

INDEX

- 1 TITLE SHEET
- 2 PRELIMINARY INFORMATION SHEET (14-1)
- 3 PRELIMINARY INFORMATION SHEET (14-2)
- 4 GENERAL NOTES
- 5 QUANTITY SHEET #1
- 6 QUANTITY SHEET #2
- 7 LAYOUT SHEET (13-1)
- 8 PROFILE SHEET (13-1)
- 9 EPSC NARRATIVE SHEET (13-1)
- 10 EXISTING CONDITIONS SITE PLAN (13-1)
- 11 EPSC PLAN (13-1)
- 12 FINAL CONDITIONS SITE PLAN (13-1)
- 13 CROSS SECTIONS (13-1)
- 14 LAYOUT SHEET (14-1)
- 15 PROFILE SHEET (14-1)
- 16 EPSC NARRATIVE SHEET (14-1)
- 17 EXISTING CONDITIONS SITE PLAN (14-1)
- 18 EPSC PLAN (14-1)
- 19 FINAL CONDITIONS SITE PLAN (14-1)
- 20 CROSS SECTIONS (14-1)
- 21 LAYOUT SHEET (14-2)
- 22 PROFILE SHEET (14-2)
- 23 TRAFFIC CONTROL PLAN (14-2)
- 24 EPSC NARRATIVE SHEET (14-2)
- 25 EXISTING CONDITIONS SITE PLAN (14-2)
- 26 EPSC PLAN (14-2)
- 27 FINAL CONDITIONS SITE PLAN (14-2)
- 28 CROSS SECTIONS (14-2)
- 29 EPSC DETAIL 01
- 30 EPSC DETAIL 02
- 31 HEADWALL DETAILS (13-1)
- 32 HEADWALL DETAILS (14-1)
- 33 HEADWALL DETAILS (14-2)
- 34 REINFORCING STEEL SCHEDULE SHEET (13-1)
- 35 REINFORCING STEEL SCHEDULE SHEET (14-1)
- 36 REINFORCING STEEL SCHEDULE SHEET (14-2)

STANDARDS

E-100	CONSTRUCTION APPROACH SIGNS	01/02/2004
E-101	CONSTRUCTION SIGN DETAILS	05/30/2003
E-102	CONSTRUCTION SIGN DETAILS	06/30/2003
E-102A	CONSTRUCTION SIGN DETAILS	05/01/2004
E-103	MAINLINE TRAFFIC CONTROL	03/01/2004
	DIVIDED HIGHWAY ONE LANE CLOSED	
E-105	TRAFFIC CONTROL FOR CONSTRUCTION	05/01/2004
	VEHICLE U-TURNS ON DIVIDED HIGHWAY	
E-106	TRAFFIC CONTROL MISCELLANEOUS DETAILS	03/01/2004
E-110	MAJOR MAINTENANCE OPERATION LANE CLOSURE	08/08/1995
E-111	MINOR MAINTENANCE OPERATION	03/11/1997
E-119	UTILITY WORK ZONE	03/01/2004
E-120	STANDARD SIGN PLACEMENT EXPRESSWAY AND FREEWAY	08/08/1995
E-142	REGULATORY SIGN DETAILS	09/20/1995
F-2	CHAIN LINK FENCE (TYPE I)	06/01/1994
	DRIVE GATE FOR CHAIN-LINK FENCE (TYPE I)	
	WALK GATE FOR CHAIN-LINK FENCE (TYPE I)	
G-1	STEEL BEAM GUARDRAIL WITH STEEL POSTS	01/03/2000
	STEEL BEAM GUARDRAIL WITH WOOD POSTS	

CONVENTIONAL SYMBOLS


COUNTY LINE	
TOWN LINE	
LIMITS OF ACCESS	
POINT OF ACCESS	
FENCE LINE	
STONE WALL	
TRAVELED WAY	
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	

TRAFFIC DATA

INTERSTATE 89	
2007 ADT = 18,000	
2007 DHV = 2,300	
2007 ADTT = 3,200	
%T = 18%	
NB %D = 50	
SB %D = 50	
V = 65 MPH	

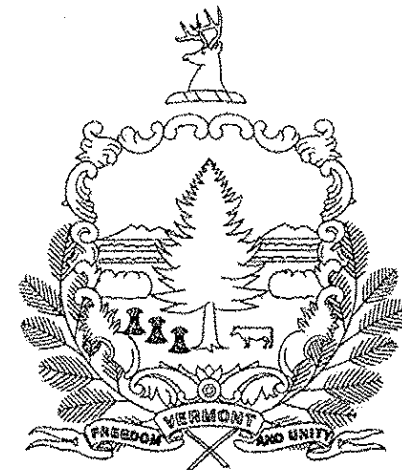
SURVEYED BY : VERMONT SURVEY AND ENGINEERING, INC.
 SURVEYED DATE : 01/2009

DATUM
 VERTICAL NAVD 88
 HORIZONTAL NAD83 (96)



McFarland Johnson
 53 REGIONAL DRIVE
 CONCORD, NH 03301-5022
 PHONE (603) 225-2978
 FAX (603) 225-0095

STATE OF VERMONT
 AGENCY OF TRANSPORTATION

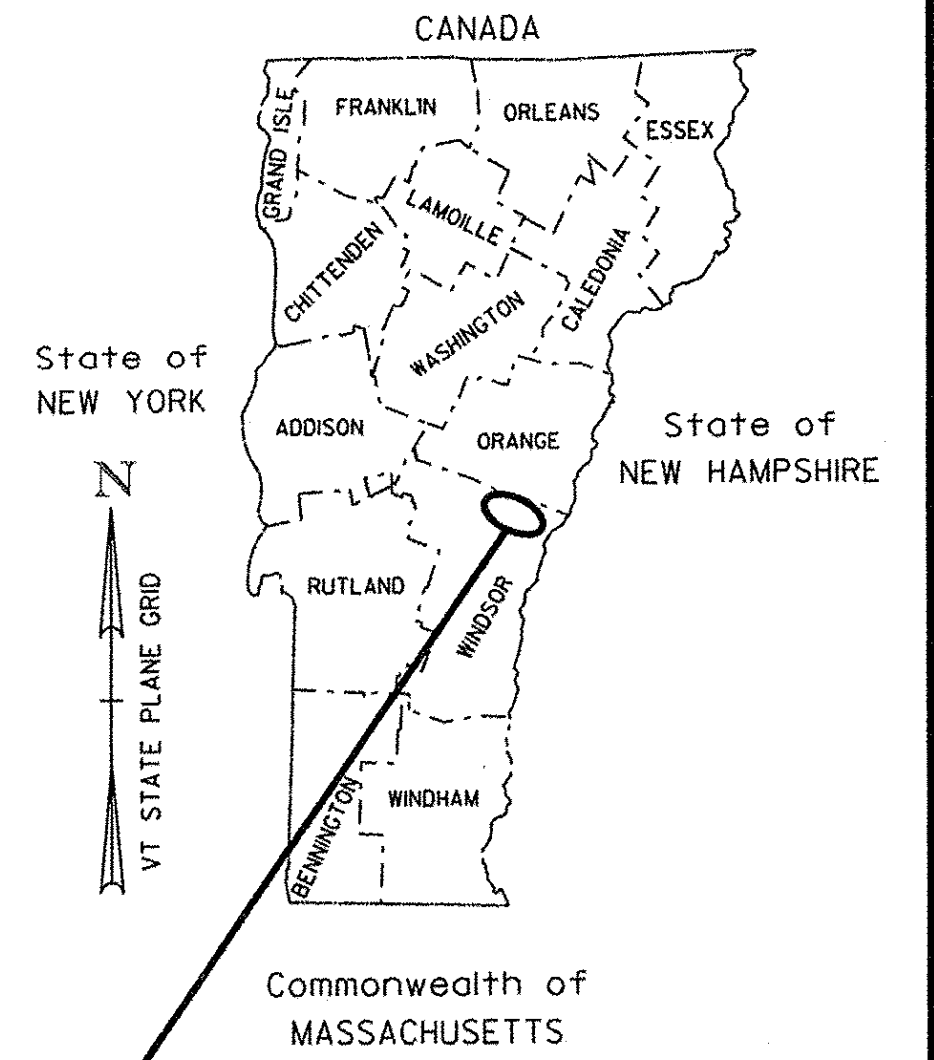
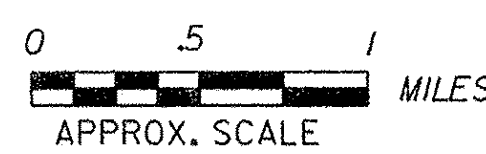
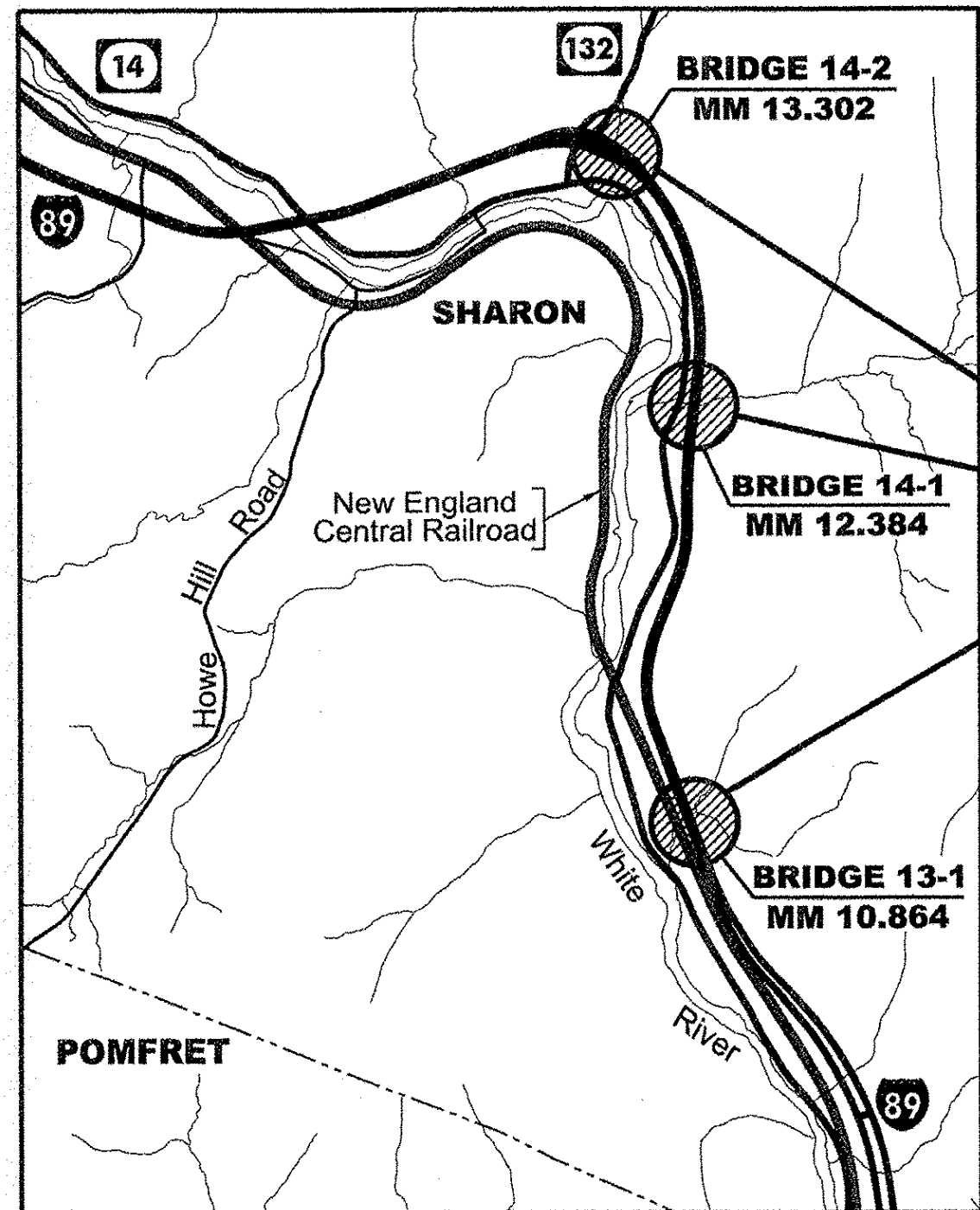


PROPOSED IMPROVEMENT
 TOWN OF SHARON
 COUNTY OF WINDSOR
 INTERSTATE 89

PROJECT LOCATION:
 THE FOLLOWING CULVERTS ALONG THE INTERSTATE 89 CORRIDOR
 WITH LOCATIONS IN THE TOWN OF SHARON.
 BRIDGE 13-1 AT MILE MARKER 10.864
 BRIDGE 14-1 AT MILE MARKER 12.384
 BRIDGE 14-2 AT MILE MARKER 13.302.

PROJECT DESCRIPTION:
 PREVENTATIVE MAINTENANCE TO EXISTING CULVERTS INCLUDING
 THE INSTALLATION OF PIPE LINERS AND HEADWALLS.

LENGTH OF PROJECT = 12,880 FEET = 2.44 MILES



RECORD PLANS

CONTRACTOR: MORRILL CONSTRUCTION INC. - NORTH HAVERHILL, NH

RESIDENT ENGINEER: TOM CHASE

CONSTRUCTION BEGAN: OCTOBER 14, 2009

CONSTRUCTION COMPLETE: OCTOBER 5, 2010

RECORD PLANS BY: TOM CHASE & NICK GARBACIK

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

BY Thomas A. Chase RESIDENT ENGINEER

DATE 11/19/12

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

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

DIRECTOR OF PROGRAM DEVELOPMENT
 APPROVED Richard J. Fournier DATE 7-16-09

PROJECT MANAGER : D. LANDRY

PROJECT NAME : SHARON
 PROJECT NUMBER : IM CULV (18)

SHEET 1 OF 36 SHEETS

PRELIMINARY INFORMATION SHEET

INDEX OF SHEETS

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: April 2009

DRAINAGE AREA : 3.7 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas
 STREAM CHARACTERISTICS : Steep, sinuous
 NATURE OF STREAMBED : Cobbles, boulders and gravel

PEAK FLOW DATA

Q 2.33 = 180 cfs Q 50 = 700 cfs
 Q 10 = 425 cfs Q 100 = 840 cfs
 Q 25 = 560 cfs Q 500 = 1200 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 24.1 fps at outlet
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
 IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 9.5' CGMPP
 YEAR BUILT: 1968
 CLEAR SPAN(NORMAL TO STREAM): 9.5'
 VERTICAL CLEARANCE ABOVE STREAMBED: 9.5'
 WATERWAY OF FULL OPENING: 70.9 sq. ft.
 DISPOSITION OF STRUCTURE: Insert liner
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 536.1' VELOCITY = 15.3 fps
 Q10 = 539.2' " 20.5 fps
 Q25 = 540.9' " 22.5 fps
 Q50 = 542.8' " 24.1 fps
 Q100 = 545.0' " 25.5 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: Above elevation 580'
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Sharon DISTANCE: 200'
 HIGHWAY #: Abandoned road STRUCTURE #: _____
 CLEAR SPAN: 13' CLEAR HEIGHT: 6'
 YEAR BUILT: Unknown FULL WATERWAY: 78 sq. ft.
 STRUCTURE TYPE: Concrete slab bridge

DOWNSTREAM STRUCTURE

TOWN: None -Confluence with the White River DISTANCE: _____
 HIGHWAY #: _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

0 LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY							
POSTED							
OPERATING							

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2007	6000	780	50	18	1.08

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

PROPOSED STRUCTURE

STRUCTURE TYPE: 8.5' CAAP liner, with full beveled inlet headwall
 CLEAR SPAN(NORMAL TO STREAM): 8.5'
 VERTICAL CLEARANCE ABOVE STREAMBED: 8.5'
 WATERWAY OF FULL OPENING: 56.7 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 536.5' VELOCITY= 15.3 fps
 Q10 = 539.5' " 20.5 fps
 Q25 = 541.1' " 22.5 fps
 Q50 = 543.0' " 24.1 fps
 Q100 = 545.4' " 25.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: Above elevation 580'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 540.7' (Top of pipe at inlet)
 VERTICAL CLEARANCE: @ Q50 = Inlet submerged below Q25

SCOUR: Not applicable for a culvert

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV or match existing as needed.

PERMIT INFORMATION

AVERAGE DAILY FLOW: 7 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 4 cfs Depth < 1.0'
 ORDINARY HIGH WATER: 77 cfs Depth = 3.0'

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 is based on the following information shown on the Preliminary Plans.
 Existing 114" pipe inlet elev. = 531.7', outlet elev. 491.4', length = 478.33', slope = 8.2%
 New 102" liner pipe inlet elev. = 532.2', outlet elev. 491.9', length = 478.33', slope = 8.2%

DESIGN CRITERIA

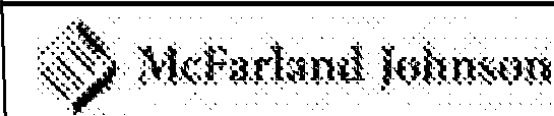
- DESIGN LIVE LOAD AASHTO: N/A
- DESIGN SPAN: N/A
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: 4 ksf
ON LEDGE: 10 ksf
- ALLOWABLE LOAD FOR PILING: N/A
TYPE: N/A
ESTIMATED LENGTH: N/A
- STRUCTURAL STEEL AASHTO M270M/M270 GRADE: 50W
- REINFORCING STEEL GRADE: 60
- CONCRETE, HIGH PERFORMANCE CLASS A f_c: 4000 psi
CONCRETE, HIGH PERFORMANCE CLASS B f_c: 3500 psi
- DESIGN SOIL UNIT WEIGHT: 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: _____

TRAFFIC MAINTENANCE

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

PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)

FILE NAME: engpi1.xls PLOT DATE: 6/18/2009
 PROJECT LEADER: DMB DRAWN BY: RPH
 DESIGNED BY: RPH CHECKED: BRC
 PRELIMINARY INFORMATION SHEET (14-1) SHEET 2 OF 36



PRELIMINARY INFORMATION SHEET

INDEX OF SHEETS

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: April 2009

DRAINAGE AREA : 5.8 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, a mixture of forested and open areas
 STREAM CHARACTERISTICS : Steep, sinuous
 NATURE OF STREAMBED : Cobbles, gravel and ledge

PEAK FLOW DATA

Q 2.33 = 300 cfs	Q 50 = 1000 cfs
Q 10 = 600 cfs	Q 100 = 1200 cfs
Q 25 = 800 cfs	Q 500 = 1700 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 12.8 fps at outlet
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
 IF YES, DESCRIBE:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 12.0' CGMPP
 YEAR BUILT: 1968
 CLEAR SPAN(NORMAL TO STREAM): 12.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 12.0'
 WATERWAY OF FULL OPENING: 113 sq. ft.
 DISPOSITION OF STRUCTURE: Insert liner
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 461.0'	VELOCITY = 12.7 fps
Q10 = 463.7'	" 15.6 fps
Q25 = 465.5'	" 16.9 fps
Q50 = 467.2'	" 17.9 fps
Q100 = 469.1'	" 18.7 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: Above elevation 510'
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Sharon DISTANCE: 2800'
 HIGHWAY #: TH 26 STRUCTURE #: 28
 CLEAR SPAN: 12.5' CLEAR HEIGHT: 9.2'
 YEAR BUILT: Unknown FULL WATERWAY: 78 sq. ft.
 STRUCTURE TYPE: CGMPPA

DOWNSTREAM STRUCTURE

TOWN: Sharon DISTANCE: 250'
 HIGHWAY #: VT 14 STRUCTURE #: 16
 CLEAR SPAN: 12.0' CLEAR HEIGHT: 12.5'
 YEAR BUILT: 1939 FULL WATERWAY: 150 sq. ft.
 STRUCTURE TYPE: R.C. Box

0 LOAD RATING (TONS)

LOADING LEVELS	TRUCK					
	H	HS	3S2	6 AXLE	3A. STR.	5A. SEMI
INVENTORY						
POSTED						
OPERATING						

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2007	6000	780	50	18	1.08

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

PROPOSED STRUCTURE

STRUCTURE TYPE: 11.0' CAAP liner, with full beveled inlet headwall

CLEAR SPAN(NORMAL TO STREAM): 11.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 11.0'
 WATERWAY OF FULL OPENING: 95 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 461.2'	VELOCITY = 12.9 fps
Q10 = 463.9'	" 15.7 fps
Q25 = 465.5'	" 16.9 fps
Q50 = 467.0'	" 17.8 fps
Q100 = 468.7'	" 18.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: Above elevation 510'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 466.9' (Top of pipe at inlet)
 VERTICAL CLEARANCE: @ Q50 = Inlet submerged at Q50

SCOUR: Not applicable for a culvert

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV or match existing as needed.

PERMIT INFORMATION

AVERAGE DAILY FLOW: 12 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 6 cfs Depth = 1.0'
 ORDINARY HIGH WATER: 130 cfs Depth = 3.0'

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

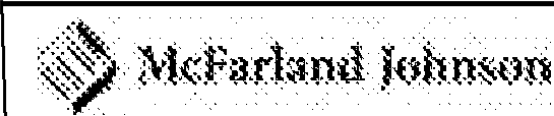
The above final hydraulics is based on the following information shown on the Preliminary Plans.
 Existing 144" pipe inlet elev. = 455.4', outlet elev. 433.7', length = 558.6', slope = 3.9%
 New 132" liner pipe inlet elev. = 455.9', outlet elev. 434.2', length = 558.6', slope = 3.9%

- DESIGN CRITERIA**
- DESIGN LIVE LOAD AASHTO: N/A
 - DESIGN SPAN: N/A
 - ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: 4 ksf
ON LEDGE: 10 ksf
 - ALLOWABLE LOAD FOR PILING: N/A
TYPE: N/A
ESTIMATED LENGTH: N/A
 - STRUCTURAL STEEL AASHTO M270M/M270 GRADE: 50W
 - REINFORCING STEEL GRADE: 60
 - CONCRETE, HIGH PERFORMANCE CLASS A f_c: 4000 psi
CONCRETE, HIGH PERFORMANCE CLASS B f_c: 3500 psi
 - DESIGN SOIL UNIT WEIGHT: 140 pcf
 - DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: _____

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

PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)

FILE NAME: engpi2.xls PLOT DATE: 6/18/2009
 PROJECT LEADER: DMB DRAWN BY: RPH
 DESIGNED BY: RPH CHECKED: BRC
PRELIMINARY INFORMATION SHEET (14-2) SHEET 3 OF 36



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 ASSURE 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 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 AS ITEM 900.640, "SPECIAL PROVISION (TEST BORINGS)".

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. 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 LIMITS OF STRUCTURE EXCAVATION SHALL BE RESTORED AND PAID FOR UNDER CONTRACT ITEMS FOR TURF ESTABLISHMENT.
3. 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 ITEM 900.640, "SPECIAL PROVISION (ALUMINUM PIPE LINER)".
4. 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".
5. 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".
6. 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.
7. A NEW FULL 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)".
8. 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.

9. LIMITS OF FENCING IMPACTED BY THE TEMPORARY ACCESS SHALL BE APPROVED BY THE ENGINEER. REMOVING AND RESETTING EXISTING FENCING SHALL BE INCIDENTAL TO ITEM 900.645, "SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)". FENCING IMPACTED WITHIN THE PAY LIMITS OF THE HEADWALL CONSTRUCTION SHALL BE RESTORED AND PAID FOR UNDER CONTRACT ITEMS FOR FENCING.

CONCRETE NOTES

1. CONCRETE PAYMENT AND CLASSIFICATION SHALL BE AS FOLLOWS:

HEADWALL: ITEM 501.34, "CONCRETE HIGH PERFORMANCE CLASS B"
SUBFOOTING: ITEM 541.30, "CONCRETE, CLASS C"
FILLING VOIDS UNDER CULVERT: 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 STRUCTURES ENGINEER 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 STRUCTURES ENGINEER 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 STRUCTURES ENGINEER. 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 WITH CONTRACT PAY ITEMS OR A BEDROCK PROFILE SHALL BE PROVIDED BY THE CONTRACTOR TO THE STRUCTURES ENGINEER 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 STRUCTURES ENGINEER.
10. THE LIMITS OF SUBFOOTINGS SHALL BE 1' -0" 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 1 GAL/14 SY.

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 2003 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 ROADWAY, TRAFFIC AND SAFETY ENGINEER FOR APPROVAL PER SUBSECTION 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 LANE AND/OR SHOULDER CLOSURES SHALL BE ALLOWED DURING WORKING HOURS ONLY. THE INTERSTATE SHALL BE RESTORED TO FULL CAPACITY AT THE CLOSE OF DAILY CONSTRUCTION ACTIVITIES.
5. 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".
6. 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".
7. 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".

PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

FILE NAME: GEN_NOTES.DGN
PROJECT LEADER: DMB
DESIGNED BY: MHM
GENERAL NOTES

PLOT DATE: 10-AUG-2009
DRAWN BY: MJF
CHECKED BY: DMB
SHEET 4 OF 36



QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES				
					ROADWAY	EROSION CONTROL	I-89 BR NO. 13-1	I-89 BR NO. 14-1	I-89 BR NO. 14-2	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS	
					1						1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10					
								20			20		CY	SOLID ROCK EXCAVATION	203.16					
							15	20	15		50		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27					
					1						1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22					
							108	190	174		472		CY	STRUCTURE EXCAVATION	204.25					
							70	201	387		658		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30					
							23	49	71		143		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34					
							1979	4439	8688		15106		LB	REINFORCING STEEL	507.15					
								40			40		LF	DRILLING AND GROUTING DOWELS	507.16					
							2	4	6		12		GAL	WATER REPELLENT, SILANE	514.10					
							5	25	36		66		CY	REMOVAL OF CONCRETE OR MASONARY	529.25					
								47			47		CY	CONCRETE, CLASS C	541.30					
							10	10	10		30		CY	CONCRETE, CLASS D	541.31					
							23	37	31		91		CY	STONE FILL, TYPE IV	613.13					
									33		33		LF	CHAIN-LINK FENCE, 6 FEET	620.12					
									6		6		EACH	BRACING ASSEMBLY FOR CHAIN-LINK FENCE, 6 FEET	620.21					
									33		33		LF	REMOVAL OF EXISTING FENCE	620.55					
					120						120		HR	UNIFORMED TRAFFIC OFFICERS	630.10					
					48						48		HR	FLAGGERS	630.15					
										1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16					
					1						1		LS	MOBILIZATION/DEMOBILIZATION	635.11					
							1				1		LS	TRAFFIC CONTROL (I-89 BR NO. 13-1)	641.10					
								1			1		LS	TRAFFIC CONTROL (I-89 BR NO. 14-1)	641.10					
									1		1		LS	TRAFFIC CONTROL (I-89 BR NO. 14-2)	641.10					
					6						6		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15					
							8	10	17		35		SY	GEOTEXTILE UNDER STONE FILL	649.31					
						117					117		SY	GEOTEXTILE FOR SILT FENCE	649.51					
						2					2		LB	SEED	651.15					
						14					14		LB	FERTILIZER	651.18					
						0.06					0.06		TON	AGRICULTURAL LIMESTONE	651.20					
						0.06					0.06		TON	HAY MULCH	651.25					
						8					8		CY	TOPSOIL	651.35					
						1					1		LS	EPSC PLAN	652.10					
						48					48		HR	MONITORING EPSC PLAN	652.20					
						1					1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30					

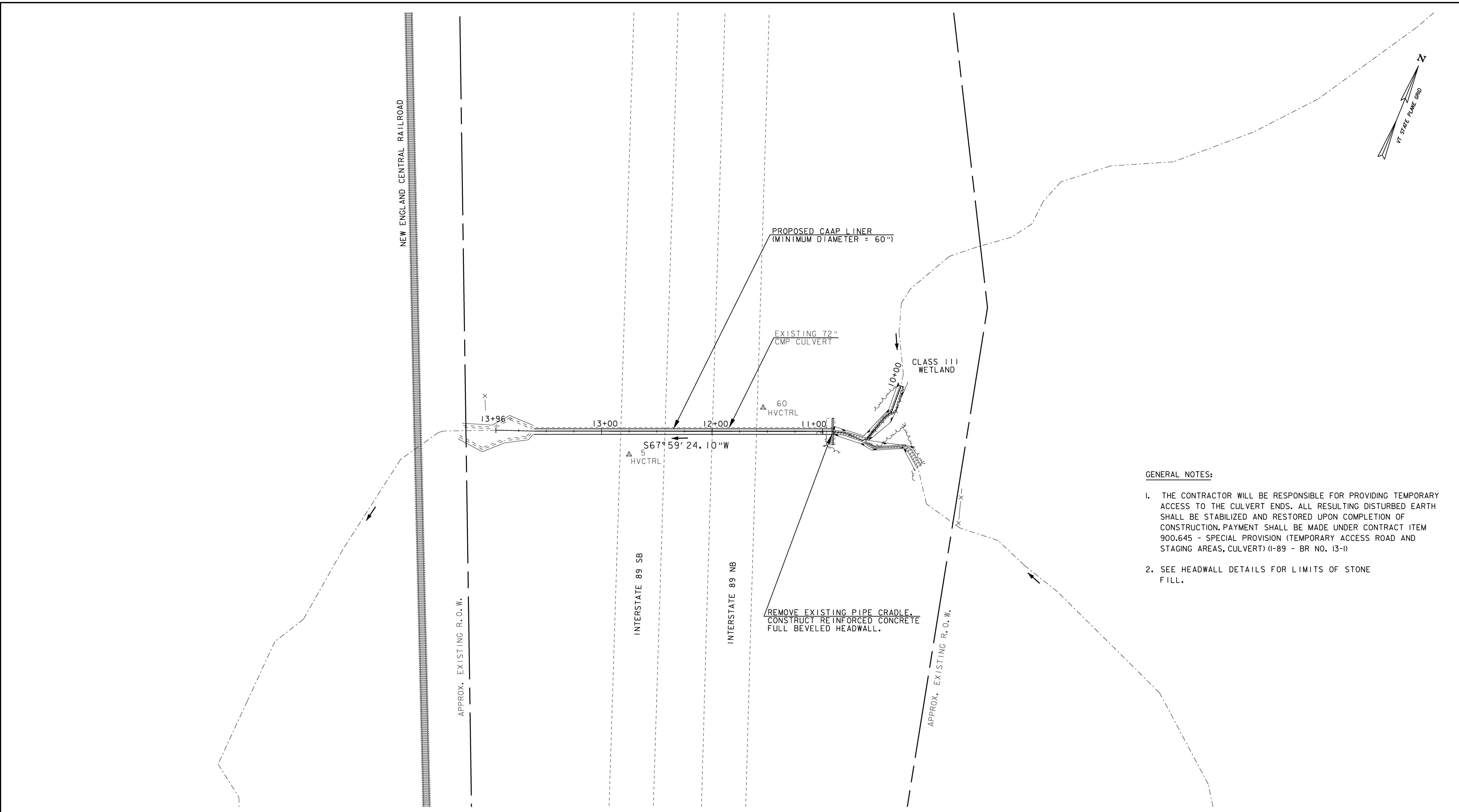
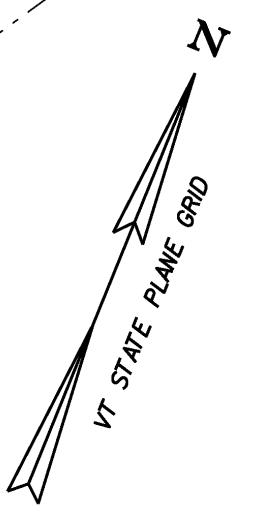
PROJECT NAME: **SHARON**
PROJECT NUMBER: **IM CULV (18)**

FILE NAME: Quantity Sheet	PLOT DATE: 7/8/2009
PROJECT MANAGER: DMB	DRAWN BY: RPH
DESIGNED BY: RPH	CHECKED: BRC
QUANTITY SHEET #1	SHEET 5 OF 36

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
				ROADWAY	EROSION CONTROL	I-89 BR NO. 13-1	I-89 BR NO. 14-1	I-89 BR NO. 14-2	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
					136					136		SY	PERMANENT EROSION MATTING	653.21				
					2013					2013		LF	PROJECT DEMARCATION FENCE	653.55				
						10	10	10		30		CY	SPECIAL PROVISION (CONTROLLED DENSITY (FLOWABLE) FILL)	900.608				
						273				273		LF	SPECIAL PROVISION (ALUMINUM PIPE LINER) (60") (EXISTING 72" PIPE)	900.640				
							481			481		LF	SPECIAL PROVISION (ALUMINUM PIPE LINER) (102") (EXISTING 114" PIPE)	900.640				
								560		560		LF	SPECIAL PROVISION (ALUMINUM PIPE LINER) (132") (EXISTING 144" PIPE)	900.640				
						200	200	200		600		LF	SPECIAL PROVISION (TEST BORINGS)	900.640				
						1				1		LS	SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)(I-89 BR NO. 13-1)	900.645				
							1			1		LS	SPECIAL PROVISION TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)(I-89 BR NO. 14-1)	900.645				
								1		1		LS	SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)(I-89 BR NO.14-2)	900.645				
						1				1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)(I-89 BR NO. 13-1)	900.645				
							1			1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)(I-89 BR NO.14-1)	900.645				
								1		1		LS	SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)(I-89 BR NO.14-2)	900.645				

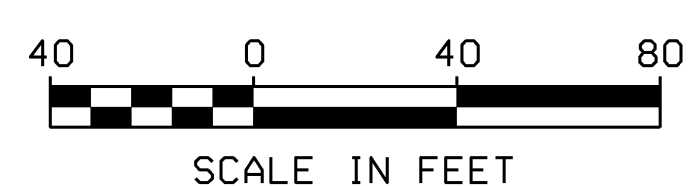
PROJECT NAME: **SHARON**
PROJECT NUMBER: **IM CULV (18)**
FILE NAME: **Quantity Sheet** PLOT DATE: **7/8/2009**
PROJECT MANAGER: **DMB** DRAWN BY: **RPH**
DESIGNED BY: **RPH** CHECKED: **BRC**
QUANTITY SHEET #2 SHEET **6** OF **36**



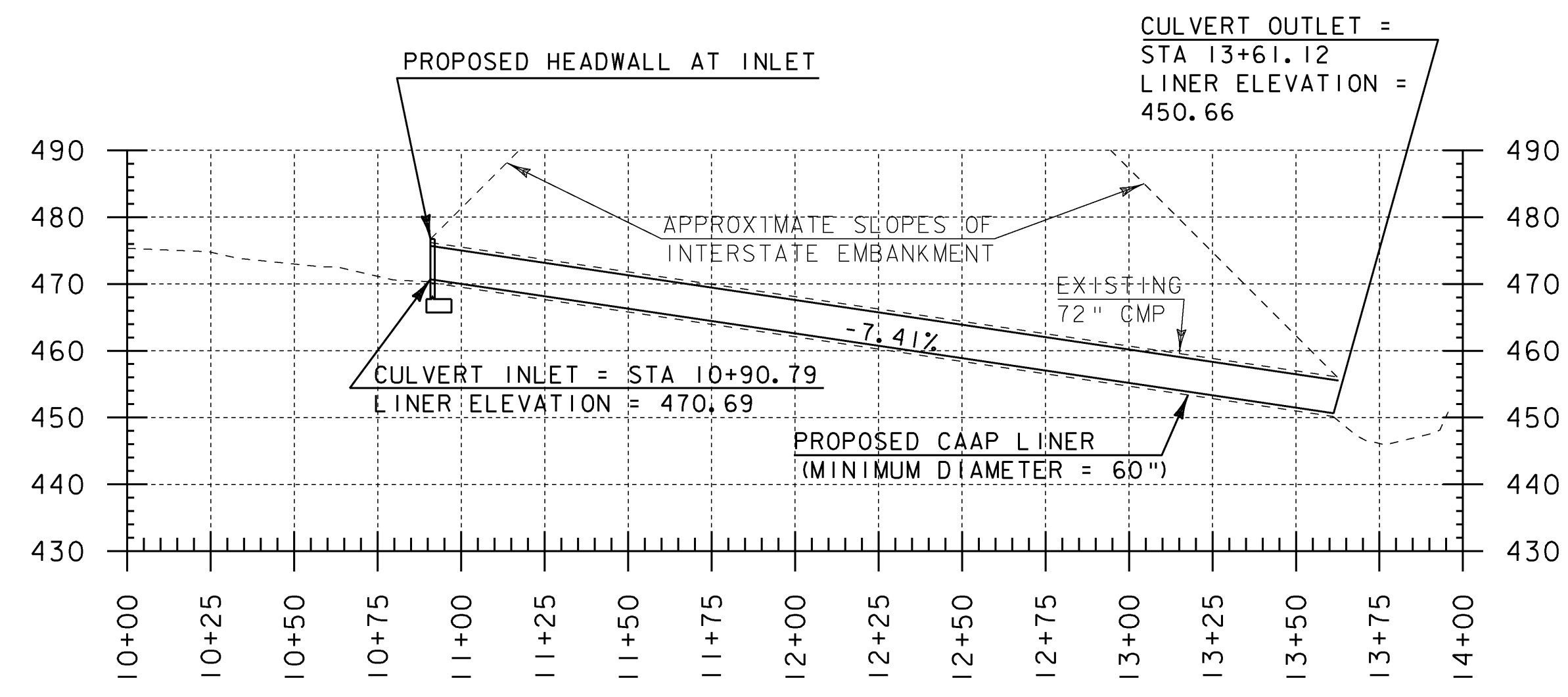
GENERAL NOTES:

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) (I-89 - BR NO. 13-1)
2. SEE HEADWALL DETAILS FOR LIMITS OF STONE FILL.

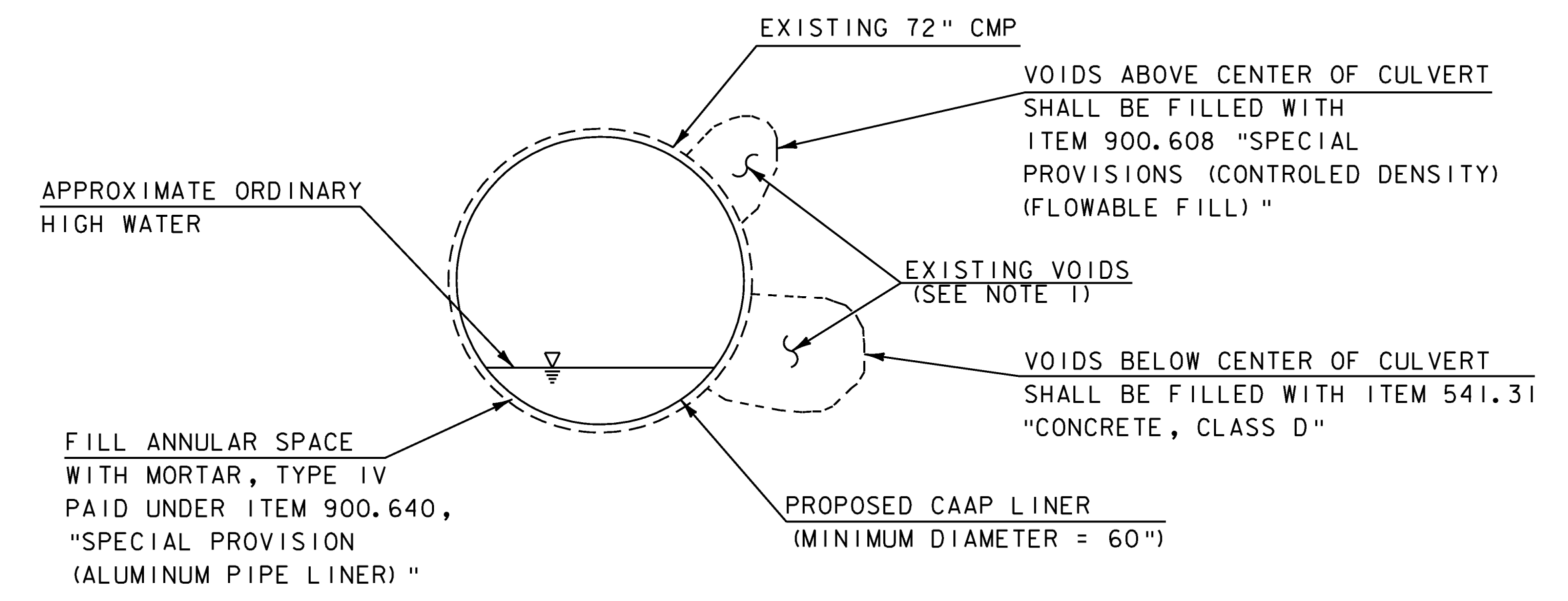
PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)



FILE NAME: L01.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
LAYOUT SHEET (13-1)	SHEET 7 OF 36



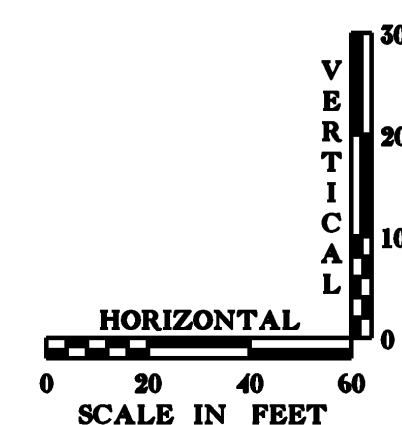
SHARON BRIDGE NO. 13-1
CULVERT CENTERLINE PROFILE



SHARON BRIDGE NO. 13-1
CULVERT LINING DETAIL
NOT TO SCALE

PROJECT NOTES

- POTENTIAL VOID LOCATIONS SHOWN FOR EXPLANATION PURPOSES ONLY.



PROJECT NAME: SHARON	
PROJECT NUMBER: IM CULV (18)	
FILE NAME: PROF01.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
PROFILE SHEET (13-1)	SHEET 8 OF 36

EROSION CONTROL NARRATIVE

1.1. PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REHABILITATION OF AN EXISTING 72-INCH CORRUGATED METAL CULVERT ON INTERSTATE 89 IN THE TOWN OF SHARON. THE CULVERT IS LOCATED NEAR MILE MARKER 10.864 ON THE INTERSTATE AND IS DESIGNATED AS STRUCTURE BR 13-1. THE 270 FT LONG CULVERT HAS APPROXIMATELY 45 FEET OF COVER AND CONVEYS STORMWATER FROM AN UNNAMED BROOK UNDER THE INTERSTATE. THE EXISTING CULVERT WILL BE SLIP-LINED WITH THE PROPOSED CAAP PIPE AS THE CULVERT IS BEYOND ITS DESIGN LIFE AND SHOWS SIGNS OF DETERIORATION AND STRUCTURAL DEFICIENCY. THE PROJECT ALSO INCLUDES THE CONSTRUCTION OF A NEW FULL BEVELED HEADWALL AT THE INLET OF THE CULVERT TO IMPROVE HYDRAULICS. THERE WILL BE NO IMPACT TO THE EXISTING ROADWAY. TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW, AND CONTRACTOR'S OFF-SITE STAGING AREAS) EQUALS 0.64 ACRES. THE TOTAL DISTURBED AREA INCLUDES THE ENTIRE AREA LOCATED WITHIN THE PROJECT DEMARCATION FENCING SHOWN.

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

1.1. SITE INVENTORY

OFF-SITE DRAINAGE CHARACTERISTICS:

THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION WITH STEEP TERRAIN. THE AREA IS MOSTLY FORESTED AND CAN BE DESCRIBED AS HILLY TO MOUNTAINOUS WITH WELL DEFINED DRAINAGE WAYS. ANOTHER UNNAMED BROOK INTERSECTS APPROXIMATELY 50 FEET UPSTREAM FROM THE INLET OF THE CULVERT. DOWNSTREAM OF THE CULVERT THERE IS A SCOUR POOL AND THEN A 20 FT DROP OVER A LEDGE OUTCROPPING. DUE TO THE NATURE OF THE SURROUNDING TERRAIN, STORMWATER RUNOFF ENTERING THE PROJECT SITE WILL BE PRIMARILY LIMITED TO THAT WHICH IS CONVEYED WITHIN THE UNNAMED BROOK. THE ROADWAY EMBANKMENTS ARE GRASSED WITH WELL ESTABLISHED VEGETATION AND WERE CONSTRUCTED AT A 1:2 (VERTICAL:HORIZONTAL) SLOPE. APPROXIMATELY 100 FEET DOWNSTREAM OF THE EXISTING CULVERT THERE IS A 4 FT BY 3.5 FT STONE BOX CULVERT CONVEYING WATER BENEATH THE RAILROAD.

