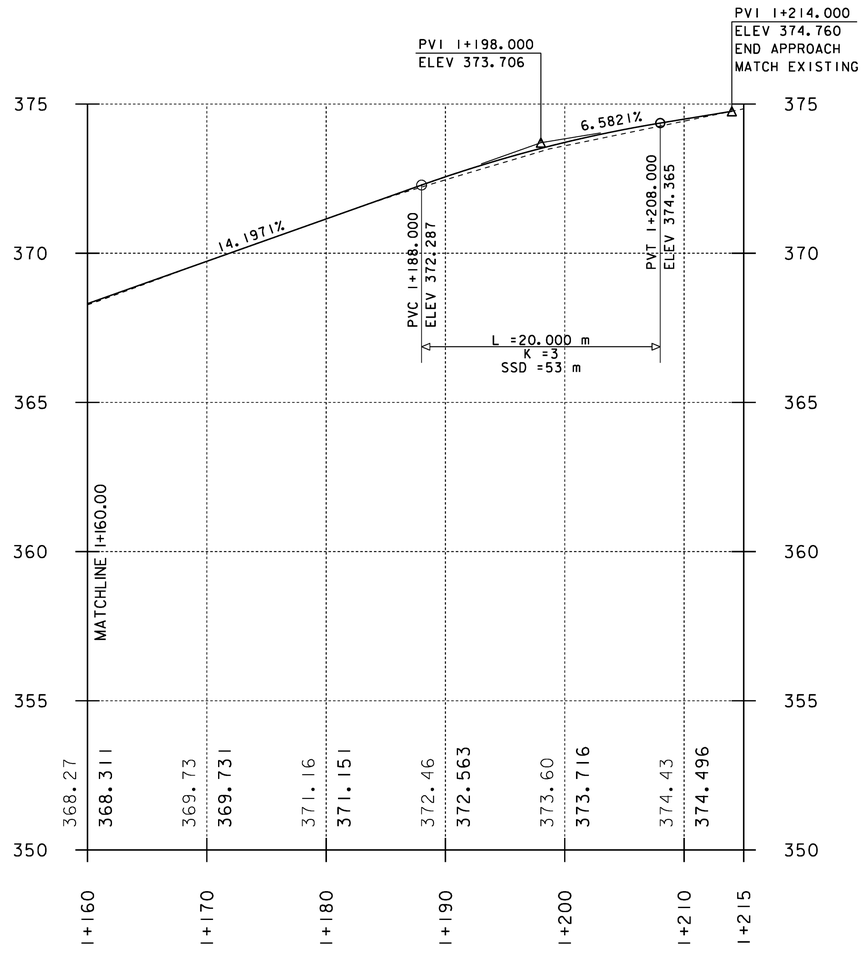
PROJECT NAME: READSBORO	
PROJECT NUMBER: BRF 0105 (3)	
FILE NAME: 89J088/STR/s89J088bdr.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
LAYOUT SHEET 2	SHEET 14 OF 90



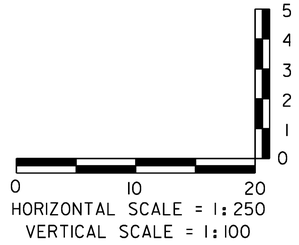
MAINLINE PROFILE

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE EXISTING GROUND ALONG THE CENTERLINE. THE GRADES SHOWN TO THE NEAREST THOUSANDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
MAINLINE PROFILE SHEET 1	SHEET 15 OF 90



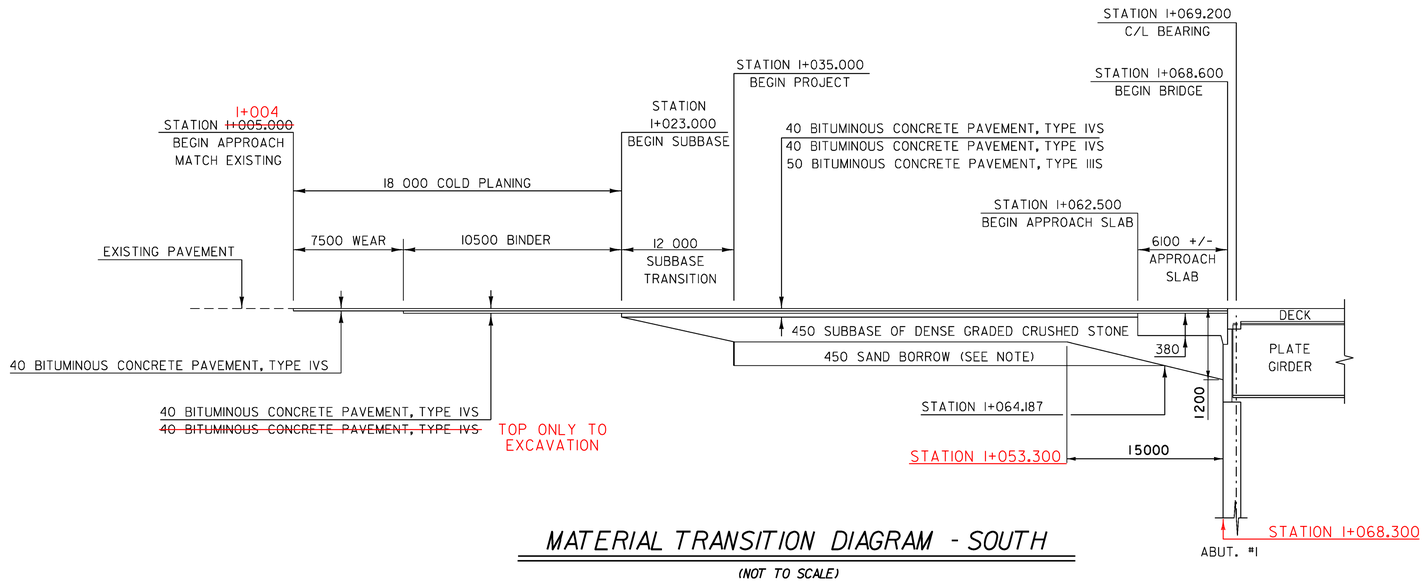
MAINLINE PROFILE



HORIZONTAL SCALE = 1:250
VERTICAL SCALE = 1:100

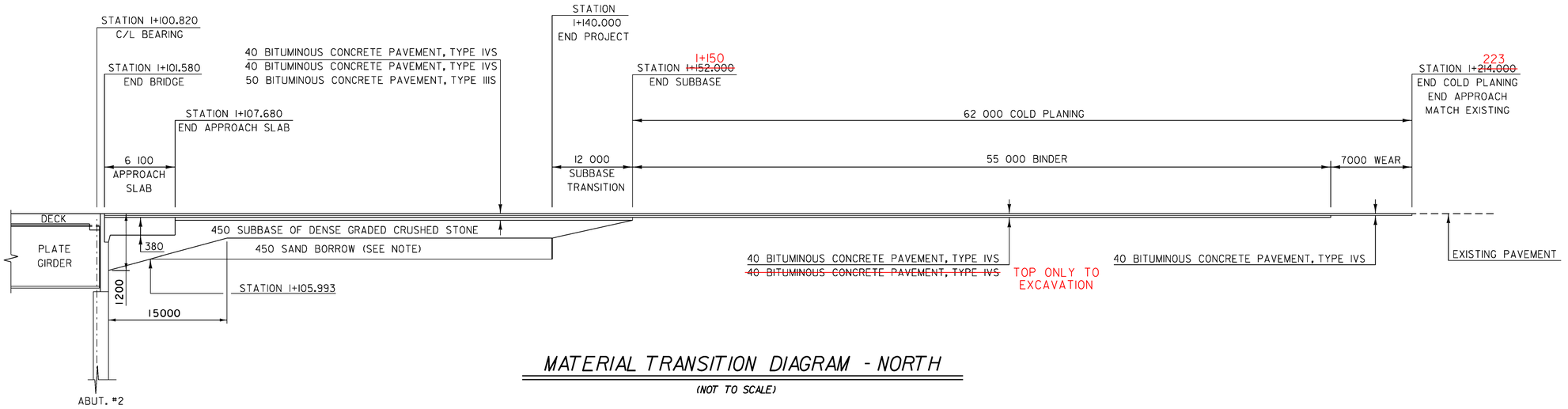
THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE EXISTING GROUND ALONG THE CENTERLINE. THE GRADES SHOWN TO THE NEAREST THOUSANDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
MAINLINE PROFILE SHEET 2	SHEET 16 OF 90



MATERIAL TRANSITION DIAGRAM - SOUTH

(NOT TO SCALE)

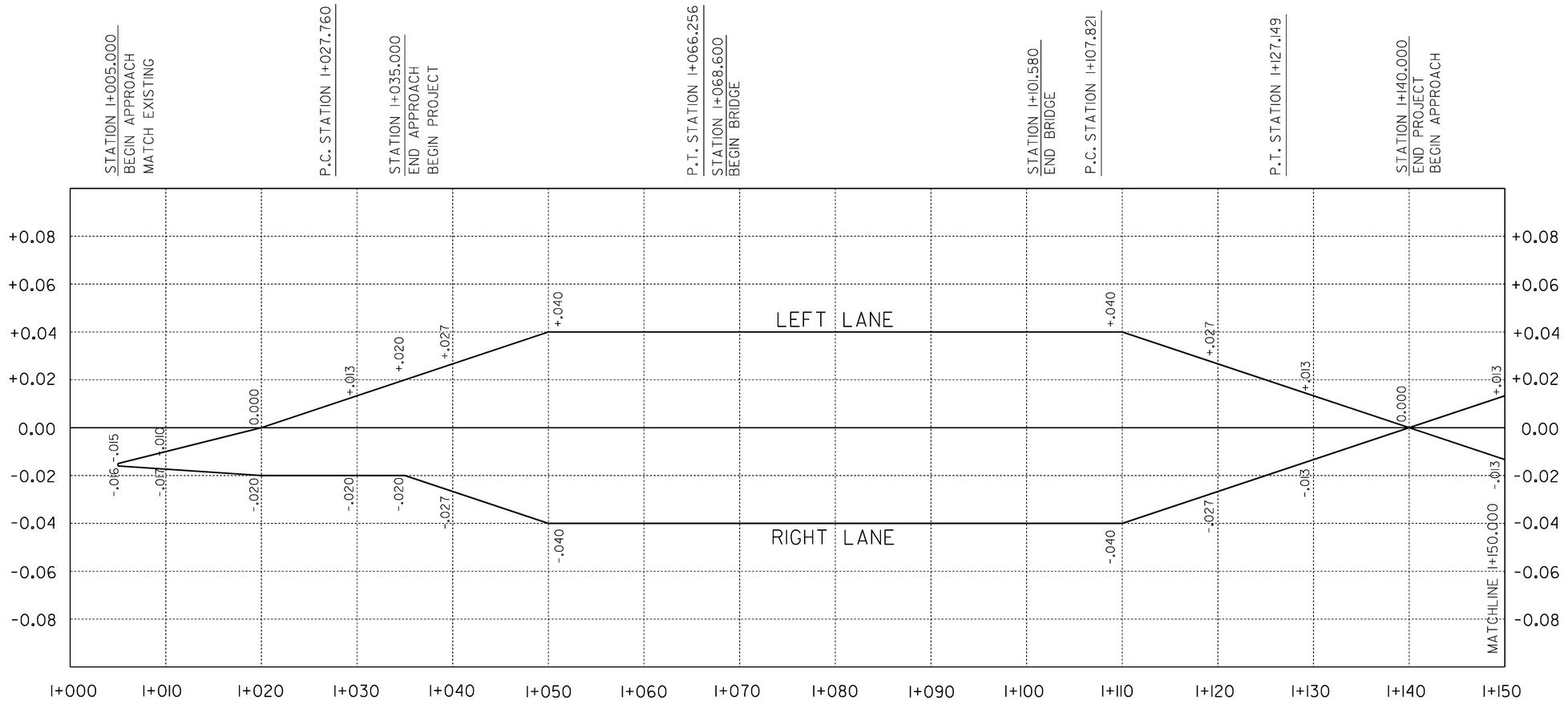


MATERIAL TRANSITION DIAGRAM - NORTH

(NOT TO SCALE)

NOTE: SEE "PROJECT NOTE" SHEET FOR SAND BORROW SUBSTITUTION

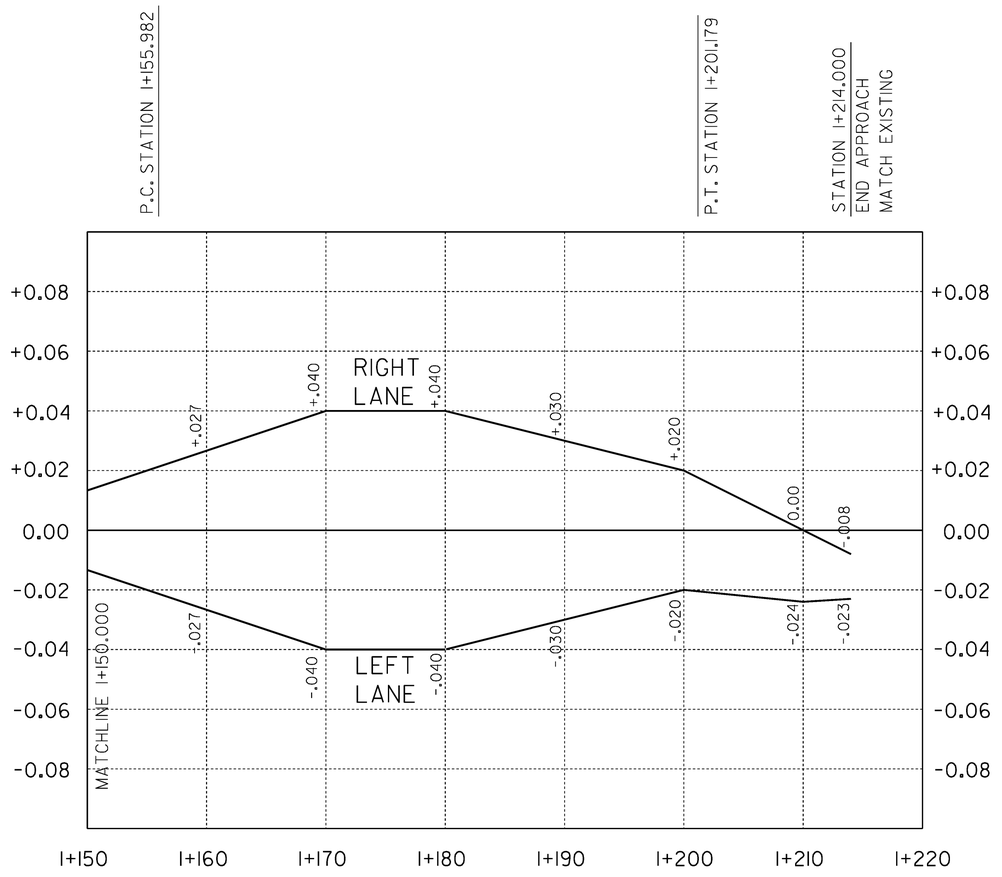
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
MATERIAL TRANSITION SHEET	SHEET 17 OF 90



MAINLINE BANKING DIAGRAM

(NOT TO SCALE)

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
SUPER ELEVATION DIAGRAM SHEET I	SHEET 18 OF 90



MAINLINE BANKING DIAGRAM

(NOT TO SCALE)

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

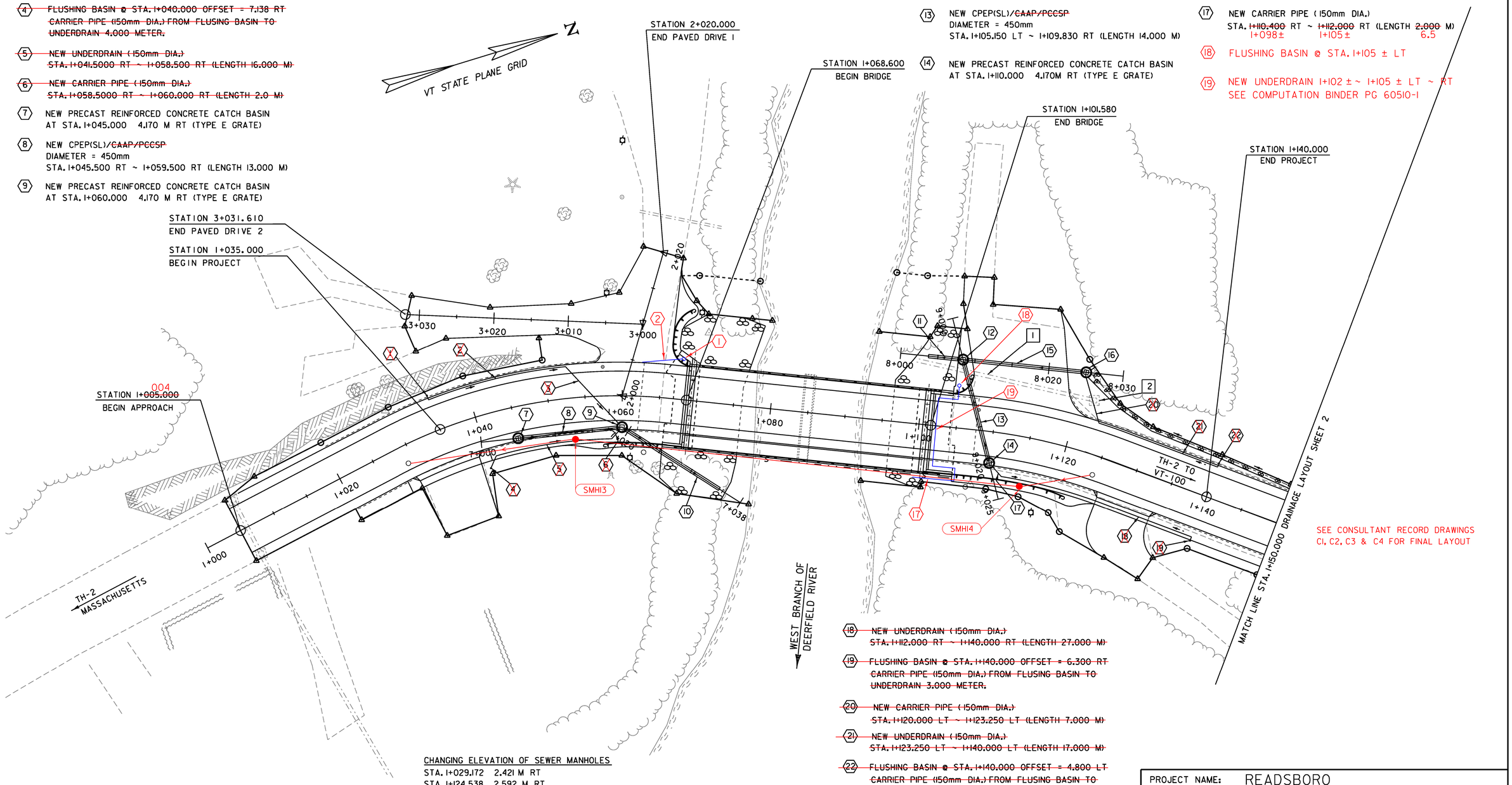
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
SUPER ELEVATION DIAGRAM SHEET 2	SHEET 19 OF 90

VIOT Metric

1. FLUSHING BASIN @ STA. I+~~035.000~~ +67± OFFSET = 4.875 LT ± ~~CARRIER PIPE (150mm DIA.) FROM FLUSING BASIN TO UNDERDRAIN 3.000 METER.~~
2. NEW UNDERDRAIN (150mm DIA.) STA. I+~~035.000 LT~~ +61± ~ I+~~053.000~~ +67± LT (LENGTH ~~19.000~~ 6.1 M)
3. ~~NEW CARRIER PIPE (150mm DIA.) STA. I+053.000 LT ~ I+060.000 RT (LENGTH 11.000 M)~~
4. ~~FLUSHING BASIN @ STA. I+040.000 OFFSET = 7.138 RT CARRIER PIPE (150mm DIA.) FROM FLUSING BASIN TO UNDERDRAIN 4.000 METER.~~
5. ~~NEW UNDERDRAIN (150mm DIA.) STA. I+041.5000 RT ~ I+058.500 RT (LENGTH 16.000 M)~~
6. ~~NEW CARRIER PIPE (150mm DIA.) STA. I+058.5000 RT ~ I+060.000 RT (LENGTH 2.0 M)~~
7. NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. I+045.000 4.170 M RT (TYPE E GRATE)
8. NEW CPEP(SL)/~~CAAP/PCCSP~~ DIAMETER = 450mm STA. I+045.500 RT ~ I+059.500 RT (LENGTH 13.000 M)
9. NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. I+060.000 4.170 M RT (TYPE E GRATE)

1. REMOVE EXISTING PIPE STA. I+098.830 LT ~ I+121.800 LT (LENGTH 24.000 M)
2. REMOVE EXISTING DROP INLET STA. I+121.852 OFFSET= 6.972 LT

10. NEW CPEP(SL)/~~CAAP/PCCSP~~ DIAMETER = 450mm STA. I+060.400 RT ~ I+073.400 RT (LENGTH 15.000 M)
11. NEW CPEP(SL)/~~CAAP/PCCSP~~ DIAMETER = 450mm STA. I+100.333 LT ~ I+104.533 LT (LENGTH 5.000 M)
12. NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. I+105.000 9.185 M LT (TYPE E GRATE)
13. NEW CPEP(SL)/~~CAAP/PCCSP~~ DIAMETER = 450mm STA. I+105.150 LT ~ I+109.830 RT (LENGTH 14.000 M)
14. NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. I+110.000 4.170M RT (TYPE E GRATE)
15. NEW CPEP(SL)/CAAP/PCCSP DIAMETER = 450mm STA. I+105.493 LT ~ I+119.548 LT (LENGTH 16.000 M)
16. NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. I+120.000 10.309 M LT (TYPE E GRATE)
17. NEW CARRIER PIPE (150mm DIA.) STA. ~~I+110.400~~ I+098± RT ~ ~~I+112.000~~ I+105± RT (LENGTH ~~2.000~~ 6.5 M)
18. FLUSHING BASIN @ STA. I+105 ± LT
19. NEW UNDERDRAIN I+102 ± ~ I+105 ± LT ~ RT SEE COMPUTATION BINDER PG 6051O-1



SEE CONSULTANT RECORD DRAWINGS C1, C2, C3 & C4 FOR FINAL LAYOUT

CHANGING ELEVATION OF SEWER MANHOLES
STA. I+029.172 2.421 M RT
STA. I+124.538 2.592 M RT

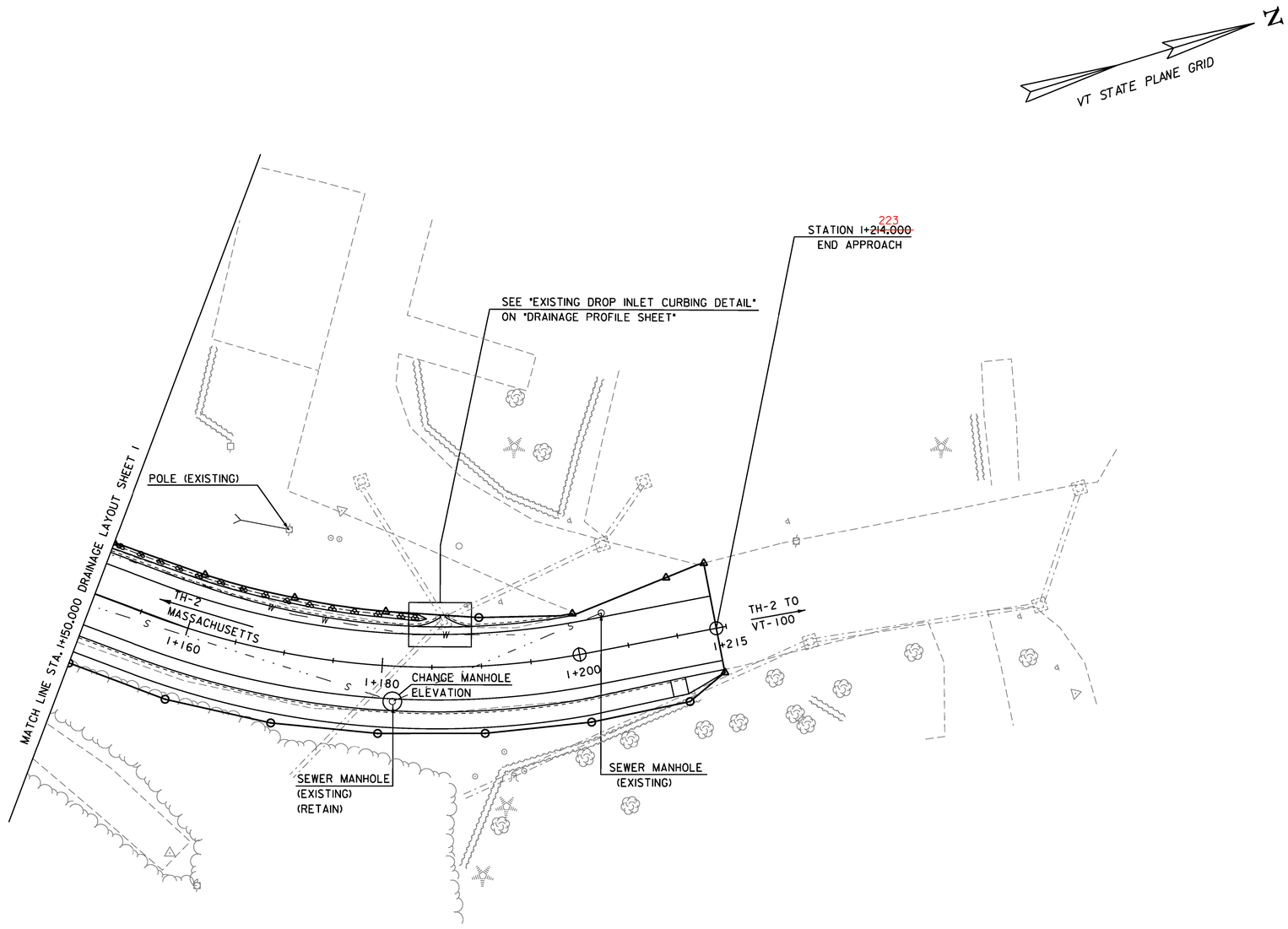
18. ~~NEW UNDERDRAIN (150mm DIA.) STA. I+112.000 RT ~ I+140.000 RT (LENGTH 27.000 M)~~
19. ~~FLUSHING BASIN @ STA. I+140.000 OFFSET = 6.300 RT CARRIER PIPE (150mm DIA.) FROM FLUSING BASIN TO UNDERDRAIN 3.000 METER.~~
20. ~~NEW CARRIER PIPE (150mm DIA.) STA. I+120.000 LT ~ I+123.250 LT (LENGTH 7.000 M)~~
21. ~~NEW UNDERDRAIN (150mm DIA.) STA. I+123.250 LT ~ I+140.000 LT (LENGTH 17.000 M)~~
22. ~~FLUSHING BASIN @ STA. I+140.000 OFFSET = 4.800 LT CARRIER PIPE (150mm DIA.) FROM FLUSING BASIN TO UNDERDRAIN 3.000 METER.~~

0 10 20
SCALE 1:250

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088utilbdr.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
DRAINAGE LAYOUT SHEET 1
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 20 OF 90

VTrans Metric



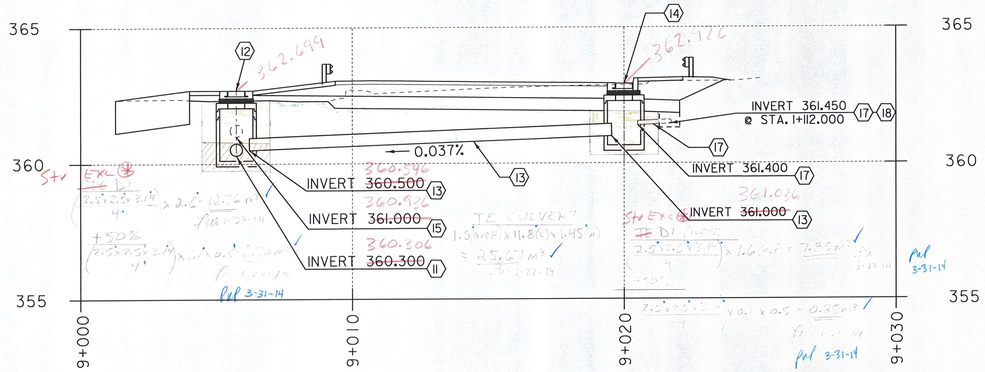
CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES
STA. 1+186.220 4.640 M LT

CHANGING ELEVATION OF SEWER MANHOLES
STA. 1+181.200 3.558 M RT

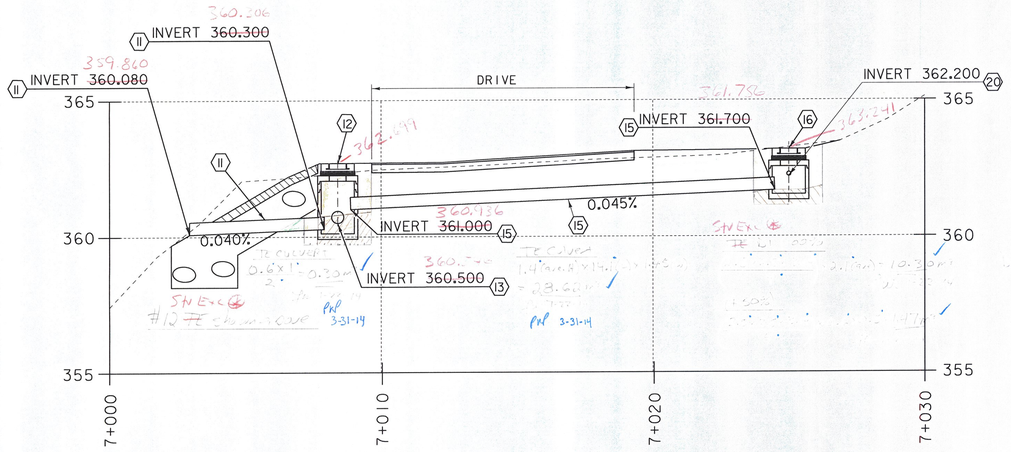
0 10 20
SCALE 1:250

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

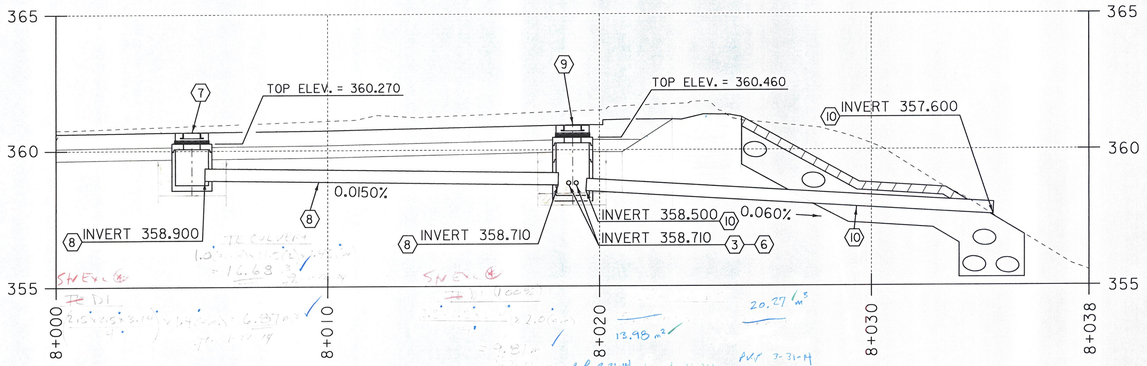
FILE NAME: 89J088/STR/s89J088util1bdr.dgn PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER CHECKED BY: W. PELLETIER
DRAINAGE LAYOUT SHEET 2 SHEET 21 OF 90



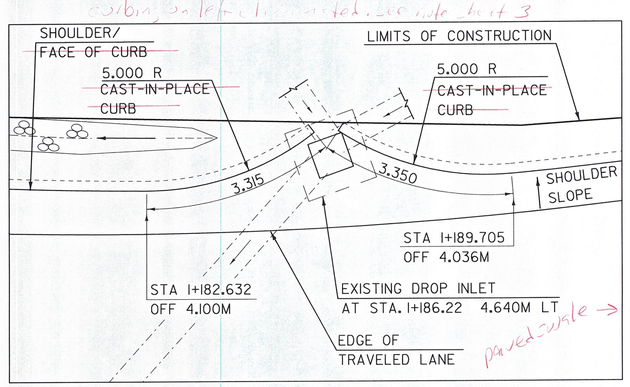
DRAINAGE PROFILE PIPE 13



DRAINAGE PROFILE PIPES 11 AND 15



DRAINAGE PROFILE PIPES 8 AND 10



THE SHOULDER SLOPE SHALL BE EXTENDED BETWEEN THE ~~CAST-IN-PLACE CURBS~~ SO THAT ALL WATER IS DIRECTED TO THE EXISTING DROP INLET.

EXISTING DROP INLET CURBING DETAIL

NTS

③ ~~NEW CARRIER PIPE~~
~~DIAMETER = 150mm~~

⑥ ~~NEW CARRIER PIPE~~
~~DIAMETER = 150mm~~

⑦ NEW PRECAST REINFORCED CONCRETE CATCH BASIN
AT STA. 1+045.000 4.170M RT (TYPE E GRATE)

⑧ NEW CPEP(SL)/~~CAAP/PCCSP~~
DIAMETER = 450mm
LENGTH = 13.000M

⑨ NEW PRECAST REINFORCED CONCRETE CATCH BASIN
AT STA. 1+060.000 4.170M RT (TYPE E GRATE)

⑩ NEW CPEP(SL)/~~CAAP/PCCSP~~
DIAMETER = 450mm
LENGTH = 15.000M

⑪ NEW CPEP(SL)/~~CAAP/PCCSP~~
DIAMETER = 450mm
LENGTH = 5.000 M

⑫ NEW PRECAST REINFORCED CONCRETE CATCH BASIN
AT STA. 1+105.000 9.185M LT (TYPE E GRATE)

⑬ NEW CPEP(SL)/~~CAAP/PCCSP~~
DIAMETER = 450mm
LENGTH = 14.000M

⑭ NEW PRECAST REINFORCED CONCRETE CATCH BASIN
AT STA. 1+110.000 4.170M RT (TYPE E GRATE)

⑮ NEW CPEP(SL)/~~CAAP/PCCSP~~
DIAMETER = 450mm
LENGTH = 16.000M

⑯ NEW PRECAST REINFORCED CONCRETE CATCH BASIN
AT STA. 1+120.000 10.309M LT (TYPE E GRATE)

⑰ ~~NEW CARRIER PIPE~~
~~DIAMETER = 150mm~~

⑱ ~~NEW UNDERDRAIN~~
~~DIAMETER = 150mm~~

⑳ ~~NEW CARRIER PIPE~~
~~DIAMETER = 150mm~~

For Underdrain
See Sheet 20

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
DRAINAGE PROFILE SHEET	SHEET 22 OF 90

VAOT Metric

VT STATE PLANE GRID

STATION 3+031.610
END PAVED DRIVE 2

STATION 1+035.000
BEGIN PROJECT

STATION 2+020.000
END PAVED DRIVE 1

STATION 1+068.600
BEGIN BRIDGE

STATION 1+101.580
END BRIDGE

STATION 1+140.000
END PROJECT

STATION 1+005.000
BEGIN APPROACH

POLE (TEMP.)

NEW POLE (PERM.)

REMOVE POLE (EXISTING)

POLE (TEMP.)

GUY (TEMP.)

GUY (TEMP.)

POLE (EXISTING)
(RETAIN)

POLE (EXISTING)
(RETAIN)

POLE (TEMP.)

GUY (TEMP.)

POLE (TEMP.)

GUY (TEMP.)

TEMPORARY AERIAL E&T

PERMANENT AERIAL E&T

AERIAL E&T TEMPORARY

AERIAL E&T PERMANENT

AERIAL E&T

TH-2
MASSACHUSETTS

TH-2 TO
VT-100

WEST BRANCH OF
DEERFIELD RIVER

MATCH LINE STA. 1+150.000 AERIAL UTILITIES LAYOUT SHEET 2

THIS POLE WAS LEFT IN PLACE WITH ELECTRICAL SERVICE FOR HEAT TAPE ON WATER AND SEWER LINES. CONTRACTOR PAID PROPERTY OWNER AND SIGNED AGREEMENT WITH GMP. COPY OF SIGNED AGREEMENT IS IN CORRESPONDENCE FILE ATTACHED TO EMAIL FROM CHARLIE EZEQUELLE DATED 12/11/14

0 10 20
SCALE 1:250

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088util1bdr.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
AERIAL UTILITIES LAYOUT SHEET 1

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 23 OF 90

VT STATE PLANE GRID

N

MATCH LINE STA. 1+150.000 AERIAL UTILITIES LAYOUT SHEET 1

PERMANENT AERIAL E&T

TEMPORARY AERIAL E&T

POLE (EXISTING)
(RETAIN)

AERIAL AERIAL E&T

EXISTING AERIAL E&T

AERIAL E&T

AERIAL E

STATION 1+~~214.000~~ 223
END APPROACH

1+160

1+180

1+200

1+215

0 10 20

SCALE 1:250

PROJECT NAME: READSBORO	
PROJECT NUMBER: BRF 0105 (3)	
FILE NAME: 89J088/STR/s89J088ut1lbdr.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
AERIAL UTILITIES LAYOUT SHEET 2	SHEET 24 OF 90

100mm WHITE LINE
STA. 1+~~005.000~~ 004 TO STA. 1+150.000 (LT/RT)

100mm YELLOW LINE
STA. 1+~~005.000~~ 004 TO STA. 1+150.000 (DOUBLE CENTERLINE)

N

VT STATE PLANE GRID

STATION 2+020.000
END PAVED DRIVE 1

STATION 1+068.600
BEGIN BRIDGE

STATION 1+101.580
END BRIDGE

STATION 1+140.000
END PROJECT

STATION 3+031.610
END PAVED DRIVE 2

STATION 1+035.000
BEGIN PROJECT

STATION 1+~~005.000~~ 004
BEGIN APPROACH

3+030 3+020 3+010 3+000 2+020 2+000 1+060 1+080 1+040 1+020 1+000 1+120 1+140

TH-2 TO VT-100

TH-2 MASSACHUSETTS

WEST BRANCH OF DEERFIELD RIVER

MATCH LINE STA. 1+150 TRAFFIC SIGN LAYOUT SHEET 2

NO PARKING BETWEEN SIGNS R

R

STA. 1+063.067 RT

NO PARKING BETWEEN SIGNS N

N

STA. 1+064.500
OFFSET 6.800 RT

SIGN LEGEND	
R	= REMOVE
N	= NEW

0 10 20

SCALE 1:250

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088trf.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
TRAFFIC SIGN LAYOUT SHEET 1

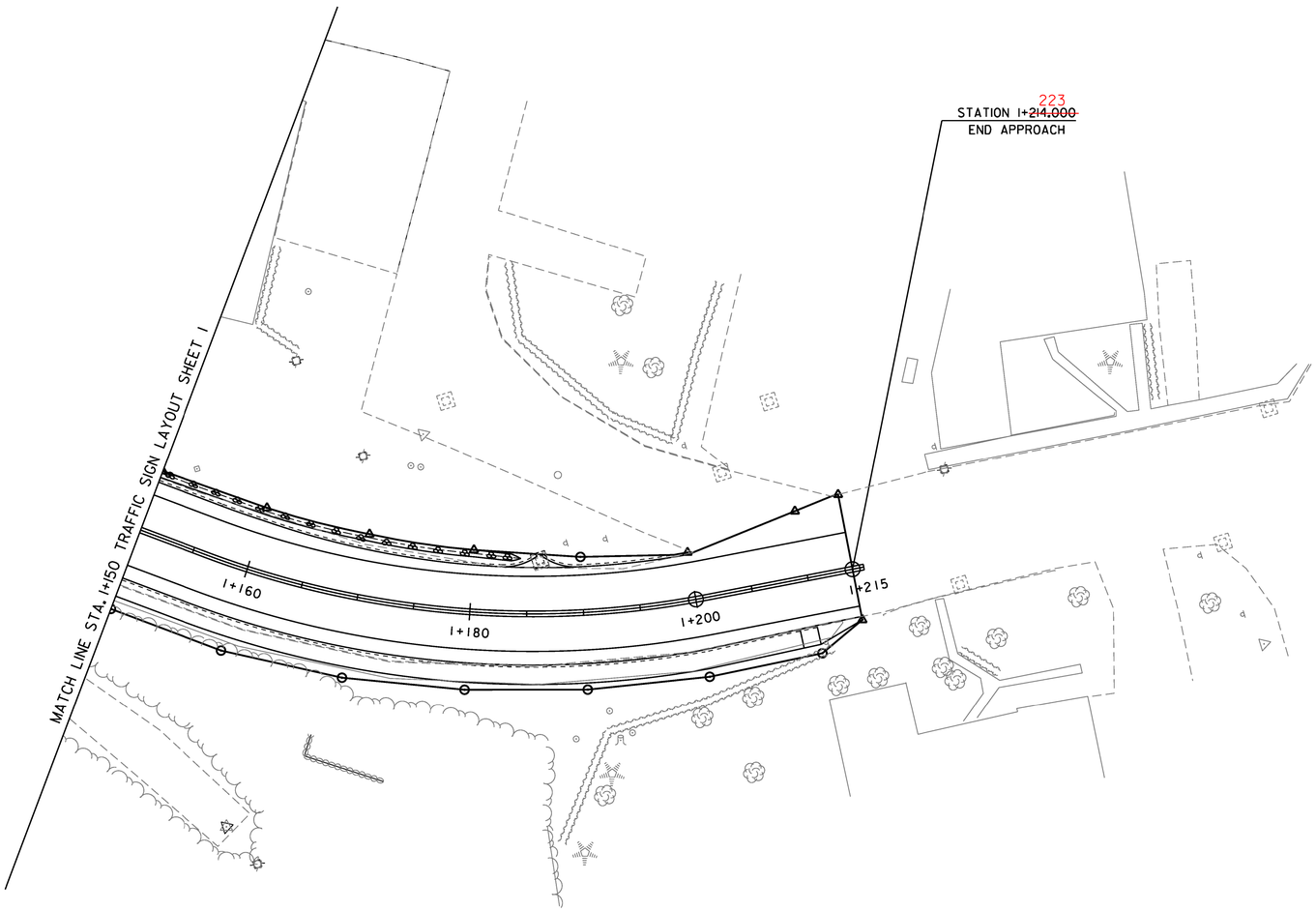
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 25 OF 90

100mm WHITE LINE
STA. 1+150.000 TO STA. 1+~~214.000~~ 195 (LT/RT)

100mm YELLOW LINE
STA. 1+150.000 TO STA. 1+~~214.000~~ 246 (DOUBLE CENTERLINE)

N

VT STATE PLANE GRID



0 10 20

SCALE 1:250

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088trf.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
TRAFFIC SIGN LAYOUT SHEET 2

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 26 OF 90

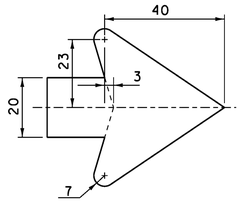
STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

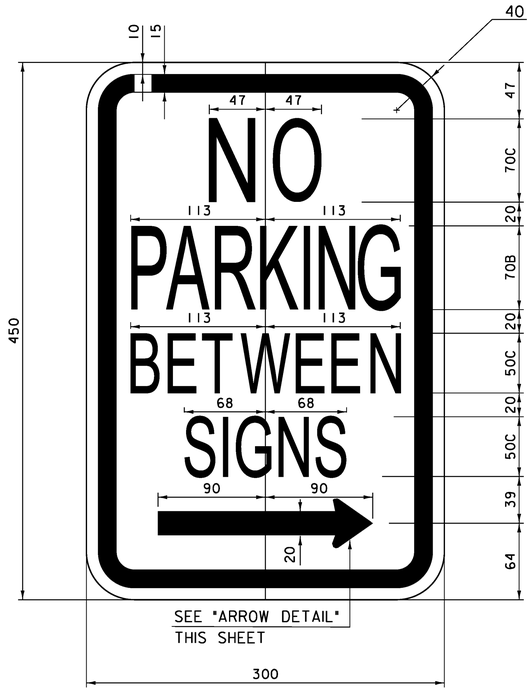
Metric

KILOMETER MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (mm)	HEIGHT (mm)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL kg/m 1.7	3.0	4.5	SQUARE STEEL (mm) 44 kg/m 3.4	50 kg/m 3.9	63 kg/m 5.0	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (mm) 75 kg/m 1.9	100 kg/m 2.5	100 MOD kg/m 2.5	TUBULAR STEEL Ø (mm) FOUNDATION	75 kg/m 11.3	89 kg/m 13.4	100 kg/m 16.1	125 kg/m 21.7	W-SHAPE STEEL FTG. SIZE 600 mm	750 mm	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
I+064.500 RT	NO PARKING BETWEEN SIGNS	I	300	450	0.135						I					4.56		X																	THIS SHEET	
					m	m	m	m			m	m	m	m	m	4.56	m	m	m	m	m	m		kg	kg	kg	kg								
SUBTOTAL					m^2 0.135	m^2	EA.	m^2			m				m 4.56					m			EA.	kg				EA.	EA.	kg					
ROUNDING					0										0.44																				
TOTAL					0.135										5.00																				

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



ARROW DETAIL
NTS



NO PARKING SIGN DETAIL
NTS

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088trf.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
TRAFFIC SIGN SUMMARY SHEET	SHEET 27 OF 90

SOIL CLASSIFICATION

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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

COMMONLY USED SYMBOLS

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

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

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.

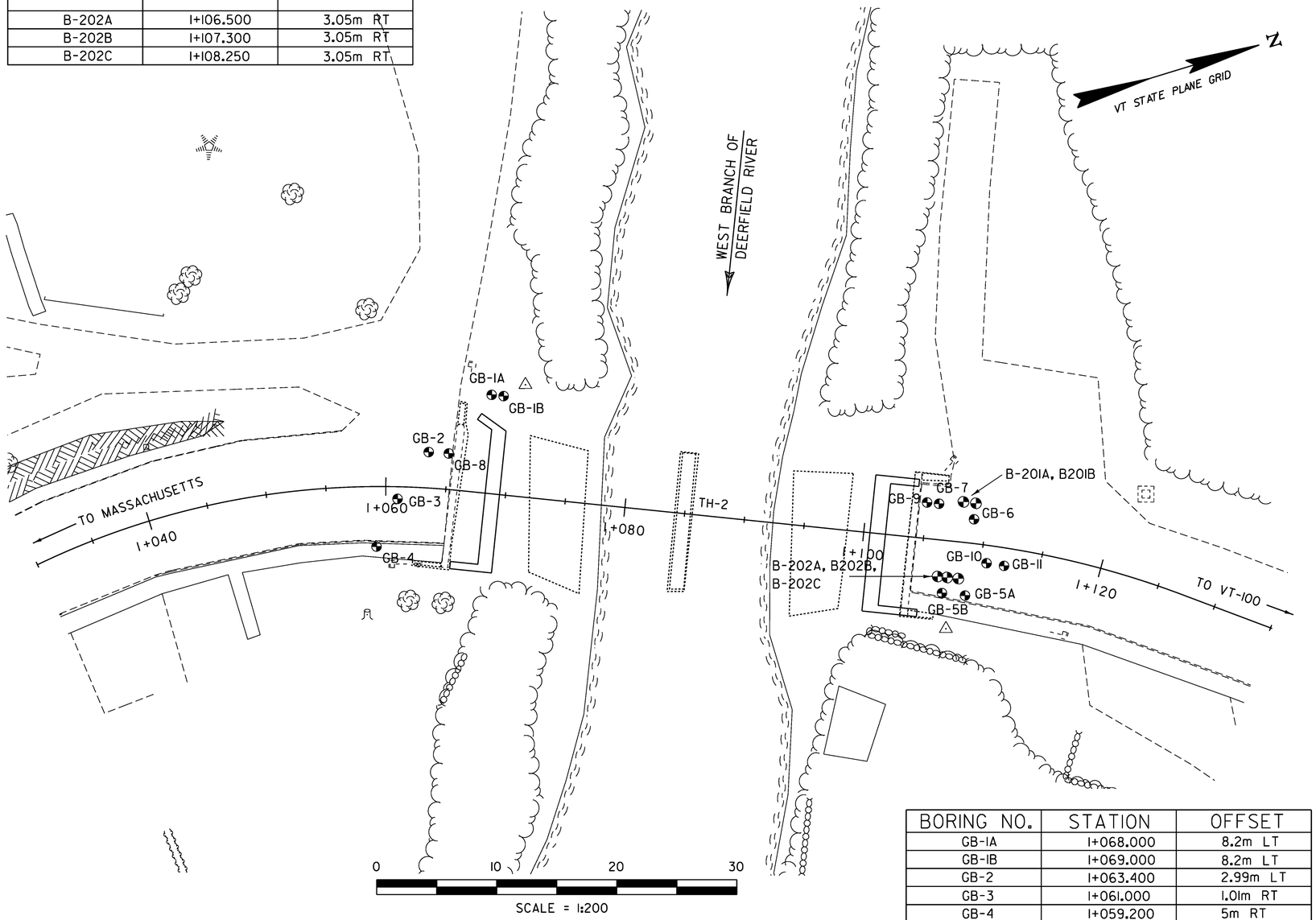
MOISTURE CONTENT - Weight of water divided by dry weight of soil.

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.

BORING NO.	STATION	OFFSET
B-201A	1+109.000	3.35m LT
B-201B	1+108.000	3.35m LT
B-202A	1+106.500	3.05m RT
B-202B	1+107.300	3.05m RT
B-202C	1+108.250	3.05m RT



BORING NO.	STATION	OFFSET
GB-1A	1+068.000	8.2m LT
GB-1B	1+069.000	8.2m LT
GB-2	1+063.400	2.99m LT
GB-3	1+061.000	1.0lm RT
GB-4	1+059.200	5m RT
GB-5A	1+109.000	4.39m RT
GB-5B	1+107.000	4.39m RT
GB-6	1+109.000	2.0lm LT
GB-7	1+106.00	2.99m LT
GB-8	1+065.000	2.99m LT
GB-9	1+105.000	2.99m LT
GB-10	1+110.500	1.49m RT
GB-11	1+112.000	1.49m RT

GENERAL NOTES

1. The subsurface explorations shown herein were made between 4/26/02 and 6/5/02 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LAYOUT SHEET

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 28 OF 90

VAOT Metric

BORING LOG

GEODESIGN INCORPORATED

P.O. Box 699, Windsor, VT 05089, Tel: (802) 674-2033
1233 Shelburne Road, Suite E-1, South Burlington, VT 05403, Tel: (802) 652-5140

Project Name: Readsboro BRF 0105 (3), Readsboro, VT

Boring No.: GB-1A
Page No.: 1 of 1
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 30, 2002 Date Finished: April 30, 2002
N. Coordinate: 325.53 m E. Coordinate: -8.20 m
Ground Surface Elevation (meters): 381.00
Station: 1068 Offset: 8.20 m LT

Casing: Sampler:
Type:
I.D./O.D.: cm cm
Hammer Wt.:
Hammer Fall:
Rig Type: Acker Truck Mounted
Other:

Groundwater Observations:

Date and Time	Depth (m)	Elevation (m)	Notes
4/30/02 12:00 PM			Dry

BOT. OF FTG. ELEV. 357.000

Sample Information: Depth (m); Casing Blows/0.3m; Number; Type; Penetration (cm); Recovery (cm); Depth (m); Blows / 0.15 m Interval: 0-0.15, 0.15-0.30, 0.30-0.45, 0.45-0.60; Coring Time (min./0.3m); PID Result

Sample Description: Classification System: Burmister

Symbol

Strata Description: Elevation & Depth (meters)

0.00 — SSA Probe - no sampling. (Strata description based on auger cuttings and drilling resistance.)

Possible Gravelly SAND FILL (with Boulders)

358.99
2.01 Bottom of Borehole at 2.01 m

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by this method used.
(1.07 -1.22 m): Hard drilling resistance observed. Penetrated possible small boulder.
(2.01 m): SSA refusal on possible large boulder.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock.
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-1A

OFFICES LOG_750-03.6M.GPJ GEODSGN.GDT 11/4/03

BORING LOG

GEODESIGN INCORPORATED

P.O. Box 699, Windsor, VT 05089, Tel: (802) 674-2033
1233 Shelburne Road, Suite E-1, South Burlington, VT 05403, Tel: (802) 652-5140

Project Name: Readsboro BRF 0105 (3), Readsboro, VT

Boring No.: GB-1B
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 30, 2002 Date Finished: April 30, 2002
N. Coordinate: 325.83 m E. Coordinate: -8.20 m
Ground Surface Elevation (meters): 381.00
Station: 1069 Offset: 8.20 m LT

Casing: Sampler:
Type:
I.D./O.D.: cm cm
Hammer Wt.:
Hammer Fall:
Rig Type: Acker Truck Mounted
Other:

Groundwater Observations:

Date and Time	Depth (m)	Elevation (m)	Notes
4/30/02 12:00 PM			Dry

BOT. OF FTG. ELEV. 357.000

Sample Information: Depth (m); Casing Blows/0.3m; Number; Type; Penetration (cm); Recovery (cm); Depth (m); Blows / 0.15 m Interval: 0-0.15, 0.15-0.30, 0.30-0.45, 0.45-0.60; Coring Time (min./0.3m); PID Result

Sample Description: Classification System: Burmister

Symbol

Strata Description: Elevation & Depth (meters)

0.00 — SSA Probe - no sampling. (Strata description based on auger cuttings and drilling resistance.)

Possible Gravelly SAND FILL (with Cobbles and small Boulders)

357.65
3.35 Possible SAND and GRAVEL (with fewer Cobbles)

354.90
6.10 Possible GLACIAL TILL

ESTIMATED PILE TIP EL=349.50

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by this method used.
(1.22 - 2.74 m): Observed SSA penetration through possible coarse gravel, some cobbles and small boulders (estimated 30.5-45.7 cm diameter). High drilling resistance.
(3.35 - 5.94 m): Slightly lower resistance through possible sand and gravel with fewer cobbles.
(6.10 - 7.16m): Observed slight increases in drilling resistance through donsor stratum.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock.
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-1B

OFFICES LOG_750-03.6M.GPJ GEODSGN.GDT 11/4/03

BORING LOG

GEODESIGN INCORPORATED

P.O. Box 699, Windsor, VT 05089, Tel: (802) 674-2033
1233 Shelburne Road, Suite E-1, South Burlington, VT 05403, Tel: (802) 652-5140

Project Name: Readsboro BRF 0105 (3), Readsboro, VT

Boring No.: GB-1B
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 30, 2002 Date Finished: April 30, 2002
N. Coordinate: 325.83 m E. Coordinate: -8.20 m
Ground Surface Elevation (meters): 381.00
Station: 1069 Offset: 8.20 m LT

Casing: Sampler:
Type:
I.D./O.D.: cm cm
Hammer Wt.:
Hammer Fall:
Rig Type: Acker Truck Mounted
Other:

Groundwater Observations:

Date and Time	Depth (m)	Elevation (m)	Notes
4/30/02 12:00 PM			Dry

Sample Information: Depth (m); Casing Blows/0.3m; Number; Type; Penetration (cm); Recovery (cm); Depth (m); Blows / 0.15 m Interval: 0-0.15, 0.15-0.30, 0.30-0.45, 0.45-0.60; Coring Time (min./0.3m); PID Result

Sample Description: Classification System: Burmister

Symbol

Strata Description: Elevation & Depth (meters)

353.84
7.16 Possible Weathered BEDROCK

353.23
7.77 Bottom of Borehole at 7.77 m

Remarks: (7.77 m): SSA refusal on possible bedrock. Observed gray colored (graphitic), silty fine to medium sand from bottom 0.30 m of SSA flights after auger retrieval.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock.
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-1B

OFFICES LOG_750-03.6M.GPJ GEODSGN.GDT 11/4/03

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LOG SHEET 1

PLOT DATE: 07-MAR-2012
DRAWN BY: M.EVANS-MONGEON
CHECKED BY: W. PELLETIER
SHEET 29 OF 90

VAOT Metric

GEODESIGN INCORPORATED

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-2
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 26, 2002 — Date Finished: April 26, 2002
N. Coordinate: 324.12 m — E. Coordinate: -2.99 m
Ground Surface Elevation (meters): 361.00
Station: 1063.4 — Offset: 2.99 m LT

Casing: Type	Casing: I.D./O.D.	Sampler: Type	Sampler: I.D./O.D.	Sampler: Hammer Wt.	Sampler: Hammer Fall	Sampler: Rig Type	Sampler: Other
H.S.A.	11 cm	SS	5 cm	NA	NA	Acker Truck Mounted	

Groundwater Observations: Date and Time	Depth (m)	Elevation (m)	Notes
4/26/02 9:30 AM	3.20	357.80	wet soil

Sample Information: Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Casing Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description: Elevation & Depth (meters)
															0.12 ASPHALT SAND and GRAVEL (Fill)
		S1	SS	61	25	0.61	7	7	4	3		-	(S1) Medium dense, light to dark brown fine to coarse SAND, little fine Gravel, trace Silt, moist.		
1															
		S2	SS	61	30	1.22	5	3	6	7		-	(S2) Loose, similar to S1 except with coarse gravel and asphalt debris.		
2		S3	SS	30	20	1.83	17	50/0.15				-	(S3) Very dense, light brown to beige fine to coarse GRAVEL, some fine to medium Sand, trace Silt, dryer then above.		358.87 2.13 BOULDER 358.56
		S4	SS	25	15	2.44	25	50/0.10				-	(S4) Very dense, similar to S3 except mottled green-brown with orange oxidation, with piece of coarse Gravel stuck in spoon tip.		2.44 Disturbed GLACIAL TILL (with Cobbles)
3		S5	SS	61	36	2.90	23	21	19	22		-			357.80 3.20 GLACIAL TILL
		S6	SS	46	30	3.51	30	40	50			-	(S5) Dense, Top 15.2 cm: Similar to S4. Bottom 20.3 cm: Green-brown with oxidized orange partings, fine Sand, little Silt, trace medium to coarse Sand, moist.		
4													(S6) Very dense, green-brown fine to medium SAND, little Silt, little fine Gravel with some oxidized partings.		
		S7	SS	23	15	4.42	17	50/0.08				-			356.43 4.57 GLACIAL TILL (with Cobbles)
5													(S7) Very dense, similar to S6 except with oxidized orange, decomposed schistose rock fragments near spoon tip, wet.		
6															
		S8	SS	15	10	5.94	54/0.15					-	(S8) Very dense, similar to S6 except less oxidation, with piece of quartzite cobble in spoon tip.		
7															

BOT. OF FTG. ELEV. 357.000

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by the method used.
(2.13 m): SS refusal. Observed difficult advance of HSA to 2.44 m through possible 30.5 cm diameter boulder.
(2.59-3.05 m): Observed grinding resistance through possible cobbles and small boulders.
(3.20-3.81 m): Observed slow advance of HSA through probable dense gravelly glacial till.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-2

OFFICES LOG 750-03.6M.GPJ GEODSGN.GDT 11/4/03

ESTIMATED PILE TIP EL=349.50

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-2
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 26, 2002 — Date Finished: April 26, 2002
N. Coordinate: 324.12 m — E. Coordinate: -2.99 m
Ground Surface Elevation (meters): 361.00
Station: 1063.4 — Offset: 2.99 m LT

Casing: Type	Casing: I.D./O.D.	Sampler: Type	Sampler: I.D./O.D.	Sampler: Hammer Wt.	Sampler: Hammer Fall	Sampler: Rig Type	Sampler: Other
H.S.A.	11 cm	SS	5 cm	NA	NA	Acker Truck Mounted	

Groundwater Observations: Date and Time	Depth (m)	Elevation (m)	Notes
4/26/02 9:30 AM	3.20	357.80	wet soil

Sample Information: Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Casing Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description: Elevation & Depth (meters)
		S9	SS	8	3	7.47	50/0.08					-	(S9) Very dense, similar to S6 except with gray schistose rock fragments.		353.44 7.56 BEDROCK (Schist)
8		C1	C	122	117	7.77					5.5	-	(C1) Light to dark gray, moderately hard, moderately weathered along fracture surfaces, closely jointed, poor quality SCHIST with red garnet inclusions. (RQD = 29%).		
											6.5				
											5.5				
9		C2	C	107	76	8.99					8.0				
											6.5	-	(C2) Similar rock type to C1 except with fewer garnet inclusions. (RQD = 19%).		
											8.0				
10											6.0				
		C3	C	122	89	10.06					6.0	-	(C3) Similar rock type to C1. (RQD = 31%).		
											4.0				
											7.0				
11											7.5				349.72 11.28 Bottom of Borehole at 11.28 m
											8.0				
12															
13															
14															

Remarks: (4.57-5.94 m): Increased HSA resistance observed through possible dense till with cobbles.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-2

OFFICES LOG 750-03.6M.GPJ GEODSGN.GDT 11/4/03

GEODESIGN INCORPORATED

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-3
Page No.: 1 of 1
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 29, 2002 — Date Finished: April 29, 2002
N. Coordinate: 323.39 m — E. Coordinate: 1.01 m
Ground Surface Elevation (meters): 361.00
Station: 1061 — Offset: 1.01 m RT

Casing: Type	Casing: I.D./O.D.	Sampler: Type	Sampler: I.D./O.D.	Sampler: Hammer Wt.	Sampler: Hammer Fall	Sampler: Rig Type	Sampler: Other
H.S.A.	11 cm	SS	5 cm	NA	NA	Acker Truck Mounted	

Groundwater Observations: Date and Time	Depth (m)	Elevation (m)	Notes
4/29/02 12:00 PM			Dry

Sample Information: Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Casing Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description: Elevation & Depth (meters)
						0.00						-	SSA Probe - no sampling. (Strata description based on auger cuttings and drilling resistance.)		Possible GRAVEL FILL (with Boulders)
1															
2															358.81 2.19 Bottom of Borehole at 2.19 m
3															
4															
5															
6															
7															

BOT. OF FTG. ELEV. 357.000

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by the method used.
(0.61-1.52 m) Observed hard drilling resistance through coarse gravel, cobbles, and boulders estimated up to 30.5 cm diameter.
(2.19 m) SSA refusal on possible large boulder.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-3

OFFICES LOG 750-03.6M.GPJ GEODSGN.GDT 11/4/03

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LOG SHEET 2

PLOT DATE: 07-MAR-2012
DRAWN BY: M.EVANS-MONGEON
CHECKED BY: W. PELLETIER
SHEET 30 OF 90

VAOT Metric

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BORING LOG

Project Name: Readsboro BRF 0105 (3) Readsboro, VT

Boring No.: GB-4
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 29, 2002 — Date Finished: May 1, 2002
N. Coordinate: 322.84 m — E. Coordinate: 5.00 m
Ground Surface Elevation (meters): 361.00
Station: 1059.2 — Offset: 5.00 m RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D./O.D.:	11 cm	5 cm
Hammer Wt.:	NA	63.5 kg
Hammer Fall:	NA	76 cm
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
4/29/02 2:30 PM	2.44	358.56	wet soils
5/1/02 8:30 AM	1.98	359.02	Open Hole

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description (Elevation & Depth (meters))
															0.12 ASPHALT Gravelly SAND (FILL)
1		S1	SS	61	30	0.61	4	4	6	3		-	(S1) Loose, light to dark brown fine to coarse SAND, little fine Gravel, trace to little Silt, moist.		
		S2	SS	61	20	1.22	2	3	5	7		-	(S2) Loose, similar to S1 except bottom 10.16 cm beige brown to green, moist.		
2															358.56
		S3	SS	23	23	2.59	28	50/0.08				-	(S3) Very dense, dark gray to black with orange-red oxidized seams, fine micaceous SAND, little Silt, trace fine Gravel, moist. Fractured cobble in spoon tip.		2.44 Disturbed GLACIAL TILL (with Boulders)
3		C1	C	30	28	2.93						9.5	(C1) Recovered 27.9 cm piece of dark gray coarse-grained boulder with white crystallization.		357.34
BOT. OF FTG. ELEV. 357.000															3.66 GLACIAL TILL (with Cobbles)
4		S4	SS	46	25	3.90	16	28	42			-	(S4) Very dense, green-gray fine to medium SAND, little Silt, trace fine to coarse Gravel, moist.		
5		S5	SS	28	25	5.12	33	50/0.13				-	(S5) Very dense, similar to S4 except with coarse Sand.		
															354.29
7															6.71

ESTIMATED PILE TIP EL=349.50

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by this method used.
(0.61-1.52 m): Observed increased drilling resistance through possible coarse gravel and cobble Fill.
(1.98 m): Hard grinding resistance observed through possible cobble estimated 15.2-20.3 cm diameter.
(2.50 m): Observed HSA refusal on possible boulder. Borehole left open for possible coring at a later date. Borehole reattempted on May 1, 2002 using 10.8 cm o.d. SSA to further advance hole. Penetrated possible cobble estimated 15.2 cm diameter.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-4

OFFICE5.LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

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BORING LOG

Project Name: Readsboro BRF 0105 (3) Readsboro, VT

Boring No.: GB-4
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 29, 2002 — Date Finished: May 1, 2002
N. Coordinate: 322.84 m — E. Coordinate: 5.00 m
Ground Surface Elevation (meters): 361.00
Station: 1059.2 — Offset: 5.00 m RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D./O.D.:	11 cm	5 cm
Hammer Wt.:	NA	63.5 kg
Hammer Fall:	NA	76 cm
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
4/29/02 2:30 PM	2.44	358.56	wet soils
5/1/02 8:30 AM	1.98	359.02	Open Hole

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description (Elevation & Depth (meters))
8													Possible Steeply Dipping BEDROCK *(Continued)*		
															352.47
9															8.53 Bottom of Borehole at 8.53 m
10															
11															
12															
13															
14															

Remarks: (2.83 m): Very hard SSA grinding resistance observed on large boulder. SSA refusal at 2.93 m. 10.2 cm o.d. flush joint casing lowered and borehole advanced with roller bit.
(4.27-5.18 m): Observed increased drilling resistance during roller bit advance through possible cobbles within glacial till.
(6.71-8.56 m): Observed increased drilling resistance during roller bit advance through possible weathered bedock. Possibly drilling on steeply dipping bedrock with roller bit "walking" along face.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-4

OFFICE5.LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

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BORING LOG

Project Name: Readsboro BRF 0105 (3) Readsboro, VT

Boring No.: GB-5A
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 30, 2002 — Date Finished: April 30, 2002
N. Coordinate: 338.02 m — E. Coordinate: 4.39 m
Ground Surface Elevation (meters): 382.50
Station: 1109 — Offset: 4.39 m RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D./O.D.:	11 cm	5 cm
Hammer Wt.:	NA	63.5 kg
Hammer Fall:	NA	76 cm
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
4/30/02 8:25 AM	1.37	381.13	Wet soil

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description (Elevation & Depth (meters))
															0.09 ASPHALT SAND and GRAVEL FILL (with Cobbles)
1		S1	SS	61	30	0.76	6	7	11	9		-	(S1) Medium dense, light to dark brown with black seams, fine to medium SAND, little fine Gravel, trace Silt, moist.		
		S2	SS	61	25	1.37	9	13	6	3		-	(S2) Medium dense, similar to S1 except with little Silt, trace coarse Gravel, wet.		
2		S3	SS	61	25	1.98	5	13	8	6		-	(S3) Medium dense, similar to S1 except with red orange oxidation and small wood pieces.		
		S4	SS	61	15	2.59	7	3	6	11		-	(S4) Loose, similar to S2.		
3		S5	SS	61	30	3.20	12	13	13	12		-	(S5) Medium dense, light brown to oxidized orange fine to medium SAND, little fine to coarse Gravel, trace Silt with fractured rock pieces in spoon tip, moist.		
4		S6	SS	61	25	3.81	16	17	31	37		-	(S6) Dense, similar to S5 with gray pulverized cobble pieces. Bottom 5.1 cm wetter.		
		S7	SS	46	30	4.42	32	32	38			-	(S7) Very dense, similar to S5 except with some coarse Gravel and pulverized white Cobble (possibly pushing).		357.87 4.63 BOULDERS
BOT. OF FTG. ELEV. 357.000															357.01
5															5.49 Possible GLACIAL TILL
		S8	SS	46	41	5.49	19	45	44			-	(S8) Very dense, brown to oxidized orange micaceous fine to medium SAND, some fine to coarse Gravel and decomposed schistose rock fragments, wet.		356.34
6		C1	C	3	3	6.16					8.0		(C1) Recovered approximately 2.5 cm of dark gray with white banding, gneissic rock, and gray fine to medium SAND, some Silt.		6.16 Possible BOULDER
7															6.19 Bottom of Borehole at 6.19 m

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by this method used.
(1.52-2.59 m): Observed slight drilling resistance through estimated coarse gravel and some cobbles during HSA advance.
(3.05-3.66 m): Observed harder drilling resistance during HSA advance through estimated cobbles and small boulders. Possible boulder at 3.96-4.27m.
(4.42 m): Drillers note HSA filling with wet soil prior to SS sample.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-5A

OFFICE5.LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LOG SHEET 3

PLOT DATE: 07-MAR-2012
DRAWN BY: M.EVANS-MONGEON
CHECKED BY: W. PELLETIER
SHEET 31 OF 90

VAOT Metric

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-5A
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 30, 2002 Date Finished: April 30, 2002
N. Coordinate: 338.02 m E. Coordinate: 4.39 m
Ground Surface Elevation (meters): 362.50
Station: 1109 Offset: 4.39 m RT

	Casing:	Sampler:	Groundwater Observations:			
Type:	H.S.A.	SS	Date and Time	Depth (m)	Elevation (m)	Notes
I.D./O.D.:	11 cm	5 cm				
Hammer Wt.:	NA	63.5 kg	4/30/02 8:25 AM	1.37	361.13	Wet soil
Hammer Fall:	NA	76 cm				
Rig Type:	Acker Truck Mounted					
Other:						

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description: Classification System: Burmister	Symbol	Strata Description: Elevation & Depth (meters)
													trace fine Gravel (possible glacial till).		
8															
9															
10															
11															
12															
13															
14															

Remarks: (4.63 m): Observed difficult HSA penetration through possible small boulder to 5.06 m.
(6.16 m): HSA refusal on possible boulder. Attempted rock core - Observed approximately 2.5 cm of penetration without water return. Stopped coring and retrieved core barrel. Diamond coring bit sheared away from barrel and lost down borehole.
(6.19 m):Borehole abandoned.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger; C = Core; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-5A

OFFICES LOG 750-03.6M GPJ GEODSGN.GDT 1/14/03

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-5B
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 30, 2002 Date Finished: May 1, 2002
N. Coordinate: 337.41 m E. Coordinate: 4.39 m
Ground Surface Elevation (meters): 362.00
Station: 1107 Offset: 4.39 m RT

	Casing:	Sampler:	Groundwater Observations:			
Type:	H.S.A.	SS	Date and Time	Depth (m)	Elevation (m)	Notes
I.D./O.D.:	11 cm	5 cm				
Hammer Wt.:	NA	63.5 kg	5/1/02 12:00 PM			Not Obser
Hammer Fall:	NA	76 cm				
Rig Type:	Acker Truck Mounted					
Other:						

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description: Classification System: Burmister	Symbol	Strata Description: Elevation & Depth (meters)
						0.00							(See Boring Log B-5A for soil descriptions)		SAND and GRAVEL FILL (with cobbles)
1															358.04
2															3.96 Possible GLACIAL TILL
3															
4															356.88
5		C1	C	30	25	5.12						7.5	(C1) Recovered Top 10.1 cm: banded dark gray cobble. Bottom 15.2 cm: weathered schistose boulder.		5.12 COBBLE
															356.57
6															5.43 GLACIAL TILL
7															

BOT. OF FTG. ELEV. 357.000

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by this method used
(3.96 m): Observed increased drilling resistance through denser stratum. Possible strata change to glacial till.
(5.12 m): 10.2 cm i.d. flush joint casing installed prior to coring C1. Observed brownish-red fine sand from wash cuttings during core run C1. Recovered cobble and possible fractured boulder.
Used 7.30 cm o.d. roller bit to further advance hole.
(5.43-6.92 m): Observed fine to coarse sand from wash cuttings, with alternating gray to orange-brown color.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger; C = Core; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-5B

OFFICES LOG 750-03.6M GPJ GEODSGN.GDT 1/14/03

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-5B
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 30, 2002 Date Finished: May 1, 2002
N. Coordinate: 337.41 m E. Coordinate: 4.39 m
Ground Surface Elevation (meters): 362.00
Station: 1107 Offset: 4.39 m RT

	Casing:	Sampler:	Groundwater Observations:			
Type:	H.S.A.	SS	Date and Time	Depth (m)	Elevation (m)	Notes
I.D./O.D.:	11 cm	5 cm				
Hammer Wt.:	NA	63.5 kg	5/1/02 12:00 PM			Not Obser
Hammer Fall:	NA	76 cm				
Rig Type:	Acker Truck Mounted					
Other:						

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description: Classification System: Burmister	Symbol	Strata Description: Elevation & Depth (meters)
															GLACIAL TILL (Continued)
															354.29
															7.71 Bottom of Borehole at 7.71 m
8															
9															
10															
11															
12															
13															
14															

Remarks: (7.71 m): Very hard roller bit drilling resistance through possible boulder. 10.2 cm i.d. flush joint removed. Using 10.8 cm o.d. SSA to expand borehole diameter to allow advancement of flush joint casing to top of possible boulder
prior to coring. Lost carbide teeth from SSA down hole. Borehole abandoned.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger; C = Core; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-5B

OFFICES LOG 750-03.6M GPJ GEODSGN.GDT 1/14/03

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LOG SHEET 4

PLOT DATE: 07-MAR-2012
DRAWN BY: M.EVANS-MONGEON
CHECKED BY: W. PELLETIER
SHEET 32 OF 90

VAOT Metric

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-6
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 29, 2002 — Date Finished: May 2, 2002
N. Coordinate: 338.02 m — E. Coordinate: -2.01 m
Ground Surface Elevation (meters): 362.50
Station: 1109 — Offset: 2.01 m LT

Casing: Type	Casing: I.D./O.D.	Sampler: Type	Sampler: Hammer Wt.	Sampler: Hammer Fall	Rig Type	Other
H.S.A.	11 cm	SS	NA 63.5 kg	NA 76 cm	Acker Truck Mounted	

Groundwater Observations: Date and Time	Depth (m)	Elevation (m)	Notes
4/28/02 1:30 PM	4.11	358.39	Wet soil

Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Classification System: Burmister	Symbol	Elevation & Depth (meters)	Strata Description
															362.50 0.12	ASPHALT GRAVEL FILL (with Boulders)
1		S1	SS	61	30	0.61	9	8	7	7	-	-	(S1) Medium dense. Top 25.4 cm: Light brown, fine to coarse SAND, little fine Gravel, trace Silt, moist. Bottom 5.1 cm: Similar to top except dark brown with asphalt pieces.			
		S2	SS	61	0	1.22	7	6	4	4	-	-	(S2) Loose, no recovery.			
2																
		S3	SS	61	30	2.44	12	5	4	3	-	-	(S3) Loose. Top 15.2 cm: Similar to top S1. Bottom 15.2 cm: light brown to black, fine to medium SAND, some Silt, trace fine Gravel. Moist. (black soil observed to be soft and pourous with possible coal pieces.		359.91 2.59	Sandy FILL (with Cobbles and Boulders)
3		S4	SS	61	30	3.05	2	3	6	23	-	-				
		S5	SS	43	30	3.66	13	30	50/0.13		-	-	(S4) Loose. Top 15.2 cm: Similar to bottom S3. Bottom 15.2 cm: Red-brown, fine to medium SAND, little fine Gravel, trace Silt.		358.39 4.11	Probable GLACIAL TILL (with Boulders)
4		S6	SS	46	36	4.27	38	21	50/0.15		-	-	(S5) Very dense, similar to bottom of S4, except with coarse Gravel. Bottom 5.1 cm: Wet.			
5													(S6) Very dense, similar to S4 (layered) with pulverized cobble in middle of sample.			
6		S7	SS	3	0	5.94	50/0.03				-	-	(S7) Very dense, no recovery except with evidence of green-brown, micaceous soil (possible till) at spoon tip.		356.25 6.25	GLACIAL TILL
7																

BOT. OF FTG. ELEV. 357.000

Remarks: (0 m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by the method used.
(0.61-1.52 m): Observed slight resistance during HSA advance through gravel and possible cobbles.
(1.83-1.98 m): Difficult HSA advance through probable boulder.
(3.35-3.96 m): HSA advance through coarse gravel with probable cobbles and boulders estimated 15.2-45.8 cm diameter.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-6

OFFICES LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-6
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Jason Gaudette
Date Started: April 29, 2002 — Date Finished: May 2, 2002
N. Coordinate: 338.02 m — E. Coordinate: -2.01 m
Ground Surface Elevation (meters): 362.50
Station: 1109 — Offset: 2.01 m LT

Casing: Type	Casing: I.D./O.D.	Sampler: Type	Sampler: Hammer Wt.	Sampler: Hammer Fall	Rig Type	Other
H.S.A.	11 cm	SS	NA 63.5 kg	NA 76 cm	Acker Truck Mounted	

Groundwater Observations: Date and Time	Depth (m)	Elevation (m)	Notes
4/29/02 1:30 PM	4.11	358.39	Wet soil

Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Classification System: Burmister	Symbol	Elevation & Depth (meters)	Strata Description
																GLACIAL TILL *(Continued)*
8															351.59 10.91	COBBLES BOULDERS
9															351.07 11.43	GLACIAL TILL
10																
11																
12																
13		S8	SS	15	10	12.98	120/0.15				-	-	(S8) Very dense, green-brown fine to medium SAND, little Silt, trace fine Gravel, moist.		349.36 13.14	Bottom of Borehole at 13.14 m
14																

BOT. OF FTG. ELEV. 357.000

Remarks: (4.72 m): Very Hard HSA resistance through possible boulder- refusal at 4.97 m. Attempted to further advance hole using 10.8 cm o.d. SSA. Observed SSA penetration through possible 15.2 cm diameter cobbles at 5.27-5.43 m and 5.64-5.94 m.
(5.94 m): SS sample attempted. HSA returned down hole with very slow advance from 5.94-6.25 m.
(7.77-12.98 m): Observed green/ gray wash water during roller bit advance.
(10.91-11.43 m): Observed increased resistance during roller bit advance through possible cobbles and small boulders.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-6

OFFICES LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-7
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Andrew Elms
Date Started: June 3, 2002 — Date Finished: June 4, 2002
N. Coordinate: 337.11 m — E. Coordinate: -2.99 m
Ground Surface Elevation (meters): 382.71
Station: 1106 — Offset: 2.99 m LT

Casing: Type	Casing: I.D./O.D.	Sampler: Type	Sampler: Hammer Wt.	Sampler: Hammer Fall	Rig Type	Other
FJ	10 cm	SS	136.1 kg 63.5 kg	76 cm 76 cm	Acker Truck Mounted	

Groundwater Observations: Date and Time	Depth (m)	Elevation (m)	Notes
6/3/02 10:10 AM	4.27	358.44	Moist
6/3/02 10:52 AM	6.10	356.62	Wet Soil

Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Classification System: Burmister	Symbol	Elevation & Depth (meters)	Strata Description
															382.71 0.00	GRAVEL FILL (with Cobbles)
1		S-1	SS	61	41	0.61	10	10	8	9	-	-	(S1): Medium dense, brown, fine to coarse SAND, little fine Gravel, trace of Silt, dry.			
		S-2	SS	46	18	1.22	10	8	6	50/0	-	-	(S2): Similar to S1, except dark brown with trace of fine to coarse Gravel.			
2		S-3	SS	61	23	1.83	4	6	3	4	-	-	(S3): Similar to S1.			
		S-4	SS	61	33	2.44	5	3	8	8	-	-	(S4): Loose, dark brown, fine to coarse SAND,some Silt, 2" piece of rotted wood, organic, moist.			
3		S-5	SS	61	30	3.05	18	23	15	22	-	-	(S5): Dense, red/brown, fine to coarse SAND,some fine Gravel, trace Silt, dry.		359.05	
		S-6	SS	13	10	3.66	50/5	-	-	-	-	-	(S6): Very dense, brown, fine to coarse SAND, some fine Gravel, trace of Silt, dry.		3.66	GLACIAL TILL.
4																
		S-7	SS	13	10	4.57	50/5	-	-	-	-	-	(S7): Similar to S6.			
5																
6		S-8	SS	46	30	6.10	24	37	50/3	-	-	-	(S8): Very dense, red/brown, fine to coarse SAND, little fine Gravel, little Silt, some oxidation, wet.			
7																
8		S-9	SS	8	8	7.62	60/3	-	-	-	-	-	(S9): Very dense, gray, fine to coarse SAND, little fine Gravel, little Silt, wet.			
9																

BOT. OF FTG. ELEV. 357.000

Remarks: (0m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by the method used.
(0-4.57m): Borehole advanced with 10.2cm dia. SSA to 4.57m. SSA removed prior to SS sampling and reinserted in borehole after sampling.
(4.57-11.58m): Casing Blows/ft - recorded # of blows required to drive casing into open hole.
(4.57m): SSA removed. Flush joint casing installed and borehole advanced with 7.6cm dia. roller bit.

Notes: 1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-7

OFFICES LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LOG SHEET 5

PLOT DATE: 07-MAR-2012
DRAWN BY: M.EVANS-MONGEON
CHECKED BY: W. PELLETIER

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Tel: (802) 652-5140

BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-7
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Andrew Elms
Date Started: June 3, 2002 — Date Finished: June 4, 2002
N. Coordinate: 337.11 m — E. Coordinate: -2.99 m
Ground Surface Elevation (meters): 382.71
Station: 1106 — Offset: 2.99 m LT

	Casing	Sampler
Type:	FJ	SS
I.D./O.D.:	10 cm	5 cm
Hammer Wt.:	136.1 kg	63.5 kg
Hammer Fall:	76 cm	76 cm
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
6/3/02 10:10 AM	4.27	358.44	Moist
6/3/02 10:52 AM	6.10	356.62	Wet Soil

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description (Elevation & Depth (meters))
0															GLACIAL TILL. *(Continued)*
11															
11															
10	11														
11	10														
11	11														
11	12	S-10	SS	15	15	10.67	50	-	-	-			(S10): Very dense, olive, fine to coarse SAND, trace of Silt, trace of fine Gravel, dry.		
11	9														
11	11														
12	18														
		S-11	SS	10	0	12.19	102/4	-	-	-	19		(S11): No Recovery		
		C-1	C	109	33	12.28					3		(C1): Top 0.3 meters: White/pinkish, quartzite boulder. Bottom 0.79 meters: No recovery.		
13											3				
		S-12	SS	8	0	13.38	50/3	-	-	-			(S12): No Recovery.		
		C-2	C	43	0	13.44							(C2): No recovery.		
14		C-3	C	152	0	13.87							(C3): No recovery.		
15															
16															
17		C-4	C	30	0	16.92							(C4): No recovery.		345.49
18															17.22 Bottom of Borehole at 17.22 m

Remarks:
(4.57-11.58m): Casing Blows/ft - recorded # of blows required to drive casing into open hole.
(4.88 - 5.79m): Observed hard resistance during SSA drilling due to probable gravel and cobbles.
(12.35m): SS sampler refusal on probable boulder.
(13.38m): Core run C-1 stopped. Attempted SS sample. Refusal on probable boulder. Core barrel reinstalled in borehole to complete 152cm run.
(13.44-17.22m): Coring time averaged 2-3 min./ft.
(17.22m): Stopped coring and retrieved Diamond coring bits sheared away from barrel and lost down borehole. Borehole terminated.

Notes:
1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-7

OFFICES LOG 750-03.6M.GPJ GEODSGN.GDT 11/4/03

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-8
Page No.: 1 of 1
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Andrew Elms
Date Started: June 4, 2002 — Date Finished: June 4, 2002
N. Coordinate: 337.11 m — E. Coordinate: -2.99 m
Ground Surface Elevation (meters): 381.01
Station: 1065 — Offset: 2.99 m LT

	Casing	Sampler
Type:		
I.D./O.D.:	cm	cm
Hammer Wt.:		
Hammer Fall:		
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
6/4/02 12:00 PM	4.57	356.43	Wet soil

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description (Elevation & Depth (meters))
						0.00							SSA probe- no sampling. (Strata description based on auger cuttings and drilling resistance.)		GRAVEL FILL.
1															
2															
3															
4															357.35 3.66 Possible GLACIAL TILL.
5															
6															
7															353.51 7.50 Bottom of Borehole at 7.50 m
8															
9															

BOT. OF FTG. ELEV. 357.000

Remarks:
(0m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by this method used.
(3.66m): Observed slight increase in drilling resistance through denser stratum. Possible strata change to Glacial Till.
(7.50m): SSA refusal on possible boulder or probable bedrock.

Notes:
1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-8

OFFICES LOG 750-03.6M.GPJ GEODSGN.GDT 11/4/03

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BORING LOG

Project Name

Readsboro BRF 0105 (3)
Readsboro, VT

Boring No.: GB-9
Page No.: 1 of 1
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Andrew Elms
Date Started: June 5, 2002 — Date Finished: June 5, 2002
N. Coordinate: 336.80 m — E. Coordinate: -2.99 m
Ground Surface Elevation (meters): 382.71
Station: 1105 — Offset: 2.99 m LT

	Casing	Sampler
Type:		
I.D./O.D.:	cm	cm
Hammer Wt.:		
Hammer Fall:		
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
6/5/02 10:00 AM	5.79	356.92	Dry

Depth (m)	Casing Blows/0.3m	Sample Information: Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval: 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min./0.3m)	PID Result	Sample Description (Classification System: Burmister)	Symbol	Strata Description (Elevation & Depth (meters))
						0.00							SSA - no probe. (Strata description based on auger cuttings and drilling resistance).		GRAVEL FILL (with cobbles and boulders)
1															
2															
3															
4															
5															357.53 5.18 BOULDERS.
6															356.92 5.79 Bottom of Borehole at 5.79 m
7															
8															
9															

BOT. OF FTG. ELEV. 357.000

Remarks:
(0m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by this method used.
(3.05-3.20m): Observed harder drilling resistance through possible cobbles.
(3.66-3.81m): Similar to (3.05-3.20m)
(4.27-4.72m): Similar to (3.05-3.20m)
(5.79m): SSA refusal on probable boulder.

Notes:
1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Coding: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-9

OFFICES LOG 750-03.6M.GPJ GEODSGN.GDT 11/4/03

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LOG SHEET 6

PLOT DATE: 07-MAR-2012
DRAWN BY: M.EVANS-MONGEON
CHECKED BY: W. PELLETIER

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BORING LOG

Project Name: Readsboro BRF 0105 (3) Readsboro, VT

Boring No.: GB-10
Page No.: 1 of 1
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Andrew Elms
Date Started: June 5, 2002 Date Finished: June 5, 2002
N. Coordinate: 338.48 m E. Coordinate: 1.49 m
Ground Surface Elevation (meters): 362.89
Station: 1110.5 Offset: 1.49 m RT

	Casing:	Sampler:
Type:		
I.D./O.D.:	cm	cm
Hammer Wt.:		
Hammer Fall:		
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
6/5/02 12:00 PM	4.27	358.63	Dry

Sample Information													Sample Description	Symbol	Strata Description
Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min/0.3m)	PID Result	Classification System: Burmister		Elevation & Depth (meters)
						0.00							SSA probe - no sampling. (Strata description based on auger cuttings and drilling resistance).		GRAVEL FILL (with Cobbles)
															358.63
						4.27									Bottom of Borehole at 4.27 m

BOT. OF FTG. ELEV. 357.000

Remarks:
(0m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by the method used.
(3.05-3.96m): Observed hard drilling resistance through probable cobbles during SSA advancement.
(4.27m): SSA refusal on probable boulder.

Notes:
1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Codes: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-10

OFFICES LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

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BORING LOG

Project Name: Readsboro BRF 0105 (3) Readsboro, VT

Boring No.: GB-11
Page No.: 1 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Andrew Elms
Date Started: June 5, 2002 Date Finished: June 5, 2002
N. Coordinate: 338.94 m E. Coordinate: 1.49 m
Ground Surface Elevation (meters): 362.99
Station: 1112 Offset: 1.49 m RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D./O.D.:	11 cm	5 cm
Hammer Wt.:	NA	63.5 kg
Hammer Fall:	NA	76 cm
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
6/5/02 12:50 PM	3.05	359.94	Wet Soil

Sample Information													Sample Description	Symbol	Strata Description
Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min/0.3m)	PID Result	Classification System: Burmister		Elevation & Depth (meters)
						0.00							HSA probe - no sampling until 9.14m. (Strata description based on auger cuttings and drilling resistance).		GRAVEL FILL (with Cobbles)
															356.89
						6.10									Possible GLACIAL TILL.

BOT. OF FTG. ELEV. 357.000

Remarks:
(0m): Groundsurface elevation is estimated from VAOT Main Line Profile based on locations taped from existing features and plotted by GeoDesign. Elevations and locations should be considered accurate only to the degree implied by the method used.
(3.05m): Observed wet soil on HSA.
(4.57m): Observed harder drilling resistance through possible cobbles during HSA advancement.
(5.79m): Similar to 4.57m.
(6.10m): Observed increase in drilling resistance. Possible strata change to Glacial Till.

Notes:
1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Codes: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-11

OFFICES LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

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BORING LOG

Project Name: Readsboro BRF 0105 (3) Readsboro, VT

Boring No.: GB-11
Page No.: 2 of 2
File No.: 750-03.6m
Checked By: RSA

Boring Company: M & W Soils Engineering
Foreman: Jim Ferguson
GeoDesign Rep.: Andrew Elms
Date Started: June 5, 2002 Date Finished: June 5, 2002
N. Coordinate: 338.94 m E. Coordinate: 1.49 m
Ground Surface Elevation (meters): 362.99
Station: 1112 Offset: 1.49 m RT

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D./O.D.:	11 cm	5 cm
Hammer Wt.:	NA	63.5 kg
Hammer Fall:	NA	76 cm
Rig Type:	Acker Truck Mounted	
Other:		

Groundwater Observations			
Date and Time	Depth (m)	Elevation (m)	Notes
6/5/02 12:50 PM	3.05	359.94	Wet Soil

Sample Information													Sample Description	Symbol	Strata Description
Depth (m)	Casing Blows/0.3m	Number	Type	Penetration (cm)	Recovery (cm)	Depth (m)	Blows / 0.15 m Interval 0-0.15	0.15-0.30	0.30-0.45	0.45-0.60	Coring Time (min/0.3m)	PID Result	Classification System: Burmister		Elevation & Depth (meters)
		S-1	SS	5	5	9.14	50/2						(S1): Very dense, olive, fine to coarse SAND, little Silt, trace of fine Gravel, dry.		353.78
															9.20 Bottom of Borehole at 9.20 m

Remarks:
(9.14m): SS sampler bouncing on probable cobbles or boulder.
(9.20m): HSA refusal on probable boulder.

