



# PRELIMINARY INFORMATION SHEET

INDEX OF SHEETS

FINAL HYDRAULIC REPORT

PLAN SHEETS

STANDARDS LIST

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E-100	01-02-2004
E-101	05-30-2003
E-102	06-30-2003
E-106	03-01-2004
E-110	08-08-1995
E-111	03-11-1997
G-1	01-03-2000
G-17A	09-27-2002
G-17B	09-27-2002
G-19	11-15-2002

HYDROLOGIC DATA Date: Aug. 21, 2012

DRAINAGE AREA : 40.2 sq. mi.  
 CHARACTER OF TERRAIN : Ranges from Steep Mountainous to Flat Valley  
 STREAM CHARACTERISTICS : Steep Braided Stream  
 NATURE OF STREAMBED : Gravel and Small Boulders

PEAK FLOW DATA

Q 2.33 =	1,550 cfs	Q 50 =	5,750 cfs
Q 10 =	3,300 cfs	Q 100 =	7,100 cfs
Q 25 =	4,700 cfs	Q 500 =	11,300 cfs

DATE OF FLOOD OF RECORD : 8/28/2011 (Tropical Storm Irene)  
 ESTIMATED DISCHARGE : 9,420 cfs  
 WATER SURFACE ELEV. : Unknown

NATURAL STREAM VELOCITY : @ Q25 = 8 to 12 fps  
 ICE CONDITIONS : Moderate  
 DEBRIS : High  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes  
 IS ORDINARY RISE RAPID? Yes  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No  
 IF YES, DESCRIBE : -

WATERSHED STORAGE : Minimal HEADWATERS : -  
 UNIFORM : -  
 IMMEDIATELY ABOVE SITE : -

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : 3 Span Continuous, Composite Rolled Beam  
 YEAR BUILT : 1940, Reconstructed 1989  
 CLEAR SPAN(NORMAL TO STREAM) : 69.7' (Span 1) 69.3' (Span 2) 68.7' (Span 3)  
 VERTICAL CLEARANCE ABOVE STREAMBED : 26' Max  
 WATERWAY OF FULL OPENING : 3,571 sq. ft.  
 DISPOSITION OF STRUCTURE : Retain, retrofit spread foundations  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : Stratified soil deposits

WATER SURFACE ELEVATIONS AT:

Q2.33 =	908.0' (FIELD VERIFIED)	VELOCITY =	4.4 fps
Q10 =	909.4'	"	5.9 fps
Q25 =	910.3'	"	6.6 fps
Q50 =	910.9'	"	7.0 fps
Q100 =	911.6'	"	7.5 fps

LONG TERM STREAMBED CHANGES : Vertically Stable, Laterally Active

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: -  
 RELIEF ELEVATION: 926.8  
 DISCHARGE OVER ROAD @Q100: -

UPSTREAM STRUCTURE

TOWN: Woodford DISTANCE: 1.76 miles  
 HIGHWAY #: VT Route 9 STRUCTURE #: 11  
 CLEAR SPAN: 275' CLEAR HEIGHT: N.A.  
 YEAR BUILT: 2007 FULL WATERWAY: N.A.  
 STRUCTURE TYPE: 3 Span Steel Stringer

DOWNSTREAM STRUCTURE

TOWN: Bennington DISTANCE: 0.68 miles  
 HIGHWAY #: VT Route 279 STRUCTURE #: 15N and 15S  
 CLEAR SPAN: 475' CLEAR HEIGHT: 41 ft.  
 YEAR BUILT: 2011 FULL WATERWAY: 13,420 sq. ft.  
 STRUCTURE TYPE: 3 Span Curved Continuous Plate Girder

XXXX LOAD RATING (TONS)

LOADING LEVELS		TRUCK						
		H	HS	3S2	6 AXLE	3A STR	4A STR	5A SEM
INVENTORY								
POSTED								
OPERATING								
COMMENTS:								

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT

20 year ESAL for flexible pavement from to :  
 40 year ESAL for flexible pavement from to :  
 Design Speed : mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Retain existing structure, retrofit existing spread footings

CLEAR SPAN(NORMAL TO STREAM): -  
 VERTICAL CLEARANCE ABOVE STREAMBED: 26' Max  
 WATERWAY OF FULL OPENING: 3,593 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	908.1'	VELOCITY=	4.4 fps
Q10 =	909.4'	"	5.9 fps
Q25 =	910.3'	"	6.6 fps
Q50 =	910.9'	"	7.0 fps
Q100 =	911.6'	"	7.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: -  
 RELIEF ELEVATION: 926.8  
 DISCHARGE OVER ROAD @Q100: -

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 926.3  
 VERTICAL CLEARANCE: @ Q25 = 926.3 - 910.3 = 16 ft

SCOUR: @ Q500 Total Scour = 0.0 (Abutment 1), 21.6' (Pier 1), 23.1' (Pier 2),  
 6.4' (Abutment 2)

REQUIRED CHANNEL PROTECTION: Riprap, Heavy Type (at Piers 1 and 2)

PERMIT INFORMATION

AVERAGE DAILY FLOW: 125 cfs DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: - 903.5'  
 ORDINARY HIGH WATER: - 905.0'

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 (Impact excluded for pile loads)
- DESIGN SPAN -
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL -  
ON LEDGE -
- ALLOWABLE LOAD FOR PILING Contractor-designed  
TYPE Cased Micropiles  
ESTIMATED LENGTH 70'
- STRUCTURAL STEEL AASHTO M270M/M270 GRADE -
- REINFORCING STEEL GRADE 60
- CONCRETE, HIGH PERFORMANCE CLASS A fc: -  
CONCRETE, HIGH PERFORMANCE CLASS B fc: 3500 psi
- DESIGN SOIL UNIT WEIGHT
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL

TRAFFIC MAINTENANCE

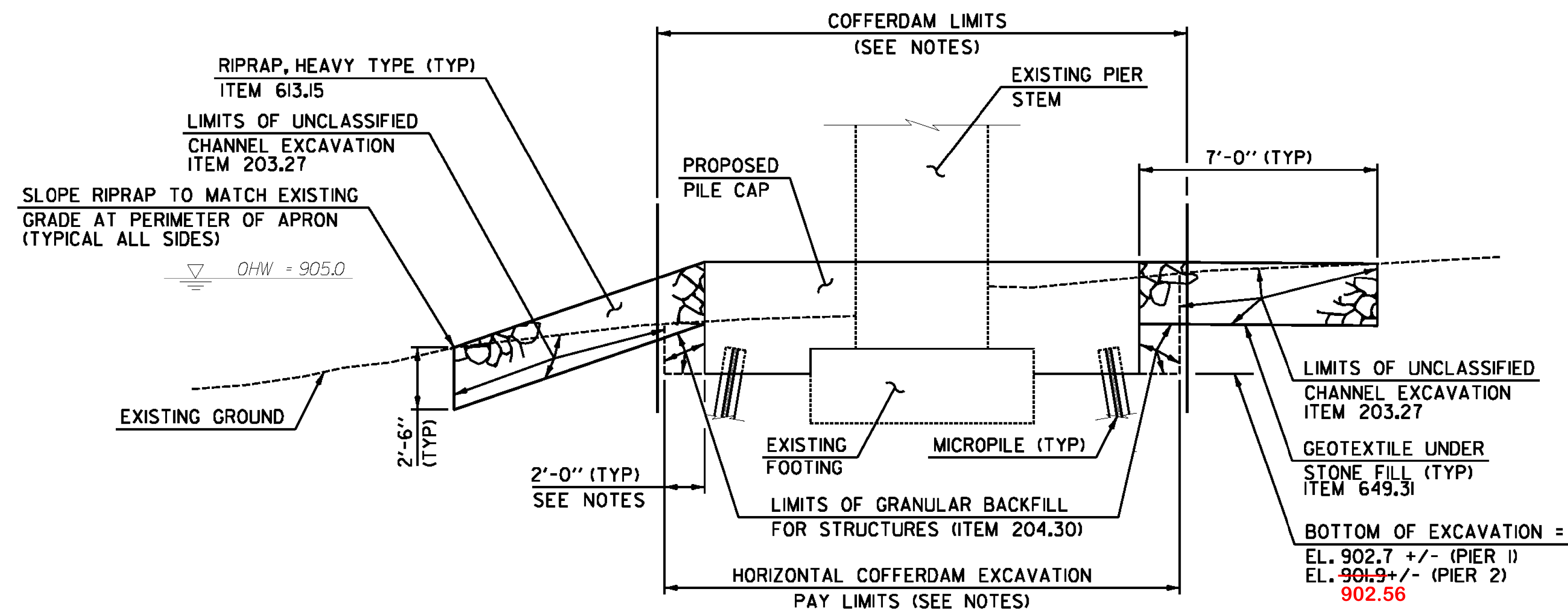
- IS TRAFFIC TO BE MAINTAINED? Yes  
IF YES, ON EXISTING STRUCTURE? Yes  
OR ON TEMPORARY BRIDGE? No  
ONE OR TWO-WAY TRAVEL? Two-Way
- TRAFFIC CONTROL SIGNALS REQUIRED? No
- ARE SIDEWALKS REQUIRED? No  
IF SO, ON WHAT SIDE? N/A

PROJECT NAME: BENNINGTON  
 PROJECT NUMBER: ER BHF 010-1(45)  
 FILE NAME: z11b326\_pl.xls PLOT DATE: 8/21/2012  
 PROJECT LEADER: DEG DRAWN BY: KJK  
 DESIGNED BY: BTH CHECKED BY: SAW  
 PRELIMINARY INFORMATION SHEET SHEET 2 OF 40



## NOTES

1. COFFERDAM SIZE TO BE DETERMINED BY THE CONTRACTOR.
2. THE PAY LIMITS OF "COFFERDAM EXCAVATION, EARTH" AND "COFFERDAM EXCAVATION, ROCK" SHALL BE 2'-0" OUTSIDE THE PERIMETER OF THE FOOTING UP TO THE EXISTING GROUND AND DOWN TO THE ELEVATIONS SHOWN ON THIS SHEET.
3. IF A COFFERDAM IS CONSTRUCTED WHICH IS LARGER THAN THE INDICATED COFFERDAM EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, INCLUDING THAT PORTION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE COFFERDAM EXCAVATION PAY LIMITS, SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION.



**TYPICAL PIER SECTION**

NOT TO SCALE

**TYPICAL  
SECTION  
SHEET**

PROJECT NAME: BENNINGTON  
PROJECT NUMBER: ER BHF 010-I(45)

FILE NAME: z11b326.typ.dgn  
PROJECT LEADER: D.E.G.  
DESIGNED BY: K.J.K.  
DWG. NO.: z11b326+yp.1

PLOT DATE: 9/6/2012  
DRAWN BY: M.E.D.  
CHECKED BY: D.E.G.  
SHEET 3 OF 40

**CHA**

# QUANTITY SHEET 1 BENNINGTON

SUMMARY OF ESTIMATED QUANTITIES					TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
	ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
	1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
			150		150		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	25.0			
	1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
			45		45		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	3.5			
			240		240		CY	COFFERDAM EXCAVATION, EARTH	208.30	24.0			
			25		25		CY	COFFERDAM EXCAVATION, ROCK	208.35	EST.			
			1		1		LS	COFFERDAM (PIER 1)	208.40				
			1		1		LS	COFFERDAM (PIER 2)	208.40				
		170			170		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	11.0			
			260		260		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
			27,510		27,510		LB	REINFORCING STEEL, LEVEL I	507.11				
			304		304		LF	DRILLING AND GROUTING DOWELS	507.16				
			50		50		EACH	MECHANICAL BAR CONNECTOR	507.19				
			50		50		GAL	WATER REPELLENT, SILANE	514.10				
			4		4		CY	REMOVAL OF CONCRETE OR MASONRY	529.25				
	120				120		HR	POWER BROOM RENTAL, TYPE II	608.31	EST.			
		25			25		CY	STONE FILL, TYPE I	613.10	EST.			
			200		200		CY	RIPRAP, HEAVY TYPE	613.15				
	2				2		EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50				
	112.5				112.5		LF	REMOVE AND RESET GUARDRAIL	621.75				
	75				75		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
	40				40		HR	UNIFORMED TRAFFIC OFFICERS	630.10	EST.			
	240				240		HR	FLAGGERS	630.15	EST.			
				1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
				1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
				3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
	1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11				

FILE NAME: V:\Projects\BENNINGTON\BENNINGTON\MSTN\z11b326\_quant\_01.dgn  
 DATE/TIME: 8/21/2012  
 USER: 4866



**QUANTITY SHEET #1**

PROJECT NAME: BENNINGTON	
PROJECT NUMBER: ER BHF 010-1(45)	
FILE NAME: z11b326_quant_01.dgn	PLOT DATE: 8/21/2012
PROJECT LEADER: D.E.G.	DRAWN BY: M.E.D.
DESIGNED BY: K.J.K.	CHECKED BY: D.E.G.
DWG. NO.: z11b326quant01	SHEET 4 OF 40

# QUANTITY SHEET 2 BENNINGTON

SUMMARY OF ESTIMATED QUANTITIES					TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
	ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
	1				1		LS	TRAFFIC CONTROL	641.10				
	2				2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15				
		1080			1080		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11	6.3			
			240		240		SY	GEOTEXTILE UNDER STONE FILL	649.31				
		150			150		SY	GEOTEXTILE FOR SILT FENCE	649.51	7.3			
		30			30		LB	SEED	651.15	EST.			
		250			250		LB	FERTILIZER	651.18	EST.			
		1			1		TON	AGRICULTURAL LIMESTONE	651.20	EST.			
		1			1		TON	HAY MULCH	651.25	EST.			
		40			40		CY	TOPSOIL	651.35	EST.			
		1			1		LS	EPSC PLAN	652.10				
		40			40		HR	MONITORING EPSC PLAN	652.20				
		1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
		100			100		SY	TEMPORARY EROSION MATTING	653.20	EST.			
		50			50		CY	TEMPORARY STONE CHECK DAM, TYPE I	653.25	2.0			
		55			55		CY	VEHICLE TRACKING PAD	653.35	6.4			
		1300			1300		LF	PROJECT DEMARCATION FENCE	653.55	13.0			
			74		74		EACH	SPECIAL PROVISION (MICROPILE)	900.620				
			2		2		EACH	SPECIAL PROVISION (MICROPILE VERIFICATION LOAD TEST)	900.620				
			350		350		LF	SPECIAL PROVISION (CORING CONCRETE)	900.640				
			1		1		LS	SPECIAL PROVISION (FURNISHING EQUIPMENT FOR INSTALLING MICROPILES)	900.645				

FILE NAME: V:\Projects\BENNINGTON\BENNINGTON\MSTN\z11b326-quant\_02.dgn  
DATE/TIME: 8/21/2012  
USER: 4986



**QUANTITY SHEET #2**

PROJECT NAME: BENNINGTON	PLOT DATE: 8/21/2012
PROJECT NUMBER: ER BHF 010-1(45)	DRAWN BY: M.E.D.
FILE NAME: z11b326-quant_02.dgn	CHECKED BY: D.E.G.
PROJECT LEADER: D.E.G.	SHEET 5 OF 40
DESIGNED BY: K.J.K.	
DWG. NO.: z11b326quant02.1	

GPS/NGS CONTROL POINTS

**BENNINGTON CORS ARP**

PID DK8255  
 N = 140182.53  
 E = 1452827.06  
 ELLIP HEIGHT = 603.37

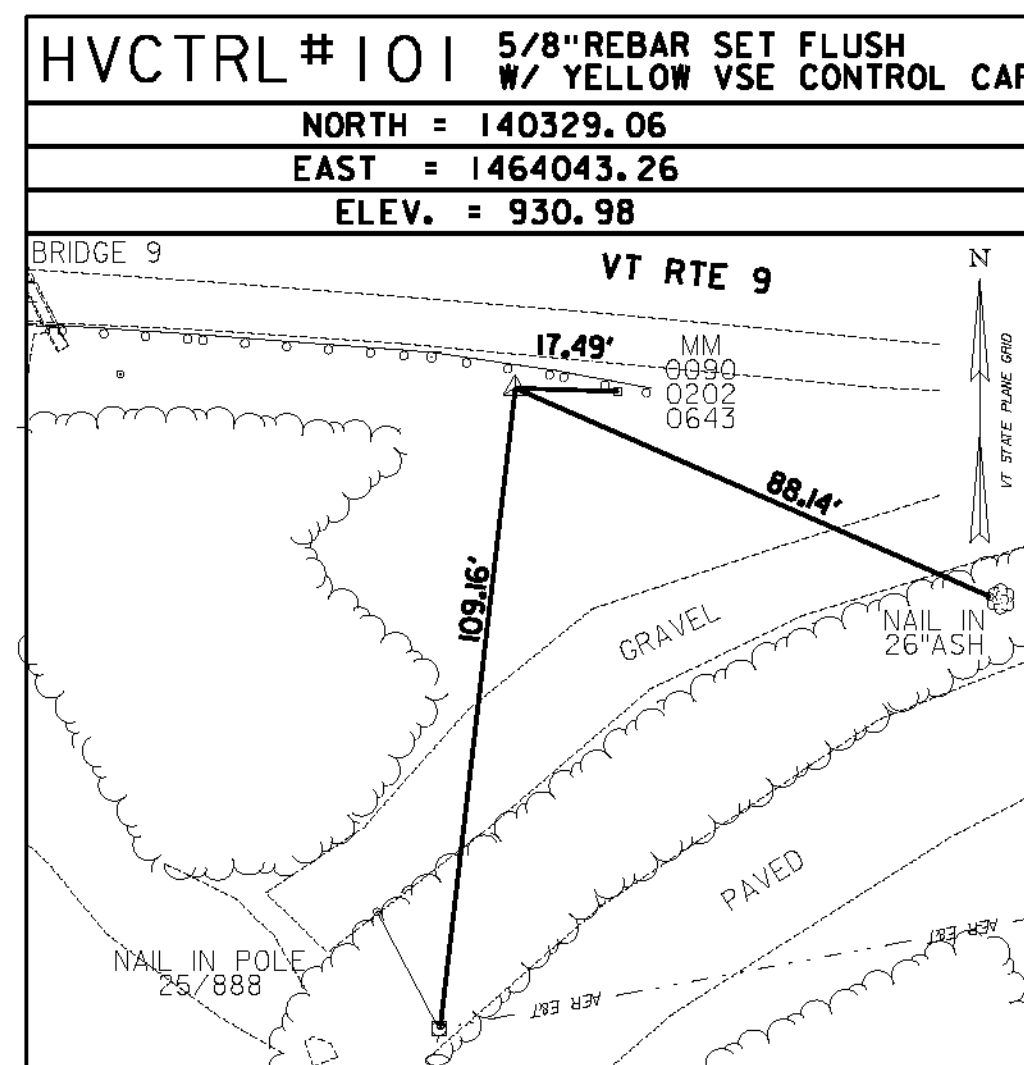
STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA. LOCATED AT THE BENNINGTON, VERMONT FIRE DEPARTMENT, THE MONUMENT IS ATTACHED TO A THREE STORY CONCRETE & BRICK BUILDING WITH A 10 FT CONCRETE FOUNDATION BUILT IN 1998. THE MAST IS A 1.75 INCH DIA. GALV PIPE THAT IS 108 INCHES LONG. THE MAST IS ATTACHED TO A STEEL MOUNTING FRAME WITH THREE ATTACHMENTS CONSISTING OF 3/8 INCH SS THROUGH BOLTS. THE MOUNTING FRAME IS ATTACHED TO THE BUILDING USING 6 ATTACHMENT POINTS. ALL 6 ATTACHMENTS ARE THROUGH BOLTED AND CONSIST OF 1/2 INCH SS THREADED ROD AND NUTS.

**B95009**

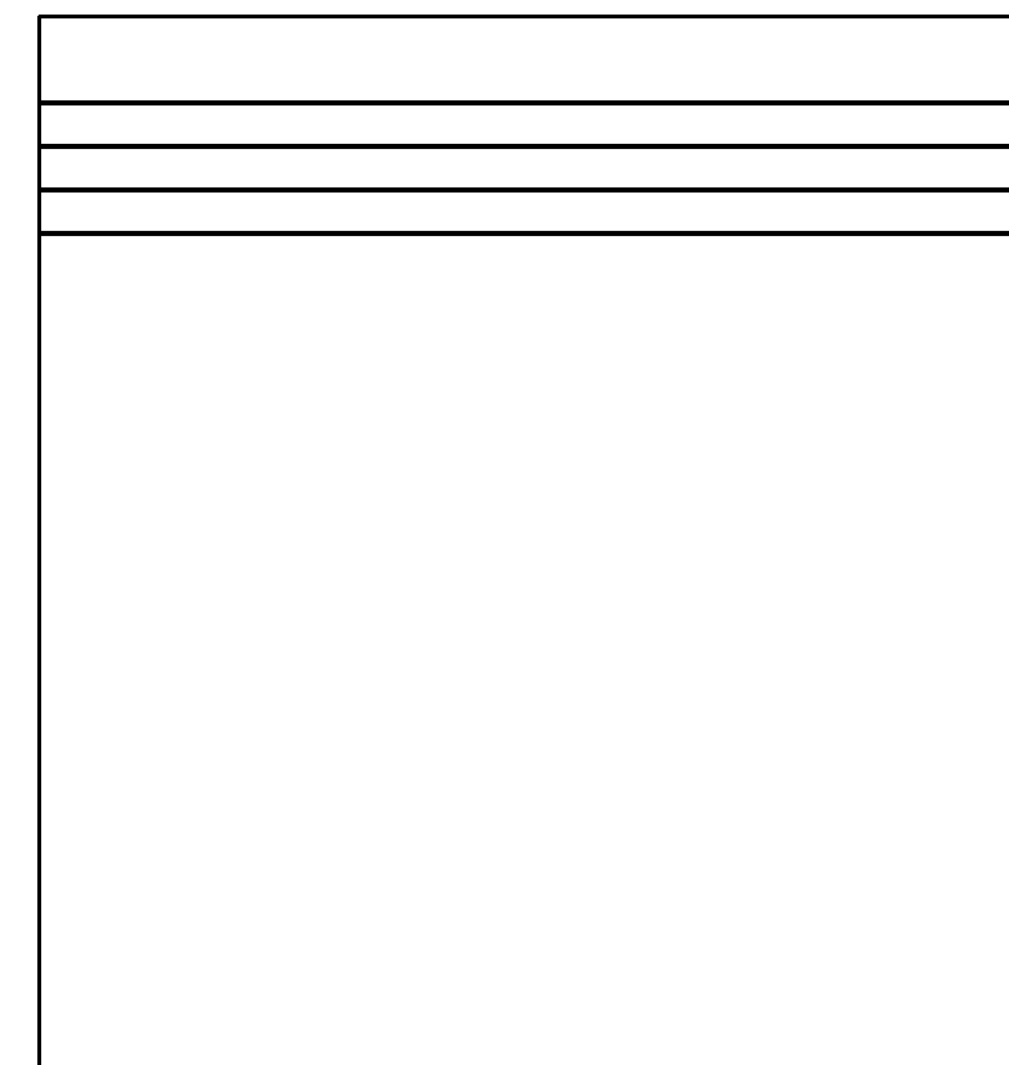
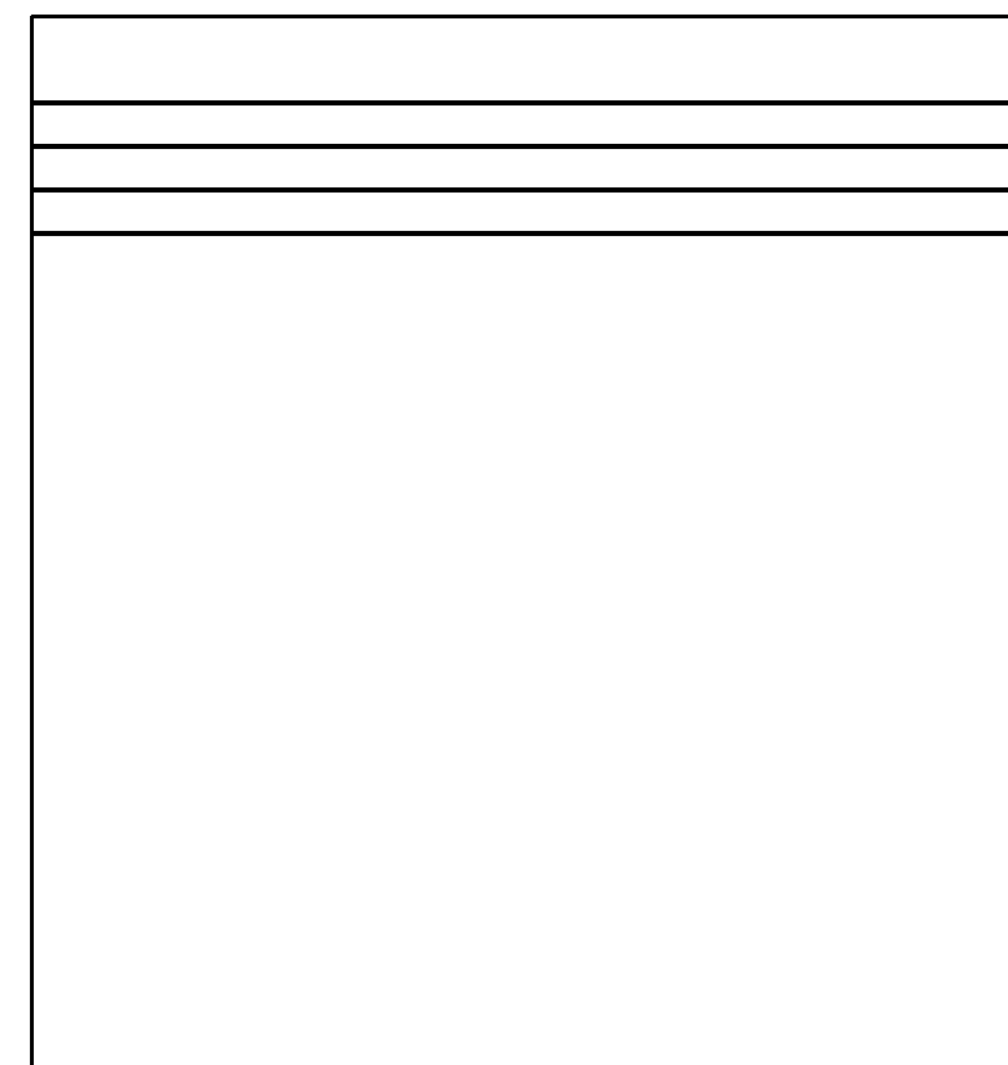
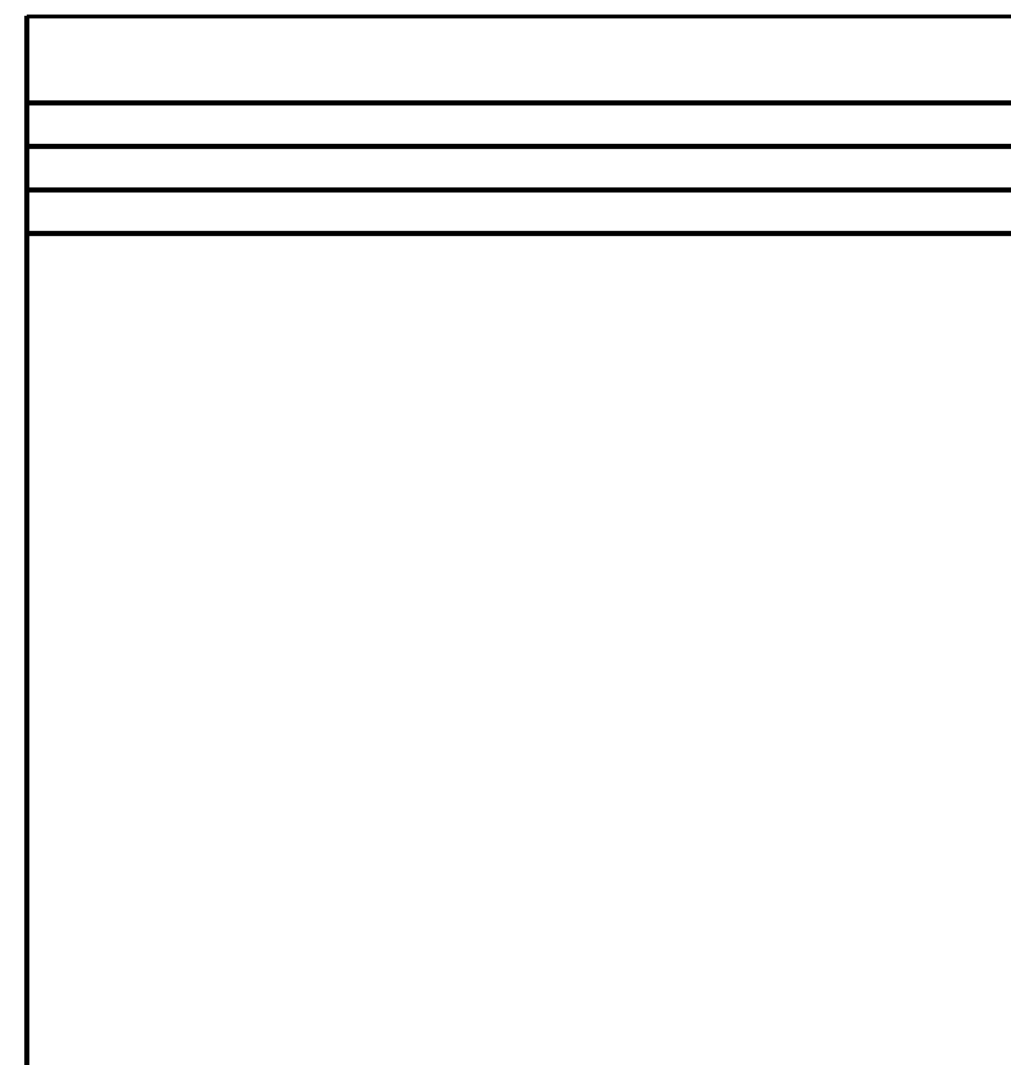
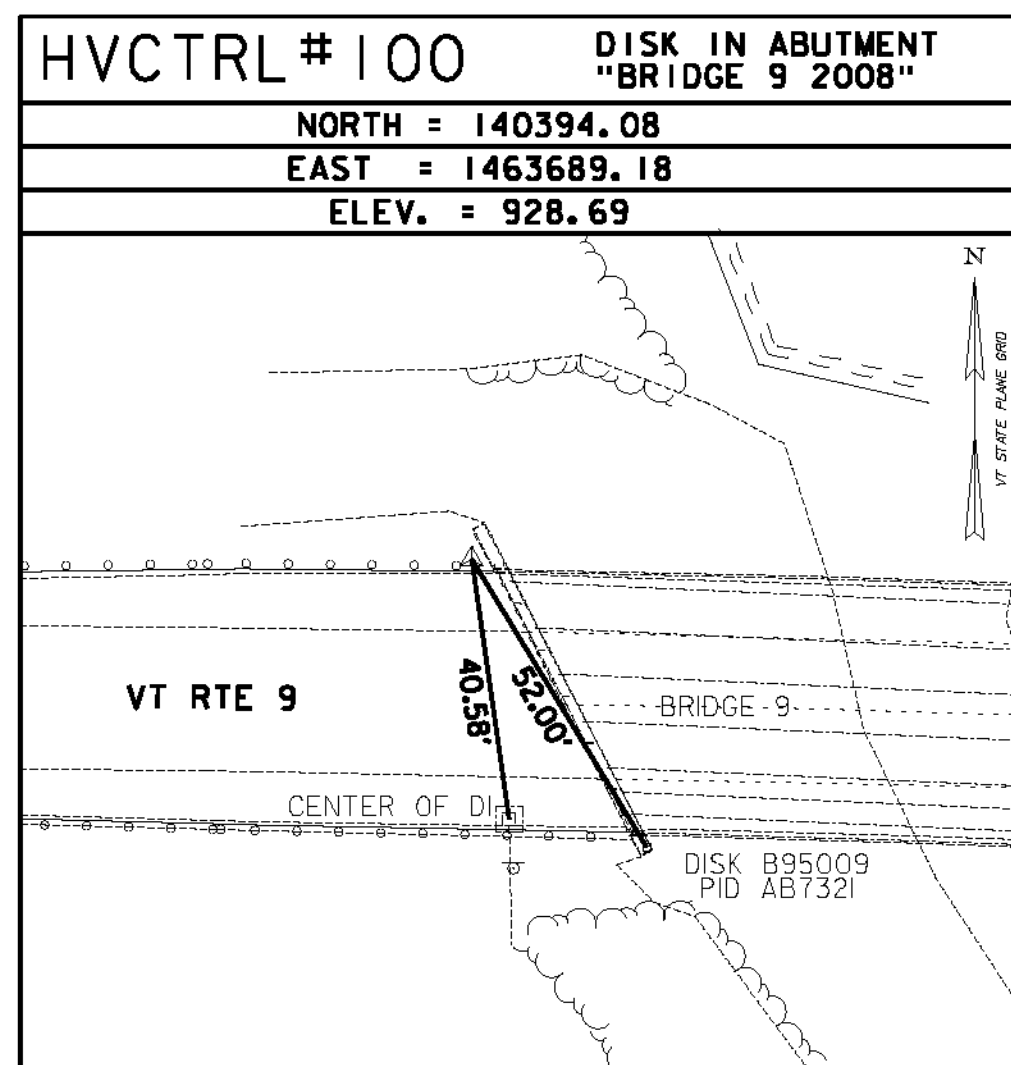
PID AB7321  
 N = 140349.66  
 E = 1463716.18  
 ELEVATION = 929.01

TO REACH FROM THE INTERSECTION OF U.S. ROUTE 7 AND VT ROUTE 9 IN BENNINGTON, GO EAST ALONG VT ROUTE 9 FOR 2.0 MI (3.2 KM) TO THE WEST END OF THE VT ROUTE 9 BRIDGE OVER THE ROARING BRANCH AND THE MARK ON THE RIGHT IN THE TOP OF THE ABUTMENT AT THE SOUTHWEST CORNER OF THE BRIDGE. THE MARK IS 0.2 M (0.7 FT) WEST OF THE EAST FACE OF THE ABUTMENT, 0.25 M (0.82 FT) NORTH OF THE SOUTH EDGE OF THE ABUTMENT, AND 0.8 M (2.6 FT) SOUTH OF THE NORTH FACE OF THE BRIDGE CURB. THE MARK IS A SURVEY DISK STAMPED B95009.

