

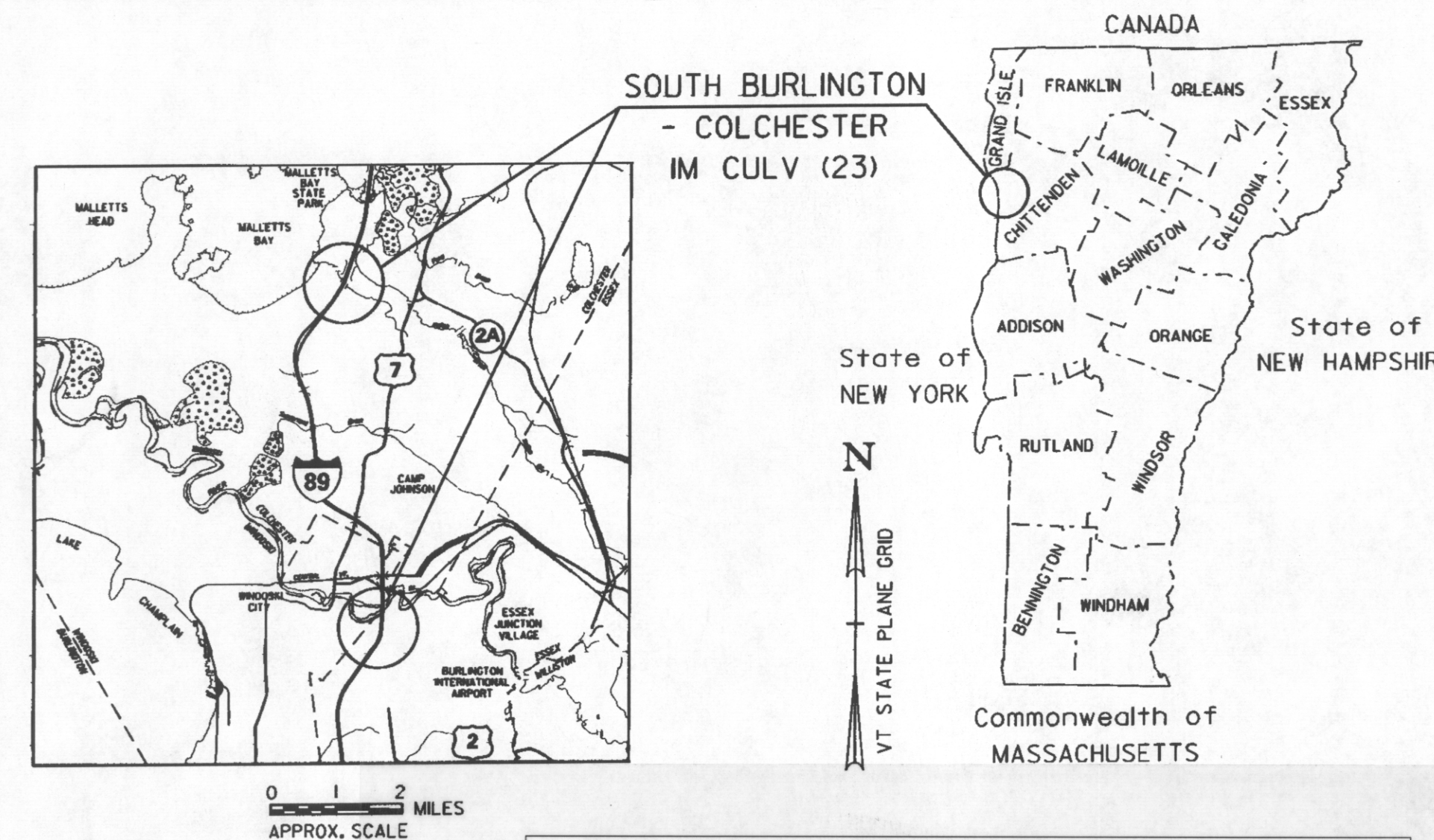
STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT CITY OF SOUTH BURLINGTON AND TOWN OF COLCHESTER COUNTY OF CHITTENDEN INTERSTATE 89 NB & SB

PROJECT LOCATION: THE FOLLOWING CULVERTS ALONG THE INTERSTATE 89 CORRIDOR
BRIDGE 69-1 AT MILE MARKER 89.636 IN THE CITY OF SOUTH BURLINGTON
BRIDGE 75-3 AT MILE MARKER 95.183 IN THE TOWN OF COLCHESTER

PROJECT DESCRIPTION: PREVENTIVE MAINTENANCE TO EXISTING CULVERTS INCLUDING THE INSTALLATION OF PIPE LINERS AND HEADWALLS ALONG WITH THE CONSTRUCTION OF NEW CULVERTS USING TRENCHLESS TECHNOLOGY ALONGSIDE THE EXISTING CULVERTS.

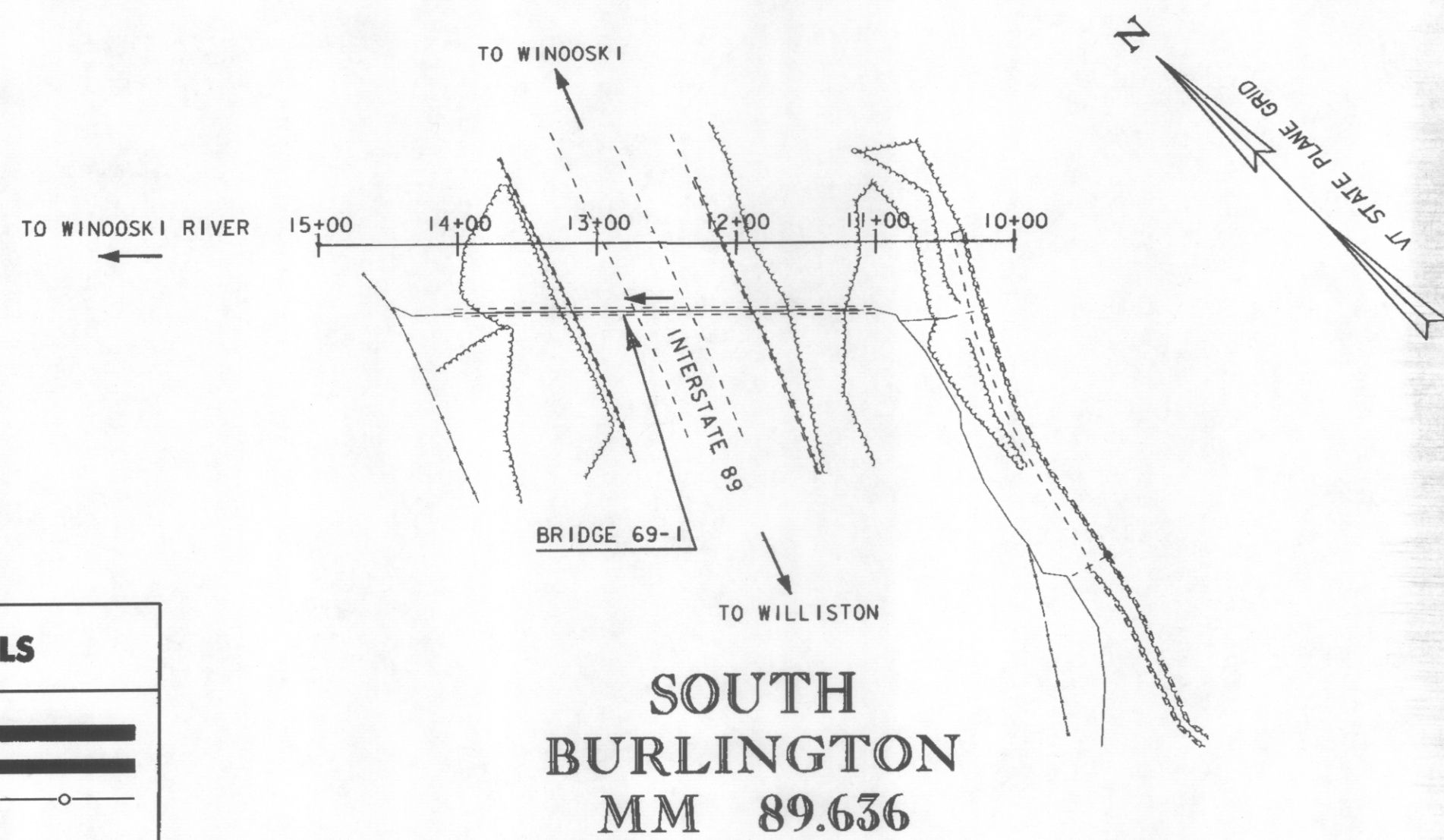


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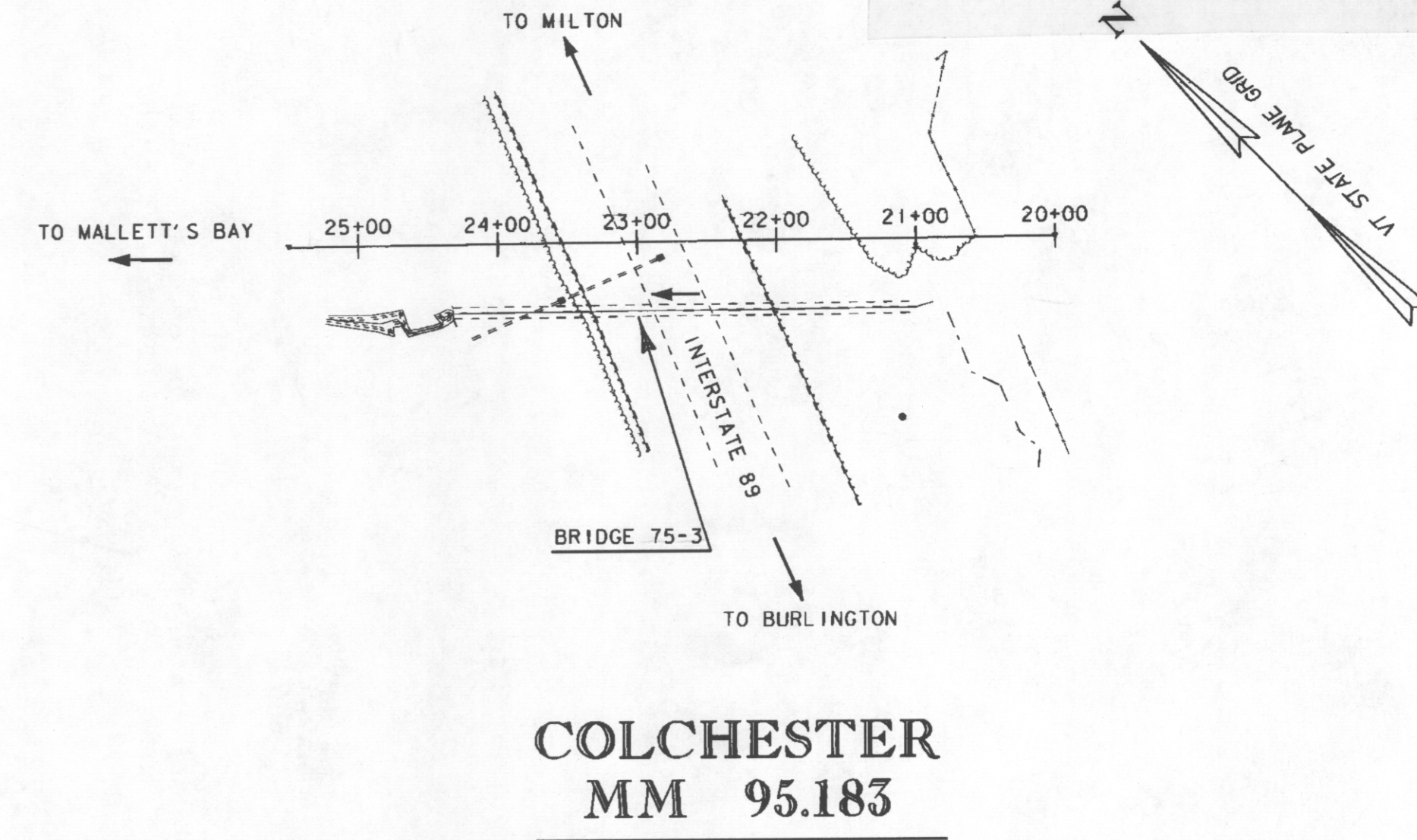
TRAFFIC DATA	
SOUTH BURLINGTON	
INTERSTATE 89	
MM 89.636	
2010 ADT =	52,300
2010 DHV =	4,800
2010 ADTT =	3,660
%T =	7
NB %D =	50
SB %D =	50
V =	55 MPH

TRAFFIC DATA	
COLCHESTER	
INTERSTATE 89	
MM 95.183	
2010 ADT =	28,800
2010 DHV =	2,800
2010 ADTT =	2,020
%T =	7
NB %D =	50
SB %D =	50
V =	65 MPH

RECORD PLANS	
CONTRACTOR:	MORRILL CONSTRUCTION INC - NORTH HAVERHILL, NH
RESIDENT ENGINEER:	GREG WILCOX
CONSTRUCTION BEGAN:	JUNE 13, 2011
CONSTRUCTION COMPLETE:	AUGUST 29, 2012
RECORD PLANS BY:	GREG WILCOX & JENNA HYDE
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.	
BY:	RESIDENT ENGINEER
DATE:	7/18/13
NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.	



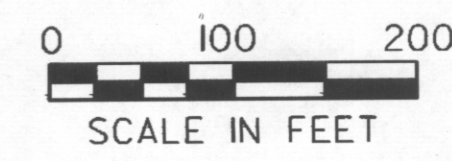
**SOUTH BURLINGTON
MM 89.636**



**COLCHESTER
MM 95.183**

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

SURVEYED BY : TOPOGRAPHIC SURVEY BY: VSE DATE: 9/2009 SURVEY CONTROL BY: VSE DATE: 9/2009	ROADWAY PLANS PREPARED BY McFarland Johnson Mc FARLAND-JOHNSON, INC CONCORD, N.H.
DATUM VERTICAL NAVD 88 (GEO1D03) HORIZONTAL NAD 83 (CORS96)	



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

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 4, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATOR	
APPROVED _____	DATE _____
DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED	DATE 2-15-11
PROJECT MANAGER : D. LANDRY	
PROJECT NAME : SOUTH BURLINGTON - COLCHESTER	
PROJECT NUMBER : 1M CULV (23)	
SHEET 1 OF 36 SHEETS	

PRELIMINARY INFORMATION SHEET

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STANDARDS

D-33	REINFORCED CONCRETE CRADLE HEADWALL	03/12/07
D-34	REINFORCED CONCRETE CRADLE HEADWALL	03/12/07
E-100	CONSTRUCTION APPROACH SIGNS	01/02/04
E-101	CONSTRUCTION SIGN DETAILS	05/30/03
E-102	CONSTRUCTION SIGN DETAILS	06/30/06
E102A	CONSTRUCTION SIGN DETAILS	05/01/04
E-103	MAINLINE TRAFFIC CONTROL	03/01/04
	DIVIDED HIGHWAY ONE LANE CLOSED	
E-105	TRAFFIC CONTROL FOR CONSTRUCTION	05/01/04
	VEHICLE U-TURNS ON DIVIDED HIGHWAY	
E-106	TRAFFIC CONTROL MISCELLANEOUS DETAIL	03/01/04
E-107	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	06/30/03
E-107A	BREAKAWAY BARRICADE DETAIL	06/08/09
E-110	MAJOR MAINTENANCE OPERATION LANE CLOSURE	08/08/95
E-111	MINOR MAINTENANCE OPERATION	03/11/97
E-120	STANDARD SIGN PLACEMENT EXPRESSWAY AND FREEWAY	08/08/95
E-142	REGULATORY SIGN DETAIL	09/20/95
G-1	STEEL BEAM GUARDRAIL WITH STEEL POSTS	01/03/00
L-1	GEOTECHNICAL INSTRUMENTATION	07/24/95

FINAL HYDRAULIC REPORT - BR NO. 75-3

HYDROLOGIC DATA

Date: November 2009

DRAINAGE AREA : _____
 CHARACTER OF TERRAIN : _____
 STREAM CHARACTERISTICS : _____
 NATURE OF STREAMBED : _____

PEAK FLOW DATA

Q 2.33 = _____ Q 50 = 275 cfs
 Q 10 = _____ Q 100 = 325 cfs
 Q 25 = _____ Q 500 = _____

DATE OF FLOOD OF RECORD : _____
 ESTIMATED DISCHARGE: _____
 WATER SURFACE ELEV.: _____
 NATURAL STREAM VELOCITY : _____
 ICE CONDITIONS : _____
 DEBRIS: _____
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? _____
 IS ORDINARY RISE RAPID? _____
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? _____
 IF YES, DESCRIBE: _____

WATERSHED STORAGE: _____ HEADWATERS: _____
 UNIFORM: _____
 IMMEDIATELY ABOVE SITE: _____

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 9' CGMPP
 YEAR BUILT: 1964
 CLEAR SPAN(NORMAL TO STREAM): 9'
 VERTICAL CLEARANCE ABOVE STREAMBED: 9'
 WATERWAY OF FULL OPENING: 63.6 sq. ft.
 DISPOSITION OF STRUCTURE: Insert liner
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = _____ VELOCITY = _____
 Q10 = _____ " _____
 Q25 = _____ " _____
 Q50 = 111.68' " 10.0 fps
 Q100 = 112.50' " 10.5 fps

LONG TERM STREAMBED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
 FREQUENCY: _____
 RELIEF ELEVATION: _____
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: _____ DISTANCE: _____
 HIGHWAY #: _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

DOWNSTREAM STRUCTURE

TOWN: _____ DISTANCE: _____
 HIGHWAY #: _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

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: 5' CAAP Liner / 5' pipe, with full beveled inlet headwall

CLEAR SPAN(NORMAL TO STREAM): 5'
 VERTICAL CLEARANCE ABOVE STREAMBED: 5'
 WATERWAY OF FULL OPENING: 39.3

WATER SURFACE ELEVATIONS AT:

Q2.33 = _____ VELOCITY= _____
 Q10 = _____ " _____
 Q25 = _____ " _____
 Q50 = 110.30' " 10.0 / 7.0 fps
 Q100 = 111.24' " 10.4 / 7.0 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
 FREQUENCY: _____
 RELIEF ELEVATION: _____
 DISCHARGE OVER ROAD @Q100: _____

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: _____
 VERTICAL CLEARANCE: _____

SCOUR: Not calculated for culverts

REQUIRED CHANNEL PROTECTION: Stone fill, Type II

PERMIT INFORMATION

AVERAGE DAILY FLOW: _____ DEPTH OR ELEVATION: _____
 ORDINARY LOW WATER: _____
 ORDINARY HIGH WATER: _____

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required
 CLEAR SPAN (NORMAL TO STREAM): _____
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

The above final hydraulics are based on the following information:
 Existing 108" pipe inlet elev. = 104.4', outlet elev. 103.7', length = 331.0', slope = 0.2%
 New 60" CMP liner pipe inlet elev. = 104.9', outlet elev. 103.1', length = 311.7', slope = 0.6%
 New 60" Aluminum pipe inlet elev. = 105.4', outlet elev. 103.6', length = 311.7', slope = 0.6%

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO: N/A
2. DESIGN SPAN: N/A
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: 3 ksf
ON LEDGE: 10 ksf
4. ALLOWABLE LOAD FOR PILING: N/A
TYPE: N/A
ESTIMATED LENGTH: N/A
5. STRUCTURAL STEEL AASHTO M270M/M270 GRADE: N/A
6. REINFORCING STEEL GRADE: 60
7. CONCRETE, HIGH PERFORMANCE CLASS A fc: N/A
CONCRETE, HIGH PERFORMANCE CLASS B fc: 3500 psi
8. DESIGN SOIL UNIT WEIGHT: 140 pcf
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: _____

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? YES
IF YES, ON EXISTING STRUCTURE? ON EXISTING STRUCTURE
OR ON TEMPORARY BRIDGE? _____
ONE OR TWO-WAY TRAVEL? _____
2. TRAFFIC CONTROL SIGNALS REQUIRED? NO
3. ARE SIDEWALKS REQUIRED? NO
IF SO, ON WHAT SIDE? _____

PROJECT NAME: SOUTH BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)

FILE NAME: z09a046engpi02.xls PLOT DATE: 2/8/2011
 PROJECT LEADER: BENOIT DRAWN BY: RPH
 DESIGNED BY: RPH CHECKED: BRC
 PRELIMINARY INFORMATION SHT (BR NO. 75-3) SHEET 2 OF 36

PROJECT NOTES

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION, DATED 2002, AND ITS LATEST REVISIONS.
2. DIMENSIONS, ANGLES, BEARINGS, AND ELEVATIONS OF THE EXISTING CULVERTS SHOWN ON THESE PLANS HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURES AND LIMITED FIELD INVESTIGATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING FIELD MEASUREMENTS OF ALL EXISTING STRUCTURE COMPONENTS TO ENSURE CONSISTENCY WITH THE PROPOSED MODIFICATIONS. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER OR EXTENT OF THE EXISTING FEATURES SHALL BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER BEFORE ADVANCING THE WORK. WORKING DRAWINGS REQUIRED FOR VARIOUS ITEMS OF WORK SHALL INDICATE THE ACTUAL FIELD MEASUREMENTS AND SHALL BE SO NOTED.
3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
4. IT IS EXPECTED THAT CULVERT LINING, NEW CULVERT INSTALLATION AND HEADWALL CONSTRUCTION WILL BE THE EXTENT OF THE WORK AT EACH SITE. DURING THE COURSE OF CONSTRUCTION IF THE CONTRACTOR SEES AN AREA OF CONCERN, SUCH AS VOIDS AROUND THE EXISTING CULVERT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. THE ENGINEER SHALL MAKE A DETERMINATION AS TO THE NEED FOR FURTHER EXPLORATION. IF FURTHER EXPLORATION IS NEEDED TEST BORINGS SHALL BE CONDUCTED IN THE AREA OF CONCERN. TEST BORINGS SHALL EXTEND 5' BELOW THE INVERT OF THE CULVERT. THIS WORK SHALL BE PAID FOR UNDER ITEM 900.640, SPECIAL PROVISION (TEST BORINGS).
5. THE CONTRACTOR MUST CONTACT DIG SAFE AT 1-888-344-7233 AT LEAST THREE DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

PIPE REHABILITATION NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ACCESS TO ALL CULVERT REHABILITATION SITES. ALL RESULTING DISTURBED EARTH SHALL BE STABILIZED AND RESTORED UPON COMPLETION OF CONSTRUCTION. PAYMENT SHALL BE MADE UNDER CONTRACT ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).
2. CONTRACTOR IS RESPONSIBLE FOR PIPE DESIGN WITH SUBMITTAL AND ACCEPTANCE PRIOR TO INSTALLATION.
3. STABILIZATION AND RESTORATION ASSOCIATED WITH THE TEMPORARY ACCESS SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT). EARTH DISTURBED WITHIN THE LIMITS OF STRUCTURE EXCAVATION FOR HEADWALL CONSTRUCTION SHALL BE RESTORED AND PAID FOR UNDER CONTRACT ITEMS FOR TURF ESTABLISHMENT.
4. AT EACH LOCATION SPECIFIED IN THESE PLANS, THE EXISTING CULVERT SHALL REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION OF THE EXISTING PIPE TO THE SATISFACTION OF THE ENGINEER. IT IS ANTICIPATED THAT IT WILL BE NECESSARY FOR THE CONTRACTOR TO REMOVE SEDIMENT, LARGE STONES, AND/OR DEBRIS FROM INSIDE THE EXISTING CULVERT, AND TO FILL AND REPAIR LARGE HOLES IN THE EXISTING CULVERT, PRIOR TO INSTALLING THE NEW LINER. PAYMENT FOR THIS WORK SHALL BE MADE UNDER THE APPROPRIATE SECTION 900 PIPE-LINER ITEM.
5. THE CONTRACTOR SHALL FILL ANY VOIDS BELOW THE CENTER OF THE CULVERT FROM WITHIN THE CULVERT BEFORE INSTALLING THE LINER. PAYMENT FOR THIS WORK SHALL BE MADE UNDER ITEM 541.31, CONCRETE, CLASS D.
6. THE CONTRACTOR SHALL FILL ANY VOIDS ABOVE THE CENTER OF THE CULVERT FROM WITHIN THE CULVERT BEFORE INSTALLING THE LINER. PAYMENT FOR THIS WORK SHALL BE MADE UNDER ITEM 900.608, CONTROLLED DENSITY (FLOWABLE) FILL.
7. THE EXISTING CRADLE WALL AT EACH PIPE INLET SHALL BE REMOVED UNDER ITEM 529.25, REMOVAL OF CONCRETE OR MASONRY AND A NEW CONCRETE HEADWALL SHALL BE CONSTRUCTED AT THE INLET. SEE HEADWALL DETAILS SHEET.
8. A NEW FULLY BEVELED HEADWALL SHALL BE CONSTRUCTED AT THE INLET OF EACH CULVERT. SEE HEADWALL DETAILS SHEET. THE NEW HEADWALL SHALL BE CONSTRUCTED IN THE DRY. CONTROL OF WATER SHALL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).
9. THE CONTRACTOR SHALL VERIFY THAT THE RECOMMENDED SIZE LINER WILL FIT IN THE EXISTING PIPE BEFORE ORDERING THE LINER PIPE. SHOULD THE CONTRACTOR DISCOVER THAT THE RECOMMENDED SIZE LINER WILL NOT FIT IN THE EXISTING PIPE, THEN THE CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER. ANY CHANGES TO THE PROPOSED SIZE OF THE LINER WILL BE PAID FOR AS EXTRA WORK.

CONCRETE NOTES

1. CONCRETE PAYMENT AND CLASSIFICATION SHALL BE AS FOLLOWS:
STRAIGHT HEADWALLS: ITEM 501.34, CONCRETE, HIGH PERFORMANCE CLASS B
CRADLE HEADWALLS: ITEM 541.25, CONCRETE, CLASS B
SUBFOOTINGS: ITEM 541.30, CONCRETE, CLASS C
FILLING VOIDS BELOW CULVERT CENTERLINE: ITEM 541.31, CONCRETE, CLASS D
2. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH BY 1 INCH, UNLESS OTHERWISE NOTED.
3. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
4. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT UNLESS OTHERWISE INDICATED. ANY UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.
5. FOOTINGS OR SUBFOOTINGS FOR SUBSTRUCTURES FOUNDED ON BEDROCK SHALL BE PLACED ON CLEAN COMPETENT ROCK. ALL LOOSE ROCK AND DEBRIS SHALL BE REMOVED.
6. UPON COMPLETION OF THE EXCAVATION FOR SUBSTRUCTURES FOUNDED ON BEDROCK AND PRIOR TO PLACING FORMWORK, THE RESIDENT ENGINEER SHALL CONTACT THE VTRANS SOILS AND FOUNDATION ENGINEER TO INSPECT THE BEDROCK. THE PROJECT MANAGER AS WELL AS THE VTRANS GEOLOGIST WILL ALSO BE NOTIFIED THAT THE BEDROCK IS READY FOR INSPECTION. THE SOILS AND FOUNDATION ENGINEER WILL DETERMINE IF THE BEDROCK IS COMPETENT TO OBTAIN THE NOMINAL BEARING RESISTANCE OF 10,000 PSF. FIVE (5) WORKING DAYS FROM NOTIFICATION SHALL BE ALLOWED TO MAKE THE INSPECTION AND THE DETERMINATION FOR THE COMPETENCY OF THE BEDROCK.
7. IF COMPETENT BEDROCK IS WITHIN 1' -0" BELOW THE DESIGN BOTTOM OF FOOTING FOR THE EXTENT OF THE SUBSTRUCTURE AS SHOWN IN THE CONTRACT PLANS, THE FOOTING MAY BE PLACED INTEGRALLY TO THE TOP OF THE BEDROCK USING THE CONCRETE ITEM SPECIFIED FOR THE FOOTING AT THE CONTRACT UNIT PRICE.
8. WHERE COMPETENT BEDROCK IS BELOW THE DESIGN BOTTOM OF FOOTING BY MORE THAN 1' -0" FOR ANY PORTION OF THE SUBSTRUCTURE, THE PROJECT MANAGER SHALL BE CONTACTED TO DETERMINE WHETHER OR NOT THE FOOTING SHALL BE LOWERED, A SUBFOOTING CONSTRUCTED OR PLACEMENT OF A 1' -0" LAYER OF GRANULAR BACKFILL FOR STRUCTURES BELOW THE FOOTING IS REQUIRED. IF THE DESIGN BOTTOM OF FOOTING ELEVATION IS TO BE LOWERED THE CONTRACTOR SHALL PROVIDE A BEDROCK PROFILE TO THE PROJECT MANAGER. THREE (3) WORKING DAYS FROM RECEIPT OF THE BEDROCK PROFILE SHALL BE ALLOWED TO MAKE THIS DETERMINATION. NO WORK SHALL BE DONE ON THE FOOTINGS UNTIL A REPLY IS RECEIVED.
9. WHERE COMPETENT BEDROCK IS ABOVE THE DESIGN BOTTOM OF FOOTING ELEVATION, IT SHALL BE REMOVED DOWN TO THE BOTTOM OF FOOTING ELEVATION AND PAID FOR UNDER ITEM 203.16, SOLID ROCK EXCAVATION OR A BEDROCK PROFILE SHALL BE PROVIDED BY THE CONTRACTOR TO THE PROJECT MANAGER TO DETERMINE WHETHER THE DESIGN BOTTOM OF FOOTING ELEVATION MAY BE RAISED. THREE (3) WORKING DAYS FROM RECEIPT OF THE BEDROCK PROFILE SHALL BE ALLOWED TO MAKE THE DETERMINATION. FOOTING ELEVATIONS SHALL NOT BE ADJUSTED WITHOUT APPROVAL OF THE PROJECT MANAGER.
10. THE LIMITS OF SUBFOOTINGS SHALL BE 1' -6" OUTSIDE OF THE HORIZONTAL LIMITS OF THE FOOTING. IF A SUBFOOTING IS REQUIRED IT SHALL BE PAID FOR UNDER ITEM 541.30, CONCRETE, CLASS C. THE TOP SURFACE OF ALL SUBFOOTINGS SHALL BE INTENTIONALLY ROUGHENED TO 1/4" AMPLITUDE.
11. A MAXIMUM OF 6" AVERAGE ALLOWANCE FOR OVERBREAKAGE WILL BE ALLOWED. ADDITIONAL OVERBREAKAGE AND REPLACEMENT WITH CONCRETE WILL BE AT THE CONTRACTOR'S EXPENSE.
12. DOWELS SHALL BE DRILLED AND GROUTED INTO BEDROCK WHEN SHOWN ON THE PLANS OR AS ORDERED BY THE ENGINEER. THE DOWELS SHALL HAVE A 2' -0" MINIMUM EMBEDMENT IN THE BEDROCK AND SHALL EXTEND IN THE FOOTING OR SUBFOOTING A MINIMUM OF 1' -6", UNLESS NOTED OTHERWISE. PAYMENT FOR DRILLING AND GROUTING OF DOWELS SHALL BE UNDER ITEM 507.16, DRILLING AND GROUTING DOWELS. PAYMENT FOR DOWELS SHALL BE MADE UNDER ITEM 507.15, REINFORCING STEEL.
13. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES. PAYMENT SHALL BE MADE AS ITEM 514.10, WATER REPELLENT, SILANE. APPLICATION RATE OF WATER REPELLENT, SILANE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

REINFORCING STEEL NOTES

1. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
ALONG BACK FACES OF WALLS AGAINST EARTH: 2"
ELSEWHERE UNLESS OTHERWISE INDICATED: 3"
2. REINFORCEMENT STEEL PLACEMENT TOLERANCES SHALL BE:
SPACING = +/- 1-INCH
CLEARANCE = +/- 1/4-INCH

TRAFFIC CONTROL NOTES

1. ALL TRAFFIC CONTROL MEASURES FOR THIS PROJECT SHALL BE INSTALLED IN ACCORDANCE WITH TYPICAL APPLICATIONS TA-5, TA-33, AND TA-34 OF THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE REFERENCED VTRANS STANDARD DRAWINGS. CONFLICTS BETWEEN THE MUTCD AND THE VTRANS STANDARD DRAWINGS SHOULD DEFER TO THE MUTCD.
2. THE CONTRACTOR SHALL SUBMIT A SPECIFIC TRAFFIC CONTROL PLAN FOR EACH CONSTRUCTION SITE TO THE HIGHWAY SAFETY AND DESIGN ENGINEER FOR APPROVAL PER SUBSECTIONS 104.04 AND 105.03. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN TRAFFIC CONTROL ITEMS.
3. LARGE CONSTRUCTION VEHICLES MAY BE REQUIRED TO BACK DOWN THE TEMPORARY ACCESS ROAD AT EACH CULVERT LOCATION. THESE VEHICLES WILL LIKELY NOT HAVE ADEQUATE SPACE AT THE INTERSECTION OF THE ACCESS ROAD AND THE INTERSTATE TO PERFORM THE NECESSARY TURNING MOVEMENTS. AT THE DISCRETION OF THE ENGINEER, A TEMPORARY CLOSURE OF THE INTERSTATE TRAVEL LANE AND SHOULDER WILL BE ALLOWED FOR ACCESS TO THE PROJECT SITES. SEE VTRANS STANDARD E-103. THIS WORK SHALL BE PAID FOR UNDER ITEM 641.10, TRAFFIC CONTROL.
4. TEMPORARY BARRIER, IF USED, SHALL MEET THE REQUIREMENTS OF SECTION 621. BARRIER ENDS FACING ONCOMING TRAFFIC SHOULD BE TAPERED BEYOND THE CLEAR ZONE. IF NECESSARY, PAYMENT FOR FURNISHING, INSTALLING, RESETTING, AND REMOVING ANY TEMPORARY TRAFFIC BARRIER SHALL BE INCIDENTAL TO ITEM 641.10, TRAFFIC CONTROL.
5. ENERGY ABSORPTION ATTENUATORS, IF USED, SHALL MEET THE REQUIREMENTS OF SECTION 621. PAYMENT FOR INSTALLING AND REMOVING ANY ENERGY ABSORPTION ATTENUATORS SHALL BE INCIDENTAL TO ITEM 641.10, TRAFFIC CONTROL.
6. SIGNS, BARRICADES, AND TRAFFIC CONTROL DEVICES SHALL BE CLEANED WEEKLY AND THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 641.10, TRAFFIC CONTROL.
7. TEMPORARY SIGNS LOCATED BEHIND GUARDRAIL SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE SIGN IS ABOVE THE HEIGHT OF THE GUARDRAIL. ALL CONSTRUCTION RELATED SIGNS SHALL BE PLACED SUCH THAT THEY DO NOT OBSTRUCT VISIBILITY OF EXISTING SIGNS.
8. IF THE CONTRACTOR REMOVES ANY EXISTING GUARDRAIL FOR CONSTRUCTION ACCESS, TRAFFIC SHALL BE PROTECTED BY TEMPORARY BARRIER MEETING THE REQUIREMENTS LISTED IN TRAFFIC CONTROL NOTE 5 ABOVE. PAYMENT FOR REMOVING AND RESETTING GUARDRAIL, FURNISHING, INSTALLING, RESETTING, AND REMOVING ANY TEMPORARY TRAFFIC BARRIER OR OTHER MATERIALS REQUIRED TO PROVIDE PROTECTION SHALL BE INCIDENTAL TO ITEM 641.10, TRAFFIC CONTROL. THE CONTRACTOR SHALL PLACE TEMPORARY BARRIER IN A MANNER SUCH THAT IT PROTECTS TRAFFIC FROM EXPOSED ENDS OF THE BARRIER AND GUARDRAIL.
9. THE CONTRACTOR SHALL COORDINATE ANY PROPOSED TRAFFIC CONTROL MEASURES WITH ABUTTING CONSTRUCTION PROJECTS.

PROJECT NAME: SO. BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)

FILE NAME: enggeneral.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
PROJECT NOTES

PLOT DATE: 09-FEB-2011
DRAWN BY: M. LOVETT
CHECKED BY: D. BENOIT
SHEET 3 OF 36



QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES							TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	#89 - BR NO. 69-1	#89 - BR NO. 75-3	FULL C.E. ITEMS		GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
1							1	1	LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
			-9-0	-10-0			19	0	CY	SOILD ROCK EXCAVATION	203.16	0.6			
			886 449	420 203.9			810	682.9	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	0			
			-8-23.9	-8-1.9			16	25.8	CY	EARTH BORROW	203.30				
1							4	118.4	CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
			886 568.9	480 146.4			790	715.3	CY	STRUCTURE EXCAVATION	204.25	8			
			886 308.4	886 112.8			450	421.2	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	1			
			886 111.0	886 42.88			140	153.98	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	9			
			886 445.3	1650 278.0			3600	7238	SF	TEMPORARY SHEET PILING	505.36	81			
			886 037.2	886 402.8			12900	1440.0	LB	REINFORCING STEEL	507.15	45			
			-8-0	-20-0			40	0	LF	DRILLING AND GROUTING DOWELS	507.16				
			-6-8	-5-2			10	10	GAL	WATER REPELLENT, SILANE	514.10	0.8			
			-5-13.59	-10-23.69			15	37.23	CY	REMOVAL OF CONCRETE OR MASONRY	529.25				
			-6-0	0			6	0	CY	CONCRETE, CLASS B	541.25				
			-24-48	-92-0			53	48	CY	CONCRETE, CLASS C	541.30				
			-10-0	-10-2.67			20	2.67	CY	CONCRETE, CLASS D	541.31				
										BEGIN OPTION AA					
				-8-0			80	0	LF	18" RCP CLASS III	601.0815				
				-8-0			80	0	LF	18" CPEP(SL)	601.2815				
										END OPTION AA					
			486 20				100	20	LF	CLEANING CULV. PIPE, IN-PLACE (0 TO 24 IN., INCL.)	601.885				
			470 627.4	440 162.4			280		CY	STONE FILL, TYPE II	613.11	6			
			886 455.8	886 0			600	455.8	HR	UNIFORMED TRAFFIC OFFICERS	630.10				
						1	1	1	LS	FIELD OFFICE ENGINEERS	631.10				
						1	1	1	LS	TESTING EQUIPMENT, CONCRETE	631.16				
						3000	2,100	DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.28					
						498	498	HR	EMPLOYEE TRAINEESHIP	634.10					
	498 600					8000 2,100									
1							1	1	LS	MOBILIZATION/DEMOLITION	635.11				
							1	1	LS	TRAFFIC CONTROL (89 - BR. NO. 69-1)	641.10				
							1	1	LS	TRAFFIC CONTROL (89 - BR. NO. 75-3)	641.10				
							2	3	EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15				
							2	4	EACH	PORTABLE ARROW BOARD	641.16				
			886 941.8	886 242			500	1183.8	SY	GEOTEXTILE UNDER STONE FILL	649.31	33			
			886 358.6				190	358.6	SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515	9			
			886 107				20	107	LB	SEED	651.15				
			886 355				50	355	LB	FERTILIZER	651.18				
			-1-4.42				4	1.42	TON	AGRICULTURAL LIMESTONE	651.20				
			-1-3.72				4	3.72	TON	HAY MULCH	651.25				
			-12-0				12	0	CY	TOPSOIL	651.35	1			
							1	1	LS	EPSC PLAN	652.10				
			886 0				32	0	HR	MONITORING EPSC PLAN	652.20				
			-1-0.73				4	0.73	LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				

REVISION	BY	DATE
1	MHM	4/4/2011

REVISION NO. 1 ADDED THE FOLLOWING ITEMS:
ITEM 631.10 FIELD OFFICE ENGINEERS
ITEM 631.28 FIELD OFFICE TELEPHONE (N.A.B.I.)

PROJECT NAME: SOUTH BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)
FILE NAME: z09a046quansheet.xls
PROJECT MANAGER: DMB
DESIGNED BY: MMH
QUANTITY SHEET #1
PLOT DATE: 02/09/2011
DRAWN BY: MMH
CHECKED: BRC
SHEET 4 OF 36

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	TRAINING	EROSION CONTROL	#89 - BR. NO. (89-1)	#89 - BR. NO. (75-3)	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS				
		210	000			210	1000	SY	TEMPORARY EROSION MATTING	653.20	6							
		8	1			8	1	EACH	FILTER BAG	653.45								
		1800	935			1800	935	LF	BARRIER FENCE	653.60	47							
			100	0	100	200	0	CY	SPECIAL PROVISION (CONTROLLED DENSITY (FLOWABLE) FILL)	900.608								
			10	0	10	20	0	EACH	SPECIAL PROVISION (GRID CRACK GAUGE)	900.620								
			18	0	18	36	18	EACH	SPECIAL PROVISION (GROUND MONITORING POINT)	900.620								
			1	2	0	3	1	EACH	SPECIAL PROVISION (INCLINOMETER)	900.620								
			1	1	0	2	1	EACH	SPECIAL PROVISION (INSTRUMENT DECOMMISSIONING)	900.620								
			12	10	13	25	10	EACH	SPECIAL PROVISION (STRUCTURE MONITORING POINT)	900.620								
			8	0	8	16	0	HR	SPECIAL PROVISION (TRENCHLESS PIPE OBSTRUCTION REMOVAL)	900.630								
					320	320	0	LF	SPECIAL PROVISION (CORRUGATED PIPE LINER, CAAP) (60") (EXISTING 108" PIPE)	900.640	8							
			290	0		290	0	LF	SPECIAL PROVISION (CORRUGATED PIPE LINER, HDPE) (48") (EXISTING 72" PIPE)	900.640	5							
			1250	0	1250	2500	0	LF	SPECIAL PROVISION (TEST BORINGS)	900.640								
			287	298		287	298	LF	SPECIAL PROVISION (TRENCHLESS PIPE) (60") (89 - BR. NO. 89-1)	900.640	1							
					313	313	0	LF	SPECIAL PROVISION (TRENCHLESS PIPE) (60") (89 - BR. NO. 75-3)	900.640	1							
			1			1	1	LS	SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT) (89 - BR. NO. 89-1)	900.645								
				1		1	1	LS	SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT) (89 - BR. NO. 75-3)	900.645								
			1			1	1	LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) (89 - BR. NO. 89-1)	900.645								
				1		1	1	LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) (89 - BR. NO. 75-3)	900.645								

PROJECT NAME: SOUTH BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)
 FILE NAME: z06a45quantitysheet.xls
 PROJECT MANAGER: DMB
 DESIGNED BY: MMH
 QUANTITY SHEET #2
 PLOT DATE: 02/09/2011
 DRAWN BY: MMH
 CHECKED: BRC
 SHEET 5 OF 36

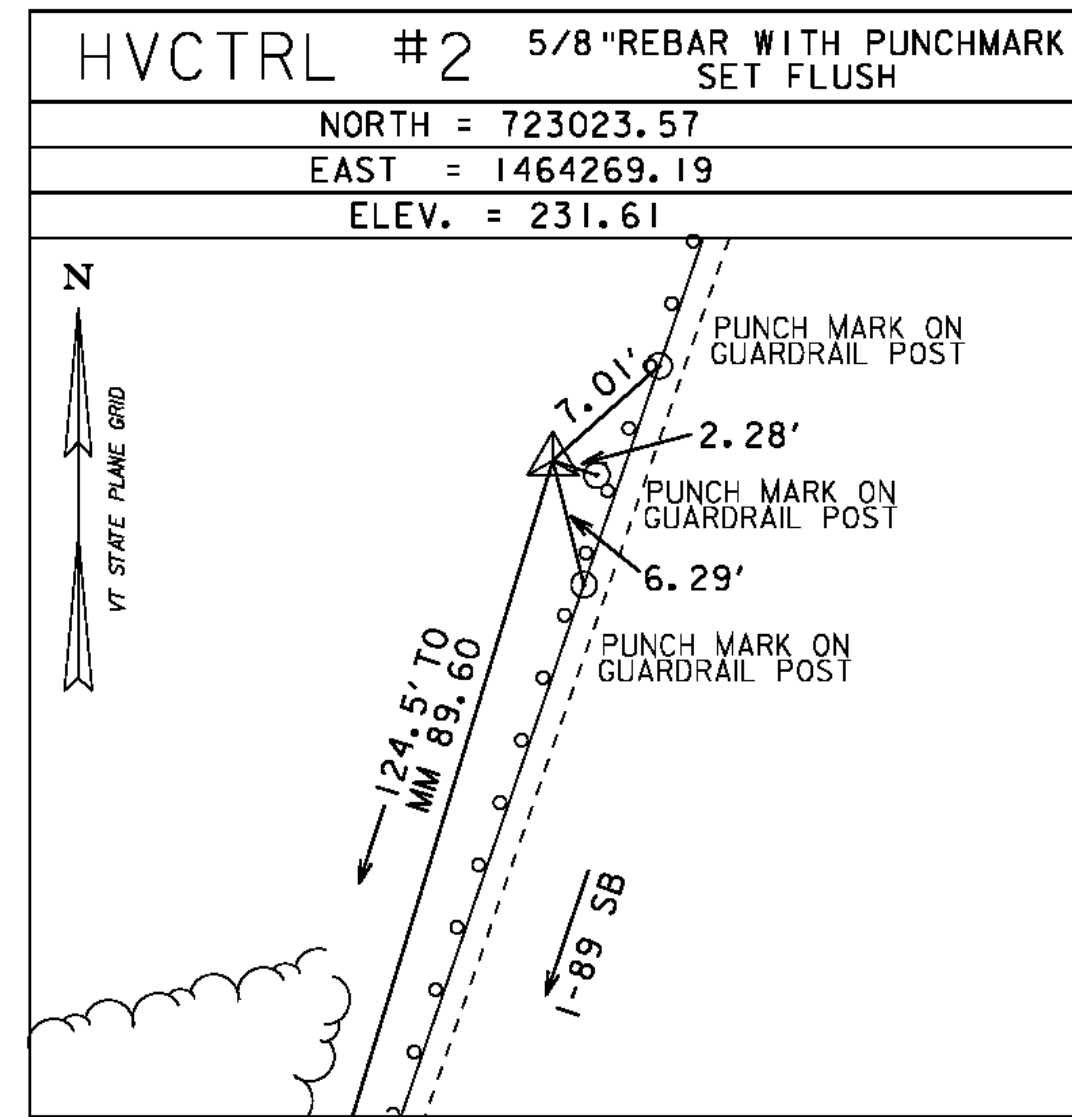
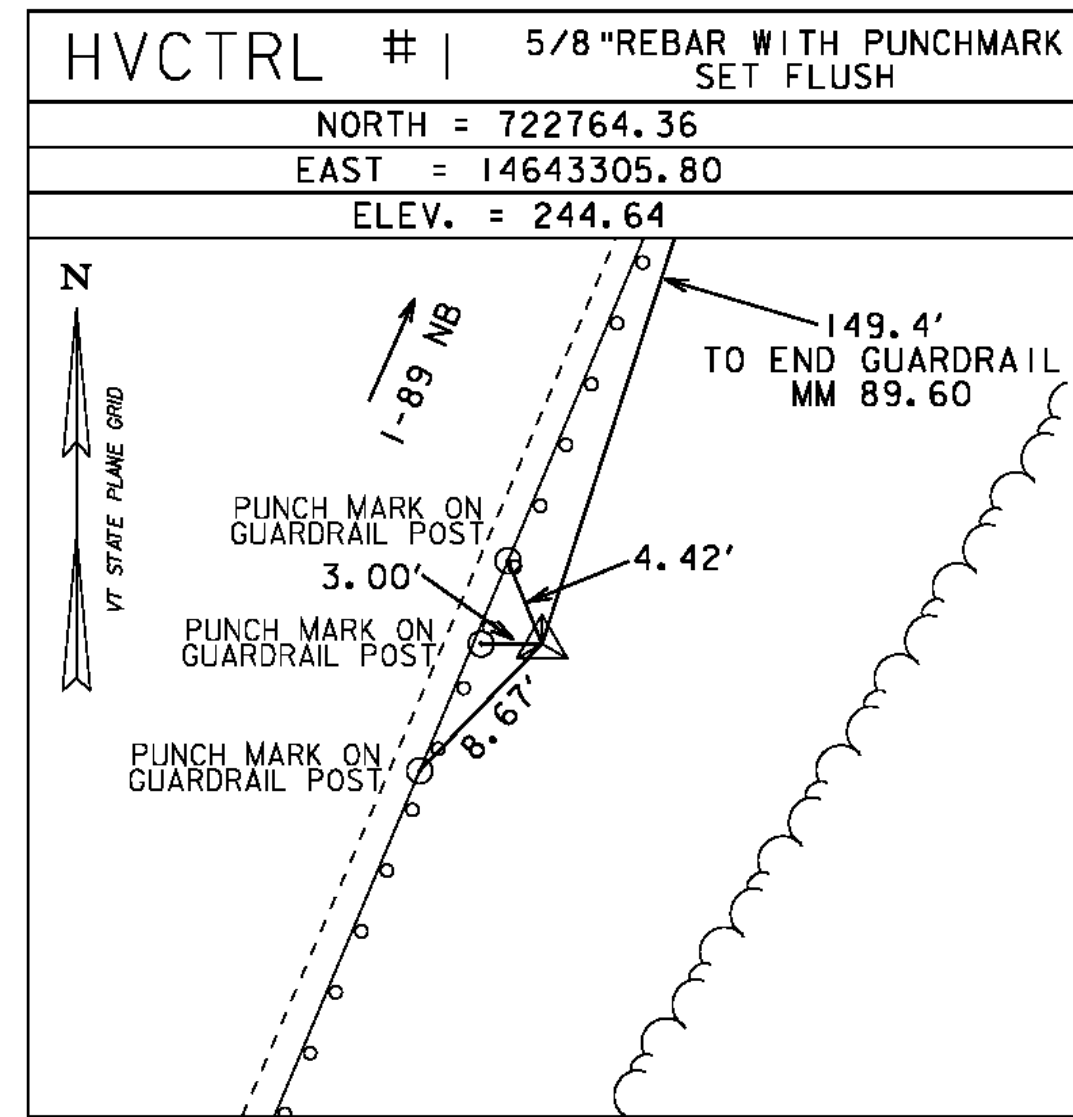
GPS CONTROL POINTS

UVM COOLIDGE CORS ARP

PID DG9783 DESCRIBED BY NATIONAL GEODETIC SURVEY 2005, STATION IS A GPS CORS.
 THE MONUMENT IS THE ANTENNA REFERENCE POINT (ARP) OF A TRIMBLE
 TRM41249.00 GPS ANTENNA, MOUNTED ON A STEEL MAST ON THE ROOF OF
 COOLIDGE HALL ON THE CAMPUS OF UVM, BURLINGTON, VERMONT.