Notes:
1) Soil Samples screened in the field using a thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. ND = None Detected, - = Sample Not Screened
2) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
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. AC = After Coring Rock
4) Sample Type Codes: A = Auger, C = Core, PS = Piston Sampler, SS = Split Barrel (Split Spoon), ST = Shelby Tube, V = Vane
5) Proportions Used: Trace = 1-10%, Little = 10-20%, Some = 20-35%, And = 35-50%

Boring No.: GB-11

OFFICES LOG 750-03.6M.GPJ GEODESIGN.GDT 1/14/03

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088bor.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BORING LOG SHEET 7

PLOT DATE: 07-MAR-2012
DRAWN BY: M.EVANS-MONGEON
CHECKED BY: W. PELLETIER
SHEET 35 OF 90

VAOT Metric

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BORING LOG

Project Name

Readsboro BRF 0105(3)

Readsboro, VT

Boring No.: **B-201A**
Page No.: 1 of 1
File No.: 750-09.1
Checked By: JAG/JFW

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Alan Baribault
Date Started: November 9, 2011 Date Finished: November 9, 2011
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 1191
Station: Offset: ft

	Casing:	Sampler:
Type:	Flush	SS
I.D.:	4.0 in.	1.38 in.
Hammer Wt.:	140 lbs	140 lbs
Hammer Fall:	30 in.	30 in.
Rig Type:	CME 75 ATV	
Hammer Type:	Automatic	

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/9/11, 10:00			See Note 2
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min/ft)	Moisture Content (%)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
	5												Asphalt 1190.6		
	10	S1	SS	18	12	0.5	5	5	6				Fill (Silty Sand & Gravel)		S1) Medium dense, light brown fine to coarse SAND, little Silt, little fine to coarse Gravel, moist.
	30														
	20														
5	15														
	10	S2	SS	24	5	5	6	5	3	2					S2) Loose, brown fine to coarse SAND and fine to coarse GRAVEL (plate-like fragments), little Silt, wet.
	20														
	25														
	20														
10	15														
	23	S3	SS	24	11	10	5	7	12	19					S3) Medium dense, brown with orange and gray fine to coarse SAND, little fine to coarse Gravel, little Silt, wet.
	35														
	60												13		
	35												Silty Sand & Gravel) 1178.0		
15	65														S4) Dense, brown with orange areas fine to coarse SAND and fine to coarse GRAVEL, some Silt, wet. (Possible highly weathered cobble or boulder).
		S4	SS	22	8	15	16	21	22	50/4"			16.9		
		S5	SS	0	0	17	30/0"						Inferred Boulder 1174.1 1174.0		S5) Refusal, no recovery.
													Bottom of Exploration at 17.0 ft		
20															
25															
30															

Remarks:
1) Borehole located 10 feet West of painted centerline, 17 feet North of existing abutment. Elevation approximately 1191 feet based on Mainline Profile.
2) HSA used to penetrate pavement. Moisture observations of samples S2 through S4 are likely elevated due to wash-drive drilling methods.
3) Advanced borehole with the rollerbit ahead of the casing at 13 to 15 feet deep due to hard driving of casing.
4) Borehole terminated at 17 feet deep due to rollerbit refusal on inferred boulder (used ~150gal water to advance 2 inches). Hole offset 4 feet South to B-201B.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) 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. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **B-201A**

BOT. OF FTG.
ELEV. 357.0 M
ELEV. 1171.26 FT

SMALL REMARK FONT STANDARD 750-09.1 READSBORO BRF 0105.GPJ GEODESIGN STANDARD.GDT 12/9/11

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: s89j088bor.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: M. LONGSTREET
DESIGNED BY: W. PELLETIER	CHECKED BY: S. SCRIBNER
BORING LOG SHEET 8	SHEET 36 OF 90

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BORING LOG

Project Name: Readsboro BRF 0105(3)
Readsboro, VT

Boring No.: **B-201B**
Page No.: 1 of 3
File No.: 750-09.1
Checked By: JAG/JFW

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Alan Baribault/Joshua Gilman
Date Started: November 9, 2011 Date Finished: November 17, 2011
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 1191
Station: Offset: ft

	Casing:	Sampler:	Groundwater Observations			
			Date	Depth (ft)	Elev. (ft)	Notes
Type:	Flush	SS				
I.D.:	4.0 in.	1.38 in.				
Hammer Wt.:	140 lbs	140 lbs	▼ 11/17/11, 16:00	-2.0	1193.0	See Note 6.
Hammer Fall:	30 in.	30 in.	▼			
Rig Type:	CME 75 ATV		▼			
Hammer Type:	Automatic		▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Sample Description (Classification System: Burmister)
	3												Asphalt 1190.6		
	21												Fill (Silty Sand & Gravel) Inferred from B-201A		
	38														
	55														
5	42														
	61														
	50														
	75														
	36														
10	20														
	35														
	65														
	58												13		
	75												Silty Sand 1178.0 & Gravel		
15	68														
		S1	SS	9	4	15	5	50/3"							S1) Refusal, brown fine to coarse SAND and fine to coarse GRAVEL (gray rock fragments in spoon tip), little Silt, wet.
													17		
													Glacial Till 1174.0 (With Boulders / Cobbles)		
20															
		S2	SS	0	0	20	30/0"								S2) Refusal, no recovery.
25															
		S3	SS	24	14	25	35	52	53	26					S3) Very dense, gray fine to coarse SAND and SILT, some fine to coarse Gravel, wet.
30															
		S4	SS	24	18	30	33	47	49	64					S4) Very dense, gray SILT and fine to coarse SAND, some fine to coarse Gravel (gray and white pieces, no reaction to diluted HCl), moist.
35															

Remarks:
1) Borehole located 10 feet West of painted centerline, 13 feet North of existing abutment. Elevation approximately 1191 feet based on Mainline Profile.
2) Sampling began at 15 feet deep. Stratigraphy inferred similar to B-201A between 0.5 and 15 feet deep. Moisture observations of samples are likely elevated due to wash-drive drilling methods.
3) Inferred boulders based on drilling resistance encountered at 16 to 17 feet deep, 20 to 21 feet deep, 36.5 to 38 feet deep (sampled a 10.5" core), 67.5 to 68.7 feet deep (samples a 14" core), and 73 to 74 feet deep.
4) Casing set to 30 feet deep with open-hole drilling methods used below. E-Z Mud drilling fluid added to the wash tub beginning at 31 feet deep.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) 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.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **B-201B**

SMALL REMARK FONT STANDARD 750-09.1 READSBORO BRF 105.GPJ GEODESIGN STANDARD .GDT 12/9/11

BOT. OF FTG.
ELEV. 357.0 M
ELEV. 1171.26 FT

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BORING LOG

Project Name: Readsboro BRF 0105(3)
Readsboro, VT

Boring No.: **B-201B**
Page No.: 2 of 3
File No.: 750-09.1
Checked By: JAG/JFW

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Alan Baribault/Joshua Gilman
Date Started: November 9, 2011 Date Finished: November 17, 2011
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 1191
Station: Offset: ft

	Casing:	Sampler:	Groundwater Observations			
			Date	Depth (ft)	Elev. (ft)	Notes
Type:	Flush	SS				
I.D.:	4.0 in.	1.38 in.				
Hammer Wt.:	140 lbs	140 lbs	▼ 11/17/11, 16:00	-2.0	1193.0	See Note 6.
Hammer Fall:	30 in.	30 in.	▼			
Rig Type:	CME 75 ATV		▼			
Hammer Type:	Automatic		▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Sample Description (Classification System: Burmister)
		S5	SS	17	17	35	30	64	85/5"				Glacial Till (With Boulders / Cobbles) *(Continued)*		S5) Refusal, gray fine to coarse SAND and SILT, trace fine to coarse Gravel, very moist.
		C1	C	10	10	37	[REC= 100%; RQD= 100%]				6.5				C1) Excellent quality, hard, medium-grained gray GNEISS (Boulder).
40															
		S6	SS	6	0	40	23	30/0"							S6) Refusal, no recovery. (sloughed soil in spoon sampler consisted of 3" very wet SAND and Silt, one piece of coarse Gravel)
45															
50															
55															
60															
65															
		C2	C	14	14	67.5	[REC= 100%; RQD= 86%]								C2) Good quality, hard, pale white/tan boulder.
											C				
70															

Remarks:

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) 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.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **B-201B**

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BORING LOG

Project Name: Readsboro BRF 0105(3)
Readsboro, VT

Boring No.: **B-201B**
Page No.: 3 of 3
File No.: 750-09.1
Checked By: JAG/JFW

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Alan Baribault/Joshua Gilman
Date Started: November 9, 2011 Date Finished: November 17, 2011
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 1191
Station: Offset: ft

	Casing:	Sampler:	Groundwater Observations			
			Date	Depth (ft)	Elev. (ft)	Notes
Type:	Flush	SS				
I.D.:	4.0 in.	1.38 in.				
Hammer Wt.:	140 lbs	140 lbs	▼ 11/17/11, 16:00	-2.0	1193.0	See Note 6.
Hammer Fall:	30 in.	30 in.	▼			
Rig Type:	CME 75 ATV		▼			
Hammer Type:	Automatic		▼			

Depth (ft)	Casing Blows/ft	Sample Info: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description (Depth & Elevation(feet))	Symbol	Sample Description (Classification System: Burmister)
													Glacial Till (With Boulders / Cobbles) *(Continued)*		
75															
80															
85															
90															
95															
100															
													101		
													Bottom of Exploration at 101.0 ft 1090.0		
105															

Remarks:
5) Borehole terminated at 101 feet deep, no refusal. Driller noted borehole collapsed approximately 10 feet upon termination.
6) Following termination, artesian water level was measured at 2 feet above ground surface in drill casing after stabilizing for 15 minutes (continued to slowly rise).

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) 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.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane; WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **B-201B**

ESTIMATED PILE
TIP EL=332.61 METERS
OR EL=1091.24 FEET

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: s89j088bor.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: M. LONGSTREET
DESIGNED BY: W. PELLETIER	CHECKED BY: S. SCRIBNER
BORING LOG SHEET 9	SHEET 37 OF 90

VAOT Metric

BORING LOG

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Project Name: Readsboro BRF 0105(3)
Readsboro, VT

Boring No.: **B-202A**
Page No.: 1 of 1
File No.: 750-09.1
Checked By: JAG/JFW

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Alan Baribault
Date Started: November 9, 2011 Date Finished: November 9, 2011
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 1191
Station: Offset: ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type:	CME 75 ATV
Hammer Type:	Automatic

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/9/11, 12:00			None observed.

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
													Asphalt 1190.6		
2		S1	SS	18	13	0.5	17	11	10				Road Base (Sand and Gravel)		S1) Medium dense, light brown fine to coarse SAND, some fine to coarse Gravel, little Silt, slightly moist.
													Fill 1189.0 (Silty Sand with Boulders / Cobbles)		
5		S2	SS	24	5	5	3	2	1	4					S2) Very loose, brown to dark brown fine to coarse SAND, some (+) Silt, trace fine to coarse Gravel, trace decomposed Wood, moist.
10		S3	SS	24	12	10	5	8	9	8					S3) Medium dense, light brown fine to coarse SAND, little fine Gravel, trace Silt (upper 4 inches dark brown SILT and fine to coarse SAND discarded prematurely), moist.
11													Fill 1180.0		
12													(Gravelly Sand with Boulders / Cobbles) 1179.0		
													Bottom of Exploration at 12.0 ft		
15															
20															
25															
30															

Remarks:
1) Borehole located 10 feet East of painted centerline, 8 feet North of existing abutment. Elevation approximately 1191 feet based on Mainline Profile.
2) Boulder/cobbles inferred at 7 to 8 feet deep based on drilling resistance.
3) Augers became crooked after grinding at 7 to 8 feet. Abandon hole and offset 3 feet North to B-202B.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) 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.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **B-202A**

BOT. OF FTG.
ELEV. 357.0 M
ELEV. 1171.26 FT

BORING LOG

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Project Name: Readsboro BRF 0105(3)
Readsboro, VT

Boring No.: **B-202B**
Page No.: 1 of 1
File No.: 750-09.1
Checked By: JAG/JFW

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Alan Baribault
Date Started: November 9, 2011 Date Finished: November 9, 2011
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 1191
Station: Offset: ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type:	CME 75 ATV
Hammer Type:	Automatic

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/9/11, 13:00			None observed.

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
													Asphalt pavement 1190.6		
2													Road Base (Sand and Gravel) Inferred from B-202A 1188.0		
													Fill (Silty Sand with Boulders / Cobbles) Inferred From B-202A		
5.5													1185.5		
													Bottom of Exploration at 5.5 ft		
10															
15															
20															
25															
30															

Remarks:
1) Borehole located 10 feet East of painted centerline, 11 feet North of existing abutment. Elevation approximately 1191 feet based on Mainline Profile.
2) HSA refusal at 5.5 feet deep on inferred boulder. No samples were taken in this borehole.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) 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.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **B-202B**

BOT. OF FTG.
ELEV. 357.0 M
ELEV. 1171.26 FT

BORING LOG

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Project Name: Readsboro BRF 0105(3)
Readsboro, VT

Boring No.: **B-202C**
Page No.: 1 of 1
File No.: 750-09.1
Checked By: JAG/JFW

Boring Company: TransTech Drilling Services
Foreman: John Leonhardt
GeoDesign Rep.: Alan Baribault
Date Started: November 9, 2011 Date Finished: November 9, 2011
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet): 1191
Station: Offset: ft

Casing:	Sampler:
Type: H.S.A.	SS
I.D.: 3.25 in.	1.38 in.
Hammer Wt.: NA	140 lbs
Hammer Fall: NA	30 in.
Rig Type:	CME 75 ATV
Hammer Type:	Automatic

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
▼ 11/9/11, 3:55	15.0	1176.0	Wet sample.

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	Moisture Content (%)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System: Burmister
													Asphalt pavement 1190.6		
2													Road Base (Sand and Gravel) (Inferred from B-202A) 1188.0		
													Fill (Silty Sand with Boulders / Cobbles) Inferred from B-202A		
5															
10															
11													Fill 1180.0		
													(Gravelly Sand with Boulders / Cobbles)		
15		S1	SS	24	14	15	7	43	50	37			Silty Sand & Gravel 1176.0		S1) Very dense, gray with orange/brown/white areas fine to coarse GRAVEL (micaceous flakes) and fine to coarse SAND, some Silt, wet (possible highly weathered cobble or boulder).
17													Bottom of Exploration at 17.0 ft 1174.0		
20															
25															
30															

Remarks:
1) Borehole located 10 feet East of painted centerline, 14 feet North of existing abutment. Elevation approximately 1191 feet based on Mainline Profile. Offset 3 feet North from B-202B.
2) Hole terminated at 17 feet deep due to crooked augers.

Notes:
1) Stratification Lines Represent Approximate Boundary Between Material Types, Transitions May Be Gradual.
2) 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.
A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A=Auger; C=Core; D=Driven; G=Grab; PS=Piston Sampler; SS=Split Barrel (Split Spoon); ST=Shelby Tube; Geo=GeoProbe V=Vane;
WOR/H=Weight of Rod/Hammer
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: **B-202C**

BOT. OF FTG.
ELEV. 357.0 M
ELEV. 1171.26 FT

SMALL REMARK FONT STANDARD 750-09.1 READSBORO BRF 105.GPJ GEODESIGN STANDARD.GDT 12/9/11

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: s89j088bor.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: M. LONGSTREET
DESIGNED BY: W. PELLETIER	CHECKED BY: S. SCRIBNER
BORING LOG SHEET 10	SHEET 38 OF 90

VAOT Metric

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION, AND ITS LATEST REVISIONS.

2. DURING CONSTRUCTION, TRAFFIC SHALL BE MAINTAINED ON A ONE-WAY TEMPORARY BRIDGE CONSTRUCTED UP STREAM OF THE EXISTING STRUCTURE. THE TEMPORARY BRIDGE SHALL NOT BE OPENED TO TRAFFIC UNTIL APRIL 1ST 2013 WITHOUT WRITTEN APPROVAL FROM THE AGENCY. CONSTRUCTION AND MAINTENANCE OF THE TEMPORARY BRIDGE AND ITS APPROACHES SHALL BE PAID FOR UNDER ITEM 528.10, "ONE-WAY TEMPORARY BRIDGE." THE APPROACHES TO THE TEMPORARY BRIDGE SHALL BE PAVED. ACCESS TO ALL DRIVES WITHIN PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES.

3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, AS DIRECTED BY THE RESIDENT ENGINEER AND SECTION 105.

4. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 20 DEGREES CELSIUS, UNLESS NOTED OTHERWISE.

5. THE DETAILS AND DIMENSIONS SHOWN ON THE PROJECT SPECIFIC PLAN AND DETAIL SHEETS TAKE PRECEDENCE OVER THE MORE GENERAL "STRUCTURES DETAIL SHEETS" PROVIDED AFTER THE PLAN SHEETS IN THE INDEX.

6. PLACEMENT OF THE NEW HYDRANT SHALL BE COORDINATED WITH THE TOWN.

EARTHWORK AND RELATED ITEMS

7. TEMPORARY CONSTRUCTION FILLS WITHIN THE WATERCOURSE FOR ANY PURPOSE SHALL CONSIST OF CLEAN STONE FILL AND ONLY UP TO THE ELEVATION INDICATED ON THE CHANNEL CROSS-SECTION DRAWINGS. NO OTHER FILLING IN THE RIVER SHALL OCCUR WITHOUT THE APPROVAL OF THE STREAM ALTERATION ENGINEER.

8. ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE SUPERSTRUCTURE, AND PORTIONS OF EXISTING ABUTMENT 1 AND ABUTMENT 2 THAT INTERFERE WITH THE CONSTRUCTION OF THE NEW ABUTMENTS, EXISTING SEWER/WATER MAINS WITHIN THE BRIDGE LIMITS,AND THE REMOVAL OF THE PIER ABOVE THE ELEVATION PROVIDED ON THE PLAN AND ELEVATION.
   AND ANY EXCAVATION NOT SPECIFICALLY INCLUDED IN:
   ITEM 203.15 COMMON EXCAVATION
   ITEM 203.27 UNCLASSIFIED CHANNEL EXCAVATION
   ITEM 204.20 TRENCH EXCAVATION EARTH
   OR ITEM 204.25 STRUCTURE EXCAVATION
   SHALL BE PAID FOR UNDER "REMOVAL OF STRUCTURE." REFER TO TYPICAL ABUTMENT SECTION.

9. THE COST OF THE TEMPORARY CAUSEWAY FOR REMOVAL OF THE EXISTING PIER SHALL BE INCIDENTAL TO PAY ITEM 529.15 "REMOVAL OF STRUCTURE."

10. REMOVAL OF THE EXISTING SEWER/WATER MAINS OUTSIDE OF THE BRIDGE LIMITS WILL BE PAID FOR UNDER "TRENCH EXCAVATION OF EARTH".

11. ITEM 613.13 "STONE FILL, TYPE IV" SHALL BE PLACED UNDER THE BRIDGE (AS SHOWN IN THE PLANS) BEFORE THE NEW STRUCTURAL STEEL IS SET.

12. THE CONTRACTOR MAY SUBSTITUTE SUBBASE MATERIAL FOR THE SAND BORROW SHOWN ON THE PLANS. THE SUBBASE MATERIAL SHALL BE THE TYPE SPECIFIED AND PLACED AS REQUIRED. IF THIS SUBSTITUTION IS MADE, A GEOTEXTILE MEETING THE REQUIREMENTS OF SECTION 649 FOR "GEOTEXTILE FOR ROAD BED SEPARATOR" SHALL BE PLACED BETWEEN THE SUBGRADE AND THE SUBBASE MATERIAL. ALL COSTS ASSOCIATED WITH SUBSTITUTION (INCLUDING GEOTEXTILE) WILL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 203.31 "SAND BORROW."

13. THE HEIGHT OF THE FILL BEHIND THE NEW ABUTMENTS SHALL BE LIMITED TO THE BRIDGE SEAT ELEVATION UNTIL THE DECK HAS BEEN POURED AND CURED.

STRUCTURAL STEEL

14. THE EXISTING STRUCTURAL STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSITION OF THE REMOVED EXISTING STRUCTURAL STEEL.

15. UNLESS OTHERWISE NOTED, ALL NEW STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270M/M270 GRADE 345W AND SHALL BE PAID FOR UNDER ITEM 506.55, "STRUCTURAL STEEL, PLATE GIRDER".

16. STRUCTURAL STEEL MEMBERS DESIGNATED "CVN" IN THE PLANS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SUBSECTION 714.01.

17. ALL FIELD CONNECTIONS SHALL BE MADE USING M22 BOLTS MEETING ASTM A325, TYPE 3. UNLESS OTHERWISE NOTED, HOLE DIAMETER SHALL BE 24MM. IN PAINTED AREAS ALL FIELD CONNECTIONS SHALL BE MADE WITH M22, TYPE 1 BOLTS MEETING THE REQUIREMENTS OF ASTM A325. ALL TYPE 1 BOLTS SHALL BE GALVANIZED PER AASHTO M232M/M232. ANY CONNECTIONS NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.

18. 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.

19. FLEMING BRACKETS OR SIMILAR FALSEWORK SHALL BE SPACED AS REQUIRED BY DESIGN, BUT SHALL BE LIMITED TO A MAXIMUM SPACING OF 1.22 M. THE DESIGN OF FALSEWORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION AND REMOVAL OF FALSEWORK WITH THE RELOCATION OF THE SEWER AND WATER LINES. BOTTOM SUPPORT OF FLEMING BRACKET OR FALSEWORK SHALL BE NO HIGHER THAN ¼ OF THE WEB DEPTH MEASURED FROM THE BOTTOM FLANGE.

20. ANY BOLT HOLES IN THE WEBS OF FASCIA GIRDERS NOT OTHERWISE FILLED SHALL BE FILLED WITH BUTTON HEAD OR HEX HEAD BOLTS. THE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19.

21. THE ENDS OF GIRDERS ARE TO BE VERTICAL IN FINAL POSITION.

22. THE NORTHERN ENDS OF THE 5 GIRDERS SHALL BE PAINTED FOR A DISTANCE OF 3.0 M FROM ABUTMENT #2. ALL CROSS FRAMES, DIAPHRAGM CONNECTION PLATES, DOWNSPOUTS AND BEARING STIFFENERS LOCATED WITHIN THIS ZONE SHALL ALSO BE PAINTED.THE PAINT SYSTEM UTILIZED SHALL CONFORM TO THE REQUIREMENTS OF SECTION 513 AND THE FINAL COLOR SHALL BE BROWN, COLOR CHIP NO. 20059 IN CONFORMANCE WITH SUBSECTION 708.03. BROWN GREASE, CONFORMING TO SUBSECTION 708.04, SHALL BE APPLIED PER SUBSECTION 513.06 TO THE SPECIFIED SURFACES WITHIN THE 3.0M ZONE.

23. BRIDGE DOWNSPOUTS, WITH THE EXCEPTION OF PAINTING SHALL BE PAID FOR UNDER ITEM 506.60, "STRUCTURAL STEEL".

ELASTOMERIC BEARINGS AND ANCHOR BOLTS

24. ELASTOMERIC BEARING SHALL COMPLY WITH THE REQUIREMENTS OF SUBSECTION 731.03 AND BE PAID FOR UNDER ITEM 531.11.

25. ANCHOR BOLTS FOR BEARINGS SHALL MEET THE REQUIREMENTS OF AASHTO M314, (ASTM F1554), 380 MPa (55ksi).

CONCRETE

26. SUBSTRUCTURE AND APPROACH SLAB CONCRETE SHALL BE HIGH PERFORMANCE CLASS B AND SHALL BE PAID FOR UNDER ITEM 501.34, "CONCRETE, HIGH PERFORMANCE CLASS B". THE BRIDGE DECK INCLUDING BACK WALLS, APPROACH SLAB BRACKETS AND SIDEWALK CONCRETE SHALL BE SPECIAL PROVISION HIGH PERFORMANCE CONCRETE CLASS A LOW CEMENT AND SHALL BE PAID FOR UNDER ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT)". REFER TO SPECIAL PROVISIONS FOR CONCRETE FOR BRIDGE RAILING.
   (ALL CONCRETE/GROUT FOR MICROPILES IS COVERED BY A SPECIAL PROVISION, SEE NOTE 36.)

27. ALL BRIDGE RAILING SHALL BE CONSTRUCTED AND PAID FOR IN ACCORDANCE WITH THE SPECIAL PROVISION 900.640, "(BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION)." THE CONCRETE FOR THIS BRIDGE RAILING SHALL MEET THE REQUIREMENTS OF SPECIAL PROVISION HIGH PERFORMANCE CONCRETE CLASS A LOW CEMENT AND SHALL BE PAID FOR UNDER ITEM 900.640, "SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION)."

28. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL. ALL OTHER AREAS OF BRIDGE SEATS SHALL BE SLOPED (AWAY FROM THE BEARING DEVICES) AT 80MM PER METER. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE GIVEN A MAGNESIUM FLOAT FINISH.

29. CONCRETE PORTIONS OF ABUTMENTS AND WINGWALLS ABOVE BRIDGE SEAT ELEVATIONS SHALL NOT BE PLACED UNTIL FINISH GRADES HAVE BEEN DETERMINED BY THE RESIDENT ENGINEER.

30. ALL NEW CONCRETE INDICATED ON CONSULTANT DRAWINGS (C1-C4, E1, E2) AND IN SPECIAL PROVISIONS FOR THE SEWER, WATER LINES (INCLUDING THE POWER PANEL WORK FOR THE HEAT TRACE SYSTEM AND THRUST BLOCKS) SHALL BE HIGH PERFORMANCE CLASS B AND SHALL BE INCIDENTAL TO THESE SPECIAL PROVISIONS.

31. IN ACCORDANCE WITH SUBSECTION 506.23(A) AND AS DIRECTED BY THE RESIDENT 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 WILL 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.

32. THE DECK IS TO BE POURED IN ONE CONTINUOUS POUR WITH A MAXIMUM DURATION OF EIGHT HOURS. IF CIRCUMSTANCES BEYOND THE CONTRACTOR'S CONTROL PREVENT THIS FROM BEING ACCOMPLISHED, A TRANSVERSE CONSTRUCTION JOINT SHALL BE USED BETWEEN ADJACENT POURS. A MINIMUM 96 HOUR DELAY BETWEEN ADJACENT POURS SHALL BE OBSERVED.

33. LOADING ALLOWANCE ON THE NEW DECK SHALL BE IN ACCORDANCE WITH SUBSECTION 501.18(B).

34. WATER REPELLENT, SILANE, ITEM 514.10, SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.

35. ALL SUPERSTRUCTURE REINFORCING STEEL SHALL BE EPOXY COATED AND PAID FOR UNDER ITEM 507.17, "EPOXY COATED REINFORCING STEEL". CUTTING AND REPAIRING DAMAGED AREAS OF COATED REINFORCING STEEL SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 507.04.

MICROPILES

36. ALL MATERIALS AND WORK RELATED TO THE INSTALLATION AND TESTING OF MICROPILES SHALL BE IN ACCORDANCE WITH SECTION 900 OF THE SPECIAL PROVISIONS FOR MICROPILES.

WATER AND SEWER MAINS ON BRIDGE

37. ALL WORK RELATED TO THE MAINTENANCE/TEMPORARY RELOCATION, TRANSFER OF SERVICE OR INSTALLATION AND SUPPORT OF NEW WATER OR SEWER SYSTEM PIPING SHALL BE PAID FOR UNDER SECTION 628, SECTION 629 AND THE SPECIAL PROVISIONS AS APPROPRIATE.

38. FOR INFORMATION REGARDING THE SEWER OR WATER MAIN CHANGES AND RELOCATIONS, REFER TO SPECIAL PROVISIONS AND DRAWINGS PREPARED BY DUFRESNE GROUP, INCLUDED IN THESE PLANS.

TRAFFIC CONTROL

39. PAYMENT FOR ALL TRAFFIC CONTROL SHALL BE INCLUDED IN ITEM 900.645 SPECIAL PROVISION, "TRAFFIC CONTROL, ALL-INCLUSIVE." THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL TEMPORARY ON AND OFF-PROJECT SIGNS AND BARRICADES. FLAGGERS WILL BE PAID FOR SEPARATELY UNDER ITEM 630.15.

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088forms.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
PROJECT NOTES	SHEET 39 OF 90

VAOT Metric

MAINLINE STA. 1+067.000
CHANNEL STA. 5+015.000
AT 90°

MAINLINE STA. 1+060.000
SIDE ROAD STA. 2+000.000
ASKEW AT 15°36'00"

TH-2
MASSACHUSETTS

BEGIN APPROACH SLAB
STA. 1+062.500
FG = 361.122

BEGIN BRIDGE
STA. 1+068.600
FG = 361.234

℄ BEARING (FIXED)
STA. 1+069.200
FG = 361.246

END BRIDGE
STA. 1+101.580
FG = 362.550

℄ BEARING (EXP.)
STA. 1+100.820
FG = 362.504

PROPOSED WATER LINE
(SEE CONSULTANT PLANS
FOR ADDITIONAL INFORMATION)

PROPOSED SEWER LINE
(SEE CONSULTANT PLANS
FOR ADDITIONAL INFORMATION)

STONE FILL, TYPE IV

STONE FILL, TYPE IV

1:1.5

2.750 R

WW 1

WW 2

WW 3

WW 4

CZ

SIDEWALK

648
TYP

N22°51'58.8"E

1+060

1+080

1+100

1+120

END APPROACH SLAB
STA. 1+107.680
FG = 362.945

CAST IN PLACE CURB,
TYPE B (TYP)

TH-2 TO
VT-100

VT STATE PLANE GRID

WEST BRANCH OF
DEERFIELD RIVER

CHANNEL
STATIONING

ALL CATCH BASINS AND PIPES IN
THIS PLAN VIEW ARE PROPOSED.

PLAN

0 1 2 4 6 8 10

SCALE = 1:100

PAY LIMITS SPECIAL PROVISION
(GUARDRAIL APPROACH SECTION TO
CONCRETE BRIDGE RAILING) (TL-2)

HD STEEL BEAM GUARDRAIL, GALVANIZED

PAY LIMITS SPECIAL PROVISION (BRIDGE RAILING,
GALVANIZED STEEL TUBING/CONCRETE COMBINATION)
39080 RIGHT/ 35580 LEFT

365
360
355
350

FIXED

EXP.

Q100 = 358.400

OHW EL= 355.391

PIER TO BE REMOVED
ABOVE EL. 354.500

STONE FILL, TYPE IV

STONE FILL, TYPE IV

ELEVATION

0 1 2 4 6 8 10

SCALE = 1:100

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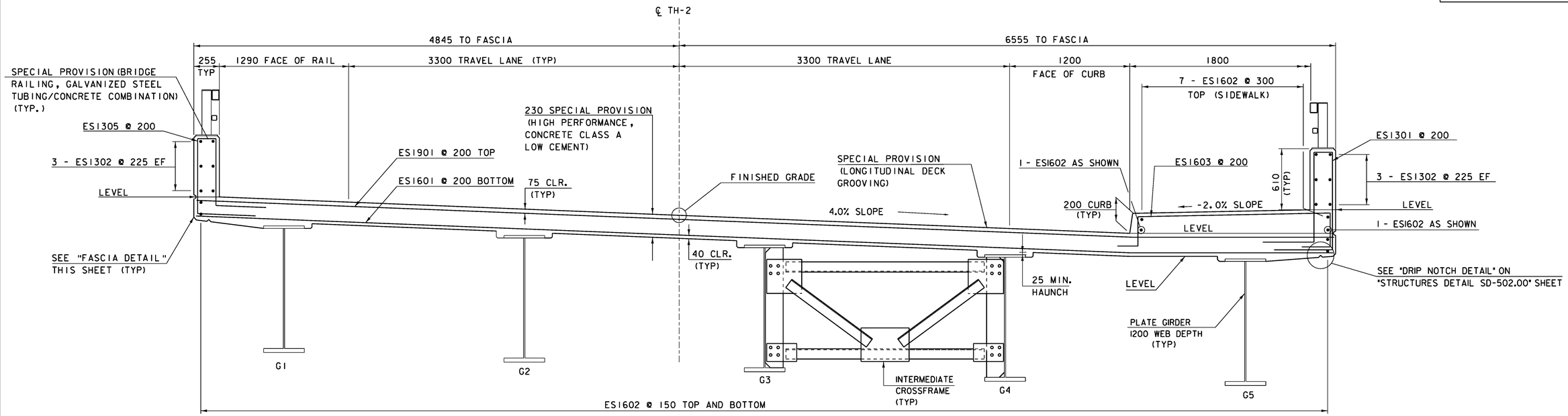
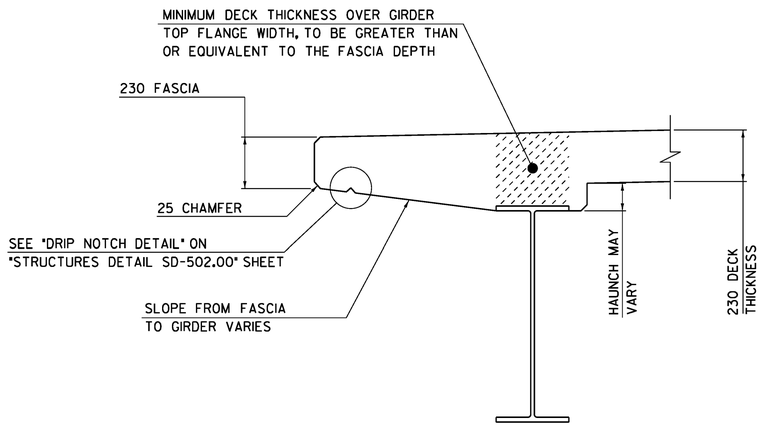
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
PLAN AND ELEVATION	SHEET 40 OF 90



TYPICAL BRIDGE DECK SECTION

0 1 2

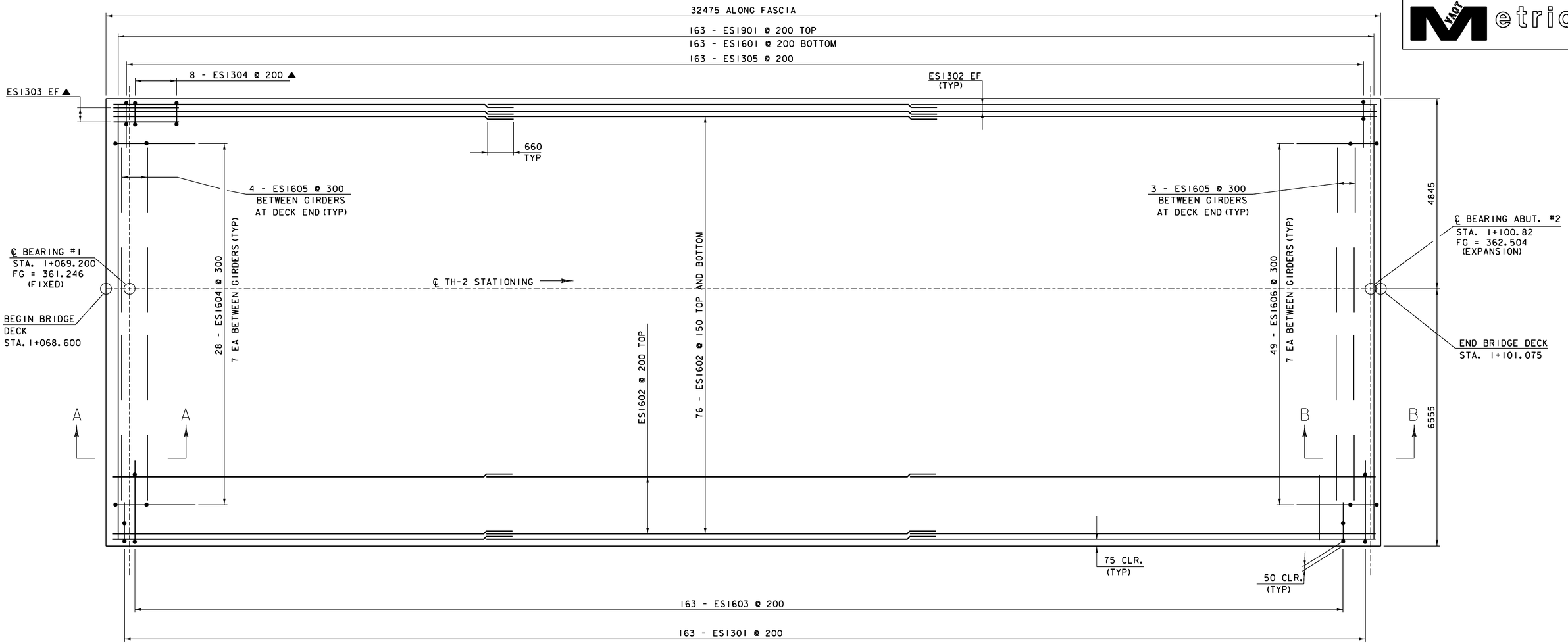
SCALE = 1:20



FASCIA DETAIL

NTS

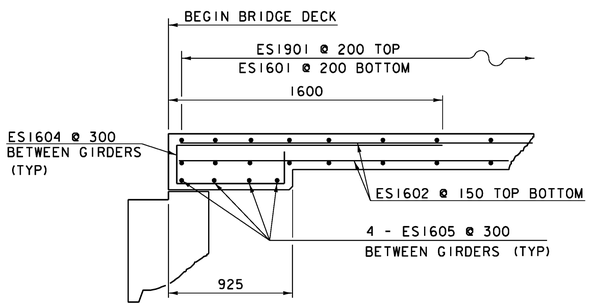
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
BRIDGE TYPICAL	SHEET 41 OF 90



DECK REINFORCING PLAN

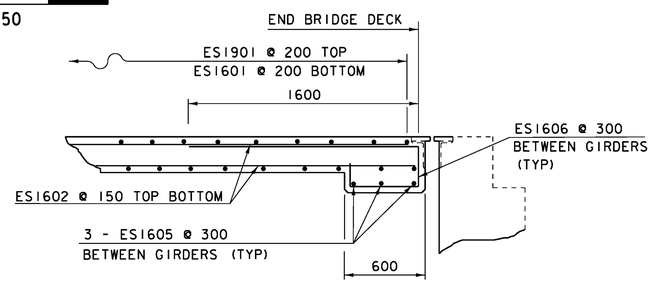
0 1 2 3 4 5

SCALE = 1:50



SECTION A-A

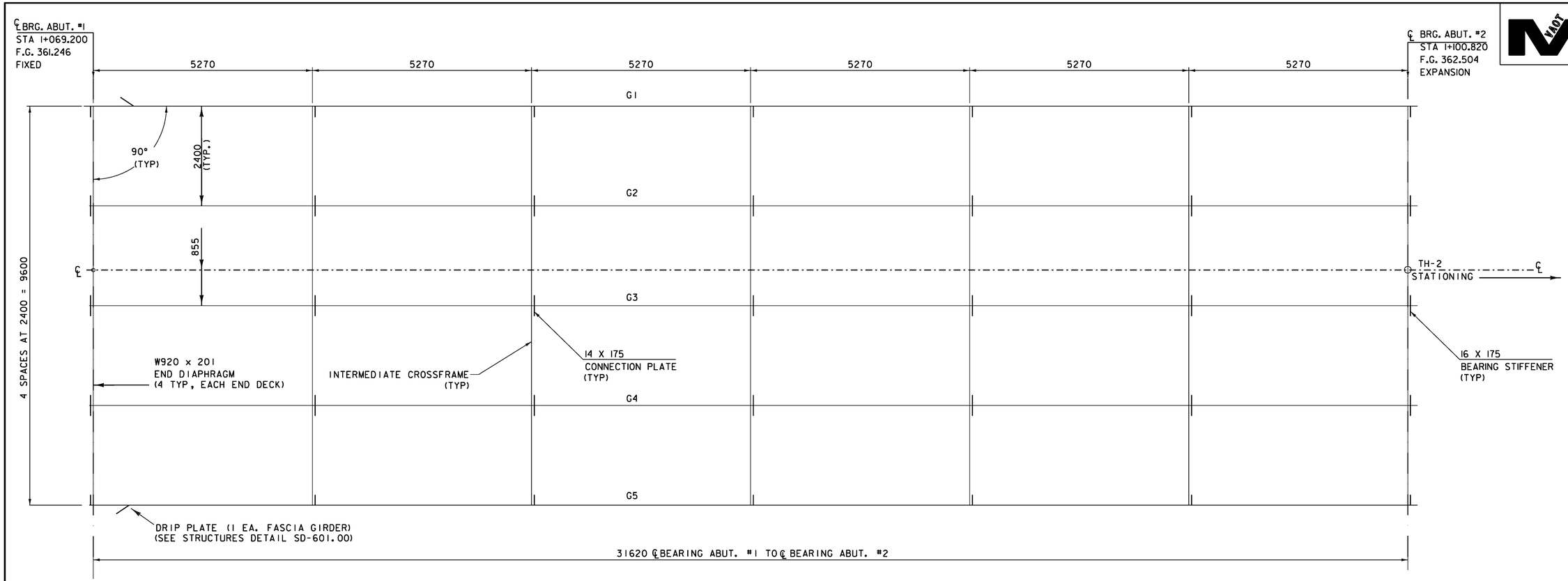
NTS



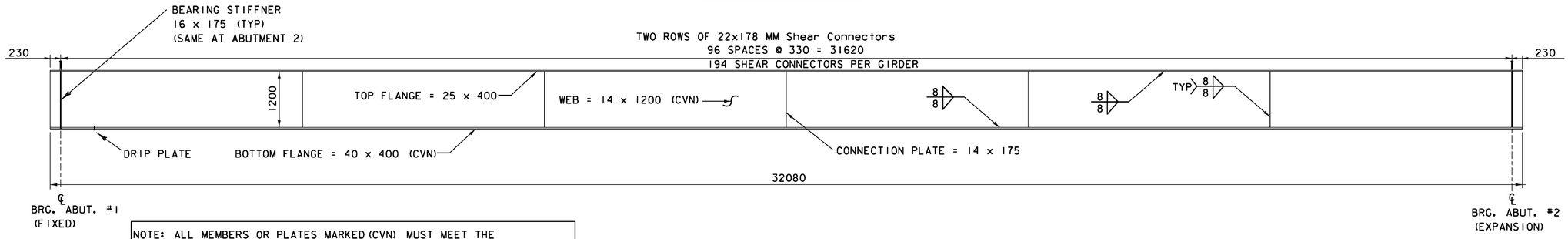
SECTION B-B

NTS

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
DECK REINFORCING LAYOUT SHEET	SHEET 42 OF 90



FRAMING PLAN

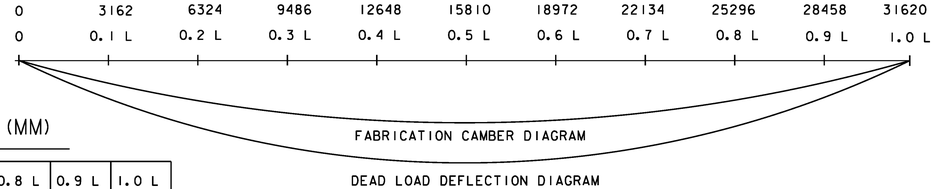


NOTE: ALL MEMBERS OR PLATES MARKED (CVN) MUST MEET THE REQUIREMENTS OF THE CHARPY V-NOTCH TEST FOR MAIN MEMBERS AS INDICATED IN SECTION 714.

TYPICAL EXTERIOR GIRDER ELEVATION

CAMBER AND DEFLECTION TABLE (MM)

LOCATION	0	0.1 L	0.2 L	0.3 L	0.4 L	0.5 L	0.6 L	0.7 L	0.8 L	0.9 L	1.0 L
FABRICATION CAMBER	0	21	34	41	44	44	44	41	34	21	0
DEAD LOAD DEFLECTION (EXCLUDES GIRDER SELF WT.)	0	29	54	75	88	94	88	75	54	29	0



CAMBER DIAGRAM

(NOT TO SCALE)

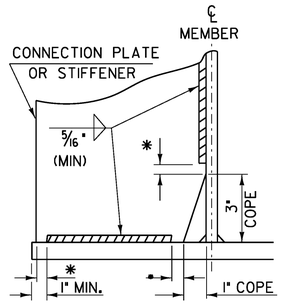
0 1 2 3 4 5

SCALE = 1:50 (UNLESS NOTED OTHERWISE)

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

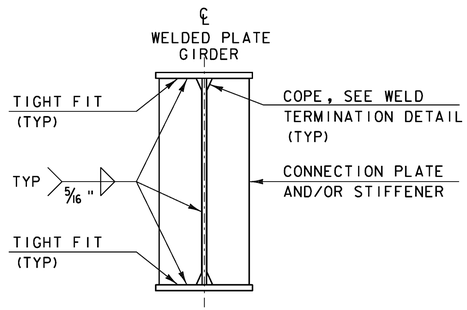
FILE NAME: 89J088/STR/sJ088fram.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
FRAMING PLAN AND GIRDER ELEVATION

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 43 OF 90

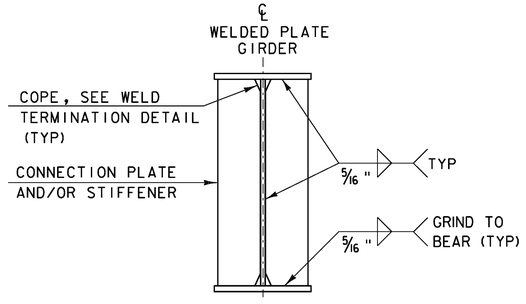


WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

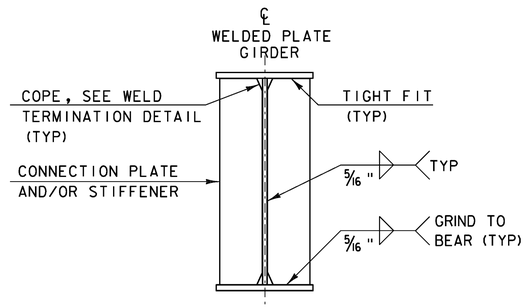
*NO WELD FOR 3/8" MIN. 7/8" MAX. (EXCEPT MUST MAINTAIN 1" MINIMUM FROM EDGE OF FLANGE)



INTERMEDIATE CONNECTION PLATES AND/OR STIFFENERS FOR WELDED PLATE GIRDERS

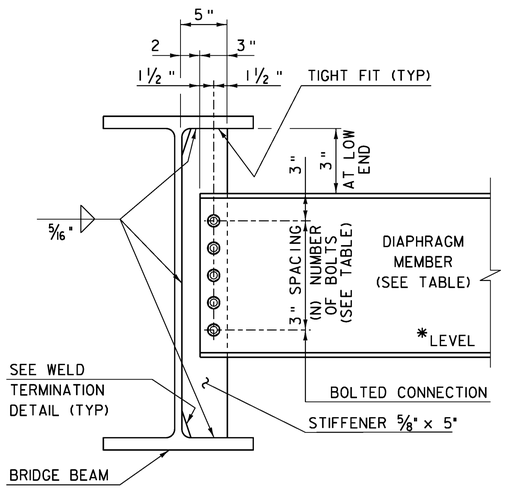


ABUTMENT BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



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

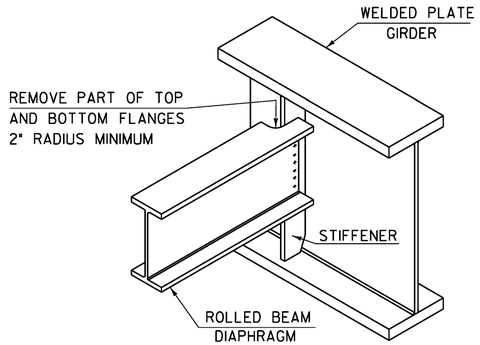
INTERMEDIATE DETAIL IS ONLY USED WHEN PLATE DOES NOT OCCUR AT AN ABUTMENT OR PIER.



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

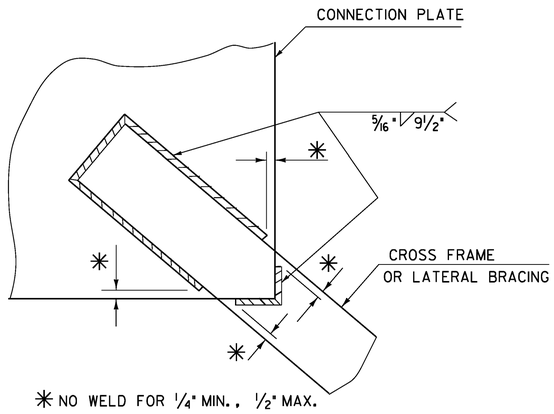
END DIAPHRAGMS FOR 24" TO 48" BRIDGE BEAMS

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



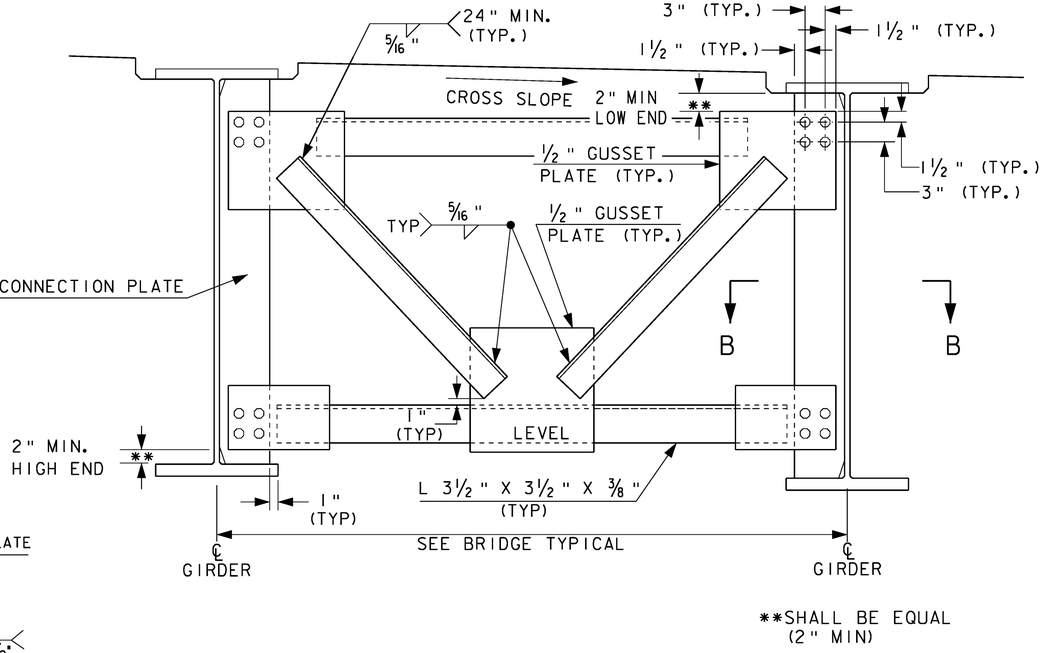
SEE CONTRACT DRAWINGS FOR SIZES OF MEMBERS AND CONNECTION DETAILS

ROLLED BEAM USED AS DIAPHRAGM



* NO WELD FOR 1/4" MIN., 1/2" MAX.

WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING



**SHALL BE EQUAL (2" MIN)

INTERMEDIATE CROSS FRAME

PROJECT NAME:	READSBORO
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DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
END DIAPHRAGM AND INTERMEDIATE DETAILS	SHEET 44 OF 90

BEARING NOTES

1) FIXED AND EXPANSION BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.11 "BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD" AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.

2) ALL MATERIALS SHALL CONFORM TO SECTION 14 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 18 OF AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS AND ALL AASHTO OR ASTM SPECIFICATIONS REFERENCED IN THE CONTRACT DOCUMENTS.

3) THE ELASTOMERIC COMPOUND SHALL BE VIRGIN CRYSTALLIZATION RESISTANT POLYCHLOROPENE (NEOPRENE) OR VIRGIN NATURAL POLYISOPRENE (NATURAL RUBBER) AS THE RAW POLYMER, EXCEPT WHEN USING A DISC THE COMPOUND SHALL BE BASED ON POLYETHER URETHANE, USING ONLY VIRGIN MATERIALS. THE RESULTING PRODUCT SHALL BE FREE OF POROUS AREAS, WEAK SECTIONS, BUBBLES, FOREIGN MATTER, OR OTHER DEFECTS AFFECTING SERVICEABILITY. IT SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 251.

4) 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 THIS SHEET. THE ALTERNATE SHALL MAINTAIN THE ANCHORAGE SYSTEM SHOWN AND SHALL BE DESIGNED PER THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMMODATE AN ALTERNATIVE CONFIGURATION.

5) STEEL REINFORCED ELASTOMERIC PADS SHALL BE WITHIN THE TOLERANCES LISTED IN TABLE 2 IN AASHTO M251. EXTERNAL LOAD PLATES SHALL BE WITHIN THE TOLERANCES GIVEN IN SECTION 18 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.

6) THE PREFORMED BEARING PAD BENEATH THE MASONRY PLATE SHALL HAVE THE SAME SIZE AND ANCHOR BOLT HOLE LAYOUT AS THE CORRESPONDING MASONRY PLATE.

7) BEARING SHALL BE SET LEVEL AND PARALLEL WITHIN 3 MM/METERr (0.03125 IN./FT.) WITH FULL AND UNIFORM BEARING. THE CONCRETE UNDER THE BEARING DEVICE SHALL BE LEVEL.

8) DURING ANY WELDING, SURFACES IN CONTACT WITH THE ELASTOMER SHALL BE RESTRICTED TO 200 DEGREES FAHRENHEIT, AND SURFACES IN CONTACT WITH PTFE SHALL BE RESTRICTED TO 300 DEGREES FAHRENHEIT. TEMPERATURE SHALL BE DETERMINED BY TEMPERATURE INDICATING WAX PENCILS OR OTHER SUITABLE MEANS.

9) PRIOR TO ORDERING MATERIALS AND STARTING THE WORK, THE CONTRACTOR SHALL SUBMIT A DRILLING AND MORTARING PROPOSAL TO THE ENGINEER FOR APPROVAL, INCLUDING A PREMIXED MORTAR MATERIAL BRAND NAME.

10) THE DRILLED HOLES TO BE MORTARED SHALL BE THOROUGHLY CLEANED, WETTED, AND FREE OF STANDING WATER.

11) THE MORTAR SHALL BE MIXED IN A MECHANICAL MIXER ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE READILY POURABLE SO THAT WHEN POURED IT COMPLETELY FILLS THE REMAINING HOLE CAVITIES. THE PLACEMENT OF MORTAR FOR EACH BEARING SHALL BE CONTINUOUS AND COMPLETE AT ALL HOLE LOCATIONS.

12) ALL EXPOSED MORTAR SHALL BE CURED FOR A PERIOD OF NOT LESS THAN THREE (3) DAYS BY THE WETTED BURLAP METHOD IN ACCORDANCE WITH SECTION 501. CURING SHALL COMMENCE AS SOON AS PRACTICAL AFTER MORTAR PLACEMENT. THE CONTRACTOR SHALL NOT APPLY ANY FORCES TO THE ANCHOR BOLTS DURING THE CURING PERIOD.

13) USE THE FOLLOWING PROCEDURE FOR INSTALLING DOUBLE-NUTTED ANCHOR BOLTS : INSTALL THE LOWER NUT IN CONTACT WITH TOP OF SOLE PLATE, AND THEN BACK OFF ½ TURN. INSTALL UPPER NUT SNUG TIGHT TO PREVENT LOWER NUTS FROM LOOSENING.

14) THE BEARING MANUFACTURER SHALL INCLUDE A TEMPERATURE SETTING TABLE ON THE FABRICATION DRAWINGS.

15) BRIDGE SEAT ELEVATIONS ARE BASED ON THE BEARING HEIGHTS SHOWN. PRIOR TO CONSTRUCTING EITHER ABUTMENT, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE PROPOSED BEARING HEIGHT AS PROVIDED BY THE MANUFACTURER AND ANY ELEVATION MODIFICATIONS REQUIRED.

16) BOLTS INSTALLED IN PAINTED STRUCTURAL COMPONENTS SHALL BE TYPE 1, SHALL BE PROVIDED WITH APPROPRIATE NUTS AND WASHERS, AS REQUIRED, AND THE COMBINATION OF BOLT, NUT, AND WASHER SHALL BE MECHANICALLY GALVANIZED IN ACCORDANCE WITH AASHTO M 298, CLASS 50, TYPE 1.

17) BOLTS FURNISHED FOR BEARINGS SHALL CONFORM TO SUBSECTION 714.08. THE BOLTS, NUTS, AND WASHERS FURNISHED SHALL BE TESTED AND CERTIFIED AS MEETING THE REQUIREMENTS OF THE ZINC THICKNESS TEST AS SPECIFIED IN SUBSECTION 714.05, IN ADDITION TO ANY OTHER TEST AND CERTIFICATION REQUIREMENTS.

18) THE WELDS FOR THE SOLE PLATE CONNECTION SHOULD ONLY BE ALONG THE LONGITUDINAL GIRDER AXIS. TRANSVERSE JOINTS SHOULD BE SEALED WITH AN ACCEPTABLE CAULKING MATERIAL.

19) GALVANIZING THAT HAS BEEN DAMAGED SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A780, STANDARD PRACTICE FOR REPAIR OF DAMAGED HOT DIPPED GALVANIZED COATINGS, ANNEX A2. THE PAINT USED IN THE REPAIR SHALL BE ORGANIC-RICH, CONTAINING 92 PERCENT(MIN.) ZINC BY WEIGHT IN THE DRY FILM. THE PAINT SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS TO A THICKNESS EQUIVALENT TO THE SURROUNDING GALVANIZING.

20) METALIZING THAT HAS BEEN DAMAGED SHALL BE REPAIRED USING THE METHODS DESCRIBED IN NOTE 19.

21) STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM 4MM EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.

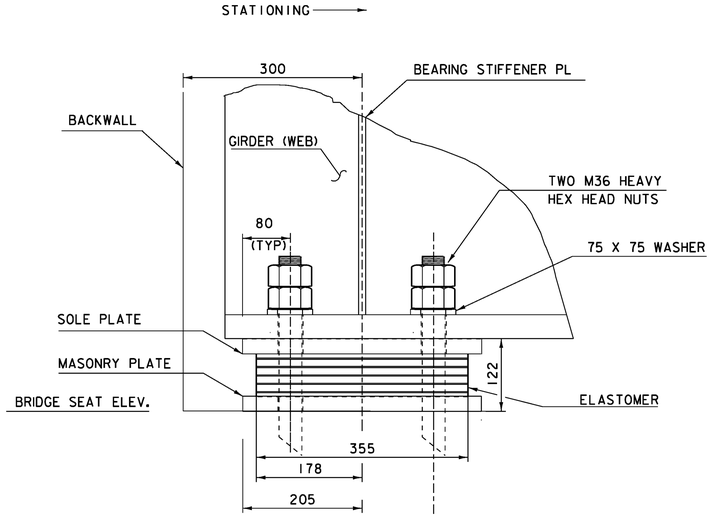
BEARING DESIGN CRITERIA:

A) MASONRY PLATE TO CONCRETE DESIGN PRESSURE = **7.5 MPa** Max
B) DESIGN ROTATION = **0.008 RAD**
C) HORIZONTAL CAPACITY SHALL BE MINIMUM OF 20% VERTICAL LOAD IN ANY UNRESTRAINED DIRECTION.
D) DESIGN LOADS PER BEARING **(UNFACTORED):**
RDL = 400 kN = 89.5 KIPS
(89.5 =SUM OF DC1=60.8kips, DC2=15.7kips, DW=13.0kips)
RLL = 354 kN= 79.5 KIPS (HL-93)
E) NO FABRIC REINFORCEMENT WILL BE ALLOWED IN ELASTOMERIC PADS

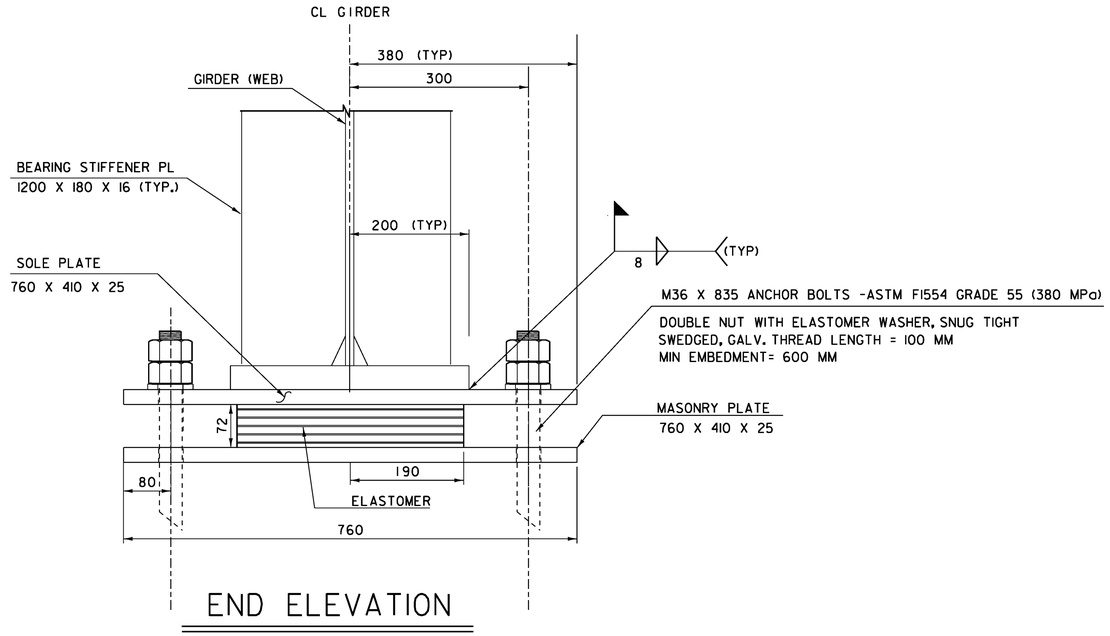
Material Property	Test Method	Required Result
Hardness	ASTM D 2240	design hardness +/- 5 points
	or	
Shear Modulus	ASTM D 412 with AASTHO M 251 Section 8.8.4	design shear modulus +/- 15%
Low Temperature Brittleness	ASTM D 746 Procedure B	Pass Grade 4 test
Shear Bond Strength	AASHTO M 251 Annex A2 or Appendix X2	Pass
Min Tensile Strength	ASTM D 412	2250 psi
Min Ultimate Elongation	ASTM D 412	(650 - 5 x design hardness)%

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

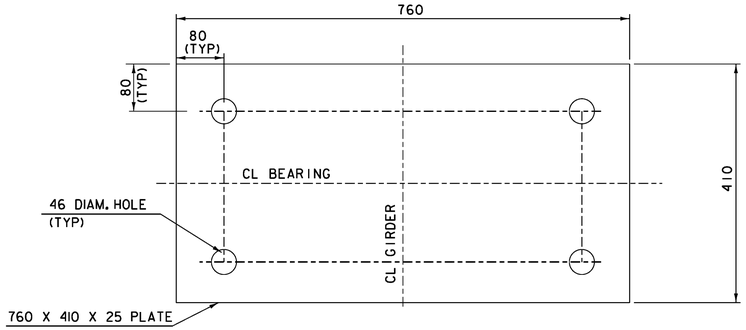
FILE NAME: 89J088/STR/s89J088forms.dgn PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER CHECKED BY: W. PELLETIER
BEARING NOTES SHEET 45 OF 90



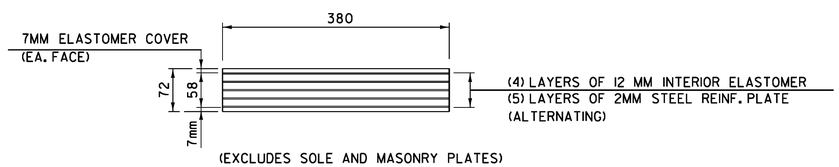
SIDE ELEVATION



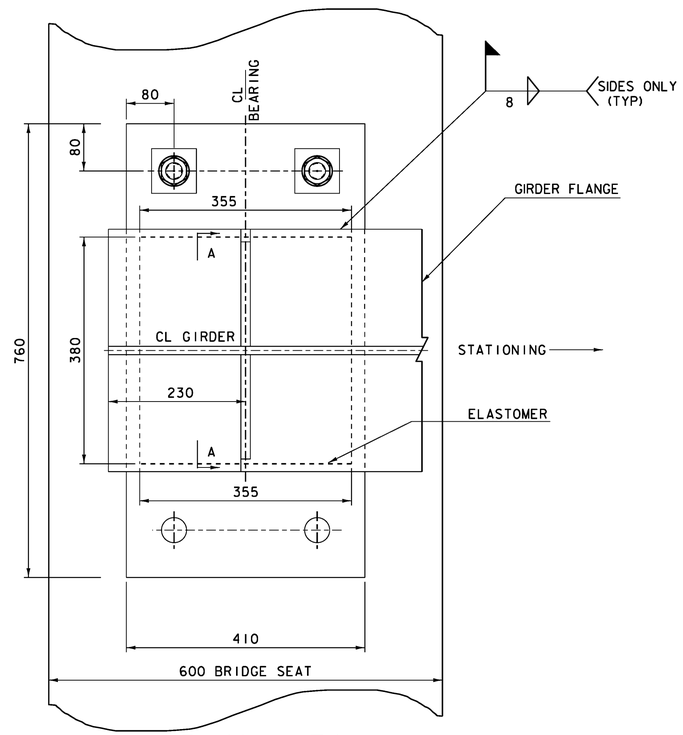
END ELEVATION



SOLE & MASONRY PLATES



ELASTOMER SECTION A-A



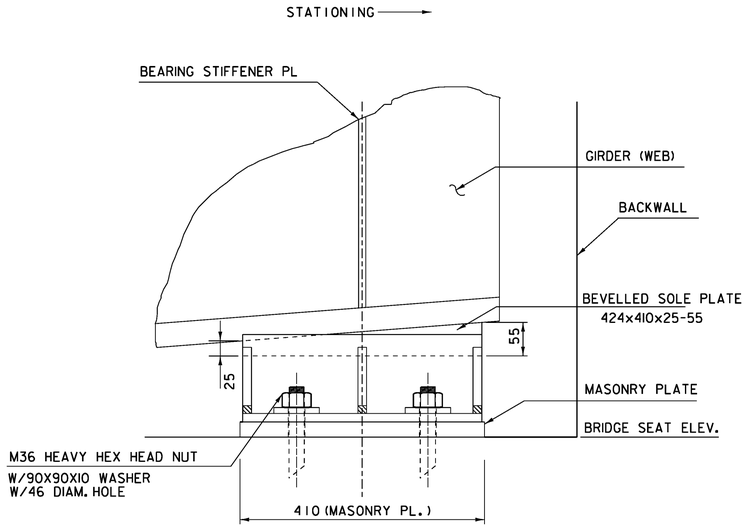
PLAN VIEW

FIXED BEARING-ABUTMENT 1

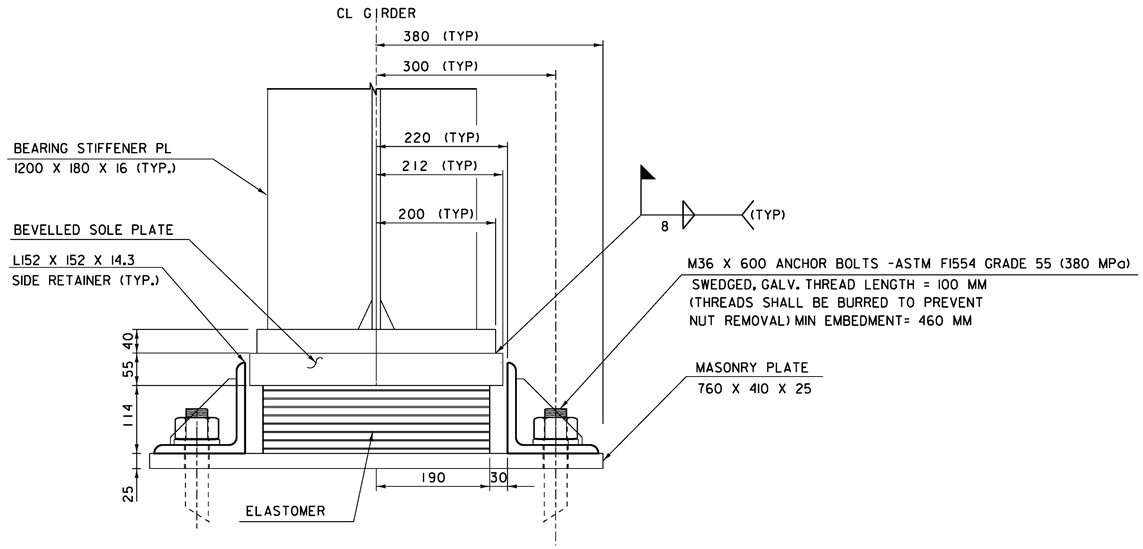
0 0.25 0.5

SCALE = 1:5

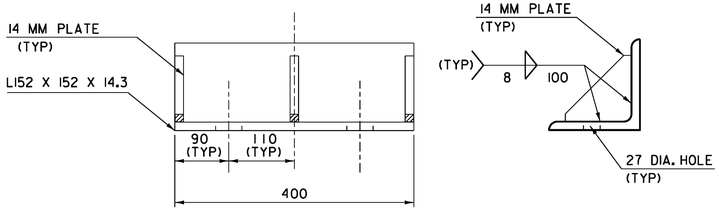
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088brg.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: W. PELLETIER
DESIGNED BY: W. PELLETIER	CHECKED BY: N. VANDENBERG
FIXED BEARING ABUTMENT 1	SHEET 46 OF 90



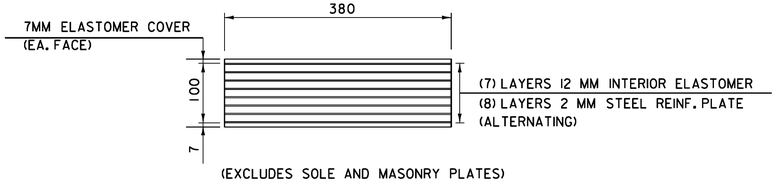
SIDE ELEVATION



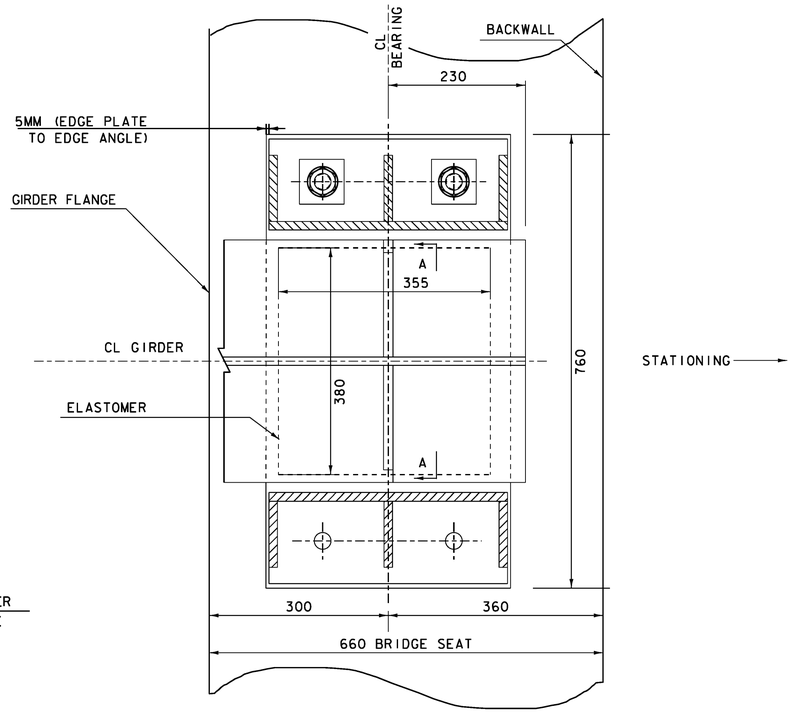
END ELEVATION



SIDE RETAINER



ELASTOMER SECTION A-A



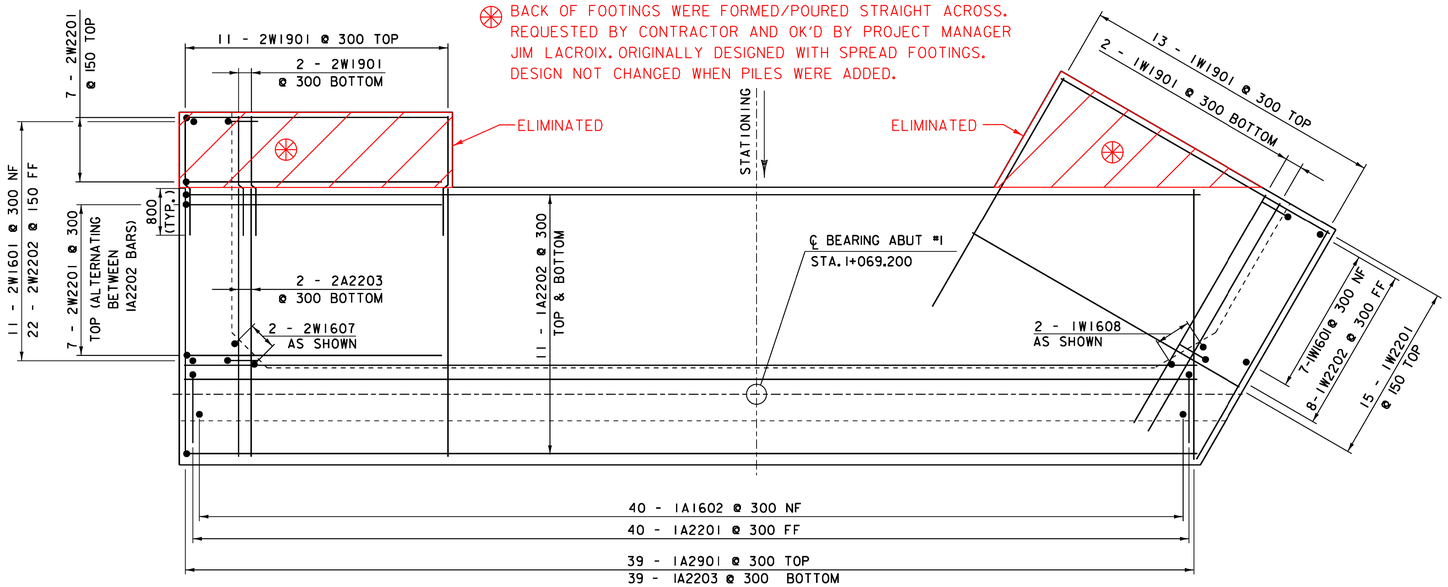
PLAN VIEW

EXPANSION BEARING-ABUTMENT 2

0 0.25 0.5

SCALE = 1:5

PROJECT NAME: READSBORO	
PROJECT NUMBER: BRF 0105 (3)	
FILE NAME: 89J088/STR/s89J088brg.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: W. PELLETIER
DESIGNED BY: W. PELLETIER	CHECKED BY: N. VANDENBERG
EXPANSION BEARING ABUTMENT 2	SHEET 47 OF 90



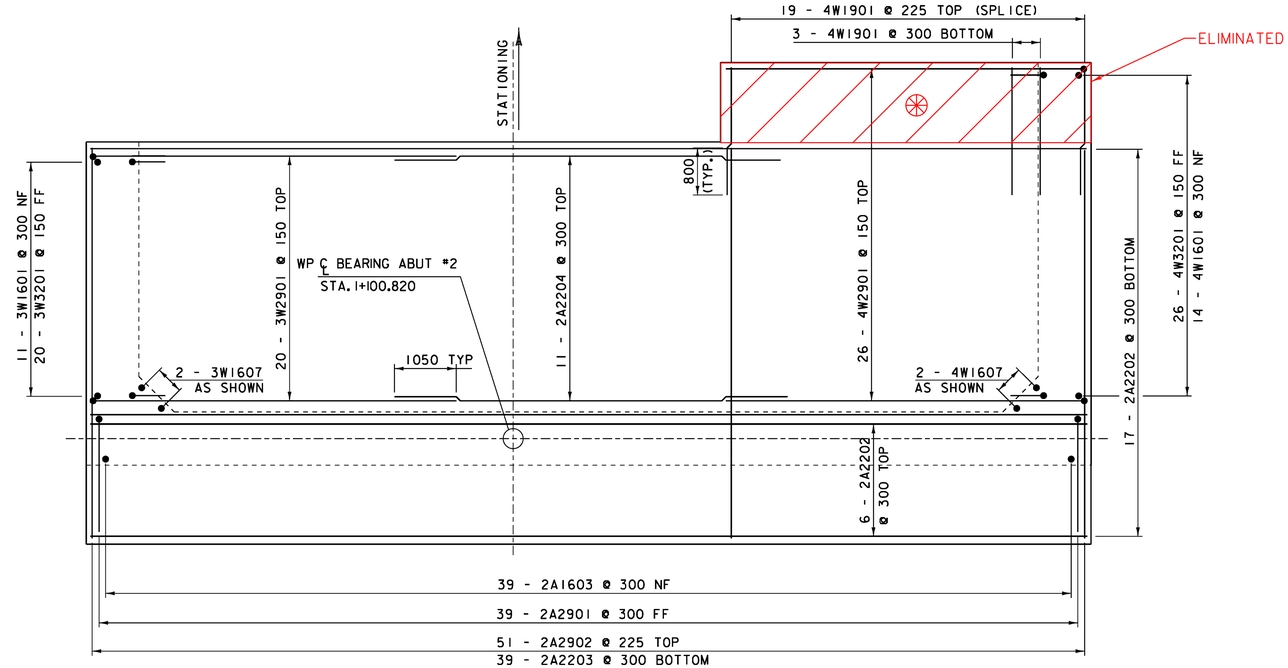
ABUTMENT #1 FOOTING REINFORCING PLAN

0 1 2 3 4

SCALE = 1:40

SEE SHEET 49 FOR PILE LOCATIONS.

PORTION OF FOOTINGS ELIMINATED DUE TO LACK OF NEED, PILES USED! SEE SHEET 49



ABUTMENT #2 FOOTING REINFORCING PLAN

0 1 2 3 4

SCALE = 1:40

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
〰 = HORIZONTAL JOINT INTENTIONALLY ROUGHENED

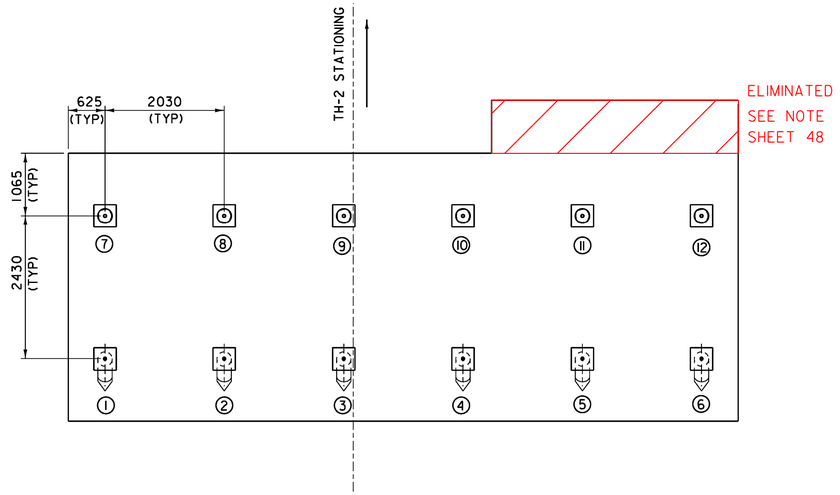
75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ABUTMENT FOOTING DETAILS

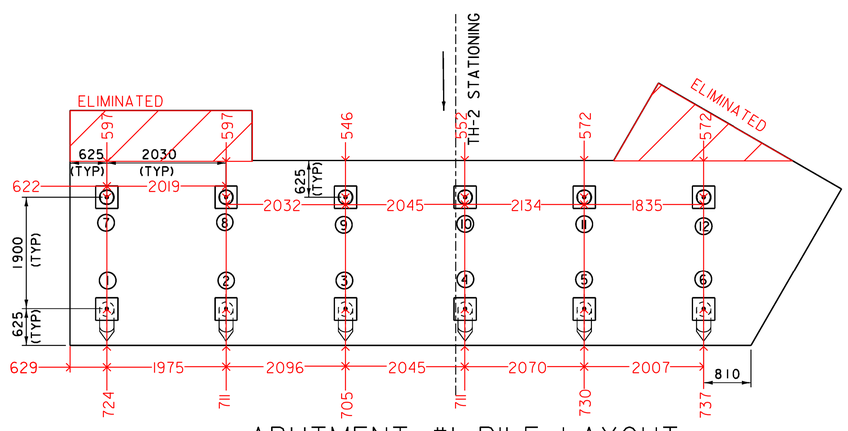
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 48 OF 90



ABUTMENT #2 PILE LAYOUT

SCALE = 1:50

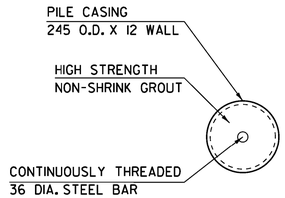
5 4 3 2 1 0



ABUTMENT #1 PILE LAYOUT

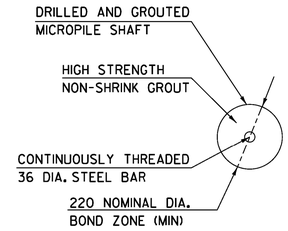
SCALE = 1:50

5 4 3 2 1 0



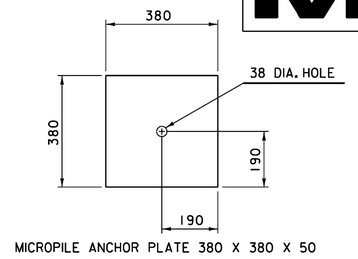
CASED MICROPILE SECTION A

NOT TO SCALE



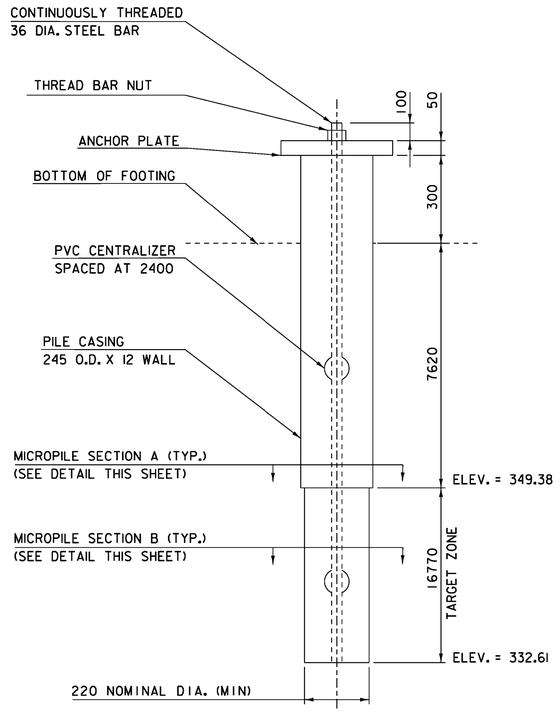
UNCASED MICROPILE SECTION B

NOT TO SCALE



MICROPILE ANCHOR PLATE

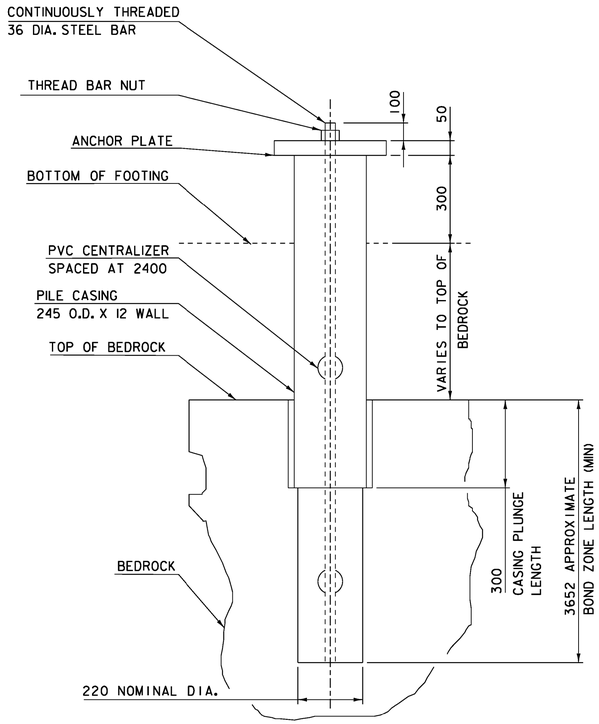
NOT TO SCALE



DESIGN TEST LOAD =225 KIPS/PILE, BASED ON ASSUMED 'NOMINAL SKIN RESISTANCE' IN SOIL= 3.0 KSF

ABUTMENT #2 MICROPILE

NOT TO SCALE



DESIGN TEST LOAD = 162 KIPS/PILE, BASED ON ASSUMED 'NOMINAL SKIN RESISTANCE' IN ROCK= 12 KSF

ABUTMENT #1 MICROPILE

NOT TO SCALE

= MICROPILE

= MICROPILE BATTERED AT 12 TO 1

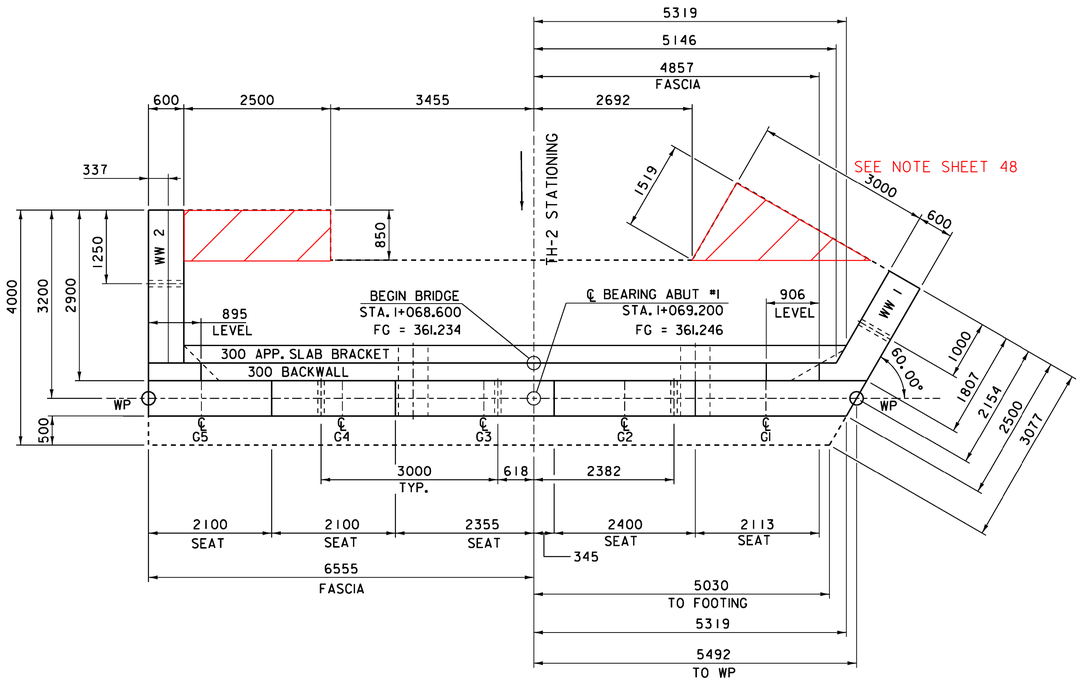
NOTE 1: SEE 'SPECIAL PROVISIONS' FOR CONTINUOUSLY THREADED STEEL BAR STRENGTH AND PILE CASING STRENGTHS.

NOTE 2: FIRST PILE DRIVEN AT ABUTMENT 2 WILL BE LOAD TESTED AS PER THE SPECIAL PROVISIONS.

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ABUTMENT MICROPILE LAYOUT

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 49 OF 90

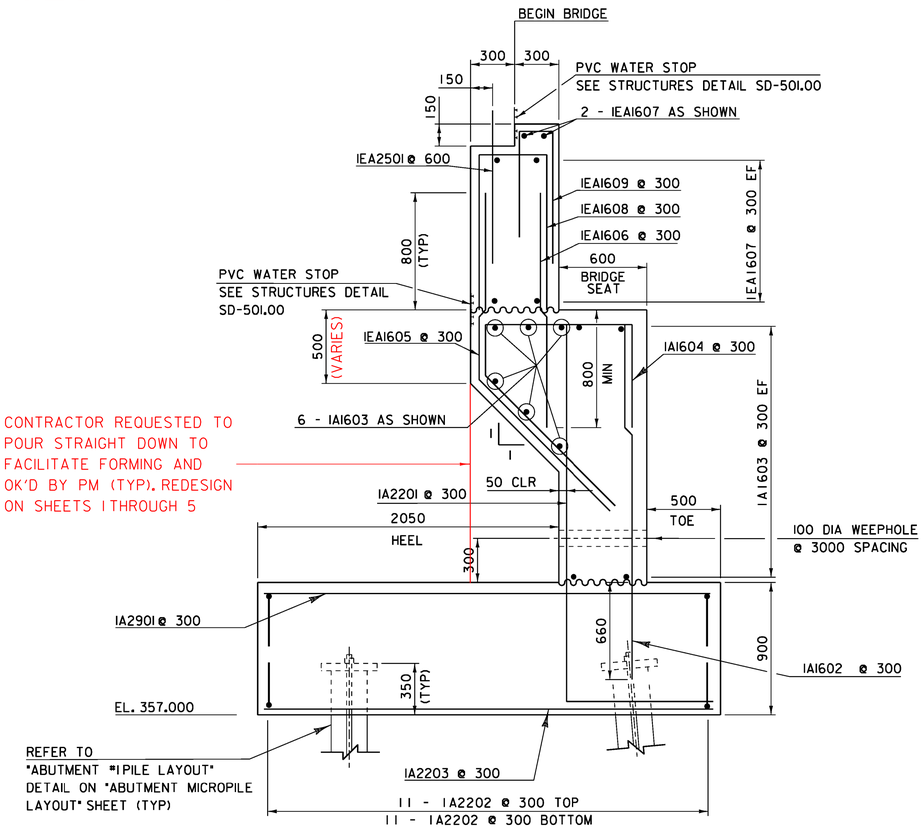


ABUTMENT #1 PLAN

SCALE = 1:50

0 1 2 3 4 5

SEE REVISED PAGES # 1~5



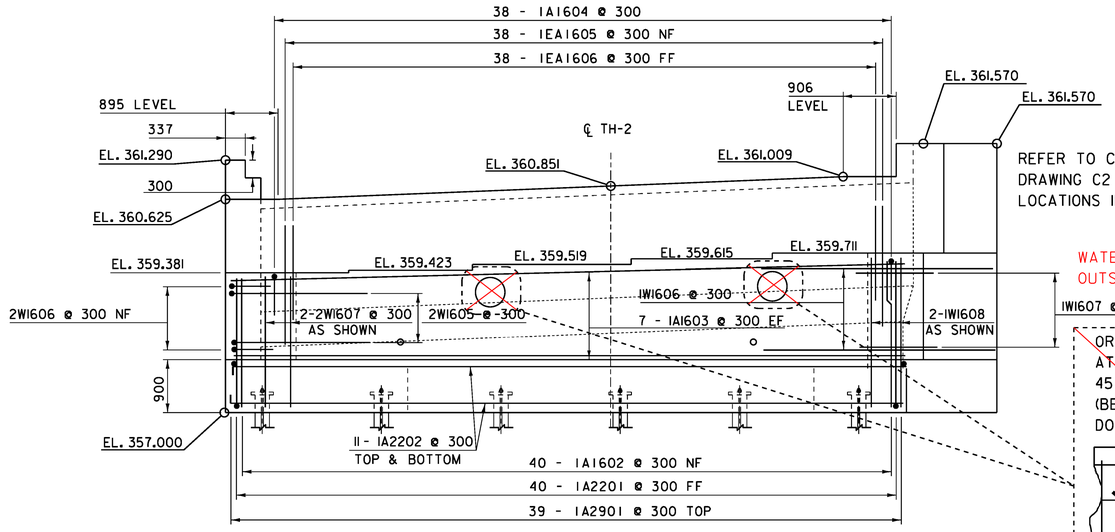
CONTRACTOR REQUESTED TO POUR STRAIGHT DOWN TO FACILITATE FORMING AND OK'D BY PM (TYP). REDESIGN ON SHEETS 1 THROUGH 5

REFER TO "ABUTMENT #1 PILE LAYOUT" DETAIL ON "ABUTMENT MICROPILE LAYOUT" SHEET (TYP)

ABUTMENT #1 TYPICAL SECTION

0 1 2

SCALE = 1:20



0 1 2 3 4 5

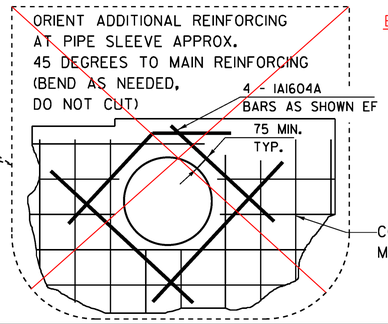
SCALE = 1:50

ABUTMENT #1 ELEVATION

REFER TO CONSULTANT (DUFRESNE GROUP) DRAWING C2 FOR UTILITY PIPING LOCATIONS IN ABUTMENTS.