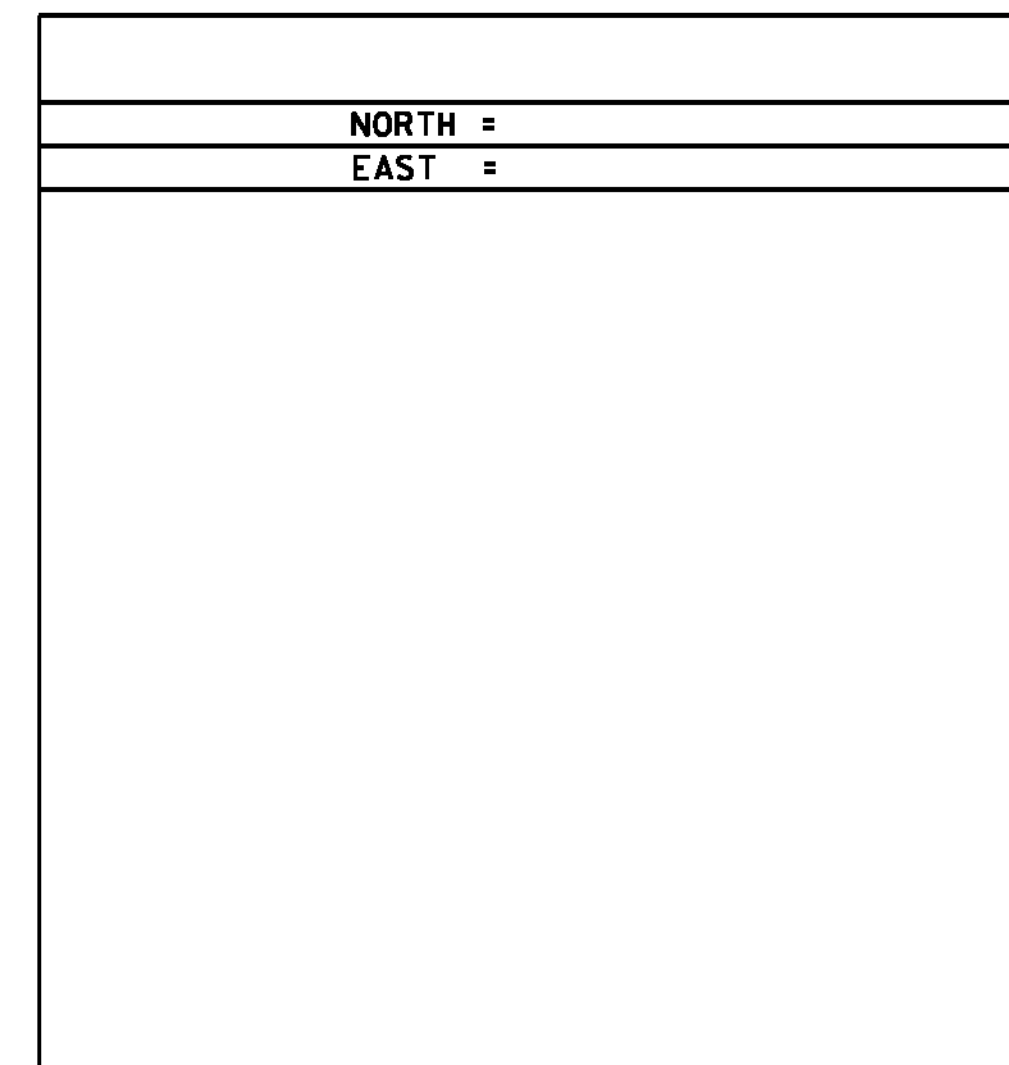
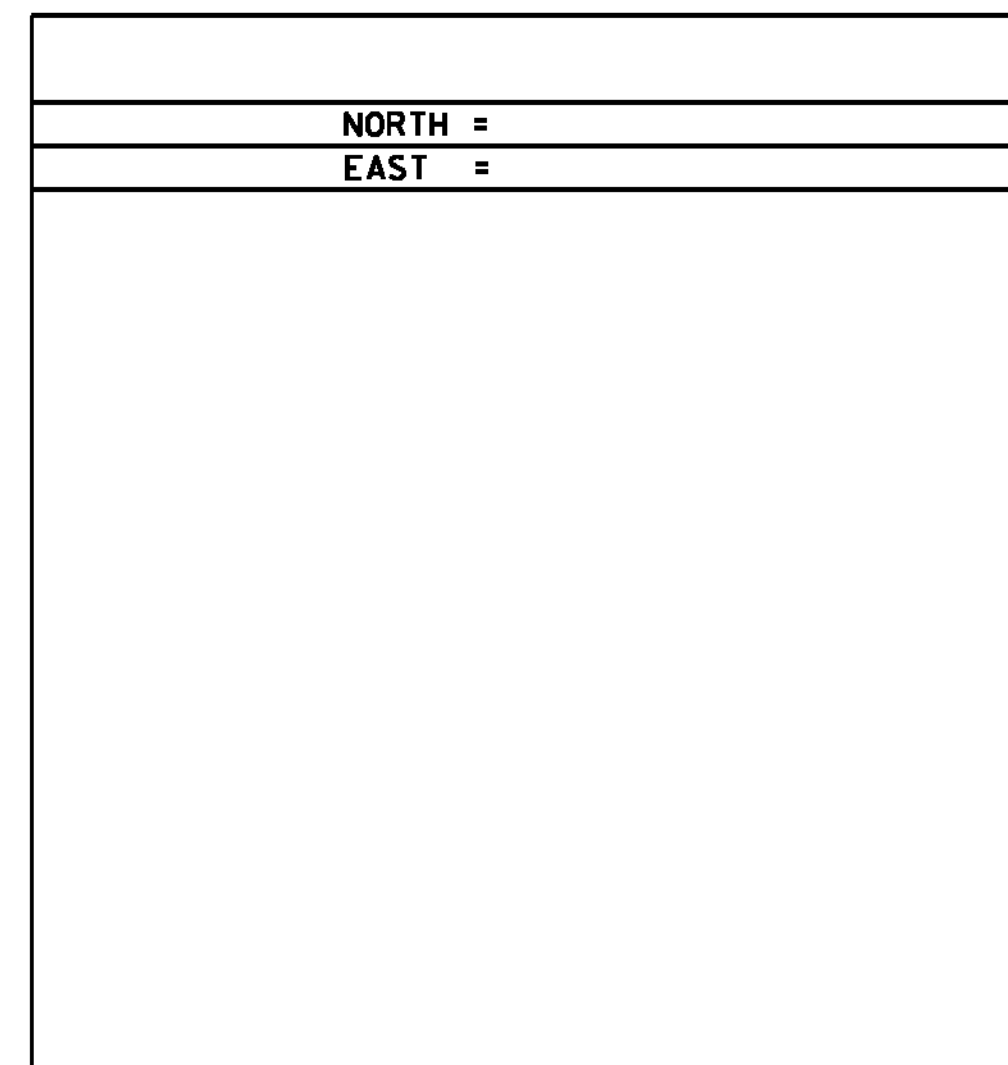
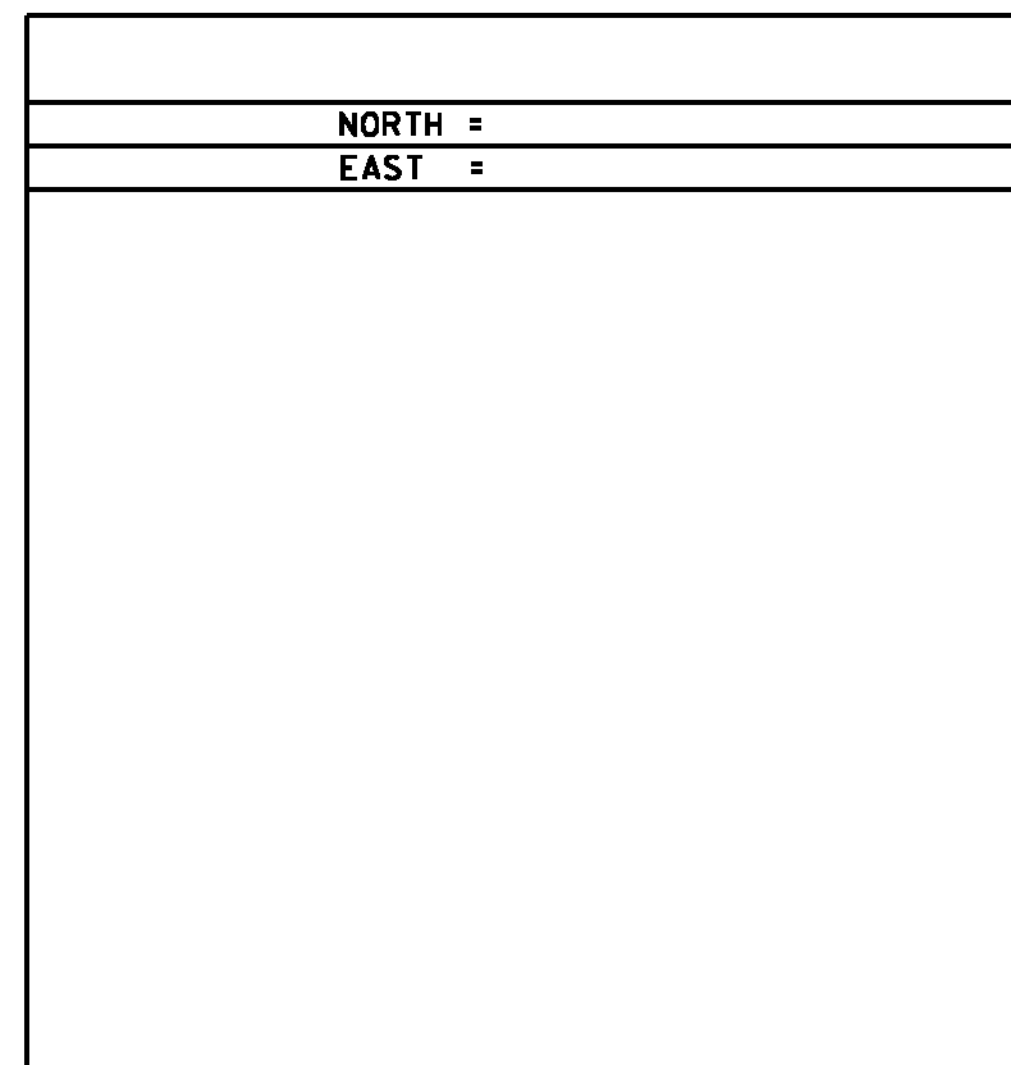
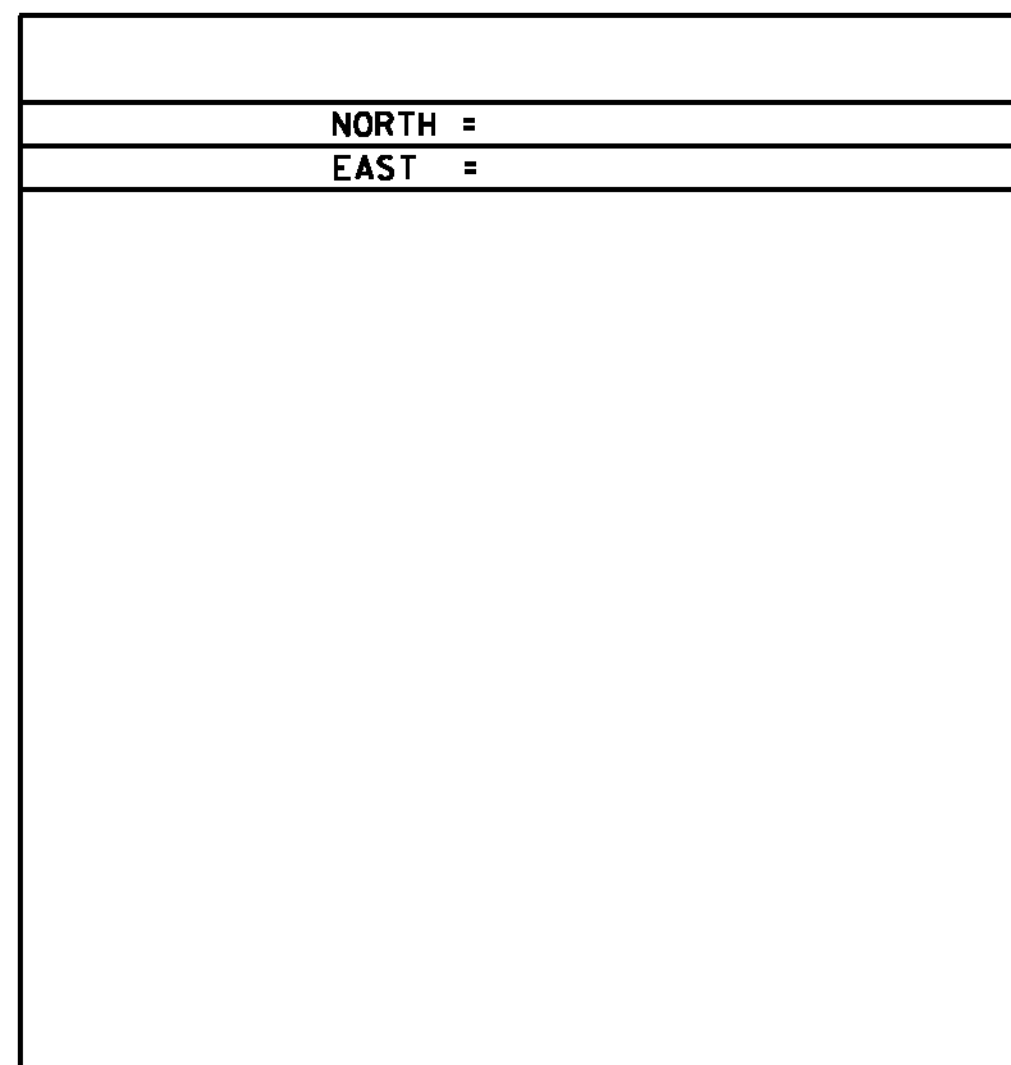
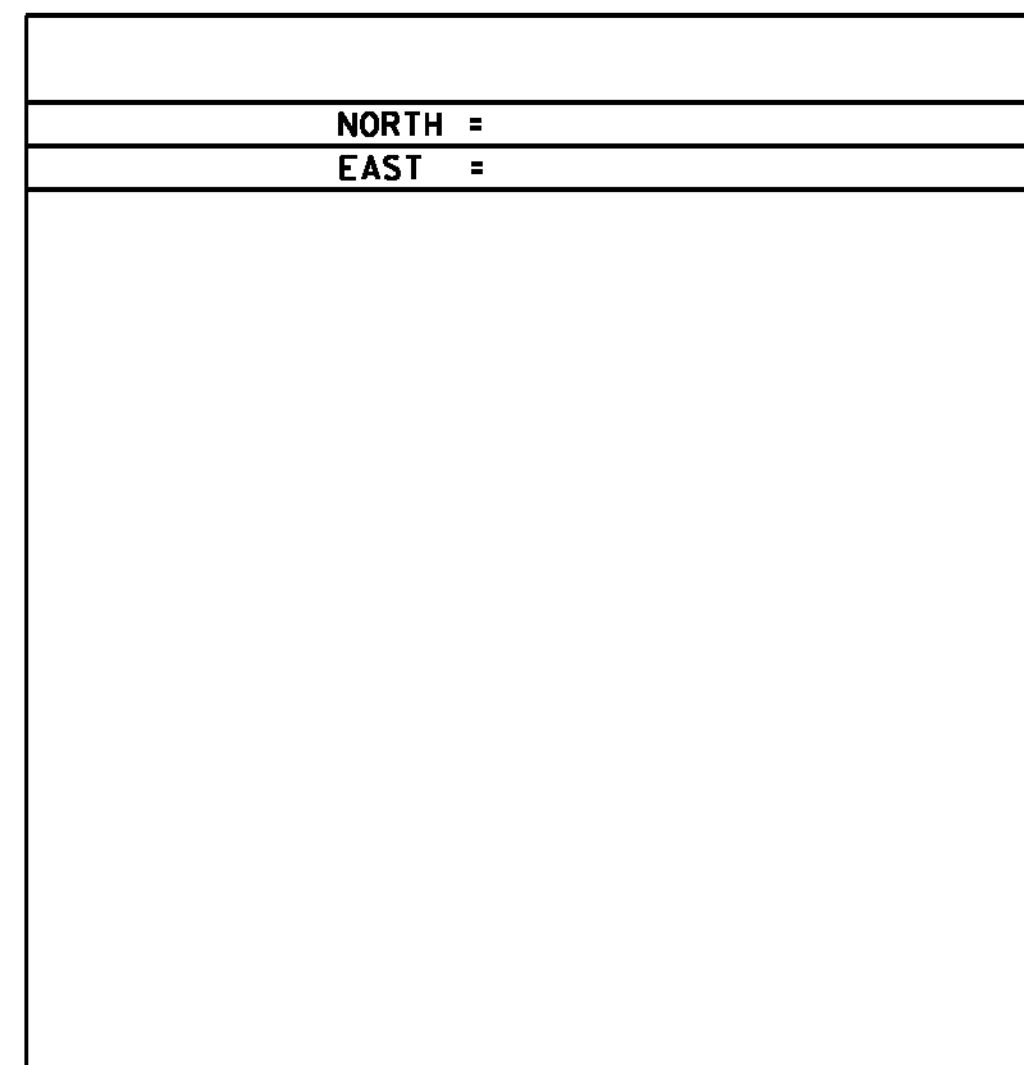
TRAVERSE TIES



• MAIN TRAVERSE COMPLETED: JANUARY 5, 2012 BY VSE, T. SCARZELLO-PC, T. YEFCHAK



ALIGNMENT TIES



<b>DATUM</b>	
VERTICAL	NAVD 88 FT
HORIZONTAL	NAD 83(CORS) sFT
ADJUSTMENT	LSQ



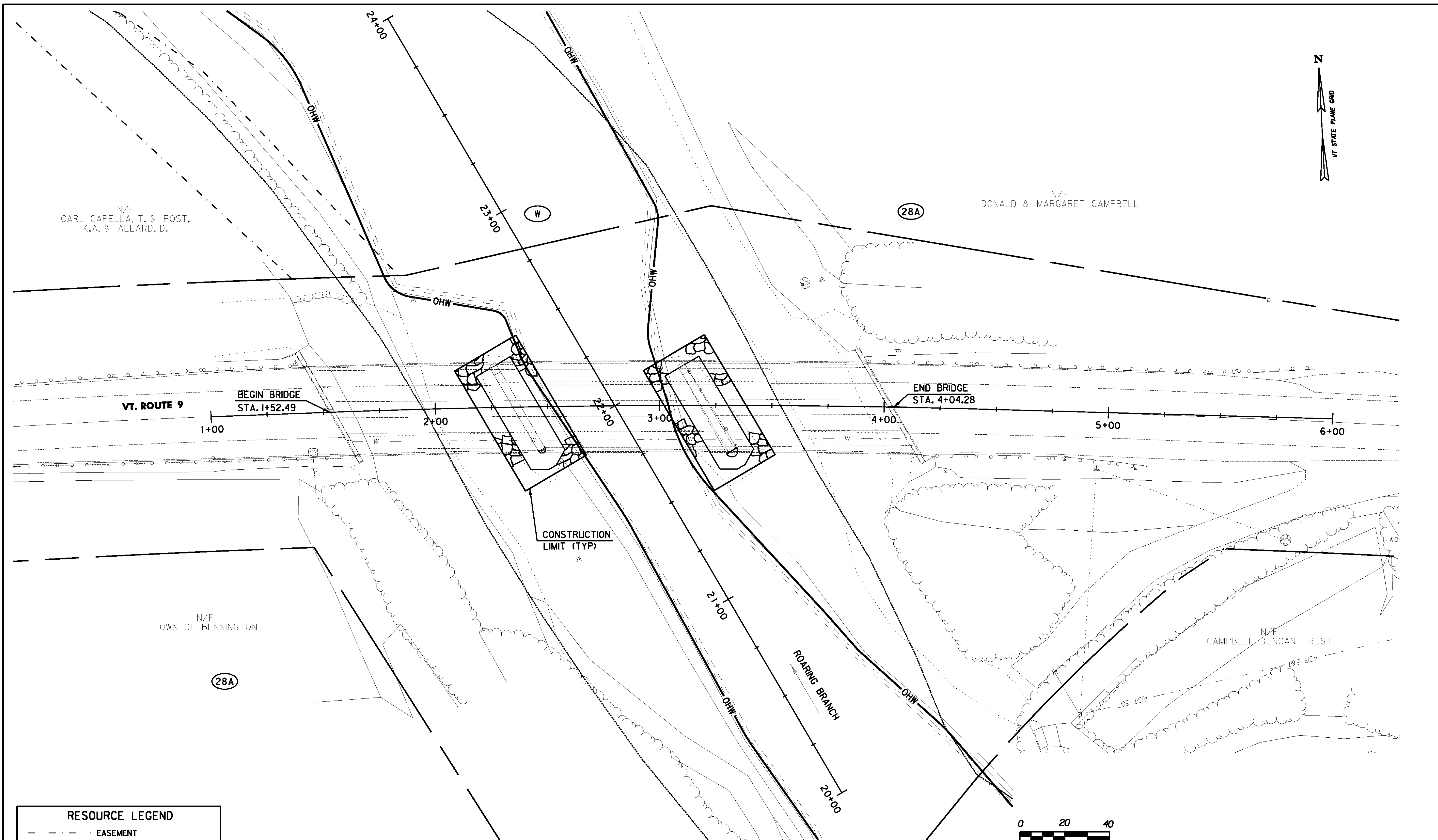
**TIE SHEET**

PROJECT NAME: BENNINGTON  
 PROJECT NUMBER: ER BHF 010-I(45)

FILE NAME: z1lb326\_blt.dgn  
 PROJECT LEADER: D.E.G.  
 DESIGNED BY: K.J.K.  
 DWG. NO.: z1lb326blt.i

PLOT DATE: 8/21/2012  
 DRAWN BY: M.E.D.  
 CHECKED BY: D.E.G.  
 SHEET 6 OF 40

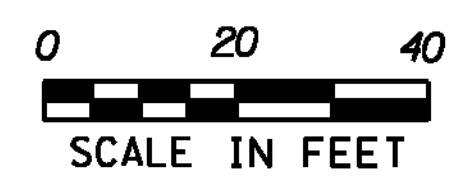
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 DATE/TIME: 8/21/2012  
 USER: 4886



**RESOURCE LEGEND**

- - - - - EASEMENT
- ..... SOILS BOUNDARY
- ..... FLOOD PLAIN
- OHW — ORDINARY HIGH WATER
- (XX) SOIL MAP UNIT SYMBOL (SEE SHEET 9 FOR DETAILS)

NOTE:  
1. COORDINATION WITH VTRANS' ENVIRONMENTAL SECTION INDICATED THAT THERE ARE NO RESOURCES AT THIS LOCATION.

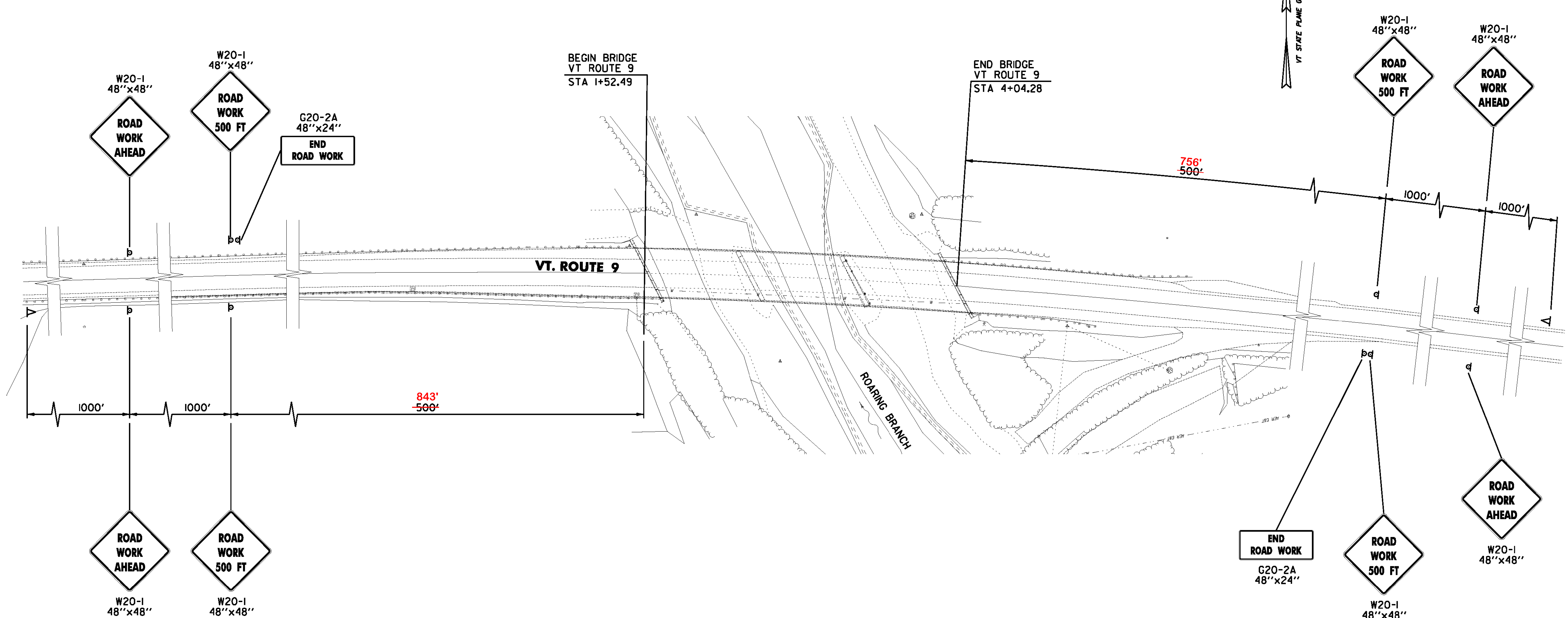
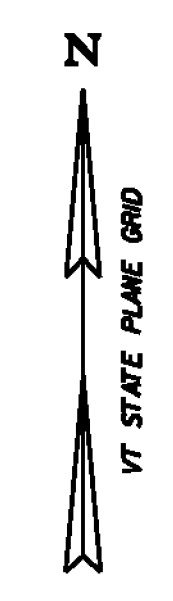


**RESOURCE LAYOUT SHEET**

PROJECT NAME: BENNINGTON	PLOT DATE: 8/21/2012
PROJECT NUMBER: ER BHF 010-I(45)	DRAWN BY: M.E.D.
FILE NAME: z1lb326_rlp.dgn	CHECKED BY: D.E.G.
PROJECT LEADER: D.E.G.	SHEET 7 OF 40
DESIGNED BY: K.J.K.	
DWG. NO.: z1lb326r.lp.l	



FILE NAME: V:\VPROJETS\2012\23770\CADD\MSTN\z1lb326\_rlp.dgn  
DATE/TIME: 8/21/2012 10:58:46 AM  
USER: d4866



**NOTES:**

1. SEE VTRANS' STD. E-100 FOR ADDITIONAL SIGN PLACEMENT DETAILS.
2. TEMPORARY TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH SECTION 6 OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
3. CONSTRUCTION SIGNS SHALL BE IN NEW OR LIKE NEW CONDITION PER VTRANS' STANDARDS.
4. DIAMOND SHAPED SIGNS SHALL BE 48" X 48" WITH BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND. LEAD SIGN (W20-1) SHALL BE RETROREFLECTIVE PER MUTCD REQUIREMENTS.
5. PORTABLE CHANGEABLE MESSAGE SIGN LOCATIONS AND MESSAGES ARE TO BE APPROVED BY THE ENGINEER.
6. CONES SHALL BE USED FOR DELINEATING THE TRAVEL SPACE ALONG THE TANGENT FOR THE ENTIRE LENGTH OF ANY LANE CLOSURE. ALL CONES SHALL BE 28" HIGH AND RETROREFLECTIVE.
7. FLAGGER STATIONS SHALL BE A MAXIMUM OF 1500 FEET FROM THE FLAGGER AHEAD SIGN. WHEN FLAGGER STATIONS ARE MOVED BEYOND THIS DISTANCE, THE FLAGGER AHEAD SIGN SHALL BE MOVED ACCORDINGLY.
8. FLAGGER AHEAD SIGNS SHALL BE TURNED OR REMOVED WHEN FLAGGING OPERATIONS CEASE FOR MORE THAN 15 MINUTES.
9. PAYMENT FOR ALL CONSTRUCTION SIGNING (INCLUDING FLAGGER AND LANE CLOSURE SIGNS) AND CONES WILL BE MADE UNDER ITEM 641.10 TRAFFIC CONTROL.

**LEGEND**

- ⊥ SIGN AND POST(S)
- ▷ PORTABLE CHANGEABLE MESSAGE SIGN

NOT TO SCALE

**CONSTRUCTION  
APPROACH  
SIGNING  
SHEET**

PROJECT NAME:	BENNINGTON
PROJECT NUMBER:	ER BHF 010-1(45)
FILE NAME:	z1lb326_csd_01.dgn
PROJECT LEADER:	D.E.G.
DESIGNED BY:	K.J.K.
DWG. NO.:	z1lb326csd01.1
PLOT DATE:	8/21/2012
DRAWN BY:	M.E.D.
CHECKED BY:	A.M.P.
SHEET	8 OF 40



FILE NAME: W:\Projects\BENNINGTON\237770\CADD\MSTN\z1lb326\_csd\_01.dgn  
 DATE/TIME: 8/21/2012 4:46:46  
 USER:

**EPSC PLAN NARRATIVE**

**1.1 PROJECT DESCRIPTION**

THIS PROJECT INVOLVES THE RETROFITTING OF THE VERMONT ROUTE 9 BRIDGE 9 PIER FOUNDATIONS WITH MICROPILES IN THE TOWN OF BENNINGTON. THIS PROJECT DOES NOT INCLUDE ANY BRIDGE OR ROADWAY PAVEMENT REHABILITATION. THIS PROJECT WILL INVOLVE THE CONSTRUCTION OF TWO TEMPORARY ACCESS ROADS FROM VERMONT ROUTE 9 TO EITHER BRIDGE PIER.

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

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLANS (SHEETS II TO I3) IS APPROXIMATELY 0.70 ACRES.

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

**1.2 SITE INVENTORY**

**1.2.1 TOPOGRAPHY**

THE TOPOGRAPHY OF THE PROJECT AREA CONSISTS PRIMARILY OF LEVEL TERRAIN AND THE BRIDGE IS SITUATED OVER THE ROARING BRANCH OF THE WALLOOMSAC RIVER. THE GREEN MOUNTAIN NATIONAL FOREST IS LOCATED EAST OF THE PROJECT AREA.

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

THE PROJECT AREA IS LOCATED ON THE ROARING BRANCH OF THE WALLOOMSAC RIVER. THE ROARING BRANCH IS A PERENNIAL RELATIVELY PERMANENT WATER THAT FLOWS NORTHWEST IN THE VICINITY OF THE PROJECT. THE STREAM BED APPEARS TO CONSIST OF SOME COBBLE, BOULDERS, SILT AND SAND. THE EXISTING DRAINAGE PATTERNS WITHIN THE ROADWAY AND ADJACENT ROADWAY AREAS FLOW OVERLAND INTO THE RIVER. THE PROPOSED PROJECT WILL MAINTAIN THE SAME GENERAL DRAINAGE PATTERNS ASSOCIATED WITH THE EXISTING AREA.

**1.2.3 VEGETATION**

THE VEGETATION IN THE PROJECT AREA PRIMARILY CONSISTS OF UPLAND MEADOW AREAS AND UPLAND FOREST. IMPACTS TO THE EXISTING VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY THE CONSTRUCTION OF THE MICROPILE RETROFIT AND/OR THE CONTRACTOR ACCESS REQUIRED TO COMPLETE THOSE MODIFICATIONS. UPON PROJECT COMPLETION, THE BANKS WILL BE ARMORED WITH STONE FILL AS NECESSARY AND DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

**1.2.4 SOILS**

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF BENNINGTON, VERMONT. SEE THE BELOW TABLE FOR SOIL TYPES LOCATED WITHIN THE PROJECT AREA.

MAP UNIT	DESCRIPTION	SLOPES	K-VALUE
28A	UDIFLUVENTS, LOAMY- SKELETAL	3 TO 8%	0.24
W	WATER		

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:  
 0.0-0.23 = LOW EROSION POTENTIAL  
 0.24-0.36 = MODERATE EROSION POTENTIAL  
 0.37 AND HIGHER = HIGH EROSION POTENTIAL

**1.2.5 SENSITIVE RESOURCE AREAS**

CRITICAL HABITATS: NO  
 HISTORICAL OR ARCHEOLOGICAL AREAS: NO  
 PRIME AGRICULTURAL LAND: NO  
 THREATENED AND ENDANGERED SPECIES: NO  
 WATER RESOURCE: ROARING BRANCH OF THE WALLOOMSAC RIVER  
 WETLANDS: NO

**1.3 RISK EVALUATION**

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORM WATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

**1.4 EROSION PREVENTION AND SEDIMENT CONTROL**

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

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

**1.4.1 MARK SITE BOUNDARIES**

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

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

**1.4.2 LIMIT DISTURBANCE AREA**

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

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

**1.4.3 SITE ENTRANCE/EXIT STABILIZATION**

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

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

**1.4.4 INSTALL SEDIMENT BARRIERS**

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

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

**1.4.5 DIVERT UPLAND RUNOFF**

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

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

**1.4.6 SLOW DOWN CHANNELIZED RUNOFF**

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSION POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

CHECK DAMS SHALL BE UTILIZED AS PROPOSED ON THE EPSC PLANS.

**1.4.7 CONSTRUCT PERMANENT CONTROLS**

NO PERMANENT STORMWATER TREATMENT DEVICES ARE PROPOSED.

**1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION**

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE.

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

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

**1.4.9 WINTER STABILIZATION**

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

**1.4.10 STABILIZE SOIL AT FINAL GRADE**

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

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

**1.4.11 DE-WATERING ACTIVITIES**

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

TREATMENT OF DEWATERING COFFERDAM IS ANTICIPATED. THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR.

**1.4.12 INSPECT YOUR SITE**

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

**1.5 SEQUENCE AND STAGING**

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

**1.5.1 CONSTRUCTION SEQUENCE**

**1.5.2 OFF-SITE ACTIVITIES**

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

**1.5.3 UPDATES**

<b>EROSION PREVENTION AND SEDIMENT CONTROL NOTES</b>	PROJECT NAME: BENNINGTON	
	PROJECT NUMBER: ER BHF 010-1(45)	
	FILE NAME: z1lb326_eprn.dgn	PLOT DATE: 9/6/2012
	PROJECT LEADER: D.E.G.	DRAWN BY: M.E.D.
	DESIGNED BY: B.T.H.	CHECKED BY: D.E.G.
	DWG. NO.: z1lb326eprn.i	SHEET 9 OF 40





N/F  
CARL CAPELLA, T. & POST,  
K.A. & ALLARD, D.

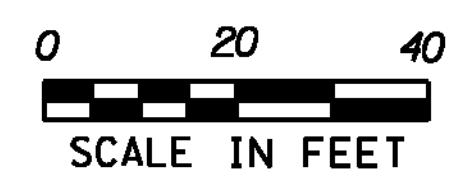
N/F  
DONALD & MARGARET CAMPBELL

VT. ROUTE 9

ROARING BRANCH

N/F  
TOWN OF BENNINGTON

N/F  
CAMPBELL DUNCAN TRUST



**EROSION CONTROL EXISTING CONDITION SHEET**

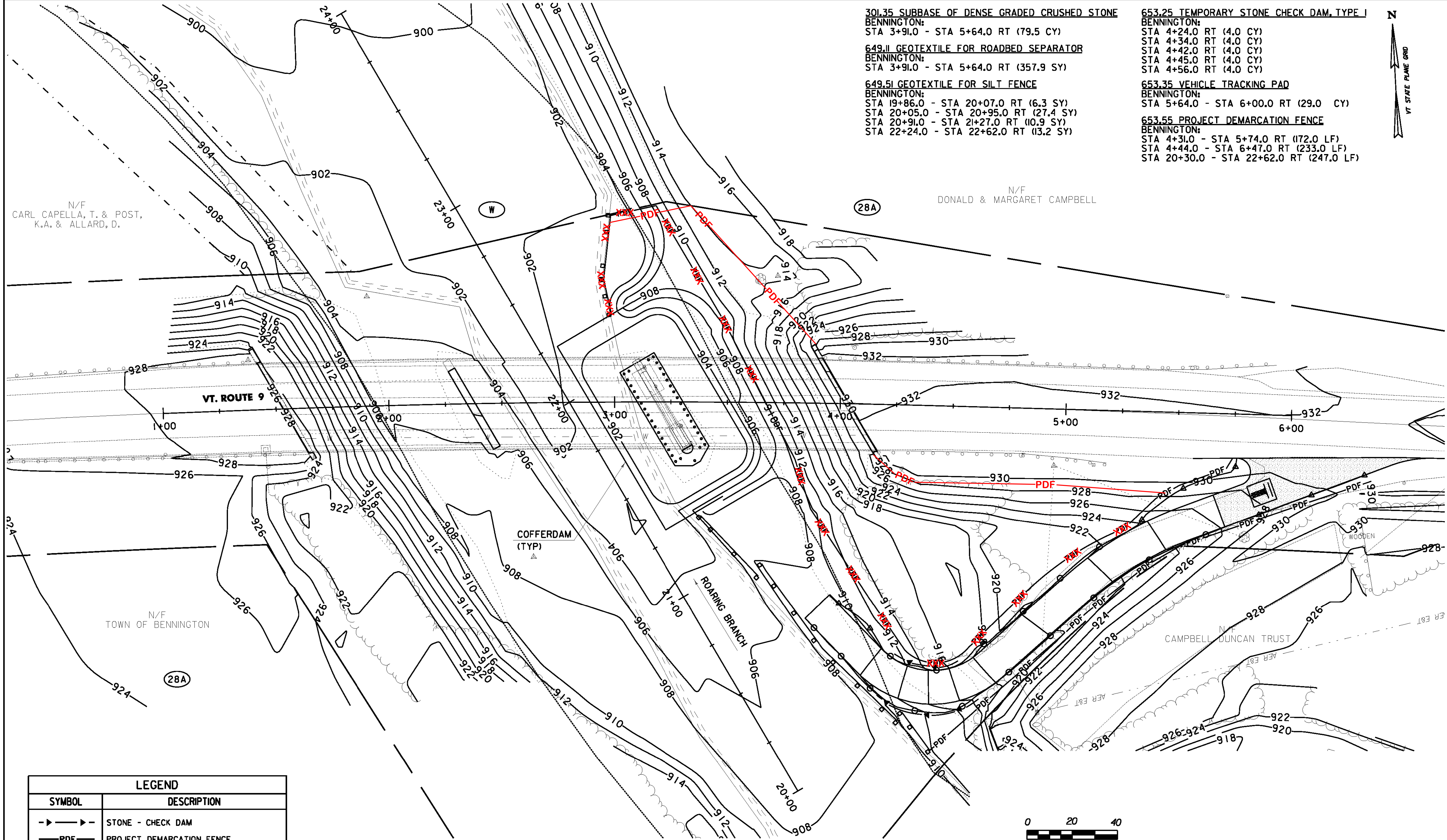


PROJECT NAME: BENNINGTON	PLOT DATE: 8/21/2012
PROJECT NUMBER: ER BHF 010-I(45)	DRAWN BY: M.E.D.
FILE NAME: z1lb326_ecc.dgn	CHECKED BY: D.E.G.
PROJECT LEADER: D.E.G.	SHEET 10 OF 40
DESIGNED BY: B.T.H.	
DWG. NO.: z1lb326ec.j	

**RESOURCE LEGEND**

- SOILS BOUNDARY
- FLOOD PLAIN
- (XX) SOIL MAP UNIT SYMBOL (SEE SHEET 9 FOR DETAILS)

FILE NAME: V:\Projects\2012\23770\CADD\MSTN\z1lb326\_ecc.dgn  
DATE/TIME: 8/21/2012  
USER: e4866



- 301.35 SUBBASE OF DENSE GRADED CRUSHED STONE  
BENNINGTON:  
STA 3+91.0 - STA 5+64.0 RT (79.5 CY)
- 649.11 GEOTEXTILE FOR ROADBED SEPARATOR  
BENNINGTON:  
STA 3+91.0 - STA 5+64.0 RT (357.9 SY)
- 649.51 GEOTEXTILE FOR SILT FENCE  
BENNINGTON:  
STA 19+86.0 - STA 20+07.0 RT (6.3 SY)  
STA 20+05.0 - STA 20+95.0 RT (27.4 SY)  
STA 20+91.0 - STA 21+27.0 RT (10.9 SY)  
STA 22+24.0 - STA 22+62.0 RT (13.2 SY)
- 653.25 TEMPORARY STONE CHECK DAM, TYPE I  
BENNINGTON:  
STA 4+24.0 RT (4.0 CY)  
STA 4+34.0 RT (4.0 CY)  
STA 4+42.0 RT (4.0 CY)  
STA 4+45.0 RT (4.0 CY)  
STA 4+56.0 RT (4.0 CY)
- 653.35 VEHICLE TRACKING PAD  
BENNINGTON:  
STA 5+64.0 - STA 6+00.0 RT (29.0 CY)
- 653.55 PROJECT DEMARCATION FENCE  
BENNINGTON:  
STA 4+31.0 - STA 5+74.0 RT (172.0 LF)  
STA 4+44.0 - STA 6+47.0 RT (233.0 LF)  
STA 20+30.0 - STA 22+62.0 RT (247.0 LF)

N/F  
CARL CAPELLA, T. & POST,  
K.A. & ALLARD, D.

N/F  
DONALD & MARGARET CAMPBELL

VT. ROUTE 9

COFFERDAM  
(TYP)

ROARING BRANCH

CAMPBELL DUNCAN TRUST

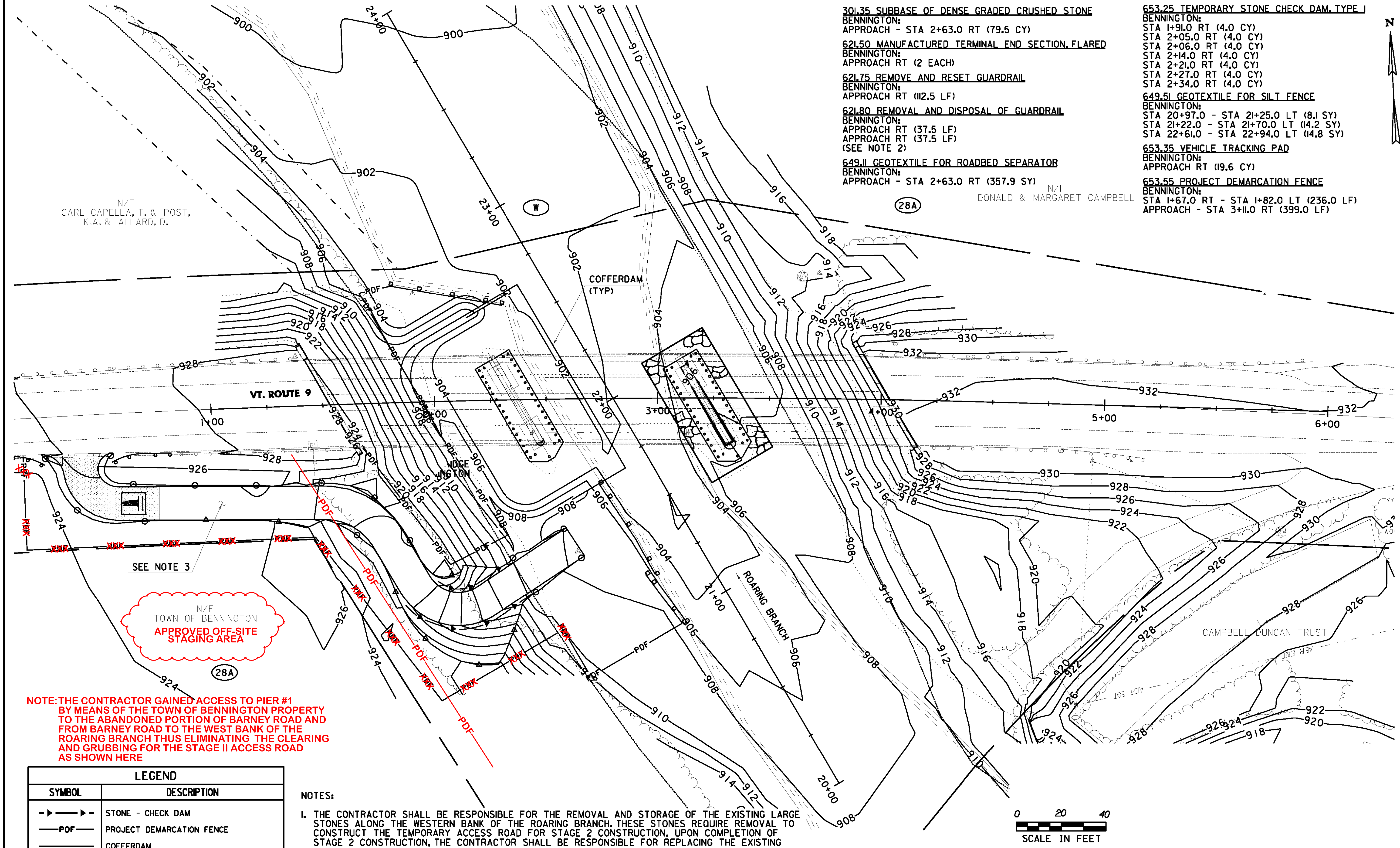
N/F  
TOWN OF BENNINGTON

LEGEND	
SYMBOL	DESCRIPTION
	STONE - CHECK DAM
	PROJECT DEMARCATION FENCE
	COFFERDAM
	SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE



<b>CHA</b>	<b>EROSION CONTROL STAGE 1 PLAN SHEET</b>	
	PROJECT NAME: BENNINGTON	PROJECT NUMBER: ER BHF 010-I(45)
	FILE NAME: z11b326_erocp_stgl.dgn	PLOT DATE: 8/21/2012
	PROJECT LEADER: D.E.G. DESIGNED BY: B.T.H. DWG. NO.: z11b326ecl.i	DRAWN BY: M.E.D. CHECKED BY: D.E.G. SHEET 11 OF 40

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 DATE/TIME = 8/21/2012 10:46:46  
 USER = d466



- 301.35 SUBBASE OF DENSE GRADED CRUSHED STONE  
BENNINGTON:  
APPROACH - STA 2+63.0 RT (79.5 CY)
- 621.50 MANUFACTURED TERMINAL END SECTION, FLARED  
BENNINGTON:  
APPROACH RT (2 EACH)
- 621.75 REMOVE AND RESET GUARDRAIL  
BENNINGTON:  
APPROACH RT (112.5 LF)
- 621.80 REMOVAL AND DISPOSAL OF GUARDRAIL  
BENNINGTON:  
APPROACH RT (37.5 LF)  
APPROACH RT (37.5 LF)  
(SEE NOTE 2)
- 649.11 GEOTEXTILE FOR ROADBED SEPARATOR  
BENNINGTON:  
APPROACH - STA 2+63.0 RT (357.9 SY)

- 653.25 TEMPORARY STONE CHECK DAM, TYPE I  
BENNINGTON:  
STA 1+91.0 RT (4.0 CY)  
STA 2+05.0 RT (4.0 CY)  
STA 2+06.0 RT (4.0 CY)  
STA 2+14.0 RT (4.0 CY)  
STA 2+21.0 RT (4.0 CY)  
STA 2+27.0 RT (4.0 CY)  
STA 2+34.0 RT (4.0 CY)
- 649.51 GEOTEXTILE FOR SILT FENCE  
BENNINGTON:  
STA 20+97.0 - STA 21+25.0 LT (8.1 SY)  
STA 21+22.0 - STA 21+70.0 LT (14.2 SY)  
STA 22+61.0 - STA 22+94.0 LT (14.8 SY)
- 653.35 VEHICLE TRACKING PAD  
BENNINGTON:  
APPROACH RT (19.6 CY)
- 653.55 PROJECT DEMARCATION FENCE  
BENNINGTON:  
STA 1+67.0 RT - STA 1+82.0 LT (236.0 LF)  
APPROACH - STA 3+11.0 RT (399.0 LF)

N/F  
CARL CAPELLA, T. & POST,  
K.A. & ALLARD, D.

N/F  
DONALD & MARGARET CAMPBELL

N/F  
TOWN OF BENNINGTON  
APPROVED OFF-SITE  
STAGING AREA

**NOTE: THE CONTRACTOR GAINED ACCESS TO PIER #1 BY MEANS OF THE TOWN OF BENNINGTON PROPERTY TO THE ABANDONED PORTION OF BARNEY ROAD AND FROM BARNEY ROAD TO THE WEST BANK OF THE ROARING BRANCH THUS ELIMINATING THE CLEARING AND GRUBBING FOR THE STAGE II ACCESS ROAD AS SHOWN HERE**

LEGEND	
SYMBOL	DESCRIPTION
	STONE - CHECK DAM
	PROJECT DEMARCATION FENCE
	COFFERDAM
	SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE

**NOTES:**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND STORAGE OF THE EXISTING LARGE STONES ALONG THE WESTERN BANK OF THE ROARING BRANCH. THESE STONES REQUIRE REMOVAL TO CONSTRUCT THE TEMPORARY ACCESS ROAD FOR STAGE 2 CONSTRUCTION. UPON COMPLETION OF STAGE 2 CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING THE EXISTING LARGE STONES IN THEIR ORIGINAL LOCATION. THE COST OF THIS WORK SHALL BE INCIDENTAL TO OTHER CONTRACT ITEMS.
2. ~~WHEN THE CONSTRUCTION ACCESS ROAD IS REMOVED, THE CONTRACTOR SHALL REMOVE AND SALVAGE THE TWO MANUFACTURED TERMINAL SECTIONS IN ACCORDANCE WITH SUBSECTION 621.13 OF THE 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION BOOK. THE TERMINAL SECTIONS SHALL BECOME THE PROPERTY OF VTTRANS MAINTENANCE DISTRICT 1.~~
3. CONTRACTOR SHALL PLACE TOPSOIL AND SEED ONCE TEMPORARY ACCESS ROAD IS REMOVED.