N = 718549.76'
 E = 1458233.62'
 EL. HT. = 368.82'

TRAVERSE TIES

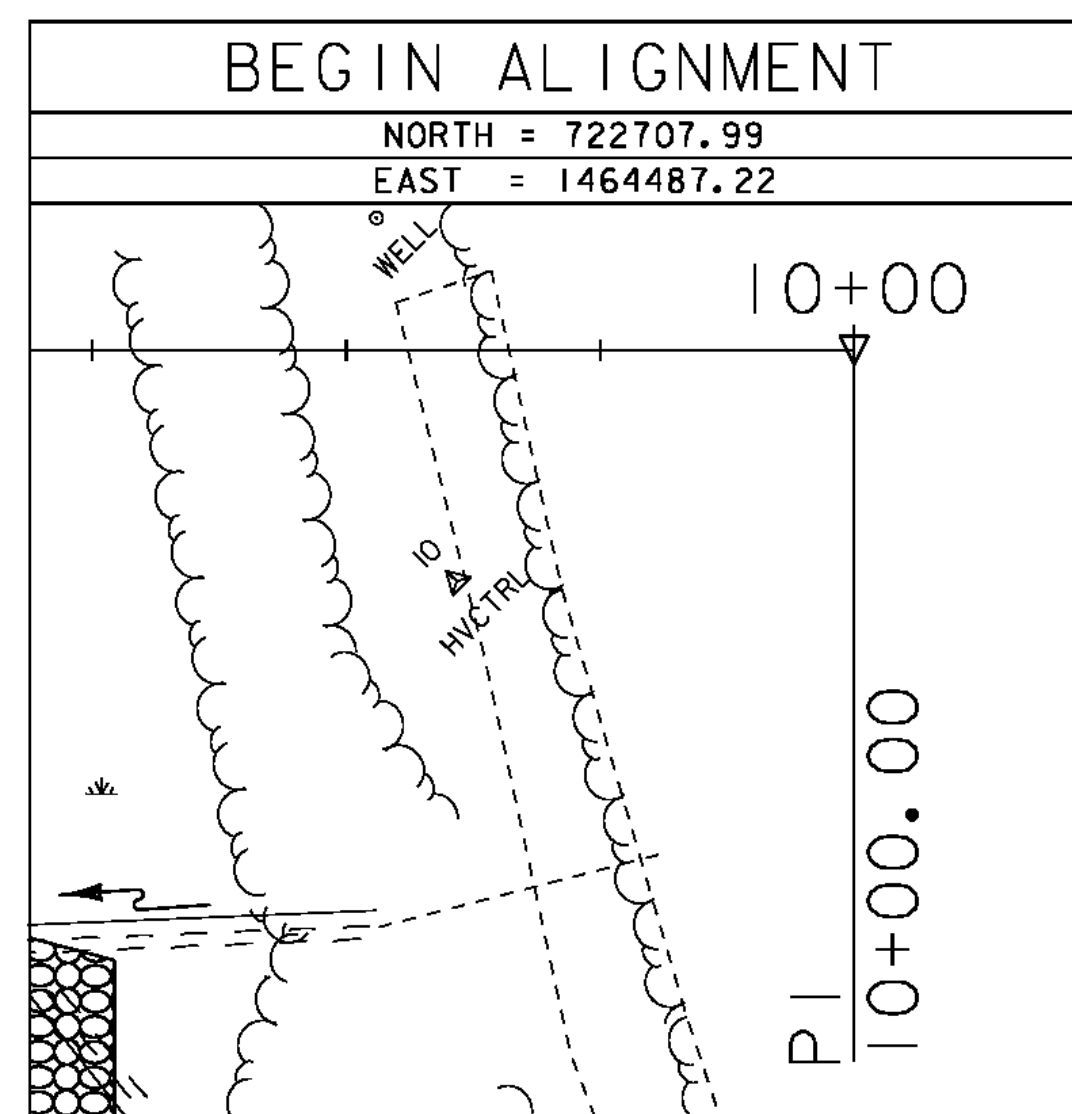
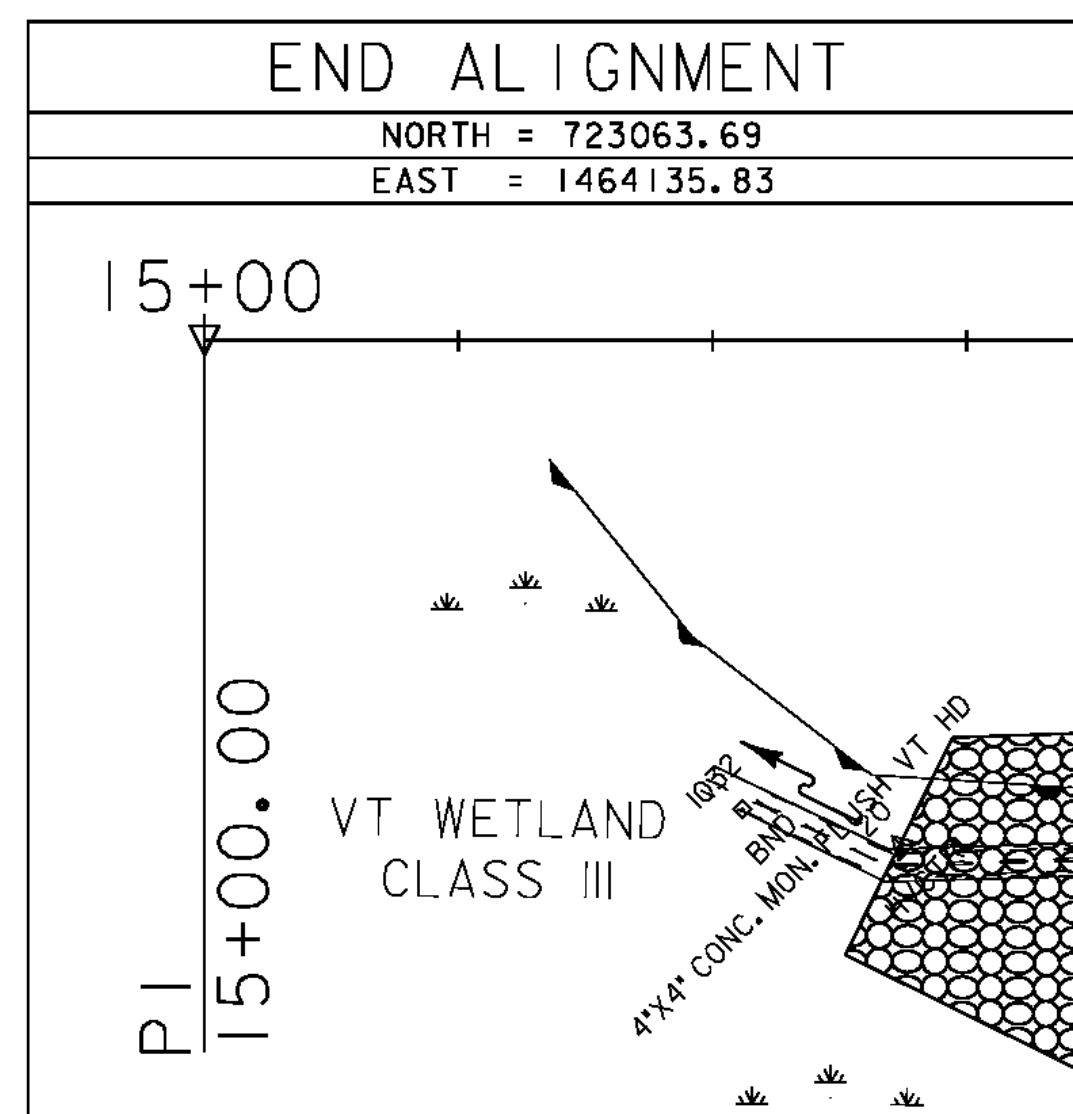


NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

ALIGNMENT TIES



NORTH =
EAST =

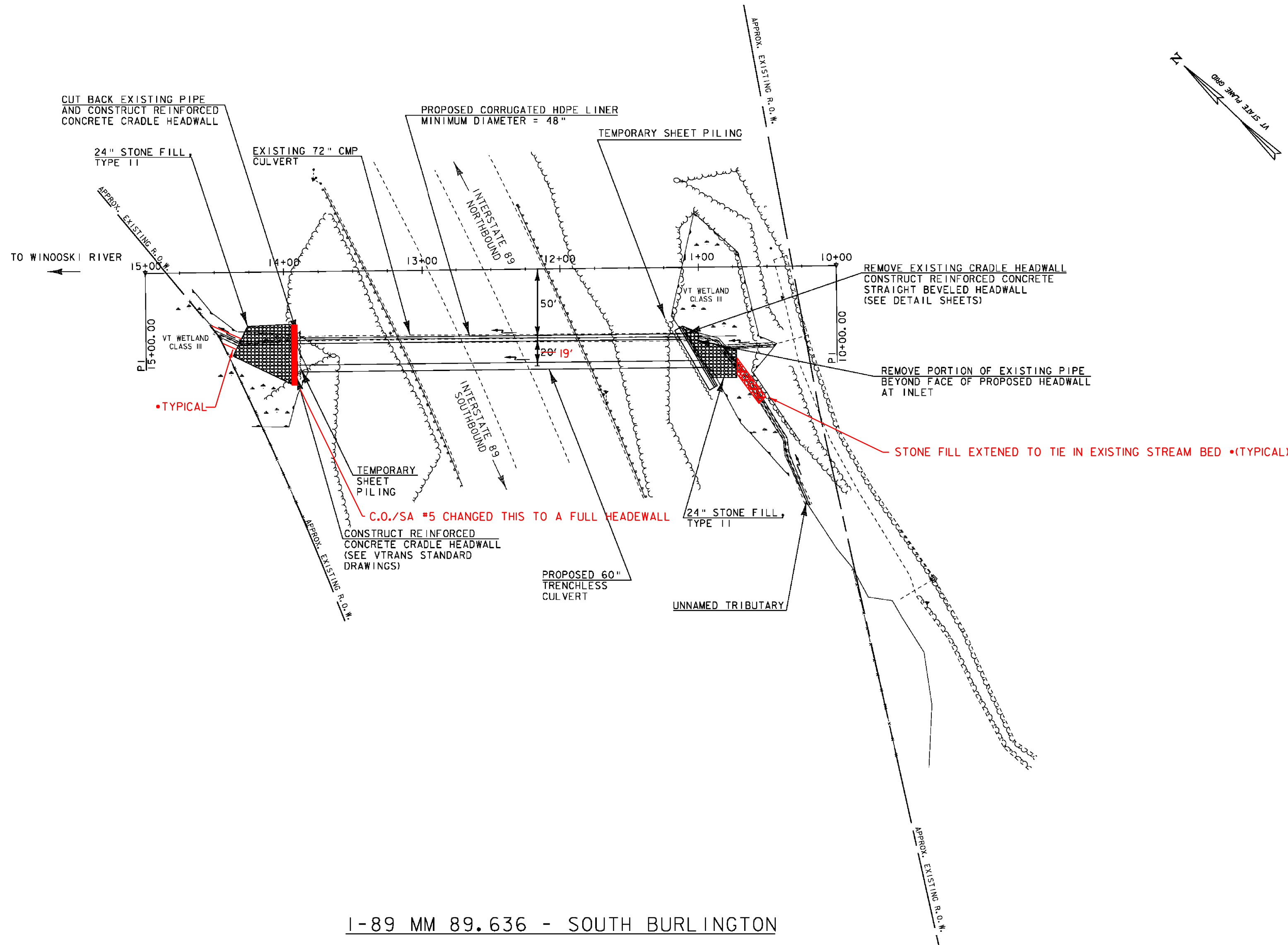
NORTH =
EAST =

NORTH =
EAST =

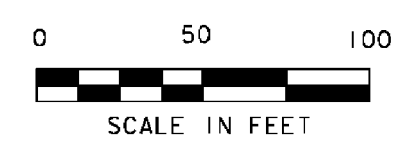
DATUM	
VERTICAL	NAVD 88(GEIOD3)
HORIZONTAL	NAD 83(CORS96)
ADJUSTMENT	LSQ

PROJECT NAME:	SO. BURLINGTON - COLCHESTER
PROJECT NUMBER:	IM CULV (23)
FILE NAME:	z09a046+102.dgn
PROJECT LEADER:	D. BENOIT
DESIGNED BY:	B. COLBURN
TIE SHEET - SOUTH BURLINGTON	69-1
PLOT DATE:	08-FEB-2011
DRAWN BY:	M. FUGERE
CHECKED BY:	D. BENOIT
SHEET	6 OF 36

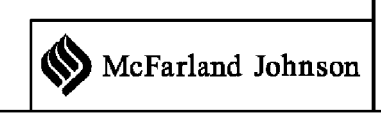




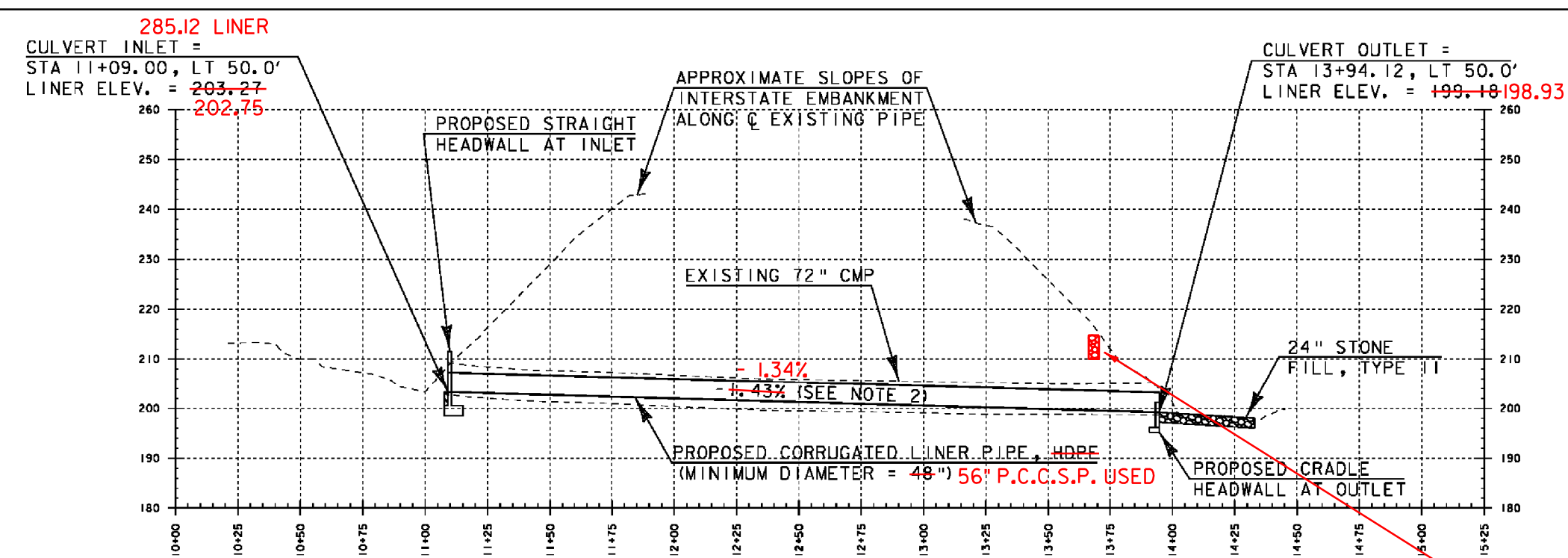
1-89 MM 89.636 - SOUTH BURLINGTON



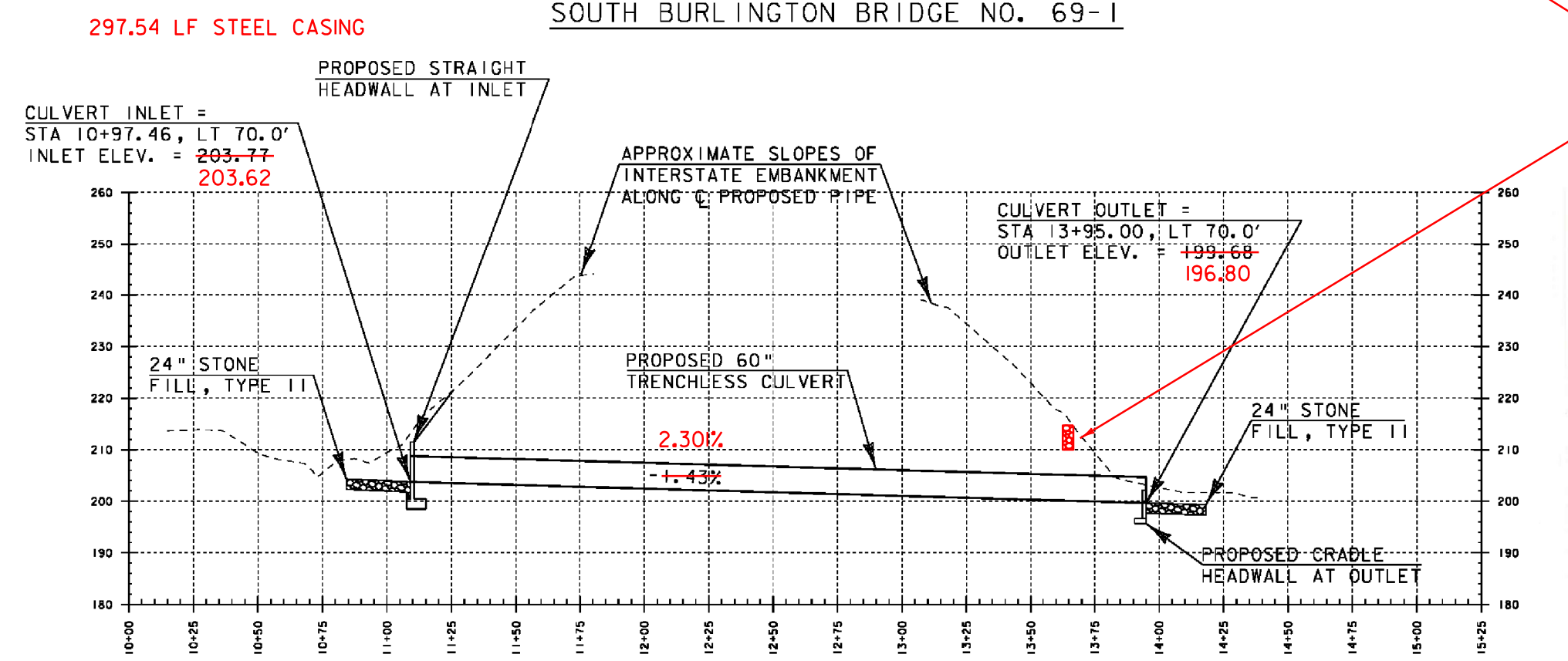
GENERAL NOTE:
 1. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING TEMPORARY ACCESS TO THE CULVERT ENDS. ALL RESULTING DISTURBED EARTH SHALL BE STABILIZED AND RESTORED UPON COMPLETION OF CONSTRUCTION. PAYMENT SHALL BE MADE UNDER CONTRACT ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT). ANY REMOVAL OF TREES AND STUMPS NECESSARY FOR CONSTRUCTION OF THE TEMPORARY ACCESS ROAD SHALL BE PAID UNDER ITEM 201.10 - CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS.



PROJECT NAME:	SO. BURLINGTON - COLCHESTER	
PROJECT NUMBER:	IM CULV (23)	
FILE NAME:	z09a0461a02.dgn	PLOT DATE:
PROJECT LEADER:	D. BENOIT	DRAWN BY:
DESIGNED BY:	B. COLBURN	CHECKED BY:
LAYOUT SHEET:	SOUTH BURLINGTON 69-1	SHEET:
		7 OF 36



EXISTING CULVERT WITH LINER
SOUTH BURLINGTON BRIDGE NO. 69-1



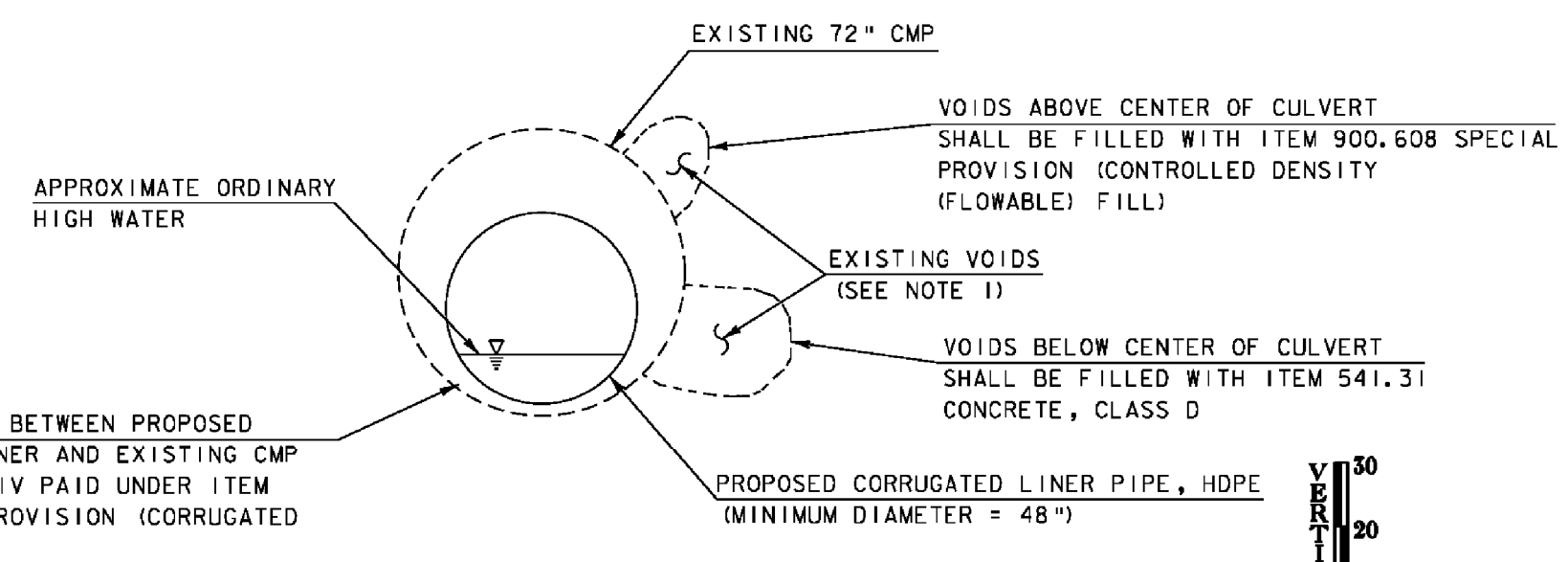
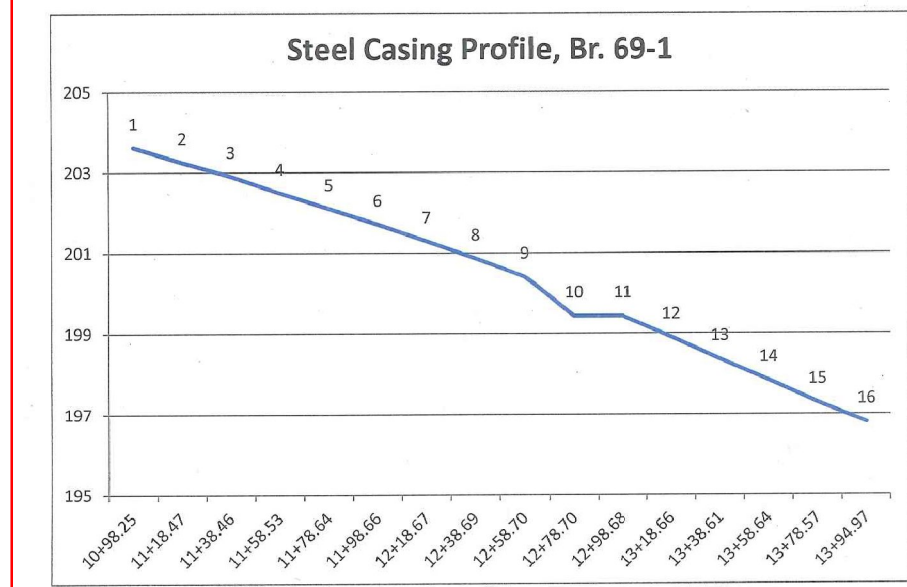
PROPOSED 60" TRENCHLESS CULVERT
SOUTH BURLINGTON BRIDGE NO. 69-1

TOTAL STATION USED FOR ASBULT DATA,
60" INVERT @ INLET STORED AS POINT *502
N 722729.60
E 1464368.91
ELEV. 202.75

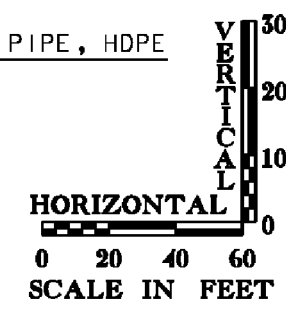
60" OUTLET POINT *503
N 722939.51
E 1464159.58
ELEV. 196.80

STONE FILL (TYPE 1/III) USED AS FRENCH
DRAIN ALONG TOP OF HEADWALL. TIED
INTO STONE FILL ON SLOPE.

Station	Elevation	Offset
1	10+98.25	203.62 68.98 LT
2	11+18.47	203.25 69.12 LT
3	11+38.66	202.91 69.07 LT
4	11+58.53	202.49 69.09 LT
5	11+78.64	202.1 69.25 LT
6	11+98.66	201.71 69.27 LT
7	12+18.67	201.29 69.34 LT
8	12+38.69	200.86 69.39 LT
9	12+58.70	200.41 69.45 LT
10	12+78.70	199.44 69.55 LT
11	12+98.68	199.44 69.7 LT
12	13+18.66	198.91 69.83 LT
13	13+38.61	198.36 69.95 LT
14	13+58.64	197.84 70.08 LT
15	13+78.57	197.29 70.19 LT
16	13+94.07	196.8 70.38 LT



CULVERT LINING DETAIL
NOT TO SCALE



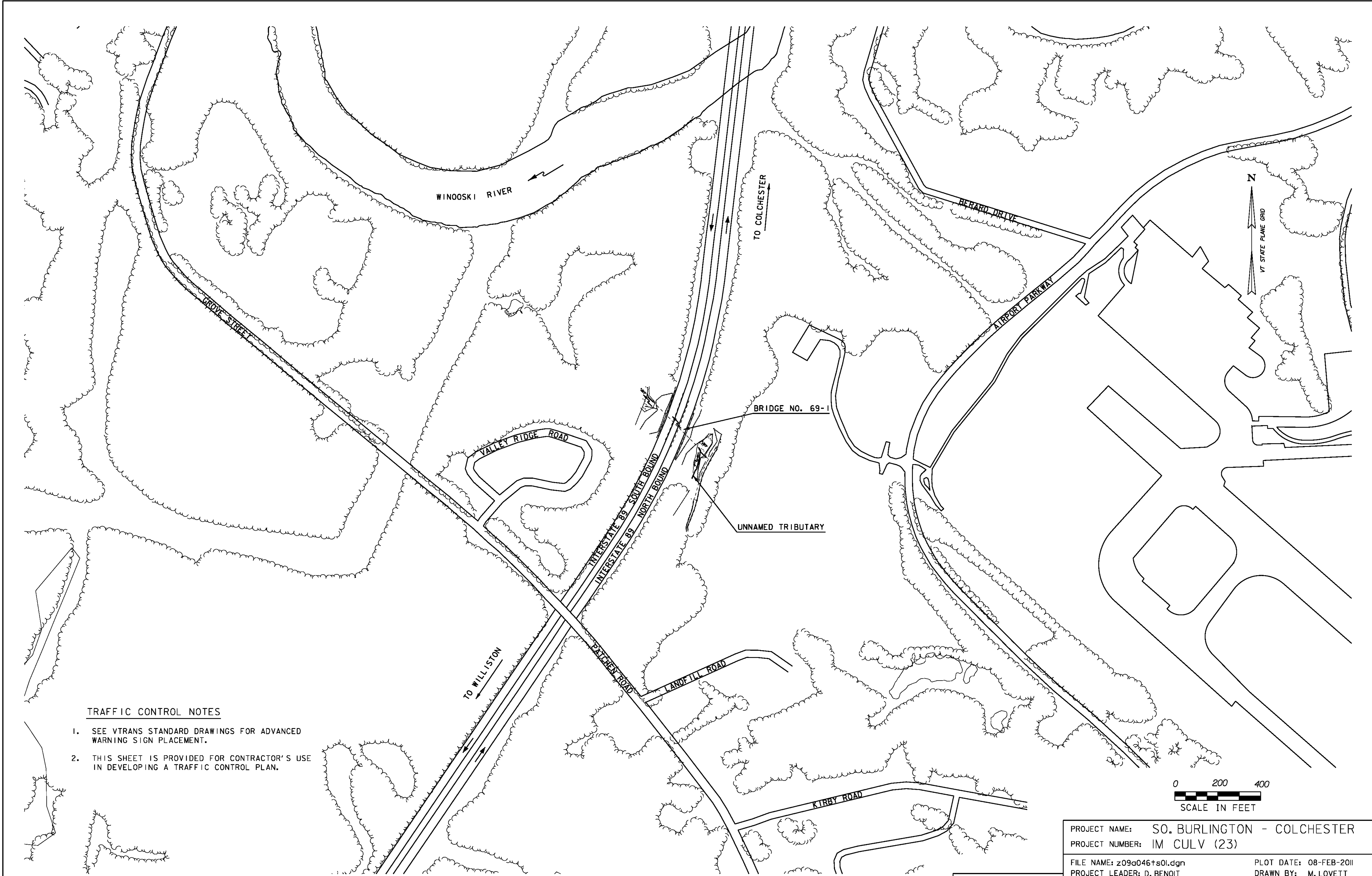
PROJECT NOTES

- POTENTIAL VOID LOCATIONS SHOWN FOR EXPLANATION PURPOSES ONLY.
- CULVERT LINER SHALL BE CONSTRUCTED AT A CONSTANT SLOPE TO ELIMINATE THE SAG IN THE EXISTING CULVERT.

FILL ANNULAR SPACE BETWEEN PROPOSED CORRUGATED HDPE LINER AND EXISTING CMP WITH MORTAR, TYPE 1V PAID UNDER ITEM 900.640, SPECIAL PROVISION (CORRUGATED PIPE LINER HDPE)

EXISTING 72" CMP
VOIDS ABOVE CENTER OF CULVERT SHALL BE FILLED WITH ITEM 900.608 SPECIAL PROVISION (CONTROLLED DENSITY (FLOWABLE) FILL)
EXISTING VOIDS (SEE NOTE 1)
VOIDS BELOW CENTER OF CULVERT SHALL BE FILLED WITH ITEM 541.31 CONCRETE, CLASS D

PROJECT NAME: SO. BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)
FILE NAME: z09q046pr-o02.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
PROFILE SHEET - SOUTH BURLINGTON 69-1
PLOT DATE: 08-FEB-2011
DRAWN BY: M. LOVETT
CHECKED BY: D. BENOIT
SHEET 8 OF 36



TRAFFIC CONTROL NOTES

1. SEE VTRANS STANDARD DRAWINGS FOR ADVANCED WARNING SIGN PLACEMENT.
2. THIS SHEET IS PROVIDED FOR CONTRACTOR'S USE IN DEVELOPING A TRAFFIC CONTROL PLAN.

PROJECT NAME: SO. BURLINGTON - COLCHESTER	
PROJECT NUMBER: IM CULV (23)	
FILE NAME: z09a046ts01.dgn	PLOT DATE: 08-FEB-2011
PROJECT LEADER: D. BENOIT	DRAWN BY: M. LOVETT
DESIGNED BY: B. COLBURN	CHECKED BY: D. BENOIT
TRAFFIC SAFETY PLAN - SO. BURLINGTON 69-ISHEET 9 OF 36	



EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REHABILITATION OF AN EXISTING 72-INCH CORRUGATED METAL CULVERT UNDER INTERSTATE 89 AS WELL AS THE INSTALLATION OF A NEW PIPE ADJACENT TO THE EXISTING CULVERT USING TRENCHLESS TECHNOLOGY. THE CULVERT IS LOCATED SOUTH OF EXIT 15 NEAR THE PATCHEN ROAD BRIDGE IN SOUTH BURLINGTON, VT. THE CULVERT IS DESIGNATED AS BR 69-1. THE 302 FOOT LONG CULVERT CONVEYS AN UNNAMED BROOK WEST WHICH ULTIMATELY OUTLETS INTO THE WINOOSKI RIVER. THE EXISTING CULVERT WILL BE SLIP LINED WITH A PROPOSED 48-INCH CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE AS THE EXISTING CULVERT IS BEYOND ITS DESIGN LIFE AND SHOWS SIGNS OF DETERIORATION AND STRUCTURAL DEFICIENCY. A NEW CULVERT IS TO BE INSTALLED 20 FEET SOUTH OF THE EXISTING PIPE. THE NEW CULVERT IS A 60-INCH SMOOTH WALLED PIPE TO BE INSTALLED USING TRENCHLESS TECHNOLOGY SUCH AS PIPE JACKING OR AUGERING. THE PROJECT ALSO INCLUDES THE CONSTRUCTION OF A FULLY BEVELED HEADWALL AT THE INLET OF BOTH CULVERTS TO IMPROVE HYDRAULICS. DISTURBANCE TO TRAFFIC WILL BE ONLY THAT WHICH CONSTRUCTION VEHICLES NEED TO ACCESS THE SITE. NO FULL ROAD CLOSURES WILL BE NECESSARY. TEMPORARY LANE CLOSURES WILL BE ALLOWED (SEE SPECIAL PROVISIONS). TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW, AND THE CONTRACTOR'S OFF-SITE STAGING AREAS) EQUALS 1.07 ACRES. THE TOTAL DISTURBED AREA EQUALS THE ENTIRE AREA LOCATED WITHIN THE BARRIER FENCE. THE UPSTREAM SIDE OF THE SITE IS LOCATED APPROXIMATELY 100 FEET FROM A CAPPED LANDFILL. THE SITE IS ALSO LOCATED NEAR A WASTE WATER TREATMENT FACILITY AND THE BURLINGTON INTERNATIONAL AIRPORT.

IT IS ANTICIPATED THAT THIS WILL BE A SINGLE SEASON PROJECT.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE PROPERTY SURROUNDING THE SITE CONSISTS OF WOODS WITH LIGHT UNDERBRUSH. THE SIDE SLOPES OF THE INTERSTATE ARE GRASSED. THE TERRAIN CAN BE DESCRIBED AS FLAT WITH WELL DEFINED WATERWAYS. AFTER THE WATER TRAVELS UNDER THE INTERSTATE, IT FLOWS APPROXIMATELY 1000 FEET BEFORE REACHING THE WINOOSKI RIVER. THE SIDE SLOPES OF THE STREAM ARE LOW. DUE TO THE FLAT TERRAIN IN THE AREA, HIGH FLOW RATES WOULD CREATE SIGNIFICANT PONDING ON THE UPSTREAM END OF THE CULVERT. THE ROADWAY EMBANKMENTS ARE GRASSED WITH WELL ESTABLISHED VEGETATION AND ARE CONSTRUCTED AT 1:2 (VERTICAL: HORIZONTAL) SLOPES.

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

THE UNNAMED BROOK IS LOCATED WITHIN THE PROJECT AREA. THE BROOK FLOWS EAST TO WEST BENEATH BOTH BARRELS OF INTERSTATE 89. THERE ARE NO OTHER WATERWAYS OR BODIES OF WATER WITHIN THE PROJECT AREA. STORMWATER ENTERING THE PROJECT AREA WILL BE LIMITED TO THE RUNOFF FROM INTERSTATE 89 AND RUNOFF FROM THE SIDESLOPES OF THE EMBANKMENT.

1.2.3 VEGETATION

THE VEGETATION ON THE SITE CONSISTS OF BRUSH AND TREES ON BOTH SIDES OF THE INTERSTATE. THE DOWNSTREAM END CONTAINS A MIX OF HERBACEOUS AND FORESTED VEGETATION WITH SHRUBS. THE UPSTREAM END CONTAINS A MIX OF HERBACEOUS AND FORESTED VEGETATION. THE INTERSTATE EMBANKMENTS ARE GRASSED ON BOTH SIDES. THE IMPACT TO THE VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY IMPACTED BY SLIP-LINING, NEW CULVERT INSTALLATION, AND HEADWALL CONSTRUCTION OPERATIONS. DISTURBED SOILS AND VEGETATION WILL BE REESTABLISHED USING STONE AND STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

THE SOIL FOUND SURROUNDING THE PROJECT SITE IS PRIMARILY HARTLAND SANDY LOAM, 25 TO 60% SLOPES. THIS SOIL IS CLASSIFIED AS WELL DRAINED AND HAS AN ERODIBILITY FACTOR OF 0.49. THE ROADWAY EMBANKMENTS ARE MOST LIKELY A COMMON FILL MATERIAL THAT WAS PLACED DURING CONSTRUCTION OF THE INTERSTATE. GENERALLY, K-VALUES INDICATE THE FOLLOWING:

- 0.23 AND LOWER LOW ERODIBILITY
- 0.24 TO 0.36 MODERATE ERODIBILITY
- 0.36 AND HIGHER HIGH ERODIBILITY

1.2.5 SENSITIVE RESOURCE AREAS

DISTURBANCE OF THE SOILS NEAR THE WATERWAY WILL CONSIST OF THAT WHICH IS NECESSARY TO CONSTRUCT THE PROPOSED HEADWALL, SLIP-LINE THE EXISTING PIPE, AND INSTALL THE NEW PIPE. BARRIER FENCE (BF) WILL BE CONSTRUCTED ALONG THE PROJECT LIMITS TO PREVENT DISTURBANCE OUTSIDE THE PROJECT LIMITS.

- CRITICAL HABITATS: NO
- HISTORIC OR ARCHEOLOGICAL AREA: NO
- PRIME AGRICULTURAL LAND: NO
- THREATENED AND ENDANGERED SPECIES: NO
- WATER RESOURCE: YES
- WETLANDS: YES, SEE BELOW FOR IMPACTS

WETLAND IMPACTS: 5,635 SF TEMPORARY; 1,344 SF PERMANENT
OHW IMPACTS: 527 SF TEMPORARY; 1,667 SF PERMANENT

1.3 RISK EVALUATION

THIS PROJECT FALLS UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES FOR LOW RISK PROJECTS. ANY MODIFICATIONS TO THE PROJECT THAT INCREASE THE RISK TO ENVIRONMENTAL RESOURCES SHALL BE EVALUATED IN ACCORDANCE WITH THE PERMIT REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING. THE RISK EVALUATION WAS BASED ON HAVING LESS THAN 2 ACRES OF DISTURBANCE AND NO AREAS OF DISTURBANCE FOR MORE THAN 14 CONSECUTIVE DAYS WITHOUT TEMPORARY OR FINAL STABILIZATION.

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.

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

INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN IN THE EROSION CONTROL PLAN OR AS DIRECTED BY THE ENGINEER OR ON-SITE COORDINATOR. DO NOT MODIFY THE TYPE, SIZE, OR LOCATION OF ANY CONTROL OR PRACTICE WITHOUT APPROVAL OF THE ENGINEER OR ON-SITE COORDINATOR. ANY CHANGES SHALL BE NOTED ON THE PLANS, IN THE WEEKLY INSPECTION REPORT, AND REPORTED TO THE APPROPRIATE AUTHORITY IN A TIMELY MANNER. INSPECT ALL CONTROL MEASURES WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES RUNOFF FROM THE PROJECT SITE. REPAIR MEASURES PROMPTLY ONCE DAMAGE IS DISCOVERED. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR EACH PRACTICE REQUIRED ON THE PROJECT TO INCLUDE BUT NOT LIMITED TO THE FOLLOWING:

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED. BARRIER FENCE (BF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, BARRIER FENCE SHALL BE USED INSTEAD OF PROJECT DEMARCATION FENCE WITHIN 100 FT OF A WATER RESOURCE (STREAM, BROOK, LAKE, POND, WETLAND, ETC). DISTURBANCE OUTSIDE THE LIMITS OF THE BARRIER FENCE WILL REQUIRE ADDITIONAL PERMIT COVERAGE.

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. DO NOT ALLOW CONSTRUCTION EQUIPMENT TO OPERATE OUTSIDE OF PERIMETER CONTROL MEASURES.

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 AT TEMPORARY ACCESS ROADS AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES. IF SEDIMENT IS STILL BEING TRACKED ONTO PUBLIC ROADS, THE LENGTH OF THE PAD SHALL BE EXTENDED OR VEHICLES SHALL BE RINSED WITH A HOSE PRIOR TO LEAVING THE SITE.

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 TO BE INSTALLED AS PROPOSED ON THE EPSC PLAN. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, WOVEN WIRE REINFORCED SILT FENCE SHALL BE USED INSTEAD OF SILT FENCE WITHIN 100 FEET UPSLOPE OF RECEIVING WATERS.

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 EXISTING STREAM WILL BE DIVERTED AS DESCRIBED IN THE DEWATERING SECTION BELOW. IT IS NOT ANTICIPATED THAT ANY OTHER UPLAND FLOW DIVERSION WILL BE REQUIRED.

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 TO BE USED AS DETERMINED NECESSARY BY THE RESIDENT ENGINEER. IT IS ANTICIPATED THAT STONE CHECK DAMS WILL BE REQUIRED AS A RESULT OF THE TEMPORARY ACCESS ROADS.

1.4.7. CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS. ALL DISTURBED SOIL SHALL BE STABILIZED WITH SEED AND MULCH OR STONE FILL AS SHOWN ON THE PLANS. IT IS NOT ANTICIPATED THAT ANY OTHER PERMANENT STORMWATER TREATMENT DEVICES WILL BE NECESSARY.

1.4.8. STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION. SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3. THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9. WINTER STABILIZATION

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

IF ANY EARTHWORK IS TO BE PERFORMED OUTSIDE THE CONSTRUCTION SEASON, A WINTER EROSION AND SEDIMENT CONTROL PLAN DESCRIBING ALTERNATIVE STABILIZATION METHODS SHALL BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO AUGUST 15 FOR APPROVAL.

1.4.10. STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE. SEEDING, MULCHING, AND BIODEGRADABLE EROSION CONTROL MATTING OR EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

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. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE HEADWALLS AND CRADLE WALLS. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSIONS WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO THE EXISTING CULVERT DURING THE NEW CULVERT INSTALLATION AND INTO THE NEW CULVERT DURING THE LINING OF THE EXISTING CULVERT. FILTER BAGS MAY BE NECESSARY FOR TREATMENT WHILE DEWATERING AS NECESSARY FOR CONSTRUCTION ACTIVITIES. HOWEVER, THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT A PLAN FOR ANY DEWATERING AREAS TO THE RESIDENT ENGINEER FOR APPROVAL.

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

THE CONTRACTOR SHALL DEVELOP THE TRAFFIC MANAGEMENT PLAN USING THE STANDARD PLANS AND THE MOST RECENT EDITION OF THE MUTCD.

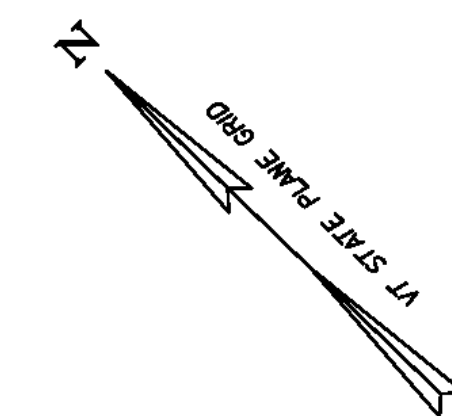
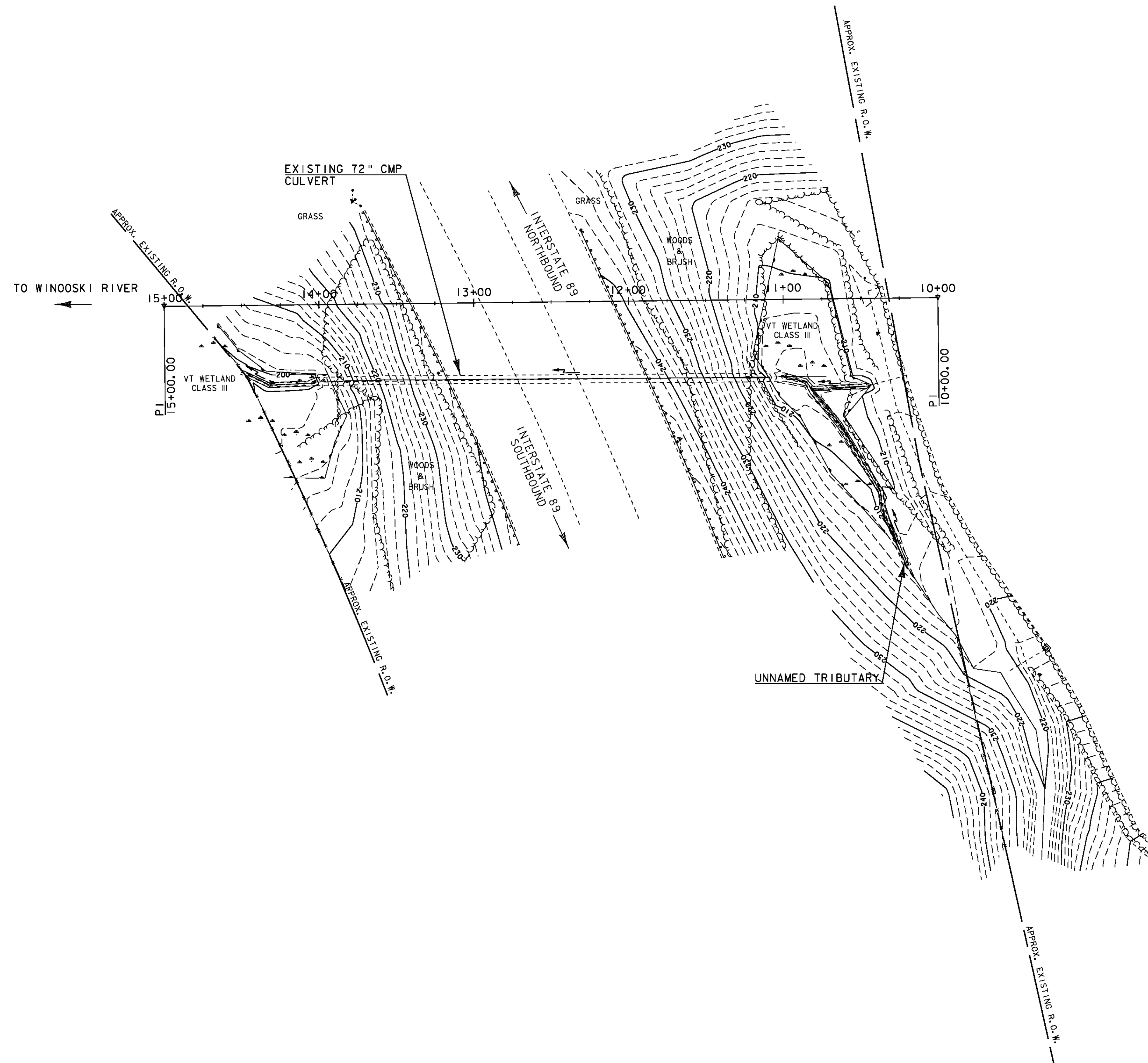
1.5.2 OFF-SITE ACTIVITIES

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.