WATER & SEWER LINES WERE RAISED AND INSTALLED OUTSIDE OF FASCIA BEAMS. SEE CO#4, DATED 10/13/17

ELIMINATED



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

75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

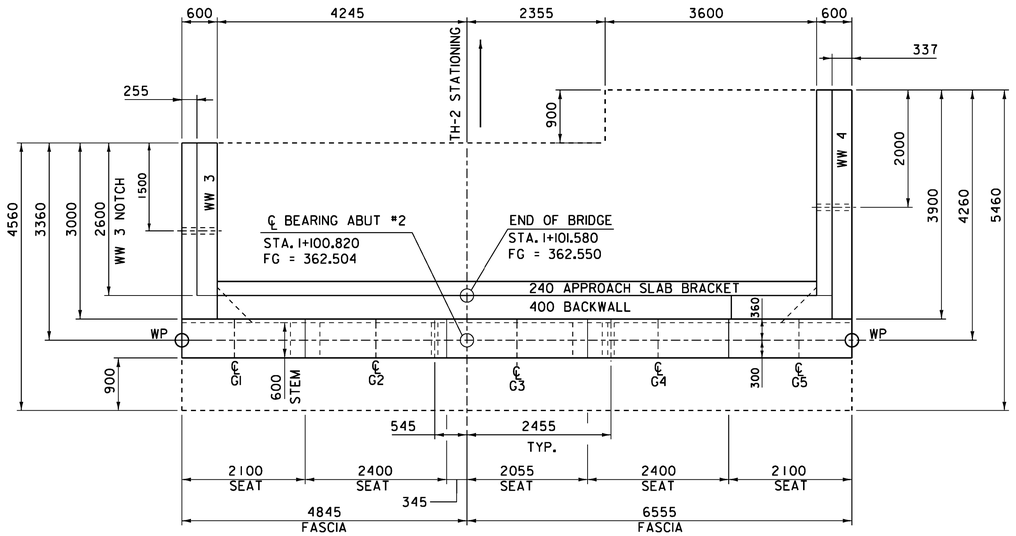
660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

SEE REDESIGNED ABUTMENTS SHEETS 1 THROUGH 5

PROJECT NAME: READSBORO SEE SHEET 1 OF 5
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ABUTMENT 1 DETAILS

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 50 OF 90

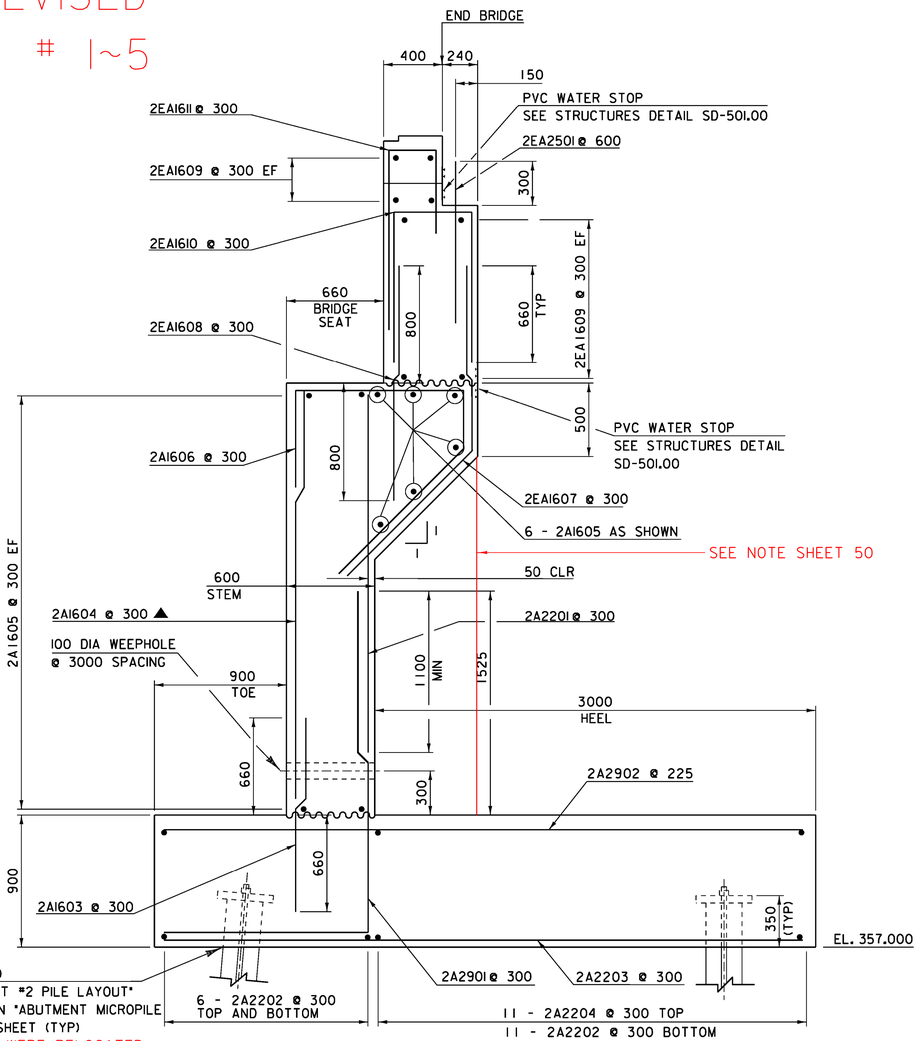


ABUTMENT #2 PLAN

0 1 2 3 4 5

SCALE = 1:50

SEE REVISED PAGES # 1~5

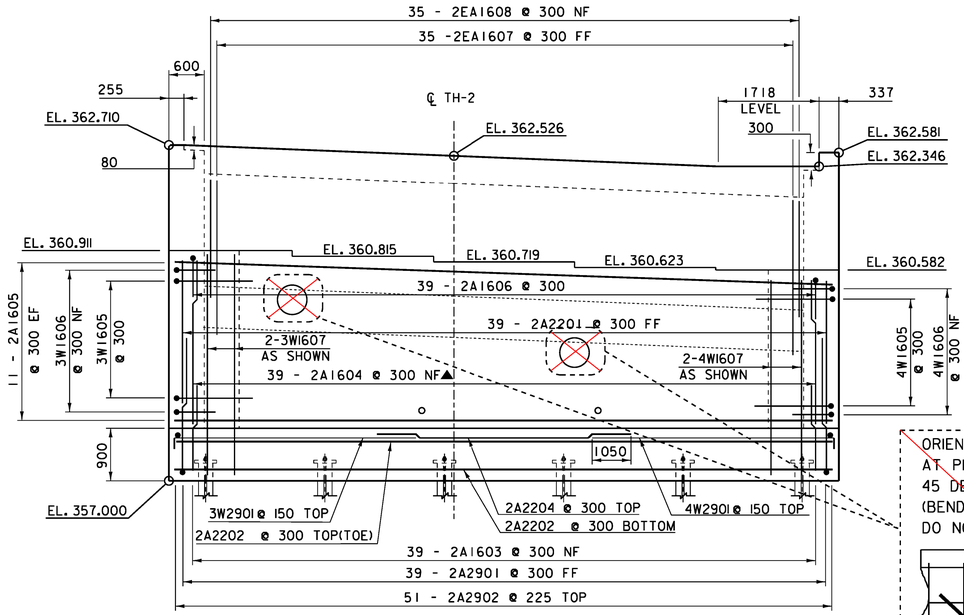


ABUTMENT #2 TYPICAL SECTION

0 1 2

SCALE = 1:20

❀ WATER AND SEWER LINES WERE RELOCATED OUTSIDE FASCIA BEAMS. SEE CO#4 DATED 10/17/13



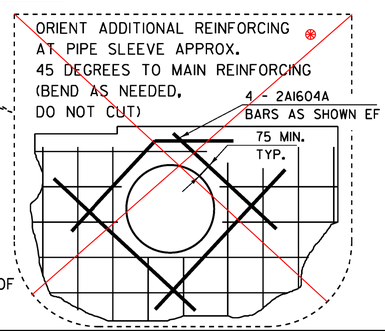
ABUTMENT #2 ELEVATION

0 1 2 3 4 5

SCALE = 1:50

REFER TO CONSULTANT (DUFRESNE GROUP) DRAWING C2 FOR UTILITY PIPING LOCATIONS IN ABUTMENTS.

CONCEPTUAL POSITION OF MAIN REINFORCEMENT



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

75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

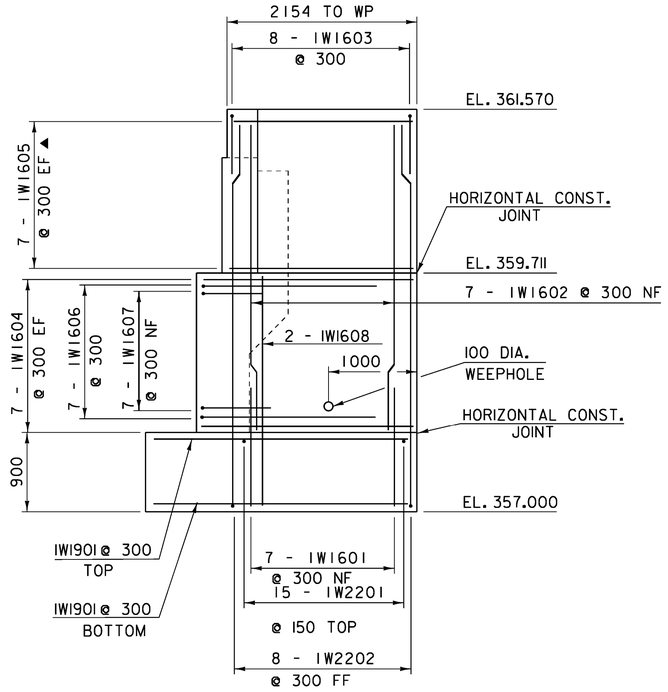
660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

SEE REDESIGNED ABUTMENTS SHEET 2 OF 5

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

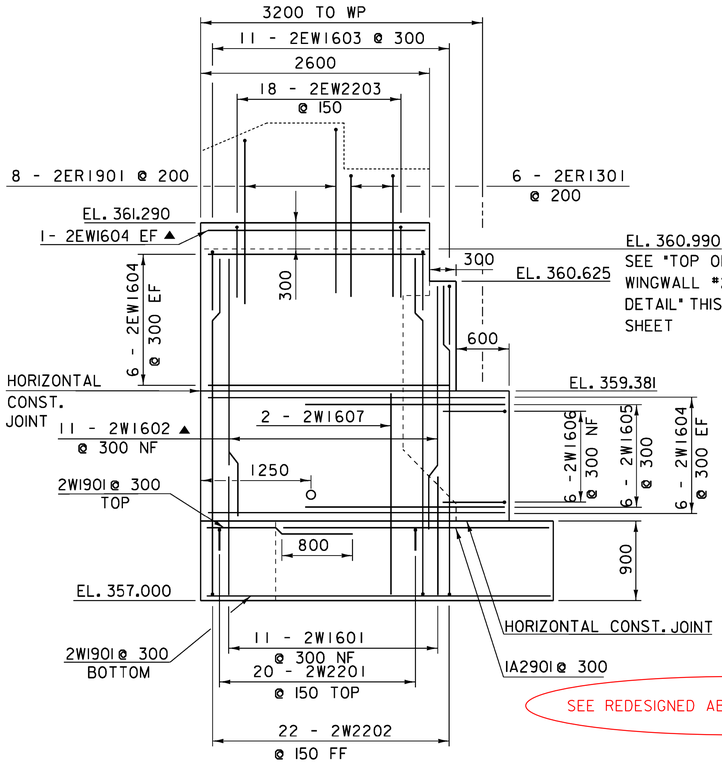
FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ABUTMENT 2 DETAILS

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 51 OF 90



WINGWALL #1 ELEVATION

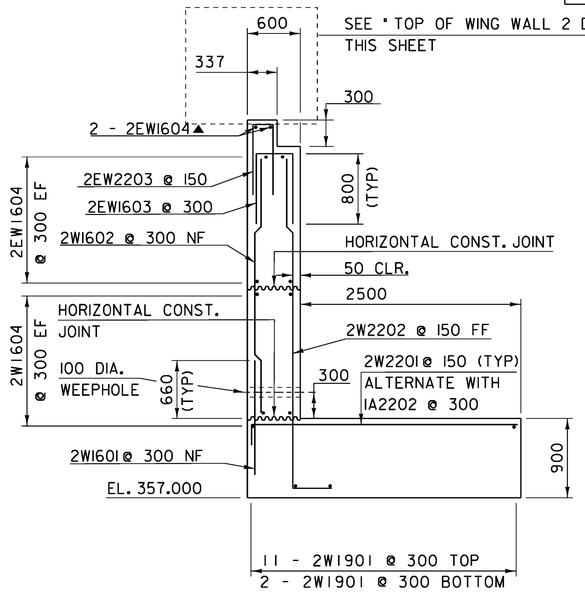
SCALE = 1:40



WINGWALL #2 ELEVATION

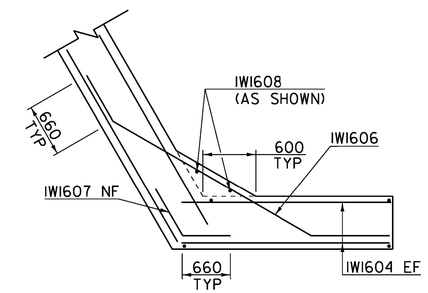
SCALE = 1:40

SEE REDESIGNED ABUTMENTS SHEET 3 OF 5



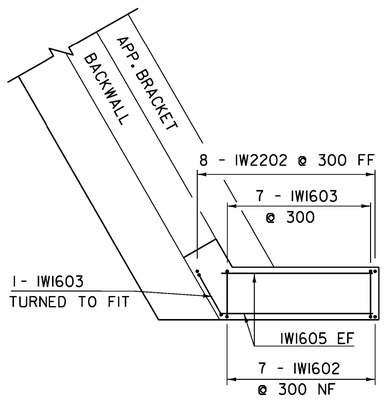
WINGWALL #2 TYPICAL

SCALE = 1:40



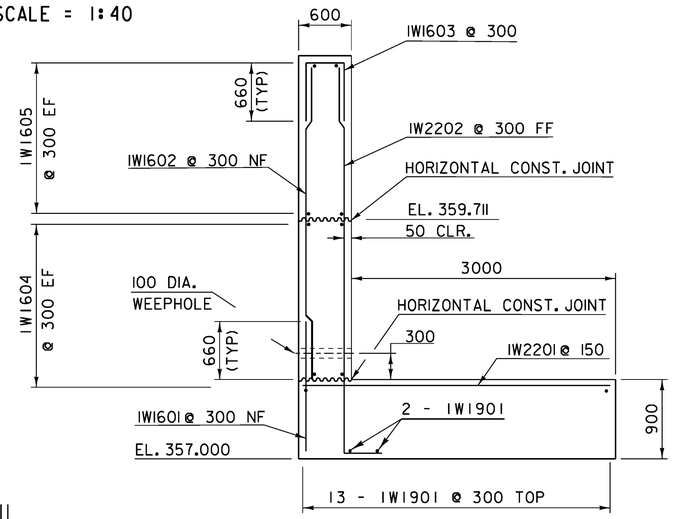
WINGWALL #1 CORNER DETAIL (BELOW BRIDGE SEAT)

NTS

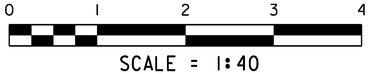


WINGWALL #1 CORNER DETAIL (ABOVE BRIDGE SEAT)

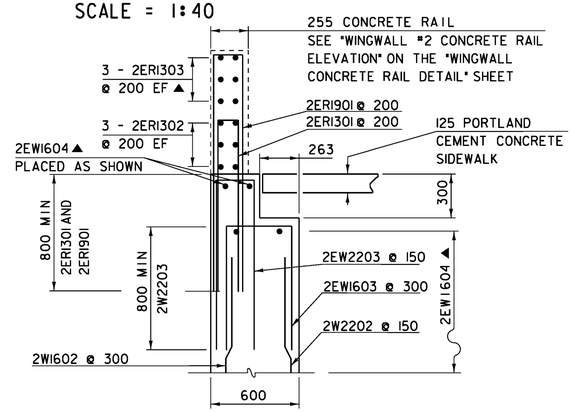
NTS



WINGWALL #1 TYPICAL



SCALE = 1:40



TOP OF WINGWALL #2 DETAIL

NTS

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

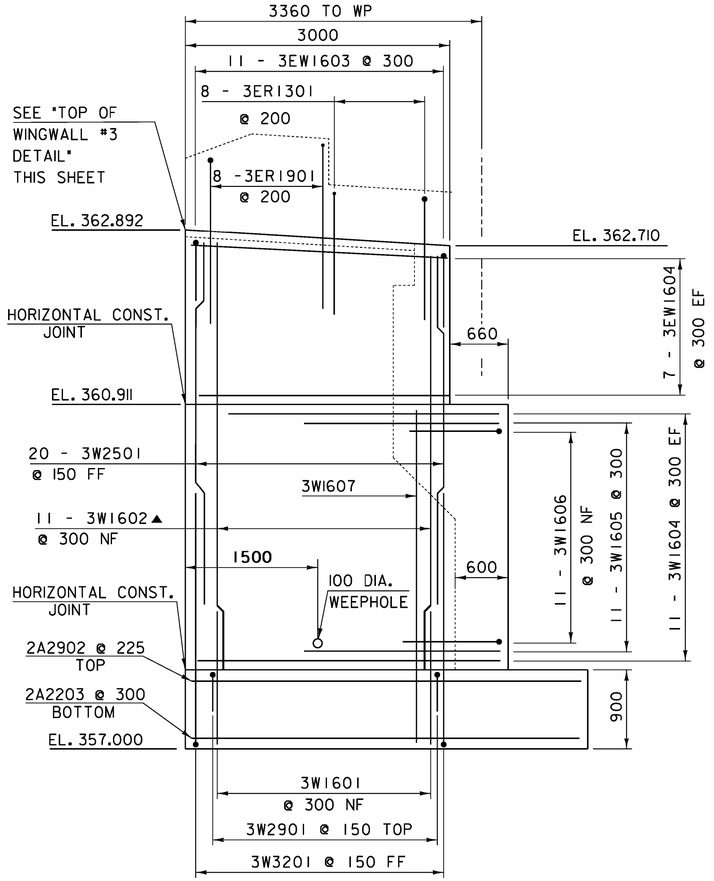
75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
WINGWALL 1 AND 2 DETAILS

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 52 OF 90

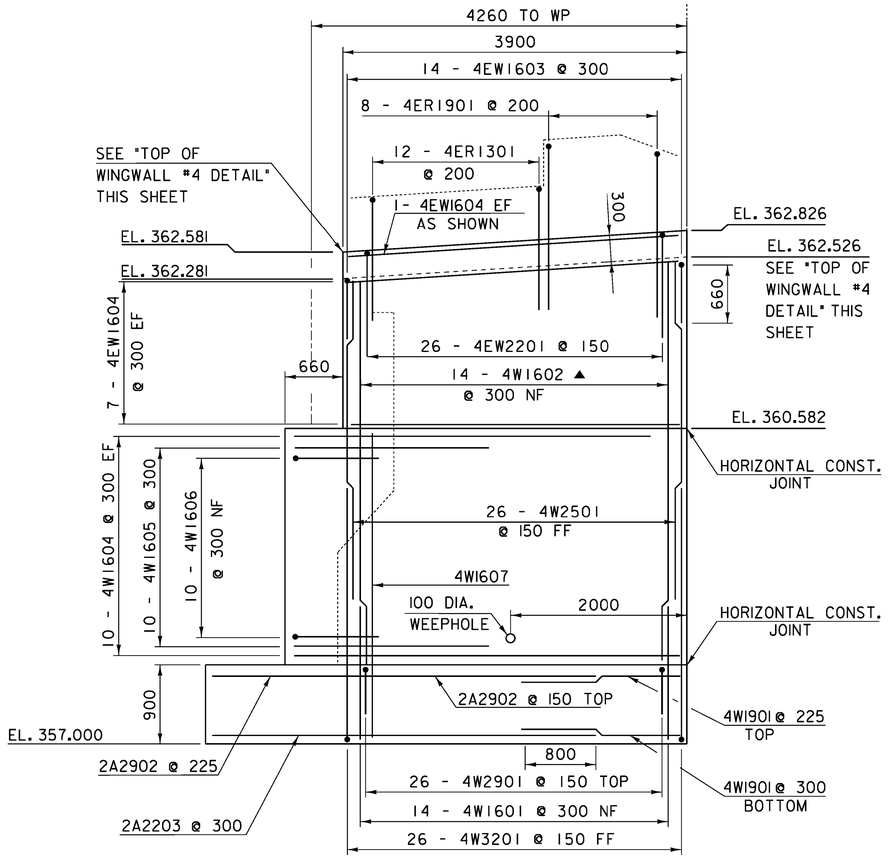


WINGWALL #3 ELEVATION

0 1 2 3 4

SCALE = 1:40

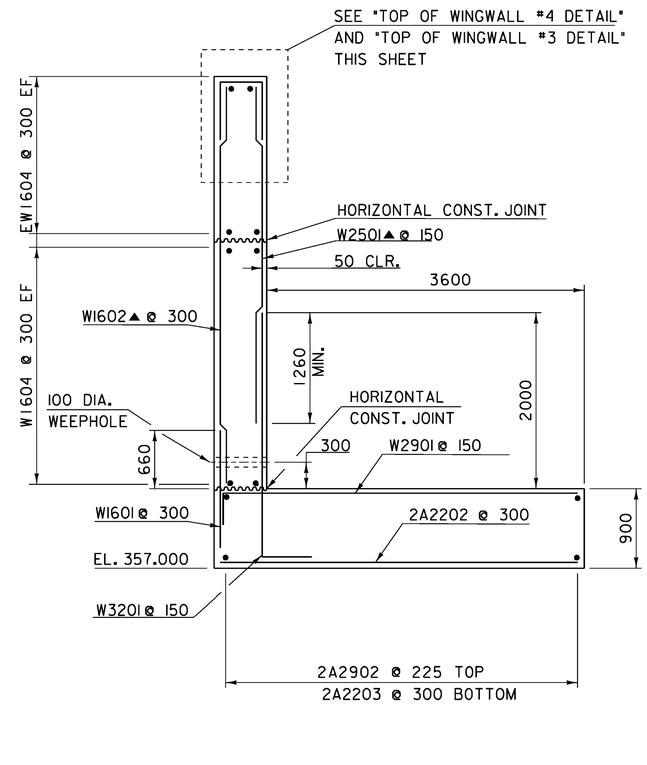
SEE REDESIGNED ABUTMENTS SHEET 4 OF 5



WINGWALL #4 ELEVATION

0 1 2 3 4

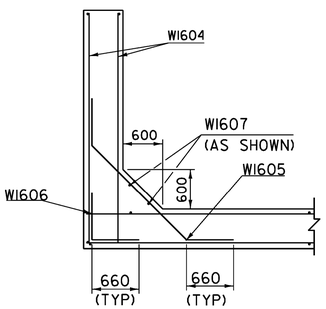
SCALE = 1:40



WINGWALL #3 & #4 TYPICAL

0 1 2 3 4

SCALE = 1:40

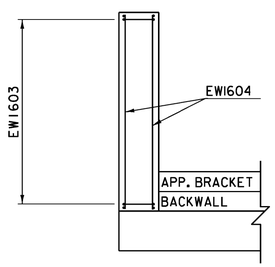


WINGWALL #2,#3,#4

CORNER DETAIL

(BELOW BRIDGE SEAT)

NTS

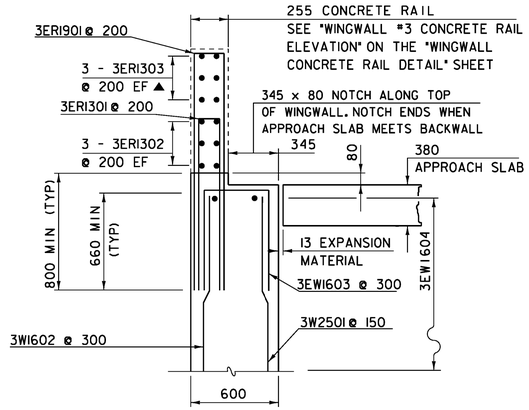


WINGWALL #2, #3,#4

CORNER DETAIL

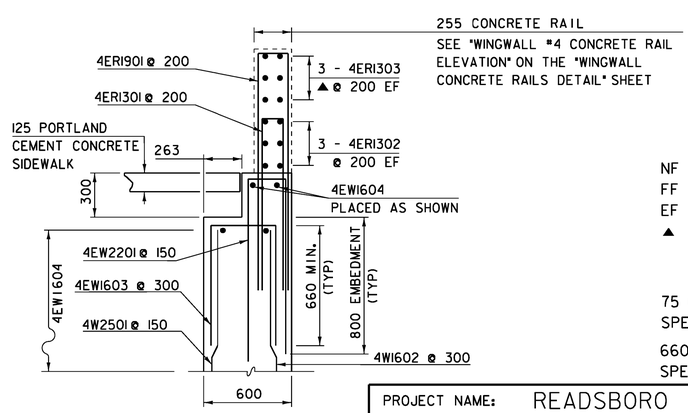
(ABOVE BRIDGE SEAT)

NTS



TOP OF WINGWALL #3 DETAIL

NTS



TOP OF WINGWALL #4 DETAIL

NTS

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

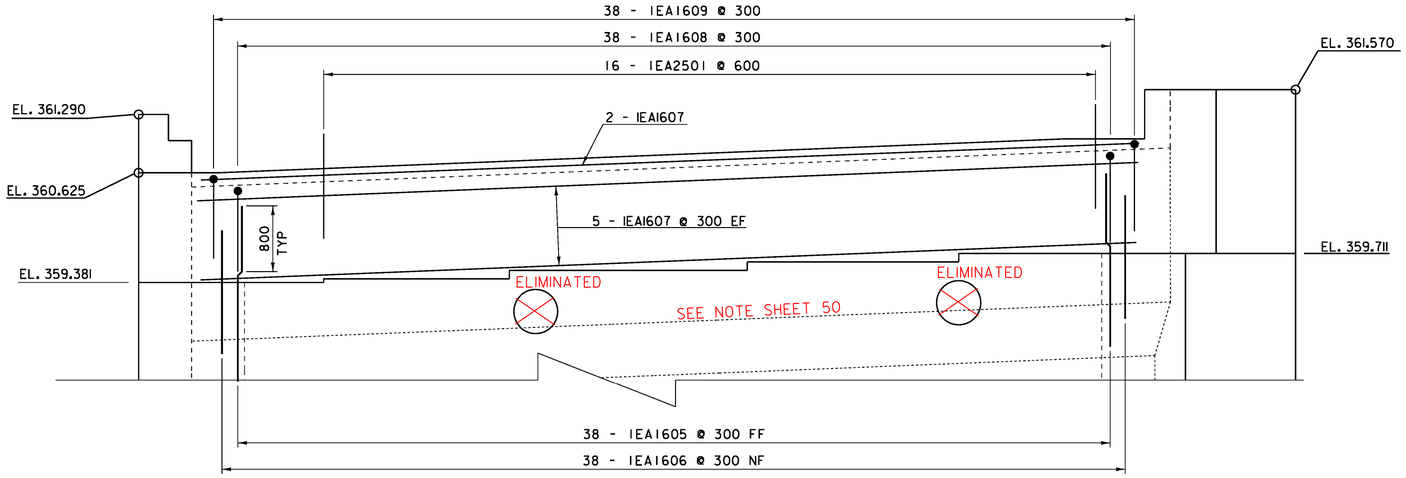
75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
WINGWALL 3 AND 4 DETAILS

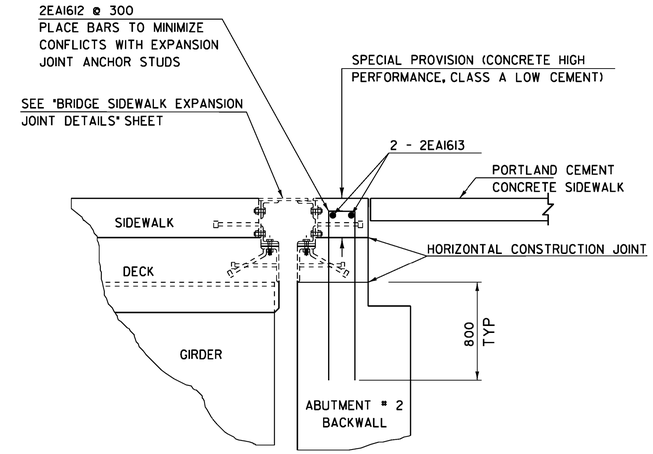
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 53 OF 90



ABUTMENT #1 ELEVATION BACKWALL

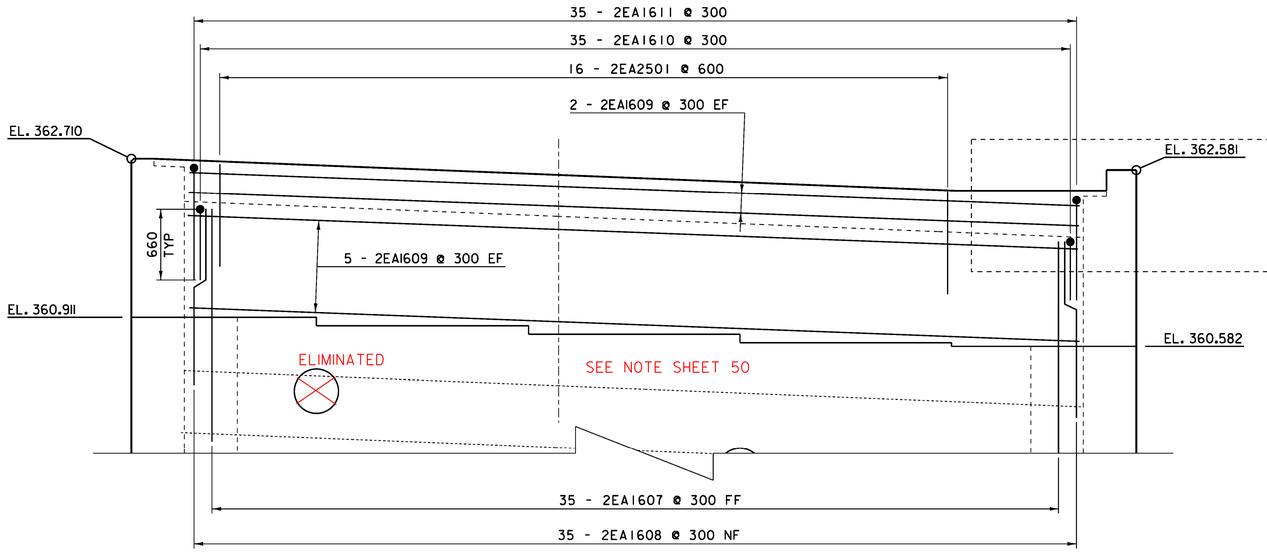
0 1 2 3 4

SCALE = 1:40



ABUTMENT #2 SIDEWALK REINFORCING IN BACKWALL TYPICAL

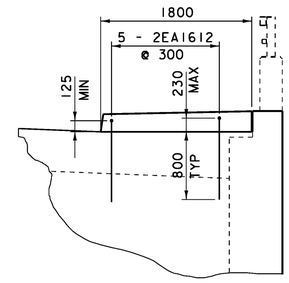
NTS



ABUTMENT #2 ELEVATION BACKWALL

0 1 2 3 4

SCALE = 1:40



ABUTMENT #2 SIDEWALK REINFORCING IN BACKWALL

NTS

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

75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

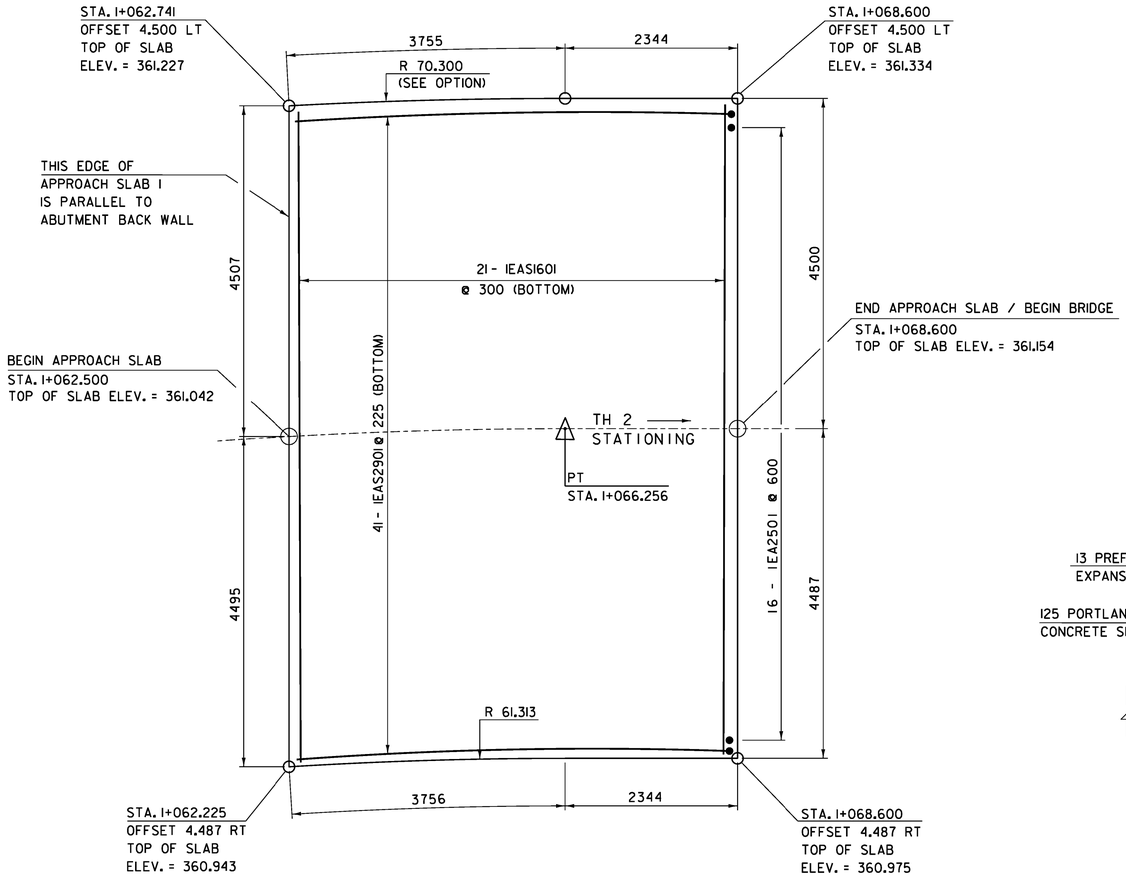
660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ABUTMENT BACKWALL DETAILS

PLOT DATE: 07-MAR-2012
DRAWN BY: C. ROKES
CHECKED BY: W. PELLETIER
SHEET 54 OF 90

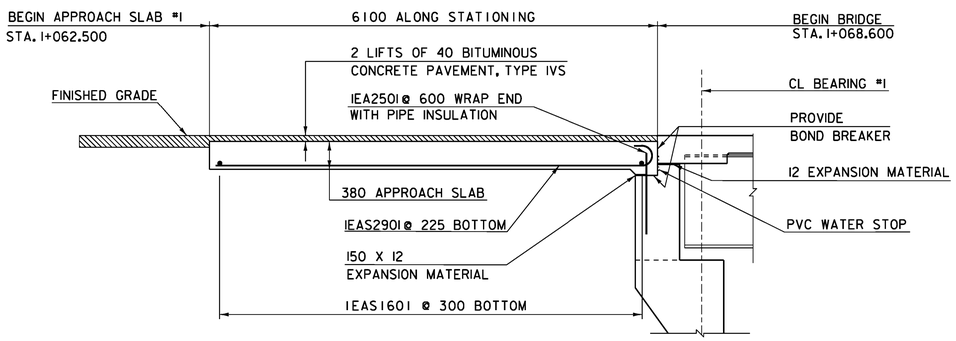
CONTRACTOR OPTION:
APPROACH SLAB RADIUS MAY BE APPROXIMATED BY STRAIGHT LINE ON THIS SIDE. NO CHANGE TO CONCRETE QUANTITIES WILL BE ALLOWED.



APPROACH SLAB #1

0 1 2 3 4

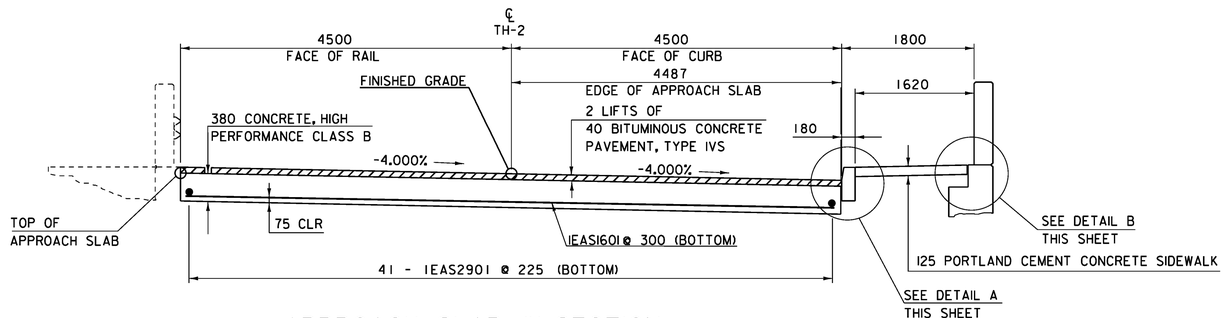
SCALE = 1:40



APPROACH SLAB ABUTMENT #1 ELEVATION

0 1 2 3 4

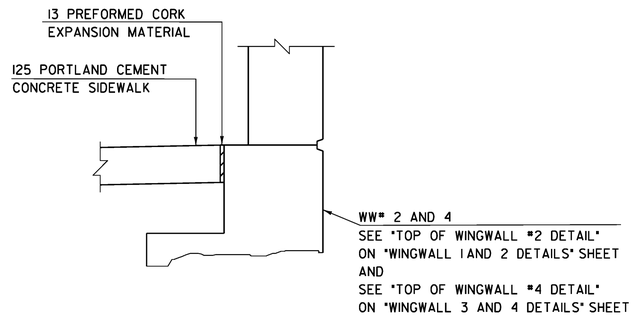
SCALE = 1:40



APPROACH SLAB #1 SECTION

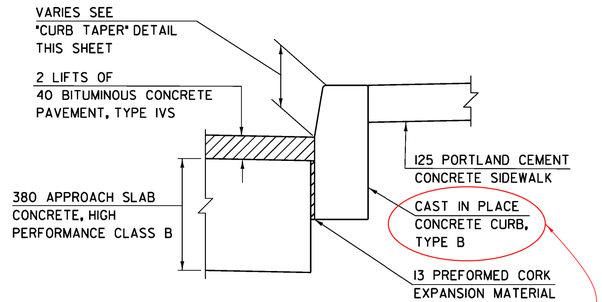
0 1 2 3 4

SCALE = 1:40



DETAIL "B"

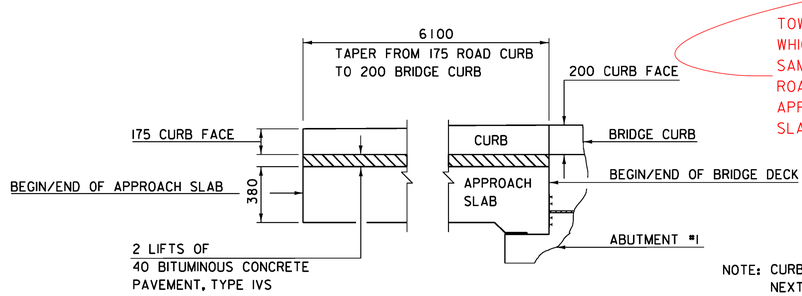
NTS



DETAIL "A"

NTS

TOWN REQUESTED GRANITE CURB WHICH CONTRACTOR PLACED AT SAME PRICE. THIS WAS DONE IN ROADWAY. CURB NEXT TO APPROACH SLAB WAS POURED SLABS WAS POURED IN PLACE.



NOTE: CURB TAPER SHOWN HERE IS FOR AREA NEXT TO APPROACH SLAB #1. THE TAPER NEXT TO APPROACH SLAB #2 IS SIMILAR

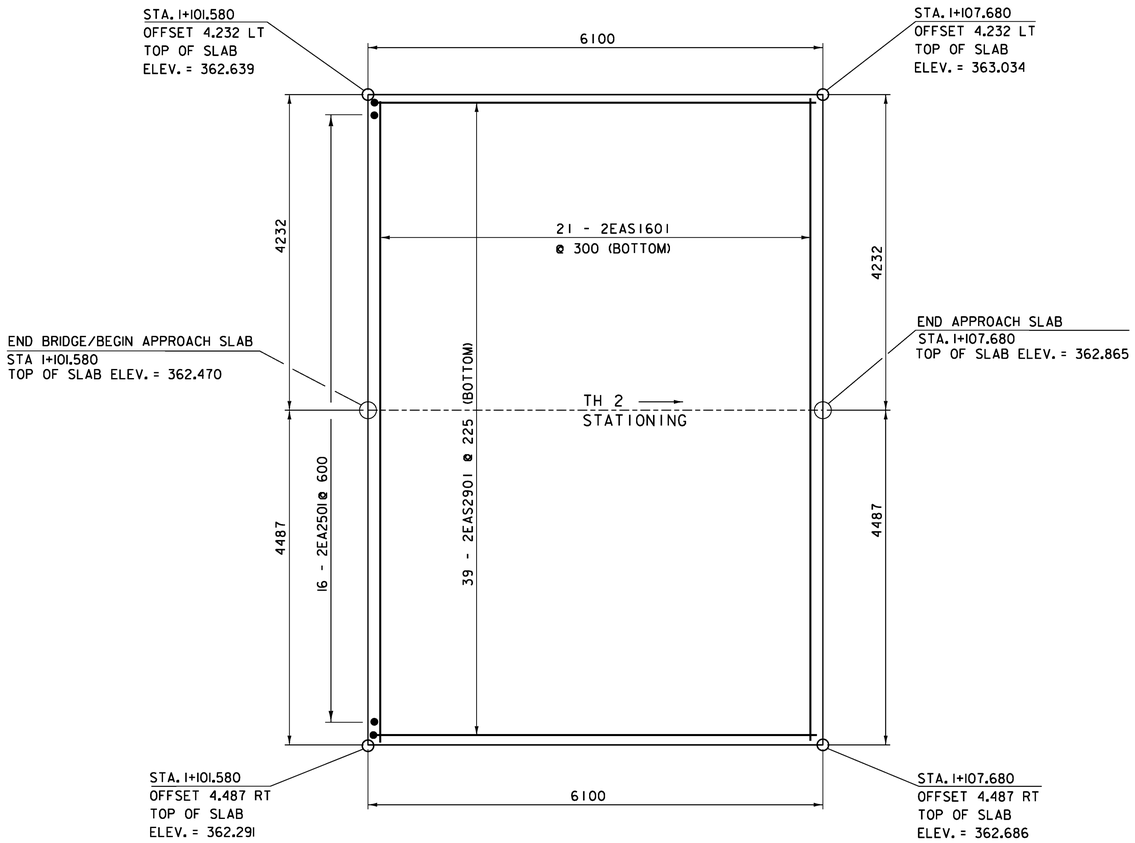
CURB TAPER

NTS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sup.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
APPROACH SLAB 1 DETAILS

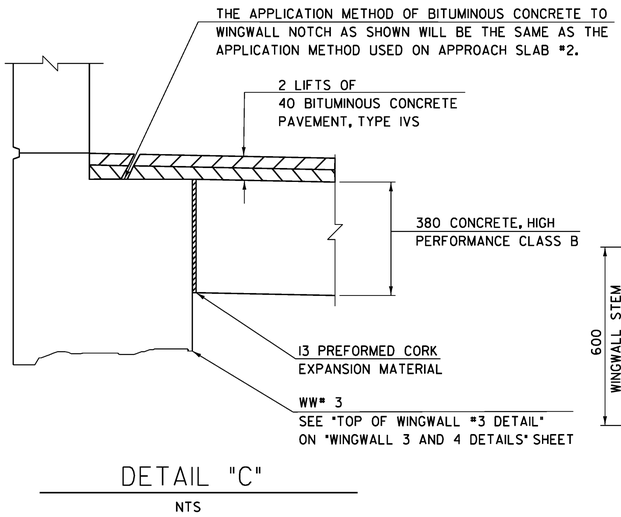
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 55 OF 90



APPROACH SLAB #2

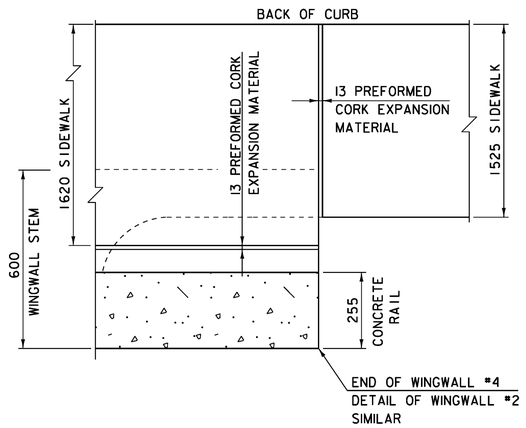
0 1 2 3 4

SCALE = 1:40



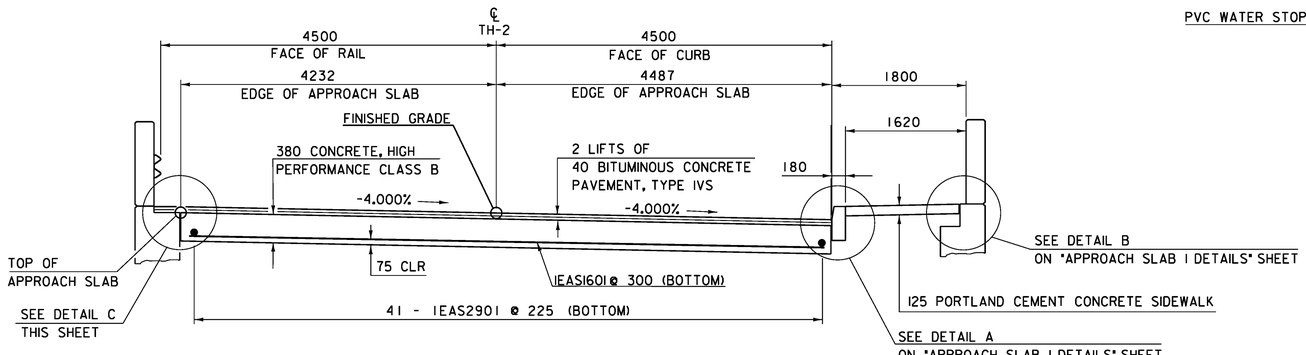
DETAIL "C"

NTS



SIDEWALK WIDTH TRANSITION PLAN DETAIL

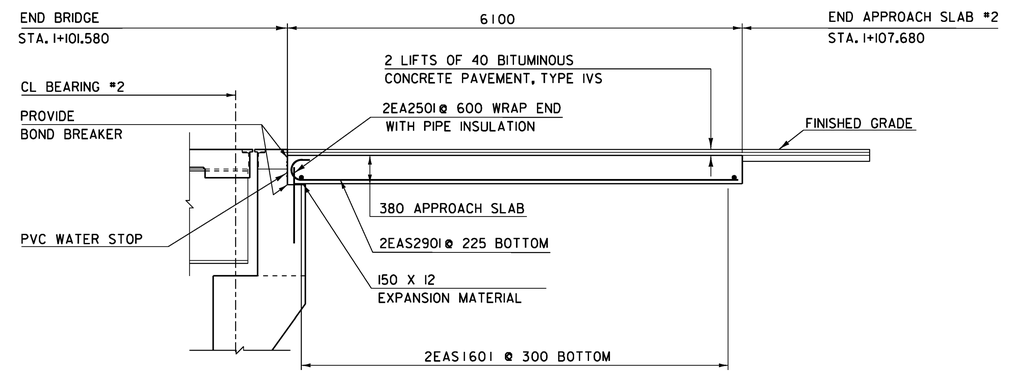
NTS



APPROACH SLAB #2 SECTION

0 1 2 3 4

SCALE = 1:40



APPROACH SLAB ELEVATION

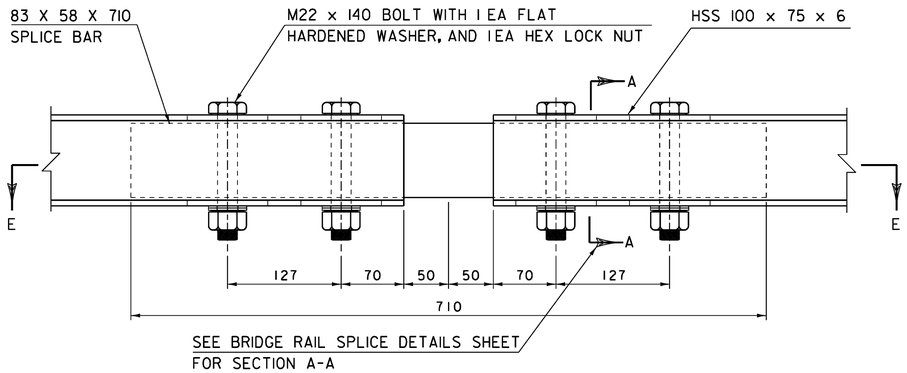
0 1 2 3 4

SCALE = 1:40

NOTE: FOR CURB TAPER ALONG APPROACH SLAB #2
SEE "CURB TAPER" ON "APPROACH SLAB 1DETAILS" SHEET

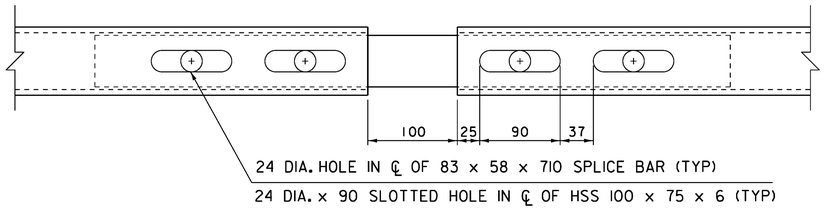
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
APPROACH SLAB 2 DETAILS	SHEET 56 OF 90



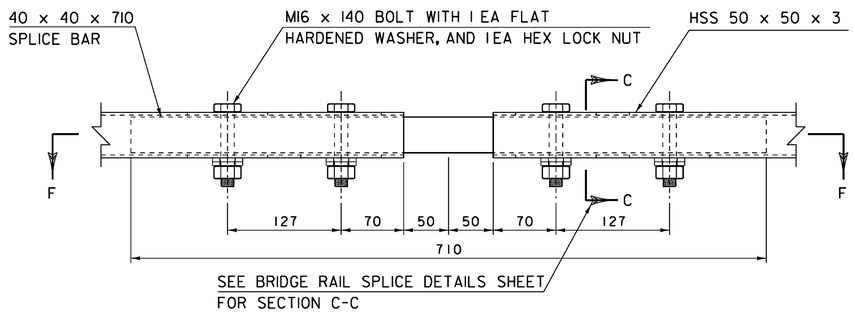
TOP RAIL EXPANSION JOINT ELEVATION DETAIL

NTS



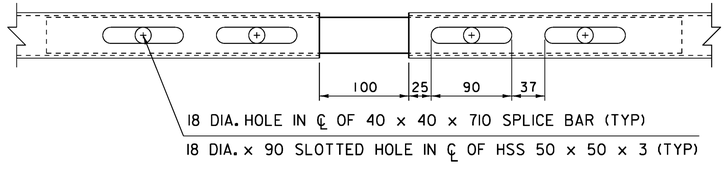
SECTION E-E

NTS



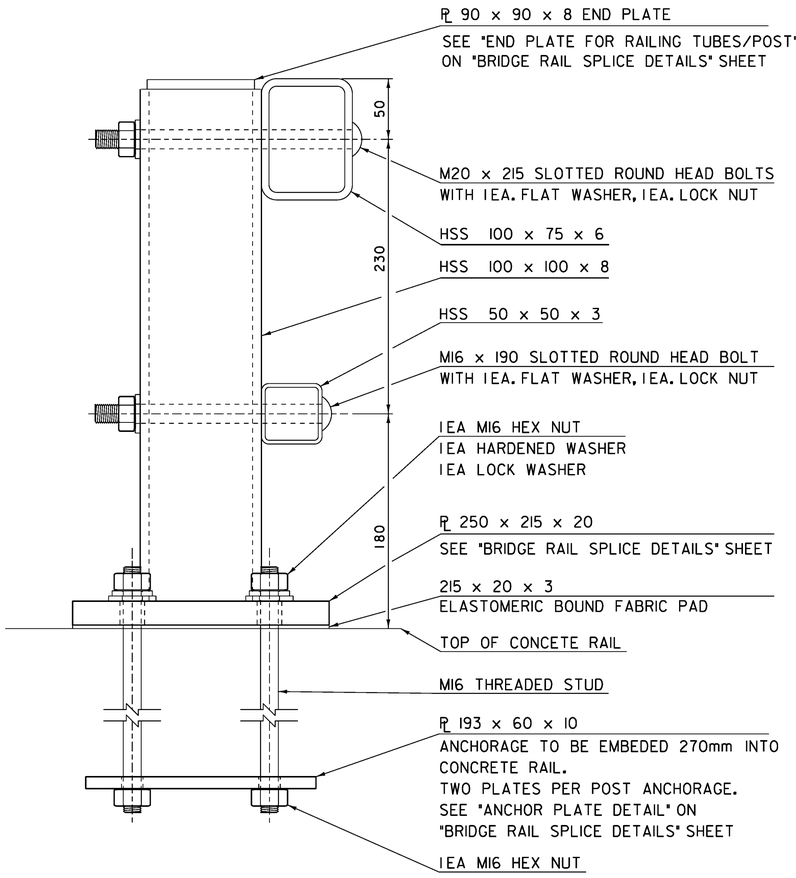
BOTTOM RAIL EXPANSION JOINT ELEVATION DETAIL

NTS



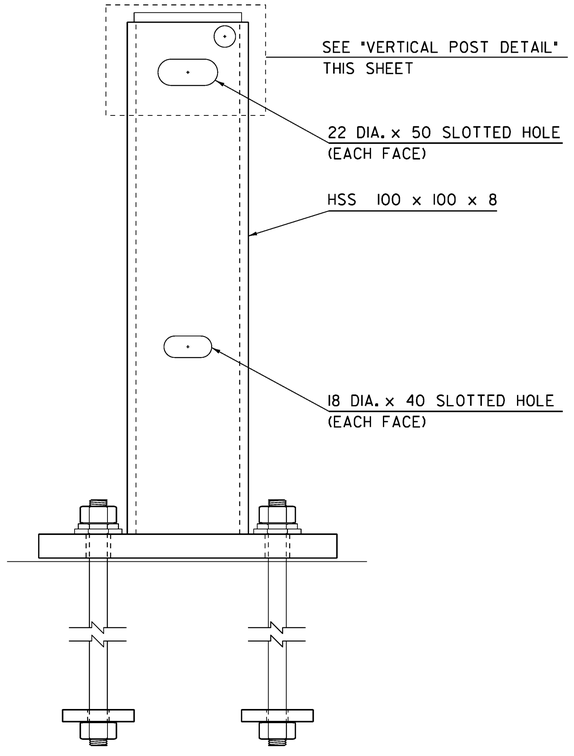
SECTION F-F

NTS



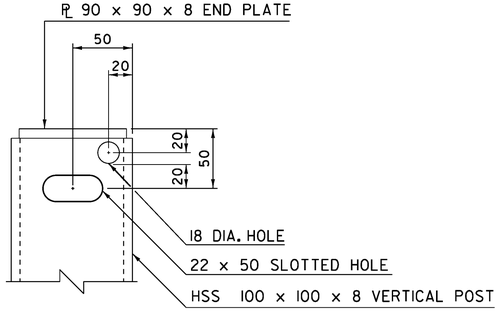
RAIL POST DETAIL (SIDE VIEW)

NTS



RAIL POST DETAIL (FRONT VIEW)

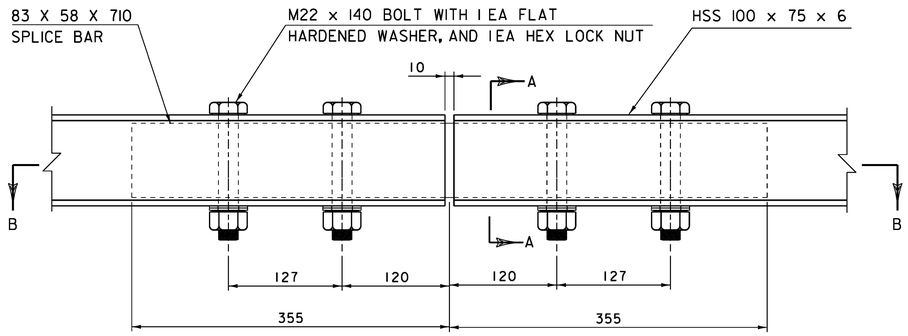
NTS



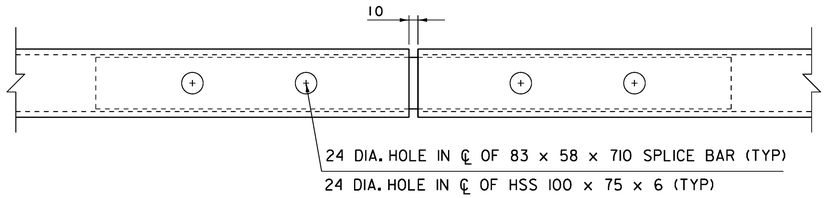
VERTICAL POST DETAIL (FRONT VIEW)

NTS

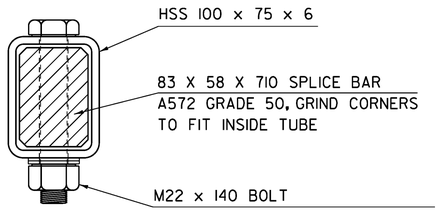
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
BRIDGE RAIL EXPANSION JOINT DETAILS	SHEET 57 OF 90



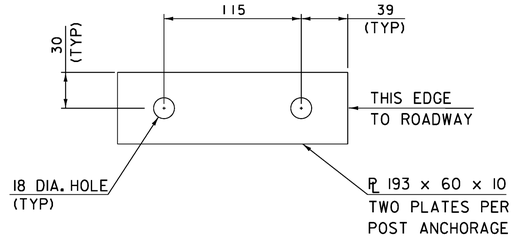
TOP RAIL SPLICE ELEVATION DETAIL
NTS



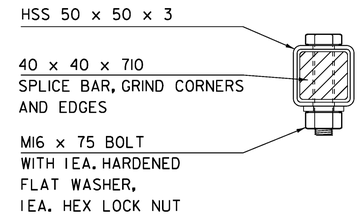
SECTION B-B
NTS



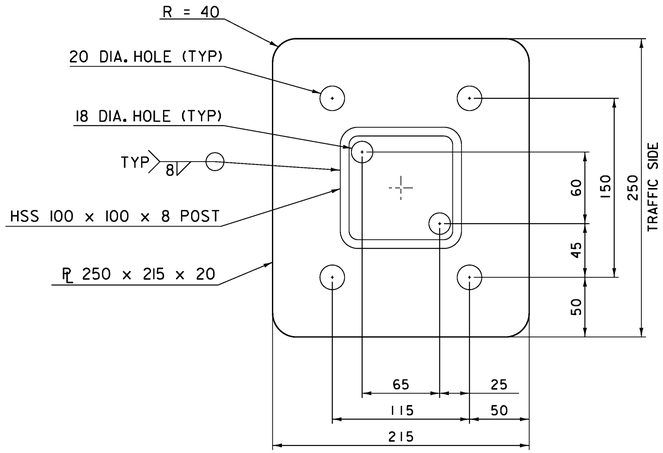
SECTION A-A
NTS



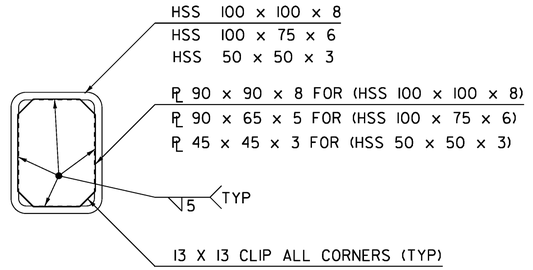
ANCHOR PLATE DETAIL
NTS



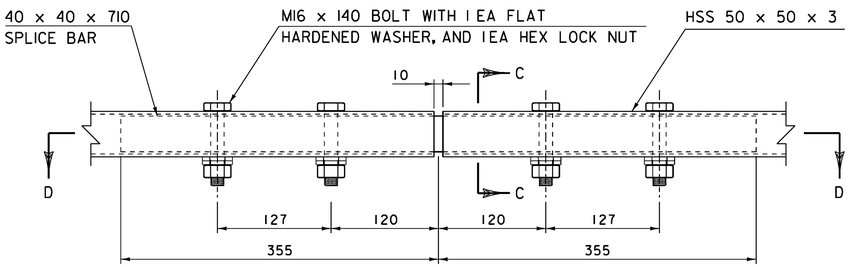
SECTION C-C
NTS



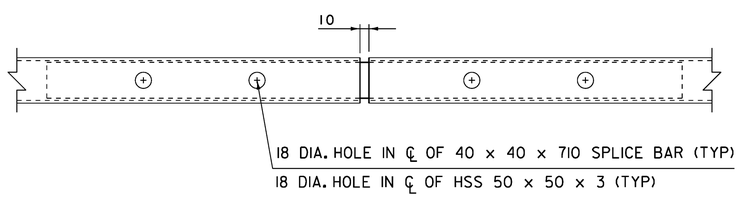
RAILING BASE PLATE DETAIL
NTS



END PLATE FOR RAILING TUBES/POST
NTS

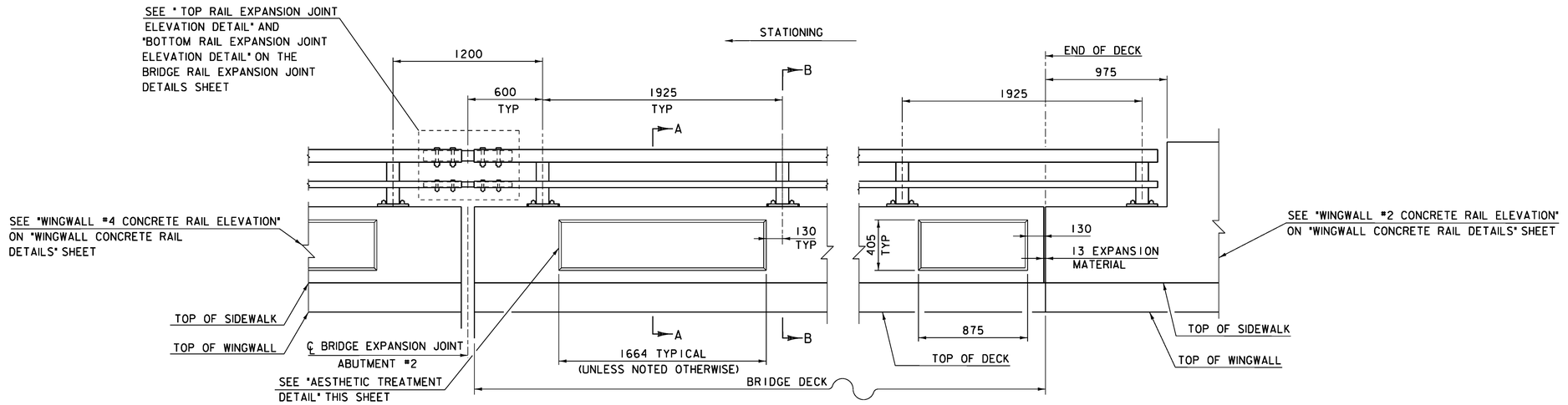


BOTTOM RAIL SPLICE ELEVATION DETAIL
NTS

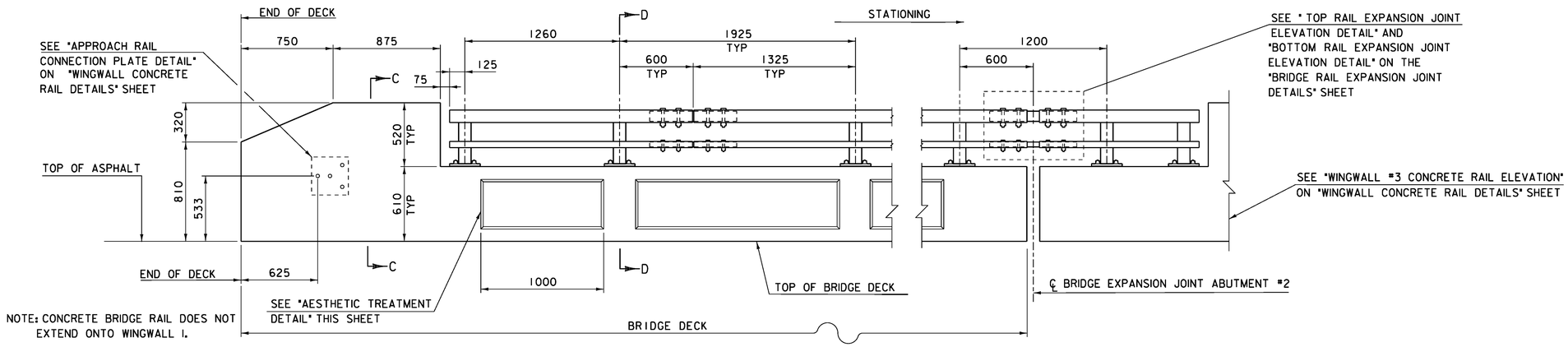


SECTION D-D
NTS

PROJECT NAME: READSBORO	
PROJECT NUMBER: BRF 0105 (3)	
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
BRIDGE RAIL SPLICE DETAILS	SHEET 58 OF 90

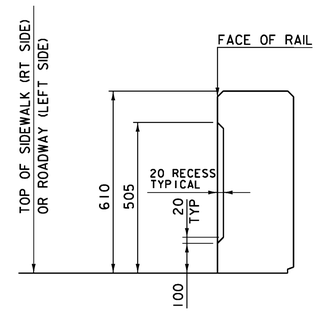


RIGHT BRIDGE CONCRETE RAIL ELEVATION (SIDEWALK)



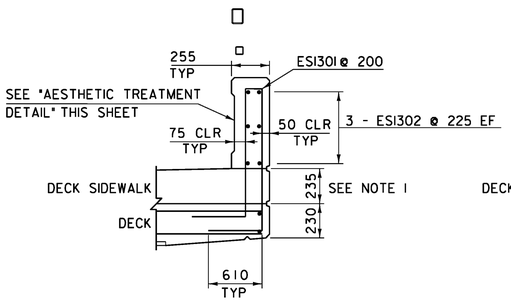
LEFT BRIDGE CONCRETE RAIL ELEVATION (NO SIDEWALK)

NOTE 1: SEE "TYPICAL BRIDGE DECK SECTION" ON "BRIDGE TYPICAL" SHEET FOR SIDEWALK REINFORCING STEEL.

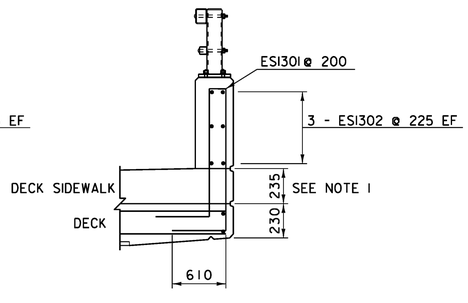


AESTHETIC TREATMENT DETAIL

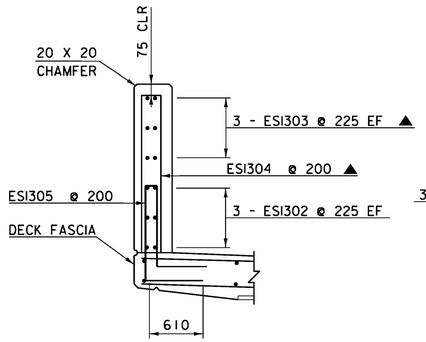
NTS



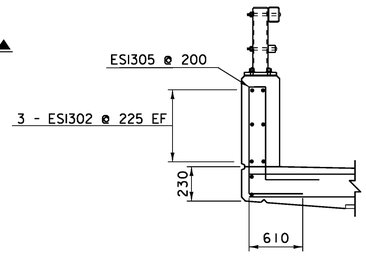
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

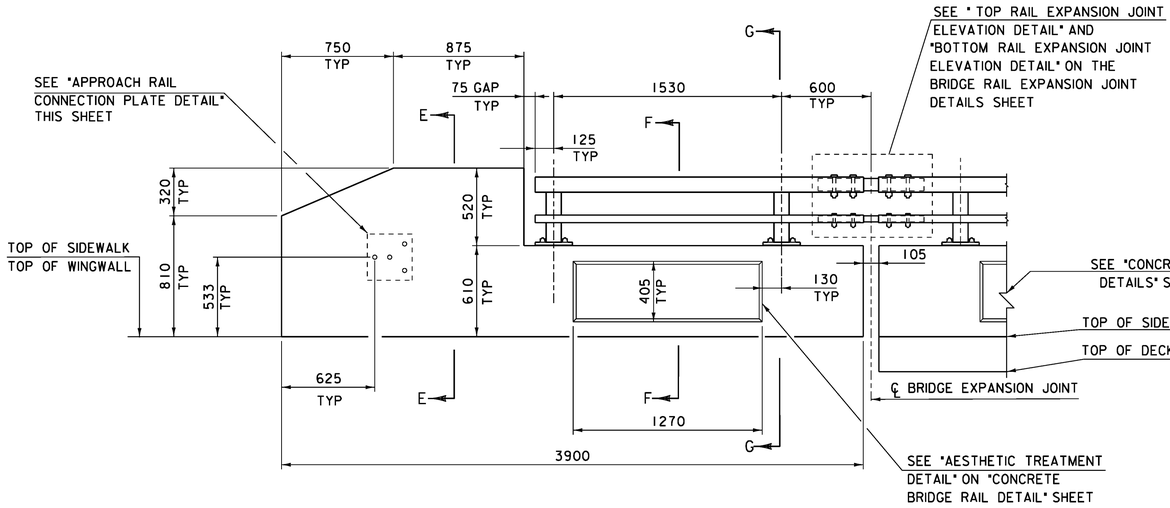
ALL DETAILS ON THIS SHEET ARE 1:20 SCALE UNLESS OTHERWISE NOTED

0 1 2

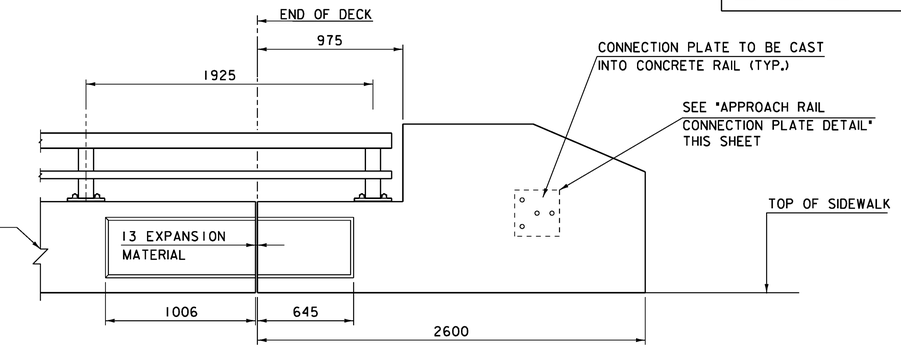
SCALE = 1:20

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

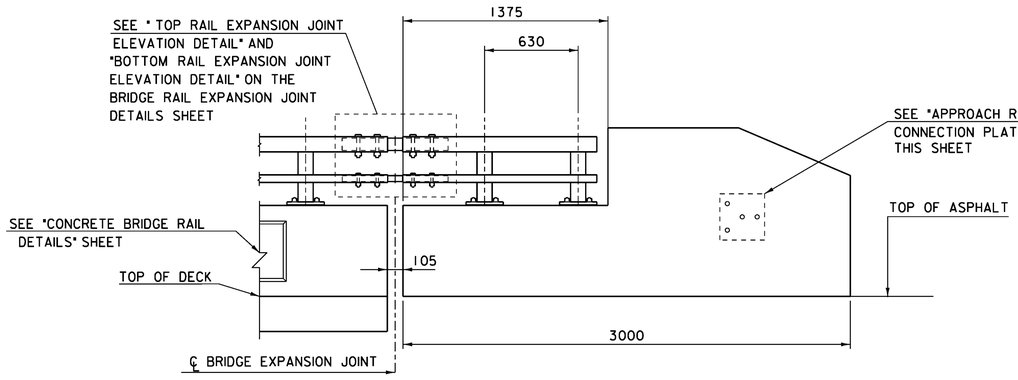
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
CONCRETE BRIDGE RAIL DETAILS	SHEET 59 OF 90



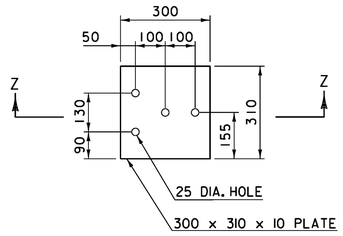
WINGWALL #4 CONCRETE RAIL ELEVATION



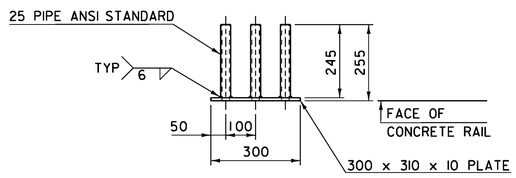
WINGWALL #2 CONCRETE RAIL ELEVATION



WINGWALL #3 CONCRETE RAIL ELEVATION

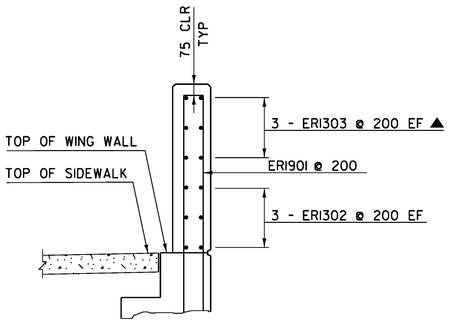


APPROACH RAIL CONNECTION PLATE DETAIL

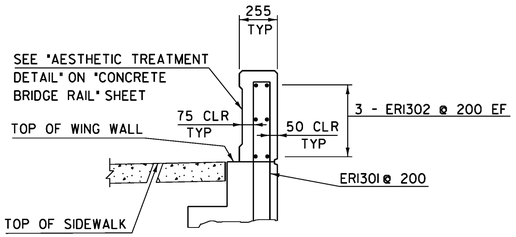


APPROACH RAIL CONNECTION PLATE SECTION Z-Z

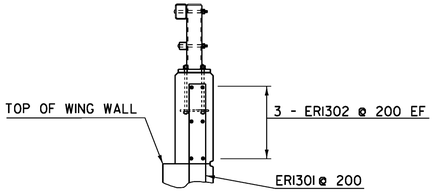
0 0.5 1
SCALE = 1:10



SECTION E-E



SECTION F-F



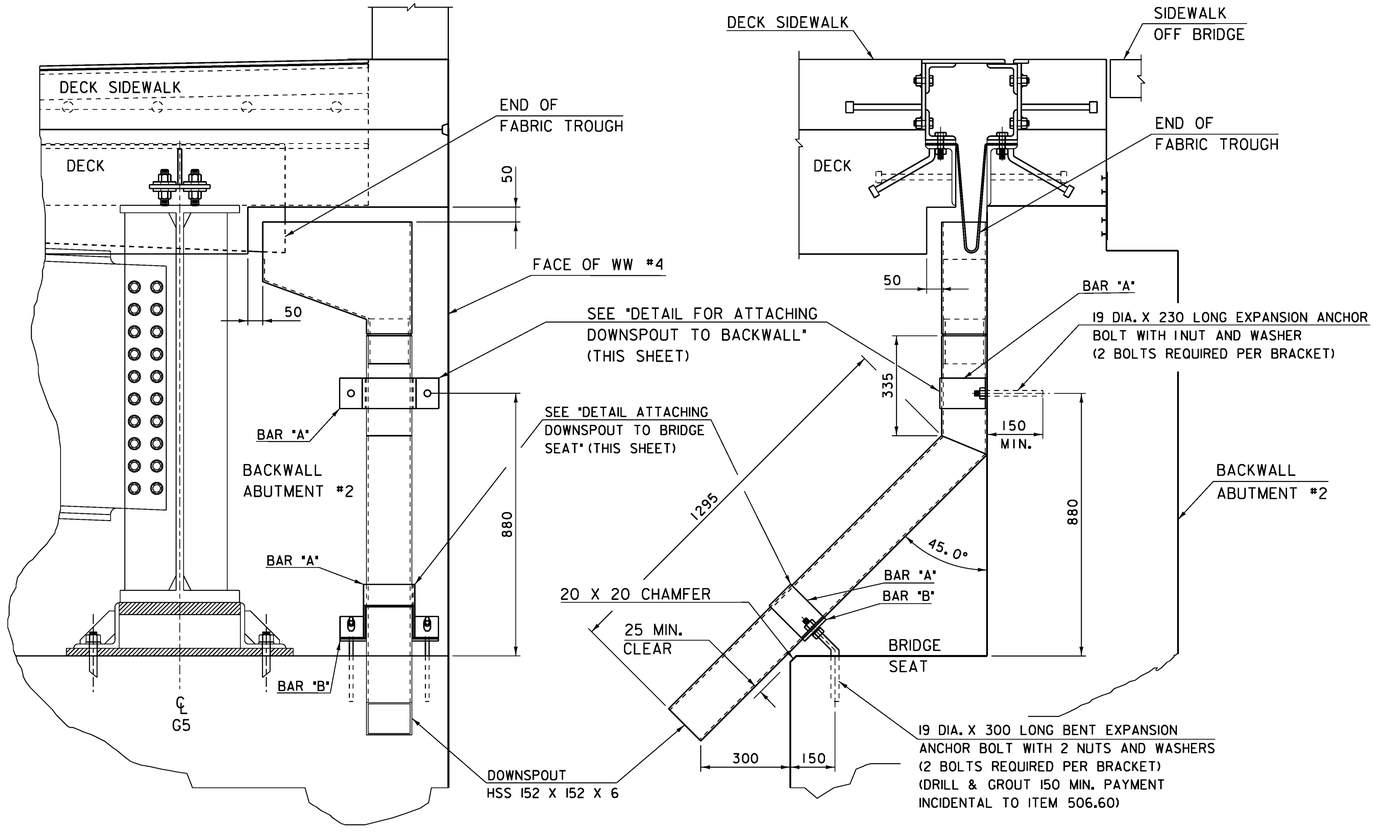
SECTION G-G

ALL DETAILS ON THIS SHEET ARE 1:20 SCALE UNLESS OTHERWISE NOTED

0 1 2
SCALE = 1:20

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

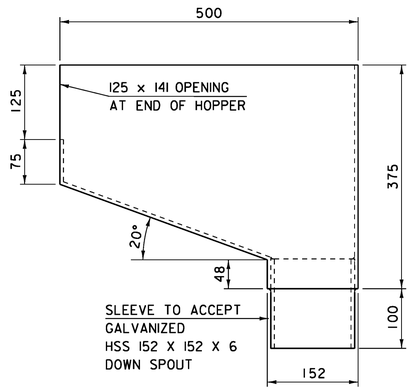
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
WINGWALL CONCRETE RAIL DETAILS	SHEET 60 OF 90



DOWNSPOUT FRONT

0 0.5 1

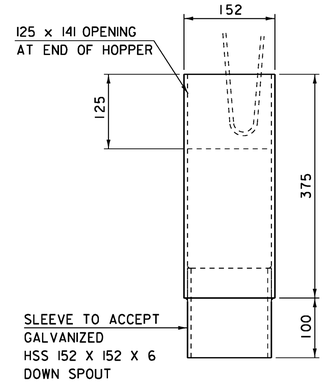
SCALE = 1:10



DOWNSPOUT HOPPER DETAIL- (FRONT)

0 0.25 0.5

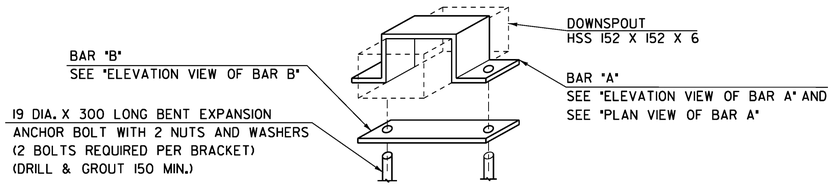
SCALE = 1:5



DOWNSPOUT HOPPER DETAIL- (END)

0 0.25 0.5

SCALE = 1:5

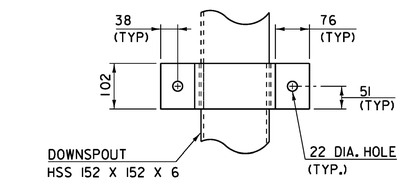


DETAIL ATTACHING DOWNSPOUT TO BRIDGE SEAT

NTS

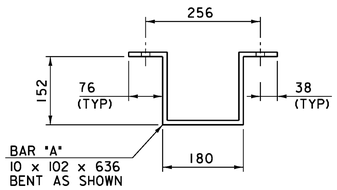
DOWNSPOUT NOTES

1. HOLLOW STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A500 OR A501.
2. ALL PLATES, BARS, AND ANGLES SHALL CONFORM TO AASHTO M 270M/M 270 GR 36.
3. DOWNSPOUTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION. AFTER GALVANIZATION THEY SHALL BE PAINTED. THE PAINT SHALL BE BROWN COLOR CHIP #20059.
4. ALL BOLTS AND RELATED HARDWARE SHALL BE ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M 232M/M 232).
5. IN AREAS WHERE THE GALVANIZING HAS BEEN REMOVED FROM THE DOWNSPOUTS EITHER BY CUTTING, BURNING, WELDING, PLACING, OR ANY OTHER MEANS, IT SHALL BE REPAIRED BY THOROUGHLY CLEANING THE DAMAGED AREAS WITH A WIRE BRUSH AND PAINTING THE DAMAGED AREAS WITH TWO COATS OF AN APPROVED SEALANT.
6. ALL MATERIALS AND INSTALLATION COSTS FOR THE DOWNSPOUTS, INCLUDING STEEL TUBING, GALVANIZING, RELATED HARDWARE, AND ANCHOR BOLTS SHALL BE PAID FOR UNDER ITEM 506.60 "STRUCTURAL STEEL". PAINTING WILL BE PAID FOR UNDER THE SECTION 513 ITEMS IN THE CONTRACT.
7. THE PLATES REFERENCED ON THIS SHEET ARE 6MM THICK UNLESS OTHERWISE NOTED.



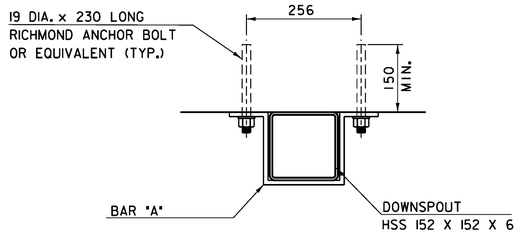
ELEVATION VIEW OF BAR "A"

NTS



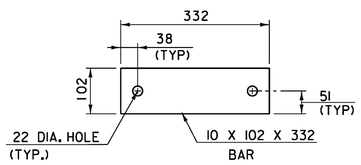
PLAN VIEW OF BAR "A"

NTS



DETAIL FOR ATTACHING DOWNSPOUT TO BACKWALL

NTS



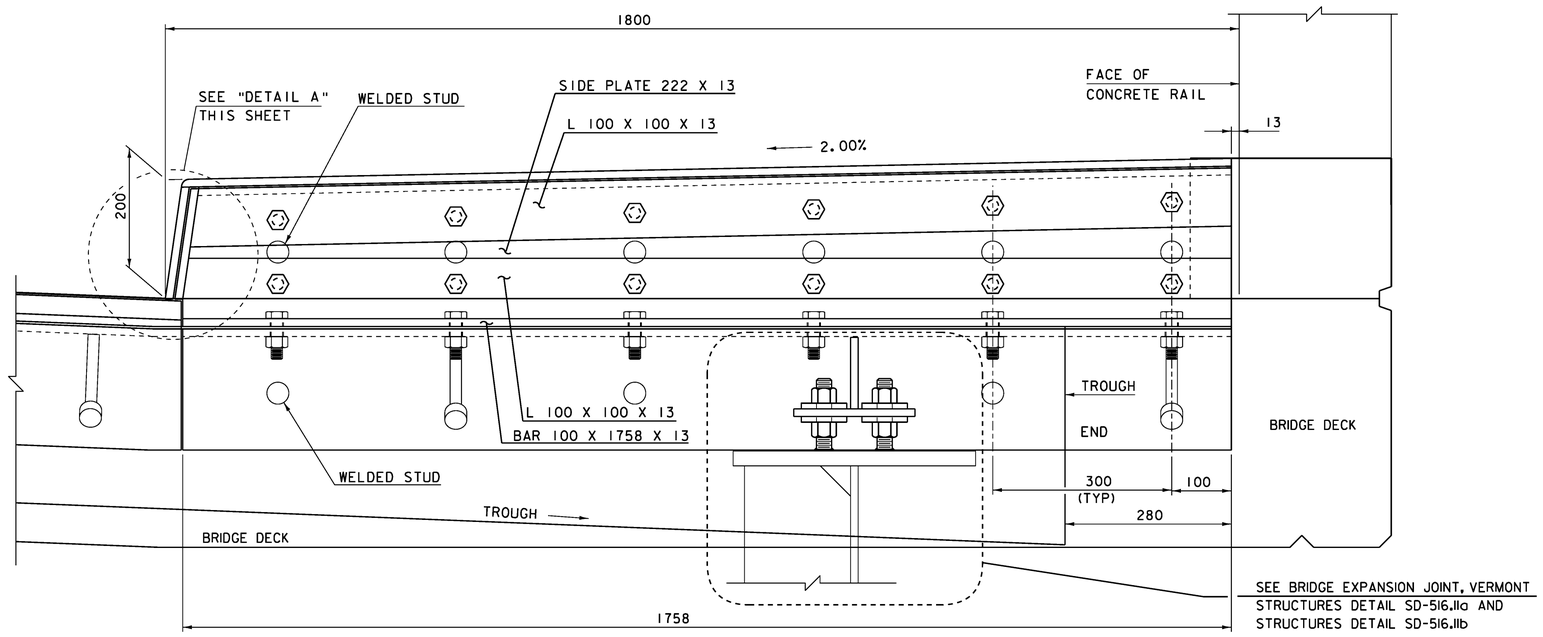
ELEVATION VIEW OF BAR "B"

NTS

0 0.5 1

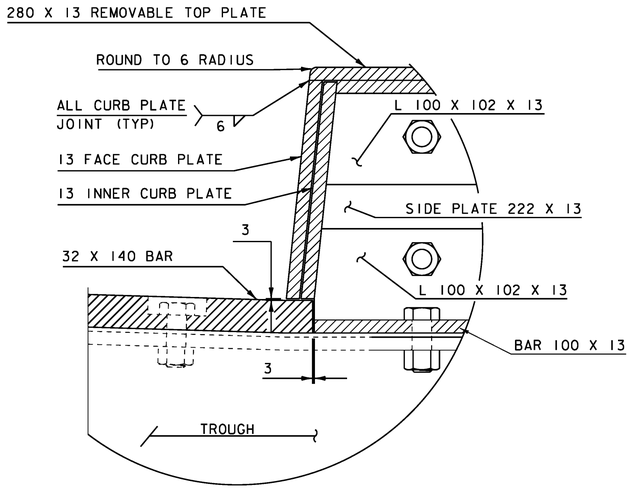
SCALE = 1:10

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: G. ROKES	CHECKED BY: W. PELLETIER
DOWNSPOUT DETAILS SHEET	SHEET 61 OF 90



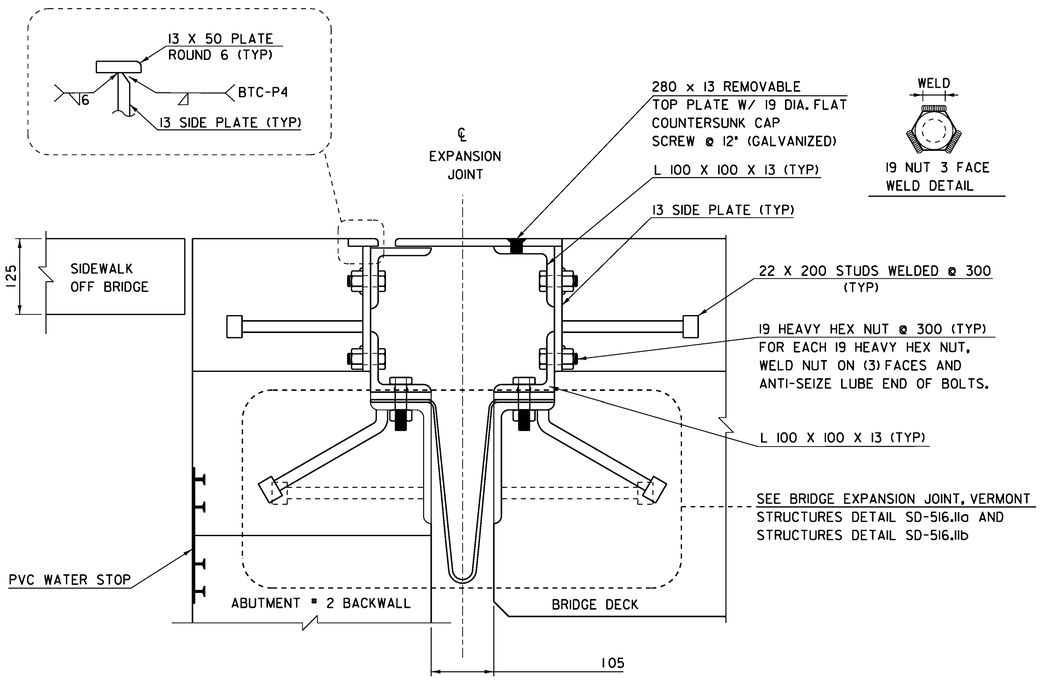
BRIDGE EXPANSION JOINT SIDEWALK SECTION

NTS



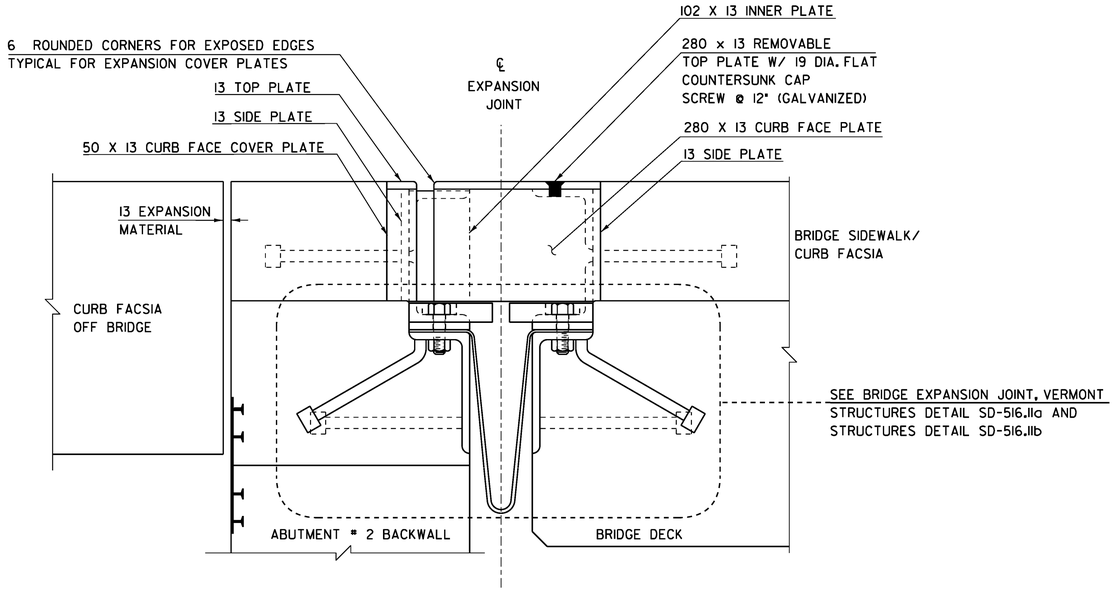
DETAIL A

NOT TO SCALE



BRIDGE EXPANSION JOINT SIDEWALK TYPICAL

NTS



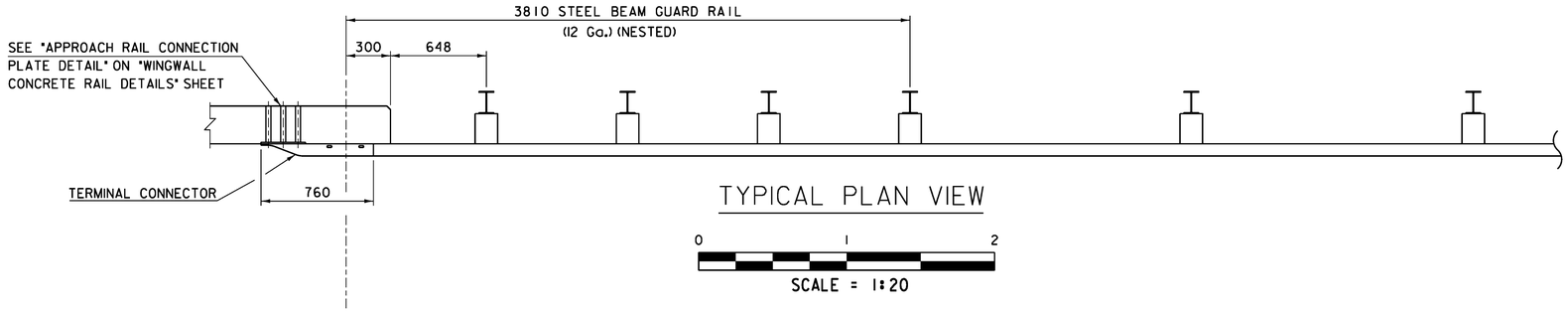
SIDEWALK EXPANSION JOINT AT CURB FACE

NTS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sup.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
BRIDGE SIDEWALK EXPANSION JOINT DETAILS

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 62 OF 90

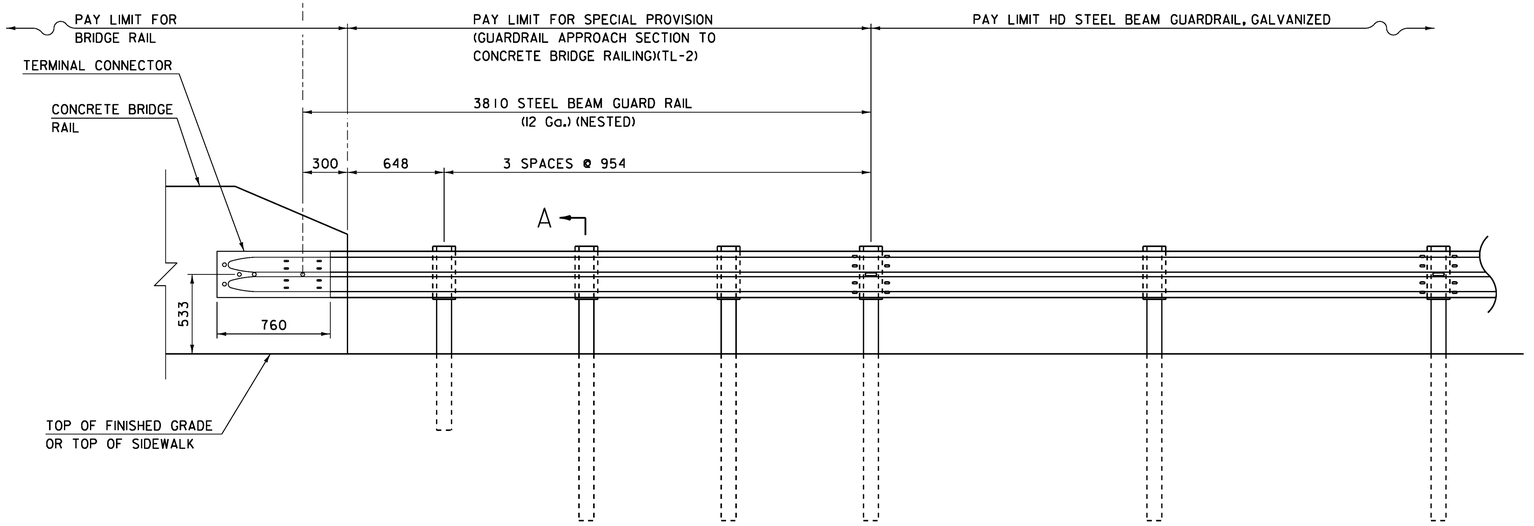


TYPICAL PLAN VIEW

0 1 2

SCALE = 1:20

CENTER LINE
OF SPLICE



TYPICAL ELEVATION VIEW

0 1 2

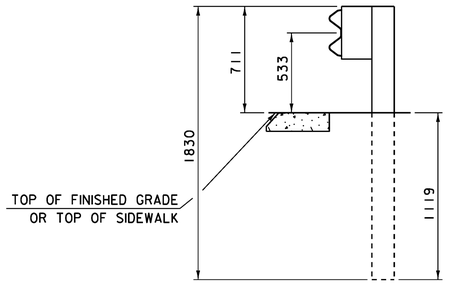
SCALE = 1:20

GENERAL NOTES

1. A COMPOSITE MATERIAL BLOCKOUT FROM THE APPROVED PRODUCTS LIST MAY BE SUBSTITUTED FOR A POST AND/OR BLOCKOUT OF SIMILAR DIMENSIONS.
2. REFER TO STANDARD DRAWINGS G-1 AND G-1D FOR ADDITIONAL DETAILS.
3. THE TERMINAL CONNECTOR SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 900.620 "SPECIAL PROVISION (GUARDRAIL APPROACH SECTION TO CONCRETE BRIDGE RAILING)(TL-2)". THE CONNECTION PLATE SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 900.640 "SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION)".