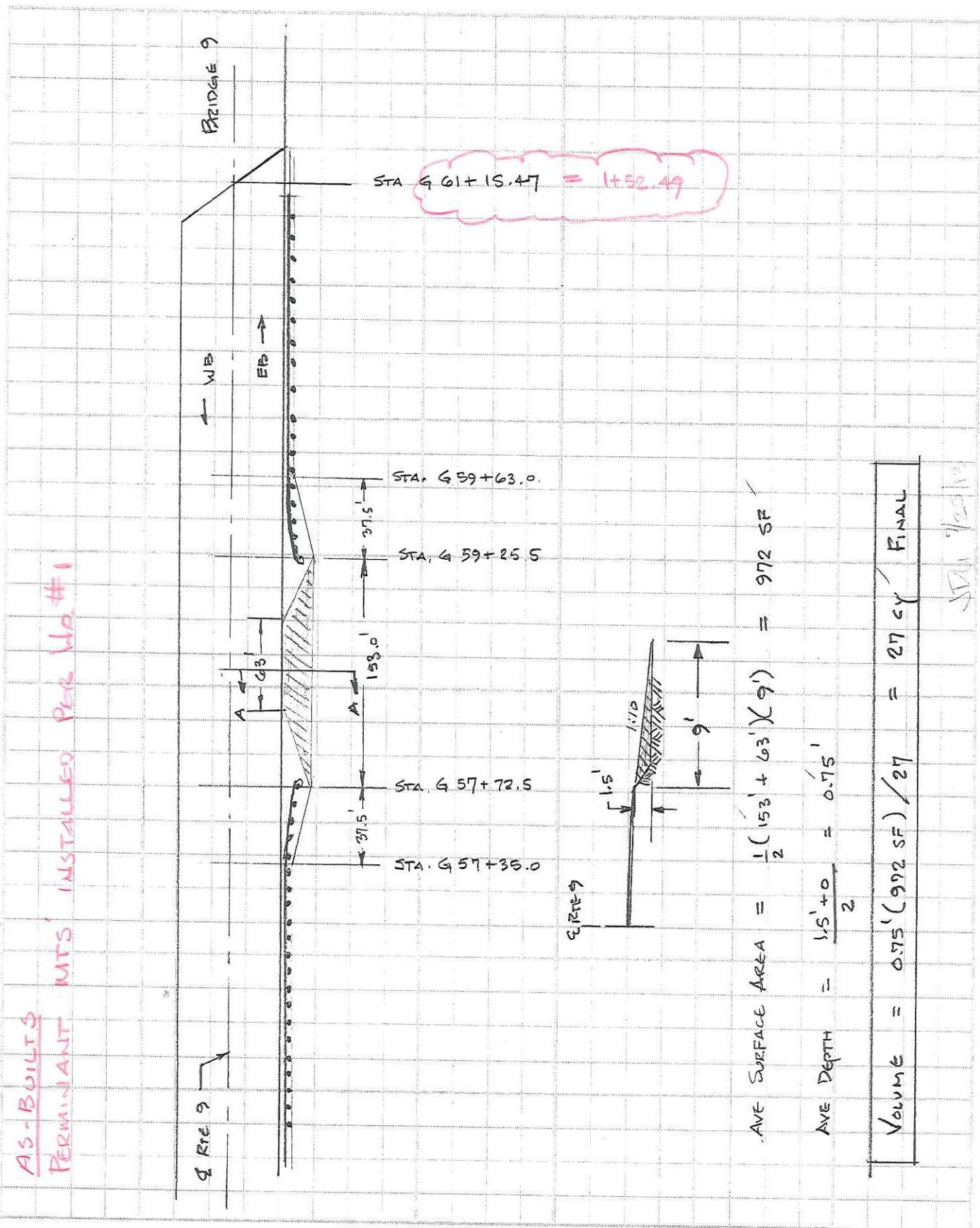
<b>EROSION CONTROL STAGE 2 PLAN SHEET</b>	PROJECT NAME: BENNINGTON	PLOT DATE: 9/6/2012
	PROJECT NUMBER: ER BHF 010-I(45)	DRAWN BY: M.E.D.
	FILE NAME: z11b326_erccp_stg2.dgn	DESIGNED BY: B.T.H.
	DWG. NO.: z11b326ec2.1	CHECKED BY: D.E.G.
		SHEET 12 OF 40

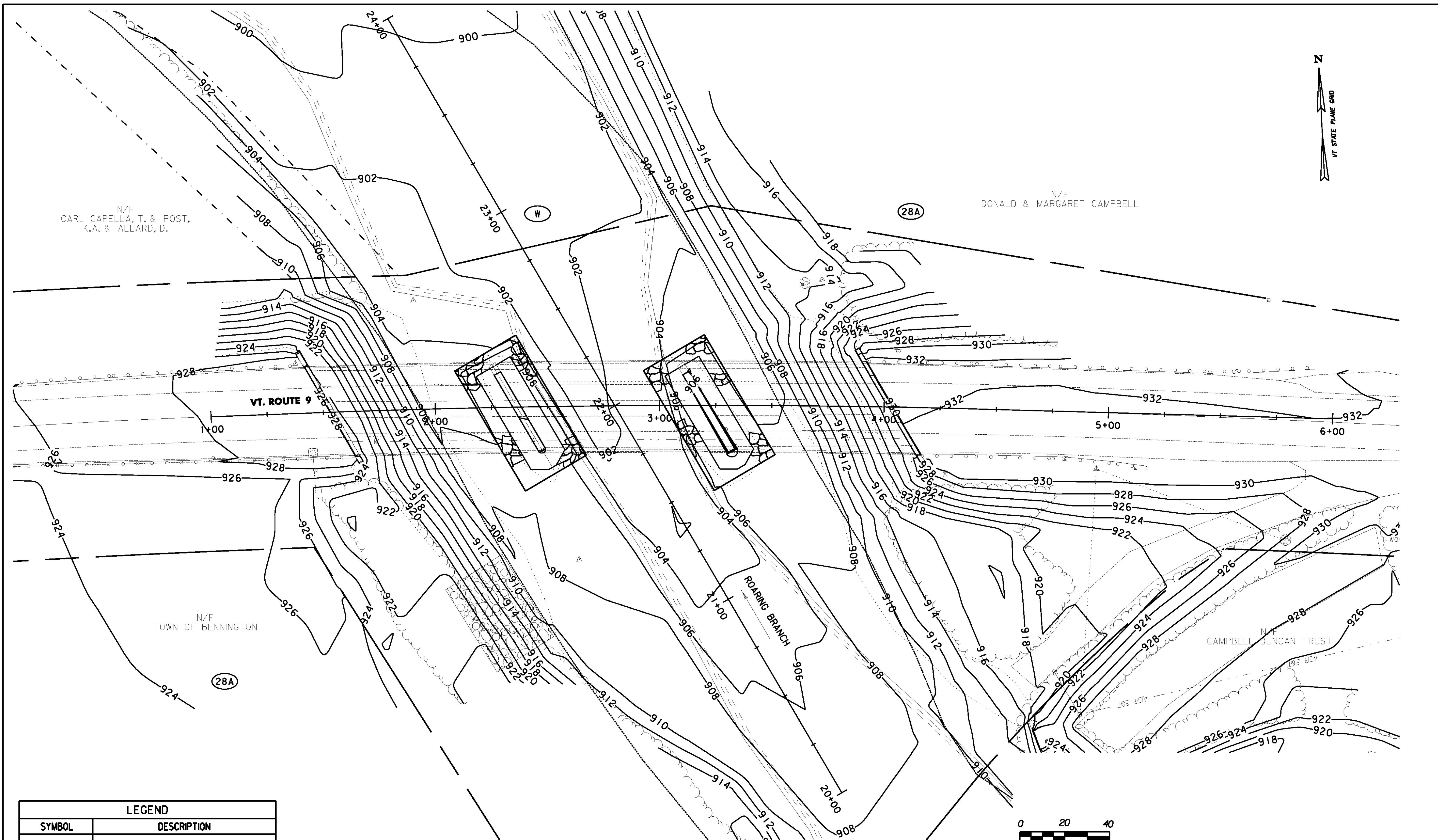


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DATE/TIME: 9/6/2012 4:46:46  
USER: jrb

Project Bennington ER BHF 010-1(45) Calculation Sheet Number \_\_\_\_\_  
 Line Item # 301.35 Page Number \_\_\_\_\_ of \_\_\_\_\_  
 Item # 0060 Field Measured by R. DEMEY  
 Item Description SUBBASE OF DENSE GRADED CRUSHED STONE  
 Location STAGE II ACCESS (RTE 9 OPENING) Date 7-16-13

124





N/F  
CARL CAPELLA, T. & POST,  
K.A. & ALLARD, D.

N/F  
DONALD & MARGARET CAMPBELL

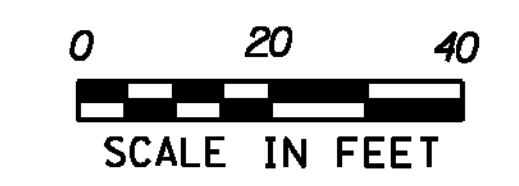
N/F  
TOWN OF BENNINGTON

N/F  
CAMPBELL DUNCAN TRUST

LEGEND	
SYMBOL	DESCRIPTION
	PROPOSED RIPRAP
	AREA OF STONE PLACEMENT (SEE NOTE 1)

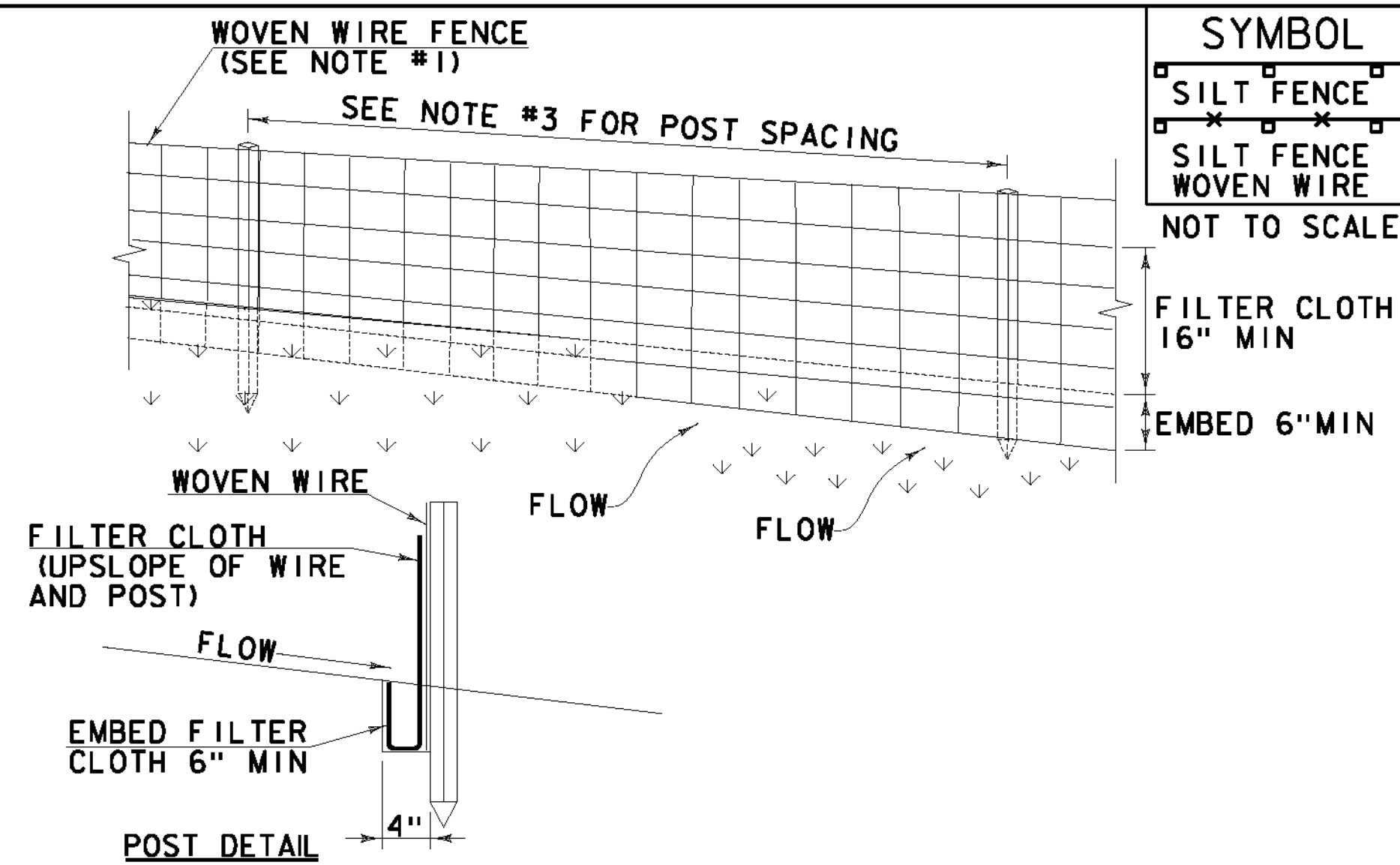
NOTE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND STORAGE OF THE EXISTING LARGE STONES ALONG THE WESTERN BANK OF THE ROARING BRANCH. THESE STONES REQUIRE REMOVAL TO CONSTRUCT THE TEMPORARY ACCESS ROAD FOR STAGE 2 CONSTRUCTION. UPON COMPLETION OF STAGE 2 CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING THE EXISTING LARGE STONES IN THEIR ORIGINAL LOCATION. THE COST OF THIS WORK SHALL BE INCIDENTAL TO OTHER CONTRACT ITEMS.



<b>EROSION CONTROL FINAL CONDITION SHEET</b>	PROJECT NAME: BENNINGTON	PLOT DATE: 8/21/2012
	PROJECT NUMBER: ER BHF 010-I(45)	DRAWN BY: M.E.D.
	FILE NAME: z1lb326_fcp.dgn	CHECKED BY: D.E.G.
	PROJECT LEADER: D.E.G.	SHEET 13 OF 40
	DESIGNED BY: B.T.H.	
	DWG. NO.: z1lb326fc.l	

FILE NAME: V:\Projects\2012\23770\CADD\MSTN\z1lb326\_fcp.dgn  
 DATE/TIME: 8/21/2012 10:46:46 AM  
 USER: d4866



**CONSTRUCTION SPECIFICATIONS**

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFL100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

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

**SILT FENCE**

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

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

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

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

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

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

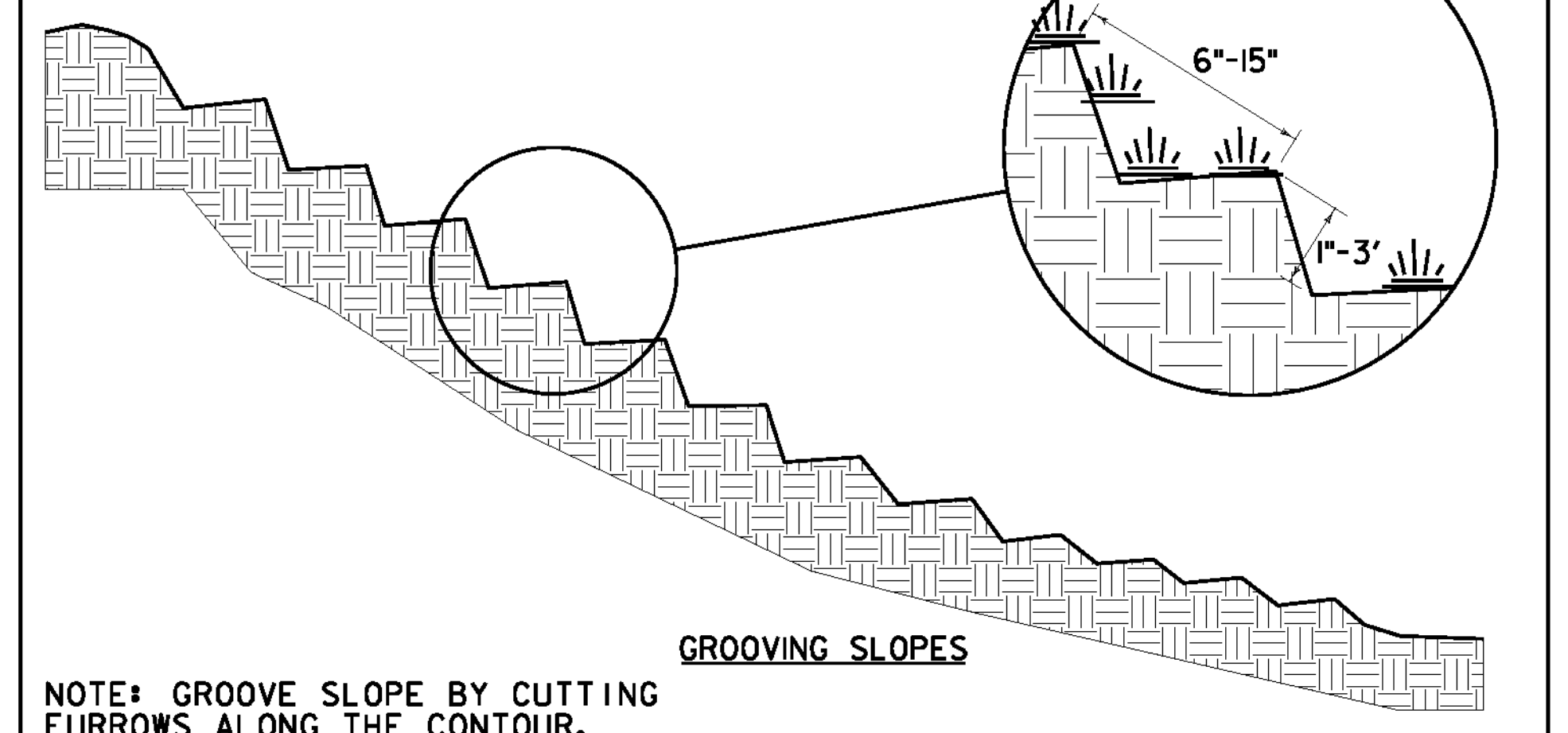
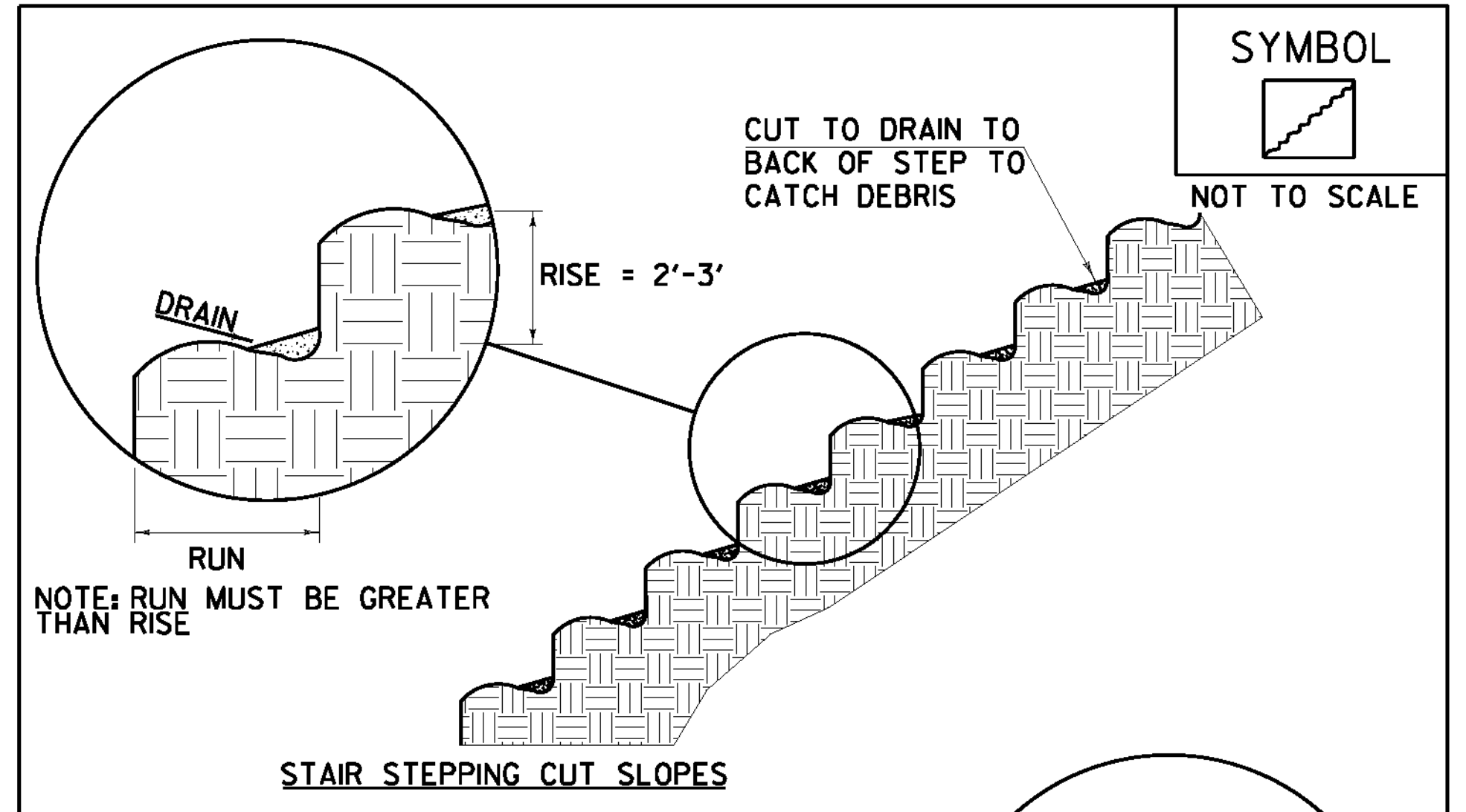
**CONSTRUCTION GUIDANCE**

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

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR  
ROADWAYS AND TRANSPORTATION FACILITIES

**TURF ESTABLISHMENT**

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



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

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

**SURFACE ROUGHENING**

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE  
CONTRACT

REVISIONS		
APRIL 1, 2008	WHF	
JANUARY 13, 2009	WHF	

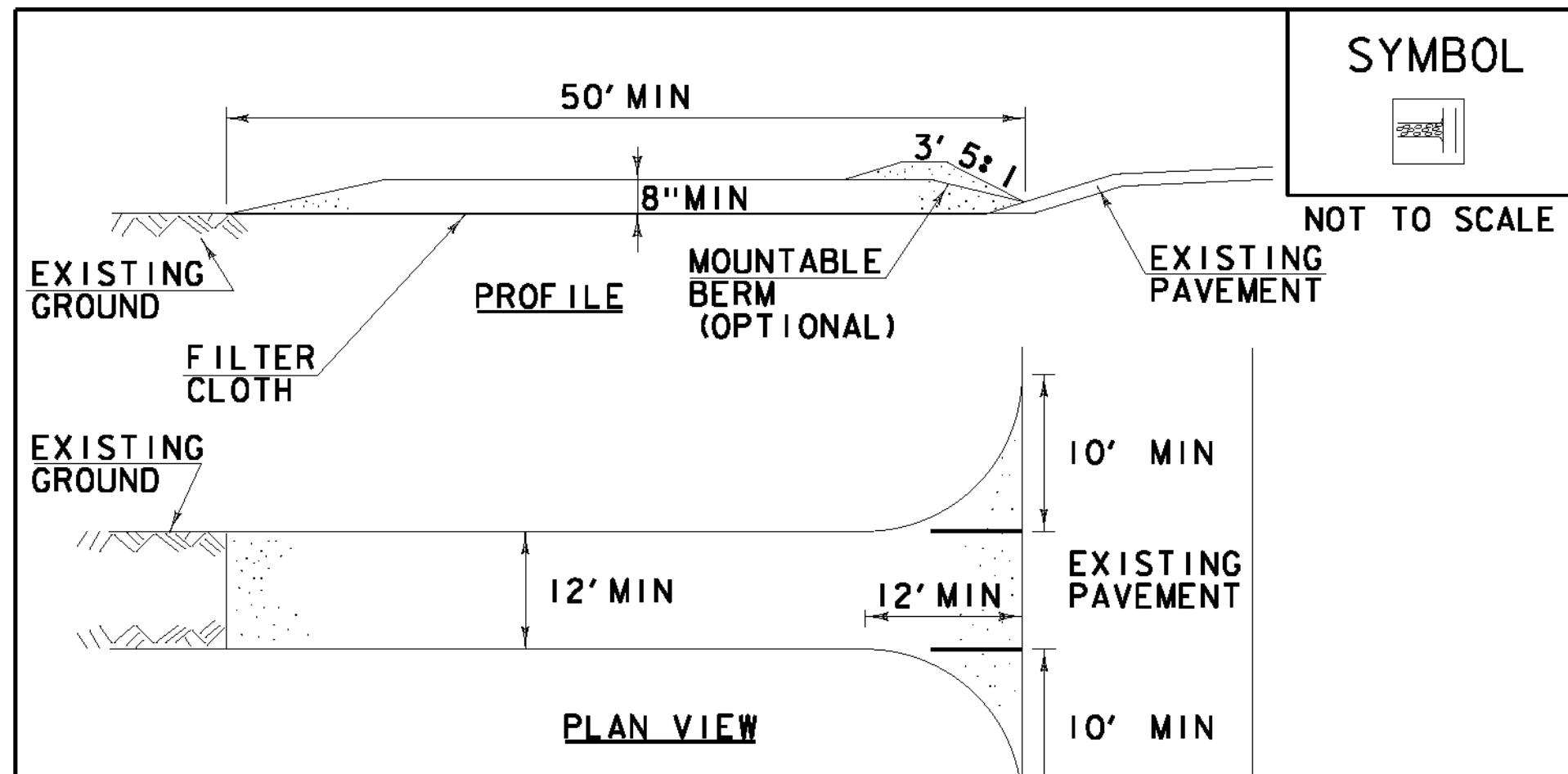
NOT TO SCALE

**EROSION CONTROL SHEET #1**

PROJECT NAME: BENNINGTON	PLOT DATE: 8/21/2012
PROJECT NUMBER: ER BHF 010-(145)	DRAWN BY: M.E.D.
FILE NAME: z11b326_e.cd.dgn	CHECKED BY: D.E.G.
PROJECT LEADER: D.E.G.	SHEET 14 OF 40
DESIGNED BY: B.T.H.	
DWG. NO.: z11b326ecd.l	



FILE NAME: V:\Proje\2012\23770\CADD\MSTN\z11b326\_e.cd.dgn  
 DATE/TIME: 8/21/2012  
 USER: 4866



SYMBOL



NOT TO SCALE

**CONSTRUCTION SPECIFICATIONS**

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

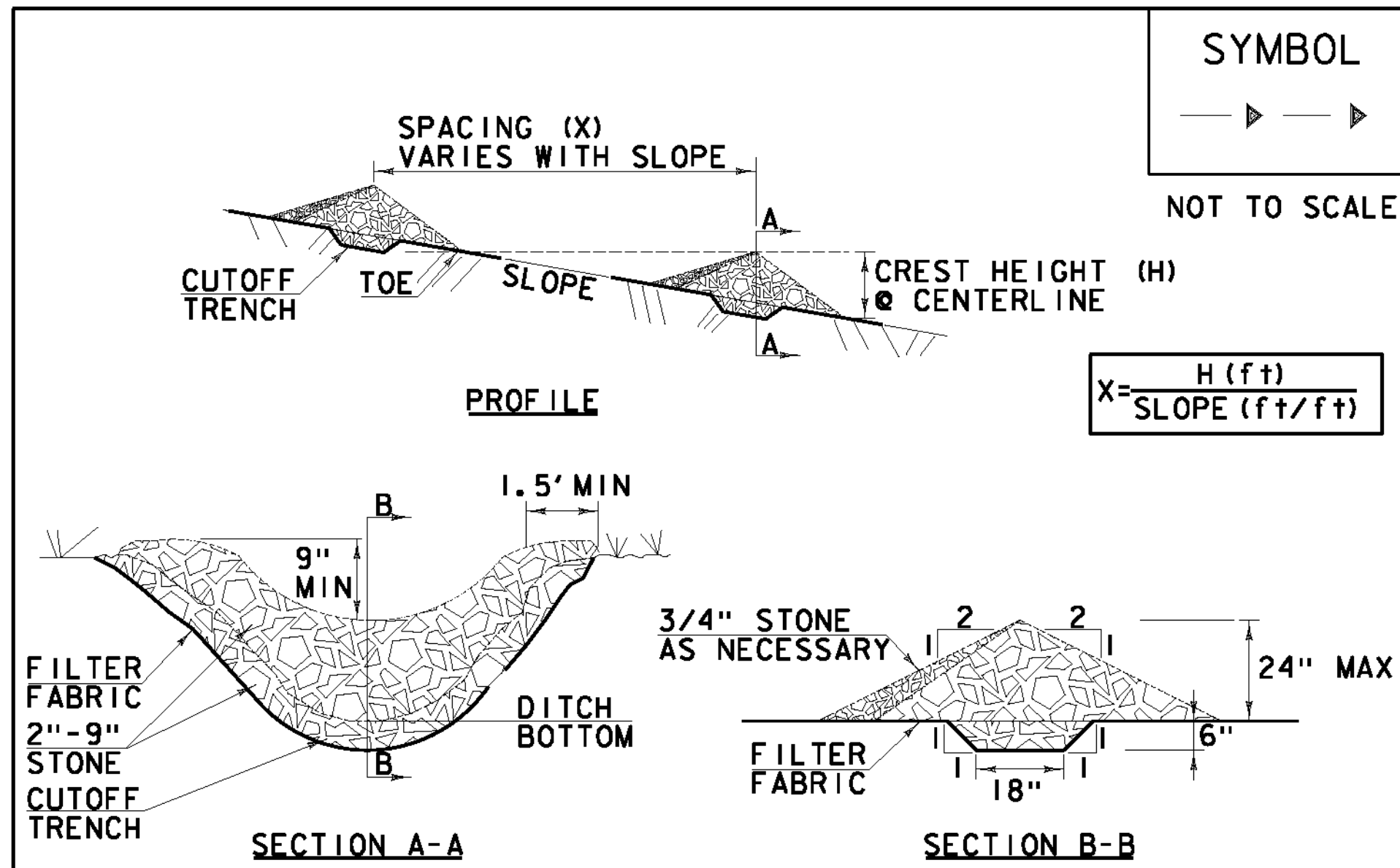
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**STABILIZED  
CONSTRUCTION  
ENTRANCE**

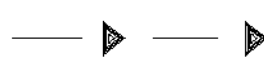
NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR  
EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM  
THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL  
GUIDANCE.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

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



SYMBOL



NOT TO SCALE

$$X = \frac{H (ft)}{\text{SLOPE } (ft/ft)}$$

**CONSTRUCTION SPECIFICATIONS**

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

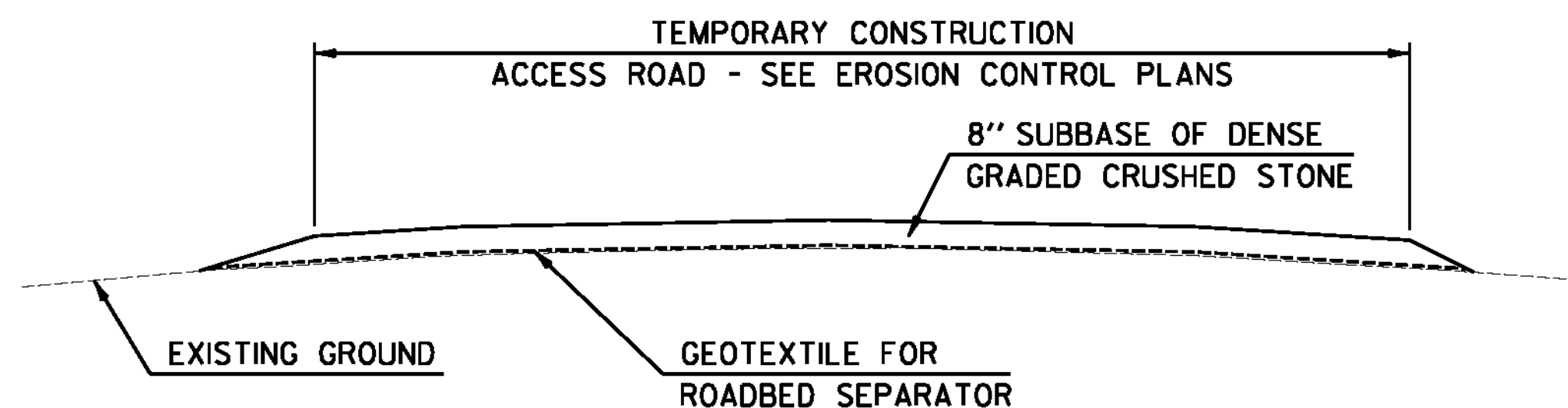
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**CHECK DAM**

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

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF

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



**TEMPORARY CONSTRUCTION ACCESS ROAD TYPICAL SECTION**

NOT TO SCALE

**EROSION  
CONTROL  
DETAILS  
SHEET #2**

PROJECT NAME: BENNINGTON  
PROJECT NUMBER: ER BHF 010-1(45)

FILE NAME: z1lb326\_eed\_02.dgn  
PROJECT LEADER: D.E.G.  
DESIGNED BY: B.T.H.  
DWG. NO.: z1lb326ecd2.i

PLOT DATE: 8/21/2012  
DRAWN BY: M.E.D.  
CHECKED BY: D.E.G.  
SHEET 15 OF 40



**SOIL CLASSIFICATION**

**AASHTO**

A1	GRAVEL AND SAND
A2	SILTY OR CLAYEY GRAVEL AND SAND
A3	FINE SAND
A4	SILTY SOIL - LOW COMPRESSIBILITY
A5	SILTY SOIL - HIGHLY COMPRESSIBLE
A6	CLAYEY SOIL - LOW COMPRESSIBILITY
A7	CLAYEY SOIL - HIGHLY COMPRESSIBLE

**ROCK QUALITY DESIGNATION**

R.Q.D. (%)	ROCK DESCRIPTION
<25	VERY POOR
25 to 50	POOR
51 to 75	FAIR
76 to 90	GOOD
>90	EXCELLENT

**SHEAR STRENGTH**

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	VERY SOFT
250-500	SOFT
500-1000	MED. STIFF
1000-2000	STIFF
2000-4000	VERY STIFF
>4000	HARD

**CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY**

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	VERY LOOSE	<2	VERY SOFT
5-10	LOOSE	2-4	SOFT
11-24	MED. DENSE	5-8	MED. STIFF
25-50	DENSE	9-15	STIFF
>50	VERY DENSE	16-30	VERY STIFF
		31-60	HARD
		>60	VERY HARD

**COMMONLY USED SYMBOLS**

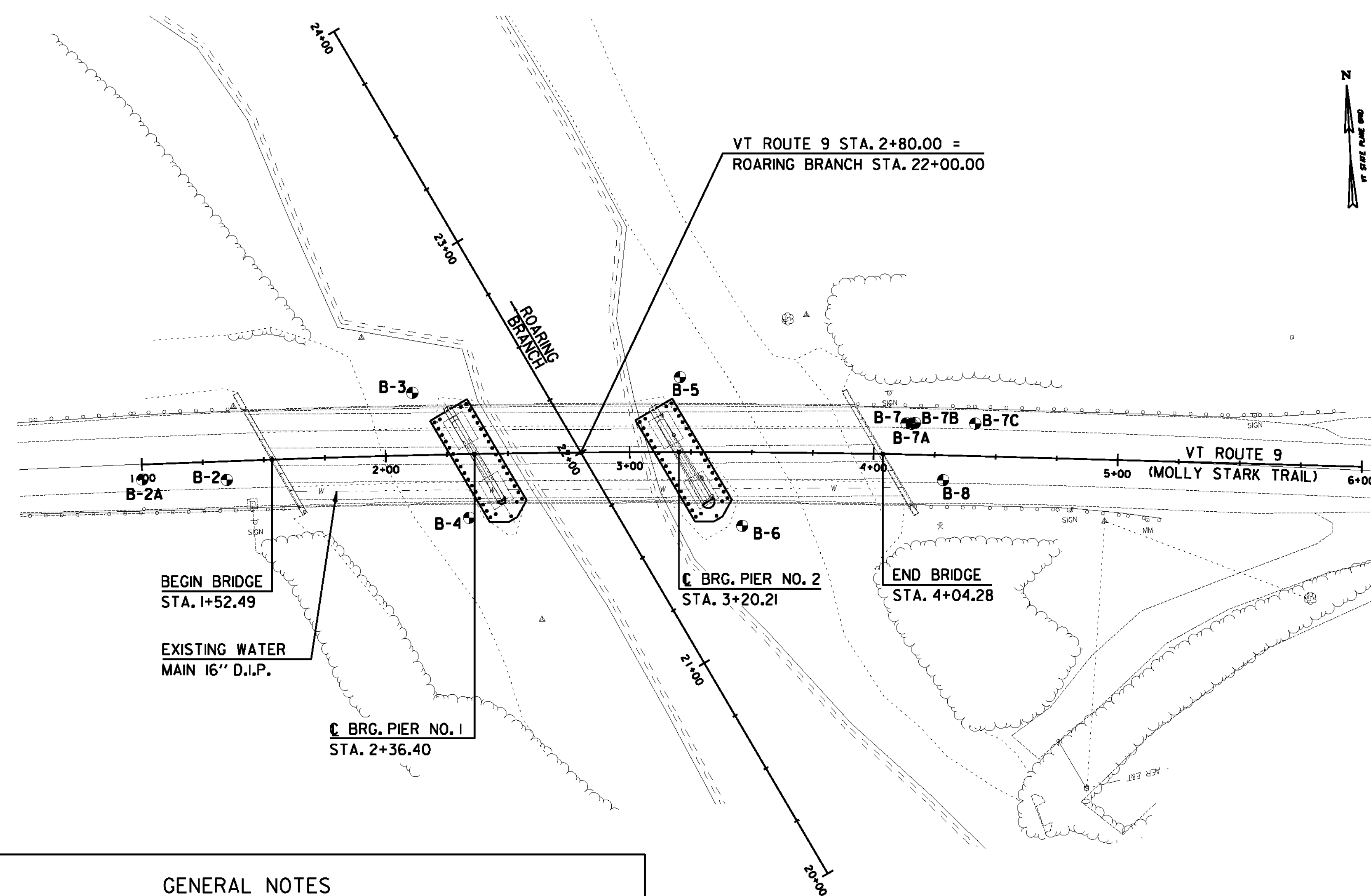
▼	WATER ELEVATION
⊙	STANDARD PENETRATION BORING
⊕	AUGER BORING
⊖	ROD SOUNDING
○	SAMPLE
S	STANDARD PENETRATION TEST
N	BLOW COUNT PER FOOT FOR: 2" O. D. SAMPLER
	1 3/8" I. D. SAMPLER
	HAMMER WEIGHT OF 140 LBS.
	HAMMER FALL OF 30"
YS	FIELD VANE SHEAR TEST
US	UNDISTURBED SOIL SAMPLE
B	BLAST
DC	DIAMOND CORE
MD	MUD DRILL
WA	WASH AHEAD
HSA	HOLLOW STEM AUGER
AX	CORE SIZE 1 1/4"
BX	CORE SIZE 1 3/8"
NX	CORE SIZE 2 1/4"
M	DOUBLE TUBE CORE BARREL USED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
NP	NON PLASTIC
w	MOISTURE CONTENT (DRY WGT. BASIS)
D	DRY
M	MOIST
MTW	MOIST TO WET
W	WET
Sat	SATURATED
Bo	BOULDER
Gr	GRAVEL
Sa	SAND
SI	SILT
Cl	CLAY
HP	HARDPAN
Le	LEDGE
NLTD	NO LEDGE TO DEPTH
CNPF	CAN NOT PENETRATE FURTHER
TLOB	TOP OF LEDGE OR BOULDER
NR	NO RECOVERY
Rec.	RECOVERY
%Rec.	PERCENT RECOVERY
ROD	ROCK QUALITY DESIGNATION
CBR	CALIFORNIA BEARING RATIO
<	LESS THAN
>	GREATER THAN
R	REFUSAL (N >100)
VTSPG	NAD83 - SEE NOTE 7

**COLOR**

bik	BLACK	pnk	PINK
bl	BLUE	pu	PURPLE
brn	BROWN	rd	RED
dk	DARK	tn	TAN
gr	GRAY	wh	WHITE
gn	GREEN	yel	YELLOW
lt	LIGHT	mltc	MULTICOLORED
or	ORANGE		

**DEFINITIONS (AASHTO)**

BEDROCK (LEDGE) - ROCK IN ITS NATIVE LOCATION OF INDEFINITE THICKNESS.	VARVED - ALTERNATE LAYERS OF SILT AND CLAY.
BOULDER - A ROCK FRAGMENT WITH AN AVERAGE DIMENSION > 12 INCHES.	HARDPAN - EXTREMELY DENSE SOIL, CEMENTED LAYER, NOT SOFTENED WHEN WET.
COBBLE - ROCK FRAGMENTS WITH AN AVERAGE DIMENSION BETWEEN 3 AND 12 INCHES.	MUCK - SOFT ORGANIC SOIL (CONTAINING > 10% ORGANIC MATERIAL).
GRAVEL - ROUNDED PARTICLES OF ROCK < 3" AND > 0.075" (#10 SIEVE).	MOISTURE CONTENT - WEIGHT OF WATER DIVIDED BY DRY WEIGHT OF SOIL.
SAND - PARTICLES OF ROCK < 0.075" (#10 SIEVE) AND > 0.0029" (#200 SIEVE).	FLOWING SAND - GRANULAR SOIL SO SATURATED (LOOSE) THAT IT FLOWS INTO DRILL CASING DURING EXTRACTION OF WASH ROD.
SILT - SOIL < 0.0029" (#200 SIEVE), NON OR SLIGHTLY PLASTIC AND EXHIBITS NO STRENGTH WHEN AIR-DRIED.	STRIKE - ANGLE FROM MAGNETIC NORTH TO LINE OF INTERSECTION OF BED WITH A HORIZONTAL PLANE.
CLAY - FINE GRAINED SOIL, EXHIBITS PLASTICITY WHEN MOIST AND CONSIDERABLE STRENGTH WHEN AIR-DRIED.	DIP - INCLINATION OF BED WITH A HORIZONTAL PLANE.