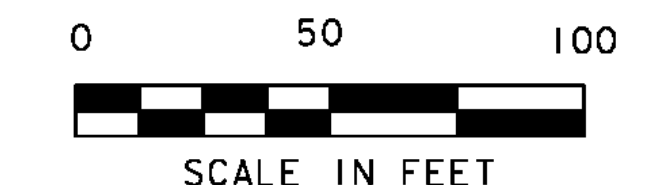
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PROJECT NUMBER: IM CULV (23)

FILE NAME: z09a046ern02.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
EPSC NARRATIVE - SOUTH BURLINGTON 69-1

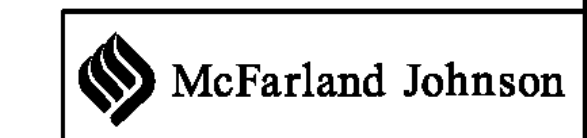
PLOT DATE: 08-FEB-2011
DRAWN BY: M. LOVETT
CHECKED BY: D. BENOIT
SHEET 10 OF 36



LEGEND	
	EDGE OF WETLAND
	ORDINARY HIGH WATER
	DIRECTION OF FLOW



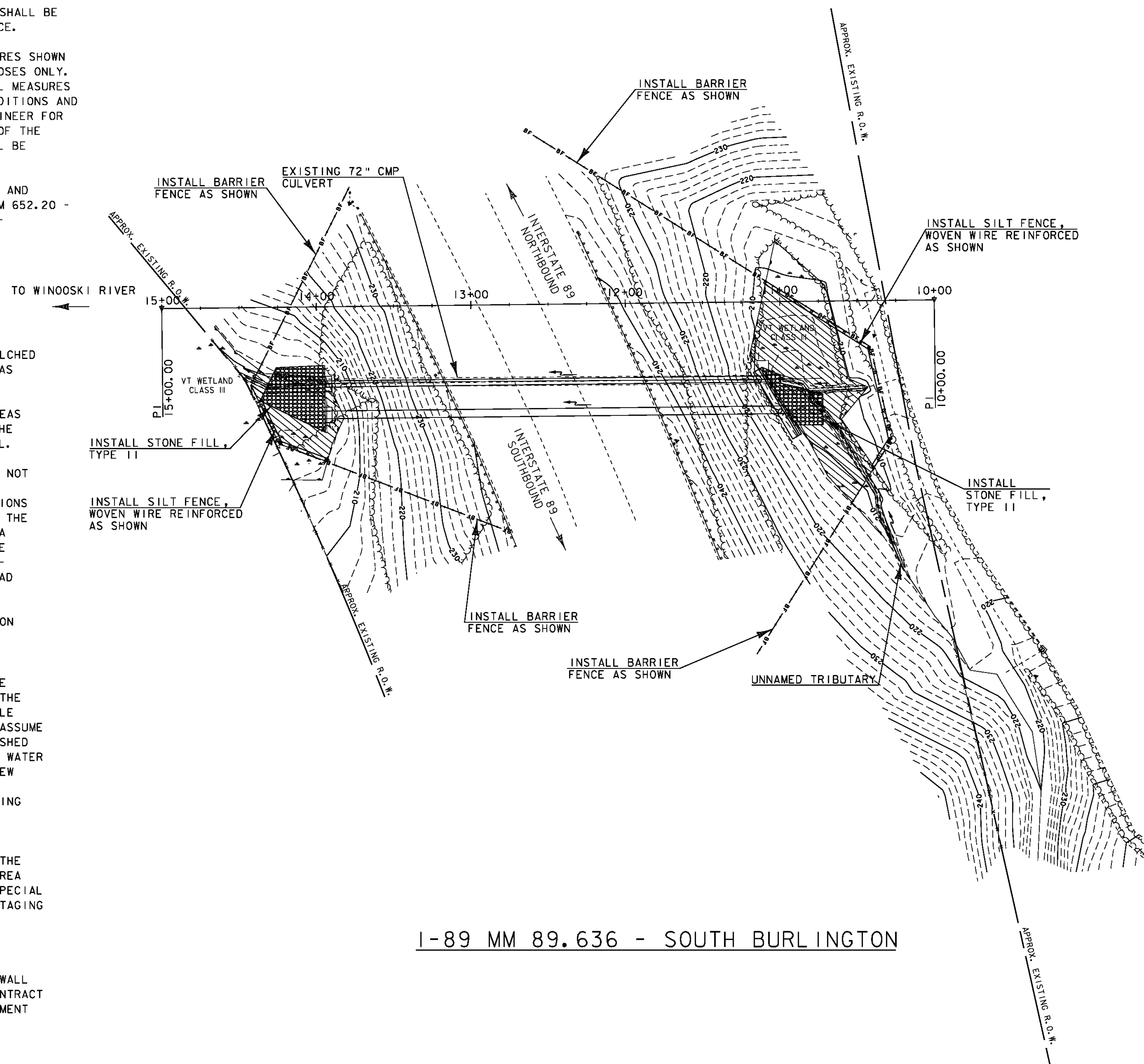
I-89 MM 89.636 - SOUTH BURLINGTON



PROJECT NAME:	SO. BURLINGTON - COLCHESTER
PROJECT NUMBER:	IM CULV (23)
FILE NAME:	z09a046ec02.dgn
PROJECT LEADER:	D. BENOIT
DESIGNED BY:	B. COLBURN
EXISTING CONDITIONS -	SO. BURLINGTON 69-1
PLOT DATE:	08-FEB-2011
DRAWN BY:	M. LOVETT
CHECKED BY:	D. BENOIT
SHEET	11 OF 36

GENERAL EROSION PREVENTION & SEDIMENT CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE.
2. THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE BASED UPON EXISTING FIELD CONDITIONS AND SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL. PAYMENT FOR THE DEVELOPMENT OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE INCLUDED IN ITEM 652.10 - EPSC PLAN.
3. MONITORING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE PER ITEM 652.20 - MONITORING EPSC PLAN, AND ITEM 652.30 - MAINTENANCE OF EPSC PLAN.
4. FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN SHOWN. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED.
5. THE LOCATION OF ANY WASTE OR BORROW AREAS AND HAUL ROADS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
6. STABILIZED CONSTRUCTION ENTRANCES HAVE NOT BEEN SHOWN. STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES WILL LEAVE THE CONSTRUCTION DISTURBED AREA AND ENTER A PAVED PUBLIC ROADWAY. THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).
7. SEE SEEDING FORMULA AND SEEDING NOTES ON SHEET 27 FOR TURF REESTABLISHMENT REQUIREMENTS.
8. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE HEADWALLS AND CRADLE WALLS. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSION WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO THE EXISTING CULVERT DURING THE NEW CULVERT INSTALLATION AND INTO THE NEW CULVERT DURING THE LINING OF THE EXISTING CULVERT.
9. CLEARING AND RESTORATION OF TURF TO RE-ESTABLISH DISTURBED SOIL CAUSED BY THE CONTRACTOR'S ACCESS ROAD AND STAGING AREA WILL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).
10. CLEARING AND RESTORATION OF TURF TO RE-ESTABLISH DISTURBED SOIL WITHIN THE PAYMENT LIMITS OF HEADWALL AND CRADLE WALL CONSTRUCTION WILL BE PAID FOR UNDER CONTRACT ITEMS. RESTORATION OF TURF OUTSIDE PAYMENT LIMITS OF HEADWALL AND CRADLE WALL CONSTRUCTION SHALL BE INCLUDED IN ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)

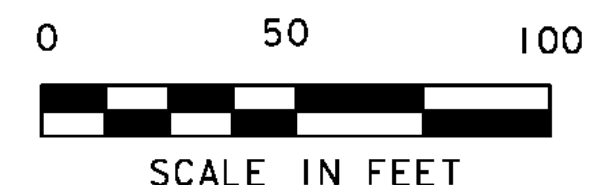


I-89 MM 89.636 - SOUTH BURLINGTON

PROPOSED CONSTRUCTION SEQUENCE

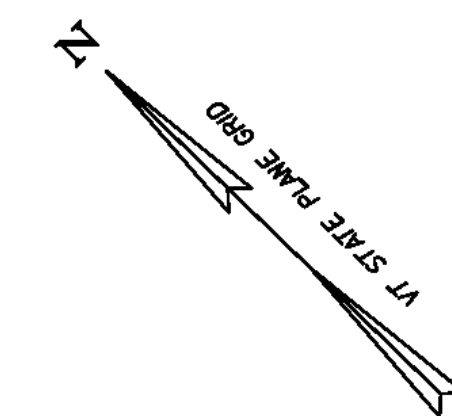
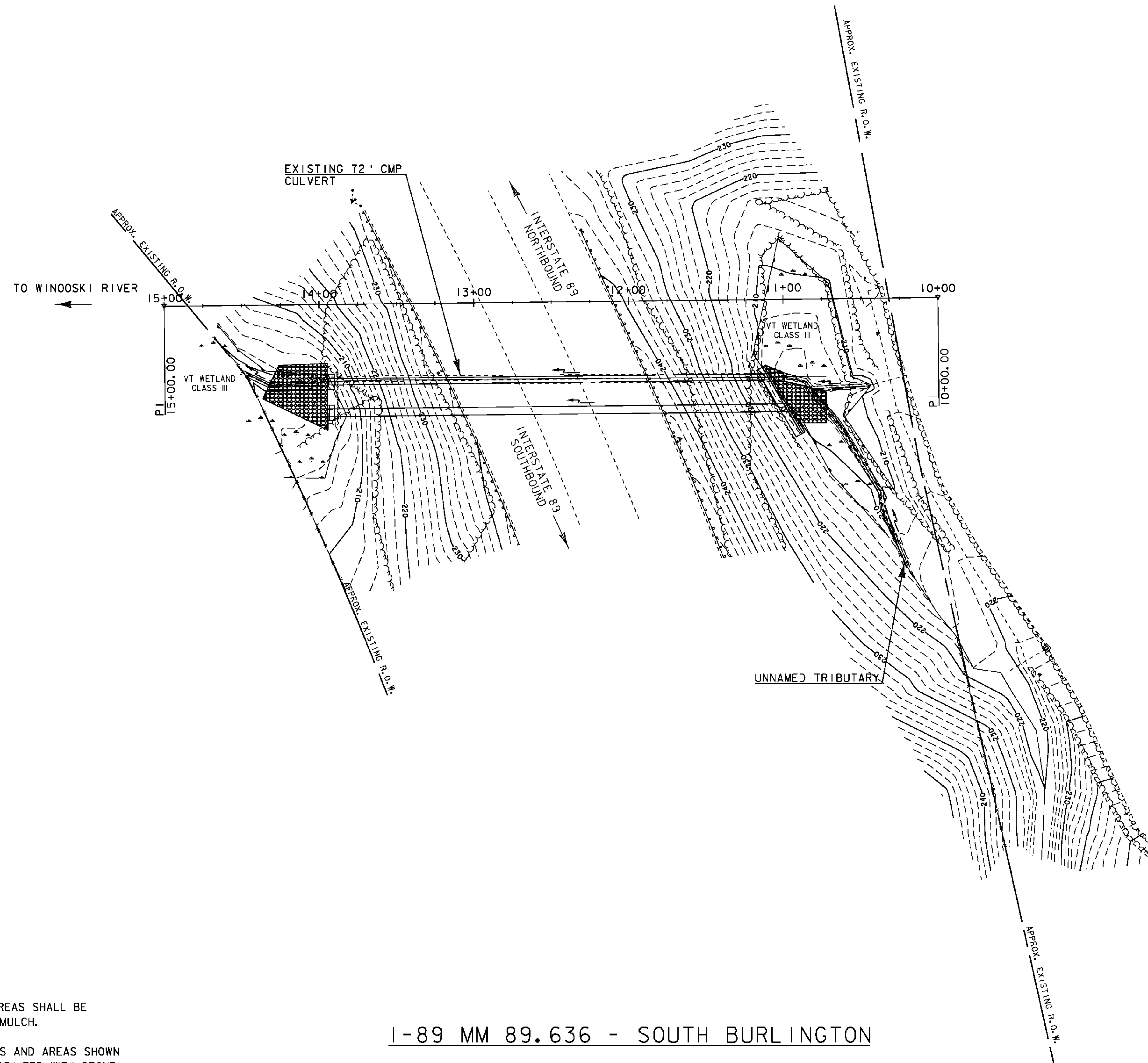
1. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AS REQUIRED.
2. CONSTRUCT STAGING AREAS AND ACCESS ROADS.
3. INSTALL 60" CULVERT USING TRENCHLESS TECHNOLOGY.
4. CUT BACK EXISTING CULVERT AT INLET AND OUTLET AND REMOVE EXISTING CRADLE HEADWALL AT INLET.
5. INSTALL 48" LINER.
6. CONSTRUCT STRAIGHT BEVELED HEADWALL AT CULVERT PIPE INLETS AND CRADLE HEADWALLS AT CULVERT PIPE OUTLETS.
7. INSTALL STONE FILL AND STABILIZE ALL DISTURBED AREAS.

LEGEND	
	BARRIER FENCE
	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
	EDGE OF WETLAND
	ORDINARY HIGH WATER
	LIMITS OF PERMITTED WETLAND IMPACTS
	STONE FILL, TYPE II



PROJECT NAME: SO. BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)
 FILE NAME: z09a046epsc02.dgn
 PROJECT LEADER: D. BENOIT
 DESIGNED BY: B. COLBURN
 EPSC PLAN - SOUTH BURLINGTON 69-1
 PLOT DATE: 08-FEB-2011
 DRAWN BY: M. LOVETT
 CHECKED BY: D. BENOIT
 SHEET 12 OF 36

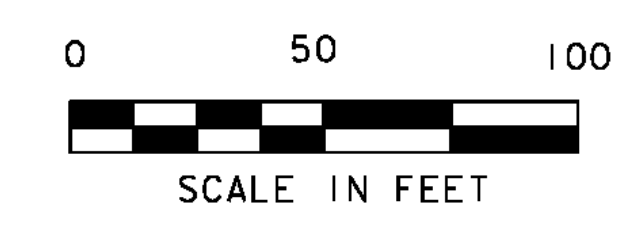




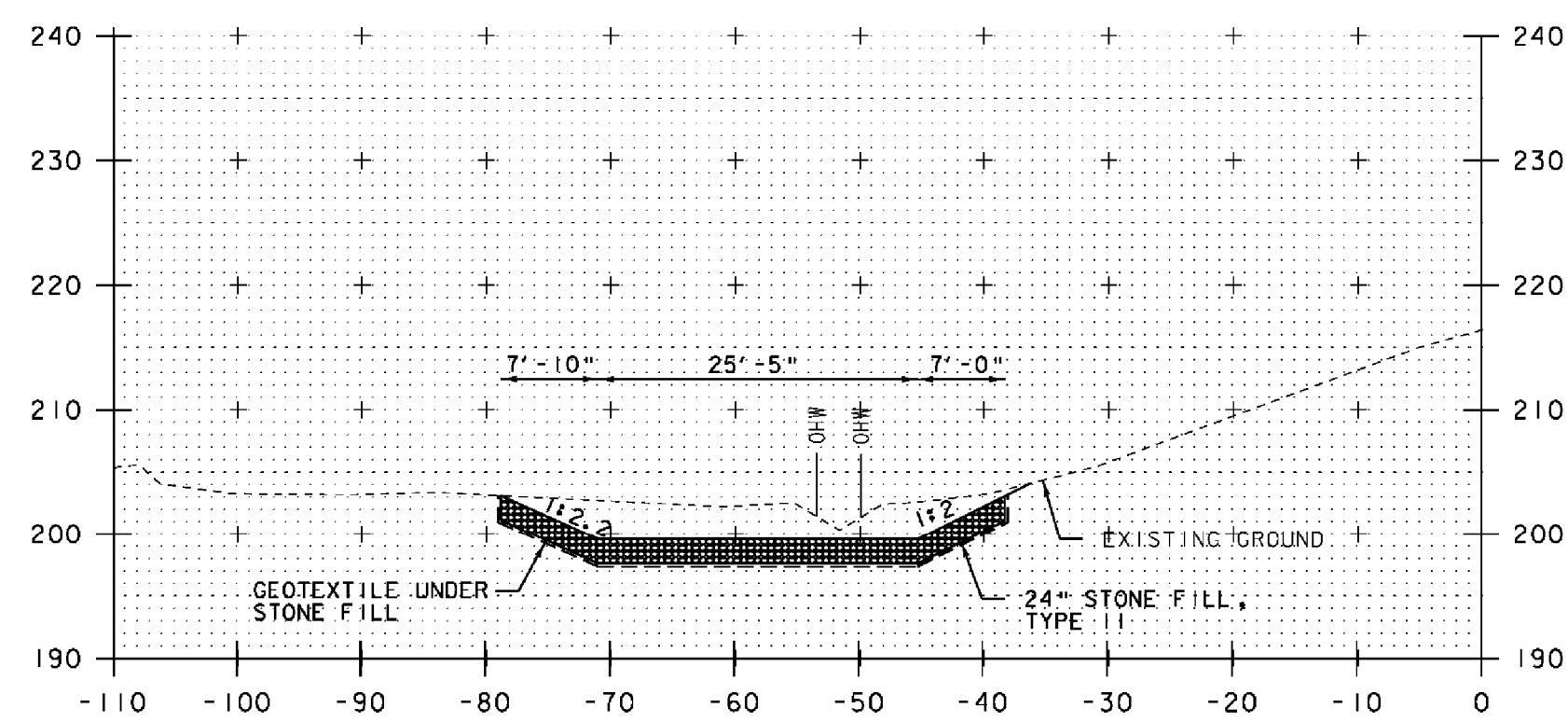
LEGEND	
	EDGE OF WETLAND
	ORDINARY HIGH WATER
	STONE FILL, TYPE II

- SITE STABILIZATION NOTES:**
1. ALL DISTURBED GRASSED AREAS SHALL BE STABILIZED WITH SEED AND MULCH.
 2. ALL DISTURBED STONE AREAS AND AREAS SHOWN ON THE PLAN SHALL BE STABILIZED WITH STONE FILL, TYPE II.
 3. SLOPES STEEPER THAN 1:3 (VERTICAL:HORIZONTAL) SHALL ALSO USE TEMPORARY EROSION MATTING.
 4. THE RESIDENT ENGINEER SHALL HAVE THE OPTION TO LEAVE THE TEMPORARY ACCESS ROAD IN PLACE AT THE COMPLETION OF THE PROJECT.

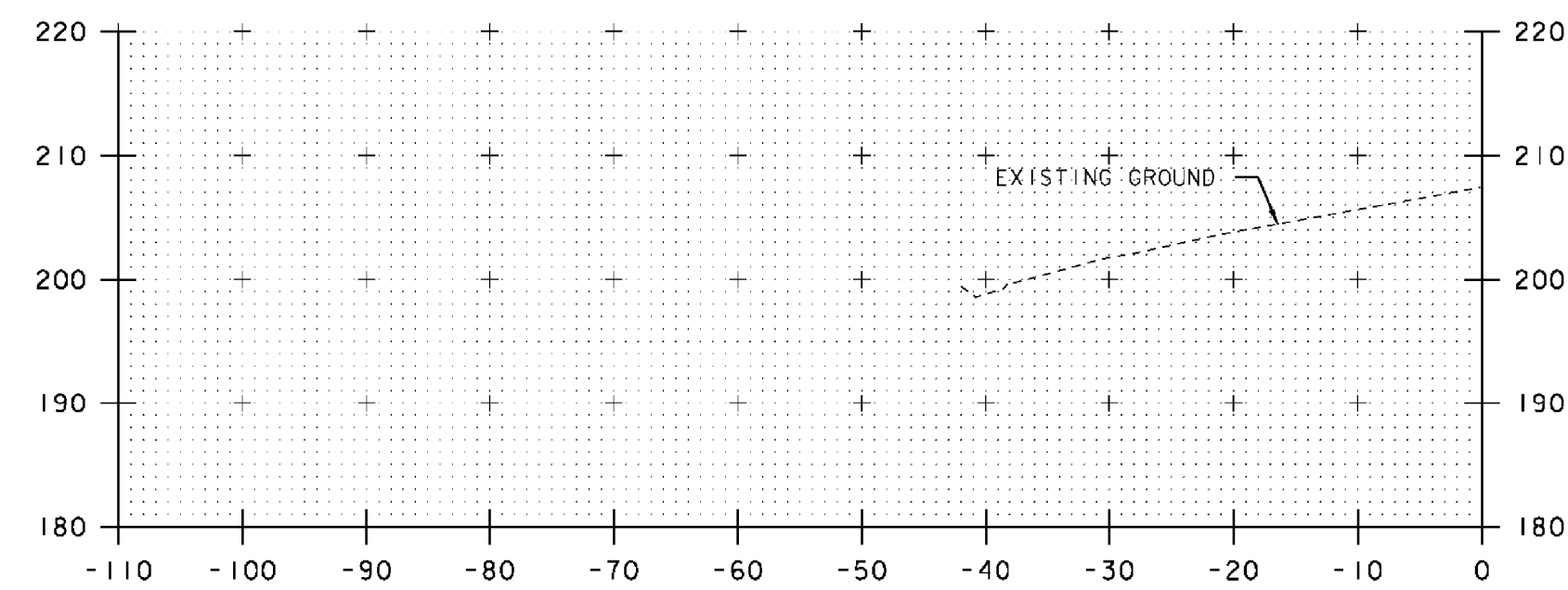
I-89 MM 89.636 - SOUTH BURLINGTON



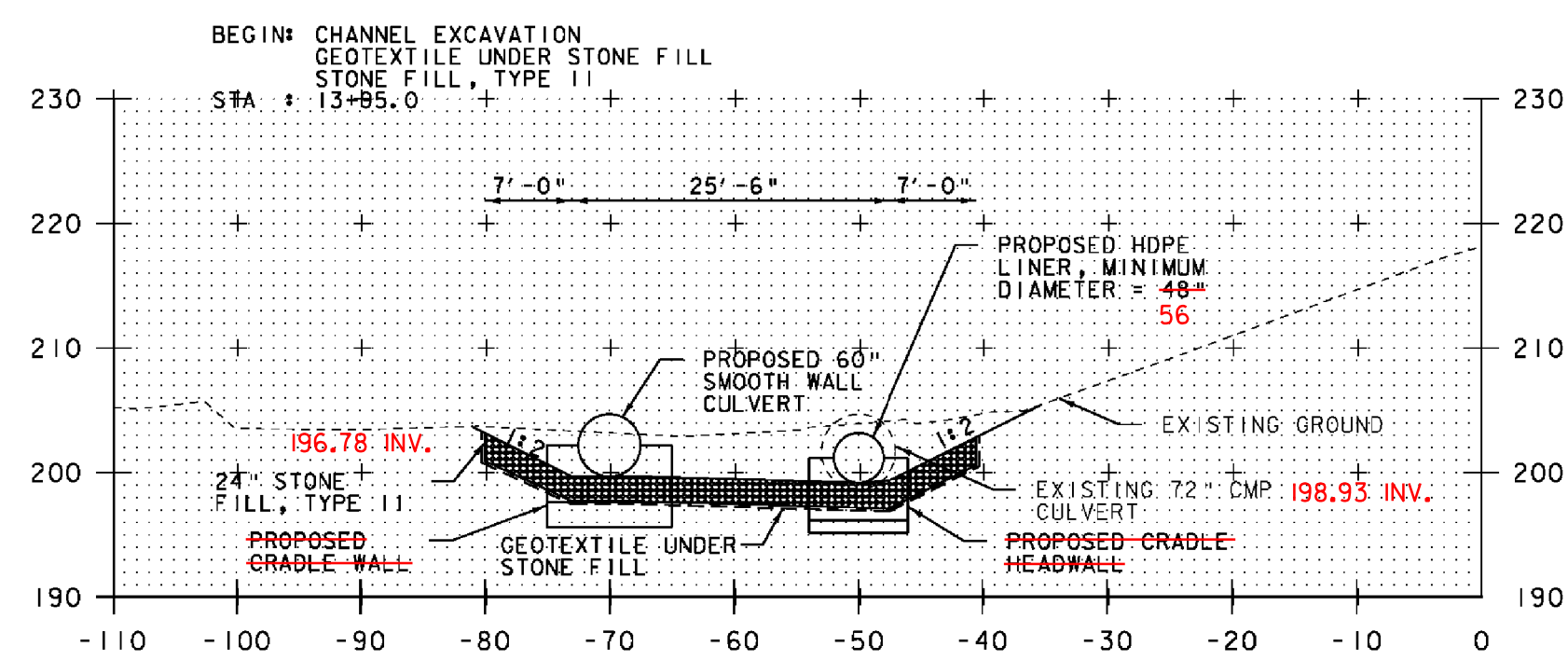
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PROJECT NUMBER: IM CULV (23)	
FILE NAME: z09a046fc02.dgn	PLOT DATE: 08-FEB-2011
PROJECT LEADER: D. BENOIT	DRAWN BY: M. LOVETT
DESIGNED BY: B. COLBURN	CHECKED BY: D. BENOIT
FINAL CONDITIONS - SOUTH BURLINGTON 69-1 SHEET 13 OF 36	



14+00

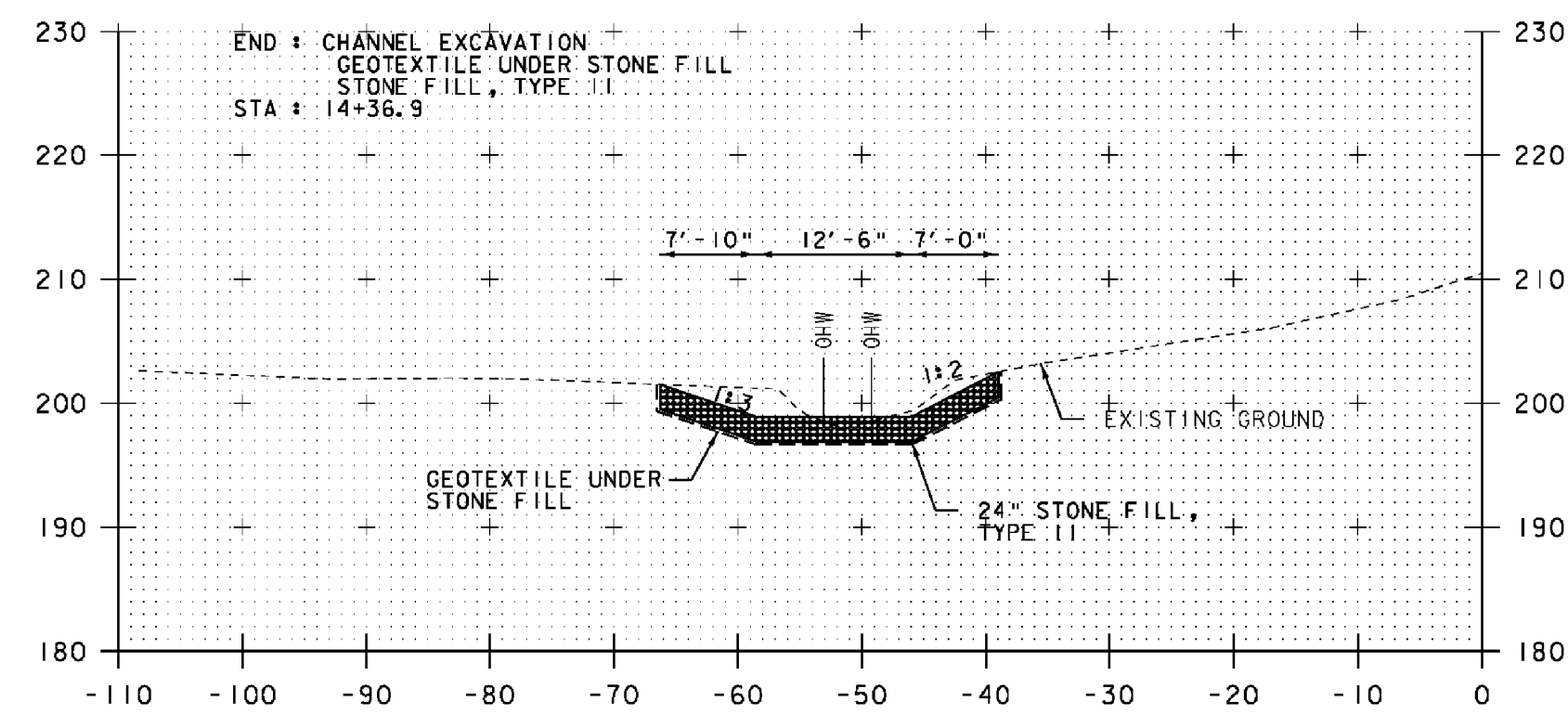


14+50



13+95

SEE C.O./S.A. #5 FOR CHANGE
TO FULL HEAWALL, NO BEVEL.



14+25

STA. 13+95 TO STA. 14+50

PROJECT NAME:	SO. BURLINGTON - COLCHESTER
PROJECT NUMBER:	IM CULV (23)
FILE NAME:	z09a046xs.dgn
PROJECT LEADER:	D. BENOIT
DESIGNED BY:	R. HALEY
CROSS SECTIONS - SOUTH BURLINGTON 69-1	SHEET 15 OF 36
PLOT DATE:	08-FEB-2011
DRAWN BY:	R. HALEY
CHECKED BY:	D. BENOIT



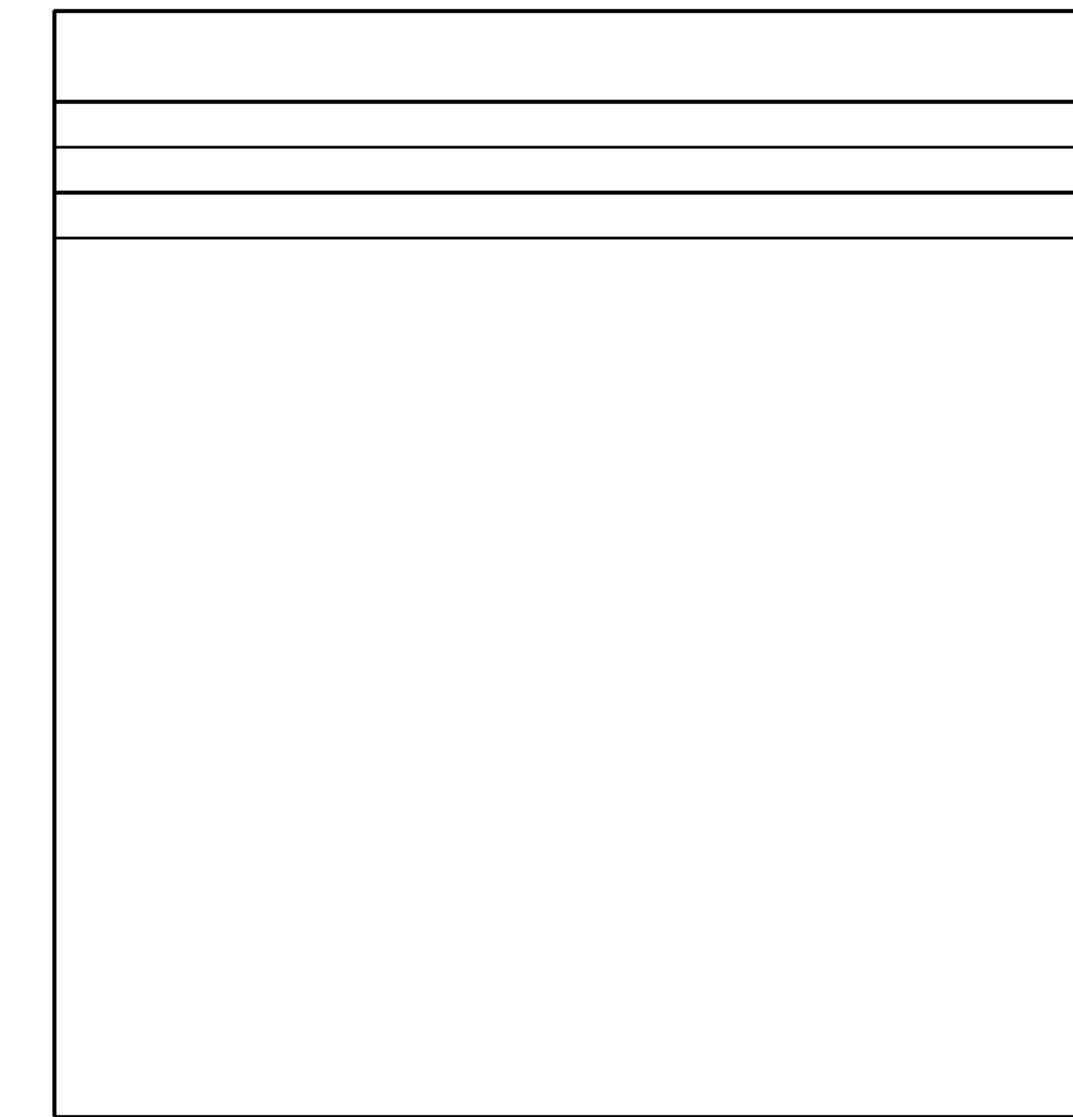
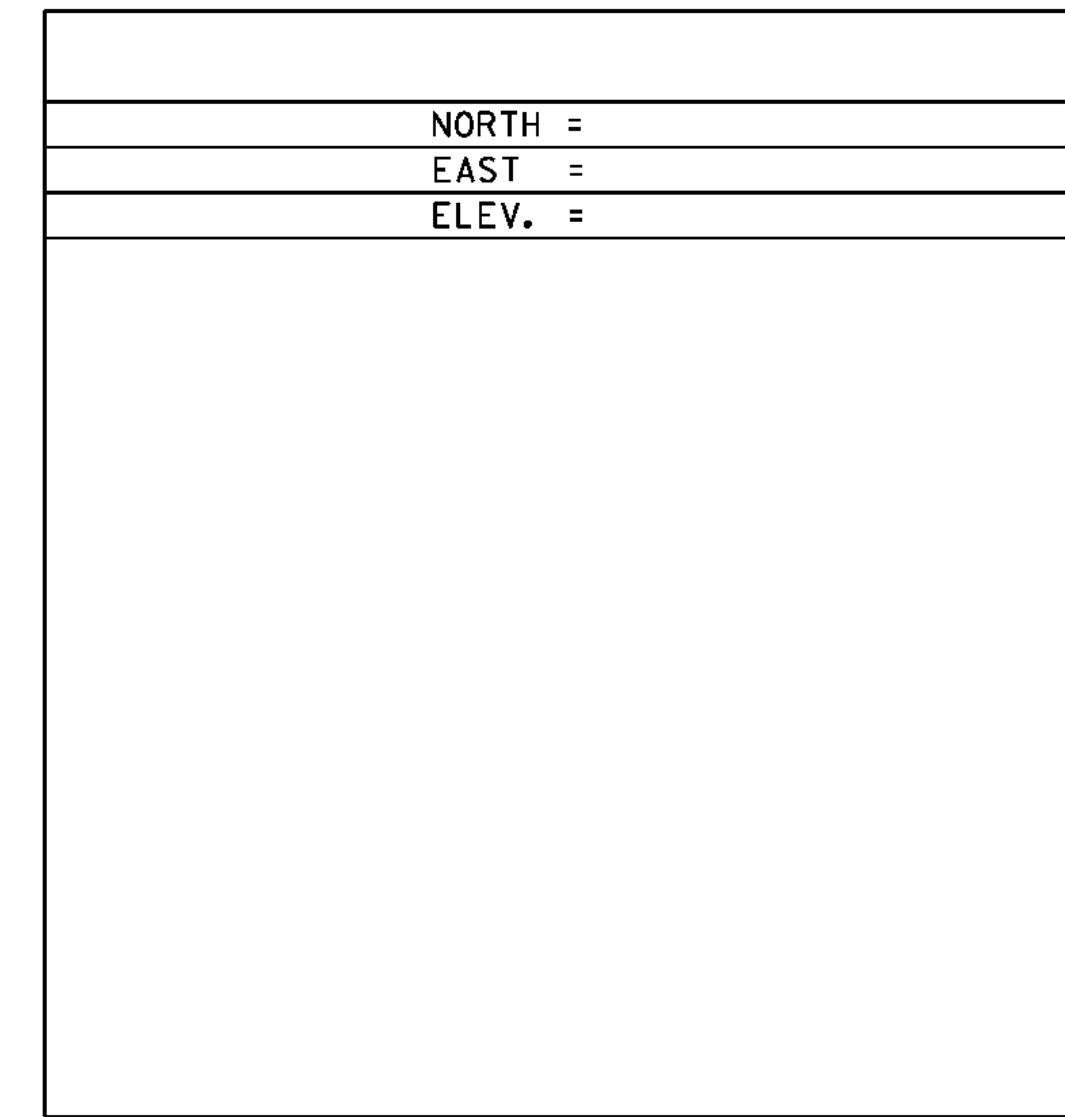
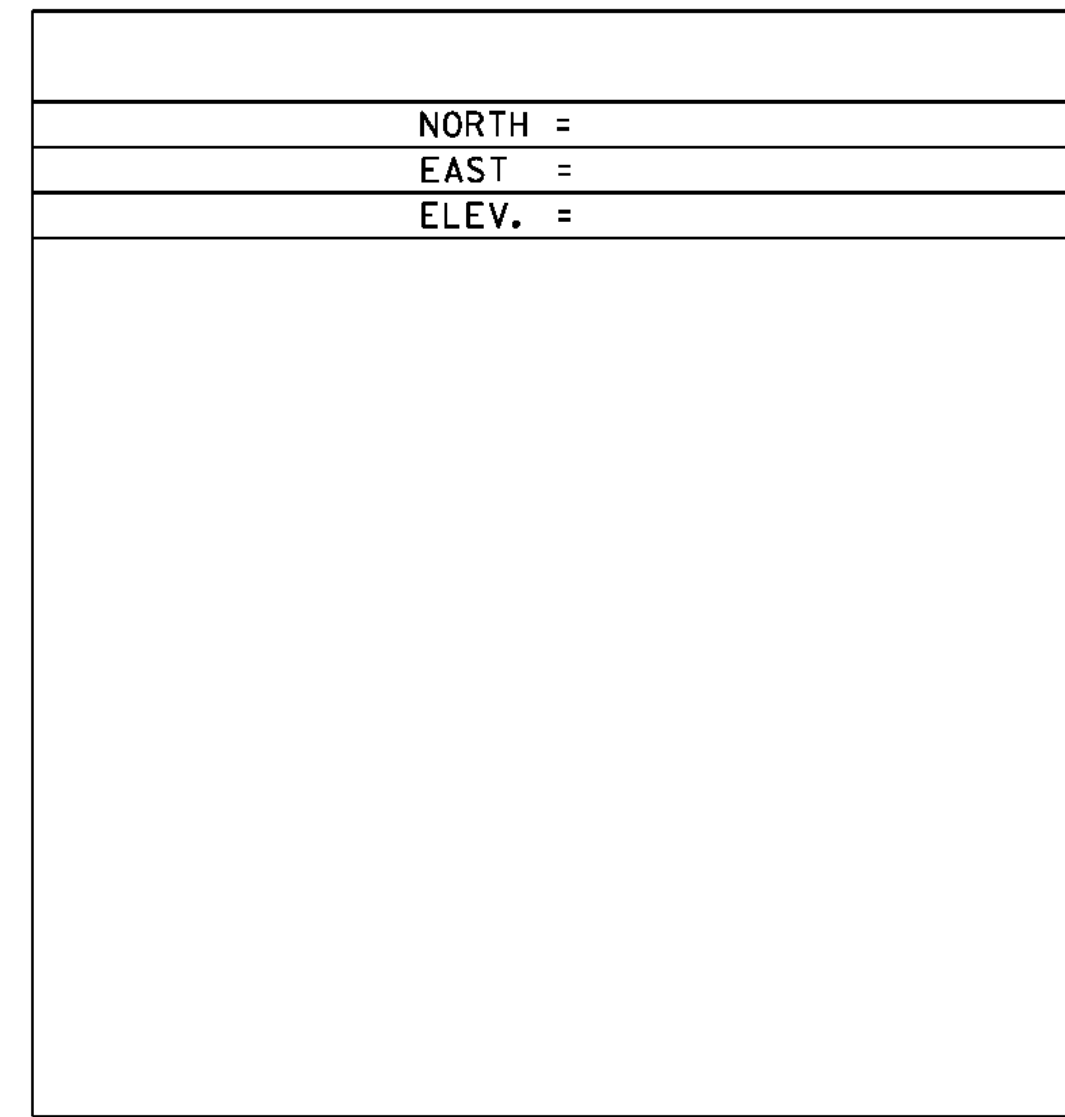
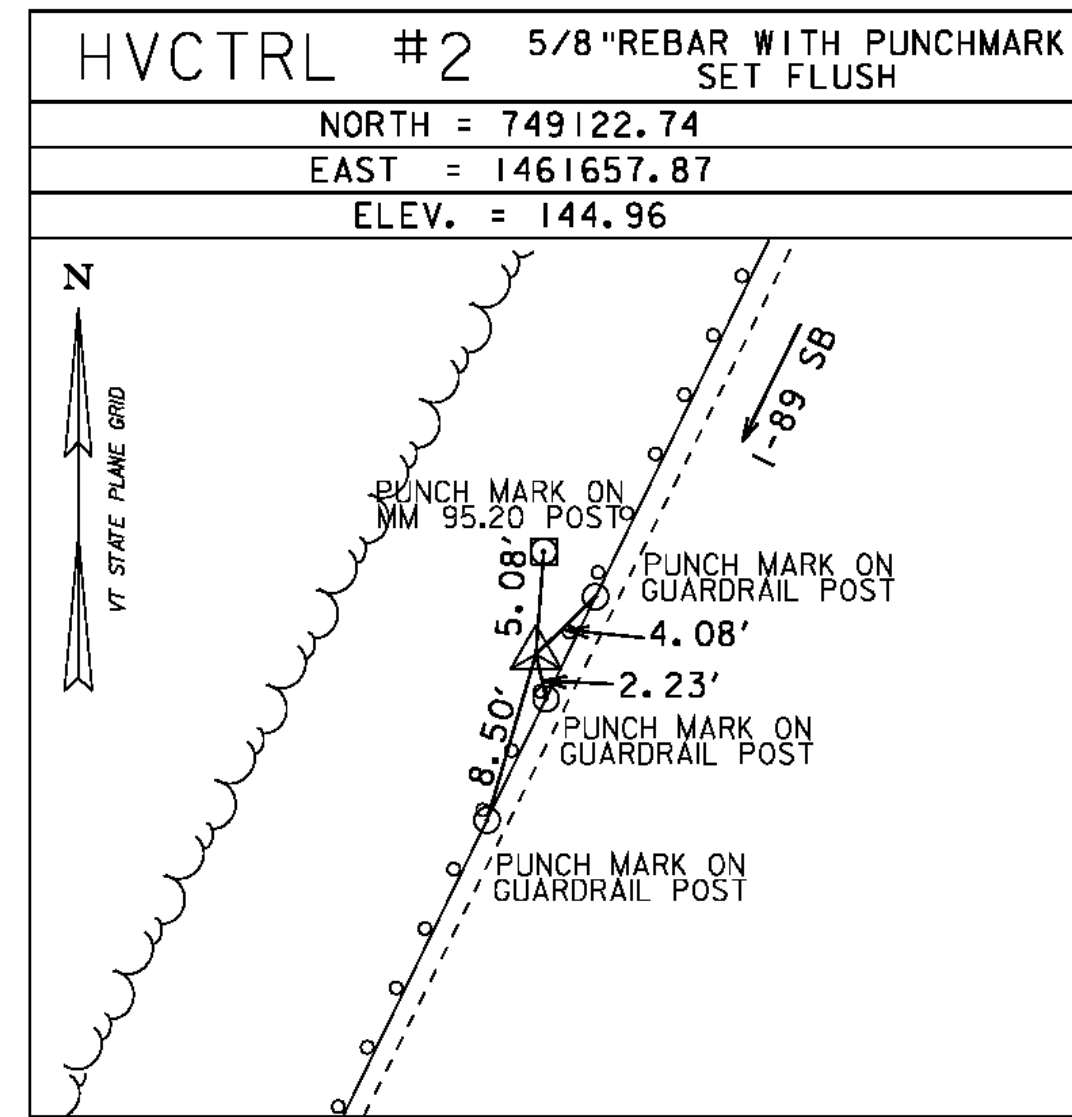
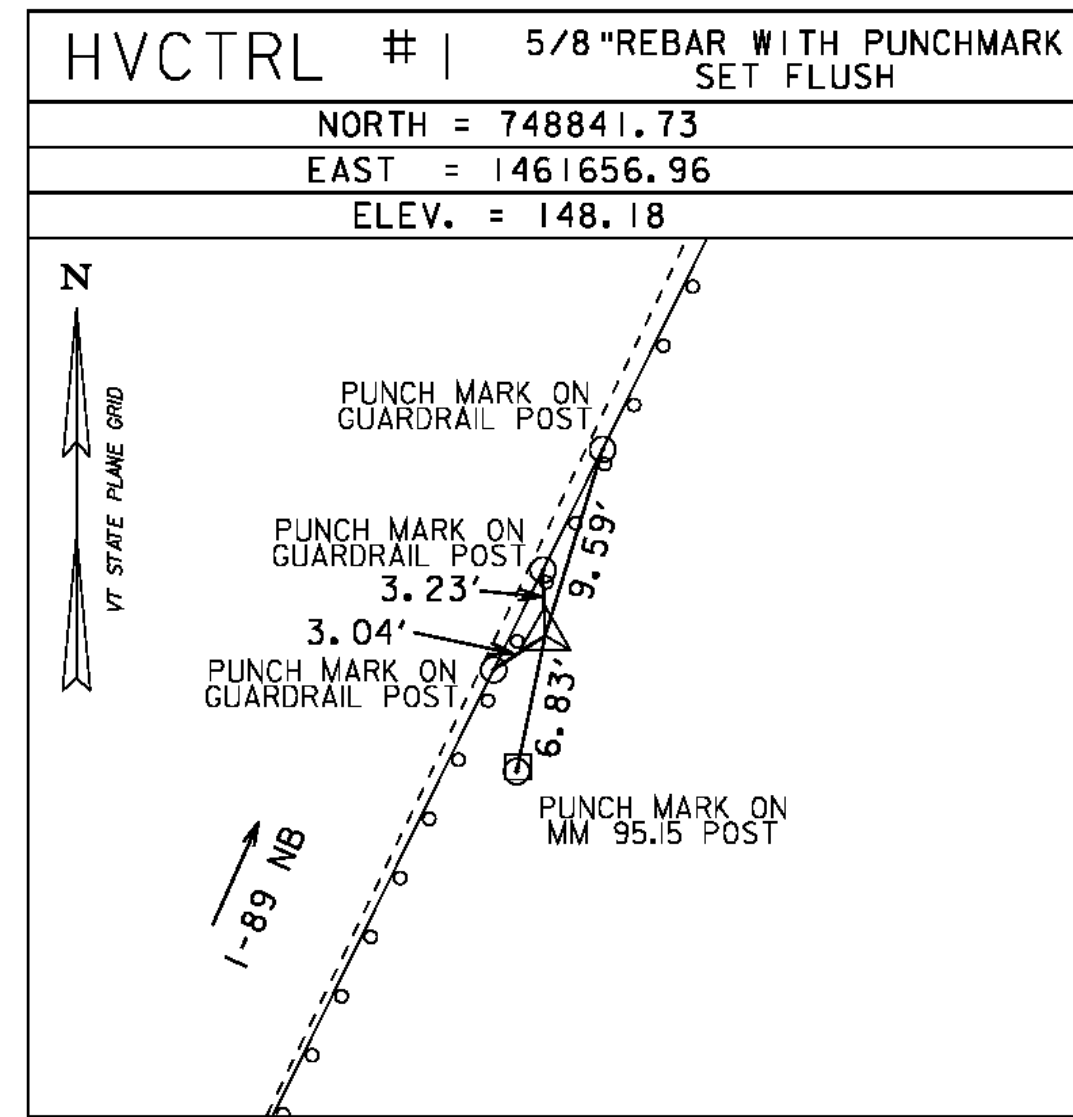
GPS CONTROL POINTS