BLOCKOUT TO POST DETAIL

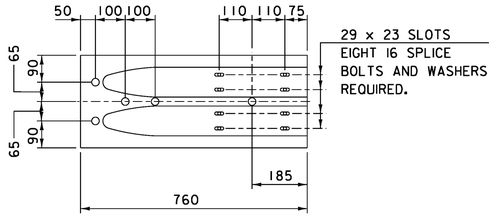
NTS



SECTION A-A

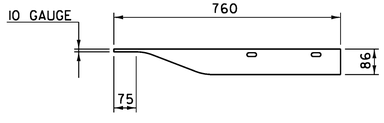
0 1 2

SCALE = 1:20



TERMINAL CONNECTOR
ELEVATION VIEW

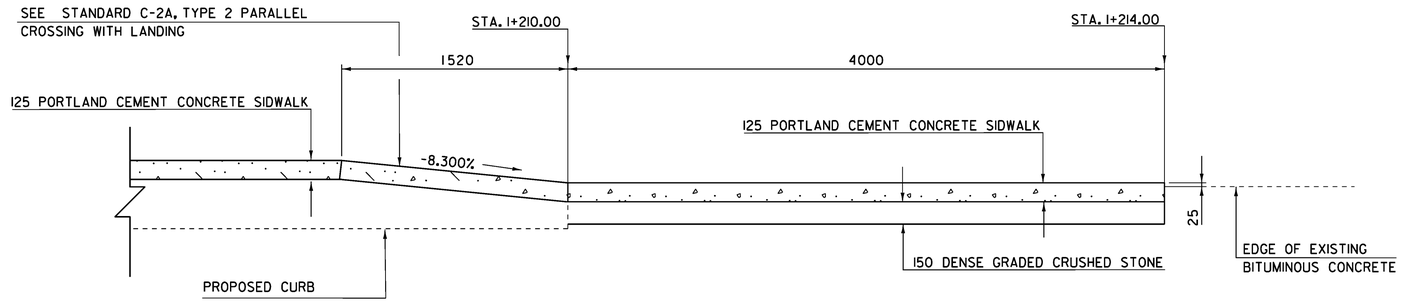
NTS



TYPICAL PLAN VIEW

NTS

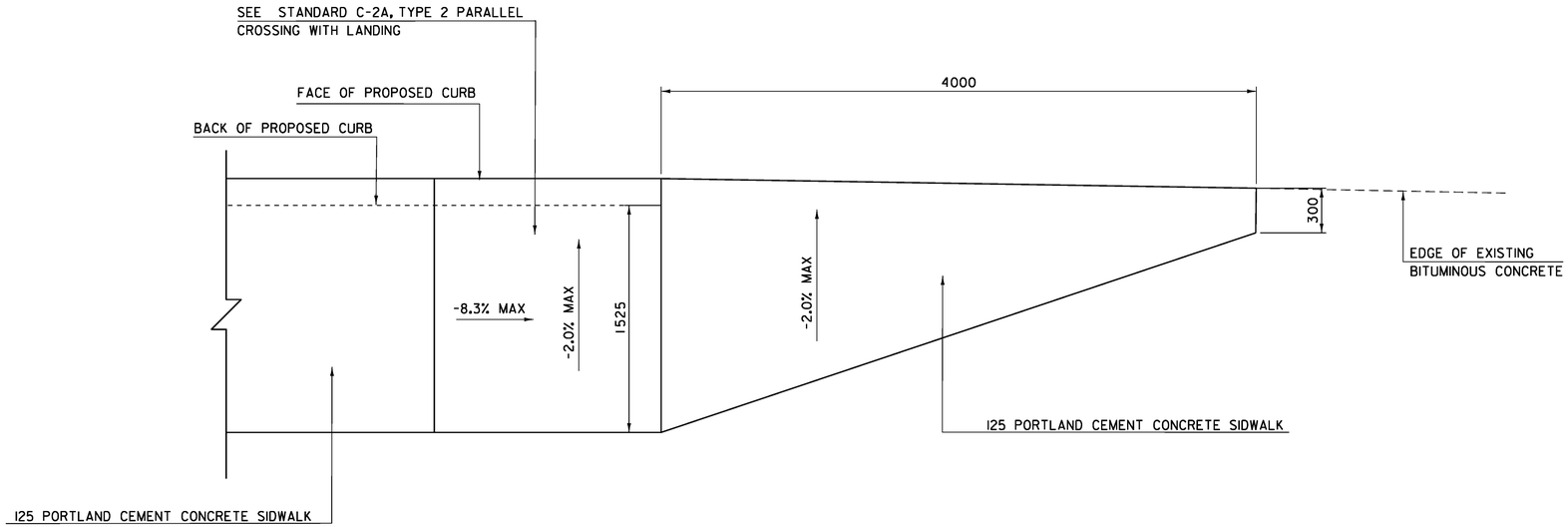
PROJECT NAME: READSBORO	
PROJECT NUMBER: BRF 0105 (3)	
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
APPROACH RAIL DETAILS	SHEET 63 OF 90



ELEVATION PORTLAND CEMENT CONCRETE SIDEWALK APPROACH

0 1 2

SCALE = 1:20



PLAN PORTLAND CEMENT CONCRETE SIDEWALK APPROACH

0 1 2

SCALE = 1:20

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088sup.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
CONCRETE SIDEWALK APPROACH	SHEET 64 OF 90

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

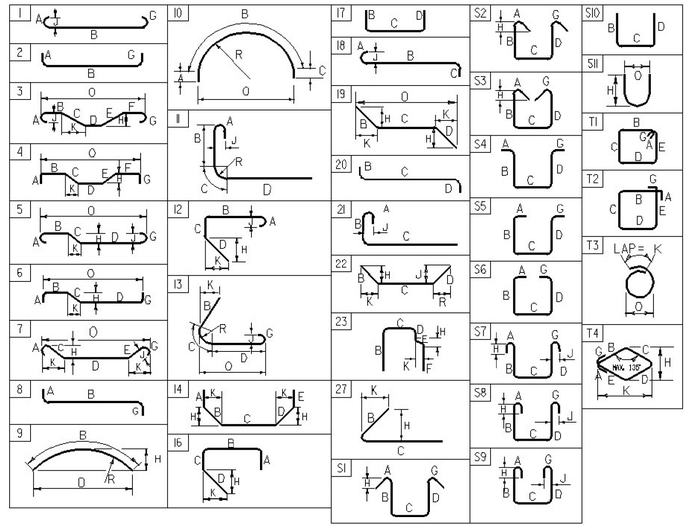
Metric

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
BRIDGE DECK AND RAIL																	
	36	13	11220	ES1302	STR	11220											
△ ▲	8	13	1475	ES1303	STR	1475											
	163	16	11250	ES1601	STR	11250											
	483	16	11220	ES1602	STR	11220											
✳	29	16	2236	ES1605	STR	2236											
✳	164	19	11250	ES1901	STR	11250											
	163	13	3105	ES1301	S5	610	930	110	845			610					
▲	9	13	2220	ES1304	17		1055	110	1055								
	163	13	2680	ES1305	S5	610	705	110	645			610					
	163	16	3685	ES1603	S5	600	315	1855	315			600					
	28	16	2630	ES1604	S5	165	775	165	1525								
	28	16	2305	ES1606	S5	165	450	165	1525								
ABUTMENT #1																	
✳	41	16	2395	1A1602	STR	2395											
	20	16	11724	1A1603	STR	11724											
	8	16	1200	1A1604A	STR	1200											
△	40	16	1600	1EA1606	STR	1600											
	10	16	11026	1EA1607	STR	11026											
	39	22	3000	1A2203	STR	3000											
	16	25	1125	1EA2501	STR	1125											
✳	40	29	3000	1A2901	STR	3000											
	38	16	3260	1A1604	16	660	1050	350	1200				850		850		
	38	16	2425	1EA1605	22		1200	1225					850		850		
	38	16	2450	1EA1608	17		1000	450	1000								
	38	16	1770	1EA1609	17		720	150	900								
✳ ▲	41	22	3535	1A2201	17		2560	975									
	22	22	12035	1A2202	17		11435	600									
WINGWALL #1																	
	9	16	1320	1W1601	STR	1320											
	9	16	3745	1W1602	STR	3745											
✳	15	16	2350	1W1604	STR	2350											
	14	16	1655	1W1605	STR	1655											
	2	16	1810	1W1608	STR	1810											
✳	16	19	2925	1W1901	STR	2925											
✳	16	22	3450	1W2201	STR	3450											
	8	16	1795	1W1603	17		660	475	660								
	7	16	4220	1W1606	22		660	2900	660				300	300	525	525	
	7	16	1320	1W1607	22		660	660					572		330		
	8	22	4770	1W2202	17		4420	350									
WINGWALL #2 AND RAIL																	
✳	7	13	2450	2ER1302	STR	2450											
▲	6	13	1475	2ER1303	STR	1475											
	11	16	1320	2W1601	STR	1320											
✳	12	16	3165	2W1602	STR	3165											
	6	16	3350	2W1604	STR	3350											
	2	16	1480	2W1607	STR	1480											
✳ ▲	15	16	2750	2EW1604	STR	2750											
✳	14	19	1650	2W1901	STR	1650											
✳	15	22	2950	2W2201	STR	2950											
	6	13	2780	2ER1301	17		1335	110	1335								
	6	16	3490	2W1605	22		660	2170	660				467	467	467	467	
	6	16	1320	2W1606	17		660	660									
	11	16	2075	2EW1603	17		800	475	800								
✳	10	19	3820	2ER1901	17		1855	110	1855								
✳	15	22	3550	2W2201	17		2950	600									
	22	22	4190	2W2202	17		3840	350									
✳	21	22	2387	2EW2203	17		1100	187	1100								
APPROACH SLAB #1																	
	21	16	8835	1EAS1601	STR	8835											
✳	42	29	6325	1EAS2901	1	225	6100							230			

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
ABUTMENT #2																	
	39	16	1320	2A1603	STR	1320											
✳ ▲	40	16	2935	2A1604	STR	2935											
	8	16	1200	2A1604A	STR	1200											
	28	16	11250	2A1605	STR	11250											
✳	3	16	2425	2EA1613	STR	2425											
	35	16	1600	2EA1608	STR	1600											
	14	16	10200	2EA1609	STR	10200											
✳	40	22	2935	2A2201	STR	2935											
	23	22	11250	2A2202	STR	11250											
	39	22	4350	2A2203	STR	4350											
	11	22	4710	2A2204	STR	4710											
	16	25	1125	2EA2501	STR	1125											
	51	29	4350	2A2902	STR	4350											
	39	16	3360	2A1606	16	660	1150	350	1200				849		849		
	35	16	2425	2EA1607	22		1200	1225					849		849		
	35	16	2800	2EA1610	17		1155	490	1155								
	35	16	2155	2EA1611	17		800	250	1105								
	9	16	2210	2EA1612	17		1030	150	1030								
✳	40	29	3700	2A2901	17		2350	1350									
WINGWALL #3 AND RAIL																	
✳	7	13	2850	3ER1302	STR	2850											
	6	13	1425	3ER1303	STR	1425											
△	13	16	1485	3W1601	STR	1485											
▲	11	16	4915	3W1602	STR	4915											
	22	16	3510	3W1604	STR	3510											
✳	15	16	2850	3EW1604	STR	2850											
✳ ▲	21	25	4175	3W2501	STR	4175											
	8	13	2780	3ER1301	17		1335	110	1335								
	11	16	3490	3W1605	22		660	2170	660				467	467	467	467	
	11	16	1320	3W1606	17		660	660									
	11	16	1770	3EW1603	17		660	450	660								
	8	19	3820	3ER1901	17		1855	110	1855								
✳	21	29	4650	3W2901	17		4050	600									
✳	21	32	3385	3W3201	17		2825	560									
WINGWALL #4 AND RAIL																	
✳	7	13	3750	4ER1302	STR	3750											
	6	13	1475	4ER1303	STR	1475											
△	16	16	1485	4W1601	STR	1485											
▲	14	16	4850	4W1602	STR	4850											
	20	16	4410	4W1604	STR	4410											
✳	17	16	3750	4EW1604	STR	3750											
✳	23	19	1760	4W1901	STR	1760											
✳ ▲	27	25	3810	4W2501	STR	3810											
	12	13	2780	4ER1301	17		1335	110	1335								
	14	16	1770	4EW1603	17		660	450	660								
	10	16	3490	4W1605	22		660	2170	660				467	467	467	467	
	10	16	1320	4W1606	17		660	660									
✳	8	20	3820	4ER1901	17		1855	110	1855								
✳	27	22	2230	4EW2201	17		1025	180	1025								
✳	27	29	4650	4W2901	17		4050	600									
✳	27	32	3385	4W3201	17		2825	560									
APPROACH SLAB #2																	
	21	16	8570	2EAS1601	STR	8570											
	39	29	6325	2EAS2901	1	225	6100							230			

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31M (ASTM A 615M-SI). ALL BARS SHALL BE GRADE 420, 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	NOMINAL MASS (Kg/m)	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER (mm)	CROSS SECTIONAL AREA (mm^2)	PERIMETER (mm)
#10	0.560	9.5	71	29.84
#13	0.994	12.7	129	39.90
#16	1.552	15.9	199	49.95
#19	2.235	19.1	284	60.00
#22	3.042	22.2	387	69.74
#25	3.973	25.4	510	79.80
#29	5.060	28.7	645	90.16
#32	6.404	32.3	819	101.47
#36	7.907	35.8	1006	112.47
#43	11.380	43.0	1452	135.09
#57	20.240	57.3	2581	180.01

SEE REDESIGNNED ABUTMENTS SHEET 5 OF 5

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **BRF 0105 (3)**

FILE NAME: **sj088rss 9-28-11.xls**
PROJECT MANAGER: **J. LACROIX**
DESIGNED BY: **W. PELLETIER**
REINFORCING STEEL SCHEDULE SHEET

PLOT DATE: **3/12/2012**
DRAWN BY: **G. ROKES**
CHECKED BY: **N. VAN DEN BER**
SHEET **65** OF **90**

VTrans Metric

N

VT STATE PLANE GRID

STATION 2+020.000
END PAVED DRIVE 1

STATION 1+068.600
BEGIN BRIDGE

STATION 1+101.580
END BRIDGE

STATION 1+140.000
END PROJECT

STATION 3+031.610
END PAVED DRIVE 2

STATION 1+035.000
BEGIN PROJECT

STATION 1+005.000
BEGIN APPROACH

TH-2
MASSACHUSETTS

TH-2 TO
VT-100

WEST BRANCH OF
DEERFIELD RIVER

— PS — PROPOSED SEWER
— S — EXISTING SEWER
— W — PROPOSED WATER
— W — EXISTING SEWER

RECORD DRAWINGS
V

NOTE: SEE CONSULTANT UTLITIES PLANS (C1-C4) AND (E1,E2) FOR ANY INFORMATION ON EXISTING/PROPOSED SEWER LINES AND EXISTING/PROPOSED WATER LINES.

0 10 20
SCALE 1:250

PROJECT NAME: READSBORO	
PROJECT NUMBER: BRF 0105 (3)	
FILE NAME: 89J088/STR/s89J088utilbdr.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
WATER AND SEWER UTILITIES	SHEET 66 OF 90

VAOT Metric

N

VT STATE PLANE GRID

BEGIN R.O.W. PROJECT
BRF 0105(3) STA. 1+016.4
11.33M (37.2') L T.

B.M.#1 (NOT ON PLAN)
APPROX. STATION 0+896 (11.940 LEFT)
CHISEL SQUARE IN TOP OF BOULDER
ELEV.= 360.818

END R.O.W. PROJECT
BRF 0103(3)STA. 1+149.9
7.42M (24.3') RT.

HOLLAND, MITCHELL H. & AMBER J. (1)

B.M.#2
APPROX. STATION 1+041.431 (5.989 LEFT)
CHISEL SQUARE IN LEDGE
ELEV.= 361.973

1.5 STORY HOUSE

STATION 3+031.610
END PAVED DRIVE 2

STATION 1+035.000
BEGIN PROJECT

STATION 2+020.000
END PAVED DRIVE 1

STATION 1+068.600
BEGIN BRIDGE

STATION 1+101.580
END BRIDGE

STATION 1+140.000
END PROJECT

WALTER L. CASE
POST # 29

TOWN OF READSBORO (2)

JOHNSON, FREDA (3)

TOWN OF READSBORO FIRE STATION

PETERSON, THOMAS D. & JENNIFER L. (5)

DEMASI, N/F PAUL & ELAINE

DIMEZZA, N/F ROBERT A. & KRISTY L.

TRANS CANADA HYDRO NORTHEAST INC. JOINED BY VERMONT LAND TRUST, INC. (4)

EXIST. R.O.W.

MATCH LINE STA. 1+50

TH-2 TO VT-100

TH-2 MASSACHUSETTS

WEST BRANCH OF DEERFIELD RIVER

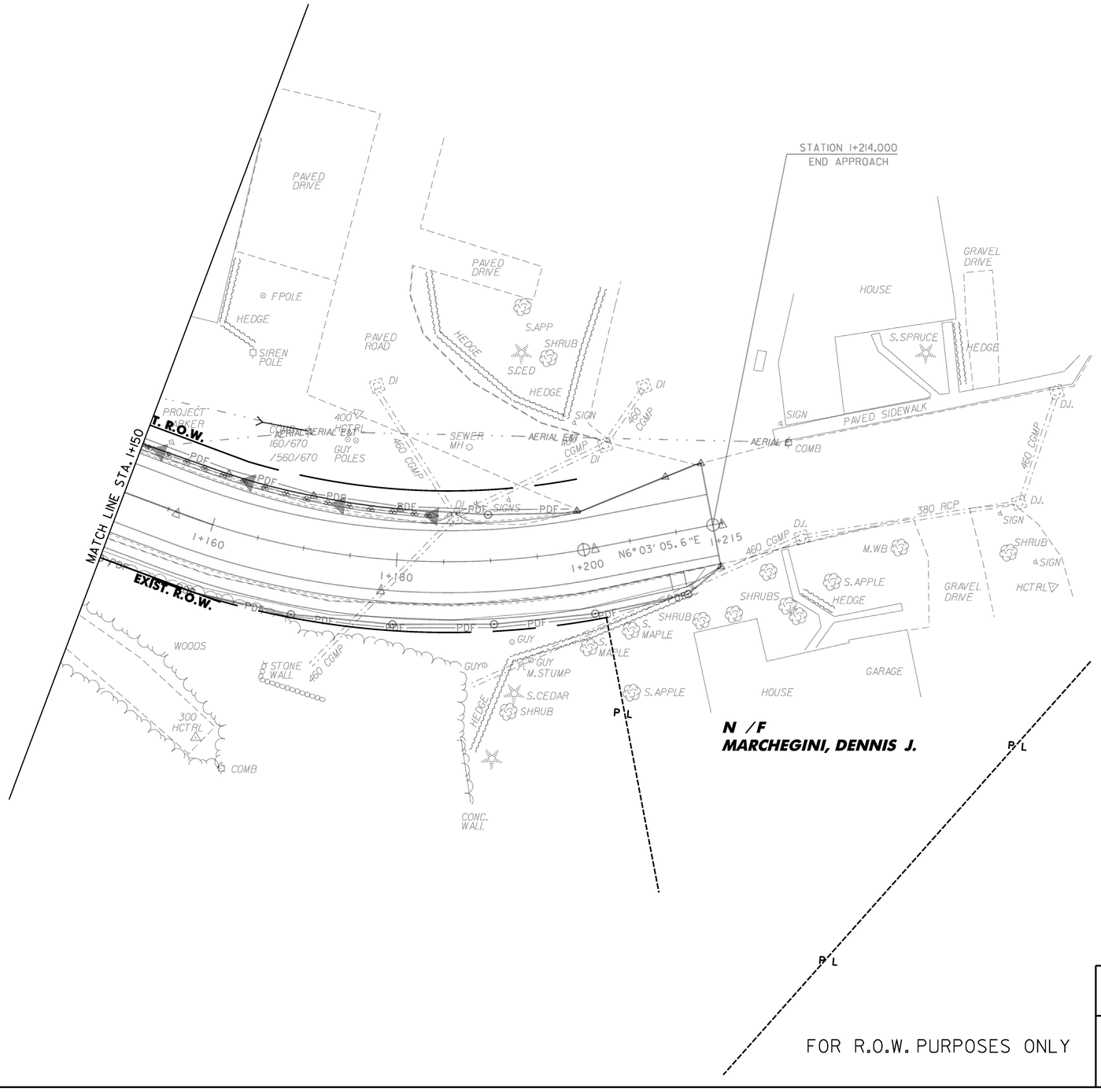
LINES SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE TOWN OF READSBORO'S ACQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

0 10 20
SCALE 1:250

FOR R.O.W. PURPOSES ONLY

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

FILE NAME: s89j088rowbdr.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: M. LONGSTREET
ROW LAYOUT SHEET 1	SHEET 67 OF 90



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

FOR R.O.W. PURPOSES ONLY

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: s89j088rowbdr.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ROW LAYOUT SHEET 2

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: M. LONGSTREET
SHEET 68 OF 90

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

Metric

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA ±	AREA ±	TYPE	(T)/(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
1	HOLLAND, MITCHELL H. & AMBER J.	9	1+016.4 LT.				INSTALL	(T)		WDOE	10.7.2004	READSBORO	60	493-5	GUY
			SIDELINE #2 3+004.46	SIDELINE #2 3+031.61			DRIVE	(T)							9.1M PAVED (30')
			1+049.4 LT.	1+078.5 LT.			DETOUR	(T)	211.7 S.M.						2278 S.F.± TWO WAY TRAFFIC
			1+053.1 LT.	1+060.2 LT.			UTILITY EASE.	(P)	247.6 S.M.						2665 S.F.±
			1+066.2 LT.	1+068.0 LT.			INSTALL & MAINTAIN	(P)							GUARDRAIL
			1+067.0 LT.	1+077.3 LT.			CHANNEL	(P)	40.9 S.M.						440 S.F.±
			1+076.8 LT.	1+078.3 LT.			INSTALL	(T)							EROSION CONTROL
			SIDELINE #1 2+004.66	SIDELINE #1 2+020.00			DRIVE	(T)							6.1M PAVED ACCESS TO PARCEL 2
2	WALTER L. CASE POST #29	9	SIDELINE #1 2+004.66	SIDELINE #1 2+020.00						WDOE	8.17.2004	READSBORO	60	306-307	DRIVE 6.1M PAVED ACROSS PARCEL 1 (20')
			1+059.8 LT.	1+064.1 LT.			UTILITY EASE.	(P)	80.5 S.M.						867 S.F.±
3	JOHNSON, FREDA	9	1+103.1 LT.	1+103.4 LT.			INSTALL	(T)				READSBORO			ARCHEOLOGICAL FENCE
			1+115.0 LT.	1+124.0 LT.			SLOPE	(T)	33.2 S.M.						357 S.F.±
			1+103.7 LT.	1+121.9 LT.			DETOUR	(T)	107 S.M.						1151 S.F.± TWO WAY TRAFFIC
			1+104.1 LT.	1+118.5 LT.			DRIVE	(T)							PAVED
			1+104.6 LT.	1+120.6 LT.			CULVERT	(P)							2 CULVERTS & 2 DRAIN INLETS
			1+120.6 LT.	1+125.3 LT.			DITCH	(P)	6.0 S.M.						64 S.F.±
4	TRANS CANADA HYDRO NORTHEAST INC.	9	1+072.6 RT.	1+078.3 RT.			SLOPE	(T)	15.8 S.M.	QCD	7.18.2007	READSBORO	66	25-29	170 S.F.±
	JOINED BY VERMONT LAND TRUST, INC.		1+072.6 RT.	1+076.0 RT.			CHANNEL	(P)	13.9 S.M.						150 S.F.±
			1+072.6 RT.	1+078.4 RT.			INSTALL	(T)	1.0 S.M.						11 S.F.± EROSION CONTROL
			1+072.9 RT.	1+123.6 RT.			UTILITY EASE.	(T)	89.7 S.M.						966 S.F.±
			1+072.8 RT.	1+074.1 RT.			CULVERT & DRAINAGE	(P)							
			1+093.0 RT.	1+109.8 RT.			SLOPE	(P)	7.6 S.M.						82 S.F.±
			1+093.1 RT.	1+129.9 RT.			INSTALL	(T)	69.9 S.M.						752 S.F.± EROSION CONTROL FENCE
			1+097.3 RT.	1+101.0 RT.			CHANNEL	(P)	2.0 S.M.						22 S.F.±
			1+096.5 RT.	1+144.0 RT.			INSTALL	(T)							ARCHEOLOGICAL FENCE
			1+118.2 RT.				INSTALL	(T)							GUY
			1+130.0 RT.				DRIVE	(T)							7.5M PAVED (24.6')
			1+109.8 RT.	1+129.9 RT.			SLOPE	(T)	27.4 S.M.						295 S.F.±
			1+136.1 RT.	1+149.9 RT.			INSTALL	(T)	11.3 S.M.						EROSION CONTROL (122 S.F.±)
5	PETERSON, THOMAS D. & JENNIFER L.	9	1+034.2 RT.				DRIVE	(T)				READSBORO			8.25M PAVED (27')
			1+038.9 RT.	1+045.5 RT.			INSTALL	(T)	13.6 S.M.						146 S.F.± EROSION CONTROL
			1+046.4 RT.				INSTALL	(T)							CONCRETE WALKWAY 1.1M (3.6')
			1+047.1 RT.	1+072.6 RT.			INSTALL	(T)	75.7 S.M.						815 S.F.± EROSION CONTROL
			1+055.2 RT.	1+072.9 RT.			UTILITY EASE.	(T)	12.5 S.M.						135 S.F.±
			1+062.8 RT.				INSTALL	(T)							GUY
			1+065.9 RT.	1+073.2 RT.			CHANNEL	(P)	45.8 S.M.						493 S.F.±
			1+065.2 RT.	1+071.1 RT.			INSTALL & MAINTAIN	(P)	3.8 S.M.						41 S.F.± CONCRETE BRIDGE FOOTINGS
			1+066.4 RT.	1+072.8 RT.			CULVERT	(P)							
			1+038.9 RT.	1+045.7 RT.			SLOPE	(T)	5.5 S.M.						59 S.F.±
			1+051.3 RT.	1+068.6 RT.			SLOPE	(T)	14.4 S.M.						155 S.F.±
6	VERIZON NEW ENGLAND, INC.														UTILITY
7	TOWN OF READSBORO - WATER														UTILITY
8	TOWN OF READSBORO - SEWER														UTILITY
9	TOWN OF READSBORO - ELECTRIC														UTILITY

TABLE OF REVISIONS

REVISION NO.	SHEET NO.	DESCRIPTION	DATE
1	8,9	PARCEL NO. 1 HOLLAND. CHANGE TITLE TO: HOLLAND, MITCHELL H. & AMBER J. PER C.O. 9345. MADE BY: MR APPROVED BY: RPD	4.12.2004
2	8,9	PARCEL NO. 1 HOLLAND. CHANGE THE RIGHT TO INSTALL & MAINTAIN (P) FOR GUY TO INSTALL (T). PER C.O. 9347. MADE BY: MR APPROVED BY: RPD	4.26.2004
3	8	PARCEL NO. 2 AMERICAN LEGION. CHANGE THE SQUARE FOOTAGE IN THE REMARKS COLUMN FOR THE UTILITY EASEMENT FROM 887 S.F.± TO 867 S.F.± PER C.O. 9348. MADE BY: MR APPROVED BY: RPD	4.26.2004
4	9	PARCEL NO. 4 U.S. GEN. NEW ENGLAND. CHANGE THE RIGHT ON THE LAYOUT FROM INSTALL GUY (T) TO INSTALL (T). PER C.O. 9349. MADE BY: MR APPROVED BY: RPD	4.26.2004
5	8,9	PARCEL NO. 5 PETERSON. CHANGE THE RIGHT TO INSTALL & MAINTAIN (T) FOR GUY TO INSTALL (T). PER C.O. 9350. MADE BY: MR APPROVED BY: RPD	4.26.2004
6	8,9	PARCEL NO. 2 WALTER CASE POST #129 OF THE AMERICAN LEGION. CHANGE NAME TO WALTER L. CASE POST #29. PER C.O. 9380. MADE BY: MR APPROVED BY: RPD	7.22.2004
7	8,9	PARCEL NO. 4 U.S. GEN NEW ENGLAND, INC. ADD NEW OWNER TO PLANS. NEW OWNER: TRANS CANADA HYDRO NORTHEAST INC. JOINED BY VERMONT LAND TRUST, INC. PER C.O. 9445 MADE BY: MR APPROVED BY: RPD	10.18.2005

PLOT DATE 12.28.2011

PLAN LEGEND

EXISTING RIGHT-OF-WAY
TAKING WITH ACCESS
TAKING WITHOUT ACCESS
CLEAR ZONE (CZ)
PROPERTY LINE (P / L)
TOE OF SLOPE
TOP OF CUT
SLOPE RIGHT (SR (P))
CONSTRUCTION RIGHT (CONST. (T))
PROJECT DEMARCATION FENCE (PDF — PDF)

(P) -PERMANENT
(T) -TEMPORARY
DR. -DRAINAGE RIGHT
DIT. -DITCHING RIGHT
CH. -CHANNEL RIGHT
DRIVE -DRIVE RIGHT
CUL. -CULVERT RIGHT
C&T -CLEARING & TRIMMING RIGHT
SR -SLOPE RIGHT
UE -UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 07-07-03
CHIEF, PLANS & TITLES

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105(3)

FILE NAME: rj088d.xls
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETEIR
R.O.W. DETAIL SHEET #1

PLOT DATE: 12/9/98
DRAWN BY: M.J.R.
CHECKED BY: R.E.F.
SHEET 69 OF 90

READSBOSO BRF 0105(3) EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

READSBORO BRF 0105(3) CONSISTS OF THE REPLACEMENT OF BRIDGE 32 ON TOWN HIGHWAY 2 OVER THE WEST BRANCH OF THE DEERFIELD RIVER, IN THE TOWN OF READSBORO IN BENNINGTON COUNTY, VERMONT. THE NEW STEEL PLATE GIRDER BRIDGE, WILL HAVE A SLIGHTLY SHORTER SPAN (32.9 m) THAN THE EXISTING BRIDGE. IT WILL BE CONSTRUCTED ON NEW ABUTMENTS ON THE EXISTING HORIZONTAL ALIGNMENT. A TWO LANE TEMPORARY BRIDGE IS PLANNED, JUST UPSTREAM (WEST) OF THE EXISTING BRIDGE.

TOTAL AREA OF DISTURBANCE FOR THE PROJECT AREA IS 0.85 ACRES. THIS INCLUDES THE 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 EXISTING CONDITIONS EPSC PLAN. IT IS ANTICIPATED THAT THIS PROJECT WILL LAST TWO CONSTRUCTION SEASONS.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY
THE BANKS OF THE WEST BRANCH OF THE DEERFIELD RIVER IN THE PROJECT AREA ARE HILLY, ROCKY AND WOODED. TWO WIDE PAVED DRIVEWAYS IMMEDIATELY ADJOIN THE NEW BRIDGE TO THE NORTHWEST AND SOUTHWEST, AND WILL BE UTILIZED TO ACCESS THE TEMPORARY BRIDGE.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES
BRIDGE 32 SPANS OVER THE WEST BRANCH OF THE DEERFIELD RIVER. THE STREAM BED IS VERY ROCKY AND SINUOUS. THERE ARE TWO HOUSES, AND A GARAGE ADJOINING THE PROJECT LIMITS. THE WEST BRANCH OF THE DEERFIELD RIVER FLOWS INTO THE DEERFIELD RIVER, APPROX. 45 m DOWNSTREAM FROM THE PROJECT SITE.

1.2.3 VEGETATION
THE VEGETATION IN THE PROJECT AREA CONSISTS OF A COMBINATION OF SMALL TREES AND BRUSH. STONE FILL COVERED WITH GRUBBING MATERIAL WILL STABILIZE STEEPER (CHANNEL) SLOPES. SEED AND MULCH (OR BIODEGRADABLE EROSION MATTING WHERE SPECIFIED) WILL STABILIZE FLATTER SLOPES. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE IV AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS
THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR BENNINGTON COUNTY, VERMONT IS THE SOURCE OF THE SOILS INFORMATION. THE SOIL EXPECTED ON THIS PROJECT IS COLTON GRAVELLY LOAMY SAND, 3-8% SLOPES, EXTREMELY STONY (K=0.17, HYDROGROUP A)

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING: 0.00-0.17 = LOW EROSION POTENTIAL
0.18-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: YES, STONE FOUNDATION WALL NORTHEAST QUADRANT AND ARCH. SENSITIVE AREAS IN NW AND SW QUADRANT.
(SECTION 106 FINDINGS "NO ADVERSE Effect" 9/18/2002.)
BARRIER FENCING WILL BE REQUIRED TO PROTECT ARCH. SENSITIVE AREAS. SEE 1.4.1.
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: WEST BRANCH OF THE DEERFIELD RIVER
WETLANDS: NO

1.3 RISK EVALUATION

BECAUSE TOTAL AREA OF DISTURBANCE IS LESS THAN 1 ACRE, THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF THE GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES FOR LOW RISK PROJECTS. ANY MODIFICATIONS TO THE PROJECT THAT INCREASES THE RISK TO ENVIRONMENTAL RESOURCES SHALL BE RE-EVALUATED IN ACCORDANCE WITH THE PERMIT REQUIREMENTS. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL (EPSC)

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS THAT CAN BE ACCESSED BY CONSTRUCTION EQUIPMENT SHALL BE DELINEATED.PROJECT DEMARCATION FENCING , DENOTED **-PDF-** ON THE PLANS, SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.
BARRIER FENCE, DENOTED -BF- ON THE PLANS, SHALL BE USED INSTEAD OF PROJECT DEMARCATION FENCE WITHIN 100 FT OF A WATER RESOURCE (STREAM, BROOK, LAKE, POND, WETLAND, ETC) AND AT AREAS IDENTIFIED AS ARCHEOLOGICALLY SENSITIVE.

1.4.2 LIMIT DISTURBANCE AREA
PREVENTING INITIAL SOIL EROSION 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 (PHASING) AS CONSTRUCTION PROCEEDS. ADDITIONAL MEASURES MAY BE NEEDED DUE TO THE PHASING OF THE PROJECT AND AS DIRECTED BY THE ENGINEER.

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

1.4.3 SITE ENTRANCE/ EXIT STABILIZATION
TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLANS AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES AND AS DIRECTED BY THE ENGINEER.

INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

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.

INSTALL SILT FENCE AS PROPOSED ON THE EPSC PLAN, ACCORDING TO DETAIL PROVIDED. WOVEN WIRE REINFORCED SILT FENCE SHALL BE USED INSTEAD OF SILT FENCE WITHIN 100 FEET UPSLOPE OF RECEIVING WATERS.

FILTER CURTAIN WILL BE REQUIRED TO BE INSTALLED AND MAINTAINED FOR THE REMOVAL OF THE EXISTING PIER, AS INDICATED ON THE PLANS.

FILTER FABRIC DROP INLET PROTECTION IS REQUIRED TO BE INSTALLED AND MAINTAINED AT 6 LOCATIONS, AS INDICATED ON THE PLANS.

1.4.5 DIVERT UPLAND RUNOFF
CONSTRUCTION OF DIVERSIONARY SWALES AND OTHER MEASURES SHALL BE UTILIZED AS NEEDED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION SITE AND DIRECT IT AROUND DISTURBED AREAS, SO CLEAN WATER IS NOT MUDDIED BY TRAVELLING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF
CONSTRUCTION OF STONE CHECK DAMS IS ANTICIPATED IN ORDER TO REDUCE THE VELOCITY OF CHANNELIZED RUNOFF IN STEEPER AREAS.

1.4.7 CONSTRUCT PERMANENT CONTROLS
THE FOLLOWING PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED, IN ACCORDANCE WITH PERMIT CONDITIONS.
1. STONE FILL, TYPE IV FOR CHANNEL PROTECTION
2. GRUBBING MATERIAL OVER STONE FILL

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE. 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 SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER CONSTRUCTION MAY BE NECESSARY SHOULD THE PROJECT WORK EXTEND INTO WINTER (OCT. 15 - 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, OR SOONER IF RAIN IS FORECAST. SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

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

TREATMENT OF DEWATERING OF FOUNDATION EXCAVATIONS IS ANTICIPATED. LOCATIONS FOR THE TREATMENT HAVE BEEN PROPOSED ON THE PLANS. HOWEVER, THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR.

1.4.12 INSPECT YOUR SITE

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

1.5 SEQUENCE AND STAGING

THE CONTRACTOR SHALL DEVELOP A SEQUENCE AND STAGING PLAN USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

1.5.2 OFF-SITE ACTIVITIES
IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088forms.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
EPSC NARRATIVE	SHEET 70 OF 90

VAOT Metric

N

VT STATE PLANE GRID

SOIL INFORMATION

COLTON GRAVELLY LOAMY SAND
3 TO 8 PERCENT SLOPES
HYDROGROUP A
EXTREMELY STONY

LEGEND

RIPARIAN BUFFER	RIPARIAN BUFFER
FLOOD PLAIN	FLOOD PLAIN
OHW	ORDINARY HIGH WATER
HISTORIC	HISTORIC DISTRICT
HIST.	HISTORICAL
ARCH	ARCHAEOLOGY

0 10 20 30

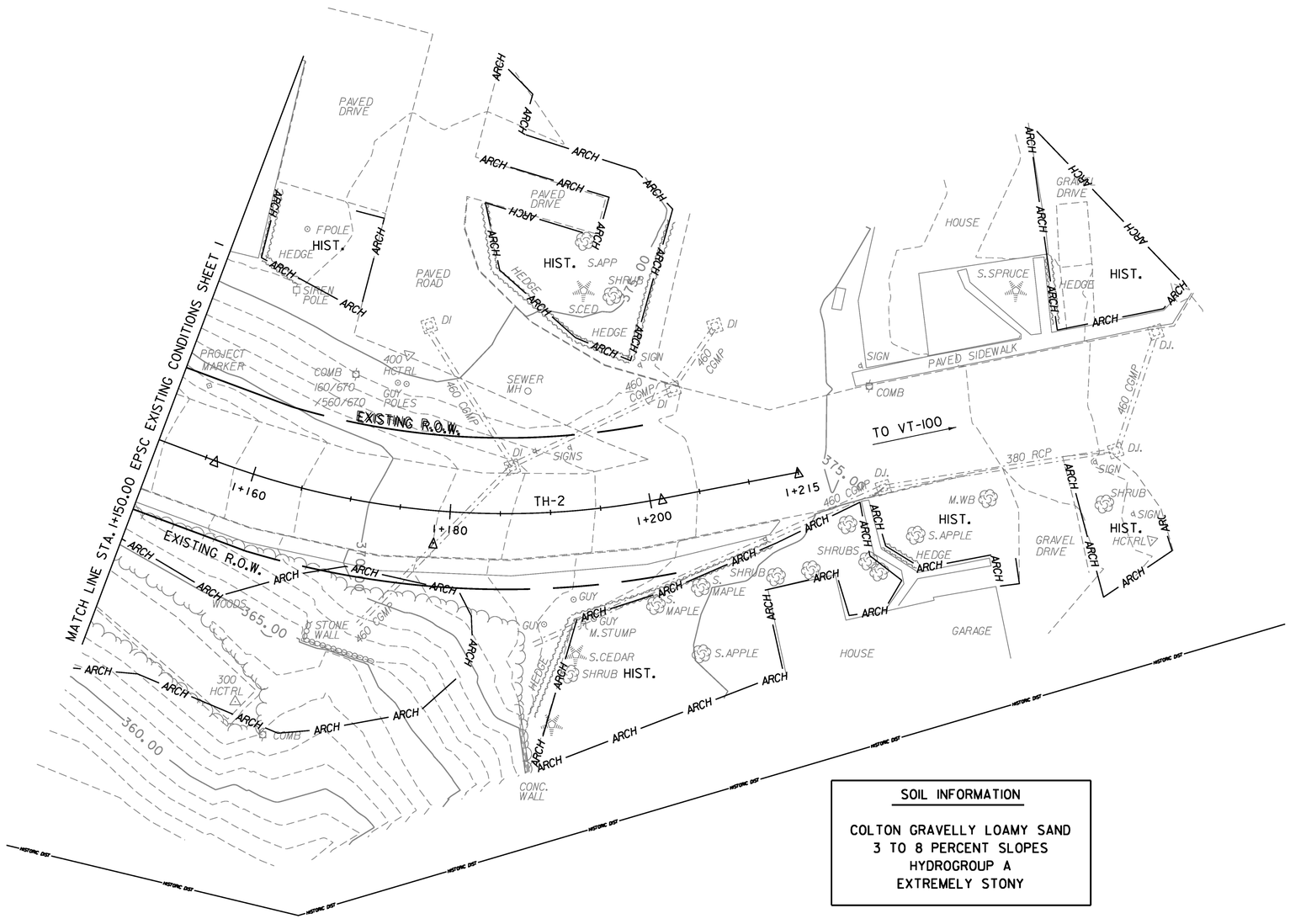
SCALE 1:250 IN METERS

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088/ep_ex.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
EPSC EXISTING CONDITIONS SHEET 1	SHEET 71 OF 90

VAOT Metric

LEGEND

HISTORIC	HISTORIC DISTRICT
HIST.	HISTORICAL
ARCH	ARCHAEOLOGY



VT STATE PLANE GRID

N

SOIL INFORMATION

COLTON GRAVELLY LOAMY SAND
3 TO 8 PERCENT SLOPES
HYDROGROUP A
EXTREMELY STONY

0 10 20 30

SCALE 1:250 IN METERS

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088/ep_ex.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
EPSC EXISTING CONDITIONS SHEET 2	SHEET 72 OF 90

VAOT Metric

N

VT STATE PLANE GRID

LIMITS OF PROPOSED TEMPORARY CAUSEWAY

POTENTIAL SEDIMENT DEWATERING LOCATION, CONTRACTOR TO PROVIDE DETAILS AND METHODOLOGY.

POTENTIAL SEDIMENT DEWATERING LOCATION, CONTRACTOR TO PROVIDE DETAILS AND METHODOLOGY.

LIMITS OF TEMPORARY DETOUR

CENTERLINE TEMPORARY DETOUR

STONE FILL TYPE IV (TYP)

STONE FILL TYPE I

RIPARIAN BUFFER

FLOOD PLAIN

EXISTING R.O.W.

EXISTING INC. R.O.W.

TO MASSACHUSETTS

WEST BRANCH OF DEERFIELD RIVER

MATCH LINE STA. 1+150.00 EPSC CONSTRUCTION CONDITIONS SHEET 2

1.5 STORY HOUSE

2 STORY HOUSE

FIRE STATION

GARAGE

GRAVEL DRIVE

PAVED DRIVE

STONE WALL

CONC. WALL

FOUNDATION

WOODS

BRUSH

SHRUBS

HEDGE

TH-2

460 RCP

HYD W50

COMB. POLE

SIGN

SMH

HCTRL

LEGEND

- RIPARIAN BUFFER
- FLOOD PLAIN — FLOOD PLAIN
- OHW — ORDINARY HIGH WATER
- HISTORIC — HISTORIC DISTRICT
- HIST. — HISTORICAL
- EROSION CONTROL MATTING
- ARCH — ARCH — ARCHAEOLOGY
- STABILIZED CONSTRUCTION ENTRANCE
- FILTER FABRIC DROP INLET PROTECTION
- BF — BARRIER FENCE
- SILT FENCE WOVEN WIRE
- CHECK DAM
- PDF — PDF — PROJECT DEMARCATION FENCE
- SEED AND MULCH
- TYPE IV STONE FILL
- TYPE I STONE FILL
- PROJECT SLOPE LIMITS
- DETOUR SLOPE LIMITS
- FILTER CURTAIN

0 10 20 30

SCALE 1:250 IN METERS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088/epcon.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
EPSC CONSTRUCTION COND SHEET 1

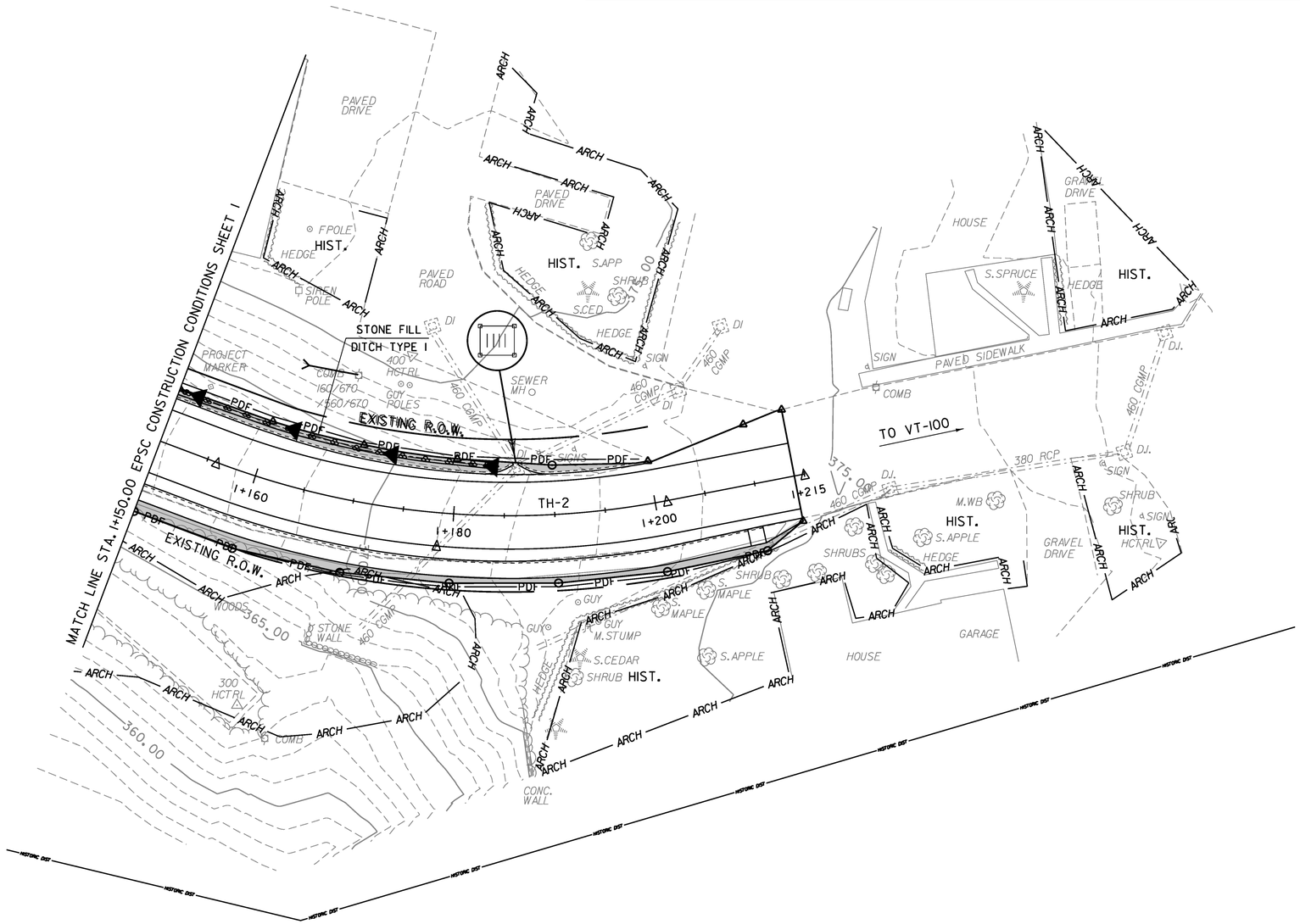
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER

LEGEND

PDF ——— PDF —	PROJECT DEMARCATION FENCE
— ◀ ——— ◀	CHECK DAM
	FILTER FABRIC DROP INLET PROTECTION
HISTORIC	HISTORIC DISTRICT
HIST.	HISTORICAL
ARCH ——— ARCH —	ARCHAEOLOGY

TYPE I STONE FILL

SEED AND MULCH



0 10 20 30

SCALE 1:250 IN METERS

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088/epcon.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
EPSC CONSTRUCTION COND. SHEET 2	SHEET 74 OF 90

VAOT Metric

N

VT STATE PLANE GRID

LEGEND

FLOOD PLAIN	FLOOD PLAIN		SEED AND MULCH
OHW	ORDINARY HIGH WATER		
HISTORIC	HISTORIC DISTRICT		
HIST.	HISTORICAL		
ARCH — ARCH —	ARCHAEOLOGY		

0 10 20 30

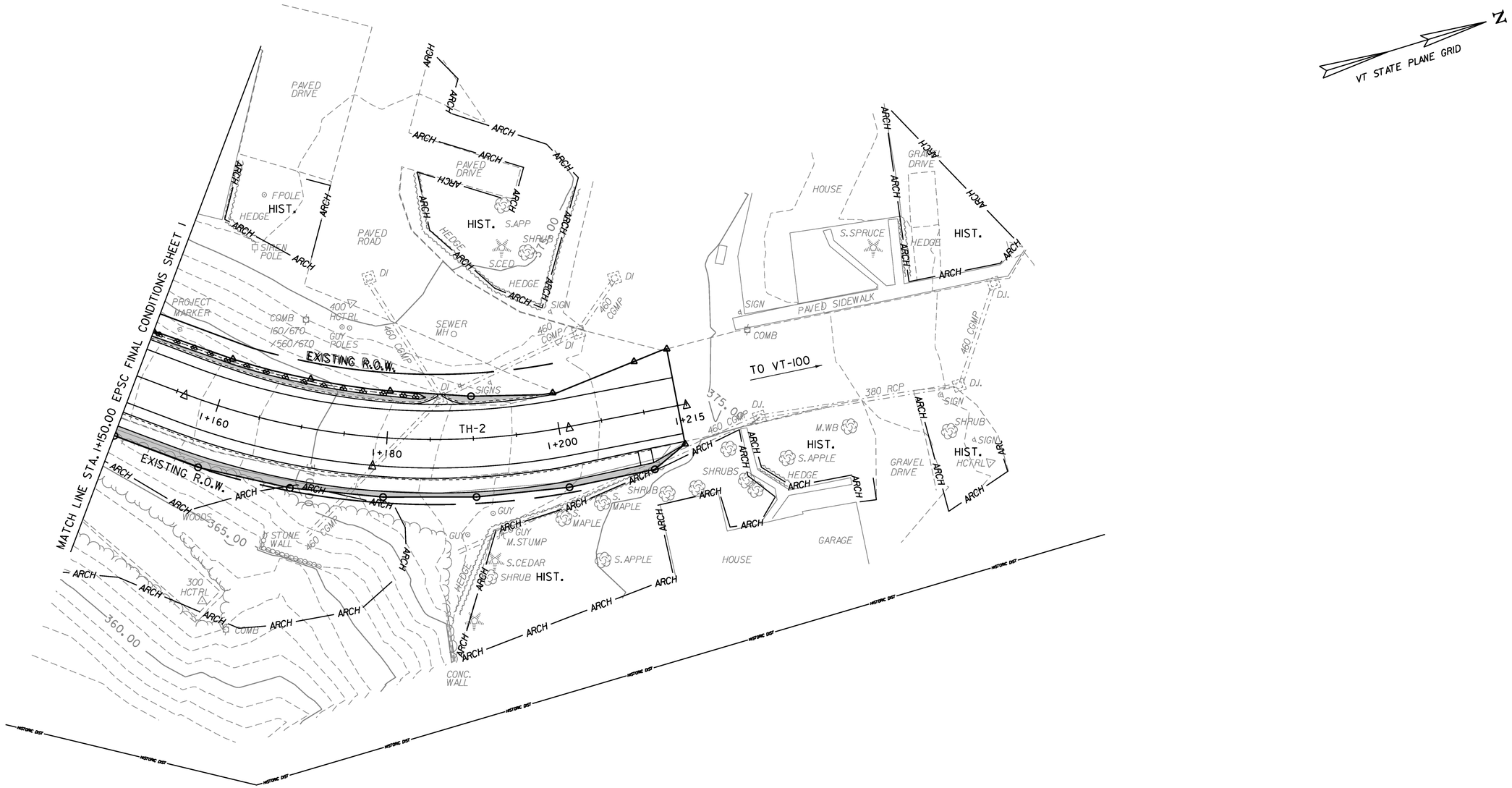
SCALE 1:250 IN METERS

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088/ep_fin.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
EPSC FINAL CONDITIONS SHEET 1	SHEET 75 OF 90

VAOT Metric

LEGEND

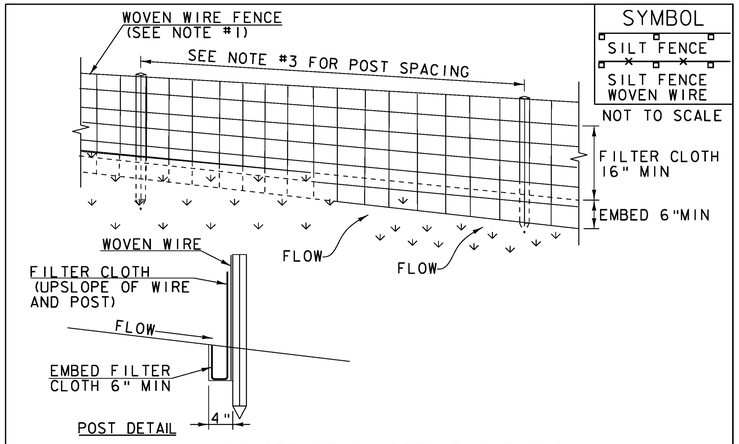
HISTORIC	HISTORIC DISTRICT
HIST.	HISTORICAL
ARCH	ARCHAEOLOGY
	SEED AND MULCH



0 10 20 30

SCALE 1:250 IN METERS

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088/ep_fin.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
EPSC FINAL CONDITIONS SHEET 2	SHEET 76 OF 90



SYMBOL

SILT FENCE

SILT FENCE WOVEN WIRE

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

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

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

SILT FENCE

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

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

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

VAOT RURAL AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE

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

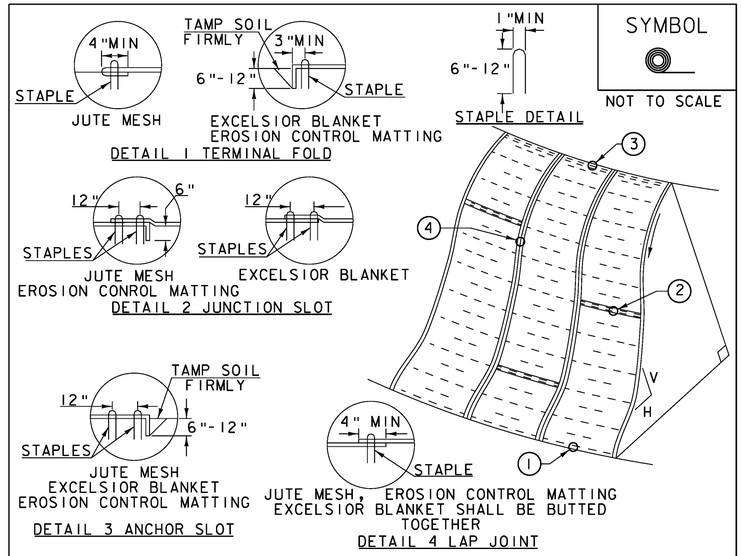
CONSTRUCTION GUIDANCE

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

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

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



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

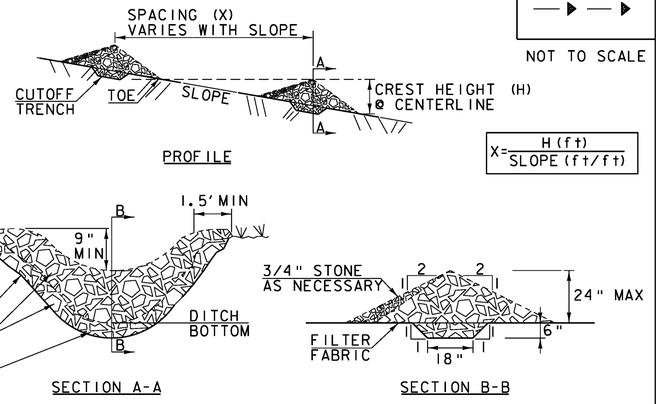
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088/epsc.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
EPSC DETAILS SHEET 1

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 77 OF 90

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. CHECK DAMS SHALL BE SPACED SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. 3/4" FILTERING STONE MAY BE ADDED TO THE FACE OF THE CHECK DAM AS NECESSARY.
4. EXTEND THE STONE A MINIMUM OF 1.5' BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
5. PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
6. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
7. MAXIMUM DRAINAGE AREA 2 ACRES.

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

CHECK DAM

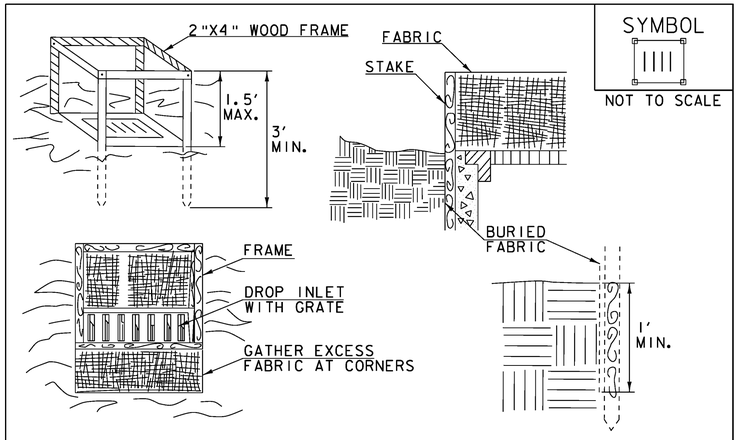
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

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

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. FILTER FABRIC SHALL HAVE AN APPARENT OPENING SIZE OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2"x 4" WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3'.
4. SPACE STAKES EVENLY AROUND INLET 3' APART AND DRIVE A MINIMUM 18" DEEP. SPANS GREATER THAN 3' MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1' MINIMUM BELOW GROUND AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2" x 4" WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVER FLOW STABILITY.
7. MAXIMUM DRAINAGE AREA 1 ACRE

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

FILTER FABRIC DROP INLET PROTECTION

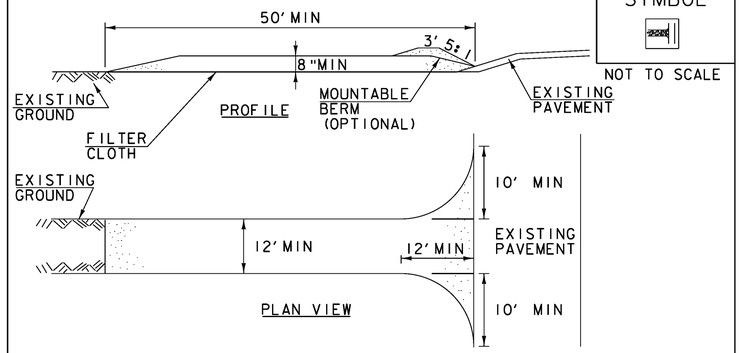
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR INLET PROTECTION DEVICE, TYPE I (PAY ITEM 653.40).

REVISIONS	
MARCH 7, 2008	WHF
JANUARY 13, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

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

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

STABILIZED CONSTRUCTION ENTRANCE

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

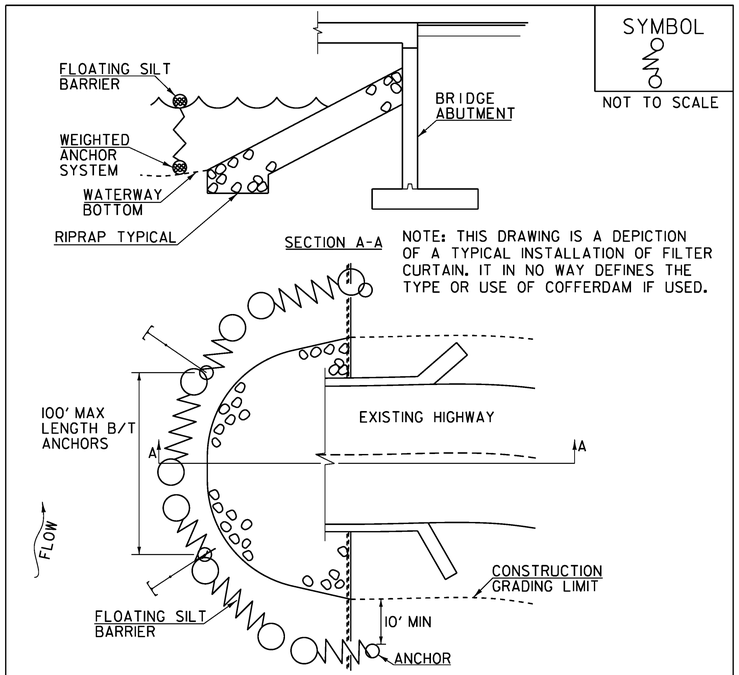
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088/epsc.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
EPSC DETAILS SHEET 2

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 78 OF 90



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

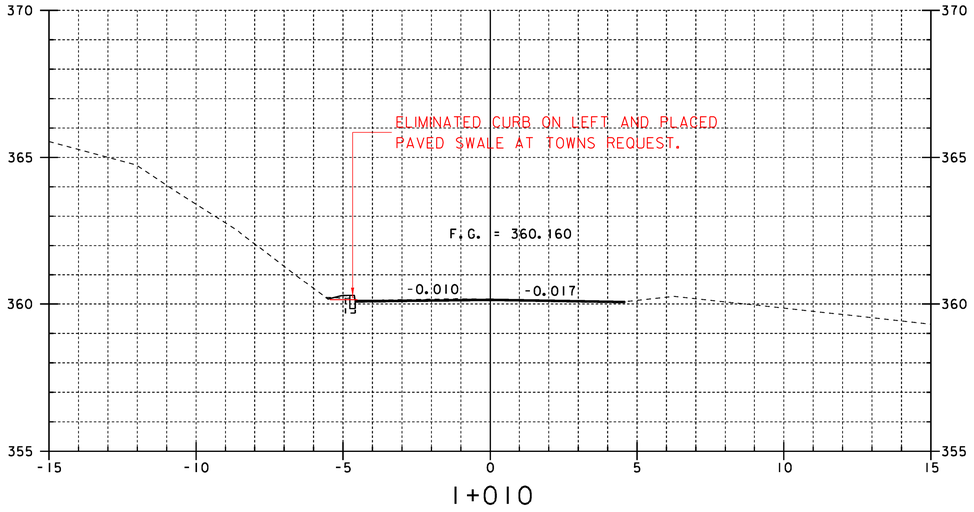
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

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

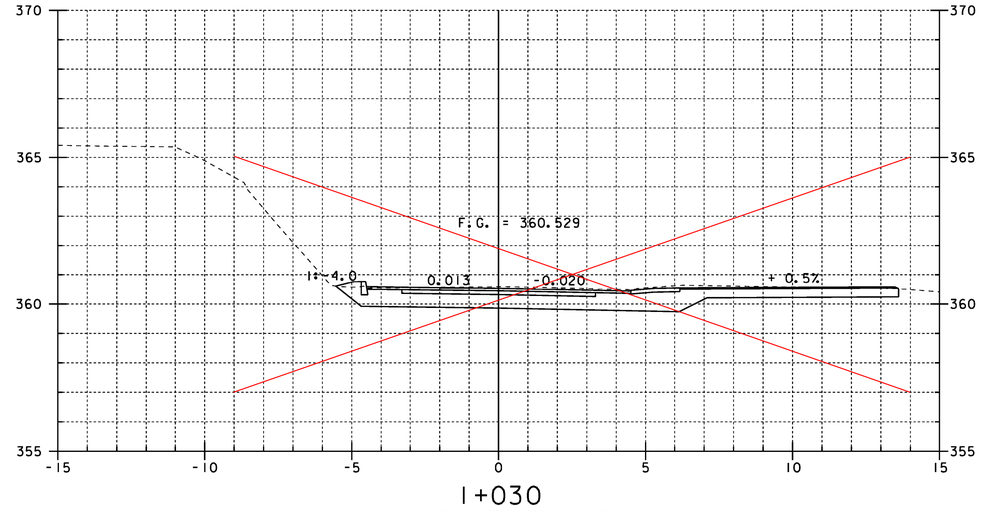
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088/epsc.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
EPSC DETAILS SHEET 3

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 79 OF 90

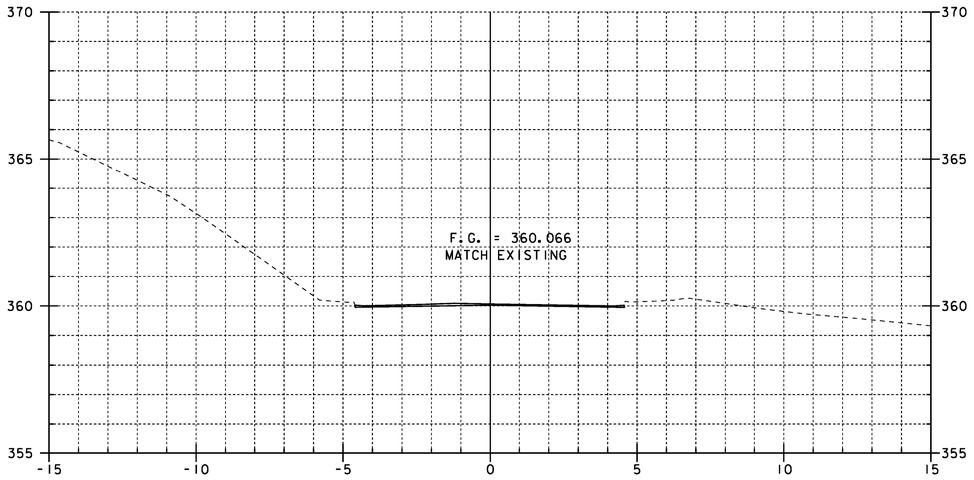


I+010

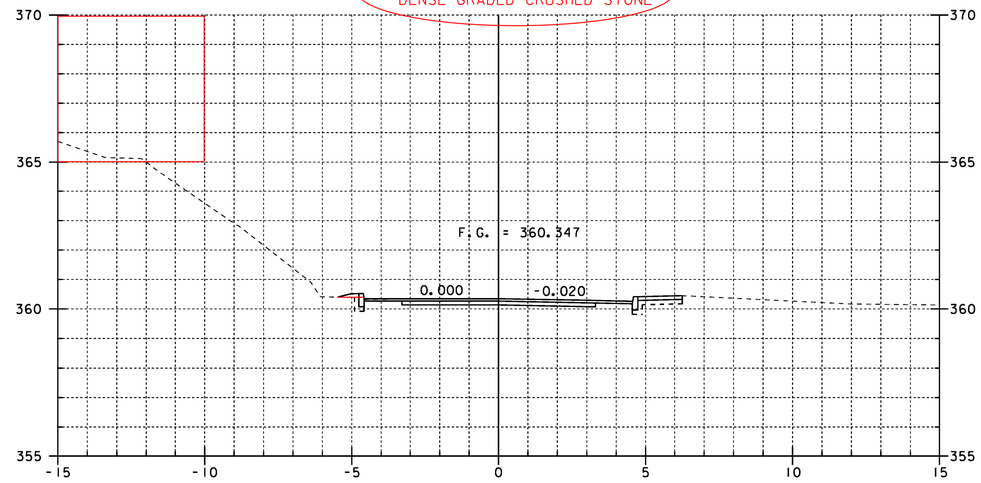


I+030
DRIVE RIGHT

I+023 = ZERO COMMON AND
DENSE GRADED CRUSHED STONE



I+005
BEGIN APPROACH



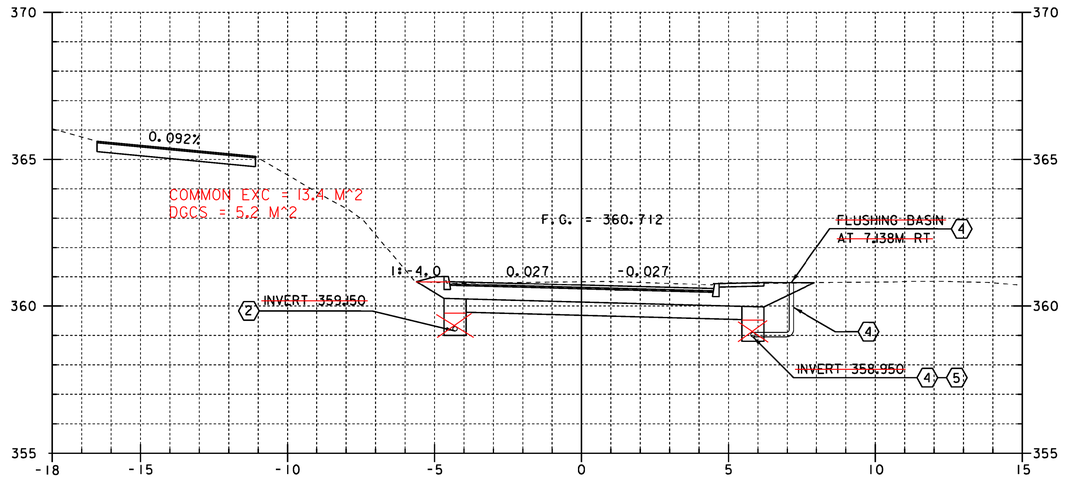
I+020

STA. I+005.000 TO STA. I+030.000

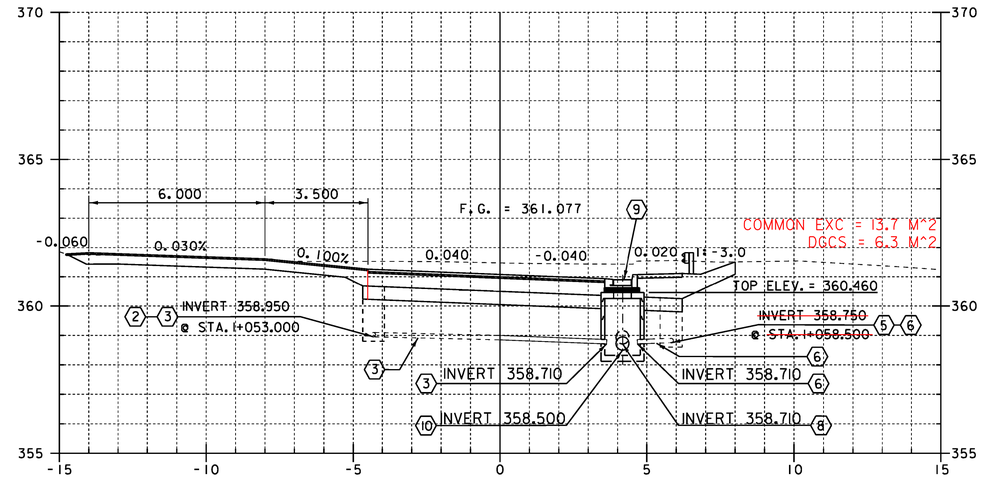
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/sJ088xs.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
MAINLINE CROSS SECTIONS SHEET 1

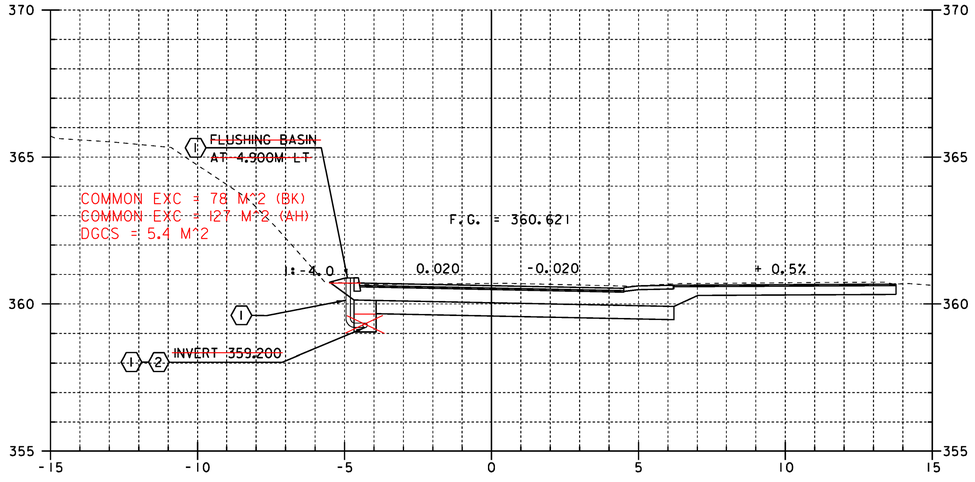
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 80 OF 90



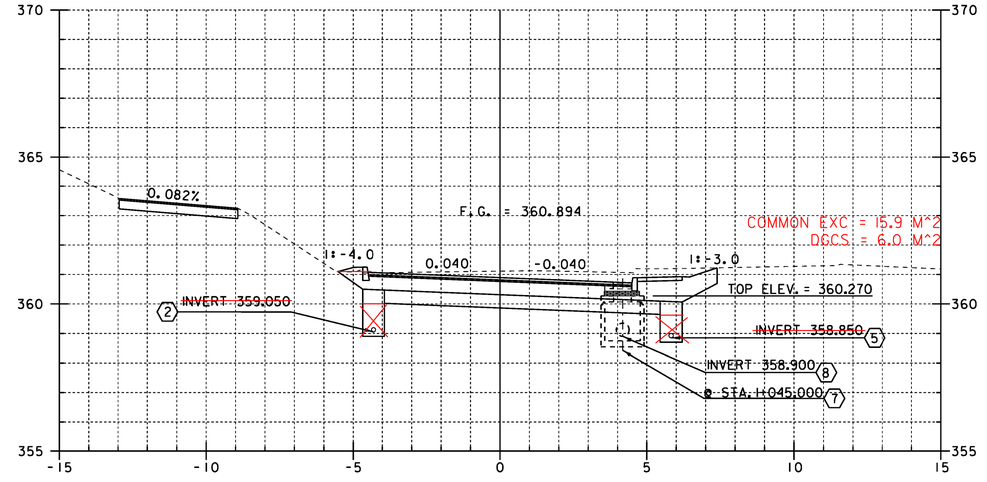
1+040



1+060
DRIVE LEFT



1+035
END APPROACH / BEGIN PROJECT
DRIVE RIGHT



1+050

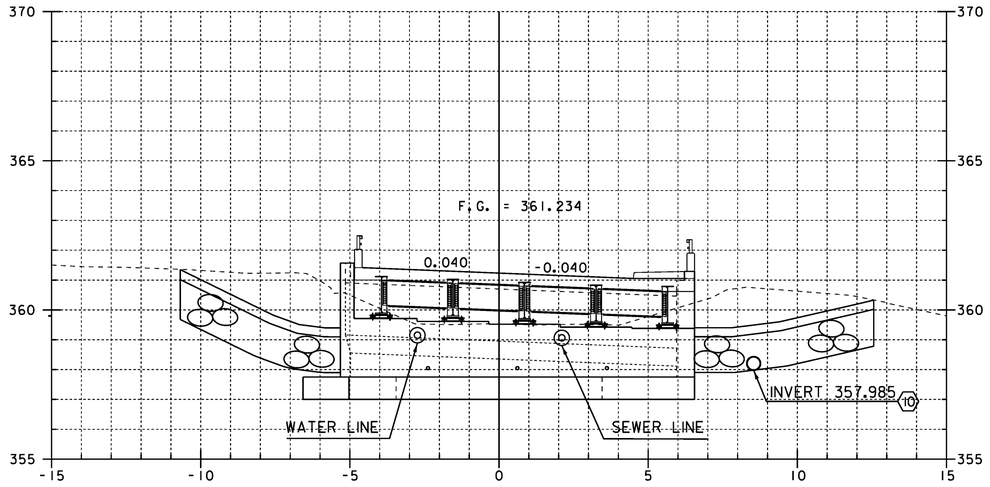
1. NEW CARRIER PIPE ~~DIAMETER = 150mm~~
2. NEW UNDERDRAIN ~~DIAMETER = 150mm~~
3. NEW CARRIER PIPE ~~DIAMETER = 150mm~~
4. NEW CARRIER PIPE ~~DIAMETER = 150mm~~
5. NEW UNDERDRAIN ~~DIAMETER = 150mm~~
6. NEW CARRIER PIPE ~~DIAMETER = 150mm~~
7. NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. 1+045.000 4.170M RT (TYPE E GRATE)
8. NEW CPEP(SL)/CAAP/PCCSP DIAMETER = 450mm
9. NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. 1+060.000 4.170M RT (TYPE E GRATE)
10. NEW CPEP(SL)/CAAP/PCCSP DIAMETER = 450mm

STA. 1+035.000 TO STA. 1+060.000

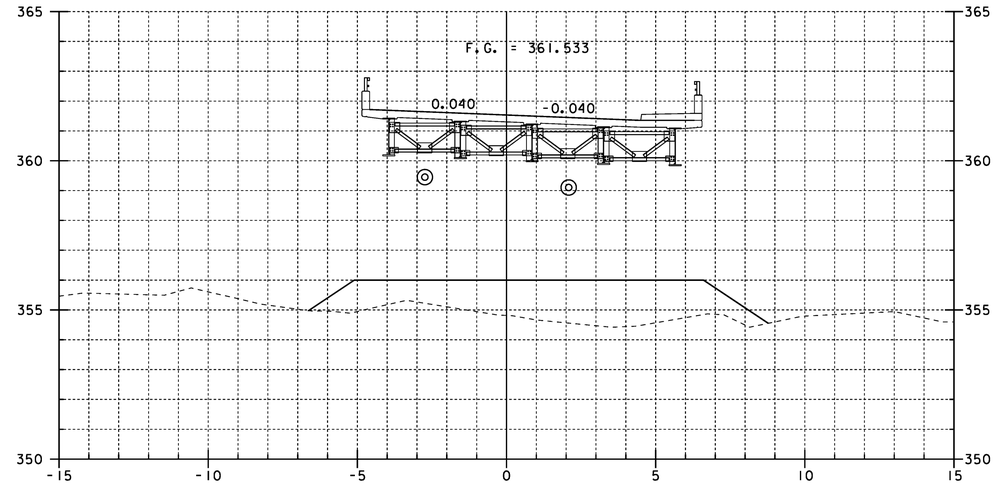
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/sJ088xs.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
MAINLINE CROSS SECTIONS SHEET 2

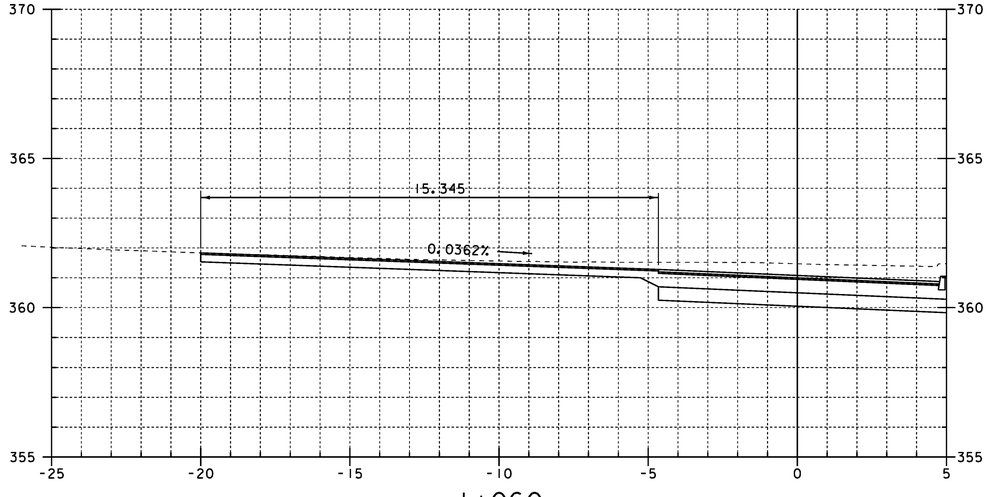
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 81 OF 90



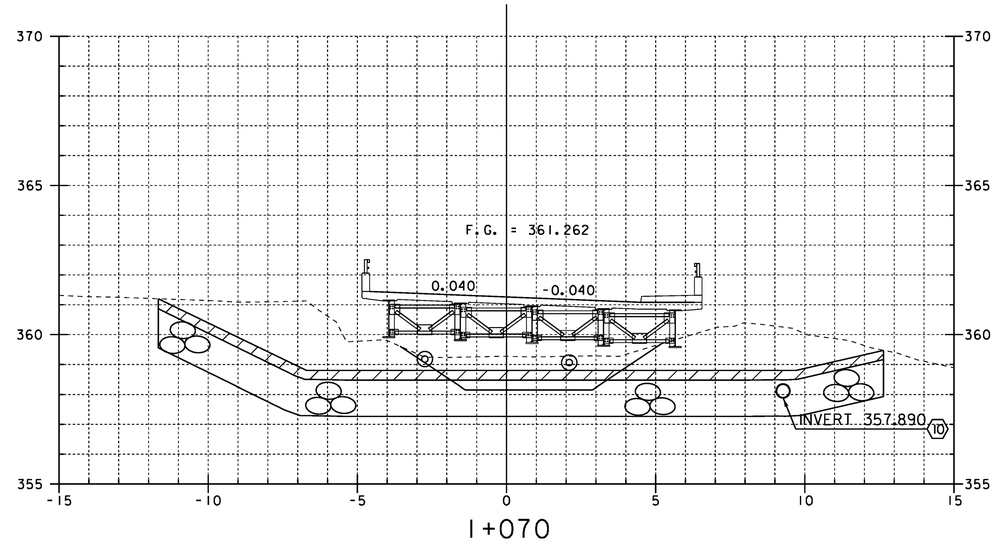
I+068.600
BEGIN BRIDGE



I+080



I+060
DRIVE SKEWED

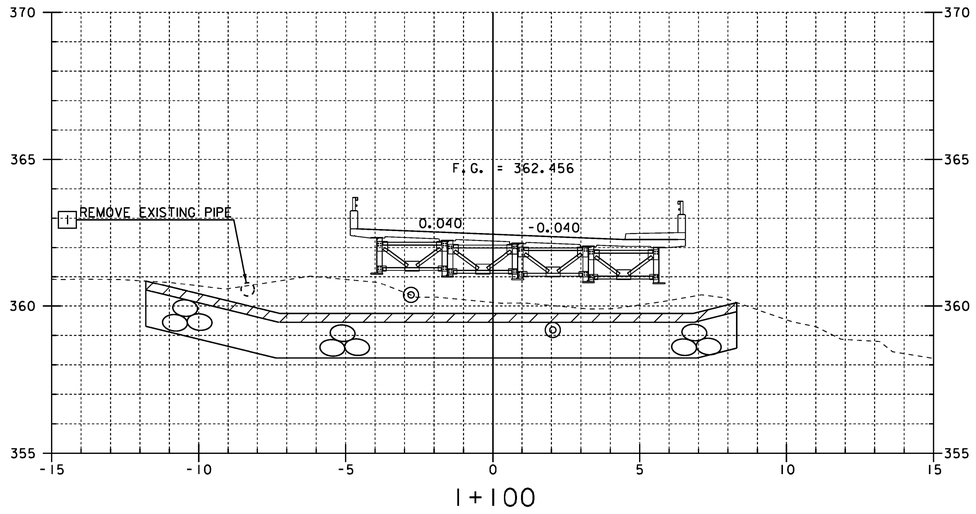


I+070

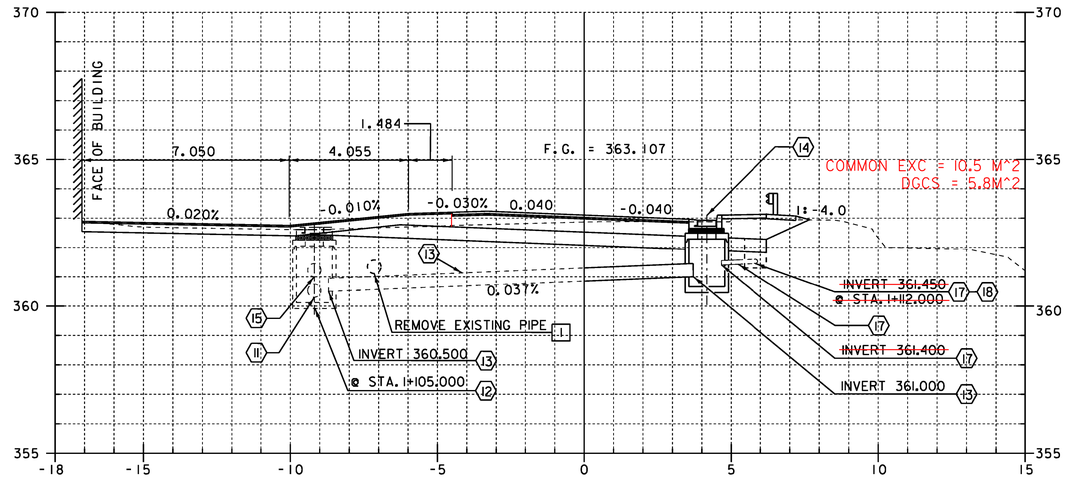
10 NEW CPEP/CAAP/PCCSP
DIAMETER = 450mm

STA. I+060.000 TO STA. I+080.000

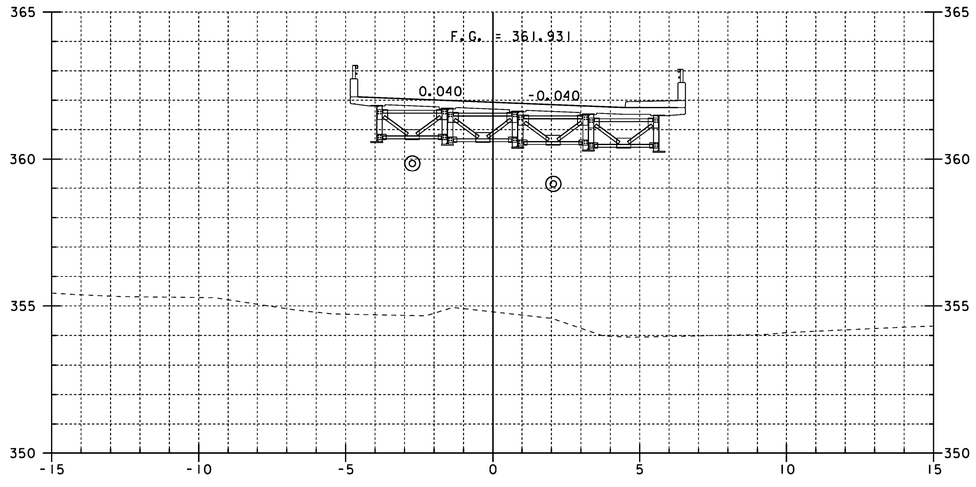
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
MAINLINE CROSS SECTIONS SHEET 3	SHEET 82 OF 90



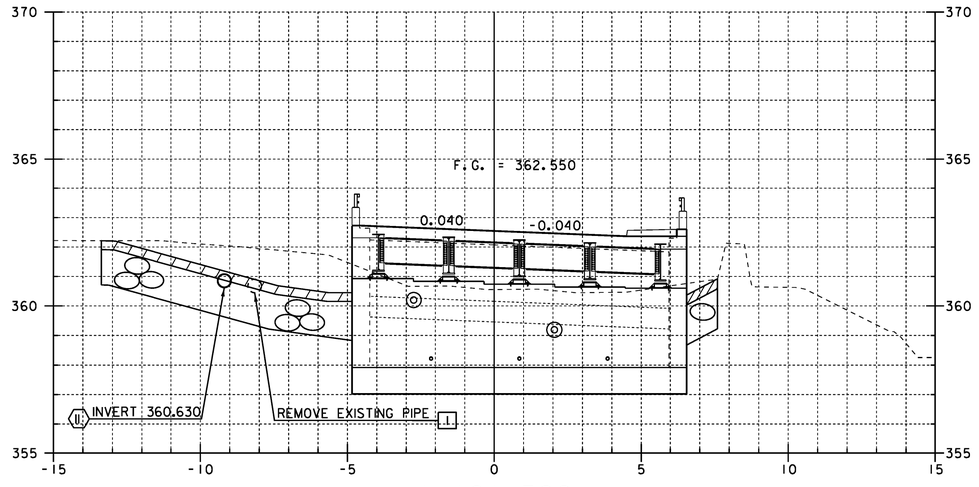
1+100



1+110
DRIVE LEFT



1+090



1+101.580
END BRIDGE

1 EXISTING 450mm CGMP

11 NEW CPEP(SL)/CAAP/PCCSP
DIAMETER = 450mm

12 NEW PRECAST REINFORCED CONCRETE CATCH BASIN
AT STA. 1+105.000 9.185 M LT (TYPE E GRATE)

13 NEW CPEP(SL)/CAAP/PCCSP
DIAMETER = 450mm

14 NEW PRECAST REINFORCED CONCRETE CATCH BASIN
AT STA. 1+110.000 4.170M RT (TYPE E GRATE)

15 NEW CPEP(SL)/CAAP/PCCSP
DIAMETER = 450mm

17 NEW CARRIER PIPE
DIAMETER = 150mm

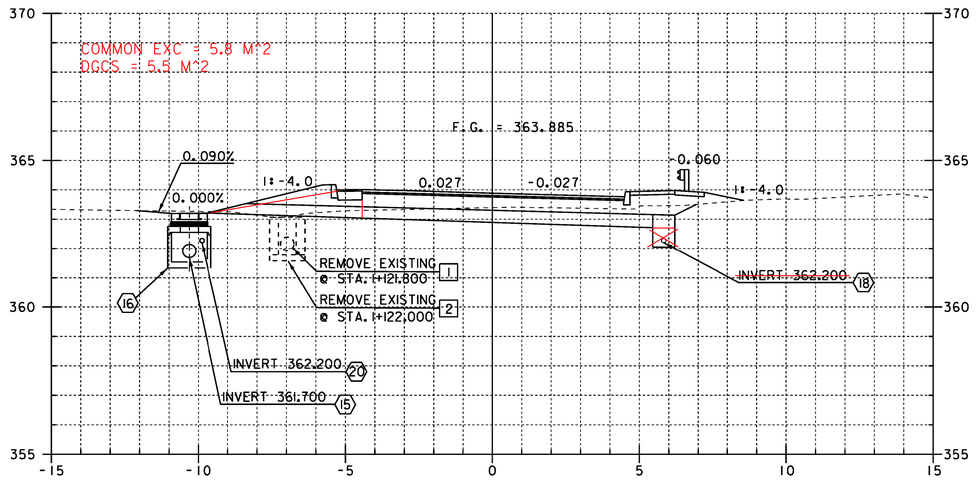
18 NEW UNDERDRAIN
DIAMETER = 150mm

STA. 1+090.000 TO STA. 1+110.000

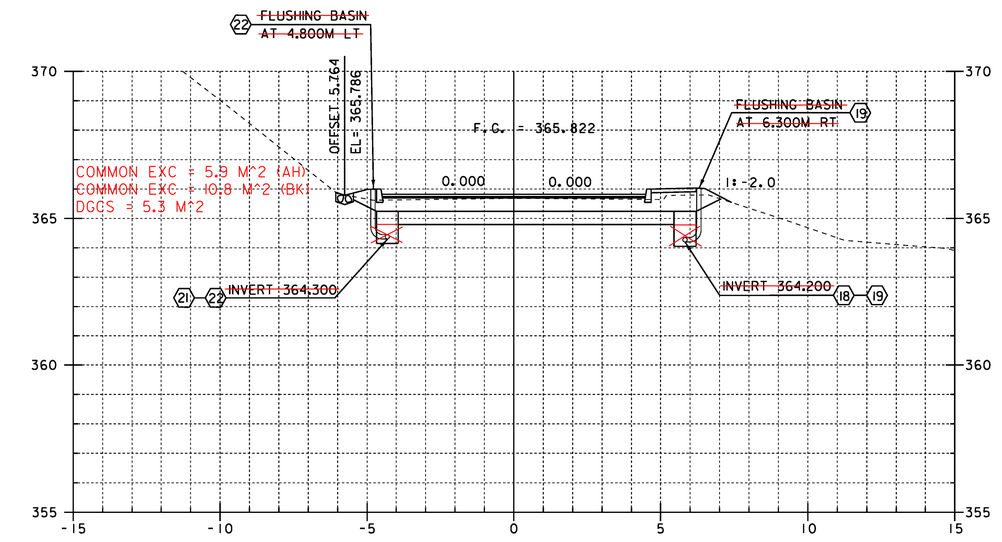
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/sJ088xs.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
MAINLINE CROSS SECTIONS SHEET4

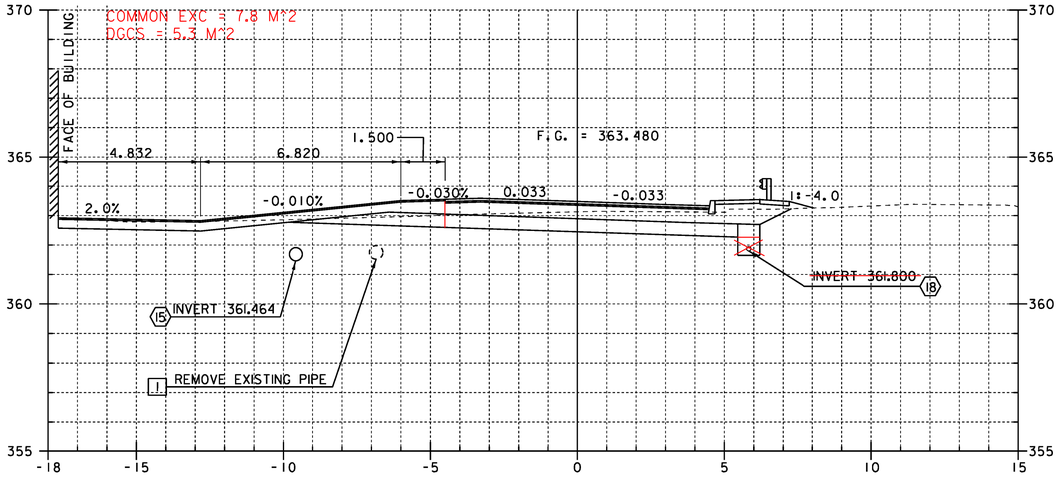
PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 83 OF 90



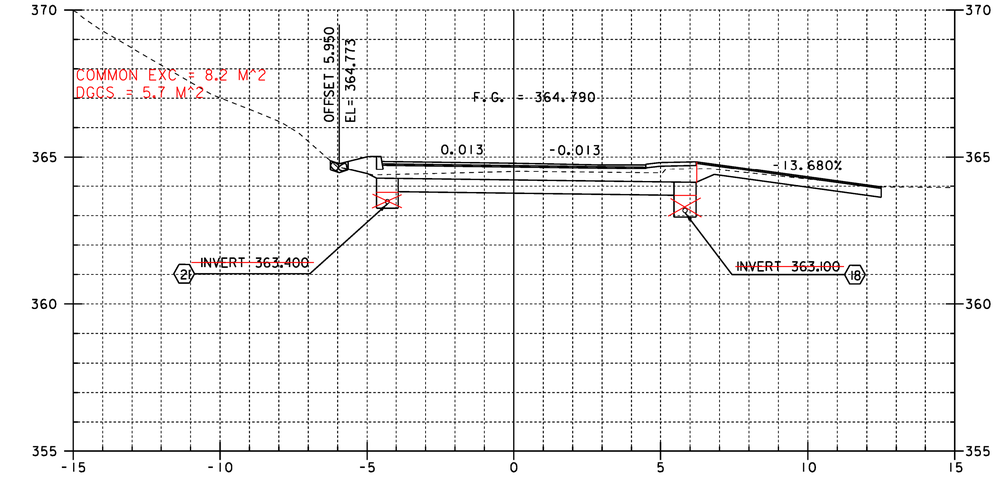
1+120



1+140
END PROJECT / BEGIN APPROACH



1+115
DRIVE LEFT



1+130
DRIVE RIGHT

~~BEGIN SPECIAL STONE DITCH~~
~~STONE FILL, TYPE I~~
~~AT 1+121.000 LT~~

ELIMINATED STONE FILL DITCH AND CURB LEFT AND PLACED PAVED SWALE AT TOWN'S REQUEST.