**GENERAL NOTES**

- THE SUBSURFACE EXPLORATIONS SHOWN HEREIN WERE MADE BETWEEN JANUARY 16 AND FEBRUARY 2, 2012 BY CHA.
- SOIL AND ROCK CLASSIFICATIONS, PROPERTIES AND DESCRIPTIONS ARE BASED ON ENGINEERING INTERPRETATION FROM AVAILABLE SUBSURFACE INFORMATION BY THE AGENCY AND MAY NOT NECESSARILY REFLECT ACTUAL VARIATIONS IN SUBSURFACE CONDITIONS THAT MAY BE ENCOUNTERED BETWEEN INDIVIDUAL BORING OR SAMPLE LOCATIONS.
- OBSERVED WATER LEVELS AND/OR CONDITIONS INDICATED ARE AS RECORDED AT THE TIME OF EXPLORATION AND MAY VARY ACCORDING TO THE PREVAILING RAINFALL, METHODS OF EXPLORATION AND OTHER FACTORS.
- ENGINEERING JUDGMENT WAS EXERCISED IN PREPARING THE SUBSURFACE INFORMATION PRESENTED HEREIN. ANALYSIS AND INTERPRETATION OF SUBSURFACE DATA WAS PERFORMED AND INTERPRETED FOR AGENCY DESIGN AND ESTIMATING PURPOSES. PRESENTATION OF THE INFORMATION IN THE CONTRACT IS INTENDED TO PROVIDE THE CONTRACTOR ACCESS TO THE SAME DATA AVAILABLE TO THE AGENCY. THE SUBSURFACE INFORMATION IS PRESENTED IN GOOD FAITH AND IS NOT INTENDED AS A SUBSTITUTE FOR PERSONAL INVESTIGATION, INDEPENDENT INTERPRETATION, INDEPENDENT ANALYSIS OR JUDGMENT BY THE CONTRACTOR.
- PICTORIAL STRUCTURE DETAILS SHOWN ON THE BORING PLAN LAYOUT OR SOILS PROFILE ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY NOT ACCURATELY PORTRAY FINAL CONTRACT DETAILS.
- TERMINOLOGY USED ON BORING LOGS TO DESCRIBE THE HARDNESS, DEGREE OF WEATHERING, AND SPACING OF FRACTURES, JOINTS AND OTHER DISCONTINUITIES IN THE BEDROCK IS DEFINED IN THE AASHTO MANUAL ON SUBSURFACE INVESTIGATIONS, 1988.
- NORTHING AND EASTING COORDINATES ARE SHOWN IN VERMONT STATE PLANE GRID NORTH AMERICAN DATUM 1983 IN METERS AND SURVEY FEET.

**BORING PLAN**



BORING LOCATIONS (FEET)						
BORING	NORTHING	EASTING	STATION	OFFSET	SURFACE EL.	BOTTOM EL.
B-1						
BORING NOT ADVANCED						
B-2	140364.27	1463684.91	1+34.6	7.6 RT	929	918
B-2A	140366.15	1463648.56	1+00	6.2 RT	928	919
B-3	140396.05	1463762.64	2+11.6	25.6 LT	905	810.6
B-4	140343.77	1463783.29	2+33.7	26.1 RT	907	886
B-5	140396.90	1463872.54	3+20.7	30.7 LT	905	884
B-6	140334.74	1463894.87	3+46.3	30.1 RT	907	782.7
B-7	140373.29	1463964.23	4+13.2	12.8 LT	932	927
B-7A	140373.00	1463966.23	4+15.2	12.6 LT	932	927
B-7B	140373.28	1463967.76	4+16.7	13.0 LT	932	909
B-7C	140371.55	1463995.70	4+43.9	13.4 LT	932	927
B-8	140349.28	1463978.01	4+28.7	10.2 RT	932	916

**BORING INFORMATION SHEET**

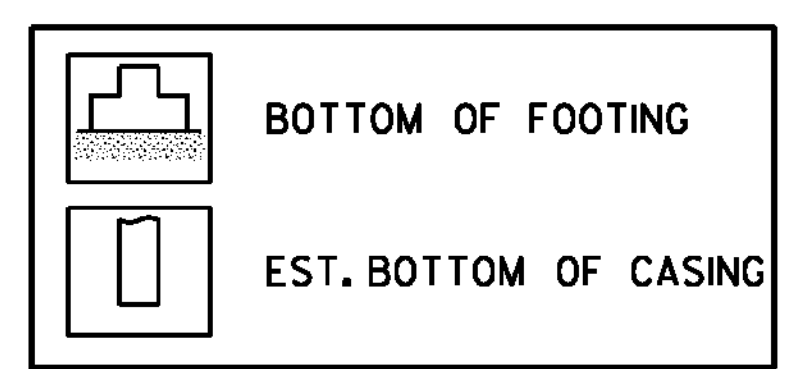
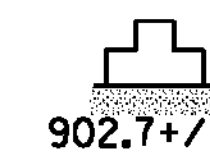
PROJECT NAME:	BENNINGTON
PROJECT NUMBER:	ER BHF 010-1(45)
FILE NAME:	z11b326_bor_plan.dgn
PROJECT LEADER:	D.E.G.
DESIGNED BY:	K.J.K.
DWG. NO.:	z11b326borplan.i
PLOT DATE:	8/21/2012
DRAWN BY:	M.E.D.
CHECKED BY:	D.E.G.
SHEET	16 OF 40



STATE OF VERMONT VTTrans AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-2</b>				
Bridge 9, VT Route 9 23770.1000.32000 Bridge 9, VT Route 9		Page No.: 1 of 1		Pin No.: ER BHF 010-1(45)				
Boring Crew: J. Leonhardt, K. Owens		Type: WB SS		Checked By: C. Symmes				
Date Started: 2/01/12 Date Finished: 2/01/12		Casing I.D.: 4 in 1.25 in		Sampler I.D.: 1.25 in				
VTSPG NAD83: N 140364.27 ft E 1463684.91 ft		Hammer Wt: N.A. 140 lb.		Date				
Station: 1+34.60 Offset: 7.6 RT		Hammer Fall: N.A. 30 in.		Depth (ft)				
Ground Elevation: 928.85 ft		Hammer/Rod Type: Auto/NWJ		Notes				
		Rig: CME 75 TRACK C <sub>p</sub> = 1.4						
Depth (ft)	Strata (f)	CLASSIFICATION OF MATERIALS (Description)	Run (ft) (C/F Log)	Bowls* (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0 - 0.8	Asphalt Pavement (Granular FILL)		C-1					
5	(Granular FILL), f.m.c. SAND, little f.c. gravel, trace silt, compact, gray, Wet, Rec. = 0.5 ft			7-15-27-26 (42)				
10	No recovery, Rec. = 0.0 ft			36-23-32-22 (15)				
Hole stopped @ 11.0 ft								
Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.  Very difficult drilling ground surface to boring termination.  Boring terminated at 11.0' at casing refusal, offset to B-2A.								
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. *N Values have not been corrected for hammer energy. C <sub>p</sub> is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.								

STATE OF VERMONT VTTrans AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-2A</b>				
Bridge 9, VT Route 9 23770.1000.32000 Bridge 9, VT Route 9		Page No.: 1 of 1		Pin No.: ER BHF 010-1(45)				
Boring Crew: J. Leonhardt, K. Owens		Type: WB SS		Checked By: C. Symmes				
Date Started: 2/02/12 Date Finished: 2/02/12		Casing I.D.: 4 in 1.25 in		Sampler I.D.: 1.25 in				
VTSPG NAD83: N 140386.15 ft E 1463648.56 ft		Hammer Wt: N.A. 140 lb.		Date				
Station: 1+00.00 Offset: 6.2 RT		Hammer Fall: N.A. 30 in.		Depth (ft)				
Ground Elevation: 927.99 ft		Hammer/Rod Type: Auto/NWJ		Notes				
		Rig: CME 75 TRACK C <sub>p</sub> = 1.4						
Depth (ft)	Strata (f)	CLASSIFICATION OF MATERIALS (Description)	Run (ft) (C/F Log)	Bowls* (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0 - 0.8	Asphalt Pavement		C-1					
5	Not Sampled							
10	Hole stopped @ 9.0 ft							
Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.  Offset from B-2, attempt to resume sampling at depth of B-2 termination.  Very difficult drilling ground surface to termination depth.  Boring terminated at 9.0' at casing refusal.								
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. *N Values have not been corrected for hammer energy. C <sub>p</sub> is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.								

STATE OF VERMONT VTTrans AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-3</b>						
Bridge 9, VT Route 9 23770.1000.32000 Bridge 9, VT Route 9		Page No.: 1 of 3		Pin No.: ER BHF 010-1(45)						
Boring Crew: J. Leonhardt, K. Owens		Type: WB SS		Checked By: C. Symmes						
Date Started: 1/23/12 Date Finished: 1/24/12		Casing I.D.: 4 in 1.25 in		Sampler I.D.: 1.25 in						
VTSPG NAD83: N 140396.05 ft E 1463762.64 ft		Hammer Wt: N.A. 140 lb.		Date						
Station: 2+11.60 Offset: 25.6 LT		Hammer Fall: N.A. 30 in.		Depth (ft)						
Ground Elevation: 904.6 ft		Hammer/Rod Type: Auto/NWJ		Notes						
		Rig: CME 75 TRACK C <sub>p</sub> = 1.4								
Depth (ft)	Strata (f)	CLASSIFICATION OF MATERIALS (Description)	Run (ft) (C/F Log)	Bowls* (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0.0 - 0.2	(Granular FILL), f.c. GRAVEL, Some f.m.c. Sand, little silt, very compact, Light brown, Moist, Rec. = 0.2 ft			90/3 (8)						
0.2 - 0.9	(Granular FILL), Similar Soil, Rec. = 0.9 ft			20-28-51-80 (7)						
0.9 - 1.4	(ML), Clayey SILT, Some f.m.c. Sand, trace f. gravel, hard, Light brown/gray/white, Moist, Rec. = 0.7 ft			61-37-31-31 (68)						
1.4 - 1.9	(ML), Clayey SILT, AND f.m.c. SAND, trace f. gravel, hard, Light brown/gray, Moist, Rec. = 1.4 ft, 1" seams of f.m.c. sand			25-17-15-23 (32)	19.2	8.6	29.5	61.9	31	8
1.9 - 2.0	(ML), Clayey SILT, Some f.m.c. Sand, little f. gravel, very stiff, Light brown/gray, Moist, Rec. = 1.9 ft, Seams of f.m.c. sand			5-8-12-16 (20)	20.0	18.4	24.0	57.6		
2.0 - 2.4	(ML), Clayey SILT, Some f.m.c. Sand, hard, Light brown/orange/white/gray, Moist, Rec. = 1.7 ft, Turns brown at 15.4'			36-26-28-36 (34)						
2.4 - 2.7	(ML), Clayey SILT, Some f.m.c. Sand, trace f. gravel, very stiff, brown/white, Moist, Rec. = 1.7 ft, Lenses of f.m.c. sand			12-12-15-15 (27)						
2.7 - 3.4	(ML), becomes hard, Rec. = 1.6 ft, Lenses of f.m.c. sand			11-15-19-16 (34)						
3.4 - 3.6	(ML), becomes very stiff, Rec. = 1.8 ft, Lenses of wet f. sand			6-6-12-18 (18)						
3.6 - 3.7	(SM)									
3.7 - 3.8	(SM), f.m.c. SAND, Some clayey Silt, trace f. gravel, very compact, brown/dark brown, Wet, Rec. = 1.5 ft			22-25-30-37 (55)	15.3	7.1	67.9	25.0		
3.8 - 4.0	(SM), Similar Soil, Rec. = 2.0 ft			23-26-						
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. *N Values have not been corrected for hammer energy. C <sub>p</sub> is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.										



<b>BORING LOGS SHEET #1</b>	PROJECT NAME: BENNINGTON	PLOT DATE: 8/21/2012
	PROJECT NUMBER: ER BHF 010-1(45)	DRAWN BY: M.E.G.
	FILE NAME: z1lb326_bor_log_01.dgn	CHECKED BY: D.E.G.
	DESIGNED BY: K.J.K.	SHEET 17 OF 40
	DWG. NO.: z1lb326borlog1	

FILE NAME: V:\Projects\ANY\K2\23770\CADD\MSTN\z1lb326\_bor\_log\_01.dgn  
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 DATE/TIME = 8/21/2012  
 USER = 4866

863.7 +/-

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-3</b>					
Bridge 9, VT Route 9 23770.1000.32000 Bridge 9, VT Route 9		Page No.: 2 of 3 Pin No.: ER BHF 010-1(45) Checked By: C. Symmes							
Boring Crew: J. Leonhardt, K. Owens		Type: WB SS		Groundwater Observations					
Date Started: 1/23/12 Date Finished: 1/24/12		I.D.: 4 in 1.25 in		Date	Depth (ft)				
VTSPG NAD83: N 140396.05 ft E 1463762.64 ft		Hammer Wt: N.A. 140 lb		01/23/12	2.0				
Station: 2+11.60 Offset: 25.6 LT		Hammer Fall: N.A. 30 in		Notes					
Ground Elevation: 904.6 ft		Hammer/Rod Type: Auto/NWJ							
		Rig: CME 75 TRACK C <sub>2</sub> = 1.4							
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
40-55 (66)									
45		(SM), <b>Similar Soil</b> , Rec. = 2.0 ft, Lenses of clayey silt	28-53-61-86 (114)						
50		(SM), <b>f. SAND</b> , Some clayey silt, very compact, orange/brown, MTW, Rec. = 1.7 ft, Stratified by color	31-45-66-91/4 (111)						
55		(CL), <b>Silty CLAY</b>							
		(CL), <b>Silty CLAY</b> , Some f.m. Sand, trace c. sand, hard, orange/brown, Moist, Rec. = 1.5 ft, Stratified by color	27-45-45-52 (90)	1.1	38.7	60.2			
60		(CL), <b>Silty CLAY</b> , Rec. = 1.3 ft	17-22-43-100 (65)	19.6			33	11	
65		(CL), <b>Silty CLAY</b> , Some f.m.c. Sand, little f. gravel, hard, orange/white, Moist, Rec. = 0.4 ft	100/5" (R)						
70		(SM)							
		(SM), <b>f.m.c. SAND</b> , little clayey silt, little crushed gravel, very compact, orange/white, Moist, Rec. = 0.3 ft	150/3" (R)						
75		(SP)							
		(SP), grades to trace clayey silt, Rec. = 0.1 ft	150/2" (R)						
		(SM)							
		(SM), grades to little clayey silt, Rec. = 0.4 ft	102						

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

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-3</b>					
Bridge 9, VT Route 9 23770.1000.32000 Bridge 9, VT Route 9		Page No.: 3 of 3 Pin No.: ER BHF 010-1(45) Checked By: C. Symmes							
Boring Crew: J. Leonhardt, K. Owens		Type: WB SS		Groundwater Observations					
Date Started: 1/23/12 Date Finished: 1/24/12		I.D.: 4 in 1.25 in		Date	Depth (ft)				
VTSPG NAD83: N 140396.05 ft E 1463762.64 ft		Hammer Wt: N.A. 140 lb		01/23/12	2.0				
Station: 2+11.60 Offset: 25.6 LT		Hammer Fall: N.A. 30 in		Notes					
Ground Elevation: 904.6 ft		Hammer/Rod Type: Auto/NWJ							
		Rig: CME 75 TRACK C <sub>2</sub> = 1.4							
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
			(R)						
85		(ML), <b>Clayey SILT</b> , little f.m.c. sand, trace f. gravel, hard, orange/white, Moist, Rec. = 0.8 ft	41-100/4" (R)						
90		(SM), <b>f.m.c. SAND</b> , Some f.c. Crushed Gravel, little clayey silt, very compact, orange/white, Moist, Rec. = 0.3 ft	150/3" (R)						
95		(SM), <b>f.m.c. SAND</b> , Some clayey silt, little crushed gravel, very compact, orange/white, Moist, Rec. = 0.4 ft	150/5" (R)						
		Hole stopped @ 94.4 ft							
		Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger. Very difficult drilling from ground surface to 8.0'. Drilling mud added at 21.0'. Rollerbit grinding and harder drilling 27.0' - 54.0'. Very high drilling resistance at 54.0'. Easier drilling 76.0' - 79.0'. Very high drilling resistance resumed at 79.0'.							

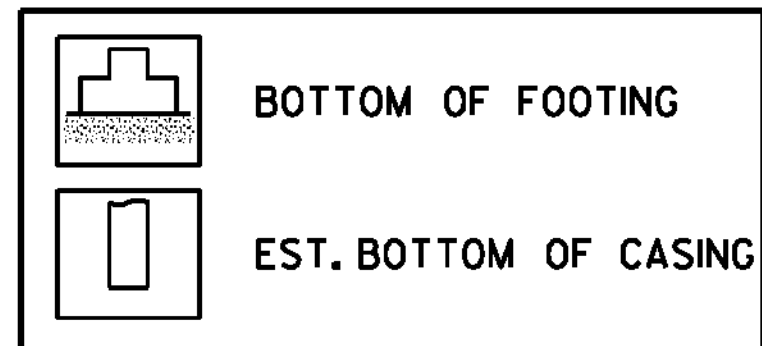
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Notes:  
 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.  
 2. N Values have not been corrected for hammer energy. C<sub>2</sub> is the hammer energy correction factor.  
 3. Water level readings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

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-4</b>					
Bridge 9, VT Route 9 23770.1000.32000 Bridge 9, VT Route 9		Page No.: 1 of 1 Pin No.: ER BHF 010-1(45) Checked By: C. Symmes							
Boring Crew: J. Leonhardt, K. Owens		Type: WB SS		Groundwater Observations					
Date Started: 1/24/12 Date Finished: 1/25/12		I.D.: 4 in 1.25 in		Date	Depth (ft)				
VTSPG NAD83: N 140343.77 ft E 1483783.29 ft		Hammer Wt: N.A. 140 lb		01/25/12	2.0				
Station: 2+33.70 Offset: 26.1 RT		Hammer Fall: N.A. 30 in		Notes					
Ground Elevation: 906.59 ft		Hammer/Rod Type: Auto/NWJ							
		Rig: CME 75 TRACK C <sub>2</sub> = 1.4							
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		(Granular FILL), <b>f.c. GRAVEL</b> , Some f.m.c. Sand, trace silt very compact, gray/brown, Wei, Rec. = 0.4 ft	15-100/4" (R)						
		No recovery, Rec. = 0.0 ft							
5		(ML), <b>Clayey SILT</b> , Some f.m.c. Sand, trace f. gravel, hard, brown, Moist, Rec. = 0.1 ft	14-21-18-39 (39)						
		(ML), <b>Clayey SILT</b> , AND f.m.c. SAND, trace f.c. gravel, hard, brown, Moist, Rec. = 1.6 ft	13-27-20-15 (47)	19.4	10.6	39.0	50.4		
		(ML), <b>Clayey SILT</b> , AND f.m.c. SAND, trace f. gravel, hard, brown/gray, Moist, Rec. = 1.0 ft	8-15-23-26 (38)						
		ft. Lenses of gray f.m.c. sand	32-24-35-28 (59)						
15		(ML), <b>Similar Soil</b> , Rec. = 1.2 ft	15-24-31-31 (55)						
20		(ML), <b>Similar Soil</b> , Rec. = 1.1 ft	44-41-28-48 (67)	17.8	10.7	29.3	60.0		
		Hole stopped @ 21.0 ft							
		Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger. Cobbles & boulders visible at ground surface. Rollerbit through boulder 1.0-2.5'. Easier drilling at 5.0'.							

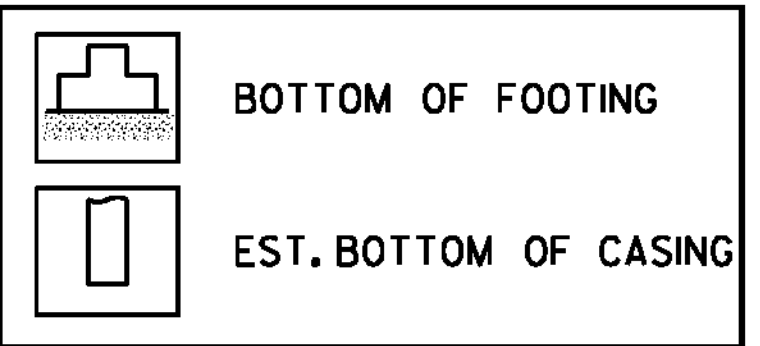
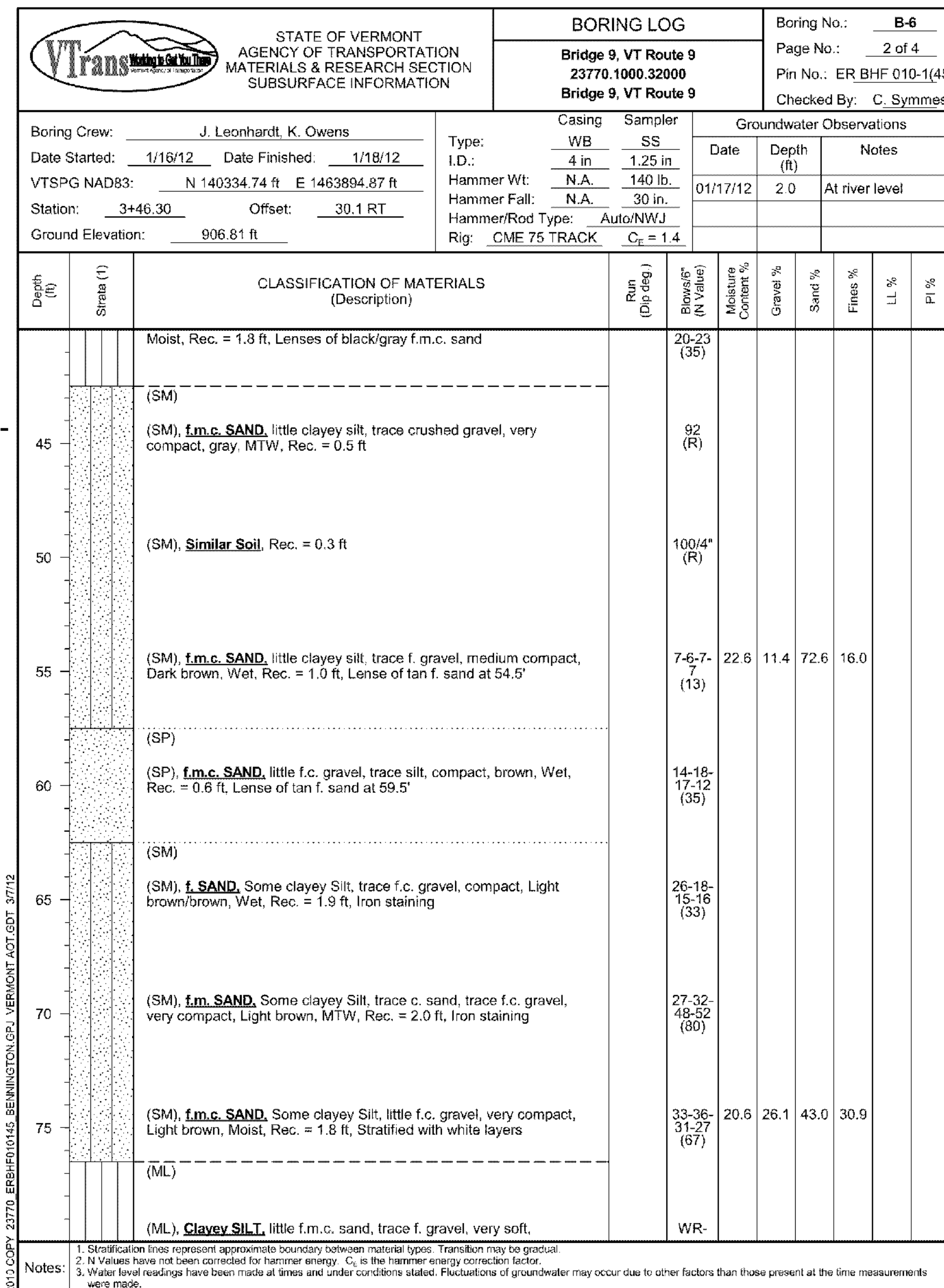
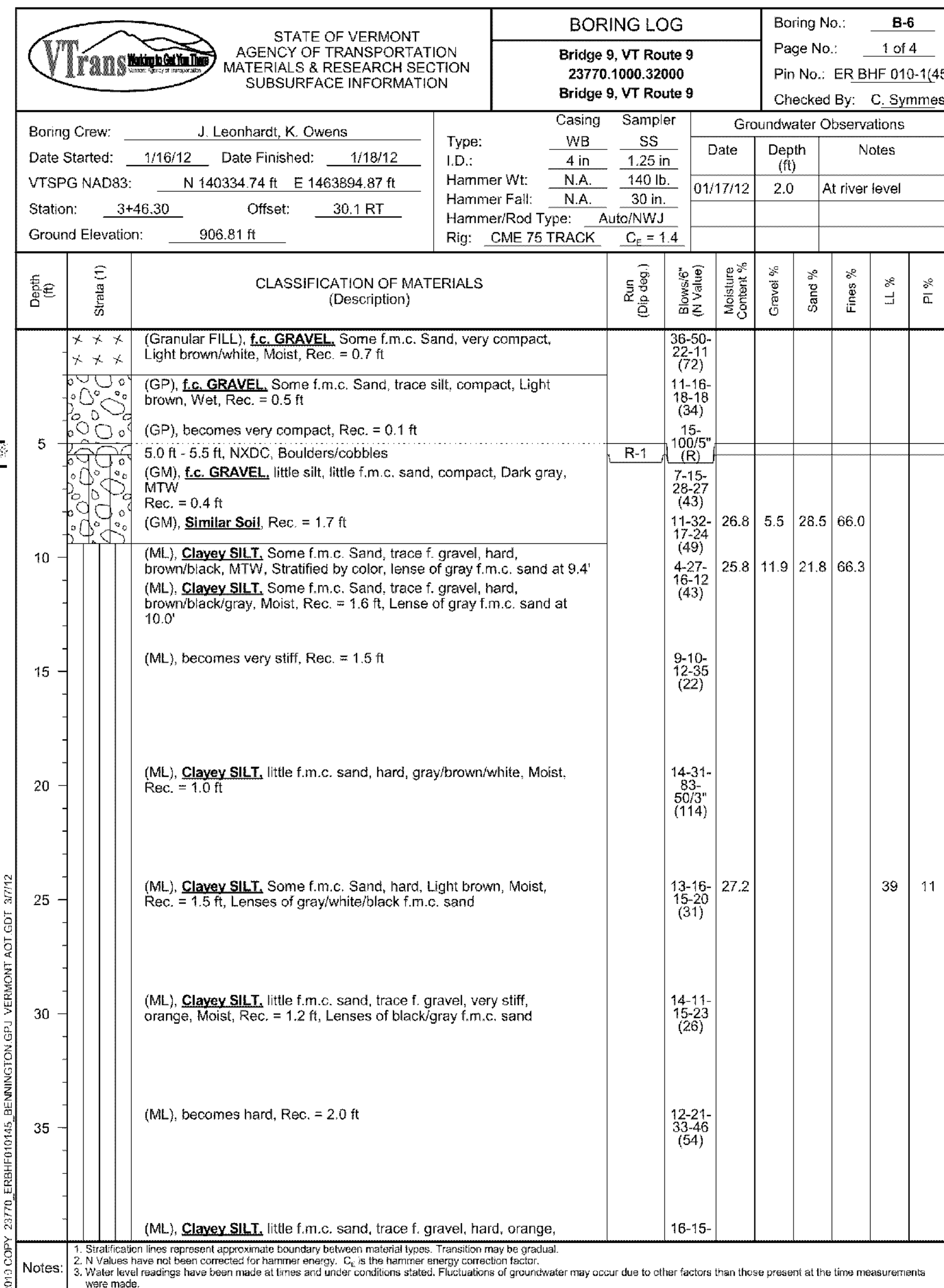
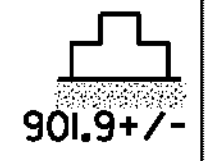
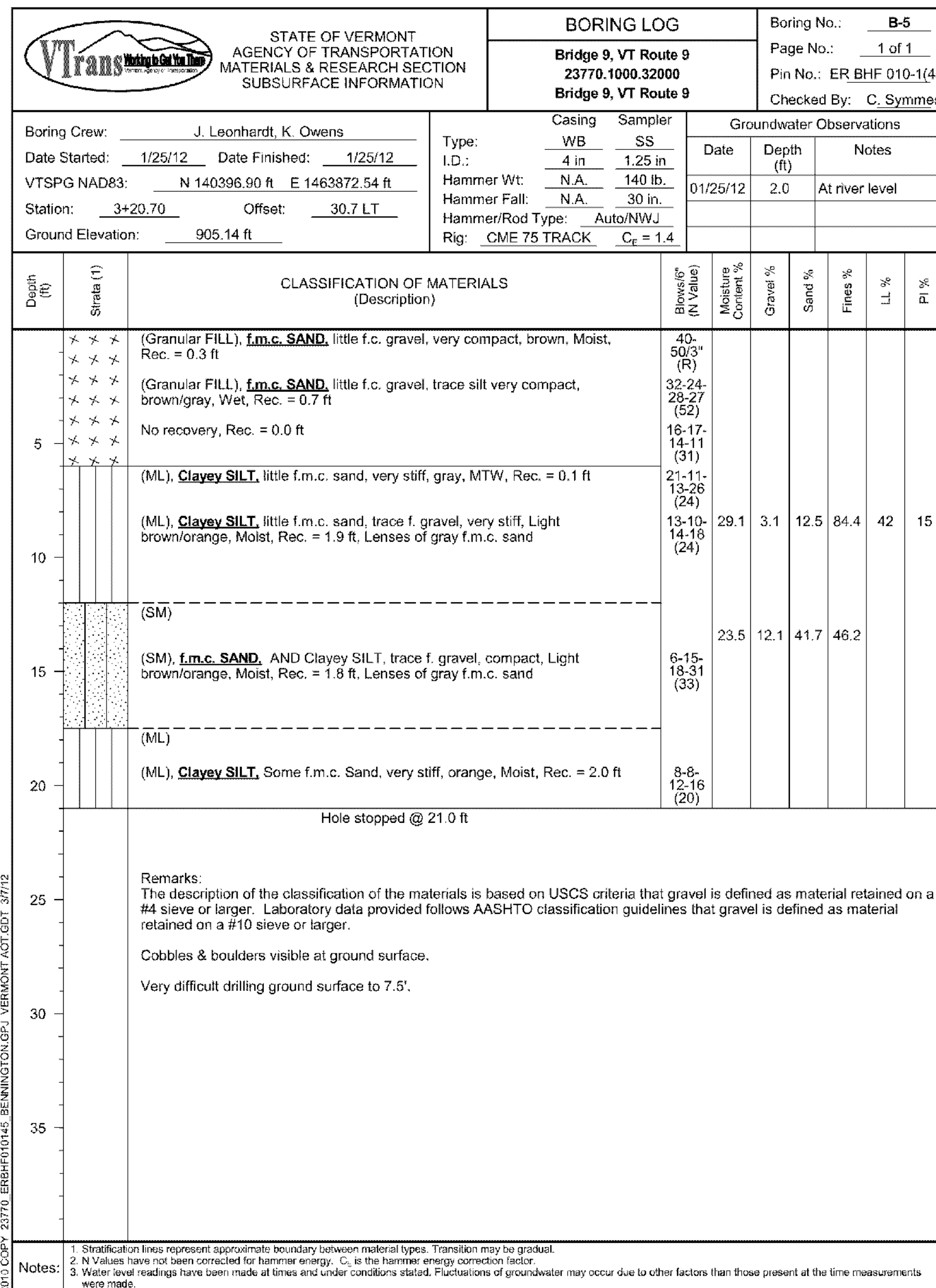
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Notes:  
 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.  
 2. N Values have not been corrected for hammer energy. C<sub>2</sub> is the hammer energy correction factor.  
 3. Water level readings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



<b>BORING LOGS SHEET #2</b>	PROJECT NAME: BENNINGTON	PROJECT NUMBER: ER BHF 010-1(45)
	FILE NAME: z1lb326_bor_log_02.dgn	PLOT DATE: 8/21/2012
	PROJECT LEADER: D.E.G.	DRAWN BY: M.E.D.
	DESIGNED BY: K.J.K.	CHECKED BY: D.E.G.
	DWG. NO.: z1lb326borlog2.1	SHEET 18 OF 40





**BORING LOGS  
SHEET #3**

PROJECT NAME: BENNINGTON  
 PROJECT NUMBER: ER BHF 010-1(45)  
 FILE NAME: z1lb326\_bor\_log\_03.dgn  
 PROJECT LEADER: D.E.G.  
 DESIGNED BY: K.J.K.  
 DWG. NO.: z1lb326borlog3.1  
 PLOT DATE: 8/21/2012  
 DRAWN BY: M.E.D.  
 CHECKED BY: D.E.G.  
 SHEET 19 OF 40

FILE NAME: V:\Projects\ANY\K2\23770\CADD\MSTN\z1lb326\_bor\_log\_03.dgn  
 DATE/TIME: 8/21/2012  
 USER: 4866


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FILE NAME = V:\Projects\ANY\K2\23770\CADD\MSTN\z1lb326\_bor\_log\_05.dgn  
 DATE/TIME = 8/21/2012  
 USER = 4966

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-7A</b>				
		<b>Bridge 9, VT Route 9</b> <b>23770.1000.32000</b> <b>Bridge 9, VT Route 9</b>		Page No.: 1 of 1 Pin No.: ER BHF 010-1(45) Checked By: C. Symmes				
Boring Crew: J. Leonhardt, K. Owens Date Started: 1/26/12 Date Finished: 1/26/12 VTSPG NAD83: N 140373.00 ft E 1463966.23 ft Station: 4+15.20 Offset: 12.6 LT Ground Elevation: 932.45 ft		Casing Sampler Type: WB SS I.D.: 4 in 1.25 in Hammer Wt: N.A. 140 lb. Hammer Fall: N.A. 30 in. Hammer/Rod Type: Auto/NWJ Rig: CME 75 TRACK C <sub>e</sub> = 1.4		Groundwater Observations Date Depth (ft) Notes				
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		Not Sampled						
5		Hole stopped @ 5.0 ft						
10		Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger. Offset from B-7, attempt to resume sampling at refusal depth of B-7. Advance casing through asphalt pavement. Casing refusal at 5.0', offset to B-7B.						
15								
20								
25								
30								
35								
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C <sub>e</sub> is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.								

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-7B</b>				
		<b>Bridge 9, VT Route 9</b> <b>23770.1000.32000</b> <b>Bridge 9, VT Route 9</b>		Page No.: 1 of 1 Pin No.: ER BHF 010-1(45) Checked By: C. Symmes				
Boring Crew: J. Leonhardt, K. Owens Date Started: 1/26/12 Date Finished: 1/27/12 VTSPG NAD83: N 140373.28 ft E 1463967.76 ft Station: 4+16.70 Offset: 13.0 LT Ground Elevation: 932.24 ft		Casing Sampler Type: WB SS I.D.: 4 in 1.25 in Hammer Wt: N.A. 140 lb. Hammer Fall: N.A. 30 in. Hammer/Rod Type: Auto/NWJ Rig: CME 75 TRACK C <sub>e</sub> = 1.4		Groundwater Observations Date Depth (ft) Notes				
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		Not Sampled						
10		No recovery, Rec. = 0.0 ft						
15		(Granular FILL), f.m.c. SAND, trace silt trace f.c. gravel medium compact, brown, Wet, Rec. = 0.4 ft		6-12-91-13 (103)				
20		(Granular FILL), f.m.c. SAND, Some f.c. Gravel, trace silt medium compact, brown, Wet, Rec. = 0.4 ft		9-7-21-20 (28)				
20				11-16-14-39 (30)				
25		Hole stopped @ 23.0 ft						
30		Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger. Offset from B-7A, attempt to resume sampling at refusal depth of B-7A. Advance casing through asphalt pavement. Casing refusal at 23.0', offset to B-7C.						
35								
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C <sub>e</sub> is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.								

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <b>B-7C</b>				
		<b>Bridge 9, VT Route 9</b> <b>23770.1000.32000</b> <b>Bridge 9, VT Route 9</b>		Page No.: 1 of 1 Pin No.: ER BHF 010-1(45) Checked By: C. Symmes				
Boring Crew: J. Leonhardt, K. Owens Date Started: 1/30/12 Date Finished: 1/30/12 VTSPG NAD83: N 140371.55 ft E 1463995.70 ft Station: 4+43.90 Offset: 13.4 LT Ground Elevation: 932.29 ft		Casing Sampler Type: WB SS I.D.: 4 in 1.25 in Hammer Wt: N.A. 140 lb. Hammer Fall: N.A. 30 in. Hammer/Rod Type: Auto/NWJ Rig: CME 75 TRACK C <sub>e</sub> = 1.4		Groundwater Observations Date Depth (ft) Notes				
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)		Blows/ft (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		No recovery						
5		Hole stopped @ 5.0 ft						
10		Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger. Offset from B-7B, attempt to resume sampling at refusal depth of B-7B. Advance casing through asphalt pavement. Boring terminated at 5.0' due to large amount of fines washing out from drilling operations.						
15								
20								
25								
30								
35								
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C <sub>e</sub> is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.								

**BORING LOGS  
SHEET #5**



PROJECT NAME: BENNINGTON  
 PROJECT NUMBER: ER BHF 010-1(45)

FILE NAME: z1lb326\_bor\_log\_05.dgn  
 PROJECT LEADER: D.E.G.  
 DESIGNED BY: K.J.K.  
 DWG. NO.: z1lb326borlog5.1

PLOT DATE: 8/21/2012  
 DRAWN BY: M.E.D.  
 CHECKED BY: D.E.G.  
 SHEET 21 OF 40

FILE NAME = V:\Projects\VT\23770\CA000\MSTN\z11b326\_bor\_log.dgn  
 DATE/TIME = 8/21/2012  
 USER = 4966

STATE OF VERMONT VT Trans AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: <u>B-8</u>	
		Bridge 9, VT Route 9 23770.1000.32000 Bridge 9, VT Route 9		Page No.: <u>1 of 1</u>	
				Pin No.: <u>ER BHF 010-1(45)</u>	
				Checked By: <u>C. Symmes</u>	
Boring Crew: <u>J. Leonhardt, K. Owens</u>		Casing Type: <u>WB</u>	Sampler: <u>SS</u>	Groundwater Observations	
Date Started: <u>1/30/12</u>	Date Finished: <u>1/31/12</u>	I.D.: <u>4 in</u>	1.25 in	Date	Depth (ft)
VTSPG NAD83: <u>N 140349.28 ft</u>	<u>E 1463978.01 ft</u>	Hammer Wt: <u>N.A.</u>	<u>140 lb.</u>		Notes
Station: <u>4+28.70</u>	Offset: <u>10.2 RT</u>	Hammer Fall: <u>N.A.</u>	<u>30 in.</u>		
Ground Elevation: <u>931.83 ft</u>		Hammer/Rod Type: <u>Auto/NWJ</u>			
		Rig: <u>CME 75 TRACK</u>	<u>C<sub>p</sub> = 1.4</u>		

Depth (ft)	Strata (f)	CLASSIFICATION OF MATERIALS (Description)	Run (ft) (C/F ref)	Blowlog (R Value)	Moisture Content %	Gravel %	Sand %	Fines %
0.0		0.0 ft - 0.8 ft, Asphalt Pavement	C-1					
0.8		Not Sampled						
5.0		Rec. = 0.0 ft		50/1* (R)				
10.0		(Granular FILL), f.m.c. SAND, little f.c. gravel, trace silt, medium compact, brown, Wet, Rec. = 0.4 ft		15-10-6-8 (16)				
15.0		No recovery, Rec. = 0.0 ft		10-38-27-14 (16)				
16.0		Hole stopped @ 16.0 ft						
20.0		Remarks: The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger. Very difficult drilling ground surface to termination depth. Casing refusal at 16.0'.						

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



**BORING LOGS SHEET #6**

PROJECT NAME: <u>BENNINGTON</u>	PLOT DATE: <u>8/21/2012</u>
PROJECT NUMBER: <u>ER BHF 010-1(45)</u>	DRAWN BY: <u>M.E.D.</u>
FILE NAME: <u>z11b326_bor_log_06.dgn</u>	CHECKED BY: <u>D.E.G.</u>
DESIGNED BY: <u>K.J.K.</u>	SHEET <u>22</u> OF <u>40</u>
DWG. NO.: <u>z11b326borlog6.i</u>	





**GENERAL NOTES:**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION DATED 2010, AND ITS LATEST REVISIONS.
2. FOUNDATION DESIGN IS FOR HL-93 LIVE LOADING, IMPACT EXCLUDED.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION, ESPECIALLY THE DISCHARGE OF RAW CONCRETE, INTO ROARING BRANCH AS DIRECTED BY THE RESIDENT ENGINEER AND STANDARD SPECIFICATION SECTION 105.
4. THE MINIMUM COVER FOR REINFORCING STEEL IN THE SUBSTRUCTURES SHALL BE THREE INCHES UNLESS DETAILED OTHERWISE.
5. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).  
  
REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:  
SPACING +/- 1"  
CLEARANCE +/- 1/4"
6. THE COFFERDAM LIMITS SHOWN IN PLAN REPRESENT THE MAXIMUM COFFERDAM SIZE PERMISSIBLE TO SATISFY PERMITTING AND ENVIRONMENTAL REQUIREMENTS. ACTUAL COFFERDAM LIMITS TO BE DETERMINED BY THE CONTRACTOR.
7. TWO-WAY TRAFFIC WILL BE MAINTAINED ON THE EXISTING STRUCTURE, ALTHOUGH DURING THE DAILY CONSTRUCTION PERIOD, THE CONTRACTOR MAY USE ALTERNATING ONE-WAY TRAFFIC WITH FLAGGERS.
8. UTILITY RELOCATIONS ARE NOT ANTICIPATED AS PART OF THIS PROJECT; HOWEVER, THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF BENNINGTON PRIOR TO EXCAVATION AT THE PIERS TO ENSURE THE INTEGRITY OF THE 16" DUCTILE IRON WATER MAIN ATTACHED TO THE EXISTING BRIDGE IS PRESERVED AND PROTECTED DURING CONSTRUCTION. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. THE CONTRACTOR SHALL CONDUCT WORK IN A MANNER AS TO PREVENT, OR REDUCE TO A MINIMUM, POLLUTION ON VERMONT ROUTE 9 BY DEBRIS OR SEDIMENT; OR FROM THE MANIPULATION OF EQUIPMENT AND/OR MATERIALS. THE CONTRACTOR SHALL KEEP VERMONT ROUTE 9 PAVEMENT AND SHOULDER CLEAN AT ALL TIMES AS DIRECTED BY THE ENGINEER. PAYMENT UNDER ITEM 608.31 POWER BROOM RENTAL, TYPE II.