UVM COOLIDGE CORS ARP

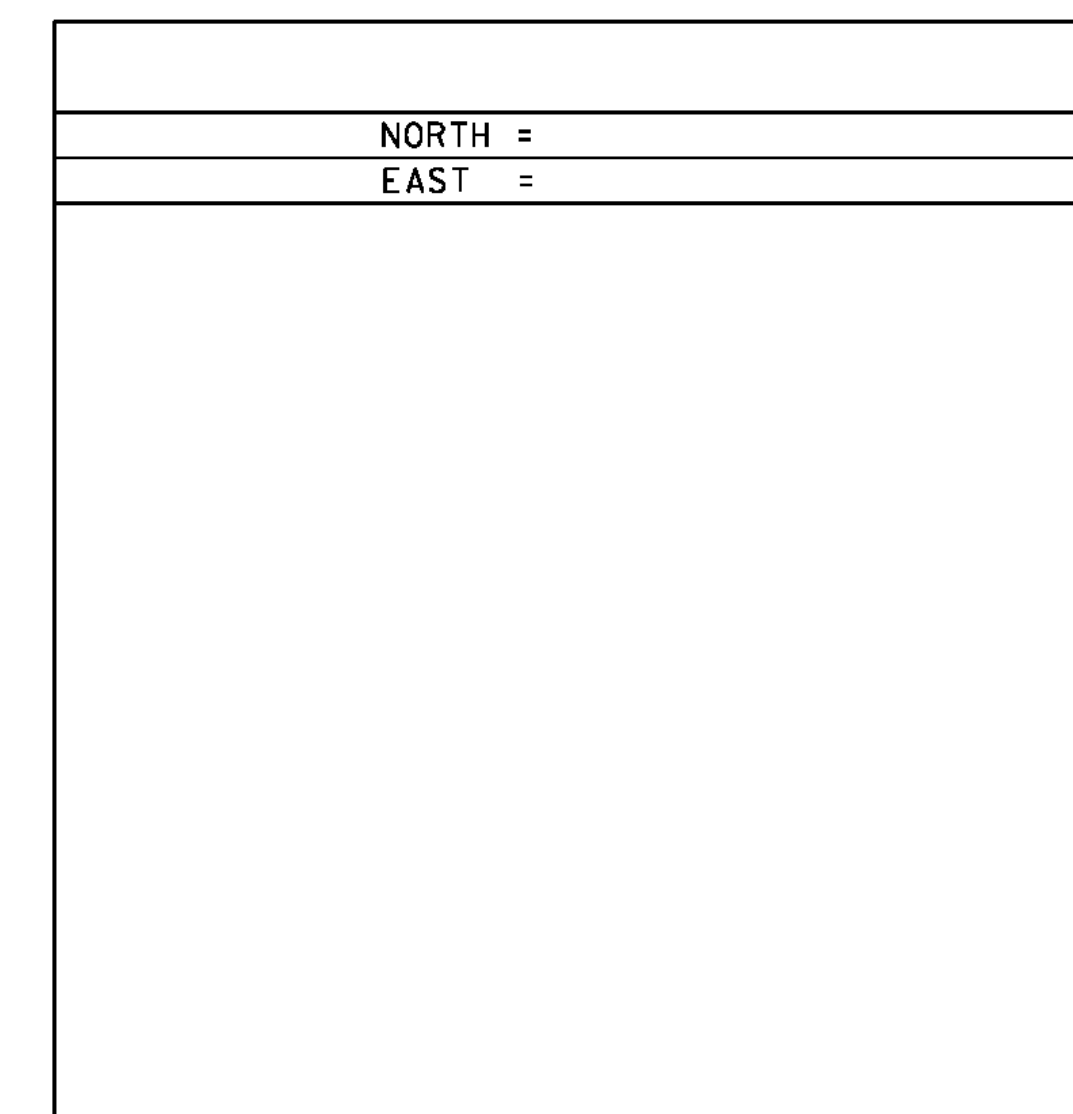
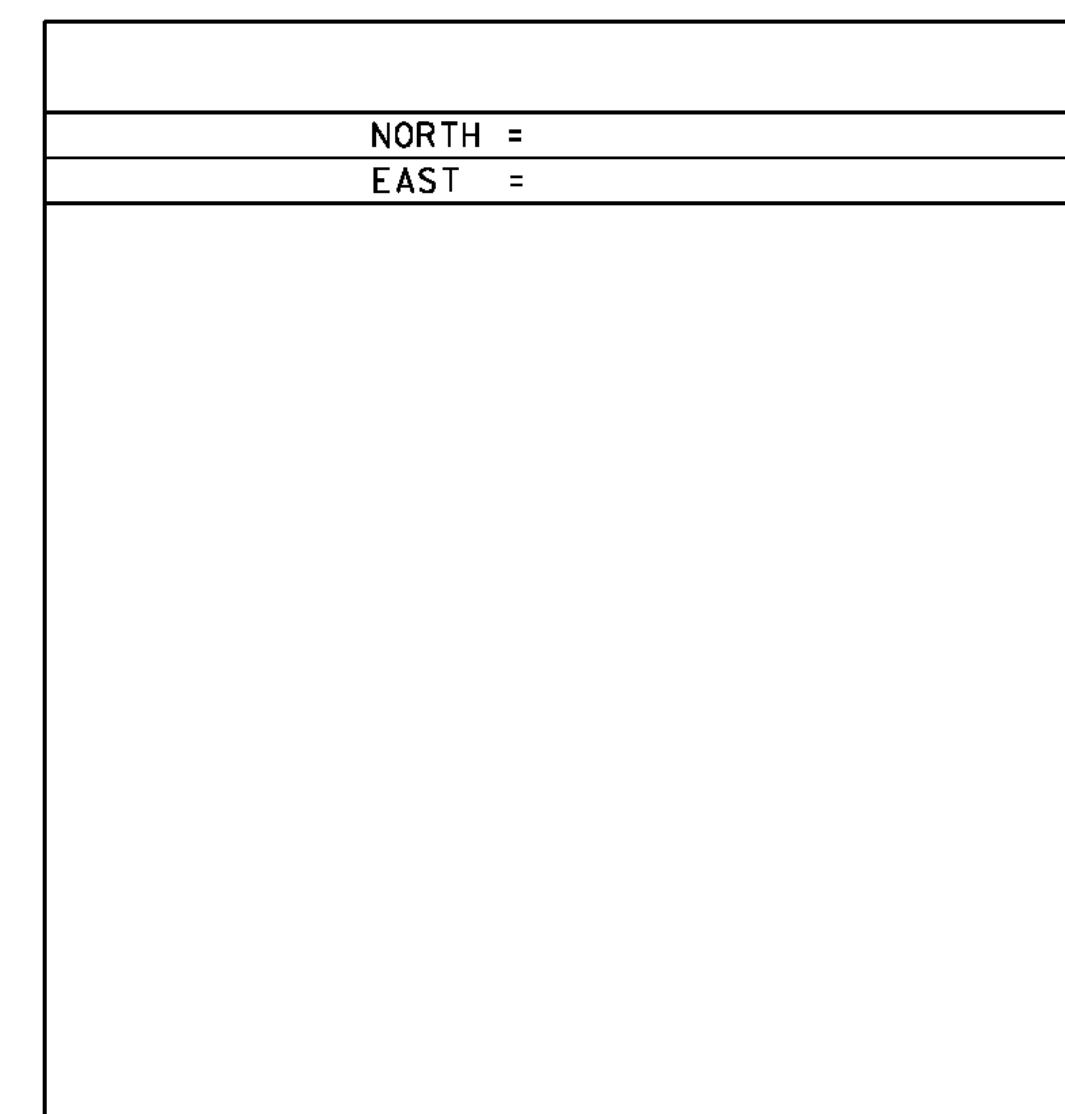
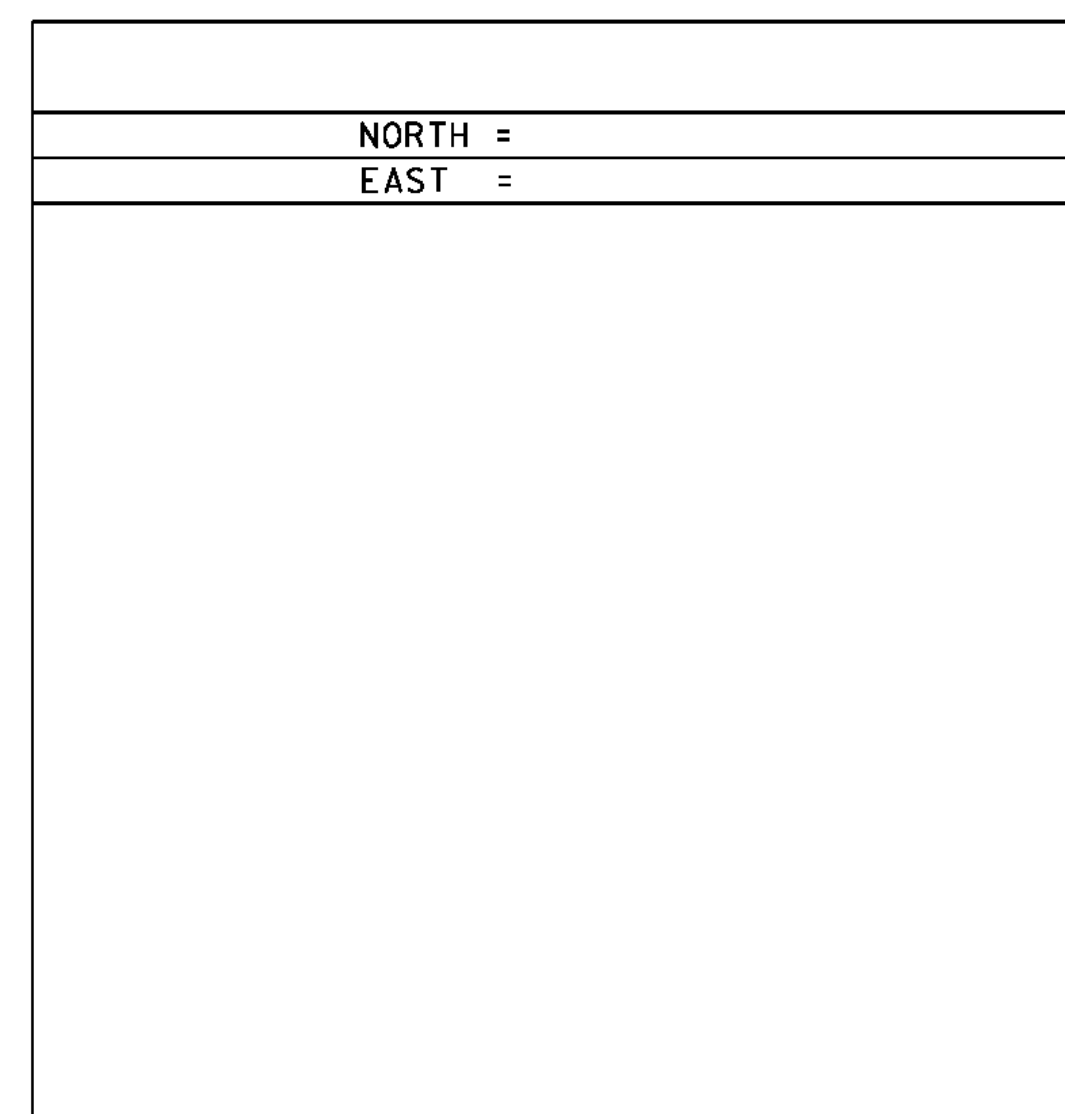
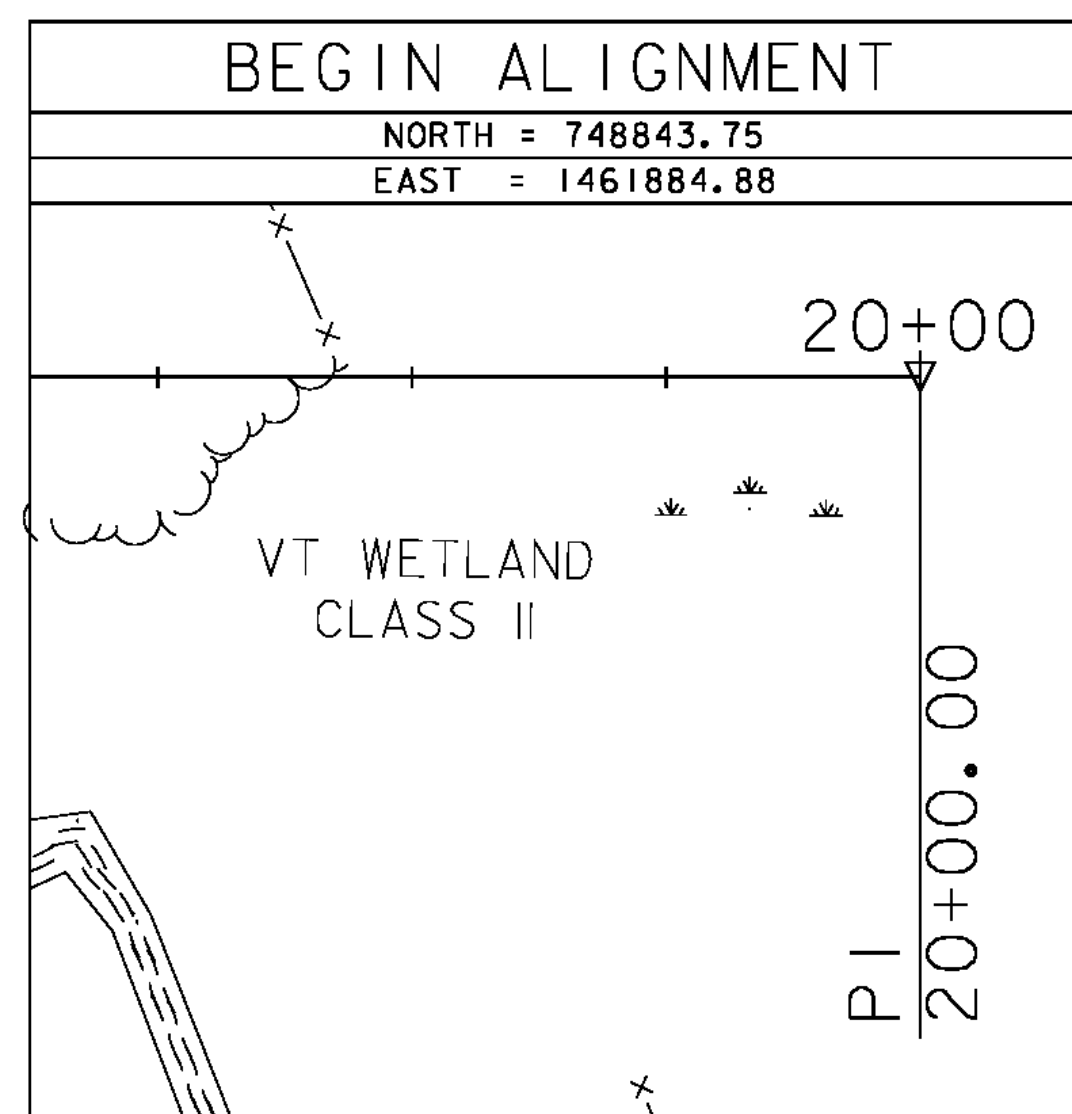
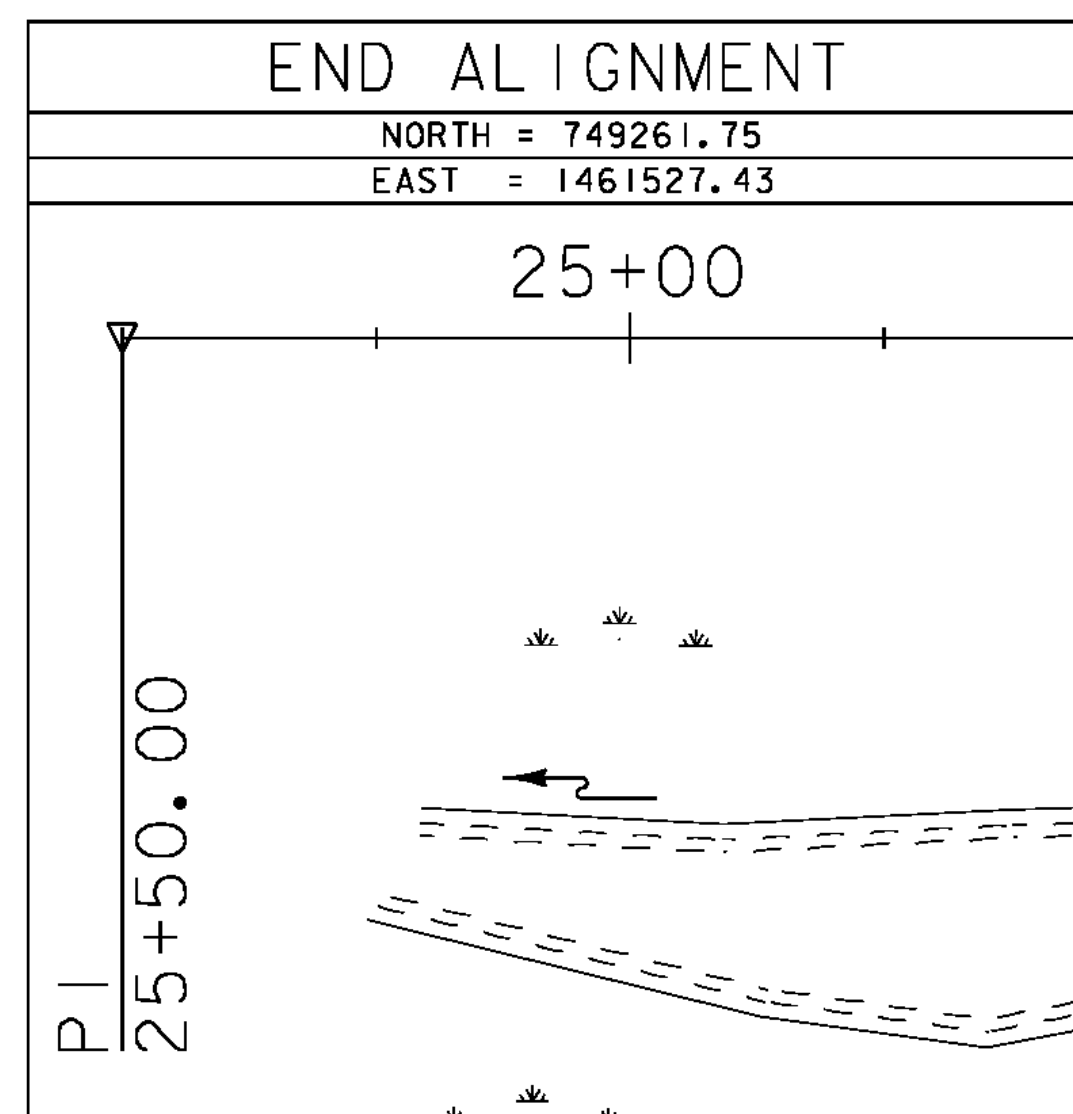
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 COOLIDGE HALL ON THE CAMPUS OF UVM, BURLINGTON, VERMONT.

N = 718549.76'
 E = 1458233.62'
 EL. HT. = 368.82'

TRAVERSE TIES



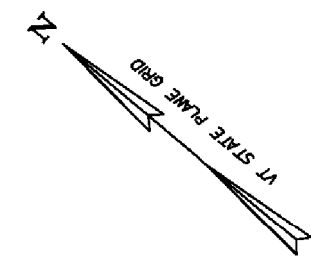
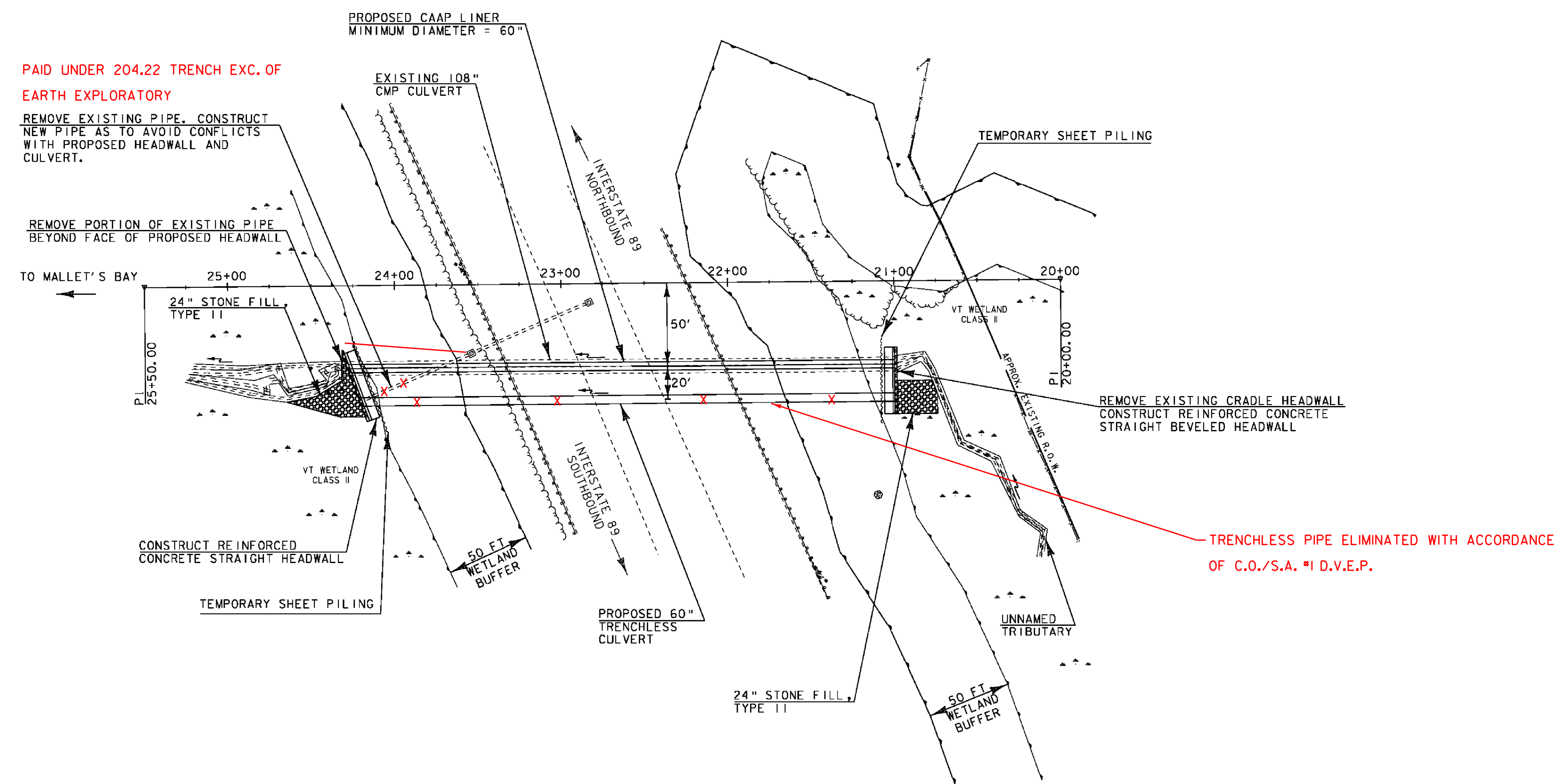
ALIGNMENT TIES



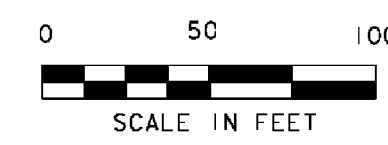
DATUM
 VERTICAL NAVD 88(GEIOD03)
 HORIZONTAL NAD 83(CORS96)
 ADJUSTMENT LSQ

PROJECT NAME: SO. BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)
 FILE NAME: z09a046+101.dgn PLOT DATE: 08-FEB-2011
 PROJECT LEADER: D. BENOIT DRAWN BY: M. FUGERE
 DESIGNED BY: B. COLBURN CHECKED BY: D. BENOIT
 TIE SHEET - COLCHESTER 75-3 SHEET 16 OF 36





1-89 MM 95.183 - COLCHESTER

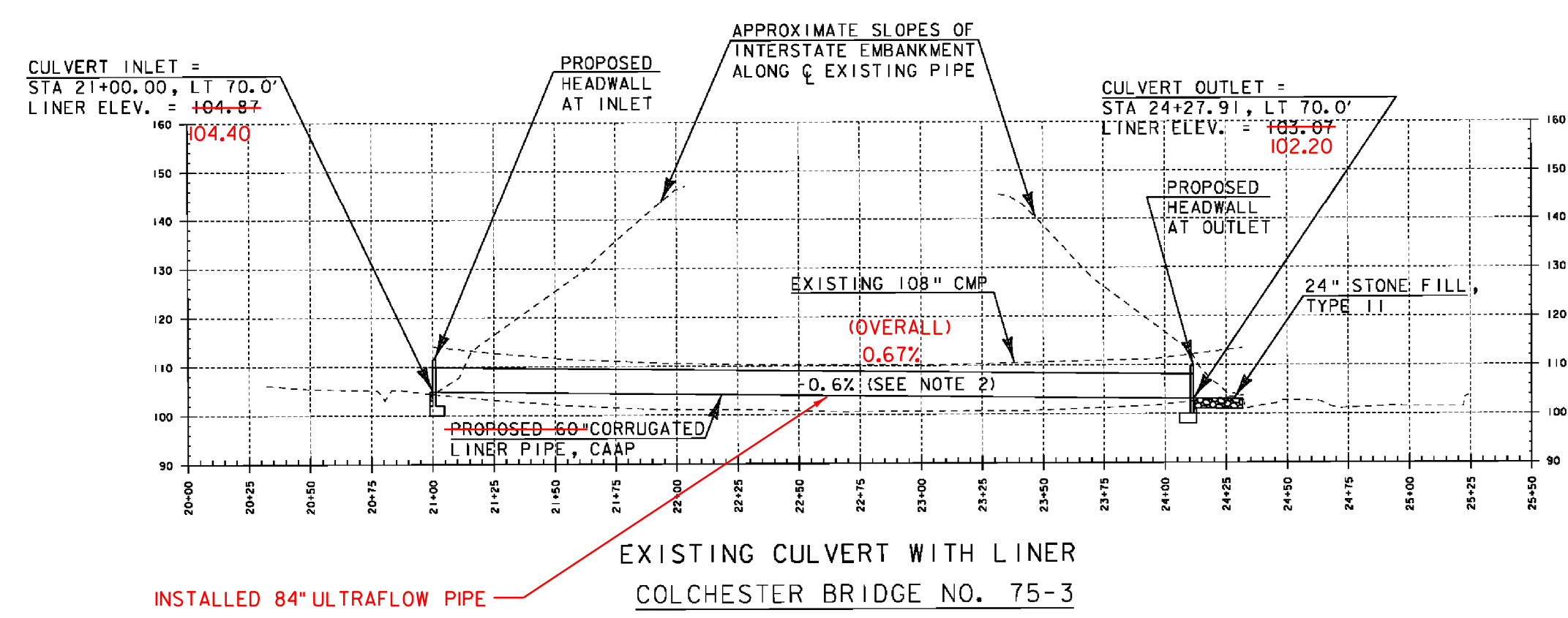


GENERAL NOTES:

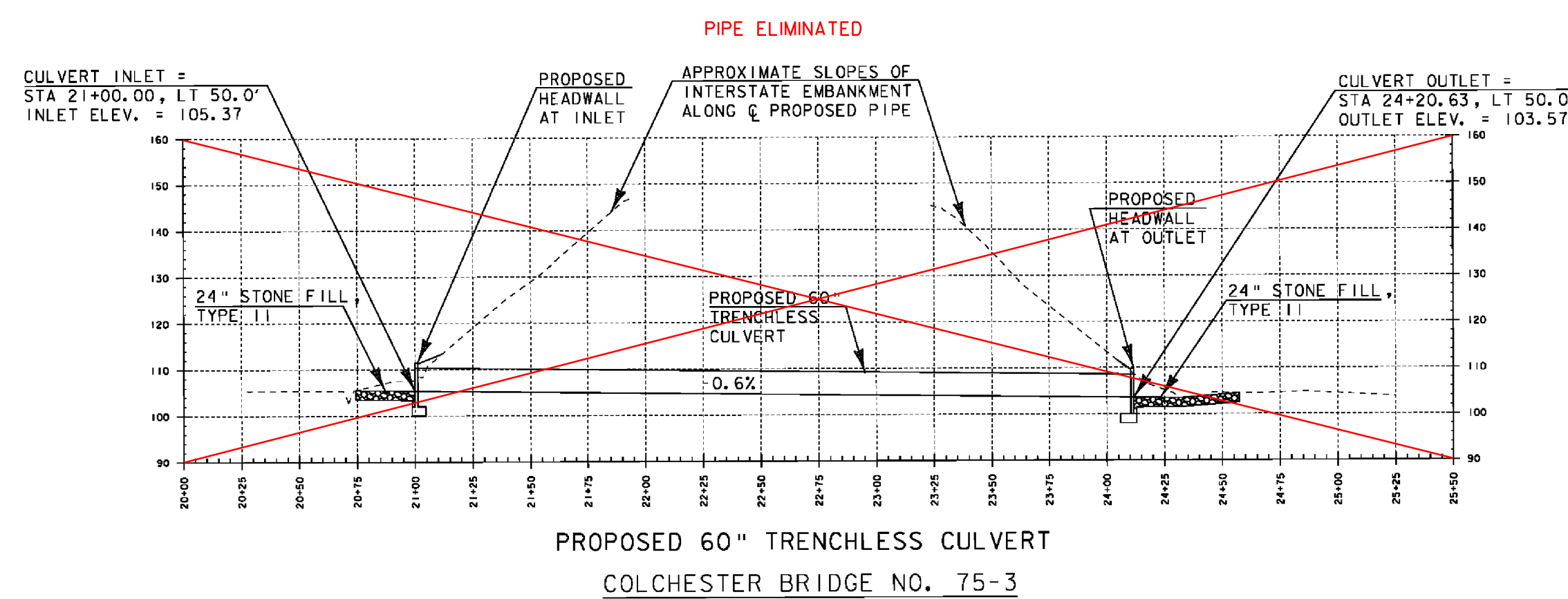
1. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING TEMPORARY ACCESS TO THE CULVERT ENDS. ALL RESULTING DISTURBED EARTH SHALL BE STABILIZED AND RESTORED UPON COMPLETION OF CONSTRUCTION. PAYMENT SHALL BE MADE UNDER CONTRACT ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT). ANY CLEARING OF TREES AND STUMPS NECESSARY FOR CONSTRUCTION OF THE TEMPORARY ACCESS ROAD SHALL BE PAID UNDER CONTRACT ITEM 201.10 - CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS.



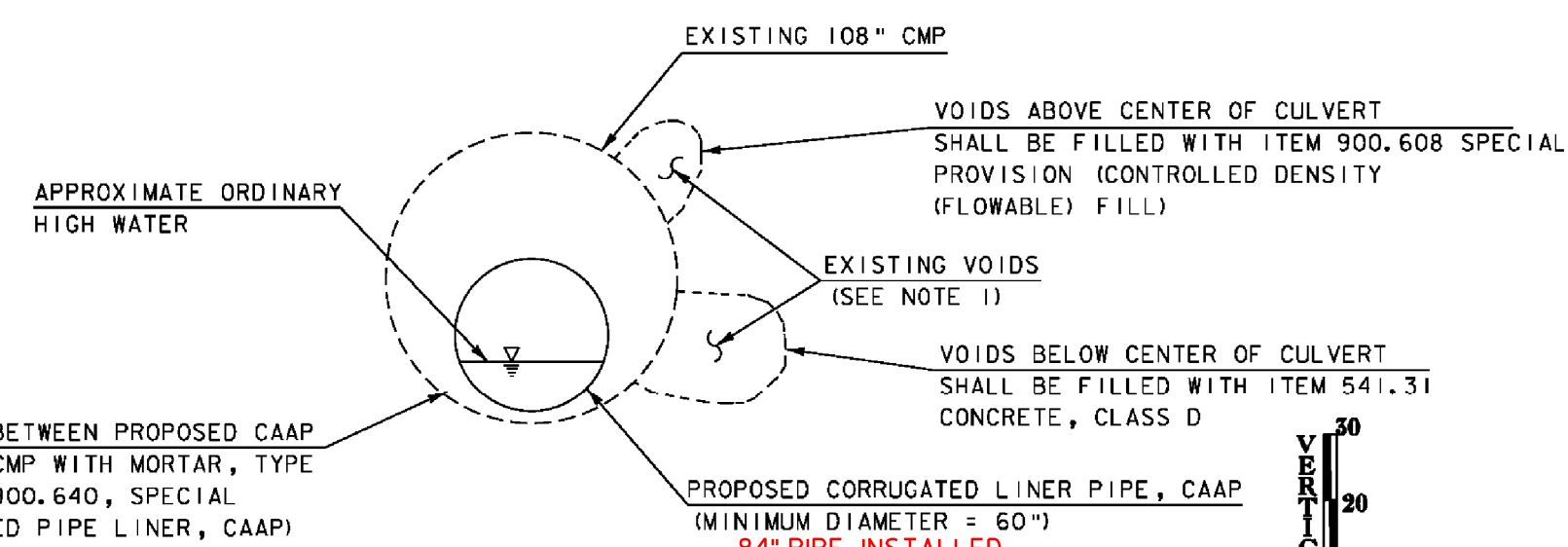
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PROJECT NUMBER:	IM CULV (23)
FILE NAME:	z09a0461a01.dgn
PROJECT LEADER:	D. BENOIT
DESIGNED BY:	B. COLBURN
LAYOUT SHEET:	COLCHESTER 75-3
PLOT DATE:	08-FEB-2011
DRAWN BY:	M. LOVETT
CHECKED BY:	D. BENOIT
SHEET:	17 OF 36



EXISTING CULVERT WITH LINER
COLCHESTER BRIDGE NO. 75-3



PROPOSED 60" TRENCHLESS CULVERT
COLCHESTER BRIDGE NO. 75-3



CULVERT LINING DETAIL
NOT TO SCALE

HORIZONTAL SCALE IN FEET
0 20 40 60



PROJECT NOTES

- POTENTIAL VOID LOCATIONS SHOWN FOR EXPLANATION PURPOSES ONLY.
- CULVERT LINER SHALL BE CONSTRUCTED AT A CONSTANT SLOPE TO ELIMINATE THE SAG IN THE EXISTING CULVERT.

FILL ANNULAR SPACE BETWEEN PROPOSED CAAP LINER AND EXISTING CMP WITH MORTAR, TYPE IV PAID UNDER ITEM 900.640, SPECIAL PROVISION (CORRUGATED PIPE LINER, CAAP)

VOIDS ABOVE CENTER OF CULVERT SHALL BE FILLED WITH ITEM 900.608 SPECIAL PROVISION (CONTROLLED DENSITY (FLOWABLE) FILL)

EXISTING VOIDS (SEE NOTE 1)

VOIDS BELOW CENTER OF CULVERT SHALL BE FILLED WITH ITEM 541.31 CONCRETE, CLASS D

PROPOSED CORRUGATED LINER PIPE, CAAP (MINIMUM DIAMETER = 60")
84" PIPE INSTALLED

PROJECT NAME:	SO. BURLINGTON - COLCHESTER
PROJECT NUMBER:	IM CULV (23)
FILE NAME:	z09a046pr-01.dgn
PROJECT LEADER:	D. BENOIT
DESIGNED BY:	B. COLBURN
PROFILE SHEET - COLCHESTER 75-3	
PLOT DATE:	08-FEB-2011
DRAWN BY:	M. LOVETT
CHECKED BY:	D. BENOIT
SHEET	18 OF 36

EPSC PLAN NARRATIVE

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REHABILITATION OF AN EXISTING 108-INCH CORRUGATED METAL CULVERT UNDER INTERSTATE 89 AS WELL AS INSTALLING A NEW PIPE ADJACENT TO THE EXISTING CULVERT USING TRENCHLESS TECHNOLOGY. THE CULVERT IS LOCATED NORTH OF EXIT 15 APPROXIMATELY 300 FEET SOUTH OF THE BRIDGE OVER BAY ROAD IN COLCHESTER, VT. THE CULVERT IS DESIGNATED AS BR 75-3. THE 332 FOOT LONG CULVERT CONVEYS AN UNNAMED BROOK WEST AND OUTLETS INTO MALLETS BAY OF LAKE CHAMPLAIN. THE EXISTING CULVERT WILL BE SLIP LINED WITH A PROPOSED 60-INCH CORRUGATED ALUMINUM ALLOY PIPE (CAAP) AS THE EXISTING CULVERT IS BEYOND ITS DESIGN LIFE AND SHOWS SIGNS OF DETERIORATION AND STRUCTURAL DEFICIENCY. A NEW CULVERT IS TO BE INSTALLED 20 FEET SOUTH OF THE EXISTING PIPE. THE NEW CULVERT IS A 60 INCH SMOOTH WALLED PIPE TO BE INSTALLED USING TRENCHLESS TECHNOLOGY SUCH AS PIPE JACKING OR AUGERING. THE PROJECT ALSO INCLUDES THE CONSTRUCTION OF A FULLY BEVELED HEADWALL AT THE INLET OF BOTH CULVERTS TO IMPROVE HYDRAULICS. DISTURBANCE TO TRAFFIC WILL BE ONLY THAT WHICH CONSTRUCTION VEHICLES NEED TO ACCESS THE SITE. NO FULL ROAD CLOSURES WILL BE NECESSARY. TEMPORARY LANE CLOSURES WILL BE ALLOWED (SEE SPECIAL PROVISIONS). TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW, AND CONTRACTORS OFF-SITE STAGING AREAS) EQUALS 1.31 ACRES. THE TOTAL DISTURBED AREA EQUALS THE ENTIRE AREA LOCATED WITHIN THE BARRIER FENCE.

IT IS ANTICIPATED THAT THIS WILL BE A SINGLE SEASON PROJECT.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE PROPERTY SURROUNDING THE SITE CONSISTS OF WOODS WITH LIGHT UNDERBRUSH. THE SIDE SLOPES OF THE INTERSTATE ARE GRASSED. THE TERRAIN CAN BE DESCRIBED AS FLAT WITH WELL DEFINED WATERWAYS. AFTER THE WATER TRAVELS UNDER THE INTERSTATE, IT FLOWS TO ANOTHER CULVERT UNDER BAY ROAD AND THROUGH A RESIDENTIAL AREA TO OUTLET INTO MALLETS BAY. THE SIDE SLOPES OF THE STREAM ARE LOW. DUE TO THE FLAT TERRAIN IN THE AREA, HIGH FLOW RATES WOULD CREATE SIGNIFICANT PONDING ON BOTH THE UPSTREAM AND DOWNSTREAM ENDS OF THE CULVERT. THE ROADWAY EMBANKMENTS ARE GRASSED WITH WELL ESTABLISHED VEGETATION AND WERE CONSTRUCTED AT 1:2 (VERTICAL: HORIZONTAL) SLOPES.

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

THE UNNAMED BROOK IS LOCATED WITHIN THE PROJECT AREA. THE BROOK FLOWS EAST TO WEST BENEATH BOTH BARRELS OF INTERSTATE 89. THERE ARE NO OTHER WATERWAYS OR BODIES OF WATER WITHIN THE PROJECT AREA. STORMWATER ENTERING THE PROJECT AREA WILL BE LIMITED TO THE RUNOFF FROM INTERSTATE 89 AND RUNOFF FROM THE SIDESLOPES OF THE EMBANKMENT.

1.2.3 VEGETATION

THE VEGETATION ON THE SITE CONSISTS OF BRUSH AND TREES ON BOTH SIDES OF THE INTERSTATE. THE DOWNSTREAM END CONTAINS MANY SHRUBS WITH SOME FORESTED AREAS. THE UPSTREAM TERRAIN IS MARSHY WITH A MIX OF HERBACEOUS AND FORESTED VEGETATION. THE INTERSTATE EMBANKMENTS ARE GRASSED ON BOTH SIDES. THE IMPACT TO THE VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY IMPACTED BY THE SLIP-LINING, NEW CULVERT INSTALLATION, AND HEADWALL CONSTRUCTION OPERATIONS. DISTURBED SOILS AND VEGETATION WILL BE REESTABLISHED USING STONE AND STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

THE SOIL FOUND ON THE UPSTREAM SIDE OF THE PROJECT IS A MIX OF WINOOSKI VERY FINE SANDY LOAM AND TERRACE ESCARPMENTS. THE DOWNSTREAM END IS COMPOSED OF TERRACE ESCARPMENTS, WINOOSKI VERY FINE SANDY LOAM, AND MUNSON AND BELGRADE SILT LOAMS, 12-25% SLOPES. WINOOSKI VERY FINE SANDY LOAM HAS AN ERODIBILITY FACTOR (K-VALUE) OF 0.49. MUNSON AND BELGRADE SILT LOAM HAS AN ERODIBILITY FACTOR OF 0.49. THE ROADWAY EMBANKMENTS ARE MOST LIKELY A COMMON FILL MATERIAL THAT WAS PLACED DURING CONSTRUCTION OF THE INTERSTATE. GENERALLY, K-VALUES INDICATE THE FOLLOWING:

- 0.23 AND LOWER LOW ERODIBILITY
- 0.24 TO 0.36 MODERATE ERODIBILITY
- 0.36 AND HIGHER HIGH ERODIBILITY

1.2.5 SENSITIVE RESOURCE AREAS

DISTURBANCE OF THE SOILS NEAR THE WATERWAY WILL CONSIST OF THAT WHICH IS NECESSARY TO CONSTRUCT THE PROPOSED HEADWALL, SLIP-LINE THE EXISTING PIPE, AND INSTALL THE NEW PIPE. BARRIER FENCE (BF) WILL BE CONSTRUCTED ALONG THE PROJECT LIMITS TO PREVENT DISTURBANCE OUTSIDE THE PROJECT LIMITS.

CRITICAL HABITATS: NO
HISTORIC OR ARCHAEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCES: NO
WETLANDS: YES, SEE BELOW FOR IMPACTS

WETLAND IMPACTS: 12,927 SF TEMPORARY; 1,783 SF PERMANENT
WETLAND BUFFER IMPACTS: 24,046 SF TEMPORARY; 456 SF PERMANENT
OHW IMPACTS: 1,408 SF TEMPORARY; 2,788 SF PERMANENT

1.3 RISK EVALUATION

THIS PROJECT FALLS UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES FOR LOW RISK PROJECTS. ANY MODIFICATIONS TO THE PROJECT THAT INCREASE THE RISK TO ENVIRONMENTAL RESOURCES SHALL BE EVALUATED IN ACCORDANCE WITH THE PERMIT REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING. THE RISK EVALUATION WAS BASED ON HAVING LESS THAN 2 ACRES OF DISTURBANCE AND NO AREAS OF DISTURBANCE FOR MORE THAN 14 CONSECUTIVE DAYS WITHOUT TEMPORARY OR FINAL STABILIZATION.

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.

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

INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN IN THE EROSION CONTROL PLAN OR AS DIRECTED BY THE ENGINEER OR ON-SITE COORDINATOR. DO NOT MODIFY THE TYPE, SIZE, OR LOCATION OF ANY CONTROL OR PRACTICE WITHOUT APPROVAL OF THE ENGINEER OR ON-SITE COORDINATOR. ANY CHANGES SHALL BE NOTED ON THE PLANS, IN THE WEEKLY INSPECTION REPORT, AND REPORTED TO THE APPROPRIATE AUTHORITY IN A TIMELY MANNER. INSPECT ALL CONTROL MEASURES WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES RUNOFF FROM THE PROJECT SITE. REPAIR MEASURES PROMPTLY ONCE DAMAGE IS DISCOVERED. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR EACH PRACTICE REQUIRED ON THE PROJECT TO INCLUDE BUT NOT LIMITED TO THE FOLLOWING:

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED. BARRIER FENCE (BF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, BARRIER FENCE SHALL BE USED INSTEAD OF PROJECT DEMARCATION FENCE WITHIN 100 FT OF A WATER RESOURCE (STREAM, BROOK, LAKE, POND, WETLAND, ETC). DISTURBANCE OUTSIDE THE LIMITS OF THE BARRIER FENCE WILL REQUIRE ADDITIONAL PERMIT COVERAGE.

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. DO NOT ALLOW CONSTRUCTION EQUIPMENT TO OPERATE OUTSIDE OF PERIMETER CONTROL MEASURES.

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 AT TEMPORARY ACCESS ROADS AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES. IF SEDIMENT IS STILL BEING TRACKED ONTO PUBLIC ROADS, THE LENGTH OF THE PAD SHALL BE EXTENDED OR VEHICLES SHALL BE RINSED WITH A HOSE PRIOR TO LEAVING THE SITE.

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 TO BE INSTALLED AS PROPOSED ON THE EPSC PLAN. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, WOVEN WIRE REINFORCED SILT FENCE SHALL BE USED INSTEAD OF SILT FENCE WITHIN 100 FEET UPSLOPE OF RECEIVING WATERS.

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 EXISTING STREAM WILL BE DIVERTED AS DESCRIBED IN THE DEWATERING SECTION BELOW. IT IS NOT ANTICIPATED THAT ANY OTHER UPLAND FLOW DIVERSION WILL BE REQUIRED.

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 TO BE USED AS DETERMINED NECESSARY BY THE RESIDENT ENGINEER. IT IS ANTICIPATED THAT STONE CHECK DAMS WILL BE REQUIRED AS A RESULT OF THE TEMPORARY ACCESS ROADS.

1.4.7. CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS. ALL DISTURBED SOIL SHALL BE STABILIZED WITH SEED AND MULCH OR STONE FILL AS SHOWN ON THE PLANS. IT IS NOT ANTICIPATED THAT ANY OTHER PERMANENT STORMWATER TREATMENT DEVICES WILL BE NECESSARY.

1.4.8. STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION. SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3. THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9. WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK HANDBOOK FOR GUIDANCE. IF ANY EARTHWORK IS TO BE PERFORMED OUTSIDE THE CONSTRUCTION SEASON, A WINTER EROSION AND SEDIMENT CONTROL PLAN DESCRIBING ALTERNATIVE STABILIZATION METHODS SHALL BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO AUGUST 15 FOR APPROVAL.

1.4.10. STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE. SEEDING, MULCHING, AND BIODEGRADABLE EROSION CONTROL MATTING OR EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3. THESE SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

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. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE HEADWALLS AND CRADLE WALLS. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSIONS WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO THE EXISTING CULVERT DURING THE NEW CULVERT INSTALLATION AND INTO THE NEW CULVERT DURING THE LINING OF THE EXISTING CULVERT. FILTER BAGS MAY BE NECESSARY FOR TREATMENT WHILE DEWATERING AS NECESSARY FOR CONSTRUCTION ACTIVITIES. HOWEVER, THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT A PLAN FOR ANY DEWATERING AREAS TO THE RESIDENT ENGINEER FOR APPROVAL.

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

THE CONTRACTOR SHALL DEVELOP THE TRAFFIC MANAGEMENT PLAN USING THE STANDARD PLANS AND THE MOST RECENT EDITION OF THE MUTCD.

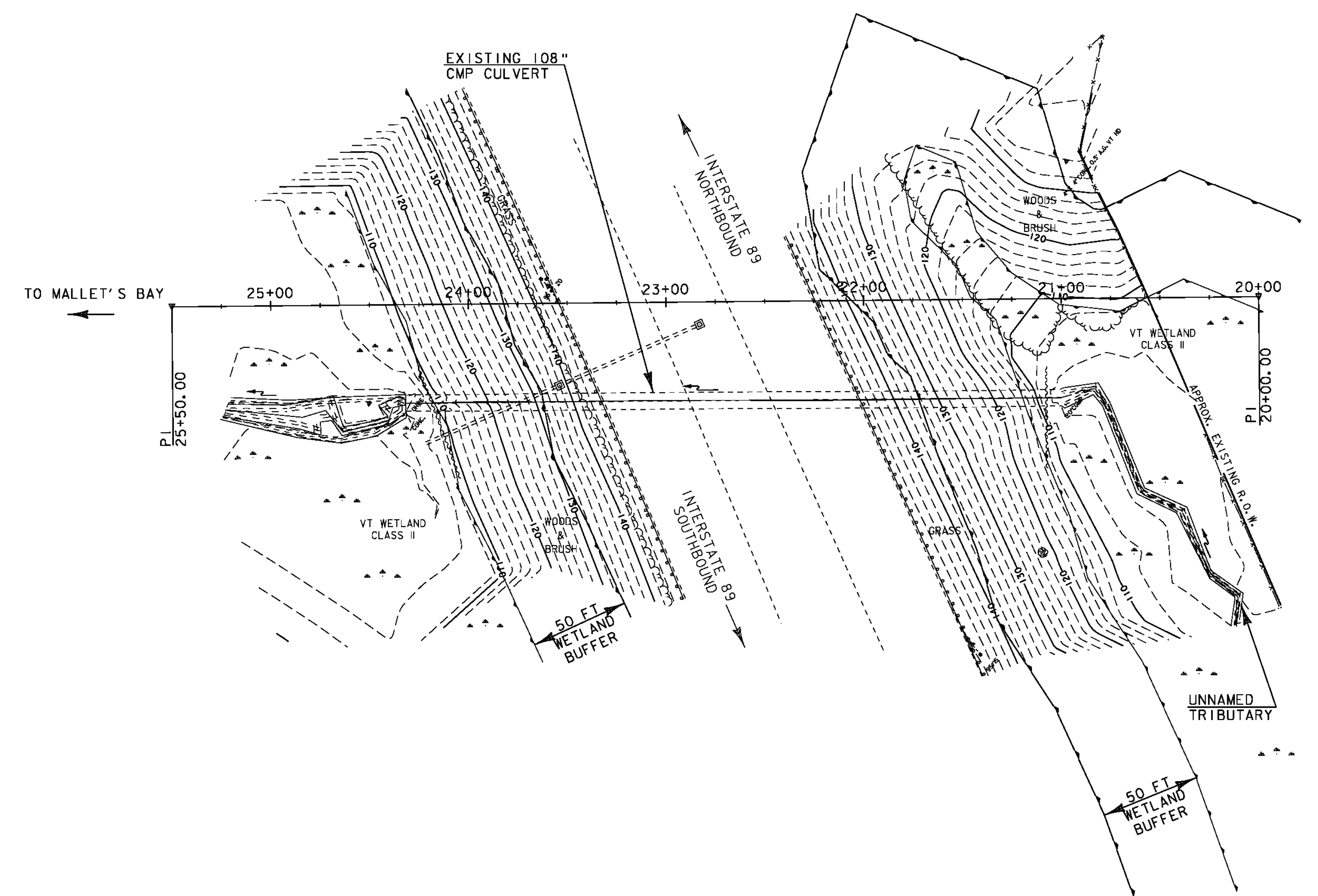
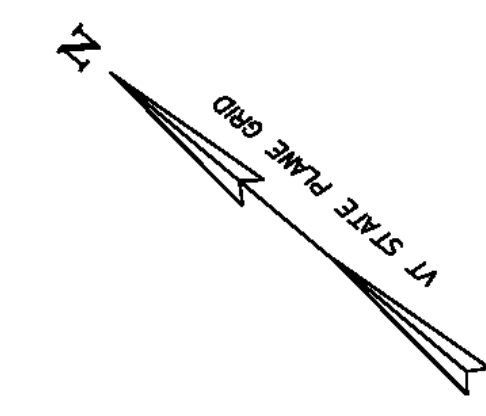
1.5.2 OFF-SITE ACTIVITIES

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.