[1] EXISTING 450mm CGMP

[2] EXISTING 1200mm X 1200mm CAST-IN-PLACE CONCRETE DROP INLET

(15) NEW CPEP(SL)/CAAP/PCCSP DIAMETER = 450mm

(16) NEW PRECAST REINFORCED CONCRETE CATCH BASIN AT STA. 1+120.000 10.309 LT (TYPE E GRATE)

(18) ~~NEW UNDERDRAIN DIAMETER = 150mm~~

(19) ~~NEW CARRIER PIPE DIAMETER = 150mm~~

(20) ~~NEW CARRIER PIPE DIAMETER = 150mm~~

(21) ~~NEW UNDERDRAIN DIAMETER = 150mm~~

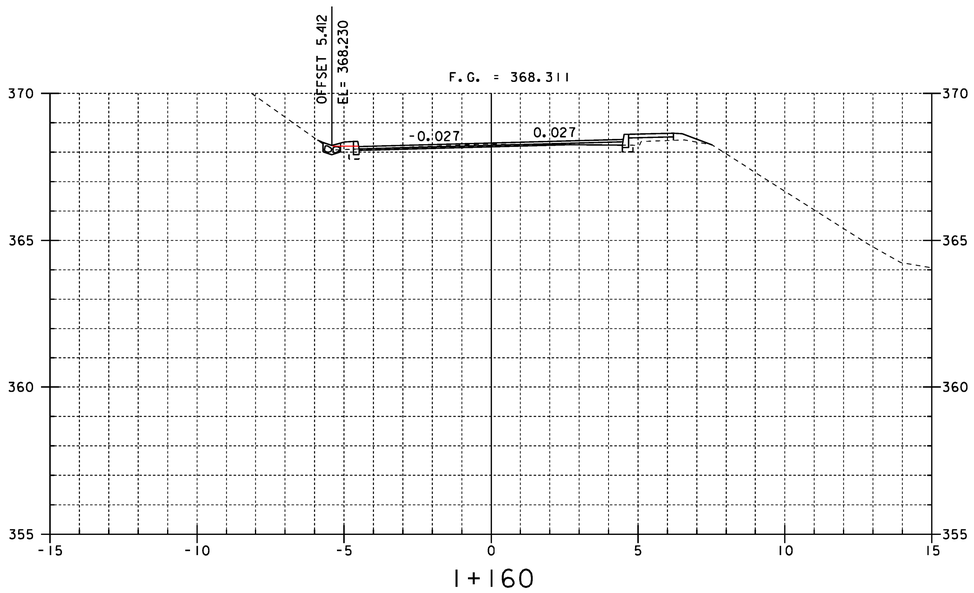
(22) ~~NEW CARRIER PIPE DIAMETER = 150mm~~

STA. 1+115.000 TO STA. 1+140.000

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

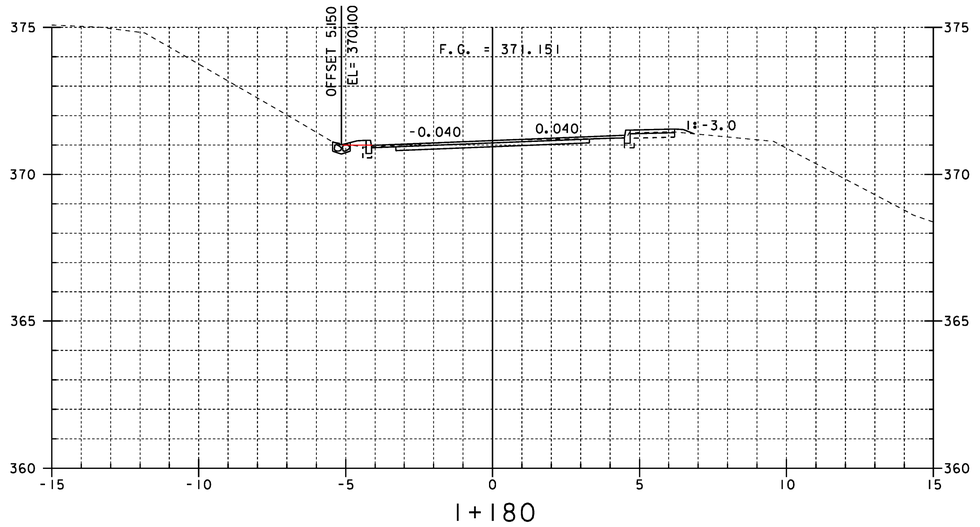
FILE NAME: 89J088/STR/sJ088xs.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
MAINLINE CROSS SECTIONS SHEET 5

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 84 OF 90

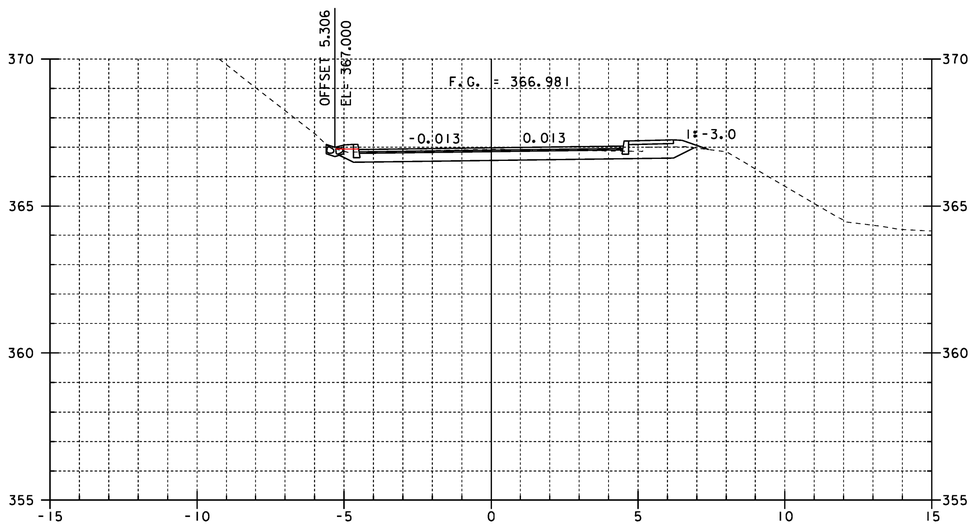


1+160

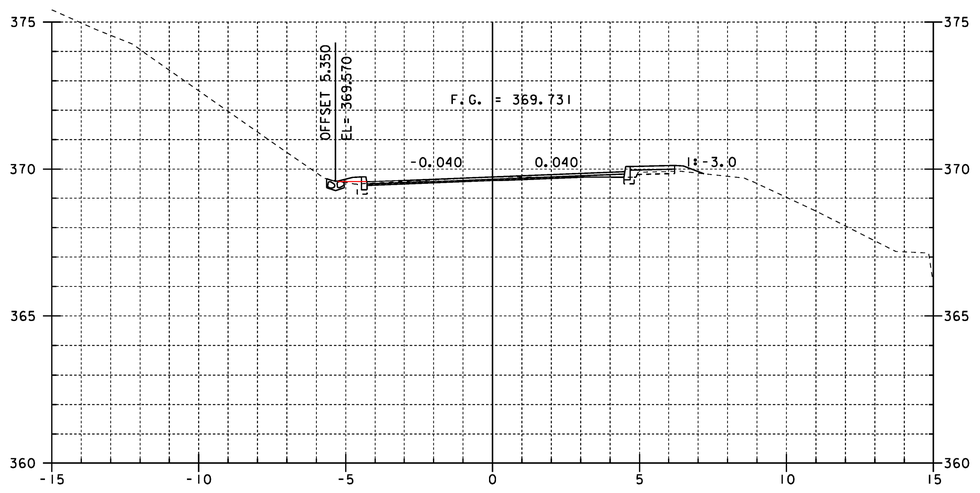
ELIMINATED STONE FILL DITCH AND
CURB ON LEFT AT TOWN'S REQUEST
~~END SPECIAL STONE DITCH~~ PAVED SWALE PLACED
~~STONE FILL, TYPE I~~
~~AT 1+184.000 LT~~



1+180



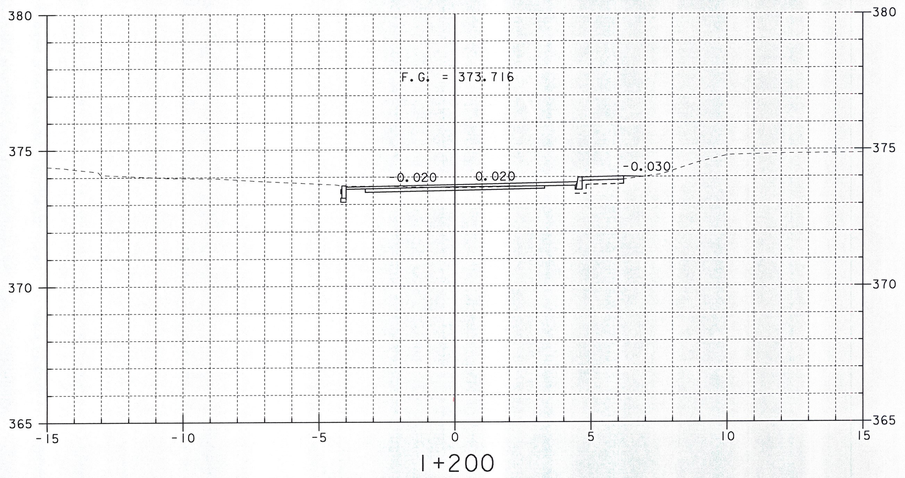
1+150 = ZERO EXCAVATION



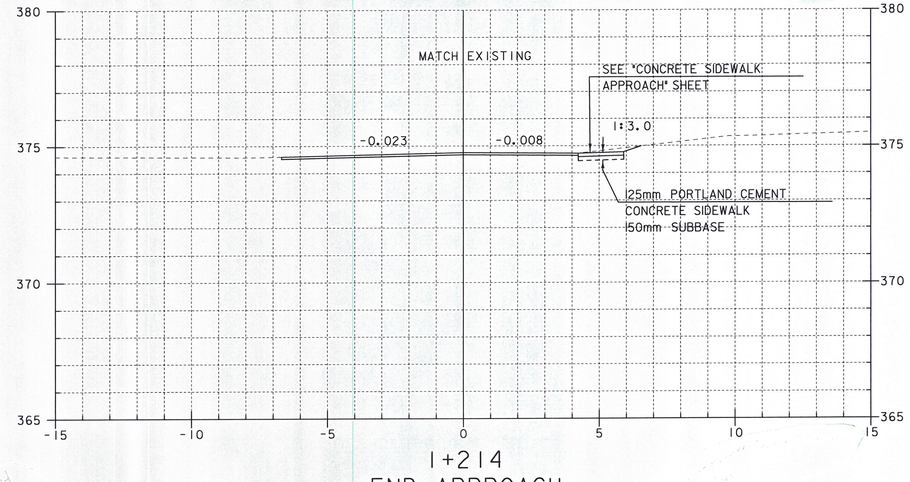
1+170

STA. 1+150.000 TO STA. 1+180.000

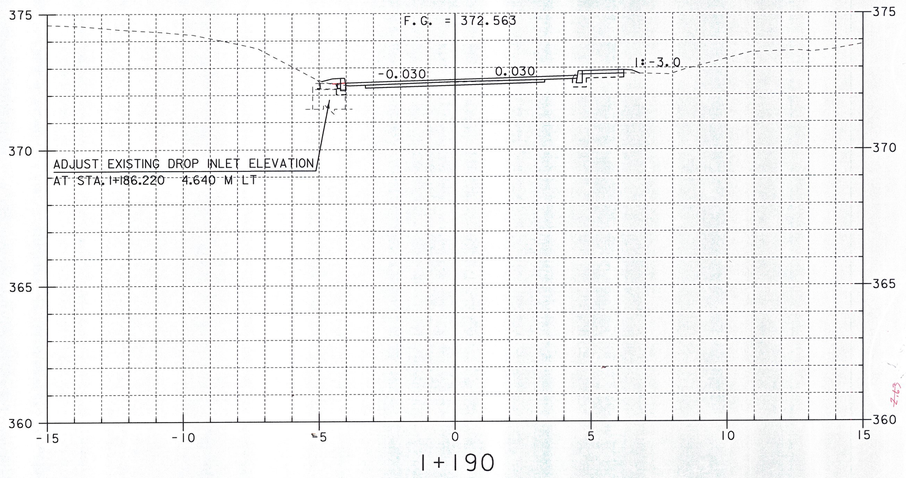
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
MAINLINE CROSS SECTIONS SHEET 6	SHEET 85 OF 90



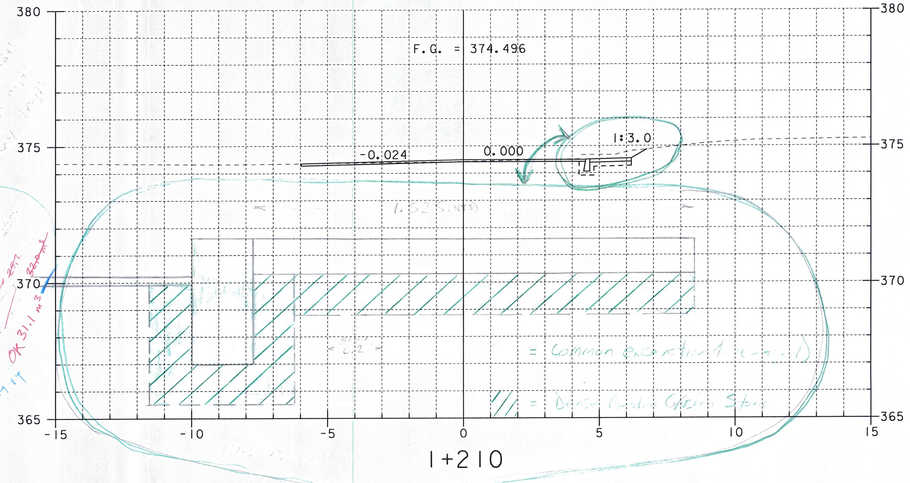
1+200



1+214
END APPROACH



1+190

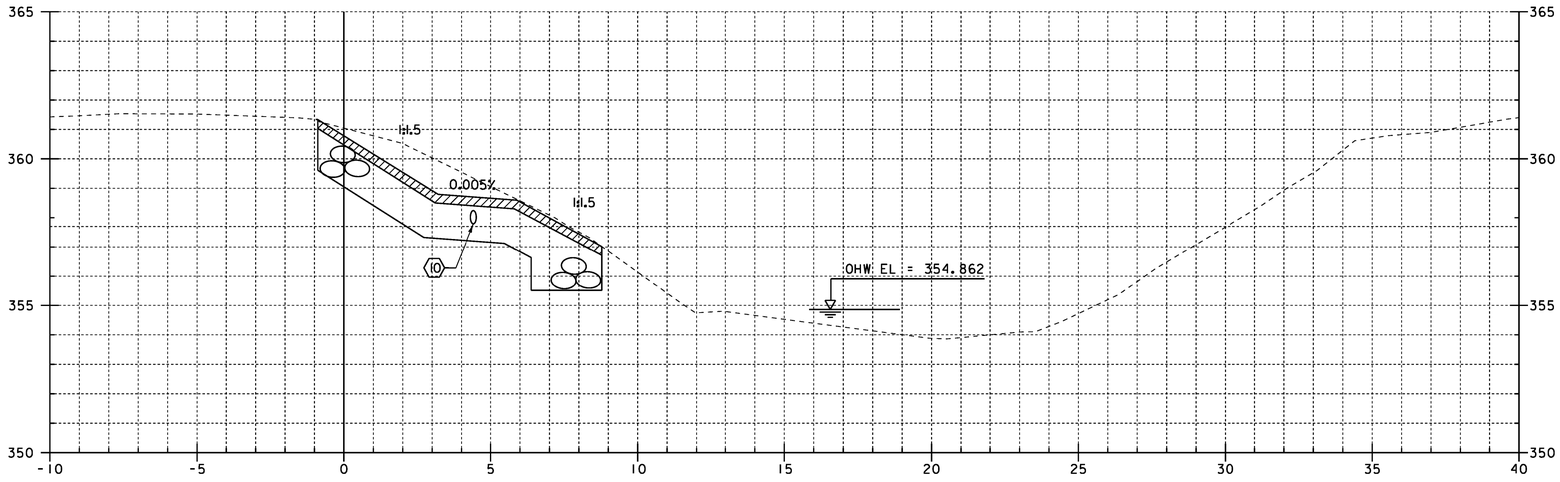


1+210

STA. 1+090.000 TO STA. 1+214.000

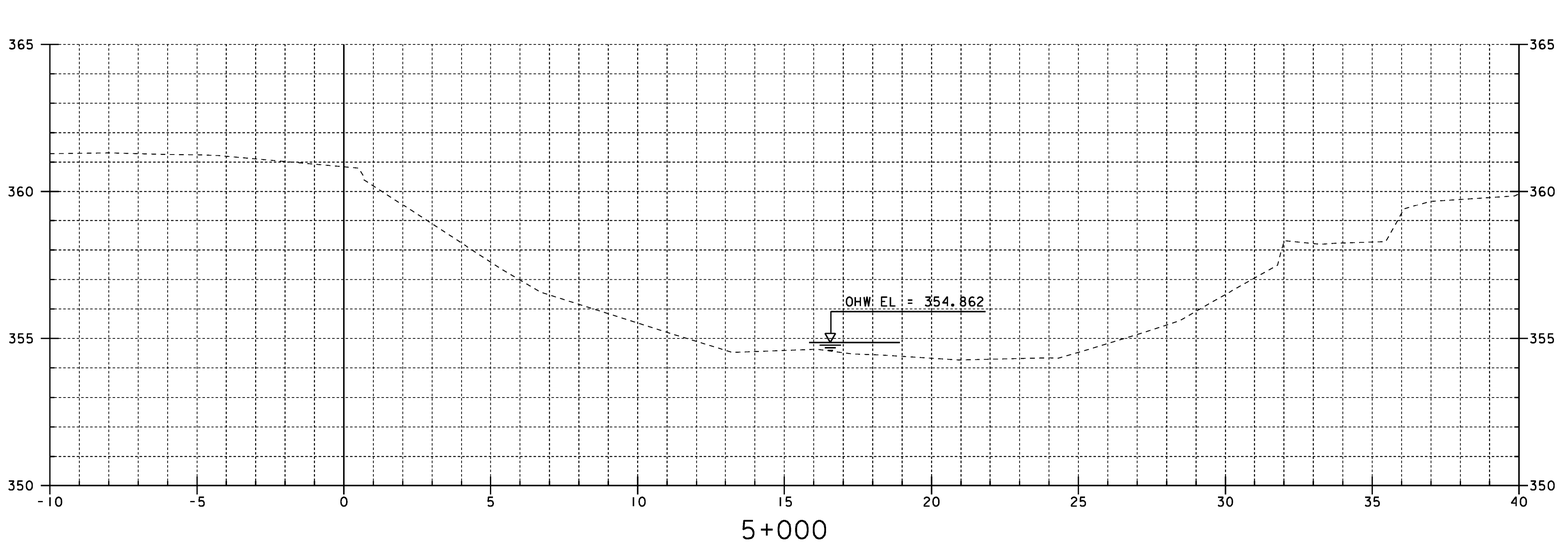
PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
MAINLINE CROSS SECTIONS SHEET 7	SHEET 86 OF 90

STA. 5+002.400 (LEFT CHANNEL SLOPE)
BEGIN ITEMS
MATCH EXISTING GROUND AND TRANSITION
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE IV
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL



5+005

SEE NEW CHANNEL CROSS SECTIONS



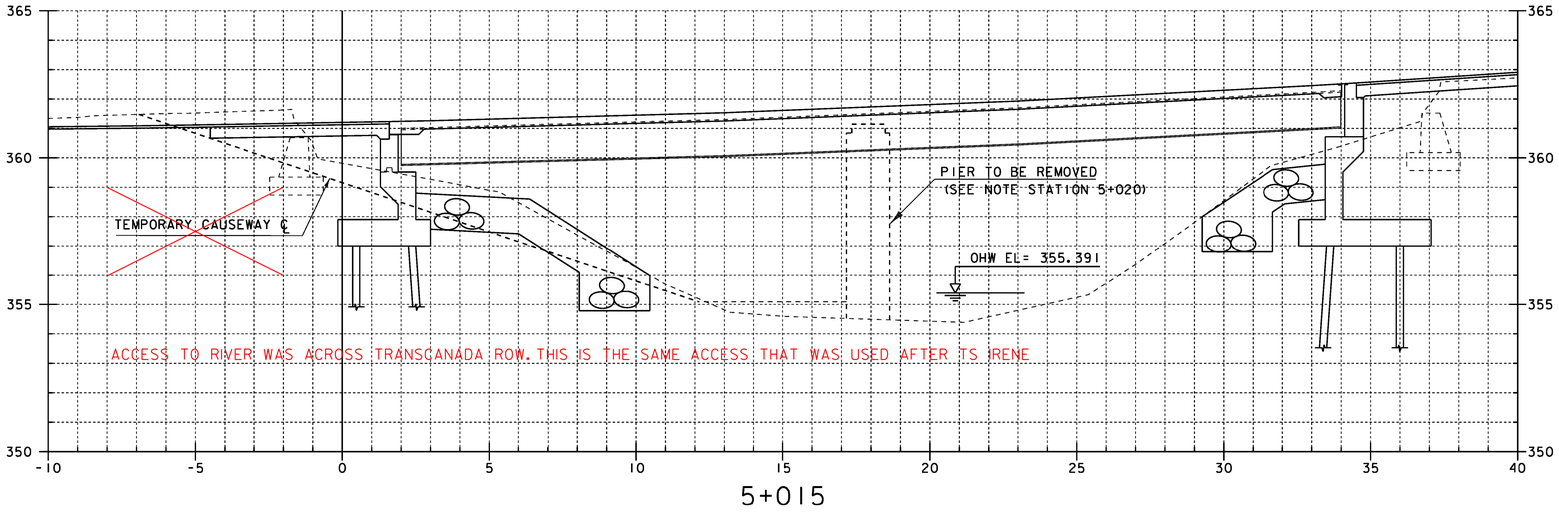
5+000

STA. 5+000.000 TO STA. 5+005.000

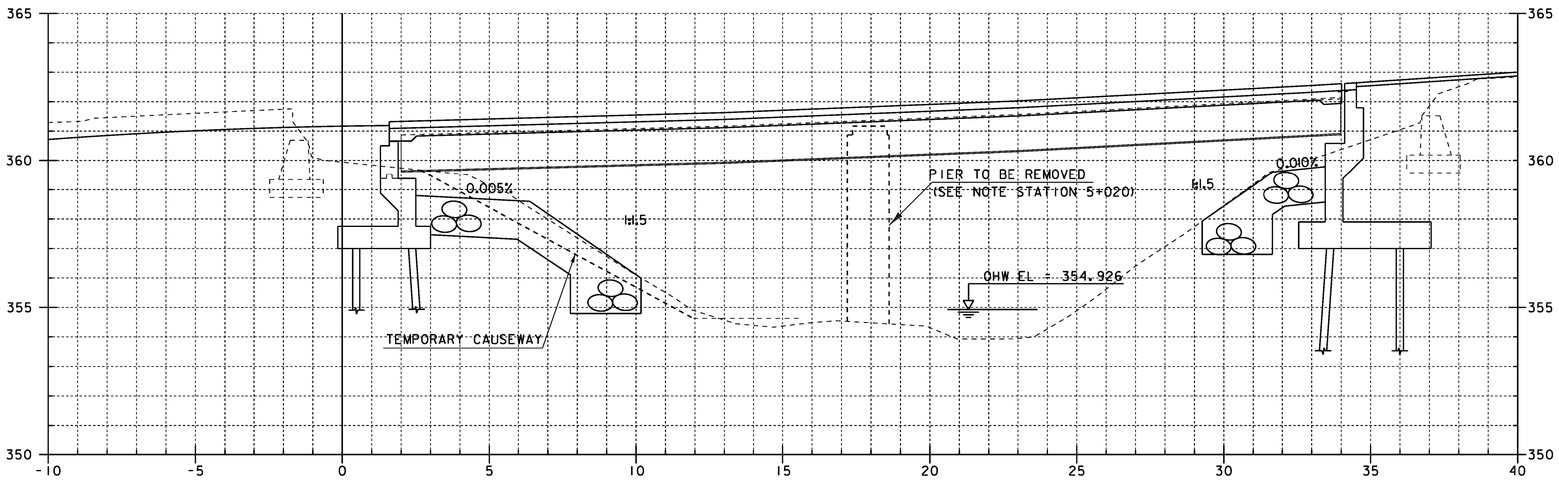
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/sj088xs.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
CHANNEL CROSS SECTIONS SHEET 1

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 87 OF 90



5+015



5+010

STA. 5+008.500 (LEFT CHANNEL SLOPE)
END ITEM
GRUBBING MATERIAL

STA. 5+008.500 (RIGHT CHANNEL SLOPE)
END ITEM
GRUBBING MATERIAL

STA. 5+006.600 (RIGHT CHANNEL SLOPE)
BEGIN ITEMS
MATCH EXISTING GROUND AND TRANSITION
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE IV
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL

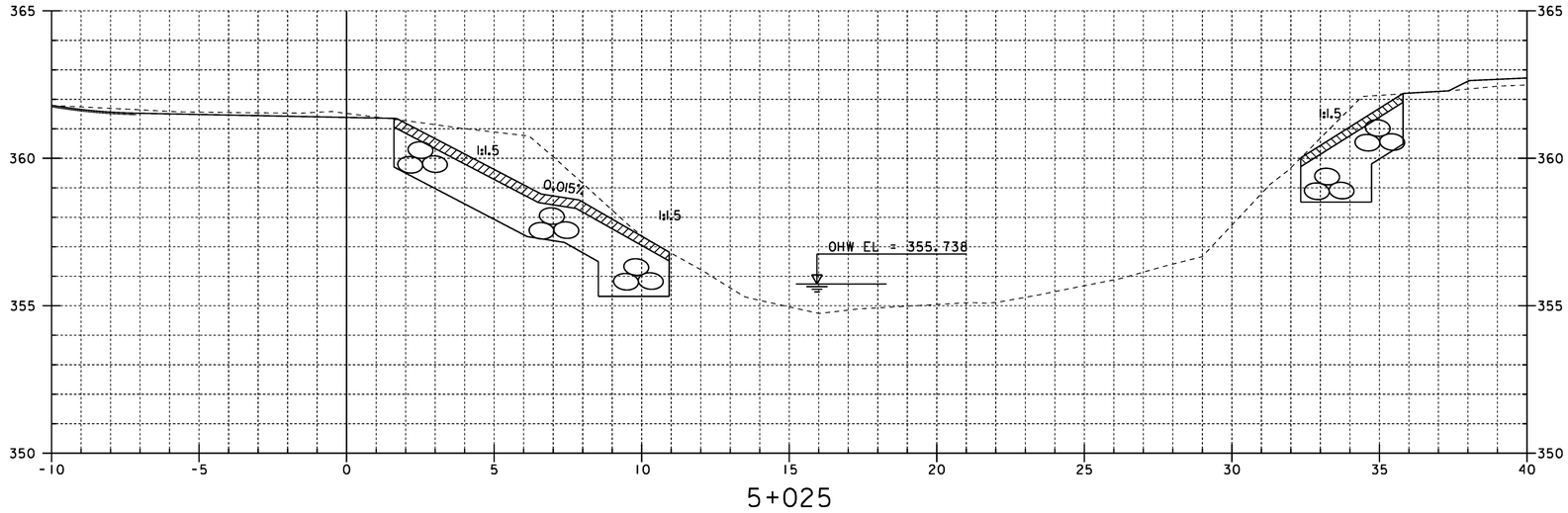
STA. 5+010.000 TO STA. 5+015.000

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/sJ088xs.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
CHANNEL CROSS SECTIONS SHEET 2

PLOT DATE: 07-MAR-2012
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 88 OF 90

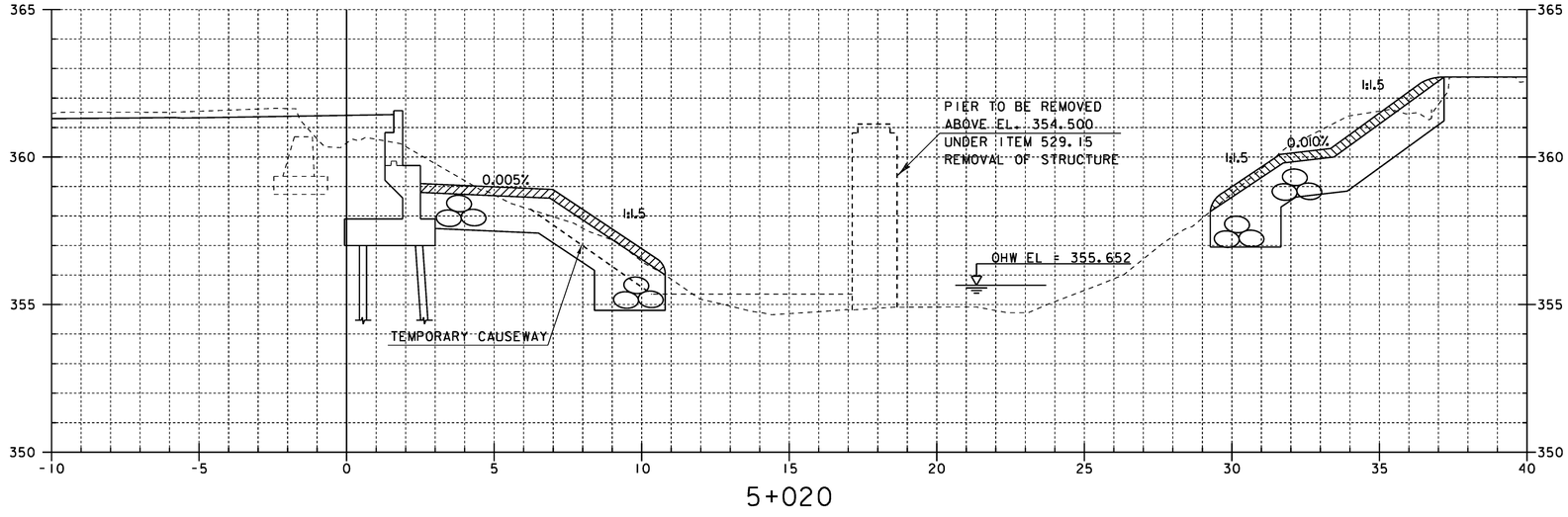
STA. 5+026.800 (LEFT CHANNEL SLOPE)
END ITEMS
MATCH EXISTING GROUND AND TRANSITION
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE IV
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL



5+025

STA. 5+028.400 (RIGHT CHANNEL SLOPE)
END ITEMS
MATCH EXISTING GROUND AND TRANSITION
UNCLASSIFIED CHANNEL EXCAVATION
STONE FILL TYPE IV
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL

STA. 5+019.800 (LEFT CHANNEL SLOPE)
BEGIN ITEM
GRUBBING MATERIAL



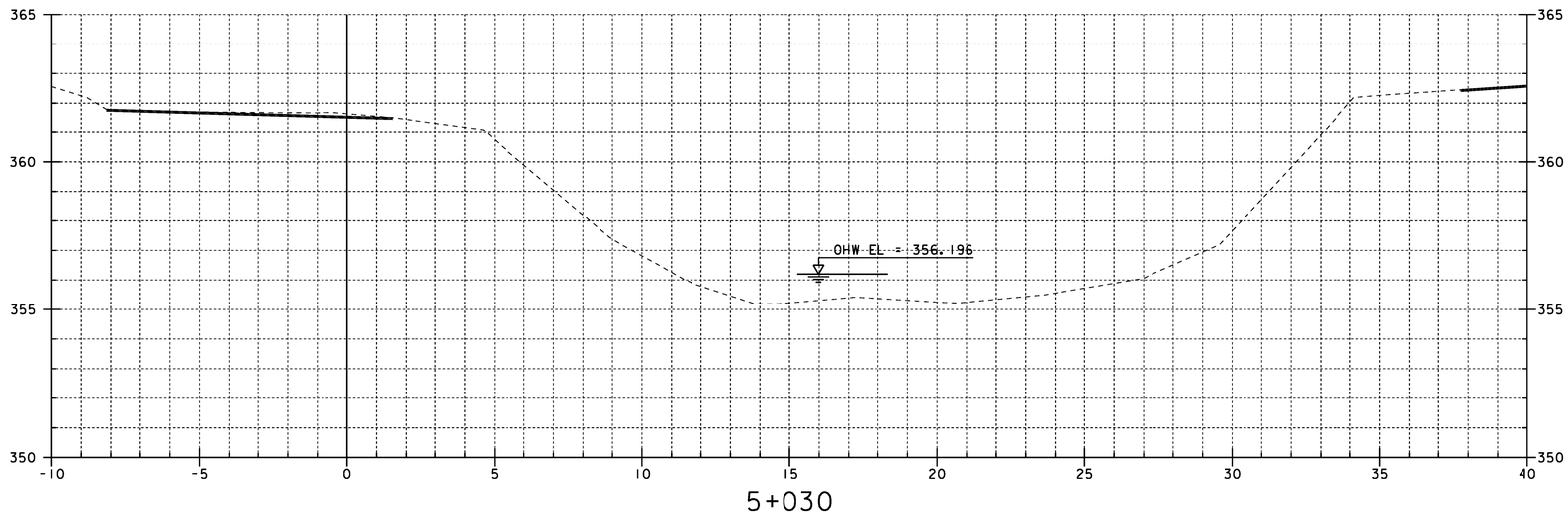
5+020

STA. 5+019.800 (RIGHT CHANNEL SLOPE)
BEGIN ITEM
GRUBBING MATERIAL

STA. 5+020.000 TO STA. 5+025.000

PROJECT NAME: READSBORO	
PROJECT NUMBER: BRF 0105 (3)	
FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
CHANNEL CROSS SECTIONS SHEET 3	SHEET 89 OF 90

VAOT Metric

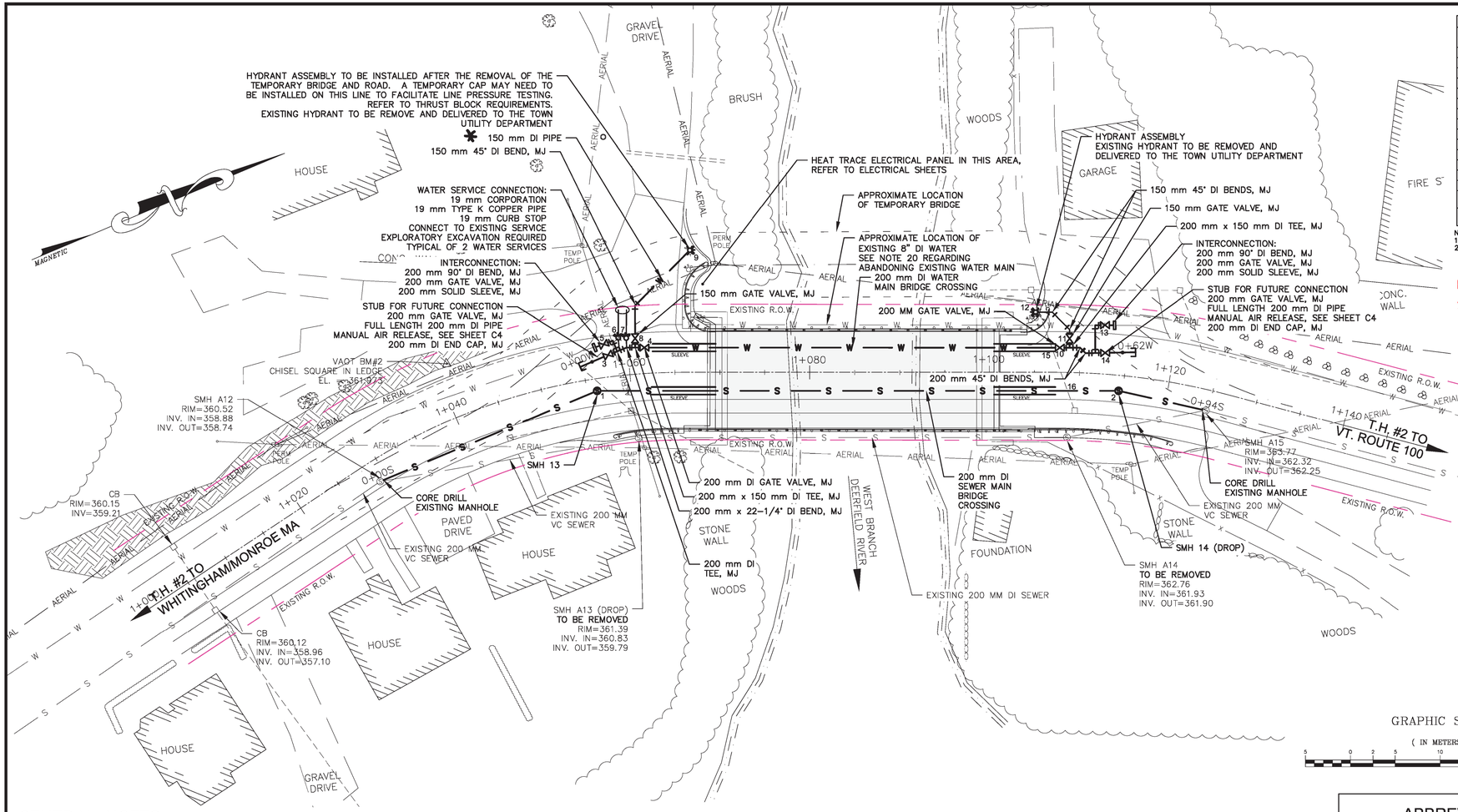


5+030

STA. 5+030.000

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)

FILE NAME: 89J088/STR/sJ088xs.dgn	PLOT DATE: 07-MAR-2012
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
CHANNEL CROSS SECTIONS SHEET 4	SHEET 90 OF 90



GRAPHIC SCALE
(IN METERS)
5 0 2 5 10 15 20 25

UTILITY ITEM LOCATIONS			
ITEM	DESCRIPTION	ROAD STA	OFFSET
1	SMH 13	1+056.0	1.35 M RIGHT
2	SMH 14	1+114.5	1.72 M RIGHT
3	200 mm GATE VALVE	1+057.9	2.4 M LEFT
4	200 mm GATE VALVE	1+061.8	2.9 M LEFT
5	200 mm GATE VALVE	1+057.5	3.9 M LEFT
6	19 mm CURB STOP	1+059.1	4.2 M LEFT
7	19 mm CURB STOP	1+060.0	4.1 M LEFT
8	150 mm GATE VALVE	1+060.9	4.0 M LEFT
9	HYDRANT	1+066.6	13.5 M LEFT
10	200 mm GATE VALVE	1+107.8	2.7 M LEFT
11	150 mm GATE VALVE	1+108.8	3.8 M LEFT
12	HYDRANT	1+105.1	6.7 M LEFT
13	200 mm GATE VALVE	1+112.4	5.4 M LEFT
14	200 mm GATE VALVE	1+112.7	2.4 M LEFT
15	WATER & STORM DRAIN CROSSING	1+106.9	2.7 M LEFT
16	SEWER & STORM DRAIN CROSSING	1+108.7	2.0 M LEFT

NOTES:
1. ITEM 15 – WATER & STORM DRAIN CROSSING: INVERT OF SLEEVE ELEVATION 360.016.
2. ITEM 16 – SEWER & STORM DRAIN CROSSING: INVERT OF SEWER MAIN ELEVATION 359.108.

FOR SHEETS C1, C2, C3 & C4
SEE AS BUILT PLANS

GENERAL NOTES:

1. DRAWINGS PROVIDED BY VTRANS. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE BASED ON INFORMATION PROVIDED BY THE TOWN OF READSBORO. THIS IS NOT A BOUNDARY SURVEY.
2. EXPLORATORY EXCAVATION IS REQUIRED TO LOCATE UNDERGROUND UTILITIES. CONTRACTOR SHALL USE EXTREME CAUTION TO PREVENT DAMAGE TO EXISTING UTILITIES. CONTRACTOR SHALL COORDINATE WITH DIG SAFE (1-888-DIG SAFE) A MINIMUM OF 48 HOURS PRIOR TO EXCAVATION.
3. LOCATION OF PROPOSED WATER MAIN IS INTENDED NOT TO DISTURB ROOT SYSTEMS OF EXISTING TREES OR SHRUBS. CONTRACTOR SHALL EXERCISE DUE CARE TO PREVENT DAMAGE THERETO. ALL DISTURBED AREAS SHALL BE RESTORED TO PRECONSTRUCTION CONDITIONS.
4. ALL WORK IS TO BE DONE SHALL BE IN PUBLIC RIGHT-OF-WAY OR EASEMENT AREAS. REFER TO R.O.W. AND EASEMENT LIMITS ON SEPARATE VAOT SHEETS.
5. LISTING OF ADAPTERS, FITTINGS, NIPPLES, ETC. IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. ADDITIONAL MATERIAL MAY BE REQUIRED. SOLID SLEEVE COUPLINGS WILL BE REQUIRED FOR CONNECTION TO EXISTING MAINS.
6. MINIMUM VERTICAL CLEARANCE BETWEEN NEW WATER MAINS AND ALL EXISTING UTILITIES, EXCEPT SEWERS AND STORM DRAINS TO BE 150 mm AT CROSSING LOCATIONS.
7. ALL BURIED FITTINGS MUST BE BLOCKED. REFER TO THRUST BLOCK DETAILS, AND TRENCH DETAIL SHOWN ON DRAWING C4.
8. MECHANICAL JOINT RESTRAINTS SHALL BE USED WHERE VALVES WILL BE SUBJECTED TO SERVICE PRESSURES ON ONE SIDE BEFORE BEING FULLY INCORPORATED INTO THE DISTRIBUTION SYSTEM.
9. WATER MAINS TO HAVE 1.675 METERS MINIMUM COVER UNLESS OTHERWISE STATED OR SHOWN ON THE PROFILES. WHEN 1.675 METERS OF COVER CANNOT BE MAINTAINED 100 mm RIGID BOARD INSULATION SHALL BE USED. DEPTH OF COVER SHALL NOT BE LESS THAN 1.200 METERS EVEN WITH INSULATION. SEE MATERIAL SPECIFICATION SECTION 735.01.
10. ALL MECHANICAL JOINT FITTINGS AND VALVES SHALL INCORPORATE A WEDGE-STYLE RETAINER GLAND INSTEAD OF THE COMMON FOLLOWER GLAND, AT THE CONTRACTOR'S EXPENSE.
11. ALL EXISTING UNDERGROUND UTILITIES WERE LOCATED USING THE BEST AVAILABLE INFORMATION. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL UTILITES WHETHER OR NOT THEY ARE SHOWN ON THE PLANS. ALL REPAIRS TO DAMAGED UTILITIES SHALL BE MADE BY THE CONTRACTOR USING MATERIALS APPROVED BY THE ENGINEER PRIOR TO INSTALLATION, AT THE CONTRACTORS EXPENSE.
12. CONTRACTOR IS RESPONSIBLE FOR FLUSHING, PRESSURE TESTING AND DISINFECTING ALL NEW WATER MAIN. CHLORINE INJECTION POINTS SHALL BE INSTALLED WHERE REQUIRED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION AND REMOVED UPON COMPLETION OF TESTING. CONTRACTOR IS RESPONSIBLE FOR TESTING ALL SEWER MANHOLES AND SEWER MAIN ACCORDING TO THE SPECIFICATIONS.
13. CONTRACTOR SHALL VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND ELECTRIC, CABLE AND TELEPHONE LINES AND TAKE NECESSARY PRECAUTIONS IN STRICT ACCORDANCE WITH OSHA STANDARDS DURING CONSTRUCTION. CONTRACTOR SHALL CONTACT THE LOCAL POWER UTILITY AND TELEPHONE UTILITY REGARDING ANY NECESSARY SUPPORT OF ANY UTILITY POLES DURING CONSTRUCTION. LOCAL ELECTRIC UTILITY IS CVPS. LOCAL PHONE UTILITY IS FAIRPOINT.
14. TEMPORARY WATER AND SEWER ARE REQUIRED FOR THIS PROJECT. TEMPORARY SEWER SHALL BE PROVIDED USING A TEMPORARY GRAVITY SYSTEM OR BY MEANS OF BYPASS PUMPING. ANY ABOVE GROUND PIPING SHALL BE SECURED TO THE TEMPORARY BRIDGE OR OTHER RIGID STRUCTURES AT A SPACING OF 3.05 M MINIMUM. THE CONTRACTOR SHALL SUBMIT A TEMPORARY UTILITIES PLAN TO THE ENGINEER PRIOR TO THE INSTALLATION. TEMPORARY UTILITIES SHALL NOT AFFECT TRAFFIC. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
15. GENERALLY HEAVY OR DARK LINE WORK OR NOTES REFER TO PROPOSED IMPROVEMENTS. LIGHT LINE WORK OR SCREENED GENERALLY DENOTES EXISTING FEATURES.
16. TECHNICAL SPECIFICATIONS PROVIDE NECESSARY INFORMATION AND ARE PART OF THE CONTRACT DOCUMENTS FOR THIS PROJECT.
17. CONTRACTOR SHALL CONNECT WATER SERVICES TO IDENTIFIED WATER USERS UPON COMPLETION OF INSTALLATION OF WATER MAIN AND RECEIPT OF SUCCESSFUL BACTERIOLOGICAL TESTS.
18. REFER TO ELECTRICAL SHEETS FOR HEAT TRACE REQUIREMENTS.
19. ALL EXISTING SEWER MAIN AND MANHOLES BETWEEN SMH A12 AND SMH A15 SHALL BE REMOVED UNDER CONTRACT ITEM 204.21
20. ALL EXISTING WATER MAIN AND FITTINGS LOCATED BETWEEN THE TWO PROPOSED INTERCONNECTIONS ON EITHER SIDE OF THE PROPOSED BRIDGE SHALL BE ABANDONED AND REMOVED AS PART OF THIS PROJECT.
21. CONTRACTOR SHALL REBUILD EXISTING SEWER MANHOLE INVERTS AS NECESSARY TO MAINTAIN PROPER FLOW BETWEEN THE EXISTING STRUCTURE AND NEW SEWER MAINS.
22. CONTRACTOR IS RESPONSIBLE FOR CONNECTING ALL EXISTING WATER AND SEWER CUSTOMERS TO THE PROPOSED WATER AND SEWER MAINS. CONTRACTORS IS RESPONSIBLE FOR COORDINATING AND RESOLVING CONFLICTS BETWEEN ANY NEW OR EXISTING UTILITY.
23. TOWN OF READSBORO WATER SYSTEM STANDARDS:
    - HYDRANTS: CLOW EDDY F-2640.
    - GATE VALVES: AFC 2500 RESILIENT SEAT OR MUELLER A2360.
    - CORPORATION: MUELLER B-25008EB OR FORD 1000-3-Q-NL.
    - CURB STOP (WATER SERVICE): MUELLER B-25200ED OR FORD B44-333-Q-NL.
    - CURB STOP (MANUAL AIR RELEASE): MUELLER B25209 OR FORD B44-333-SENQ. CURB STOPS FOR MANUAL AIR RELEASES SHALL BE NON-DRAINING IN AREAS OF HIGH GROUNDWATER OR WHEN INSTALLED WITHIN 3.0 HORIZONTAL METERS FROM A SANITARY SEWER OR 1.5 HORIZONTAL METERS FROM A STORM DRAIN.

    ANY PRODUCT SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE PROVEN AS "EQUAL" AND BE PRE-APPROVED IN WRITING BY THE TOWN, STATE OF VT AOT AND DUFRESNE GROUP.
23. ALL PRODUCTS USED THAT ARE TO COME IN CONTACT WITH POTABLE WATER SHALL COMPLY WITH ALL STATE AND FEDERAL LEAD LAWS AND REQUIREMENTS.

LOCAL VALVE OPERATION

1. EXISTING AND PROPOSED MAIN LINE GATE VALVES SHALL OPEN LEFT OR COUNTER CLOCKWISE. OPERATION OF GATE VALVES WILL BE PERFORMED BY THE OWNER'S STAFF ONLY.
2. ALL INTERCONNECTIONS TO THE EXISTING SYSTEM CAN ONLY BE MADE WITH THE WRITTEN PERMISSION OF THE TOWN OF READSBORO.

ABBREVIATIONS

CI	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
CU	COPPER PIPE
DI	DUCTILE IRON PIPE
EL	ELEVATION
ER	EROSION
HYD	FIRE HYDRANT
INV	INVERT
IP	IRON PIPE
MJ	MECHANICAL JOINT
P	ELECTRICAL POWER
ROW	RIGHT OF WAY
STA	STATION
TBM	TEMPORARY BENCH MARK
TYP	TYPICAL
W	WATER MAIN
WSO	WATER SHUT OFF
WV	WATER VALVE

LEGEND

EXISTING:	
	EDGE OF RIVER
	EDGE OF PAVEMENT
	EDGE OF GRAVEL
	BUILDING
W	WATER MAIN
S	SEWER MAIN
AERIAL	TEMP OVERHEAD WIRE
	TREE LINE
	STONE WALL
	FENCE
	SWALE
	UTILITY POLE
	GUY WIRE
	CATCH BASIN
	MAIL BOX
	SEWER MANHOLE
	FIRE HYDRANT
IP	IRON PIN FOUND
	BENCH MARK
	ROAD SIGN
	DECIDUOUS TREE
	EVERGREEN TREE
PROPOSED:	
W	WATER MAIN
S	SEWER MAIN
	UTILITY SLEEVE
	GATE VALVE
	END CAP
	MANUAL AIR RELEASE
	SOLID SLEEVE
	CURB STOP
	SEWER MANHOLE
12	UTILITY ITEM NUMBER

FOR CONSTRUCTION

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STATE OF VERMONT
TIMOTHY P. KNAPP
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REVISIONS

DATE	COMMENTS	BY

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TH 2, FAS 105
BRIDGE #32

WATER AND SEWER MAIN LEGEND, ABBREVIATIONS, GENERAL NOTES, AND PLAN

READSBORO, VERMONT

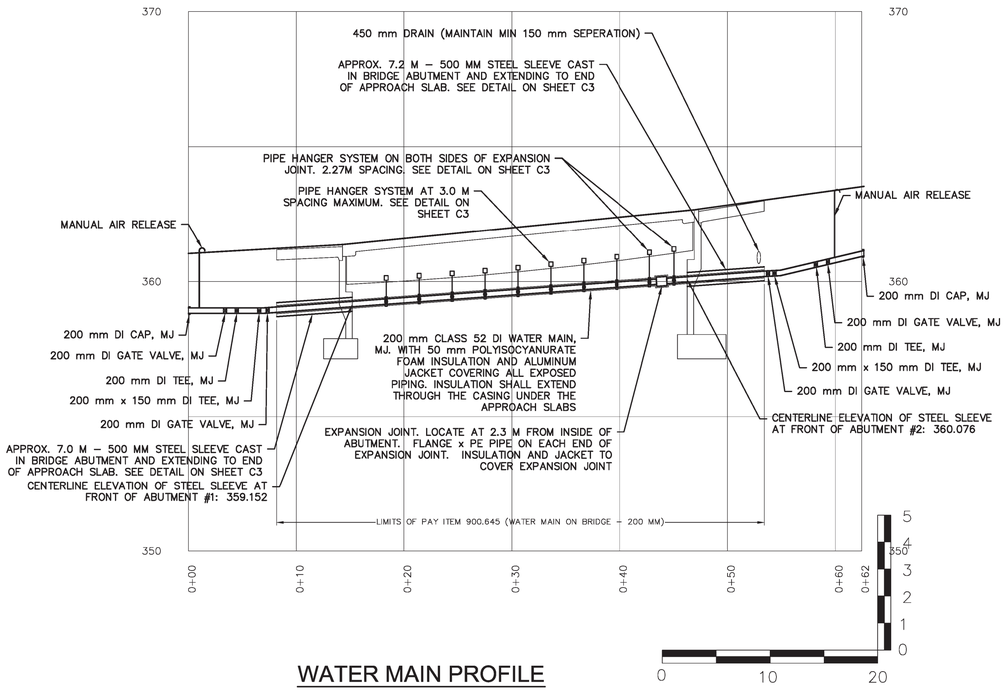
READSBORO BRF 0105(3)
WATER AND SEWER MAIN
LEGEND, ABBREVIATIONS,
GENERAL NOTES AND PLAN
SHEET __ OF __

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	NRJ
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

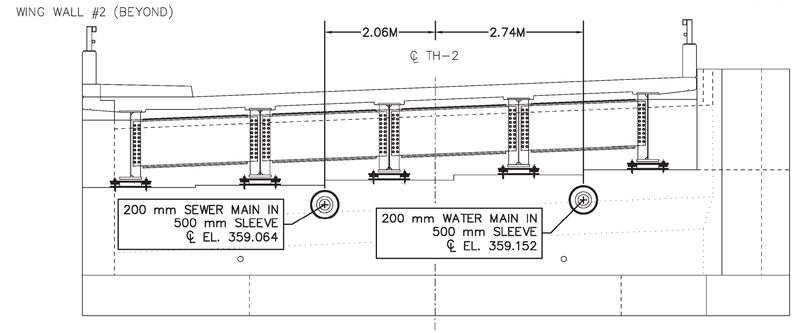
C1

SHEET 1 OF 4

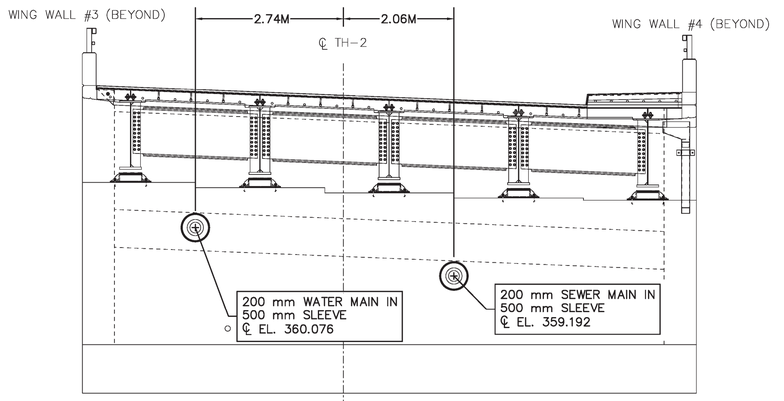
FILE: P:\2400 Files\Readsboro VT\Bridge 32\416006-C1.dwg Dec 14, 2011 - 9:29pm



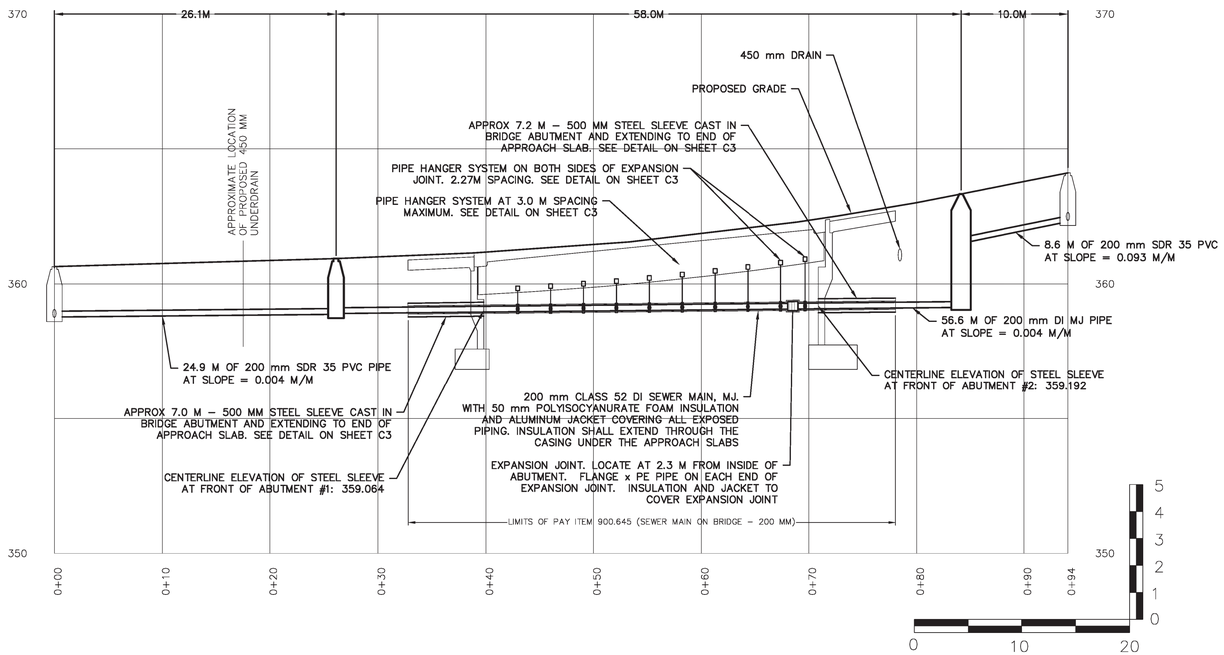
WATER MAIN PROFILE



PIPE PENETRATIONS AT ABUTMENT #1



PIPE PENETRATIONS AT ABUTMENT #2



SEWER MAIN PROFILE

NOTES:

1. THE DIMENSIONS AND STATIONING SHOWN ON THIS DRAWING FOR BRIDGE SUPPORTS ARE APPROXIMATE AND MAY BE ALTERED ON THE BASIS OF APPROVED BRIDGE FABRICATION DRAWINGS. THE CONTRACTOR SHALL NOT FABRICATE THE BRIDGE CROSSING PIPING UNTIL APPROVED BRIDGE FABRICATION DRAWINGS ARE AVAILABLE.
2. THE FABRICATED PIPE SUPPORTS ATTACHED TO THE BRIDGE SHALL BE HOT DIPPED GALVANIZED AFTER COMPLETE FABRICATION. ALL HIGH STRENGTH BOLTS, NUTS AND WASHERS AS WELL AS THE PIPE SUPPORT AND SUPPORTING ELEMENTS SHALL BE ELECTROGALVANIZED UNLESS OTHERWISE NOTED.
3. THE PIPE LOCATED BETWEEN THE START OF EACH APPROACH SLAB SHALL BE INSULATED AND HAVE HEAT TRACING INSTALLED AFTER PLACEMENT.
4. REFER TO SHEET C3 FOR PIPE SUPPORT DETAILS. ALL BRIDGE CROSSING PIPE SHALL BE INSTALLED WITHOUT DEFLECTION OF JOINTS. CONTRACTOR SHALL INSTALL LATERAL AND VERTICAL RESTRAINT IF ANY PIPE JOINTS ARE DEFLECTED, AT THE CONTRACTOR'S EXPENSE. WORK IS SUBJECT TO THE WRITTEN PRE–APPROVAL OF AOT.
5. FLANGED EXPANSION JOINTS SHALL BE FURNISHED AND INSTALLED ADJACENT TO BRIDGE ABUTMENT #2 AS SHOWN ON THE DRAWING. THE EXPANSION JOINT SHALL HAVE A MINIMUM OF 100 mm (4 INCHES) OF AXIAL MOVEMENT.
6. PIPE FOR BRIDGE CROSSING SHALL BE CLASS 52, DUCTILE IRON WITH MEGALUG RETAINER GLANDS. EACH SECTION OF PIPE SHALL BE SUPPORTED BY AT LEAST TWO PIPE SUPPORTS. SUPPORTS SHALL BE INSTALLED WITHOUT CONFLICT BETWEEN PIPE JOINT AND SUPPORTS
7. ALL GATE VALVES MUST CONFORM TO THE TOWN OF READSBORO STANDARD AND OPEN LEFT (COUNTER CLOCKWISE).
8. PIPE SHALL BE SUPPORTED AT TWO POINTS ALONG EACH LENGTH OF PIPE. PIPE SHALL BE INSTALLED SUCH THAT THE PIPE SUPPORT IS 0.3 METERS FROM A PIPE JOINT, ON THE BELL SIDE OF THE JOINT, AND ANOTHER SUPPORT AT OR NEAR THE CENTER OF THE PIPE.
9. RIM ELEVATIONS SHOWN ON THIS PLAN MAY REQUIRE ADJUSTMENT BY THE CONTRACTOR AT NO ADDITIONAL COST TO MEET FINISH GRADE OF THE PROPOSED ROADWAY.
10. 900.645 SPECIAL PROVISION (WATER MAIN ON BRIDGE – 200MM) SHALL COVER ALL WORK BETWEEN THE ENDS OF THE STEEL SLEEVE, INCLUDING HEAT TRACING AND RELATED ELECTRICAL CONNECTIONS. ALL WORK OUTSIDE OF THESE LIMITS WILL BE PAID FOR UNDER THE APPROPRIATE INDIVIDUAL PAY ITEMS.
11. 900.645 SPECIAL PROVISION (SEWER MAIN ON BRIDGE – 200MM) SHALL COVER ALL WORK BETWEEN THE ENDS OF THE STEEL SLEEVE, INCLUDING HEAT TRACING AND RELATED ELECTRICAL CONNECTIONS. ALL WORK OUTSIDE OF THESE LIMITS WILL BE PAID FOR UNDER THE APPROPRIATE INDIVIDUAL PAY ITEMS.

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REVISIONS

DATE	COMMENTS	BY

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TH 2, FAS 105
BRIDGE #32

WATER AND SEWER MAIN PROFILES

READSBORO, VERMONT

READSBORO BRF 0105(3)
WATER AND SEWER MAIN PROFILES
SHEET __ OF __

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	NRJ
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

C2

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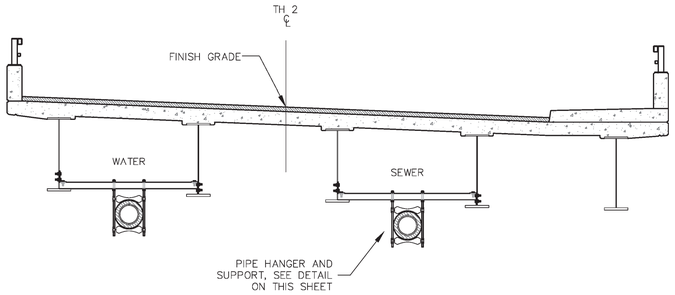
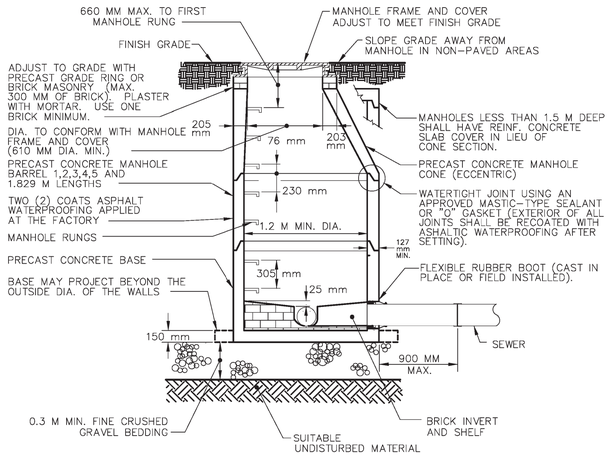
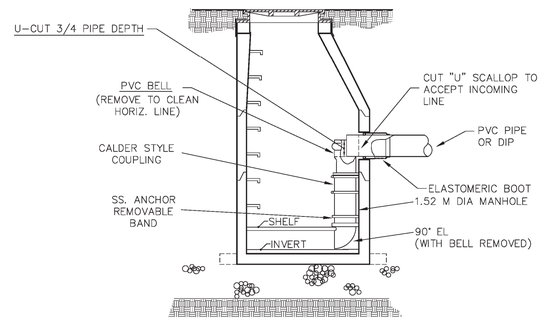


TYPICAL PIPE CROSSING BRIDGE SECTION
NOT TO SCALE

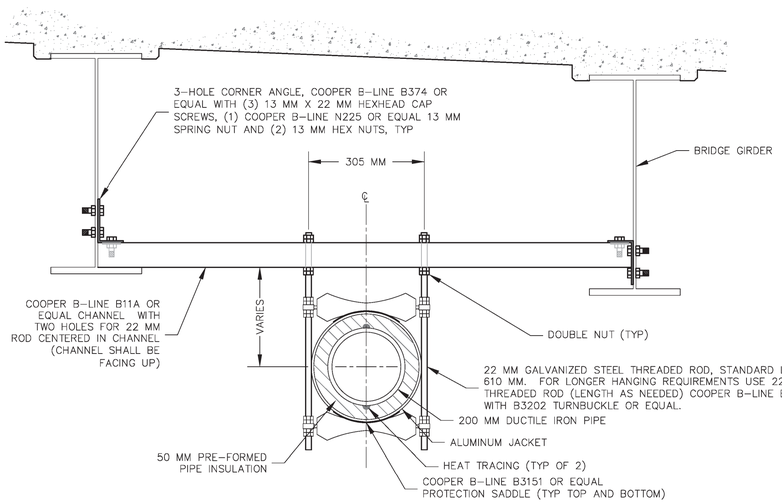


PRECAST CONCRETE MANHOLE
NOT TO SCALE



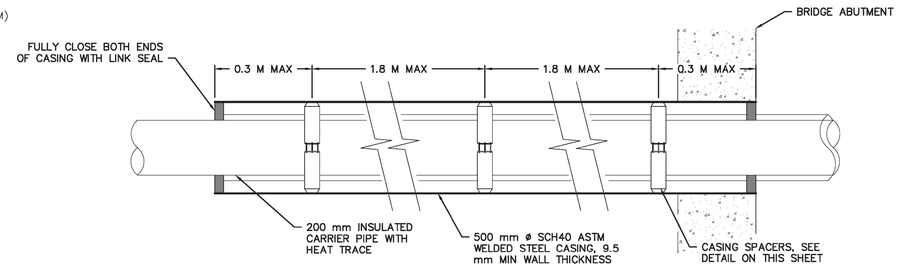
PRECAST CONCRETE DROP MANHOLE
NOT TO SCALE

NOTE:
SEE "PRECAST CONCRETE MANHOLE" DETAIL ON THIS SHEET FOR NOTES AND ADDITIONAL INFORMATION.



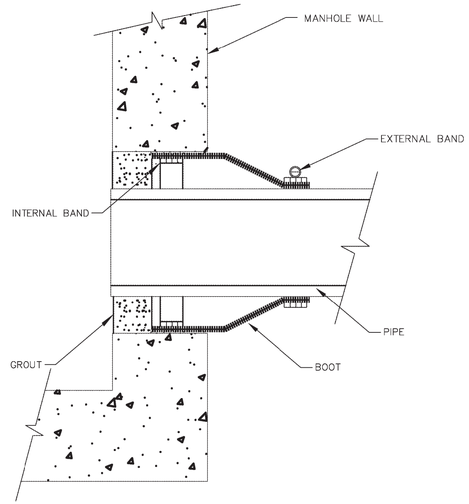
NOTES:
1. CHANNELS AND ANGLE FITTINGS SHALL BE HOT DIPPED GALVANIZED STEEL
2. NUTS AND SCREWS SHALL BE ZINC PLATED STEEL
3. ALL PIPE SUPPORT PARTS WITH PART NUMBERS LISTED SHALL BE AS MANUFACTURED BY COOPER B-LINE OR EQUAL.
4. PIPE SUPPORTS SHALL BE INSTALLED EVERY 3.0 M MAXIMUM.

PIPE SUPPORT DETAIL - SECTION VIEW
NOT TO SCALE



CASING AND SPACER DETAIL
NOT TO SCALE

NOTES:
1. EARTH BACKFILL TO BE MADE IN 150 MM LIFTS AND COMPACTED TO NOT LESS THAN 95% MAX DRY DENSITY.
2. SEE SHEETS C1 AND C2 FOR DETERMINING SLEEVE LENGTH.



PIPE TO EXISTING MANHOLE JOINT
NOT TO SCALE

NOTE: PIPE CORE SIZE SHALL BE BASED ON MANUFACTURER'S RECOMMENDATIONS.

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DATE	COMMENTS	BY

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TH 2, FAS 105
BRIDGE #32

GENERAL DETAILS

READSBORO, VERMONT

READSBORO BRF 0105(3)
GENERAL DETAILS
SHEET __ OF __

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	NRJ
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

C3

FOR CONSTRUCTION

SHEET 3 OF 4

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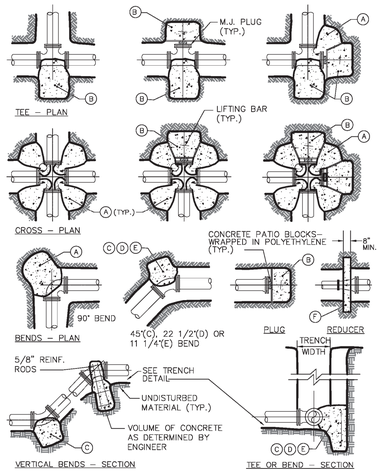


THRUST BLOCK SCHEDULE
SQUARE FEET OF CONCRETE THRUST
BLOCKING BEARING ON UNDISTURBED MATERIAL

REACTION TYPE		PIPE SIZE 4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
TEST PRESSURE 200 PSIG	Ⓐ	5.12	10.58	18.19	27.37	38.71	52.00	67.26	84.47	103.64	147.87
	Ⓑ	3.62	7.48	12.87	19.35	27.37	36.77	47.56	59.73	73.29	104.56
	Ⓒ	2.77	5.72	9.85	14.81	20.95	28.14	36.40	45.72	56.09	80.03
	Ⓓ	1.41	2.92	5.02	7.55	10.68	14.35	18.56	23.31	28.60	40.80
	Ⓔ	0.71	1.47	2.52	3.79	5.37	7.21	9.32	11.71	14.37	20.56
	Ⓕ	–	3.86	9.25	15.73	23.75	29.29	40.08	46.86	53.93	77.19

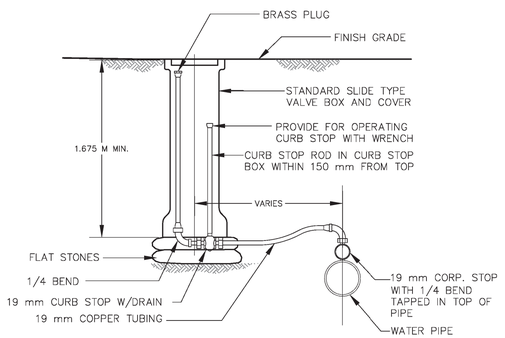
NOTES:
1. THRUST RESTRAINT IS REQUIRED FOR ALL TEES, BENDS, REDUCERS, CAPS, PLUGS, OR CROSSES.
2. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
3. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
4. PLACE CONCRETE PATIO BLOCKS IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK.
5. PRE–FORMED AND PRE–POURED THRUST BLOCKS ARE NOT ACCEPTABLE.
6. THE USE OF A MECHANICAL JOINT RESTRAINT SYSTEM DOES NOT REDUCE THE REQUIREMENTS SHOWN IN THIS DETAIL.
7. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.
8. IF THREADED ROD IS USED, IT SHALL BE ANSI A242 FY50 PIPE RESTRAINT NUTS TO MATCH AWWA C111.
9. SIZES FOR REDUCERS SHOWN ARE BASED ON THE SMALLEST AVAILABLE RUN SIZE FOR A GIVEN PIPE SIZE.
10. INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.
11. TEST PRESSURE TO BE 200 PSI MIN. AT LOW END OF THE TEST SECTION. SQUARE FEET OF CONCRETE THRUST BLOCKING FOR OTHER TEST PRESSURES IS DIRECTLY PROPORTIONAL TO THE ABOVE TABLE. FOR INSTANCE, AT 300 PSI TEST PRESSURE, THE NUMBERS SHOWN IN THE ABOVE TABLE ARE MULTIPLIED BY 1.5. SEE BELOW FOR EXAMPLE CALCULATION.
12. THRUST BLOCK AREA IS BASED ON A SOIL BEARING STRENGTH OF 1500 LBS/SF AND A SAFETY FACTOR OF 1.5. MULTIPLY THE BEARING AREA FROM ABOVE (WITH CONSIDERATION OF TEST PRESSURE) AND MULTIPLY BY THE FOLLOWING FACTORS TO DETERMINE BEARING AREA REQUIRED FOR VARIOUS SOIL CONDITIONS:

SOIL TYPE	BEARING CAPACITY (LB/SF)	FACTOR
SOFT CLAY	1,000	1.50
SILT	1,500	1.00
SANDY SILT	3,000	0.50
SAND	4,000	0.38
SANDY GRAVEL	5,000	0.30
SANDY CLAY	6,000	0.25
GRAVEL W/ ROCK	7,000	0.21
HARD CLAY	9,000	0.17

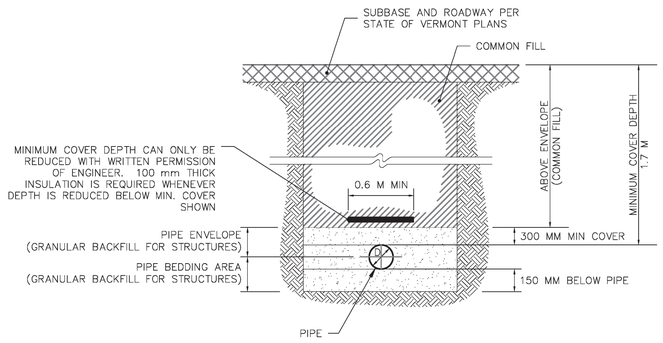
EXAMPLE: AN 8–INCH 90° BEND IN SANDY GRAVEL SOILS, TEST PRESSURE OF 200 PSI:

AREA REQUIRED = 18.19SF x 1 x 0.30 = 5.46SF

THRUST BLOCK DETAILS AND NOTES
NOT TO SCALE

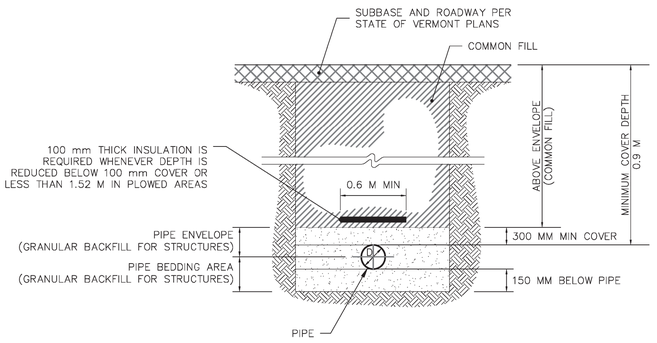


TYPICAL INSTALLATION-TRAVEL WAY FOR MANUAL AIR RELEASE OR CHLORINATION INJECTION
NOT TO SCALE



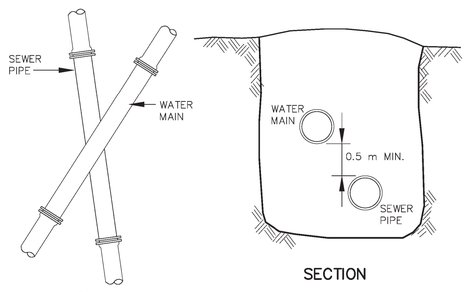
WATER MAIN TYPICAL TRENCH DETAIL
NOT TO SCALE

NOTES:
1. REFER TO SPECIFICATIONS FOR PAVEMENT THICKNESS REQUIREMENTS.
2. REFER TO THE SPECIFICATIONS FOR COMPACTION, PAY LIMITS, AND SPECIALTY MATERIALS FOR BEDDING, ENVELOPE, AND GRAVELS.
3. IF THE EXCAVATED MATERIAL BECOMES TOO WET DUE TO WEATHER CONDITIONS OR DUE TO IMPROPER HANDLING PROCEDURES AND CANNOT BE REUSED FOR BACKFILL, THE MATERIAL SHALL BE SUFFICIENTLY DRIED OR MIXED WITH DRY MATERIAL TO OBTAIN PROPER MOISTURE CONTENT AT NO CHARGE TO THE OWNER.
4. BACKFILL IN ACCORDANCE WITH VERMONT AOT STANDARD SPECIFICATION SUBSECTION 628.14



SEWER MAIN TYPICAL TRENCH DETAIL
NOT TO SCALE

NOTES:
1. REFER TO SPECIFICATIONS FOR PAVEMENT THICKNESS REQUIREMENTS.
2. REFER TO THE SPECIFICATIONS FOR COMPACTION, PAY LIMITS, AND SPECIALTY MATERIALS FOR BEDDING, ENVELOPE, AND GRAVELS.
3. IF THE EXCAVATED MATERIAL BECOMES TOO WET DUE TO WEATHER CONDITIONS OR DUE TO IMPROPER HANDLING PROCEDURES AND CANNOT BE REUSED FOR BACKFILL, THE MATERIAL SHALL BE SUFFICIENTLY DRIED OR MIXED WITH DRY MATERIAL TO OBTAIN PROPER MOISTURE CONTENT AT NO CHARGE TO THE OWNER.
4. BACKFILL IN ACCORDANCE WITH VERMONT AOT STANDARD SPECIFICATION SUBSECTION 629.14

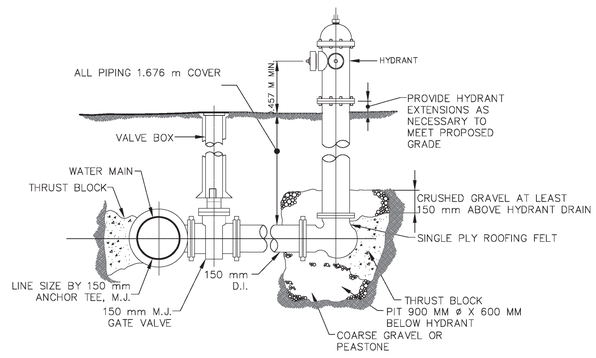


1. PARALLEL INSTALLATION: WATER MAINS SHALL BE LAID AT LEAST 3.05 M HORIZONTALLY FROM ANY EXISTING OR PROPOSED MANHOLE OR SANITARY SEWER. THIS DISTANCE CAN BE REDUCED TO 1.52 M FOR STORM SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.

2. CROSSINGS: WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 0.5 M BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR THE FIRST SEWER AS POSSIBLE. IF THE SEWER MAIN IS OVER THE WATER MAIN, THE FIRST SEWER PIPE JOINTS ON EACH SIDE OF THE WATER MAIN MUST BE CONCRETE ENCASED. SPECIAL STRUCTURAL SUPPORT FOR THE WATER AND SEWER PIPES MAY BE REQUIRED. WATER MAINS SHALL NOT PASS THROUGH SEWER MANHOLES OR BE SUBMERGED IN BASINS CONTAINING SEWAGE OR OTHER GROSSLY CONTAMINATED OR HAZARDOUS MATERIAL.

3. EXCEPTION: THE SECRETARY OF THE STATE MUST SPECIFICALLY APPROVE ANY VARIANCE FROM THESE REQUIREMENTS WHEN IT IS IMPOSSIBLE TO OBTAIN THE SPECIFIED SEPARATION DISTANCES.

STORM SEWER OR SANITARY SEWER AND WATER MAIN CROSSING
NOT TO SCALE



HYDRANT ASSEMBLY DETAIL
NOT TO SCALE

NOTES:
1. IN AREAS OF HIGH GROUND WATER OR WHEN HYDRANT IS INSTALLED WITHIN 3.05 M OF A SEWER UTILITY, THE HYDRANT SHALL NOT BE EQUIPPED WITH DRAINING CAPABILITIES.

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TH 2, FAS 105
BRIDGE #32

GENERAL DETAILS

READSBORO, VERMONT

READSBORO BRF 0105(3)
GENERAL DETAILS
SHEET __ OF __

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	NRJ
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

C4

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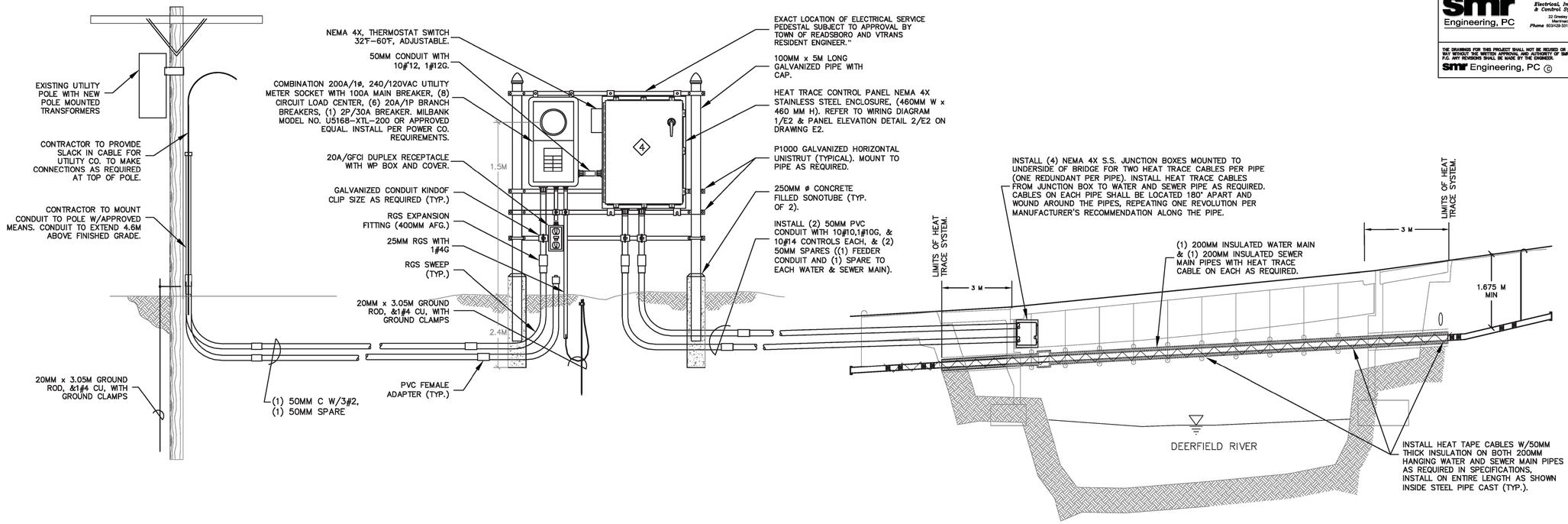
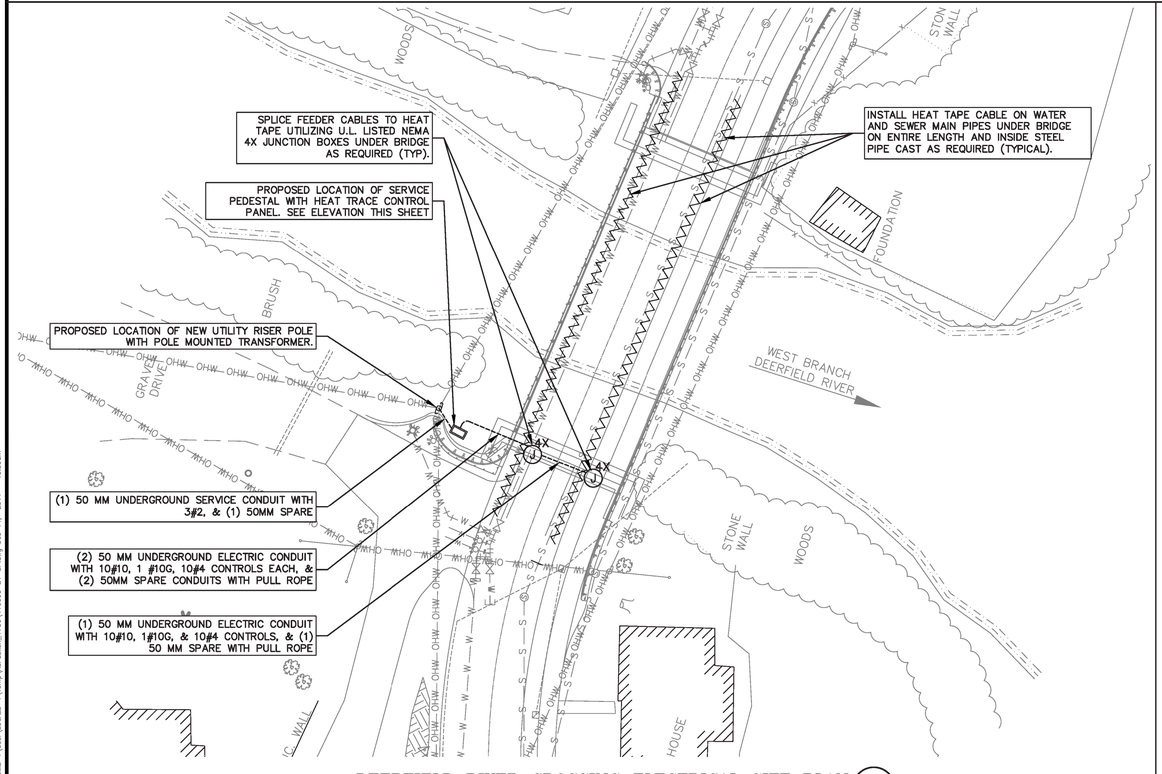


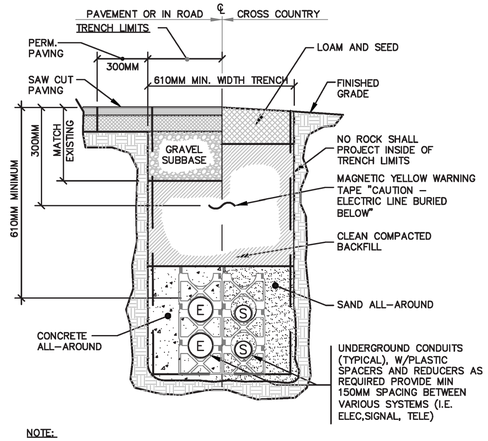
ELECTRICAL SERVICE PEDESTAL WITH HEAT TRACE SYSTEM ELEVATION (1/E1)

SCALE: NONE



DEERFIELD RIVER CROSSING ELECTRICAL SITE PLAN (2/E1)

SCALE: 1:250



NOTE:

1. REFER TO ELECTRICAL SITE PLAN & DUCT BANK SCHEDULE FOR SPECIFIC REQUIREMENTS.
2. REFER TO VTRANS SPECS FOR ALL EARTHWORK MATERIALS AND METHODS.
3. REFER TO STATE OF VERMONT PLANS AND SPECIFICATIONS FOR ADDITIONAL ROADWAY, SUB–BASE AND BACKFILL REQUIREMENTS.

