

STATE OF VERMONT  
AGENCY OF TRANSPORTATION



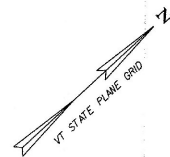
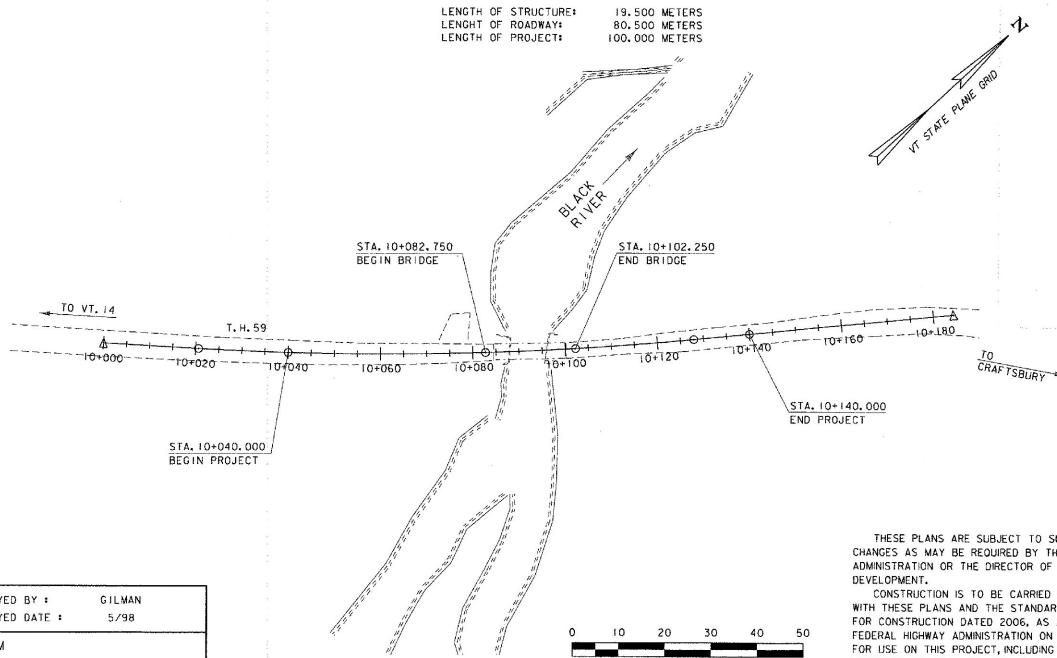
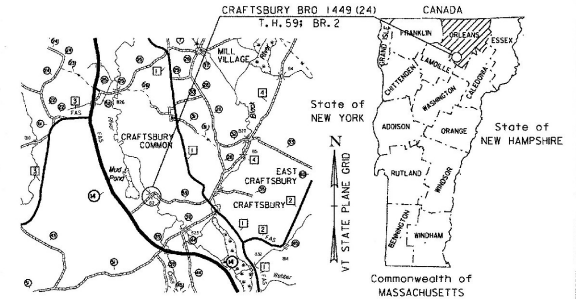
PROPOSED IMPROVEMENT  
BRIDGE PROJECT  
TOWN OF CRAFTSBURY  
COUNTY OF ORLEANS

ROUTE NO: T.H. 59 CLASS 3 BRIDGE NO: 2

PROJECT LOCATION: BEGINNING AT A POINT ON T.H. 59 APPROXIMATELY 0.500 KILOMETERS NORTHEASTERLY OF THE INTERSECTION OF T.H. 59 AND VT. 14 AND PROCEEDING NORTHEASTERLY 0.100 KILOMETERS ALONG T.H. 59.

PROJECT DESCRIPTION: REPLACEMENT OF THE EXISTING BRIDGE ON EXISTING ALIGNMENT TO INCLUDE NECESSARY APPROACH ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE: 19.500 METERS  
LENGTH OF ROADWAY: 80.500 METERS  
LENGTH OF PROJECT: 100.000 METERS



RECORD PLANS

CONTRACTOR: TREMBLAY CONSTRUCTION, LLC WASHINGTON VT  
RESIDENT ENGINEER: SHANE MORIN  
CONSTRUCTION BEGAN: AUGUST 4, 2009  
CONSTRUCTION COMPLETE: JULY 16, 2010  
RECORD PLANS BY: SHANE MORIN & AMOS KEMPTON

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

BY: *Shane Morin* RESIDENT ENGINEER  
DATE: 10-26-2011

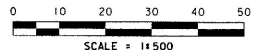
NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.



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

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	
TOP OF CUT	
TOE OF SLOPE	

SURVEYED BY: GILMAN  
SURVEYED DATE: 5/98  
DATUM:  
VERTICAL: NAVD88  
HORIZONTAL: NAD83 (92)



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.

DIRECTOR OF PROGRAM DEVELOPMENT  
APPROVED: *Keith Stewart* DATE: 6/20/09  
PROJECT MANAGER: R. R. WHITCOMB  
PROJECT NAME: CRAFTSBURY  
PROJECT NUMBER: BRD 1449 (24)  
SHEET 1 OF 47 SHEETS

# PRELIMINARY INFORMATION SHEET



INDEX OF SHEETS

- 1. TITLE SHEET
- 2. PRELIMINARY INFORMATION SHEET
- 3. GENERAL NOTES
- 4-5. QUANTITY SHEETS
- 6. BRIDGE QUANTITY SHEET
- 7. PROJECT TYPICAL SECTIONS
- 8. TIE INFORMATION SHEET
- 9. LAYOUT SHEET
- 10. PROFILE SHEET
- 11. TRAFFIC CONTROL SHEET
- 12. BORING LAYOUT SHEET
- 13-15. BORING LOG INFORMATION SHEETS
- 16. PLAN AND ELEVATION SHEET
- 17. APPROACH SLAB DETAILS
- 18. DECK REINFORCING
- 19. DECK DETAILS
- 20. 540 X 1220 VOIDED SLAB DETAILS
- 21. BRIDGE END DETAILS
- 22. CURB AND RAIL DETAILS
- 23. BEARING DETAILS
- 24. ABUTMENT NO. 1 DETAILS
- 25. ABUTMENT NO. 2 DETAILS
- 26. WINGWALLS 1 & 2 ELEVATIONS
- 27. WINGWALLS 3 & 4 ELEVATIONS
- 28. REINFORCING STEEL SCHEDULE
- 29. MATERIAL TRANSITION DETAILS
- 30-34 MAINLINE CROSS SECTIONS
- 35-40 CHANNEL CROSS SECTIONS
- 41. EROSION CONTROL NARRATIVE
- 42. EXISTING CONDITIONS SITE PLAN
- 43. EROSION PREVENTION AND SEDIMENT CONTROL PLAN
- 44. FINAL CONDITIONS SITE PLAN
- 45-47 EROSION CONTROL DETAILS

RIGHT-OF-WAY SHEETS

- 9 of 10 RIGHT-OF-WAY DETAIL SHEET
- 10 of 10 ROW LAYOUT SHEET

LIST OF STANDARDS

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	8-01-94
E-100	CONSTRUCTION APPROACH SIGNS	1-06-97
E-100A	SIDE ROAD CONSTRUCTION - APPROACH SIGNS	1-06-97
E-101	CONSTRUCTION SIGN DETAILS	3-10-97
E-102	CONSTRUCTION SIGN DETAILS	8-08-95
E-102A	CONSTRUCTION SIGN DETAILS	8-08-95
E-107	DELINEATION, BARRICADES AND DETOURS FOR U-TURNS ON DIVIDED HIGHWAY	8-08-95
E-107A	BREAKAWAY BARRICADE DETAILS	8-08-95
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	8-08-95
G-1	STEEL BEAM GUARDRAIL (50MPH & OVER)	1-03-00
	HEAVY DUTY STEEL BEAM GUARDRAIL TWISTED END TERMINAL ANCHOR FOR STEEL BEAM RAIL	
G-1D	STEEL BEAM GUARDRAIL (40MPH & LESS)	1-03-00
	HEAVY DUTY STEEL BEAM GUARDRAIL STEEL BEAM MEDIAN BARRIER ANCHOR FOR STEEL BEAM RAIL	
SB-R6-82M	BRIDGE RAILING - HEAVY DUTY STEEL BEAM	7-10-97
SB-R7-90M	BRIDGE RAILING - HEAVY DUTY STEEL BEAM	7-10-97

FINAL HYDRAULIC REPORT

**HYDROLOGIC DATA** Date: Dec. 22, 2004  
 DRAINAGE AREA: 104.8 sq. km  
 CHARACTER OF TERRAIN: Hilly, a Mixture of Open and Forested Areas  
 STREAM CHARACTERISTICS: Sinuous, Alluvial Channel Boundries and a Wide Flood Plain.  
 NATURE OF STREAMBED: Sand

**PEAK FLOW DATA**  
 Q2.33 = 23.0 cms Q50 = 85.0 cms  
 Q10 = 53.0 cms Q100 = 99.0 cms  
 Q25 = 70.0 cms Q500 = 130.0 cms

DATE OF FLOOD OF RECORD: Unknown  
 ESTIMATED DISCHARGE: unknown  
 WATER SURFACE ELEV.: unknown  
 NATURAL STREAM VELOCITY: @ Q25 = 0.7 m/s  
 ICE CONDITIONS: Light  
 DEBRIS: Light  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No  
 IS ORDINARY RISE RAPID? No  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No  
 IF YES, DESCRIBE:

WATERSHED STORAGE: 5% HEADWATERS:  
 UNIFORM: X  
 IMMEDIATELY ABOVE SITE:

**EXISTING STRUCTURE INFORMATION**  
 STRUCTURE TYPE: Single span; Temp. Bailey Bridge over Timber Bridge  
 YEAR BUILT: Bailey Bridge set in 1997 original Timber Bridge unknown  
 CLEAR SPAN(NORMAL TO STREAM): 7.7 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.8 m (low steel E.L. = 267.3 m)  
 WATERWAY OF FULL OPENING: 27.6 m  
 DISPOSITION OF STRUCTURE: Removal of old structure  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: unknown

**WATER SURFACE ELEVATIONS AT:**  
 Q2.33 = 266.3 m VELOCITY = 1.2 m/s  
 Q10 = 266.8 m \* 2.4 m/s  
 Q25 = 266.8 m \* 3.0 m/s  
 Q50 = 267.0 m \* 3.4 m/s  
 Q100 = 267.6 m \* 3.1 m/s

LONG TERM STREAMBED CHANGES: Large stream-wide by 2.4m deep scour hole under bridge and downstream of bridge due to constriction of channel.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
 FREQUENCY: < Q25  
 RELIEF ELEVATION: 266.9 at station 10+160  
 DISCHARGE OVER ROAD @Q100: 44 cms

**UPSTREAM STRUCTURE**  
 TOWN: Craftsbury DISTANCE: 3050 m  
 HIGHWAY #: TH #39 STRUCTURE #: 23  
 CLEAR SPAN: 10.7 m CLEAR HEIGHT: 2.7 m  
 YEAR BUILT: 1914 FULL WATERWAY: unknown  
 STRUCTURE TYPE: Single span steel beam bridge, concrete deck

**DOWNSTREAM STRUCTURE**  
 TOWN: Craftsbury DISTANCE: 1220 m  
 HIGHWAY #: TH #25 STRUCTURE #: 26  
 CLEAR SPAN: 11.3 m CLEAR HEIGHT: 3.0 m  
 YEAR BUILT: 1900 FULL WATERWAY: unknown  
 STRUCTURE TYPE: Single span steel beam bridge, concrete deck

**LRFR - LOAD RATING (METRIC TONS)**

LOADING LEVELS	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
INVENTORY	37	42					
POSTED							
OPERATING	46	55	50	67	38	39	43

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
2003	450	85	50	7	35
2023	600	85	50	7	45

20 year ESAL for flexible pavement from 2003 to 2023 : 323,000  
 40 year ESAL for flexible pavement from 2003 to 2043 : 738,000  
 Design Speed : 40 km/h

**PROPOSED STRUCTURE**  
 STRUCTURE TYPE: Single span, precast concrete beam bridge w/ concrete overlay deck  
 CLEAR SPAN(NORMAL TO STREAM): 17.5 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.4 m  
 WATERWAY OF FULL OPENING: 58.8 m

**WATER SURFACE ELEVATIONS AT:**  
 Q2.33 = 266.3 m VELOCITY = 0.7 m/s  
 Q10 = 266.7 m \* 1.4 m/s  
 Q25 = 266.8 m \* 1.7 m/s  
 Q50 = 267.0 m \* 2.2 m/s  
 Q100 = 267.1 m \* 1.4 m/s

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
 FREQUENCY: > Q25  
 RELIEF ELEVATION: 266.9 at station 10+160  
 DISCHARGE OVER ROAD @Q100: 29 cms

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 267.9 m  
 VERTICAL CLEARANCE: @ Q100 = 0.8 m

SCOUR: Contraction scour 0.6 m @ Q 25 is greatest up to Q500.

REQUIRED CHANNEL PROTECTION: Type III Stone Fill

**PERMIT INFORMATION**  
 AVERAGE DAILY FLOW: 2.3 cms DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 1.1 cms Elev. 264.5 m  
 ORDINARY HIGH WATER: 9.8 cms Elev. 265.5 m

**TEMPORARY BRIDGE REQUIREMENTS**  
 STRUCTURE TYPE: N/A  
 CLEAR SPAN (NORMAL TO STREAM): N/A  
 VERTICAL CLEARANCE ABOVE STREAMBED: N/A  
 WATERWAY AREA OF FULL OPENING: N/A

**ADDITIONAL INFORMATION**

- DESIGN CRITERIA**
- DESIGN LIVE LOAD AASHTO HL-93
  - DESIGN SPAN 18.600 m
  - ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE N/A
  - FACTORED DESIGN LOAD PER PILE 368 kN TYPE HP 850 X 108
  - ESTIMATED LENGTH 30.0 m (INCLUDING 0.6 m EMBEDMENT IN CONCRETE)
  - STRUCTURAL STEEL AASHTO M270M270 GRADE N/A
  - REINFORCING STEEL GRADE 420
  - CONCRETE, HIGH PERFORMANCE CLASS AA fc: 30 Mpa CONCRETE, HIGH PERFORMANCE CLASS B fc: 25 Mpa
  - DESIGN SOIL UNIT WEIGHT 22.00 kN/m<sup>3</sup>
  - DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL N/A

- TRAFFIC MAINTENANCE**
- IS TRAFFIC TO BE MAINTAINED? NO - ROAD CLOSED  
 IF YES, ON EXISTING STRUCTURE? N/A  
 OR ON TEMPORARY BRIDGE? N/A  
 ONE OR TWO-WAY TRAVEL? N/A
  - TRAFFIC CONTROL SIGNALS REQUIRED? N/A
  - ARE SIDEWALKS REQUIRED? N/A  
 IF SO, ON WHAT SIDE? N/A

PROJECT NAME: CRAFTSBURY  
 PROJECT NUMBER: BRO 1449 (24)

FILE NAME: 96j310/Structures/96j310pl.xls PLOT DATE: 5/19/2009  
 PROJECT MANAGER: R. R. WHITCOMB DRAWN BY: W. LAMMER  
 DESIGNER BY: W. LAMMER CHECKED BY: W. LAMMER  
 PRELIMINARY INFORMATION SHEET SHEET 2 OF 47

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2006 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.
2. DIMENSIONS ARE HORIZONTAL OR VERTICAL IN MILLIMETERS AT 20 °C, UNLESS NOTED OTHERWISE.
3. CONTRACTOR IS TO MAINTAIN ACCESS TO THE EXISTING DRY HYDRANT 10-080 LT. AT ALL TIMES. ANY DAMAGE TO THE EXISTING DRY HYDRANT SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AND PAID FOR BY THE CONTRACTOR.
4. BRIDGE 2 WILL BE CLOSED TO ALL PEDESTRIANS AND VEHICULAR TRAFFIC DURING CONSTRUCTION. THE CRAFTSBURY TOWN CLERK SHALL BE NOTIFIED AT (802) 586-2823 TWO WEEKS PRIOR TO THE CLOSING OF THE BRIDGE. ALL ON-PROJECT SIGNS AND BARRICADES AS REQUIRED BY THE RESIDENT ENGINEER WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCIDENTAL TO ITEM 64.1.10, "TRAFFIC CONTROL". ALL OFF-PROJECT SIGNING WILL BE THE RESPONSIBILITY OF THE TOWN.

DESIGN

1. THE BRIDGE IS DESIGNED FOR HL-93 LIVE LOAD WITH NO ALLOWANCE FOR FUTURE PAVEMENT.

CONSTRUCTION

1. IN-STREAM CONSTRUCTION: PERMITS DESIGNATE AND LIMIT THE PERIOD FOR IN-STREAM CONSTRUCTION. THE AGENCY OF NATURAL RESOURCES MUST APPROVE ANY DEVIATION FROM THIS PERIOD IN WRITING.

EARTHWORK

1. ITEM 52.9.15 "REMOVAL OF STRUCTURE": WILL INCLUDE THE REMOVAL OF THE "BAILEY" BRIDGE. SEE SPECIAL PROVISIONS.
2. ITEM 52.9.20 "PARTIAL REMOVAL OF STRUCTURE": WILL INCLUDE THE REMOVAL OF THE EXISTING BRIDGE SUPERSTRUCTURE. SEE SPECIAL PROVISIONS.
3. THE EXISTING WINGWALLS AND ABUTMENTS AT ABUTMENT NO. 1 AND NO. 2 SHALL BE REMOVED UNDER THE ITEM "UNCLASSIFIED CHANNEL EXCAVATION." ALL PORTIONS OF THE EXISTING STRUCTURE NOT REMOVED UNDER "UNCLASSIFIED CHANNEL EXCAVATION" SHALL BE REMOVED AND THE WORK WILL BE INCIDENTAL TO THE ITEM "PARTIAL REMOVAL OF STRUCTURE."
4. ABUTMENT STONE FILL: PLACE STONE FILL UNDER THE BRIDGE BEFORE PLACING THE PRESTRESS UNITS.
5. THE CONTRACTOR MAY SUBSTITUTE SUBBASE MATERIAL FOR THE SAND BORROW SHOWN ON THE PLANS. THE SUBBASE MATERIAL SHALL BE THE TYPE SPECIFIED IN THE CONTRACT AND SHALL BE PLACED TO MEET THE SUBBASE SPECIFICATIONS. IF SUBBASE IS PLACED IN LIEU OF SAND BORROW, A GEOTEXTILE MEETING THE REQUIREMENTS OF ITEM 649.11 "GEOTEXTILE FOR ROAD BED SEPARATOR" SHALL BE PLACED BETWEEN THE SUBGRADE AND THE SUBBASE MATERIAL. ALL COSTS ASSOCIATED WITH THE SUBSTITUTION INCLUDING THE GEOTEXTILE SHALL BE INCIDENTAL TO 203.31 "SAND BORROW".

STEEL PILING

1. THE FACTORED AXIAL COMPRESSIVE LOAD IS 368 KN PER PILE. THE RESISTANCE FACTOR FOR DYNAMIC PILE LOAD TESTING IS 0.65. USING THIS RESISTANCE FACTOR, THE REQUIRED NOMINAL DRIVING RESISTANCE IS 567 KN PER PILE.
2. THE ESTIMATED PILE DEPTH TO ACHIEVE THE REQUIRED NOMINAL DRIVING RESISTANCE IS 30 M. ADDITIONAL PILING MAY BE REQUIRED IF THE DRIVING RESISTANCE IS NOT ACHIEVED IN 30 M.
3. DRIVE THE TEST PILE TO THE REQUIRED NOMINAL DRIVING RESISTANCE OR 30 M, WHICHEVER OCCURS FIRST. THE MINIMUM TIME BETWEEN THE END OF INSTALLATION OF ALL PILES AT AN ABUTMENT AND RESTRIKING SHALL BE 72 HOURS.
4. IF THE REQUIRED NOMINAL DRIVING RESISTANCE IS NOT ACHIEVED AT RESTRIKE, THEN SUBMIT RESULTS OF THE PILE DRIVING ANALYSIS TO THE STRUCTURES SECTION AND ALLOW THREE BUSINESS DAYS FOR EVALUATION. IF ADDITIONAL PILING IS REQUIRED, AN ADDITIONAL DYNAMIC LOAD TEST WILL BE REQUIRED AND PAID FOR UNDER ITEM 505.45 "DYNAMIC PILE LOAD TEST."
5. IF A TEST PILE IS USED FOR PRODUCTION, THEN IT SHALL BE AN EXTERIOR PILE. WARM-UP THE PILE HAMMER ON THE OPPOSITE EXTERIOR PILE BEFORE RE-STRIKING THE EXTERIOR TEST PILE.
6. PILING DRIVEN BELOW 20 M DEPTH SHALL BE DRIVEN WITH A PILE DRIVING HAMMER, NOT A VIBRATORY HAMMER. FINAL DRIVING RESISTANCE SHALL BE DETERMINED WITH THE APPROVED PILE DRIVING HAMMER REGARDLESS OF THE LENGTH OF PILE DRIVEN.
7. DRIVING POINT REINFORCEMENT SHALL NOT BE REQUIRED FOR THIS PROJECT.

STRUCTURAL CONCRETE

1. ITEM 501.32 "CONCRETE, HIGH PERFORMANCE CLASS AA": USE HPC AA FOR THE DECK OVERLAY AND CURBS.
2. ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B": USE HPC B FOR THE APPROACH SLABS, ABUTMENTS, AND ALL OTHER SUBSTRUCTURE COMPONENTS.

3. ITEM 507.15 "REINFORCING STEEL": USE UNCOATED REINFORCEMENT FOR THE ABUTMENTS.
4. ITEM 507.17 "EPOXY COATED REINFORCING STEEL": USE COATED REINFORCEMENT FOR THE DECK OVERLAY, CURBS, AND APPROACH SLABS.
5. CONCRETE JOINTS: CONSTRUCT CONCRETE JOINTS AS INDICATED ON THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER.
6. CHAMFERS: CHAMFER ALL EXPOSED EDGES OF CONCRETE WITH 25 MM X 2.5MM CHAMFERS, UNLESS OTHERWISE NOTED. ROUND THE TOP INSIDE CORNER OF CURBS WITH A 15MM RADIUS.
7. SCORE MARKS: CONSTRUCT SCORE MARKS AS INDICATED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.
8. ITEM 514.10 WATER REPELLENT, SILANE: APPLY REPELLENT TO ALL EXPOSED SURFACES OF CONCRETE ON THE BRIDGE, INCLUDING THE BRIDGE DECK, EXCEPT THE BOTTOM OF THE SUPERSTRUCTURE BETWEEN THE DRIP NOTCHES. APPLY REPELLENT TO TOP OF APPROACH SLAB.

PRESTRESSED CONCRETE

1. ITEM 510.22 "PRESTRESSED CONCRETE VOIDED SLABS": PRESTRESSED PRECAST MEMBERS SHALL:
  - A. CONFORM TO SECTION 510 "PRESTRESSED CONCRETE".
  - B. BE 540MM X 1220MM VOIDED SLABS.
  - C. USE CONCRETE WITH  $f_c = 45 \text{ MPa}$  AND  $f_t = 30 \text{ MPa}$ .
  - D. BE DESIGNED FOR AN AASHTO MS 22.5 LIVE LOAD.
  - E. CONTAIN CONTINUOUS VOIDS EXCEPT AS SHOWN IN THE PLAN DETAIL.
  - F. HAVE VOID DRAINS AT THE ENDS OF EACH VOID. THE VOID DRAINS SHALL BE 18MM DIAMETER, NON-FERROUS, AND CLEANED AFTER ERECTION.
  - G. CONTAIN PRESTRESSING STRANDS WHICH ARE 15.2 MM DIAMETER, 1860 MPa, LOW-RELAXATION STRANDS PULLED TO 75% OF THEIR YIELD.
  - H. HAVE THE ENDS OF THE STRANDS RECESSED AND GROUDED ACCORDING TO STANDARD PRACTICE.
  - I. HAVE THE TOP SURFACE BAKED TO UNIFORM ROUGHNESS WITH AVERAGE AMPLITUDE OF 6MM.
  - J. INCLUDE COLD POURED JOINT FILLER, AND TRANSVERSE TENDONS.
2. THE FABRICATOR MAY, WITH THE APPROVAL OF THE PROJECT MANAGER, ALTER THE DESIGN AS DETAILED TO MEET THE PLANTS PRESTRESSING OPERATION AND MATERIAL REQUIREMENTS. AN ALTERNATE STRAND CONFIGURATION MAY BE SUBMITTED FOR APPROVAL, PROVIDED THE DESIGN IS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT, AND THAT THE DESIGN MEETS ALL OF THE APPLICABLE DESIGN CRITERIA, LOADINGS AND CODES.
3. THE CONTRACTOR SHALL NOTIFY THE VTRANS MATERIALS & RESEARCH STRUCTURAL CONCRETE ENGINEER TWO WEEKS BEFORE THE PRESTRESS FABRICATOR OR CONSTRUCTS THE UNITS TO ALLOW FOR TIMELY INSPECTION OF THE PRESTRESSED CONCRETE UNITS.
4. ITEM 510.22 "PRESTRESSED CONCRETE VOIDED SLABS" TRANSVERSE TENDONS:
  - A. GALVANIZE PLATES AND CHUCKS AFTER FABRICATION ACCORDING TO AASHTO M232/M232M.
  - B. INSTALL TRANSVERSE TENDONS BEFORE PLACING MORTAR AND CASTING THE CONCRETE DECK OVERLAY.
5. ITEM 510.24 "GROUTING SHEAR KEYS": FILL THE JOINTS BETWEEN THE VOIDED SLABS WITH MORTAR, TYPE IV, AS DESCRIBED IN SUBSECTION 510.13.

6. SERVICE LOADS	540x1220
MEMBER MOMENT	463 kN/m
DECK MOMENT	199 kN/m
SUPERIMPOSED DEAD LOAD MOMENT	0 kN/m
LIVE LOAD & IMPACT MOMENT	644 kN/m
DEAD LOAD REACTION	155 kN
LIVE LOAD & IMPACT REACTION	362 kN
TOTAL REACTION	517 kN
FINAL CAMBER	14 mm

PROPOSED CONSTRUCTION SEQUENCE FOR PRESTRESSED VOIDED SLABS

1. LAY OUT WORKING LINES:
  - A. LAY OUT WORKING LINES FOR THE ENTIRE BRIDGE WIDTH ON THE BEAM SEAT.
  - B. MEASURE ALL WORKING LINES FROM A COMMON WORKING POINT.
  - C. BASE THE WORKING LINES ON THE NOMINAL BEAM WIDTHS.
2. VERIFY BEAM SEAT ELEVATIONS:
  - A. MEASURE ELEVATIONS AT BEAM SEATS.
  - B. IF SEATS ARE HIGH, GRIND TO CORRECT ELEVATIONS.
  - C. IF SEATS ARE LOW, SHIM TO CORRECT ELEVATIONS.
  - D. INSTALL BEARINGS.

3. ERECT BEAMS:
  - A. PLACE BEAMS TO FIT WITHIN THE WORKING LINES.
  - B. AS WORK PROGRESSES, INSTALL HARDWOOD WEDGES BETWEEN ADJACENT BEAMS TO MAINTAIN PROPER JOINT OPENING (A MINIMUM OF ONE WEDGE AT EACH TRANSVERSE TENDON).
  - C. DRILL ANCHOR BOLT HOLES.
  - D. PLACE ANCHOR BOLTS.
  - E. GROUT ANCHOR BOLTS IN ABUTMENT.
4. INSTALL BACKER ROD: PLACE FILLER BELOW THE KEYWAY BOTTOM, AS SHOWN ON THE PLANS.
5. INSTALL TRANSVERSE TENDONS:
  - A. FEED TENDONS THROUGH DUCTS.
  - B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED TO PREVENT SLIPPAGE OF BEAMS.
  - C. USING A CALIBRATED JACK, POST-TENSION TENDONS TO APPROXIMATELY 13.3kN TO REMOVE SAG IN THE TENDON AND TO SEAT THE CHUCK.
6. GROUT SHEAR KEYS:
  - A. CLEAN JOINTS WITH AN OIL FREE AIR-BLAST IMMEDIATELY BEFORE GROUT PLACEMENT. VERIFY THAT THE BACKER ROD IS STILL IN PLACE.
  - B. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR ADDITIONAL JOINT PREPARATION AND GROUT PLACEMENT.
  - C. CAREFULLY ROD JOINTS TO ELIMINATE ANY POSSIBILITY OF VOIDS.
7. POST-TENSION TRANSVERSE TENDONS:
  - A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 10 MPa, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING.
  - B. PROVIDE APPROPRIATE CUBE MOLDS AS DESCRIBED IN AASHTO T106 FOR 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES AND AT A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 10MPa MINIMUM COMPRESSIVE STRENGTH.
  - C. POST-TENSION TENDONS TO 13.34 kN USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL.
8. END DETAILS:
  - A. GROUT ANCHOR BOLTS INTO THE SLEEVES IN THE PRESTRESSED UNITS AT THE FIXED ENDS. BEFORE THE GROUT CURES, PLACE THE WASHER PLATE, AND INSTALL THE NUT ON TOP AND TIGHTEN.
  - B. PLACE THE COLD POURED JOINT SEALER IN THE SLEEVES IN THE PRESTRESSED UNITS AT THE EXPANSION ENDS. PLACE THE WASHER PLATE AND INSTALL THE NUT ON TOP. HAND TIGHTEN AND THEN LOOSEN 1/2 TURN.
  - C. GROUT OVER THE NUT AND BOLT IN THE ANCHOR BOLT BLOCK OUTS ON THE FIXED ENDS. FILL THE ANCHOR BOLT BLOCK OUTS ON THE EXPANSION ENDS WITH COLD POURED JOINT SEALER.
9. FINISH WORK:
  - A. REMOVE WEDGES, AND PATCH DECK OVERLAY AND FASCIA BEAMS AT TRANSVERSE TENDONS.
  - B. SATURATE THE PRESTRESSED UNITS WITH WATER FOR TWELVE HOURS PRIOR TO PLACING OF THE CONCRETE DECK OVERLAY.
  - C. REMOVE ANY FREESTANDING WATER IMMEDIATELY BEFORE PLACING THE DECK OVERLAY.

BOTH TEST PILES FAIL TO ACHIEVE THE REQUIRED CAPACITY.  
ALL 16 PILES WERE EXTENDED AT THE DIRECTION OF STRUCTURES.  
FINAL PILE LENGTH 38.1M (125 FT)

GENERAL NOTES

PROJECT NAME:	CRAFTSBURY	FILE NAME:	96j30\str\sj3\0gen.dgn	PLOT DATE:	05-JUN-2009
PROJECT NUMBER:	BRO 1449 (24)	PROJECT LEADER:	R. WHITCOMB	DRAWN BY:	W. LAMMER
		DESIGNED BY:	W. LAMMER	CHECKED BY:	T. LACKEY
				SHEET	3 OF 47

# QUANTITY SHEET 1



SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY	EROSION CONTROL	BRIDGE	FULL CE ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				EARTHWORK SUMMARY
						560				560		CM	COMMON EXCAVATION	203.15				FILL REQUIRED
								1010		1010		CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27		150	CM	COMMON FILL (1.15*130 CM)
						110				110		CM	SAND BORROW	203.31				FILL AVAILABLE
						140				140		CM	GRANULAR BORROW	203.32		560	CM	COMMON EXCAVATION (1*560 CM)
							10			10		CM	TRENCH EXCAVATION OF EARTH	204.20		303	CM	UNCLASSIFIED CHANNEL EXCAVATION (0.3*1010 CM)
						1				1		CM	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22		10	CM	TRENCH EXCAVATION OF EARTH (1*10 CM)
						30		250		280		CM	STRUCTURE EXCAVATION	204.25		84	CM	STRUCTURE EXCAVATION (0.3*280 CM)
						1		170		171		CM	GRANULAR BACKFILL FOR STRUCTURES	204.30		957	CM	TOTAL
						560				560		CM	SUBBASE OF GRAVEL	301.15		150	CM	FILL REQUIRED
						102				102		KG	EMULSIFIED ASPHALT	404.65		807	CM	WASTE
						1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
								32		32		CM	CONCRETE, HIGH PERFORMANCE CLASS AA	501.32				
								100		100		CM	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
								1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
								480		480		M	STEEL PILING, HP 380 X 108	505.17				
								2		2		EACH	DYNAMIC PILE LOADING TEST	505.45				
								3905		3905		KG	REINFORCING STEEL	507.15				
								3920		3920		KG	EPOXY COATED REINFORCING STEEL	507.17				
								114		114		M	PRESTRESSED CONCRETE VOIDED SLABS (540 X 1220)	510.22				
								95		95		M	GROUTING SHEAR KEYS	510.24				TEMPORARY EROSION CONTROL ITEMS
								70		70		L	WATER REPELLENT, SILANE	514.10		10	CM	TRENCH EXCAVATION OF EARTH
								1		1		EACH	REMOVAL OF STRUCTURE (60 SM - EST.) (EXISTING BAILEY BRIDGE)	529.15		40	SM	GEOTEXTILE FOR SILT FENCE
								1		1		EACH	PARTIAL REMOVAL OF STRUCTURE	529.20		360	SM	GEOTEXTILE FOR FILTER CURTAIN
								24		24		EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11		10	KG	SEED
													BEGIN OPTION AA			10	KG	SEED, WINTER RYE
						14				14		M	1500 CSP 3.51 (68 X 12)	601.0068		50	KG	FERTILIZER
						14				14		M	1500 CAAP 3.43 (68 X 12)	601.0268		1	T	AGRICULTURAL LIMESTONE
													END OPTION AA			1	T	HAY MULCH
						50				50		CM	STONE FILL, TYPE I	613.10		40	CM	TOPSOIL
								730		730		CM	STONE FILL, TYPE III	613.12		1	LS	EPSC PLAN
						59				59		M	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21		50	HR	MONITORING EPSC PLAN
						4				4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60		1	LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)
									1	1		LS	FIELD OFFICE, ENGINEERS	631.10		350	SM	TEMPORARY EROSION MATTING
									1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16		10	CM	TEMPORARY STONE CHECK DAM, TYPE I
									1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17		40	CM	VEHICLE TRACKING PAD
									1	1		LU	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.25		320	M	BARRIER FENCE
						1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
						1				1		LS	TRAFFIC CONTROL	641.10				N.A.B.I. = NOT A BID ITEM
						180		880		1060		SM	GEOTEXTILE UNDER STONE FILL	649.31				

# QUANTITY SHEET 2

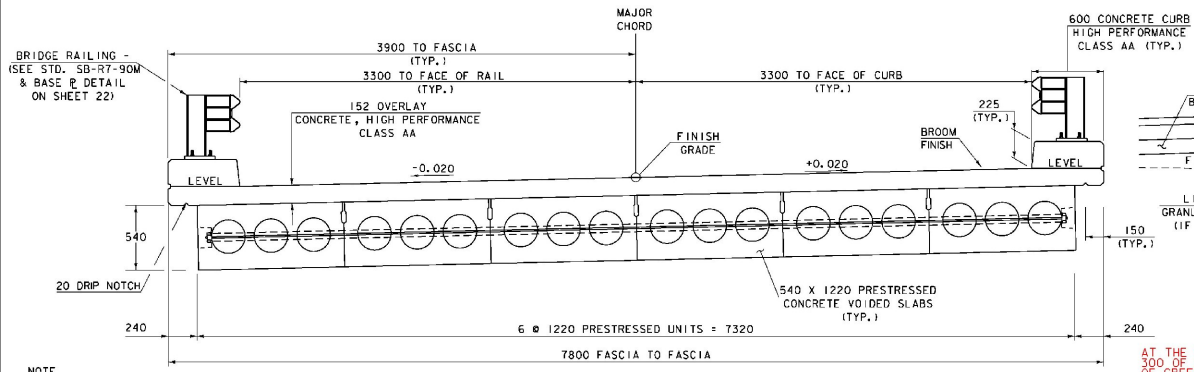


SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE	FULL CE ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
								40			40		SM	GEOTEXTLE FOR SILT FENCE	649.51				
								360			360		SM	GEOTEXTLE FOR FILTER CURTAIN	649.61				
								10			10		KG	SEED	651.15				
								10			10		KG	SEED, WINTER RYE	651.17				
								50			50		KG	FERTILIZER	651.18				
								1			1		T	AGRICULTURAL LIMESTONE	651.20				
								1			1		T	HAY MULCH	651.25				
								40			40		CM	TOPSOIL	651.35				
									270		270		SM	GRUBBING MATERIAL	651.40				
								1			1		LS	EPSC PLAN	652.10				
								50			50		HR	MONITORING EPSC PLAN	652.20				
								1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
								350			350		SM	TEMPORARY EROSION MATTING	653.20				
								10			10		CM	TEMPORARY STONE CHECK DAM, TYPE I	653.25				
								40			40		CM	VEHICLE TRACKING PAD	653.35				
								320			320		M	BARRIER FENCE	653.50				
							2				2		EACH	REMOVING SIGNS	675.50				
									42		42		M	SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED HDSB/CURB MOUNTED/STEEL TUBING)	900.640				
								1			1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I.)	900.650				
								1			1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT) (N.A.B.I.)	900.650				
							255				255		T	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

# BRIDGE QUANTITY SHEET 1

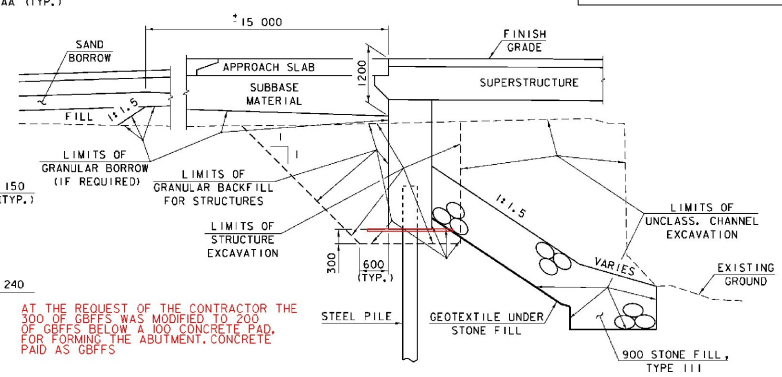
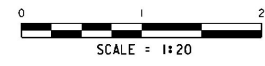


SUMMARY OF BRIDGE QUANTITIES										TOTALS		DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
					DECK	APP SLAB 1	APP SLAB 2	ABUT 1	ABUT 2	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS	
								510	500	1010	CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
								150	100	250	CM	STRUCTURE EXCAVATION	204.25				
								85	85	170	CM	GRANULAR BACKFILL FOR STRUCTURES	204.30				
					32					32	CM	CONCRETE, HIGH PERFORMANCE CLASS AA	501.32				
						12	12	38	38	100	CM	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
								0.5	0.5	1	LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
								240	240	480	M	STEEL PILING, HP 360 X 108	505.17				
								1	1	2	EACH	DYNAMIC PILE LOADING TEST	505.45				
								1955	1950	3905	KG	REINFORCING STEEL	507.15				
					2480	640	640	80	80	3920	KG	EPOXY COATED REINFORCING STEEL	507.17				
					114					114	M	PRESTRESSED CONCRETE VOIDED SLABS (540 X 1220)	510.22				
					95					95	M	GROUTING SHEAR KEYS	510.24				
					50	7	7	2	4	70	L	WATER REPELLENT, SILANE	514.10				
					1					1	EACH	REMOVAL OF STRUCTURE (60 SM - EST.) (EXISTING BAILEY BRIDGE)	529.15				
					1					1	EACH	PARTIAL REMOVAL OF STRUCTURE	529.20				
								12	12	24	EACH	BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD	531.11				
								355	375	730	CM	STONE FILL, TYPE III	613.12				
								440	440	880	SM	GEOTEXTLE UNDER STONE FILL	649.31				
								145	125	270	SM	GRUBBING MATERIAL	651.40				
					42					42	M	SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED HDSB/CURB MOUNTED/STEEL TUBING)	900.640				



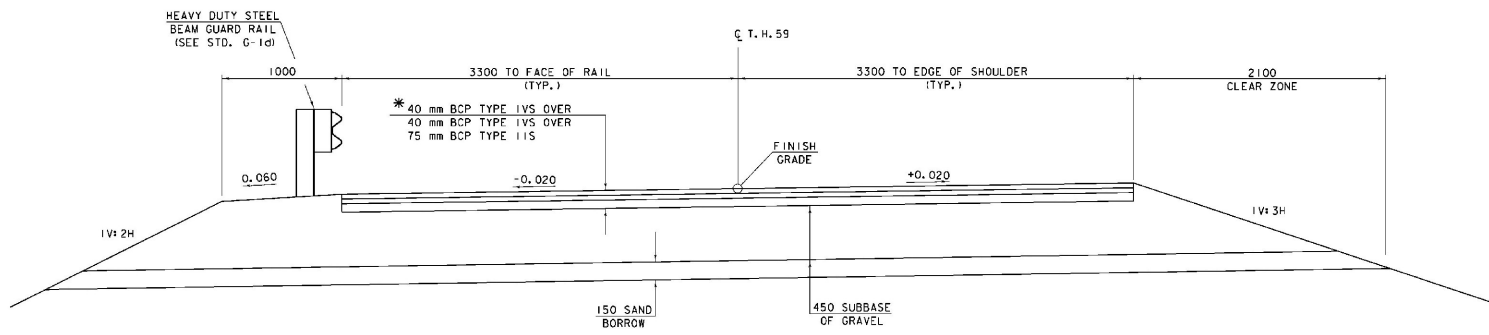
- NOTE
- BRIDGE IS TO BE LAID OUT PARALLEL TO THE MAJOR CHORD WITH NO CONSIDERATION GIVEN TO CURVE EXCEPT AT THE END OF APPROACH SLABS.
  - THE CONCRETE DECK SHALL BE BROOM FINISHED NORMAL TO CENTERLINE.
  - BRIDGE RAILING SHALL BE PAID FOR UNDER ITEM 900.640 SPECIAL PROVISION (BRIDGE RAILING, GALVANIZED HDSB/CURB MOUNTED/STEEL TUBING).