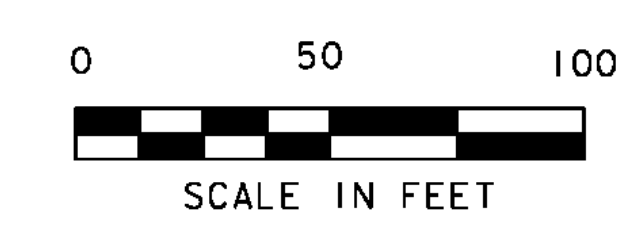
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FILE NAME: z09a046ern01.dgn PLOT DATE: 08-FEB-2011
PROJECT LEADER: D. BENOIT DRAWN BY: M. LOVETT
DESIGNED BY: B. COLBURN CHECKED BY: D. BENOIT
EPSC NARRATIVE - COLCHESTER 75-3 SHEET 19 OF 36



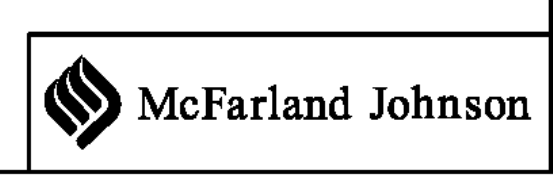


LEGEND	
	EDGE OF WETLAND
	ORDINARY HIGH WATER
	DIRECTION OF FLOW



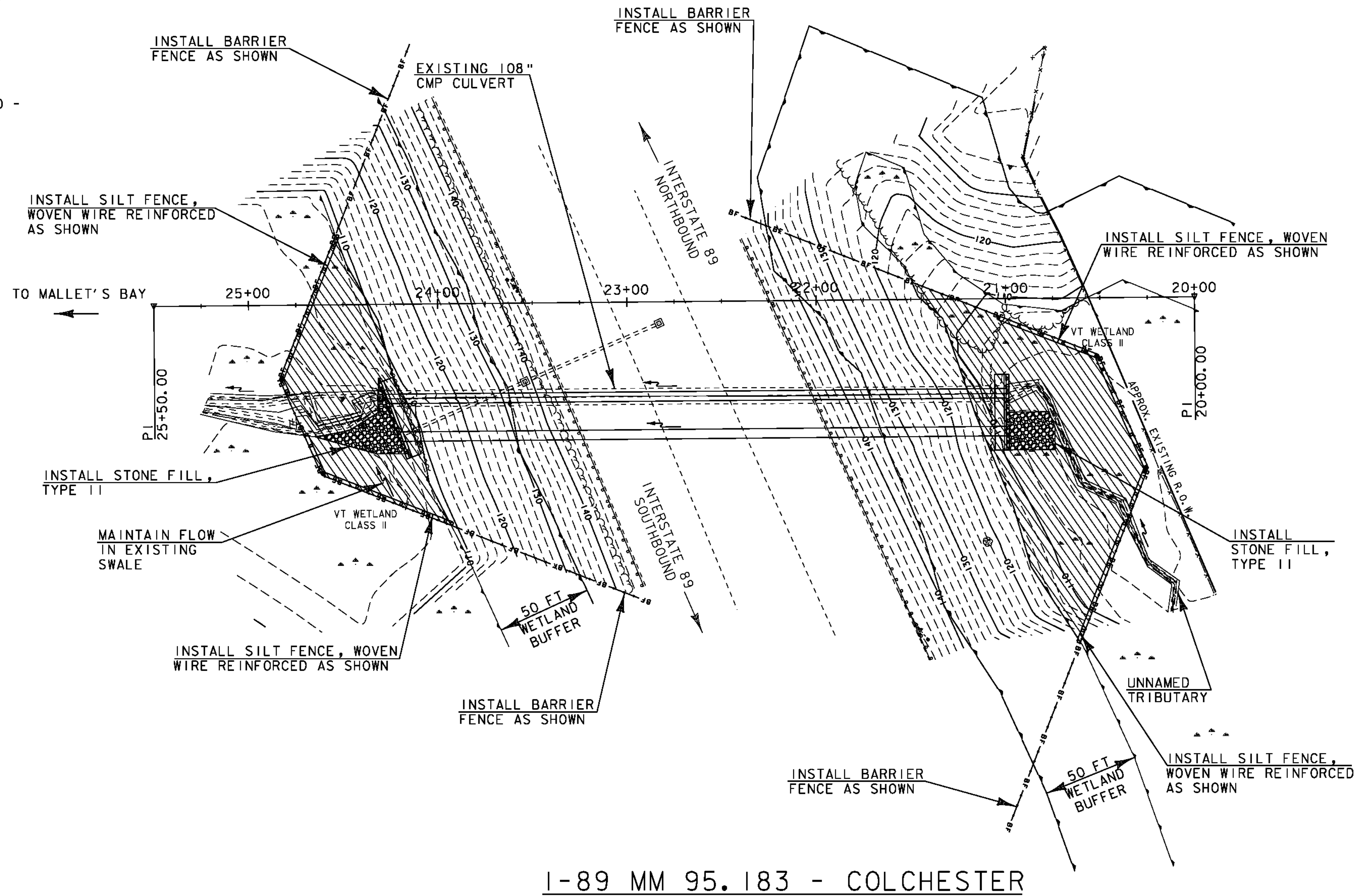
I-89 MM 95.183 - COLCHESTER

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EXISTING CONDITIONS - COLCHESTER 75-3	SHEET 20 OF 36

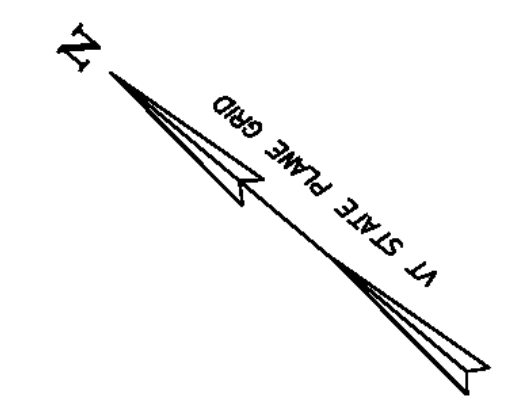


GENERAL EROSION PREVENTION & SEDIMENT CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH DISTURBANCE.
2. THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE BASED UPON EXISTING FIELD CONDITIONS AND SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL. PAYMENT FOR THE DEVELOPMENT OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE INCLUDED IN ITEM 652.10 - EPSC PLAN.
3. MONITORING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE PER ITEM 652.20 - MONITORING EPSC PLAN, AND ITEM 652.30 - MAINTENANCE OF EPSC PLAN.
4. FOR CLARITY, AREAS TO BE SEEDED AND MULCHED HAVE NOT BEEN SHOWN. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED.
5. THE LOCATION OF ANY WASTE OR BORROW AREAS AND HAUL ROADS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
6. STABILIZED CONSTRUCTION ENTRANCES HAVE NOT BEEN SHOWN. STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES WILL LEAVE THE CONSTRUCTION DISTURBED AREA AND ENTER A PAVED PUBLIC ROADWAY. THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).
7. SEE SEEDING FORMULA AND SEEDING NOTES ON SHEET 27 FOR TURF REESTABLISHMENT REQUIREMENTS.
8. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE HEADWALLS AND CRADLE WALLS. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSION WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO THE EXISTING CULVERT DURING THE NEW CULVERT INSTALLATION AND INTO THE NEW CULVERT DURING THE LINING OF THE EXISTING CULVERT.
9. CLEARING AND RESTORATION OF TURF TO RE-ESTABLISH DISTURBED SOIL CAUSED BY THE CONTRACTOR'S ACCESS ROAD AND STAGING AREA WILL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).
10. CLEARING AND RESTORATION OF TURF TO RE-ESTABLISH DISTURBED SOIL WITHIN THE PAYMENT LIMITS OF HEADWALL AND CRADLE WALL CONSTRUCTION WILL BE PAID FOR UNDER CONTRACT ITEMS. RESTORATION OF TURF OUTSIDE PAYMENT LIMITS OF HEADWALL AND CRADLE WALL CONSTRUCTION SHALL BE INCLUDED IN ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)



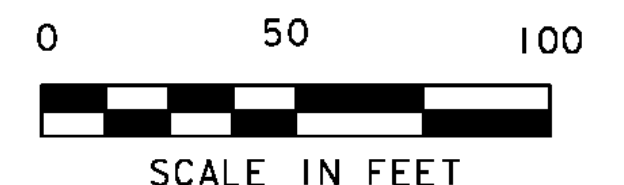
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PROPOSED CONSTRUCTION SEQUENCE

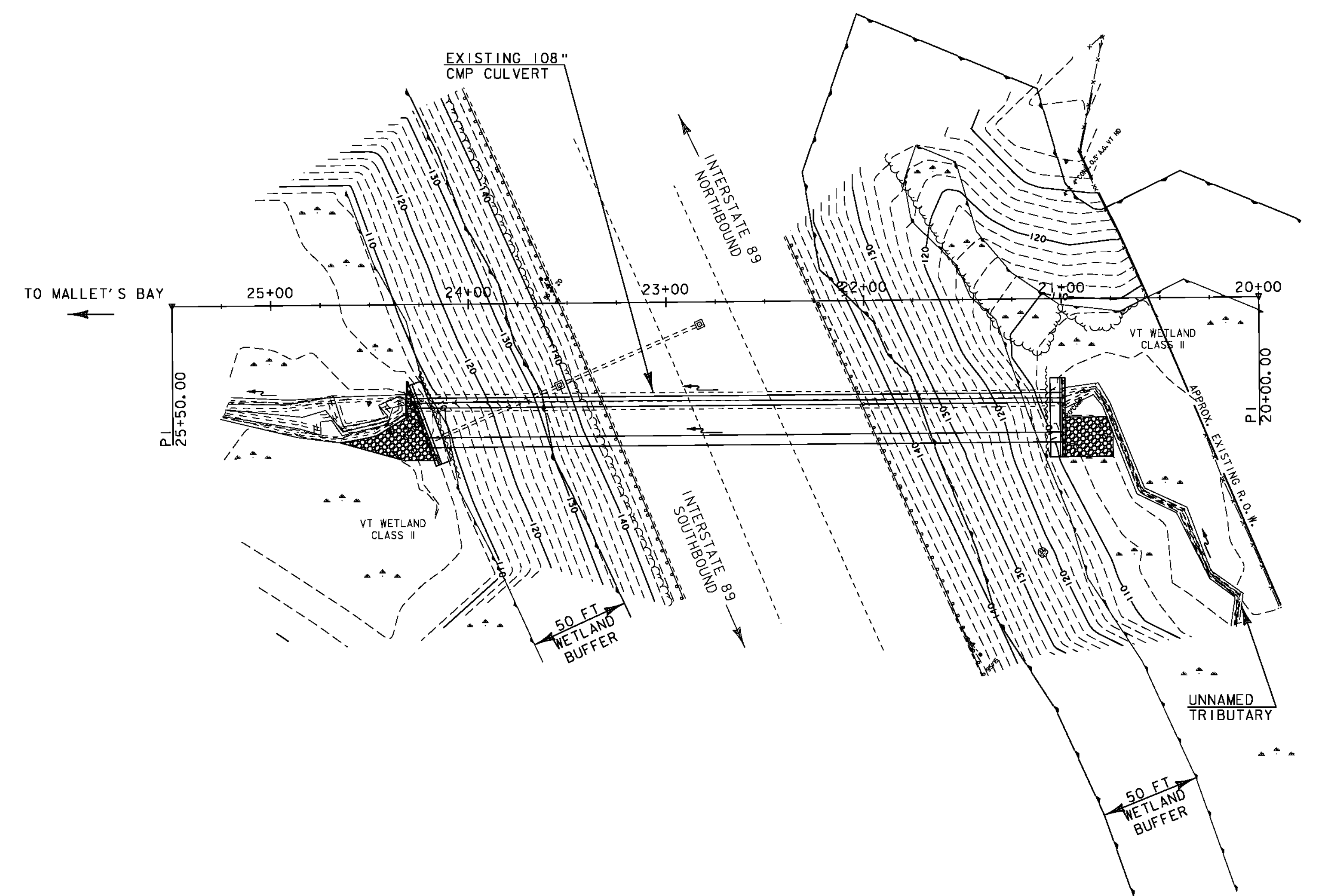
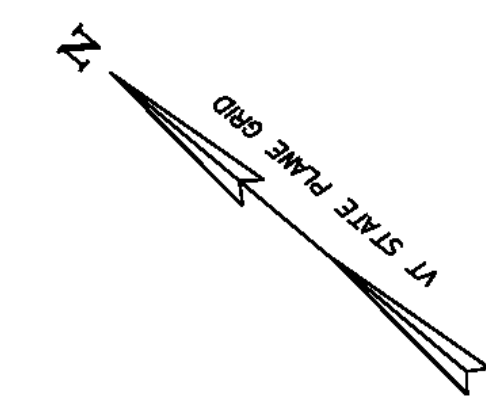
1. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AS REQUIRED.
2. CONSTRUCT STAGING AREAS AND ACCESS ROADS.
3. REMOVE EXISTING 18" PIPE AT CULVERT OUTLET AND CONSTRUCT NEW 18" PIPE AS TO AVOID CONFLICTS WITH NEW CULVERT AND HEADWALL.
4. INSTALL 60" CULVERT USING TRENCHLESS TECHNOLOGY.
5. REMOVE EXISTING CRADLE HEADWALL AT INLET AND CUT BACK EXISTING CULVERT AT OUTLET.
6. INSTALL 60" LINER.
7. CONSTRUCT STRAIGHT BEVELED HEADWALL AT CULVERT INLETS AND AT CULVERT OUTLETS.
8. INSTALL STONE FILL AND STABILIZE ALL DISTURBED AREAS.

LEGEND	
	BARRIER FENCE
	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED
	EDGE OF WETLAND
	ORDINARY HIGH WATER
	LIMITS OF PERMITTED WETLAND IMPACTS
	STONE FILL, TYPE II



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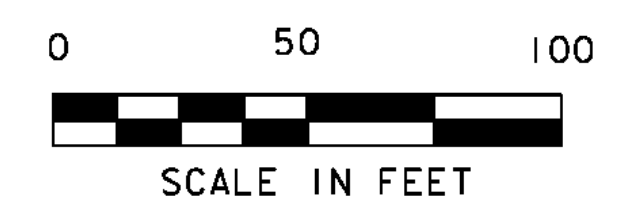


LEGEND	
	EDGE OF WETLAND
	ORDINARY HIGH WATER
	STONE FILL, TYPE II

SITE STABILIZATION NOTES:

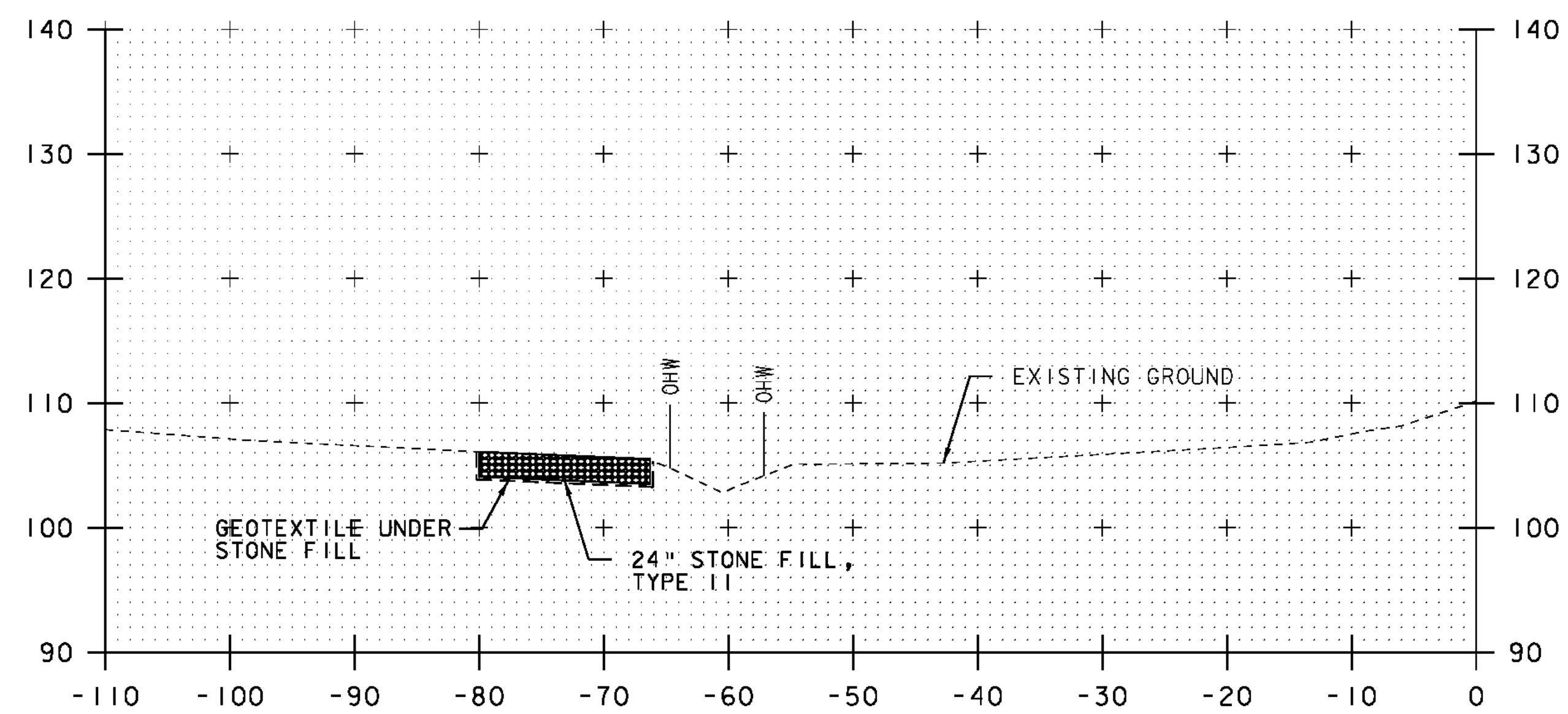
1. ALL DISTURBED GRASSED AREAS SHALL BE STABILIZED WITH SEED AND MULCH.
2. ALL DISTURBED STONE AREAS AND AREAS SHOWN ON THE PLANS SHALL BE STABILIZED WITH STONE FILL, TYPE II.
3. SLOPES STEEPER THAN 1:3 (VERTICAL:HORIZONTAL) SHALL ALSO USE TEMPORARY EROSION MATTING.
4. THE RESIDENT ENGINEER SHALL HAVE THE OPTION TO LEAVE THE TEMPORARY ACCESS ROAD IN PLACE AT THE COMPLETION OF THE PROJECT.

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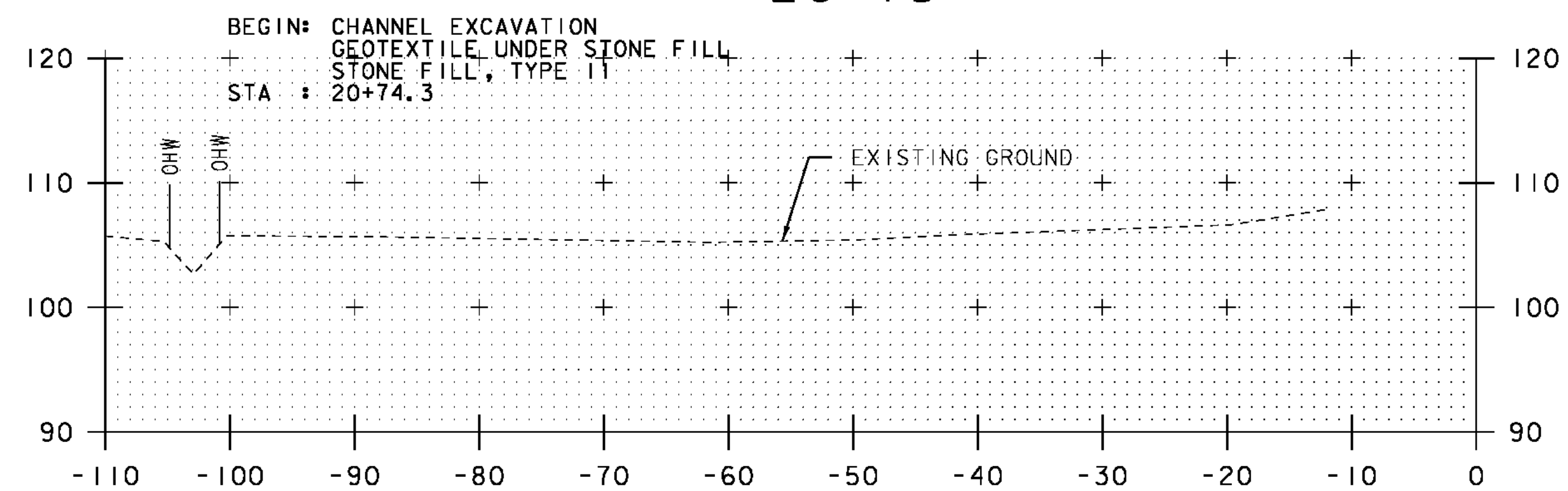


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FINAL CONDITIONS - COLCHESTER 75-3	SHEET 22 OF 36

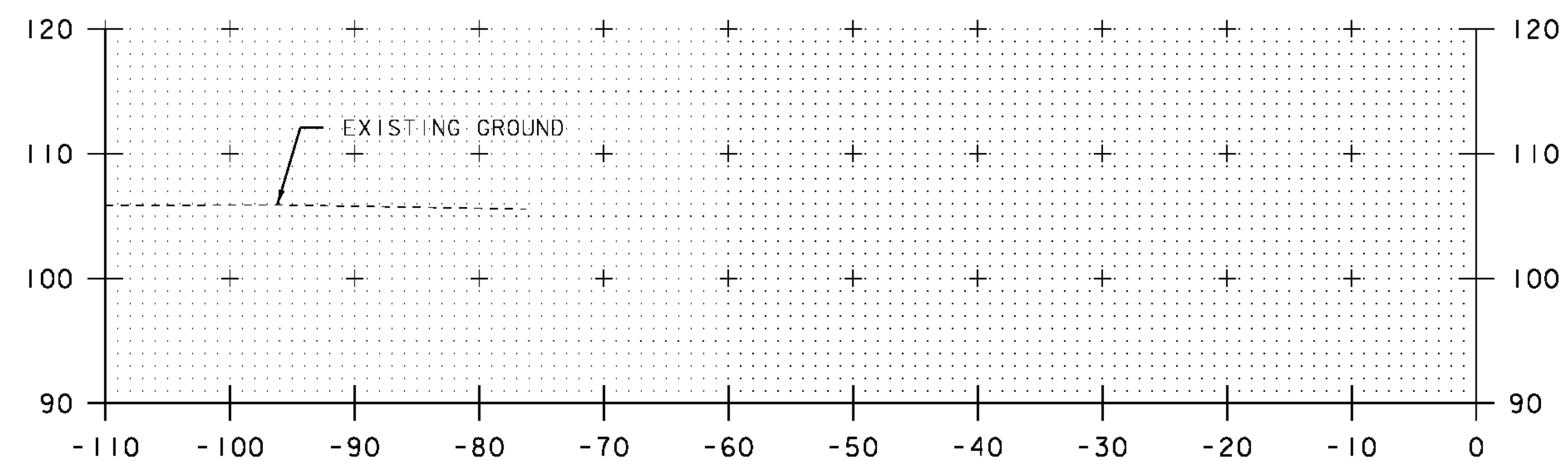




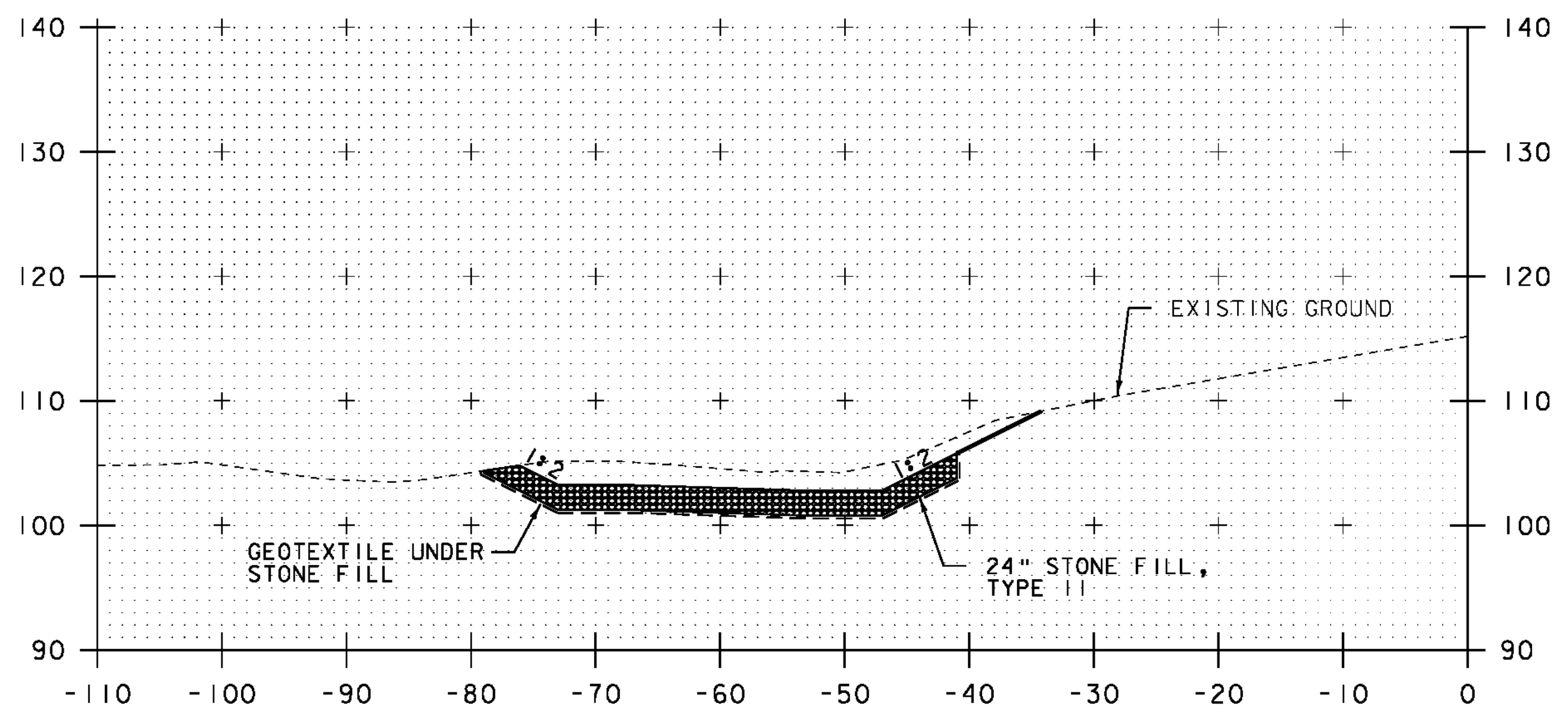
20+75



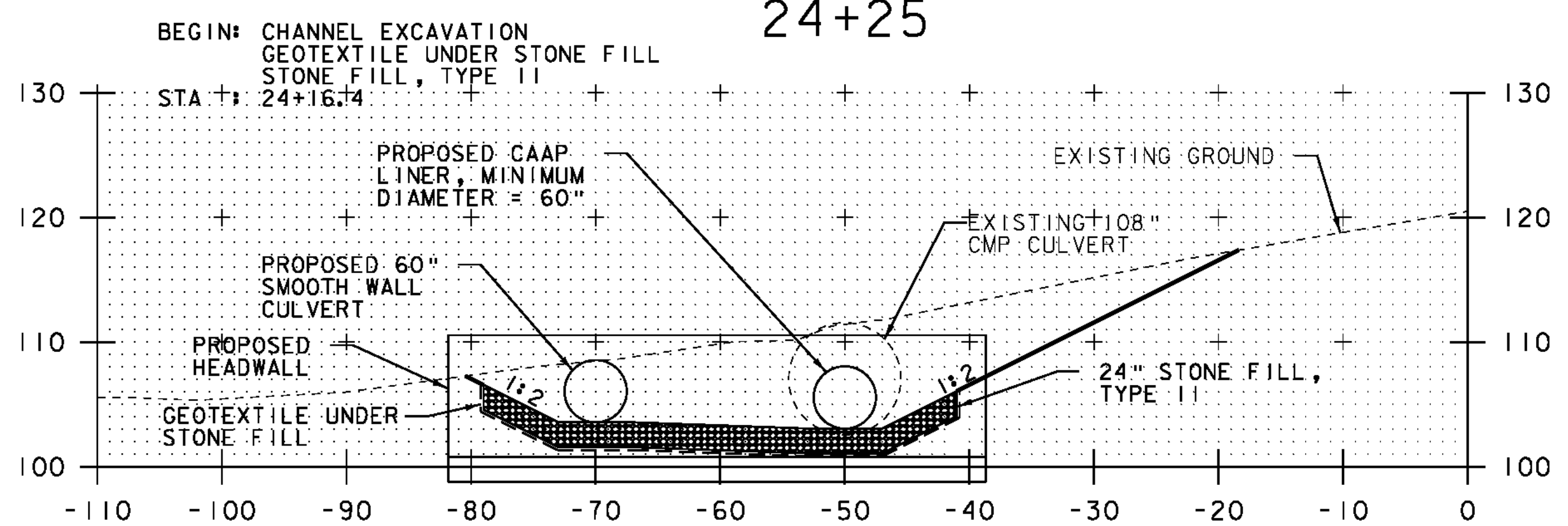
20+50



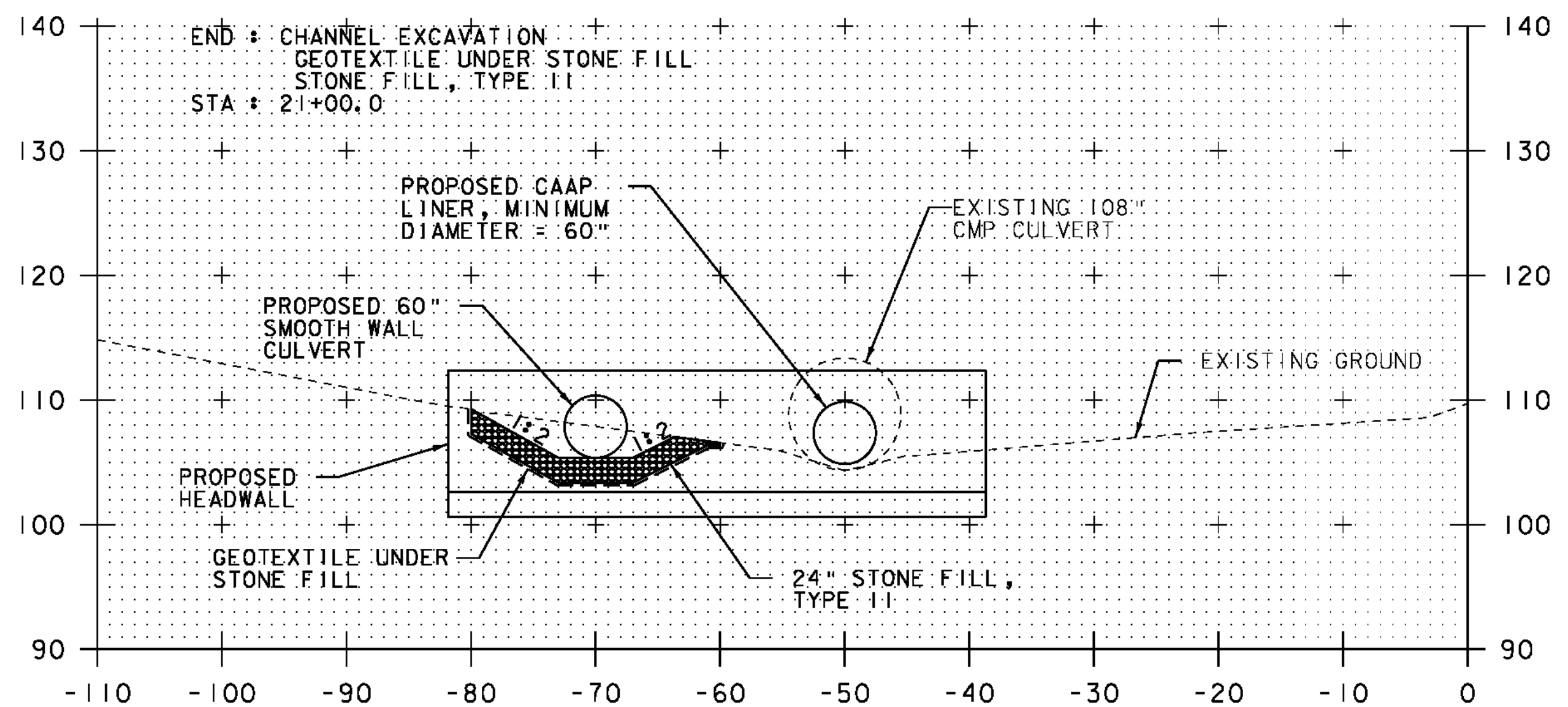
20+25



24+25



24+22

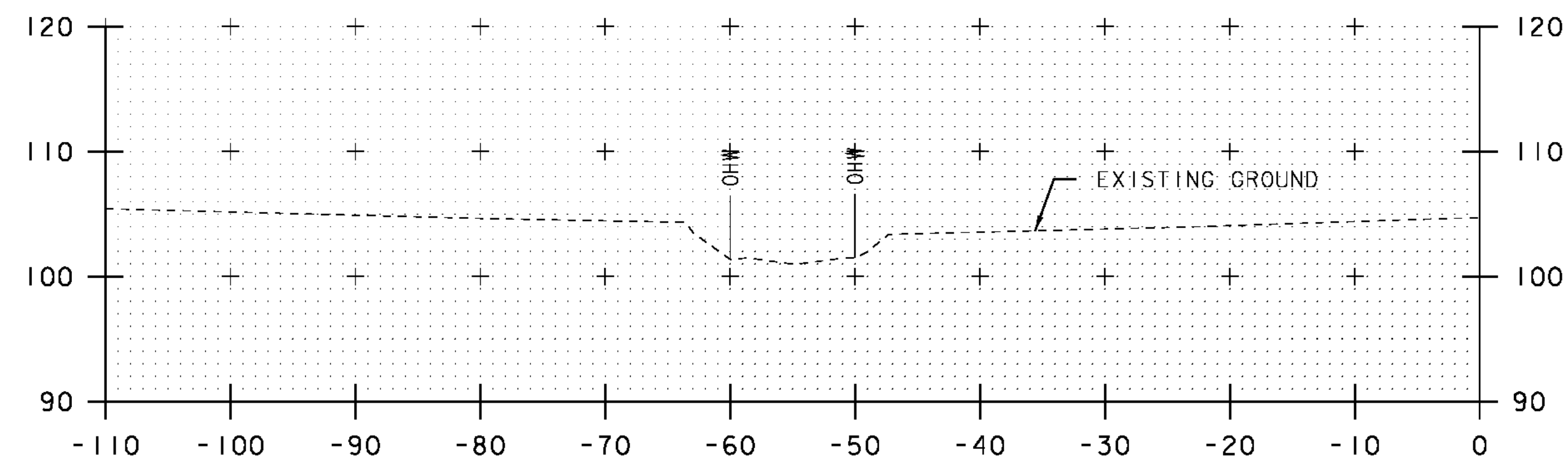


21+00

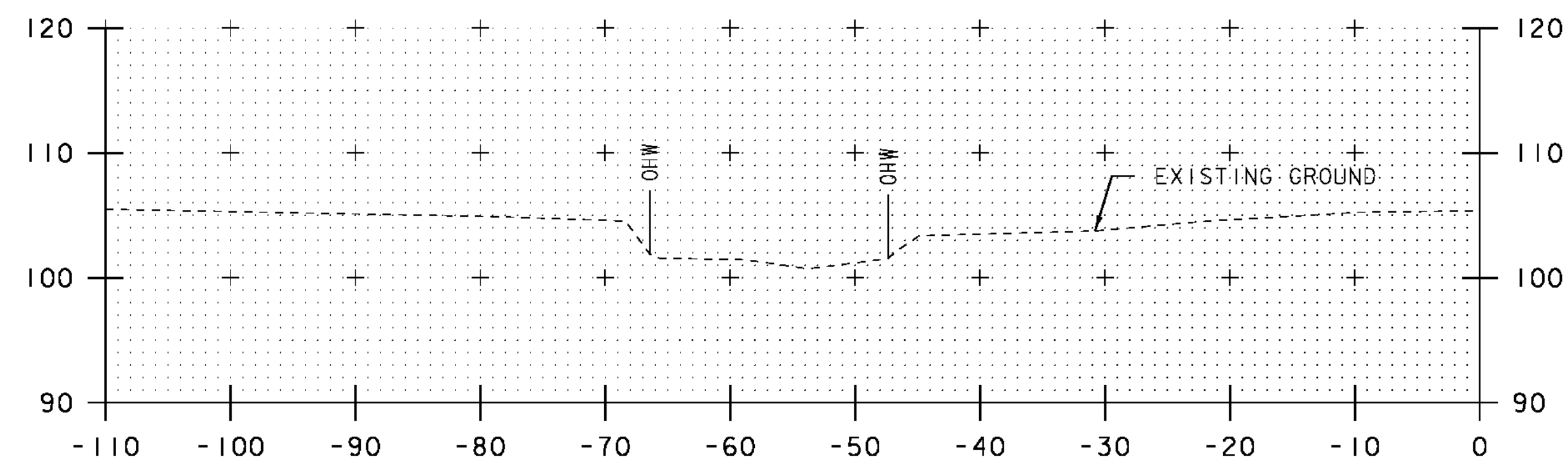
STA. 20+25 TO STA. 24+25

PROJECT NAME: SO. BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)
 FILE NAME: z09a046xs.dgn
 PROJECT LEADER: D. BENOIT
 DESIGNED BY: R. HALEY
 CROSS SECTIONS - COLCHESTER 75-3
 PLOT DATE: 08-FEB-2011
 DRAWN BY: R. HALEY
 CHECKED BY: D. BENOIT
 SHEET 23 OF 36

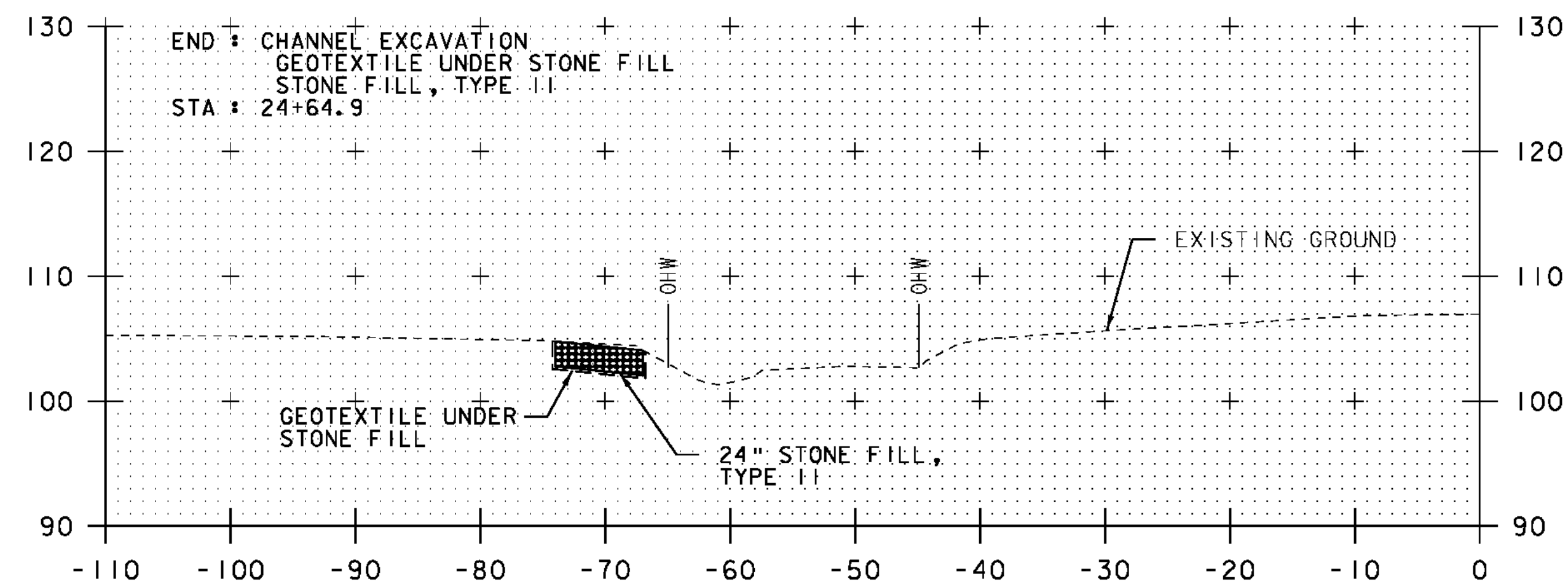




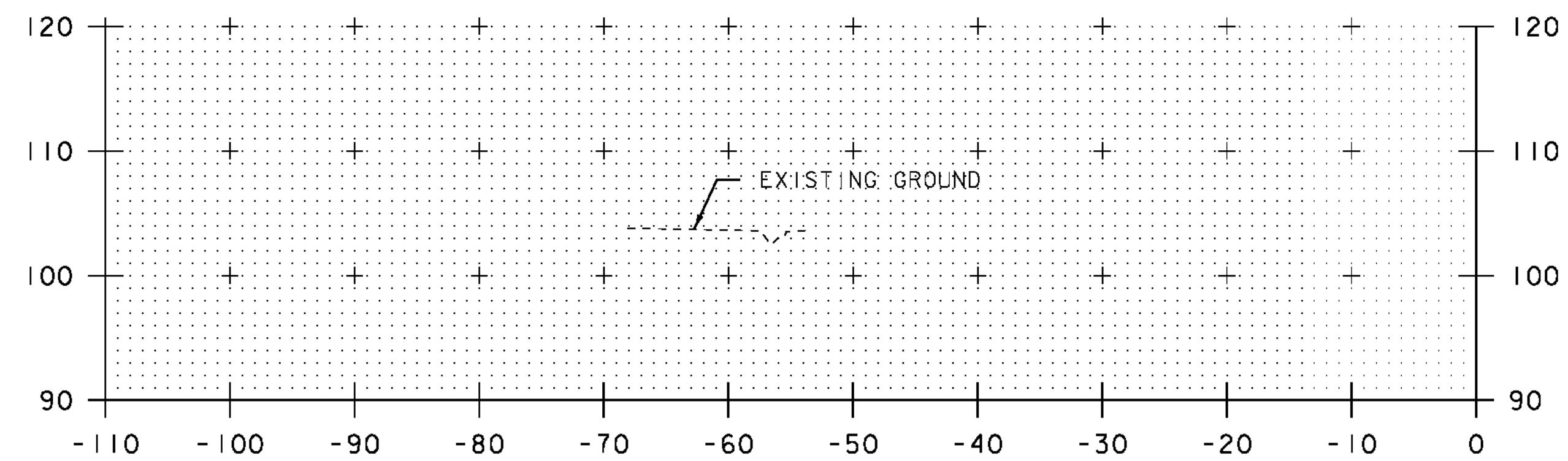
25+00



24+75



24+50

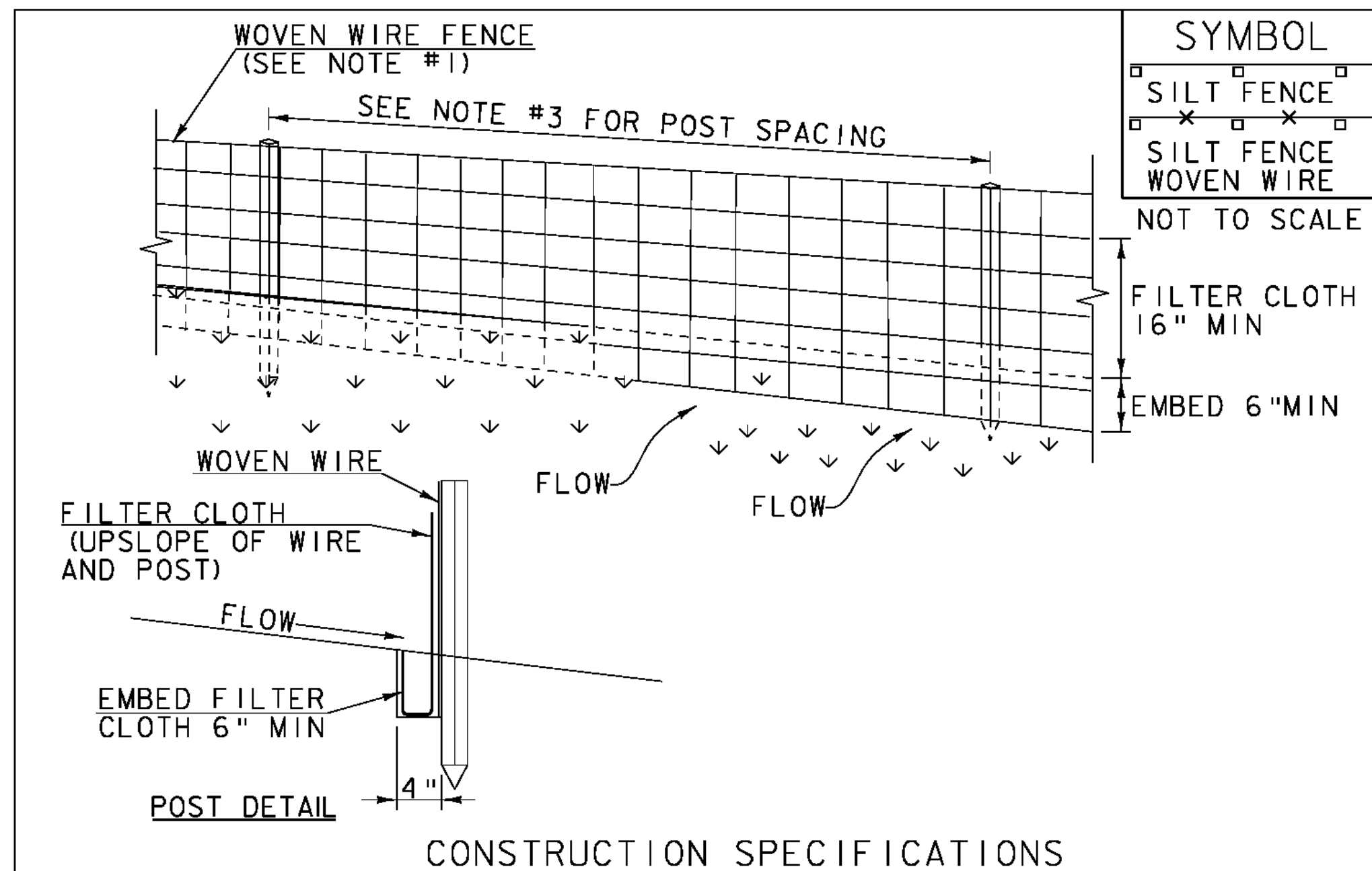


25+25

STA. 24+50 TO STA. 25+25

PROJECT NAME: SO. BURLINGTON - COLCHESTER	
PROJECT NUMBER: IM CULV (23)	
FILE NAME: z09a046xs.dgn	PLOT DATE: 08-FEB-2011
PROJECT LEADER: D. BENOIT	DRAWN BY: R. HALEY
DESIGNED BY: R. HALEY	CHECKED BY: D. BENOIT
CROSS SECTIONS - COLCHESTER 75-3	SHEET 24 OF 36





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, MIRAF1100X, 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.