**CONCRETE NOTES:**

10. ALL PORTIONS OF THE SUBSTRUCTURES INCLUDING THE PROPOSED PILE CAPS AND NOSING ON UPSTREAM FACE SHALL BE "CONCRETE, HIGH PERFORMANCE - CLASS B".
11. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1"
12. THE VERTICAL FACES OF THE EXISTING PIER COLUMNS, VERTICAL FACES OF THE EXISTING PIER WEB WALL, AND TOPS OF EXISTING FOOTINGS WHERE FRESH CONCRETE IS PLACED AGAINST HARDENED CONCRETE SHALL BE INTENTIONALLY ROUGHENED OR THOROUGHLY SANDBLASTED TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING TO THE FRESH CONCRETE. THE ROUGHENED SURFACE SHALL HAVE AN AMPLITUDE OF APPROXIMATELY 1/4". AFTER ROUGHENING IS COMPLETED, ALL SURFACES SHALL BE AIR-BLOWN OR VACUUM-CLEANED.  
  
IMMEDIATELY PRIOR TO PLACING THE NEW CONCRETE, EPOXY BONDING COMPOUND WHICH CONFORMS TO THE REQUIREMENTS OF SUBSECTION 719.02 SHALL BE APPLIED TO THE PREPARED SURFACES BY MEANS OF STIFF BRUSHES OR OTHER MEANS ACCEPTABLE TO THE ENGINEER. THE COST OF SURFACE TREATMENT, INCLUDING EPOXY BONDING COMPOUND, WILL NOT BE PAID FOR SEPARATELY BUT WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR ITEM 501.34 CONCRETE, HIGH PERFORMANCE CLASS B.
13. THE COST OF ANY LABOR, EQUIPMENT, OR MATERIAL REQUIRED FOR LOCATING THE EXISTING PIER REINFORCEMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 501.34 CONCRETE, HIGH PERFORMANCE CLASS B.
14. ALL PERMANENTLY EXPOSED CONCRETE SURFACES AT PIER 1 AND PIER 2 SHALL BE TREATED WITH WATER REPELLENT, SILANE IN ACCORDANCE WITH SECTION 514. THE TREATED SURFACES SHALL INCLUDE THE TOPS AND SIDES OF NEW PILE CAP CONSTRUCTION, PIER NOSINGS, EXISTING COLUMNS, EXISTING WEB WALLS, AND TOPS AND SIDES OF EXISTING PIER CAPS. PRIOR TO APPLICATION OF THE SILANE WATER REPELLENT, ALL EXPOSED CONCRETE AT PIER 1 AND PIER 2 WHICH WAS CONSTRUCTED PRIOR TO THIS PROJECT SHALL BE PREPARED IN ACCORDANCE WITH SUBSECTION 514.04.

**FOUNDATION NOTES:**

15. MICROPILES, INCLUDING PILE TO FOOTING CONNECTIONS, STEEL CASING AND JOINTS, CENTRAL REINFORCING BARS, MECHANICAL SPLICES, UNCASSED PILE LENGTHS, AND GROUT SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT TO HAVE BOTH SUFFICIENT STRUCTURAL RESISTANCE AND GEOTECHNICAL RESISTANCE FOR THE FOLLOWING FACTORED AXIAL LOADS AND CONCURRENT MOMENTS WITH THE CORRESPONDING UNBRACED LENGTHS:

LIMIT STATE	COMBINED AXIAL COMPRESSION AND FLEXURE (PER PILE)		COMBINED AXIAL TENSION AND FLEXURE (PER PILE)		UNBRACED LENGTH (FT)
	FACTORED AXIAL COMPRESSIVE LOAD (KIP)	FACTORED RESULTANT FLEXURAL MOMENT (KIP-FT)	FACTORED AXIAL TENSILE LOAD (KIP)	FACTORED RESULTANT FLEXURAL MOMENT (KIP-FT)	
STRENGTH	130.0	14.3	-	-	25.75
STRENGTH	-	-	12.0	10.5	25.75
EXTREME	187.0	23.6	-	-	25.75
EXTREME	-	-	109.0	28.6	25.75
SERVICE	114.4	8.8	-	-	25.75
SERVICE	-	-	0	0	25.75

AXIAL LOADS AND MOMENTS SHALL BE APPLIED CONCURRENTLY. LOAD COMBINATIONS ARE APPLICABLE FOR BOTH PIER 1 AND PIER 2 MICROPILES. SEE SPECIAL PROVISION (MICROPILE) FOR ADDITIONAL REQUIREMENTS.

16. THE MICROPILE CASING OUTSIDE DIAMETER SHALL NOT BE LESS THAN 9 5/8". SEE SPECIAL PROVISION (MICROPILE) FOR SACRIFICIAL THICKNESS AND OTHER CASING DESIGN REQUIREMENTS.
17. A TOTAL OF TWO TENSILE VERIFICATION LOAD TESTS SHALL BE PERFORMED. ONE PLUMB TEST PILE SHALL BE INSTALLED AT A LOCATION THAT IS NOT WITHIN THE PROPOSED PIER 1 PILE CAP LIMITS AND NOT MORE THAN 10 FT FROM THE NORTH END OF THE PIER 1 PILE CAP. A SECOND PLUMB TEST PILE SHALL BE INSTALLED AT A LOCATION THAT IS NOT WITHIN THE PROPOSED PIER 2 PILE CAP LIMITS AND NOT MORE THAN 10 FT FROM THE SOUTH END OF THE PIER 2 PILE CAP. THE LOCATION OF THE TEST PILES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
18. THE DESIGN TEST LOAD (DTL) FOR BOTH VERIFICATION LOAD TESTS SHALL BE 187.0 KIPS IN TENSION. PAYMENT WILL BE MADE UNDER ITEM 900.620 SPECIAL PROVISION (MICROPILE VERIFICATION LOAD TEST).
19. ONCE VERIFICATION LOAD TESTING IS COMPLETED AND ACCEPTED, TEST PILES SHALL BE REMOVED TO AN ELEVATION THAT IS A MINIMUM OF TWO FEET BELOW FINISHED GRADE.
20. A KNOWN OBSTRUCTION CONSISTING OF AN APPROXIMATELY 3.5 FT THICK TREMIE CONCRETE POUR IS LOCATED ADJACENT TO THE SOUTHEASTERLY CORNER OF PIER 2. AS INDICATED IN THE FOUNDATION PLANS. THE LIMITS OF THE TREMIE CONCRETE ARE UNKNOWN, BUT BASED ON PHOTOGRAPHIC DOCUMENTATION, IT IS ESTIMATED THAT APPROXIMATELY SEVEN PROPOSED MICROPILES WILL PENETRATE THE OBSTRUCTION. THE COST OF CORING, DRILLING, OR OTHER MEANS OF ADVANCING THE MICROPILES THROUGH THE TREMIE CONCRETE SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR ITEM 900.620 SPECIAL PROVISION (MICROPILE).

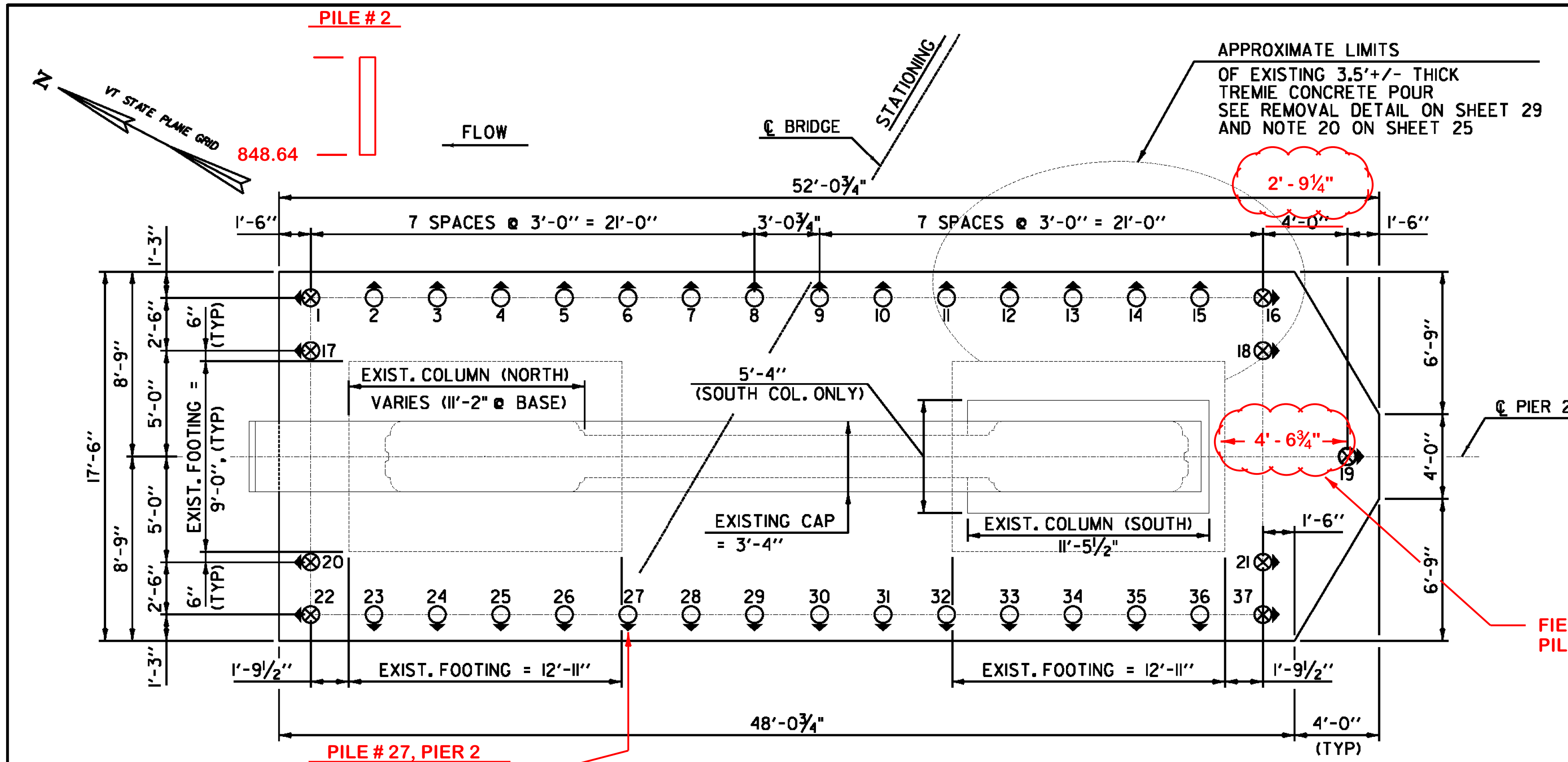
PER RESPONSE TO RFI #1 DATED 3-15-2013

$$\frac{\text{STRENGTH LIMIT STATE}}{\text{GEOTECHNICAL RESISTANCE}} = \frac{130 \text{ K}}{0.55} = -236.4$$

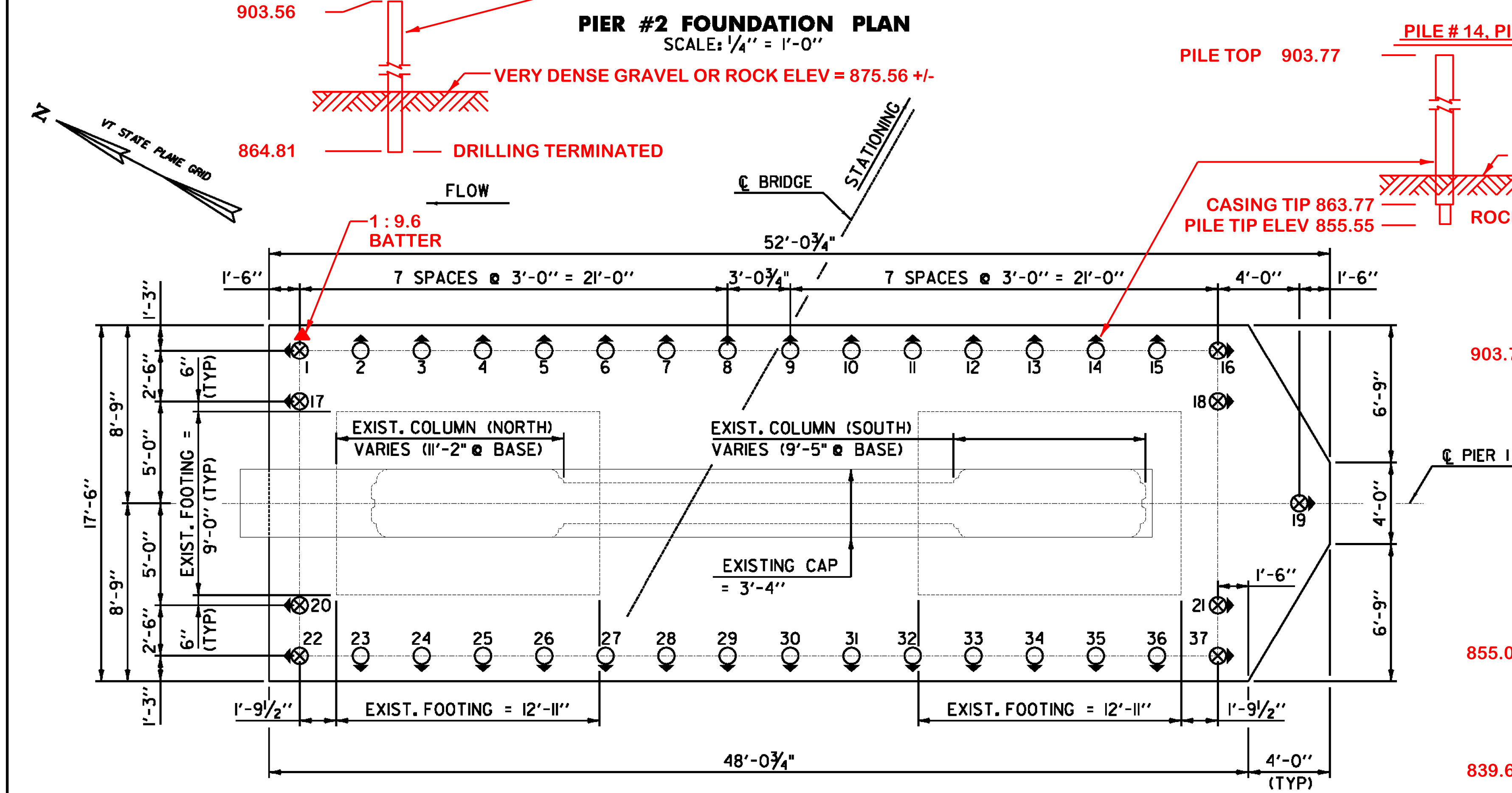
ACTUAL DTL = 94.6 KIPS  
VERIFICATION TEST LOAD = 2.5 (94.6 KIPS) = 236.5 KIPS



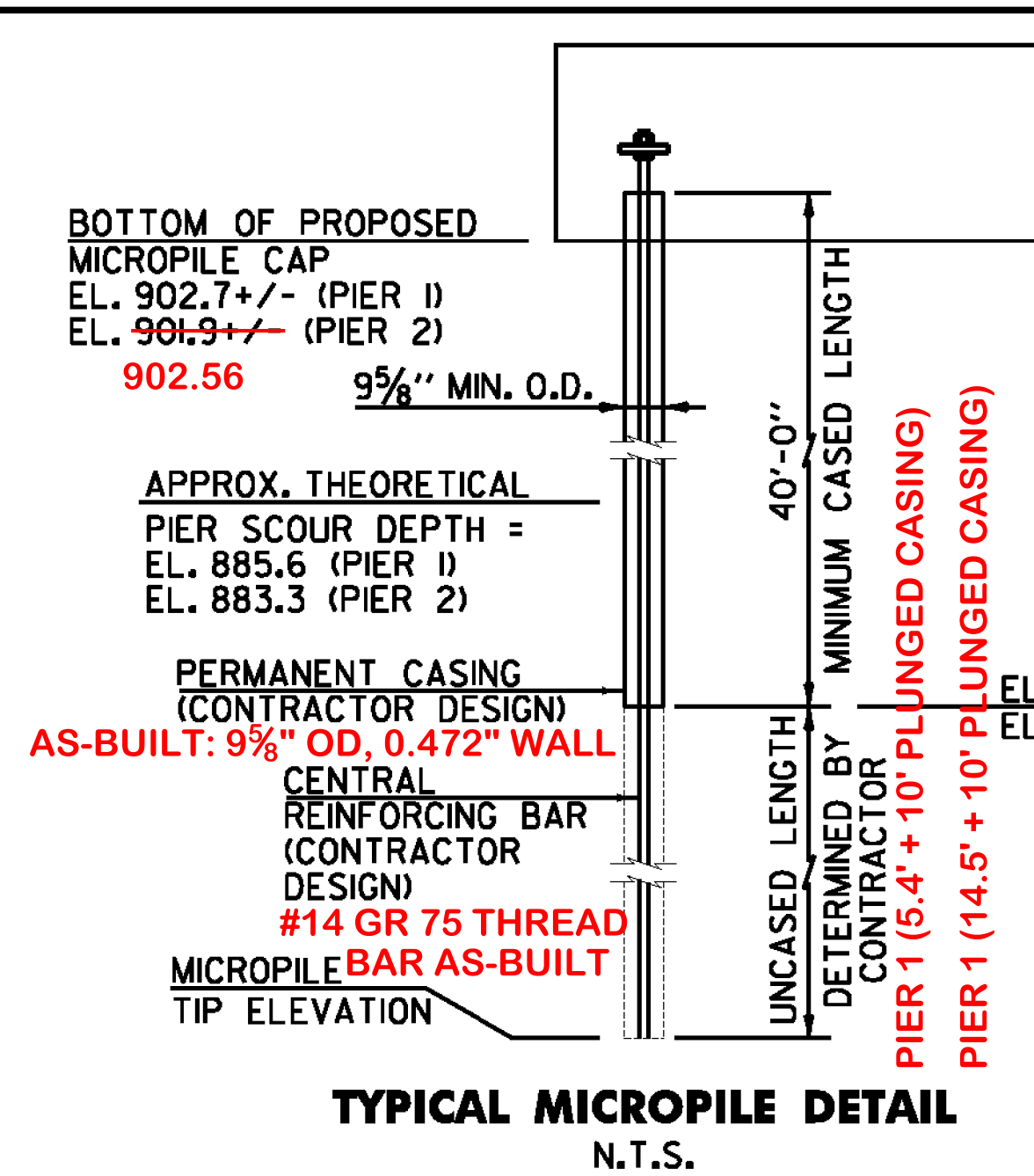
<b>PROJECT NOTES SHEET</b>	PROJECT NAME: BENNINGTON	
	PROJECT NUMBER: ER BHF 010-I(45)	
	FILE NAME: z11b326_gn.dgn	PLOT DATE: 8/21/2012
	PROJECT LEADER: D.E.G. DESIGNED BY: K.J.K. DWG. NO.: z11b326gn.1	DRAWN BY: M.E.D. CHECKED BY: A.M.P. SHEET 25 OF 40



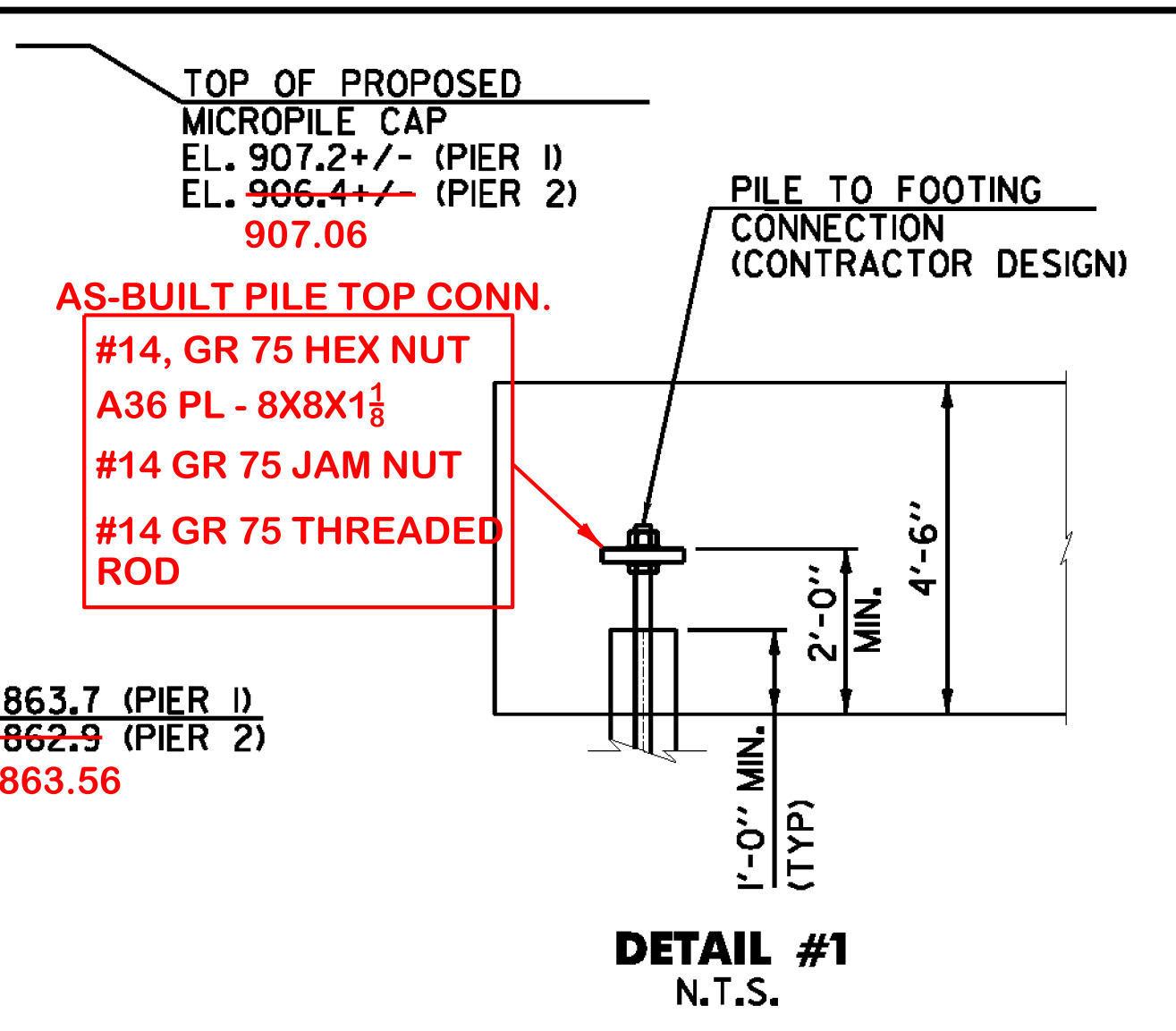
**PIER #2 FOUNDATION PLAN**  
SCALE: 1/4" = 1'-0"



**PIER #1 FOUNDATION PLAN**  
SCALE: 1/4" = 1'-0"



**TYPICAL MICROPILE DETAIL**  
N.T.S.



**DETAIL #1**  
N.T.S.

AS-BUILT MICROPILE DATA					
PIER 1			PIER 2		
PILE NO.	TIP ELEV.	CASED LENGTH (FT)	PILE NO.	TIP ELEV.	CASED LENGTH (FT)
1	854.37	38.75	1	849.33	40.00
2	854.82	40.00	2	849.33	40.00
3	855.00	40.00	3	848.80	40.00
4	855.61	40.00	4	848.78	40.00
5	855.21	40.00	5	848.56	40.00
6	855.00	40.00	6	848.60	40.00
7	855.65	40.00	7	848.24	40.00
8	854.95	40.00	8	848.60	40.00
9	855.23	40.00	9	848.32	40.00
10	855.61	40.00	10	848.31	40.00
11	855.22	40.00	11	849.06	40.00
12	855.10	40.00	12	848.71	40.00
13	856.17	40.00	13	848.53	40.00
14	855.55	40.00	14	848.57	40.00
15	855.29	40.00	15	848.43	40.00
16	839.66	48.66	16	848.98	40.00
17	855.61	40.00	17	849.06	38.75
18	857.14	40.00	18	848.25	40.00
19	855.02	40.00	19	849.06	38.75
20	855.37	40.00	20	848.34	40.00
21	855.26	40.00	21	848.74	40.00
22	857.54	40.00	22	849.75	40.00
23	854.48	40.00	23	848.41	40.00
24	855.70	40.00	24	848.84	40.00
25	854.60	40.00	25	848.31	40.00
26	854.43	40.00	26	848.54	40.00
27	855.39	40.00	27	864.81	40.00
28	855.47	40.00	28	848.33	40.00
29	855.35	40.00	29	848.13	40.00
30	855.33	40.00	30	848.29	40.00
31	854.33	40.00	31	848.56	40.00
32	839.67	48.00	32	848.22	40.00
33	855.60	40.00	33	848.50	40.00
34	855.43	40.00	34	848.56	40.00
35	854.83	40.00	35	848.16	40.00
36	855.72	40.00	36	848.17	40.00
37	855.11	40.00	37	848.97	40.00

AS-BUILT MICROPILE DATA TABLE IS TO BE FILLED IN BY THE MICROPILE CONTRACTOR AND SUBMITTED TO THE ENGINEER AS A PERMANENT RECORD OF THE BRIDGE CONSTRUCTION.

- LEGEND**
- ITEM 900.620 SPECIAL PROVISION (MICROPILE) INSTALLED ON A 1:6 BATTER
  - ⊗ ITEM 900.620 SPECIAL PROVISION (MICROPILE) INSTALLED ON A 1:4 BATTER

**NOTE:**

1. EXISTING COLUMN AND FOOTING DIMENSIONS ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATING STEEL REINFORCING.

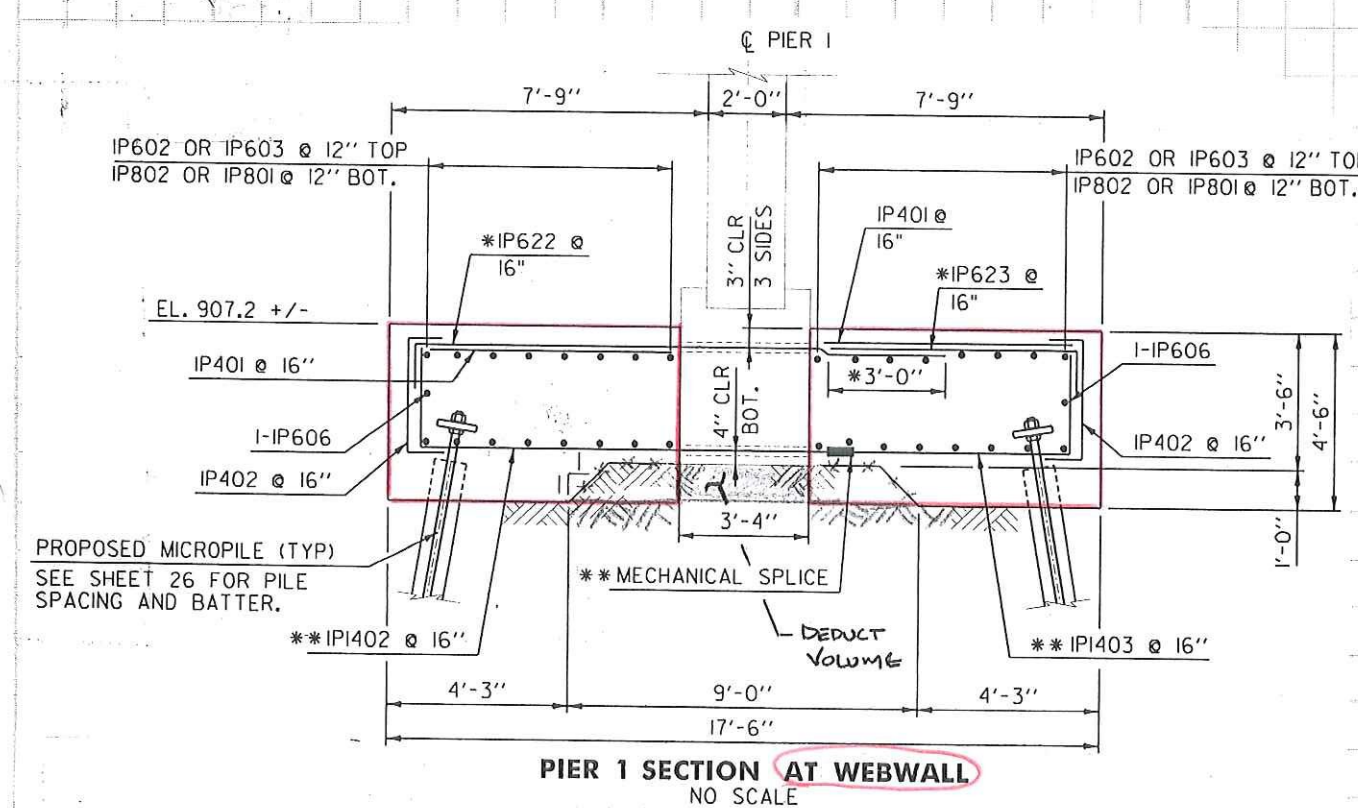


<b>RETROFIT FOUNDATION PLAN</b>	PROJECT NAME: BENNINGTON	PLOT DATE: 8/21/2012
	PROJECT NUMBER: ER BHF 010-I(45)	DRAWN BY: M.E.D.
	FILE NAME: zllb326_foundation.dgn	CHECKED BY: A.M.P.
	DWG. NO.: zllb326foundation.i	SHEET 26 OF 40

FILE NAME = W:\Projects\BENNINGTON\23770\CADD\MSTN\_zllb326\_Foundation.dgn  
DATE/TIME = 8/21/2012 4:06

Project Bennington ER BHF 010-1(45) Calculation Sheet Number \_\_\_\_\_  
 Line Item # 521.34 Page Number \_\_\_\_\_ of \_\_\_\_\_  
 Item # 0170 Field Measured by \_\_\_\_\_  
 Item Description CONCRETE, HIGH PERFORMANCE CLASS B  
 Location BRIDGE 9, PIER #1 FOOTING Date \_\_\_\_\_

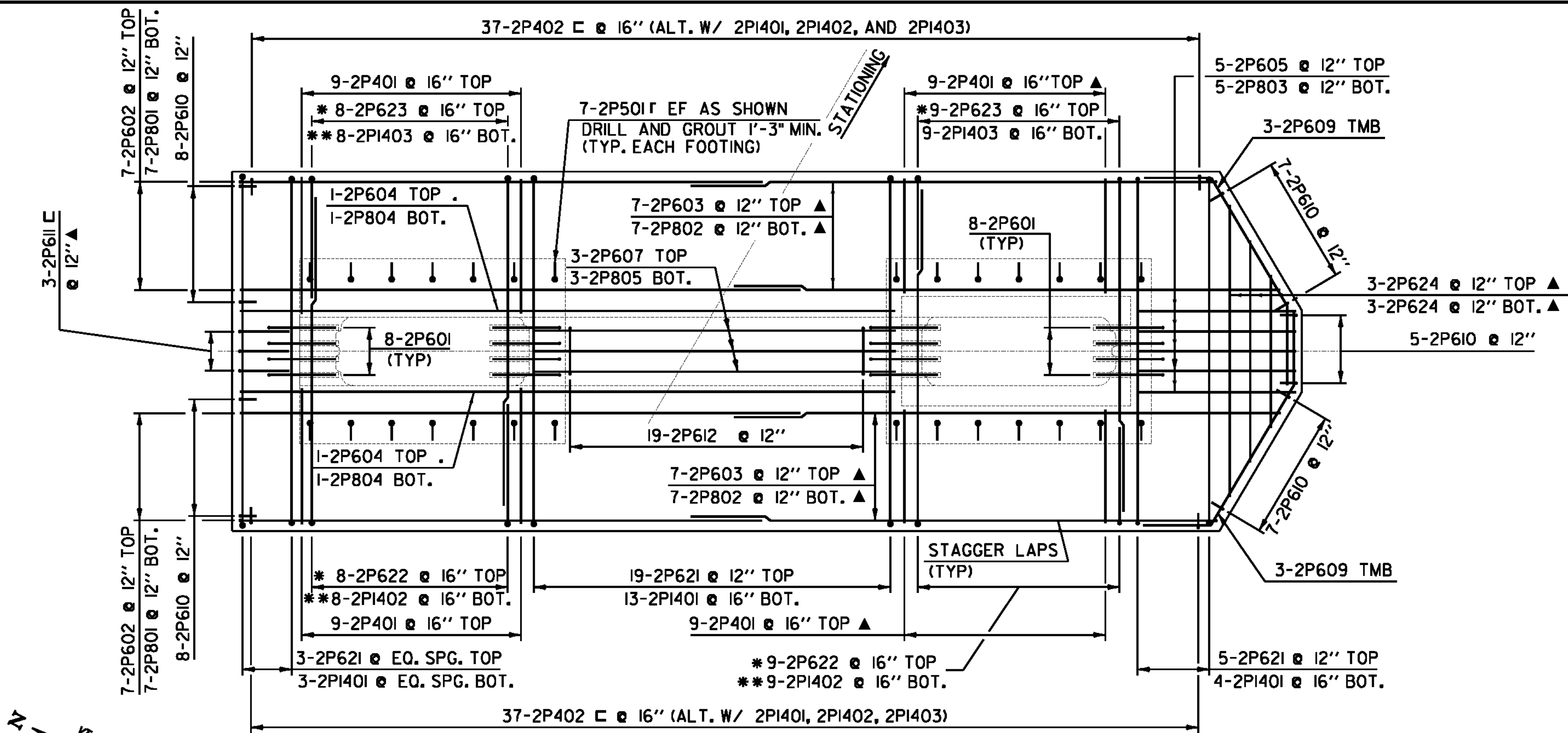
THE CONTRACTOR GRADED THE AREA BETWEEN THE EXISTING NORTH AND SOUTH FOOTINGS PER THE SKETCH BELOW. THE VOLUME UNDERNEATH THE WEB WAS NOT DEDUCTED IN THE COMPUTATION PREPARED ON 3-21-13 THEREFORE THE DEDUCTION MADE ON THIS SHEET.



LENGTH OF WEB BETWEEN THE EXISTING NORTH & SOUTH FOOTINGS = 15.65'  
 VOLUME TO BE DEDUCTED =  $3.33' (15.65') (1.0') / 27 = 1.93 \text{ cy.}$   
 REVISED TOTAL VOLUME =  $121.69 \text{ cy} - 1.93 \text{ cy} = 119.76 \text{ cy.}$

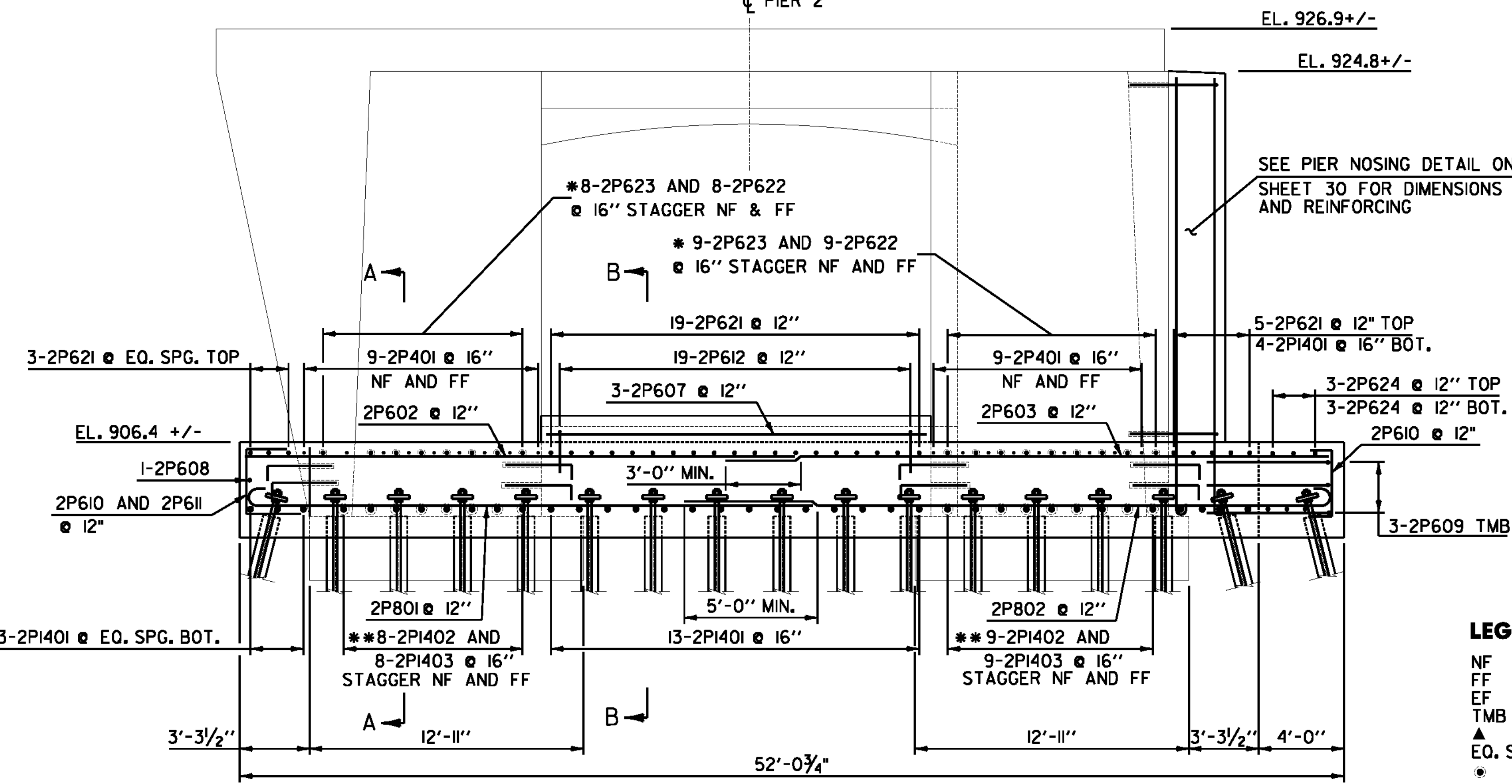
Pay 119.76 cy. FINAL





**PIER #2 FOOTING PLAN**  
SCALE: 1/4" = 1'-0"

NOTE: LAPS FOR 2P622 AND 2P623 BARS SHOWN IN PLAN. MECHANICAL BAR CONNECTORS FOR 2P1402 AND 2P1403 BARS NOT SHOWN FOR CLARITY.



**PIER #2 ELEVATION**  
SCALE: 1/4" = 1'-0"

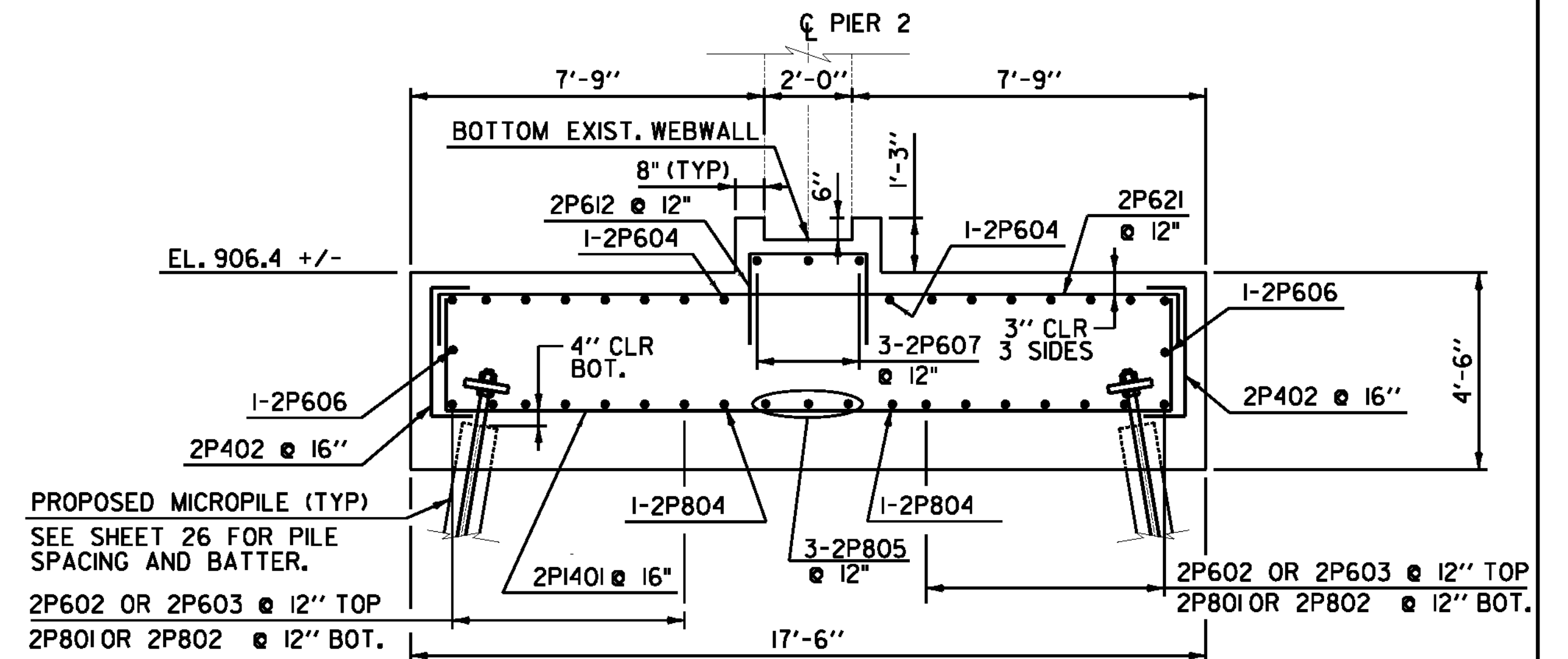
NOTE: 2P501, 2P605, 2P803, AND 2P805 BARS NOT SHOWN FOR CLARITY.