BRIDGE TYPICAL SECTION



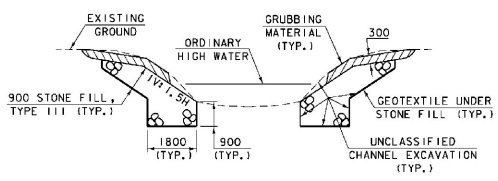
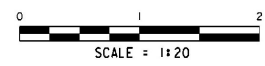
AT THE REQUEST OF THE CONTRACTOR THE 300 OF GBFFS WAS MODIFIED TO 200 OF GBFFS BELOW A 100 CONCRETE PAD. FOR FORMING THE ABUTMENT, CONCRETE PAID AS GBFFS

ABUTMENT EARTHWORK TYPICAL SECTION



\* BCP SHALL BE READ AS BITUMINOUS CONCRETE PAVEMENT AND SHALL BE PAID FOR UNDER ITEM 900.680 SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)

ROADWAY TYPICAL SECTION



CHANNEL TYPICAL SECTION

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.

MATERIAL TOLERANCES (IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 5 mm
- AGGREGATE SURFACE COURSE	+/- 15 mm
SUBBASE	+/- 30 mm
SAND BORROW	+/- 30 mm

PROJECT TYPICAL SECTIONS

PROJECT NAME:	CRAFTSBURY	FILE NAME:	96130/stf/sj30typ.dgn	PLOT DATE:	04-JUN-2009
PROJECT NUMBER:	BRO 1449 (24)	PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	G. ROY
		DESIGNED BY:	G. ROY	CHECKED BY:	W. LAMMER
			sj30typ.i	SHEET	7 OF 47

### HVCTRL # 1

Standard Disk Stamped

Malaney  
 NORTH = 237814.178  
 EAST = 507792.735  
 ELEV. =

TO REACH FROM THE INTERSECTION OF VT ROUTE 14 NORTH AND VT ROUTE 15, WEST OF HARDWICK VILLAGE, GO NORTH ALONG VT ROUTE 14 FOR 7.1 MI (11.4 KM) TO THE INTERSECTION OF TH 1 RIGHT. CONTINUE STRAIGHT AND NORTH ALONG VT ROUTE 14 FOR 3.3 MI (5.3 KM) TO A GRAVEL DRIVE LEFT LEADING TO THE HOUSE AND ATTACHED GARAGE OF MALANEY, TURN LEFT AND GO WEST ALONG GRAVEL DRIVE FOR 102 M (334.6 FT) TO THE MARK ON THE RIGHT SET IN A LAWN EAST OF THE HOUSE. THE MARK IS SET FLUSH WITH GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT POURED 1.3 M (4.3 FT) DEEP. IT IS 35.5 M (116.5 FT) EAST OF THE NORTHEAST CORNER OF THE MALANEY HOUSE, 40.9 M (134.2 FT) NORTHEAST OF THE SOUTHEAST CORNER OF THE ATTACHED GARAGE, 34.7 M (113.8 FT) NORTH OF AND ABOUT LEVEL WITH THE CENTERLINE OF GRAVEL DRIVE, AND 38.6 M (126.6 FT) NORTH OF POLE NO. 65A AND A FIBERGLASS WITNESS POST.

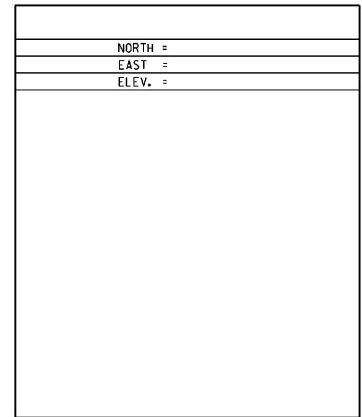
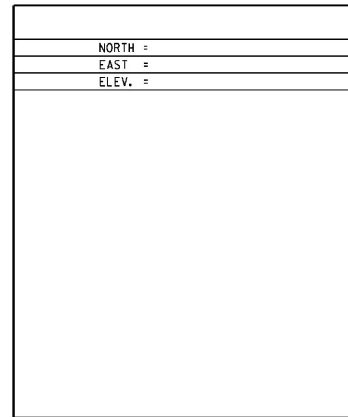
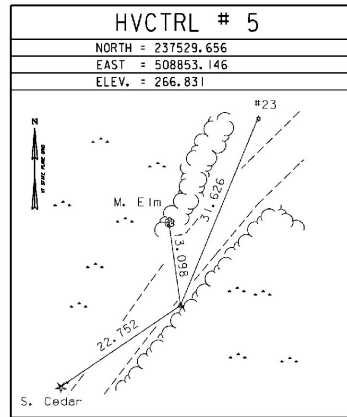
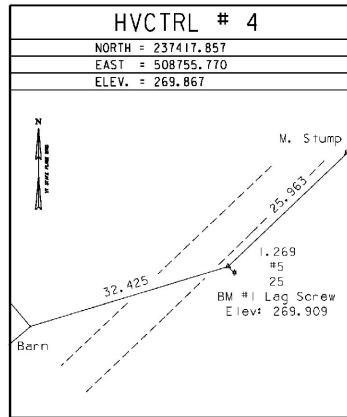
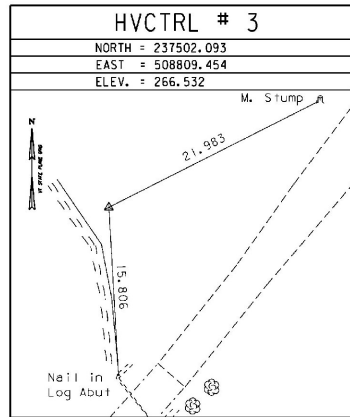
### HVCTRL # 2

Standard Disk Stamped

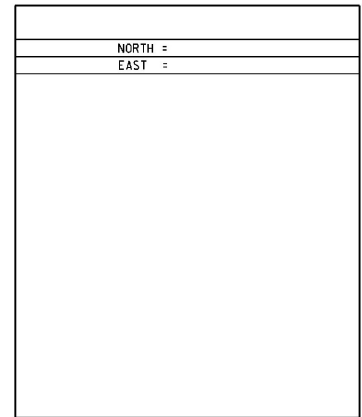
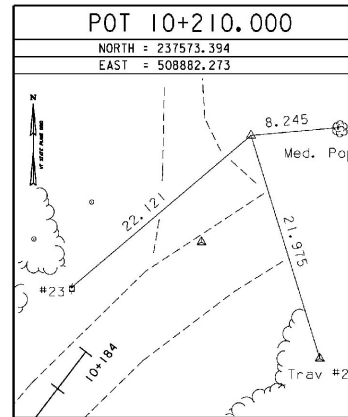
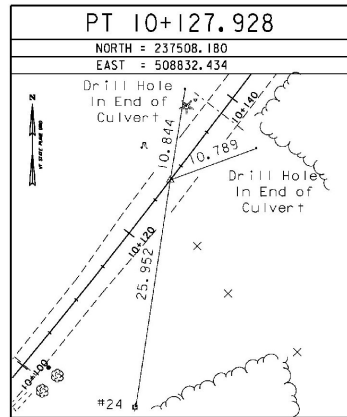
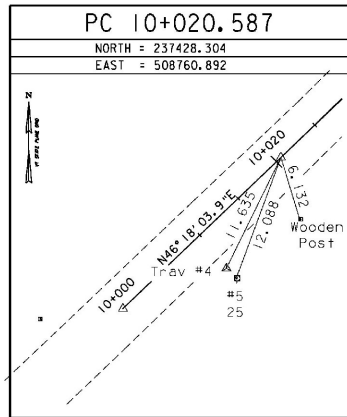
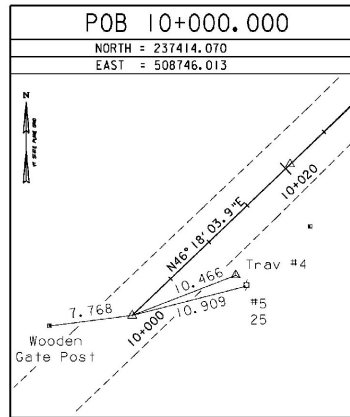
M 40  
 NORTH = 237552.396  
 EAST = 508888.752  
 ELEV. = 267.220

TO REACH FROM THE INTERSECTION OF VT ROUTE 14 NORTH AND VT ROUTE 15, WEST OF HARDWICK VILLAGE, GO NORTH ALONG VT ROUTE 14 FOR 9.9 MI (15.9 KM) TO THE INTERSECTION OF TH 59 (BLACK RIVER ROAD) RIGHT. TURN RIGHT AND GO EAST ALONG TH 59 (BLACK RIVER ROAD) FOR 0.4 MI (0.6 KM) TO THE BRIDGE OVER THE BLACK RIVER, CONTINUE STRAIGHT FOR ABOUT 103 M (337.9 FT) TO THE MARK ON THE RIGHT. NOTE, BRIDGE CLOSED THIS DATE. THE MARK IS SET IN THE TOP OF A 2.3 M (7.5 FT) X 1.7 M (5.6 FT) ROCK OUTCROP WHICH PROJECTS ABOUT 0.5 M (1.6 FT) ABOVE GROUND SURFACE. IT IS 12.9 M (42.3 FT) SOUTH OF AND ABOUT LEVEL WITH THE CENTERLINE OF BLACK RIVER ROAD, 24.4 M (80.1 FT) SOUTHEAST OF POLE NO. 23, 7.6 M (24.9 FT) EAST SOUTHEAST OF CRAFTSBURY SKI TRAIL SIGN NO. 50, AND 1.1 M (3.6 FT) SOUTHEAST OF A FIBERGLASS WITNESS POST.

• Description provided by Vermont Agency of Transportation Geodetic Survey Unit



• Main Traverse Completed 04/17/98 by R. Gilman P.C. & T. Companion



• Alignment Staked 06/29/03 by R. Gilman P.C. & P. Winters

### TIE INFORMATION SHEET

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (92)
ADJUSTMENT	Compass

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	R. BULLOCK
FILE NAME:	96J310\Structures\310tie.1	CHECKED BY:	
PROJECT MANAGER:	R. R. WHITCOMB	DESIGNED BY:	G. ROY
		SHEET	8 OF 47

**HD STEEL BEAM GUARDRAIL, GALVANIZED**

10+068.9 RT. - 10+082.1 RT.  
 10+074.1 LT. - 10+082.0 LT.  
 10+102.9 RT. - 10+114.2 RT.  
 10+103.0 LT. - 10+116.3 LT.

**ANCHOR FOR STEEL BEAM RAIL**

10+070.6 RT.  
 10+075.7 LT.  
 10+112.5 RT.  
 10+114.6 LT.

**REMOVE EXISTING 1200 PIPE**

10+137.8 LT - RT

**INSTALL NEW 1500 OPTION PIPE**

10+137.8 LT - RT

**SPECIAL PROVISION (BRIDGE RAILING,  
 GALVANIZED HDSB/CURB MOUNTED/STEEL TUBING)**

10+082.1 RT. - 10+102.9 RT.  
 10+082.0 LT. - 10+103.0 LT.

**REMOVING SIGNS**

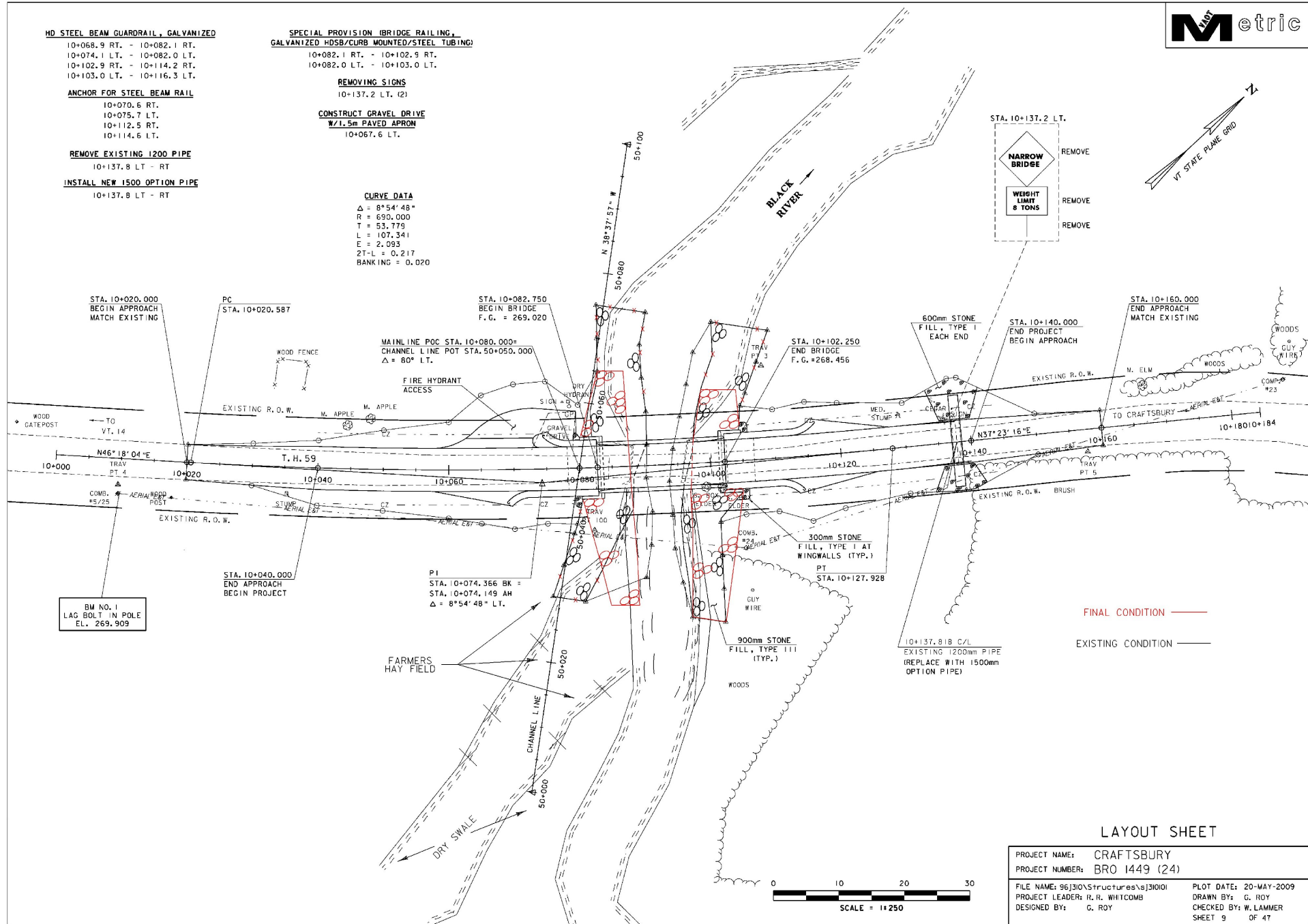
10+137.2 LT. (2)

**CONSTRUCT GRAVEL DRIVE**

W/1.5m PAVED APRON  
 10+067.6 LT.

**CURVE DATA**

$\Delta = 8^{\circ}54'48''$   
 $R = 690.000$   
 $T = 53.779$   
 $L = 107.341$   
 $E = 2.093$   
 $ZT-L = 0.217$   
 $BANKING = 0.020$

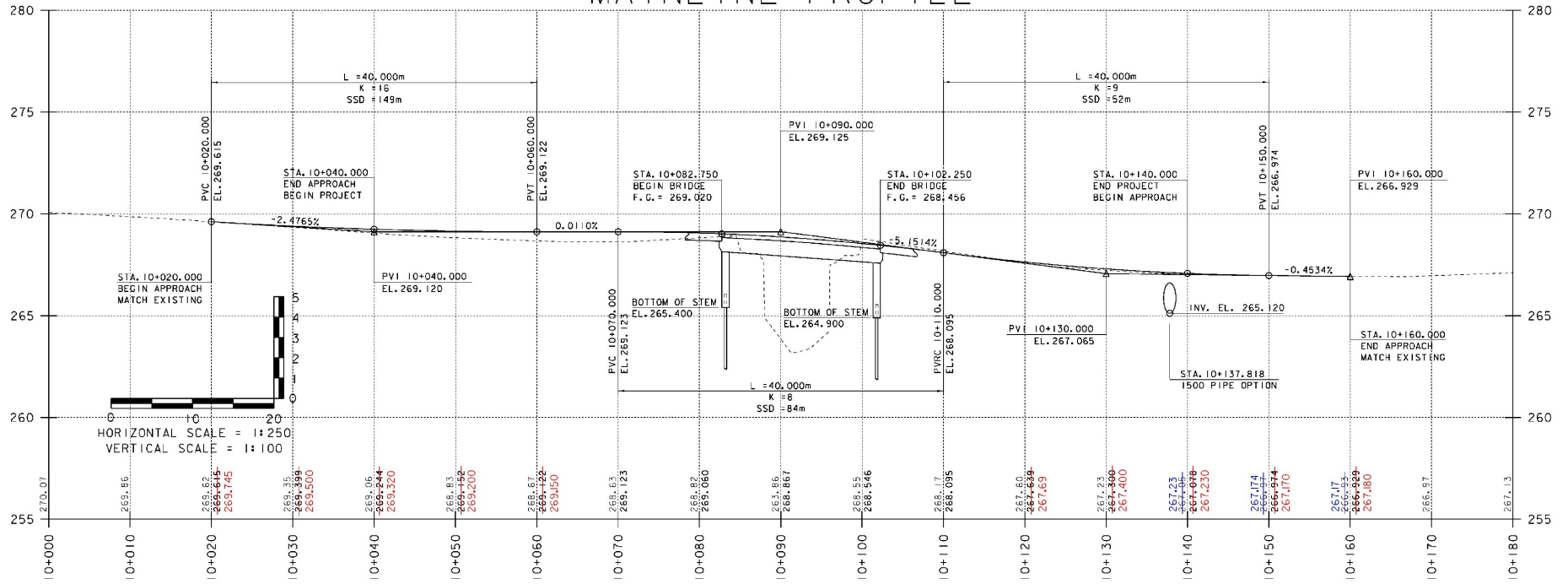


**LAYOUT SHEET**

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\9631001	CHECKED BY:	W. LAMMER
PROJECT LEADER:	R. R. WHITCOMB		
DESIGNED BY:	G. ROY		
		SHEET	9 OF 47



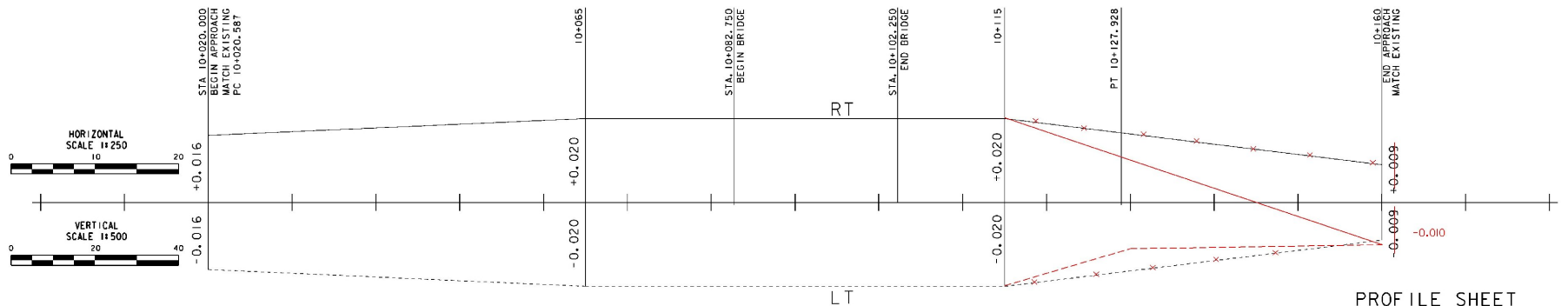
# MAINLINE PROFILE



BOTH ENDS OF THE PROJECT WERE DESIGNED LOW. GRADES WERE 'RE-WORKED' TO MATCH THE EXISTING ROAD.

EXISTING ———  
FINAL ———

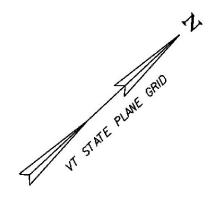
PROFILE NOTES:  
EXISTING ELEVATIONS ARE EXPRESSED TO 0.01 METERS.  
PROPOSED ELEVATIONS ARE EXPRESSED TO 0.001 METERS.



## PROFILE SHEET

PROJECT NAME: CRAFTSBURY  
PROJECT NUMBER: BRO 1449 (24)

FILE NAME: 96130\Structures\sj30xsl1 PLOT DATE: 20-MAY-2009  
PROJECT MANAGER: R. R. WHITCOMB DRAWN BY: G. ROY  
DESIGNED BY: G. ROY CHECKED BY: W. LAMMER  
SHEET 10 OF 47

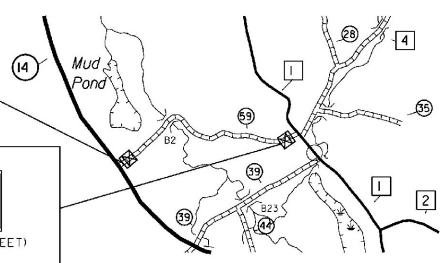


**BRIDGE CLOSED**  
AHEAD  
LOCAL TRAFFIC ONLY  
(SEE DETAIL THIS SHEET)

R11-3a ON TYPE III BARRICADE

**BRIDGE CLOSED**  
1 MILE AHEAD  
LOCAL TRAFFIC ONLY  
(SEE DETAIL THIS SHEET)

R11-3a ON TYPE III BARRICADE



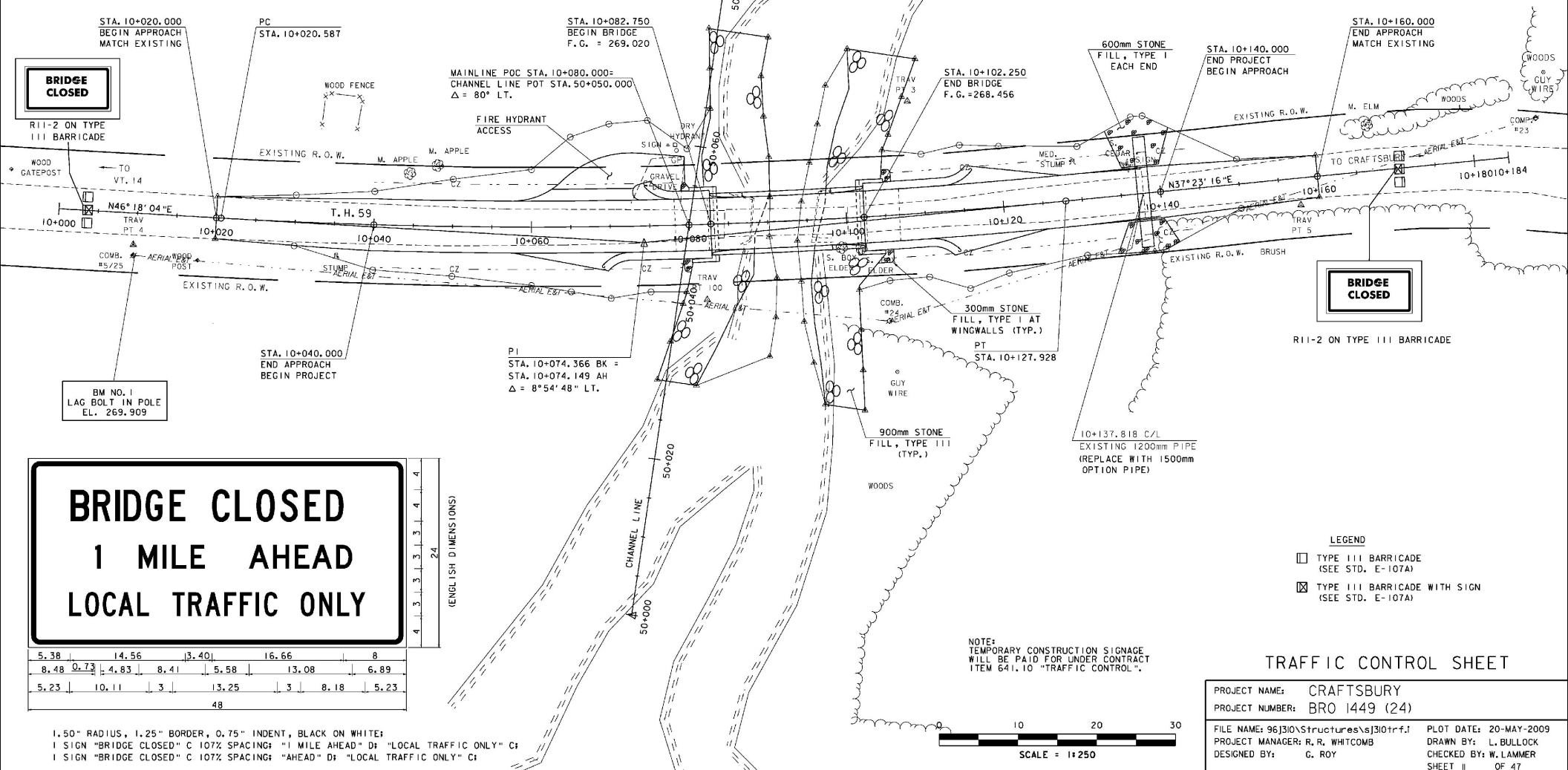
**BRIDGE CLOSED**

R11-2 ON TYPE III BARRICADE

**BRIDGE CLOSED**  
**1 MILE AHEAD**  
**LOCAL TRAFFIC ONLY**

5.38	14.56	13.40	16.66	8		
8.48	0.73	4.83	8.41	5.58	13.08	6.89
5.23	10.11	3	13.25	3	8.18	5.23
48						

1.50" RADIUS, 1.25" BORDER, 0.75" INDENT, BLACK ON WHITE;  
I SIGN "BRIDGE CLOSED" C 107% SPACING; "1 MILE AHEAD" D; "LOCAL TRAFFIC ONLY" C;  
I SIGN "BRIDGE CLOSED" C 107% SPACING; "AHEAD" D; "LOCAL TRAFFIC ONLY" C;



**BRIDGE CLOSED**

R11-2 ON TYPE III BARRICADE

- LEGEND**
- TYPE III BARRICADE (SEE STD. E-107A)
  - TYPE III BARRICADE WITH SIGN (SEE STD. E-107A)

NOTE:  
TEMPORARY CONSTRUCTION SIGNAGE  
WILL BE PAID FOR UNDER CONTRACT  
ITEM 641.10 "TRAFFIC CONTROL".



**TRAFFIC CONTROL SHEET**

PROJECT NAME: CRAFTSBURY  
PROJECT NUMBER: BRO 1449 (24)  
FILE NAME: 96J30\Structures\sj30trf.1  
PROJECT MANAGER: R. R. WHITCOMB  
DESIGNED BY: G. ROY  
PLOT DATE: 20-MAY-2009  
DRAWN BY: L. BULLOCK  
CHECKED BY: W. LAMMER  
SHEET 11 OF 47

**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.O.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 kPa**

UNDRAINED SHEAR STRENGTH IN kPa	CONSISTENCY
<12	Very Soft
12-24	Soft
24-48	Med. Stiff
48-96	Stiff
96-192	Very Stiff
>192	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

**DEFINITIONS (AASHTO)**

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

**BOULDER** - A rock fragment with an average dimension > 304.8 mm.

**COBBLE** - Rock fragments with an average dimension between 76.2 and 304.8 mm.

**GRAVEL** - Rounded particles of rock < 76.2 mm and > 2 mm (#10 sieve).

**SAND** - Particles of rock < 75 µm (#200 sieve).

**SILT** - Soil < 75 µm (#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.

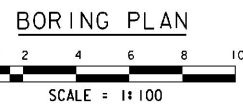
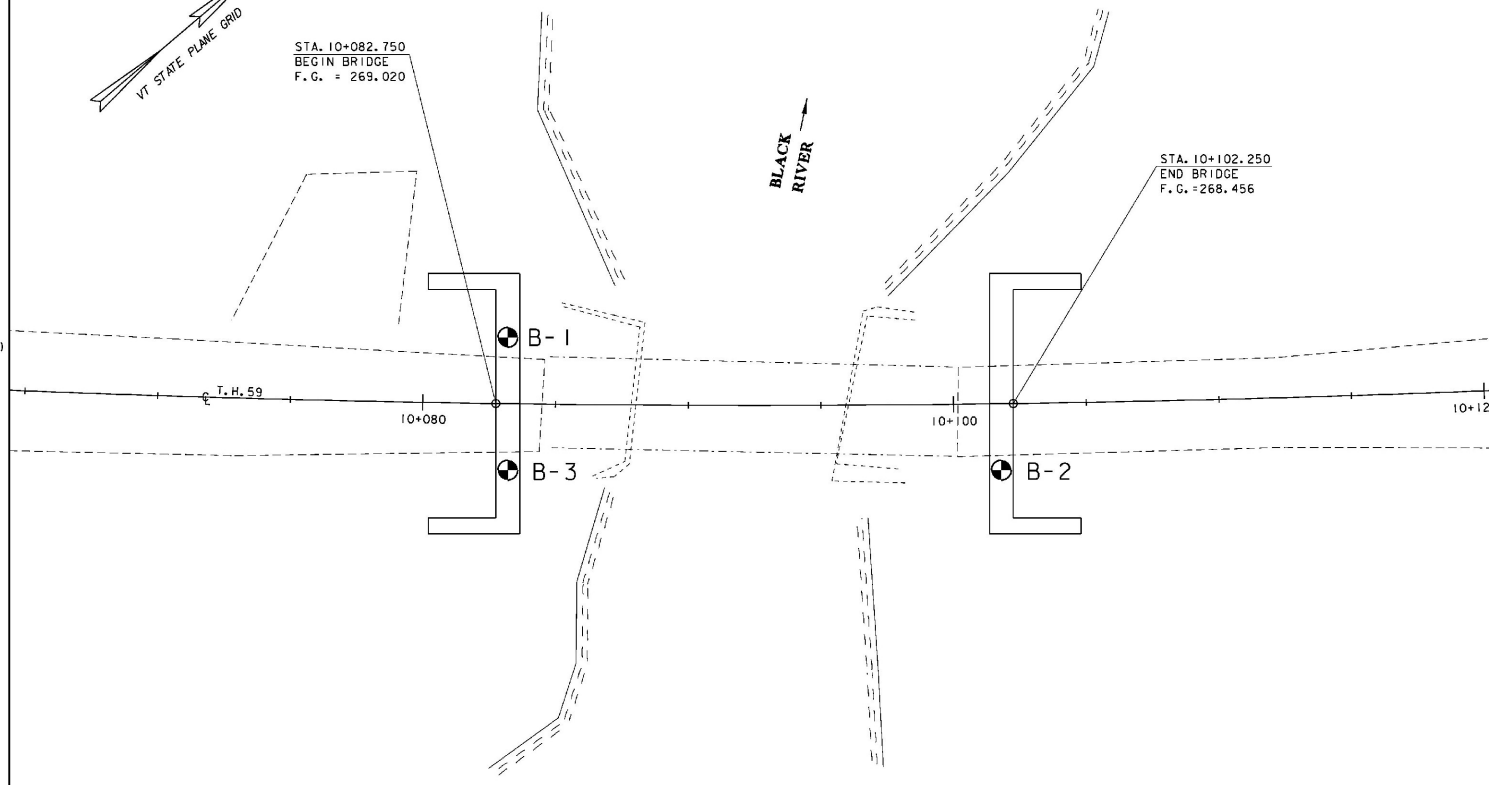
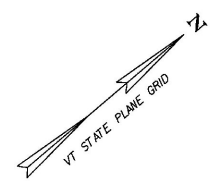
**DIP** - Inclination of bed with a horizontal plane.