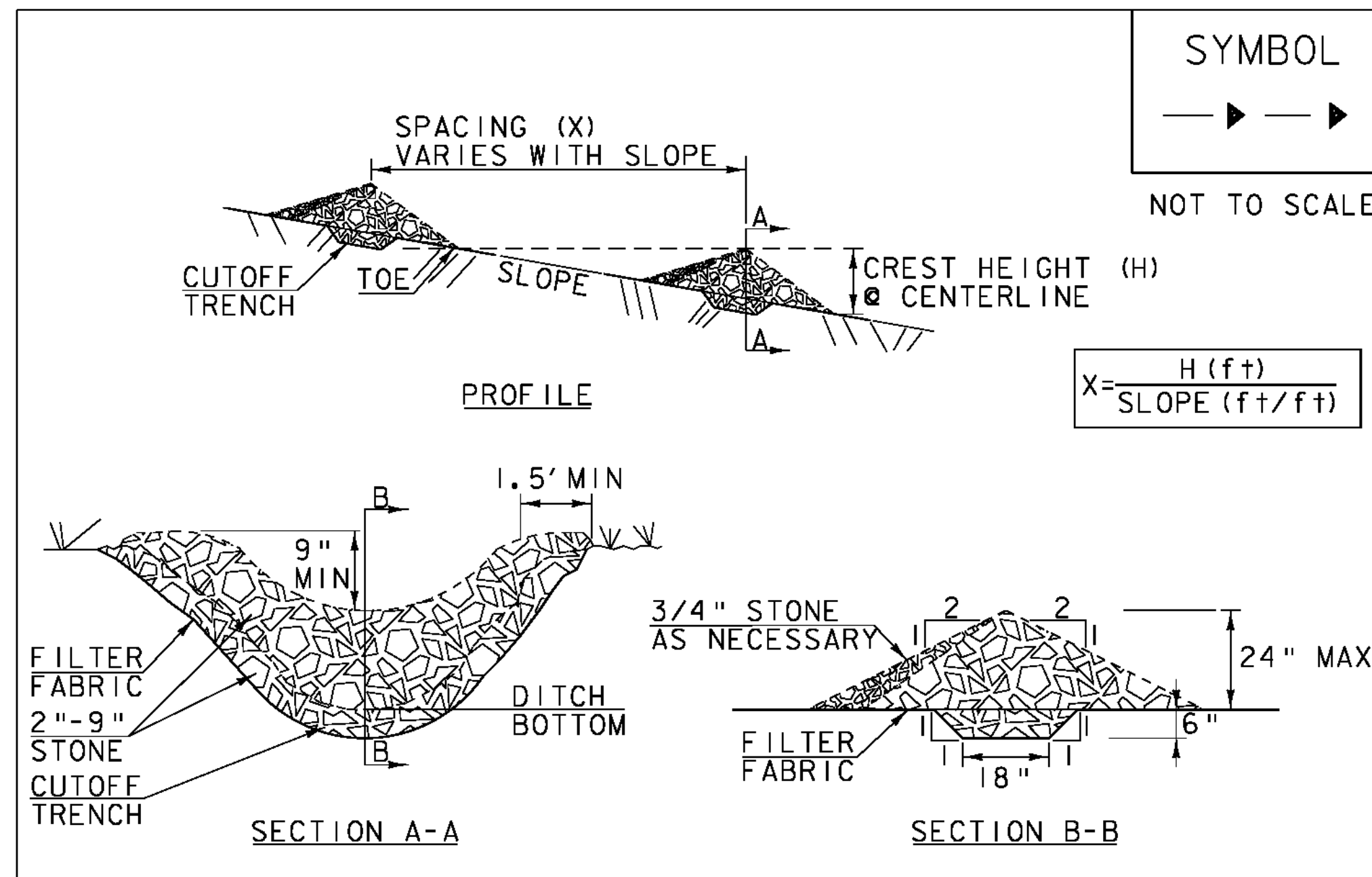
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
 ORIGINALLY DEVELOPED BY USDA-NRCS
 VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

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



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

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

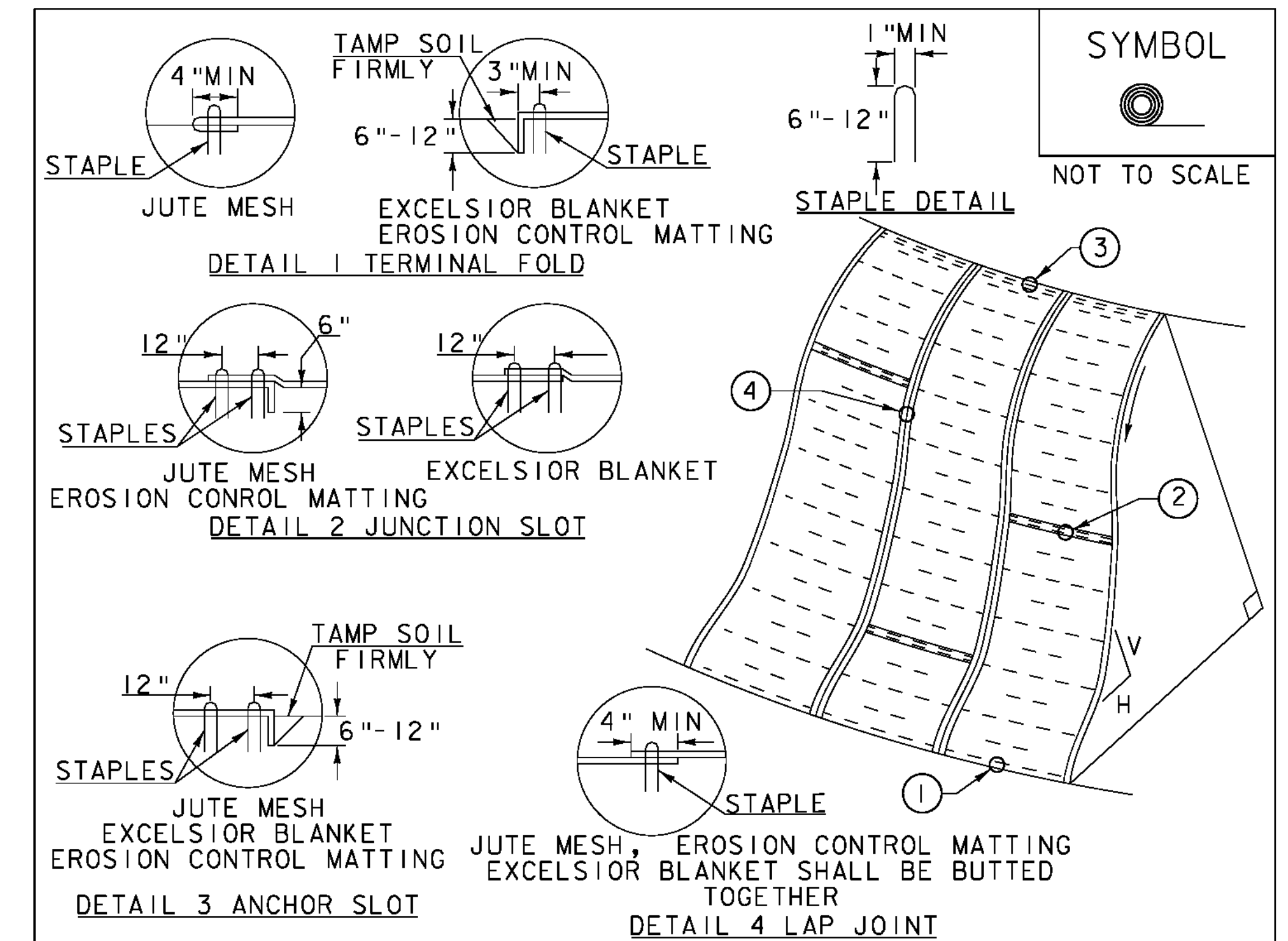
CHECK DAM

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

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE I.

REVISIONS		
MARCH 21, 2008	WHF	
JANUARY 8, 2009	WHF	

CHECK DAMS REQUIRED AS PART OF THE CONTRACTOR'S TEMPORARY ACCESS ROAD OR STAGING AREA SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).



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

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

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

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

REVISIONS		
APRIL 16, 2007	JMF	
JANUARY 13, 2009	WHF	

TEMPORARY EROSION MATTING REQUIRED AS PART OF THE CONTRACTOR'S TEMPORARY ACCESS ROAD OR STAGING AREA SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).

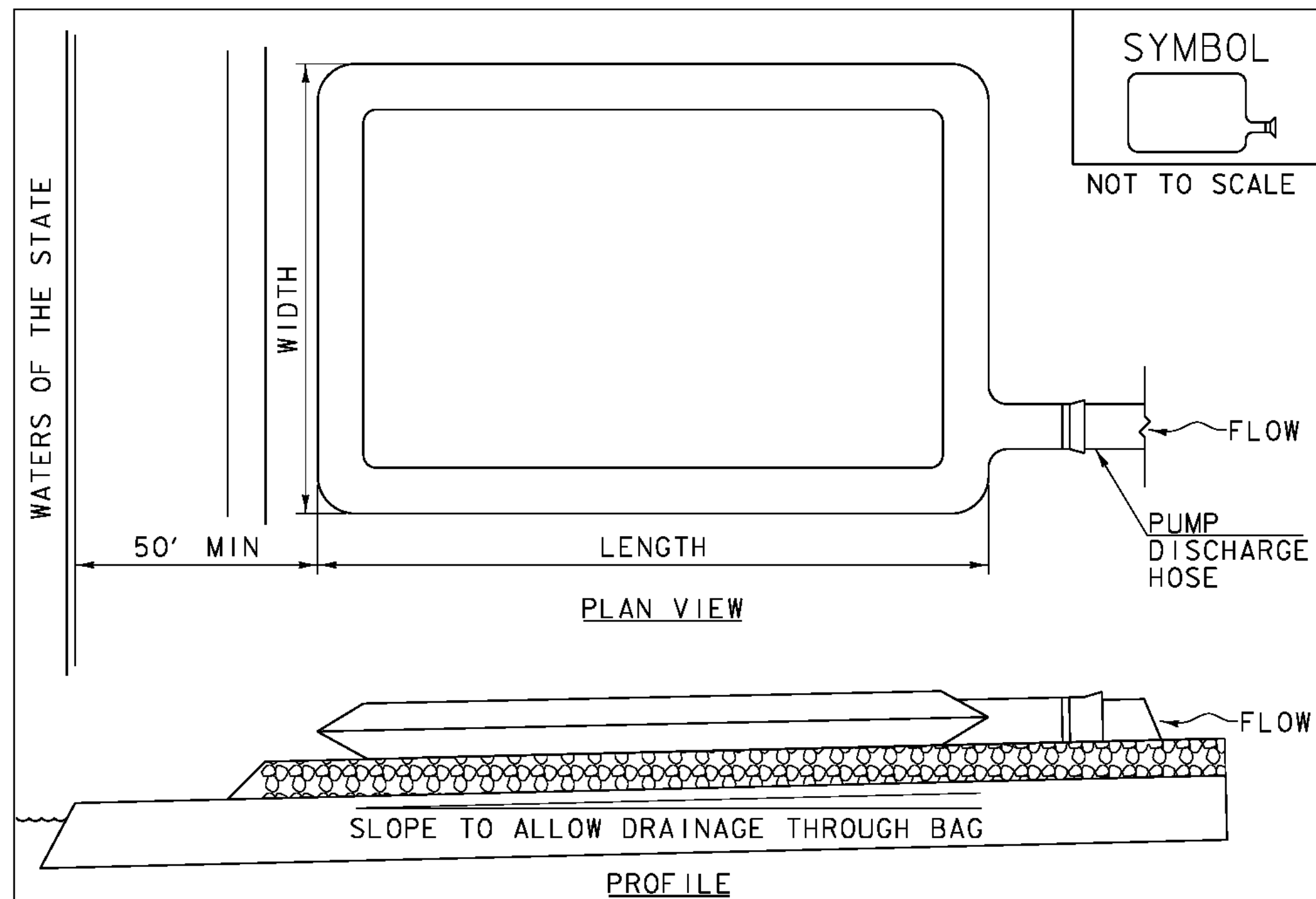
SILT FENCE AND SILT FENCE, WOVEN WIRE REINFORCED REQUIRED AS PART OF THE CONTRACTOR'S TEMPORARY ACCESS ROAD OR STAGING AREA SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).

PROJECT NAME: SO. BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)

FILE NAME: z09a046erde+01.dgn
 PROJECT LEADER: D. BENOIT
 DESIGNED BY: B. COLBURN
 EPSC DETAILS 01

PLOT DATE: 08-FEB-2011
 DRAWN BY: M. LOVETT
 CHECKED BY: D. BENOIT
 SHEET 25 OF 36





CONSTRUCTION SPECIFICATIONS

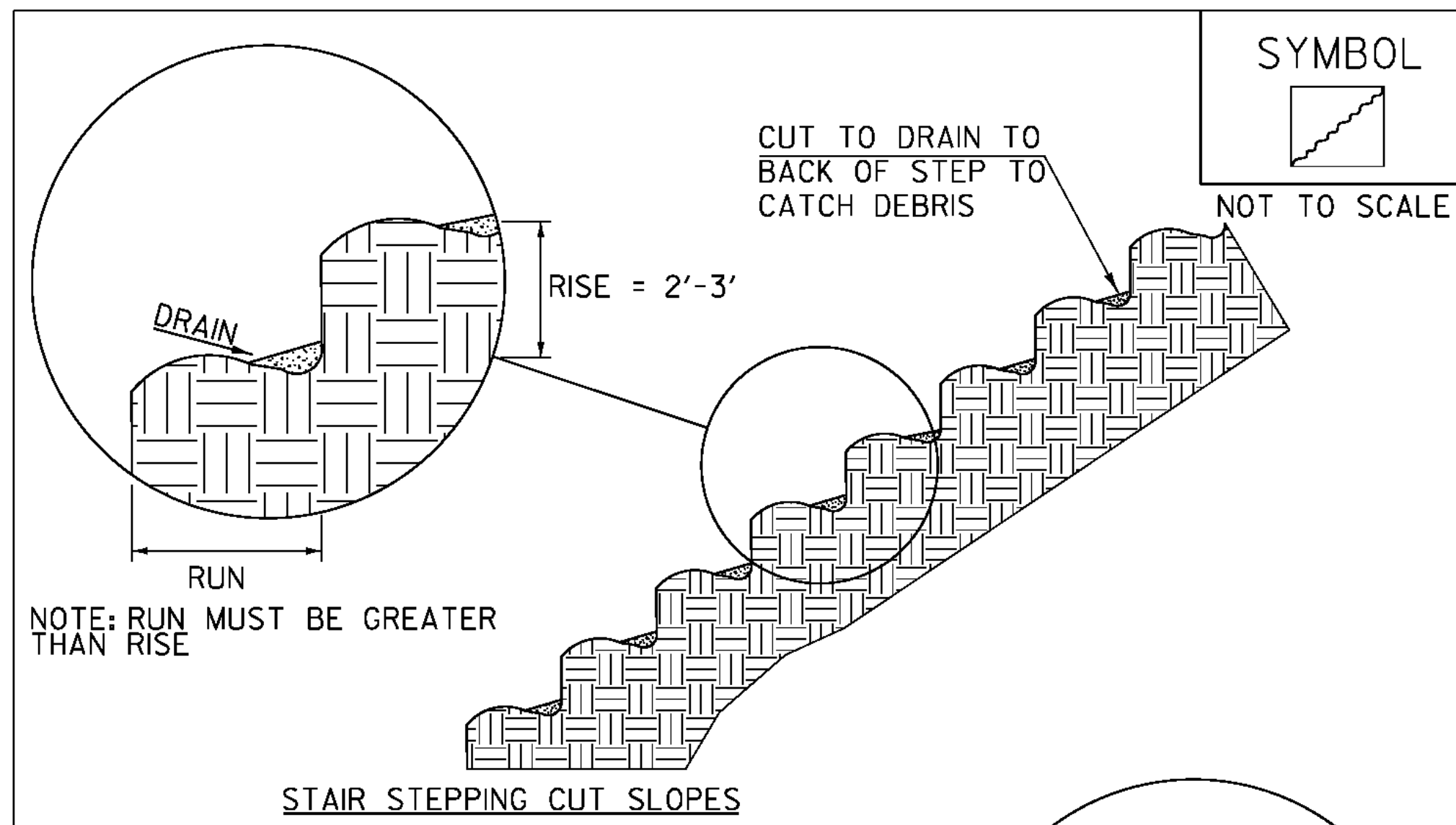
1. THE PRIMARY PURPOSE OF FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS.
2. FILTER BAGS SHALL BE INSTALLED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG.
3. FILTER BAGS MAY ALSO BE PLACED ON COARSE AGGREGATE, STONE, OR HAYBALES TO INCREASE FILTRATION EFFICIENCY.
4. FILTER BAGS SHALL BE LOCATED A MINIMUM OF 50' FROM WATERS OF THE STATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. THE NECK OF THE FILTER BAG SHALL BE STRAPPED TIGHTLY TO THE DISCHARGE HOSE.
6. A FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE.
7. FILTER BAG SHALL BE DISPOSED OF AS APPROVED IN THE EPSC PLAN OR AS DIRECTED BY THE ENGINEER.

FILTER BAG

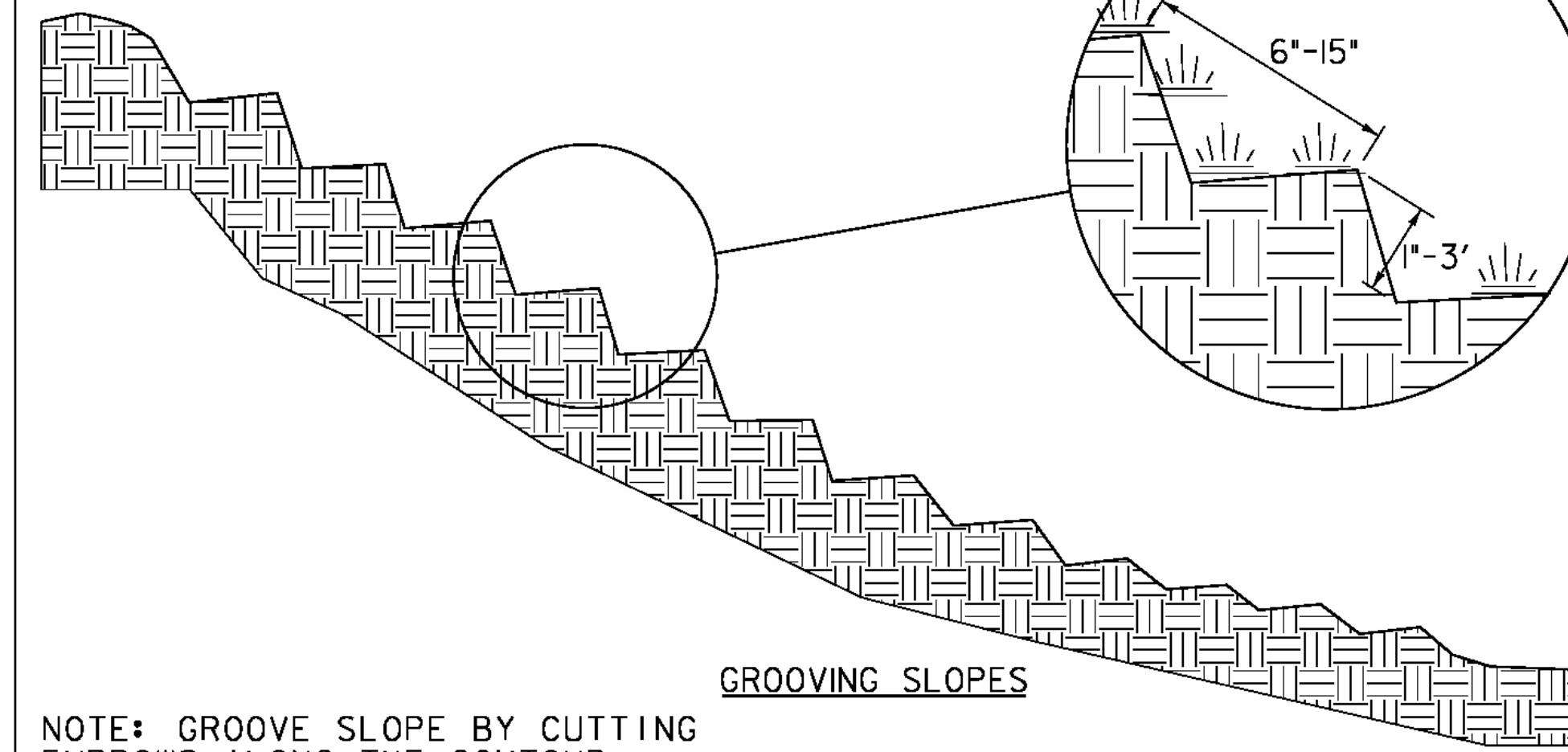
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR FILTER BAG AND AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF



STAIR STEPPING CUT SLOPES



GROOVING SLOPES

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

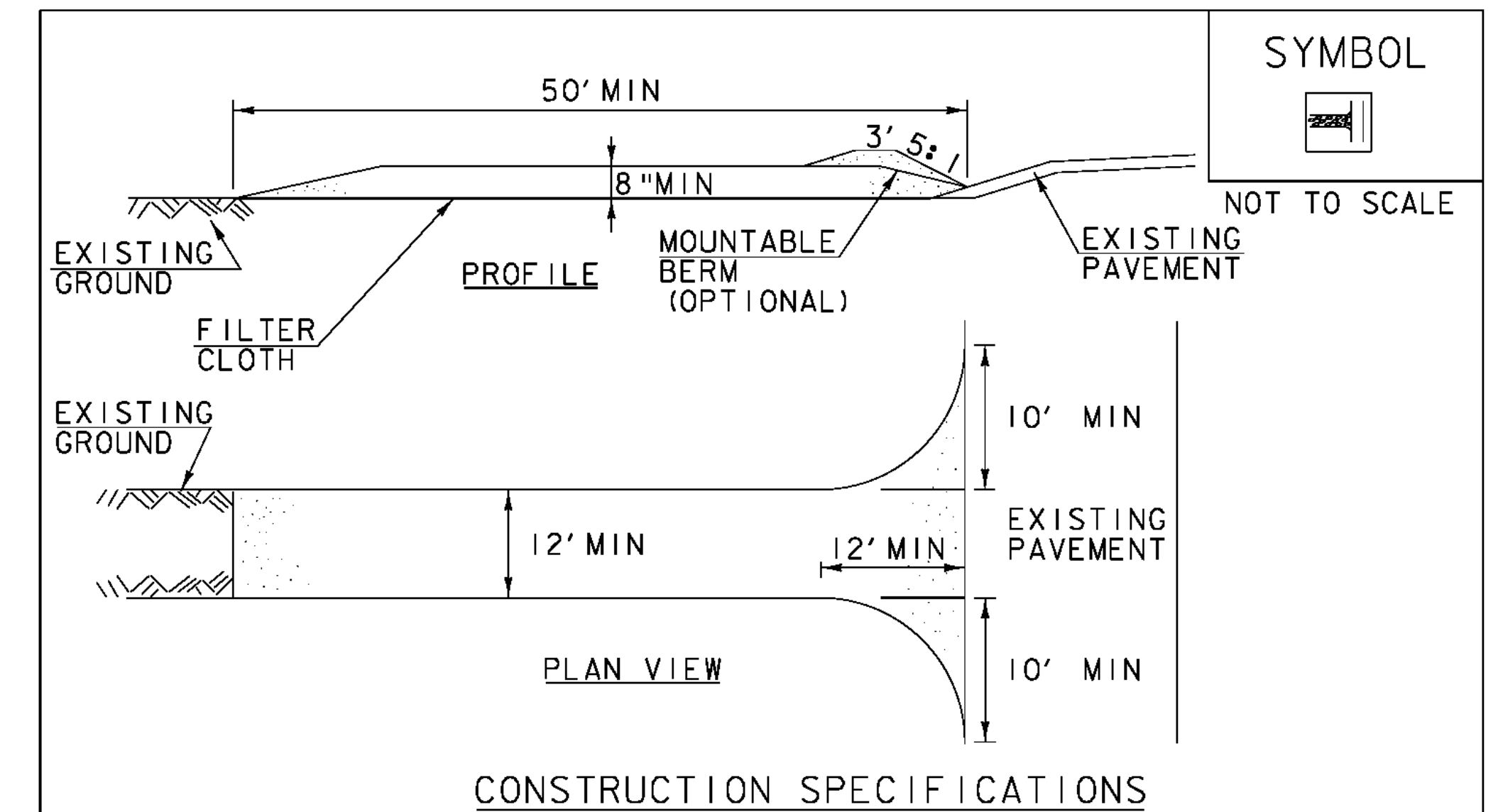
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SURFACE ROUGHENING

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

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

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

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

STABILIZED CONSTRUCTION ENTRANCE

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

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

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

VEHICLE TRACKING PADS REQUIRED AS PART OF THE CONTRACTOR'S TEMPORARY ACCESS ROAD OR STAGING AREA SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT).

PROJECT NAME: SO. BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)

FILE NAME: z09a046er de+02.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
EPSC DETAILS 02

PLOT DATE: 08-FEB-2011
DRAWN BY: M. LOVETT
CHECKED BY: D. BENOIT
SHEET 26 OF 36



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			

GENERAL GUIDANCE			
FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	19-19-19	PELLETIZED	LIQUID
500 LBS/AC		2 TONS/AC	4.4 GAL/AC

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 MAUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF

PROJECT NAME: SO. BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)

FILE NAME: z09a046erde+03.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
EPSC DETAILS 03

PLOT DATE: 08-FEB-2011
DRAWN BY: M. LOVETT
CHECKED BY: D. BENOIT
SHEET 27 OF 36



SOIL CLASSIFICATION

AASHTO

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

ROCK QUALITY DESIGNATION

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

SHEAR STRENGTH

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

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

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

COMMONLY USED SYMBOLS

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

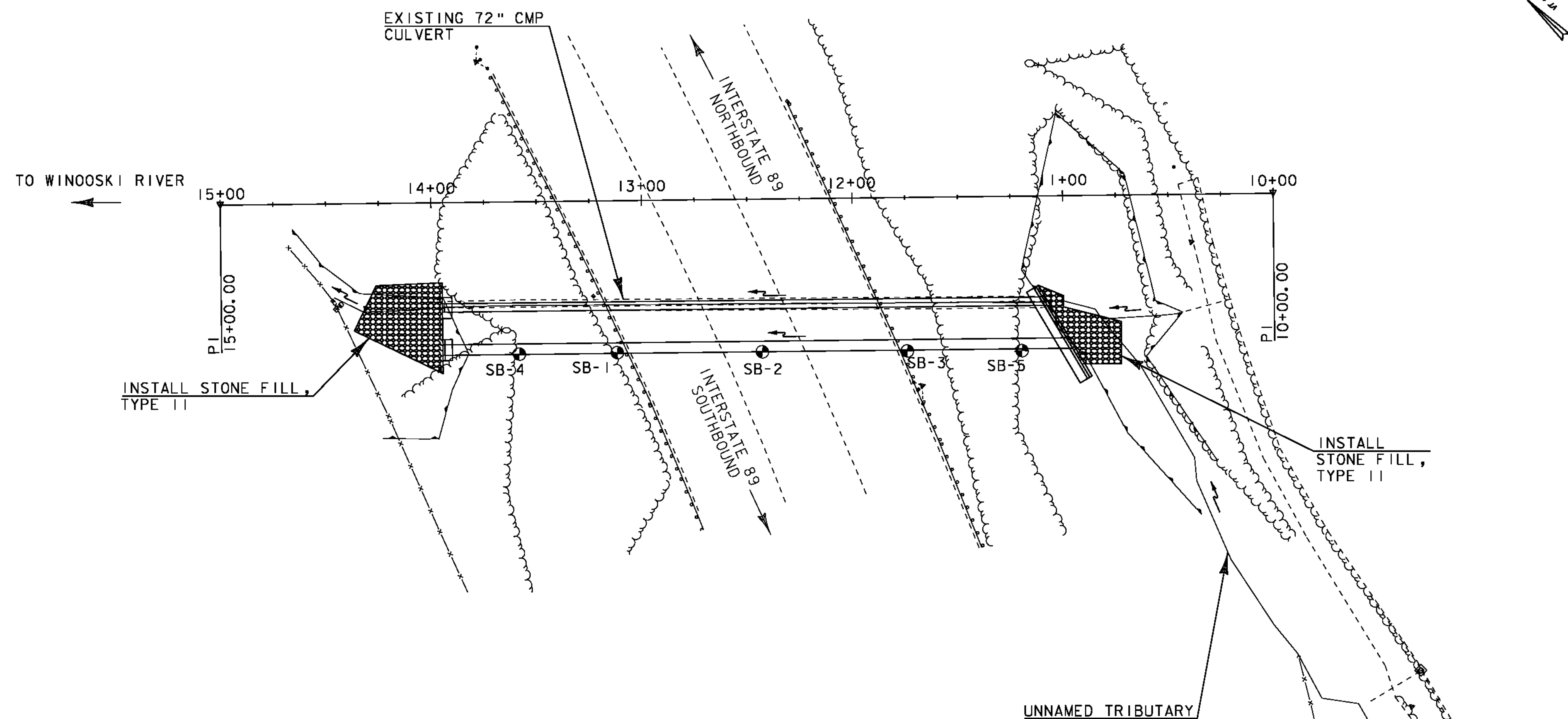
COLOR

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

DEFINITIONS (AASHTO)

- BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.
- BOULDER** - A rock fragment with an average dimension > 12 inches.
- COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.
- GRAVEL** - Rounded particles of rock < 3" and > 0.075" (#10 sieve).
- SAND** - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).
- SILT** - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.
- CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

- VARVED** - Alternate layers of silt and clay.
- HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.
- MUCK** - Soft organic soil (containing > 10% organic material).
- MOISTURE CONTENT** - Weight of water divided by dry weight of soil.
- FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
- STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.
- DIP** - Inclination of bed with a horizontal plane.



BORING CHART

1-89 MM 89.636 - SOUTH BURLINGTON

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
SB-1	13+12.18	72' LT	239.0 (EST.)	N/A
SB-2	12+43.33	73' LT	238.1	N/A
SB-3	11+74.48	73' LT	237.0 (EST.)	N/A
SB-4	13+58.73	72' LT	218.7	N/A
SB-5	11+20.03	73' LT	215.1	N/A

GENERAL NOTES

- The subsurface explorations shown herein were made between 12/1/09 and 5/18/10 by the Agency and Haley & Aldrich.
- 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 judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- For boring log information see Geotechnical Baseline Report (GBR) included in contract documents.

PROJECT NAME: SO. BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)

FILE NAME: z09a046bor02.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
BORING INFORMATION - SO. BURLINGTON 69-1

PLOT DATE: 08-FEB-2011
DRAWN BY: M. FUGERE
CHECKED BY: D. BENOIT
SHEET 28 OF 36



SOIL CLASSIFICATION

AASHTO

- A1 Gravel and Sand
- A3 Fine Sand
- A2 Silty or Clayey Gravel and Sand
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R.Q.D. (%)	ROCK DESCRIPTION
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COMMONLY USED SYMBOLS

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

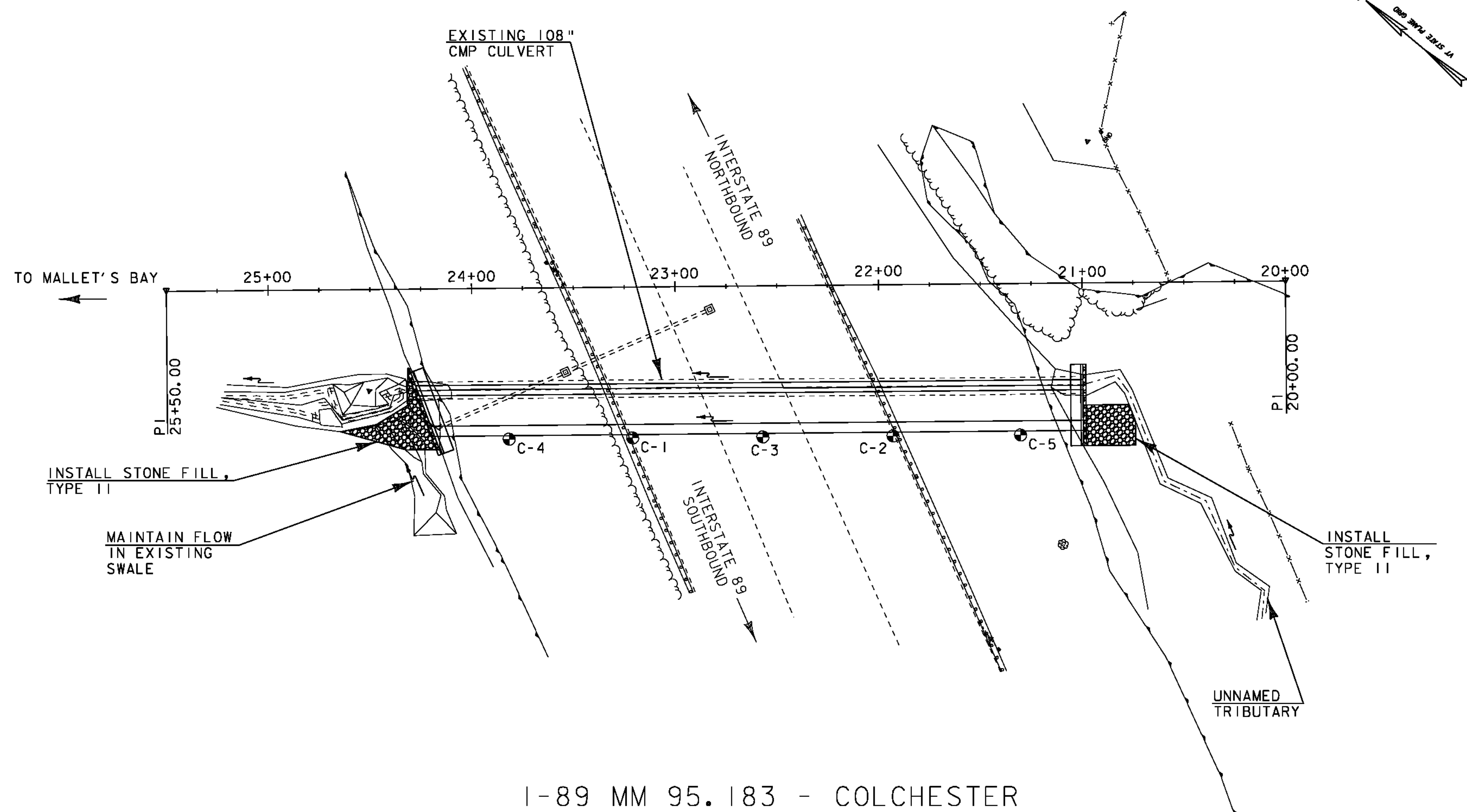
COLOR

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

DEFINITIONS (AASHTO)

- BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.
- BOULDER** - A rock fragment with an average dimension > 12 inches.
- COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.
- GRAVEL** - Rounded particles of rock < 3" and > 0.075" (#10 sieve).
- SAND** - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).
- SILT** - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.
- CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

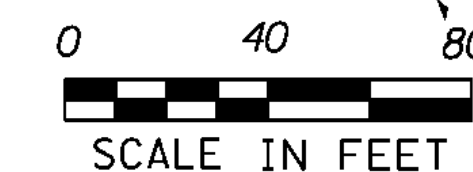
- VARVED** - Alternate layers of silt and clay.
- HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.
- MUCK** - Soft organic soil (containing > 10% organic material).
- MOISTURE CONTENT** - Weight of water divided by dry weight of soil.
- FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
- STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.
- DIP** - Inclination of bed with a horizontal plane.



BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
C-1	23+21.51	74' LT	143.0 (EST.)	N/A
C-2	21+93.50	74' LT	145.0 (EST.)	N/A
C-3	22+57.51	74' LT	142.8	N/A
C-4	23+82.18	74' LT	120.1	N/A
C-5	21+30.85	74' LT	121.1	N/A

I-89 MM 95.183 - COLCHESTER



GENERAL NOTES

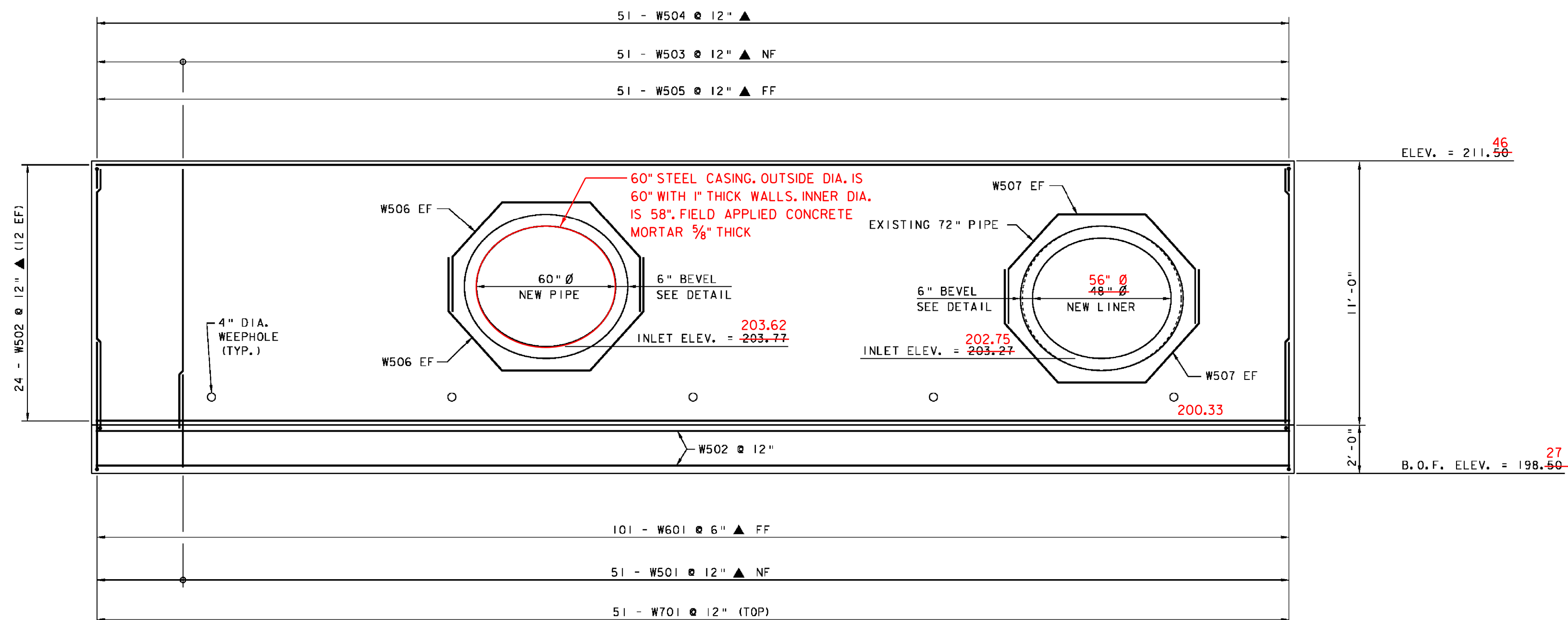
- The subsurface explorations shown herein were made between 12/1/09 and 5/18/10 by the Agency and Haley & Aldrich.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect 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 judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
- For boring log information see Geotechnical Baseline Report (GBR) included in contract documents.

PROJECT NAME: SO. BURLINGTON - COLCHESTER
PROJECT NUMBER: IM CULV (23)

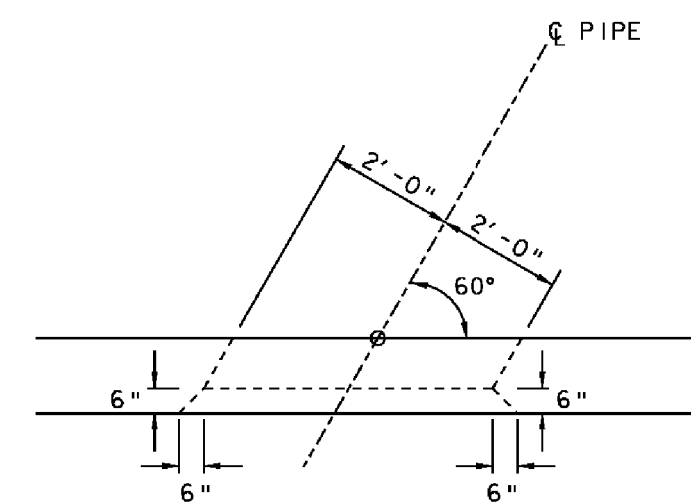
FILE NAME: z09a046bor01.dgn
PROJECT LEADER: D. BENOIT
DESIGNED BY: B. COLBURN
BORING INFORMATION - COLCHESTER 75-3

PLOT DATE: 08-FEB-2011
DRAWN BY: M. FUGERE
CHECKED BY: D. BENOIT
SHEET 29 OF 36

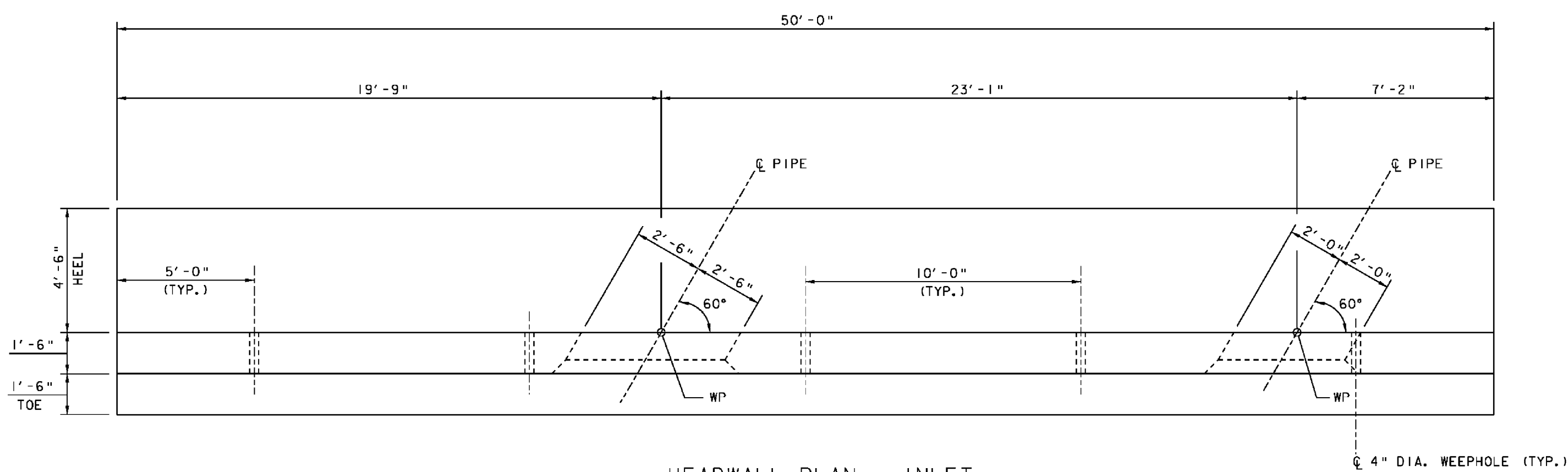




HEADWALL ELEVATION - INLET



BEVEL DETAIL

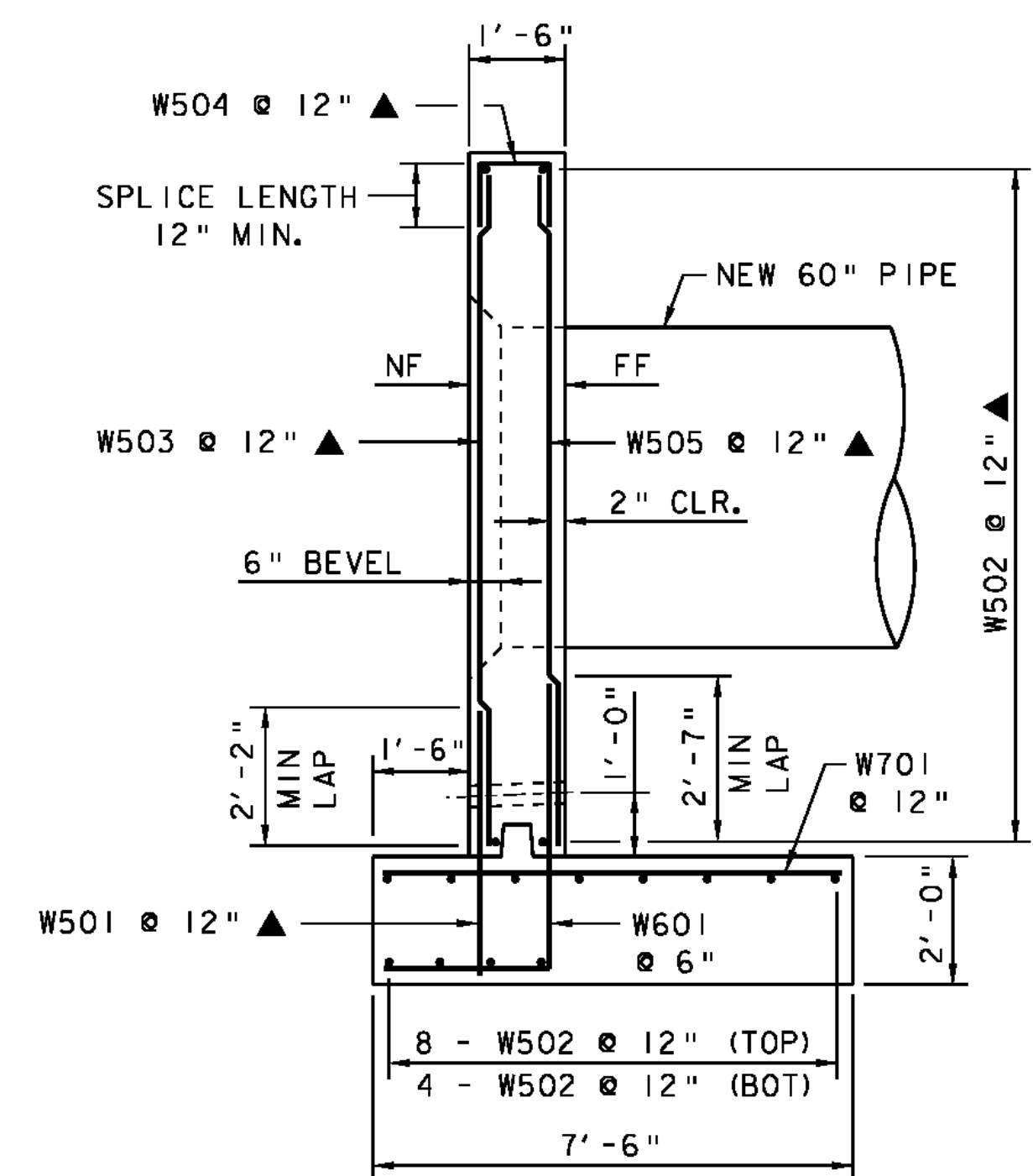


HEADWALL PLAN - INLET

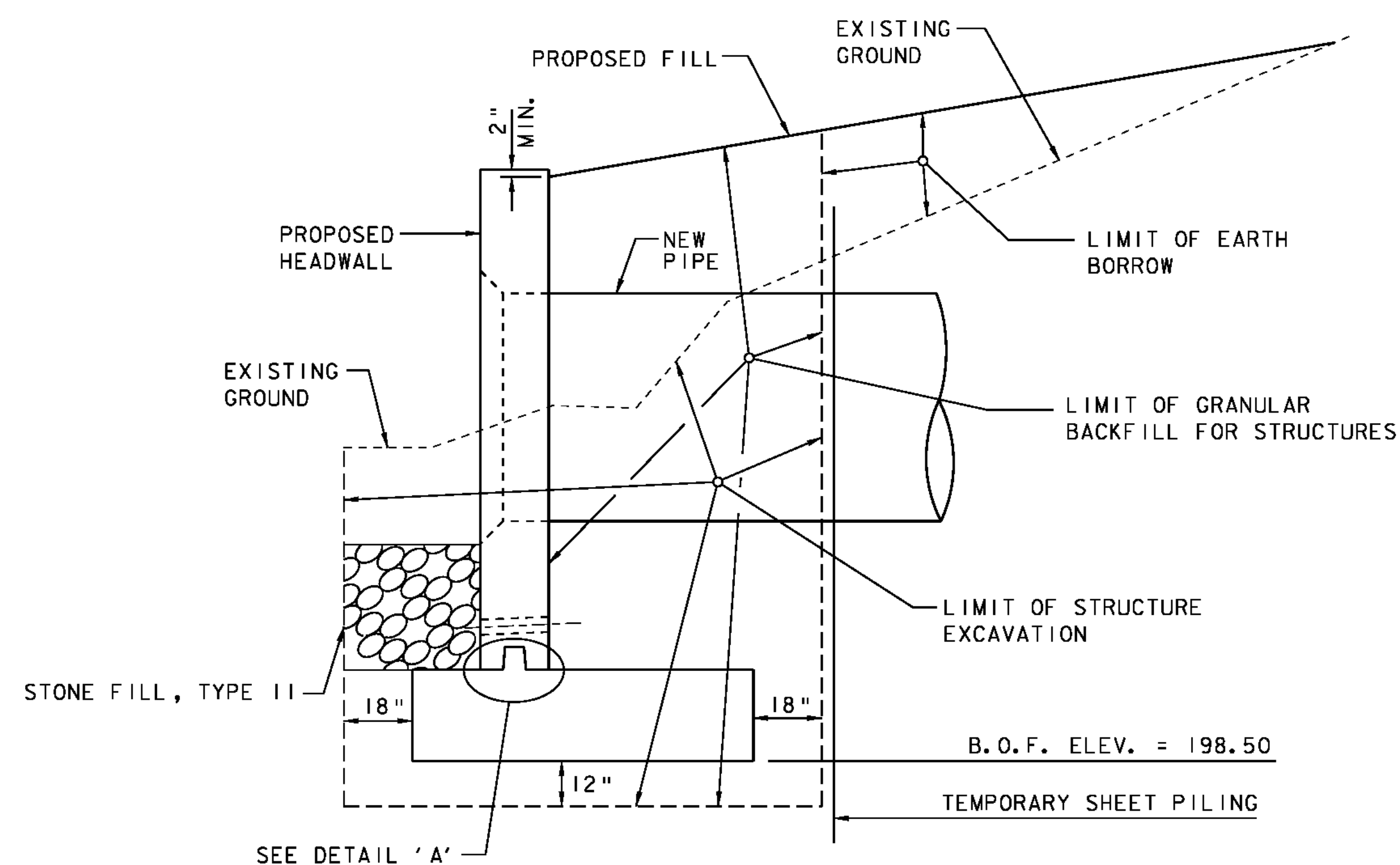


NOTE:
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 FF - FAR FACE
 EF - EACH FACE
 ▲ - CUT TO FIT IN FIELD
 3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

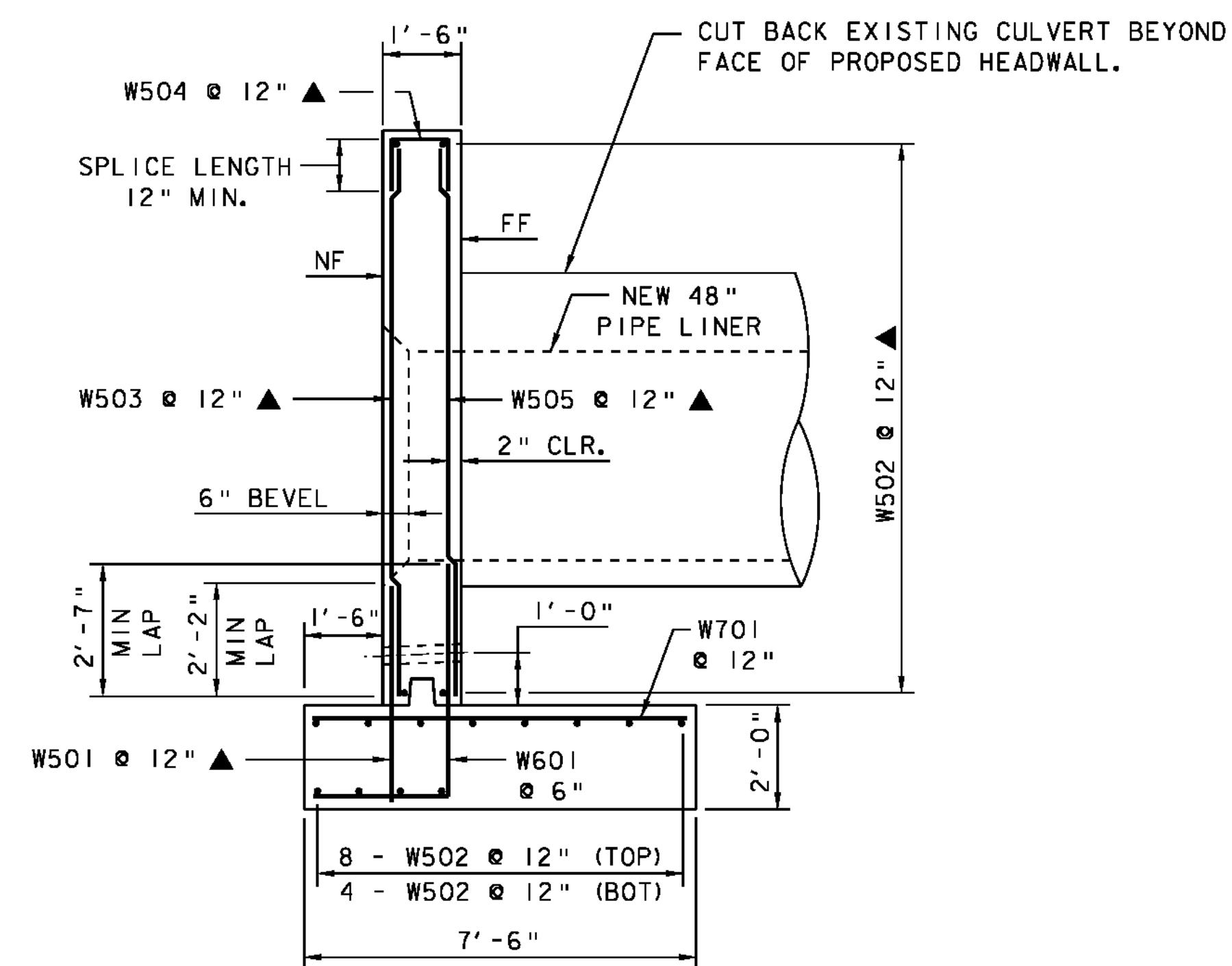
PROJECT NAME:	SO. BURLINGTON - COLCHESTER
PROJECT NUMBER:	IM CULV (23)
FILE NAME:	Headwall5 Burlington.dgn
PROJECT LEADER:	D. BENOIT
DESIGNED BY:	W. DURACK
HEADWALL DETAILS SHEET 1 - SO. BURL. 69-1	SHEET 30 OF 36