TYPICAL ELECTRICAL TRENCHING DETAIL (4/E1)

SCALE: NONE

SUBSURFACE WORK NOTE:

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIG SAFE" AT 1(888)344–7233 (1(888)DIG–SAFE)AND COORDINATE ACTIVITIES PRIOR TO ANY EXCAVATIONS.

ELECTRICAL SITE LEGEND

- UTILITY POLE
- OHP — PROPOSED OVERHEAD PRIMARY CABLE
- EXP — EXISTING UNDERGROUND PRIMARY CONDUIT
- EX — EXISTING UNDERGROUND ELECTRICAL CONDUIT
- SX — EXISTING UNDERGROUND SIGNAL CONDUIT
- E — PROPOSED NEW UNDERGROUND ELECTRICAL CONDUIT
- S — PROPOSED NEW UNDERGROUND SIGNAL CONDUIT
- (J) 4X — PROPOSED NEW JUNCTION BOX, 4X INDICATES NEMA TYPE

NOTES:

1. PROVIDE RIGID GALVANIZED SWEEPS ON ALL 90° TURNS.
2. UTILIZE RIGID GALVANIZED STEEL CONDUIT & SWEEPS AT THE RISER POLE FOR PRIMARY SECONDARY & TELEPHONE CONDUITS, GROUND AS REQUIRED.
3. COORDINATE NEW UNDERGROUND CONDUIT LOCATION WITH EXISTING UNDERGROUND ELECTRIC CONDUIT, PROCESS PIPING AND STRUCTURES PRIOR TO EXCAVATION.
4. REPAIR EXISTING PAVED AND GRASSED AREAS TO CONDITION EXISTING PRIOR TO EXCAVATION.
5. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING.
6. REFER TO DETAIL 4/E1 FOR TYPICAL TRENCHING DETAIL FOR ELECTRICAL/SIGNAL CONDUITS.

SAME PLAN USED FOR RELOCATED WATER AND SEWER LINES

FOR CONSTRUCTION

smr Engineering, PC
Electrical, Instrumentation & Control Systems Design
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STATE OF VERMONT
SADEGH M. RADVAR
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REVISIONS		
DATE	COMMENTS	BY

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BRIDGE #32

ELECTRICAL SITE PLAN WITH DETAILS

READSBORO, VERMONT

READSBORO BRF 0105(3)
ELECTRICAL SITE PLAN WITH DETAILS
SHEET __ OF __

Project #	416006
Project Mgr.	NRJ
Design by	JWC
Drawn by	JWC
Reviewed by	SMR
Approved by	SMR
Date	MAY 2011
Scale	

E1

SHEET 1 OF 4

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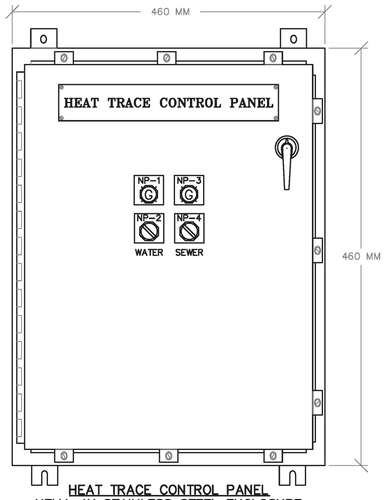


HEAT TRACE CONTROL PANEL
NEMA 4X STAINLESS STEEL ENCLOSURE

PLC PANEL NAMEPLATE SCHEDULE:

NP-1/3 HEAT TRACE 'ON'

NP-2/4 HEAT TRACE 'H-O-A' SWITCH (PUSH TO TEST TYPE)

TYPICAL CONTROL PANEL SYMBOLS:

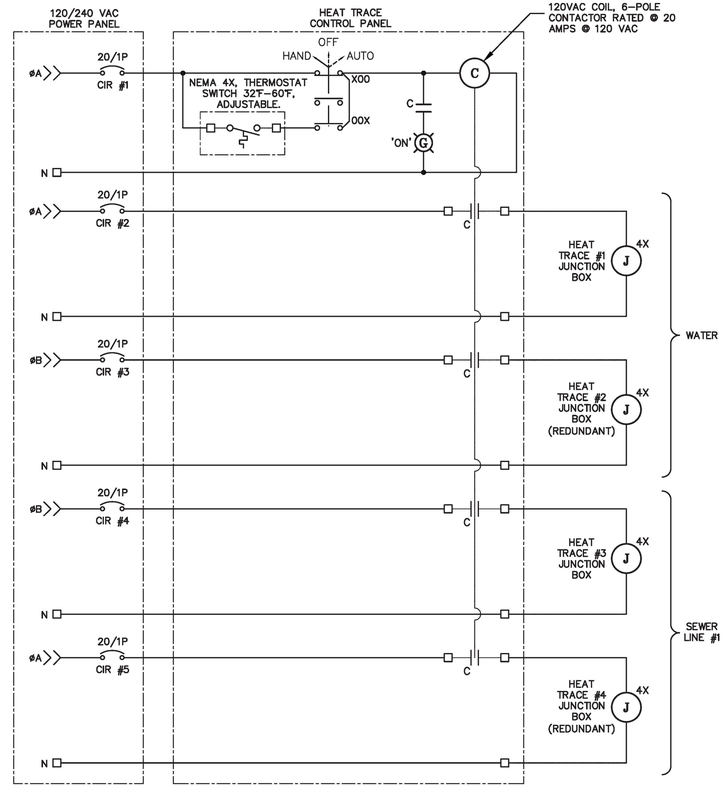
(R) INDICATING LIGHTS PUSH TO TEST TYPE
A: AMBER R: RED
B: BLUE W: WHITE
G: GREEN Y: YELLOW

HEAT TRACE CONTROL PANEL ELEVATION (2/E2)

SCALE: NONE

PROJECT GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (N.E.C.) LATEST EDITION.
2. COORDINATE ALL ELECTRICAL EQUIPMENT LOCATIONS AND MECHANICAL APPURTENANCES WITHIN THE EXISTING CONDITIONS TO PROVIDE ADEQUATE WORKING AND ACCESS PER N.E.C. REQUIREMENTS.
3. WHERE EXISTING ELECTRICAL DEVICES AND PROCESS DEVICES ARE INDICATE THOSE LOCATIONS ARE APPROXIMATE AND NOT ALL ELECTRICAL DEVICES MAY BE INDICATE. (FIELD VERIFY ALL ELECTRICAL ITEMS WHERE POSSIBLE.)
4. CONDUITS, RACEWAYS AND CABLES SHALL BE PROPERLY AND SECURELY ATTACHED TO BUILDING STRUCTURAL COMPONENTS AS REQUIRED BY N.E.C. ALL FASTENERS AND HARDWARE SHALL BE APPROVED FOR THE INSTALLATION AND THE CONDITIONS ENCOUNTERED.
5. EACH JUNCTION IN ANY OF THE WIRING SYSTEMS SHALL BE MADE IN AN APPROVED JUNCTION BOX. SUCH BOX SHALL BE SUITABLE FOR THE SIZE AND NUMBER OF CONDUCTORS AND DEVICES TO BE INSTALLED, AS WELL AS THE CONDITION ENCOUNTERED. ALL SPLICES SHALL BE MADE WITH APPROVED, MECHANICAL CONNECTORS.
6. CONTRACTOR SHALL VERIFY ALL STRUCTURAL, PROCESS AND MECHANICAL CONDITIONS PRIOR TO ROUGH-IN FOR ELECTRICAL WIRING AND EQUIPMENT.
7. ALL ELECTRICAL WORK SHALL BE CAREFULLY COORDINATED WITH THE ON-SITE CONDITIONS. WHERE CUTTING, DRILLING OR ALTERATION TO THE WORK OF OTHERS IS NECESSARY FOR THE PROPER INSTALLATION OF ELECTRICAL EQUIPMENT, SUCH WORK SHALL BE PLANNED IN ADVANCE AND SHALL BE CAREFULLY DONE. ANY DAMAGE TO THE BUILDINGS OR EQUIPMENT SHALL BE REPAIRED BY PROPERLY TRAINED PERSONNEL TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
8. DURING ROUGH-IN AND FINISHED STAGES OF CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND KEEP CLEAN ALL ELECTRICAL EQUIPMENT, PANELS, FIXTURES AND DEVICES AS WELL AS ALL EXISTING EQUIPMENT AND RELATED WORK AREAS.
9. THE CONTRACTOR SHALL PROVIDE ALL INFORMATION ABOUT EQUIPMENT WHICH HE/SHE IS FURNISHING TO THE ENGINEER/OWNER FOR REVIEW PURPOSES. THE CONTRACTOR SHALL PROVIDE ALL INSTALLATION DETAILS AND SUPPORT COMPONENTS SO THAT THESE MAY BE BUILT INTO THE CONSTRUCTION IN A TIMELY MANNER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF THE FINAL LOCATIONS OF INSTRUMENTATION, CONTROL AND POWER CONNECTION DETAILS SO THAT THE ASSOCIATED ELECTRICAL WORK WILL BE PROPERLY COORDINATED AND INSTALLED.
11. EQUIPMENT LAYOUT AND EXACT LAYOUT OF NEW ELECTRICAL EQUIPMENT AND INSTRUMENTATION SHALL BE COORDINATED WITH PROCESS AND MECHANICAL EQUIPMENT.
12. DRAWINGS SHOW A LAYOUT OF ELECTRICAL/INSTRUMENTATION SYSTEMS AND EQUIPMENT DIAGRAMMATICALLY. EXACT LOCATION OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE DETERMINED BY FIELD CONDITIONS AND DIRECTION BY ENGINEER AND OWNER. BY SUBMITTING A BID, CONTRACTOR WARRANTS THAT HE HAS VISITED THE SITE WHERE WORK IS TO BE PERFORMED, AND HAS EXAMINED THE EXISTING CONDITIONS AND EXTENT OF LABOR AND MATERIALS TO BE PROVIDED. COORDINATION WITH ALL TRADES, UTILITIES, ETC. SHALL BE PROVIDED. THE ENGINEER SHOULD BE NOTIFIED OF ANY DISCREPANCIES, OMISSIONS, CONFLICTS OR INTERFERENCES WHICH OCCUR BETWEEN VARIOUS DRAWINGS AND SPECIFICATIONS. IF SUCH NOTIFICATION IS NOT RECEIVED, THE INSTALLING CONTRACTOR(S) SHALL BE RESPONSIBLE FOR THEIR INTERPRETATIONS.
13. ALL COST FOR PROVIDING AND INSTALLING HEAT TRACE SYSTEMS FOR WATER MAIN AND SEWER MAIN ON THE BRIDGE WILL BE INCLUDED UNDER CONTRACT ITEM 900.645 SPECIAL PROVISION (WATER MAIN ON BRIDGE) AND (SEWER MAIN ON BRIDGE), RESPECTIVELY.



HEAT TRACE CONTROL PANEL WIRING DIAGRAM (1/E2)

SCALE: NONE

FOR CONSTRUCTION

smr Engineering, PC
Electrical, Instrumentation & Control Systems Design
22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone 603/429-3313 Fax 603/429-3466

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REVISIONS

BY	COMMENTS	DATE

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BRIDGE #32

WIRING DIAGRAMS AND DETAILS

READSBORO, VERMONT

READSBORO BRF 0105(3)
WIRING DIAGRAM AND DETAILS

SHEET __ OF __

Project #	416006
Project Mgr.	NRJ
Design by	JWC
Drawn by	JWC
Reviewed by	SMR
Approved by	SMR
Date	MAY 2011
Scale	

E2

SHEET 2 OF 4

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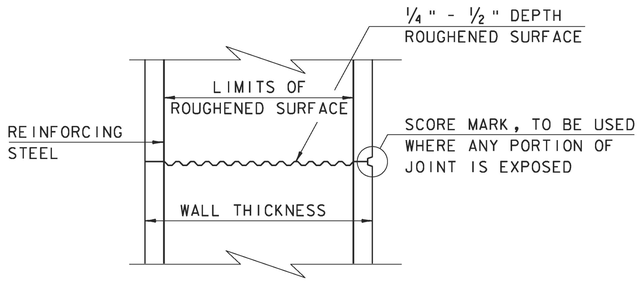
CONCRETE GENERAL NOTES

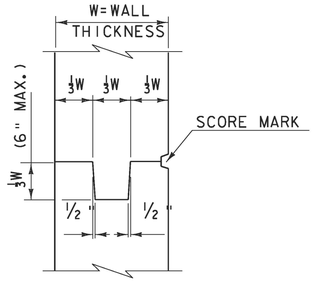
1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"



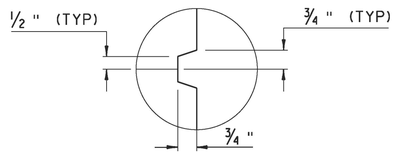
TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.

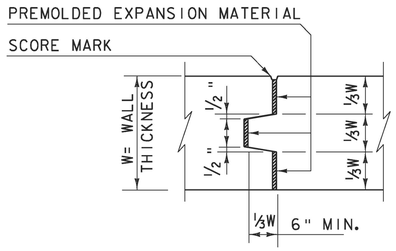
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



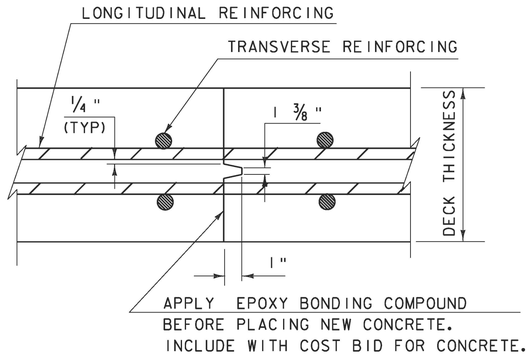
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



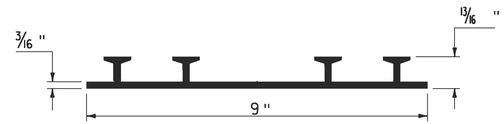
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



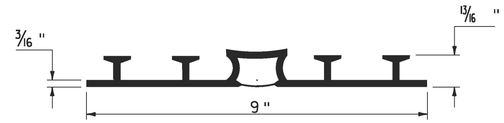
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



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.

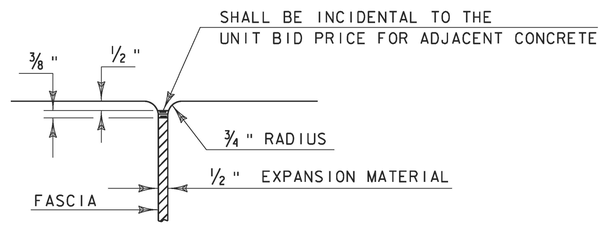
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



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.



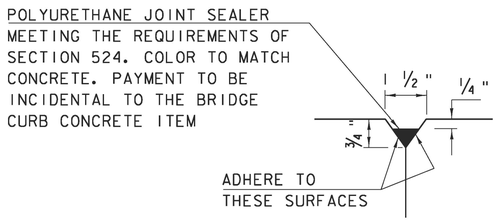
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION

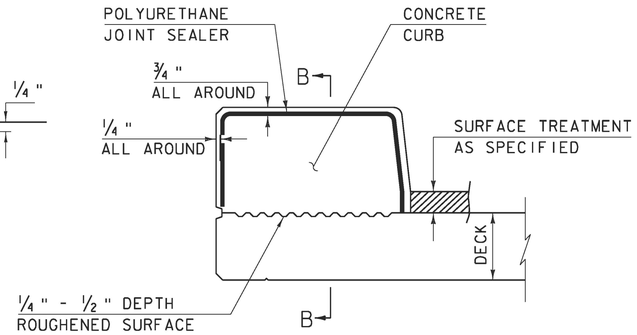
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL SD-501.00

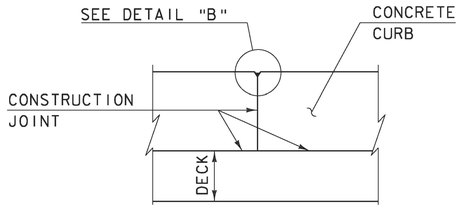


DETAIL "B"
(NOT TO SCALE)

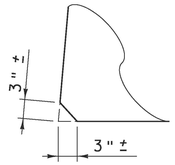


CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

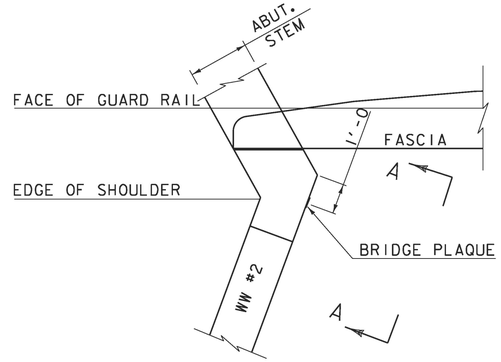
1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



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.

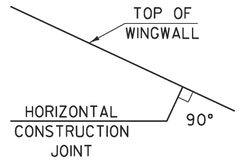
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

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.

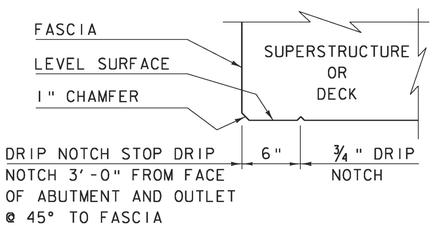
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

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.

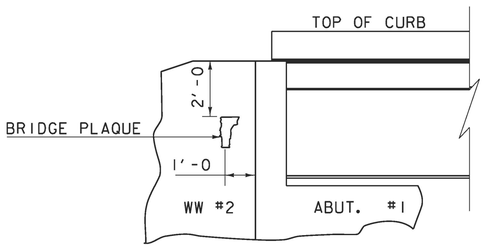
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



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.

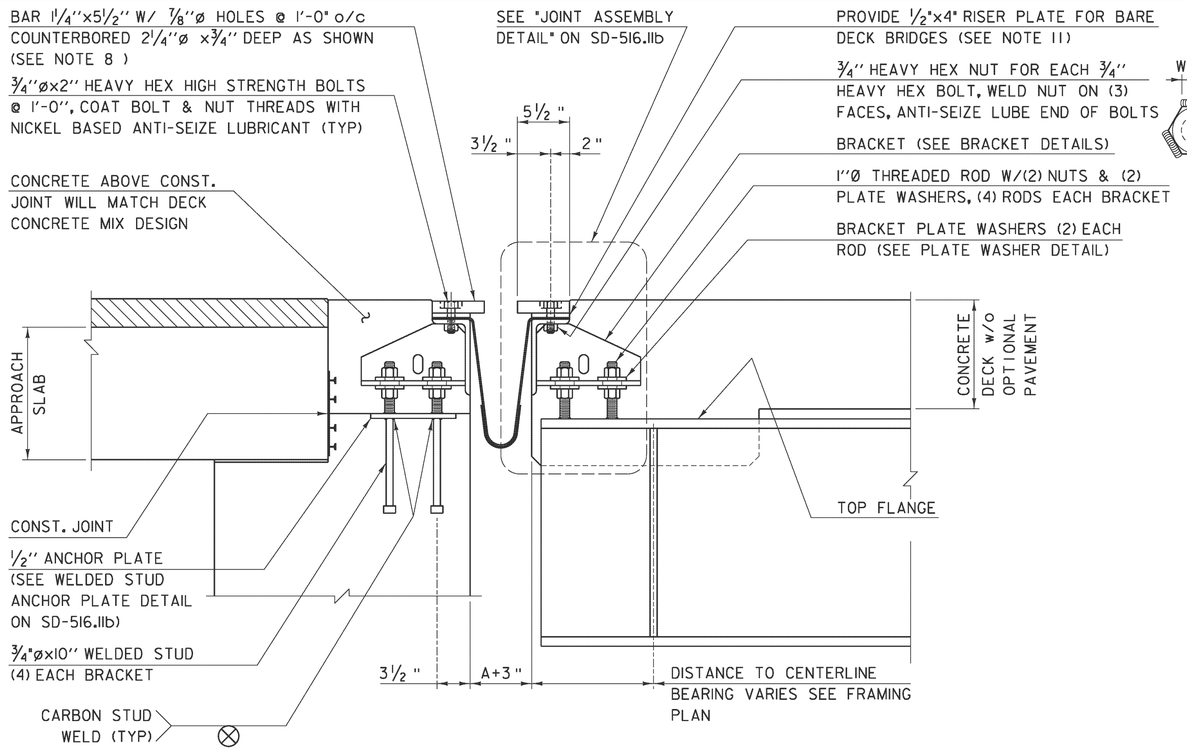
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS

CONCRETE DETAILS AND NOTES

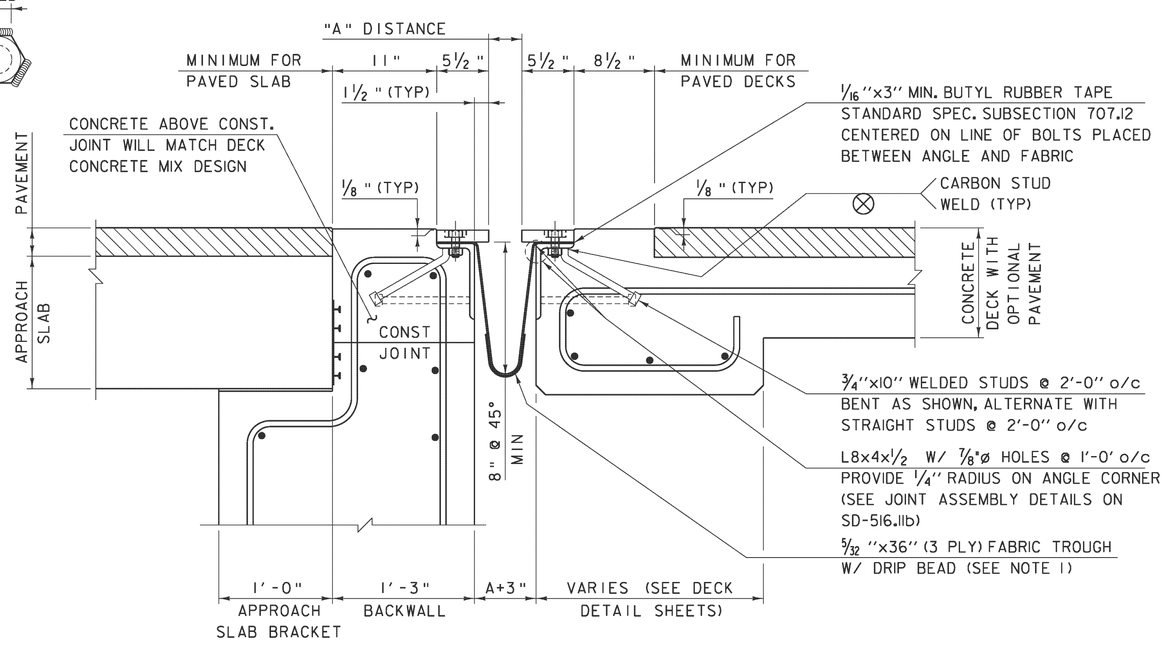
VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-502.00



TYPICAL SECTION AT GIRDERS

SCALE 1½" = 1'-0"

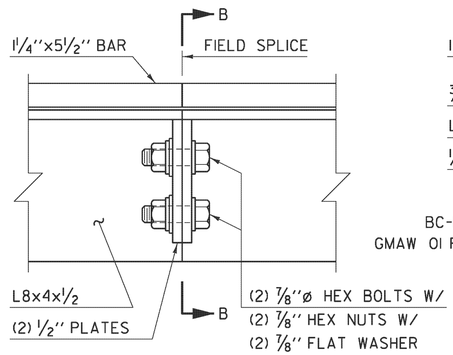


TYPICAL SECTION BETWEEN GIRDERS

SCALE 1½" = 1'-0"

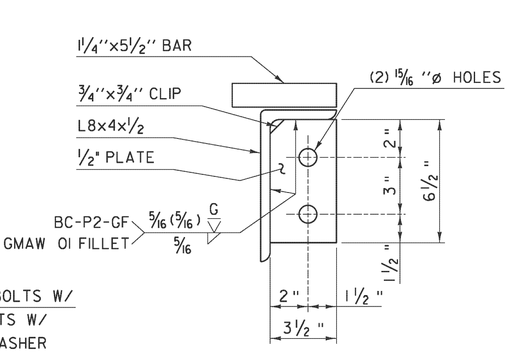
NOTES FOR ITEM 516.11 "BRIDGE EXPANSION JOINT, VERMONT"

1. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION. A DRIP BEAD OF 1/4"x7" STRIP OF PREFORMED FABRIC MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.
2. THE EXPANSION DEVICE SHALL BE COVERED TO PROTECT THE FINISH DURING PLACING OF BRIDGE DECK CONCRETE.
3. SEE "JOINT GAP DIMENSION TABLE" FOR DISTANCE "A" VALUES IN TEMPERATURE RANGE PROVIDED.
4. JOINT BRACKET LENGTH "X" VARIES DEPENDENT ON THE BRIDGE SKEW ANGLE. THE BRACKET MUST BE LOCATED SUCH THAT THE THREADED RODS ARE NOT LESS THAN 1½" FROM GIRDERS END OR FLANGE SIDES.
5. ALL STEEL COMPONENTS SHALL BE GALVANIZED OR METALIZED AND MEET THE REQUIREMENTS OF SUBSECTION 516.02. PRIOR TO GALVANIZING OR METALIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A 1/16" INCH RADIUS. THREADED RODS SHALL CONFORM TO THE REQUIREMENTS OF 714.04. THE "WELDED STUD ANCHOR PLATE" AND WELDED STUDS MAY BE SUPPLIED WITHOUT GALVANIZING OR METALIZING.
6. THE 4"x8"x1/2" ANGLES MAY BE FURNISHED AS ONE CONTINUOUS PIECE OR SPLICED AS SHOWN IN THE FIELD SPLICE DETAIL WHEN SPECIFIED. THE 1¼"x5 ½" BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
7. PROJECTING THREADS OF THE 3/4" Ø BOLTS IN THE JOINT SHALL BE GREASED BY THE CONTRACTOR PRIOR TO PLACING ADJACENT CONCRETE. THIS WILL FACILITATE BOLT REMOVAL IF REQUIRED IN THE FUTURE.
8. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER (STD. SPEC. 707.04) AFTER BOLT INSTALLATION. PAYMENT FOR THE WORK SHALL BE INCIDENTAL TO ITEM 516.11 "BRIDGE EXPANSION JOINT, VERMONT".
9. THE EXPANSION JOINT, INCLUDING THE FABRIC TROUGH, SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT. IF THE EXPANSION JOINT HAS A FIELD SPLICE SPECIFIED, THE FABRIC TROUGH SHALL BE SHIPPED WITH ONE UNIT AND ASSEMBLED WITH THE SECOND UNIT PRIOR TO CONCRETE PLACEMENT.
10. TEMPORARY SHIPPING ATTACHMENTS SHALL BE ATTACHED BY BOLTING; WELDING WILL NOT BE PERMITTED.
11. BARE DECK "RISER PLATE" AS SHOWN IN "TYPICAL SECTION AT GIRDERS" DRAWING SHALL BE INCLUDED ON BRIDGES WITH BARE CONCRETE DECK SPECIFIED. RISER PLATES SHALL BE INCLUDED FOR BOTH SIDES AND MATCH THE LENGTHS OF THE 1¼"x5½" BARS. THE RISER PLATE CAN BE REMOVED IF THE DECK IS MILLED IN THE FUTURE.



FIELD SPLICE DETAIL

SPLICE ONLY WHEN SPECIFIED ON PLANS.



SECTION "B-B"

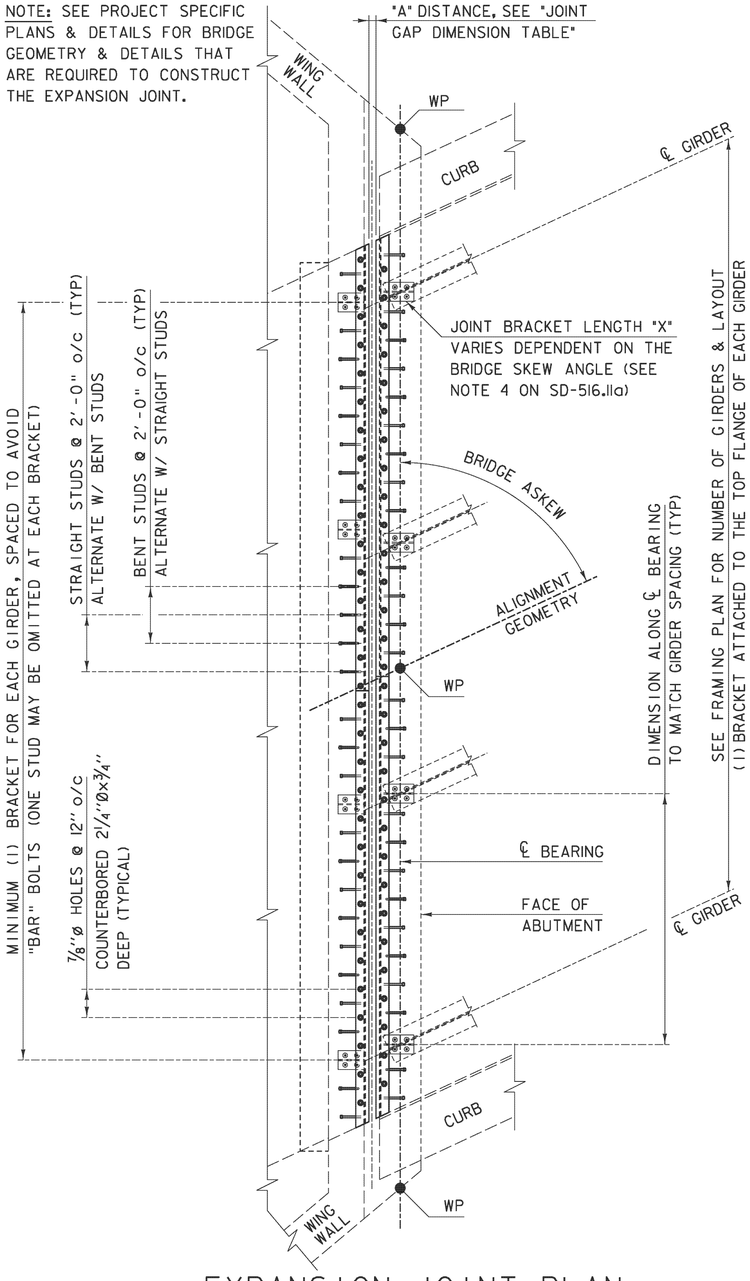
REVISIONS	
FEBRUARY 24, 2011	APPROVED FOR USE BY VAOT STRUCTURES SECTION

BRIDGE EXPANSION JOINT, VERMONT

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

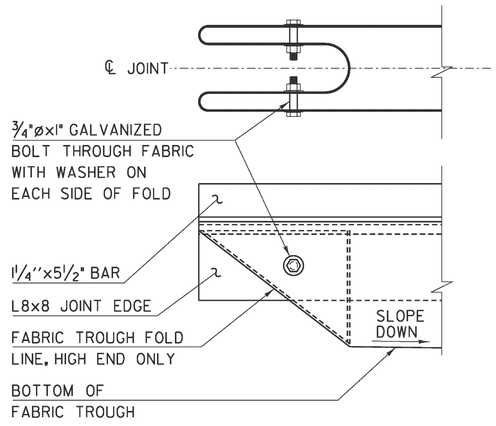
STRUCTURES DETAIL

SD-516.11a



EXPANSION JOINT PLAN

SCALE 3/8" = 1'-0"



FOLDED TROUGH END DETAIL

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

1. TROUGH SHALL BE FOLDED AT HIGH ENDS. TROUGH SHALL SLOPE AT MIN 2% DOWN TOWARD THE NEAREST DRAINAGE SPOUT HOPPER LOCATION.

2. BOLTS, NUTS AND WASHERS FOR FOLD SHALL MEET REQUIREMENTS OF SUBSECTION 714.04 AND SHALL BE GALVANIZED.

JOINT GAP DIMENSION TABLE

Temp (°F)	"A" Distance (in) Expansion Length (ft)				
	100 - 120	>120 - 140	>140 - 160	>160 - 180	>180 - 200
0	1 5/8	1 13/16	1 7/8	1 15/16	2 1/8
15	1 1/2	1 5/8	1 11/16	1 3/4	1 7/8
30	1 5/16	1 1/2	1 1/2	1 1/2	1 5/8
45	1 3/16	1 5/16	1 5/16	1 5/16	1 7/16
60	1 1/16	1 1/8	1 1/8	1 1/16	1 3/16
75	15/16	1	15/16	7/8	15/16
90	3/4	13/16	3/4	11/16	11/16
105	5/8	11/16	9/16	7/16	1/2

1) Expansion Length: Length of span, from Expansion Joint to nearest Fixed Bearing.
2) "A" Distance: measured distance during joint placement.
3) Temp: Approximate temperature of steel during joint placement.

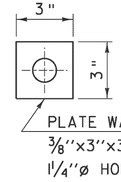
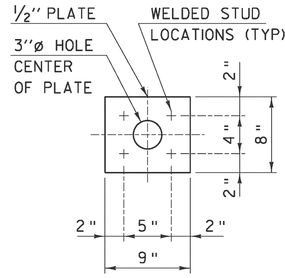


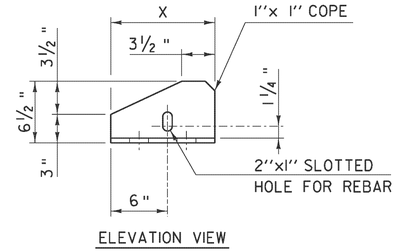
PLATE WASHER DETAIL

SCALE 3" = 1'-0"



WELDED STUD ANCHOR PLATE DETAIL

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



BRACKET DETAILS

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

JOINT ASSEMBLY DETAIL

SCALE 3" = 1'-0"

REVISIONS	
FEBRUARY 24, 2011	APPROVED FOR USE BY VAOT STRUCTURES SECTION

BRIDGE EXPANSION JOINT, VERMONT

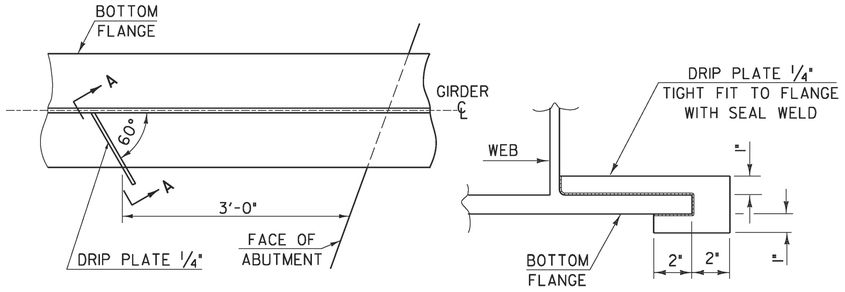
VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL

SD-516.11b

STRUCTURAL STEEL GENERAL NOTES:

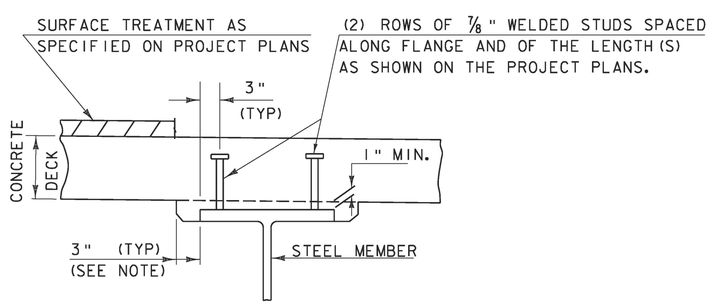
1. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH-STRENGTH BOLTS IN 15/16" DIAMETER HOLES, PER SUBSECTION 506.19, UNLESS OTHERWISE SPECIFIED.
2. ALL HOLES IN THE WEBS OF THE FASCIA GIRDERS THAT ARE NOT OTHERWISE FILLED, SHALL BE FILLED WITH EITHER BUTTON HEAD OR HEX HEAD BOLTS. THESE BOLTS 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

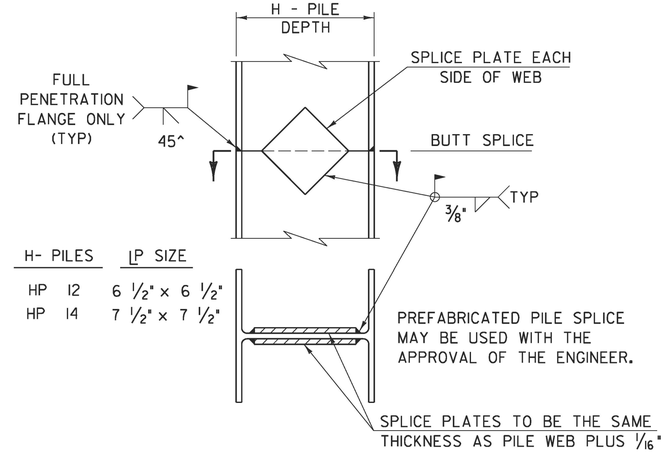
SECTION A - A

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

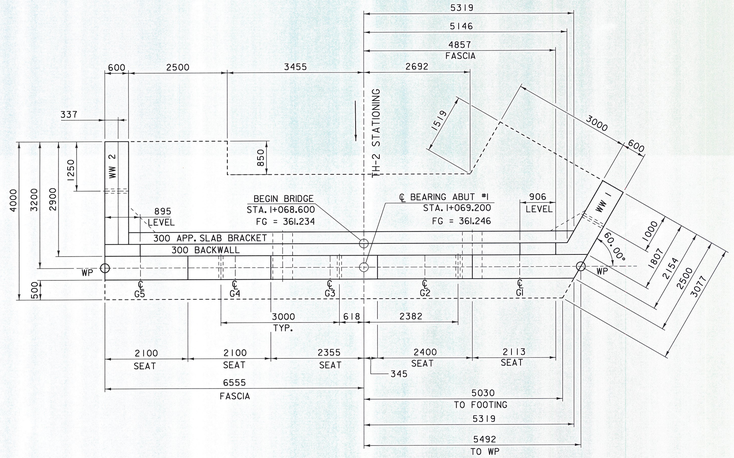
STRUCTURAL STEEL DETAILS & NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-601.00

REVISION	DATE	DESCIPTION	BY
1	04-10-2013	CHANGED STEM WIDTH AND FIXED REBAR AS APPROPRIATE	MRU

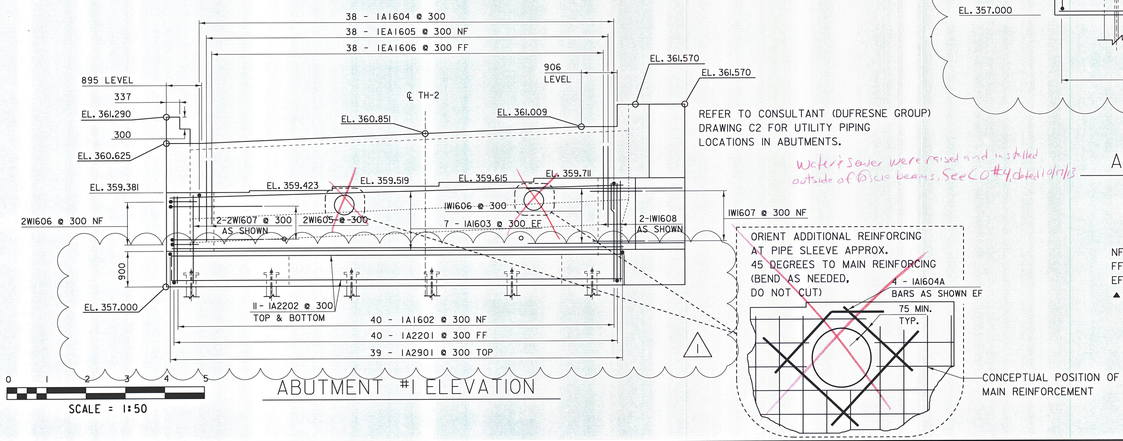
MTO Metric



ABUTMENT #1 PLAN

SCALE = 1:50

5 4 3 2 1 0



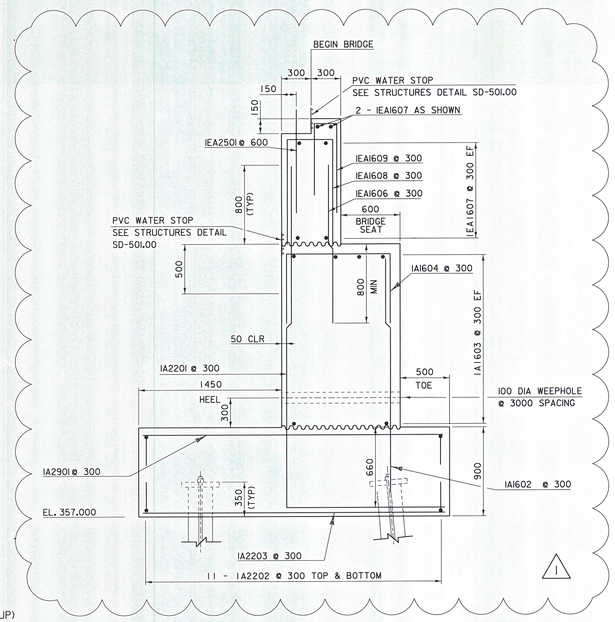
REFER TO CONSULTANT (DUFRESNE GROUP) DRAWING C2 FOR UTILITY PIPING LOCATIONS IN ABUTMENTS.

water & sewer were raised and installed outside of fascia beams. See CO #4 dated 11/07/13

ABUTMENT #1 ELEVATION

0 1 2 3 4 5

SCALE = 1:50



ABUTMENT #1 TYPICAL SECTION

0 1 2

SCALE = 1:20

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

75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

Redesigned Abutments

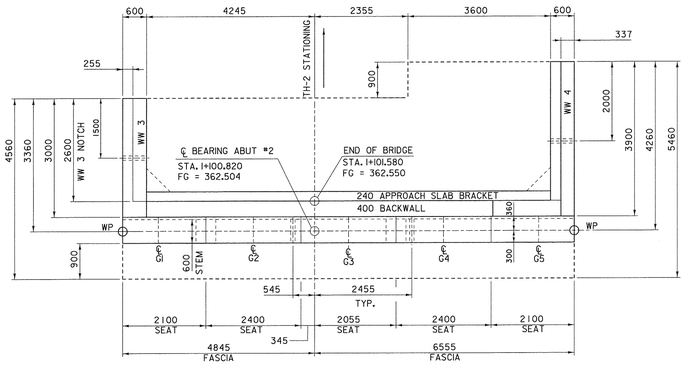
PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 891088/STR/s891088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ABUTMENT 1 DETAILS

PLOT DATE: 12-APR-2013
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 1 OF 5

REVISION	DATE	DESCIPTION	BY
1	04-10-2013	CHANGED STEM WIDTH AND FIXED REBAR AS APPROPRIATE	MRU

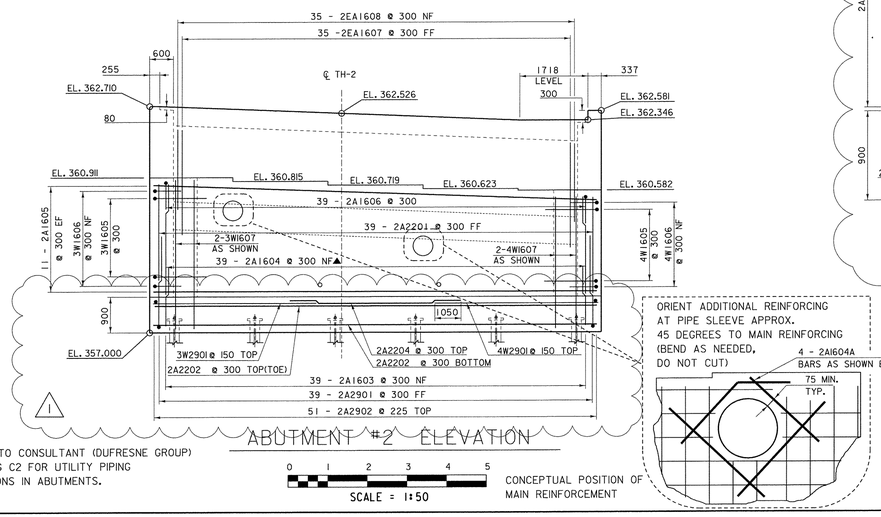
Metric



ABUTMENT #2 PLAN

0 1 2 3 4 5

SCALE = 1:50



ABUTMENT #2 ELEVATION

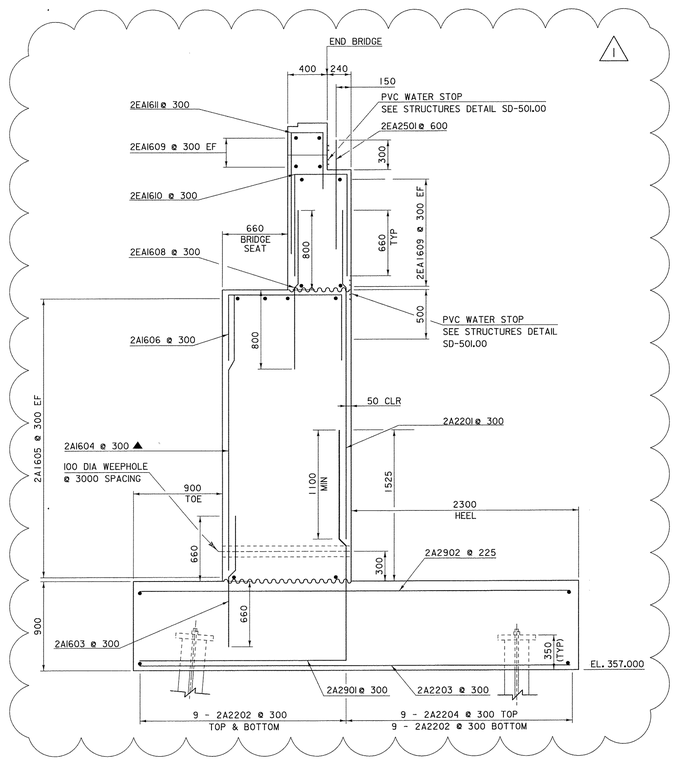
0 1 2 3 4 5

SCALE = 1:50

REFER TO CONSULTANT (DUFRESNE GROUP) DRAWING C2 FOR UTILITY PIPING LOCATIONS IN ABUTMENTS.

ORIENT ADDITIONAL REINFORCING AT PIPE SLEEVE APPROX. 45 DEGREES TO MAIN REINFORCING (BEND AS NEEDED, DO NOT CUT)

CONCEPTUAL POSITION OF MAIN REINFORCEMENT



ABUTMENT #2 TYPICAL SECTION

0 1 2

SCALE = 1:20

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

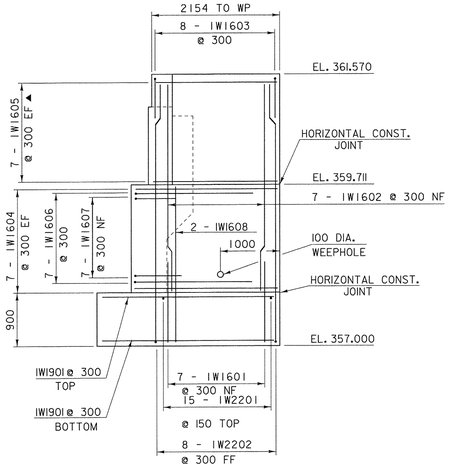
75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
ABUTMENT 2 DETAILS

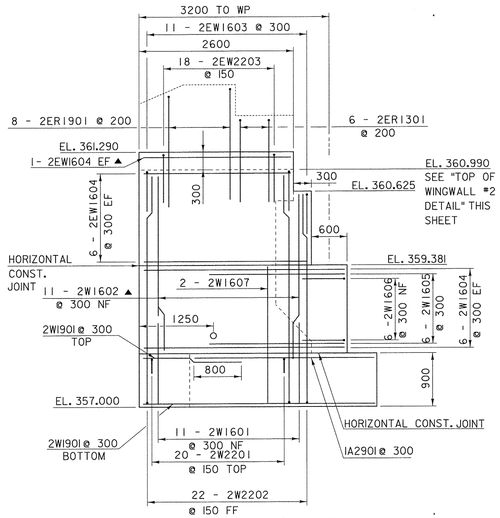
PLOT DATE: 12-APR-2013
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 2 OF 5



WINGWALL #1 ELEVATION

0 1 2 3 4

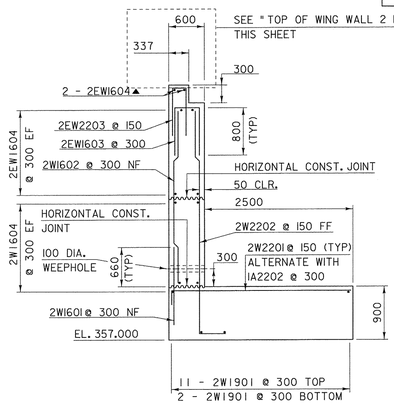
SCALE = 1:40



WINGWALL #2 ELEVATION

0 1 2 3 4

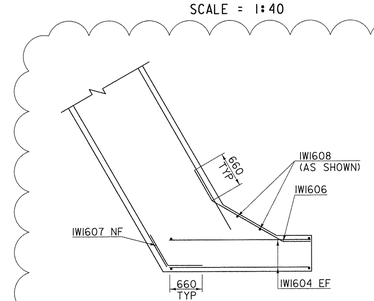
SCALE = 1:40



WINGWALL #2 TYPICAL

0 1 2 3 4

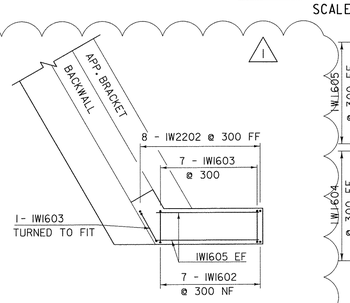
SCALE = 1:40



WINGWALL #1 CORNER DETAIL

(BELOW BRIDGE SEAT)

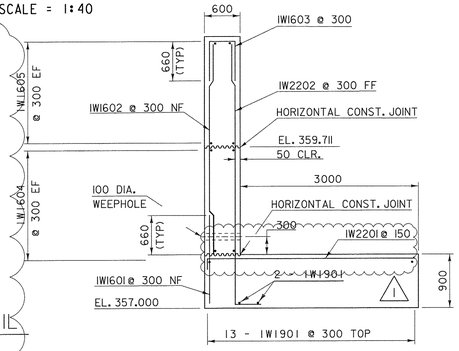
NTS



WINGWALL #1 CORNER DETAIL

(ABOVE BRIDGE SEAT)

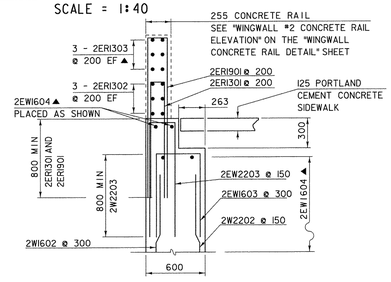
NTS



WINGWALL #1 TYPICAL

0 1 2 3 4

SCALE = 1:40



TOP OF WINGWALL #2 DETAIL

NTS

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

75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

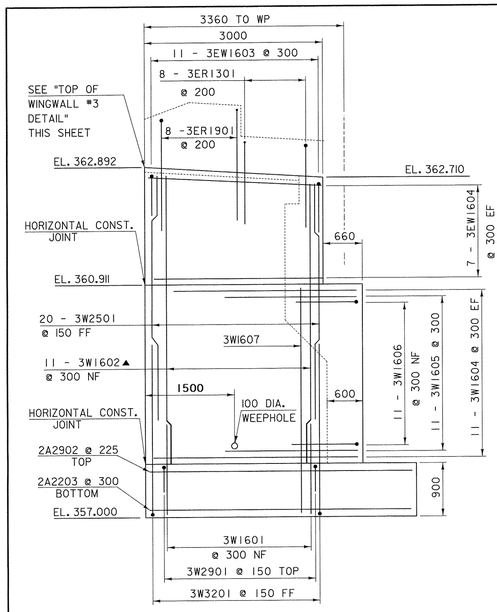
660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

REVISION	DATE	DESCIPTION	BY
1	04-10-2013	CHANGED STEM WIDTH AND FIXED REBAR AS APPROPRIATE	MRU

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
WINGWALL 1 AND 2 DETAILS

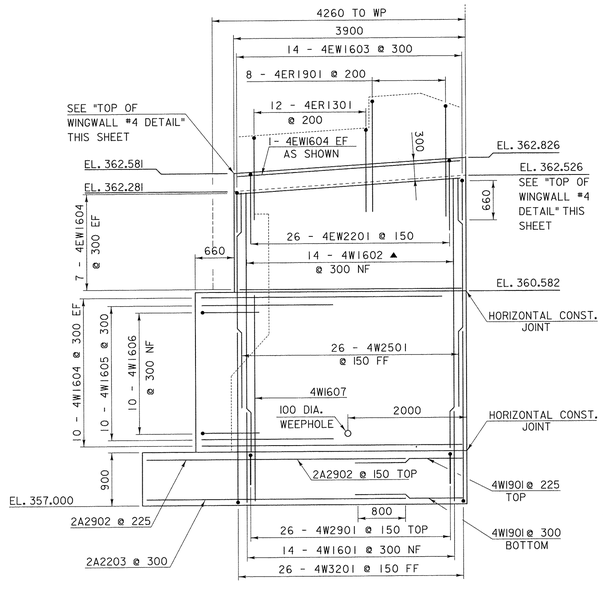
PLOT DATE: 12-APR-2013
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 3 OF 5



WINGWALL #3 ELEVATION

0 1 2 3 4

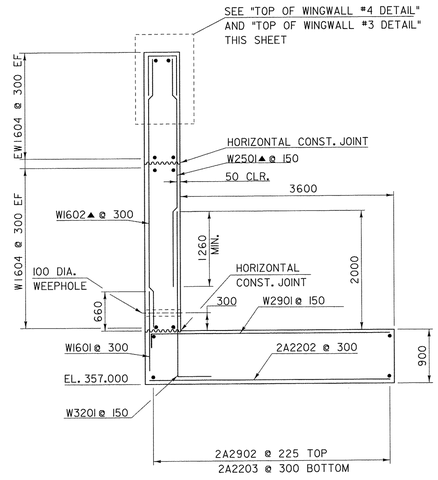
SCALE = 1:40



WINGWALL #4 ELEVATION

0 1 2 3 4

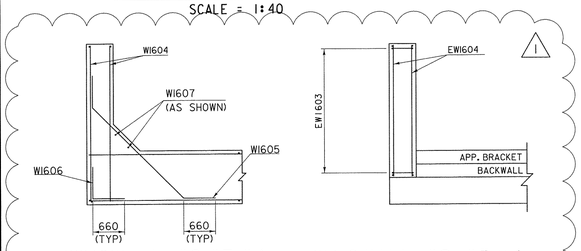
SCALE = 1:40



WINGWALL #3 & #4 TYPICAL

0 1 2 3 4

SCALE = 1:40

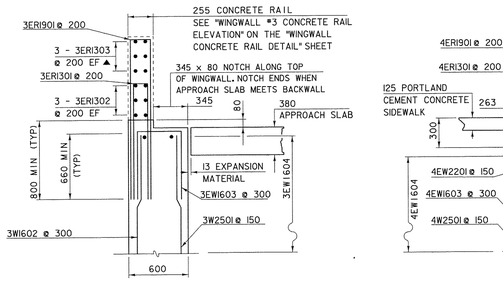


WINGWALL #2, #3, #4 CORNER DETAIL (BELOW BRIDGE SEAT)

NTS

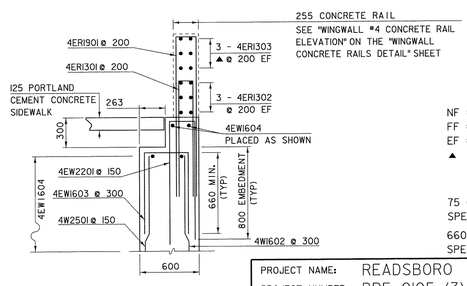
WINGWALL #2, #3, #4 CORNER DETAIL (ABOVE BRIDGE SEAT)

NTS



TOP OF WINGWALL #3 DETAIL

NTS



TOP OF WINGWALL #4 DETAIL

NTS

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

75 CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS

660 BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

PROJECT NAME: READSBORO
PROJECT NUMBER: BRF 0105 (3)

FILE NAME: 89J088/STR/s89J088sub.dgn
PROJECT LEADER: J. LACROIX
DESIGNED BY: W. PELLETIER
WINGWALL 3 AND 4 DETAILS

PLOT DATE: 12-APR-2013
DRAWN BY: G. ROKES
CHECKED BY: W. PELLETIER
SHEET 4 OF 5

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

Metric

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
				BRIDGE DECK AND RAIL													
	36	13	11220	ES1302	STR	11220											
△ ▲	8	13	1475	ES1303	STR	1475											
	163	16	11250	ES1601	STR	11250											
	483	16	11220	ES1602	STR	11220											
✳	29	16	2236	ES1605	STR	2236											
✳	164	19	11250	ES1901	STR	11250											
	163	13	3105	ES1301	S5	610	930	110	845			610					
▲	9	13	2220	ES1304	17		1055	110	1055								
	163	13	2680	ES1305	S5	610	705	110	645			610					
	163	16	3805	ES1603	S5	660	315	1855	315			660					
	28	16	2630	ES1604	S5	165	775	165	1525								
	28	16	2305	ES1606	S5	165	450	165	1525								
				ABUTMENT #1													
✳ △	41	16	2395	1A1602	STR	2395											
	16	16	11724	1A1603	STR	11724											
	16	16	1200	1A1604A	STR	1200											
△	40	16	1600	1EA1606	STR	1600											
	10	16	11026	1EA1607	STR	11026											
	39	22	3000	1A2203	STR	3000											
	19	25	1125	1EA2501	STR	1125											
✳	40	29	3000	1A2901	STR	3000											
	38	16	2395	1A1604	17	660	660	1075	660			850		850			
	38	16	2425	1EA1605	22		1200	1225				850		850			
	38	16	2475	1EA1608	17		1000	475	1000								
	38	16	1795	1EA1609	17		720	175	900								
✳ ▲	41	22	5015	1A2201	17		3440	1575									
	22	22	11785	1A2202	17		11435	350									
				WINGWALL #1													
	7	16	1560	1W1601	STR	1560											
	8	16	3595	1W1602	STR	3595											
✳	15	16	2350	1W1604	STR	2350											
	14	16	1655	1W1605	STR	1655											
	2	16	2560	1W1608	STR	2560											
✳	16	19	2925	1W1901	STR	2925											
✳	16	22	3300	1W2201	17	3450	2950	350									
	8	16	1795	1W1603	17		660	475	660								
	7	16	2386	1W1606	22		660	1086	660			330	330	572	572		
	7	16	1320	1W1607	22		660	660				572		330			
	8	22	4770	1W2202	17		4420	350									
				WINGWALL #2 AND RAIL													
✳	7	13	2450	2ER1302	STR	2450											
▲	6	13	1475	2ER1303	STR	1475											
	11	16	1560	2W1601	STR	1560											
✳	12	16	3015	2W1602	STR	3015											
	6	16	3350	2W1604	STR	3350											
	2	16	2230	2W1607	STR	2230											
✳ ▲	15	16	2750	2EW1604	STR	2750											
✳	14	19	1650	2W1901	STR	1650											
✳	15	22	3300	2W2201	17	2950	2950	350									
	6	13	2780	2ER1301	17		1335	110	1335								
	6	16	4510	2W1605	22		660	3190	660			330	330	572	572		
	6	16	1320	2W1606	17		660	660									
	11	16	2075	2EW1603	17		800	475	800								
✳	10	19	3820	2ER1901	17		1855	110	1855								
	15	22	3550	2W2201	17		2950	600									
	22	22	4190	2W2202	17		3840	350									
✳	19	22	2410	2EW2203	17		1100	210	1100								
				APPROACH SLAB #1													
	21	16	8835	1EAS1601	STR	8835											
✳	42	29	6175	1EAS2901	1	225	5950						230				

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
				ABUTMENT #2													
	39	16	1320	2A1603	STR	1320											
✳ ▲	40	16	2935	2A1604	STR	2935											
	16	16	1200	2A1604A	STR	1200											
	24	16	11250	2A1605	STR	11250											
✳	3	16	2425	2EA1613	STR	2425											
	35	16	1600	2EA1608	STR	1600											
	14	16	10050	2EA1609	STR	10050											
✳	40	22	3390	2A2201	STR	3390											
	27	22	11250	2A2202	STR	11250											
	39	22	4350	2A2203	STR	4350											
	9	22	4710	2A2204	STR	4710											
	18	25	1125	2EA2501	STR	1125											
	51	29	4350	2A2902	STR	4350											
	39	16	2495	2A1606	17	660	660	1175	660						849		849
	35	16	2425	2EA1607	22		1200	1225							849		849
	35	16	2825	2EA1610	17		1155	515	1155								
	35	16	2180	2EA1611	17		800	275	1105								
	9	16	2210	2EA1612	17		1030	150	1030								
✳	40	29	4425	2A2901	17		2350	2075									
				WINGWALL #3 AND RAIL													
✳	7	13	2850	3ER1302	STR	2850											
	6	13	1475	3ER1303	STR	1475											
△	13	16	1560	3W1601	STR	1560											
▲	11	16	4915	3W1602	STR	4915											
	22	16	3510	3W1604	STR	3510											
✳	15	16	2850	3EW1604	STR	2850											
✳ ▲	21	25	4175	3W2501	STR	4175											
	8	13	2780	3ER1301	17		1335	110	1335								
	11	16	4545	3W1605	22		660	3225	660						330	330	572	572
	11	16	1320	3W1606	17		660	660									
	2	16	3760	3W1607	STR	3760											
	11	16	1795	3EW1603	17		660	475	660								
	8	19	3820	3ER1901	17		1855	110	1855								
✳	21	29	4400	3W2901	17		4050	350									
✳	21	32	3385	3W3201	17		2825	560									
				WINGWALL #4 AND RAIL													
✳	7	13	3750	4ER1302	STR	3750											
	6	13	1475	4ER1303	STR	1475											
△	16	16	1560	4W1601	STR	1560											
▲	14	16	4550	4W1602	STR	4550											
	20	16	4410	4W1604	STR	4410											
✳	17	16	3750	4EW1604	STR	3750											
✳	23	19	1760	4W1901	STR	1760											
✳ ▲	27	25	3810	4W2501	STR	3810											
	12	13	2780	4ER1301	17		1335	110	1335								
	14	16	1795	4EW1603	17		660	475	660								
	10	16	4545	4W1605	22		660	3225	660						330	330	572	572
	10	16	1320	4W1606	17		660	660									
	2	16	3430	4W1607	STR	3430											
✳	8	20	3820	4ER1901	17		1855	110	1855								
✳	27	22	2230	4EW2201	17		1025	180	1025								
✳	27	29	4400	4W2901	17		4050	350									
✳	27	32	3385	4W3201	17		2825	560									
				APPROACH SLAB #2													
	21	16	8570	2EAS1601	STR	8570											
	39	29	6175	2EAS2901	1	225	5950							230			

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31M (ASTM A 615M-SI). ALL BARS SHALL BE GRADE 420, 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	NOMINAL MASS (kg/m)	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER (mm)	CROSS SECTIONAL AREA (mm²)	PERIMETER (mm)
#10	0.560	9.5	71	29.84
#13	0.994	12.7	129	39.90
#16	1.552	15.9	199	49.95
#19	2.235	19.1	284	60.00
#22	3.042	22.2	387	69.74
#25	3.973	25.4	510	79.80
#29	5.060	28.7	645	90.16
#32	6.404	32.3	819	101.47
#36	7.907	35.8	1006	112.47
#43	11.380	43.0	1452	135.09
#57	20.240	57.3	2581	180.01

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **BRF 0105 (3)**

FILE NAME: **sj088rss 04-04-2013.xls**
PROJECT MANAGER: **J. LACROIX**
DESIGNED BY: **W. PELLETIER**
REINFORCING STEEL SCHEDULE SHEET

PLOT DATE: **4/11/2013**
DRAWN BY: **G. ROKES**
CHECKED BY: **N. VAN DEN BER**
SHEET 5 OF 5

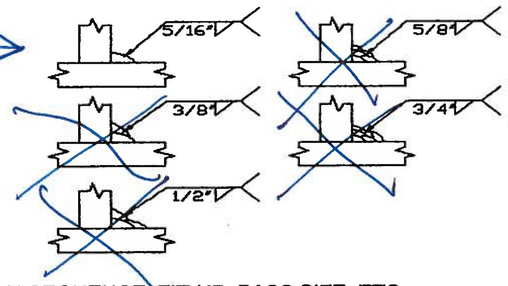
COSMEC INC.

WELDING PROCEDURE SPECIFICATION

SPECIFICATIONS AND CODE: AASHTO–AWS D1.5 + D1.1
MATERIAL SPECIFICATION- ASTM A709 GR 50W, GR 50, GR 36
WELDING PROCESS——— FCAW-G
MANUAL OR MACHINE——— SEMI-AUTOMATIC
POSITION OF WELDING—— 1F & 2F
FILLER METAL SPECIFICAT ION AWS 5.20 CLASSIFICATION: E71T
MANUFACTURER: LINCOLN ELECTRIC TRADENAME: E71T OUTERSHIELD
FLUX——— INTERNAL
SHIELDING GAS———————— CO2 FLOW RATE 45 CFH
SINGLE OR MULTIPLE PASS MULTIPLE
SINGLE OR MULTIPLE ARC- SINGLE
WELDING CURRENT———— DC
POLARITY : REVERSE (EP)
WELDING PROGRESSION————————————————————————————
ROOT TREATMENT———— CLEANED & PREPARED BRIGHT METAL
PREHEAT AND INTERPASS TEMPERATURE———————— SEE BELOW
POSTHEAT TEMPERATURE N/A
HEAT IMPUT MIN.———————————— MAX.——

WELDING PROCEDURE

PASS NO.	ELECTRODE SIZE	WELDING CURRENT AMPERES	VOLTS	TRAVEL SPEED	JOINT DETAIL
ALL	0.045	190-230	27-29	8-9	



PREHEAT TEMPS.

THICKNESS	TI TEMP.
UP TO 3/4"	50 DEG. F
OVER 3/4" TO 1 1/2"	70 DEG. F
OVER 1 1/2" TO 2 1/2"	150 DEG. F
OVER 2 1/2"	225 DEG. F
INTERPASS TEMP:	400 DEG. F

THIS PROCEURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC. WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5.

PROCEDURE NO. FCAW-FILLET
SUPPORTING PQR: FCAW-1.0-05
REVISION NO.

CONTRACTOR: COSMEC INC.
AUTHORIZED BY:DONALD VOSE

DATE:—— 12/28/2009

Vermont Agency of Transportation
RECEIVED
CK'D BY J.W.C OK'D BY J.E.L
Sept. 5, 2012
RESUBMIT _____ APPROVED ✓
BY J. LACROIX DATE 09-26-2012

COSMEC INC. / DYNAMIC RUBBER
P.O. Box 2159
1501 Rocky Ridge Road
Athens, TX 75751
TEL: 903.677.2871 FAX: 903.675.4776

Vermont Agency of Transportation
RECEIVED
CK'D BY M.R.U. OK'D BY J.A.G.
Sept. 5, 2012
RESUBMIT _____ APPROVED AS NOTED ✓
BY J. LACROIX DATE 09-20-2012

TRANSMITTAL SHEET

TO: RENAUD BROTHERS
ATTN: MIKE RENAUD renaudbr@sover.net
CC: DEBBIE PLANTE dplante@cosmecinc.com

DATE: 9/5/12
JOB: READSBORO, BRF-0105 (3)
RE: SHOP DRAWING SUBMITTAL
DRP JOB NO: **11621** LOCATION: BENNIGNTON CO., VT

WE TRANSMIT TO YOU UNDER SEPARATE COVER HERE WITH THE FOLLOWING DRAWINGS:

DWG NO	REV NO	NO EACH	DESCRIPTION	REMARKS
11621-GN1	**0**	**1**	**GENERAL NOTES**	
11621-E1	**0**	**1**	**ERECTION DIAGRAM**	
11621-D1	**0**	**1**	**SHOP DRAWING**	
11621-D2	**0**	**1**	**SHOP DRAWING**	
11621-D3	**0**	**1**	**SHOP DRAWING**	
11621-D4	**0**	**1**	**SHOP DRAWING**	

DWG NO	REV NO	NO EACH	DESCRIPTION	REMARKS

COMMENTS: **THE ATTACHED SHOP DRAWINGS ARE SUBMITTED FOR APPROVAL. PLEASE FORWARD THIS PACKAGE TO THE ENGINEER FOR REVIEW AND ADVISE THE APPROVAL STATUS AS SOON AS POSSIBLE.**

THE ABOVE PRINTS ARE SUBMITTED TO YOU FOR:

BY:
(XXX) Approval ( ) Final Approval ( ) Distribution
( ) Field Use ( ) Fabrication (XXX) E-MAIL
( ) Next Day Air ( ) Second Day Air ( ) Messenger
( ) UPS ( ) First Class Mail ( ) Fax

Thank you
Katie Bales
COSMEC INC. / DYNAMIC RUBBER PRODUCTS

External Steel (Sole Plate & Masonry Plate) need to be M270 GR. 345 (Grade 50)

MATERIALS	SPECIFICATION
STRUCTURAL STEEL	AASHTO M270 GR.250 (GRADE 36)
ELASTOMERIC LAM. PAD	50 DUROMETER NATURAL RUBBER
STEEL LAMINATES	ASTM A36, A1011 GR.36 OR EQUAL
ANCHOR BOLTS	ASTM F1554 GR.55 (GALV.) HVY. HEX NUTS: ASTM A563–DH (GALV.) WASHERS: ASTM A36 OR AASHTO M270 GR.250 (GR.36) GALV.
FABRIC PADS	PER VAOT STD. SPECIFICATION SECTION 731.01
ELASTOMERIC WASHERS	50 DUROMETER NEOPRENE

ok

Ok

ok

GENERAL SHOP NOTES

1. ALL BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTIONS 506, 531, 714, 726 AND 731 OF THE 2006 VT.O.A.T. STD. SPECIFICATIONS.
2. ⊗ SOLE PLATES TO BE MARKED AS TO HIGH SIDE AND TO BE MARKED WITH AHEAD STATION ARROW AS SHOWN.
3. BEARING IS TO BE PROTECTED FROM MOISTURE AND DUST DURING SHIPMENT, STORAGE AND ERECTION.
4. ALL STEEL BEARING PLATES SHALL BE BLAST CLEANED SSPC–SP5 (WHITE METAL BLAST CLEANING) THEN ZINC METALIZED AS PER VAOT. STD. SPEC. SUBSECTIONS 531.04(b) & 506.15(b). ALL EXTERIOR SURFACES SHALL BE SEALED WITH AN APPROVED SEALANT.
5. ALL FREE EDGES OF PLATES TO BE COATED SHALL BE ROUNDED TO A 1/16 in. RADIUS OR SHALL HAVE THE EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE.
6. DRAWINGS ARE IN ENGLISH (IMPERIAL) UNITS, WITH METRIC UNITS SHOWN IN BRACKETS "[ ]" WHERE REQUIRED.

GENERAL INSTALLATION NOTES

1. BEARING ASSEMBLIES SHALL NOT BE LIFTED BY THEIR SOLE PLATES. ANY HANDLING SHALL SUPPORT THE BEARING FROM THE UNDERSIDE.
2. PROTECT BEARING ASSEMBLIES FROM WELD SPATTER, DIRT AND OTHER FOREIGN MATTER.
3. WHEN WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PEN OR OTHER SUITABLE MEANS TO INSURE OF THE BEARING AT THE ELASTOMER DOES NOT EXCEED 200°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.
4. FIELD WELDING OF THE BEARING UNIT DURING THE INSTALLATION PHASE SHALL BE PERFORMED BY QUALIFIED WELDERS USING APPROVED PROCEDURES AND ELECTRODES.
5. THE WELDS FOR THE SOLE PLATE CONNECTION SHOULD ONLY BE ALONG THE LONGITUDINAL GIRDER AXIS. TRANSVERSE JOINTS SHOULD BE SEALED WITH AN ACCEPTABLE CAULKING MATERIAL.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE FIELD TOUCH–UP OF DAMAGED METALIZING AND SEAL COAT DUE TO FIELD WELDING AND BEARING INSTALLATION.
7. COSMEC REPRESENTATIVE DEBBIE PLANTE: (508) 455–3290

APPROVER NOTES:
PLEASE VERIFY THE CLOUDED ITEMS

1. **STRUCTURAL STEEL TYPE OR GRADE WAS NOT SPECIFIED IN THE CONTRACT PLANS.**
2. **THE DUROMETER AND TYPE OF ELASTOMER WAS NOT SPECIFIED IN THE CONTRACT PLANS FOR THE ELASTOMERIC BEARING OR ELASTOMERIC WASHER.**
3. **ASTM F568 IS NO LONGER A VALID SPECIFICATION FOR ANCHOR BOLTS.**

SEE SHEETS 1 THRU 4 FOR BEARING ASSEMBLY DETAILS

Vermont Agency of Transportation
RECEIVED
CK'D BY M.R.U. OK'D BY J.A.G.
Sept. 5, 2012
RESUBMIT ____ APPROVED AS NOTED ✓
BY J. LACROIX DATE 09-20-2012

REV.	DESCRIPTION	BY	DATE	CK'D	DATE
0	.	.	.	.	.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TOWN OF READSBORO
ROUTE NO: TH 2, FAS 105,
(MAJOR COLLECTOR) BRIDGE #32

STATE	COUNTY	CONTROL NO.
VT.	BENNINGTON	N/A

PROJ. ID NO.: BRF 0105 (3)

DYNAMIC RUBBER
LAM. ELASTOMERIC BEARING ASS'Ys

Cosmec
1501 ROCKY RIDGE ROAD
P.O. BOX 2159
ATHENS, TEXAS 75751

SCALE: NONE	DRAWN BY: RP	CHECKED BY: SL
	DATE: 8/29/12	DATE: 8/31/12
SHEET GN1 OF 1	JOB NO.: 11621	
CUSTOMER: RENAUD BROTHERS, INC.	DRAWING NUMBER: 11621–GN1	REV. 0

ERECTION DIAGRAM

SEE SHEETS 1–4 OF 4 FOR DETAILS
SEE NOTES ON SHEET GN1 OF 1

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TOWN OF READSBORO
ROUTE NO: TH 2, FAS 105, (MAJOR COLLECTOR) BRIDGE #32

STATE	COUNTY	CONTROL NO.
VT.	BENNINGTON	N/A

PROJ. ID NO.: BRF 0105 (3)

DYNAMIC RUBBER
LAM. ELASTOMERIC BEARING ASS'Ys

Cosmec
1501 ROCKY RIDGE ROAD
P.O. BOX 2159
ATHENS, TEXAS 75751

Vermont Agency of Transportation
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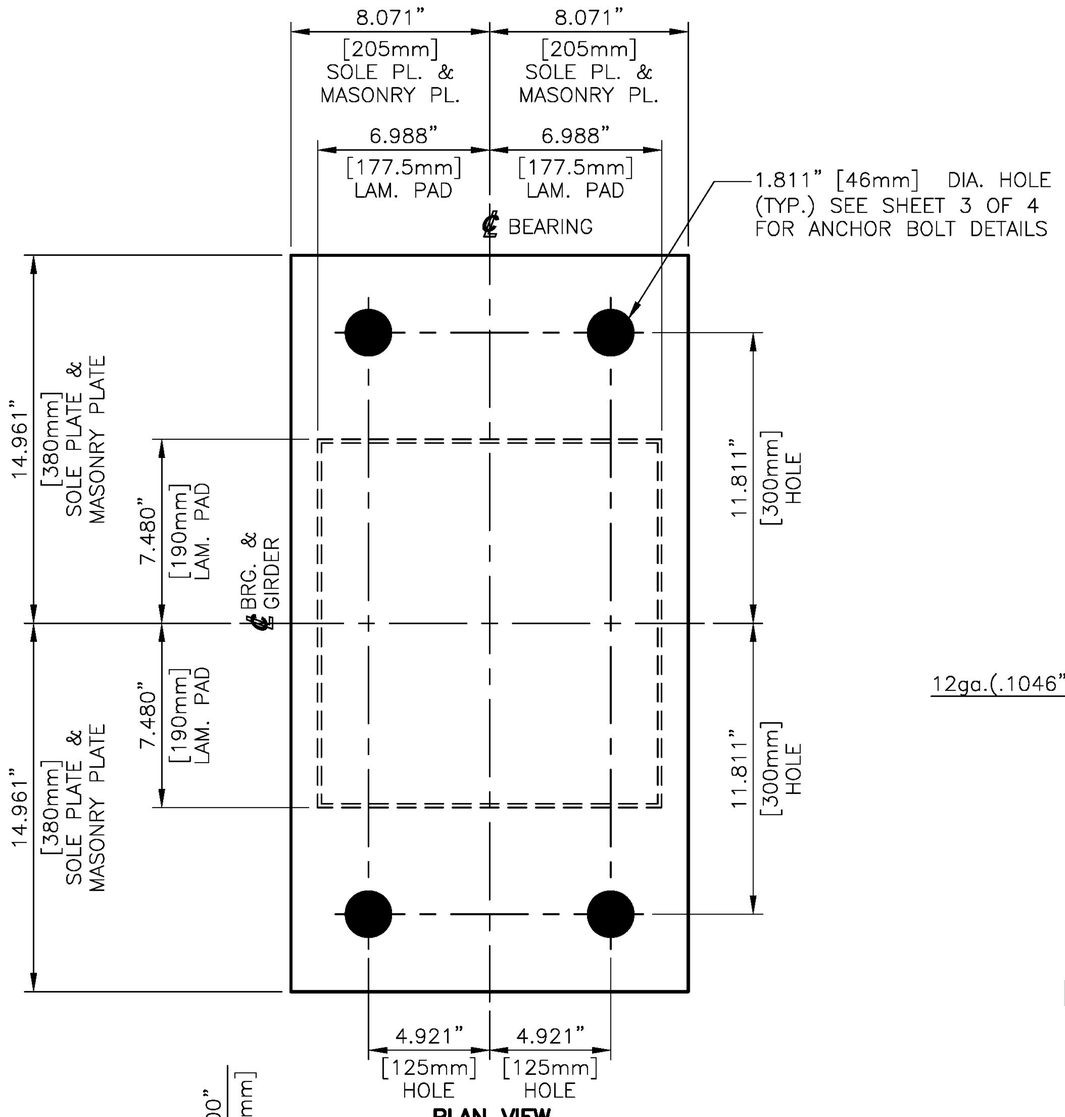
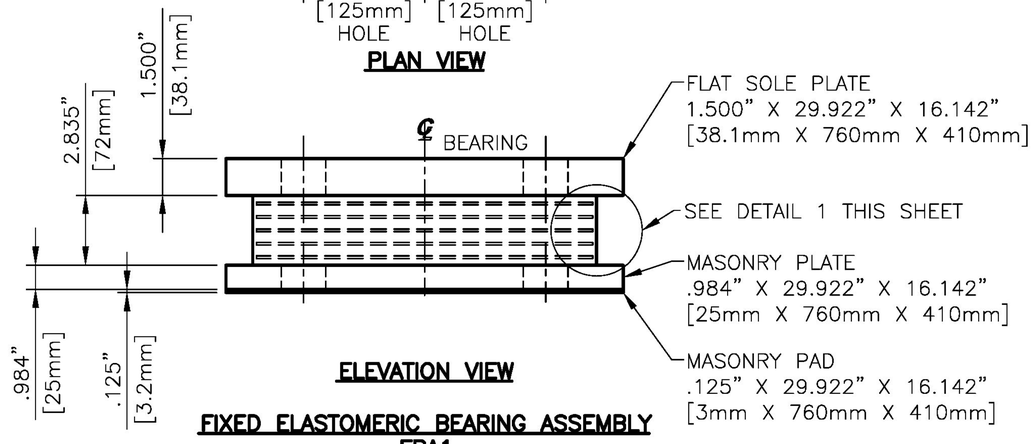
CK'D BY M.R.U. OK'D BY J.A.G.
Sept. 5, 2012
RESUBMIT APPROVED AS NOTED ✓
BY J. LACROIX DATE 09-20-2012

REV.	DESCRIPTION	BY	DATE	CK'D	DATE
1	.	.	.	.	.

SCALE: NONE
DRAWN BY: RP DATE: 8/29/12
CHECKED BY: SL DATE: 8/31/12
SHEET E1 OF 1
JOB NO.: 11621
CUSTOMER: RENAUD BROTHERS, INC.
DRAWING NUMBER: 11621–E1
REV.: 0

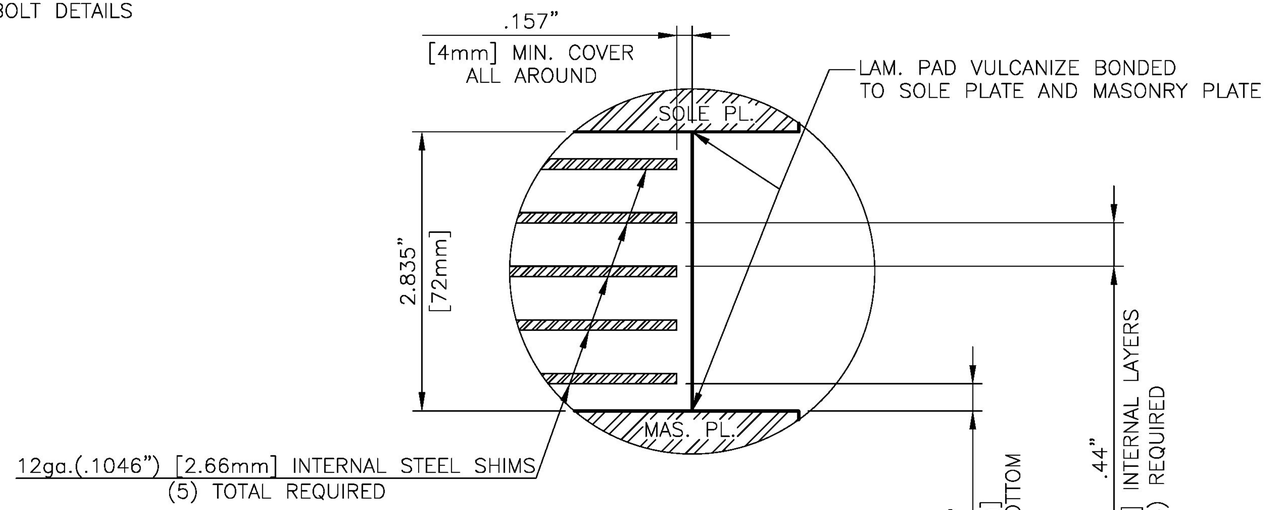


PLAN VIEW



ELEVATION VIEW

FIXED ELASTOMERIC BEARING ASSEMBLY
FBA1
LOCATED @ ABUTMENT 1
GIRDERS 1–5
(5) TOTAL REQUIRED



DETAIL 1

2.835" X 14.960" X 13.976"
[72mm X 380mm X 355mm]
LAMINATED ELASTOMERIC BEARING PAD
50 DUROMETER NATURAL RUBBER
VULCANIZED TO SOLE PLATE & MASONRY PLATE
(5) REQUIRED

DESIGN LOADS (UNFACTORED)
R.D.L. = 89.5kips [400kN]
R.L.L. = 79.5kips [354kN]

APPROVER PLEASE VERIFY

ok

Vermont Agency of Transportation
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CK'D BY M.R.U. OK'D BY J.A.G.
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REV.	DESCRIPTION	BY	DATE	CK'D	DATE
0	.	.	.	.	.

SEE NOTES ON SHEET GN1 OF 1

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TOWN OF READSBORO
ROUTE NO: TH 2, FAS 105,
(MAJOR COLLECTOR) BRIDGE #32

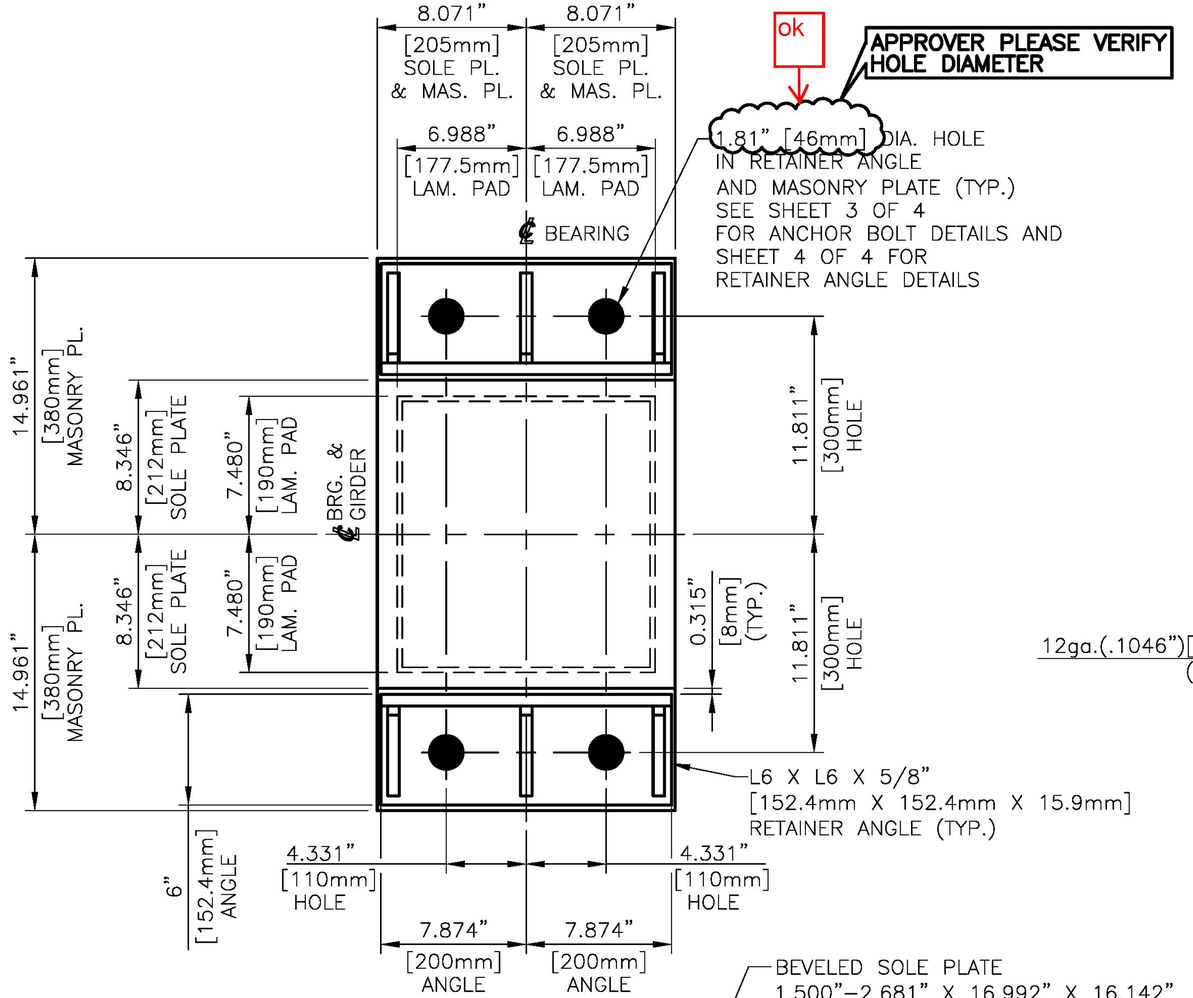
STATE	COUNTY	CONTROL NO.
VT.	BENNINGTON	N/A

PROJ. ID NO.: BRF 0105 (3)

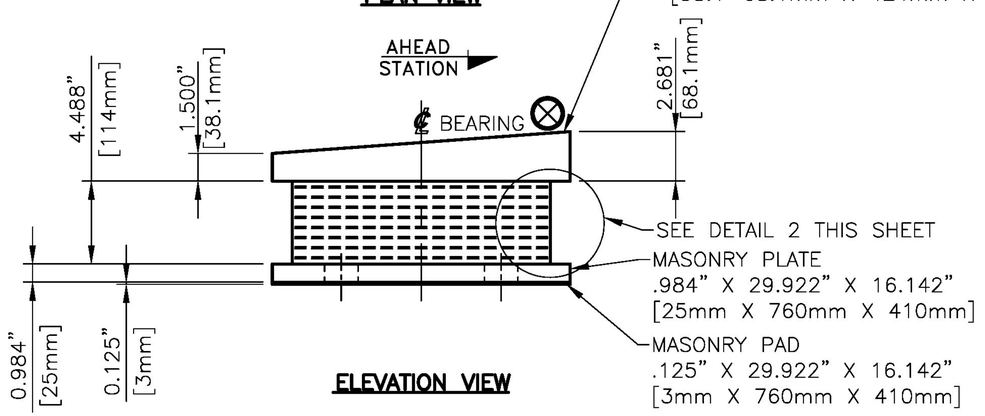
DYNAMIC RUBBER
LAM. ELASTOMERIC BEARING ASS'Ys

Cosmec
1501 ROCKY RIDGE ROAD
P.O. BOX 2159
ATHENS, TEXAS 75751

SCALE: NONE	DRAWN BY: RP	CHECKED BY: SL
	DATE: 8/29/12	DATE: 8/31/12
SHEET 1 OF 4	JOB NO.: 11621	
CUSTOMER: RENAUD BROTHERS, INC.	DRAWING NUMBER: 11621–D1	REV. 0

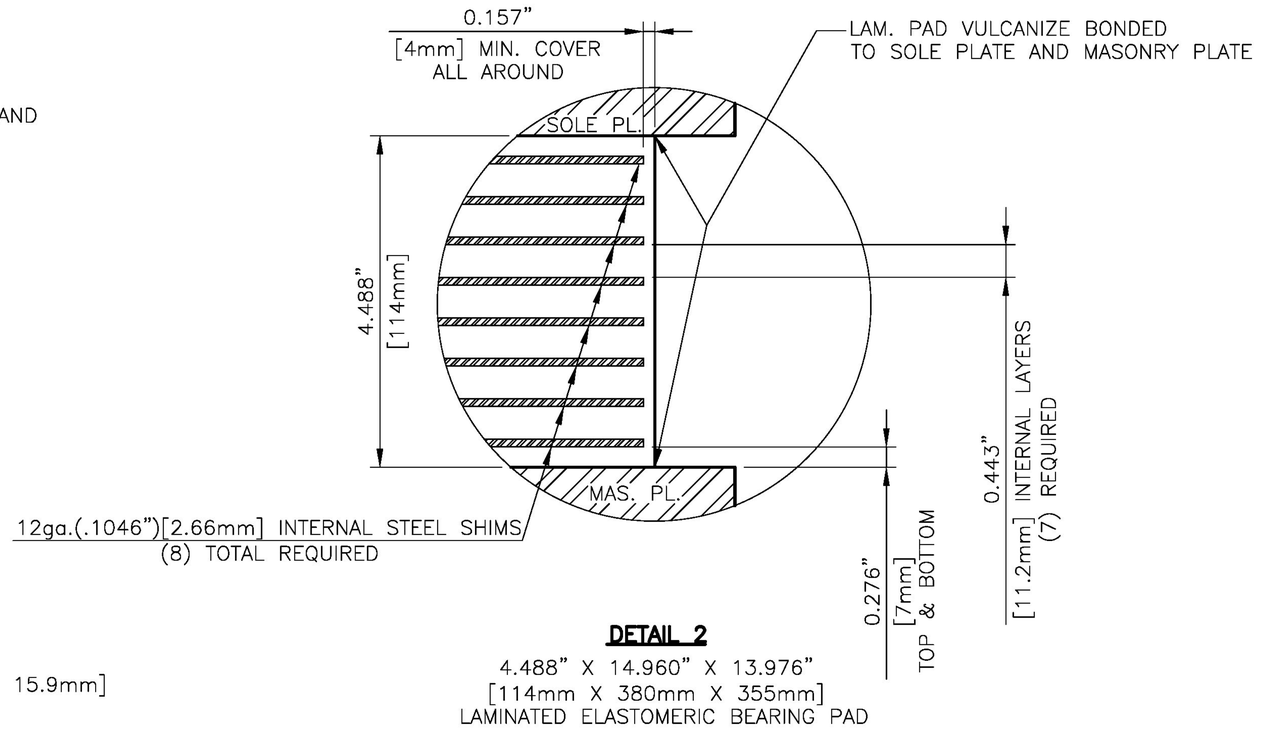


PLAN VIEW



ELEVATION VIEW

EXPANSION ELASTOMERIC BEARING ASSEMBLY
EBA1
LOCATED @ ABUTMENT 2 GIRDERS 1–5
RETAINER ANGLES NOT SHOWN FOR CLARITY
SEE SHEET 4 OF 4 FOR DETAILS
(5) TOTAL REQUIRED



DETAIL 2

4.488" X 14.960" X 13.976"
[114mm X 380mm X 355mm]
LAMINATED ELASTOMERIC BEARING PAD
50 DUROMETER NATURAL RUBBER
VULCANIZED TO SOLE PLATE & MASONRY PLATE
(5) REQUIRED

DESIGN LOADS (UNFACTORED)
R.D.L. = 89.5kips [400kN]
R.L.L. = 79.5kips [354kN]

APPROVER PLEASE VERIFY

ok

SEE NOTES ON SHEET GN1 OF 1

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TOWN OF READSBORO
ROUTE NO: TH 2, FAS 105,
(MAJOR COLLECTOR) BRIDGE #32

STATE	COUNTY	CONTROL NO.
VT.	BENNINGTON	N/A

PROJ. ID NO.: BRF 0105 (3)

DYNAMIC RUBBER
LAM. ELASTOMERIC BEARING ASS'Ys

Cosmec
1501 ROCKY RIDGE ROAD
P.O. BOX 2159
ATHENS, TEXAS 75751

Vermont Agency of Transportation
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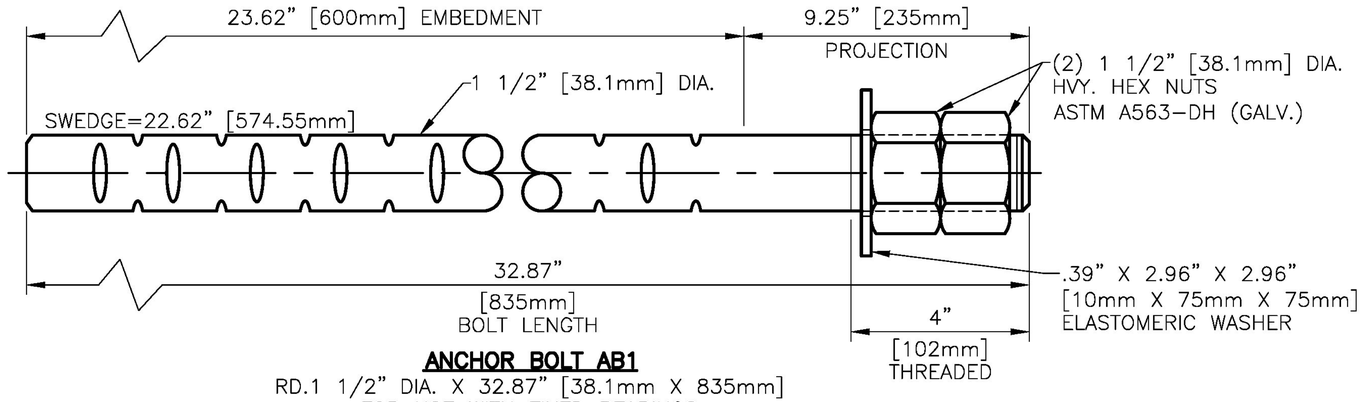
SHEET 2 OF 4	JOB NO.: 11621	

REV.	DESCRIPTION	BY	DATE	CK'D	DATE
0	.	.	.	.	.