**COMMONLY USED SYMBOLS**

- ▼ Water Elevation
- ⊕ Standard Penetration Boring
- ⊙ Auger Boring
- ⊗ Rod Sounding
- ⊖ Sample
- N Standard Penetration Test
  - Blow Count Per 300 mm For:
  - 50.8 mm O.D. Sampler
  - 35.0 mm I.D. Sampler
  - Hammer Weight Of 63.5 kg.
  - Hammer Fall Of 762 mm
- YS 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 30.1mm
- BX Core Size 42.0 mm
- NX Core Size 54.7 mm
- 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
- So Sand
- Si Silt
- Cl Clay
- HP Hardpan
- Le Ledge
- NLTD No Ledge To Depth
- CNPF Can Not Penetrate Further
- TLOB To Ledge Or Boulder
- NR No Recovery
- Rec. Recovery
- %Rec. Percent Recovery
- ROD Rock Quality Designation
- CBR California Bearing Ratio
- < Less Than
- > Greater Than
- R Refusal (N > 100)

**COLOR**

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



**GENERAL NOTES**

- The subsurface explorations shown herein were made between 07-31-2003 and 03-22-2004 by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual borings or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

**BORING CHART**

HOLE NO.	STATION	OFFSET (m)	GROUND ELEV.	ELEV. TLOB
B-1	10+083.0	2.5 LT.	268.90	NLTD
B-2	10+101.8	2.5 RT.	268.54	NLTD
B-3	10+083.0	2.5 RT.	268.90	NLTD

**BORING LAYOUT SHEET**

PROJECT NAME: CRAFTSBURY  
 PROJECT NUMBER: BRO 1449 (24)

FILE NAME: 96\310\Structures\310b01  
 PROJECT MANAGER: R. R. WHITCOMB  
 DESIGNED BY: W. LAMMER

PLOT DATE: 20-MAY-2009  
 DRAWN BY: C. MOONEY  
 CHECKED BY: W. LAMMER  
 SHEET 12 OF 47

# BORING LOG INFORMATION

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING NUMBER: B-1 SHEET 1 of 1 DATE STARTED: 8/13/03 DATE COMPLETED: 8/18/03							
PROJECT NAME: CRAFTSBURY SITE NAME: TH-59 STATION: 10+083.00 OFFSET: -2.50		PROJECT NUMBER: BRO 1449(24) SITE NUMBER: BR-2 GROUND ELEVATION: 269.90 m GROUNDWATER DEPTH:							
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: GARROW		BORING RIG: LARGE SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY:							
DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
0-2	x x x x	Fill material appears to be gravel, 0.00 m - 3.00 m							
2	A-4	Si, om, Moist. Rec. = 0.38 m	3	20.0	3.8	13.7	82.7		
4		Visual Classification: Silt with broken rock particles, br, Moist. Rec. = 0.30 m, 4.00 m - 4.60 m	8	27.7					
4	A-4	Si, gy, Moist. Rec. = 0.60 m	4	31.0	0.0	7.8	92.2		
6	A-4	Si, gy, Moist. Rec. = 0.50 m	3	30.1	0.4	9.0	89.7	22	4
8	A-4	Si, gy, Moist. Rec. = 0.57 m	2	29.9	0.4	14.1	85.5		
8	A-4	Cl, gy, Moist. Rec. = 0.56 m	3	30.3	0.3	8.1	91.6	24	7
10	A-4	Si, gy, Moist. Rec. = 0.60 m	4	31.0	0.0	5.3	94.7	22	3
10	A-4	Si, gy, Moist. Rec. = 0.50 m	2	31.8	1.7	3.2	95.1	23	3
12	A-4	Si, gy, Moist. Rec. = 0.60 m	2	34.5	0.0	3.5	96.5	23	4
12	A-3	Sa, gy, Moist. Rec. = 0.50 m	3	24.5	0.4	90.1	9.5		
14	A-3	Sa, gy, Moist. Rec. = 0.45 m	5	24.1	0.6	93.3	6.1		
14	A-4	Si, gy, Moist. Rec. = 0.15 m	22.6	0.1	8.9	91.0	23	5	
14	A-4	Si, gy, Moist. Rec. = 0.30 m	4	30.1	0.1	13.0	86.9	24	5
14		Hole stopped @ 14.50 m							
16		DRILLER'S NOTES Hole caved in @ 1.00m. No water found.							
18									

BOTTOM OF STEM  
ABUT. NO. 1  
EL. 265.400

30.0m ESTIMATED PILE LENGTH  
(INCLUDING 0.6m EMBEDMENT LENGTH)

BOTTOM OF PILING  
APPROXIMATE  
EL. 236.0

BOTTOM OF STEM  
ABUT. NO. 2  
EL. 264.900

30.0m ESTIMATED PILE LENGTH  
(INCLUDING 0.6m EMBEDMENT LENGTH)

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING NUMBER: B-2 SHEET 1 of 3 DATE STARTED: 7/31/03 DATE COMPLETED: 8/12/03							
PROJECT NAME: CRAFTSBURY SITE NAME: TH-59 STATION: 10+101.90 OFFSET: -2.50		PROJECT NUMBER: BRO 1449(24) SITE NUMBER: BR-2 GROUND ELEVATION: 288.54 m GROUNDWATER DEPTH:							
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: GARROW		BORING RIG: LARGE SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY:							
DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
2		No Recovery, 1.50 m - 2.10 m	4						
4	A-4	Sa, gy, Moist. Rec. = 0.60 m	4	28.1	0.0	25.7	74.3	32	6
4	A-4	Si, gy, Moist. Rec. = 0.60 m	WH	43.5	0.0	18.9	81.1		
6	A-4	Sa, gy, Moist. Rec. = 0.50 m	3	25.9	8.9	34.9	56.2		
8		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.45 m, 7.50 m - 8.10 m	4	26.2					
8	A-4	Si, gy, Moist. Rec. = 0.60 m	4	27.0	0.6	5.9	93.5	21	4
10		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.48 m, 10.50 m - 11.10 m	3	28.1					
12		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.50 m, 12.00 m - 12.60 m	5	28.4					
14	A-4	Si, gy, Moist. Rec. = 0.60 m	4	33.2	0.0	2.9	97.1	25	6
15		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.60 m, 15.00 m - 15.60 m	2	32.5					
15	A-4	Sa, gy, Moist. Rec. = 0.60 m	2	24.1	5.1	48.3	46.6	24	6
18		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.25 m, 18.00 m - 18.60 m	WH	32.2					
18		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.30 m, 19.50 m - 20.10 m	3	33.1					

BOTTOM OF PILING  
APPROXIMATE  
EL. 235.5

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING NUMBER: B-2 SHEET 2 of 3 DATE STARTED: 7/31/03 DATE COMPLETED: 8/12/03							
PROJECT NAME: CRAFTSBURY SITE NAME: TH-59 STATION: 10+101.90 OFFSET: -2.50		PROJECT NUMBER: BRO 1449(24) SITE NUMBER: BR-2 GROUND ELEVATION: 288.54 m GROUNDWATER DEPTH:							
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: GARROW		BORING RIG: LARGE SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY:							
DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
22		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.35 m, 21.00 m - 21.60 m	2	33.1					
22	A-4	Si, gy, Moist. Rec. = 0.25 m	WH	32.3	0.0	0.9	99.1	25	3
24		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.60 m, 24.00 m - 24.60 m	2	34.5					
26									
26		Visual Classification: A-4, Silt, gy, Moist. Rec. = 0.20 m, 27.00 m - 27.60 m	3	38.8					
28									
30	A-7-6	Cl, gy, Moist. Rec. = 0.60 m	WH	47.8	0.0	0.9	99.1	45	23
32									
34		Visual Classification: A-5, Silty Clay, gy, Moist. Rec. = 0.55 m, 33.00 m - 33.60 m	WH	43.1					
36									
36		Visual Classification: A-4, Clay Silt, gy, Moist. Rec. = 0.60 m, 36.00 m - 36.60 m	WH	41.5					
38									
38		A-4, Si, gy, Moist. Rec. = 0.35 m	WH	39.6	0.0	0.4	99.6		
40									

BORING LOG INFORMATION SHEET ONE

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	11/22/04
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	C. MOONEY
FILE NAME:	196\310\Structure\310bor.xls	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET 13	OF 47
DESIGNED BY:	W. LAMMER		

# BORING LOG INFORMATION

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING NUMBER: B-2 SHEET 3 of 3 DATE STARTED: 7/31/03 DATE COMPLETED: 8/12/03					
PROJECT NAME: CRAFTSBURY SITE NAME: TH-59 STATION: 10+101.80 OFFSET: 2.50		PROJECT NUMBER: BRO 1449(24) SITE NUMBER: BR-2 GROUND ELEVATION: 268.54 m GROUNDWATER DEPTH:							
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: GARROW		BORING RIG: LARGE SKID RIG BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL CHECKED BY:							
DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PL (%)
44		Visual Classification: A-4, Sandy Silt, gry, Moist, Rec. = 0.30 m, 42.00 m - 42.60 m		39.2					
45		No Recovery, 45.00 m - 45.80 m							
48		Visual Classification: A-4, Sandy Silt, gry, Moist, Rec. = 0.30 m, 48.00 m - 48.60 m		23.4					
51		No Recovery, 51.00 m - 51.80 m							
54		EXMDC, Into Rock material, 52.73 m - 53.18 m, Rock break from 53.18m-53.64m							
54		EXMDC, Into Rock material, 53.64 m - 54.56 m, Broke through with core barrel at 54.56m, Went down to 55.16m, No Rock, Casing plugged.							
55		Hole stopped @ 55.16 m							
50		DRILLER'S NOTES: Hole caved in @ 3.35m, No water found.							

BOTTOM OF STEM  
ABUT. NO. 1  
EL. 265.400

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING NUMBER: B-3 SHEET 1 of 3 DATE STARTED: 2/11/04 DATE COMPLETED: 3/22/04					
PROJECT NAME: CRAFTSBURY SITE NAME: TH-59 STATION: 10+083.00 OFFSET: 2.50		PROJECT NUMBER: BRO 1449(24) SITE NUMBER: BR-2 GROUND ELEVATION: 268.900 GROUNDWATER DEPTH: 3.15 m 3/22/04							
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL		BORING RIG: TRUCK BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL & TUBE CHECKED BY:							
DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PL (%)
1.0		A-1-a, S&G, gry, Moist, Rec. = 0.30 m	61	10.3	50.4	34.1	15.5		
2.0		A-2-4, SiS, gry, Moist, Rec. = 0.38 m	5	24.8	7.7	69.6	22.7		
3.0		A-2-4, SiS with small particles of wood, tm, Moist, Rec. = 0.20 m	3	36.6	4.7	64.3	31.0		
4.0		A-4, Si with small particles of wood, gry, Moist, Rec. = 0.45 m	9	34.0	0.5	18.2	81.3		
5.0		Shelby Tube Attempted, 5.00 m - 5.60 m, No Recovery							
6.0		Vane Shear 400/30 pcf, 5.90 m - 6.05 m							
6.5		A-4, Si Shelby Tube#1, Rec. = 0.56m, gry, Moist	27.2	0.0	8.1	91.9	27	5	
6.5		A-6, SiCl, gry, Moist, Bottom half of Tube #1	43.7	0.0	1.6	98.4	38	17	

30.0M ESTIMATED PILE LENGTH  
(INCLUDING 0.6m EMBEDMENT LENGTH)

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING NUMBER: B-3 SHEET 2 of 3 DATE STARTED: 2/11/04 DATE COMPLETED: 3/22/04					
PROJECT NAME: CRAFTSBURY SITE NAME: TH-59 STATION: 10+083.00 OFFSET: 2.50		PROJECT NUMBER: BRO 1449(24) SITE NUMBER: BR-2 GROUND ELEVATION: 268.900 GROUNDWATER DEPTH: 3.15 m 3/22/04							
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL		BORING RIG: TRUCK BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL & TUBE CHECKED BY:							
DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PL (%)
7.5		Vane Shear 650/200 pcf, 7.10 m - 7.25 m							
7.5		A-4, Si Shelby Tube#2, Rec. = 0.58m, gry, Moist		31.9	0.0	6.9	93.1	25	6
8.0		A-6, SiCl, gry, Moist, Bottom half of Tube #2		40.0	0.0	2.3	97.7	34	13
8.5		Vane Shear 540/60 pcf, 8.30 m - 8.45 m, Sample off Vane		33.9					22
8.5		A-4, SiS Shelby Tube#3, Rec. = 0.27m, gry, Moist, Stopped by a Stone		22.9	0.0	8.1	91.6	30	7
10.0		Vane Shear 650/100 pcf, 10.20 m - 10.35 m							
10.5		Shelby Tube Attempted, 10.50 m - 11.10 m, No Recovery							
11.0		A-4, Visual Classification: Si, Vane Shear 700/60 pcf, gry, Moist, Sample off Vane		30.7					25
11.0		A-4, Si Shelby Tube#4, Rec. = 0.26m, gry, Moist		25.1	0.0	10.7	89.3	23	3
12.5		Vane Shear 750/100 pcf, 12.90 m - 12.75 m							
13.0		Shelby Tube Attempted, 12.90 m - 13.50 m, No Recovery							
13.5		Vane Shear 1275/130 pcf, 13.80 m - 13.95 m							

## BORING LOG INFORMATION SHEET TWO

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	11/22/04
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	C. MOONEY
FILE NAME:	\\96\310\Structures\esj310bor.xls	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET	14 OF 47
DESIGNED BY:	W. LAMMER		

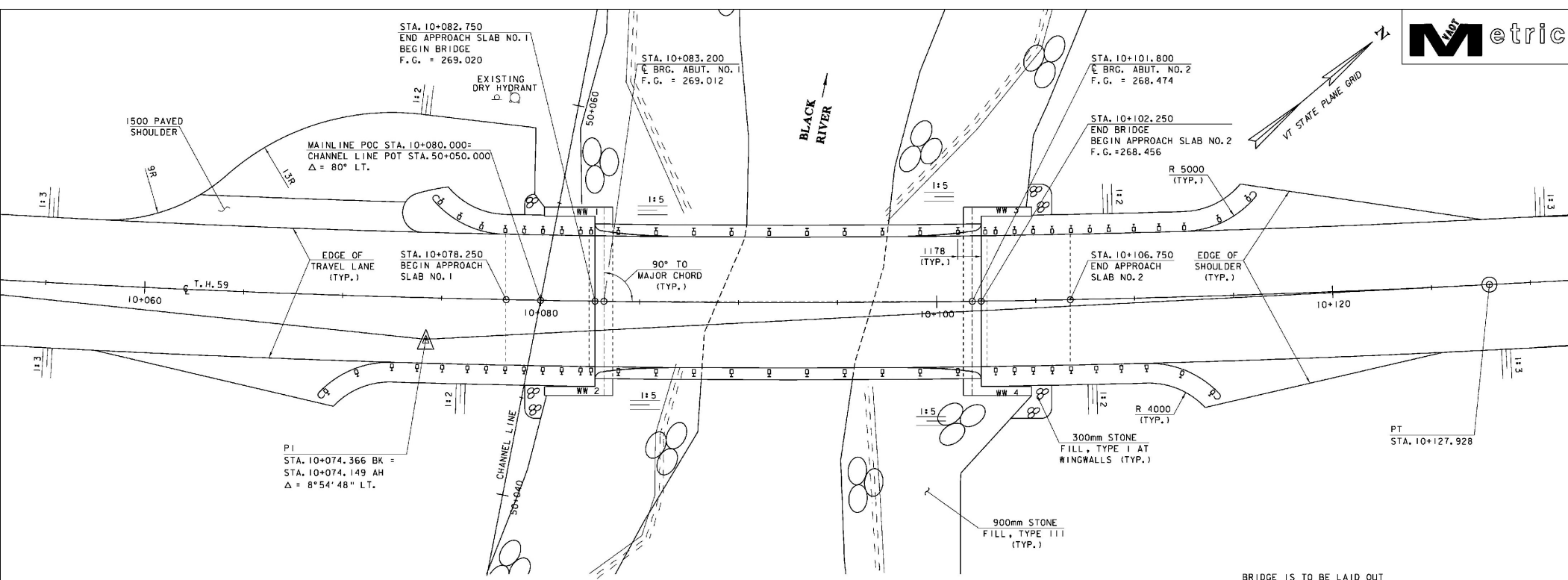
# BORING LOG INFORMATION

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING NUMBER: B-3 SHEET 3 of 3 DATE STARTED: 2/11/04 DATE COMPLETED: 3/22/04							
PROJECT NAME: CRAFTSBURY SITE NAME: TH-59 STATION: 10+083.00 OFFSET: 2.50		PROJECT NUMBER: BRO 1449(24) SITE NUMBER: BR-2 GROUND ELEVATION: 268.900 GROUNDWATER DEPTH: 3.15 m 3/22/04							
BORING CREW CREW CHIEF: TALLMAN DRILLER: TALLMAN LOGGER: RUSSELL		BORING RIG: TRUCK BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL & TUBE CHECKED BY:							
DEPTH (m)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 300mm	M.C (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PL (%)
14.5		Shelby Tube Attempted 14.10 m - 14.70 m; No Recovery							
15.0		A-4, Si Vane Shear 702/115 psf, gry, Moist, Sample off Vane		33.4	0.0	2.8	97.2	27	6
15.5		A-4, Si, gry, Moist, Sample from Disturbed Tube, Rec. = 0.23m		35.1	0.0	2.5	97.5	25	5
16.0									
16.5		A-4, Si, Vane Shear 1150/65 psf, gry, Moist, Sample off Vane		30.4	0.0	1.7	98.3	24	4
17.0									
17.5		A-4, Si Shelby Tube#5, Rec. = 0.56m, gry, Moist		23.5	0.0	7.7	92.3	21	2
18.0		A-4, Cl# Top of Trial#1 sample, gry, Moist A-4, Si Bottom of Trial#1 sample, gry, Moist		23.8 23.8				31 23	10 1
18.5		Vane Shear 820/30 psf, 18.45 m - 18.60 m Hole stopped @ 18.60 m							
15.0		DRILLER'S NOTES 1. Vane used was 3/8 inches. 2. Vane Shear = Initial/Remold 3. Ground Water Elevation was 3.15m on 3/22/04. 4. See Geotechnical Report for Trial#1 & One Dimensional Consolidation test results.							

| BOTTOM OF PILING  
 APPROXIMATE  
 EL. 236.0

## BORING LOG INFORMATION SHEET THREE

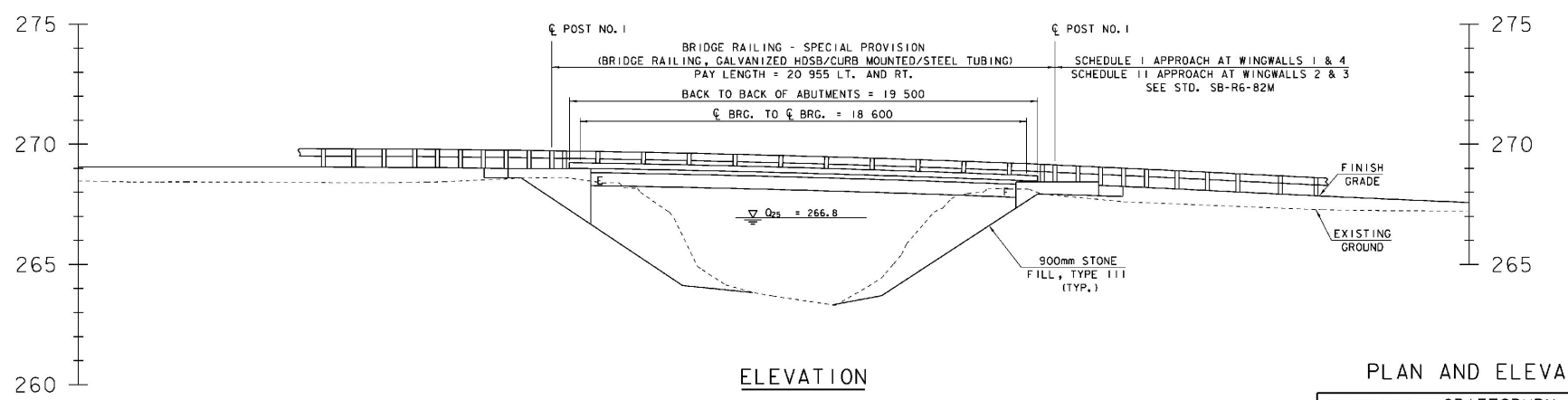
PROJECT NAME:	CRAFTSBURY	PLOT DATE:	11/22/04
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	C. MOONEY
FILE NAME:	\\96310\Structures\sj310bor.xls	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET	15 OF 47
DESIGNED BY:	W. LAMMER		



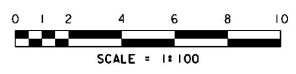
PLAN



BRIDGE IS TO BE LAID OUT PARALLEL TO THE MAJOR CHORD WITH NO CONSIDERATION GIVEN TO CURVE EXCEPT AT THE END OF APPROACH SLABS.

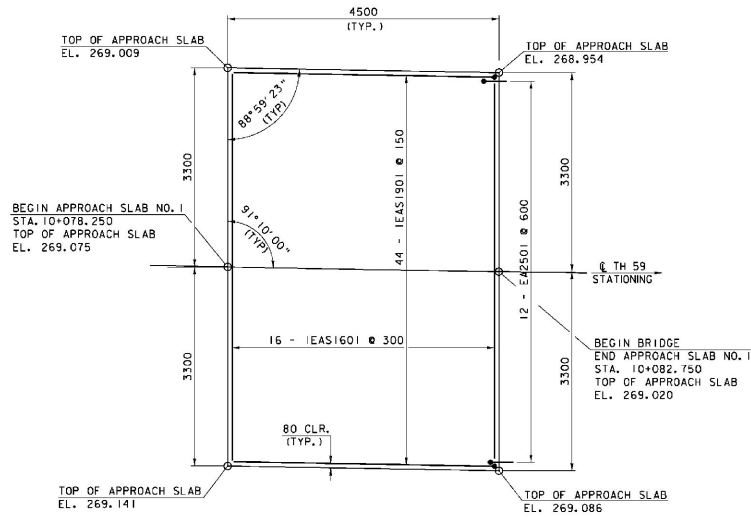


ELEVATION

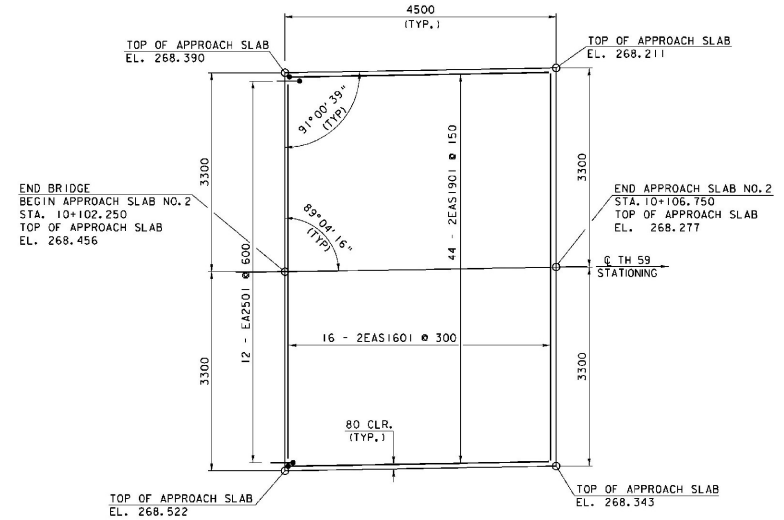
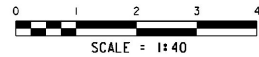


PLAN AND ELEVATION SHEET

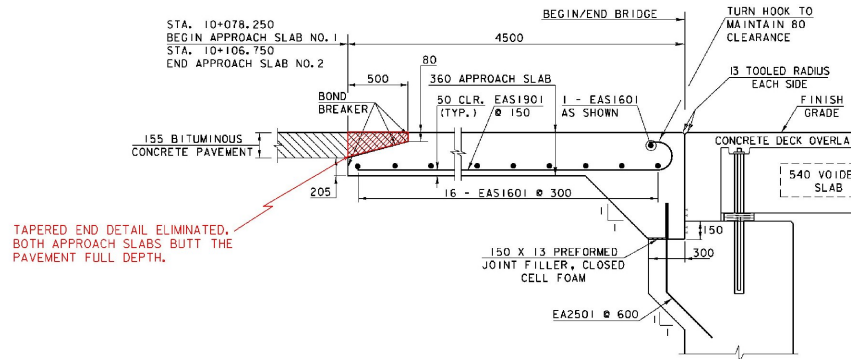
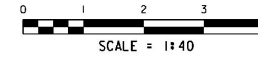
PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\310pe.1	CHECKED BY:	W. LAMMER
DESIGNED BY:	G. ROY	SHEET	16 OF 47



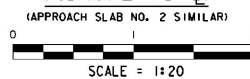
APPROACH SLAB NO. 1 PLAN



APPROACH SLAB NO. 2 PLAN

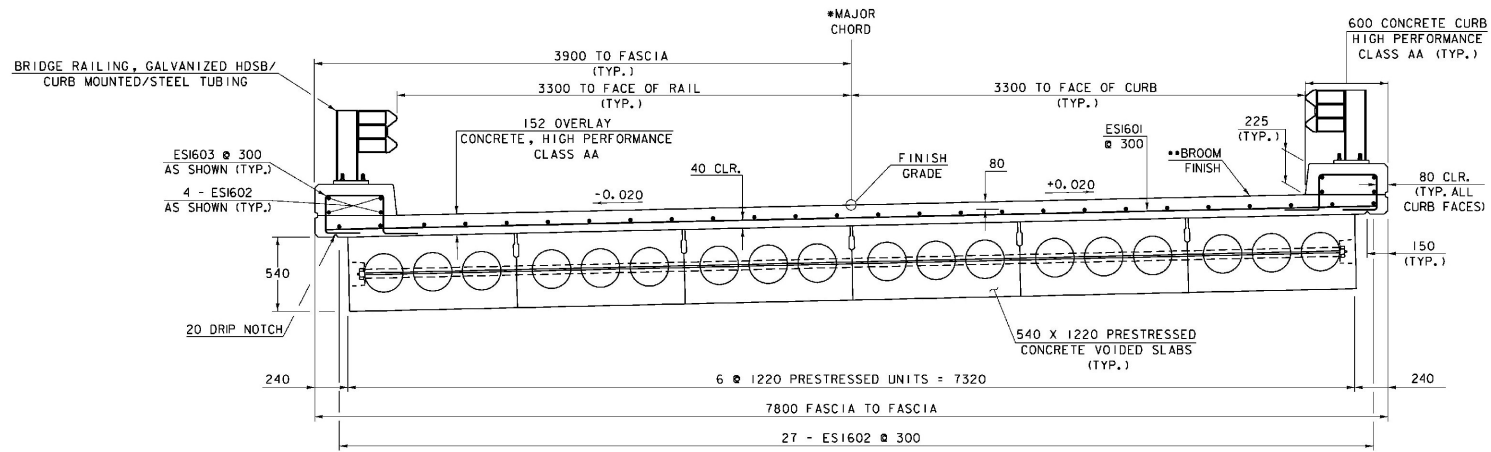


APPROACH SLAB NO. 1 DETAIL  
(NORMAL TO C)



APPROACH SLAB DETAILS

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449(24)	DRAWN BY:	L. BULLOCK
FILE NAME:	96j310/str-3/sj310sup.dgn	CHECKED BY:	C. CARLSON
PROJECT LEADER:	R. WHITCOMB	DESIGNED BY:	N. LAMMER
DESIGNED BY:	N. LAMMER	FILE NAME:	96j310csd.i
		SHEET	17 OF 47

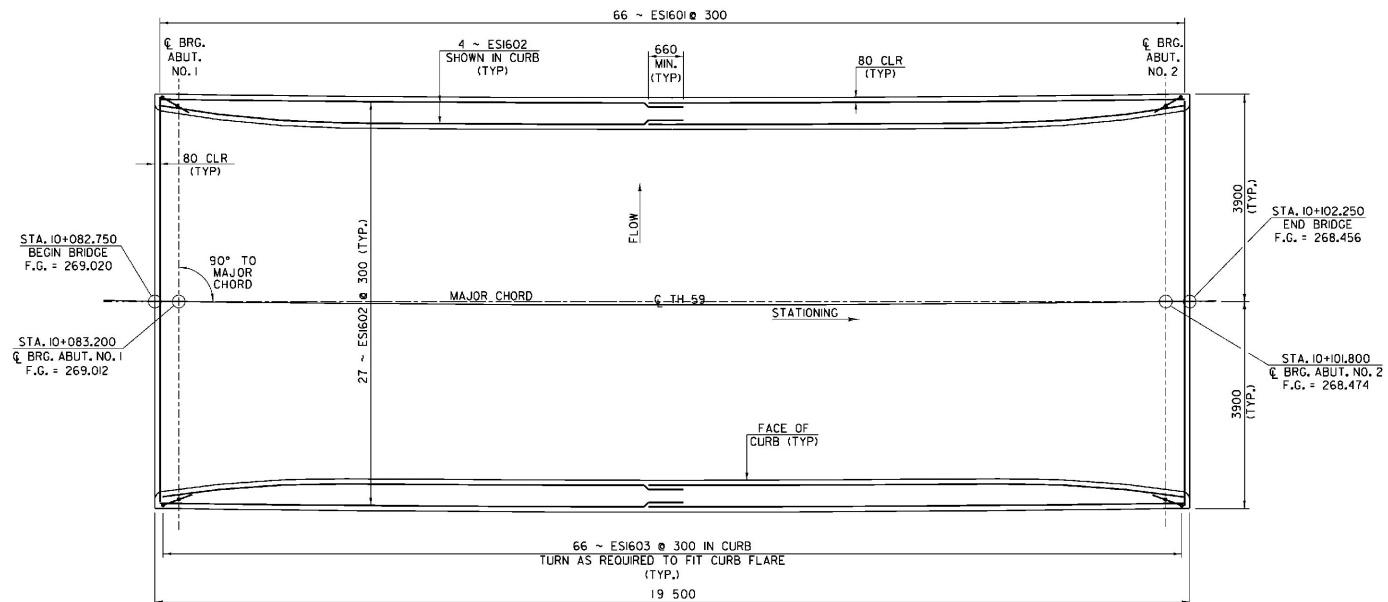


BRIDGE TYPICAL SECTION

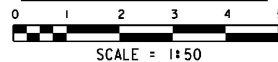


\* BRIDGE IS TO BE LAID OUT PARALLEL TO THE MAJOR CHORD WITH NO CONSIDERATION GIVEN TO CURVE EXCEPT AT THE END OF APPROACH SLABS. MAJOR CHORD IS FROM  $\varnothing$  BEARING TO  $\varnothing$  BEARING

\*\* THE CONCRETE DECK WILL BE BROOM FINISHED NORMAL TO CENTERLINE.



DECK REINFORCING



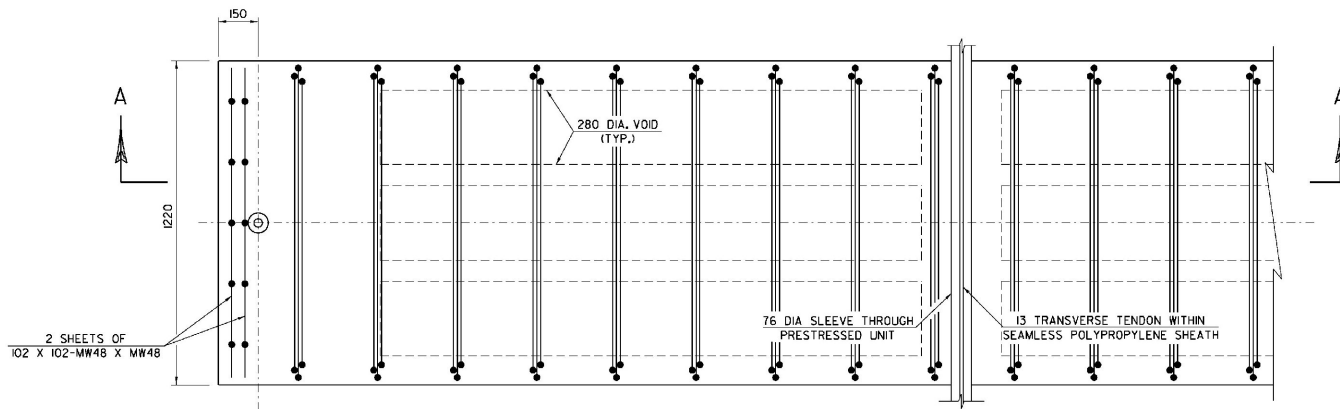
DECK REINFORCING

PROJECT NAME: CRAFTSBURY  
PROJECT NUMBER: BRO 1449 (24)

FILE NAME: 96j310/str3/sj310sup.dgn  
PROJECT MANAGER: R. R. WHITCOMB  
DESIGNED BY: W. LAMMER  
sj310dck.1

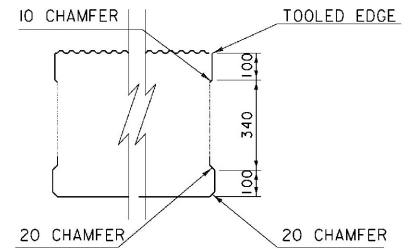
PLOT DATE: 20-MAY-2009  
DRAWN BY: L. BULLOCK  
CHECKED BY: C. CARLSON  
SHEET 18 OF 47



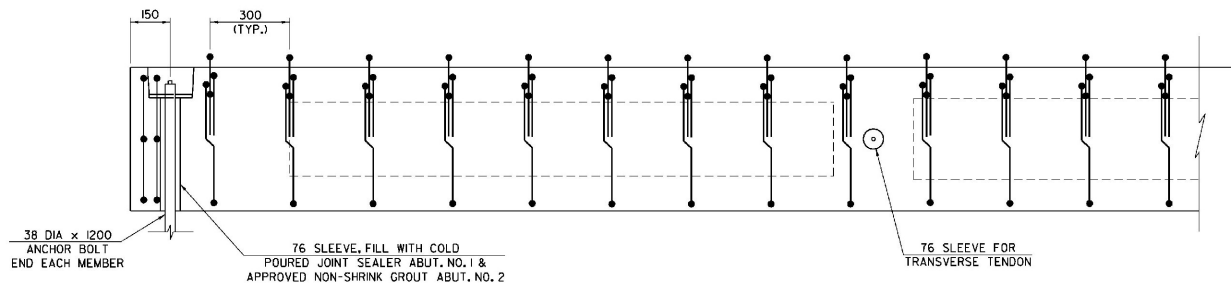


**END BLOCK DETAIL**  
SCALE = 1/10

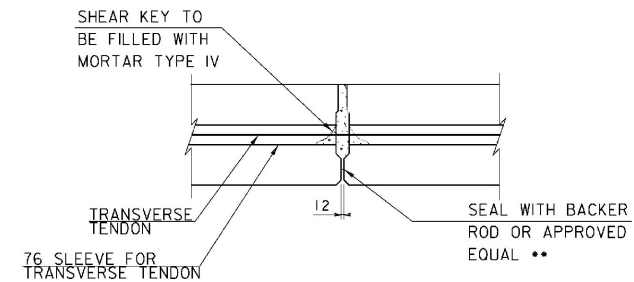
**DETAIL AT TRANSVERSE TENDON**  
SCALE = 1/10



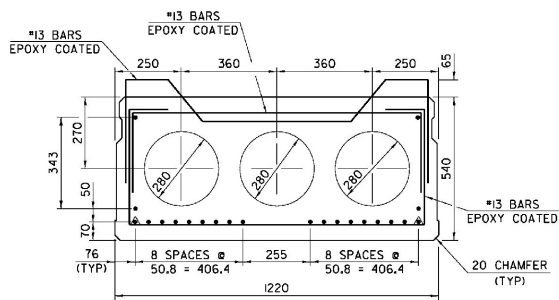
**SHEAR KEY DETAIL FOR VOIDED SLAB**  
SCALE 1/100



**VOIDED SLAB SECTION A-A**  
SCALE = 1/10



**SHEAR KEY SECTION FOR VOIDED SLAB**  
SCALE 1/100



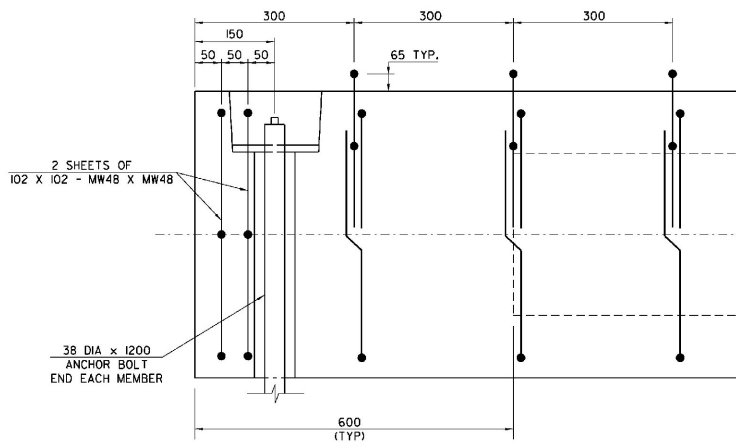
**540 x 1220 VOIDED SLAB**  
SCALE = 1/10

▲ = STRAND DEBONDED 500 EACH END

NUMBER OF STRANDS FOR 540x1220 SLAB

ROW #	NO. OF STRANDS
1 @ 70	18 STRANDS
2 @ 120	2 STRANDS
3 @ 463	2 STRANDS

\* ROWS ARE ALWAYS AT SPECIFIED DISTANCES FROM BOTTOM OF UNIT

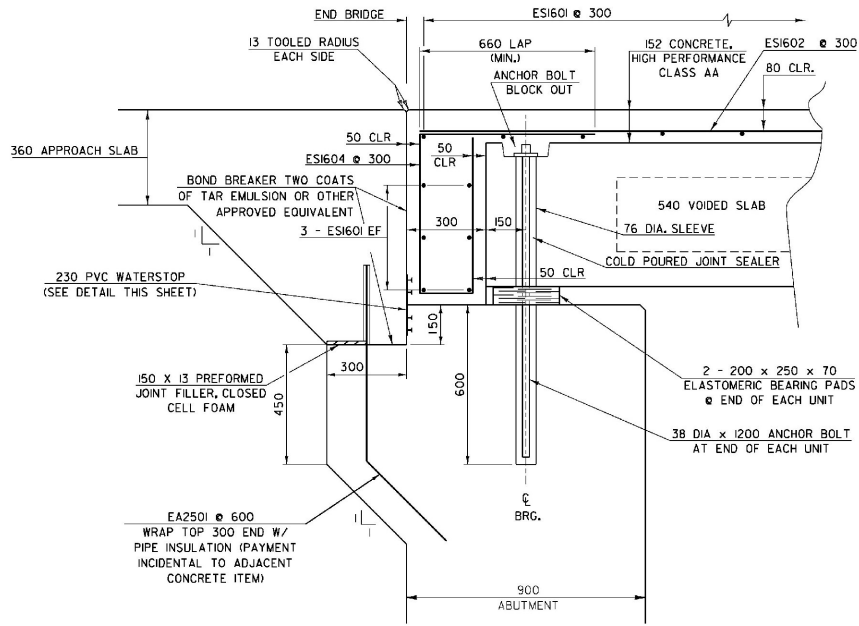


**END BLOCK SECTION**  
SCALE = 1/5

\*\*NOTE:  
INSTALL BACKER ROD AFTER UNITS HAVE BEEN PLACED

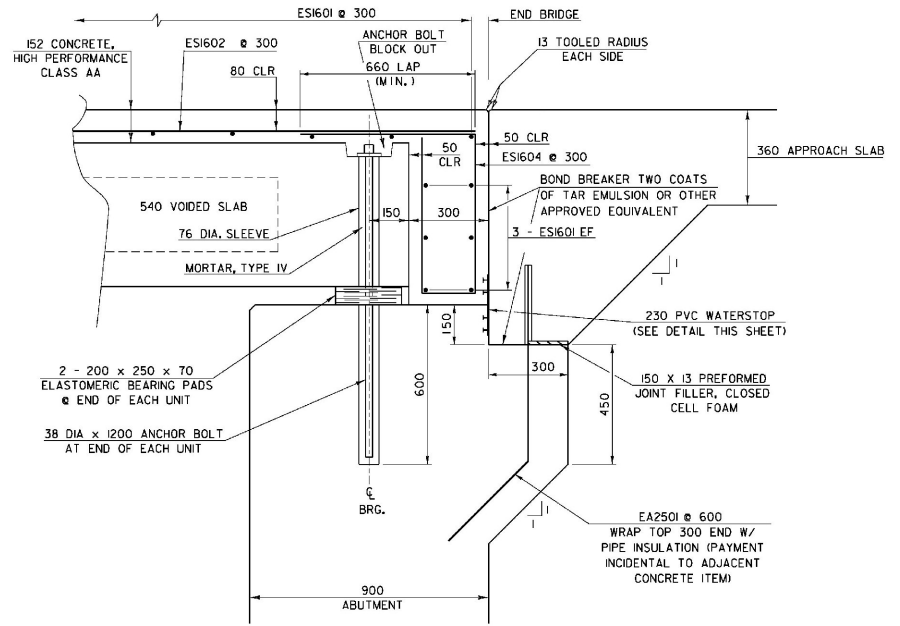
**540 X 1220 VOIDED SLAB DETAILS**

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449(24)	DRAWN BY:	L. BULLOCK
FILE NAME:	96j310/str3/sj310sup.dgn	CHECKED BY:	C. CARLSON
PROJECT LEADER:	R. WHITCOMB	SHEET	20 OF 47
DESIGNED BY:	W. LAMMER		
sj310vsd.1			



**BRIDGE END DETAIL AT ABUTMENT #1 (EXPANSION)**

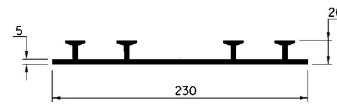
SCALE = 1/40



**BRIDGE END DETAIL AT ABUTMENT #2 (FIXED)**

SCALE = 1/40

**NOTE:**  
 FABRICATOR SHALL SUPPLY A SELF ADHESIVE COMPRESSIBLE SEALER BETWEEN THE BOTTOM OF THE UNITS AND THE BRIDGE SEAT. THIS COMPRESSIBLE SEALER SHALL SURROUND THE 76 DIA. SLEEVE IN THE UNIT. THE PURPOSE OF THE SEALER IS TO FACILITATE PLACEMENT OF THE "MORTAR OR JOINT SEALER" AROUND THE ANCHOR BOLTS.