1.2.2. DRAINAGE, WATERWAYS, BODIES OF WATER:

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. RUNOFF STORMWATER ENTERING THE PROJECT AREA WILL BE PRIMARILY LIMITED TO THAT WHICH IS CONVEYED VIA GRASSED ROADWAY DITCHES ALONG INTERSTATE 89.

1.2.3. TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

THE TOPOGRAPHY OF THE PROJECT SITE CONSISTS OF ROUGH FORESTED TERRAIN ON BOTH SIDES OF INTERSTATE 89. THE ROADWAY EMBANKMENTS ARE GRASSED WITH ESTABLISHED VEGETATION AND APPROXIMATE 1:2 (VERTICAL:HORIZONTAL) SLOPES. THE PROJECT AREA DOES NOT ENCROACH UPON ANY BUILDINGS.

1.2.4. VEGETATION:

THE VEGETATION WITHIN THE PROJECT AREA CONSISTS OF BRUSH AND TREES ON EACH SIDE OF THE INTERSTATE. THE INTERSTATE EMBANKMENTS ARE GRASSED WITH BRUSH ON EITHER SIDE. THE IMPACT TO THE VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY IMPACTED BY THE CULVERT SLIP-LINING OPERATIONS AND THE CONSTRUCTION OF THE PROPOSED HEADWALL. DISTURBED SOILS AND VEGETATION WILL BE REESTABLISHED USING STONE AND STANDARD SEED AND MULCH PRACTICES.

1.2.5. SOILS:

THE SOIL FOUND SURROUNDING THE PROJECT SITE IS PRIMARILY HITCHCOCK SILT LOAM (ML), 25 TO 50% SLOPES. THE HITCHCOCK SERIES IS A WELL DRAINED SOIL WITH AN ERODIBILITY FACTOR (K-VALUE) OF 0.49. THE ROADWAY EMBANKMENTS ARE MOST LIKELY A COMMON FILL MATERIAL THAT WAS PLACED DURING THE CONSTRUCTION OF THE INTERSTATE.

GENERALLY, K-VALUES INDICATE THE FOLLOWING:
0.23 AND LOWER - LOW ERODIBILITY
0.24 TO 0.36 - MODERATE ERODIBILITY
0.37 AND HIGHER - HIGH ERODIBILITY

1.2.6. SENSITIVE RESOURCE AREAS

NO THREATENED OR ENDANGERED SPECIES OR ARCHEOLOGICAL RESOURCES HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS AND THERE WILL BE NO ADVERSE EFFECT TO AGRICULTURAL FEATURES. CLASS III WETLANDS ARE LOCATED UPSTREAM OF THE CULVERT. DISTURBANCE OF SOILS NEAR THE WATERWAY WILL CONSIST OF THAT WHICH IS NECESSARY TO CONSTRUCT THE PROPOSED HEADWALL AT THE INLET OF THE EXISTING CULVERT AND IMPACTS NECESSARY FOR THE CULVERT SLIP-LINING OPERATIONS. PROJECT DEMARCATION FENCING (PDF) SHALL BE CONSTRUCTED ALONG THE PROJECT LIMITS TO PREVENT IMPACTS OUTSIDE THE PROJECT AREA.

1.3. RISK EVALUATION

SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRE OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT THEN THE SELECTED CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL PERMITTING WITH VANR VIA FILING OF THE APPROPRIATE NOTICE OF INTENT UNDER THE CONSTRUCTION GENERAL PERMIT PROCESS.

1.4. EROSION PREVENTION AND SEDIMENT CONTROL

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

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 ONSITE COORDINATOR. SEE SECTION 105.23 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006.

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

PREVENTING SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. 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.

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

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
PROJECT DEMARCATION FENCE, DENOTED -PDF- IN THE PLANS, IS USED TO DELINEATE THE LIMITS THE CONTRACTOR CAN ACCESS WITH CONSTRUCTION EQUIPMENT. THIS MEASURE LIMITS AREA THAT CAN BE DISTURBED AND EXPOSED TO EROSION. DISTURBANCE OUTSIDE THE LIMITS OF THE PROJECT DEMARCATION FENCE WILL REQUIRE ADDITIONAL PERMIT COVERAGE.

CONTROL ONLY SEDIMENT LADEN STORMWATER RUNOFF GENERATED BY THE PROJECT SITE. COLLECT AND ROUTE CLEAN STORMWATER AROUND THE PROJECT SITE WHENEVER POSSIBLE USING DIVERSION BERMS, CHANNELS, CULVERTS, OR TEMPORARY PIPES.

1.4.2. LIMIT DISTURBANCE AREA
CONTRACTOR SHALL LIMIT THE DISTURBANCE TO WITHIN THE IMPACT LINES SHOWN ON THE PLANS. CONTRACTOR SHALL NOT DISTURB ANY AREA OUTSIDE OF THE EXISTING RIGHT OF WAY.

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

1.4.3. STABILIZE CONSTRUCTION EXIT
AT LOCATIONS WHERE CONSTRUCTION VEHICLES WILL BE LEAVING THE CONSTRUCTION SITE/STAGING AREAS, A STABILIZED CONSTRUCTION EXIT SHALL BE CONSTRUCTED TO LIMIT THE AMOUNT OF SEDIMENT THAT IS TRANSPORTED OFF OF THE SITE BY CONSTRUCTION VEHICLES. STONE WILL BE USED TO REMOVE SEDIMENT FROM THE TIRES OF CONSTRUCTION VEHICLES. 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 SILT FENCE
SILT FENCE WILL BE INSTALLED AT THE TOE OF FILL SLOPES TO PREVENT SEDIMENT TRANSPORT TO DOWN GRADIENT AREAS. EACH LINE OF SILT FENCE WILL BE PLACED ALONG THE CONTOUR WITH THE LOWER EDGE BURIED 6" TO PREVENT UNDERFLOW AND ENDS TURNED SLIGHTLY UP GRADE TO CREATE A PONDING EFFECT. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UPSLOPE EARTHWORK. SILT FENCE SHALL BE PLACED AS SHOWN ON THE EROSION CONTROL PLAN AND AS DIRECTED BY THE ENGINEER.

1.4.5. DIVERT UPLAND FLOW
THE EXISTING STREAM WILL BE DIVERTED AS DESCRIBED IN THE DEWATERING SECTION BELOW. NO OTHER UPLAND FLOW DIVERSION WILL BE REQUIRED.

1.4.6. SLOW DOWN CHANNELIZED RUNOFF
CHECK DAMS TO BE USED AS NECESSARY.

1.4.7. CONSTRUCT PERMANENT CONTROLS
ALL DISTURBED SOIL SHALL BE STABILIZED WITH SEED AND MULCH.

1.4.8. STABILIZE EXPOSED SOILS
SEEDING AND MULCHING SHALL BE UTILIZED TO STABILIZE SOIL. SOIL SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE AND/OR DURING INTERMITTENT PHASES OF CONSTRUCTION. MULCHING WILL BE UTILIZED ON A REGULAR BASIS. ANY SOIL TO BE EXPOSED FOR SEVERAL DAYS PRIOR TO FINAL GRADING SHALL BE MULCHED. SOIL SHALL BE STABILIZED WITHIN 48 HOURS PRIOR TO FORECASTED RAIN. THEREFORE, STABILIZE ALL DISTURBED AREAS PROMPTLY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY VEGETATION SHALL BE ESTABLISHED IF THE AREA IS TO BE WITHOUT CONSTRUCTION ACTIVITY FOR A PERIOD OF 14 DAYS. PERIMETER CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. INSTALL OTHER TEMPORARY CONTROLS IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS.

1.4.9. WINTER STABILIZATION
THE CONSTRUCTION SEASON SHALL BE FROM MAY 1 TO OCTOBER 15. 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
SEEDING AND MULCHING SHALL BE UTILIZED TO STABILIZE SOIL. SOIL SHALL 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. DEWATERING ACTIVITIES
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 A SMALLER PIPE INSERTED INTO THE LINER.

1.4.12. SITE INSPECTION
TEMPORARY EROSION CONTROL MEASURES SHALL BE REGULARLY INSPECTED AND MAINTAINED FOR SEDIMENT BUILDUP. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT REACHES ONE-HALF THE HEIGHT OF THE CONTROL MEASURE. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE SUCH THAT IT WILL NOT BE SUBJECT TO EROSION.

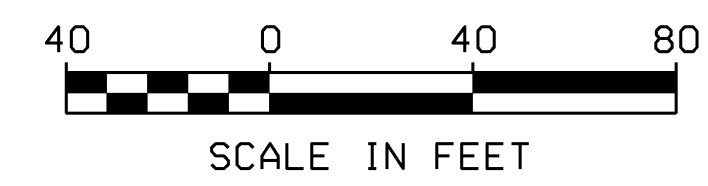
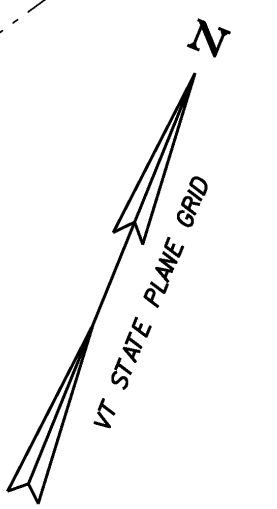
PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

FILE NAME: ERO_NARR01.DGN PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB DRAWN BY: MJF
DESIGNED BY: MHM CHECKED BY: DMB
EPSC NARRATIVE SHEET (13-1) SHEET 9 OF 36



CONSTRUCTION TIMETABLE:

1. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AS REQUIRED.
2. INSTALL CAAP LINER PIPE.
3. CONSTRUCT FULL BEVELED HEADWALL AT CULVERT INLET.
4. STABILIZE ALL DISTURBED AREAS.

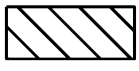



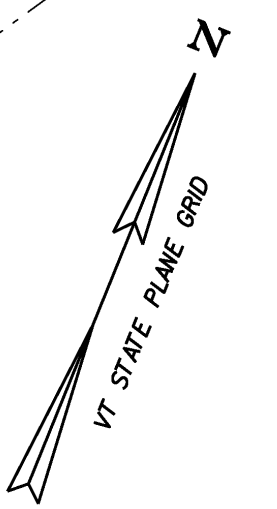
PROJECT NAME: SHARON	
PROJECT NUMBER: IM CULV (18)	
FILE NAME: ECO1.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
EXISTING CONDITIONS SITE PLAN (13-1) SHEET 10 OF 36	

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 - EROSION PREVENTION AND SEDIMENT CONTROL PLAN.
3. MONITORING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE PER ITEM 652.20 - MONITORING EROSION PREVENTION AND SEDIMENT CONTROL PLAN, AND ITEM 652.30 - MAINTENANCE OF EROSION PREVENTION AND SEDIMENT CONTROL 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. CONSTRUCTION EXITS HAVE NOT BEEN SHOWN. CONSTRUCTION EXIT TREATMENT SHALL BE PLACED AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES WILL LEAVE THE CONSTRUCTION DISTURBED AREA AND ENTER A PUBLIC ROADWAY.
7. SEE SEEDING FORMULA AND SEEDING NOTES FOR TURF REESTABLISHMENT REQUIREMENTS.
8. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE PROPOSED HEADWALL. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSION WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO A SMALLER PIPE INSERTED INTO THE PROPOSED LINER.
9. CLEARING AND RESTORATION OF TURF TO REESTABLISH DISTURBED SOIL CAUSED BY THE CONTRACTOR'S ACCESS ROAD AND STAGING AREA WILL BE PAID UNDER ITEM 900.645, "SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)".
10. CLEARING AND RESTORATION OF TURF TO REESTABLISH DISTURBED SOIL WITHIN THE PAYMENT LIMITS OF THE HEADWALL CONSTRUCTION WILL BE PAID UNDER TURF ESTABLISHMENT CONTRACT ITEMS. RESTORATION OF TURF OUTSIDE LIMITS OF HEADWALL SHALL BE INCLUDED IN ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)

LEGEND

- PDF — PDF — PROJECT DEMARCATION FENCE
-  — WETLANDS ASSUMED TO BE IMPACTED BY PROPOSED WORK
-  — SILT FENCE



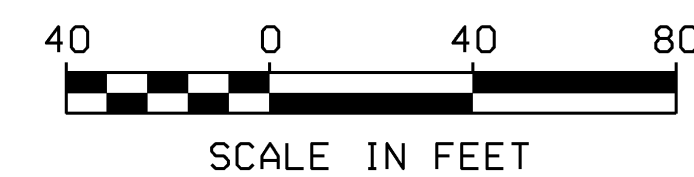
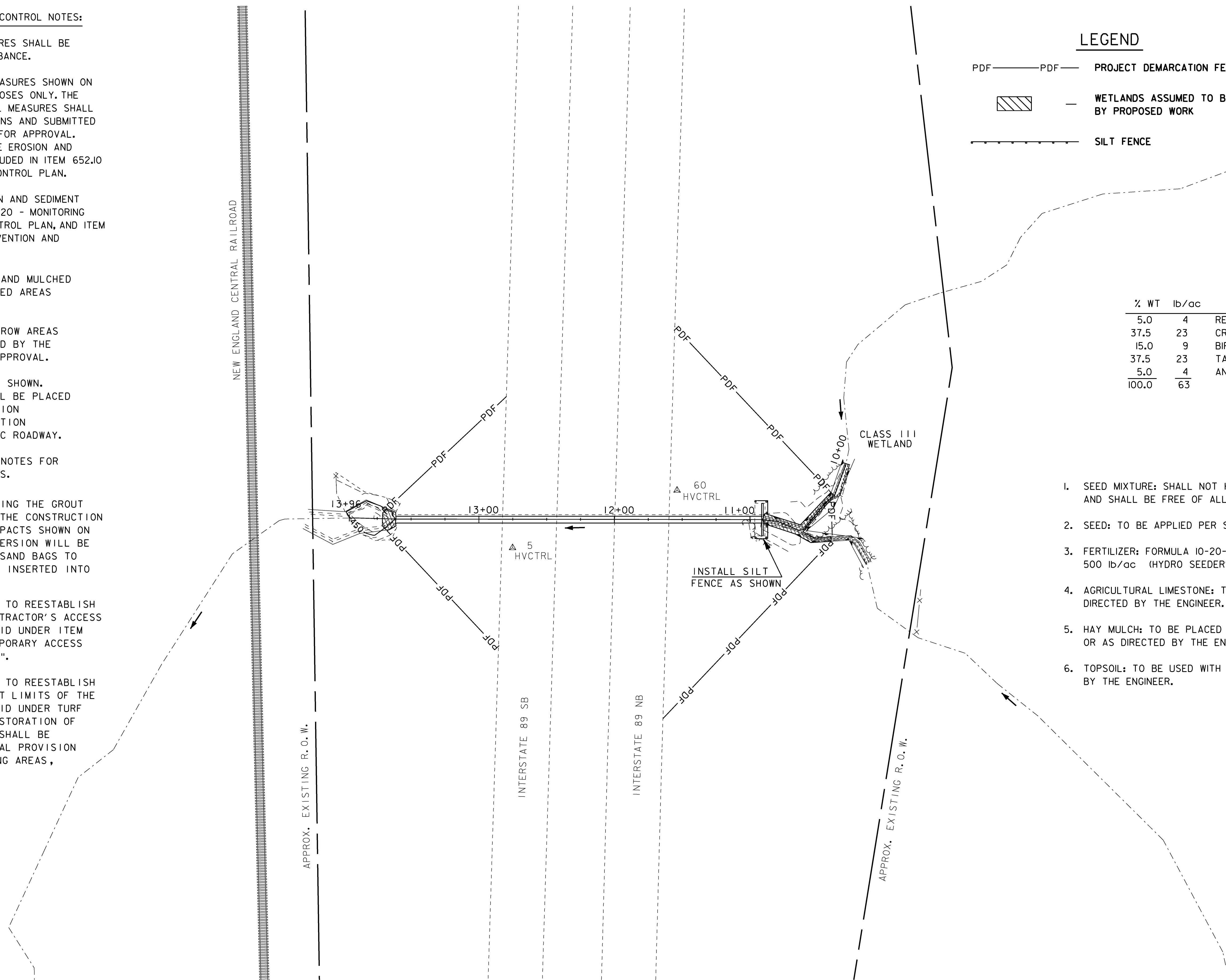
SEEDING FORMULA

RURAL AREAS

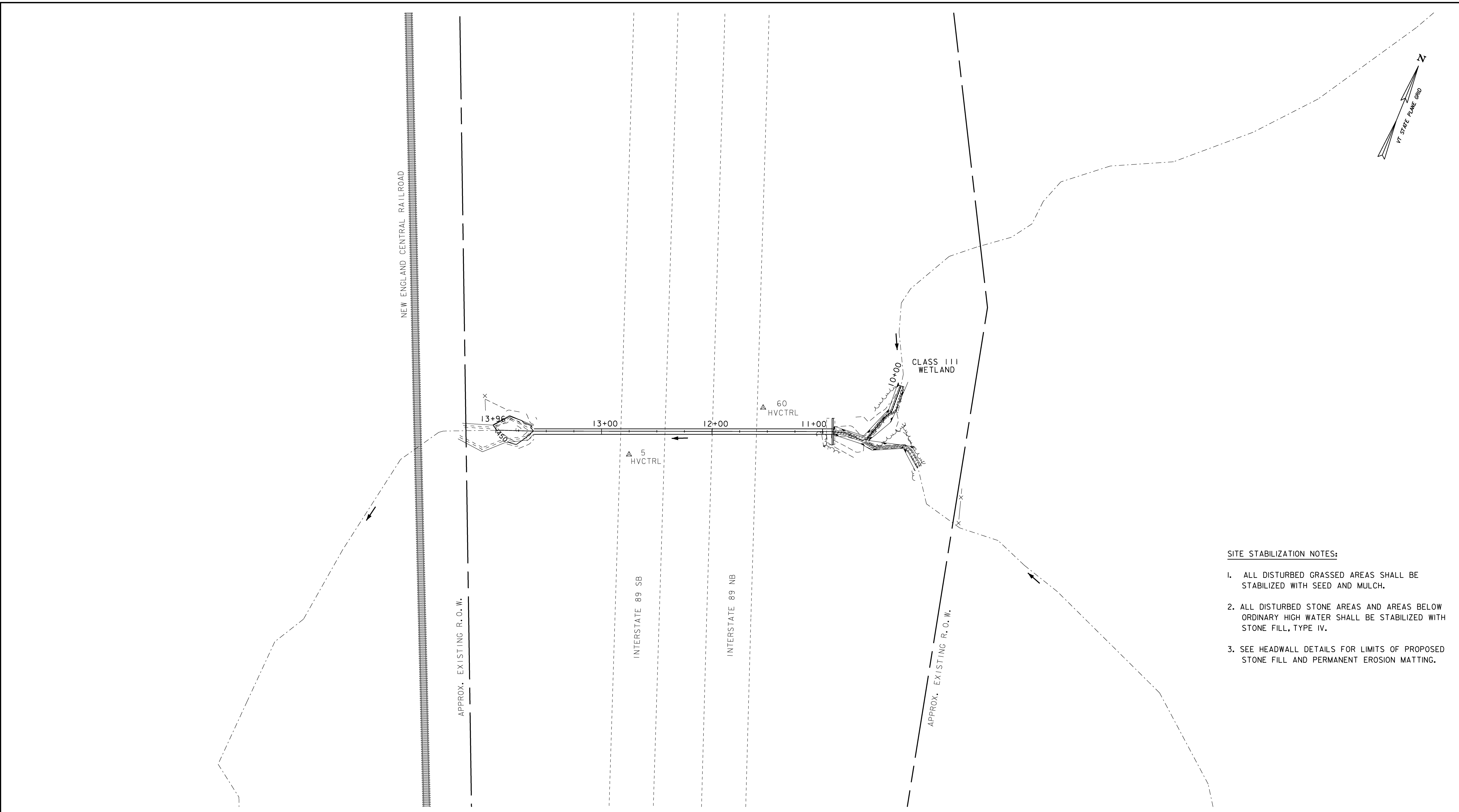
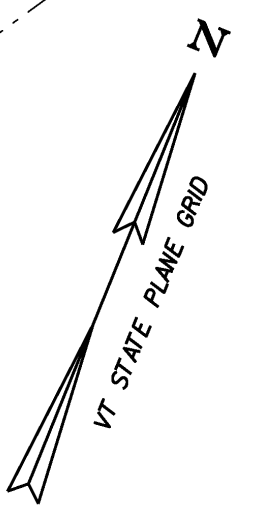
% WT	lb/ac	NAME	PUR %	GERM %
5.0	4	RED TOP	95	90
37.5	23	CREeping RED FESCUE	98	85
15.0	9	BIRDSFOOT TREFOL	98	85
37.5	23	TALL FESCUE	95	90
5.0	4	ANNUAL RYE GRASS	95	85
100.0	63			

SEEDING NOTES

1. SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
2. SEED: TO BE APPLIED PER SEEDING FORMULAS, OR AS DIRECTED BY THE ENGINEER.
3. FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 lb/ac (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).
4. AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2.0 tons/ac, OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2.0 tons/ac, OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

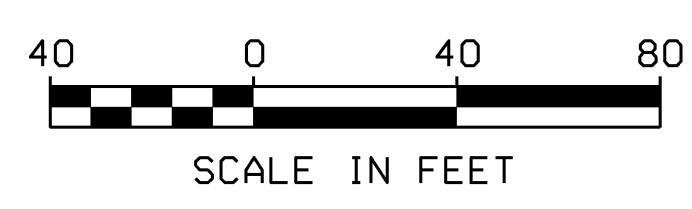


PROJECT NAME: SHARON	PLOT DATE: 13-JUL-2009
PROJECT NUMBER: IM CULV (18)	DRAWN BY: MJF
FILE NAME: ero01.dgn	CHECKED BY: DMB
PROJECT LEADER: DMB	SHEET 11 OF 36
DESIGNED BY: MHM	
EPSC PLAN (13-1)	

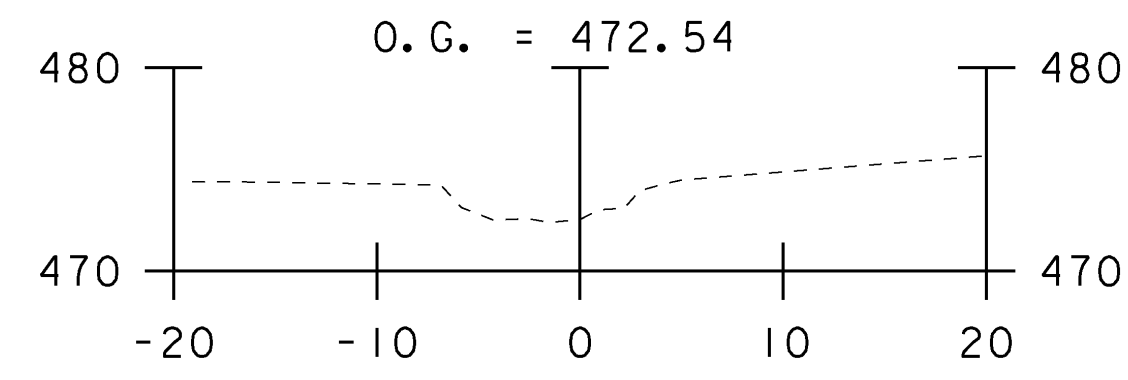


SITE STABILIZATION NOTES:

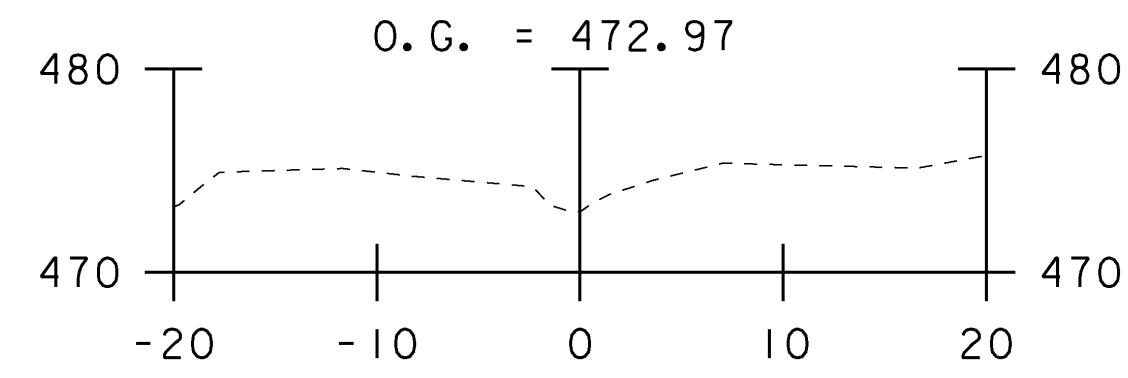
1. ALL DISTURBED GRASSED AREAS SHALL BE STABILIZED WITH SEED AND MULCH.
2. ALL DISTURBED STONE AREAS AND AREAS BELOW ORDINARY HIGH WATER SHALL BE STABILIZED WITH STONE FILL, TYPE IV.
3. SEE HEADWALL DETAILS FOR LIMITS OF PROPOSED STONE FILL AND PERMANENT EROSION MATTING.



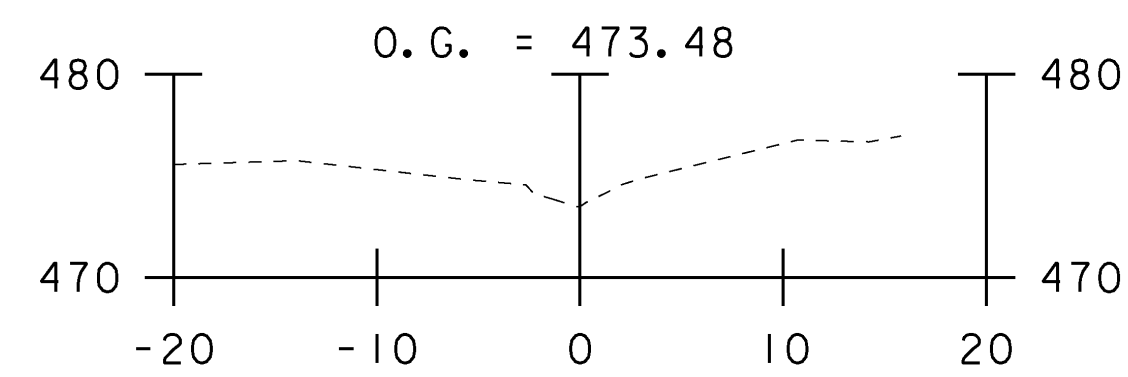
PROJECT NAME: SHARON	
PROJECT NUMBER: IM CULV (18)	
FILE NAME: FC01.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
FINAL CONDITIONS SITE PLAN (13-1)	SHEET 12 OF 36