**LEGEND**

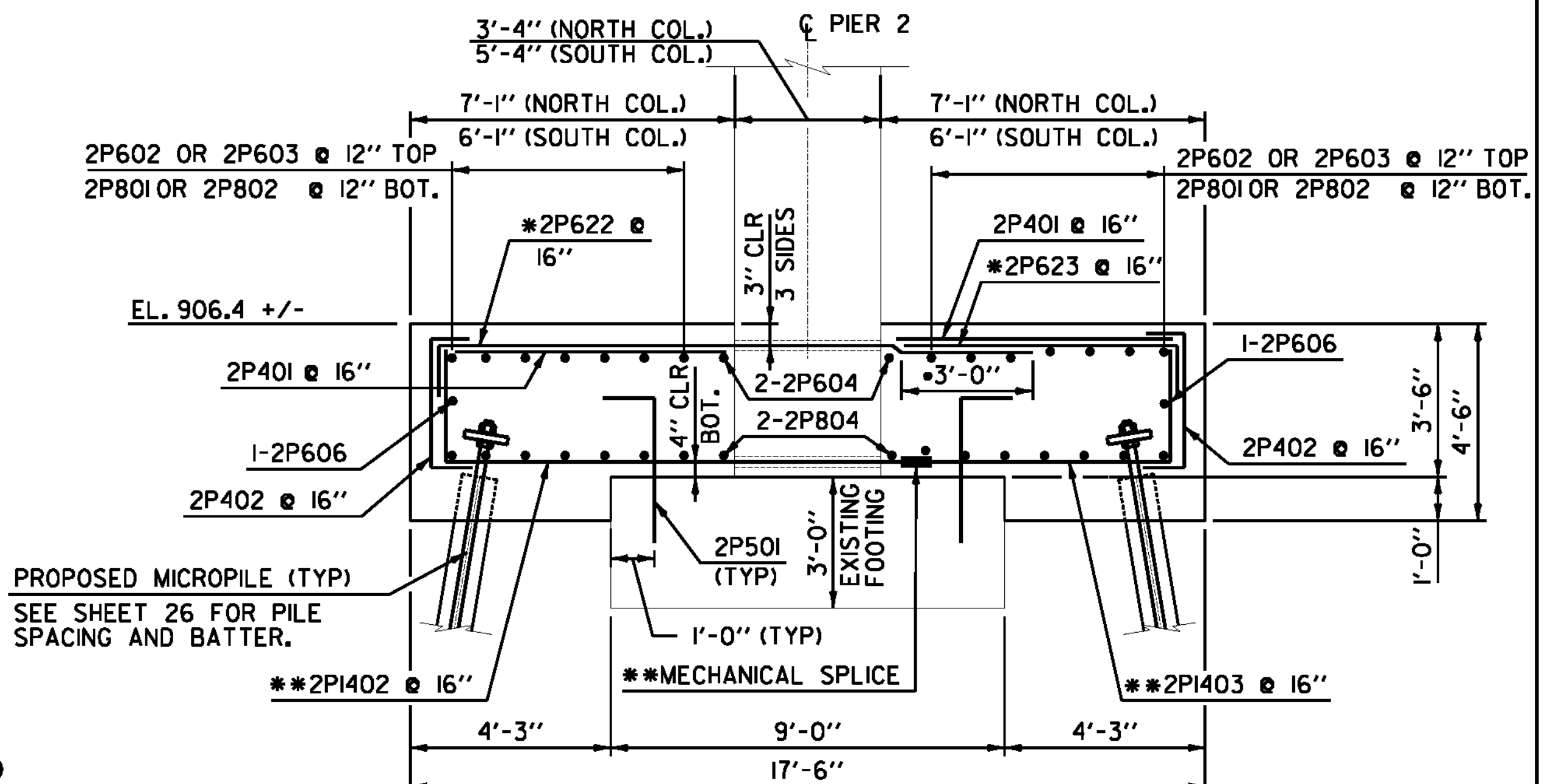
- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- TMB = TOP, MIDDLE, BOTTOM
- CUT TO FIT IN FIELD
- EQ. SPG. = EQUAL SPACING
- = CORED REINFORCING BAR

**NOTES:**

1. \* LAP 2P622 BARS WITH 2P623 BARS. STAGGER LAPS ON EACH SIDE OF THE PIER.  
CONTRACTOR'S OPTION - MECHANICAL BAR CONNECTORS MAY BE SUBSTITUTED FOR LAP SPLICES WITH NO ADDITIONAL PAYMENT.
2. \*\* BARS 2P1402 AND 2P1403 SHALL BE SPLICED USING MECHANICAL BAR CONNECTORS WHICH CONFORM TO THE REQUIREMENTS OF SUBSECTION 713.02. STAGGER THE MECHANICAL SPLICES ON EACH SIDE OF THE PIER.
3. ADJUST BAR SPACING FOR 2P621, 2P622, 2P623, 2P1401, 2P1402, AND 2P1403 SLIGHTLY TO AVOID CONFLICTS WITH THE EXISTING COLUMN REINFORCEMENT. MAXIMUM BAR SPACING IS 16". SEE SHEET 29 FOR ADDITIONAL SPACING DETAILS.
4. ALL ELEVATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATING STEEL REINFORCING.



**PIER SECTION B-B**  
SCALE: 3/8" = 1'-0"



**PIER SECTION A-A**  
SCALE: 3/8" = 1'-0"

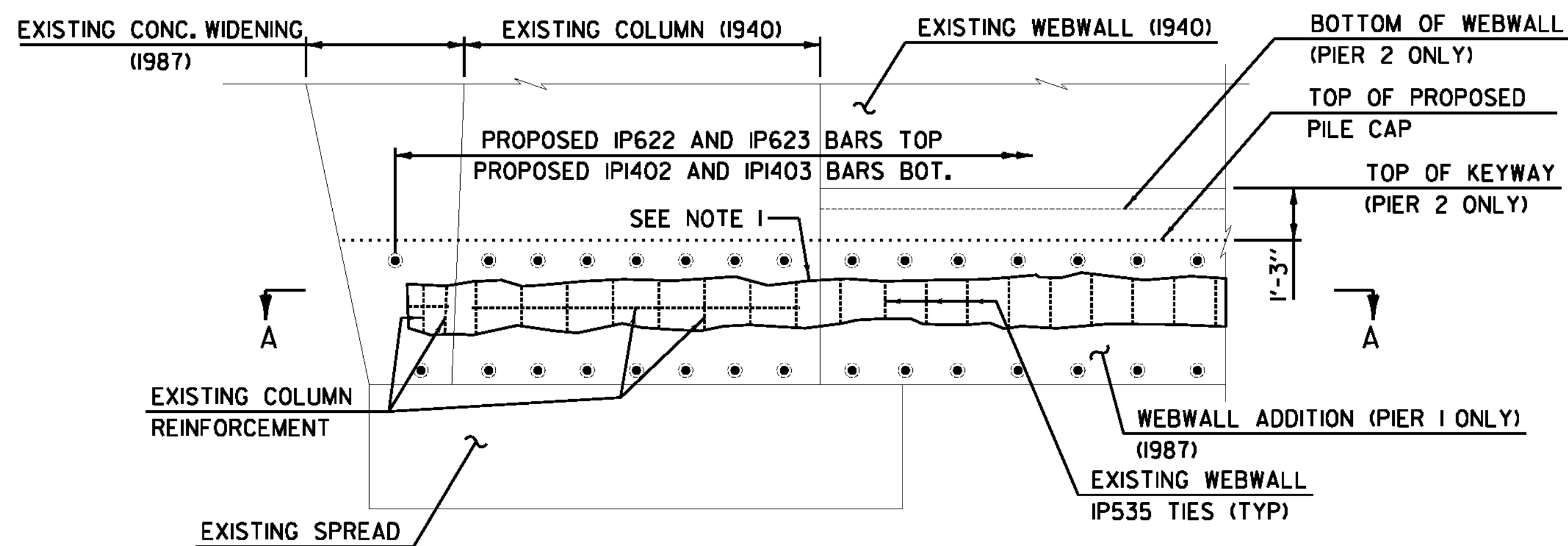
**PIER 2 RETROFIT DETAILS SHEET**

PROJECT NAME: BENNINGTON  
PROJECT NUMBER: ER BHF 010-1(45)

FILE NAME: z1lb326\_pier2.dgn  
PROJECT LEADER: D.E.G.  
DESIGNED BY: K.J.K.  
DWG. NO.: z1lb326pier2.1

PLOT DATE: 8/21/2012  
DRAWN BY: M.E.D.  
CHECKED BY: A.M.P.  
SHEET 28 OF 40

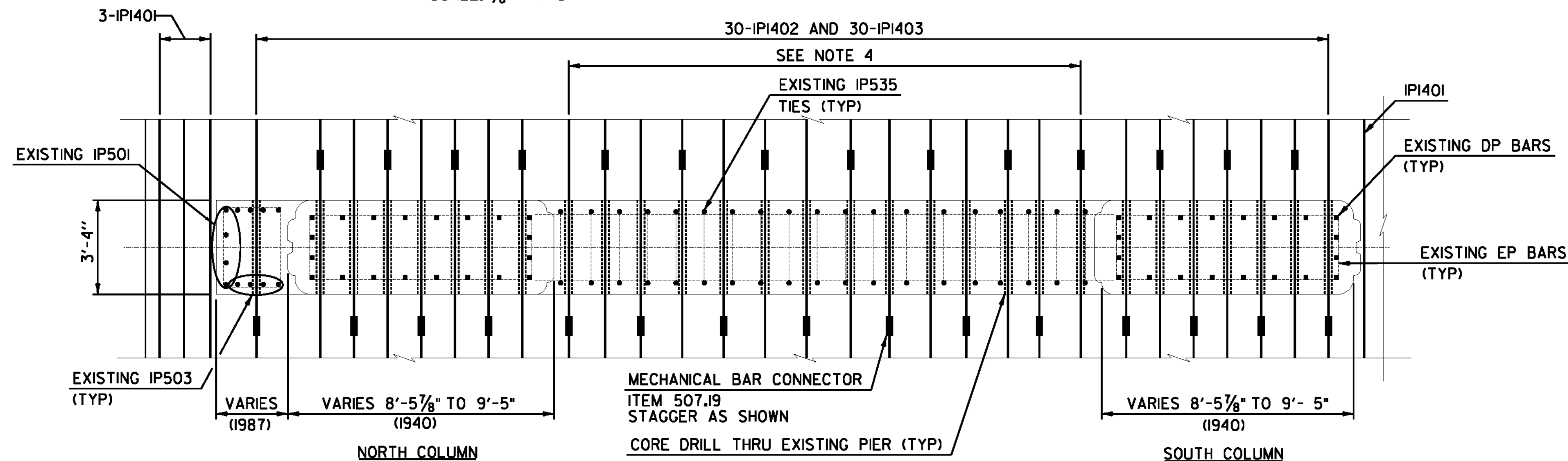




**COLUMN CORING ELEVATION  
 (PIER 1 SHOWN, PIER 2 SIMILAR)**  
 SCALE: 3/8" = 1'-0"

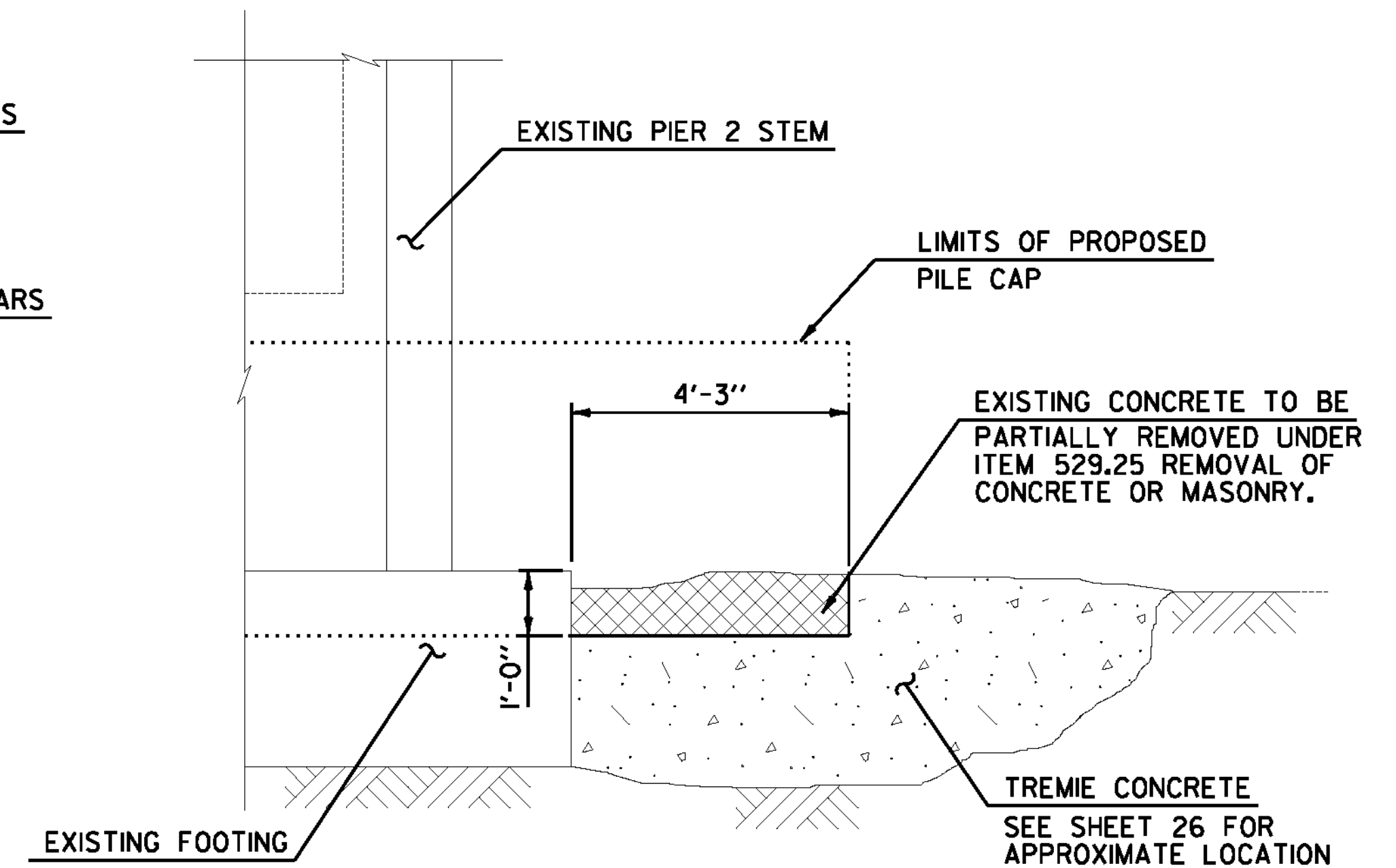
**NOTES:**

1. LOCATE THE EXISTING REINFORCING PRIOR TO ANY CORE DRILLING THROUGH THE EXISTING PIER CONCRETE FOR THE IP622, IP623, 2P622, 2P623, IP402, IP403, 2PI402, AND 2PI403 BARS. REMOVE AN AREA OR MULTIPLE AREAS OF CONCRETE DOWN TO THE EXISTING REINFORCING STEEL AS REQUIRED TO LOCATE THE EXISTING COLUMN BARS AND TIES AND THE EXISTING WEBWALL TIES. THE AREA OF CONCRETE REMOVAL SHALL BE LIMITED TO THE AREA WITHIN THE PROPOSED PILE CAP AS SHOWN. ONCE THE EXISTING REINFORCEMENT LOCATIONS HAVE BEEN IDENTIFIED, ADJUST THE SPACING OF THE CORED HOLES AS REQUIRED TO AVOID DAMAGING THE EXISTING REINFORCEMENT. THE MAXIMUM SPACING FOR THE CORED HOLES IS 16".
2. ALL LOCATIONS OF EXISTING REINFORCEMENT ARE APPROXIMATED BASED ON RECORD PLANS. CONTRACTOR SHALL VERIFY EXISTING REINFORCEMENT LOCATIONS AS SPECIFIED IN NOTE 1.
3. IF CONFLICTS BETWEEN PROPOSED CORE DRILLING AND EXISTING DP BARS AND F50I BARS ARE UNAVOIDABLE AT THE SOUTH COLUMN ON PIER 2, AVOIDANCE OF THE EXISTING DP BARS SHALL BE THE HIGHER PRIORITY. CORING WHICH PENETRATES EXISTING REINFORCEMENT SHALL BE APPROVED BY THE ENGINEER.
4. FOR EXISTING PIER 1 AND 2 DIMENSIONS AND REINFORCEMENT LOCATIONS, SEE THE RECORD PLANS ON SHEETS 39 AND 40 (1940 CONSTRUCTION) AND SHEETS 37 AND 38 (1987 WIDENING).
5. CONTRACTOR'S OPTION - IN LIEU OF CORING TO INSTALL THE IP402 AND IP403 BARS THROUGH THE PIER 1 WEBWALL, THE BOTTOM 6" OF CONCRETE MAY BE CAREFULLY REMOVED BY CHIPPING. IP40I BARS MAY BE SUBSTITUTED FOR THE IP402 AND IP403 BARS SHOWN AND MECHANICAL BAR CONNECTORS ELIMINATED IF THE CONCRETE REMOVAL OPTION IS SELECTED. NO ADDITIONAL PAYMENT WILL BE MADE FOR CONCRETE REMOVAL.

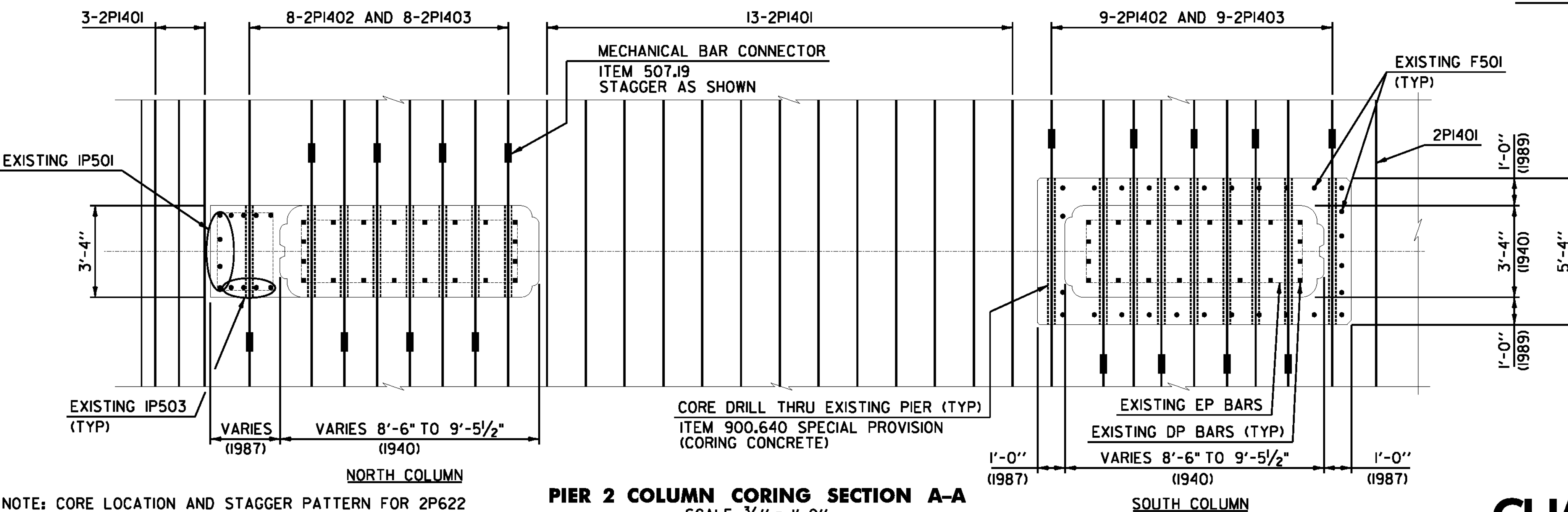


**PIER 1 COLUMN CORING SECTION A-A**  
 SCALE: 3/8" = 1'-0"

NOTE: CORE LOCATION AND STAGGER PATTERN FOR IP622 AND IP623 BARS SIMILAR TO THAT SHOWN FOR IP402 AND IP403 BARS.



**PIER 2 TREMIE CONCRETE REMOVAL DETAIL**  
 N.T.S.



**PIER 2 COLUMN CORING SECTION A-A**  
 SCALE: 3/8" = 1'-0"

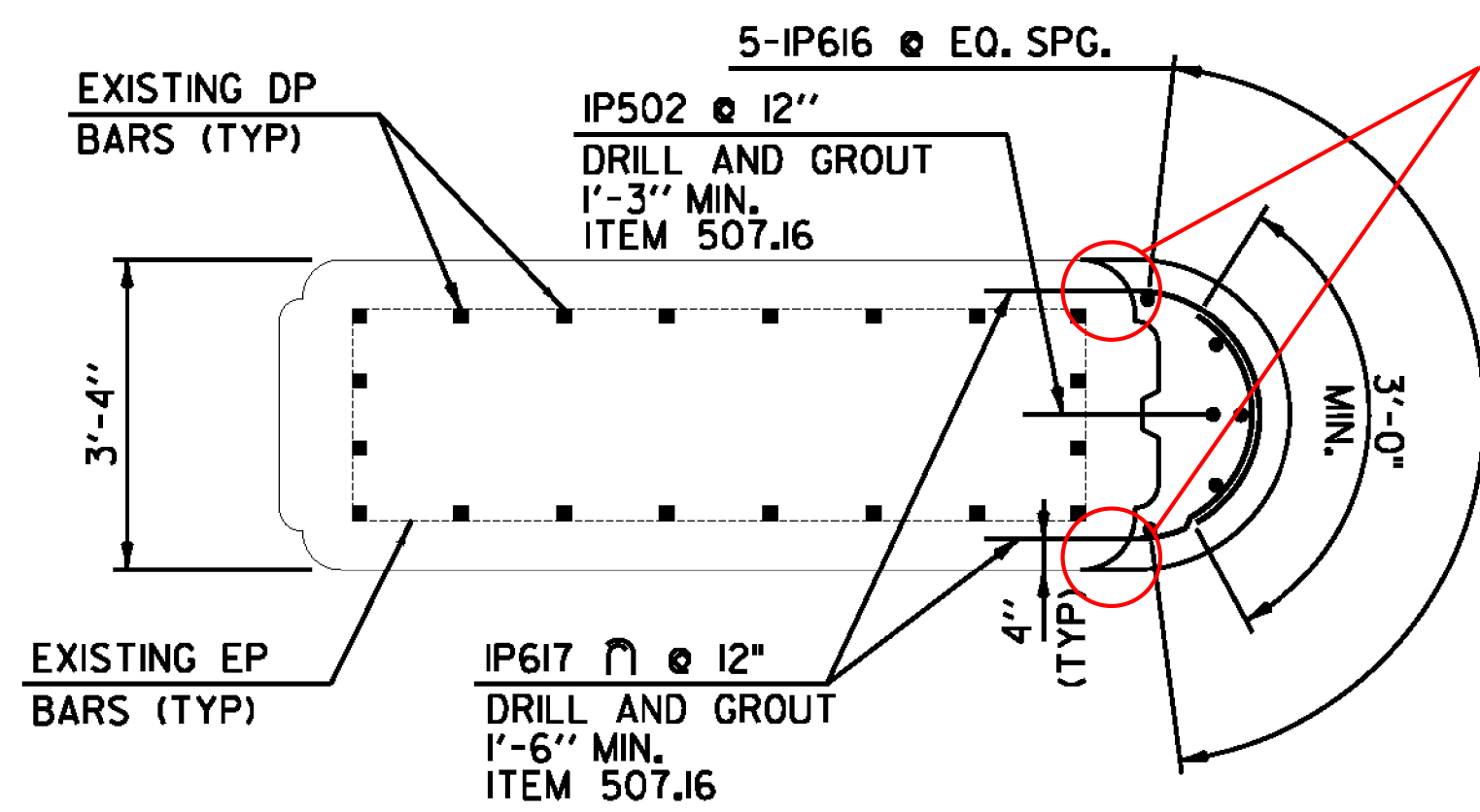
NOTE: CORE LOCATION AND STAGGER PATTERN FOR 2P622 AND 2P623 BARS SIMILAR TO THAT SHOWN FOR 2PI402 AND 2PI403 BARS.

**LEGEND**

- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- (1940) = INDICATES APPROXIMATE YEAR OF CONSTRUCTION
- = CORED REINFORCING BAR

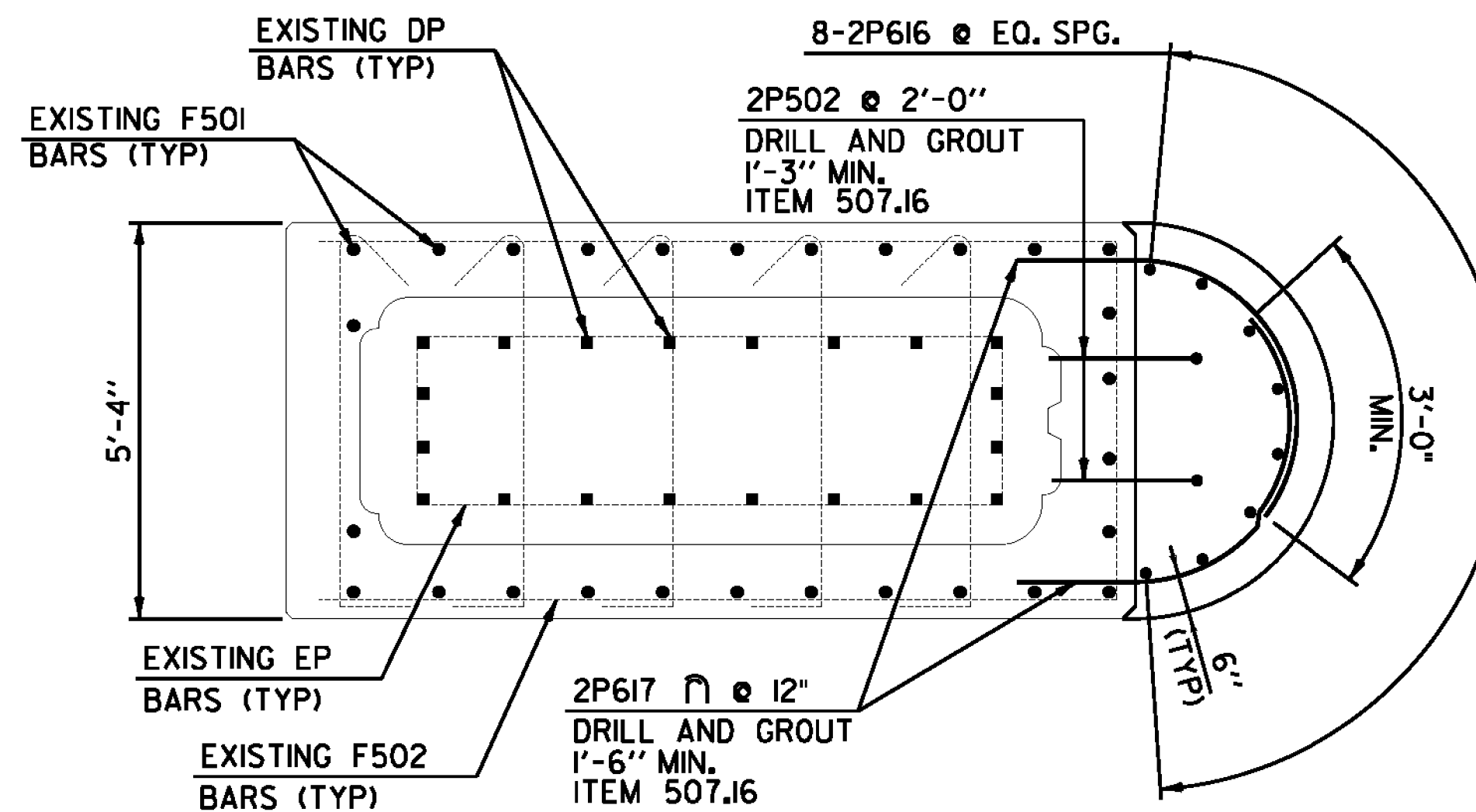
<b>CORING AND DETAILS SHEET</b>	PROJECT NAME: BENNINGTON	PROJECT NUMBER: ER BHF 010-1(45)
	FILE NAME: z1lb326_pier_detail_01.dgn	PLOT DATE: 8/21/2012
	PROJECT LEADER: D.E.G.	DRAWN BY: M.E.D.
	DESIGNED BY: K.J.K.	CHECKED BY: A.M.P.
	DWG. NO.: z1lb326pierdetail01	SHEET 29 OF 40



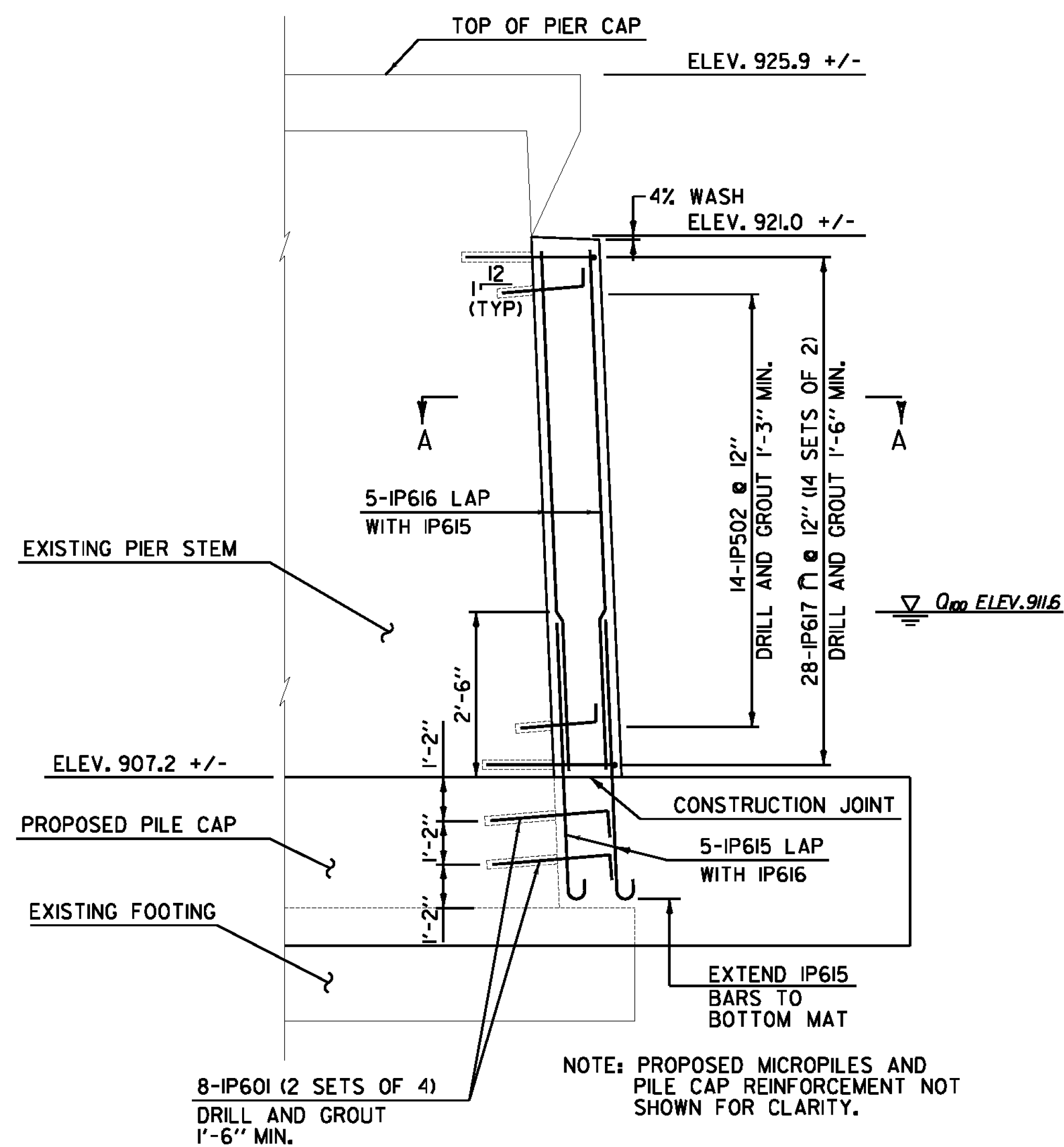


**PIER 1 SECTION A-A**  
SCALE: 1/2" = 1'-0"

CONSTRUCTION JOINT  
MODIFIED PER C.O. #2

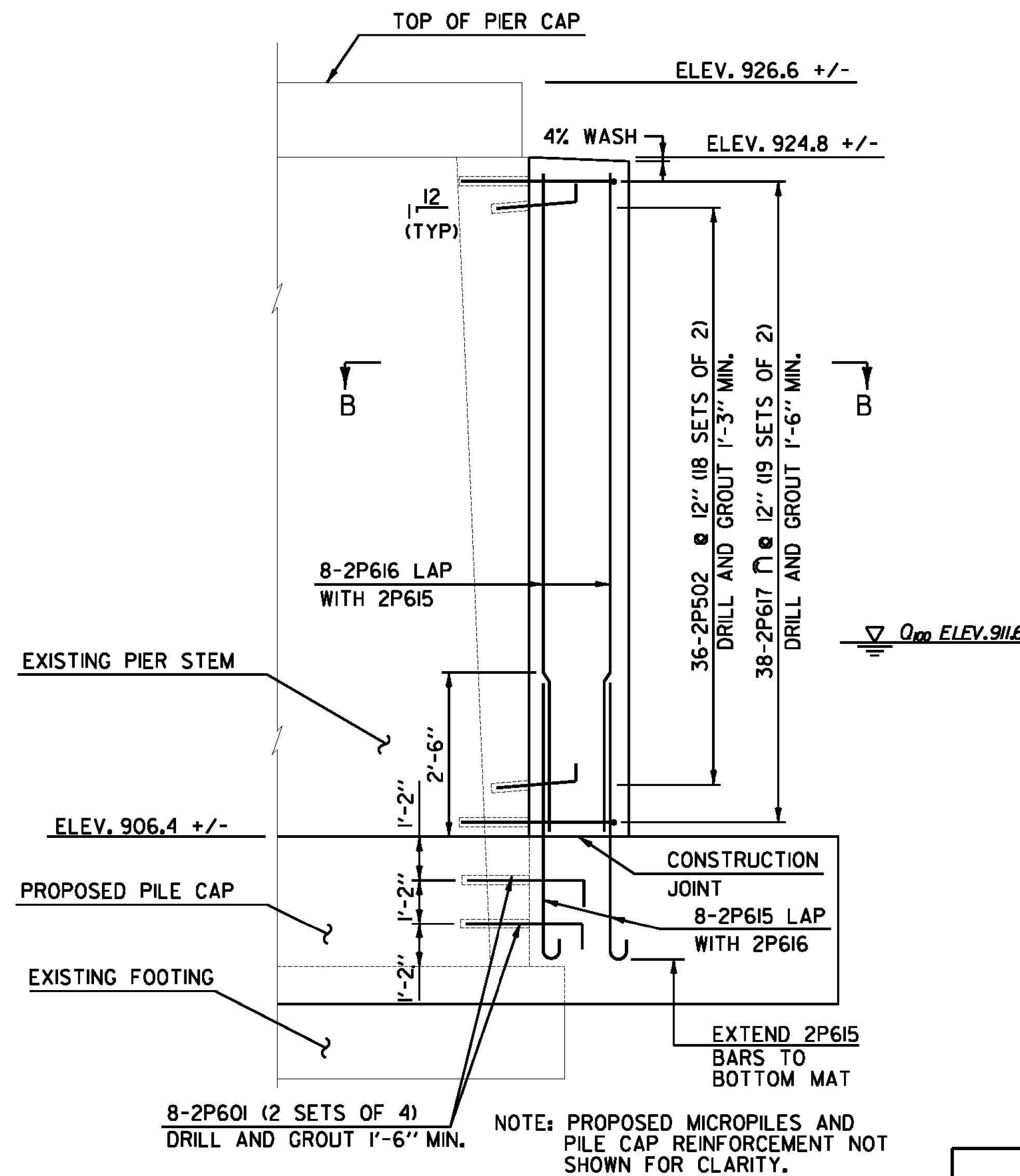


**PIER 2 SECTION B-B**  
SCALE: 1/2" = 1'-0"



**PIER 1 NOSING ELEVATION**  
SCALE: 3/8" = 1'-0"

NOTE: PROPOSED MICROPILES AND PILE CAP REINFORCEMENT NOT SHOWN FOR CLARITY.



**PIER 2 NOSING ELEVATION**  
SCALE: 3/8" = 1'-0"

NOTE: PROPOSED MICROPILES AND PILE CAP REINFORCEMENT NOT SHOWN FOR CLARITY.

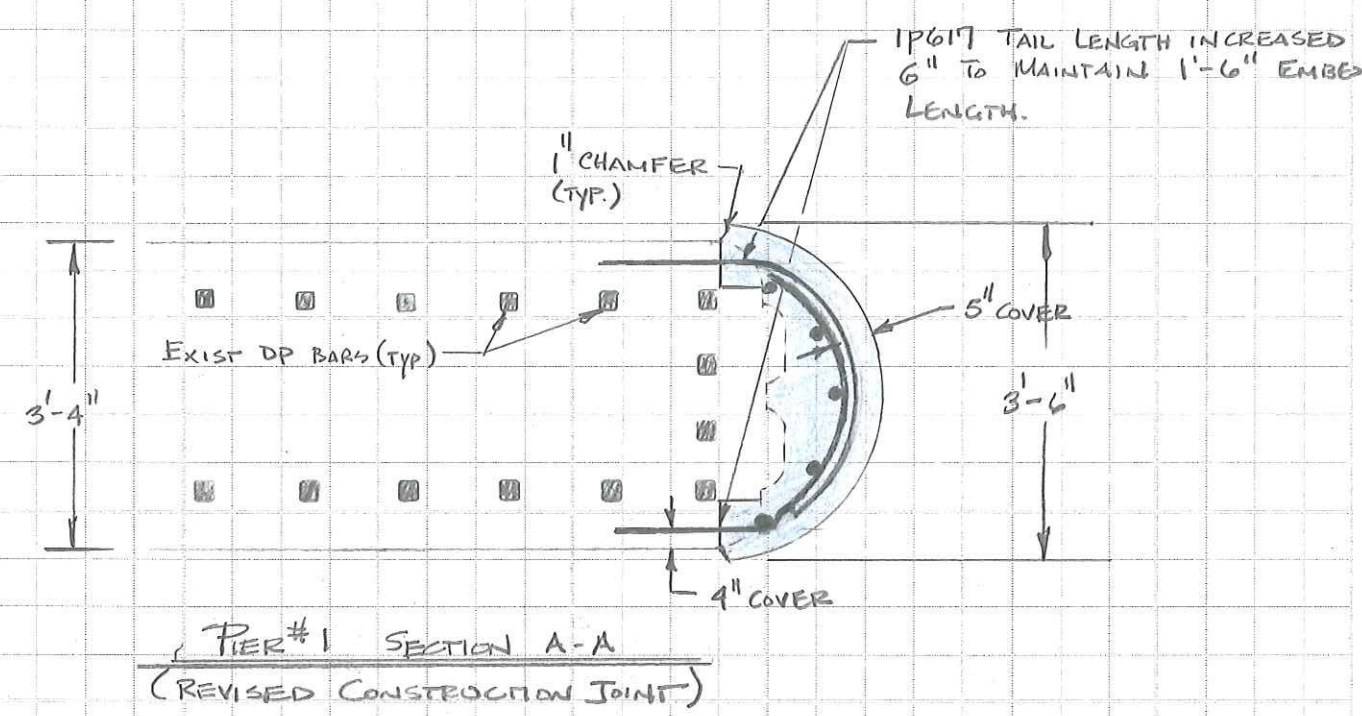
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DATE/TIME: 8/21/2012 4:46:46  
USER: jk



PIER NOSING DETAIL SHEET	
PROJECT NAME:	BENNINGTON
PROJECT NUMBER:	ER BHF 010-I(45)
FILE NAME:	z11b326_pier_detail_02.dgn
PROJECT LEADER:	D.E.G.
DESIGNED BY:	K.J.K.
DWG. NO.:	z11b326pierdetail02.i
PLOT DATE:	8/21/2012
DRAWN BY:	M.E.D.
CHECKED BY:	A.M.P.
SHEET 30 OF 40	

Project Bennington ER BHF 010-1(45) Calculation Sheet Number \_\_\_\_\_  
 Line Item # \_\_\_\_\_ Page Number \_\_\_\_\_ of \_\_\_\_\_  
 Item # \_\_\_\_\_ Field Measured by \_\_\_\_\_  
 Item Description \_\_\_\_\_  
 Location \_\_\_\_\_ Date \_\_\_\_\_

AS BUILT PIER #1 NOLING DETAIL

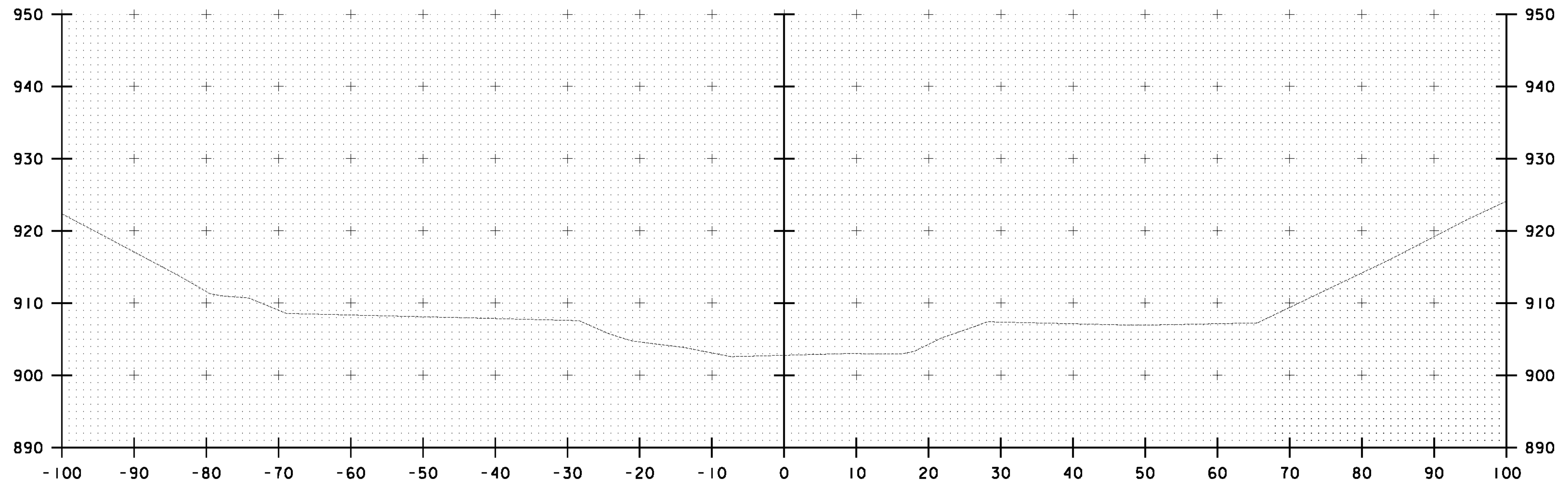


PIER #1 SECTION A-A  
(REVISED CONSTRUCTION JOINT)

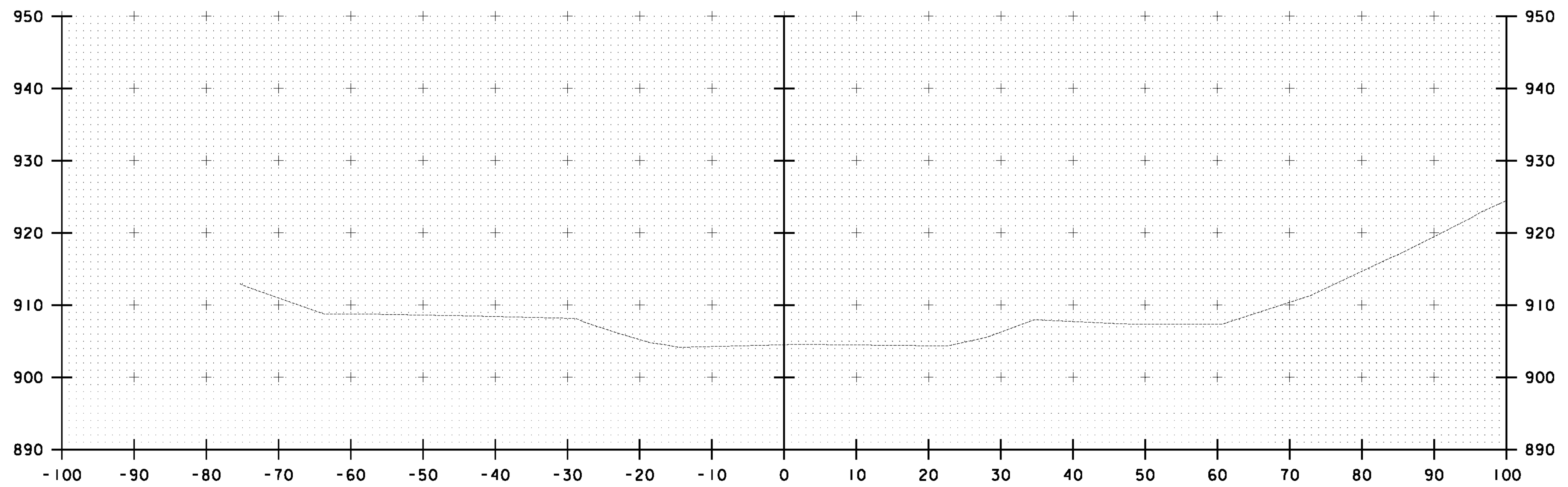
THE CONTRACTOR WAS ALLOWED TO USE A 42" DIA CAN TO FORM PIER #1  
 NOLING. PREVIOUS THE EDGE AT THE CONSTRUCTION JOINT IS CHAMFERED.  
 ADDITIONAL CONCRETE WAS REQUIRED AT THE CONSTRUCTION JOINT TO  
 ELIMINATE THE ACUTE ANGLE AS SHOWN IN THE ORIGINAL SECTION PER CO. #2.  
 THE BARS MARKED IPG11 WERE ADJUSTED TO ENSURE THE MIN EMBEDMENT  
 LENGTH OF 1'-6" WAS NOT COMPROMISED.