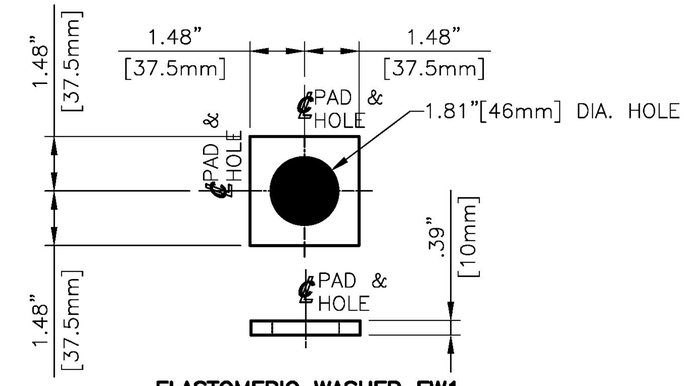
CUSTOMER	DRAWING NUMBER	REV.
RENAUD BROTHERS, INC.	11621–D2	0



ANCHOR BOLT AB1

RD.1 1/2" DIA. X 32.87" [38.1mm X 835mm]
FOR USE WITH FIXED BEARINGS
ASTM F1554 GR.55 (GALV.)
(10) TOTAL REQUIRED

Verify Quantity (20)
4/Bearing



ELASTOMERIC WASHER EW1

PAD .39" X 2.96" X 2.96" [10mm X 75mm X 75mm]
FOR USE WITH FIXED BEARINGS
50 DUROMETER NEOPRENE
(10) TOTAL REQUIRED

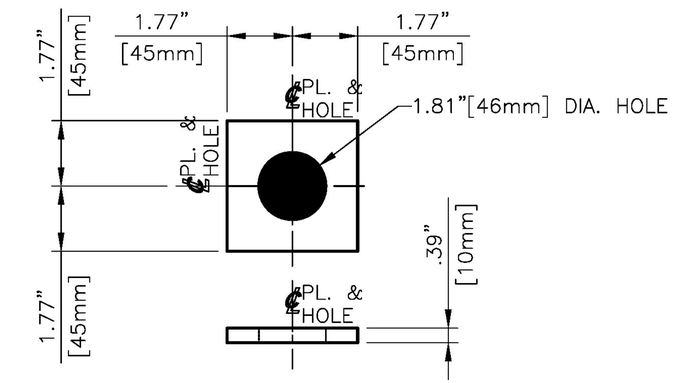
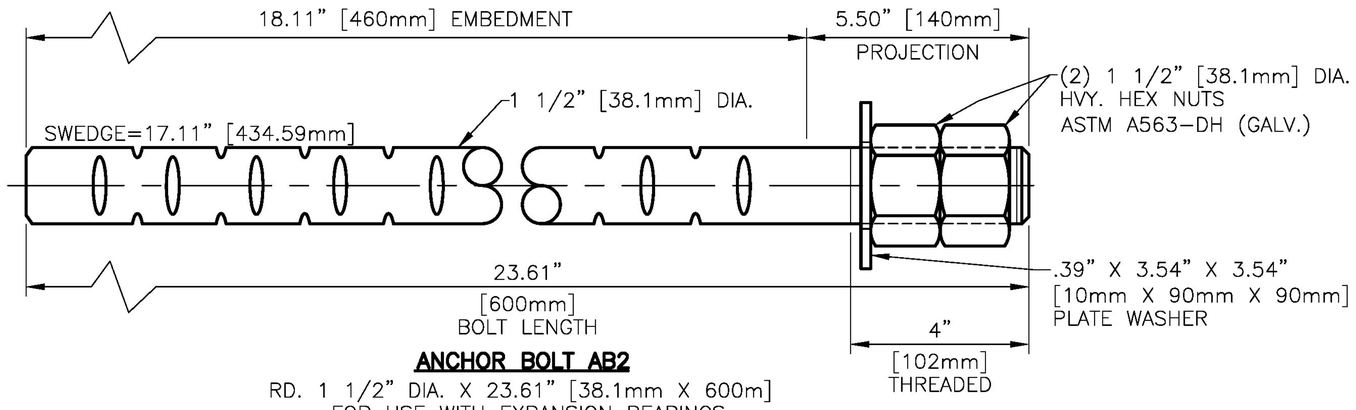


PLATE WASHER PW1

PL. .39" X 3.54" X 3.54" [10mm X 90mm X 90mm]
FOR USE WITH EXPANSION BEARINGS
ASTM A36/A 36M OR
[AASHTO M270M/M 270, GR.250] (GRADE36)
(10) TOTAL REQUIRED



ANCHOR BOLT AB2

RD. 1 1/2" DIA. X 23.61" [38.1mm X 600m]
FOR USE WITH EXPANSION BEARINGS
ASTM F1554 GR.55 (GALV.)
(10) TOTAL REQUIRED

Verify Quantity (20)
4/Bearing

SEE NOTES ON SHEET GN1 OF 1

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TOWN OF READSBORO
ROUTE NO: TH 2, FAS 105,
(MAJOR COLLECTOR) BRIDGE #32

STATE	COUNTY	CONTROL NO.
VT.	BENNINGTON	N/A

PROJ. ID NO.: BRF 0105 (3)

DYNAMIC RUBBER
LAM. ELASTOMERIC BEARING ASS'Ys

Cosmec
1501 ROCKY RIDGE ROAD
P.O. BOX 2159
ATHENS, TEXAS 75751

Vermont Agency of Transportation
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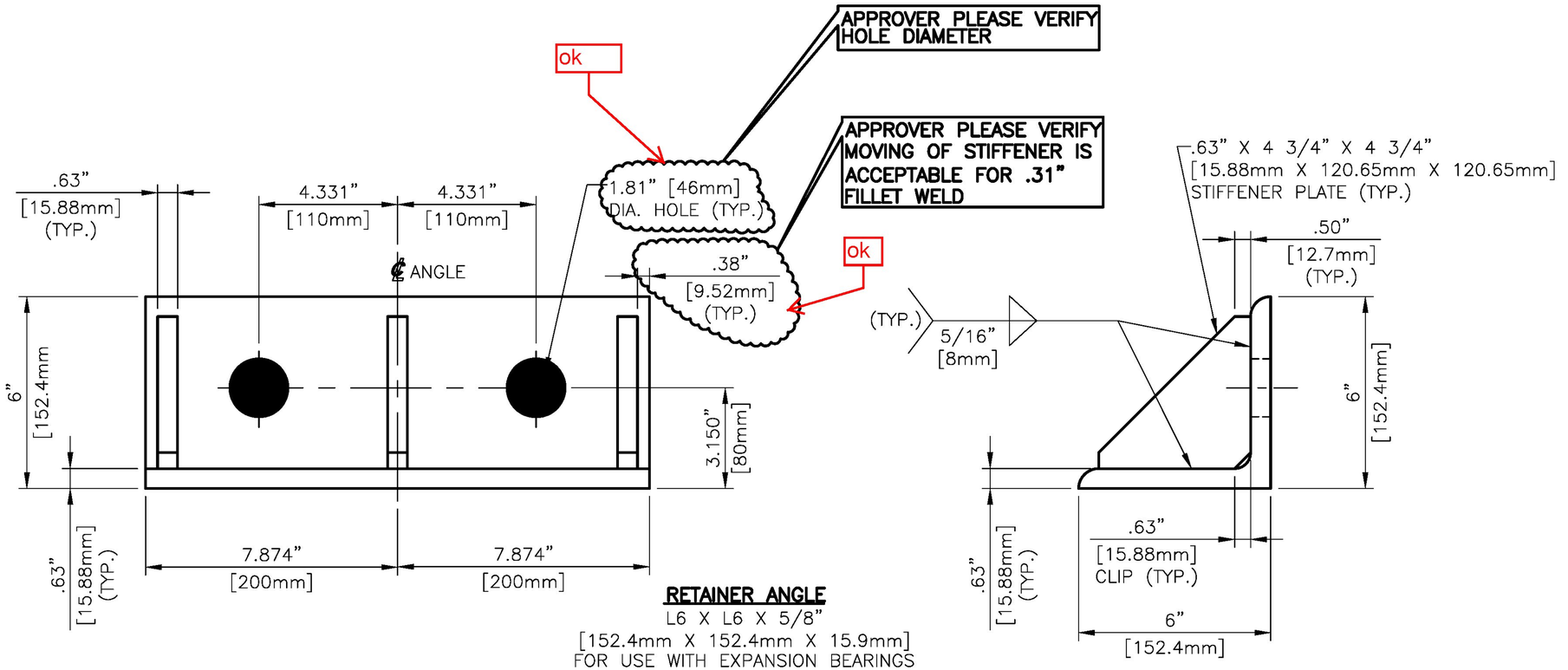
	DATE: 8/29/12	DATE: 8/31/12
SHEET 3 OF 4	JOB NO.: 11621	

REV.	DESCRIPTION	BY	DATE	CK'D	DATE
0	.	.	.	.	.

CUSTOMER	DRAWING NUMBER	REV.
RENAUD BROTHERS, INC.	11621-D3	0



RETAINER ANGLE
L6 X L6 X 5/8"
[152.4mm X 152.4mm X 15.9mm]
FOR USE WITH EXPANSION BEARINGS
LOCATED @ ABUTMENT 2 GIRDERS 1–5
(10) TOTAL REQUIRED

SEE NOTES ON SHEET GN1 OF 1

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REV.	DESCRIPTION	BY	DATE	CK'D	DATE
1	.	.	.	.	.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
TOWN OF READSBORO
ROUTE NO: TH 2, FAS 105,
(MAJOR COLLECTOR) BRIDGE #32

STATE	COUNTY	CONTROL NO.
VT.	BENNINGTON	N/A

PROJ. ID NO.: BRF 0105 (3)

DYNAMIC RUBBER
LAM. ELASTOMERIC BEARING ASS'Ys

Cosmec
1501 ROCKY RIDGE ROAD
P.O. BOX 2159
ATHENS, TEXAS 75751

SCALE: NONE	DRAWN BY: RP	CHECKED BY: SL
	DATE: 9/4/12	DATE: 9/4/12
SHEET 4 OF 4	JOB NO.: 11621	
CUSTOMER: RENAUD BROTHERS, INC.	DRAWING NUMBER: 11621–D4	REV. 0

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

1) ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006 WITH LATEST REVISIONS AND THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS FOR HIGHWAY BRIDGES, 5TH EDITION AND ITS LATEST REVISIONS.

MATERIAL SPECIFICATIONS

1) ALL STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270M GRADE 345W (UN).

2) MATERIAL NOTED "CVN" OR "T2" ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS SECTION 714.01.

3) HIGH STRENGTH BOLTS:
-ASTM A325 (AASHTO M164) TYPE 3 W/ A563 GRADE DH3 NUTS & F436W WASHERS IN NON-PAINTED AREAS.
-ASTM A325 (AASHTO M164) TYPE 1 (GALV.) W/ A563 GRADE DH NUTS & F436 WASHERS IN PAINTED AREAS AND FIELD CONNECTIONS.
Mechanically Galvanized

4) BOLTS & NUTS SHALL BE ROTATIONAL CAPACITY TESTED.

5) DO NOT MIX NUTS & BOLTS FROM DIFFERENT CONTAINERS UNLESS ALL BOLTS & NUTS HAVE THE SAME LOT NUMBER.

6) ALL TYPE 1 BOLTS SHALL BE GALVANIZED PER AASHTOM M232M/M232.

FABRICATION

1) ALL HOLES SHALL BE PUNCHED OR DRILLED FULL SIZE (UN).

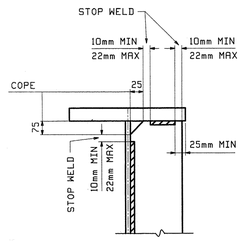
WELDING

1) THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5-08: 2010 BRIDGE WELDING CODE AND IN ADDITION TO SPECIFICATIONS SHOWN ABOVE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2) WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESSES. ALL WELDS ARE CONTINUOUS U.N.

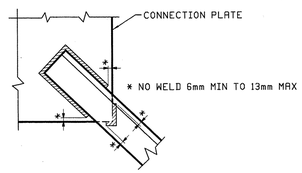
3) NON DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.

4) SEE DETAILS "WS1 & WS2" ON THIS DRAWING FOR WELD TERMINATION DETAILS.



DETAIL "WS1"

STIFFENER WELD TERMINATION



DETAIL "WS2"

TYP. WELD TERMINATION

FIELD CONNECTIONS

1) ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH A-325 BOLTS TYPE 3, EXCEPT IN PAINTED AREAS SHALL BE A325 TYPE 1 GALV. INSTALLED PER SECTION 506.19(c). SEE DWG E1 FOR FIELD BOLT SIZES.

2) BOLTS SHALL HAVE HEAVY HEX NUT, HEAVY HEX HEAD, AND AT LEAST ONE FLAT WASHER EACH. WASHER TO BE PLACED UNDER TURNED ELEMENT.

3) PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWINGS.

PAINTING

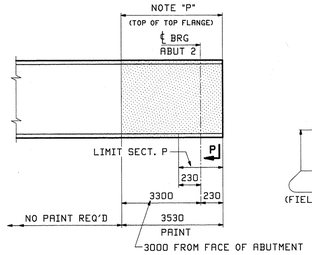
1) THE ENDS OF GIRDERS & DIAPHRAGMS AT ABUTMENT 2 SHALL BE PAINTED AS SHOWN IN SKETCH "P1", (UN).

2) THE PAINT SYSTEM AND ITS APPLICATION SHALL CONFORM TO SECTIONS 513 AND 708 OF THE STANDARD SPECIFICATIONS.

3) PAINT SYSTEM SHALL BE AS FOLLOWS:
PRIMER: CARBOLINE 859 ORGANIC ZINC RICH PRIMER - 3.0 - 5.0 MILS DFT.
INTERMEDIATE: CARBOLINE 888 EPOXY 4.0-6.0 MILS DFT.
TOPCOAT: CARBOLINE 133 LH ALIPHATIC POLYURETHANE - 2.0-4.0 MILS DFT.
TOPCOAT COLOR: BROWN FED. COLOR #20059. - SUBMIT COLOR SAMPLE TO DEPARTMENT.

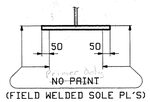
4) PRIME COAT ONLY WITHIN 3" OF OPEN HOLES IN PAINTED AREAS.

5) BROWN GREASE, CONFORMING TO SUBSECTION 708.04, SHALL BE APPLIED PER SUBSECTION 513.06 TO THE SPECIFIED SURFACES WITHIN THE PAINTED ZONE.

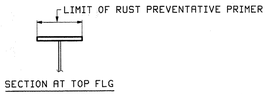


SKETCH "P"

NOTE "P"
PAINT WITH A LIGHT RUST-PREVENTATIVE COAT OF PRIMER (SEE TYPICAL SECTION AT TOP FLG).



SECTION P



NOTE TO ENGINEER:
THESE NOTES ARE NOT INTENDED TO BE ALL INCLUSIVE AND COMPLIANCE WITH RELEVANT SPECIFICATIONS REMAIN UNCHANGED.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

OMIT T3 2012

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:

DESCRIPTION: GENERAL NOTES

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

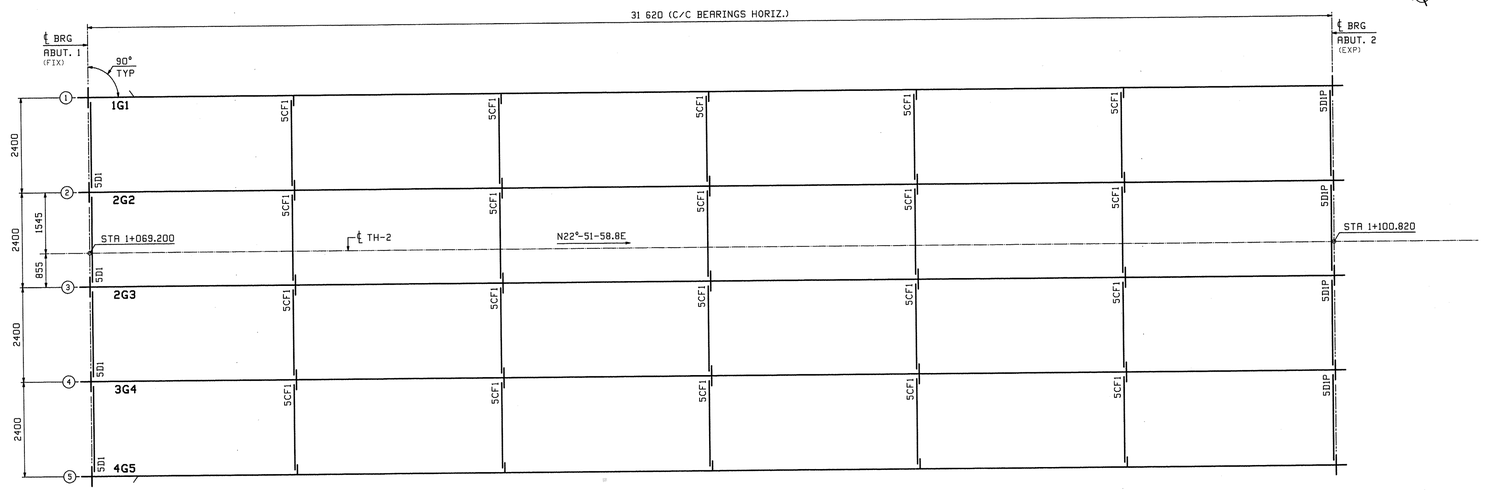
TENSOR 3132

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: JTB	DATE: 06/22	
	CHK'D: WJL	DATE: 07/10	
LOCATION: READSBORO, VERMONT	JOB NO. 519	DWG NO. GN1	
PROJ NO. BRF 0105(3)			
CUSTOMER: RENAUD BROS.		REV. △	

ITEMS RECEIVED ON FILE

JUL 23 2012

Reviewed by _____ Approved by _____ Date 8/1/12



FRAMING PLAN

FIELD BOLT LIST								A325 Type 1 BOLTS (GALV)									
LINE	NO REQ'D.	BOLT DIAM.	BOLT LEN.	BOLTS/CONN.	# OF CONN.	GRIP	THICKNESS OF PCS. CONNECTED								WASH CODE	PIECES CONNECTED AND REMARKS
1																**ABUTMENT 2 DIAPHRAGMS**
2	80	7/8	2 1/2	10	8	31	15	16							1	DIAPHRAGM WEB TO BRG STIFFENER

WASHER CODES

1: 1 Hard Flat Washer

FIELD BOLT LIST								A325 Type 3 BOLTS									
LINE	NO REQ'D.	BOLT DIAM.	BOLT LEN.	BOLTS/CONN.	# OF CONN.	GRIP	THICKNESS OF PCS. CONNECTED								WASH CODE	PIECES CONNECTED AND REMARKS
3																**ABUTMENT 1 DIAPHRAGMS**
4	80	7/8	2 1/2	10	8	31	15	16							1	DIAPHRAGM WEB TO BRG STIFFENER
5																
6																**INT. CROSSFRAMES**
7	320	7/8	2 1/2	4	80	27	13	14							1	TOP & BOTTOM GUSSETS TO CONN. PL.

WASHER CODES

1: 1 Hard Flat Washer

1. All bolt diameters and lengths are shown in inches (english unit of measurement).
2. All grip values are shown in metric units.

FIELD BOLT SUMMARY	EXACT COUNT - NONE EXTRA				
LINE	NO. OF BOLTS	BOLT DIAM.	TYPE	BOLT LEN.	ACTUAL COUNT	REMARKS
1	80	7/8	A325 Type 1	2 1/2	80	(GALVANIZED)
2	80	Hard Flat Washers for 7/8"ø BOLT				F436-1 (GALVANIZED)
3						
4						
5	400	7/8	A325 Type 3	2 1/2	400	
6	400	Hard Flat Washers for 7/8"ø BOLT				F436-3
7						
8						
9						
10						
11						

VTrans RECEIVED JUL 23 2012

JUL 23 2012

FOR GENERAL NOTES SEE DRAWING GN1.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MAR 13 2013

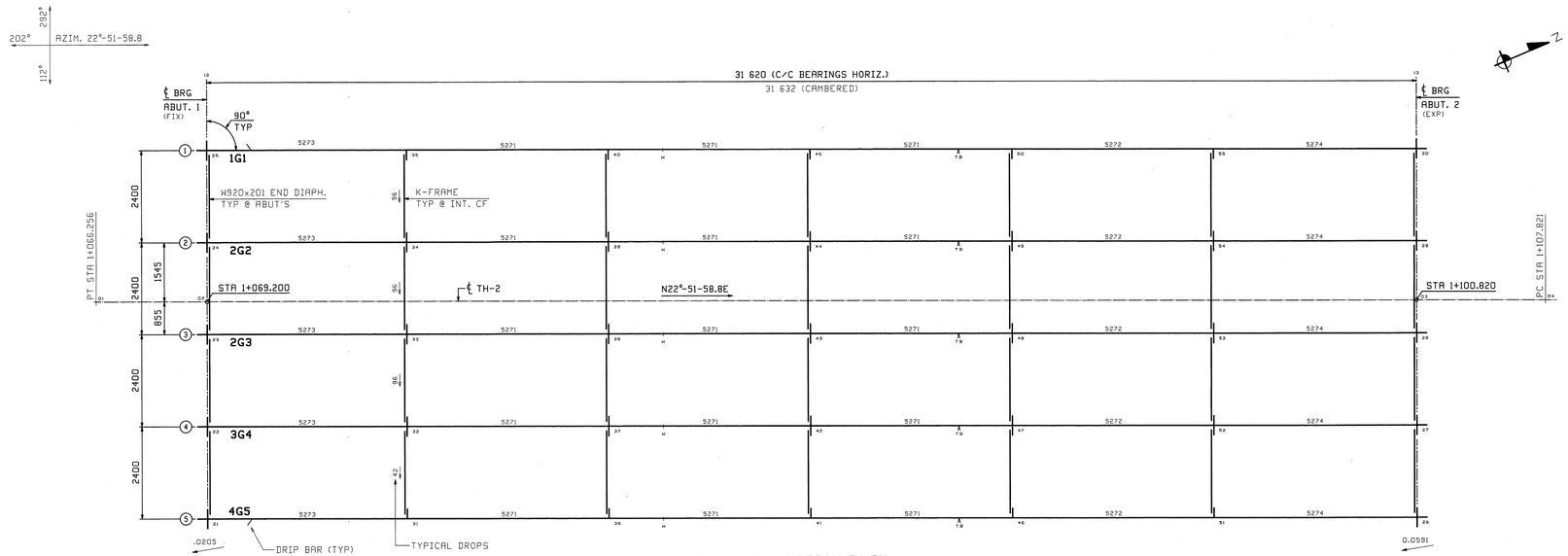
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:

DESCRIPTION: FRAMING PLAN & FIELD BOLTS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TENSOR 3132

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: JTB	DATE: 06/23
	CHKD: WJL	DATE: 07/10
LOCATION: READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO. BRF 0105(3)	519	E1
CUSTOMER: RENAUD BROS.		REV. 0



CALCULATION PLAN

** NOTE **
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DWG IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					MJL 1 3 2012	

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:

DESCRIPTION: CALCULATION PLAN

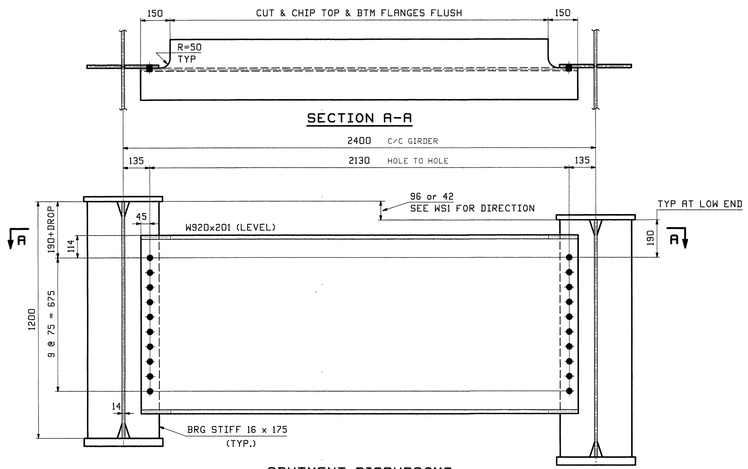
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TENSOR 3132

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: JTB	DATE: 05/14
	CHK'D: WJL	DATE: 07/10
LOCATION: READSBORO, VERMONT	JOB NO. 519	DWG NO. WS1
PROJ NO. BRF 0105(3)		REV. △
CUSTOMER: RENAUD BROS.		

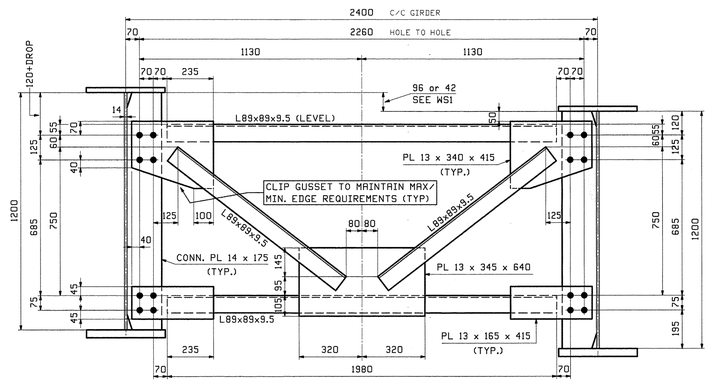
JUL 2 3 2012

CALCULATION PLAN NOTES:
1. LONGITUDINAL DIMENSIONS ARE SLOPING ALONG BTM OF GIRDERS WITH CORRECTIONS MADE FOR DL CAMBER, V.C. & GRADE (UN).
2. TRANSVERSE DIMENSIONS ARE IN A HORIZONTAL PLANE (UN).
3. ARROW POINTS TOWARD LOW END OF MEMBER.
4. ENDS OF GIRDERS ARE VERTICAL AFTER DL ROTATION.
5. DIAPHRAGM STIFFENERS ARE NORMAL TO GRADE.
6. BOTTOM POINT NUMBERS = TOP POINT NUMBERS + 200



ABUTMENT DIAPHRAGMS

LOOKING TOWARD BACKWALL



INT. CROSSFRAMES

LOOKING UP-STATION

NOTE:

BOLTS : $\frac{7}{8}$"ϕ A325-TYPE 3 (TYP UN).

BOLTS : $\frac{7}{8}$"ϕ A325-TYPE 1 (GALV) AT ABUTMENT 2 (PAINTED).

** NOTE **
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION AND CONNECTION SPACING. THIS DWG IS SUBMITTED FOR INFORMATION ONLY & IS NOT INTENDED FOR SHOP FABRICATION. DETAIL DWGS WILL SHOW ALL WELDING AND DIMENSIONS REQ'D FOR FABRICATION.

VTrans Approved Drawings
JUL 23 2012

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0	JUL 13 2012					

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345W	SEE DWG GN1	15/16"ϕ	NONE

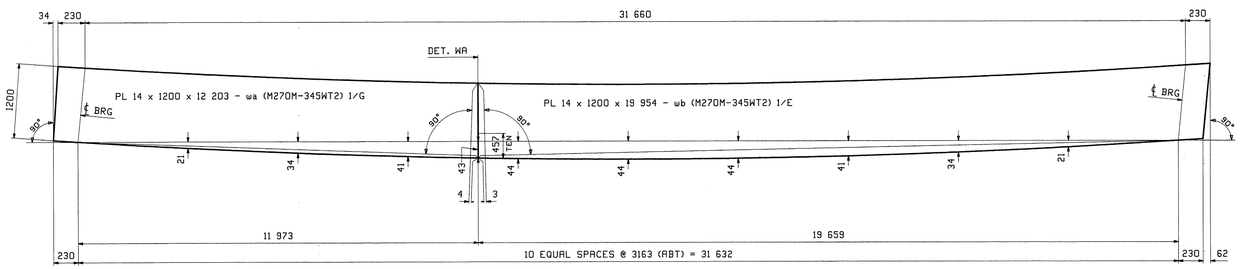
DESCRIPTION: TYPICAL LAYOUTS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TENSOR 3132

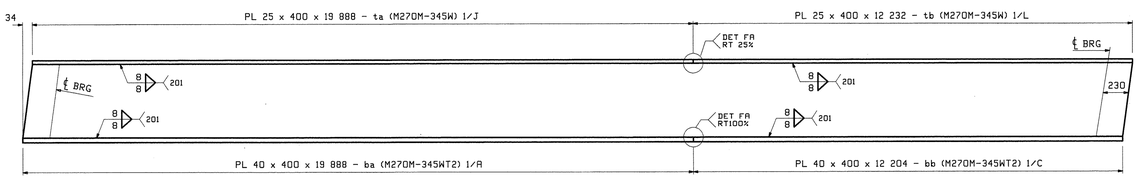
STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: JTB	DATE: 06/22
	CHKD: WJL	DATE: 07/10
LOCATION: READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO. BRF 0105(3)	519	TD1
CUSTOMER: RENAUD BROS.		REV. △

Wed, Jul 11, 2012 10:53:55 AM J:\PROJECTS\519\TD1.dwg

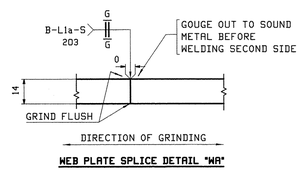


CAMBER DIAGRAM FOR 1G1, 2G2, 2G3, 3G4, 4G5

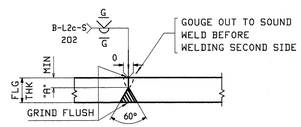
5 REQ'D



FLANGE DIAGRAM FOR 1G1, 2G2, 2G3, 3G4, 4G5



WEB PLATE SPLICE DETAIL "WA"



FLANGE PLATE SPLICE DETAIL "FA"

FLG THK	"A"
25	6
40	12

NOTES:

1. FOR GENERAL NOTES SEE DRAWING GN1.
2. "T2" DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST AT H FREQ. FOR ZONE 2

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					JTB '12 2012	

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345WT2	SEE DWG GN1		

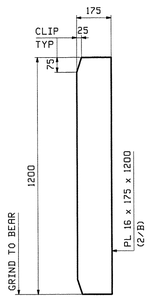
DESCRIPTION: CAMBER & FLANGE DIAGRAM

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TENSOR 3132

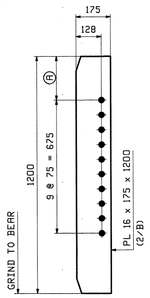
STRUCTURE:	DRAWN:	DATE:
READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	JTB	05/17
	CHK'D: WJL	DATE: 07/10
LOCATION: READSBORO, VERMONT	JOB NO. 519	DWG NO. C1
PROJ NO. BRF 0105(3)		REV. △
CUSTOMER: RENAUD BROS.		

VTrans Received JUL 23 2012



4 ~ x1a

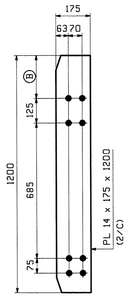
ABUT BRG STIFF
(FASCIA SIDE)



MARK "A"

ABUT BRG STIFF
END DIAPH CONN.

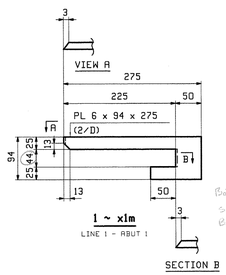
MARK "A"	QTY	Ⓐ	
x1b	8	190	LOW END
x1c	2	232	HIGH END DROP = 42
x1d	6	286	HIGH END DROP = 96



MARK "B"

INT. CF CONN.

MARK "B"	QTY	Ⓑ	
x1f	20	120	LOW END
x1g	5	162	HIGH END DROP = 42
x1k	15	216	HIGH END DROP = 96

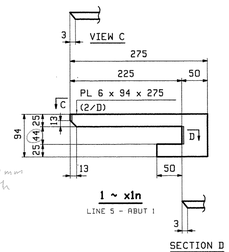


1 ~ x1m

LINE 1 = ABUT 1

SECTION B

Bottom Flange is 40 mm
should be tight with
Bottom Flange



1 ~ x1n

LINE 5 = ABUT 1

SECTION D

NOTE:
FOR GENERAL NOTES SEE DRAWING GN1.

JUL 23 2012

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					JUL 23 2012	

MATERIAL:	SURFACE PREP. & PRINT:	HOLES:	SHOP BOLTS:
M270M-345W	SEE DWG GN1	15/16"Ø	NONE

DESCRIPTION: GIRDER STANDARD DETAILS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TENSOR 2022

STRUCTURE:	READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: JTB	DATE: 06/22
		CHKD: WJL	DATE: 07/10
LOCATION:	READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO.	BRF 0105(3)	519	X1
CUSTOMER:	RENAUD BROS.		REV. △

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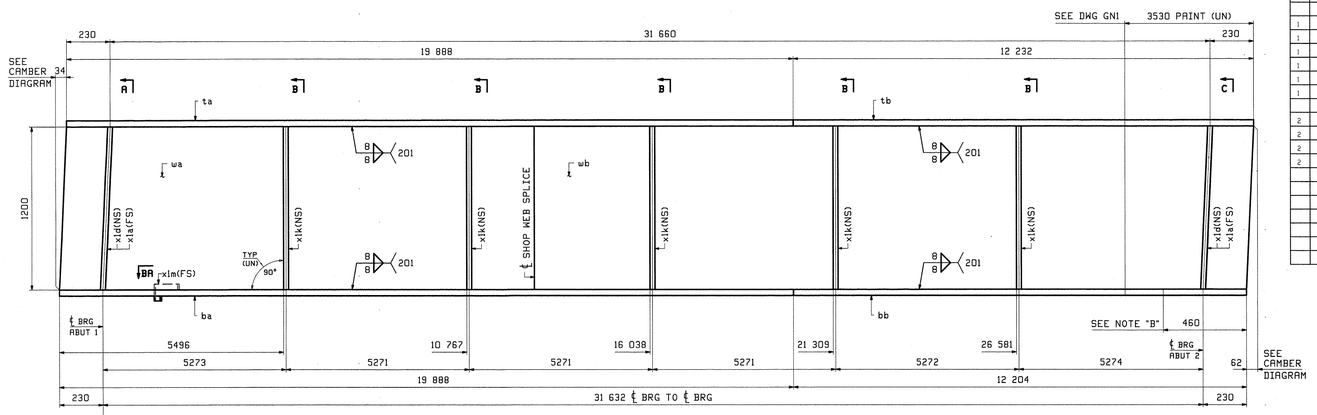
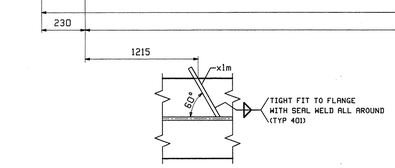


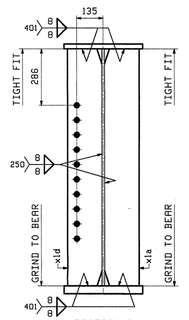


SECTION BR

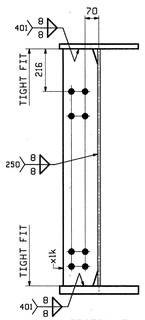
ONE - GIRDER - 1G1

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

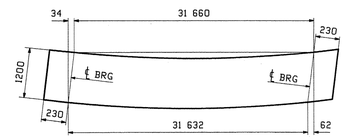
NOTE "B"
NO PAINT AREA ALONG BOTTOM FLANGE.
(FIELD WELDED SOLE PLATE) (SEE SECTION P ON GN1).



SECTION A
SECTION C (PAINTED)



SECTION B



ORIENTATION DIAGRAM
FOR CAMBER SEE DWG C1

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
								519	1	
		1G1	1		GIRDER				12115 kg 26693 lbs	
1	G		1	wa	PL 14x1200	12	203	M270M-345W T2	1509 kg 3548 lbs	
1	E		1	wb	PL 14x1200	19	954	M270M-345W T2	2632 kg 5802 lbs	
1	J		1	ta	PL 25x400	19	888		1561 kg 3442 lbs	
1	L		1	tb	PL 25x400	12	232		960 kg 2117 lbs	
1	A		1	ba	PL 40x400	19	888	M270M-345W T2	2498 kg 5507 lbs	
1	C		1	bb	PL 40x400	12	204	M270M-345W T2	1533 kg 3378 lbs	
2	B		2	x1a	PL 16x175	1	200	PIE	53 kg 116 lbs	
2	B		2	x1d	PL 16x175	1	200	PIE	53 kg 116 lbs	
2	C		5	x1k	PL 14x175	1	200		115 kg 254 lbs	
2	D		1	x1m	PL 6x94	0	275		1 kg 3 lbs	

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					JTB 7/3 2012	

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345W(UN)	SEE DWG GN1	15/16"ø	NONE

DESCRIPTION: GIRDER - 1G1

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

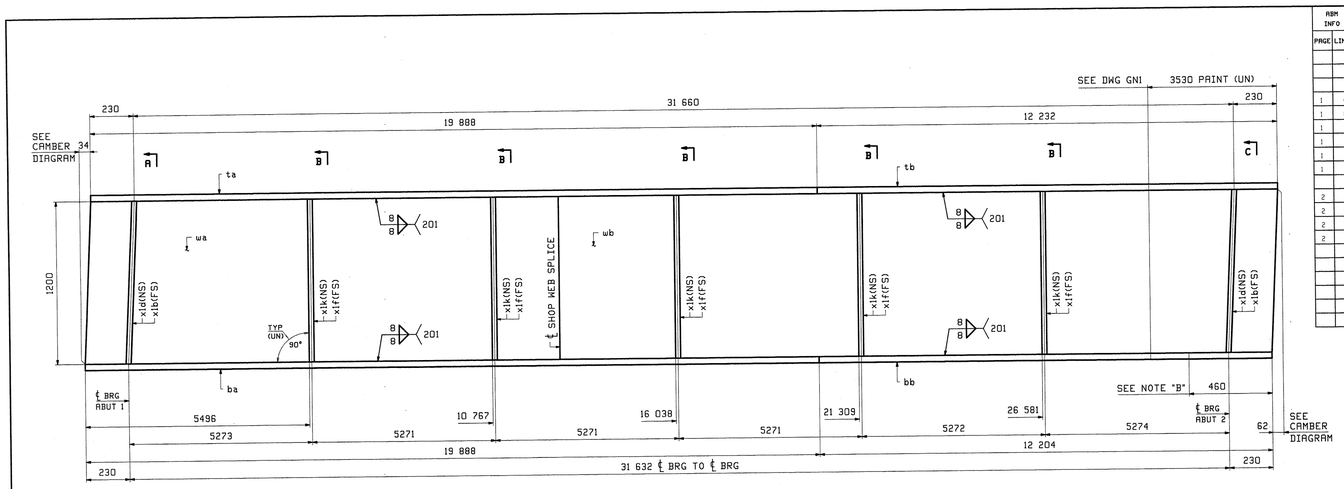
TENSOR AISC

STRUCTURE:	DRAWN:	DATE:
READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	JTB	06/22
	CHK'D: WJL	DATE: 07/10
LOCATION: READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO. BRF 0105(3)	519	1
CUSTOMER: RENAUD BROS.		REV. △

VTrans Structures Section JUL 23 2012

Reviewed by _____ Approved by _____
BRF _____ Date: 7/19/12

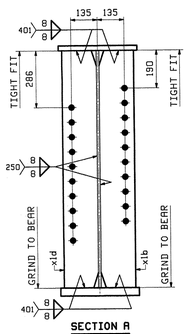
Wed, Jul 25, 2012 11:43:53 AM c:\users\jwilson\desktop\1 dwg.dgn



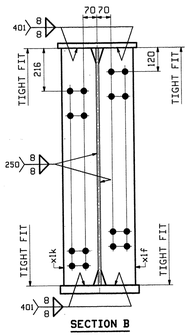
ONE - GIRDER - 2G2 | ALIKE EXCEPT
ONE - GIRDER - 2G3 | FOR MARK

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

NOTE "B"
NO PAINT AREA ALONG BOTTOM FLANGE.
(FIELD WELDED SOLE PLATE) (SEE SECTION P ON GN1).

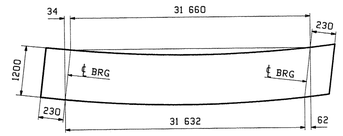


SECTION A
SECTION C (PAINTED)



SECTION B

ASM INFO		SHIP	BILL OF MATERIAL						JOB NO.	DRAWING NO.	REV.
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	519	2	
		2G2	1		GIRDER				WT	PROCUREMENT NOTES	
		2G2	1		GIRDER				22759 kg 50172 lbs		
		2G3	1		GIRDER				22759 kg 50172 lbs		
1	G		2	wa	PL 14x1200	12	203	#270M-345WT2	3219 kg 7096 lbs		
1	E		2	wb	PL 14x1200	19	954	#270M-345WT2	5263 kg 11603 lbs		
1	J		2	ta	PL 25x400	19	888		3122 kg 6884 lbs		
1	L		2	tb	PL 25x400	12	232		1820 kg 4015 lbs		
1	A		2	ba	PL 40x400	19	888	#270M-345WT2	4996 kg 11014 lbs		
1	C		2	bb	PL 40x400	12	204	#270M-345WT2	3066 kg 6759 lbs		
2	B		4	x1b	PL 16x175	1	200	MIE	106 kg 235 lbs		
2	B		4	x1d	PL 16x175	1	200	MIE	106 kg 235 lbs		
2	C		10	x1f	PL 14x175	1	200		231 kg 508 lbs		
2	C		10	x1k	PL 14x175	1	200		231 kg 508 lbs		



ORIENTATION DIAGRAM
FOR CAMBER SEE DWG C1

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					DWF '13 2012	

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345W(UN)	SEE DWG GN1	15/16 ø	NONE

DESCRIPTION: GIRDERS - 2G2 & 2G3

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TENSOR 3132

STRUCTURE: READSBORO
VT. ROUTE TH-2 OVER WEST BRANCH
OF DEERFIELD RIVER

DRAWN:	DATE:
JTB	06/22
CHKD:	DATE:
WJL	07/10

LOCATION: READSBORO, VERMONT
PROJ NO. BRF 0105(3)
CUSTOMER: RENAUD BROS.

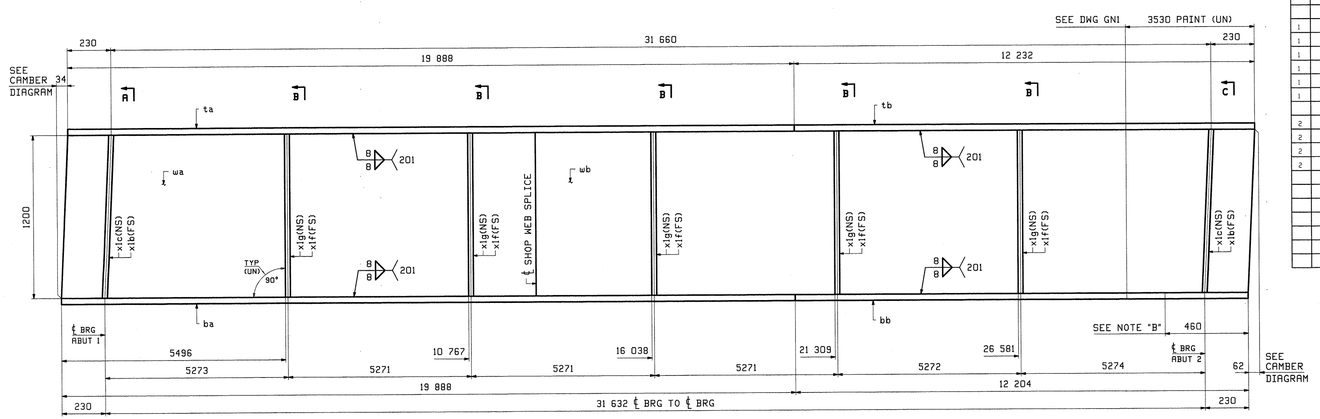
JOB NO. 519 | DWG NO. 2 | REV. 0

VTrans Received DEC 05 2012

JUL 23 2012

Received by _____ approved date 7/11/12

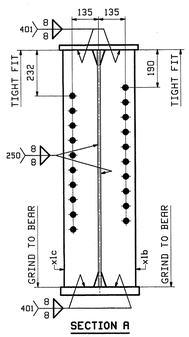
PLOT DATE: May 14 15, 2012 11:53:15 AM
I:\projects\2012\519\2-2.dwg



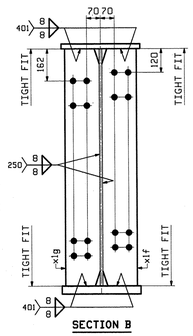
ONE - GIRDER - 3G4

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

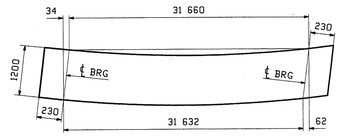
NOTE "B"
NO PAINT AREA ALONG BOTTOM FLANGE.
(FIELD WELDED SOLE PLATE) (SEE SECTION P ON GN1).



SECTION A
SECTION C (PAINTED)



SECTION B



ORIENTATION DIAGRAM
FOR CAMBER SEE DWG C1

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								519	3	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		3G4	1		GIRDER				11129 kg 24535 lbs	
1	G		1	wa	PL 14x1200	12	203	M270M-345WT2	1809 kg 3548 lbs	
1	E		1	wb	PL 14x1200	19	954	M270M-345WT2	2932 kg 5802 lbs	
1	J		1	ta	PL 25x400	19	888		1561 kg 3442 lbs	
1	L		1	tb	PL 25x400	12	232		960 kg 2117 lbs	
1	A		1	ba	PL 40x400	19	888	M270M-345WT2	2498 kg 5507 lbs	
1	C		1	bb	PL 40x400	12	204	M270M-345WT2	1533 kg 3379 lbs	
2	B		2	x1b	PL 16x175	1	200	NIE	53 kg 118 lbs	
2	B		2	x1c	PL 16x175	1	200	NIE	53 kg 116 lbs	
2	C		5	x1f	PL 14x175	1	200		175 kg 384 lbs	
2	C		5	x1g	PL 14x175	1	200		175 kg 384 lbs	

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					JUL 13 2012	

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345W(UN)	SEE DWG GN1	15 / 18 Ø	NONE

DESCRIPTION: GIRDER - 3G4

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

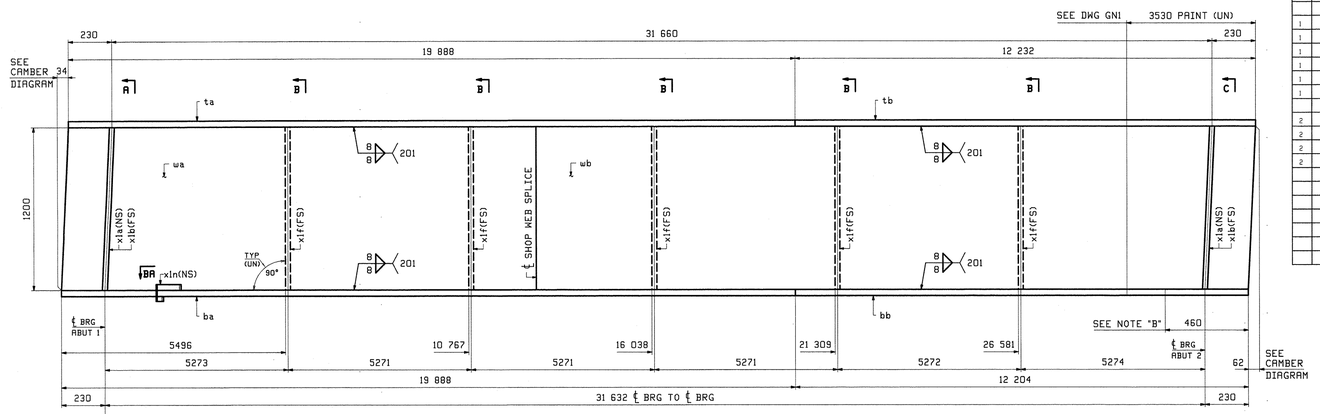
TENSOR TITE

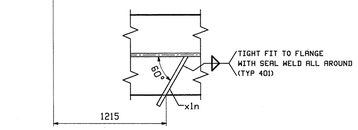
STRUCTURE:	READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: JTB	DATE: 06/23
		CHK'D: WJL	DATE: 07/10
LOCATION:	READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO.	BRF 0105(3)	519	3
CUSTOMER:	RENAUD BROS.		REV. △

Received by VTrans CPG 3585 JUL 23 2012

Approved by _____ Date 8/14/12

STR_ 3of_3_ BRF 0105(3)_ ENG
drawing1.pln(0105(3)_ ENG)



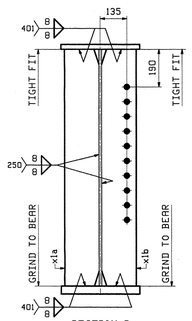


SECTION BA

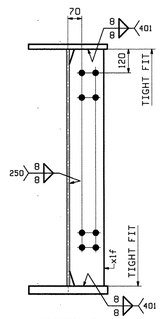
ONE - GIRDER - 4G5

FOR GIRDER STANDARD DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

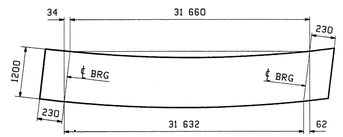
NOTE "B"
NO PAINT AREA ALONG BOTTOM FLANGE.
(FIELD WELDED SOLE PLATE) (SEE SECTION P ON GN1).



SECTION A
SECTION C (PAINTED)



SECTION B



ORIENTATION DIAGRAM
FOR CAMBER SEE DWG C1

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		4G5	1		GIRDER				4015 kg 8283 lb	
1	G		1	wa	PL 14×1200	12	203	M270M-345WT2	1609 kg 3548 lb	
1	E		1	wb	PL 14×1200	19	954	M270M-345WT2	2632 kg 5802 lb	
1	J		1	ta	PL 25×400	19	888		1561 kg 3442 lb	
1	L		1	tb	PL 25×400	12	232		960 kg 2117 lb	
1	A		1	ba	PL 40×400	19	888	M270M-345WT2	2488 kg 5507 lb	
1	C		1	bb	PL 40×400	12	204	M270M-345WT2	1593 kg 3373 lb	
2	B		2	x1a	PL 16×175	1	200	MIE	53 kg 118 lb	
2	B		2	x1b	PL 16×175	1	200	MIE	53 kg 118 lb	
2	C		5	x1f	PL 14×175	1	200		115 kg 254 lb	
2	D		1	x1n	PL 6×94	0	275		1 kg 3 lb	

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					DWC 13 2012	

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345W(UN)	SEE DWG GN1	15/16"ø	NONE

DESCRIPTION: GIRDER - 4G5

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TENSOR SIZE

STRUCTURE: READSBORO
VT. ROUTE TH-2 OVER WEST BRANCH
OF DEERFIELD RIVER

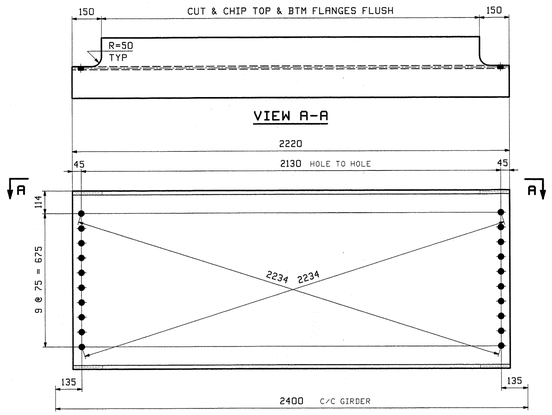
DRAWN: JTB DATE: 06/23
CHKD: WJL DATE: 07/10

LOCATION: READSBORO, VERMONT
JOB NO. 519
DWG NO. 4
REV. △

PROJ NO. BRF 0105(3)
CUSTOMER: RENAUD BROS.

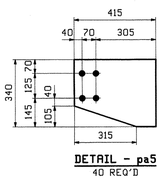
VTrans RECEIVED DATE JUL 23 2012
APPROVED DATE 9/11/12

Wed, Jul 11, 2012 10:53:53 AM //vtrans/pw/2012/1 4G5

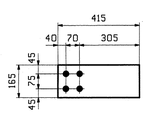


4 ~ END DIAPHRAGMS - 5D1 (NO PAINT)

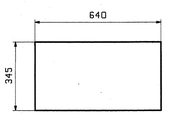
4 ~ END DIAPHRAGMS - 5D1P (PAINTED - SEE DWG GN1)



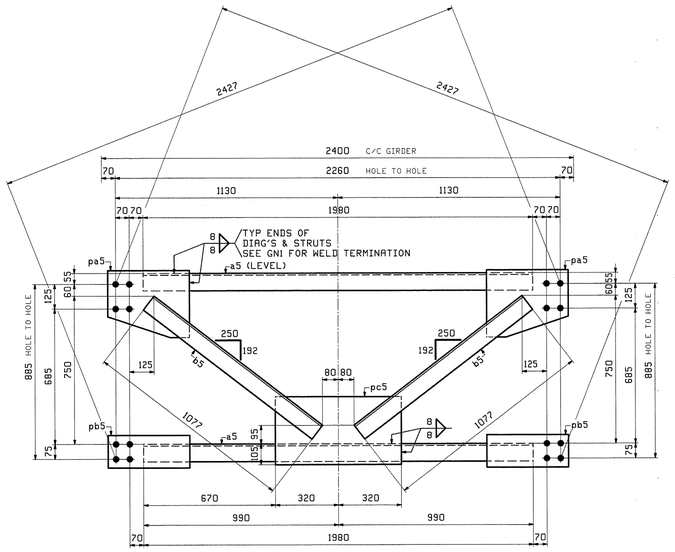
DETAIL - pa5
40 REQ'D



DETAIL - pb5
40 REQ'D



DETAIL - pc5
20 REQ'D



20 ~ INT. CROSSFRAMES - 5CF1
LOOKING UP-STATION

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								519	5	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
					END DIAPHRAGMS					
2	G	5D1	4		W 920x201	2	220	NO PRINT	1785 kg 3935 lbs	
2	G	5D1P	4		W 920x201	2	220	PRINTED	1785 kg 3935 lbs	
								NO PRINT		
		5CF1	20		CROSSFRAMES				2847 kg 6276 lbs	
2	K		40	a5	L 89x89x9.5	1	980		938 kg 2070 lbs	
2	L		40	b5	L 89x89x9.5	1	077		543 kg 1197 lbs	
2	M		40	pa5	PL 13x340	0	415		576 kg 1270 lbs	
2	N		40	pb5	PL 13x165	0	415		280 kg 616 lbs	
2	P		20	pc5	PL 13x345	0	640		451 kg 994 lbs	

NOTE:
FOR GENERAL NOTES SEE DRAWING GN1.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0					TW	2012

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345W	SEE DWG GN1	$\frac{15}{16}$"Ø	NONE

DESCRIPTION: DIAPHRAGMS & CROSSFRAMES

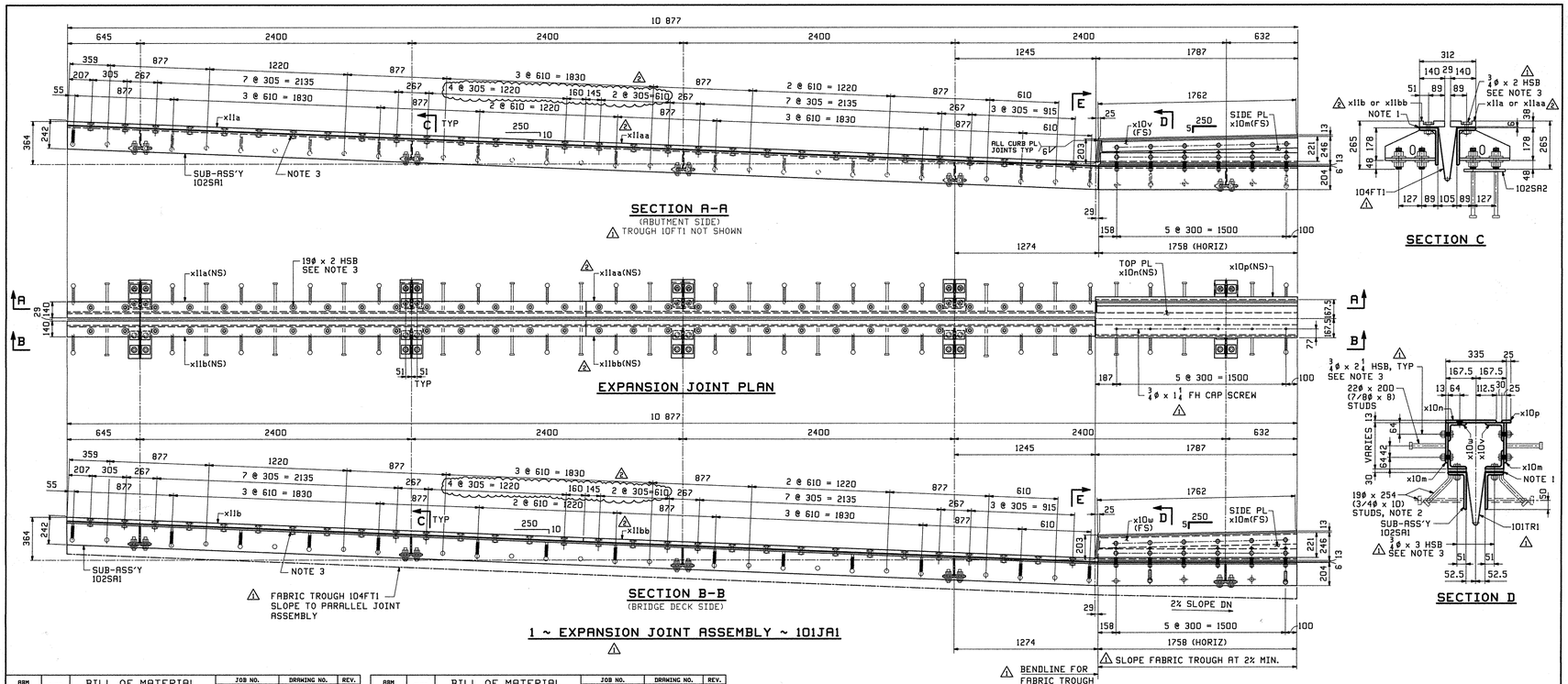
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TENSOR 2132

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: JTB	DATE: 06/23
	CHK'D: WJL	DATE: 07/10
LOCATION: READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO. BRF 0105(3)	519	5
CUSTOMER: RENAUD BROS.		REV. △

VT AGENCY OF TRANSPORTATION REVIEWED FOR CONFORMANCE WITH CONTRACT DOCUMENTS
CHK'D WBD DATE JAG
JUL 23 2012
REVIEWER DC APPROVED DATE 7/11/12

Wed, Jul 18, 2012 3:43:39 PM J:\projects\519\5.dwg



SECTION A-A
(ABUTMENT SIDE)
TROUGH 10FT1 NOT SHOWN

SECTION C

EXPANSION JOINT PLAN

SECTION B-B
(BRIDGE DECK SIDE)

SECTION D

1 ~ EXPANSION JOINT ASSEMBLY ~ 101JA1

SECTION E

ABM INFO PAGE	LINE	SHIP MARK	QTY	MARK	BILL OF MATERIAL	LENGTH m	LENGTH mm	REMARKS	JOB NO. 519 WT	DRAWING NO. 101 PROCUREMENT NOTES	REV.
	101JA1		1		EXPANSION JOINT SUB-ASSY				2082 kg 4590 lbs		
4	E		1	x10d	PL 13x189	0	280		9 kg 19 lbs		
4	F		1	x10f	PL 13x102	0	189		2 kg 4 lbs		
4	G		1	x10g	PL 13x51	0	189		.88 kg 1.7 lbs		
4	J		2	x10m	PL 13x222	1	774		40 kg 88 lbs		
4	K		1	x10n	PL 13x280	1	764		50 kg 111 lbs		
4	L		1	x10p	PL 13x51	1	764		9 kg 20 lbs		
4	P		1	x10v	L 102x102x13	1	764		41 kg 90 lbs		
4	R		1	x10w	L 102x102x13	1	748		18 kg 40 lbs		
4	S		2	x10y	PL 13x102	1	758				
5	B		1	x11a	FL 32x140	4	561		151 kg 354 lbs		
5	C		1	x11b	FL 32x140	4	561		151 kg 354 lbs		
5	B		1	x11a	FL 32x140	4	562		151 kg 354 lbs		
5	C		1	x11b	FL 32x140	4	562		151 kg 354 lbs		
					SHOP BOLTS						
6	B		60		3/4ø HSB	0	2	GALV. ASTM F3125-1	.24 kg .53 lbs		
6	C		24		3/4ø HSB	0	2 1/2	GALV. ASTM F3125-1	.24 kg .53 lbs		
6	D		12		3/4ø HSB	0	3	GALV. ASTM F3125-1	.24 kg .53 lbs		
6	E		96		3/4ø HSW			GALV. ASTM F436	.02 kg .05 lbs		

ABM INFO PAGE	LINE	SHIP MARK	QTY	MARK	BILL OF MATERIAL	LENGTH m	LENGTH mm	REMARKS	JOB NO. 519 WT	DRAWING NO. 101 PROCUREMENT NOTES	REV.
6	G		6		3/4ø CAP SCREW	0	1 1/4		.24 kg .53 lbs		
					SHOP STUDS						
6	N		84		STUD 19ø	0	254	3/4 DIA x 10 ASSM	.33 kg .73 lbs		
6	P		12		STUD 22ø	0	200	7/8 DIA x 8 ASSM	.67 kg 1.47 lbs		
6	T		2	101TP1	1/16 x 3 x 36'-0 TAPE			BUTYL RUBBER TAPE SPEC 707.12			
			1	104FT1	FABRIC TROUGH						
			1	102SA1	LOWER JOINT SUB-ASSY				1127 kg 2483 lbs		
			5	102SA2	ANCHOR PL SUB-ASSY				5 kg 11 lbs		

NOTES:

1). 1/16x3" BUTYL RUBBER TAPE MK 101TP1 STANDARD SPEC SUBSECTION 707.12 CENTERED ON LINE OF BOLTS PLACED BETWEEN ANGLE AND FABRIC.

2.) STUDS WELDED @ 300 O/C. BENT AS SHOWN, ALTERNATE WITH STRAIGHT STUDS @ 300 O/C.

3.) WELD NUTS ON (3) SIDES COAT BOLT & NUT THREADS WITH NICKEL BASED ANTI-SEIZE LUBE.

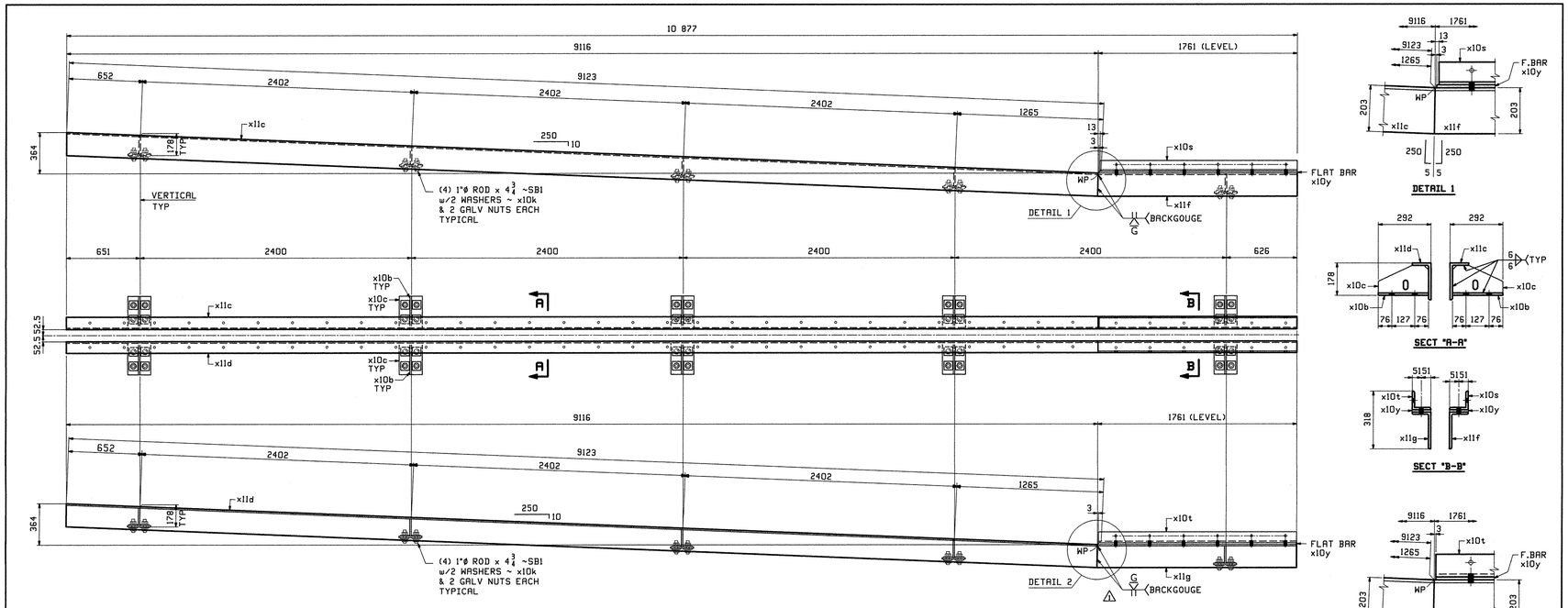
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
2	4/25/13	ADDED x11aa & x11bb, REVISED DIMS	BP	TJB		
1	4/2/13	REVISED MARKS, BOM & TITLEBOX	BP	TJB		
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345	GALVANIZED	NONE	NONE

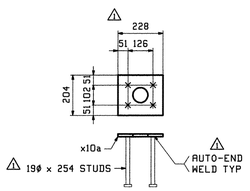
DESCRIPTION: EXPANSION JOINT ASSEMBLY

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: BP	DATE: 02/26
	CHK'D: TJB	DATE: 03/09
LOCATION: READSBORO, VERMONT	JOB NO. 519	DWG NO. 101
PROJ NO. BRF 0105(3)		
CUSTOMER: RENAUD BROS.		REV. 2



1 ~ LOWER JOINT SUB-ASSEMBLY ~ 102SA1



5 ~ ANCHOR SUB-ASSEMBLIES ~ 102SA2

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
						LENGTH		519	102	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	m	mm	REMARKS	WT	PROCUREMENT NOTES
		102SA1	1		LOWER JOINT SUB-ASSY				1046 kg 2306 lbs	
4	C		10	x10b	PL 13x204	0	278		6 kg 13 lbs	
4	D		10	x10c	PL 13x152	0	279		4 kg 10 lbs	
4	H		80	x10k	PL 13x76	0	076		.139 kg .307 lbs	
4	M		1	x10s	L 102x102x13	1	749		40 kg 90 lbs	
4	N		1	x10t	L 102x102x13	1	758		41 kg 90 lbs	
4	S		2	x10y	PL 13x102	1	758	⚠	18 kg 40 lbs	
5	D		1	x11c	L 203x102x13	9	127	⚠	214 kg 471 lbs	
5	E		1	x11d	L 203x102x13	9	127	⚠	214 kg 471 lbs	
5	F		1	x11f	L 203x102x13	1	765	⚠	41 kg 90 lbs	
5	G		1	x11g	L 203x102x13	1	765	⚠	41 kg 90 lbs	
6	J		40	SB1	ROD 1ø ⚠		4 3/4	THREADED ROD A563	6 kg 14 lbs	
6	K		80		1 ø HHN			GALV. GR DH A563	.19 kg .43 lbs	
		102SA2	5		ANCHOR PL SUB-ASSY				6 kg 13 lbs	
4	B		5	x10a	PL 13x204	0	228		5 kg 10.3lbs	
6	N		20		STUD 19 ø	0	254	3/4 DIA x 10 A108M	.33 kg .73 lbs	

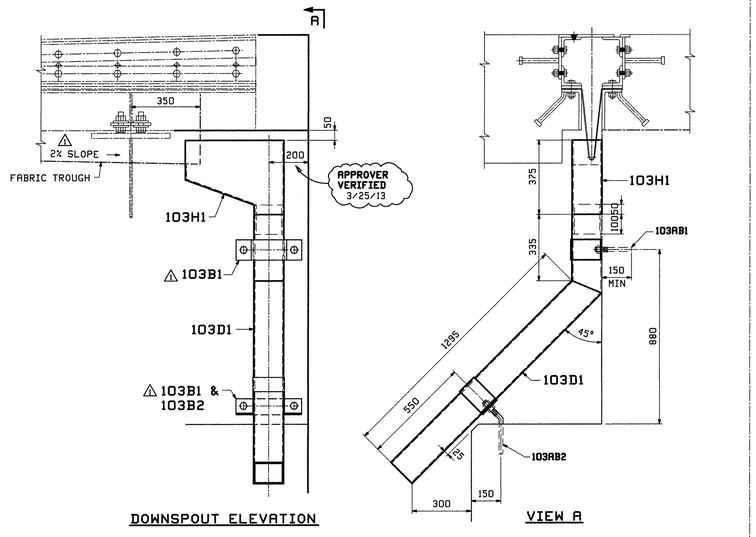
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
⚠ 1	4/2/13	REVISED DIMS, BOM & TITLEBOX	BP	TJB		
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
⚠ M270M-345	⚠ GALVANIZED	⚠ NONE	⚠ NONE

DESCRIPTION: EXPANSION LOWER JOINT SUB-ASSEMBLY

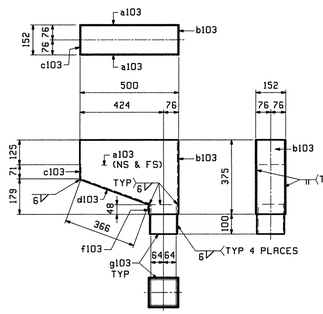
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: BP	DATE: 02/26
	CHKD: TJB	DATE: 03/10
LOCATION: READSBORO, VERMONT	JOB NO. 519	DWG NO. 102
PROJ NO. BRF 0105(3)		
CUSTOMER: RENAUD BROS.		REV. ⚠

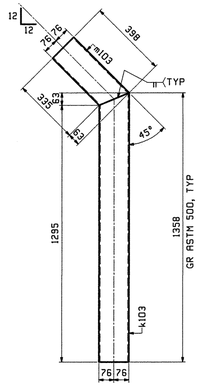


DOWNSPOUT ELEVATION

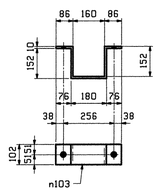
VIEW A



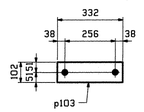
1 - DOWNSPOUT HOPPER - 103H1



1 - DOWNSPOUT - 103D1



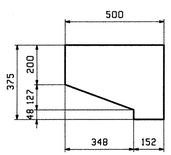
2 - BAR - 103B1



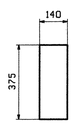
1 - BAR - 103B2

ABM INFO		SHIP	BILL OF MATERIAL						JOB NO.	DRAWING NO.	REV.
									519	103	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES	
		103H1	1		DOWNSPOUT HOPPER				27 kg 59 lbs		
7	B		2	a103	PL 6x375	0	500		9 kg 18 lbs		
7	C		1	b103	PL 6x140	0	375		2 kg 5 lbs		
7	D		1	c103	PL 6x140	0	366		2 kg 5 lbs		
7	E		1	d103	PL 6x71	0	140		.47 kg 103 lbs		
7	F		1	f103	PL 6x49	0	140		.32 kg .70 lbs		
7	G		4	g103	PL 6x128	0	148		.89 kg 197 lbs		
		103D1	1		DOWNSPOUT				50 kg 110 lbs		
7	H		1	h103	HSS 152x152x6	1	358		38 kg 85 lbs		
7	J		1	m103	HSS 152x152x6	0	398		11 kg 24 lbs		
		103B1	2		BARS				5 kg 11 lbs		
7	K		2	n103	PL 10x102	0	636		5 kg 11 lbs		
		103B2	1		BAR				5 kg 11 lbs		
7	L		1	p103	PL 10x102	0	332		3 kg 6 lbs		
					ANCHOR BOLTS						
7	M		2	103AB1	ROD 19	0	230	GALV, A. BOLT A307	.34 kg .73 lbs		
7	N		2	103AB2	ROD 19	0	300	GALV, A. BOLT A307 BENT	.47 kg 1.47 lbs		
7	P		6		19Ø HHN			GALV, GR DH A563			
7	Q		6		19Ø HSH			GALV, F436			

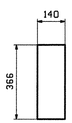
ALL MATERIAL TO BE GALVANIZED AFTER FABRICATION AND PAINTED BROWN COLOR CHIP #20059, UN.



2 ~ a103



1 ~ b103

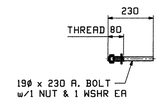


1 ~ c103

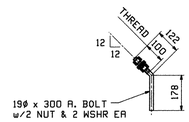
1 ~ d103

1 ~ f103

4 ~ g103



2 - ANCHOR BOLTS - 103AB1
"GALVANIZED"



2 - ANCHOR BOLTS - 103AB2
"GALVANIZED"

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	4/2/13	REVISED PER APPROVAL COMMENTS	BP	TJB		
0						

MATERIAL:	SURFACE PREP. & PRINT:	HOLES:	SHOP BOLTS:
M270M-250(UN)	GALV & PRINTED	22Ø	NONE

DESCRIPTION: DOWNSPOUT

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

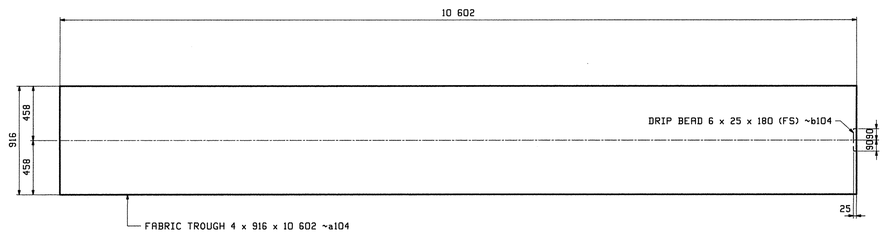
STRUCTURE: READSBORO
VT. ROUTE TH-2 OVER WEST BRANCH
OF DEERFIELD RIVER

DRAWN:	DATE:
TJB	03/12
CHKD:	DATE:
WBC	03/13

LOCATION:	READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO.	BRF 0105(3)	519	103
CUSTOMER:	RENAUD BROS.		REV. 1

119 Tue, Apr 9, 2013 9:50:05 AM //casco_bay/DESIGN/... Revit

ABM INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								519	104	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH m	LENGTH mm	REMARKS	WT	PROCUREMENT NOTES
		104FT1	1		FABRIC TROUGH					
6	R		1	a104	5/32 x 916 x 11 602 TROUGH			3 PLY FABRIC		
6	S		1	b104	5/32 x 25 x 180			3 PLY FABRIC DRIP BEND		



1 - FABRIC TROUGH - 104FT1

1.) FABRIC DRAIN TROUGH SHALL BE 3-PLY PREFOREMED FABRIC MATERIAL CONFORMING TO SECTION 561.2.8 AND SHALL BE CUT PRE-ASSEMBLY FROM ONE PIECE.

2.) DRIP BEAD OF FABRIC MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH CONTINUOUS TO THE FULL LENGTH.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	4/2/13	REVISED DRIP BEAD	BP	TJB		
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:

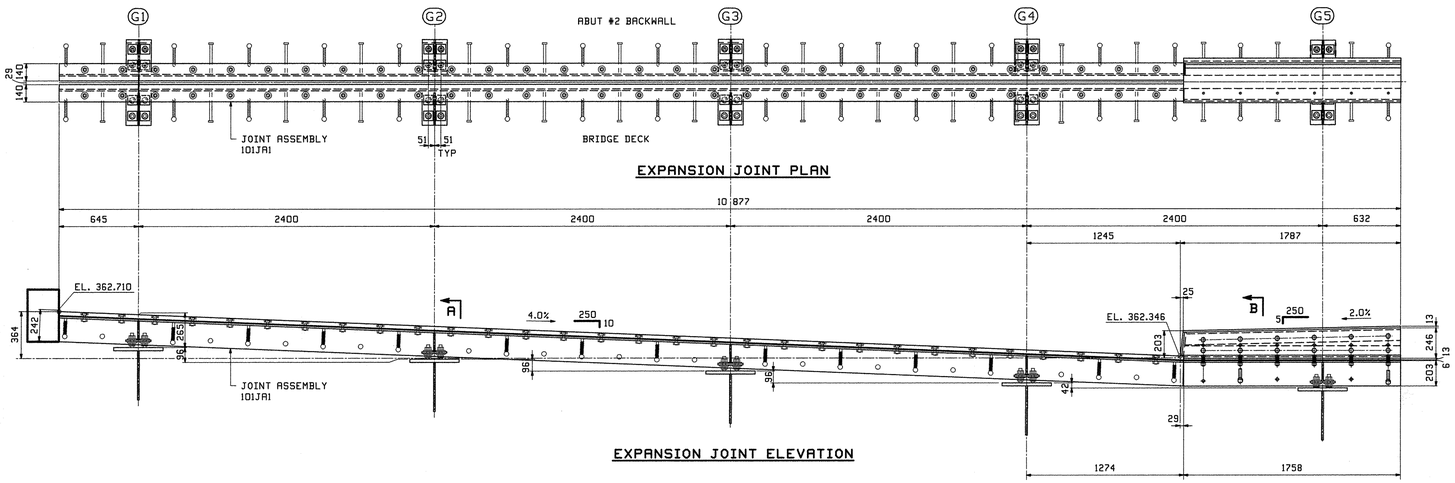
DESCRIPTION: FABRIC TROUGH

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

STRUCTURE: READSBORO
VT. ROUTE TH-2 OVER WEST BRANCH
OF DEERFIELD RIVER

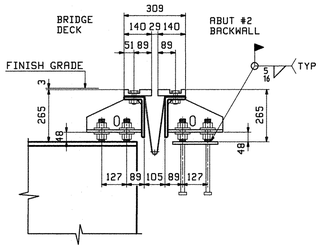
DRAWN:	TJB	DATE:	03/13
CHKD:	WBC	DATE:	03/13
LOCATION:	READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO.	BRF 0105(3)	519	104
CUSTOMER:	RENAUD BROS.		REV. 1

Tue, Apr 2, 2013 10:05:28 PM //www/jobs/519/104.dwg

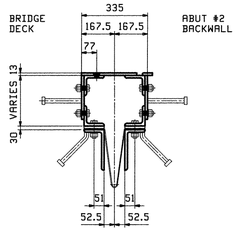


EXPANSION JOINT PLAN

EXPANSION JOINT ELEVATION



SECTION A



SECTION B

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	4/2/13	RELEASED FOR FABRICATION	BP	TJB		
0						

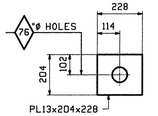
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:

DESCRIPTION: FRAMING PLAN

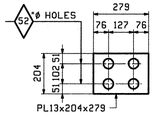
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: BP	DATE: 02/26
	CHK'D: TJB	DATE: 03/06
LOCATION: READSBORO, VERMONT	JOB NO. 519	DWG NO. E101
PROJ NO. BRF 0105(3)		REV. 1
CUSTOMER: RENAUD BROS.		

Tue Mar 5, 2013 010649 PM J:\work\jobs\519\E101.dwg



10 ~ x10a
(NO CORTING)



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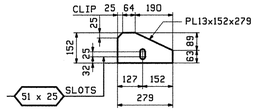

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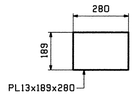
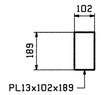


1 ~ x10d



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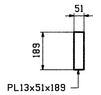
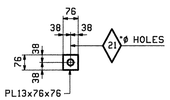
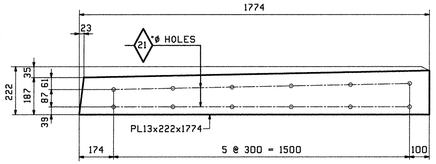


1 ~ x10g



80 ~ x10k



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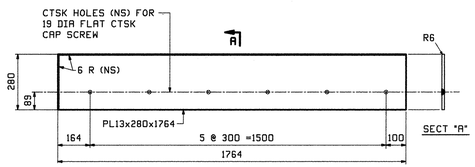

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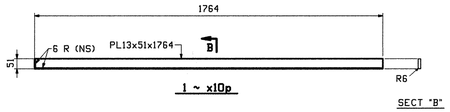

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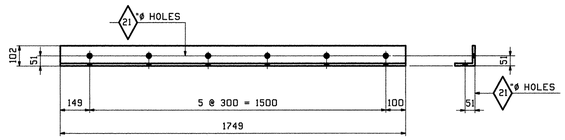

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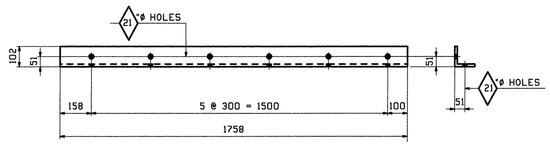
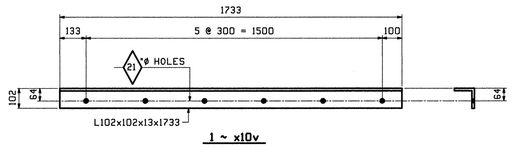


1 ~ x10t



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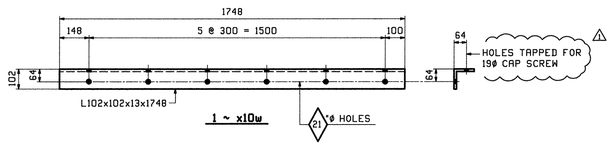

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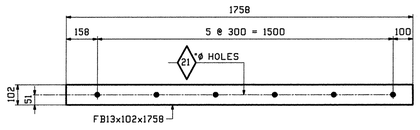


2 ~ x10y

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0	4/2/13	ADDED TITLEBOX INFO	BP	TJB		

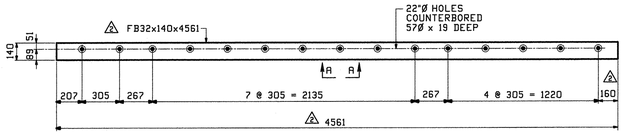
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270M-345	GALVANIZED	AS NOTED	NONE

DESCRIPTION: STANDARD DETAILS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

STRUCTURE: READSBORO VT. ROUTE TH-2 OVER WEST BRANCH OF DEERFIELD RIVER	DRAWN: BP	DATE: 02/26
	CHKD: TJB	DATE: 03/09
LOCATION: READSBORO, VERMONT	JOB NO.	DWG NO.
PROJ NO. BRF 0105(3)	519	X10
CUSTOMER: RENAUD BROS.		REV. 0

File: Mon Apr 1 2013 03:03:13 PM c:\steel\jobs\2013\519\X10.dwg



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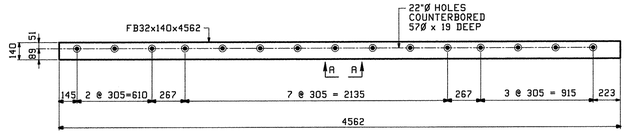
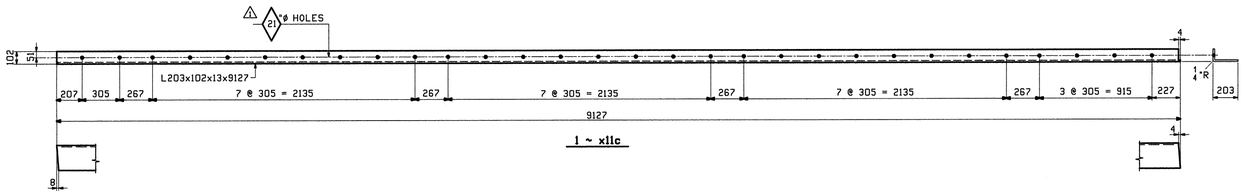


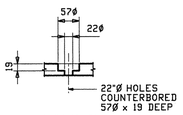
1 ~ x11aa

1 ~ x11b

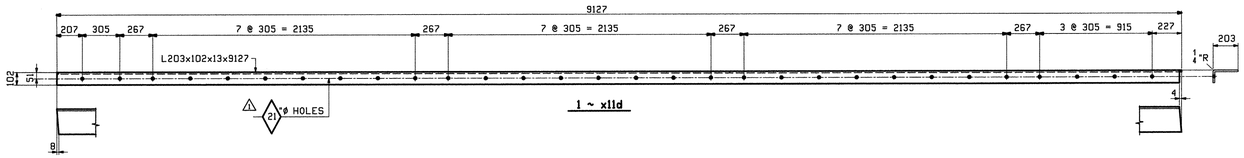
1 ~ x11bb



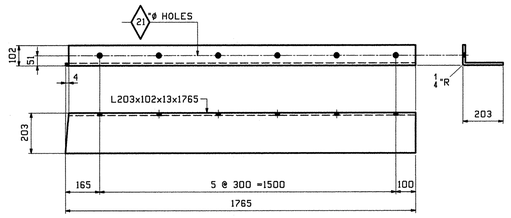
1 ~ x11c



SECT "A-A"



1 ~ x11d



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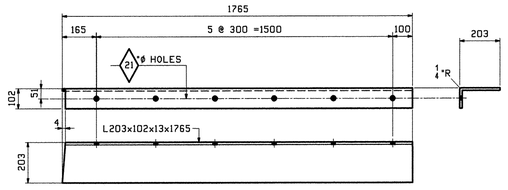


1 ~ x11g

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
2	6/25/13	DIVIDE x11a & x11b INTO EQ LENTGHS	BP	TJB		
1	4/2/13	ADDED HOLE SIZE & TITLEBOX INFO	BP	TJB		
0						

MATERIAL: 1 M270M-345 | SURFACE PREP. & PAINT: 1 GALVANIZED | HOLES: 1 AS NOTED | SHOP BOLTS: 1 NONE

DESCRIPTION: STANDARD DETAILS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

STRUCTURE: READSBORO
VT. ROUTE TH-2 OVER WEST BRANCH
OF DEERFIELD RIVER

DRAWN: BP DATE: 02/26
CHKD: TJB DATE: 03/10

LOCATION: READSBORO, VERMONT
JOB NO. 519
DWG NO. X11
REV. 2

PROJ NO. BRF 0105(3)
CUSTOMER: RENAUD BROS.