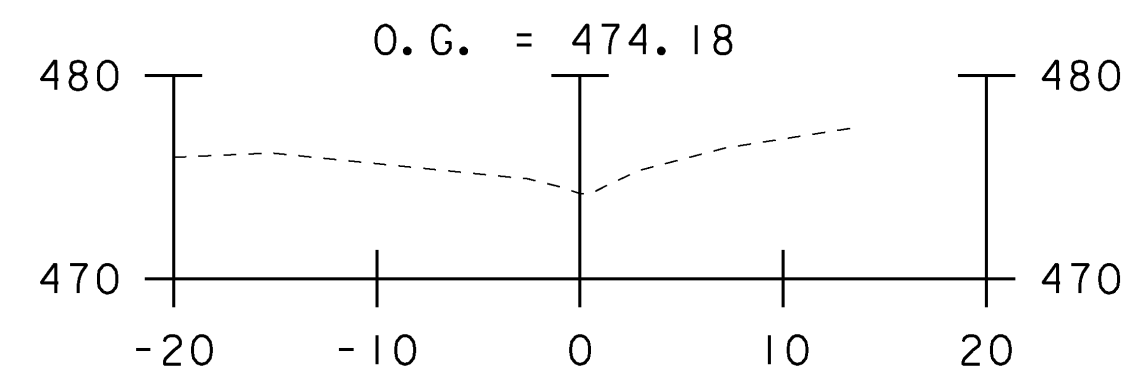
10+60



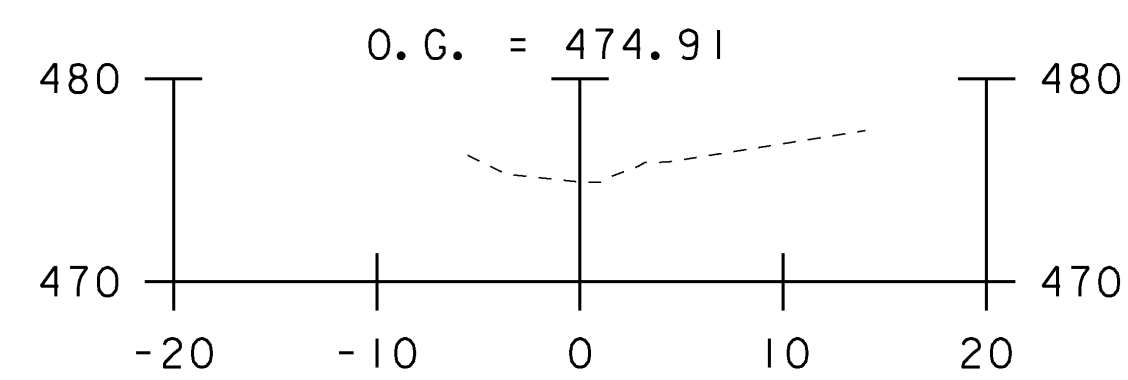
10+50



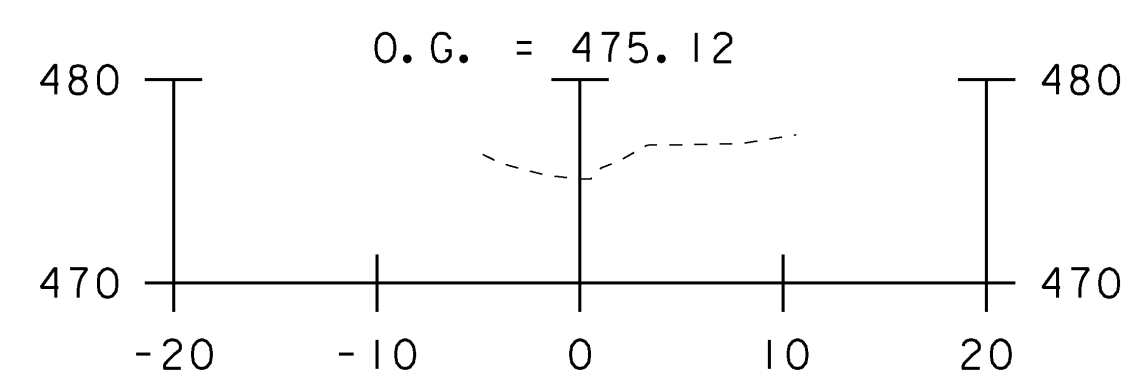
10+40



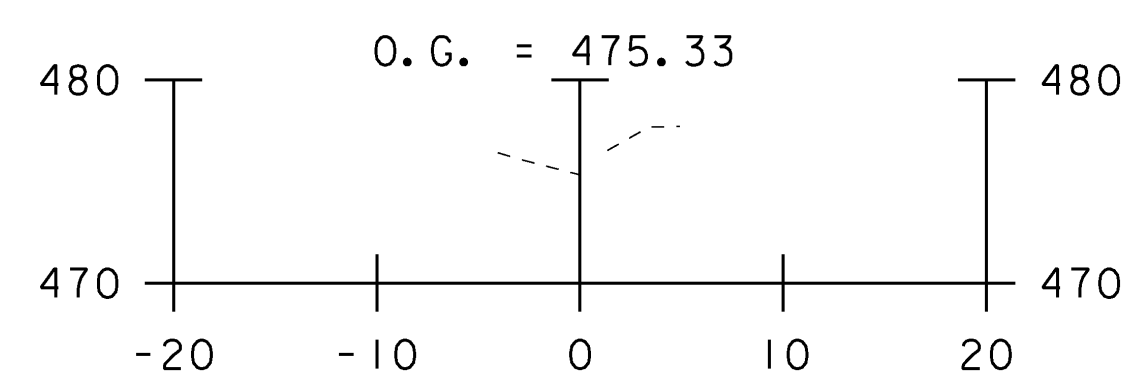
10+30



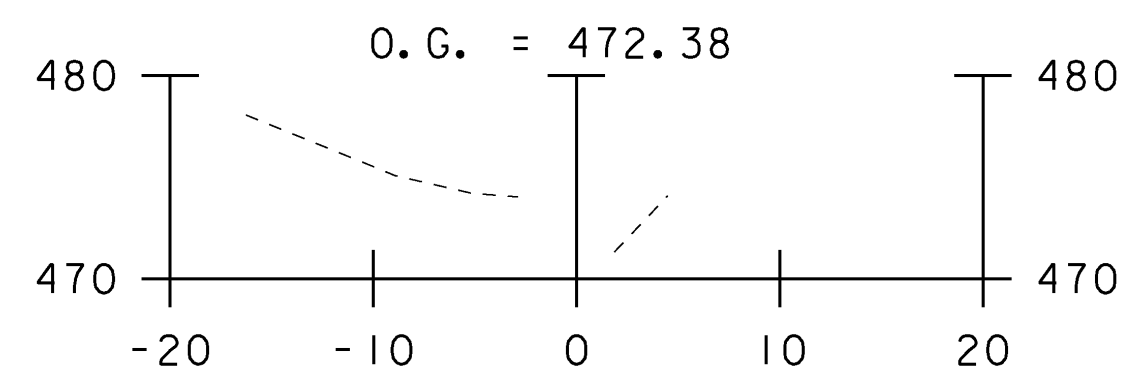
10+20



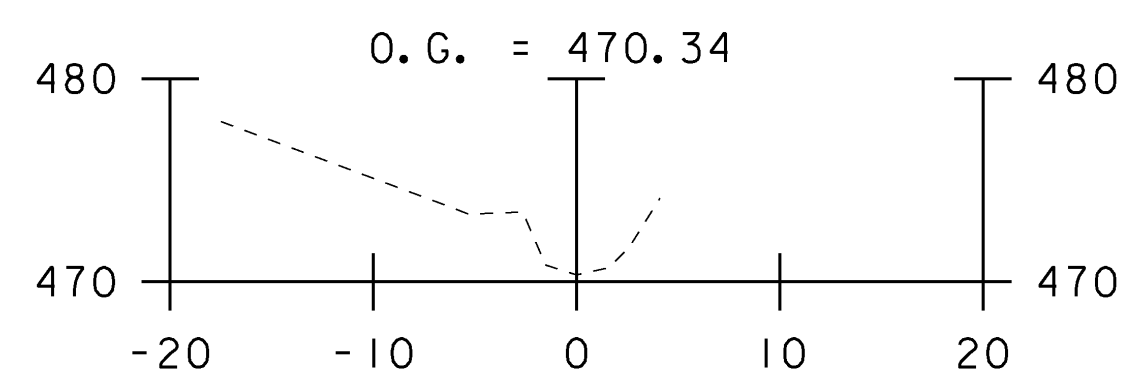
10+10



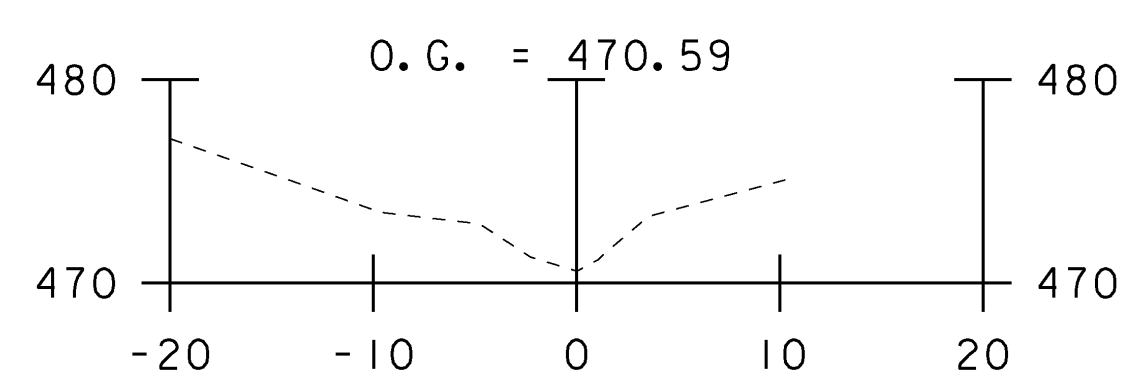
10+00



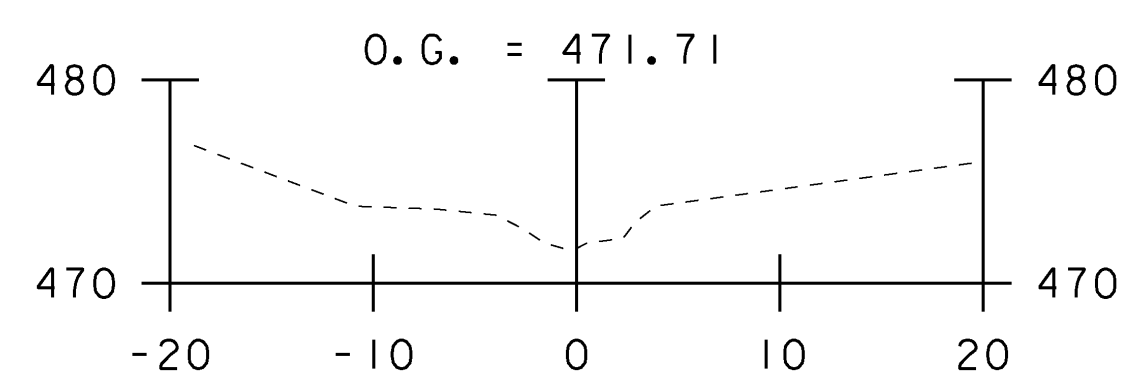
10+91



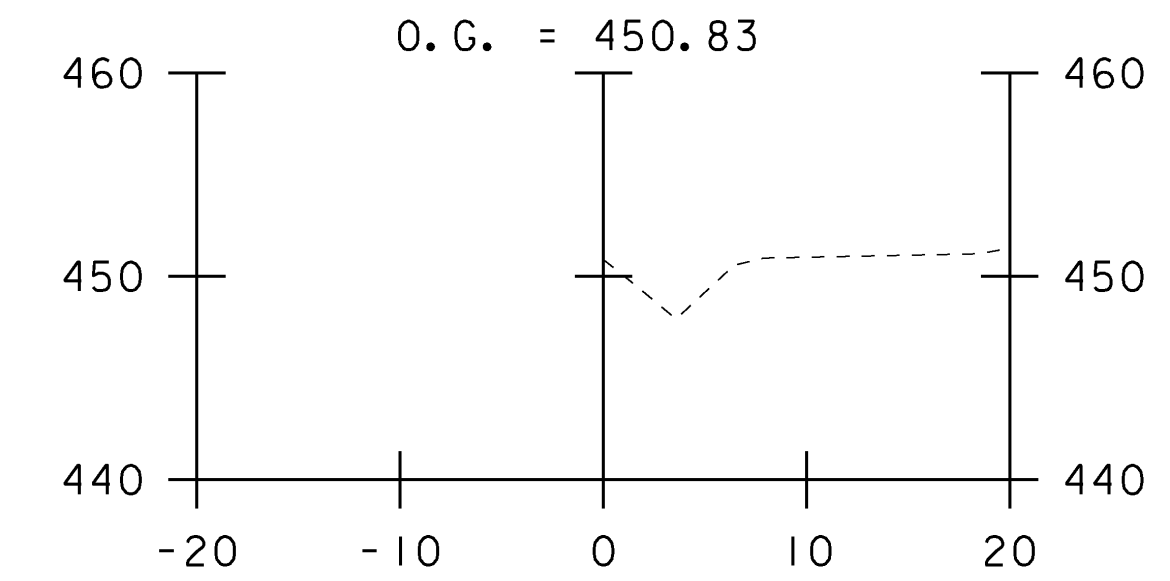
10+90



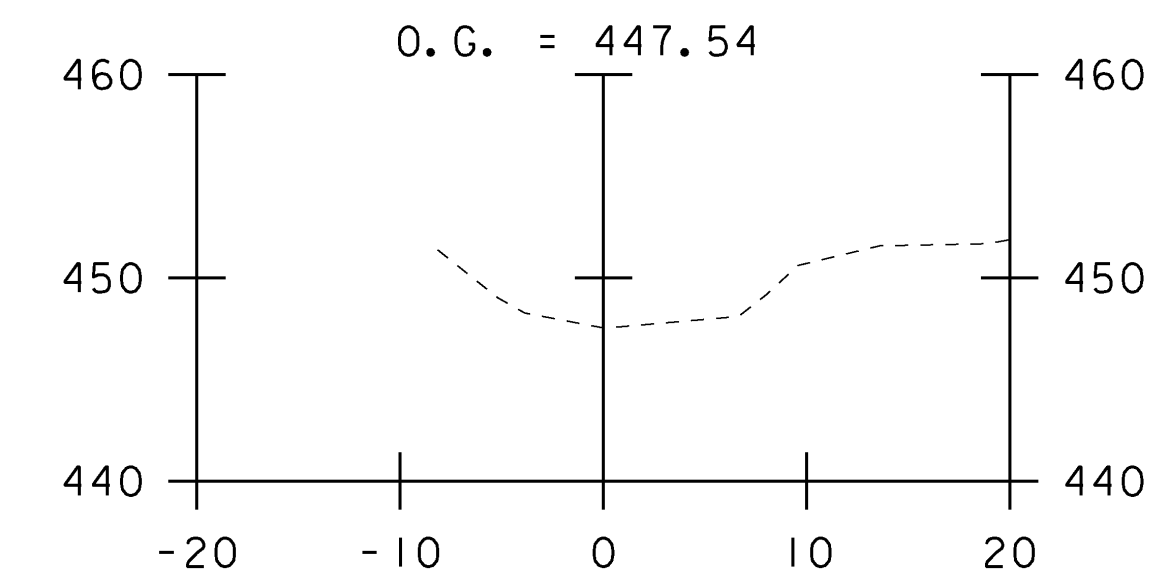
10+80



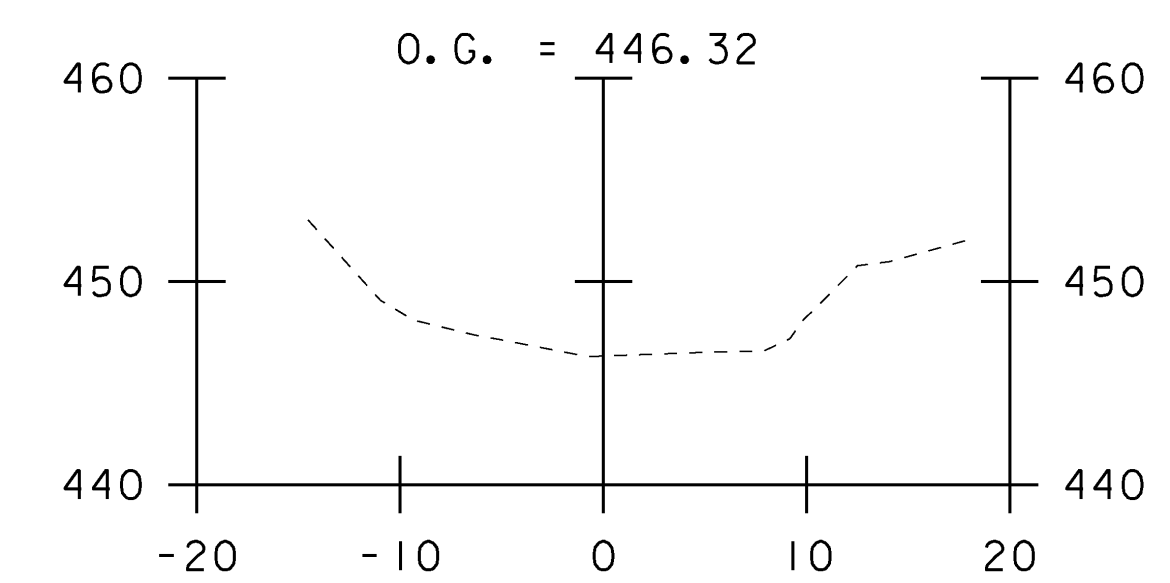
10+70



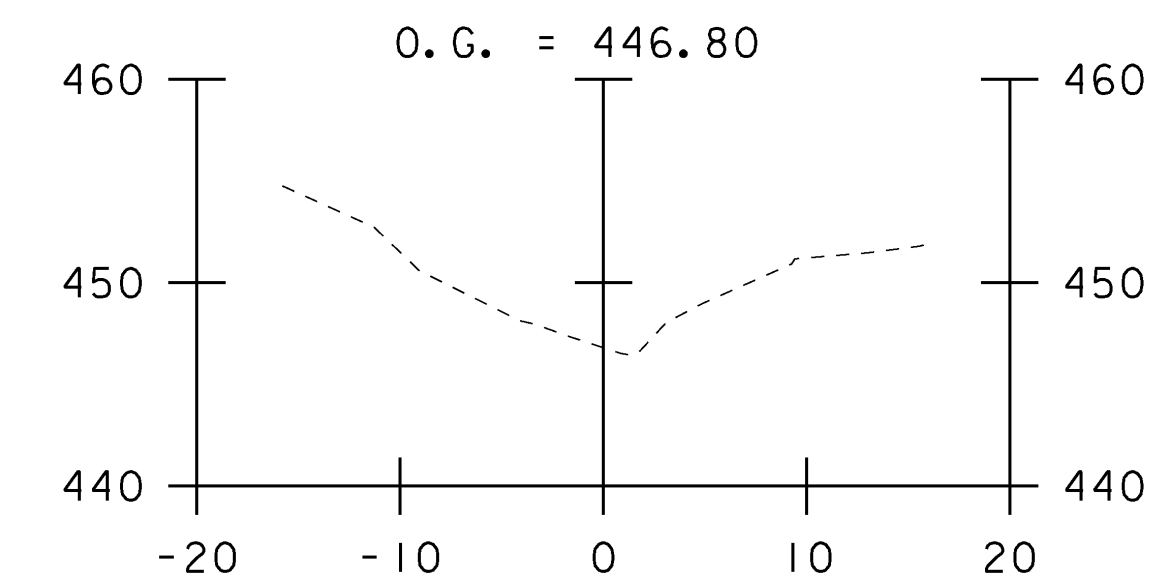
13+96



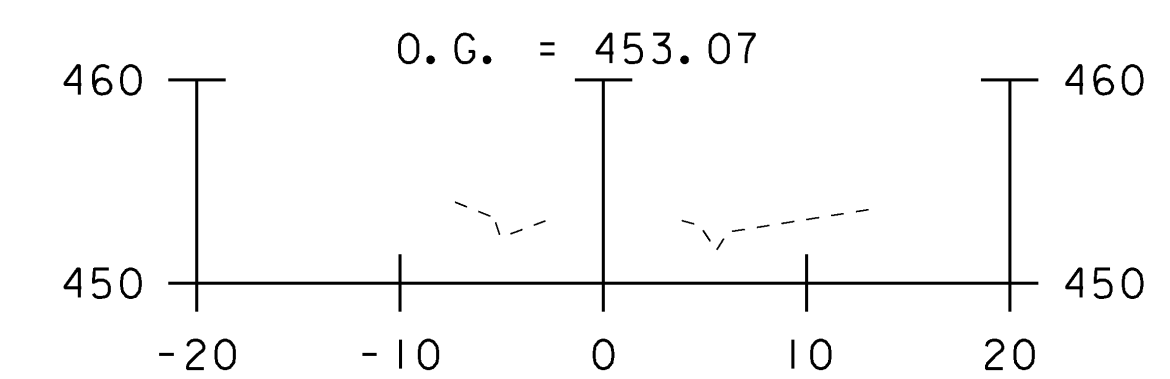
13+90



13+80



13+70



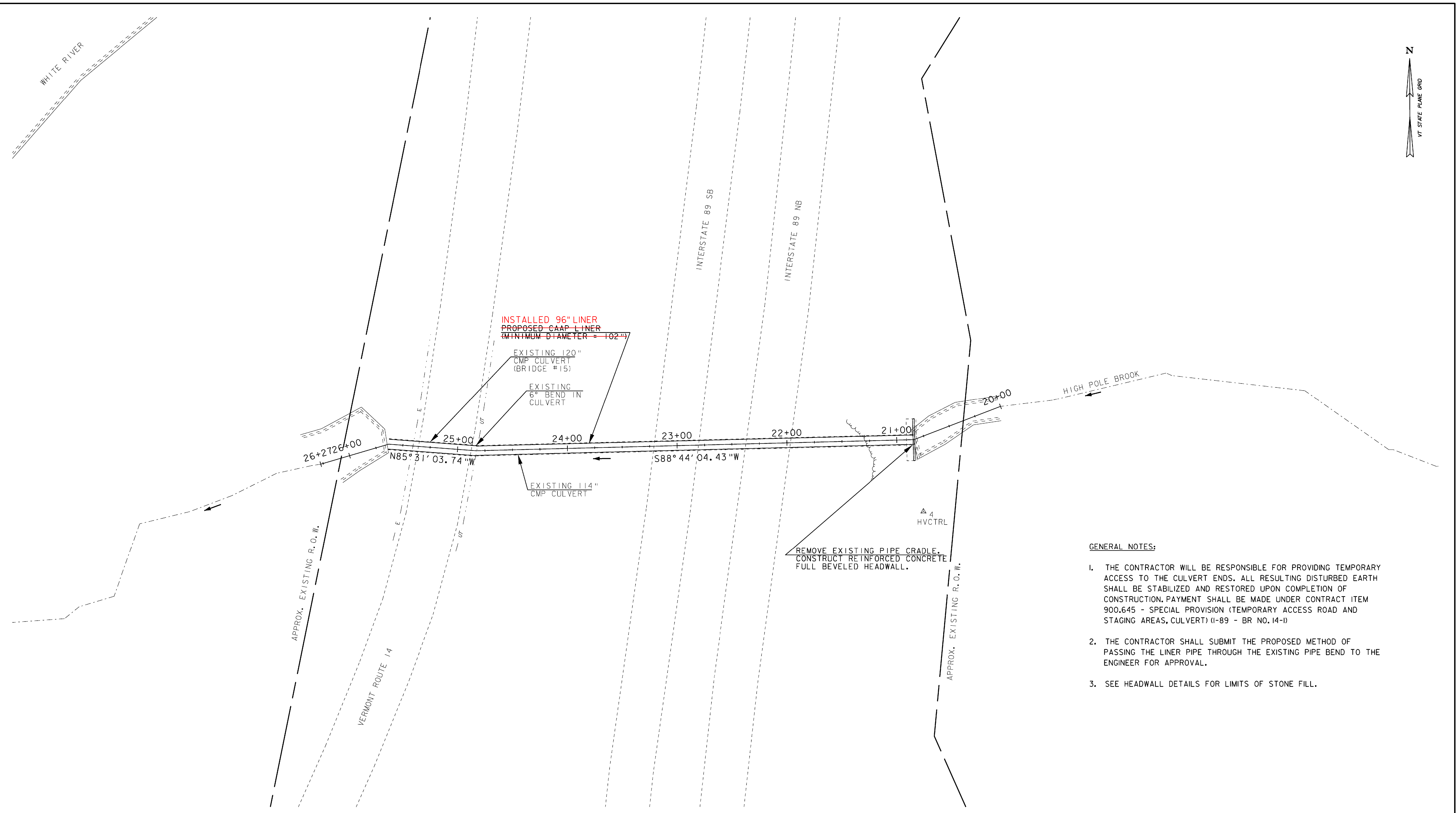
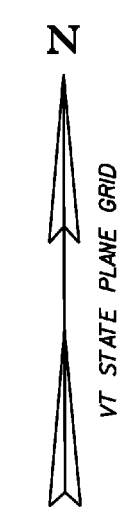
13+61



PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

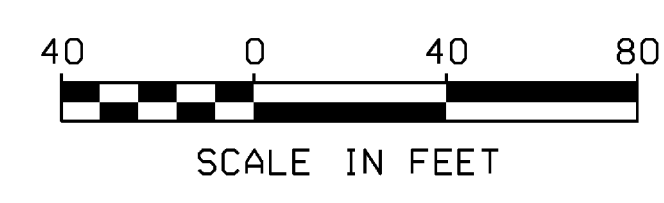
FILE NAME: z08a190xsl.dgn
PROJECT LEADER: DMB
DESIGNED BY: MHM
CROSS SECTIONS (13-1)

PLOT DATE: 13-JUL-2009
DRAWN BY: MJF
CHECKED BY: DMB
SHEET 13 OF 36

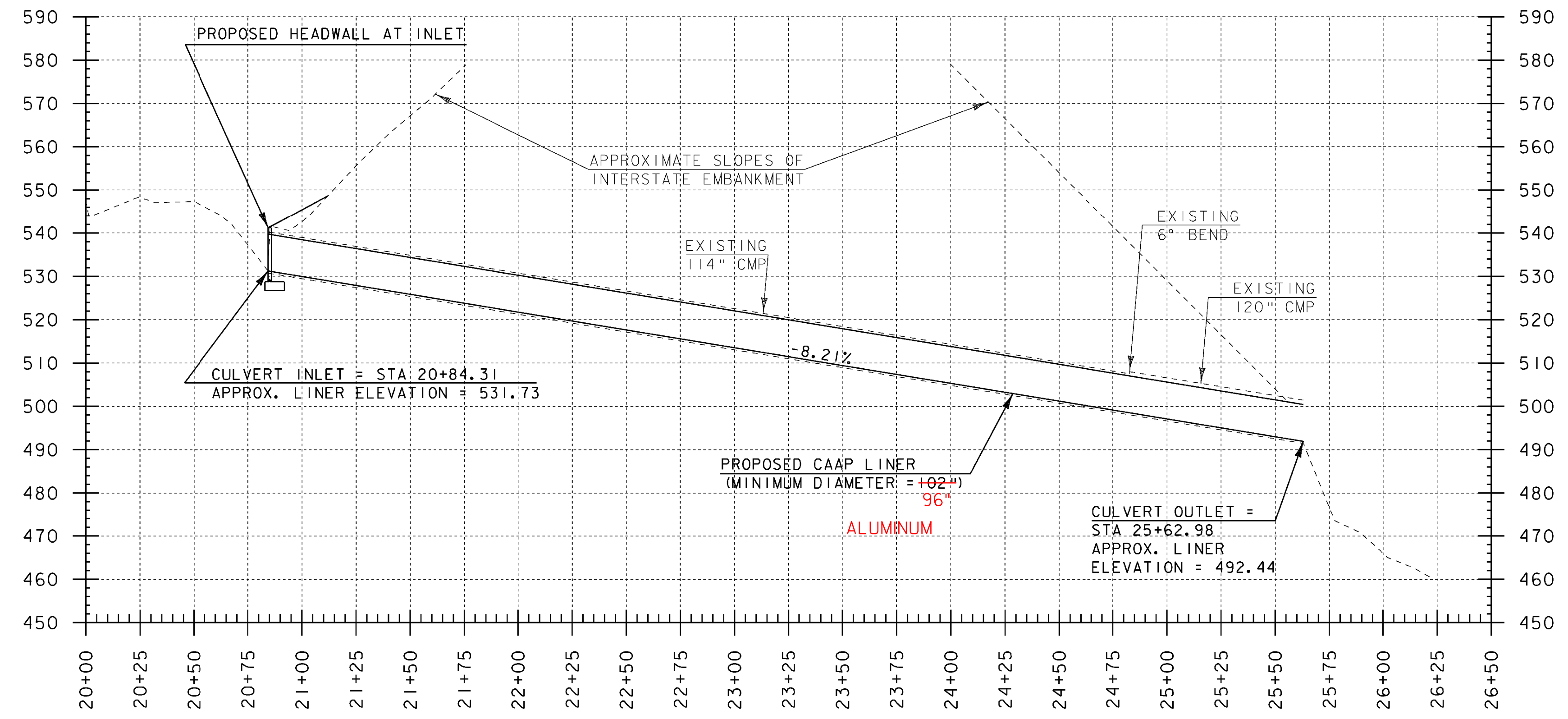


GENERAL NOTES:

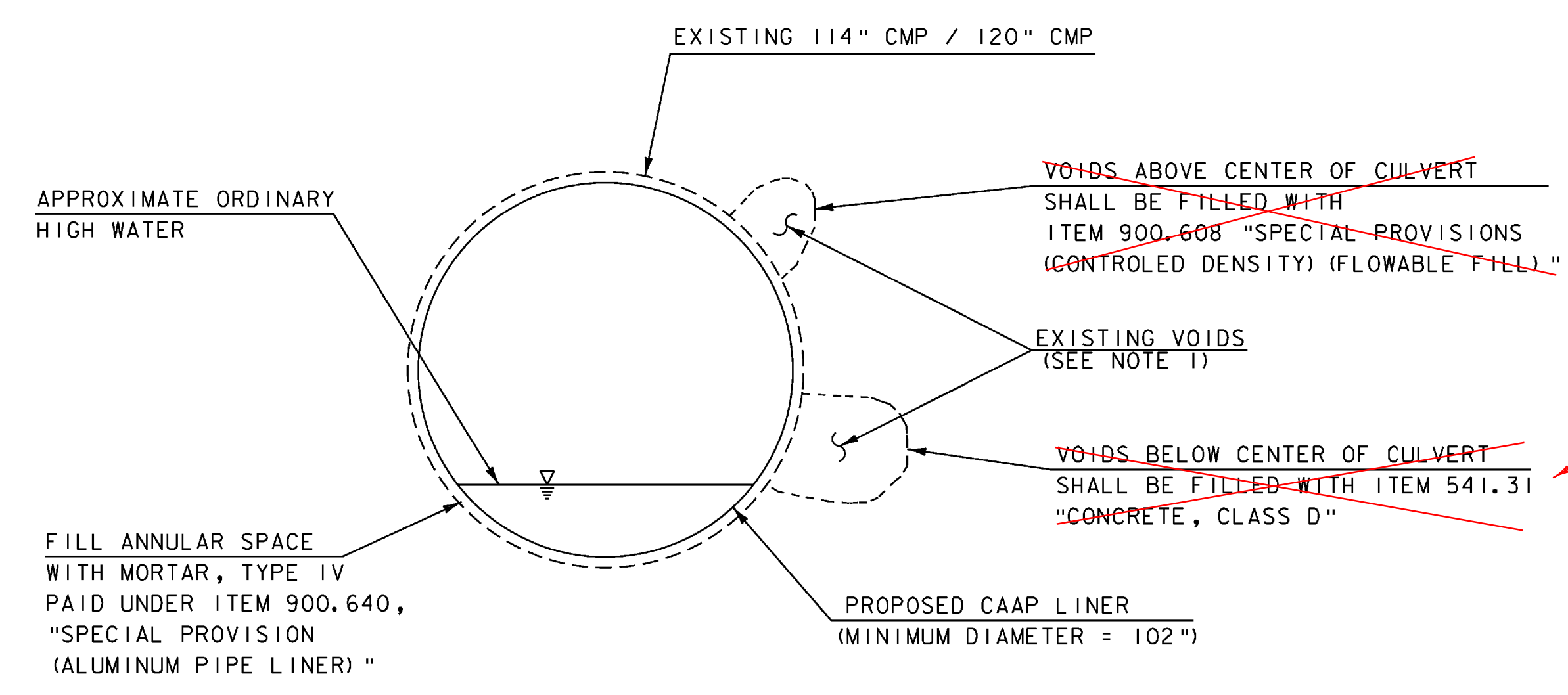
1. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING TEMPORARY ACCESS TO THE CULVERT ENDS. ALL RESULTING DISTURBED EARTH SHALL BE STABILIZED AND RESTORED UPON COMPLETION OF CONSTRUCTION. PAYMENT SHALL BE MADE UNDER CONTRACT ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT) (I-89 - BR NO. 14-I)
2. THE CONTRACTOR SHALL SUBMIT THE PROPOSED METHOD OF PASSING THE LINER PIPE THROUGH THE EXISTING PIPE BEND TO THE ENGINEER FOR APPROVAL.
3. SEE HEADWALL DETAILS FOR LIMITS OF STONE FILL.



PROJECT NAME: SHARON	
PROJECT NUMBER: IM CULV (18)	
FILE NAME: L02.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
LAYOUT SHEET (14-1)	SHEET 14 OF 36



SHARON BRIDGE NO. 14-1
CULVERT CENTERLINE PROFILE

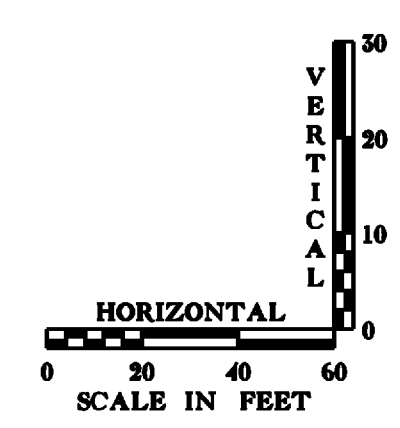


SHARON BRIDGE NO. 14-1
CULVERT LINING DETAIL
NOT TO SCALE

NOT NEEDED.
TYP. FOR ALL 3 PIPES

PROJECT NOTES

1. POTENTIAL VOID LOCATIONS SHOWN FOR EXPLANATION PURPOSES ONLY.



PROJECT NAME: SHARON		PLOT DATE: 13-JUL-2009	
PROJECT NUMBER: IM CULV (18)		DRAWN BY: MJF	
FILE NAME: PROF02.dgn	DESIGNED BY: MMH	CHECKED BY: DMB	SHEET 15 OF 36
PROJECT LEADER: DMB	PROFILE SHEET (14-1)		

EROSION CONTROL NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REHABILITATION OF AN EXISTING 114-INCH CORRUGATED METAL CULVERT ON INTERSTATE 89 IN THE TOWN OF SHARON, NEAR MILE MARKER 12.384 AND IS DESIGNATED AS STRUCTURE BR 14-1. THE EXISTING CULVERT CONVEYS HIGH POLE BROOK UNDER BOTH THE SOUTHBOUND AND NORTHBOUND LANES OF INTERSTATE 89. THE EXISTING CULVERT IS PROPOSED TO BE SLIP LINED WITH 102" CORRUGATED ALUMINUM ALLOY PIPE AS THE EXISTING CULVERT IS BEYOND ITS DESIGN LIFE AND SHOWS SIGNS OF STRUCTURAL DEFICIENCY. WORK WILL INCLUDE THE CONSTRUCTION OF A NEW HEADWALL AT THE INLET AND THE INSTALLATION OF A SLIP-LINE PIPE INSIDE THE EXISTING CULVERT. THE LENGTH OF THE EXISTING CULVERT IS APPROXIMATELY 478.33 FEET. TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW, AND CONTRACTOR'S OFF-SITE STAGING AREAS) EQUALS 0.64 ACRES. THE TOTAL DISTURBED AREA INCLUDES THE ENTIRE AREA LOCATED WITHIN THE PROJECT DEMARCATION FENCING SHOWN.

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

1.2 SITE INVENTORY

OFF SITE DRAINAGE CHARACTERISTICS

THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION WITH MODERATE SLOPING TERRAIN. THE TERRAIN IS MOSTLY FORESTED WITH SOME CLEARINGS AND CAN BE DESCRIBED AS HILLY TO MOUNTAINOUS WITH WELL DEFINED DRAINAGE WAYS. THE AREA EAST OF I-89 CONSISTS OF BOTH HARDWOOD AND SOFTWOOD TREES. DUE TO THE NATURE OF THE SURROUNDING AREA, STORMWATER RUNOFF ENTERING THE PROJECT SITE WILL BE LIMITED TO THAT WHICH IS CONTAINED IN THE HIGH POLE BROOK TRIBUTARY AREA.

1.2.2. DRAINAGE, WATERWAYS, BODIES OF WATER

HIGH POLE BROOK IS LOCATED IN THE PROJECT AREA AND PASSES THROUGH THE CULVERT PROPOSED TO BE SLIP-LINED WITH 102" CORRUGATED ALUMINUM ALLOY PIPE. THE BROOK FLOWS FROM EAST TO WEST BENEATH THE NORTHBOUND AND SOUTHBOUND EMBANKMENTS OF INTERSTATE 89. THERE ARE NO OTHER WATERWAYS OR BODIES OF WATER WITHIN THE PROJECT AREA. STORMWATER RUNOFF ENTERING THE PROJECT AREA WILL BE PRIMARILY LIMITED TO THAT WHICH IS CONVEYED VIA GRASSED ROADWAY DITCHES ALONG INTERSTATE 89 AND STORMWATER CONTAINED WITHIN HIGH POLE BROOK.

1.2.3. TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

THE TOPOGRAPHY OF THE PROJECT SITE IS STEEP HILLY TERRAIN. THE BROOK TO THE WEST SIDE OF THE INTERSTATE EMBANKMENTS RUNS BETWEEN TWO ABUTTING PROPERTIES. THE OUTLET HEADWALL IS SURROUNDED BY LARGE STONES ON A STEEP EMBANKMENT. THE BROOK TO THE EAST SIDE OF THE INTERSTATE EMBANKMENT FLOWS THROUGH HILLY ROCKY TERRAIN. THE EMBANKMENT SLOPES FROM THE INTERSTATE ARE AT A 1:2 (VERTICAL : HORIZONTAL) SLOPE.

1.2.4. VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF A WOODED AREA NEAR THE CULVERT ENDS AND GRASSLAND ON THE ROADWAY EMBANKMENTS. THE IMPACT TO THE VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY IMPACTED BY THE SLIP-LING OF THE EXISTING CULVERT OPERATIONS AND THE CONSTRUCTION OF THE PROPOSED HEADWALL AT THE INLET OF THE EXISTING CULVERT. DISTURBED VEGETATION WILL BE REESTABLISHED USING STANDARD SEED AND MULCH PRACTICES OR STONE.

1.2.5. SOILS

THE SOIL FOUND EAST OF INTERSTATE 89 CONSISTS OF AGAWAM FINE SANDY LOAM, 3 TO 8% SLOPES AND A COMMON FILL MATERIAL. AGAWAM LOAM IS WELL DRAINED AND HAS AN ERODIBILITY FACTOR (K-VALUE) OF 0.28. THE ROADWAY EMBANKMENTS ARE MOST LIKELY A COMMON FILL MATERIAL THAT WAS PLACED DURING THE CONSTRUCTION OF THE INTERSTATE.

GENERALLY, K-VALUES INDICATE THE FOLLOWING:
0.23 AND LOWER - LOW ERODIBILITY
0.24 TO 0.36 - MODERATE ERODIBILITY
0.37 AND HIGHER - HIGH ERODIBILITY

1.2.6. SENSITIVE RESOURCE AREAS

NO THREATENED OR ENDANGERED SPECIES HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS AND THERE WILL BE NO ADVERSE EFFECT TO AGRICULTURE OR ARCHAEOLOGICAL FEATURES. HIGH POLE BROOK RUNS THROUGH THE PROJECT SITE AND THROUGH THE CULVERT PROPOSED TO BE SLIP LINED.

1.3. RISK EVALUATION

SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT THEN THE SELECTED CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL PERMITTING WITH VANR VIA FILING FOR THE APPROPRIATE NOTICE OF INTENT UNDER THE CONSTRUCTION GENERAL PERMIT PROCESS

1.4. EROSION PREVENTION AND SEDIMENT CONTROL

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

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 ONSITE COORDINATOR. SEE SECTION 105.23 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006.

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

PREVENTING SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. 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.

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

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
PROJECT DEMARCATION FENCE, DENOTED -PDF- IN THE PLANS, IS USED TO DELINEATE THE LIMITS THE CONTRACTOR CAN ACCESS WITH CONSTRUCTION EQUIPMENT. THIS MEASURE LIMITS AREA THAT CAN BE DISTURBED AND EXPOSED TO EROSION. DISTURBANCE OUTSIDE THE LIMITS OF THE PROJECT DEMARCATION FENCE WILL REQUIRE ADDITIONAL PERMIT COVERAGE.

CONTROL ONLY SEDIMENT LADEN STORMWATER RUNOFF GENERATED BY THE PROJECT SITE. COLLECT AND ROUTE CLEAN STORMWATER AROUND THE PROJECT SITE WHENEVER POSSIBLE USING DIVERSION BERMS, CHANNELS, CULVERTS, OR TEMPORARY PIPES.

1.4.2. LIMIT DISTURBANCE AREA
CONTRACTOR SHALL LIMIT THE DISTURBANCE TO WITHIN THE IMPACT LINES SHOWN ON THE PLANS. CONTRACTOR SHALL NOT DISTURB ANY AREA OUTSIDE OF THE EXISTING RIGHT OF WAY.

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

1.4.3. STABILIZE CONSTRUCTION EXIT
AT LOCATIONS WHERE CONSTRUCTION VEHICLES WILL BE LEAVING THE CONSTRUCTION SITE/STAGING AREAS, A STABILIZED CONSTRUCTION EXIT SHALL BE CONSTRUCTED TO LIMIT THE AMOUNT OF SEDIMENT THAT IS TRANSPORTED OFF OF THE SITE BY CONSTRUCTION VEHICLES. STONE WILL BE USED TO REMOVE SEDIMENT FROM THE TIRES OF CONSTRUCTION VEHICLES. 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 SILT FENCE
SILT FENCE WILL BE INSTALLED AT THE TOE OF FILL SLOPES TO PREVENT SEDIMENT TRANSPORT TO DOWN GRADIENT AREAS. EACH LINE OF SILT FENCE WILL BE PLACED ALONG THE CONTOUR WITH THE LOWER EDGE BURIED 6" TO PREVENT UNDERFLOW AND ENDS TURNED SLIGHTLY UP GRADE TO CREATE A PONDING EFFECT. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UPSLOPE EARTHWORK. SILT FENCE SHALL BE PLACED AS SHOWN ON THE EROSION CONTROL PLAN AND AS DIRECTED BY THE ENGINEER.

1.4.5. DIVERT UPLAND FLOW
THE EXISTING STREAM WILL BE DIVERTED AS DESCRIBED IN THE DEWATERING SECTION BELOW. NO OTHER UPLAND FLOW DIVERSION WILL BE REQUIRED.

1.4.6. SLOW DOWN CHANNELIZED RUNOFF
CHECK DAMS TO BE USED AS NECESSARY.

1.4.7. CONSTRUCT PERMANENT CONTROLS
ALL DISTURBED SOIL SHALL BE STABILIZED WITH SEED AND MULCH.

1.4.8. STABILIZE EXPOSED SOILS
SEEDING AND MULCHING SHALL BE UTILIZED TO STABILIZE SOIL. SOIL SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE AND/OR DURING INTERMITTENT PHASES OF CONSTRUCTION. MULCHING WILL BE UTILIZED ON A REGULAR BASIS. ANY SOIL TO BE EXPOSED FOR SEVERAL DAYS PRIOR TO FINAL GRADING SHALL BE MULCHED. SOIL SHALL BE STABILIZED WITHIN 48 HOURS PRIOR TO FORECASTED RAIN. THEREFORE, STABILIZE ALL DISTURBED AREAS PROMPTLY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY VEGETATION SHALL BE ESTABLISHED IF THE AREA IS TO BE WITHOUT CONSTRUCTION ACTIVITY FOR A PERIOD OF 14 DAYS. PERIMETER CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. INSTALL OTHER TEMPORARY CONTROLS IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS.

1.4.9. WINTER STABILIZATION
THE CONSTRUCTION SEASON SHALL BE FROM MAY 1 TO OCTOBER 15. 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
SEEDING AND MULCHING SHALL BE UTILIZED TO STABILIZE SOIL. SOIL SHALL 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. DEWATERING ACTIVITIES
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 A SMALLER PIPE INSERTED INTO THE LINER.

1.4.12. SITE INSPECTION
TEMPORARY EROSION CONTROL MEASURES SHALL BE REGULARLY INSPECTED AND MAINTAINED FOR SEDIMENT BUILDUP. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT REACHES ONE-HALF THE HEIGHT OF THE CONTROL MEASURE. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE SUCH THAT IT WILL NOT BE SUBJECT TO EROSION.

PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

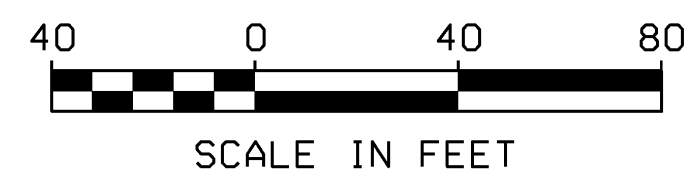
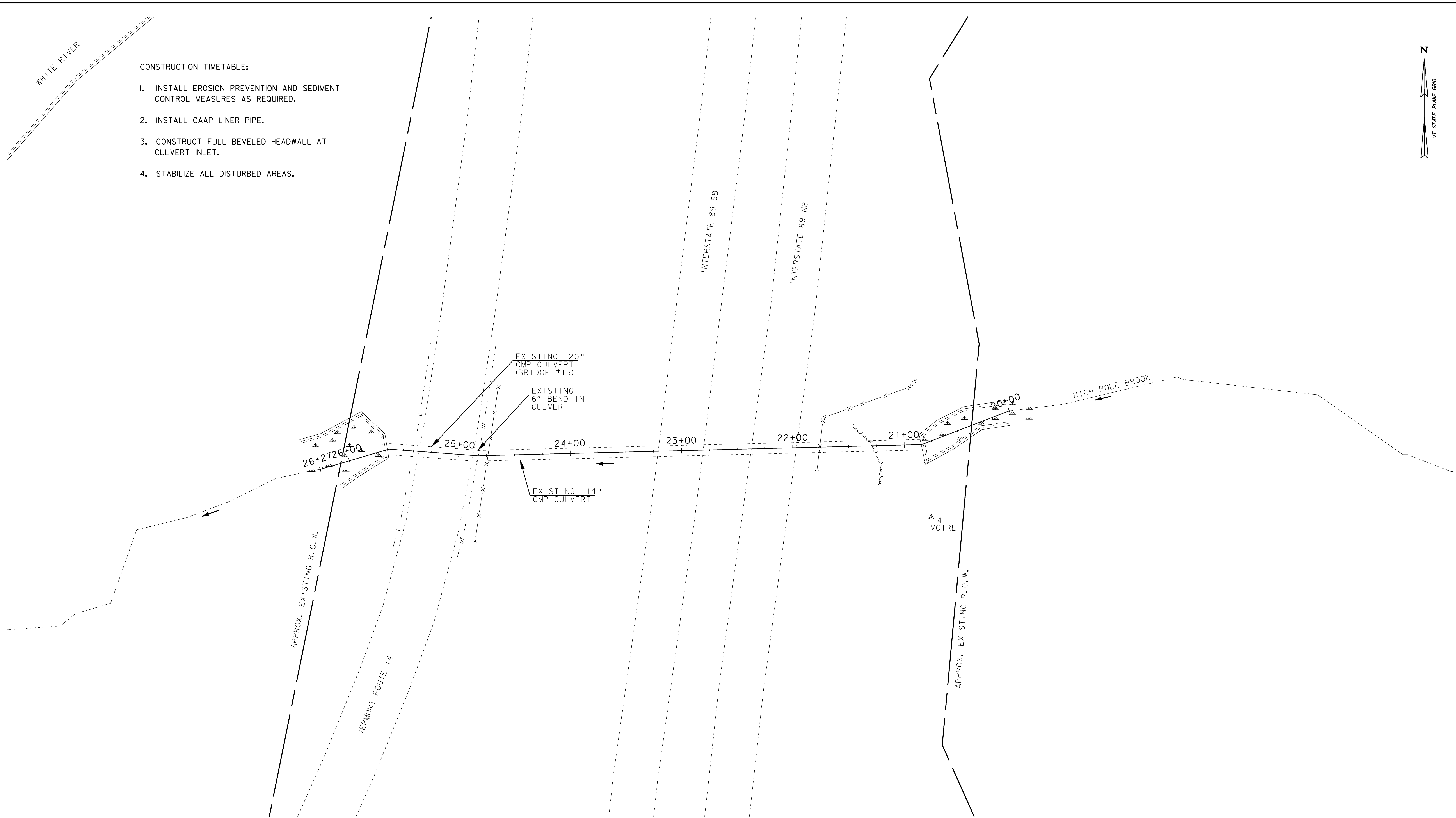
FILE NAME: ERO_NARR02.DGN PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB DRAWN BY: MJF
DESIGNED BY: MHM CHECKED BY: DMB
EPSC NARRATIVE SHEET (14-1) SHEET 16 OF 36



WHITE RIVER

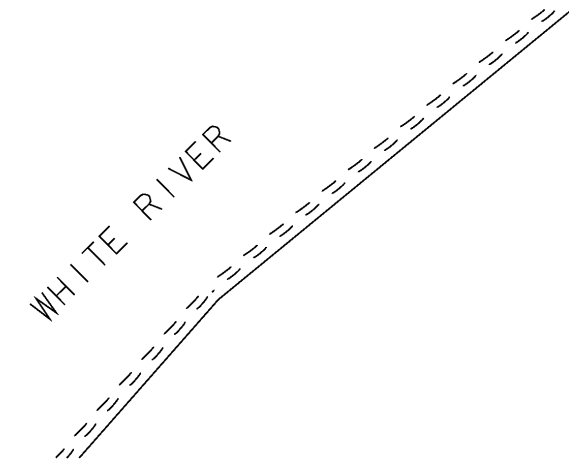
CONSTRUCTION TIMETABLE:

1. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AS REQUIRED.
2. INSTALL CAAP LINER PIPE.
3. CONSTRUCT FULL BEVELED HEADWALL AT CULVERT INLET.
4. STABILIZE ALL DISTURBED AREAS.



PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)

FILE NAME: EC02.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
EXISTING CONDITIONS SITE PLAN (14-1) SHEET 17 OF 36	

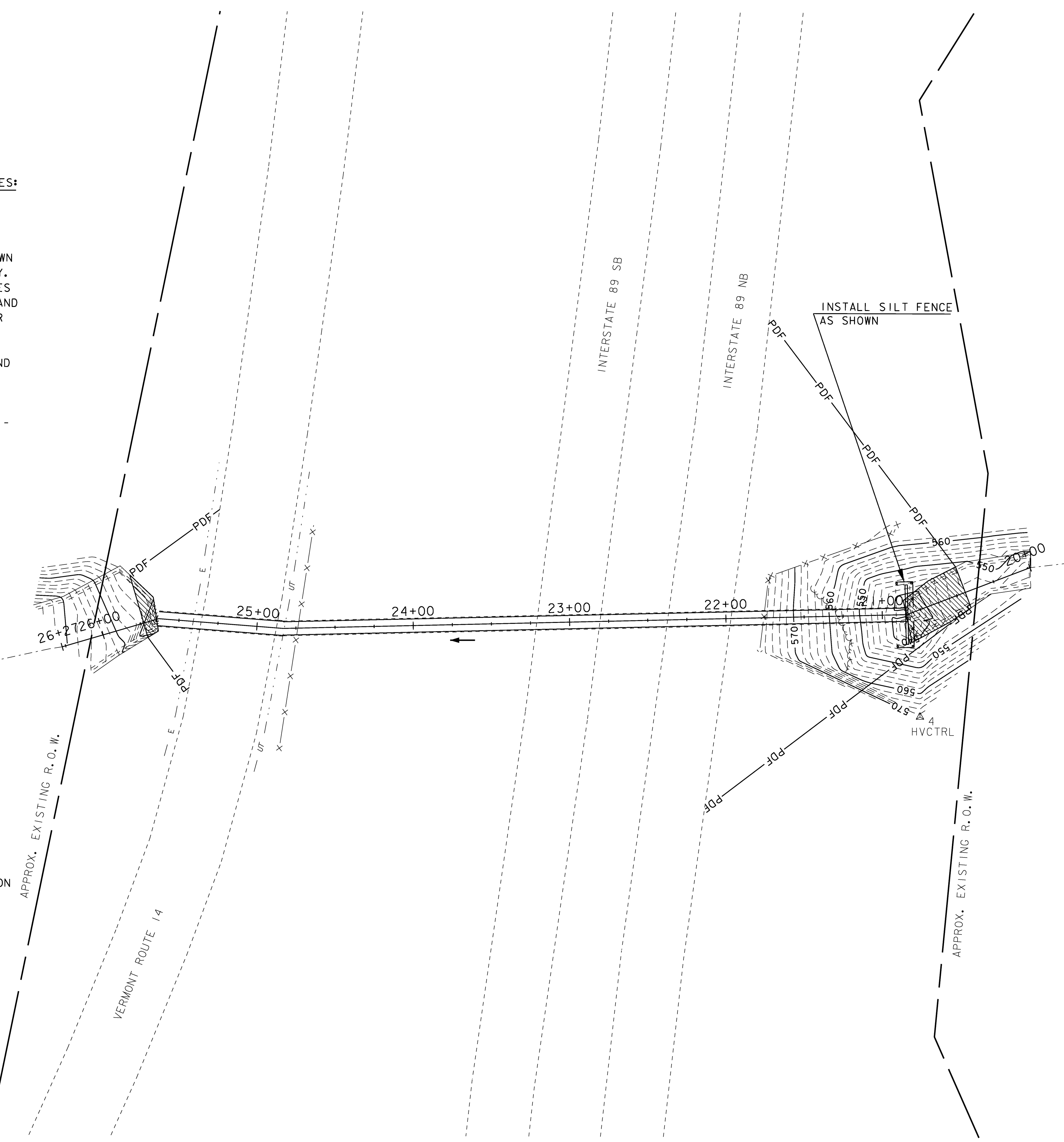
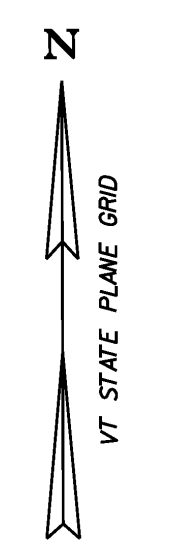


GENERAL EROSION PREVENTION & SEDIMENT CONTROL NOTES:

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 - EROSION PREVENTION AND SEDIMENT CONTROL PLAN.
3. MONITORING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE PER ITEM 652.20 - MONITORING EROSION PREVENTION AND SEDIMENT CONTROL PLAN, AND ITEM 652.30 - MAINTENANCE OF EROSION PREVENTION AND SEDIMENT CONTROL 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. CONSTRUCTION EXITS HAVE NOT BEEN SHOWN. CONSTRUCTION EXIT TREATMENT SHALL BE PLACED AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES WILL LEAVE THE CONSTRUCTION DISTURBED AREA AND ENTER A PUBLIC ROADWAY.
7. SEE SEEDING FORMULA AND SEEDING NOTES FOR TURF REESTABLISHMENT REQUIREMENTS.
8. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE PROPOSED HEADWALL. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSION WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO A SMALLER PIPE INSERTED INTO THE PROPOSED LINER.
9. CLEARING AND RESTORATION OF TURF TO REESTABLISH DISTURBED SOIL CAUSED BY THE CONTRACTOR'S ACCESS ROAD AND STAGING AREA WILL BE PAID UNDER ITEM 900.645, "SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)".
10. CLEARING AND RESTORATION OF TURF TO REESTABLISH DISTURBED SOIL WITHIN THE PAYMENT LIMITS OF THE HEADWALL CONSTRUCTION WILL BE PAID UNDER TURF ESTABLISHMENT CONTRACT ITEMS. RESTORATION OF TURF OUTSIDE LIMITS OF HEADWALL SHALL BE INCLUDED IN ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)

LEGEND

- PDF — PDF — PROJECT DEMARCATION FENCE
- WETLANDS ASSUMED TO BE IMPACTED BY PROPOSED WORK
- SILT FENCE

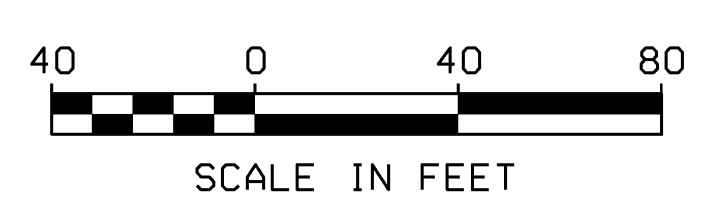


SEEDING FORMULA

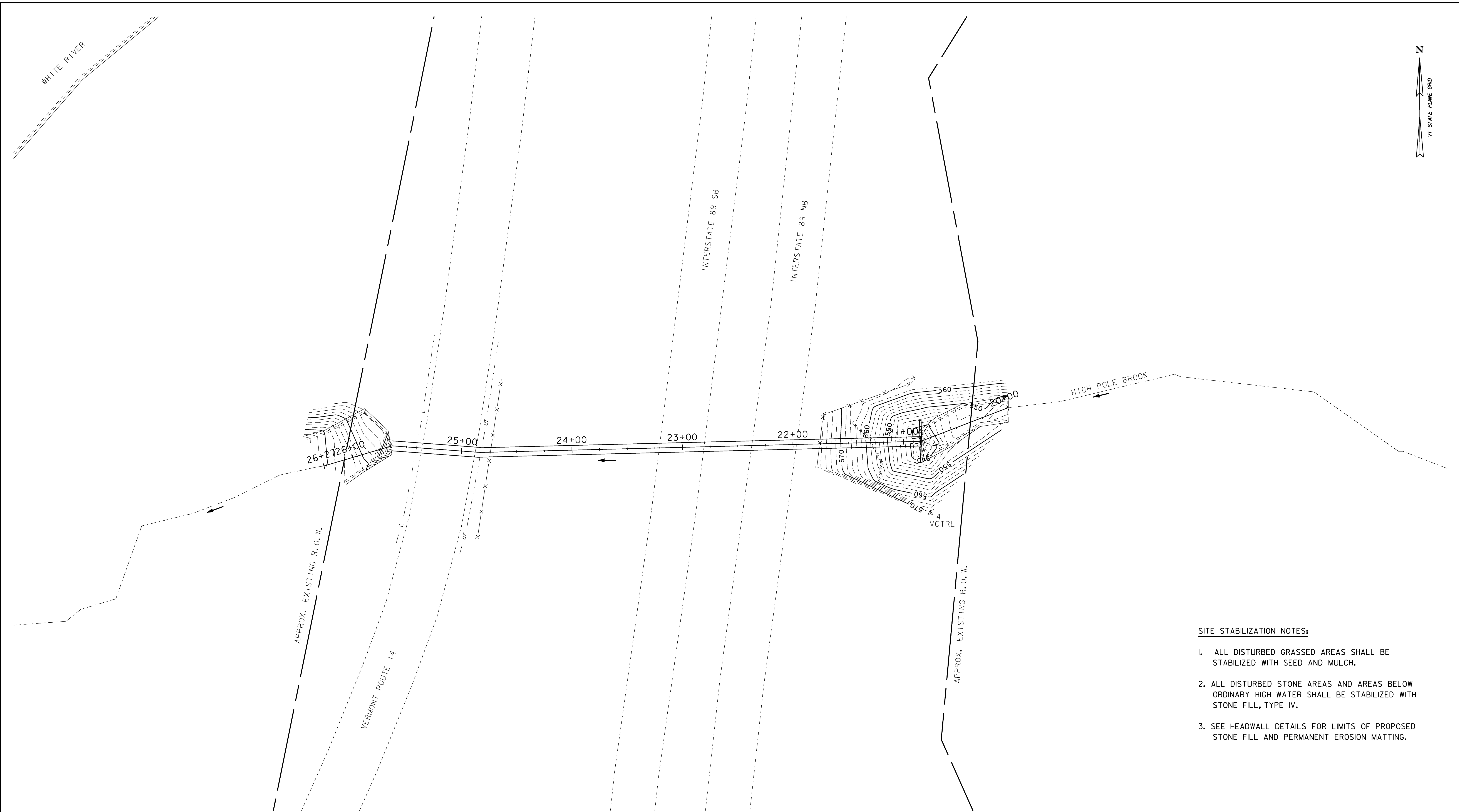
RURAL AREAS					
% WT	lb/ac	NAME	PUR %	GERM %	
5.0	4	RED TOP	95	90	
37.5	23	CREeping RED FESCUE	98	85	
15.0	9	BIRDSFOOT TREFOL	98	85	
37.5	23	TALL FESCUE	95	90	
5.0	4	ANNUAL RYE GRASS	95	85	
100.0	63				

SEEDING NOTES

1. SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
2. SEED: TO BE APPLIED PER SEEDING FORMULAS, OR AS DIRECTED BY THE ENGINEER.
3. FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 lb/ac (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).
4. AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2.0 tons/ac, OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2.0 tons/ac, OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.