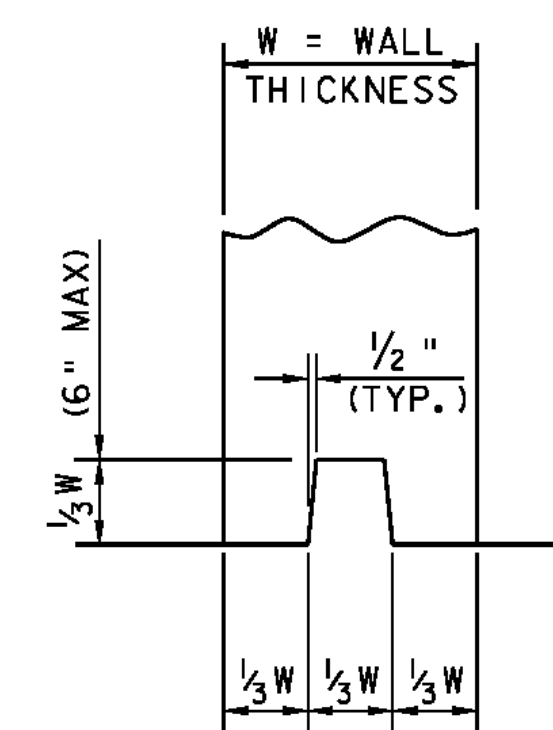
HEADWALL SECTION - INLET
(AT NEW 60" SMOOTH WALL CULVERT)



HEADWALL SECTION - INLET
(EARTHWORK)



HEADWALL SECTION - INLET
(AT NEW 48" CAAP LINER)



DETAIL 'A'
NOT TO SCALE

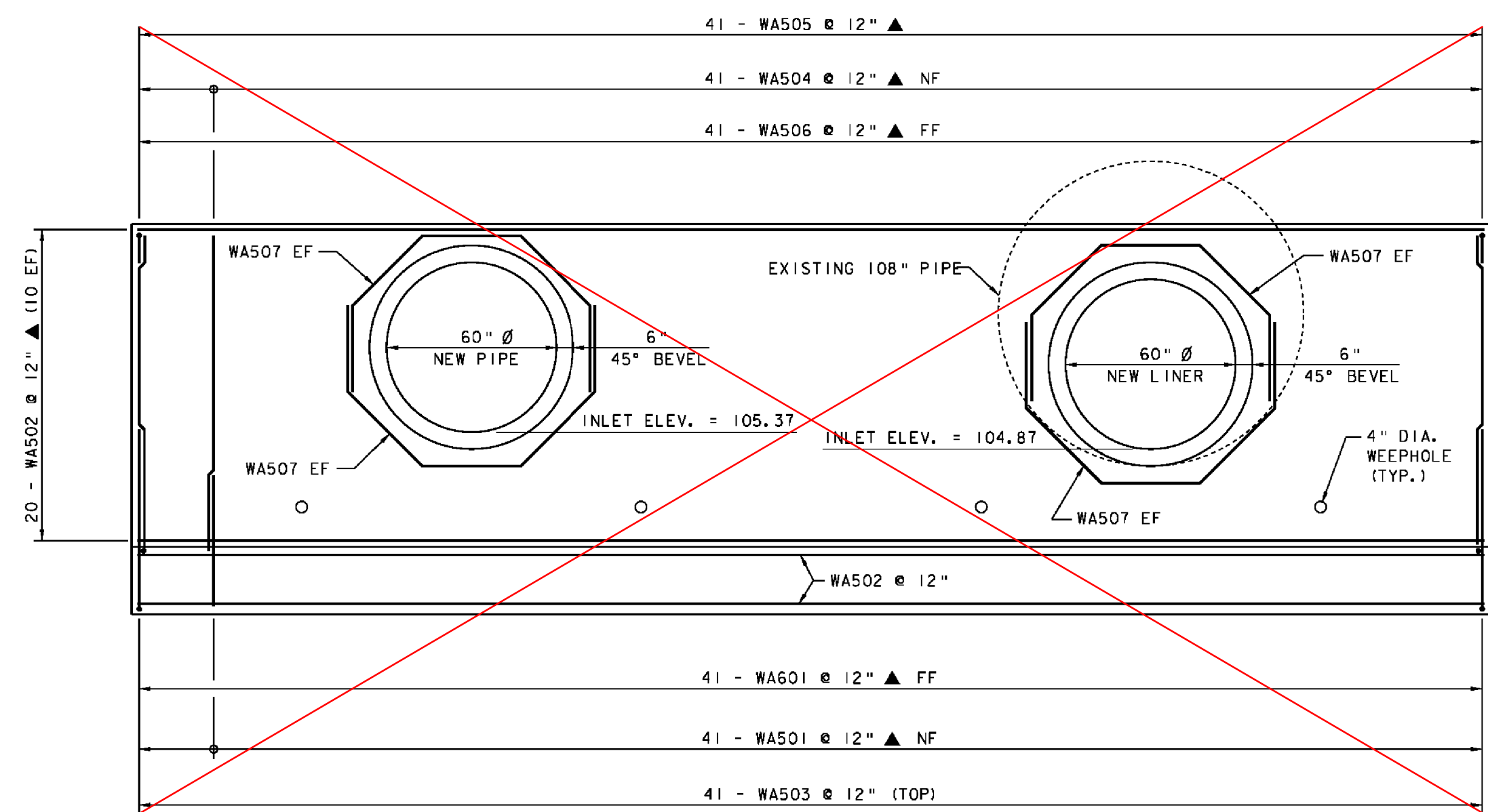
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PROJECT NAME: SO. BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)

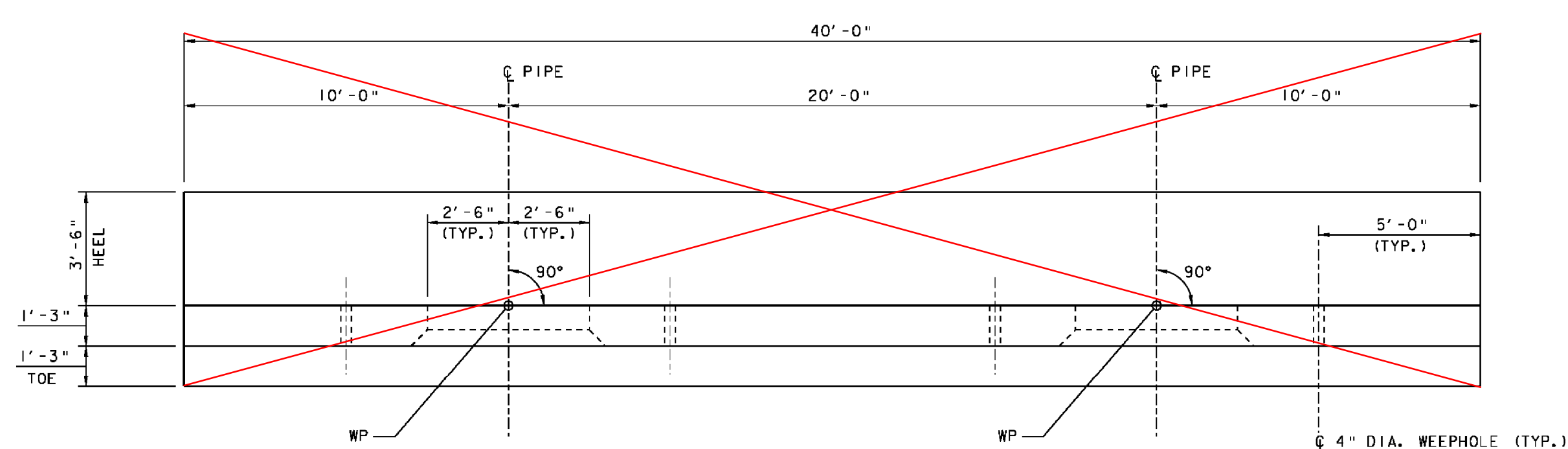
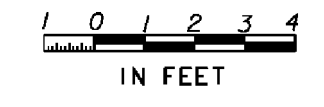
FILE NAME: Headwall S Burlington.dgn PLOT DATE: 08-FEB-2011
 PROJECT LEADER: D. BENOIT DRAWN BY: S. MERKWAN
 DESIGNED BY: W. DURACK CHECKED BY: D. BENOIT
 HEADWALL DETAILS SHEET 2 - SO. BURL. 69-1 SHEET 31 OF 36



NEW HEADWALL DESIGN, PART OF D.V.E.P.
SECOND PIPE ELIMINATED



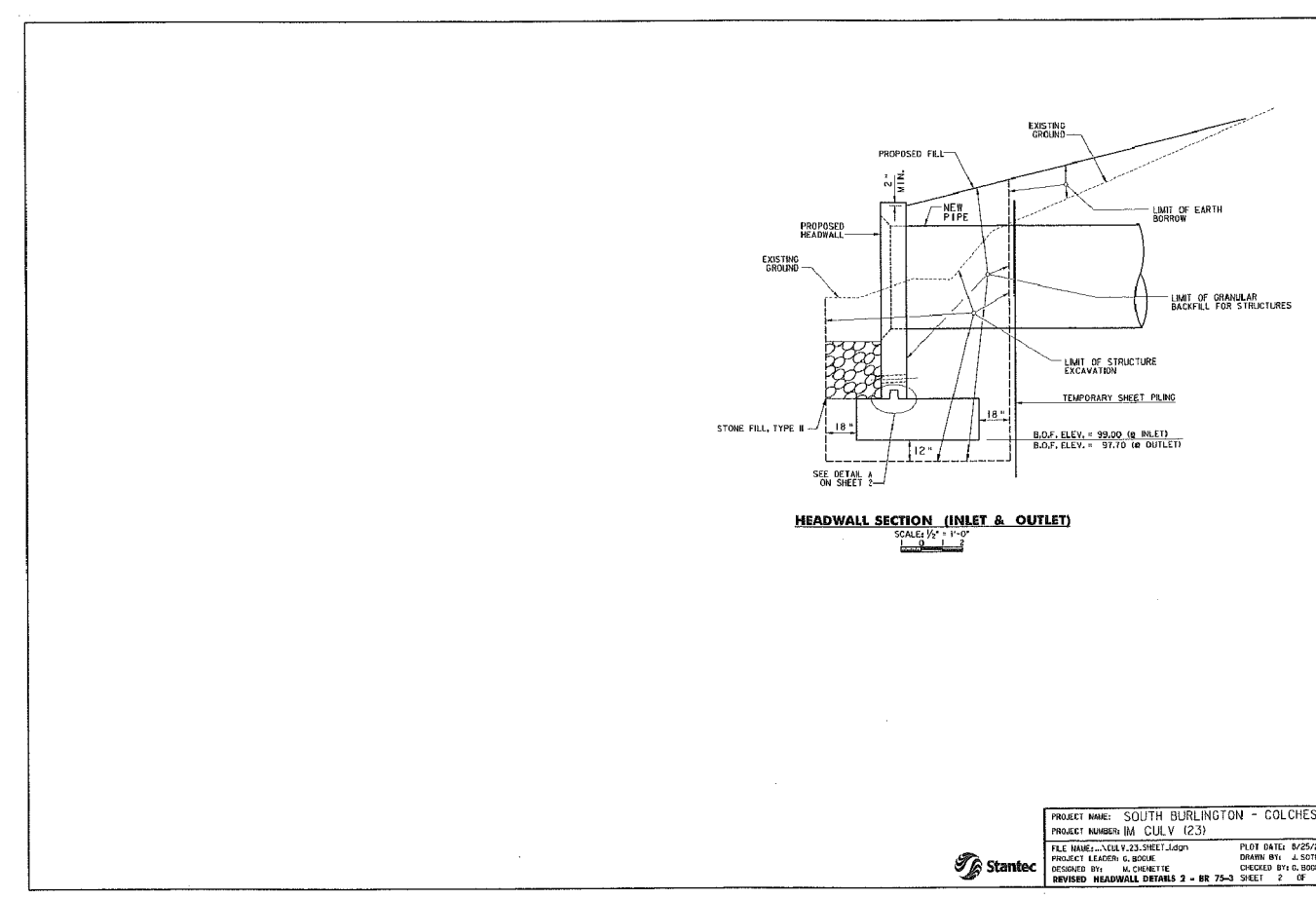
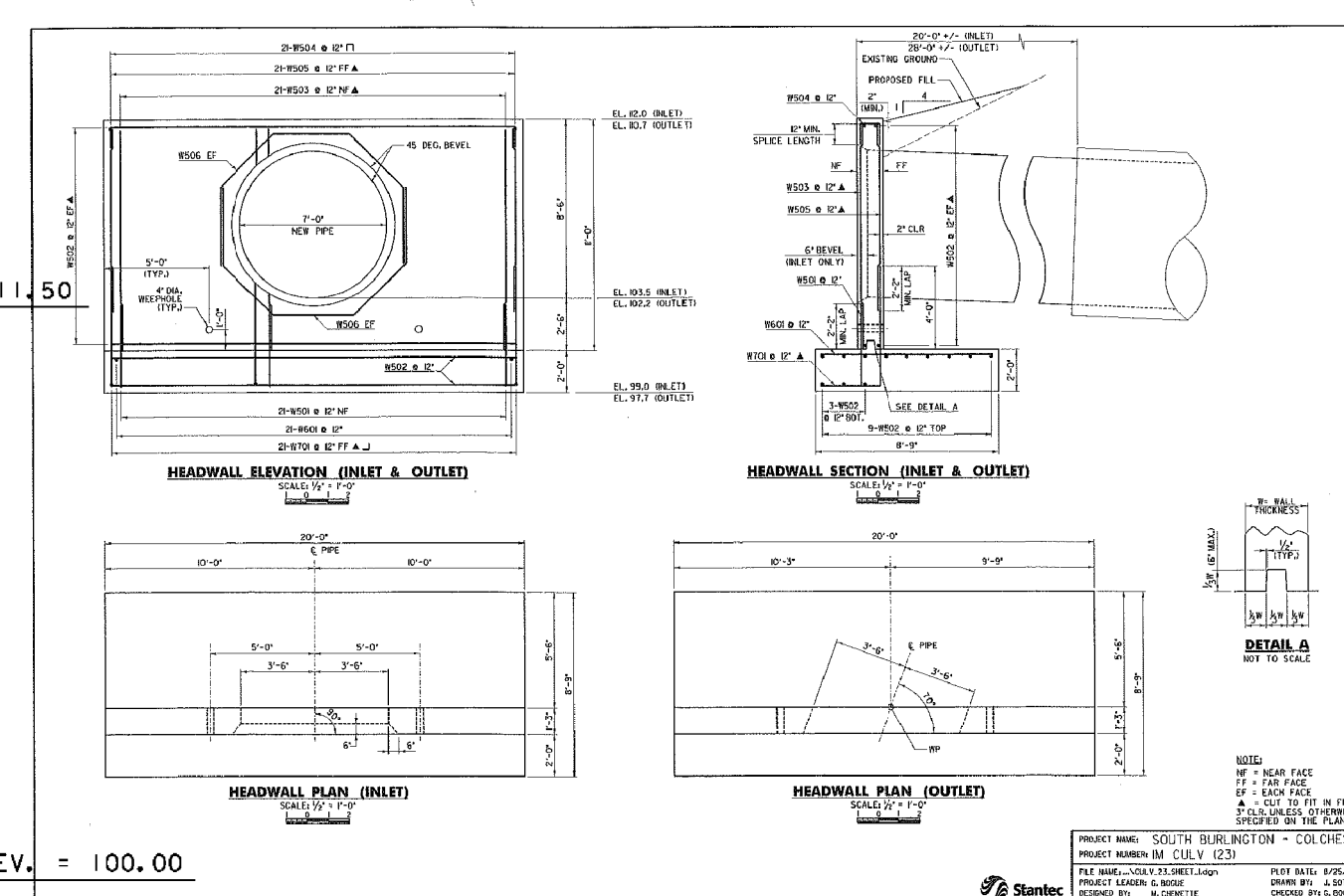
HEADWALL ELEVATION - INLET



HEADWALL PLAN - INLET

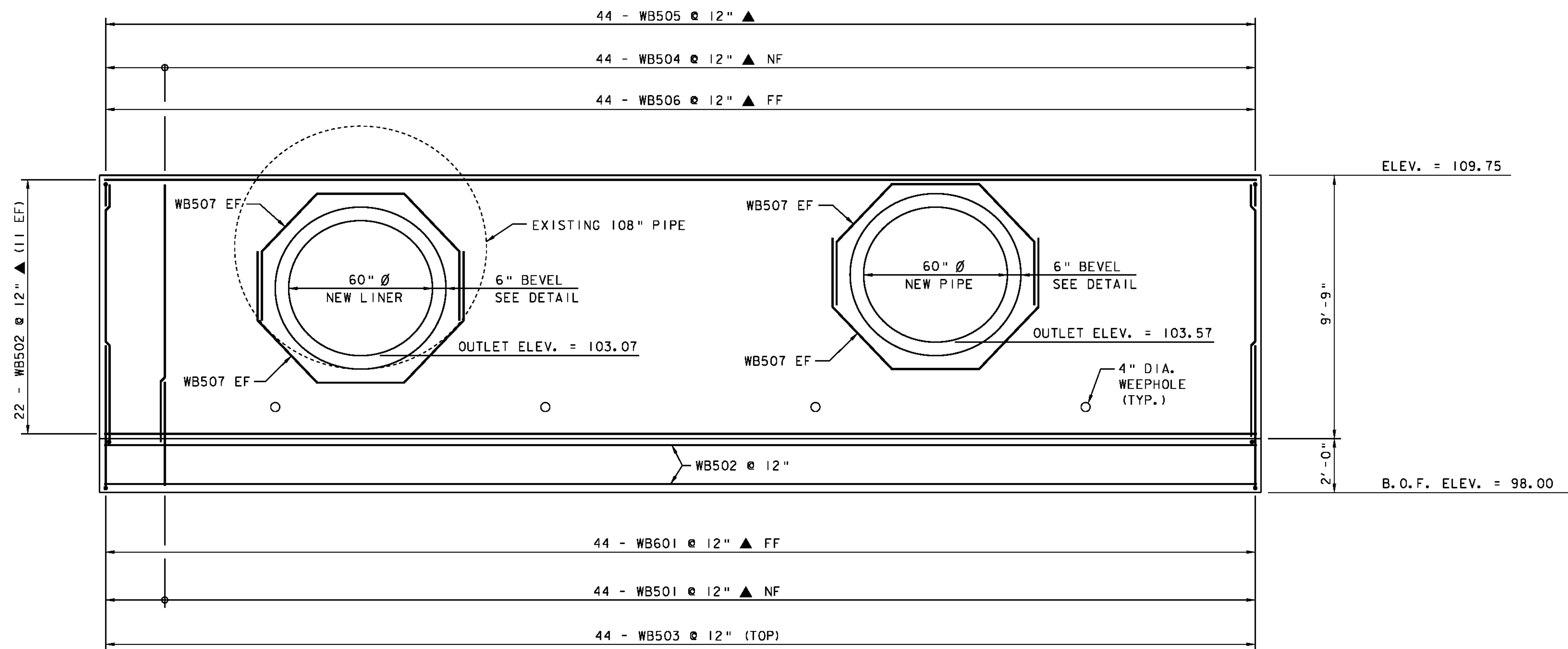


ELEV. = 111.50
B.O.F. ELEV. = 100.00

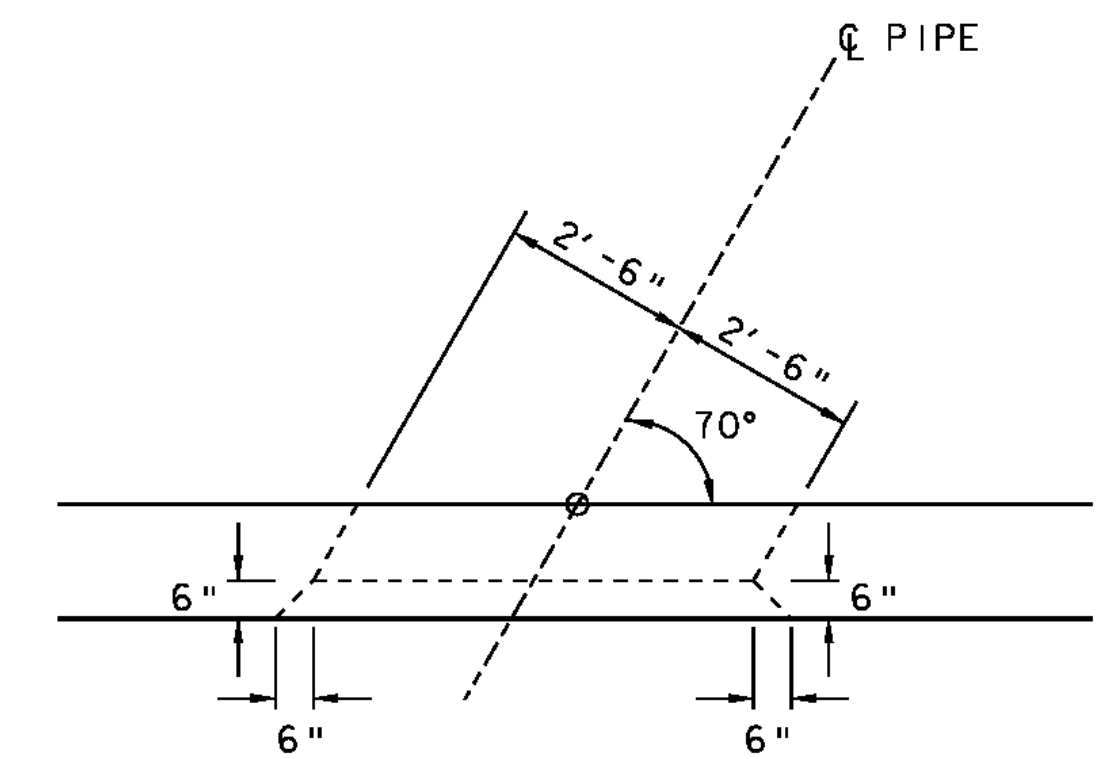


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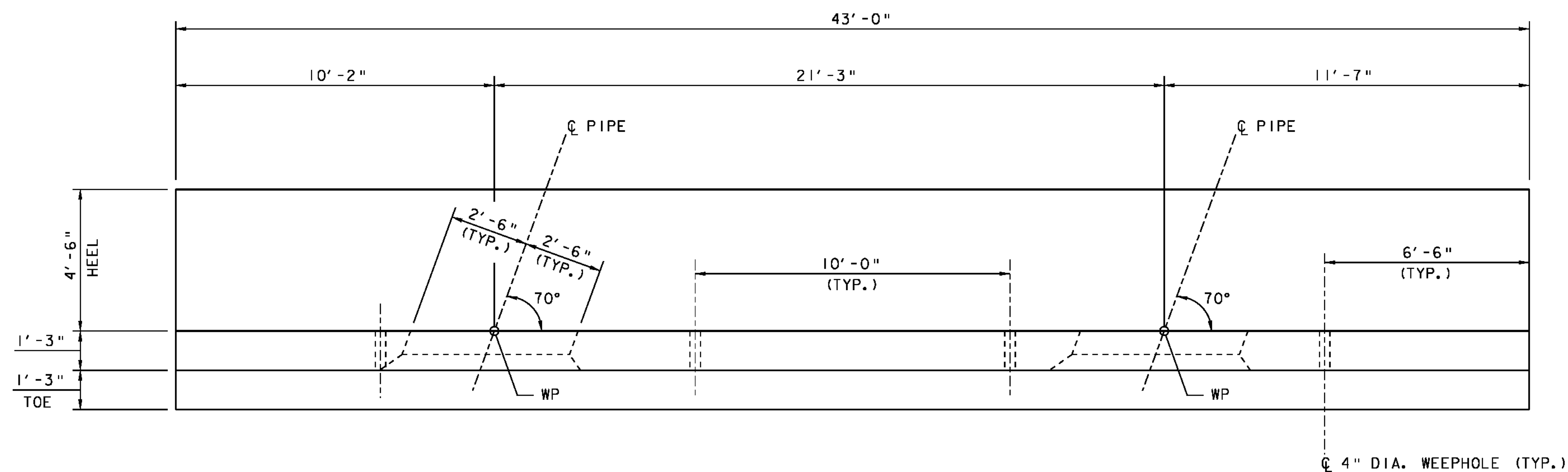
PROJECT NAME: SO. BURLINGTON - COLCHESTER	PLOT DATE: 08-FEB-2011
PROJECT NUMBER: IM CULV (23)	DRAWN BY: S. MERKMAN
FILE NAME: headwall_colchester.dgn	CHECKED BY: D. BENOIT
PROJECT LEADER: D. BENOIT	DESIGNED BY: W. DURACK
HEADWALL DETAILS SHEET 1 - COLCH. 75-3	SHEET 32 OF 36



HEADWALL ELEVATION - OUTLET



BEVEL DETAIL



HEADWALL PLAN - OUTLET



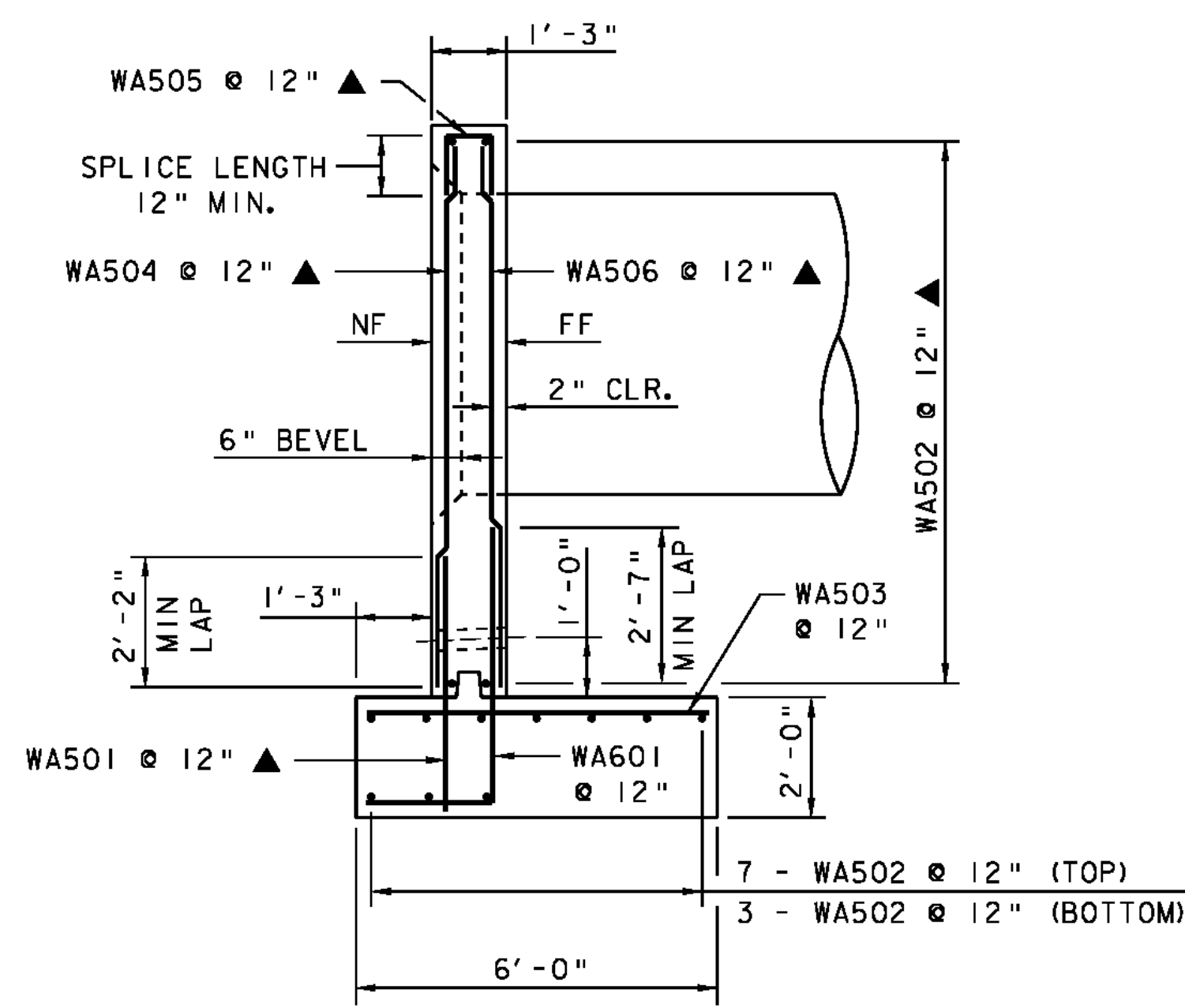
NOTE:

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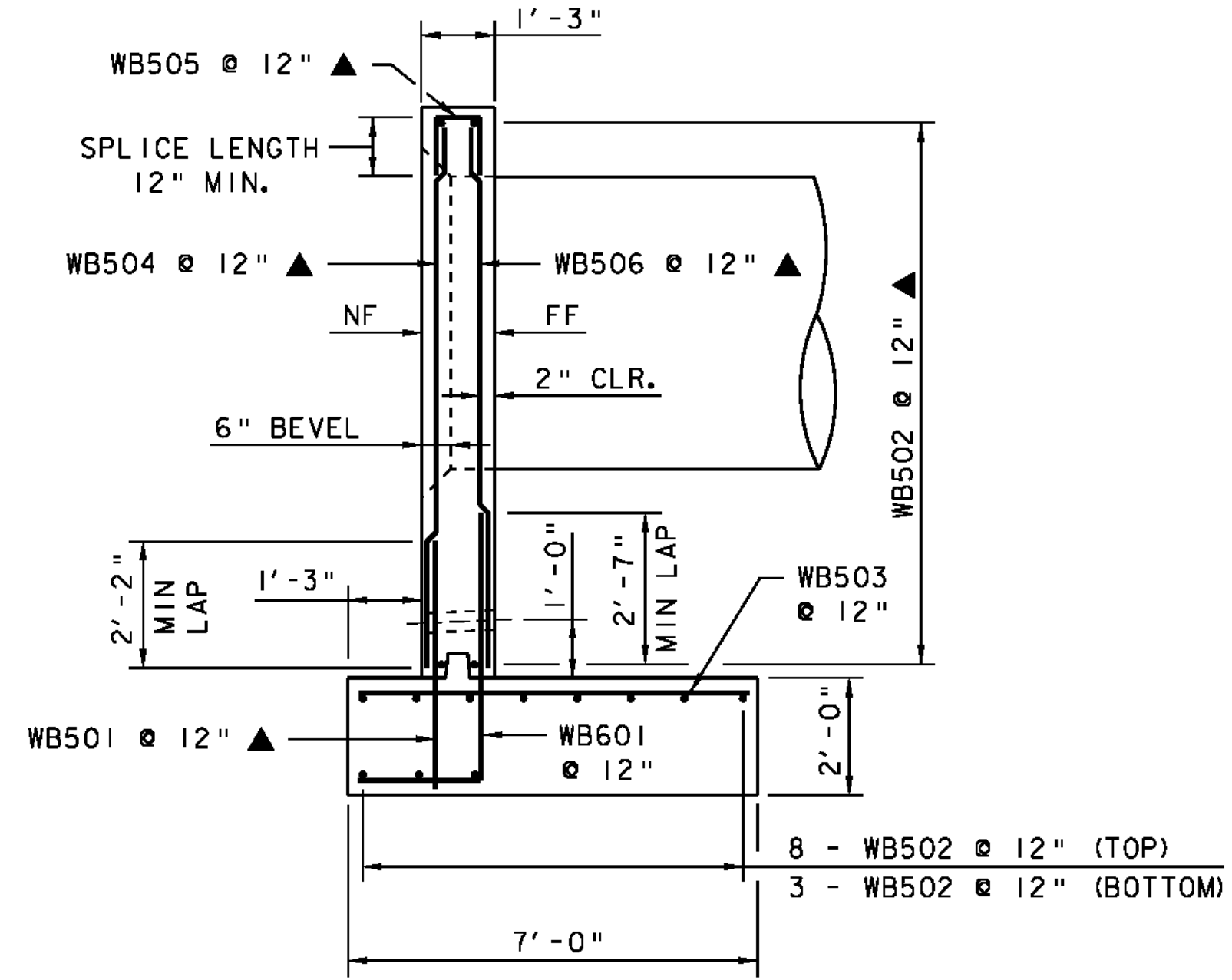
PROJECT NAME: SO. BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)

FILE NAME: headwall.colchester.dgn PLOT DATE: 08-FEB-2011
 PROJECT LEADER: D. BENOIT DRAWN BY: S. MERKWAN
 DESIGNED BY: W. DURACK CHECKED BY: D. BENOIT
 HEADWALL DETAILS SHEET 2 - COLCH. 75-3 SHEET 33 OF 36

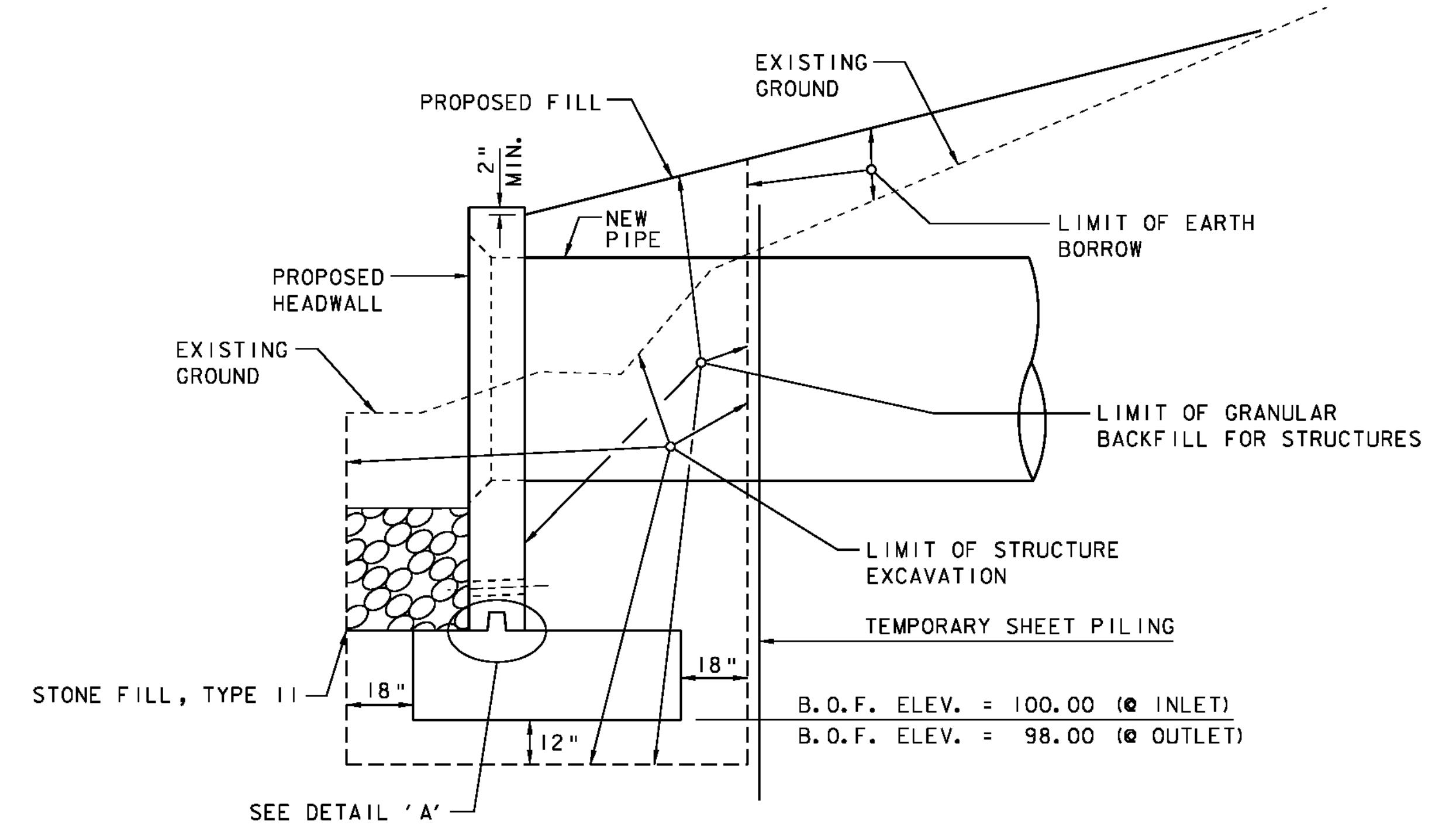




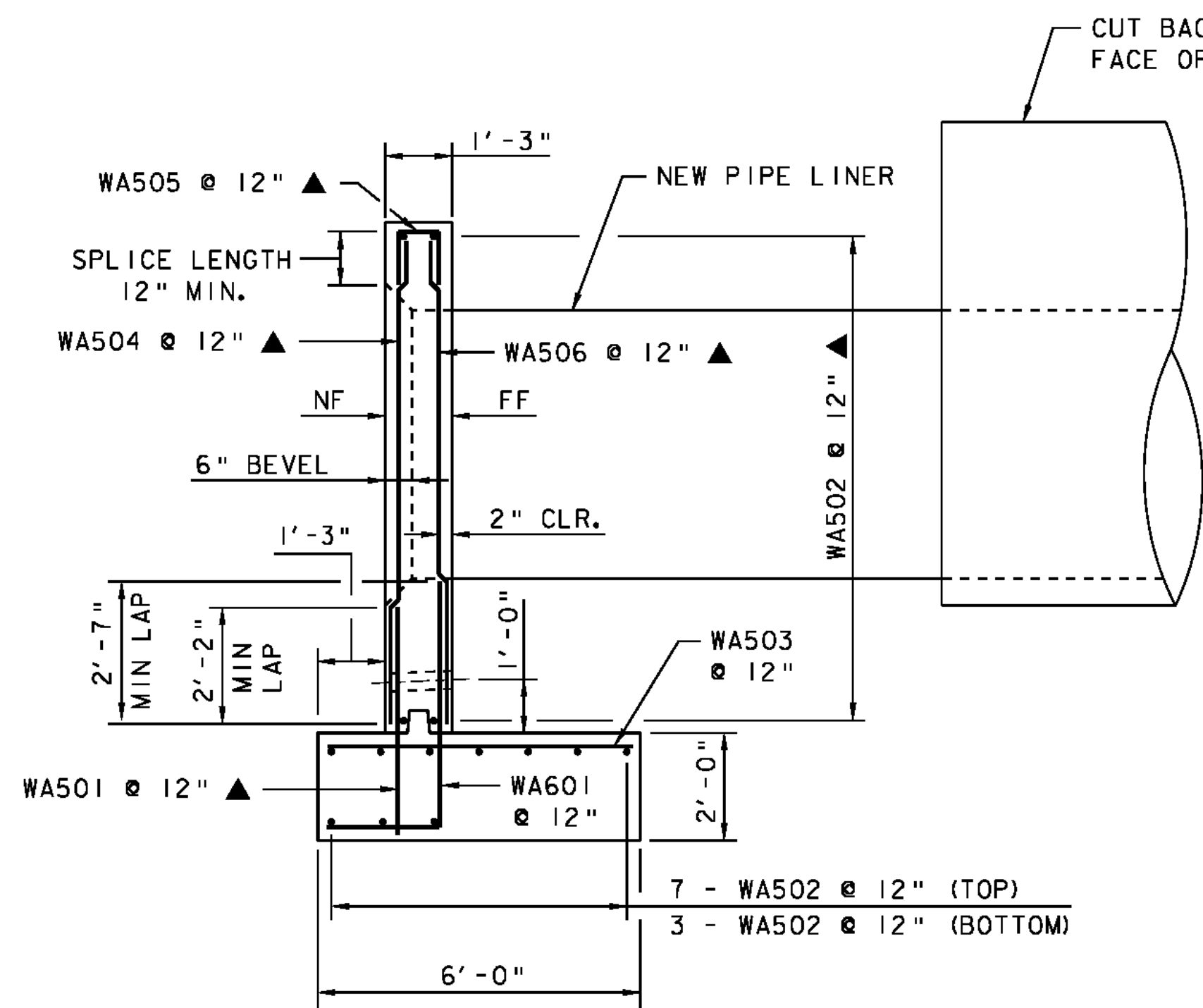
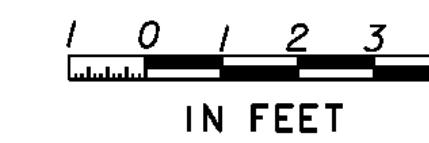
HEADWALL SECTION - INLET
(AT NEW 60" TRENCHLESS CULVERT)



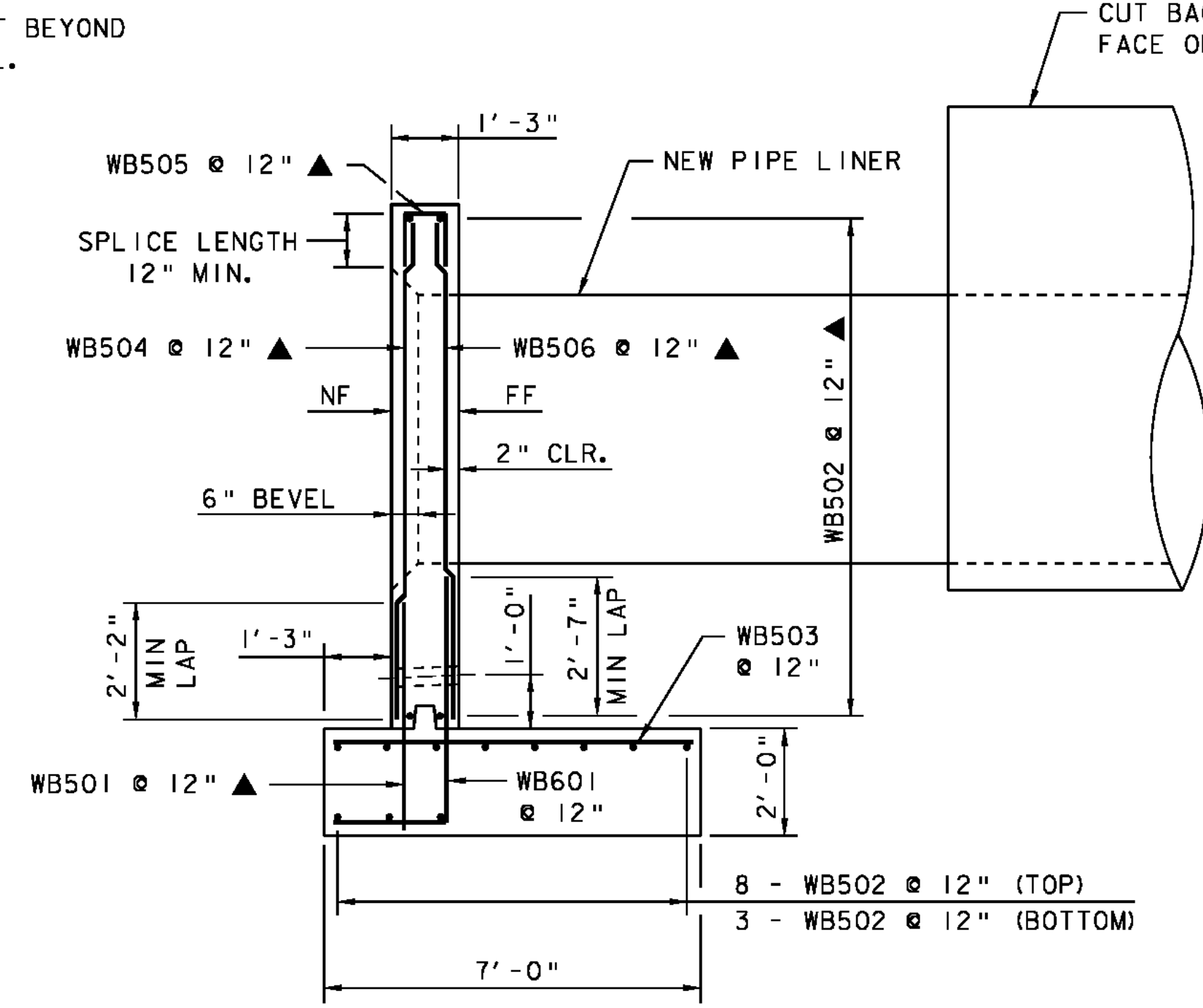
HEADWALL SECTION - OUTLET
(AT NEW 60" TRENCHLESS CULVERT)



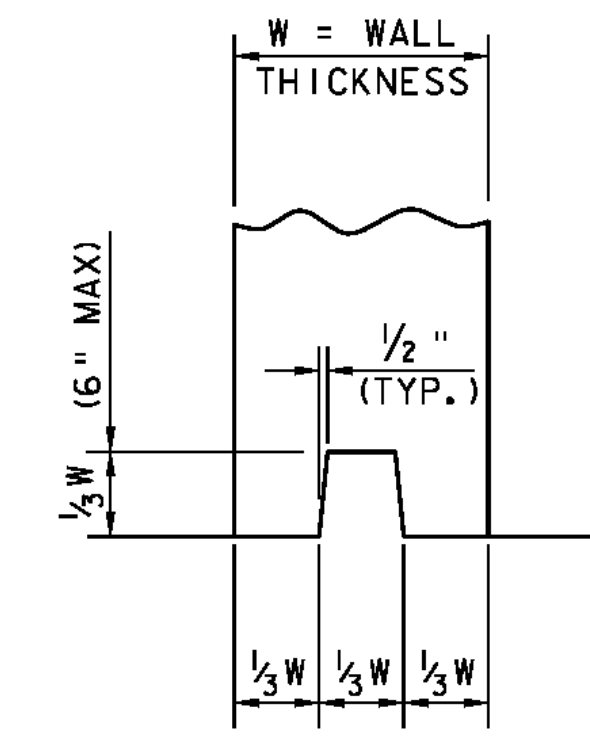
EARTHWORK SECTION
(EARTHWORK)



HEADWALL SECTION - INLET
(AT NEW 60" CAAP LINER)



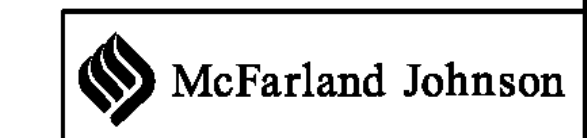
HEADWALL SECTION - OUTLET
(AT NEW 60" CAAP LINER)



DETAIL 'A'
NOT TO SCALE

NOTE:
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 EF - EACH FACE
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 3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME:	SO. BURLINGTON - COLCHESTER
PROJECT NUMBER:	IM CULV (23)
FILE NAME:	headwall_colchester.dgn
PROJECT LEADER:	D. BENOIT
DESIGNED BY:	W. DURACK
HEADWALL DETAILS SHEET 3 - COLCH. 75-3	
PLOT DATE:	08-FEB-2011
DRAWN BY:	S. MERKWAN
CHECKED BY:	D. BENOIT
SHEET	34 OF 36