Thu, Mar 28, 2013 10:48:16 AM c:\users\jobs\519\x11.dwg

Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification: **ASTM A36, A709 Gr 36, A500 gr B, A709 gr 50, A572 gr 50**

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

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

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

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

Filler metal classification: **ER70S-6**

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

Flux and manufacturer: **N/A**

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

Single or multiple pass: **Single or Multiple**

Single or multiple arc: **Single**

Welding current: **DCEP**

Polarity: **Reverse - electrode positive**

Welding progression: **Stringers**

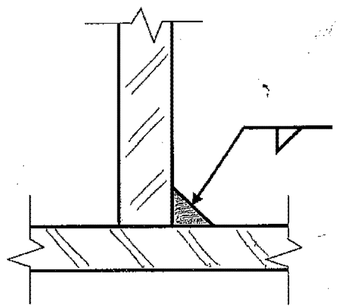
Root treatment: **clean base metal**

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

Postheat treatment: **None**

Electrode extension: **3/4" ± 1/4"**

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed	Joint detail
3/16" 3mm	1	0.045"	300 A ± 30	29 V ± 2	14 ipm ± 2	TYPICAL ALL FILLET WELDS 
5/16" 8mm	1	0.062"	300 A ± 30	29 V ± 2	10 ipm ± 2	

Trans. Received DEC 03 2012 Rec'd By JJC
CFL
Reviewed By
APPROVED DATE 12/07/12

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

WPS no. **W-1905**

Revision no. **0**

Supporting PQR no. **Pre-Qualified**

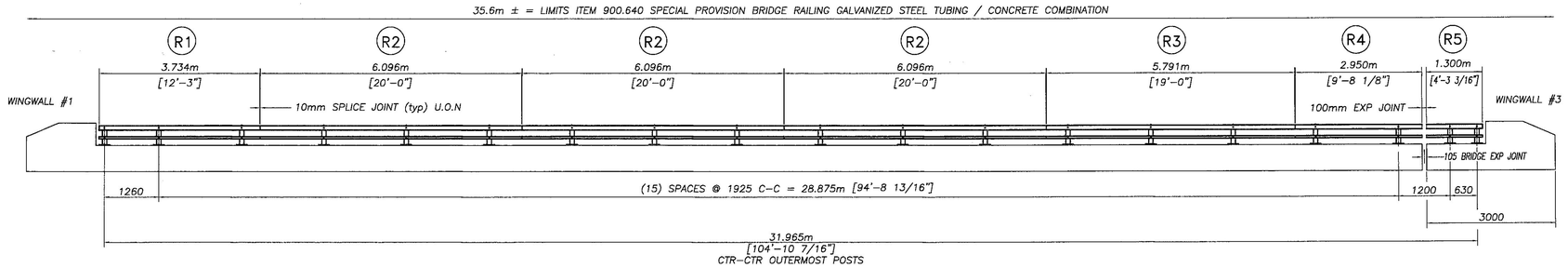
Project Name **READSBORO, VT**

Fabricator **Highway Safety Corporation**

Prepared By: **Paul Radice**

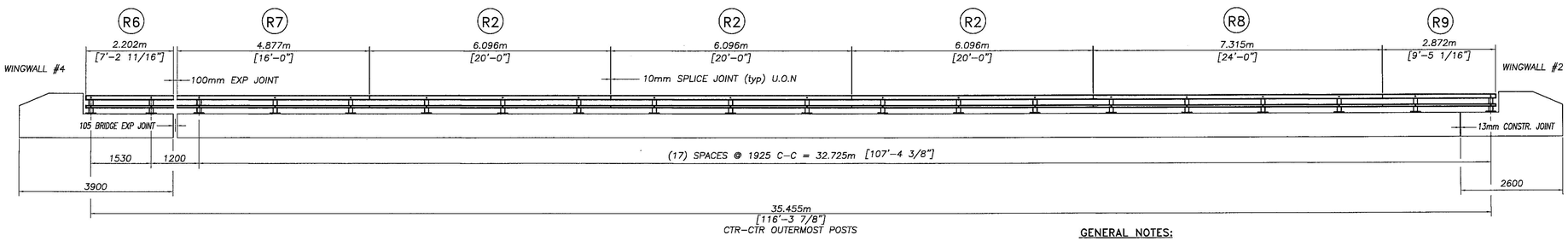
Date **11/21/12**

Project Number **BRF 0105 (3)**



WEST RAILING ELEVATION

LOOKING AT FACE OF RAIL FROM CENTERLINE OF ROAD



EAST RAILING ELEVATION

LOOKING AT FACE OF RAIL FROM CENTERLINE OF ROAD

BILL OF MATERIAL

Qty	mk	Description	Spec.
39		BRIDGE RAILING POST HSS 100 x 100 x 6 x 429 LG [457mm OAH INCLUDING BASE PLATE & CAP] (GALV)	A572 gr 50
39		20 x 215 x 250 BRIDGE RAIL POST BASE PLATE	A572 gr 50
39		8 x 90 x 90 BRIDGE RAIL POST TOP CAP PLATE	A36
12		UPPER RAIL SPLICE BAR 58 x 83 x 710 mm LG (GALV)	A572 gr 50
12		LOWER RAIL SPLICE BAR 40 x 40 x 710 mm LG (GALV)	A572 gr 50
1	R1	UPPER RAIL TUBE HSS 100 x 76 x 6 x 3.734m LG - SPLICE HOLES ONE END (GALV)	A500 gr B
6	R2	UPPER RAIL TUBE HSS 100 x 76 x 6 x 6.096m LG - SPLICE HOLES BOTH ENDS (GALV)	A500 gr B
1	R3	UPPER RAIL TUBE HSS 100 x 76 x 6 x 5.791m LG - SPLICE HOLES BOTH ENDS (GALV)	A500 gr B
1	R4	UPPER RAIL TUBE HSS 100 x 76 x 6 x 2.950m LG - 1 END SPLICE HOLES, 1 END EXP SLOTS (GALV)	A500 gr B
1	R5	UPPER RAIL TUBE HSS 100 x 76 x 6 x 1.300m LG - EXP SLOTS ONE END (GALV)	A500 gr B
1	R6	UPPER RAIL TUBE HSS 100 x 76 x 6 x 2.202m LG - EXP SLOTS ONE END (GALV)	A500 gr B
1	R7	UPPER RAIL TUBE HSS 100 x 76 x 6 x 4.877m LG - 1 END SPLICE HOLES, 1 END EXP SLOTS (GALV)	A500 gr B
1	R8	UPPER RAIL TUBE HSS 100 x 76 x 6 x 7.315m LG - SPLICE HOLES BOTH ENDS (GALV)	A500 gr B
1	R9	UPPER RAIL TUBE HSS 100 x 76 x 6 x 2.872m LG - SPLICE HOLES ONE END (GALV)	A500 gr B
4		END CAP PLATE 5 x 65 x 90 (WELDED TO NON SPLICE END OF UPPER RAIL TUBES R1, R5, R6 & R9)	A36
1	R1	LOWER RAIL TUBE HSS 50 x 50 x 3 x 3.734m LG - SPLICE HOLES ONE END (GALV)	A500 gr B
6	R2	LOWER RAIL TUBE HSS 50 x 50 x 3 x 6.096m LG - SPLICE HOLES BOTH ENDS (GALV)	A500 gr B
1	R3	LOWER RAIL TUBE HSS 50 x 50 x 3 x 5.791m LG - SPLICE HOLES BOTH ENDS (GALV)	A500 gr B
1	R4	LOWER RAIL TUBE HSS 50 x 50 x 3 x 2.950m LG - 1 END SPLICE HOLES, 1 END EXP SLOTS (GALV)	A500 gr B
1	R5	LOWER RAIL TUBE HSS 50 x 50 x 3 x 1.300m LG - EXP SLOTS ONE END (GALV)	A500 gr B
1	R6	LOWER RAIL TUBE HSS 50 x 50 x 3 x 2.202m LG - EXP SLOTS ONE END (GALV)	A500 gr B
1	R7	LOWER RAIL TUBE HSS 50 x 50 x 3 x 4.877m LG - 1 END SPLICE HOLES, 1 END EXP SLOTS (GALV)	A500 gr B
1	R8	LOWER RAIL TUBE HSS 50 x 50 x 3 x 7.315m LG - SPLICE HOLES BOTH ENDS (GALV)	A500 gr B
1	R9	LOWER RAIL TUBE HSS 50 x 50 x 3 x 2.872m LG - SPLICE HOLES ONE END (GALV)	A500 gr B
4		END CAP PLATE 5 x 45 x 45 (WELDED TO NON SPLICE END OF LOWER RAIL TUBES R1, R5, R6 & R9)	A36

– CONTINUED –

78		ANCHOR PLATE 10 x 80 x 193 (GALV)	A36
158		FULL THREAD ANCHOR STUD M16 x 380mm (GALV)	A449
316		HEX NUT M16 (GALV)	A563 DH
158		ROUND WASHER M16 (GALV)	F436
39		SLOTTED ROUND HEAD POST BOLT (NO SHOULDER) M20 x 228.6mm (GALV)	A449
39		LOCK NUT M20 (GALV)	A563 DH
39		ROUND WASHER M20 (GALV)	F436
39		SLOTTED ROUND HEAD POST BOLT (NO SHOULDER) M16 x 203.2mm (GALV)	A449
39		LOCK NUT M16 (GALV)	A563 DH
39		ROUND WASHER M16 (GALV)	F436
48		HEXHEAD BOLT M22 x 140mm (GALV)	A325
48		LOCK NUT M22 (GALV)	A563 DH
48		ROUND WASHER M22 (GALV)	F436
48		HEXHEAD BOLT M16 x 75mm (GALV)	A325
48		LOCK NUT M16 (GALV)	A563 DH
48		ROUND WASHER M16 (GALV)	F436
39		BEARING PAD 3mm THICK x 215 x 250 (NEOPRENE 60 duro +/-10)	aashto M251

No.	Remarks	Date
0	Initial submittal	11/21/12

REVISIONS

GENERAL NOTES:

ALL MATERIAL GALVANIZED AFTER FABRICATION ASTM A123 / A153.

ALL WELDING AND FABRICATION SHALL BE PERFORMED PRIOR TO GALVANIZING.

GRIND ALL EDGES OF PLATES AND SHAPES TO MINIMUM 3mm RADIUS PRIOR TO GALVANIZING.

ALL POSTS SHALL BE SET NORMAL TO GRADE.

FOR RADII LESS THAN 290 METERS, HSS RAIL TUBES SHALL BE SHOP BENT TO MATCH APPLICABLE CURVE. RADIUS GREATER THAN 290 METERS WILL UTILIZE STRAIGHT TUBES WHICH WILL FLEX UNDER THEIR OWN WEIGHT IN EXCESS OF REQUIRED CURVATURE.

HOLES IN RAIL TUBES FOR ATTACHMENT TO POSTS SHALL BE FIELD DRILLED. FIELD DRILLED HOLES SHALL BE COATED WITH AN APPROVED ZINC RICH PAINT PRIOR TO BOLT INSTALLATION.

RAIL TUBES WILL MEET THE DROP WEIGHT TEAR TEST REQUIREMENTS OF ASTM E436 IN ACCORDANCE WITH VAOT STANDARD SPECIFICAITON SUBSECTION 732.03

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE
ENGLISH DIMENSIONS ARE SHOWN IN [ ] FOR REFERENCE CONVENIENCE

PAYMENT LENGTH ITEM 900.640 = 75 meters

Vermont Agency of Transportation
RECEIVED
CK'D BY C.A.M OK'D BY M.R.U
Dec. 05, 2012
RESUBMIT APPROVED ✓
BY J. LACROIX DATE 12-31-2012

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

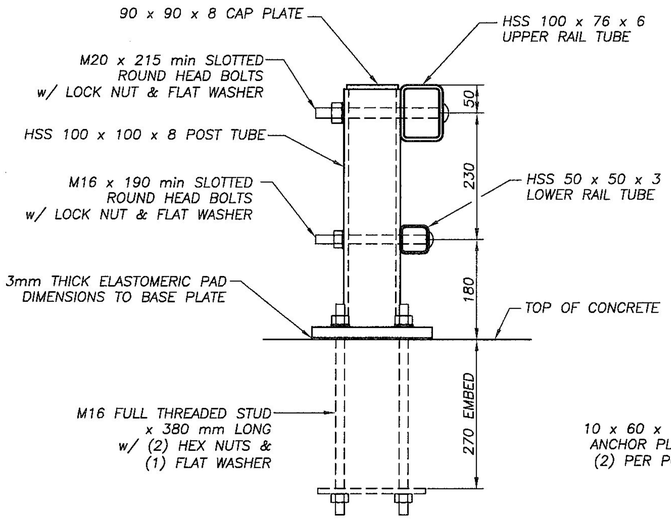
ITEM 900.640 SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED, STEEL TUBING/CONCRETE COMBINATION)
ROUTE No. TH 2 / BRIDGE #32
TOWN OR READSBORO, COUNTY OF BENNINGTON
BRF 0105 (3)

CERTIFIED FABRICATOR

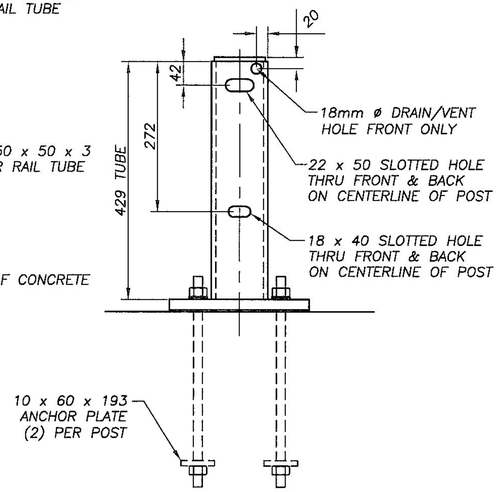
HSC JOB NO. 1905
SHEET NO. 1 of 2

GENERAL CONTRACTOR
SUB CONTRACTOR LAFAYETTE

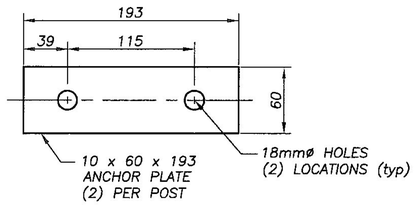
DRAWN	CHECKED	DATE	SCALE	SIZE
PAR		11-20-12	NONE	D



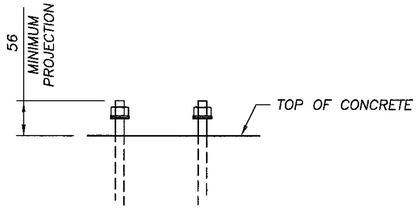
RAIL POST DETAIL
SIDE VIEW



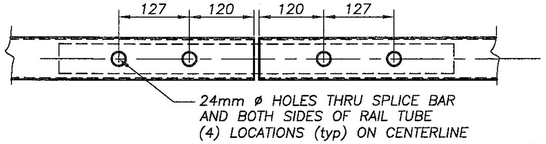
RAIL POST DETAIL
FRONT VIEW

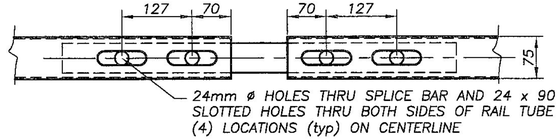


ANCHOR PLATE DETAIL

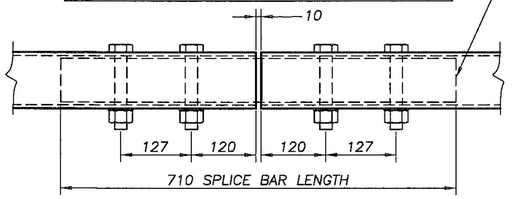


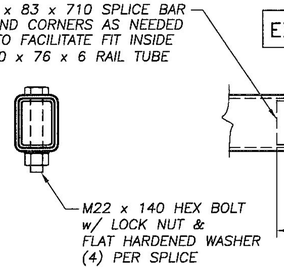
ANCHOR INSTALLATION



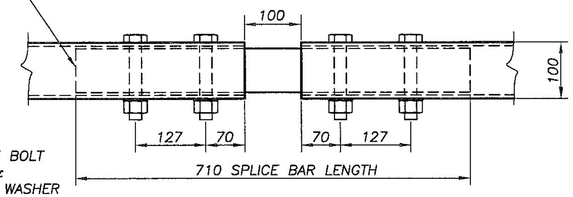


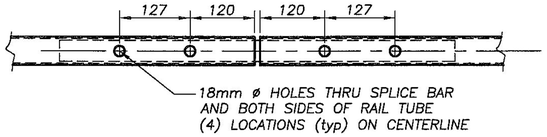
SPLICE JOINT DETAIL – TOP RAIL

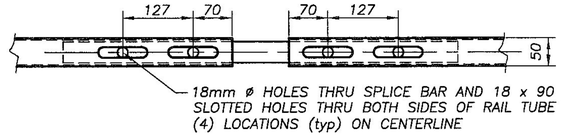




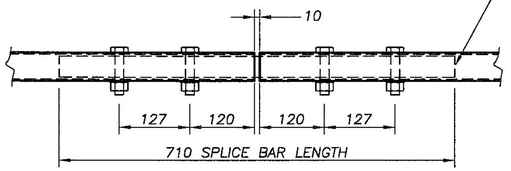
EXPANSION JOINT DETAIL – TOP RAIL

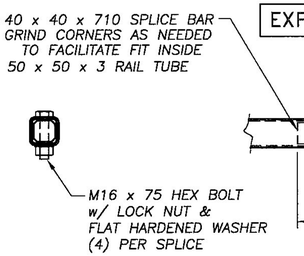




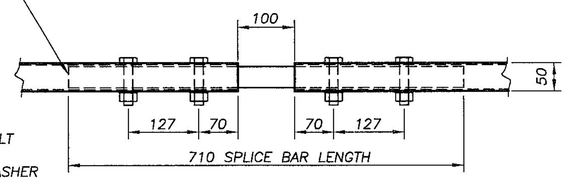


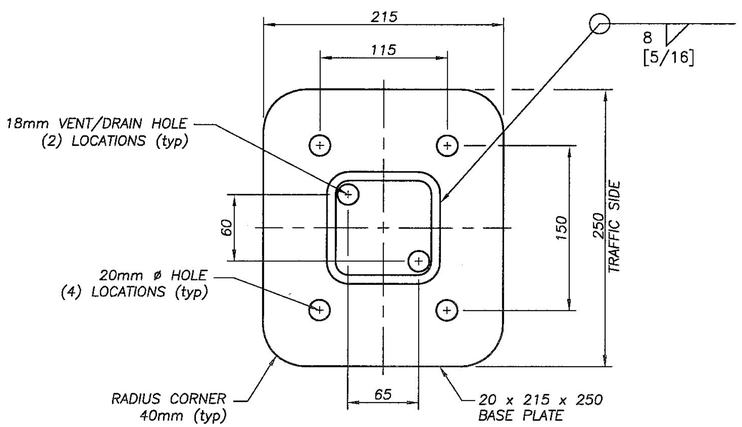
SPLICE JOINT DETAIL – BOTTOM RAIL



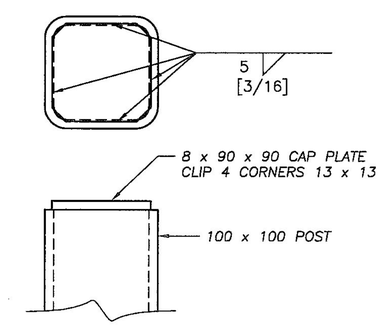


EXPANSION JOINT DETAIL – BOTTOM RAIL

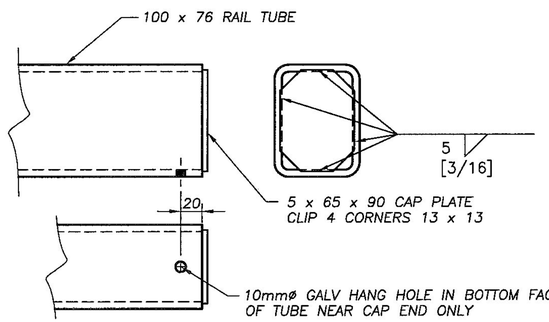




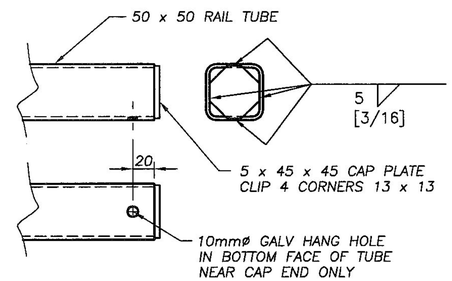
SECTION THRU POST
AT BASE PLATE



POST CAP DETAIL



UPPER RAIL END CAP DETAIL



LOWER RAIL END CAP DETAIL

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE
ENGLISH DIMENSIONS ARE SHOWN IN [ ] FOR REFERENCE CONVENIENCE

Vermont Agency of Transportation
RECEIVED
CK'D BY C.A.M OK'D BY M.R.U
Dec. 05, 2012
RESUBMIT APPROVED ✓
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HIGHWAY SAFETY CORP
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ROUTE No. TH 2 / BRIDGE #32
TOWN OR READSBORO, COUNTY OF BENNINGTON
BRF 0105 (3)

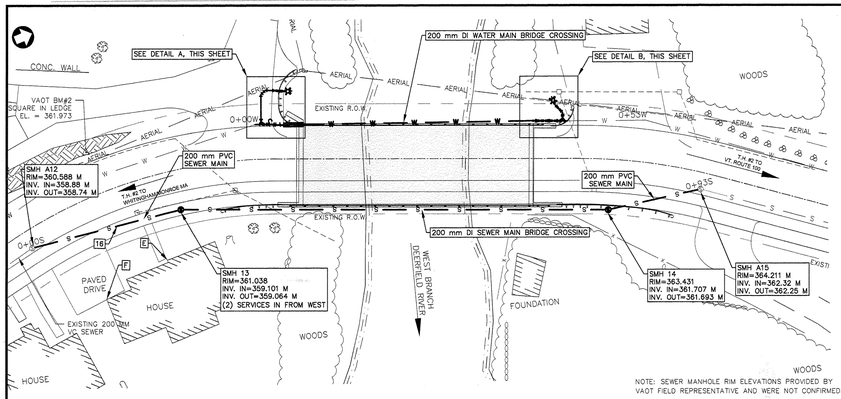
AISC CERTIFIED FABRICATOR

GENERAL CONTRACTOR
SUB CONTRACTOR LAFAYETTE

HSC JOB NO. 1905
SHEET NO. 2 of 2

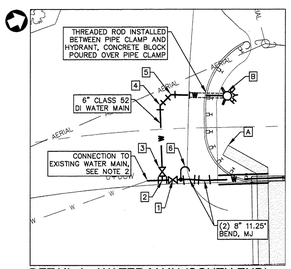
DRAWN	CHECKED	DATE	SCALE	SIZE
PAR		11-20-12	NONE	D

Readsboro BRF 0105(3)



NOTE: SEWER MANHOLE RIM ELEVATIONS PROVIDED BY VAOT FIELD REPRESENTATIVE AND WERE NOT CONFIRMED.

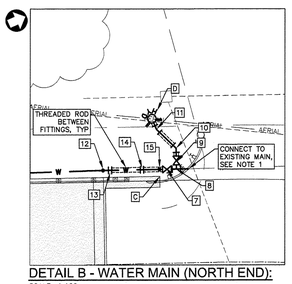
GRAPHIC SCALE
(IN METERS)
0 5 10 15 20 25



DETAIL A - WATER MAIN (SOUTH END):

SCALE: 1:100

NOTES:
1. 4" THICK RIGID BOARD INSULATION INSTALLED OVER 6" WATER MAIN BETWEEN ITEM 3 (6" GATE VALVE) AND ITEM B (HYDRANT)
2. CONNECTION TO EXISTING MAIN SHOWN IN APPROXIMATE LOCATION. CONNECTION WAS NOT FIELD OBSERVED.



DETAIL B - WATER MAIN (NORTH END):

SCALE: 1:100

NOTES:
1. CONNECTION TO EXISTING MAIN SHOWN IN APPROXIMATELY LOCATION. CONNECTION WAS NOT FIELD OBSERVED.

GENERAL NOTES:

1. EXISTING DRAWINGS PROVIDED BY VTRANS. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE BASED ON INFORMATION PROVIDED BY THE TOWN OF READSBORO. THIS IS NOT A BOUNDARY SURVEY.
2. EXPLORATORY EXCAVATION IS REQUIRED TO LOCATE UNDERGROUND UTILITIES. CONTRACTOR SHALL USE EXTREME CAUTION TO PREVENT DAMAGE TO EXISTING UTILITIES. CONTRACTOR SHALL COORDINATE WITH DIG SAFE (1-888-DIG SAFE) A MINIMUM OF 72 HOURS PRIOR TO EXCAVATION.
3. LOCATION OF PROPOSED WATER MAIN IS INTENDED NOT TO DISTURB ROOT SYSTEMS OF EXISTING TREES OR SHRUBS. CONTRACTOR SHALL EXERCISE DUE CARE TO PREVENT DAMAGE THERETO. ALL DISTURBED AREAS SHALL BE RESTORED TO PRECONSTRUCTION CONDITIONS.
4. ALL WORK IS TO BE DONE SHALL BE IN PUBLIC RIGHT-OF-WAY OR EASEMENT AREAS. REFER TO R.O.W. AND EASEMENT LIMITS ON SEPARATE VAOT SHEETS.
5. LISTING OF ADAPTERS, FITTINGS, NIPPLES, ETC. IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. ADDITIONAL MATERIAL MAY BE REQUIRED. SOLID SLEEVE COUPLINGS WILL BE REQUIRED FOR CONNECTION TO EXISTING MAINS.
6. MINIMUM VERTICAL CLEARANCE BETWEEN NEW WATER MAINS AND ALL EXISTING UTILITIES, EXCEPT SEWERS AND STORM DRAINS TO BE 150 mm AT CROSSING LOCATIONS.
7. ALL BURIED FITTINGS MUST BE BLOCKED. REFER TO THRUST BLOCK DETAILS, AND TRENCH DETAIL SHOWN ON DRAWING C4.
8. MECHANICAL JOINT RESTRAINTS SHALL BE USED WHERE VALVES WILL BE SUBJECTED TO SERVICE PRESSURES ON ONE SIDE BEFORE BEING FULLY INCORPORATED INTO THE DISTRIBUTION SYSTEM.
9. WATER MAINS TO HAVE 1.675 METERS MINIMUM COVER UNLESS OTHERWISE STATED OR SHOWN ON THE PROFILES. WHEN 1.675 METERS OF COVER CANNOT BE MAINTAINED 100 mm RIGID BOARD INSULATION SHALL BE USED. DEPTH OF COVER SHALL NOT BE LESS THAN 1.200 METERS EVEN WITH INSULATION. SEE MATERIAL SPECIFICATION SECTION 735.01.
10. ALL MECHANICAL JOINT FITTINGS AND VALVES SHALL INCORPORATE A WEDGE-STYLE RETAINER GLAND INSTEAD OF THE COMMON FOLLOWER GLAND, AT THE CONTRACTOR'S EXPENSE.
11. ALL EXISTING UNDERGROUND UTILITIES WERE LOCATED USING THE BEST AVAILABLE INFORMATION. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL UTILITIES WHETHER OR NOT THEY ARE SHOWN ON THE PLANS. ALL REPAIRS TO DAMAGED UTILITIES SHALL BE MADE BY THE CONTRACTOR USING MATERIALS APPROVED BY THE ENGINEER PRIOR TO INSTALLATION, AT THE CONTRACTORS EXPENSE.
12. CONTRACTOR IS RESPONSIBLE FOR FLUSHING, PRESSURE TESTING AND DISINFECTING ALL NEW WATER MAIN. CHLORINE INJECTION POINTS SHALL BE INSTALLED WHERE REQUIRED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION AND REMOVED UPON COMPLETION OF TESTING. CONTRACTOR IS RESPONSIBLE FOR TESTING ALL SEWER MANHOLES AND SEWER MAIN ACCORDING TO THE SPECIFICATIONS.
13. CONTRACTOR SHALL VERIFY LOCATION OF ALL OVERHEAD AND UNDERGROUND ELECTRIC, CABLE AND TELEPHONE LINES AND TAKE NECESSARY PRECAUTIONS IN STRICT ACCORDANCE WITH OSHA STANDARDS DURING CONSTRUCTION. CONTRACTOR SHALL CONTACT THE LOCAL POWER UTILITY AND TELEPHONE UTILITY REGARDING ANY NECESSARY SUPPORT OF ANY UTILITY POLES DURING CONSTRUCTION. LOCAL ELECTRIC UTILITY IS CVPS. LOCAL PHONE UTILITY IS FAIRPOINT.
14. TEMPORARY WATER AND SEWER ARE REQUIRED FOR THIS PROJECT. TEMPORARY SEWER SHALL BE PROVIDED USING A TEMPORARY GRAVITY SYSTEM OR BY MEANS OF BYPASS PUMPING. ANY ABOVE GROUND PIPING SHALL BE SECURED TO THE TEMPORARY BRIDGE OR OTHER RIGID STRUCTURES AT A SPACING OF 3.05 M MINIMUM. THE CONTRACTOR SHALL SUBMIT A TEMPORARY UTILITIES PLAN TO THE ENGINEER PRIOR TO THE INSTALLATION. TEMPORARY UTILITIES SHALL NOT AFFECT TRAFFIC. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
15. GENERALLY HEAVY OR DARK LINE WORK OR NOTES REFER TO PROPOSED IMPROVEMENTS. LIGHT LINE WORK OR SCREENED GENERALLY DENOTES EXISTING FEATURES.
16. TECHNICAL SPECIFICATIONS PROVIDE NECESSARY INFORMATION AND ARE PART OF THE CONTRACT DOCUMENTS FOR THIS PROJECT.
17. CONTRACTOR SHALL CONNECT WATER SERVICES TO IDENTIFIED WATER USERS UPON COMPLETION OF INSTALLATION OF WATER MAIN AND RECEIPT OF SUCCESSFUL BACTERIOLOGICAL TESTS.
18. REFER TO ELECTRICAL SHEETS FOR HEAT TRACE REQUIREMENTS.
19. ALL EXISTING SEWER MAIN AND MANHOLES BETWEEN SMH A12 AND SMH A15 SHALL BE ABANDONED AND REMOVED AS PART OF THIS PROJECT.
20. ALL EXISTING WATER MAIN AND FITTINGS LOCATED BETWEEN THE TWO PROPOSED INTERCONNECTIONS ON EITHER SIDE OF THE PROPOSED BRIDGE SHALL BE ABANDONED AND REMOVED AS PART OF THIS PROJECT.
21. CONTRACTOR SHALL REBUILD EXISTING SEWER MANHOLE INVERTS AS NECESSARY TO MAINTAIN PROPER FLOW BETWEEN THE EXISTING STRUCTURE AND NEW SEWER MAINS.
22. CONTRACTOR IS RESPONSIBLE FOR CONNECTING ALL EXISTING WATER AND SEWER CUSTOMERS TO THE PROPOSED WATER AND SEWER MAINS. CONTRACTORS IS RESPONSIBLE FOR COORDINATING AND RESOLVING CONFLICTS BETWEEN ANY NEW OR EXISTING UTILITY.
23. ALL PRODUCTS USED THAT ARE TO COME IN CONTACT WITH POTABLE WATER SHALL COMPLY WITH ALL STATE AND FEDERAL LEAD LAWS AND REQUIREMENTS.

TIES *(FEET)*

NUMBER	ITEM DESCRIPTION	LETTER	TIE	LETTER	TIE
1	8" GATE VALVE WITH VALVE BOX, MJ	A	12.0	B	17.6
2	8"X6" DI ANCHOR TEE, MJ	–	–	–	–
3	6" GATE VALVE WITH VALVE BOX	A	12.8	B	18.0
4	8" 45° DI BEND, MJ	–	–	–	–
5	6" 45° DI BEND, MJ	–	–	–	–
6	3/4" MANUAL AIR RELEASE	A	9.2	B	13.7
7	8" GATE VALVE WITH VALVE BOX, MJ	C	3.3	D	9.1
8	8"X6" DI ANCHOR TEE, MJ	–	–	–	–
9	6" GATE VALVE WITH VALVE BOX, MJ	C	5.4	D	8.5
10	6" 45° DI BEND, MJ	–	–	–	–
11	6" 22.5° DI BEND, MJ	–	–	–	–
12	3/4" MANUAL AIR RELEASE	–	–	–	–
13	8" 45° DI BEND, VERT, MJ	–	–	–	–
14	8" 45° DI BEND, VERT, MJ	–	–	–	–
15	2" CORPORATION WITH SADDLE	–	–	–	–
16	8"X4" SEWER SERVICE WYE	E	27.7	F	33.7

LETTER TIE POINT

A	SW CORNER OF WINGWALL
B	HYDRANT
C	NW CORNER OF WINGWALL
D	HYDRANT
E	BUILDING CORNER
F	BUILDING CORNER

DISTANCES *(FEET)*

FROM	TO	DISTANCE
B	5	10.0
A	B	8.9
3	4	11.5
4	5	3.0
9	10	2.5
10	11	4.9
11	D	2.1
7	14	6.0
7	15	APP. 2.0

ABBREVIATIONS

CI	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
CU	COPPER PIPE
DI	DUCTILE IRON PIPE
EL	ELEVATION
ER	EROSION
HYD	FIRE HYDRANT
INV	INVERT
IP	IRON PIPE
MJ	MECHANICAL JOINT
P	ELECTRICAL POWER
ROW	RIGHT OF WAY
STA	STATION
TBM	TEMPORARY BENCH MARK
TYP	TYPICAL
W	WATER MAIN
WSO	WATER SHUT OFF
WV	WATER VALVE

LEGEND

EXISTING:
- EDGE OF RIVER
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- BUILDING
- W — WATER MAIN
- S — SEWER MAIN
- AERIAL — TEMP OVERHEAD WIRE
- TREE LINE
- STONE WALL
- FENCE
- SWALE
- UTILITY POLE
- GUY WIRE
- CATCH BASIN
- MAIL BOX
- SEWER MANHOLE
- FIRE HYDRANT
- IP — IRON PIN FOUND
- BENCH MARK
- ROAD SIGN
- DECIDUOUS TREE
- EVERGREEN TREE

PROPOSED:
- WATER MAIN
- SEWER MAIN
- UTILITY SLEEVE
- GATE VALVE
- MANUAL AIR RELEASE
- SEWER MANHOLE

LOCAL VALVE OPERATION

1. EXISTING AND PROPOSED MAIN LINE GATE VALVES SHALL OPEN LEFT OR COUNTER CLOCKWISE. OPERATION OF GATE VALVES WILL BE PERFORMED BY THE OWNER'S STAFF ONLY.
2. ALL INTERCONNECTIONS TO THE EXISTING SYSTEM CAN ONLY BE MADE WITH THE WRITTEN PERMISSION OF THE TOWN OF READSBORO.

NOTE:

-READSBORO, VERMONT - BRIDGE 32 - WATER AND SEWER UTILITIES

1. AS RESIDENT PROJECT REPRESENTATIVE FOR THE ABOVE REFERENCED PROJECT I HAVE REVIEWED THE RECORD DRAWINGS. MY REVIEW INCLUDED COMPARING THE INFORMATION ON THESE RECORD DRAWINGS TO THE INFORMATION THAT WAS PLACED IN THE FIELD BOOKS, AND ON DAILY REPORTS. AS SUCH, I ATTEST THAT THE INFORMATION SHOWN ON THESE RECORD DRAWING PLANS REPRESENT WHAT WAS CONSTRUCTED AS SO FAR AS IT WAS OBSERVED.

SIGNED,

CHRISTINE M. LEGGE, RPR– DUFRESNE GROUP

RECORD DRAWINGS

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Dufresne Group is owned by Dufresne & Associates, PC

STATE OF VERMONT
CHRISTINE P. LEGGE
NO. 50793
REGISTERED PROFESSIONAL ENGINEER
12-16-13

REVISIONS	DATE	BY
COMMENTS		
REVISED FOR RECORD	12.16.13	TPK

TH 2, FAS 105
BRIDGE #32

READSBORO, VERMONT

WATER AND SEWER MAIN LEGEND, ABBREVIATIONS, GENERAL NOTES, AND PLAN

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	CML
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

C1

SHEET 1 OF 4

THE ENGINEER SHALL NOT BE HELD RESPONSIBLE FOR ANY ALTERATIONS OF THESE PLANS BY ANYONE OTHER THAN THE ENGINEER OR HIS AUTHORIZED AGENTS, AND ANY SUCH ALTERATIONS SHALL BE MADE AT THE SOLE RISK OF ANYONE SO ACTING.

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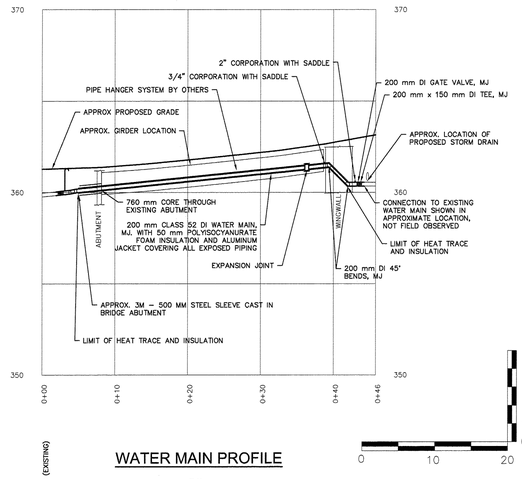
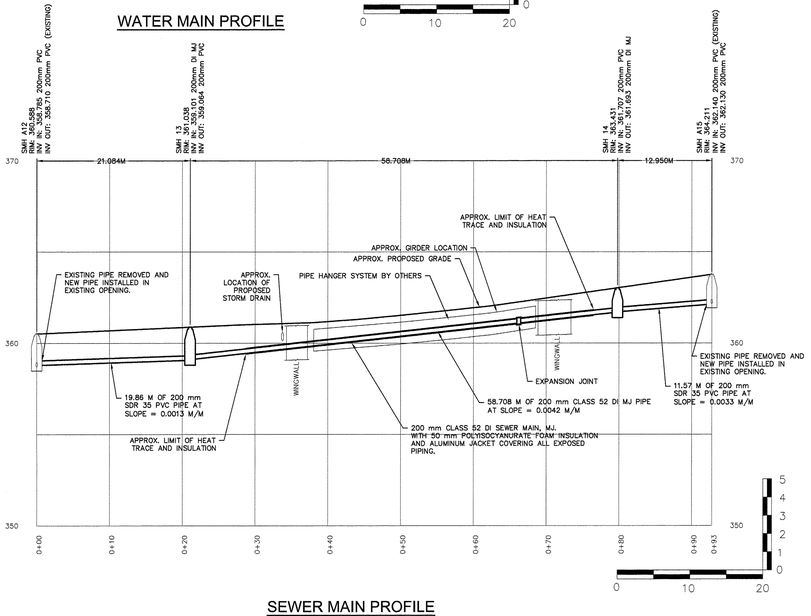


WATER MAIN PROFILE



SEWER MAIN PROFILE

NOTES:

1. THE DIMENSIONS AND STATIONING SHOWN ON THIS DRAWING FOR BRIDGE SUPPORTS ARE APPROXIMATE AND MAY BE ALTERED ON THE BASIS OF APPROVED BRIDGE FABRICATION DRAWINGS. THE CONTRACTOR SHALL NOT FABRICATE THE BRIDGE CROSSING PIPING UNTIL APPROVED BRIDGE FABRICATION DRAWINGS ARE AVAILABLE.
2. THE FABRICATED PIPE SUPPORTS ATTACHED TO THE BRIDGE SHALL BE HOT DIPPED GALVANIZED AFTER COMPLETE FABRICATION. ALL HIGH STRENGTH BOLTS, NUTS AND WASHERS AS WELL AS THE PIPE SUPPORT AND SUPPORTING ELEMENTS SHALL BE ELECTROGALVANIZED UNLESS OTHERWISE NOTED.
3. THE PIPE LOCATED BETWEEN THE START OF EACH APPROACH SLAB SHALL BE INSULATED AND HAVE HEAT TRACING INSTALLED AFTER PLACEMENT.
4. REFER TO SHEET C3 FOR PIPE SUPPORT DETAILS. ALL BRIDGE CROSSING PIPE SHALL BE INSTALLED WITHOUT DEFLECTION OF JOINTS. CONTRACTOR SHALL INSTALL LATERAL AND VERTICAL RESTRAINT IF ANY PIPE JOINTS ARE DEFLECTED, AT THE CONTRACTOR'S EXPENSE. WORK IS SUBJECT TO THE WRITTEN PRE–APPROVAL OF AOT.
5. FLANGED EXPANSION JOINTS SHALL BE FURNISHED AND INSTALLED ADJACENT TO BRIDGE ABUTMENT #2 AS SHOWN ON THE DRAWING. THE EXPANSION JOINT SHALL HAVE A MINIMUM OF 100 mm (4 INCHES) OF AXIAL MOVEMENT.
6. PIPE FOR BRIDGE CROSSING SHALL BE CLASS 52, DUCTILE IRON WITH MEGALUG RETAINER GLANDS. EACH SECTION OF PIPE SHALL BE SUPPORTED BY AT LEAST TWO PIPE SUPPORTS. SUPPORTS SHALL BE INSTALLED WITHOUT CONFLICT BETWEEN PIPE JOINT AND SUPPORTS
7. ALL GATE VALVES MUST CONFORM TO THE TOWN OF READSBORO STANDARD AND OPEN LEFT (COUNTER CLOCKWISE).
8. PIPE SHALL BE SUPPORTED AT TWO POINTS ALONG EACH LENGTH OF PIPE. PIPE SHALL BE INSTALLED SUCH THAT THE PIPE SUPPORT IS 0.3 METERS FROM A PIPE JOINT, ON THE BELL SIDE OF THE JOINT, AND ANOTHER SUPPORT AT OR NEAR THE CENTER OF THE PIPE.
9. RIM ELEVATIONS SHOWN ON THIS PLAN MAY REQUIRE ADJUSTMENT BY THE CONTRACTOR AT NO ADDITIONAL COST TO MEET FINISH GRADE OF THE PROPOSED ROADWAY.
10. 900.645 SPECIAL PROVISION (WATER MAIN ON BRIDGE – 200MM) SHALL COVER ALL WORK BETWEEN THE ENDS OF THE STEEL SLEEVE, INCLUDING HEAT TRACING AND RELATED ELECTRICAL CONNECTIONS. ALL WORK OUTSIDE OF THESE LIMITS WILL BE PAID FOR UNDER THE APPROPRIATE INDIVIDUAL PAY ITEMS.
11. 900.645 SPECIAL PROVISION (SEWER MAIN ON BRIDGE – 200MM) SHALL COVER ALL WORK BETWEEN THE ENDS OF THE STEEL SLEEVE, INCLUDING HEAT TRACING AND RELATED ELECTRICAL CONNECTIONS. ALL WORK OUTSIDE OF THESE LIMITS WILL BE PAID FOR UNDER THE APPROPRIATE INDIVIDUAL PAY ITEMS.

NOTE:

-READSBORO, VERMONT - BRIDGE 32 - WATER AND SEWER UTILITIES

1. AS RESIDENT PROJECT REPRESENTATIVE FOR THE ABOVE REFERENCED PROJECT I HAVE REVIEWED THE RECORD DRAWINGS. MY REVIEW INCLUDED COMPARING THE INFORMATION ON THESE RECORD DRAWINGS TO THE INFORMATION THAT WAS PLACED IN THE FIELD BOOKS, AND ON DAILY REPORTS. AS SUCH, I ATTEST THAT THE INFORMATION SHOWN ON THESE RECORD DRAWING PLANS REPRESENT WHAT WAS CONSTRUCTED AS SO FAR AS IT WAS OBSERVED.

SIGNED,

CHRISTINE M. LEGGE, RPR– DUFRESNE GROUP

RECORD DRAWINGS

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Dufresne Group is owned by Dufresne & Associates, PC

STATE OF VERMONT
CHRISTINE M. LEGGE
NO. 50793
REGISTERED PROFESSIONAL ENGINEER
12-16-13

REVISIONS			
DATE	COMMENTS	BY	
12.16.13	REVISED FOR RECORD	TPK	

THE DRAWINGS SHALL NOT BE ACCEPTED AS FINAL UNTIL THEY BEAR THE AGENCY APPROVAL AND JURISDICTIONAL SIGNATURE SEAL, AS WELL AS THE AOT APPROVAL SIGNATURE.

TH 2, FAS 105
BRIDGE #32

WATER AND SEWER MAIN PROFILES

READSBORO, VERMONT

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	NRJ
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

C2

SHEET 2 OF 4

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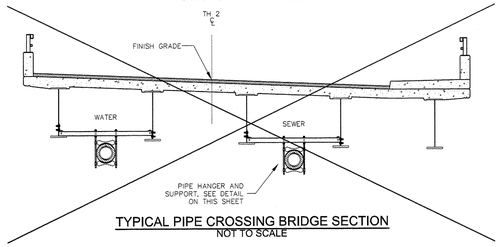
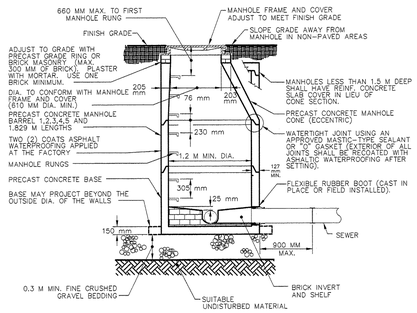
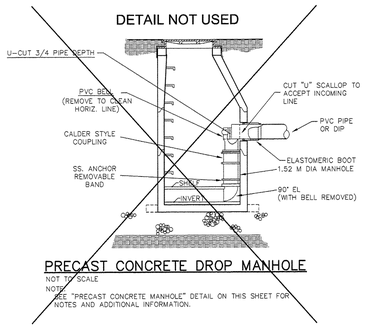


TYPICAL PIPE CROSSING BRIDGE SECTION
NOT TO SCALE



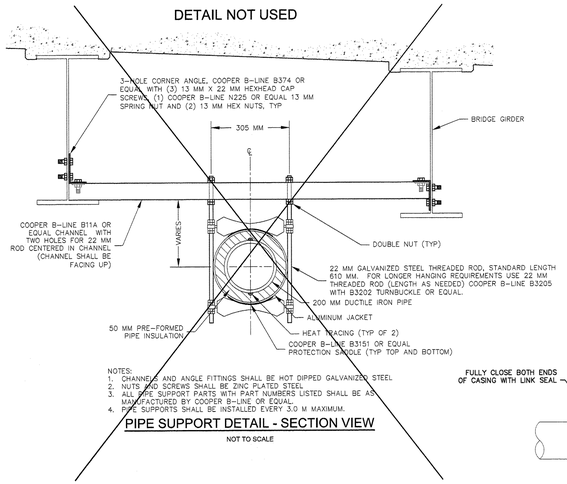
PRECAST CONCRETE MANHOLE
NOT TO SCALE

DETAIL NOT USED



PRECAST CONCRETE DROP MANHOLE
NOT TO SCALE
NOTE:
SEE "PRECAST CONCRETE MANHOLE" DETAIL ON THIS SHEET FOR NOTES AND ADDITIONAL INFORMATION.

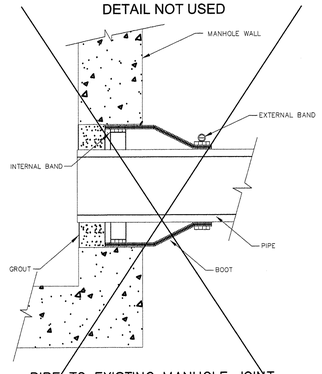
DETAIL NOT USED



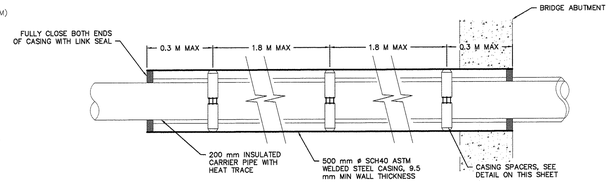
NOTES:
1. CHANNELS AND ANGLE FITTINGS SHALL BE HOT DIPPED GALVANIZED STEEL
2. NUTS AND SCREWS SHALL BE ZINC PLATED STEEL
3. ALL PIPE SUPPORT PARTS WITH PART NUMBERS LISTED SHALL BE AS MANUFACTURED BY COOPER B-LINE OR EQUAL.
4. PIPE SUPPORTS SHALL BE INSTALLED EVERY 3.0 M MAXIMUM.

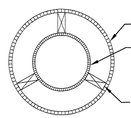
PIPE SUPPORT DETAIL - SECTION VIEW
NOT TO SCALE

DETAIL NOT USED



PIPE TO EXISTING MANHOLE JOINT
NOT TO SCALE
NOTE: PIPE CORE SIZE SHALL BE BASED ON MANUFACTURER'S RECOMMENDATIONS.





WATER/SEWER MAIN

NOTES:
1. EARTH BACKFILL TO BE MADE IN 150 MM LIFTS AND COMPACTED TO NOT LESS THAN 95% MAX DRY DENSITY.
2. SEE SHEETS C1 AND C2 FOR DETERMINING SLEEVE LENGTH.

CASING AND SPACER DETAIL
NOT TO SCALE

NOTE:

-READSBORO, VERMONT - BRIDGE 32 - WATER AND SEWER UTILITIES

1. AS RESIDENT PROJECT REPRESENTATIVE FOR THE ABOVE REFERENCED PROJECT I HAVE REVIEWED THE RECORD DRAWINGS. MY REVIEW INCLUDED COMPARING THE INFORMATION ON THESE RECORD DRAWINGS TO THE INFORMATION THAT WAS PLACED IN THE FIELD BOOKS, AND ON DAILY REPORTS. AS SUCH, I ATTEST THAT THE INFORMATION SHOWN ON THESE RECORD DRAWING PLANS REPRESENT WHAT WAS CONSTRUCTED AS SO FAR AS IT WAS OBSERVED.

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CHRISTINE M. LEGGE, RPR– DUFRESNE GROUP

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TIMOTHY P. KNAPP
NO. 50793
REGISTERED
PROFESSIONAL ENGINEER
7-10-13

REVISIONS			
DATE	COMMENTS	BY	
12.16.13	REVISED FOR RECORD	TPK	

TH 2 FAS 105
BRIDGE #32

GENERAL DETAILS

READSBORO, VERMONT

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	NRJ
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

C3

SHEET 3 OF 4

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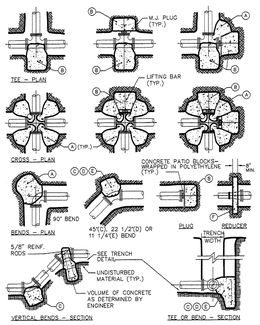
Readsboro BRF 0105(3)



THRUST BLOCK SCHEDULE
SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL

TEST PRESSURE 200 PSI	REACTION TYPE	PIPE SIZE 4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	Ⓐ	5.12	10.58	18.19	27.37	38.71	52.00	67.26	84.47	103.64	147.87
	Ⓑ	3.62	7.48	12.87	19.35	27.37	36.77	47.56	59.73	73.29	104.56
	Ⓒ	2.77	5.72	9.85	14.81	20.95	28.14	36.40	45.72	56.09	80.03
	Ⓓ	1.41	2.92	5.02	7.55	10.68	14.35	18.56	23.31	28.60	40.80
	Ⓔ	0.71	1.47	2.52	3.79	5.37	7.21	9.32	11.71	14.37	20.50
	Ⓕ	–	3.66	9.25	15.73	23.75	29.29	40.08	46.86	53.93	77.19

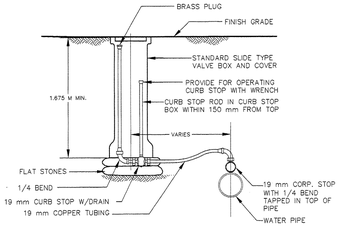
NOTES:
1. THRUST RESTRAINT IS REQUIRED FOR ALL TEES, BENDS, REDUCERS, CAPS, PLUGS, OR CROSSES.
2. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
3. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
4. PLACE CONCRETE PATIO BLOCKS IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCK.
5. PRE-FORMED AND PRE-POURED THRUST BLOCKS ARE NOT ACCEPTABLE.
6. THE USE OF A MECHANICAL JOINT RESTRAINT SYSTEM DOES NOT REDUCE THE REQUIREMENTS SHOWN IN THIS DETAIL.
7. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE RESTRAINT.
8. IF THREADED ROD IS USED, IT SHALL BE ANSI A242 FY50 PIPE RESTRAINT NUTS TO MATCH AWWA C111.
9. THRUST BLOCK SIZES SHOWN ARE BASED ON THE SMALLEST AVAILABLE RUN SIZE FOR A GIVEN PIPE SIZE.
10. INSTALL LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.
11. TEST PRESSURE TO BE 200 PSI MIN. AT LOW END OF THE TEST SECTION. SQUARE FEET OF CONCRETE THRUST BLOCKING FOR OTHER TEST PRESSURES IS DIRECTLY PROPORTIONAL TO THE ABOVE TABLE. FOR INSTANCE, AT 300 PSI TEST PRESSURE, THE NUMBERS SHOWN IN THE ABOVE TABLE ARE MULTIPLIED BY 1.5. SEE BELOW FOR EXAMPLE CALCULATION.
12. THRUST BLOCK AREA IS BASED ON A SOIL BEARING STRENGTH OF 1500 LBS/SF AND A SAFETY FACTOR OF 1.5. MULTIPLY THE BEARING AREA FROM ABOVE (WITH CONSIDERATION OF TEST PRESSURE) AND MULTIPLY BY THE FOLLOWING FACTORS TO DETERMINE BEARING AREA REQUIRED FOR VARIOUS SOIL CONDITIONS:

SOIL TYPE	BEARING CAPACITY (LB/SF)	FACTOR
SOFT CLAY	1,000	1.50
SILT	1,500	1.00
SANDY SILT	3,000	0.50
SAND	4,000	0.38
SANDY GRAVEL	5,000	0.30
SANDY CLAY	6,000	0.25
GRAVEL W/ ROCK	7,000	0.21
HARD CLAY	9,000	0.17

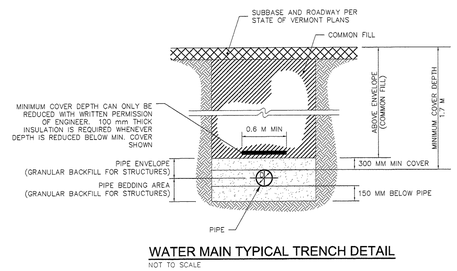
EXAMPLE: AN 8-INCH 90° BEND IN SANDY GRAVEL SOILS TEST PRESSURE OF 200 PSI:

AREA REQUIRED = 18.19SF x 1 x 0.30 = 5.46SF

THRUST BLOCK DETAILS AND NOTES
NOT TO SCALE

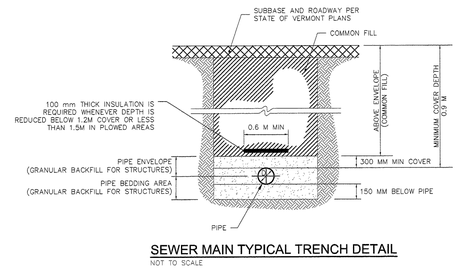


TYPICAL INSTALLATION-TRAVEL WAY FOR MANUAL AIR RELEASE OR CHLORINATION INJECTION
NOT TO SCALE



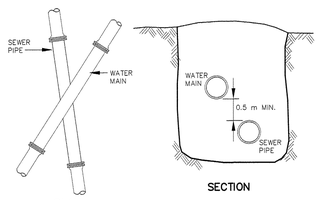
WATER MAIN TYPICAL TRENCH DETAIL
NOT TO SCALE

NOTES:
1. REFER TO SPECIFICATIONS FOR PAVEMENT THICKNESS REQUIREMENTS.
2. REFER TO THE SPECIFICATIONS FOR COMPACTION, PAY LIMITS, AND SPECIALTY MATERIALS FOR BEDDING, ENVELOPE, AND GRAVELS.
3. IF THE EXCAVATED MATERIAL BECOMES TOO WET DUE TO WEATHER CONDITIONS OR DUE TO IMPROPER HANDLING PROCEDURES AND CANNOT BE REUSED FOR BACKFILL, THE MATERIAL SHALL BE SUFFICIENTLY DRIED OR MIXED WITH DRY MATERIAL TO OBTAIN PROPER MOISTURE CONTENT AT NO CHARGE TO THE OWNER.
4. BACKFILL IN ACCORDANCE WITH VERMONT AOT STANDARD SPECIFICATION SUBSECTION 628.14



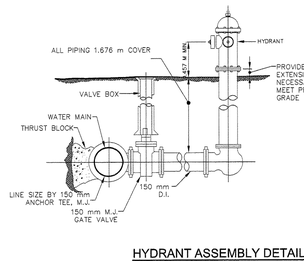
SEWER MAIN TYPICAL TRENCH DETAIL
NOT TO SCALE

NOTES:
1. REFER TO SPECIFICATIONS FOR PAVEMENT THICKNESS REQUIREMENTS.
2. REFER TO THE SPECIFICATIONS FOR COMPACTION, PAY LIMITS, AND SPECIALTY MATERIALS FOR BEDDING, ENVELOPE, AND GRAVELS.
3. IF THE EXCAVATED MATERIAL BECOMES TOO WET DUE TO WEATHER CONDITIONS OR DUE TO IMPROPER HANDLING PROCEDURES AND CANNOT BE REUSED FOR BACKFILL, THE MATERIAL SHALL BE SUFFICIENTLY DRIED OR MIXED WITH DRY MATERIAL TO OBTAIN PROPER MOISTURE CONTENT AT NO CHARGE TO THE OWNER.
4. BACKFILL IN ACCORDANCE WITH VERMONT AOT STANDARD SPECIFICATION SUBSECTION 629.14



1. PARALLEL INSTALLATION: WATER MAINS SHALL BE LAID AT LEAST 3.05 M HORIZONTALLY FROM ANY EXISTING OR PROPOSED MANHOLE OR SANITARY SEWER. THIS DISTANCE CAN BE REDUCED TO 1.52 M FOR STORM SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
2. CROSSINGS: WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 0.5 M BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER. THIS SHALL BE THE CASE WHERE THE WATER MAIN IS EITHER ABOVE OR BELOW THE SEWER. AT CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR THE FIRST SEWER AS POSSIBLE. IF THE SEWER MAIN IS OVER THE WATER MAIN, THE FIRST SEWER PIPE JOINTS ON EACH SIDE OF THE WATER MAIN MUST BE CONCRETE ENCASED. SPECIAL STRUCTURAL SUPPORT FOR THE WATER AND SEWER PIPES MAY BE REQUIRED. WATER MAINS SHALL NOT PASS THROUGH SEWER MANHOLES OR BE SUBMERGED IN BASINS CONTAINING SEWAGE OR OTHER GROSSLY CONTAMINATED OR HAZARDOUS MATERIAL.
3. EXCEPTION: THE SECRETARY OF THE STATE MUST SPECIFICALLY APPROVE ANY VARIANCE FROM THESE REQUIREMENTS WHEN IT IS IMPOSSIBLE TO OBTAIN THE SPECIFIED SEPARATION DISTANCES.

STORM SEWER OR SANITARY SEWER AND WATER MAIN CROSSING
NOT TO SCALE



HYDRANT ASSEMBLY DETAIL
NOT TO SCALE

NOTES:
1. IN AREAS OF HIGH GROUND WATER OR WHEN HYDRANT IS INSTALLED WITHIN 3.05 M OF A SEWER UTILITY, THE HYDRANT SHALL NOT BE EQUIPPED WITH DRAINING CAPABILITIES.

NOTE:

-READSBORO, VERMONT - BRIDGE 32 - WATER AND SEWER UTILITIES

1. AS RESIDENT PROJECT REPRESENTATIVE FOR THE ABOVE REFERENCED PROJECT I HAVE REVIEWED THE RECORD DRAWINGS. MY REVIEW INCLUDED COMPARING THE INFORMATION ON THESE RECORD DRAWINGS TO THE INFORMATION THAT WAS PLACED IN THE FIELD BOOKS, AND ON DAILY REPORTS. AS SUCH, I ATTEST THAT THE INFORMATION SHOWN ON THESE RECORD DRAWING PLANS REPRESENT WHAT WAS CONSTRUCTED AS SO FAR AS IT WAS OBSERVED.

SIGNED,

CHRISTINE M. LEGGE, RPR– DUFRESNE GROUP

RECORD DRAWINGS

DUFRESNE GROUP
CONSULTING ENGINEERS
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Windsor, Vermont 05089
E-mail: dufresne@vermontel.net
Web: www.dufresnegroup.com
Windsor, VT • Tel: (802) 674-2304 Fax: (802) 674-2913
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St. Johnsbury, VT • Tel: (802) 748-8405 Fax: (802) 748-8412
Dufresne Group is owned by Dufresne & Associates, PC

STATE OF VERMONT
CHRISTINE P. KNAPP
NO. 50793
REGISTERED
PROFESSIONAL ENGINEER
2-10-13

REVISIONS	DATE	COMMENTS	BY
	12.15.13	REVISED FOR RECORD	TPK

TH 2, FAS 105
BRIDGE #32

GENERAL DETAILS

READSBORO, VERMONT

Project #	416006
Project Mgr.	NRJ
Design by	TPK
Drawn by	TPK
Reviewed by	NRJ
Approved by	NRJ
Date	MAY 2011
Scale	AS SHOWN

C4

SHEET 4 OF 4

FILE: P:\2400 Files\Readsboro - 07\Bridge 32\Sheets\#14606-CAD.dwg Dec 17, 2013 - 1:02pm

Readsboro BRF-0125(2)
New Sewer Line
Drainage Sheet #1

Total Trench Depth from Plan Sheet
8.95 + 7.85 + 12.45 + 27.85 + 5.64 + 11.29 = 74.85cm
Jm 1-28-14

Total Excavated Depth for Sewers
66.31 + 13.49 = 1.50 − 8.30 = 71.00cm
Jm 1-28-14

Total Structure Excavation for Plan Sheet
7.85 + 5.64 = 13.49cm Jm 1-28-14

Trench Earth Pipe
(16.54' + 4.22') / 2 × 6.45' × 1.25' = 8.95cy

Structure Excavation
Trench Earth SMH
12.5' × 2.5' × 5.4' × 1.25' = 7.85cy

Volume of SMH in Structure
(4.5' × 3.5' × 5.4') × 0.27 = 2.92cy

Trench Earth Pipe
(16.54' + 0') / 2 × 5.2' × 1.25' = 5.85cy

Trench Earth Pipe
(16.54' + 11.81') / 2 × 6.22' × 1.25' = 12.45cy

Trench Earth Pipe
16.54' × 5.4' × 1.25' = 9.73cy
0.95' × 15.1' × 1.25' = 17.93cy
27.66cy
Jm 1-28-14

Structure Excavation
Trench Earth SMH
(12.5' × 2.5' × 5.4') / 2 × 1.15' = 5.64cy

Volume of SMH in Structure
(4.5' × 3.5' × 5.4') / 2 × 0.27 = 1.29cy

Trench Earth Pipe
(16.54' + 11.81') / 2 × 5.65' × 1.25' = 11.29cy

Excavation this Side for Culvert and Channelok

Limit of Trench for Sewer

SMH #14

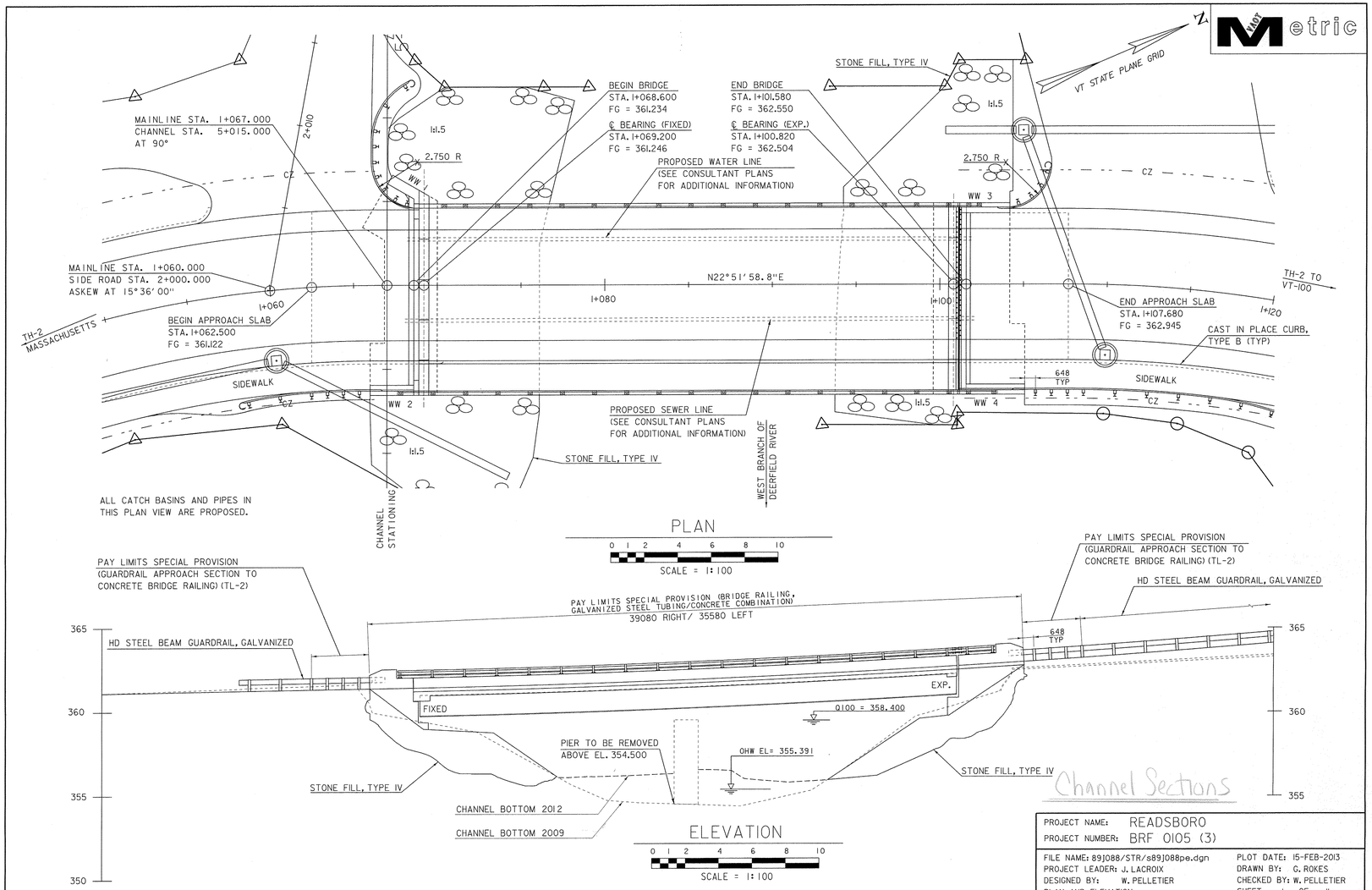
SMH #15

SMH #13

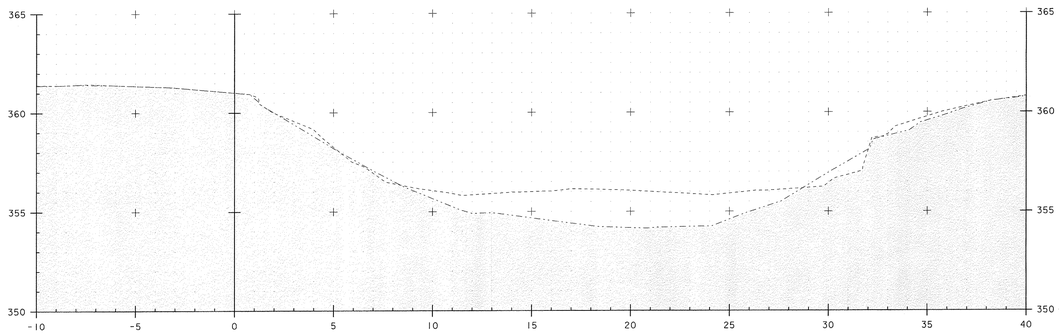
365
364
363
362
361
360
359

PLATE 3-1(1) CURB SECTION PULL LINE
STANDARD HIGHWAY
MONTH OF 19 __
CHIEF OF THE BUREAU

Spoke w/Pam Jim Lacroix 1/28/14 and SMH's and DI's were set as per Structure Excavation



PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105 (3)
FILE NAME: 89J088/STR/s89J088pe.dgn	PLOT DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: G. ROKES
DESIGNED BY: W. PELLETIER	CHECKED BY: W. PELLETIER
PLAN AND ELEVATION	SHEET I OF II



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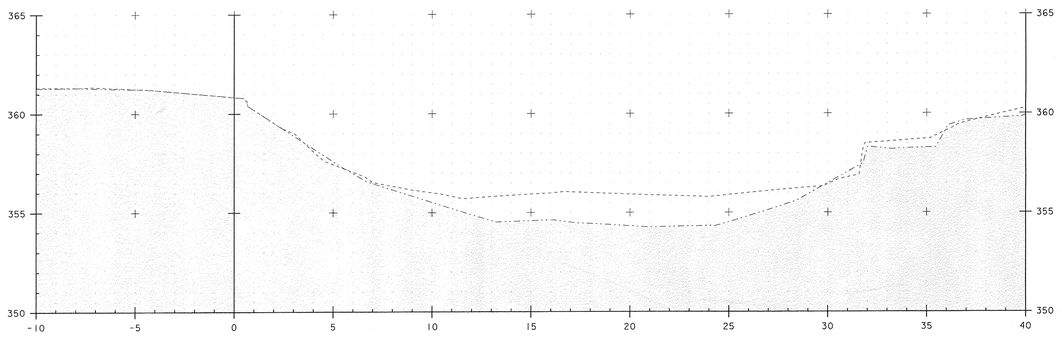


5+000.00

SURFACE LEGEND

OG 2012

OG 2009

STA. 5+000 TO STA. 5+002

PROJECT NAME: READSBORO

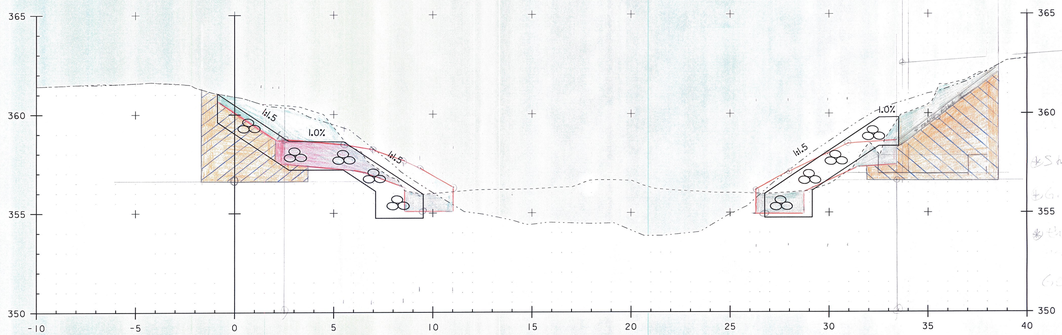
PROJECT NUMBER: BRF 0105(3) 300

FILE NAME: s891088channelCrossSections300.dgn PLOT DATE: 15-FEB-2013

PROJECT LEADER: J. LACROIX DRAWN BY: D. KARABEGOVIC

DESIGNED BY: ------ CHECKED BY: M. LONGSTREET

CH XS SHEET 1 SHEET 2 OF 11



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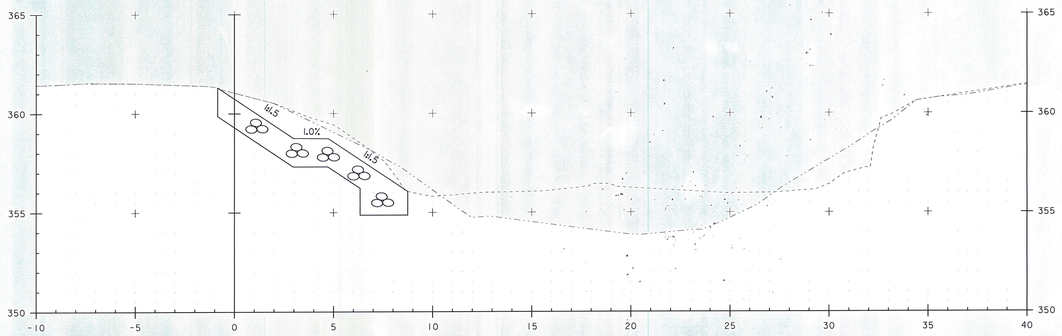

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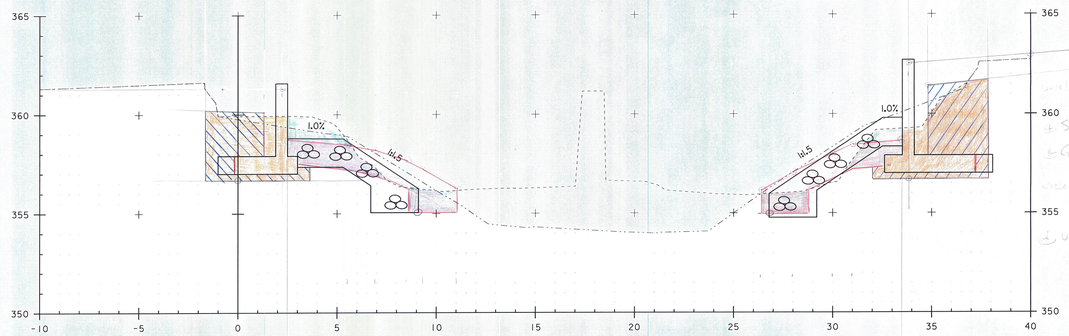
SURFACE LEGEND

OG 2012

OG 2009

STA. 5+005 TO STA. 5+008

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s89J088channelCrossSections300.dgn	DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: ------	CHECKED BY: M. LONGSTREET
CH XS SHEET 2	SHEET 3 OF 11



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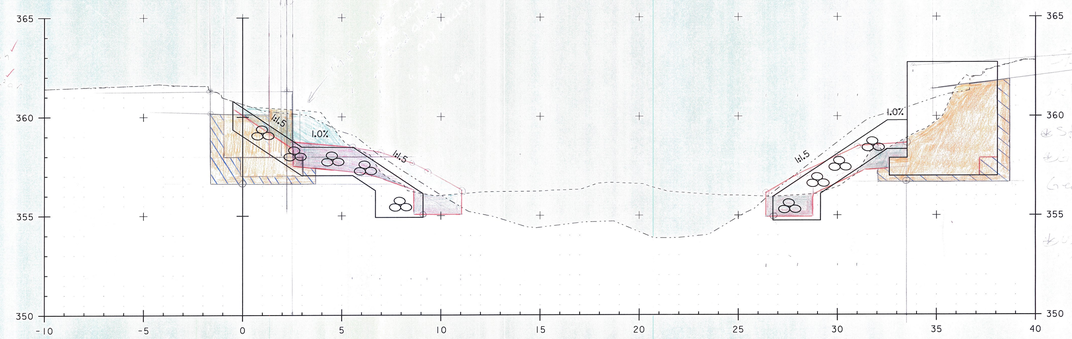

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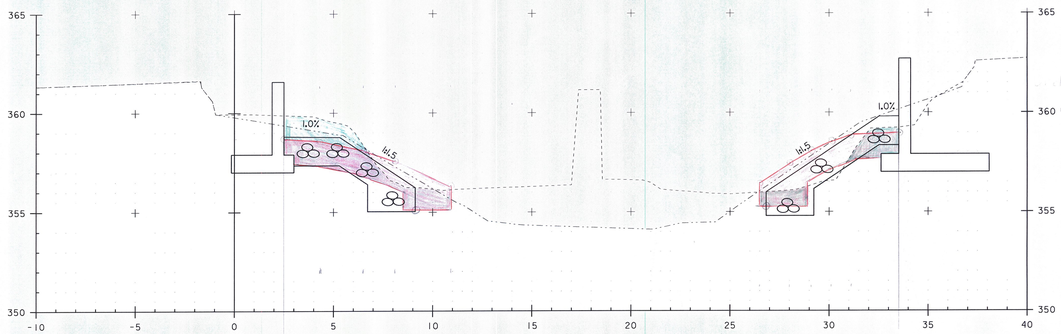
SURFACE LEGEND

- OG 2012
- OG 2009

STA. 5+008 TO STA. 5+011

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s89J088channelCrossSections300.dgn	PLOT DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: -----	CHECKED BY: M. LONGSTREET
CH XS SHEET 3	SHEET 4 OF 11



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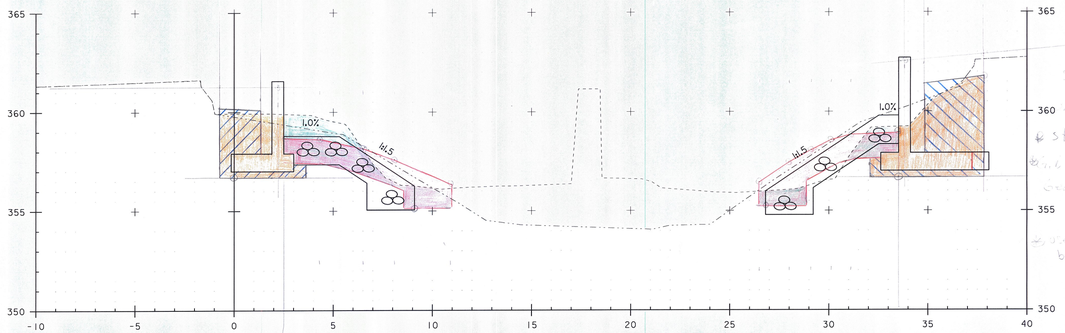


5+012.10

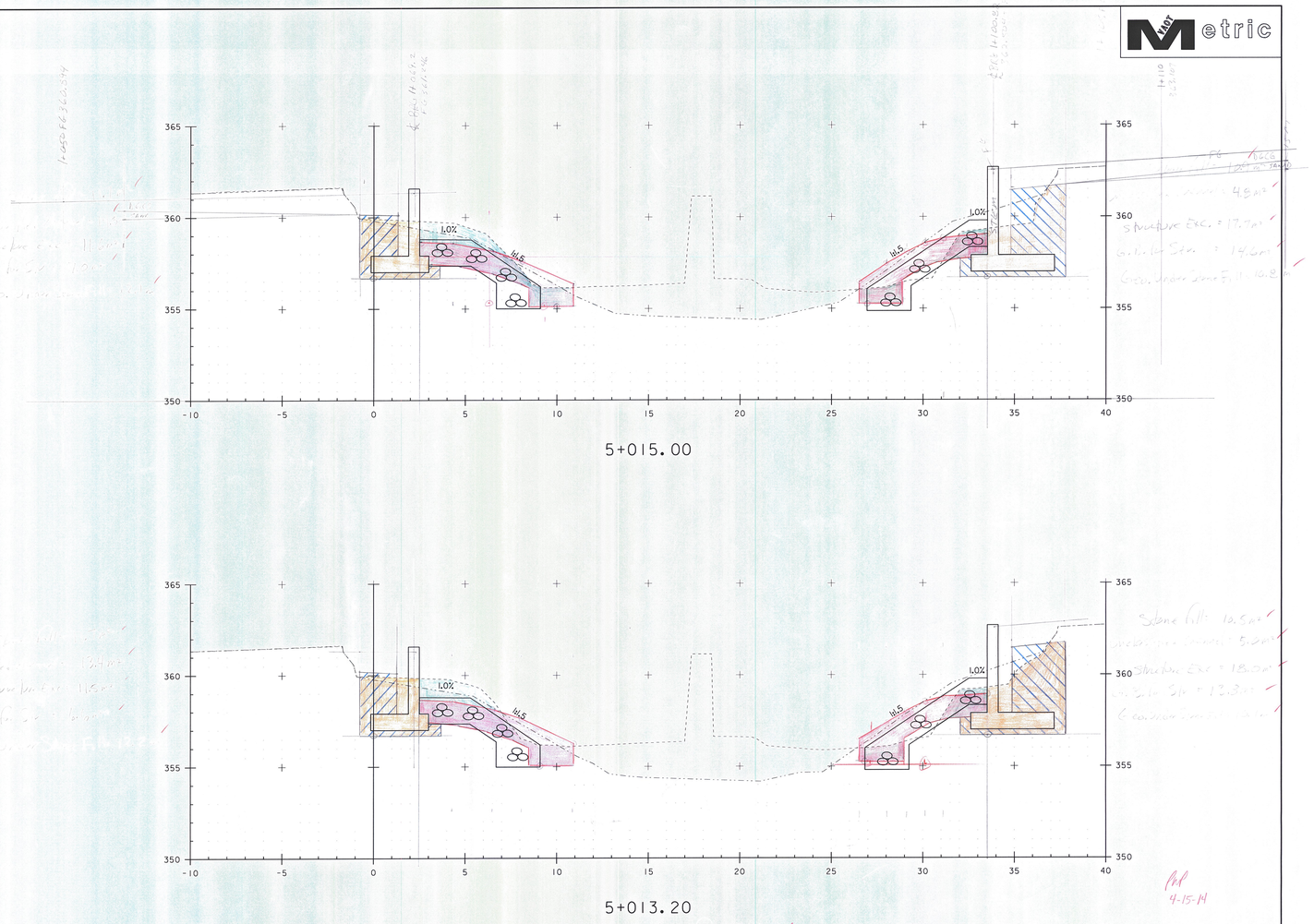
SURFACE LEGEND

OG 2012

OG 2009

STA. 5+012 TO STA. 5+013

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s891088channelCrossSections300.dgn	DESIGN DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: ------	CHECKED BY: M. LONGSTREET
CH XS SHEET 4	SHEET 5 OF 11



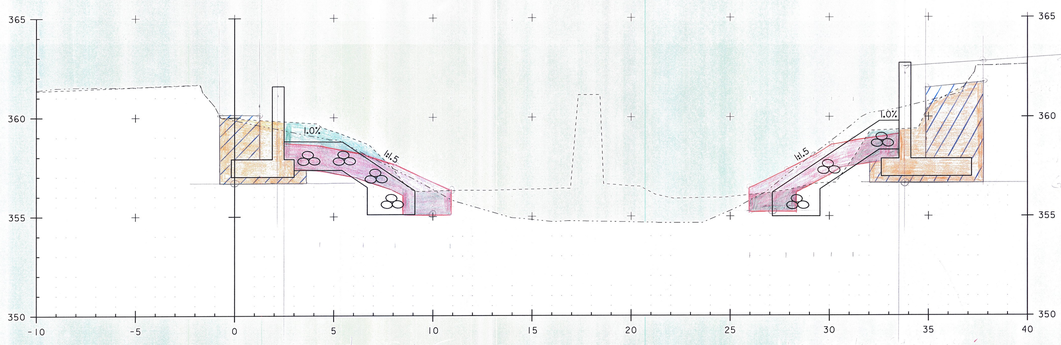
SURFACE LEGEND

OG 2012

OG 2009

STA. 5+013 TO STA. 5+015

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s89J088channelCrossSections300.dgn	PLOT DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: ------	CHECKED BY: M. LONGSTREET
CH XS SHEET 5	SHEET 6 OF 11



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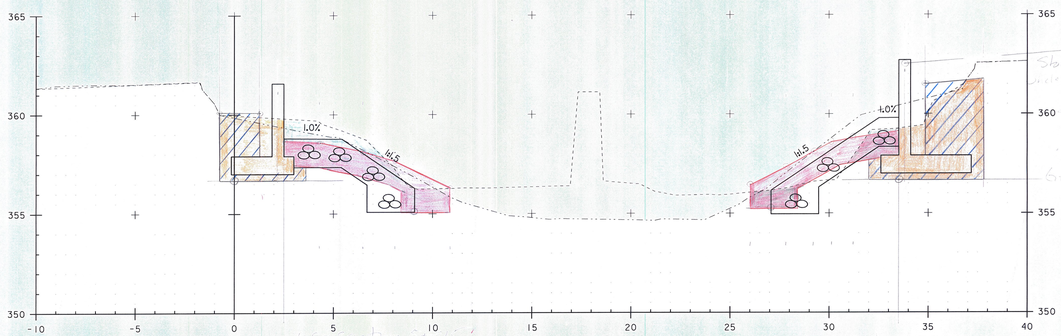


5+017.20

SURFACE LEGEND

OG 2012

OG 2009

STA. 5+017 TO STA. 5+018

PROJECT NAME: READSBORO

PROJECT NUMBER: BRF 0105(3) 300

FILE NAME: s89J088channelCrossSections300.dgn

PROJECT LEADER: J. LACROIX

DESIGNED BY: ------

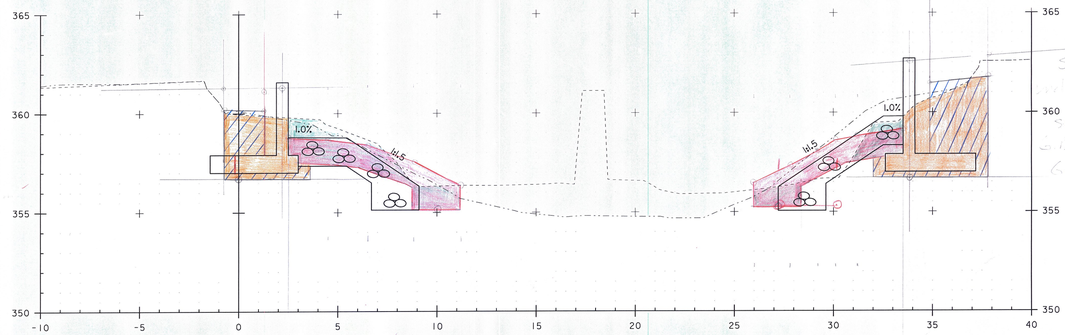
CH XS SHEET 6

PLOT DATE: 15-FEB-2013

DRAWN BY: D. KARABEGOVIC

CHECKED BY: M. LONGSTREET

SHEET 7 OF 11



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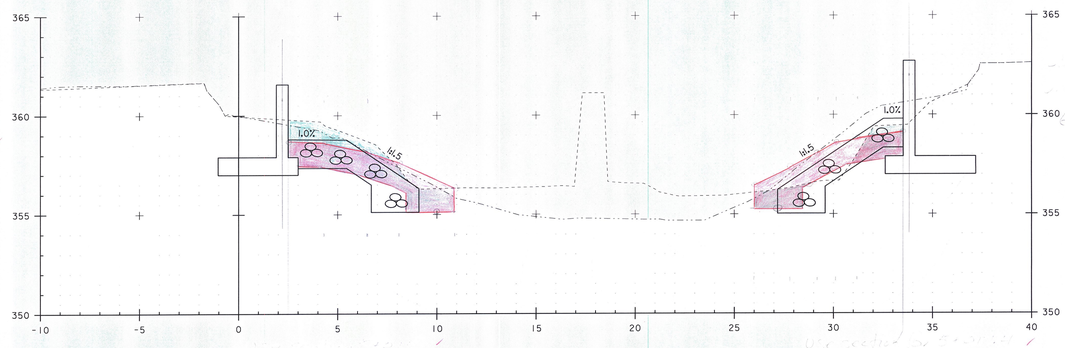


5+018.20

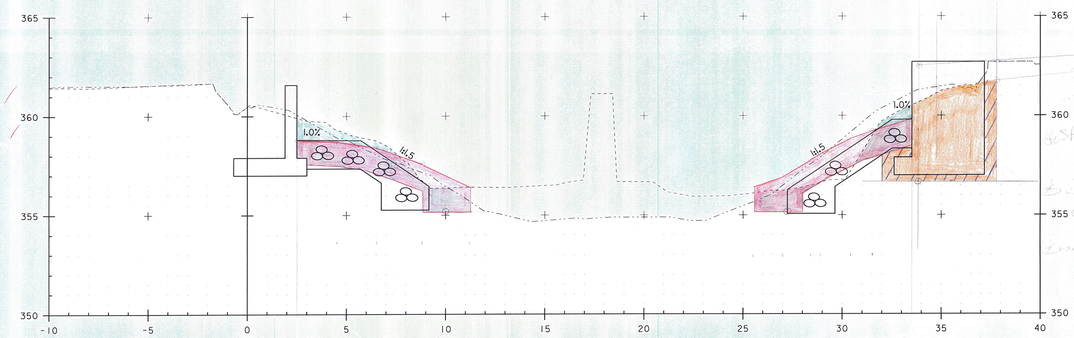
SURFACE LEGEND

OG 2012

OG 2009

STA. 5+018 TO STA. 5+019

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s89J088channelCrossSections300.dgn	PLOT DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: ------	CHECKED BY: M. LONGSTREET
CH XS SHEET 7	SHEET 8 OF 11



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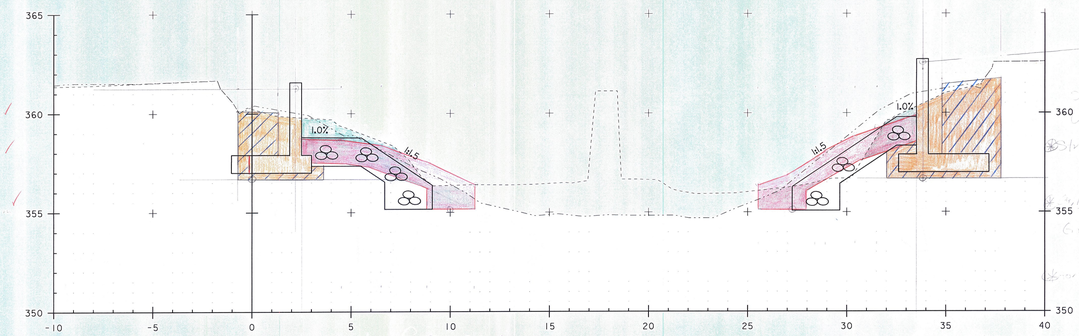


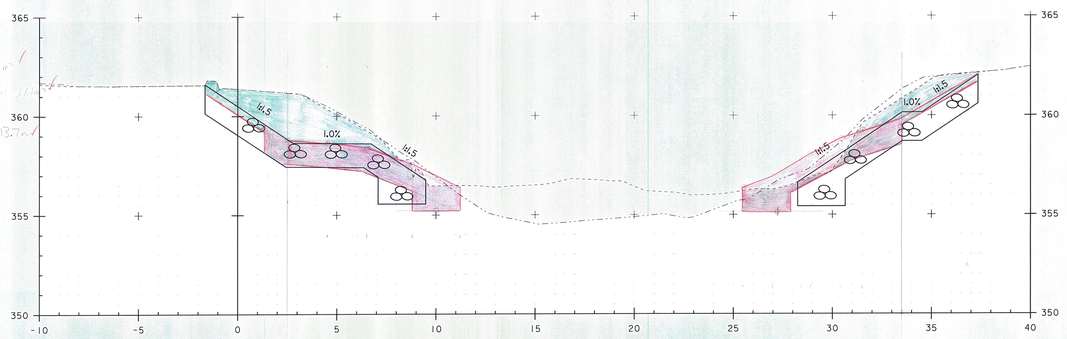
5+019.20

SURFACE LEGEND

- OG 2012
- OG 2009

STA. 5+019 TO STA. 5+020

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s89J088channelCrossSections300.dgn	DESIGN DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: ------	CHECKED BY: M. LONGSTREET
CH XS SHEET 8	SHEET 9 OF 11



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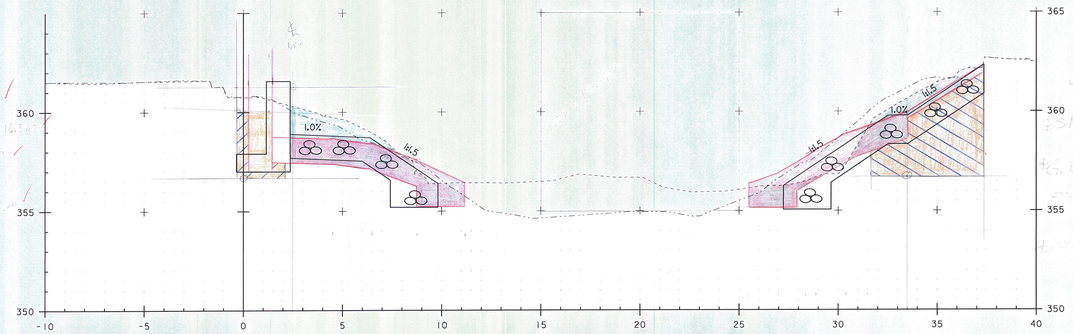


5+020.40

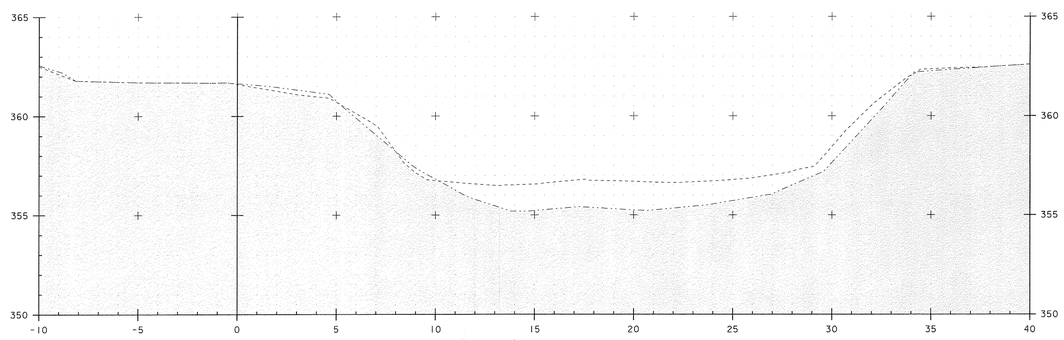
SURFACE LEGEND

OG 2012

OG 2009

STA. 5+020 TO STA. 5+022

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s89j088channelCrossSections300.dgn	PLOT DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: ------	CHECKED BY: M. LONGSTREET
CH XS SHEET 9	SHEET 10 OF 11



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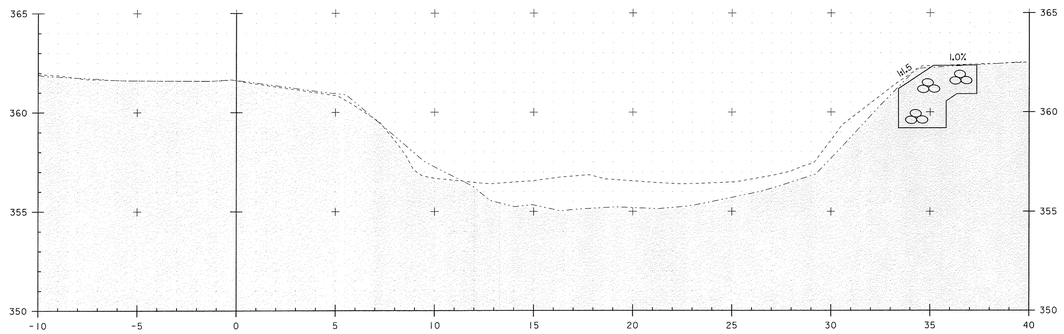

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SURFACE LEGEND

OG 2012

OG 2009

STA. 5+027 TO STA. 5+030

PROJECT NAME:	READSBORO
PROJECT NUMBER:	BRF 0105(3) 300
FILE NAME: s89J088channelCrossSections300.dgn	DATE: 15-FEB-2013
PROJECT LEADER: J. LACROIX	DRAWN BY: D. KARABEGOVIC
DESIGNED BY: ------	CHECKED BY: M. LONGSTREET
CH XS SHEET 10	SHEET 11 OF 11