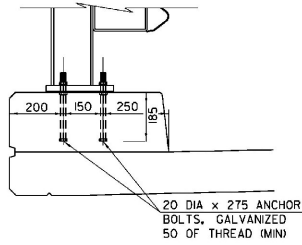


**P. V. C. WATERSTOP FOR CONSTRUCTION JOINTS**

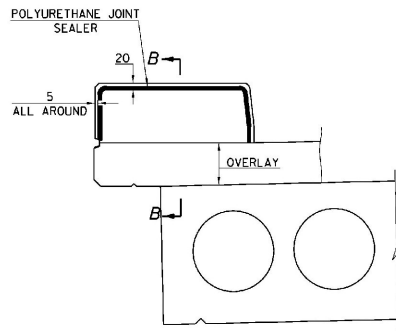
THE COSTS FOR P. V. C. WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.

**BRIDGE END DETAILS**

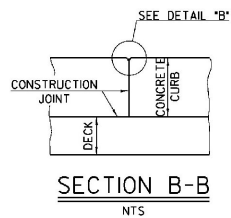
PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449(24)	DRAWN BY:	L. BULLOCK
FILE NAME:	96j310/str3/sj310sup.dgn	CHECKED BY:	C. CARLSON
PROJECT LEADER:	R. WHITCOMB	DESIGNED BY:	W. LAMMER
DESIGNED BY:	W. LAMMER	SHEET	21 OF 47
sj310bed.1			



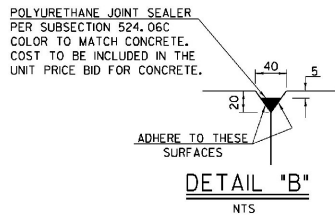
**ANCHOR BOLT DETAIL**  
SCALE: 1/10



**TYPICAL SECTION THROUGH CONCRETE CURB CONSTRUCTION JOINT**  
NTS

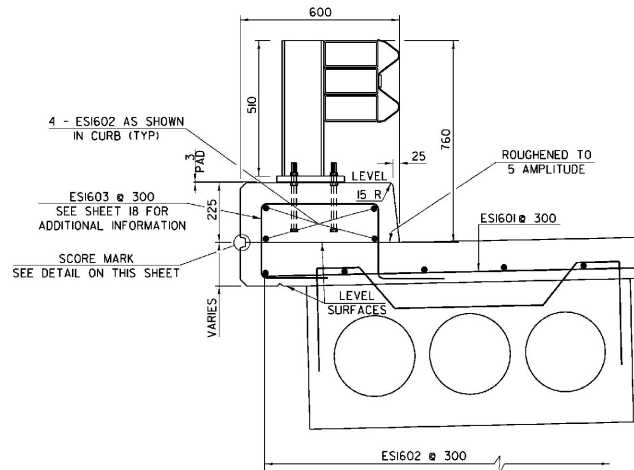


**SECTION B-B**  
NTS



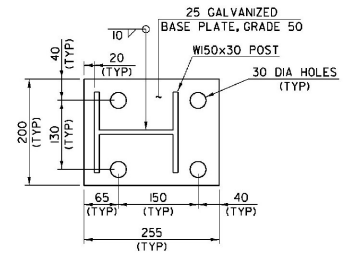
**DETAIL "B"**  
NTS

**NOTES:**  
1. CONCRETE CURBS AND SIDEWALK MAY BE POURED IN ONE CONTINUOUS POUR IF ONE OF THE APPROVED SHRINKAGE REDUCING ADMIXTURES LISTED IN THE SPECIAL PROVISIONS IS USED. PAYMENT FOR THE ADMIXTURE WILL BE INCLUDED IN THE UNIT BID PRICE FOR PAY ITEM 501.32 CONCRETE, HIGH PERFORMANCE CLASS AA.  
2. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 6000 CENTER TO CENTER AND SHALL BE 450 MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.  
3. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS.

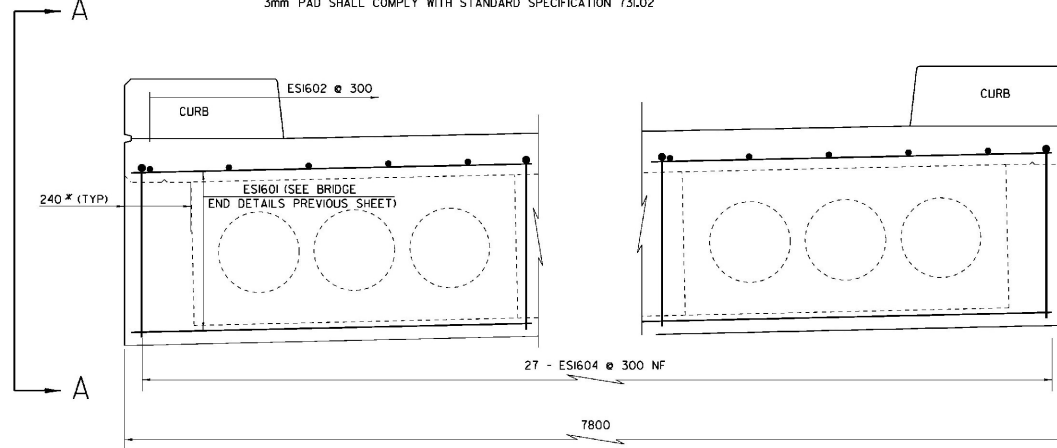


**CURB AND RAIL SECTION**  
SCALE: 1/10

FOR ADDITIONAL BRIDGE RAILING DETAILS SEE VAOT STD DRAWING SB-R7-90  
3mm PAD SHALL COMPLY WITH STANDARD SPECIFICATION 731.02

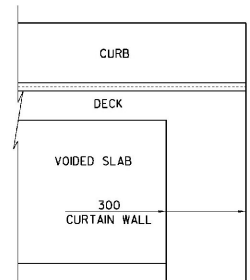


**BRIDGE RAIL BASE PLATE DETAIL**  
SCALE: 1/5

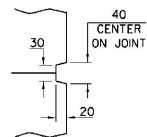


\* CURTAIN WALL LENGTH MATCHES THE FASCIA TO FASCIA WIDTH.

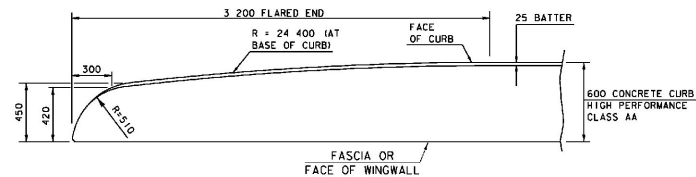
**CURTAIN WALL DETAIL**  
SCALE: 1/10



**VIEW A-A**  
SCALE: 1/10



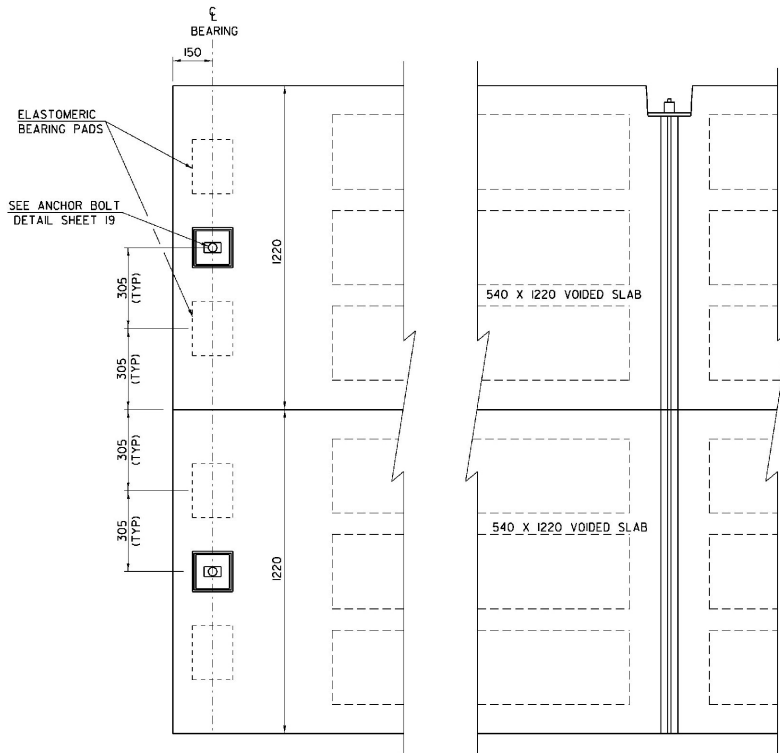
**SCORE MARK DETAIL**  
SCALE: 1/5



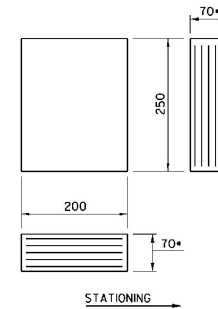
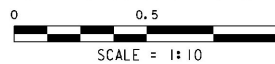
**FLARED END FOR 600 CURB**  
BARS SHALL BE TURNED AS REQUIRED TO FIT FLARED ENDS  
NTS

**CURB AND RAIL DETAILS**

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449(24)	PROJECT LEADER:	R. WHITCOMB
DESIGNED BY:	W. LAMMER	CHECKED BY:	C. CARLSON
FILE NAME:	96j310/s1r3/sj310sup.dgn	DESIGNED BY:	W. LAMMER
		CHECKED BY:	C. CARLSON
		SHEET	22 OF 47

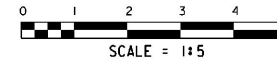


**BEARING PAD PLACEMENT DETAIL**  
(TYPICAL EACH END)



**ELASTOMERIC BEARING DETAIL**

- 4 - 13 mm LAYERS OF ELASTOMERIC ALTERNATING WITH
- 5 - 14 GAGE STEEL REINFORCING PLATES



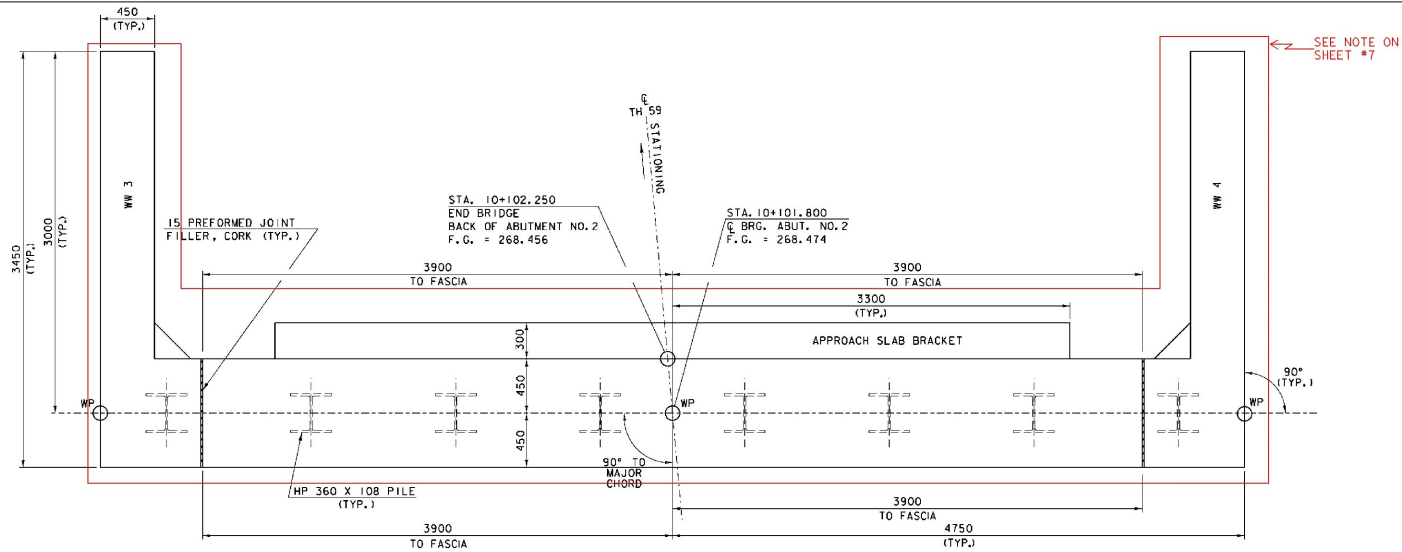
**NOTES**

1. ALTERNATE CONFIGURATIONS FOR ELASTOMERIC BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE BEARING SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE LOADS AND CRITERIA SHOWN ON THIS SHEET AND MAINTAIN THE ANCHORAGE SYSTEM SHOWN. THE BEARINGS SHALL BE DESIGNED ACCORDING TO AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" 2002 EDITION AND ITS LATEST REVISIONS.
2. THE BEARING SHAPE FACTOR SHALL BE BETWEEN 5.0 AND 12.0.
3. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL GRADE 250. NO FABRIC REINFORCEMENT WILL BE PERMITTED.
4. ELASTOMERIC BEARINGS REINFORCED WITH STEEL SHALL HAVE A 3mm EDGE SEAL OF ELASTOMERIC INTEGRAL WITH THE BEARING OVER ALL PLATES.
5. ALL MATERIALS AND FABRICATION SHALL BE PER AASHTO DIVISION II SECTION 18.2 AND AASHTO MATERIAL SPECIFICATION M251.
6. DESIGN CRITERIA:
  - A. TEMPERATURE RANGE: 27C
  - B. 60 DUROMETER ELASTOMERIC
  - C. MAXIMUM BEARING STRESS: 2.7 MPa
  - D. DESIGN ROTATION: 0.011 RAD
  - E. FACTORED REACTION/BEAM:
    - RDL: 317 kN
    - RLI: 241 kN

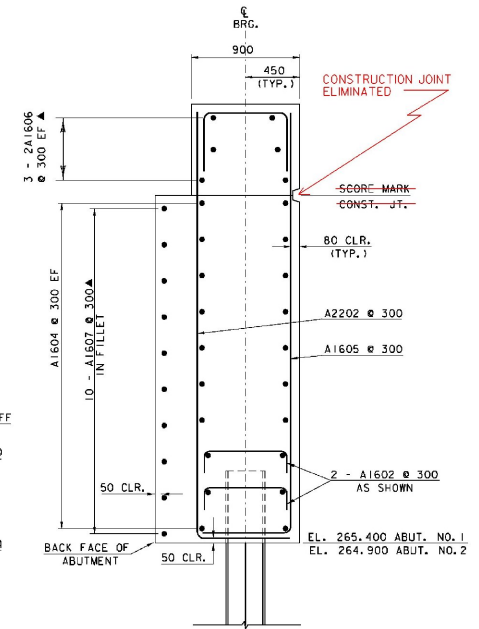
**BEARING DETAILS**

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449(24)	DRAWN BY:	L. BULLOCK
FILE NAME:	96J310/str3/sj310sup.dgn	CHECKED BY:	C. CARLSON
PROJECT LEADER:	R. WHITCOMB	DESIGNED BY:	W. LAMMER
DESIGNED BY:	W. LAMMER	SHEET	23 OF 47
sj310brg.1			

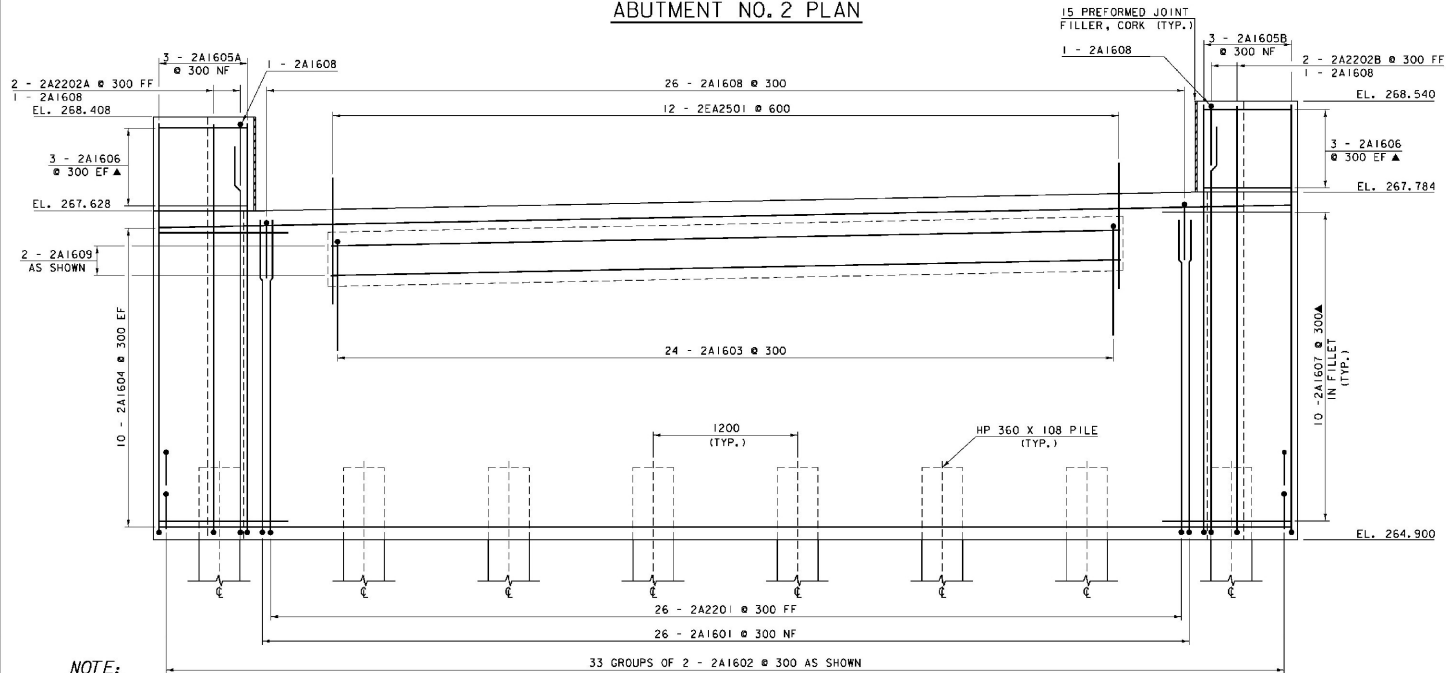




ABUTMENT NO. 2 PLAN



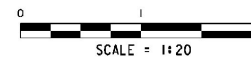
ABUTMENT TYPICAL IN FILLET



ABUTMENT NO. 2 ELEVATION

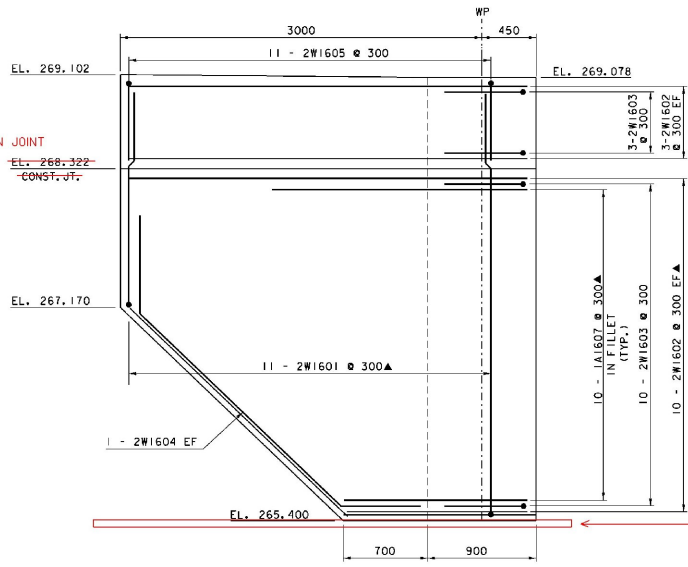
**NOTE:**

- NF - NEAR FACE
- FF - FAR FACE
- EF - EACH FACE
- ▲ - CUT TO FIT IN FIELD
- 80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

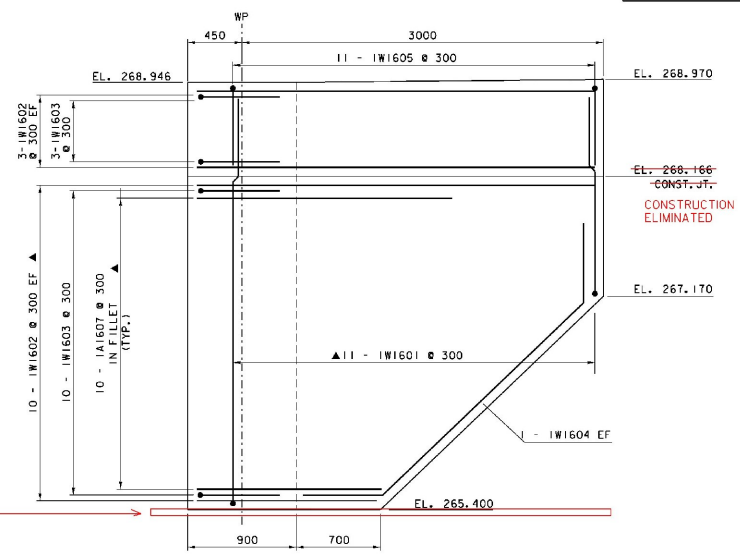


ABUTMENT NO. 2 DETAILS

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	22-MAY-2009
PROJECT NUMBER:	BRO 1449(24)	DRAWN BY:	L. BULLOCK
FILE NAME:	/961310/str/sj310sub.dgn	DESIGNED BY:	W. LAMMER
PROJECT MANAGER:	R. WHITCOMB	CHECKED BY:	W. LAMMER
sj310cb2.1		SHEET	25 OF 47

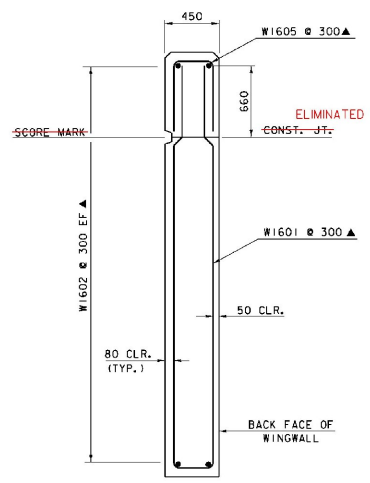


WW NO. 2

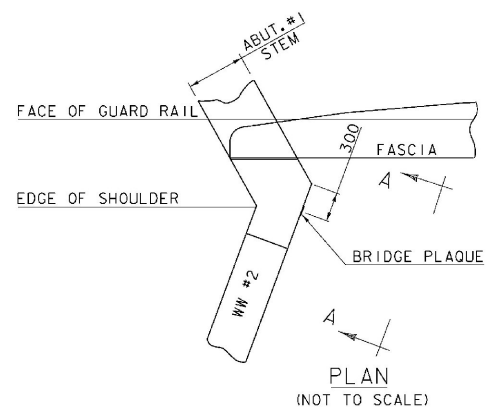


WW NO. 1

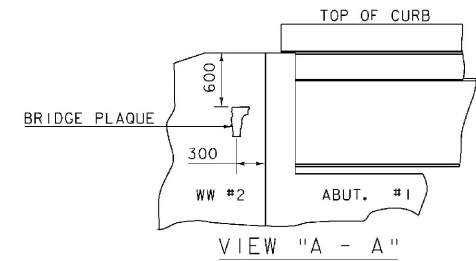
SEE NOTE ON SHEET #7



WINGWALL TYPICAL



PLAN (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.

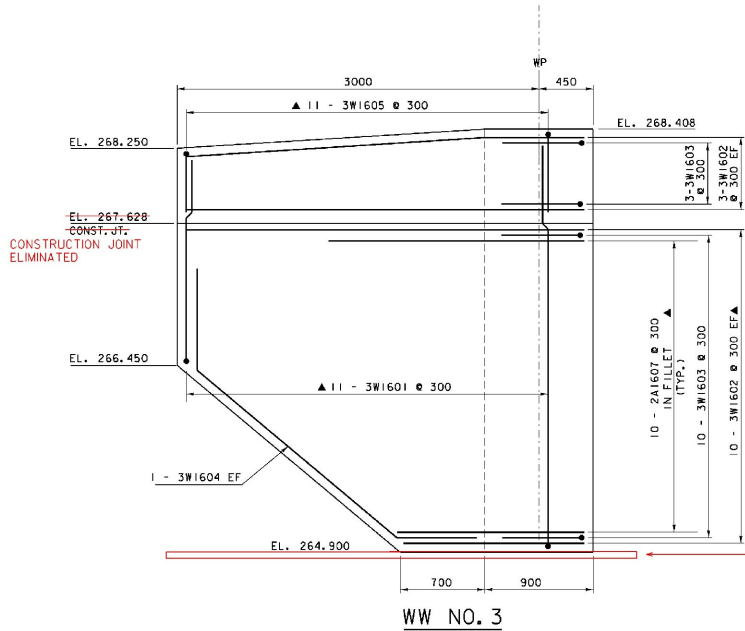
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

**NOTE:**  
 NF - NEAR FACE  
 FF - FAR FACE  
 EF - EACH FACE  
 ▲ - CUT TO FIT IN FIELD  
 80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

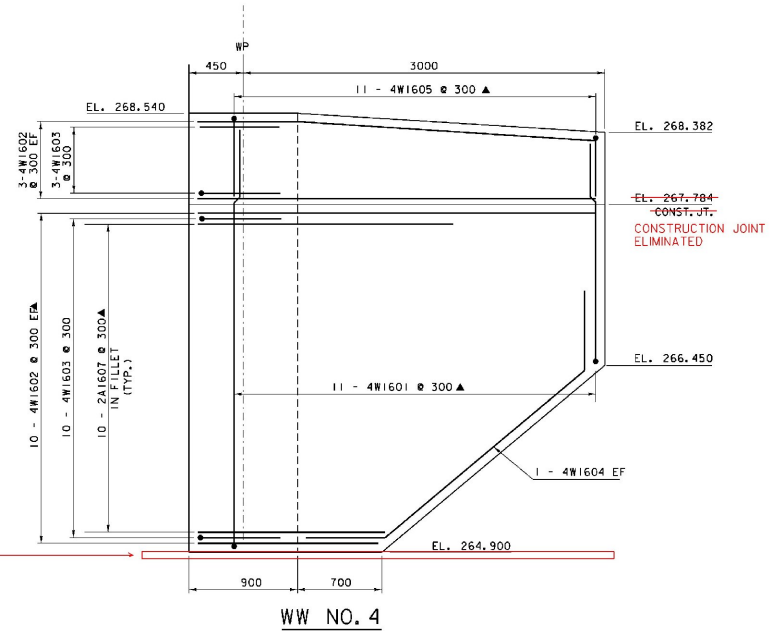
WINGWALLS 1 & 2 ELEVATIONS

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449(24)	DRAWN BY:	L. BULLOCK
FILE NAME:	796J310/stt/sj310sub.dgn	DESIGNED BY:	W. LAMMER
PROJECT MANAGER:	R. WHITCOMB	CHECKED BY:	C. CARLSON
DESIGNED BY:	W. LAMMER	SHEET	26 OF 47

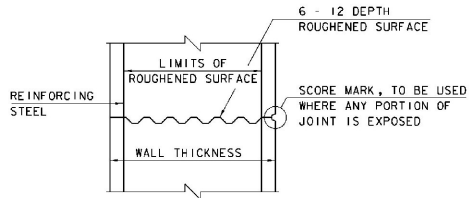




**WW NO. 3**

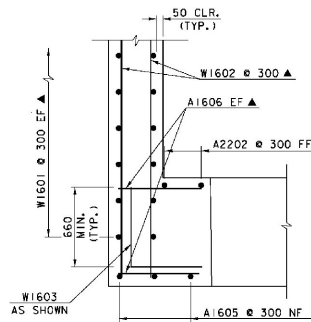


**WW NO. 4**

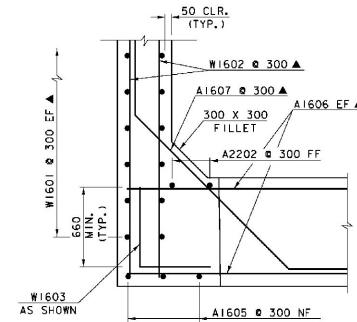


**TYPICAL HORIZONTAL CONSTRUCTION JOINT**  
(NOT TO SCALE)

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.

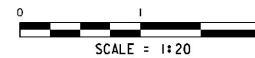


**WINGWALL CORNER**  
**ABOVE BRIDGE SEAT**  
**REINFORCING DETAIL**



**WINGWALL CORNER**  
**BELOW BRIDGE SEAT**  
**REINFORCING DETAIL**

**NOTE:**  
NF - NEAR FACE  
FF - FAR FACE  
EF - EACH FACE  
▲ - OUT TO FIT IN FIELD  
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.



**WINGWALLS 3 & 4 ELEVATIONS**

PROJECT NAME: CRAFTSBURY  
PROJECT NUMBER: BRO 1449(24)

FILE NAME: /96J310/stf/sj310sub.dgn  
PROJECT MANAGER: RR, WHITCOMB  
DESIGNED BY: W. LAMMER  
sj310ww21

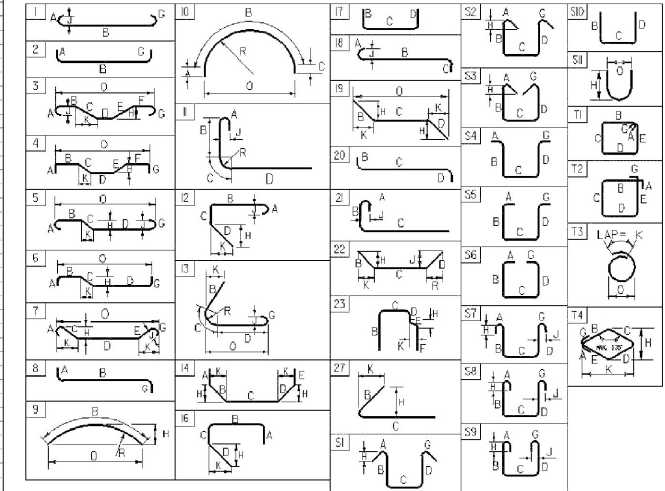
PLOT DATE: 20-MAY-2009  
DRAWN BY: L. BULLOCK  
CHECKED BY: C. CARLSON  
SHEET 27 OF 47

# REINFORCING STEEL SCHEDULE

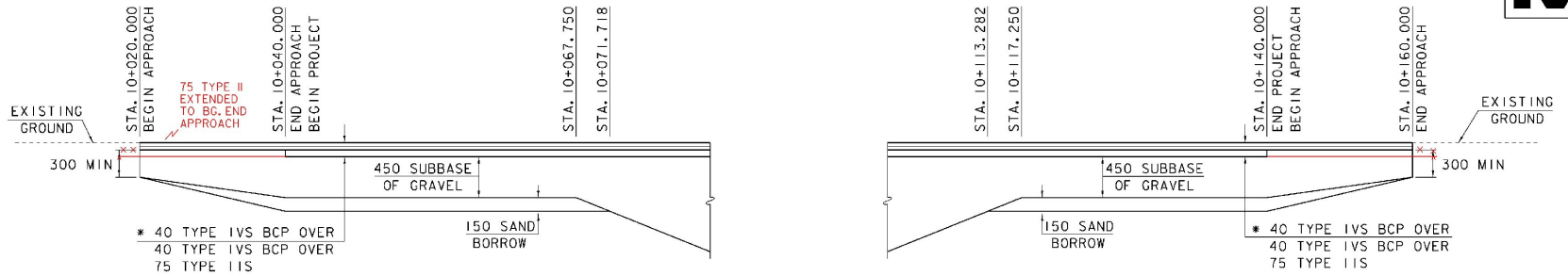
ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O				
<b>DECK</b>																																							
*	79	16	7640	ES1601	STR	7640																																	
*	71	16	10055	ES1602	STR	10055																																	
	132	16	1260	ES1603	S5	155	255	440	255				155																										
	54	16	2085	ES1604	S5	660	625	200	600	---																													
<b>APPROACH SLAB NO. 1</b>																	<b>APPROACH SLAB NO. 2</b>																						
*	18	16	6440	1EAS1601	STR	6440												*	18	16	6440	2EAS1601	STR	6440															
*	45	19	4575	1EAS1901	1	205	4370											*	45	19	4575	2EAS1901	1	205	4370														
<b>ABUTMENT NO. 1</b>																	<b>ABUTMENT NO. 2</b>																						
▲	26	16	3560	1A1601	17		770	2790	---									▲	26	16	3525	2A1601	17		770	2755	---												
△	68	16	1270	1A1602	2	250	770					250						△	68	16	1270	2A1602	2	250	770					250									
	24	16	2410	1A1603	16	250	1070	350	740										24	16	2410	2A1603	16	250	1070	350	740												
	20	16	9340	1A1604	STR	9340													20	16	9340	2A1604	STR	9340															
	3	16	4185	1A1605A	17		770	3415	---										3	16	4150	2A1605	17		770	3380	---												
	3	16	4320	1A1605B	17		770	3550	---											3	16	4280	2A1605	17		770	3510	---											
	12	16	700	1A1606	STR	700													12	16	700	2A1606	STR	700															
▲	20	16	3260	1A1607	22		660	1940	660									▲	20	16	3260	2A1607	22		660	1940	660												
	28	16	2090	1A1608	17		660	770	660										28	16	2090	2A1608	17		660	770	660												
	2	16	6440	1A1609	STR	6440													2	16	6440	2A1609	STR	6440															
△	▲	28	22	3560	1A2201	17		770	2790	---								△	▲	28	22	3525	2A2201	17		770	2755	---											
	2	22	4185	1A2202A	17		770	3415	---										2	22	4150	2A2202A	17		770	3380	---												
	2	22	4320	1A2202B	17		770	3550	---										2	22	4280	2A2202B	17		770	3510	---												
△	▲	14	25	1440	1EA2501	16	---	---	700	740								△	▲	14	25	1440	2EA2501	16	---	---	700	740											
<b>WINGWALL NO. 1</b>																	<b>WINGWALL NO. 3</b>																						
* ▲	12	16	7160	1W1601	17		3420	320	3420									* ▲	12	16	7080	3W1601	17		3380	320	3380												
* ▲	27	16	3290	1W1602	STR	3290												* ▲	27	16	3290	3W1602	STR	3290															
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	2	16	3805	1W1604	22		660	2485	660				475	455	455	475			2	16	3660	3W1604	22		660	2340	660					505	425	425	505				
▲	11	16	1640	1W1605	17		660	320	660									▲	11	16	1640	3W1605	17		660	320	660												
<b>WINGWALL NO. 2</b>																	<b>WINGWALL NO. 4</b>																						
* ▲	12	16	7420	2W1601	17		3550	320	3550									* ▲	12	16	7360	4W1601	17		3520	320	3520												
* ▲	27	16	3290	2W1602	STR	3290												* ▲	27	16	3290	4W1602	STR	3290															
	13	16	1320	2W1603	17		660	660	---										13	16	1320	4W1603	17		660	660	---												
	2	16	3805	2W1604	22		660	2485	660				475	455	455	475			2	16	3660	4W1604	22		660	2340	660					505	425	425	505				
▲	11	16	1640	2W1605	17		660	320	660									▲	11	16	1640	4W1605	17		660	320	660												

~ NOTES ~

- 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 (ASTMA 615M-SI). ALL BARS SHALL BE GRADE 420, UNLESS OTHERWISE DESIGNATED.
- 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".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- \* DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
- △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
- E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

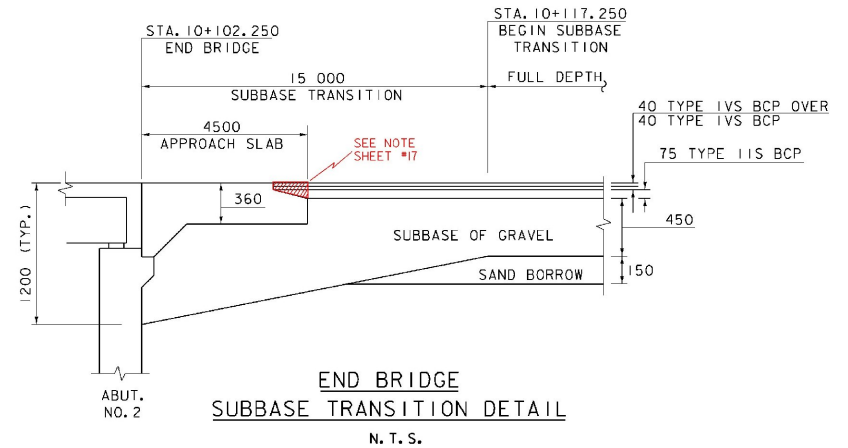
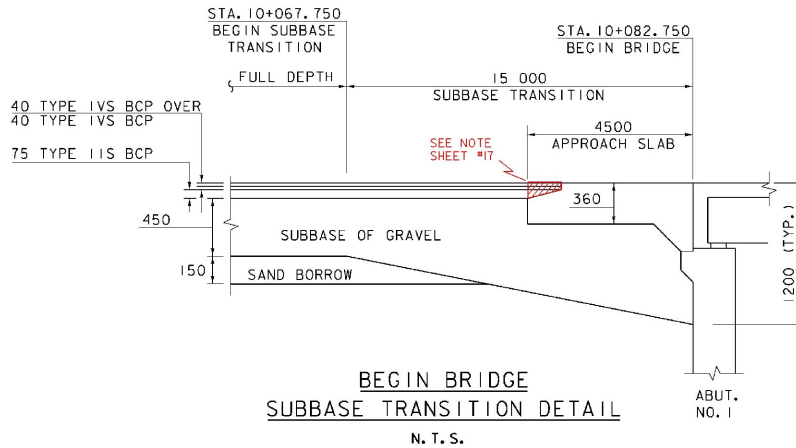
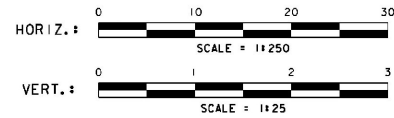