PROJECT NAME: SHARON	FILE NAME: ero02.dgn	PLOT DATE: 13-JUL-2009
PROJECT NUMBER: IM CULV (18)	PROJECT LEADER: DMB	DRAWN BY: MJF
	DESIGNED BY: MHM	CHECKED BY: DMB
	EPSC PLAN (14-1)	SHEET 18 OF 36



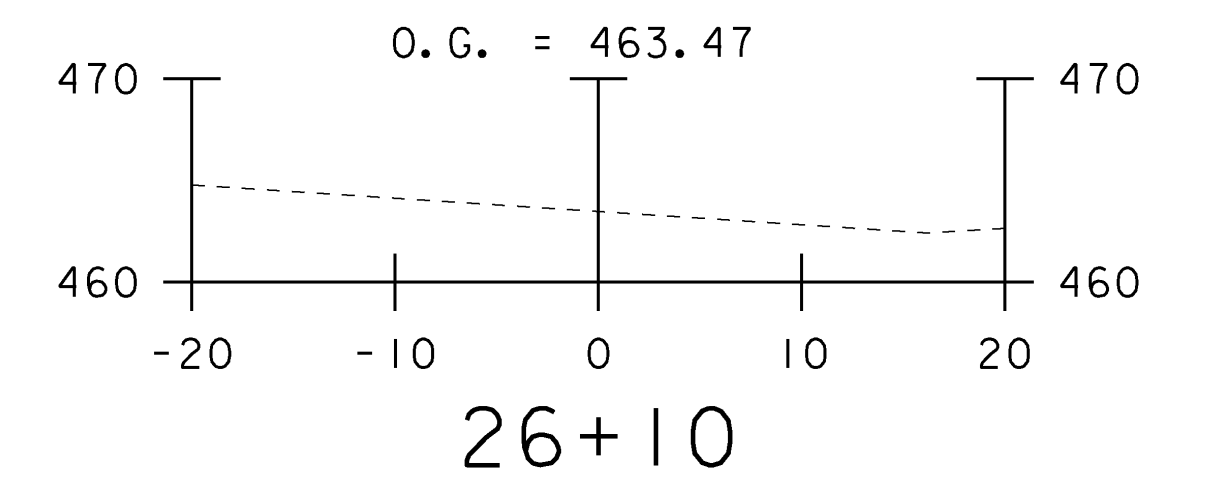
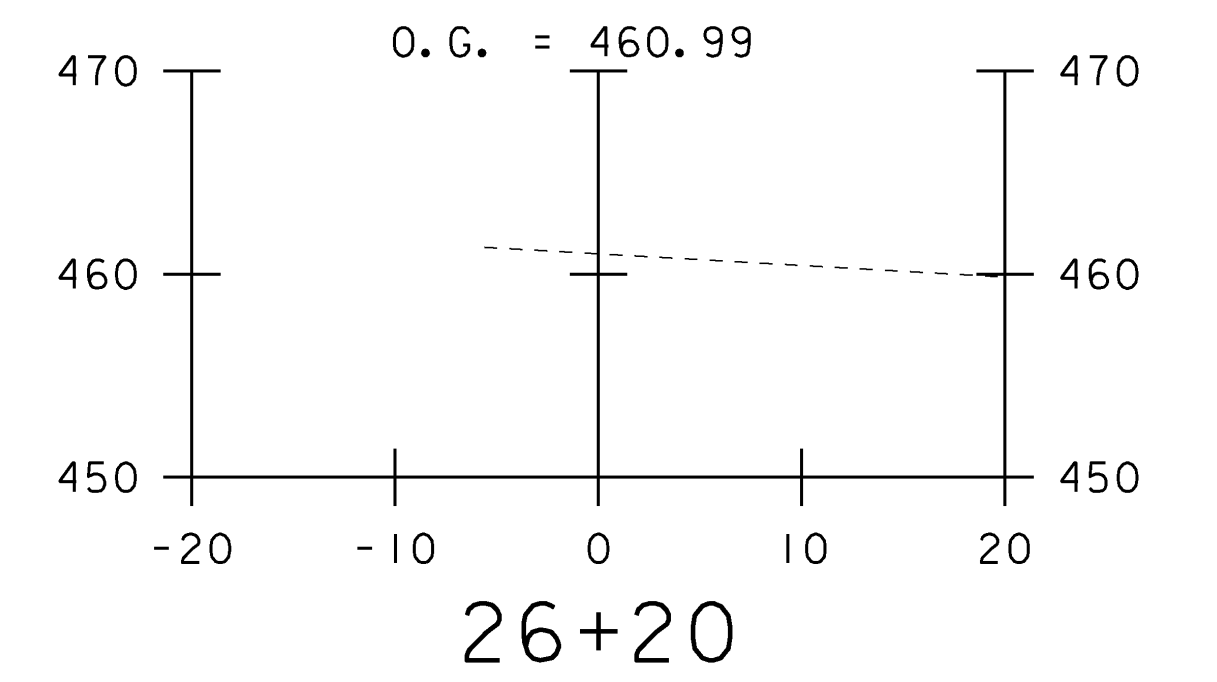
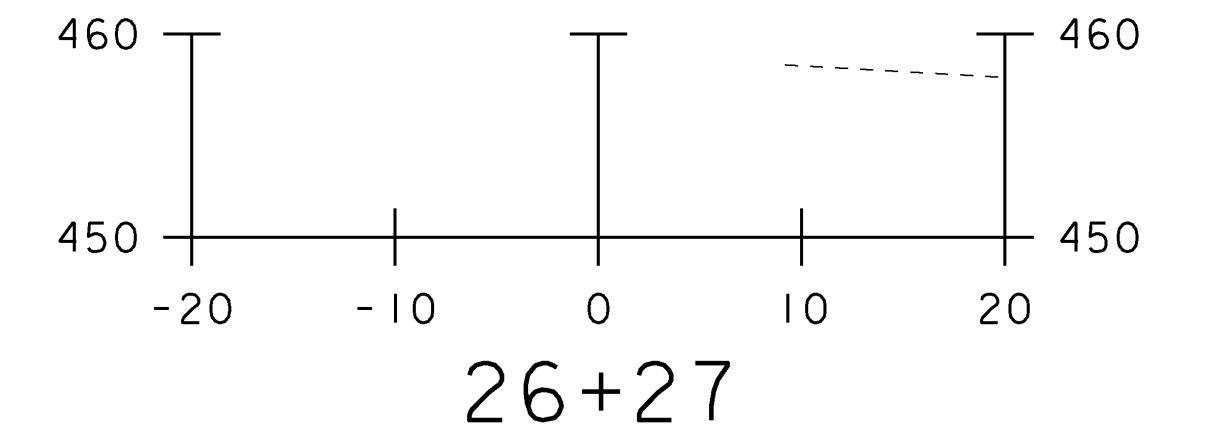
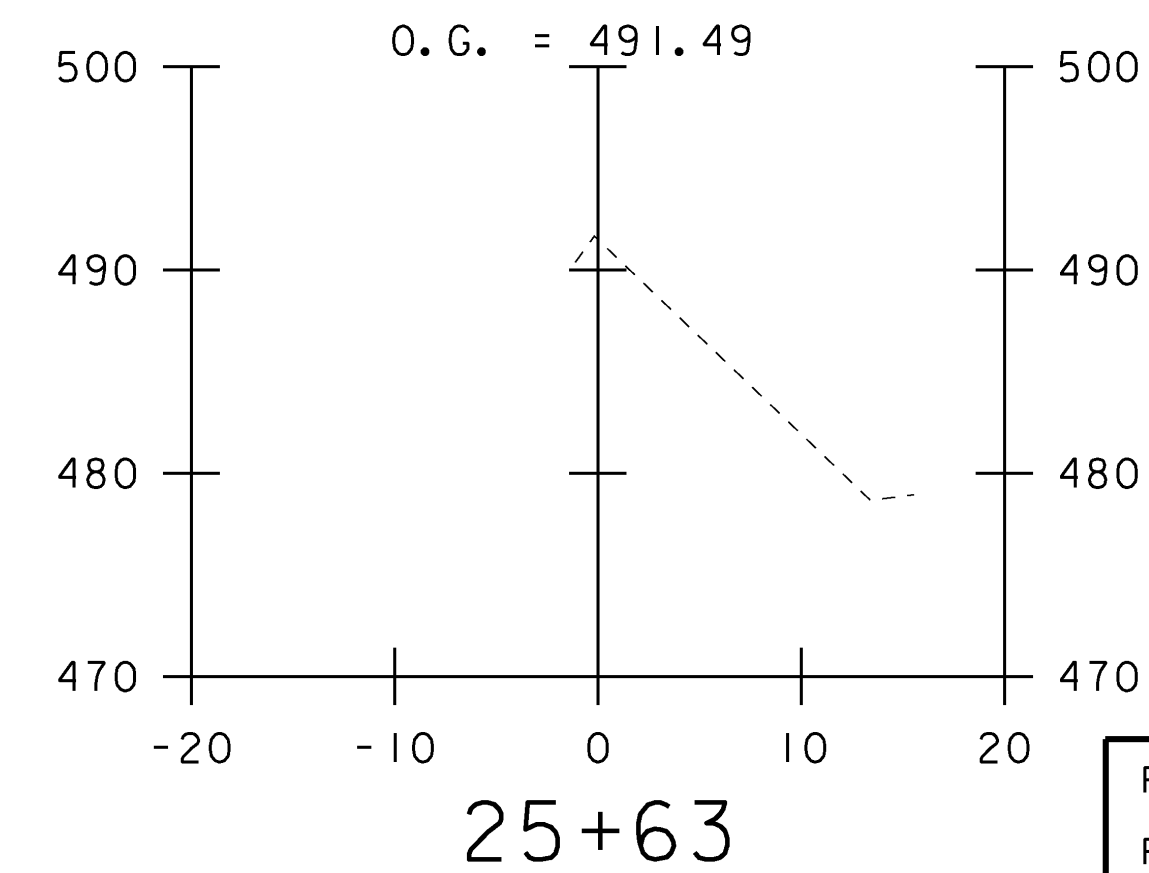
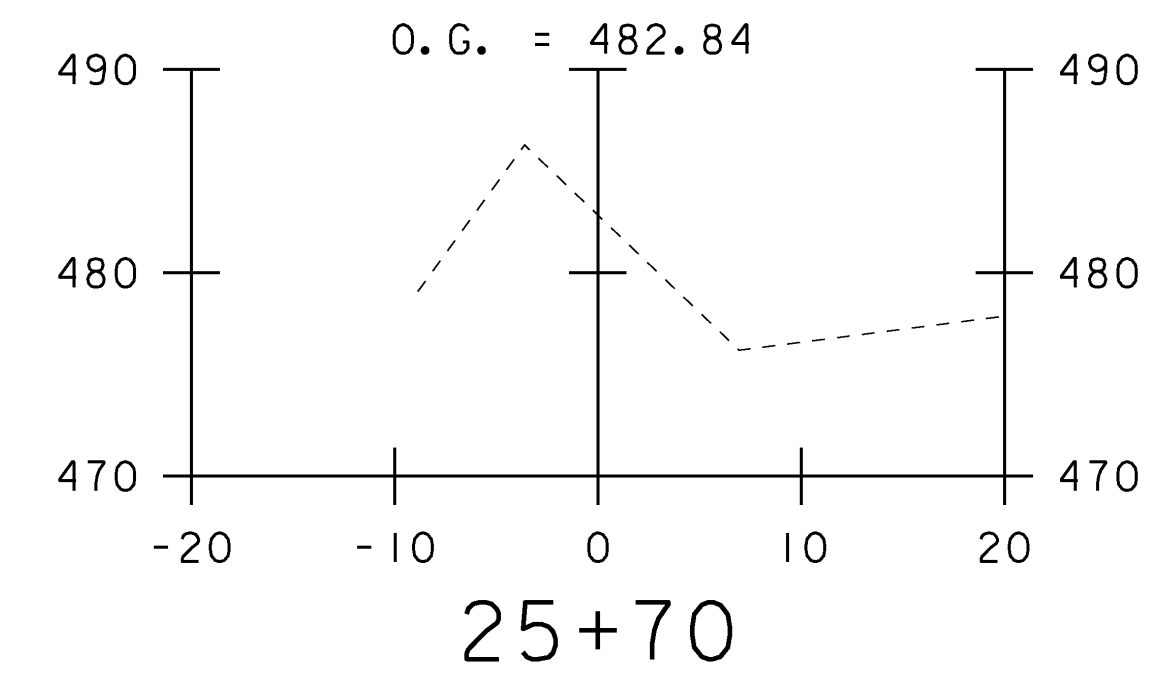
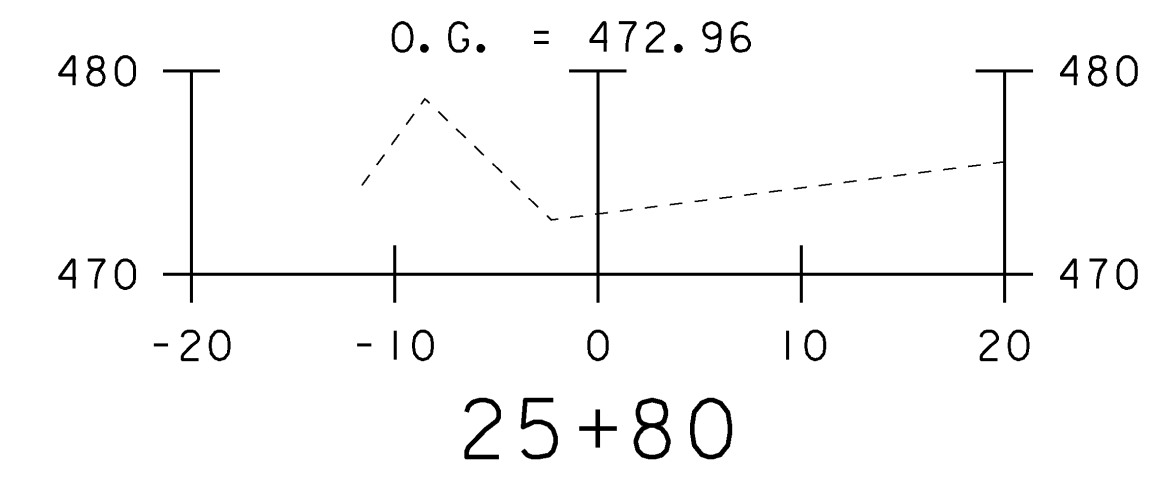
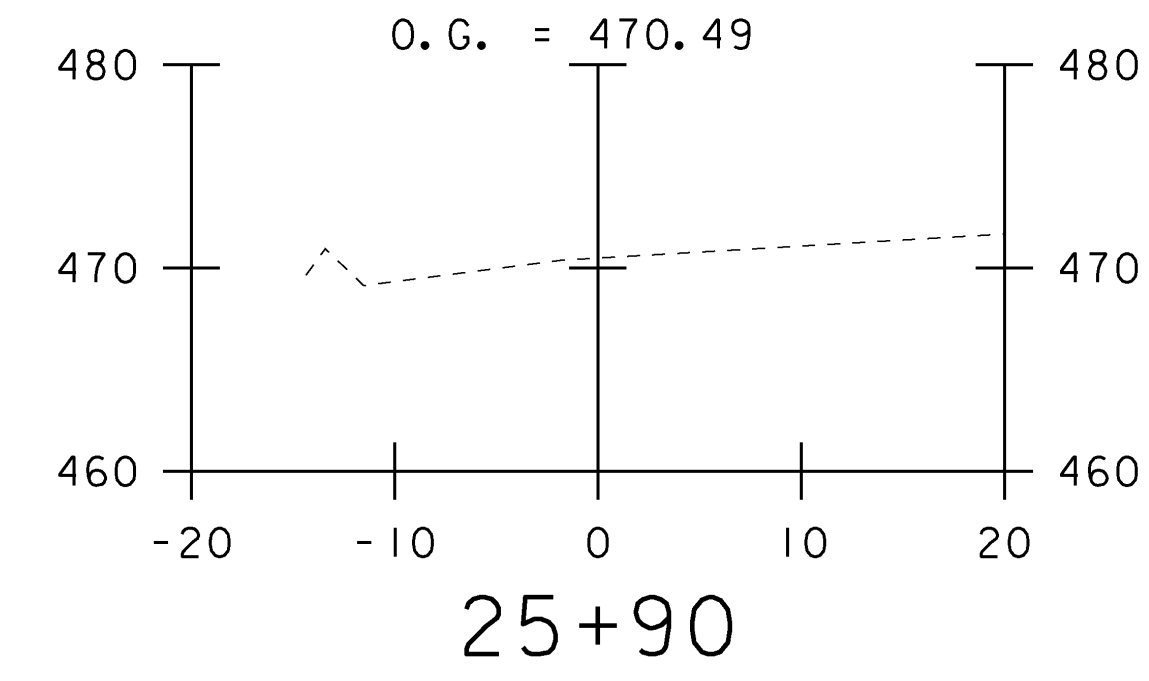
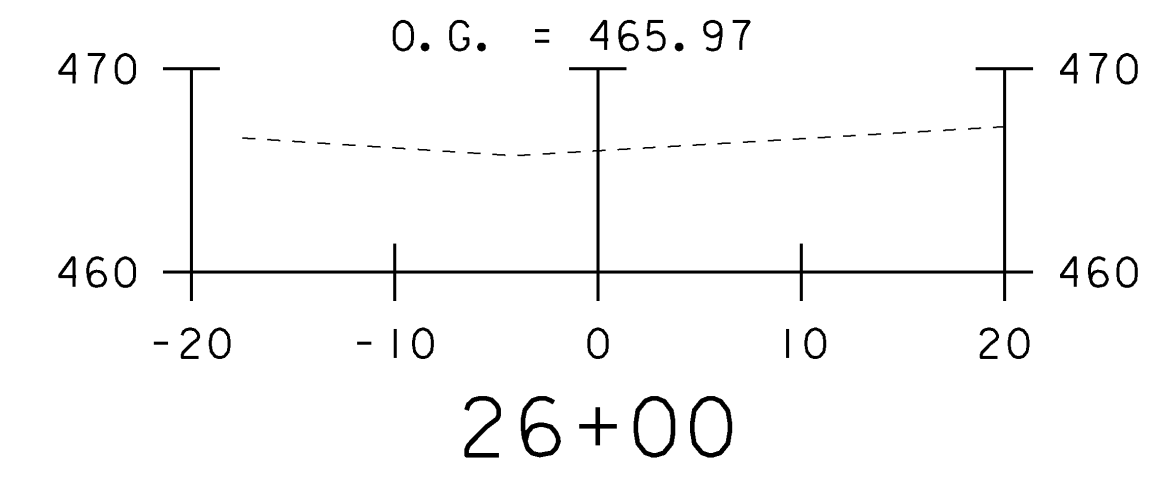
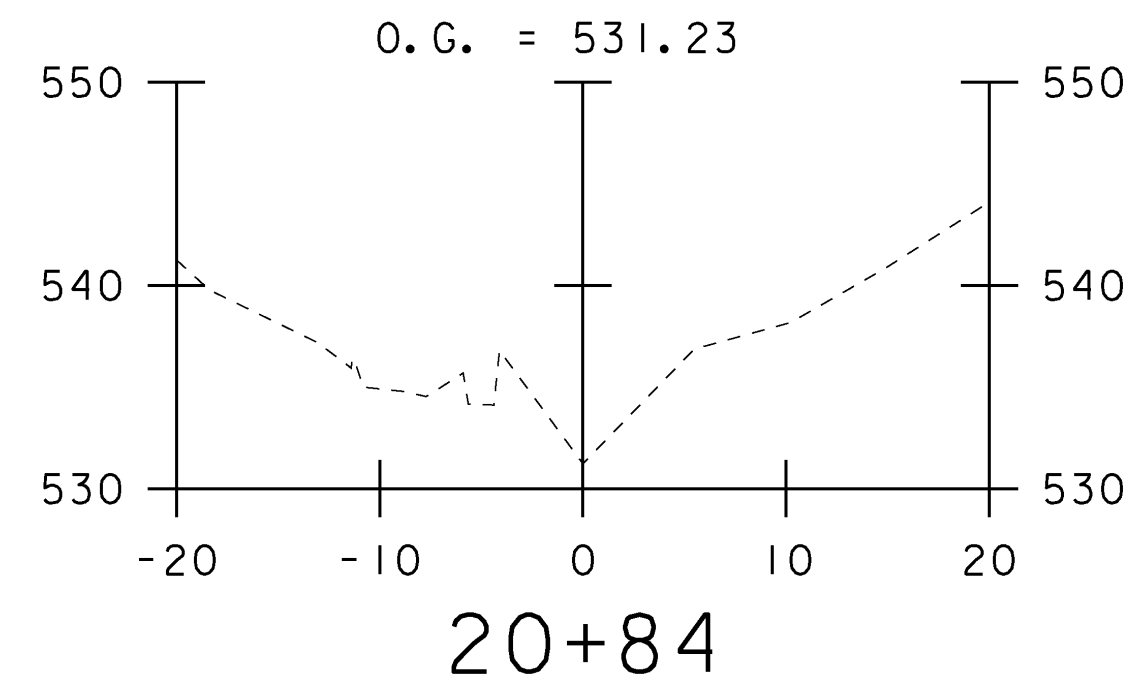
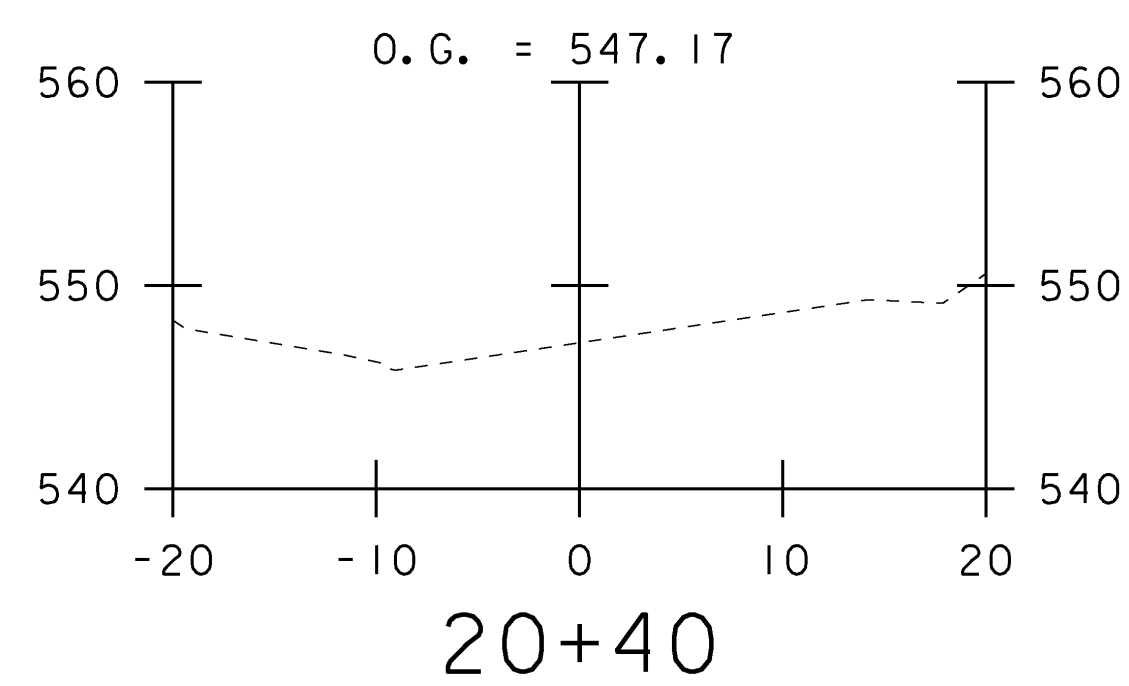
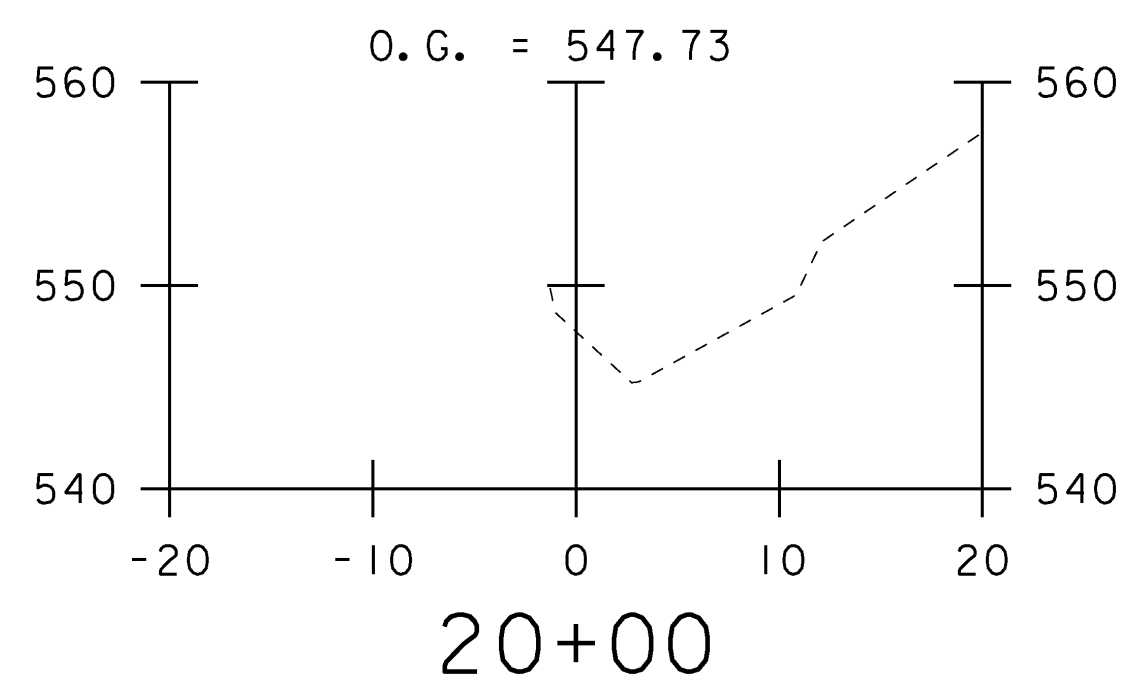
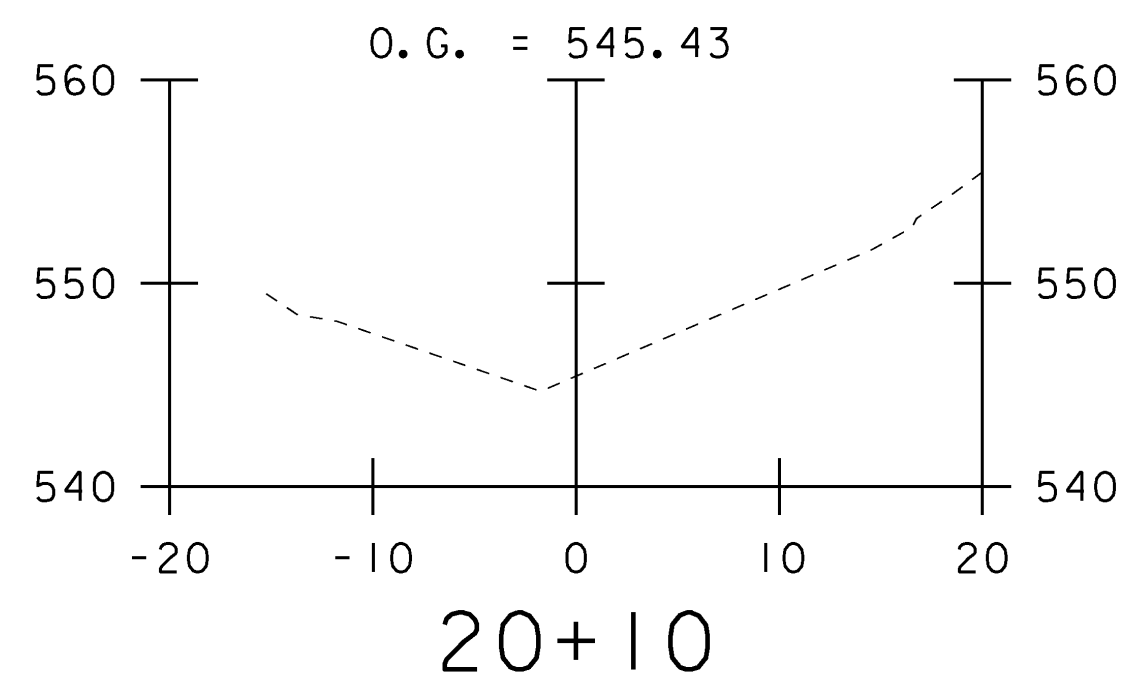
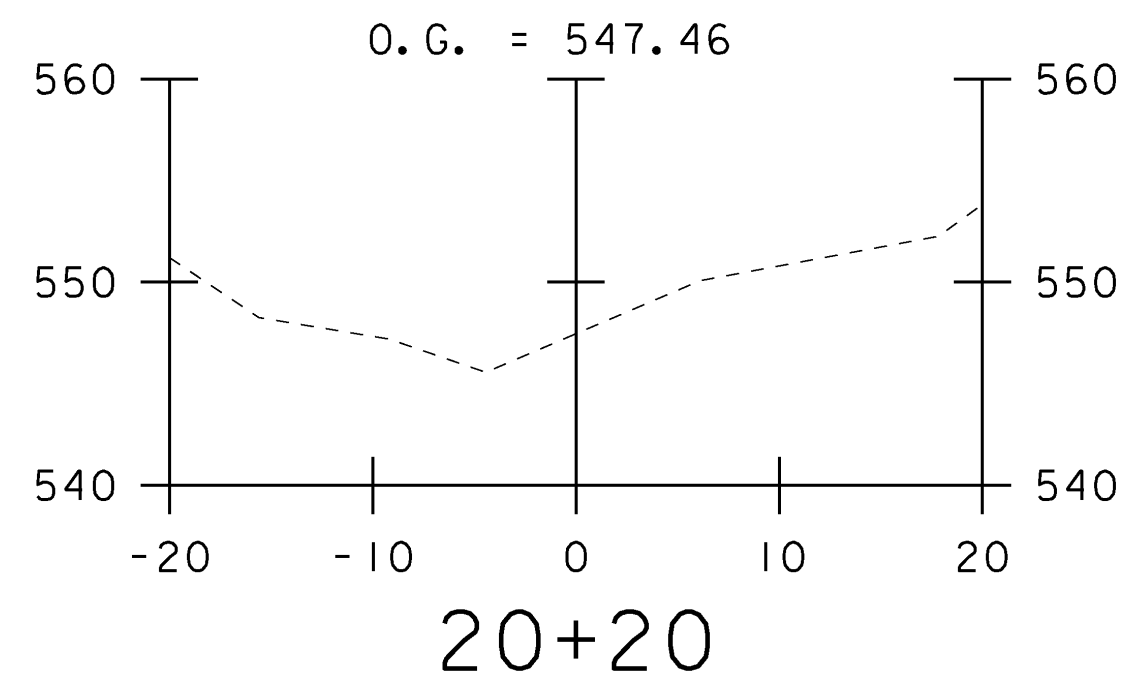
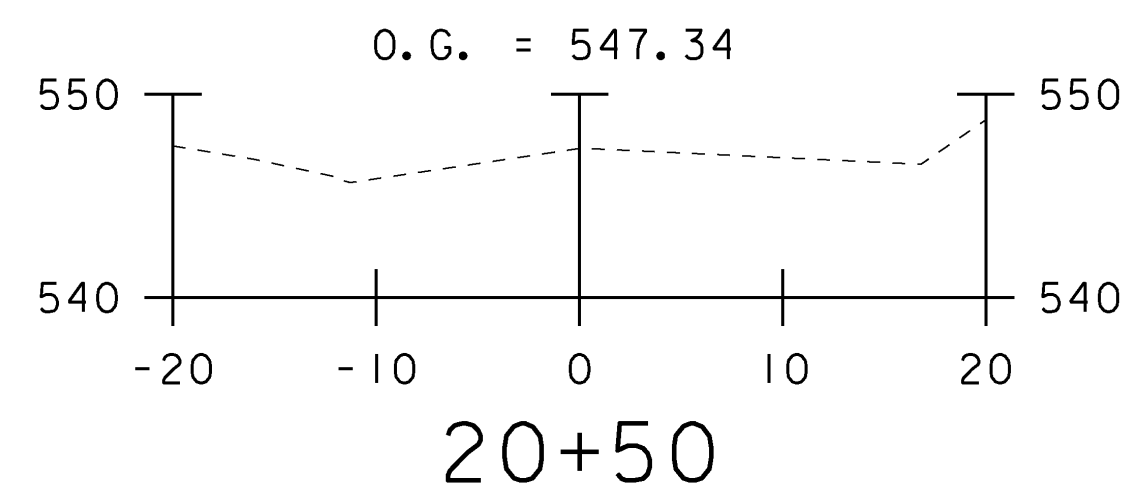
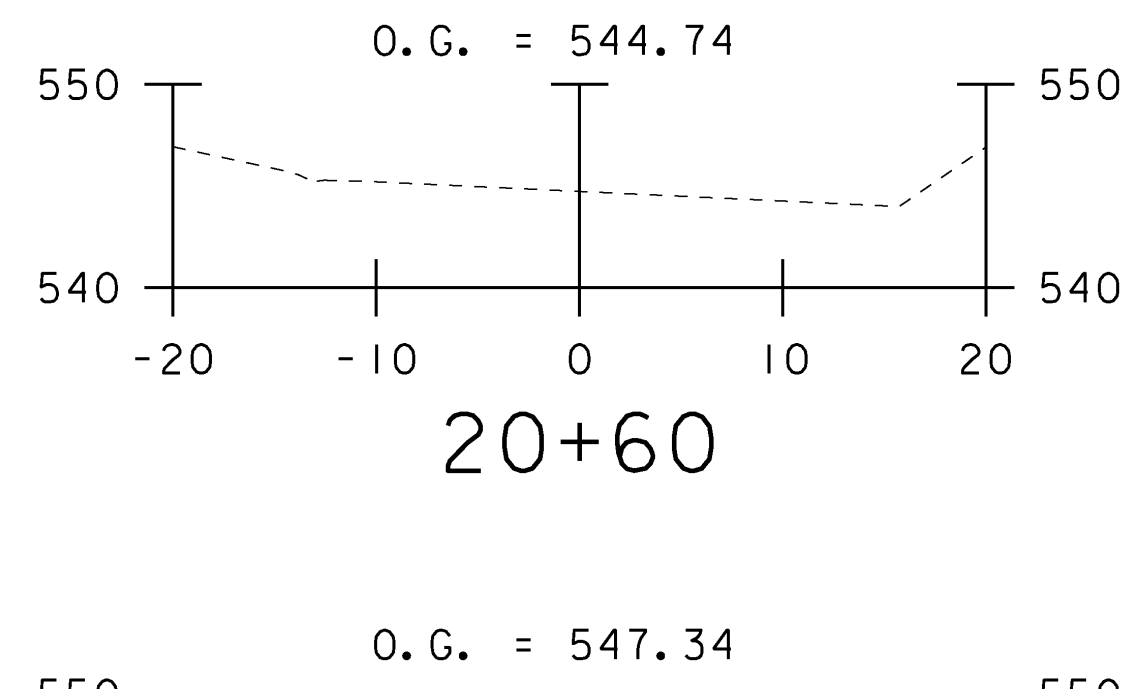
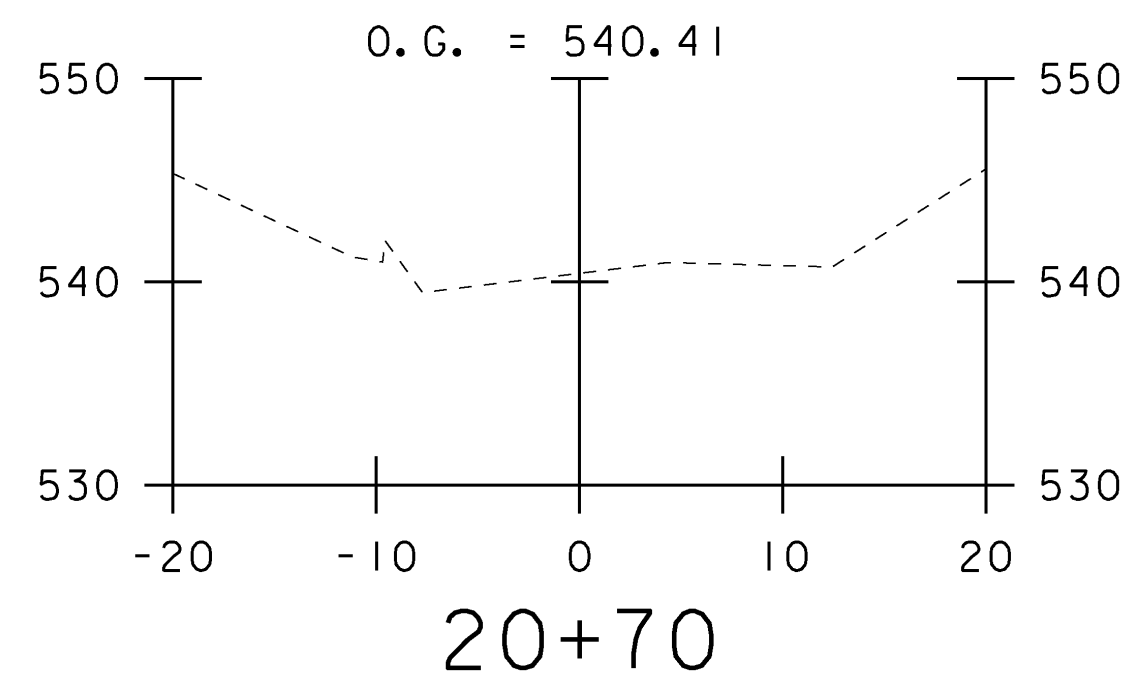
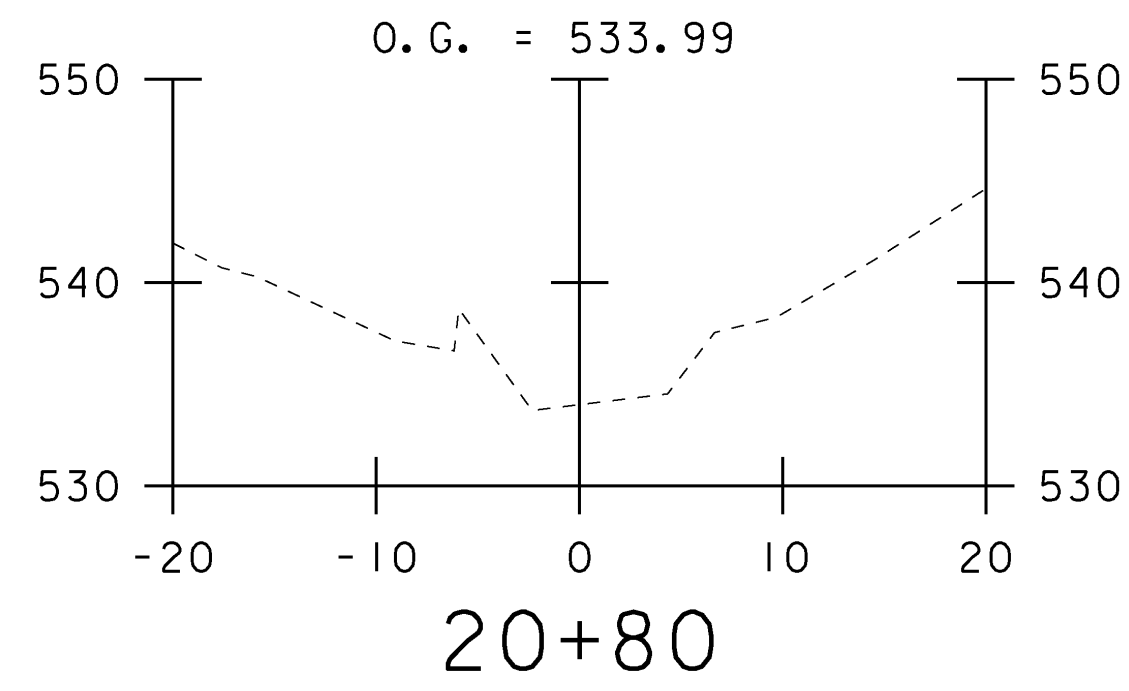
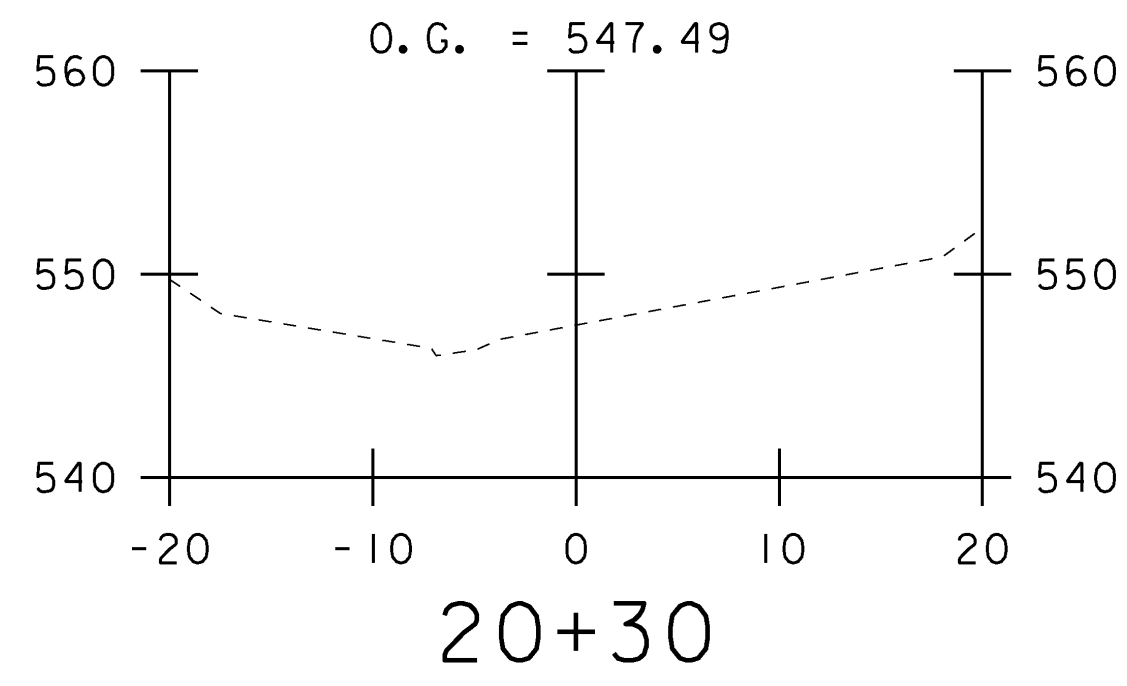
SITE STABILIZATION NOTES:

1. ALL DISTURBED GRASSED AREAS SHALL BE STABILIZED WITH SEED AND MULCH.
2. ALL DISTURBED STONE AREAS AND AREAS BELOW ORDINARY HIGH WATER SHALL BE STABILIZED WITH STONE FILL, TYPE IV.
3. SEE HEADWALL DETAILS FOR LIMITS OF PROPOSED STONE FILL AND PERMANENT EROSION MATTING.