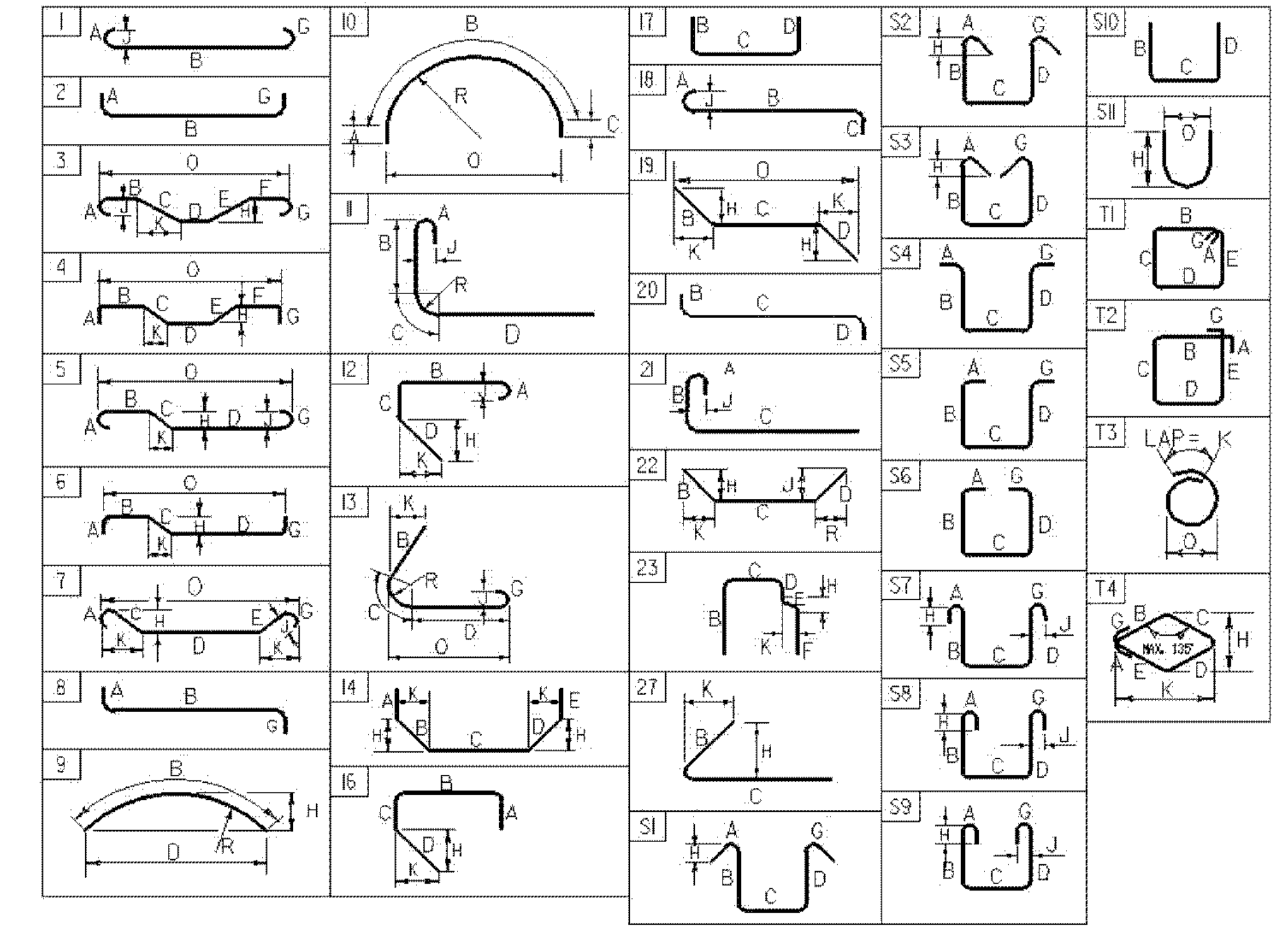


REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O					
SOUTH BURLINGTON FOOTING																																								
▲	51	5	4'- 1"	W501	STR																																			
	12	5	49'- 6"	W502	STR																																			
▲	101	6	7'- 1"	W601	17		0'- 0"	2'- 7"	4'- 6"																															
	51	7	7'- 0"	W701	STR																																			
STEM																																								
▲	24	5	49'- 6"	W502	STR																																			
▲	51	5	10'- 8"	W503	STR																																			
	51	5	3'- 2"	W504	17		1'- 0"	1'- 2"	1'- 0"																															
▲	51	5	10'- 8"	W505	STR																																			
	4	5	14'- 6"	W506	14	2'- 6"	3'- 0"	3'- 6"	3'- 0"	2'- 6"			2'- 2"				2'- 2"																							
	4	5	12'- 2"	W507	14	2'- 0"	2'- 7"	3'- 0"	2'- 7"	2'- 0"			1'- 10"				1'- 10"																							

~ NOTES ~

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



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

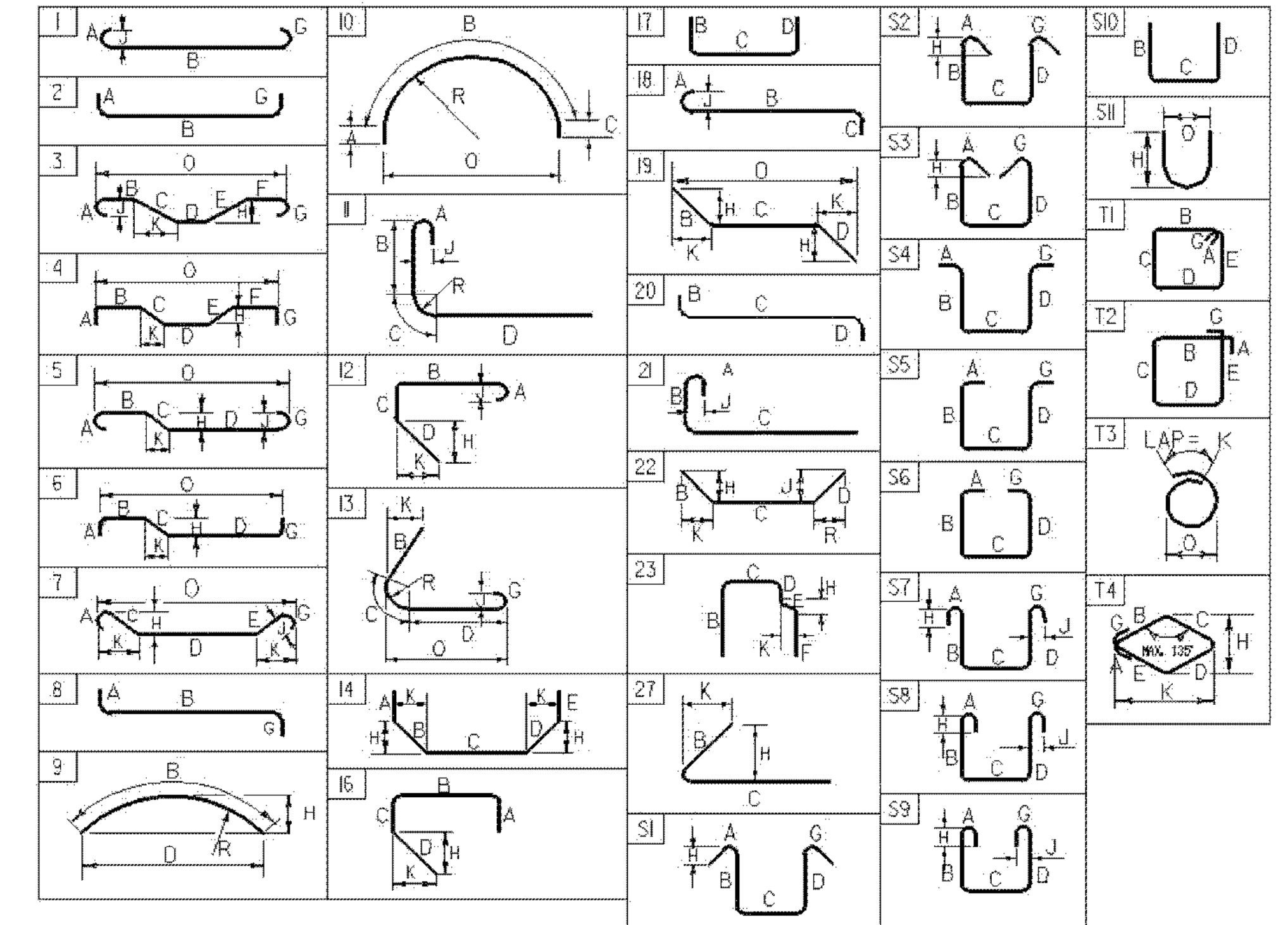
PROJECT NAME: **SOUTH BURLINGTON - COLCHESTER**
 PROJECT NUMBER: **IM CULV (23)**
 FILE NAME: z09a046engreinf so burl.xls
 PROJECT MANAGER: **DMB**
 DESIGNED BY: **SFD**
 PLOT DATE: **8/31/2010**
 DRAWN BY: **SLM**
 CHECKED BY: **DMK**
 REINFORCING STEEL SCHEDULE SHEET 69-1 SHEET **35** OF **36**

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O		
COLCHESTER INLET FOOTING																																					
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INLET STEM																																					
▲	20	5	39'- 6"	W502	STR																																
▲	41	5	9'- 2"	W504	STR																																
▲	41	5	2'- 11"	W505	17		1'- 0"	0'- 11"	1'- 0"																												
▲	41	5	9'- 2"	W506	STR																																
	8	5	13'- 9"	W507	14	2'- 6"	2'- 11"	2'- 11"	2'- 11"	2'- 6"			2'- 1"		2'- 1"																						
OUTLET FOOTING																																					
▲	44	5	4'- 1"	W501	STR																																
	11	5	42'- 6"	W502	STR																																
	44	5	6'- 6"	W503	STR																																
▲	44	6	6'- 7"	W601	17		0'- 0"	2'- 1"	4'- 6"																												
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#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
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PROJECT NAME: **SOUTH BURLINGTON - COLCHESTER**
PROJECT NUMBER: **IM CULV (23)**
FILE NAME: **z09a046engreinf colchester.xls** PLOT DATE: **8/31/2010**
PROJECT MANAGER: **DMB** DRAWN BY: **SLM**
DESIGNED BY: **SFD** CHECKED BY: **DMK**
REINFORCING STEEL SCHEDULE SHEET 75-3 SHEET **36** OF **36**

Vitans
Received
OK'd BY JWC

MAY 11 2012

Steel Pipe Fabricators, Inc.

Welding Procedure Specification (WPS)

Prequalified Yes No

or Procedure Qualification Record (PQR)

Resubmit
BY _____
DATE 5/11/12

APPROVED
DATE 5/11/12

Identification # SPT-FCAW-SAW1

Revision 0 Date 2/13/08 By J. Klehm

Authorized By J. Klehm Date 2/13/08

Type - Manual Semi - Auto

Machine Automatic

Company Steel Pipe Fabricators, Inc.

Welding Process(es) FCAW/SAW

Supporting PQR(s) SPT-FCAW-001A Rev. 0

SPT-SAW-001 Rev. 0

JOINT DESIGN USED

Type: B-U2-GF

Single Double Weld

Backing

Backing Material Weld Metal

Root Opening 0 - 1/8" Root Face 0 - 1/4"

Groove Angle 55 - 70° Radius (J-U) N/A

Back Gouging Yes Method Grinding

BASE METALS

Material Specification A36

Type or Grade _____

Thickness: _____

Groove 1/4" - Unlimited Fillet All

Diameter (Pipe) 24" and Greater

FILLER METALS

AWS Specification A5.20 / A5.17

AWS Classification E71T-1 / EM12K

SHIELDING

Flux Lincoln 780 Flux - Class F7A2

Gas CO₂ Composition 100%

Flow Rate 28 - 52 Gas Cup Size #4 /

PREHEAT

Preheat Temp., Min 70°

Interpass Temp., Min 70°

Max 450°

POSITION

Groove Flat Fillet Flat

Progression Up Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW)

Short Circuit Globular

Spray AC DCEP

Current: DCEN Pulsed

Other _____

Tungsten Electrode (GTAW)

Size: N/A Type N/A

TECHNIQUE

Stringer or Weave Bond: Stringer

Multi or Single Pass (per side) Multiple

Number of Electrodes 1

Electrode Spacing Longitudinal N/A

Lateral N/A

Angle N/A

Contact Tube to Work Distance 1/8 - 1"

Peening None

Interpass Cleaning Chipping/Wire Brush

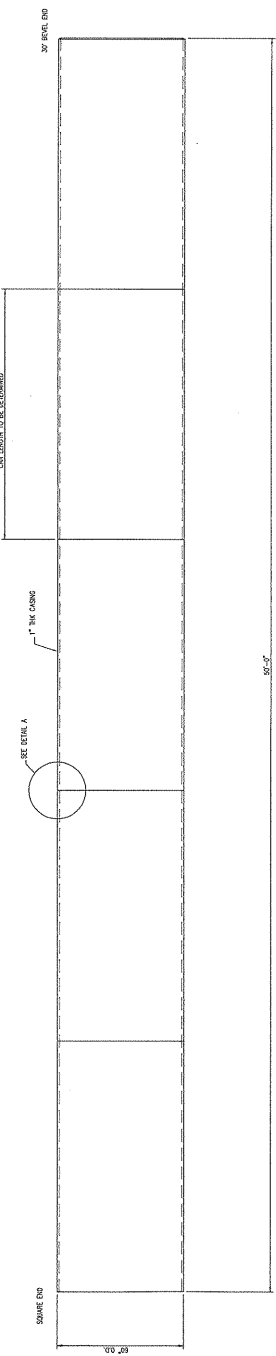
POSTWELD HEAT TREATMENT

Temp. None

Time N/A

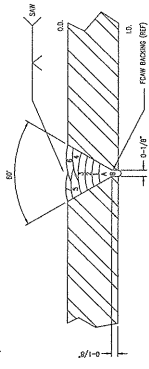
WELDING PROCEDURE

Pass or Weld Layer(s)	Process	Filler Metals		Current		Travel Speed	Volts	Joint Details
		Class	Diameter	Type & Polarity	Amps or Wire Feed Speed			
Root	FCAW	E71T-1	0.052"	DCEP	276 - 338	13-21	26-30	
Hot Pass	FCAW	E71T-1	0.052"	DCEP	276 - 338	13-21	26-30	
Hot Pass	SAW	EM12K	5/32"	DCEP	441 - 539	9-12	29-33	
Fill / Cover	SAW	EM12K	5/32"	DCEP	441 - 539	9-12	29-33	



35'-2"

SPOOL No/ 60100-1
 60" O.D. x 1.00 WALL



CONVENTIONAL WELD
 A FLOW (FROM WELD FROM OUTSIDE) TO FLOW (WELD) CONNECTION WELD JOINT
 1/4" TO 3/8" SAW (MACHINE WELD, MULTIPLE LAYERS NEED TO COMPLETE WELD)
 DETAIL A
 TRUCK WELD JOINT
 CONVENTIONAL WELD
 (SECTION CUT FOR CLARITY)

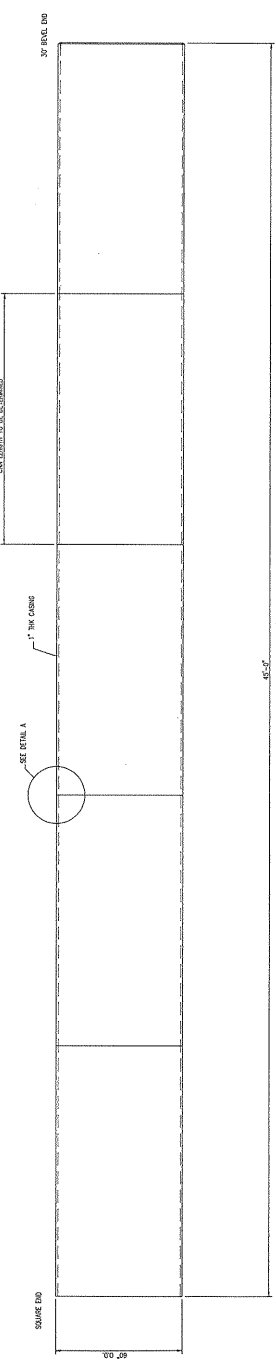
GENERAL NOTES:
 1. ALL WELDS TO BE CONTINUOUS WITH FULL PENETRATION, PERFORMED BY CERTIFIED WELDERS FI
 2. PIPE TO BE MANUFACTURED IN ACCORDANCE WITH ASTM A132 OR, S WITH THE EXCEPTION OF
 WAVED BY THE STATE OF VERMONT AS DOCUMENTED IN WRITTEN ORDER #18.

Witness
 Received *[Signature]*
 OK'd BY *[Signature]*

MAY 11 2012

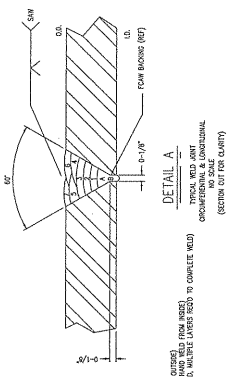
Submitted *[Signature]* APPROVED *[Signature]*
 BY DATE 5/11/12

INDUSTRIAL WELDER This drawing is subject to field use and not be taken in any other manner without the written consent of the Industrial Welding & Fabrication, Inc. Acceptance of this drawing is an acceptance of the drawing for the drawing and the property of Industrial Welding & Fabrication, Inc.		PROJECT NUMBER W 047 (03)
COMPANY Iron Era, Inc. St. Johnsbury, VT		DATE 5/11/12
DRAWN BY J. J. J.	CHECKED BY J. J. J.	DATE 5/11/12
PROJECT NAME Vermont Steel and Employment, Inc.		SHEET NO. 60100
ADDRESS 1000 S. Main St. St. Johnsbury, VT 05818		SCALE AS SHOWN



45-47

SPOOL No/ 60100-6
60" O.D. x 1.00 WALL

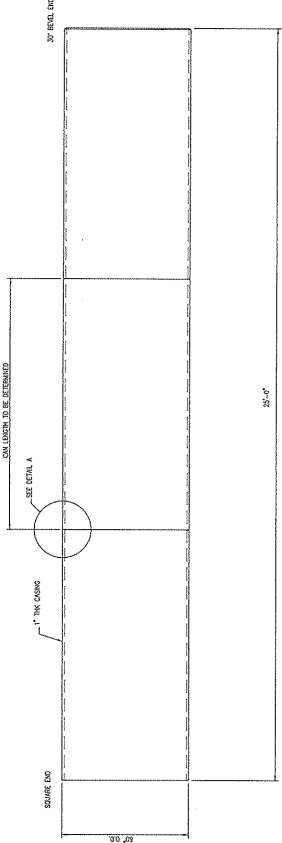


- GENERAL NOTES:
1. ALL WELDS TO BE CONTINUOUS WITH FILL PENETRATION, PERFORMED BY CERTIFIED WELDERS PER AWS D11
 2. PIPE TO BE MANUFACTURED IN ACCORDANCE WITH ASTM A139 GR. B, WITH THE EXCEPTION OF THE TESTS WAIKED BY THE STATE OF VERMONT AS DOCUMENTED IN WRITTEN ORDER #6.

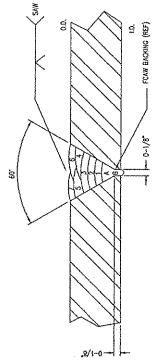
Checked by: *JJC*
 VTrans Received
 OK'd by: *JJC*
 MAY 1 1 2012
 Resubmittal BY: *Stacy*
 APPROVED DATE: *5/1/12*

PROJECT NUMBER		BY DATE (DD)	
PROJECT NAME		DATE (MM/DD)	
ISSUE NO.	ISSUE DATE	DATE	BY
1	05/01/12		
MANUFACTURED BY		60100	
MATERIAL		60100	
SPECIFICATION		60100	
DRAWING NO.		60100	
DATE		60100	
BY		60100	
CHECKED		60100	
APPROVED		60100	
DATE		60100	
BY		60100	
CHECKED		60100	
APPROVED		60100	
DATE		60100	
BY		60100	
CHECKED		60100	
APPROVED		60100	
DATE		60100	
BY		60100	
CHECKED		60100	
APPROVED		60100	
DATE		60100	
BY		60100	

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SPOOL No/ 60100-7
60" O.D. x 1.00 WALL



NOTE: SAME WELD JOINT AS SHOWN IN DRAWING FROM ISSUES TO COMPLETE WELD CONNECTION TO SPOOL CONTIGUAL (SECTION CUT FOR CLARITY)

Utians
 RECEIVED
 CHECKED *Juc*
 MAY 11 2012
 APPROVED *[Signature]*
 BY *[Signature]* DATE

GENERAL NOTES
 1. ALL WELDS TO BE CONTINUOUS WITH FULL PENETRATION, PERFORMED BY CERTIFIED WELDERS PER AWS D 1.1
 2. ALL WELDS TO BE UNREPAIRED, WITH REPAIRS TO BE DOCUMENTED IN WRITTEN ORDER #18
 3. ALL WELDS TO BE INSPECTED AND APPROVED BY THE STATE OF VERMONT AS DOCUMENTED IN WRITTEN ORDER #18

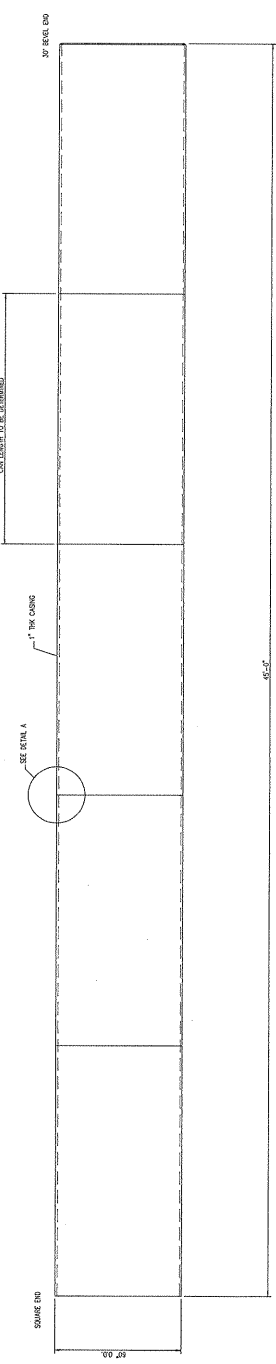
REVISIONS

NO.	DATE	BY	DESCRIPTION

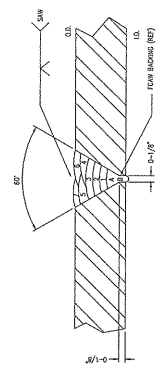
PROJECT NUMBER M 0011 CD
DATE MAY 10, 2012
COMPANY International Steel and Equipment, Inc.
PROJECT NAME *[Blank]*
OWNER *[Blank]* **DATE** *[Blank]*
ISSUED FOR *[Blank]* **DATE** *[Blank]*
SCALE *[Blank]* **DATE** *[Blank]*
REV. NO. *[Blank]* **DATE** *[Blank]* **BY** *[Blank]*

60100

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SPOOL No/ 60100-8
 60" O.D. x 1.00 WALL



DETAIL A
 TYPICAL WELD JOINT
 CONNECTION BETWEEN ADJACENT
 SPOOL SECTIONS
 (SECTION CUT FOR CLARITY)

CK'D. BY *CKD BY JSC*
 VTRANS
 RECEIVED
 MAY 11 2012
 APPROVED BY *[Signature]*
 DATE *5/11/12*

GENERAL NOTES:
 1. ALL WELDS TO BE CONTINUOUS WITH FULL PENETRATION, PERFORMED BY CERTIFIED WELDERS PER AWS D1.1
 2. ALL WELDS TO BE INSPECTED AS SHOWN AND AS NOTED IN THIS DRAWING AND IN WRITTEN ORDER #88
 3. ALL WELDS TO BE REWORKED BY THE STATE OF VERMONT AS DOCUMENTED IN WRITTEN ORDER #88

WARRANTY STATEMENT

This drawing is the property of Valiant Steel & Equip. and is not to be used for any other purpose without the written consent of Valiant Steel & Equip. The user of this drawing is an employee of the user and is not to be used for any other purpose without the written consent of Valiant Steel & Equip.

PROJECT NUMBER	60100
DATE	MAY 11 2012
COMPANY	Valiant Steel and Equipment, Inc.
LOCATION	60100 for Appendix B only
SCALE	AS SHOWN
REV. NO.	01
DATE	5/11/12
BY	JSC

60100

SOUTH BURLINGTON
COLCHESTER
JIM CULY (23)

EXTRA WORK:

EXIST. SLOPE PIPE REPLACEMENT
TRENCH EARTH TO 6' DEPTH

ITEM 204.22, T.E. EXPLORATORY

S.W. HEADLEY
8-15-12

RE: CROSS SECTION DRAWING

STATION	DEPTH	WIDTH	END AREA	FACTOR	BASE	VOLUME
0+00	5'	4.5'	22.5'	1.0	3	67.5 cy
0+103	5	4.5	22.5		7	157.5
0+110	5	4.5	22.5		6	135.0
0+116	5	4.5	22.5		14	315.0
0+130	5	4.5	22.5		12	270.0
0+142	5	4.5	22.5		14	315.0
0+156	5	4.5	22.5		10	225.0
0+66	5	4.5	22.5		6	135.0
0+172	5	4.5	22.5		8	180.0
0+80	5	4.5	22.5		9	117.5
0+189	0.8	4.5	3.6		12	21.6
1+01	∅	4.5	∅			1939.1 cy
						<u>71.8 cy</u>
0+100	2.5'	4.5	11.3	1.0	6	33.9
0+06	∅	4.5	∅		4	∅
0+110	∅	4.5	∅		6	6.9
0+116	0.5	4.5	2.3		14	47.6
0+130	1.0	4.5	4.5		12	81.0
0+142	2.0	4.5	9.0		14	189.0
0+156	4.0	4.5	18.0		10	225.0
0+166	6.0	4.5	27.0		6	156.4
0+171	3.5	4.5	24.8		8	99.7
0+180	∅	4.5	∅			838 cy

TRENCH EXIST BELOW 5' DEPTH
T.E. 70.5' = $\frac{1939.1 \text{ cy}}{27}$

0.75
2.75/12

118.4 cy

TOTAL T.E. = 71.8 cy + 46.6 cy = 118.4 cy
838.0 cy ÷ 1.5 ft = 46.6 cy

Res 10/19/11

ONE slope pipe project

HC 200703010114

TIME	2.31	29.61
Run	2.30	2.37
End		2.38.50

10.00	2.30	231.65
0.00	2.30	168.91
0.00	2.10	264.2
3'	2.80	231.15
10'	6.2	217.50
		10.5
		223.4
		-1.7

16'	8.35	219.65	241.7
30	16.2	217.1	
42'	21.4	212.55	
56'	27.0	206.9	
66'	30.5	203.4	
72'	32.6	201.70	92.9
89'	42.4	196.5	191.17
101	43.4	190.65	

✓ crew

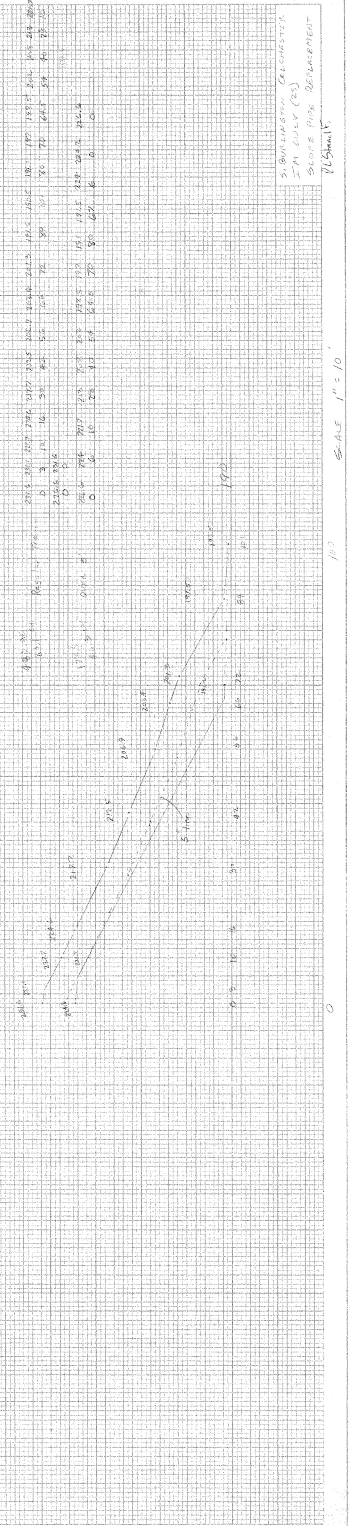
8-19-11 27

UNIVERSITY OF CALIFORNIA
SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING

DATE	10/10/1977
PROJECT	South Bay Bridge
ENGINEER	W. H. ...
CHECKED	...
SCALE	1" = 10'

South Bay Bridge (15)
Cable (15)

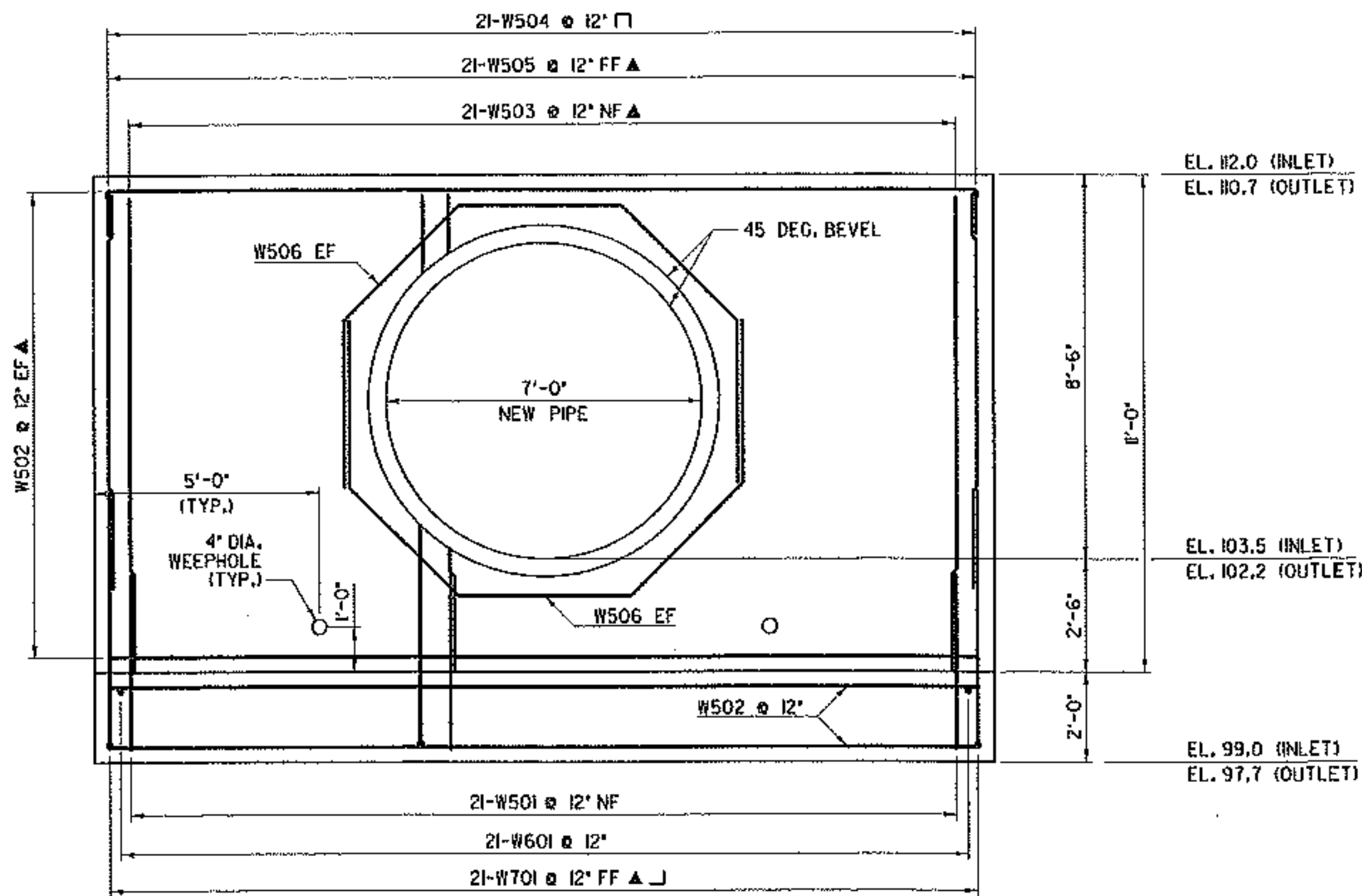
DATE	10/10/1977
PROJECT	South Bay Bridge
ENGINEER	W. H. ...
CHECKED	...
SCALE	1" = 10'



UNIVERSITY OF CALIFORNIA
SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING
10/10/1977

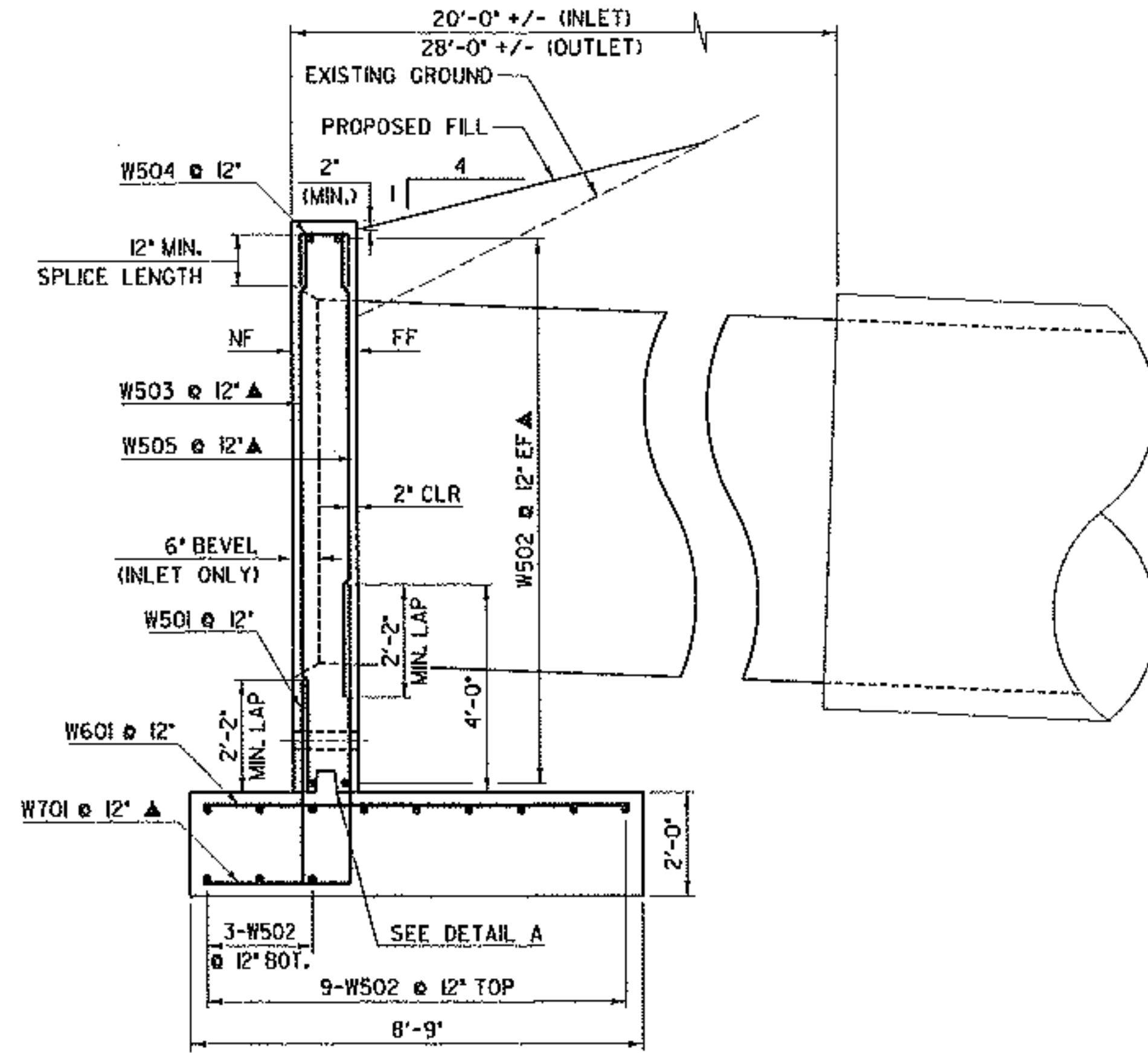
1" = 10'

Handwritten notes: *Handwritten notes: Part of D.M.P. Sewer Pipe elevated*



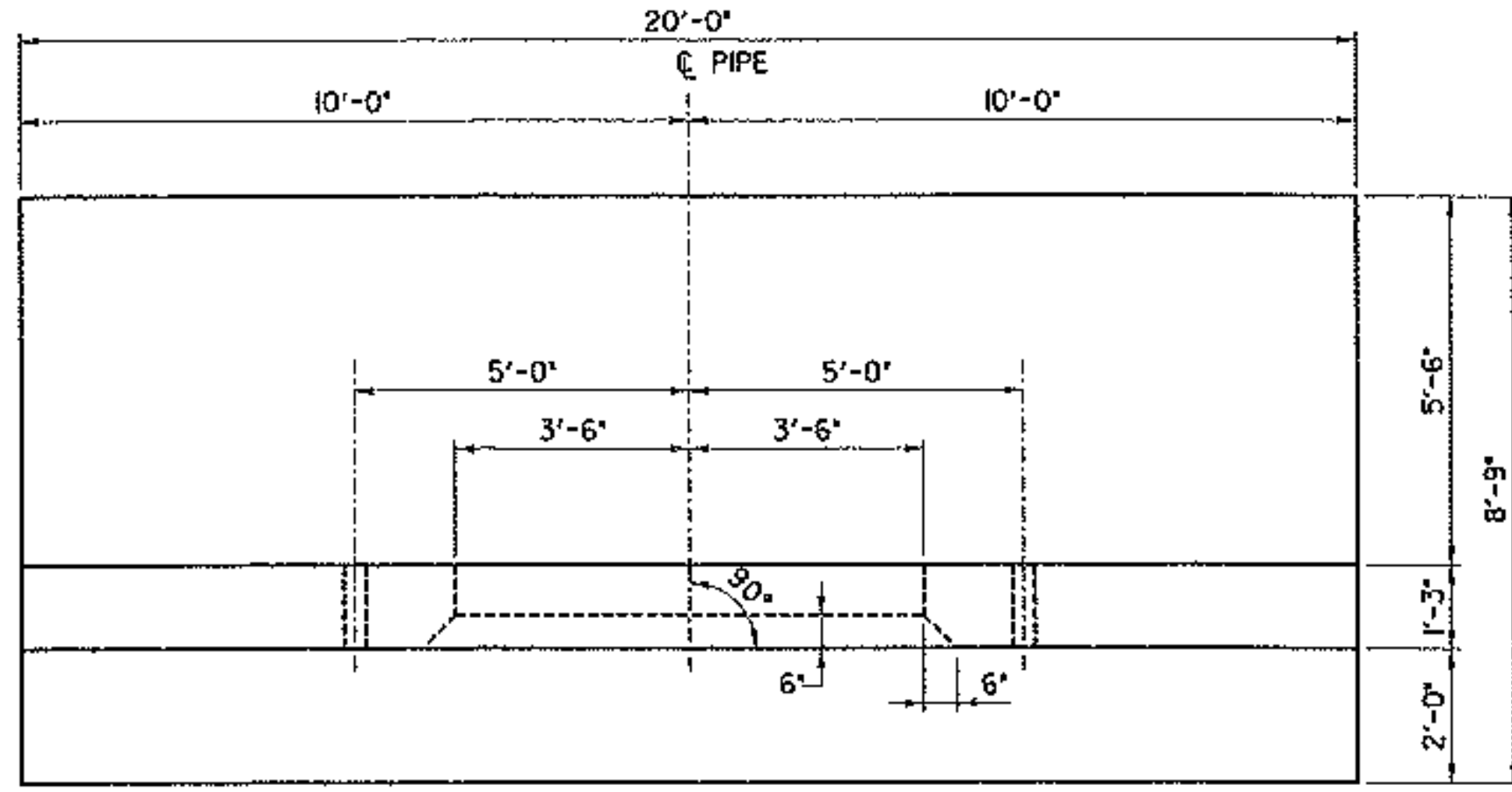
HEADWALL ELEVATION (INLET & OUTLET)

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



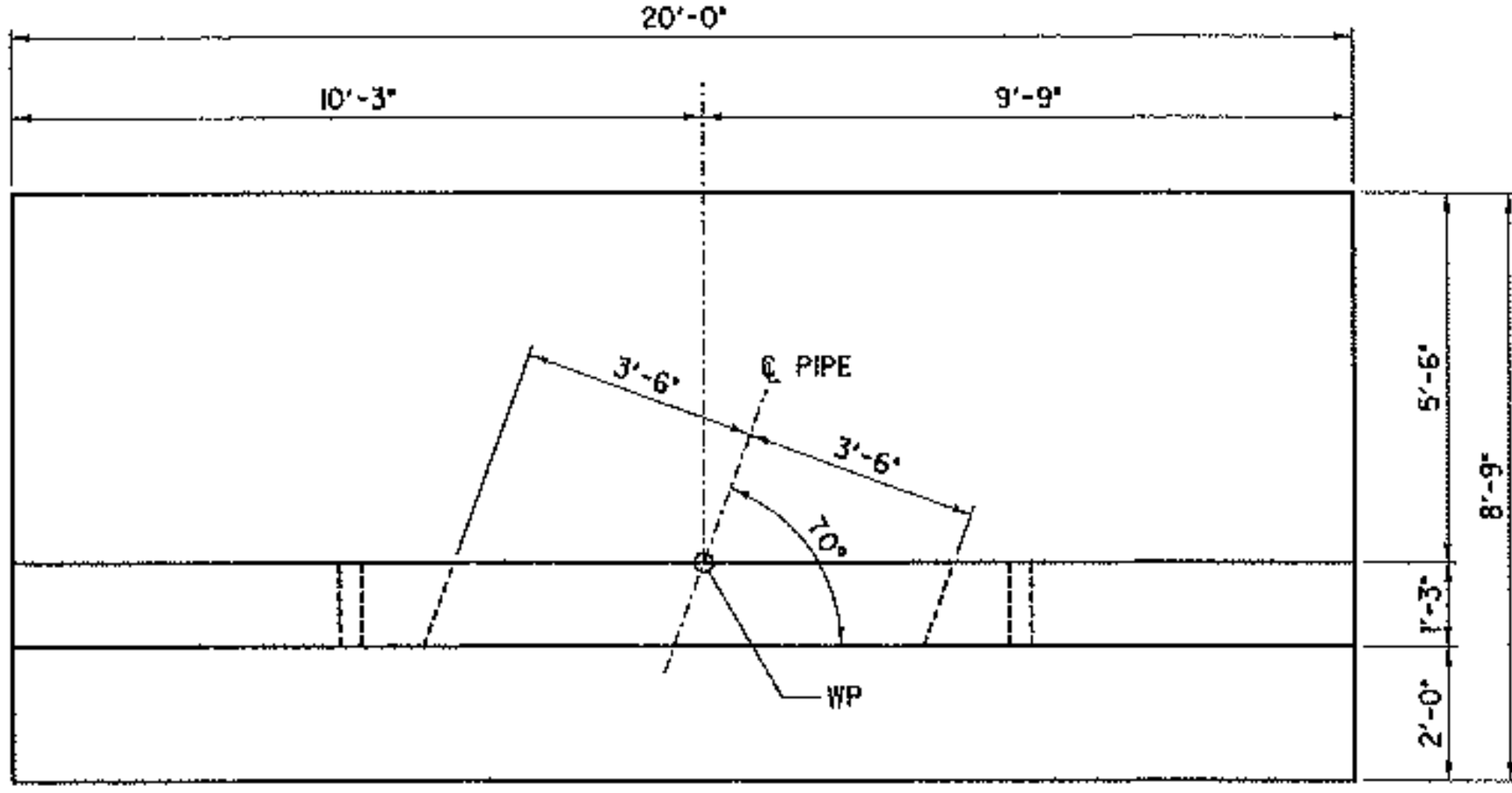
HEADWALL SECTION (INLET & OUTLET)

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



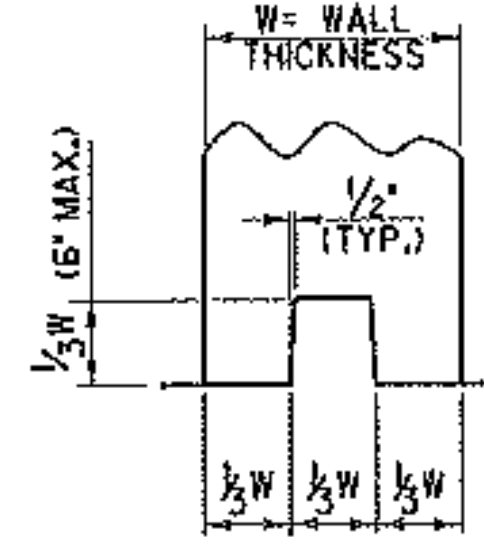
HEADWALL PLAN (INLET)

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



HEADWALL PLAN (OUTLET)

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

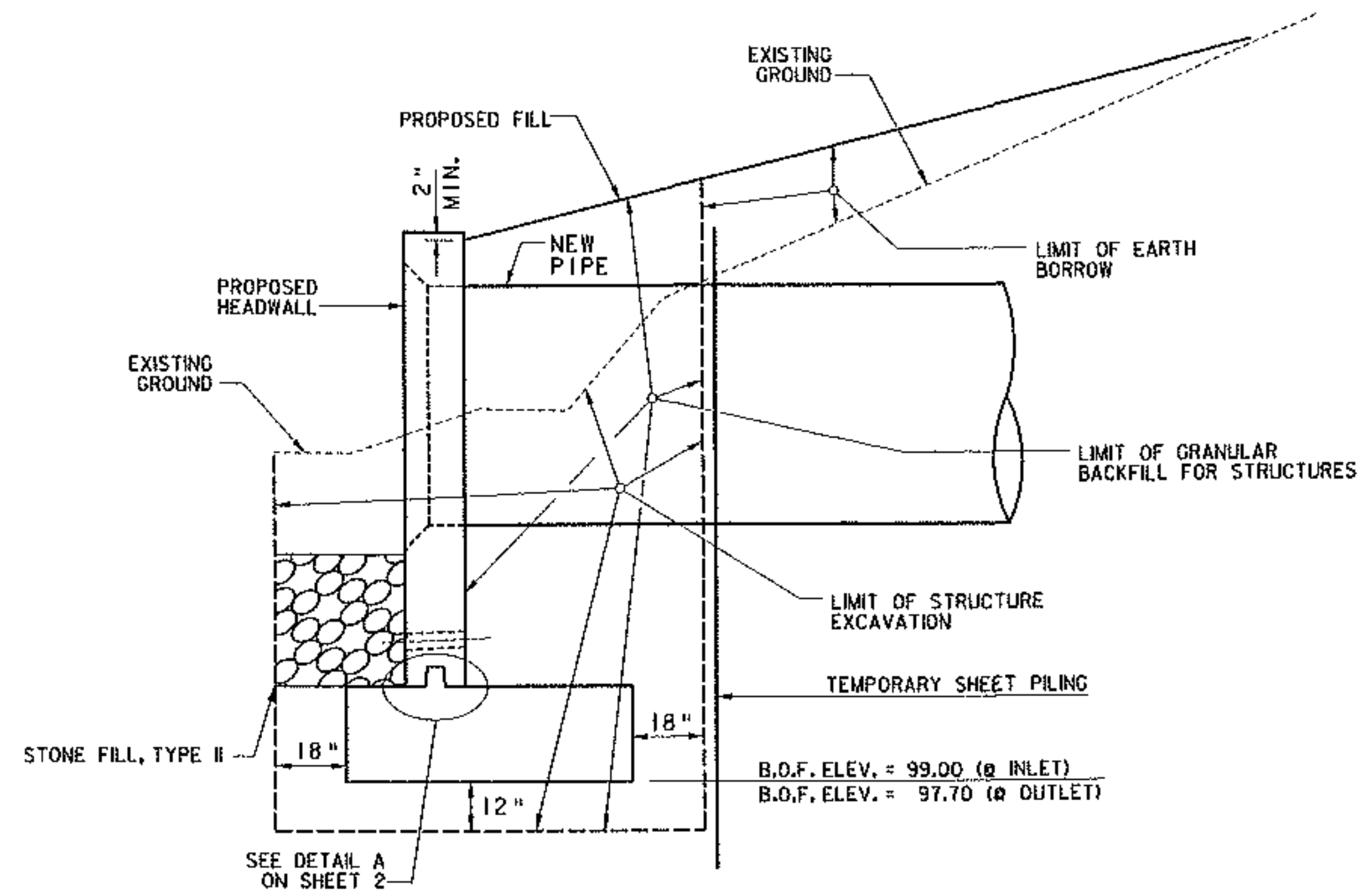


DETAIL A
 NOT TO SCALE

NOTE:
 NF = NEAR FACE
 FF = FAR FACE
 EF = EACH FACE
 ▲ = CUT TO FIT IN FIELD
 3" CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.



PROJECT NAME: SOUTH BURLINGTON - COLCHESTER
 PROJECT NUMBER: IM CULV (23)
 FILE NAME: ... \CULV_23.SHEET.dgn
 PROJECT LEADER: G. BOGUE
 DESIGNED BY: M. CHENETTE
 REVISED HEADWALL DETAILS 1 - BR 75-3
 PLOT DATE: 8/25/2018
 DRAWN BY: J. SOTER
 CHECKED BY: G. BOGUE
 SHEET 1 OF 3



HEADWALL SECTION (INLET & OUTLET)

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

PROJECT NAME: SOUTH BURLINGTON - COLCHESTER	
PROJECT NUMBER: IM CULV (23)	
FILE NAME: ... \CULV.23.SHEET.1.dgn	PLOT DATE: 8/25/2011
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: M. CHENETTE	CHECKED BY: G. BOGUE
REVISED HEADWALL DETAILS 2 - BR 75-3 SHEET 2 OF 3	



	Station	Elevation	Offset
1	10+98.25	203.62	68.98 LT
2	11+18.47	203.25	69.12 LT
3	11+38.46	202.91	69.07 LT
4	11+58.53	202.49	69.09 LT
5	11+78.64	202.1	69.25 LT
6	11+98.66	201.71	69.27 LT
7	12+18.67	201.29	69.34 LT
8	12+38.69	200.86	69.39 LT
9	12+58.70	200.41	69.45 LT
10	12+78.70	199.44	69.55 LT
11	12+98.68	199.44	69.7 LT
12	13+18.66	198.91	69.83 LT
13	13+38.61	198.36	69.95 LT
14	13+58.64	197.84	70.08 LT
15	13+78.57	197.29	70.19 LT
16	13+94.97	196.8	70.38 LT

Notes:
2.30% Slope Overall
1.4' Drop