BAR SIZE	NOMINAL MASS (kg/m)	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER (mm)	SECTIONAL AREA (mm²)	PERIMETER (mm)
#10	0.560	9.5	71	29.84
#13	0.994	12.7	129	39.90
#16	1.552	15.9	199	49.95
#19	2.235	19.1	284	60.00
#22	3.042	22.2	387	69.74
#25	3.973	25.4	510	79.80
#29	5.060	28.7	645	90.16
#32	6.404	32.3	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



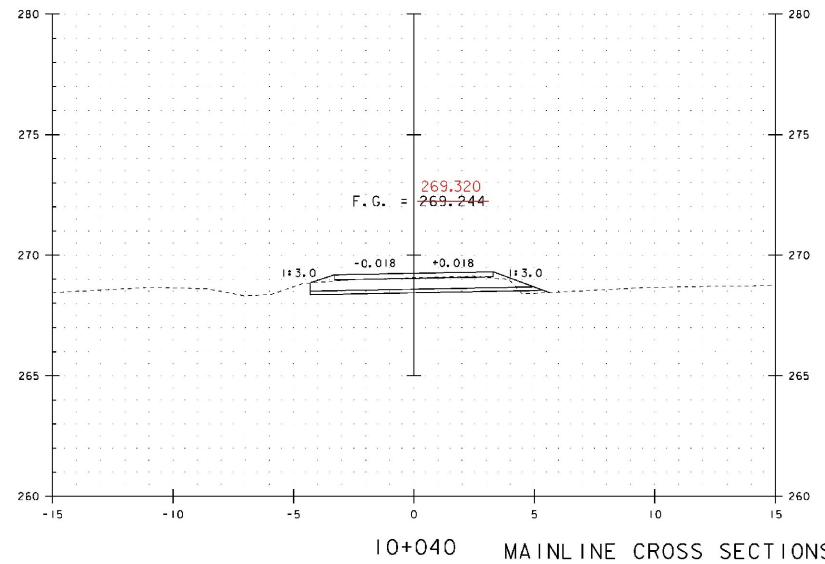
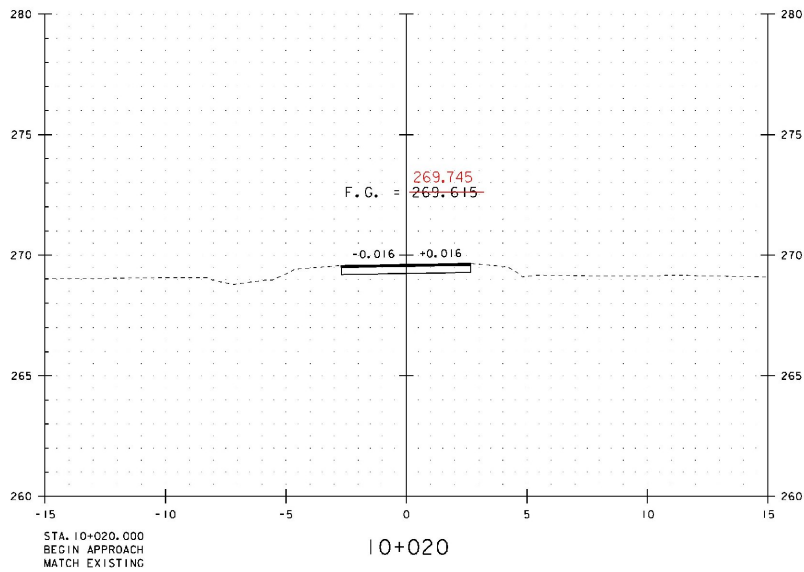
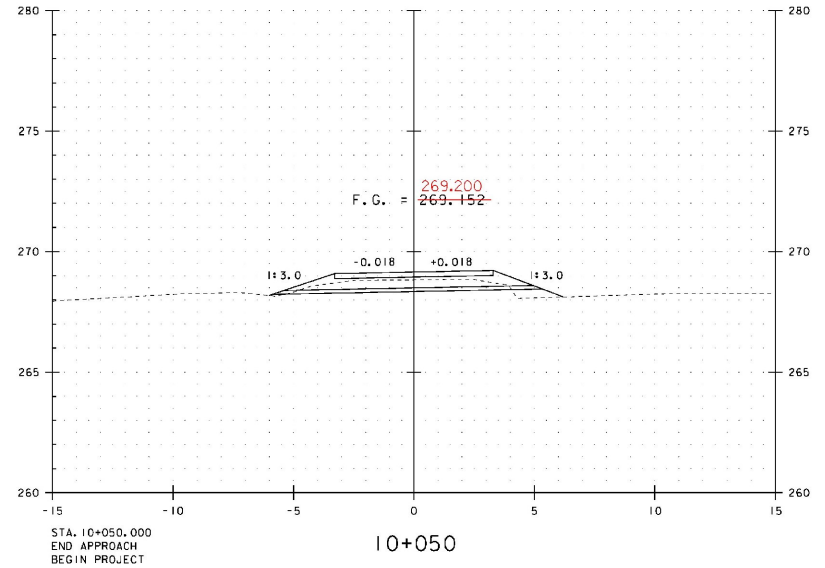
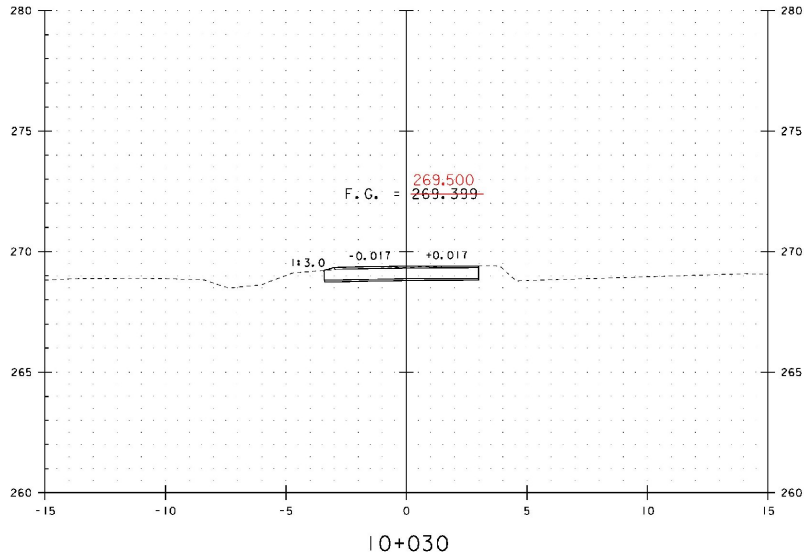
\* BCP SHALL BE READ AS BITUMINOUS CONCRETE PAVEMENT AND SHALL BE PAID FOR UNDER ITEM 900.680 SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)

**MATERIAL TRANSITION DETAIL**

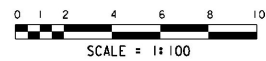


**MATERIAL TRANSITION DETAILS**

PROJECT NAME:	CRAFTSBURY	FILE NAME:	96j310/st+3/sj310xsl.dgn	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	PROJECT MANAGER:	R. R. WHITCOMB	DRAWN BY:	G. ROY
		DESIGNED BY:	G. ROY	CHECKED BY:	W. LAMMER
			sj310mtd.i	SHEET	29 OF 47

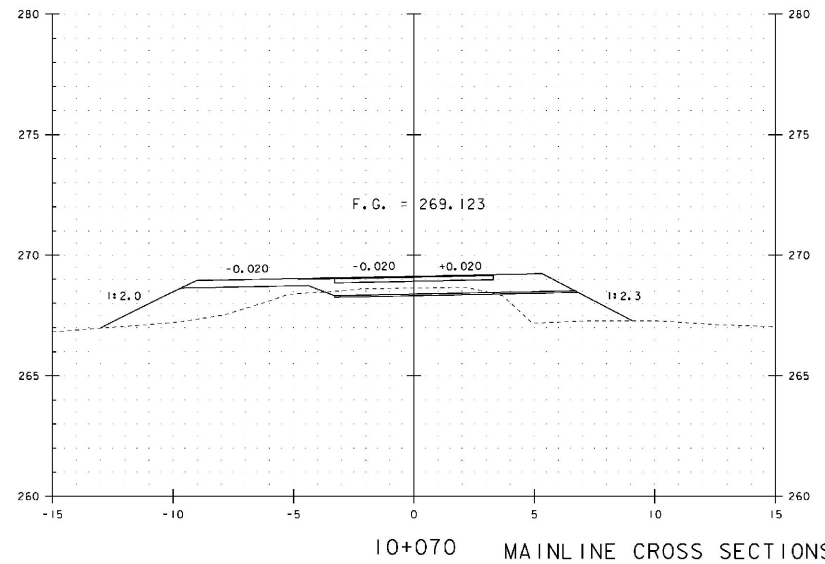
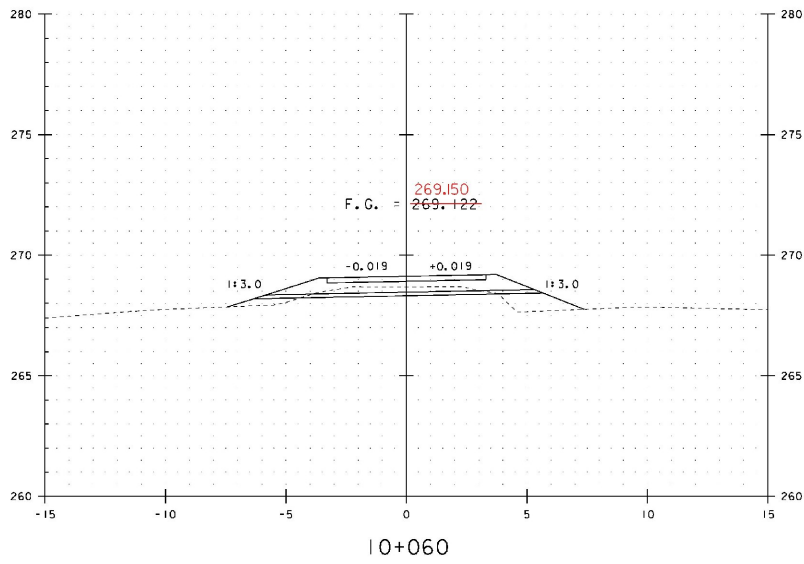
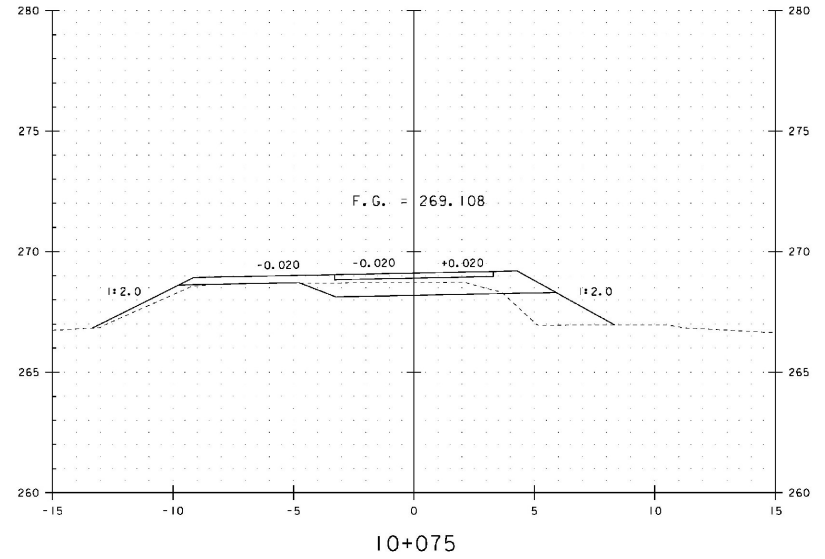
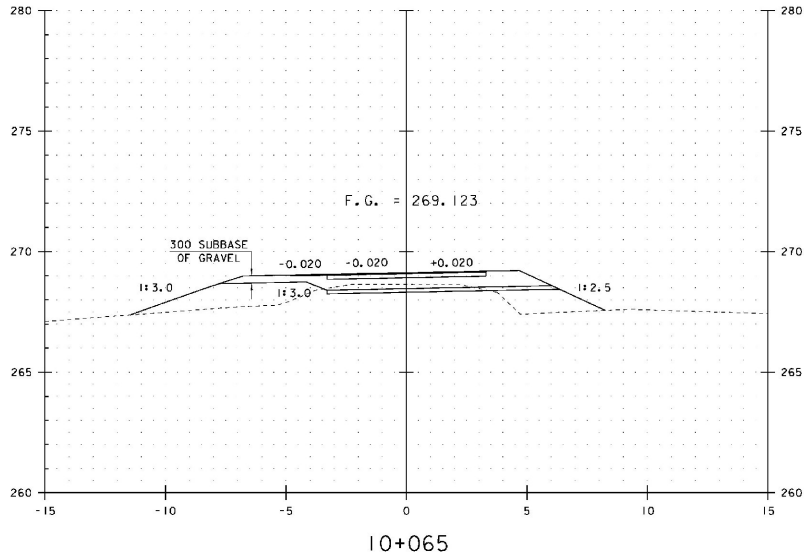


MAINLINE CROSS SECTIONS (1)

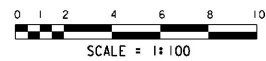


STA. 10+020 TO STA. 10+050

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	04-JUN-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\sj310m01	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	DESIGNED BY:	G. ROY
			SHEET 30 OF 47

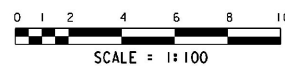
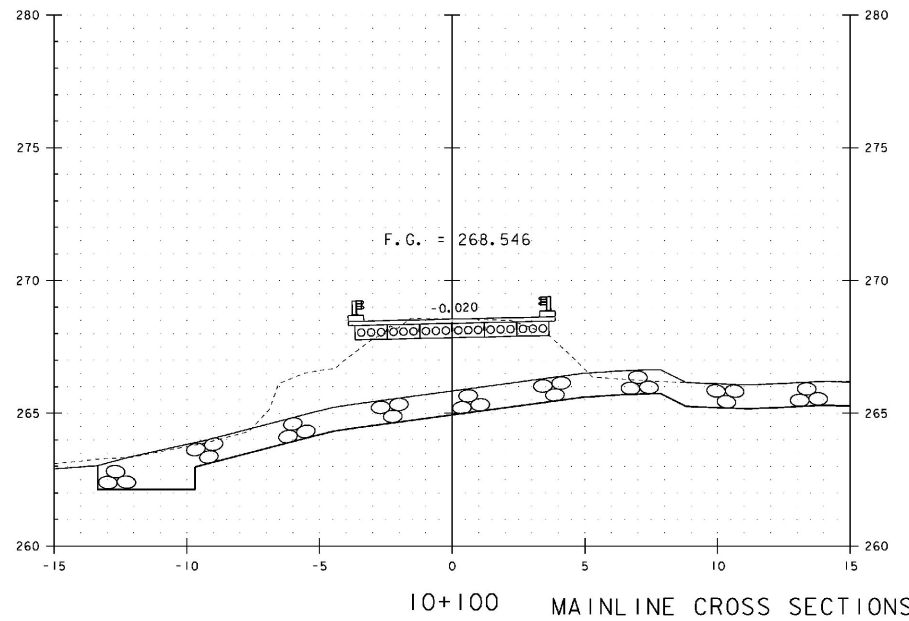
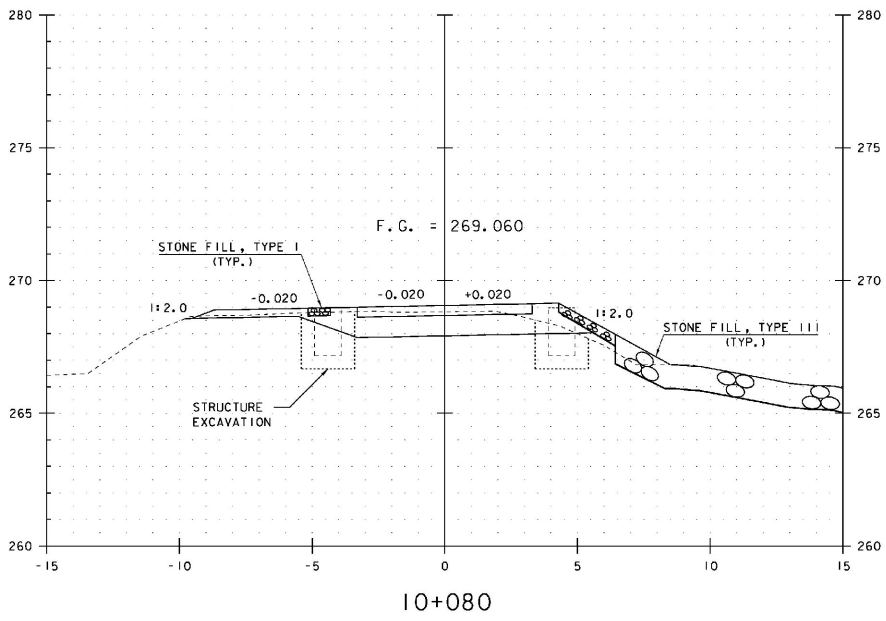
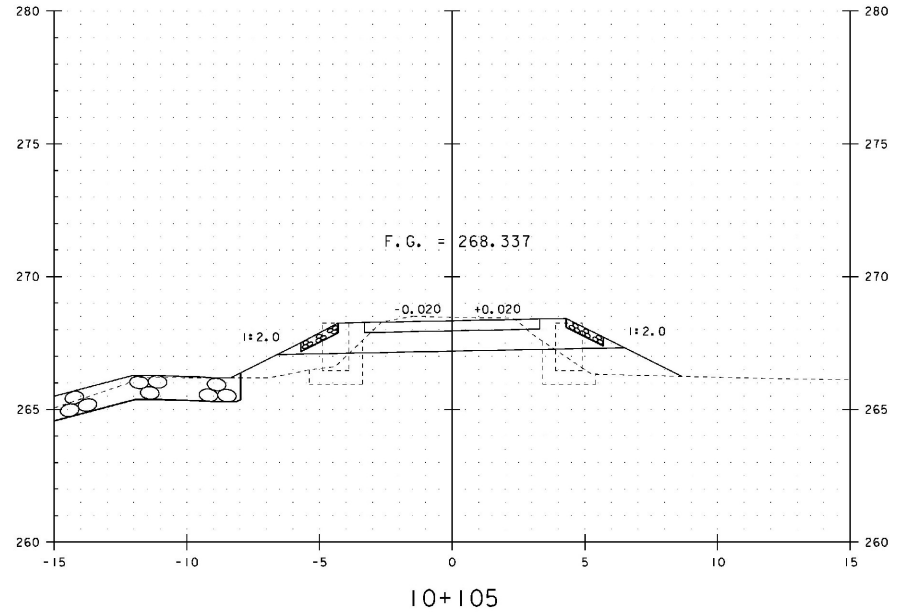
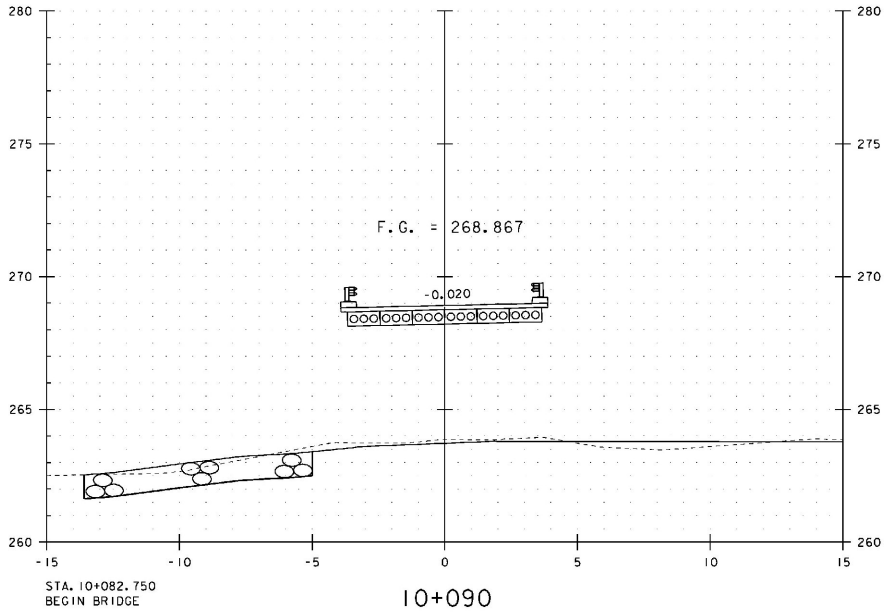


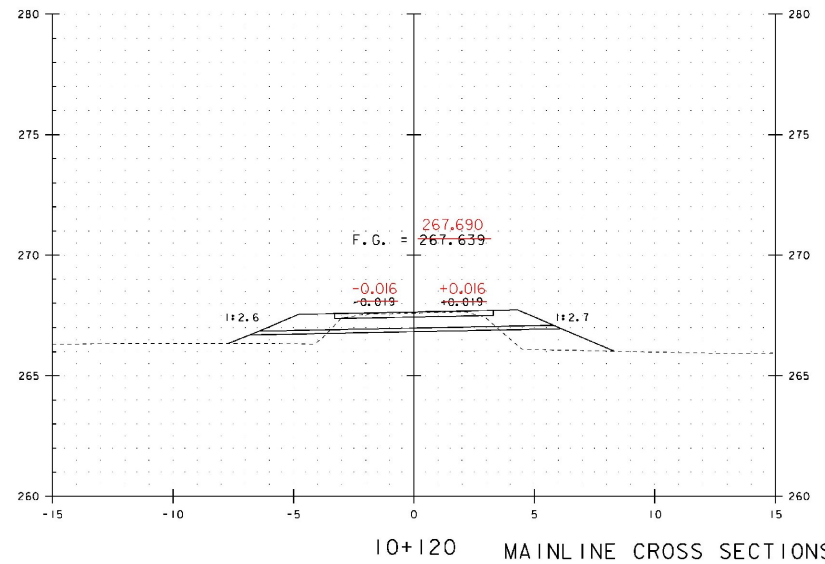
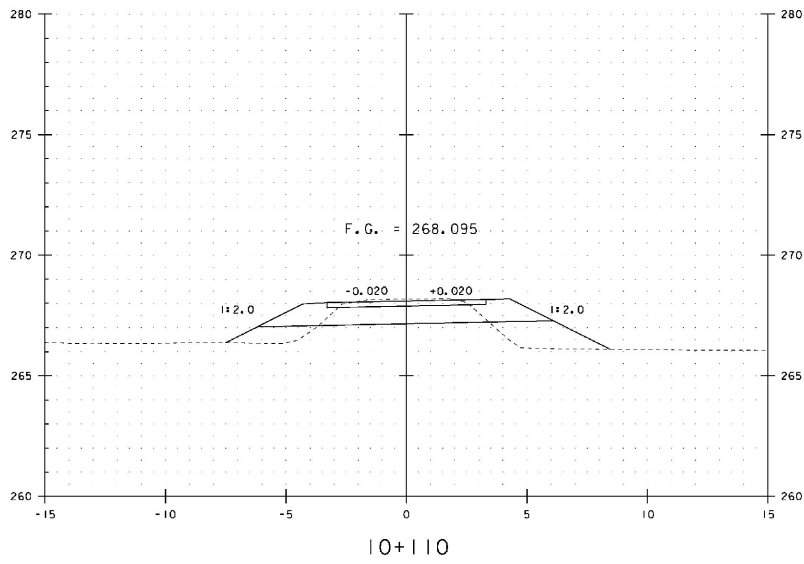
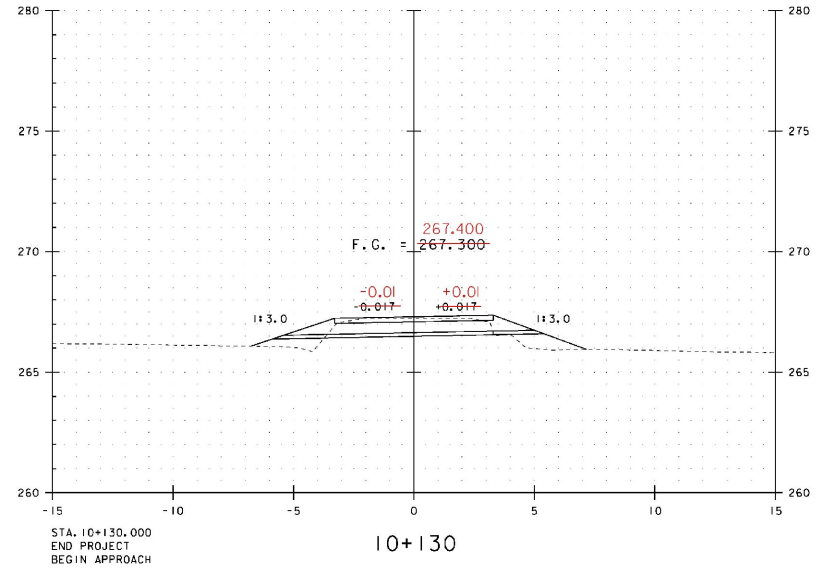
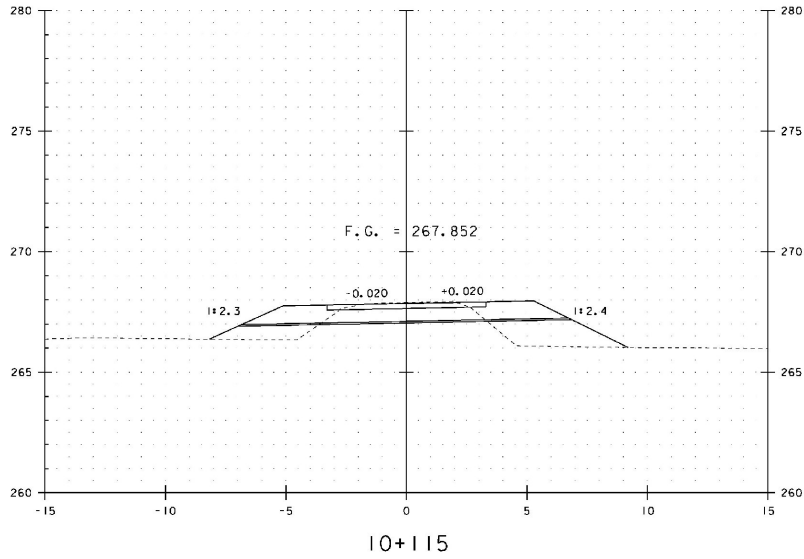
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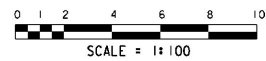
STA. 10+060 TO STA. 10+075

PROJECT NAME:	CRAFTSBURY	PLLOT DATE:	04-JUN-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\sj310m02.1	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET 31	OF 47
DESIGNED BY:	G. ROY		



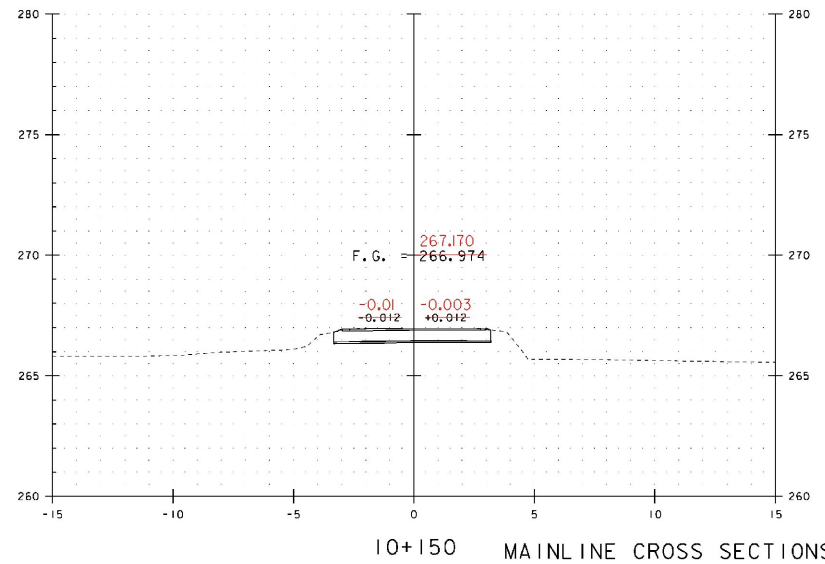
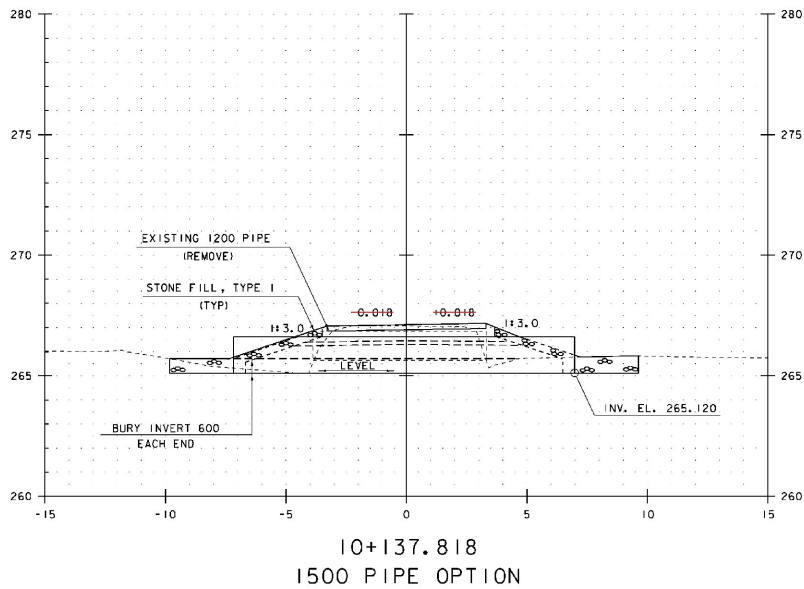
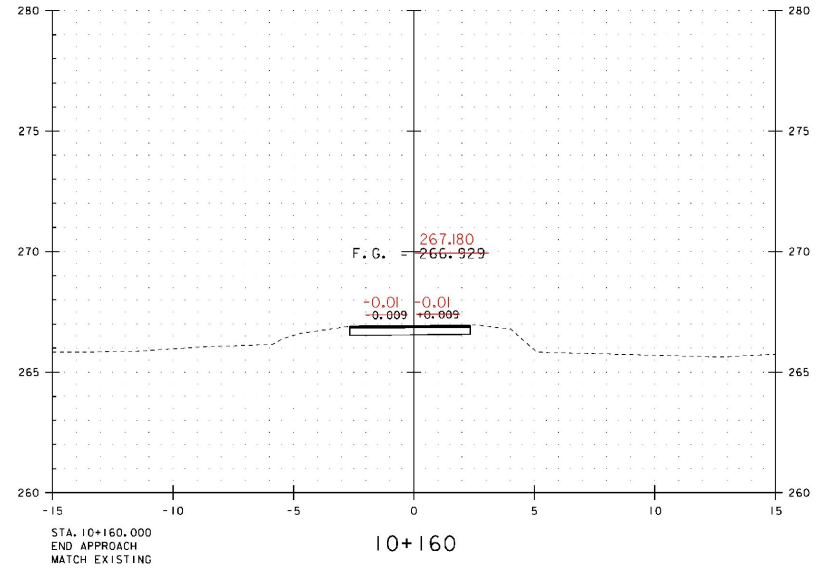
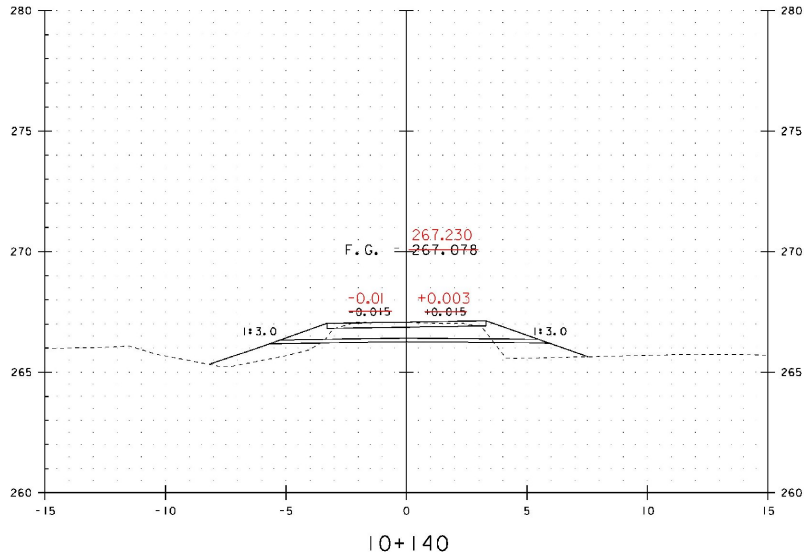


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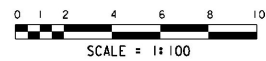


STA. 10+110 TO STA. 10+130

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	04-JUN-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96310\Structures\sj310m04.1	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	DESIGNED BY:	G. ROY
			SHEET 33 OF 47

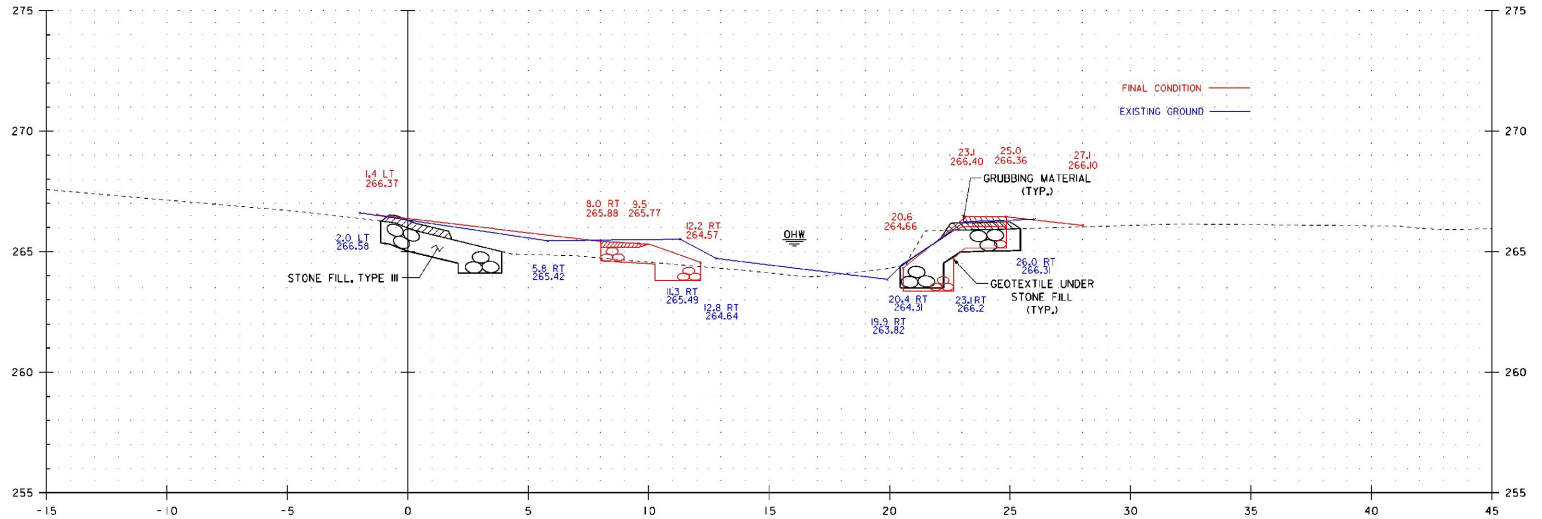


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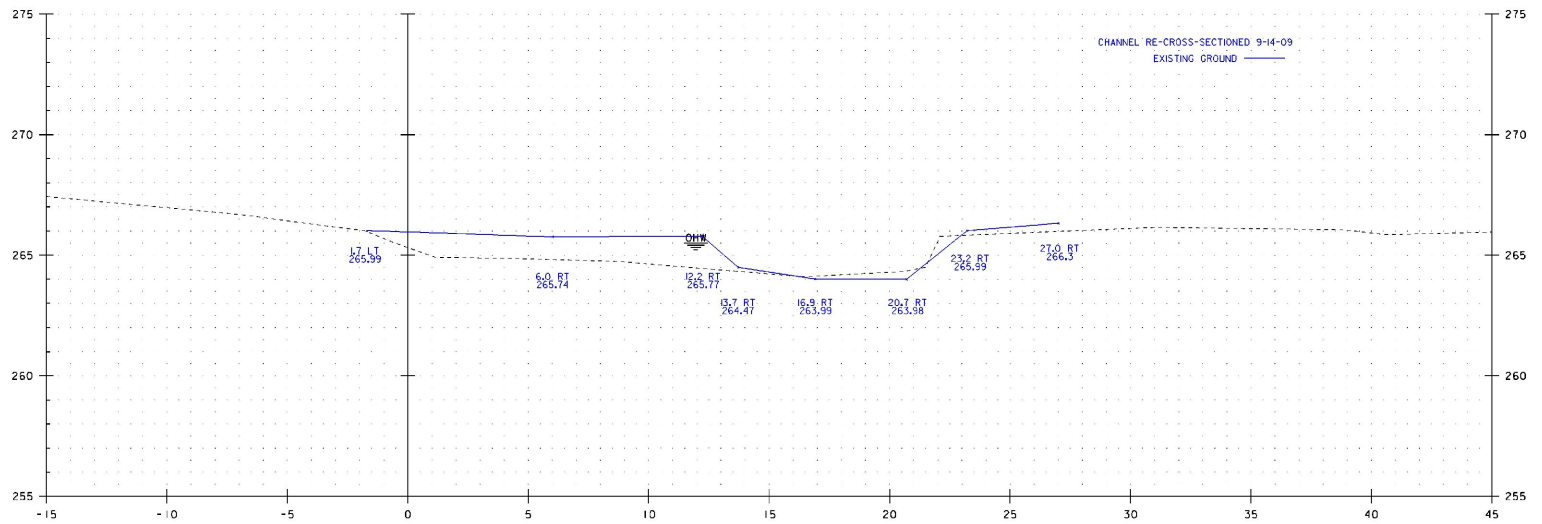
STA. 10+140 TO STA. 10+160