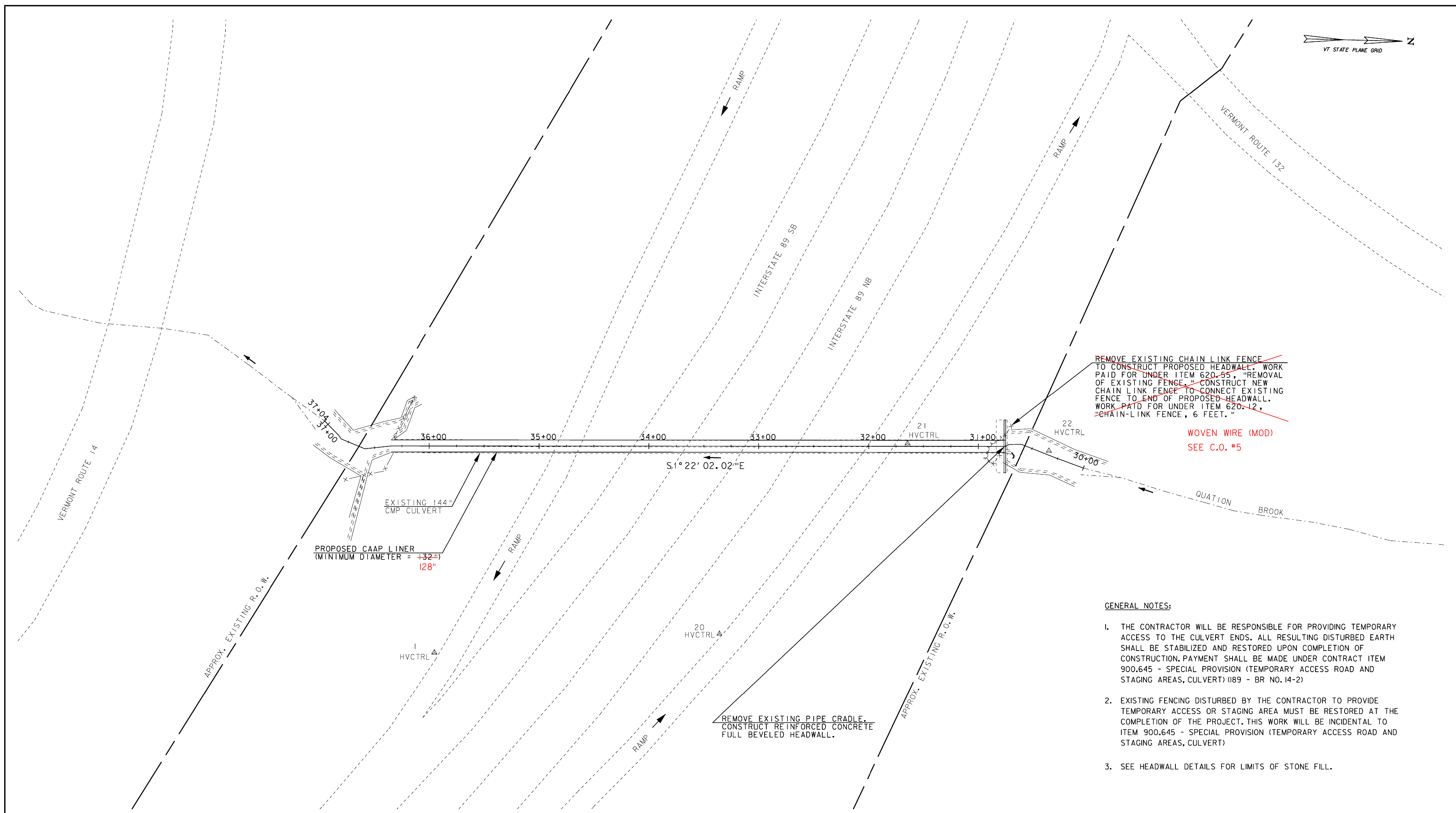
PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)

FILE NAME: FC02.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
FINAL CONDITIONS SITE PLAN (14-1)	SHEET 19 OF 36





PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)
 FILE NAME: z08a190xsl.dgn
 PROJECT LEADER: DMB
 DESIGNED BY: MHM
 CROSS SECTIONS (14-1)
 PLOT DATE: 13-JUL-2009
 DRAWN BY: MJF
 CHECKED BY: DMB
 SHEET 20 OF 36

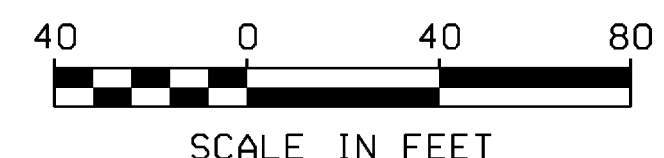


~~REMOVE EXISTING CHAIN LINK FENCE TO CONSTRUCT PROPOSED HEADWALL. WORK PAID FOR UNDER ITEM 620.55, "REMOVAL OF EXISTING FENCE." CONSTRUCT NEW CHAIN LINK FENCE TO CONNECT EXISTING FENCE TO END OF PROPOSED HEADWALL. WORK PAID FOR UNDER ITEM 620.12, "CHAIN-LINK FENCE, 6 FEET."~~

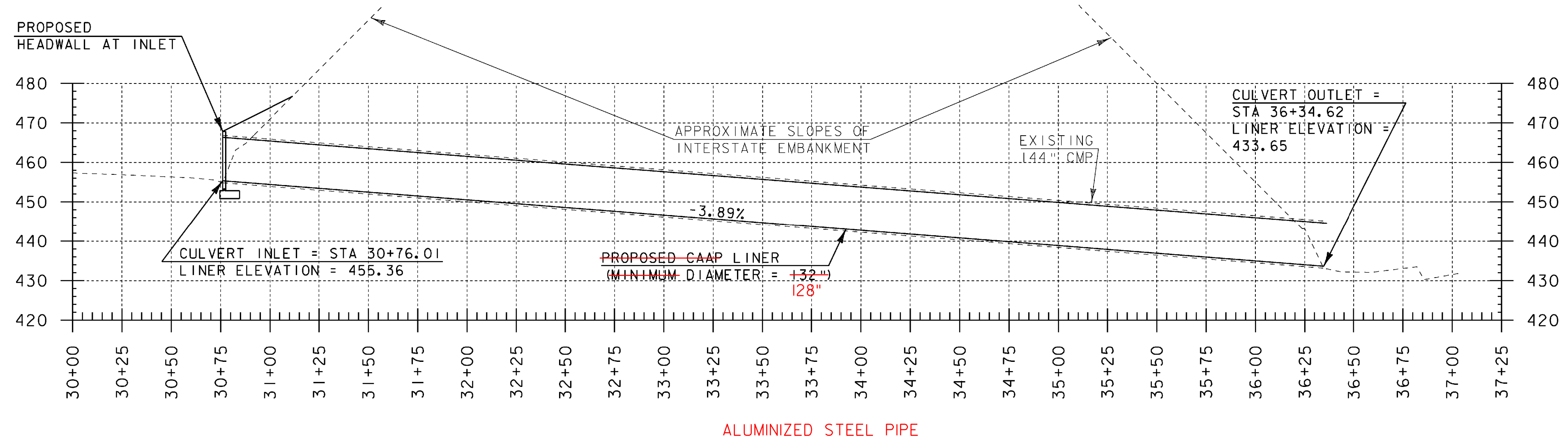
WOVEN WIRE (MOD)
SEE C.O. #5

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) (189 - BR NO. 14-2)
2. EXISTING FENCING DISTURBED BY THE CONTRACTOR TO PROVIDE TEMPORARY ACCESS OR STAGING AREA MUST BE RESTORED AT THE COMPLETION OF THE PROJECT. THIS WORK WILL BE INCIDENTAL TO ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)
3. SEE HEADWALL DETAILS FOR LIMITS OF STONE FILL.

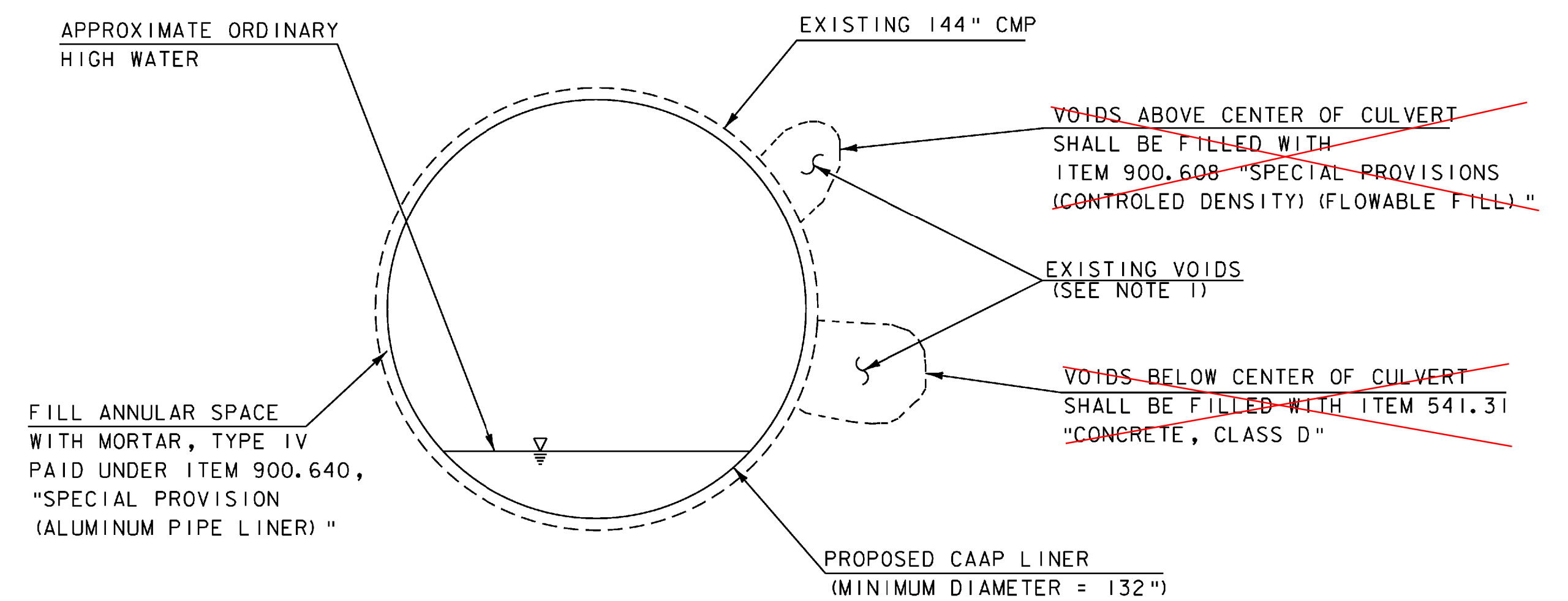


PROJECT NAME: SHARON	FILE NAME: L03.dgn	PLOT DATE: 13-JUL-2009
PROJECT NUMBER: IM CULV (18)	PROJECT LEADER: DMB	DRAWN BY: MJF
	DESIGNED BY: MHM	CHECKED BY: DMB
	LAYOUT SHEET (14-2)	SHEET 21 OF 36



ALUMINIZED STEEL PIPE

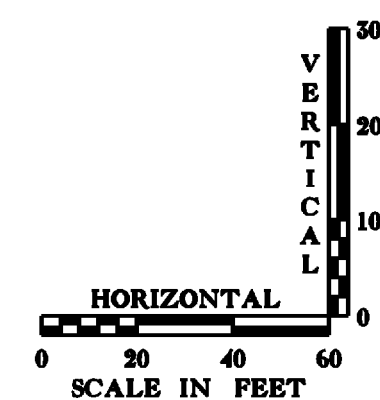
SHARON BRIDGE NO. 14-2
CULVERT CENTERLINE PROFILE



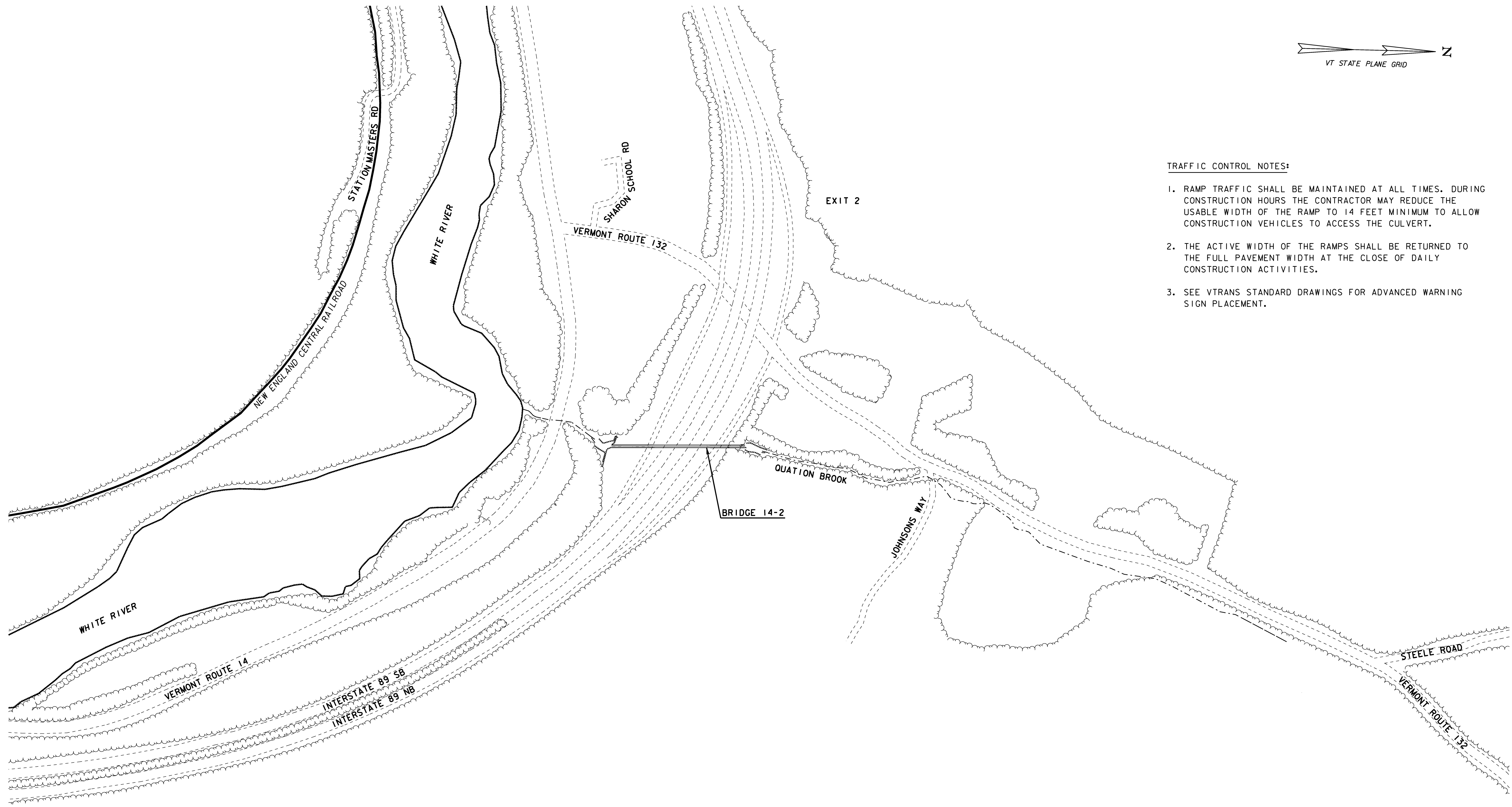
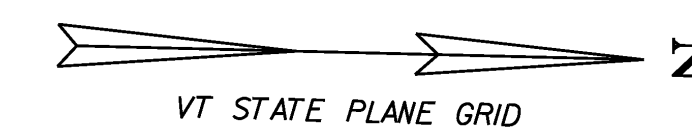
SHARON BRIDGE NO. 14-2
CULVERT LINING DETAIL
NOT TO SCALE

PROJECT NOTES

1. POTENTIAL VOID LOCATIONS SHOWN FOR EXPLANATION PURPOSES ONLY.

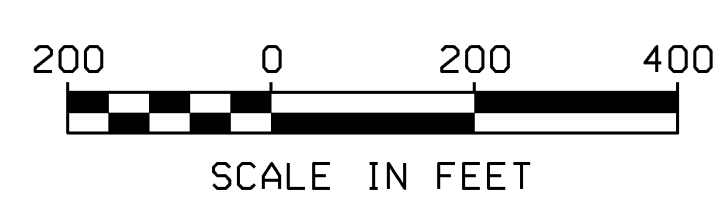


PROJECT NAME: SHARON	PLOT DATE: 13-JUL-2009
PROJECT NUMBER: IM CULV (18)	DRAWN BY: MJF
FILE NAME: PROF03.dgn	CHECKED BY: DMB
PROJECT LEADER: DMB	SHEET 22 OF 36
DESIGNED BY: MHM	
PROFILE SHEET (14-2)	



TRAFFIC CONTROL NOTES:

1. RAMP TRAFFIC SHALL BE MAINTAINED AT ALL TIMES. DURING CONSTRUCTION HOURS THE CONTRACTOR MAY REDUCE THE USABLE WIDTH OF THE RAMP TO 14 FEET MINIMUM TO ALLOW CONSTRUCTION VEHICLES TO ACCESS THE CULVERT.
2. THE ACTIVE WIDTH OF THE RAMP SHALL BE RETURNED TO THE FULL PAVEMENT WIDTH AT THE CLOSE OF DAILY CONSTRUCTION ACTIVITIES.
3. SEE VTRANS STANDARD DRAWINGS FOR ADVANCED WARNING SIGN PLACEMENT.



PROJECT NAME: SHARON	PLOT DATE: 13-JUL-2009
PROJECT NUMBER: IM CULV (18)	DRAWN BY: MJF
FILE NAME: z08a192tcp01.dgn	CHECKED BY: DMB
PROJECT LEADER: DMB	SHEET 23 OF 36
DESIGNED BY: MHM	
TRAFFIC CONTROL PLAN (14-2)	

EROSION CONTROL NARRATIVE

1.1. PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REHABILITATION OF AN EXISTING 144-INCH CORRUGATED METAL CULVERT ON INTERSTATE 89 IN THE TOWN OF SHARON. THE CULVERT IS LOCATED NEAR MILE MARKER 13.302 ON THE INTERSTATE AND IS DESIGNATED AS STRUCTURE BR 14-2. THE 558 FT CULVERT HAS APPROXIMATELY 60 FEET OF COVER AND CONVEYS STORMWATER FROM QUATION BROOK UNDER THE INTERSTATE AND TWO INTERSTATE RAMPS. THE EXISTING CULVERT WILL BE SLIP-LINED WITH A NEW CORRUGATED ALUMINUM ALLOY PIPE AS THE CULVERT IS BEYOND ITS DESIGN LIFE AND SHOWS SIGNS OF DETERIORATION AND STRUCTURAL DEFICIENCY. THE PROJECT ALSO INCLUDES THE CONSTRUCTION OF A NEW FULL BEVELED HEADWALL AT THE INLET OF THE CULVERT TO IMPROVE HYDRAULICS. THERE WILL BE NO IMPACT TO THE EXISTING ROADWAY. TOTAL DISTURBED AREA (EXCLUDING WASTE, BORROW, AND CONTRACTOR'S OFF-SITE STAGING AREAS) EQUALS 0.86 ACRES. THE TOTAL DISTURBED AREA INCLUDES THE ENTIRE AREA LOCATED WITHIN THE PROJECT DEMARCATION FENCING SHOWN.

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

1.2. SITE INVENTORY

OFF SITE DRAINAGE CHARACTERISTICS

THE PROPERTY SURROUNDING THE PROJECT SITE CONSISTS OF WELL ESTABLISHED VEGETATION WITH SEVERE TO MODERATE SLOPING TERRAIN. THE TERRAIN IS MOSTLY FORESTED WITH SOME CLEARINGS AND THICK BRUSH AND CAN BE DESCRIBED AS HILLY TO MOUNTAINOUS WITH WELL DEFINED DRAINAGE WAYS. DUE TO THE NATURE OF THE SURROUNDING AREA RUNOFF WATER ENTERING THE PROJECT SITE WILL BE LIMITED TO THAT WHICH IS CONTAINED IN THE QUATION BROOK TRIBUTARY AREA.

1.2.2. DRAINAGE, WATERWAYS, BODIES OF WATER

QUATION BROOK IS LOCATED IN THE PROJECT AREA. THE BROOK FLOWS FROM EAST TO WEST BENEATH THE NORTHBOUND AND SOUTHBOUND EMBANKMENTS OF INTERSTATE 89 AS WELL AS A NORTHBOUND OFF RAMP AND A SOUTHBOUND ON RAMP. THERE ARE NO OTHER WATERWAYS OR BODIES OF WATER WITHIN THE PROJECT AREA. RUNOFF WATER ENTERING THE PROJECT AREA WILL BE PRIMARILY LIMITED TO THAT WHICH FLOWS DOWN THE GRASSED ROADWAY EMBANKMENTS OF INTERSTATE 89.

1.2.3. TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

THE TOPOGRAPHY OF THE SITE IS STEEP HILLY TERRAIN. ON THE EAST SIDE OF THE INTERSTATE THE BROOK RUNS BETWEEN TWO ABUTTING PROPERTIES. ON THE WEST SIDE OF THE SITE THERE EXISTS THICK BRUSH AND ROUGH TERRAIN. THE OUTLET OF THE CULVERT IS SURROUNDED BY LARGE STONES ON A STEEP EMBANKMENT. THE INTERSTATE HAS APPROXIMATE 1:2 (VERTICAL:HORIZONTAL) GRASSED SLOPES.

1.2.4. VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF THICK BRUSH AND TREES NEAR THE INLET AND OUTLET OF THE CULVERT WITH GRASSED SLOPES AND LIGHT BRUSH ON THE INTERSTATE EMBANKMENTS. THE IMPACT TO THE VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY IMPACTED BY THE CULVERT SLIP-LINING OPERATIONS AND THE CONSTRUCTION OF THE PROPOSED HEADWALL. DISTURBED SOILS AND VEGETATION WILL BE REESTABLISHED USING STONE AND STANDARD SEED AND MULCH PRACTICES.

1.2.5. SOILS

THE SOIL FOUND SURROUNDING THE SITE CONSISTS OF AGAWAM FINE SANDY LOAM (SM), 3 TO 8% SLOPES. THE AGAWAM SERIES IS A WELL DRAINED SOIL WITH AN ERODIBILITY FACTOR (K-VALUE) OF 0.28. THE ROADWAY EMBANKMENTS ARE MOST LIKELY A COMMON FILL MATERIAL THAT WAS PLACED DURING THE CONSTRUCTION OF THE INTERSTATE.

GENERALLY, K-VALUES INDICATE THE FOLLOWING:
0.23 AND LOWER - LOW ERODIBILITY
0.24 TO 0.36 - MODERATE ERODIBILITY
0.37 AND HIGHER - HIGH ERODIBILITY

1.2.6. SENSITIVE RESOURCE AREAS

NO THREATENED & ENDANGERED SPECIES HAVE BEEN IDENTIFIED WITHIN THE PROJECT LIMITS AND THERE WILL BE NO ADVERSE EFFECT TO AGRICULTURE OR ARCHAEOLOGICAL FEATURES. QUATION BROOK FLOWS THROUGH THE PROJECT AREA.

1.3. RISK EVALUATION

SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT THEN THE SELECTED CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL PERMITTING WITH VANR VIA FILING FOR THE APPROPRIATE NOTICE OF INTENT UNDER THE CONSTRUCTION GENERAL PERMIT PROCESS.

1.4. EROSION PREVENTION AND SEDIMENT CONTROL

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

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 ONSITE COORDINATOR. SEE SECTION 105.23 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006.

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

PREVENTING SOIL EROSION IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. 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.

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

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
PROJECT DEMARCATION FENCE, DENOTED -PDF- IN THE PLANS, IS USED TO DELINEATE THE LIMITS THE CONTRACTOR CAN ACCESS WITH CONSTRUCTION EQUIPMENT. THIS MEASURE LIMITS AREA THAT CAN BE DISTURBED AND EXPOSED TO EROSION. DISTURBANCE OUTSIDE THE LIMITS OF THE PROJECT DEMARCATION FENCE WILL REQUIRE ADDITIONAL PERMIT COVERAGE.

CONTROL ONLY SEDIMENT LADEN STORMWATER RUNOFF GENERATED BY THE PROJECT SITE. COLLECT AND ROUTE CLEAN STORMWATER AROUND THE PROJECT SITE WHENEVER POSSIBLE USING DIVERSION BERMS, CHANNELS, CULVERTS, OR TEMPORARY PIPES.

1.4.2. LIMIT DISTURBANCE AREA
CONTRACTOR SHALL LIMIT THE DISTURBANCE TO WITHIN THE IMPACT LINES SHOWN ON THE PLANS. CONTRACTOR SHALL NOT DISTURB ANY AREA OUTSIDE OF THE EXISTING RIGHT OF WAY.

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

1.4.3. STABILIZE CONSTRUCTION EXIT
AT LOCATIONS WHERE CONSTRUCTION VEHICLES WILL BE LEAVING THE CONSTRUCTION SITE/STAGING AREAS, A STABILIZED CONSTRUCTION EXIT SHALL BE CONSTRUCTED TO LIMIT THE AMOUNT OF SEDIMENT THAT IS TRANSPORTED OFF OF THE SITE BY CONSTRUCTION VEHICLES. STONE WILL BE USED TO REMOVE SEDIMENT FROM THE TIRES OF CONSTRUCTION VEHICLES. 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 SILT FENCE
SILT FENCE WILL BE INSTALLED AT THE TOE OF FILL SLOPES TO PREVENT SEDIMENT TRANSPORT TO DOWN GRADIENT AREAS. EACH LINE OF SILT FENCE WILL BE PLACED ALONG THE CONTOUR WITH THE LOWER EDGE BURIED 6" TO PREVENT UNDERFLOW AND ENDS TURNED SLIGHTLY UP GRADE TO CREATE A PONDING EFFECT. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY UPSLOPE EARTHWORK. SILT FENCE SHALL BE PLACED AS SHOWN ON THE EROSION CONTROL PLAN AND AS DIRECTED BY THE ENGINEER.

1.4.5. DIVERT UPLAND FLOW
THE EXISTING STREAM WILL BE DIVERTED AS DESCRIBED IN THE DEWATERING SECTION BELOW. NO OTHER UPLAND FLOW DIVERSION WILL BE REQUIRED.

1.4.6. SLOW DOWN CHANNELIZED RUNOFF
CHECK DAMS TO BE USED AS NECESSARY.

1.4.7. CONSTRUCT PERMANENT CONTROLS
ALL DISTURBED SOIL SHALL BE STABILIZED WITH SEED AND MULCH.

1.4.8. STABILIZE EXPOSED SOILS
SEEDING AND MULCHING SHALL BE UTILIZED TO STABILIZE SOIL. SOIL SHALL BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE AND/OR DURING INTERMITTENT PHASES OF CONSTRUCTION. MULCHING WILL BE UTILIZED ON A REGULAR BASIS. ANY SOIL TO BE EXPOSED FOR SEVERAL DAYS PRIOR TO FINAL GRADING SHALL BE MULCHED. SOIL SHALL BE STABILIZED WITHIN 48 HOURS PRIOR TO FORECASTED RAIN. THEREFORE, STABILIZE ALL DISTURBED AREAS PROMPTLY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY VEGETATION SHALL BE ESTABLISHED IF THE AREA IS TO BE WITHOUT CONSTRUCTION ACTIVITY FOR A PERIOD OF 14 DAYS. PERIMETER CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. INSTALL OTHER TEMPORARY CONTROLS IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS.

1.4.9. WINTER STABILIZATION
THE CONSTRUCTION SEASON SHALL BE FROM MAY 1 TO OCTOBER 15. 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
SEEDING AND MULCHING SHALL BE UTILIZED TO STABILIZE SOIL. SOIL SHALL 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. DEWATERING ACTIVITIES
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 A SMALLER PIPE INSERTED INTO THE LINER.

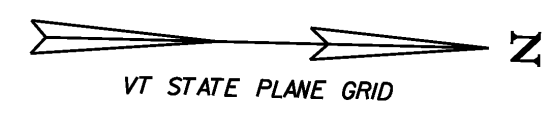
1.4.12. SITE INSPECTION
TEMPORARY EROSION CONTROL MEASURES SHALL BE REGULARLY INSPECTED AND MAINTAINED FOR SEDIMENT BUILDUP. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT REACHES ONE-HALF THE HEIGHT OF THE CONTROL MEASURE. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE SUCH THAT IT WILL NOT BE SUBJECT TO EROSION.

PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

FILE NAME: ERO_NARR03.DGN
PROJECT LEADER: DMB
DESIGNED BY: MHM
EPSC NARRATIVE SHEET (14-2)

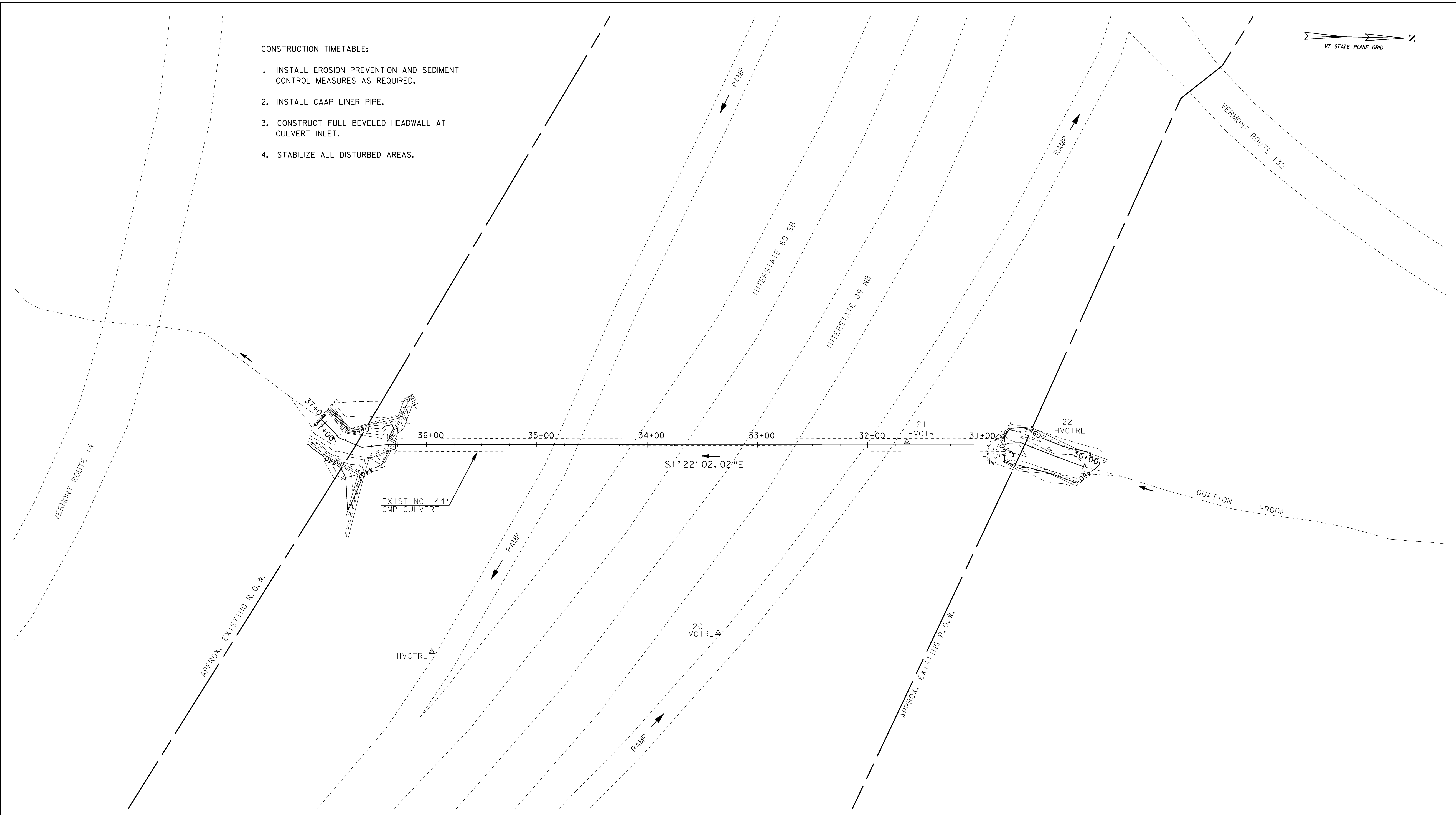
PLOT DATE: 13-JUL-2009
DRAWN BY: MJF
CHECKED BY: DMB
SHEET 24 OF 36





CONSTRUCTION TIMETABLE:

1. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES AS REQUIRED.
2. INSTALL CAAP LINER PIPE.
3. CONSTRUCT FULL BEVELED HEADWALL AT CULVERT INLET.
4. STABILIZE ALL DISTURBED AREAS.



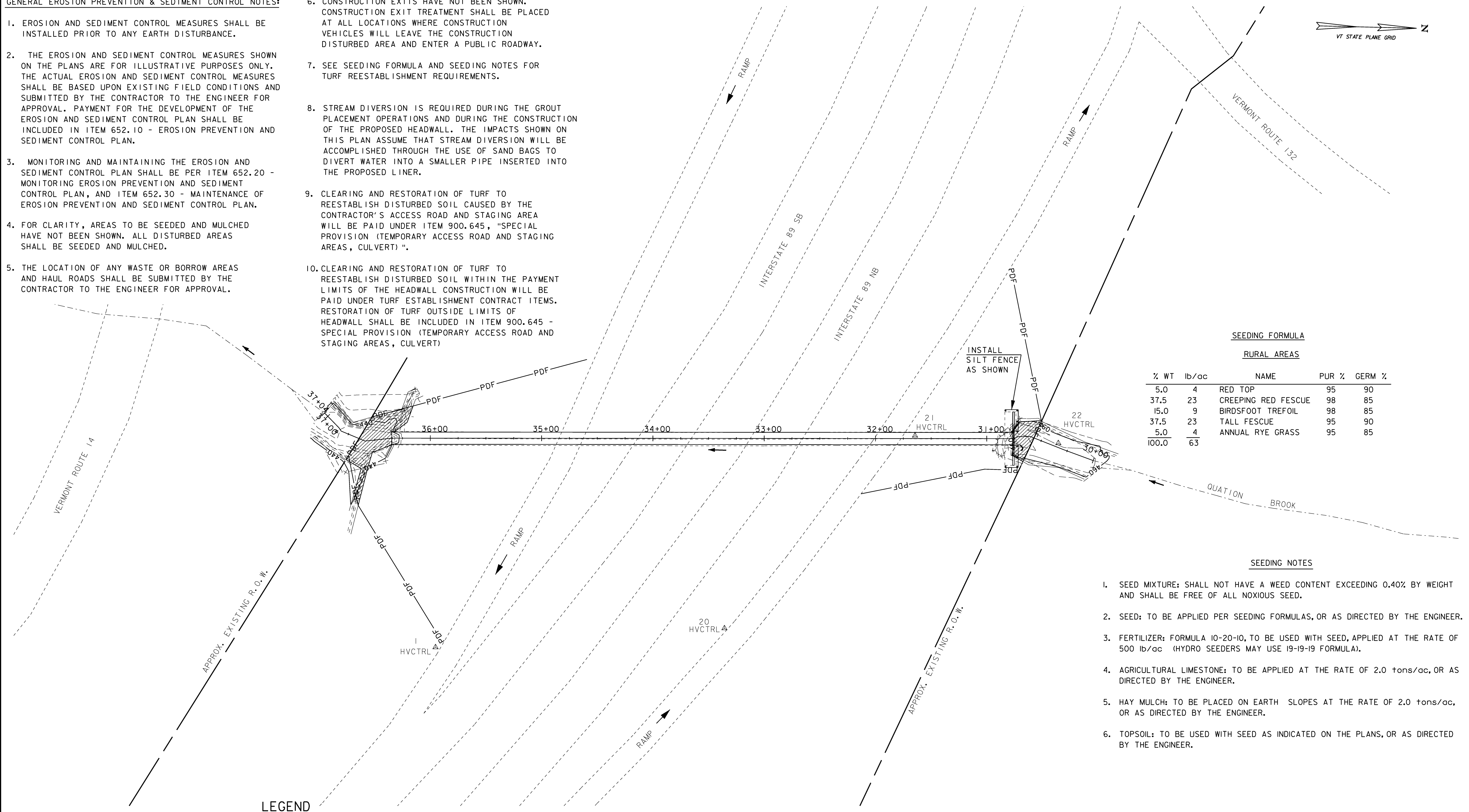
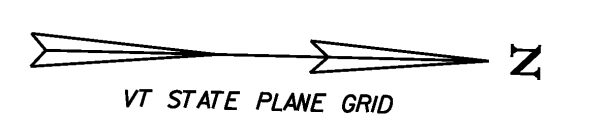
PROJECT NAME: SHARON	
PROJECT NUMBER: IM CULV (18)	
FILE NAME: EC03.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
EXISTING CONDITIONS SITE PLAN (14-2) SHEET 25 OF 36	



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 - EROSION PREVENTION AND SEDIMENT CONTROL PLAN.
3. MONITORING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE PER ITEM 652.20 - MONITORING EROSION PREVENTION AND SEDIMENT CONTROL PLAN, AND ITEM 652.30 - MAINTENANCE OF EROSION PREVENTION AND SEDIMENT CONTROL 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. CONSTRUCTION EXITS HAVE NOT BEEN SHOWN. CONSTRUCTION EXIT TREATMENT SHALL BE PLACED AT ALL LOCATIONS WHERE CONSTRUCTION VEHICLES WILL LEAVE THE CONSTRUCTION DISTURBED AREA AND ENTER A PUBLIC ROADWAY.
7. SEE SEEDING FORMULA AND SEEDING NOTES FOR TURF REESTABLISHMENT REQUIREMENTS.
8. STREAM DIVERSION IS REQUIRED DURING THE GROUT PLACEMENT OPERATIONS AND DURING THE CONSTRUCTION OF THE PROPOSED HEADWALL. THE IMPACTS SHOWN ON THIS PLAN ASSUME THAT STREAM DIVERSION WILL BE ACCOMPLISHED THROUGH THE USE OF SAND BAGS TO DIVERT WATER INTO A SMALLER PIPE INSERTED INTO THE PROPOSED LINER.
9. CLEARING AND RESTORATION OF TURF TO REESTABLISH DISTURBED SOIL CAUSED BY THE CONTRACTOR'S ACCESS ROAD AND STAGING AREA WILL BE PAID UNDER ITEM 900.645, "SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)".
10. CLEARING AND RESTORATION OF TURF TO REESTABLISH DISTURBED SOIL WITHIN THE PAYMENT LIMITS OF THE HEADWALL CONSTRUCTION WILL BE PAID UNDER TURF ESTABLISHMENT CONTRACT ITEMS. RESTORATION OF TURF OUTSIDE LIMITS OF HEADWALL SHALL BE INCLUDED IN ITEM 900.645 - SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)



SEEDING FORMULA

RURAL AREAS

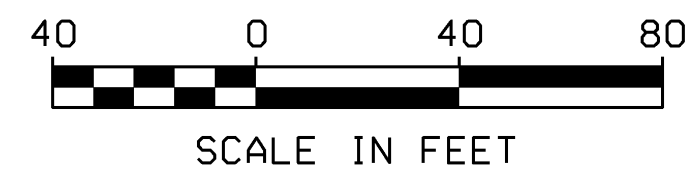
% WT	lb/ac	NAME	PUR %	GERM %
5.0	4	RED TOP	95	90
37.5	23	CREeping RED FESCUE	98	85
15.0	9	BIRDSFOOT TREFOL	98	85
37.5	23	TALL FESCUE	95	90
5.0	4	ANNUAL RYE GRASS	95	85
100.0	63			

SEEDING NOTES

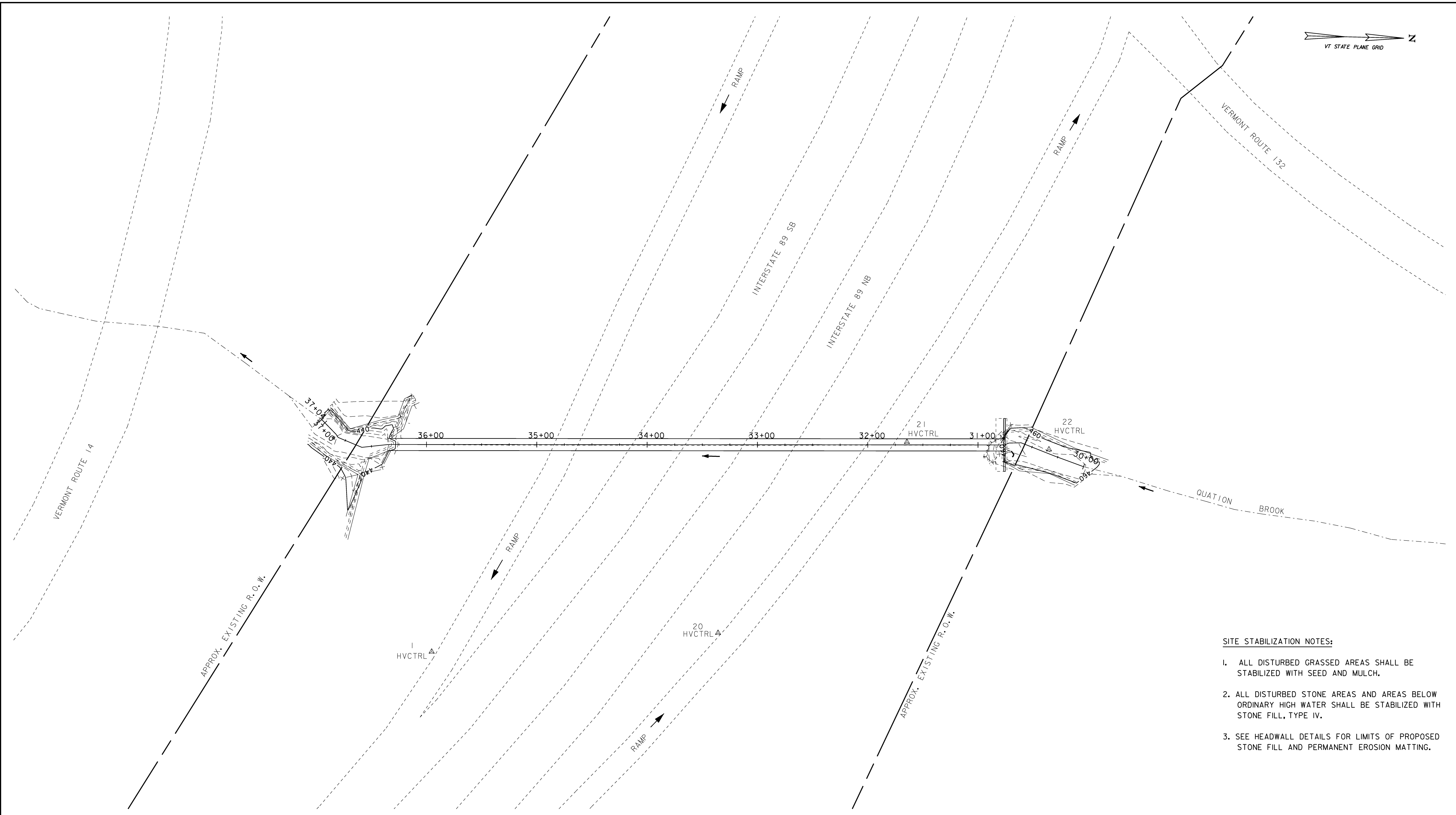
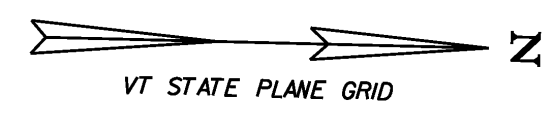
1. SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
2. SEED: TO BE APPLIED PER SEEDING FORMULAS, OR AS DIRECTED BY THE ENGINEER.
3. FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 lb/ac (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).
4. AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2.0 tons/ac, OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2.0 tons/ac, OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

LEGEND

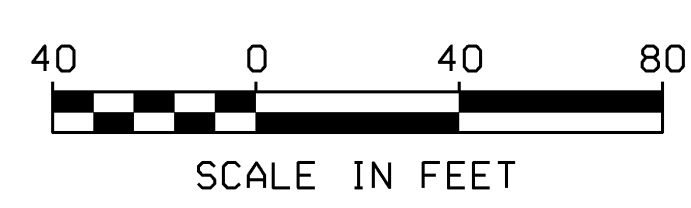
- PDF — PDF — PROJECT DEMARCATION FENCE
- WETLANDS ASSUMED TO BE IMPACTED BY PROPOSED WORK
- SILT FENCE