(RFD)

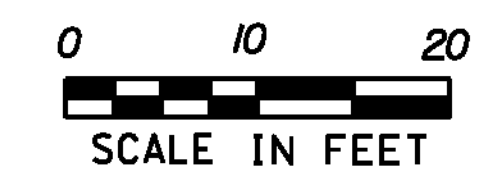




21+25.00



21+00.00

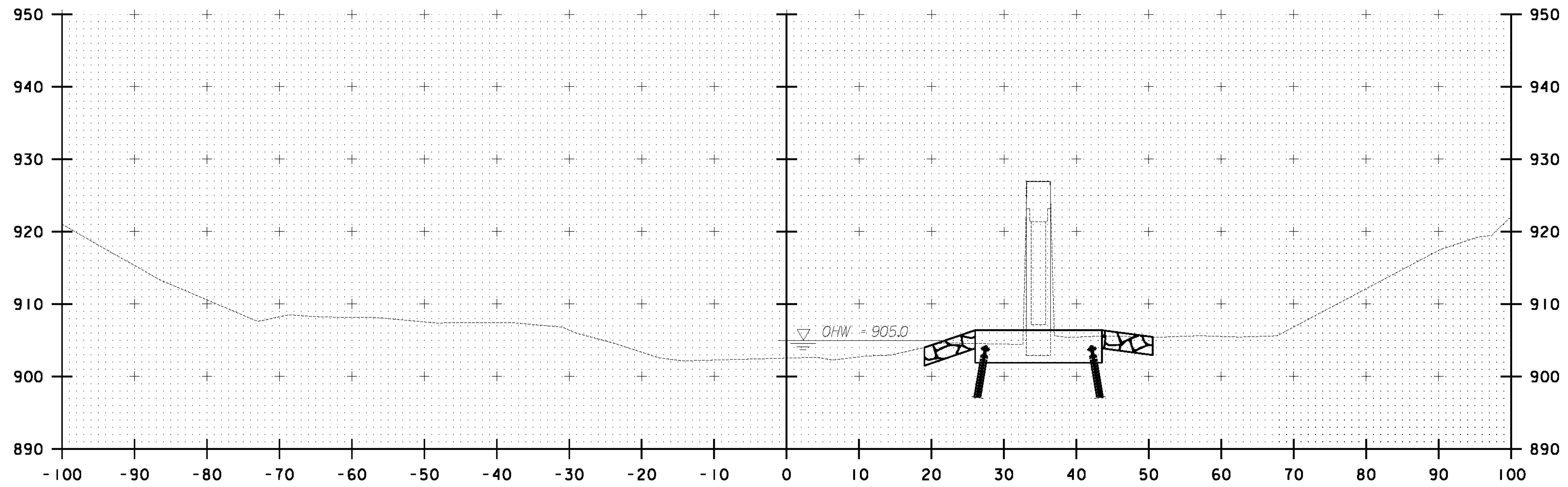


**CHANNEL  
CROSS  
SECTIONS  
SHEET #1**

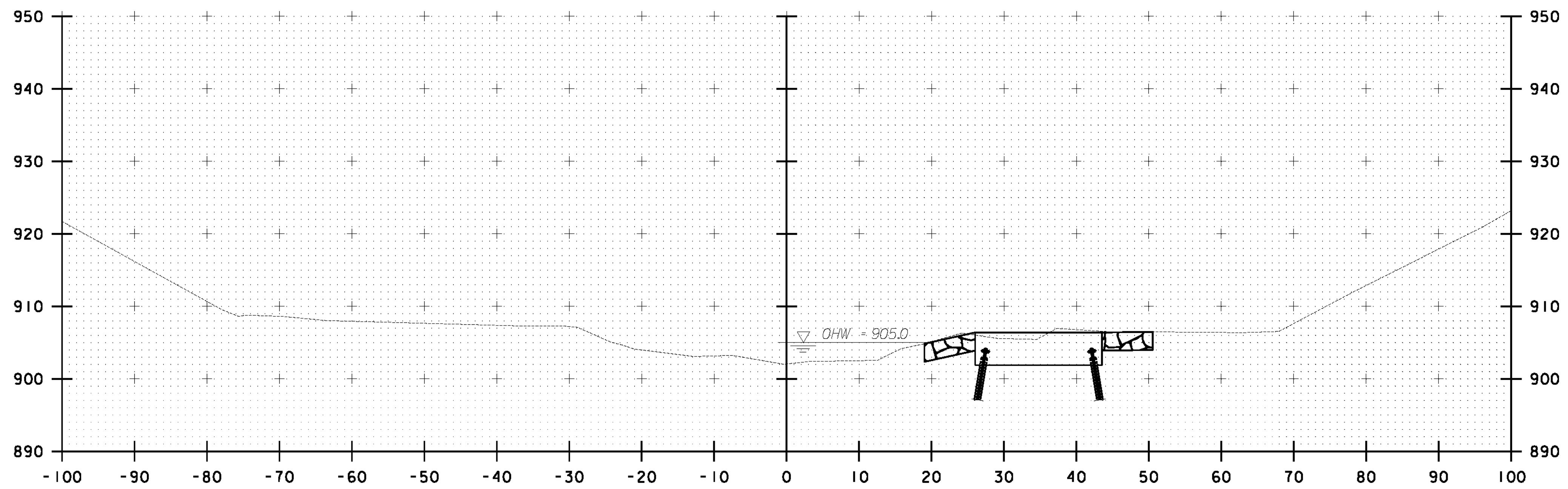
PROJECT NAME: BENNINGTON  
PROJECT NUMBER: ER BHF 010-I(45)

FILE NAME: z1b326\_xs\_channel.dgn  
PROJECT LEADER: D.E.G.  
DESIGNED BY: B.T.H.  
DWG. NO.: z1b326xs.1

PLOT DATE: 8/21/2012  
DRAWN BY: W.E.P.  
CHECKED BY: D.E.G.  
SHEET 32 OF 40

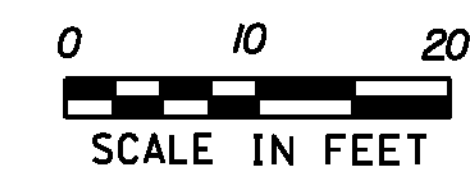


21+75.00



21+50.00

STA 21+45.00 RT  
 BEGIN RIPRAP, HEAVY TYPE  
 BEGIN STRUCTURE EXCAVATION  
 BEGIN GEOTEXTILE UNDER STONE FILL



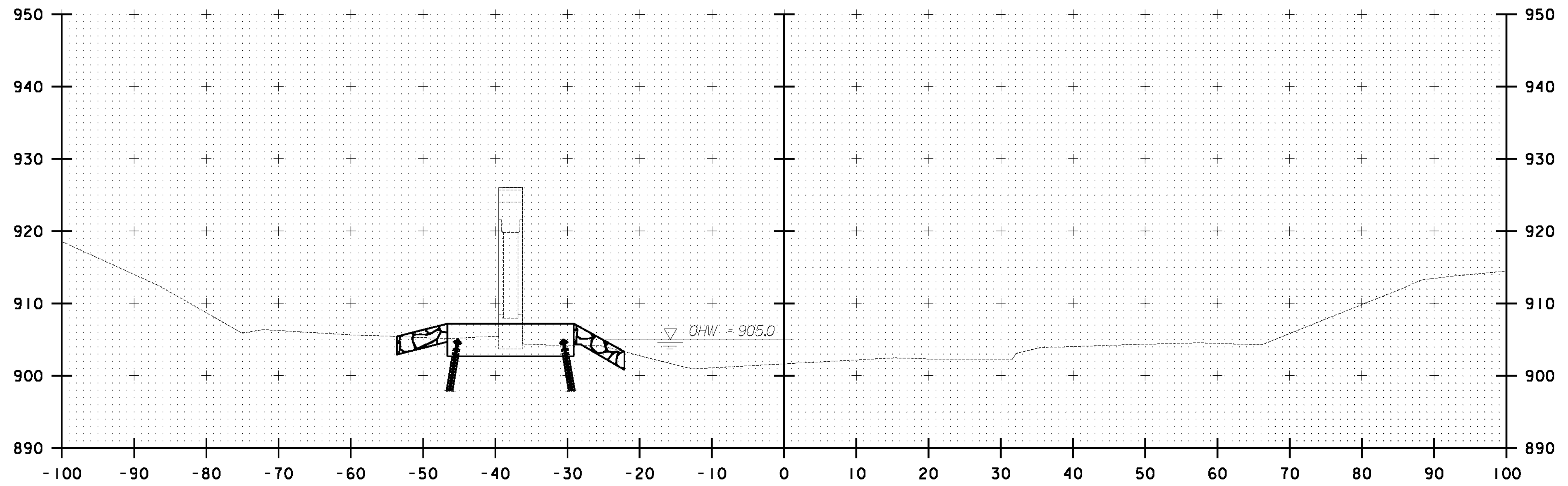
**CHANNEL  
CROSS  
SECTIONS  
SHEET #2**

PROJECT NAME: BENNINGTON  
 PROJECT NUMBER: ER BHF 010-I(45)

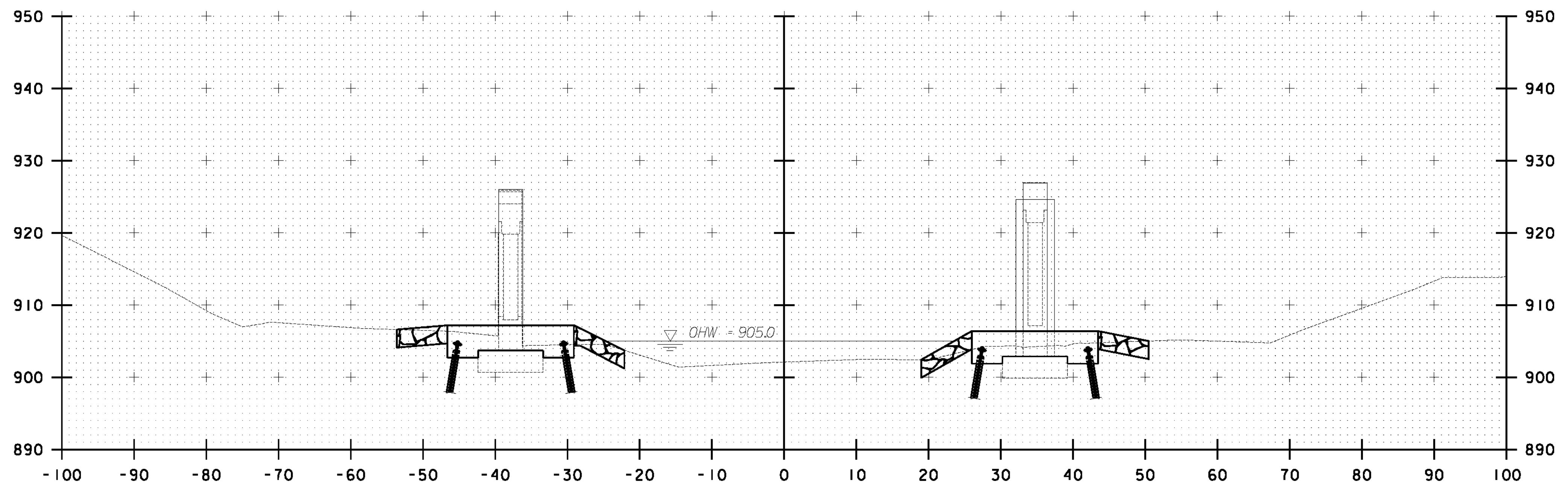
FILE NAME: z1lb326\_xs\_channel.dgn  
 PROJECT LEADER: D.E.G.  
 DESIGNED BY: B.T.H.  
 DWG. NO.: z1lb326xs.1

PLOT DATE: 8/21/2012  
 DRAWN BY: W.E.P.  
 CHECKED BY: D.E.G.  
 SHEET 33 OF 40





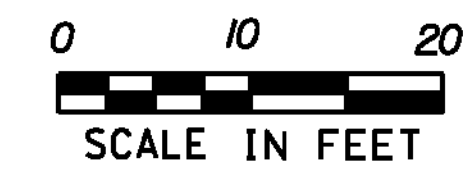
22+25.00



22+00.00

STA 21+87.00 LT  
 BEGIN RIPRAP, HEAVY TYPE  
 BEGIN STRUCTURE EXCAVATION  
 BEGIN GEOTEXTILE UNDER STONE FILL

STA 22+07.00 RT  
 END RIPRAP, HEAVY TYPE  
 END STRUCTURE EXCAVATION  
 END GEOTEXTILE UNDER STONE FILL



**CHANNEL  
 CROSS  
 SECTIONS  
 SHEET #3**

PROJECT NAME: BENNINGTON  
 PROJECT NUMBER: ER BHF 010-I(45)

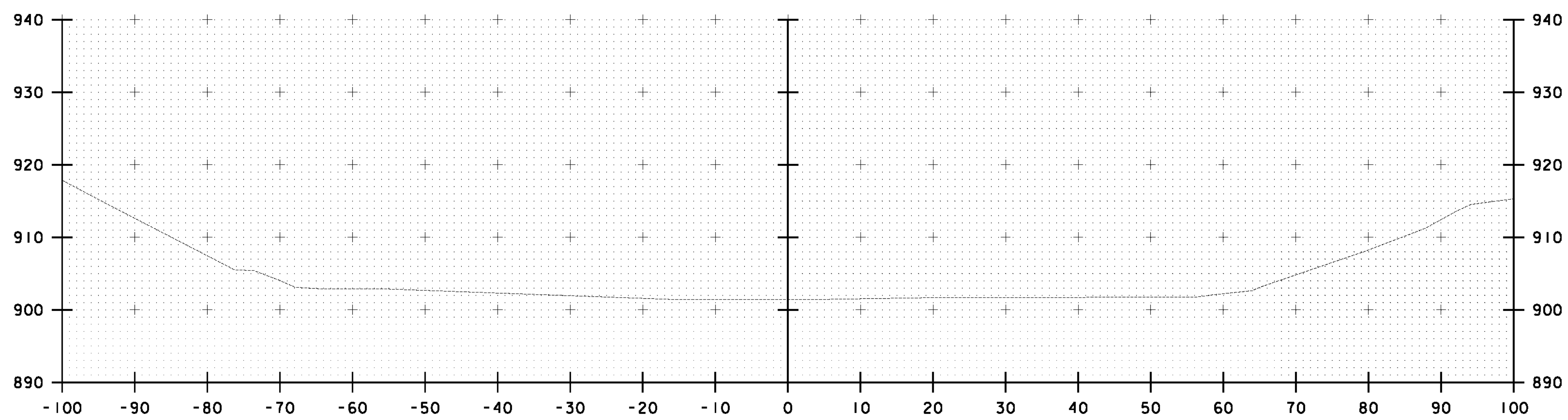
FILE NAME: z1b326\_xs\_channel.dgn  
 PROJECT LEADER: D.E.G.  
 DESIGNED BY: B.T.H.  
 DWG. NO.: z1b326xs.1

PLOT DATE: 8/21/2012  
 DRAWN BY: W.E.P.  
 CHECKED BY: D.E.G.  
 SHEET 34 OF 40

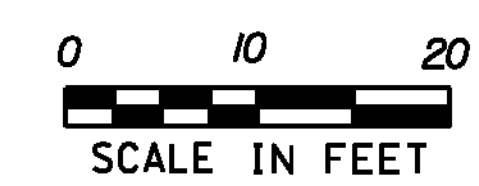




FILE NAME: V:\Projects\ANY\K2\23770\CADD\CADD\11b326\_xs\_channel.dgn  
DATE/TIME: 8/21/2012  
USER: 4866



23+00.00

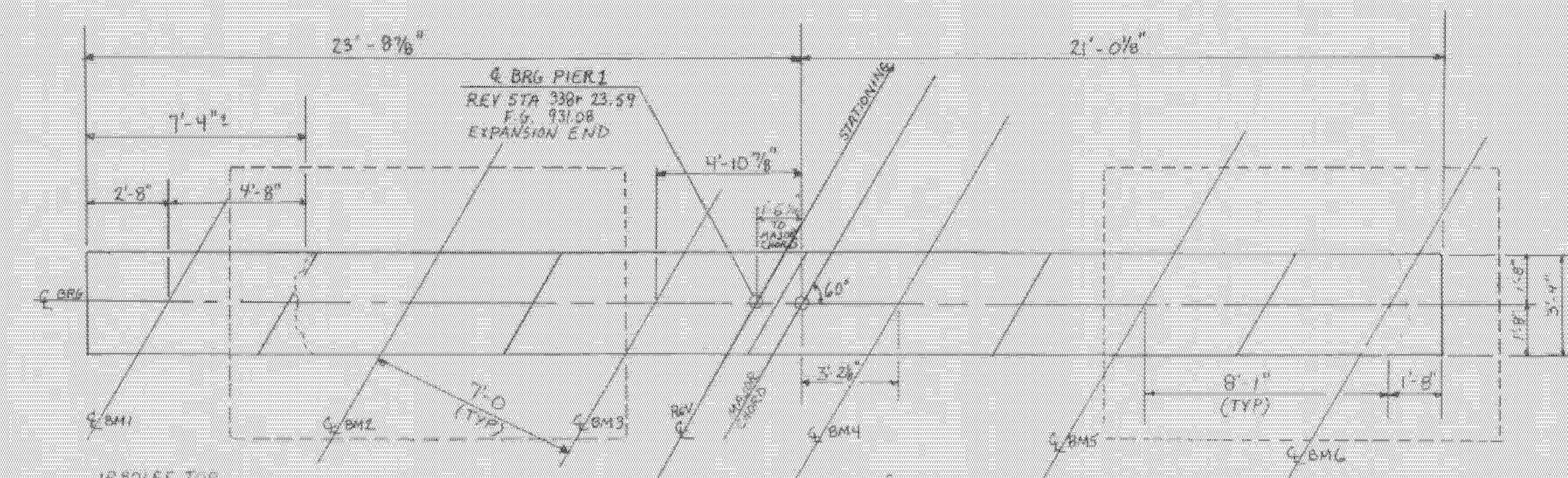


**CHANNEL  
CROSS  
SECTIONS  
SHEET #5**

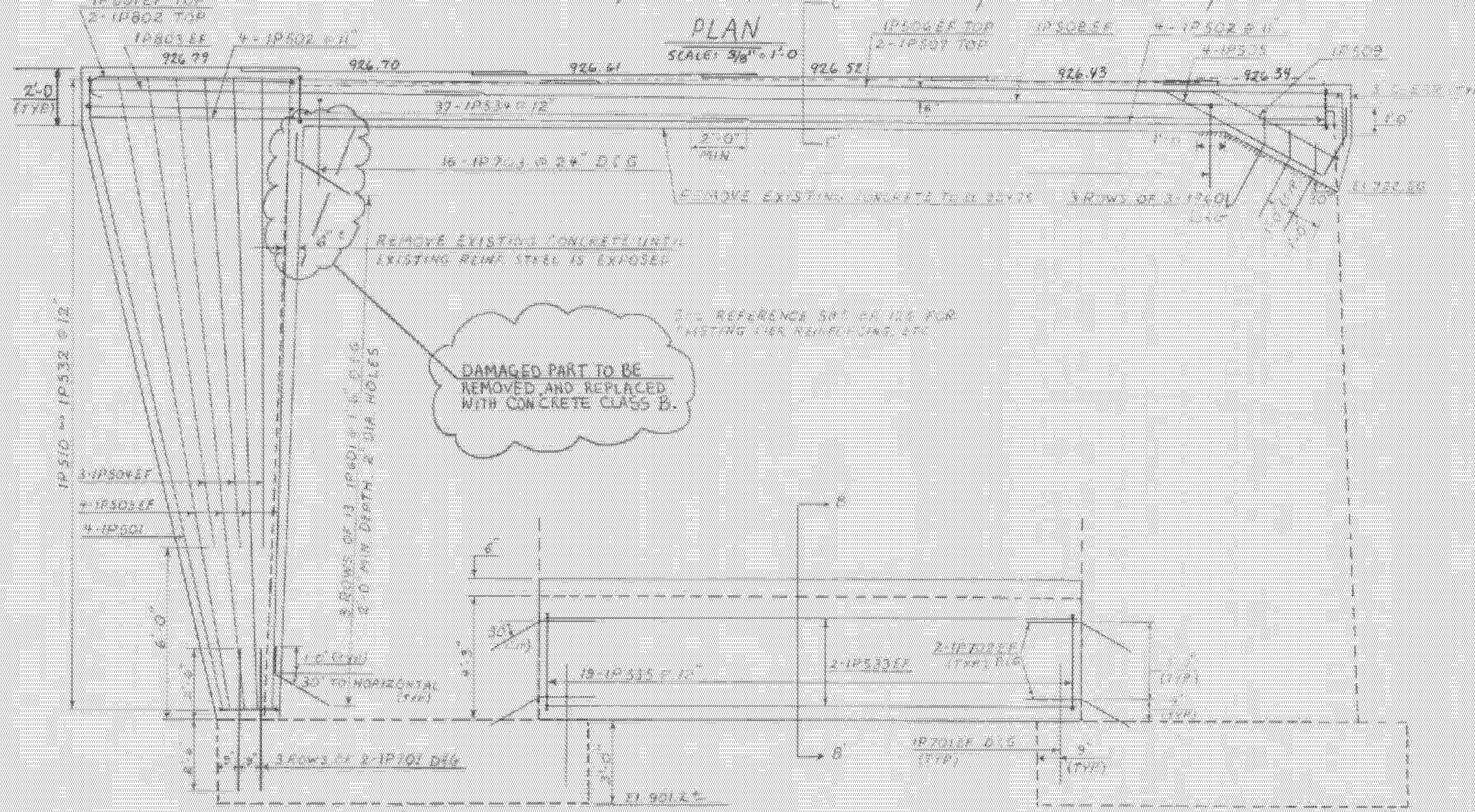
PROJECT NAME: BENNINGTON  
PROJECT NUMBER: ER BHF 010-I(45)

FILE NAME: z1b326\_xs\_channel.dgn  
PROJECT LEADER: D.E.G.  
DESIGNED BY: B.T.H.  
DWG. NO.: z1b326xs.1

PLOT DATE: 8/21/2012  
DRAWN BY: W.E.P.  
CHECKED BY: D.E.G.  
SHEET 36 OF 40

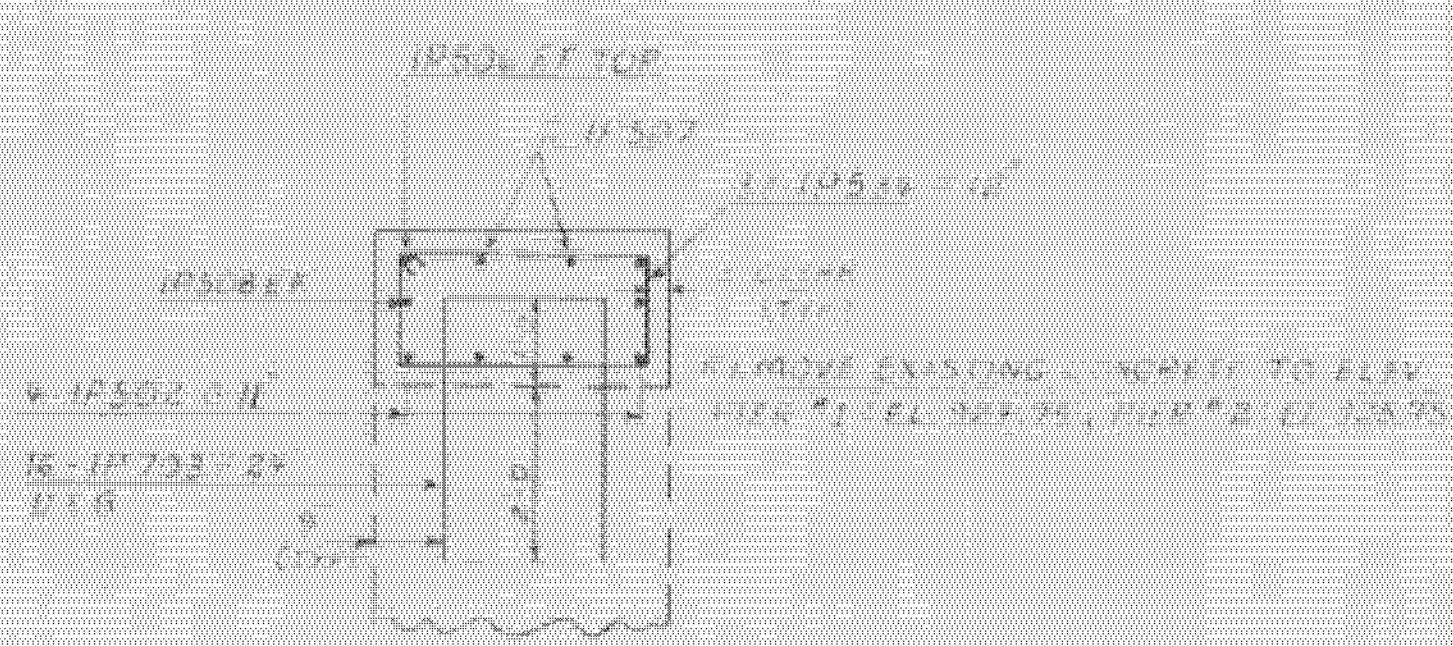


PLAN  
SCALE: 3/8" = 1'-0"

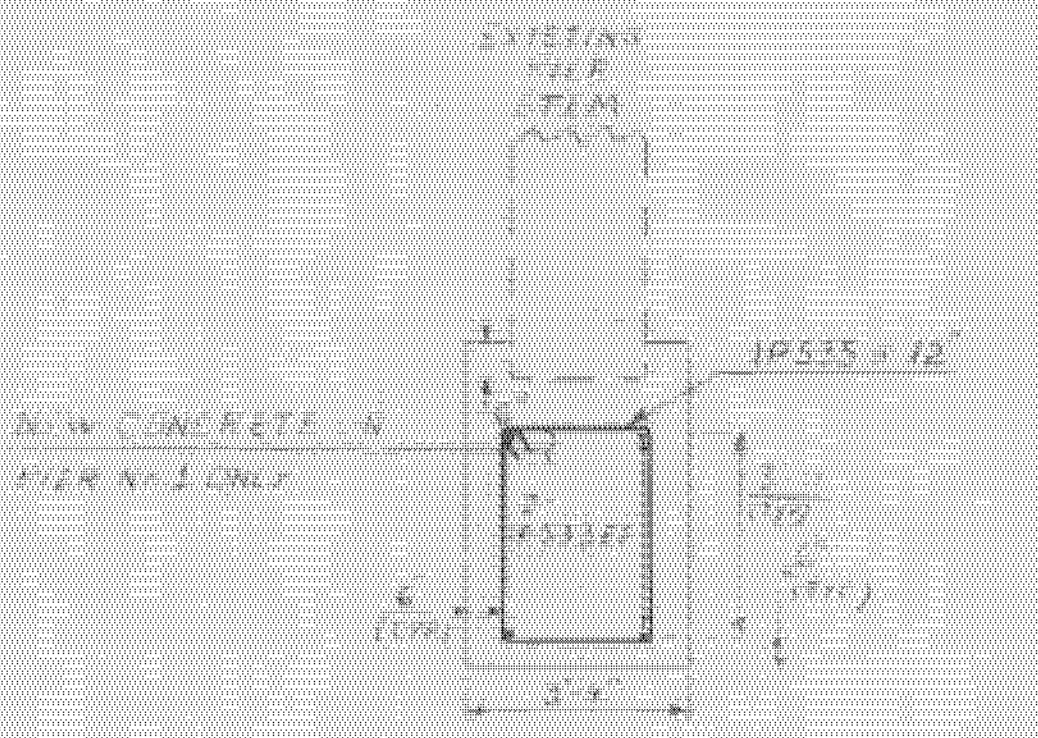


ELEVATION  
SCALE: 3/8" = 1'-0"

FOR ADDITIONAL INFORMATION SEE  
PIER NO. 2 DETAIL SHEET



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

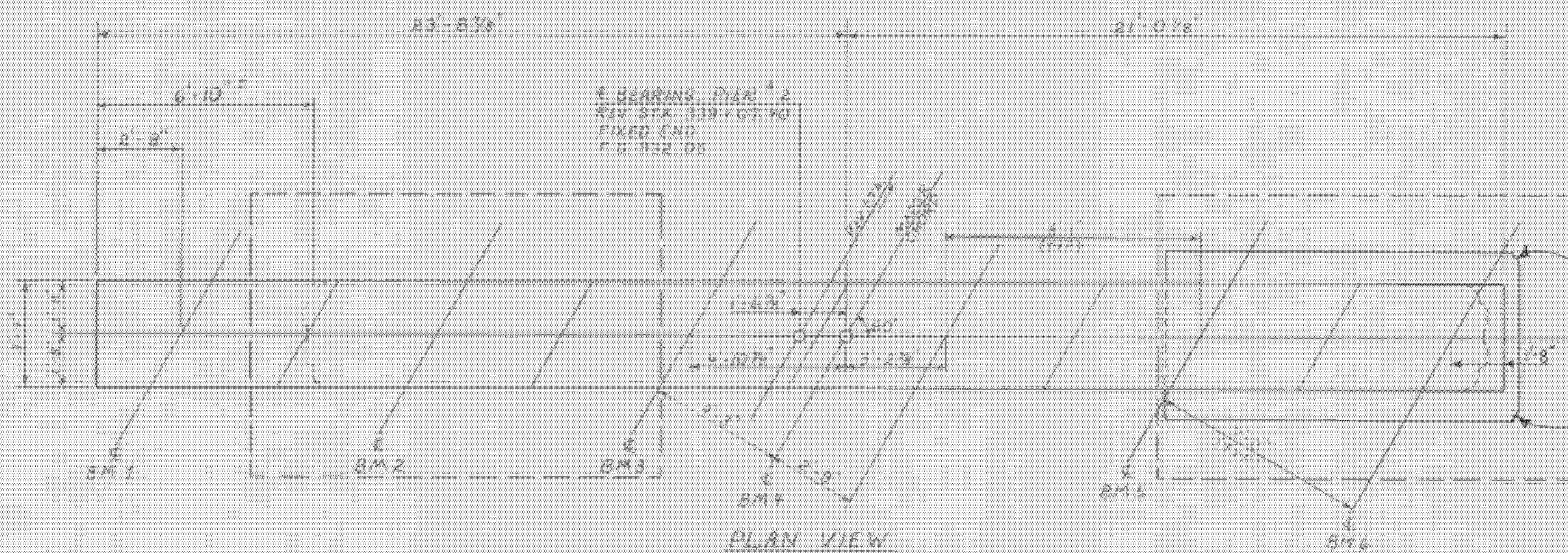


SECTION B-B  
SCALE: 3/8" = 1'-0"

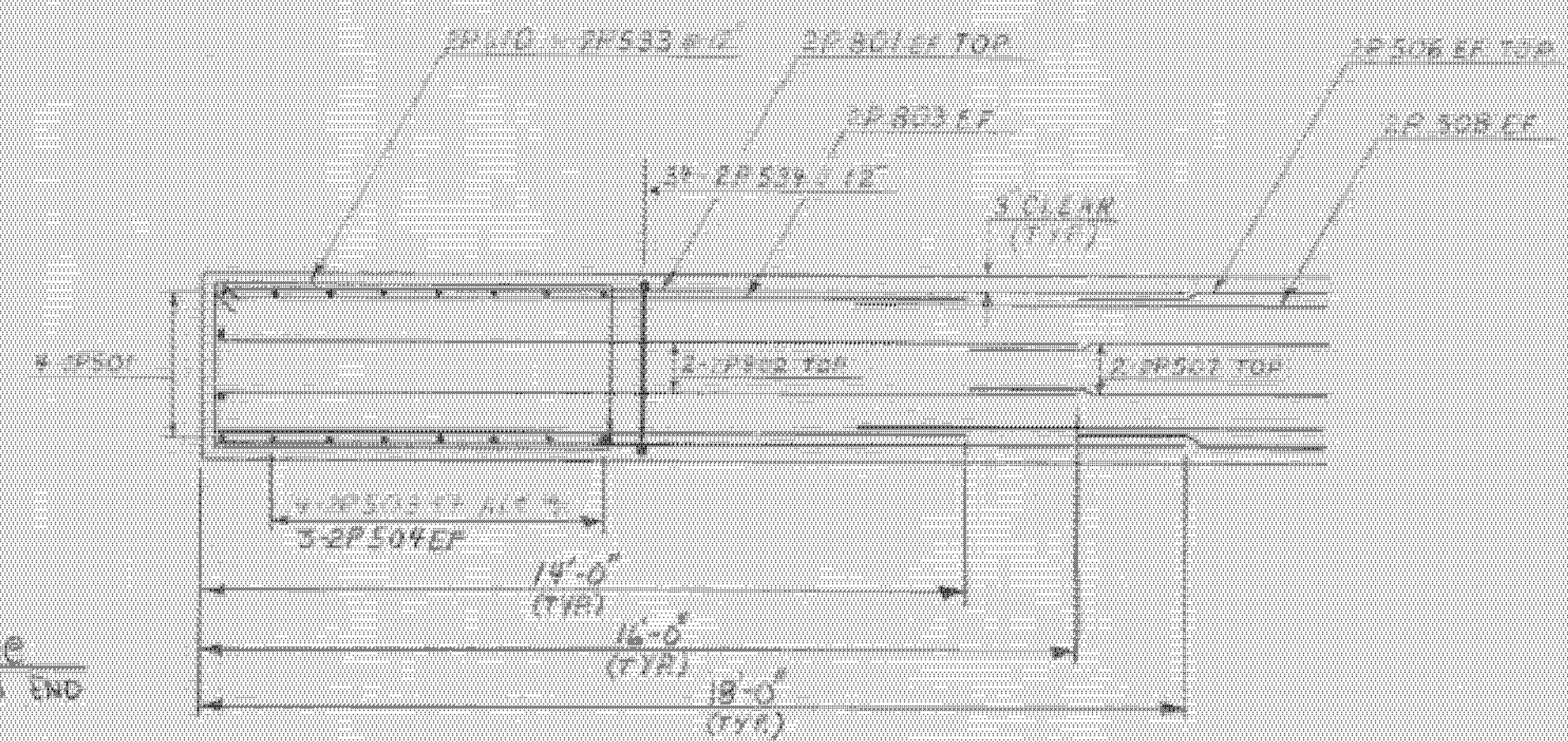
① - Built and Great Reinforced  
Steel in existing concrete  
See spec. note "6".  
② - Place Epoxy Bonding Compound

REVISED SHEET  
S. FARNSWORTH 4/88  
REVISION - REMOVAL  
OF DAMAGED CONCRETE  
AT DOWNSTREAM TOP  
CORNER OF PIER.