PROJECT NAME:	CRAFTSBURY	PROJECT NUMBER:	BRO 1449 (24)
FILE NAME:	96\310\Structures\310m05.1	DESIGNED BY:	G. ROY
PROJECT MANAGER:	R. R. WHITCOMB	CHECKED BY:	W. LAMMER
PLOT DATE:	04-JUN-2009	DRAWN BY:	G. ROY
SHEET	34	OF	47



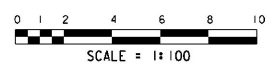
STA. 50+030.0 LT & RT.  
 BEGIN UNCLASS. CHANNEL EXCAVATION  
 GEOTEXTILE UNDER STONE FILL  
 STONE FILL - TYPE III  
 GRUBBING MATERIAL

50+030



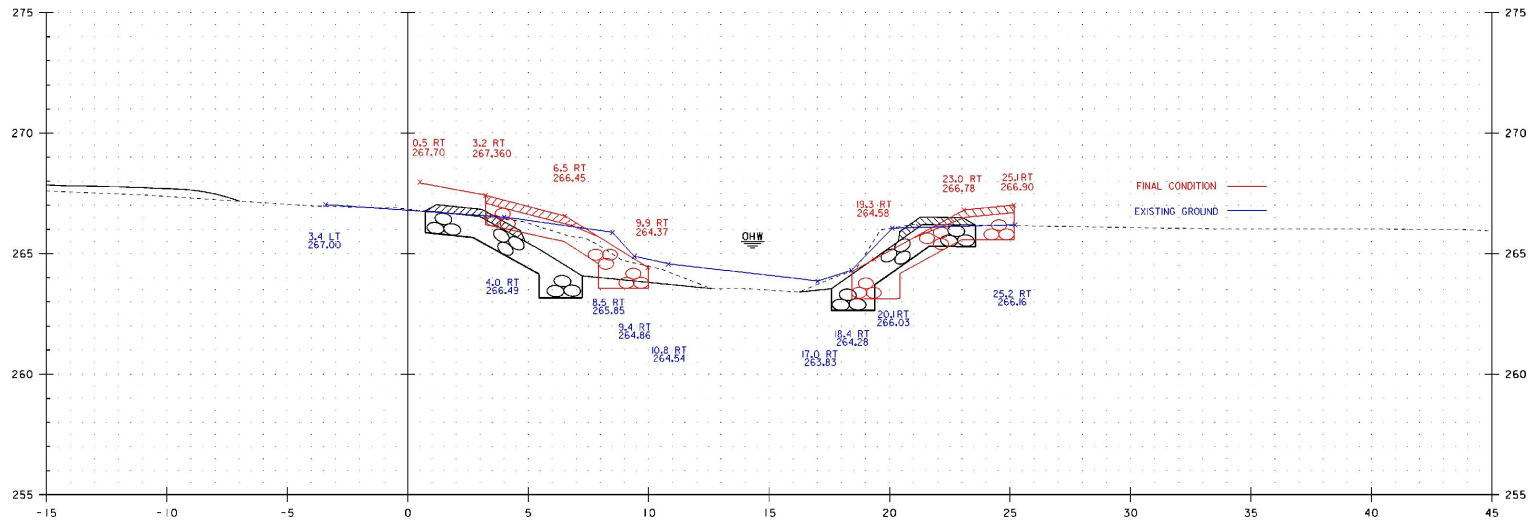
50+025-  
 50+020

CHANNEL CROSS SECTIONS (1)

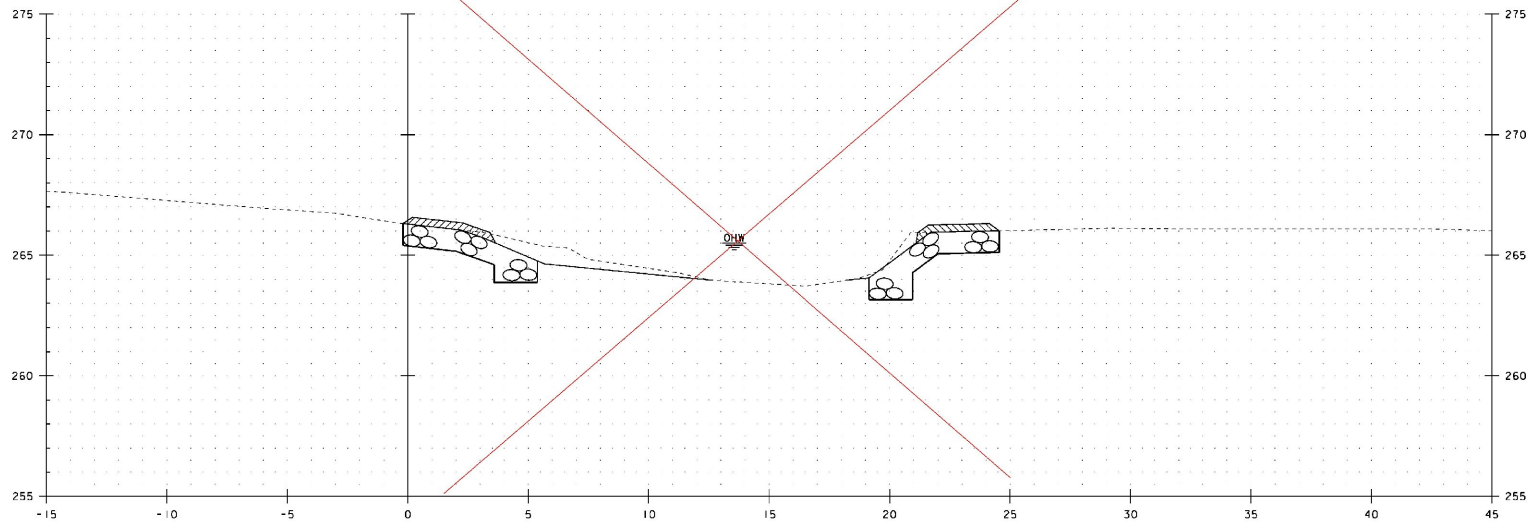


STA. 50+025 TO STA. 50+030

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\sj310c01.i	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET	35 OF 47
DESIGNED BY:	G. ROY		

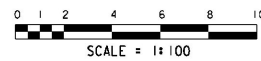


50+040



50+035

CHANNEL CROSS SECTIONS (2)

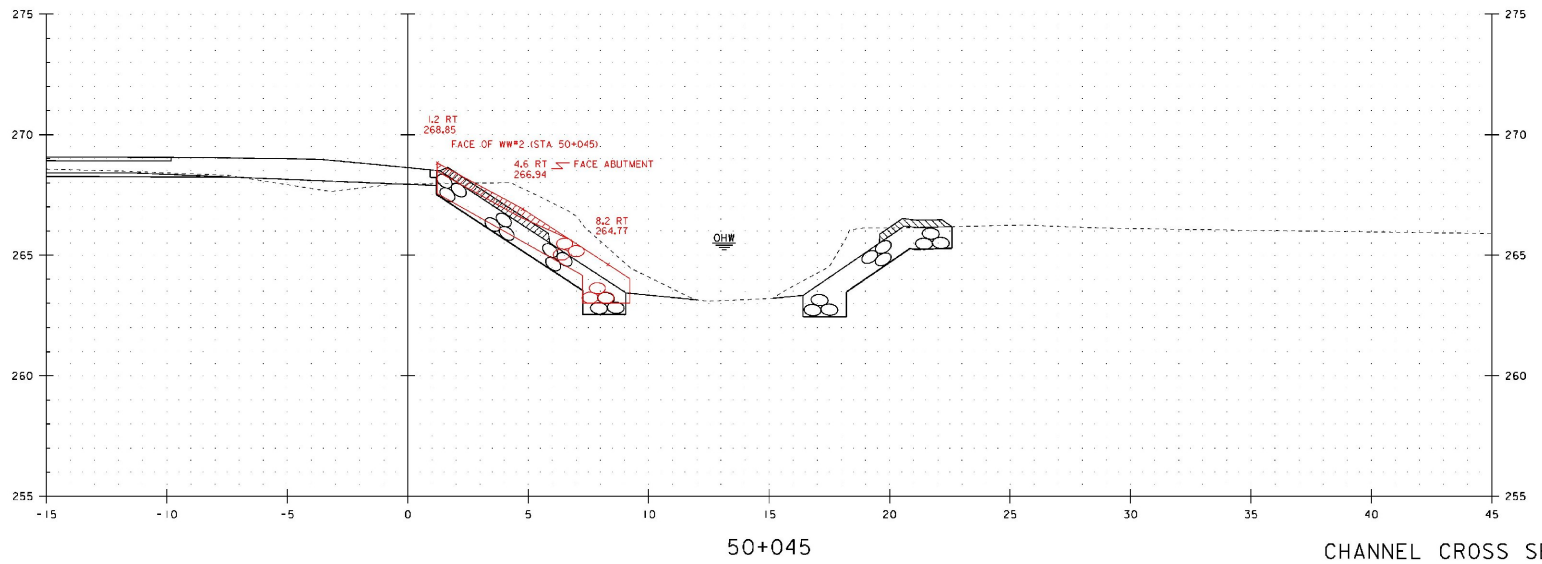
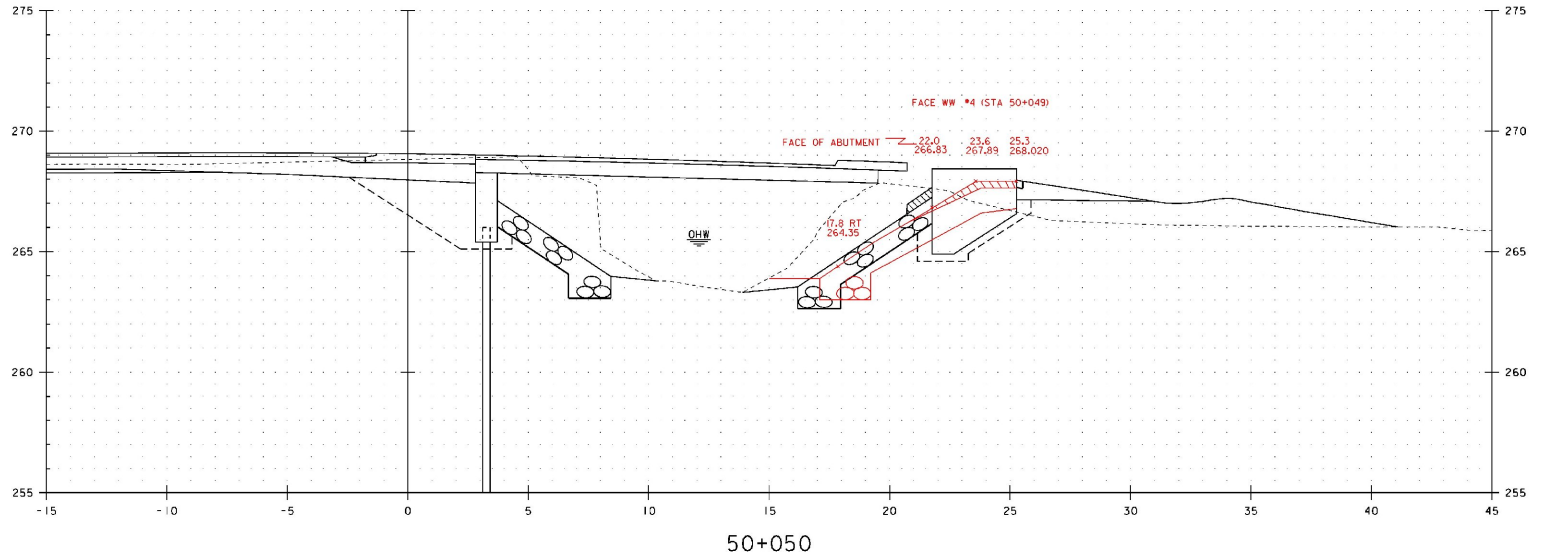


STA. 50+035 TO STA. 50+040

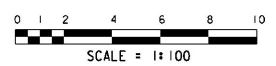
PROJECT NAME: CRAFTSBURY  
 PROJECT NUMBER: BRO 1449 (24)

FILE NAME: 96\310\Structures\sj310c02.1  
 PROJECT MANAGER: R. R. WHITCOMB  
 DESIGNED BY: G. ROY

PLOT DATE: 20-MAY-2009  
 DRAWN BY: G. ROY  
 CHECKED BY: W. LAMMER  
 SHEET 36 OF 47

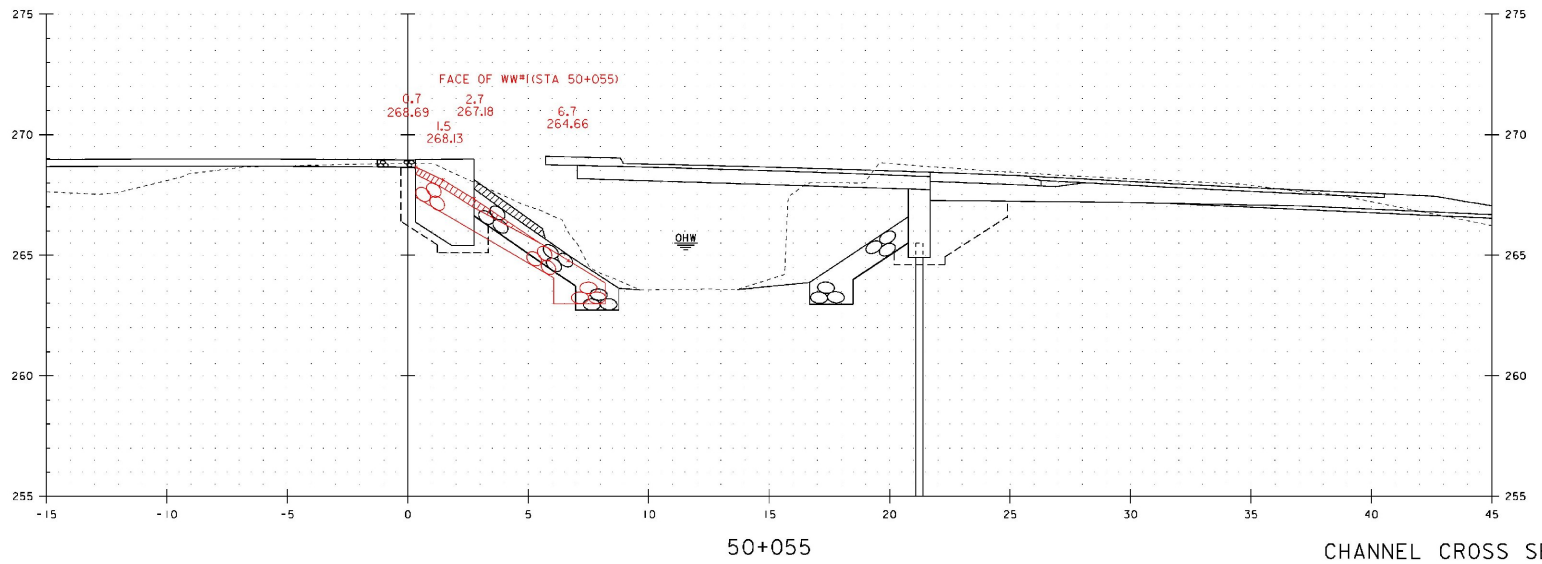
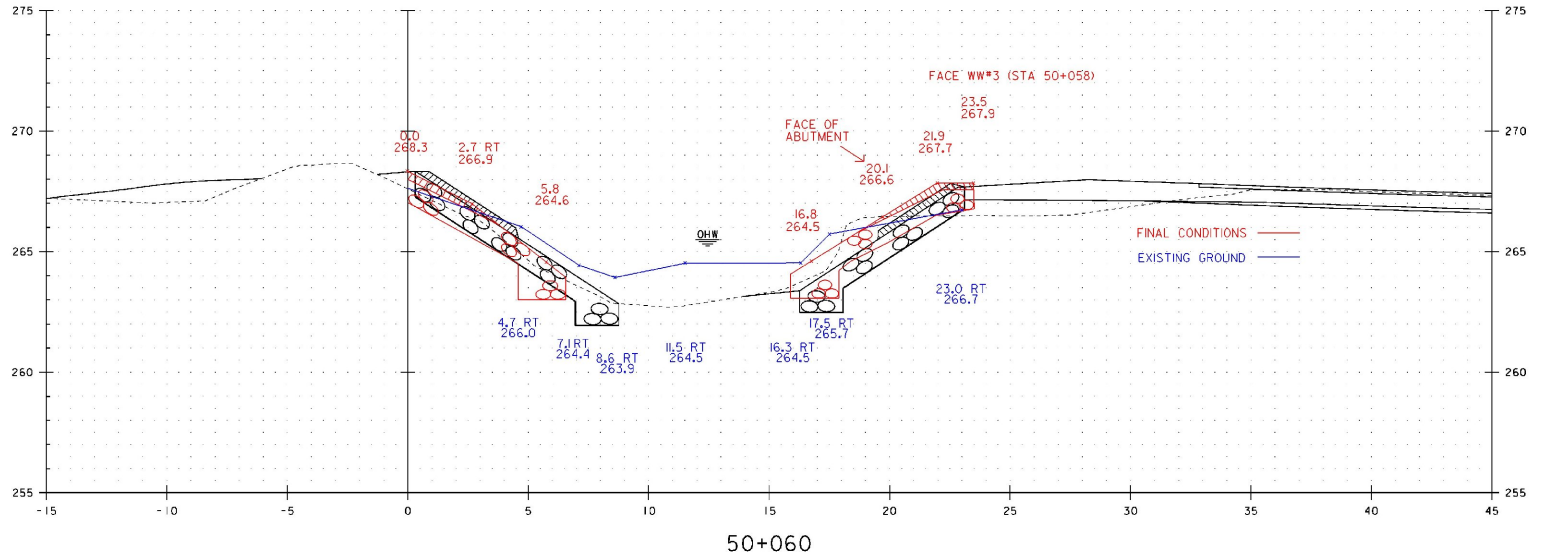


CHANNEL CROSS SECTIONS (3)

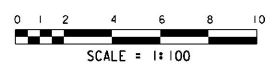


STA. 50+045 TO STA. 50+050

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\sj310c03.1	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET	37 OF 47
DESIGNED BY:	G. ROY		

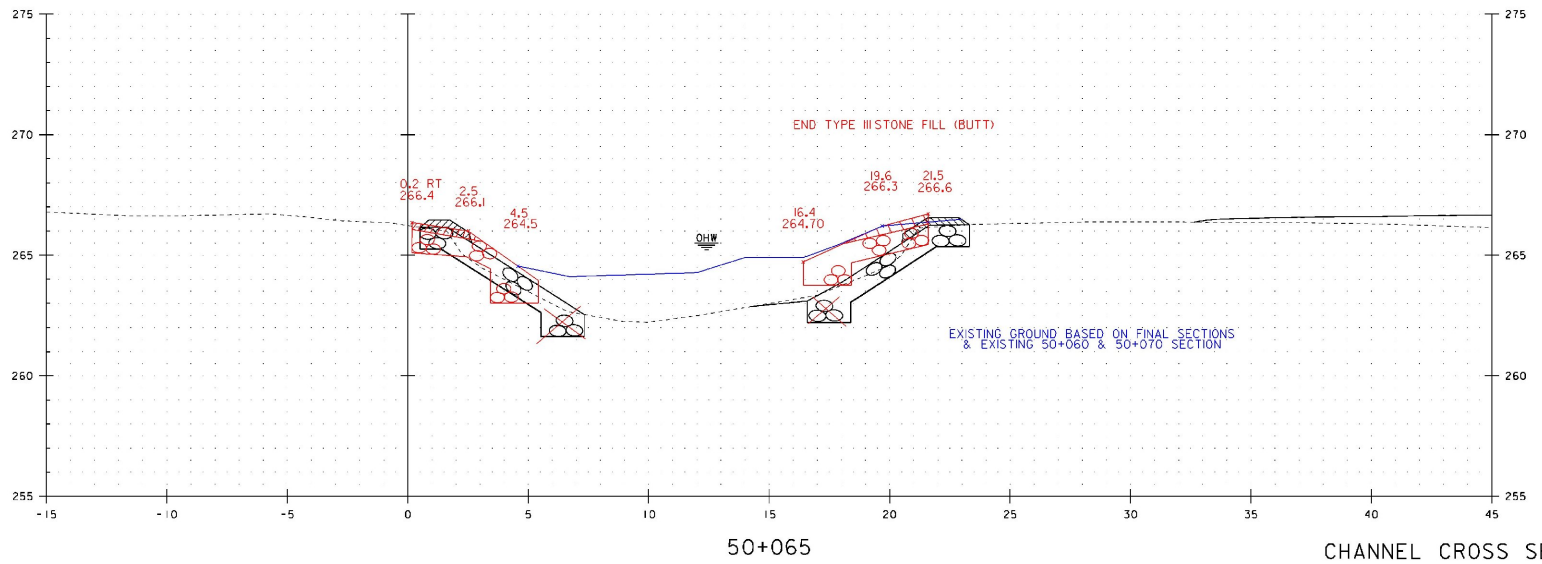
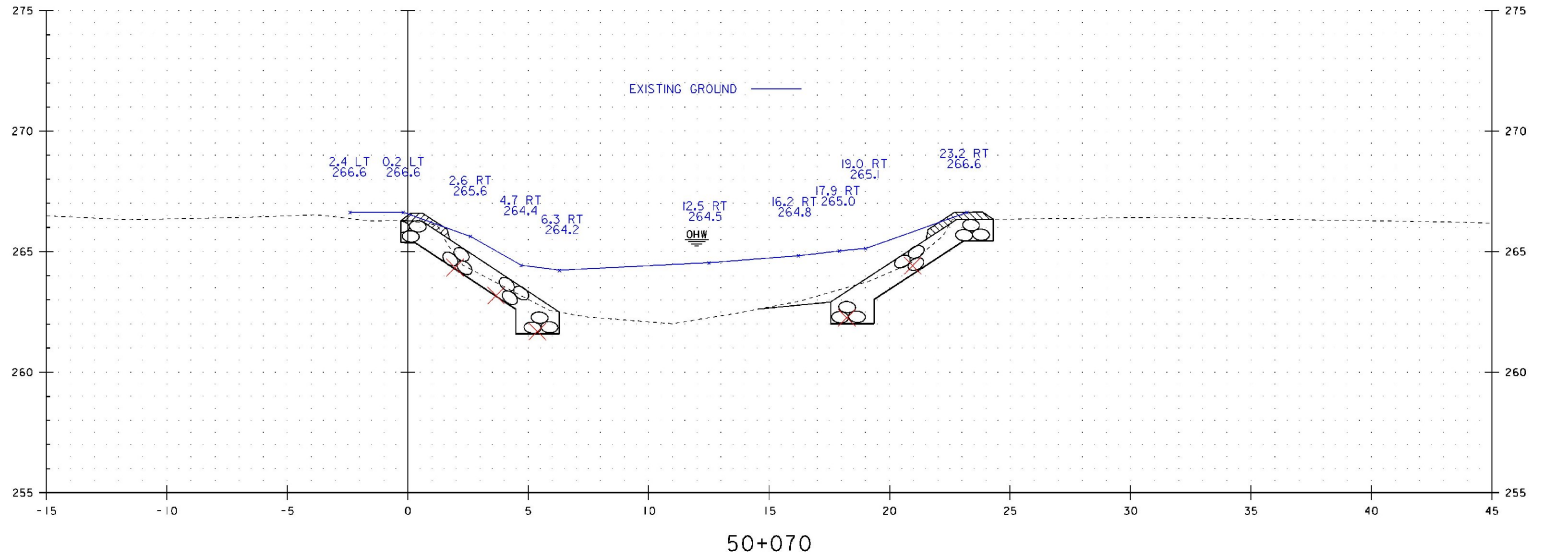


CHANNEL CROSS SECTIONS (4)

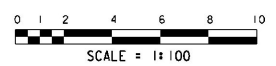


STA. 50+055 TO STA. 50+060

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	04-JUN-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\310c04.1	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET	38 OF 47
DESIGNED BY:	G. ROY		

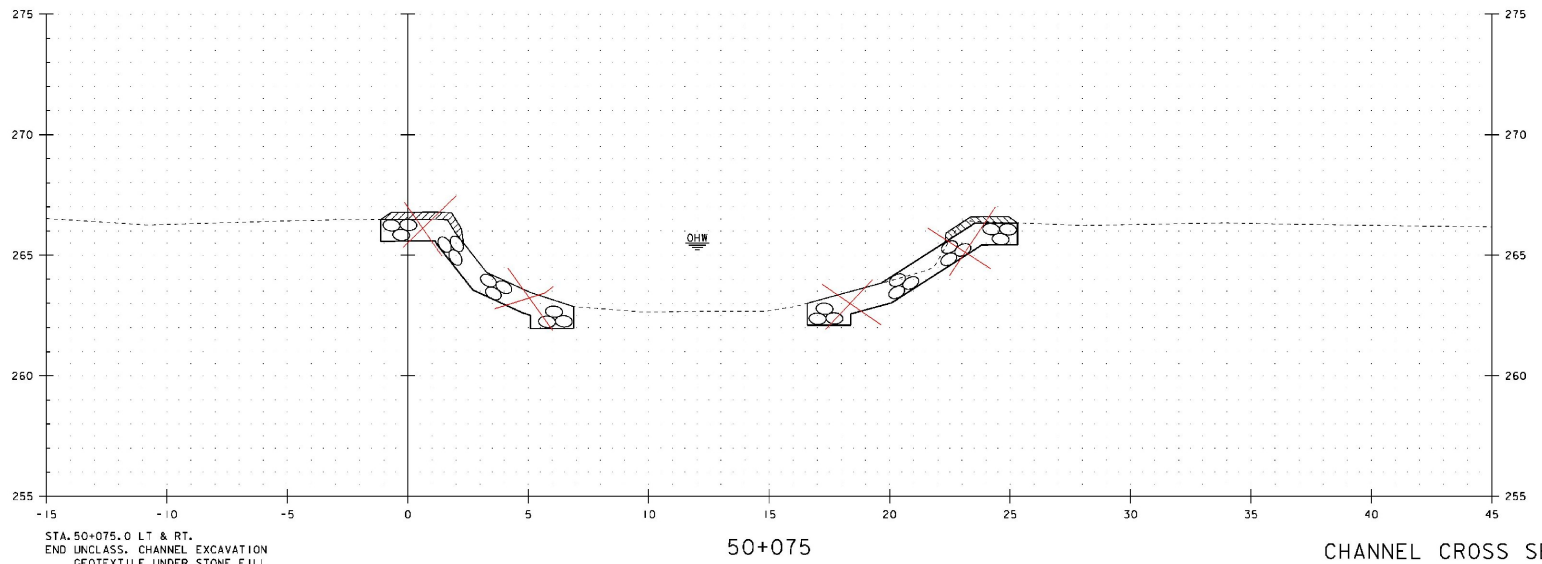
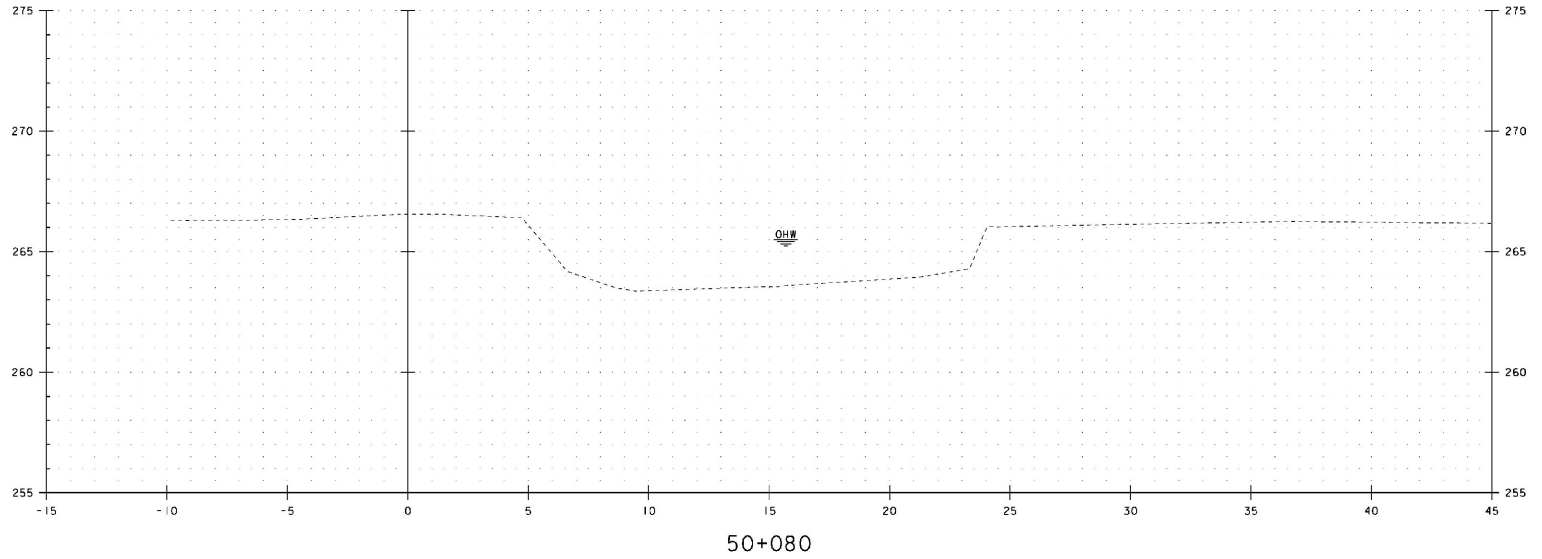


CHANNEL CROSS SECTIONS (5)

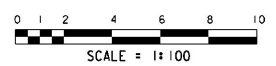


STA. 50+065 TO STA. 50+070

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\310c05.i	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET	39 OF 47
DESIGNED BY:	G. ROY		



STA. 50+075.0 LT. & RT.  
 END UNCLASS. CHANNEL EXCAVATION  
 GEOTEXTILE UNDER STONE FILL  
 STONE FILL, TYPE III  
 GRUBBING MATERIAL



STA. 50+075 TO STA. 50+080

CHANNEL CROSS SECTIONS (6)

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	G. ROY
FILE NAME:	96\310\Structures\5310c06.1	CHECKED BY:	W. LAMMER
PROJECT MANAGER:	R. R. WHITCOMB	SHEET	40
DESIGNED BY:	G. ROY	OF	47

**PROJECT DESCRIPTION**

THIS PROJECT INVOLVES THE RECONSTRUCTION OF BRIDGE NO. 2 OVER THE BLACK RIVER IN THE TOWN OF CRAFTSBURY. THE PROJECT IS ON T.H. 59, AN UNPAVED, CLASS III TOWN HIGHWAY. THE TEMPORARY BRIDGE, INSTALLED OVER THE EXISTING TIMBER BRIDGE AND EXISTING TIMBER ABUTMENTS WILL BE REMOVED. A NEW TWO-WAY, SINGLE SPAN, PRESTRESSED GIRDER BRIDGE WILL BE CONSTRUCTED ON THE EXISTING ALIGNMENT. THE ROAD WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION OF THE NEW BRIDGE. TOTAL ROADWAY APPROACH WORK, INCLUDING BOTH APPROACHES, IS APPROXIMATELY 140 METERS. NATURAL RESOURCES WITHIN THE PROJECT AREA HAVE BEEN CLEARLY IDENTIFIED AND SHOWN ON THE EXISTING CONDITIONS PLAN SHEET.

IT IS ANTICIPATED THAT THIS PROJECT WILL BE COMPLETED IN 2010.

TOTAL DISTURBED AREA (EXCLUDING OFF-SITE WASTE, BORROW AND STAGING AREAS): 0.35 HA (0.87 AC.)

**SITE INVENTORY & ANALYSIS**

**OFF SITE DRAINAGE CHARACTERISTICS:**

THE PROPERTY SURROUNDING THE PROJECT SITE IS FARMLAND. THE AREA BOTH UPSTREAM AND DOWNSTREAM IS VERY FLAT WITH MIXED VEGETATION. MUCH OF THE AREA CONSISTS OF OPEN FIELDS AND GRASSLAND. AREAS OF LOW GROWING SHRUBBERY ARE MIXED IN, ESPECIALLY IN THE VICINITY OF THE BRIDGE.

**DRAINAGE, WATERWAYS, BODIES OF WATER:**

THE BLACK RIVER IS LOCATED WITHIN THE PROJECT AREA. THE BLACK RIVER IS DESCRIBED AS PERENNIAL, HIGHLY MEANDERING AND NON INCISED. THE STREAMBED IS MADE UP PRIMARILY OF SILT AND SAND. THE BANKS ALONG BOTH SIDES OF THE RIVER BOTH UPSTREAM AND DOWNSTREAM ARE LOW AND UNSTABLE WITH LIGHT VEGETATION CONSISTING OF GRASS, FERNS AND LOW GROWING SHRUBBERY. WITHIN THE PROJECT AREA, THERE ARE SEVERAL AREAS ALONG THE RIVER BANKS THAT HAVE BECOME ERODED. THESE AREAS WILL BE STABILIZED BY THE PLACEMENT OF STONE FILL DURING RECONSTRUCTION OF THE BRIDGE. AREAS OF DISTURBED SOILS ARE FOUND ADJACENT TO THE BLACK RIVER. IMPACTS TO THE BLACK RIVER WILL BE MINIMIZED BY THE USE OF SILT FENCE AND FILTER CURTAIN, AS SHOWN ON THE EPSC PLAN.

**TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:**

THE TOPOGRAPHY OF THE SITE IS VERY FLAT CONSISTING MOSTLY OF FIELDS. THE TOPOGRAPHY DIRECTLY AROUND THE SITE IS MOSTLY OPEN FIELDS AND GRASSLANDS. T.H. 59 IS A CLASS II TOWN HIGHWAY WITH A GRAVEL SURFACE. THERE ARE NO BUILDINGS WITHIN THE VICINITY OF THE SITE. OVERHEAD UTILITIES EXIST ALONG THE UPSTREAM SIDE OF THE BRIDGE.

**VEGETATION:**

VEGETATION ALONG T.H. 59 IS A MIX OF GRASS, SMALL SHRUBS AND A FEW SMALL DECIDUOUS TREES. THE MAJORITY OF THE VEGETATION PRESENT ON THE SITE IS GRASS AND FERNS MIXED IN WITH SMALL SHRUBS.

FOLLOWING CONSTRUCTION OF THE NEW BRIDGE THE CHANNEL SLOPES WILL BE STABILIZED WITH STONE FILL AND VEGETATION REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES ALONG THE ROADWAY.

**SOILS:**

SOILS IN THE PROJECT VICINITY HAVE NOT BEEN MAPPED; THEREFORE, TREAT ALL SOILS AS HIGHLY ERODIBLE (K > 0.36).

**SENSITIVE RESOURCE AREAS:**

THE WESTERN HALF OF THE PROJECT IS LOCATED WITHIN AN ARCHAEOLOGICAL SENSITIVE AREA.

CLASS II WETLANDS ARE LOCATED IN EACH QUADRANT SURROUNDING THE PROJECT.

EACH OF THE AREAS IS CLEARLY MARKED ON THE PLANS. BARRIER FENCE WILL BE USED TO MINIMIZE EFFECTS OF CONSTRUCTION ON ALL SENSITIVE RESOURCE AREAS.

THERE IS AN HISTORICAL RESOURCE AREA IN THE WESTERN SECTION OF THE SITE THAT WILL NOT BE IMPACTED BY CONSTRUCTION.

THERE HAVE BEEN NO THREATENED AND ENDANGERED SPECIES IDENTIFIED WITHIN THE PROJECT LIMITS.

**PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES:**

THE DISTURBANCE OF SOILS WILL BE NECESSARY TO REMOVE THE EXISTING TIMBER ABUTMENTS. THE NEW ABUTMENTS WILL BE PLACED ON PILES WITH MINIMAL DISTURBANCE TO SOILS. THE AREA AROUND THE ABUTMENT WILL BE STABILIZED WITH STONE FILL ONCE THE CONSTRUCTION OF THE NEW ABUTMENTS IS COMPLETE.

**RISK EVALUATION**

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF CONSTRUCTION GENERAL PERMIT 3-9020 BASED ON THE PROJECT IMPACT AREA. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE, OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THEN THE SELECTED CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL PERMITTING WITH VARN VIA FILING OF THE APPROPRIATE NOTICE OF INTENT UNDER THE CONSTRUCTION GENERAL PERMIT PROCESS.

**EROSION PREVENTION AND SEDIMENT CONTROL**

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE WORK OUTLINED IN THIS NARRATIVE CONSISTS OF APPLYING MEASURES THROUGHOUT THE LIFE OF THE PROJECT TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION CONTROLS.

EMPLOY TEMPORARY STABILIZATION PRACTICES IN INCREMENTAL STAGES (PHASING) AS CONSTRUCTION PROCEEDS. ADDITIONAL MEASURES MAY BE NEEDED DUE TO THE PHASING OF PROJECT AND AS DIRECTED BY THE ENGINEER.

PREVENTING INITIAL SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. THEREFORE, STABILIZE ALL DISTURBED AREAS PROMPTLY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY VEGETATION SHALL BE ESTABLISHED IF THE AREA IS TO BE WITHOUT CONSTRUCTION ACTIVITY FOR A PERIOD OF 14 DAYS. PERMETER CONTROL MEASURES SHALL BE INSTALLED FOLLOWING CLEARING, BUT PRIOR TO THE START OF ANY GRUBBING OR GRADING ACTIVITY. INSTALL OTHER TEMPORARY CONTROLS IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS.