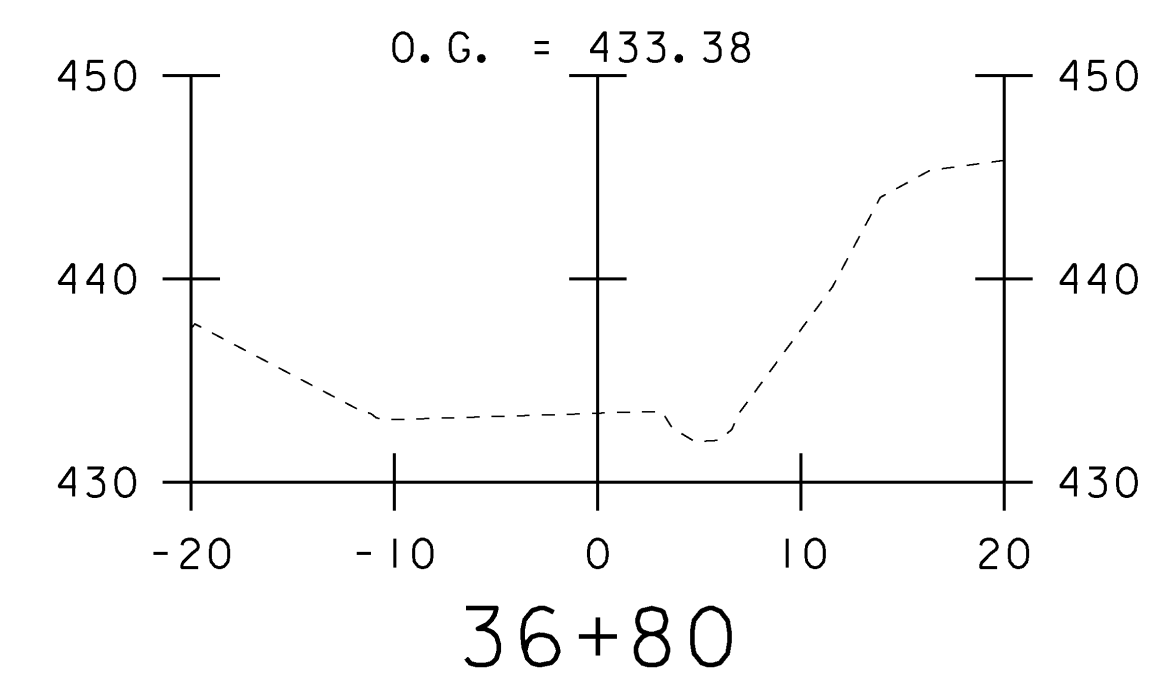
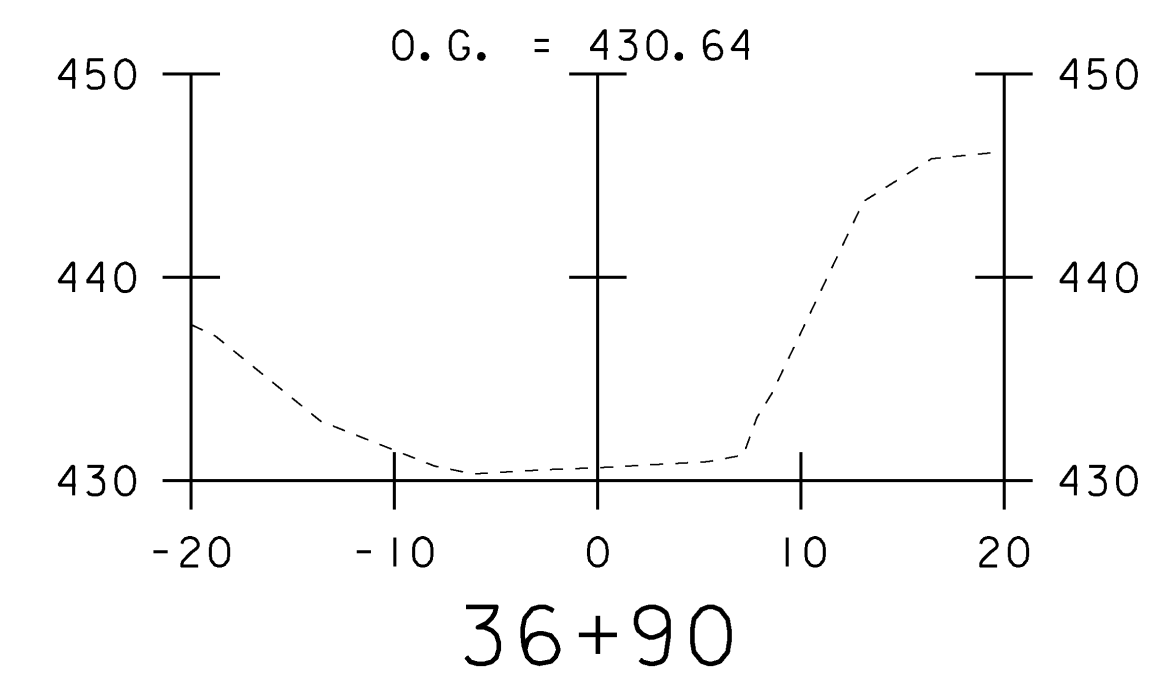
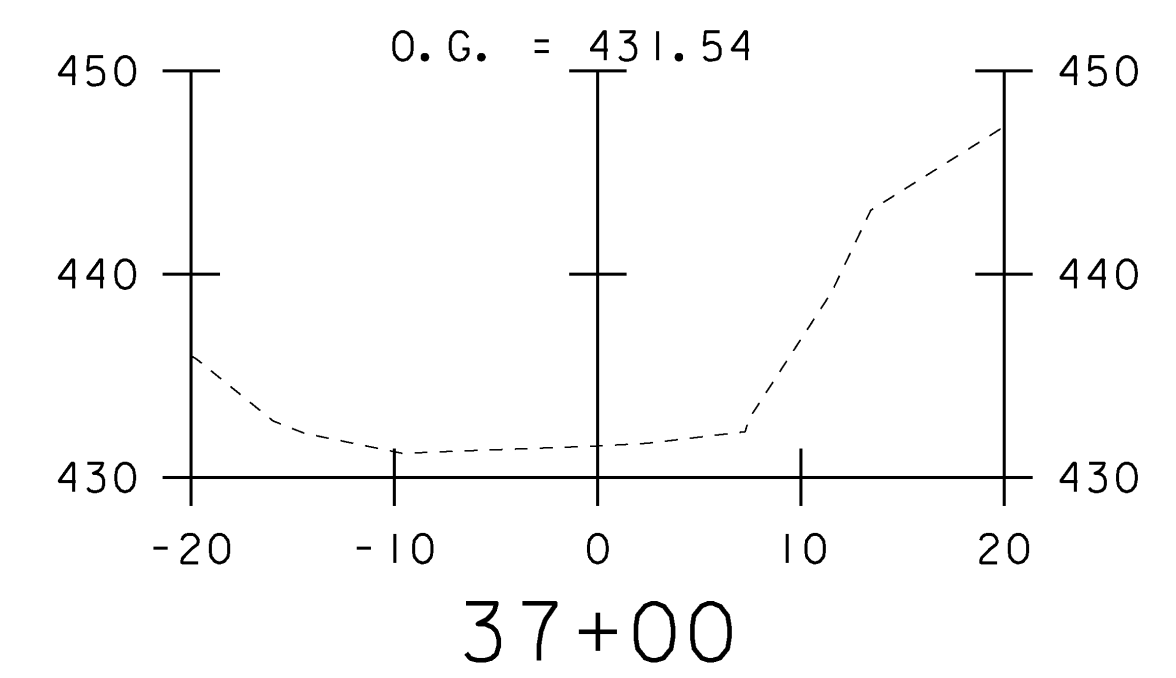
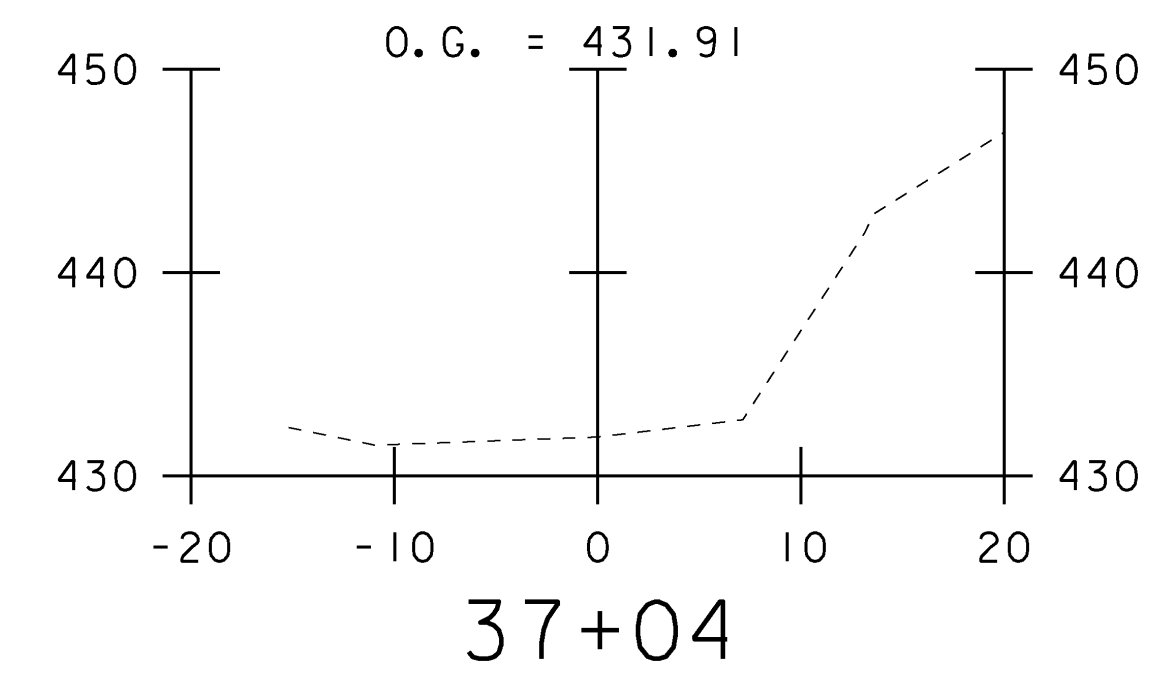
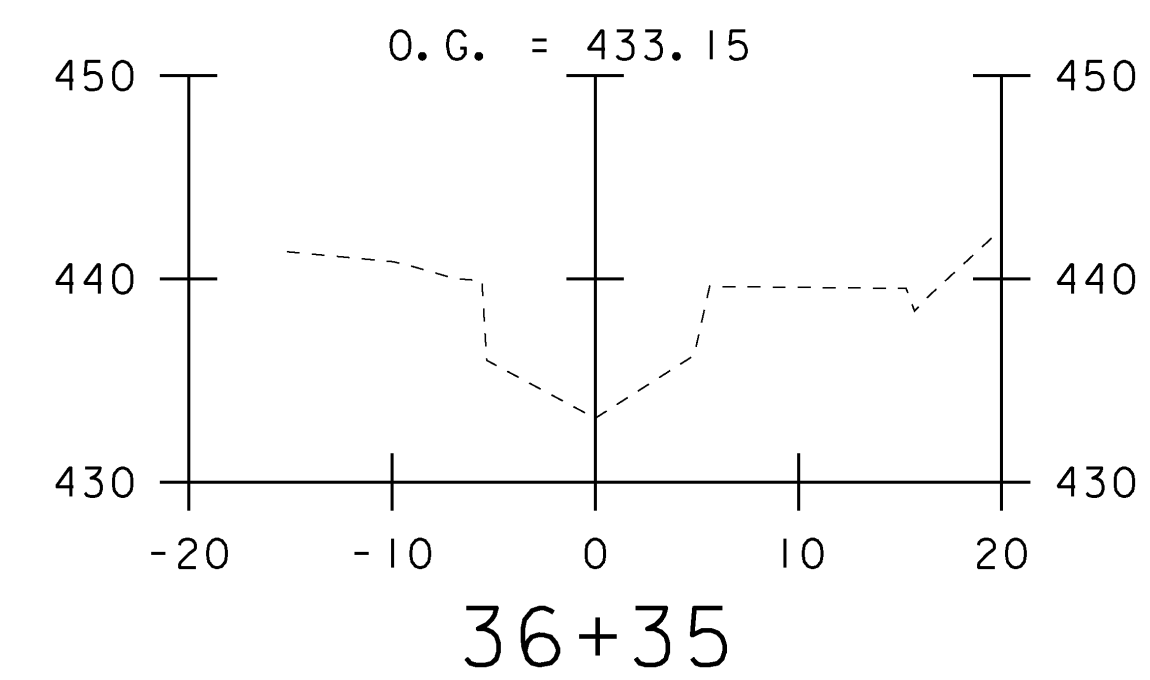
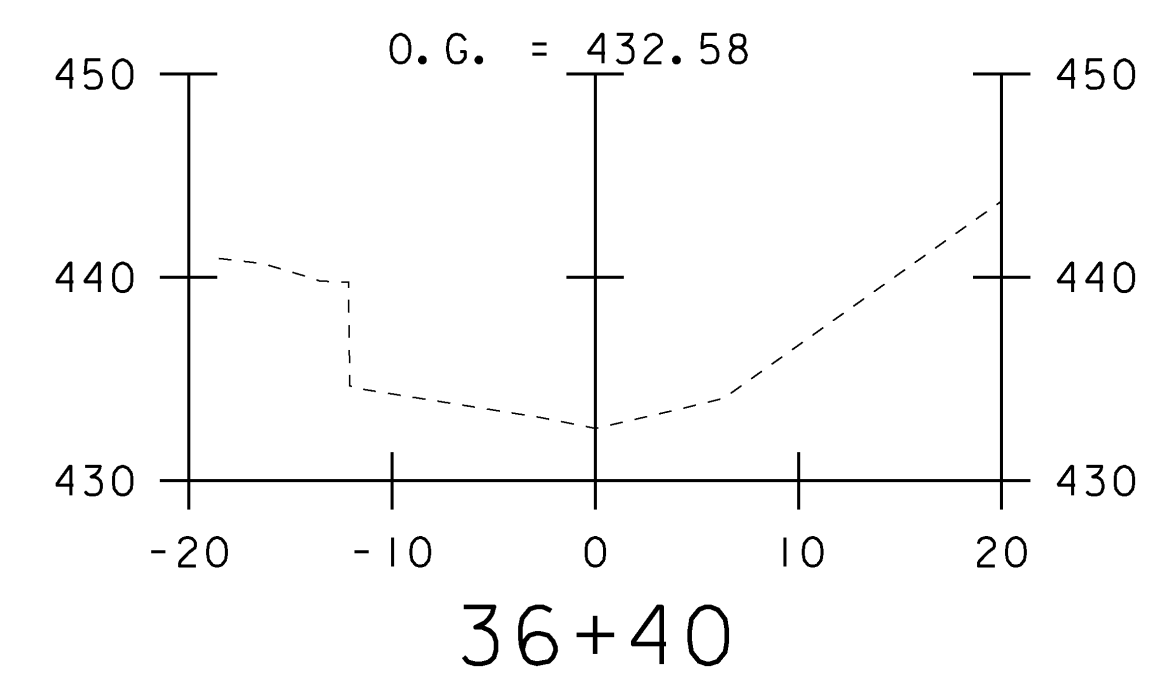
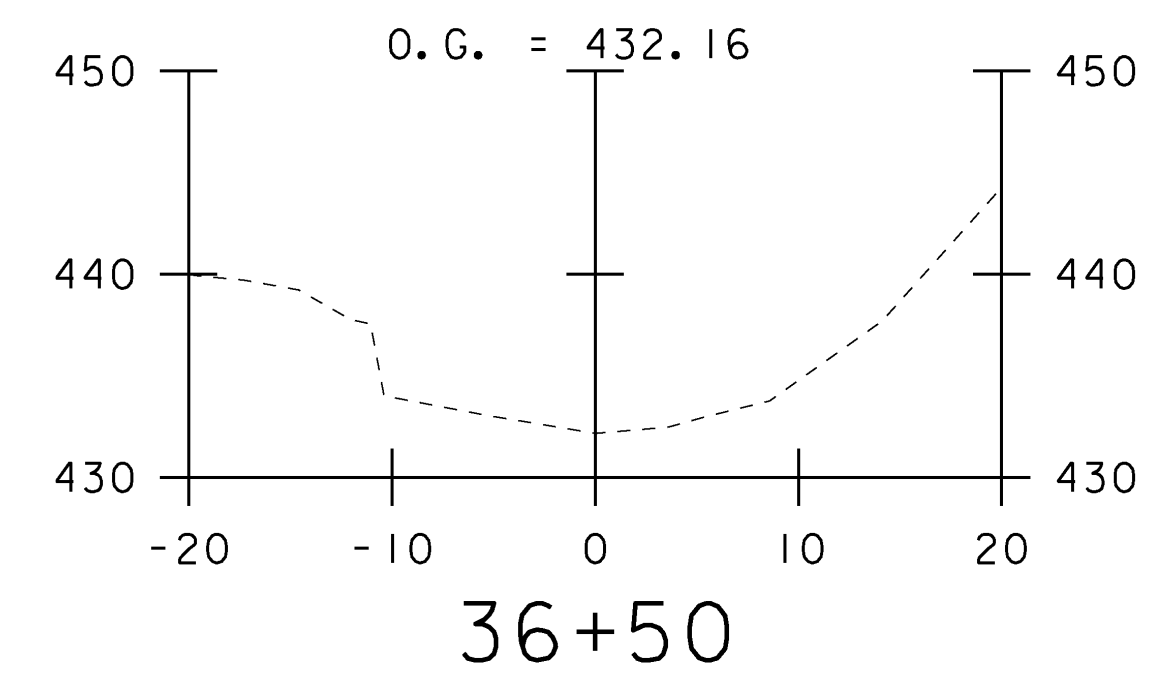
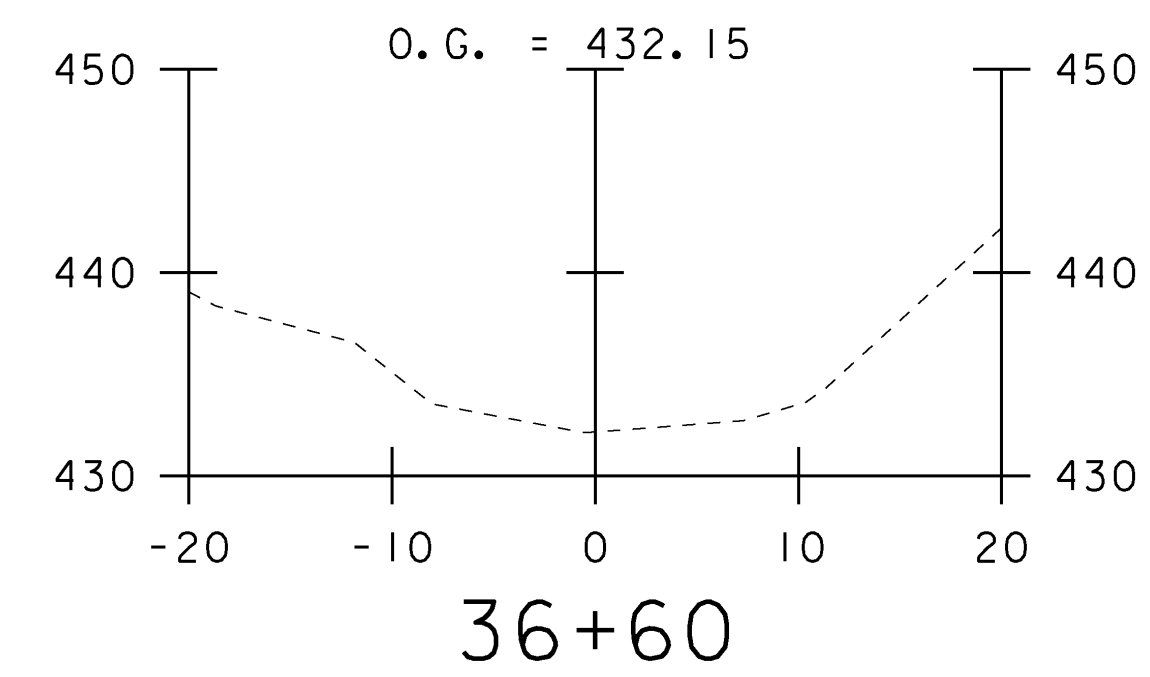
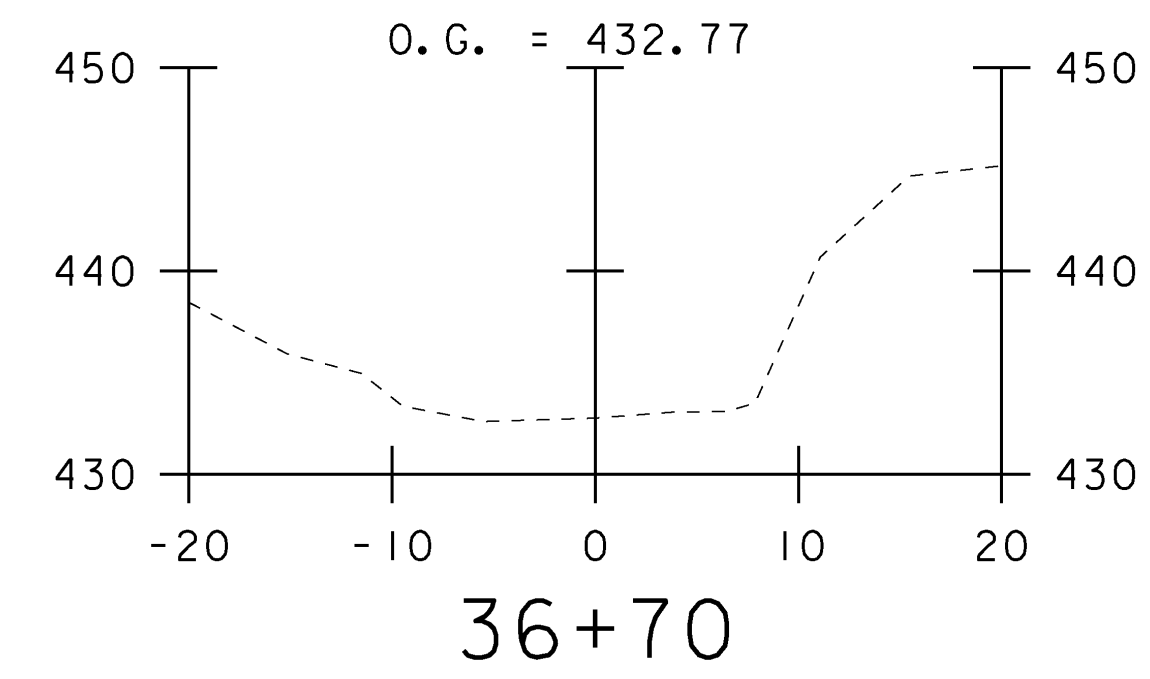
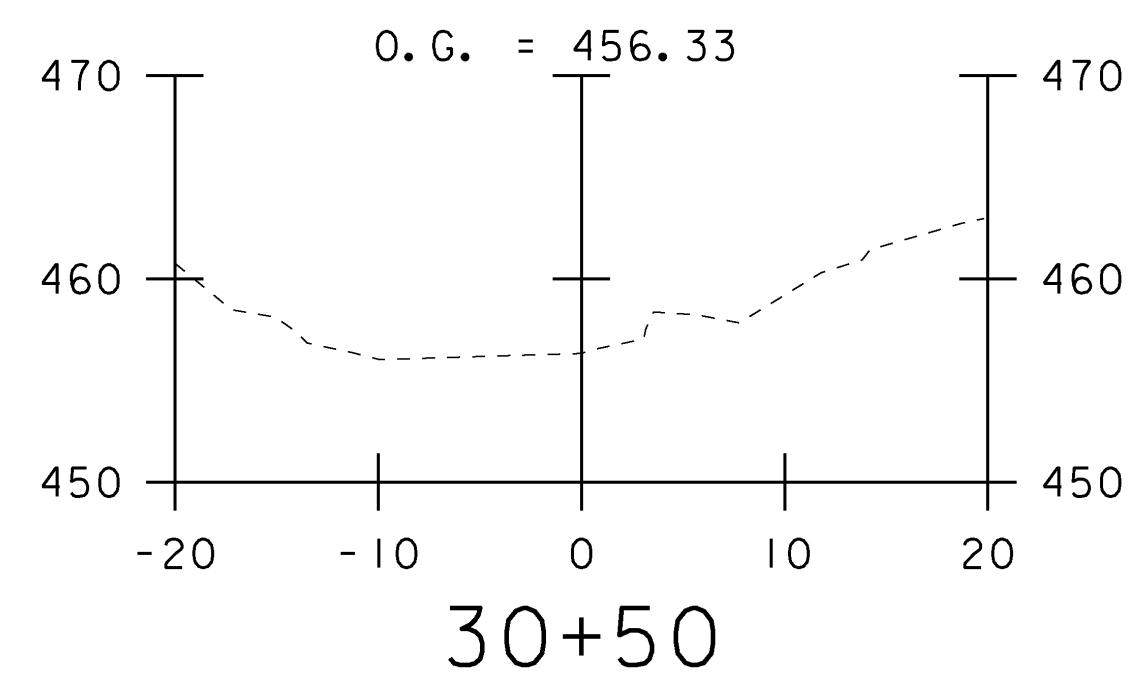
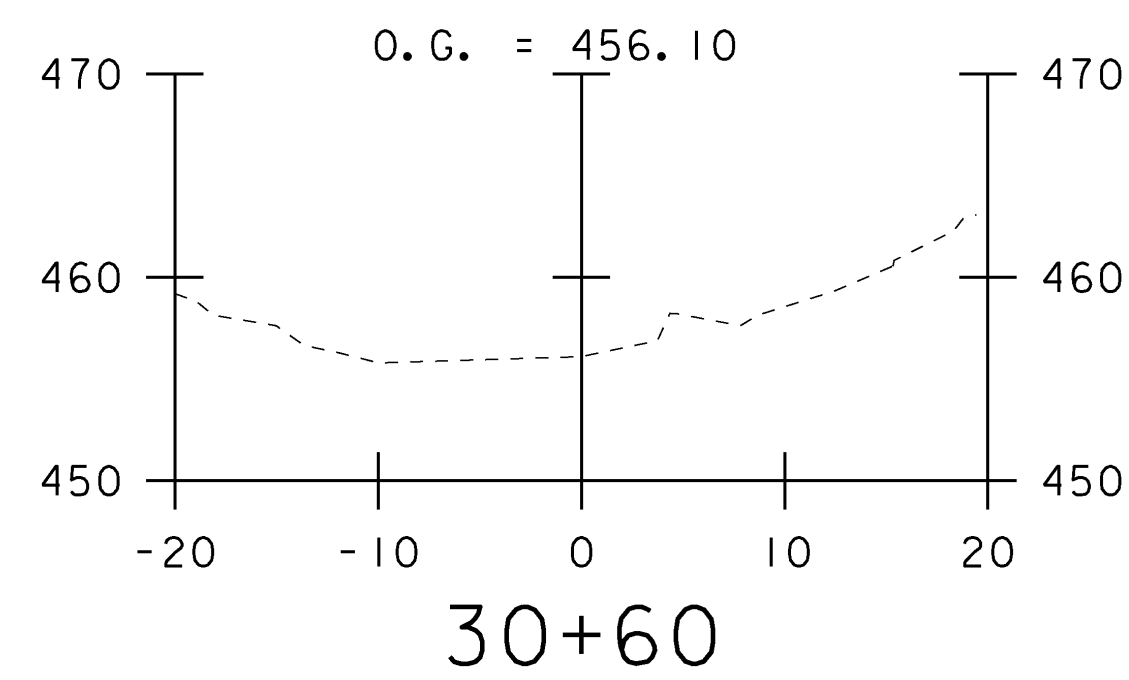
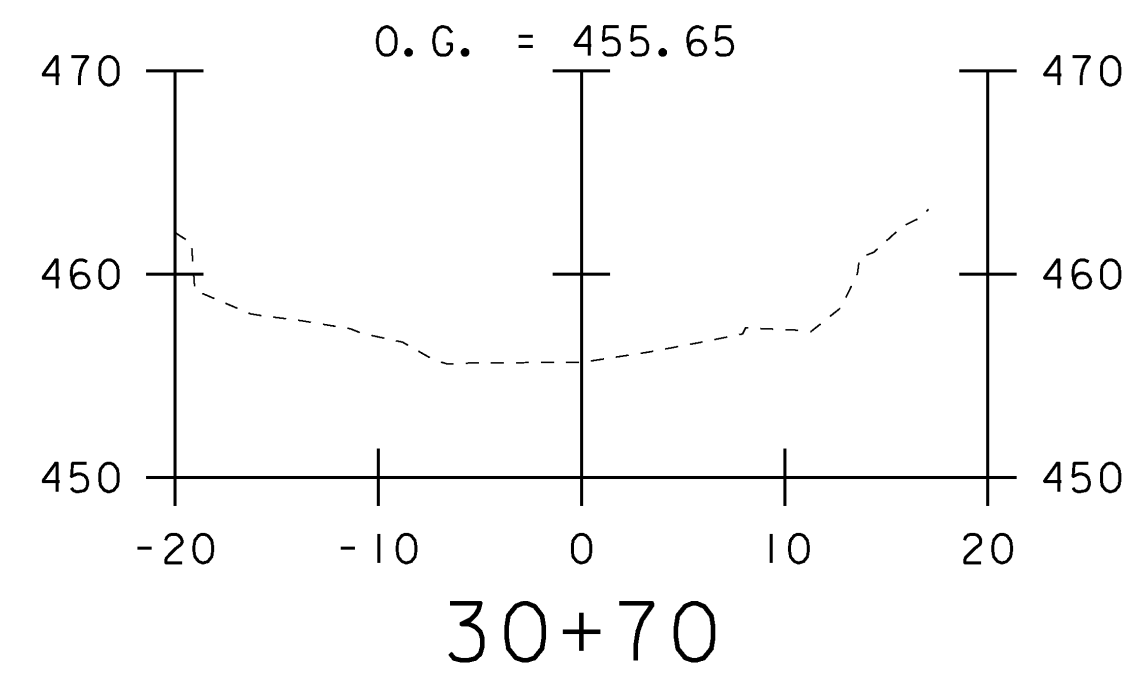
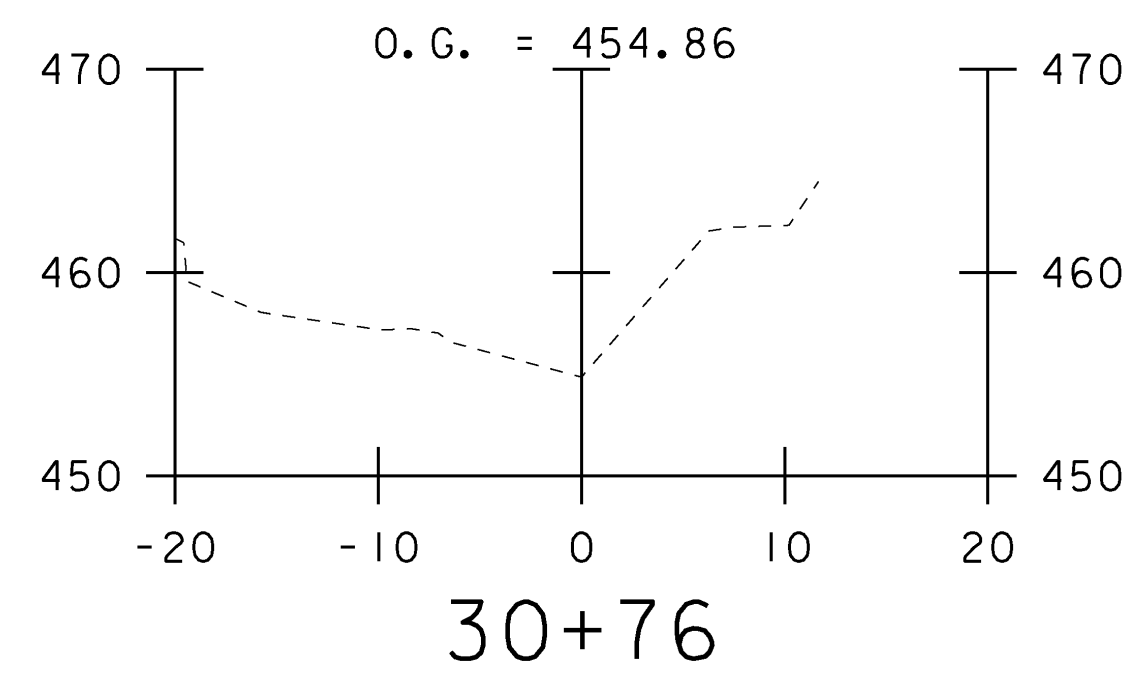
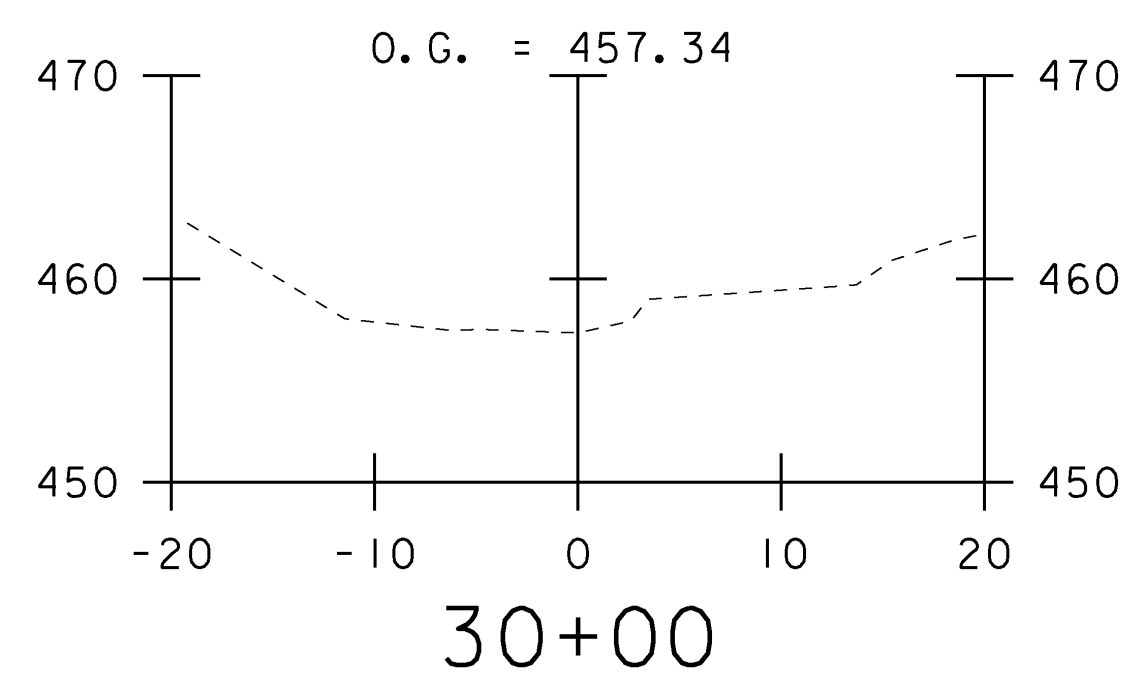
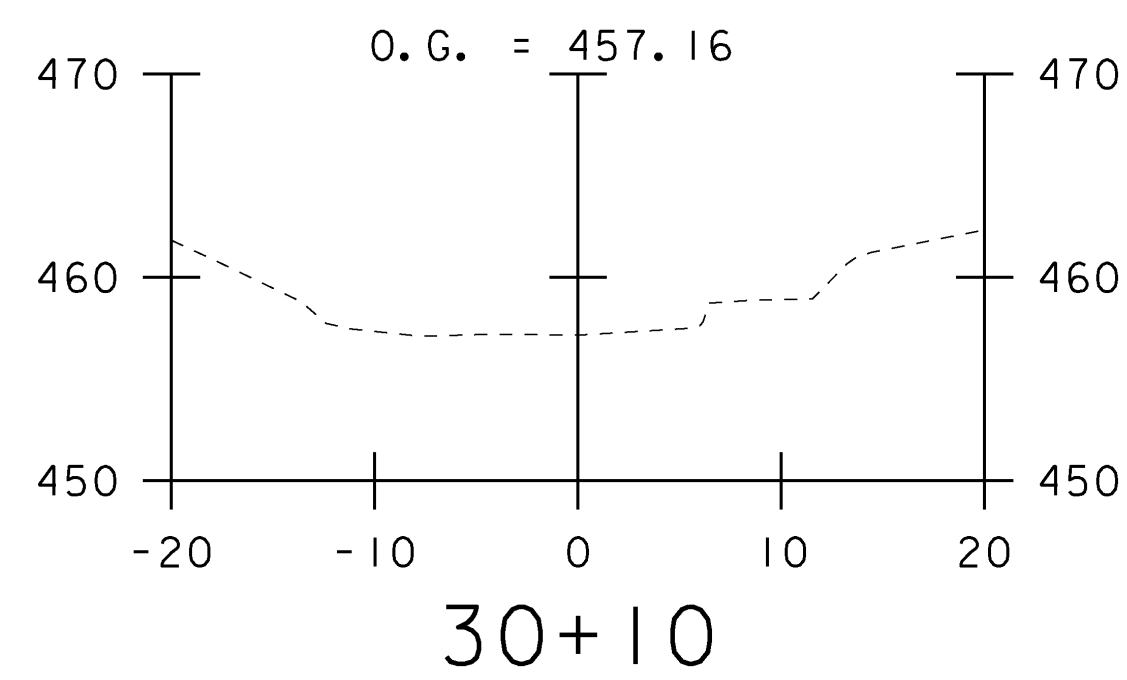
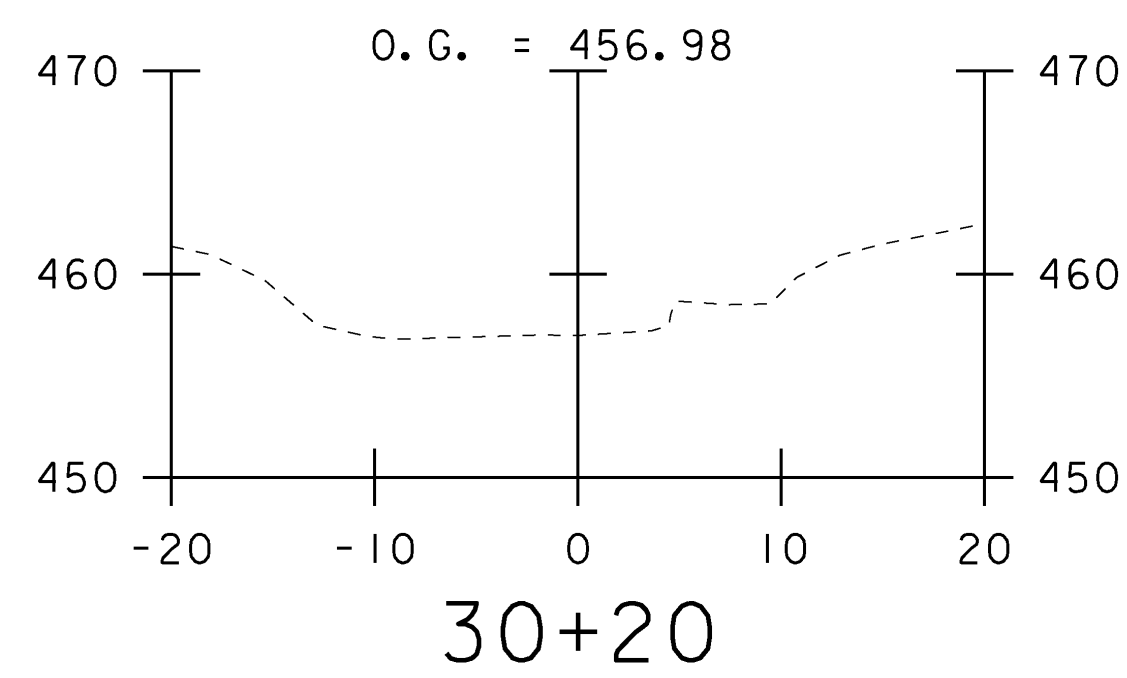
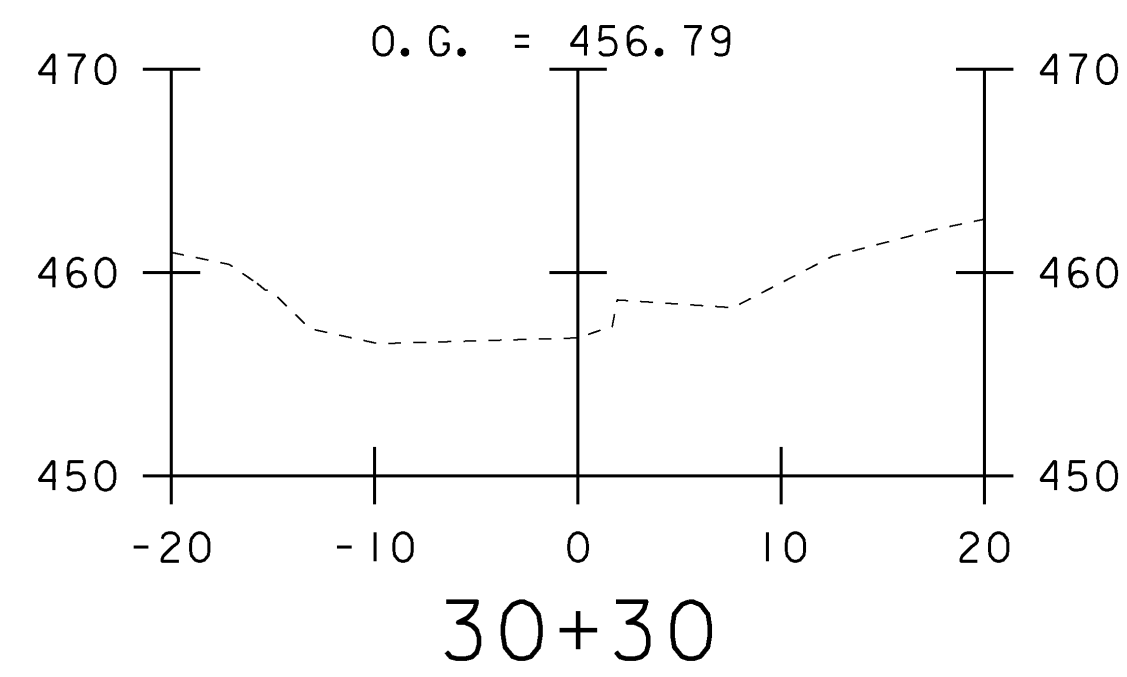
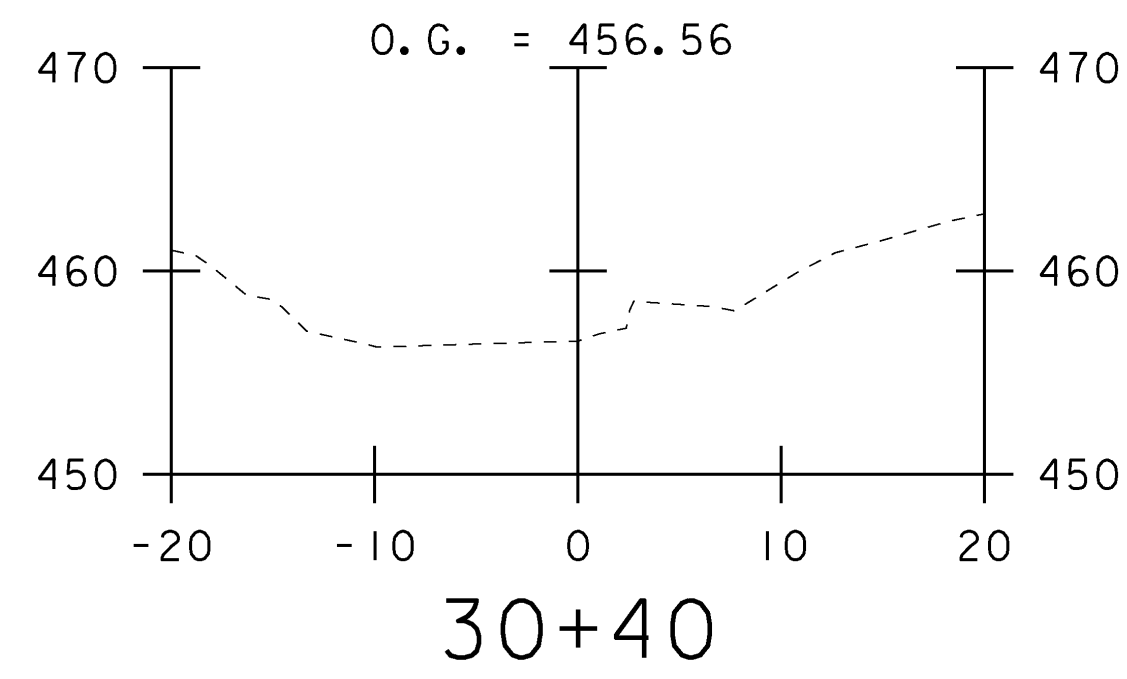
PROJECT NAME: SHARON	FILE NAME: er03.dgn	PLOT DATE: 13-JUL-2009
PROJECT NUMBER: IM CULV (18)	PROJECT LEADER: DMB	DRAWN BY: MJF
	DESIGNED BY: MHM	CHECKED BY: DMB
	EPSC PLAN (14-2)	SHEET 26 OF 36



- SITE STABILIZATION NOTES:**
1. ALL DISTURBED GRASSED AREAS SHALL BE STABILIZED WITH SEED AND MULCH.
 2. ALL DISTURBED STONE AREAS AND AREAS BELOW ORDINARY HIGH WATER SHALL BE STABILIZED WITH STONE FILL, TYPE IV.
 3. SEE HEADWALL DETAILS FOR LIMITS OF PROPOSED STONE FILL AND PERMANENT EROSION MATTING.