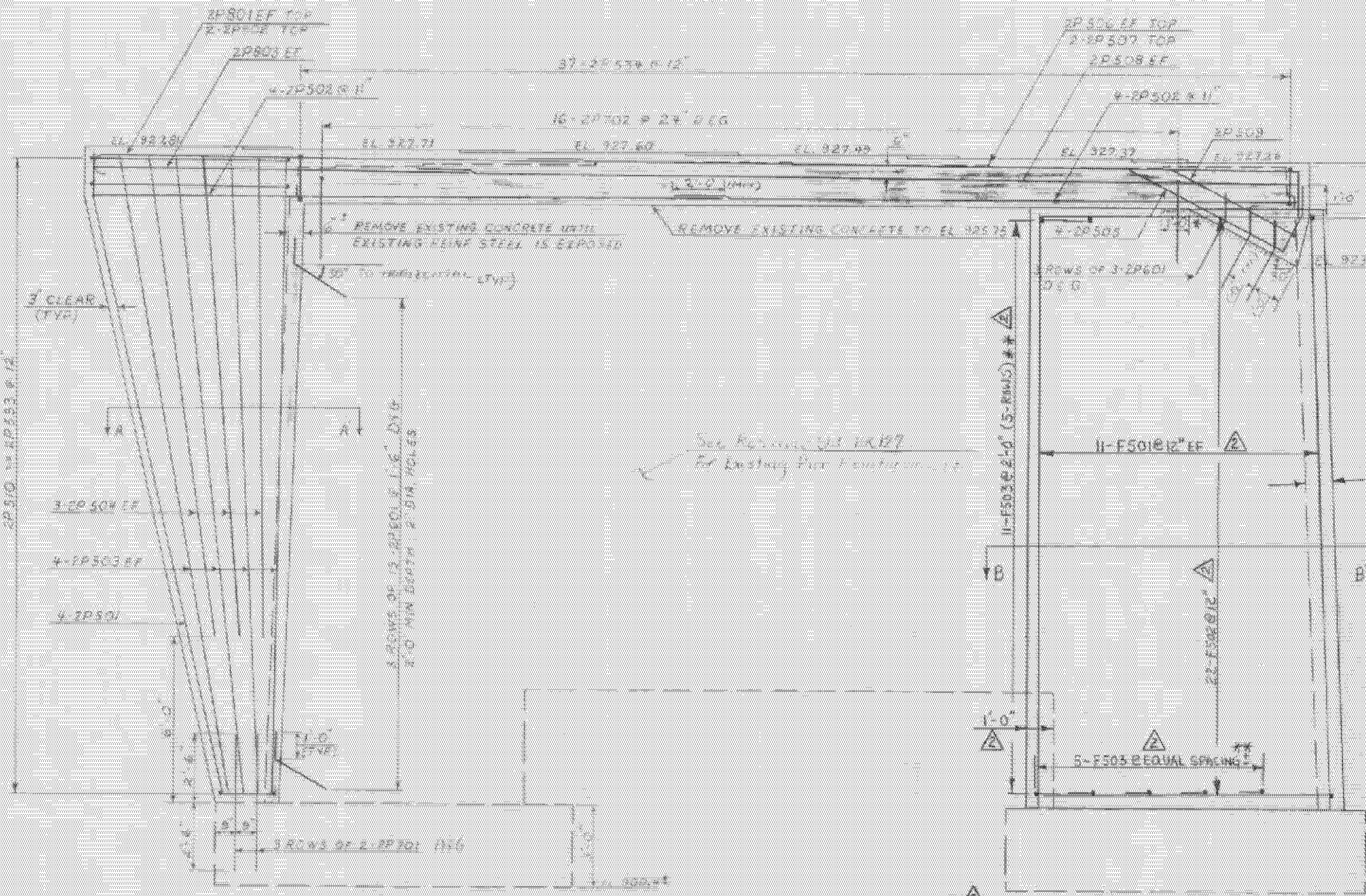
<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b>	
Town Of <b>BENNINGTON</b>	Bridge No. <b>9</b>
Highway No. <b>VT. RTE 9</b>	Log Sta. <b>938+166</b> REV. STA. <b>338+65.50</b>
<b>VT RTE 9 OVER ROARING BRANCH PIER # 1 DETAILS</b>	
Designed By <b>S.G. FARNSWORTH</b>	Drawn By <b>J.Z. BURMAN</b>
Checked By <b>C. McNEIL</b>	Bridge Design Supervisor
Date <b>4/7</b>	Date <b>2/87</b>
PROJECT <b>BENNINGTON</b>	PROJECT NO. <b>BHF-010-1(2)5</b>
L.C.C. info.	
Bridge Sheet No. <b>BR11 R</b>	Sheet <b>23</b> of <b>20</b>



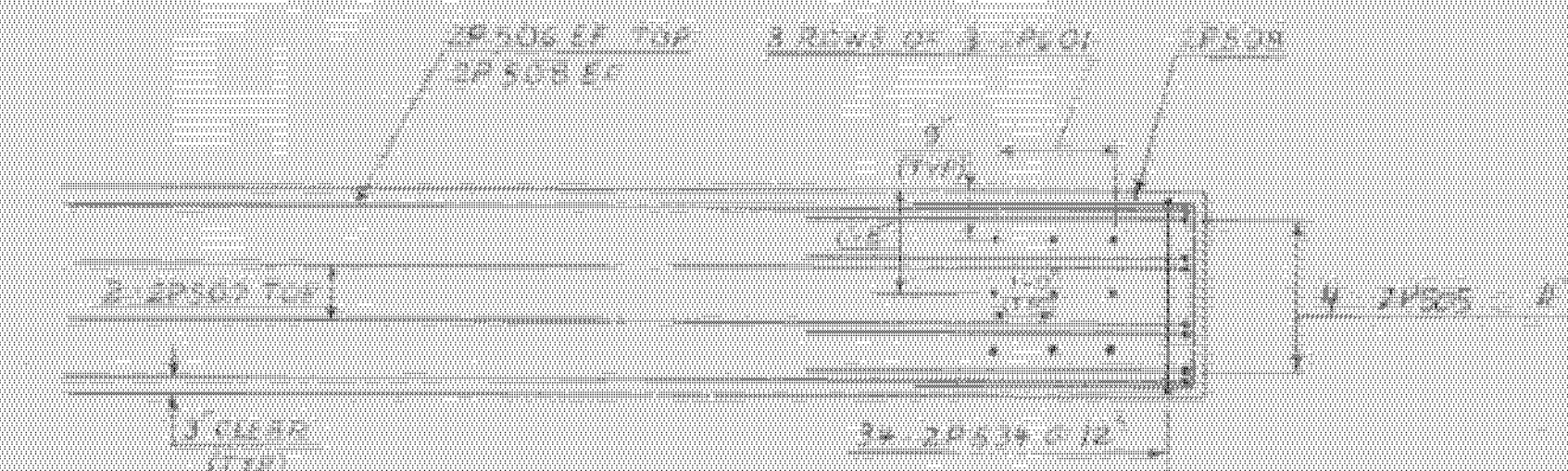
PLAN VIEW  
SCALE: 3/8" = 1'-0"



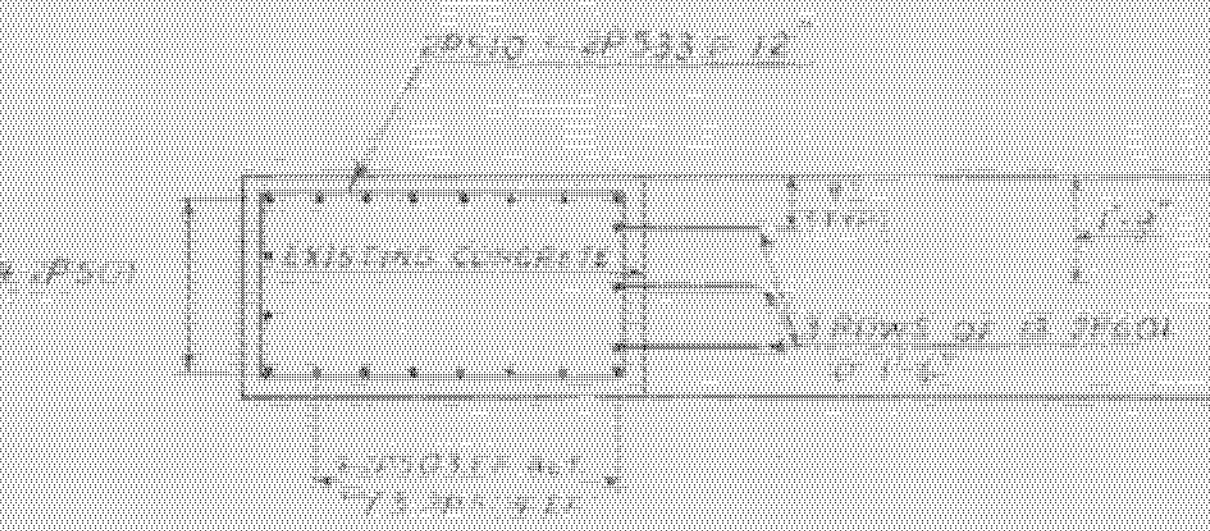
TOP VIEW - LEFT END  
SCALE: 3/8" = 1'-0"



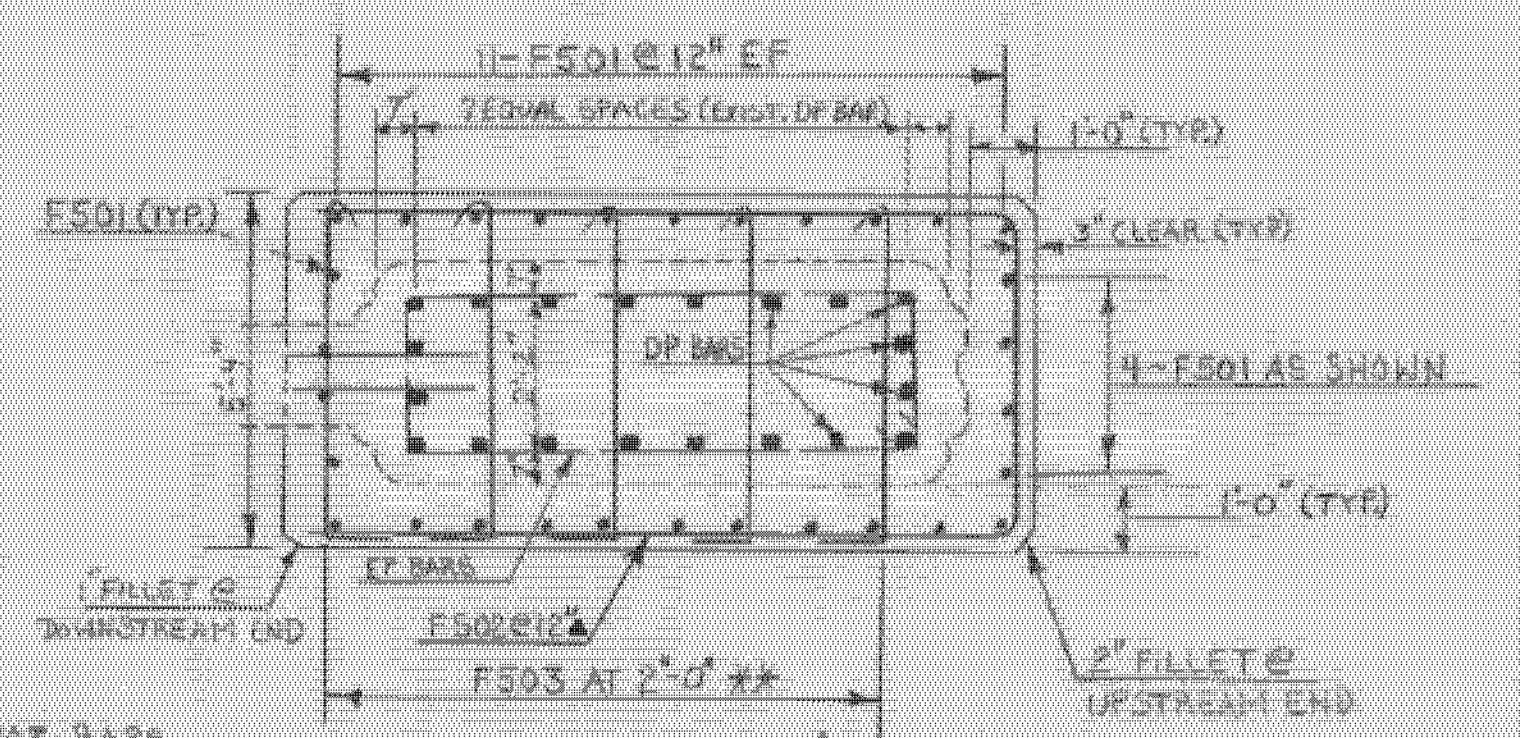
ELEVATION  
SCALE: 3/8" = 1'-0"



TOP VIEW - RIGHT END  
SCALE: 3/8" = 1'-0"



SECTION A-A  
SCALE: 3/8" = 1'-0"



SECTION B-B  
SCALE: 3/8" = 1'-0"

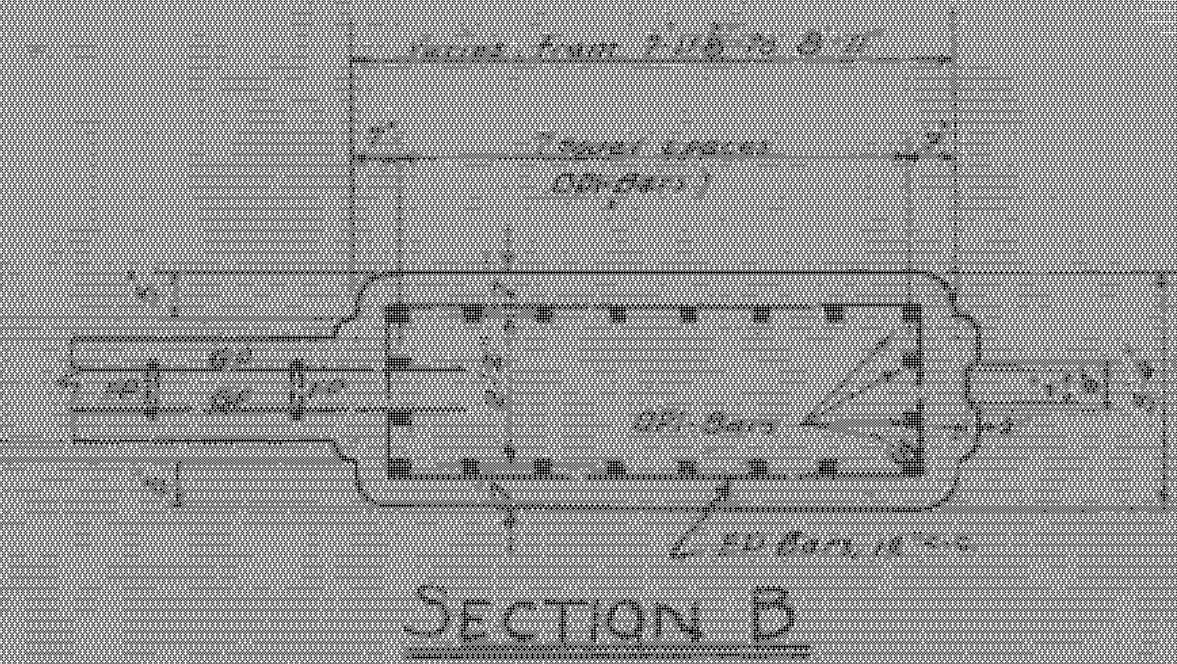
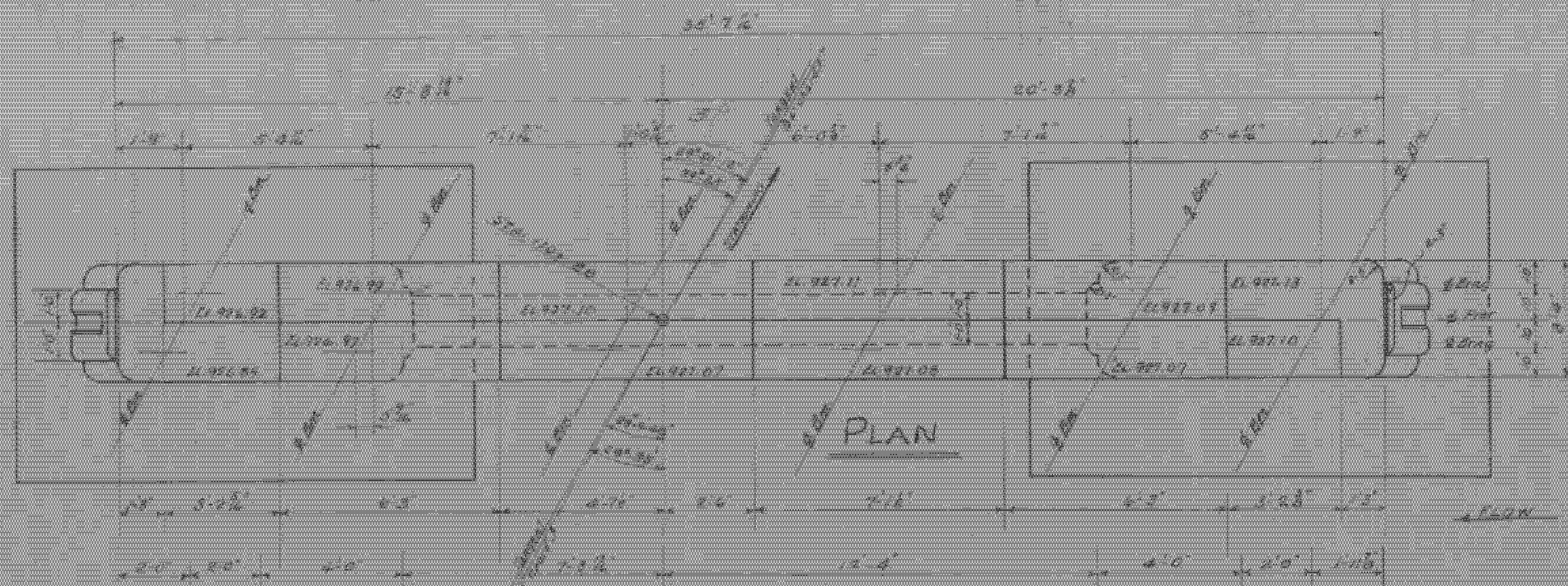
REVISED SHEET  
S. FARNSWORTH 5/88  
REVISION #2 -  
FACE THE UPSTREAM  
END OF PIER #2 WITH  
CONCRETE CLASS B.

- \* PLACE "EPOXY BONDING COMPOUND."
- Ø 9 - DRILL AND GROUT REINFORCING STEEL INTO EXISTING CONCRETE. SEE GENERAL NOTE "6".
- ▲ - CUT TO FIT IN FIELD.
- \*\* - F503 BARS WILL BE PRE-BENT ON ONE END THE 90° BEND WILL BE MADE IN THE FIELD AFTER THE BARS ARE PLACED THROUGH 1/4" DIA. HOLES IN THE EXISTING PIER CONCRETE. THE 90° BEND MAY BE PERFORMED WITH A MODERATE AMOUNT OF HEAT APPLIED.

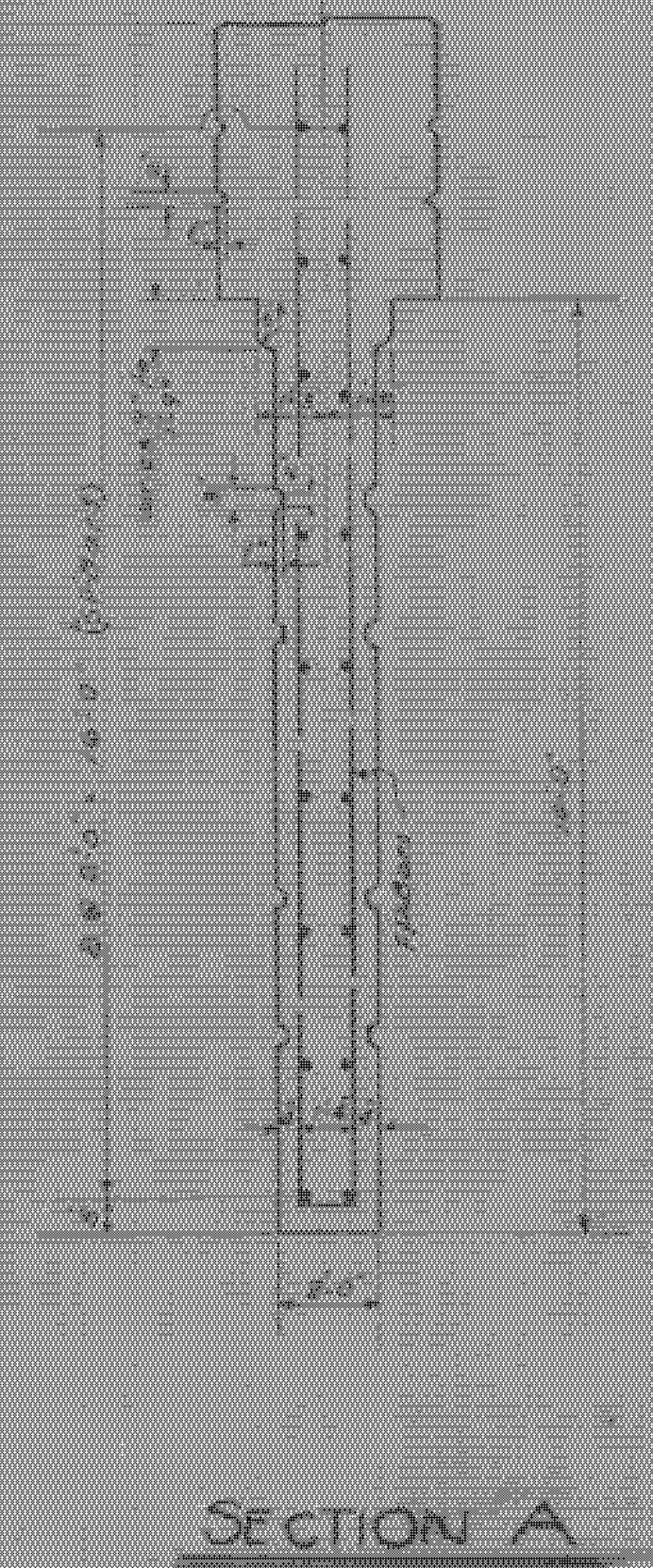
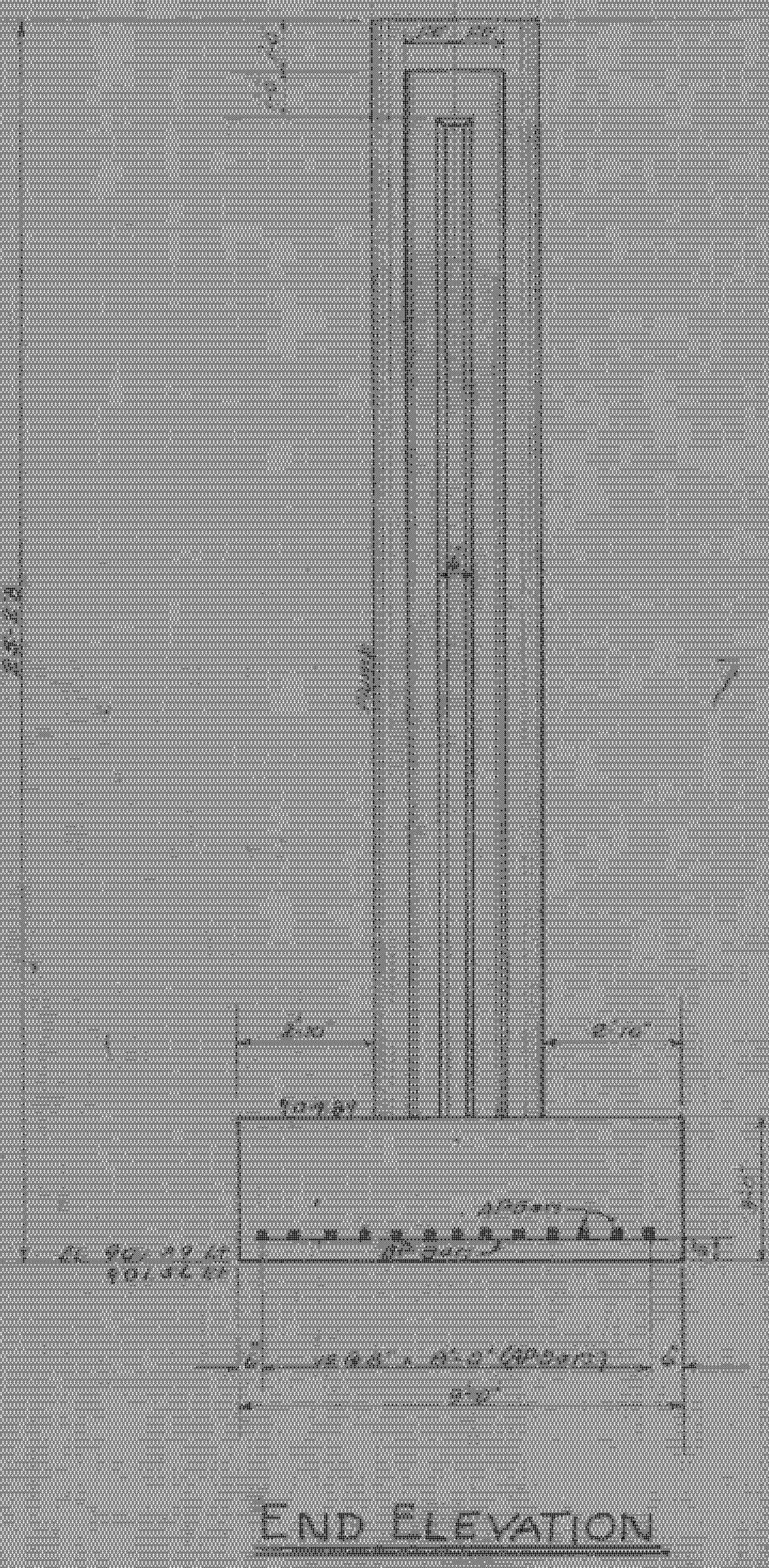
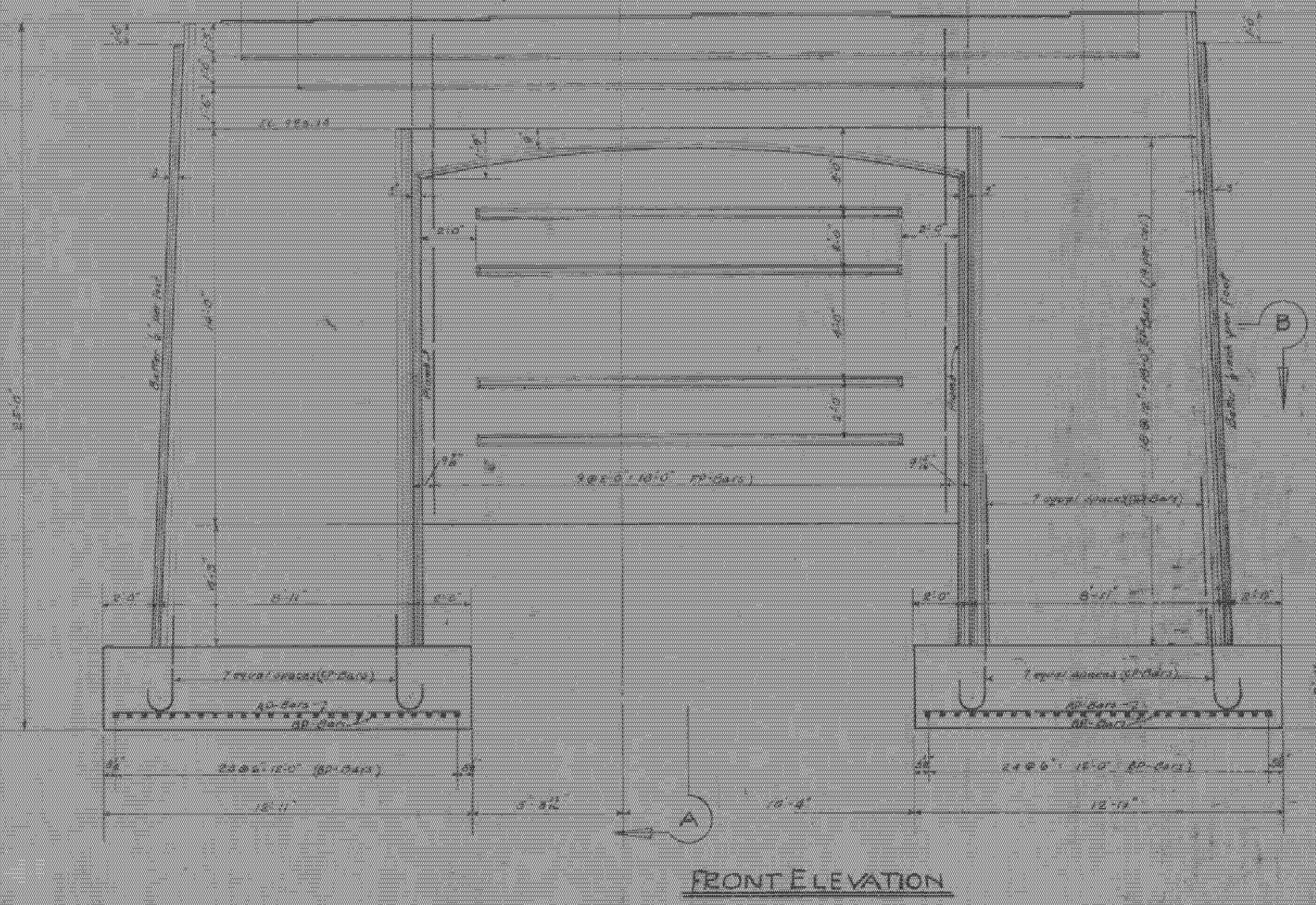
<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b>	
Town Of <b>BENNINGTON</b>	Bridge No. <b>9</b>
Highway No. <b>Vt. Rte. 9</b>	Log Sta. <b>338+66</b> Acc. Sta. <b>338+65.58</b>
<b>Vt. Rte. 9 Over Roaring Branch</b>	
<b>PIER No. 2 DETAILS</b>	
Designed By <b>S. FARNSWORTH</b>	Drawn By <b>DZGILMAN</b>
Checked By <b>C. McWICK</b>	Date <b>1/87</b> Bridge Design Supervisor <b>D. B. FORD</b>
PROJECT <b>BENNINGTON</b>	PROJECT NO. <b>BHF 010-1(2)S</b>
16.C. info.	
Bridge Sheet No. <b>BA12 R</b>	Sheet <b>27</b> of <b>71</b>

NOTE: PRIOR TO ANY HOLES BEING DRILLED FOR THE F503 BARS GOING THROUGH THE EXISTING PIER, AREAS OF CONCRETE AT THE TOP AND BOTTOM OF PIER WILL BE REMOVED DOWN TO THE EXISTING REINFORCING STEEL TO LOCATE THE DP BARS. APPLICABLE AREAS WILL THEN BE MARK ALONG THE PIER TO ENSURE THAT DP BARS ARE NOT DAMAGED DURING THE DRILLING OF HOLES.

BR 6



REINFORCING STEEL				
MARK	REQD.	SIZE	TOTL LQTY	SHAPE
AP	24	1 1/2"	1253	straight
BP	30	1 1/4"	874	straight
CP	40	1 1/2"	978	tee
DP	20	1 1/2"	216	straight
EP	38	5/8"	210 (long) lengths vary from 22' 0" to 23' 0" (long 210)	straight
FP	10	5/8"	3510	straight
GP	18	5/8"	2270	straight

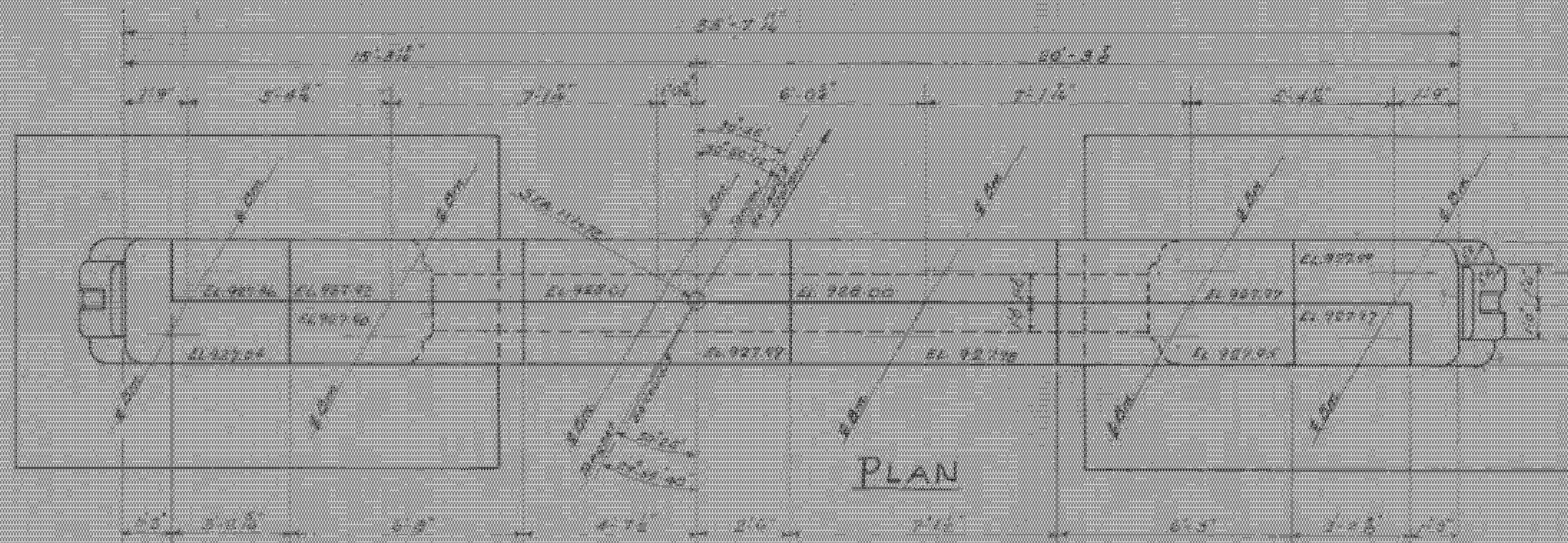


FOR REFERENCE ONLY  
 Revision  
 BHF 010-2(21)S  
 Sheet 126 of 126

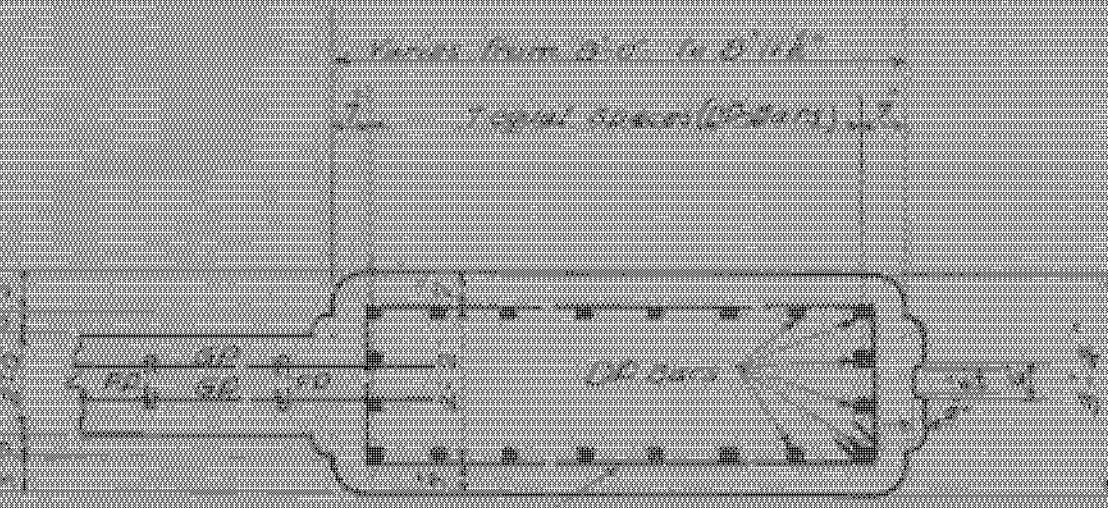
DETAILS OF PIER 2  
 FURNACE BRIDGE  
 BENNINGTON, VT  
 SCALE 1/2" = 1'

ESTIMATED QUANTITIES			
Structural Excavation	96 CY	103	
Concrete Class A	103 CY	1045	
Reinforcing Steel	10120 LB	1012	

Submitted by  
 Designed by J.G.G.  
 Drawn by W.G.G. Feb 28 1940  
 Checked by J.M.P.  
 Checked by J.M.P.  
 Based upon No. 103.C(1) and  
 No. 103.C(2) of 1/24/40



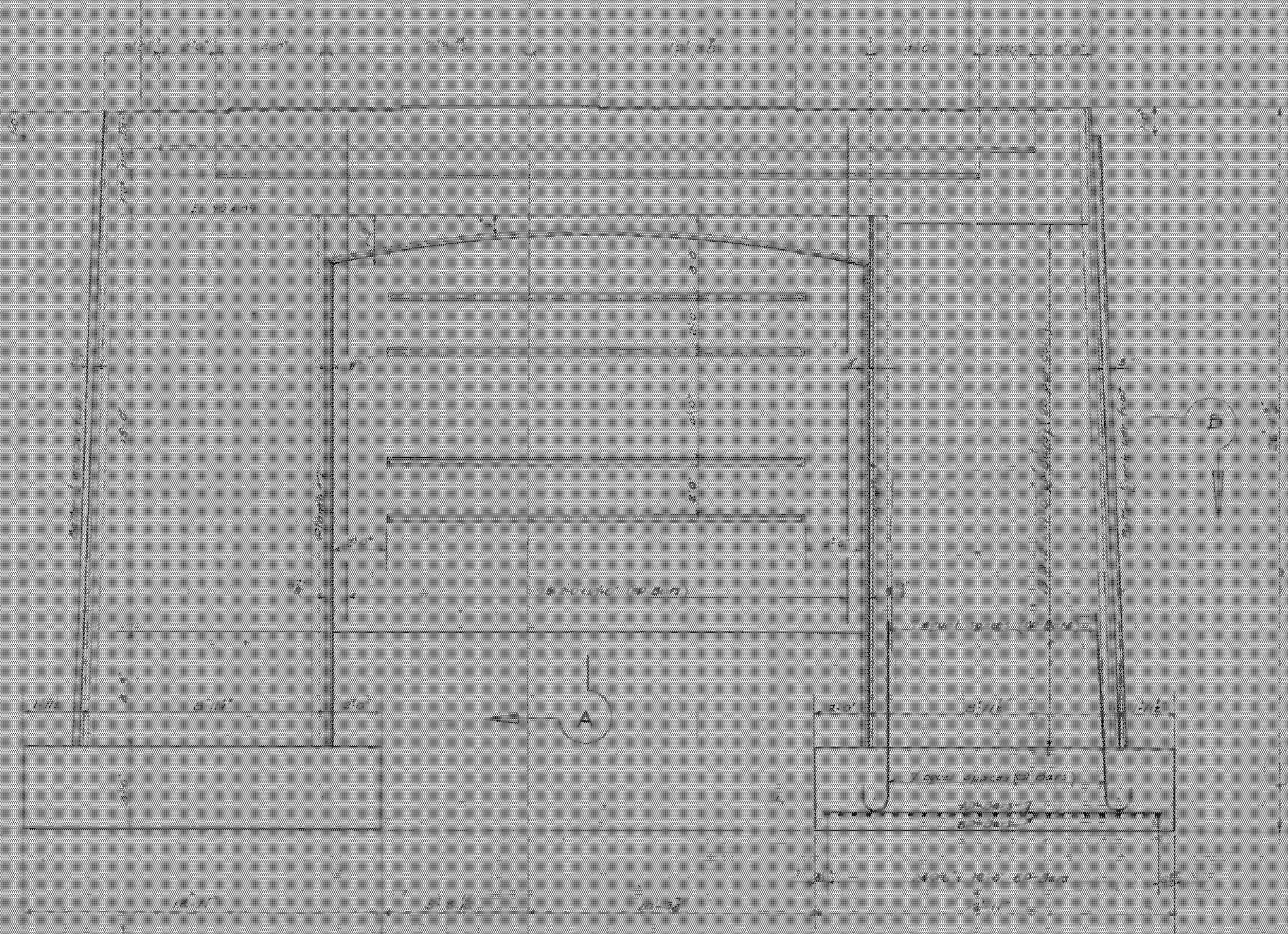
PLAN



SECTION-B

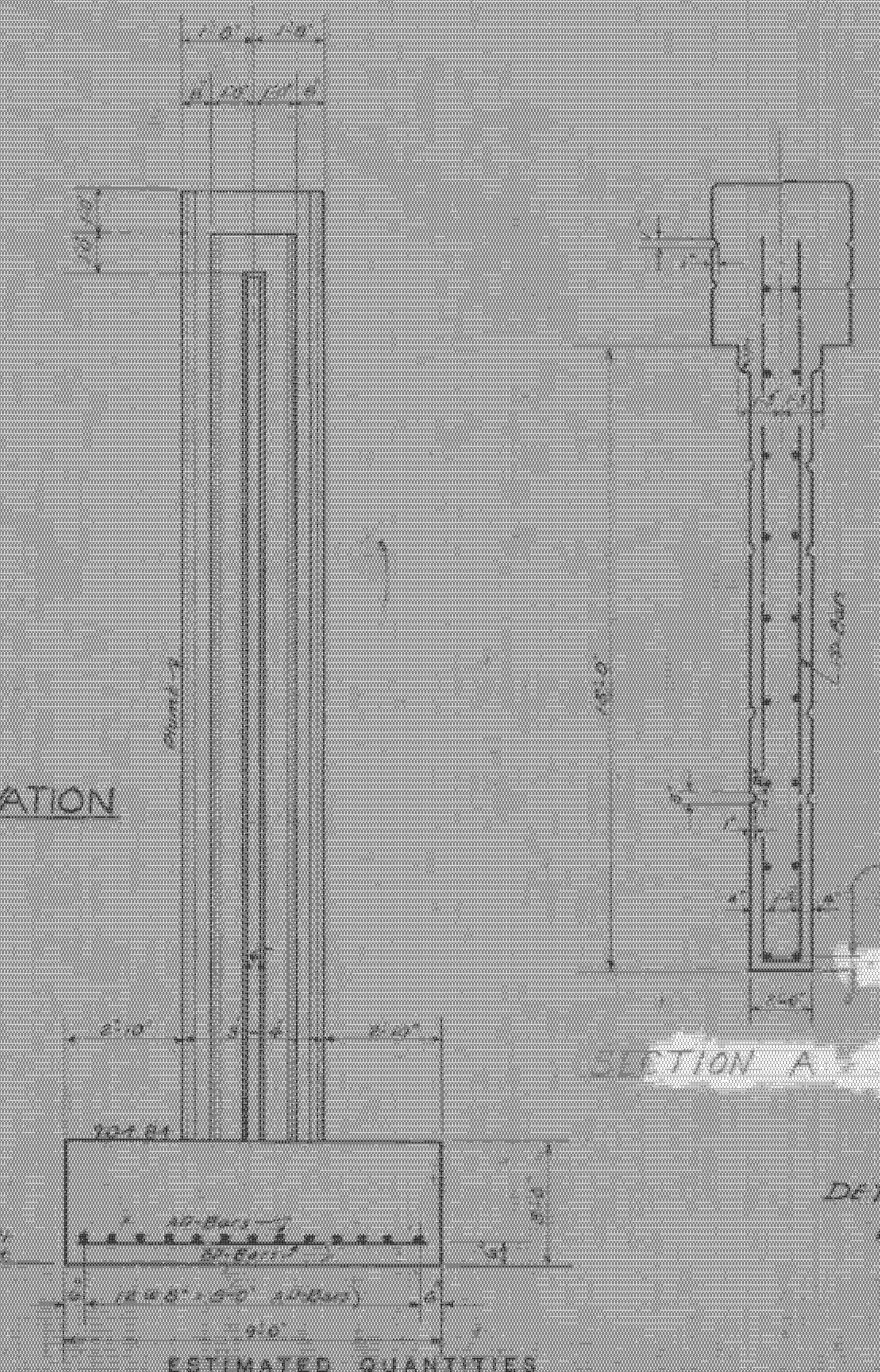
REINFORCING STEEL

MAX	REQD	SIZE	SPACING	SHAPE
AP	26	1\"/>		
BP	34	1\"/>		
CP	40	1 1/2\"/>		
DP	40	1 1/2\"/>		
EP	40	1 1/2\"/>		
FP	10	5\"/>		
GP	18	5\"/>		



FRONT ELEVATION

END ELEVATION



SECTION A

FOR REFERENCE ONLY  
 Bennington  
 BHF 010-2(21)S  
 Sheet BR127 of  
 DETAILS OF DIER 2  
 FURNACE BRIDGE,  
 BENNINGTON, VT.  
 Scale 3/4\"/>

ESTIMATED QUANTITIES

Structure Excavation	100	CY	1127
Concrete Class A	100	CY	1127
Reinforcing Steel	100	LB	10340

Checked by J. H. G. 2-29-45  
 Drawn by J. G. S.  
 Prepared by J. D. W. P.  
 Checked by L. M. B.  
 Survey F&M No. 1000(11)  
 Date 11-1-45