*(REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR EACH PRACTICE REQUIRED ON THE PROJECT TO INCLUDE BUT NOT LIMITED TO THE FOLLOWING.)*  
MARK SITE BOUNDARIES: BARRIER FENCE

LIMIT DISTURBANCE AREA: PHASING PLAN, SILT FENCE, BARRIER FENCE, TURBIDITY CURTAIN

STABILIZE CONSTRUCTION ENTRANCE: STABILIZED CONSTRUCTION ENTRANCE

INSTALL SILT FENCE: SILT FENCE

SLOW DOWN CHANNELIZED RUNOFF: CHECK DAM

CONSTRUCT PERMANENT CONTROLS:  
 TYPE I AND II STONE FOR SLOPE LINING AND CHANNEL PROTECTION  
 SEED AND MULCH

STABILIZE EXPOSED SOILS:  
 SEED AND MULCH  
 EROSION MATTING  
 TRACKING OF EXPOSED SLOPES

WINTER STABILIZATION:  
 VARIOUS MEASURES SPECIFIC TO WINTER (SEE LOW RISK HANDBOOK) SHOULD FINAL STABILIZATION NOT BE ACHIEVED BY OCT 15

STABILIZE SOIL AT FINAL GRADE:  
 SEED AND MULCH  
 EROSION MATTING

DEWATERING ACTIVITIES: DEWATERING NOT ANTICIPATED FOR THIS PROJECT

INSPECT YOUR SITE:  
 INSPECT SITE BASED ON PERMIT AUTHORIZATION REQUIREMENTS

**TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:**

BARRIER FENCE DELINEATES THE LIMITS THE CONTRACTOR CAN ACCESS WITH CONSTRUCTION EQUIPMENT. THIS MEASURE LIMITS THE AREA THAT CAN BE DISTURBED AND EXPOSED TO EROSION.

TRACKING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, WILL ALSO BE UTILIZED ON A REGULAR BASIS. ANY SLOPES TO BE EXPOSED FOR MORE THAN 14 DAYS PRIOR TO FINAL GRADING SHALL BE TRACKED AND MULCHED. SLOPES SHALL BE STABILIZED IF RAIN IS FORECAST WITHIN THE FOLLOWING 48 HOURS.

SEEDING, MULCHING AND BIODEGRADABLE EROSION CONTROL MATTING, OR AN EQUIVALENT, SHALL BE USED TO STABILIZE ALL FINAL SLOPES STEEPER THAN 1V:3H. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE OR DURING INTERMITTENT PHASES OF CONSTRUCTION.

SILT FENCE WILL BE INSTALLED A DISTANCE OF 150.0 - 300.0 (5'-10') FROM THE TOE OF FILL SLOPES TO PREVENT SEDIMENT TRANSPORT TO DOWN GRADIENT AREAS. EACH LINE OF SILT FENCE WILL BE PLACED ALONG THE CONTOUR WITH THE LOWER EDGE BURIED 150 (6") TO PREVENT UNDERFLOW AND ENDS TURNED SLIGHTLY UP GRADE TO CREATE A PONDING EFFECT SHOULD WATER TRY TO RUN ALONG THE FENCING AND AROUND THE ENDS. THE MAXIMUM SLOPE LENGTH BETWEEN SEPARATE RUNS OF SILT FENCE SHALL BE 30,000 (100'). SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UP-SLOPE EARTHWORK.

MEASURES SUCH AS SILT FENCE SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT BUILD-UP SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT REACHES ONE-HALF THE HEIGHT OF THE CONTROL MEASURE. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE SUCH THAT IT WILL NOT BE SUBJECT TO EROSION.

BARRIER FENCE WILL BE USED TO DEMARCAT E SENSITIVE AREAS NEAR THE STAGING AREA. DUE TO THE FACT THAT THE ROAD WILL BE CLOSED, THE MAJORITY OF THE STAGING WILL BE IN THE ROADWAY.

**PERMANENT EROSION CONTROL MEASURES**

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:

STREAM BANKS WILL BE STONE LINED AS SPECIFIED BY VTRANS ON THE PROJECT PLANS. THE STONE LINING WILL STABILIZE THE EXISTING BANK IN ORDER TO PROTECT IT FROM EROSION DURING STORM AND HIGH WATER EVENTS.

ALL DISTURBED AREAS WILL BE SEEDED AND MULCHED. AREAS WITH SLOPES STEEPER THAN 1:3 SHALL UTILIZE BIODEGRADABLE EROSION CONTROL MATTING.

STREAM BANK VEGETATION WILL BE INTRODUCED IN THE GRUBBING MATERIAL THAT IS TO BE PLACED OVER THE STREAM BANK RIP RAP.

**GENERAL EROSION & SEDIMENT CONTROL GUIDELINES**

COORDINATE THE INSTALLATION, USE, AND REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES WITH CONSTRUCTION ACTIVITIES TO ENSURE ECONOMICAL, EFFECTIVE AND CONTINUOUS EROSION AND SEDIMENT CONTROL. EMPLOY TEMPORARY STABILIZATION PRACTICES IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS. THE CONTRACTOR WILL USE ADDITIONAL EROSION CONTROL MEASURES AS NECESSITATED BY THE SEQUENCE OF CONSTRUCTION AND AS DIRECTED BY THE ENGINEER OR ONSITE COORDINATOR. SEE SUBSECTION 105.23 OF THE VERMONT AOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006.

INSTALL ALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN IN THE EROSION CONTROL PLAN OR AS DIRECTED BY THE ENGINEER OR ONSITE COORDINATOR. DO NOT MODIFY THE TYPE, SIZE OR LOCATION OF ANY CONTROL OR PRACTICE WITHOUT APPROVAL OF THE ENGINEER OR ONSITE COORDINATOR. ANY CHANGES SHALL BE NOTED ON THE PLANS, IN THE WEEKLY INSPECTION REPORT, AND REPORTED TO THE APPROPRIATE AUTHORITY IN A TIMELY MANNER. INSPECT ALL CONTROL MEASURES WEEKLY AND AFTER EACH RAINFALL EVENT. REPAIR MEASURES PROMPTLY ONCE DAMAGE IS DISCOVERED.

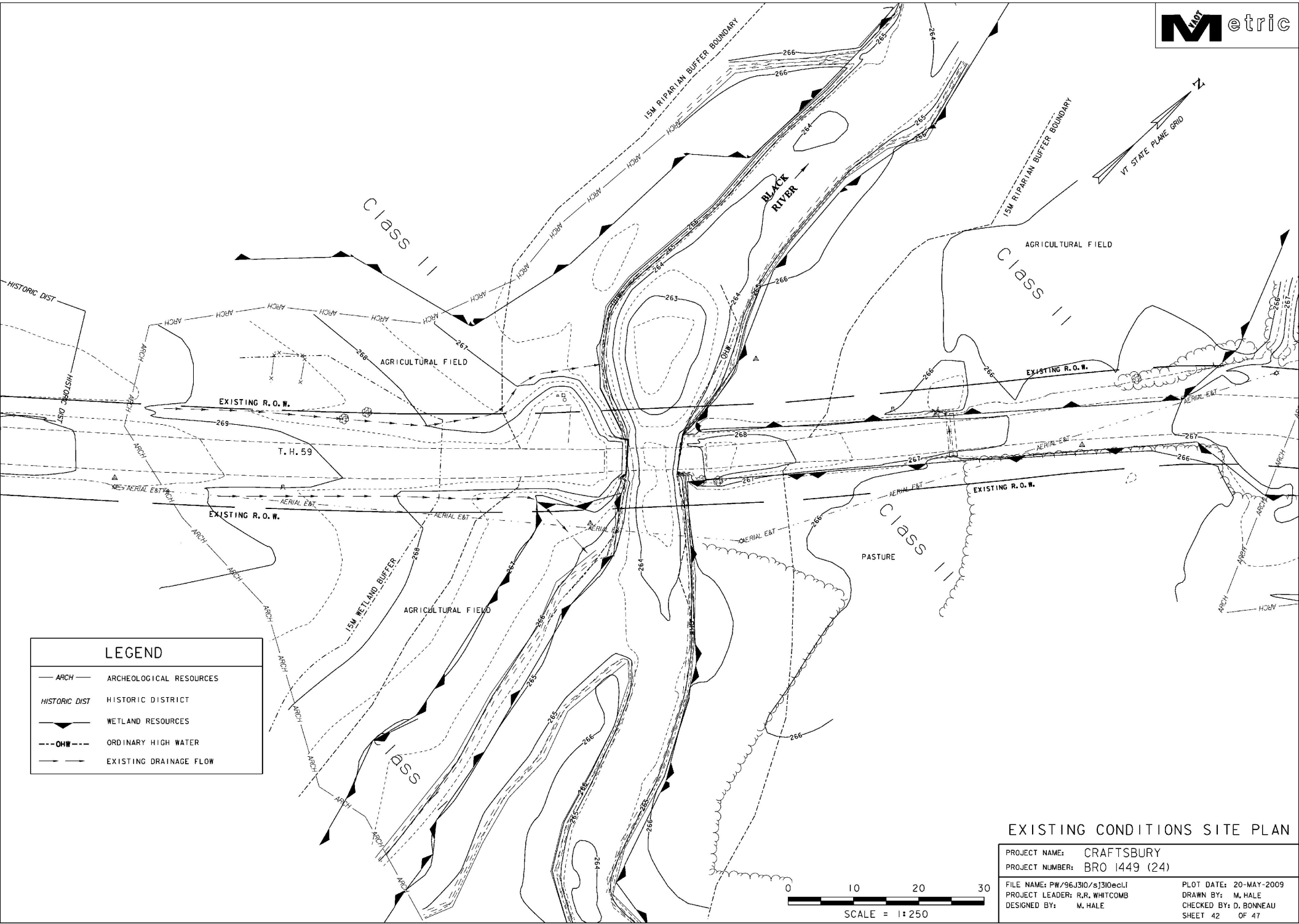
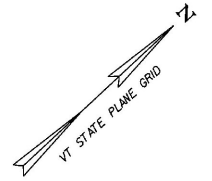
MAINTAINING VEGETATED BUFFERS ALONG THE STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE FOLLOWED WHEREVER POSSIBLE.

CONTROL ONLY SEDIMENT-LADEN RUNOFF GENERATED BY THE PROJECT SITE. COLLECT AND ROUTE CLEAN OFFSITE RUNOFF AROUND OR THROUGH THE PROJECT SITE USING DIVERSION BERMS, DIVERSION CHANNELS, CULVERTS AND/OR TEMPORARY PIPES.

DO NOT ALLOW CONSTRUCTION EQUIPMENT TO OPERATE ON THE DOWN SLOPE SIDE OF PERIMETER CONTROL MEASURES.

EPSC NARRATIVE

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	W. LAMMER
FILE NAME:	Structures\asj310ecr.dgn	CHECKED BY:	T. LACKEY
PROJECT MANAGER:	R.R. WHITCOMB	SHEET	41 OF 47
DESIGNED BY:	D. BONNEAU		



LEGEND	
— ARCH —	ARCHEOLOGICAL RESOURCES
HISTORIC DIST	HISTORIC DISTRICT
	WETLAND RESOURCES
--- OHW ---	ORDINARY HIGH WATER
---	EXISTING DRAINAGE FLOW

EXISTING CONDITIONS SITE PLAN

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	M. HALE
FILE NAME:	PW/96J30/sj30ecl.i	CHECKED BY:	D. BONNEAU
PROJECT LEADER:	R.R. WHITCOMB	SHEET	42 OF 47
DESIGNED BY:	M. HALE		

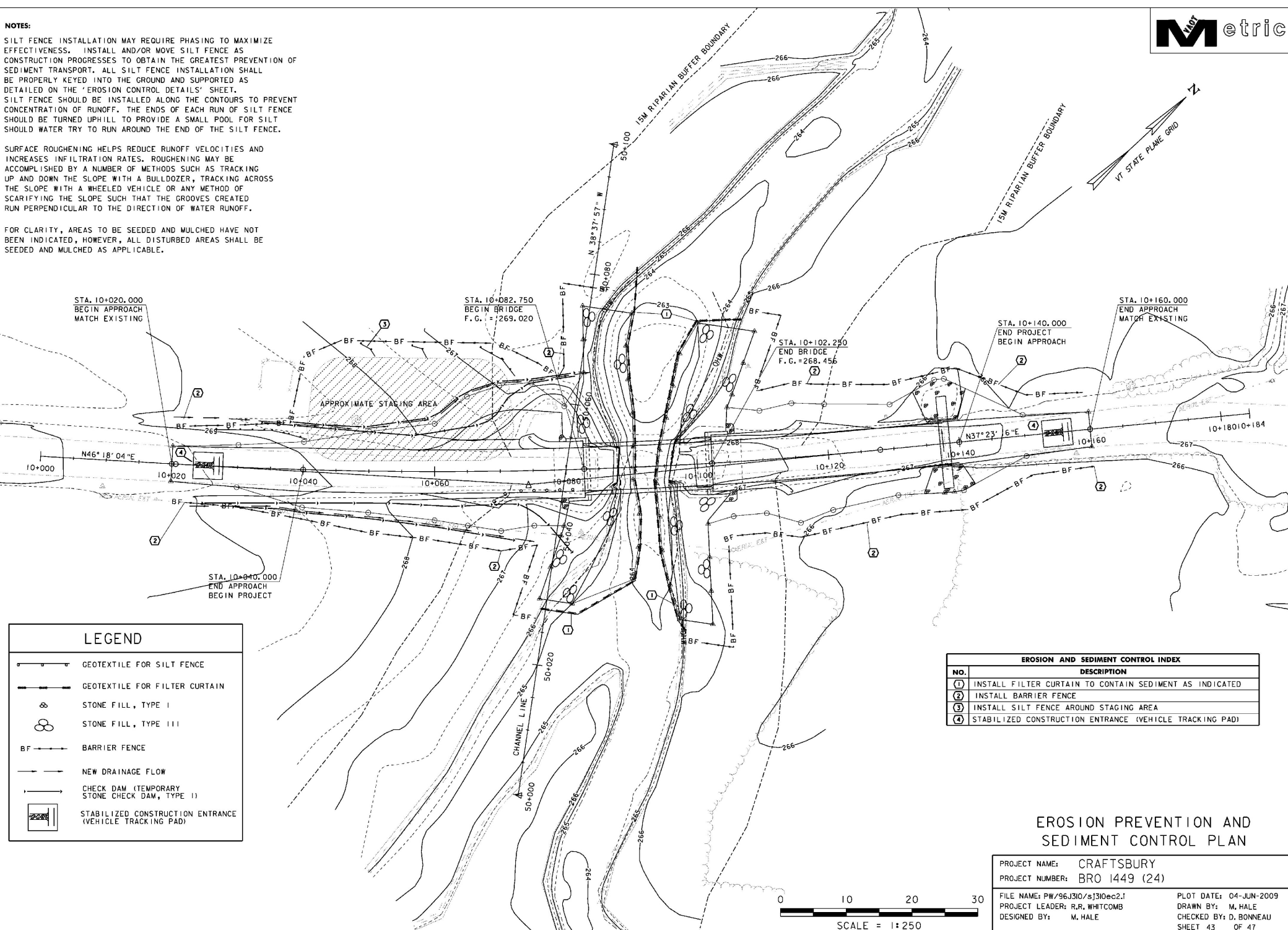
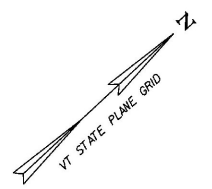


**NOTES:**

SILT FENCE INSTALLATION MAY REQUIRE PHASING TO MAXIMIZE EFFECTIVENESS. INSTALL AND/OR MOVE SILT FENCE AS CONSTRUCTION PROGRESSES TO OBTAIN THE GREATEST PREVENTION OF SEDIMENT TRANSPORT. ALL SILT FENCE INSTALLATION SHALL BE PROPERLY KEYPED INTO THE GROUND AND SUPPORTED AS DETAILED ON THE 'EROSION CONTROL DETAILS' SHEET. SILT FENCE SHOULD BE INSTALLED ALONG THE CONTOURS TO PREVENT CONCENTRATION OF RUNOFF. THE ENDS OF EACH RUN OF SILT FENCE SHOULD BE TURNED UPHILL TO PROVIDE A SMALL POOL FOR SILT SHOULD WATER TRY TO RUN AROUND THE END OF THE SILT FENCE.

SURFACE ROUGHENING HELPS REDUCE RUNOFF VELOCITIES AND INCREASES INFILTRATION RATES. ROUGHENING MAY BE ACCOMPLISHED BY A NUMBER OF METHODS SUCH AS TRACKING UP AND DOWN THE SLOPE WITH A BULLDOZER, TRACKING ACROSS THE SLOPE WITH A WHEELED VEHICLE OR ANY METHOD OF SCARIFYING THE SLOPE SUCH THAT THE GROOVES CREATED RUN PERPENDICULAR TO THE DIRECTION OF WATER RUNOFF.

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



**LEGEND**

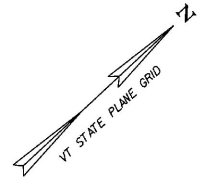
- GEOTEXTILE FOR SILT FENCE
- GEOTEXTILE FOR FILTER CURTAIN
- STONE FILL, TYPE I
- STONE FILL, TYPE III
- BARRIER FENCE
- NEW DRAINAGE FLOW
- CHECK DAM (TEMPORARY STONE CHECK DAM, TYPE II)
- STABILIZED CONSTRUCTION ENTRANCE (VEHICLE TRACKING PAD)

EROSION AND SEDIMENT CONTROL INDEX	
NO.	DESCRIPTION
(1)	INSTALL FILTER CURTAIN TO CONTAIN SEDIMENT AS INDICATED
(2)	INSTALL BARRIER FENCE
(3)	INSTALL SILT FENCE AROUND STAGING AREA
(4)	STABILIZED CONSTRUCTION ENTRANCE (VEHICLE TRACKING PAD)

**EROSION PREVENTION AND SEDIMENT CONTROL PLAN**

PROJECT NAME: CRAFTSBURY  
 PROJECT NUMBER: BRO 1449 (24)  
 FILE NAME: PW/96J30/sj310ec2.1  
 PROJECT LEADER: R.R. WHITCOMB  
 DESIGNED BY: M. HALE  
 PLOT DATE: 04-JUN-2009  
 DRAWN BY: M. HALE  
 CHECKED BY: D. BONNEAU  
 SHEET 43 OF 47





**LEGEND**

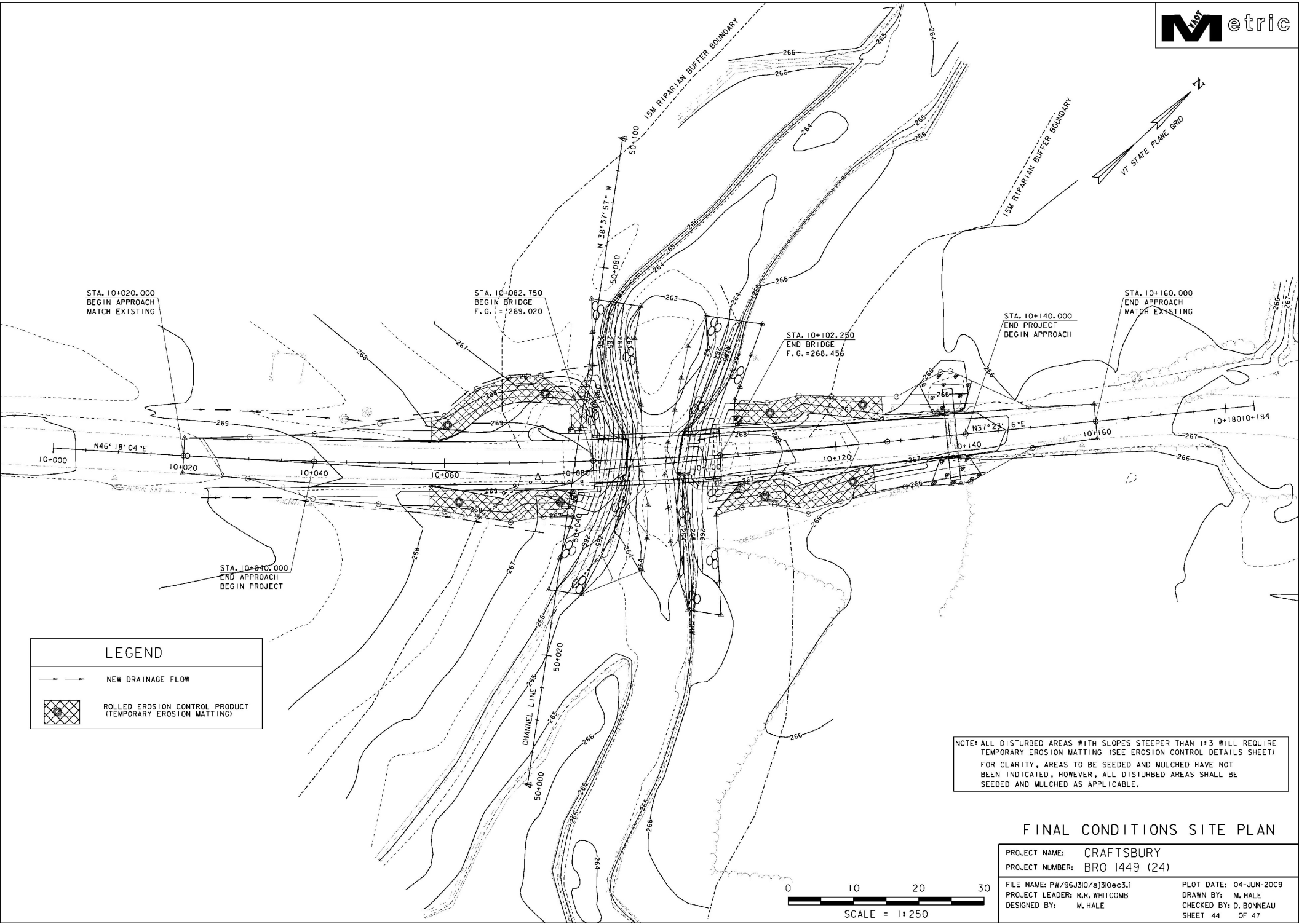
→ → → NEW DRAINAGE FLOW

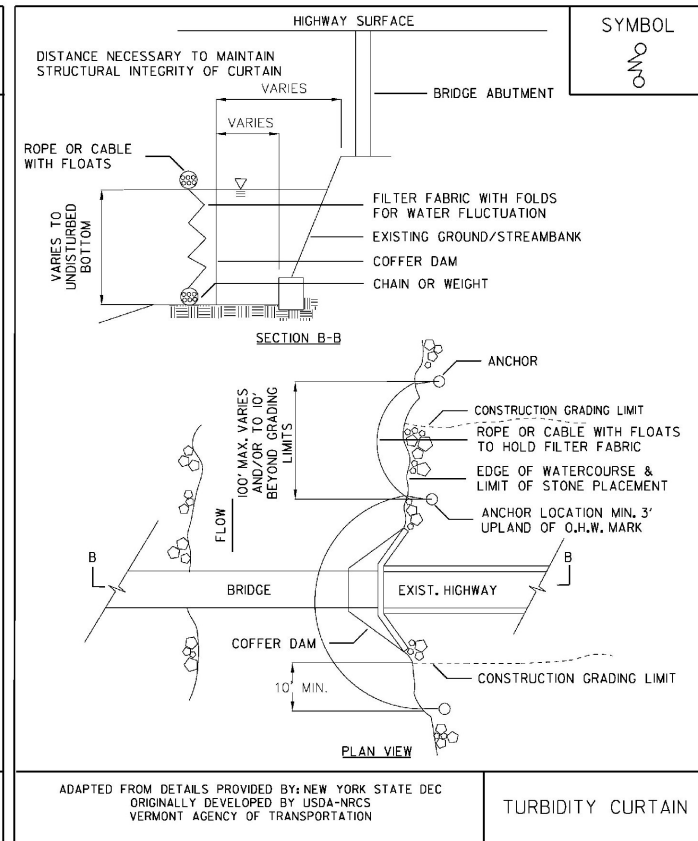
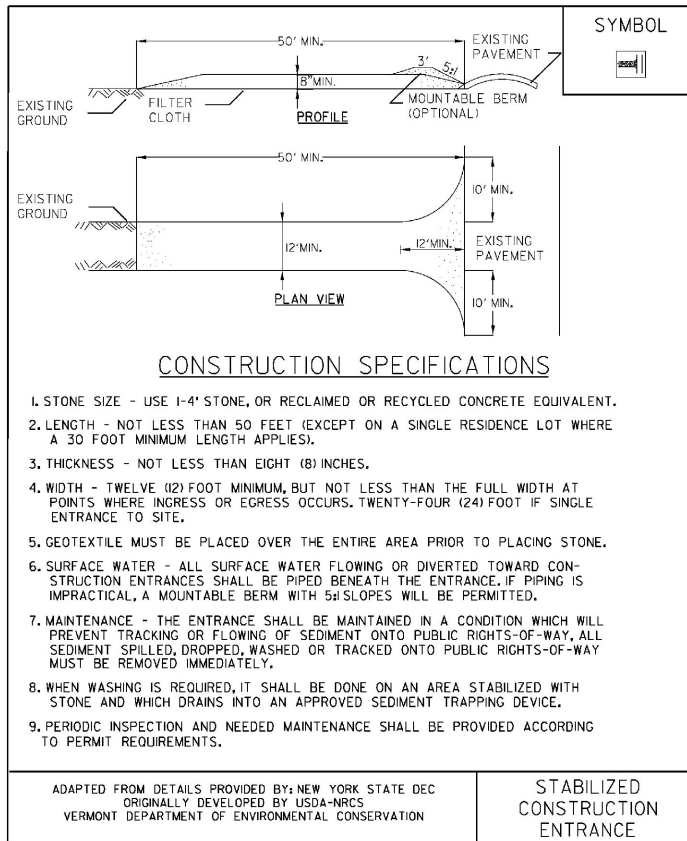
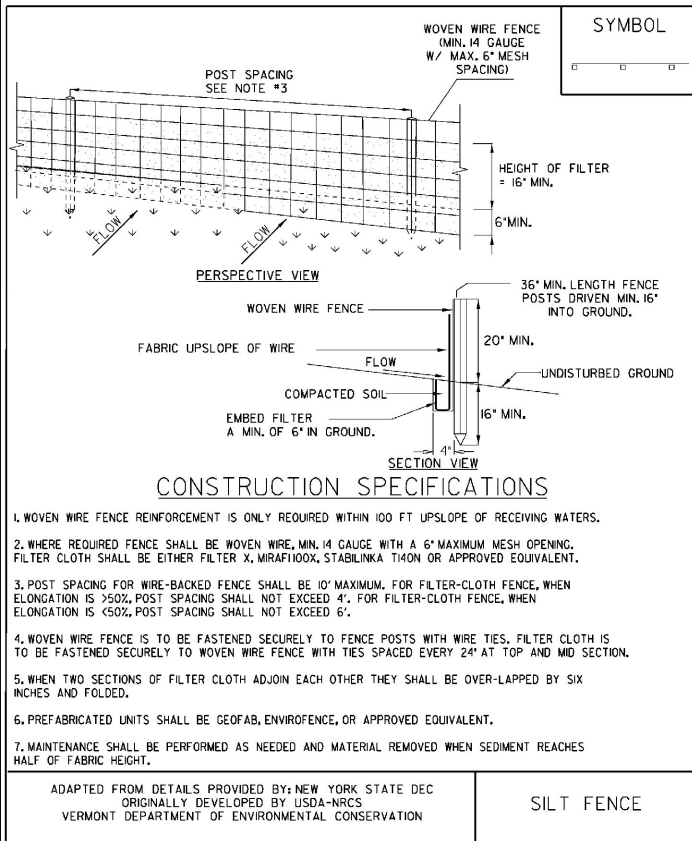
ROLLED EROSION CONTROL PRODUCT (TEMPORARY EROSION MATTING)

NOTE: ALL DISTURBED AREAS WITH SLOPES STEEPER THAN 1:3 WILL REQUIRE TEMPORARY EROSION MATTING (SEE EROSION CONTROL DETAILS SHEET) FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN INDICATED, HOWEVER, ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS APPLICABLE.

**FINAL CONDITIONS SITE PLAN**

PROJECT NAME: CRAFTSBURY  
 PROJECT NUMBER: BRO 1449 (24)  
 FILE NAME: PW/96J30/sj310ec3.1  
 PROJECT LEADER: R.R. WHITCOMB  
 DESIGNED BY: M. HALE  
 PLOT DATE: 04-JUN-2009  
 DRAWN BY: M. HALE  
 CHECKED BY: D. BONNEAU  
 SHEET 44 OF 47





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

THIS ITEM SHALL BE PAID FOR UNDER ITEM  
649.51 GEOTEXTILE FOR SILT FENCE OR  
649.55 GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED.

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

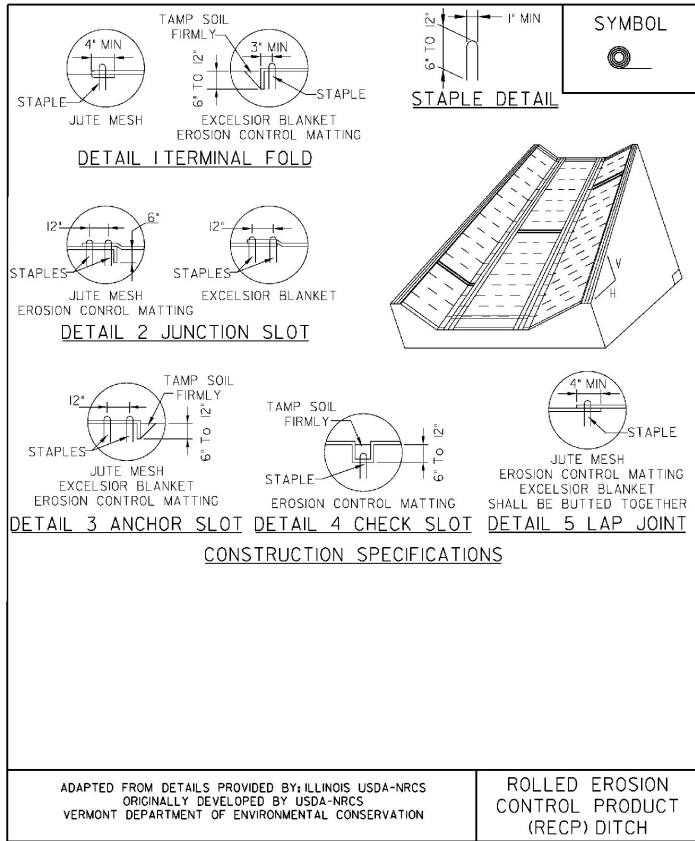
THIS ITEM SHALL BE PAID FOR UNDER ITEM  
653.35 VEHICLE TRACKING PAD

REVISIONS	
FEBRUARY 9, 2007	WHF
MARCH 8, 2007	JMF

NOTES:  
THIS ITEM SHALL BE PAID FOR UNDER ITEM  
649.61 GEOTEXTILE FOR FILTER CURTAIN

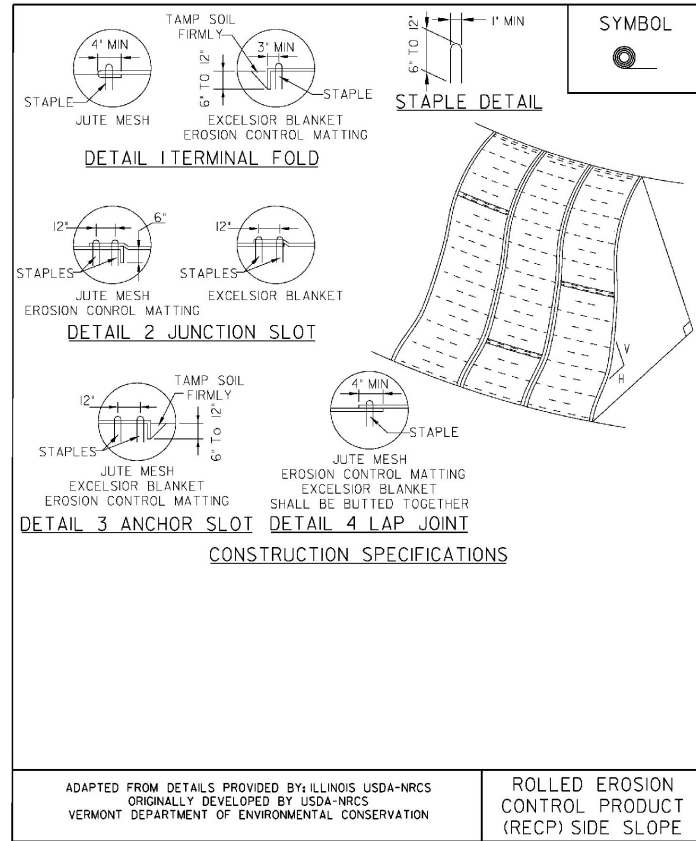
EPSC DETAILS SHEET ONE

PROJECT NAME:	CRAFTSBURY	PROJECT NUMBER:	BRO 1449 (24)
FILE NAME:	PW/96J30/sj310ecdl1	PROJECT LEADER:	R.R. WHITCOMB
DESIGNED BY:	W. LAMMER	CHECKED BY:	T. LACKEY
PLOT DATE:	20-MAY-2009	DRAWN BY:	W. LAMMER
		CHECKED BY:	T. LACKEY
		SHEET	45 OF 47



NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
THIS ITEM SHALL BE PAID FOR UNDER ITEM 653.20 TEMPORARY EROSION MATTING ~~OR~~ 653.21 PERMANENT EROSION MATTING

REVISIONS		
MARCH 8, 2007	JMF	
APRIL 16, 2007	WHF	

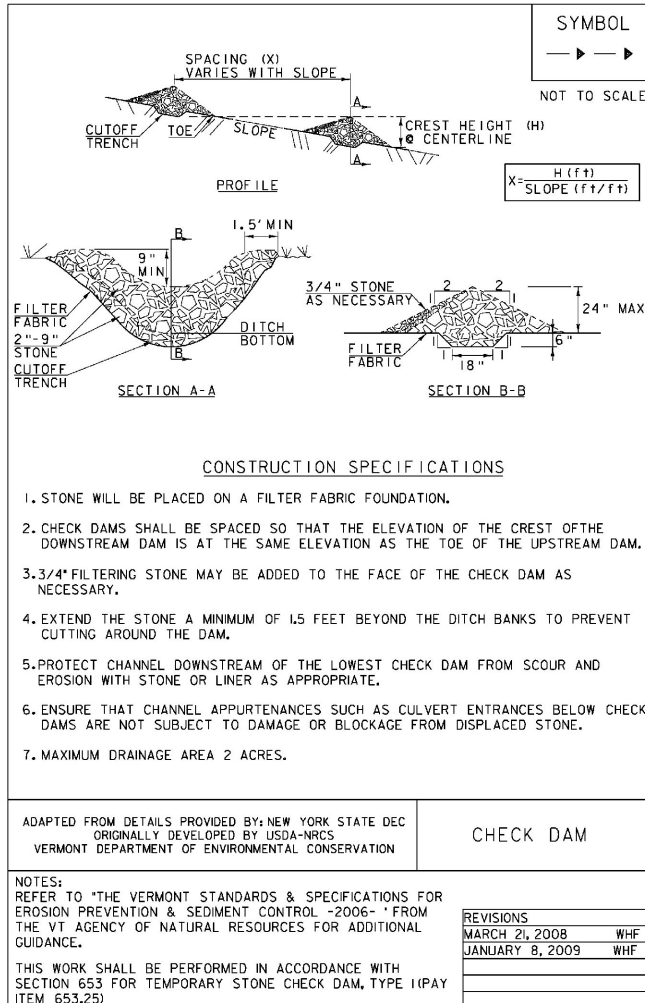


NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.  
THIS ITEM SHALL BE PAID FOR UNDER ITEM 653.20 TEMPORARY EROSION MATTING ~~OR~~ 653.21 PERMANENT EROSION MATTING

REVISIONS		
APRIL 16, 2007	WHF	

EPSC DETAILS SHEET TWO

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	W. LAMMER
FILE NAME:	PW/96J30/sj30ecd2.i	CHECKED BY:	T. LACKEY
PROJECT LEADER:	R.R. WHITCOMB		
DESIGNED BY:	W. LAMMER	SHEET	46 OF 47



**SEEDING FORMULA  
RURAL AREAS**

% MASS	kg/ha	NAME	PUR %	GERM %
37.5	26.0	CREEPING RED FESCUE	98	85
37.5	26.0	TALL FESCUE	95	90
5.0	4.0	RED TOP	95	90
15.0	10.0	BIRDSFOOT TREFOIL	98	85
5.0	4.0	ANNUAL RYE GRASS	95	85
100.0	70.0			

**GENERAL NOTES**

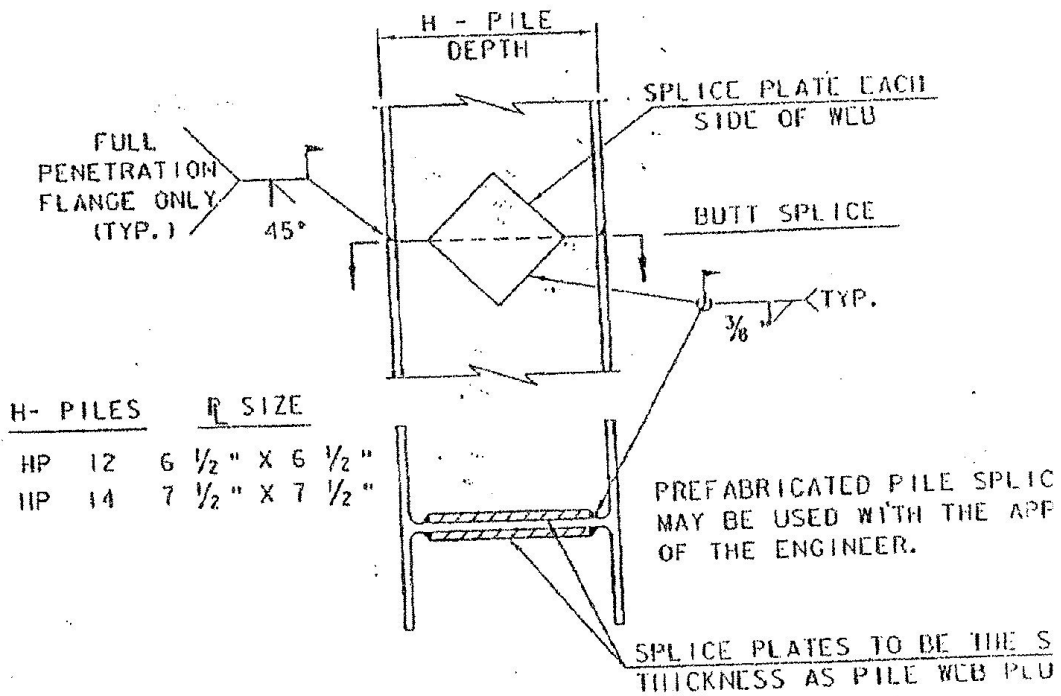
- SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY MASS AND SHALL BE FREE OF ALL NOXIOUS SEED.
- SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.
- FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 560 kg/ha. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).
- AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.
- HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.
- TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
- MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.
- SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-5M.
- PAY LIMITS OF SAND BORROW: WHEN USED IN CONJUNCTION WITH UNDERDRAIN - SEE STANDARD SHEET D-2M.
- TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.07 L/m<sup>2</sup> BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

EPSC DETAILS SHEET THREE

PROJECT NAME:	CRAFTSBURY	PLOT DATE:	20-MAY-2009
PROJECT NUMBER:	BRO 1449 (24)	DRAWN BY:	W. LAMMER
FILE NAME:	PW/96J30/sj310ecd3.i	CHECKED BY:	T. LACKEY
PROJECT LEADER:	R.R. WHITCOMB	DESIGNED BY:	W. LAMMER
			SHEET 47 OF 47







DETAIL OF PILE SPLICE

N.T.S.