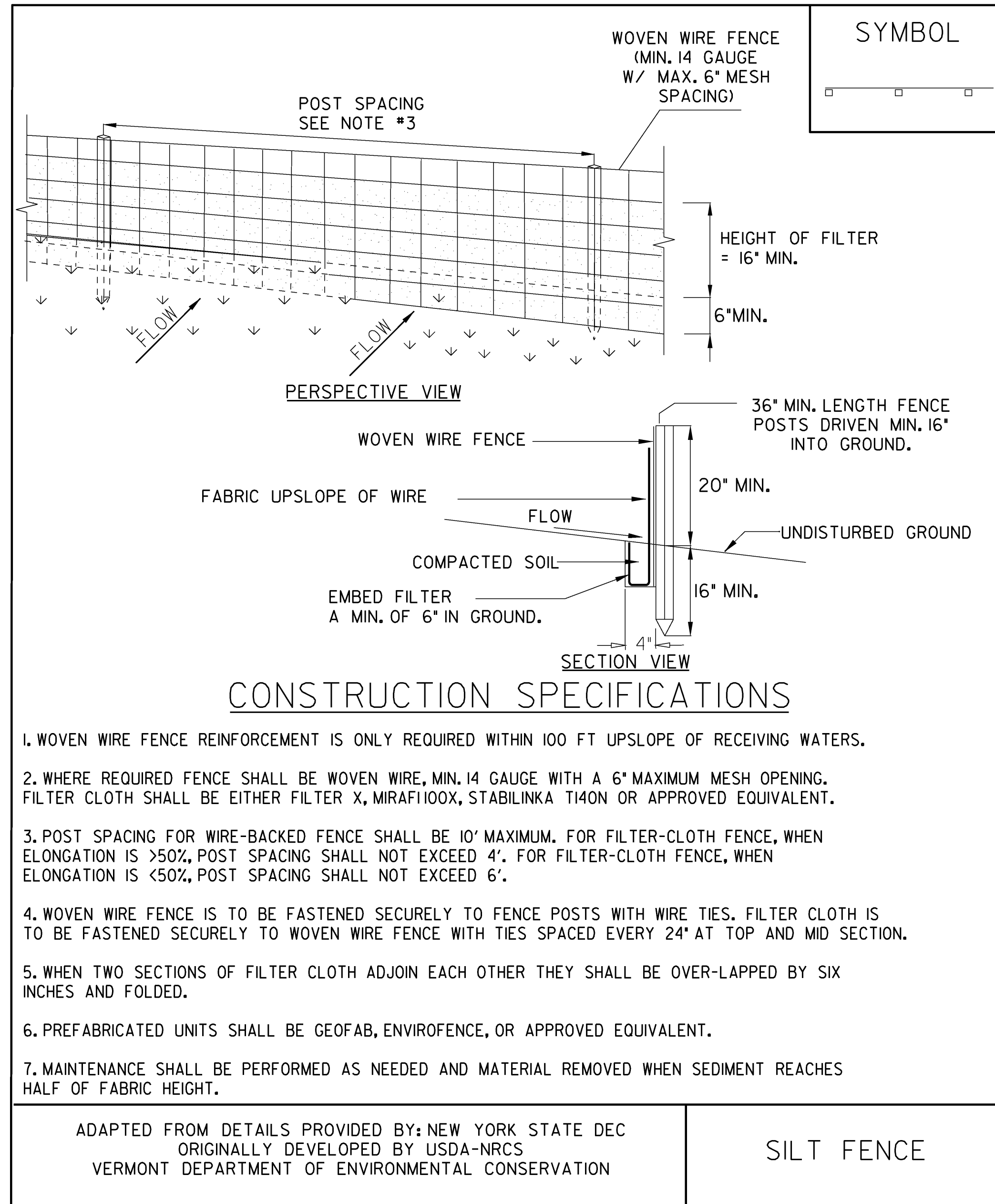
PROJECT NAME: SHARON	
PROJECT NUMBER: IM CULV (18)	
FILE NAME: FC03.dgn	PLOT DATE: 13-JUL-2009
PROJECT LEADER: DMB	DRAWN BY: MJF
DESIGNED BY: MHM	CHECKED BY: DMB
FINAL CONDITIONS SITE PLAN (14-2)	SHEET 27 OF 36



PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

FILE NAME: z08a190xsl.dgn
PROJECT LEADER: DMB
DESIGNED BY: MHM
CROSS SECTIONS (14-2)

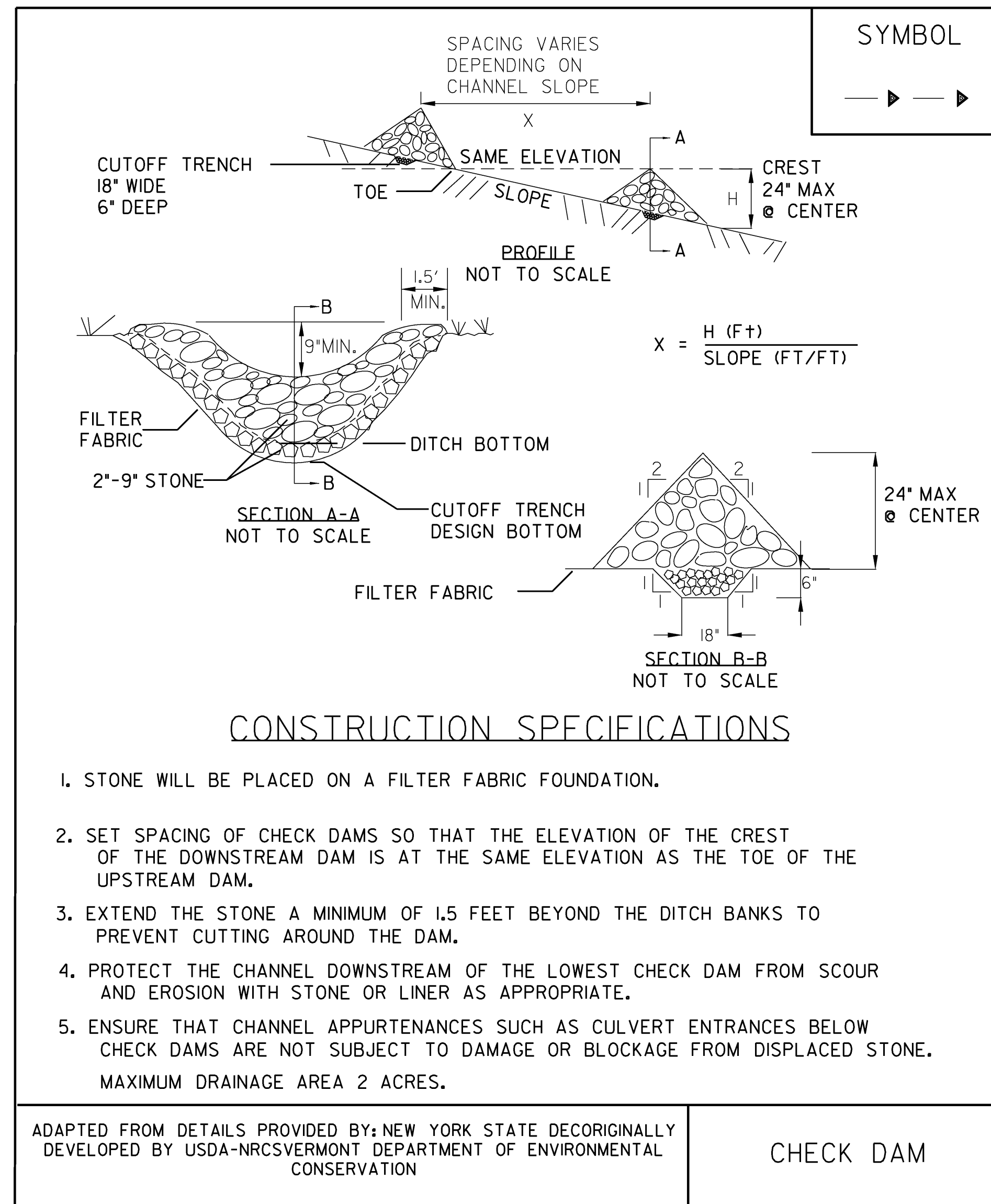
PLOT DATE: 13-JUL-2009
DRAWN BY: MJF
CHECKED BY: DMB
SHEET 28 OF 36



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

SILT FENCE REQUIRED TO PROTECT THE PROPOSED HEADWALL CONSTRUCTION SHALL BE PAID FOR UNDER ITEM 649.51, "GEO TEXTILE FOR SILT FENCE".

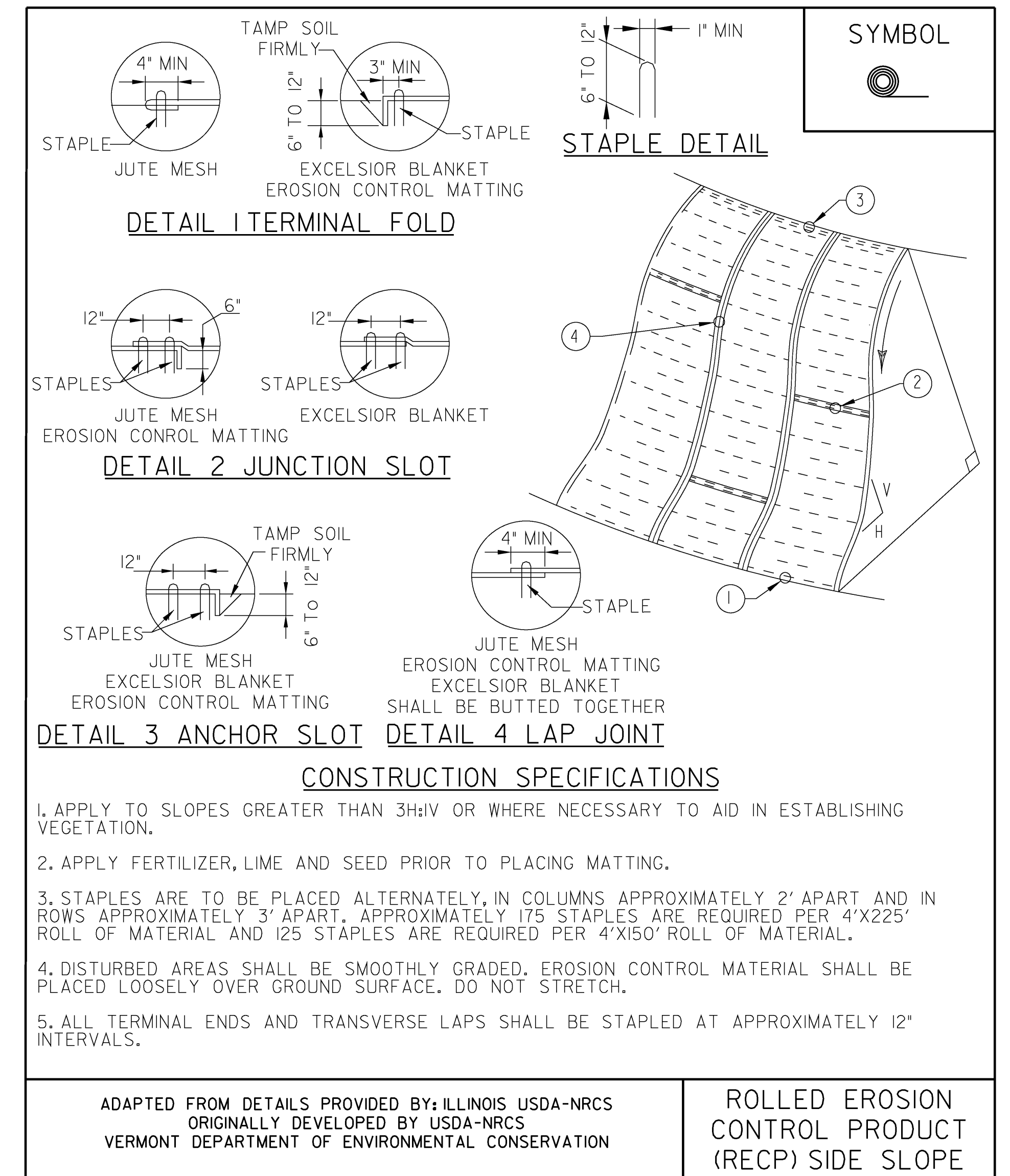
SILT FENCE REQUIRED AS PART OF THE CONTRACTOR'S TEMPORARY ACCESS ROAD OR STAGING AREA SHALL BE INCIDENTAL TO ITEM 900.645, "SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)".



REVISIONS	
MARCH 8, 2007	JMF

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

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)".



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

THIS ITEM SHALL BE PAID FOR UNDER ITEM 653.20 TEMPORARY EROSION MATTING OR 653.21 PERMANENT EROSION MATTING

PERMANENT EROSION MATTING REQUIRED TO STABILIZE SOIL DISTURBED AS PART OF THE PROPOSED HEADWALL CONSTRUCTION SHALL BE PAID FOR UNDER ITEM 653.21, "PERMANENT EROSION MATTING".

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)".

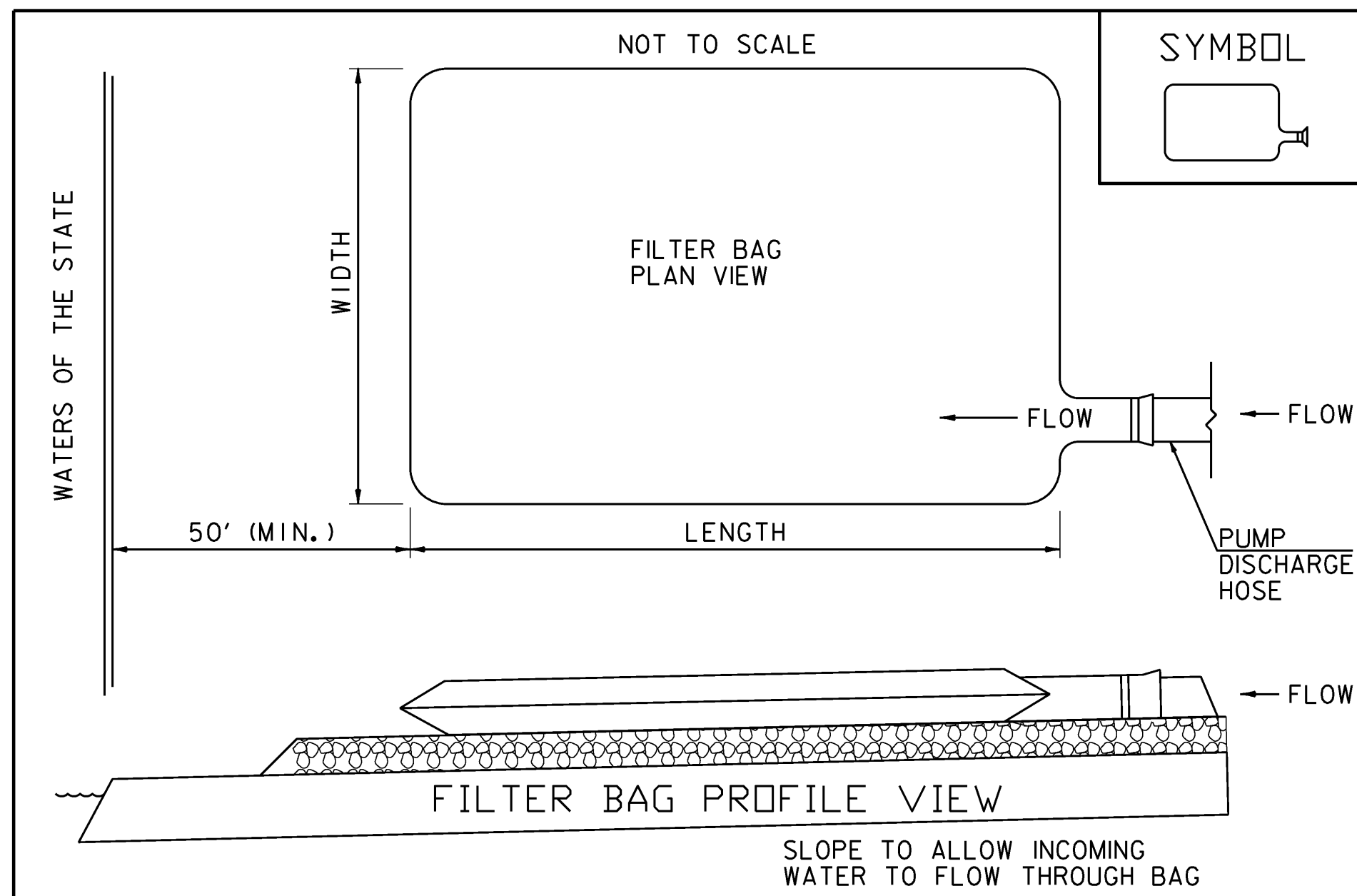
NEW REVISIONS	
APRIL 16, 2007	WHF

PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

FILE NAME: EPSC01.DGN
PROJECT LEADER: DMB
DESIGNED BY: MHM
EPSC DETAIL 01

PLOT DATE: 13-JUL-2009
DRAWN BY: MJF
CHECKED BY: DMB
SHEET 29 OF 36





APPLICATION NOTES:

THE PRIMARY PURPOSE OF THE FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS WHILE ALLOWING WATER TO PASS THROUGH THE BAG.

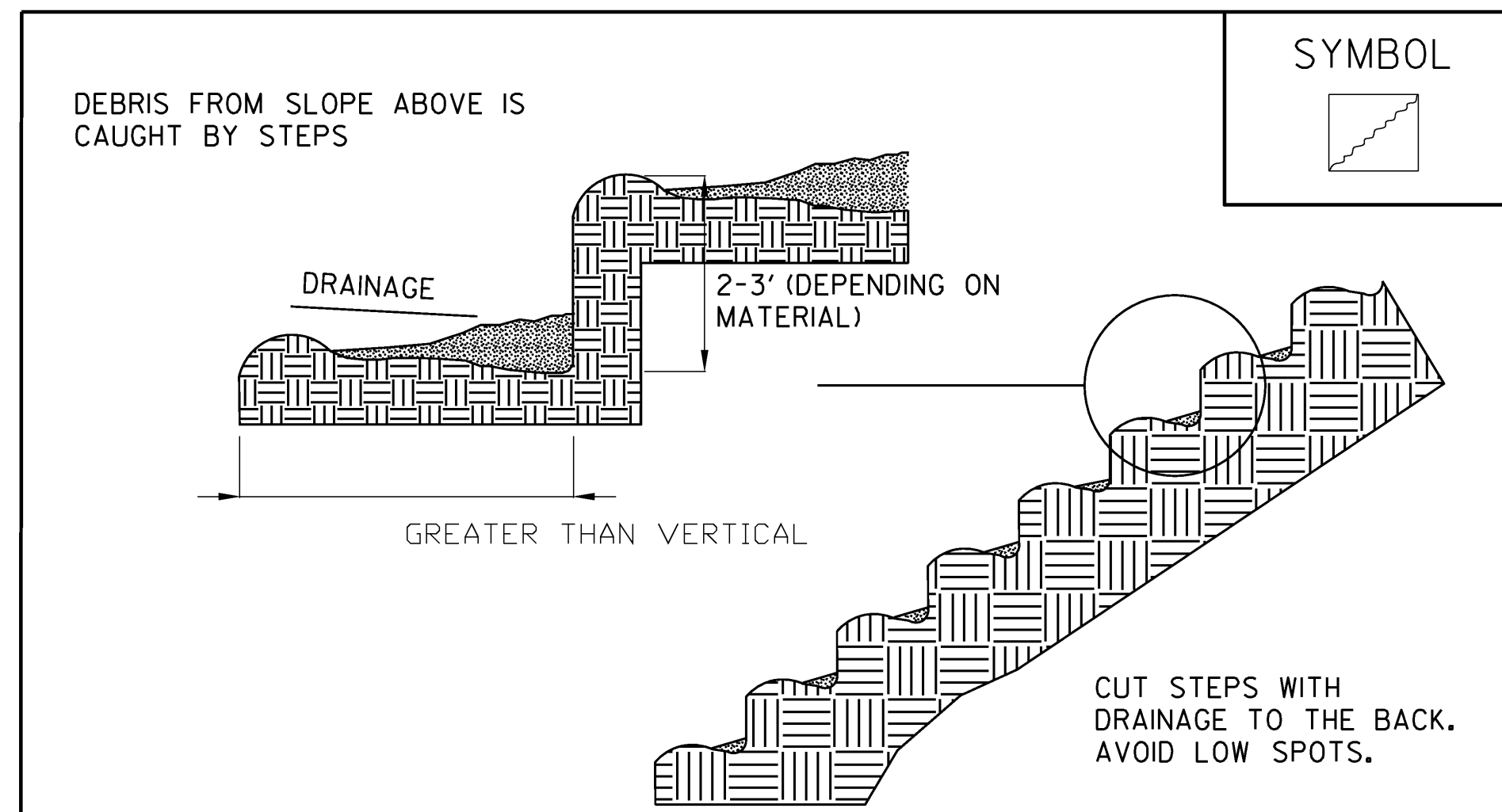
GENERAL NOTES:

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

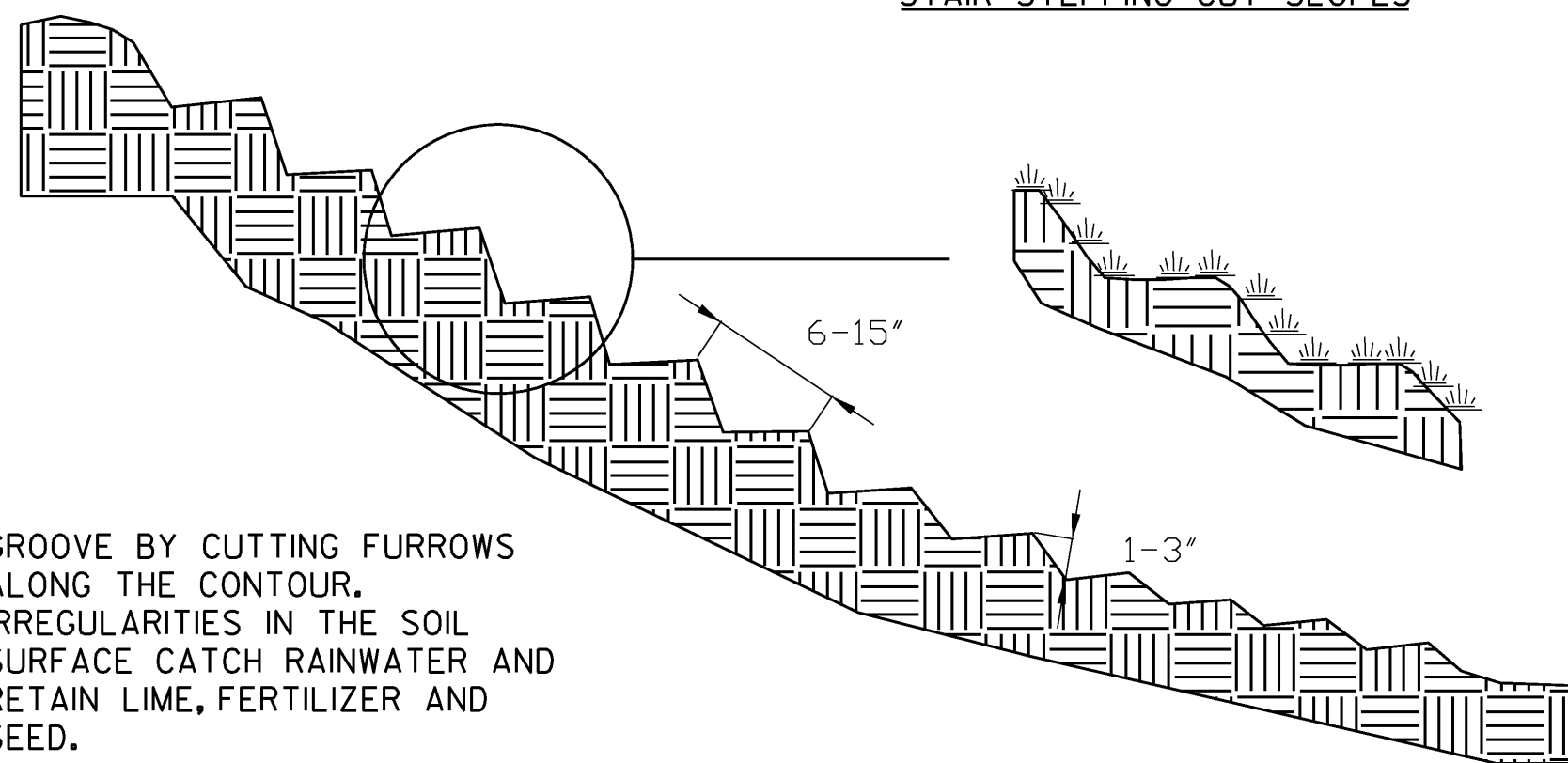
FILTER BAG

REVISIONS	
SEPTEMBER 18, 2007	WHF
DECEMBER 13, 2007	WHF

FILTER BAGS REQUIRED AS PART OF THE CONTRACTOR'S WORK SHALL BE INCIDENTAL TO ITEM 900.645, "SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM)".



STAIR STEPPING CUT SLOPES



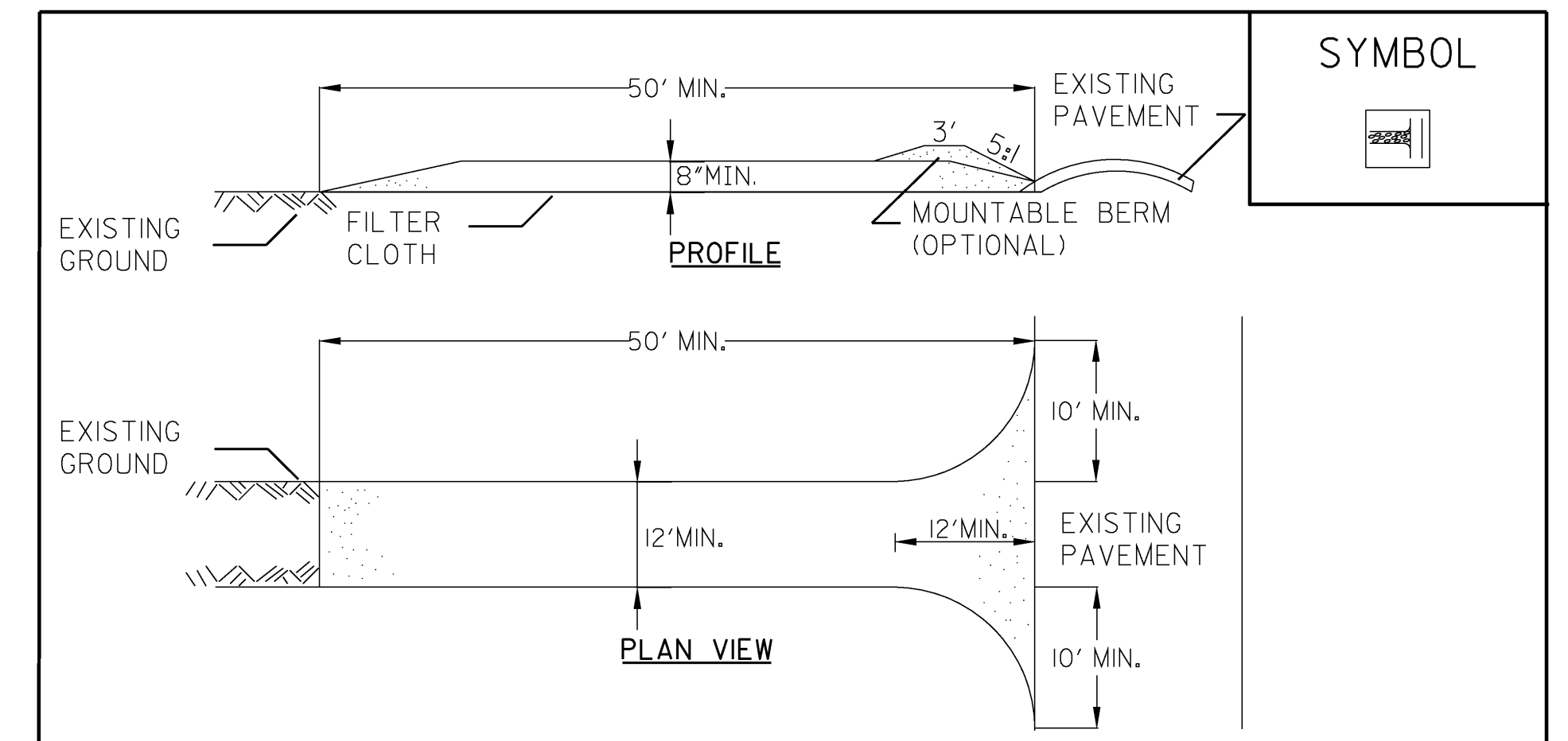
GROOVING SLOPES

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

SURFACE ROUGHENING
DETAILS

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

THIS ITEM SHALL BE CONSIDERED INCIDENTAL TO THE MATERIAL ITEM SPECIFIED



CONSTRUCTION SPECIFICATIONS

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

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

STABILIZED
CONSTRUCTION
ENTRANCE

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

REVISIONS	
FEBRUARY 9, 2007	WHF
MARCH 8, 2007	JMF

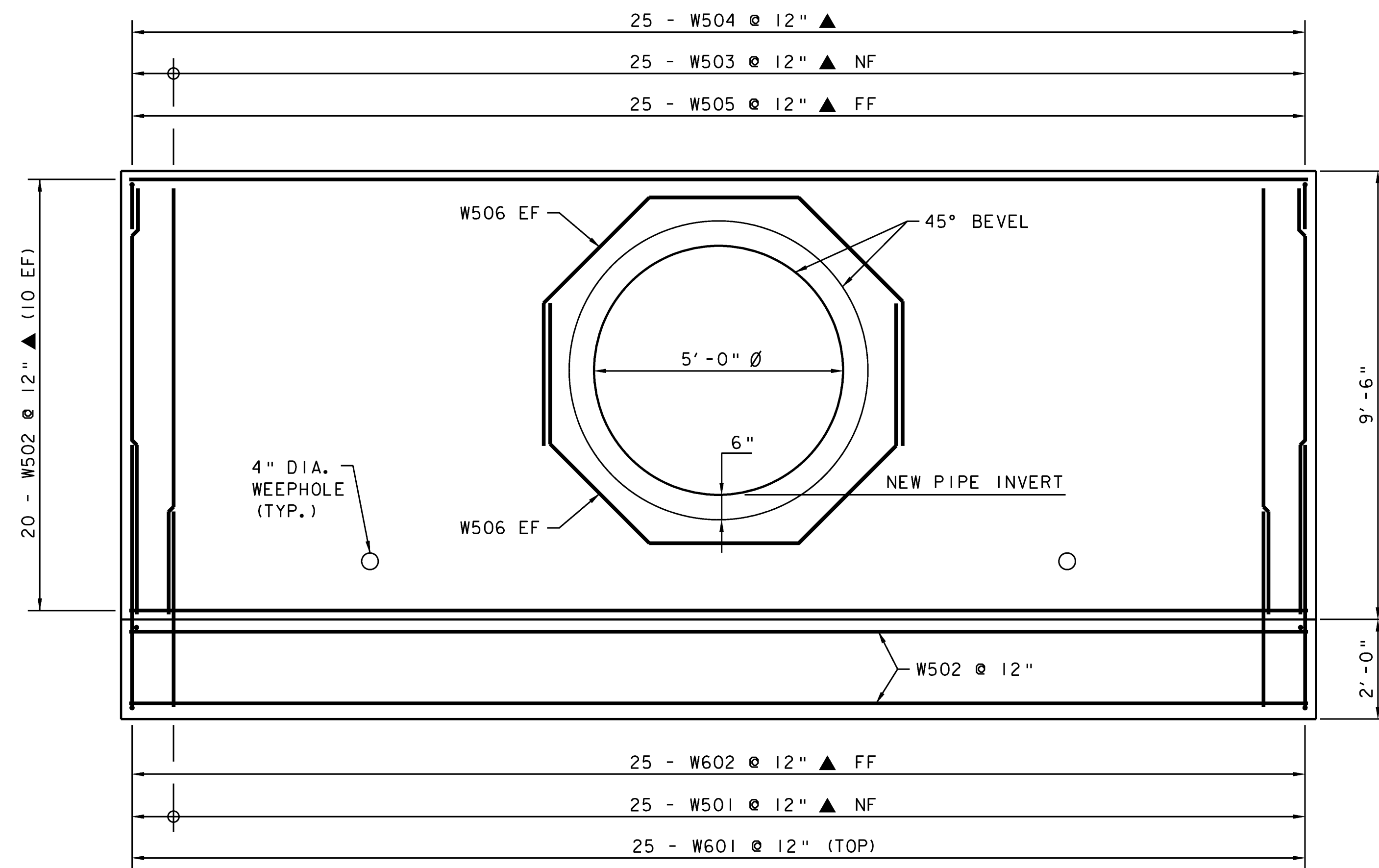
VEHICLE TRACKING PADS REQUIRED AS PART OF THE CONTRACTOR'S TEMPORARY ACCESS ROAD OR STAGING AREA SHALL BE INCIDENTAL TO ITEM 900.645, "SPECIAL PROVISION (TEMPORARY ACCESS ROAD AND STAGING AREAS, CULVERT)".



PROJECT NAME: SHARON
PROJECT NUMBER: IM CULV (18)

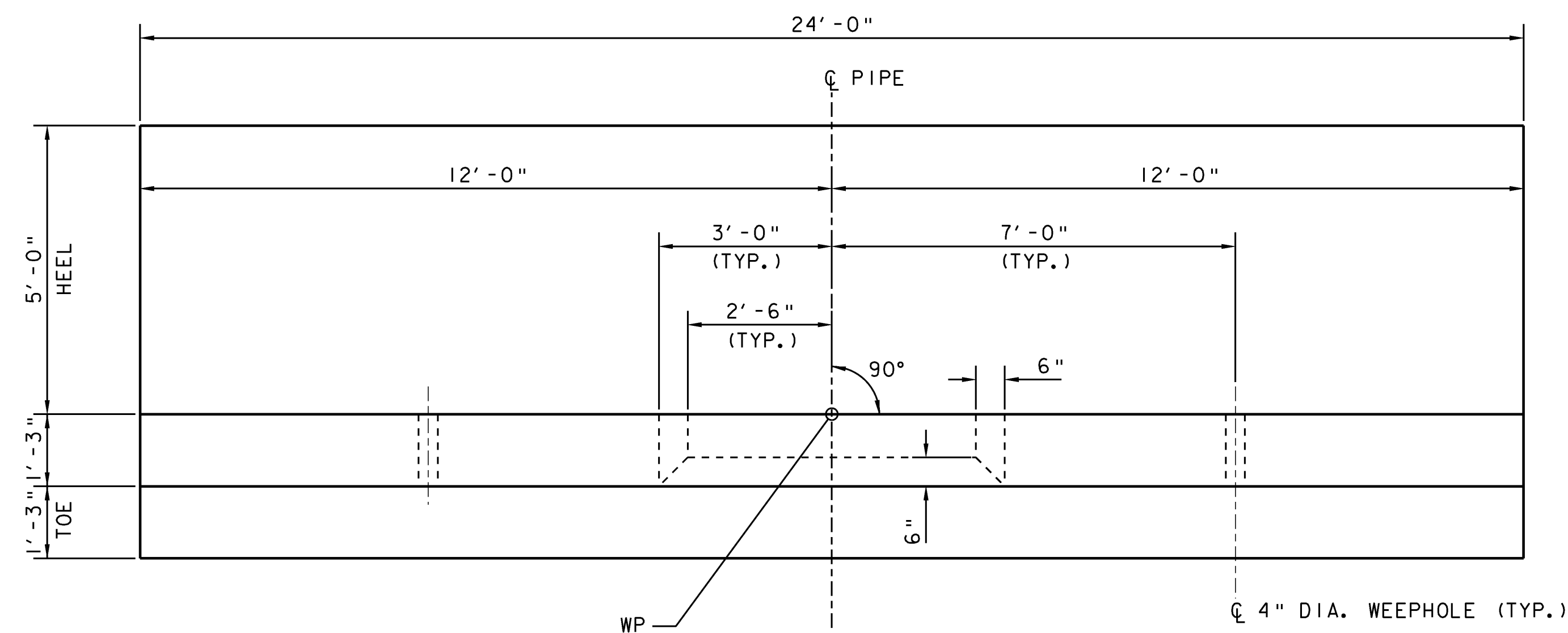
FILE NAME: EPSC02.DGN
PROJECT LEADER: DMB
DESIGNED BY: MHM
EPSC DETAIL 02

PLOT DATE: 13-JUL-2009
DRAWN BY: MJF
CHECKED BY: DMB
SHEET 30 OF 36



HEADWALL ELEVATION

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

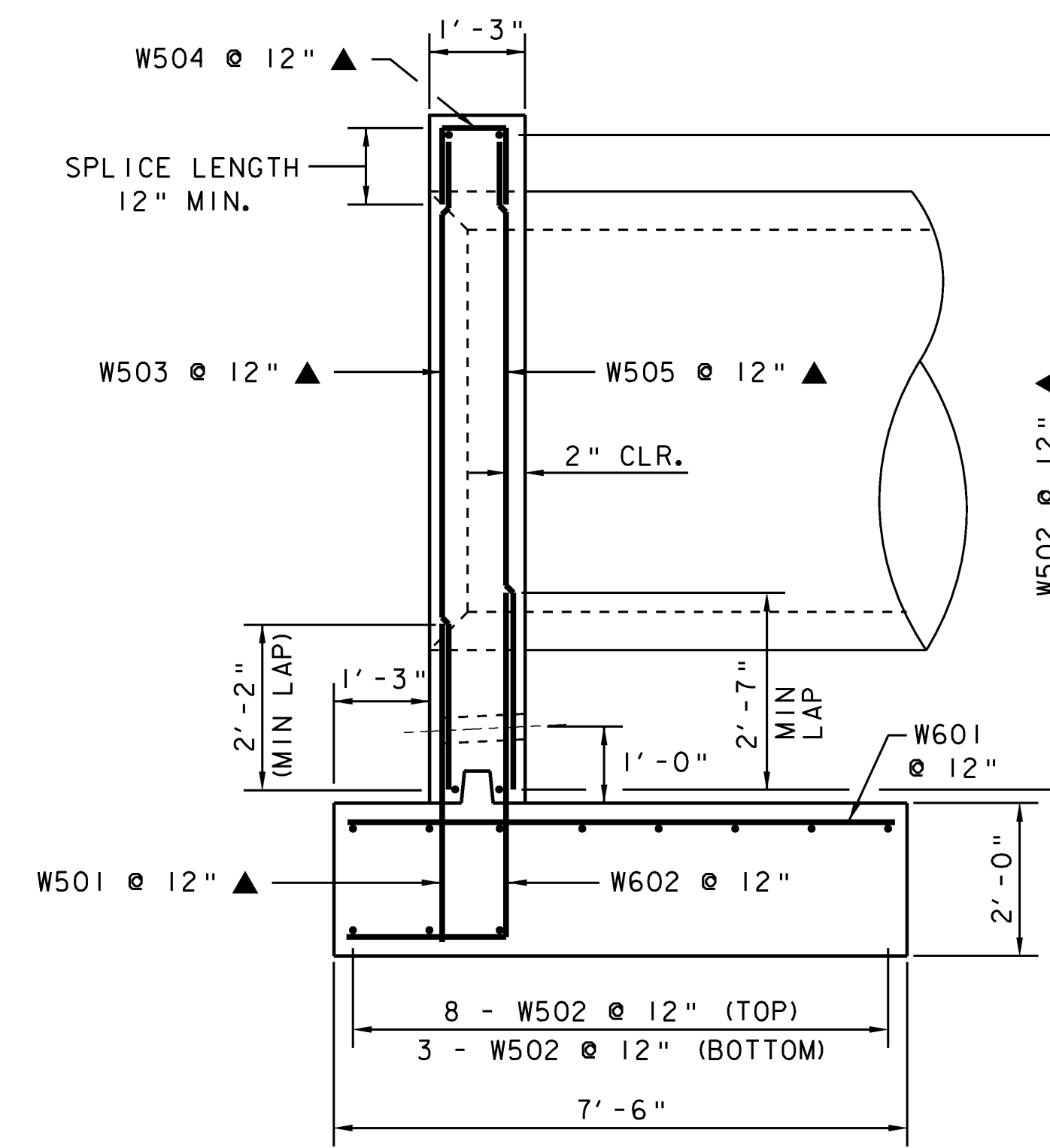


HEADWALL PLAN

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

NOTE:

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

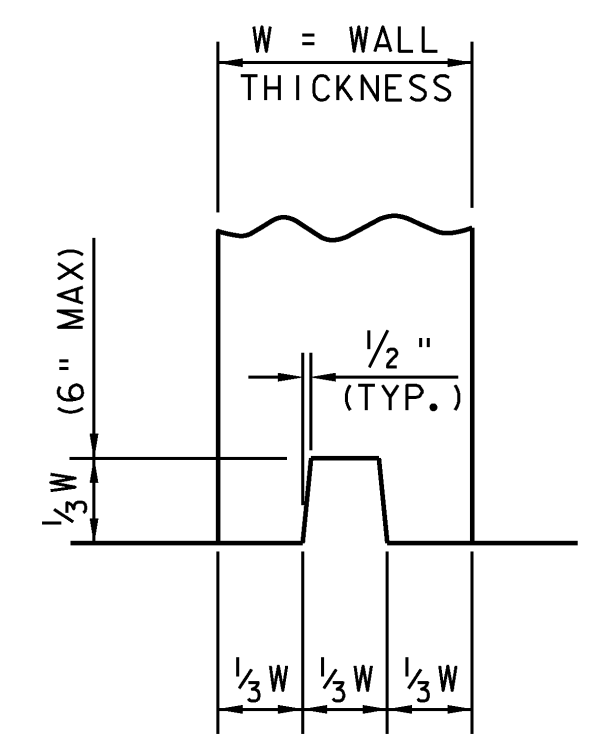


HEADWALL SECTION

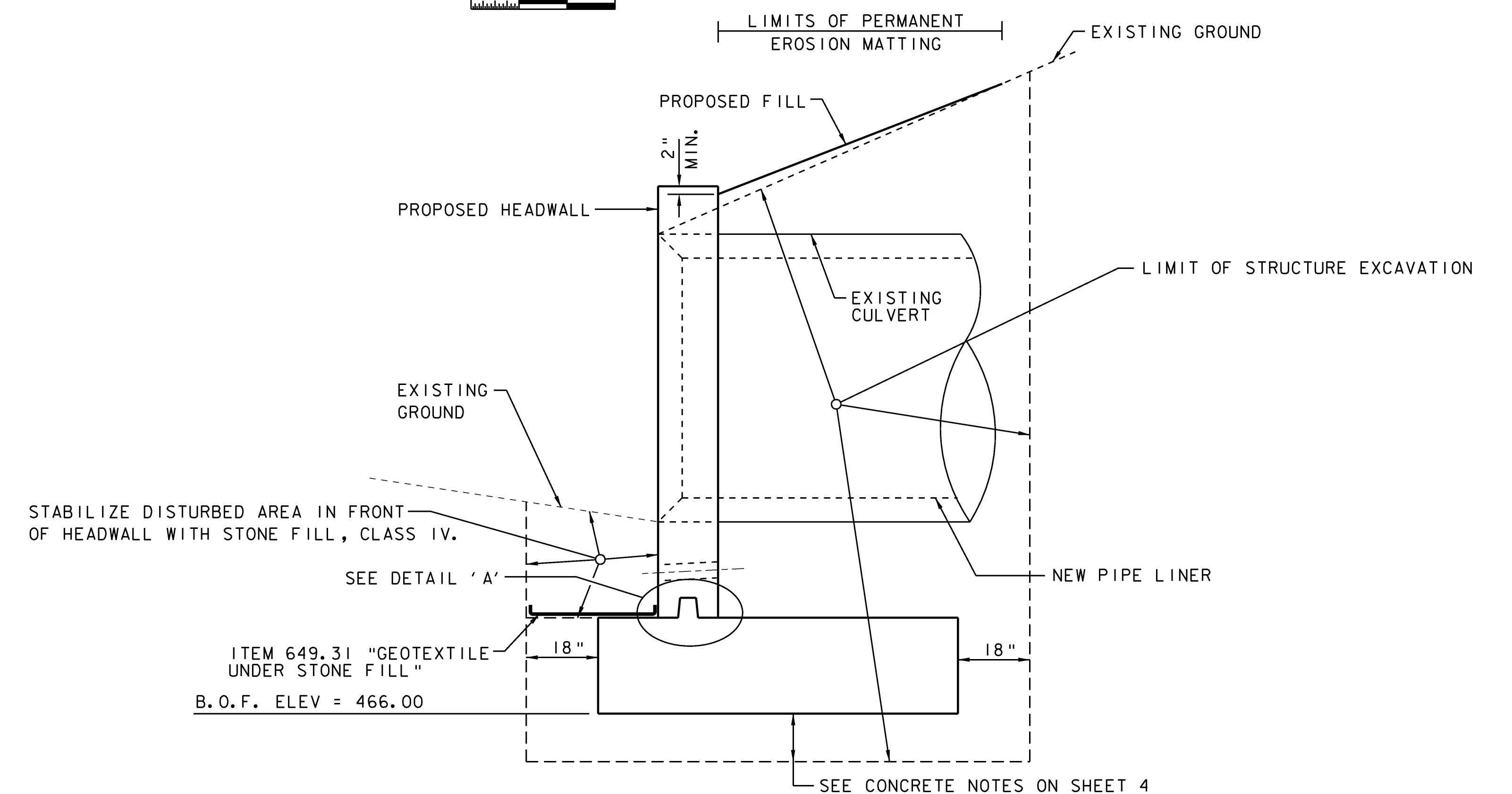
SCALE 1/2" = 1'-0"
 1 0 1 2

NOTES:

1. SEE CONCRETE NOTES ON SHEET 4 FOR
 SUBFOOTING AND DOWEL DETAILS.



DETAIL 'A'
 NOT TO SCALE



PROPOSED HEADWALL SECTION

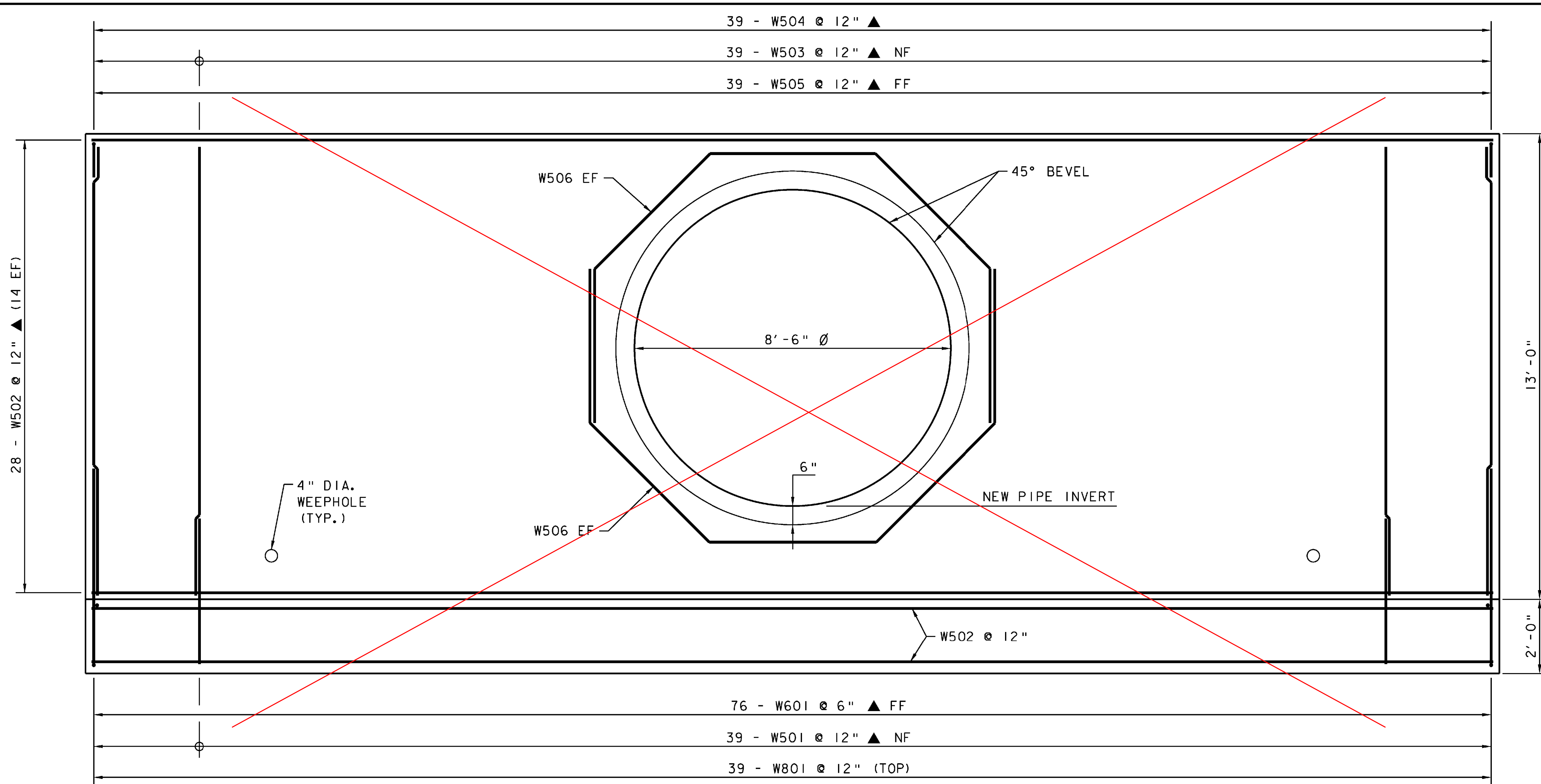
SCALE 1/2" = 1'-0"
 1 0 1 2



PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)

FILE NAME: HEADWALL72SHARON.DGN
 PROJECT LEADER: DMB
 DESIGNED BY: LKW
 HEADWALL DETAILS (13-1)

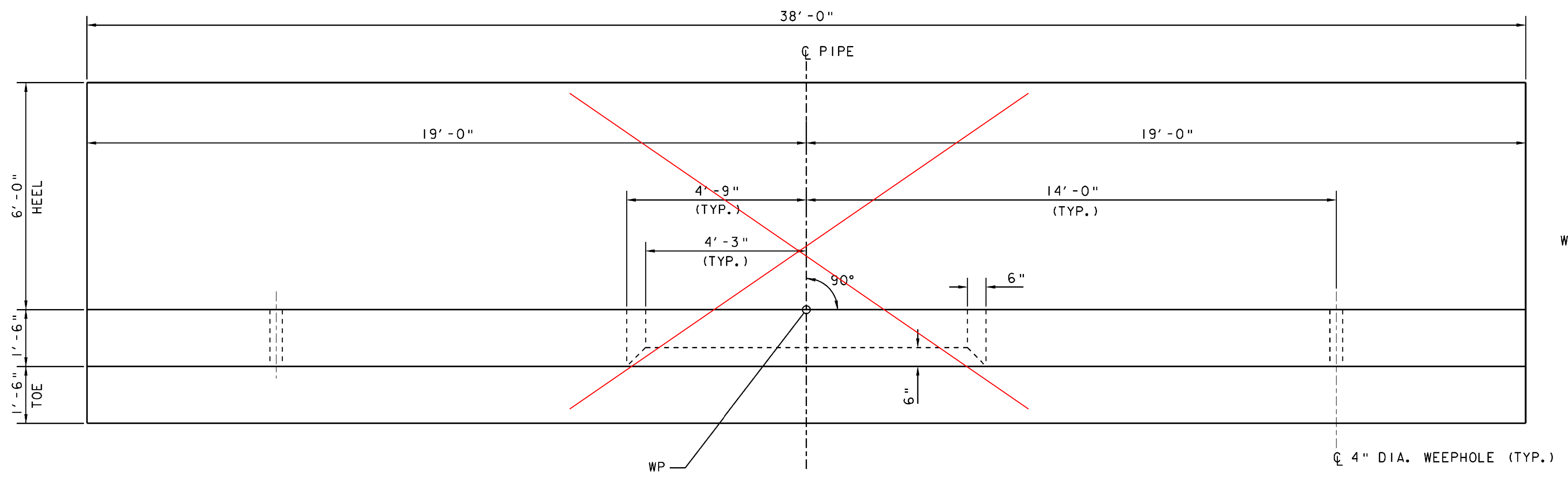
PLOT DATE: 13-JUL-2009
 DRAWN BY: SLM
 CHECKED BY: WLD
 SHEET 31 OF 36



HEADWALL ELEVATION

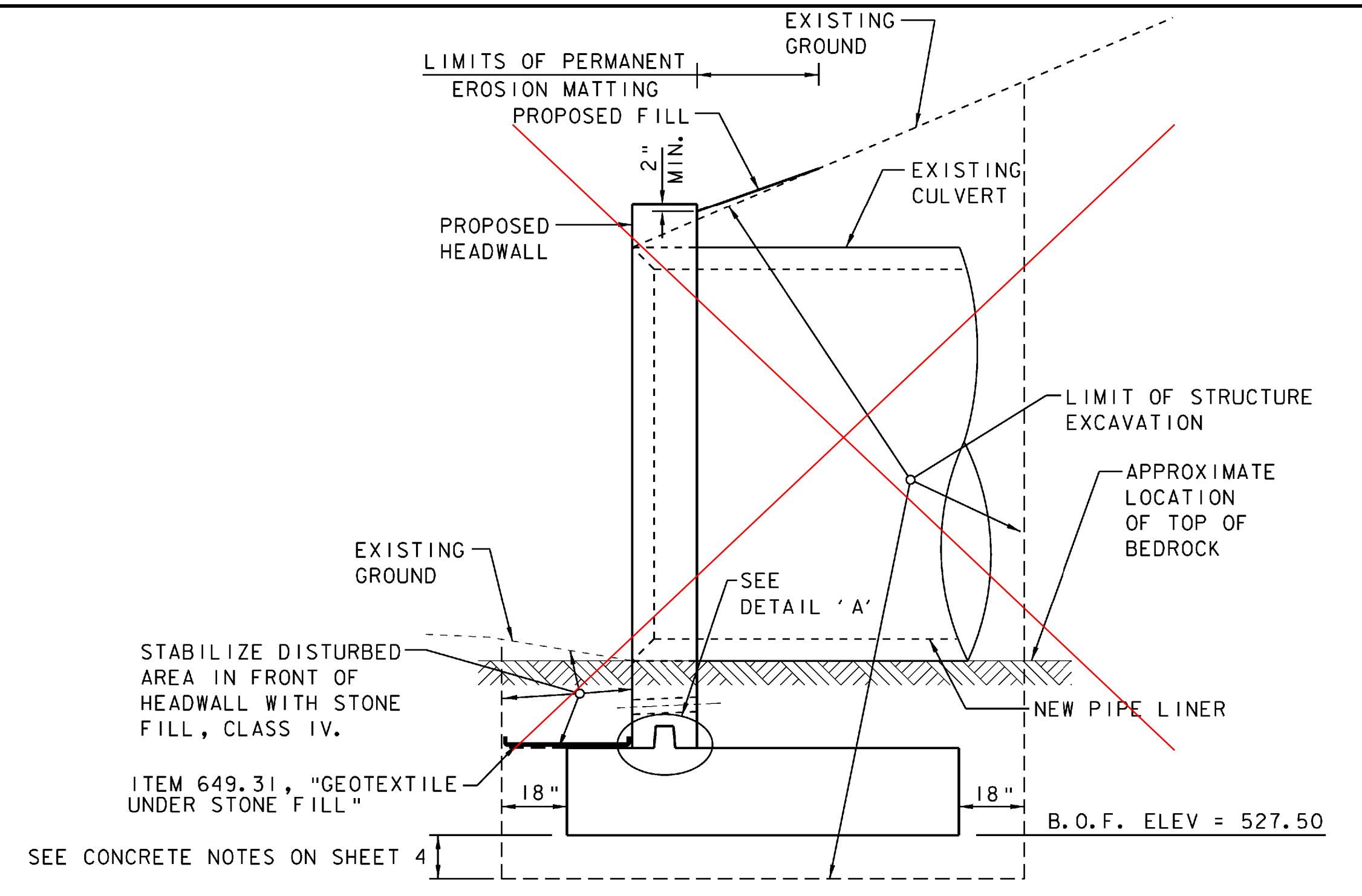
SCALE 1/2" = 1'-0"
 1 0 1 2

SEE CHANGE IN DESIGN 3



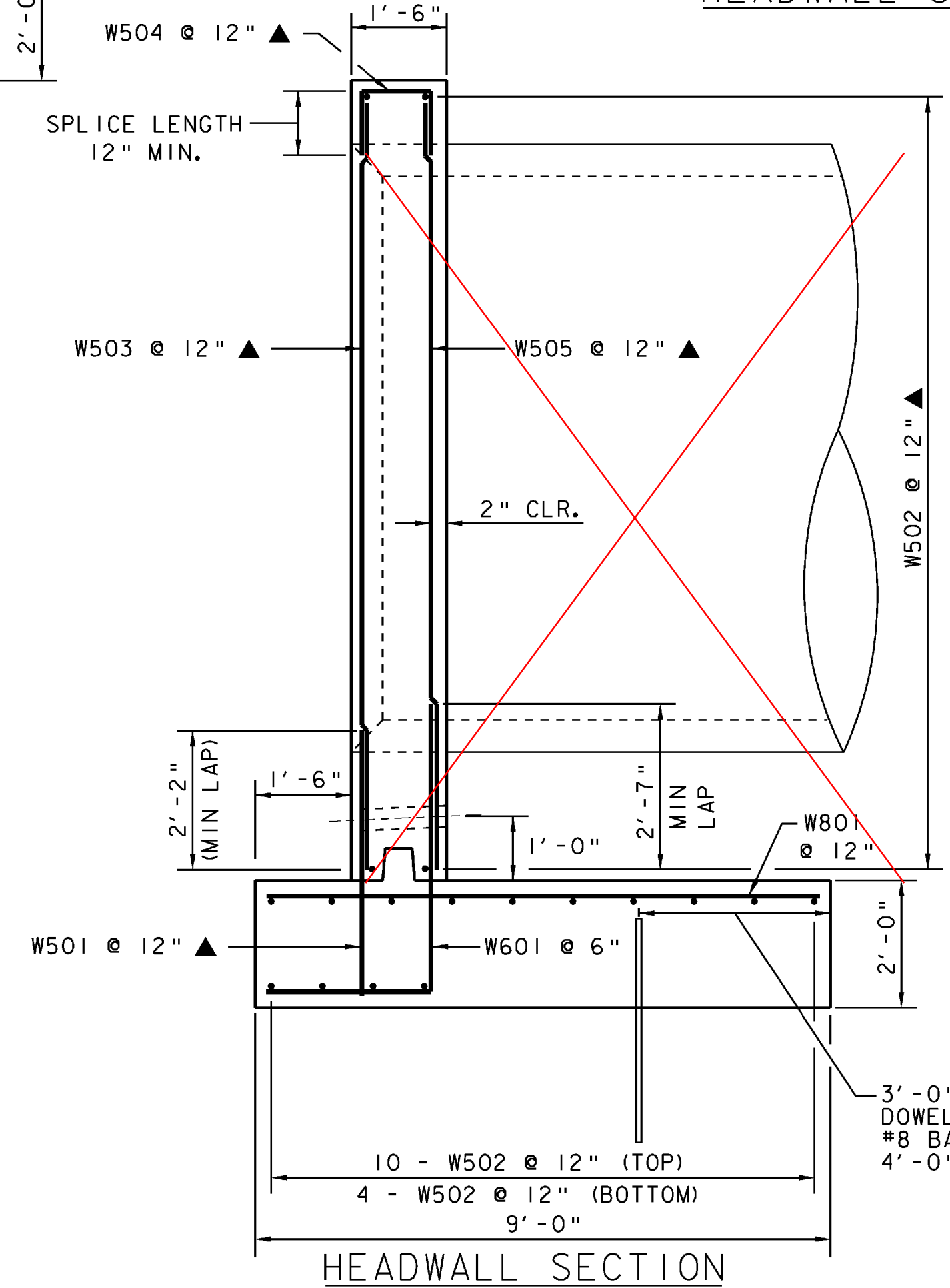
HEADWALL PLAN

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



PROPOSED HEADWALL SECTION

SCALE 3/8" = 1'-0"
 1 0 1 2 3 4

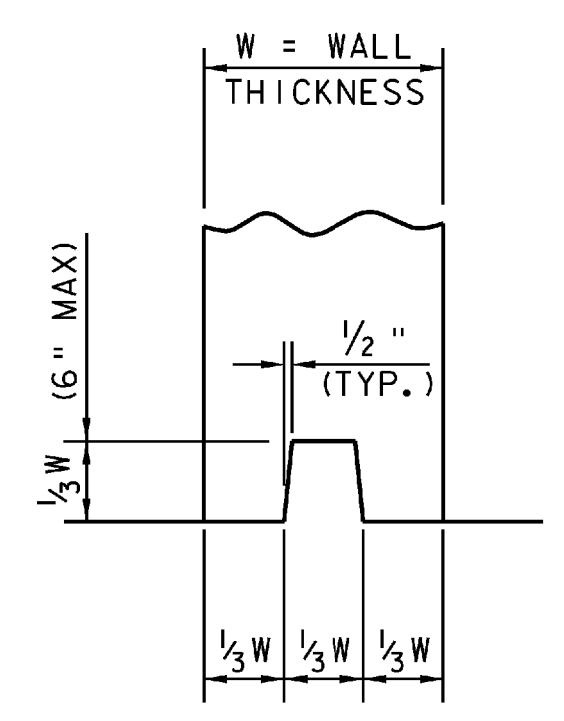


HEADWALL SECTION

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

NOTES:

1. SEE CONCRETE NOTES ON SHEET 4 FOR SUBFOOTING AND DOWEL DETAILS.
2. BEDROCK ELEVATION DETERMINED BY VISUAL INSPECTION.



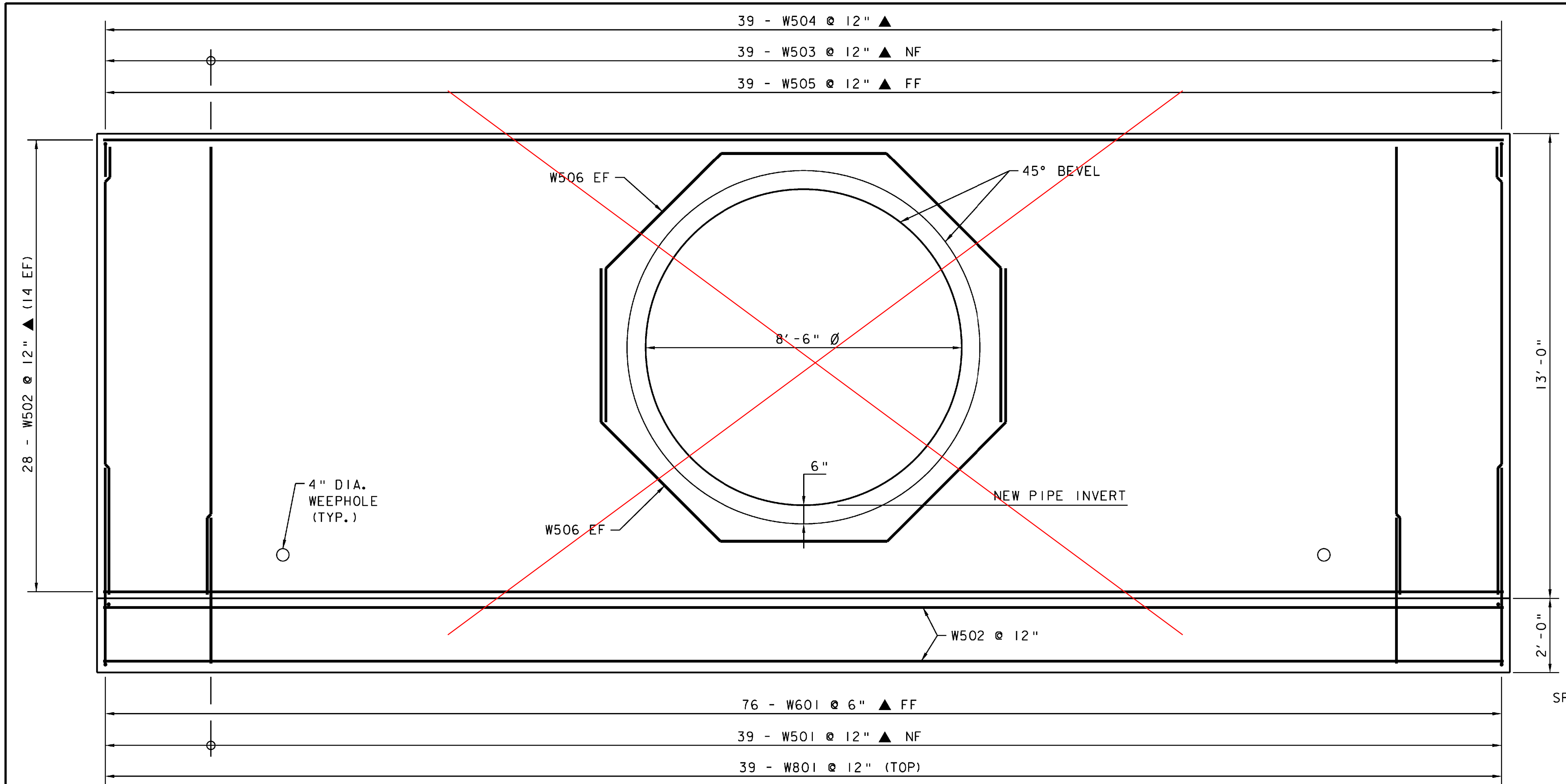
DETAIL 'A'
 NOT TO SCALE

NOTE:

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



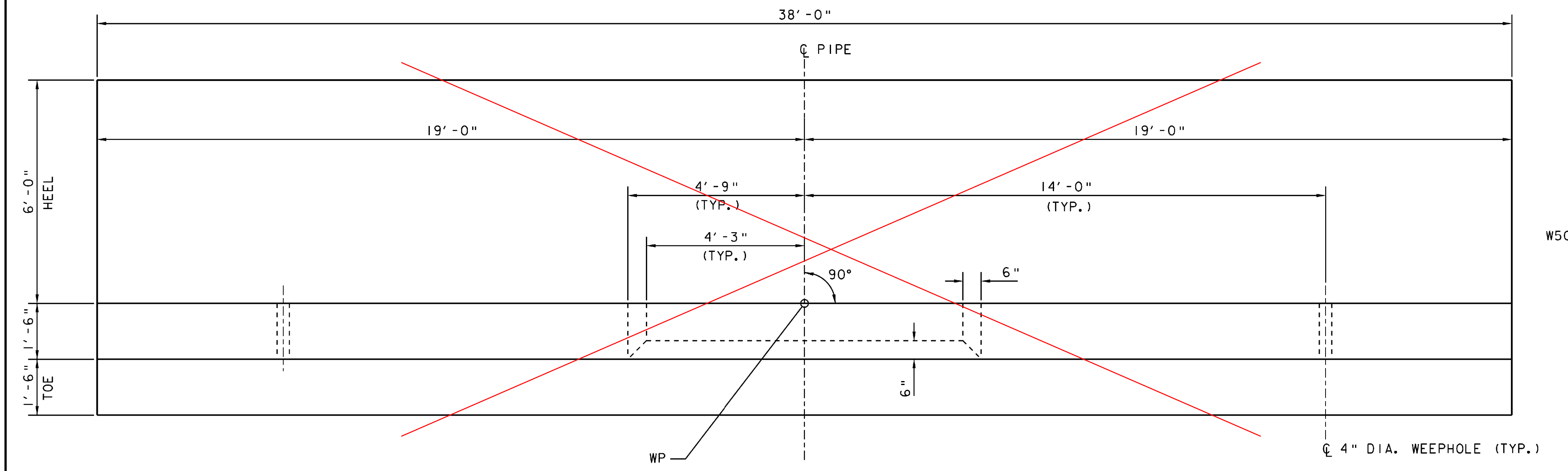
PROJECT NAME:	SHARON
PROJECT NUMBER:	IM CULV (18)
FILE NAME:	HEADWALL I14-SHARON-I4-I.DGN
PROJECT LEADER:	DMB
DESIGNED BY:	LKW
HEADWALL DETAILS (I4-I)	
PLOT DATE:	10-AUG-2009
DRAWN BY:	SLM
CHECKED BY:	WLD
SHEET	32 OF 36



HEADWALL ELEVATION

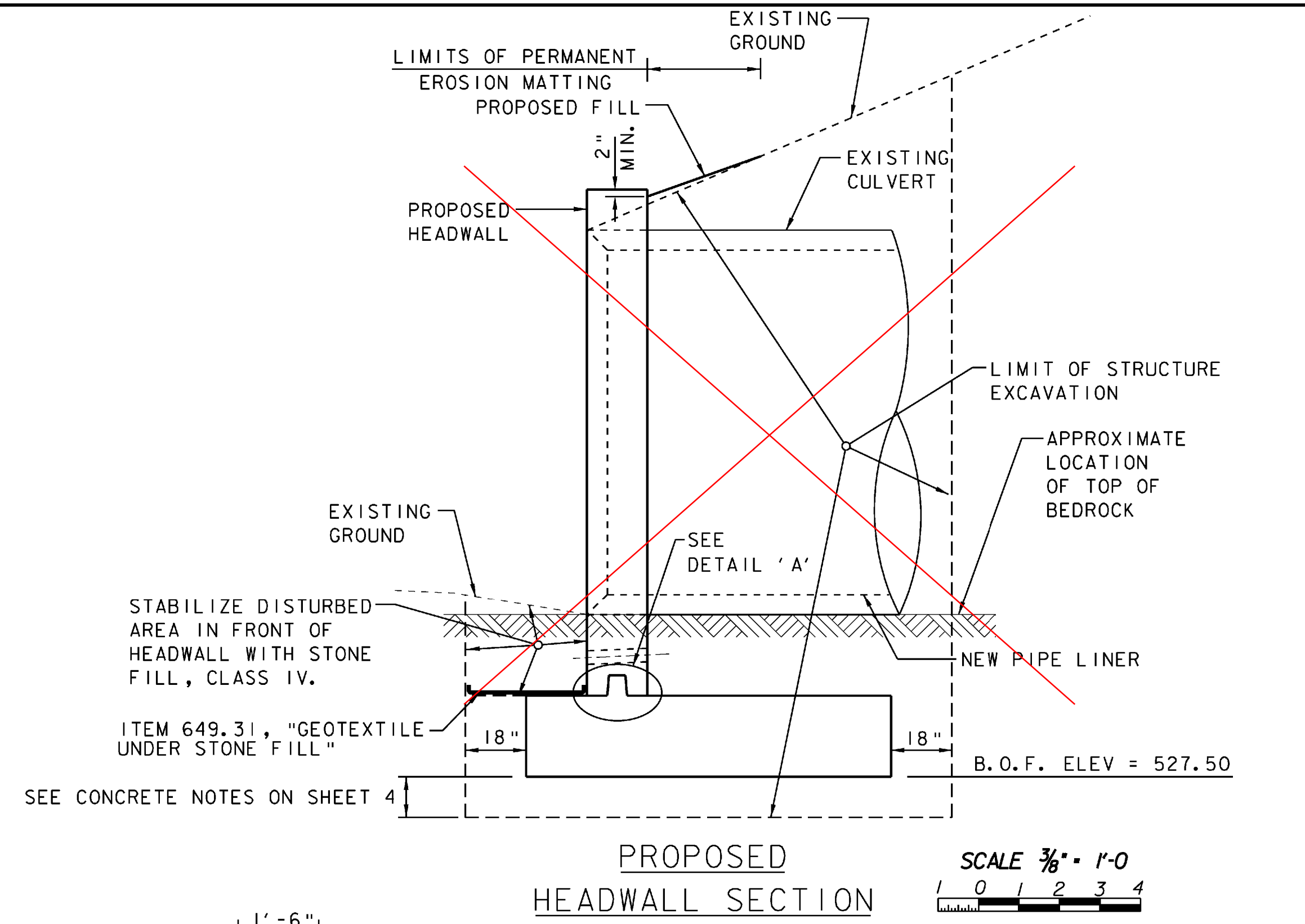
SCALE 1/2" = 1'-0"
 1 0 1 2

SEE CHANGE IN DESIGN 4



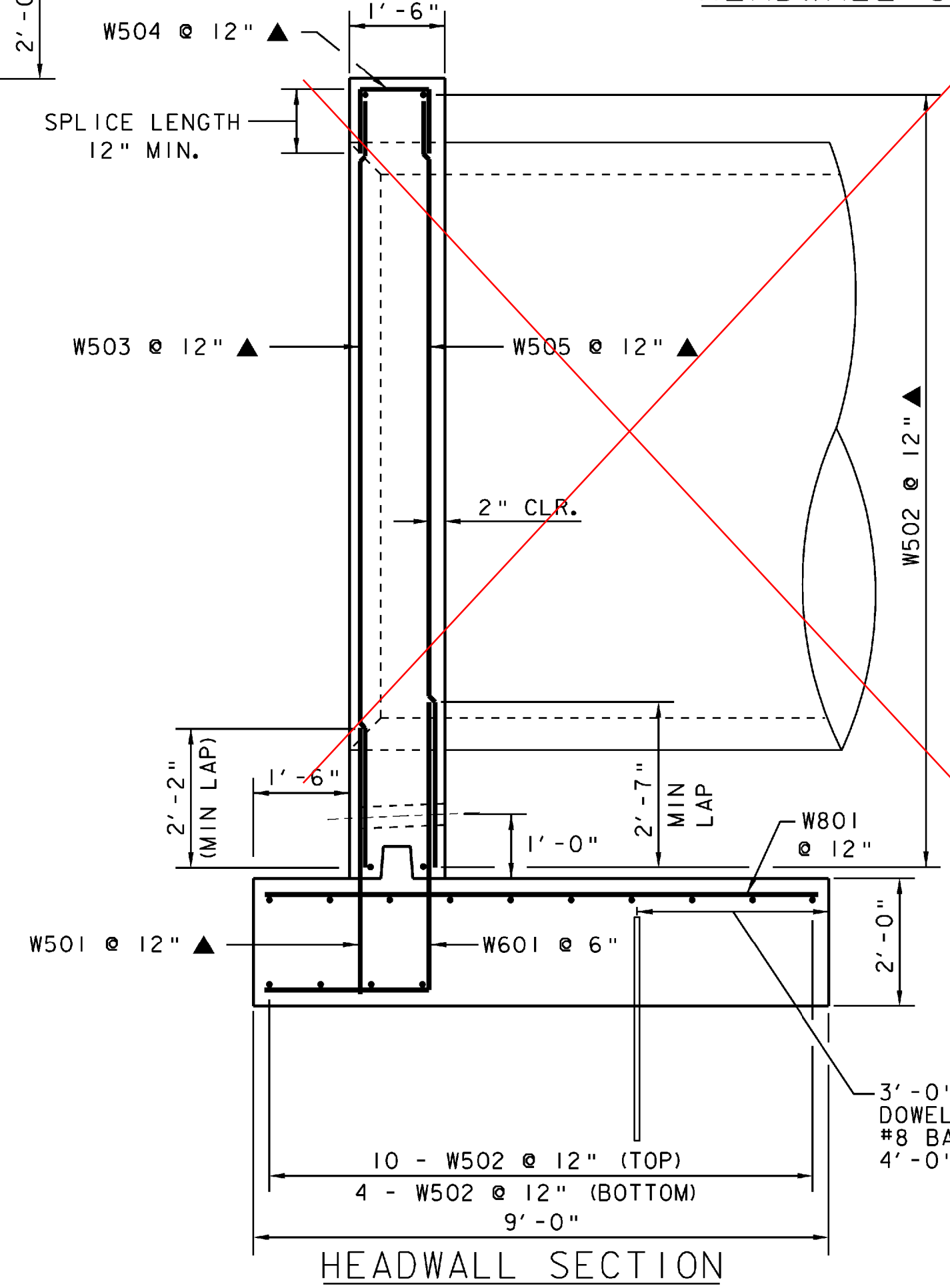
HEADWALL PLAN

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



PROPOSED HEADWALL SECTION

SCALE 3/8" = 1'-0"
 1 0 1 2 3 4

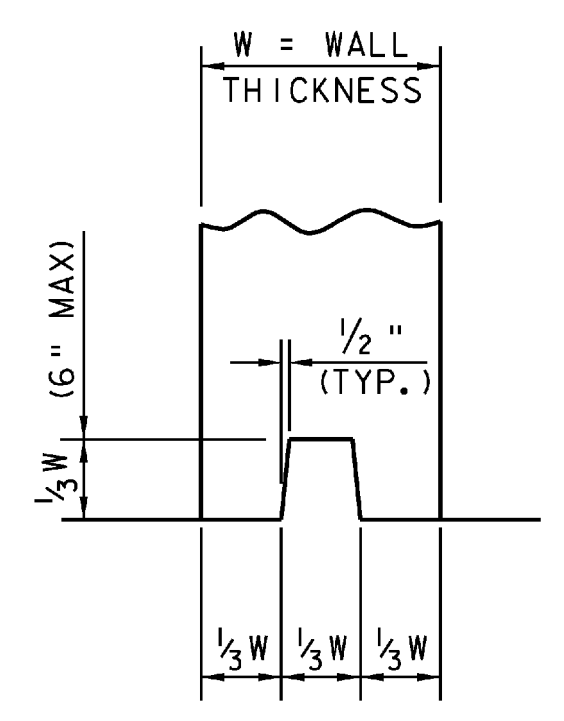


HEADWALL SECTION

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

NOTES:

1. SEE CONCRETE NOTES ON SHEET 4 FOR SUBFOOTING AND DOWEL DETAILS.
2. BEDROCK ELEVATION DETERMINED BY VISUAL INSPECTION.



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:	SHARON
PROJECT NUMBER:	IM CULV (18)
FILE NAME:	HEADWALL I14-SHARON-I4-I.DGN
PROJECT LEADER:	DMB
DESIGNED BY:	LKW
HEADWALL DETAILS (I4-I)	
PLOT DATE:	10-AUG-2009
DRAWN BY:	SLM
CHECKED BY:	WLD
SHEET	32 OF 36

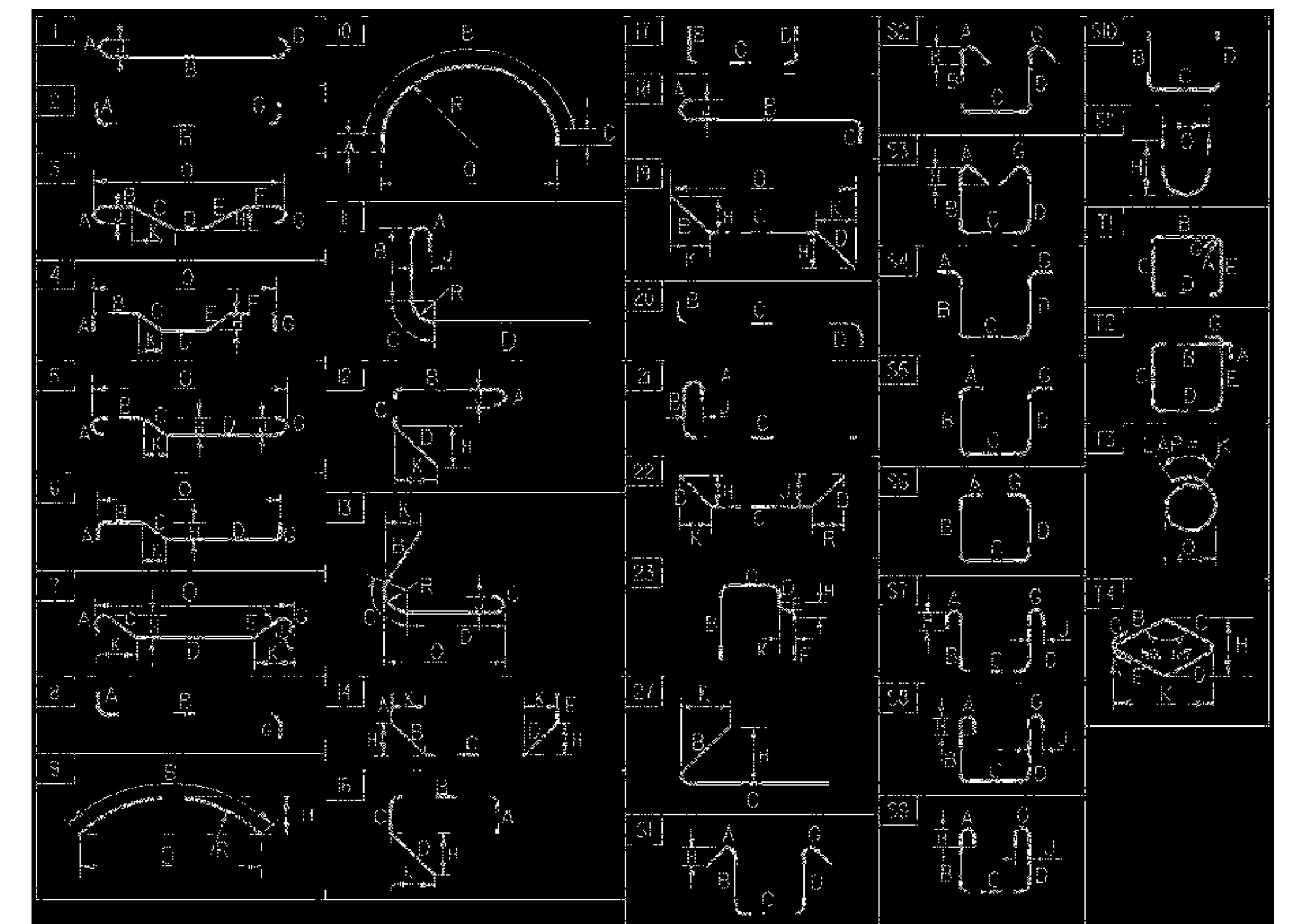


REINFORCING STEEL SCHEDULE

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	
▲ 39	5	4-	1"	W501	STR																															
▲ 42	5	37-	6"	W502	STR																															
▲ 39	5	12-	7"	W503	STR																															
▲ 39	5	3-	1"	W504	17		1'- 0"	1'- 1"	1'- 0"																											
▲ 39	5	12-	7"	W505	STR																															
4	5	20-	10"	W506	14	4'- 2"	4'- 2"	4'- 2"	4'- 2"	4'- 2"			2'- 11"		2'- 11"																					
▲ 39	6	7-	1"	W601	17		4'- 6"	4'- 6"	2'- 7"																											
39	8	8-	6"	W801	STR																															
10	8	3-	6"	DOWEL	STR																															

~ 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-S). 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

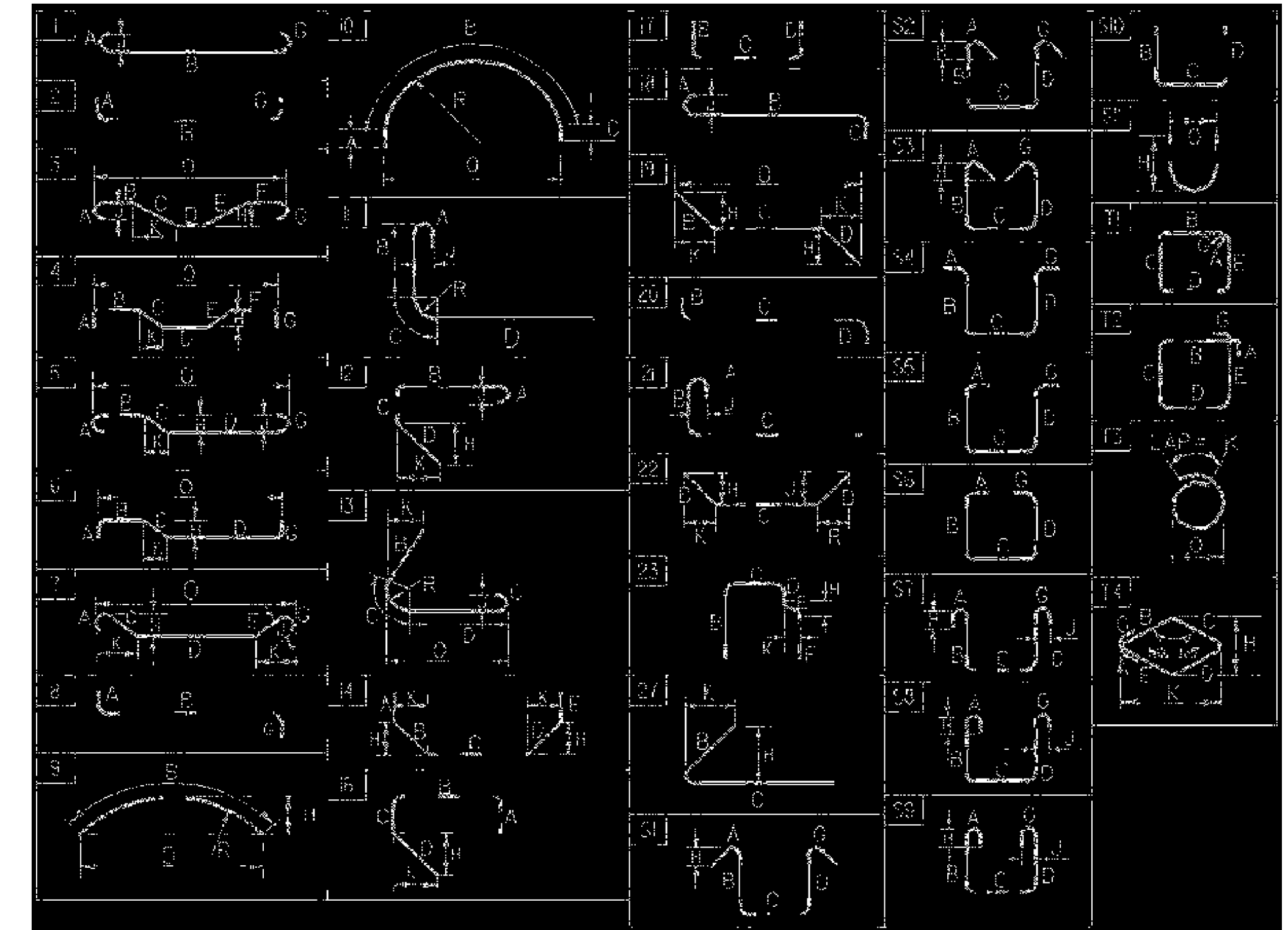
PROJECT NAME: SHARON
 PROJECT NUMBER: IM CULV (18)
 FILE NAME: ENGREINF14-1.XLS PLOT DATE: 3/9/2009
 PROJECT MANAGER: DMB DRAWN BY: SLM
 DESIGNED BY: LKW CHECKED BY: WLD
 REINFORCING STEEL SCHEDULE SHEET (14-1) SHEET 35 OF 36

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
▲ 49	5	4'- 1"	W501	STR																															
▲ 47	5	47'- 6"	W502	STR																															
▲ 49	5	15'- 1"	W503	STR																															
▲ 49	5	3'- 1"	W504	17			1'- 0"	1'- 1"	1'- 0"																										
4	5	25'- 10"	W505	14	5'- 2"	5'- 2"	5'- 2"	5'- 2"	5'- 2"				3'- 8"		3'- 8"																				
▲ 49	6	15'- 1"	W601	STR																															
▲ 96	7	8'- 0"	W701	17		5'- 5"	2'- 7"																												
▲ 96	8	9'- 6"	W801	STR																															

~ 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-S). 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 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: SHARON
 PROJECT NUMBER: IM CULV (18)
 FILE NAME: ENGREINF14-2.XLS PLOT DATE: 3/9/2009
 PROJECT MANAGER: DMB DRAWN BY: SLM
 DESIGNED BY: LKW CHECKED BY: WLD
 REINFORCING STEEL SCHEDULE SHEET (14-2) SHEET 36 OF 36