CONTRACTOR

TREMBLAY CONSTRUCTION, LLC  
 P.O. Box 63  
 Washington, VT 05676

Project Craftsbury Bl

PREQUALIFIED JOINT WELDING PROCEDURE  
PROCEDURE SPECIFICATION

Material specification A56  
 Welding process SMAW  
 Manual or machine MANUAL  
 Position of welding ALL POSITION  
 Filler metal specification E7018  
 Filler metal classification LOW HYDROGEN  
 Flux N/A  
 Weld metal grade\* \_\_\_\_\_ Flow rate \_\_\_\_\_  
 Single or multiple pass SINGLE MULTIPLE  
 Single or multiple arc SINGLE  
 Welding current \_\_\_\_\_  
 Polarity REVERSE  
 Welding progression 1/8" IF 2/8" & 4/8" II  
 Root treatment GRIND & WIRE BRUSH  
 Preheat and interpass temperature 20  
 Postheat treatment NONE

\*Applicable only when filler metal has no AWS classification.

WELDING PROCEDURE

Pass no.	Electrode size	Welding current		Travel speed	Joint detail
		Ampere	Volts		
2	5/32	180	30	4"/min	PILE SPLICE WELDING DETAIL

VT TRANS  
RECEIVED

OK'D BY \_\_\_\_\_ OK'D BY JWC

AUG 10 2009

RESUBMIT \_\_\_\_\_ APPROVED ✓

BY CWC DATE 8-11-09

Contractor

TREMBLAY CONSTRUCTION, LLC  
P.O. Box 63  
Washington, VT 05675

Project  
Craftbury B10 1449 (24)

PREQUALIFIED JOINT WELDING PROCEDURE  
PROCEDURE SPECIFICATION

Material specification A516  
 Welding process SMAW  
 Manual or machine MANUAL  
 Position of welding ALL POSITIONS  
 Filler metal specification E7018  
 Filler metal classification LOW HYDROGEN  
 Flux N/A  
 Weld metal grade\* \_\_\_\_\_ Flow rate \_\_\_\_\_  
 Single or multiple pass SINGLE  
 Single or multiple arc \_\_\_\_\_  
 Welding current \_\_\_\_\_  
 Polarity REVERSE  
 Welding progression 1B 2F 2G & 4E  
 Root treatment NONE  
 Preheat and interpass temperature 30°  
 Postheat treatment NONE

\*Applicable only when filler metal has no AWS classification.

WELDING PROCEDURE

Pass no.	Electrode size	Welding current		Travel speed	Joint detail
		Amps/ees	Volts		
2	5/32	180	50	4"/min	<p>DETAIL A N.T.S. Butt Bar</p> <p>DETAIL OF PILE SPLICE</p>

VTRANS  
RECEIVED

OK'D BY \_\_\_\_\_ OK'D BY JWC

AUG 13 2009

REQUEST \_\_\_\_\_ APPROVED ✓

BY CWC DATE 8-11-09

Contractor

TREMBLAY CONSTRUCTION, LLC  
P.O. Box 63  
Washington, VT 05675

Project  
Craftsbury Bro 1449(24)

LIFTING LOOP DESIGN CALCULATIONS

WT OF VOIDED SLAB = 23.73 T

THERE ARE 4 LIFTING LUGS

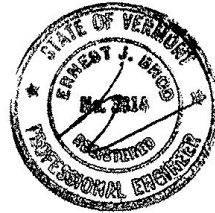
$$\text{LOAD/LIFTING LUG} = \frac{23.73 \times 2}{4} = 11.9 \text{ K}$$

FROM ATTACHED PCI LITERATURE

USE DOUBLE 1/2"  $\phi$  LIFTING LUGS, MIN EMBOS

$$\frac{1.6'' \text{ W} / 1.0'' \text{ HOOKS}}{\text{SWL (4:1 S.F.)}} = 8 \times 1.7 = 13.6 \text{ K}$$

> 11.9 K, OK



RECEIVED

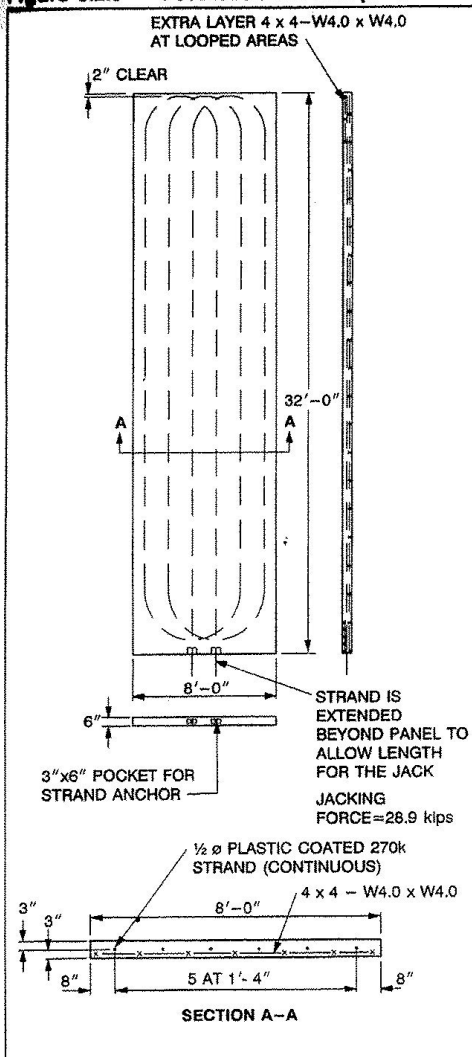
CK'D BY DRP OK'D BY \_\_\_\_\_

JUL 31 2009

DESIGNER \_\_\_\_\_ APPROVED \_\_\_\_\_

BY Bruce DATE 8-1-09

**Figure 5.2.3 Post-tensioned wall panel**



### 5.2.8 Handling Devices

The most common lifting devices are prestressing strand or aircraft cable loops projecting from the concrete, threaded inserts, or proprietary devices.

Since lifting devices are subject to dynamic loads, ductility of the material is part of the design requirement. Deformed reinforcing bars should not be used since the deformations result in stress concentrations from the shackle pin. Also, reinforcing bars may be hard grade or re-rolled rail steel with little ductility and

low impact strength at cold temperatures. Strain hardening from bending the bars may also cause embrittlement. Smooth bars of a known steel grade may be used if adequate embedment or mechanical anchorage is provided. The diameter must be such that localized failure will not occur by bearing on the shackle pin.

Prestressing strand, both new and used, may be used for lifting loops. The capacity of a lifting loop embedded in concrete is dependent upon the strength of the strand, length of embedment, the condition of the strand, the diameter of the loop, and the strength of the concrete.

As a result of observations of lift loop behavior during the past few years, it is important that certain procedures be followed to prevent both strand slippage and strand failure. Precast producers' tests and/or experience offer the best guideline for the load capacity to use. A safety factor of 4 against slippage or breakage should be used. In lieu of test data, the recommendations listed below should be considered when using strand as lifting loops:

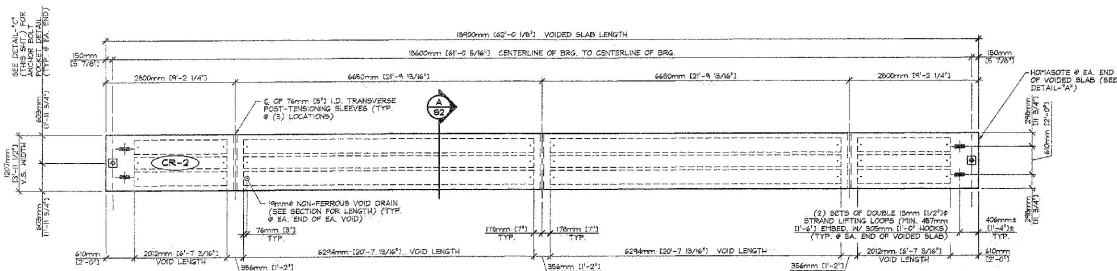
1. Minimum embedment to the bend should be 16 in.
2. Embedded ends should have 6 in. hooks bent at 80-100 degrees. The bending radius should be at least 2 in. and the bend should be made mechanically without heating.
3. The strand surface shall be free of contaminants, such as form oil, grease, mud, or loose rust which could reduce the bonding of the strand to the concrete.
4. The diameter of the hook or fitting around which the strand lifting eye will be placed should be at least 4 times the diameter of the strand being used.
5. Do not use heavily corroded strand or strand of unknown size and strength.

In the absence of tests or experience, it is recommended that the safe load on a single 1/2 in. diameter 270 ksi strand loop satisfying the above recommendations not exceed 8 kips. The safe working load of multiple loops may be conservatively obtained by multiplying the safe load for one loop by 1.7 for double loops and 2.2 for triple loops. To avoid overstress in one loop when using multiple loops, care should be taken in the fabrication to ensure that all strands are bent the same. Thin wall conduit over the strands in the region of the bend has been used to reduce the overstress.

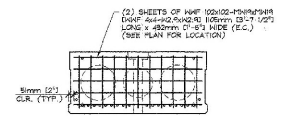




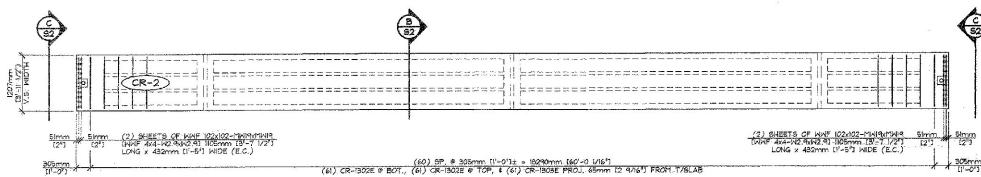




1 PRESTRESSED VOIDED SLAB PLAN VIEW IN FORM  
S2 1:50

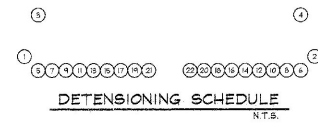


C END BLOCK REINF. SECTION  
S2 1:20

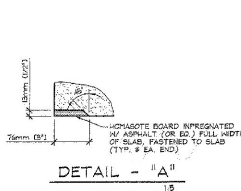


2 REINFORCING PLAN VIEW IN FORM  
S2 1:50

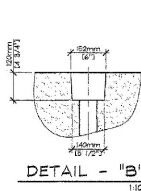
SHOP NOTE:  
ADJUST REINFORCING AS REQUIRED TO CLEAR SLEEVES, POCKETS, ETC.



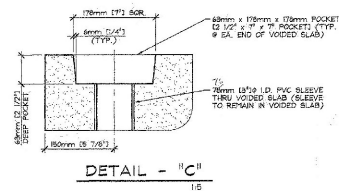
DETENSING SCHEDULE  
N.T.S.



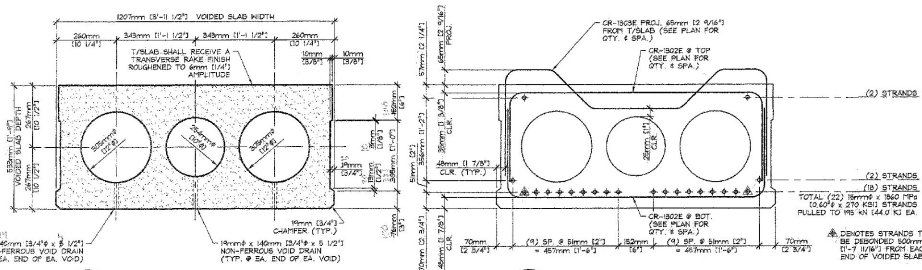
DETAIL - "A"  
1:5



DETAIL - "B"  
1:10



DETAIL - "C"  
1:5



A DIMENSIONAL SECTION  
S2 1:10

B REINFORCING SECTION  
S2 1:10

MARK: CR-2		QTY: 4	WT: 20,715 kg (22.93 T)	VOL: 8.62 m <sup>3</sup> (11.29 cy)
MATERIAL LIST / VOIDED SLAB				
ITEM	MARK	DESCRIPTION	QTY.	
1				
2	100E	#10(4) BENT BAR (EPOXY COATED)	122	
3	100E	#10(4) BENT BAR (EPOXY COATED)	51	
4		SHEET OF NON-FERROUS VOID DRAIN (44" x 44" x 1/2") 150mm (5'-7") LONG x 420mm (16'-0") WIDE (E.C.)	4	
5	CR-100E	DATELOR-200(1) 44" x 44" PRECAST HALF HANGER (GALV.)	1/2	
6		30mm x 200mm (1 1/2" x 8'-0") VOID	4	
7		25mm x 200mm (1" x 8'-0") VOID	2	
8		35mm x 420mm (1 3/8" x 20'-7") VOID	4	
9		25mm x 420mm (1" x 20'-7") VOID	2	
10		11mm x 140mm (3/4" x 5'-7") NON-FERROUS VOID DRAIN	8	
11		11mm x 140mm (3/4" x 5'-7") NON-FERROUS VOID DRAIN	4	
12		DOUBLE 3mm (1/2") STRAND LIFTING LOOPS	16	
13				
14				
15				

APPROVAL STAMP:  
RECEIVED  
JUL 11 2009  
BY: [Signature] DATE: 8-14-09

J.P. CARRARA & SONS INC.  
Precast & Prestress Manufacturer  
284 ONE ST. WAREHOSE DRIVE WTS Phone: (802) 238-4761 Fax: (802) 238-3010

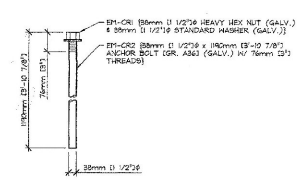
STATE OF VERMONT  
AGENCY OF TRANSPORTATION  
TOWN OF CRAFTSBURY  
ROUTE NO. T.H. 99 CLASS 3 BRIDGE NO.: 2  
PROJECT NO.: BRO 1449(24)

JEFF TREMBLAY  
CONTRACTOR  
DATE: JULY 27, 2009  
SCALE: NOTED  
CHKD: [Signature] DTM: B.L.  
JOB NO.: 23298-00R  
DWG. NO.: S2

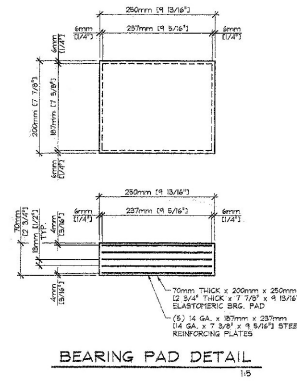
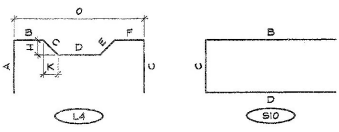
P/S VOIDED SLAB DETAILS

BENT BARS, TIES, & STIRRUPS																			
ITEM	MARK	QTY.	SIZE	LENGTH	TYPE	A	B	C	D	E	F/R	G	H	J	K	O	GRADE	REMARKS	
1																			
2	ISOE	782	#5 (A3)	1502mm (5'-0" 3/4")	SIO		38mm (1-1/2")	117mm (4'-6")	58mm (2'-3")								60	EPOXY COATED	
3	ISOE	346	#5 (A3)	2048mm (6'-9" 1/4")	L4	457mm (1'-6")	202mm (8")	240mm (9'-6")	345mm (13'-2" 3/8")	240mm (9'-6")	202mm (8")	457mm (1'-6")	170mm (6'-7")		170mm (6'-7")	118mm (4'-7" 3/8")	60	EPOXY COATED	
4																			
5																			
6																			
7																			
8																			
9																			
10																			

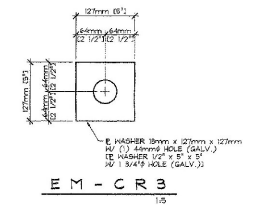
MISCELLANEOUS MATERIAL				
ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1		24	75mm THICK x 250mm x 250mm (2 3/4" THICK x 7 7/8" x 9 13/16") ELASTOMERIC BEARING PAD	FOR ERECTION, SEE DETAIL THIS SHEET
2	EM-CR	12	38mm (1 1/2") HEAVY HEX NUT (GALV.) + 58mm (2 1/4") STD. WASHER (GALV.)	FOR ERECTION, SEE ANCHOR BOLT DETAIL
3	EM-CR2	12	38mm x 145mm (1 1/2" x 5'-10" 7/8") ANCHOR BOLT (GALV.)	FOR ERECTION, SEE ANCHOR BOLT DETAIL
4	EM-CR3	12	WASHER 18mm x 127mm x 127mm (3/4" 1/2" 1/2") + 1/2" 1/2" 1/2" HOLE (GALV.)	FOR ERECTION, SEE DETAIL THIS SHEET
5	EM-CR4	6	E-17mm x 127mm x 127mm (1/2" 1/2" 1/2") HOLE (GALV.)	FOR ERECTION, SEE DETAIL THIS SHEET
6		6	SINGLE USE STRESSING GAUGE	FOR ERECTION
7		8	18mm x 653mm (1/2" x 21'-4") POLYSTRAND	FOR ERECTION
8		21	COMPRESSIBLE SEALER SELF ADHESIVE	FOR ERECTION
9		24	SHEET OF VAPOR BARRIER (KAPAK-44-H2-NS-24)	EPOXY COATED
10	HK-PA	32	DAYTON C-24 TYPE 4-JAW PRESS STEEL PRECAST HALF HANGER	GALVANIZE
11		24	38mm x 202mm (1 1/2" x 6'-7" 3/8") VOID	
12		12	254mm x 202mm (10" x 6'-7" 3/8") VOID	
13		24	254mm x 624mm (10" x 20'-7" 13/16") VOID	
14		12	254mm x 624mm (10" x 20'-7" 13/16") VOID	
15		48	18mm x 142mm (3/4" x 5' 1/2") NON-FERROUS VOID DRAIN	
16		18	18mm x 142mm (3/4" x 5' 1/2") NON-FERROUS VOID DRAIN	
17		24	DOUBLE 18mm (1/2") STRAND LIFTING LOOPS	



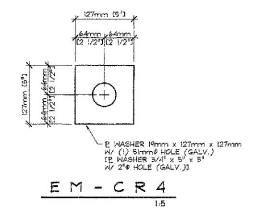
ANCHOR BOLT DETAIL  
1/8



BEARING PAD DETAIL  
1/8



EM - CR 3  
1/8



EM - CR 4  
1/8

APPROVAL STAMP:  
  
RECEIVED  
BY: [Signature] DATE: [Signature]  
JUL 31 2008  
APPROVED BY: [Signature] DATE: 07-26-08

<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer <small>1444 GLENN ST. WOODBURY CENTER ROAD WOODBURY, VT 05091-2508-4301 FAX: (802) 558-0610</small>		<b>JEFF TREMBLAY</b> CONTRACTOR	
STATE OF VERMONT AGENCY OF TRANSPORTATION		DATE: JULY 27, 2008 SCALE: NOTED	
TOWN OF CRAFTSBURY ROUTE NO. T.H. 89 CLASS 3 BRIDGE NO. 2 PROJECT NO.: BRO 1449(24)		CHKD: - D/TM: B.L. JOB NO: 23598-009	
<b>P/S VOIDED SLAB DETAILS</b>		DWG. NO: <b>M1</b>	

**WELDING PROCEDURE SPECIFICATION**

Material Specification A572 TO A572  
 Welding Process FCAW  
 Manual or Machine SEMAUTOMATIC  
 Position of Welding FLAT  
 Filler Metal Specification A5.20-85  
 Filler Metal Classification E71T-1H8 E71T-9H8 LINCOLN ULTRACORE  
 Flux N/A  
 Shielding Gas CO 2 Dew Point -40DEG F Flow Rate 50CFH  
 Single or Multiple Pass SINGLE  
 Single or Multiple Arc SINGLE  
 Welding Current DC  
 Polarity (REVERSE) ELECTRODE POSITIVE  
 Welding Progression STRINGER  
 Root Treatment CLEAN AS PER SECTION 803 OF THE NYSSCM  
 Preheat and Interpass Temperature PREHEAT AS PER TABLE 708 OF THE NYSSCM  
 Postheat Temperature NONE  
 Heat input Min \_\_\_\_\_ Max \_\_\_\_\_

**WELDING PROCEDURE**

Pass no.	Electrode size	Welding Current		Travel speed	Joint detail
		Amperes	Volts		
1	1/16	300	26	14	
Variable	LIMITS	270	24	12.6	
		TO 330	TO 28	TO 15.4	

**NYSDOT METALS ENGINEERING REVIEW**  
 APPROVED AS NOTED  
 DISAPPROVED  
 R. P. [Signature]  
 1/12/09

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

Procedure No. 1026 Contractor Elderlee, Inc.  
 Revision No. \_\_\_\_\_ Authorized By RANDY SCOTT  
 Date 12/4/2008

Form III-2

Form III-2-Sample Welding Procedure Specification

VTRANS RECEIVED  
 CK'D BY \_\_\_\_\_ OK'D BY JUC  
 SEP 30 2009  
 REQUEST APPROVED  
 BY [Signature] DATE 10/9/09

**WELDING PROCEDURE SPECIFICATION**

Material Specification A53 TO A572  
 Welding Process FCAW  
 Manual or Machine SEMAUTOMATIC  
 Position of Welding FLAT  
 Filler Metal Specification A5.20 - 95  
 Filler Metal Classification E71T-1H8 E71T-9H8 LINCOLN ULTRACORE  
 Flux N/A  
 Shielding Gas CO2 Dew Point -40DEG F Flow Rate .50CFH  
 Single or Multiple Pass SINGLE  
 Single or Multiple Arc SINGLE  
 Welding Current DC  
 Polarity REVERSE ELECTRODE POSITIVE  
 Welding Progression STRINGER  
 Root Treatment CLEAN AS PER SECTION 603 OF THE NYSSCM  
 Preheat and Interpass Temperature PREHEAT AS PER TABLE 708 OF THE NYSSCM  
 Postheat Temperature NONE  
 Heat Input Min \_\_\_\_\_ Max \_\_\_\_\_

**WELDING PROCEDURE**

Pass no.	Electrode size	Welding Current		Travel speed	Joint detail
		Amperes	Volts		
1	1/16	300	26	14	
Variable	LIMITS	270	24	12.6	
		TO 330	TO 28	15.4	

**NYSDOT METALS ENGINEERING REVIEW**  
 APPROVED AS NOTED  
 R. [Signature]  
 1/12/09

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

Procedure No. 1025  
 Revision No. \_\_\_\_\_

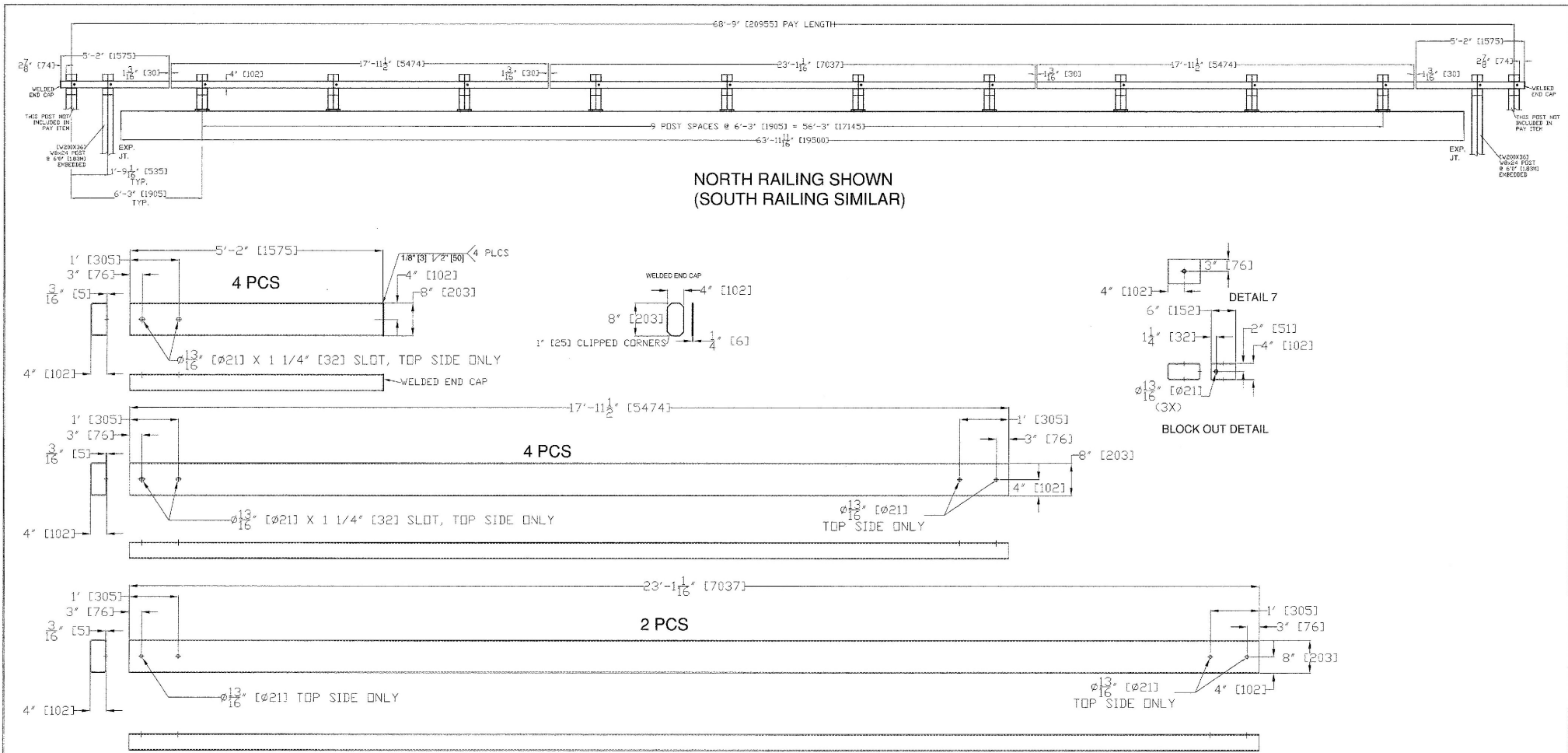
Contractor Elderlee, Inc.  
 Authorized By RANDY SCOTT  
 Date 12/4/2008

**RECEIVED**

OK'D BY \_\_\_\_\_ OK'D BY Jee

SEP 30 2009

APPROVED [Signature]  
 BY [Signature] DATE 10/18/09



BILL OF MATERIALS			
DET. #	QTY	DESCRIPTION	MATERIAL
1	20	W150x29.8 POST ON 200x255x25 B.P. @ 5.35	ASTM A572 Gr 345
2	4	W200x35.9 TRANSITION POST @ 1.83m	ASTM A36
3	4	TS203x102x4.8 TUBING @ 1.575m	ASTM A500 Gr B
4	4	TS203x102x4.8 TUBING @ 5.474m	ASTM A500 Gr B
5	2	TS203x102x4.8 TUBING @ 7.037m	ASTM A500 Gr B
6	8	C180x18.2 CHANNEL @ 790	ASTM A572 Gr 345
7	56	TS203x102x4.8 TUBING @ 152	ASTM A500 Gr B
8	12	10 GAUGE "W" BEAM @ 3.81m	ASTM A36
9	28	16x250' HEX BOLT	ASTM A325
10	28	16x330 HEX BOLT	ASTM A325
11	88	16x50 HEX BOLT	ASTM A325
12	96	16x32 PANEL BOLTS & NUTS	ASTM A307
13	28	5x44x76' SPECIAL WASHER	ASTM A36
14	112	16 HEX NUT	ASTM A563
15	228	16 FLAT WASHER	ASTM A436
16	80	20 ANCHORS (SUPPLIED BY OTHERS)	ASTM A325
17	80	20 HEX NUT (SUPPLIED BY OTHERS)	ASTM A563
18	80	20 FLAT WASHER (SUPPLIED BY OTHERS)	ASTM F436

- NOTES:**
- HEAVY DUTY STEEL BEAM GUARD RAIL SHALL CONFORM TO VAOT STD SPECIFICATION 732.
  - STRUCTURAL STEEL TUBING SHALL CONFORM TO VAOT STD. SPECIFICATION 732 AND SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M III.
  - ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 AND SHALL CONFORM TO VAOT STD SPECIFICATION 714 UNLESS OTHERWISE NOTED.
  - BRIDGE RAIL POST, SPECIAL WASHERS, PLATE WASHERS AND SPLICE BARS SHALL CONFORM TO AASHTO M 223/M GRADE 345 AND SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M III.
  - ALL BOLTS AND RELATED HARDWARE SHALL CONFORM TO AASHTO M 164M, TYPE 1 BOLTS AND SHALL BE HOT DIPPED OR MECHANICALLY GALVANIZED PER SPECIFICATION.
  - ALL POST SHALL BE SET NORMAL TO GRADE.
  - A RAILING JOINT SPLICE SHALL BE PROVIDED AT EACH SUPERSTRUCTURE EXPANSION JOINT.
  - ALL FIELD CUT OR DRILLED AREAS SHALL BE COATED WITH AN APPROVED SEALANT.
  - THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING ON THIS STANDARD.
  - PRIOR TO GALVANIZING ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC. SHALL BE GROUND TO A 1.6mm (1/16") RADIUS.

ITEM #: 900.640-SP BRIDGE RAILING GEN CONTR: F R LaFayette SHEET 1 OF 2

APPROVED BY: *[Signature]*

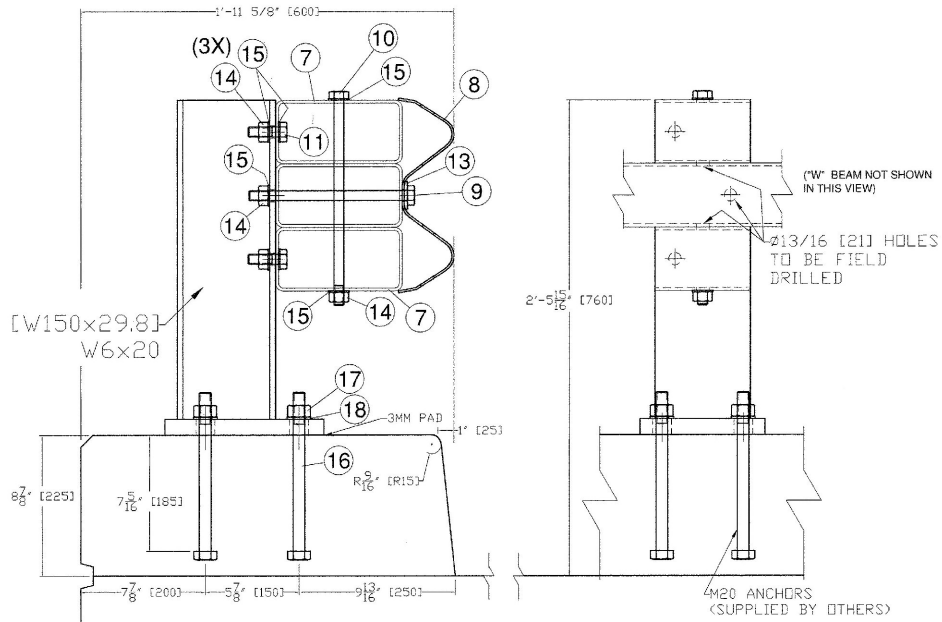
RECEIVED  
OCT 28 2008  
BY: *[Signature]* DATE: 10-28-08

R NO.	DATE	DESCRIPTION	BY: R	NO.	DATE	DESCRIPTION	BY: E
1	10/16/09	REVISED PER APPROVAL BY C.W.C.	E.P.				

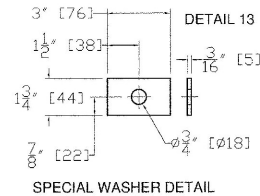
**BRIDGE RAIL DETAILS SHEET**  
CRAFTSBURY, PROJECT # BRO 1449 (24)  
TOWN OF CRAFTSBURY, ORLEANS COUNTY, STATE OF VERMONT

SCALE	SCHEMATIC	DRAWING NO.	DATE
		EM09-143	09/24/09

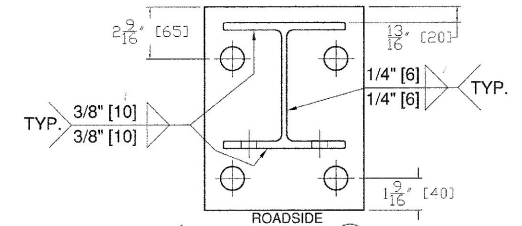
**ELDERLEE, INC.**  
OAKS CORNERS, NEW YORK 14518  
E-Mail: [dlong@elderlee.com](mailto:dlong@elderlee.com)  
Tel: 315-789-6670 Fax: 315-789-6615



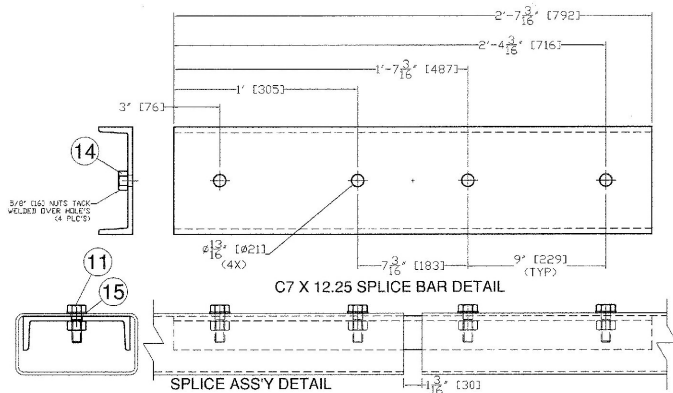
TYP. CONNECTION FOR RAILING TO POST  
CURB & RAIL SECTION



SPECIAL WASHER DETAIL

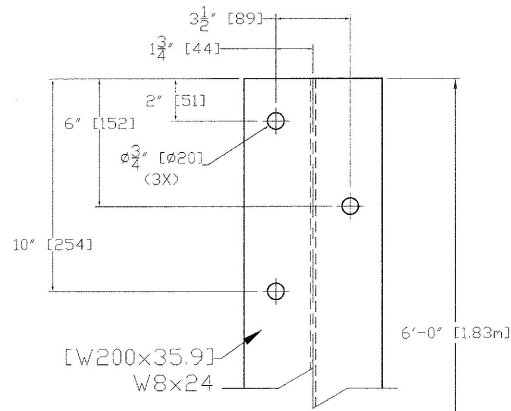


POST ON BASE PLATE

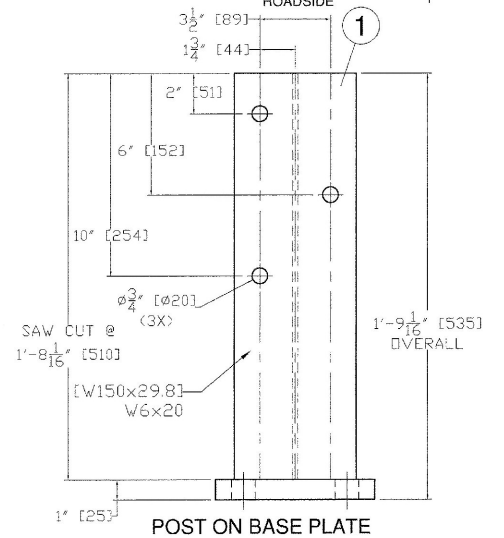


C7 X 12.25 SPLICE BAR DETAIL

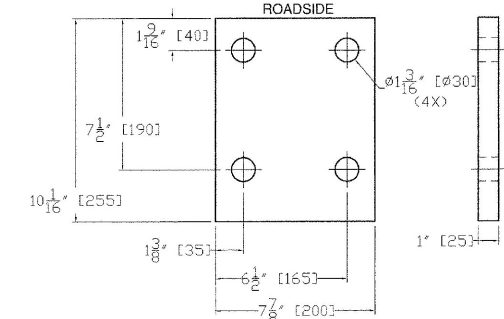
SPLICE ASSY DETAIL



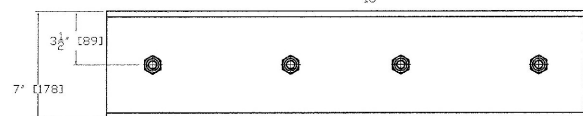
EMBEDDED POST  
DETAIL 2



POST ON BASE PLATE



ROADSIDE



BOTTOM VIEW

ITEM #: 900.640-SP BRIDGE RAILING

GEN CONTR: F R LaFayette

SHEET 2 OF 2

APPROVED BY:

RECEIVED  
OCT 2 8 2009  
BY [Signature] DATE 10-28-09

BRIDGE RAIL DETAILS SHEET

CRAFTSBURY, PROJECT # BRO 1449 (24)  
TOWN OF CRAFTSBURY, ORLEANS COUNTY, STATE OF VERMONT

R	NO.	DATE	DESCRIPTION	BY	R	NO.	DATE	DESCRIPTION	BY
E	1	10/16/09	REVISED PER APPROVAL BY C.W.C.	E.P.					
V									

<p><b>ELDERLEE, INC.</b> OAKS CORNERS, NEW YORK 14518 E-Mail: diong@elderlee.com Tel: 315-789-6670 Fax: 315-789-6615</p>	<p>DRAWN CHECKED APPROVED SCALE SCHEMATIC DRAWING NO. EM09-143</p>
--	--